COWI

ALAMEDA COUNTY, CALIFORNIA

**PROJECT # PRWWF 24-002**
SPECICATION # 32400202

# Berkeley Water Transportation Pier Ferry Project

CALCULATIONS – 60% SUBMITTAL

PREPARED FOR SUBMITTAL TO:
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CITY OF BERKELEY

# Berkeley Water Transportation Pier Ferry Project

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# 1 Pier Gravity Load Calculations

# 1.1 Pier Slab Calculations

Project: BWTPF
Subject: Pier Gravity Load Slab Design

Job #: A272767
By: TYRD | Date: 11/7/2024
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## 1. Introduction

Objective: Design the reinforcement for the Pier slab considering applicable gravity loads. Lateral loads will be considered separately.

Background: The new 22' wide pier will consist of concrete prestressed precast concrete piles and a concrete deck. See Figure 1 for Slab plan view, and Figures 2a and 2b for isometric views.

Codes: The following codes are referenced:

- American Concrete Institute *Building Code Requirements for Structural Concrete* (ACI 318-19), 2019 (ACI)
- American Association of State Highway and Transportation Officials *LRFD Bridge Design Specifications*, 7th Ed., 2020 (AASHTO)
- American Society of Civil Engineers *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-22), 2022 (ASCE)

Methodology: First, assume a one-way slab system. Then, create a SAP2000 model to analyze two-way slab action for the load cases that are predicted to control (double 86k firetrucks, uniform live load). Obtain controlling moment in the longitudinal & transverse directions, shear, and deflection. Design for moment and shear. Use ACI 318-19 to determine reinforcing in the slab. Use the model results to check deflection. Analyze a simply supported 12" width strip of slab for moment in the longitudinal and transverse directions for all applicable loading cases by hand to confirm model results.

Units: U.S. Customary System, as noted in equations.

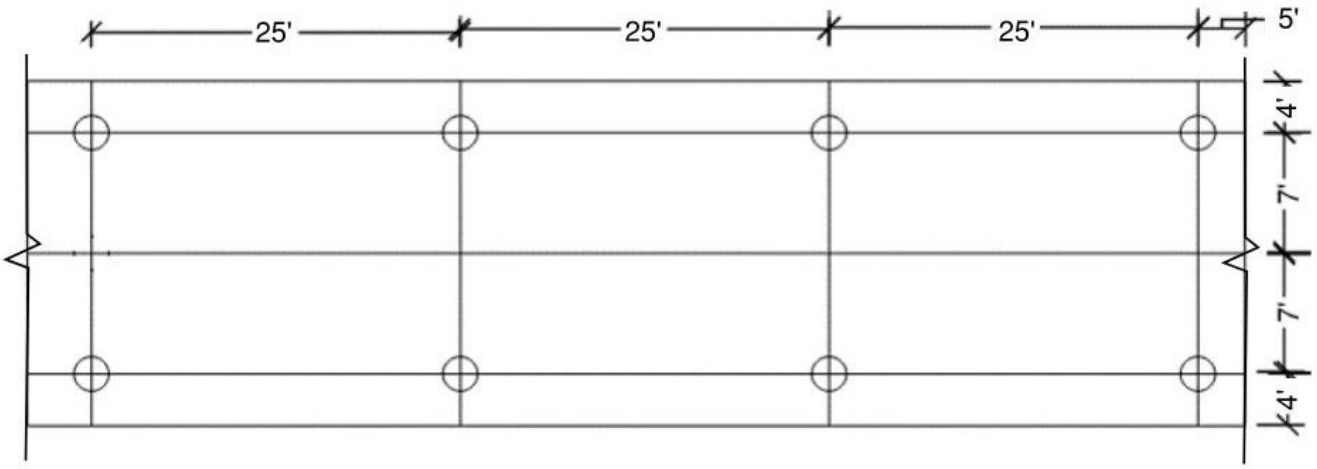



*Figure 1 - Slab plan view*

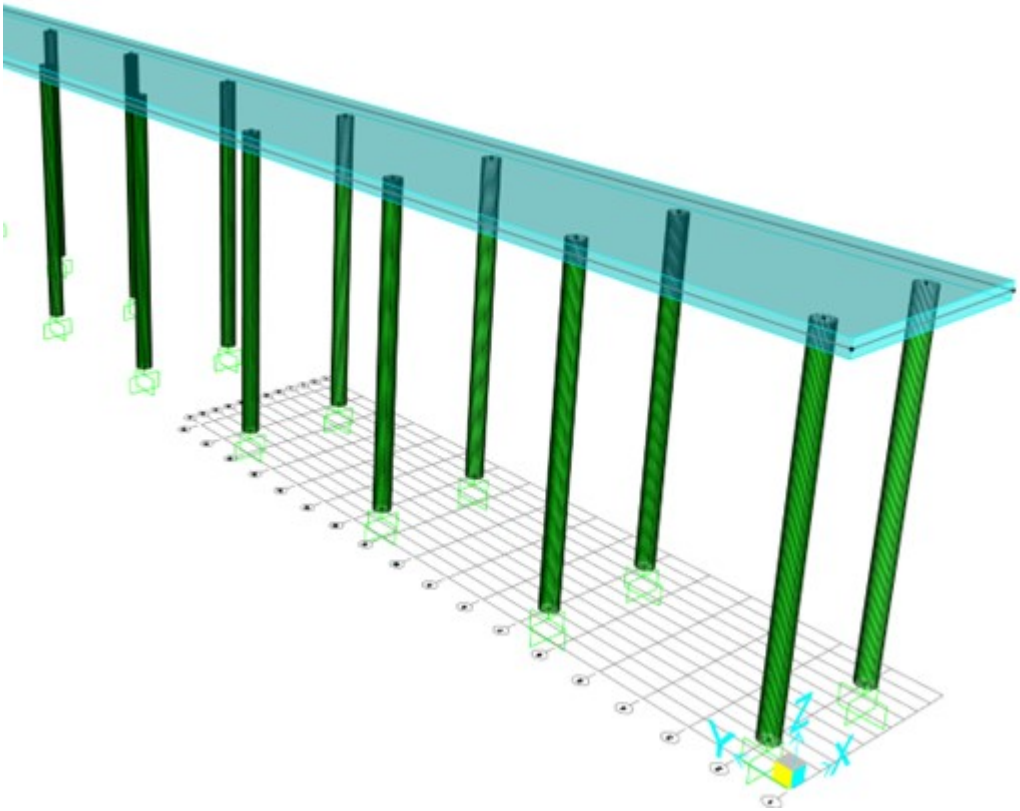


*Figure 2a - Slab Isometric View*

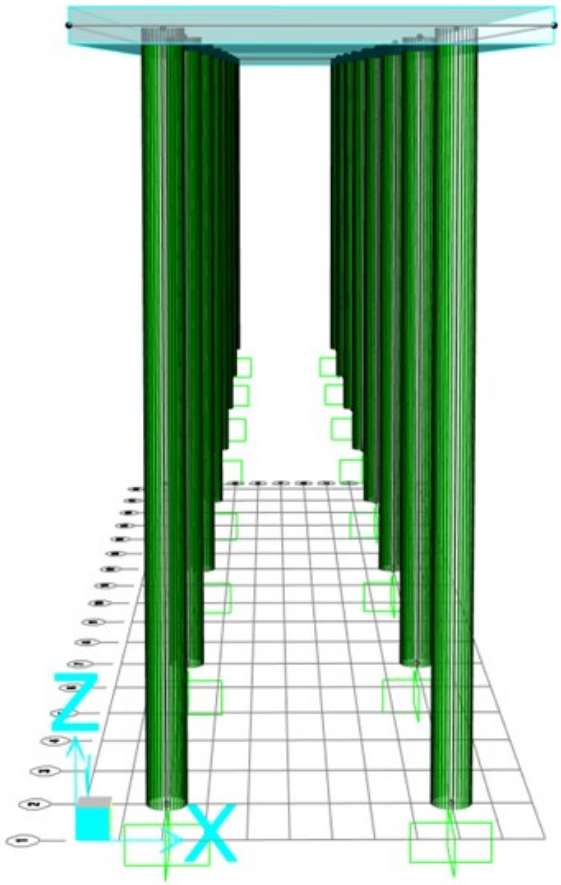



*Figure 2b - Slab Section View*

## 2. Load Cases

Consider Load Cases below per ASCE 7-22

Load Case 1: 1.4*DL
Load Case 2: 1.2*DL + 1.6*(Lc)
Load Case 3: 1.2*DL + 1.6*(Lu)

where
DL = slab concrete dead load
Lc = concentrated live load (Fire Trucks)
Lu = uniform live load

Per UFC Section 3-3.3, concentrated live loads include a factor of 1.15. The updated Load Cases are:

Load Case 1: 1.4*DL
Load Case 2: 1.2*DL + 1.84*(Lc)
Load Case 3: 1.2*DL + 1.6*(Lu)

## 3. Design Loads

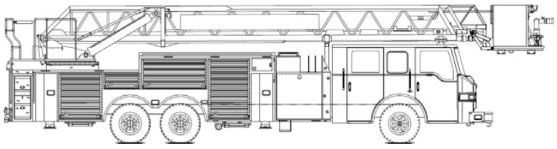
Consider all design load cases specified in Section 2. Apply loads to a 12" wide strip of slab. Assume piles provide pinned supports.

Preliminary geometry of the Ramp Pier deck slab are as follows:

| | |
|---|---|
| $h := 20\ in$ | height of slab |
| $b := 12\ in$ | width of slab considered |
| $W := 22\ ft$ | actual width of pier slab |
| $\gamma_{conc} := 150\ pcf$ | Unit weight of Normal Weight concrete |

### a. Tandem Firetrucks

**AERIAL PLATFORM REAR MOUNT – TANDEM REAR AXLE**



| | Minimum | Maximum |
|---|---|---|
| Front GAWR (lbs) | 21500 | 24000 |
| Rear GAWR (lbs) | 46000 | 62000 |
| Width (in.) | 98 | 100 |
| Height (in.) | 11.5 | 13 |
| Length (ft.) | 46 | 48 |

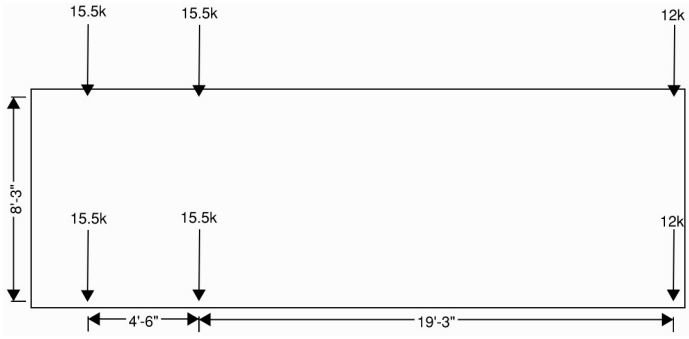



*Figure 3 - Live Load with Tandem Firetruck.*

A 4.5' spacing between each axle controls for maximum bending and shear for a **simply-supported** section. The two firetrucks will be placed 22" next to each other

Figures 4a and 4b visualize how the firetrucks were modeled in SAP2000.

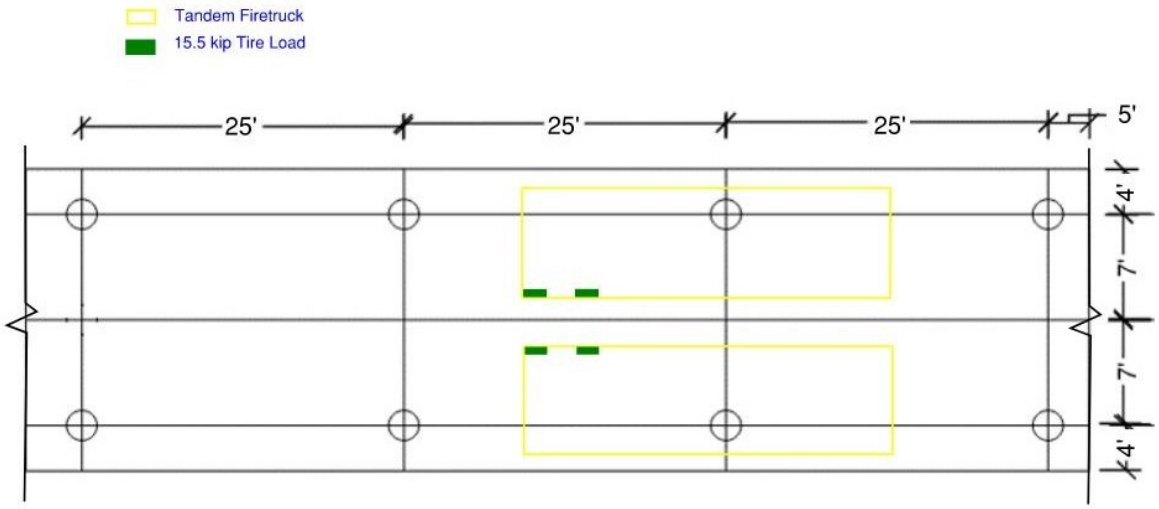



*Figure 4a - Load Case 2 Position 1*

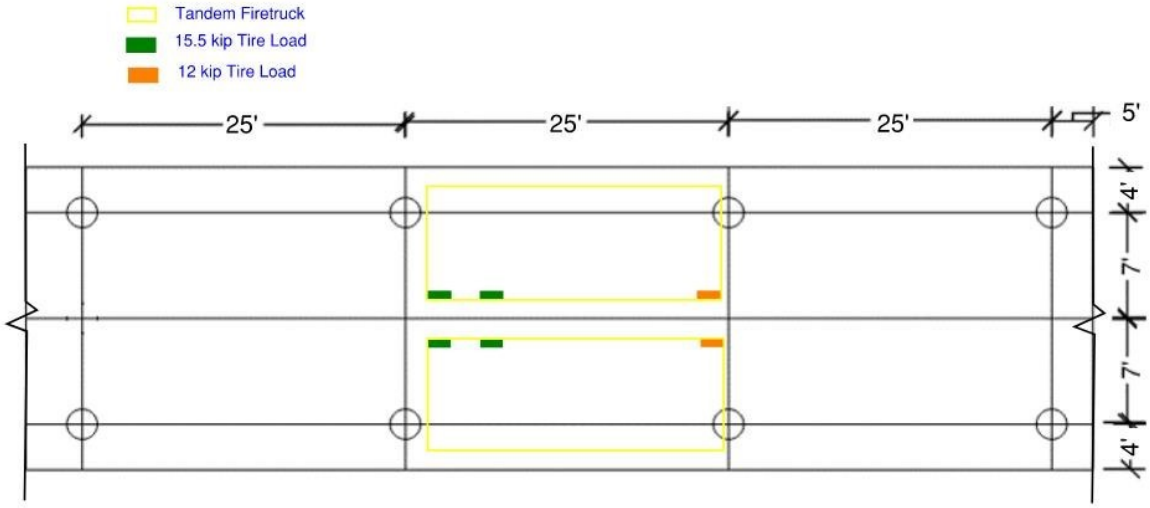



*Figure 4b - Load Case 2 Position 2*

## b. Column Strips

In order to optimize the amount of reinforcing steel in the concrete, the slab was divided into column strips in both directions. Each strip will be designed according to the maximum moments in each strip. The widths of each strip and their labels are shown in Figure 5.

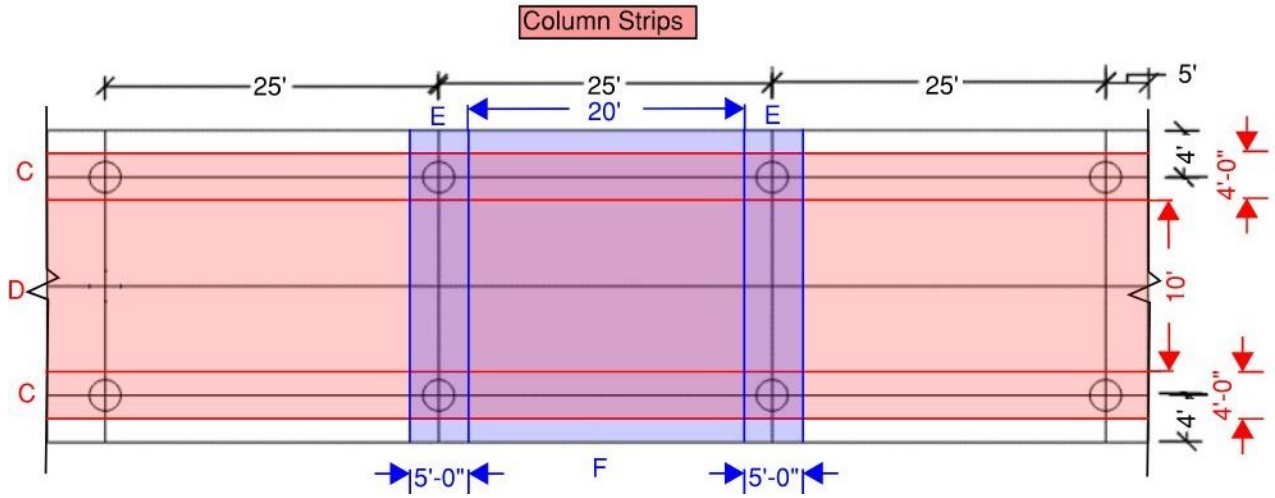



*Figure 5 - Column Strip Information*

## c. SAP2000 Analysis Results

In order to account for two-way bending and obtain realistic results, model various loading positions of the Tandem Firetruck on the slab and uniform live load on slab in SAP2000.

### i. Dead Load in SAP2000 Model

The dead load self-weight of the structure includes the cast-in-place concrete slab, ledge-beam concrete slab, and pile dead load. The unit weight of reinforced concrete is γ = 150 pcf. The dead load self-weight of the structure was computed and defined in the SAP2000 structural elements.

### ii. Uniform Live Load in SAP2000 Model

A uniform live load of 250 psf is applied as uniform loads to shells in the model.

### iii. Summary of Results from SAP2000 Model

The ultimate factored moment diagrams in the longitudinal (M11) and transverse (M22) directions for all loading positions shown in part 3a above were obtained.

The distribution diagrams for the controlling M11 and M22 diagrams for the top (negative M11 or M22) and bottom (positive M11 or M22) are shown in Figures 6(a) through 6(c).

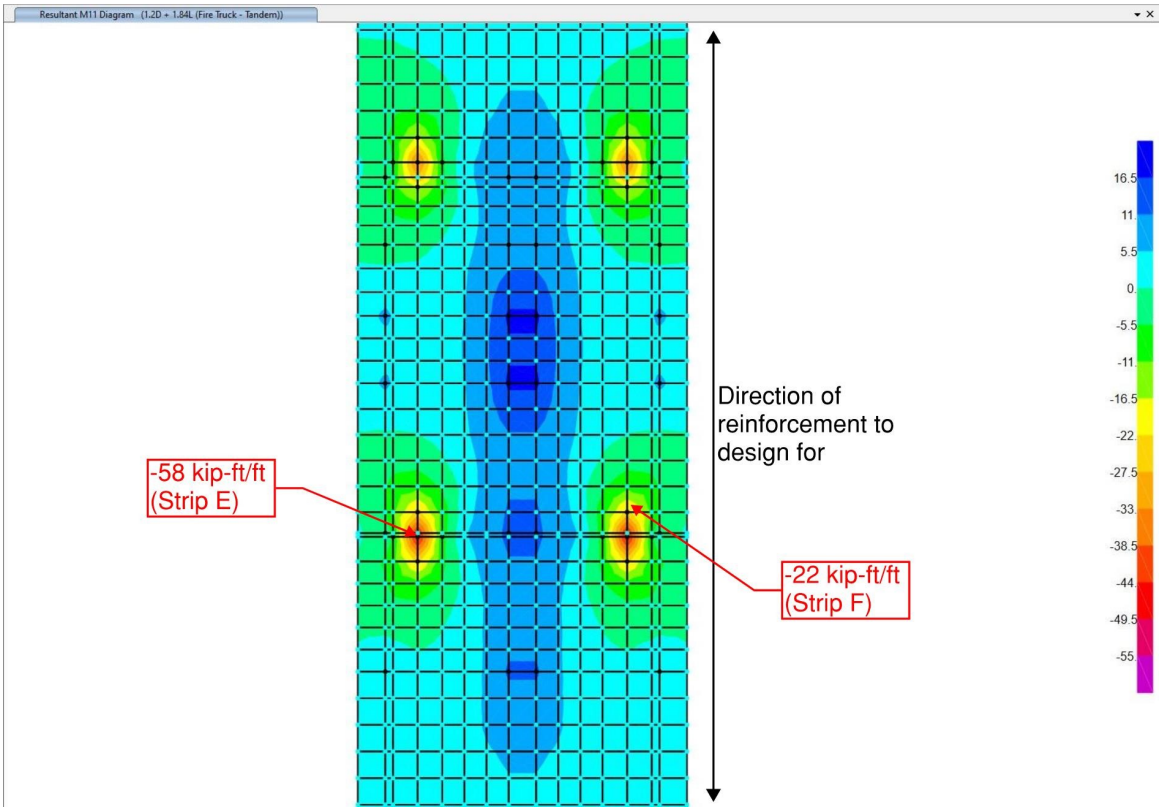



*Figure 6(a) - M11 diagram for Load Case 2 Position 1*
*(controls for M11 top)*

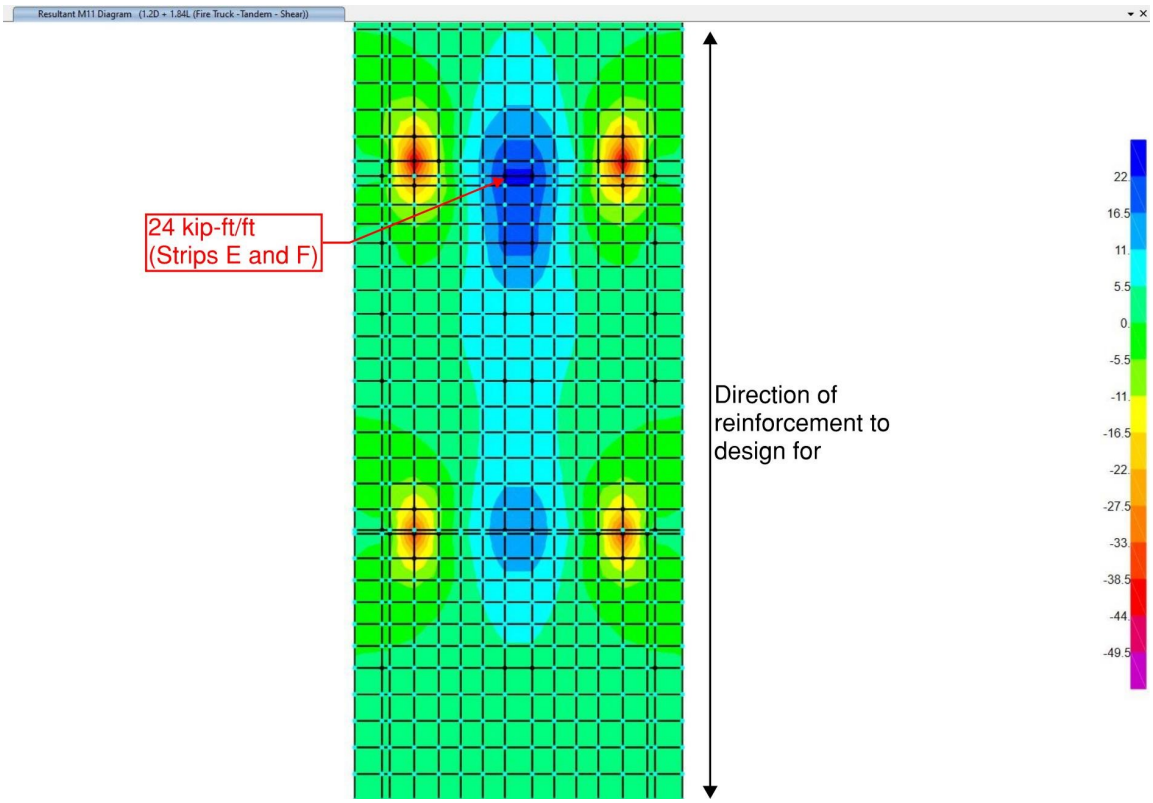



*Figure 6(b) - M11 diagram for Load Case 2 Position 2*
*(controls form M11 bot)*

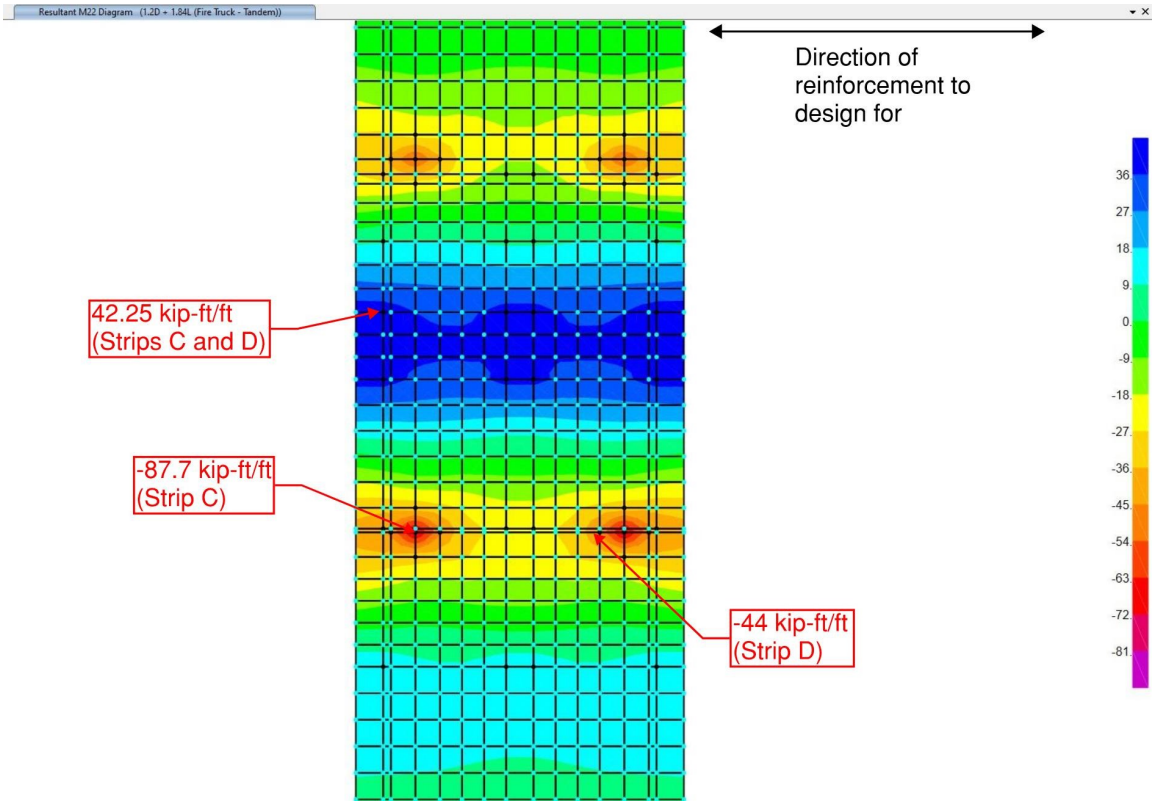



*Figure 6(c) - M22 diagram for Load Case 2 Position 1 (controls for M22 top and bot)*

$M_{utot\_controlling\_long\_top\_model} := 87.7\ kip \cdot ft$ per ft $M_{utot\_controlling\_transv\_top\_model} := 58\ kip \cdot ft$ per ft

$M_{utot\_controlling\_long\_bot\_model} := 42.3\ kip \cdot ft$ per ft $M_{utot\_controlling\_transv\_bot\_model} := 24\ kip \cdot ft$ per ft

$M_{utot\_controlling\_long\_top\_stripD} := 44\ kip \cdot ft$ per ft

$M_{utot\_controlling\_transv\_top\_stripF} := 22\ kip \cdot ft$ per ft

The maximum ultimate factored shear (VMAX) for all loading positions shown in part 3a were obtained. The diagram for the controlling VMAX diagram is shown in Figure 7. Extracted shear value is the maximum at Strip D.

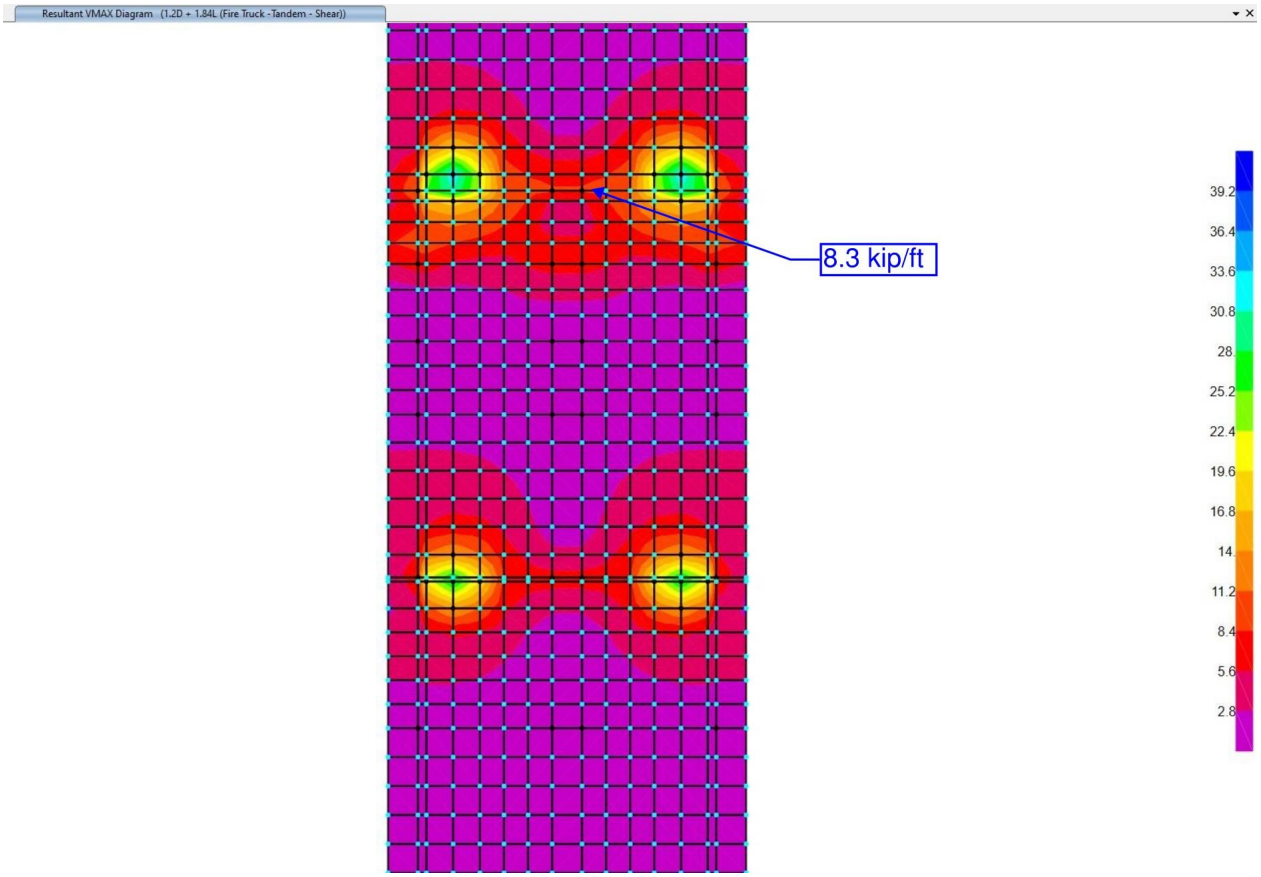



*Figure 7 - VMAX diagram for Load Case 2 Position 2*

$V_{utot\_controlling\_vmax\_model} := 8.3\ \textbf{\textit{kip}}$ per ft

## d. Determining Design Loads

The design loads are as follows:

$M_{utot\_controlling\_long\_bot\_overall} := M_{utot\_controlling\_long\_bot\_model} = 42.3\ \textbf{\textit{kip}} \cdot \textbf{\textit{ft}}$ per ft

$M_{utot\_controlling\_long\_top\_overall} := M_{utot\_controlling\_long\_top\_model} = 87.7\ \textbf{\textit{kip}} \cdot \textbf{\textit{ft}}$ per ft

$M_{utot\_controlling\_transv\_bot\_overall} := M_{utot\_controlling\_transv\_bot\_model} = 24\ \textbf{\textit{kip}} \cdot \textbf{\textit{ft}}$ per ft

$M_{utot\_controlling\_transv\_top\_overall} := M_{utot\_controlling\_transv\_top\_model} = 58\ \textbf{\textit{kip}} \cdot \textbf{\textit{ft}}$ per ft

$V_{utot\_controlling\_vmax\_overall} := V_{utot\_controlling\_vmax\_model} = 8.3\ \textbf{\textit{kip}}$ per ft

## 4. Design at Main Slab

Preliminary Top and Bottom mat reinforcing are as shown below:

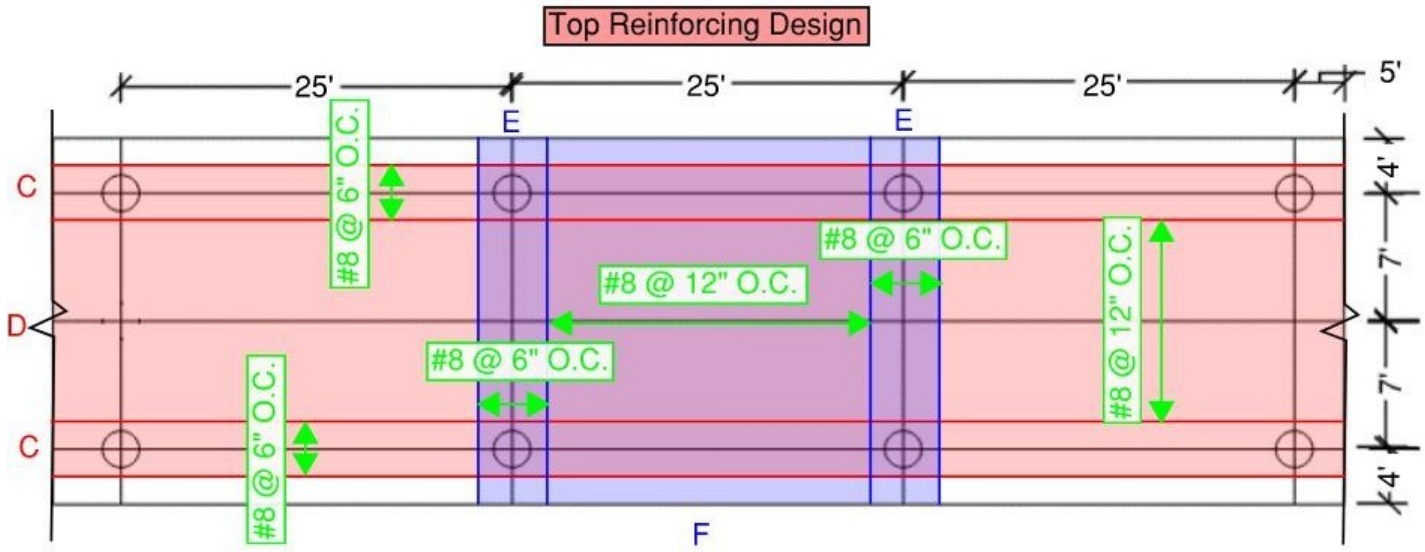



*Figure 8 - Top mat reinforcing design for slab.*

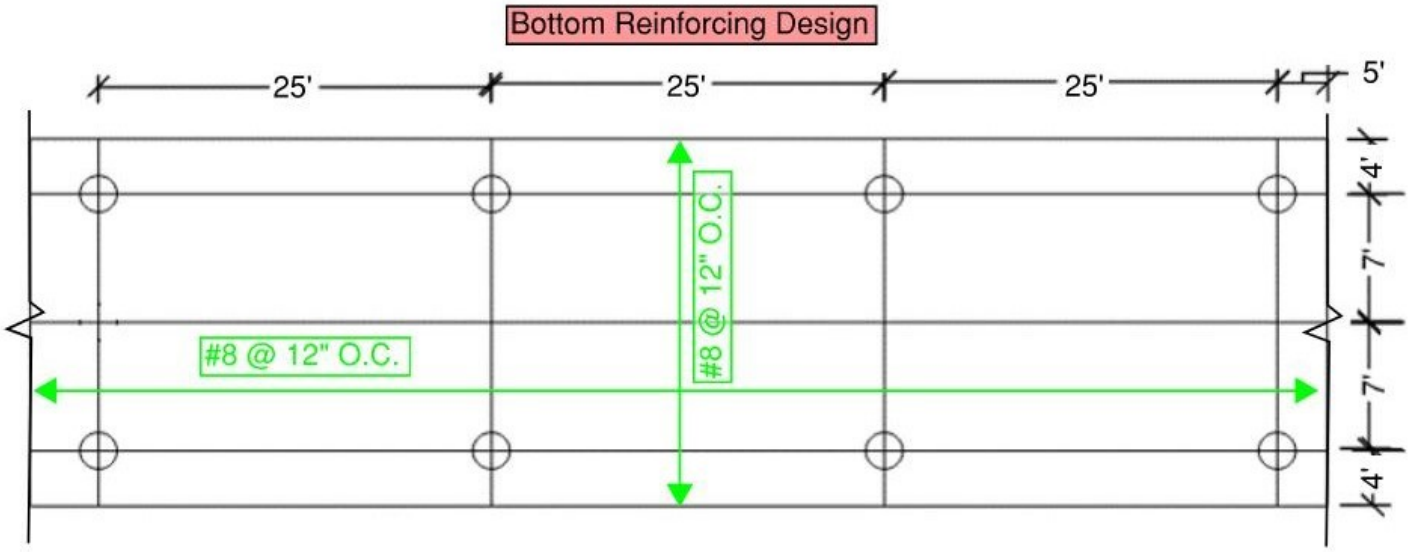



*Figure 9 - Bottom mat reinforcing design for slab.*

### a. Longitudinal Reinforcement Design for Positive Bending (Strips C and D)

Step 1. Design for positive bending (top compression, bottom tension)

- Check minimum required height of slab:

$l_1 := 25\ ft$ clear span of slab, longitudinal

$l_3 := 14\ ft$ clear span of slab, transverse

$h_{min} := \frac{\max(l_1, l_3)}{20} = 15\ in$ minimum one-way slab thickness (ACI Table 7.3.1.1) for simply supported

$h = 20\ in$ provided height of slab

$$\begin{cases} \text{if } h \geq h_{min} \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{cases} = \text{“OK”}$$

- Slab properties:

$b = 12\ in$ width of slab considered

$d_{cover} := 3\ in$ ACI 318-19 Table 20.5.1.3.1 (2" required)

$d_b := \frac{8}{8}\ in$ assumed tension reinforcement (#8)

$d := h - d_{cover} - \frac{d_b}{2} = 16.5\ in$ depth to tension reinforcement

- See Figures 8 & 9 for preliminary reinforcing design. Design for a 1' wide strip spanning longitudinally.

Top Longitudinal: #8 @ 12" O.C. [compression]
Bottom Longitudinal: #8 @ 12" O.C. [tension]

$s_{l\_comp} := 12\ in$ $s_{l\_tens} := 12\ in$ spacing of steel in slab

$A_{sprov1} := \frac{12\ in}{s_{l\_comp}} \cdot 0.79\ in^2 = 0.79\ in^2$ per ft depth of slab at compression layer

$A_{sprov2} := \frac{12\ in}{s_{l\_tens}} \cdot 0.79\ in^2 = 0.79\ in^2$ per ft depth of slab at tension layer

$\rho_{prov} := \frac{A_{sprov1} + A_{sprov2}}{b \cdot h} = 6.58333 \cdot 10^{-3}$ provided steel reinforcing to concrete reinforcing ratio

- Check minimum reinforcement ratio:

$f_{cprime} := 5000$ psi $f_y := 60000$ psi

$\rho_{min1} := \frac{3 \cdot \sqrt{f_{cprime}}}{f_y} = 3.536 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2a

$\rho_{min2} := \frac{200}{f_y} = 3.333 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2b

if $\rho_{prov} > \rho_{min1} \wedge \rho_{prov} > \rho_{min2}$
  "Min. reinforcement provided."
else
  "Min. reinforcement NOT provided."
= "Min. reinforcement provided."

- Check maximum spacing of main reinforcement:

if $\max\left(s_{l\_comp}, s_{l\_tens}\right) \le 3 \cdot h \wedge 18\ in$
  "OK"
else
  "NG"
= "OK"  ACI 318-19 Sect. 7.7.2.3

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

- Again, consider a 12" width section of the slab and analyze as a beam.

$f_{cprime} := f_{cprime} \cdot psi = 5\ ksi$ concrete compressive strength

$\varepsilon_{cu} := 0.003$ concrete compression-controlled strain limit

$E_s := 29000 \cdot ksi$ elastic modulus of reinforcing steel

$f_y := f_y \cdot psi = 60\ ksi$ yield stress of longitudinal reinforcing

$\varepsilon_y := \frac{f_y}{E_s} = 0.00207$ yield strain of reinforcing steel

$c_c := d_{cover} = 3\ in$ clear cover to tension reinforcement

$c_{cprime} := d_{cover} = 3\ in$ clear cover to compression reinforcement

$h = 20\ in$ gross section depth

$d_b = 1\ in$ bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ bar diameter - compression steel (#8)

$d_t := 1\ in$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 15.5\ in$ depth to tensile reinforcement

$A_s := A_{sprov2} = 0.79\ in^2$ tension steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := c_{cprime} + d_t + \frac{d_{bprime}}{2} = 4.5\ in$ depth to compression reinforcing

$A_{sprime} := 0.79\ in^2 \cdot \left(\frac{12\ in}{s_{l\_comp}}\right) = 0.79\ in^2$ compression steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$b_{bott} := b = 1\ ft$ width of section, bottom (T)

$b_{top} := b = 1\ ft$ width of section, top (C)

Use iterative procedure to establish section equilibrium and find the depth to the neutral axis c.

1. Assume tension steel is yielding
2. Select trial value for c, start with 0 and iterate up
3. Find strain in compression reinforcement
4. Find stress in compression steel
5. Find force in compression steel
6. Find concrete compression force
7. Find force in tension reinforcement
8. Check section equilibrium (T = C)
9. Confirm that the section is yielding
10. Calculate the nominal moment strength Mn
11. Confirm that the tension steel area exceeds Asmin
12. Calculate the strength reduction factor and design moment strength

Calculate stress block depth factor (ACI 318-19 Table 22.2.2.4.3)

$$\beta_1 := \left\| \begin{array}{l} \text{if } \left(2500 \cdot psi \le f_{cprime}\right) \wedge \left(f_{cprime} \le 4000 \cdot psi\right) \\ \quad \text{return } 0.85 \\ \text{if } \left(4000 \cdot psi < f_{cprime}\right) \wedge \left(f_{cprime} < 8000 \cdot psi\right) \\ \quad 0.85 - 0.05 \cdot \dfrac{\left(f_{cprime} - 4000 \cdot psi\right)}{1000 \cdot psi} \\ \text{if } \left(f_{cprime} \ge 8000 \cdot psi\right) \\ \quad 0.65 \end{array} \right. = 0.8$$

$$CompressionDepth := \left\| \begin{array}{l} c \leftarrow 0 \cdot in \\ C_c \leftarrow 0 \cdot kip \\ C_s \leftarrow 0 \cdot kip \\ T \leftarrow A_s \cdot f_y \\ \text{while } T > \left(C_c + C_s\right) \\ \quad c \leftarrow c + 0.001 \cdot in \\ \quad \varepsilon_{sprime} \leftarrow \dfrac{\left(c - d_{prime}\right) \cdot \varepsilon_{cu}}{c} \\ \quad f_{sprime} \leftarrow \left\| \begin{array}{l} \text{if } \varepsilon_{sprime} < 0 \\ \quad \max\left(\varepsilon_{sprime} \cdot E_s, -f_y\right) \\ \text{else} \\ \quad min\left(\varepsilon_{sprime} \cdot E_s, f_y\right) \end{array} \right. \\ \quad C_s \leftarrow A_{sprime} \cdot \left(f_{sprime} - 0.85 \cdot f_{cprime}\right) \\ \quad C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c \\ c \end{array} \right. = 2.41\ in$$

$c := CompressionDepth = 2.41\ in$

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0026$

$f_{sprime} := \left|\begin{array}{l}\text{if } (\varepsilon_{sprime} < 0) \\ \quad \left|\begin{array}{l}\max(\varepsilon_{sprime} \cdot E_s, -f_y)\end{array}\right. \\ \text{else} \\ \quad \left|\begin{array}{l}min(\varepsilon_{sprime} \cdot E_s, f_y)\end{array}\right.\end{array}\right| = -60\ ksi$ Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) = -50.8\ kip$

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 98.2\ kip$

$C := C_s + C_c = 47.4\ kip$ per foot of slab

$T := A_s \cdot f_y = 47.4\ kip$ per foot of slab

Confirm tension steel yields

$\varepsilon_t := \left(\frac{d - c}{c}\right) \cdot \varepsilon_{cu} = 0.016$

$\varepsilon_y = 0.0021$

$Yield := \left|\begin{array}{l}\text{if } \varepsilon_t > \varepsilon_y \\ \quad \left|\begin{array}{l}\text{“OK”}\end{array}\right. \\ \text{else} \\ \quad \left|\begin{array}{l}\text{“NG”}\end{array}\right.\end{array}\right| = \text{“OK”}$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 1.92\ in$

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot (d - d_{prime}) = 72\ kip \cdot ft$ per foot of slab

Minimum steel area (ACI 318-19 7.6.1.1)

$A_g := h \cdot b_{bott} = 1.667\ ft^2$

$A_{smin} := 0.0018 \cdot A_g = 0.43\ in^2$

$A_s = 0.79\ in^2$

$MinimumSteel := \left|\begin{array}{l}\text{if } A_s > A_{smin} \\ \quad \left|\begin{array}{l}\text{“OK”}\end{array}\right. \\ \text{else} \\ \quad \left|\begin{array}{l}\text{“NG”}\end{array}\right.\end{array}\right| = \text{“OK”}$

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$\phi_b := \left|\begin{array}{l}\text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \left|\begin{array}{l}\text{return } 0.9\end{array}\right. \\ \text{also if } (\varepsilon_y + 0.003 > \varepsilon_t) \wedge (\varepsilon_t > \varepsilon_y) \\ \quad \left|\begin{array}{l}\left(0.65 + \frac{0.25 \cdot (\varepsilon_t - \varepsilon_y)}{0.003}\right)\end{array}\right. \\ \text{else} \\ \quad \left|\begin{array}{l}0.65\end{array}\right.\end{array}\right| = 0.9$

$\phi_b \cdot M_n = 65\ kip \cdot ft$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_long\_bot\_overall}}{\phi_b \cdot M_n} = 0.649$ OK

Therefore, provide **#8 @ 12" O.C. (bottom)** for longitudinal steel reinforcement in Strips C and D.

### b. Longitudinal Reinforcement Design for Negative Bending (Strip D)

Step 1. Design for negative bending (top tension, bottom compression)

- See Figures 8 & 9 for preliminary reinforcing design. Design for a 1' wide strip.

Top Longitudinal: #8 @ 12" O.C. [tension]
Bottom Longitudinal: #8 @ 12" O.C. [compression]

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$d_b := 1\ in$ — bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ — bar diameter - compression steel (#8)

$d_t := 1\ in$ — bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 15.5\ in$ — depth to tensile reinforcement

$A_s := A_{sprov1} = 0.79\ in^2$ — compression steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := c_{cprime} + d_t + \frac{d_{bprime}}{2} = 4.5\ in$ — depth to compression reinforcing

$A_{sprime} := 0.79\ in^2 \cdot \left(\frac{12\ in}{s_{l\_tens}}\right) = 0.79\ in^2$ — tension steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$CompressionDepth :=$

$c \leftarrow 0 \cdot in$
$C_c \leftarrow 0 \cdot kip$
$C_s \leftarrow 0 \cdot kip$
$T \leftarrow A_s \cdot f_y$
while $T > (C_c + C_s)$
  $c \leftarrow c + 0.001 \cdot in$
  $\varepsilon_{sprime} \leftarrow \frac{(c - d_{prime}) \cdot \varepsilon_{cu}}{c}$
  $f_{sprime} \leftarrow$ if $\varepsilon_{sprime} < 0$ : $\max(\varepsilon_{sprime} \cdot E_s, -f_y)$ ; else : $min(\varepsilon_{sprime} \cdot E_s, f_y)$
  $C_s \leftarrow A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime})$
  $C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c$
$c$

$= 2.41\ in$

$c := CompressionDepth = 2.41\ in$

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0026$

$f_{sprime} :=$ if $(\varepsilon_{sprime} < 0)$ : $\max(\varepsilon_{sprime} \cdot E_s, -f_y)$ ; else : $min(\varepsilon_{sprime} \cdot E_s, f_y)$ $= -60\ ksi$

Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot \left(f_{sprime} - 0.85 \cdot f_{cprime}\right) = -50.8$ **kip**

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 98.2$ **kip**

$C := C_s + C_c = 47.4$ **kip** per foot of slab

$T := A_s \cdot f_y = 47.4$ **kip** per foot of slab

Confirm tension steel yields

$$\varepsilon_t := \left(\frac{d-c}{c}\right) \cdot \varepsilon_{cu} = 0.016$$

$\varepsilon_y = 0.0021$

$$Yield := \left\| \begin{array}{l} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right\| = \text{“OK”}$$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 1.92$ **in**

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot \left(d - d_{prime}\right) = 72$ **kip · ft** per foot of slab

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$$\phi_b := \left\| \begin{array}{l} \text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \text{return } 0.9 \\ \text{also if } \left(\varepsilon_y + 0.003 > \varepsilon_t\right) \wedge \left(\varepsilon_t > \varepsilon_y\right) \\ \quad \left(0.65 + \frac{0.25 \cdot \left(\varepsilon_t - \varepsilon_y\right)}{0.003}\right) \\ \text{else} \\ \quad 0.65 \end{array} \right\| = 0.9$$

$\phi_b \cdot M_n = 65$ **kip · ft** per foot of slab

$$DCR_M := \frac{M_{utot\_controlling\_long\_top\_stripD}}{\phi_b \cdot M_n} = 0.675$$ OK

Therefore, provide **#8 @ 12" O.C. (top)** for longitudinal steel reinforcement in Strip D.

### c. Longitudinal Reinforcement Design for Negative Bending (Strip C)

Step 1. Design for negative bending (top tension, bottom compression)

- See Figures 8 & 9 for preliminary reinforcing design. Design for a 1' wide strip.

Top Longitudinal: #8 @ 12" O.C. [tension]
Bottom Longitudinal: #8 @ 6" O.C. [compression]

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$d_b := 1\ in$ bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ bar diameter - compression steel (#8)

$d_t := 1\ in$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 15.5\ in$ depth to tensile reinforcement

$s_{l\_comp} := 6\ in$ spacing of compression steel in slab

$A_{sprov1} := 0.79\ in^2 \cdot \left(\frac{12\ in}{s_{l\_comp}}\right) = 1.58\ in^2$ compression steel reinforcing area per 12" slab (#8 @ 6" O.C.)

$A_s := A_{sprov1} = 1.58\ in^2$

$d_{prime} := c_{cprime} + d_t + \frac{d_{bprime}}{2} = 4.5\ in$ depth to compression reinforcing

$A_{sprime} := 0.79\ in^2 \cdot \left(\frac{12\ in}{s_{l\_tens}}\right) = 0.79\ in^2$ tension steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$CompressionDepth :=$

```
c ← 0·in
C_c ← 0·kip
C_s ← 0·kip
T ← A_s·f_y
while T > (C_c + C_s)
    c ← c + 0.001·in
    ε_sprime ← ((c − d_prime)·ε_cu) / c
    f_sprime ← if ε_sprime < 0
                   max(ε_sprime·E_s, −f_y)
               else
                   min(ε_sprime·E_s, f_y)
    C_s ← A_sprime·(f_sprime − 0.85·f_cprime)
    C_c ← 0.85·f_cprime·b_top·β_1·c
c
```

$= 3.14\ in$

$c := CompressionDepth = 3.14\ in$

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0013$

$f_{sprime} := \begin{cases} \text{if } (\varepsilon_{sprime} < 0) \\ \quad \max(\varepsilon_{sprime} \cdot E_s, -f_y) \\ \text{else} \\ \quad min(\varepsilon_{sprime} \cdot E_s, f_y) \end{cases} = -37.76 \text{ ksi}$ Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) = -33.2 \text{ kip}$

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 128 \text{ kip}$

$C := C_s + C_c = 94.8 \text{ kip}$ per foot of slab

$T := A_s \cdot f_y = 94.8 \text{ kip}$ per foot of slab

Confirm tension steel yields

$\varepsilon_t := \left(\frac{d-c}{c}\right) \cdot \varepsilon_{cu} = 0.012$

$\varepsilon_y = 0.0021$

$Yield := \begin{cases} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{cases} = \text{“OK”}$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 2.51 \text{ in}$

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot (d - d_{prime}) = 122 \text{ kip} \cdot \text{ft}$ per foot of slab

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$\phi_b := \begin{cases} \text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \text{return } 0.9 \\ \text{also if } (\varepsilon_y + 0.003 > \varepsilon_t) \wedge (\varepsilon_t > \varepsilon_y) \\ \quad \left(0.65 + \frac{0.25 \cdot (\varepsilon_t - \varepsilon_y)}{0.003}\right) \\ \text{else} \\ \quad 0.65 \end{cases} = 0.9$

$\phi_b \cdot M_n = 109 \text{ kip} \cdot \text{ft}$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_long\_top\_overall}}{\phi_b \cdot M_n} = 0.802$ OK

Therefore, provide **#8 @ 6" O.C. (top)** for longitudinal steel reinforcement in Strip C.

## d. Transverse Reinforcement Design for Positive Bending (Strips E and F)

Step 1. Preliminary design for positive bending (top compression, bottom tension)
See Figures 8 & 9.

- Try **#8 @ 12"** O.C. (top layer) for main steel reinforcement.
- Try **#8 @ 12"** O.C. (bottom layer) for main steel reinforcement.

$s_{l1} := 12\ in$ spacing of compression steel in slab

$s_{l2} := 12\ in$ spacing of tension steel in slab

$A_{sprov1} := \frac{12\ in}{s_{l1}} \cdot 0.79\ in^2 = 0.79\ in^2$ per ft depth of slab at **each layer**

$A_{sprov2} := \frac{12\ in}{s_{l2}} \cdot 0.79\ in^2 = 0.79\ in^2$

$\rho_{prov} := \frac{A_{sprov1} + A_{sprov2}}{b \cdot h} = 6.58333 \cdot 10^{-3}$ provided steel reinforcing to concrete reinforcing ratio

- Check minimum reinforcement ratio:

$f_{cprime} := 5000$ psi $f_y := 60000$ psi

$\rho_{min1} := \frac{3 \cdot \sqrt{f_{cprime}}}{f_y} = 3.536 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2a

$\rho_{min2} := \frac{200}{f_y} = 3.333 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2b

if $\rho_{prov} > \rho_{min1} \wedge \rho_{prov} > \rho_{min2}$
  "Min. reinforcement provided."
else
  "Min. reinforcement NOT provided."
$=$ "Min. reinforcement provided."

- Check maximum spacing of main reinforcement:

if $s_{l1} \le 3 \cdot h \wedge 18\ in$
  "OK"
else
  "NG"
$=$ "OK" ACI 318-19 Sect. 7.7.2.3

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$f_{cprime} := f_{cprime} \cdot psi = 5\ ksi$ concrete compressive strength

$\varepsilon_{cu} := 0.003$ concrete compression-controlled strain limit

$E_s := 29000 \cdot ksi$ elastic modulus of reinforcing steel

$f_y := f_y \cdot psi = 60\ ksi$ yield stress of longitudinal reinforcing

$\varepsilon_y := \frac{f_y}{E_s} = 0.00207$ yield strain of reinforcing steel

$c_c := d_{cover} = 3\ in$ clear cover to tension reinforcement

$c_{cprime} := d_{cover} = 3\ in$ clear cover to compression reinforcement

$h = 20\ in$ gross section depth

$d_b := 1\ in$ bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ bar diameter - compression steel (#8)

$d_t := 1\ in$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 15.5\ in$ depth to tensile reinforcement

$A_s := A_{sprov2} = 0.79\ in^2$ tension steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := c_{cprime} + d_t + \frac{d_{bprime}}{2} = 4.5\ in$ depth to compression reinforcing

$A_{sprime} := A_{sprov1} = 0.79\ in^2$ compression steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$b_{bott} := b = 1\ ft$ width of section, bottom (T)

$b_{top} := b = 1\ ft$ width of section, top (C)

Use iterative procedure to establish section equilibrium and find the depth to the neutral axis c.

1. Assume tension steel is yielding
2. Select trial value for c, start with 0 and iterate up
3. Find strain in compression reinforcement
4. Find stress in compression steel
5. Find force in compression steel
6. Find concrete compression force
7. Find force in tension reinforcement
8. Check section equilibrium (T = C)
9. Confirm that the section is yielding
10. Calculate the nominal moment strength Mn
11. Confirm that the tension steel area exceeds Asmin
12. Calculate the strength reduction factor and design moment strength

Calculate stress block depth factor (ACI 318-19 Table 22.2.2.4.3)

$$\beta_1 := \left\| \begin{array}{l} \text{if } \left(2500 \cdot psi \le f_{cprime}\right) \wedge \left(f_{cprime} \le 4000 \cdot psi\right) \\ \quad \text{return } 0.85 \\ \text{if } \left(4000 \cdot psi < f_{cprime}\right) \wedge \left(f_{cprime} < 8000 \cdot psi\right) \\ \quad 0.85 - 0.05 \cdot \frac{\left(f_{cprime} - 4000 \cdot psi\right)}{1000 \cdot psi} \\ \text{if } \left(f_{cprime} \ge 8000 \cdot psi\right) \\ \quad 0.65 \end{array} \right| = 0.8$$

$$CompressionDepth := \left\| \begin{array}{l} c \leftarrow 0 \cdot in \\ C_c \leftarrow 0 \cdot kip \\ C_s \leftarrow 0 \cdot kip \\ T \leftarrow A_s \cdot f_y \\ \text{while } T > (C_c + C_s) \\ \quad \left\| \begin{array}{l} c \leftarrow c + 0.001 \cdot in \\ \varepsilon_{sprime} \leftarrow \dfrac{(c - d_{prime}) \cdot \varepsilon_{cu}}{c} \\ f_{sprime} \leftarrow \left\| \begin{array}{l} \text{if } \varepsilon_{sprime} < 0 \\ \quad \left\| \max(\varepsilon_{sprime} \cdot E_s, -f_y) \right. \\ \text{else} \\ \quad \left\| min(\varepsilon_{sprime} \cdot E_s, f_y) \right. \end{array} \right. \\ C_s \leftarrow A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) \\ C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c \end{array} \right. \\ c \end{array} \right. = 2.41\ in$$

$$c := CompressionDepth = 2.41\ in$$

$$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0026$$

$$f_{sprime} := \left\| \begin{array}{l} \text{if } (\varepsilon_{sprime} < 0) \\ \quad \left\| \max(\varepsilon_{sprime} \cdot E_s, -f_y) \right. \\ \text{else} \\ \quad \left\| min(\varepsilon_{sprime} \cdot E_s, f_y) \right. \end{array} \right. = -60\ ksi$$

Negative values indicate that the steel is in tension

$$C_s := A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) = -50.8\ kip$$

$$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 98.2\ kip$$

$$C := C_s + C_c = 47.4\ kip$$

per foot of slab

$$T := A_s \cdot f_y = 47.4\ kip$$

per foot of slab

Confirm tension steel yields

$$\varepsilon_t := \left(\frac{d - c}{c}\right) \cdot \varepsilon_{cu} = 0.016$$

$$\varepsilon_y = 0.0021$$

$$Yield := \left\| \begin{array}{l} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \left\| \text{“OK”} \right. \\ \text{else} \\ \quad \left\| \text{“NG”} \right. \end{array} \right. = \text{“OK”}$$

Calculate nominal moment capacity

$$a := \beta_1 \cdot c = 1.92\ in$$

$$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot (d - d_{prime}) = 72\ kip \cdot ft$$

per foot of slab

Minimum steel area (ACI 318-19 7.6.1.1)

$A_g := h \cdot b_{bott} = 1.667\ ft^2$

$A_{smin} := 0.0018 \cdot A_g = 0.43\ in^2$

$A_s = 0.79\ in^2$

$MinimumSteel :=$ if $A_s > A_{smin}$ "OK" else "NG" $=$ "OK"

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$\phi_b :=$ if $\varepsilon_t \geq \varepsilon_y + 0.003$ return $0.9$ also if $(\varepsilon_y + 0.003 > \varepsilon_t) \wedge (\varepsilon_t > \varepsilon_y)$ $\left(0.65 + \frac{0.25 \cdot (\varepsilon_t - \varepsilon_y)}{0.003}\right)$ else $0.65$ $= 0.9$

$\phi_b \cdot M_n = 65\ kip \cdot ft$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_transv\_bot\_overall}}{\phi_b \cdot M_n} = 0.368$ OK

Therefore, provide **#8 @ 12" o.c.** for transverse steel reinforcement (bottom layer, strips E and F).

## e. Transverse Reinforcement Design for Negative Bending (Strip F)

Step 1. Preliminary design for positive bending (top tension, bottom compression)
See Figure 8 & 9.

- Try **#8 @ 12"** O.C. (top layer) for main steel reinforcement.
- Try **#8 @ 12"** O.C. (bottom layer) for main steel reinforcement.

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$d_b := 1\ in$ bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ bar diameter - compression steel (#8)

$d_t := 1\ in$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 15.5\ in$ depth to tensile reinforcement

$A_s := A_{sprov1} = 0.79\ in^2$ compression steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := \left(c_{cprime} + d_t + \frac{d_{bprime}}{2}\right) = 4.5\ in$ depth to compression reinforcing

$A_{sprime} := A_{sprov2} = 0.79\ in^2$ tension steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$CompressionDepth :=$

$c \leftarrow 0 \cdot in$
$C_c \leftarrow 0 \cdot kip$
$C_s \leftarrow 0 \cdot kip$
$T \leftarrow A_s \cdot f_y$
while $T > (C_c + C_s)$
  $c \leftarrow c + 0.001 \cdot in$
  $\varepsilon_{sprime} \leftarrow \frac{(c - d_{prime}) \cdot \varepsilon_{cu}}{c}$
  $f_{sprime} \leftarrow$ if $\varepsilon_{sprime} < 0$ : $\max(\varepsilon_{sprime} \cdot E_s, -f_y)$; else $min(\varepsilon_{sprime} \cdot E_s, f_y)$
  $C_s \leftarrow A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime})$
  $C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c$
$c$

$= 2.41\ in$

$c := CompressionDepth = 2.41\ in$

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0026$

$f_{sprime} :=$ if $(\varepsilon_{sprime} < 0)$ : $\max(\varepsilon_{sprime} \cdot E_s, -f_y)$; else $min(\varepsilon_{sprime} \cdot E_s, f_y)$ $= -60\ ksi$ Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot \left(f_{sprime} - 0.85 \cdot f_{cprime}\right) = -50.8\ kip$

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 98.2\ kip$

$C := C_s + C_c = 47.4\ kip$ per foot of slab

$T := A_s \cdot f_y = 47.4\ kip$ per foot of slab

Confirm tension steel yields

$\varepsilon_t := \left(\frac{d-c}{c}\right) \cdot \varepsilon_{cu} = 0.016$

$\varepsilon_y = 0.0021$

$Yield := \left\| \begin{array}{l} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right\| = \text{“OK”}$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 1.92\ in$

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot \left(d - d_{prime}\right) = 72\ kip \cdot ft$ per foot of slab

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$\phi_b := \left\| \begin{array}{l} \text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \text{return } 0.9 \\ \text{also if } \left(\varepsilon_y + 0.003 > \varepsilon_t\right) \wedge \left(\varepsilon_t > \varepsilon_y\right) \\ \quad \left(0.65 + \frac{0.25 \cdot \left(\varepsilon_t - \varepsilon_y\right)}{0.003}\right) \\ \text{else} \\ \quad 0.65 \end{array} \right\| = 0.9$

$\phi_b \cdot M_n = 65\ kip \cdot ft$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_transv\_top\_stripF}}{\phi_b \cdot M_n} = 0.338$ OK

Therefore, provide **#8 @ 12" o.c.** for transverse steel reinforcement (top layer, strip F).

## f. Transverse Reinforcement Design for Negative Bending (Strip E)

Step 1. Preliminary design for positive bending (top tension, bottom compression)
See Figure 8 & 9.

- Try **#8 @ 6"** O.C. (top layer) for main steel reinforcement.
- Try **#8 @ 12"** O.C. (bottom layer) for main steel reinforcement.

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$d_b := 1\ in$ bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ bar diameter - compression steel (#8)

$d_t := 1\ in$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 15.5\ in$ depth to tensile reinforcement

$s_{l\_comp} := 6\ in$ spacing of compression steel in slab

$A_{sprov1} := 0.79\ in^2 \cdot \left(\frac{12\ in}{s_{l\_comp}}\right) = 1.58\ in^2$

$A_s := A_{sprov1} = 1.58\ in^2$ compression steel reinforcing area per 12" slab (#8 @ 6" O.C.)

$d_{prime} := \left(c_{cprime} + d_t + \frac{d_{bprime}}{2}\right) = 4.5\ in$ depth to compression reinforcing

$A_{sprime} := A_{sprov2} = 0.79\ in^2$ tension steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$CompressionDepth :=$

$c \leftarrow 0 \cdot in$
$C_c \leftarrow 0 \cdot kip$
$C_s \leftarrow 0 \cdot kip$
$T \leftarrow A_s \cdot f_y$
while $T > (C_c + C_s)$
  $c \leftarrow c + 0.001 \cdot in$
  $\varepsilon_{sprime} \leftarrow \frac{(c - d_{prime}) \cdot \varepsilon_{cu}}{c}$
  $f_{sprime} \leftarrow$ if $\varepsilon_{sprime} < 0$ : $\max(\varepsilon_{sprime} \cdot E_s, -f_y)$; else: $min(\varepsilon_{sprime} \cdot E_s, f_y)$
  $C_s \leftarrow A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime})$
  $C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c$
$c$

$= 3.14\ in$

$c := CompressionDepth = 3.14\ in$

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0013$

$f_{sprime} :=$ if $(\varepsilon_{sprime} < 0)$ : $\max(\varepsilon_{sprime} \cdot E_s, -f_y)$; else: $min(\varepsilon_{sprime} \cdot E_s, f_y)$ $= -37.76\ ksi$ Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot \left(f_{sprime} - 0.85 \cdot f_{cprime}\right) = -33.2\ \textit{kip}$

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 128\ \textit{kip}$

$C := C_s + C_c = 94.8\ \textit{kip}$ per foot of slab

$T := A_s \cdot f_y = 94.8\ \textit{kip}$ per foot of slab

Confirm tension steel yields

$\varepsilon_t := \left(\frac{d-c}{c}\right) \cdot \varepsilon_{cu} = 0.012$

$\varepsilon_y = 0.0021$

$Yield := \left\| \begin{array}{l} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \| \text{“OK”} \\ \text{else} \\ \quad \| \text{“NG”} \end{array} \right| = \text{“OK”}$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 2.51\ \textit{in}$

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot \left(d - d_{prime}\right) = 122\ \textit{kip} \cdot \textit{ft}$ per foot of slab

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$\phi_b := \left\| \begin{array}{l} \text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \| \text{return } 0.9 \\ \text{also if } \left(\varepsilon_y + 0.003 > \varepsilon_t\right) \wedge \left(\varepsilon_t > \varepsilon_y\right) \\ \quad \| \left(0.65 + \frac{0.25 \cdot \left(\varepsilon_t - \varepsilon_y\right)}{0.003}\right) \\ \text{else} \\ \quad \| 0.65 \end{array} \right| = 0.9$

$\phi_b \cdot M_n = 109\ \textit{kip} \cdot \textit{ft}$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_transv\_top\_overall}}{\phi_b \cdot M_n} = 0.53$ OK

Therefore, provide **#8 @ 6" o.c.** for transverse steel reinforcement (top layer, strip E).

## g. Shear Reinforcement

Step 1. Check if shear reinforcement is required for the controlling load case among the hand calculation and the model results.

Assume only concrete contributes to shear capacity.

$h = 20\ in$ height of section

$d = 15.5\ in$ Effective depth, from extreme compression face to centroid of longitudinal tension reinforcement

$f'_c := f_{cprime} \cdot \frac{1000}{ksi} = 5000$ psi Concrete compressive strength

$\lambda := 1$ concrete density modification factor (ACI 22.5.5 & AASHTO 5.4.2.8)

$\lambda_s := min\left(1, \sqrt{\frac{2}{1 + \frac{d}{10\ in}}}\right) = 0.886$ size effect modification factor

$\phi := 0.75$ shear reduction factor

$V_c := 8 \cdot \lambda_s \cdot \sqrt[3]{\frac{A_{sprov2}}{A_g}} \cdot \lambda \cdot \sqrt{f'_c}\ psi \cdot b \cdot d = 13.861\ kip$ ACI Eqn. 22.5.5.1c for 12" slab depth

$\phi \cdot V_c = 10.4\ kip$ for slab depth

$V_{utot\_controlling\_vmax\_overall} = 8.3\ kip$ for slab depth

$DCR_V := \frac{V_{utot\_controlling\_vmax\_overall}}{\phi \cdot V_c} = 0.798$ OK

Step 2. Check two-way punching shear.

Compute Vu on the critical perimeter for 2-way shear:

$x := 24 \cdot in$ tire length Assumed tire dimensions for Tandem Firetruck

$y := 12\ in$ tire width

$q_{uLL} := \frac{1.15 \cdot 1.6 \cdot 31\ kip}{x \cdot y} = 198.056\ psi$ factored (1.15 for impact) equivalent uniform live load (this is the greatest single tire point load among all vehicles considered, assuming two rear tires are simplified as one)

$q_{uDL} := 1.2 \cdot \gamma_{conc} \cdot h = 2.083\ psi$ factored uniform load (self-weight)

$q_{utot} := q_{uLL} + q_{uDL} = 200.1\ psi$

$V_{u2way} := q_{utot} \cdot \left(x + 2 \cdot \frac{d}{2}\right) \cdot \left(y + 2 \cdot \frac{d}{2}\right) = 217.4\ kip$

Compute ultimate shear resistance and compare to 2-way concrete shear resistance capacity for the critical section:

$b_o := 2 \cdot \left(x + 2 \cdot \frac{d}{2}\right) + 2 \cdot \left(y + 2 \cdot \frac{d}{2}\right) = 134\ in$ critical perimeter

$v_u := \frac{V_{u2way}}{b_o \cdot d} = 104.7\ psi$

$v_{c1} := 4 \cdot \lambda \cdot \sqrt{f'_c} = 282.8$ psi (ACI 318-19 Table 22.6.5.2a)

$\beta := \frac{x}{y} = 2$ (ACI 318-19 R22.6.5.2)

$v_{c2} := \left(2 + \frac{4}{\beta}\right) \cdot \lambda \cdot \sqrt{f'_c} = 282.8$ psi (ACI 318-19 Table 22.6.5.2b)

$\alpha_s := 30$ exterior column (ACI 318-19 22.6.5.3)

$v_{c3} := \left(\frac{\alpha_s \cdot d}{b_o} + 2\right) \cdot \lambda \cdot \sqrt{f'_c} = 386.8$ psi (ACI 318-19 Table 22.6.5.2c)

$v_c := min\left(v_{c1}, v_{c2}, v_{c3}\right)\ psi = 282.8\ psi$

$\phi \cdot v_c = 212.1\ psi$

$DCR_{v2way} := \frac{v_u}{\phi \cdot v_c} = 0.493$ OK

## h. Deflection

The deflection of the slab in each of the load cases is investigated and the maximum deflection for each load case is reported in Figure 10. Combine deflections from DEAD_TOTAL (includes self weight and superimposed dead load) and the controlling live load case without load factors.

**Displacement in U3 (Z) Direction**

| Joint | Load Case | U3 [in] |
|---|---|---|
| 174 | FireTruck_tandum | -0.11 |
| 1939 | FireTruck_tandum_sh | -0.06 |
| 1864 | ULL | -0.08 |
| 1864 | DEAD_TOTAL | -0.08 |

Page 5

Maximum Total Deflection = DEAD_TOTAL + ULL
Maximum Total Deflection = -0.19

$\Delta_{max} := 0.19\ in$

*Figure 10 - Displacement in the Z direction for each load case.*

The location of the joint where the maximum deflection occurs for the controlling load cases are shown in Figure 11. These joints occur at approximately between pile bents.

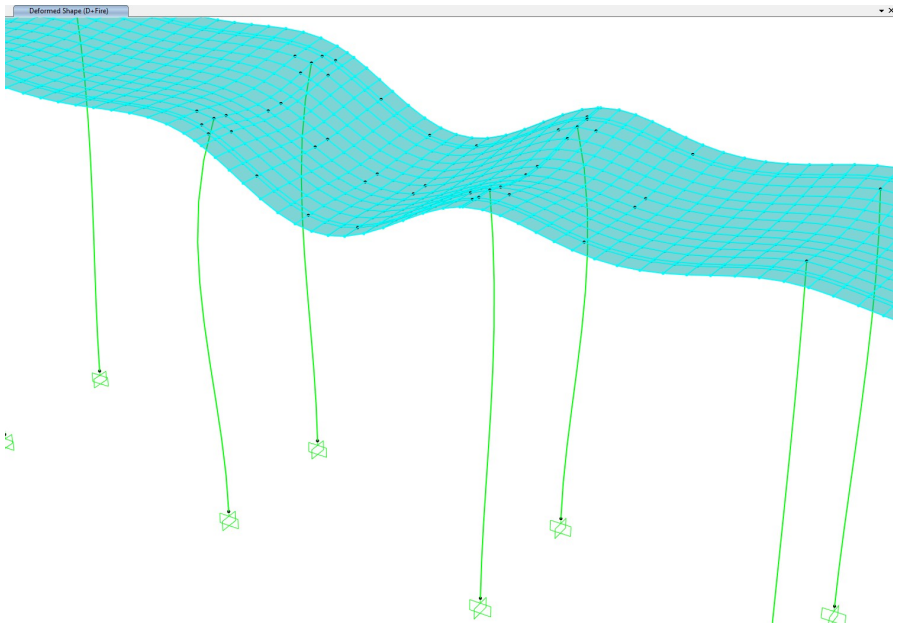


*Figure 11 - Isometric view of joint locations of maximum deflection.*

Therefore, the deflection limit will involve the length between pile bents. The deflection limits per ACI 318-19 Table 24.2.2 for "flat roofs" of immediate deflection is as follows:

$\Delta_{lim} := \frac{l_3}{180} = 0.933\ in$ deflection limit between pile bents

$\begin{array}{l} \text{if } \Delta_{max} \le \Delta_{lim} \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} = \text{“OK”}$ Therefore, deflection limit is satisfied.

## i. Splice Lengths

Development of Deformed Bars in Tension per ACI 318-14, 25.4.2

| | #6 and smaller bars | #7 and larger bars |
|---|---|---|
| Case 1 (a)(b) | $l_d = \left(\frac{f_y \Psi_t \Psi_e}{25\lambda\sqrt{f_c'}}\right) d_b$ | $l_d = \left(\frac{f_y \Psi_t \Psi_e}{20\lambda\sqrt{f_c'}}\right) d_b$ |
| Case 2 (c) | $l_d = \left(\frac{3 f_y \Psi_t \Psi_e}{50\lambda\sqrt{f_c'}}\right) d_b$ | $l_d = \left(\frac{3 f_y \Psi_t \Psi_e}{40\lambda\sqrt{f_c'}}\right) d_b$ |

**Notes:**

(a) Case 1 if clear spacing of spliced bars ≥ $d_b$, clear cover ≥ $d_b$, and stirrups or ties along $l_d$ not less than Code minimum

(b) Case 1 if clear spacing of spliced bars ≥ $2d_b$ and clear cover ≥ $d_b$ **-> use Case 1**

(c) Case 2 is for all other cases

| | | |
|---|---|---|
| $\Psi_t$ = | 1.3 | 1.3 if more than 12" fresh concrete cast below splice, 1.0 otherwise<br>1.5 if rebar epoxy coated w/ cover < $3d_b$ or clear spacing < $6d_b$, |
| $\Psi_e$ = | 1.0 | 1.2 for all other epoxy coated bars, 1.0 if uncoated |
| $\Psi_t\Psi_e$= | 1.3 | need not exceed 1.7 |
| $f_c'$ = | 5,000 | psi |
| $f_y$ = | 60,000 | psi |
| λ = | 1.0 | 1.0 for normalweight concrete, 0.75 for lightweight concrete |

| Bar | $d_b$ | $l_d$ or Class A splice | | $l_{st}$ for Class B splice | |
|---|---|---|---|---|---|
| | | Case 1 | Case 2 | Case 1 | Case 2 |
| #4 | 0.500 in. | 23 in. | 34 in. | 29 in. | 44 in. |
| #5 | 0.625 in. | 28 in. | 42 in. | 36 in. | 54 in. |
| #6 | 0.750 in. | 34 in. | 50 in. | 44 in. | 65 in. |
| #7 | 0.875 in. | 49 in. | 73 in. | 63 in. | 95 in. |
| #8 | 1.000 in. | 56 in. | 83 in. | 72 in. | 108 in. |
| #9 | 1.128 in. | 63 in. | 94 in. | 81 in. | 122 in. |
| #10 | 1.270 in. | 71 in. | 106 in. | 92 in. | 137 in. |
| #11 | 1.410 in. | 78 in. | 117 in. | 102 in. | 152 in. |

**Notes:**

(a) Class A splice if tensile bar stress ≤ $0.5f_y$, ≤ 50% bars spliced at any section, adjacent lap splices staggered by at least $l_d$ [Table 25.5.2.1]

(b) Class B splice for all other cases, $l_{st,ClassB} = 1.3*l_d$ per Table 25.5.2.1

Use Class B splice for #5 temperature & shrinkage longitudinal bar:

Tension lap length of #5 longitudinal bar (mid-height) = 3'- 0"

Conservatively provide Class B splice per Table 25.5.2.1.

Tension lap length of #8 longitudinal bar (top & bot) = 6'- 0"

*Figure 12 - Splice Lengths*

# 5. Appendix: Hand Calculations

This section uses hand calculations to confirm the numerical results from SAP2000 in Section 3.

Utilize AASHTO Section 4.6.2.1.3 - Width of Equivalent Interior Strips method to obtain live load moments due to Firetruck load.

Split the deck into various regions of critical moment demand. For each applicable region, obtain a width of strip to distribute the moment load over.

## a. Load Case 1: Dead Load

This hand calculation proves that Load Case 1 does not control design values.

$l_1 = 25\ ft$ clear span of slab, sections type 1 (e.g. cross section A-A)

$l_2 := 5\ ft$ clear span of slab, sections type 2 (e.g. cross section B-B)

$l_3 = 14\ ft$ clear span of slab, sections type 3 (e.g. cross section G-G)

$l_4 := 4\ ft$ clear span of slab, sections type 4 (e.g. cross section F-F)

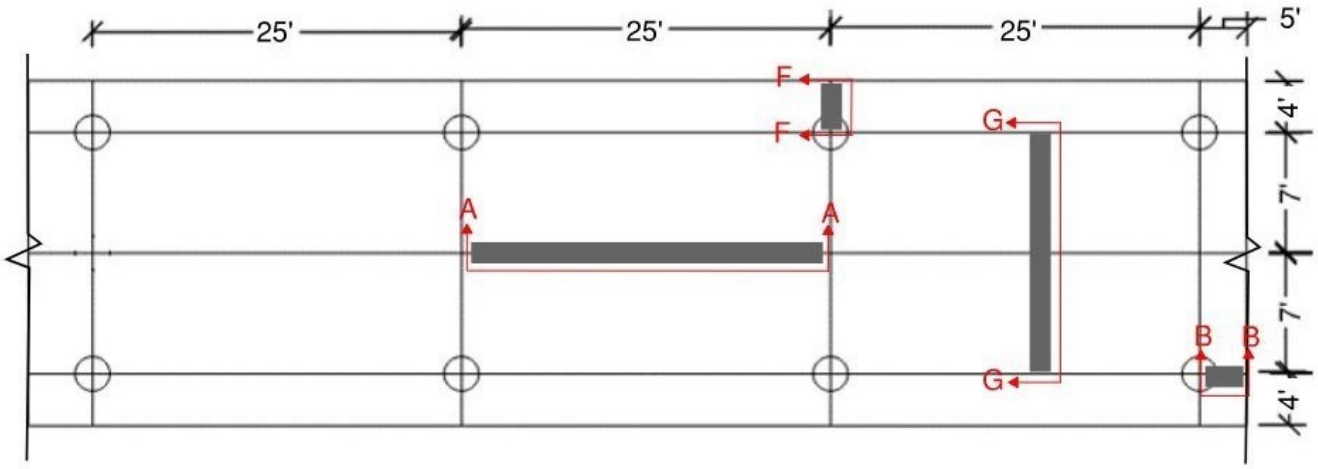



*Figure 13 - Annotated Slab Plan View*

$D := \gamma_{conc} \cdot h = 250\ psf$ dead load (self-weight)

$w_{DL} := D \cdot b = 0.25\ klf$ unfactored load for 12" wide strip of slab

Consider dead load self-weight of the concrete slab only.

$M_{DL\_12inStrip\_l1} := \frac{w_{DL} \cdot {l_1}^2}{8} = 19.53\ kip \cdot ft$ maximum positive moment for 12" wide strip (Sect. A-A, Fig. 2) (simply supported)

$V_{DL\_12inStrip\_l1} := \frac{w_{DL} \cdot l_1}{2} = 3.1\ kip$ maximum shear (ends) for 12" wide strip (Sect. A-A, Fig. 2)

$M_{DL\_12inStrip\_l2} := \frac{w_{DL} \cdot {l_2}^2}{2} = 3.13\ kip \cdot ft$ maximum positive moment for 12" wide strip (Sect. B-B, Fig. 2) (cantilever)

$V_{DL\_12inStrip\_l2} := w_{DL} \cdot l_2 = 1.3\ kip$ maximum shear (ends) for 12" wide strip (Sect. B-B, Fig. 2)

$M_{DL\_12inStrip\_l3} := \frac{w_{DL} \cdot {l_3}^2}{8} = 6.13\ kip \cdot ft$ maximum positive moment for 12" wide strip (Sect. G-G, Fig. 2) (simply supported)

$V_{DL\_12inStrip\_l3} := \frac{w_{DL} \cdot l_3}{2} = 1.8\ kip$ maximum shear (ends) for 12" wide strip (Sect. G-G, Fig. 2)

$M_{DL\_12inStrip\_l4} := \frac{w_{DL} \cdot {l_4}^2}{2} = 2\ kip \cdot ft$ maximum positive moment for 12" wide strip (Sect. F-F, Fig. 2) (cantilever)

$V_{DL\_12inStrip\_l4} := w_{DL} \cdot l_4 = 1\ kip$ maximum shear (ends) for 12" wide strip (Sect. F-F, Fig. 2)

Factored moments and shears:

| | | |
|---|---|---|
| $M_{u\_12inStrip\_LC1\_l1} := 1.4 \cdot M_{DL\_12inStrip\_l1} = 27.3\ kip \cdot ft$ | per ft | (Sect. A-A, Fig. 2) |
| $V_{u\_12inStrip\_LC1\_l1} := 1.4 \cdot V_{DL\_12inStrip\_l1} = 4.375\ kip$ | per ft | (Sect. A-A, Fig. 2) |
| $M_{u\_12inStrip\_LC1\_l2} := 1.4 \cdot M_{DL\_12inStrip\_l2} = 4.4\ kip \cdot ft$ | per ft | (Sect. B-B, Fig. 2) |
| $V_{u\_12inStrip\_LC1\_l2} := 1.4 \cdot V_{DL\_12inStrip\_l2} = 1.75\ kip$ | per ft | (Sect. B-B, Fig. 2) |
| $M_{u\_12inStrip\_LC1\_l3} := 1.4 \cdot M_{DL\_12inStrip\_l3} = 8.6\ kip \cdot ft$ | per ft | (Sect. G-G, Fig. 2) |
| $V_{u\_12inStrip\_LC1\_l3} := 1.4 \cdot V_{DL\_12inStrip\_l3} = 2.45\ kip$ | per ft | (Sect. G-G, Fig. 2) |
| $M_{u\_12inStrip\_LC1\_l4} := 1.4 \cdot M_{DL\_12inStrip\_l4} = 2.8\ kip \cdot ft$ | per ft | (Sect. F-F, Fig. 2) |
| $V_{u\_12inStrip\_LC1\_l4} := 1.4 \cdot V_{DL\_12inStrip\_l4} = 1.4\ kip$ | per ft | (Sect. F-F, Fig. 2) |

## b. Load Case 2: Dead Load & Live Load with Tandem Firetruck

These hand calculations (5b) is meant to overestimate the design values in Section 3, since it uses a much simpler analytical model.

### i. Cross Section A-A

$S_{AA} := 25$ ft span length

$EW_{AA} := \frac{(26 + 6.6 \cdot S_{AA}) \cdot ft}{12} = 15.9\ ft$ equivalent width of strip (Table 4.6.2.1.3-1 for CIP Concrete Deck)

Compute the maximum shear. Consider the point loads over the centerline of slab. Assume that the rear point loads can be modeled as a singular point load. Consider the load cases A-A below in Figure 14a.

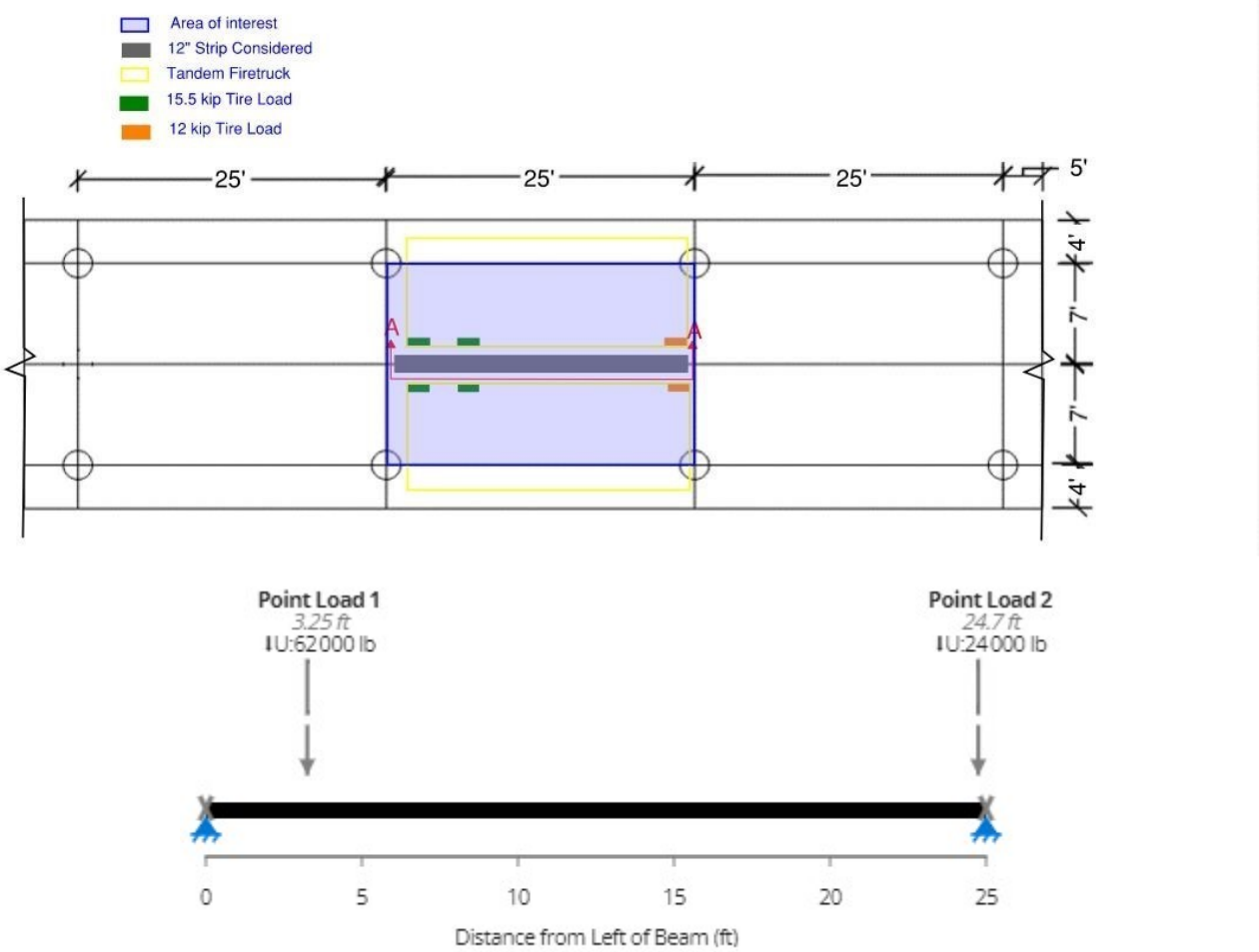



*Figure 14a - Load Case for section A-A to find maximum shear.*

$S := S_{AA} \cdot ft = 25\ ft$

$V_1 := \frac{(62 \cdot 21.75 + 24 \cdot 0.25)}{25}\ kip$ Take moment about right end support

$V_{1\_tot} := V_1 = 54.2\ kip$ maximum V, assuming edge rear tire is just one foot off of support

$V_{umax} := 1.15 \cdot V_{1\_tot} = 62.3\ kip$

$V_{LL\_EW\_AA} := V_{umax} = 62.3\ kip$ Includes impact load factor of 1.15 per UFC Section 3-3.3

Compute the maximum moment. Consider the point loads over the centerline of slab.

Consider the load case for section A-A below in Figure 14b.

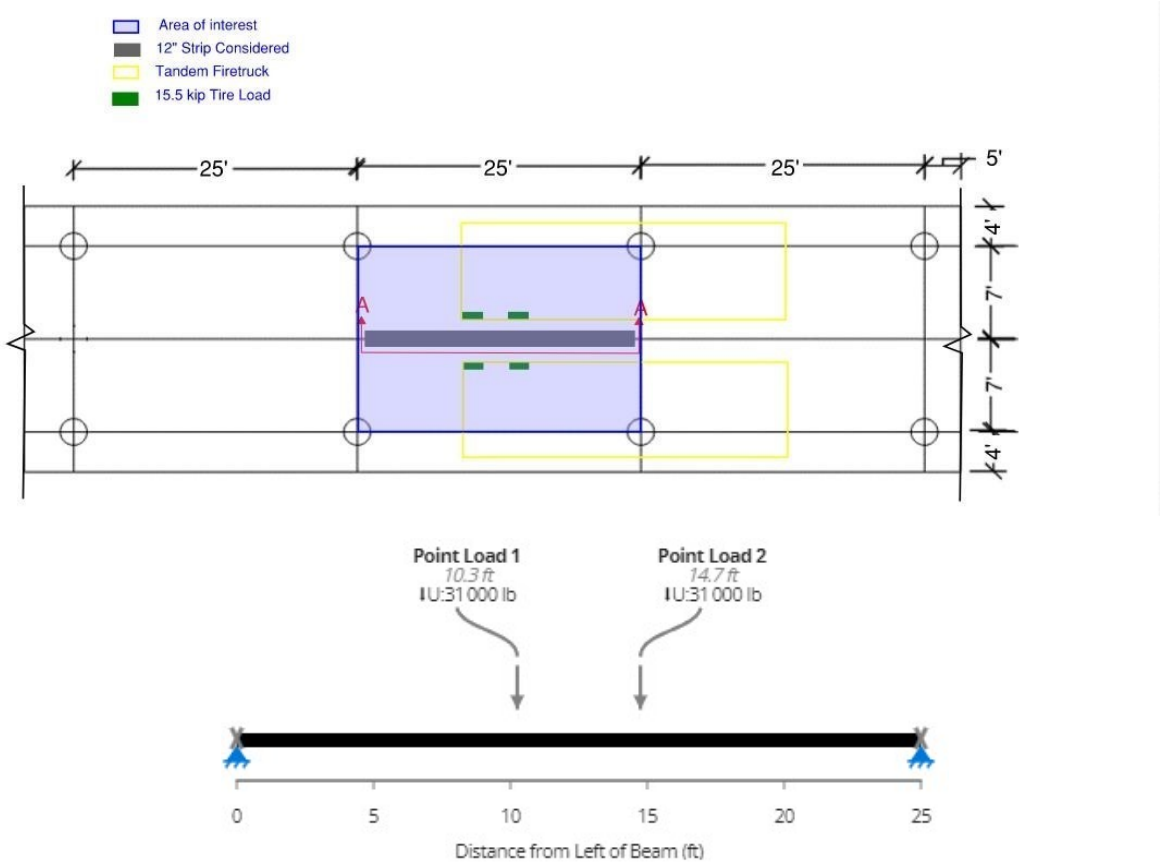



*Figure 14b - Load Case for section A-A to find maximum moment.*

$M_{umax} := (31\ \textbf{kip} \cdot 10.25\ \textbf{ft}) = 317.8\ \textbf{kip} \cdot \textbf{ft}$

$M_{LL\_EW\_AA} := 1.15 \cdot M_{umax} = 365.4\ \textbf{kip} \cdot \textbf{ft}$ Impact load factor of 1.15 per UFC Section 3-3.3

For a 12" wide strip of slab:

$M_{LL\_12inStrip\_AA} := M_{LL\_EW\_AA} \cdot \left(\frac{b}{EW_{AA}}\right) = 22.96\ \textbf{kip} \cdot \textbf{ft}$ per ft

$V_{LL\_12inStrip\_AA} := V_{LL\_EW\_AA} \cdot \left(\frac{b}{EW_{AA}}\right) = 3.9\ \textbf{kip}$ per ft

Total Factored Moments and Shears, Cross Section A-A:

$M_{utot\_12inStrip\_AA} := 1.2 \cdot M_{DL\_12inStrip\_l1} + 1.6 \cdot M_{LL\_12inStrip\_AA} = 60.2\ \textbf{kip} \cdot \textbf{ft}$ per ft

$V_{utot\_12inStrip\_AA} := 1.2 \cdot V_{DL\_12inStrip\_l1} + 1.6 \cdot V_{LL\_12inStrip\_AA} = 10\ \textbf{kip}$ per ft

## ii. Cross Section B-B

This hand calculation (5bii) is meant to underestimate one of the design values in Section 3, since it uses a much simpler analytical model.

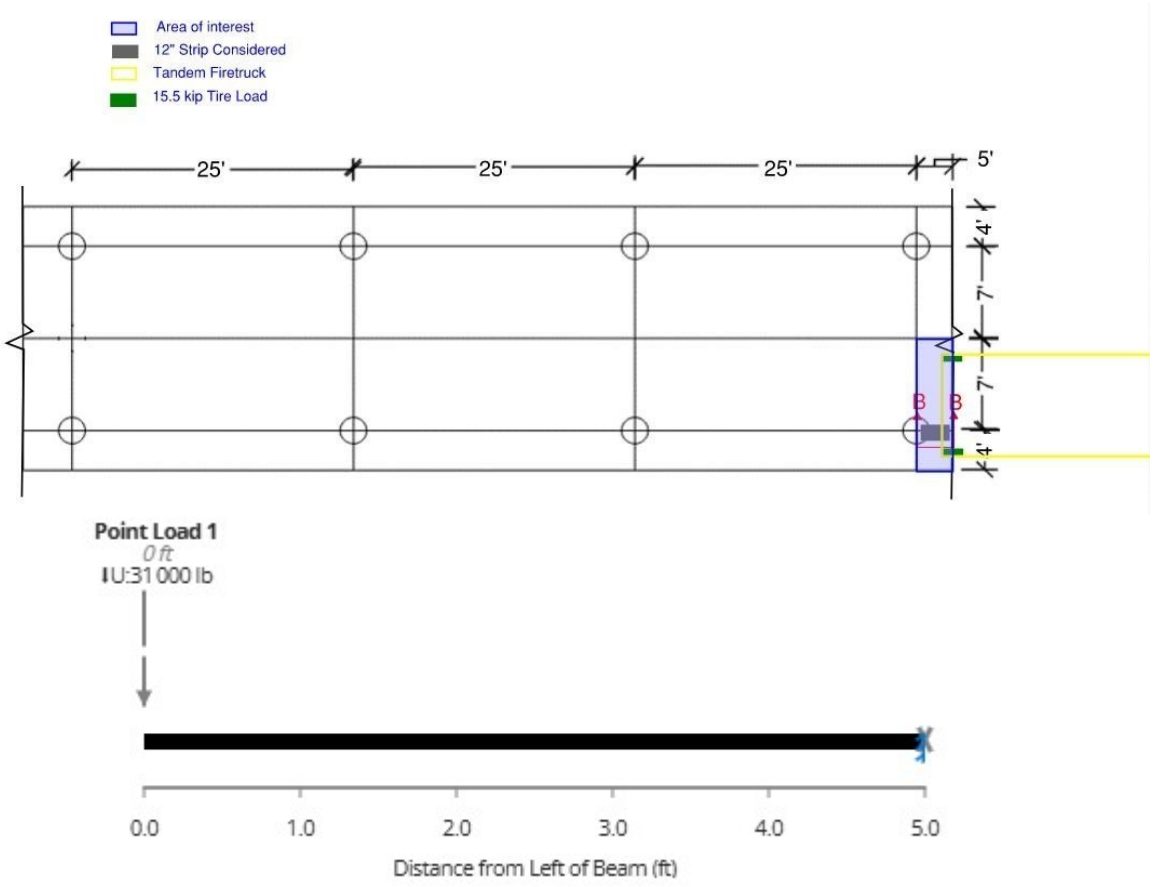



*Figure 15 - Section B-B on Slab plan view*

$S_{BB} := 5$ ft — span length

$S := S_{BB} \cdot ft = 5\ ft$

$EW_{BB} := \frac{(26 + 6.6 \cdot S_{BB}) \cdot ft}{12} = 4.9\ ft$ — equivalent width of strip (Table 4.6.2.1.3-1 for CIP Concrete Deck)

Compute the maximum factored moment considering the load cases above. Consider the point loads over the centerline of slab.

$M_{LL\_EW\_BB} := 1.15 \cdot ((31\ kip \cdot S)) = 178.3\ kip \cdot ft$ per ft — Includes impact factor of 1.15 per UFC 3.3-3

$V_{LL\_EW\_BB} := 1.15 \cdot (31\ kip) = 35.7\ kip$ per ft

For a 12" wide strip of slab:

$M_{LL\_12inStrip\_BB} := M_{LL\_EW\_BB} \cdot \left(\frac{b}{EW_{BB}}\right) = 36.25\ kip \cdot ft$ per ft

$V_{LL\_12inStrip\_BB} := V_{LL\_EW\_BB} \cdot \left(\frac{b}{EW_{BB}}\right) = 7.3\ kip$ per ft

Compute dead loads :

$M_{DL\_EW\_BB} := \frac{w_{DL} \cdot S^2}{2} = 3.13\ kip \cdot ft$ per ft cantilever supported

$V_{DL\_EW\_BB} := w_{DL} \cdot S_{BB} \cdot ft = 1.3\ kip$ per ft

Total Factored Moments and Shears, Cross Section B-B:

$M_{utot\_12inStrip\_BB} := 1.2 \cdot M_{DL\_EW\_BB} + 1.6 \cdot M_{LL\_12inStrip\_BB} = 61.8\ kip \cdot ft$ per ft

$V_{utot\_12inStrip\_BB} := 1.2 \cdot V_{DL\_EW\_BB} + 1.6 \cdot V_{LL\_12inStrip\_BB} = 13.1\ kip$ per ft

## iii. Cross Section G-G

$S_{GG} := 14$ ft span length

$EW_{GG} := \frac{(26 + 6.6 \cdot S_{GG}) \cdot ft}{12} = 9.9\ ft$ equivalent width of strip (Table 4.6.2.1.3-1 for CIP Concrete Deck)

Compute the maximum shear. Consider the point loads over the centerline of slab. Consider the load cases G-G below in Figure 16.

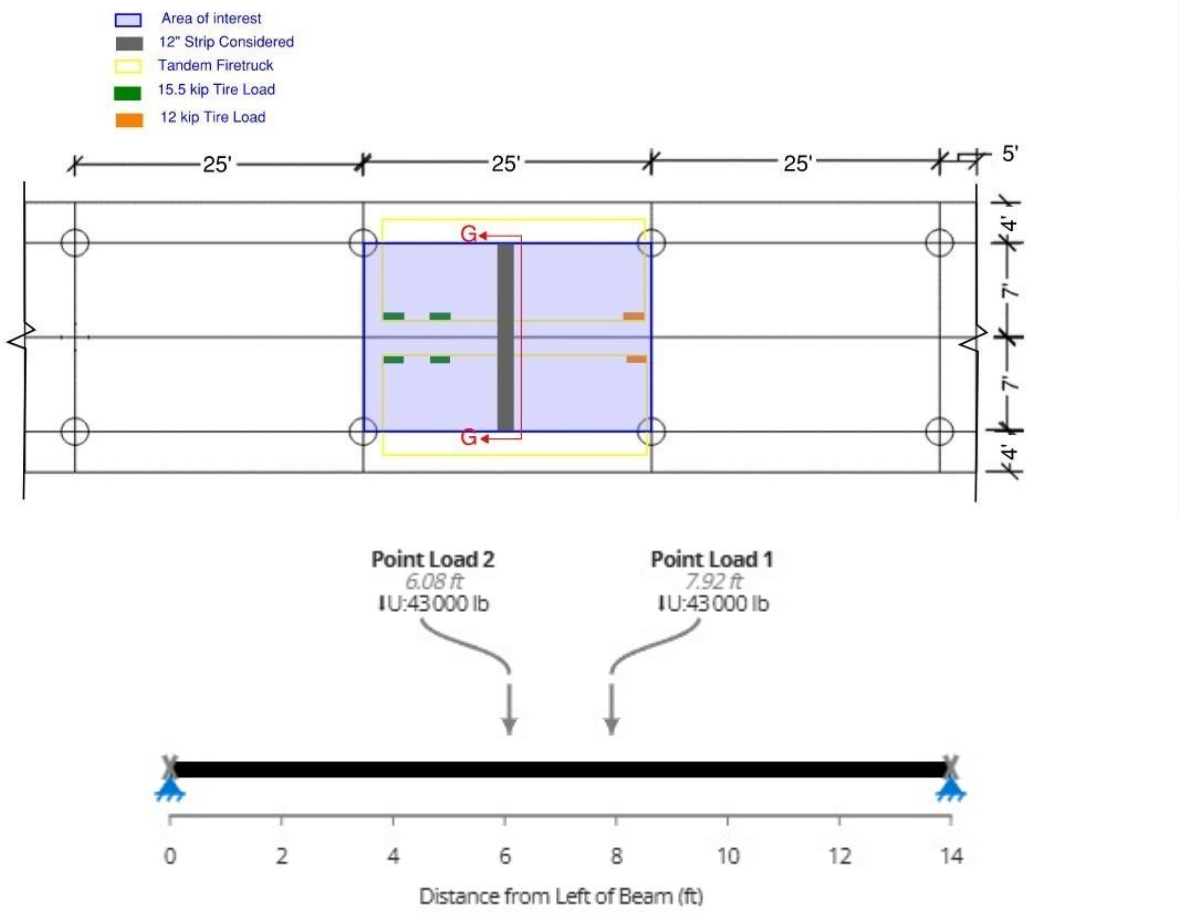



*Figure 16 - Load Case for section G-G to find maximum shear.*

$V_2 := 43\ kip$

$V_{2\_tot} := V_2 = 43\ kip$ maximum V, by symmetry

$V_{umax} := 1.15 \cdot V_{2\_tot} = 49.5\ kip$ Includes impact load factor of 1.15 per UFC Section 3-3.3

$V_{LL\_EW\_GG} := V_{umax} = 49.5\ kip$

Compute the maximum moment. Consider the point loads over the centerline of slab.

Consider the load case for section G-G in Figure 7.

$S := S_{GG} \cdot ft = 14\ ft$

$M_{umax} := \left(43\ kip \cdot \left(7\ ft - \frac{11}{12}\ in\right)\right) = 297.7\ kip \cdot ft$ Take moment at left support, by symmetry

$M_{LL\_EW\_GG} := 1.15 \cdot M_{umax} = 342.4\ kip \cdot ft$ Impact load factor of 1.15 per UFC Section 3-3.3

For a 12" wide strip of slab:

$M_{LL\_12inStrip\_GG} := M_{LL\_EW\_GG} \cdot \left(\frac{b}{EW_{GG}}\right) = 34.7\ kip \cdot ft$ per ft

$V_{LL\_12inStrip\_GG} := V_{LL\_EW\_GG} \cdot \left(\frac{b}{EW_{GG}}\right) = 5\ kip$ per ft

Total Factored Moments and Shears, Cross Section G-G:

$M_{utot\_12inStrip\_GG} := 1.2 \cdot M_{DL\_12inStrip\_l3} + 1.6 \cdot M_{LL\_12inStrip\_GG} = 62.9\ kip \cdot ft$ per ft

$V_{utot\_12inStrip\_GG} := 1.2 \cdot V_{DL\_12inStrip\_l3} + 1.6 \cdot V_{LL\_12inStrip\_GG} = 10.1\ kip$ per ft

## iv. Cross Section F-F

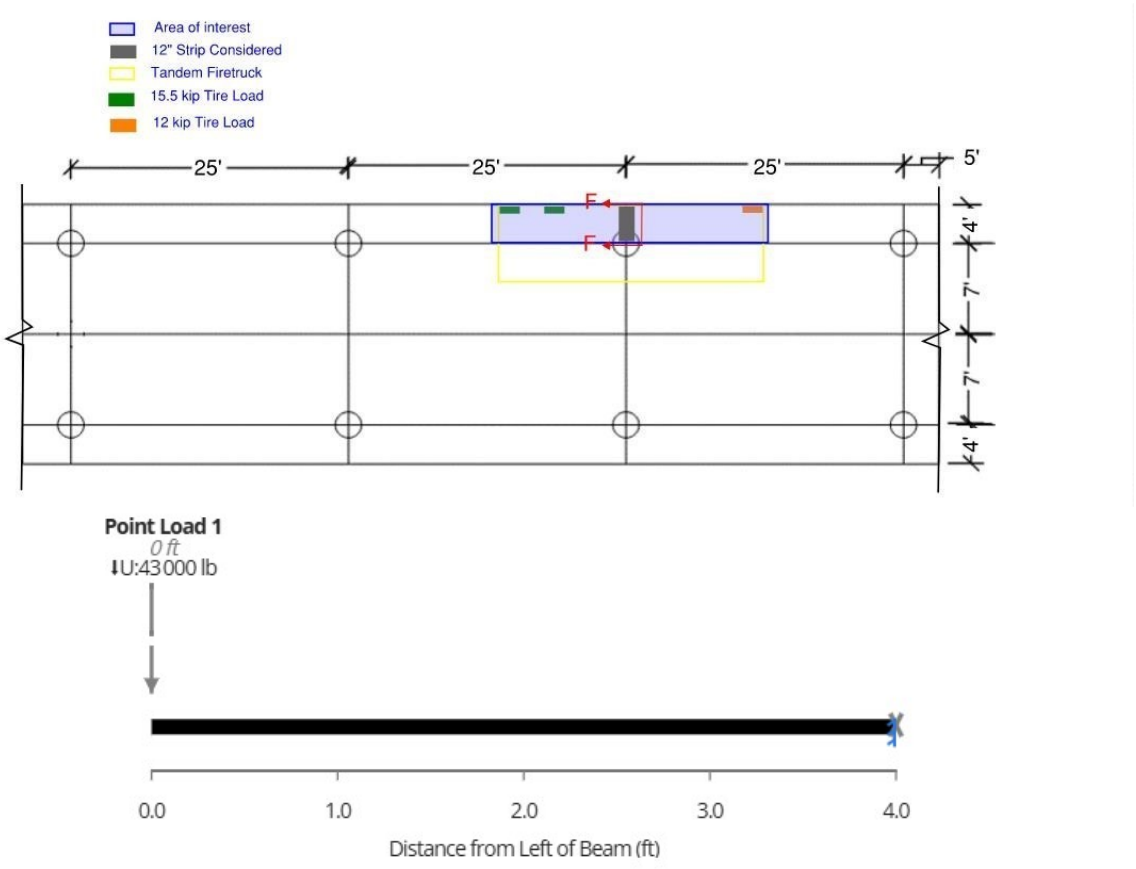



*Figure 17 - Section F-F on Slab plan view*

$S_{FF} := 4$ ft span length

$S := S_{FF} \cdot ft = 4\ ft$

$EW_{FF} := \frac{(26 + 6.6 \cdot S_{FF}) \cdot ft}{12} = 4.4\ ft$ equivalent width of strip (Table 4.6.2.1.3-1 for CIP Concrete Deck)

Compute the maximum factored moment considering the load cases above. Consider the point loads over the centerline of slab.

$M_{LL\_EW\_FF} := 1.15 \cdot (((15.5 \cdot 2 + 12)\ kip \cdot S)) = 197.8\ kip \cdot ft$ per ft Includes impact factor of 1.15 per UFC 3.3-3

$V_{LL\_EW\_FF} := 1.15 \cdot ((15.5 \cdot 2 + 12)\ kip) = 49.5\ kip$ per ft

For a 12" wide strip of slab:

$M_{LL\_12inStrip\_FF} := M_{LL\_EW\_FF} \cdot \left(\frac{b}{EW_{FF}}\right) = 45.3\ kip \cdot ft$ per ft

$V_{LL\_12inStrip\_FF} := V_{LL\_EW\_FF} \cdot \left(\frac{b}{EW_{FF}}\right) = 11.3\ kip$ per ft

Compute dead loads :

$M_{DL\_EW\_FF} := \frac{w_{DL} \cdot S^2}{2} = 2\ kip \cdot ft$ per ft cantilever supported

$V_{DL\_EW\_FF} := w_{DL} \cdot S = 1\ kip$ per ft

Total Factored Moments and Shears, Cross Section F-F:

$M_{utot\_12inStrip\_FF} := 1.2 \cdot M_{DL\_EW\_FF} + 1.6 \cdot M_{LL\_12inStrip\_FF} = 74.9\ kip \cdot ft$ per ft

$V_{utot\_12inStrip\_FF} := 1.2 \cdot V_{DL\_EW\_FF} + 1.6 \cdot V_{LL\_12inStrip\_FF} = 19.3\ kip$ per ft

## c. Load Case 3: Dead Load & Uniform Live Load

This hand calculation proves that Load Case 3 does not control design values.

Apply a uniform 250 psf as per over the slab.

### i. Cross Section A-A

$M_{LL\_12inStrip\_uniform\_AA} := 250\ psf \cdot \frac{{l_1}^2}{8} \cdot b = 19.531\ kip \cdot ft$ per ft

$V_{LL\_12inStrip\_uniform\_AA} := \frac{250\ psf \cdot b \cdot l_1}{2} = 3.125\ kip$ per ft

### ii. Cross Section B-B

$M_{LL\_12inStrip\_uniform\_BB} := 250\ psf \cdot \frac{{l_2}^2}{2} \cdot b = 3.125\ kip \cdot ft$ per ft

$V_{LL\_12inStrip\_uniform\_BB} := 250\ psf \cdot b \cdot l_2 = 1.25\ kip$ per ft

### iii. Cross Section G-G

$M_{LL\_12inStrip\_uniform\_GG} := 250\ psf \cdot \frac{{l_3}^2}{8} \cdot b = 6.125\ kip \cdot ft$ per ft

$V_{LL\_12inStrip\_uniform\_GG} := \frac{250\ psf \cdot b \cdot l_3}{2} = 1.75\ kip$ per ft

### iv. Cross Section F-F

$M_{LL\_12inStrip\_uniform\_FF} := 250\ psf \cdot \frac{{l_4}^2}{2} \cdot b = 2\ kip \cdot ft$ per ft

$V_{LL\_12inStrip\_uniform\_FF} := 250\ psf \cdot b \cdot l_4 = 1\ kip$ per ft

Total Factored Moments and Shears, Load Case 3:

$M_{utot\_12inStrip\_uniform\_AA} := 1.2 \cdot M_{DL\_12inStrip\_l1} + 1.6 \cdot M_{LL\_12inStrip\_uniform\_AA} = 54.7\ kip \cdot ft$ per ft

$V_{utot\_12inStrip\_uniform\_AA} := 1.2 \cdot V_{DL\_12inStrip\_l1} + 1.6 \cdot V_{LL\_12inStrip\_uniform\_AA} = 8.8\ kip$ per ft

$M_{utot\_12inStrip\_uniform\_BB} := 1.2 \cdot M_{DL\_12inStrip\_l2} + 1.6 \cdot M_{LL\_12inStrip\_uniform\_BB} = 8.8\ kip \cdot ft$ per ft

$V_{utot\_12inStrip\_uniform\_BB} := 1.2 \cdot V_{DL\_12inStrip\_l2} + 1.6 \cdot V_{LL\_12inStrip\_uniform\_BB} = 3.5\ kip$ per ft

$M_{utot\_12inStrip\_uniform\_GG} := 1.2 \cdot M_{DL\_12inStrip\_l3} + 1.6 \cdot M_{LL\_12inStrip\_uniform\_GG} = 17.2\ kip \cdot ft$ per ft

$V_{utot\_12inStrip\_uniform\_GG} := 1.2 \cdot V_{DL\_12inStrip\_l3} + 1.6 \cdot V_{LL\_12inStrip\_uniform\_GG} = 4.9\ kip$ per ft

$M_{utot\_12inStrip\_uniform\_FF} := 1.2 \cdot M_{DL\_12inStrip\_l4} + 1.6 \cdot M_{LL\_12inStrip\_uniform\_FF} = 5.6\ kip \cdot ft$ per ft

$V_{utot\_12inStrip\_uniform\_FF} := 1.2 \cdot V_{DL\_12inStrip\_l4} + 1.6 \cdot V_{LL\_12inStrip\_uniform\_FF} = 2.8\ kip$ per ft

## END OF CALCULATIONS

COWI

## 1.2 Pier Pile Calculations

Project: BWTPF
Subject: Pier Gravity Load Pile Calcs

Job #: A272767
By: TYRD | Date: 12/11/2025
Checked by: JBSW | Date: 12/11/2025

## Outline

1. Introduction

2. Load Cases

3. Design Loads
   a. Tandem Fire Trucks
   b. SAP2000 Model Analysis Results
      i. Dead Load in SAP2000 Model
      ii. Uniform Live Load in SAP2000 Model
      iii. Summary of Results from SAP2000 Model
   c. Determining Design Loads

4. Design of Concrete Piles
   a. Axial Capacity
   b. Pile Length

## 1. Introduction

Objective: Design the reinforcement for the Pier concrete piles considering applicable gravity loads. Lateral loads will be considered separately.

Background: The new 22' wide pier will consist of concrete prestressed precast octagonal concrete piles and a concrete deck. See Figure 1 for Slab plan view and Figures 2a and 2b for isometric views.

Codes: The following codes are referenced:

- American Concrete Institute *Building Code Requirements for Structural Concrete* (ACI 318-19), 2019 (ACI)
- American Association of State Highway and Transportation Officials *LRFD Bridge Design Specifications*, 7th Ed., 2020 (AASHTO)
- American Society of Civil Engineers *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-22), 2022 (ASCE)
- ENGEO *Incorporated Berkeley Water Transportation Pier Ferry Geotechnical Report*, 2025 (EnGeo)

Methodology: First, assume a one-way slab system. Then, create a SAP2000 model to analyze axial load into piles for the load cases that are predicted to control (double 86k firetrucks, uniform live load). Obtain controlling compression force. Design axial. Use ACI 318-19 to determine reinforcing in the piles.

Units: U.S. Customary System, as noted in equations.

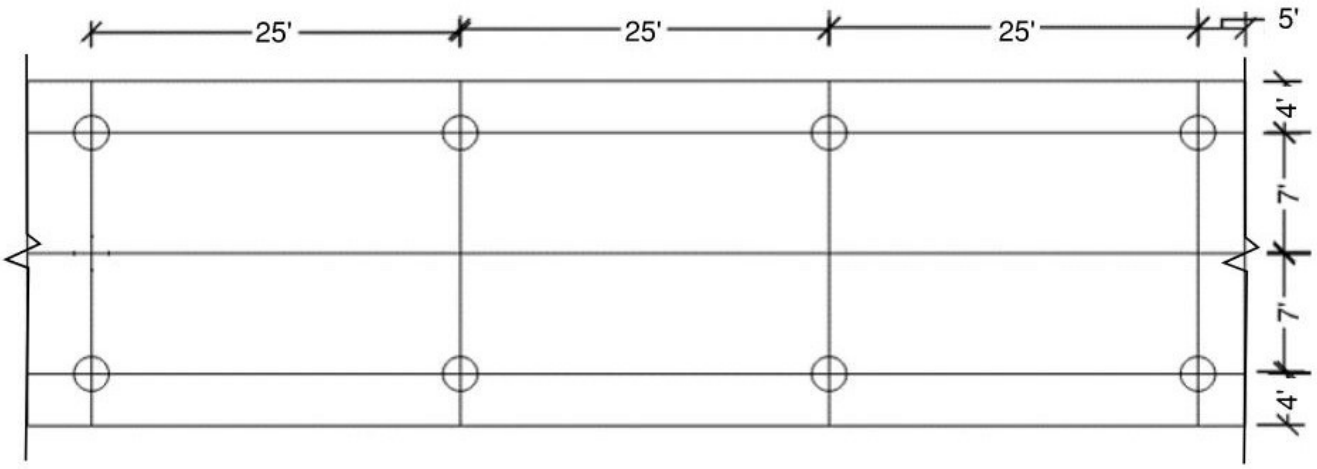



*Figure 1 - Slab Plan View*

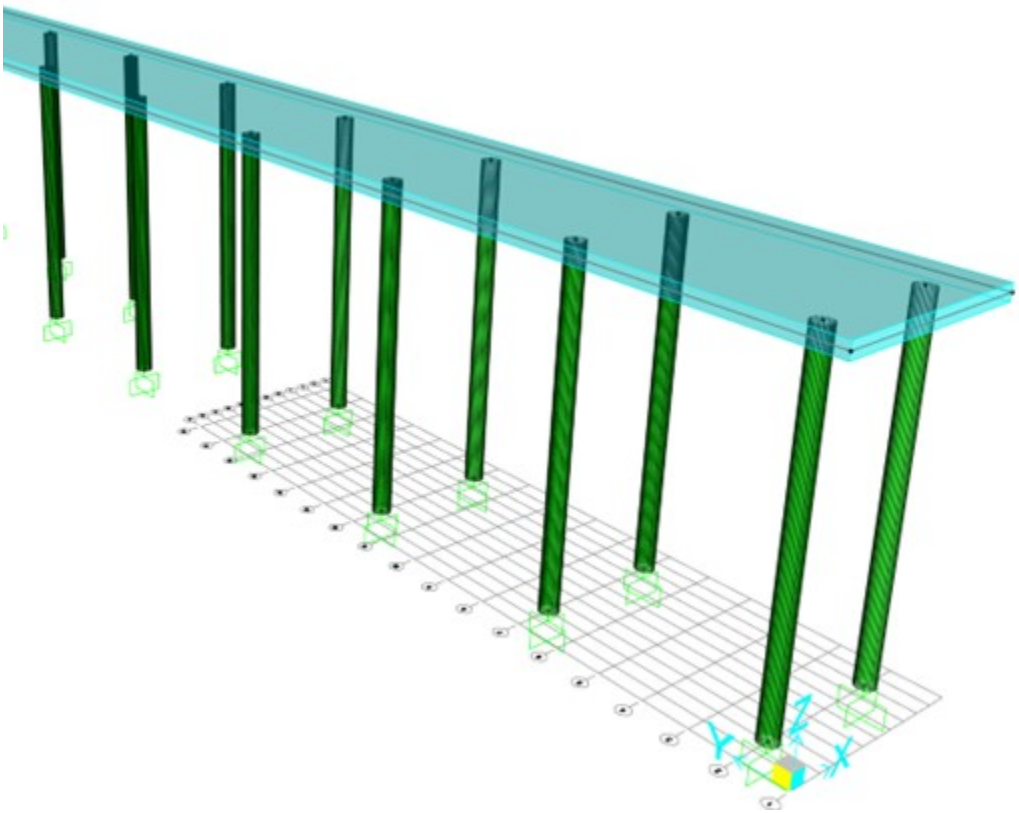



*Figure 2a - Slab Isometric View*

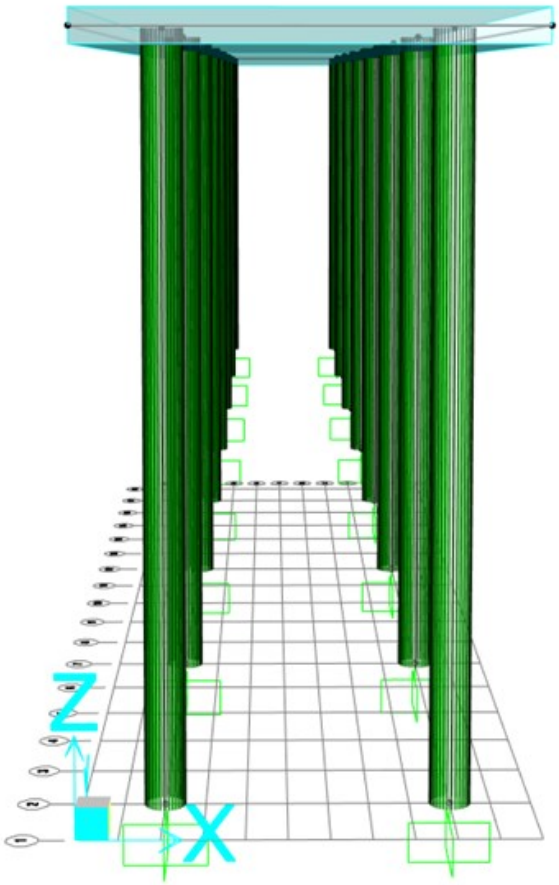



*Figure 2b - Slab Section View*

## 2. Load Cases

Consider Load Cases below per ASCE 7-22

Load Case 1: 1.4*DL
Load Case 2: 1.2*DL + 1.6*(Lc)
Load Case 3: 1.2*DL + 1.6*(Lu)

where
DL = slab concrete dead load
Lc = concentrated live load (Fire Trucks)
Lu = uniform live load

Per UFC Section 3-3.3, concentrated live loads include a factor of 1.15. The updated Load Cases are:

Load Case 1: 1.4*DL
Load Case 2: 1.2*DL + 1.84*(Lc)
Load Case 3: 1.2*DL + 1.6*(Lu)

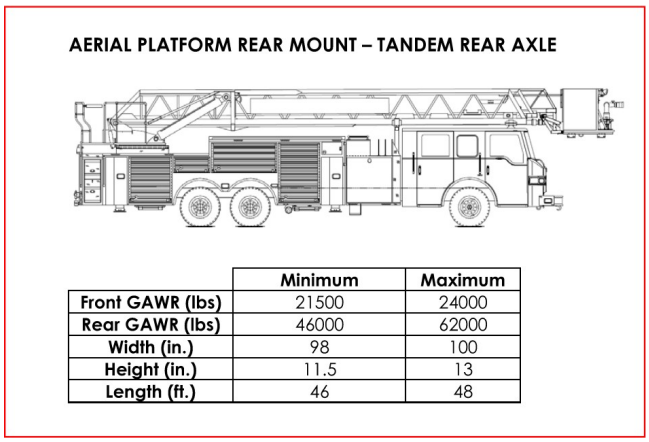
## 3. Design Loads

Consider all design load cases specified in Section 2. Assume piles provide pinned supports.

Preliminary geometry of the Ramp Pier deck slab and piles are as follows:

| | |
|---|---|
| $h_{slab} := 20\ in$ | height of slab |
| $E_{slab} := 17.6\ ft$ | Elevation of slab above MLLW |
| $h_1 := 6\ ft$ | Distance between MLLW and Mudline |
| $W := 22\ ft$ | actual width of pier slab |
| $d := 24\ in$ | diameter of pier pile |
| $\gamma_{conc} := 150\ pcf$ | Unit weight of Normal Weight concrete |

### a. Tandem Firetrucks




| | Minimum | Maximum |
|---|---|---|
| Front GAWR (lbs) | 21500 | 24000 |
| Rear GAWR (lbs) | 46000 | 62000 |
| Width (in.) | 98 | 100 |
| Height (in.) | 11.5 | 13 |
| Length (ft.) | 46 | 48 |

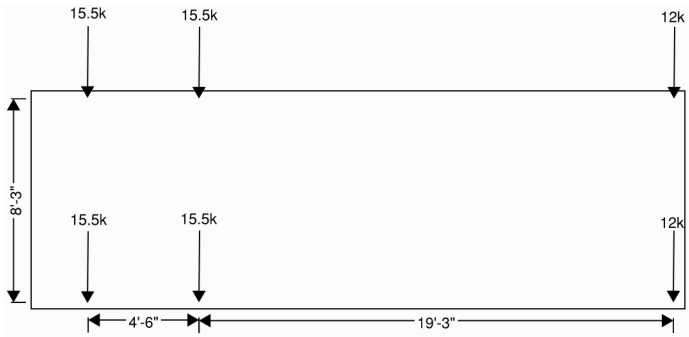



*Figure 3 - Live Load with Tandem Firetruck.*

A 4.5' spacing between each axle controls for maximum bending and shear for a **simply-supported** section. The two firetrucks will be placed 22" next to each other

Figures 4a and 4b visualize how the firetrucks were modeled in SAP2000.

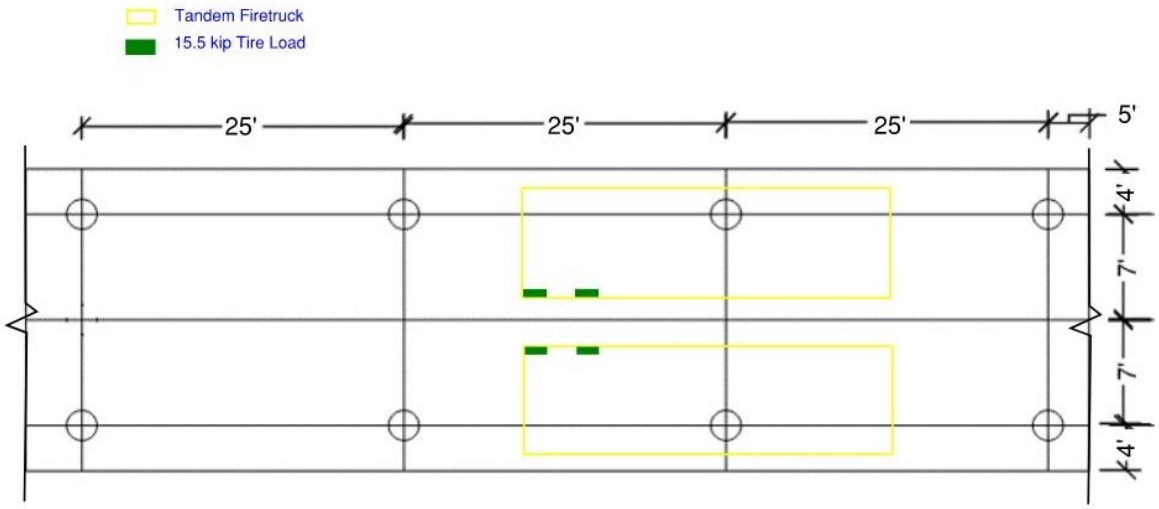



*Figure 4a - Load Case 2 Position 1*

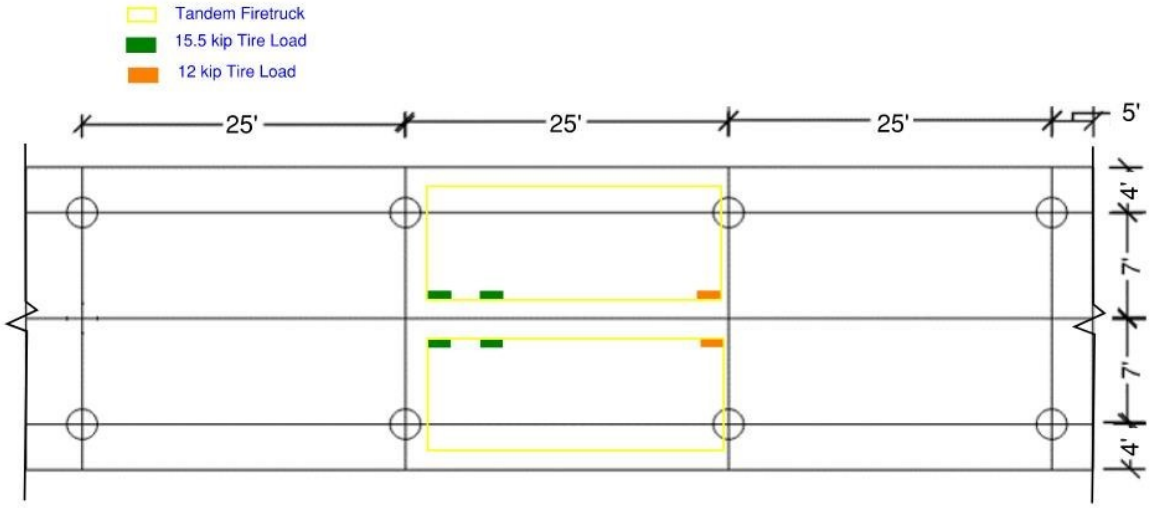



*Figure 4b - Load Case 2 Position 2*

## b. SAP2000 Analysis Results

In order to account for two-way bending and obtain realistic results, model various loading positions of the Tandem Firetruck on the slab and uniform live load on slab in SAP2000.

### i. Dead Load in SAP2000 Model

The dead load self-weight of the structure includes the cast-in-place concrete slab, ledge-beam concrete slab, and pile dead load. The unit weight of reinforced concrete is $\gamma$ = 150 pcf. The dead load self-weight of the structure was computed and defined in the SAP2000 structural elements.

### ii. Uniform Live Load in SAP2000 Model

A uniform live load of 250 psf is applied as uniform loads to shells in the model.

### iii. Summary of Results from SAP2000 Model

The ultimate factored axial diagrams in the piles for all loading positions shown in part 3a above were obtained.

The distribution diagrams for the controlling axial diagrams are shown in Figure 5.

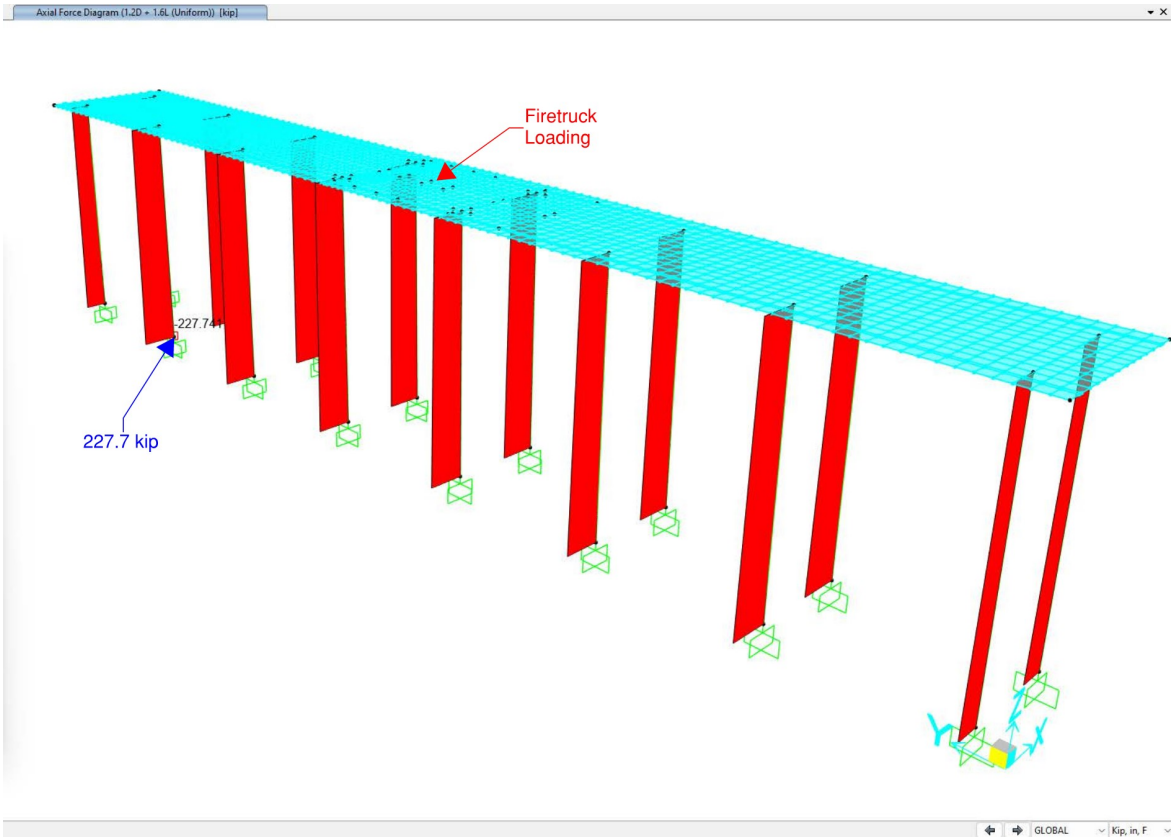



*Figure 5 - Axial diagram for Load Case 3*
*(controls for Axial Load)*

$P_{utot\_controlling\_axial\_model} := 227.7\ \boldsymbol{kip}$ per ft

## c. Determining Design Loads

The design loads are as follows:

$P_{utot\_controlling\_axial\_overall} := P_{utot\_controlling\_axial\_model} = 227.7\ \boldsymbol{kip}$ per ft

## 4. Design of Concrete Pile

Preliminary Pile reinforcing are as shown below:

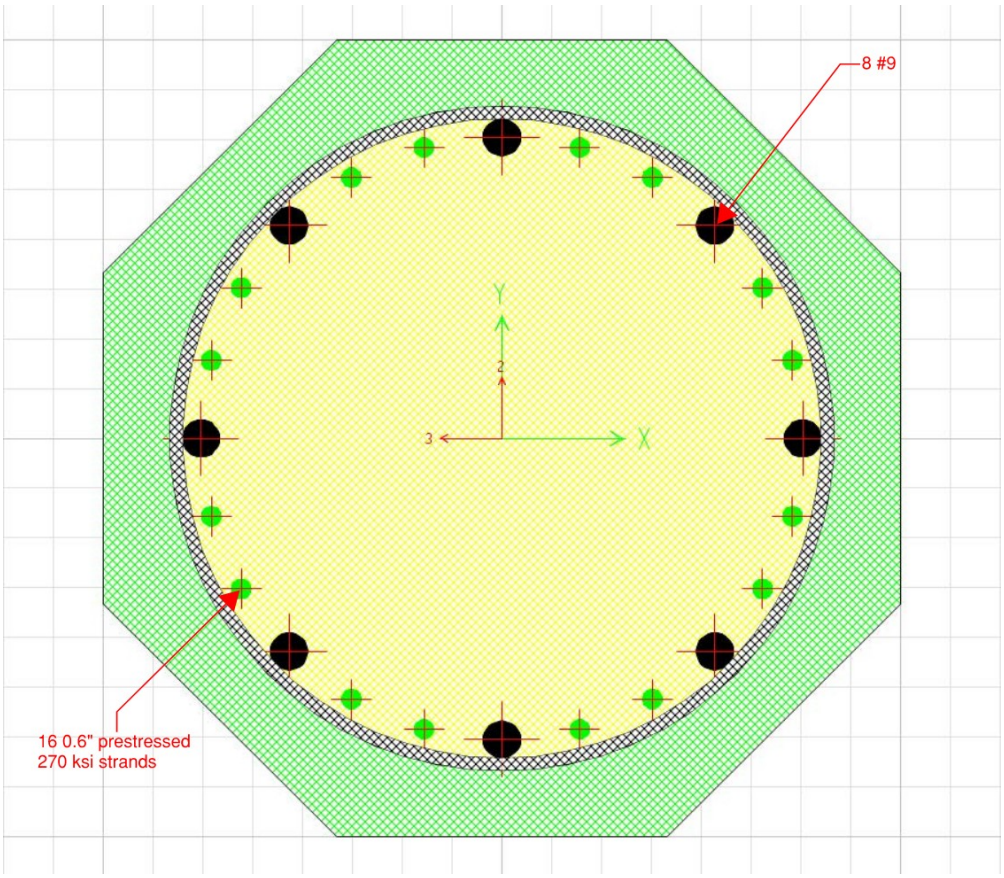



*Figure 6 - Reinforcing design for piles*

### a. Axial Capacity

This Pile's axial capacity was calculated in SAP2000 as shown by it's P-M diagram below:

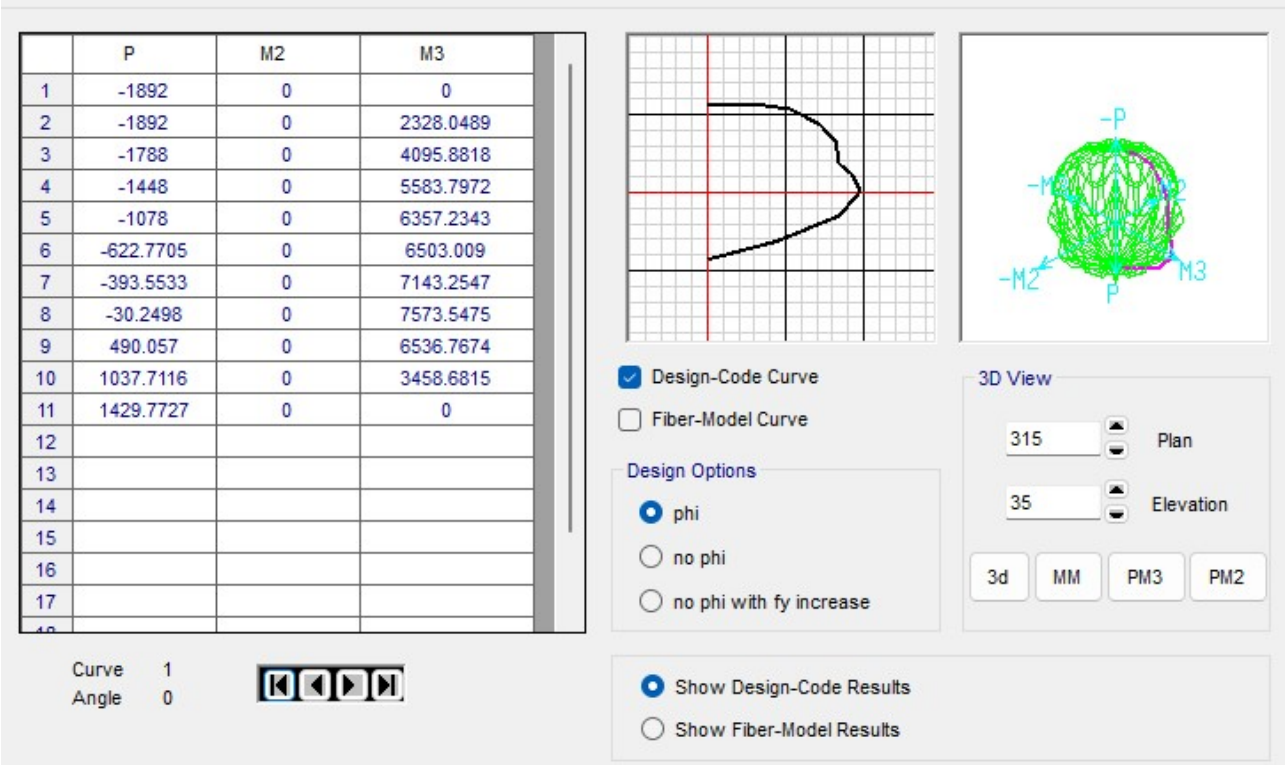



*Figure 7 - P-M Diagram for piles*

$P_{capacity} := 1892\ \textbf{\textit{kip}}$ per ft — Compressional axial capacity

$r_{factor} := 0.7$ — Reduction factor from EnGeo 6.1.1

$P_{capacity\_r} := P_{capacity} \cdot r_{factor} = 1324.4\ \textbf{\textit{kip}}$ — Reduced axial capacity

$U_{factor} := \frac{P_{utot\_controlling\_axial\_overall}}{P_{capacity\_r}} = 0.2$ OK — Utilization Factor

### b. Pile Length

The Geotechnical Report provided by Engeo informs the required length of the piles. Figure 8 shows the depth below the mudline for the piles reduced axial capacity.

$$P_{utot\_controlling\_axial\_reduced} := \frac{P_{utot\_controlling\_axial\_overall}}{r_{factor}} = 325.286\ \textit{kip}$$

Axial Capacity used for Design

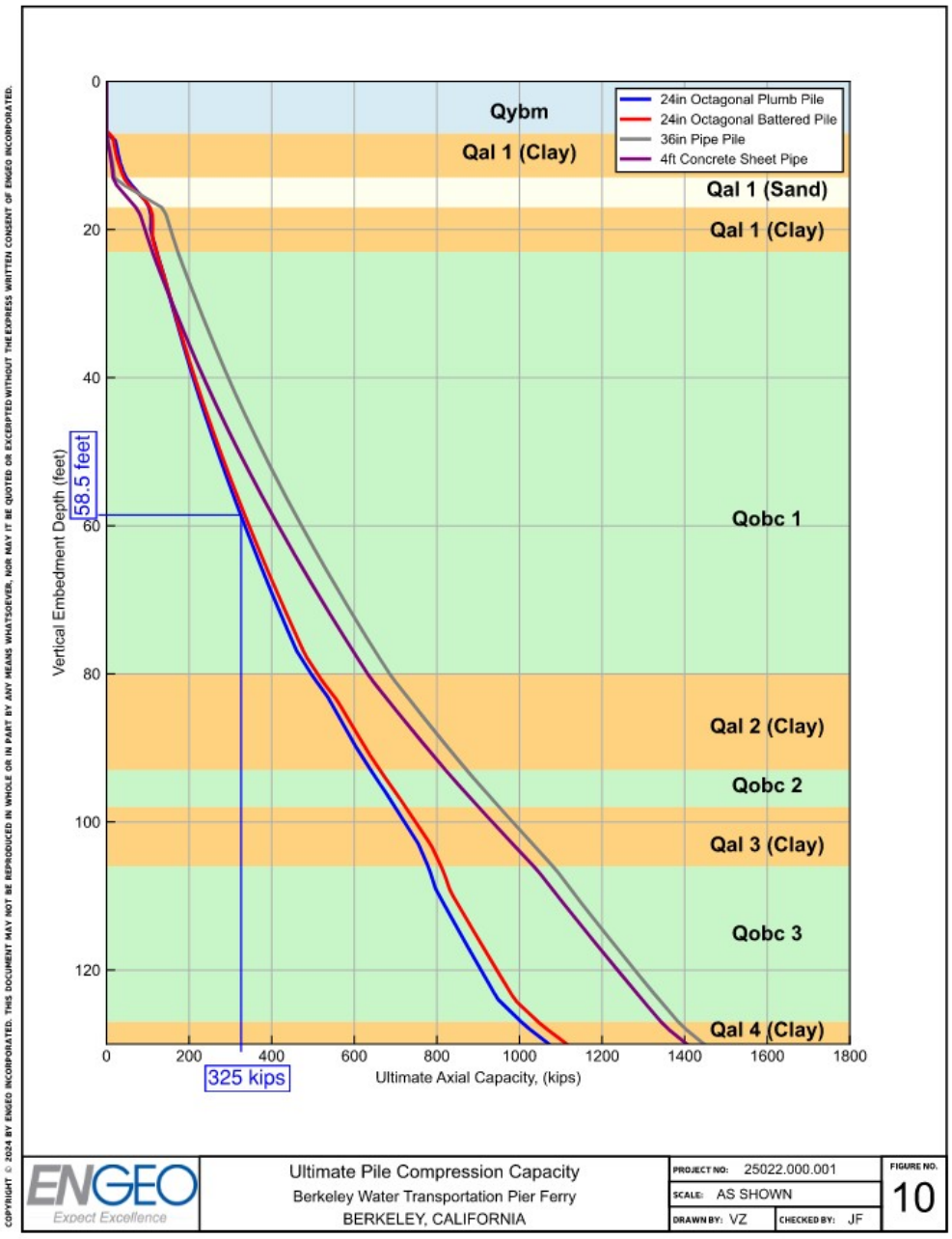



*Figure 8 - Ultimate Pile Compression Capacity*

$h_{req} := 58.5\ ft$ Required height below mudline

$L_{pile\_min} := E_{slab} - h_{slab} + h_1 + h_{req} = 80.4\ ft$ Minimum required length of pile

$L_{pile} := 90\ ft$ Chosen length of pile

$E_{pile} := -\left(L_{pile} - \left(E_{slab} - h_{slab}\right)\right) = -74.067\ ft$ Pile Tip Elevation

**END OF CALCULATIONS**

# 2 Pier Seismic Calculations

City of Berkeley

# Berkeley Water Transportation Pier Ferry

## Section 1 - Structural

### 1A – Fixed Pier Seismic Design Calculations

January 5, 2026

City of Berkeley

# Berkeley Water Transportation Pier Ferry

## Section 1 - Structural

### 1A – Fixed Pier Seismic Design Calculations

January 5, 2026

| | |
|---|---|
| Contract | COWI #272767 |
| Document no. | 1-A Pile Seismic Design Calculations |
| Version | 60% Design |
| Date of issue | January 5, 2026 |
| | |
| Prepared | Tyler Rodrigues |
| Checked | Jacob Shaw |
| Approved | James Connolly |

| | | | | |
|---|---|---|---|---|
| | COWI | Project<br>Berkeley Water Transportation Pier Ferry | Date<br>01/5/26 | Sheet<br>1A-3 |
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# 1. Introduction

The following design package *Pile design* contains the calculations for the design of piles for the Fixed Pier at the Berkeley Water Transportation Pier Ferry.

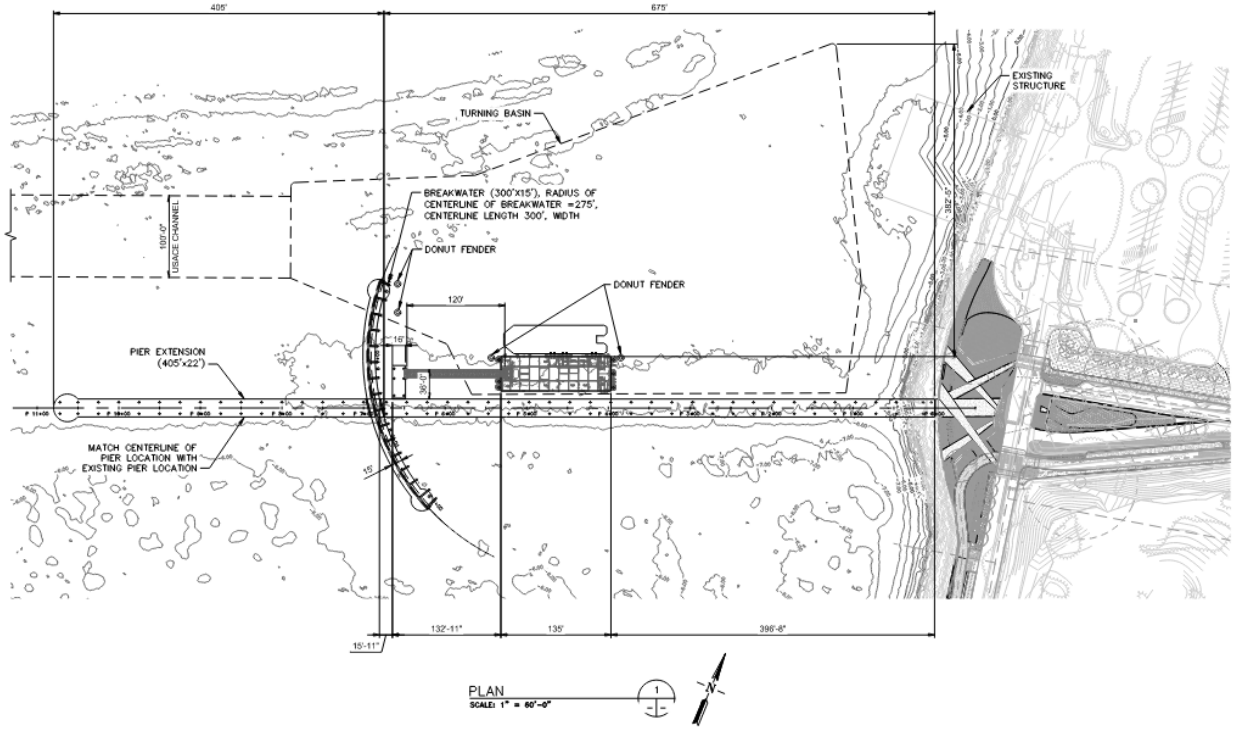


*Figure 1-1: Overview of the Ferry terminal*

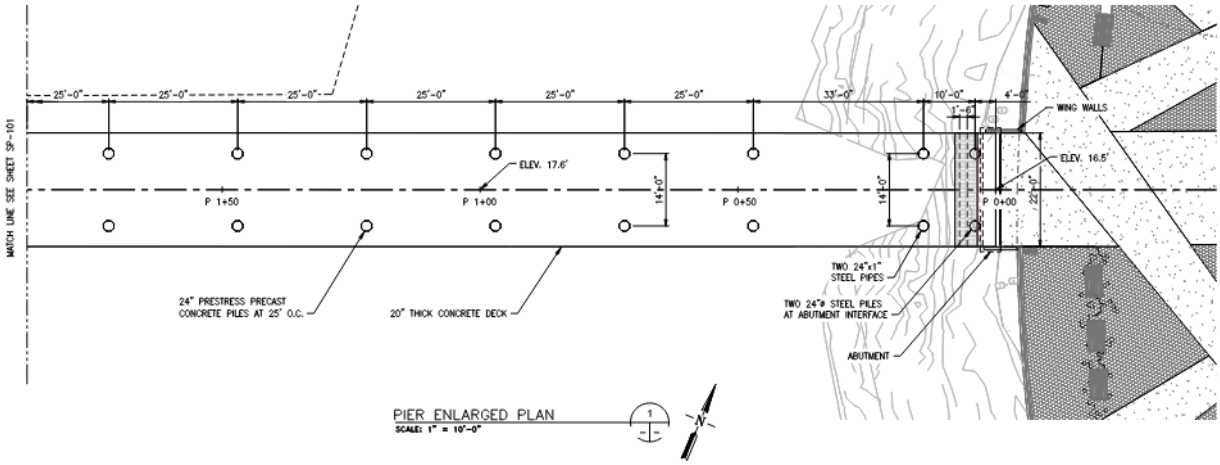


*Figure 1-2: Fixed Pier schematic design plan.*

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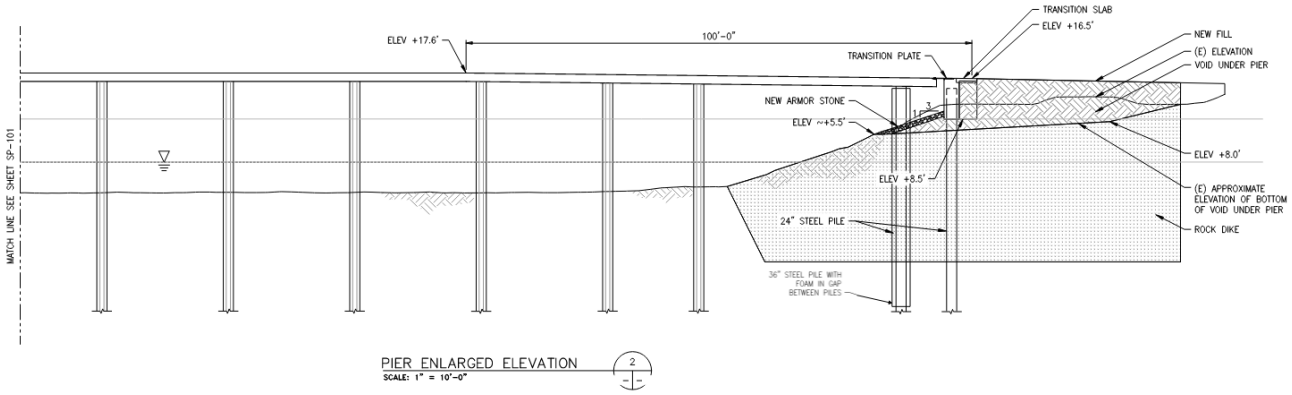


*Figure 1-3: Typical cross section of Fixed Pier showing piles*

### a. Scope of Work

The fixed pier pile design calculation includes the following components:

1. Seismic Analysis of Fixed Pier
2. Design of Piles
3. Establish Deck Demands for Deck Capacity Protection

### b. Governing Code

California Building Standards Commission, (California Building Code 2022)

### c. References

American Society of Civil Engineers

- ASCE 61-14 Seismic Design of Piers and Wharves (Seismic Design and Analysis)
- ASCE 7-22, Minimum Design Loads for Buildings (Gravity Load Combinations)

American Institute of Steel Construction

- ANSI/AISC 360-10, Specification for Structural Steel Buildings (Steel Design)

American Concrete Institute

- ACI 318-19, Building Code Requirements for Structural Concrete (Concrete Design)

COWI

- Basis of Design - Berkeley Water Transportation Pier Ferry (Basis of Design)
- Structural Drawings – A Berkeley Water Transportation Pier Ferry (Drawings)
- Specifications – Berkeley Water Transportation Pier Ferry (Specifications)

ENGEO (Geotechnical – see appendix B)

- Berkeley Water Transportation Pier Ferry Geotechnical Report

### d. Design Life

The design life of the Fixed Pier is 50 years. The durability of the materials to achieve this design life considered by providing 3" min of concrete cover to the reinforcement and using concrete

| | | | | |
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conforming to ACI 318-19 exposure class C2 for exposure to sea water. The steel pipe piles are embedded in ground and are not in a corrosive environment. The steel pipe piles will be coated.

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### e. Design Summary

The Fixed Pier is supported by 52 prestressed reinforced concrete piles and 2 steel pipe piles.

#### i. Steel Pipe Piles

Material: Steel: A992 Gr.50 ($F_y$=50 ksi)

Geometry: 24" x 1" WT Steel Pipe

#### ii. Prestressed Pile

Material Concrete: 7000 psi

Prestressing: A416 low relaxation strand ($f_{pu}$ = 270 ksi)

Spiral Reinf: A1064 ($F_y$ = 65ksi)

Dowels: A706 Grade 80 ($F_y$ = 80 ksi)

Geometry: 24" Octagonal Pile with 16-0.6" Prestress strands

@ Piles above the mudline: 8- #10 Dowels

@ Pile below the mudline: 8- #9 Bars

#### iii. Reinforced Concrete Deck

Material Concrete: 5000psi

Geometry: 20" deep

### f. Seismic Performance Criteria

The seismic performance criteria and design spectra for the fixed pier are summarized below.

#### i. Operating Level Earthquake (OLE)

The OLE corresponds to a 50% probability of exceedance in 50 years. In an OLE event the fixed pier is designed to remain elastic.

#### ii. Contingency Level Earthquake (CLE)

The CLE corresponds to a 10% probability of exceedance in 50 years. In a CLE event the fixed pier is designed for "Minimal Damage" as described in ASCE 61-14. The strain limits on the piles for minimal damage are shown below.

#### iii. Design Earthquake (DE)

The DE corresponds to 2/3 of the Maximum Considered Earthquake developed using the procedures provided in ASCE 7-22. In a DE event the fixed pier is designed for "Minimal Damage" as described in ASCE 61-14. The strain limits on the piles for minimal damage are shown below.

| | | | | |
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### iv. Maximum Considered Earthquake (MCE)

The MCE corresponds to a 2% probability of exceedance in 50 years calculated using procedures provided in ASCE 7-22. In an MCE event the fixed pier is designed for "Controlled and Repairable Damage" as described in ASCE 61-14. The strain limits on the piles for Controlled and Repairable Damage are provided below.

**Table 3-1. Strain Limits for "Minimal Damage" per Section 2.4.3**

| | | Hinge location | | |
|---|---|---|---|---|
| Pile type | Component | Top of pile | In ground | Deep in ground (>10$D_p$) |
| Solid concrete pile | Concrete | $\varepsilon_c \le 0.005$ | $\varepsilon_c \le 0.005$ | $\varepsilon_c \le 0.008$ |
| | Reinforcing steel | $\varepsilon_s \le 0.015$ | | |
| | Prestressing steel | | $\varepsilon_p \le 0.015$ | $\varepsilon_p \le 0.015$ |
| Hollow concrete pile[a] | Concrete | $\varepsilon_c \le 0.004$ | $\varepsilon_c \le 0.004$ | $\varepsilon_c \le 0.004$ |
| | Reinforcing steel | $\varepsilon_s \le 0.015$ | | |
| | Prestressing steel | | $\varepsilon_p \le 0.015$ | $\varepsilon_p \le 0.015$ |
| Steel pipe pile | Steel pipe | | $\varepsilon_s \le 0.010$ | $\varepsilon_s \le 0.010$ |
| | Concrete | $\varepsilon_c \le 0.010$ | | |
| | Reinforcing steel | $\varepsilon_s \le 0.015$ | | |

[a]If the interior of the hollow pile is filled with concrete, all strain limits shall be the same as for solid piles.

**Table 3-2. Strain Limits for "Controlled and Repairable Damage" per Section 2.4.2**

| | | Hinge location | | |
|---|---|---|---|---|
| Pile type | Component | Top of pile | In ground | Deep in ground (>10$D_p$) |
| Solid concrete pile | Concrete | $\varepsilon_c \le 0.005 + 1.1\rho_s \le 0.025$ | $\varepsilon_c \le 0.005 + 1.1\rho_s \le 0.008$ | $\varepsilon_c \le 0.012$ |
| | Reinforcing steel | $\varepsilon_s \le 0.6\varepsilon_{smd} \le 0.06$ | | |
| | Prestressing steel | | $\varepsilon_p \le 0.025$ | $\varepsilon_p \le 0.025$ |
| Hollow concrete pile[a] | Concrete | $\varepsilon_c \le 0.006$ | $\varepsilon_c \le 0.006$ | $\varepsilon_c \le 0.006$ |
| | Reinforcing steel | $\varepsilon_s \le 0.4\varepsilon_{smd} \le 0.04$ | | |
| | Prestressing steel | | $\varepsilon_p \le 0.020$ | $\varepsilon_p \le 0.025$ |
| Steel pipe pile | Steel pipe | | $\varepsilon_s \le 0.025$[b] | $\varepsilon_s \le 0.035$ |
| | Concrete | $\varepsilon_c \le 0.025$ | | |
| | Reinforcing steel | $\varepsilon_s \le 0.6\varepsilon_{smd} \le 0.06$ | | |

[a]If the interior of the hollow pile is filled with concrete, all strain limits shall be the same as for solid piles.
[b]If the steel pipe pile is infilled with concrete, a value of 0.035 may be used.

Figure 1-4: Table 3-1 and 3-2 from ASCE 61-14 for strain limits of piles

| | | | | |
|---|---|---|---|---|
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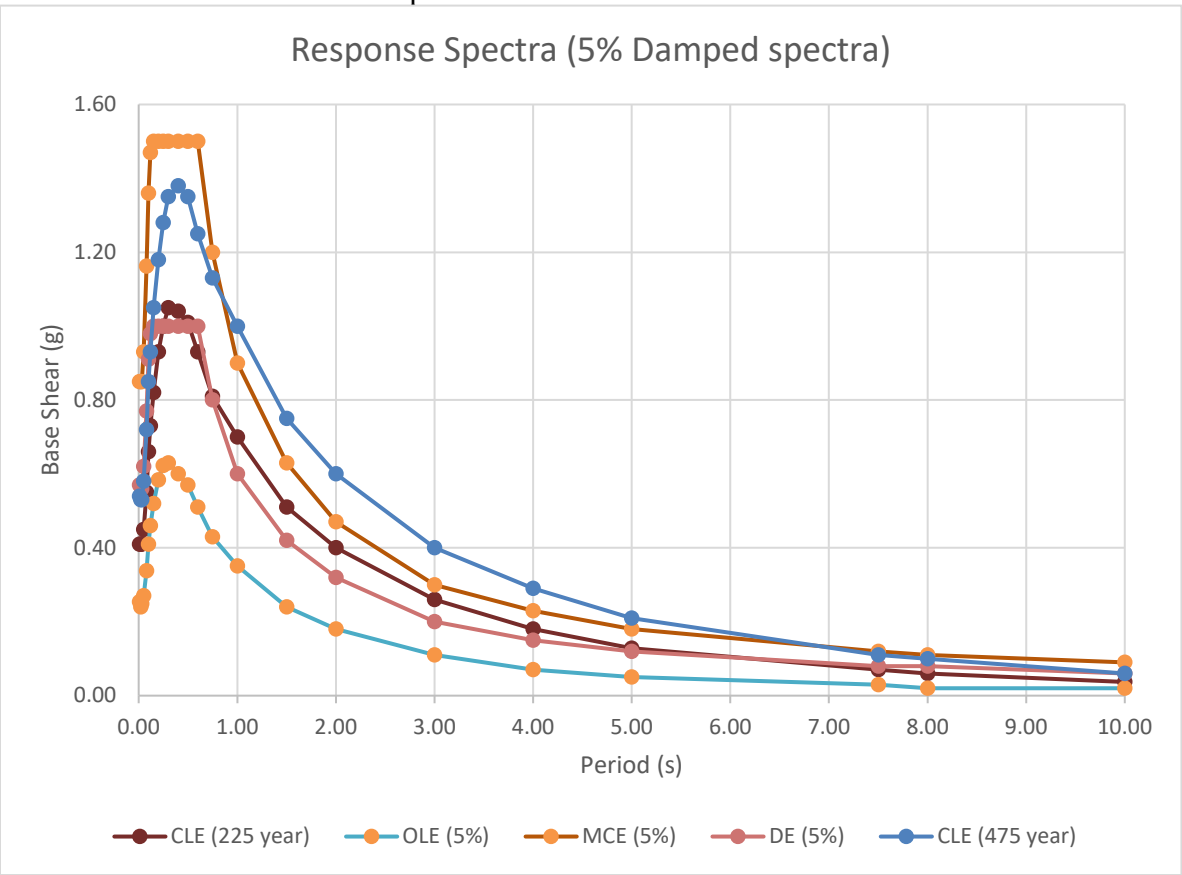
### g. Seismic Acceleration Spectra

The following pseudo acceleration spectra are provided by ENGEO and are used in the seismic design of the fixed pier. 5% and 10% damped spectra are provided. The damping is discussed in farther detail in section 6d. The pseudo acceleration values are tabulated in Attachment A6.



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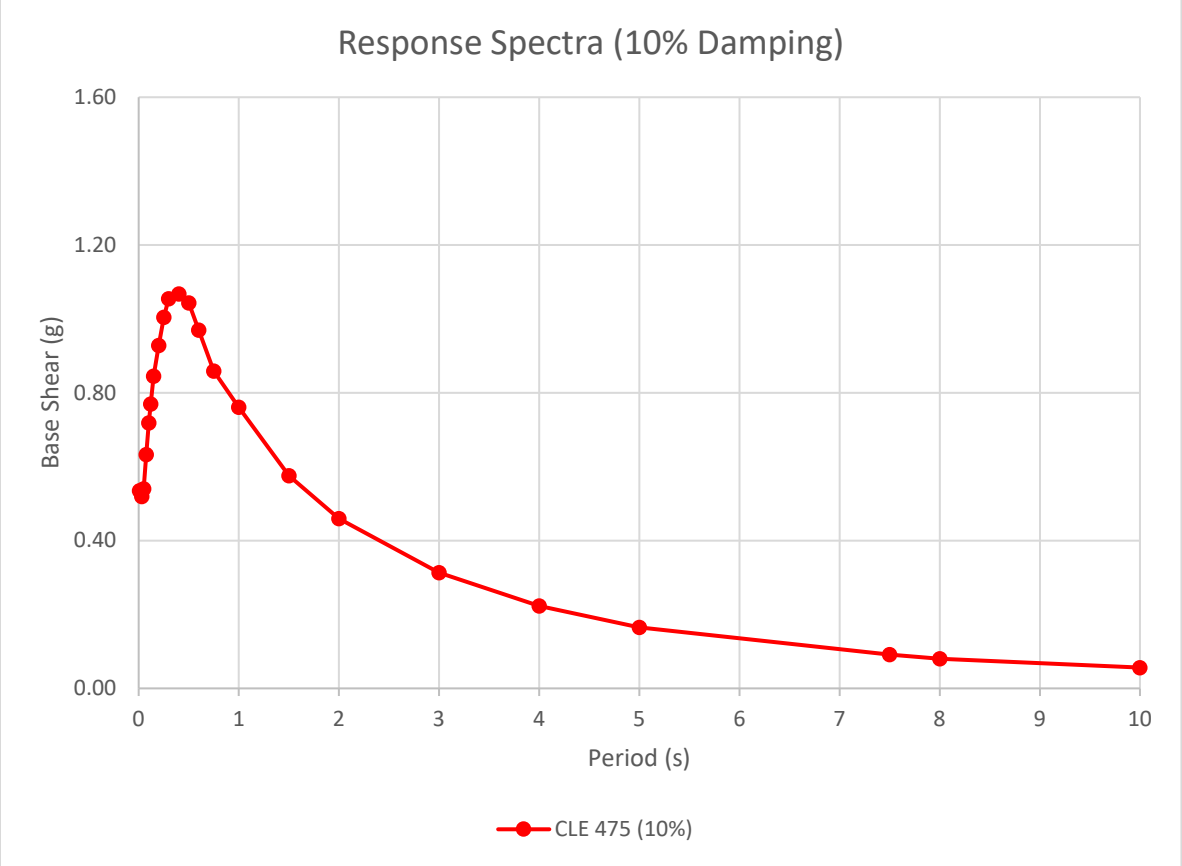

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| | | Subject<br>Section 1A - Structural – Fixed Pier Seismic Design Calculations | Design<br>TYRD | Checked<br>JBSW |

### h. Methodology

The piles are designed for seismic and gravity load cases. Seismic design of the piles is governed by the global and local behavior of the fixed pier in a seismic event. Gravity load design is governed by the behavior of the pier under dead and live loads.

#### i. Seismic Load Analysis

A nonlinear finite element model is created using SAP 2000. Seismic analysis of the fixed pier was performed using the following steps:

**1. Develop Soil Spring Properties**

Soil spring curves are discussed in section 2. The soil springs are applied to the SAP 2000 finite element model as 1 node nonlinear links.

**2. Develop pile plastic hinge properties.**

Pile plastic hinge properties are developed by performing cross section analysis of the piles using Xtract, then establishing plastic hinge lengths. The pile hinge properties are applied as non-linear hinges to the frame elements of the SAP 2000 model. Cross sectional analysis is discussed in section 3 and pile hinge properties structural analysis are discussed in section 4.

**3. Perform nonlinear pushover analysis**

The pushover analysis is performed using the SAP 2000 nonlinear finite element model. The pushover analysis is used to access the seismic response of the structure. The pushover analysis is discussed in section 6a.

**4. Develop Seismic Loads**

Inertial seismic loads on the fixed pier are calculated using the capacity spectrum method. The seismic loading and Seismic load combinations are discussed in Section 6.

**5. Apply Seismic Loads and Evaluate System**

Apply the seismic loads and evaluate the plastic rotational demand versus the rotational capacity of the hinges for various seismic load combinations. Seismic evaluation is discussed in section 6e

| | | | | |
|---|---|---|---|---|
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## 2. Soil Springs

For discrete lateral analysis of pile-soil interaction, the soil is replaced by non-linear P-Y springs. Distance between the adjacent springs was considered to calculate the spring curves for use in the SAP model. In other words, all stiffnesses are converted to the units of the SAP model by considering the tributary area of each spring.

The soil springs provided by ENGEO are included as Appendix B.

The soil springs provided by ENGEO are given in force per displacement per length of pile. These are multiplied by the tributary length of pile to create SAP 2000 one node links.

P-Y curves used in the SAP 2000 model are shown as Attachment A1.

T-Z springs are not considered, instead, piles are axially fixed in the SAP model, and tip elevations are set to prevent slipping of the pile.

### a. Upper and Lower bound springs

The uncertainty in the soil behavior is accounted for by using upper and lower bound soil springs. The force values provided by ENGEO are multiplied by 0.5 and 2.0 for the upper and lower bound springs, respectively. This results in soils that are softer and stiffer than the design values.

| | | | | |
|---|---|---|---|---|
| | COWI | Project<br>Berkeley Water Transportation Pier Ferry | Date<br>01/5/26 | Sheet<br>1A-14 |
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## 3. Pile Cross Section Analysis

A pile cross section analysis was performed for the prestressed concrete and steel pipe piles using XTRACT section analysis software. From the XTRACT output, a bilinear idealization curve is made for use in the hinge properties of the pushover analysis. See section 4 for the bilinear idealization of the hinge at the top of pile and in ground.

### a. Materials

- Steel Pile plugs have $f'_c$ =5,000 psi.
- Prestressed Piles have $f'_c$ =7,000 psi.
- Prestressing reinforcement is ASTM A416 Gr.270 ($F_{pu}$ = 270 ksi)
- Top of Pile Dowels are ASTM A706 Gr.80 ($F_y$ = 80 ksi)
- Pile reinforcement is ASTM A706 Gr.60 ($F_y$ = 60 ksi)
- Spiral Reinforcing are ASTM A1064 Gr.65 ($F_y$ = 65 ksi)

### b. Expected Material Properties

The material properties input into XTRACT are based on the expected material properties. See Attachment A2 for the XTRACT Material Reports.

### c. Geometry

The input information for XTRACT is provided in Attachment A3. The sections analyzed are:

- Prestressed Concrete Pile in ground hinge (16 tendons + 8-#9 bars 60 ksi)
- Prestressed Pile to Deck Connection (8-#10 bars 80 ksi) –

### d. Moment Curvature Analysis

The XTRACT moment curvature analysis is summarized in the graphs on the following page. Detailed outputs from XTRACT are provided in Attachment A3.

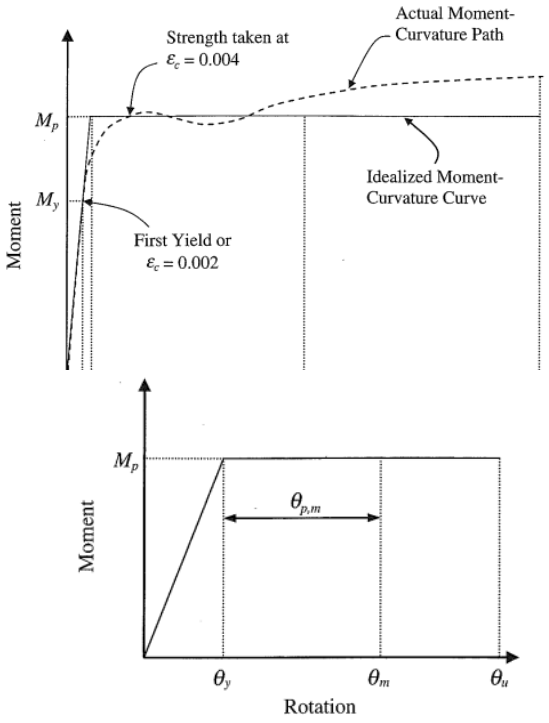


**Fig. 6-6. Idealized moment–rotation curve**
Source: Port of Long Beach (2012)

| | | | | |
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## 4. Pile Plastic Hinges

Plastic Hinges are defined at the top of the pile and at the point of maximum in-ground moment. The plastic hinge lengths are determined per ASCE 61-14 Table 6-1. The properties of the hinges are calculated based on the results of the XTRACT cross section analysis.

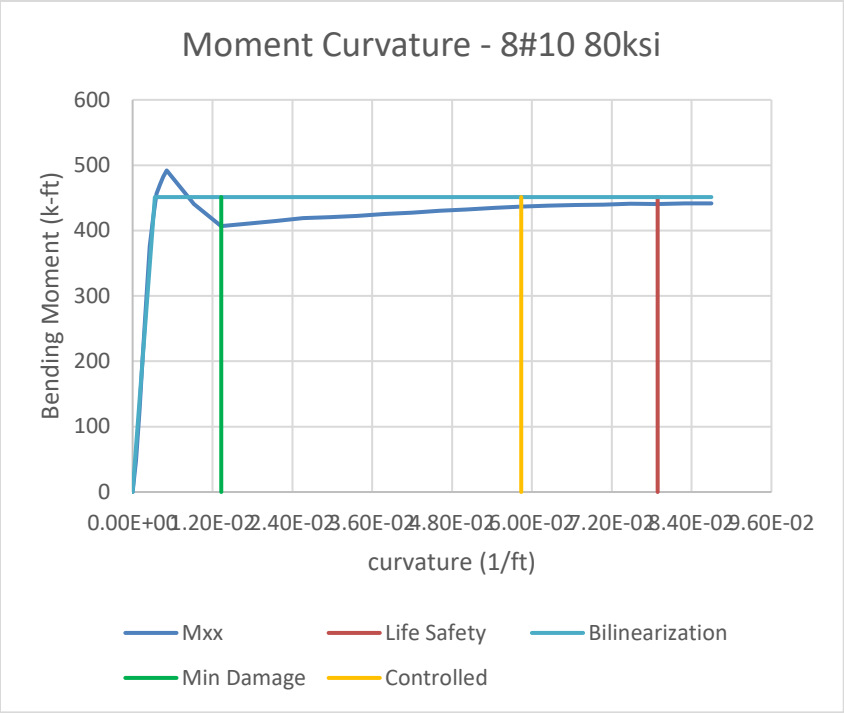
Attachment A4 shows the following detailed calculations:

### a. Moment Curvature Bi-Linearization

The Moment Curvature Bi-Linearization follows Method A of ASCE 61-14, described in Section 6.6.2.1. The Yield moment is taken at a concrete strain of 0.004 and the elastic slope is taken for first yield of the reinforcing bars or a concrete strain of 0.002, whichever occurs first.

### b. Limit State Strain Limits

The Curvatures corresponding to various limit states are computed based on the strain limits described in section 1d: Seismic Design Criteria. The graphical representations of these limit states are provided below.



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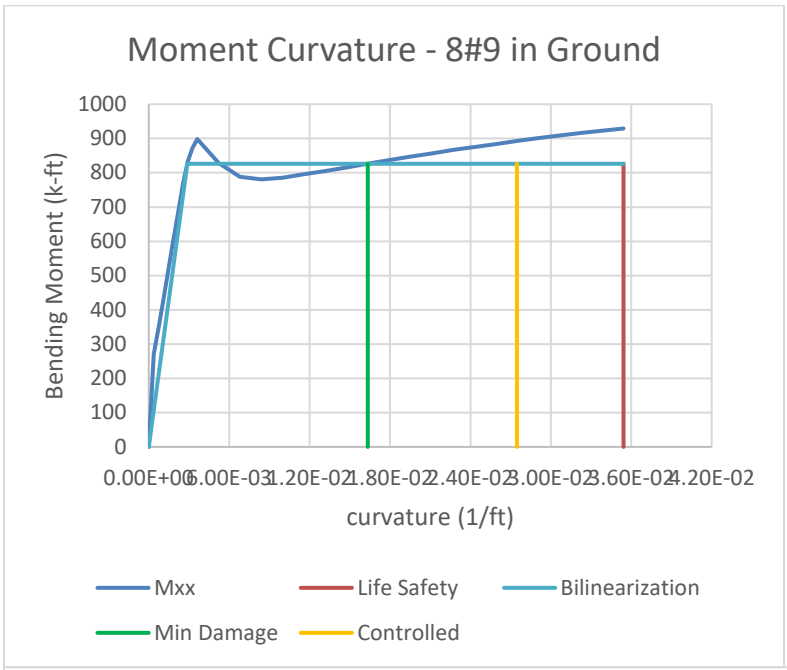


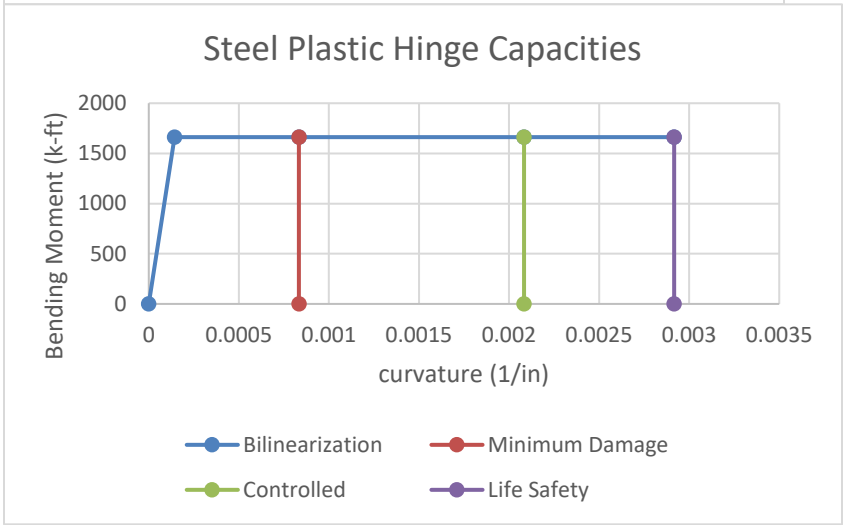

| | | | | |
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### c. Plastic Hinge Length

The curvature at various strain limits are multiplied by the plastic hinge lengths defined in ASCE 61-14.

#### i. Top of pile prestressed pile

From ASCE 61-14 Table 6-1 - Plastic Hinge Length for doweled prestressed connection:

$$L_p = 0.25F_{ye}d_{bl}$$

| Mudline | Dowels | $d_{bl}$ (in) | $F_y$ (ksi) | $F_{ye}$= 1.1×$F_y$ (ksi) | $L_p$ = 0.25$F_{ye}d_{bl}$ (in) |
|---|---|---|---|---|---|
| Above | 8#10 | 1.27 | 80 | 88 | ***27.94*** |
| Below | 8#9 | 1.128 | 60 | 66 | ***18.6*** |

#### ii. Prestressed Pile In-Ground

From ASCE 61 Equation 6-12

$$L_p = 2 \times D_p = 2 \times 24\text{in} = \textbf{\textit{48 in}}$$

### d. Plastic Hinge Properties

The table below summarizes the plastic hinge properties input into SAP 2000.

| Hinge type | Steel Pipe in ground | 8#10 deck conn | 8#9 in ground |
|---|---|---|---|
| Yield (kip-ft) | 1662.15 | 665.46 | 826.21 |
| IO (rad) | 0.017 | 0.02 | 0.028 |
| LS (rad) | 0.046 | 0.125 | 0.051 |
| CP (rad) | 0.066 | 0.172 | 0.067 |
| $L_p$ (in) | 24 | 27.94 | 18.6 |

**Table 6-1. Plastic Hinge Length**

| Connection type<br>Steel pipe piles | $L_p$ at deck (in.) |
|---|---|
| Embedded pile | 0.5*D* (see Section 7.4.3.3) |
| Concrete plug | $0.30f_{ye}d_b$ |
| Isolated shell | $0.30f_{ye}d_b + g$ |
| Welded embed | 0.5*D* (See Section 7.4.2.4) |
| Welded dowels | NA |
| **Prestressed concrete piles** | |
| Pile buildup | $0.15f_{ye}d_b \le L_p \le 0.3f_{ye}d_b$ |
| Extended strand | $0.2f_{pye}d_{st}$ |
| Embedded pile | 0.5*D* (see Section 7.4.2.1) |
| Dowelled | $0.25f_{ye}d_b$ |
| Hollow dowelled | $0.2f_{ye}d_b$ |
| External confinement | $0.30f_{ye}d_b$ |
| Isolated interface | $0.25f_{ye}d_b$ |
| **Other connections** | |
| Pinned connection | NA |
| Batter pile | See Section 7.4.4.2 |

Note: Table uses English units. Metric equivalent is not provided.

| | | | | |
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## 5. Nonlinear Finite Element Model

The Piles and deck are analyzed as an integral pile-deck structural system using finite element analysis software SAP 2000 to determine the effects of the design forces on the structural response.

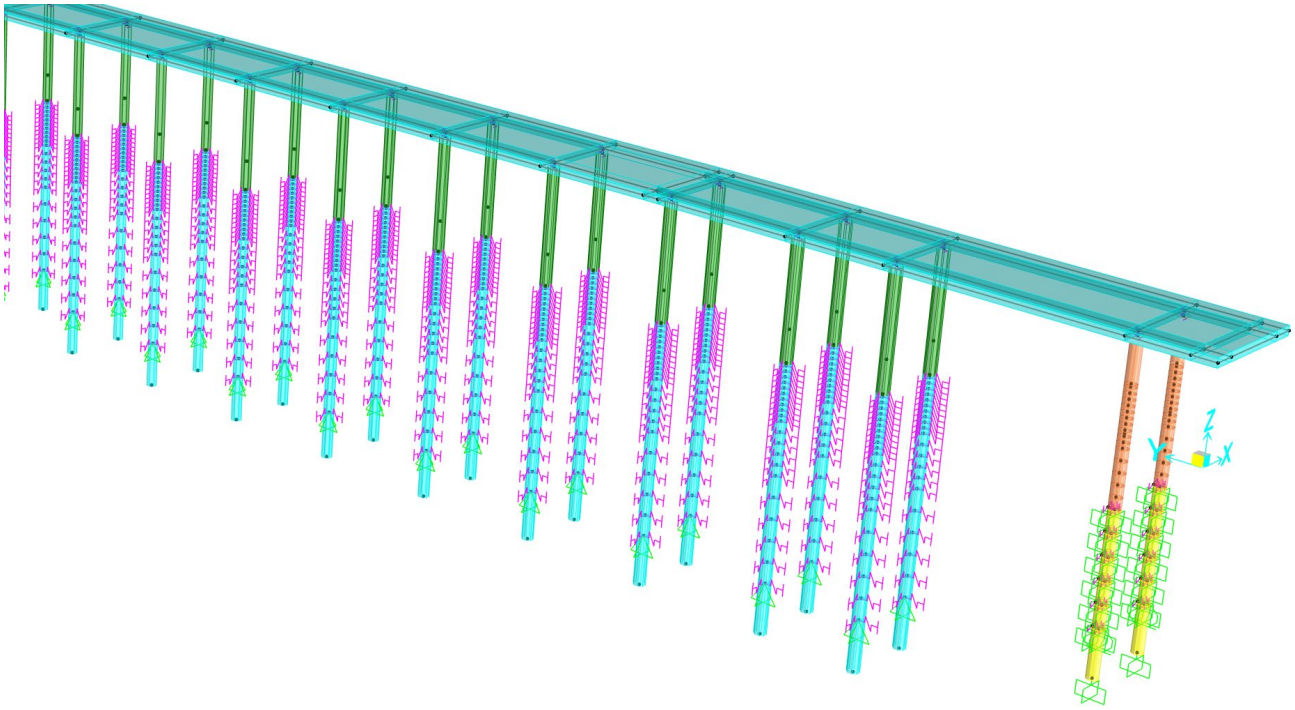

*Figure 5-1: SAP2000 Fixed Pier Finite Element model*

The nonlinear finite element model consists of the following components.

### a. Piles - Frame Elements

The piles are modeled using frame elements from the deck soffit to the tips shown in the table below. The frame members are fixed to the bottom of the deck and laterally supported by nonlinear springs p-y below the assumed mudline, pile tips are fixed against vertical displacements. The piles are attached to the deck by rigid links from the center of deck to the deck soffit. The top of pile and at the Maximum moment location, plastic rotational hinges are included.

#### i. Material and Section Properties

The material and geometric properties of the pile frame members in SAP2000 to match the properties of the prestressed 24"octagonal concrete pile and the 24" diameter steel piles. The seismic analysis model assumes that the initial integrity of the concrete piles would be reduced to a cracked equivalent of $I_{cr}= 0.65I_g$ during a seismic event.

#### ii. Plastic Hinges

The moment curvature properties of the 24" prestressed octagonal pile and 24" diameter steel were determined by using XTRACT and can be found in section 3

| | | | | |
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#### iii. Soil Springs

For discrete lateral analysis of pile-soil interaction, the soil is replaced by non-linear P-Y springs. Distance between the adjacent springs was considered to calculate the spring curves for use in the SAP model. In other words, all stiffnesses are converted to the units of the SAP model by considering the tributary area of each spring.

The soil springs provided by ENGEO are included as Appendix B.

The soil springs provided by ENGEO are given in force per displacement per length of pile. These are multiplied by the tributary length of pile to create SAP 2000 one node links.

P-Y curves used in the SAP 2000 model are shown as Attachment A1.

T-Z springs are not considered, instead, piles are axially fixed in the SAP model, and tip elevations are set to prevent slipping of the pile.

**Upper and Lower bound springs**

The uncertainty in the soil behavior is accounted for by using upper and lower bound soil springs. The force values provided by ENGEO are multiplied by 0.5 and 2.0 for the upper and lower bound springs, respectively. This results in soils that are softer and stiffer than the design values.

#### iv. Pile Cross Section Analysis

Plastic hinges were defined at the pile top and below ground per section 4 Pile Plastic Hinges. The steel piles above the mudline remain elastic and therefore do not have plastic hinges.

### b. Deck - Shell Elements

The cast-in-place deck is modeled as 20-inch-thick concrete shell elements which are in turn supported by the piles. The seismic analysis assumes $I_{ef}= 0.50I_g$ (ACI 318-19 6.6.3.1.2 and the upper limit of 6.6.3.1.1, since the deck will be designed to be capacity protected resulting in limited deformation of the deck).

### c. Geometric Nonlinearity

To capture the effects of geometric nonlinearity, P-Delta effects due to gravity loads are included in the lateral load analysis.

### d. Applied Loads

Design load combinations are defined based on the Basis of Design. The load conditions represent various combinations of loads and forces to which the pier may be subjected. Different load factors used are based on the probability of occurrence of the loads.

#### i. Dead Load

The dead load consists of the weight of the entire structure, including permanent attachments. The dead load of the structure was determined by SAP2000 as the self-weight of the structural members. The unit weight of reinforced concrete is taken as $\gamma = 150$ pcf.

#### ii. Uniform Live Loads

A uniform live load of 250 psf is applied on the wharf deck. Continuous loading is used for application of the uniform live load in order to determine the maximum design forces for the piles. Skip bay loading is not used, as pile maximum design forces are not appreciably influenced by far field effects.

#### iii. Seismic Loads

Seismic Loads included inertial and kinematic loads from slope failure. These loads are discussed in further detail in section 6, Seismic Analysis.

#### iv. Load Combinations

The piles are designed to the following gravity load combinations. A seismic load combination is shown below, however Seismic load combinations are discussed in greater detail under Section 6 Seismic Analysis.

1.4D

1.2D+1.6L

(1.0+k)D+0.1L+Seismic (where k is 0.5 x PGA)

| | | | | |
|---|---|---|---|---|
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## 6. Seismic Analysis

The seismic analysis is done using the following procedure:

a. Run a nonlinear pushover analysis of the structure and plot Base Shear vs Displacement in both orthogonal directions

b. Determine the inertial seismic loads by the capacity spectrum method in both orthogonal directions for all 4 seismic design cases. Apply the inertial seismic load to the structure as an acceleration.

c. Establish the seismic load cases and combinations and apply to the structural model as a nonlinear load case.

d. Analyze the nonlinear model for the applied seismic load cases to determine if the model meets the seismic performance criteria. The seismic performance criteria are determined based on the level of nonlinear rotation at the plastic hinges observed.

### a. Kinematic Seismic Loads

-The steel landside piles are to be fitted with a sleeve contains a gap expected to be larger than the kinematic loading, which will negate the kinematic loading to the rest of the structure. Thus, no kinematic loading is considered on these piles. No kinematic loading from slope stability is considered on the waterside prestressed piles.

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### b. Push Over Analysis

A displacement-controlled pushover analysis of the Fixed Pier is performed using the SAP 2000 nonlinear model. The nonlinearity of the pushover analysis is caused by the nonlinearity of the soil springs and the activation of the nonlinear frame plastic hinges.

The pushover analysis is performed by incrementally displacing the center of mass of the pier structure in the 2 primary orthogonal directions.

The pushover analysis is performed for a variety of initial loading conditions. The upper, lower and design soil springs are considered, as well as the kinematic movements of the soil. The conditions considered are:

- Displacement in the +X direction (-X not considered as the pier is symmetric in the Y)
- Displacement in the +Y direction without kinematic loading
- Displacement in the -Y direction without kinematic loading

Shown in the following page is the pushover analysis for the CLE load cases for the 3 different soil springs. Attachment A6 shows the pushover results for all the load cases as well as all soil spring conditions (design, lower bound and upper bound). The pseudo acceleration spectrum is shown as well. As can be seen- the pushover curves for the lower and the upper bound soil springs are softer and stiffer, respectively, as would be expected.

The figure below shows the lower bound pushover curves plotted against the 10% damped spectra of the controlling load case, the CLE.

| | | | | |
|---|---|---|---|---|
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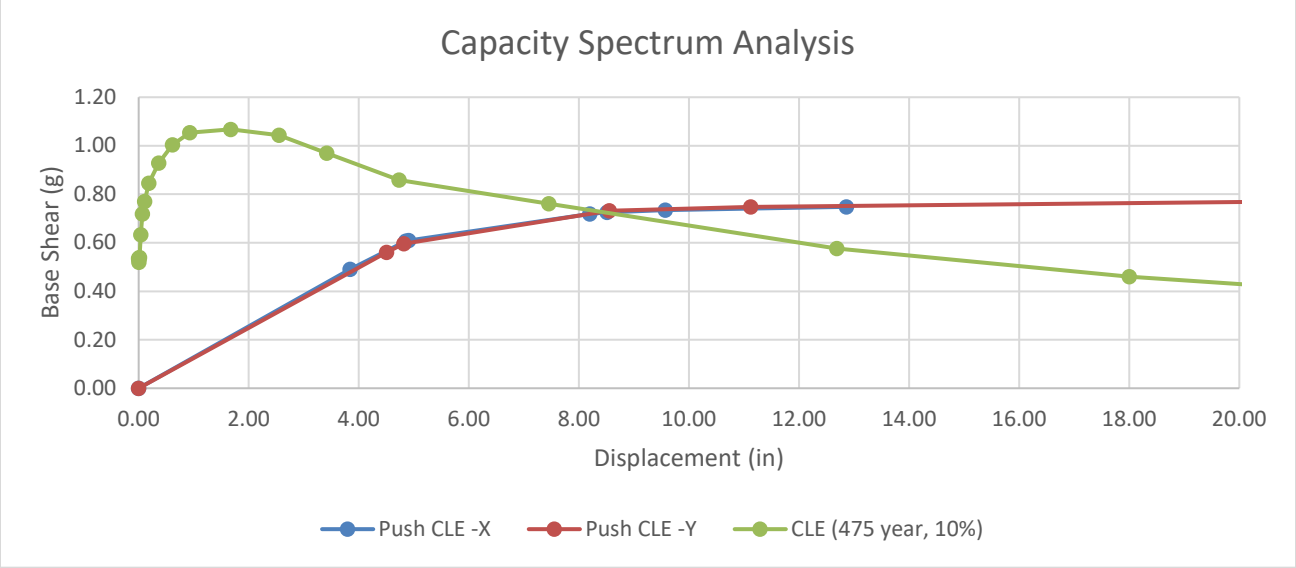
| | | Subject<br>Section 1A - Structural – Fixed Pier Seismic Design Calculations | Design<br>TYRD | Checked<br>JBSW |




### c. Inertial Seismic Loads

The Inertial Seismic Loads are determined from the capacity spectrum method. The capacity spectrum determines the inertial seismic load from the intersection of the spectral acceleration vs spectral displacement curve and the normalized pushover curve.

#### i. Damping

Effective damping of a system is typically assumed as 5%. However, since the wharf exhibits nonlinearity in larger seismic events, effective system damping values greater than 5% are considered. Damping values are determined from ASCE 61-14 6.6.3.3. Detailed Calculations of the system damping are included as Attachment A6. Below is the summary of the effective system damping assumed for each soil spring type, direction, and seismic event. Since only 5% and 10% spectrums are provided, a damping value of 10% is assumed where computation shows greater than 10% damping.

| Pushover X Direction | | | |
|---|---|---|---|
| Damping Values | | | |
| | Lower Bound | Design | Upper Bound |
| OLE | TBD | TBD | TBD |
| DE | TBD | TBD | TBD |
| CLE | 10% | TBD | TBD |
| MCE | TBD | TBD | TBD |

| Pushover Y Direction | | | |
|---|---|---|---|
| Damping Values | | | |
| | Lower Bound | Design | Upper Bound |
| OLE | TBD | TBD | TBD |
| DE | TBD | TBD | TBD |
| CLE | 10% | TBD | TBD |
| MCE | TBD | TBD | TBD |

#### ii. Design Accelerations

Inertial loads are applied as accelerations to the SAP2000 model. The accelerations are taken as the intersection of the pushover curve and the acceleration spectrum. Detailed calculations of the design accelerations are provided as attachment A7.

| | | | | |
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| Pushover X Direction | | | |
|---|---|---|---|
| Design Acceleration (g) | | | |
| | Lower Bound | Design | Upper Bound |
| OLE | TBD | TBD | TBD |
| DE | TBD | TBD | TBD |
| CLE | 0.72 | TBD | TBD |
| MCE | TBD | TBD | TBD |

| Pushover Y Direction | | | |
|---|---|---|---|
| Design Acceleration (g) | | | |
| | Lower Bound | Design | Upper Bound |
| OLE | TBD | TBD | TBD |
| DE | TBD | TBD | TBD |
| CLE | 0.73 | TBD | TBD |
| MCE | TBD | TBD | TBD |

### d. Seismic Load Combinations

The following considerations are included in the seismic load combinations in addition to the gravity load of (1.0±0.5PGA)D + 0.1L.

#### i. Inertial loads

Inertial loads are applied to as an acceleration the dead load and 10% of the uniform seismic mass.

#### ii. Kinematic loads

Kinematic loads are not applied due to the sleeve discussed in Section 6a.

#### iii. Orthogonal Effects

Effects of simultaneous seismic excitation in the orthogonal horizontal directions are considered by adding 30% of the perpendicular seismic affect to 100% of the seismic effect in the primary direction (ASCE 61-14 Section 3.6.2). This is shown by:

$E = \pm 1.0(E_h)_{prime} \pm 0.3(E_h)_{second}$ *where $E_h$ is defined under Inertial/Kinematic Load Combo

#### iv. Load Combinations

The seismic load combinations considered are

(1.0+0.5PGA)D + 0.1L + E

(1.0–0.5PGA)D + E *where E is defined under Orthogonal Effects above.

#### v. Design Seismic Case

The above load cases are repeated for each of the OLE, CLE, DE and MCE cases. The design Load Cases used in the SAP 2000 model is provided as Appendix 5.

| | | | | |
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### e. Seismic Evaluation of Pile Demand

The seismic evaluation of piles is performed by applying the Load Combinations defined above to the nonlinear structural model and obtaining the plastic hinge rotations (demand).

| | | | | |
|---|---|---|---|---|
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### i. Pile Demands

The plastic hinge rotations are evaluated against the strain limits by comparing the hinge rotation to the hinge rotation at the various OLE, CLE, DE and MCE limiting strains, established in Section 3, Pile Plastic Hinges. The maximum plastic hinge rotation per hinge location and design case along with the design criteria and rotational capacity for the design criteria are shown below for the lower bound soil spring case. SAP 2000 output hinge rotations for all cases are provided as Attachment 5.

| **OLE** | | | | |
|---|---|---|---|---|
| Hinge Type | | 8#10 80 ksi | 8#9 60ksi | Steel Pile |
| Demand | Max(kip-ft) | TBD | TBD | TBD |
| Capacity | radians | TBD | TBD | TBD |
| D/C | - | **TBD** | **TBD** | **TBD** |
| **CLE** | | | | |
| Hinge Type | | 8#10 80 ksi | 8#9 60ksi | Steel Pile |
| Demand | Max(rad) | 0.02 | 0.008 | 0.001 |
| Capacity | radians | 0.020 | 0.028 | 0.017 |
| D/C | - | **100%** | **27%** | **9%** |
| **DE** | | | | |
| Hinge Type | | 8#10 80 ksi | 8#9 60ksi | Steel Pile |
| Demand | Max(rad) | TBD | TBD | TBD |
| Capacity | radians | TBD | TBD | TBD |
| D/C | - | **TBD** | **TBD** | **TBD** |
| **MCE** | | | | |
| Hinge Type | | 8#10 80 ksi | 8#9 60ksi | Steel Pile |
| Demand | Max(rad) | TBD | TBD | TBD |
| Capacity | radians | TBD | TBD | TBD |
| D/C | - | **TBD** | **TBD** | **TBD** |

| | | | | |
|---|---|---|---|---|
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Below is a summary of the D/C ratios for all 3 soil conditions.

| Lower Bound Soil Springs | | | | |
|---|---|---|---|---|
| Event | Limit State | 8#10 80 ksi | 8#9 60ksi | Steel Pile |
| OLE | TBD | TBD | TBD | TBD |
| CLE | Min Damage | 100% | 27% | 9% |
| DE | TBD | TBD | TBD | TBD |
| MCE | TBD | TBD | TBD | TBD |
| Design Soil Springs | | | | |
| Event | Limit State | 8#10 80 ksi | 8#9 60ksi | Steel Pile |
| OLE | TBD | TBD | TBD | TBD |
| CLE | TBD | TBD | TBD | TBD |
| DE | TBD | TBD | TBD | TBD |
| MCE | TBD | TBD | TBD | TBD |
| Upper Bound Soil Springs | | | | |
| Event | Limit State | 8#10 80 ksi | 8#9 60ksi | Steel Pile |
| OLE | TBD | TBD | TBD | TBD |
| CLE | TBD | TBD | TBD | TBD |
| DE | TBD | TBD | TBD | TBD |
| MCE | TBD | TBD | TBD | TBD |

Since all the demand over capacity ratios are less than 100%, the design of the piles for seismic load cases is adequate.

### f. Seismic Displacements

The seismic displacements of the pier are used as the design requirements of expansion joints and clearances around the fixed pier. The following summarizes the maximum displacements at the landside end of the fixed pier, determined from the finite element analysis. For clearance considerations, lower-bound soil springs were considered.

| | | | | |
|---|---|---|---|---|
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| Direction | OLE | CLE | DE | MCE |
|---|---|---|---|---|
| Longitudinal to Waterside | TBD | 8.4 in | TBD | TBD |
| Longitudinal to Landside | TBD | 8.5 in | TBD | TBD |
| Transverse to Waterside | TBD | 6.2 in | TBD | TBD |
| Transverse to Landside | TBD | 11.9 in | TBD | TBD |

| | | | | |
|---|---|---|---|---|
| | COWI | Project<br>Berkeley Water Transportation Pier Ferry | Date<br>01/05/26 | Sheet<br>1A-29 |
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# 7. Summary and Evaluation

## a. Seismic Analysis

The displacement based seismic design criteria is met, since the plastic hinge rotational capacities are greater than the demands, as detailed in Section 6, Seismic Analysis. The plastic hinge rotational capacities are calculated based using nonlinear cross-sectional analysis and evaluating the moment curvature diagram against the material strain limits established in the seismic design criteria. The seismic loads are determined from the nonlinear pushover analysis using the capacity spectrum. The plastic hinge demands are calculated using the nonlinear finite element analysis of the pile-deck system.

| | | | | |
|---|---|---|---|---|
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# Appendix A: Pile Analysis Attachments

| | | | | |
|---|---|---|---|---|
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| | | Subject<br>Section 1A - Structural – Fixed Pier Pile Design | Design<br>T. RODRIGUES | Checked<br>JBSW |

# Attachment 1: Soil Structure Interaction

The following sheets provide the soil springs used in the SAP2000 analysis

## A1.1 – Concrete Pile Soil Springs – provided by ENGEO

## A1.2 – Steel Pile Soil Springs – provided by ENGEO

## A1.3 – SAP2000 Soil Springs

# Berkeley Water Transportation Pier Ferry

Interpolated Added Columns

Section 0 TO 1080 — Nominal

| | Material | Depth Below Mudline(feet) | midpoints (ft) | spring length (ft) | spring length (in) | p0 (psi) | y0 (in) | p1 (psi) | p1 (kip) | y1 (in) | p2 (psi) | p2 (kip) | y2 (in) | p3 (psi) | p3 (kip) | y3 (in) | p4 (psi) | p4 (kip) | y4 (in) | p5 (psi) | p5 (kip) | y5 (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Qybm | 0.5 | 0 | 1 | 12 | 0 | 0 | 17.86111 | 5.144 | 0.35556 | 32.15 | 9.2592 | 2.0736 | 42.86667 | 12.3456 | 4.9152 | 53.58333 | 15.432 | 9.6 | 53.58333 | 15.432 | 10.2 |
| | | 1.5 | 1 | 1 | 12 | | | 20.25 | 5.832 | 0.35556 | 36.45 | 10.4976 | 2.0736 | 48.6 | 13.9968 | 4.9152 | 60.75 | 17.496 | 9.6 | 60.75 | 17.496 | 10.2 |
| | | 2.5 | 2 | 1 | 12 | | | 22.63889 | 6.519999 | 0.35556 | 40.75 | 11.736 | 2.0736 | 54.33334 | 15.648 | 4.9152 | 67.91666 | 19.56 | 9.6 | 67.91666 | 19.56 | 10.2 |
| | | 3.5 | 3 | 1 | 12 | | | 25.02778 | 7.207999 | 0.35556 | 45.05 | 12.9744 | 2.0736 | 60.06667 | 17.2992 | 4.9152 | 75.08333 | 21.624 | 9.6 | 75.08333 | 21.624 | 10.2 |
| | | 4.5 | 4 | 1 | 12 | | | 27.41666 | 7.895999 | 0.35556 | 49.35 | 14.2128 | 2.0736 | 65.8 | 18.9504 | 4.9152 | 82.25 | 23.688 | 9.6 | 82.25 | 23.688 | 10.2 |
| | | 5.5 | 5 | 1 | 12 | | | 29.80555 | 8.583999 | 0.35556 | 53.65 | 15.4512 | 2.0736 | 71.53334 | 20.6016 | 4.9152 | 89.41666 | 25.752 | 9.6 | 89.41666 | 25.752 | 10.2 |
| | Qybm | 6.5 | 6 | 1 | 12 | 0 | 0 | 32.19444 | 9.271999 | 0.35556 | 57.95 | 16.6896 | 2.0736 | 77.26667 | 22.2528 | 4.9152 | 96.58333 | 27.816 | 9.6 | 96.58333 | 27.816 | 10.2 |
| | Qal 1 (Clay | 7.5 | 7 | 1 | 12 | 0 | 0 | 311.0614 | 89.58567 | 0.08296 | 559.9105 | 161.2542 | 0.87091 | 746.5473 | 215.0056 | 2.75251 | 933.1841 | 268.757 | 6.72 | 933.1841 | 268.757 | 8.4 |
| | | 8.5 | 8 | 1 | 12 | | | 336.9814 | 97.05064 | 0.08296 | 606.5665 | 174.6911 | 0.87091 | 808.7553 | 232.9215 | 2.75251 | 1010.944 | 291.1519 | 6.72 | 1010.944 | 291.1519 | 8.4 |
| | | 9.5 | 9 | 1 | 12 | | | 362.9014 | 104.5156 | 0.08296 | 653.2225 | 188.1281 | 0.87091 | 870.9633 | 250.8374 | 2.75251 | 1088.704 | 313.5468 | 6.72 | 1088.704 | 313.5468 | 8.4 |
| | | 10.5 | 10 | 1.5 | 18 | | | 388.8214 | 167.9708 | 0.08296 | 699.8785 | 302.3475 | 0.87091 | 933.1713 | 403.13 | 2.75251 | 1166.464 | 503.9125 | 6.72 | 1166.464 | 503.9125 | 8.4 |
| | Qal 1 (Clay | 12.5 | 11.5 | 2 | 24 | 0 | 0 | 440.6614 | 253.821 | 0.08296 | 793.1905 | 456.8777 | 0.87091 | 1057.587 | 609.1703 | 2.75251 | 1321.984 | 761.4629 | 6.72 | 1321.984 | 761.4629 | 8.4 |
| No | Qal 1 (Sanc | 13.5 | 13 | | 0 | 0 | 0 | 337.8276 | | 0.07737 | 700.2812 | | 0.25661 | 1614.356 | | 0.9 | 1614.356 | | 1.08 | 1614.356 | | 1.26 |
| | | 14.5 | 13.5 | 2 | 24 | | | 414.8996 | 238.9822 | 0.079013 | 847.5309 | 488.1778 | 0.25734 | 1949.292 | 1122.792 | 0.9 | 1949.292 | 1122.792 | 1.08 | 1949.292 | 1122.792 | 1.26 |
| | Qal 1 (Sanc | 16.5 | 15.5 | 2 | 24 | 0 | 0 | 569.0436 | 327.7691 | 0.0823 | 1142.03 | 657.8094 | 0.2588 | 2619.163 | 1508.638 | 0.9 | 2619.163 | 1508.638 | 1.08 | 2619.163 | 1508.638 | 1.26 |
| No | Qal 1 (Clay | 17.5 | 17 | | 0 | 0 | 0 | 607.9342 | | 0.08296 | 1094.282 | | 0.87091 | 1459.042 | | 2.75251 | 1823.803 | | 6.72 | 1823.803 | | 8.4 |
| | | 18.5 | 17.5 | 2 | 24 | | | 634.82 | 365.6563 | 0.08296 | 1142.676 | 658.1814 | 0.87091 | 1523.568 | 877.5752 | 2.75251 | 1904.46 | 1096.969 | 6.72 | 1904.46 | 1096.969 | 8.4 |
| | | 20.5 | 19.5 | 2 | 24 | | | 688.5917 | 396.6288 | 0.08296 | 1239.465 | 713.9319 | 0.87091 | 1652.62 | 951.9092 | 2.75251 | 2065.775 | 1189.886 | 6.72 | 2065.775 | 1189.886 | 8.4 |
| No | Qal 1 (Clay | 22.5 | 21.5 | | 0 | 0 | 0 | 742.3634 | | 0.08296 | 1336.254 | | 0.87091 | 1781.672 | | 2.75251 | 2227.09 | | 6.72 | 2227.09 | | 8.4 |
| No | Qobc 1 | 23.5 | 23 | | 0 | 0 | 0 | 815.6118 | | 0.08296 | 1468.101 | | 0.87091 | 1957.468 | | 2.75251 | 2446.835 | | 6.72 | 2446.835 | | 8.4 |
| | | 24.5 | 23.5 | 3 | 36 | | | 845.1152 | 730.1795 | 0.08296 | 1521.207 | 1314.323 | 0.87091 | 2028.276 | 1752.431 | 2.75251 | 2535.346 | 2190.539 | 6.72 | 2535.346 | 2190.539 | 8.4 |
| No | Qobc 1 | 28 | 26.25 | | 0 | 0 | 0 | 948.3772 | | 0.08296 | 1707.079 | | 0.87091 | 2276.105 | | 2.75251 | 2845.132 | | 6.72 | 2845.132 | | 8.4 |
| | | 28.5 | 26.5 | 4 | 48 | | | 948.5395 | 1092.717 | 0.08296 | 1707.371 | 1966.891 | 0.87091 | 2276.495 | 2622.522 | 2.75251 | 2845.618 | 3278.152 | 6.72 | 2845.618 | 3278.152 | 8.4 |
| | | 32.5 | 30.5 | 4 | 48 | | | 949.8377 | 1094.213 | 0.08296 | 1709.708 | 1969.583 | 0.87091 | 2279.611 | 2626.111 | 2.75251 | 2849.513 | 3282.639 | 6.72 | 2849.513 | 3282.639 | 8.4 |
| No | Qobc 1 | 33 | 32.75 | | 0 | 0 | 0 | 950 | | 0.08296 | 1710 | | 0.87091 | 2280 | | 2.75251 | 2850 | | 6.72 | 2850 | | 8.4 |
| | | 36.5 | 34.5 | 4 | 48 | | | 1007.204 | 1160.299 | 0.142268 | 1752.903 | 2019.345 | 1.012536 | 2308.602 | 2659.51 | 2.929155 | 2850 | 3283.2 | 6.72 | 2850 | 3283.2 | 8.4 |
| | | 40.5 | 38.5 | 6.75 | 81 | | | 1072.581 | 2085.097 | 0.210049 | 1801.935 | 3502.963 | 1.174394 | 2341.29 | 4551.468 | 3.131036 | 2850 | 5540.4 | 6.72 | 2850 | 5540.4 | 8.4 |
| | Qobc 1 | 79.5 | 45.25 | 34.75 | 417 | 0 | 0 | 1710 | 17113.68 | 0.87091 | 2280 | 22818.24 | 2.75251 | 2660 | 26621.28 | 5.09937 | 2850 | 28522.8 | 6.72 | 2850 | 28522.8 | 8.4 |
| | Qal 2 (Clay | 80.5 | 80 | 6.5 | 78 | 0 | 0 | 2475 | 4633.2 | 0.62208 | 3300 | 6177.6 | 1.96608 | 3850 | 7207.2 | 3.64241 | 4125 | 7722 | 4.8 | 4125 | 7722 | 6 |
| | Qal 2 (Clay | 92.5 | 86.5 | 6.5 | 78 | 0 | 0 | 2475 | 4633.2 | 0.62208 | 3300 | 6177.6 | 1.96608 | 3850 | 7207.2 | 3.64241 | 4125 | 7722 | 4.8 | 4125 | 7722 | 6 |
| | Qobc 2 | 93.5 | 93 | 2.5 | 30 | 0 | 0 | 2700 | 1944 | 0.62208 | 3600 | 2592 | 1.96608 | 4200 | 3024 | 3.64241 | 4500 | 3240 | 4.8 | 4500 | 3240 | 6 |
| | Qobc 2 | 97.5 | 95.5 | 2.5 | 30 | 0 | 0 | 2700 | 1944 | 0.62208 | 3600 | 2592 | 1.96608 | 4200 | 3024 | 3.64241 | 4500 | 3240 | 4.8 | 4500 | 3240 | 6 |
| | Qal 3 (Clay | 98.5 | 98 | 4 | 48 | 0 | 0 | 2700 | 3110.4 | 0.62208 | 3600 | 4147.2 | 1.96608 | 4200 | 4838.4 | 3.64241 | 4500 | 5184 | 4.8 | 4500 | 5184 | 6 |
| | Qal 3 (Clay | 105.5 | 102 | 4 | 48 | 0 | 0 | 2700 | 3110.4 | 0.62208 | 3600 | 4147.2 | 1.96608 | 4200 | 4838.4 | 3.64241 | 4500 | 5184 | 4.8 | 4500 | 5184 | 6 |
| | Qobc 3 | 106.5 | 106 | 10.5 | 126 | 0 | 0 | 1800 | 5443.2 | 0.62208 | 2400 | 7257.6 | 1.96608 | 2800 | 8467.2 | 3.64241 | 3000 | 9072 | 4.8 | 3000 | 9072 | 6 |
| | Qobc 3 | 126.5 | 116.5 | 10.5 | 126 | 0 | 0 | 1800 | 5443.2 | 0.62208 | 2400 | 7257.6 | 1.96608 | 2800 | 8467.2 | 3.64241 | 3000 | 9072 | 4.8 | 3000 | 9072 | 6 |
| | Qal 4 (Clay | 127.5 | 127 | 6.5 | 78 | 0 | 0 | 4000 | 7488 | 0.75852 | 5200 | 9734.4 | 2.1664 | 5600 | 10483.2 | 2.91392 | 6000 | 11232 | 3.84 | 6000 | 11232 | 4.8 |
| | Qal 4 (Clay | 139.5 | 133.5 | | | 0 | 0 | 4000 | | 0.75852 | 5200 | | 2.1664 | 5600 | | 2.91392 | 6000 | | 3.84 | 6000 | | 4.8 |

Section 0 TO 1080 — Upper Bound

| | Material | Depth Below Mudline(feet) | midpoints (ft) | spring length (ft) | spring length (in) | p0 (psi) | y0 (in) | p1 (psi) | p1 (kip) | y1 (in) | p2 (psi) | p2 (kip) | y2 (in) | p3 (psi) | p3 (kip) | y3 (in) | p4 (psi) | p4 (kip) | y4 (in) | p5 (psi) | p5 (kip) | y5 (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Qybm | 0.5 | 0 | 1 | 12 | 0 | 0 | 35.72222 | 10.288 | 0.35556 | 64.3 | 18.5184 | 2.0736 | 85.73334 | 24.6912 | 4.9152 | 107.1667 | 30.864 | 9.6 | 107.1667 | 30.864 | 10.2 |
| | | 1.5 | 1 | 1 | 12 | | | 40.5 | 11.664 | 0.35556 | 72.9 | 20.9952 | 2.0736 | 97.20001 | 27.9936 | 4.9152 | 121.5 | 34.992 | 9.6 | 121.5 | 34.992 | 10.2 |
| | | 2.5 | 2 | 1 | 12 | | | 45.27777 | 13.04 | 0.35556 | 81.5 | 23.472 | 2.0736 | 108.6667 | 31.296 | 4.9152 | 135.8333 | 39.12 | 9.6 | 135.8333 | 39.12 | 10.2 |
| | | 3.5 | 3 | 1 | 12 | | | 50.05555 | 14.416 | 0.35556 | 90.1 | 25.9488 | 2.0736 | 120.1333 | 34.5984 | 4.9152 | 150.1667 | 43.248 | 9.6 | 150.1667 | 43.248 | 10.2 |
| | | 4.5 | 4 | 1 | 12 | | | 54.83333 | 15.792 | 0.35556 | 98.7 | 28.4256 | 2.0736 | 131.6 | 37.9008 | 4.9152 | 164.5 | 47.376 | 9.6 | 164.5 | 47.376 | 10.2 |
| | | 5.5 | 5 | 1 | 12 | | | 59.6111 | 17.168 | 0.35556 | 107.3 | 30.9024 | 2.0736 | 143.0667 | 41.2032 | 4.9152 | 178.8333 | 51.504 | 9.6 | 178.8333 | 51.504 | 10.2 |
| | Qybm | 6.5 | 6 | 1 | 12 | 0 | 0 | 64.38888 | 18.544 | 0.35556 | 115.9 | 33.3792 | 2.0736 | 154.5333 | 44.5056 | 4.9152 | 193.1667 | 55.632 | 9.6 | 193.1667 | 55.632 | 10.2 |
| | Qal 1 (Clay | 7.5 | 7 | 1 | 12 | 0 | 0 | 622.1227 | 179.1713 | 0.08296 | 1119.821 | 322.5084 | 0.87091 | 1493.095 | 430.0112 | 2.75251 | 1866.368 | 537.514 | 6.72 | 1866.368 | 537.514 | 8.4 |
| | | 8.5 | 8 | 1 | 12 | | | 673.9627 | 194.1013 | 0.08296 | 1213.133 | 349.3823 | 0.87091 | 1617.511 | 465.8431 | 2.75251 | 2021.888 | 582.3038 | 6.72 | 2021.888 | 582.3038 | 8.4 |
| | | 9.5 | 9 | 1 | 12 | | | 725.8028 | 209.0312 | 0.08296 | 1306.445 | 376.2561 | 0.87091 | 1741.927 | 501.6749 | 2.75251 | 2177.408 | 627.0936 | 6.72 | 2177.408 | 627.0936 | 8.4 |
| | | 10.5 | 10 | 1.5 | 18 | | | 777.6428 | 335.9417 | 0.08296 | 1399.757 | 604.695 | 0.87091 | 1866.343 | 806.26 | 2.75251 | 2332.928 | 1007.825 | 6.72 | 2332.928 | 1007.825 | 8.4 |
| | Qal 1 (Clay | 12.5 | 11.5 | 2 | 24 | 0 | 0 | 881.3228 | 507.6419 | 0.08296 | 1586.381 | 913.7555 | 0.87091 | 2115.175 | 1218.341 | 2.75251 | 2643.968 | 1522.926 | 6.72 | 2643.968 | 1522.926 | 8.4 |
| No | Qal 1 (Sanc | 13.5 | 13 | | 0 | 0 | 0 | 675.6551 | | 0.07737 | 1400.562 | | 0.25661 | 3228.712 | | 0.9 | 3228.712 | | 1.08 | 3228.712 | | 1.26 |
| | | 14.5 | 13.5 | 2 | 24 | | | 829.7992 | 477.9643 | 0.079013 | 1695.062 | 976.3556 | 0.25734 | 3898.583 | 2245.584 | 0.9 | 3898.583 | 2245.584 | 1.08 | 3898.583 | 2245.584 | 1.26 |
| | Qal 1 (Sanc | 16.5 | 15.5 | 2 | 24 | 0 | 0 | 1138.087 | 655.5383 | 0.0823 | 2284.06 | 1315.619 | 0.2588 | 5238.326 | 3017.276 | 0.9 | 5238.326 | 3017.276 | 1.08 | 5238.326 | 3017.276 | 1.26 |
| No | Qal 1 (Clay | 17.5 | 17 | | 0 | 0 | 0 | 1215.868 | | 0.08296 | 2188.563 | | 0.87091 | 2918.084 | | 2.75251 | 3647.605 | | 6.72 | 3647.605 | | 8.4 |
| | | 18.5 | 17.5 | 2 | 24 | | | 1269.64 | 731.3127 | 0.08296 | 2285.352 | 1316.363 | 0.87091 | 3047.136 | 1755.15 | 2.75251 | 3808.92 | 2193.938 | 6.72 | 3808.92 | 2193.938 | 8.4 |
| | | 20.5 | 19.5 | 2 | 24 | | | 1377.183 | 793.2576 | 0.08296 | 2478.93 | 1427.864 | 0.87091 | 3305.24 | 1903.818 | 2.75251 | 4131.55 | 2379.773 | 6.72 | 4131.55 | 2379.773 | 8.4 |
| No | Qal 1 (Clay | 22.5 | 21.5 | | 0 | 0 | 0 | 1484.727 | | 0.08296 | 2672.508 | | 0.87091 | 3563.344 | | 2.75251 | 4454.18 | | 6.72 | 4454.18 | | 8.4 |
| No | Qobc 1 | 23.5 | 23 | | 0 | 0 | 0 | 1631.224 | | 0.08296 | 2936.202 | | 0.87091 | 3914.936 | | 2.75251 | 4893.671 | | 6.72 | 4893.671 | | 8.4 |
| | | 24.5 | 23.5 | 3 | 36 | | | 1690.23 | 1460.359 | 0.08296 | 3042.415 | 2628.646 | 0.87091 | 4056.553 | 3504.862 | 2.75251 | 5070.691 | 4381.077 | 6.72 | 5070.691 | 4381.077 | 8.4 |
| No | Qobc 1 | 28 | 26.25 | | 0 | 0 | 0 | 1896.754 | | 0.08296 | 3414.158 | | 0.87091 | 4552.211 | | 2.75251 | 5690.263 | | 6.72 | 5690.263 | | 8.4 |
| | | 28.5 | 26.5 | 4 | 48 | | | 1897.079 | 2185.435 | 0.08296 | 3414.742 | 3933.783 | 0.87091 | 4552.99 | 5245.044 | 2.75251 | 5691.237 | 6556.305 | 6.72 | 5691.237 | 6556.305 | 8.4 |
| | | 32.5 | 30.5 | 4 | 48 | | | 1899.675 | 2188.426 | 0.08296 | 3419.416 | 3939.167 | 0.87091 | 4559.221 | 5252.223 | 2.75251 | 5699.026 | 6565.278 | 6.72 | 5699.026 | 6565.278 | 8.4 |
| No | Qobc 1 | 33 | 32.75 | | 0 | 0 | 0 | 1900 | | 0.08296 | 3420 | | 0.87091 | 4560 | | 2.75251 | 5700 | | 6.72 | 5700 | | 8.4 |
| | | 36.5 | 34.5 | 4 | 48 | | | 2014.409 | 2320.599 | 0.142268 | 3505.806 | 4038.689 | 1.012536 | 4617.204 | 5319.019 | 2.929155 | 5700 | 6566.4 | 6.72 | 5700 | 6566.4 | 8.4 |
| | | 40.5 | 38.5 | 6.75 | 81 | | | 2145.161 | 4170.194 | 0.210049 | 3603.871 | 7005.925 | 1.174394 | 4682.581 | 9102.937 | 3.131036 | 5700 | 11080.8 | 6.72 | 5700 | 11080.8 | 8.4 |
| | Qobc 1 | 79.5 | 45.25 | 34.75 | 417 | 0 | 0 | 3420 | 82.08 | 0.87091 | 4560 | 109.44 | 2.75251 | 5320 | 127.68 | 5.09937 | 5700 | 136.8 | 6.72 | 5700 | 136.8 | 8.4 |
| | Qal 2 (Clay | 80.5 | 80 | 6.5 | 78 | 0 | 0 | 4950 | 118.8 | 0.62208 | 6600 | 158.4 | 1.96608 | 7700 | 184.8 | 3.64241 | 8250 | 198 | 4.8 | 8250 | 198 | 6 |
| | Qal 2 (Clay | 92.5 | 86.5 | 6.5 | 78 | 0 | 0 | 4950 | 118.8 | 0.62208 | 6600 | 158.4 | 1.96608 | 7700 | 184.8 | 3.64241 | 8250 | 198 | 4.8 | 8250 | 198 | 6 |
| | Qobc 2 | 93.5 | 93 | 2.5 | 30 | 0 | 0 | 5400 | 129.6 | 0.62208 | 7200 | 172.8 | 1.96608 | 8400 | 201.6 | 3.64241 | 9000 | 216 | 4.8 | 9000 | 216 | 6 |
| | Qobc 2 | 97.5 | 95.5 | 2.5 | 30 | 0 | 0 | 5400 | 129.6 | 0.62208 | 7200 | 172.8 | 1.96608 | 8400 | 201.6 | 3.64241 | 9000 | 216 | 4.8 | 9000 | 216 | 6 |
| | Qal 3 (Clay | 98.5 | 98 | 4 | 48 | 0 | 0 | 5400 | 129.6 | 0.62208 | 7200 | 172.8 | 1.96608 | 8400 | 201.6 | 3.64241 | 9000 | 216 | 4.8 | 9000 | 216 | 6 |
| | Qal 3 (Clay | 105.5 | 102 | 4 | 48 | 0 | 0 | 5400 | 129.6 | 0.62208 | 7200 | 172.8 | 1.96608 | 8400 | 201.6 | 3.64241 | 9000 | 216 | 4.8 | 9000 | 216 | 6 |
| | Qobc 3 | 106.5 | 106 | 10.5 | 126 | 0 | 0 | 3600 | 86.4 | 0.62208 | 4800 | 115.2 | 1.96608 | 5600 | 134.4 | 3.64241 | 6000 | 144 | 4.8 | 6000 | 144 | 6 |
| | Qobc 3 | 126.5 | 116.5 | 10.5 | 126 | 0 | 0 | 3600 | 86.4 | 0.62208 | 4800 | 115.2 | 1.96608 | 5600 | 134.4 | 3.64241 | 6000 | 144 | 4.8 | 6000 | 144 | 6 |
| | Qal 4 (Clay | 127.5 | 127 | 6.5 | 78 | 0 | 0 | 8000 | 192 | 0.75852 | 10400 | 249.6 | 2.1664 | 11200 | 268.8 | 2.91392 | 12000 | 288 | 3.84 | 12000 | 288 | 4.8 |
| | Qal 4 (Clay | 139.5 | 133.5 | | | 0 | 0 | 8000 | | 0.75852 | 10400 | | 2.1664 | 11200 | | 2.91392 | 12000 | | 3.84 | 12000 | | 4.8 |

Section 0 TO 1080 — Lower Bound

| | Material | Depth Below Mudline(feet) | midpoints (ft) | spring length (ft) | spring length (in) | p0 (psi) | y0 (in) | p1 (psi) | p1 (kip) | y1 (in) | p2 (psi) | p2 (kip) | y2 (in) | p3 (psi) | p3 (kip) | y3 (in) | p4 (psi) | p4 (kip) | y4 (in) | p5 (psi) | p5 (kip) | y5 (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Qybm | 0.5 | 0 | 1 | 12 | 0 | 0 | 8.930555 | 2.572 | 0.35556 | 16.075 | 4.6296 | 2.0736 | 21.43334 | 6.1728 | 4.9152 | 26.79167 | 7.716 | 9.6 | 26.79167 | 7.716 | 10.2 |
| | | 1.5 | 1 | 1 | 12 | | | 10.125 | 2.916 | 0.35556 | 18.225 | 5.2488 | 2.0736 | 24.3 | 6.9984 | 4.9152 | 30.375 | 8.748 | 9.6 | 30.375 | 8.748 | 10.2 |
| | | 2.5 | 2 | 1 | 12 | | | 11.31944 | 3.26 | 0.35556 | 20.375 | 5.868 | 2.0736 | 27.16667 | 7.824 | 4.9152 | 33.95833 | 9.78 | 9.6 | 33.95833 | 9.78 | 10.2 |
| | | 3.5 | 3 | 1 | 12 | | | 12.51389 | 3.604 | 0.35556 | 22.525 | 6.4872 | 2.0736 | 30.03334 | 8.6496 | 4.9152 | 37.54167 | 10.812 | 9.6 | 37.54167 | 10.812 | 10.2 |
| | | 4.5 | 4 | 1 | 12 | | | 13.70833 | 3.948 | 0.35556 | 24.675 | 7.1064 | 2.0736 | 32.9 | 9.4752 | 4.9152 | 41.125 | 11.844 | 9.6 | 41.125 | 11.844 | 10.2 |
| | | 5.5 | 5 | 1 | 12 | | | 14.90278 | 4.291999 | 0.35556 | 26.825 | 7.7256 | 2.0736 | 35.76667 | 10.3008 | 4.9152 | 44.70833 | 12.876 | 9.6 | 44.70833 | 12.876 | 10.2 |
| | Qybm | 6.5 | 6 | 1 | 12 | 0 | 0 | 16.09722 | 4.635999 | 0.35556 | 28.975 | 8.3448 | 2.0736 | 38.63334 | 11.1264 | 4.9152 | 48.29167 | 13.908 | 9.6 | 48.29167 | 13.908 | 10.2 |
| | Qal 1 (Clay | 7.5 | 7 | 1 | 12 | 0 | 0 | 155.5307 | 44.79284 | 0.08296 | 279.9552 | 80.62711 | 0.87091 | 373.2736 | 107.5028 | 2.75251 | 466.5921 | 134.3785 | 6.72 | 466.5921 | 134.3785 | 8.4 |
| | | 8.5 | 8 | 1 | 12 | | | 168.4907 | 48.52532 | 0.08296 | 303.2832 | 87.34557 | 0.87091 | 404.3776 | 116.4608 | 2.75251 | 505.4721 | 145.576 | 6.72 | 505.4721 | 145.576 | 8.4 |
| | | 9.5 | 9 | 1 | 12 | | | 181.4507 | 52.2578 | 0.08296 | 326.6112 | 94.06404 | 0.87091 | 435.4817 | 125.4187 | 2.75251 | 544.3521 | 156.7734 | 6.72 | 544.3521 | 156.7734 | 8.4 |
| | | 10.5 | 10 | 1.5 | 18 | | | 194.4107 | 83.98542 | 0.08296 | 349.9392 | 151.1738 | 0.87091 | 466.5857 | 201.565 | 2.75251 | 583.2321 | 251.9563 | 6.72 | 583.2321 | 251.9563 | 8.4 |
| | Qal 1 (Clay | 12.5 | 11.5 | 2 | 24 | 0 | 0 | 220.3307 | 126.9105 | 0.08296 | 396.5953 | 228.4389 | 0.87091 | 528.7937 | 304.5852 | 2.75251 | 660.9921 | 380.7314 | 6.72 | 660.9921 | 380.7314 | 8.4 |
| No | Qal 1 (Sanc | 13.5 | 13 | | 0 | 0 | 0 | 168.9138 | | 0.07737 | 350.1406 | | 0.25661 | 807.1779 | | 0.9 | 807.1779 | | 1.08 | 807.1779 | | 1.26 |
| | | 14.5 | 13.5 | 2 | 24 | | | 207.4498 | 119.4911 | 0.079013 | 423.7654 | 244.0889 | 0.25734 | 974.6458 | 561.396 | 0.9 | 974.6458 | 561.396 | 1.08 | 974.6458 | 561.396 | 1.26 |
| | Qal 1 (Sanc | 16.5 | 15.5 | 2 | 24 | 0 | 0 | 284.5218 | 163.8846 | 0.0823 | 571.0151 | 328.9047 | 0.2588 | 1309.582 | 754.319 | 0.9 | 1309.582 | 754.319 | 1.08 | 1309.582 | 754.319 | 1.26 |
| No | Qal 1 (Clay | 17.5 | 17 | | 0 | 0 | 0 | 303.9671 | | 0.08296 | 547.1408 | | 0.87091 | 729.521 | | 2.75251 | 911.9013 | | 6.72 | 911.9013 | | 8.4 |
| | | 18.5 | 17.5 | 2 | 24 | | | 317.41 | 182.8282 | 0.08296 | 571.338 | 329.0907 | 0.87091 | 761.784 | 438.7876 | 2.75251 | 952.23 | 548.4845 | 6.72 | 952.23 | 548.4845 | 8.4 |
| | | 20.5 | 19.5 | 2 | 24 | | | 344.2959 | 198.3144 | 0.08296 | 619.7325 | 356.9659 | 0.87091 | 826.31 | 475.9546 | 2.75251 | 1032.888 | 594.9432 | 6.72 | 1032.888 | 594.9432 | 8.4 |
| No | Qal 1 (Clay | 22.5 | 21.5 | | 0 | 0 | 0 | 371.1817 | | 0.08296 | 668.1271 | | 0.87091 | 890.8361 | | 2.75251 | 1113.545 | | 6.72 | 1113.545 | | 8.4 |
| No | Qobc 1 | 23.5 | 23 | | 0 | 0 | 0 | 407.8059 | | 0.08296 | 734.0506 | | 0.87091 | 978.7341 | | 2.75251 | 1223.418 | | 6.72 | 1223.418 | | 8.4 |
| | | 24.5 | 23.5 | 3 | 36 | | | 422.5576 | 365.0898 | 0.08296 | 760.6037 | 657.1616 | 0.87091 | 1014.138 | 876.2154 | 2.75251 | 1267.673 | 1095.269 | 6.72 | 1267.673 | 1095.269 | 8.4 |
| No | Qobc 1 | 28 | 26.25 | | 0 | 0 | 0 | 474.1886 | | 0.08296 | 853.5395 | | 0.87091 | 1138.053 | | 2.75251 | 1422.566 | | 6.72 | 1422.566 | | 8.4 |
| | | 28.5 | 26.5 | 4 | 48 | | | 474.2697 | 546.3587 | 0.08296 | 853.6855 | 983.4457 | 0.87091 | 1138.247 | 1311.261 | 2.75251 | 1422.809 | 1639.076 | 6.72 | 1422.809 | 1639.076 | 8.4 |
| | | 32.5 | 30.5 | 4 | 48 | | | 474.9189 | 547.1065 | 0.08296 | 854.8539 | 984.7917 | 0.87091 | 1139.805 | 1313.056 | 2.75251 | 1424.757 | 1641.32 | 6.72 | 1424.757 | 1641.32 | 8.4 |
| No | Qobc 1 | 33 | 32.75 | | 0 | 0 | 0 | 475 | | 0.08296 | 855 | | 0.87091 | 1140 | | 2.75251 | 1425 | | 6.72 | 1425 | | 8.4 |
| | | 36.5 | 34.5 | 4 | 48 | | | 503.6022 | 580.1497 | 0.142268 | 876.4516 | 1009.672 | 1.012536 | 1154.301 | 1329.755 | 2.929155 | 1425 | 1641.6 | 6.72 | 1425 | 1641.6 | 8.4 |
| | | 40.5 | 38.5 | 6.75 | 81 | | | 536.2903 | 1042.548 | 0.210049 | 900.9677 | 1751.481 | 1.174394 | 1170.645 | 2275.734 | 3.131036 | 1425 | 2770.2 | 6.72 | 1425 | 2770.2 | 8.4 |
| | Qobc 1 | 79.5 | 45.25 | 34.75 | 417 | 0 | 0 | 855 | 8556.84 | 0.87091 | 1140 | 11409.12 | 2.75251 | 1330 | 13310.64 | 5.09937 | 1425 | 14261.4 | 6.72 | 1425 | 14261.4 | 8.4 |
| | Qal 2 (Clay | 80.5 | 80 | 6.5 | 78 | 0 | 0 | 1237.5 | 2316.6 | 0.62208 | 1650 | 3088.8 | 1.96608 | 1925 | 3603.6 | 3.64241 | 2062.5 | 3861 | 4.8 | 2062.5 | 3861 | 6 |
| | Qal 2 (Clay | 92.5 | 86.5 | 6.5 | 78 | 0 | 0 | 1237.5 | 2316.6 | 0.62208 | 1650 | 3088.8 | 1.96608 | 1925 | 3603.6 | 3.64241 | 2062.5 | 3861 | 4.8 | 2062.5 | 3861 | 6 |
| | Qobc 2 | 93.5 | 93 | 2.5 | 30 | 0 | 0 | 1350 | 972 | 0.62208 | 1800 | 1296 | 1.96608 | 2100 | 1512 | 3.64241 | 2250 | 1620 | 4.8 | 2250 | 1620 | 6 |
| | Qobc 2 | 97.5 | 95.5 | 2.5 | 30 | 0 | 0 | 1350 | 972 | 0.62208 | 1800 | 1296 | 1.96608 | 2100 | 1512 | 3.64241 | 2250 | 1620 | 4.8 | 2250 | 1620 | 6 |
| | Qal 3 (Clay | 98.5 | 98 | 4 | 48 | 0 | 0 | 1350 | 1555.2 | 0.62208 | 1800 | 2073.6 | 1.96608 | 2100 | 2419.2 | 3.64241 | 2250 | 2592 | 4.8 | 2250 | 2592 | 6 |
| | Qal 3 (Clay | 105.5 | 102 | 4 | 48 | 0 | 0 | 1350 | 1555.2 | 0.62208 | 1800 | 2073.6 | 1.96608 | 2100 | 2419.2 | 3.64241 | 2250 | 2592 | 4.8 | 2250 | 2592 | 6 |
| | Qobc 3 | 106.5 | 106 | 10.5 | 126 | 0 | 0 | 900 | 2721.6 | 0.62208 | 1200 | 3628.8 | 1.96608 | 1400 | 4233.6 | 3.64241 | 1500 | 4536 | 4.8 | 1500 | 4536 | 6 |
| | Qobc 3 | 126.5 | 116.5 | 10.5 | 126 | 0 | 0 | 900 | 2721.6 | 0.62208 | 1200 | 3628.8 | 1.96608 | 1400 | 4233.6 | 3.64241 | 1500 | 4536 | 4.8 | 1500 | 4536 | 6 |
| | Qal 4 (Clay | 127.5 | 127 | 6.5 | 78 | 0 | 0 | 2000 | 3744 | 0.75852 | 2600 | 4867.2 | 2.1664 | 2800 | 5241.6 | 2.91392 | 3000 | 5616 | 3.84 | 3000 | 5616 | 4.8 |
| | Qal 4 (Clay | 139.5 | 133.5 | | | 0 | 0 | 2000 | | 0.75852 | 2600 | | 2.1664 | 2800 | | 2.91392 | 3000 | | 3.84 | 3000 | | 4.8 |

# Berkeley Water Transportation Pier Ferry

Interpolated | Added Columns

| | Section | 0 TO 1080 | | | | | | | | | | | Nominal | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Material | Depth Below Mudline(feet) | midpoints (ft) | spring length (ft) | spring length (in) | p0 (psi) | y0 (in) | p1 (psi) | p1 (kip) | y1 (in) | p2 (psi) | p2 (kip) | y2 (in) | p3 (psi) | p3 (kip) | y3 (in) | p4 (psi) | p4 (kip) | y4 (in) | p5 (psi) | p5 (kip) | y5 (in) |
| | Qybm | 0.5 | 0 | 1 | 12 | 0 | 0 | 26.44444 | 7.61599872 | 0.53333 | 47.6 | 13.7088 | 3.1104 | 63.46667 | 18.27840096 | 7.3728 | 79.33333 | 22.84799904 | 14.4 | 79.33333 | 22.84799904 | 15.3 |
| | | 1.5 | 1 | 1 | 12 | | | 29.33333 | 8.44799904 | 0.53333 | 52.8 | 15.2064 | 3.1104 | 70.4 | 20.27520096 | 7.3728 | 88 | 25.34399904 | 14.4 | 88 | 25.34399904 | 15.3 |
| | | 2.5 | 2 | 1 | 12 | | | 32.22222 | 9.27999936 | 0.53333 | 58 | 16.704 | 3.1104 | 77.33334 | 22.27200096 | 7.3728 | 96.66666 | 27.83999904 | 14.4 | 96.66666 | 27.83999904 | 15.3 |
| | | 3.5 | 3 | 1 | 12 | | | 35.11111 | 10.11199968 | 0.53333 | 63.2 | 18.2016 | 3.1104 | 84.26667 | 24.26880096 | 7.3728 | 105.3333 | 30.33599904 | 14.4 | 105.3333 | 30.33599904 | 15.3 |
| | | 4.5 | 4 | 1 | 12 | | | 38 | 10.944 | 0.53333 | 68.4 | 19.6992 | 3.1104 | 91.2 | 26.26560096 | 7.3728 | 114 | 32.83199904 | 14.4 | 114 | 32.83199904 | 15.3 |
| | | 5.5 | 5 | 1 | 12 | | | 40.88889 | 11.77600032 | 0.53333 | 73.6 | 21.1968 | 3.1104 | 98.13334 | 28.26240096 | 7.3728 | 122.6667 | 35.32799904 | 14.4 | 122.6667 | 35.32799904 | 15.3 |
| | Qybm | 6.5 | 6 | 1 | 12 | 0 | 0 | 43.77778 | 12.60800064 | 0.53333 | 78.8 | 22.6944 | 3.1104 | 105.0667 | 30.25920096 | 7.3728 | 131.3333 | 37.82399904 | 14.4 | 131.3333 | 37.82399904 | 15.3 |
| | Qal 1 (Clay | 7.5 | 7 | 1 | 12 | 0 | 0 | 452.4785 | 130.3137965 | 0.12444 | 814.4612 | 234.5648 | 1.30637 | 1085.948 | 312.7531075 | 4.12877 | 1357.435 | 390.9413866 | 10.08 | 1357.435 | 390.9413866 | 12.6 |
| | | 8.5 | 8 | 1 | 12 | | | 479.5429 | 138.1083684 | 0.12444 | 863.1773 | 248.5951 | 1.30637 | 1150.903 | 331.4600819 | 4.12877 | 1438.629 | 414.3251036 | 10.08 | 1438.629 | 414.3251036 | 12.6 |
| | | 9.5 | 9 | 1 | 12 | | | 506.6074 | 145.9029404 | 0.12444 | 911.8934 | 262.6253 | 1.30637 | 1215.858 | 350.1670562 | 4.12877 | 1519.822 | 437.7088207 | 10.08 | 1519.822 | 437.7088207 | 12.6 |
| | | 10.5 | 10 | 1.5 | 18 | | | 533.6719 | 230.5462686 | 0.12444 | 960.6095 | 414.9833 | 1.30637 | 1280.813 | 553.3110458 | 4.12877 | 1601.016 | 691.6388066 | 10.08 | 1601.016 | 691.6388066 | 12.6 |
| | Qal 1 (Clay | 12.5 | 11.5 | 2 | 24 | 0 | 0 | 587.8009 | 338.5733126 | 0.12444 | 1058.042 | 609.432 | 1.30637 | 1410.722 | 812.5759584 | 4.12877 | 1763.403 | 1015.719944 | 10.08 | 1763.403 | 1015.719944 | 12.6 |
| No | Qal 1 (Sanc | 13.5 | 13 | | 0 | 0 | 0 | 406.6205 | 0 | 0.11403 | 825.0971 | 0 | 0.38401 | 1849.728 | 0 | 1.35 | 1849.728 | 0 | 1.62 | 1849.728 | 0 | 1.89 |
| | | 14.5 | 13.5 | 2 | 24 | | | 473.6191 | 272.8046093 | 0.114603 | 970.4881 | 559.0011 | 0.384267 | 2202.56 | 1268.674524 | 1.35 | 2202.56 | 1268.674524 | 1.62 | 2202.56 | 1268.674524 | 1.89 |
| | Qal 1 (Sanc | 16.5 | 15.5 | 2 | 24 | 0 | 0 | 607.6163 | 349.9869773 | 0.11575 | 1261.27 | 726.4916 | 0.38478 | 2908.223 | 1675.13673 | 1.35 | 2908.223 | 1675.13673 | 1.62 | 2908.223 | 1675.13673 | 1.89 |
| No | Qal 1 (Clay | 17.5 | 17 | | 0 | 0 | 0 | 746.4099 | 0 | 0.12444 | 1343.538 | 0 | 1.30637 | 1791.384 | 0 | 4.12877 | 2239.23 | 0 | 10.08 | 2239.23 | 0 | 12.6 |
| | | 18.5 | 17.5 | 2 | 24 | | | 774.8874 | 446.3351562 | 0.12444 | 1394.797 | 803.4033 | 1.30637 | 1859.73 | 1071.204376 | 4.12877 | 2324.662 | 1339.00547 | 10.08 | 2324.662 | 1339.00547 | 12.6 |
| | | 20.5 | 19.5 | 2 | 24 | | | 831.8426 | 479.1413215 | 0.12444 | 1497.317 | 862.4544 | 1.30637 | 1996.422 | 1149.939176 | 4.12877 | 2495.528 | 1437.423968 | 10.08 | 2495.528 | 1437.423968 | 12.6 |
| No | Qal 1 (Clay | 22.5 | 21.5 | | 0 | 0 | 0 | 888.7977 | 0 | 0.12444 | 1599.836 | 0 | 1.30637 | 2133.115 | 0 | 4.12877 | 2666.393 | 0 | 10.08 | 2666.393 | 0 | 12.6 |
| No | Qobc 1 | 23.5 | 23 | | 0 | 0 | 0 | 975.6153 | 0 | 0.12444 | 1756.108 | 0 | 1.30637 | 2341.477 | 0 | 4.12877 | 2926.846 | 0 | 10.08 | 2926.846 | 0 | 12.6 |
| | | 24.5 | 23.5 | 3 | 36 | | | 1006.658 | 869.7523661 | 0.12444 | 1811.984 | 1565.554 | 1.30637 | 2415.979 | 2087.40567 | 4.12877 | 3019.973 | 2609.257092 | 10.08 | 3019.973 | 2609.257092 | 12.6 |
| No | Qobc 1 | 28 | 26.25 | | 0 | 0 | 0 | 1115.307 | 0 | 0.12444 | 2007.552 | 0 | 1.30637 | 2676.736 | 0 | 4.12877 | 3345.92 | 0 | 10.08 | 3345.92 | 0 | 12.6 |
| | | 28.5 | 26.5 | 4 | 48 | | | 1130.854 | 1302.74369 | 0.12444 | 2035.537 | 2344.939 | 1.30637 | 2714.049 | 3126.584852 | 4.12877 | 3392.562 | 3908.23107 | 10.08 | 3392.562 | 3908.23107 | 12.6 |
| | | 32.5 | 30.5 | 4 | 48 | | | 1255.231 | 1446.026114 | 0.12444 | 2259.416 | 2602.847 | 1.30637 | 3012.554 | 3470.462668 | 4.12877 | 3765.693 | 4338.078333 | 10.08 | 3765.693 | 4338.078333 | 12.6 |
| No | Qobc 1 | 33 | 32.75 | | 0 | 0 | 0 | 1270.778 | 0 | 0.12444 | 2287.401 | 0 | 1.30637 | 3049.868 | 0 | 4.12877 | 3812.334 | 0 | 10.08 | 3812.334 | 0 | 12.6 |
| | | 36.5 | 34.5 | 4 | 48 | | | 1378.733 | 1588.300925 | 0.12444 | 2481.72 | 2858.942 | 1.30637 | 3308.96 | 3811.922218 | 4.12877 | 4136.2 | 4764.902772 | 10.08 | 4136.2 | 4764.902772 | 12.6 |
| No | Qobc 1 | 38 | 38.5 | | | 0 | 0 | 1425 | 0 | 0.12444 | 2565 | 0 | 1.30637 | 3420 | 0 | 4.12877 | 4275 | 0 | 10.08 | 4275 | 0 | 12.6 |
| | | 40.5 | 38.5 | 6.75 | 81 | | | 1425 | 2770.2 | 0.12444 | 2565 | 4986.36 | 1.30637 | 3420 | 6648.48 | 4.12877 | 4275 | 8310.6 | 10.08 | 4275 | 8310.6 | 12.6 |
| | Qobc 1 | 79.5 | 45.25 | 34.75 | 417 | 0 | 0 | 1425 | 21392.1 | 0.12444 | 2565 | 38505.78 | 1.30637 | 3420 | 51341.04 | 4.12877 | 4275 | 64176.3 | 10.08 | 4275 | 64176.3 | 12.6 |
| | Qal 1 (Clay | 80.5 | 80 | 6.5 | 78 | 0 | 0 | 2062.5 | 5791.5 | 0.08889 | 3712.5 | 10424.7 | 0.93312 | 4950 | 13899.6 | 2.94912 | 6187.5 | 17374.5 | 7.2 | 6187.5 | 17374.5 | 9 |
| | Qal 1 (Clay | 92.5 | 86.5 | 6.5 | 78 | 0 | 0 | 2062.5 | 5791.5 | 0.08889 | 3712.5 | 10424.7 | 0.93312 | 4950 | 13899.6 | 2.94912 | 6187.5 | 17374.5 | 7.2 | 6187.5 | 17374.5 | 9 |
| | Qobc 2 | 93.5 | 93 | 2.5 | 30 | 0 | 0 | 2250 | 2430 | 0.08889 | 4050 | 4374 | 0.93312 | 5400 | 5832 | 2.94912 | 6750 | 7290 | 7.2 | 6750 | 7290 | 9 |
| | Qobc 2 | 97.5 | 95.5 | 2.5 | 30 | 0 | 0 | 2250 | 2430 | 0.08889 | 4050 | 4374 | 0.93312 | 5400 | 5832 | 2.94912 | 6750 | 7290 | 7.2 | 6750 | 7290 | 9 |
| | Qal 3 (Clay | 98.5 | 98 | 4 | 48 | 0 | 0 | 2250 | 3888 | 0.08889 | 4050 | 6998.4 | 0.93312 | 5400 | 9331.2 | 2.94912 | 6750 | 11664 | 7.2 | 6750 | 11664 | 9 |
| | Qal 3 (Clay | 105.5 | 102 | 4 | 48 | 0 | 0 | 2250 | 3888 | 0.08889 | 4050 | 6998.4 | 0.93312 | 5400 | 9331.2 | 2.94912 | 6750 | 11664 | 7.2 | 6750 | 11664 | 9 |
| | Qobc 3 | 106.5 | 106 | 10.5 | 126 | 0 | 0 | 1500 | 6804 | 0.08889 | 2700 | 12247.2 | 0.93312 | 3600 | 16329.6 | 2.94912 | 4500 | 20412 | 7.2 | 4500 | 20412 | 9 |
| | Qobc 3 | 126.5 | 116.5 | 10.5 | 126 | 0 | 0 | 1500 | 6804 | 0.08889 | 2700 | 12247.2 | 0.93312 | 3600 | 16329.6 | 2.94912 | 4500 | 20412 | 7.2 | 4500 | 20412 | 9 |
| | Qal 4 (Clay | 127.5 | 127 | 6.5 | 78 | 0 | 0 | 2250 | 6318 | 0.08889 | 4050 | 11372.4 | 0.93312 | 5400 | 15163.2 | 2.94912 | 6750 | 18954 | 7.2 | 6750 | 18954 | 9 |
| | Qal 4 (Clay | 139.5 | 133.5 | | | 0 | 0 | 2250 | | 0.08889 | 4050 | | 0.93312 | 5400 | | 2.94912 | 6750 | | 7.2 | 6750 | | 9 |

| | Section | 0 TO 1080 | | | | | | | | | | | Upper Bound | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Material | Depth Below Mudline(feet) | midpoints (ft) | spring length (ft) | spring length (in) | p0 (psi) | y0 (in) | p1 (psi) | p1 (kip) | y1 (in) | p2 (psi) | p2 (kip) | y2 (in) | p3 (psi) | p3 (kip) | y3 (in) | p4 (psi) | p4 (kip) | y4 (in) | p5 (psi) | p5 (kip) | y5 (in) |
| | Qybm | 0.5 | 0 | 1 | 12 | 0 | 0 | 52.88888 | 15.23199744 | 0.53333 | 95.2 | 27.4176 | 3.1104 | 126.9333 | 36.55680192 | 7.3728 | 158.6667 | 45.69599808 | 14.4 | 158.6667 | 45.69599808 | 15.3 |
| | | 1.5 | 1 | 1 | 12 | | | 58.66666 | 16.89599808 | 0.53333 | 105.6 | 30.4128 | 3.1104 | 140.8 | 40.55040192 | 7.3728 | 176 | 50.68799808 | 14.4 | 176 | 50.68799808 | 15.3 |
| | | 2.5 | 2 | 1 | 12 | | | 64.44444 | 18.55999872 | 0.53333 | 116 | 33.408 | 3.1104 | 154.6667 | 44.54400192 | 7.3728 | 193.3333 | 55.67999808 | 14.4 | 193.3333 | 55.67999808 | 15.3 |
| | | 3.5 | 3 | 1 | 12 | | | 70.22222 | 20.22399936 | 0.53333 | 126.4 | 36.4032 | 3.1104 | 168.5333 | 48.53760192 | 7.3728 | 210.6667 | 60.67199808 | 14.4 | 210.6667 | 60.67199808 | 15.3 |
| | | 4.5 | 4 | 1 | 12 | | | 76 | 21.888 | 0.53333 | 136.8 | 39.3984 | 3.1104 | 182.4 | 52.53120192 | 7.3728 | 228 | 65.66399808 | 14.4 | 228 | 65.66399808 | 15.3 |
| | | 5.5 | 5 | 1 | 12 | | | 81.77778 | 23.55200064 | 0.53333 | 147.2 | 42.3936 | 3.1104 | 196.2667 | 56.52480192 | 7.3728 | 245.3333 | 70.65599808 | 14.4 | 245.3333 | 70.65599808 | 15.3 |
| | Qybm | 6.5 | 6 | 1 | 12 | 0 | 0 | 87.55556 | 25.21600128 | 0.53333 | 157.6 | 45.3888 | 3.1104 | 210.1333 | 60.51840192 | 7.3728 | 262.6667 | 75.64799808 | 14.4 | 262.6667 | 75.64799808 | 15.3 |
| | Qal 1 (Clay | 7.5 | 7 | 1 | 12 | 0 | 0 | 904.9569 | 260.627593 | 0.12444 | 1628.922 | 469.1297 | 1.30637 | 2171.897 | 625.506215 | 4.12877 | 2714.871 | 781.8827731 | 10.08 | 2714.871 | 781.8827731 | 12.6 |
| | | 8.5 | 8 | 1 | 12 | | | 959.0859 | 276.2167369 | 0.12444 | 1726.355 | 497.1901 | 1.30637 | 2301.806 | 662.9201637 | 4.12877 | 2877.258 | 828.6502072 | 10.08 | 2877.258 | 828.6502072 | 12.6 |
| | | 9.5 | 9 | 1 | 12 | | | 1013.215 | 291.8058808 | 0.12444 | 1823.787 | 525.2506 | 1.30637 | 2431.716 | 700.3341124 | 4.12877 | 3039.645 | 875.4176413 | 10.08 | 3039.645 | 875.4176413 | 12.6 |
| | | 10.5 | 10 | 1.5 | 18 | | | 1067.344 | 461.0925372 | 0.12444 | 1921.219 | 829.9666 | 1.30637 | 2561.625 | 1106.622092 | 4.12877 | 3202.032 | 1383.277613 | 10.08 | 3202.032 | 1383.277613 | 12.6 |
| | Qal 1 (Clay | 12.5 | 11.5 | 2 | 24 | 0 | 0 | 1175.602 | 677.1466253 | 0.12444 | 2116.083 | 1218.864 | 1.30637 | 2821.444 | 1625.151917 | 4.12877 | 3526.805 | 2031.439887 | 10.08 | 3526.805 | 2031.439887 | 12.6 |
| No | Qal 1 (Sanc | 13.5 | 13 | | 0 | 0 | 0 | 813.2411 | 0 | 0.11403 | 1650.194 | 0 | 0.38401 | 3699.456 | 0 | 1.35 | 3699.456 | 0 | 1.62 | 3699.456 | 0 | 1.89 |
| | | 14.5 | 13.5 | 2 | 24 | | | 947.2382 | 545.6092186 | 0.114603 | 1940.976 | 1118.002 | 0.384267 | 4405.12 | 2537.349047 | 1.35 | 4405.12 | 2537.349047 | 1.62 | 4405.12 | 2537.349047 | 1.89 |
| | Qal 1 (Sanc | 16.5 | 15.5 | 2 | 24 | 0 | 0 | 1215.233 | 699.9739546 | 0.11575 | 2522.54 | 1452.983 | 0.38478 | 5816.447 | 3350.27346 | 1.35 | 5816.447 | 3350.27346 | 1.62 | 5816.447 | 3350.27346 | 1.89 |
| No | Qal 1 (Clay | 17.5 | 17 | | 0 | 0 | 0 | 1492.82 | 0 | 0.12444 | 2687.075 | 0 | 1.30637 | 3582.767 | 0 | 4.12877 | 4478.459 | 0 | 10.08 | 4478.459 | 0 | 12.6 |
| | | 18.5 | 17.5 | 2 | 24 | | | 1549.775 | 892.6703124 | 0.12444 | 2789.595 | 1606.807 | 1.30637 | 3719.46 | 2142.408753 | 4.12877 | 4649.325 | 2678.01094 | 10.08 | 4649.325 | 2678.01094 | 12.6 |
| | | 20.5 | 19.5 | 2 | 24 | | | 1663.685 | 958.2826429 | 0.12444 | 2994.633 | 1724.909 | 1.30637 | 3992.844 | 2299.878351 | 4.12877 | 4991.055 | 2874.847936 | 10.08 | 4991.055 | 2874.847936 | 12.6 |
| No | Qal 1 (Clay | 22.5 | 21.5 | | 0 | 0 | 0 | 1777.595 | 0 | 0.12444 | 3199.672 | 0 | 1.30637 | 4266.229 | 0 | 4.12877 | 5332.786 | 0 | 10.08 | 5332.786 | 0 | 12.6 |
| No | Qobc 1 | 23.5 | 23 | | 0 | 0 | 0 | 1951.231 | 0 | 0.12444 | 3512.215 | 0 | 1.30637 | 4682.953 | 0 | 4.12877 | 5853.692 | 0 | 10.08 | 5853.692 | 0 | 12.6 |
| | | 24.5 | 23.5 | 3 | 36 | | | 2013.316 | 1739.504732 | 0.12444 | 3623.968 | 3131.109 | 1.30637 | 4831.958 | 4174.81134 | 4.12877 | 6039.947 | 5218.514183 | 10.08 | 6039.947 | 5218.514183 | 12.6 |
| No | Qobc 1 | 28 | 26.25 | | 0 | 0 | 0 | 2230.614 | 0 | 0.12444 | 4015.104 | 0 | 1.30637 | 5353.472 | 0 | 4.12877 | 6691.841 | 0 | 10.08 | 6691.841 | 0 | 12.6 |
| | | 28.5 | 26.5 | 4 | 48 | | | 2261.708 | 2605.487381 | 0.12444 | 4071.074 | 4689.877 | 1.30637 | 5428.099 | 6253.169705 | 4.12877 | 6785.123 | 7816.462141 | 10.08 | 6785.123 | 7816.462141 | 12.6 |
| | | 32.5 | 30.5 | 4 | 48 | | | 2510.462 | 2892.052229 | 0.12444 | 4518.832 | 5205.694 | 1.30637 | 6025.109 | 6940.925335 | 4.12877 | 7531.386 | 8676.156665 | 10.08 | 7531.386 | 8676.156665 | 12.6 |
| No | Qobc 1 | 33 | 32.75 | | 0 | 0 | 0 | 2541.556 | 0 | 0.12444 | 4574.801 | 0 | 1.30637 | 6099.735 | 0 | 4.12877 | 7624.669 | 0 | 10.08 | 7624.669 | 0 | 12.6 |
| | | 36.5 | 34.5 | 4 | 48 | | | 2757.467 | 3176.60185 | 0.12444 | 4963.44 | 5717.883 | 1.30637 | 6617.921 | 7623.844437 | 4.12877 | 8272.401 | 9529.805544 | 10.08 | 8272.401 | 9529.805544 | 12.6 |
| No | Qobc 1 | 38 | 38.5 | | | 0 | 0 | 2850 | 0 | 0.12444 | 5130 | 0 | 1.30637 | 6840 | 0 | 4.12877 | 8550 | 0 | 10.08 | 8550 | 0 | 12.6 |
| | | 40.5 | 38.5 | 6.75 | 81 | | | 2850 | 5540.4 | 0.12444 | 5130 | 9972.72 | 1.30637 | 6840 | 13296.96 | 4.12877 | 8550 | 16621.2 | 10.08 | 8550 | 16621.2 | 12.6 |
| | Qobc 1 | 79.5 | 45.25 | 34.75 | 417 | 0 | 0 | 2850 | 42784.2 | 0.12444 | 5130 | 77011.56 | 1.30637 | 6840 | 102682.08 | 4.12877 | 8550 | 128352.6 | 10.08 | 8550 | 128352.6 | 12.6 |
| | Qal 1 (Clay | 80.5 | 80 | 6.5 | 78 | 0 | 0 | 4125 | 11583 | 0.08889 | 7425 | 20849.4 | 0.93312 | 9900 | 27799.2 | 2.94912 | 12375 | 34749 | 7.2 | 12375 | 34749 | 9 |
| | Qal 1 (Clay | 92.5 | 86.5 | 6.5 | 78 | 0 | 0 | 4125 | 11583 | 0.08889 | 7425 | 20849.4 | 0.93312 | 9900 | 27799.2 | 2.94912 | 12375 | 34749 | 7.2 | 12375 | 34749 | 9 |
| | Qobc 2 | 93.5 | 93 | 2.5 | 30 | 0 | 0 | 4500 | 4860 | 0.08889 | 8100 | 8748 | 0.93312 | 10800 | 11664 | 2.94912 | 13500 | 14580 | 7.2 | 13500 | 14580 | 9 |
| | Qobc 2 | 97.5 | 95.5 | 2.5 | 30 | 0 | 0 | 4500 | 4860 | 0.08889 | 8100 | 8748 | 0.93312 | 10800 | 11664 | 2.94912 | 13500 | 14580 | 7.2 | 13500 | 14580 | 9 |
| | Qal 3 (Clay | 98.5 | 98 | 4 | 48 | 0 | 0 | 4500 | 7776 | 0.08889 | 8100 | 13996.8 | 0.93312 | 10800 | 18662.4 | 2.94912 | 13500 | 23328 | 7.2 | 13500 | 23328 | 9 |
| | Qal 3 (Clay | 105.5 | 102 | 4 | 48 | 0 | 0 | 4500 | 7776 | 0.08889 | 8100 | 13996.8 | 0.93312 | 10800 | 18662.4 | 2.94912 | 13500 | 23328 | 7.2 | 13500 | 23328 | 9 |
| | Qobc 3 | 106.5 | 106 | 10.5 | 126 | 0 | 0 | 3000 | 13608 | 0.08889 | 5400 | 24494.4 | 0.93312 | 7200 | 32659.2 | 2.94912 | 9000 | 40824 | 7.2 | 9000 | 40824 | 9 |
| | Qobc 3 | 126.5 | 116.5 | 10.5 | 126 | 0 | 0 | 3000 | 13608 | 0.08889 | 5400 | 24494.4 | 0.93312 | 7200 | 32659.2 | 2.94912 | 9000 | 40824 | 7.2 | 9000 | 40824 | 9 |
| | Qal 4 (Clay | 127.5 | 127 | 6.5 | 78 | 0 | 0 | 4500 | 12636 | 0.08889 | 8100 | 22744.8 | 0.93312 | 10800 | 30326.4 | 2.94912 | 13500 | 37908 | 7.2 | 13500 | 37908 | 9 |
| | Qal 4 (Clay | 139.5 | 133.5 | | | 0 | 0 | 4500 | | 0.08889 | 8100 | | 0.93312 | 10800 | | 2.94912 | 13500 | | 7.2 | 13500 | | 9 |

| | Section | 0 TO 1080 | | | | | | | | | | | Lower Bound | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Material | Depth Below Mudline(feet) | midpoints (ft) | spring length (ft) | spring length (in) | p0 (psi) | y0 (in) | p1 (psi) | p1 (kip) | y1 (in) | p2 (psi) | p2 (kip) | y2 (in) | p3 (psi) | p3 (kip) | y3 (in) | p4 (psi) | p4 (kip) | y4 (in) | p5 (psi) | p5 (kip) | y5 (in) |
| | Qybm | 0.5 | 0 | 1 | 12 | 0 | 0 | 13.22222 | 3.80799936 | 0.53333 | 23.8 | 6.8544 | 3.1104 | 31.73334 | 9.13920048 | 7.3728 | 39.66667 | 11.42399952 | 14.4 | 39.66667 | 11.42399952 | 15.3 |
| | | 1.5 | 1 | 1 | 12 | | | 14.66667 | 4.22399952 | 0.53333 | 26.4 | 7.6032 | 3.1104 | 35.2 | 10.13760048 | 7.3728 | 44 | 12.67199952 | 14.4 | 44 | 12.67199952 | 15.3 |
| | | 2.5 | 2 | 1 | 12 | | | 16.11111 | 4.63999968 | 0.53333 | 29 | 8.352 | 3.1104 | 38.66667 | 11.13600048 | 7.3728 | 48.33333 | 13.91999952 | 14.4 | 48.33333 | 13.91999952 | 15.3 |
| | | 3.5 | 3 | 1 | 12 | | | 17.55556 | 5.05599984 | 0.53333 | 31.6 | 9.1008 | 3.1104 | 42.13334 | 12.13440048 | 7.3728 | 52.66667 | 15.16799952 | 14.4 | 52.66667 | 15.16799952 | 15.3 |
| | | 4.5 | 4 | 1 | 12 | | | 19 | 5.472 | 0.53333 | 34.2 | 9.8496 | 3.1104 | 45.6 | 13.13280048 | 7.3728 | 57 | 16.41599952 | 14.4 | 57 | 16.41599952 | 15.3 |
| | | 5.5 | 5 | 1 | 12 | | | 20.44445 | 5.88800016 | 0.53333 | 36.8 | 10.5984 | 3.1104 | 49.06667 | 14.13120048 | 7.3728 | 61.33333 | 17.66399952 | 14.4 | 61.33333 | 17.66399952 | 15.3 |
| | Qybm | 6.5 | 6 | 1 | 12 | 0 | 0 | 21.88889 | 6.30400032 | 0.53333 | 39.4 | 11.3472 | 3.1104 | 52.53334 | 15.12960048 | 7.3728 | 65.66667 | 18.91199952 | 14.4 | 65.66667 | 18.91199952 | 15.3 |
| | Qal 1 (Clay | 7.5 | 7 | 1 | 12 | 0 | 0 | 226.2392 | 65.15689824 | 0.12444 | 407.2306 | 117.2824 | 1.30637 | 542.9741 | 156.3765538 | 4.12877 | 678.7177 | 195.4706933 | 10.08 | 678.7177 | 195.4706933 | 12.6 |
| | | 8.5 | 8 | 1 | 12 | | | 239.7715 | 69.05418422 | 0.12444 | 431.5886 | 124.2975 | 1.30637 | 575.4515 | 165.7300409 | 4.12877 | 719.3144 | 207.1625518 | 10.08 | 719.3144 | 207.1625518 | 12.6 |
| | | 9.5 | 9 | 1 | 12 | | | 253.3037 | 72.95147021 | 0.12444 | 455.9467 | 131.3126 | 1.30637 | 607.9289 | 175.0835281 | 4.12877 | 759.9111 | 218.8544103 | 10.08 | 759.9111 | 218.8544103 | 12.6 |
| | | 10.5 | 10 | 1.5 | 18 | | | 266.836 | 115.2731343 | 0.12444 | 480.3047 | 207.4916 | 1.30637 | 640.4063 | 276.6555229 | 4.12877 | 800.5079 | 345.8194033 | 10.08 | 800.5079 | 345.8194033 | 12.6 |
| | Qal 1 (Clay | 12.5 | 11.5 | 2 | 24 | 0 | 0 | 293.9004 | 169.2866563 | 0.12444 | 529.0208 | 304.716 | 1.30637 | 705.3611 | 406.2879792 | 4.12877 | 881.7013 | 507.8599718 | 10.08 | 881.7013 | 507.8599718 | 12.6 |
| No | Qal 1 (Sanc | 13.5 | 13 | | 0 | 0 | 0 | 203.3103 | 0 | 0.11403 | 412.5486 | 0 | 0.38401 | 924.8641 | 0 | 1.35 | 924.8641 | 0 | 1.62 | 924.8641 | 0 | 1.89 |
| | | 14.5 | 13.5 | 2 | 24 | | | 236.8096 | 136.4023046 | 0.114603 | 485.244 | 279.5006 | 0.384267 | 1101.28 | 634.3372618 | 1.35 | 1101.28 | 634.3372618 | 1.62 | 1101.28 | 634.3372618 | 1.89 |
| | Qal 1 (Sanc | 16.5 | 15.5 | 2 | 24 | 0 | 0 | 303.8081 | 174.9934886 | 0.11575 | 630.635 | 363.2458 | 0.38478 | 1454.112 | 837.5683651 | 1.35 | 1454.112 | 837.5683651 | 1.62 | 1454.112 | 837.5683651 | 1.89 |
| No | Qal 1 (Clay | 17.5 | 17 | | 0 | 0 | 0 | 373.2049 | 0 | 0.12444 | 671.7689 | 0 | 1.30637 | 895.6918 | 0 | 4.12877 | 1119.615 | 0 | 10.08 | 1119.615 | 0 | 12.6 |
| | | 18.5 | 17.5 | 2 | 24 | | | 387.4437 | 223.1675781 | 0.12444 | 697.3987 | 401.7016 | 1.30637 | 929.8649 | 535.6021882 | 4.12877 | 1162.331 | 669.5027349 | 10.08 | 1162.331 | 669.5027349 | 12.6 |
| | | 20.5 | 19.5 | 2 | 24 | | | 415.9213 | 239.5706607 | 0.12444 | 748.6583 | 431.2272 | 1.30637 | 998.2111 | 574.9695878 | 4.12877 | 1247.764 | 718.7119839 | 10.08 | 1247.764 | 718.7119839 | 12.6 |
| No | Qal 1 (Clay | 22.5 | 21.5 | | 0 | 0 | 0 | 444.3989 | 0 | 0.12444 | 799.918 | 0 | 1.30637 | 1066.557 | 0 | 4.12877 | 1333.197 | 0 | 10.08 | 1333.197 | 0 | 12.6 |
| No | Qobc 1 | 23.5 | 23 | | 0 | 0 | 0 | 487.8076 | 0 | 0.12444 | 878.0538 | 0 | 1.30637 | 1170.738 | 0 | 4.12877 | 1463.423 | 0 | 10.08 | 1463.423 | 0 | 12.6 |
| | | 24.5 | 23.5 | 3 | 36 | | | 503.3289 | 434.876183 | 0.12444 | 905.992 | 782.7771 | 1.30637 | 1207.989 | 1043.702835 | 4.12877 | 1509.987 | 1304.628546 | 10.08 | 1509.987 | 1304.628546 | 12.6 |
| No | Qobc 1 | 28 | 26.25 | | 0 | 0 | 0 | 557.6534 | 0 | 0.12444 | 1003.776 | 0 | 1.30637 | 1338.368 | 0 | 4.12877 | 1672.96 | 0 | 10.08 | 1672.96 | 0 | 12.6 |
| | | 28.5 | 26.5 | 4 | 48 | | | 565.4269 | 651.3718452 | 0.12444 | 1017.769 | 1172.469 | 1.30637 | 1357.025 | 1563.292426 | 4.12877 | 1696.281 | 1954.115535 | 10.08 | 1696.281 | 1954.115535 | 12.6 |
| | | 32.5 | 30.5 | 4 | 48 | | | 627.6155 | 723.0130572 | 0.12444 | 1129.708 | 1301.423 | 1.30637 | 1506.277 | 1735.231334 | 4.12877 | 1882.846 | 2169.039166 | 10.08 | 1882.846 | 2169.039166 | 12.6 |
| No | Qobc 1 | 33 | 32.75 | | 0 | 0 | 0 | 635.3891 | 0 | 0.12444 | 1143.7 | 0 | 1.30637 | 1524.934 | 0 | 4.12877 | 1906.167 | 0 | 10.08 | 1906.167 | 0 | 12.6 |
| | | 36.5 | 34.5 | 4 | 48 | | | 689.3667 | 794.1504626 | 0.12444 | 1240.86 | 1429.471 | 1.30637 | 1654.48 | 1905.961109 | 4.12877 | 2068.1 | 2382.451386 | 10.08 | 2068.1 | 2382.451386 | 12.6 |
| No | Qobc 1 | 38 | 38.5 | | | 0 | 0 | 712.5 | 0 | 0.12444 | 1282.5 | 0 | 1.30637 | 1710 | 0 | 4.12877 | 2137.5 | 0 | 10.08 | 2137.5 | 0 | 12.6 |
| | | 40.5 | 38.5 | 6.75 | 81 | | | 712.5 | 1385.1 | 0.12444 | 1282.5 | 2493.18 | 1.30637 | 1710 | 3324.24 | 4.12877 | 2137.5 | 4155.3 | 10.08 | 2137.5 | 4155.3 | 12.6 |
| | Qobc 1 | 79.5 | 45.25 | 34.75 | 417 | 0 | 0 | 712.5 | 10696.05 | 0.12444 | 1282.5 | 19252.89 | 1.30637 | 1710 | 25670.52 | 4.12877 | 2137.5 | 32088.15 | 10.08 | 2137.5 | 32088.15 | 12.6 |
| | Qal 1 (Clay | 80.5 | 80 | 6.5 | 78 | 0 | 0 | 1031.25 | 2895.75 | 0.08889 | 1856.25 | 5212.35 | 0.93312 | 2475 | 6949.8 | 2.94912 | 3093.75 | 8687.25 | 7.2 | 3093.75 | 8687.25 | 9 |
| | Qal 1 (Clay | 92.5 | 86.5 | 6.5 | 78 | 0 | 0 | 1031.25 | 2895.75 | 0.08889 | 1856.25 | 5212.35 | 0.93312 | 2475 | 6949.8 | 2.94912 | 3093.75 | 8687.25 | 7.2 | 3093.75 | 8687.25 | 9 |
| | Qobc 2 | 93.5 | 93 | 2.5 | 30 | 0 | 0 | 1125 | 1215 | 0.08889 | 2025 | 2187 | 0.93312 | 2700 | 2916 | 2.94912 | 3375 | 3645 | 7.2 | 3375 | 3645 | 9 |
| | Qobc 2 | 97.5 | 95.5 | 2.5 | 30 | 0 | 0 | 1125 | 1215 | 0.08889 | 2025 | 2187 | 0.93312 | 2700 | 2916 | 2.94912 | 3375 | 3645 | 7.2 | 3375 | 3645 | 9 |
| | Qal 3 (Clay | 98.5 | 98 | 4 | 48 | 0 | 0 | 1125 | 1944 | 0.08889 | 2025 | 3499.2 | 0.93312 | 2700 | 4665.6 | 2.94912 | 3375 | 5832 | 7.2 | 3375 | 5832 | 9 |
| | Qal 3 (Clay | 105.5 | 102 | 4 | 48 | 0 | 0 | 1125 | 1944 | 0.08889 | 2025 | 3499.2 | 0.93312 | 2700 | 4665.6 | 2.94912 | 3375 | 5832 | 7.2 | 3375 | 5832 | 9 |
| | Qobc 3 | 106.5 | 106 | 10.5 | 126 | 0 | 0 | 750 | 3402 | 0.08889 | 1350 | 6123.6 | 0.93312 | 1800 | 8164.8 | 2.94912 | 2250 | 10206 | 7.2 | 2250 | 10206 | 9 |
| | Qobc 3 | 126.5 | 116.5 | 10.5 | 126 | 0 | 0 | 750 | 3402 | 0.08889 | 1350 | 6123.6 | 0.93312 | 1800 | 8164.8 | 2.94912 | 2250 | 10206 | 7.2 | 2250 | 10206 | 9 |
| | Qal 4 (Clay | 127.5 | 127 | 6.5 | 78 | 0 | 0 | 1125 | 3159 | 0.08889 | 2025 | 5686.2 | 0.93312 | 2700 | 7581.6 | 2.94912 | 3375 | 9477 | 7.2 | 3375 | 9477 | 9 |
| | Qal 4 (Clay | 139.5 | 133.5 | | | 0 | 0 | 1125 | | 0.08889 | 2025 | | 0.93312 | 2700 | | 2.94912 | 3375 | | 7.2 | 3375 | | 9 |

**TABLE: Link Property Definitions 03 - MultiLinear**

| Link | DOF | Fixed | NonLinear | TransKE | TransCE | DJ | Point | Force | Displ |
|---|---|---|---|---|---|---|---|---|---|
| Text | Text | Yes/No | Yes/No | Kip/in | Kip-s/in | in | Text | Kip | in |
| 24"_0.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -7.716 | -10.2 |
| 24"_0.5_LB_py | U2 | | | | | | 2 | -7.716 | -9.6 |
| 24"_0.5_LB_py | U2 | | | | | | 3 | -6.173 | -4.9152 |
| 24"_0.5_LB_py | U2 | | | | | | 4 | -4.63 | -2.0736 |
| 24"_0.5_LB_py | U2 | | | | | | 5 | -2.572 | -0.35556 |
| 24"_0.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_0.5_LB_py | U2 | | | | | | 7 | 2.572 | 0.35556 |
| 24"_0.5_LB_py | U2 | | | | | | 8 | 4.63 | 2.0736 |
| 24"_0.5_LB_py | U2 | | | | | | 9 | 6.173 | 4.9152 |
| 24"_0.5_LB_py | U2 | | | | | | 10 | 7.716 | 9.6 |
| 24"_0.5_LB_py | U2 | | | | | | 11 | 7.716 | 10.2 |
| 24"_0.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -7.716 | -10.2 |
| 24"_0.5_LB_py | U3 | | | | | | 2 | -7.716 | -9.6 |
| 24"_0.5_LB_py | U3 | | | | | | 3 | -6.173 | -4.9152 |
| 24"_0.5_LB_py | U3 | | | | | | 4 | -4.63 | -2.0736 |
| 24"_0.5_LB_py | U3 | | | | | | 5 | -2.572 | -0.35556 |
| 24"_0.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_0.5_LB_py | U3 | | | | | | 7 | 2.572 | 0.35556 |
| 24"_0.5_LB_py | U3 | | | | | | 8 | 4.63 | 2.0736 |
| 24"_0.5_LB_py | U3 | | | | | | 9 | 6.173 | 4.9152 |
| 24"_0.5_LB_py | U3 | | | | | | 10 | 7.716 | 9.6 |
| 24"_0.5_LB_py | U3 | | | | | | 11 | 7.716 | 10.2 |
| 24"_0.5_LB_py_axial | U1 | No | Yes | 0 | 0 | | 1 | -7.716 | -10.2 |
| 24"_0.5_LB_py_axial | U1 | | | | | | 2 | -7.716 | -9.6 |
| 24"_0.5_LB_py_axial | U1 | | | | | | 3 | -6.173 | -4.9152 |
| 24"_0.5_LB_py_axial | U1 | | | | | | 4 | -4.63 | -2.0736 |
| 24"_0.5_LB_py_axial | U1 | | | | | | 5 | -2.572 | -0.3552 |
| 24"_0.5_LB_py_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_0.5_LB_py_axial | U1 | | | | | | 7 | 2.572 | 0.3552 |
| 24"_0.5_LB_py_axial | U1 | | | | | | 8 | 4.63 | 2.0736 |
| 24"_0.5_LB_py_axial | U1 | | | | | | 9 | 6.173 | 4.9152 |
| 24"_0.5_LB_py_axial | U1 | | | | | | 10 | 7.716 | 9.6 |
| 24"_0.5_LB_py_axial | U1 | | | | | | 11 | 7.716 | 10.2 |
| 24"_0.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -11.424 | -15.3 |
| 24"_0.5_LB_py_steel | U2 | | | | | | 2 | -11.424 | -14.4 |
| 24"_0.5_LB_py_steel | U2 | | | | | | 3 | -9.139 | -7.3728 |
| 24"_0.5_LB_py_steel | U2 | | | | | | 4 | -6.855 | -3.1104 |
| 24"_0.5_LB_py_steel | U2 | | | | | | 5 | -3.808 | -0.5333 |
| 24"_0.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_0.5_LB_py_steel | U2 | | | | | | 7 | 3.808 | 0.5333 |
| 24"_0.5_LB_py_steel | U2 | | | | | | 8 | 6.855 | 3.1104 |
| 24"_0.5_LB_py_steel | U2 | | | | | | 9 | 9.139 | 7.3728 |
| 24"_0.5_LB_py_steel | U2 | | | | | | 10 | 11.424 | 14.4 |
| 24"_0.5_LB_py_steel | U2 | | | | | | 11 | 11.424 | 15.3 |
| 24"_0.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -11.424 | -15.3 |
| 24"_0.5_LB_py_steel | U3 | | | | | | 2 | -11.424 | -14.4 |
| 24"_0.5_LB_py_steel | U3 | | | | | | 3 | -9.139 | -7.3728 |
| 24"_0.5_LB_py_steel | U3 | | | | | | 4 | -6.855 | -3.1104 |
| 24"_0.5_LB_py_steel | U3 | | | | | | 5 | -3.808 | -0.5333 |
| 24"_0.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_0.5_LB_py_steel | U3 | | | | | | 7 | 3.808 | 0.5333 |
| 24"_0.5_LB_py_steel | U3 | | | | | | 8 | 6.855 | 3.1104 |
| 24"_0.5_LB_py_steel | U3 | | | | | | 9 | 9.139 | 7.3728 |
| 24"_0.5_LB_py_steel | U3 | | | | | | 10 | 11.424 | 14.4 |
| 24"_0.5_LB_py_steel | U3 | | | | | | 11 | 11.424 | 15.3 |
| 24"_0.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -18.66111274 | -1.26 |
| 24"_0.5_LB_py_steel_axial | U1 | | | | | | 2 | -18.66111274 | -0.9 |
| 24"_0.5_LB_py_steel_axial | U1 | | | | | | 3 | -12.82761054 | -0.334775143 |
| 24"_0.5_LB_py_steel_axial | U1 | | | | | | 4 | -9.250198214 | -0.106483143 |
| 24"_0.5_LB_py_steel_axial | U1 | | | | | | 5 | -7.233758198 | -0.041258286 |
| 24"_0.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_0.5_LB_py_steel_axial | U1 | | | | | | 7 | 7.233758198 | 0.041258286 |
| 24"_0.5_LB_py_steel_axial | U1 | | | | | | 8 | 9.250198214 | 0.106483143 |
| 24"_0.5_LB_py_steel_axial | U1 | | | | | | 9 | 12.82761054 | 0.334775143 |
| 24"_0.5_LB_py_steel_axial | U1 | | | | | | 10 | 18.66111274 | 0.9 |
| 24"_0.5_LB_py_steel_axial | U1 | | | | | | 11 | 18.66111274 | 1.26 |
| 24"_0.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -15.432 | -10.2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_0.5_Nom_py | U2 | | | | | | 2 | -15.432 | -9.6 |
| 24"_0.5_Nom_py | U2 | | | | | | 3 | -12.346 | -4.9152 |
| 24"_0.5_Nom_py | U2 | | | | | | 4 | -9.259 | -2.0736 |
| 24"_0.5_Nom_py | U2 | | | | | | 5 | -5.144 | -0.35556 |
| 24"_0.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_0.5_Nom_py | U2 | | | | | | 7 | 5.144 | 0.35556 |
| 24"_0.5_Nom_py | U2 | | | | | | 8 | 9.259 | 2.0736 |
| 24"_0.5_Nom_py | U2 | | | | | | 9 | 12.346 | 4.9152 |
| 24"_0.5_Nom_py | U2 | | | | | | 10 | 15.432 | 9.6 |
| 24"_0.5_Nom_py | U2 | | | | | | 11 | 15.432 | 10.2 |
| 24"_0.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -15.432 | -10.2 |
| 24"_0.5_Nom_py | U3 | | | | | | 2 | -15.432 | -9.6 |
| 24"_0.5_Nom_py | U3 | | | | | | 3 | -12.346 | -4.9152 |
| 24"_0.5_Nom_py | U3 | | | | | | 4 | -9.259 | -2.0736 |
| 24"_0.5_Nom_py | U3 | | | | | | 5 | -5.144 | -0.35556 |
| 24"_0.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_0.5_Nom_py | U3 | | | | | | 7 | 5.144 | 0.35556 |
| 24"_0.5_Nom_py | U3 | | | | | | 8 | 9.259 | 2.0736 |
| 24"_0.5_Nom_py | U3 | | | | | | 9 | 12.346 | 4.9152 |
| 24"_0.5_Nom_py | U3 | | | | | | 10 | 15.432 | 9.6 |
| 24"_0.5_Nom_py | U3 | | | | | | 11 | 15.432 | 10.2 |
| 24"_0.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -22.848 | -15.3 |
| 24"_0.5_Nom_py_steel | U2 | | | | | | 2 | -22.848 | -14.4 |
| 24"_0.5_Nom_py_steel | U2 | | | | | | 3 | -18.279 | -7.3728 |
| 24"_0.5_Nom_py_steel | U2 | | | | | | 4 | -13.709 | -3.1104 |
| 24"_0.5_Nom_py_steel | U2 | | | | | | 5 | -7.616 | -0.5333 |
| 24"_0.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_0.5_Nom_py_steel | U2 | | | | | | 7 | 7.616 | 0.5333 |
| 24"_0.5_Nom_py_steel | U2 | | | | | | 8 | 13.709 | 3.1104 |
| 24"_0.5_Nom_py_steel | U2 | | | | | | 9 | 18.279 | 7.3728 |
| 24"_0.5_Nom_py_steel | U2 | | | | | | 10 | 22.848 | 14.4 |
| 24"_0.5_Nom_py_steel | U2 | | | | | | 11 | 22.848 | 15.3 |
| 24"_0.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -22.848 | -15.3 |
| 24"_0.5_Nom_py_steel | U3 | | | | | | 2 | -22.848 | -14.4 |
| 24"_0.5_Nom_py_steel | U3 | | | | | | 3 | -18.279 | -7.3728 |
| 24"_0.5_Nom_py_steel | U3 | | | | | | 4 | -13.709 | -3.1104 |
| 24"_0.5_Nom_py_steel | U3 | | | | | | 5 | -7.616 | -0.5333 |
| 24"_0.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_0.5_Nom_py_steel | U3 | | | | | | 7 | 7.616 | 0.5333 |
| 24"_0.5_Nom_py_steel | U3 | | | | | | 8 | 13.709 | 3.1104 |
| 24"_0.5_Nom_py_steel | U3 | | | | | | 9 | 18.279 | 7.3728 |
| 24"_0.5_Nom_py_steel | U3 | | | | | | 10 | 22.848 | 14.4 |
| 24"_0.5_Nom_py_steel | U3 | | | | | | 11 | 22.848 | 15.3 |
| 24"_0.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -30.864 | -10.2 |
| 24"_0.5_UB_py | U2 | | | | | | 2 | -30.864 | -9.6 |
| 24"_0.5_UB_py | U2 | | | | | | 3 | -24.691 | -4.9152 |
| 24"_0.5_UB_py | U2 | | | | | | 4 | -18.518 | -2.0736 |
| 24"_0.5_UB_py | U2 | | | | | | 5 | -10.288 | -0.35556 |
| 24"_0.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_0.5_UB_py | U2 | | | | | | 7 | 10.288 | 0.35556 |
| 24"_0.5_UB_py | U2 | | | | | | 8 | 18.518 | 2.0736 |
| 24"_0.5_UB_py | U2 | | | | | | 9 | 24.691 | 4.9152 |
| 24"_0.5_UB_py | U2 | | | | | | 10 | 30.864 | 9.6 |
| 24"_0.5_UB_py | U2 | | | | | | 11 | 30.864 | 10.2 |
| 24"_0.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -30.864 | -10.2 |
| 24"_0.5_UB_py | U3 | | | | | | 2 | -30.864 | -9.6 |
| 24"_0.5_UB_py | U3 | | | | | | 3 | -24.691 | -4.9152 |
| 24"_0.5_UB_py | U3 | | | | | | 4 | -18.518 | -2.0736 |
| 24"_0.5_UB_py | U3 | | | | | | 5 | -10.288 | -0.35556 |
| 24"_0.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_0.5_UB_py | U3 | | | | | | 7 | 10.288 | 0.35556 |
| 24"_0.5_UB_py | U3 | | | | | | 8 | 18.518 | 2.0736 |
| 24"_0.5_UB_py | U3 | | | | | | 9 | 24.691 | 4.9152 |
| 24"_0.5_UB_py | U3 | | | | | | 10 | 30.864 | 9.6 |
| 24"_0.5_UB_py | U3 | | | | | | 11 | 30.864 | 10.2 |
| 24"_0.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -45.696 | -15.3 |
| 24"_0.5_UB_py_steel | U2 | | | | | | 2 | -45.696 | -14.4 |
| 24"_0.5_UB_py_steel | U2 | | | | | | 3 | -36.557 | -7.3728 |
| 24"_0.5_UB_py_steel | U2 | | | | | | 4 | -27.417 | -3.1104 |
| 24"_0.5_UB_py_steel | U2 | | | | | | 5 | -15.232 | -0.5333 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_0.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_0.5_UB_py_steel | U2 | | | | | | 7 | 15.232 | 0.5333 |
| 24"_0.5_UB_py_steel | U2 | | | | | | 8 | 27.417 | 3.1104 |
| 24"_0.5_UB_py_steel | U2 | | | | | | 9 | 36.557 | 7.3728 |
| 24"_0.5_UB_py_steel | U2 | | | | | | 10 | 45.696 | 14.4 |
| 24"_0.5_UB_py_steel | U2 | | | | | | 11 | 45.696 | 15.3 |
| 24"_0.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -45.696 | -15.3 |
| 24"_0.5_UB_py_steel | U3 | | | | | | 2 | -45.696 | -14.4 |
| 24"_0.5_UB_py_steel | U3 | | | | | | 3 | -36.557 | -7.3728 |
| 24"_0.5_UB_py_steel | U3 | | | | | | 4 | -27.417 | -3.1104 |
| 24"_0.5_UB_py_steel | U3 | | | | | | 5 | -15.232 | -0.5333 |
| 24"_0.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_0.5_UB_py_steel | U3 | | | | | | 7 | 15.232 | 0.5333 |
| 24"_0.5_UB_py_steel | U3 | | | | | | 8 | 27.417 | 3.1104 |
| 24"_0.5_UB_py_steel | U3 | | | | | | 9 | 36.557 | 7.3728 |
| 24"_0.5_UB_py_steel | U3 | | | | | | 10 | 45.696 | 14.4 |
| 24"_0.5_UB_py_steel | U3 | | | | | | 11 | 45.696 | 15.3 |
| 24"_1.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -8.748 | -10.2 |
| 24"_1.5_LB_py | U2 | | | | | | 2 | -8.748 | -9.6 |
| 24"_1.5_LB_py | U2 | | | | | | 3 | -6.998 | -4.9152 |
| 24"_1.5_LB_py | U2 | | | | | | 4 | -5.249 | -2.0736 |
| 24"_1.5_LB_py | U2 | | | | | | 5 | -2.916 | -0.35556 |
| 24"_1.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_1.5_LB_py | U2 | | | | | | 7 | 2.916 | 0.35556 |
| 24"_1.5_LB_py | U2 | | | | | | 8 | 5.249 | 2.0736 |
| 24"_1.5_LB_py | U2 | | | | | | 9 | 6.998 | 4.9152 |
| 24"_1.5_LB_py | U2 | | | | | | 10 | 8.748 | 9.6 |
| 24"_1.5_LB_py | U2 | | | | | | 11 | 8.748 | 10.2 |
| 24"_1.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -8.748 | -10.2 |
| 24"_1.5_LB_py | U3 | | | | | | 2 | -8.748 | -9.6 |
| 24"_1.5_LB_py | U3 | | | | | | 3 | -6.998 | -4.9152 |
| 24"_1.5_LB_py | U3 | | | | | | 4 | -5.249 | -2.0736 |
| 24"_1.5_LB_py | U3 | | | | | | 5 | -2.916 | -0.35556 |
| 24"_1.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_1.5_LB_py | U3 | | | | | | 7 | 2.916 | 0.35556 |
| 24"_1.5_LB_py | U3 | | | | | | 8 | 5.249 | 2.0736 |
| 24"_1.5_LB_py | U3 | | | | | | 9 | 6.998 | 4.9152 |
| 24"_1.5_LB_py | U3 | | | | | | 10 | 8.748 | 9.6 |
| 24"_1.5_LB_py | U3 | | | | | | 11 | 8.748 | 10.2 |
| 24"_1.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -12.672 | -15.3 |
| 24"_1.5_LB_py_steel | U2 | | | | | | 2 | -12.672 | -14.4 |
| 24"_1.5_LB_py_steel | U2 | | | | | | 3 | -10.137 | -7.3728 |
| 24"_1.5_LB_py_steel | U2 | | | | | | 4 | -7.603 | -3.1104 |
| 24"_1.5_LB_py_steel | U2 | | | | | | 5 | -4.224 | -0.5333 |
| 24"_1.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_1.5_LB_py_steel | U2 | | | | | | 7 | 4.224 | 0.5333 |
| 24"_1.5_LB_py_steel | U2 | | | | | | 8 | 7.603 | 3.1104 |
| 24"_1.5_LB_py_steel | U2 | | | | | | 9 | 10.137 | 7.3728 |
| 24"_1.5_LB_py_steel | U2 | | | | | | 10 | 12.672 | 14.4 |
| 24"_1.5_LB_py_steel | U2 | | | | | | 11 | 12.672 | 15.3 |
| 24"_1.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -12.672 | -15.3 |
| 24"_1.5_LB_py_steel | U3 | | | | | | 2 | -12.672 | -14.4 |
| 24"_1.5_LB_py_steel | U3 | | | | | | 3 | -10.137 | -7.3728 |
| 24"_1.5_LB_py_steel | U3 | | | | | | 4 | -7.603 | -3.1104 |
| 24"_1.5_LB_py_steel | U3 | | | | | | 5 | -4.224 | -0.5333 |
| 24"_1.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_1.5_LB_py_steel | U3 | | | | | | 7 | 4.224 | 0.5333 |
| 24"_1.5_LB_py_steel | U3 | | | | | | 8 | 7.603 | 3.1104 |
| 24"_1.5_LB_py_steel | U3 | | | | | | 9 | 10.137 | 7.3728 |
| 24"_1.5_LB_py_steel | U3 | | | | | | 10 | 12.672 | 14.4 |
| 24"_1.5_LB_py_steel | U3 | | | | | | 11 | 12.672 | 15.3 |
| 24"_1.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -95.53024384 | -1.26 |
| 24"_1.5_LB_py_steel_axial | U1 | | | | | | 2 | -95.53024384 | -0.9 |
| 24"_1.5_LB_py_steel_axial | U1 | | | | | | 3 | -64.77259079 | -0.335592286 |
| 24"_1.5_LB_py_steel_axial | U1 | | | | | | 4 | -46.3504585 | -0.110160286 |
| 24"_1.5_LB_py_steel_axial | U1 | | | | | | 5 | -36.35457305 | -0.045752571 |
| 24"_1.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_1.5_LB_py_steel_axial | U1 | | | | | | 7 | 36.35457305 | 0.045752571 |
| 24"_1.5_LB_py_steel_axial | U1 | | | | | | 8 | 46.3504585 | 0.110160286 |
| 24"_1.5_LB_py_steel_axial | U1 | | | | | | 9 | 64.77259079 | 0.335592286 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_1.5_LB_py_steel_axial | U1 | | | | | | 10 | 95.53024384 | 0.9 |
| 24"_1.5_LB_py_steel_axial | U1 | | | | | | 11 | 95.53024384 | 1.26 |
| 24"_1.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -17.496 | -10.2 |
| 24"_1.5_Nom_py | U2 | | | | | | 2 | -17.496 | -9.6 |
| 24"_1.5_Nom_py | U2 | | | | | | 3 | -13.997 | -4.9152 |
| 24"_1.5_Nom_py | U2 | | | | | | 4 | -10.498 | -2.0736 |
| 24"_1.5_Nom_py | U2 | | | | | | 5 | -5.832 | -0.35556 |
| 24"_1.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_1.5_Nom_py | U2 | | | | | | 7 | 5.832 | 0.35556 |
| 24"_1.5_Nom_py | U2 | | | | | | 8 | 10.498 | 2.0736 |
| 24"_1.5_Nom_py | U2 | | | | | | 9 | 13.997 | 4.9152 |
| 24"_1.5_Nom_py | U2 | | | | | | 10 | 17.496 | 9.6 |
| 24"_1.5_Nom_py | U2 | | | | | | 11 | 17.496 | 10.2 |
| 24"_1.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -17.496 | -10.2 |
| 24"_1.5_Nom_py | U3 | | | | | | 2 | -17.496 | -9.6 |
| 24"_1.5_Nom_py | U3 | | | | | | 3 | -13.997 | -4.9152 |
| 24"_1.5_Nom_py | U3 | | | | | | 4 | -10.498 | -2.0736 |
| 24"_1.5_Nom_py | U3 | | | | | | 5 | -5.832 | -0.35556 |
| 24"_1.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_1.5_Nom_py | U3 | | | | | | 7 | 5.832 | 0.35556 |
| 24"_1.5_Nom_py | U3 | | | | | | 8 | 10.498 | 2.0736 |
| 24"_1.5_Nom_py | U3 | | | | | | 9 | 13.997 | 4.9152 |
| 24"_1.5_Nom_py | U3 | | | | | | 10 | 17.496 | 9.6 |
| 24"_1.5_Nom_py | U3 | | | | | | 11 | 17.496 | 10.2 |
| 24"_1.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -25.344 | -15.3 |
| 24"_1.5_Nom_py_steel | U2 | | | | | | 2 | -25.344 | -14.4 |
| 24"_1.5_Nom_py_steel | U2 | | | | | | 3 | -20.275 | -7.3728 |
| 24"_1.5_Nom_py_steel | U2 | | | | | | 4 | -15.207 | -3.1104 |
| 24"_1.5_Nom_py_steel | U2 | | | | | | 5 | -8.448 | -0.5333 |
| 24"_1.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_1.5_Nom_py_steel | U2 | | | | | | 7 | 8.448 | 0.5333 |
| 24"_1.5_Nom_py_steel | U2 | | | | | | 8 | 15.207 | 3.1104 |
| 24"_1.5_Nom_py_steel | U2 | | | | | | 9 | 20.275 | 7.3728 |
| 24"_1.5_Nom_py_steel | U2 | | | | | | 10 | 25.344 | 14.4 |
| 24"_1.5_Nom_py_steel | U2 | | | | | | 11 | 25.344 | 15.3 |
| 24"_1.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -25.344 | -15.3 |
| 24"_1.5_Nom_py_steel | U3 | | | | | | 2 | -25.344 | -14.4 |
| 24"_1.5_Nom_py_steel | U3 | | | | | | 3 | -20.275 | -7.3728 |
| 24"_1.5_Nom_py_steel | U3 | | | | | | 4 | -15.207 | -3.1104 |
| 24"_1.5_Nom_py_steel | U3 | | | | | | 5 | -8.448 | -0.5333 |
| 24"_1.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_1.5_Nom_py_steel | U3 | | | | | | 7 | 8.448 | 0.5333 |
| 24"_1.5_Nom_py_steel | U3 | | | | | | 8 | 15.207 | 3.1104 |
| 24"_1.5_Nom_py_steel | U3 | | | | | | 9 | 20.275 | 7.3728 |
| 24"_1.5_Nom_py_steel | U3 | | | | | | 10 | 25.344 | 14.4 |
| 24"_1.5_Nom_py_steel | U3 | | | | | | 11 | 25.344 | 15.3 |
| 24"_1.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -34.992 | -10.2 |
| 24"_1.5_UB_py | U2 | | | | | | 2 | -34.992 | -9.6 |
| 24"_1.5_UB_py | U2 | | | | | | 3 | -27.994 | -4.9152 |
| 24"_1.5_UB_py | U2 | | | | | | 4 | -20.995 | -2.0736 |
| 24"_1.5_UB_py | U2 | | | | | | 5 | -11.664 | -0.35556 |
| 24"_1.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_1.5_UB_py | U2 | | | | | | 7 | 11.664 | 0.35556 |
| 24"_1.5_UB_py | U2 | | | | | | 8 | 20.995 | 2.0736 |
| 24"_1.5_UB_py | U2 | | | | | | 9 | 27.994 | 4.9152 |
| 24"_1.5_UB_py | U2 | | | | | | 10 | 34.992 | 9.6 |
| 24"_1.5_UB_py | U2 | | | | | | 11 | 34.992 | 10.2 |
| 24"_1.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -34.992 | -10.2 |
| 24"_1.5_UB_py | U3 | | | | | | 2 | -34.992 | -9.6 |
| 24"_1.5_UB_py | U3 | | | | | | 3 | -27.994 | -4.9152 |
| 24"_1.5_UB_py | U3 | | | | | | 4 | -20.995 | -2.0736 |
| 24"_1.5_UB_py | U3 | | | | | | 5 | -11.664 | -0.35556 |
| 24"_1.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_1.5_UB_py | U3 | | | | | | 7 | 11.664 | 0.35556 |
| 24"_1.5_UB_py | U3 | | | | | | 8 | 20.995 | 2.0736 |
| 24"_1.5_UB_py | U3 | | | | | | 9 | 27.994 | 4.9152 |
| 24"_1.5_UB_py | U3 | | | | | | 10 | 34.992 | 9.6 |
| 24"_1.5_UB_py | U3 | | | | | | 11 | 34.992 | 10.2 |
| 24"_1.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -50.688 | -15.3 |
| 24"_1.5_UB_py_steel | U2 | | | | | | 2 | -50.688 | -14.4 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_1.5_UB_py_steel | U2 | | | | | | 3 | -40.551 | -7.3728 |
| 24"_1.5_UB_py_steel | U2 | | | | | | 4 | -30.413 | -3.1104 |
| 24"_1.5_UB_py_steel | U2 | | | | | | 5 | -16.896 | -0.5333 |
| 24"_1.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_1.5_UB_py_steel | U2 | | | | | | 7 | 16.896 | 0.5333 |
| 24"_1.5_UB_py_steel | U2 | | | | | | 8 | 30.413 | 3.1104 |
| 24"_1.5_UB_py_steel | U2 | | | | | | 9 | 40.551 | 7.3728 |
| 24"_1.5_UB_py_steel | U2 | | | | | | 10 | 50.688 | 14.4 |
| 24"_1.5_UB_py_steel | U2 | | | | | | 11 | 50.688 | 15.3 |
| 24"_1.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -50.688 | -15.3 |
| 24"_1.5_UB_py_steel | U3 | | | | | | 2 | -50.688 | -14.4 |
| 24"_1.5_UB_py_steel | U3 | | | | | | 3 | -40.551 | -7.3728 |
| 24"_1.5_UB_py_steel | U3 | | | | | | 4 | -30.413 | -3.1104 |
| 24"_1.5_UB_py_steel | U3 | | | | | | 5 | -16.896 | -0.5333 |
| 24"_1.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_1.5_UB_py_steel | U3 | | | | | | 7 | 16.896 | 0.5333 |
| 24"_1.5_UB_py_steel | U3 | | | | | | 8 | 30.413 | 3.1104 |
| 24"_1.5_UB_py_steel | U3 | | | | | | 9 | 40.551 | 7.3728 |
| 24"_1.5_UB_py_steel | U3 | | | | | | 10 | 50.688 | 14.4 |
| 24"_1.5_UB_py_steel | U3 | | | | | | 11 | 50.688 | 15.3 |
| 24"_10.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -251.956 | -8.4 |
| 24"_10.5_LB_py | U2 | | | | | | 2 | -251.956 | -6.72 |
| 24"_10.5_LB_py | U2 | | | | | | 3 | -201.565 | -2.75251 |
| 24"_10.5_LB_py | U2 | | | | | | 4 | -151.174 | -0.87091 |
| 24"_10.5_LB_py | U2 | | | | | | 5 | -83.985 | -0.08296 |
| 24"_10.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_10.5_LB_py | U2 | | | | | | 7 | 83.985 | 0.08296 |
| 24"_10.5_LB_py | U2 | | | | | | 8 | 151.174 | 0.87091 |
| 24"_10.5_LB_py | U2 | | | | | | 9 | 201.565 | 2.75251 |
| 24"_10.5_LB_py | U2 | | | | | | 10 | 251.956 | 6.72 |
| 24"_10.5_LB_py | U2 | | | | | | 11 | 251.956 | 8.4 |
| 24"_10.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -251.956 | -8.4 |
| 24"_10.5_LB_py | U3 | | | | | | 2 | -251.956 | -6.72 |
| 24"_10.5_LB_py | U3 | | | | | | 3 | -201.565 | -2.75251 |
| 24"_10.5_LB_py | U3 | | | | | | 4 | -151.174 | -0.87091 |
| 24"_10.5_LB_py | U3 | | | | | | 5 | -83.985 | -0.08296 |
| 24"_10.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_10.5_LB_py | U3 | | | | | | 7 | 83.985 | 0.08296 |
| 24"_10.5_LB_py | U3 | | | | | | 8 | 151.174 | 0.87091 |
| 24"_10.5_LB_py | U3 | | | | | | 9 | 201.565 | 2.75251 |
| 24"_10.5_LB_py | U3 | | | | | | 10 | 251.956 | 6.72 |
| 24"_10.5_LB_py | U3 | | | | | | 11 | 251.956 | 8.4 |
| 24"_10.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -345.819 | -12.6 |
| 24"_10.5_LB_py_steel | U2 | | | | | | 2 | -345.819 | -10.08 |
| 24"_10.5_LB_py_steel | U2 | | | | | | 3 | -276.655 | -4.1288 |
| 24"_10.5_LB_py_steel | U2 | | | | | | 4 | -207.492 | -1.3064 |
| 24"_10.5_LB_py_steel | U2 | | | | | | 5 | -115.273 | -0.1244 |
| 24"_10.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_10.5_LB_py_steel | U2 | | | | | | 7 | 115.273 | 0.1244 |
| 24"_10.5_LB_py_steel | U2 | | | | | | 8 | 207.492 | 1.3064 |
| 24"_10.5_LB_py_steel | U2 | | | | | | 9 | 276.655 | 4.1288 |
| 24"_10.5_LB_py_steel | U2 | | | | | | 10 | 345.819 | 10.08 |
| 24"_10.5_LB_py_steel | U2 | | | | | | 11 | 345.819 | 12.6 |
| 24"_10.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -345.819 | -12.6 |
| 24"_10.5_LB_py_steel | U3 | | | | | | 2 | -345.819 | -10.08 |
| 24"_10.5_LB_py_steel | U3 | | | | | | 3 | -276.655 | -4.1288 |
| 24"_10.5_LB_py_steel | U3 | | | | | | 4 | -207.492 | -1.3064 |
| 24"_10.5_LB_py_steel | U3 | | | | | | 5 | -115.273 | -0.1244 |
| 24"_10.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_10.5_LB_py_steel | U3 | | | | | | 7 | 115.273 | 0.1244 |
| 24"_10.5_LB_py_steel | U3 | | | | | | 8 | 207.492 | 1.3064 |
| 24"_10.5_LB_py_steel | U3 | | | | | | 9 | 276.655 | 4.1288 |
| 24"_10.5_LB_py_steel | U3 | | | | | | 10 | 345.819 | 10.08 |
| 24"_10.5_LB_py_steel | U3 | | | | | | 11 | 345.819 | 12.6 |
| 24"_10.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -1224.696717 | -1.26 |
| 24"_10.5_LB_py_steel_axial | U1 | | | | | | 2 | -1224.696717 | -0.9 |
| 24"_10.5_LB_py_steel_axial | U1 | | | | | | 3 | -665.4442902 | -0.343029231 |
| 24"_10.5_LB_py_steel_axial | U1 | | | | | | 4 | -393.0731503 | -0.143649846 |
| 24"_10.5_LB_py_steel_axial | U1 | | | | | | 5 | -280.9402764 | -0.086679077 |
| 24"_10.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_10.5_LB_py_steel_axial | U1 | | | | | | 7 | 280.9402764 | 0.086679077 |
| 24"_10.5_LB_py_steel_axial | U1 | | | | | | 8 | 393.0731503 | 0.143649846 |
| 24"_10.5_LB_py_steel_axial | U1 | | | | | | 9 | 665.4442902 | 0.343029231 |
| 24"_10.5_LB_py_steel_axial | U1 | | | | | | 10 | 1224.696717 | 0.9 |
| 24"_10.5_LB_py_steel_axial | U1 | | | | | | 11 | 1224.696717 | 1.26 |
| 24"_10.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -503.913 | -8.4 |
| 24"_10.5_Nom_py | U2 | | | | | | 2 | -503.913 | -6.72 |
| 24"_10.5_Nom_py | U2 | | | | | | 3 | -403.13 | -2.75251 |
| 24"_10.5_Nom_py | U2 | | | | | | 4 | -302.348 | -0.87091 |
| 24"_10.5_Nom_py | U2 | | | | | | 5 | -167.971 | -0.08296 |
| 24"_10.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_10.5_Nom_py | U2 | | | | | | 7 | 167.971 | 0.08296 |
| 24"_10.5_Nom_py | U2 | | | | | | 8 | 302.348 | 0.87091 |
| 24"_10.5_Nom_py | U2 | | | | | | 9 | 403.13 | 2.75251 |
| 24"_10.5_Nom_py | U2 | | | | | | 10 | 503.913 | 6.72 |
| 24"_10.5_Nom_py | U2 | | | | | | 11 | 503.913 | 8.4 |
| 24"_10.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -503.913 | -8.4 |
| 24"_10.5_Nom_py | U3 | | | | | | 2 | -503.913 | -6.72 |
| 24"_10.5_Nom_py | U3 | | | | | | 3 | -403.13 | -2.75251 |
| 24"_10.5_Nom_py | U3 | | | | | | 4 | -302.348 | -0.87091 |
| 24"_10.5_Nom_py | U3 | | | | | | 5 | -167.971 | -0.08296 |
| 24"_10.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_10.5_Nom_py | U3 | | | | | | 7 | 167.971 | 0.08296 |
| 24"_10.5_Nom_py | U3 | | | | | | 8 | 302.348 | 0.87091 |
| 24"_10.5_Nom_py | U3 | | | | | | 9 | 403.13 | 2.75251 |
| 24"_10.5_Nom_py | U3 | | | | | | 10 | 503.913 | 6.72 |
| 24"_10.5_Nom_py | U3 | | | | | | 11 | 503.913 | 8.4 |
| 24"_10.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -691.639 | -12.6 |
| 24"_10.5_Nom_py_steel | U2 | | | | | | 2 | -691.639 | -10.08 |
| 24"_10.5_Nom_py_steel | U2 | | | | | | 3 | -553.311 | -4.1288 |
| 24"_10.5_Nom_py_steel | U2 | | | | | | 4 | -414.983 | -1.3064 |
| 24"_10.5_Nom_py_steel | U2 | | | | | | 5 | -230.546 | -0.1244 |
| 24"_10.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_10.5_Nom_py_steel | U2 | | | | | | 7 | 230.546 | 0.1244 |
| 24"_10.5_Nom_py_steel | U2 | | | | | | 8 | 414.983 | 1.3064 |
| 24"_10.5_Nom_py_steel | U2 | | | | | | 9 | 553.311 | 4.1288 |
| 24"_10.5_Nom_py_steel | U2 | | | | | | 10 | 691.639 | 10.08 |
| 24"_10.5_Nom_py_steel | U2 | | | | | | 11 | 691.639 | 12.6 |
| 24"_10.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -691.639 | -12.6 |
| 24"_10.5_Nom_py_steel | U3 | | | | | | 2 | -691.639 | -10.08 |
| 24"_10.5_Nom_py_steel | U3 | | | | | | 3 | -553.311 | -4.1288 |
| 24"_10.5_Nom_py_steel | U3 | | | | | | 4 | -414.983 | -1.3064 |
| 24"_10.5_Nom_py_steel | U3 | | | | | | 5 | -230.546 | -0.1244 |
| 24"_10.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_10.5_Nom_py_steel | U3 | | | | | | 7 | 230.546 | 0.1244 |
| 24"_10.5_Nom_py_steel | U3 | | | | | | 8 | 414.983 | 1.3064 |
| 24"_10.5_Nom_py_steel | U3 | | | | | | 9 | 553.311 | 4.1288 |
| 24"_10.5_Nom_py_steel | U3 | | | | | | 10 | 691.639 | 10.08 |
| 24"_10.5_Nom_py_steel | U3 | | | | | | 11 | 691.639 | 12.6 |
| 24"_10.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1007.825 | -8.4 |
| 24"_10.5_UB_py | U2 | | | | | | 2 | -1007.825 | -6.72 |
| 24"_10.5_UB_py | U2 | | | | | | 3 | -806.26 | -2.75251 |
| 24"_10.5_UB_py | U2 | | | | | | 4 | -604.695 | -0.87091 |
| 24"_10.5_UB_py | U2 | | | | | | 5 | -335.942 | -0.08296 |
| 24"_10.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_10.5_UB_py | U2 | | | | | | 7 | 335.942 | 0.08296 |
| 24"_10.5_UB_py | U2 | | | | | | 8 | 604.695 | 0.87091 |
| 24"_10.5_UB_py | U2 | | | | | | 9 | 806.26 | 2.75251 |
| 24"_10.5_UB_py | U2 | | | | | | 10 | 1007.825 | 6.72 |
| 24"_10.5_UB_py | U2 | | | | | | 11 | 1007.825 | 8.4 |
| 24"_10.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1007.825 | -8.4 |
| 24"_10.5_UB_py | U3 | | | | | | 2 | -1007.825 | -6.72 |
| 24"_10.5_UB_py | U3 | | | | | | 3 | -806.26 | -2.75251 |
| 24"_10.5_UB_py | U3 | | | | | | 4 | -604.695 | -0.87091 |
| 24"_10.5_UB_py | U3 | | | | | | 5 | -335.942 | -0.08296 |
| 24"_10.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_10.5_UB_py | U3 | | | | | | 7 | 335.942 | 0.08296 |
| 24"_10.5_UB_py | U3 | | | | | | 8 | 604.695 | 0.87091 |
| 24"_10.5_UB_py | U3 | | | | | | 9 | 806.26 | 2.75251 |
| 24"_10.5_UB_py | U3 | | | | | | 10 | 1007.825 | 6.72 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_10.5_UB_py | U3 | | | | | | 11 | 1007.825 | 8.4 |
| 24"_10.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -1383.277 | -12.6 |
| 24"_10.5_UB_py_steel | U2 | | | | | | 2 | -1383.277 | -10.08 |
| 24"_10.5_UB_py_steel | U2 | | | | | | 3 | -1106.622 | -4.1288 |
| 24"_10.5_UB_py_steel | U2 | | | | | | 4 | -829.967 | -1.3064 |
| 24"_10.5_UB_py_steel | U2 | | | | | | 5 | -461.093 | -0.1244 |
| 24"_10.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_10.5_UB_py_steel | U2 | | | | | | 7 | 461.093 | 0.1244 |
| 24"_10.5_UB_py_steel | U2 | | | | | | 8 | 829.967 | 1.3064 |
| 24"_10.5_UB_py_steel | U2 | | | | | | 9 | 1106.622 | 4.1288 |
| 24"_10.5_UB_py_steel | U2 | | | | | | 10 | 1383.277 | 10.08 |
| 24"_10.5_UB_py_steel | U2 | | | | | | 11 | 1383.277 | 12.6 |
| 24"_10.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -1383.277 | -12.6 |
| 24"_10.5_UB_py_steel | U3 | | | | | | 2 | -1383.277 | -10.08 |
| 24"_10.5_UB_py_steel | U3 | | | | | | 3 | -1106.622 | -4.1288 |
| 24"_10.5_UB_py_steel | U3 | | | | | | 4 | -829.967 | -1.3064 |
| 24"_10.5_UB_py_steel | U3 | | | | | | 5 | -461.093 | -0.1244 |
| 24"_10.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_10.5_UB_py_steel | U3 | | | | | | 7 | 461.093 | 0.1244 |
| 24"_10.5_UB_py_steel | U3 | | | | | | 8 | 829.967 | 1.3064 |
| 24"_10.5_UB_py_steel | U3 | | | | | | 9 | 1106.622 | 4.1288 |
| 24"_10.5_UB_py_steel | U3 | | | | | | 10 | 1383.277 | 10.08 |
| 24"_10.5_UB_py_steel | U3 | | | | | | 11 | 1383.277 | 12.6 |
| 24"_12.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -380.731 | -8.4 |
| 24"_12.5_LB_py | U2 | | | | | | 2 | -380.731 | -6.72 |
| 24"_12.5_LB_py | U2 | | | | | | 3 | -304.585 | -2.75251 |
| 24"_12.5_LB_py | U2 | | | | | | 4 | -228.439 | -0.87091 |
| 24"_12.5_LB_py | U2 | | | | | | 5 | -126.91 | -0.08296 |
| 24"_12.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_12.5_LB_py | U2 | | | | | | 7 | 126.91 | 0.08296 |
| 24"_12.5_LB_py | U2 | | | | | | 8 | 228.439 | 0.87091 |
| 24"_12.5_LB_py | U2 | | | | | | 9 | 304.585 | 2.75251 |
| 24"_12.5_LB_py | U2 | | | | | | 10 | 380.731 | 6.72 |
| 24"_12.5_LB_py | U2 | | | | | | 11 | 380.731 | 8.4 |
| 24"_12.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -380.731 | -8.4 |
| 24"_12.5_LB_py | U3 | | | | | | 2 | -380.731 | -6.72 |
| 24"_12.5_LB_py | U3 | | | | | | 3 | -304.585 | -2.75251 |
| 24"_12.5_LB_py | U3 | | | | | | 4 | -228.439 | -0.87091 |
| 24"_12.5_LB_py | U3 | | | | | | 5 | -126.91 | -0.08296 |
| 24"_12.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_12.5_LB_py | U3 | | | | | | 7 | 126.91 | 0.08296 |
| 24"_12.5_LB_py | U3 | | | | | | 8 | 228.439 | 0.87091 |
| 24"_12.5_LB_py | U3 | | | | | | 9 | 304.585 | 2.75251 |
| 24"_12.5_LB_py | U3 | | | | | | 10 | 380.731 | 6.72 |
| 24"_12.5_LB_py | U3 | | | | | | 11 | 380.731 | 8.4 |
| 24"_12.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -507.86 | -12.6 |
| 24"_12.5_LB_py_steel | U2 | | | | | | 2 | -507.86 | -10.08 |
| 24"_12.5_LB_py_steel | U2 | | | | | | 3 | -406.288 | -4.1288 |
| 24"_12.5_LB_py_steel | U2 | | | | | | 4 | -304.716 | -1.3064 |
| 24"_12.5_LB_py_steel | U2 | | | | | | 5 | -169.287 | -0.1244 |
| 24"_12.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_12.5_LB_py_steel | U2 | | | | | | 7 | 169.287 | 0.1244 |
| 24"_12.5_LB_py_steel | U2 | | | | | | 8 | 304.716 | 1.3064 |
| 24"_12.5_LB_py_steel | U2 | | | | | | 9 | 406.288 | 4.1288 |
| 24"_12.5_LB_py_steel | U2 | | | | | | 10 | 507.86 | 10.08 |
| 24"_12.5_LB_py_steel | U2 | | | | | | 11 | 507.86 | 12.6 |
| 24"_12.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -507.86 | -12.6 |
| 24"_12.5_LB_py_steel | U3 | | | | | | 2 | -507.86 | -10.08 |
| 24"_12.5_LB_py_steel | U3 | | | | | | 3 | -406.288 | -4.1288 |
| 24"_12.5_LB_py_steel | U3 | | | | | | 4 | -304.716 | -1.3064 |
| 24"_12.5_LB_py_steel | U3 | | | | | | 5 | -169.287 | -0.1244 |
| 24"_12.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_12.5_LB_py_steel | U3 | | | | | | 7 | 169.287 | 0.1244 |
| 24"_12.5_LB_py_steel | U3 | | | | | | 8 | 304.716 | 1.3064 |
| 24"_12.5_LB_py_steel | U3 | | | | | | 9 | 406.288 | 4.1288 |
| 24"_12.5_LB_py_steel | U3 | | | | | | 10 | 507.86 | 10.08 |
| 24"_12.5_LB_py_steel | U3 | | | | | | 11 | 507.86 | 12.6 |
| 24"_12.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -1997.409094 | -1.26 |
| 24"_12.5_LB_py_steel_axial | U1 | | | | | | 2 | -1997.409094 | -0.9 |
| 24"_12.5_LB_py_steel_axial | U1 | | | | | | 3 | -1060.175737 | -0.34156 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_12.5_LB_py_steel_axial | U1 | | | | | | 4 | -601.8746959 | -0.137036 |
| 24"_12.5_LB_py_steel_axial | U1 | | | | | | 5 | -413.5737738 | -0.078596 |
| 24"_12.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_12.5_LB_py_steel_axial | U1 | | | | | | 7 | 413.5737738 | 0.078596 |
| 24"_12.5_LB_py_steel_axial | U1 | | | | | | 8 | 601.8746959 | 0.137036 |
| 24"_12.5_LB_py_steel_axial | U1 | | | | | | 9 | 1060.175737 | 0.34156 |
| 24"_12.5_LB_py_steel_axial | U1 | | | | | | 10 | 1997.409094 | 0.9 |
| 24"_12.5_LB_py_steel_axial | U1 | | | | | | 11 | 1997.409094 | 1.26 |
| 24"_12.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -761.463 | -8.4 |
| 24"_12.5_Nom_py | U2 | | | | | | 2 | -761.463 | -6.72 |
| 24"_12.5_Nom_py | U2 | | | | | | 3 | -609.17 | -2.75251 |
| 24"_12.5_Nom_py | U2 | | | | | | 4 | -456.878 | -0.87091 |
| 24"_12.5_Nom_py | U2 | | | | | | 5 | -253.821 | -0.08296 |
| 24"_12.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_12.5_Nom_py | U2 | | | | | | 7 | 253.821 | 0.08296 |
| 24"_12.5_Nom_py | U2 | | | | | | 8 | 456.878 | 0.87091 |
| 24"_12.5_Nom_py | U2 | | | | | | 9 | 609.17 | 2.75251 |
| 24"_12.5_Nom_py | U2 | | | | | | 10 | 761.463 | 6.72 |
| 24"_12.5_Nom_py | U2 | | | | | | 11 | 761.463 | 8.4 |
| 24"_12.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -761.463 | -8.4 |
| 24"_12.5_Nom_py | U3 | | | | | | 2 | -761.463 | -6.72 |
| 24"_12.5_Nom_py | U3 | | | | | | 3 | -609.17 | -2.75251 |
| 24"_12.5_Nom_py | U3 | | | | | | 4 | -456.878 | -0.87091 |
| 24"_12.5_Nom_py | U3 | | | | | | 5 | -253.821 | -0.08296 |
| 24"_12.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_12.5_Nom_py | U3 | | | | | | 7 | 253.821 | 0.08296 |
| 24"_12.5_Nom_py | U3 | | | | | | 8 | 456.878 | 0.87091 |
| 24"_12.5_Nom_py | U3 | | | | | | 9 | 609.17 | 2.75251 |
| 24"_12.5_Nom_py | U3 | | | | | | 10 | 761.463 | 6.72 |
| 24"_12.5_Nom_py | U3 | | | | | | 11 | 761.463 | 8.4 |
| 24"_12.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -1015.72 | -12.6 |
| 24"_12.5_Nom_py_steel | U2 | | | | | | 2 | -1015.72 | -10.08 |
| 24"_12.5_Nom_py_steel | U2 | | | | | | 3 | -812.576 | -4.1288 |
| 24"_12.5_Nom_py_steel | U2 | | | | | | 4 | -609.432 | -1.3064 |
| 24"_12.5_Nom_py_steel | U2 | | | | | | 5 | -338.573 | -0.1244 |
| 24"_12.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_12.5_Nom_py_steel | U2 | | | | | | 7 | 338.573 | 0.1244 |
| 24"_12.5_Nom_py_steel | U2 | | | | | | 8 | 609.432 | 1.3064 |
| 24"_12.5_Nom_py_steel | U2 | | | | | | 9 | 812.576 | 4.1288 |
| 24"_12.5_Nom_py_steel | U2 | | | | | | 10 | 1015.72 | 10.08 |
| 24"_12.5_Nom_py_steel | U2 | | | | | | 11 | 1015.72 | 12.6 |
| 24"_12.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -1015.72 | -12.6 |
| 24"_12.5_Nom_py_steel | U3 | | | | | | 2 | -1015.72 | -10.08 |
| 24"_12.5_Nom_py_steel | U3 | | | | | | 3 | -812.576 | -4.1288 |
| 24"_12.5_Nom_py_steel | U3 | | | | | | 4 | -609.432 | -1.3064 |
| 24"_12.5_Nom_py_steel | U3 | | | | | | 5 | -338.573 | -0.1244 |
| 24"_12.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_12.5_Nom_py_steel | U3 | | | | | | 7 | 338.573 | 0.1244 |
| 24"_12.5_Nom_py_steel | U3 | | | | | | 8 | 609.432 | 1.3064 |
| 24"_12.5_Nom_py_steel | U3 | | | | | | 9 | 812.576 | 4.1288 |
| 24"_12.5_Nom_py_steel | U3 | | | | | | 10 | 1015.72 | 10.08 |
| 24"_12.5_Nom_py_steel | U3 | | | | | | 11 | 1015.72 | 12.6 |
| 24"_12.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1522.926 | -8.4 |
| 24"_12.5_UB_py | U2 | | | | | | 2 | -1522.926 | -6.72 |
| 24"_12.5_UB_py | U2 | | | | | | 3 | -1218.341 | -2.75251 |
| 24"_12.5_UB_py | U2 | | | | | | 4 | -913.755 | -0.87091 |
| 24"_12.5_UB_py | U2 | | | | | | 5 | -507.642 | -0.08296 |
| 24"_12.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_12.5_UB_py | U2 | | | | | | 7 | 507.642 | 0.08296 |
| 24"_12.5_UB_py | U2 | | | | | | 8 | 913.755 | 0.87091 |
| 24"_12.5_UB_py | U2 | | | | | | 9 | 1218.341 | 2.75251 |
| 24"_12.5_UB_py | U2 | | | | | | 10 | 1522.926 | 6.72 |
| 24"_12.5_UB_py | U2 | | | | | | 11 | 1522.926 | 8.4 |
| 24"_12.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1522.926 | -8.4 |
| 24"_12.5_UB_py | U3 | | | | | | 2 | -1522.926 | -6.72 |
| 24"_12.5_UB_py | U3 | | | | | | 3 | -1218.341 | -2.75251 |
| 24"_12.5_UB_py | U3 | | | | | | 4 | -913.755 | -0.87091 |
| 24"_12.5_UB_py | U3 | | | | | | 5 | -507.642 | -0.08296 |
| 24"_12.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_12.5_UB_py | U3 | | | | | | 7 | 507.642 | 0.08296 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_12.5_UB_py | U3 | | | | | | 8 | 913.755 | 0.87091 |
| 24"_12.5_UB_py | U3 | | | | | | 9 | 1218.341 | 2.75251 |
| 24"_12.5_UB_py | U3 | | | | | | 10 | 1522.926 | 6.72 |
| 24"_12.5_UB_py | U3 | | | | | | 11 | 1522.926 | 8.4 |
| 24"_12.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -2031.44 | -12.6 |
| 24"_12.5_UB_py_steel | U2 | | | | | | 2 | -2031.44 | -10.08 |
| 24"_12.5_UB_py_steel | U2 | | | | | | 3 | -1625.152 | -4.1288 |
| 24"_12.5_UB_py_steel | U2 | | | | | | 4 | -1218.864 | -1.3064 |
| 24"_12.5_UB_py_steel | U2 | | | | | | 5 | -677.147 | -0.1244 |
| 24"_12.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_12.5_UB_py_steel | U2 | | | | | | 7 | 677.147 | 0.1244 |
| 24"_12.5_UB_py_steel | U2 | | | | | | 8 | 1218.864 | 1.3064 |
| 24"_12.5_UB_py_steel | U2 | | | | | | 9 | 1625.152 | 4.1288 |
| 24"_12.5_UB_py_steel | U2 | | | | | | 10 | 2031.44 | 10.08 |
| 24"_12.5_UB_py_steel | U2 | | | | | | 11 | 2031.44 | 12.6 |
| 24"_12.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -2031.44 | -12.6 |
| 24"_12.5_UB_py_steel | U3 | | | | | | 2 | -2031.44 | -10.08 |
| 24"_12.5_UB_py_steel | U3 | | | | | | 3 | -1625.152 | -4.1288 |
| 24"_12.5_UB_py_steel | U3 | | | | | | 4 | -1218.864 | -1.3064 |
| 24"_12.5_UB_py_steel | U3 | | | | | | 5 | -677.147 | -0.1244 |
| 24"_12.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_12.5_UB_py_steel | U3 | | | | | | 7 | 677.147 | 0.1244 |
| 24"_12.5_UB_py_steel | U3 | | | | | | 8 | 1218.864 | 1.3064 |
| 24"_12.5_UB_py_steel | U3 | | | | | | 9 | 1625.152 | 4.1288 |
| 24"_12.5_UB_py_steel | U3 | | | | | | 10 | 2031.44 | 10.08 |
| 24"_12.5_UB_py_steel | U3 | | | | | | 11 | 2031.44 | 12.6 |
| 24"_14.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -561.396 | -1.26 |
| 24"_14.5_LB_py | U2 | | | | | | 2 | -561.396 | -1.08 |
| 24"_14.5_LB_py | U2 | | | | | | 3 | -561.396 | -0.9 |
| 24"_14.5_LB_py | U2 | | | | | | 4 | -244.089 | -0.25734 |
| 24"_14.5_LB_py | U2 | | | | | | 5 | -119.491 | -0.079013 |
| 24"_14.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_14.5_LB_py | U2 | | | | | | 7 | 119.491 | 0.079013 |
| 24"_14.5_LB_py | U2 | | | | | | 8 | 244.089 | 0.25734 |
| 24"_14.5_LB_py | U2 | | | | | | 9 | 561.396 | 0.9 |
| 24"_14.5_LB_py | U2 | | | | | | 10 | 561.396 | 1.08 |
| 24"_14.5_LB_py | U2 | | | | | | 11 | 561.396 | 1.26 |
| 24"_14.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -561.396 | -1.26 |
| 24"_14.5_LB_py | U3 | | | | | | 2 | -561.396 | -1.08 |
| 24"_14.5_LB_py | U3 | | | | | | 3 | -561.396 | -0.9 |
| 24"_14.5_LB_py | U3 | | | | | | 4 | -244.089 | -0.25734 |
| 24"_14.5_LB_py | U3 | | | | | | 5 | -119.491 | -0.079013 |
| 24"_14.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_14.5_LB_py | U3 | | | | | | 7 | 119.491 | 0.079013 |
| 24"_14.5_LB_py | U3 | | | | | | 8 | 244.089 | 0.25734 |
| 24"_14.5_LB_py | U3 | | | | | | 9 | 561.396 | 0.9 |
| 24"_14.5_LB_py | U3 | | | | | | 10 | 561.396 | 1.08 |
| 24"_14.5_LB_py | U3 | | | | | | 11 | 561.396 | 1.26 |
| 24"_14.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -634.337 | -1.89 |
| 24"_14.5_LB_py_steel | U2 | | | | | | 2 | -634.337 | -1.62 |
| 24"_14.5_LB_py_steel | U2 | | | | | | 3 | -634.337 | -1.35 |
| 24"_14.5_LB_py_steel | U2 | | | | | | 4 | -279.501 | -0.3843 |
| 24"_14.5_LB_py_steel | U2 | | | | | | 5 | -136.402 | -0.1146 |
| 24"_14.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_14.5_LB_py_steel | U2 | | | | | | 7 | 136.402 | 0.1146 |
| 24"_14.5_LB_py_steel | U2 | | | | | | 8 | 279.501 | 0.3843 |
| 24"_14.5_LB_py_steel | U2 | | | | | | 9 | 634.337 | 1.35 |
| 24"_14.5_LB_py_steel | U2 | | | | | | 10 | 634.337 | 1.62 |
| 24"_14.5_LB_py_steel | U2 | | | | | | 11 | 634.337 | 1.89 |
| 24"_14.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -634.337 | -1.89 |
| 24"_14.5_LB_py_steel | U3 | | | | | | 2 | -634.337 | -1.62 |
| 24"_14.5_LB_py_steel | U3 | | | | | | 3 | -634.337 | -1.35 |
| 24"_14.5_LB_py_steel | U3 | | | | | | 4 | -279.501 | -0.3843 |
| 24"_14.5_LB_py_steel | U3 | | | | | | 5 | -136.402 | -0.1146 |
| 24"_14.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_14.5_LB_py_steel | U3 | | | | | | 7 | 136.402 | 0.1146 |
| 24"_14.5_LB_py_steel | U3 | | | | | | 8 | 279.501 | 0.3843 |
| 24"_14.5_LB_py_steel | U3 | | | | | | 9 | 634.337 | 1.35 |
| 24"_14.5_LB_py_steel | U3 | | | | | | 10 | 634.337 | 1.62 |
| 24"_14.5_LB_py_steel | U3 | | | | | | 11 | 634.337 | 1.89 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 24"_14.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | 1 | -2361.889231 | -1.26 |
| 24"_14.5_LB_py_steel_axial | U1 | | | | | 2 | -2361.889231 | -0.9 |
| 24"_14.5_LB_py_steel_axial | U1 | | | | | 3 | -1233.09242 | -0.340090769 |
| 24"_14.5_LB_py_steel_axial | U1 | | | | | 4 | -679.651858 | -0.130422154 |
| 24"_14.5_LB_py_steel_axial | U1 | | | | | 5 | -452.5605124 | -0.070512923 |
| 24"_14.5_LB_py_steel_axial | U1 | | | | | 6 | 0 | 0 |
| 24"_14.5_LB_py_steel_axial | U1 | | | | | 7 | 452.5605124 | 0.070512923 |
| 24"_14.5_LB_py_steel_axial | U1 | | | | | 8 | 679.651858 | 0.130422154 |
| 24"_14.5_LB_py_steel_axial | U1 | | | | | 9 | 1233.09242 | 0.340090769 |
| 24"_14.5_LB_py_steel_axial | U1 | | | | | 10 | 2361.889231 | 0.9 |
| 24"_14.5_LB_py_steel_axial | U1 | | | | | 11 | 2361.889231 | 1.26 |
| 24"_14.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 1 | -1122.792 | -1.26 |
| 24"_14.5_Nom_py | U2 | | | | | 2 | -1122.792 | -1.08 |
| 24"_14.5_Nom_py | U2 | | | | | 3 | -1122.792 | -0.9 |
| 24"_14.5_Nom_py | U2 | | | | | 4 | -488.178 | -0.25734 |
| 24"_14.5_Nom_py | U2 | | | | | 5 | -238.982 | -0.079013 |
| 24"_14.5_Nom_py | U2 | | | | | 6 | 0 | 0 |
| 24"_14.5_Nom_py | U2 | | | | | 7 | 238.982 | 0.079013 |
| 24"_14.5_Nom_py | U2 | | | | | 8 | 488.178 | 0.25734 |
| 24"_14.5_Nom_py | U2 | | | | | 9 | 1122.792 | 0.9 |
| 24"_14.5_Nom_py | U2 | | | | | 10 | 1122.792 | 1.08 |
| 24"_14.5_Nom_py | U2 | | | | | 11 | 1122.792 | 1.26 |
| 24"_14.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 1 | -1122.792 | -1.26 |
| 24"_14.5_Nom_py | U3 | | | | | 2 | -1122.792 | -1.08 |
| 24"_14.5_Nom_py | U3 | | | | | 3 | -1122.792 | -0.9 |
| 24"_14.5_Nom_py | U3 | | | | | 4 | -488.178 | -0.25734 |
| 24"_14.5_Nom_py | U3 | | | | | 5 | -238.982 | -0.079013 |
| 24"_14.5_Nom_py | U3 | | | | | 6 | 0 | 0 |
| 24"_14.5_Nom_py | U3 | | | | | 7 | 238.982 | 0.079013 |
| 24"_14.5_Nom_py | U3 | | | | | 8 | 488.178 | 0.25734 |
| 24"_14.5_Nom_py | U3 | | | | | 9 | 1122.792 | 0.9 |
| 24"_14.5_Nom_py | U3 | | | | | 10 | 1122.792 | 1.08 |
| 24"_14.5_Nom_py | U3 | | | | | 11 | 1122.792 | 1.26 |
| 24"_14.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 1 | -1268.675 | -1.89 |
| 24"_14.5_Nom_py_steel | U2 | | | | | 2 | -1268.675 | -1.62 |
| 24"_14.5_Nom_py_steel | U2 | | | | | 3 | -1268.675 | -1.35 |
| 24"_14.5_Nom_py_steel | U2 | | | | | 4 | -559.001 | -0.3843 |
| 24"_14.5_Nom_py_steel | U2 | | | | | 5 | -272.805 | -0.1146 |
| 24"_14.5_Nom_py_steel | U2 | | | | | 6 | 0 | 0 |
| 24"_14.5_Nom_py_steel | U2 | | | | | 7 | 272.805 | 0.1146 |
| 24"_14.5_Nom_py_steel | U2 | | | | | 8 | 559.001 | 0.3843 |
| 24"_14.5_Nom_py_steel | U2 | | | | | 9 | 1268.675 | 1.35 |
| 24"_14.5_Nom_py_steel | U2 | | | | | 10 | 1268.675 | 1.62 |
| 24"_14.5_Nom_py_steel | U2 | | | | | 11 | 1268.675 | 1.89 |
| 24"_14.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 1 | -1268.675 | -1.89 |
| 24"_14.5_Nom_py_steel | U3 | | | | | 2 | -1268.675 | -1.62 |
| 24"_14.5_Nom_py_steel | U3 | | | | | 3 | -1268.675 | -1.35 |
| 24"_14.5_Nom_py_steel | U3 | | | | | 4 | -559.001 | -0.3843 |
| 24"_14.5_Nom_py_steel | U3 | | | | | 5 | -272.805 | -0.1146 |
| 24"_14.5_Nom_py_steel | U3 | | | | | 6 | 0 | 0 |
| 24"_14.5_Nom_py_steel | U3 | | | | | 7 | 272.805 | 0.1146 |
| 24"_14.5_Nom_py_steel | U3 | | | | | 8 | 559.001 | 0.3843 |
| 24"_14.5_Nom_py_steel | U3 | | | | | 9 | 1268.675 | 1.35 |
| 24"_14.5_Nom_py_steel | U3 | | | | | 10 | 1268.675 | 1.62 |
| 24"_14.5_Nom_py_steel | U3 | | | | | 11 | 1268.675 | 1.89 |
| 24"_14.5_UB_py | U2 | No | Yes | 0 | 0 | 0 1 | -2245.584 | -1.26 |
| 24"_14.5_UB_py | U2 | | | | | 2 | -2245.584 | -1.08 |
| 24"_14.5_UB_py | U2 | | | | | 3 | -2245.584 | -0.9 |
| 24"_14.5_UB_py | U2 | | | | | 4 | -976.356 | -0.25734 |
| 24"_14.5_UB_py | U2 | | | | | 5 | -477.964 | -0.079013 |
| 24"_14.5_UB_py | U2 | | | | | 6 | 0 | 0 |
| 24"_14.5_UB_py | U2 | | | | | 7 | 477.964 | 0.079013 |
| 24"_14.5_UB_py | U2 | | | | | 8 | 976.356 | 0.25734 |
| 24"_14.5_UB_py | U2 | | | | | 9 | 2245.584 | 0.9 |
| 24"_14.5_UB_py | U2 | | | | | 10 | 2245.584 | 1.08 |
| 24"_14.5_UB_py | U2 | | | | | 11 | 2245.584 | 1.26 |
| 24"_14.5_UB_py | U3 | No | Yes | 0 | 0 | 0 1 | -2245.584 | -1.26 |
| 24"_14.5_UB_py | U3 | | | | | 2 | -2245.584 | -1.08 |
| 24"_14.5_UB_py | U3 | | | | | 3 | -2245.584 | -0.9 |
| 24"_14.5_UB_py | U3 | | | | | 4 | -976.356 | -0.25734 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_14.5_UB_py | U3 | | | | | | 5 | -477.964 | -0.079013 |
| 24"_14.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_14.5_UB_py | U3 | | | | | | 7 | 477.964 | 0.079013 |
| 24"_14.5_UB_py | U3 | | | | | | 8 | 976.356 | 0.25734 |
| 24"_14.5_UB_py | U3 | | | | | | 9 | 2245.584 | 0.9 |
| 24"_14.5_UB_py | U3 | | | | | | 10 | 2245.584 | 1.08 |
| 24"_14.5_UB_py | U3 | | | | | | 11 | 2245.584 | 1.26 |
| 24"_14.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -2537.349 | -1.89 |
| 24"_14.5_UB_py_steel | U2 | | | | | | 2 | -2537.349 | -1.62 |
| 24"_14.5_UB_py_steel | U2 | | | | | | 3 | -2537.349 | -1.35 |
| 24"_14.5_UB_py_steel | U2 | | | | | | 4 | -1118.002 | -0.3843 |
| 24"_14.5_UB_py_steel | U2 | | | | | | 5 | -545.609 | -0.1146 |
| 24"_14.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_14.5_UB_py_steel | U2 | | | | | | 7 | 545.609 | 0.1146 |
| 24"_14.5_UB_py_steel | U2 | | | | | | 8 | 1118.002 | 0.3843 |
| 24"_14.5_UB_py_steel | U2 | | | | | | 9 | 2537.349 | 1.35 |
| 24"_14.5_UB_py_steel | U2 | | | | | | 10 | 2537.349 | 1.62 |
| 24"_14.5_UB_py_steel | U2 | | | | | | 11 | 2537.349 | 1.89 |
| 24"_14.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -2537.349 | -1.89 |
| 24"_14.5_UB_py_steel | U3 | | | | | | 2 | -2537.349 | -1.62 |
| 24"_14.5_UB_py_steel | U3 | | | | | | 3 | -2537.349 | -1.35 |
| 24"_14.5_UB_py_steel | U3 | | | | | | 4 | -1118.002 | -0.3843 |
| 24"_14.5_UB_py_steel | U3 | | | | | | 5 | -545.609 | -0.1146 |
| 24"_14.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_14.5_UB_py_steel | U3 | | | | | | 7 | 545.609 | 0.1146 |
| 24"_14.5_UB_py_steel | U3 | | | | | | 8 | 1118.002 | 0.3843 |
| 24"_14.5_UB_py_steel | U3 | | | | | | 9 | 2537.349 | 1.35 |
| 24"_14.5_UB_py_steel | U3 | | | | | | 10 | 2537.349 | 1.62 |
| 24"_14.5_UB_py_steel | U3 | | | | | | 11 | 2537.349 | 1.89 |
| 24"_16.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -754.319 | -1.26 |
| 24"_16.5_LB_py | U2 | | | | | | 2 | -754.319 | -1.08 |
| 24"_16.5_LB_py | U2 | | | | | | 3 | -754.319 | -0.9 |
| 24"_16.5_LB_py | U2 | | | | | | 4 | -328.905 | -0.2588 |
| 24"_16.5_LB_py | U2 | | | | | | 5 | -163.885 | -0.0823 |
| 24"_16.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_16.5_LB_py | U2 | | | | | | 7 | 163.885 | 0.0823 |
| 24"_16.5_LB_py | U2 | | | | | | 8 | 328.905 | 0.2588 |
| 24"_16.5_LB_py | U2 | | | | | | 9 | 754.319 | 0.9 |
| 24"_16.5_LB_py | U2 | | | | | | 10 | 754.319 | 1.08 |
| 24"_16.5_LB_py | U2 | | | | | | 11 | 754.319 | 1.26 |
| 24"_16.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -754.319 | -1.26 |
| 24"_16.5_LB_py | U3 | | | | | | 2 | -754.319 | -1.08 |
| 24"_16.5_LB_py | U3 | | | | | | 3 | -754.319 | -0.9 |
| 24"_16.5_LB_py | U3 | | | | | | 4 | -328.905 | -0.2588 |
| 24"_16.5_LB_py | U3 | | | | | | 5 | -163.885 | -0.0823 |
| 24"_16.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_16.5_LB_py | U3 | | | | | | 7 | 163.885 | 0.0823 |
| 24"_16.5_LB_py | U3 | | | | | | 8 | 328.905 | 0.2588 |
| 24"_16.5_LB_py | U3 | | | | | | 9 | 754.319 | 0.9 |
| 24"_16.5_LB_py | U3 | | | | | | 10 | 754.319 | 1.08 |
| 24"_16.5_LB_py | U3 | | | | | | 11 | 754.319 | 1.26 |
| 24"_16.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -837.569 | -1.89 |
| 24"_16.5_LB_py_steel | U2 | | | | | | 2 | -837.569 | -1.62 |
| 24"_16.5_LB_py_steel | U2 | | | | | | 3 | -837.569 | -1.35 |
| 24"_16.5_LB_py_steel | U2 | | | | | | 4 | -363.246 | -0.3848 |
| 24"_16.5_LB_py_steel | U2 | | | | | | 5 | -174.993 | -0.1158 |
| 24"_16.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_16.5_LB_py_steel | U2 | | | | | | 7 | 174.993 | 0.1158 |
| 24"_16.5_LB_py_steel | U2 | | | | | | 8 | 363.246 | 0.3848 |
| 24"_16.5_LB_py_steel | U2 | | | | | | 9 | 837.569 | 1.35 |
| 24"_16.5_LB_py_steel | U2 | | | | | | 10 | 837.569 | 1.62 |
| 24"_16.5_LB_py_steel | U2 | | | | | | 11 | 837.569 | 1.89 |
| 24"_16.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -837.569 | -1.89 |
| 24"_16.5_LB_py_steel | U3 | | | | | | 2 | -837.569 | -1.62 |
| 24"_16.5_LB_py_steel | U3 | | | | | | 3 | -837.569 | -1.35 |
| 24"_16.5_LB_py_steel | U3 | | | | | | 4 | -363.246 | -0.3848 |
| 24"_16.5_LB_py_steel | U3 | | | | | | 5 | -174.993 | -0.1158 |
| 24"_16.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_16.5_LB_py_steel | U3 | | | | | | 7 | 174.993 | 0.1158 |
| 24"_16.5_LB_py_steel | U3 | | | | | | 8 | 363.246 | 0.3848 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_16.5_LB_py_steel | U3 | | | | | | 9 | 837.569 | 1.35 |
| 24"_16.5_LB_py_steel | U3 | | | | | | 10 | 837.569 | 1.62 |
| 24"_16.5_LB_py_steel | U3 | | | | | | 11 | 837.569 | 1.89 |
| 24"_16.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -2181.095495 | -1.26 |
| 24"_16.5_LB_py_steel_axial | U1 | | | | | | 2 | -2181.095495 | -0.9 |
| 24"_16.5_LB_py_steel_axial | U1 | | | | | | 3 | -1124.807282 | -0.338621538 |
| 24"_16.5_LB_py_steel_axial | U1 | | | | | | 4 | -605.9432161 | -0.123808308 |
| 24"_16.5_LB_py_steel_axial | U1 | | | | | | 5 | -393.2378008 | -0.062429846 |
| 24"_16.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_16.5_LB_py_steel_axial | U1 | | | | | | 7 | 393.2378008 | 0.062429846 |
| 24"_16.5_LB_py_steel_axial | U1 | | | | | | 8 | 605.9432161 | 0.123808308 |
| 24"_16.5_LB_py_steel_axial | U1 | | | | | | 9 | 1124.807282 | 0.338621538 |
| 24"_16.5_LB_py_steel_axial | U1 | | | | | | 10 | 2181.095495 | 0.9 |
| 24"_16.5_LB_py_steel_axial | U1 | | | | | | 11 | 2181.095495 | 1.26 |
| 24"_16.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1508.638 | -1.26 |
| 24"_16.5_Nom_py | U2 | | | | | | 2 | -1508.638 | -1.08 |
| 24"_16.5_Nom_py | U2 | | | | | | 3 | -1508.638 | -0.9 |
| 24"_16.5_Nom_py | U2 | | | | | | 4 | -657.809 | -0.2588 |
| 24"_16.5_Nom_py | U2 | | | | | | 5 | -327.769 | -0.0823 |
| 24"_16.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_16.5_Nom_py | U2 | | | | | | 7 | 327.769 | 0.0823 |
| 24"_16.5_Nom_py | U2 | | | | | | 8 | 657.809 | 0.2588 |
| 24"_16.5_Nom_py | U2 | | | | | | 9 | 1508.638 | 0.9 |
| 24"_16.5_Nom_py | U2 | | | | | | 10 | 1508.638 | 1.08 |
| 24"_16.5_Nom_py | U2 | | | | | | 11 | 1508.638 | 1.26 |
| 24"_16.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1508.638 | -1.26 |
| 24"_16.5_Nom_py | U3 | | | | | | 2 | -1508.638 | -1.08 |
| 24"_16.5_Nom_py | U3 | | | | | | 3 | -1508.638 | -0.9 |
| 24"_16.5_Nom_py | U3 | | | | | | 4 | -657.809 | -0.2588 |
| 24"_16.5_Nom_py | U3 | | | | | | 5 | -327.769 | -0.0823 |
| 24"_16.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_16.5_Nom_py | U3 | | | | | | 7 | 327.769 | 0.0823 |
| 24"_16.5_Nom_py | U3 | | | | | | 8 | 657.809 | 0.2588 |
| 24"_16.5_Nom_py | U3 | | | | | | 9 | 1508.638 | 0.9 |
| 24"_16.5_Nom_py | U3 | | | | | | 10 | 1508.638 | 1.08 |
| 24"_16.5_Nom_py | U3 | | | | | | 11 | 1508.638 | 1.26 |
| 24"_16.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -1675.137 | -1.89 |
| 24"_16.5_Nom_py_steel | U2 | | | | | | 2 | -1675.137 | -1.62 |
| 24"_16.5_Nom_py_steel | U2 | | | | | | 3 | -1675.137 | -1.35 |
| 24"_16.5_Nom_py_steel | U2 | | | | | | 4 | -726.491 | -0.3848 |
| 24"_16.5_Nom_py_steel | U2 | | | | | | 5 | -349.987 | -0.1158 |
| 24"_16.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_16.5_Nom_py_steel | U2 | | | | | | 7 | 349.987 | 0.1158 |
| 24"_16.5_Nom_py_steel | U2 | | | | | | 8 | 726.491 | 0.3848 |
| 24"_16.5_Nom_py_steel | U2 | | | | | | 9 | 1675.137 | 1.35 |
| 24"_16.5_Nom_py_steel | U2 | | | | | | 10 | 1675.137 | 1.62 |
| 24"_16.5_Nom_py_steel | U2 | | | | | | 11 | 1675.137 | 1.89 |
| 24"_16.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -1675.137 | -1.89 |
| 24"_16.5_Nom_py_steel | U3 | | | | | | 2 | -1675.137 | -1.62 |
| 24"_16.5_Nom_py_steel | U3 | | | | | | 3 | -1675.137 | -1.35 |
| 24"_16.5_Nom_py_steel | U3 | | | | | | 4 | -726.491 | -0.3848 |
| 24"_16.5_Nom_py_steel | U3 | | | | | | 5 | -349.987 | -0.1158 |
| 24"_16.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_16.5_Nom_py_steel | U3 | | | | | | 7 | 349.987 | 0.1158 |
| 24"_16.5_Nom_py_steel | U3 | | | | | | 8 | 726.491 | 0.3848 |
| 24"_16.5_Nom_py_steel | U3 | | | | | | 9 | 1675.137 | 1.35 |
| 24"_16.5_Nom_py_steel | U3 | | | | | | 10 | 1675.137 | 1.62 |
| 24"_16.5_Nom_py_steel | U3 | | | | | | 11 | 1675.137 | 1.89 |
| 24"_16.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -3017.276 | -1.26 |
| 24"_16.5_UB_py | U2 | | | | | | 2 | -3017.276 | -1.08 |
| 24"_16.5_UB_py | U2 | | | | | | 3 | -3017.276 | -0.9 |
| 24"_16.5_UB_py | U2 | | | | | | 4 | -1315.619 | -0.2588 |
| 24"_16.5_UB_py | U2 | | | | | | 5 | -655.538 | -0.0823 |
| 24"_16.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_16.5_UB_py | U2 | | | | | | 7 | 655.538 | 0.0823 |
| 24"_16.5_UB_py | U2 | | | | | | 8 | 1315.619 | 0.2588 |
| 24"_16.5_UB_py | U2 | | | | | | 9 | 3017.276 | 0.9 |
| 24"_16.5_UB_py | U2 | | | | | | 10 | 3017.276 | 1.08 |
| 24"_16.5_UB_py | U2 | | | | | | 11 | 3017.276 | 1.26 |
| 24"_16.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -3017.276 | -1.26 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_16.5_UB_py | U3 | | | | | | 2 | -3017.276 | -1.08 |
| 24"_16.5_UB_py | U3 | | | | | | 3 | -3017.276 | -0.9 |
| 24"_16.5_UB_py | U3 | | | | | | 4 | -1315.619 | -0.2588 |
| 24"_16.5_UB_py | U3 | | | | | | 5 | -655.538 | -0.0823 |
| 24"_16.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_16.5_UB_py | U3 | | | | | | 7 | 655.538 | 0.0823 |
| 24"_16.5_UB_py | U3 | | | | | | 8 | 1315.619 | 0.2588 |
| 24"_16.5_UB_py | U3 | | | | | | 9 | 3017.276 | 0.9 |
| 24"_16.5_UB_py | U3 | | | | | | 10 | 3017.276 | 1.08 |
| 24"_16.5_UB_py | U3 | | | | | | 11 | 3017.276 | 1.26 |
| 24"_16.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -3350.27 | -1.89 |
| 24"_16.5_UB_py_steel | U2 | | | | | | 2 | -3350.27 | -1.62 |
| 24"_16.5_UB_py_steel | U2 | | | | | | 3 | -3350.27 | -1.35 |
| 24"_16.5_UB_py_steel | U2 | | | | | | 4 | -1452.983 | -0.3848 |
| 24"_16.5_UB_py_steel | U2 | | | | | | 5 | -699.974 | -0.1158 |
| 24"_16.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_16.5_UB_py_steel | U2 | | | | | | 7 | 699.974 | 0.1158 |
| 24"_16.5_UB_py_steel | U2 | | | | | | 8 | 1452.983 | 0.3848 |
| 24"_16.5_UB_py_steel | U2 | | | | | | 9 | 3350.273 | 1.35 |
| 24"_16.5_UB_py_steel | U2 | | | | | | 10 | 3350.273 | 1.62 |
| 24"_16.5_UB_py_steel | U2 | | | | | | 11 | 3350.273 | 1.89 |
| 24"_16.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -3350.27 | -1.89 |
| 24"_16.5_UB_py_steel | U3 | | | | | | 2 | -3350.27 | -1.62 |
| 24"_16.5_UB_py_steel | U3 | | | | | | 3 | -3350.27 | -1.35 |
| 24"_16.5_UB_py_steel | U3 | | | | | | 4 | -1452.983 | -0.3848 |
| 24"_16.5_UB_py_steel | U3 | | | | | | 5 | -699.974 | -0.1158 |
| 24"_16.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_16.5_UB_py_steel | U3 | | | | | | 7 | 699.974 | 0.1158 |
| 24"_16.5_UB_py_steel | U3 | | | | | | 8 | 1452.983 | 0.3848 |
| 24"_16.5_UB_py_steel | U3 | | | | | | 9 | 3350.273 | 1.35 |
| 24"_16.5_UB_py_steel | U3 | | | | | | 10 | 3350.273 | 1.62 |
| 24"_16.5_UB_py_steel | U3 | | | | | | 11 | 3350.273 | 1.89 |
| 24"_18.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -548.485 | -8.4 |
| 24"_18.5_LB_py | U2 | | | | | | 2 | -548.485 | -6.72 |
| 24"_18.5_LB_py | U2 | | | | | | 3 | -438.788 | -2.75251 |
| 24"_18.5_LB_py | U2 | | | | | | 4 | -329.091 | -0.87091 |
| 24"_18.5_LB_py | U2 | | | | | | 5 | -182.828 | -0.08296 |
| 24"_18.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_18.5_LB_py | U2 | | | | | | 7 | 182.828 | 0.08296 |
| 24"_18.5_LB_py | U2 | | | | | | 8 | 329.091 | 0.87091 |
| 24"_18.5_LB_py | U2 | | | | | | 9 | 438.788 | 2.75251 |
| 24"_18.5_LB_py | U2 | | | | | | 10 | 548.485 | 6.72 |
| 24"_18.5_LB_py | U2 | | | | | | 11 | 548.485 | 8.4 |
| 24"_18.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -548.485 | -8.4 |
| 24"_18.5_LB_py | U3 | | | | | | 2 | -548.485 | -6.72 |
| 24"_18.5_LB_py | U3 | | | | | | 3 | -438.788 | -2.75251 |
| 24"_18.5_LB_py | U3 | | | | | | 4 | -329.091 | -0.87091 |
| 24"_18.5_LB_py | U3 | | | | | | 5 | -182.828 | -0.08296 |
| 24"_18.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_18.5_LB_py | U3 | | | | | | 7 | 182.828 | 0.08296 |
| 24"_18.5_LB_py | U3 | | | | | | 8 | 329.091 | 0.87091 |
| 24"_18.5_LB_py | U3 | | | | | | 9 | 438.788 | 2.75251 |
| 24"_18.5_LB_py | U3 | | | | | | 10 | 548.485 | 6.72 |
| 24"_18.5_LB_py | U3 | | | | | | 11 | 548.485 | 8.4 |
| 24"_18.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -669.503 | -12.6 |
| 24"_18.5_LB_py_steel | U2 | | | | | | 2 | -669.503 | -10.08 |
| 24"_18.5_LB_py_steel | U2 | | | | | | 3 | -535.602 | -4.1288 |
| 24"_18.5_LB_py_steel | U2 | | | | | | 4 | -401.702 | -1.3064 |
| 24"_18.5_LB_py_steel | U2 | | | | | | 5 | -223.167 | -0.1244 |
| 24"_18.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_18.5_LB_py_steel | U2 | | | | | | 7 | 223.167 | 0.1244 |
| 24"_18.5_LB_py_steel | U2 | | | | | | 8 | 401.702 | 1.3064 |
| 24"_18.5_LB_py_steel | U2 | | | | | | 9 | 535.602 | 4.1288 |
| 24"_18.5_LB_py_steel | U2 | | | | | | 10 | 669.503 | 10.08 |
| 24"_18.5_LB_py_steel | U2 | | | | | | 11 | 669.503 | 12.6 |
| 24"_18.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -669.503 | -12.6 |
| 24"_18.5_LB_py_steel | U3 | | | | | | 2 | -669.503 | -10.08 |
| 24"_18.5_LB_py_steel | U3 | | | | | | 3 | -535.602 | -4.1288 |
| 24"_18.5_LB_py_steel | U3 | | | | | | 4 | -401.702 | -1.3064 |
| 24"_18.5_LB_py_steel | U3 | | | | | | 5 | -223.167 | -0.1244 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_18.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_18.5_LB_py_steel | U3 | | | | | | 7 | 223.167 | 0.1244 |
| 24"_18.5_LB_py_steel | U3 | | | | | | 8 | 401.702 | 1.3064 |
| 24"_18.5_LB_py_steel | U3 | | | | | | 9 | 535.602 | 4.1288 |
| 24"_18.5_LB_py_steel | U3 | | | | | | 10 | 669.503 | 10.08 |
| 24"_18.5_LB_py_steel | U3 | | | | | | 11 | 669.503 | 12.6 |
| 24"_18.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -193.9088726 | -4.332 |
| 24"_18.5_LB_py_steel_axial | U1 | | | | | | 2 | -193.9088726 | -4.02 |
| 24"_18.5_LB_py_steel_axial | U1 | | | | | | 3 | -112.8127556 | -2.033628 |
| 24"_18.5_LB_py_steel_axial | U1 | | | | | | 4 | -68.19836587 | -0.853408 |
| 24"_18.5_LB_py_steel_axial | U1 | | | | | | 5 | -41.2989647 | -0.15374 |
| 24"_18.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_18.5_LB_py_steel_axial | U1 | | | | | | 7 | 41.2989647 | 0.15374 |
| 24"_18.5_LB_py_steel_axial | U1 | | | | | | 8 | 68.19836587 | 0.853408 |
| 24"_18.5_LB_py_steel_axial | U1 | | | | | | 9 | 112.8127556 | 2.033628 |
| 24"_18.5_LB_py_steel_axial | U1 | | | | | | 10 | 193.9088726 | 4.02 |
| 24"_18.5_LB_py_steel_axial | U1 | | | | | | 11 | 193.9088726 | 4.332 |
| 24"_18.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1096.969 | -8.4 |
| 24"_18.5_Nom_py | U2 | | | | | | 2 | -1096.969 | -6.72 |
| 24"_18.5_Nom_py | U2 | | | | | | 3 | -877.575 | -2.75251 |
| 24"_18.5_Nom_py | U2 | | | | | | 4 | -658.181 | -0.87091 |
| 24"_18.5_Nom_py | U2 | | | | | | 5 | -365.656 | -0.08296 |
| 24"_18.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_18.5_Nom_py | U2 | | | | | | 7 | 365.656 | 0.08296 |
| 24"_18.5_Nom_py | U2 | | | | | | 8 | 658.181 | 0.87091 |
| 24"_18.5_Nom_py | U2 | | | | | | 9 | 877.575 | 2.75251 |
| 24"_18.5_Nom_py | U2 | | | | | | 10 | 1096.969 | 6.72 |
| 24"_18.5_Nom_py | U2 | | | | | | 11 | 1096.969 | 8.4 |
| 24"_18.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1096.969 | -8.4 |
| 24"_18.5_Nom_py | U3 | | | | | | 2 | -1096.969 | -6.72 |
| 24"_18.5_Nom_py | U3 | | | | | | 3 | -877.575 | -2.75251 |
| 24"_18.5_Nom_py | U3 | | | | | | 4 | -658.181 | -0.87091 |
| 24"_18.5_Nom_py | U3 | | | | | | 5 | -365.656 | -0.08296 |
| 24"_18.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_18.5_Nom_py | U3 | | | | | | 7 | 365.656 | 0.08296 |
| 24"_18.5_Nom_py | U3 | | | | | | 8 | 658.181 | 0.87091 |
| 24"_18.5_Nom_py | U3 | | | | | | 9 | 877.575 | 2.75251 |
| 24"_18.5_Nom_py | U3 | | | | | | 10 | 1096.969 | 6.72 |
| 24"_18.5_Nom_py | U3 | | | | | | 11 | 1096.969 | 8.4 |
| 24"_18.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -1339.005 | -12.6 |
| 24"_18.5_Nom_py_steel | U2 | | | | | | 2 | -1339.005 | -10.08 |
| 24"_18.5_Nom_py_steel | U2 | | | | | | 3 | -1071.205 | -4.1288 |
| 24"_18.5_Nom_py_steel | U2 | | | | | | 4 | -803.403 | -1.3064 |
| 24"_18.5_Nom_py_steel | U2 | | | | | | 5 | -446.335 | -0.1244 |
| 24"_18.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_18.5_Nom_py_steel | U2 | | | | | | 7 | 446.335 | 0.1244 |
| 24"_18.5_Nom_py_steel | U2 | | | | | | 8 | 803.403 | 1.3064 |
| 24"_18.5_Nom_py_steel | U2 | | | | | | 9 | 1071.205 | 4.1288 |
| 24"_18.5_Nom_py_steel | U2 | | | | | | 10 | 1339.005 | 10.08 |
| 24"_18.5_Nom_py_steel | U2 | | | | | | 11 | 1339.005 | 12.6 |
| 24"_18.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -1339.005 | -12.6 |
| 24"_18.5_Nom_py_steel | U3 | | | | | | 2 | -1339.005 | -10.08 |
| 24"_18.5_Nom_py_steel | U3 | | | | | | 3 | -1071.205 | -4.1288 |
| 24"_18.5_Nom_py_steel | U3 | | | | | | 4 | -803.403 | -1.3064 |
| 24"_18.5_Nom_py_steel | U3 | | | | | | 5 | -446.335 | -0.1244 |
| 24"_18.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_18.5_Nom_py_steel | U3 | | | | | | 7 | 446.335 | 0.1244 |
| 24"_18.5_Nom_py_steel | U3 | | | | | | 8 | 803.403 | 1.3064 |
| 24"_18.5_Nom_py_steel | U3 | | | | | | 9 | 1071.205 | 4.1288 |
| 24"_18.5_Nom_py_steel | U3 | | | | | | 10 | 1339.005 | 10.08 |
| 24"_18.5_Nom_py_steel | U3 | | | | | | 11 | 1339.005 | 12.6 |
| 24"_18.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -2193.938 | -8.4 |
| 24"_18.5_UB_py | U2 | | | | | | 2 | -2193.938 | -6.72 |
| 24"_18.5_UB_py | U2 | | | | | | 3 | -1755.15 | -2.75251 |
| 24"_18.5_UB_py | U2 | | | | | | 4 | -1316.363 | -0.87091 |
| 24"_18.5_UB_py | U2 | | | | | | 5 | -731.313 | -0.08296 |
| 24"_18.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_18.5_UB_py | U2 | | | | | | 7 | 731.313 | 0.08296 |
| 24"_18.5_UB_py | U2 | | | | | | 8 | 1316.363 | 0.87091 |
| 24"_18.5_UB_py | U2 | | | | | | 9 | 1755.15 | 2.75251 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_18.5_UB_py | U2 | | | | | | 10 | 2193.938 | 6.72 |
| 24"_18.5_UB_py | U2 | | | | | | 11 | 2193.938 | 8.4 |
| 24"_18.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -2193.938 | -8.4 |
| 24"_18.5_UB_py | U3 | | | | | | 2 | -2193.938 | -6.72 |
| 24"_18.5_UB_py | U3 | | | | | | 3 | -1755.15 | -2.75251 |
| 24"_18.5_UB_py | U3 | | | | | | 4 | -1316.363 | -0.87091 |
| 24"_18.5_UB_py | U3 | | | | | | 5 | -731.313 | -0.08296 |
| 24"_18.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_18.5_UB_py | U3 | | | | | | 7 | 731.313 | 0.08296 |
| 24"_18.5_UB_py | U3 | | | | | | 8 | 1316.363 | 0.87091 |
| 24"_18.5_UB_py | U3 | | | | | | 9 | 1755.15 | 2.75251 |
| 24"_18.5_UB_py | U3 | | | | | | 10 | 2193.938 | 6.72 |
| 24"_18.5_UB_py | U3 | | | | | | 11 | 2193.938 | 8.4 |
| 24"_18.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -2678.011 | -12.6 |
| 24"_18.5_UB_py_steel | U2 | | | | | | 2 | -2678.011 | -10.08 |
| 24"_18.5_UB_py_steel | U2 | | | | | | 3 | -2142.409 | -4.1288 |
| 24"_18.5_UB_py_steel | U2 | | | | | | 4 | -1606.807 | -1.3064 |
| 24"_18.5_UB_py_steel | U2 | | | | | | 5 | -892.67 | -0.1244 |
| 24"_18.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_18.5_UB_py_steel | U2 | | | | | | 7 | 892.67 | 0.1244 |
| 24"_18.5_UB_py_steel | U2 | | | | | | 8 | 1606.807 | 1.3064 |
| 24"_18.5_UB_py_steel | U2 | | | | | | 9 | 2142.409 | 4.1288 |
| 24"_18.5_UB_py_steel | U2 | | | | | | 10 | 2678.011 | 10.08 |
| 24"_18.5_UB_py_steel | U2 | | | | | | 11 | 2678.011 | 12.6 |
| 24"_18.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -2678.011 | -12.6 |
| 24"_18.5_UB_py_steel | U3 | | | | | | 2 | -2678.011 | -10.08 |
| 24"_18.5_UB_py_steel | U3 | | | | | | 3 | -2142.409 | -4.1288 |
| 24"_18.5_UB_py_steel | U3 | | | | | | 4 | -1606.807 | -1.3064 |
| 24"_18.5_UB_py_steel | U3 | | | | | | 5 | -892.67 | -0.1244 |
| 24"_18.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_18.5_UB_py_steel | U3 | | | | | | 7 | 892.67 | 0.1244 |
| 24"_18.5_UB_py_steel | U3 | | | | | | 8 | 1606.807 | 1.3064 |
| 24"_18.5_UB_py_steel | U3 | | | | | | 9 | 2142.409 | 4.1288 |
| 24"_18.5_UB_py_steel | U3 | | | | | | 10 | 2678.011 | 10.08 |
| 24"_18.5_UB_py_steel | U3 | | | | | | 11 | 2678.011 | 12.6 |
| 24"_2.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -9.78 | -10.2 |
| 24"_2.5_LB_py | U2 | | | | | | 2 | -9.78 | -9.6 |
| 24"_2.5_LB_py | U2 | | | | | | 3 | -7.824 | -4.9152 |
| 24"_2.5_LB_py | U2 | | | | | | 4 | -5.868 | -2.0736 |
| 24"_2.5_LB_py | U2 | | | | | | 5 | -3.26 | -0.35556 |
| 24"_2.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_2.5_LB_py | U2 | | | | | | 7 | 3.26 | 0.35556 |
| 24"_2.5_LB_py | U2 | | | | | | 8 | 5.868 | 2.0736 |
| 24"_2.5_LB_py | U2 | | | | | | 9 | 7.824 | 4.9152 |
| 24"_2.5_LB_py | U2 | | | | | | 10 | 9.78 | 9.6 |
| 24"_2.5_LB_py | U2 | | | | | | 11 | 9.78 | 10.2 |
| 24"_2.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -9.78 | -10.2 |
| 24"_2.5_LB_py | U3 | | | | | | 2 | -9.78 | -9.6 |
| 24"_2.5_LB_py | U3 | | | | | | 3 | -7.824 | -4.9152 |
| 24"_2.5_LB_py | U3 | | | | | | 4 | -5.868 | -2.0736 |
| 24"_2.5_LB_py | U3 | | | | | | 5 | -3.26 | -0.35556 |
| 24"_2.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_2.5_LB_py | U3 | | | | | | 7 | 3.26 | 0.35556 |
| 24"_2.5_LB_py | U3 | | | | | | 8 | 5.868 | 2.0736 |
| 24"_2.5_LB_py | U3 | | | | | | 9 | 7.824 | 4.9152 |
| 24"_2.5_LB_py | U3 | | | | | | 10 | 9.78 | 9.6 |
| 24"_2.5_LB_py | U3 | | | | | | 11 | 9.78 | 10.2 |
| 24"_2.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -13.92 | -15.3 |
| 24"_2.5_LB_py_steel | U2 | | | | | | 2 | -13.92 | -14.4 |
| 24"_2.5_LB_py_steel | U2 | | | | | | 3 | -11.136 | -7.3728 |
| 24"_2.5_LB_py_steel | U2 | | | | | | 4 | -8.352 | -3.1104 |
| 24"_2.5_LB_py_steel | U2 | | | | | | 5 | -4.64 | -0.5333 |
| 24"_2.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_2.5_LB_py_steel | U2 | | | | | | 7 | 4.64 | 0.5333 |
| 24"_2.5_LB_py_steel | U2 | | | | | | 8 | 8.352 | 3.1104 |
| 24"_2.5_LB_py_steel | U2 | | | | | | 9 | 11.136 | 7.3728 |
| 24"_2.5_LB_py_steel | U2 | | | | | | 10 | 13.92 | 14.4 |
| 24"_2.5_LB_py_steel | U2 | | | | | | 11 | 13.92 | 15.3 |
| 24"_2.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -13.92 | -15.3 |
| 24"_2.5_LB_py_steel | U3 | | | | | | 2 | -13.92 | -14.4 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_2.5_LB_py_steel | U3 | | | | | | 3 | -11.136 | -7.3728 |
| 24"_2.5_LB_py_steel | U3 | | | | | | 4 | -8.352 | -3.1104 |
| 24"_2.5_LB_py_steel | U3 | | | | | | 5 | -4.64 | -0.5333 |
| 24"_2.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_2.5_LB_py_steel | U3 | | | | | | 7 | 4.64 | 0.5333 |
| 24"_2.5_LB_py_steel | U3 | | | | | | 8 | 8.352 | 3.1104 |
| 24"_2.5_LB_py_steel | U3 | | | | | | 9 | 11.136 | 7.3728 |
| 24"_2.5_LB_py_steel | U3 | | | | | | 10 | 13.92 | 14.4 |
| 24"_2.5_LB_py_steel | U3 | | | | | | 11 | 13.92 | 15.3 |
| 24"_2.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -162.3510835 | -1.26 |
| 24"_2.5_LB_py_steel_axial | U1 | | | | | | 2 | -162.3510835 | -0.9 |
| 24"_2.5_LB_py_steel_axial | U1 | | | | | | 3 | -109.8103961 | -0.336409429 |
| 24"_2.5_LB_py_steel_axial | U1 | | | | | | 4 | -78.46984282 | -0.113837429 |
| 24"_2.5_LB_py_steel_axial | U1 | | | | | | 5 | -61.58028734 | -0.050246857 |
| 24"_2.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_2.5_LB_py_steel_axial | U1 | | | | | | 7 | 61.58028734 | 0.050246857 |
| 24"_2.5_LB_py_steel_axial | U1 | | | | | | 8 | 78.46984282 | 0.113837429 |
| 24"_2.5_LB_py_steel_axial | U1 | | | | | | 9 | 109.8103961 | 0.336409429 |
| 24"_2.5_LB_py_steel_axial | U1 | | | | | | 10 | 162.3510835 | 0.9 |
| 24"_2.5_LB_py_steel_axial | U1 | | | | | | 11 | 162.3510835 | 1.26 |
| 24"_2.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -19.56 | -10.2 |
| 24"_2.5_Nom_py | U2 | | | | | | 2 | -19.56 | -9.6 |
| 24"_2.5_Nom_py | U2 | | | | | | 3 | -15.648 | -4.9152 |
| 24"_2.5_Nom_py | U2 | | | | | | 4 | -11.736 | -2.0736 |
| 24"_2.5_Nom_py | U2 | | | | | | 5 | -6.52 | -0.35556 |
| 24"_2.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_2.5_Nom_py | U2 | | | | | | 7 | 6.52 | 0.35556 |
| 24"_2.5_Nom_py | U2 | | | | | | 8 | 11.736 | 2.0736 |
| 24"_2.5_Nom_py | U2 | | | | | | 9 | 15.648 | 4.9152 |
| 24"_2.5_Nom_py | U2 | | | | | | 10 | 19.56 | 9.6 |
| 24"_2.5_Nom_py | U2 | | | | | | 11 | 19.56 | 10.2 |
| 24"_2.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -19.56 | -10.2 |
| 24"_2.5_Nom_py | U3 | | | | | | 2 | -19.56 | -9.6 |
| 24"_2.5_Nom_py | U3 | | | | | | 3 | -15.648 | -4.9152 |
| 24"_2.5_Nom_py | U3 | | | | | | 4 | -11.736 | -2.0736 |
| 24"_2.5_Nom_py | U3 | | | | | | 5 | -6.52 | -0.35556 |
| 24"_2.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_2.5_Nom_py | U3 | | | | | | 7 | 6.52 | 0.35556 |
| 24"_2.5_Nom_py | U3 | | | | | | 8 | 11.736 | 2.0736 |
| 24"_2.5_Nom_py | U3 | | | | | | 9 | 15.648 | 4.9152 |
| 24"_2.5_Nom_py | U3 | | | | | | 10 | 19.56 | 9.6 |
| 24"_2.5_Nom_py | U3 | | | | | | 11 | 19.56 | 10.2 |
| 24"_2.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -27.84 | -15.3 |
| 24"_2.5_Nom_py_steel | U2 | | | | | | 2 | -27.84 | -14.4 |
| 24"_2.5_Nom_py_steel | U2 | | | | | | 3 | -22.272 | -7.3728 |
| 24"_2.5_Nom_py_steel | U2 | | | | | | 4 | -16.704 | -3.1104 |
| 24"_2.5_Nom_py_steel | U2 | | | | | | 5 | -9.28 | -0.5333 |
| 24"_2.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_2.5_Nom_py_steel | U2 | | | | | | 7 | 9.28 | 0.5333 |
| 24"_2.5_Nom_py_steel | U2 | | | | | | 8 | 16.704 | 3.1104 |
| 24"_2.5_Nom_py_steel | U2 | | | | | | 9 | 22.272 | 7.3728 |
| 24"_2.5_Nom_py_steel | U2 | | | | | | 10 | 27.84 | 14.4 |
| 24"_2.5_Nom_py_steel | U2 | | | | | | 11 | 27.84 | 15.3 |
| 24"_2.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -27.84 | -15.3 |
| 24"_2.5_Nom_py_steel | U3 | | | | | | 2 | -27.84 | -14.4 |
| 24"_2.5_Nom_py_steel | U3 | | | | | | 3 | -22.272 | -7.3728 |
| 24"_2.5_Nom_py_steel | U3 | | | | | | 4 | -16.704 | -3.1104 |
| 24"_2.5_Nom_py_steel | U3 | | | | | | 5 | -9.28 | -0.5333 |
| 24"_2.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_2.5_Nom_py_steel | U3 | | | | | | 7 | 9.28 | 0.5333 |
| 24"_2.5_Nom_py_steel | U3 | | | | | | 8 | 16.704 | 3.1104 |
| 24"_2.5_Nom_py_steel | U3 | | | | | | 9 | 22.272 | 7.3728 |
| 24"_2.5_Nom_py_steel | U3 | | | | | | 10 | 27.84 | 14.4 |
| 24"_2.5_Nom_py_steel | U3 | | | | | | 11 | 27.84 | 15.3 |
| 24"_2.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -39.12 | -10.2 |
| 24"_2.5_UB_py | U2 | | | | | | 2 | -39.12 | -9.6 |
| 24"_2.5_UB_py | U2 | | | | | | 3 | -31.296 | -4.9152 |
| 24"_2.5_UB_py | U2 | | | | | | 4 | -23.472 | -2.0736 |
| 24"_2.5_UB_py | U2 | | | | | | 5 | -13.04 | -0.35556 |
| 24"_2.5_UB_py | U2 | | | | | | 6 | 0 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_2.5_UB_py | U2 | | | | | | 7 | 13.04 | 0.35556 |
| 24"_2.5_UB_py | U2 | | | | | | 8 | 23.472 | 2.0736 |
| 24"_2.5_UB_py | U2 | | | | | | 9 | 31.296 | 4.9152 |
| 24"_2.5_UB_py | U2 | | | | | | 10 | 39.12 | 9.6 |
| 24"_2.5_UB_py | U2 | | | | | | 11 | 39.12 | 10.2 |
| 24"_2.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -39.12 | -10.2 |
| 24"_2.5_UB_py | U3 | | | | | | 2 | -39.12 | -9.6 |
| 24"_2.5_UB_py | U3 | | | | | | 3 | -31.296 | -4.9152 |
| 24"_2.5_UB_py | U3 | | | | | | 4 | -23.472 | -2.0736 |
| 24"_2.5_UB_py | U3 | | | | | | 5 | -13.04 | -0.35556 |
| 24"_2.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_2.5_UB_py | U3 | | | | | | 7 | 13.04 | 0.35556 |
| 24"_2.5_UB_py | U3 | | | | | | 8 | 23.472 | 2.0736 |
| 24"_2.5_UB_py | U3 | | | | | | 9 | 31.296 | 4.9152 |
| 24"_2.5_UB_py | U3 | | | | | | 10 | 39.12 | 9.6 |
| 24"_2.5_UB_py | U3 | | | | | | 11 | 39.12 | 10.2 |
| 24"_2.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -55.68 | -15.3 |
| 24"_2.5_UB_py_steel | U2 | | | | | | 2 | -55.68 | -14.4 |
| 24"_2.5_UB_py_steel | U2 | | | | | | 3 | -44.544 | -7.3728 |
| 24"_2.5_UB_py_steel | U2 | | | | | | 4 | -33.408 | -3.1104 |
| 24"_2.5_UB_py_steel | U2 | | | | | | 5 | -18.56 | -0.5333 |
| 24"_2.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_2.5_UB_py_steel | U2 | | | | | | 7 | 18.56 | 0.5333 |
| 24"_2.5_UB_py_steel | U2 | | | | | | 8 | 33.408 | 3.1104 |
| 24"_2.5_UB_py_steel | U2 | | | | | | 9 | 44.544 | 7.3728 |
| 24"_2.5_UB_py_steel | U2 | | | | | | 10 | 55.68 | 14.4 |
| 24"_2.5_UB_py_steel | U2 | | | | | | 11 | 55.68 | 15.3 |
| 24"_2.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -55.68 | -15.3 |
| 24"_2.5_UB_py_steel | U3 | | | | | | 2 | -55.68 | -14.4 |
| 24"_2.5_UB_py_steel | U3 | | | | | | 3 | -44.544 | -7.3728 |
| 24"_2.5_UB_py_steel | U3 | | | | | | 4 | -33.408 | -3.1104 |
| 24"_2.5_UB_py_steel | U3 | | | | | | 5 | -18.56 | -0.5333 |
| 24"_2.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_2.5_UB_py_steel | U3 | | | | | | 7 | 18.56 | 0.5333 |
| 24"_2.5_UB_py_steel | U3 | | | | | | 8 | 33.408 | 3.1104 |
| 24"_2.5_UB_py_steel | U3 | | | | | | 9 | 44.544 | 7.3728 |
| 24"_2.5_UB_py_steel | U3 | | | | | | 10 | 55.68 | 14.4 |
| 24"_2.5_UB_py_steel | U3 | | | | | | 11 | 55.68 | 15.3 |
| 24"_20.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -594.943 | -8.4 |
| 24"_20.5_LB_py | U2 | | | | | | 2 | -594.943 | -6.72 |
| 24"_20.5_LB_py | U2 | | | | | | 3 | -475.955 | -2.75251 |
| 24"_20.5_LB_py | U2 | | | | | | 4 | -356.966 | -0.87091 |
| 24"_20.5_LB_py | U2 | | | | | | 5 | -198.314 | -0.08296 |
| 24"_20.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_20.5_LB_py | U2 | | | | | | 7 | 198.314 | 0.08296 |
| 24"_20.5_LB_py | U2 | | | | | | 8 | 356.966 | 0.87091 |
| 24"_20.5_LB_py | U2 | | | | | | 9 | 475.955 | 2.75251 |
| 24"_20.5_LB_py | U2 | | | | | | 10 | 594.943 | 6.72 |
| 24"_20.5_LB_py | U2 | | | | | | 11 | 594.943 | 8.4 |
| 24"_20.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -594.943 | -8.4 |
| 24"_20.5_LB_py | U3 | | | | | | 2 | -594.943 | -6.72 |
| 24"_20.5_LB_py | U3 | | | | | | 3 | -475.955 | -2.75251 |
| 24"_20.5_LB_py | U3 | | | | | | 4 | -356.966 | -0.87091 |
| 24"_20.5_LB_py | U3 | | | | | | 5 | -198.314 | -0.08296 |
| 24"_20.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_20.5_LB_py | U3 | | | | | | 7 | 198.314 | 0.08296 |
| 24"_20.5_LB_py | U3 | | | | | | 8 | 356.966 | 0.87091 |
| 24"_20.5_LB_py | U3 | | | | | | 9 | 475.955 | 2.75251 |
| 24"_20.5_LB_py | U3 | | | | | | 10 | 594.943 | 6.72 |
| 24"_20.5_LB_py | U3 | | | | | | 11 | 594.943 | 8.4 |
| 24"_20.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -718.712 | -12.6 |
| 24"_20.5_LB_py_steel | U2 | | | | | | 2 | -718.712 | -10.08 |
| 24"_20.5_LB_py_steel | U2 | | | | | | 3 | -574.969 | -4.1288 |
| 24"_20.5_LB_py_steel | U2 | | | | | | 4 | -431.227 | -1.3064 |
| 24"_20.5_LB_py_steel | U2 | | | | | | 5 | -239.571 | -0.1244 |
| 24"_20.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_20.5_LB_py_steel | U2 | | | | | | 7 | 239.571 | 0.1244 |
| 24"_20.5_LB_py_steel | U2 | | | | | | 8 | 431.227 | 1.3064 |
| 24"_20.5_LB_py_steel | U2 | | | | | | 9 | 574.969 | 4.1288 |
| 24"_20.5_LB_py_steel | U2 | | | | | | 10 | 718.712 | 10.08 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_20.5_LB_py_steel | U2 | | | | | | 11 | 718.712 | 12.6 |
| 24"_20.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -718.712 | -12.6 |
| 24"_20.5_LB_py_steel | U3 | | | | | | 2 | -718.712 | -10.08 |
| 24"_20.5_LB_py_steel | U3 | | | | | | 3 | -574.969 | -4.1288 |
| 24"_20.5_LB_py_steel | U3 | | | | | | 4 | -431.227 | -1.3064 |
| 24"_20.5_LB_py_steel | U3 | | | | | | 5 | -239.571 | -0.1244 |
| 24"_20.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_20.5_LB_py_steel | U3 | | | | | | 7 | 239.571 | 0.1244 |
| 24"_20.5_LB_py_steel | U3 | | | | | | 8 | 431.227 | 1.3064 |
| 24"_20.5_LB_py_steel | U3 | | | | | | 9 | 574.969 | 4.1288 |
| 24"_20.5_LB_py_steel | U3 | | | | | | 10 | 718.712 | 10.08 |
| 24"_20.5_LB_py_steel | U3 | | | | | | 11 | 718.712 | 12.6 |
| 24"_20.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | 1 | | -233.28 | -5.1 |
| 24"_20.5_LB_py_steel_axial | U1 | | | | | 2 | | -233.28 | -4.8 |
| 24"_20.5_LB_py_steel_axial | U1 | | | | | 3 | | -186.624 | -2.4576 |
| 24"_20.5_LB_py_steel_axial | U1 | | | | | 4 | | -139.968 | -1.0368 |
| 24"_20.5_LB_py_steel_axial | U1 | | | | | 5 | | -77.76 | -0.17778 |
| 24"_20.5_LB_py_steel_axial | U1 | | | | | 6 | | 0 | 0 |
| 24"_20.5_LB_py_steel_axial | U1 | | | | | 7 | | 77.76 | 0.17778 |
| 24"_20.5_LB_py_steel_axial | U1 | | | | | 8 | | 139.968 | 1.0368 |
| 24"_20.5_LB_py_steel_axial | U1 | | | | | 9 | | 186.624 | 2.4576 |
| 24"_20.5_LB_py_steel_axial | U1 | | | | | 10 | | 233.28 | 4.8 |
| 24"_20.5_LB_py_steel_axial | U1 | | | | | 11 | | 233.28 | 5.1 |
| 24"_20.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1189.886 | -8.4 |
| 24"_20.5_Nom_py | U2 | | | | | | 2 | -1189.886 | -6.72 |
| 24"_20.5_Nom_py | U2 | | | | | | 3 | -951.909 | -2.75251 |
| 24"_20.5_Nom_py | U2 | | | | | | 4 | -713.932 | -0.87091 |
| 24"_20.5_Nom_py | U2 | | | | | | 5 | -396.629 | -0.08296 |
| 24"_20.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_20.5_Nom_py | U2 | | | | | | 7 | 396.629 | 0.08296 |
| 24"_20.5_Nom_py | U2 | | | | | | 8 | 713.932 | 0.87091 |
| 24"_20.5_Nom_py | U2 | | | | | | 9 | 951.909 | 2.75251 |
| 24"_20.5_Nom_py | U2 | | | | | | 10 | 1189.886 | 6.72 |
| 24"_20.5_Nom_py | U2 | | | | | | 11 | 1189.886 | 8.4 |
| 24"_20.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1189.886 | -8.4 |
| 24"_20.5_Nom_py | U3 | | | | | | 2 | -1189.886 | -6.72 |
| 24"_20.5_Nom_py | U3 | | | | | | 3 | -951.909 | -2.75251 |
| 24"_20.5_Nom_py | U3 | | | | | | 4 | -713.932 | -0.87091 |
| 24"_20.5_Nom_py | U3 | | | | | | 5 | -396.629 | -0.08296 |
| 24"_20.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_20.5_Nom_py | U3 | | | | | | 7 | 396.629 | 0.08296 |
| 24"_20.5_Nom_py | U3 | | | | | | 8 | 713.932 | 0.87091 |
| 24"_20.5_Nom_py | U3 | | | | | | 9 | 951.909 | 2.75251 |
| 24"_20.5_Nom_py | U3 | | | | | | 10 | 1189.886 | 6.72 |
| 24"_20.5_Nom_py | U3 | | | | | | 11 | 1189.886 | 8.4 |
| 24"_20.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -1437.424 | -12.6 |
| 24"_20.5_Nom_py_steel | U2 | | | | | | 2 | -1437.424 | -10.08 |
| 24"_20.5_Nom_py_steel | U2 | | | | | | 3 | -1149.939 | -4.1288 |
| 24"_20.5_Nom_py_steel | U2 | | | | | | 4 | -862.455 | -1.3064 |
| 24"_20.5_Nom_py_steel | U2 | | | | | | 5 | -479.141 | -0.1244 |
| 24"_20.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_20.5_Nom_py_steel | U2 | | | | | | 7 | 479.141 | 0.1244 |
| 24"_20.5_Nom_py_steel | U2 | | | | | | 8 | 862.455 | 1.3064 |
| 24"_20.5_Nom_py_steel | U2 | | | | | | 9 | 1149.939 | 4.1288 |
| 24"_20.5_Nom_py_steel | U2 | | | | | | 10 | 1437.424 | 10.08 |
| 24"_20.5_Nom_py_steel | U2 | | | | | | 11 | 1437.424 | 12.6 |
| 24"_20.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -1437.424 | -12.6 |
| 24"_20.5_Nom_py_steel | U3 | | | | | | 2 | -1437.424 | -10.08 |
| 24"_20.5_Nom_py_steel | U3 | | | | | | 3 | -1149.939 | -4.1288 |
| 24"_20.5_Nom_py_steel | U3 | | | | | | 4 | -862.455 | -1.3064 |
| 24"_20.5_Nom_py_steel | U3 | | | | | | 5 | -479.141 | -0.1244 |
| 24"_20.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_20.5_Nom_py_steel | U3 | | | | | | 7 | 479.141 | 0.1244 |
| 24"_20.5_Nom_py_steel | U3 | | | | | | 8 | 862.455 | 1.3064 |
| 24"_20.5_Nom_py_steel | U3 | | | | | | 9 | 1149.939 | 4.1288 |
| 24"_20.5_Nom_py_steel | U3 | | | | | | 10 | 1437.424 | 10.08 |
| 24"_20.5_Nom_py_steel | U3 | | | | | | 11 | 1437.424 | 12.6 |
| 24"_20.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -2379.773 | -8.4 |
| 24"_20.5_UB_py | U2 | | | | | | 2 | -2379.773 | -6.72 |
| 24"_20.5_UB_py | U2 | | | | | | 3 | -1903.818 | -2.75251 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_20.5_UB_py | U2 | | | | | | 4 | -1427.864 | -0.87091 |
| 24"_20.5_UB_py | U2 | | | | | | 5 | -793.258 | -0.08296 |
| 24"_20.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_20.5_UB_py | U2 | | | | | | 7 | 793.258 | 0.08296 |
| 24"_20.5_UB_py | U2 | | | | | | 8 | 1427.864 | 0.87091 |
| 24"_20.5_UB_py | U2 | | | | | | 9 | 1903.818 | 2.75251 |
| 24"_20.5_UB_py | U2 | | | | | | 10 | 2379.773 | 6.72 |
| 24"_20.5_UB_py | U2 | | | | | | 11 | 2379.773 | 8.4 |
| 24"_20.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -2379.773 | -8.4 |
| 24"_20.5_UB_py | U3 | | | | | | 2 | -2379.773 | -6.72 |
| 24"_20.5_UB_py | U3 | | | | | | 3 | -1903.818 | -2.75251 |
| 24"_20.5_UB_py | U3 | | | | | | 4 | -1427.864 | -0.87091 |
| 24"_20.5_UB_py | U3 | | | | | | 5 | -793.258 | -0.08296 |
| 24"_20.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_20.5_UB_py | U3 | | | | | | 7 | 793.258 | 0.08296 |
| 24"_20.5_UB_py | U3 | | | | | | 8 | 1427.864 | 0.87091 |
| 24"_20.5_UB_py | U3 | | | | | | 9 | 1903.818 | 2.75251 |
| 24"_20.5_UB_py | U3 | | | | | | 10 | 2379.773 | 6.72 |
| 24"_20.5_UB_py | U3 | | | | | | 11 | 2379.773 | 8.4 |
| 24"_20.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -2874.848 | -12.6 |
| 24"_20.5_UB_py_steel | U2 | | | | | | 2 | -2874.848 | -10.08 |
| 24"_20.5_UB_py_steel | U2 | | | | | | 3 | -2299.879 | -4.1288 |
| 24"_20.5_UB_py_steel | U2 | | | | | | 4 | -1724.909 | -1.3064 |
| 24"_20.5_UB_py_steel | U2 | | | | | | 5 | -958.283 | -0.1244 |
| 24"_20.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_20.5_UB_py_steel | U2 | | | | | | 7 | 958.283 | 0.1244 |
| 24"_20.5_UB_py_steel | U2 | | | | | | 8 | 1724.909 | 1.3064 |
| 24"_20.5_UB_py_steel | U2 | | | | | | 9 | 2299.879 | 4.1288 |
| 24"_20.5_UB_py_steel | U2 | | | | | | 10 | 2874.848 | 10.08 |
| 24"_20.5_UB_py_steel | U2 | | | | | | 11 | 2874.848 | 12.6 |
| 24"_20.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -2874.848 | -12.6 |
| 24"_20.5_UB_py_steel | U3 | | | | | | 2 | -2874.848 | -10.08 |
| 24"_20.5_UB_py_steel | U3 | | | | | | 3 | -2299.879 | -4.1288 |
| 24"_20.5_UB_py_steel | U3 | | | | | | 4 | -1724.909 | -1.3064 |
| 24"_20.5_UB_py_steel | U3 | | | | | | 5 | -958.283 | -0.1244 |
| 24"_20.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_20.5_UB_py_steel | U3 | | | | | | 7 | 958.283 | 0.1244 |
| 24"_20.5_UB_py_steel | U3 | | | | | | 8 | 1724.909 | 1.3064 |
| 24"_20.5_UB_py_steel | U3 | | | | | | 9 | 2299.879 | 4.1288 |
| 24"_20.5_UB_py_steel | U3 | | | | | | 10 | 2874.848 | 10.08 |
| 24"_20.5_UB_py_steel | U3 | | | | | | 11 | 2874.848 | 12.6 |
| 24"_24.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1095.269 | -8.4 |
| 24"_24.5_LB_py | U2 | | | | | | 2 | -1095.269 | -6.72 |
| 24"_24.5_LB_py | U2 | | | | | | 3 | -876.215 | -2.75251 |
| 24"_24.5_LB_py | U2 | | | | | | 4 | -657.162 | -0.87091 |
| 24"_24.5_LB_py | U2 | | | | | | 5 | -365.09 | -0.08296 |
| 24"_24.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_24.5_LB_py | U2 | | | | | | 7 | 365.09 | 0.08296 |
| 24"_24.5_LB_py | U2 | | | | | | 8 | 657.162 | 0.87091 |
| 24"_24.5_LB_py | U2 | | | | | | 9 | 876.215 | 2.75251 |
| 24"_24.5_LB_py | U2 | | | | | | 10 | 1095.269 | 6.72 |
| 24"_24.5_LB_py | U2 | | | | | | 11 | 1095.269 | 8.4 |
| 24"_24.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1095.269 | -8.4 |
| 24"_24.5_LB_py | U3 | | | | | | 2 | -1095.269 | -6.72 |
| 24"_24.5_LB_py | U3 | | | | | | 3 | -876.215 | -2.75251 |
| 24"_24.5_LB_py | U3 | | | | | | 4 | -657.162 | -0.87091 |
| 24"_24.5_LB_py | U3 | | | | | | 5 | -365.09 | -0.08296 |
| 24"_24.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_24.5_LB_py | U3 | | | | | | 7 | 365.09 | 0.08296 |
| 24"_24.5_LB_py | U3 | | | | | | 8 | 657.162 | 0.87091 |
| 24"_24.5_LB_py | U3 | | | | | | 9 | 876.215 | 2.75251 |
| 24"_24.5_LB_py | U3 | | | | | | 10 | 1095.269 | 6.72 |
| 24"_24.5_LB_py | U3 | | | | | | 11 | 1095.269 | 8.4 |
| 24"_24.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -1304.629 | -12.6 |
| 24"_24.5_LB_py_steel | U2 | | | | | | 2 | -1304.629 | -10.08 |
| 24"_24.5_LB_py_steel | U2 | | | | | | 3 | -1043.703 | -4.1288 |
| 24"_24.5_LB_py_steel | U2 | | | | | | 4 | -782.777 | -1.3064 |
| 24"_24.5_LB_py_steel | U2 | | | | | | 5 | -434.876 | -0.1244 |
| 24"_24.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_24.5_LB_py_steel | U2 | | | | | | 7 | 434.876 | 0.1244 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_24.5_LB_py_steel | U2 | | | | | | 8 | 782.777 | 1.3064 |
| 24"_24.5_LB_py_steel | U2 | | | | | | 9 | 1043.703 | 4.1288 |
| 24"_24.5_LB_py_steel | U2 | | | | | | 10 | 1304.629 | 10.08 |
| 24"_24.5_LB_py_steel | U2 | | | | | | 11 | 1304.629 | 12.6 |
| 24"_24.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -1304.629 | -12.6 |
| 24"_24.5_LB_py_steel | U3 | | | | | | 2 | -1304.629 | -10.08 |
| 24"_24.5_LB_py_steel | U3 | | | | | | 3 | -1043.703 | -4.1288 |
| 24"_24.5_LB_py_steel | U3 | | | | | | 4 | -782.777 | -1.3064 |
| 24"_24.5_LB_py_steel | U3 | | | | | | 5 | -434.876 | -0.1244 |
| 24"_24.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_24.5_LB_py_steel | U3 | | | | | | 7 | 434.876 | 0.1244 |
| 24"_24.5_LB_py_steel | U3 | | | | | | 8 | 782.777 | 1.3064 |
| 24"_24.5_LB_py_steel | U3 | | | | | | 9 | 1043.703 | 4.1288 |
| 24"_24.5_LB_py_steel | U3 | | | | | | 10 | 1304.629 | 10.08 |
| 24"_24.5_LB_py_steel | U3 | | | | | | 11 | 1304.629 | 12.6 |
| 24"_24.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | 1 | | -642.6 | -8.4 |
| 24"_24.5_LB_py_steel_axial | U1 | | | | | | 2 | -642.6 | -6.72 |
| 24"_24.5_LB_py_steel_axial | U1 | | | | | | 3 | -514.08 | -2.75251 |
| 24"_24.5_LB_py_steel_axial | U1 | | | | | | 4 | -385.56 | -0.87091 |
| 24"_24.5_LB_py_steel_axial | U1 | | | | | | 5 | -214.2 | -0.08296 |
| 24"_24.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_24.5_LB_py_steel_axial | U1 | | | | | | 7 | 214.2 | 0.08296 |
| 24"_24.5_LB_py_steel_axial | U1 | | | | | | 8 | 385.56 | 0.87091 |
| 24"_24.5_LB_py_steel_axial | U1 | | | | | | 9 | 514.08 | 2.75251 |
| 24"_24.5_LB_py_steel_axial | U1 | | | | | | 10 | 642.6 | 6.72 |
| 24"_24.5_LB_py_steel_axial | U1 | | | | | | 11 | 642.6 | 8.4 |
| 24"_24.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -2190.539 | -8.4 |
| 24"_24.5_Nom_py | U2 | | | | | | 2 | -2190.539 | -6.72 |
| 24"_24.5_Nom_py | U2 | | | | | | 3 | -1752.431 | -2.75251 |
| 24"_24.5_Nom_py | U2 | | | | | | 4 | -1314.323 | -0.87091 |
| 24"_24.5_Nom_py | U2 | | | | | | 5 | -730.179 | -0.08296 |
| 24"_24.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_24.5_Nom_py | U2 | | | | | | 7 | 730.179 | 0.08296 |
| 24"_24.5_Nom_py | U2 | | | | | | 8 | 1314.323 | 0.87091 |
| 24"_24.5_Nom_py | U2 | | | | | | 9 | 1752.431 | 2.75251 |
| 24"_24.5_Nom_py | U2 | | | | | | 10 | 2190.539 | 6.72 |
| 24"_24.5_Nom_py | U2 | | | | | | 11 | 2190.539 | 8.4 |
| 24"_24.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -2190.539 | -8.4 |
| 24"_24.5_Nom_py | U3 | | | | | | 2 | -2190.539 | -6.72 |
| 24"_24.5_Nom_py | U3 | | | | | | 3 | -1752.431 | -2.75251 |
| 24"_24.5_Nom_py | U3 | | | | | | 4 | -1314.323 | -0.87091 |
| 24"_24.5_Nom_py | U3 | | | | | | 5 | -730.179 | -0.08296 |
| 24"_24.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_24.5_Nom_py | U3 | | | | | | 7 | 730.179 | 0.08296 |
| 24"_24.5_Nom_py | U3 | | | | | | 8 | 1314.323 | 0.87091 |
| 24"_24.5_Nom_py | U3 | | | | | | 9 | 1752.431 | 2.75251 |
| 24"_24.5_Nom_py | U3 | | | | | | 10 | 2190.539 | 6.72 |
| 24"_24.5_Nom_py | U3 | | | | | | 11 | 2190.539 | 8.4 |
| 24"_24.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -2609.257 | -12.6 |
| 24"_24.5_Nom_py_steel | U2 | | | | | | 2 | -2609.257 | -10.08 |
| 24"_24.5_Nom_py_steel | U2 | | | | | | 3 | -2087.406 | -4.1288 |
| 24"_24.5_Nom_py_steel | U2 | | | | | | 4 | -1565.554 | -1.3064 |
| 24"_24.5_Nom_py_steel | U2 | | | | | | 5 | -869.753 | -0.1244 |
| 24"_24.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_24.5_Nom_py_steel | U2 | | | | | | 7 | 869.753 | 0.1244 |
| 24"_24.5_Nom_py_steel | U2 | | | | | | 8 | 1565.554 | 1.3064 |
| 24"_24.5_Nom_py_steel | U2 | | | | | | 9 | 2087.406 | 4.1288 |
| 24"_24.5_Nom_py_steel | U2 | | | | | | 10 | 2609.257 | 10.08 |
| 24"_24.5_Nom_py_steel | U2 | | | | | | 11 | 2609.257 | 12.6 |
| 24"_24.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -2609.257 | -12.6 |
| 24"_24.5_Nom_py_steel | U3 | | | | | | 2 | -2609.257 | -10.08 |
| 24"_24.5_Nom_py_steel | U3 | | | | | | 3 | -2087.406 | -4.1288 |
| 24"_24.5_Nom_py_steel | U3 | | | | | | 4 | -1565.554 | -1.3064 |
| 24"_24.5_Nom_py_steel | U3 | | | | | | 5 | -869.753 | -0.1244 |
| 24"_24.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_24.5_Nom_py_steel | U3 | | | | | | 7 | 869.753 | 0.1244 |
| 24"_24.5_Nom_py_steel | U3 | | | | | | 8 | 1565.554 | 1.3064 |
| 24"_24.5_Nom_py_steel | U3 | | | | | | 9 | 2087.406 | 4.1288 |
| 24"_24.5_Nom_py_steel | U3 | | | | | | 10 | 2609.257 | 10.08 |
| 24"_24.5_Nom_py_steel | U3 | | | | | | 11 | 2609.257 | 12.6 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_24.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -4381.077 | -8.4 |
| 24"_24.5_UB_py | U2 | | | | | | 2 | -4381.077 | -6.72 |
| 24"_24.5_UB_py | U2 | | | | | | 3 | -3504.862 | -2.75251 |
| 24"_24.5_UB_py | U2 | | | | | | 4 | -2628.646 | -0.87091 |
| 24"_24.5_UB_py | U2 | | | | | | 5 | -1460.359 | -0.08296 |
| 24"_24.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_24.5_UB_py | U2 | | | | | | 7 | 1460.359 | 0.08296 |
| 24"_24.5_UB_py | U2 | | | | | | 8 | 2628.646 | 0.87091 |
| 24"_24.5_UB_py | U2 | | | | | | 9 | 3504.862 | 2.75251 |
| 24"_24.5_UB_py | U2 | | | | | | 10 | 4381.077 | 6.72 |
| 24"_24.5_UB_py | U2 | | | | | | 11 | 4381.077 | 8.4 |
| 24"_24.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -4381.077 | -8.4 |
| 24"_24.5_UB_py | U3 | | | | | | 2 | -4381.077 | -6.72 |
| 24"_24.5_UB_py | U3 | | | | | | 3 | -3504.862 | -2.75251 |
| 24"_24.5_UB_py | U3 | | | | | | 4 | -2628.646 | -0.87091 |
| 24"_24.5_UB_py | U3 | | | | | | 5 | -1460.359 | -0.08296 |
| 24"_24.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_24.5_UB_py | U3 | | | | | | 7 | 1460.359 | 0.08296 |
| 24"_24.5_UB_py | U3 | | | | | | 8 | 2628.646 | 0.87091 |
| 24"_24.5_UB_py | U3 | | | | | | 9 | 3504.862 | 2.75251 |
| 24"_24.5_UB_py | U3 | | | | | | 10 | 4381.077 | 6.72 |
| 24"_24.5_UB_py | U3 | | | | | | 11 | 4381.077 | 8.4 |
| 24"_24.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -5218.51 | -12.6 |
| 24"_24.5_UB_py_steel | U2 | | | | | | 2 | -5218.51 | -10.08 |
| 24"_24.5_UB_py_steel | U2 | | | | | | 3 | -4174.81 | -4.1288 |
| 24"_24.5_UB_py_steel | U2 | | | | | | 4 | -3131.109 | -1.3064 |
| 24"_24.5_UB_py_steel | U2 | | | | | | 5 | -1739.505 | -0.1244 |
| 24"_24.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_24.5_UB_py_steel | U2 | | | | | | 7 | 1739.505 | 0.1244 |
| 24"_24.5_UB_py_steel | U2 | | | | | | 8 | 3131.109 | 1.3064 |
| 24"_24.5_UB_py_steel | U2 | | | | | | 9 | 4174.811 | 4.1288 |
| 24"_24.5_UB_py_steel | U2 | | | | | | 10 | 5218.514 | 10.08 |
| 24"_24.5_UB_py_steel | U2 | | | | | | 11 | 5218.514 | 12.6 |
| 24"_24.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -5218.51 | -12.6 |
| 24"_24.5_UB_py_steel | U3 | | | | | | 2 | -5218.51 | -10.08 |
| 24"_24.5_UB_py_steel | U3 | | | | | | 3 | -4174.81 | -4.1288 |
| 24"_24.5_UB_py_steel | U3 | | | | | | 4 | -3131.109 | -1.3064 |
| 24"_24.5_UB_py_steel | U3 | | | | | | 5 | -1739.505 | -0.1244 |
| 24"_24.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_24.5_UB_py_steel | U3 | | | | | | 7 | 1739.505 | 0.1244 |
| 24"_24.5_UB_py_steel | U3 | | | | | | 8 | 3131.109 | 1.3064 |
| 24"_24.5_UB_py_steel | U3 | | | | | | 9 | 4174.811 | 4.1288 |
| 24"_24.5_UB_py_steel | U3 | | | | | | 10 | 5218.514 | 10.08 |
| 24"_24.5_UB_py_steel | U3 | | | | | | 11 | 5218.514 | 12.6 |
| 24"_28.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1639.076 | -8.4 |
| 24"_28.5_LB_py | U2 | | | | | | 2 | -1639.076 | -6.72 |
| 24"_28.5_LB_py | U2 | | | | | | 3 | -1311.261 | -2.75251 |
| 24"_28.5_LB_py | U2 | | | | | | 4 | -983.446 | -0.87091 |
| 24"_28.5_LB_py | U2 | | | | | | 5 | -546.359 | -0.08296 |
| 24"_28.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_28.5_LB_py | U2 | | | | | | 7 | 546.359 | 0.08296 |
| 24"_28.5_LB_py | U2 | | | | | | 8 | 983.446 | 0.87091 |
| 24"_28.5_LB_py | U2 | | | | | | 9 | 1311.261 | 2.75251 |
| 24"_28.5_LB_py | U2 | | | | | | 10 | 1639.076 | 6.72 |
| 24"_28.5_LB_py | U2 | | | | | | 11 | 1639.076 | 8.4 |
| 24"_28.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1639.076 | -8.4 |
| 24"_28.5_LB_py | U3 | | | | | | 2 | -1639.076 | -6.72 |
| 24"_28.5_LB_py | U3 | | | | | | 3 | -1311.261 | -2.75251 |
| 24"_28.5_LB_py | U3 | | | | | | 4 | -983.446 | -0.87091 |
| 24"_28.5_LB_py | U3 | | | | | | 5 | -546.359 | -0.08296 |
| 24"_28.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_28.5_LB_py | U3 | | | | | | 7 | 546.359 | 0.08296 |
| 24"_28.5_LB_py | U3 | | | | | | 8 | 983.446 | 0.87091 |
| 24"_28.5_LB_py | U3 | | | | | | 9 | 1311.261 | 2.75251 |
| 24"_28.5_LB_py | U3 | | | | | | 10 | 1639.076 | 6.72 |
| 24"_28.5_LB_py | U3 | | | | | | 11 | 1639.076 | 8.4 |
| 24"_28.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -1954.115 | -12.6 |
| 24"_28.5_LB_py_steel | U2 | | | | | | 2 | -1954.115 | -10.08 |
| 24"_28.5_LB_py_steel | U2 | | | | | | 3 | -1563.293 | -4.1288 |
| 24"_28.5_LB_py_steel | U2 | | | | | | 4 | -1172.469 | -1.3064 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_28.5_LB_py_steel | U2 | | | | | | 5 | -651.372 | -0.1244 |
| 24"_28.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_28.5_LB_py_steel | U2 | | | | | | 7 | 651.372 | 0.1244 |
| 24"_28.5_LB_py_steel | U2 | | | | | | 8 | 1172.469 | 1.3064 |
| 24"_28.5_LB_py_steel | U2 | | | | | | 9 | 1563.293 | 4.1288 |
| 24"_28.5_LB_py_steel | U2 | | | | | | 10 | 1954.115 | 10.08 |
| 24"_28.5_LB_py_steel | U2 | | | | | | 11 | 1954.115 | 12.6 |
| 24"_28.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -1954.115 | -12.6 |
| 24"_28.5_LB_py_steel | U3 | | | | | | 2 | -1954.115 | -10.08 |
| 24"_28.5_LB_py_steel | U3 | | | | | | 3 | -1563.293 | -4.1288 |
| 24"_28.5_LB_py_steel | U3 | | | | | | 4 | -1172.469 | -1.3064 |
| 24"_28.5_LB_py_steel | U3 | | | | | | 5 | -651.372 | -0.1244 |
| 24"_28.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_28.5_LB_py_steel | U3 | | | | | | 7 | 651.372 | 0.1244 |
| 24"_28.5_LB_py_steel | U3 | | | | | | 8 | 1172.469 | 1.3064 |
| 24"_28.5_LB_py_steel | U3 | | | | | | 9 | 1563.293 | 4.1288 |
| 24"_28.5_LB_py_steel | U3 | | | | | | 10 | 1954.115 | 10.08 |
| 24"_28.5_LB_py_steel | U3 | | | | | | 11 | 1954.115 | 12.6 |
| 24"_28.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -2361.81842 | -1.26 |
| 24"_28.5_LB_py_steel_axial | U1 | | | | | | 2 | -2361.81842 | -0.9 |
| 24"_28.5_LB_py_steel_axial | U1 | | | | | | 3 | -1232.051856 | -0.34692 |
| 24"_28.5_LB_py_steel_axial | U1 | | | | | | 4 | -780.2808365 | -0.163564 |
| 24"_28.5_LB_py_steel_axial | U1 | | | | | | 5 | -617.0287495 | -0.111027 |
| 24"_28.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_28.5_LB_py_steel_axial | U1 | | | | | | 7 | 617.0287495 | 0.111027 |
| 24"_28.5_LB_py_steel_axial | U1 | | | | | | 8 | 780.2808365 | 0.163564 |
| 24"_28.5_LB_py_steel_axial | U1 | | | | | | 9 | 1232.051856 | 0.34692 |
| 24"_28.5_LB_py_steel_axial | U1 | | | | | | 10 | 2361.81842 | 0.9 |
| 24"_28.5_LB_py_steel_axial | U1 | | | | | | 11 | 2361.81842 | 1.26 |
| 24"_28.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -3278.152 | -8.4 |
| 24"_28.5_Nom_py | U2 | | | | | | 2 | -3278.152 | -6.72 |
| 24"_28.5_Nom_py | U2 | | | | | | 3 | -2622.522 | -2.75251 |
| 24"_28.5_Nom_py | U2 | | | | | | 4 | -1966.891 | -0.87091 |
| 24"_28.5_Nom_py | U2 | | | | | | 5 | -1092.717 | -0.08296 |
| 24"_28.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_28.5_Nom_py | U2 | | | | | | 7 | 1092.717 | 0.08296 |
| 24"_28.5_Nom_py | U2 | | | | | | 8 | 1966.891 | 0.87091 |
| 24"_28.5_Nom_py | U2 | | | | | | 9 | 2622.522 | 2.75251 |
| 24"_28.5_Nom_py | U2 | | | | | | 10 | 3278.152 | 6.72 |
| 24"_28.5_Nom_py | U2 | | | | | | 11 | 3278.152 | 8.4 |
| 24"_28.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -3278.152 | -8.4 |
| 24"_28.5_Nom_py | U3 | | | | | | 2 | -3278.152 | -6.72 |
| 24"_28.5_Nom_py | U3 | | | | | | 3 | -2622.522 | -2.75251 |
| 24"_28.5_Nom_py | U3 | | | | | | 4 | -1966.891 | -0.87091 |
| 24"_28.5_Nom_py | U3 | | | | | | 5 | -1092.717 | -0.08296 |
| 24"_28.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_28.5_Nom_py | U3 | | | | | | 7 | 1092.717 | 0.08296 |
| 24"_28.5_Nom_py | U3 | | | | | | 8 | 1966.891 | 0.87091 |
| 24"_28.5_Nom_py | U3 | | | | | | 9 | 2622.522 | 2.75251 |
| 24"_28.5_Nom_py | U3 | | | | | | 10 | 3278.152 | 6.72 |
| 24"_28.5_Nom_py | U3 | | | | | | 11 | 3278.152 | 8.4 |
| 24"_28.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -3908.23 | -12.6 |
| 24"_28.5_Nom_py_steel | U2 | | | | | | 2 | -3908.23 | -10.08 |
| 24"_28.5_Nom_py_steel | U2 | | | | | | 3 | -3126.585 | -4.1288 |
| 24"_28.5_Nom_py_steel | U2 | | | | | | 4 | -2344.939 | -1.3064 |
| 24"_28.5_Nom_py_steel | U2 | | | | | | 5 | -1302.744 | -0.1244 |
| 24"_28.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_28.5_Nom_py_steel | U2 | | | | | | 7 | 1302.744 | 0.1244 |
| 24"_28.5_Nom_py_steel | U2 | | | | | | 8 | 2344.939 | 1.3064 |
| 24"_28.5_Nom_py_steel | U2 | | | | | | 9 | 3126.585 | 4.1288 |
| 24"_28.5_Nom_py_steel | U2 | | | | | | 10 | 3908.231 | 10.08 |
| 24"_28.5_Nom_py_steel | U2 | | | | | | 11 | 3908.231 | 12.6 |
| 24"_28.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -3908.23 | -12.6 |
| 24"_28.5_Nom_py_steel | U3 | | | | | | 2 | -3908.23 | -10.08 |
| 24"_28.5_Nom_py_steel | U3 | | | | | | 3 | -3126.585 | -4.1288 |
| 24"_28.5_Nom_py_steel | U3 | | | | | | 4 | -2344.939 | -1.3064 |
| 24"_28.5_Nom_py_steel | U3 | | | | | | 5 | -1302.744 | -0.1244 |
| 24"_28.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_28.5_Nom_py_steel | U3 | | | | | | 7 | 1302.744 | 0.1244 |
| 24"_28.5_Nom_py_steel | U3 | | | | | | 8 | 2344.939 | 1.3064 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_28.5_Nom_py_steel | U3 | | | | | | 9 | 3126.585 | 4.1288 |
| 24"_28.5_Nom_py_steel | U3 | | | | | | 10 | 3908.231 | 10.08 |
| 24"_28.5_Nom_py_steel | U3 | | | | | | 11 | 3908.231 | 12.6 |
| 24"_28.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -6556.305 | -8.4 |
| 24"_28.5_UB_py | U2 | | | | | | 2 | -6556.305 | -6.72 |
| 24"_28.5_UB_py | U2 | | | | | | 3 | -5245.044 | -2.75251 |
| 24"_28.5_UB_py | U2 | | | | | | 4 | -3933.783 | -0.87091 |
| 24"_28.5_UB_py | U2 | | | | | | 5 | -2185.435 | -0.08296 |
| 24"_28.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_28.5_UB_py | U2 | | | | | | 7 | 2185.435 | 0.08296 |
| 24"_28.5_UB_py | U2 | | | | | | 8 | 3933.783 | 0.87091 |
| 24"_28.5_UB_py | U2 | | | | | | 9 | 5245.044 | 2.75251 |
| 24"_28.5_UB_py | U2 | | | | | | 10 | 6556.305 | 6.72 |
| 24"_28.5_UB_py | U2 | | | | | | 11 | 6556.305 | 8.4 |
| 24"_28.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -6556.305 | -8.4 |
| 24"_28.5_UB_py | U3 | | | | | | 2 | -6556.305 | -6.72 |
| 24"_28.5_UB_py | U3 | | | | | | 3 | -5245.044 | -2.75251 |
| 24"_28.5_UB_py | U3 | | | | | | 4 | -3933.783 | -0.87091 |
| 24"_28.5_UB_py | U3 | | | | | | 5 | -2185.435 | -0.08296 |
| 24"_28.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_28.5_UB_py | U3 | | | | | | 7 | 2185.435 | 0.08296 |
| 24"_28.5_UB_py | U3 | | | | | | 8 | 3933.783 | 0.87091 |
| 24"_28.5_UB_py | U3 | | | | | | 9 | 5245.044 | 2.75251 |
| 24"_28.5_UB_py | U3 | | | | | | 10 | 6556.305 | 6.72 |
| 24"_28.5_UB_py | U3 | | | | | | 11 | 6556.305 | 8.4 |
| 24"_28.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -7816.46 | -12.6 |
| 24"_28.5_UB_py_steel | U2 | | | | | | 2 | -7816.46 | -10.08 |
| 24"_28.5_UB_py_steel | U2 | | | | | | 3 | -6253.17 | -4.1288 |
| 24"_28.5_UB_py_steel | U2 | | | | | | 4 | -4689.88 | -1.3064 |
| 24"_28.5_UB_py_steel | U2 | | | | | | 5 | -2605.487 | -0.1244 |
| 24"_28.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_28.5_UB_py_steel | U2 | | | | | | 7 | 2605.487 | 0.1244 |
| 24"_28.5_UB_py_steel | U2 | | | | | | 8 | 4689.877 | 1.3064 |
| 24"_28.5_UB_py_steel | U2 | | | | | | 9 | 6253.17 | 4.1288 |
| 24"_28.5_UB_py_steel | U2 | | | | | | 10 | 7816.46 | 10.08 |
| 24"_28.5_UB_py_steel | U2 | | | | | | 11 | 7816.46 | 12.6 |
| 24"_28.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -7816.46 | -12.6 |
| 24"_28.5_UB_py_steel | U3 | | | | | | 2 | -7816.46 | -10.08 |
| 24"_28.5_UB_py_steel | U3 | | | | | | 3 | -6253.17 | -4.1288 |
| 24"_28.5_UB_py_steel | U3 | | | | | | 4 | -4689.88 | -1.3064 |
| 24"_28.5_UB_py_steel | U3 | | | | | | 5 | -2605.487 | -0.1244 |
| 24"_28.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_28.5_UB_py_steel | U3 | | | | | | 7 | 2605.487 | 0.1244 |
| 24"_28.5_UB_py_steel | U3 | | | | | | 8 | 4689.877 | 1.3064 |
| 24"_28.5_UB_py_steel | U3 | | | | | | 9 | 6253.17 | 4.1288 |
| 24"_28.5_UB_py_steel | U3 | | | | | | 10 | 7816.46 | 10.08 |
| 24"_28.5_UB_py_steel | U3 | | | | | | 11 | 7816.46 | 12.6 |
| 24"_3.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -10.812 | -10.2 |
| 24"_3.5_LB_py | U2 | | | | | | 2 | -10.812 | -9.6 |
| 24"_3.5_LB_py | U2 | | | | | | 3 | -8.65 | -4.9152 |
| 24"_3.5_LB_py | U2 | | | | | | 4 | -6.487 | -2.0736 |
| 24"_3.5_LB_py | U2 | | | | | | 5 | -3.604 | -0.35556 |
| 24"_3.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_3.5_LB_py | U2 | | | | | | 7 | 3.604 | 0.35556 |
| 24"_3.5_LB_py | U2 | | | | | | 8 | 6.487 | 2.0736 |
| 24"_3.5_LB_py | U2 | | | | | | 9 | 8.65 | 4.9152 |
| 24"_3.5_LB_py | U2 | | | | | | 10 | 10.812 | 9.6 |
| 24"_3.5_LB_py | U2 | | | | | | 11 | 10.812 | 10.2 |
| 24"_3.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -10.812 | -10.2 |
| 24"_3.5_LB_py | U3 | | | | | | 2 | -10.812 | -9.6 |
| 24"_3.5_LB_py | U3 | | | | | | 3 | -8.65 | -4.9152 |
| 24"_3.5_LB_py | U3 | | | | | | 4 | -6.487 | -2.0736 |
| 24"_3.5_LB_py | U3 | | | | | | 5 | -3.604 | -0.35556 |
| 24"_3.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_3.5_LB_py | U3 | | | | | | 7 | 3.604 | 0.35556 |
| 24"_3.5_LB_py | U3 | | | | | | 8 | 6.487 | 2.0736 |
| 24"_3.5_LB_py | U3 | | | | | | 9 | 8.65 | 4.9152 |
| 24"_3.5_LB_py | U3 | | | | | | 10 | 10.812 | 9.6 |
| 24"_3.5_LB_py | U3 | | | | | | 11 | 10.812 | 10.2 |
| 24"_3.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -15.168 | -15.3 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_3.5_LB_py_steel | U2 | | | | | | 2 | -15.168 | -14.4 |
| 24"_3.5_LB_py_steel | U2 | | | | | | 3 | -12.135 | -7.3728 |
| 24"_3.5_LB_py_steel | U2 | | | | | | 4 | -9.101 | -3.1104 |
| 24"_3.5_LB_py_steel | U2 | | | | | | 5 | -5.056 | -0.5333 |
| 24"_3.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_3.5_LB_py_steel | U2 | | | | | | 7 | 5.056 | 0.5333 |
| 24"_3.5_LB_py_steel | U2 | | | | | | 8 | 9.101 | 3.1104 |
| 24"_3.5_LB_py_steel | U2 | | | | | | 9 | 12.135 | 7.3728 |
| 24"_3.5_LB_py_steel | U2 | | | | | | 10 | 15.168 | 14.4 |
| 24"_3.5_LB_py_steel | U2 | | | | | | 11 | 15.168 | 15.3 |
| 24"_3.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -15.168 | -15.3 |
| 24"_3.5_LB_py_steel | U3 | | | | | | 2 | -15.168 | -14.4 |
| 24"_3.5_LB_py_steel | U3 | | | | | | 3 | -12.135 | -7.3728 |
| 24"_3.5_LB_py_steel | U3 | | | | | | 4 | -9.101 | -3.1104 |
| 24"_3.5_LB_py_steel | U3 | | | | | | 5 | -5.056 | -0.5333 |
| 24"_3.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_3.5_LB_py_steel | U3 | | | | | | 7 | 5.056 | 0.5333 |
| 24"_3.5_LB_py_steel | U3 | | | | | | 8 | 9.101 | 3.1104 |
| 24"_3.5_LB_py_steel | U3 | | | | | | 9 | 12.135 | 7.3728 |
| 24"_3.5_LB_py_steel | U3 | | | | | | 10 | 15.168 | 14.4 |
| 24"_3.5_LB_py_steel | U3 | | | | | | 11 | 15.168 | 15.3 |
| 24"_3.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -137.5031539 | -1.26 |
| 24"_3.5_LB_py_steel_axial | U1 | | | | | | 2 | -137.5031539 | -0.9 |
| 24"_3.5_LB_py_steel_axial | U1 | | | | | | 3 | -92.90892089 | -0.337226571 |
| 24"_3.5_LB_py_steel_axial | U1 | | | | | | 4 | -66.35353628 | -0.117514571 |
| 24"_3.5_LB_py_steel_axial | U1 | | | | | | 5 | -52.08360097 | -0.054741143 |
| 24"_3.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_3.5_LB_py_steel_axial | U1 | | | | | | 7 | 52.08360097 | 0.054741143 |
| 24"_3.5_LB_py_steel_axial | U1 | | | | | | 8 | 66.35353628 | 0.117514571 |
| 24"_3.5_LB_py_steel_axial | U1 | | | | | | 9 | 92.90892089 | 0.337226571 |
| 24"_3.5_LB_py_steel_axial | U1 | | | | | | 10 | 137.5031539 | 0.9 |
| 24"_3.5_LB_py_steel_axial | U1 | | | | | | 11 | 137.5031539 | 1.26 |
| 24"_3.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -21.624 | -10.2 |
| 24"_3.5_Nom_py | U2 | | | | | | 2 | -21.624 | -9.6 |
| 24"_3.5_Nom_py | U2 | | | | | | 3 | -17.299 | -4.9152 |
| 24"_3.5_Nom_py | U2 | | | | | | 4 | -12.974 | -2.0736 |
| 24"_3.5_Nom_py | U2 | | | | | | 5 | -7.208 | -0.35556 |
| 24"_3.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_3.5_Nom_py | U2 | | | | | | 7 | 7.208 | 0.35556 |
| 24"_3.5_Nom_py | U2 | | | | | | 8 | 12.974 | 2.0736 |
| 24"_3.5_Nom_py | U2 | | | | | | 9 | 17.299 | 4.9152 |
| 24"_3.5_Nom_py | U2 | | | | | | 10 | 21.624 | 9.6 |
| 24"_3.5_Nom_py | U2 | | | | | | 11 | 21.624 | 10.2 |
| 24"_3.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -21.624 | -10.2 |
| 24"_3.5_Nom_py | U3 | | | | | | 2 | -21.624 | -9.6 |
| 24"_3.5_Nom_py | U3 | | | | | | 3 | -17.299 | -4.9152 |
| 24"_3.5_Nom_py | U3 | | | | | | 4 | -12.974 | -2.0736 |
| 24"_3.5_Nom_py | U3 | | | | | | 5 | -7.208 | -0.35556 |
| 24"_3.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_3.5_Nom_py | U3 | | | | | | 7 | 7.208 | 0.35556 |
| 24"_3.5_Nom_py | U3 | | | | | | 8 | 12.974 | 2.0736 |
| 24"_3.5_Nom_py | U3 | | | | | | 9 | 17.299 | 4.9152 |
| 24"_3.5_Nom_py | U3 | | | | | | 10 | 21.624 | 9.6 |
| 24"_3.5_Nom_py | U3 | | | | | | 11 | 21.624 | 10.2 |
| 24"_3.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -30.336 | -15.3 |
| 24"_3.5_Nom_py_steel | U2 | | | | | | 2 | -30.336 | -14.4 |
| 24"_3.5_Nom_py_steel | U2 | | | | | | 3 | -24.269 | -7.3728 |
| 24"_3.5_Nom_py_steel | U2 | | | | | | 4 | -18.201 | -3.1104 |
| 24"_3.5_Nom_py_steel | U2 | | | | | | 5 | -10.112 | -0.5333 |
| 24"_3.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_3.5_Nom_py_steel | U2 | | | | | | 7 | 10.112 | 0.5333 |
| 24"_3.5_Nom_py_steel | U2 | | | | | | 8 | 18.201 | 3.1104 |
| 24"_3.5_Nom_py_steel | U2 | | | | | | 9 | 24.269 | 7.3728 |
| 24"_3.5_Nom_py_steel | U2 | | | | | | 10 | 30.336 | 14.4 |
| 24"_3.5_Nom_py_steel | U2 | | | | | | 11 | 30.336 | 15.3 |
| 24"_3.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -30.336 | -15.3 |
| 24"_3.5_Nom_py_steel | U3 | | | | | | 2 | -30.336 | -14.4 |
| 24"_3.5_Nom_py_steel | U3 | | | | | | 3 | -24.269 | -7.3728 |
| 24"_3.5_Nom_py_steel | U3 | | | | | | 4 | -18.201 | -3.1104 |
| 24"_3.5_Nom_py_steel | U3 | | | | | | 5 | -10.112 | -0.5333 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_3.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_3.5_Nom_py_steel | U3 | | | | | | 7 | 10.112 | 0.5333 |
| 24"_3.5_Nom_py_steel | U3 | | | | | | 8 | 18.201 | 3.1104 |
| 24"_3.5_Nom_py_steel | U3 | | | | | | 9 | 24.269 | 7.3728 |
| 24"_3.5_Nom_py_steel | U3 | | | | | | 10 | 30.336 | 14.4 |
| 24"_3.5_Nom_py_steel | U3 | | | | | | 11 | 30.336 | 15.3 |
| 24"_3.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -43.248 | -10.2 |
| 24"_3.5_UB_py | U2 | | | | | | 2 | -43.248 | -9.6 |
| 24"_3.5_UB_py | U2 | | | | | | 3 | -34.598 | -4.9152 |
| 24"_3.5_UB_py | U2 | | | | | | 4 | -25.949 | -2.0736 |
| 24"_3.5_UB_py | U2 | | | | | | 5 | -14.416 | -0.35556 |
| 24"_3.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_3.5_UB_py | U2 | | | | | | 7 | 14.416 | 0.35556 |
| 24"_3.5_UB_py | U2 | | | | | | 8 | 25.949 | 2.0736 |
| 24"_3.5_UB_py | U2 | | | | | | 9 | 34.598 | 4.9152 |
| 24"_3.5_UB_py | U2 | | | | | | 10 | 43.248 | 9.6 |
| 24"_3.5_UB_py | U2 | | | | | | 11 | 43.248 | 10.2 |
| 24"_3.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -43.248 | -10.2 |
| 24"_3.5_UB_py | U3 | | | | | | 2 | -43.248 | -9.6 |
| 24"_3.5_UB_py | U3 | | | | | | 3 | -34.598 | -4.9152 |
| 24"_3.5_UB_py | U3 | | | | | | 4 | -25.949 | -2.0736 |
| 24"_3.5_UB_py | U3 | | | | | | 5 | -14.416 | -0.35556 |
| 24"_3.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_3.5_UB_py | U3 | | | | | | 7 | 14.416 | 0.35556 |
| 24"_3.5_UB_py | U3 | | | | | | 8 | 25.949 | 2.0736 |
| 24"_3.5_UB_py | U3 | | | | | | 9 | 34.598 | 4.9152 |
| 24"_3.5_UB_py | U3 | | | | | | 10 | 43.248 | 9.6 |
| 24"_3.5_UB_py | U3 | | | | | | 11 | 43.248 | 10.2 |
| 24"_3.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -60.672 | -15.3 |
| 24"_3.5_UB_py_steel | U2 | | | | | | 2 | -60.672 | -14.4 |
| 24"_3.5_UB_py_steel | U2 | | | | | | 3 | -48.537 | -7.3728 |
| 24"_3.5_UB_py_steel | U2 | | | | | | 4 | -36.403 | -3.1104 |
| 24"_3.5_UB_py_steel | U2 | | | | | | 5 | -20.224 | -0.5333 |
| 24"_3.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_3.5_UB_py_steel | U2 | | | | | | 7 | 20.224 | 0.5333 |
| 24"_3.5_UB_py_steel | U2 | | | | | | 8 | 36.403 | 3.1104 |
| 24"_3.5_UB_py_steel | U2 | | | | | | 9 | 48.537 | 7.3728 |
| 24"_3.5_UB_py_steel | U2 | | | | | | 10 | 60.672 | 14.4 |
| 24"_3.5_UB_py_steel | U2 | | | | | | 11 | 60.672 | 15.3 |
| 24"_3.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -60.672 | -15.3 |
| 24"_3.5_UB_py_steel | U3 | | | | | | 2 | -60.672 | -14.4 |
| 24"_3.5_UB_py_steel | U3 | | | | | | 3 | -48.537 | -7.3728 |
| 24"_3.5_UB_py_steel | U3 | | | | | | 4 | -36.403 | -3.1104 |
| 24"_3.5_UB_py_steel | U3 | | | | | | 5 | -20.224 | -0.5333 |
| 24"_3.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_3.5_UB_py_steel | U3 | | | | | | 7 | 20.224 | 0.5333 |
| 24"_3.5_UB_py_steel | U3 | | | | | | 8 | 36.403 | 3.1104 |
| 24"_3.5_UB_py_steel | U3 | | | | | | 9 | 48.537 | 7.3728 |
| 24"_3.5_UB_py_steel | U3 | | | | | | 10 | 60.672 | 14.4 |
| 24"_3.5_UB_py_steel | U3 | | | | | | 11 | 60.672 | 15.3 |
| 24"_32.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1641.32 | -8.4 |
| 24"_32.5_LB_py | U2 | | | | | | 2 | -1641.32 | -6.72 |
| 24"_32.5_LB_py | U2 | | | | | | 3 | -1313.056 | -2.75251 |
| 24"_32.5_LB_py | U2 | | | | | | 4 | -984.792 | -0.87091 |
| 24"_32.5_LB_py | U2 | | | | | | 5 | -547.106 | -0.08296 |
| 24"_32.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_32.5_LB_py | U2 | | | | | | 7 | 547.106 | 0.08296 |
| 24"_32.5_LB_py | U2 | | | | | | 8 | 984.792 | 0.87091 |
| 24"_32.5_LB_py | U2 | | | | | | 9 | 1313.056 | 2.75251 |
| 24"_32.5_LB_py | U2 | | | | | | 10 | 1641.32 | 6.72 |
| 24"_32.5_LB_py | U2 | | | | | | 11 | 1641.32 | 8.4 |
| 24"_32.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1641.32 | -8.4 |
| 24"_32.5_LB_py | U3 | | | | | | 2 | -1641.32 | -6.72 |
| 24"_32.5_LB_py | U3 | | | | | | 3 | -1313.056 | -2.75251 |
| 24"_32.5_LB_py | U3 | | | | | | 4 | -984.792 | -0.87091 |
| 24"_32.5_LB_py | U3 | | | | | | 5 | -547.106 | -0.08296 |
| 24"_32.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_32.5_LB_py | U3 | | | | | | 7 | 547.106 | 0.08296 |
| 24"_32.5_LB_py | U3 | | | | | | 8 | 984.792 | 0.87091 |
| 24"_32.5_LB_py | U3 | | | | | | 9 | 1313.056 | 2.75251 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_32.5_LB_py | U3 | | | | | | 10 | 1641.32 | 6.72 |
| 24"_32.5_LB_py | U3 | | | | | | 11 | 1641.32 | 8.4 |
| 24"_32.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -2169.039 | -12.6 |
| 24"_32.5_LB_py_steel | U2 | | | | | | 2 | -2169.039 | -10.08 |
| 24"_32.5_LB_py_steel | U2 | | | | | | 3 | -1735.231 | -4.1288 |
| 24"_32.5_LB_py_steel | U2 | | | | | | 4 | -1301.423 | -1.3064 |
| 24"_32.5_LB_py_steel | U2 | | | | | | 5 | -723.013 | -0.1244 |
| 24"_32.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_32.5_LB_py_steel | U2 | | | | | | 7 | 723.013 | 0.1244 |
| 24"_32.5_LB_py_steel | U2 | | | | | | 8 | 1301.423 | 1.3064 |
| 24"_32.5_LB_py_steel | U2 | | | | | | 9 | 1735.231 | 4.1288 |
| 24"_32.5_LB_py_steel | U2 | | | | | | 10 | 2169.039 | 10.08 |
| 24"_32.5_LB_py_steel | U2 | | | | | | 11 | 2169.039 | 12.6 |
| 24"_32.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -2169.039 | -12.6 |
| 24"_32.5_LB_py_steel | U3 | | | | | | 2 | -2169.039 | -10.08 |
| 24"_32.5_LB_py_steel | U3 | | | | | | 3 | -1735.231 | -4.1288 |
| 24"_32.5_LB_py_steel | U3 | | | | | | 4 | -1301.423 | -1.3064 |
| 24"_32.5_LB_py_steel | U3 | | | | | | 5 | -723.013 | -0.1244 |
| 24"_32.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_32.5_LB_py_steel | U3 | | | | | | 7 | 723.013 | 0.1244 |
| 24"_32.5_LB_py_steel | U3 | | | | | | 8 | 1301.423 | 1.3064 |
| 24"_32.5_LB_py_steel | U3 | | | | | | 9 | 1735.231 | 4.1288 |
| 24"_32.5_LB_py_steel | U3 | | | | | | 10 | 2169.039 | 10.08 |
| 24"_32.5_LB_py_steel | U3 | | | | | | 11 | 2169.039 | 12.6 |
| 24"_32.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -789.48 | -8.4 |
| 24"_32.5_LB_py_steel_axial | U1 | | | | | | 2 | -789.48 | -6.72 |
| 24"_32.5_LB_py_steel_axial | U1 | | | | | | 3 | -631.584 | -2.75251 |
| 24"_32.5_LB_py_steel_axial | U1 | | | | | | 4 | -473.688 | -0.87091 |
| 24"_32.5_LB_py_steel_axial | U1 | | | | | | 5 | -263.16 | -0.08296 |
| 24"_32.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_32.5_LB_py_steel_axial | U1 | | | | | | 7 | 263.16 | 0.08296 |
| 24"_32.5_LB_py_steel_axial | U1 | | | | | | 8 | 473.688 | 0.87091 |
| 24"_32.5_LB_py_steel_axial | U1 | | | | | | 9 | 631.584 | 2.75251 |
| 24"_32.5_LB_py_steel_axial | U1 | | | | | | 10 | 789.48 | 6.72 |
| 24"_32.5_LB_py_steel_axial | U1 | | | | | | 11 | 789.48 | 8.4 |
| 24"_32.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -3282.639 | -8.4 |
| 24"_32.5_Nom_py | U2 | | | | | | 2 | -3282.639 | -6.72 |
| 24"_32.5_Nom_py | U2 | | | | | | 3 | -2626.111 | -2.75251 |
| 24"_32.5_Nom_py | U2 | | | | | | 4 | -1969.583 | -0.87091 |
| 24"_32.5_Nom_py | U2 | | | | | | 5 | -1094.213 | -0.08296 |
| 24"_32.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_32.5_Nom_py | U2 | | | | | | 7 | 1094.213 | 0.08296 |
| 24"_32.5_Nom_py | U2 | | | | | | 8 | 1969.583 | 0.87091 |
| 24"_32.5_Nom_py | U2 | | | | | | 9 | 2626.111 | 2.75251 |
| 24"_32.5_Nom_py | U2 | | | | | | 10 | 3282.639 | 6.72 |
| 24"_32.5_Nom_py | U2 | | | | | | 11 | 3282.639 | 8.4 |
| 24"_32.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -3282.639 | -8.4 |
| 24"_32.5_Nom_py | U3 | | | | | | 2 | -3282.639 | -6.72 |
| 24"_32.5_Nom_py | U3 | | | | | | 3 | -2626.111 | -2.75251 |
| 24"_32.5_Nom_py | U3 | | | | | | 4 | -1969.583 | -0.87091 |
| 24"_32.5_Nom_py | U3 | | | | | | 5 | -1094.213 | -0.08296 |
| 24"_32.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_32.5_Nom_py | U3 | | | | | | 7 | 1094.213 | 0.08296 |
| 24"_32.5_Nom_py | U3 | | | | | | 8 | 1969.583 | 0.87091 |
| 24"_32.5_Nom_py | U3 | | | | | | 9 | 2626.111 | 2.75251 |
| 24"_32.5_Nom_py | U3 | | | | | | 10 | 3282.639 | 6.72 |
| 24"_32.5_Nom_py | U3 | | | | | | 11 | 3282.639 | 8.4 |
| 24"_32.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -4338.08 | -12.6 |
| 24"_32.5_Nom_py_steel | U2 | | | | | | 2 | -4338.08 | -10.08 |
| 24"_32.5_Nom_py_steel | U2 | | | | | | 3 | -3470.46 | -4.1288 |
| 24"_32.5_Nom_py_steel | U2 | | | | | | 4 | -2602.847 | -1.3064 |
| 24"_32.5_Nom_py_steel | U2 | | | | | | 5 | -1446.026 | -0.1244 |
| 24"_32.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_32.5_Nom_py_steel | U2 | | | | | | 7 | 1446.026 | 0.1244 |
| 24"_32.5_Nom_py_steel | U2 | | | | | | 8 | 2602.847 | 1.3064 |
| 24"_32.5_Nom_py_steel | U2 | | | | | | 9 | 3470.463 | 4.1288 |
| 24"_32.5_Nom_py_steel | U2 | | | | | | 10 | 4338.078 | 10.08 |
| 24"_32.5_Nom_py_steel | U2 | | | | | | 11 | 4338.078 | 12.6 |
| 24"_32.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -4338.08 | -12.6 |
| 24"_32.5_Nom_py_steel | U3 | | | | | | 2 | -4338.08 | -10.08 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_32.5_Nom_py_steel | U3 | | | | | | 3 | -3470.46 | -4.1288 |
| 24"_32.5_Nom_py_steel | U3 | | | | | | 4 | -2602.847 | -1.3064 |
| 24"_32.5_Nom_py_steel | U3 | | | | | | 5 | -1446.026 | -0.1244 |
| 24"_32.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_32.5_Nom_py_steel | U3 | | | | | | 7 | 1446.026 | 0.1244 |
| 24"_32.5_Nom_py_steel | U3 | | | | | | 8 | 2602.847 | 1.3064 |
| 24"_32.5_Nom_py_steel | U3 | | | | | | 9 | 3470.463 | 4.1288 |
| 24"_32.5_Nom_py_steel | U3 | | | | | | 10 | 4338.078 | 10.08 |
| 24"_32.5_Nom_py_steel | U3 | | | | | | 11 | 4338.078 | 12.6 |
| 24"_32.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -6565.278 | -8.4 |
| 24"_32.5_UB_py | U2 | | | | | | 2 | -6565.278 | -6.72 |
| 24"_32.5_UB_py | U2 | | | | | | 3 | -5252.223 | -2.75251 |
| 24"_32.5_UB_py | U2 | | | | | | 4 | -3939.167 | -0.87091 |
| 24"_32.5_UB_py | U2 | | | | | | 5 | -2188.426 | -0.08296 |
| 24"_32.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_32.5_UB_py | U2 | | | | | | 7 | 2188.426 | 0.08296 |
| 24"_32.5_UB_py | U2 | | | | | | 8 | 3939.167 | 0.87091 |
| 24"_32.5_UB_py | U2 | | | | | | 9 | 5252.223 | 2.75251 |
| 24"_32.5_UB_py | U2 | | | | | | 10 | 6565.278 | 6.72 |
| 24"_32.5_UB_py | U2 | | | | | | 11 | 6565.278 | 8.4 |
| 24"_32.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -6565.278 | -8.4 |
| 24"_32.5_UB_py | U3 | | | | | | 2 | -6565.278 | -6.72 |
| 24"_32.5_UB_py | U3 | | | | | | 3 | -5252.223 | -2.75251 |
| 24"_32.5_UB_py | U3 | | | | | | 4 | -3939.167 | -0.87091 |
| 24"_32.5_UB_py | U3 | | | | | | 5 | -2188.426 | -0.08296 |
| 24"_32.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_32.5_UB_py | U3 | | | | | | 7 | 2188.426 | 0.08296 |
| 24"_32.5_UB_py | U3 | | | | | | 8 | 3939.167 | 0.87091 |
| 24"_32.5_UB_py | U3 | | | | | | 9 | 5252.223 | 2.75251 |
| 24"_32.5_UB_py | U3 | | | | | | 10 | 6565.278 | 6.72 |
| 24"_32.5_UB_py | U3 | | | | | | 11 | 6565.278 | 8.4 |
| 24"_32.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -8676.15 | -12.6 |
| 24"_32.5_UB_py_steel | U2 | | | | | | 2 | -8676.15 | -10.08 |
| 24"_32.5_UB_py_steel | U2 | | | | | | 3 | -6940.93 | -4.1288 |
| 24"_32.5_UB_py_steel | U2 | | | | | | 4 | -5205.69 | -1.3064 |
| 24"_32.5_UB_py_steel | U2 | | | | | | 5 | -2892.052 | -0.1244 |
| 24"_32.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_32.5_UB_py_steel | U2 | | | | | | 7 | 2892.052 | 0.1244 |
| 24"_32.5_UB_py_steel | U2 | | | | | | 8 | 5205.694 | 1.3064 |
| 24"_32.5_UB_py_steel | U2 | | | | | | 9 | 6940.927 | 4.1288 |
| 24"_32.5_UB_py_steel | U2 | | | | | | 10 | 8676.153 | 10.08 |
| 24"_32.5_UB_py_steel | U2 | | | | | | 11 | 8676.153 | 12.6 |
| 24"_32.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -8676.15 | -12.6 |
| 24"_32.5_UB_py_steel | U3 | | | | | | 2 | -8676.15 | -10.08 |
| 24"_32.5_UB_py_steel | U3 | | | | | | 3 | -6940.93 | -4.1288 |
| 24"_32.5_UB_py_steel | U3 | | | | | | 4 | -5205.69 | -1.3064 |
| 24"_32.5_UB_py_steel | U3 | | | | | | 5 | -2892.052 | -0.1244 |
| 24"_32.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_32.5_UB_py_steel | U3 | | | | | | 7 | 2892.052 | 0.1244 |
| 24"_32.5_UB_py_steel | U3 | | | | | | 8 | 5205.694 | 1.3064 |
| 24"_32.5_UB_py_steel | U3 | | | | | | 9 | 6940.927 | 4.1288 |
| 24"_32.5_UB_py_steel | U3 | | | | | | 10 | 8676.153 | 10.08 |
| 24"_32.5_UB_py_steel | U3 | | | | | | 11 | 8676.153 | 12.6 |
| 24"_36.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1641.6 | -8.4 |
| 24"_36.5_LB_py | U2 | | | | | | 2 | -1641.6 | -6.72 |
| 24"_36.5_LB_py | U2 | | | | | | 3 | -1329.755 | -2.929155 |
| 24"_36.5_LB_py | U2 | | | | | | 4 | -1009.672 | -1.012536 |
| 24"_36.5_LB_py | U2 | | | | | | 5 | -580.15 | -0.142268 |
| 24"_36.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_36.5_LB_py | U2 | | | | | | 7 | 580.15 | 0.142268 |
| 24"_36.5_LB_py | U2 | | | | | | 8 | 1009.672 | 1.012536 |
| 24"_36.5_LB_py | U2 | | | | | | 9 | 1329.755 | 2.929155 |
| 24"_36.5_LB_py | U2 | | | | | | 10 | 1641.6 | 6.72 |
| 24"_36.5_LB_py | U2 | | | | | | 11 | 1641.6 | 8.4 |
| 24"_36.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1641.6 | -8.4 |
| 24"_36.5_LB_py | U3 | | | | | | 2 | -1641.6 | -6.72 |
| 24"_36.5_LB_py | U3 | | | | | | 3 | -1329.755 | -2.929155 |
| 24"_36.5_LB_py | U3 | | | | | | 4 | -1009.672 | -1.012536 |
| 24"_36.5_LB_py | U3 | | | | | | 5 | -580.15 | -0.142268 |
| 24"_36.5_LB_py | U3 | | | | | | 6 | 0 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_36.5_LB_py | U3 | | | | | | 7 | 580.15 | 0.142268 |
| 24"_36.5_LB_py | U3 | | | | | | 8 | 1009.672 | 1.012536 |
| 24"_36.5_LB_py | U3 | | | | | | 9 | 1329.755 | 2.929155 |
| 24"_36.5_LB_py | U3 | | | | | | 10 | 1641.6 | 6.72 |
| 24"_36.5_LB_py | U3 | | | | | | 11 | 1641.6 | 8.4 |
| 24"_36.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -2382.451 | -12.6 |
| 24"_36.5_LB_py_steel | U2 | | | | | | 2 | -2382.451 | -10.08 |
| 24"_36.5_LB_py_steel | U2 | | | | | | 3 | -1905.961 | -4.1288 |
| 24"_36.5_LB_py_steel | U2 | | | | | | 4 | -1429.471 | -1.3064 |
| 24"_36.5_LB_py_steel | U2 | | | | | | 5 | -794.151 | -0.1244 |
| 24"_36.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_36.5_LB_py_steel | U2 | | | | | | 7 | 794.151 | 0.1244 |
| 24"_36.5_LB_py_steel | U2 | | | | | | 8 | 1429.471 | 1.3064 |
| 24"_36.5_LB_py_steel | U2 | | | | | | 9 | 1905.961 | 4.1288 |
| 24"_36.5_LB_py_steel | U2 | | | | | | 10 | 2382.451 | 10.08 |
| 24"_36.5_LB_py_steel | U2 | | | | | | 11 | 2382.451 | 12.6 |
| 24"_36.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -2382.451 | -12.6 |
| 24"_36.5_LB_py_steel | U3 | | | | | | 2 | -2382.451 | -10.08 |
| 24"_36.5_LB_py_steel | U3 | | | | | | 3 | -1905.961 | -4.1288 |
| 24"_36.5_LB_py_steel | U3 | | | | | | 4 | -1429.471 | -1.3064 |
| 24"_36.5_LB_py_steel | U3 | | | | | | 5 | -794.151 | -0.1244 |
| 24"_36.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_36.5_LB_py_steel | U3 | | | | | | 7 | 794.151 | 0.1244 |
| 24"_36.5_LB_py_steel | U3 | | | | | | 8 | 1429.471 | 1.3064 |
| 24"_36.5_LB_py_steel | U3 | | | | | | 9 | 1905.961 | 4.1288 |
| 24"_36.5_LB_py_steel | U3 | | | | | | 10 | 2382.451 | 10.08 |
| 24"_36.5_LB_py_steel | U3 | | | | | | 11 | 2382.451 | 12.6 |
| 24"_36.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -862.92 | -8.4 |
| 24"_36.5_LB_py_steel_axial | U1 | | | | | | 2 | -862.92 | -6.72 |
| 24"_36.5_LB_py_steel_axial | U1 | | | | | | 3 | -690.336 | -2.75251 |
| 24"_36.5_LB_py_steel_axial | U1 | | | | | | 4 | -517.752 | -0.87091 |
| 24"_36.5_LB_py_steel_axial | U1 | | | | | | 5 | -287.64 | -0.08296 |
| 24"_36.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_36.5_LB_py_steel_axial | U1 | | | | | | 7 | 287.64 | 0.08296 |
| 24"_36.5_LB_py_steel_axial | U1 | | | | | | 8 | 517.752 | 0.87091 |
| 24"_36.5_LB_py_steel_axial | U1 | | | | | | 9 | 690.336 | 2.75251 |
| 24"_36.5_LB_py_steel_axial | U1 | | | | | | 10 | 862.92 | 6.72 |
| 24"_36.5_LB_py_steel_axial | U1 | | | | | | 11 | 862.92 | 8.4 |
| 24"_36.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -3283.2 | -8.4 |
| 24"_36.5_Nom_py | U2 | | | | | | 2 | -3283.2 | -6.72 |
| 24"_36.5_Nom_py | U2 | | | | | | 3 | -2659.51 | -2.929155 |
| 24"_36.5_Nom_py | U2 | | | | | | 4 | -2019.345 | -1.012536 |
| 24"_36.5_Nom_py | U2 | | | | | | 5 | -1160.299 | -0.142268 |
| 24"_36.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_36.5_Nom_py | U2 | | | | | | 7 | 1160.299 | 0.142268 |
| 24"_36.5_Nom_py | U2 | | | | | | 8 | 2019.345 | 1.012536 |
| 24"_36.5_Nom_py | U2 | | | | | | 9 | 2659.51 | 2.929155 |
| 24"_36.5_Nom_py | U2 | | | | | | 10 | 3283.2 | 6.72 |
| 24"_36.5_Nom_py | U2 | | | | | | 11 | 3283.2 | 8.4 |
| 24"_36.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -3283.2 | -8.4 |
| 24"_36.5_Nom_py | U3 | | | | | | 2 | -3283.2 | -6.72 |
| 24"_36.5_Nom_py | U3 | | | | | | 3 | -2659.51 | -2.929155 |
| 24"_36.5_Nom_py | U3 | | | | | | 4 | -2019.345 | -1.012536 |
| 24"_36.5_Nom_py | U3 | | | | | | 5 | -1160.299 | -0.142268 |
| 24"_36.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_36.5_Nom_py | U3 | | | | | | 7 | 1160.299 | 0.142268 |
| 24"_36.5_Nom_py | U3 | | | | | | 8 | 2019.345 | 1.012536 |
| 24"_36.5_Nom_py | U3 | | | | | | 9 | 2659.51 | 2.929155 |
| 24"_36.5_Nom_py | U3 | | | | | | 10 | 3283.2 | 6.72 |
| 24"_36.5_Nom_py | U3 | | | | | | 11 | 3283.2 | 8.4 |
| 24"_36.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -4764.9 | -12.6 |
| 24"_36.5_Nom_py_steel | U2 | | | | | | 2 | -4764.9 | -10.08 |
| 24"_36.5_Nom_py_steel | U2 | | | | | | 3 | -3811.92 | -4.1288 |
| 24"_36.5_Nom_py_steel | U2 | | | | | | 4 | -2858.941 | -1.3064 |
| 24"_36.5_Nom_py_steel | U2 | | | | | | 5 | -1588.301 | -0.1244 |
| 24"_36.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_36.5_Nom_py_steel | U2 | | | | | | 7 | 1588.301 | 0.1244 |
| 24"_36.5_Nom_py_steel | U2 | | | | | | 8 | 2858.941 | 1.3064 |
| 24"_36.5_Nom_py_steel | U2 | | | | | | 9 | 3811.922 | 4.1288 |
| 24"_36.5_Nom_py_steel | U2 | | | | | | 10 | 4764.903 | 10.08 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_36.5_Nom_py_steel | U2 | | | | | | 11 | 4764.903 | 12.6 |
| 24"_36.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -4764.9 | -12.6 |
| 24"_36.5_Nom_py_steel | U3 | | | | | | 2 | -4764.9 | -10.08 |
| 24"_36.5_Nom_py_steel | U3 | | | | | | 3 | -3811.92 | -4.1288 |
| 24"_36.5_Nom_py_steel | U3 | | | | | | 4 | -2858.941 | -1.3064 |
| 24"_36.5_Nom_py_steel | U3 | | | | | | 5 | -1588.301 | -0.1244 |
| 24"_36.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_36.5_Nom_py_steel | U3 | | | | | | 7 | 1588.301 | 0.1244 |
| 24"_36.5_Nom_py_steel | U3 | | | | | | 8 | 2858.941 | 1.3064 |
| 24"_36.5_Nom_py_steel | U3 | | | | | | 9 | 3811.922 | 4.1288 |
| 24"_36.5_Nom_py_steel | U3 | | | | | | 10 | 4764.903 | 10.08 |
| 24"_36.5_Nom_py_steel | U3 | | | | | | 11 | 4764.903 | 12.6 |
| 24"_36.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -6566.4 | -8.4 |
| 24"_36.5_UB_py | U2 | | | | | | 2 | -6566.4 | -6.72 |
| 24"_36.5_UB_py | U2 | | | | | | 3 | -5319.019 | -2.929155 |
| 24"_36.5_UB_py | U2 | | | | | | 4 | -4038.689 | -1.012536 |
| 24"_36.5_UB_py | U2 | | | | | | 5 | -2320.599 | -0.142268 |
| 24"_36.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_36.5_UB_py | U2 | | | | | | 7 | 2320.599 | 0.142268 |
| 24"_36.5_UB_py | U2 | | | | | | 8 | 4038.689 | 1.012536 |
| 24"_36.5_UB_py | U2 | | | | | | 9 | 5319.019 | 2.929155 |
| 24"_36.5_UB_py | U2 | | | | | | 10 | 6566.4 | 6.72 |
| 24"_36.5_UB_py | U2 | | | | | | 11 | 6566.4 | 8.4 |
| 24"_36.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -6566.4 | -8.4 |
| 24"_36.5_UB_py | U3 | | | | | | 2 | -6566.4 | -6.72 |
| 24"_36.5_UB_py | U3 | | | | | | 3 | -5319.019 | -2.929155 |
| 24"_36.5_UB_py | U3 | | | | | | 4 | -4038.689 | -1.012536 |
| 24"_36.5_UB_py | U3 | | | | | | 5 | -2320.599 | -0.142268 |
| 24"_36.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_36.5_UB_py | U3 | | | | | | 7 | 2320.599 | 0.142268 |
| 24"_36.5_UB_py | U3 | | | | | | 8 | 4038.689 | 1.012536 |
| 24"_36.5_UB_py | U3 | | | | | | 9 | 5319.019 | 2.929155 |
| 24"_36.5_UB_py | U3 | | | | | | 10 | 6566.4 | 6.72 |
| 24"_36.5_UB_py | U3 | | | | | | 11 | 6566.4 | 8.4 |
| 24"_36.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -9529.81 | -12.6 |
| 24"_36.5_UB_py_steel | U2 | | | | | | 2 | -9529.81 | -10.08 |
| 24"_36.5_UB_py_steel | U2 | | | | | | 3 | -7623.85 | -4.1288 |
| 24"_36.5_UB_py_steel | U2 | | | | | | 4 | -5717.88 | -1.3064 |
| 24"_36.5_UB_py_steel | U2 | | | | | | 5 | -3176.6 | -0.1244 |
| 24"_36.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_36.5_UB_py_steel | U2 | | | | | | 7 | 3176.602 | 0.1244 |
| 24"_36.5_UB_py_steel | U2 | | | | | | 8 | 5717.883 | 1.3064 |
| 24"_36.5_UB_py_steel | U2 | | | | | | 9 | 7623.847 | 4.1288 |
| 24"_36.5_UB_py_steel | U2 | | | | | | 10 | 9529.807 | 10.08 |
| 24"_36.5_UB_py_steel | U2 | | | | | | 11 | 9529.807 | 12.6 |
| 24"_36.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -9529.81 | -12.6 |
| 24"_36.5_UB_py_steel | U3 | | | | | | 2 | -9529.81 | -10.08 |
| 24"_36.5_UB_py_steel | U3 | | | | | | 3 | -7623.85 | -4.1288 |
| 24"_36.5_UB_py_steel | U3 | | | | | | 4 | -5717.88 | -1.3064 |
| 24"_36.5_UB_py_steel | U3 | | | | | | 5 | -3176.6 | -0.1244 |
| 24"_36.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_36.5_UB_py_steel | U3 | | | | | | 7 | 3176.602 | 0.1244 |
| 24"_36.5_UB_py_steel | U3 | | | | | | 8 | 5717.883 | 1.3064 |
| 24"_36.5_UB_py_steel | U3 | | | | | | 9 | 7623.847 | 4.1288 |
| 24"_36.5_UB_py_steel | U3 | | | | | | 10 | 9529.807 | 10.08 |
| 24"_36.5_UB_py_steel | U3 | | | | | | 11 | 9529.807 | 12.6 |
| 24"_4.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -11.844 | -10.2 |
| 24"_4.5_LB_py | U2 | | | | | | 2 | -11.844 | -9.6 |
| 24"_4.5_LB_py | U2 | | | | | | 3 | -9.475 | -4.9152 |
| 24"_4.5_LB_py | U2 | | | | | | 4 | -7.106 | -2.0736 |
| 24"_4.5_LB_py | U2 | | | | | | 5 | -3.948 | -0.35556 |
| 24"_4.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_4.5_LB_py | U2 | | | | | | 7 | 3.948 | 0.35556 |
| 24"_4.5_LB_py | U2 | | | | | | 8 | 7.106 | 2.0736 |
| 24"_4.5_LB_py | U2 | | | | | | 9 | 9.475 | 4.9152 |
| 24"_4.5_LB_py | U2 | | | | | | 10 | 11.844 | 9.6 |
| 24"_4.5_LB_py | U2 | | | | | | 11 | 11.844 | 10.2 |
| 24"_4.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -11.844 | -10.2 |
| 24"_4.5_LB_py | U3 | | | | | | 2 | -11.844 | -9.6 |
| 24"_4.5_LB_py | U3 | | | | | | 3 | -9.475 | -4.9152 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_4.5_LB_py | U3 | | | | | | 4 | -7.106 | -2.0736 |
| 24"_4.5_LB_py | U3 | | | | | | 5 | -3.948 | -0.35556 |
| 24"_4.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_4.5_LB_py | U3 | | | | | | 7 | 3.948 | 0.35556 |
| 24"_4.5_LB_py | U3 | | | | | | 8 | 7.106 | 2.0736 |
| 24"_4.5_LB_py | U3 | | | | | | 9 | 9.475 | 4.9152 |
| 24"_4.5_LB_py | U3 | | | | | | 10 | 11.844 | 9.6 |
| 24"_4.5_LB_py | U3 | | | | | | 11 | 11.844 | 10.2 |
| 24"_4.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -16.416 | -15.3 |
| 24"_4.5_LB_py_steel | U2 | | | | | | 2 | -16.416 | -14.4 |
| 24"_4.5_LB_py_steel | U2 | | | | | | 3 | -13.133 | -7.3728 |
| 24"_4.5_LB_py_steel | U2 | | | | | | 4 | -9.849 | -3.1104 |
| 24"_4.5_LB_py_steel | U2 | | | | | | 5 | -5.472 | -0.5333 |
| 24"_4.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_4.5_LB_py_steel | U2 | | | | | | 7 | 5.472 | 0.5333 |
| 24"_4.5_LB_py_steel | U2 | | | | | | 8 | 9.849 | 3.1104 |
| 24"_4.5_LB_py_steel | U2 | | | | | | 9 | 13.133 | 7.3728 |
| 24"_4.5_LB_py_steel | U2 | | | | | | 10 | 16.416 | 14.4 |
| 24"_4.5_LB_py_steel | U2 | | | | | | 11 | 16.416 | 15.3 |
| 24"_4.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -16.416 | -15.3 |
| 24"_4.5_LB_py_steel | U3 | | | | | | 2 | -16.416 | -14.4 |
| 24"_4.5_LB_py_steel | U3 | | | | | | 3 | -13.133 | -7.3728 |
| 24"_4.5_LB_py_steel | U3 | | | | | | 4 | -9.849 | -3.1104 |
| 24"_4.5_LB_py_steel | U3 | | | | | | 5 | -5.472 | -0.5333 |
| 24"_4.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_4.5_LB_py_steel | U3 | | | | | | 7 | 5.472 | 0.5333 |
| 24"_4.5_LB_py_steel | U3 | | | | | | 8 | 9.849 | 3.1104 |
| 24"_4.5_LB_py_steel | U3 | | | | | | 9 | 13.133 | 7.3728 |
| 24"_4.5_LB_py_steel | U3 | | | | | | 10 | 16.416 | 14.4 |
| 24"_4.5_LB_py_steel | U3 | | | | | | 11 | 16.416 | 15.3 |
| 24"_4.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -139.4409204 | -1.26 |
| 24"_4.5_LB_py_steel_axial | U1 | | | | | | 2 | -139.4409204 | -0.9 |
| 24"_4.5_LB_py_steel_axial | U1 | | | | | | 3 | -93.54571085 | -0.34531 |
| 24"_4.5_LB_py_steel_axial | U1 | | | | | | 4 | -71.4100631 | -0.153914 |
| 24"_4.5_LB_py_steel_axial | U1 | | | | | | 5 | -61.49021314 | -0.099224 |
| 24"_4.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_4.5_LB_py_steel_axial | U1 | | | | | | 7 | 61.49021314 | 0.099224 |
| 24"_4.5_LB_py_steel_axial | U1 | | | | | | 8 | 71.4100631 | 0.153914 |
| 24"_4.5_LB_py_steel_axial | U1 | | | | | | 9 | 93.54571085 | 0.34531 |
| 24"_4.5_LB_py_steel_axial | U1 | | | | | | 10 | 139.4409204 | 0.9 |
| 24"_4.5_LB_py_steel_axial | U1 | | | | | | 11 | 139.4409204 | 1.26 |
| 24"_4.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -23.688 | -10.2 |
| 24"_4.5_Nom_py | U2 | | | | | | 2 | -23.688 | -9.6 |
| 24"_4.5_Nom_py | U2 | | | | | | 3 | -18.95 | -4.9152 |
| 24"_4.5_Nom_py | U2 | | | | | | 4 | -14.213 | -2.0736 |
| 24"_4.5_Nom_py | U2 | | | | | | 5 | -7.896 | -0.35556 |
| 24"_4.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_4.5_Nom_py | U2 | | | | | | 7 | 7.896 | 0.35556 |
| 24"_4.5_Nom_py | U2 | | | | | | 8 | 14.213 | 2.0736 |
| 24"_4.5_Nom_py | U2 | | | | | | 9 | 18.95 | 4.9152 |
| 24"_4.5_Nom_py | U2 | | | | | | 10 | 23.688 | 9.6 |
| 24"_4.5_Nom_py | U2 | | | | | | 11 | 23.688 | 10.2 |
| 24"_4.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -23.688 | -10.2 |
| 24"_4.5_Nom_py | U3 | | | | | | 2 | -23.688 | -9.6 |
| 24"_4.5_Nom_py | U3 | | | | | | 3 | -18.95 | -4.9152 |
| 24"_4.5_Nom_py | U3 | | | | | | 4 | -14.213 | -2.0736 |
| 24"_4.5_Nom_py | U3 | | | | | | 5 | -7.896 | -0.35556 |
| 24"_4.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_4.5_Nom_py | U3 | | | | | | 7 | 7.896 | 0.35556 |
| 24"_4.5_Nom_py | U3 | | | | | | 8 | 14.213 | 2.0736 |
| 24"_4.5_Nom_py | U3 | | | | | | 9 | 18.95 | 4.9152 |
| 24"_4.5_Nom_py | U3 | | | | | | 10 | 23.688 | 9.6 |
| 24"_4.5_Nom_py | U3 | | | | | | 11 | 23.688 | 10.2 |
| 24"_4.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -32.832 | -15.3 |
| 24"_4.5_Nom_py_steel | U2 | | | | | | 2 | -32.832 | -14.4 |
| 24"_4.5_Nom_py_steel | U2 | | | | | | 3 | -26.265 | -7.3728 |
| 24"_4.5_Nom_py_steel | U2 | | | | | | 4 | -19.699 | -3.1104 |
| 24"_4.5_Nom_py_steel | U2 | | | | | | 5 | -10.944 | -0.5333 |
| 24"_4.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_4.5_Nom_py_steel | U2 | | | | | | 7 | 10.944 | 0.5333 |

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|---|---|---|---|---|---|---|---|---|---|
| 24"_4.5_Nom_py_steel | U2 | | | | | | 8 | 19.699 | 3.1104 |
| 24"_4.5_Nom_py_steel | U2 | | | | | | 9 | 26.265 | 7.3728 |
| 24"_4.5_Nom_py_steel | U2 | | | | | | 10 | 32.832 | 14.4 |
| 24"_4.5_Nom_py_steel | U2 | | | | | | 11 | 32.832 | 15.3 |
| 24"_4.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -32.832 | -15.3 |
| 24"_4.5_Nom_py_steel | U3 | | | | | | 2 | -32.832 | -14.4 |
| 24"_4.5_Nom_py_steel | U3 | | | | | | 3 | -26.265 | -7.3728 |
| 24"_4.5_Nom_py_steel | U3 | | | | | | 4 | -19.699 | -3.1104 |
| 24"_4.5_Nom_py_steel | U3 | | | | | | 5 | -10.944 | -0.5333 |
| 24"_4.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_4.5_Nom_py_steel | U3 | | | | | | 7 | 10.944 | 0.5333 |
| 24"_4.5_Nom_py_steel | U3 | | | | | | 8 | 19.699 | 3.1104 |
| 24"_4.5_Nom_py_steel | U3 | | | | | | 9 | 26.265 | 7.3728 |
| 24"_4.5_Nom_py_steel | U3 | | | | | | 10 | 32.832 | 14.4 |
| 24"_4.5_Nom_py_steel | U3 | | | | | | 11 | 32.832 | 15.3 |
| 24"_4.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -47.376 | -10.2 |
| 24"_4.5_UB_py | U2 | | | | | | 2 | -47.376 | -9.6 |
| 24"_4.5_UB_py | U2 | | | | | | 3 | -37.901 | -4.9152 |
| 24"_4.5_UB_py | U2 | | | | | | 4 | -28.426 | -2.0736 |
| 24"_4.5_UB_py | U2 | | | | | | 5 | -15.792 | -0.35556 |
| 24"_4.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_4.5_UB_py | U2 | | | | | | 7 | 15.792 | 0.35556 |
| 24"_4.5_UB_py | U2 | | | | | | 8 | 28.426 | 2.0736 |
| 24"_4.5_UB_py | U2 | | | | | | 9 | 37.901 | 4.9152 |
| 24"_4.5_UB_py | U2 | | | | | | 10 | 47.376 | 9.6 |
| 24"_4.5_UB_py | U2 | | | | | | 11 | 47.376 | 10.2 |
| 24"_4.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -47.376 | -10.2 |
| 24"_4.5_UB_py | U3 | | | | | | 2 | -47.376 | -9.6 |
| 24"_4.5_UB_py | U3 | | | | | | 3 | -37.901 | -4.9152 |
| 24"_4.5_UB_py | U3 | | | | | | 4 | -28.426 | -2.0736 |
| 24"_4.5_UB_py | U3 | | | | | | 5 | -15.792 | -0.35556 |
| 24"_4.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_4.5_UB_py | U3 | | | | | | 7 | 15.792 | 0.35556 |
| 24"_4.5_UB_py | U3 | | | | | | 8 | 28.426 | 2.0736 |
| 24"_4.5_UB_py | U3 | | | | | | 9 | 37.901 | 4.9152 |
| 24"_4.5_UB_py | U3 | | | | | | 10 | 47.376 | 9.6 |
| 24"_4.5_UB_py | U3 | | | | | | 11 | 47.376 | 10.2 |
| 24"_4.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -65.664 | -15.3 |
| 24"_4.5_UB_py_steel | U2 | | | | | | 2 | -65.664 | -14.4 |
| 24"_4.5_UB_py_steel | U2 | | | | | | 3 | -52.531 | -7.3728 |
| 24"_4.5_UB_py_steel | U2 | | | | | | 4 | -39.399 | -3.1104 |
| 24"_4.5_UB_py_steel | U2 | | | | | | 5 | -21.888 | -0.5333 |
| 24"_4.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_4.5_UB_py_steel | U2 | | | | | | 7 | 21.888 | 0.5333 |
| 24"_4.5_UB_py_steel | U2 | | | | | | 8 | 39.399 | 3.1104 |
| 24"_4.5_UB_py_steel | U2 | | | | | | 9 | 52.531 | 7.3728 |
| 24"_4.5_UB_py_steel | U2 | | | | | | 10 | 65.664 | 14.4 |
| 24"_4.5_UB_py_steel | U2 | | | | | | 11 | 65.664 | 15.3 |
| 24"_4.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -65.664 | -15.3 |
| 24"_4.5_UB_py_steel | U3 | | | | | | 2 | -65.664 | -14.4 |
| 24"_4.5_UB_py_steel | U3 | | | | | | 3 | -52.531 | -7.3728 |
| 24"_4.5_UB_py_steel | U3 | | | | | | 4 | -39.399 | -3.1104 |
| 24"_4.5_UB_py_steel | U3 | | | | | | 5 | -21.888 | -0.5333 |
| 24"_4.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_4.5_UB_py_steel | U3 | | | | | | 7 | 21.888 | 0.5333 |
| 24"_4.5_UB_py_steel | U3 | | | | | | 8 | 39.399 | 3.1104 |
| 24"_4.5_UB_py_steel | U3 | | | | | | 9 | 52.531 | 7.3728 |
| 24"_4.5_UB_py_steel | U3 | | | | | | 10 | 65.664 | 14.4 |
| 24"_4.5_UB_py_steel | U3 | | | | | | 11 | 65.664 | 15.3 |
| 24"_40.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -2770.2 | -8.4 |
| 24"_40.5_LB_py | U2 | | | | | | 2 | -2770.2 | -6.72 |
| 24"_40.5_LB_py | U2 | | | | | | 3 | -2275.734 | -3.131036 |
| 24"_40.5_LB_py | U2 | | | | | | 4 | -1751.481 | -1.174394 |
| 24"_40.5_LB_py | U2 | | | | | | 5 | -1042.548 | -0.210049 |
| 24"_40.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_40.5_LB_py | U2 | | | | | | 7 | 1042.548 | 0.210049 |
| 24"_40.5_LB_py | U2 | | | | | | 8 | 1751.481 | 1.174394 |
| 24"_40.5_LB_py | U2 | | | | | | 9 | 2275.734 | 3.131036 |
| 24"_40.5_LB_py | U2 | | | | | | 10 | 2770.2 | 6.72 |
| 24"_40.5_LB_py | U2 | | | | | | 11 | 2770.2 | 8.4 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_40.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -2770.2 | -8.4 |
| 24"_40.5_LB_py | U3 | | | | | | 2 | -2770.2 | -6.72 |
| 24"_40.5_LB_py | U3 | | | | | | 3 | -2275.734 | -3.131036 |
| 24"_40.5_LB_py | U3 | | | | | | 4 | -1751.481 | -1.174394 |
| 24"_40.5_LB_py | U3 | | | | | | 5 | -1042.548 | -0.210049 |
| 24"_40.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_40.5_LB_py | U3 | | | | | | 7 | 1042.548 | 0.210049 |
| 24"_40.5_LB_py | U3 | | | | | | 8 | 1751.481 | 1.174394 |
| 24"_40.5_LB_py | U3 | | | | | | 9 | 2275.734 | 3.131036 |
| 24"_40.5_LB_py | U3 | | | | | | 10 | 2770.2 | 6.72 |
| 24"_40.5_LB_py | U3 | | | | | | 11 | 2770.2 | 8.4 |
| 24"_40.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -4155.3 | -12.6 |
| 24"_40.5_LB_py_steel | U2 | | | | | | 2 | -4155.3 | -10.08 |
| 24"_40.5_LB_py_steel | U2 | | | | | | 3 | -3324.24 | -4.1288 |
| 24"_40.5_LB_py_steel | U2 | | | | | | 4 | -2493.18 | -1.3064 |
| 24"_40.5_LB_py_steel | U2 | | | | | | 5 | -1385.1 | -0.1244 |
| 24"_40.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_40.5_LB_py_steel | U2 | | | | | | 7 | 1385.1 | 0.1244 |
| 24"_40.5_LB_py_steel | U2 | | | | | | 8 | 2493.18 | 1.3064 |
| 24"_40.5_LB_py_steel | U2 | | | | | | 9 | 3324.24 | 4.1288 |
| 24"_40.5_LB_py_steel | U2 | | | | | | 10 | 4155.3 | 10.08 |
| 24"_40.5_LB_py_steel | U2 | | | | | | 11 | 4155.3 | 12.6 |
| 24"_40.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -4155.3 | -12.6 |
| 24"_40.5_LB_py_steel | U3 | | | | | | 2 | -4155.3 | -10.08 |
| 24"_40.5_LB_py_steel | U3 | | | | | | 3 | -3324.24 | -4.1288 |
| 24"_40.5_LB_py_steel | U3 | | | | | | 4 | -2493.18 | -1.3064 |
| 24"_40.5_LB_py_steel | U3 | | | | | | 5 | -1385.1 | -0.1244 |
| 24"_40.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_40.5_LB_py_steel | U3 | | | | | | 7 | 1385.1 | 0.1244 |
| 24"_40.5_LB_py_steel | U3 | | | | | | 8 | 2493.18 | 1.3064 |
| 24"_40.5_LB_py_steel | U3 | | | | | | 9 | 3324.24 | 4.1288 |
| 24"_40.5_LB_py_steel | U3 | | | | | | 10 | 4155.3 | 10.08 |
| 24"_40.5_LB_py_steel | U3 | | | | | | 11 | 4155.3 | 12.6 |
| 24"_40.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -2421.36 | -8.4 |
| 24"_40.5_LB_py_steel_axial | U1 | | | | | | 2 | -2421.36 | -6.72 |
| 24"_40.5_LB_py_steel_axial | U1 | | | | | | 3 | -1937.088 | -2.75251 |
| 24"_40.5_LB_py_steel_axial | U1 | | | | | | 4 | -1452.816 | -0.87091 |
| 24"_40.5_LB_py_steel_axial | U1 | | | | | | 5 | -807.12 | -0.08296 |
| 24"_40.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_40.5_LB_py_steel_axial | U1 | | | | | | 7 | 807.12 | 0.08296 |
| 24"_40.5_LB_py_steel_axial | U1 | | | | | | 8 | 1452.816 | 0.87091 |
| 24"_40.5_LB_py_steel_axial | U1 | | | | | | 9 | 1937.088 | 2.75251 |
| 24"_40.5_LB_py_steel_axial | U1 | | | | | | 10 | 2421.36 | 6.72 |
| 24"_40.5_LB_py_steel_axial | U1 | | | | | | 11 | 2421.36 | 8.4 |
| 24"_40.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -5540.4 | -8.4 |
| 24"_40.5_Nom_py | U2 | | | | | | 2 | -5540.4 | -6.72 |
| 24"_40.5_Nom_py | U2 | | | | | | 3 | -4551.468 | -3.131036 |
| 24"_40.5_Nom_py | U2 | | | | | | 4 | -3502.963 | -1.174394 |
| 24"_40.5_Nom_py | U2 | | | | | | 5 | -2085.097 | -0.210049 |
| 24"_40.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_40.5_Nom_py | U2 | | | | | | 7 | 2085.097 | 0.210049 |
| 24"_40.5_Nom_py | U2 | | | | | | 8 | 3502.963 | 1.174394 |
| 24"_40.5_Nom_py | U2 | | | | | | 9 | 4551.468 | 3.131036 |
| 24"_40.5_Nom_py | U2 | | | | | | 10 | 5540.4 | 6.72 |
| 24"_40.5_Nom_py | U2 | | | | | | 11 | 5540.4 | 8.4 |
| 24"_40.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -5540.4 | -8.4 |
| 24"_40.5_Nom_py | U3 | | | | | | 2 | -5540.4 | -6.72 |
| 24"_40.5_Nom_py | U3 | | | | | | 3 | -4551.468 | -3.131036 |
| 24"_40.5_Nom_py | U3 | | | | | | 4 | -3502.963 | -1.174394 |
| 24"_40.5_Nom_py | U3 | | | | | | 5 | -2085.097 | -0.210049 |
| 24"_40.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_40.5_Nom_py | U3 | | | | | | 7 | 2085.097 | 0.210049 |
| 24"_40.5_Nom_py | U3 | | | | | | 8 | 3502.963 | 1.174394 |
| 24"_40.5_Nom_py | U3 | | | | | | 9 | 4551.468 | 3.131036 |
| 24"_40.5_Nom_py | U3 | | | | | | 10 | 5540.4 | 6.72 |
| 24"_40.5_Nom_py | U3 | | | | | | 11 | 5540.4 | 8.4 |
| 24"_40.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -8310.6 | -12.6 |
| 24"_40.5_Nom_py_steel | U2 | | | | | | 2 | -8310.6 | -10.08 |
| 24"_40.5_Nom_py_steel | U2 | | | | | | 3 | -6648.48 | -4.1288 |
| 24"_40.5_Nom_py_steel | U2 | | | | | | 4 | -4986.36 | -1.3064 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_40.5_Nom_py_steel | U2 | | | | | | 5 | -2770.2 | -0.1244 |
| 24"_40.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_40.5_Nom_py_steel | U2 | | | | | | 7 | 2770.2 | 0.1244 |
| 24"_40.5_Nom_py_steel | U2 | | | | | | 8 | 4986.36 | 1.3064 |
| 24"_40.5_Nom_py_steel | U2 | | | | | | 9 | 6648.48 | 4.1288 |
| 24"_40.5_Nom_py_steel | U2 | | | | | | 10 | 8310.6 | 10.08 |
| 24"_40.5_Nom_py_steel | U2 | | | | | | 11 | 8310.6 | 12.6 |
| 24"_40.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -8310.6 | -12.6 |
| 24"_40.5_Nom_py_steel | U3 | | | | | | 2 | -8310.6 | -10.08 |
| 24"_40.5_Nom_py_steel | U3 | | | | | | 3 | -6648.48 | -4.1288 |
| 24"_40.5_Nom_py_steel | U3 | | | | | | 4 | -4986.36 | -1.3064 |
| 24"_40.5_Nom_py_steel | U3 | | | | | | 5 | -2770.2 | -0.1244 |
| 24"_40.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_40.5_Nom_py_steel | U3 | | | | | | 7 | 2770.2 | 0.1244 |
| 24"_40.5_Nom_py_steel | U3 | | | | | | 8 | 4986.36 | 1.3064 |
| 24"_40.5_Nom_py_steel | U3 | | | | | | 9 | 6648.48 | 4.1288 |
| 24"_40.5_Nom_py_steel | U3 | | | | | | 10 | 8310.6 | 10.08 |
| 24"_40.5_Nom_py_steel | U3 | | | | | | 11 | 8310.6 | 12.6 |
| 24"_40.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -11080.8 | -8.4 |
| 24"_40.5_UB_py | U2 | | | | | | 2 | -11080.8 | -6.72 |
| 24"_40.5_UB_py | U2 | | | | | | 3 | -9102.937 | -3.131036 |
| 24"_40.5_UB_py | U2 | | | | | | 4 | -7005.925 | -1.174394 |
| 24"_40.5_UB_py | U2 | | | | | | 5 | -4170.194 | -0.210049 |
| 24"_40.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_40.5_UB_py | U2 | | | | | | 7 | 4170.194 | 0.210049 |
| 24"_40.5_UB_py | U2 | | | | | | 8 | 7005.925 | 1.174394 |
| 24"_40.5_UB_py | U2 | | | | | | 9 | 9102.937 | 3.131036 |
| 24"_40.5_UB_py | U2 | | | | | | 10 | 11080.8 | 6.72 |
| 24"_40.5_UB_py | U2 | | | | | | 11 | 11080.8 | 8.4 |
| 24"_40.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -11080.8 | -8.4 |
| 24"_40.5_UB_py | U3 | | | | | | 2 | -11080.8 | -6.72 |
| 24"_40.5_UB_py | U3 | | | | | | 3 | -9102.937 | -3.131036 |
| 24"_40.5_UB_py | U3 | | | | | | 4 | -7005.925 | -1.174394 |
| 24"_40.5_UB_py | U3 | | | | | | 5 | -4170.194 | -0.210049 |
| 24"_40.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_40.5_UB_py | U3 | | | | | | 7 | 4170.194 | 0.210049 |
| 24"_40.5_UB_py | U3 | | | | | | 8 | 7005.925 | 1.174394 |
| 24"_40.5_UB_py | U3 | | | | | | 9 | 9102.937 | 3.131036 |
| 24"_40.5_UB_py | U3 | | | | | | 10 | 11080.8 | 6.72 |
| 24"_40.5_UB_py | U3 | | | | | | 11 | 11080.8 | 8.4 |
| 24"_40.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -16621.2 | -12.6 |
| 24"_40.5_UB_py_steel | U2 | | | | | | 2 | -16621.2 | -10.08 |
| 24"_40.5_UB_py_steel | U2 | | | | | | 3 | -13296.96 | -4.1288 |
| 24"_40.5_UB_py_steel | U2 | | | | | | 4 | -9972.72 | -1.3064 |
| 24"_40.5_UB_py_steel | U2 | | | | | | 5 | -5540.4 | -0.1244 |
| 24"_40.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_40.5_UB_py_steel | U2 | | | | | | 7 | 5540.4 | 0.1244 |
| 24"_40.5_UB_py_steel | U2 | | | | | | 8 | 9972.72 | 1.3064 |
| 24"_40.5_UB_py_steel | U2 | | | | | | 9 | 13296.96 | 4.1288 |
| 24"_40.5_UB_py_steel | U2 | | | | | | 10 | 16621.2 | 10.08 |
| 24"_40.5_UB_py_steel | U2 | | | | | | 11 | 16621.2 | 12.6 |
| 24"_40.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -16621.2 | -12.6 |
| 24"_40.5_UB_py_steel | U3 | | | | | | 2 | -16621.2 | -10.08 |
| 24"_40.5_UB_py_steel | U3 | | | | | | 3 | -13296.96 | -4.1288 |
| 24"_40.5_UB_py_steel | U3 | | | | | | 4 | -9972.72 | -1.3064 |
| 24"_40.5_UB_py_steel | U3 | | | | | | 5 | -5540.4 | -0.1244 |
| 24"_40.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_40.5_UB_py_steel | U3 | | | | | | 7 | 5540.4 | 0.1244 |
| 24"_40.5_UB_py_steel | U3 | | | | | | 8 | 9972.72 | 1.3064 |
| 24"_40.5_UB_py_steel | U3 | | | | | | 9 | 13296.96 | 4.1288 |
| 24"_40.5_UB_py_steel | U3 | | | | | | 10 | 16621.2 | 10.08 |
| 24"_40.5_UB_py_steel | U3 | | | | | | 11 | 16621.2 | 12.6 |
| 24"_5.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -12.876 | -10.2 |
| 24"_5.5_LB_py | U2 | | | | | | 2 | -12.876 | -9.6 |
| 24"_5.5_LB_py | U2 | | | | | | 3 | -10.301 | -4.9152 |
| 24"_5.5_LB_py | U2 | | | | | | 4 | -7.726 | -2.0736 |
| 24"_5.5_LB_py | U2 | | | | | | 5 | -4.292 | -0.35556 |
| 24"_5.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_5.5_LB_py | U2 | | | | | | 7 | 4.292 | 0.35556 |
| 24"_5.5_LB_py | U2 | | | | | | 8 | 7.726 | 2.0736 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_5.5_LB_py | U2 | | | | | | 9 | 10.301 | 4.9152 |
| 24"_5.5_LB_py | U2 | | | | | | 10 | 12.876 | 9.6 |
| 24"_5.5_LB_py | U2 | | | | | | 11 | 12.876 | 10.2 |
| 24"_5.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -12.876 | -10.2 |
| 24"_5.5_LB_py | U3 | | | | | | 2 | -12.876 | -9.6 |
| 24"_5.5_LB_py | U3 | | | | | | 3 | -10.301 | -4.9152 |
| 24"_5.5_LB_py | U3 | | | | | | 4 | -7.726 | -2.0736 |
| 24"_5.5_LB_py | U3 | | | | | | 5 | -4.292 | -0.35556 |
| 24"_5.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_5.5_LB_py | U3 | | | | | | 7 | 4.292 | 0.35556 |
| 24"_5.5_LB_py | U3 | | | | | | 8 | 7.726 | 2.0736 |
| 24"_5.5_LB_py | U3 | | | | | | 9 | 10.301 | 4.9152 |
| 24"_5.5_LB_py | U3 | | | | | | 10 | 12.876 | 9.6 |
| 24"_5.5_LB_py | U3 | | | | | | 11 | 12.876 | 10.2 |
| 24"_5.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -17.664 | -15.3 |
| 24"_5.5_LB_py_steel | U2 | | | | | | 2 | -17.664 | -14.4 |
| 24"_5.5_LB_py_steel | U2 | | | | | | 3 | -14.131 | -7.3728 |
| 24"_5.5_LB_py_steel | U2 | | | | | | 4 | -10.599 | -3.1104 |
| 24"_5.5_LB_py_steel | U2 | | | | | | 5 | -5.888 | -0.5333 |
| 24"_5.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_5.5_LB_py_steel | U2 | | | | | | 7 | 5.888 | 0.5333 |
| 24"_5.5_LB_py_steel | U2 | | | | | | 8 | 10.599 | 3.1104 |
| 24"_5.5_LB_py_steel | U2 | | | | | | 9 | 14.131 | 7.3728 |
| 24"_5.5_LB_py_steel | U2 | | | | | | 10 | 17.664 | 14.4 |
| 24"_5.5_LB_py_steel | U2 | | | | | | 11 | 17.664 | 15.3 |
| 24"_5.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -17.664 | -15.3 |
| 24"_5.5_LB_py_steel | U3 | | | | | | 2 | -17.664 | -14.4 |
| 24"_5.5_LB_py_steel | U3 | | | | | | 3 | -14.131 | -7.3728 |
| 24"_5.5_LB_py_steel | U3 | | | | | | 4 | -10.599 | -3.1104 |
| 24"_5.5_LB_py_steel | U3 | | | | | | 5 | -5.888 | -0.5333 |
| 24"_5.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_5.5_LB_py_steel | U3 | | | | | | 7 | 5.888 | 0.5333 |
| 24"_5.5_LB_py_steel | U3 | | | | | | 8 | 10.599 | 3.1104 |
| 24"_5.5_LB_py_steel | U3 | | | | | | 9 | 14.131 | 7.3728 |
| 24"_5.5_LB_py_steel | U3 | | | | | | 10 | 17.664 | 14.4 |
| 24"_5.5_LB_py_steel | U3 | | | | | | 11 | 17.664 | 15.3 |
| 24"_5.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -324.7778752 | -1.26 |
| 24"_5.5_LB_py_steel_axial | U1 | | | | | | 2 | -324.7778752 | -0.9 |
| 24"_5.5_LB_py_steel_axial | U1 | | | | | | 3 | -204.7353058 | -0.346702308 |
| 24"_5.5_LB_py_steel_axial | U1 | | | | | | 4 | -148.3445828 | -0.160184462 |
| 24"_5.5_LB_py_steel_axial | U1 | | | | | | 5 | -124.704085 | -0.106886769 |
| 24"_5.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_5.5_LB_py_steel_axial | U1 | | | | | | 7 | 124.704085 | 0.106886769 |
| 24"_5.5_LB_py_steel_axial | U1 | | | | | | 8 | 148.3445828 | 0.160184462 |
| 24"_5.5_LB_py_steel_axial | U1 | | | | | | 9 | 204.7353058 | 0.346702308 |
| 24"_5.5_LB_py_steel_axial | U1 | | | | | | 10 | 324.7778752 | 0.9 |
| 24"_5.5_LB_py_steel_axial | U1 | | | | | | 11 | 324.7778752 | 1.26 |
| 24"_5.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -25.752 | -10.2 |
| 24"_5.5_Nom_py | U2 | | | | | | 2 | -25.752 | -9.6 |
| 24"_5.5_Nom_py | U2 | | | | | | 3 | -20.602 | -4.9152 |
| 24"_5.5_Nom_py | U2 | | | | | | 4 | -15.451 | -2.0736 |
| 24"_5.5_Nom_py | U2 | | | | | | 5 | -8.584 | -0.35556 |
| 24"_5.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_5.5_Nom_py | U2 | | | | | | 7 | 8.584 | 0.35556 |
| 24"_5.5_Nom_py | U2 | | | | | | 8 | 15.451 | 2.0736 |
| 24"_5.5_Nom_py | U2 | | | | | | 9 | 20.602 | 4.9152 |
| 24"_5.5_Nom_py | U2 | | | | | | 10 | 25.752 | 9.6 |
| 24"_5.5_Nom_py | U2 | | | | | | 11 | 25.752 | 10.2 |
| 24"_5.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -25.752 | -10.2 |
| 24"_5.5_Nom_py | U3 | | | | | | 2 | -25.752 | -9.6 |
| 24"_5.5_Nom_py | U3 | | | | | | 3 | -20.602 | -4.9152 |
| 24"_5.5_Nom_py | U3 | | | | | | 4 | -15.451 | -2.0736 |
| 24"_5.5_Nom_py | U3 | | | | | | 5 | -8.584 | -0.35556 |
| 24"_5.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_5.5_Nom_py | U3 | | | | | | 7 | 8.584 | 0.35556 |
| 24"_5.5_Nom_py | U3 | | | | | | 8 | 15.451 | 2.0736 |
| 24"_5.5_Nom_py | U3 | | | | | | 9 | 20.602 | 4.9152 |
| 24"_5.5_Nom_py | U3 | | | | | | 10 | 25.752 | 9.6 |
| 24"_5.5_Nom_py | U3 | | | | | | 11 | 25.752 | 10.2 |
| 24"_5.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -35.328 | -15.3 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_5.5_Nom_py_steel | U2 | | | | | | 2 | -35.328 | -14.4 |
| 24"_5.5_Nom_py_steel | U2 | | | | | | 3 | -28.263 | -7.3728 |
| 24"_5.5_Nom_py_steel | U2 | | | | | | 4 | -21.197 | -3.1104 |
| 24"_5.5_Nom_py_steel | U2 | | | | | | 5 | -11.776 | -0.5333 |
| 24"_5.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_5.5_Nom_py_steel | U2 | | | | | | 7 | 11.776 | 0.5333 |
| 24"_5.5_Nom_py_steel | U2 | | | | | | 8 | 21.197 | 3.1104 |
| 24"_5.5_Nom_py_steel | U2 | | | | | | 9 | 28.263 | 7.3728 |
| 24"_5.5_Nom_py_steel | U2 | | | | | | 10 | 35.328 | 14.4 |
| 24"_5.5_Nom_py_steel | U2 | | | | | | 11 | 35.328 | 15.3 |
| 24"_5.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -35.328 | -15.3 |
| 24"_5.5_Nom_py_steel | U3 | | | | | | 2 | -35.328 | -14.4 |
| 24"_5.5_Nom_py_steel | U3 | | | | | | 3 | -28.263 | -7.3728 |
| 24"_5.5_Nom_py_steel | U3 | | | | | | 4 | -21.197 | -3.1104 |
| 24"_5.5_Nom_py_steel | U3 | | | | | | 5 | -11.776 | -0.5333 |
| 24"_5.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_5.5_Nom_py_steel | U3 | | | | | | 7 | 11.776 | 0.5333 |
| 24"_5.5_Nom_py_steel | U3 | | | | | | 8 | 21.197 | 3.1104 |
| 24"_5.5_Nom_py_steel | U3 | | | | | | 9 | 28.263 | 7.3728 |
| 24"_5.5_Nom_py_steel | U3 | | | | | | 10 | 35.328 | 14.4 |
| 24"_5.5_Nom_py_steel | U3 | | | | | | 11 | 35.328 | 15.3 |
| 24"_5.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -51.504 | -10.2 |
| 24"_5.5_UB_py | U2 | | | | | | 2 | -51.504 | -9.6 |
| 24"_5.5_UB_py | U2 | | | | | | 3 | -41.203 | -4.9152 |
| 24"_5.5_UB_py | U2 | | | | | | 4 | -30.902 | -2.0736 |
| 24"_5.5_UB_py | U2 | | | | | | 5 | -17.168 | -0.35556 |
| 24"_5.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_5.5_UB_py | U2 | | | | | | 7 | 17.168 | 0.35556 |
| 24"_5.5_UB_py | U2 | | | | | | 8 | 30.902 | 2.0736 |
| 24"_5.5_UB_py | U2 | | | | | | 9 | 41.203 | 4.9152 |
| 24"_5.5_UB_py | U2 | | | | | | 10 | 51.504 | 9.6 |
| 24"_5.5_UB_py | U2 | | | | | | 11 | 51.504 | 10.2 |
| 24"_5.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -51.504 | -10.2 |
| 24"_5.5_UB_py | U3 | | | | | | 2 | -51.504 | -9.6 |
| 24"_5.5_UB_py | U3 | | | | | | 3 | -41.203 | -4.9152 |
| 24"_5.5_UB_py | U3 | | | | | | 4 | -30.902 | -2.0736 |
| 24"_5.5_UB_py | U3 | | | | | | 5 | -17.168 | -0.35556 |
| 24"_5.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_5.5_UB_py | U3 | | | | | | 7 | 17.168 | 0.35556 |
| 24"_5.5_UB_py | U3 | | | | | | 8 | 30.902 | 2.0736 |
| 24"_5.5_UB_py | U3 | | | | | | 9 | 41.203 | 4.9152 |
| 24"_5.5_UB_py | U3 | | | | | | 10 | 51.504 | 9.6 |
| 24"_5.5_UB_py | U3 | | | | | | 11 | 51.504 | 10.2 |
| 24"_5.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -70.656 | -15.3 |
| 24"_5.5_UB_py_steel | U2 | | | | | | 2 | -70.656 | -14.4 |
| 24"_5.5_UB_py_steel | U2 | | | | | | 3 | -56.525 | -7.3728 |
| 24"_5.5_UB_py_steel | U2 | | | | | | 4 | -42.393 | -3.1104 |
| 24"_5.5_UB_py_steel | U2 | | | | | | 5 | -23.552 | -0.5333 |
| 24"_5.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_5.5_UB_py_steel | U2 | | | | | | 7 | 23.552 | 0.5333 |
| 24"_5.5_UB_py_steel | U2 | | | | | | 8 | 42.393 | 3.1104 |
| 24"_5.5_UB_py_steel | U2 | | | | | | 9 | 56.525 | 7.3728 |
| 24"_5.5_UB_py_steel | U2 | | | | | | 10 | 70.656 | 14.4 |
| 24"_5.5_UB_py_steel | U2 | | | | | | 11 | 70.656 | 15.3 |
| 24"_5.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -70.656 | -15.3 |
| 24"_5.5_UB_py_steel | U3 | | | | | | 2 | -70.656 | -14.4 |
| 24"_5.5_UB_py_steel | U3 | | | | | | 3 | -56.525 | -7.3728 |
| 24"_5.5_UB_py_steel | U3 | | | | | | 4 | -42.393 | -3.1104 |
| 24"_5.5_UB_py_steel | U3 | | | | | | 5 | -23.552 | -0.5333 |
| 24"_5.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_5.5_UB_py_steel | U3 | | | | | | 7 | 23.552 | 0.5333 |
| 24"_5.5_UB_py_steel | U3 | | | | | | 8 | 42.393 | 3.1104 |
| 24"_5.5_UB_py_steel | U3 | | | | | | 9 | 56.525 | 7.3728 |
| 24"_5.5_UB_py_steel | U3 | | | | | | 10 | 70.656 | 14.4 |
| 24"_5.5_UB_py_steel | U3 | | | | | | 11 | 70.656 | 15.3 |
| 24"_6.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -13.908 | -10.2 |
| 24"_6.5_LB_py | U2 | | | | | | 2 | -13.908 | -9.6 |
| 24"_6.5_LB_py | U2 | | | | | | 3 | -11.126 | -4.9152 |
| 24"_6.5_LB_py | U2 | | | | | | 4 | -8.345 | -2.0736 |
| 24"_6.5_LB_py | U2 | | | | | | 5 | -4.636 | -0.35556 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_6.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_6.5_LB_py | U2 | | | | | | 7 | 4.636 | 0.35556 |
| 24"_6.5_LB_py | U2 | | | | | | 8 | 8.345 | 2.0736 |
| 24"_6.5_LB_py | U2 | | | | | | 9 | 11.126 | 4.9152 |
| 24"_6.5_LB_py | U2 | | | | | | 10 | 13.908 | 9.6 |
| 24"_6.5_LB_py | U2 | | | | | | 11 | 13.908 | 10.2 |
| 24"_6.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -13.908 | -10.2 |
| 24"_6.5_LB_py | U3 | | | | | | 2 | -13.908 | -9.6 |
| 24"_6.5_LB_py | U3 | | | | | | 3 | -11.126 | -4.9152 |
| 24"_6.5_LB_py | U3 | | | | | | 4 | -8.345 | -2.0736 |
| 24"_6.5_LB_py | U3 | | | | | | 5 | -4.636 | -0.35556 |
| 24"_6.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_6.5_LB_py | U3 | | | | | | 7 | 4.636 | 0.35556 |
| 24"_6.5_LB_py | U3 | | | | | | 8 | 8.345 | 2.0736 |
| 24"_6.5_LB_py | U3 | | | | | | 9 | 11.126 | 4.9152 |
| 24"_6.5_LB_py | U3 | | | | | | 10 | 13.908 | 9.6 |
| 24"_6.5_LB_py | U3 | | | | | | 11 | 13.908 | 10.2 |
| 24"_6.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -18.912 | -15.3 |
| 24"_6.5_LB_py_steel | U2 | | | | | | 2 | -18.912 | -14.4 |
| 24"_6.5_LB_py_steel | U2 | | | | | | 3 | -15.129 | -7.3728 |
| 24"_6.5_LB_py_steel | U2 | | | | | | 4 | -11.347 | -3.1104 |
| 24"_6.5_LB_py_steel | U2 | | | | | | 5 | -6.304 | -0.5333 |
| 24"_6.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_6.5_LB_py_steel | U2 | | | | | | 7 | 6.304 | 0.5333 |
| 24"_6.5_LB_py_steel | U2 | | | | | | 8 | 11.347 | 3.1104 |
| 24"_6.5_LB_py_steel | U2 | | | | | | 9 | 15.129 | 7.3728 |
| 24"_6.5_LB_py_steel | U2 | | | | | | 10 | 18.912 | 14.4 |
| 24"_6.5_LB_py_steel | U2 | | | | | | 11 | 18.912 | 15.3 |
| 24"_6.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -18.912 | -15.3 |
| 24"_6.5_LB_py_steel | U3 | | | | | | 2 | -18.912 | -14.4 |
| 24"_6.5_LB_py_steel | U3 | | | | | | 3 | -15.129 | -7.3728 |
| 24"_6.5_LB_py_steel | U3 | | | | | | 4 | -11.347 | -3.1104 |
| 24"_6.5_LB_py_steel | U3 | | | | | | 5 | -6.304 | -0.5333 |
| 24"_6.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_6.5_LB_py_steel | U3 | | | | | | 7 | 6.304 | 0.5333 |
| 24"_6.5_LB_py_steel | U3 | | | | | | 8 | 11.347 | 3.1104 |
| 24"_6.5_LB_py_steel | U3 | | | | | | 9 | 15.129 | 7.3728 |
| 24"_6.5_LB_py_steel | U3 | | | | | | 10 | 18.912 | 14.4 |
| 24"_6.5_LB_py_steel | U3 | | | | | | 11 | 18.912 | 15.3 |
| 24"_6.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -451.9843402 | -1.26 |
| 24"_6.5_LB_py_steel_axial | U1 | | | | | | 2 | -451.9843402 | -0.9 |
| 24"_6.5_LB_py_steel_axial | U1 | | | | | | 3 | -270.7128438 | -0.345967692 |
| 24"_6.5_LB_py_steel_axial | U1 | | | | | | 4 | -184.2716047 | -0.156877538 |
| 24"_6.5_LB_py_steel_axial | U1 | | | | | | 5 | -148.3067791 | -0.102845231 |
| 24"_6.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_6.5_LB_py_steel_axial | U1 | | | | | | 7 | 148.3067791 | 0.102845231 |
| 24"_6.5_LB_py_steel_axial | U1 | | | | | | 8 | 184.2716047 | 0.156877538 |
| 24"_6.5_LB_py_steel_axial | U1 | | | | | | 9 | 270.7128438 | 0.345967692 |
| 24"_6.5_LB_py_steel_axial | U1 | | | | | | 10 | 451.9843402 | 0.9 |
| 24"_6.5_LB_py_steel_axial | U1 | | | | | | 11 | 451.9843402 | 1.26 |
| 24"_6.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -27.816 | -10.2 |
| 24"_6.5_Nom_py | U2 | | | | | | 2 | -27.816 | -9.6 |
| 24"_6.5_Nom_py | U2 | | | | | | 3 | -22.253 | -4.9152 |
| 24"_6.5_Nom_py | U2 | | | | | | 4 | -16.69 | -2.0736 |
| 24"_6.5_Nom_py | U2 | | | | | | 5 | -9.272 | -0.35556 |
| 24"_6.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_6.5_Nom_py | U2 | | | | | | 7 | 9.272 | 0.35556 |
| 24"_6.5_Nom_py | U2 | | | | | | 8 | 16.69 | 2.0736 |
| 24"_6.5_Nom_py | U2 | | | | | | 9 | 22.253 | 4.9152 |
| 24"_6.5_Nom_py | U2 | | | | | | 10 | 27.816 | 9.6 |
| 24"_6.5_Nom_py | U2 | | | | | | 11 | 27.816 | 10.2 |
| 24"_6.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -27.816 | -10.2 |
| 24"_6.5_Nom_py | U3 | | | | | | 2 | -27.816 | -9.6 |
| 24"_6.5_Nom_py | U3 | | | | | | 3 | -22.253 | -4.9152 |
| 24"_6.5_Nom_py | U3 | | | | | | 4 | -16.69 | -2.0736 |
| 24"_6.5_Nom_py | U3 | | | | | | 5 | -9.272 | -0.35556 |
| 24"_6.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_6.5_Nom_py | U3 | | | | | | 7 | 9.272 | 0.35556 |
| 24"_6.5_Nom_py | U3 | | | | | | 8 | 16.69 | 2.0736 |
| 24"_6.5_Nom_py | U3 | | | | | | 9 | 22.253 | 4.9152 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_6.5_Nom_py | U3 | | | | | | 10 | 27.816 | 9.6 |
| 24"_6.5_Nom_py | U3 | | | | | | 11 | 27.816 | 10.2 |
| 24"_6.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -37.824 | -15.3 |
| 24"_6.5_Nom_py_steel | U2 | | | | | | 2 | -37.824 | -14.4 |
| 24"_6.5_Nom_py_steel | U2 | | | | | | 3 | -30.259 | -7.3728 |
| 24"_6.5_Nom_py_steel | U2 | | | | | | 4 | -22.695 | -3.1104 |
| 24"_6.5_Nom_py_steel | U2 | | | | | | 5 | -12.608 | -0.5333 |
| 24"_6.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_6.5_Nom_py_steel | U2 | | | | | | 7 | 12.608 | 0.5333 |
| 24"_6.5_Nom_py_steel | U2 | | | | | | 8 | 22.695 | 3.1104 |
| 24"_6.5_Nom_py_steel | U2 | | | | | | 9 | 30.259 | 7.3728 |
| 24"_6.5_Nom_py_steel | U2 | | | | | | 10 | 37.824 | 14.4 |
| 24"_6.5_Nom_py_steel | U2 | | | | | | 11 | 37.824 | 15.3 |
| 24"_6.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -37.824 | -15.3 |
| 24"_6.5_Nom_py_steel | U3 | | | | | | 2 | -37.824 | -14.4 |
| 24"_6.5_Nom_py_steel | U3 | | | | | | 3 | -30.259 | -7.3728 |
| 24"_6.5_Nom_py_steel | U3 | | | | | | 4 | -22.695 | -3.1104 |
| 24"_6.5_Nom_py_steel | U3 | | | | | | 5 | -12.608 | -0.5333 |
| 24"_6.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_6.5_Nom_py_steel | U3 | | | | | | 7 | 12.608 | 0.5333 |
| 24"_6.5_Nom_py_steel | U3 | | | | | | 8 | 22.695 | 3.1104 |
| 24"_6.5_Nom_py_steel | U3 | | | | | | 9 | 30.259 | 7.3728 |
| 24"_6.5_Nom_py_steel | U3 | | | | | | 10 | 37.824 | 14.4 |
| 24"_6.5_Nom_py_steel | U3 | | | | | | 11 | 37.824 | 15.3 |
| 24"_6.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -55.632 | -10.2 |
| 24"_6.5_UB_py | U2 | | | | | | 2 | -55.632 | -9.6 |
| 24"_6.5_UB_py | U2 | | | | | | 3 | -44.506 | -4.9152 |
| 24"_6.5_UB_py | U2 | | | | | | 4 | -33.379 | -2.0736 |
| 24"_6.5_UB_py | U2 | | | | | | 5 | -18.544 | -0.35556 |
| 24"_6.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_6.5_UB_py | U2 | | | | | | 7 | 18.544 | 0.35556 |
| 24"_6.5_UB_py | U2 | | | | | | 8 | 33.379 | 2.0736 |
| 24"_6.5_UB_py | U2 | | | | | | 9 | 44.506 | 4.9152 |
| 24"_6.5_UB_py | U2 | | | | | | 10 | 55.632 | 9.6 |
| 24"_6.5_UB_py | U2 | | | | | | 11 | 55.632 | 10.2 |
| 24"_6.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -55.632 | -10.2 |
| 24"_6.5_UB_py | U3 | | | | | | 2 | -55.632 | -9.6 |
| 24"_6.5_UB_py | U3 | | | | | | 3 | -44.506 | -4.9152 |
| 24"_6.5_UB_py | U3 | | | | | | 4 | -33.379 | -2.0736 |
| 24"_6.5_UB_py | U3 | | | | | | 5 | -18.544 | -0.35556 |
| 24"_6.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_6.5_UB_py | U3 | | | | | | 7 | 18.544 | 0.35556 |
| 24"_6.5_UB_py | U3 | | | | | | 8 | 33.379 | 2.0736 |
| 24"_6.5_UB_py | U3 | | | | | | 9 | 44.506 | 4.9152 |
| 24"_6.5_UB_py | U3 | | | | | | 10 | 55.632 | 9.6 |
| 24"_6.5_UB_py | U3 | | | | | | 11 | 55.632 | 10.2 |
| 24"_6.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -75.648 | -15.3 |
| 24"_6.5_UB_py_steel | U2 | | | | | | 2 | -75.648 | -14.4 |
| 24"_6.5_UB_py_steel | U2 | | | | | | 3 | -60.519 | -7.3728 |
| 24"_6.5_UB_py_steel | U2 | | | | | | 4 | -45.389 | -3.1104 |
| 24"_6.5_UB_py_steel | U2 | | | | | | 5 | -25.216 | -0.5333 |
| 24"_6.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_6.5_UB_py_steel | U2 | | | | | | 7 | 25.216 | 0.5333 |
| 24"_6.5_UB_py_steel | U2 | | | | | | 8 | 45.389 | 3.1104 |
| 24"_6.5_UB_py_steel | U2 | | | | | | 9 | 60.519 | 7.3728 |
| 24"_6.5_UB_py_steel | U2 | | | | | | 10 | 75.648 | 14.4 |
| 24"_6.5_UB_py_steel | U2 | | | | | | 11 | 75.648 | 15.3 |
| 24"_6.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -75.648 | -15.3 |
| 24"_6.5_UB_py_steel | U3 | | | | | | 2 | -75.648 | -14.4 |
| 24"_6.5_UB_py_steel | U3 | | | | | | 3 | -60.519 | -7.3728 |
| 24"_6.5_UB_py_steel | U3 | | | | | | 4 | -45.389 | -3.1104 |
| 24"_6.5_UB_py_steel | U3 | | | | | | 5 | -25.216 | -0.5333 |
| 24"_6.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_6.5_UB_py_steel | U3 | | | | | | 7 | 25.216 | 0.5333 |
| 24"_6.5_UB_py_steel | U3 | | | | | | 8 | 45.389 | 3.1104 |
| 24"_6.5_UB_py_steel | U3 | | | | | | 9 | 60.519 | 7.3728 |
| 24"_6.5_UB_py_steel | U3 | | | | | | 10 | 75.648 | 14.4 |
| 24"_6.5_UB_py_steel | U3 | | | | | | 11 | 75.648 | 15.3 |
| 24"_7.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -134.379 | -8.4 |
| 24"_7.5_LB_py | U2 | | | | | | 2 | -134.379 | -6.72 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_7.5_LB_py | U2 | | | | | | 3 | -107.503 | -2.75251 |
| 24"_7.5_LB_py | U2 | | | | | | 4 | -80.627 | -0.87091 |
| 24"_7.5_LB_py | U2 | | | | | | 5 | -44.793 | -0.08296 |
| 24"_7.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_7.5_LB_py | U2 | | | | | | 7 | 44.793 | 0.08296 |
| 24"_7.5_LB_py | U2 | | | | | | 8 | 80.627 | 0.87091 |
| 24"_7.5_LB_py | U2 | | | | | | 9 | 107.503 | 2.75251 |
| 24"_7.5_LB_py | U2 | | | | | | 10 | 134.379 | 6.72 |
| 24"_7.5_LB_py | U2 | | | | | | 11 | 134.379 | 8.4 |
| 24"_7.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -134.379 | -8.4 |
| 24"_7.5_LB_py | U3 | | | | | | 2 | -134.379 | -6.72 |
| 24"_7.5_LB_py | U3 | | | | | | 3 | -107.503 | -2.75251 |
| 24"_7.5_LB_py | U3 | | | | | | 4 | -80.627 | -0.87091 |
| 24"_7.5_LB_py | U3 | | | | | | 5 | -44.793 | -0.08296 |
| 24"_7.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_7.5_LB_py | U3 | | | | | | 7 | 44.793 | 0.08296 |
| 24"_7.5_LB_py | U3 | | | | | | 8 | 80.627 | 0.87091 |
| 24"_7.5_LB_py | U3 | | | | | | 9 | 107.503 | 2.75251 |
| 24"_7.5_LB_py | U3 | | | | | | 10 | 134.379 | 6.72 |
| 24"_7.5_LB_py | U3 | | | | | | 11 | 134.379 | 8.4 |
| 24"_7.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -195.471 | -12.6 |
| 24"_7.5_LB_py_steel | U2 | | | | | | 2 | -195.471 | -10.08 |
| 24"_7.5_LB_py_steel | U2 | | | | | | 3 | -156.377 | -4.1288 |
| 24"_7.5_LB_py_steel | U2 | | | | | | 4 | -117.283 | -1.3064 |
| 24"_7.5_LB_py_steel | U2 | | | | | | 5 | -65.157 | -0.1244 |
| 24"_7.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_7.5_LB_py_steel | U2 | | | | | | 7 | 65.157 | 0.1244 |
| 24"_7.5_LB_py_steel | U2 | | | | | | 8 | 117.283 | 1.3064 |
| 24"_7.5_LB_py_steel | U2 | | | | | | 9 | 156.377 | 4.1288 |
| 24"_7.5_LB_py_steel | U2 | | | | | | 10 | 195.471 | 10.08 |
| 24"_7.5_LB_py_steel | U2 | | | | | | 11 | 195.471 | 12.6 |
| 24"_7.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -195.471 | -12.6 |
| 24"_7.5_LB_py_steel | U3 | | | | | | 2 | -195.471 | -10.08 |
| 24"_7.5_LB_py_steel | U3 | | | | | | 3 | -156.377 | -4.1288 |
| 24"_7.5_LB_py_steel | U3 | | | | | | 4 | -117.283 | -1.3064 |
| 24"_7.5_LB_py_steel | U3 | | | | | | 5 | -65.157 | -0.1244 |
| 24"_7.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_7.5_LB_py_steel | U3 | | | | | | 7 | 65.157 | 0.1244 |
| 24"_7.5_LB_py_steel | U3 | | | | | | 8 | 117.283 | 1.3064 |
| 24"_7.5_LB_py_steel | U3 | | | | | | 9 | 156.377 | 4.1288 |
| 24"_7.5_LB_py_steel | U3 | | | | | | 10 | 195.471 | 10.08 |
| 24"_7.5_LB_py_steel | U3 | | | | | | 11 | 195.471 | 12.6 |
| 24"_7.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -543.1043747 | -1.26 |
| 24"_7.5_LB_py_steel_axial | U1 | | | | | | 2 | -543.1043747 | -0.9 |
| 24"_7.5_LB_py_steel_axial | U1 | | | | | | 3 | -313.9420146 | -0.345233077 |
| 24"_7.5_LB_py_steel_axial | U1 | | | | | | 4 | -203.7158953 | -0.153570615 |
| 24"_7.5_LB_py_steel_axial | U1 | | | | | | 5 | -158.0534637 | -0.098803692 |
| 24"_7.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_7.5_LB_py_steel_axial | U1 | | | | | | 7 | 158.0534637 | 0.098803692 |
| 24"_7.5_LB_py_steel_axial | U1 | | | | | | 8 | 203.7158953 | 0.153570615 |
| 24"_7.5_LB_py_steel_axial | U1 | | | | | | 9 | 313.9420146 | 0.345233077 |
| 24"_7.5_LB_py_steel_axial | U1 | | | | | | 10 | 543.1043747 | 0.9 |
| 24"_7.5_LB_py_steel_axial | U1 | | | | | | 11 | 543.1043747 | 1.26 |
| 24"_7.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -268.757 | -8.4 |
| 24"_7.5_Nom_py | U2 | | | | | | 2 | -268.757 | -6.72 |
| 24"_7.5_Nom_py | U2 | | | | | | 3 | -215.006 | -2.75251 |
| 24"_7.5_Nom_py | U2 | | | | | | 4 | -161.254 | -0.87091 |
| 24"_7.5_Nom_py | U2 | | | | | | 5 | -89.586 | -0.08296 |
| 24"_7.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_7.5_Nom_py | U2 | | | | | | 7 | 89.586 | 0.08296 |
| 24"_7.5_Nom_py | U2 | | | | | | 8 | 161.254 | 0.87091 |
| 24"_7.5_Nom_py | U2 | | | | | | 9 | 215.006 | 2.75251 |
| 24"_7.5_Nom_py | U2 | | | | | | 10 | 268.757 | 6.72 |
| 24"_7.5_Nom_py | U2 | | | | | | 11 | 268.757 | 8.4 |
| 24"_7.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -268.757 | -8.4 |
| 24"_7.5_Nom_py | U3 | | | | | | 2 | -268.757 | -6.72 |
| 24"_7.5_Nom_py | U3 | | | | | | 3 | -215.006 | -2.75251 |
| 24"_7.5_Nom_py | U3 | | | | | | 4 | -161.254 | -0.87091 |
| 24"_7.5_Nom_py | U3 | | | | | | 5 | -89.586 | -0.08296 |
| 24"_7.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |

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|---|---|---|---|---|---|---|---|---|---|
| 24"_7.5_Nom_py | U3 | | | | | | 7 | 89.586 | 0.08296 |
| 24"_7.5_Nom_py | U3 | | | | | | 8 | 161.254 | 0.87091 |
| 24"_7.5_Nom_py | U3 | | | | | | 9 | 215.006 | 2.75251 |
| 24"_7.5_Nom_py | U3 | | | | | | 10 | 268.757 | 6.72 |
| 24"_7.5_Nom_py | U3 | | | | | | 11 | 268.757 | 8.4 |
| 24"_7.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -390.941 | -12.6 |
| 24"_7.5_Nom_py_steel | U2 | | | | | | 2 | -390.941 | -10.08 |
| 24"_7.5_Nom_py_steel | U2 | | | | | | 3 | -312.753 | -4.1288 |
| 24"_7.5_Nom_py_steel | U2 | | | | | | 4 | -234.565 | -1.3064 |
| 24"_7.5_Nom_py_steel | U2 | | | | | | 5 | -130.314 | -0.1244 |
| 24"_7.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_7.5_Nom_py_steel | U2 | | | | | | 7 | 130.314 | 0.1244 |
| 24"_7.5_Nom_py_steel | U2 | | | | | | 8 | 234.565 | 1.3064 |
| 24"_7.5_Nom_py_steel | U2 | | | | | | 9 | 312.753 | 4.1288 |
| 24"_7.5_Nom_py_steel | U2 | | | | | | 10 | 390.941 | 10.08 |
| 24"_7.5_Nom_py_steel | U2 | | | | | | 11 | 390.941 | 12.6 |
| 24"_7.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -390.941 | -12.6 |
| 24"_7.5_Nom_py_steel | U3 | | | | | | 2 | -390.941 | -10.08 |
| 24"_7.5_Nom_py_steel | U3 | | | | | | 3 | -312.753 | -4.1288 |
| 24"_7.5_Nom_py_steel | U3 | | | | | | 4 | -234.565 | -1.3064 |
| 24"_7.5_Nom_py_steel | U3 | | | | | | 5 | -130.314 | -0.1244 |
| 24"_7.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_7.5_Nom_py_steel | U3 | | | | | | 7 | 130.314 | 0.1244 |
| 24"_7.5_Nom_py_steel | U3 | | | | | | 8 | 234.565 | 1.3064 |
| 24"_7.5_Nom_py_steel | U3 | | | | | | 9 | 312.753 | 4.1288 |
| 24"_7.5_Nom_py_steel | U3 | | | | | | 10 | 390.941 | 10.08 |
| 24"_7.5_Nom_py_steel | U3 | | | | | | 11 | 390.941 | 12.6 |
| 24"_7.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -537.514 | -8.4 |
| 24"_7.5_UB_py | U2 | | | | | | 2 | -537.514 | -6.72 |
| 24"_7.5_UB_py | U2 | | | | | | 3 | -430.011 | -2.75251 |
| 24"_7.5_UB_py | U2 | | | | | | 4 | -322.508 | -0.87091 |
| 24"_7.5_UB_py | U2 | | | | | | 5 | -179.171 | -0.08296 |
| 24"_7.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_7.5_UB_py | U2 | | | | | | 7 | 179.171 | 0.08296 |
| 24"_7.5_UB_py | U2 | | | | | | 8 | 322.508 | 0.87091 |
| 24"_7.5_UB_py | U2 | | | | | | 9 | 430.011 | 2.75251 |
| 24"_7.5_UB_py | U2 | | | | | | 10 | 537.514 | 6.72 |
| 24"_7.5_UB_py | U2 | | | | | | 11 | 537.514 | 8.4 |
| 24"_7.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -537.514 | -8.4 |
| 24"_7.5_UB_py | U3 | | | | | | 2 | -537.514 | -6.72 |
| 24"_7.5_UB_py | U3 | | | | | | 3 | -430.011 | -2.75251 |
| 24"_7.5_UB_py | U3 | | | | | | 4 | -322.508 | -0.87091 |
| 24"_7.5_UB_py | U3 | | | | | | 5 | -179.171 | -0.08296 |
| 24"_7.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_7.5_UB_py | U3 | | | | | | 7 | 179.171 | 0.08296 |
| 24"_7.5_UB_py | U3 | | | | | | 8 | 322.508 | 0.87091 |
| 24"_7.5_UB_py | U3 | | | | | | 9 | 430.011 | 2.75251 |
| 24"_7.5_UB_py | U3 | | | | | | 10 | 537.514 | 6.72 |
| 24"_7.5_UB_py | U3 | | | | | | 11 | 537.514 | 8.4 |
| 24"_7.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -781.883 | -12.6 |
| 24"_7.5_UB_py_steel | U2 | | | | | | 2 | -781.883 | -10.08 |
| 24"_7.5_UB_py_steel | U2 | | | | | | 3 | -625.506 | -4.1288 |
| 24"_7.5_UB_py_steel | U2 | | | | | | 4 | -469.129 | -1.3064 |
| 24"_7.5_UB_py_steel | U2 | | | | | | 5 | -260.627 | -0.1244 |
| 24"_7.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_7.5_UB_py_steel | U2 | | | | | | 7 | 260.627 | 0.1244 |
| 24"_7.5_UB_py_steel | U2 | | | | | | 8 | 469.129 | 1.3064 |
| 24"_7.5_UB_py_steel | U2 | | | | | | 9 | 625.506 | 4.1288 |
| 24"_7.5_UB_py_steel | U2 | | | | | | 10 | 781.883 | 10.08 |
| 24"_7.5_UB_py_steel | U2 | | | | | | 11 | 781.883 | 12.6 |
| 24"_7.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -781.883 | -12.6 |
| 24"_7.5_UB_py_steel | U3 | | | | | | 2 | -781.883 | -10.08 |
| 24"_7.5_UB_py_steel | U3 | | | | | | 3 | -625.506 | -4.1288 |
| 24"_7.5_UB_py_steel | U3 | | | | | | 4 | -469.129 | -1.3064 |
| 24"_7.5_UB_py_steel | U3 | | | | | | 5 | -260.627 | -0.1244 |
| 24"_7.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_7.5_UB_py_steel | U3 | | | | | | 7 | 260.627 | 0.1244 |
| 24"_7.5_UB_py_steel | U3 | | | | | | 8 | 469.129 | 1.3064 |
| 24"_7.5_UB_py_steel | U3 | | | | | | 9 | 625.506 | 4.1288 |
| 24"_7.5_UB_py_steel | U3 | | | | | | 10 | 781.883 | 10.08 |

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|---|---|---|---|---|---|---|---|---|---|
| 24"_7.5_UB_py_steel | U3 | | | | | | 11 | 781.883 | 12.6 |
| 24"_8.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -145.576 | -8.4 |
| 24"_8.5_LB_py | U2 | | | | | | 2 | -145.576 | -6.72 |
| 24"_8.5_LB_py | U2 | | | | | | 3 | -116.461 | -2.75251 |
| 24"_8.5_LB_py | U2 | | | | | | 4 | -87.346 | -0.87091 |
| 24"_8.5_LB_py | U2 | | | | | | 5 | -48.525 | -0.08296 |
| 24"_8.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_8.5_LB_py | U2 | | | | | | 7 | 48.525 | 0.08296 |
| 24"_8.5_LB_py | U2 | | | | | | 8 | 87.346 | 0.87091 |
| 24"_8.5_LB_py | U2 | | | | | | 9 | 116.461 | 2.75251 |
| 24"_8.5_LB_py | U2 | | | | | | 10 | 145.576 | 6.72 |
| 24"_8.5_LB_py | U2 | | | | | | 11 | 145.576 | 8.4 |
| 24"_8.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -145.576 | -8.4 |
| 24"_8.5_LB_py | U3 | | | | | | 2 | -145.576 | -6.72 |
| 24"_8.5_LB_py | U3 | | | | | | 3 | -116.461 | -2.75251 |
| 24"_8.5_LB_py | U3 | | | | | | 4 | -87.346 | -0.87091 |
| 24"_8.5_LB_py | U3 | | | | | | 5 | -48.525 | -0.08296 |
| 24"_8.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_8.5_LB_py | U3 | | | | | | 7 | 48.525 | 0.08296 |
| 24"_8.5_LB_py | U3 | | | | | | 8 | 87.346 | 0.87091 |
| 24"_8.5_LB_py | U3 | | | | | | 9 | 116.461 | 2.75251 |
| 24"_8.5_LB_py | U3 | | | | | | 10 | 145.576 | 6.72 |
| 24"_8.5_LB_py | U3 | | | | | | 11 | 145.576 | 8.4 |
| 24"_8.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -207.163 | -12.6 |
| 24"_8.5_LB_py_steel | U2 | | | | | | 2 | -207.163 | -10.08 |
| 24"_8.5_LB_py_steel | U2 | | | | | | 3 | -165.73 | -4.1288 |
| 24"_8.5_LB_py_steel | U2 | | | | | | 4 | -124.297 | -1.3064 |
| 24"_8.5_LB_py_steel | U2 | | | | | | 5 | -69.054 | -0.1244 |
| 24"_8.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_8.5_LB_py_steel | U2 | | | | | | 7 | 69.054 | 0.1244 |
| 24"_8.5_LB_py_steel | U2 | | | | | | 8 | 124.297 | 1.3064 |
| 24"_8.5_LB_py_steel | U2 | | | | | | 9 | 165.73 | 4.1288 |
| 24"_8.5_LB_py_steel | U2 | | | | | | 10 | 207.163 | 10.08 |
| 24"_8.5_LB_py_steel | U2 | | | | | | 11 | 207.163 | 12.6 |
| 24"_8.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -207.163 | -12.6 |
| 24"_8.5_LB_py_steel | U3 | | | | | | 2 | -207.163 | -10.08 |
| 24"_8.5_LB_py_steel | U3 | | | | | | 3 | -165.73 | -4.1288 |
| 24"_8.5_LB_py_steel | U3 | | | | | | 4 | -124.297 | -1.3064 |
| 24"_8.5_LB_py_steel | U3 | | | | | | 5 | -69.054 | -0.1244 |
| 24"_8.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_8.5_LB_py_steel | U3 | | | | | | 7 | 69.054 | 0.1244 |
| 24"_8.5_LB_py_steel | U3 | | | | | | 8 | 124.297 | 1.3064 |
| 24"_8.5_LB_py_steel | U3 | | | | | | 9 | 165.73 | 4.1288 |
| 24"_8.5_LB_py_steel | U3 | | | | | | 10 | 207.163 | 10.08 |
| 24"_8.5_LB_py_steel | U3 | | | | | | 11 | 207.163 | 12.6 |
| 24"_8.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -634.2244091 | -1.26 |
| 24"_8.5_LB_py_steel_axial | U1 | | | | | | 2 | -634.2244091 | -0.9 |
| 24"_8.5_LB_py_steel_axial | U1 | | | | | | 3 | -357.1711853 | -0.344498462 |
| 24"_8.5_LB_py_steel_axial | U1 | | | | | | 4 | -223.1601858 | -0.150263692 |
| 24"_8.5_LB_py_steel_axial | U1 | | | | | | 5 | -167.8001484 | -0.094762154 |
| 24"_8.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_8.5_LB_py_steel_axial | U1 | | | | | | 7 | 167.8001484 | 0.094762154 |
| 24"_8.5_LB_py_steel_axial | U1 | | | | | | 8 | 223.1601858 | 0.150263692 |
| 24"_8.5_LB_py_steel_axial | U1 | | | | | | 9 | 357.1711853 | 0.344498462 |
| 24"_8.5_LB_py_steel_axial | U1 | | | | | | 10 | 634.2244091 | 0.9 |
| 24"_8.5_LB_py_steel_axial | U1 | | | | | | 11 | 634.2244091 | 1.26 |
| 24"_8.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -291.152 | -8.4 |
| 24"_8.5_Nom_py | U2 | | | | | | 2 | -291.152 | -6.72 |
| 24"_8.5_Nom_py | U2 | | | | | | 3 | -232.922 | -2.75251 |
| 24"_8.5_Nom_py | U2 | | | | | | 4 | -174.691 | -0.87091 |
| 24"_8.5_Nom_py | U2 | | | | | | 5 | -97.051 | -0.08296 |
| 24"_8.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_8.5_Nom_py | U2 | | | | | | 7 | 97.051 | 0.08296 |
| 24"_8.5_Nom_py | U2 | | | | | | 8 | 174.691 | 0.87091 |
| 24"_8.5_Nom_py | U2 | | | | | | 9 | 232.922 | 2.75251 |
| 24"_8.5_Nom_py | U2 | | | | | | 10 | 291.152 | 6.72 |
| 24"_8.5_Nom_py | U2 | | | | | | 11 | 291.152 | 8.4 |
| 24"_8.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -291.152 | -8.4 |
| 24"_8.5_Nom_py | U3 | | | | | | 2 | -291.152 | -6.72 |
| 24"_8.5_Nom_py | U3 | | | | | | 3 | -232.922 | -2.75251 |

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|---|---|---|---|---|---|---|---|---|---|
| 24"_8.5_Nom_py | U3 | | | | | | 4 | -174.691 | -0.87091 |
| 24"_8.5_Nom_py | U3 | | | | | | 5 | -97.051 | -0.08296 |
| 24"_8.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_8.5_Nom_py | U3 | | | | | | 7 | 97.051 | 0.08296 |
| 24"_8.5_Nom_py | U3 | | | | | | 8 | 174.691 | 0.87091 |
| 24"_8.5_Nom_py | U3 | | | | | | 9 | 232.922 | 2.75251 |
| 24"_8.5_Nom_py | U3 | | | | | | 10 | 291.152 | 6.72 |
| 24"_8.5_Nom_py | U3 | | | | | | 11 | 291.152 | 8.4 |
| 24"_8.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -414.325 | -12.6 |
| 24"_8.5_Nom_py_steel | U2 | | | | | | 2 | -414.325 | -10.08 |
| 24"_8.5_Nom_py_steel | U2 | | | | | | 3 | -331.46 | -4.1288 |
| 24"_8.5_Nom_py_steel | U2 | | | | | | 4 | -248.595 | -1.3064 |
| 24"_8.5_Nom_py_steel | U2 | | | | | | 5 | -138.109 | -0.1244 |
| 24"_8.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_8.5_Nom_py_steel | U2 | | | | | | 7 | 138.109 | 0.1244 |
| 24"_8.5_Nom_py_steel | U2 | | | | | | 8 | 248.595 | 1.3064 |
| 24"_8.5_Nom_py_steel | U2 | | | | | | 9 | 331.46 | 4.1288 |
| 24"_8.5_Nom_py_steel | U2 | | | | | | 10 | 414.325 | 10.08 |
| 24"_8.5_Nom_py_steel | U2 | | | | | | 11 | 414.325 | 12.6 |
| 24"_8.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -414.325 | -12.6 |
| 24"_8.5_Nom_py_steel | U3 | | | | | | 2 | -414.325 | -10.08 |
| 24"_8.5_Nom_py_steel | U3 | | | | | | 3 | -331.46 | -4.1288 |
| 24"_8.5_Nom_py_steel | U3 | | | | | | 4 | -248.595 | -1.3064 |
| 24"_8.5_Nom_py_steel | U3 | | | | | | 5 | -138.109 | -0.1244 |
| 24"_8.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_8.5_Nom_py_steel | U3 | | | | | | 7 | 138.109 | 0.1244 |
| 24"_8.5_Nom_py_steel | U3 | | | | | | 8 | 248.595 | 1.3064 |
| 24"_8.5_Nom_py_steel | U3 | | | | | | 9 | 331.46 | 4.1288 |
| 24"_8.5_Nom_py_steel | U3 | | | | | | 10 | 414.325 | 10.08 |
| 24"_8.5_Nom_py_steel | U3 | | | | | | 11 | 414.325 | 12.6 |
| 24"_8.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -582.304 | -8.4 |
| 24"_8.5_UB_py | U2 | | | | | | 2 | -582.304 | -6.72 |
| 24"_8.5_UB_py | U2 | | | | | | 3 | -465.843 | -2.75251 |
| 24"_8.5_UB_py | U2 | | | | | | 4 | -349.382 | -0.87091 |
| 24"_8.5_UB_py | U2 | | | | | | 5 | -194.101 | -0.08296 |
| 24"_8.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_8.5_UB_py | U2 | | | | | | 7 | 194.101 | 0.08296 |
| 24"_8.5_UB_py | U2 | | | | | | 8 | 349.382 | 0.87091 |
| 24"_8.5_UB_py | U2 | | | | | | 9 | 465.843 | 2.75251 |
| 24"_8.5_UB_py | U2 | | | | | | 10 | 582.304 | 6.72 |
| 24"_8.5_UB_py | U2 | | | | | | 11 | 582.304 | 8.4 |
| 24"_8.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -582.304 | -8.4 |
| 24"_8.5_UB_py | U3 | | | | | | 2 | -582.304 | -6.72 |
| 24"_8.5_UB_py | U3 | | | | | | 3 | -465.843 | -2.75251 |
| 24"_8.5_UB_py | U3 | | | | | | 4 | -349.382 | -0.87091 |
| 24"_8.5_UB_py | U3 | | | | | | 5 | -194.101 | -0.08296 |
| 24"_8.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_8.5_UB_py | U3 | | | | | | 7 | 194.101 | 0.08296 |
| 24"_8.5_UB_py | U3 | | | | | | 8 | 349.382 | 0.87091 |
| 24"_8.5_UB_py | U3 | | | | | | 9 | 465.843 | 2.75251 |
| 24"_8.5_UB_py | U3 | | | | | | 10 | 582.304 | 6.72 |
| 24"_8.5_UB_py | U3 | | | | | | 11 | 582.304 | 8.4 |
| 24"_8.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -828.65 | -12.6 |
| 24"_8.5_UB_py_steel | U2 | | | | | | 2 | -828.65 | -10.08 |
| 24"_8.5_UB_py_steel | U2 | | | | | | 3 | -662.92 | -4.1288 |
| 24"_8.5_UB_py_steel | U2 | | | | | | 4 | -497.19 | -1.3064 |
| 24"_8.5_UB_py_steel | U2 | | | | | | 5 | -276.217 | -0.1244 |
| 24"_8.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_8.5_UB_py_steel | U2 | | | | | | 7 | 276.217 | 0.1244 |
| 24"_8.5_UB_py_steel | U2 | | | | | | 8 | 497.19 | 1.3064 |
| 24"_8.5_UB_py_steel | U2 | | | | | | 9 | 662.92 | 4.1288 |
| 24"_8.5_UB_py_steel | U2 | | | | | | 10 | 828.65 | 10.08 |
| 24"_8.5_UB_py_steel | U2 | | | | | | 11 | 828.65 | 12.6 |
| 24"_8.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -828.65 | -12.6 |
| 24"_8.5_UB_py_steel | U3 | | | | | | 2 | -828.65 | -10.08 |
| 24"_8.5_UB_py_steel | U3 | | | | | | 3 | -662.92 | -4.1288 |
| 24"_8.5_UB_py_steel | U3 | | | | | | 4 | -497.19 | -1.3064 |
| 24"_8.5_UB_py_steel | U3 | | | | | | 5 | -276.217 | -0.1244 |
| 24"_8.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_8.5_UB_py_steel | U3 | | | | | | 7 | 276.217 | 0.1244 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_8.5_UB_py_steel | U3 | | | | | | 8 | 497.19 | 1.3064 |
| 24"_8.5_UB_py_steel | U3 | | | | | | 9 | 662.92 | 4.1288 |
| 24"_8.5_UB_py_steel | U3 | | | | | | 10 | 828.65 | 10.08 |
| 24"_8.5_UB_py_steel | U3 | | | | | | 11 | 828.65 | 12.6 |
| 24"_9.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -156.773 | -8.4 |
| 24"_9.5_LB_py | U2 | | | | | | 2 | -156.773 | -6.72 |
| 24"_9.5_LB_py | U2 | | | | | | 3 | -125.419 | -2.75251 |
| 24"_9.5_LB_py | U2 | | | | | | 4 | -94.064 | -0.87091 |
| 24"_9.5_LB_py | U2 | | | | | | 5 | -52.258 | -0.08296 |
| 24"_9.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_9.5_LB_py | U2 | | | | | | 7 | 52.258 | 0.08296 |
| 24"_9.5_LB_py | U2 | | | | | | 8 | 94.064 | 0.87091 |
| 24"_9.5_LB_py | U2 | | | | | | 9 | 125.419 | 2.75251 |
| 24"_9.5_LB_py | U2 | | | | | | 10 | 156.773 | 6.72 |
| 24"_9.5_LB_py | U2 | | | | | | 11 | 156.773 | 8.4 |
| 24"_9.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -156.773 | -8.4 |
| 24"_9.5_LB_py | U3 | | | | | | 2 | -156.773 | -6.72 |
| 24"_9.5_LB_py | U3 | | | | | | 3 | -125.419 | -2.75251 |
| 24"_9.5_LB_py | U3 | | | | | | 4 | -94.064 | -0.87091 |
| 24"_9.5_LB_py | U3 | | | | | | 5 | -52.258 | -0.08296 |
| 24"_9.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_9.5_LB_py | U3 | | | | | | 7 | 52.258 | 0.08296 |
| 24"_9.5_LB_py | U3 | | | | | | 8 | 94.064 | 0.87091 |
| 24"_9.5_LB_py | U3 | | | | | | 9 | 125.419 | 2.75251 |
| 24"_9.5_LB_py | U3 | | | | | | 10 | 156.773 | 6.72 |
| 24"_9.5_LB_py | U3 | | | | | | 11 | 156.773 | 8.4 |
| 24"_9.5_LB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -218.855 | -12.6 |
| 24"_9.5_LB_py_steel | U2 | | | | | | 2 | -218.855 | -10.08 |
| 24"_9.5_LB_py_steel | U2 | | | | | | 3 | -175.083 | -4.1288 |
| 24"_9.5_LB_py_steel | U2 | | | | | | 4 | -131.313 | -1.3064 |
| 24"_9.5_LB_py_steel | U2 | | | | | | 5 | -72.951 | -0.1244 |
| 24"_9.5_LB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_9.5_LB_py_steel | U2 | | | | | | 7 | 72.951 | 0.1244 |
| 24"_9.5_LB_py_steel | U2 | | | | | | 8 | 131.313 | 1.3064 |
| 24"_9.5_LB_py_steel | U2 | | | | | | 9 | 175.083 | 4.1288 |
| 24"_9.5_LB_py_steel | U2 | | | | | | 10 | 218.855 | 10.08 |
| 24"_9.5_LB_py_steel | U2 | | | | | | 11 | 218.855 | 12.6 |
| 24"_9.5_LB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -218.855 | -12.6 |
| 24"_9.5_LB_py_steel | U3 | | | | | | 2 | -218.855 | -10.08 |
| 24"_9.5_LB_py_steel | U3 | | | | | | 3 | -175.083 | -4.1288 |
| 24"_9.5_LB_py_steel | U3 | | | | | | 4 | -131.313 | -1.3064 |
| 24"_9.5_LB_py_steel | U3 | | | | | | 5 | -72.951 | -0.1244 |
| 24"_9.5_LB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_9.5_LB_py_steel | U3 | | | | | | 7 | 72.951 | 0.1244 |
| 24"_9.5_LB_py_steel | U3 | | | | | | 8 | 131.313 | 1.3064 |
| 24"_9.5_LB_py_steel | U3 | | | | | | 9 | 175.083 | 4.1288 |
| 24"_9.5_LB_py_steel | U3 | | | | | | 10 | 218.855 | 10.08 |
| 24"_9.5_LB_py_steel | U3 | | | | | | 11 | 218.855 | 12.6 |
| 24"_9.5_LB_py_steel_axial | U1 | No | Yes | 0 | 0 | | 1 | -725.3444435 | -1.26 |
| 24"_9.5_LB_py_steel_axial | U1 | | | | | | 2 | -725.3444435 | -0.9 |
| 24"_9.5_LB_py_steel_axial | U1 | | | | | | 3 | -400.4003561 | -0.343763846 |
| 24"_9.5_LB_py_steel_axial | U1 | | | | | | 4 | -242.6044763 | -0.146956769 |
| 24"_9.5_LB_py_steel_axial | U1 | | | | | | 5 | -177.546833 | -0.090720615 |
| 24"_9.5_LB_py_steel_axial | U1 | | | | | | 6 | 0 | 0 |
| 24"_9.5_LB_py_steel_axial | U1 | | | | | | 7 | 177.546833 | 0.090720615 |
| 24"_9.5_LB_py_steel_axial | U1 | | | | | | 8 | 242.6044763 | 0.146956769 |
| 24"_9.5_LB_py_steel_axial | U1 | | | | | | 9 | 400.4003561 | 0.343763846 |
| 24"_9.5_LB_py_steel_axial | U1 | | | | | | 10 | 725.3444435 | 0.9 |
| 24"_9.5_LB_py_steel_axial | U1 | | | | | | 11 | 725.3444435 | 1.26 |
| 24"_9.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -313.547 | -8.4 |
| 24"_9.5_Nom_py | U2 | | | | | | 2 | -313.547 | -6.72 |
| 24"_9.5_Nom_py | U2 | | | | | | 3 | -250.837 | -2.75251 |
| 24"_9.5_Nom_py | U2 | | | | | | 4 | -188.128 | -0.87091 |
| 24"_9.5_Nom_py | U2 | | | | | | 5 | -104.516 | -0.08296 |
| 24"_9.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_9.5_Nom_py | U2 | | | | | | 7 | 104.516 | 0.08296 |
| 24"_9.5_Nom_py | U2 | | | | | | 8 | 188.128 | 0.87091 |
| 24"_9.5_Nom_py | U2 | | | | | | 9 | 250.837 | 2.75251 |
| 24"_9.5_Nom_py | U2 | | | | | | 10 | 313.547 | 6.72 |
| 24"_9.5_Nom_py | U2 | | | | | | 11 | 313.547 | 8.4 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_9.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -313.547 | -8.4 |
| 24"_9.5_Nom_py | U3 | | | | | | 2 | -313.547 | -6.72 |
| 24"_9.5_Nom_py | U3 | | | | | | 3 | -250.837 | -2.75251 |
| 24"_9.5_Nom_py | U3 | | | | | | 4 | -188.128 | -0.87091 |
| 24"_9.5_Nom_py | U3 | | | | | | 5 | -104.516 | -0.08296 |
| 24"_9.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_9.5_Nom_py | U3 | | | | | | 7 | 104.516 | 0.08296 |
| 24"_9.5_Nom_py | U3 | | | | | | 8 | 188.128 | 0.87091 |
| 24"_9.5_Nom_py | U3 | | | | | | 9 | 250.837 | 2.75251 |
| 24"_9.5_Nom_py | U3 | | | | | | 10 | 313.547 | 6.72 |
| 24"_9.5_Nom_py | U3 | | | | | | 11 | 313.547 | 8.4 |
| 24"_9.5_Nom_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -437.709 | -12.6 |
| 24"_9.5_Nom_py_steel | U2 | | | | | | 2 | -437.709 | -10.08 |
| 24"_9.5_Nom_py_steel | U2 | | | | | | 3 | -350.167 | -4.1288 |
| 24"_9.5_Nom_py_steel | U2 | | | | | | 4 | -262.625 | -1.3064 |
| 24"_9.5_Nom_py_steel | U2 | | | | | | 5 | -145.903 | -0.1244 |
| 24"_9.5_Nom_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_9.5_Nom_py_steel | U2 | | | | | | 7 | 145.903 | 0.1244 |
| 24"_9.5_Nom_py_steel | U2 | | | | | | 8 | 262.625 | 1.3064 |
| 24"_9.5_Nom_py_steel | U2 | | | | | | 9 | 350.167 | 4.1288 |
| 24"_9.5_Nom_py_steel | U2 | | | | | | 10 | 437.709 | 10.08 |
| 24"_9.5_Nom_py_steel | U2 | | | | | | 11 | 437.709 | 12.6 |
| 24"_9.5_Nom_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -437.709 | -12.6 |
| 24"_9.5_Nom_py_steel | U3 | | | | | | 2 | -437.709 | -10.08 |
| 24"_9.5_Nom_py_steel | U3 | | | | | | 3 | -350.167 | -4.1288 |
| 24"_9.5_Nom_py_steel | U3 | | | | | | 4 | -262.625 | -1.3064 |
| 24"_9.5_Nom_py_steel | U3 | | | | | | 5 | -145.903 | -0.1244 |
| 24"_9.5_Nom_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_9.5_Nom_py_steel | U3 | | | | | | 7 | 145.903 | 0.1244 |
| 24"_9.5_Nom_py_steel | U3 | | | | | | 8 | 262.625 | 1.3064 |
| 24"_9.5_Nom_py_steel | U3 | | | | | | 9 | 350.167 | 4.1288 |
| 24"_9.5_Nom_py_steel | U3 | | | | | | 10 | 437.709 | 10.08 |
| 24"_9.5_Nom_py_steel | U3 | | | | | | 11 | 437.709 | 12.6 |
| 24"_9.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -627.094 | -8.4 |
| 24"_9.5_UB_py | U2 | | | | | | 2 | -627.094 | -6.72 |
| 24"_9.5_UB_py | U2 | | | | | | 3 | -501.675 | -2.75251 |
| 24"_9.5_UB_py | U2 | | | | | | 4 | -376.256 | -0.87091 |
| 24"_9.5_UB_py | U2 | | | | | | 5 | -209.031 | -0.08296 |
| 24"_9.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 24"_9.5_UB_py | U2 | | | | | | 7 | 209.031 | 0.08296 |
| 24"_9.5_UB_py | U2 | | | | | | 8 | 376.256 | 0.87091 |
| 24"_9.5_UB_py | U2 | | | | | | 9 | 501.675 | 2.75251 |
| 24"_9.5_UB_py | U2 | | | | | | 10 | 627.094 | 6.72 |
| 24"_9.5_UB_py | U2 | | | | | | 11 | 627.094 | 8.4 |
| 24"_9.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -627.094 | -8.4 |
| 24"_9.5_UB_py | U3 | | | | | | 2 | -627.094 | -6.72 |
| 24"_9.5_UB_py | U3 | | | | | | 3 | -501.675 | -2.75251 |
| 24"_9.5_UB_py | U3 | | | | | | 4 | -376.256 | -0.87091 |
| 24"_9.5_UB_py | U3 | | | | | | 5 | -209.031 | -0.08296 |
| 24"_9.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 24"_9.5_UB_py | U3 | | | | | | 7 | 209.031 | 0.08296 |
| 24"_9.5_UB_py | U3 | | | | | | 8 | 376.256 | 0.87091 |
| 24"_9.5_UB_py | U3 | | | | | | 9 | 501.675 | 2.75251 |
| 24"_9.5_UB_py | U3 | | | | | | 10 | 627.094 | 6.72 |
| 24"_9.5_UB_py | U3 | | | | | | 11 | 627.094 | 8.4 |
| 24"_9.5_UB_py_steel | U2 | No | Yes | 0 | 0 | 0 | 1 | -875.417 | -12.6 |
| 24"_9.5_UB_py_steel | U2 | | | | | | 2 | -875.417 | -10.08 |
| 24"_9.5_UB_py_steel | U2 | | | | | | 3 | -700.334 | -4.1288 |
| 24"_9.5_UB_py_steel | U2 | | | | | | 4 | -525.251 | -1.3064 |
| 24"_9.5_UB_py_steel | U2 | | | | | | 5 | -291.806 | -0.1244 |
| 24"_9.5_UB_py_steel | U2 | | | | | | 6 | 0 | 0 |
| 24"_9.5_UB_py_steel | U2 | | | | | | 7 | 291.806 | 0.1244 |
| 24"_9.5_UB_py_steel | U2 | | | | | | 8 | 525.251 | 1.3064 |
| 24"_9.5_UB_py_steel | U2 | | | | | | 9 | 700.334 | 4.1288 |
| 24"_9.5_UB_py_steel | U2 | | | | | | 10 | 875.417 | 10.08 |
| 24"_9.5_UB_py_steel | U2 | | | | | | 11 | 875.417 | 12.6 |
| 24"_9.5_UB_py_steel | U3 | No | Yes | 0 | 0 | 0 | 1 | -875.417 | -12.6 |
| 24"_9.5_UB_py_steel | U3 | | | | | | 2 | -875.417 | -10.08 |
| 24"_9.5_UB_py_steel | U3 | | | | | | 3 | -700.334 | -4.1288 |
| 24"_9.5_UB_py_steel | U3 | | | | | | 4 | -525.251 | -1.3064 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 24"_9.5_UB_py_steel | U3 | | | | | | 5 | -291.806 | -0.1244 |
| 24"_9.5_UB_py_steel | U3 | | | | | | 6 | 0 | 0 |
| 24"_9.5_UB_py_steel | U3 | | | | | | 7 | 291.806 | 0.1244 |
| 24"_9.5_UB_py_steel | U3 | | | | | | 8 | 525.251 | 1.3064 |
| 24"_9.5_UB_py_steel | U3 | | | | | | 9 | 700.334 | 4.1288 |
| 24"_9.5_UB_py_steel | U3 | | | | | | 10 | 875.417 | 10.08 |
| 24"_9.5_UB_py_steel | U3 | | | | | | 11 | 875.417 | 12.6 |
| 36"_0.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -17.136 | -15.3 |
| 36"_0.5_LB_py | U2 | | | | | | 2 | -17.136 | -14.4 |
| 36"_0.5_LB_py | U2 | | | | | | 3 | -13.709 | -7.3728 |
| 36"_0.5_LB_py | U2 | | | | | | 4 | -10.282 | -3.1104 |
| 36"_0.5_LB_py | U2 | | | | | | 5 | -5.712 | -0.53333 |
| 36"_0.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_0.5_LB_py | U2 | | | | | | 7 | 5.712 | 0.53333 |
| 36"_0.5_LB_py | U2 | | | | | | 8 | 10.282 | 3.1104 |
| 36"_0.5_LB_py | U2 | | | | | | 9 | 13.709 | 7.3728 |
| 36"_0.5_LB_py | U2 | | | | | | 10 | 17.136 | 14.4 |
| 36"_0.5_LB_py | U2 | | | | | | 11 | 17.136 | 15.3 |
| 36"_0.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -17.136 | -15.3 |
| 36"_0.5_LB_py | U3 | | | | | | 2 | -17.136 | -14.4 |
| 36"_0.5_LB_py | U3 | | | | | | 3 | -13.709 | -7.3728 |
| 36"_0.5_LB_py | U3 | | | | | | 4 | -10.282 | -3.1104 |
| 36"_0.5_LB_py | U3 | | | | | | 5 | -5.712 | -0.53333 |
| 36"_0.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_0.5_LB_py | U3 | | | | | | 7 | 5.712 | 0.53333 |
| 36"_0.5_LB_py | U3 | | | | | | 8 | 10.282 | 3.1104 |
| 36"_0.5_LB_py | U3 | | | | | | 9 | 13.709 | 7.3728 |
| 36"_0.5_LB_py | U3 | | | | | | 10 | 17.136 | 14.4 |
| 36"_0.5_LB_py | U3 | | | | | | 11 | 17.136 | 15.3 |
| 36"_0.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -34.272 | -15.3 |
| 36"_0.5_Nom_py | U2 | | | | | | 2 | -34.272 | -14.4 |
| 36"_0.5_Nom_py | U2 | | | | | | 3 | -27.418 | -7.3728 |
| 36"_0.5_Nom_py | U2 | | | | | | 4 | -20.563 | -3.1104 |
| 36"_0.5_Nom_py | U2 | | | | | | 5 | -11.424 | -0.53333 |
| 36"_0.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_0.5_Nom_py | U2 | | | | | | 7 | 11.424 | 0.53333 |
| 36"_0.5_Nom_py | U2 | | | | | | 8 | 20.563 | 3.1104 |
| 36"_0.5_Nom_py | U2 | | | | | | 9 | 27.418 | 7.3728 |
| 36"_0.5_Nom_py | U2 | | | | | | 10 | 34.272 | 14.4 |
| 36"_0.5_Nom_py | U2 | | | | | | 11 | 34.272 | 15.3 |
| 36"_0.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -34.272 | -15.3 |
| 36"_0.5_Nom_py | U3 | | | | | | 2 | -34.272 | -14.4 |
| 36"_0.5_Nom_py | U3 | | | | | | 3 | -27.418 | -7.3728 |
| 36"_0.5_Nom_py | U3 | | | | | | 4 | -20.563 | -3.1104 |
| 36"_0.5_Nom_py | U3 | | | | | | 5 | -11.424 | -0.53333 |
| 36"_0.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_0.5_Nom_py | U3 | | | | | | 7 | 11.424 | 0.53333 |
| 36"_0.5_Nom_py | U3 | | | | | | 8 | 20.563 | 3.1104 |
| 36"_0.5_Nom_py | U3 | | | | | | 9 | 27.418 | 7.3728 |
| 36"_0.5_Nom_py | U3 | | | | | | 10 | 34.272 | 14.4 |
| 36"_0.5_Nom_py | U3 | | | | | | 11 | 34.272 | 15.3 |
| 36"_0.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -68.544 | -15.3 |
| 36"_0.5_UB_py | U2 | | | | | | 2 | -68.544 | -14.4 |
| 36"_0.5_UB_py | U2 | | | | | | 3 | -54.835 | -7.3728 |
| 36"_0.5_UB_py | U2 | | | | | | 4 | -41.126 | -3.1104 |
| 36"_0.5_UB_py | U2 | | | | | | 5 | -22.848 | -0.53333 |
| 36"_0.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_0.5_UB_py | U2 | | | | | | 7 | 22.848 | 0.53333 |
| 36"_0.5_UB_py | U2 | | | | | | 8 | 41.126 | 3.1104 |
| 36"_0.5_UB_py | U2 | | | | | | 9 | 54.835 | 7.3728 |
| 36"_0.5_UB_py | U2 | | | | | | 10 | 68.544 | 14.4 |
| 36"_0.5_UB_py | U2 | | | | | | 11 | 68.544 | 15.3 |
| 36"_0.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -68.544 | -15.3 |
| 36"_0.5_UB_py | U3 | | | | | | 2 | -68.544 | -14.4 |
| 36"_0.5_UB_py | U3 | | | | | | 3 | -54.835 | -7.3728 |
| 36"_0.5_UB_py | U3 | | | | | | 4 | -41.126 | -3.1104 |
| 36"_0.5_UB_py | U3 | | | | | | 5 | -22.848 | -0.53333 |
| 36"_0.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_0.5_UB_py | U3 | | | | | | 7 | 22.848 | 0.53333 |
| 36"_0.5_UB_py | U3 | | | | | | 8 | 41.126 | 3.1104 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_0.5_UB_py | U3 | | | | | | 9 | 54.835 | 7.3728 |
| 36"_0.5_UB_py | U3 | | | | | | 10 | 68.544 | 14.4 |
| 36"_0.5_UB_py | U3 | | | | | | 11 | 68.544 | 15.3 |
| 36"_1.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -19.008 | -15.3 |
| 36"_1.5_LB_py | U2 | | | | | | 2 | -19.008 | -14.4 |
| 36"_1.5_LB_py | U2 | | | | | | 3 | -15.206 | -7.3728 |
| 36"_1.5_LB_py | U2 | | | | | | 4 | -11.405 | -3.1104 |
| 36"_1.5_LB_py | U2 | | | | | | 5 | -6.336 | -0.53333 |
| 36"_1.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_1.5_LB_py | U2 | | | | | | 7 | 6.336 | 0.53333 |
| 36"_1.5_LB_py | U2 | | | | | | 8 | 11.405 | 3.1104 |
| 36"_1.5_LB_py | U2 | | | | | | 9 | 15.206 | 7.3728 |
| 36"_1.5_LB_py | U2 | | | | | | 10 | 19.008 | 14.4 |
| 36"_1.5_LB_py | U2 | | | | | | 11 | 19.008 | 15.3 |
| 36"_1.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -19.008 | -15.3 |
| 36"_1.5_LB_py | U3 | | | | | | 2 | -19.008 | -14.4 |
| 36"_1.5_LB_py | U3 | | | | | | 3 | -15.206 | -7.3728 |
| 36"_1.5_LB_py | U3 | | | | | | 4 | -11.405 | -3.1104 |
| 36"_1.5_LB_py | U3 | | | | | | 5 | -6.336 | -0.53333 |
| 36"_1.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_1.5_LB_py | U3 | | | | | | 7 | 6.336 | 0.53333 |
| 36"_1.5_LB_py | U3 | | | | | | 8 | 11.405 | 3.1104 |
| 36"_1.5_LB_py | U3 | | | | | | 9 | 15.206 | 7.3728 |
| 36"_1.5_LB_py | U3 | | | | | | 10 | 19.008 | 14.4 |
| 36"_1.5_LB_py | U3 | | | | | | 11 | 19.008 | 15.3 |
| 36"_1.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -38.016 | -15.3 |
| 36"_1.5_Nom_py | U2 | | | | | | 2 | -38.016 | -14.4 |
| 36"_1.5_Nom_py | U2 | | | | | | 3 | -30.413 | -7.3728 |
| 36"_1.5_Nom_py | U2 | | | | | | 4 | -22.81 | -3.1104 |
| 36"_1.5_Nom_py | U2 | | | | | | 5 | -12.672 | -0.53333 |
| 36"_1.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_1.5_Nom_py | U2 | | | | | | 7 | 12.672 | 0.53333 |
| 36"_1.5_Nom_py | U2 | | | | | | 8 | 22.81 | 3.1104 |
| 36"_1.5_Nom_py | U2 | | | | | | 9 | 30.413 | 7.3728 |
| 36"_1.5_Nom_py | U2 | | | | | | 10 | 38.016 | 14.4 |
| 36"_1.5_Nom_py | U2 | | | | | | 11 | 38.016 | 15.3 |
| 36"_1.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -38.016 | -15.3 |
| 36"_1.5_Nom_py | U3 | | | | | | 2 | -38.016 | -14.4 |
| 36"_1.5_Nom_py | U3 | | | | | | 3 | -30.413 | -7.3728 |
| 36"_1.5_Nom_py | U3 | | | | | | 4 | -22.81 | -3.1104 |
| 36"_1.5_Nom_py | U3 | | | | | | 5 | -12.672 | -0.53333 |
| 36"_1.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_1.5_Nom_py | U3 | | | | | | 7 | 12.672 | 0.53333 |
| 36"_1.5_Nom_py | U3 | | | | | | 8 | 22.81 | 3.1104 |
| 36"_1.5_Nom_py | U3 | | | | | | 9 | 30.413 | 7.3728 |
| 36"_1.5_Nom_py | U3 | | | | | | 10 | 38.016 | 14.4 |
| 36"_1.5_Nom_py | U3 | | | | | | 11 | 38.016 | 15.3 |
| 36"_1.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -76.032 | -15.3 |
| 36"_1.5_UB_py | U2 | | | | | | 2 | -76.032 | -14.4 |
| 36"_1.5_UB_py | U2 | | | | | | 3 | -60.826 | -7.3728 |
| 36"_1.5_UB_py | U2 | | | | | | 4 | -45.619 | -3.1104 |
| 36"_1.5_UB_py | U2 | | | | | | 5 | -25.344 | -0.53333 |
| 36"_1.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_1.5_UB_py | U2 | | | | | | 7 | 25.344 | 0.53333 |
| 36"_1.5_UB_py | U2 | | | | | | 8 | 45.619 | 3.1104 |
| 36"_1.5_UB_py | U2 | | | | | | 9 | 60.826 | 7.3728 |
| 36"_1.5_UB_py | U2 | | | | | | 10 | 76.032 | 14.4 |
| 36"_1.5_UB_py | U2 | | | | | | 11 | 76.032 | 15.3 |
| 36"_1.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -76.032 | -15.3 |
| 36"_1.5_UB_py | U3 | | | | | | 2 | -76.032 | -14.4 |
| 36"_1.5_UB_py | U3 | | | | | | 3 | -60.826 | -7.3728 |
| 36"_1.5_UB_py | U3 | | | | | | 4 | -45.619 | -3.1104 |
| 36"_1.5_UB_py | U3 | | | | | | 5 | -25.344 | -0.53333 |
| 36"_1.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_1.5_UB_py | U3 | | | | | | 7 | 25.344 | 0.53333 |
| 36"_1.5_UB_py | U3 | | | | | | 8 | 45.619 | 3.1104 |
| 36"_1.5_UB_py | U3 | | | | | | 9 | 60.826 | 7.3728 |
| 36"_1.5_UB_py | U3 | | | | | | 10 | 76.032 | 14.4 |
| 36"_1.5_UB_py | U3 | | | | | | 11 | 76.032 | 15.3 |
| 36"_10.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -518.729 | -12.6 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_10.5_LB_py | U2 | | | | | | 2 | -518.729 | -10.08 |
| 36"_10.5_LB_py | U2 | | | | | | 3 | -414.983 | -4.12877 |
| 36"_10.5_LB_py | U2 | | | | | | 4 | -311.238 | -1.30637 |
| 36"_10.5_LB_py | U2 | | | | | | 5 | -172.91 | -0.12444 |
| 36"_10.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_10.5_LB_py | U2 | | | | | | 7 | 172.91 | 0.12444 |
| 36"_10.5_LB_py | U2 | | | | | | 8 | 311.238 | 1.30637 |
| 36"_10.5_LB_py | U2 | | | | | | 9 | 414.983 | 4.12877 |
| 36"_10.5_LB_py | U2 | | | | | | 10 | 518.729 | 10.08 |
| 36"_10.5_LB_py | U2 | | | | | | 11 | 518.729 | 12.6 |
| 36"_10.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -518.729 | -12.6 |
| 36"_10.5_LB_py | U3 | | | | | | 2 | -518.729 | -10.08 |
| 36"_10.5_LB_py | U3 | | | | | | 3 | -414.983 | -4.12877 |
| 36"_10.5_LB_py | U3 | | | | | | 4 | -311.238 | -1.30637 |
| 36"_10.5_LB_py | U3 | | | | | | 5 | -172.91 | -0.12444 |
| 36"_10.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_10.5_LB_py | U3 | | | | | | 7 | 172.91 | 0.12444 |
| 36"_10.5_LB_py | U3 | | | | | | 8 | 311.238 | 1.30637 |
| 36"_10.5_LB_py | U3 | | | | | | 9 | 414.983 | 4.12877 |
| 36"_10.5_LB_py | U3 | | | | | | 10 | 518.729 | 10.08 |
| 36"_10.5_LB_py | U3 | | | | | | 11 | 518.729 | 12.6 |
| 36"_10.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1037.458 | -12.6 |
| 36"_10.5_Nom_py | U2 | | | | | | 2 | -1037.458 | -10.08 |
| 36"_10.5_Nom_py | U2 | | | | | | 3 | -829.967 | -4.12877 |
| 36"_10.5_Nom_py | U2 | | | | | | 4 | -622.475 | -1.30637 |
| 36"_10.5_Nom_py | U2 | | | | | | 5 | -345.819 | -0.12444 |
| 36"_10.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_10.5_Nom_py | U2 | | | | | | 7 | 345.819 | 0.12444 |
| 36"_10.5_Nom_py | U2 | | | | | | 8 | 622.475 | 1.30637 |
| 36"_10.5_Nom_py | U2 | | | | | | 9 | 829.967 | 4.12877 |
| 36"_10.5_Nom_py | U2 | | | | | | 10 | 1037.458 | 10.08 |
| 36"_10.5_Nom_py | U2 | | | | | | 11 | 1037.458 | 12.6 |
| 36"_10.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1037.458 | -12.6 |
| 36"_10.5_Nom_py | U3 | | | | | | 2 | -1037.458 | -10.08 |
| 36"_10.5_Nom_py | U3 | | | | | | 3 | -829.967 | -4.12877 |
| 36"_10.5_Nom_py | U3 | | | | | | 4 | -622.475 | -1.30637 |
| 36"_10.5_Nom_py | U3 | | | | | | 5 | -345.819 | -0.12444 |
| 36"_10.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_10.5_Nom_py | U3 | | | | | | 7 | 345.819 | 0.12444 |
| 36"_10.5_Nom_py | U3 | | | | | | 8 | 622.475 | 1.30637 |
| 36"_10.5_Nom_py | U3 | | | | | | 9 | 829.967 | 4.12877 |
| 36"_10.5_Nom_py | U3 | | | | | | 10 | 1037.458 | 10.08 |
| 36"_10.5_Nom_py | U3 | | | | | | 11 | 1037.458 | 12.6 |
| 36"_10.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -2074.916 | -12.6 |
| 36"_10.5_UB_py | U2 | | | | | | 2 | -2074.916 | -10.08 |
| 36"_10.5_UB_py | U2 | | | | | | 3 | -1659.933 | -4.12877 |
| 36"_10.5_UB_py | U2 | | | | | | 4 | -1244.95 | -1.30637 |
| 36"_10.5_UB_py | U2 | | | | | | 5 | -691.639 | -0.12444 |
| 36"_10.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_10.5_UB_py | U2 | | | | | | 7 | 691.639 | 0.12444 |
| 36"_10.5_UB_py | U2 | | | | | | 8 | 1244.95 | 1.30637 |
| 36"_10.5_UB_py | U2 | | | | | | 9 | 1659.933 | 4.12877 |
| 36"_10.5_UB_py | U2 | | | | | | 10 | 2074.916 | 10.08 |
| 36"_10.5_UB_py | U2 | | | | | | 11 | 2074.916 | 12.6 |
| 36"_10.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -2074.916 | -12.6 |
| 36"_10.5_UB_py | U3 | | | | | | 2 | -2074.916 | -10.08 |
| 36"_10.5_UB_py | U3 | | | | | | 3 | -1659.933 | -4.12877 |
| 36"_10.5_UB_py | U3 | | | | | | 4 | -1244.95 | -1.30637 |
| 36"_10.5_UB_py | U3 | | | | | | 5 | -691.639 | -0.12444 |
| 36"_10.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_10.5_UB_py | U3 | | | | | | 7 | 691.639 | 0.12444 |
| 36"_10.5_UB_py | U3 | | | | | | 8 | 1244.95 | 1.30637 |
| 36"_10.5_UB_py | U3 | | | | | | 9 | 1659.933 | 4.12877 |
| 36"_10.5_UB_py | U3 | | | | | | 10 | 2074.916 | 10.08 |
| 36"_10.5_UB_py | U3 | | | | | | 11 | 2074.916 | 12.6 |
| 36"_12.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -761.79 | -12.6 |
| 36"_12.5_LB_py | U2 | | | | | | 2 | -761.79 | -10.08 |
| 36"_12.5_LB_py | U2 | | | | | | 3 | -609.432 | -4.12877 |
| 36"_12.5_LB_py | U2 | | | | | | 4 | -457.074 | -1.30637 |
| 36"_12.5_LB_py | U2 | | | | | | 5 | -253.93 | -0.12444 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_12.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_12.5_LB_py | U2 | | | | | | 7 | 253.93 | 0.12444 |
| 36"_12.5_LB_py | U2 | | | | | | 8 | 457.074 | 1.30637 |
| 36"_12.5_LB_py | U2 | | | | | | 9 | 609.432 | 4.12877 |
| 36"_12.5_LB_py | U2 | | | | | | 10 | 761.79 | 10.08 |
| 36"_12.5_LB_py | U2 | | | | | | 11 | 761.79 | 12.6 |
| 36"_12.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -761.79 | -12.6 |
| 36"_12.5_LB_py | U3 | | | | | | 2 | -761.79 | -10.08 |
| 36"_12.5_LB_py | U3 | | | | | | 3 | -609.432 | -4.12877 |
| 36"_12.5_LB_py | U3 | | | | | | 4 | -457.074 | -1.30637 |
| 36"_12.5_LB_py | U3 | | | | | | 5 | -253.93 | -0.12444 |
| 36"_12.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_12.5_LB_py | U3 | | | | | | 7 | 253.93 | 0.12444 |
| 36"_12.5_LB_py | U3 | | | | | | 8 | 457.074 | 1.30637 |
| 36"_12.5_LB_py | U3 | | | | | | 9 | 609.432 | 4.12877 |
| 36"_12.5_LB_py | U3 | | | | | | 10 | 761.79 | 10.08 |
| 36"_12.5_LB_py | U3 | | | | | | 11 | 761.79 | 12.6 |
| 36"_12.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1523.58 | -12.6 |
| 36"_12.5_Nom_py | U2 | | | | | | 2 | -1523.58 | -10.08 |
| 36"_12.5_Nom_py | U2 | | | | | | 3 | -1218.864 | -4.12877 |
| 36"_12.5_Nom_py | U2 | | | | | | 4 | -914.148 | -1.30637 |
| 36"_12.5_Nom_py | U2 | | | | | | 5 | -507.86 | -0.12444 |
| 36"_12.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_12.5_Nom_py | U2 | | | | | | 7 | 507.86 | 0.12444 |
| 36"_12.5_Nom_py | U2 | | | | | | 8 | 914.148 | 1.30637 |
| 36"_12.5_Nom_py | U2 | | | | | | 9 | 1218.864 | 4.12877 |
| 36"_12.5_Nom_py | U2 | | | | | | 10 | 1523.58 | 10.08 |
| 36"_12.5_Nom_py | U2 | | | | | | 11 | 1523.58 | 12.6 |
| 36"_12.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1523.58 | -12.6 |
| 36"_12.5_Nom_py | U3 | | | | | | 2 | -1523.58 | -10.08 |
| 36"_12.5_Nom_py | U3 | | | | | | 3 | -1218.864 | -4.12877 |
| 36"_12.5_Nom_py | U3 | | | | | | 4 | -914.148 | -1.30637 |
| 36"_12.5_Nom_py | U3 | | | | | | 5 | -507.86 | -0.12444 |
| 36"_12.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_12.5_Nom_py | U3 | | | | | | 7 | 507.86 | 0.12444 |
| 36"_12.5_Nom_py | U3 | | | | | | 8 | 914.148 | 1.30637 |
| 36"_12.5_Nom_py | U3 | | | | | | 9 | 1218.864 | 4.12877 |
| 36"_12.5_Nom_py | U3 | | | | | | 10 | 1523.58 | 10.08 |
| 36"_12.5_Nom_py | U3 | | | | | | 11 | 1523.58 | 12.6 |
| 36"_12.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -3047.16 | -12.6 |
| 36"_12.5_UB_py | U2 | | | | | | 2 | -3047.16 | -10.08 |
| 36"_12.5_UB_py | U2 | | | | | | 3 | -2437.728 | -4.12877 |
| 36"_12.5_UB_py | U2 | | | | | | 4 | -1828.296 | -1.30637 |
| 36"_12.5_UB_py | U2 | | | | | | 5 | -1015.72 | -0.12444 |
| 36"_12.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_12.5_UB_py | U2 | | | | | | 7 | 1015.72 | 0.12444 |
| 36"_12.5_UB_py | U2 | | | | | | 8 | 1828.296 | 1.30637 |
| 36"_12.5_UB_py | U2 | | | | | | 9 | 2437.728 | 4.12877 |
| 36"_12.5_UB_py | U2 | | | | | | 10 | 3047.16 | 10.08 |
| 36"_12.5_UB_py | U2 | | | | | | 11 | 3047.16 | 12.6 |
| 36"_12.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -3047.16 | -12.6 |
| 36"_12.5_UB_py | U3 | | | | | | 2 | -3047.16 | -10.08 |
| 36"_12.5_UB_py | U3 | | | | | | 3 | -2437.728 | -4.12877 |
| 36"_12.5_UB_py | U3 | | | | | | 4 | -1828.296 | -1.30637 |
| 36"_12.5_UB_py | U3 | | | | | | 5 | -1015.72 | -0.12444 |
| 36"_12.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_12.5_UB_py | U3 | | | | | | 7 | 1015.72 | 0.12444 |
| 36"_12.5_UB_py | U3 | | | | | | 8 | 1828.296 | 1.30637 |
| 36"_12.5_UB_py | U3 | | | | | | 9 | 2437.728 | 4.12877 |
| 36"_12.5_UB_py | U3 | | | | | | 10 | 3047.16 | 10.08 |
| 36"_12.5_UB_py | U3 | | | | | | 11 | 3047.16 | 12.6 |
| 36"_14.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -951.506 | -1.89 |
| 36"_14.5_LB_py | U2 | | | | | | 2 | -951.506 | -1.62 |
| 36"_14.5_LB_py | U2 | | | | | | 3 | -951.506 | -1.35 |
| 36"_14.5_LB_py | U2 | | | | | | 4 | -419.251 | -0.384267 |
| 36"_14.5_LB_py | U2 | | | | | | 5 | -204.603 | -0.114603 |
| 36"_14.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_14.5_LB_py | U2 | | | | | | 7 | 204.603 | 0.114603 |
| 36"_14.5_LB_py | U2 | | | | | | 8 | 419.251 | 0.384267 |
| 36"_14.5_LB_py | U2 | | | | | | 9 | 951.506 | 1.35 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_14.5_LB_py | U2 | | | | | | 10 | 951.506 | 1.62 |
| 36"_14.5_LB_py | U2 | | | | | | 11 | 951.506 | 1.89 |
| 36"_14.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -951.506 | -1.89 |
| 36"_14.5_LB_py | U3 | | | | | | 2 | -951.506 | -1.62 |
| 36"_14.5_LB_py | U3 | | | | | | 3 | -951.506 | -1.35 |
| 36"_14.5_LB_py | U3 | | | | | | 4 | -419.251 | -0.384267 |
| 36"_14.5_LB_py | U3 | | | | | | 5 | -204.603 | -0.114603 |
| 36"_14.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_14.5_LB_py | U3 | | | | | | 7 | 204.603 | 0.114603 |
| 36"_14.5_LB_py | U3 | | | | | | 8 | 419.251 | 0.384267 |
| 36"_14.5_LB_py | U3 | | | | | | 9 | 951.506 | 1.35 |
| 36"_14.5_LB_py | U3 | | | | | | 10 | 951.506 | 1.62 |
| 36"_14.5_LB_py | U3 | | | | | | 11 | 951.506 | 1.89 |
| 36"_14.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1903.012 | -1.89 |
| 36"_14.5_Nom_py | U2 | | | | | | 2 | -1903.012 | -1.62 |
| 36"_14.5_Nom_py | U2 | | | | | | 3 | -1903.012 | -1.35 |
| 36"_14.5_Nom_py | U2 | | | | | | 4 | -838.502 | -0.384267 |
| 36"_14.5_Nom_py | U2 | | | | | | 5 | -409.207 | -0.114603 |
| 36"_14.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_14.5_Nom_py | U2 | | | | | | 7 | 409.207 | 0.114603 |
| 36"_14.5_Nom_py | U2 | | | | | | 8 | 838.502 | 0.384267 |
| 36"_14.5_Nom_py | U2 | | | | | | 9 | 1903.012 | 1.35 |
| 36"_14.5_Nom_py | U2 | | | | | | 10 | 1903.012 | 1.62 |
| 36"_14.5_Nom_py | U2 | | | | | | 11 | 1903.012 | 1.89 |
| 36"_14.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1903.012 | -1.89 |
| 36"_14.5_Nom_py | U3 | | | | | | 2 | -1903.012 | -1.62 |
| 36"_14.5_Nom_py | U3 | | | | | | 3 | -1903.012 | -1.35 |
| 36"_14.5_Nom_py | U3 | | | | | | 4 | -838.502 | -0.384267 |
| 36"_14.5_Nom_py | U3 | | | | | | 5 | -409.207 | -0.114603 |
| 36"_14.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_14.5_Nom_py | U3 | | | | | | 7 | 409.207 | 0.114603 |
| 36"_14.5_Nom_py | U3 | | | | | | 8 | 838.502 | 0.384267 |
| 36"_14.5_Nom_py | U3 | | | | | | 9 | 1903.012 | 1.35 |
| 36"_14.5_Nom_py | U3 | | | | | | 10 | 1903.012 | 1.62 |
| 36"_14.5_Nom_py | U3 | | | | | | 11 | 1903.012 | 1.89 |
| 36"_14.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -3806.024 | -1.89 |
| 36"_14.5_UB_py | U2 | | | | | | 2 | -3806.024 | -1.62 |
| 36"_14.5_UB_py | U2 | | | | | | 3 | -3806.024 | -1.35 |
| 36"_14.5_UB_py | U2 | | | | | | 4 | -1677.003 | -0.384267 |
| 36"_14.5_UB_py | U2 | | | | | | 5 | -818.414 | -0.114603 |
| 36"_14.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_14.5_UB_py | U2 | | | | | | 7 | 818.414 | 0.114603 |
| 36"_14.5_UB_py | U2 | | | | | | 8 | 1677.003 | 0.384267 |
| 36"_14.5_UB_py | U2 | | | | | | 9 | 3806.024 | 1.35 |
| 36"_14.5_UB_py | U2 | | | | | | 10 | 3806.024 | 1.62 |
| 36"_14.5_UB_py | U2 | | | | | | 11 | 3806.024 | 1.89 |
| 36"_14.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -3806.024 | -1.89 |
| 36"_14.5_UB_py | U3 | | | | | | 2 | -3806.024 | -1.62 |
| 36"_14.5_UB_py | U3 | | | | | | 3 | -3806.024 | -1.35 |
| 36"_14.5_UB_py | U3 | | | | | | 4 | -1677.003 | -0.384267 |
| 36"_14.5_UB_py | U3 | | | | | | 5 | -818.414 | -0.114603 |
| 36"_14.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_14.5_UB_py | U3 | | | | | | 7 | 818.414 | 0.114603 |
| 36"_14.5_UB_py | U3 | | | | | | 8 | 1677.003 | 0.384267 |
| 36"_14.5_UB_py | U3 | | | | | | 9 | 3806.024 | 1.35 |
| 36"_14.5_UB_py | U3 | | | | | | 10 | 3806.024 | 1.62 |
| 36"_14.5_UB_py | U3 | | | | | | 11 | 3806.024 | 1.89 |
| 36"_16.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1256.353 | -1.89 |
| 36"_16.5_LB_py | U2 | | | | | | 2 | -1256.353 | -1.62 |
| 36"_16.5_LB_py | U2 | | | | | | 3 | -1256.353 | -1.35 |
| 36"_16.5_LB_py | U2 | | | | | | 4 | -544.869 | -0.38478 |
| 36"_16.5_LB_py | U2 | | | | | | 5 | -262.49 | -0.11575 |
| 36"_16.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_16.5_LB_py | U2 | | | | | | 7 | 262.49 | 0.11575 |
| 36"_16.5_LB_py | U2 | | | | | | 8 | 544.869 | 0.38478 |
| 36"_16.5_LB_py | U2 | | | | | | 9 | 1256.353 | 1.35 |
| 36"_16.5_LB_py | U2 | | | | | | 10 | 1256.353 | 1.62 |
| 36"_16.5_LB_py | U2 | | | | | | 11 | 1256.353 | 1.89 |
| 36"_16.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1256.353 | -1.89 |
| 36"_16.5_LB_py | U3 | | | | | | 2 | -1256.353 | -1.62 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_16.5_LB_py | U3 | | | | | | 3 | -1256.353 | -1.35 |
| 36"_16.5_LB_py | U3 | | | | | | 4 | -544.869 | -0.38478 |
| 36"_16.5_LB_py | U3 | | | | | | 5 | -262.49 | -0.11575 |
| 36"_16.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_16.5_LB_py | U3 | | | | | | 7 | 262.49 | 0.11575 |
| 36"_16.5_LB_py | U3 | | | | | | 8 | 544.869 | 0.38478 |
| 36"_16.5_LB_py | U3 | | | | | | 9 | 1256.353 | 1.35 |
| 36"_16.5_LB_py | U3 | | | | | | 10 | 1256.353 | 1.62 |
| 36"_16.5_LB_py | U3 | | | | | | 11 | 1256.353 | 1.89 |
| 36"_16.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -2512.705 | -1.89 |
| 36"_16.5_Nom_py | U2 | | | | | | 2 | -2512.705 | -1.62 |
| 36"_16.5_Nom_py | U2 | | | | | | 3 | -2512.705 | -1.35 |
| 36"_16.5_Nom_py | U2 | | | | | | 4 | -1089.737 | -0.38478 |
| 36"_16.5_Nom_py | U2 | | | | | | 5 | -524.981 | -0.11575 |
| 36"_16.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_16.5_Nom_py | U2 | | | | | | 7 | 524.981 | 0.11575 |
| 36"_16.5_Nom_py | U2 | | | | | | 8 | 1089.737 | 0.38478 |
| 36"_16.5_Nom_py | U2 | | | | | | 9 | 2512.705 | 1.35 |
| 36"_16.5_Nom_py | U2 | | | | | | 10 | 2512.705 | 1.62 |
| 36"_16.5_Nom_py | U2 | | | | | | 11 | 2512.705 | 1.89 |
| 36"_16.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -2512.705 | -1.89 |
| 36"_16.5_Nom_py | U3 | | | | | | 2 | -2512.705 | -1.62 |
| 36"_16.5_Nom_py | U3 | | | | | | 3 | -2512.705 | -1.35 |
| 36"_16.5_Nom_py | U3 | | | | | | 4 | -1089.737 | -0.38478 |
| 36"_16.5_Nom_py | U3 | | | | | | 5 | -524.981 | -0.11575 |
| 36"_16.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_16.5_Nom_py | U3 | | | | | | 7 | 524.981 | 0.11575 |
| 36"_16.5_Nom_py | U3 | | | | | | 8 | 1089.737 | 0.38478 |
| 36"_16.5_Nom_py | U3 | | | | | | 9 | 2512.705 | 1.35 |
| 36"_16.5_Nom_py | U3 | | | | | | 10 | 2512.705 | 1.62 |
| 36"_16.5_Nom_py | U3 | | | | | | 11 | 2512.705 | 1.89 |
| 36"_16.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -5025.41 | -1.89 |
| 36"_16.5_UB_py | U2 | | | | | | 2 | -5025.41 | -1.62 |
| 36"_16.5_UB_py | U2 | | | | | | 3 | -5025.41 | -1.35 |
| 36"_16.5_UB_py | U2 | | | | | | 4 | -2179.475 | -0.38478 |
| 36"_16.5_UB_py | U2 | | | | | | 5 | -1049.961 | -0.11575 |
| 36"_16.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_16.5_UB_py | U2 | | | | | | 7 | 1049.961 | 0.11575 |
| 36"_16.5_UB_py | U2 | | | | | | 8 | 2179.475 | 0.38478 |
| 36"_16.5_UB_py | U2 | | | | | | 9 | 5025.41 | 1.35 |
| 36"_16.5_UB_py | U2 | | | | | | 10 | 5025.41 | 1.62 |
| 36"_16.5_UB_py | U2 | | | | | | 11 | 5025.41 | 1.89 |
| 36"_16.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -5025.41 | -1.89 |
| 36"_16.5_UB_py | U3 | | | | | | 2 | -5025.41 | -1.62 |
| 36"_16.5_UB_py | U3 | | | | | | 3 | -5025.41 | -1.35 |
| 36"_16.5_UB_py | U3 | | | | | | 4 | -2179.475 | -0.38478 |
| 36"_16.5_UB_py | U3 | | | | | | 5 | -1049.961 | -0.11575 |
| 36"_16.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_16.5_UB_py | U3 | | | | | | 7 | 1049.961 | 0.11575 |
| 36"_16.5_UB_py | U3 | | | | | | 8 | 2179.475 | 0.38478 |
| 36"_16.5_UB_py | U3 | | | | | | 9 | 5025.41 | 1.35 |
| 36"_16.5_UB_py | U3 | | | | | | 10 | 5025.41 | 1.62 |
| 36"_16.5_UB_py | U3 | | | | | | 11 | 5025.41 | 1.89 |
| 36"_18.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1004.254 | -12.6 |
| 36"_18.5_LB_py | U2 | | | | | | 2 | -1004.254 | -10.08 |
| 36"_18.5_LB_py | U2 | | | | | | 3 | -803.403 | -4.12877 |
| 36"_18.5_LB_py | U2 | | | | | | 4 | -602.553 | -1.30637 |
| 36"_18.5_LB_py | U2 | | | | | | 5 | -334.751 | -0.12444 |
| 36"_18.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_18.5_LB_py | U2 | | | | | | 7 | 334.751 | 0.12444 |
| 36"_18.5_LB_py | U2 | | | | | | 8 | 602.553 | 1.30637 |
| 36"_18.5_LB_py | U2 | | | | | | 9 | 803.403 | 4.12877 |
| 36"_18.5_LB_py | U2 | | | | | | 10 | 1004.254 | 10.08 |
| 36"_18.5_LB_py | U2 | | | | | | 11 | 1004.254 | 12.6 |
| 36"_18.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1004.254 | -12.6 |
| 36"_18.5_LB_py | U3 | | | | | | 2 | -1004.254 | -10.08 |
| 36"_18.5_LB_py | U3 | | | | | | 3 | -803.403 | -4.12877 |
| 36"_18.5_LB_py | U3 | | | | | | 4 | -602.553 | -1.30637 |
| 36"_18.5_LB_py | U3 | | | | | | 5 | -334.751 | -0.12444 |
| 36"_18.5_LB_py | U3 | | | | | | 6 | 0 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_18.5_LB_py | U3 | | | | | | 7 | 334.751 | 0.12444 |
| 36"_18.5_LB_py | U3 | | | | | | 8 | 602.553 | 1.30637 |
| 36"_18.5_LB_py | U3 | | | | | | 9 | 803.403 | 4.12877 |
| 36"_18.5_LB_py | U3 | | | | | | 10 | 1004.254 | 10.08 |
| 36"_18.5_LB_py | U3 | | | | | | 11 | 1004.254 | 12.6 |
| 36"_18.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -2008.508 | -12.6 |
| 36"_18.5_Nom_py | U2 | | | | | | 2 | -2008.508 | -10.08 |
| 36"_18.5_Nom_py | U2 | | | | | | 3 | -1606.807 | -4.12877 |
| 36"_18.5_Nom_py | U2 | | | | | | 4 | -1205.105 | -1.30637 |
| 36"_18.5_Nom_py | U2 | | | | | | 5 | -669.503 | -0.12444 |
| 36"_18.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_18.5_Nom_py | U2 | | | | | | 7 | 669.503 | 0.12444 |
| 36"_18.5_Nom_py | U2 | | | | | | 8 | 1205.105 | 1.30637 |
| 36"_18.5_Nom_py | U2 | | | | | | 9 | 1606.807 | 4.12877 |
| 36"_18.5_Nom_py | U2 | | | | | | 10 | 2008.508 | 10.08 |
| 36"_18.5_Nom_py | U2 | | | | | | 11 | 2008.508 | 12.6 |
| 36"_18.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -2008.508 | -12.6 |
| 36"_18.5_Nom_py | U3 | | | | | | 2 | -2008.508 | -10.08 |
| 36"_18.5_Nom_py | U3 | | | | | | 3 | -1606.807 | -4.12877 |
| 36"_18.5_Nom_py | U3 | | | | | | 4 | -1205.105 | -1.30637 |
| 36"_18.5_Nom_py | U3 | | | | | | 5 | -669.503 | -0.12444 |
| 36"_18.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_18.5_Nom_py | U3 | | | | | | 7 | 669.503 | 0.12444 |
| 36"_18.5_Nom_py | U3 | | | | | | 8 | 1205.105 | 1.30637 |
| 36"_18.5_Nom_py | U3 | | | | | | 9 | 1606.807 | 4.12877 |
| 36"_18.5_Nom_py | U3 | | | | | | 10 | 2008.508 | 10.08 |
| 36"_18.5_Nom_py | U3 | | | | | | 11 | 2008.508 | 12.6 |
| 36"_18.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -4017.016 | -12.6 |
| 36"_18.5_UB_py | U2 | | | | | | 2 | -4017.016 | -10.08 |
| 36"_18.5_UB_py | U2 | | | | | | 3 | -3213.613 | -4.12877 |
| 36"_18.5_UB_py | U2 | | | | | | 4 | -2410.21 | -1.30637 |
| 36"_18.5_UB_py | U2 | | | | | | 5 | -1339.005 | -0.12444 |
| 36"_18.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_18.5_UB_py | U2 | | | | | | 7 | 1339.005 | 0.12444 |
| 36"_18.5_UB_py | U2 | | | | | | 8 | 2410.21 | 1.30637 |
| 36"_18.5_UB_py | U2 | | | | | | 9 | 3213.613 | 4.12877 |
| 36"_18.5_UB_py | U2 | | | | | | 10 | 4017.016 | 10.08 |
| 36"_18.5_UB_py | U2 | | | | | | 11 | 4017.016 | 12.6 |
| 36"_18.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -4017.016 | -12.6 |
| 36"_18.5_UB_py | U3 | | | | | | 2 | -4017.016 | -10.08 |
| 36"_18.5_UB_py | U3 | | | | | | 3 | -3213.613 | -4.12877 |
| 36"_18.5_UB_py | U3 | | | | | | 4 | -2410.21 | -1.30637 |
| 36"_18.5_UB_py | U3 | | | | | | 5 | -1339.005 | -0.12444 |
| 36"_18.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_18.5_UB_py | U3 | | | | | | 7 | 1339.005 | 0.12444 |
| 36"_18.5_UB_py | U3 | | | | | | 8 | 2410.21 | 1.30637 |
| 36"_18.5_UB_py | U3 | | | | | | 9 | 3213.613 | 4.12877 |
| 36"_18.5_UB_py | U3 | | | | | | 10 | 4017.016 | 10.08 |
| 36"_18.5_UB_py | U3 | | | | | | 11 | 4017.016 | 12.6 |
| 36"_2.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -20.88 | -15.3 |
| 36"_2.5_LB_py | U2 | | | | | | 2 | -20.88 | -14.4 |
| 36"_2.5_LB_py | U2 | | | | | | 3 | -16.704 | -7.3728 |
| 36"_2.5_LB_py | U2 | | | | | | 4 | -12.528 | -3.1104 |
| 36"_2.5_LB_py | U2 | | | | | | 5 | -6.96 | -0.53333 |
| 36"_2.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_2.5_LB_py | U2 | | | | | | 7 | 6.96 | 0.53333 |
| 36"_2.5_LB_py | U2 | | | | | | 8 | 12.528 | 3.1104 |
| 36"_2.5_LB_py | U2 | | | | | | 9 | 16.704 | 7.3728 |
| 36"_2.5_LB_py | U2 | | | | | | 10 | 20.88 | 14.4 |
| 36"_2.5_LB_py | U2 | | | | | | 11 | 20.88 | 15.3 |
| 36"_2.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -20.88 | -15.3 |
| 36"_2.5_LB_py | U3 | | | | | | 2 | -20.88 | -14.4 |
| 36"_2.5_LB_py | U3 | | | | | | 3 | -16.704 | -7.3728 |
| 36"_2.5_LB_py | U3 | | | | | | 4 | -12.528 | -3.1104 |
| 36"_2.5_LB_py | U3 | | | | | | 5 | -6.96 | -0.53333 |
| 36"_2.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_2.5_LB_py | U3 | | | | | | 7 | 6.96 | 0.53333 |
| 36"_2.5_LB_py | U3 | | | | | | 8 | 12.528 | 3.1104 |
| 36"_2.5_LB_py | U3 | | | | | | 9 | 16.704 | 7.3728 |
| 36"_2.5_LB_py | U3 | | | | | | 10 | 20.88 | 14.4 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_2.5_LB_py | U3 | | | | | | 11 | 20.88 | 15.3 |
| 36"_2.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -41.76 | -15.3 |
| 36"_2.5_Nom_py | U2 | | | | | | 2 | -41.76 | -14.4 |
| 36"_2.5_Nom_py | U2 | | | | | | 3 | -33.408 | -7.3728 |
| 36"_2.5_Nom_py | U2 | | | | | | 4 | -25.056 | -3.1104 |
| 36"_2.5_Nom_py | U2 | | | | | | 5 | -13.92 | -0.53333 |
| 36"_2.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_2.5_Nom_py | U2 | | | | | | 7 | 13.92 | 0.53333 |
| 36"_2.5_Nom_py | U2 | | | | | | 8 | 25.056 | 3.1104 |
| 36"_2.5_Nom_py | U2 | | | | | | 9 | 33.408 | 7.3728 |
| 36"_2.5_Nom_py | U2 | | | | | | 10 | 41.76 | 14.4 |
| 36"_2.5_Nom_py | U2 | | | | | | 11 | 41.76 | 15.3 |
| 36"_2.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -41.76 | -15.3 |
| 36"_2.5_Nom_py | U3 | | | | | | 2 | -41.76 | -14.4 |
| 36"_2.5_Nom_py | U3 | | | | | | 3 | -33.408 | -7.3728 |
| 36"_2.5_Nom_py | U3 | | | | | | 4 | -25.056 | -3.1104 |
| 36"_2.5_Nom_py | U3 | | | | | | 5 | -13.92 | -0.53333 |
| 36"_2.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_2.5_Nom_py | U3 | | | | | | 7 | 13.92 | 0.53333 |
| 36"_2.5_Nom_py | U3 | | | | | | 8 | 25.056 | 3.1104 |
| 36"_2.5_Nom_py | U3 | | | | | | 9 | 33.408 | 7.3728 |
| 36"_2.5_Nom_py | U3 | | | | | | 10 | 41.76 | 14.4 |
| 36"_2.5_Nom_py | U3 | | | | | | 11 | 41.76 | 15.3 |
| 36"_2.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -83.52 | -15.3 |
| 36"_2.5_UB_py | U2 | | | | | | 2 | -83.52 | -14.4 |
| 36"_2.5_UB_py | U2 | | | | | | 3 | -66.816 | -7.3728 |
| 36"_2.5_UB_py | U2 | | | | | | 4 | -50.112 | -3.1104 |
| 36"_2.5_UB_py | U2 | | | | | | 5 | -27.84 | -0.53333 |
| 36"_2.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_2.5_UB_py | U2 | | | | | | 7 | 27.84 | 0.53333 |
| 36"_2.5_UB_py | U2 | | | | | | 8 | 50.112 | 3.1104 |
| 36"_2.5_UB_py | U2 | | | | | | 9 | 66.816 | 7.3728 |
| 36"_2.5_UB_py | U2 | | | | | | 10 | 83.52 | 14.4 |
| 36"_2.5_UB_py | U2 | | | | | | 11 | 83.52 | 15.3 |
| 36"_2.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -83.52 | -15.3 |
| 36"_2.5_UB_py | U3 | | | | | | 2 | -83.52 | -14.4 |
| 36"_2.5_UB_py | U3 | | | | | | 3 | -66.816 | -7.3728 |
| 36"_2.5_UB_py | U3 | | | | | | 4 | -50.112 | -3.1104 |
| 36"_2.5_UB_py | U3 | | | | | | 5 | -27.84 | -0.53333 |
| 36"_2.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_2.5_UB_py | U3 | | | | | | 7 | 27.84 | 0.53333 |
| 36"_2.5_UB_py | U3 | | | | | | 8 | 50.112 | 3.1104 |
| 36"_2.5_UB_py | U3 | | | | | | 9 | 66.816 | 7.3728 |
| 36"_2.5_UB_py | U3 | | | | | | 10 | 83.52 | 14.4 |
| 36"_2.5_UB_py | U3 | | | | | | 11 | 83.52 | 15.3 |
| 36"_20.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1078.068 | -12.6 |
| 36"_20.5_LB_py | U2 | | | | | | 2 | -1078.068 | -10.08 |
| 36"_20.5_LB_py | U2 | | | | | | 3 | -862.454 | -4.12877 |
| 36"_20.5_LB_py | U2 | | | | | | 4 | -646.841 | -1.30637 |
| 36"_20.5_LB_py | U2 | | | | | | 5 | -359.356 | -0.12444 |
| 36"_20.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_20.5_LB_py | U2 | | | | | | 7 | 359.356 | 0.12444 |
| 36"_20.5_LB_py | U2 | | | | | | 8 | 646.841 | 1.30637 |
| 36"_20.5_LB_py | U2 | | | | | | 9 | 862.454 | 4.12877 |
| 36"_20.5_LB_py | U2 | | | | | | 10 | 1078.068 | 10.08 |
| 36"_20.5_LB_py | U2 | | | | | | 11 | 1078.068 | 12.6 |
| 36"_20.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1078.068 | -12.6 |
| 36"_20.5_LB_py | U3 | | | | | | 2 | -1078.068 | -10.08 |
| 36"_20.5_LB_py | U3 | | | | | | 3 | -862.454 | -4.12877 |
| 36"_20.5_LB_py | U3 | | | | | | 4 | -646.841 | -1.30637 |
| 36"_20.5_LB_py | U3 | | | | | | 5 | -359.356 | -0.12444 |
| 36"_20.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_20.5_LB_py | U3 | | | | | | 7 | 359.356 | 0.12444 |
| 36"_20.5_LB_py | U3 | | | | | | 8 | 646.841 | 1.30637 |
| 36"_20.5_LB_py | U3 | | | | | | 9 | 862.454 | 4.12877 |
| 36"_20.5_LB_py | U3 | | | | | | 10 | 1078.068 | 10.08 |
| 36"_20.5_LB_py | U3 | | | | | | 11 | 1078.068 | 12.6 |
| 36"_20.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -2156.136 | -12.6 |
| 36"_20.5_Nom_py | U2 | | | | | | 2 | -2156.136 | -10.08 |
| 36"_20.5_Nom_py | U2 | | | | | | 3 | -1724.909 | -4.12877 |

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|---|---|---|---|---|---|---|---|---|---|
| 36"_20.5_Nom_py | U2 | | | | | | 4 | -1293.682 | -1.30637 |
| 36"_20.5_Nom_py | U2 | | | | | | 5 | -718.712 | -0.12444 |
| 36"_20.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_20.5_Nom_py | U2 | | | | | | 7 | 718.712 | 0.12444 |
| 36"_20.5_Nom_py | U2 | | | | | | 8 | 1293.682 | 1.30637 |
| 36"_20.5_Nom_py | U2 | | | | | | 9 | 1724.909 | 4.12877 |
| 36"_20.5_Nom_py | U2 | | | | | | 10 | 2156.136 | 10.08 |
| 36"_20.5_Nom_py | U2 | | | | | | 11 | 2156.136 | 12.6 |
| 36"_20.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -2156.136 | -12.6 |
| 36"_20.5_Nom_py | U3 | | | | | | 2 | -2156.136 | -10.08 |
| 36"_20.5_Nom_py | U3 | | | | | | 3 | -1724.909 | -4.12877 |
| 36"_20.5_Nom_py | U3 | | | | | | 4 | -1293.682 | -1.30637 |
| 36"_20.5_Nom_py | U3 | | | | | | 5 | -718.712 | -0.12444 |
| 36"_20.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_20.5_Nom_py | U3 | | | | | | 7 | 718.712 | 0.12444 |
| 36"_20.5_Nom_py | U3 | | | | | | 8 | 1293.682 | 1.30637 |
| 36"_20.5_Nom_py | U3 | | | | | | 9 | 1724.909 | 4.12877 |
| 36"_20.5_Nom_py | U3 | | | | | | 10 | 2156.136 | 10.08 |
| 36"_20.5_Nom_py | U3 | | | | | | 11 | 2156.136 | 12.6 |
| 36"_20.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -4312.272 | -12.6 |
| 36"_20.5_UB_py | U2 | | | | | | 2 | -4312.272 | -10.08 |
| 36"_20.5_UB_py | U2 | | | | | | 3 | -3449.818 | -4.12877 |
| 36"_20.5_UB_py | U2 | | | | | | 4 | -2587.363 | -1.30637 |
| 36"_20.5_UB_py | U2 | | | | | | 5 | -1437.424 | -0.12444 |
| 36"_20.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_20.5_UB_py | U2 | | | | | | 7 | 1437.424 | 0.12444 |
| 36"_20.5_UB_py | U2 | | | | | | 8 | 2587.363 | 1.30637 |
| 36"_20.5_UB_py | U2 | | | | | | 9 | 3449.818 | 4.12877 |
| 36"_20.5_UB_py | U2 | | | | | | 10 | 4312.272 | 10.08 |
| 36"_20.5_UB_py | U2 | | | | | | 11 | 4312.272 | 12.6 |
| 36"_20.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -4312.272 | -12.6 |
| 36"_20.5_UB_py | U3 | | | | | | 2 | -4312.272 | -10.08 |
| 36"_20.5_UB_py | U3 | | | | | | 3 | -3449.818 | -4.12877 |
| 36"_20.5_UB_py | U3 | | | | | | 4 | -2587.363 | -1.30637 |
| 36"_20.5_UB_py | U3 | | | | | | 5 | -1437.424 | -0.12444 |
| 36"_20.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_20.5_UB_py | U3 | | | | | | 7 | 1437.424 | 0.12444 |
| 36"_20.5_UB_py | U3 | | | | | | 8 | 2587.363 | 1.30637 |
| 36"_20.5_UB_py | U3 | | | | | | 9 | 3449.818 | 4.12877 |
| 36"_20.5_UB_py | U3 | | | | | | 10 | 4312.272 | 10.08 |
| 36"_20.5_UB_py | U3 | | | | | | 11 | 4312.272 | 12.6 |
| 36"_24.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1956.943 | -12.6 |
| 36"_24.5_LB_py | U2 | | | | | | 2 | -1956.943 | -10.08 |
| 36"_24.5_LB_py | U2 | | | | | | 3 | -1565.554 | -4.12877 |
| 36"_24.5_LB_py | U2 | | | | | | 4 | -1174.166 | -1.30637 |
| 36"_24.5_LB_py | U2 | | | | | | 5 | -652.314 | -0.12444 |
| 36"_24.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_24.5_LB_py | U2 | | | | | | 7 | 652.314 | 0.12444 |
| 36"_24.5_LB_py | U2 | | | | | | 8 | 1174.166 | 1.30637 |
| 36"_24.5_LB_py | U2 | | | | | | 9 | 1565.554 | 4.12877 |
| 36"_24.5_LB_py | U2 | | | | | | 10 | 1956.943 | 10.08 |
| 36"_24.5_LB_py | U2 | | | | | | 11 | 1956.943 | 12.6 |
| 36"_24.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1956.943 | -12.6 |
| 36"_24.5_LB_py | U3 | | | | | | 2 | -1956.943 | -10.08 |
| 36"_24.5_LB_py | U3 | | | | | | 3 | -1565.554 | -4.12877 |
| 36"_24.5_LB_py | U3 | | | | | | 4 | -1174.166 | -1.30637 |
| 36"_24.5_LB_py | U3 | | | | | | 5 | -652.314 | -0.12444 |
| 36"_24.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_24.5_LB_py | U3 | | | | | | 7 | 652.314 | 0.12444 |
| 36"_24.5_LB_py | U3 | | | | | | 8 | 1174.166 | 1.30637 |
| 36"_24.5_LB_py | U3 | | | | | | 9 | 1565.554 | 4.12877 |
| 36"_24.5_LB_py | U3 | | | | | | 10 | 1956.943 | 10.08 |
| 36"_24.5_LB_py | U3 | | | | | | 11 | 1956.943 | 12.6 |
| 36"_24.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -3913.886 | -12.6 |
| 36"_24.5_Nom_py | U2 | | | | | | 2 | -3913.886 | -10.08 |
| 36"_24.5_Nom_py | U2 | | | | | | 3 | -3131.109 | -4.12877 |
| 36"_24.5_Nom_py | U2 | | | | | | 4 | -2348.331 | -1.30637 |
| 36"_24.5_Nom_py | U2 | | | | | | 5 | -1304.629 | -0.12444 |
| 36"_24.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_24.5_Nom_py | U2 | | | | | | 7 | 1304.629 | 0.12444 |

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|---|---|---|---|---|---|---|---|---|---|
| 36"_24.5_Nom_py | U2 | | | | | | 8 | 2348.331 | 1.30637 |
| 36"_24.5_Nom_py | U2 | | | | | | 9 | 3131.109 | 4.12877 |
| 36"_24.5_Nom_py | U2 | | | | | | 10 | 3913.886 | 10.08 |
| 36"_24.5_Nom_py | U2 | | | | | | 11 | 3913.886 | 12.6 |
| 36"_24.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -3913.886 | -12.6 |
| 36"_24.5_Nom_py | U3 | | | | | | 2 | -3913.886 | -10.08 |
| 36"_24.5_Nom_py | U3 | | | | | | 3 | -3131.109 | -4.12877 |
| 36"_24.5_Nom_py | U3 | | | | | | 4 | -2348.331 | -1.30637 |
| 36"_24.5_Nom_py | U3 | | | | | | 5 | -1304.629 | -0.12444 |
| 36"_24.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_24.5_Nom_py | U3 | | | | | | 7 | 1304.629 | 0.12444 |
| 36"_24.5_Nom_py | U3 | | | | | | 8 | 2348.331 | 1.30637 |
| 36"_24.5_Nom_py | U3 | | | | | | 9 | 3131.109 | 4.12877 |
| 36"_24.5_Nom_py | U3 | | | | | | 10 | 3913.886 | 10.08 |
| 36"_24.5_Nom_py | U3 | | | | | | 11 | 3913.886 | 12.6 |
| 36"_24.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -7827.771 | -12.6 |
| 36"_24.5_UB_py | U2 | | | | | | 2 | -7827.771 | -10.08 |
| 36"_24.5_UB_py | U2 | | | | | | 3 | -6262.217 | -4.12877 |
| 36"_24.5_UB_py | U2 | | | | | | 4 | -4696.663 | -1.30637 |
| 36"_24.5_UB_py | U2 | | | | | | 5 | -2609.257 | -0.12444 |
| 36"_24.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_24.5_UB_py | U2 | | | | | | 7 | 2609.257 | 0.12444 |
| 36"_24.5_UB_py | U2 | | | | | | 8 | 4696.663 | 1.30637 |
| 36"_24.5_UB_py | U2 | | | | | | 9 | 6262.217 | 4.12877 |
| 36"_24.5_UB_py | U2 | | | | | | 10 | 7827.771 | 10.08 |
| 36"_24.5_UB_py | U2 | | | | | | 11 | 7827.771 | 12.6 |
| 36"_24.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -7827.771 | -12.6 |
| 36"_24.5_UB_py | U3 | | | | | | 2 | -7827.771 | -10.08 |
| 36"_24.5_UB_py | U3 | | | | | | 3 | -6262.217 | -4.12877 |
| 36"_24.5_UB_py | U3 | | | | | | 4 | -4696.663 | -1.30637 |
| 36"_24.5_UB_py | U3 | | | | | | 5 | -2609.257 | -0.12444 |
| 36"_24.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_24.5_UB_py | U3 | | | | | | 7 | 2609.257 | 0.12444 |
| 36"_24.5_UB_py | U3 | | | | | | 8 | 4696.663 | 1.30637 |
| 36"_24.5_UB_py | U3 | | | | | | 9 | 6262.217 | 4.12877 |
| 36"_24.5_UB_py | U3 | | | | | | 10 | 7827.771 | 10.08 |
| 36"_24.5_UB_py | U3 | | | | | | 11 | 7827.771 | 12.6 |
| 36"_28.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -2931.173 | -12.6 |
| 36"_28.5_LB_py | U2 | | | | | | 2 | -2931.173 | -10.08 |
| 36"_28.5_LB_py | U2 | | | | | | 3 | -2344.939 | -4.12877 |
| 36"_28.5_LB_py | U2 | | | | | | 4 | -1758.704 | -1.30637 |
| 36"_28.5_LB_py | U2 | | | | | | 5 | -977.058 | -0.12444 |
| 36"_28.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_28.5_LB_py | U2 | | | | | | 7 | 977.058 | 0.12444 |
| 36"_28.5_LB_py | U2 | | | | | | 8 | 1758.704 | 1.30637 |
| 36"_28.5_LB_py | U2 | | | | | | 9 | 2344.939 | 4.12877 |
| 36"_28.5_LB_py | U2 | | | | | | 10 | 2931.173 | 10.08 |
| 36"_28.5_LB_py | U2 | | | | | | 11 | 2931.173 | 12.6 |
| 36"_28.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -2931.173 | -12.6 |
| 36"_28.5_LB_py | U3 | | | | | | 2 | -2931.173 | -10.08 |
| 36"_28.5_LB_py | U3 | | | | | | 3 | -2344.939 | -4.12877 |
| 36"_28.5_LB_py | U3 | | | | | | 4 | -1758.704 | -1.30637 |
| 36"_28.5_LB_py | U3 | | | | | | 5 | -977.058 | -0.12444 |
| 36"_28.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_28.5_LB_py | U3 | | | | | | 7 | 977.058 | 0.12444 |
| 36"_28.5_LB_py | U3 | | | | | | 8 | 1758.704 | 1.30637 |
| 36"_28.5_LB_py | U3 | | | | | | 9 | 2344.939 | 4.12877 |
| 36"_28.5_LB_py | U3 | | | | | | 10 | 2931.173 | 10.08 |
| 36"_28.5_LB_py | U3 | | | | | | 11 | 2931.173 | 12.6 |
| 36"_28.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -5862.347 | -12.6 |
| 36"_28.5_Nom_py | U2 | | | | | | 2 | -5862.347 | -10.08 |
| 36"_28.5_Nom_py | U2 | | | | | | 3 | -4689.877 | -4.12877 |
| 36"_28.5_Nom_py | U2 | | | | | | 4 | -3517.408 | -1.30637 |
| 36"_28.5_Nom_py | U2 | | | | | | 5 | -1954.116 | -0.12444 |
| 36"_28.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_28.5_Nom_py | U2 | | | | | | 7 | 1954.116 | 0.12444 |
| 36"_28.5_Nom_py | U2 | | | | | | 8 | 3517.408 | 1.30637 |
| 36"_28.5_Nom_py | U2 | | | | | | 9 | 4689.877 | 4.12877 |
| 36"_28.5_Nom_py | U2 | | | | | | 10 | 5862.347 | 10.08 |
| 36"_28.5_Nom_py | U2 | | | | | | 11 | 5862.347 | 12.6 |

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|---|---|---|---|---|---|---|---|---|---|
| 36"_28.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -5862.347 | -12.6 |
| 36"_28.5_Nom_py | U3 | | | | | | 2 | -5862.347 | -10.08 |
| 36"_28.5_Nom_py | U3 | | | | | | 3 | -4689.877 | -4.12877 |
| 36"_28.5_Nom_py | U3 | | | | | | 4 | -3517.408 | -1.30637 |
| 36"_28.5_Nom_py | U3 | | | | | | 5 | -1954.116 | -0.12444 |
| 36"_28.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_28.5_Nom_py | U3 | | | | | | 7 | 1954.116 | 0.12444 |
| 36"_28.5_Nom_py | U3 | | | | | | 8 | 3517.408 | 1.30637 |
| 36"_28.5_Nom_py | U3 | | | | | | 9 | 4689.877 | 4.12877 |
| 36"_28.5_Nom_py | U3 | | | | | | 10 | 5862.347 | 10.08 |
| 36"_28.5_Nom_py | U3 | | | | | | 11 | 5862.347 | 12.6 |
| 36"_28.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -11724.69 | -12.6 |
| 36"_28.5_UB_py | U2 | | | | | | 2 | -11724.69 | -10.08 |
| 36"_28.5_UB_py | U2 | | | | | | 3 | -9379.755 | -4.12877 |
| 36"_28.5_UB_py | U2 | | | | | | 4 | -7034.816 | -1.30637 |
| 36"_28.5_UB_py | U2 | | | | | | 5 | -3908.231 | -0.12444 |
| 36"_28.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_28.5_UB_py | U2 | | | | | | 7 | 3908.231 | 0.12444 |
| 36"_28.5_UB_py | U2 | | | | | | 8 | 7034.816 | 1.30637 |
| 36"_28.5_UB_py | U2 | | | | | | 9 | 9379.755 | 4.12877 |
| 36"_28.5_UB_py | U2 | | | | | | 10 | 11724.69 | 10.08 |
| 36"_28.5_UB_py | U2 | | | | | | 11 | 11724.69 | 12.6 |
| 36"_28.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -11724.69 | -12.6 |
| 36"_28.5_UB_py | U3 | | | | | | 2 | -11724.69 | -10.08 |
| 36"_28.5_UB_py | U3 | | | | | | 3 | -9379.755 | -4.12877 |
| 36"_28.5_UB_py | U3 | | | | | | 4 | -7034.816 | -1.30637 |
| 36"_28.5_UB_py | U3 | | | | | | 5 | -3908.231 | -0.12444 |
| 36"_28.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_28.5_UB_py | U3 | | | | | | 7 | 3908.231 | 0.12444 |
| 36"_28.5_UB_py | U3 | | | | | | 8 | 7034.816 | 1.30637 |
| 36"_28.5_UB_py | U3 | | | | | | 9 | 9379.755 | 4.12877 |
| 36"_28.5_UB_py | U3 | | | | | | 10 | 11724.69 | 10.08 |
| 36"_28.5_UB_py | U3 | | | | | | 11 | 11724.69 | 12.6 |
| 36"_3.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -22.752 | -15.3 |
| 36"_3.5_LB_py | U2 | | | | | | 2 | -22.752 | -14.4 |
| 36"_3.5_LB_py | U2 | | | | | | 3 | -18.202 | -7.3728 |
| 36"_3.5_LB_py | U2 | | | | | | 4 | -13.651 | -3.1104 |
| 36"_3.5_LB_py | U2 | | | | | | 5 | -7.584 | -0.53333 |
| 36"_3.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_3.5_LB_py | U2 | | | | | | 7 | 7.584 | 0.53333 |
| 36"_3.5_LB_py | U2 | | | | | | 8 | 13.651 | 3.1104 |
| 36"_3.5_LB_py | U2 | | | | | | 9 | 18.202 | 7.3728 |
| 36"_3.5_LB_py | U2 | | | | | | 10 | 22.752 | 14.4 |
| 36"_3.5_LB_py | U2 | | | | | | 11 | 22.752 | 15.3 |
| 36"_3.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -22.752 | -15.3 |
| 36"_3.5_LB_py | U3 | | | | | | 2 | -22.752 | -14.4 |
| 36"_3.5_LB_py | U3 | | | | | | 3 | -18.202 | -7.3728 |
| 36"_3.5_LB_py | U3 | | | | | | 4 | -13.651 | -3.1104 |
| 36"_3.5_LB_py | U3 | | | | | | 5 | -7.584 | -0.53333 |
| 36"_3.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_3.5_LB_py | U3 | | | | | | 7 | 7.584 | 0.53333 |
| 36"_3.5_LB_py | U3 | | | | | | 8 | 13.651 | 3.1104 |
| 36"_3.5_LB_py | U3 | | | | | | 9 | 18.202 | 7.3728 |
| 36"_3.5_LB_py | U3 | | | | | | 10 | 22.752 | 14.4 |
| 36"_3.5_LB_py | U3 | | | | | | 11 | 22.752 | 15.3 |
| 36"_3.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -45.504 | -15.3 |
| 36"_3.5_Nom_py | U2 | | | | | | 2 | -45.504 | -14.4 |
| 36"_3.5_Nom_py | U2 | | | | | | 3 | -36.403 | -7.3728 |
| 36"_3.5_Nom_py | U2 | | | | | | 4 | -27.302 | -3.1104 |
| 36"_3.5_Nom_py | U2 | | | | | | 5 | -15.168 | -0.53333 |
| 36"_3.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_3.5_Nom_py | U2 | | | | | | 7 | 15.168 | 0.53333 |
| 36"_3.5_Nom_py | U2 | | | | | | 8 | 27.302 | 3.1104 |
| 36"_3.5_Nom_py | U2 | | | | | | 9 | 36.403 | 7.3728 |
| 36"_3.5_Nom_py | U2 | | | | | | 10 | 45.504 | 14.4 |
| 36"_3.5_Nom_py | U2 | | | | | | 11 | 45.504 | 15.3 |
| 36"_3.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -45.504 | -15.3 |
| 36"_3.5_Nom_py | U3 | | | | | | 2 | -45.504 | -14.4 |
| 36"_3.5_Nom_py | U3 | | | | | | 3 | -36.403 | -7.3728 |
| 36"_3.5_Nom_py | U3 | | | | | | 4 | -27.302 | -3.1104 |

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|---|---|---|---|---|---|---|---|---|---|
| 36"_3.5_Nom_py | U3 | | | | | | 5 | -15.168 | -0.53333 |
| 36"_3.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_3.5_Nom_py | U3 | | | | | | 7 | 15.168 | 0.53333 |
| 36"_3.5_Nom_py | U3 | | | | | | 8 | 27.302 | 3.1104 |
| 36"_3.5_Nom_py | U3 | | | | | | 9 | 36.403 | 7.3728 |
| 36"_3.5_Nom_py | U3 | | | | | | 10 | 45.504 | 14.4 |
| 36"_3.5_Nom_py | U3 | | | | | | 11 | 45.504 | 15.3 |
| 36"_3.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -91.008 | -15.3 |
| 36"_3.5_UB_py | U2 | | | | | | 2 | -91.008 | -14.4 |
| 36"_3.5_UB_py | U2 | | | | | | 3 | -72.806 | -7.3728 |
| 36"_3.5_UB_py | U2 | | | | | | 4 | -54.605 | -3.1104 |
| 36"_3.5_UB_py | U2 | | | | | | 5 | -30.336 | -0.53333 |
| 36"_3.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_3.5_UB_py | U2 | | | | | | 7 | 30.336 | 0.53333 |
| 36"_3.5_UB_py | U2 | | | | | | 8 | 54.605 | 3.1104 |
| 36"_3.5_UB_py | U2 | | | | | | 9 | 72.806 | 7.3728 |
| 36"_3.5_UB_py | U2 | | | | | | 10 | 91.008 | 14.4 |
| 36"_3.5_UB_py | U2 | | | | | | 11 | 91.008 | 15.3 |
| 36"_3.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -91.008 | -15.3 |
| 36"_3.5_UB_py | U3 | | | | | | 2 | -91.008 | -14.4 |
| 36"_3.5_UB_py | U3 | | | | | | 3 | -72.806 | -7.3728 |
| 36"_3.5_UB_py | U3 | | | | | | 4 | -54.605 | -3.1104 |
| 36"_3.5_UB_py | U3 | | | | | | 5 | -30.336 | -0.53333 |
| 36"_3.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_3.5_UB_py | U3 | | | | | | 7 | 30.336 | 0.53333 |
| 36"_3.5_UB_py | U3 | | | | | | 8 | 54.605 | 3.1104 |
| 36"_3.5_UB_py | U3 | | | | | | 9 | 72.806 | 7.3728 |
| 36"_3.5_UB_py | U3 | | | | | | 10 | 91.008 | 14.4 |
| 36"_3.5_UB_py | U3 | | | | | | 11 | 91.008 | 15.3 |
| 36"_32.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -3253.559 | -12.6 |
| 36"_32.5_LB_py | U2 | | | | | | 2 | -3253.559 | -10.08 |
| 36"_32.5_LB_py | U2 | | | | | | 3 | -2602.847 | -4.12877 |
| 36"_32.5_LB_py | U2 | | | | | | 4 | -1952.135 | -1.30637 |
| 36"_32.5_LB_py | U2 | | | | | | 5 | -1084.52 | -0.12444 |
| 36"_32.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_32.5_LB_py | U2 | | | | | | 7 | 1084.52 | 0.12444 |
| 36"_32.5_LB_py | U2 | | | | | | 8 | 1952.135 | 1.30637 |
| 36"_32.5_LB_py | U2 | | | | | | 9 | 2602.847 | 4.12877 |
| 36"_32.5_LB_py | U2 | | | | | | 10 | 3253.559 | 10.08 |
| 36"_32.5_LB_py | U2 | | | | | | 11 | 3253.559 | 12.6 |
| 36"_32.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -3253.559 | -12.6 |
| 36"_32.5_LB_py | U3 | | | | | | 2 | -3253.559 | -10.08 |
| 36"_32.5_LB_py | U3 | | | | | | 3 | -2602.847 | -4.12877 |
| 36"_32.5_LB_py | U3 | | | | | | 4 | -1952.135 | -1.30637 |
| 36"_32.5_LB_py | U3 | | | | | | 5 | -1084.52 | -0.12444 |
| 36"_32.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_32.5_LB_py | U3 | | | | | | 7 | 1084.52 | 0.12444 |
| 36"_32.5_LB_py | U3 | | | | | | 8 | 1952.135 | 1.30637 |
| 36"_32.5_LB_py | U3 | | | | | | 9 | 2602.847 | 4.12877 |
| 36"_32.5_LB_py | U3 | | | | | | 10 | 3253.559 | 10.08 |
| 36"_32.5_LB_py | U3 | | | | | | 11 | 3253.559 | 12.6 |
| 36"_32.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -6507.117 | -12.6 |
| 36"_32.5_Nom_py | U2 | | | | | | 2 | -6507.117 | -10.08 |
| 36"_32.5_Nom_py | U2 | | | | | | 3 | -5205.694 | -4.12877 |
| 36"_32.5_Nom_py | U2 | | | | | | 4 | -3904.27 | -1.30637 |
| 36"_32.5_Nom_py | U2 | | | | | | 5 | -2169.039 | -0.12444 |
| 36"_32.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_32.5_Nom_py | U2 | | | | | | 7 | 2169.039 | 0.12444 |
| 36"_32.5_Nom_py | U2 | | | | | | 8 | 3904.27 | 1.30637 |
| 36"_32.5_Nom_py | U2 | | | | | | 9 | 5205.694 | 4.12877 |
| 36"_32.5_Nom_py | U2 | | | | | | 10 | 6507.117 | 10.08 |
| 36"_32.5_Nom_py | U2 | | | | | | 11 | 6507.117 | 12.6 |
| 36"_32.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -6507.117 | -12.6 |
| 36"_32.5_Nom_py | U3 | | | | | | 2 | -6507.117 | -10.08 |
| 36"_32.5_Nom_py | U3 | | | | | | 3 | -5205.694 | -4.12877 |
| 36"_32.5_Nom_py | U3 | | | | | | 4 | -3904.27 | -1.30637 |
| 36"_32.5_Nom_py | U3 | | | | | | 5 | -2169.039 | -0.12444 |
| 36"_32.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_32.5_Nom_py | U3 | | | | | | 7 | 2169.039 | 0.12444 |
| 36"_32.5_Nom_py | U3 | | | | | | 8 | 3904.27 | 1.30637 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_32.5_Nom_py | U3 | | | | | | 9 | 5205.694 | 4.12877 |
| 36"_32.5_Nom_py | U3 | | | | | | 10 | 6507.117 | 10.08 |
| 36"_32.5_Nom_py | U3 | | | | | | 11 | 6507.117 | 12.6 |
| 36"_32.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -13014.23 | -12.6 |
| 36"_32.5_UB_py | U2 | | | | | | 2 | -13014.23 | -10.08 |
| 36"_32.5_UB_py | U2 | | | | | | 3 | -10411.39 | -4.12877 |
| 36"_32.5_UB_py | U2 | | | | | | 4 | -7808.541 | -1.30637 |
| 36"_32.5_UB_py | U2 | | | | | | 5 | -4338.078 | -0.12444 |
| 36"_32.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_32.5_UB_py | U2 | | | | | | 7 | 4338.078 | 0.12444 |
| 36"_32.5_UB_py | U2 | | | | | | 8 | 7808.541 | 1.30637 |
| 36"_32.5_UB_py | U2 | | | | | | 9 | 10411.39 | 4.12877 |
| 36"_32.5_UB_py | U2 | | | | | | 10 | 13014.23 | 10.08 |
| 36"_32.5_UB_py | U2 | | | | | | 11 | 13014.23 | 12.6 |
| 36"_32.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -13014.23 | -12.6 |
| 36"_32.5_UB_py | U3 | | | | | | 2 | -13014.23 | -10.08 |
| 36"_32.5_UB_py | U3 | | | | | | 3 | -10411.39 | -4.12877 |
| 36"_32.5_UB_py | U3 | | | | | | 4 | -7808.541 | -1.30637 |
| 36"_32.5_UB_py | U3 | | | | | | 5 | -4338.078 | -0.12444 |
| 36"_32.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_32.5_UB_py | U3 | | | | | | 7 | 4338.078 | 0.12444 |
| 36"_32.5_UB_py | U3 | | | | | | 8 | 7808.541 | 1.30637 |
| 36"_32.5_UB_py | U3 | | | | | | 9 | 10411.39 | 4.12877 |
| 36"_32.5_UB_py | U3 | | | | | | 10 | 13014.23 | 10.08 |
| 36"_32.5_UB_py | U3 | | | | | | 11 | 13014.23 | 12.6 |
| 36"_36.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -3573.677 | -12.6 |
| 36"_36.5_LB_py | U2 | | | | | | 2 | -3573.677 | -10.08 |
| 36"_36.5_LB_py | U2 | | | | | | 3 | -2858.942 | -4.12877 |
| 36"_36.5_LB_py | U2 | | | | | | 4 | -2144.206 | -1.30637 |
| 36"_36.5_LB_py | U2 | | | | | | 5 | -1191.226 | -0.12444 |
| 36"_36.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_36.5_LB_py | U2 | | | | | | 7 | 1191.226 | 0.12444 |
| 36"_36.5_LB_py | U2 | | | | | | 8 | 2144.206 | 1.30637 |
| 36"_36.5_LB_py | U2 | | | | | | 9 | 2858.942 | 4.12877 |
| 36"_36.5_LB_py | U2 | | | | | | 10 | 3573.677 | 10.08 |
| 36"_36.5_LB_py | U2 | | | | | | 11 | 3573.677 | 12.6 |
| 36"_36.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -3573.677 | -12.6 |
| 36"_36.5_LB_py | U3 | | | | | | 2 | -3573.677 | -10.08 |
| 36"_36.5_LB_py | U3 | | | | | | 3 | -2858.942 | -4.12877 |
| 36"_36.5_LB_py | U3 | | | | | | 4 | -2144.206 | -1.30637 |
| 36"_36.5_LB_py | U3 | | | | | | 5 | -1191.226 | -0.12444 |
| 36"_36.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_36.5_LB_py | U3 | | | | | | 7 | 1191.226 | 0.12444 |
| 36"_36.5_LB_py | U3 | | | | | | 8 | 2144.206 | 1.30637 |
| 36"_36.5_LB_py | U3 | | | | | | 9 | 2858.942 | 4.12877 |
| 36"_36.5_LB_py | U3 | | | | | | 10 | 3573.677 | 10.08 |
| 36"_36.5_LB_py | U3 | | | | | | 11 | 3573.677 | 12.6 |
| 36"_36.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -7147.354 | -12.6 |
| 36"_36.5_Nom_py | U2 | | | | | | 2 | -7147.354 | -10.08 |
| 36"_36.5_Nom_py | U2 | | | | | | 3 | -5717.883 | -4.12877 |
| 36"_36.5_Nom_py | U2 | | | | | | 4 | -4288.412 | -1.30637 |
| 36"_36.5_Nom_py | U2 | | | | | | 5 | -2382.451 | -0.12444 |
| 36"_36.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_36.5_Nom_py | U2 | | | | | | 7 | 2382.451 | 0.12444 |
| 36"_36.5_Nom_py | U2 | | | | | | 8 | 4288.412 | 1.30637 |
| 36"_36.5_Nom_py | U2 | | | | | | 9 | 5717.883 | 4.12877 |
| 36"_36.5_Nom_py | U2 | | | | | | 10 | 7147.354 | 10.08 |
| 36"_36.5_Nom_py | U2 | | | | | | 11 | 7147.354 | 12.6 |
| 36"_36.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -7147.354 | -12.6 |
| 36"_36.5_Nom_py | U3 | | | | | | 2 | -7147.354 | -10.08 |
| 36"_36.5_Nom_py | U3 | | | | | | 3 | -5717.883 | -4.12877 |
| 36"_36.5_Nom_py | U3 | | | | | | 4 | -4288.412 | -1.30637 |
| 36"_36.5_Nom_py | U3 | | | | | | 5 | -2382.451 | -0.12444 |
| 36"_36.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_36.5_Nom_py | U3 | | | | | | 7 | 2382.451 | 0.12444 |
| 36"_36.5_Nom_py | U3 | | | | | | 8 | 4288.412 | 1.30637 |
| 36"_36.5_Nom_py | U3 | | | | | | 9 | 5717.883 | 4.12877 |
| 36"_36.5_Nom_py | U3 | | | | | | 10 | 7147.354 | 10.08 |
| 36"_36.5_Nom_py | U3 | | | | | | 11 | 7147.354 | 12.6 |
| 36"_36.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -14294.71 | -12.6 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_36.5_UB_py | U2 | | | | | | 2 | -14294.71 | -10.08 |
| 36"_36.5_UB_py | U2 | | | | | | 3 | -11435.77 | -4.12877 |
| 36"_36.5_UB_py | U2 | | | | | | 4 | -8576.825 | -1.30637 |
| 36"_36.5_UB_py | U2 | | | | | | 5 | -4764.903 | -0.12444 |
| 36"_36.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_36.5_UB_py | U2 | | | | | | 7 | 4764.903 | 0.12444 |
| 36"_36.5_UB_py | U2 | | | | | | 8 | 8576.825 | 1.30637 |
| 36"_36.5_UB_py | U2 | | | | | | 9 | 11435.77 | 4.12877 |
| 36"_36.5_UB_py | U2 | | | | | | 10 | 14294.71 | 10.08 |
| 36"_36.5_UB_py | U2 | | | | | | 11 | 14294.71 | 12.6 |
| 36"_36.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -14294.71 | -12.6 |
| 36"_36.5_UB_py | U3 | | | | | | 2 | -14294.71 | -10.08 |
| 36"_36.5_UB_py | U3 | | | | | | 3 | -11435.77 | -4.12877 |
| 36"_36.5_UB_py | U3 | | | | | | 4 | -8576.825 | -1.30637 |
| 36"_36.5_UB_py | U3 | | | | | | 5 | -4764.903 | -0.12444 |
| 36"_36.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_36.5_UB_py | U3 | | | | | | 7 | 4764.903 | 0.12444 |
| 36"_36.5_UB_py | U3 | | | | | | 8 | 8576.825 | 1.30637 |
| 36"_36.5_UB_py | U3 | | | | | | 9 | 11435.77 | 4.12877 |
| 36"_36.5_UB_py | U3 | | | | | | 10 | 14294.71 | 10.08 |
| 36"_36.5_UB_py | U3 | | | | | | 11 | 14294.71 | 12.6 |
| 36"_4.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -24.624 | -15.3 |
| 36"_4.5_LB_py | U2 | | | | | | 2 | -24.624 | -14.4 |
| 36"_4.5_LB_py | U2 | | | | | | 3 | -19.699 | -7.3728 |
| 36"_4.5_LB_py | U2 | | | | | | 4 | -14.774 | -3.1104 |
| 36"_4.5_LB_py | U2 | | | | | | 5 | -8.208 | -0.53333 |
| 36"_4.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_4.5_LB_py | U2 | | | | | | 7 | 8.208 | 0.53333 |
| 36"_4.5_LB_py | U2 | | | | | | 8 | 14.774 | 3.1104 |
| 36"_4.5_LB_py | U2 | | | | | | 9 | 19.699 | 7.3728 |
| 36"_4.5_LB_py | U2 | | | | | | 10 | 24.624 | 14.4 |
| 36"_4.5_LB_py | U2 | | | | | | 11 | 24.624 | 15.3 |
| 36"_4.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -24.624 | -15.3 |
| 36"_4.5_LB_py | U3 | | | | | | 2 | -24.624 | -14.4 |
| 36"_4.5_LB_py | U3 | | | | | | 3 | -19.699 | -7.3728 |
| 36"_4.5_LB_py | U3 | | | | | | 4 | -14.774 | -3.1104 |
| 36"_4.5_LB_py | U3 | | | | | | 5 | -8.208 | -0.53333 |
| 36"_4.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_4.5_LB_py | U3 | | | | | | 7 | 8.208 | 0.53333 |
| 36"_4.5_LB_py | U3 | | | | | | 8 | 14.774 | 3.1104 |
| 36"_4.5_LB_py | U3 | | | | | | 9 | 19.699 | 7.3728 |
| 36"_4.5_LB_py | U3 | | | | | | 10 | 24.624 | 14.4 |
| 36"_4.5_LB_py | U3 | | | | | | 11 | 24.624 | 15.3 |
| 36"_4.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -49.248 | -15.3 |
| 36"_4.5_Nom_py | U2 | | | | | | 2 | -49.248 | -14.4 |
| 36"_4.5_Nom_py | U2 | | | | | | 3 | -39.398 | -7.3728 |
| 36"_4.5_Nom_py | U2 | | | | | | 4 | -29.549 | -3.1104 |
| 36"_4.5_Nom_py | U2 | | | | | | 5 | -16.416 | -0.53333 |
| 36"_4.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_4.5_Nom_py | U2 | | | | | | 7 | 16.416 | 0.53333 |
| 36"_4.5_Nom_py | U2 | | | | | | 8 | 29.549 | 3.1104 |
| 36"_4.5_Nom_py | U2 | | | | | | 9 | 39.398 | 7.3728 |
| 36"_4.5_Nom_py | U2 | | | | | | 10 | 49.248 | 14.4 |
| 36"_4.5_Nom_py | U2 | | | | | | 11 | 49.248 | 15.3 |
| 36"_4.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -49.248 | -15.3 |
| 36"_4.5_Nom_py | U3 | | | | | | 2 | -49.248 | -14.4 |
| 36"_4.5_Nom_py | U3 | | | | | | 3 | -39.398 | -7.3728 |
| 36"_4.5_Nom_py | U3 | | | | | | 4 | -29.549 | -3.1104 |
| 36"_4.5_Nom_py | U3 | | | | | | 5 | -16.416 | -0.53333 |
| 36"_4.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_4.5_Nom_py | U3 | | | | | | 7 | 16.416 | 0.53333 |
| 36"_4.5_Nom_py | U3 | | | | | | 8 | 29.549 | 3.1104 |
| 36"_4.5_Nom_py | U3 | | | | | | 9 | 39.398 | 7.3728 |
| 36"_4.5_Nom_py | U3 | | | | | | 10 | 49.248 | 14.4 |
| 36"_4.5_Nom_py | U3 | | | | | | 11 | 49.248 | 15.3 |
| 36"_4.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -98.496 | -15.3 |
| 36"_4.5_UB_py | U2 | | | | | | 2 | -98.496 | -14.4 |
| 36"_4.5_UB_py | U2 | | | | | | 3 | -78.797 | -7.3728 |
| 36"_4.5_UB_py | U2 | | | | | | 4 | -59.098 | -3.1104 |
| 36"_4.5_UB_py | U2 | | | | | | 5 | -32.832 | -0.53333 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_4.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_4.5_UB_py | U2 | | | | | | 7 | 32.832 | 0.53333 |
| 36"_4.5_UB_py | U2 | | | | | | 8 | 59.098 | 3.1104 |
| 36"_4.5_UB_py | U2 | | | | | | 9 | 78.797 | 7.3728 |
| 36"_4.5_UB_py | U2 | | | | | | 10 | 98.496 | 14.4 |
| 36"_4.5_UB_py | U2 | | | | | | 11 | 98.496 | 15.3 |
| 36"_4.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -98.496 | -15.3 |
| 36"_4.5_UB_py | U3 | | | | | | 2 | -98.496 | -14.4 |
| 36"_4.5_UB_py | U3 | | | | | | 3 | -78.797 | -7.3728 |
| 36"_4.5_UB_py | U3 | | | | | | 4 | -59.098 | -3.1104 |
| 36"_4.5_UB_py | U3 | | | | | | 5 | -32.832 | -0.53333 |
| 36"_4.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_4.5_UB_py | U3 | | | | | | 7 | 32.832 | 0.53333 |
| 36"_4.5_UB_py | U3 | | | | | | 8 | 59.098 | 3.1104 |
| 36"_4.5_UB_py | U3 | | | | | | 9 | 78.797 | 7.3728 |
| 36"_4.5_UB_py | U3 | | | | | | 10 | 98.496 | 14.4 |
| 36"_4.5_UB_py | U3 | | | | | | 11 | 98.496 | 15.3 |
| 36"_40.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -6232.95 | -12.6 |
| 36"_40.5_LB_py | U2 | | | | | | 2 | -6232.95 | -10.08 |
| 36"_40.5_LB_py | U2 | | | | | | 3 | -4986.36 | -4.12877 |
| 36"_40.5_LB_py | U2 | | | | | | 4 | -3739.77 | -1.30637 |
| 36"_40.5_LB_py | U2 | | | | | | 5 | -2077.65 | -0.12444 |
| 36"_40.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_40.5_LB_py | U2 | | | | | | 7 | 2077.65 | 0.12444 |
| 36"_40.5_LB_py | U2 | | | | | | 8 | 3739.77 | 1.30637 |
| 36"_40.5_LB_py | U2 | | | | | | 9 | 4986.36 | 4.12877 |
| 36"_40.5_LB_py | U2 | | | | | | 10 | 6232.95 | 10.08 |
| 36"_40.5_LB_py | U2 | | | | | | 11 | 6232.95 | 12.6 |
| 36"_40.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -6232.95 | -12.6 |
| 36"_40.5_LB_py | U3 | | | | | | 2 | -6232.95 | -10.08 |
| 36"_40.5_LB_py | U3 | | | | | | 3 | -4986.36 | -4.12877 |
| 36"_40.5_LB_py | U3 | | | | | | 4 | -3739.77 | -1.30637 |
| 36"_40.5_LB_py | U3 | | | | | | 5 | -2077.65 | -0.12444 |
| 36"_40.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_40.5_LB_py | U3 | | | | | | 7 | 2077.65 | 0.12444 |
| 36"_40.5_LB_py | U3 | | | | | | 8 | 3739.77 | 1.30637 |
| 36"_40.5_LB_py | U3 | | | | | | 9 | 4986.36 | 4.12877 |
| 36"_40.5_LB_py | U3 | | | | | | 10 | 6232.95 | 10.08 |
| 36"_40.5_LB_py | U3 | | | | | | 11 | 6232.95 | 12.6 |
| 36"_40.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -12465.9 | -12.6 |
| 36"_40.5_Nom_py | U2 | | | | | | 2 | -12465.9 | -10.08 |
| 36"_40.5_Nom_py | U2 | | | | | | 3 | -9972.72 | -4.12877 |
| 36"_40.5_Nom_py | U2 | | | | | | 4 | -7479.54 | -1.30637 |
| 36"_40.5_Nom_py | U2 | | | | | | 5 | -4155.3 | -0.12444 |
| 36"_40.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_40.5_Nom_py | U2 | | | | | | 7 | 4155.3 | 0.12444 |
| 36"_40.5_Nom_py | U2 | | | | | | 8 | 7479.54 | 1.30637 |
| 36"_40.5_Nom_py | U2 | | | | | | 9 | 9972.72 | 4.12877 |
| 36"_40.5_Nom_py | U2 | | | | | | 10 | 12465.9 | 10.08 |
| 36"_40.5_Nom_py | U2 | | | | | | 11 | 12465.9 | 12.6 |
| 36"_40.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -12465.9 | -12.6 |
| 36"_40.5_Nom_py | U3 | | | | | | 2 | -12465.9 | -10.08 |
| 36"_40.5_Nom_py | U3 | | | | | | 3 | -9972.72 | -4.12877 |
| 36"_40.5_Nom_py | U3 | | | | | | 4 | -7479.54 | -1.30637 |
| 36"_40.5_Nom_py | U3 | | | | | | 5 | -4155.3 | -0.12444 |
| 36"_40.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_40.5_Nom_py | U3 | | | | | | 7 | 4155.3 | 0.12444 |
| 36"_40.5_Nom_py | U3 | | | | | | 8 | 7479.54 | 1.30637 |
| 36"_40.5_Nom_py | U3 | | | | | | 9 | 9972.72 | 4.12877 |
| 36"_40.5_Nom_py | U3 | | | | | | 10 | 12465.9 | 10.08 |
| 36"_40.5_Nom_py | U3 | | | | | | 11 | 12465.9 | 12.6 |
| 36"_40.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -24931.8 | -12.6 |
| 36"_40.5_UB_py | U2 | | | | | | 2 | -24931.8 | -10.08 |
| 36"_40.5_UB_py | U2 | | | | | | 3 | -19945.44 | -4.12877 |
| 36"_40.5_UB_py | U2 | | | | | | 4 | -14959.08 | -1.30637 |
| 36"_40.5_UB_py | U2 | | | | | | 5 | -8310.6 | -0.12444 |
| 36"_40.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_40.5_UB_py | U2 | | | | | | 7 | 8310.6 | 0.12444 |
| 36"_40.5_UB_py | U2 | | | | | | 8 | 14959.08 | 1.30637 |
| 36"_40.5_UB_py | U2 | | | | | | 9 | 19945.44 | 4.12877 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_40.5_UB_py | U2 | | | | | | 10 | 24931.8 | 10.08 |
| 36"_40.5_UB_py | U2 | | | | | | 11 | 24931.8 | 12.6 |
| 36"_40.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -24931.8 | -12.6 |
| 36"_40.5_UB_py | U3 | | | | | | 2 | -24931.8 | -10.08 |
| 36"_40.5_UB_py | U3 | | | | | | 3 | -19945.44 | -4.12877 |
| 36"_40.5_UB_py | U3 | | | | | | 4 | -14959.08 | -1.30637 |
| 36"_40.5_UB_py | U3 | | | | | | 5 | -8310.6 | -0.12444 |
| 36"_40.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_40.5_UB_py | U3 | | | | | | 7 | 8310.6 | 0.12444 |
| 36"_40.5_UB_py | U3 | | | | | | 8 | 14959.08 | 1.30637 |
| 36"_40.5_UB_py | U3 | | | | | | 9 | 19945.44 | 4.12877 |
| 36"_40.5_UB_py | U3 | | | | | | 10 | 24931.8 | 10.08 |
| 36"_40.5_UB_py | U3 | | | | | | 11 | 24931.8 | 12.6 |
| 36"_5.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -26.496 | -15.3 |
| 36"_5.5_LB_py | U2 | | | | | | 2 | -26.496 | -14.4 |
| 36"_5.5_LB_py | U2 | | | | | | 3 | -21.197 | -7.3728 |
| 36"_5.5_LB_py | U2 | | | | | | 4 | -15.898 | -3.1104 |
| 36"_5.5_LB_py | U2 | | | | | | 5 | -8.832 | -0.53333 |
| 36"_5.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_5.5_LB_py | U2 | | | | | | 7 | 8.832 | 0.53333 |
| 36"_5.5_LB_py | U2 | | | | | | 8 | 15.898 | 3.1104 |
| 36"_5.5_LB_py | U2 | | | | | | 9 | 21.197 | 7.3728 |
| 36"_5.5_LB_py | U2 | | | | | | 10 | 26.496 | 14.4 |
| 36"_5.5_LB_py | U2 | | | | | | 11 | 26.496 | 15.3 |
| 36"_5.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -26.496 | -15.3 |
| 36"_5.5_LB_py | U3 | | | | | | 2 | -26.496 | -14.4 |
| 36"_5.5_LB_py | U3 | | | | | | 3 | -21.197 | -7.3728 |
| 36"_5.5_LB_py | U3 | | | | | | 4 | -15.898 | -3.1104 |
| 36"_5.5_LB_py | U3 | | | | | | 5 | -8.832 | -0.53333 |
| 36"_5.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_5.5_LB_py | U3 | | | | | | 7 | 8.832 | 0.53333 |
| 36"_5.5_LB_py | U3 | | | | | | 8 | 15.898 | 3.1104 |
| 36"_5.5_LB_py | U3 | | | | | | 9 | 21.197 | 7.3728 |
| 36"_5.5_LB_py | U3 | | | | | | 10 | 26.496 | 14.4 |
| 36"_5.5_LB_py | U3 | | | | | | 11 | 26.496 | 15.3 |
| 36"_5.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -52.992 | -15.3 |
| 36"_5.5_Nom_py | U2 | | | | | | 2 | -52.992 | -14.4 |
| 36"_5.5_Nom_py | U2 | | | | | | 3 | -42.394 | -7.3728 |
| 36"_5.5_Nom_py | U2 | | | | | | 4 | -31.795 | -3.1104 |
| 36"_5.5_Nom_py | U2 | | | | | | 5 | -17.664 | -0.53333 |
| 36"_5.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_5.5_Nom_py | U2 | | | | | | 7 | 17.664 | 0.53333 |
| 36"_5.5_Nom_py | U2 | | | | | | 8 | 31.795 | 3.1104 |
| 36"_5.5_Nom_py | U2 | | | | | | 9 | 42.394 | 7.3728 |
| 36"_5.5_Nom_py | U2 | | | | | | 10 | 52.992 | 14.4 |
| 36"_5.5_Nom_py | U2 | | | | | | 11 | 52.992 | 15.3 |
| 36"_5.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -52.992 | -15.3 |
| 36"_5.5_Nom_py | U3 | | | | | | 2 | -52.992 | -14.4 |
| 36"_5.5_Nom_py | U3 | | | | | | 3 | -42.394 | -7.3728 |
| 36"_5.5_Nom_py | U3 | | | | | | 4 | -31.795 | -3.1104 |
| 36"_5.5_Nom_py | U3 | | | | | | 5 | -17.664 | -0.53333 |
| 36"_5.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_5.5_Nom_py | U3 | | | | | | 7 | 17.664 | 0.53333 |
| 36"_5.5_Nom_py | U3 | | | | | | 8 | 31.795 | 3.1104 |
| 36"_5.5_Nom_py | U3 | | | | | | 9 | 42.394 | 7.3728 |
| 36"_5.5_Nom_py | U3 | | | | | | 10 | 52.992 | 14.4 |
| 36"_5.5_Nom_py | U3 | | | | | | 11 | 52.992 | 15.3 |
| 36"_5.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -105.984 | -15.3 |
| 36"_5.5_UB_py | U2 | | | | | | 2 | -105.984 | -14.4 |
| 36"_5.5_UB_py | U2 | | | | | | 3 | -84.787 | -7.3728 |
| 36"_5.5_UB_py | U2 | | | | | | 4 | -63.59 | -3.1104 |
| 36"_5.5_UB_py | U2 | | | | | | 5 | -35.328 | -0.53333 |
| 36"_5.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_5.5_UB_py | U2 | | | | | | 7 | 35.328 | 0.53333 |
| 36"_5.5_UB_py | U2 | | | | | | 8 | 63.59 | 3.1104 |
| 36"_5.5_UB_py | U2 | | | | | | 9 | 84.787 | 7.3728 |
| 36"_5.5_UB_py | U2 | | | | | | 10 | 105.984 | 14.4 |
| 36"_5.5_UB_py | U2 | | | | | | 11 | 105.984 | 15.3 |
| 36"_5.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -105.984 | -15.3 |
| 36"_5.5_UB_py | U3 | | | | | | 2 | -105.984 | -14.4 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_5.5_UB_py | U3 | | | | | | 3 | -84.787 | -7.3728 |
| 36"_5.5_UB_py | U3 | | | | | | 4 | -63.59 | -3.1104 |
| 36"_5.5_UB_py | U3 | | | | | | 5 | -35.328 | -0.53333 |
| 36"_5.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_5.5_UB_py | U3 | | | | | | 7 | 35.328 | 0.53333 |
| 36"_5.5_UB_py | U3 | | | | | | 8 | 63.59 | 3.1104 |
| 36"_5.5_UB_py | U3 | | | | | | 9 | 84.787 | 7.3728 |
| 36"_5.5_UB_py | U3 | | | | | | 10 | 105.984 | 14.4 |
| 36"_5.5_UB_py | U3 | | | | | | 11 | 105.984 | 15.3 |
| 36"_6.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -28.368 | -15.3 |
| 36"_6.5_LB_py | U2 | | | | | | 2 | -28.368 | -14.4 |
| 36"_6.5_LB_py | U2 | | | | | | 3 | -22.694 | -7.3728 |
| 36"_6.5_LB_py | U2 | | | | | | 4 | -17.021 | -3.1104 |
| 36"_6.5_LB_py | U2 | | | | | | 5 | -9.456 | -0.53333 |
| 36"_6.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_6.5_LB_py | U2 | | | | | | 7 | 9.456 | 0.53333 |
| 36"_6.5_LB_py | U2 | | | | | | 8 | 17.021 | 3.1104 |
| 36"_6.5_LB_py | U2 | | | | | | 9 | 22.694 | 7.3728 |
| 36"_6.5_LB_py | U2 | | | | | | 10 | 28.368 | 14.4 |
| 36"_6.5_LB_py | U2 | | | | | | 11 | 28.368 | 15.3 |
| 36"_6.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -28.368 | -15.3 |
| 36"_6.5_LB_py | U3 | | | | | | 2 | -28.368 | -14.4 |
| 36"_6.5_LB_py | U3 | | | | | | 3 | -22.694 | -7.3728 |
| 36"_6.5_LB_py | U3 | | | | | | 4 | -17.021 | -3.1104 |
| 36"_6.5_LB_py | U3 | | | | | | 5 | -9.456 | -0.53333 |
| 36"_6.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_6.5_LB_py | U3 | | | | | | 7 | 9.456 | 0.53333 |
| 36"_6.5_LB_py | U3 | | | | | | 8 | 17.021 | 3.1104 |
| 36"_6.5_LB_py | U3 | | | | | | 9 | 22.694 | 7.3728 |
| 36"_6.5_LB_py | U3 | | | | | | 10 | 28.368 | 14.4 |
| 36"_6.5_LB_py | U3 | | | | | | 11 | 28.368 | 15.3 |
| 36"_6.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -56.736 | -15.3 |
| 36"_6.5_Nom_py | U2 | | | | | | 2 | -56.736 | -14.4 |
| 36"_6.5_Nom_py | U2 | | | | | | 3 | -45.389 | -7.3728 |
| 36"_6.5_Nom_py | U2 | | | | | | 4 | -34.042 | -3.1104 |
| 36"_6.5_Nom_py | U2 | | | | | | 5 | -18.912 | -0.53333 |
| 36"_6.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_6.5_Nom_py | U2 | | | | | | 7 | 18.912 | 0.53333 |
| 36"_6.5_Nom_py | U2 | | | | | | 8 | 34.042 | 3.1104 |
| 36"_6.5_Nom_py | U2 | | | | | | 9 | 45.389 | 7.3728 |
| 36"_6.5_Nom_py | U2 | | | | | | 10 | 56.736 | 14.4 |
| 36"_6.5_Nom_py | U2 | | | | | | 11 | 56.736 | 15.3 |
| 36"_6.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -56.736 | -15.3 |
| 36"_6.5_Nom_py | U3 | | | | | | 2 | -56.736 | -14.4 |
| 36"_6.5_Nom_py | U3 | | | | | | 3 | -45.389 | -7.3728 |
| 36"_6.5_Nom_py | U3 | | | | | | 4 | -34.042 | -3.1104 |
| 36"_6.5_Nom_py | U3 | | | | | | 5 | -18.912 | -0.53333 |
| 36"_6.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_6.5_Nom_py | U3 | | | | | | 7 | 18.912 | 0.53333 |
| 36"_6.5_Nom_py | U3 | | | | | | 8 | 34.042 | 3.1104 |
| 36"_6.5_Nom_py | U3 | | | | | | 9 | 45.389 | 7.3728 |
| 36"_6.5_Nom_py | U3 | | | | | | 10 | 56.736 | 14.4 |
| 36"_6.5_Nom_py | U3 | | | | | | 11 | 56.736 | 15.3 |
| 36"_6.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -113.472 | -15.3 |
| 36"_6.5_UB_py | U2 | | | | | | 2 | -113.472 | -14.4 |
| 36"_6.5_UB_py | U2 | | | | | | 3 | -90.778 | -7.3728 |
| 36"_6.5_UB_py | U2 | | | | | | 4 | -68.083 | -3.1104 |
| 36"_6.5_UB_py | U2 | | | | | | 5 | -37.824 | -0.53333 |
| 36"_6.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_6.5_UB_py | U2 | | | | | | 7 | 37.824 | 0.53333 |
| 36"_6.5_UB_py | U2 | | | | | | 8 | 68.083 | 3.1104 |
| 36"_6.5_UB_py | U2 | | | | | | 9 | 90.778 | 7.3728 |
| 36"_6.5_UB_py | U2 | | | | | | 10 | 113.472 | 14.4 |
| 36"_6.5_UB_py | U2 | | | | | | 11 | 113.472 | 15.3 |
| 36"_6.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -113.472 | -15.3 |
| 36"_6.5_UB_py | U3 | | | | | | 2 | -113.472 | -14.4 |
| 36"_6.5_UB_py | U3 | | | | | | 3 | -90.778 | -7.3728 |
| 36"_6.5_UB_py | U3 | | | | | | 4 | -68.083 | -3.1104 |
| 36"_6.5_UB_py | U3 | | | | | | 5 | -37.824 | -0.53333 |
| 36"_6.5_UB_py | U3 | | | | | | 6 | 0 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_6.5_UB_py | U3 | | | | | | 7 | 37.824 | 0.53333 |
| 36"_6.5_UB_py | U3 | | | | | | 8 | 68.083 | 3.1104 |
| 36"_6.5_UB_py | U3 | | | | | | 9 | 90.778 | 7.3728 |
| 36"_6.5_UB_py | U3 | | | | | | 10 | 113.472 | 14.4 |
| 36"_6.5_UB_py | U3 | | | | | | 11 | 113.472 | 15.3 |
| 36"_7.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -293.206 | -12.6 |
| 36"_7.5_LB_py | U2 | | | | | | 2 | -293.206 | -10.08 |
| 36"_7.5_LB_py | U2 | | | | | | 3 | -234.565 | -4.12877 |
| 36"_7.5_LB_py | U2 | | | | | | 4 | -175.924 | -1.30637 |
| 36"_7.5_LB_py | U2 | | | | | | 5 | -97.735 | -0.12444 |
| 36"_7.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_7.5_LB_py | U2 | | | | | | 7 | 97.735 | 0.12444 |
| 36"_7.5_LB_py | U2 | | | | | | 8 | 175.924 | 1.30637 |
| 36"_7.5_LB_py | U2 | | | | | | 9 | 234.565 | 4.12877 |
| 36"_7.5_LB_py | U2 | | | | | | 10 | 293.206 | 10.08 |
| 36"_7.5_LB_py | U2 | | | | | | 11 | 293.206 | 12.6 |
| 36"_7.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -293.206 | -12.6 |
| 36"_7.5_LB_py | U3 | | | | | | 2 | -293.206 | -10.08 |
| 36"_7.5_LB_py | U3 | | | | | | 3 | -234.565 | -4.12877 |
| 36"_7.5_LB_py | U3 | | | | | | 4 | -175.924 | -1.30637 |
| 36"_7.5_LB_py | U3 | | | | | | 5 | -97.735 | -0.12444 |
| 36"_7.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_7.5_LB_py | U3 | | | | | | 7 | 97.735 | 0.12444 |
| 36"_7.5_LB_py | U3 | | | | | | 8 | 175.924 | 1.30637 |
| 36"_7.5_LB_py | U3 | | | | | | 9 | 234.565 | 4.12877 |
| 36"_7.5_LB_py | U3 | | | | | | 10 | 293.206 | 10.08 |
| 36"_7.5_LB_py | U3 | | | | | | 11 | 293.206 | 12.6 |
| 36"_7.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -586.412 | -12.6 |
| 36"_7.5_Nom_py | U2 | | | | | | 2 | -586.412 | -10.08 |
| 36"_7.5_Nom_py | U2 | | | | | | 3 | -469.13 | -4.12877 |
| 36"_7.5_Nom_py | U2 | | | | | | 4 | -351.847 | -1.30637 |
| 36"_7.5_Nom_py | U2 | | | | | | 5 | -195.471 | -0.12444 |
| 36"_7.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_7.5_Nom_py | U2 | | | | | | 7 | 195.471 | 0.12444 |
| 36"_7.5_Nom_py | U2 | | | | | | 8 | 351.847 | 1.30637 |
| 36"_7.5_Nom_py | U2 | | | | | | 9 | 469.13 | 4.12877 |
| 36"_7.5_Nom_py | U2 | | | | | | 10 | 586.412 | 10.08 |
| 36"_7.5_Nom_py | U2 | | | | | | 11 | 586.412 | 12.6 |
| 36"_7.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -586.412 | -12.6 |
| 36"_7.5_Nom_py | U3 | | | | | | 2 | -586.412 | -10.08 |
| 36"_7.5_Nom_py | U3 | | | | | | 3 | -469.13 | -4.12877 |
| 36"_7.5_Nom_py | U3 | | | | | | 4 | -351.847 | -1.30637 |
| 36"_7.5_Nom_py | U3 | | | | | | 5 | -195.471 | -0.12444 |
| 36"_7.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_7.5_Nom_py | U3 | | | | | | 7 | 195.471 | 0.12444 |
| 36"_7.5_Nom_py | U3 | | | | | | 8 | 351.847 | 1.30637 |
| 36"_7.5_Nom_py | U3 | | | | | | 9 | 469.13 | 4.12877 |
| 36"_7.5_Nom_py | U3 | | | | | | 10 | 586.412 | 10.08 |
| 36"_7.5_Nom_py | U3 | | | | | | 11 | 586.412 | 12.6 |
| 36"_7.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1172.824 | -12.6 |
| 36"_7.5_UB_py | U2 | | | | | | 2 | -1172.824 | -10.08 |
| 36"_7.5_UB_py | U2 | | | | | | 3 | -938.259 | -4.12877 |
| 36"_7.5_UB_py | U2 | | | | | | 4 | -703.694 | -1.30637 |
| 36"_7.5_UB_py | U2 | | | | | | 5 | -390.941 | -0.12444 |
| 36"_7.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_7.5_UB_py | U2 | | | | | | 7 | 390.941 | 0.12444 |
| 36"_7.5_UB_py | U2 | | | | | | 8 | 703.694 | 1.30637 |
| 36"_7.5_UB_py | U2 | | | | | | 9 | 938.259 | 4.12877 |
| 36"_7.5_UB_py | U2 | | | | | | 10 | 1172.824 | 10.08 |
| 36"_7.5_UB_py | U2 | | | | | | 11 | 1172.824 | 12.6 |
| 36"_7.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1172.824 | -12.6 |
| 36"_7.5_UB_py | U3 | | | | | | 2 | -1172.824 | -10.08 |
| 36"_7.5_UB_py | U3 | | | | | | 3 | -938.259 | -4.12877 |
| 36"_7.5_UB_py | U3 | | | | | | 4 | -703.694 | -1.30637 |
| 36"_7.5_UB_py | U3 | | | | | | 5 | -390.941 | -0.12444 |
| 36"_7.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_7.5_UB_py | U3 | | | | | | 7 | 390.941 | 0.12444 |
| 36"_7.5_UB_py | U3 | | | | | | 8 | 703.694 | 1.30637 |
| 36"_7.5_UB_py | U3 | | | | | | 9 | 938.259 | 4.12877 |
| 36"_7.5_UB_py | U3 | | | | | | 10 | 1172.824 | 10.08 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_7.5_UB_py | U3 | | | | | | 11 | 1172.824 | 12.6 |
| 36"_8.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -310.744 | -12.6 |
| 36"_8.5_LB_py | U2 | | | | | | 2 | -310.744 | -10.08 |
| 36"_8.5_LB_py | U2 | | | | | | 3 | -248.595 | -4.12877 |
| 36"_8.5_LB_py | U2 | | | | | | 4 | -186.446 | -1.30637 |
| 36"_8.5_LB_py | U2 | | | | | | 5 | -103.581 | -0.12444 |
| 36"_8.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_8.5_LB_py | U2 | | | | | | 7 | 103.581 | 0.12444 |
| 36"_8.5_LB_py | U2 | | | | | | 8 | 186.446 | 1.30637 |
| 36"_8.5_LB_py | U2 | | | | | | 9 | 248.595 | 4.12877 |
| 36"_8.5_LB_py | U2 | | | | | | 10 | 310.744 | 10.08 |
| 36"_8.5_LB_py | U2 | | | | | | 11 | 310.744 | 12.6 |
| 36"_8.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -310.744 | -12.6 |
| 36"_8.5_LB_py | U3 | | | | | | 2 | -310.744 | -10.08 |
| 36"_8.5_LB_py | U3 | | | | | | 3 | -248.595 | -4.12877 |
| 36"_8.5_LB_py | U3 | | | | | | 4 | -186.446 | -1.30637 |
| 36"_8.5_LB_py | U3 | | | | | | 5 | -103.581 | -0.12444 |
| 36"_8.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_8.5_LB_py | U3 | | | | | | 7 | 103.581 | 0.12444 |
| 36"_8.5_LB_py | U3 | | | | | | 8 | 186.446 | 1.30637 |
| 36"_8.5_LB_py | U3 | | | | | | 9 | 248.595 | 4.12877 |
| 36"_8.5_LB_py | U3 | | | | | | 10 | 310.744 | 10.08 |
| 36"_8.5_LB_py | U3 | | | | | | 11 | 310.744 | 12.6 |
| 36"_8.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -621.488 | -12.6 |
| 36"_8.5_Nom_py | U2 | | | | | | 2 | -621.488 | -10.08 |
| 36"_8.5_Nom_py | U2 | | | | | | 3 | -497.19 | -4.12877 |
| 36"_8.5_Nom_py | U2 | | | | | | 4 | -372.893 | -1.30637 |
| 36"_8.5_Nom_py | U2 | | | | | | 5 | -207.163 | -0.12444 |
| 36"_8.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_8.5_Nom_py | U2 | | | | | | 7 | 207.163 | 0.12444 |
| 36"_8.5_Nom_py | U2 | | | | | | 8 | 372.893 | 1.30637 |
| 36"_8.5_Nom_py | U2 | | | | | | 9 | 497.19 | 4.12877 |
| 36"_8.5_Nom_py | U2 | | | | | | 10 | 621.488 | 10.08 |
| 36"_8.5_Nom_py | U2 | | | | | | 11 | 621.488 | 12.6 |
| 36"_8.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -621.488 | -12.6 |
| 36"_8.5_Nom_py | U3 | | | | | | 2 | -621.488 | -10.08 |
| 36"_8.5_Nom_py | U3 | | | | | | 3 | -497.19 | -4.12877 |
| 36"_8.5_Nom_py | U3 | | | | | | 4 | -372.893 | -1.30637 |
| 36"_8.5_Nom_py | U3 | | | | | | 5 | -207.163 | -0.12444 |
| 36"_8.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_8.5_Nom_py | U3 | | | | | | 7 | 207.163 | 0.12444 |
| 36"_8.5_Nom_py | U3 | | | | | | 8 | 372.893 | 1.30637 |
| 36"_8.5_Nom_py | U3 | | | | | | 9 | 497.19 | 4.12877 |
| 36"_8.5_Nom_py | U3 | | | | | | 10 | 621.488 | 10.08 |
| 36"_8.5_Nom_py | U3 | | | | | | 11 | 621.488 | 12.6 |
| 36"_8.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1242.975 | -12.6 |
| 36"_8.5_UB_py | U2 | | | | | | 2 | -1242.975 | -10.08 |
| 36"_8.5_UB_py | U2 | | | | | | 3 | -994.38 | -4.12877 |
| 36"_8.5_UB_py | U2 | | | | | | 4 | -745.785 | -1.30637 |
| 36"_8.5_UB_py | U2 | | | | | | 5 | -414.325 | -0.12444 |
| 36"_8.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_8.5_UB_py | U2 | | | | | | 7 | 414.325 | 0.12444 |
| 36"_8.5_UB_py | U2 | | | | | | 8 | 745.785 | 1.30637 |
| 36"_8.5_UB_py | U2 | | | | | | 9 | 994.38 | 4.12877 |
| 36"_8.5_UB_py | U2 | | | | | | 10 | 1242.975 | 10.08 |
| 36"_8.5_UB_py | U2 | | | | | | 11 | 1242.975 | 12.6 |
| 36"_8.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1242.975 | -12.6 |
| 36"_8.5_UB_py | U3 | | | | | | 2 | -1242.975 | -10.08 |
| 36"_8.5_UB_py | U3 | | | | | | 3 | -994.38 | -4.12877 |
| 36"_8.5_UB_py | U3 | | | | | | 4 | -745.785 | -1.30637 |
| 36"_8.5_UB_py | U3 | | | | | | 5 | -414.325 | -0.12444 |
| 36"_8.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_8.5_UB_py | U3 | | | | | | 7 | 414.325 | 0.12444 |
| 36"_8.5_UB_py | U3 | | | | | | 8 | 745.785 | 1.30637 |
| 36"_8.5_UB_py | U3 | | | | | | 9 | 994.38 | 4.12877 |
| 36"_8.5_UB_py | U3 | | | | | | 10 | 1242.975 | 10.08 |
| 36"_8.5_UB_py | U3 | | | | | | 11 | 1242.975 | 12.6 |
| 36"_9.5_LB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -328.282 | -12.6 |
| 36"_9.5_LB_py | U2 | | | | | | 2 | -328.282 | -10.08 |
| 36"_9.5_LB_py | U2 | | | | | | 3 | -262.625 | -4.12877 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 36"_9.5_LB_py | U2 | | | | | | 4 | -196.969 | -1.30637 |
| 36"_9.5_LB_py | U2 | | | | | | 5 | -109.427 | -0.12444 |
| 36"_9.5_LB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_9.5_LB_py | U2 | | | | | | 7 | 109.427 | 0.12444 |
| 36"_9.5_LB_py | U2 | | | | | | 8 | 196.969 | 1.30637 |
| 36"_9.5_LB_py | U2 | | | | | | 9 | 262.625 | 4.12877 |
| 36"_9.5_LB_py | U2 | | | | | | 10 | 328.282 | 10.08 |
| 36"_9.5_LB_py | U2 | | | | | | 11 | 328.282 | 12.6 |
| 36"_9.5_LB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -328.282 | -12.6 |
| 36"_9.5_LB_py | U3 | | | | | | 2 | -328.282 | -10.08 |
| 36"_9.5_LB_py | U3 | | | | | | 3 | -262.625 | -4.12877 |
| 36"_9.5_LB_py | U3 | | | | | | 4 | -196.969 | -1.30637 |
| 36"_9.5_LB_py | U3 | | | | | | 5 | -109.427 | -0.12444 |
| 36"_9.5_LB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_9.5_LB_py | U3 | | | | | | 7 | 109.427 | 0.12444 |
| 36"_9.5_LB_py | U3 | | | | | | 8 | 196.969 | 1.30637 |
| 36"_9.5_LB_py | U3 | | | | | | 9 | 262.625 | 4.12877 |
| 36"_9.5_LB_py | U3 | | | | | | 10 | 328.282 | 10.08 |
| 36"_9.5_LB_py | U3 | | | | | | 11 | 328.282 | 12.6 |
| 36"_9.5_Nom_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -656.563 | -12.6 |
| 36"_9.5_Nom_py | U2 | | | | | | 2 | -656.563 | -10.08 |
| 36"_9.5_Nom_py | U2 | | | | | | 3 | -525.251 | -4.12877 |
| 36"_9.5_Nom_py | U2 | | | | | | 4 | -393.938 | -1.30637 |
| 36"_9.5_Nom_py | U2 | | | | | | 5 | -218.854 | -0.12444 |
| 36"_9.5_Nom_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_9.5_Nom_py | U2 | | | | | | 7 | 218.854 | 0.12444 |
| 36"_9.5_Nom_py | U2 | | | | | | 8 | 393.938 | 1.30637 |
| 36"_9.5_Nom_py | U2 | | | | | | 9 | 525.251 | 4.12877 |
| 36"_9.5_Nom_py | U2 | | | | | | 10 | 656.563 | 10.08 |
| 36"_9.5_Nom_py | U2 | | | | | | 11 | 656.563 | 12.6 |
| 36"_9.5_Nom_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -656.563 | -12.6 |
| 36"_9.5_Nom_py | U3 | | | | | | 2 | -656.563 | -10.08 |
| 36"_9.5_Nom_py | U3 | | | | | | 3 | -525.251 | -4.12877 |
| 36"_9.5_Nom_py | U3 | | | | | | 4 | -393.938 | -1.30637 |
| 36"_9.5_Nom_py | U3 | | | | | | 5 | -218.854 | -0.12444 |
| 36"_9.5_Nom_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_9.5_Nom_py | U3 | | | | | | 7 | 218.854 | 0.12444 |
| 36"_9.5_Nom_py | U3 | | | | | | 8 | 393.938 | 1.30637 |
| 36"_9.5_Nom_py | U3 | | | | | | 9 | 525.251 | 4.12877 |
| 36"_9.5_Nom_py | U3 | | | | | | 10 | 656.563 | 10.08 |
| 36"_9.5_Nom_py | U3 | | | | | | 11 | 656.563 | 12.6 |
| 36"_9.5_UB_py | U2 | No | Yes | 0 | 0 | 0 | 1 | -1313.126 | -12.6 |
| 36"_9.5_UB_py | U2 | | | | | | 2 | -1313.126 | -10.08 |
| 36"_9.5_UB_py | U2 | | | | | | 3 | -1050.501 | -4.12877 |
| 36"_9.5_UB_py | U2 | | | | | | 4 | -787.876 | -1.30637 |
| 36"_9.5_UB_py | U2 | | | | | | 5 | -437.709 | -0.12444 |
| 36"_9.5_UB_py | U2 | | | | | | 6 | 0 | 0 |
| 36"_9.5_UB_py | U2 | | | | | | 7 | 437.709 | 0.12444 |
| 36"_9.5_UB_py | U2 | | | | | | 8 | 787.876 | 1.30637 |
| 36"_9.5_UB_py | U2 | | | | | | 9 | 1050.501 | 4.12877 |
| 36"_9.5_UB_py | U2 | | | | | | 10 | 1313.126 | 10.08 |
| 36"_9.5_UB_py | U2 | | | | | | 11 | 1313.126 | 12.6 |
| 36"_9.5_UB_py | U3 | No | Yes | 0 | 0 | 0 | 1 | -1313.126 | -12.6 |
| 36"_9.5_UB_py | U3 | | | | | | 2 | -1313.126 | -10.08 |
| 36"_9.5_UB_py | U3 | | | | | | 3 | -1050.501 | -4.12877 |
| 36"_9.5_UB_py | U3 | | | | | | 4 | -787.876 | -1.30637 |
| 36"_9.5_UB_py | U3 | | | | | | 5 | -437.709 | -0.12444 |
| 36"_9.5_UB_py | U3 | | | | | | 6 | 0 | 0 |
| 36"_9.5_UB_py | U3 | | | | | | 7 | 437.709 | 0.12444 |
| 36"_9.5_UB_py | U3 | | | | | | 8 | 787.876 | 1.30637 |
| 36"_9.5_UB_py | U3 | | | | | | 9 | 1050.501 | 4.12877 |
| 36"_9.5_UB_py | U3 | | | | | | 10 | 1313.126 | 10.08 |
| 36"_9.5_UB_py | U3 | | | | | | 11 | 1313.126 | 12.6 |

| | | | | |
|---|---|---|---|---|
| | COWI | Project<br>Berkeley Water Transportation Pier Ferry | Date<br>01/05/26 | Sheet<br>1A-7 |
| | | Subject<br>Section 1A - Structural – Fixed Pier Pile Design | Design<br>T. RODRIGUES | Checked<br>JBSW |

# Attachment 2: XTRACT Material Reports

The following sheets provide the material reports from XTRACT

## A2.1 – Concrete Pile Above Mudline – 8#10, 80 ksi

## A2.2 – Concrete Pile Below Mudline – 8#9, 16 PS

# XTRACT Material Report

Material Name: Unconfined1

Material Type: Unconfined Concrete

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New 24in Oct Dowel at deck
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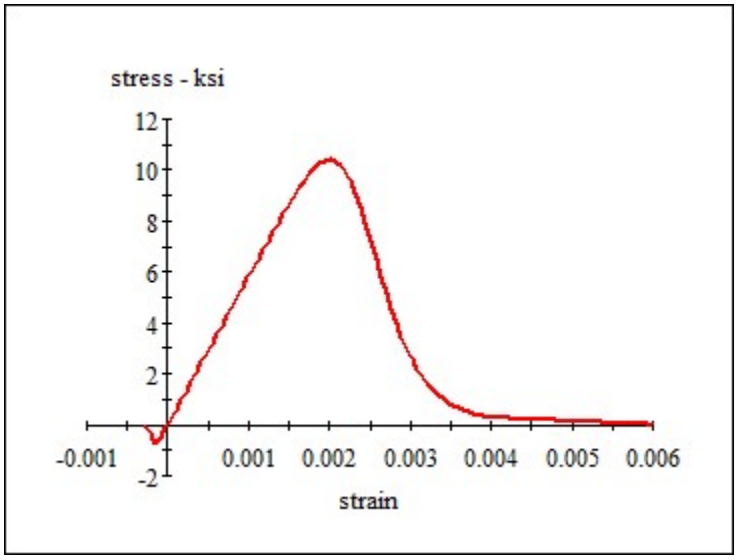
## Input Parameters:

| | |
|---|---|
| Tension Strength: | -.8050 ksi |
| 28 Day Strength: | 10.40 ksi |
| Post Crushing Strength: | 0 ksi |
| Tension Strain Capacity: | .1385E-3 Comp |
| Spalling Strain: | 6.000E-3 Comp |
| Failure Strain: | 1.0000 Comp |
| Elastic Modulus: | 5813 ksi |
| Secant Modulus: | 5200 ksi |




## Model Details:

For Strain - $\varepsilon < 2 \cdot \varepsilon_t$ $fc = 0$

For Strain - $\varepsilon < 0$ $fc = \varepsilon \cdot Ec$

For Strain - $\varepsilon < \varepsilon_{cu}$ $fc = \dfrac{f'_c \cdot x \cdot r}{r - 1 + x^r}$

For Strain - $\varepsilon < \varepsilon_{sp}$ $fc = f_{cu} + \left(f_{cp} - f_{cu}\right) \cdot \dfrac{\left(\varepsilon - \varepsilon_{cu}\right)}{\left(\varepsilon_{sp} - \varepsilon_{cu}\right)}$

$$x = \frac{\varepsilon}{\varepsilon_{cc}}$$

$$r = \frac{Ec}{Ec - E_{sec}}$$

$$E_{sec} = \frac{f'_c}{\varepsilon_{cc}}$$

$\varepsilon$ = Concrete Strain

fc = Concrete Stress

Ec = Elastic Modulus

$E_{sec}$ = Secant Modulus

$\varepsilon_t$ = Tension Strain Capacity

$\varepsilon_{cu}$ = Ultimate Concrete Strain

$\varepsilon_{cc}$ = Strain at Peak Stress = .002

$\varepsilon_{sp}$ = Spalling Strain

$f'_c$ = 28 Day Compressive Strength

$f_{cu}$ = Stress at $\varepsilon_{cu}$

$f_{cp}$ = Post Spalling Strength

## Material Color States:

- Tension strain after tension capacity
- Tension strain before tension capacity
- Initial state
- Compression before crushing strain
- Compression before end of spalling
- Compression after spalling

## Reference:

Mander, J.B., Priestley, M. J. N., "Observed Stress-Strain Behavior of Confined Concrete", Journal of Structural Engineering, ASCE, Vol. 114, No. 8, August 1988, pp. 1827-1849

# XTRACT Material Report

Material Name: Confined1

Material Type: Confined Concrete

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New 24in Oct Dowel at deck
Page __ of __

## Input Parameters:

| | |
|---|---|
| Tension Strength: | -.7520 ksi |
| 28 Day Strength: | 9.100 ksi |
| Confined Concrete Strength: | 13.87 ksi |
| Tension Strain Capacity: | .1383E-3 Comp |
| Strain at Peak Stress: | 7.242E-3 |
| Crushing Strain: | 21.80E-3 Comp |
| Elastic Modulus: | 5437 ksi |
| Secant Modulus: | 1915 ksi |

## Model Details:

| | |
|---|---|
| For Strain - $\varepsilon < 2 \cdot \varepsilon_t$ | $fc = 0$ |
| For Strain - $\varepsilon < 0$ | $fc = \varepsilon \cdot Ec$ |
| For Strain - $\varepsilon < \varepsilon_{cu}$ | $fc = \frac{f'_{cc} \cdot x \cdot r}{r - 1 + x^r}$ |

$$x = \frac{\varepsilon}{\varepsilon_{cc}}$$

$$\varepsilon_{cc} = .002 \cdot \left[ 1 + 5 \cdot \left( \frac{f'_{cc}}{f'_c} - 1 \right) \right]$$

$$r = \frac{Ec}{Ec - E_{sec}}$$

$$E_{sec} = \frac{f'_{cc}}{\varepsilon_{cc}}$$

$\varepsilon$ = Concrete Strain

fc = Concrete Stress

Ec = Elastic Modulus

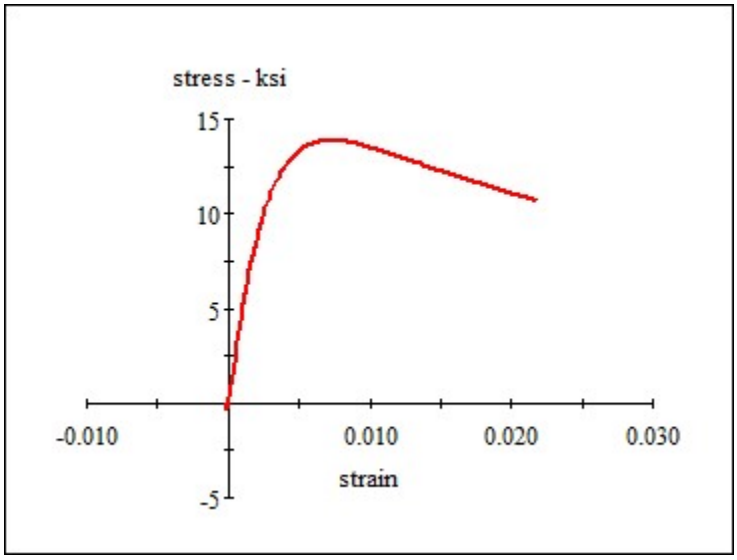
$\varepsilon_t$ = Tension Strain Capacity

$\varepsilon_{cu}$ = Ultimate Concrete Strain

$\varepsilon_{cc}$ = Strain at Peak Stress

$f'_c$ = 28 Day Compressive Strength

$f'_{cc}$ = Confined Concrete Strength




## Material Color States:

- Tension strain after tension capacity
- Tension strain before tension capacity
- Initial state
- Compression before crushing strain

## Reference:

Mander, J.B., Priestley, M. J. N., "Observed Stress-Strain Behavior of Confined Concrete", Journal of Structural Engineering, ASCE, Vol. 114, No. 8, August 1988, pp. 1827-1849

# XTRACT Material Report

Material Name: Steel1

Material Type: Strain Hardening Steel

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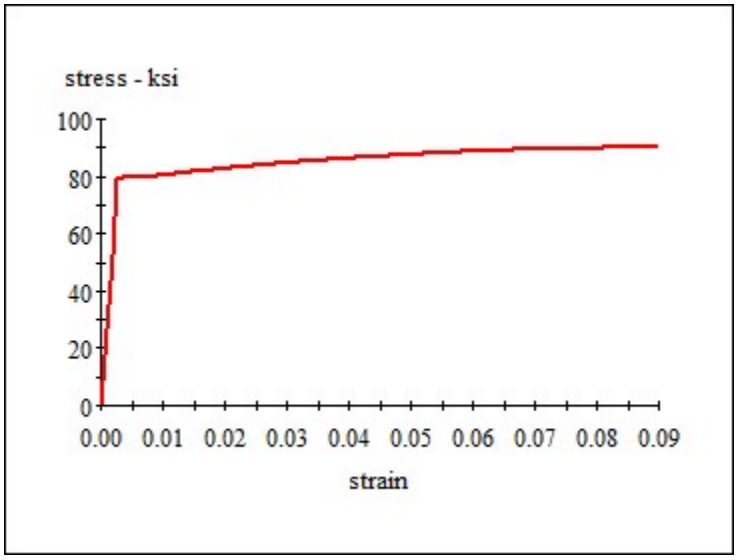
New 24in Oct Dowel at deck
Page __ of __

## Input Parameters:

| | |
|---|---|
| Yield Stress: | 80.00 ksi |
| Fracture Stress: | 90.00 ksi |
| Yield Strain: | 2.759E-3 |
| Strain at Strain Hardening: | 8.000E-3 |
| Failure Strain: | 90.00E-3 |
| Elastic Modulus: | 29.00E+3 ksi |
| Additional Information: | Symetric Tension and Comp. |




## Model Details:

For Strain - $\varepsilon < \varepsilon_y$ $fs = E \cdot \varepsilon$

For Strain - $\varepsilon < \varepsilon_{sh}$ $fs = f_y$

For Strain - $\varepsilon < \varepsilon_{su}$ $fs = f_u - (f_u - f_y) \cdot \left( \frac{\varepsilon_{su} - \varepsilon}{\varepsilon_{su} - \varepsilon_{sh}} \right)^2$

$\varepsilon$ = Steel Strain

fs = Steel Stress

$f_y$ = Yield Stress

$f_u$ = Fracture Stress

$\varepsilon_y$ = Yield Strain

$\varepsilon_{sh}$ = Strain at Strain Hardening

$\varepsilon_{su}$ = Failure Strain

E = Elastic Modulus

## Material Color States:

- Tension force after onset of strain hardening
- Tension force after yield
- Initial state
- Compression force after yield
- Compression force after onset of strain hardening

# XTRACT Material Report

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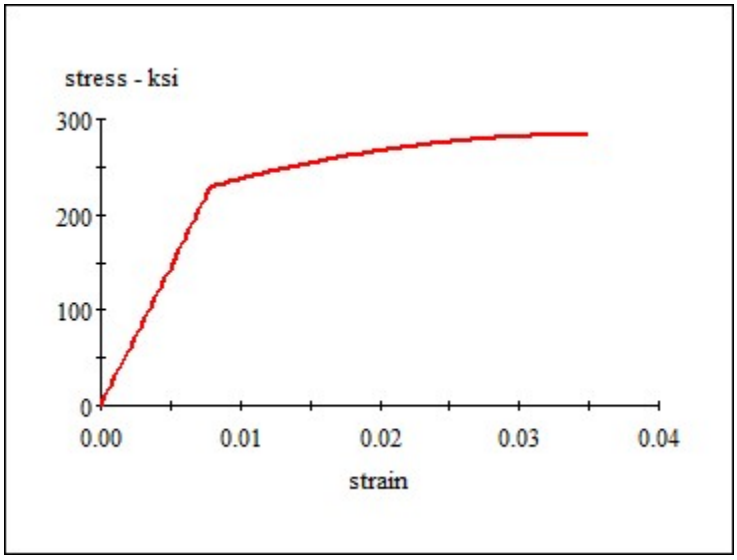
New 24in Oct Dowel at deck
Page __ of __

Material Name: PreStress1

Material Type: Prestressing Steel

## Input Parameters:

| | |
|---|---|
| Yield Stress: | 229.5 ksi |
| Peak Stress: | 283.5 ksi |
| Yield Strain: | 7.914E-3 |
| Strain at Peak Stress: | 35.00E-3 |
| Failure Strain: | 35.00E-3 |
| Elastic Modulus: | 29.00E+3 ksi |
| Additional Information: | Symetric Tension and Comp. |




## Model Details:

For Strain - $\varepsilon < \varepsilon_y$ $fs = E \cdot \varepsilon$

For Strain - $\varepsilon < \varepsilon_{su}$ $fs = f_u - (f_u - f_y) \cdot \left( \frac{\varepsilon_{sp} - \varepsilon}{\varepsilon_{sp} - \varepsilon_{sh}} \right)^2$

$\varepsilon$ = Steel Strain

fs = Steel Stress

$f_y$ = Yield Stress

$f_u$ = Fracture Stress

$\varepsilon_y$ = Yield Strain

$\varepsilon_{sp}$ = Strain at Peak Stress

$\varepsilon_{su}$ = Failure Strain

E = Elastic Modulus

## Material Color States:

- Tension force after yield
- Initial state
- Compression force after yield

# XTRACT Material Report

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1/7/2026

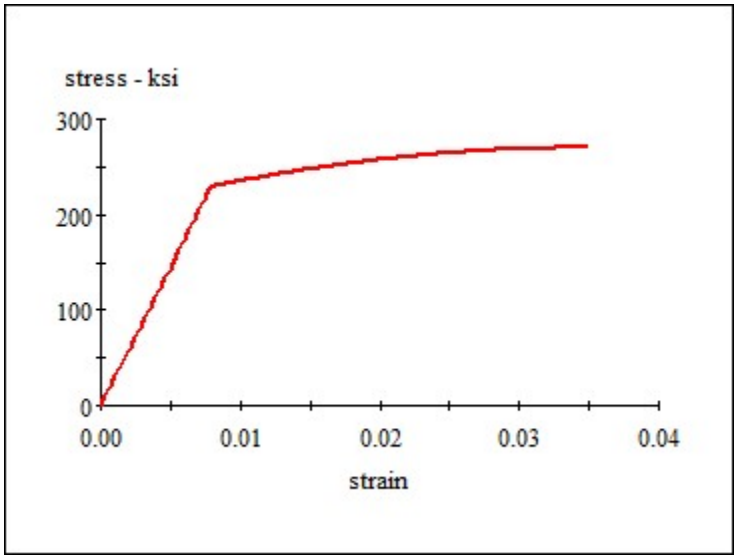
New 24in Oct Dowel at deck
Page __ of __

Material Name: PreStress270

Material Type: Prestressing Steel

## Input Parameters:

| | |
|---|---|
| Yield Stress: | 229.5 ksi |
| Peak Stress: | 270.0 ksi |
| Yield Strain: | 7.914E-3 |
| Strain at Peak Stress: | 35.00E-3 |
| Failure Strain: | 35.00E-3 |
| Elastic Modulus: | 29.00E+3 ksi |
| Additional Information: | Symetric Tension and Comp. |




## Model Details:

For Strain - $\varepsilon < \varepsilon_y$ $fs = E \cdot \varepsilon$

For Strain - $\varepsilon < \varepsilon_{su}$ $fs = f_u - (f_u - f_y) \cdot \left( \frac{\varepsilon_{sp} - \varepsilon}{\varepsilon_{sp} - \varepsilon_{sh}} \right)^2$

$\varepsilon$ = Steel Strain

fs = Steel Stress

$f_y$ = Yield Stress

$f_u$ = Fracture Stress

$\varepsilon_y$ = Yield Strain

$\varepsilon_{sp}$ = Strain at Peak Stress

$\varepsilon_{su}$ = Failure Strain

E = Elastic Modulus

## Material Color States:

- Tension force after yield
- Initial state
- Compression force after yield

# XTRACT Material Report

Material Name: Unconfined1

Material Type: Unconfined Concrete

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New 24in Oct Dowel at deck
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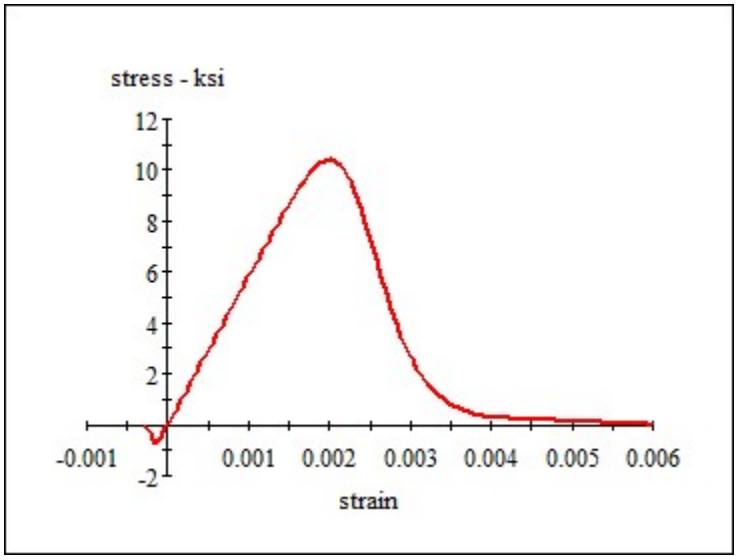
## Input Parameters:

| | |
|---|---|
| Tension Strength: | -.8050 ksi |
| 28 Day Strength: | 10.40 ksi |
| Post Crushing Strength: | 0 ksi |
| Tension Strain Capacity: | .1385E-3 Comp |
| Spalling Strain: | 6.000E-3 Comp |
| Failure Strain: | 1.0000 Comp |
| Elastic Modulus: | 5813 ksi |
| Secant Modulus: | 5200 ksi |




## Model Details:

For Strain - $\varepsilon < 2 \cdot \varepsilon_t$ $fc = 0$

For Strain - $\varepsilon < 0$ $fc = \varepsilon \cdot Ec$

For Strain - $\varepsilon < \varepsilon_{cu}$ $fc = \frac{f'_c \cdot x \cdot r}{r - 1 + x^r}$

For Strain - $\varepsilon < \varepsilon_{sp}$ $fc = f_{cu} + \left(f_{cp} - f_{cu}\right) \cdot \frac{\left(\varepsilon - \varepsilon_{cu}\right)}{\left(\varepsilon_{sp} - \varepsilon_{cu}\right)}$

$x = \frac{\varepsilon}{\varepsilon_{cc}}$

$r = \frac{Ec}{Ec - E_{sec}}$

$E_{sec} = \frac{f'_c}{\varepsilon_{cc}}$

$\varepsilon$ = Concrete Strain

fc = Concrete Stress

Ec = Elastic Modulus

$E_{sec}$ = Secant Modulus

$\varepsilon_t$ = Tension Strain Capacity

$\varepsilon_{cu}$ = Ultimate Concrete Strain

$\varepsilon_{cc}$ = Strain at Peak Stress = .002

$\varepsilon_{sp}$ = Spalling Strain

$f'_c$ = 28 Day Compressive Strength

$f_{cu}$ = Stress at $\varepsilon_{cu}$

$f_{cp}$ = Post Spalling Strength

## Material Color States:

- Tension strain after tension capacity
- Tension strain before tension capacity
- Initial state
- Compression before crushing strain
- Compression before end of spalling
- Compression after spalling

## Reference:

Mander, J.B., Priestley, M. J. N., "Observed Stress-Strain Behavior of Confined Concrete", Journal of Structural Engineering, ASCE, Vol. 114, No. 8, August 1988, pp. 1827-1849

# XTRACT Material Report

Material Name: Confined1

Material Type: Confined Concrete

COWI
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New 24in Oct Dowel at deck
Page __ of __

## Input Parameters:

| | |
|---|---|
| Tension Strength: | -.7520 ksi |
| 28 Day Strength: | 9.100 ksi |
| Confined Concrete Strength: | 13.87 ksi |
| Tension Strain Capacity: | .1383E-3 Comp |
| Strain at Peak Stress: | 7.242E-3 |
| Crushing Strain: | 21.80E-3 Comp |
| Elastic Modulus: | 5437 ksi |
| Secant Modulus: | 1915 ksi |

## Model Details:

| | |
|---|---|
| For Strain - $\varepsilon < 2 \cdot \varepsilon_t$ | $fc = 0$ |
| For Strain - $\varepsilon < 0$ | $fc = \varepsilon \cdot Ec$ |
| For Strain - $\varepsilon < \varepsilon_{cu}$ | $fc = \frac{f'_{cc} \cdot x \cdot r}{r - 1 + x^r}$ |

$$x = \frac{\varepsilon}{\varepsilon_{cc}}$$

$$\varepsilon_{cc} = .002 \cdot \left[ 1 + 5 \cdot \left( \frac{f'_{cc}}{f'_c} - 1 \right) \right]$$

$$r = \frac{Ec}{Ec - E_{sec}}$$

$$E_{sec} = \frac{f'_{cc}}{\varepsilon_{cc}}$$

$\varepsilon$ = Concrete Strain

fc = Concrete Stress

Ec = Elastic Modulus

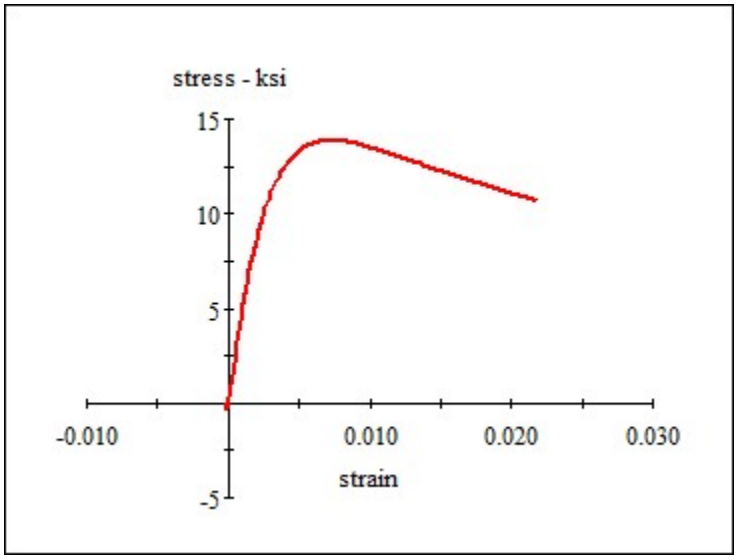
$\varepsilon_t$ = Tension Strain Capacity

$\varepsilon_{cu}$ = Ultimate Concrete Strain

$\varepsilon_{cc}$ = Strain at Peak Stress

$f'_c$ = 28 Day Compressive Strength

$f'_{cc}$ = Confined Concrete Strength




## Material Color States:

- Tension strain after tension capacity
- Tension strain before tension capacity
- Initial state
- Compression before crushing strain

## Reference:

Mander, J.B., Priestley, M. J. N., "Observed Stress-Strain Behavior of Confined Concrete", Journal of Structural Engineering, ASCE, Vol. 114, No. 8, August 1988, pp. 1827-1849

# XTRACT Material Report

COWI
COWI
1/7/2026

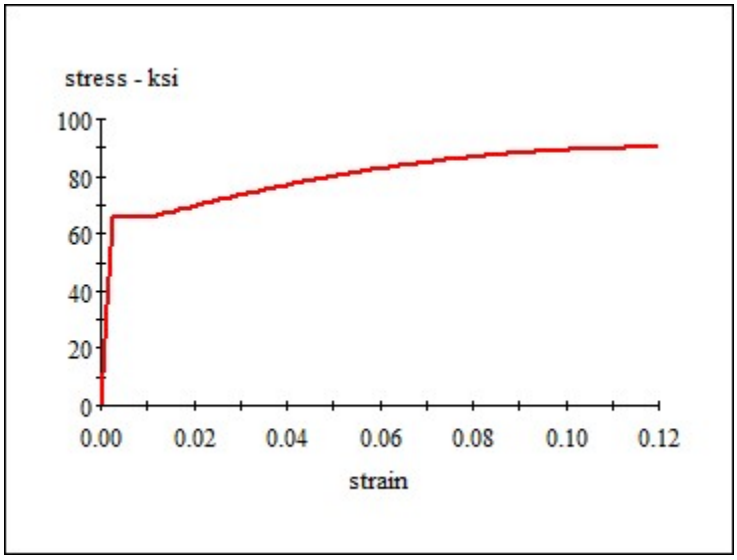
New 24in Oct Dowel at deck
Page __ of __

Material Name: Steel1

Material Type: Strain Hardening Steel

## Input Parameters:

| | |
|---|---|
| Yield Stress: | 66.00 ksi |
| Fracture Stress: | 90.00 ksi |
| Yield Strain: | 2.276E-3 |
| Strain at Strain Hardening: | 11.50E-3 |
| Failure Strain: | .1200 |
| Elastic Modulus: | 29.00E+3 ksi |
| Additional Information: | Symetric Tension and Comp. |




## Model Details:

For Strain - $\varepsilon < \varepsilon_y$ $fs = E \cdot \varepsilon$

For Strain - $\varepsilon < \varepsilon_{sh}$ $fs = f_y$

For Strain - $\varepsilon < \varepsilon_{su}$ $fs = f_u - (f_u - f_y) \cdot \left( \frac{\varepsilon_{su} - \varepsilon}{\varepsilon_{su} - \varepsilon_{sh}} \right)^2$

$\varepsilon$ = Steel Strain

fs = Steel Stress

$f_y$ = Yield Stress

$f_u$ = Fracture Stress

$\varepsilon_y$ = Yield Strain

$\varepsilon_{sh}$ = Strain at Strain Hardening

$\varepsilon_{su}$ = Failure Strain

E = Elastic Modulus

## Material Color States:

- Tension force after onset of strain hardening
- Tension force after yield
- Initial state
- Compression force after yield
- Compression force after onset of strain hardening

# XTRACT Material Report

COWI
COWI
1/7/2026

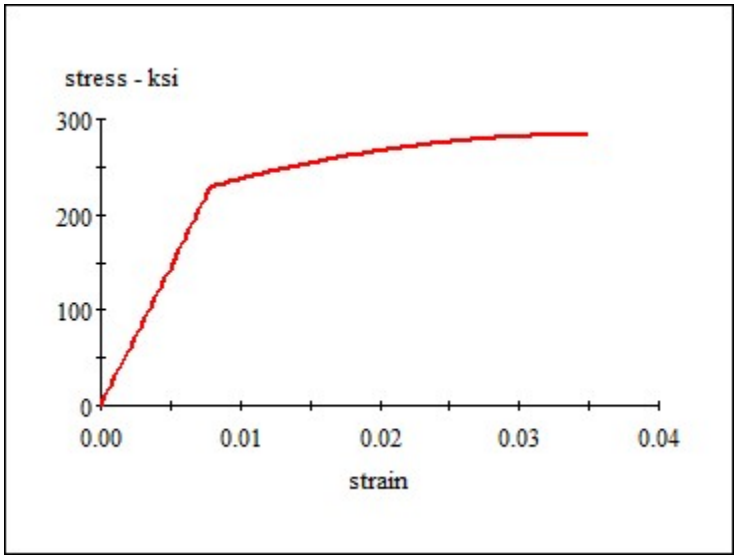
New 24in Oct Dowel at deck
Page __ of __

Material Name: PreStress1

Material Type: Prestressing Steel

## Input Parameters:

| | |
|---|---|
| Yield Stress: | 229.5 ksi |
| Peak Stress: | 283.5 ksi |
| Yield Strain: | 7.914E-3 |
| Strain at Peak Stress: | 35.00E-3 |
| Failure Strain: | 35.00E-3 |
| Elastic Modulus: | 29.00E+3 ksi |
| Additional Information: | Symetric Tension and Comp. |




## Model Details:

For Strain - $\varepsilon < \varepsilon_y$ $fs = E \cdot \varepsilon$

For Strain - $\varepsilon < \varepsilon_{su}$ $fs = f_u - (f_u - f_y) \cdot \left( \frac{\varepsilon_{sp} - \varepsilon}{\varepsilon_{sp} - \varepsilon_{sh}} \right)^2$

$\varepsilon$ = Steel Strain

fs = Steel Stress

$f_y$ = Yield Stress

$f_u$ = Fracture Stress

$\varepsilon_y$ = Yield Strain

$\varepsilon_{sp}$ = Strain at Peak Stress

$\varepsilon_{su}$ = Failure Strain

E = Elastic Modulus

## Material Color States:

- Tension force after yield
- Initial state
- Compression force after yield

# XTRACT Material Report

COWI
COWI
1/7/2026

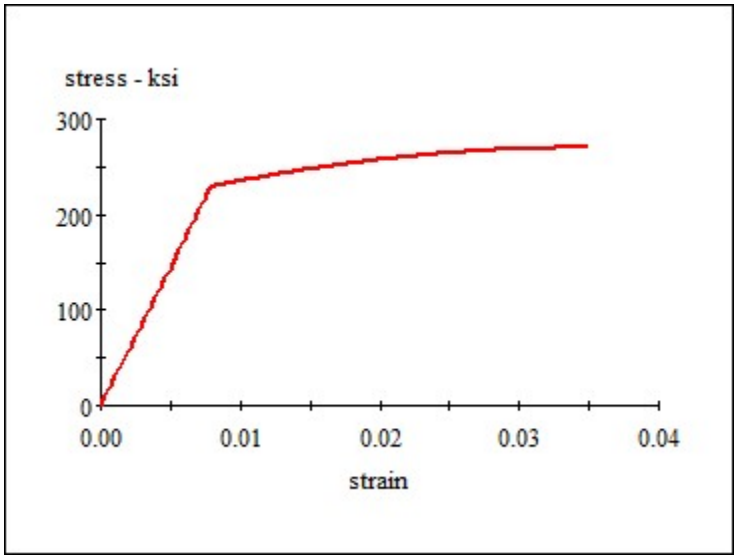
New 24in Oct Dowel at deck
Page __ of __

Material Name: PreStress270

Material Type: Prestressing Steel

## Input Parameters:

| | |
|---|---|
| Yield Stress: | 229.5 ksi |
| Peak Stress: | 270.0 ksi |
| Yield Strain: | 7.914E-3 |
| Strain at Peak Stress: | 35.00E-3 |
| Failure Strain: | 35.00E-3 |
| Elastic Modulus: | 29.00E+3 ksi |
| Additional Information: | Symetric Tension and Comp. |




## Model Details:

For Strain - $\varepsilon < \varepsilon_y$ $fs = E \cdot \varepsilon$

For Strain - $\varepsilon < \varepsilon_{su}$ $fs = f_u - (f_u - f_y) \cdot \left( \frac{\varepsilon_{sp} - \varepsilon}{\varepsilon_{sp} - \varepsilon_{sh}} \right)^2$

$\varepsilon$ = Steel Strain

fs = Steel Stress

$f_y$ = Yield Stress

$f_u$ = Fracture Stress

$\varepsilon_y$ = Yield Strain

$\varepsilon_{sp}$ = Strain at Peak Stress

$\varepsilon_{su}$ = Failure Strain

E = Elastic Modulus

## Material Color States:

- Tension force after yield
- Initial state
- Compression force after yield

| | | | | |
|---|---|---|---|---|
| | COWI | Project<br>Berkeley Water Transportation Pier Ferry | Date<br>01/05/26 | Sheet<br>1A-8 |
| | | Subject<br>Section 1A - Structural – Fixed Pier Pile Design | Design<br>T. RODRIGUES | Checked<br>JBSW |

# Attachment 3: XTRACT Section Analysis

The following sheets provide the reports from XTRACT's section analysis, which is used to calculate the hinge properties.

## A3.1 – Concrete Pile Above Mudline – 8#10, 80 ksi

### A3.1.1 – Section Report

### A3.1.2 – Analysis Report

## A3.2 – Concrete Pile Below Mudline – 8#9, 16 PS

### A3.2.1 – Section Report

### A3.2.2 – Analysis Report

# XTRACT Section Report

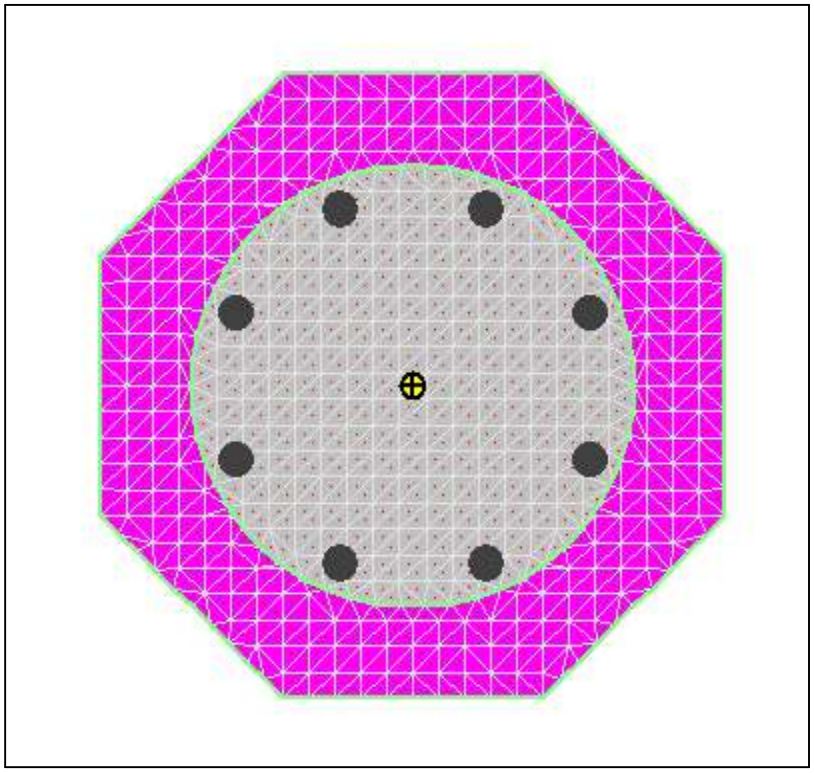
Section Name: New 24in Oct Dowel at deck

COWI
COWI
1/7/2026

New 24in Oct Dowel at deck
Page __ of __

## Section Details:

| | |
|---|---|
| X Centroid: | .6427E-15 in |
| Y Centroid: | -.1408E-15 in |
| Section Area: | 477.2 in^2 |
| EI gross about X: | 1.10E+8 kip-in^2 |
| EI gross about Y: | 1.10E+8 kip-in^2 |
| I trans (Unconfined1) about X: | 18.99E+3 in^4 |
| I trans (Unconfined1) about Y: | 18.99E+3 in^4 |
| Reinforcing Bar Area: | 10.14 in^2 |
| Percent Longitudinal Steel: | 2.124 % |
| Overall Width: | 24.00 in |
| Overall Height: | 24.00 in |
| Number of Fibers: | 1026 |
| Number of Bars: | 8 |
| Number of Materials: | 3 |



## Material Types and Names:

| | |
|---|---|
| Unconfined Concrete: | Unconfined1 |
| Confined Concrete: | Confined1 |
| Strain Hardening Steel: | Steel1 |

## Comments:

User Comments

# XTRACT Analysis Report

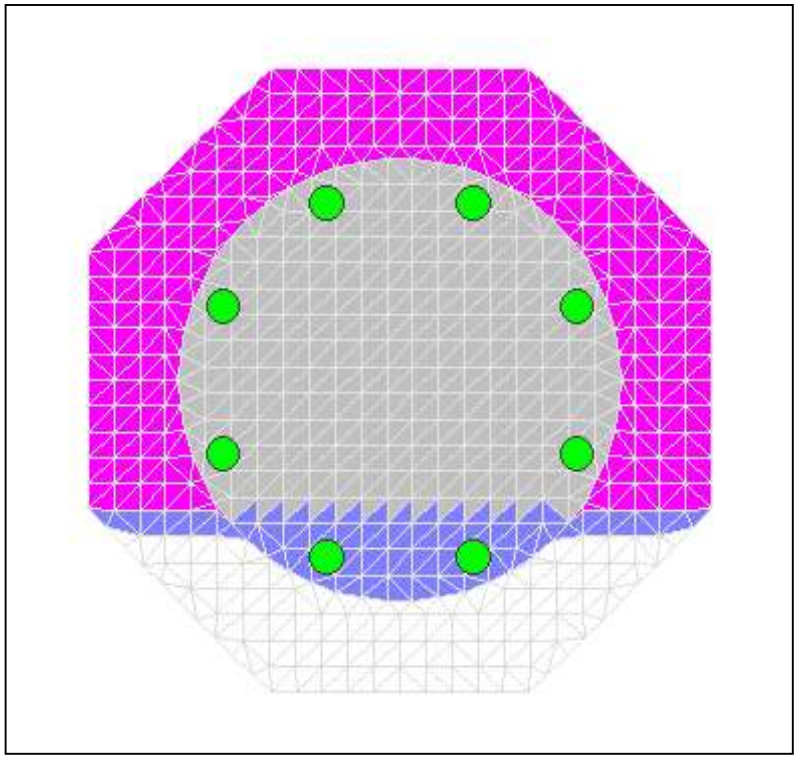
COWI
COWI
1/7/2026

Section Name: New 24in Oct Dowel at deck
Loading Name: MC-P-100
Analysis Type: Moment Curvature

New 24in Oct Dowel at deck
Page __ of __

## Section Details:

| | |
|---|---|
| X Centroid: | .6427E-15 in |
| Y Centroid: | -.1408E-15 in |
| Section Area: | 477.2 in^2 |

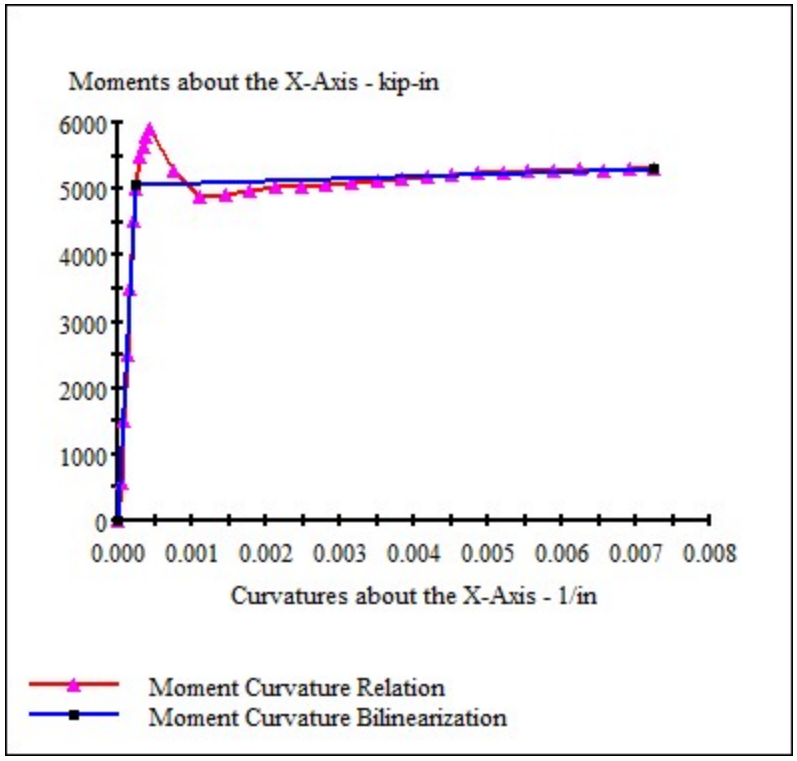


## Loading Details:

| | |
|---|---|
| Constant Load - P: | -100.0 kips |
| Incrementing Loads: | Mxx Only |
| Number of Points: | 30 |
| Analysis Strategy: | Displacement Control |

## Analysis Results:

| | |
|---|---|
| Failing Material: | Confined1 |
| Failure Strain: | 21.80E-3 Compression |
| Curvature at Initial Load: | .1096E-21 1/in |
| Curvature at First Yield: | .2135E-3 1/in |
| Ultimate Curvature: | 7.248E-3 1/in |
| Moment at First Yield: | 4516 kip-in |
| Ultimate Moment: | 5302 kip-in |
| Centroid Strain at Yield: | 1.305E-3 Ten |
| Centroid Strain at Ultimate: | 37.29E-3 Ten |
| N.A. at First Yield: | 6.114 in |
| N.A. at Ultimate: | 5.145 in |
| Energy per Length: | 36.91 kips |
| Effective Yield Curvature: | .2391E-3 1/in |
| Effective Yield Moment: | 5057 kip-in |
| Over Strength Factor: | 1.048 |
| EI Effective: | 2.12E+7 kip-in^2 |
| Yield EI Effective: | 34.93E+3 kip-in^2 |
| Bilinear Harding Slope: | .1651 % |
| Curvature Ductility: | 30.32 |




## Comments:

User Comments

# XTRACT Section Report

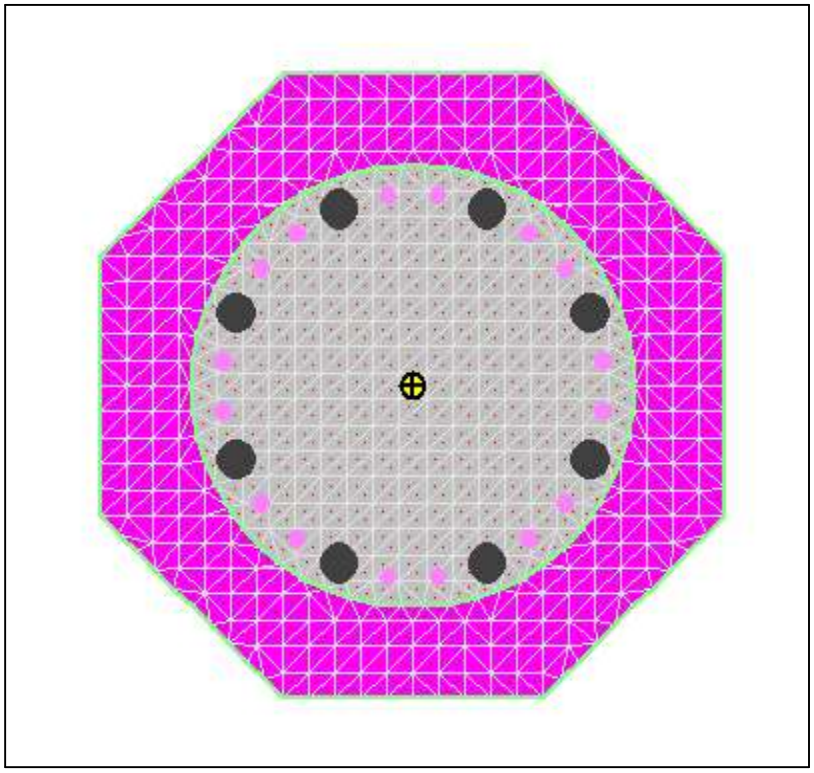
Section Name: New 24in Oct Dowel at deck

COWI
COWI
1/7/2026

New 24in Oct Dowel at deck
Page __ of __

## Section Details:

| | |
|---|---|
| X Centroid: | .6202E-15 in |
| Y Centroid: | -.1496E-15 in |
| Section Area: | 477.2 in^2 |
| EI gross about X: | 1.15E+8 kip-in^2 |
| EI gross about Y: | 1.15E+8 kip-in^2 |
| I trans (Unconfined1) about X: | 19.75E+3 in^4 |
| I trans (Unconfined1) about Y: | 19.75E+3 in^4 |
| Reinforcing Bar Area: | 17.02 in^2 |
| Percent Longitudinal Steel: | 3.567 % |
| Overall Width: | 24.00 in |
| Overall Height: | 24.00 in |
| Number of Fibers: | 1026 |
| Number of Bars: | 24 |
| Number of Materials: | 4 |



## Material Types and Names:

| | |
|---|---|
| Unconfined Concrete: | Unconfined1 |
| Confined Concrete: | Confined1 |
| Strain Hardening Steel: | Steel1 |
| Prestressing Steel: | PreStress270 |

## Comments:

User Comments

# XTRACT Analysis Report

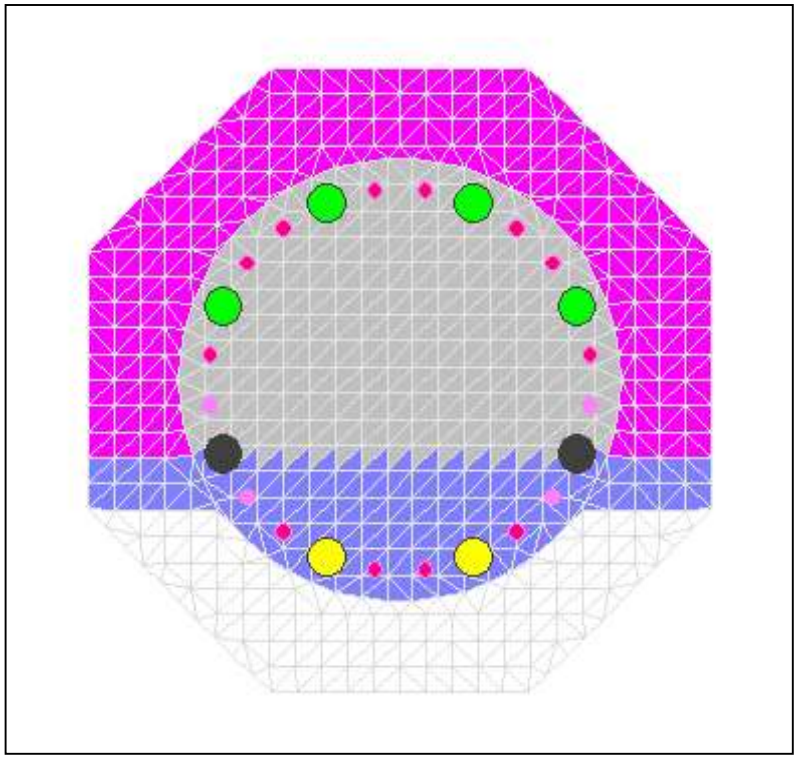
COWI
COWI
1/7/2026

Section Name: New 24in Oct Dowel at deck
Loading Name: MC-P-100
Analysis Type: Moment Curvature

New 24in Oct Dowel at deck
Page __ of __

## Section Details:

| | |
|---|---|
| X Centroid: | .6202E-15 in |
| Y Centroid: | -.1496E-15 in |
| Section Area: | 477.2 in^2 |

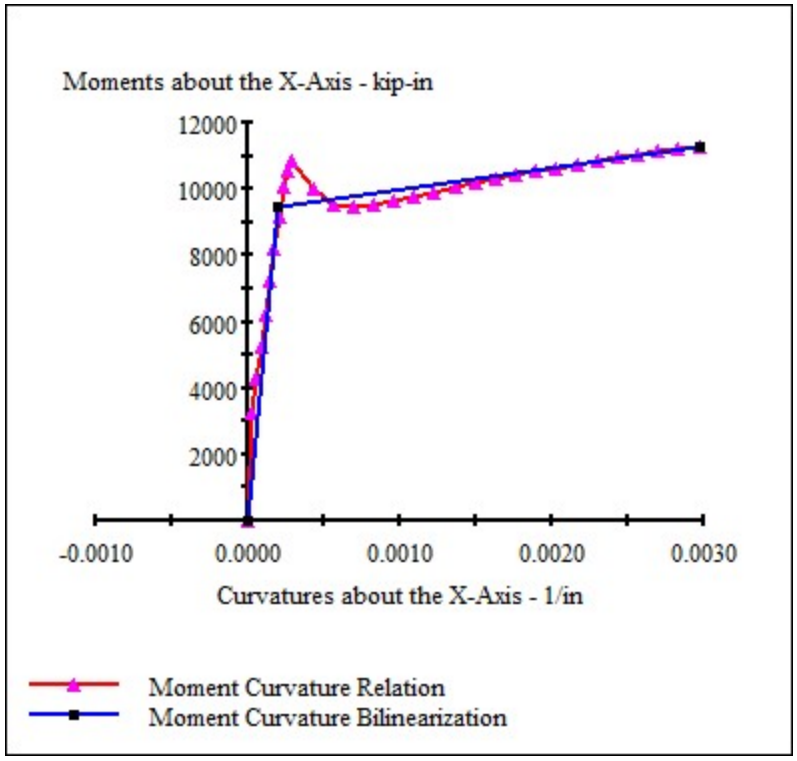


## Loading Details:

| | |
|---|---|
| Constant Load - P: | -100.0 kips |
| Incrementing Loads: | Mxx Only |
| Number of Points: | 30 |
| Analysis Strategy: | Displacement Control |

## Analysis Results:

| | |
|---|---|
| Failing Material: | PreStress270 |
| Failure Strain: | 35.00E-3 Tension |
| Curvature at Initial Load: | -.8080E-21 1/in |
| Curvature at First Yield: | .1472E-3 1/in |
| Ultimate Curvature: | 2.967E-3 1/in |
| Moment at First Yield: | 7222 kip-in |
| Ultimate Moment: | 11.28E+3 kip-in |
| Centroid Strain at Yield: | .3176E-3 Ten |
| Centroid Strain at Ultimate: | 8.984E-3 Ten |
| N.A. at First Yield: | 2.157 in |
| N.A. at Ultimate: | 3.028 in |
| Energy per Length: | 29.72 kips |
| Effective Yield Curvature: | .1935E-3 1/in |
| Effective Yield Moment: | 9491 kip-in |
| Over Strength Factor: | 1.188 |
| EI Effective: | 4.91E+7 kip-in^2 |
| Yield EI Effective: | 644.9E+3 kip-in^2 |
| Bilinear Harding Slope: | 1.315 % |
| Curvature Ductility: | 15.34 |




## Comments:

User Comments

| | | | | |
|---|---|---|---|---|
| | COWI | Project<br>Berkeley Water Transportation Pier Ferry | Date<br>01/05/26 | Sheet<br>1A-9 |
| | | Subject<br>Section 1A - Structural – Fixed Pier Pile Design | Design<br>T. RODRIGUES | Checked<br>JBSW |

# Attachment 4: XTRACT Section Analysis

The following sheets provide detailed calculation of the hysteresis curves of the plastic hinges using the results from XTRACT in Attachment 3.

## A4.1 – Steel Pipe Pile Hinge

## A4.2 – Concrete Pile Above Mudline Hinge– 8#10, 80 ksi

## A4.3 – Concrete Pile Above Mudline Hinge– 8#10, 80 ksi

| | | | |
|---|---|---|---|
| D | 24 | in | Outer Diameter |
| t | 1 | in | wall Thickness |
| d | 22 | in | Inner Diameter |
| Z | 398.916817 | in^3 | Section Modulus |
| Fy | 50 | ksi | Yield strength |
| M | 19945.8409 | k-in | Moment Capacity |
| | 1662.1534 | k-ft | |
| E | 29000 | ksi | Modulus of elasticity |
| I | 4787.00181 | in^4 | Moment of Inertia |
| | 0.00014368 | 1/in | Yield curvature |
| | 0.00172414 | 1/ft | |
| | 12 | in | Distance from nuetral axis |
| | 1 | ft | |

TABLE:

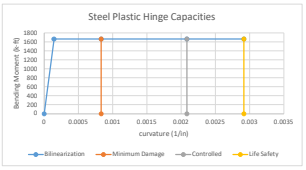
| HingeName | FDPoint | Curvature | Moment |
|---|---|---|---|
| 24" Steel (Below) | A | 0 | 0 |
| | B | 1.44E-04 | 1662.15 |
| | C | 8.33E-04 | 1662.15 |
| | D | 2.08E-03 | 1662.15 |
| | E | 2.92E-03 | 1662.15 |
| 24" Steel (Far Below) | A | 0 | 0 |
| | B | 1.44E-04 | 1662.15 |
| | C | 8.33E-04 | 1662.15 |
| | D | 2.92E-03 | 1662.15 |
| | E | 4.17E-03 | 1662.15 |

Top -> Same as Far Below

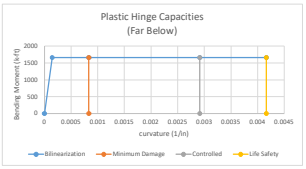
L= 24 in

| Strain Limits: | Curve Capacity: | Curve: | Rotation: |
|---|---|---|---|
| 0.01 | 0.0008333 | 0.0006897 | 0.0165517 |
| 0.025 | 0.002051 | 0.0019073 | 0.0457757 |
| 0.035 | 0.002885 | 0.0027413 | 0.0657917 |
| 0.01 | 0.0008333 | 0.0006897 | 0.0165517 |
| 0.035 | 0.002885 | 0.0027413 | 0.0657917 |
| 0.05 | 0.004167 | 0.0040233 | 0.0965597 |

| plastic hinge capacities | | |
|---|---|---|
| Limit State | Curve | Moment |
| Min Damage | 8.33E-04 | 0 |
| | 8.33E-04 | 1662.15 |
| Controlled | 2.08E-03 | 0 |
| | 2.08E-03 | 1662.15 |
| Life Safety | 2.92E-03 | 0 |
| | 0.00292 | 1662.15 |




| plastic hinge capacities | | |
|---|---|---|
| Limit State | Curve | Moment |
| Min Damage | 8.33E-04 | 0 |
| | 8.33E-04 | 1662.15 |
| Controlled | 2.92E-03 | 0 |
| | 2.92E-03 | 1662.15 |
| Life Safety | 4.17E-03 | 0 |
| | 0.00417 | 1662.15 |



24in PS Pile Deck Conn 8#10 80ksi

| | | |
|---|---|---|
| peak dowel strain | esmd | 0.12 |
| rein. ratio | ps= | 0.02619 |

Strain Limits

| Limit state | Concrete | Reinf. Steel |
|---|---|---|
| Min Damage | -0.005 | 0.015 |
| Controlled | -0.025 | 0.06 |
| Life Safety | -1 | 0.08 |

| | | |
|---|---|---|
| M,y= | 665.46 | kip*ft |
| K,y= | 4.90E-03 | 1/ft |

Bilinearization

| | Curve | Moment |
|---|---|---|
| Initial | 0 | 0 |
| Yield | 0.0049 | 665.457 |
| Plastic | 8.70E-02 | 665.457 |

curvature capacity

| | | |
|---|---|---|
| Min Damage | 1.33E-02 | 1/ft |
| Controlled | 5.84E-02 | 1/ft |
| Life Safety | 7.89E-02 | 1/ft |

curvature capacity

| Limit State | Curve | Moment |
|---|---|---|
| Min Damage | 1.33E-02 | 0 |
| | 1.33E-02 | 665.457 |
| Controlled | 5.84E-02 | 0 |
| | 5.84E-02 | 665.457 |
| Life Safety | 7.89E-02 | 0 |
| | 7.89E-02 | 665.457 |

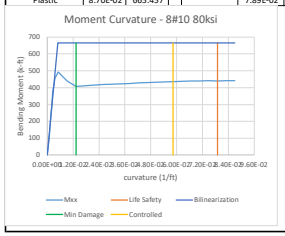
| hinge length | L,h | 2.328 | ft |
|---|---|---|---|

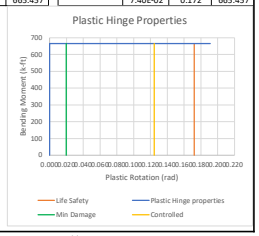
Plastic Hinge properties

| state | Curve | Rotation | Moment |
|---|---|---|---|
| Initial | 0 | 0.000 | 0 |
| Yield | 0 | 0.000 | 665.457 |
| Plastic | 8.21E-02 | 0.191 | 665.457 |

plastic hinge capacities

| Limit State | Curve | Rotation | Moment |
|---|---|---|---|
| Min Damage | 8.42E-03 | 0.020 | 0 |
| | 8.42E-03 | 0.020 | 665.457 |
| Controlled | 5.35E-02 | 0.125 | 0 |
| | 5.35E-02 | 0.125 | 665.457 |
| Life Safety | 7.40E-02 | 0.172 | 0 |
| | 7.40E-02 | 0.172 | 665.457 |




possible input
already important

| | |
|---|---|
| Yield | 665.46 |
| IO | 0.0196 |
| LS | 0.1246 |
| CP | 0.1723 |

24in PS Pile Deck Conn 8#10 80ksi

| | Kxx | Mxx | Min. 7000psi-con exp Strain | Max. 80ksi expected Strain | Min. 7000psi expected Strain | extrapolated |
|---|---|---|---|---|---|---|
| | Pile @ Top #10 | Pile @ Top #10 | Pile @ Top #10 | Pile @ Top #10 | Pile @ Top #10 | Mxx |
| | MC-100k comp | MC-100k comp | MC-100k comp | MC-100k comp | MC-100k comp | at Kxx =0.004 |
| Limit | 1/ft | kip-ft | strain | strain | strain | kip-ft |
| OK | 1.32E-21 | 0 | 0 | 3.42E-05 | 0 | |
| OK | 5.13E-04 | 47.98 | -5.63E-05 | 5.83E-04 | -2.06E-04 | 929.84 |
| OK | 1.03E-03 | 124.4 | -1.30E-04 | 1.15E-03 | -4.30E-04 | 1342.79 |
| OK | 1.54E-03 | 207.7 | -2.27E-04 | 1.69E-03 | -6.77E-04 | 1328.76 |
| OK | 2.05E-03 | 292.7 | -3.32E-04 | 2.22E-03 | -9.32E-04 | 1314.43 |
| OK | 2.56E-03 | 376.4 | -4.35E-04 | 2.76E-03 | -1.19E-03 | 1305.15 |
| OK | 3.07E-03 | 417.1 | -4.91E-04 | 3.34E-03 | -1.39E-03 | 932.37 |
| OK | 3.59E-03 | 456.5 | -5.46E-04 | 3.93E-03 | -1.60E-03 | 918.34 |
| OK | 4.10E-03 | 470.5 | -5.58E-04 | 4.55E-03 | -1.76E-03 | 665.46 |
| OK | 4.61E-03 | 482.1 | -5.69E-04 | 5.18E-03 | -1.92E-03 | 632.04 |
| OK | 5.13E-03 | 492 | -5.84E-04 | 5.81E-03 | -2.09E-03 | 606.21 |
| OK | 9.22E-03 | 440.5 | -1.80E-03 | 9.70E-03 | -4.51E-03 | 451.25 |
| OK | 1.33E-02 | 406.8 | -3.32E-03 | 1.33E-02 | -7.23E-03 | 446.76 |
| Min Dam Exceed | 1.74E-02 | 410.5 | -4.28E-03 | 1.74E-02 | -9.38E-03 | 401.26 |
| Min Dam Exceed | 2.15E-02 | 414.8 | -5.01E-03 | 2.18E-02 | -1.13E-02 | 398.51 |
| Min Dam Exceed | 2.56E-02 | 419 | -5.91E-03 | 2.60E-02 | -1.34E-02 | 400.18 |
| Min Dam Exceed | 2.97E-02 | 420.3 | -7.11E-03 | 2.99E-02 | -1.58E-02 | 413.90 |
| Min Dam Exceed | 3.38E-02 | 422.3 | -8.14E-03 | 3.40E-02 | -1.80E-02 | 409.71 |
| Min Dam Exceed | 3.79E-02 | 425.4 | -9.09E-03 | 3.82E-02 | -2.02E-02 | 402.06 |
| Min Dam Exceed | 4.20E-02 | 427.6 | -1.00E-02 | 4.24E-02 | -2.23E-02 | 408.60 |
| Min Dam Exceed | 4.61E-02 | 430.3 | -1.10E-02 | 4.65E-02 | -2.45E-02 | 404.50 |
| Min Dam Exceed | 5.02E-02 | 432.4 | -1.19E-02 | 5.07E-02 | -2.66E-02 | 410.33 |
| Min Dam Exceed | 5.43E-02 | 434.8 | -1.29E-02 | 5.49E-02 | -2.88E-02 | 407.40 |
| Min Dam Exceed | 5.84E-02 | 436.5 | -1.38E-02 | 5.90E-02 | -3.09E-02 | 415.31 |
| Control Exceed | 6.25E-02 | 438 | -1.48E-02 | 6.32E-02 | -3.31E-02 | 417.80 |
| Control Exceed | 6.66E-02 | 439.2 | -1.57E-02 | 6.73E-02 | -3.53E-02 | 421.84 |
| Control Exceed | 7.07E-02 | 439.8 | -1.67E-02 | 7.15E-02 | -3.74E-02 | 430.48 |
| Control Exceed | 7.48E-02 | 441.1 | -1.78E-02 | 7.55E-02 | -3.97E-02 | 420.50 |
| Control Exceed | 7.89E-02 | 440.5 | -1.96E-02 | 7.88E-02 | -4.27E-02 | 448.07 |
| LS Exceed | 8.30E-02 | 441.6 | -2.08E-02 | 8.27E-02 | -4.51E-02 | 422.22 |
| LS Exceed | 8.70E-02 | 441.8 | -2.18E-02 | 8.66E-02 | -4.73E-02 | 437.90 |
| OK | | | | | | 37.39 |

| | | | | | |
|---|---|---|---|---|---|
| | 0 | 0 | 3.42E-05 | 0 | 1.32E-21 |
| | -2.06E-04 | -5.63E-05 | 5.83E-04 | 47.98 | 5.13E-04 |
| | -4.30E-04 | -1.30E-04 | 1.15E-03 | 124.4 | 1.03E-03 |
| | -6.77E-04 | -2.27E-04 | 1.69E-03 | 207.7 | 1.54E-03 |
| | -9.32E-04 | -3.32E-04 | 2.22E-03 | 292.7 | 2.05E-03 |
| | -1.19E-03 | -4.35E-04 | 2.76E-03 | 376.4 | 2.56E-03 |
| | -1.39E-03 | -4.91E-04 | 3.34E-03 | 417.1 | 3.07E-03 |
| | -1.60E-03 | -5.46E-04 | 3.93E-03 | 456.5 | 3.59E-03 |
| | -1.76E-03 | -5.58E-04 | 4.55E-03 | 470.5 | 4.10E-03 |
| | -1.92E-03 | -5.69E-04 | 5.18E-03 | 482.1 | 4.61E-03 |
| | -2.09E-03 | -5.84E-04 | 5.81E-03 | 492 | 5.13E-03 |
| | -4.51E-03 | -1.80E-03 | 9.70E-03 | 440.5 | 9.22E-03 |
| | -7.23E-03 | -3.32E-03 | 1.33E-02 | 406.8 | 1.33E-02 |
| | -9.38E-03 | -4.28E-03 | 1.74E-02 | 410.5 | 1.74E-02 |
| | -1.13E-02 | -5.01E-03 | 2.18E-02 | 414.8 | 2.15E-02 |
| | -1.34E-02 | -5.91E-03 | 2.60E-02 | 419 | 2.56E-02 |
| | -1.58E-02 | -7.11E-03 | 2.99E-02 | 420.3 | 2.97E-02 |
| | -1.80E-02 | -8.14E-03 | 3.40E-02 | 422.3 | 3.38E-02 |
| | -2.02E-02 | -9.09E-03 | 3.82E-02 | 425.4 | 3.79E-02 |
| | -2.23E-02 | -1.00E-02 | 4.24E-02 | 427.6 | 4.20E-02 |
| | -2.45E-02 | -1.10E-02 | 4.65E-02 | 430.3 | 4.61E-02 |
| | -2.66E-02 | -1.19E-02 | 5.07E-02 | 432.4 | 5.02E-02 |
| | -2.88E-02 | -1.29E-02 | 5.49E-02 | 434.8 | 5.43E-02 |
| | -3.09E-02 | -1.38E-02 | 5.90E-02 | 436.5 | 5.84E-02 |
| | -3.31E-02 | -1.48E-02 | 6.32E-02 | 438 | 6.25E-02 |
| | -3.53E-02 | -1.57E-02 | 6.73E-02 | 439.2 | 6.66E-02 |
| | -3.74E-02 | -1.67E-02 | 7.15E-02 | 439.8 | 7.07E-02 |
| | -3.97E-02 | -1.78E-02 | 7.55E-02 | 441.1 | 7.48E-02 |
| | -4.27E-02 | -1.96E-02 | 7.88E-02 | 440.5 | 7.89E-02 |
| | -4.51E-02 | -2.08E-02 | 8.27E-02 | 441.6 | 8.30E-02 |
| | -4.73E-02 | -2.18E-02 | 8.66E-02 | 441.8 | 8.70E-02 |

**PS Concrete Pile-Deck Connection**

| Rebar | $d_b$ | FY=60ksi $f_{ye}=1.1f_y$ | FY=60ksi Lp = $0.25f_{ye}d_b$ | FY=60ksi Lp/16.5" | FY=80ksi $f_{ye}=1.1f_y$ | FY=80ksi Lp = $0.25f_{ye}d_b$ | FY=80ksi Lp/16.5" | Pile Column |
|---|---|---|---|---|---|---|---|---|
| | (in) | (ksi) | (ft) | | (ksi) | (ft) | | Line |
| #8 | 1 | 66 | 1.375 | 1 | 88 | **1.833** | 1.33333 | 2 and 3 |
| #9 | 1.128 | 66 | 1.55 | 1.128 | 88 | 2.068 | 1.504 | |
| #10 | 1.27 | 66 | 1.75 | 1.27 | 88 | 2.328 | 1.69333 | |
| #11 | 1.41 | 66 | 1.94 | 1.41 | 88 | **2.585** | 1.88 | 1 |

**24" Pipe Pile-Deck Connection**

| Rebar | $d_b$ | FY=60ksi $f_{ye}=1.1f_y$ | FY=60ksi Lp = $0.3f_{ye}d_b$ | FY=60ksi Lp/16.5" | FY=80ksi $f_{ye}=1.1f_y$ | FY=80ksi Lp = $0.3f_{ye}d_b$+g | FY=80ksi Lp/16.5" | |
|---|---|---|---|---|---|---|---|---|
| | (in) | (ksi) | (in) | | (ksi) | (in) | | |
| #8 | 1 | 66 | 19.8 | 1.2 | 88 | **2.367** | 1.72121 | 4 and 5 |
| #9 | 1.128 | 66 | 22.3344 | 1.3536 | 88 | 2.648 | 1.92601 | |
| #10 | 1.27 | 66 | 25.146 | 1.524 | 82.5 | 2.786 | 2.02621 | |
| #11 | 1.41 | 66 | 27.918 | 1.692 | 88 | 3.269 | 2.37721 | |

where g=2" (2" gap between top of steel pipe pile to deck)

**24in PS Pile in Ground 8#9 80ksi**

| | | |
|---|---|---|
| peak dowel strain | esmd | 0.12 |
| rein. ratio | ps= | 0.03567 |

Strain Limits

| Limit state | Concrete | PS Steel |
|---|---|---|
| Min Damage | -0.005 | 0.015 |
| Controlled | -0.008 | 0.025 |
| Life Safety | -0.012 | 0.035 |

| | | |
|---|---|---|
| M.y= | 826.21 | kip*ft |
| K.y= | 2.88E-03 | 1/ft |

Bilinearization

| | Curve | Moment |
|---|---|---|
| Initial | 0 | 0 |
| Yield | 0.002878 | 826.2141 |
| Plastic | 3.54E-02 | 826.2141 |

curvature capacity

| | | |
|---|---|---|
| Min Damage | 1.63E-02 | 1/ft |
| Controlled | 2.75E-02 | 1/ft |
| Life Safety | 3.54E-02 | 1/ft |

curvature capacity

| Limit State | Curve | Moment |
|---|---|---|
| Min Damage | 1.63E-02 | 0 |
| | 1.63E-02 | 826.2141 |
| Controlled | 2.75E-02 | 0 |
| | 2.75E-02 | 826.2141 |
| Life Safety | 3.54E-02 | 0 |
| | 3.54E-02 | 826.2141 |

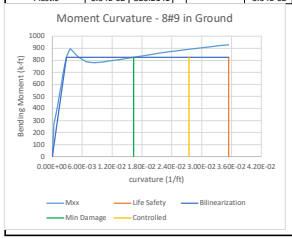
| hinge length | L.h | 2.068 | ft |
|---|---|---|---|

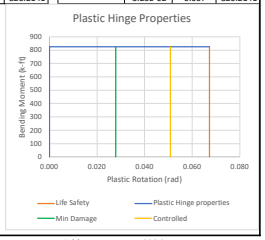
Plastic Hinge properties

| state | Curve | Rotation | Moment |
|---|---|---|---|
| Initial | 0 | 0.000 | 0 |
| Yield | 0 | 0.000 | 826.2141 |
| Plastic | 3.25E-02 | 0.067 | 826.2141 |

plastic hinge capacities

| Limit State | Curve | Rotation | Moment |
|---|---|---|---|
| Min Damage | 1.35E-02 | 0.028 | 0 |
| | 1.35E-02 | 0.028 | 826.21 |
| Controlled | 2.46E-02 | 0.051 | 0 |
| | 2.46E-02 | 0.051 | 826.2141 |
| Life Safety | 3.25E-02 | 0.067 | 0 |
| | 3.25E-02 | 0.067 | 826.2141 |




| | |
|---|---|
| Yield | 826.21 |
| IO | 0.0278 |
| LS | 0.0509 |
| CP | 0.0673 |

**24in PS Pile in Ground 8#9 60ksi**

| | Kxx | Mxx | Min. 7000psi-con exp Strain | Max. 270ksi Strain | Min. 7000psi expected Strain | extrapolated |
|---|---|---|---|---|---|---|
| | Pile in Ground 8# | Pile in Ground 8# | Pile in Ground 8#9 | Pile in Ground 8#9 | Pile in Ground 8#9 | Mxx |
| | MC-140k comp | MC-140k comp | MC-140k comp | MC-140k comp | MC-140k comp | at Kxx =0.004 |
| Limit | 1/ft | kip-ft | strain | strain | strain | kip-ft |
| OK | 1.54E-21 | 0 | -1.39E-04 | 4.19E-03 | -1.39E-04 | 0.00 |
| OK | 3.63E-04 | 271.3 | -3.80E-04 | 4.42E-03 | -4.86E-04 | 3019.73 |
| OK | 7.25E-04 | 347.8 | -5.22E-04 | 4.74E-03 | -7.34E-04 | 1353.60 |
| OK | 1.09E-03 | 428.3 | -6.42E-04 | 5.09E-03 | -9.61E-04 | 1508.53 |
| OK | 1.45E-03 | 513.1 | -7.58E-04 | 5.44E-03 | -1.18E-03 | 1592.44 |
| OK | 1.81E-03 | 597.7 | -8.69E-04 | 5.80E-03 | -1.40E-03 | 1606.69 |
| OK | 2.18E-03 | 683.1 | -9.82E-04 | 6.15E-03 | -1.62E-03 | 1611.58 |
| OK | 2.54E-03 | 765.8 | -1.10E-03 | 6.51E-03 | -1.84E-03 | 1582.23 |
| OK | 2.90E-03 | 832.6 | -1.21E-03 | 6.86E-03 | -2.06E-03 | 1431.34 |
| OK | 3.26E-03 | 8.73E+02 | -1.32E-03 | 7.22E-03 | -2.27E-03 | 1193.56 |
| OK | 3.63E-03 | 8.98E+02 | -1.45E-03 | 7.55E-03 | -2.51E-03 | 1056.94 |
| OK | 5.22E-03 | 828.3 | -2.41E-03 | 8.65E-03 | -3.93E-03 | 824.95 |
| OK | 6.81E-03 | 788.3 | -3.24E-03 | 9.86E-03 | -5.24E-03 | 826.21 |
| OK | 8.40E-03 | 780.5 | -4.01E-03 | 1.11E-02 | -6.46E-03 | 796.16 |
| OK | 9.98E-03 | 785.5 | -4.72E-03 | 1.25E-02 | -7.64E-03 | 770.02 |
| Min Dam Exceed | 1.16E-02 | 795.3 | -5.41E-03 | 1.38E-02 | -8.80E-03 | 754.82 |
| Min Dam Exceed | 1.32E-02 | 805.2 | -6.07E-03 | 1.52E-02 | -9.93E-03 | 753.06 |
| Min Dam Exceed | 1.48E-02 | 815.3 | -6.72E-03 | 1.66E-02 | -1.10E-02 | 751.53 |
| Min Dam Exceed | 1.63E-02 | 826.1 | -7.38E-03 | 1.80E-02 | -1.22E-02 | 748.02 |
| Control Exceed | 1.79E-02 | 8.37E+02 | -8.04E-03 | 1.94E-02 | -1.33E-02 | 748.78 |
| Control Exceed | 1.95E-02 | 8.47E+02 | -8.70E-03 | 2.08E-02 | -1.44E-02 | 753.75 |
| Control Exceed | 2.11E-02 | 8.57E+02 | -9.35E-03 | 2.22E-02 | -1.55E-02 | 753.75 |
| Control Exceed | 2.27E-02 | 8.67E+02 | -1.00E-02 | 2.36E-02 | -1.67E-02 | 753.75 |
| Control Exceed | 2.43E-02 | 8.75E+02 | -1.06E-02 | 2.50E-02 | -1.78E-02 | 771.25 |
| Control Exceed | 2.59E-02 | 8.83E+02 | -1.13E-02 | 2.64E-02 | -1.88E-02 | 768.34 |
| Control Exceed | 2.75E-02 | 8.93E+02 | -1.19E-02 | 2.79E-02 | -1.99E-02 | 758.21 |
| LS Exceed | 2.91E-02 | 9.01E+02 | -1.25E-02 | 2.93E-02 | -2.10E-02 | 771.35 |
| LS Exceed | 3.07E-02 | 9.08E+02 | -1.31E-02 | 3.07E-02 | -2.21E-02 | 782.74 |
| LS Exceed | 3.22E-02 | 9.16E+02 | -1.37E-02 | 3.21E-02 | -2.32E-02 | 783.90 |
| LS Exceed | 3.38E-02 | 9.23E+02 | -1.43E-02 | 3.36E-02 | -2.42E-02 | 795.76 |
| LS Exceed | 3.54E-02 | 9.29E+02 | -1.50E-02 | 3.50E-02 | -2.53E-02 | 799.22 |
| | | | | | | 146.68 |

**PS Concrete Pile-Deck Connection**

| | | FY=60ksi | | | FY=80ksi | | | |
|---|---|---|---|---|---|---|---|---|
| Rebar | $d_b$ | $f_{ye}=1.1f_y$ | Lp = $0.25f_{ye}d_b$ | Lp/16.5" | $f_{ye}=1.1f_y$ | Lp = $0.25f_{ye}d_b$ | Lp/16.5" | Pile Column |
| | (in) | (ksi) | (in) | | (ksi) | (ft) | | Line |
| #8 | 1 | 66 | 16.5 | 1 | 88 | **1.833** | 1.333333 | 2 and 3 |
| #9 | 1.128 | 66 | 18.61 | 1.128 | 88 | 2.068 | 1.504 | |
| #10 | 1.27 | 66 | 20.96 | 1.27 | 88 | 2.328 | 1.693333 | |
| #11 | 1.41 | 66 | 23.27 | 1.41 | 88 | **2.585** | 1.88 | 1 |

**24" Pipe Pile-Deck Connection**

| | | FY=60ksi | | | FY=80ksi | | | |
|---|---|---|---|---|---|---|---|---|
| Rebar | $d_b$ | $f_{ye}=1.1f_y$ | Lp = $0.3f_{ye}d_b$ | Lp/16.5" | $f_{ye}=1.1f_y$ | Lp = $0.3f_{ye}d_b+g$ | Lp/16.5" | |
| | (in) | (ksi) | (in) | | (ksi) | (in) | | |
| #8 | 1 | 66 | 19.8 | 1.2 | 88 | **2.367** | 1.721212 | 4 and 5 |
| #9 | 1.128 | 66 | 22.3344 | 1.3536 | 88 | 2.648 | 1.926012 | |
| #10 | 1.27 | 66 | 25.146 | 1.524 | 82.5 | 2.786 | 2.026212 | |
| #11 | 1.41 | 66 | 27.918 | 1.692 | 88 | 3.269 | 2.377212 | |

where g=2" (2" gap between top of steel pipe pile to deck)

| | | | | |
|---|---|---|---|---|
| | COWI | Project<br>Berkeley Water Transportation Pier Ferry | Date<br>01/05/26 | Sheet<br>1A-10 |
| | | Subject<br>Section 1A - Structural – Fixed Pier Pile Design | Design<br>T. RODRIGUES | Checked<br>JBSW |

# Attachment 5: SAP2000 Model

The following sheets provide detailed inputs and outputs of the SAP2000 model.

## A5.1 – SAP2000 Material Properties

## A5.2 – SAP2000 Hinge Definitions

## A5.3 – SAP2000 Load Case Definitions

## A5.4 – SAP2000 Hinge Results

**TABLE: Material Properties 01 - General**

| Material | Type | Grade | SymType | TempDepend | Color | GUID | Notes |
|---|---|---|---|---|---|---|---|
| Text | Text | Text | Text | Yes/No | Text | Text | Text |
| 4000Psi | Concrete | f'c 4000 psi | Isotropic | No | Yellow | 565cd13b-b239-41a9-8f87-213d975ac8ac | Customary f'c 4000 psi 10/29/2024 10:33:17 AM |
| 5000Psi | Concrete | f'c 5000 psi | Isotropic | No | Yellow | 10116a96-a620-41a9-9d7f-0ca1bcbaf1bd | Customary f'c 4000 psi 10/29/2024 10:33:17 AM |
| 7000Psi | Concrete | f'c 4000 psi | Isotropic | No | Green | b448727d-e6e2-4c0b-ae4d-b4a2dd46f9c3 | Concrete added 11/21/2017 1:02:05 PM |
| A416Gr270 | Tendon | Grade 270 | Uniaxial | No | Cyan | 2ee80d4e-1968-4329-bb90-54f9bbc182e6 | ASTM A416 Grade 270 10/29/2024 10:52:21 AM |
| A53GrB | Steel | Grade B | Isotropic | No | Cyan | eff7dc00-c415-4cf2-b867-7bf5cbe447ba | United States ASTM A53 Grade B added 4/2/2025 3:55:27 PM |
| A615Gr60 | Rebar | Grade 60 | Uniaxial | No | Cyan | 411d82f0-d62e-48c4-aaf5-df86d9f0b8ea | ASTM A615 Grade 60 10/29/2024 10:49:26 AM |
| A615Gr75 | Rebar | Grade 75 | Uniaxial | No | Green | 3a7cc32b-0a29-46d8-97d5-f7efc0b45183 | United States ASTM A615 Grade 75 added 12/22/2025 4:01:44 PM |
| A709GrHPS70W | Steel | Grade HPS 70W | Isotropic | No | Blue | 237252e7-71d1-4b04-abe3-9f1fd7c39cce | United States ASTM A709 Grade HPS 70W added 12/22/2025 4:01:19 PM |
| A992Fy50 | Steel | Grade 50 | Isotropic | No | Magenta | b6f9a8dd-f7ef-44a2-9bdf-e21d10c64c50 | ASTM A992 Grade 50 10/29/2024 10:33:17 AM |

**TABLE: Material Properties 03a - Steel Data**

| Material | Fy | Fu | EffFy | EffFu | SSCurveOpt | SSHysType | SHard | SMax | SRup | FinalSlope | CoupModType |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Text | Kip/in2 | Kip/in2 | Kip/in2 | Kip/in2 | Text | Text | Unitless | Unitless | Unitless | Unitless | Text |
| A53GrB | 35 | 60 | 38.5 | 66 | Simple | Kinematic | 0.02 | 0.14 | 0.2 | -0.1 | Von Mises |
| A709GrHPS70W | 70 | 85 | 77 | 93.5 | Simple | Kinematic | 0.015 | 0.11 | 0.17 | -0.1 | Von Mises |
| A992Fy50 | 50 | 65 | 55 | 71.5 | Simple | Kinematic | 0.015 | 0.11 | 0.17 | -0.1 | Von Mises |

**TABLE: Material Properties 03e - Rebar Data**

| Material | Fy | Fu | EffFy | EffFu | SSCurveOpt | SSHysType | SHard | SCap | FinalSlope | UseCTDef | CoupModType |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Text | Kip/in2 | Kip/in2 | Kip/in2 | Kip/in2 | Text | Text | Unitless | Unitless | Unitless | Yes/No | Text |
| A615Gr60 | 60 | 90 | 66 | 99 | Simple | Kinematic | 0.01 | 0.09 | -0.1 | No | Von Mises |
| A615Gr75 | 75 | 100 | 82.5 | 110 | Simple | Kinematic | 0.005 | 0.06 | -0.1 | No | Von Mises |

**TABLE: Material Properties 03f - Tendon Data**

| Material | Fy | Fu | SSCurveOpt | SSHysType | FinalSlope | CoupModType |
|---|---|---|---|---|---|---|
| Text | Kip/in2 | Kip/in2 | Text | Text | Unitless | Text |
| A416Gr270 | 245.1 | 270 | 270 ksi | Kinematic | -0.1 | Von Mises |

**TABLE: Hinges Gen 03 - Noninteracting - Deform Control - Force-Deform**

| HingeName | AssignHinge | DOFType | FDPoint | Force | Displ |
|---|---|---|---|---|---|
| Text | Text | Text | Text | Unitless | Unitless |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |

| | | | | | |
|---|---|---|---|---|---|
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |

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|---|---|---|---|---|---|
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |

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|---|---|---|---|---|---|
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |

| | | | | | |
|---|---|---|---|---|---|
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |

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|---|---|---|---|---|---|
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |

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|---|---|---|---|---|---|
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |

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|---|---|---|---|---|---|
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | -E | -1662.153405 | -0.0658 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | -D | -1662.153405 | -0.0458 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | -C | -1662.153405 | -0.0166 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | -B | -1662.153405 | 0 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | A | 0 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 132H1 | 24" Steel (Below) M2 | Moment M2 | B | 1662.153405 | 0 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | C | 1662.153405 | 0.0166 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | D | 1662.153405 | 0.0458 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | E | 1662.153405 | 0.0658 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | -E | -1662.153405 | -0.0658 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | -D | -1662.153405 | -0.0458 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | -C | -1662.153405 | -0.0166 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | -B | -1662.153405 | 0 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | A | 0 | 0 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | B | 1662.153405 | 0 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | C | 1662.153405 | 0.0166 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | D | 1662.153405 | 0.0458 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | E | 1662.153405 | 0.0658 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 138H1 | 24" Steel (Below) M2 | Moment M2 | -E | -1662.153405 | -0.0658 |
| 138H1 | 24" Steel (Below) M2 | Moment M2 | -D | -1662.153405 | -0.0458 |
| 138H1 | 24" Steel (Below) M2 | Moment M2 | -C | -1662.153405 | -0.0166 |
| 138H1 | 24" Steel (Below) M2 | Moment M2 | -B | -1662.153405 | 0 |
| 138H1 | 24" Steel (Below) M2 | Moment M2 | A | 0 | 0 |
| 138H1 | 24" Steel (Below) M2 | Moment M2 | B | 1662.153405 | 0 |

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|---|---|---|---|---|---|
| 138H1 | 24" Steel (Below) M2 | Moment M2 | C | 1662.153405 | 0.0166 |
| 138H1 | 24" Steel (Below) M2 | Moment M2 | D | 1662.153405 | 0.0458 |
| 138H1 | 24" Steel (Below) M2 | Moment M2 | E | 1662.153405 | 0.0658 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | -E | -1662.153405 | -0.0658 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | -D | -1662.153405 | -0.0458 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | -C | -1662.153405 | -0.0166 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | -B | -1662.153405 | 0 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | A | 0 | 0 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | B | 1662.153405 | 0 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | C | 1662.153405 | 0.0166 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | D | 1662.153405 | 0.0458 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | E | 1662.153405 | 0.0658 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |

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|---|---|---|---|---|---|
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |

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|---|---|---|---|---|---|
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |

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|---|---|---|---|---|---|
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |

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|---|---|---|---|---|---|
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |

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|---|---|---|---|---|---|
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |

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|---|---|---|---|---|---|
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |

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|---|---|---|---|---|---|
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |

| | | | | | |
|---|---|---|---|---|---|
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |

| | | | | | |
|---|---|---|---|---|---|
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |

| | | | | | |
|---|---|---|---|---|---|
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |

| | | | | | |
|---|---|---|---|---|---|
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |

| | | | | | |
|---|---|---|---|---|---|
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |

| | | | | | |
|---|---|---|---|---|---|
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | -E | -1662.153405 | -0.0658 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | -D | -1662.153405 | -0.0458 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | -C | -1662.153405 | -0.0166 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | -B | -1662.153405 | 0 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | A | 0 | 0 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | B | 1662.153405 | 0 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | C | 1662.153405 | 0.0166 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | D | 1662.153405 | 0.0458 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | E | 1662.153405 | 0.0658 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | -E | -1662.153405 | -0.0658 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | -D | -1662.153405 | -0.0458 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | -C | -1662.153405 | -0.0166 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | -B | -1662.153405 | 0 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | A | 0 | 0 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | B | 1662.153405 | 0 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | C | 1662.153405 | 0.0166 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | D | 1662.153405 | 0.0458 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | E | 1662.153405 | 0.0658 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | -E | -1662.153405 | -0.0658 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | -D | -1662.153405 | -0.0458 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | -C | -1662.153405 | -0.0166 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | -B | -1662.153405 | 0 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | A | 0 | 0 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | B | 1662.153405 | 0 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | C | 1662.153405 | 0.0166 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | D | 1662.153405 | 0.0458 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | E | 1662.153405 | 0.0658 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | -E | -1662.153405 | -0.0658 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | -D | -1662.153405 | -0.0458 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | -C | -1662.153405 | -0.0166 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | -B | -1662.153405 | 0 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | A | 0 | 0 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | B | 1662.153405 | 0 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | C | 1662.153405 | 0.0166 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | D | 1662.153405 | 0.0458 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | E | 1662.153405 | 0.0658 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |

| | | | | | |
|---|---|---|---|---|---|
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |

| | | | | | |
|---|---|---|---|---|---|
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |

| | | | | | |
|---|---|---|---|---|---|
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |

| | | | | | |
|---|---|---|---|---|---|
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |

| | | | | | |
|---|---|---|---|---|---|
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |

| | | | | | |
|---|---|---|---|---|---|
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -E | -665.46 | -0.172 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -D | -665.46 | -0.125 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -C | -665.46 | -0.02 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | -B | -665.46 | 0 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | A | 0 | 0 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | B | 665.46 | 0 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | C | 665.46 | 0.02 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | D | 665.46 | 0.125 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | E | 665.46 | 0.172 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -E | -665.46 | -0.172 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -D | -665.46 | -0.125 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -C | -665.46 | -0.02 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | -B | -665.46 | 0 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | A | 0 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | B | 665.46 | 0 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | C | 665.46 | 0.02 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | D | 665.46 | 0.125 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | E | 665.46 | 0.172 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -E | -826.21 | -0.067 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -D | -826.21 | -0.0275 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -C | -826.21 | -0.0163 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | -B | -826.21 | 0 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | A | 0 | 0 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | B | 826.21 | 0 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | C | 826.21 | 0.0163 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | D | 826.21 | 0.0275 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | E | 826.21 | 0.067 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -E | -826.21 | -0.067 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -D | -826.21 | -0.0275 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -C | -826.21 | -0.0163 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | -B | -826.21 | 0 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | A | 0 | 0 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | B | 826.21 | 0 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | C | 826.21 | 0.0163 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | D | 826.21 | 0.0275 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | E | 826.21 | 0.067 |

| TABLE: Hinges Gen 04 - Noninteracting - Deform Control - Acceptance | | | | | |
|---|---|---|---|---|---|
| HingeName | AssignHinge | DOFType | ACPoint | ACPos | ACNeg |
| Text | Text | Text | Text | Unitless | Unitless |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1007H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1007H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 100H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 100H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1029H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1029H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 103H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 103H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1051H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1051H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 106H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 106H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1073H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1073H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1095H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1095H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 109H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |

| | | | | | |
|---|---|---|---|---|---|
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 109H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1117H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1117H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 112H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 112H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1139H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1139H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 115H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 115H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1161H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1161H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1183H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1183H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 118H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 118H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1205H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1205H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 121H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |

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|---|---|---|---|---|---|
| 121H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1227H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1227H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 1249H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 1249H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 124H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 124H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 127H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 127H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 130H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 130H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 131H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 131H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | IO | 0.0166 | -0.0166 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | LS | 0.0458 | -0.0458 |
| 132H1 | 24" Steel (Below) M2 | Moment M2 | CP | 0.0658 | -0.0658 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | IO | 0.0166 | -0.0166 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | LS | 0.0458 | -0.0458 |
| 132H2 | 24" Steel (Below) M3 | Moment M3 | CP | 0.0658 | -0.0658 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 133H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 133H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 136H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 136H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |

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|---|---|---|---|---|---|
| 138H1 | 24" Steel (Below) M2 | Moment M2 | IO | 0.0166 | -0.0166 |
| 138H1 | 24" Steel (Below) M2 | Moment M2 | LS | 0.0458 | -0.0458 |
| 138H1 | 24" Steel (Below) M2 | Moment M2 | CP | 0.0658 | -0.0658 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | IO | 0.0166 | -0.0166 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | LS | 0.0458 | -0.0458 |
| 138H2 | 24" Steel (Below) M3 | Moment M3 | CP | 0.0658 | -0.0658 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 139H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 139H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 142H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 142H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 145H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 145H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 148H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 148H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 151H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 151H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 154H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 154H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 157H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 157H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 160H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 160H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |

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|---|---|---|---|---|---|
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 163H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 163H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 166H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 166H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 169H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 169H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 172H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 172H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 175H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 175H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 178H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 178H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 17H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 17H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 181H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 181H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 184H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 184H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |

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|---|---|---|---|---|---|
| 187H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 187H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 190H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 190H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 193H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 193H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 196H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 196H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 197H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 197H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 199H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 199H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 202H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 202H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 205H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 205H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 208H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 208H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 211H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |

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|---|---|---|---|---|---|
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 211H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 237H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 237H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 259H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 259H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 281H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 281H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 303H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 303H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 325H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 325H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 347H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 347H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 369H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 369H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 391H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 391H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 39H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |

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|---|---|---|---|---|---|
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 39H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 413H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 413H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 435H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 435H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 457H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 457H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 479H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 479H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 501H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 501H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 523H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 523H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 545H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 545H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 567H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 567H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 589H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |

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|---|---|---|---|---|---|
| 589H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 58H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 58H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 611H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 611H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 61H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 61H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 633H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 633H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | IO | 0.0166 | -0.0166 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | LS | 0.0458 | -0.0458 |
| 63H1 | 24" Steel (Below) M2 | Moment M2 | CP | 0.0658 | -0.0658 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | IO | 0.0166 | -0.0166 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | LS | 0.0458 | -0.0458 |
| 63H2 | 24" Steel (Below) M3 | Moment M3 | CP | 0.0658 | -0.0658 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 64H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 64H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 655H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 655H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 65H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 65H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 677H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 677H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |

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|---|---|---|---|---|---|
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 67H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 67H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 699H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 699H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | IO | 0.0166 | -0.0166 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | LS | 0.0458 | -0.0458 |
| 69H1 | 24" Steel (Below) M2 | Moment M2 | CP | 0.0658 | -0.0658 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | IO | 0.0166 | -0.0166 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | LS | 0.0458 | -0.0458 |
| 69H2 | 24" Steel (Below) M3 | Moment M3 | CP | 0.0658 | -0.0658 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 70H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 70H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 721H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 721H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 73H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 73H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 743H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 743H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 765H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 765H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 76H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 76H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |

| | | | | | |
|---|---|---|---|---|---|
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 787H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 787H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 79H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 79H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 809H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 809H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 82H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 82H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 831H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 831H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 853H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 853H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 85H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 85H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 875H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 875H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 88H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 88H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |

| | | | | | |
|---|---|---|---|---|---|
| 897H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 897H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 919H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 919H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 91H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 91H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 941H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 941H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 94H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 94H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 963H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 963H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | IO | 0.02 | -0.02 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | LS | 0.125 | -0.125 |
| 97H1 | 24" Conc 8 #10 80ksi M2 | Moment M2 | CP | 0.172 | -0.172 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | IO | 0.02 | -0.02 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | LS | 0.125 | -0.125 |
| 97H2 | 24" Conc 8 #10 80ksi M3 | Moment M3 | CP | 0.172 | -0.172 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | IO | 0.0163 | -0.0163 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | LS | 0.0275 | -0.0275 |
| 985H1 | 24" Conc. 16PS/#9 (Below) M2 | Moment M2 | CP | 0.0354 | -0.0354 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | IO | 0.0163 | -0.0163 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | LS | 0.0275 | -0.0275 |
| 985H2 | 24" Conc. 16PS/#9 (Below) M3 | Moment M3 | CP | 0.0354 | -0.0354 |

**TABLE: Load Case Definitions**

| Case | Type | InitialCond | ModalCase | BaseCase | MassSource | DesTypeOpt | DesignType | DesActOpt | DesignAct | AutoType | RunCase | CaseStatus | GUID | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Text | Text | Text | Text | Text | Text | Text | Text | Text | Text | Text | Yes/No | Text | Text | Text |
| DEAD | LinStatic | Zero | | | | Prog Det | Dead | Prog Det | Non-Composite | None | Yes | Finished | 2f5755ac-1d96-4a72-9a4c-0a21c8656908 | |
| MODAL | LinModal | Zero | | | | Prog Det | Other | Prog Det | Other | None | Yes | Finished | 37bb5d9d-0b3d-41f5-840b-3a7a56afff77 | |
| LIVE | LinStatic | Zero | | | | Prog Det | Live | Prog Det | Short-Term Composite | None | No | Not Run | c1c7e9d0-efe0-45fa-b654-08bf7783843f | |
| 1.4D | LinStatic | Zero | | | | Prog Det | Dead | Prog Det | Non-Composite | None | No | Not Run | 9a1dd2b1-f97b-42a2-9bb3-c45bbd42a69c | |
| 1.2D + 1.6L (Uniform) | LinStatic | Zero | | | | Prog Det | Dead | Prog Det | Non-Composite | None | No | Not Run | 41ed4d66-d2d0-4f85-af0d-218173ad92c6 | |
| 1.4D Nonlinear | NonStatic | Zero | | | | Prog Det | Dead | Prog Det | Non-Composite | None | No | Not Run | d9cb8a35-a4f5-4ba3-be70-b9b4ceadafff | |
| 1.2D+1.6L Nonlinear | NonStatic | Zero | | | | Prog Det | Dead | Prog Det | Non-Composite | None | No | Not Run | 3feedf82-f057-4c23-bf42-dae664e808b1 | |
| 1st Mode Nonlinear | NonStatic | Zero | MODAL | | | Prog Det | | Prog Det | Other | None | No | Not Run | 9b77d850-bbae-4e56-94bd-6567c83293aa | |
| RS CLE U1 | LinRespSpec | | MODAL | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 98f7a438-cc92-402e-afff-02bebe197165 | |
| RS OLE U2 | LinRespSpec | | MODAL | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 3fbb8a8f-1b82-4b47-9145-91149f92b1b7 | |
| RS CLE 225 U1 | LinRespSpec | | MODAL | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 68ba13aa-d517-4f1b-8449-37da8e3fef6c | |
| RS CLE 225 U2 | LinRespSpec | | MODAL | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | e7ee4a54-968d-451f-b859-b593de85618f | |
| RS CLE 475 U1 | LinRespSpec | | MODAL | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | d81082c7-48cf-4ff3-930a-8e730a14e835 | |
| RS CLE 475 U2 | LinRespSpec | | MODAL | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | e949254e-8807-4811-a541-3331a04ab862 | |
| RS DE U1 | LinRespSpec | | MODAL | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 48415882-7670-4f75-86d1-98f1784bbb7d | |
| RS DE U2 | LinRespSpec | | MODAL | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 438e857c-b7a6-4860-8a52-25e184214261 | |
| RS MCE U1 | LinRespSpec | | MODAL | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | e80e4c49-727d-42f6-8caf-dd355fc9d8f5 | |
| RS MCE U2 | LinRespSpec | | MODAL | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 902c93d6-74c7-42af-81da-236b38d63e7c | |
| test | LinStatic | Zero | | | | Prog Det | Dead | Prog Det | Non-Composite | None | No | Not Run | 84f2107c-db62-4237-ad6b-434834dbc3fa | |
| test y | LinStatic | Zero | | | | Prog Det | Dead | Prog Det | Non-Composite | None | No | Not Run | 50ce5b69-4da2-4ee4-a7af-a7515c954efe | |
| kinematic y | LinStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | ee74c137-e200-4ab8-a084-20bee217c1ac | |
| Kinematic Loading Y | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 49aa6b0a-afcd-42e2-ba79-1739ad6b726d | |
| 0.5Kinematic Loading Y | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 657bde37-06e3-40b4-a50e-5639235792a9 | |
| -UY Nonlinear | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | Yes | Finished | e697f952-bdbb-4d33-ae0b-2e16c6b3b5b9 | |
| UY Nonlinear | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | eb2472fb-a178-49eb-b153-4a64fe41b8f0 | |
| -UX Nonlinear | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | Yes | Finished | 6ea436eb-7e0b-462a-9a6a-3519a6530949 | |
| -UY Nonlinear + Kinematic Loading Y | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 625da7a5-8843-4e8e-a36c-a8586dfeb3e2 | |
| -UY Nonlinear + Kinematic Loading Y (Full) | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | b7881a06-677b-4e49-bb5e-8e650a36d590 | |
| UY Nonlinear + Kinematic Loading Y | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 94ae7e71-1b51-46e8-aee5-401e50aadbea | |
| UY Nonlinear + Kinematic Loading Y (Full) | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | c8460f35-72da-4431-81b7-fb04b7d9e583 | |
| CLE(+Y) | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | Yes | Finished | afb9c94d-fa8b-4f40-a720-2554467b6bd5 | |
| CLE(-Y) | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | Yes | Finished | 34b27303-a56d-45b8-a651-75cb45a4dc3b | |
| CLE(-X) | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | Yes | Finished | 0918cf43-f7a2-4d2d-bb36-df497e109e7c | |
| 0.5CLE(-Y) + Kinematic Loading Y | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | fb2ca0e2-37cb-4964-a1ab-53221fdb610a | |
| 0.5CLE(+Y) + Kinematic Loading Y | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | a229a668-be73-4f9c-b460-572044bb2f9c | |
| 0.5CLE(-X) + Kinematic Loading Y | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | caeae08a-7c4d-428a-8982-3d7074476453 | |
| CLE(-Y) + 0.5Kinematic Loading Y | NonStatic | 0.5Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | b3e54eb5-f5b4-47eb-8f6b-9b1cdefa4c04 | |
| CLE(Y) + 0.5Kinematic Loading Y | NonStatic | 0.5Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | d897f201-897a-4eeb-a804-2a2bd204a01e | |
| CLE(-X) + 0.5Kinematic Loading Y | NonStatic | 0.5Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 6ecbffd0-6ce0-4d47-80e2-f3d736f6b214 | |
| CLE(0.3Y - X) | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | Yes | Finished | f4adc04d-e6d6-41a0-9e6f-f233dc369c30 | |
| CLE(Y - 0.3X) | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | Yes | Finished | e6611953-0256-4cd4-8810-1c1e3e92cf1e | |
| CLE(-0.3Y - X) | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | Yes | Finished | 2016e841-18c9-424d-aaf1-4036fe222aca | |
| CLE(-Y - 0.3X) | NonStatic | Zero | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | Yes | Finished | 863f70e2-f2e8-43b7-86fe-53f5bfa0c535 | |
| 0.5CLE(-Y - 0.3X) + Kinematic Loading Y | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | b4542703-add5-451b-af35-257ba08d6fe7 | |
| 0.5CLE(Y - 0.3X) + Kinematic Loading Y | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | c8165181-dd64-4897-8387-8c9f2cf8f476 | |
| 0.5CLE(-0.3Y - X) + Kinematic Loading Y | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | cf6766ae-4b20-4cad-aa85-8f59107242d8 | |
| 0.5CLE(0.3Y - X) + Kinematic Loading Y | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 8882a17b-356d-44b2-80fd-8093eb0727b4 | |
| CLE(-Y - 0.3X) + 0.5Kinematic Loading Y | NonStatic | 0.5Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | f5a2f95e-9660-470a-b048-d110208580e2 | |
| CLE(Y - 0.3X) + 0.5Kinematic Loading Y | NonStatic | 0.5Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 47452447-a38f-409e-974a-837d8bc12d73 | |
| CLE(-0.3Y - X) + 0.5Kinematic Loading Y | NonStatic | 0.5Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | 8664017a-7e12-40b3-a549-b634be242c24 | |
| CLE(0.3Y - X) + 0.5Kinematic Loading Y | NonStatic | Kinematic Loading Y | | | | Prog Det | Quake | Prog Det | Short-Term Composite | None | No | Not Run | a3cca346-7215-4c0b-9ba9-f714ccf90ecf | |

TABLE: Frame Hinge States

| Frame | OutputCase | CaseType | StepType | AssignHinge | GenHinge | RelDist | AbsDist | P | V2 | V3 | T | M2 | M3 | U1Plastic | U2Plastic | U3Plastic | R1Plastic | R2Plastic | R3Plastic | HingeState | HingeStatus |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Text | Text | Text | Text | Text | Text | Unitless | in | Kip | Kip | Kip | Kip-in | Kip-in | Kip-in | in | in | in | Radians | Radians | Radians | Text | Text |
| 58 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 7983.777667 | 0 | 0 | 0 | 0 | 0 | 0.013061279 | 0 | B to C | A to IO |
| 58 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 40.47445252 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 58 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | -7983.777667 | 0 | 0 | 0 | 0 | 0 | -0.013061279 | 0 | A to B | A to IO |
| 58 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -40.47445252 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 152.1258992 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 58 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -7985.5262 | 0 | 0 | 0 | 0 | 0 | -0.021420529 | A to B | IO to LS |
| 58 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 2978.738318 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 58 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -7985.5262 | 0 | 0 | 0 | 0 | 0 | -0.02141859 | A to B | IO to LS |
| 58 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 7985.523827 | 0 | 0 | 0 | 0 | 0 | 0.013219635 | 0 | B to C | A to IO |
| 58 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -3394.687468 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 58 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | -2683.636103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -7985.52622 | 0 | 0 | 0 | 0 | 0 | -0.02148721 | A to B | IO to LS |
| 58 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 58 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 58 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 58H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | -7918.183588 | 0 | 0 | 0 | 0 | 0 | -0.013192343 | 0 | A to B | A to IO |
| 58 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 58H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -3474.519064 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 7983.777667 | 0 | 0 | 0 | 0 | 0 | 0.013061279 | 0 | B to C | A to IO |
| 61 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -40.47445404 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 61 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 40.47445404 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | -7983.777667 | 0 | 0 | 0 | 0 | 0 | -0.013061279 | 0 | A to B | A to IO |
| 61 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 61 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | -152.1259054 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -7985.5262 | 0 | 0 | 0 | 0 | 0 | -0.021420529 | A to B | IO to LS |
| 61 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 2683.636095 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 61 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -7985.52622 | 0 | 0 | 0 | 0 | 0 | -0.02148721 | A to B | IO to LS |
| 61 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 7918.183587 | 0 | 0 | 0 | 0 | 0 | 0.013192343 | 0 | B to C | A to IO |
| 61 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -3474.519065 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 61 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | -2978.738325 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -7985.5262 | 0 | 0 | 0 | 0 | 0 | -0.02141859 | A to B | IO to LS |
| 61 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 61 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 61 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 61H1 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | -7985.523827 | 0 | 0 | 0 | 0 | 0 | -0.013219635 | 0 | A to B | A to IO |
| 61 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 61H2 | 0.954968478 | 254.48 | 0 | 0 | 0 | 0 | 0 | -3394.687467 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 7985.523987 | 0 | 0 | 0 | 0 | 0 | 0.013927592 | 0 | B to C | A to IO |
| 64 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -3.175321464 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 64 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 3.175321463 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | -7985.523987 | 0 | 0 | 0 | 0 | 0 | -0.013927592 | 0 | A to B | A to IO |
| 64 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 153.8634893 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 64 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -7985.525853 | 0 | 0 | 0 | 0 | 0 | -0.020445018 | A to B | IO to LS |
| 64 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 3123.589409 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 64 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -7985.525864 | 0 | 0 | 0 | 0 | 0 | -0.020482175 | A to B | IO to LS |
| 64 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 7985.524034 | 0 | 0 | 0 | 0 | 0 | 0.014092379 | 0 | B to C | A to IO |
| 64 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -3271.013577 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 64 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | -2817.040795 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -7985.359355 | 0 | 0 | 0 | 0 | 0 | -0.020478387 | A to B | IO to LS |
| 64 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 64 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 64 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 64H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | -7927.02889 | 0 | 0 | 0 | 0 | 0 | -0.014105881 | 0 | A to B | A to IO |
| 64 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 64H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -3265.129117 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 7985.523987 | 0 | 0 | 0 | 0 | 0 | 0.013927592 | 0 | B to C | A to IO |
| 67 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 3.175320819 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 67 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | -7985.523987 | 0 | 0 | 0 | 0 | 0 | -0.013927592 | 0 | A to B | A to IO |
| 67 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -3.17532082 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 67 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | -153.863497 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -7985.525853 | 0 | 0 | 0 | 0 | 0 | -0.020445018 | A to B | IO to LS |
| 67 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 2817.040786 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 67 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -7985.359355 | 0 | 0 | 0 | 0 | 0 | -0.020478387 | A to B | IO to LS |
| 67 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 7927.028889 | 0 | 0 | 0 | 0 | 0 | 0.014105881 | 0 | B to C | A to IO |
| 67 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -3265.129117 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C to D | A to IO |
| 67 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | -3123.589415 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -7985.525864 | 0 | 0 | 0 | 0 | 0 | -0.020482174 | A to B | IO to LS |
| 67 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 67 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 67 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 67H1 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | -7985.524034 | 0 | 0 | 0 | 0 | 0 | -0.014092379 | 0 | A to B | A to IO |
| 67 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 67H2 | 0.955330554 | 256.64 | 0 | 0 | 0 | 0 | 0 | -3271.013577 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 7941.516519 | 0 | 0 | 0 | 0 | 0 | 0.013141274 | 0 | B to C | A to IO |
| 70 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 1.75038789 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 70 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | -7941.516519 | 0 | 0 | 0 | 0 | 0 | -0.013141274 | 0 | A to B | A to IO |
| 70 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -1.750387888 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 150.5425941 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 70 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -7985.525428 | 0 | 0 | 0 | 0 | 0 | -0.019249659 | A to B | A to IO |
| 70 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 2998.236763 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 70 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -7985.525439 | 0 | 0 | 0 | 0 | 0 | -0.019286899 | A to B | A to IO |
| 70 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 7949.911891 | 0 | 0 | 0 | 0 | 0 | 0.013316312 | 0 | B to C | A to IO |
| 70 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -3083.633514 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 70 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | -2698.280928 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -7985.525439 | 0 | 0 | 0 | 0 | 0 | -0.019288832 | A to B | A to IO |
| 70 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 70 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 70 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 70H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | -7972.907822 | 0 | 0 | 0 | 0 | 0 | -0.013084052 | 0 | A to B | A to IO |
| 70 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 70H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -3087.08948 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 7941.516519 | 0 | 0 | 0 | 0 | 0 | 0.013141274 | 0 | B to C | A to IO |
| 73 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -1.750386754 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 73 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 1.750386756 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | -7941.516519 | 0 | 0 | 0 | 0 | 0 | -0.013141274 | 0 | A to B | A to IO |
| 73 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | -150.5426015 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -7985.525428 | 0 | 0 | 0 | 0 | 0 | -0.019249659 | A to B | A to IO |
| 73 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 2698.28092 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 73 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -7985.525439 | 0 | 0 | 0 | 0 | 0 | -0.019288832 | A to B | A to IO |
| 73 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 7972.907821 | 0 | 0 | 0 | 0 | 0 | 0.013084052 | 0 | B to C | A to IO |
| 73 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -3087.089479 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 73 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | -2998.23677 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -7985.525439 | 0 | 0 | 0 | 0 | 0 | -0.019286899 | A to B | A to IO |
| 73 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 73 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 73 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 73H1 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | -7949.911891 | 0 | 0 | 0 | 0 | 0 | -0.013316312 | 0 | A to B | A to IO |
| 73 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 73H2 | 0.955823885 | 259.64 | 0 | 0 | 0 | 0 | 0 | -3083.633515 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7985.523697 | 0 | 0 | 0 | 0 | 0 | 0.013134279 | 0 | B to C | A to IO |
| 76 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.521604994 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 76 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.521604997 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7985.523697 | 0 | 0 | 0 | 0 | 0 | -0.013134279 | 0 | A to B | A to IO |
| 76 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 134.964319 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 76 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.525183 | 0 | 0 | 0 | 0 | 0 | -0.018413663 | A to B | A to IO |
| 76 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2994.747725 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 76 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.525195 | 0 | 0 | 0 | 0 | 0 | -0.018455412 | A to B | A to IO |
| 76 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7985.523747 | 0 | 0 | 0 | 0 | 0 | 0.01331258 | 0 | B to C | A to IO |
| 76 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2972.427724 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 76 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2725.895559 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.525194 | 0 | 0 | 0 | 0 | 0 | -0.018454748 | A to B | A to IO |
| 76 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 76 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 76 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 76H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7940.462536 | 0 | 0 | 0 | 0 | 0 | -0.013294707 | 0 | A to B | A to IO |
| 76 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 76H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2971.182525 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7985.523696 | 0 | 0 | 0 | 0 | 0 | 0.013134279 | 0 | B to C | A to IO |
| 79 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.52160777 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 79 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7985.523696 | 0 | 0 | 0 | 0 | 0 | -0.013134279 | 0 | A to B | A to IO |
| 79 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.521607768 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 79 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -134.9643265 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.525183 | 0 | 0 | 0 | 0 | 0 | -0.018413663 | A to B | A to IO |
| 79 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2725.89555 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 79 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.525194 | 0 | 0 | 0 | 0 | 0 | -0.018454748 | A to B | A to IO |
| 79 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7940.462535 | 0 | 0 | 0 | 0 | 0 | 0.013294707 | 0 | B to C | A to IO |
| 79 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2971.182522 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 79 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2994.747731 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.525195 | 0 | 0 | 0 | 0 | 0 | -0.018455412 | A to B | A to IO |
| 79 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 79 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 79 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 79H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7985.523747 | 0 | 0 | 0 | 0 | 0 | -0.01331258 | 0 | A to B | A to IO |
| 79 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 79H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2972.427727 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7972.981863 | 0 | 0 | 0 | 0 | 0 | 0.013134912 | 0 | B to C | A to IO |
| 82 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.086665224 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 82 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.086665224 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7972.981863 | 0 | 0 | 0 | 0 | 0 | -0.013134912 | 0 | A to B | A to IO |
| 82 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 123.1118899 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 82 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524966 | 0 | 0 | 0 | 0 | 0 | -0.017641782 | A to B | A to IO |
| 82 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2979.031862 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 82 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524978 | 0 | 0 | 0 | 0 | 0 | -0.017686399 | A to B | A to IO |
| 82 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7967.295191 | 0 | 0 | 0 | 0 | 0 | 0.013307528 | 0 | B to C | A to IO |
| 82 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2883.340081 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 82 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2733.821752 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524978 | 0 | 0 | 0 | 0 | 0 | -0.017686238 | A to B | A to IO |
| 82 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 82 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 82 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 82H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7933.546065 | 0 | 0 | 0 | 0 | 0 | -0.013292361 | 0 | A to B | A to IO |
| 82 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 82H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2883.297462 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7972.981863 | 0 | 0 | 0 | 0 | 0 | 0.013134912 | 0 | B to C | A to IO |
| 85 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.086668988 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 85 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7972.981863 | 0 | 0 | 0 | 0 | 0 | -0.013134912 | 0 | A to B | A to IO |
| 85 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.086668989 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 85 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -123.1118973 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524966 | 0 | 0 | 0 | 0 | 0 | -0.017641782 | A to B | A to IO |
| 85 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2733.821744 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 85 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524978 | 0 | 0 | 0 | 0 | 0 | -0.017686238 | A to B | A to IO |
| 85 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7933.546064 | 0 | 0 | 0 | 0 | 0 | 0.013292361 | 0 | B to C | A to IO |
| 85 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2883.297458 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 85 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2979.031869 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524978 | 0 | 0 | 0 | 0 | 0 | -0.017686399 | A to B | A to IO |
| 85 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 85 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 85 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 85H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7967.295191 | 0 | 0 | 0 | 0 | 0 | -0.013307528 | 0 | A to B | A to IO |
| 85 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 85H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2883.340086 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7971.939749 | 0 | 0 | 0 | 0 | 0 | 0.013136321 | 0 | B to C | A to IO |
| 88 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.139798541 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 88 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.13979854 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7971.939749 | 0 | 0 | 0 | 0 | 0 | -0.013136321 | 0 | A to B | A to IO |
| 88 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 110.4886507 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 88 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524772 | 0 | 0 | 0 | 0 | 0 | -0.016952101 | A to B | A to IO |
| 88 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2965.844832 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 88 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524785 | 0 | 0 | 0 | 0 | 0 | -0.016998791 | A to B | A to IO |
| 88 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7960.991888 | 0 | 0 | 0 | 0 | 0 | 0.013307586 | 0 | B to C | A to IO |
| 88 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2821.654982 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 88 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2745.795661 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 88 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.443125 | 0 | 0 | 0 | 0 | 0 | -0.016998813 | A to B | A to IO |
| 88 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 88 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 88 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 88H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7937.781426 | 0 | 0 | 0 | 0 | 0 | -0.01329719 | 0 | A to B | A to IO |
| 88 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 88H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2821.385866 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7971.939748 | 0 | 0 | 0 | 0 | 0 | 0.013136321 | 0 | B to C | A to IO |
| 91 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.139804093 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 91 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7971.939748 | 0 | 0 | 0 | 0 | 0 | -0.013136321 | 0 | A to B | A to IO |
| 91 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.139804093 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 91 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -110.4886582 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524772 | 0 | 0 | 0 | 0 | 0 | -0.016952101 | A to B | A to IO |
| 91 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2745.795653 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 91 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.443125 | 0 | 0 | 0 | 0 | 0 | -0.016998814 | A to B | A to IO |
| 91 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7937.781425 | 0 | 0 | 0 | 0 | 0 | 0.01329719 | 0 | B to C | A to IO |
| 91 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2821.385859 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 91 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2965.844839 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524785 | 0 | 0 | 0 | 0 | 0 | -0.016998791 | A to B | A to IO |
| 91 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 91 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 91 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 91H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7960.991887 | 0 | 0 | 0 | 0 | 0 | -0.013307586 | 0 | A to B | A to IO |
| 91 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 91H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2821.654989 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7969.38085 | 0 | 0 | 0 | 0 | 0 | 0.013137371 | 0 | B to C | A to IO |
| 94 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.125624436 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 94 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.125624435 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7969.38085 | 0 | 0 | 0 | 0 | 0 | -0.013137371 | 0 | A to B | A to IO |
| 94 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 98.18842783 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 94 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524598 | 0 | 0 | 0 | 0 | 0 | -0.016335016 | A to B | A to IO |
| 94 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2952.62528 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 94 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524612 | 0 | 0 | 0 | 0 | 0 | -0.016385519 | A to B | A to IO |
| 94 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7954.096933 | 0 | 0 | 0 | 0 | 0 | 0.013306525 | 0 | B to C | A to IO |
| 94 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2781.041865 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 94 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2757.064965 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.449934 | 0 | 0 | 0 | 0 | 0 | -0.016385482 | A to B | A to IO |
| 94 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 94 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 94 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 94H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7939.556299 | 0 | 0 | 0 | 0 | 0 | -0.013299963 | 0 | A to B | A to IO |
| 94 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 94H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2780.819878 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7969.380849 | 0 | 0 | 0 | 0 | 0 | 0.013137371 | 0 | B to C | A to IO |
| 97 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.125631964 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 97 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7969.380849 | 0 | 0 | 0 | 0 | 0 | -0.013137371 | 0 | A to B | A to IO |
| 97 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.125631965 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 97 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -98.18843538 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524598 | 0 | 0 | 0 | 0 | 0 | -0.016335016 | A to B | A to IO |
| 97 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2757.064957 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 97 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.449934 | 0 | 0 | 0 | 0 | 0 | -0.016385482 | A to B | A to IO |
| 97 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7939.556298 | 0 | 0 | 0 | 0 | 0 | 0.013299963 | 0 | B to C | A to IO |
| 97 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2780.819869 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 97 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2952.625287 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524612 | 0 | 0 | 0 | 0 | 0 | -0.016385518 | A to B | A to IO |
| 97 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 97 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 97 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 97H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7954.096933 | 0 | 0 | 0 | 0 | 0 | -0.013306525 | 0 | A to B | A to IO |
| 97 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 97H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2781.041874 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7967.192294 | 0 | 0 | 0 | 0 | 0 | 0.013138332 | 0 | B to C | A to IO |
| 100 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.124320786 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 100 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.124320785 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7967.192294 | 0 | 0 | 0 | 0 | 0 | -0.013138332 | 0 | A to B | A to IO |
| 100 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 86.61908356 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 100 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524445 | 0 | 0 | 0 | 0 | 0 | -0.015791429 | A to B | A to IO |
| 100 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2940.25349 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 100 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524459 | 0 | 0 | 0 | 0 | 0 | -0.015842594 | A to B | A to IO |
| 100 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7948.491366 | 0 | 0 | 0 | 0 | 0 | 0.013306041 | 0 | B to C | A to IO |
| 100 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2757.54035 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 100 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2767.689251 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524459 | 0 | 0 | 0 | 0 | 0 | -0.015842375 | A to B | A to IO |
| 100 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 100 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 100 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 100H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7940.785954 | 0 | 0 | 0 | 0 | 0 | -0.013302524 | 0 | A to B | A to IO |
| 100 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 100H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2757.310094 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7967.192294 | 0 | 0 | 0 | 0 | 0 | 0.013138332 | 0 | B to C | A to IO |
| 103 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.124330439 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 103 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7967.192294 | 0 | 0 | 0 | 0 | 0 | -0.013138332 | 0 | A to B | A to IO |
| 103 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.12433044 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 103 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -86.61909103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524445 | 0 | 0 | 0 | 0 | 0 | -0.015791429 | A to B | A to IO |
| 103 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2767.689243 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 103 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524459 | 0 | 0 | 0 | 0 | 0 | -0.015842375 | A to B | A to IO |
| 103 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7940.785953 | 0 | 0 | 0 | 0 | 0 | 0.013302524 | 0 | B to C | A to IO |
| 103 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2757.310083 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 103 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2940.253497 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524459 | 0 | 0 | 0 | 0 | 0 | -0.015842594 | A to B | A to IO |
| 103 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 103 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 103 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 103H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7948.491366 | 0 | 0 | 0 | 0 | 0 | -0.013306041 | 0 | A to B | A to IO |
| 103 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 103H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2757.540361 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7965.009909 | 0 | 0 | 0 | 0 | 0 | 0.013139139 | 0 | B to C | A to IO |
| 106 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.120621616 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 106 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.120621615 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7965.009909 | 0 | 0 | 0 | 0 | 0 | -0.013139139 | 0 | A to B | A to IO |
| 106 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 106 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 76.03595299 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 106 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524285 | 0 | 0 | 0 | 0 | 0 | -0.015224308 | A to B | A to IO |
| 106 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2928.894376 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 106 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.5243 | 0 | 0 | 0 | 0 | 0 | -0.015277995 | A to B | A to IO |
| 106 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7943.742994 | 0 | 0 | 0 | 0 | 0 | 0.013305714 | 0 | B to C | A to IO |
| 106 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2747.147486 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 106 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2777.322538 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.451506 | 0 | 0 | 0 | 0 | 0 | -0.015277963 | A to B | A to IO |
| 106 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 106 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 106 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 106H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7941.169994 | 0 | 0 | 0 | 0 | 0 | -0.013304492 | 0 | A to B | A to IO |
| 106 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 106H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2746.920054 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7965.009908 | 0 | 0 | 0 | 0 | 0 | 0.013139139 | 0 | B to C | A to IO |
| 109 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.120633443 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 109 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7965.009908 | 0 | 0 | 0 | 0 | 0 | -0.013139139 | 0 | A to B | A to IO |
| 109 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.120633444 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 109 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -76.0359611 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524285 | 0 | 0 | 0 | 0 | 0 | -0.015224308 | A to B | A to IO |
| 109 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2777.322529 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 109 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.451506 | 0 | 0 | 0 | 0 | 0 | -0.015277963 | A to B | A to IO |
| 109 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7941.169993 | 0 | 0 | 0 | 0 | 0 | 0.013304492 | 0 | B to C | A to IO |
| 109 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2746.92004 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 109 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2928.894384 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.5243 | 0 | 0 | 0 | 0 | 0 | -0.015277995 | A to B | A to IO |
| 109 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 109 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 109 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 109H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7943.742994 | 0 | 0 | 0 | 0 | 0 | -0.013305714 | 0 | A to B | A to IO |
| 109 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 109H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2747.147499 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7962.902233 | 0 | 0 | 0 | 0 | 0 | 0.013139809 | 0 | B to C | A to IO |
| 112 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.117463394 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 112 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.117463394 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7962.902233 | 0 | 0 | 0 | 0 | 0 | -0.013139809 | 0 | A to B | A to IO |
| 112 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 67.20380916 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 112 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -0.769336183 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524192 | 0 | 0 | 0 | 0 | 0 | -0.014892563 | A to B | A to IO |
| 112 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2919.33193 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 112 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524207 | 0 | 0 | 0 | 0 | 0 | -0.014947892 | A to B | A to IO |
| 112 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7939.817728 | 0 | 0 | 0 | 0 | 0 | 0.013305592 | 0 | B to C | A to IO |
| 112 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2746.309873 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 112 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2785.213605 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.453031 | 0 | 0 | 0 | 0 | 0 | -0.014947863 | A to B | A to IO |
| 112 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 112 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 112 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 112H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7940.880404 | 0 | 0 | 0 | 0 | 0 | -0.013306003 | 0 | A to B | A to IO |
| 112 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 112H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2746.082833 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7962.902233 | 0 | 0 | 0 | 0 | 0 | 0.013139809 | 0 | B to C | A to IO |
| 115 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.117477296 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 115 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7962.902233 | 0 | 0 | 0 | 0 | 0 | -0.013139809 | 0 | A to B | A to IO |
| 115 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.117477297 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0.769333733 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 115 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -67.20381414 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524192 | 0 | 0 | 0 | 0 | 0 | -0.014892563 | A to B | A to IO |
| 115 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2785.213599 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 115 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.453031 | 0 | 0 | 0 | 0 | 0 | -0.014947863 | A to B | A to IO |
| 115 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7940.880403 | 0 | 0 | 0 | 0 | 0 | 0.013306003 | 0 | B to C | A to IO |
| 115 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2746.082818 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 115 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2919.331935 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.524207 | 0 | 0 | 0 | 0 | 0 | -0.014947892 | A to B | A to IO |
| 115 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 115 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 115 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 115H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7939.817727 | 0 | 0 | 0 | 0 | 0 | -0.013305592 | 0 | A to B | A to IO |
| 115 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 115H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2746.309889 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7960.854764 | 0 | 0 | 0 | 0 | 0 | 0.013140337 | 0 | B to C | A to IO |
| 118 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.116471359 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 118 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.116471364 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7960.854764 | 0 | 0 | 0 | 0 | 0 | -0.013140337 | 0 | A to B | A to IO |
| 118 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 59.28124983 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 118 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -4.407488778 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7928.618452 | 0 | 0 | 0 | 0 | 0 | -0.014593804 | A to B | A to IO |
| 118 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2910.723182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 118 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7928.618776 | 0 | 0 | 0 | 0 | 0 | -0.014649594 | A to B | A to IO |
| 118 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7936.586179 | 0 | 0 | 0 | 0 | 0 | 0.013305605 | 0 | B to C | A to IO |
| 118 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2751.972186 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 118 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2792.198513 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7928.549673 | 0 | 0 | 0 | 0 | 0 | -0.014649566 | A to B | A to IO |
| 118 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 118 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 118 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 118H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7940.017409 | 0 | 0 | 0 | 0 | 0 | -0.013307087 | 0 | A to B | A to IO |
| 118 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 118H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2751.745882 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7960.85476 | 0 | 0 | 0 | 0 | 0 | 0.013140337 | 0 | B to C | A to IO |
| 121 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0.116485778 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 121 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7960.85476 | 0 | 0 | 0 | 0 | 0 | -0.013140337 | 0 | A to B | A to IO |
| 121 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -0.116485773 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 4.407472244 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 121 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -59.28127119 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7928.618451 | 0 | 0 | 0 | 0 | 0 | -0.014593804 | A to B | A to IO |
| 121 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2792.19849 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 121 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7928.549672 | 0 | 0 | 0 | 0 | 0 | -0.014649566 | A to B | A to IO |
| 121 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7940.017402 | 0 | 0 | 0 | 0 | 0 | 0.013307087 | 0 | B to C | A to IO |
| 121 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2751.745867 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 121 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 121 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2910.723201 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7928.618774 | 0 | 0 | 0 | 0 | 0 | -0.014649594 | A to B | A to IO |
| 121 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 121 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 121 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 121H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7936.586179 | 0 | 0 | 0 | 0 | 0 | -0.013305605 | 0 | A to B | A to IO |
| 121 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 121H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2751.9722 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7958.868902 | 0 | 0 | 0 | 0 | 0 | 0.013140725 | 0 | B to C | A to IO |
| 124 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.1161293 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 124 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.116129304 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7958.868902 | 0 | 0 | 0 | 0 | 0 | -0.013140725 | 0 | A to B | A to IO |
| 124 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 53.26164998 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 124 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -6.776064202 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.523995 | 0 | 0 | 0 | 0 | 0 | -0.014192783 | A to B | A to IO |
| 124 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2904.062634 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 124 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.524011 | 0 | 0 | 0 | 0 | 0 | -0.014248344 | A to B | A to IO |
| 124 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7933.940749 | 0 | 0 | 0 | 0 | 0 | 0.013305709 | 0 | B to C | A to IO |
| 124 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2761.593452 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 124 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2797.282664 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.45639 | 0 | 0 | 0 | 0 | 0 | -0.014248317 | A to B | A to IO |
| 124 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 124 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 124 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 124H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7938.691442 | 0 | 0 | 0 | 0 | 0 | -0.013307797 | 0 | A to B | A to IO |
| 124 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 124H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2761.366824 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7958.868896 | 0 | 0 | 0 | 0 | 0 | 0.013140725 | 0 | B to C | A to IO |
| 127 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.116089673 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 127 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7958.868896 | 0 | 0 | 0 | 0 | 0 | -0.013140725 | 0 | A to B | A to IO |
| 127 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.116089669 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 6.776132514 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 127 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -53.26156599 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.523959 | 0 | 0 | 0 | 0 | 0 | -0.014192783 | A to B | A to IO |
| 127 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2797.282745 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 127 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.456318 | 0 | 0 | 0 | 0 | 0 | -0.014248318 | A to B | A to IO |
| 127 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7938.69146 | 0 | 0 | 0 | 0 | 0 | 0.013307797 | 0 | B to C | A to IO |
| 127 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2761.36685 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 127 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2904.062547 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.524011 | 0 | 0 | 0 | 0 | 0 | -0.014248344 | A to B | A to IO |
| 127 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 127 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 127 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 127H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7933.940719 | 0 | 0 | 0 | 0 | 0 | -0.013305709 | 0 | A to B | A to IO |
| 127 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 127H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2761.593399 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7956.941979 | 0 | 0 | 0 | 0 | 0 | 0.013140973 | 0 | B to C | A to IO |
| 130 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.116349891 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 130 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.116349896 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7956.941979 | 0 | 0 | 0 | 0 | 0 | -0.013140973 | 0 | A to B | A to IO |
| 130 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 49.89712141 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 130 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7.701787063 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7972.550294 | 0 | 0 | 0 | 0 | 0 | -0.013863834 | A to B | A to IO |
| 130 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2900.14104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 130 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7972.550282 | 0 | 0 | 0 | 0 | 0 | -0.013918223 | A to B | A to IO |
| 130 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7931.786531 | 0 | 0 | 0 | 0 | 0 | 0.013305864 | 0 | B to C | A to IO |
| 130 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2773.086162 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 130 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2799.673324 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7972.48412 | 0 | 0 | 0 | 0 | 0 | -0.013918196 | A to B | A to IO |
| 130 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 130 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 130 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 130H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7936.992073 | 0 | 0 | 0 | 0 | 0 | -0.013308174 | 0 | A to B | A to IO |
| 130 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 130H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2772.858092 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7956.941956 | 0 | 0 | 0 | 0 | 0 | 0.013140973 | 0 | B to C | A to IO |
| 133 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.116202541 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 133 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7956.941956 | 0 | 0 | 0 | 0 | 0 | -0.013140973 | 0 | A to B | A to IO |
| 133 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.116202537 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7.701898758 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 133 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -49.8969809 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7972.550611 | 0 | 0 | 0 | 0 | 0 | -0.013863834 | A to B | A to IO |
| 133 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2799.673455 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 133 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7972.484435 | 0 | 0 | 0 | 0 | 0 | -0.013918197 | A to B | A to IO |
| 133 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7936.992089 | 0 | 0 | 0 | 0 | 0 | 0.013308174 | 0 | B to C | A to IO |
| 133 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2772.858354 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 133 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2900.140891 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7972.550601 | 0 | 0 | 0 | 0 | 0 | -0.013918222 | A to B | A to IO |
| 133 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 133 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 133 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 133H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7931.786469 | 0 | 0 | 0 | 0 | 0 | -0.013305864 | 0 | A to B | A to IO |
| 133 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 133H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2773.086128 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7955.075957 | 0 | 0 | 0 | 0 | 0 | 0.013141081 | 0 | B to C | A to IO |
| 136 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.114394824 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 136 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.114394828 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7955.075957 | 0 | 0 | 0 | 0 | 0 | -0.013141081 | 0 | A to B | A to IO |
| 136 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 48.76360288 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 136 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7.527460248 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7974.183752 | 0 | 0 | 0 | 0 | 0 | -0.013634896 | A to B | A to IO |
| 136 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2898.42652 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 136 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7974.182812 | 0 | 0 | 0 | 0 | 0 | -0.013597509 | A to B | A to IO |
| 136 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7930.056326 | 0 | 0 | 0 | 0 | 0 | 0.013306037 | 0 | B to C | A to IO |
| 136 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2784.724848 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 136 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2799.903616 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7974.119344 | 0 | 0 | 0 | 0 | 0 | -0.013597484 | A to B | A to IO |
| 136 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 136 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 136 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 136H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7934.990411 | 0 | 0 | 0 | 0 | 0 | -0.013308248 | 0 | A to B | A to IO |
| 136 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 136H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2784.499697 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7955.075952 | 0 | 0 | 0 | 0 | 0 | 0.013141081 | 0 | B to C | A to IO |
| 139 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.114416573 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 139 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 139 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7955.075952 | 0 | 0 | 0 | 0 | 0 | -0.013141081 | 0 | A to B | A to IO |
| 139 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.114416569 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7.527451199 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 139 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -48.76361324 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7974.183743 | 0 | 0 | 0 | 0 | 0 | -0.013634896 | A to B | A to IO |
| 139 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2799.903602 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 139 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7974.119287 | 0 | 0 | 0 | 0 | 0 | -0.013597484 | A to B | A to IO |
| 139 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7934.990404 | 0 | 0 | 0 | 0 | 0 | 0.013308248 | 0 | B to C | A to IO |
| 139 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2784.499672 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 139 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2898.426527 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7974.182852 | 0 | 0 | 0 | 0 | 0 | -0.013597509 | A to B | A to IO |
| 139 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 139 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 139 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 139H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7930.056322 | 0 | 0 | 0 | 0 | 0 | -0.013306037 | 0 | A to B | A to IO |
| 139 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 139H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2784.724867 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7953.267035 | 0 | 0 | 0 | 0 | 0 | 0.01314105 | 0 | B to C | A to IO |
| 142 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.113790237 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 142 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.113790242 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7953.267035 | 0 | 0 | 0 | 0 | 0 | -0.01314105 | 0 | A to B | A to IO |
| 142 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 49.76574457 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 142 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -6.942787147 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7910.154355 | 0 | 0 | 0 | 0 | 0 | -0.013434487 | A to B | A to IO |
| 142 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2898.839231 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 142 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7910.153069 | 0 | 0 | 0 | 0 | 0 | -0.013493698 | A to B | A to IO |
| 142 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7928.703616 | 0 | 0 | 0 | 0 | 0 | 0.01330621 | 0 | B to C | A to IO |
| 142 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2795.034283 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 142 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2798.050396 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7910.091789 | 0 | 0 | 0 | 0 | 0 | -0.013493673 | A to B | A to IO |
| 142 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 142 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 142 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 142H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7932.725384 | 0 | 0 | 0 | 0 | 0 | -0.013308039 | 0 | A to B | A to IO |
| 142 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 142H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2794.809346 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7953.267036 | 0 | 0 | 0 | 0 | 0 | 0.01314105 | 0 | B to C | A to IO |
| 145 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.113805437 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 145 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7953.267036 | 0 | 0 | 0 | 0 | 0 | -0.01314105 | 0 | A to B | A to IO |
| 145 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.113805433 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 6.942780987 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 145 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -49.76575188 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7910.154354 | 0 | 0 | 0 | 0 | 0 | -0.013434487 | A to B | A to IO |
| 145 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2798.050387 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 145 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7910.091787 | 0 | 0 | 0 | 0 | 0 | -0.013493673 | A to B | A to IO |
| 145 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7932.725384 | 0 | 0 | 0 | 0 | 0 | 0.013308039 | 0 | B to C | A to IO |
| 145 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2794.80933 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 145 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2898.839238 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7910.153069 | 0 | 0 | 0 | 0 | 0 | -0.013493698 | A to B | A to IO |
| 145 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 145 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 145 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 145H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7928.703617 | 0 | 0 | 0 | 0 | 0 | -0.01330621 | 0 | A to B | A to IO |
| 145 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 145H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2795.034298 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7951.514985 | 0 | 0 | 0 | 0 | 0 | 0.013140878 | 0 | B to C | A to IO |
| 148 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.113293662 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 148 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.113293666 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7951.514985 | 0 | 0 | 0 | 0 | 0 | -0.013140878 | 0 | A to B | A to IO |
| 148 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 52.97692671 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 148 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -4.760184106 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.844744 | 0 | 0 | 0 | 0 | 0 | -0.013081889 | A to B | A to IO |
| 148 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2901.469997 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 148 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.842644 | 0 | 0 | 0 | 0 | 0 | -0.013137646 | A to B | A to IO |
| 148 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7927.708737 | 0 | 0 | 0 | 0 | 0 | 0.013306373 | 0 | B to C | A to IO |
| 148 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2802.672428 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 148 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2794.022521 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.783217 | 0 | 0 | 0 | 0 | 0 | -0.013137621 | A to B | A to IO |
| 148 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 148 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 148 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 148H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7930.216202 | 0 | 0 | 0 | 0 | 0 | -0.013307557 | 0 | A to B | A to IO |
| 148 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 148H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2802.44749 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7951.514985 | 0 | 0 | 0 | 0 | 0 | 0.013140878 | 0 | B to C | A to IO |
| 151 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.113306736 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 151 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7951.514985 | 0 | 0 | 0 | 0 | 0 | -0.013140878 | 0 | A to B | A to IO |
| 151 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.113306732 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 4.760177635 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 151 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -52.97693435 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.844744 | 0 | 0 | 0 | 0 | 0 | -0.013081889 | A to B | A to IO |
| 151 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2794.022512 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 151 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.783216 | 0 | 0 | 0 | 0 | 0 | -0.013137621 | A to B | A to IO |
| 151 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7930.216202 | 0 | 0 | 0 | 0 | 0 | 0.013307557 | 0 | B to C | A to IO |
| 151 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2802.447477 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 151 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2901.470004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.842645 | 0 | 0 | 0 | 0 | 0 | -0.013137646 | A to B | A to IO |
| 151 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 151 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 151 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 151H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7927.708738 | 0 | 0 | 0 | 0 | 0 | -0.013306373 | 0 | A to B | A to IO |
| 151 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 151H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2802.672441 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7949.819562 | 0 | 0 | 0 | 0 | 0 | 0.01314057 | 0 | B to C | A to IO |
| 154 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.112721672 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 154 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.112721675 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7949.819562 | 0 | 0 | 0 | 0 | 0 | -0.01314057 | 0 | A to B | A to IO |
| 154 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 59.40317686 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 154 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -1.085080168 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7927.62435 | 0 | 0 | 0 | 0 | 0 | -0.012653447 | A to B | A to IO |
| 154 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2907.227262 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 154 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7927.621377 | 0 | 0 | 0 | 0 | 0 | -0.012703472 | A to B | A to IO |
| 154 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7927.071898 | 0 | 0 | 0 | 0 | 0 | 0.013306531 | 0 | B to C | A to IO |
| 154 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 154 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2806.33225 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 154 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2786.911102 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7927.563782 | 0 | 0 | 0 | 0 | 0 | -0.012703449 | A to B | A to IO |
| 154 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 154 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 154 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 154H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7927.462149 | 0 | 0 | 0 | 0 | 0 | -0.013306804 | 0 | A to B | A to IO |
| 154 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 154H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2806.107458 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7949.819562 | 0 | 0 | 0 | 0 | 0 | 0.01314057 | 0 | B to C | A to IO |
| 157 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.112732453 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 157 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7949.819562 | 0 | 0 | 0 | 0 | 0 | -0.01314057 | 0 | A to B | A to IO |
| 157 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.112732449 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 1.085073794 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 157 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -59.40318439 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7927.62435 | 0 | 0 | 0 | 0 | 0 | -0.012653447 | A to B | A to IO |
| 157 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2786.911093 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 157 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7927.563782 | 0 | 0 | 0 | 0 | 0 | -0.012703449 | A to B | A to IO |
| 157 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7927.462149 | 0 | 0 | 0 | 0 | 0 | 0.013306804 | 0 | B to C | A to IO |
| 157 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2806.107447 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 157 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2907.227268 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7927.621377 | 0 | 0 | 0 | 0 | 0 | -0.012703472 | A to B | A to IO |
| 157 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 157 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 157 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 157H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7927.071899 | 0 | 0 | 0 | 0 | 0 | -0.013306531 | 0 | A to B | A to IO |
| 157 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 157H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2806.33226 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7948.17597 | 0 | 0 | 0 | 0 | 0 | 0.013140106 | 0 | B to C | A to IO |
| 160 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.112821388 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 160 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.11282139 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7948.17597 | 0 | 0 | 0 | 0 | 0 | -0.013140106 | 0 | A to B | A to IO |
| 160 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 68.05694722 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 160 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.950252 | 0 | 0 | 0 | 0 | 0 | -0.01219482 | A to B | A to IO |
| 160 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2915.179593 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 160 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.946451 | 0 | 0 | 0 | 0 | 0 | -0.012239268 | A to B | A to IO |
| 160 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7926.801186 | 0 | 0 | 0 | 0 | 0 | 0.013306669 | 0 | B to C | A to IO |
| 160 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2804.66741 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 160 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2777.644361 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.890558 | 0 | 0 | 0 | 0 | 0 | -0.012239245 | A to B | A to IO |
| 160 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 160 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 160 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 160H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7924.445626 | 0 | 0 | 0 | 0 | 0 | -0.013305757 | 0 | A to B | A to IO |
| 160 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 160H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2804.441443 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7948.17597 | 0 | 0 | 0 | 0 | 0 | 0.013140106 | 0 | B to C | A to IO |
| 163 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.112829941 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 163 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7948.17597 | 0 | 0 | 0 | 0 | 0 | -0.013140106 | 0 | A to B | A to IO |
| 163 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.112829938 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 163 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -68.05695472 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.950252 | 0 | 0 | 0 | 0 | 0 | -0.01219482 | A to B | A to IO |
| 163 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2777.644352 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 163 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.890559 | 0 | 0 | 0 | 0 | 0 | -0.012239246 | A to B | A to IO |
| 163 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7924.445627 | 0 | 0 | 0 | 0 | 0 | 0.013305757 | 0 | B to C | A to IO |
| 163 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2804.441434 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 163 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2915.179599 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7921.946451 | 0 | 0 | 0 | 0 | 0 | -0.012239268 | A to B | A to IO |
| 163 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 163 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 163 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 163H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7926.801187 | 0 | 0 | 0 | 0 | 0 | -0.013306669 | 0 | A to B | A to IO |
| 163 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 163H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2804.667418 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7946.603395 | 0 | 0 | 0 | 0 | 0 | 0.013139575 | 0 | B to C | A to IO |
| 166 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.110531178 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 166 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.110531179 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7946.603395 | 0 | 0 | 0 | 0 | 0 | -0.013139575 | 0 | A to B | A to IO |
| 166 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 79.53977833 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 166 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7957.101034 | 0 | 0 | 0 | 0 | 0 | -0.011563621 | A to B | A to IO |
| 166 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2925.949817 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 166 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7957.095953 | 0 | 0 | 0 | 0 | 0 | -0.011602993 | A to B | A to IO |
| 166 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7926.93058 | 0 | 0 | 0 | 0 | 0 | 0.013306881 | 0 | B to C | A to IO |
| 166 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2796.250849 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 166 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2765.610998 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7957.041981 | 0 | 0 | 0 | 0 | 0 | -0.011602972 | A to B | A to IO |
| 166 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 166 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 166 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 166H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7921.170614 | 0 | 0 | 0 | 0 | 0 | -0.013304495 | 0 | A to B | A to IO |
| 166 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 166H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2796.02924 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7946.603396 | 0 | 0 | 0 | 0 | 0 | 0.013139575 | 0 | B to C | A to IO |
| 169 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.110537825 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 169 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7946.603396 | 0 | 0 | 0 | 0 | 0 | -0.013139575 | 0 | A to B | A to IO |
| 169 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.110537824 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 169 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -79.5397858 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7957.101034 | 0 | 0 | 0 | 0 | 0 | -0.011563621 | A to B | A to IO |
| 169 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2765.610988 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 169 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7957.041948 | 0 | 0 | 0 | 0 | 0 | -0.011602972 | A to B | A to IO |
| 169 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7921.170614 | 0 | 0 | 0 | 0 | 0 | 0.013304495 | 0 | B to C | A to IO |
| 169 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2796.029233 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 169 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2925.949823 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7957.095986 | 0 | 0 | 0 | 0 | 0 | -0.011602993 | A to B | A to IO |
| 169 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 169 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 169 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 169H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7926.930581 | 0 | 0 | 0 | 0 | 0 | -0.013306881 | 0 | A to B | A to IO |
| 169 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 169H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2796.250855 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7944.996407 | 0 | 0 | 0 | 0 | 0 | 0.013138586 | 0 | B to C | A to IO |
| 172 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.121845479 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 172 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 172 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.121845479 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7944.996407 | 0 | 0 | 0 | 0 | 0 | -0.013138586 | 0 | A to B | A to IO |
| 172 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 92.48388814 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 172 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7908.765689 | 0 | 0 | 0 | 0 | 0 | -0.011038779 | A to B | A to IO |
| 172 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2938.151192 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 172 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7908.760987 | 0 | 0 | 0 | 0 | 0 | -0.011073795 | A to B | A to IO |
| 172 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7927.359631 | 0 | 0 | 0 | 0 | 0 | 0.013306789 | 0 | B to C | A to IO |
| 172 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2779.613478 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 172 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2752.132191 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7908.706528 | 0 | 0 | 0 | 0 | 0 | -0.011073772 | A to B | A to IO |
| 172 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 172 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 172 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 172H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7917.528865 | 0 | 0 | 0 | 0 | 0 | -0.013302635 | 0 | A to B | A to IO |
| 172 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 172H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2779.36965 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7944.996408 | 0 | 0 | 0 | 0 | 0 | 0.013138586 | 0 | B to C | A to IO |
| 175 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.121850331 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 175 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7944.996408 | 0 | 0 | 0 | 0 | 0 | -0.013138586 | 0 | A to B | A to IO |
| 175 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.121850331 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 175 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -92.48389559 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7908.765689 | 0 | 0 | 0 | 0 | 0 | -0.011038779 | A to B | A to IO |
| 175 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2752.132182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 175 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7908.706498 | 0 | 0 | 0 | 0 | 0 | -0.011073772 | A to B | A to IO |
| 175 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7917.528865 | 0 | 0 | 0 | 0 | 0 | 0.013302635 | 0 | B to C | A to IO |
| 175 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2779.369645 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 175 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2938.151199 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7908.761018 | 0 | 0 | 0 | 0 | 0 | -0.011073795 | A to B | A to IO |
| 175 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 175 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 175 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 175H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7927.359632 | 0 | 0 | 0 | 0 | 0 | -0.013306789 | 0 | A to B | A to IO |
| 175 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 175H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2779.613483 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7943.898135 | 0 | 0 | 0 | 0 | 0 | 0.013138859 | 0 | B to C | A to IO |
| 178 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.069322959 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 178 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.069322958 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7943.898135 | 0 | 0 | 0 | 0 | 0 | -0.013138859 | 0 | A to B | A to IO |
| 178 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 106.8111299 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 178 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522846 | 0 | 0 | 0 | 0 | 0 | -0.010109909 | A to B | A to IO |
| 178 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2951.887537 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 178 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522855 | 0 | 0 | 0 | 0 | 0 | -0.010141382 | A to B | A to IO |
| 178 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7928.602174 | 0 | 0 | 0 | 0 | 0 | 0.013308053 | 0 | B to C | A to IO |
| 178 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2753.212953 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 178 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2737.442127 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522854 | 0 | 0 | 0 | 0 | 0 | -0.010141262 | A to B | A to IO |
| 178 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 178 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 178 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 178H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7914.081511 | 0 | 0 | 0 | 0 | 0 | -0.013301855 | 0 | A to B | A to IO |
| 178 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 178H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2753.071884 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7943.898135 | 0 | 0 | 0 | 0 | 0 | 0.013138859 | 0 | B to C | A to IO |
| 181 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.069326275 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 181 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7943.898135 | 0 | 0 | 0 | 0 | 0 | -0.013138859 | 0 | A to B | A to IO |
| 181 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.069326277 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 181 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -106.8111373 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522846 | 0 | 0 | 0 | 0 | 0 | -0.010109909 | A to B | A to IO |
| 181 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2737.442118 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 181 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522854 | 0 | 0 | 0 | 0 | 0 | -0.010141262 | A to B | A to IO |
| 181 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7914.081511 | 0 | 0 | 0 | 0 | 0 | 0.013301855 | 0 | B to C | A to IO |
| 181 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2753.071881 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 181 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2951.887543 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522855 | 0 | 0 | 0 | 0 | 0 | -0.010141382 | A to B | A to IO |
| 181 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 181 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 181 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 181H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7928.602175 | 0 | 0 | 0 | 0 | 0 | -0.013308053 | 0 | A to B | A to IO |
| 181 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 181H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2753.212956 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7940.477544 | 0 | 0 | 0 | 0 | 0 | 0.01313284 | 0 | B to C | A to IO |
| 184 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.320507112 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 184 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.320507109 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7940.477544 | 0 | 0 | 0 | 0 | 0 | -0.01313284 | 0 | A to B | A to IO |
| 184 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 122.5921711 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 184 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522604 | 0 | 0 | 0 | 0 | 0 | -0.009250108 | A to B | A to IO |
| 184 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2966.35287 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 184 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522612 | 0 | 0 | 0 | 0 | 0 | -0.009279022 | A to B | A to IO |
| 184 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7927.785813 | 0 | 0 | 0 | 0 | 0 | 0.013303331 | 0 | B to C | A to IO |
| 184 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2716.121532 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 184 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2720.572176 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.479491 | 0 | 0 | 0 | 0 | 0 | -0.009278839 | A to B | A to IO |
| 184 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 184 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 184 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 184H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7908.097677 | 0 | 0 | 0 | 0 | 0 | -0.013295557 | 0 | A to B | A to IO |
| 184 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 184H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2715.488371 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7940.477544 | 0 | 0 | 0 | 0 | 0 | 0.01313284 | 0 | B to C | A to IO |
| 187 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.320509122 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 187 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7940.477544 | 0 | 0 | 0 | 0 | 0 | -0.01313284 | 0 | A to B | A to IO |
| 187 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.320509126 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 187 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -122.5921785 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522604 | 0 | 0 | 0 | 0 | 0 | -0.009250108 | A to B | A to IO |
| 187 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2720.572167 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 187 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.479491 | 0 | 0 | 0 | 0 | 0 | -0.009278839 | A to B | A to IO |
| 187 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7908.097677 | 0 | 0 | 0 | 0 | 0 | 0.013295556 | 0 | B to C | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 187 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2715.488369 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 187 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2966.352876 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522612 | 0 | 0 | 0 | 0 | 0 | -0.009279022 | A to B | A to IO |
| 187 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 187 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 187 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 187H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7927.785814 | 0 | 0 | 0 | 0 | 0 | -0.013303331 | 0 | A to B | A to IO |
| 187 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 187H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2716.121534 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7949.456846 | 0 | 0 | 0 | 0 | 0 | 0.013153584 | 0 | B to C | A to IO |
| 190 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.894375453 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 190 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7949.456846 | 0 | 0 | 0 | 0 | 0 | -0.013153584 | 0 | A to B | A to IO |
| 190 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.894375459 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 137.5384953 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 190 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522329 | 0 | 0 | 0 | 0 | 0 | -0.00827543 | A to B | A to IO |
| 190 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2983.916844 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 190 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522337 | 0 | 0 | 0 | 0 | 0 | -0.008302098 | A to B | A to IO |
| 190 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7939.335194 | 0 | 0 | 0 | 0 | 0 | 0.013324529 | 0 | B to C | A to IO |
| 190 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2665.747683 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 190 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2708.447329 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522337 | 0 | 0 | 0 | 0 | 0 | -0.008302682 | A to B | A to IO |
| 190 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 190 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 190 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 190H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7914.291195 | 0 | 0 | 0 | 0 | 0 | -0.013314409 | 0 | A to B | A to IO |
| 190 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 190H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2667.492133 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7949.456846 | 0 | 0 | 0 | 0 | 0 | 0.013153584 | 0 | B to C | A to IO |
| 193 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -0.894374569 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 193 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0.894374564 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7949.456846 | 0 | 0 | 0 | 0 | 0 | -0.013153584 | 0 | A to B | A to IO |
| 193 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 193 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -137.5385027 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522329 | 0 | 0 | 0 | 0 | 0 | -0.00827543 | A to B | A to IO |
| 193 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2708.44732 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 193 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522337 | 0 | 0 | 0 | 0 | 0 | -0.008302682 | A to B | A to IO |
| 193 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7914.291195 | 0 | 0 | 0 | 0 | 0 | 0.013314409 | 0 | B to C | A to IO |
| 193 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2667.492132 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 193 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2983.916849 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522337 | 0 | 0 | 0 | 0 | 0 | -0.008302098 | A to B | A to IO |
| 193 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 193 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 193 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 193H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7939.335194 | 0 | 0 | 0 | 0 | 0 | -0.013324529 | 0 | A to B | A to IO |
| 193 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 193H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2665.747684 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7985.52362 | 0 | 0 | 0 | 0 | 0 | 0.012861671 | 0 | B to C | A to IO |
| 196 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -4.284698949 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 196 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 4.284698942 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.52362 | 0 | 0 | 0 | 0 | 0 | -0.012861671 | 0 | A to B | A to IO |
| 196 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 151.3277309 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 196 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522024 | 0 | 0 | 0 | 0 | 0 | -0.007192076 | A to B | A to IO |
| 196 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2979.921381 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 196 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522032 | 0 | 0 | 0 | 0 | 0 | -0.007220303 | A to B | A to IO |
| 196 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7970.183305 | 0 | 0 | 0 | 0 | 0 | 0.013054793 | 0 | B to C | A to IO |
| 196 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2609.902401 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 196 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2677.021189 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.175824 | 0 | 0 | 0 | 0 | 0 | -0.007216431 | A to B | A to IO |
| 196 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 196 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 196 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 196H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7939.698935 | 0 | 0 | 0 | 0 | 0 | -0.013041694 | 0 | A to B | A to IO |
| 196 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 196H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2601.355869 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7985.52362 | 0 | 0 | 0 | 0 | 0 | 0.012861671 | 0 | B to C | A to IO |
| 199 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 4.284698829 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 199 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.52362 | 0 | 0 | 0 | 0 | 0 | -0.012861671 | 0 | A to B | A to IO |
| 199 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -4.284698836 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 199 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -151.3277382 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522024 | 0 | 0 | 0 | 0 | 0 | -0.007192076 | A to B | A to IO |
| 199 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 2677.021181 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 199 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.175824 | 0 | 0 | 0 | 0 | 0 | -0.007216431 | A to B | A to IO |
| 199 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7939.698935 | 0 | 0 | 0 | 0 | 0 | 0.013041694 | 0 | B to C | A to IO |
| 199 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2601.355869 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 199 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2979.921387 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.522032 | 0 | 0 | 0 | 0 | 0 | -0.007220303 | A to B | A to IO |
| 199 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 199 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 199 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 199H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7970.183306 | 0 | 0 | 0 | 0 | 0 | -0.013054793 | 0 | A to B | A to IO |
| 199 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 199H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2609.902401 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7985.523863 | 0 | 0 | 0 | 0 | 0 | 0.013724313 | 0 | B to C | A to IO |
| 202 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 14.28458495 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 202 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.523863 | 0 | 0 | 0 | 0 | 0 | -0.013724313 | 0 | A to B | A to IO |
| 202 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -14.28458496 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 145.0648838 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 202 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.521686 | 0 | 0 | 0 | 0 | 0 | -0.005991408 | A to B | A to IO |
| 202 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 3062.459812 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 202 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7980.812278 | 0 | 0 | 0 | 0 | 0 | -0.006022536 | A to B | A to IO |
| 202 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7985.523905 | 0 | 0 | 0 | 0 | 0 | 0.013872229 | 0 | B to C | A to IO |
| 202 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2515.803278 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 202 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2771.809628 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -7985.521695 | 0 | 0 | 0 | 0 | 0 | -0.006022779 | A to B | A to IO |
| 202 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 202 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 202 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 202H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7958.855736 | 0 | 0 | 0 | 0 | 0 | -0.013863925 | 0 | A to B | A to IO |
| 202 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 202H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | -2544.514954 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 7985.523863 | 0 | 0 | 0 | 0 | 0 | 0.013724313 | 0 | B to C | A to IO |
| 205 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 205 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -14.28458601 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 205 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 14.284586 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7985.523863 | 0 | 0 | 0 | 0 | 0 | -0.013724313 | 0 | A to B | A to IO |
| 205 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 205 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -145.0648914 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.521686 | 0 | 0 | 0 | 0 | 0 | -0.005991408 | A to B | A to IO |
| 205 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2771.809619 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 205 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.521695 | 0 | 0 | 0 | 0 | 0 | -0.006022779 | A to B | A to IO |
| 205 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7958.855737 | 0 | 0 | 0 | 0 | 0 | 0.013863925 | 0 | B to C | A to IO |
| 205 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2544.514955 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 205 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -3062.459818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7980.812278 | 0 | 0 | 0 | 0 | 0 | -0.006022536 | A to B | A to IO |
| 205 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 205 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 205 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 205H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7985.523905 | 0 | 0 | 0 | 0 | 0 | -0.013872229 | 0 | A to B | A to IO |
| 205 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 205H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2515.803276 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7985.522833 | 0 | 0 | 0 | 0 | 0 | 0.010065945 | 0 | B to C | A to IO |
| 208 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -146.4196285 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 208 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 146.4196285 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7985.522833 | 0 | 0 | 0 | 0 | 0 | -0.010065945 | 0 | A to B | A to IO |
| 208 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 292.3010653 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 208 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.521201 | 0 | 0 | 0 | 0 | 0 | -0.004268339 | A to B | A to IO |
| 208 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2762.872346 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 208 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7933.882122 | 0 | 0 | 0 | 0 | 0 | -0.004539169 | A to B | A to IO |
| 208 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7985.522907 | 0 | 0 | 0 | 0 | 0 | 0.010327361 | 0 | B to C | A to IO |
| 208 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2533.375998 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 208 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2178.622217 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.521175 | 0 | 0 | 0 | 0 | 0 | -0.004174857 | A to B | A to IO |
| 208 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 208 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 208 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 208H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7985.522822 | 0 | 0 | 0 | 0 | 0 | -0.01002755 | 0 | A to B | A to IO |
| 208 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 208H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2240.445682 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7985.522833 | 0 | 0 | 0 | 0 | 0 | 0.010065945 | 0 | B to C | A to IO |
| 211 | CLE(+Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 146.4196266 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(+Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 211 | CLE(-Y) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7985.522833 | 0 | 0 | 0 | 0 | 0 | -0.010065945 | 0 | A to B | A to IO |
| 211 | CLE(-Y) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -146.4196266 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(-X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 211 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -292.3010717 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(-X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.521201 | 0 | 0 | 0 | 0 | 0 | -0.004268339 | A to B | A to IO |
| 211 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 2178.622209 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 211 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7985.521175 | 0 | 0 | 0 | 0 | 0 | -0.004174857 | A to B | A to IO |
| 211 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 7985.522822 | 0 | 0 | 0 | 0 | 0 | 0.01002755 | 0 | B to C | A to IO |
| 211 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2240.445684 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 211 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -2762.87235 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -7933.882118 | 0 | 0 | 0 | 0 | 0 | -0.004539169 | A to B | A to IO |
| 211 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 211 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 211 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M2 | 211H1 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | -7985.522907 | 0 | 0 | 0 | 0 | 0 | -0.010327361 | 0 | A to B | A to IO |
| 211 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc 8 #10 80ksi M3 | 211H2 | 0.955882353 | 260 | 0 | 0 | 0 | 0 | 0 | -2533.375996 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 17 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9914.52037 | 0 | 0 | 0 | 0 | 0 | -7.88368E-05 | 0 | A to B | A to IO |
| 17 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -13.03291592 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9914.52037 | 0 | 0 | 0 | 0 | 0 | 7.88368E-05 | 0 | B to C | A to IO |
| 17 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 13.03291592 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9914.55583 | 0 | 0 | 0 | 0 | 0 | 0.00763767 | B to C | A to IO |
| 17 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -124.7931773 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9913.880989 | 0 | 0 | 0 | 0 | 0 | 0.007668828 | B to C | A to IO |
| 17 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2416.306578 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 17 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2737.509239 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9914.521142 | 0 | 0 | 0 | 0 | 0 | -0.000243487 | 0 | A to B | A to IO |
| 17 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2174.044738 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9914.555983 | 0 | 0 | 0 | 0 | 0 | 0.007670305 | B to C | A to IO |
| 17 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9846.797136 | 0 | 0 | 0 | 0 | 0 | 0.000242522 | 0 | B to C | A to IO |
| 17 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2763.96498 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 17H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 17 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 17H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 39 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 13.03291709 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9914.52037 | 0 | 0 | 0 | 0 | 0 | -7.88368E-05 | 0 | A to B | A to IO |
| 39 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9914.52037 | 0 | 0 | 0 | 0 | 0 | 7.88368E-05 | 0 | B to C | A to IO |
| 39 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -13.03291709 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 124.7931822 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9914.55583 | 0 | 0 | 0 | 0 | 0 | 0.00763767 | B to C | A to IO |
| 39 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9914.555983 | 0 | 0 | 0 | 0 | 0 | 0.007670305 | B to C | A to IO |
| 39 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2174.044731 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 39 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2763.964981 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9846.797135 | 0 | 0 | 0 | 0 | 0 | -0.000242522 | 0 | A to B | A to IO |
| 39 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2416.306583 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9913.880989 | 0 | 0 | 0 | 0 | 0 | 0.007668828 | B to C | A to IO |
| 39 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9914.521142 | 0 | 0 | 0 | 0 | 0 | 0.000243487 | 0 | B to C | A to IO |
| 39 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2737.509238 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 39H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 39 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 39H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 65 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 1.102336851 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9867.778057 | 0 | 0 | 0 | 0 | 0 | -7.83273E-05 | 0 | A to B | A to IO |
| 65 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9867.778057 | 0 | 0 | 0 | 0 | 0 | 7.83273E-05 | 0 | B to C | A to IO |
| 65 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -1.10233685 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9914.551524 | 0 | 0 | 0 | 0 | 0 | 0.006719932 | B to C | A to IO |
| 65 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -119.8879056 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9914.551679 | 0 | 0 | 0 | 0 | 0 | 0.006752949 | B to C | A to IO |
| 65 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2447.335623 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 65 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 65 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2623.784258 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9865.808632 | 0 | 0 | 0 | 0 | 0 | -0.000241677 | 0 | A to B | A to IO |
| 65 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2208.452172 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.381965 | 0 | 0 | 0 | 0 | 0 | 0.006752924 | B to C | A to IO |
| 65 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9880.131286 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 65 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2621.69763 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 65H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 65 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 65H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 131 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9867.778057 | 0 | 0 | 0 | 0 | 0 | -7.83273E-05 | 0 | A to B | A to IO |
| 131 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -1.102336349 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9867.778057 | 0 | 0 | 0 | 0 | 0 | 7.83273E-05 | 0 | B to C | A to IO |
| 131 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1.10233635 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 119.8879115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.551524 | 0 | 0 | 0 | 0 | 0 | 0.006719932 | B to C | A to IO |
| 131 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.381965 | 0 | 0 | 0 | 0 | 0 | 0.006752925 | B to C | A to IO |
| 131 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2208.452166 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 131 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2621.69763 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9880.131282 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2447.335628 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.551679 | 0 | 0 | 0 | 0 | 0 | 0.006752949 | B to C | A to IO |
| 131 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9865.808632 | 0 | 0 | 0 | 0 | 0 | 0.000241677 | 0 | B to C | A to IO |
| 131 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2623.784257 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 131H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 131 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 131H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9778.123955 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.51158156 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9778.123955 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.511581559 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.545895 | 0 | 0 | 0 | 0 | 0 | 0.005519867 | B to C | A to IO |
| 197 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -113.1647042 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.546062 | 0 | 0 | 0 | 0 | 0 | 0.005555554 | B to C | A to IO |
| 197 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2384.067475 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 197 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2474.736499 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9825.181949 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2158.594977 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.546062 | 0 | 0 | 0 | 0 | 0 | 0.005555491 | B to C | A to IO |
| 197 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9795.150933 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2475.780681 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 197H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 197 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 197H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.51158068 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9778.123955 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9778.123955 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.511580682 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 113.1647099 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.545895 | 0 | 0 | 0 | 0 | 0 | 0.005519867 | B to C | A to IO |
| 237 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.546062 | 0 | 0 | 0 | 0 | 0 | 0.005555491 | B to C | A to IO |
| 237 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2158.594971 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2475.78068 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9795.15093 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2384.06748 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.546062 | 0 | 0 | 0 | 0 | 0 | 0.005555554 | B to C | A to IO |
| 237 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9825.181951 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 237 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2474.7365 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 237H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 237 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 237H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.223492877 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9781.553501 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9781.553501 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.223492879 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.542046 | 0 | 0 | 0 | 0 | 0 | 0.004699489 | B to C | A to IO |
| 259 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -102.9144357 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.542228 | 0 | 0 | 0 | 0 | 0 | 0.004738253 | B to C | A to IO |
| 259 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2375.472479 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 259 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2383.82512 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9822.202495 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2170.463203 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.483843 | 0 | 0 | 0 | 0 | 0 | 0.004738247 | B to C | A to IO |
| 259 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9781.275599 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2383.318927 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 259H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 259 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 259H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9781.553501 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.223495027 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9781.553501 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.223495025 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 102.9144414 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.542046 | 0 | 0 | 0 | 0 | 0 | 0.004699489 | B to C | A to IO |
| 281 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.483843 | 0 | 0 | 0 | 0 | 0 | 0.004738247 | B to C | A to IO |
| 281 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2170.463197 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2383.318925 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9781.275595 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2375.472484 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.542228 | 0 | 0 | 0 | 0 | 0 | 0.004738253 | B to C | A to IO |
| 281 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9822.202498 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B to C | A to IO |
| 281 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2383.825123 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 281H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 281 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 281H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 303 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.088136472 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9776.573697 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9776.573697 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.088136471 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.538694 | 0 | 0 | 0 | 0 | 0 | 0.003984933 | B to C | A to IO |
| 303 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -93.62578554 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.538889 | 0 | 0 | 0 | 0 | 0 | 0.004026585 | B to C | A to IO |
| 303 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2364.515218 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2315.736115 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9811.84586 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2178.035169 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.489408 | 0 | 0 | 0 | 0 | 0 | 0.004026581 | B to C | A to IO |
| 303 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9781.495276 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2315.620065 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 303H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 303 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 303H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9776.573696 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.088139387 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9776.573696 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.088139388 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 93.62579127 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.538694 | 0 | 0 | 0 | 0 | 0 | 0.003984933 | B to C | A to IO |
| 325 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.489408 | 0 | 0 | 0 | 0 | 0 | 0.004026581 | B to C | A to IO |
| 325 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2178.035163 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2315.620062 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9781.495272 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2364.515223 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.538889 | 0 | 0 | 0 | 0 | 0 | 0.004026585 | B to C | A to IO |
| 325 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9811.845862 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2315.736119 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 325H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 325 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 325H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.103843529 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9775.329384 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9775.329384 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.103843529 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.535658 | 0 | 0 | 0 | 0 | 0 | 0.0033378 | B to C | A to IO |
| 347 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -84.03293203 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.53588 | 0 | 0 | 0 | 0 | 0 | 0.003384995 | B to C | A to IO |
| 347 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2354.344002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2267.876065 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9805.895125 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2186.984229 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.535879 | 0 | 0 | 0 | 0 | 0 | 0.003384757 | B to C | A to IO |
| 347 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9785.000315 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2267.686776 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 347H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 347 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 347H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9775.329384 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.10384783 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9775.329384 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.103847831 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 84.03293779 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.535658 | 0 | 0 | 0 | 0 | 0 | 0.0033378 | B to C | A to IO |
| 369 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.535879 | 0 | 0 | 0 | 0 | 0 | 0.003384758 | B to C | A to IO |
| 369 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2186.984223 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2267.686771 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9785.000312 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2354.344007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.53588 | 0 | 0 | 0 | 0 | 0 | 0.003384995 | B to C | A to IO |
| 369 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9805.895128 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2267.87607 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 369H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 369 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 369H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.097697964 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9773.592451 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9773.592451 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.097697964 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.532974 | 0 | 0 | 0 | 0 | 0 | 0.002765703 | B to C | A to IO |
| 391 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -74.67627864 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.533188 | 0 | 0 | 0 | 0 | 0 | 0.00281129 | B to C | A to IO |
| 391 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2344.310599 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2236.412852 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9800.254192 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2195.579003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.533188 | 0 | 0 | 0 | 0 | 0 | 0.002811272 | B to C | A to IO |
| 391 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9787.158541 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2236.239238 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 391H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 391 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 391H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9773.59245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.097703796 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9773.59245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.097703797 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 74.67628442 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.532974 | 0 | 0 | 0 | 0 | 0 | 0.002765703 | B to C | A to IO |
| 413 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 413 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.533188 | 0 | 0 | 0 | 0 | 0 | 0.002811272 | B to C | A to IO |
| 413 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2195.578996 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2236.239232 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9787.158538 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2344.310604 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.533188 | 0 | 0 | 0 | 0 | 0 | 0.002811289 | B to C | A to IO |
| 413 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9800.254195 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2236.412859 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 413H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 413 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 413H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.095769689 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9771.976906 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9771.976906 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.095769688 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.530588 | 0 | 0 | 0 | 0 | 0 | 0.002257006 | B to C | A to IO |
| 435 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -65.86048841 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.530819 | 0 | 0 | 0 | 0 | 0 | 0.002306176 | B to C | A to IO |
| 435 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2334.873837 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2218.193118 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9795.565323 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2203.665816 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.483531 | 0 | 0 | 0 | 0 | 0 | 0.002306174 | B to C | A to IO |
| 435 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9788.618956 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2218.017102 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 435H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 435 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 435H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9771.976905 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.095777166 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9771.976905 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.095777167 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 65.86049418 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.530588 | 0 | 0 | 0 | 0 | 0 | 0.002257006 | B to C | A to IO |
| 457 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.483531 | 0 | 0 | 0 | 0 | 0 | 0.002306174 | B to C | A to IO |
| 457 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2203.66581 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2218.017094 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9788.618952 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2334.873843 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.530819 | 0 | 0 | 0 | 0 | 0 | 0.002306176 | B to C | A to IO |
| 457 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9795.565325 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2218.193127 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 457H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 457 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 457H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.093092917 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9770.363391 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9770.363391 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.093092916 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9818.26697 | 0 | 0 | 0 | 0 | 0 | 0.002119829 | B to C | A to IO |
| 479 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -57.82904064 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9818.104912 | 0 | 0 | 0 | 0 | 0 | 0.002170931 | B to C | A to IO |
| 479 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2326.248358 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2210.131985 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9791.6421 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2210.970649 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9818.038522 | 0 | 0 | 0 | 0 | 0 | 0.002170929 | B to C | A to IO |
| 479 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9789.31459 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2209.957113 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 479H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 479 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 479H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9770.363391 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.093102079 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9770.363391 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.093102079 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 57.82904663 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9818.26697 | 0 | 0 | 0 | 0 | 0 | 0.002119829 | B to C | A to IO |
| 501 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9818.038524 | 0 | 0 | 0 | 0 | 0 | 0.002170929 | B to C | A to IO |
| 501 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2210.970642 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2209.957103 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9789.314586 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2326.248364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9818.10491 | 0 | 0 | 0 | 0 | 0 | 0.002170931 | B to C | A to IO |
| 501 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9791.642103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2210.131996 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 501H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 501 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 501H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.09062191 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9768.77378 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9768.77378 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.09062191 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0.57598175 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.526655 | 0 | 0 | 0 | 0 | 0 | 0.001418532 | B to C | A to IO |
| 523 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -50.95512395 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.526897 | 0 | 0 | 0 | 0 | 0 | 0.001470151 | B to C | A to IO |
| 523 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2318.814002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2209.473985 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9788.415504 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2217.123838 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.462145 | 0 | 0 | 0 | 0 | 0 | 0.00147015 | B to C | A to IO |
| 523 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9789.361243 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2209.299408 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 523 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 523H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 523 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 523H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9768.773779 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.090632668 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9768.773779 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.090632669 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 50.95512893 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.526655 | 0 | 0 | 0 | 0 | 0 | 0.001418532 | B to C | A to IO |
| 545 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -0.575979203 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.462146 | 0 | 0 | 0 | 0 | 0 | 0.00147015 | B to C | A to IO |
| 545 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2217.123833 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2209.299396 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9789.36124 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2318.814007 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.526897 | 0 | 0 | 0 | 0 | 0 | 0.001470151 | B to C | A to IO |
| 545 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9788.415507 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2209.473997 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 545H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 545 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 545H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.089762841 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9767.202793 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9767.202793 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.089762845 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 3.284362005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9826.120131 | 0 | 0 | 0 | 0 | 0 | 0.00130551 | B to C | A to IO |
| 567 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -45.08038307 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9826.055879 | 0 | 0 | 0 | 0 | 0 | 0.00135782 | B to C | A to IO |
| 567 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2312.412613 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2213.852896 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9785.776795 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2222.280829 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9825.993009 | 0 | 0 | 0 | 0 | 0 | 0.001357819 | B to C | A to IO |
| 567 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9788.856425 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2213.678668 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 567H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 567 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 567H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9767.202792 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.089775176 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9767.202792 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.089775172 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 45.0803934 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9826.120131 | 0 | 0 | 0 | 0 | 0 | 0.00130551 | B to C | A to IO |
| 589 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -3.284354162 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9825.99301 | 0 | 0 | 0 | 0 | 0 | 0.001357819 | B to C | A to IO |
| 589 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2222.280818 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2213.678655 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9788.85642 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2312.412622 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9826.055877 | 0 | 0 | 0 | 0 | 0 | 0.00135782 | B to C | A to IO |
| 589 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9785.776798 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2213.852909 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 589H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 589 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 589H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.089388768 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9765.650382 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9765.650382 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.089388772 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 5.046052715 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.523589 | 0 | 0 | 0 | 0 | 0 | 0.000764966 | B to C | A to IO |
| 611 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -40.62156539 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.523832 | 0 | 0 | 0 | 0 | 0 | 0.0008168 | B to C | A to IO |
| 611 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2307.462143 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2221.299751 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9783.627923 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2226.023182 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.462497 | 0 | 0 | 0 | 0 | 0 | 0.000816799 | B to C | A to IO |
| 611 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9787.898239 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2221.12547 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 611H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 611 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 611H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9765.65038 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.089383883 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9765.65038 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.089383879 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 40.62154146 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.523577 | 0 | 0 | 0 | 0 | 0 | 0.000764966 | B to C | A to IO |
| 633 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -5.046072452 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.462474 | 0 | 0 | 0 | 0 | 0 | 0.000816799 | B to C | A to IO |
| 633 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2226.023205 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2221.125471 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9787.898243 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2307.462118 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.523832 | 0 | 0 | 0 | 0 | 0 | 0.0008168 | B to C | A to IO |
| 633 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9783.627916 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2221.299742 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 633H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 633 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 633H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.089225981 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9764.115172 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9764.115172 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.089225984 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 5.734435729 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9848.108082 | 0 | 0 | 0 | 0 | 0 | 0.000684981 | B to C | A to IO |
| 655 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -37.91091225 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 655 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9848.116387 | 0 | 0 | 0 | 0 | 0 | 0.00073564 | B to C | A to IO |
| 655 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2304.308264 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2230.197677 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9781.884584 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2228.004145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9848.056682 | 0 | 0 | 0 | 0 | 0 | 0.000735639 | B to C | A to IO |
| 655 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9786.568215 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2230.022924 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 655H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 655 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 655H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9764.115164 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.089185891 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9764.115164 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.089185888 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 37.91086985 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9848.108184 | 0 | 0 | 0 | 0 | 0 | 0.000684981 | B to C | A to IO |
| 677 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -5.734469602 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9848.056785 | 0 | 0 | 0 | 0 | 0 | 0.000735639 | B to C | A to IO |
| 677 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2228.004184 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2230.023001 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9786.568217 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2304.308218 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9848.116488 | 0 | 0 | 0 | 0 | 0 | 0.00073564 | B to C | A to IO |
| 677 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9781.884567 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2230.197674 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 677H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 677 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 677H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.088382801 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9762.597302 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9762.597302 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.088382804 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 5.606725328 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.520965 | 0 | 0 | 0 | 0 | 0 | 0.000205724 | B to C | A to IO |
| 699 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -36.91141557 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9816.033528 | 0 | 0 | 0 | 0 | 0 | 0.000570685 | B to C | A to IO |
| 699 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2302.879282 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2239.20975 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9780.484855 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2228.295387 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9815.975809 | 0 | 0 | 0 | 0 | 0 | 0.000570685 | B to C | A to IO |
| 699 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9784.928557 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2239.035888 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 699H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 699 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 699H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9762.597301 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.088397431 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9762.597301 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.088397427 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 36.91142233 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9914.520962 | 0 | 0 | 0 | 0 | 0 | 0.000205724 | B to C | A to IO |
| 721 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -5.606719517 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9815.9758 | 0 | 0 | 0 | 0 | 0 | 0.000570685 | B to C | A to IO |
| 721 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2228.295379 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2239.035872 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9784.928552 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2302.879287 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9816.03353 | 0 | 0 | 0 | 0 | 0 | 0.000570685 | B to C | A to IO |
| 721 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9780.484857 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2239.209763 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 721H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 721 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 721H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.088005778 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9761.095061 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9761.095061 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.088005781 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 5.1711384 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9820.996243 | 0 | 0 | 0 | 0 | 0 | 0.000182676 | B to C | A to IO |
| 743 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -37.68452978 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9832.884964 | 0 | 0 | 0 | 0 | 0 | 0.000189601 | B to C | A to IO |
| 743 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2303.21511 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2247.192209 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9779.388165 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2226.855612 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9832.828984 | 0 | 0 | 0 | 0 | 0 | 0.000189601 | B to C | A to IO |
| 743 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9783.016418 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2247.018306 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 743H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 743 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 743H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9761.095062 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.08801755 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9761.095062 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.088017547 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 37.68453553 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9820.996243 | 0 | 0 | 0 | 0 | 0 | 0.000182676 | B to C | A to IO |
| 765 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -5.171133548 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9832.828992 | 0 | 0 | 0 | 0 | 0 | 0.000189601 | B to C | A to IO |
| 765 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2226.855606 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2247.018294 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9783.016416 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2303.215115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9832.884956 | 0 | 0 | 0 | 0 | 0 | 0.000189601 | B to C | A to IO |
| 765 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 765 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9779.388168 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2247.19222 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 765H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 765 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 765H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.087690058 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9759.607882 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9759.607882 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.087690062 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 3.546667931 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9794.456032 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -40.31497351 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9807.236667 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2305.382816 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2253.105395 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9778.576503 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2223.617248 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9807.18233 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9780.848677 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2252.93133 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 787H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 787 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 787H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9759.607882 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.087700184 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9759.607882 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.087700181 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 40.31497934 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9794.456032 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -3.546662994 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9807.182353 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2223.617241 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2252.93132 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9780.848675 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2305.382821 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9807.236645 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9778.576506 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2253.105405 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 809H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 809 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 809H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.087375326 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9758.135297 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9758.135297 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.087375329 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0.81169536 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9700.931091 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -45.13647573 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9712.392429 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2309.691565 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2255.936645 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9778.049761 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2218.270592 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9712.339763 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9778.424503 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2255.762414 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 831H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 831 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 831H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9758.135298 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.087383678 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9758.135298 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.087383675 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 45.13648151 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9700.931091 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -0.811690472 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9712.339783 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2218.270585 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2255.762405 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9778.4245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2309.69157 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9712.392409 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9778.049765 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2255.936653 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 853H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 853 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 853H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.087303922 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9756.674951 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9756.674951 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.087303923 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9591.182353 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -51.79950463 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9601.365055 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2315.817611 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2254.642555 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9777.81716 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2211.137972 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9601.313995 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9775.730006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2254.467679 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 875H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 875 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 875H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9756.674952 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.087310548 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9756.674952 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.087310546 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 51.79951038 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 897 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9591.182353 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9601.314013 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2211.137965 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2254.467673 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9775.730004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2315.817615 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9601.365037 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9777.817164 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2254.642562 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 897H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 897 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 897H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.086686306 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9755.234134 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9755.234134 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.086686308 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9475.636858 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -60.40772803 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9484.655537 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2323.878249 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2248.119217 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9777.899468 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2202.105474 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9484.606147 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9772.758794 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2247.945447 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 919H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 919 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 919H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9755.234134 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.086691456 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9755.234134 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.086691455 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 60.40773376 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9475.636858 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9484.606153 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2202.105467 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2247.945442 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9772.758791 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2323.878253 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9484.655531 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9777.899471 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2248.119223 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 941H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 941 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 941H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.090527264 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9753.771586 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9753.771586 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.090527263 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9315.387131 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -70.36115236 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9323.407255 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2333.273237 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2235.221599 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9778.259657 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2191.751663 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9323.358691 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9769.466382 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2235.040245 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 963H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 963 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 963H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9753.771587 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.090531023 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9753.771587 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.090531023 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 70.36115807 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9315.387131 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9323.358695 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2191.751657 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2235.040241 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9769.46638 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2333.273241 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9323.407251 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9778.25966 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2235.221603 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 985H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 985 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 985H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.073631276 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9752.492023 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9752.492023 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | -0.073631275 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9166.245266 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -81.38802701 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9173.460357 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -2343.795225 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2214.789484 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -9779.079099 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2180.393471 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9173.428708 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1007 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9766.075914 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2214.641143 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1007H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1007 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1007H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9752.492023 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -0.073633846 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9752.492023 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0.073633847 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 81.3880327 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9166.245266 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9173.428718 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2180.393465 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2214.641141 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9766.075912 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2343.79523 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 9173.460347 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9779.079102 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2214.789487 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1029H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1029 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1029H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0.155526416 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9750.35014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9750.35014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -0.155526413 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8969.367592 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -93.17471914 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8975.978301 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2354.85014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2185.94303 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9779.261576 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2168.047507 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8975.932601 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9761.557809 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2185.634208 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1051H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1051 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1051H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9750.35014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -0.155527974 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9750.35014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0.155527976 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 93.17472481 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8969.367592 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8975.932608 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2168.047501 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2185.634206 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9761.557806 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2354.850144 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8975.978293 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9779.261579 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2185.943032 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1073H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1073 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1073H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9752.672031 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -0.239899499 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9752.672031 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0.239899503 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8746.011373 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -104.5515753 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8752.198765 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2366.787457 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2147.45592 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9783.945653 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2157.386745 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8752.18114 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9761.423701 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2147.919852 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1095H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1095 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1095H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0.239898876 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9752.672031 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9752.672031 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -0.239898872 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 104.551581 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8746.011373 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8752.181144 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2157.386738 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2147.919851 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9761.423698 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2366.787462 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8752.198761 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9783.945656 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2147.455921 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1117H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1117 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1117H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 1.444819518 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9758.373853 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9758.373853 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1139 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -1.444819513 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8497.662074 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -114.8540333 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8503.642492 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2371.032139 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2101.841057 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9789.792901 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2141.146412 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8503.437177 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9762.63831 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2098.958385 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1139H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1139 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1139H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9758.373854 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -1.444819425 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9758.373854 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 1.444819431 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 114.8540389 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8497.662074 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8503.437179 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2141.146405 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2098.958385 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9762.638308 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2371.032144 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8503.64249 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9789.792904 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2101.841057 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1161H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1161 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1161H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9772.262114 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -4.595348857 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9772.262114 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 4.595348863 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8227.850453 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -117.225231 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8232.235471 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2402.029624 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2038.979124 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9809.050365 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2167.358611 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8233.737596 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9780.874535 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2048.215678 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1183H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1183 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1183H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 4.595349677 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9772.262115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9772.262115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -4.595349671 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 117.2252367 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8227.850453 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8233.737595 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2167.358604 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2048.215679 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9780.874532 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2402.029628 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 8232.235472 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9809.050368 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2038.979123 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1205H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1205 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1205H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 47.71691216 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9708.364326 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9708.364326 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -47.71691216 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 7936.126901 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -167.2048435 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 7929.415096 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -2306.434066 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2009.041616 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9747.542466 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 1972.10388 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 7939.787237 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9721.814135 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 1913.577801 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1227H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1227 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1227H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(+Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9708.364326 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(+Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | -47.71691065 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9708.364326 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-Y) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 47.71691065 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-Y) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 167.2048489 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 7936.126902 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 7939.787233 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -1972.103874 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 1913.577803 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | -9721.814132 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1249 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 2306.43407 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-0.3Y - X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 7929.415098 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-0.3Y - X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 9747.542469 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 2009.041614 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M2 | 1249H1 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 1249 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Conc. 16PS/#9 (Below) M3 | 1249H2 | 0.5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(+Y) | NonStatic | Max | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(+Y) | NonStatic | Max | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0.02237457 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(+Y) | NonStatic | Min | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | -2891.414634 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(+Y) | NonStatic | Min | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-Y) | NonStatic | Max | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 2891.414634 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-Y) | NonStatic | Max | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-Y) | NonStatic | Min | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-Y) | NonStatic | Min | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | -0.02237457 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-X) | NonStatic | Max | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-X) | NonStatic | Max | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 4249.69668 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-X) | NonStatic | Min | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | -26.24572841 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-X) | NonStatic | Min | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(0.3Y - X) | NonStatic | Max | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(0.3Y - X) | NonStatic | Max | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 4251.771237 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(0.3Y - X) | NonStatic | Min | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | -478.386079 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(0.3Y - X) | NonStatic | Min | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 583.520173 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | -2917.663703 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-0.3Y - X) | NonStatic | Max | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 429.3651531 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-0.3Y - X) | NonStatic | Max | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 4251.71678 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-0.3Y - X) | NonStatic | Min | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-0.3Y - X) | NonStatic | Min | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 2891.375306 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 583.5196116 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M2 | 63H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 63 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M3 | 63H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(+Y) | NonStatic | Max | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(+Y) | NonStatic | Max | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.136545249 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(+Y) | NonStatic | Min | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | -14955.76468 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(+Y) | NonStatic | Min | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-Y) | NonStatic | Max | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | 14955.76468 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-Y) | NonStatic | Max | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-Y) | NonStatic | Min | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-Y) | NonStatic | Min | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.13654525 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-X) | NonStatic | Max | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-X) | NonStatic | Max | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19822.99736 | 0 | 0 | 0 | 0 | 0 | 0.001434519 | B to C | A to IO |
| 69 | CLE(-X) | NonStatic | Min | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | -160.1697627 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-X) | NonStatic | Min | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(0.3Y - X) | NonStatic | Max | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(0.3Y - X) | NonStatic | Max | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19823.47747 | 0 | 0 | 0 | 0 | 0 | 0.001453325 | B to C | A to IO |
| 69 | CLE(0.3Y - X) | NonStatic | Min | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | -2894.487081 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(0.3Y - X) | NonStatic | Min | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3536.08874 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | -15075.34626 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-0.3Y - X) | NonStatic | Max | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | 2595.327159 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-0.3Y - X) | NonStatic | Max | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19823.37175 | 0 | 0 | 0 | 0 | 0 | 0.001453324 | B to C | A to IO |
| 69 | CLE(-0.3Y - X) | NonStatic | Min | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-0.3Y - X) | NonStatic | Min | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | 14955.58551 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3536.085314 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M2 | 69H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 69 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M3 | 69H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(+Y) | NonStatic | Max | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(+Y) | NonStatic | Max | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(+Y) | NonStatic | Min | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | -2891.414633 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(+Y) | NonStatic | Min | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | -0.022374014 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-Y) | NonStatic | Max | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 2891.414633 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-Y) | NonStatic | Max | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0.022374014 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-Y) | NonStatic | Min | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-Y) | NonStatic | Min | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-X) | NonStatic | Max | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 26.24572937 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-X) | NonStatic | Max | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 4249.69668 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-X) | NonStatic | Min | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-X) | NonStatic | Min | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(0.3Y - X) | NonStatic | Max | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(0.3Y - X) | NonStatic | Max | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 4251.716747 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(0.3Y - X) | NonStatic | Min | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | -429.3651519 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(0.3Y - X) | NonStatic | Min | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 583.5196122 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | -2891.375304 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-0.3Y - X) | NonStatic | Max | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 478.38608 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-0.3Y - X) | NonStatic | Max | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 4251.77127 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-0.3Y - X) | NonStatic | Min | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-0.3Y - X) | NonStatic | Min | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 2917.663705 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 583.5201724 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M2 | 132H1 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 132 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M3 | 132H2 | 0.5 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(+Y) | NonStatic | Max | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(+Y) | NonStatic | Max | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(+Y) | NonStatic | Min | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | -14955.76468 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(+Y) | NonStatic | Min | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.136541855 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-Y) | NonStatic | Max | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 14955.76468 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-Y) | NonStatic | Max | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.136541855 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-Y) | NonStatic | Min | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-Y) | NonStatic | Min | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-X) | NonStatic | Max | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 160.1697686 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-X) | NonStatic | Max | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19822.99736 | 0 | 0 | 0 | 0 | 0 | 0.001434519 | B to C | A to IO |
| 138 | CLE(-X) | NonStatic | Min | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-X) | NonStatic | Min | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(0.3Y - X) | NonStatic | Max | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(0.3Y - X) | NonStatic | Max | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19823.37171 | 0 | 0 | 0 | 0 | 0 | 0.001453324 | B to C | A to IO |
| 138 | CLE(0.3Y - X) | NonStatic | Min | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | -2595.327151 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(0.3Y - X) | NonStatic | Min | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3536.085318 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | -14955.58551 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-0.3Y - X) | NonStatic | Max | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 2894.487087 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-0.3Y - X) | NonStatic | Max | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19823.47751 | 0 | 0 | 0 | 0 | 0 | 0.001453325 | B to C | A to IO |
| 138 | CLE(-0.3Y - X) | NonStatic | Min | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-0.3Y - X) | NonStatic | Min | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 15075.34627 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-Y - 0.3X) | NonStatic | Max | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3536.088737 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M2 | 138H1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |
| 138 | CLE(-Y - 0.3X) | NonStatic | Min | 24" Steel (Below) M3 | 138H2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A to B | A to IO |

| | | | | |
|---|---|---|---|---|
| | COWI | Project<br>Berkeley Water Transportation Pier Ferry | Date<br>01/05/26 | Sheet<br>1A-11 |
| | | Subject<br>Section 1A - Structural – Fixed Pier Pile Design | Design<br>T. RODRIGUES | Checked<br>JBSW |

# Attachment 6: Pushover Analysis

The pushover analysis and associated capacity spectrum analysis calculations are provided.

## A6.1 – Inertial Seismic Load – Lower Bound Soil Springs

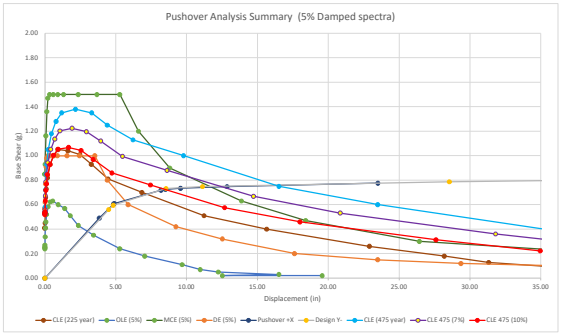
### A6.1.1 – Pushover Curves

### A6.1.2 – CLE Capacity Spectrum Analysis

Berkeley Water Transportation Pier Ferry
Project No. A103648
BWTPF SAP2000 Loads
Seismic Load Summary

| Pushover X Direction | | | |
|---|---|---|---|
| Damping Values | | | |
| | Lower Bound | Design | Upper Bound |
| OLE | | | |
| DE | | | |
| CLE | | | |
| MCE | | | |
| Design Acceleration | | | |
| | Lower Bound | Design | Upper Bound |
| OLE | | | |
| DE | | | |
| CLE | | | |
| MCE | | | |

| Pushover Y Direction | | | |
|---|---|---|---|
| Damping Values | | | |
| | Lower Bound | Design | Upper Bound |
| OLE | | | |
| DE | | | |
| CLE | | | |
| MCE | | | |
| Design Acceleration | | | |
| | Lower Bound | Design | Upper Bound |
| OLE | | | |
| DE | | | |
| CLE | | | |
| MCE | | | |




| | |
|---|---|
| 1.434241 | -1.434241 |
| -2.122483 | 2.122483 |
| -3.38294 | 3.38294 |
| -8.579107 | 8.579107 |
| -8.695959 | 8.695959 |
| -11.33956 | 11.33956 |
| -11.34056 | 11.34056 |
| -11.388655 | 11.388655 |
| -11.431376 | 11.431376 |
| -18.527645 | 18.527645 |
| -31.497404 | 31.497404 |
| -31.498404 | 31.498404 |
| -31.548607 | 31.548607 |
| -31.650271 | 31.650271 |
| -31.710754 | 31.710754 |
| -31.711754 | 31.711754 |
| -31.759277 | 31.759277 |
| -31.826571 | 31.826571 |
| -31.827571 | 31.827571 |
| -31.828571 | 31.828571 |
| -31.829571 | 31.829571 |
| -32.138807 | 32.138807 |
| -32.139809 | 32.139809 |
| -35.064915 | 35.064915 |
| -47.995108 | 47.995108 |
| -57.996721 | 57.996721 |
| -67.99646 | 67.99646 |
| -77.996535 | 77.996535 |

Seis Mass 4312 kip/g

Pushover Curves

| LoadCase | Step | Disp. | Force | Disp. | Force |
|---|---|---|---|---|---|
| Text | Unitless | in | Kip | in | g |
| Lower Bound X- | 0 | | | 0.00 | 0.00 |
| | 1 | | | 0.00 | 0.00 |
| | 2 | | | 0.00 | 0.00 |
| | 3 | | | 0.00 | 0.00 |
| | 4 | | | 0.00 | 0.00 |
| | 5 | | | 0.00 | 0.00 |
| | 6 | | | 0.00 | 0.00 |
| | 7 | | | 0.00 | 0.00 |
| | 8 | | | 0.00 | 0.00 |
| | 9 | | | 0.00 | 0.00 |
| | 10 | | | 0.00 | 0.00 |
| | 11 | | | 0.00 | 0.00 |
| | 12 | | | 0.00 | 0.00 |
| | 13 | | | 0.00 | 0.00 |
| | 14 | | | 0.00 | 0.00 |
| | 15 | | | 0.00 | 0.00 |
| | 16 | | | 0.00 | 0.00 |
| | 17 | | | 0.00 | 0.00 |
| | 18 | | | 0.00 | 0.00 |
| | 19 | | | 0.00 | 0.00 |
| | 20 | | | 0.00 | 0.00 |
| | 21 | | | 0.00 | 0.00 |
| | 22 | | | 0.00 | 0.00 |
| | 23 | | | 0.00 | 0.00 |
| | 24 | | | 0.00 | 0.00 |
| | 25 | | | 0.00 | 0.00 |
| | 26 | | | 0.00 | 0.00 |
| | 27 | | | | |

| LoadCase | Step | Disp. | Force | Disp. | Force |
|---|---|---|---|---|---|
| Text | Unitless | in | Kip | in | g |
| Lower Bound Y+ | 0 | | | 0.00 | 0.00 |
| | 1 | | | 0.00 | 0.00 |
| | 2 | | | 0.00 | 0.00 |
| | 3 | | | 0.00 | 0.00 |
| | 4 | | | 0.00 | 0.00 |
| | 5 | | | 0.00 | 0.00 |
| | 6 | | | 0.00 | 0.00 |
| | 7 | | | 0.00 | 0.00 |
| | 8 | | | 0.00 | 0.00 |
| | 9 | | | 0.00 | 0.00 |
| | 10 | | | 0.00 | 0.00 |
| | 11 | | | 0.00 | 0.00 |
| | 12 | | | 0.00 | 0.00 |
| | 13 | | | 0.00 | 0.00 |
| | 14 | | | 0.00 | 0.00 |
| | 15 | | | 0.00 | 0.00 |
| | 16 | | | 0.00 | 0.00 |
| | 17 | | | 0.00 | 0.00 |
| | 18 | | | 0.00 | 0.00 |
| | 19 | | | 0.00 | 0.00 |
| | 20 | | | 0.00 | 0.00 |
| | 21 | | | 0.00 | 0.00 |
| | 22 | | | 0.00 | 0.00 |
| | 23 | | | 0.00 | 0.00 |
| | 24 | | | 0.00 | 0.00 |
| | 25 | | | 0.00 | 0.00 |
| | 26 | | | 0.00 | 0.00 |
| | 27 | | | 0.00 | 0.00 |

| LoadCase | Step | Disp. | Force | Disp. | Force |
|---|---|---|---|---|---|
| Text | Unitless | in | Kip | in | g |
| Kinematic + Pushover Y+ | 0 | | | 0.00 | 0.00 |
| | 1 | | | 0.00 | 0.00 |
| | 2 | | | 0.00 | 0.00 |
| | 3 | | | 0.00 | 0.00 |
| | 4 | | | 0.00 | 0.00 |
| | 5 | | | 0.00 | 0.00 |
| | 6 | | | 0.00 | 0.00 |
| | 7 | | | 0.00 | 0.00 |
| | 8 | | | 0.00 | 0.00 |
| | 9 | | | 0.00 | 0.00 |
| | 10 | | | 0.00 | 0.00 |
| | 11 | | | 0.00 | 0.00 |
| | 12 | | | 0.00 | 0.00 |
| | 13 | | | 0.00 | 0.00 |
| | 14 | | | 0.00 | 0.00 |
| | 15 | | | 0.00 | 0.00 |
| | 16 | | | 0.00 | 0.00 |
| | 17 | | | 0.00 | 0.00 |
| | 18 | | | 0.00 | 0.00 |
| | 19 | | | 0.00 | 0.00 |
| | 20 | | | 0.00 | 0.00 |
| | 21 | | | 0.00 | 0.00 |
| | 22 | | | 0.00 | 0.00 |
| | 23 | | | 0.00 | 0.00 |
| | 24 | | | 0.00 | 0.00 |
| | 25 | | | 0.00 | 0.00 |
| | 26 | | | 0.00 | 0.00 |
| | 27 | | | 0.00 | 0.00 |

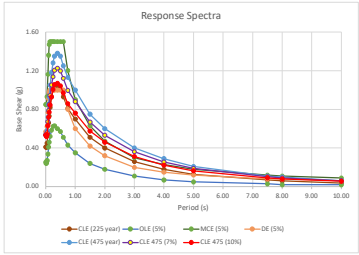
| LoadCase | Step | Disp. | Force | Disp. | Force |
|---|---|---|---|---|---|
| Text | Unitless | in | Kip | in | g |
| Kinematic + Pushover Y- | 0 | | | 0.00 | 0.00 |
| | 1 | | | 0.00 | 0.00 |
| | 2 | | | 0.00 | 0.00 |
| | 3 | | | 0.00 | 0.00 |
| | 4 | | | 0.00 | 0.00 |
| | 5 | | | 0.00 | 0.00 |
| | 6 | | | 0.00 | 0.00 |
| | 7 | | | 0.00 | 0.00 |
| | 8 | | | 0.00 | 0.00 |
| | 9 | | | 0.00 | 0.00 |
| | 10 | | | 0.00 | 0.00 |
| | 11 | | | 0.00 | 0.00 |
| | 12 | | | 0.00 | 0.00 |
| | 13 | | | 0.00 | 0.00 |
| | 14 | | | 0.00 | 0.00 |
| | 15 | | | 0.00 | 0.00 |
| | 16 | | | 0.00 | 0.00 |
| | 17 | | | 0.00 | 0.00 |
| | 18 | | | 0.00 | 0.00 |
| | 19 | | | 0.00 | 0.00 |
| | 20 | | | 0.00 | 0.00 |
| | 21 | | | 0.00 | 0.00 |
| | 22 | | | 0.00 | 0.00 |
| | 23 | | | 0.00 | 0.00 |
| | 24 | | | 0.00 | 0.00 |
| | 25 | | | 0.00 | 0.00 |
| | 26 | | | 0.00 | 0.00 |
| | 27 | | | 0.00 | 0.00 |

| LoadCase | Step | Disp. | Force | Disp. | Force |
|---|---|---|---|---|---|
| Text | Unitless | in | Kip | in | g |
| Pushover +X | 0 | 0 | 0 | 0.00 | 0.00 |
| | 1 | 3.840099 | 2114.284 | 3.84 | 0.49 |
| | 2 | 4.855836 | 2616.213 | 4.86 | 0.61 |
| | 3 | 4.907452 | 2629.506 | 4.91 | 0.61 |
| | 4 | 8.196198 | 3099.205 | 8.20 | 0.72 |
| | 5 | 8.509214 | 3125.188 | 8.51 | 0.72 |
| | 6 | 9.571781 | 3165.763 | 9.57 | 0.73 |
| | 7 | 12.858125 | 3225.546 | 12.86 | 0.75 |
| | 8 | 23.501739 | 3344.822 | 23.50 | 0.78 |
| | 9 | 27.320695 | 3375.008 | 27.32 | 0.78 |
| | 10 | 27.336613 | 3375.283 | 27.34 | 0.78 |
| | 11 | 27.35464 | 3375.491 | 27.35 | 0.78 |
| | 12 | 27.359305 | 3375.637 | 27.36 | 0.78 |
| | 13 | 27.348918 | 3320.193 | 27.35 | 0.77 |
| | 14 | 27.310072 | 3255.164 | 27.31 | 0.75 |
| | 15 | 27.25984 | 3224.857 | 27.26 | 0.75 |
| | 16 | 27.159374 | 3164.606 | 27.16 | 0.73 |
| | 17 | 27.360305 | 3118.49 | 27.36 | 0.72 |
| | 18 | 28.396019 | 3152.995 | 28.40 | 0.73 |
| | 19 | 29.962487 | 3182.629 | 29.96 | 0.74 |
| | 20 | 31.547971 | 3192.068 | 31.55 | 0.74 |
| | 21 | 33.143661 | 3190.506 | 33.14 | 0.74 |
| | 22 | 38.12848 | 3144.15 | 38.13 | 0.73 |
| | 23 | | | 0.00 | 0.00 |
| | 24 | | | 0.00 | 0.00 |
| | 25 | | | 0.00 | 0.00 |
| | 26 | | | 0.00 | 0.00 |
| | 27 | | | 0.00 | 0.00 |

| LoadCase | Step | Disp. | Force | Disp. | Force |
|---|---|---|---|---|---|
| Text | Unitless | in | Kip | in | g |
| Design Y- | 0 | 0 | 0 | 0.00 | 0.00 |
| Pushover -Y | 1 | 4.502391 | 2415.744 | 4.50 | 0.56 |
| | 2 | 4.82095 | 2567.877 | 4.82 | 0.60 |
| | 3 | 8.54998 | 3158.088 | 8.55 | 0.73 |
| | 4 | 11.122794 | 3224.038 | 11.12 | 0.75 |
| | 5 | 28.545999 | 3394.523 | 28.55 | 0.79 |
| | 6 | 37.777304 | 3452.508 | 37.78 | 0.80 |
| | 7 | 41.295703 | 3452.293 | 41.30 | 0.80 |
| | 8 | 44.814215 | 3448.17 | 44.81 | 0.80 |
| | 9 | 54.993245 | 3413.247 | 54.99 | 0.79 |
| | 10 | 63.276875 | 3427.469 | 63.28 | 0.79 |
| | 11 | 63.534622 | 3427.586 | 63.53 | 0.79 |
| | 12 | 64.055267 | 3427.557 | 64.06 | 0.79 |
| | 13 | 75.239366 | 3292.557 | 75.24 | 0.76 |
| | 14 | 85.239366 | 3169.586 | 85.24 | 0.74 |
| | 15 | 95.239035 | 3043.483 | 95.24 | 0.71 |
| | 16 | 100 | 2983.211 | 100.00 | 0.69 |
| | 17 | | | 0.00 | 0.00 |
| | 18 | | | 0.00 | 0.00 |
| | 19 | | | 0.00 | 0.00 |
| | 20 | | | 0.00 | 0.00 |
| | 21 | | | 0.00 | 0.00 |
| | 22 | | | 0.00 | 0.00 |
| | 23 | | | 0.00 | 0.00 |
| | 24 | | | 0.00 | 0.00 |
| | 25 | | | 0.00 | 0.00 |
| | 26 | | | 0.00 | 0.00 |
| | 27 | | | 0.00 | 0.00 |
| | 28 | | | 0.00 | 0.00 |
| | 29 | | | 0.00 | 0.00 |
| | 30 | | | 0.00 | 0.00 |
| | 31 | | | 0.00 | 0.00 |
| | 32 | | | 0.00 | 0.00 |
| | 33 | | | 0.00 | 0.00 |

Spectral Acceleration

| OLE (5%) | | | CLE (225 year) | | | CLE (475 year) | | | DE (5%) | | | CLE 475 (7%) | | | MCE (5%) | | | CLE 475 (10%) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (s) | (g) | (in) | (seconds) | (g) | (in) | (seconds) | (g) | (in) | (seconds) | (g) | (in) | (seconds) | (g) | (in) | (seconds) | (g) | (in) | (seconds) | (g) | (in) |
| 0.01 | 0.25 | 0.00 | 0.01 | 0.41 | 0.00 | 0.01 | 0.54 | 0.00 | 0.01 | 0.57 | 0.00 | 0.01 | 0.54 | 0.00 | 0.01 | 0.85 | 0.00 | 0.01 | 0.53 | 0.00 |
| 0.02 | 0.24 | 0.00 | 0.02 | 0.41 | 0.00 | 0.02 | 0.53 | 0.00 | 0.02 | 0.57 | 0.00 | 0.02 | 0.53 | 0.00 | 0.02 | 0.85 | 0.00 | 0.02 | 0.53 | 0.00 |
| 0.03 | 0.25 | 0.00 | 0.03 | 0.41 | 0.00 | 0.03 | 0.53 | 0.00 | 0.03 | 0.56 | 0.00 | 0.03 | 0.53 | 0.00 | 0.03 | 0.85 | 0.01 | 0.03 | 0.52 | 0.00 |
| 0.05 | 0.27 | 0.01 | 0.05 | 0.45 | 0.01 | 0.05 | 0.58 | 0.01 | 0.05 | 0.62 | 0.02 | 0.05 | 0.56 | 0.01 | 0.05 | 0.93 | 0.02 | 0.05 | 0.54 | 0.01 |
| 0.080 | 0.34 | 0.02 | 0.080 | 0.55 | 0.03 | 0.080 | 0.72 | 0.05 | 0.080 | 0.77 | 0.05 | 0.075 | 0.67 | 0.04 | 0.080 | 1.16 | 0.07 | 0.075 | 0.63 | 0.03 |
| 0.1 | 0.41 | 0.04 | 0.1 | 0.66 | 0.06 | 0.1 | 0.85 | 0.08 | 0.1 | 0.91 | 0.09 | 0.1 | 0.79 | 0.08 | 0.1 | 1.36 | 0.13 | 0.1 | 0.72 | 0.07 |
| 0.12 | 0.46 | 0.06 | 0.12 | 0.73 | 0.1028875 | 0.12 | 0.93 | 0.13 | 0.12 | 0.98 | 0.14 | 0.12 | 0.85 | 0.12 | 0.12 | 1.47 | 0.21 | 0.12 | 0.77 | 0.11 |
| 0.15 | 0.52 | 0.1145152 | 0.15 | 0.82 | 0.18 | 0.15 | 1.05 | 0.23 | 0.15 | 1.00 | 0.22 | 0.15 | 0.94 | 0.21 | 0.15 | 1.50 | 0.33 | 0.15 | 0.85 | 0.19 |
| 0.2 | 0.58 | 0.23 | 0.2 | 0.93 | 0.36 | 0.2 | 1.18 | 0.46 | 0.2 | 1.00 | 0.39 | 0.2 | 1.05 | 0.41 | 0.2 | 1.50 | 0.59 | 0.2 | 0.93 | 0.36 |
| 0.25 | 0.62 | 0.38 | 0.25 | 1.00 | 0.61 | 0.25 | 1.28 | 0.78 | 0.25 | 1.00 | 0.61 | 0.25 | 1.14 | 0.70 | 0.25 | 1.50 | 0.92 | 0.25 | 1.00 | 0.61 |
| 0.3 | 0.63 | 0.55 | 0.3 | 1.05 | 0.92 | 0.3 | 1.35 | 1.19 | 0.3 | 1.00 | 0.88 | 0.3 | 1.20 | 1.06 | 0.3 | 1.50 | 1.32 | 0.3 | 1.05 | 0.93 |
| 0.4 | 0.60 | 0.94 | 0.4 | 1.04 | 1.63 | 0.4 | 1.38 | 2.16 | 0.4 | 1.00 | 1.57 | 0.4 | 1.22 | 1.92 | 0.4 | 1.50 | 2.35 | 0.4 | 1.07 | 1.67 |
| 0.5 | 0.57 | 1.39 | 0.5 | 1.01 | 2.47 | 0.5 | 1.35 | 3.30 | 0.5 | 1.00 | 2.45 | 0.5 | 1.20 | 2.93 | 0.5 | 1.50 | 3.67 | 0.5 | 1.04 | 2.55 |
| 0.60 | 0.51 | 1.80 | 0.6 | 0.93 | 3.2768973 | 0.60 | 1.25 | 4.40 | 0.60 | 1.00 | 3.52 | 0.6 | 1.12 | 3.95 | 0.60 | 1.50 | 5.29 | 0.6 | 0.97 | 3.42 |
| 0.75 | 0.43 | 2.37 | 0.75 | 0.81 | 4.46 | 0.75 | 1.13 | 6.22 | 0.75 | 0.80 | 4.40 | 0.75 | 1.00 | 5.48 | 0.75 | 1.20 | 6.61 | 0.75 | 0.86 | 4.73 |
| 1.0 | 0.35 | 3.44 | 1 | 0.70 | 6.85 | 1.0 | 1.00 | 9.79 | 1.0 | 0.80 | 5.87 | 1 | 0.88 | 8.62 | 1.0 | 0.90 | 8.81 | 1 | 0.76 | 7.45 |
| 1.5 | 0.24 | 5.2853182 | 1.5 | 0.51 | 11.23 | 1.5 | 0.75 | 16.52 | 1.5 | 0.42 | 9.25 | 1.5 | 0.67 | 14.72 | 1.5 | 0.63 | 13.87 | 1.5 | 0.58 | 12.68 |
| 2 | 0.18 | 7.05 | 2 | 0.40 | 15.66 | 2 | 0.60 | 23.49 | 2 | 0.32 | 12.53 | 2 | 0.53 | 20.84 | 2 | 0.47 | 18.40 | 2 | 0.46 | 18.00 |
| 3 | 0.11 | 9.69 | 3 | 0.26 | 22.90 | 3 | 0.40 | 35.24 | 3 | 0.20 | 17.62 | 3 | 0.36 | 31.81 | 3 | 0.30 | 26.43 | 3 | 0.31 | 27.60 |
| 4 | 0.07 | 10.96 | 4 | 0.18 | 28.19 | 4 | 0.29 | 45.41 | 4 | 0.15 | 23.49 | 4 | 0.26 | 39.99 | 4 | 0.23 | 36.02 | 4 | 0.22 | 34.96 |
| 5 | 0.05 | 12.23 | 5 | 0.13 | 31.32 | 5 | 0.21 | 51.39 | 5 | 0.12 | 29.36 | 5 | 0.19 | 46.48 | 5 | 0.18 | 44.04 | 5 | 0.17 | 40.43 |
| 7.5 | 0.03 | 16.52 | 7.5 | 0.07 | 38.54 | 7.5 | 0.11 | 60.56 | 7.5 | 0.08 | 44.04 | 7.5 | 0.10 | 56.90 | 7.5 | 0.12 | 66.07 | 7.5 | 0.09 | 50.45 |
| 8 | 0.02 | 12.53 | 8 | 0.06 | 37.584485 | 8 | 0.1 | 62.64 | 8 | 0.08 | 50.112647 | 8 | 0.09 | 56.38 | 8 | 0.11 | 68.90 | 8 | 0.08 | 50.11 |
| 10 | 0.02 | 19.58 | 10 | 0.04 | 36.21 | 10 | 0.06 | 58.73 | 10 | 0.06 | 58.73 | 10 | 0.06 | 61.18 | 10 | 0.09 | 88.09 | 10 | 0.06 | 55.16 |



Berkeley Water Transportation Pier Ferry
Project No. A103648
BWTPF Inertial Seismic Load Design Springs Shared
CLE (475-year)

## Pushover Curves

| LoadCase | Step | Disp. | Force | Disp. | Force | LoadCase | Step | Disp. | Force | Disp. | Force | LoadCase | Step | Disp. | Force | Disp. | Force | LoadCase | Step | Disp. | Force | Disp. | Force | LoadCase | Step | Disp. | Force | Disp. | Force |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Text | Unitless | in | Kip | in | g | Text | Unitless | in | Kip | in | g | Text | Unitless | in | Kip | in | g | Text | Unitless | in | Kip | in | g | Text | Unitless | in | Kip | in | g |
| Push CLE -X | 0 | 0 | 0 | 0.00 | 0.00 | Push CLE +X | 0 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 0 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 0 | | | 0.00 | 0.00 | Push CLE +Y | 0 | 0 | 0 | 0.00 | 0.00 |
| Push CLE -X | 1 | 3.840099 | 2114.284 | 3.84 | 0.49 | Push CLE +X | 1 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 1 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 1 | | | 0.00 | 0.00 | Push CLE +Y | 1 | 4.502391 | 2415.744 | 4.50 | 0.56 |
| Push CLE -X | 2 | 4.855836 | 2616.213 | 4.86 | 0.61 | Push CLE +X | 2 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 2 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 2 | | | 0.00 | 0.00 | Push CLE +Y | 2 | 4.82095 | 2567.877 | 4.82 | 0.60 |
| Push CLE -X | 3 | 4.907452 | 2629.506 | 4.91 | 0.61 | Push CLE +X | 3 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 3 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 3 | | | 0.00 | 0.00 | Push CLE +Y | 3 | 8.54998 | 3158.088 | 8.55 | 0.73 |
| Push CLE -X | 4 | 8.196198 | 3099.205 | 8.20 | 0.72 | Push CLE +X | 4 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 4 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 4 | | | 0.00 | 0.00 | Push CLE +Y | 4 | 11.122794 | 3224.038 | 11.12 | 0.75 |
| Push CLE -X | 5 | 8.509214 | 3125.188 | 8.51 | 0.72 | Push CLE +X | 5 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 5 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 5 | | | 0.00 | 0.00 | Push CLE +Y | 5 | 28.545999 | 3394.523 | 28.55 | 0.79 |
| Push CLE -X | 6 | 9.571781 | 3165.763 | 9.57 | 0.73 | Push CLE +X | 6 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 6 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 6 | | | 0.00 | 0.00 | Push CLE +Y | 6 | 37.777304 | 3452.508 | 37.78 | 0.80 |
| Push CLE -X | 7 | 12.85813 | 3225.546 | 12.86 | 0.75 | Push CLE +X | 7 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 7 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 7 | | | 0.00 | 0.00 | Push CLE +Y | 7 | 41.295703 | 3452.293 | 41.30 | 0.80 |
| Push CLE -X | 8 | 23.50174 | 3344.822 | 23.50 | 0.78 | Push CLE +X | 8 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 8 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 8 | | | 0.00 | 0.00 | Push CLE +Y | 8 | 44.814215 | 3448.17 | 44.81 | 0.80 |
| Push CLE -X | 9 | 27.3207 | 3375.008 | 27.32 | 0.78 | Push CLE +X | 9 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 9 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 9 | | | 0.00 | 0.00 | Push CLE +Y | 9 | 54.993245 | 3413.247 | 54.99 | 0.79 |
| Push CLE -X | 10 | 27.33661 | 3375.283 | 27.34 | 0.78 | Push CLE +X | 10 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 10 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 10 | | | 0.00 | 0.00 | Push CLE +Y | 10 | 63.276875 | 3427.469 | 63.28 | 0.79 |
| Push CLE -X | 11 | 27.35464 | 3375.491 | 27.35 | 0.78 | Push CLE +X | 11 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 11 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 11 | | | 0.00 | 0.00 | Push CLE +Y | 11 | 63.534622 | 3427.586 | 63.53 | 0.79 |
| Push CLE -X | 12 | 27.35931 | 3375.637 | 27.36 | 0.78 | Push CLE +X | 12 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 12 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 12 | | | 0.00 | 0.00 | Push CLE +Y | 12 | 64.055267 | 3427.557 | 64.06 | 0.79 |
| Push CLE -X | 13 | 27.34892 | 3320.193 | 27.35 | 0.77 | Push CLE +X | 13 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 13 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 13 | | | 0.00 | 0.00 | Push CLE +Y | 13 | 75.239366 | 3292.557 | 75.24 | 0.76 |
| Push CLE -X | 14 | 27.31007 | 3255.164 | 27.31 | 0.75 | Push CLE +X | 14 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 14 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 14 | | | 0.00 | 0.00 | Push CLE +Y | 14 | 85.239366 | 3169.586 | 85.24 | 0.74 |
| Push CLE -X | 15 | 27.25984 | 3224.857 | 27.26 | 0.75 | Push CLE +X | 15 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 15 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 15 | | | 0.00 | 0.00 | Push CLE +Y | 15 | 95.239035 | 3043.483 | 95.24 | 0.71 |
| Push CLE -X | 16 | 27.15937 | 3164.606 | 27.16 | 0.73 | Push CLE +X | 16 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 16 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 16 | | | 0.00 | 0.00 | Push CLE +Y | 16 | 100 | 2983.211 | 100.00 | 0.69 |
| Push CLE -X | 17 | 27.36031 | 3118.49 | 27.36 | 0.72 | Push CLE +X | 17 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 17 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 17 | | | 0.00 | 0.00 | Push CLE +Y | 17 | | | 0.00 | 0.00 |
| Push CLE -X | 18 | 28.39602 | 3152.995 | 28.40 | 0.73 | Push CLE +X | 18 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 18 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 18 | | | 0.00 | 0.00 | Push CLE +Y | 18 | | | 0.00 | 0.00 |
| Push CLE -X | 19 | 29.96249 | 3182.629 | 29.96 | 0.74 | Push CLE +X | 19 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 19 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 19 | | | 0.00 | 0.00 | Push CLE +Y | 19 | | | 0.00 | 0.00 |
| Push CLE -X | 20 | 31.54797 | 3192.068 | 31.55 | 0.74 | Push CLE +X | 20 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 20 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 20 | | | 0.00 | 0.00 | Push CLE +Y | 20 | | | 0.00 | 0.00 |
| Push CLE -X | 21 | 33.14366 | 3190.506 | 33.14 | 0.74 | Push CLE +X | 21 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 21 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 21 | | | 0.00 | 0.00 | Push CLE +Y | 21 | | | 0.00 | 0.00 |
| Push CLE -X | 22 | 38.12848 | 3144.15 | 38.13 | 0.73 | Push CLE +X | 22 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 22 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 22 | | | 0.00 | 0.00 | Push CLE +Y | 22 | | | 0.00 | 0.00 |
| Push CLE -X | 23 | | | 0.00 | 0.00 | Push CLE +X | 23 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 23 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 23 | | | 0.00 | 0.00 | Push CLE +Y | 23 | | | 0.00 | 0.00 |
| Push CLE -X | 24 | | | 0.00 | 0.00 | Push CLE +X | 24 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 24 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 24 | | | 0.00 | 0.00 | Push CLE +Y | 24 | | | 0.00 | 0.00 |
| Push CLE -X | 25 | | | 0.00 | 0.00 | Push CLE +X | 25 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 25 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 25 | | | 0.00 | 0.00 | Push CLE +Y | 25 | | | 0.00 | 0.00 |
| Push CLE -X | 26 | | | 0.00 | 0.00 | Push CLE +X | 26 | | | 0.00 | 0.00 | Push CLE +Y with kinematic | 26 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 26 | | | 0.00 | 0.00 | | 26 | | | 0.00 | 0.00 |
| | | | | | | | | | | | | Push CLE +Y with kinematic | 27 | | | 0.00 | 0.00 | Push CLE -Y with kinematic | 27 | | | 0.00 | 0.00 | | 27 | | | 0.00 | 0.00 |
| | | | | | | | | | | | | | | | | | | Push CLE -Y with kinematic | 28 | | | | | | | | | 0.00 | 0.00 |

## Bilinearization

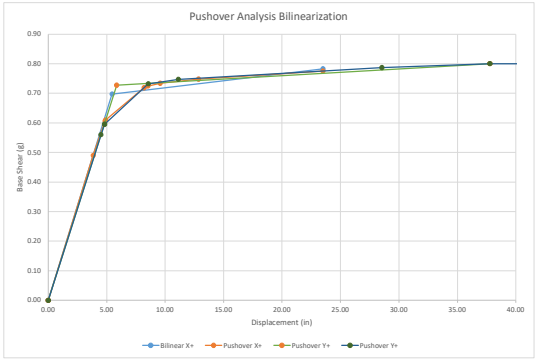
| Pushover X+ | | | Bilinear X+ | |
|---|---|---|---|---|
| Disp | Shear | Energy | Disp | Shear |
| in | g | g*in | in | g |
| 0.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.8 | 0.49 | 1.19 | 5.47 | 0.70 |
| 4.9 | 0.61 | 0.32 | 23.50 | 0.78 |
| 4.9 | 0.61 | 1.02 | | |
| 8.2 | 0.72 | 1.29 | | |
| 8.5 | 0.72 | 0.50 | | |
| 9.6 | 0.73 | 1.60 | | |
| 12.9 | 0.75 | 5.21 | | |
| 23.5 | 0.78 | 4.13 | | |
| 27.3 | 0.78 | | | |
| 27.3 | 0.78 | | | |
| 27.4 | 0.78 | | | |
| 27.4 | 0.78 | | | |
| 27.3 | 0.77 | | | |
| 27.3 | 0.75 | | | |
| 27.3 | 0.75 | | | |
| 27.2 | 0.73 | | | |
| 27.4 | 0.72 | | | |
| 28.4 | 0.73 | | | |
| 30.0 | 0.74 | | | |
| 31.5 | 0.74 | | | |
| 33.1 | 0.74 | | | |
| 38.1 | 0.73 | | | |
| 0.0 | 0.00 | 0.00 | | |
| 0.0 | 0.00 | 0.00 | | |
| 0.0 | 0.00 | 0.00 | | |
| 0.0 | 0.00 | 0.00 | | |

| Pushover Y+ | | | Bilinear Y+ | |
|---|---|---|---|---|
| Disp | Shear | Energy | Disp | Shear |
| in | g | g*in | in | g |
| 0.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.5 | 0.56 | 1.35 | 5.85 | 0.73 |
| 4.8 | 0.60 | 1.21 | 37.78 | 0.80 |
| 8.5 | 0.73 | 2.31 | | |
| 11.1 | 0.75 | 7.48 | | |
| 28.5 | 0.79 | 10.49 | | |
| 37.8 | 0.80 | 3.70 | | |
| 41.3 | 0.80 | | | |
| 44.8 | 0.80 | | | |
| 55.0 | 0.79 | | | |
| 63.3 | 0.79 | | | |
| 63.5 | 0.79 | | | |
| 64.1 | 0.79 | | | |
| 75.2 | 0.76 | | | |
| 85.2 | 0.74 | | | |
| 95.2 | 0.71 | | | |
| 100.0 | 0.69 | | | |
| 0.0 | 0.00 | | | |
| 0.0 | 0.00 | | | |
| 0.0 | 0.00 | | | |
| 0.0 | 0.00 | | | |
| 0.0 | 0.00 | | | |
| 0.0 | 0.00 | | | |
| 0.0 | 0.00 | | | |
| 0.0 | 0.00 | | | |
| 0.0 | 0.00 | | | |

Seis Mass 4312 kip/g

| Bilinearization X | | |
|---|---|---|
| Initial slope | 0.13 | g/in |
| Peak shear | 0.78 | g/in |
| Peak disp | 23.50 | in |
| yield disp | 5.47 | in |
| secondary slope | 0.00 | g/in |
| Yield shear | 0.70 | g/in |
| Bilinear Energy | 15.26 | g*in |
| Total Energy | 15.26 | g*in |
| Energy Diff | 0.00 | g*in |
| r | 0.04 | - |

| Bilinearization Y | | |
|---|---|---|
| Initial slope | 0.12 | g/in |
| Peak shear | 0.80 | g/in |
| Peak disp | 37.78 | in |
| yield disp | 5.85 | in |
| secondary slope | 0.00 | g/in |
| Yield shear | 0.73 | g/in |
| Bilinear Energy | 26.53 | g*in |
| Total Energy | 26.53 | g*in |
| Energy Diff | 0.00 | g*in |
| r | 0.02 | - |



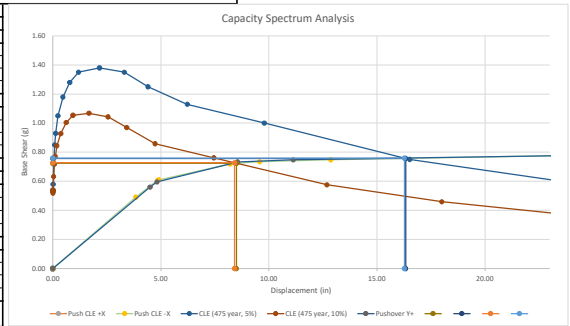

## Capacity Spectrum Analysis

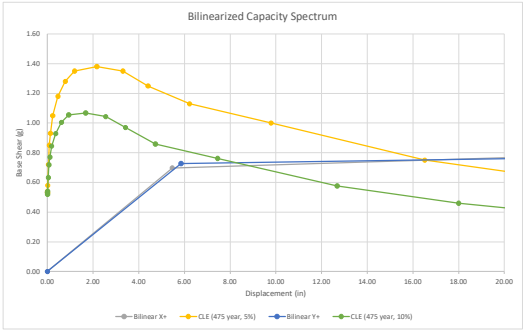
| CLE (475 year, 5%) | | | CLE (475 year, 10%) | | |
|---|---|---|---|---|---|
| (seconds) | (g) | (in) | | (g) | (in) |
| 0.01 | 0.54 | 0.00 | 0.01 | 0.53 | 0.00 |
| 0.02 | 0.53 | 0.00 | 0.02 | 0.53 | 0.00 |
| 0.03 | 0.53 | 0.00 | 0.03 | 0.52 | 0.00 |
| 0.05 | 0.58 | 0.01 | 0.05 | 0.54 | 0.01 |
| 0.080 | 0.72 | 0.05 | 0.080 | 0.63 | 0.04 |
| 0.1 | 0.85 | 0.08 | 0.1 | 0.72 | 0.07 |
| 0.12 | 0.93 | 0.13 | 0.12 | 0.77 | 0.11 |
| 0.15 | 1.05 | 0.23 | 0.15 | 0.85 | 0.19 |
| 0.2 | 1.18 | 0.46 | 0.2 | 0.93 | 0.36 |
| 0.25 | 1.28 | 0.78 | 0.25 | 1.00 | 0.61 |
| 0.3 | 1.35 | 1.19 | 0.3 | 1.05 | 0.93 |
| 0.4 | 1.38 | 2.16 | 0.4 | 1.07 | 1.67 |
| 0.5 | 1.35 | 3.30 | 0.5 | 1.04 | 2.55 |
| 0.6 | 1.25 | 4.40 | 0.60 | 0.97 | 3.42 |
| 0.75 | 1.13 | 6.22 | 0.75 | 0.86 | 4.73 |
| 1 | 1.00 | 9.79 | 1.0 | 0.76 | 7.45 |
| 1.5 | 0.75 | 16.52 | 1.5 | 0.58 | 12.68 |
| 2 | 0.60 | 23.49 | 2 | 0.46 | 18.00 |
| 3 | 0.40 | 35.24 | 3 | 0.31 | 27.60 |
| 4 | 0.29 | 45.41 | 4 | 0.22 | 34.96 |
| 5 | 0.21 | 51.39 | 5 | 0.17 | 40.43 |
| 7.5 | 0.11 | 60.56 | 7.5 | 0.09 | 50.45 |
| 8 | 0.1 | 62.64 | 8 | 0.08 | 50.11 |
| 10 | 0.06 | 58.73 | 10 | 0.06 | 55.16 |

| Design Acceleration | | |
|---|---|---|
| Design Case | X+ | Y+ |
| r | 0.04 | 0.02 |
| disp. yield (in) | 5.47 | 5.85 |
| 475 5% disp. demand (in) | 16.32675532 | 16.26474019 |
| 475 10% disp. demand (in) | 8.492040072 | 8.4111654894 |
| Assumed Damping | 0.108 | 0.10076898 |
| disp. demand at damping | 8.49 | 8.41 |
| disp. duct. demand | 1.6 | 1.4 |
| 475 5% Damped SA (g) | 0.757053957 | 0.759357985 |
| 475 10% Damped SA (g) | 0.724434698 | 0.727299902 |
| Damping | 0.108 | 0.101 |
| Difference in damping | 0.00E+00 | 0.00E+00 |
| SA (g) | 0.72 | 0.73 |
| ~~SA (ft/s²)~~ | ~~23.33~~ | ~~23.42~~ |

| Legend |
|---|
| Goal seek target to 0 |
| Goal see variable |
| Manuel input |
| Final Design Acceleration |

| (X+) | |
|---|---|
| 475-year, 5% | |
| disp (in) | Sa (g) |
| 16.3267553 | 0 |
| 16.3267553 | 0.757054 |
| 0 | 0.757054 |
| 475-year, 10% | |
| disp (in) | Sa (g) |
| 8.49204007 | 0 |
| 8.49204007 | 0.7244347 |
| 0 | 0.7244347 |
| (Y+) | |
| 475-year, 5% | |
| disp (in) | Sa (g) |
| 16.2647402 | 0 |
| 16.2647402 | 0.759358 |
| 0 | 0.759358 |
| 475-year, 10% | |
| disp (in) | Sa (g) |
| 8.41116549 | 0 |
| 8.41116549 | 0.7272999 |
| 0 | 0.7272999 |




test: m
8.492040072
8.492040072 b

| Pushy1 | CLE5%1 | Pushx1 | CLE10%1 | Pushx2 | CLE10%2 | Pushy2 | CLE5%2 |
|---|---|---|---|---|---|---|---|
| 0.00226923 | -0.037153 | 0.0025989 | -0.0354277 | 0.0192506 | | -0.035427749 | 0.03670563 | -0.03715 |
| 0.72244948 | 1.3636 | 0.7146228 | 1.0252886 | 0.5609579 | | 1.025288563 | 0.41856278 | 1.363636 |

| | | | | |
|---|---|---|---|---|
| | COWI | Project<br>Berkeley Water Transportation Pier Ferry | Date<br>01/05/26 | Sheet<br>1A-12 |
| | | Subject<br>Section 1A - Structural – Fixed Pier Pile Design | Design<br>T. RODRIGUES | Checked<br>JBSW |

# Appendix B: Geotechnical Reports

# 3 Breakwater Gravity Load Calculations

Project: BWTPF
Subject: Breakwater Flange Gravity Load Slab Design

Job #: A272767
By: TYRD | Date: 12/4/24
Checked by: JBSW | Date: 1/23/25

## Outline

1. Introduction

2. Load Cases

3. Design Loads
   a. SAP2000 Model Analysis Results
      i. Dead Load in SAP2000 Model
      ii. Uniform Live Load in SAP2000 Model
      iii. Summary of Results at Intersection from SAP2000 Model
      iv. Summary of Results at Rest of Breakwater from SAP2000 Model
   b. Determining Design Loads
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      ii. Rest of Breakwater

4. Design at Slab Intersection
   a. Longitudinal Reinforcing for Positive Bending
   b. Longitudinal Reinforcing for Negative Bending
   c. Transverse Reinforcing for Positive Bending
   d. Transverse Reinforcing for Negative Bending
   e. Shear Reinforcement
   f. Deflection

5. Design of Breakwater Flange
   a. Longitudinal Reinforcing for Positive Bending
   b. Longitudinal Reinforcing for Negative Bending
   c. Transverse Reinforcing for Positive Bending
   d. Transverse Reinforcing for Negative Bending
   e. Shear Reinforcement
   f. Deflection

6. Appendix: Hand Calculations
   a. Load Case 1: Dead
      i. At Intersection
      ii. Rest of Breakwater
   b. Load Case 2: Dead + Live Load with Tandem Firetrucks and Ambulance
      ii. Cross Section A-A at Rest of Breakwater
   c. Load Case 3: Dead + Uniform Live Load
      i. Cross Section A-A at Intersection
      ii. Cross Section A-A at Rest of Breakwater

## 1. Introduction

Objective: Design the reinforcement for the flanges of the Breakwater T-section considering applicable gravity loads. Lateral loads will be considered separately.

Background: See Figures 1a and 1b for isometric views of the Breakwater. There are two sections of the Berkeley pier, the main pier and the breakwater. The breakwater runs perpendicular to the main pier and consists of a T-section (See Figure 2). The T-section flange is proposed to be 14" thick at the intersection with the main wharf and 12" thick elsewhere. The span of the breakwater is around 245' long. For purposes of analysis a 30' section was modeled in SAP2000. See Figure 3 for Flange Section plan view.

Codes: The following codes are referenced:

- American Concrete Institute *Building Code Requirements for Structural Concrete* (ACI 318-19), 2019 (ACI)
- American Association of State Highway and Transportation Officials *LRFD Bridge Design Specifications*, 7th Ed., 2020 (AASHTO)
- American Society of Civil Engineers *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-22), 2022 (ASCE)

Methodology: First, assume a one-way slab system. Then, create a SAP2000 model to analyze two-way slab action for the load cases that are predicted to control (double 86k firetrucks, 10k Ambulance, uniform live load). Obtain controlling moment in the longitudinal & transverse directions, shear, and deflection. Design for moment and shear. Use ACI 318-19 to determine reinforcing in the slab. Use the model results to check deflection. Analyze a cantilever 12" width strip of slab for moment in the longitudinal and transverse directions for all applicable loading cases by hand to confirm model results.

Units: U.S. Customary System, as noted in equations.

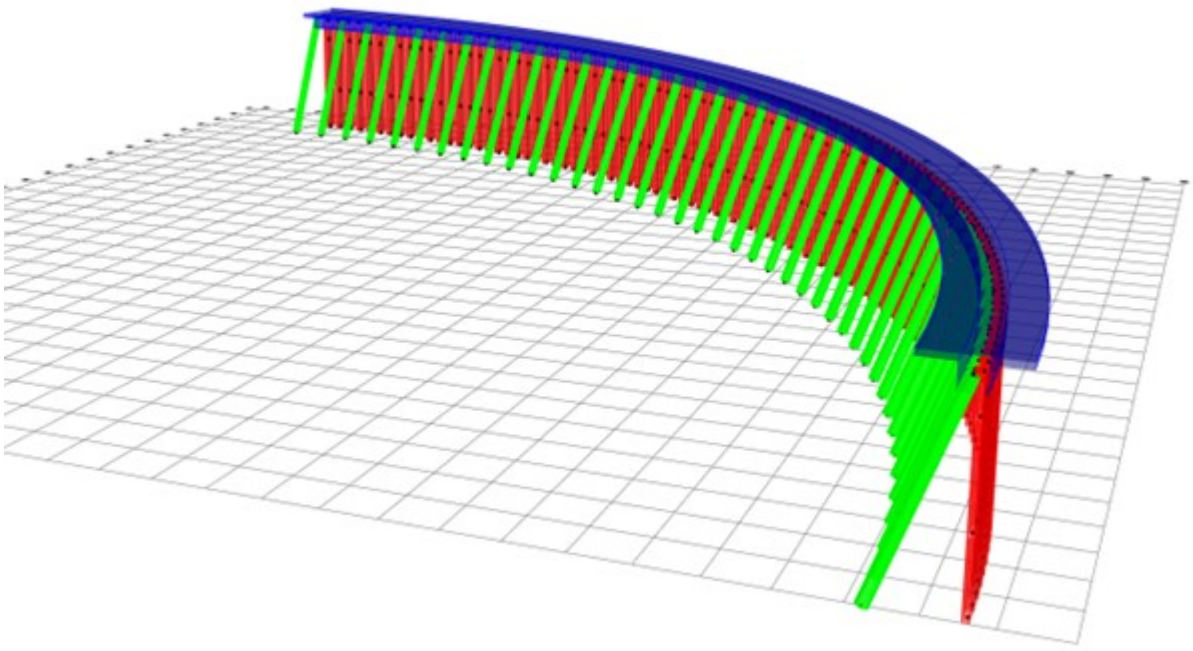


*Figure 1a - Breakwater Isometric View*

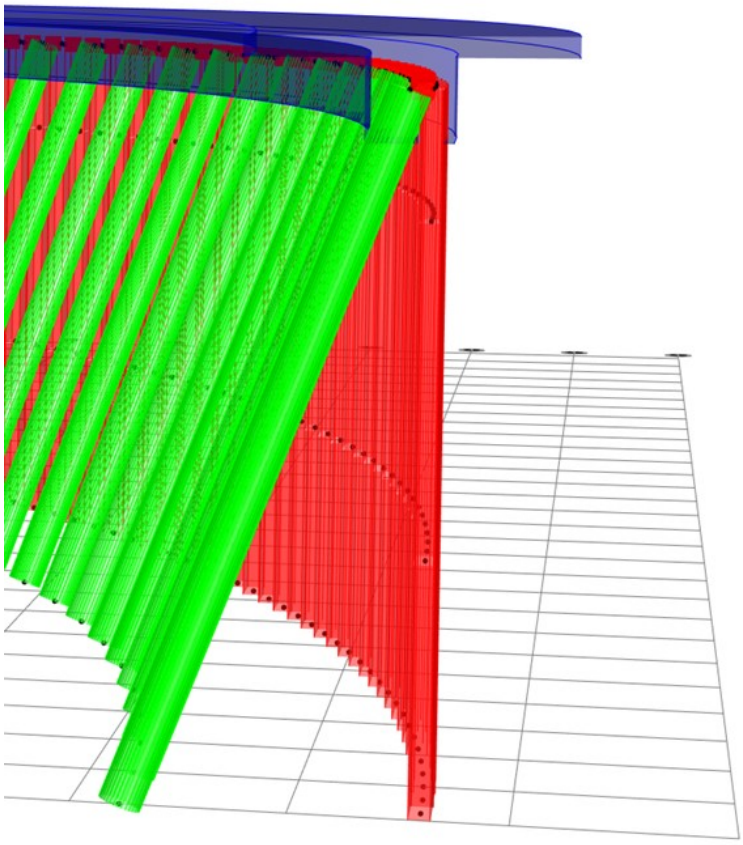


*Figure 1b - Breakwater Structure Section View*

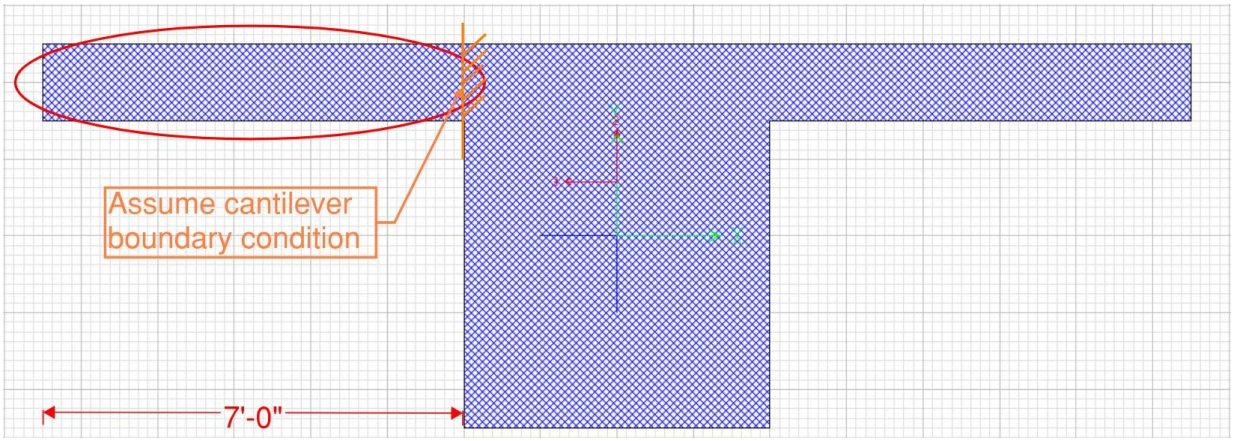



*Figure 2 - Breakwater Section View*

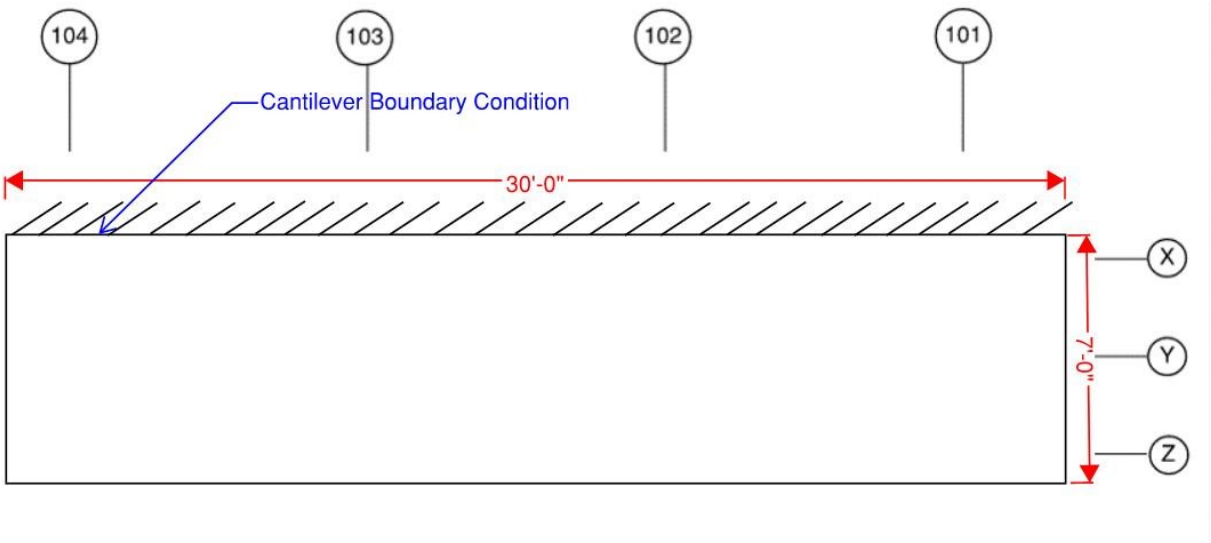



*Figure 3 - Flange Section Plan View*

## 2. Load Cases

Consider Load Cases below per ASCE 7-22

Load Case 1: 1.4*DL
Load Case 2: 1.2*DL + 1.6*(Lc)
Load Case 3: 1.2*DL + 1.6*(Lu)

where
DL = slab concrete dead load
Lc = concentrated live load (Fire Trucks and Ambulance)
Lu = uniform live load

Per UFC Section 3-3.3, concentrated live loads include a factor of 1.15. The updated Load Cases are:

Load Case 1: 1.4*DL
Load Case 2: 1.2*DL + 1.84*(Lc)
Load Case 3: 1.2*DL + 1.6*(Lu)

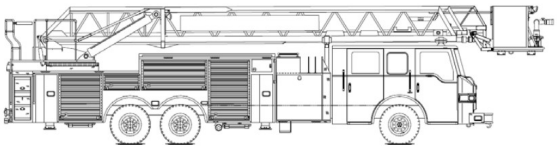
## 3. Design Loads

Consider all design load cases specified in Section 2. Assume transition from flange to web is fixed.

Preliminary geometry of the Breakwater flange slab are as follows:

| | |
|---|---|
| $h := 14\ in$ | height of slab at intersection |
| $b := 12\ in$ | width of slab considered |
| $W := 7\ ft$ | actual width of pier slab |
| $\gamma_{conc} := 150\ pcf$ | Unit weight of Normal Weight concrete |

**AERIAL PLATFORM REAR MOUNT – TANDEM REAR AXLE**



| | Minimum | Maximum |
|---|---|---|
| Front GAWR (lbs) | 21500 | 24000 |
| Rear GAWR (lbs) | 46000 | 62000 |
| Width (in.) | 98 | 100 |
| Height (in.) | 11.5 | 13 |
| Length (ft.) | 46 | 48 |

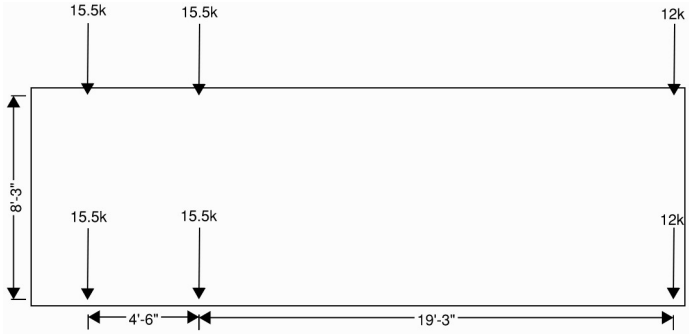



*Figure 4 - Live Load with Tandem Firetruck.*

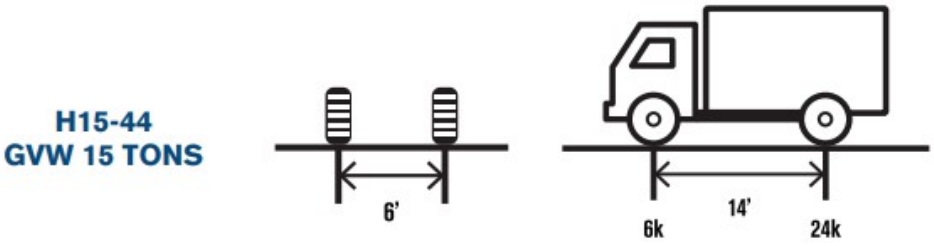



*Figure 5 - Assumed Ambulance Weight Distribution.*

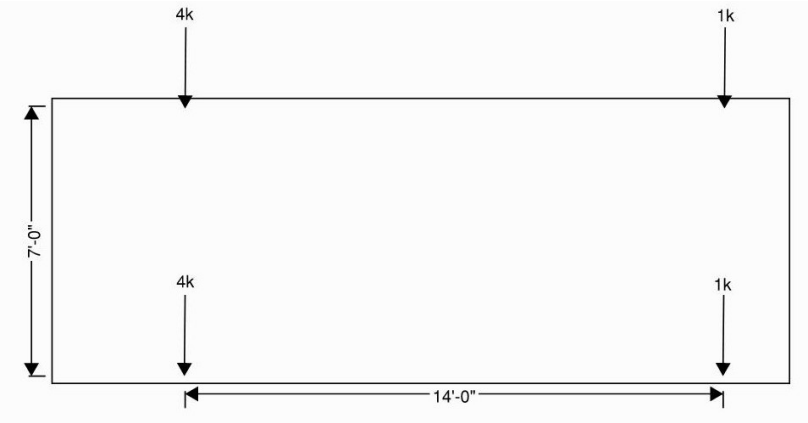



*Figure 6 - Ambulance Live Load.*

For the firetrucks, a 4.5' spacing between each axle controls for maximum bending and shear for a **cantilevered** section. The two firetrucks will be placed 22" next to each other when on the intersection. The weight distribution used in the SAP2000 model is shown in Figure 3.

Since the firetruck cannot turn onto the rest of the breakwater, only one ambulance can be placed on the flanges. This one ambulance will be placed 1' from the edge to maximize bending, and 1' from the cantilever condition to maximize shear. It is assumed that the ambulance weighs 10k in total, follows a weight distribution similar to a H15-44 truck, as shown in Figure 4, and is just as long. The rear tires control for maximum bending and shear for a **cantilevered** section.

Figures 7 through 8b visualize how the firetruck and ambulance were modeled in SAP2000.

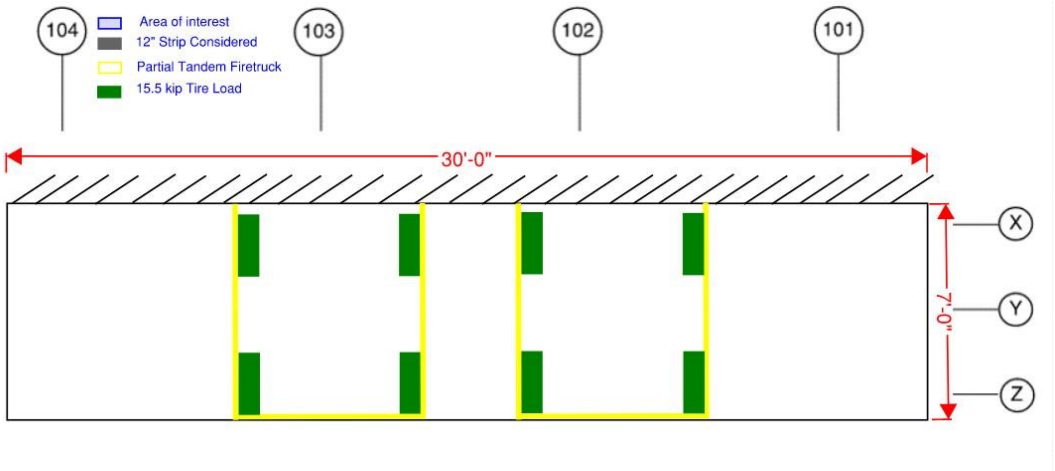



*Figure 7 - Load Case 2 at Intersection*

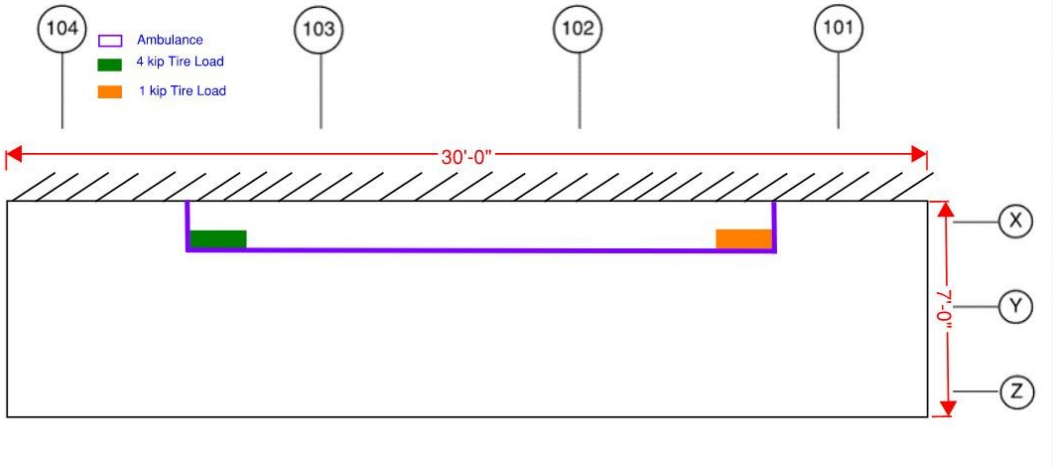



*Figure 8a - Load Case 2 at Rest of Breakwater (Shear)*

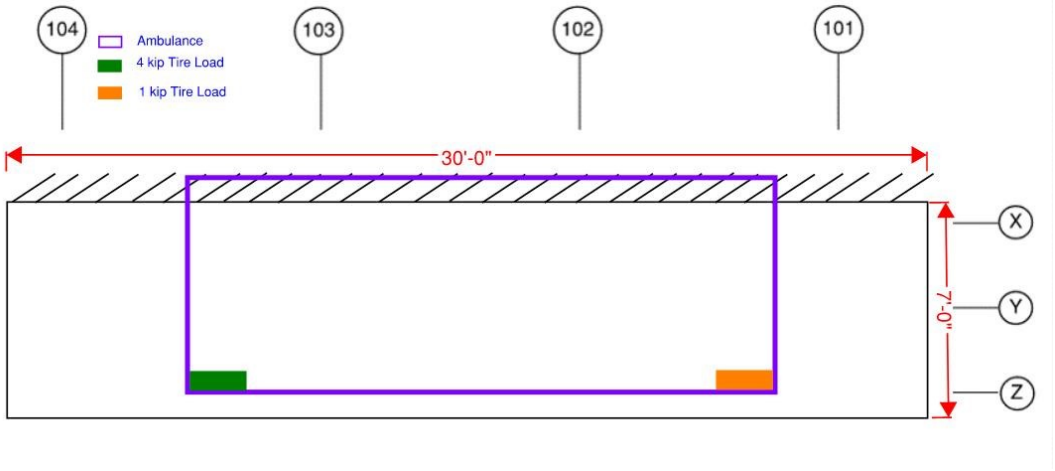



*Figure 8b - Load Case 2 at Rest of Breakwater (Moment)*

## a. SAP2000 Analysis Results

In order to account for two-way bending and obtain realistic results, model various loading positions of the Tandem Firetruck and Ambulance on the slab and uniform live load on slab in SAP2000.

### i. Dead Load in SAP2000 Model

The dead load self-weight of the structure includes the cast-in-place concrete flange. The unit weight of reinforced concrete is γ = 150 pcf. The dead load self-weight of the structure was computed and defined in the SAP2000 structural elements.

### ii. Uniform Live Load in SAP2000 Model

A uniform live load of 250 psf is applied as uniform loads to shells in the model.

### iii. Summary of Results at Intersection from SAP2000 Model

The moment diagrams in the longitudinal (M11) and transverse (M22) directions for all loading positions shown in part 3 above were obtained.

The ultimate factored distribution diagrams for the controlling M11 and M22 diagrams for the top (positive M11 or M22) and bottom (negative M11 or M22) are shown in Figures 9(a) through 9(b).

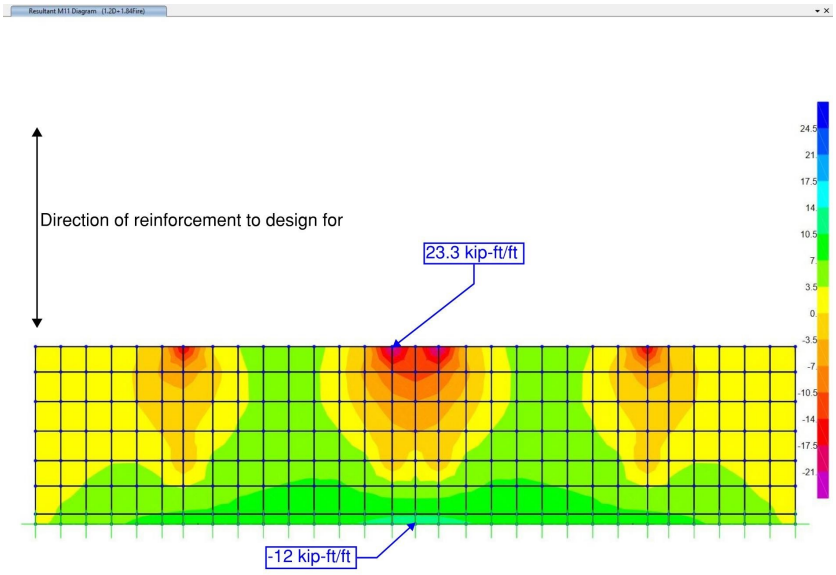



*Figure 9(a) - M11 diagram for Firetruck (controls for M11 top and bot)*

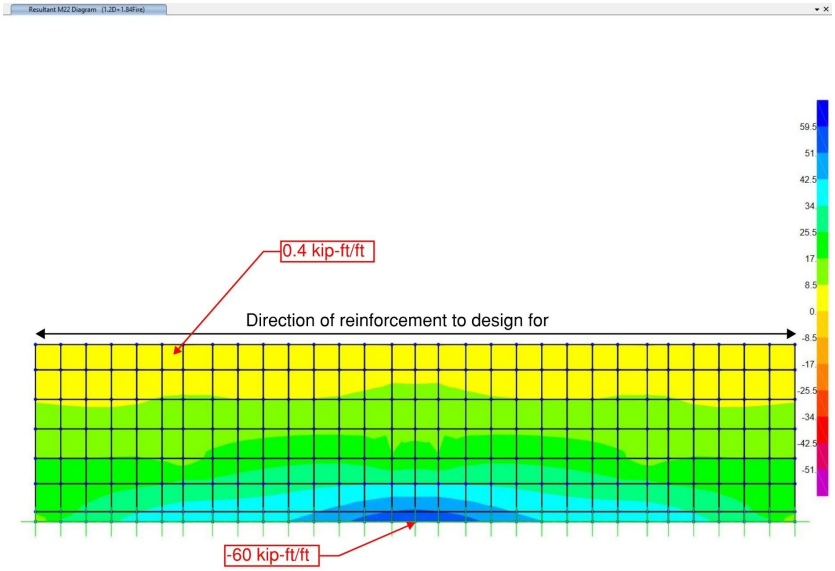



*Figure 9(b) - M22 diagram for Firetruck (controls for M22 top and bot)*

$M_{utot\_controlling\_long\_top\_model} := 12\ \textbf{kip} \cdot \textbf{ft}$ per ft $M_{utot\_controlling\_transv\_top\_model} := 60\ \textbf{kip} \cdot \textbf{ft}$ per ft

$M_{utot\_controlling\_long\_bot\_model} := 23.3\ \textbf{kip} \cdot \textbf{ft}$ per ft $M_{utot\_controlling\_transv\_bot\_model} := 0.4\ \textbf{kip} \cdot \textbf{ft}$ per ft

The maximum ultimate factored shear (VMAX) for all loading positions shown in parts (i) through (iii) were obtained. The diagram for the controlling VMAX diagram is shown in Figure 10. Extracted shear value is the average at half the depth from the edge.

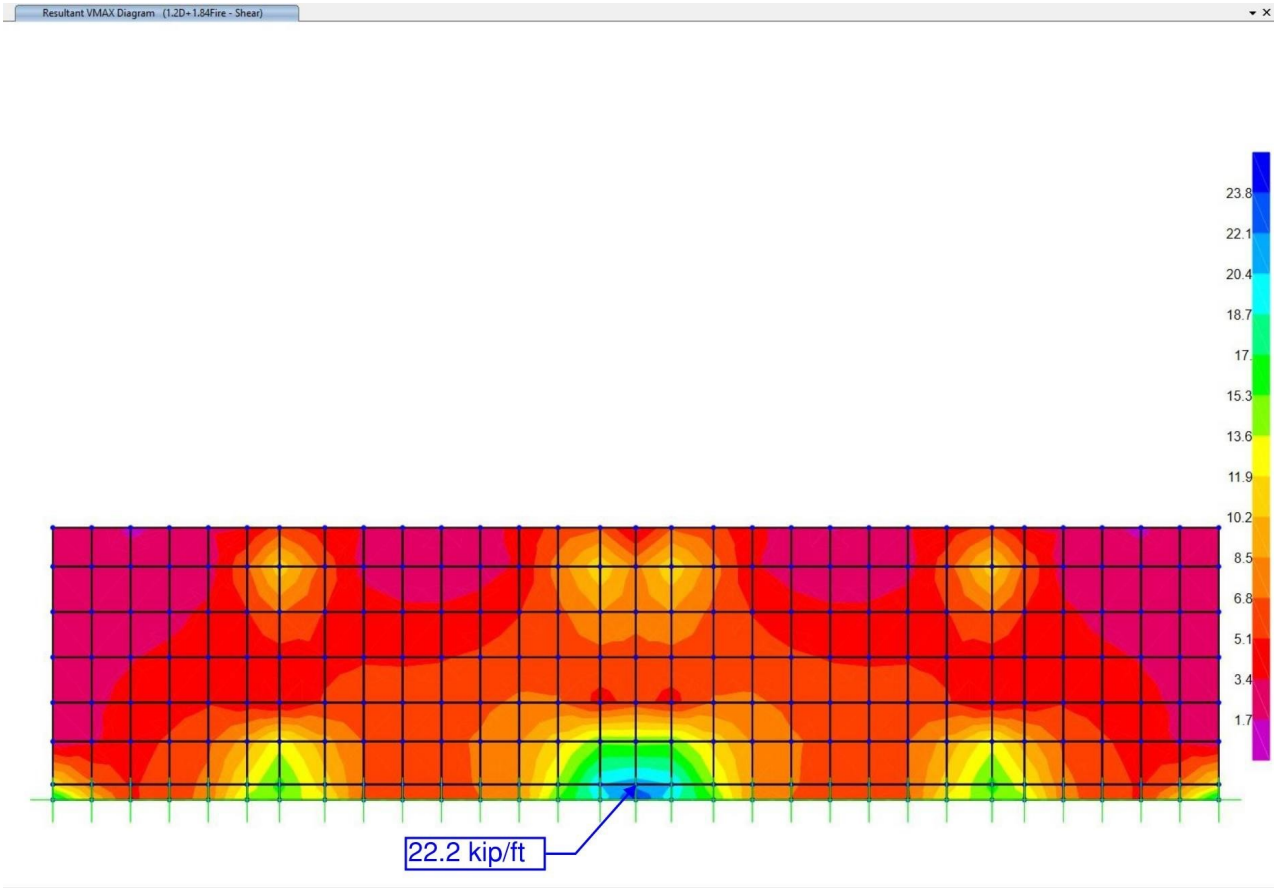



*Figure 10 - VMAX diagram for Firetruck*

$V_{utot\_controlling\_vmax\_model} := 22.2\ \textbf{kip}$ per ft

### iv. Summary of Results at Rest of Breakwater from SAP2000 Model

The factored ultimate moment diagrams in the longitudinal (M11) and transverse (M22) directions for all loading positions shown in parts (i) through (iii) above were obtained.

The ultimate factored distribution diagrams for the controlling M11 and M22 diagrams for the top (positive M11 or M22) and bottom (negative M11 or M22) are shown in Figures 11(a) through 12(b).

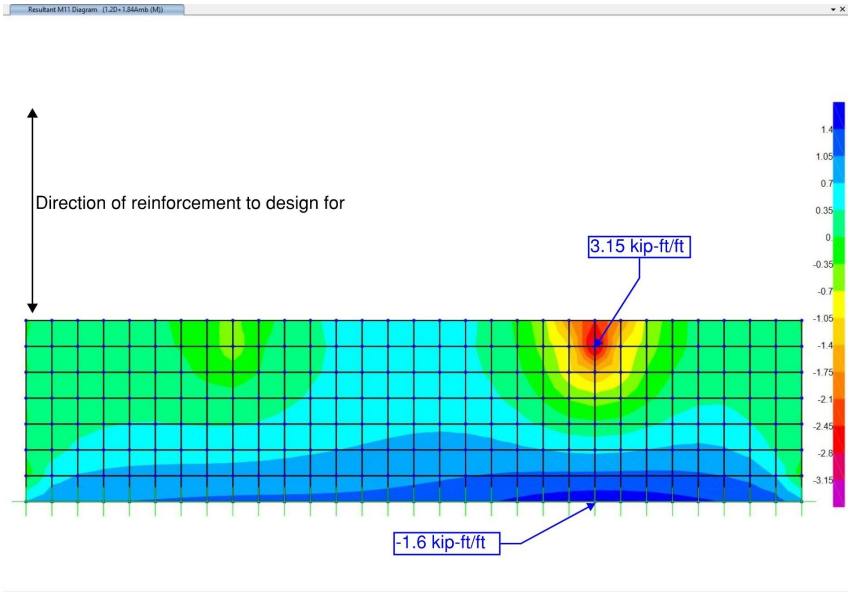



*Figure 11(a) - M11 diagram for Ambulance (controls for M11 bot)*

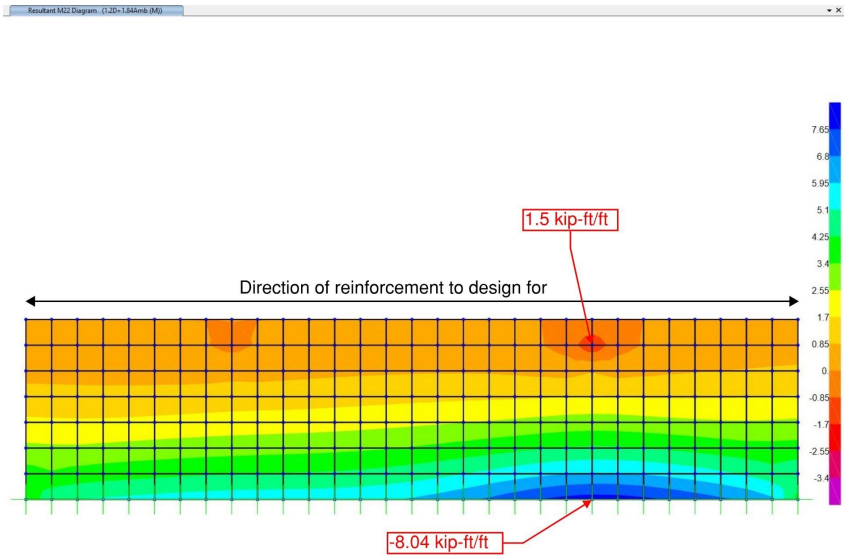



*Figure 11(b) - M22 diagram for Ambulance (controls for M22 bot)*

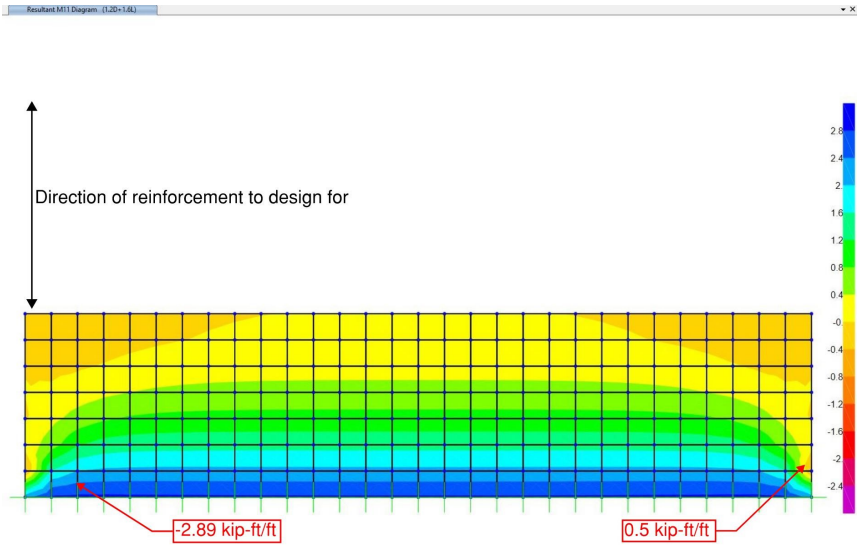



*Figure 12(a) - M11 diagram for Uniform*
*(controls for M11 top)*

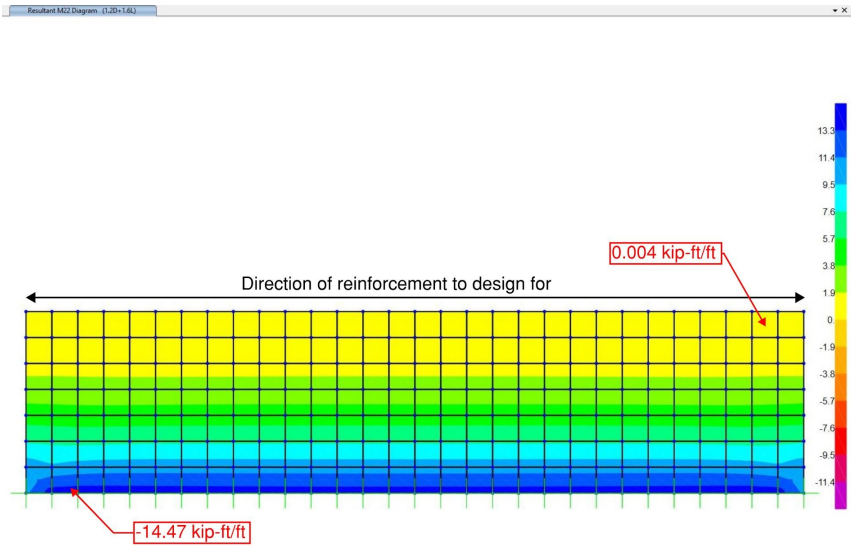



*Figure 12(b) - M22 diagram for Uniform*
*(controls for M22 top)*

$M_{utot\_controlling\_long\_top\_model2} := 2.9\ kip \cdot ft$ per ft $M_{utot\_controlling\_transv\_top\_model2} := 14.5\ kip \cdot ft$ per ft

$M_{utot\_controlling\_long\_bot\_model2} := 3.2\ kip \cdot ft$ per ft $M_{utot\_controlling\_transv\_bot\_model2} := 1.5\ kip \cdot ft$ per ft

The maximum ultimate factored shear (VMAX) for all loading positions shown in parts (i) through (iii) were obtained. The diagram for the controlling VMAX diagram is shown in Figure 13. Extracted shear value is the average at half the depth from the edge.

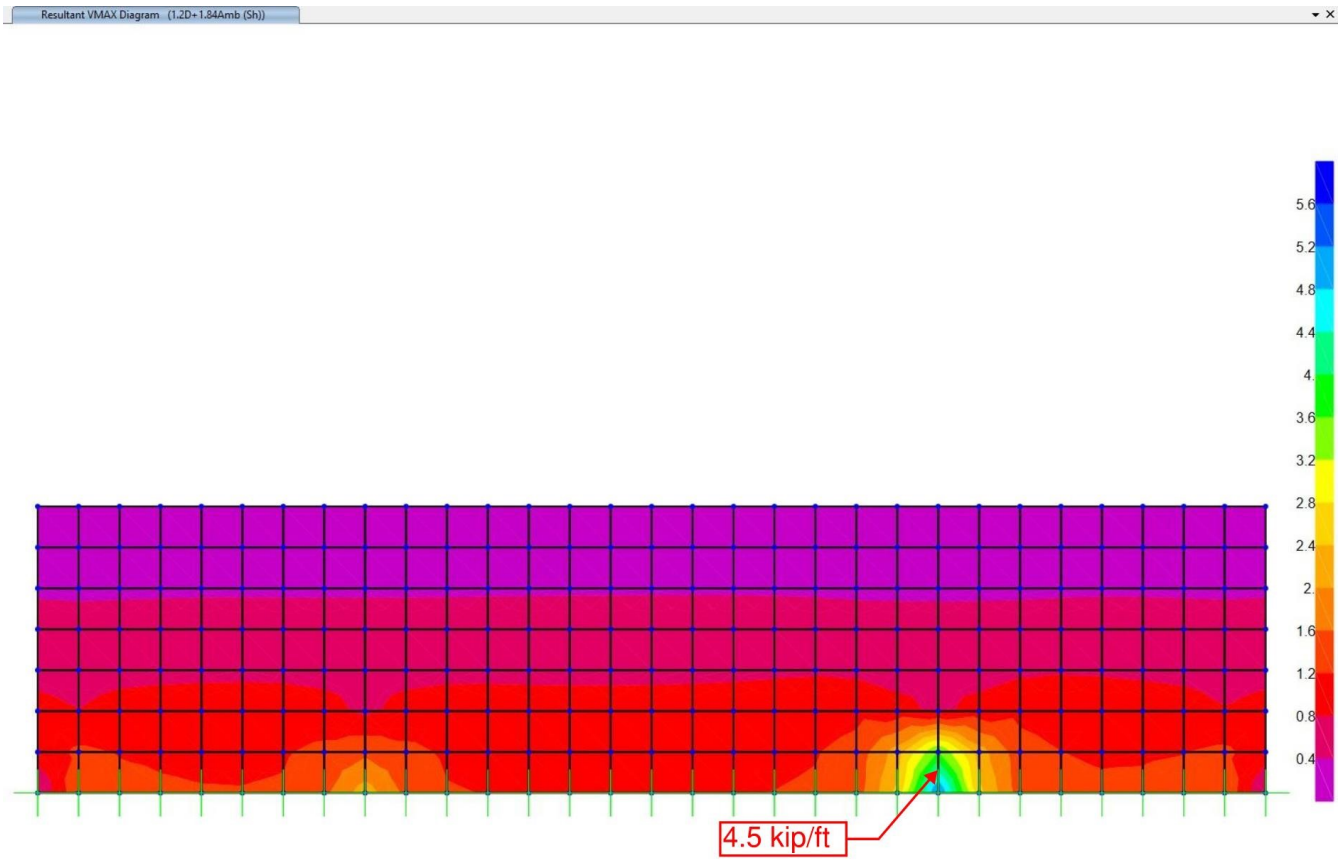



*Figure 13 - VMAX diagram for Ambulance*

$V_{utot\_controlling\_vmax\_model2} := 4.5\ \textbf{\textit{kip}}$ per ft

## e. Determining Design Loads

### i. At the Intersection

The design loads are as follows:

$M_{utot\_controlling\_long\_bot\_overall} := M_{utot\_controlling\_long\_bot\_model} = 23.3\ \textbf{kip} \cdot \textbf{ft}$ per ft

$M_{utot\_controlling\_long\_top\_overall} := M_{utot\_controlling\_long\_top\_model} = 12\ \textbf{kip} \cdot \textbf{ft}$ per ft

$M_{utot\_controlling\_transv\_bot\_overall} := M_{utot\_controlling\_transv\_bot\_model} = 0.4\ \textbf{kip} \cdot \textbf{ft}$ per ft

$M_{utot\_controlling\_transv\_top\_overall} := M_{utot\_controlling\_transv\_top\_model} = 60\ \textbf{kip} \cdot \textbf{ft}$ per ft

$V_{utot\_controlling\_vmax\_overall} := V_{utot\_controlling\_vmax\_model} = 22.2\ \textbf{kip}$ per ft

### ii. Rest of Breakwater

The design loads are as follows:

$M_{utot\_controlling\_long\_bot\_overall2} := M_{utot\_controlling\_long\_bot\_model2} = 3.2\ \textbf{kip} \cdot \textbf{ft}$ per ft

$M_{utot\_controlling\_long\_top\_overall2} := M_{utot\_controlling\_long\_top\_model2} = 2.9\ \textbf{kip} \cdot \textbf{ft}$ per ft

$M_{utot\_controlling\_transv\_bot\_overall2} := M_{utot\_controlling\_transv\_bot\_model2} = 1.5\ \textbf{kip} \cdot \textbf{ft}$ per ft

$M_{utot\_controlling\_transv\_top\_overall2} := M_{utot\_controlling\_transv\_top\_model2} = 14.5\ \textbf{kip} \cdot \textbf{ft}$ per ft

$V_{utot\_controlling\_vmax\_overall2} := V_{utot\_controlling\_vmax\_model2} = 4.5\ \textbf{kip}$ per ft

## 4. Design at Slab Intersection

Preliminary Top and Bottom mat reinforcing are as shown below:

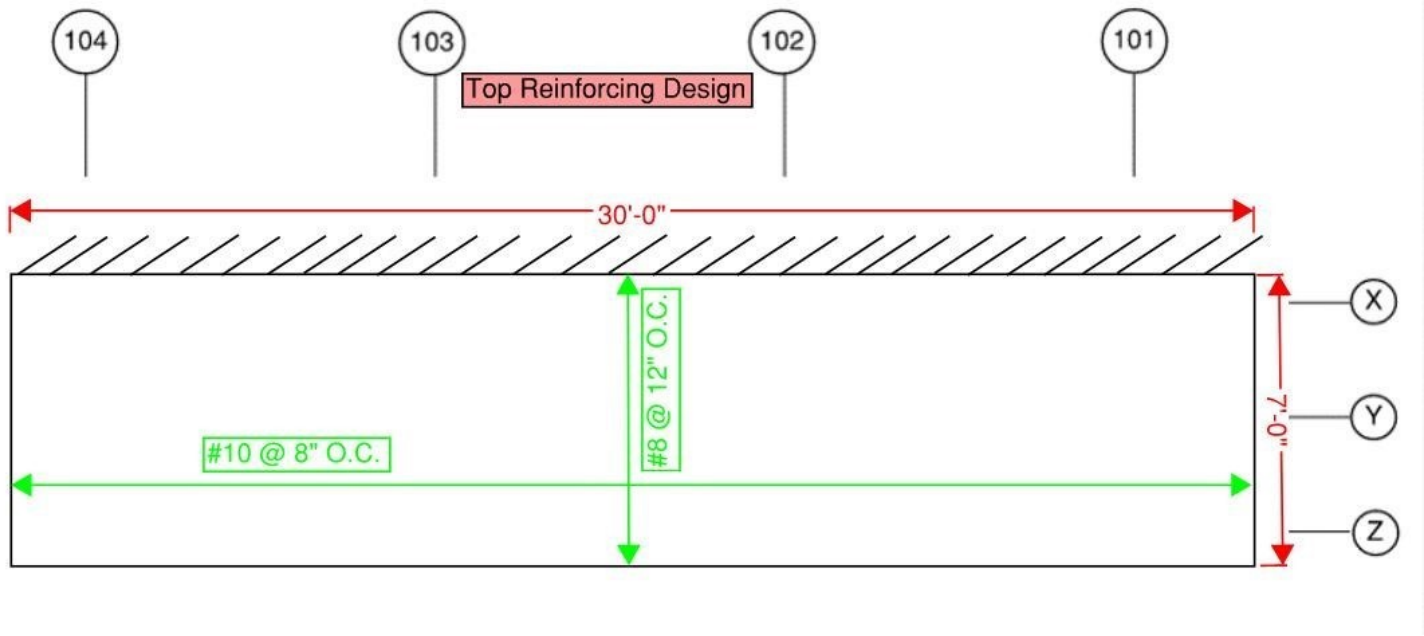



*Figure 14 - Top mat reinforcing design for slab.*

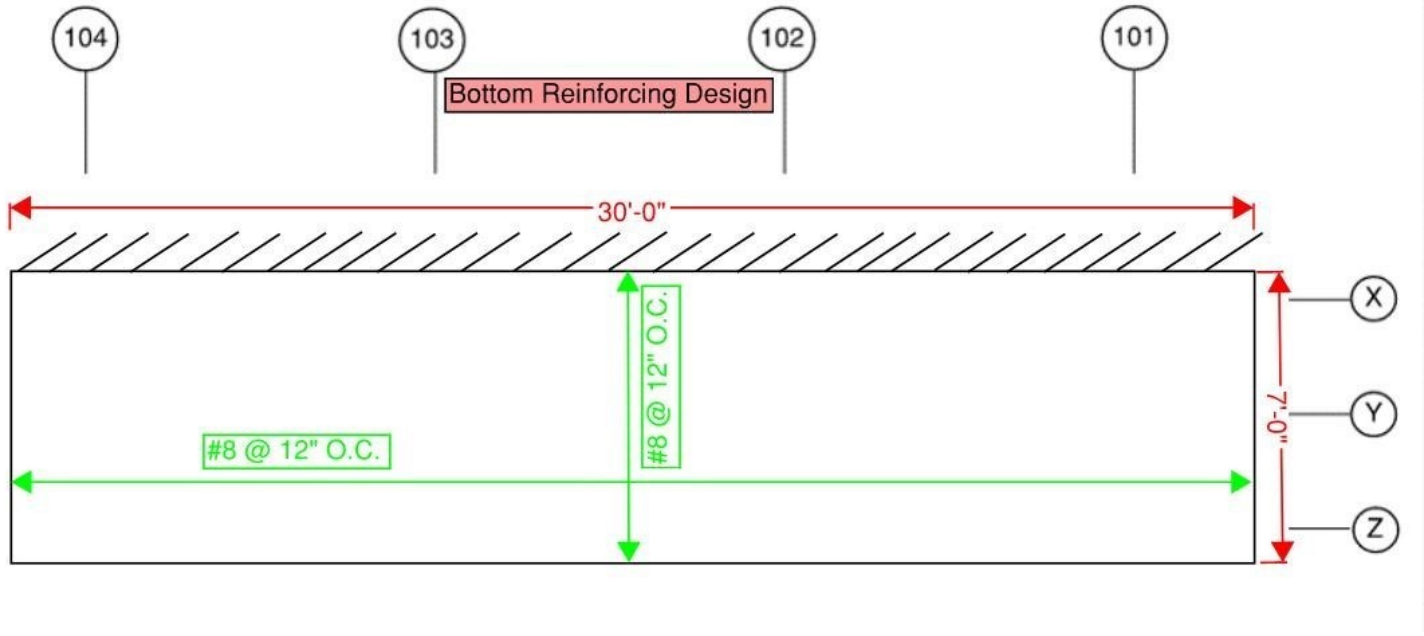



*Figure 15 - Bottom mat reinforcing design for slab.*

### a. Longitudinal Reinforcement Design for Positive Bending

Step 1. Design for positive bending (top compression, bottom tension)

- Check minimum required height of slab:

$h_{min} := \frac{W}{10} = 8.4\ in$ minimum one-way slab thickness (ACI Table 7.3.1.1) for cantilever

$h = 14\ in$ provided height of slab

if $h \geq h_{min}$ "OK"
else "NG"
$= \text{“OK”}$

- Slab properties:

$b = 12\ in$ width of slab considered

$d_{cover} := 3\ in$ ACI 318-19 Table 20.5.1.3.1 (2" required)

$d_b := \frac{8}{8}\ in$ assumed tension reinforcement (#8)

$d := h - d_{cover} - \frac{d_b}{2} = 10.5\ in$ depth to tension reinforcement

- See Figures 14 & 15 for preliminary reinforcing design. Design for a 1' wide strip spanning longitudinally.

Top Longitudinal: #8 @ 12" O.C. [compression]
Bottom Longitudinal: #8 @ 12" O.C. [tension]

$s_{l\_comp} := 12\ in$ $s_{l\_tens} := 12\ in$ spacing of steel in slab

$A_{sprov1} := \frac{12\ in}{s_{l\_comp}} \cdot 0.79\ in^2 = 0.79\ in^2$ per ft depth of slab at compression layer

$A_{sprov2} := \frac{12\ in}{s_{l\_tens}} \cdot 0.79\ in^2 = 0.79\ in^2$ per ft depth of slab at tension layer

$\rho_{prov} := \frac{A_{sprov1} + A_{sprov2}}{b \cdot h} = 9.40476 \cdot 10^{-3}$ provided steel reinforcing to concrete reinforcing ratio

- Check minimum reinforcement ratio:

$f_{cprime} := 5000$ psi $f_y := 60000$ psi

$\rho_{min1} := \frac{3 \cdot \sqrt{f_{cprime}}}{f_y} = 3.536 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2a

$\rho_{min2} := \frac{200}{f_y} = 3.333 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2b

if $\rho_{prov} > \rho_{min1} \wedge \rho_{prov} > \rho_{min2}$ "Min. reinforcement provided."
else "Min. reinforcement NOT provided."
$= \text{“Min. reinforcement provided.”}$

- Check maximum spacing of main reinforcement:

$$\left\| \begin{array}{l} \text{if } \max\left(s_{l\_comp}, s_{l\_tens}\right) \le 3 \cdot h \wedge 18\ \textit{in} \\ \quad \| \text{“OK”} \\ \text{else} \\ \quad \| \text{“NG”} \end{array} \right\| = \text{“OK”}$$ ACI 318-19 Sect. 7.7.2.3

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

- Again, consider a 12" width section of the slab and analyze as a beam.

$f_{cprime} := f_{cprime} \cdot \textit{psi} = 5\ \textit{ksi}$ concrete compressive strength

$\varepsilon_{cu} := 0.003$ concrete compression-controlled strain limit

$E_s := 29000 \cdot \textit{ksi}$ elastic modulus of reinforcing steel

$f_y := f_y \cdot \textit{psi} = 60\ \textit{ksi}$ yield stress of longitudinal reinforcing

$\varepsilon_y := \frac{f_y}{E_s} = 0.00207$ yield strain of reinforcing steel

$c_c := d_{cover} = 3\ \textit{in}$ clear cover to tension reinforcement

$c_{cprime} := d_{cover} = 3\ \textit{in}$ clear cover to compression reinforcement

$h = 14\ \textit{in}$ gross section depth

$d_b = 1\ \textit{in}$ bar diameter - tension steel (#8)

$d_{bprime} := 1\ \textit{in}$ bar diameter - compression steel (#8)

$d_t := 1\ \textit{in}$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 9.5\ \textit{in}$ depth to tensile reinforcement

$A_s := A_{sprov2} = 0.79\ \textit{in}^2$ tension steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := c_{cprime} + d_t + \frac{d_{bprime}}{2} = 4.5\ \textit{in}$ depth to compression reinforcing

$A_{sprime} := 0.79\ \textit{in}^2 \cdot \left(\frac{12\ \textit{in}}{s_{l\_comp}}\right) = 0.79\ \textit{in}^2$ compression steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$b_{bott} := b = 1\ \textit{ft}$ width of section, bottom (T)

$b_{top} := b = 1\ \textit{ft}$ width of section, top (C)

Use iterative procedure to establish section equilibrium and find the depth to the neutral axis c.

1. Assume tension steel is yielding
2. Select trial value for c, start with 0 and iterate up
3. Find strain in compression reinforcement
4. Find stress in compression steel
5. Find force in compression steel
6. Find concrete compression force
7. Find force in tension reinforcement
8. Check section equilibrium (T = C)
9. Confirm that the section is yielding
10. Calculate the nominal moment strength Mn
11. Confirm that the tension steel area exceeds Asmin
12. Calculate the strength reduction factor and design moment strength

Calculate stress block depth factor (ACI 318-19 Table 22.2.2.4.3)

$$\beta_1 := \left\| \begin{array}{l} \text{if } \left(2500 \cdot psi \le f_{cprime}\right) \wedge \left(f_{cprime} \le 4000 \cdot psi\right) \\ \quad \text{return } 0.85 \\ \text{if } \left(4000 \cdot psi < f_{cprime}\right) \wedge \left(f_{cprime} < 8000 \cdot psi\right) \\ \quad 0.85 - 0.05 \cdot \dfrac{\left(f_{cprime} - 4000 \cdot psi\right)}{1000 \cdot psi} \\ \text{if } \left(f_{cprime} \ge 8000 \cdot psi\right) \\ \quad 0.65 \end{array} \right\| = 0.8$$

$$CompressionDepth := \left\| \begin{array}{l} c \leftarrow 0 \cdot in \\ C_c \leftarrow 0 \cdot kip \\ C_s \leftarrow 0 \cdot kip \\ T \leftarrow A_s \cdot f_y \\ \text{while } T > \left(C_c + C_s\right) \\ \quad c \leftarrow c + 0.001 \cdot in \\ \quad \varepsilon_{sprime} \leftarrow \dfrac{\left(c - d_{prime}\right) \cdot \varepsilon_{cu}}{c} \\ \quad f_{sprime} \leftarrow \left\| \begin{array}{l} \text{if } \varepsilon_{sprime} < 0 \\ \quad \max\left(\varepsilon_{sprime} \cdot E_s, -f_y\right) \\ \text{else} \\ \quad min\left(\varepsilon_{sprime} \cdot E_s, f_y\right) \end{array} \right\| \\ \quad C_s \leftarrow A_{sprime} \cdot \left(f_{sprime} - 0.85 \cdot f_{cprime}\right) \\ \quad C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c \\ c \end{array} \right\| = 2.41 \ in$$

$c := CompressionDepth = 2.41\ in$

Confirm tension steel yields

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0026$

$\varepsilon_t := \left(\frac{d - c}{c}\right) \cdot \varepsilon_{cu} = 8.845 \cdot 10^{-3}$

$f_{sprime} :=$ if $(\varepsilon_{sprime} < 0)$ ‖ $\max(\varepsilon_{sprime} \cdot E_s, -f_y)$ else ‖ $min(\varepsilon_{sprime} \cdot E_s, f_y)$ $= -60\ ksi$

Negative values indicate that the steel is in tension

$\varepsilon_y = 0.0021$

$Yield :=$ if $\varepsilon_t > \varepsilon_y$ ‖ "OK" else ‖ "NG" $=$ "OK"

$C_s := A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) = -50.8\ kip$

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 98.2\ kip$

$C := C_s + C_c = 47.4\ kip$ per foot of slab

$T := A_s \cdot f_y = 47.4\ kip$ per foot of slab

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 1.92\ in$

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot (d - d_{prime}) = 49\ kip \cdot ft$ per foot of slab

Minimum steel area (ACI 318-19 7.6.1.1)

$A_g := h \cdot b_{bott} = 1.167\ ft^2$

$A_{smin} := 0.0018 \cdot A_g = 0.3\ in^2$

$A_s = 0.79\ in^2$

$MinimumSteel :=$ if $A_s > A_{smin}$ ‖ "OK" else ‖ "NG" $=$ "OK"

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$\phi_b :=$ if $\varepsilon_t \geq \varepsilon_y + 0.003$ ‖ return $0.9$ also if $(\varepsilon_y + 0.003 > \varepsilon_t) \wedge (\varepsilon_t > \varepsilon_y)$ ‖ $\left(0.65 + \frac{0.25 \cdot (\varepsilon_t - \varepsilon_y)}{0.003}\right)$ else ‖ $0.65$ $= 0.9$

$\phi_b \cdot M_n = 44\ kip \cdot ft$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_long\_bot\_overall}}{\phi_b \cdot M_n} = 0.532$ OK

Therefore, provide **#8 @ 12" O.C. (bottom)** for longitudinal steel reinforcement.

## b. Longitudinal Reinforcement Design for Negative Bending

Step 1. Design for negative bending (top tension, bottom compression)

- See Figures 14 & 15 for preliminary reinforcing design. Design for a 1' wide strip.

Top Longitudinal: #8 @ 12" O.C. [tension]
Bottom Longitudinal: #8 @ 12" O.C. [compression]

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$d_b := 1\ in$ — bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ — bar diameter - compression steel (#8)

$d_t := 1\ in$ — bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 9.5\ in$ — depth to tensile reinforcement

$A_s := A_{sprov1} = 0.79\ in^2$ — compression steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := c_{cprime} + d_t + \frac{d_{bprime}}{2} = 4.5\ in$ — depth to compression reinforcing

$A_{sprime} := 0.79\ in^2 \cdot \left(\frac{12\ in}{s_{l\_tens}}\right) = 0.79\ in^2$ — tension steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$CompressionDepth :=$

$c \leftarrow 0 \cdot in$
$C_c \leftarrow 0 \cdot kip$
$C_s \leftarrow 0 \cdot kip$
$T \leftarrow A_s \cdot f_y$
while $T > (C_c + C_s)$
  $c \leftarrow c + 0.001 \cdot in$
  $\varepsilon_{sprime} \leftarrow \frac{(c - d_{prime}) \cdot \varepsilon_{cu}}{c}$
  $f_{sprime} \leftarrow$ if $\varepsilon_{sprime} < 0$ : $\max(\varepsilon_{sprime} \cdot E_s, -f_y)$; else : $min(\varepsilon_{sprime} \cdot E_s, f_y)$
  $C_s \leftarrow A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime})$
  $C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c$
$c$

$= 2.41\ in$

$c := CompressionDepth = 2.41\ in$

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0026$

$f_{sprime} :=$ if $(\varepsilon_{sprime} < 0)$ : $\max(\varepsilon_{sprime} \cdot E_s, -f_y)$; else : $min(\varepsilon_{sprime} \cdot E_s, f_y)$ $= -60\ ksi$

Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot \left(f_{sprime} - 0.85 \cdot f_{cprime}\right) = -50.8$ **kip**

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 98.2$ **kip**

$C := C_s + C_c = 47.4$ **kip** per foot of slab

$T := A_s \cdot f_y = 47.4$ **kip** per foot of slab

Confirm tension steel yields

$$\varepsilon_t := \left(\frac{d-c}{c}\right) \cdot \varepsilon_{cu} = 8.845 \cdot 10^{-3}$$

$\varepsilon_y = 0.0021$

$$Yield := \left\| \begin{array}{l} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \| \text{“OK”} \\ \text{else} \\ \quad \| \text{“NG”} \end{array} \right\| = \text{“OK”}$$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 1.92$ **in**

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot \left(d - d_{prime}\right) = 49$ **kip · ft** per foot of slab

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$$\phi_b := \left\| \begin{array}{l} \text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \| \text{return } 0.9 \\ \text{also if } \left(\varepsilon_y + 0.003 > \varepsilon_t\right) \wedge \left(\varepsilon_t > \varepsilon_y\right) \\ \quad \| \left(0.65 + \frac{0.25 \cdot \left(\varepsilon_t - \varepsilon_y\right)}{0.003}\right) \\ \text{else} \\ \quad \| 0.65 \end{array} \right\| = 0.9$$

$\phi_b \cdot M_n = 44$ **kip · ft** per foot of slab

$$DCR_M := \frac{M_{utot\_controlling\_long\_top\_overall}}{\phi_b \cdot M_n} = 0.274$$ OK

Therefore, provide **#8 @ 12" O.C. (top)** for longitudinal steel reinforcement.

### c. Transverse Reinforcement Design for Positive Bending

Step 1. Preliminary design for positive bending (top compression, bottom tension)
See Figures 14 & 15.

- Try **#10 @ 8"** O.C. (top layer) for main steel reinforcement.
- Try **#8 @ 12"** O.C. (bottom layer) for main steel reinforcement.

$s_l := 8\ in$ spacing of compression steel in slab

$A_{sprov1} := \frac{12\ in}{s_l} \cdot 1.27\ in^2 = 1.905\ in^2$ per ft depth of slab at **each layer**

$A_{sprov2} := \frac{12\ in}{12\ in} \cdot 0.79\ in^2 = 0.79\ in^2$

$\rho_{prov} := \frac{A_{sprov1} + A_{sprov2}}{b \cdot h} = 0.01604$ provided steel reinforcing to concrete reinforcing ratio

- Check minimum reinforcement ratio:

$f_{cprime} := 5000$ psi $f_y := 60000$ psi

$\rho_{min1} := \frac{3 \cdot \sqrt{f_{cprime}}}{f_y} = 3.536 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2a

$\rho_{min2} := \frac{200}{f_y} = 3.333 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2b

if $\rho_{prov} > \rho_{min1} \wedge \rho_{prov} > \rho_{min2}$ "Min. reinforcement provided." else "Min. reinforcement NOT provided." $=$ "Min. reinforcement provided."

- Check maximum spacing of main reinforcement:

if $s_l \le 3 \cdot h \wedge 18\ in$ "OK" else "NG" $=$ "OK" ACI 318-19 Sect. 7.7.2.3

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$f_{cprime} := f_{cprime} \cdot psi = 5\ ksi$ concrete compressive strength
$\varepsilon_{cu} := 0.003$ concrete compression-controlled strain limit
$E_s := 29000 \cdot ksi$ elastic modulus of reinforcing steel
$f_y := f_y \cdot psi = 60\ ksi$ yield stress of longitudinal reinforcing

$\varepsilon_y := \frac{f_y}{E_s} = 0.00207$ yield strain of reinforcing steel

$d_{cover} := 3\ in$

$c_c := d_{cover} = 3\ in$ clear cover to tension reinforcement

$c_{cprime} := d_{cover} = 3\ in$ clear cover to compression reinforcement

$h = 14\ in$ gross section depth

$d_b := 1\ in$ bar diameter - tension steel (#8)

$d_{bprime} := 1.27\ in$ bar diameter - compression steel (#10)

$d_t := 1\ in$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 9.5\ in$ depth to tensile reinforcement

$A_s := A_{sprov2} = 0.79\ in^2$ tension steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := c_{cprime} + d_t + \frac{d_{bprime}}{2} = 4.64\ in$ depth to compression reinforcing

$A_{sprime} := A_{sprov1} = 1.905\ in^2$ compression steel reinforcing area per 12" slab width (#10 @ 8" O.C.)

$b_{bott} := b = 1\ ft$ width of section, bottom (T)

$b_{top} := b = 1\ ft$ width of section, top (C)

Use iterative procedure to establish section equilibrium and find the depth to the neutral axis c.

1. Assume tension steel is yielding
2. Select trial value for c, start with 0 and iterate up
3. Find strain in compression reinforcement
4. Find stress in compression steel
5. Find force in compression steel
6. Find concrete compression force
7. Find force in tension reinforcement
8. Check section equilibrium (T = C)
9. Confirm that the section is yielding
10. Calculate the nominal moment strength Mn
11. Confirm that the tension steel area exceeds Asmin
12. Calculate the strength reduction factor and design moment strength

Calculate stress block depth factor (ACI 318-19 Table 22.2.2.4.3)

$$\beta_1 := \left\| \begin{array}{l} \text{if } \left(2500 \cdot psi \le f_{cprime}\right) \wedge \left(f_{cprime} \le 4000 \cdot psi\right) \\ \quad \text{return } 0.85 \\ \text{if } \left(4000 \cdot psi < f_{cprime}\right) \wedge \left(f_{cprime} < 8000 \cdot psi\right) \\ \quad 0.85 - 0.05 \cdot \frac{\left(f_{cprime} - 4000 \cdot psi\right)}{1000 \cdot psi} \\ \text{if } \left(f_{cprime} \ge 8000 \cdot psi\right) \\ \quad 0.65 \end{array} \right. = 0.8$$

$$CompressionDepth := \left\| \begin{array}{l} c \leftarrow 0 \cdot in \\ C_c \leftarrow 0 \cdot kip \\ C_s \leftarrow 0 \cdot kip \\ T \leftarrow A_s \cdot f_y \\ \text{while } T > (C_c + C_s) \\ \quad \left\| \begin{array}{l} c \leftarrow c + 0.001 \cdot in \\ \varepsilon_{sprime} \leftarrow \dfrac{(c - d_{prime}) \cdot \varepsilon_{cu}}{c} \\ f_{sprime} \leftarrow \left\| \begin{array}{l} \text{if } \varepsilon_{sprime} < 0 \\ \quad \left\| \max(\varepsilon_{sprime} \cdot E_s, -f_y) \right. \\ \text{else} \\ \quad \left\| min(\varepsilon_{sprime} \cdot E_s, f_y) \right. \end{array} \right. \\ C_s \leftarrow A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) \\ C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c \end{array} \right. \\ c \end{array} \right. = 3.19\ in$$

$$c := CompressionDepth = 3.19\ in$$

$$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0014$$

$$f_{sprime} := \left\| \begin{array}{l} \text{if } (\varepsilon_{sprime} < 0) \\ \quad \left\| \max(\varepsilon_{sprime} \cdot E_s, -f_y) \right. \\ \text{else} \\ \quad \left\| min(\varepsilon_{sprime} \cdot E_s, f_y) \right. \end{array} \right. = -39.25\ ksi$$

Negative values indicate that the steel is in tension

$$C_s := A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) = -82.9\ kip$$

$$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 130.3\ kip$$

$$C := C_s + C_c = 47.4\ kip$$ per foot of slab

$$T := A_s \cdot f_y = 47.4\ kip$$ per foot of slab

Confirm tension steel yields

$$\varepsilon_t := \left(\frac{d - c}{c}\right) \cdot \varepsilon_{cu} = 5.923 \cdot 10^{-3}$$

$$\varepsilon_y = 0.0021$$

$$Yield := \left\| \begin{array}{l} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \left\| \text{“OK”} \right. \\ \text{else} \\ \quad \left\| \text{“NG”} \right. \end{array} \right. = \text{“OK”}$$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 2.56\ in$

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot \left(d - d_{prime}\right) = 56\ kip \cdot ft$ per foot of slab

Minimum steel area (ACI 318-19 7.6.1.1)

$A_g := h \cdot b_{bott} = 1.167\ ft^2$

$A_{smin} := 0.0018 \cdot A_g = 0.3\ in^2$

$A_s = 0.79\ in^2$

$MinimumSteel := \left\| \begin{array}{l} \text{if } A_s > A_{smin} \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right\| = \text{“OK”}$

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$$\phi_b := \left\| \begin{array}{l} \text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \text{return } 0.9 \\ \text{also if } \left(\varepsilon_y + 0.003 > \varepsilon_t\right) \wedge \left(\varepsilon_t > \varepsilon_y\right) \\ \quad \left(0.65 + \frac{0.25 \cdot \left(\varepsilon_t - \varepsilon_y\right)}{0.003}\right) \\ \text{else} \\ \quad 0.65 \end{array} \right\| = 0.9$$

$\phi_b \cdot M_n = 50\ kip \cdot ft$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_transv\_bot\_overall}}{\phi_b \cdot M_n} = 7.98 \cdot 10^{-3}$ OK

Therefore, provide **#8 @ 12" o.c.** for transverse steel reinforcement (bottom layer).

## d. Transverse Reinforcement Design for Negative Bending

Step 1. Preliminary design for positive bending (top tension, bottom compression)
See Figure 14 & 15.

- Try **#10 @ 8"** O.C. (top layer) for main steel reinforcement.
- Try **#8 @ 12"** O.C. (bottom layer) for main steel reinforcement.

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$d_b := 1\ in$ bar diameter - tension steel (#8)

$d_{bprime} := 1.27\ in$ bar diameter - compression steel (#10)

$d_t := 1\ in$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 9.5\ in$ depth to tensile reinforcement

$A_s := A_{sprov1} = 1.905\ in^2$ compression steel reinforcing area per 12" slab (#10 @ 8" O.C.)

$d_{prime} := \left(c_{cprime} + d_t + \frac{d_{bprime}}{2}\right) = 4.64\ in$ depth to compression reinforcing

$A_{sprime} := A_{sprov2} = 0.79\ in^2$ tension steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$CompressionDepth :=$

```
c ← 0·in
C_c ← 0·kip
C_s ← 0·kip
T ← A_s·f_y
while T > (C_c + C_s)
    c ← c + 0.001·in
    ε_sprime ← ((c − d_prime)·ε_cu) / c
    f_sprime ← if ε_sprime < 0
                   max(ε_sprime·E_s, −f_y)
               else
                   min(ε_sprime·E_s, f_y)
    C_s ← A_sprime·(f_sprime − 0.85·f_cprime)
    C_c ← 0.85·f_cprime·b_top·β_1·c
c
```

$= 3.46\ in$

$c := CompressionDepth = 3.46\ in$

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.001$

$f_{sprime} :=$

```
if (ε_sprime < 0)
    max(ε_sprime·E_s, −f_y)
else
    min(ε_sprime·E_s, f_y)
```

$= -29.61\ ksi$ Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot \left(f_{sprime} - 0.85 \cdot f_{cprime}\right) = -26.8$ **kip**

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 141.1$ **kip**

$C := C_s + C_c = 114.3$ **kip** per foot of slab

$T := A_s \cdot f_y = 114.3$ **kip** per foot of slab

Confirm tension steel yields

$\varepsilon_t := \left(\frac{d-c}{c}\right) \cdot \varepsilon_{cu} = 5.242 \cdot 10^{-3}$

$\varepsilon_y = 0.0021$

$Yield := \left\| \begin{array}{l} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right\| = \text{“OK”}$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 2.77$ **in**

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot \left(d - d_{prime}\right) = 85$ **kip · ft** per foot of slab

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$$\phi_b := \left\| \begin{array}{l} \text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \text{return } 0.9 \\ \text{also if } \left(\varepsilon_y + 0.003 > \varepsilon_t\right) \wedge \left(\varepsilon_t > \varepsilon_y\right) \\ \quad \left\| \left(0.65 + \frac{0.25 \cdot \left(\varepsilon_t - \varepsilon_y\right)}{0.003}\right) \right. \\ \text{else} \\ \quad \| 0.65 \end{array} \right\| = 0.9$$

$\phi_b \cdot M_n = 76$ **kip · ft** per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_transv\_top\_overall}}{\phi_b \cdot M_n} = 0.788$ OK

Therefore, provide **#10 @ 8" o.c.** for transverse steel reinforcement (top layer).

## e. Shear Reinforcement

Step 1. Check if shear reinforcement is required for the controlling load case among the hand calculation and the model results.

Assume only concrete contributes to shear capacity.

$h = 14\ in$ height of section

$d = 9.5\ in$ Effective depth, from extreme compression face to centroid of longitudinal tension reinforcement

$f'_c := f_{cprime} \cdot \frac{1000}{ksi} = 5000$ psi Concrete compressive strength

$\lambda := 1$ concrete density modification factor (ACI 22.5.5 & AASHTO 5.4.2.8)

$\phi := 0.75$ shear reduction factor

$\lambda_s := min\left(1, \sqrt{\frac{2}{1 + \frac{d}{10\ in}}}\right) = 1$ size effect modification factor

ACI Eqn. 22.5.5.1

$V_c := 8 \cdot \lambda_s \cdot \sqrt[3]{\frac{A_s}{A_g}} \cdot \lambda \cdot \sqrt{f'_c}\ psi \cdot b \cdot d = 14.488\ kip$ for 12" slab depth

$\phi \cdot V_c = 10.87\ kip$ for slab depth

$V_{utot\_controlling\_vmax\_overall} = 22.2\ kip$ for slab depth

$DCR_V := \frac{V_{utot\_controlling\_vmax\_overall}}{\phi \cdot V_c} = 2.043$ NG

if $V_{utot\_controlling\_vmax\_overall} < \phi \cdot V_c$ = "Min. shear reinf. is required."
  "Min. shear reinf. is not required."
else
  "Min. shear reinf. is required."

ACI Sect. 22.5.10.1

$A_{shear} := 0.31\ in^2$ Area for #5 bar

$S_{shear} := 12\ in$ Shear spacing

Two stirrups will be located around the location of maximum shear, which is towards the connection to the breakwater

$V_{c\_steel} := 2 \cdot 60 \cdot ksi \cdot d \cdot \frac{A_{shear}}{S_{shear}} = 29.45\ kip$

$V_{c\_total} := V_{c\_steel} + V_c = 43.938\ kip$

$\phi \cdot V_{c\_total} = 32.95\ kip$ for slab depth

$V_{utot\_controlling\_vmax\_overall} = 22.2\ kip$ for slab depth

$DCR_{V\_total} := \frac{V_{utot\_controlling\_vmax\_overall}}{\phi \cdot V_{c\_total}} = 0.674$ OK

Step 2. Check two-way punching shear.

Compute Vu on the critical perimeter for 2-way shear:

$x := 24 \cdot in$ tire length — Assumed tire dimensions for Tandem Firetruck

$y := 12\ in$ tire width

$q_{uLL} := \frac{1.15 \cdot 1.6 \cdot 31\ kip}{x \cdot y} = 198.056\ psi$ factored (1.15 for impact) equivalent uniform live load (this is the greatest single tire point load among all vehicles considered, assuming two rear tires are simplified as one)

$q_{uDL} := 1.2 \cdot \gamma_{conc} \cdot h = 1.458\ psi$ factored uniform load (self-weight)

$q_{utot} := q_{uLL} + q_{uDL} = 199.5\ psi$

$V_{u2way} := q_{utot} \cdot \left(x + 2 \cdot \frac{d}{2}\right) \cdot \left(y + 2 \cdot \frac{d}{2}\right) = 143.7\ kip$

Compute ultimate shear resistance and compare to 2-way concrete shear resistance capacity for the critical section:

$b_o := 2 \cdot \left(x + 2 \cdot \frac{d}{2}\right) + 2 \cdot \left(y + 2 \cdot \frac{d}{2}\right) = 110\ in$ critical perimeter

$v_u := \frac{V_{u2way}}{b_o \cdot d} = 137.5\ psi$

$v_{c1} := 4 \cdot \lambda \cdot \sqrt{f'_c} = 282.8$ psi (ACI 318-19 Table 22.6.5.2a)

$\beta := \frac{x}{y} = 2$ (ACI 318-19 R22.6.5.2)

$v_{c2} := \left(2 + \frac{4}{\beta}\right) \cdot \lambda \cdot \sqrt{f'_c} = 282.8$ psi (ACI 318-19 Table 22.6.5.2b)

$\alpha_s := 40$ interior column (ACI 318-19 22.6.5.3)

$v_{c3} := \left(\frac{\alpha_s \cdot d}{b_o} + 2\right) \cdot \lambda \cdot \sqrt{f'_c} = 385.7$ psi (ACI 318-19 Table 22.6.5.2c)

$v_c := min\left(v_{c1}, v_{c2}, v_{c3}\right)\ psi = 282.8\ psi$

$\phi \cdot v_c = 212.1\ psi$

$DCR_{v2way} := \frac{v_u}{\phi \cdot v_c} = 0.648$ OK

## f. Deflection

The deflection of the slab in each of the load cases is investigated and the maximum deflection for each load case is reported in Figure 16. Combine deflections from DEAD_TOTAL (includes self weight and superimposed dead load) and the controlling live load case without load factors.

**Displacement in U3 (Z) Direction**

| Joint | Load Case | U3 [in] |
|---|---|---|
| | FireTruck_tandum | -0.12 |
| | ULL | -0.025 |
| | DEAD_TOTAL | -0.02 |

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Maximum Total Deflection = DEAD_TOTAL + ULL
Maximum Total Deflection = -0.14

$\Delta_{max} := 0.14\ in$

*Figure 16 - Displacement in the Z direction for each load case.*

The location of the joint where the maximum deflection occurs for the controlling load cases are shown in Figure 17. These joints occur at approximately between the double firetrucks.

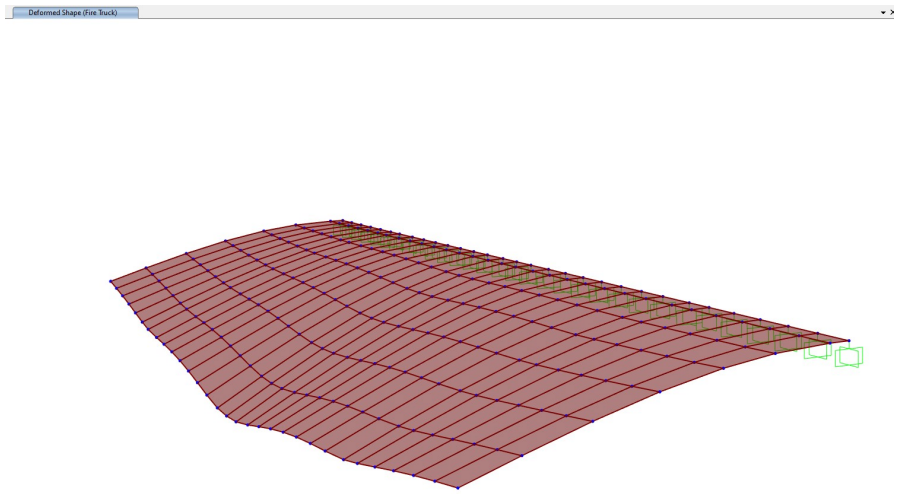



*Figure 17 - Isometric view of joint locations of maximum deflection.*

Therefore, the deflection limit will involve the length from the support. The deflection limits per ACI 318-19 Table 24.2.2 for "cantilever" of immediate deflection is as follows:

$\Delta_{lim} := \frac{W}{360} = 0.233\ in$ deflection limit

$\begin{array}{l} \text{if } \Delta_{max} \le \Delta_{lim} \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} = \text{“OK”}$ Therefore, deflection limit is satisfied.

## 5. Design of Breakwater Flange

Preliminary Top and Bottom mat reinforcing are as shown below:

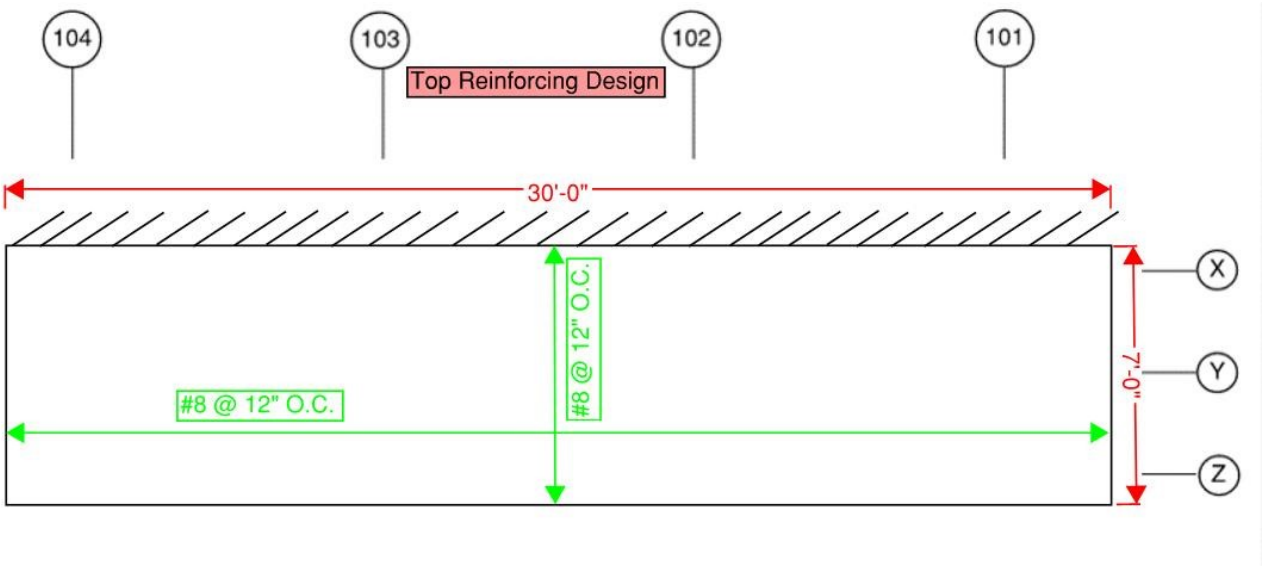



*Figure 18 - Top mat reinforcing design for slab.*

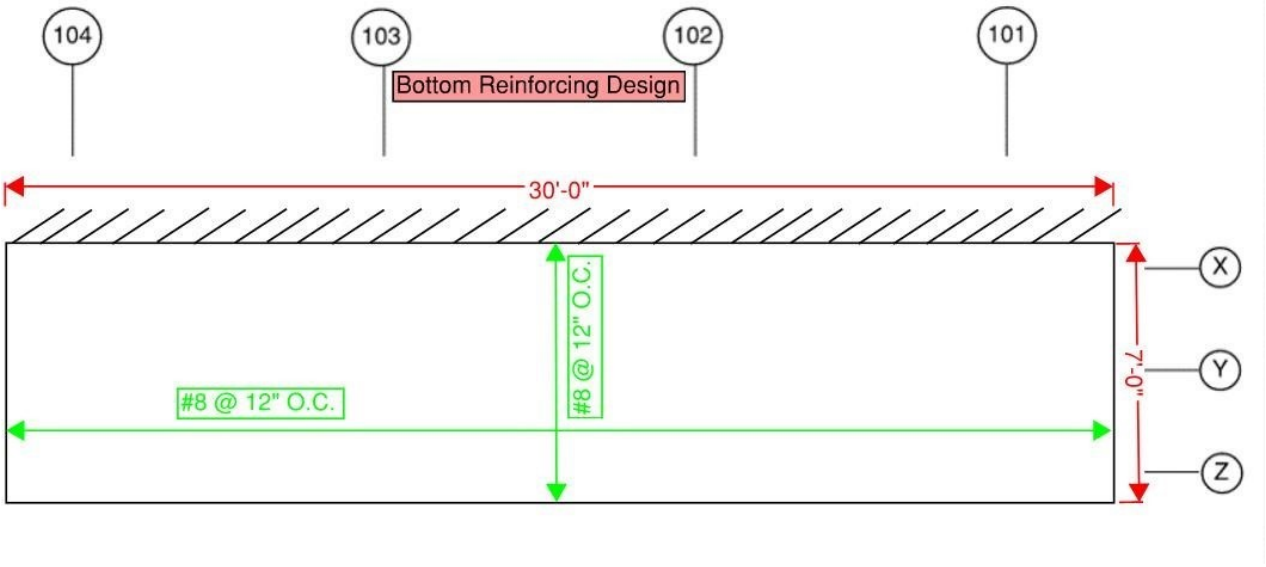



*Figure 19 - Bottom mat reinforcing design for slab.*

### a. Longitudinal Reinforcement Design for Positive Bending

Step 1. Design for positive bending (top compression, bottom tension)

- Check minimum required height of slab:

$h_{min} := \frac{W}{10} = 8.4\ in$ minimum one-way slab thickness (ACI Table 7.3.1.1) for cantilever

$h := 12\ in$ provided height of slab

$$\begin{cases} \text{if } h \geq h_{min} \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{cases} = \text{“OK”}$$

- Slab properties:

$b = 12\ in$ width of slab considered

$d_{cover} := 3\ in$ ACI 318-19 Table 20.5.1.3.1 (2" required)

$d_b := \frac{8}{8}\ in$ assumed tension reinforcement (#8)

$d := h - d_{cover} - \frac{d_b}{2} = 8.5\ in$ depth to tension reinforcement

- See Figures 18 & 19 for preliminary reinforcing design. Design for a 1' wide strip spanning longitudinally.

Top Longitudinal: #8 @ 12" O.C. [compression]
Bottom Longitudinal: #8 @ 12" O.C. [tension]

$s_{l\_comp} := 12\ in$ $s_{l\_tens} := 12\ in$ spacing of steel in slab

$A_{sprov1} := \frac{12\ in}{s_{l\_comp}} \cdot 0.79\ in^2 = 0.79\ in^2$ per ft depth of slab at compression layer

$A_{sprov2} := \frac{12\ in}{s_{l\_tens}} \cdot 0.79\ in^2 = 0.79\ in^2$ per ft depth of slab at tension layer

$\rho_{prov} := \frac{A_{sprov1} + A_{sprov2}}{b \cdot h} = 0.01097$ provided steel reinforcing to concrete reinforcing ratio

- Check minimum reinforcement ratio:

$f_{cprime} := 5000$ psi $f_y := 60000$ psi

$\rho_{min1} := \frac{3 \cdot \sqrt{f_{cprime}}}{f_y} = 3.536 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2a

$\rho_{min2} := \frac{200}{f_y} = 3.333 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2b

if $\rho_{prov} > \rho_{min1} \wedge \rho_{prov} > \rho_{min2}$
  "Min. reinforcement provided."
else
  "Min. reinforcement NOT provided."
= "Min. reinforcement provided."

- Check maximum spacing of main reinforcement:

if $\max(s_{l\_comp}, s_{l\_tens}) \le 3 \cdot h \wedge 18\ in$
  "OK"
else
  "NG"
= "OK"  ACI 318-19 Sect. 7.7.2.3

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

- Again, consider a 12" width section of the slab and analyze as a beam.

$f_{cprime} := f_{cprime} \cdot psi = 5\ ksi$ concrete compressive strength

$\varepsilon_{cu} := 0.003$ concrete compression-controlled strain limit

$E_s := 29000 \cdot ksi$ elastic modulus of reinforcing steel

$f_y := f_y \cdot psi = 60\ ksi$ yield stress of longitudinal reinforcing

$\varepsilon_y := \frac{f_y}{E_s} = 0.00207$ yield strain of reinforcing steel

$c_c := d_{cover} = 3\ in$ clear cover to tension reinforcement

$c_{cprime} := d_{cover} = 3\ in$ clear cover to compression reinforcement

$h = 12\ in$ gross section depth

$d_b = 1\ in$ bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ bar diameter - compression steel (#8)

$d_t := 1\ in$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 7.5\ in$ depth to tensile reinforcement

$A_s := A_{sprov2} = 0.79\ in^2$ tension steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := c_{cprime} + d_t + \frac{d_{bprime}}{2} = 4.5\ in$ depth to compression reinforcing

$A_{sprime} := 0.79\ in^2 \cdot \left(\frac{12\ in}{s_{l\_comp}}\right) = 0.79\ in^2$ compression steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$b_{bott} := b = 1\ ft$ width of section, bottom (T)

$b_{top} := b = 1\ ft$ width of section, top (C)

Use iterative procedure to establish section equilibrium and find the depth to the neutral axis c.

1. Assume tension steel is yielding
2. Select trial value for c, start with 0 and iterate up
3. Find strain in compression reinforcement
4. Find stress in compression steel
5. Find force in compression steel
6. Find concrete compression force
7. Find force in tension reinforcement
8. Check section equilibrium (T = C)
9. Confirm that the section is yielding
10. Calculate the nominal moment strength Mn
11. Confirm that the tension steel area exceeds Asmin
12. Calculate the strength reduction factor and design moment strength

Calculate stress block depth factor (ACI 318-19 Table 22.2.2.4.3)

$$\beta_1 := \left\| \begin{array}{l} \text{if } \left(2500 \cdot psi \le f_{cprime}\right) \wedge \left(f_{cprime} \le 4000 \cdot psi\right) \\ \quad \text{return } 0.85 \\ \text{if } \left(4000 \cdot psi < f_{cprime}\right) \wedge \left(f_{cprime} < 8000 \cdot psi\right) \\ \quad 0.85 - 0.05 \cdot \dfrac{\left(f_{cprime} - 4000 \cdot psi\right)}{1000 \cdot psi} \\ \text{if } \left(f_{cprime} \ge 8000 \cdot psi\right) \\ \quad 0.65 \end{array} \right\| = 0.8$$

$$CompressionDepth := \left\| \begin{array}{l} c \leftarrow 0 \cdot in \\ C_c \leftarrow 0 \cdot kip \\ C_s \leftarrow 0 \cdot kip \\ T \leftarrow A_s \cdot f_y \\ \text{while } T > \left(C_c + C_s\right) \\ \quad c \leftarrow c + 0.001 \cdot in \\ \quad \varepsilon_{sprime} \leftarrow \dfrac{\left(c - d_{prime}\right) \cdot \varepsilon_{cu}}{c} \\ \quad f_{sprime} \leftarrow \left\| \begin{array}{l} \text{if } \varepsilon_{sprime} < 0 \\ \quad \max\left(\varepsilon_{sprime} \cdot E_s, -f_y\right) \\ \text{else} \\ \quad min\left(\varepsilon_{sprime} \cdot E_s, f_y\right) \end{array} \right\| \\ \quad C_s \leftarrow A_{sprime} \cdot \left(f_{sprime} - 0.85 \cdot f_{cprime}\right) \\ \quad C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c \\ c \end{array} \right\| = 2.41\ in$$

$$c := CompressionDepth = 2.41\ in$$

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0026$

$f_{sprime} := \begin{cases} \text{if } (\varepsilon_{sprime} < 0) \\ \quad \max(\varepsilon_{sprime} \cdot E_s, -f_y) \\ \text{else} \\ \quad \min(\varepsilon_{sprime} \cdot E_s, f_y) \end{cases} = -60 \ ksi$

Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) = -50.8 \ kip$

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 98.2 \ kip$

$C := C_s + C_c = 47.4 \ kip$ per foot of slab

$T := A_s \cdot f_y = 47.4 \ kip$ per foot of slab

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 1.92 \ in$

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot (d - d_{prime}) = 41 \ kip \cdot ft$ per foot of slab

Minimum steel area (ACI 318-19 7.6.1.1)

$A_g := h \cdot b_{bott} = 1 \ ft^2$

$A_{smin} := 0.0018 \cdot A_g = 0.26 \ in^2$

$A_s = 0.79 \ in^2$

$MinimumSteel := \begin{cases} \text{if } A_s > A_{smin} \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{cases} = \text{“OK”}$

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$\phi_b := \begin{cases} \text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \text{return } 0.9 \\ \text{also if } (\varepsilon_y + 0.003 > \varepsilon_t) \wedge (\varepsilon_t > \varepsilon_y) \\ \quad \left(0.65 + \frac{0.25 \cdot (\varepsilon_t - \varepsilon_y)}{0.003}\right) \\ \text{else} \\ \quad 0.65 \end{cases} = 0.9$

$\phi_b \cdot M_n = 37 \ kip \cdot ft$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_long\_bot\_overall2}}{\phi_b \cdot M_n} = 0.087$ OK

Confirm tension steel yields

$\varepsilon_t := \left(\frac{d - c}{c}\right) \cdot \varepsilon_{cu} = 6.352 \cdot 10^{-3}$

$\varepsilon_y = 0.0021$

$Yield := \begin{cases} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{cases} = \text{“OK”}$

Therefore, provide **#8 @ 12" O.C. (bottom)** for longitudinal steel reinforcement.

## b. Longitudinal Reinforcement Design for Negative Bending

Step 1. Design for negative bending (top tension, bottom compression)

- See Figures 18 & 19 for preliminary reinforcing design. Design for a 1' wide strip.

Top Longitudinal: #8 @ 12" O.C. [tension]
Bottom Longitudinal: #8 @ 12" O.C. [compression]

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$d_b := 1\ in$ — bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ — bar diameter - compression steel (#8)

$d_t := 1\ in$ — bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 7.5\ in$ — depth to tensile reinforcement

$A_s := A_{sprov1} = 0.79\ in^2$ — compression steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := c_{cprime} + d_t + \frac{d_{bprime}}{2} = 4.5\ in$ — depth to compression reinforcing

$A_{sprime} := 0.79\ in^2 \cdot \left(\frac{12\ in}{s_{l\_tens}}\right) = 0.79\ in^2$ — tension steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$CompressionDepth :=$

$c \leftarrow 0 \cdot in$
$C_c \leftarrow 0 \cdot kip$
$C_s \leftarrow 0 \cdot kip$
$T \leftarrow A_s \cdot f_y$
while $T > (C_c + C_s)$
  $c \leftarrow c + 0.001 \cdot in$
  $\varepsilon_{sprime} \leftarrow \frac{(c - d_{prime}) \cdot \varepsilon_{cu}}{c}$
  $f_{sprime} \leftarrow$ if $\varepsilon_{sprime} < 0$ : $\max(\varepsilon_{sprime} \cdot E_s, -f_y)$; else: $min(\varepsilon_{sprime} \cdot E_s, f_y)$
  $C_s \leftarrow A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime})$
  $C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c$
$c$

$= 2.41\ in$

$c := CompressionDepth = 2.41\ in$

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0026$

$f_{sprime} := \begin{array}{l}\text{if } (\varepsilon_{sprime} < 0) \\ \quad \max(\varepsilon_{sprime} \cdot E_s, -f_y) \\ \text{else} \\ \quad min(\varepsilon_{sprime} \cdot E_s, f_y)\end{array} = -60\ ksi$ Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) = -50.8\ kip$

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 98.2\ kip$

$C := C_s + C_c = 47.4\ kip$ per foot of slab

$T := A_s \cdot f_y = 47.4\ kip$ per foot of slab

Confirm tension steel yields

$\varepsilon_t := \left(\frac{d-c}{c}\right) \cdot \varepsilon_{cu} = 6.352 \cdot 10^{-3}$

$\varepsilon_y = 0.0021$

$Yield := \begin{array}{l}\text{if } \varepsilon_t > \varepsilon_y \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”}\end{array} = \text{“OK”}$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 1.92\ in$

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot (d - d_{prime}) = 41\ kip \cdot ft$ per foot of slab

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$\phi_b := \begin{array}{l}\text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \text{return } 0.9 \\ \text{also if } (\varepsilon_y + 0.003 > \varepsilon_t) \wedge (\varepsilon_t > \varepsilon_y) \\ \quad \left(0.65 + \frac{0.25 \cdot (\varepsilon_t - \varepsilon_y)}{0.003}\right) \\ \text{else} \\ \quad 0.65\end{array} = 0.9$

$\phi_b \cdot M_n = 37\ kip \cdot ft$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_long\_top\_overall2}}{\phi_b \cdot M_n} = 0.079$ OK

Therefore, provide **#8 @ 12" O.C. (top)** for longitudinal steel reinforcement.

### c. Transverse Reinforcement Design for Positive Bending

Step 1. Preliminary design for positive bending (top compression, bottom tension)
See Figures 18 & 19.

- Try **#8 @ 12"** O.C. (top layer) for main steel reinforcement.
- Try **#8 @ 12"** O.C. (bottom layer) for main steel reinforcement.

$s_l := 12\ in$ spacing of compression steel in slab

$A_{sprov1} := \frac{12\ in}{s_l} \cdot 0.79\ in^2 = 0.79\ in^2$ per ft depth of slab at **each layer**

$A_{sprov2} := \frac{12\ in}{12\ in} \cdot 0.79\ in^2 = 0.79\ in^2$

$\rho_{prov} := \frac{A_{sprov1} + A_{sprov2}}{b \cdot h} = 0.01097$ provided steel reinforcing to concrete reinforcing ratio

- Check minimum reinforcement ratio:

$f_{cprime} := 5000$ psi $f_y := 60000$ psi

$\rho_{min1} := \frac{3 \cdot \sqrt{f_{cprime}}}{f_y} = 3.536 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2a

$\rho_{min2} := \frac{200}{f_y} = 3.333 \cdot 10^{-3}$ ACI Eqn. 9.6.1.2b

if $\rho_{prov} > \rho_{min1} \wedge \rho_{prov} > \rho_{min2}$
    "Min. reinforcement provided."
else
    "Min. reinforcement NOT provided."
$=$ "Min. reinforcement provided."

- Check maximum spacing of main reinforcement:

if $s_l \le 3 \cdot h \wedge 18\ in$
    "OK"
else
    "NG"
$=$ "OK" ACI 318-19 Sect. 7.7.2.3

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$f_{cprime} := f_{cprime} \cdot psi = 5\ ksi$ concrete compressive strength
$\varepsilon_{cu} := 0.003$ concrete compression-controlled strain limit
$E_s := 29000 \cdot ksi$ elastic modulus of reinforcing steel
$f_y := f_y \cdot psi = 60\ ksi$ yield stress of longitudinal reinforcing

$\varepsilon_y := \frac{f_y}{E_s} = 0.00207$ yield strain of reinforcing steel

$d_{cover} := 3\ in$

$c_c := d_{cover} = 3\ in$ clear cover to tension reinforcement

$c_{cprime} := d_{cover} = 3\ in$ clear cover to compression reinforcement

$h = 12\ in$ gross section depth

$d_b := 1\ in$ bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ bar diameter - compression steel (#8)

$d_t := 1\ in$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 7.5\ in$ depth to tensile reinforcement

$A_s := A_{sprov2} = 0.79\ in^2$ tension steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := c_{cprime} + d_t + \frac{d_{bprime}}{2} = 4.5\ in$ depth to compression reinforcing

$A_{sprime} := A_{sprov1} = 0.79\ in^2$ compression steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$b_{bott} := b = 1\ ft$ width of section, bottom (T)

$b_{top} := b = 1\ ft$ width of section, top (C)

Use iterative procedure to establish section equilibrium and find the depth to the neutral axis c.

1. Assume tension steel is yielding
2. Select trial value for c, start with 0 and iterate up
3. Find strain in compression reinforcement
4. Find stress in compression steel
5. Find force in compression steel
6. Find concrete compression force
7. Find force in tension reinforcement
8. Check section equilibrium (T = C)
9. Confirm that the section is yielding
10. Calculate the nominal moment strength Mn
11. Confirm that the tension steel area exceeds Asmin
12. Calculate the strength reduction factor and design moment strength

Calculate stress block depth factor (ACI 318-19 Table 22.2.2.4.3)

$$\beta_1 := \left\| \begin{array}{l} \text{if } \left(2500 \cdot psi \le f_{cprime}\right) \wedge \left(f_{cprime} \le 4000 \cdot psi\right) \\ \quad \left\| \text{return } 0.85 \right. \\ \text{if } \left(4000 \cdot psi < f_{cprime}\right) \wedge \left(f_{cprime} < 8000 \cdot psi\right) \\ \quad \left\| 0.85 - 0.05 \cdot \frac{\left(f_{cprime} - 4000 \cdot psi\right)}{1000 \cdot psi} \right. \\ \text{if } \left(f_{cprime} \ge 8000 \cdot psi\right) \\ \quad \left\| 0.65 \right. \end{array} \right. = 0.8$$

$CompressionDepth := \left\| \begin{array}{l} c \leftarrow 0 \cdot in \\ C_c \leftarrow 0 \cdot kip \\ C_s \leftarrow 0 \cdot kip \\ T \leftarrow A_s \cdot f_y \\ \text{while } T > (C_c + C_s) \\ \quad \left\| \begin{array}{l} c \leftarrow c + 0.001 \cdot in \\ \varepsilon_{sprime} \leftarrow \dfrac{(c - d_{prime}) \cdot \varepsilon_{cu}}{c} \\ f_{sprime} \leftarrow \left\| \begin{array}{l} \text{if } \varepsilon_{sprime} < 0 \\ \quad \left\| \max(\varepsilon_{sprime} \cdot E_s, -f_y) \right. \\ \text{else} \\ \quad \left\| min(\varepsilon_{sprime} \cdot E_s, f_y) \right. \end{array} \right. \\ C_s \leftarrow A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) \\ C_c \leftarrow 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c \end{array} \right. \\ c \end{array} \right. = 2.41\ in$

$c := CompressionDepth = 2.41\ in$

$\varepsilon_{sprime} := \left(\dfrac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0026$

$f_{sprime} := \left\| \begin{array}{l} \text{if } (\varepsilon_{sprime} < 0) \\ \quad \left\| \max(\varepsilon_{sprime} \cdot E_s, -f_y) \right. \\ \text{else} \\ \quad \left\| min(\varepsilon_{sprime} \cdot E_s, f_y) \right. \end{array} \right. = -60\ ksi$ Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot (f_{sprime} - 0.85 \cdot f_{cprime}) = -50.8\ kip$

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 98.2\ kip$

$C := C_s + C_c = 47.4\ kip$ per foot of slab

$T := A_s \cdot f_y = 47.4\ kip$ per foot of slab

Confirm tension steel yields

$\varepsilon_t := \left(\dfrac{d - c}{c}\right) \cdot \varepsilon_{cu} = 6.352 \cdot 10^{-3}$

$\varepsilon_y = 0.0021$

$Yield := \left\| \begin{array}{l} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \left\| \text{“OK”} \right. \\ \text{else} \\ \quad \left\| \text{“NG”} \right. \end{array} \right. = \text{“OK”}$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 1.92\ in$

$M_n := C_c \cdot \left(d - \dfrac{a}{2}\right) + C_s \cdot (d - d_{prime}) = 41\ kip \cdot ft$ per foot of slab

Minimum steel area (ACI 318-19 7.6.1.1)

$A_g := h \cdot b_{bott} = 1\ ft^2$

$A_{smin} := 0.0018 \cdot A_g = 0.26\ in^2$

$A_s = 0.79\ in^2$

$MinimumSteel :=$ if $A_s > A_{smin}$ "OK" else "NG" $=$ "OK"

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$\phi_b :=$ if $\varepsilon_t \geq \varepsilon_y + 0.003$ return $0.9$ also if $(\varepsilon_y + 0.003 > \varepsilon_t) \wedge (\varepsilon_t > \varepsilon_y)$ $\left(0.65 + \frac{0.25 \cdot (\varepsilon_t - \varepsilon_y)}{0.003}\right)$ else $0.65$ $= 0.9$

$\phi_b \cdot M_n = 37\ kip \cdot ft$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_transv\_bot\_overall2}}{\phi_b \cdot M_n} = 0.041$ OK

Therefore, provide **#8 @ 12" o.c.** for transverse steel reinforcement (bottom layer).

## d. Transverse Reinforcement Design for Negative Bending

Step 1. Preliminary design for positive bending (top tension, bottom compression)
See Figure 18 & 19.

- Try **#8 @ 12"** O.C. (top layer) for main steel reinforcement.
- Try **#8 @ 12"** O.C. (bottom layer) for main steel reinforcement.

Step 2. Check preliminary design from Step 1. Calculate nominal moment capacity:

$d_b := 1\ in$ bar diameter - tension steel (#8)

$d_{bprime} := 1\ in$ bar diameter - compression steel (#8)

$d_t := 1\ in$ bar diameter - longitudinal reinforcement (#8)

$d := h - c_c - d_t - \frac{d_b}{2} = 7.5\ in$ depth to tensile reinforcement

$A_s := A_{sprov1} = 0.79\ in^2$ compression steel reinforcing area per 12" slab (#8 @ 12" O.C.)

$d_{prime} := \left(c_{cprime} + d_t + \frac{d_{bprime}}{2}\right) = 4.5\ in$ depth to compression reinforcing

$A_{sprime} := A_{sprov2} = 0.79\ in^2$ tension steel reinforcing area per 12" slab width (#8 @ 12" O.C.)

$CompressionDepth :=$

```
c ← 0·in
C_c ← 0·kip
C_s ← 0·kip
T ← A_s·f_y
while T > (C_c + C_s)
    c ← c + 0.001·in
    ε_sprime ← ((c − d_prime)·ε_cu) / c
    f_sprime ← if ε_sprime < 0
                   max(ε_sprime·E_s, −f_y)
               else
                   min(ε_sprime·E_s, f_y)
    C_s ← A_sprime·(f_sprime − 0.85·f_cprime)
    C_c ← 0.85·f_cprime·b_top·β_1·c
c
```

$= 2.41\ in$

$c := CompressionDepth = 2.41\ in$

$\varepsilon_{sprime} := \left(\frac{c - d_{prime}}{c}\right) \cdot \varepsilon_{cu} = -0.0026$

$f_{sprime} :=$

```
if (ε_sprime < 0)
    max(ε_sprime·E_s, −f_y)
else
    min(ε_sprime·E_s, f_y)
```

$= -60\ ksi$ Negative values indicate that the steel is in tension

$C_s := A_{sprime} \cdot \left(f_{sprime} - 0.85 \cdot f_{cprime}\right) = -50.8\ kip$

$C_c := 0.85 \cdot f_{cprime} \cdot b_{top} \cdot \beta_1 \cdot c = 98.2\ kip$

$C := C_s + C_c = 47.4\ kip$ per foot of slab

$T := A_s \cdot f_y = 47.4\ kip$ per foot of slab

Confirm tension steel yields

$\varepsilon_t := \left(\frac{d-c}{c}\right) \cdot \varepsilon_{cu} = 6.352 \cdot 10^{-3}$

$\varepsilon_y = 0.0021$

$Yield := \left\| \begin{array}{l} \text{if } \varepsilon_t > \varepsilon_y \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{array} \right| = \text{“OK”}$

Calculate nominal moment capacity

$a := \beta_1 \cdot c = 1.92\ in$

$M_n := C_c \cdot \left(d - \frac{a}{2}\right) + C_s \cdot \left(d - d_{prime}\right) = 41\ kip \cdot ft$ per foot of slab

Strength reduction factor for bending (ACI 318-19 Table 21.2.2):

$\phi_b := \left\| \begin{array}{l} \text{if } \varepsilon_t \geq \varepsilon_y + 0.003 \\ \quad \text{return } 0.9 \\ \text{also if } \left(\varepsilon_y + 0.003 > \varepsilon_t\right) \wedge \left(\varepsilon_t > \varepsilon_y\right) \\ \quad \left(0.65 + \frac{0.25 \cdot \left(\varepsilon_t - \varepsilon_y\right)}{0.003}\right) \\ \text{else} \\ \quad 0.65 \end{array} \right| = 0.9$

$\phi_b \cdot M_n = 37\ kip \cdot ft$ per foot of slab

$DCR_M := \frac{M_{utot\_controlling\_transv\_top\_overall2}}{\phi_b \cdot M_n} = 0.395$ OK

Therefore, provide **#8 @ 12" o.c.** for transverse steel reinforcement (top layer).

### e. Shear Reinforcement

Step 1. Check if shear reinforcement is required for the controlling load case among the hand calculation and the model results.

Assume only concrete contributes to shear capacity.

$h = 12\ in$ — height of section

$d = 7.5\ in$ — Effective depth, from extreme compression face to centroid of longitudinal tension reinforcement

$f'_c := f_{cprime} \cdot \frac{1000}{ksi} = 5000$ psi — Concrete compressive strength

$\lambda := 1$ — concrete density modification factor (ACI 22.5.5 & AASHTO 5.4.2.8)

$\lambda_s := min\left(1, \sqrt{\frac{2}{1 + \frac{d}{10\ in}}}\right) = 1$ — size effect modification factor

$\phi := 0.75$ — shear reduction factor

$V_c := 8 \cdot \lambda_s \cdot \sqrt[3]{\frac{A_s}{A_g}} \cdot \lambda \cdot \sqrt{f'_c}\ psi \cdot b \cdot d = 8.979\ kip$ — ACI Eqn. 22.5.5.1

for slab depth

$\phi \cdot V_c = 6.73\ kip$

$V_{utot\_controlling\_vmax\_overall2} = 4.5\ kip$ — for slab depth

$DCR_V := \frac{V_{utot\_controlling\_vmax\_overall2}}{\phi \cdot V_c} = 0.668$ OK

Step 2. Check two-way punching shear.

Compute Vu on the critical perimeter for 2-way shear:

$x := 24 \cdot in$ tire length Assumed tire dimensions for Ambulance

$y := 12\ in$ tire width

$q_{uLL} := \frac{1.15 \cdot 1.6 \cdot 4\ kip}{x \cdot y} = 25.556\ psi$ factored (1.15 for impact) equivalent uniform live load (this is the greatest single tire point load from the Ambulance)

$q_{uDL} := 1.2 \cdot \gamma_{conc} \cdot h = 1.25\ psi$ factored uniform load (self-weight)

$q_{utot} := q_{uLL} + q_{uDL} = 26.8\ psi$

$V_{u2way} := q_{utot} \cdot \left(x + 2 \cdot \frac{d}{2}\right) \cdot \left(y + 2 \cdot \frac{d}{2}\right) = 16.5\ kip$

Compute ultimate shear resistance and compare to 2-way concrete shear resistance capacity for the critical section:

$b_o := 2 \cdot \left(x + 2 \cdot \frac{d}{2}\right) + 2 \cdot \left(y + 2 \cdot \frac{d}{2}\right) = 102\ in$ critical perimeter

$v_u := \frac{V_{u2way}}{b_o \cdot d} = 21.5\ psi$

$v_{c1} := 4 \cdot \lambda \cdot \sqrt{f'_c} = 282.8$ psi (ACI 318-19 Table 22.6.5.2a)

$\beta := \frac{x}{y} = 2$ (ACI 318-19 R22.6.5.2)

$v_{c2} := \left(2 + \frac{4}{\beta}\right) \cdot \lambda \cdot \sqrt{f'_c} = 282.8$ psi (ACI 318-19 Table 22.6.5.2b)

$\alpha_s := 40$ interior column (ACI 318-19 22.6.5.3)

$v_{c3} := \left(\frac{\alpha_s \cdot d}{b_o} + 2\right) \cdot \lambda \cdot \sqrt{f'_c} = 349.4$ psi (ACI 318-19 Table 22.6.5.2c)

$v_c := min\left(v_{c1}, v_{c2}, v_{c3}\right)\ psi = 282.8\ psi$

$\phi \cdot v_c = 212.1\ psi$

$DCR_{v2way} := \frac{v_u}{\phi \cdot v_c} = 0.101$ OK

## f. Deflection

The deflection of the slab in each of the load cases is investigated and the maximum deflection for each load case is reported in Figure 20. Combine deflections from DEAD_TOTAL (includes self weight and superimposed dead load) and the controlling live load case without load factors.

**Displacement in U3 (Z) Direction**

| Joint | Load Case | U3 [in] |
|---|---|---|
| | Ambulance | -0.03 |
| | ULL | -0.04 |
| | DEAD_TOTAL | -0.02 |

Page 3

Maximum Total Deflection = DEAD_TOTAL + ULL
Maximum Total Deflection = -0.05

$\Delta_{max} := 0.05\ in$

*Figure 20 - Displacement in the Z direction for each load case.*

The location of the joint where the maximum deflection occurs for the controlling load cases are shown in Figure 21. These joints occur close to the rear tire of the ambulance.

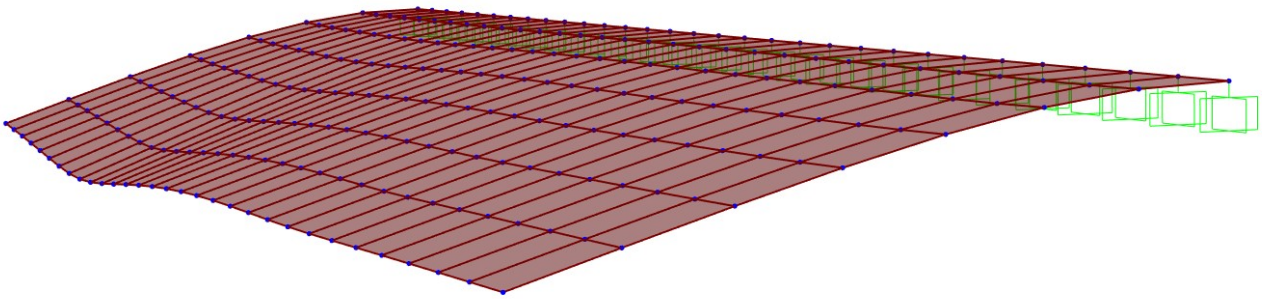


*Figure 21 - Isometric view of joint locations of maximum deflection.*

Therefore, the deflection limit will involve the length from the support. The deflection limits per ACI 318-19 Table 24.2.2 for "cantilever" of immediate deflection is as follows:

$\Delta_{lim} := \frac{W}{360} = 0.233\ in$ deflection limit between pile bents

if $\Delta_{max} \le \Delta_{lim}$ = "OK" Therefore, deflection limit is satisfied.
  "OK"
else
  "NG"

# 6. Appendix: Hand Calculations

This section uses hand calculations to confirm the numerical results from SAP2000 in Section 3.

Utilize AASHTO Section 4.6.2.1.3 - Width of Equivalent Interior Strips method to obtain live load moments due to Firetruck and Ambulance load.

Split the flange into various regions of critical moment demand. For each applicable region, obtain a width of strip to distribute the moment load over.

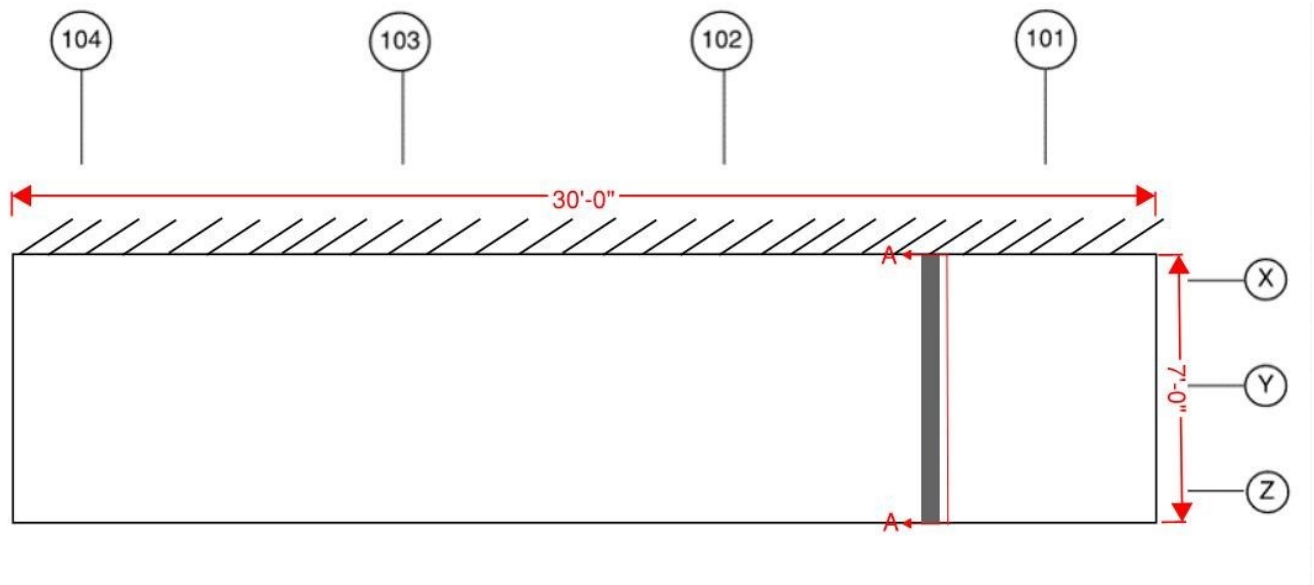



*Figure 22 - Annotated Flange Plan View*

## a. Load Case 1: Dead Load

This hand calculation proves that Load Case 1 does not control design values.

### i. At Intersection

Consider dead load self-weight of the concrete flange at the intersection only.

$h := 14\ in$ height of slab at intersection

$D := \gamma_{conc} \cdot h = 175\ psf$ dead load (self-weight)

$w_{DL} := D \cdot b = 0.175\ klf$ unfactored load for 12" wide strip of slab

$M_{DL\_12inStrip\_h} := \frac{w_{DL} \cdot W^2}{2} = 4.29\ kip \cdot ft$ maximum negative moment for 12" wide strip (Sect. A-A, Fig. 3) (cantilever)

$V_{DL\_12inStrip\_h} := w_{DL} \cdot W = 1.2\ kip$ maximum shear (ends) for 12" wide strip (Sect. A-A, Fig. 3)

Factored moments and shears:

$M_{u\_12inStrip\_LC1\_h} := 1.4 \cdot M_{DL\_12inStrip\_h} = 6\ kip \cdot ft$ per ft (Sect. A-A, Fig. 3)

$V_{u\_12inStrip\_LC1\_h} := 1.4 \cdot V_{DL\_12inStrip\_h} = 1.715\ kip$ per ft (Sect. A-A, Fig. 3)

### ii. Rest of Breakwater

Consider dead load self-weight of the concrete flange only, outside of the intersection.

$h_2 := 12\ in$ height of slab

$D_2 := \gamma_{conc} \cdot h_2 = 150\ psf$ dead load (self-weight)

$w_{DL2} := D_2 \cdot b = 0.15\ klf$ unfactored load for 12" wide strip of slab

$M_{DL\_12inStrip\_h2} := \frac{w_{DL2} \cdot W^2}{2} = 3.68\ kip \cdot ft$ maximum negative moment for 12" wide strip (Sect. A-A, Fig. 3) (cantilever)

$V_{DL\_12inStrip\_h2} := w_{DL2} \cdot W = 1.1\ kip$ maximum shear (ends) for 12" wide strip (Sect. A-A, Fig. 3)

Factored moments and shears:

$M_{u\_12inStrip\_LC1\_h2} := 1.4 \cdot M_{DL\_12inStrip\_h2} = 5.1\ kip \cdot ft$ per ft (Sect. A-A, Fig. 3)

$V_{u\_12inStrip\_LC1\_h2} := 1.4 \cdot V_{DL\_12inStrip\_h2} = 1.47\ kip$ per ft (Sect. A-A, Fig. 3)

## b. Load Case 2: Dead Load & Live Load with Tandem Firetruck and Ambulance

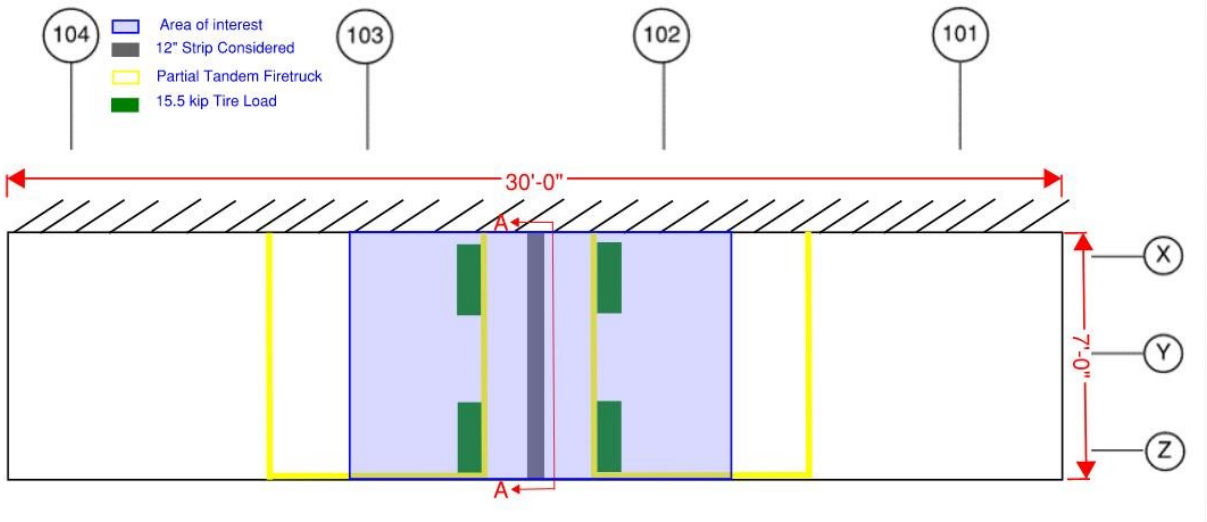
This hand calculation confirms the design values in Section 3

### i. Cross Section A-A at the Intersection

$S_{AA} := 7$ ft span length

$EW_{AA} := \frac{(26 + 6.6 \cdot S_{AA}) \cdot ft}{12} = 6\ ft$ equivalent width of strip (Table 4.6.2.1.3-1 for CIP Concrete Deck)

Compute the maximum shear. Consider the point loads over the centerline of slab. Assume that the rear point loads can be modeled as a singular point load. Consider the load cases A-A below in Figure 23a.



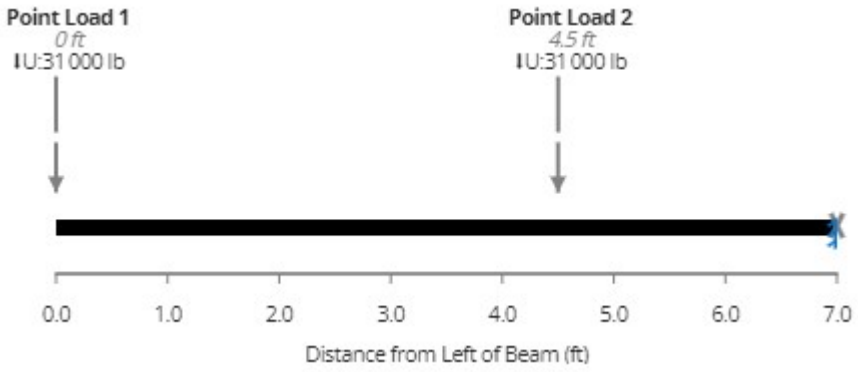



*Figure 23a - Load Case for section A-A to find maximum shear.*

$S := S_{AA} \cdot ft = 7\ ft$

$V_1 := 2 \cdot 15.5\ kip + 2 \cdot 15.5\ kip$ Take sum of vertical forces

$V_{1\_tot} := V_1 = 62\ kip$ maximum V

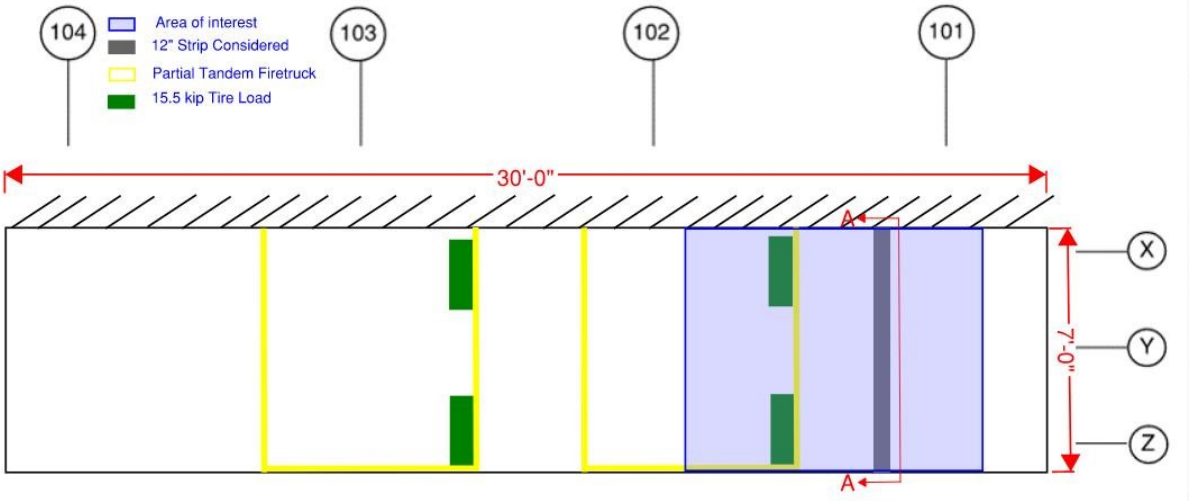
$V_{umax} := 1.15 \cdot V_{1\_tot} = 71.3\ kip$ Includes impact load factor of 1.15 per UFC Section 3-3.3

$V_{LL\_EW\_AA} := V_{umax} = 71.3\ kip$

Compute the maximum moment. Consider the point loads over the centerline of slab.

Consider the load case for section A-A below in Figure 23b.

Note: Section was not taken in the middle of the slab because it ceases to behave like a cantilever in that area.



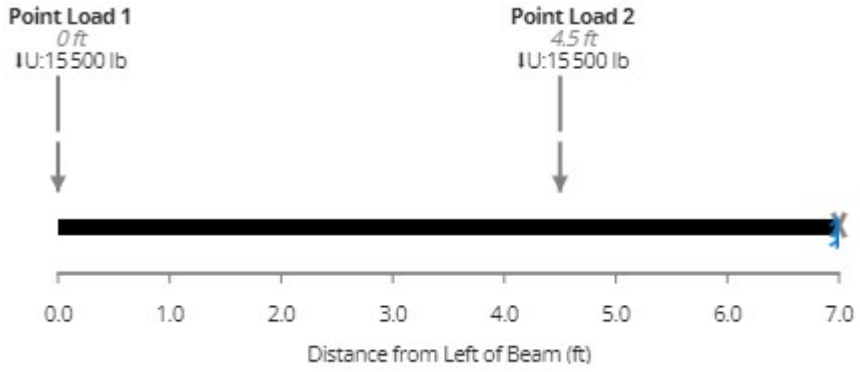



*Figure 23b - Load Case for section A-A to find maximum moment.*

$M_{umax} := (7 + 2.5)\ 15.5 \cdot kip \cdot ft = 147.3\ kip \cdot ft$ Take sum of moments at cantilever support

$M_{LL\_EW\_AA} := 1.15 \cdot M_{umax} = 169.3\ kip \cdot ft$ Impact load factor of 1.15 per UFC Section 3-3.3

For a 12" wide strip of slab:

$M_{LL\_12inStrip\_AA} := M_{LL\_EW\_AA} \cdot \left(\frac{b}{EW_{AA}}\right) = 28.14\ kip \cdot ft$ per ft

$V_{LL\_12inStrip\_AA} := V_{LL\_EW\_AA} \cdot \left(\frac{b}{EW_{AA}}\right) = 11.9\ kip$ per ft

Total Factored Moments and Shears, Cross Section A-A:

$M_{utot\_12inStrip\_AA} := 1.2 \cdot M_{DL\_12inStrip\_h} + 1.6 \cdot M_{LL\_12inStrip\_AA} = 50.2\ kip \cdot ft$ per ft

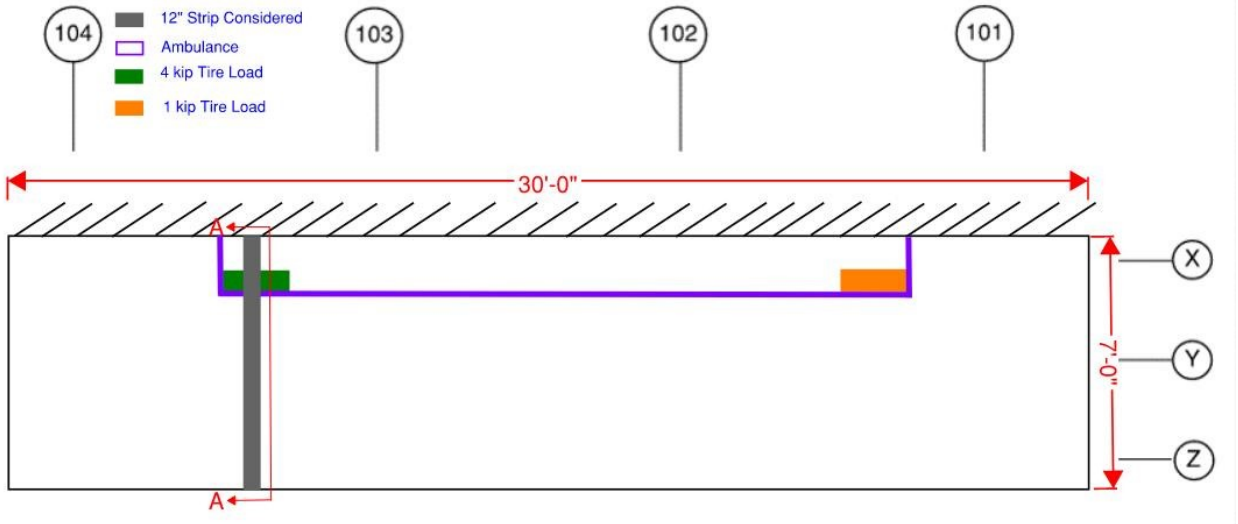
$V_{utot\_12inStrip\_AA} := 1.2 \cdot V_{DL\_12inStrip\_h} + 1.6 \cdot V_{LL\_12inStrip\_AA} = 20.4\ kip$ per ft

## ii. Cross Section A-A at Rest of Breakwater

$EW_{AA} = 6\ ft$ equivalent width of strip (Table 4.6.2.1.3-1 for CIP Concrete Deck)

Compute the maximum shear. Consider the point loads. Assume that the rear point loads can be modeled as a singular point load. Consider the load cases A-A below in Figure 24a.

Note: Strip was positioned such that shear is maximized.



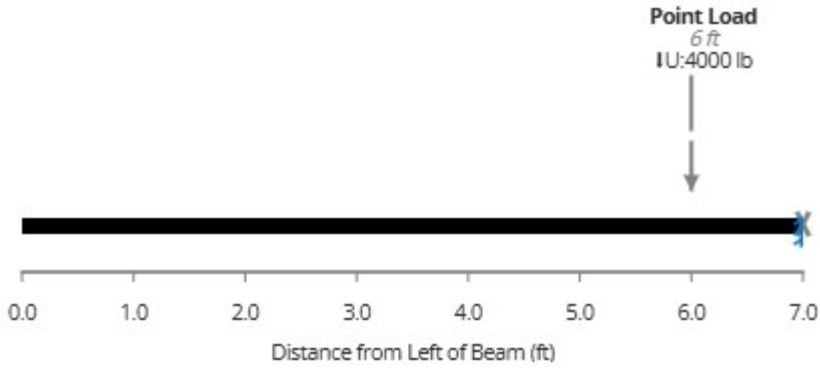



*Figure 24a - Load Case for section A-A to find maximum shear.*

$V_2 := 4\ kip$ Sum of vertical forces

$V_{2\_tot} := V_2 = 4\ kip$ maximum V

$V_{umax2} := 1.15 \cdot V_{2\_tot} = 4.6\ kip$ Includes impact load factor of 1.15 per UFC Section 3-3.3

$V_{LL\_EW\_aa} := V_{umax2} = 4.6\ kip$

Compute the maximum moment. Consider the load case for section A-A below in Figure 24b.

Note: Section was not taken between the rear tires because it ceases to behave like a cantilever in that area.

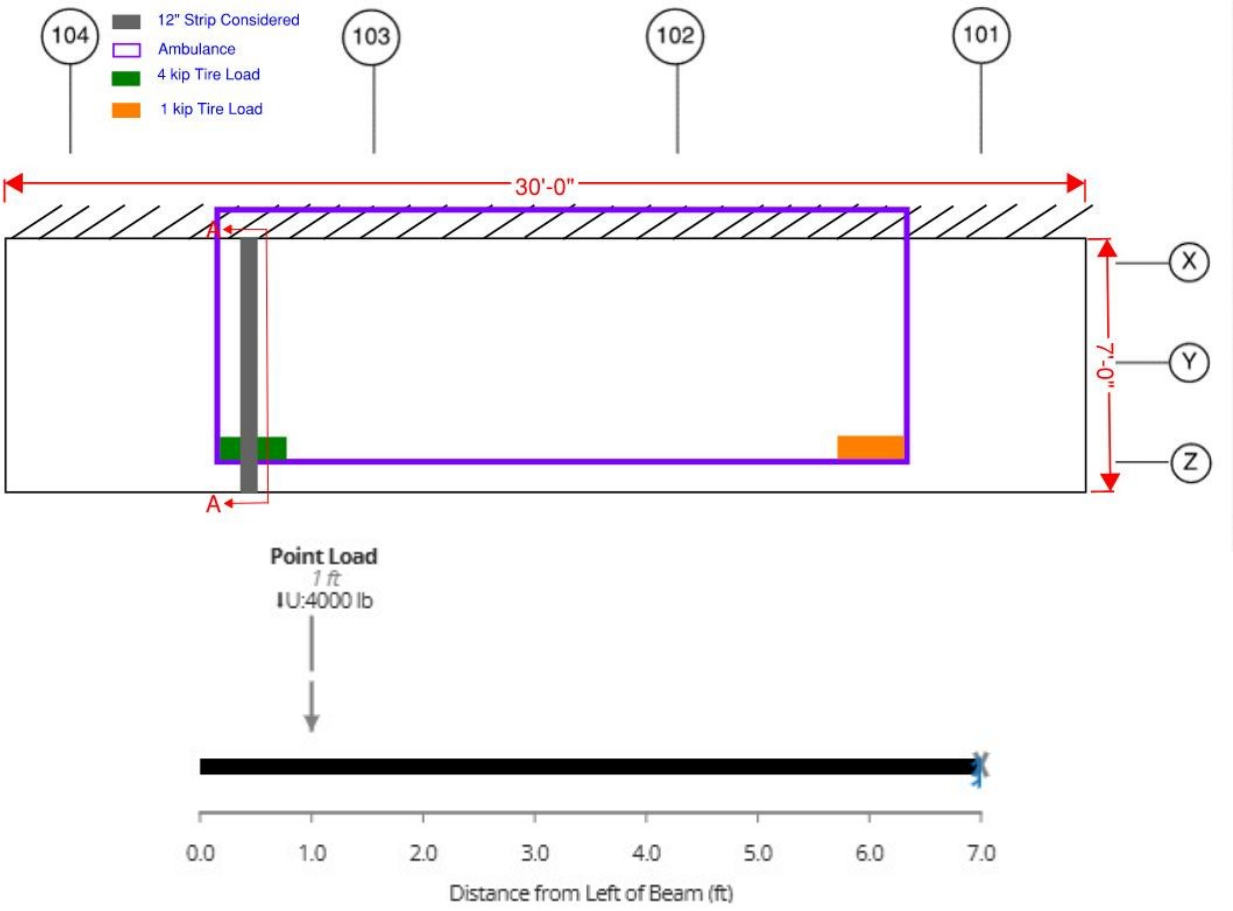



*Figure 24b - Load Case for section A-A to find maximum moment.*

$M_{umax2} := 4 \cdot 6 \cdot kip \cdot ft = 24\ kip \cdot ft$ Take sum of moments about cantilever support

$M_{LL\_EW\_aa} := 1.15\ M_{umax2} = 27.6\ kip \cdot ft$ Impact load factor of 1.15 per UFC Section 3-3.3

For a 12" wide strip of slab:

$M_{LL\_12inStrip\_aa} := M_{LL\_EW\_aa} \cdot \left(\frac{b}{EW_{AA}}\right) = 4.59\ kip \cdot ft$ per ft

$V_{LL\_12inStrip\_aa} := V_{LL\_EW\_aa} \cdot \left(\frac{b}{EW_{AA}}\right) = 0.8\ kip$ per ft

Total Factored Moments and Shears, Cross Section A-A:

$M_{utot\_12inStrip\_aa} := 1.2 \cdot M_{DL\_12inStrip\_h2} + 1.6 \cdot M_{LL\_12inStrip\_aa} = 11.7\ kip \cdot ft$ per ft

$V_{utot\_12inStrip\_aa} := 1.2 \cdot V_{DL\_12inStrip\_h2} + 1.6 \cdot V_{LL\_12inStrip\_aa} = 2.5\ kip$ per ft

## c. Load Case 3: Dead Load & Uniform Live Load

This hand calculation confirms the design values in Section 3.

Apply a uniform 250 psf load over the slab.

### i. Cross Section A-A at Intersection

$M_{LL\_12inStrip\_uniform\_AA} := 250\ psf \cdot \frac{W^2}{2} \cdot b = 6.125\ kip \cdot ft$ per ft

$V_{LL\_12inStrip\_uniform\_AA} := 250\ psf \cdot b \cdot W = 1.75\ kip$ per ft

Total Factored Moments and Shears:

$M_{utot\_12inStrip\_uniform\_AA} := 1.2 \cdot M_{DL\_12inStrip\_h} + 1.6 \cdot M_{LL\_12inStrip\_uniform\_AA} = 14.9\ kip \cdot ft$ per ft

$V_{utot\_12inStrip\_uniform\_AA} := 1.2 \cdot V_{DL\_12inStrip\_h} + 1.6 \cdot V_{LL\_12inStrip\_uniform\_AA} = 4.3\ kip$ per ft

### ii. Cross Section A-A at Rest of Breakwater

Total Factored Moments and Shears:

$M_{utot\_12inStrip\_uniform\_aa} := 1.2 \cdot M_{DL\_12inStrip\_h2} + 1.6 \cdot M_{LL\_12inStrip\_uniform\_AA} = 14.2\ kip \cdot ft$ per ft

$V_{utot\_12inStrip\_uniform\_aa} := 1.2 \cdot V_{DL\_12inStrip\_h2} + 1.6 \cdot V_{LL\_12inStrip\_uniform\_AA} = 4.1\ kip$ per ft

**END OF CALCULATIONS**

# 4 Breakwater Seismic Calculations

Project: BWTPF
Subject: Breakwater Seismic Pile Calcs

Job #: A272767
By: TYRD | Date: 12/12/2025
Checked by: JBSW | Date: 12/12/2025

## Outline

1. Introduction

2. Load Cases

3. Design Loads
   a. SAP2000 Model Analysis Results
      i. Dead Load in SAP2000 Model
      ii. Design Level Response Spectrum
      iii. Summary of Batter Pile Results from SAP2000 Model
      iv. Summary of Sheet Pile Results from SAP2000 Model
   b. Determining Design Loads

4. Design of Concrete Battered Piles
   a. P-M Diagrams
      i. Compression Utilization
      ii. Tension Utilization
   b. Pile Length
      i. Compression
      ii. Tension
      iii. Design

5. Design of Concrete Sheet Piles
   a. P-M Diagrams
      i. Compression Utilization
      ii. Tension Utilization
   b. Pile Length
      i. Compression
      ii. Tension
      iii. Design

# 1. Introduction

Objective: Design the reinforcement for the concrete piles of the Breakwater considering applicable seismic loads.

Background: See Figures 1a and 1b for isometric views of the Breakwater. There are two sections of the Berkeley pier, the main pier and the breakwater. The breakwater runs perpendicular to the main pier and consists of a T-section. The span of the breakwater is around 245' long. There are diagonal octagonal piles (at ~70 degrees) spaced every 20' on the landside, and rectangular sheet piles on the waterside spaced such that they creates a wall. Because the Breakwater is Risk Category II, only the Design level earthquake will be considered.

Codes: The following codes are referenced:

- American Concrete Institute *Building Code Requirements for Structural Concrete* (ACI 318-19), 2019 (ACI)
- American Association of State Highway and Transportation Officials *LRFD Bridge Design Specifications*, 7th Ed., 2020 (AASHTO)
- American Society of Civil Engineers *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-22), 2022 (ASCE)
- ENGEO *Incorporated Berkeley Water Transportation Pier Ferry Geotechnical Report*, 2025 (EnGeo)

Methodology: Create a SAP2000 model to analyze each pile for the load cases that are predicted to control (using the response spectrum obtained from EnGeo). Obtain controlling moment (in both directions) and axial load in both types of piles. Design for moment and axial. Use ACI 318-19 to determine reinforcing in the piles. Use the geotechnical report to determine the length of the piles.

Units: U.S. Customary System, as noted in equations.

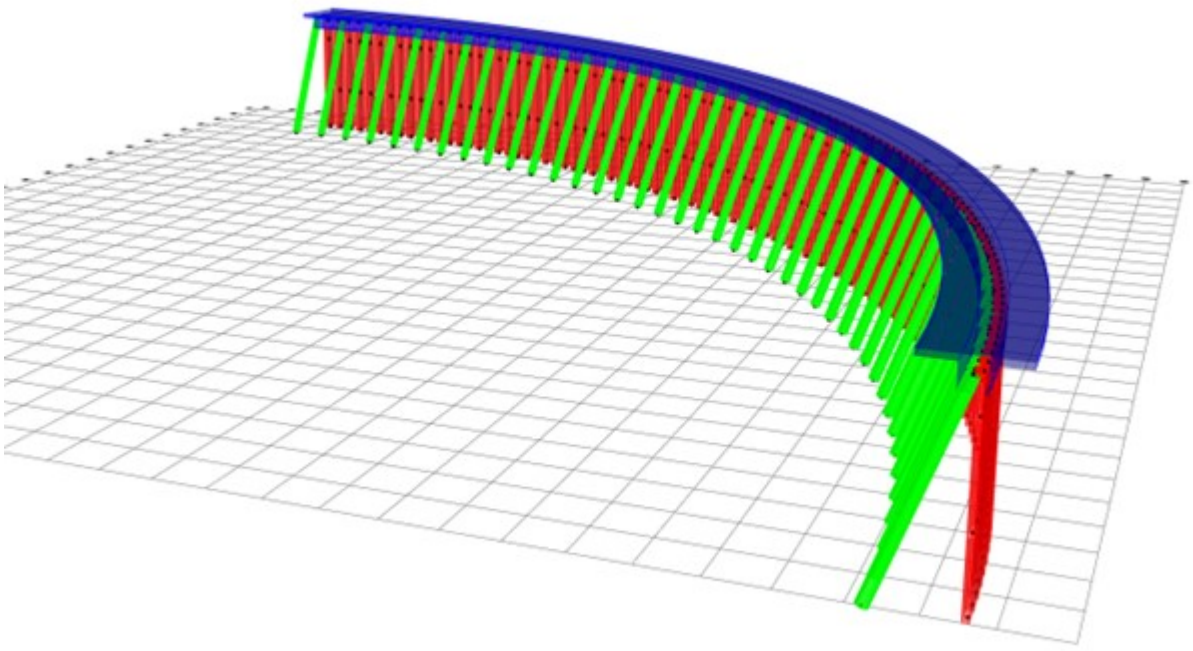


*Figure 1a - Breakwater Isometric View*

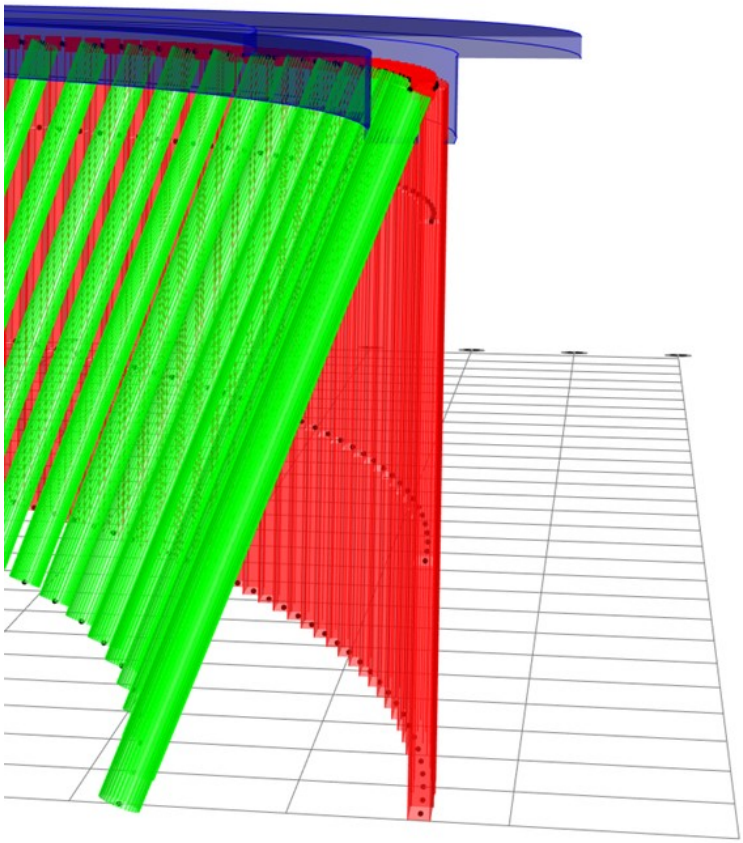


*Figure 1b - Breakwater Structure Section View*

## 2. Load Cases

Consider Load Cases below per ASCE 7-22, Sections 2.3.1, 2.3.6, and C12.5.1.2

Load Case 1: 1.4*DL
Load Case 2: 0.9*DL + Ex + 0.3*Ey
Load Case 3: 0.9*DL + 0.3Ex + Ey
Load Case 4: 0.9*DL + $\sqrt{2}$ Ex + $\sqrt{2}$ Ey
Load Case 5: 1.2*DL + Ex + 0.3*Ey
Load Case 6: 1.2*DL + 0.3Ex + Ey
Load Case 7: 1.2*DL + $\sqrt{2}$ Ex + $\sqrt{2}$ Ey

where
DL = Breakwater concrete dead load
Ex = Earthquake Load in the X-direction
Ey = Earthquake Load in the Y-direction

## 3. Design Loads

Consider all design load cases specified in Section 2.

Preliminary geometry of the Breakwater components are as follows:

| | |
|---|---|
| $E_{slab} := 17.6\ ft$ | Elevation of slab above MLLW |
| $h_1 := 6\ ft$ | Distance between MLLW and Mudline |
| $d := 24\ in$ | diameter of battered pile |
| $\gamma_{conc} := 150\ pcf$ | Unit weight of Normal Weight concrete |
| $t_{sheet} := 1\ ft$ | Sheet pile thickness |
| $L_{sheet} := 4\ ft$ | Sheet pile length |
| $\theta := 69.68\ deg$ | angle of battered pile |
| $h_2 := 5\ ft$ | height of T-section |

### a. SAP2000 Analysis Results

In order to obtain realistic results, model and run linear response spectrum analysis in SAP2000.

#### i. Dead Load in SAP2000 Model

The dead load self-weight of the structure includes the Breakwater T-section, octagonal pile, and sheet pile dead load. The unit weight of reinforced concrete is γ = 150 pcf. The dead load self-weight of the structure was computed and defined in the SAP2000 structural elements.

#### ii. Design Level Response Spectrum

The design level response spectrum at 5% damping was provided in the Geotechnical report from EnGeo, and is shown below

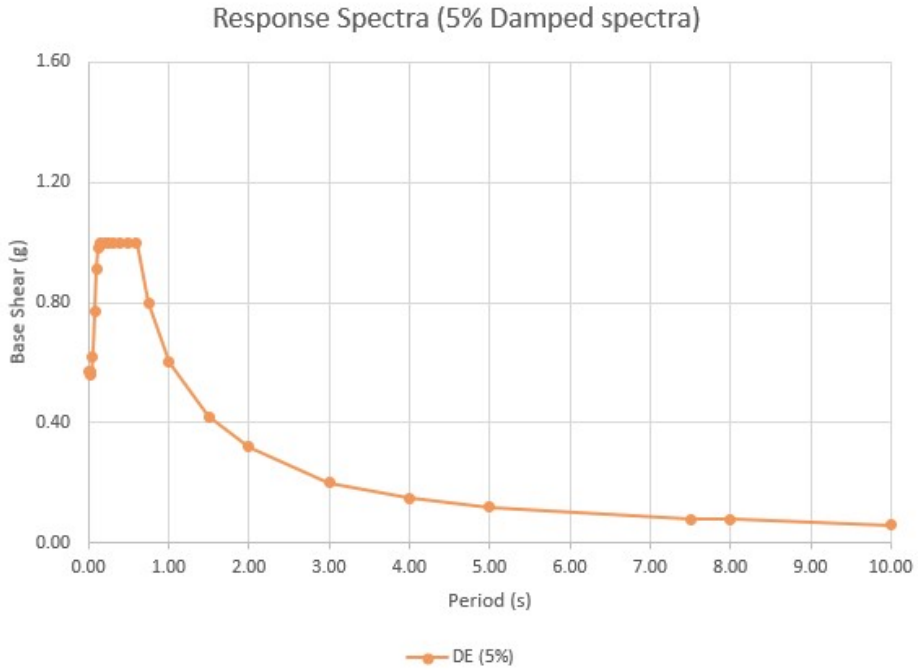



*Figure 2 - Design Level Response Spectrum*

### iii. Summary of Batter Pile Results from SAP2000 Model

The ultimate factored axial load and moment in the battered piles for all load combinations shown in part 2 above were obtained.

The controlling compression and tension axial loads, as well as controlling positive and negative bending in the M2 and M3 directions are shown in Tables 1 and 2.

| M3 (kip-ft) | P (kip) | Load Combination | Controlling |
|---|---|---|---|
| 113.7 | 396.6 | 0.9D+DEx+0.3DEy | Tension |
| -116.3 | -442 | 1.2D+DEx+0.3DEy | Compression, -Moment |
| 116.4 | 393 | 1.2D+DEx+0.3DEy | +Moment |

*Table 1 - Controlling Loads for M3 in Battered Piles*

| M2 (kip-ft) | P (kip) | Load Combination | Controlling |
|---|---|---|---|
| 25.0577 | 396.6 | 0.9D+DEx+0.3DEy | Tension |
| -25.3582 | -442 | 1.2D+DEx+0.3DEy | Compression |
| -40.4572 | -170.753 | 1.2D+DEy+0.3DEx | -Moment |
| 40.6926 | 134.827 | 1.2D+DEy+0.3DEx | +Moment |

*Table 2 - Controlling Loads for M2 in Batter Piles*

$P_{utot\_controlling\_axial\_comp\_bat\_model} := -442\ kip$ per ft

$P_{utot\_controlling\_axial\_ten\_bat\_model} := 396.6\ kip$ per ft

### iv. Summary of Sheet Pile Results from SAP2000 Model

The ultimate factored axial load and moment in the sheet piles for all load combinations shown in part 2 above were obtained.

The controlling compression and tension axial loads, as well as controlling positive and negative bending in the M2 and M3 directions are shown in Tables 3 and 4.

| M3 (kip-ft) | P (kip) | Load Combination | Controlling |
|---|---|---|---|
| -59.4204 | -210.221 | 1.2D+DEy+0.3DEx | Compression |
| 33.5035 | 143.289 | 0.9D+DEy+0.3DEx | Tension |
| 88.2773 | 34.59 | 1.2D+DEx+0.3DEy | +Moment |
| -72.3883 | -98.548 | 1.2D+DEx+0.3DEy | -Moment |

*Table 3 - Controlling Loads for M3 in Sheet Piles*

| M2 (kip-ft) | P (kip) | Load Combination | Controlling |
|---|---|---|---|
| -338.4384 | -210.221 | 1.2D+DEy+0.3DEx | Compression |
| 288.0267 | 143.289 | 0.9D+DEy+0.3DEx | Tension |
| 462.6288 | -13.723 | 1.2D+DEy+0.3DEx | +Moment |
| -442.9291 | -96.629 | 1.2D+0.707DEx+0.707 DEy | -Moment |

*Table 4 - Controlling Loads for M2 in Sheet Piles*

$P_{utot\_controlling\_axial\_comp\_sheet\_model} := -210.2\ kip$ per ft

$P_{utot\_controlling\_axial\_ten\_sheet\_model} := 143.3\ kip$ per ft

## d. Determining Design Loads

The design loads for the Battered Piles are as follows:

$P_{utot\_controlling\_axial\_comp\_overall\_bat} := P_{utot\_controlling\_axial\_comp\_bat\_model} = -442\ \textit{kip}$ per ft

$P_{utot\_controlling\_axial\_ten\_overall\_bat} := P_{utot\_controlling\_axial\_ten\_bat\_model} = 396.6\ \textit{kip}$ per ft

The design loads for the Sheet Piles are as follows:

$P_{utot\_controlling\_axial\_comp\_overall\_sheet} := P_{utot\_controlling\_axial\_comp\_sheet\_model} = -210.2\ \textit{kip}$ per ft

$P_{utot\_controlling\_axial\_ten\_overall\_sheet} := P_{utot\_controlling\_axial\_ten\_sheet\_model} = 143.3\ \textit{kip}$ per ft

## 4. Design of Concrete Battered Pile

Preliminary Pile reinforcing are as shown below:

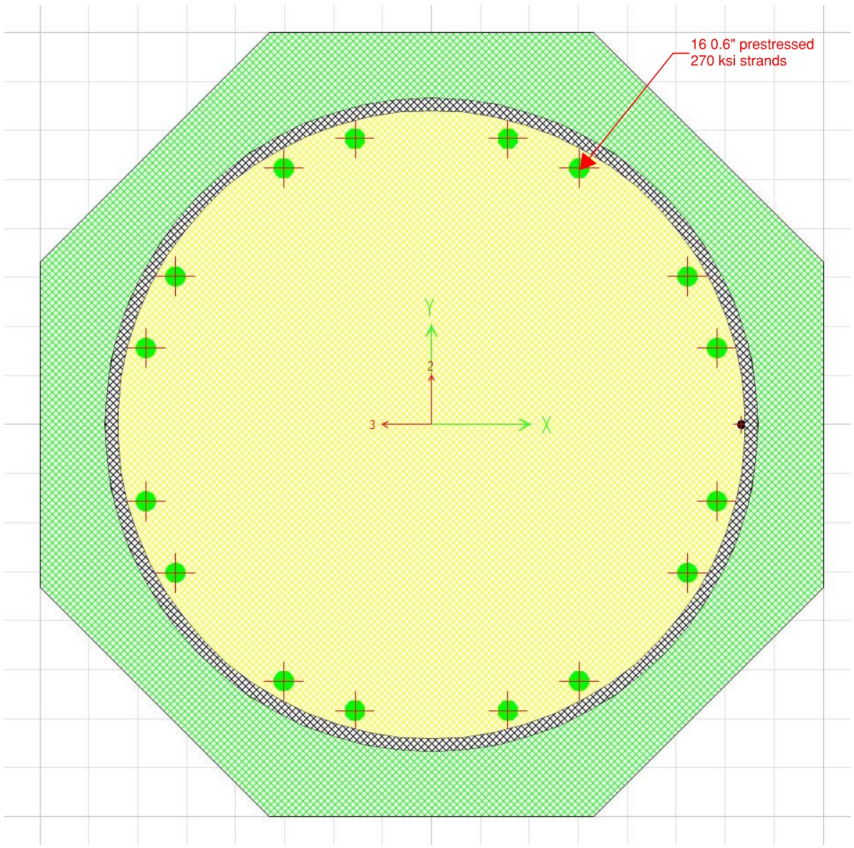



*Figure 3 - Reinforcing design for battered piles*

### a. P-M Diagrams

The Battered Pile's P-M diagram was calculated in SAP2000, for the M3 and M2 directions, and Figures 4 and 5 show them plotted against the controlling demands.

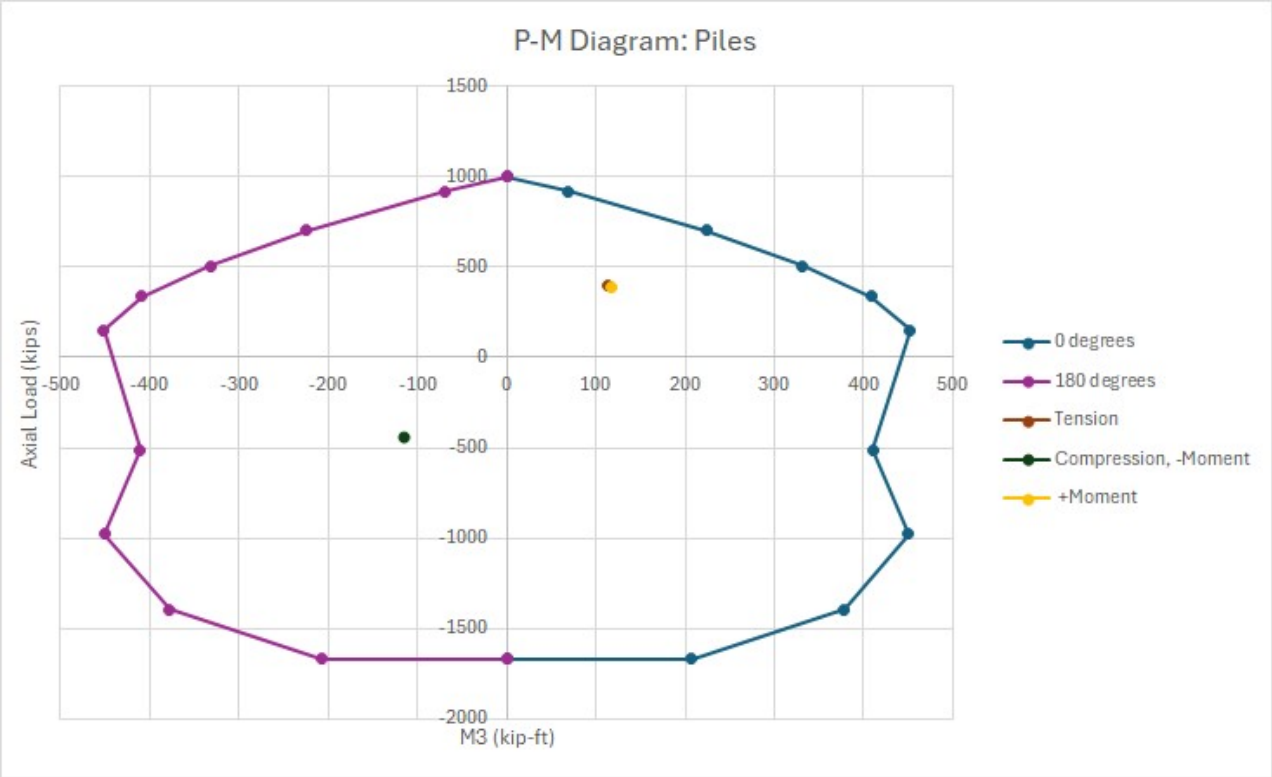



*Figure 4 - P-M3 Diagram for Battered Piles*

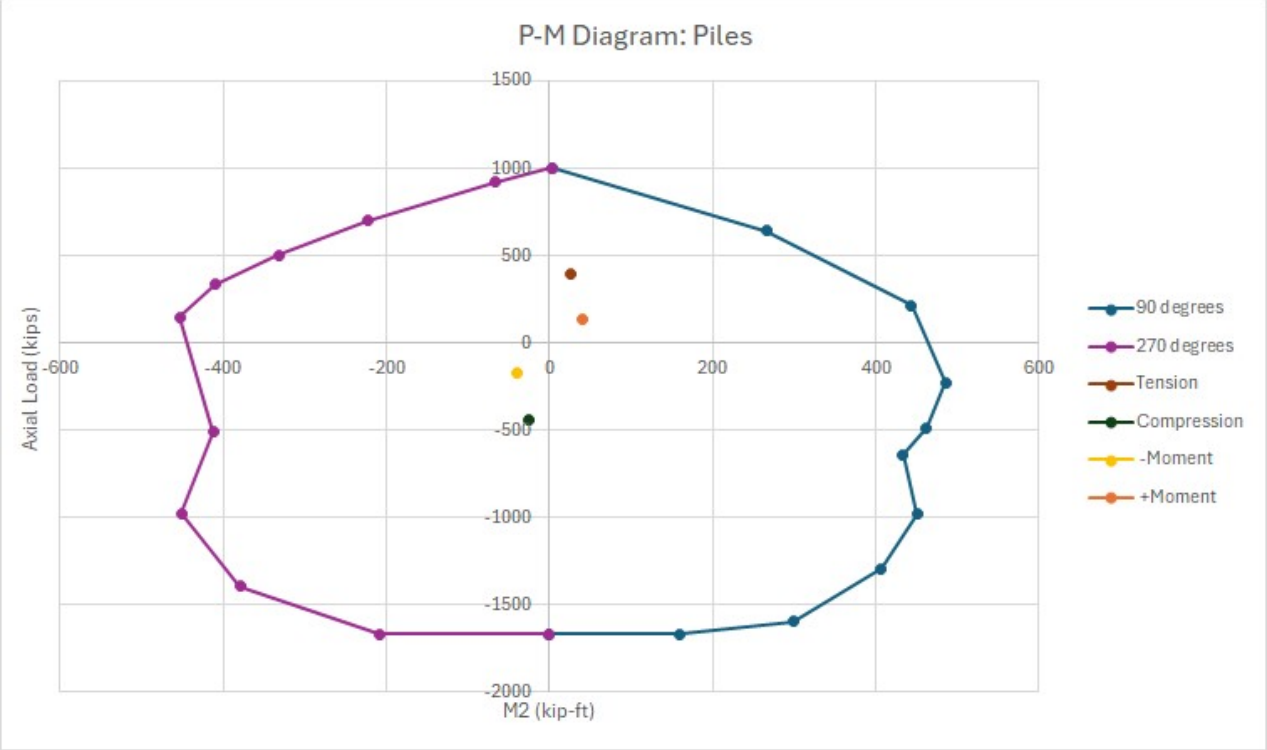



*Figure 5 - P-M2 Diagram for Battered Piles*

Since all the controlling loads are within the borders of the P-M diagrams, we can safely say that the reinforcing design shown in figure 3 is adequate.

### i. Compression Utilization

To ensure the battered pile has enough compression capacity, the utilization factor is calculated

$P_{comp\_capacity} := -1668\ \textbf{\textit{kip}}$ per ft — Compressional axial capacity

$r_{comp\_factor} := 1$ — Compression reduction factor from EnGeo 6.1.1

$P_{comp\_capacity\_r} := P_{comp\_capacity} \cdot r_{comp\_factor} = -1668\ \textbf{\textit{kip}}$ — Reduced compression axial capacity

$$U_{comp\_factor} := \frac{P_{utot\_controlling\_axial\_comp\_overall\_bat}}{P_{comp\_capacity\_r}} = 0.3$$

OK — Compression Utilization Factor

### ii. Tension Utilization

To ensure the battered pile has enough tension capacity, the utilization factor is calculated

$P_{ten\_capacity} := 1000\ \textbf{\textit{kip}}$ per ft — Tension axial capacity

$r_{ten\_factor} := 0.8$ — Tension reduction factor from EnGeo 6.1.1

$P_{ten\_capacity\_r} := P_{ten\_capacity} \cdot r_{ten\_factor} = 800\ \textbf{\textit{kip}}$ — Reduced tension axial capacity

$$U_{ten\_factor} := \frac{P_{utot\_controlling\_axial\_ten\_overall\_bat}}{P_{ten\_capacity\_r}} = 0.5$$

OK — Tension Utilization Factor

## b. Pile Length

The Geotechnical Report provided by Engeo informs the required length of the battered piles.

### i. Compression

Figure 6 shows the depth below the mudline for the piles reduced compression axial capacity.

$$P_{utot\_controlling\_comp\_axial\_reduced} := \frac{P_{utot\_controlling\_axial\_comp\_overall\_bat}}{r_{comp\_factor}} = -442\ kip$$ Axial Capacity used for Design

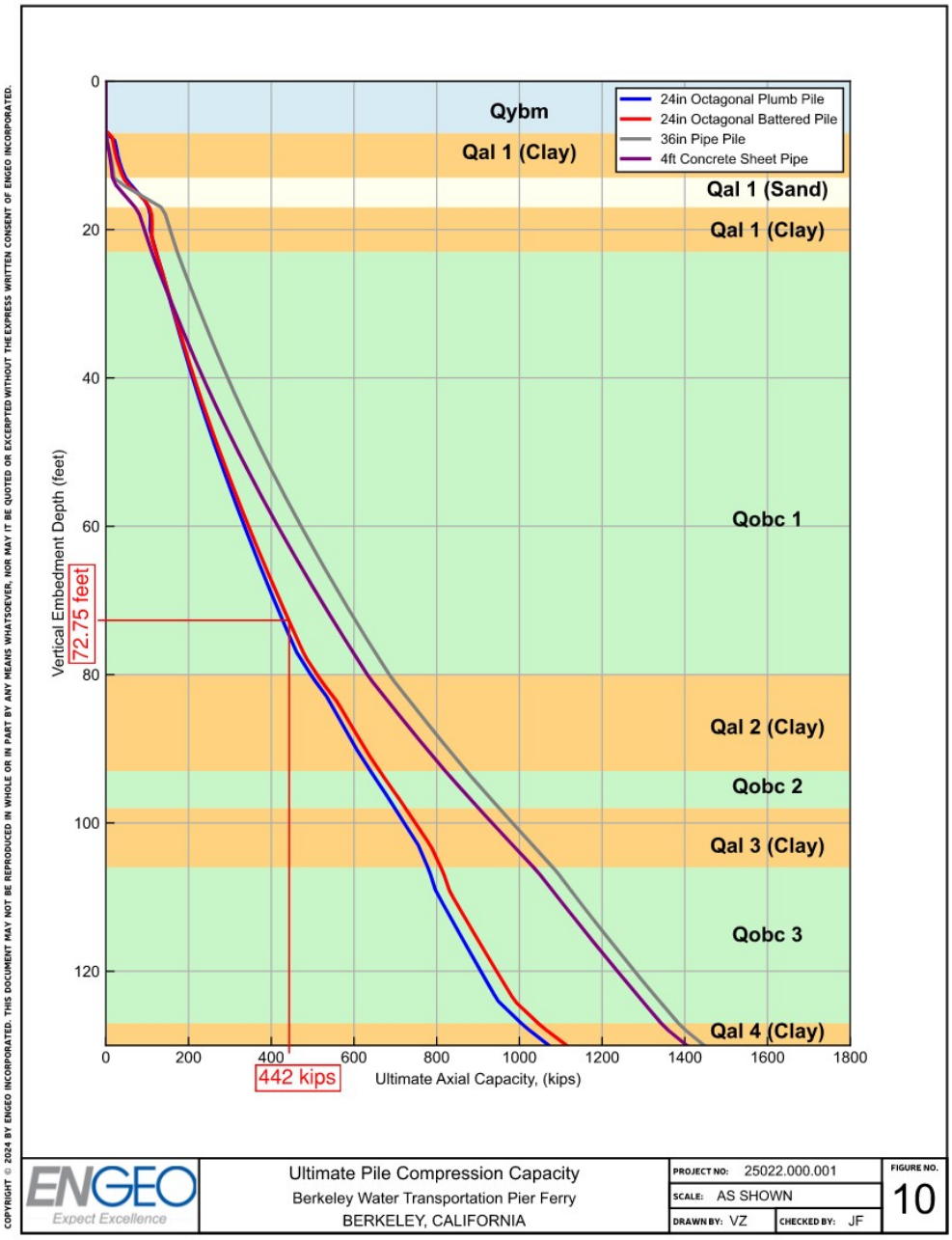



*Figure 6 - Ultimate Pile Compression Capacity*

$$h_{req\_comp} := 72.75\ ft$$ Required height below mudline

**ii. Tension**

Figure 7 shows the depth below the mudline for the piles reduced tension axial capacity.

$$P_{utot\_controlling\_ten\_axial\_reduced} := \frac{P_{utot\_controlling\_axial\_ten\_overall\_bat}}{r_{ten\_factor}} = 495.75\ kip$$

Axial Capacity used for Design

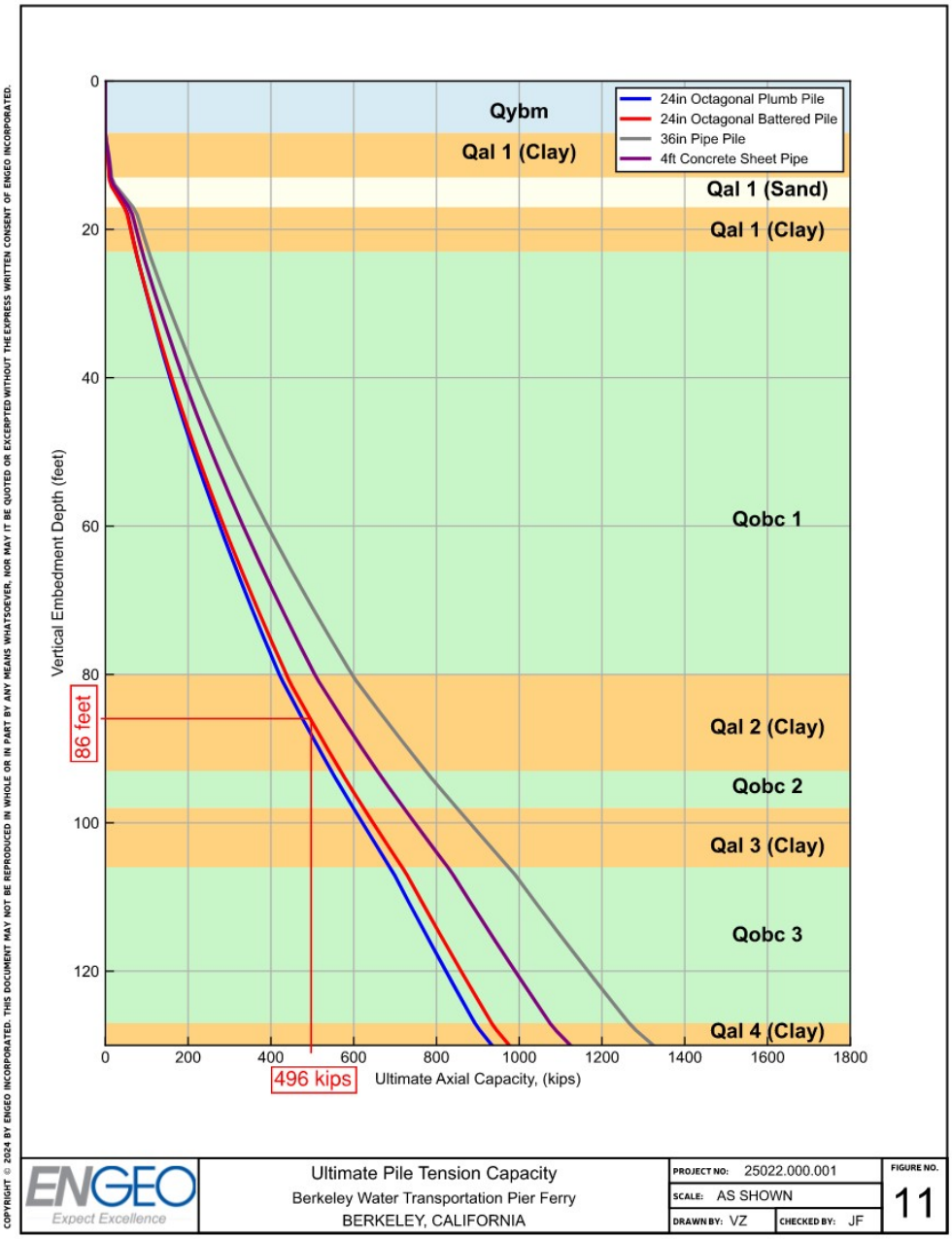



*Figure 7 - Ultimate Pile Tension Capacity*

$$h_{req\_ten} := 86\ ft$$

Required height below mudline

**iii. Design**

$h_{req} := \max\left(h_{req\_comp}, h_{req\_ten}\right) = 86\ ft$

Controlling required height below mudline

$L_{pile\_min} := 1 \cdot \frac{\left(E_{slab} - \frac{h_2}{2} + h_1 + h_{req}\right)}{\sin(\theta)} = 114.2\ ft$

Minimum required length of pile

$L_{pile} := 120\ ft$

Chosen length of pile

if $L_{pile\_min} \le L_{pile}$ = "OK"
  "OK"
else
  "NG"

Therefore, minimum length is satisfied.

$E_{pile} := -\left(\left(\sin(\theta) \cdot L_{pile}\right) - \left(E_{slab} - \frac{h_2}{2}\right)\right) = -97.432\ ft$

Pile Tip Elevation

## 5. Design of Concrete Sheet Pile

Preliminary Pile reinforcing are as shown below:

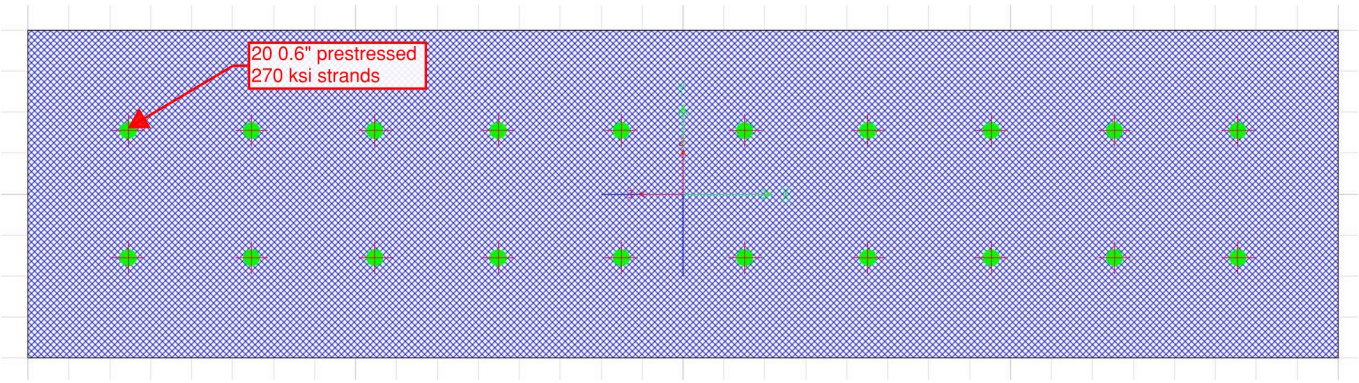



*Figure 8 - Reinforcing design for sheet piles*

### a. P-M Diagrams

The Sheet Pile's P-M diagram was calculated in SAP2000, for the M3 and M2 directions, and Figures 9 and 10 show them plotted against the controlling demands.

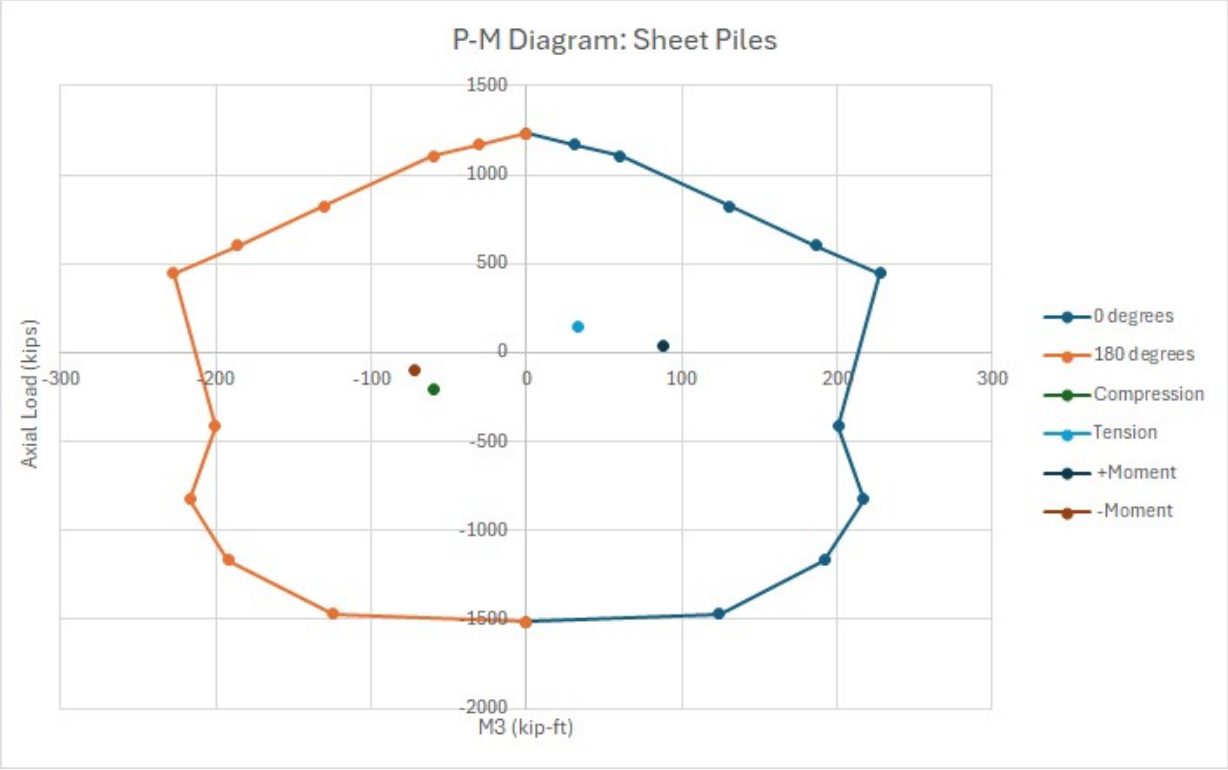



*Figure 9 - P-M3 Diagram for Sheet Piles*

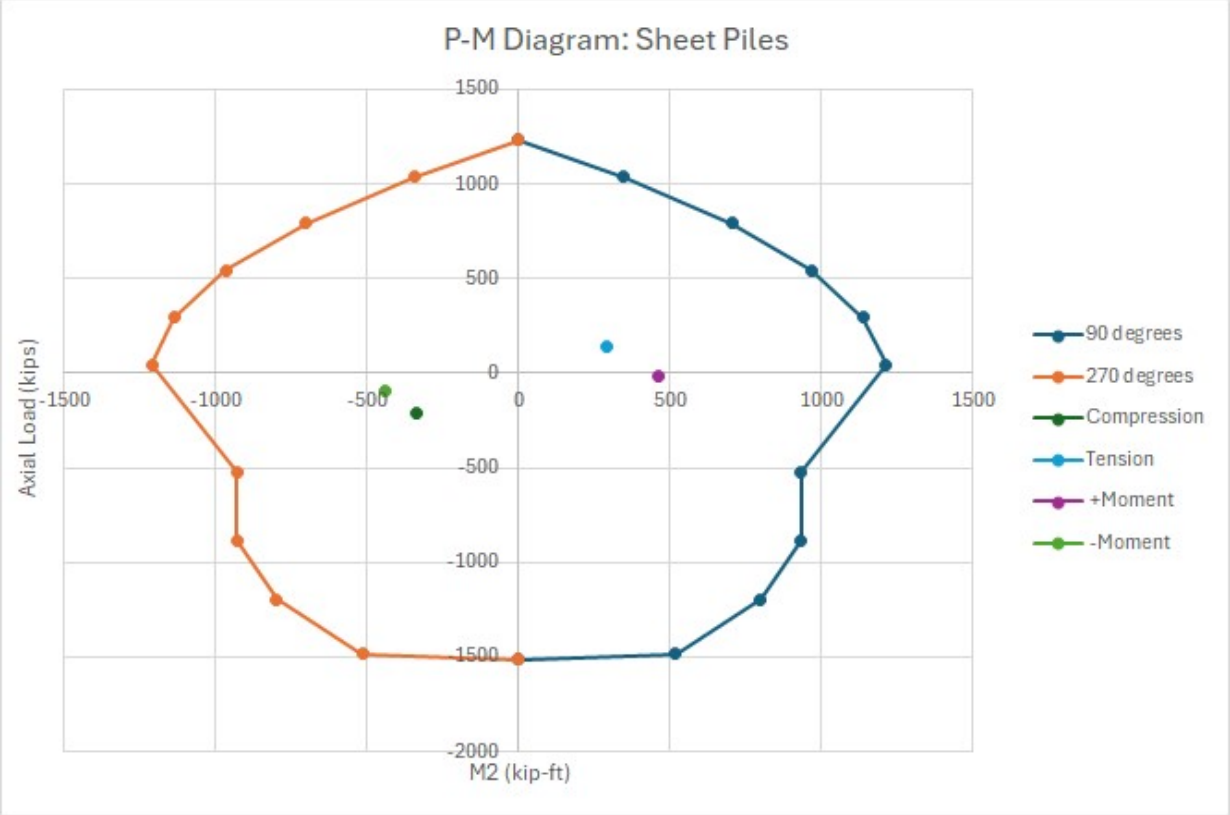



*Figure 10 - P-M2 Diagram for Sheet Piles*

Since all the controlling loads are within the borders of the P-M diagrams, we can safely say that the reinforcing design shown in figure 8 is adequate.

**i. Compression Utilization**

To ensure the sheet pile has enough compression capacity, the utilization factor is calculated

$P_{comp\_capacity} := -1514\ kip$ per ft — Compressional axial capacity

$r_{comp\_factor} := 1$ — Compression reduction factor from EnGeo 6.1.1

$P_{comp\_capacity\_r} := P_{comp\_capacity} \cdot r_{comp\_factor} = -1514\ kip$ — Reduced compression axial capacity

$U_{comp\_factor} := \frac{P_{utot\_controlling\_axial\_comp\_overall\_sheet}}{P_{comp\_capacity\_r}} = 0.1$ OK — Compression Utilization Factor

**ii. Tension Utilization**

To ensure the sheet pile has enough tension capacity, the utilization factor is calculated

$P_{ten\_capacity} := 1235\ kip$ per ft — Tension axial capacity

$r_{ten\_factor} := 0.8$ — Tension reduction factor from EnGeo 6.1.1

$P_{ten\_capacity\_r} := P_{ten\_capacity} \cdot r_{ten\_factor} = 988\ kip$ — Reduced tension axial capacity

$$U_{ten\_factor} := \frac{P_{utot\_controlling\_axial\_ten\_overall\_sheet}}{P_{ten\_capacity\_r}} = 0.1$$ OK Tension Utilization Factor

## b. Pile Length

The Geotechnical Report provided by Engeo informs the required length of the sheet piles.

### i. Compression

Figure 11 shows the depth below the mudline for the piles reduced compression axial capacity.

$$P_{utot\_controlling\_comp\_axial\_reduced} := \frac{P_{utot\_controlling\_axial\_comp\_overall\_sheet}}{r_{comp\_factor}} = -210.2\ kip$$ Axial Capacity used for Design

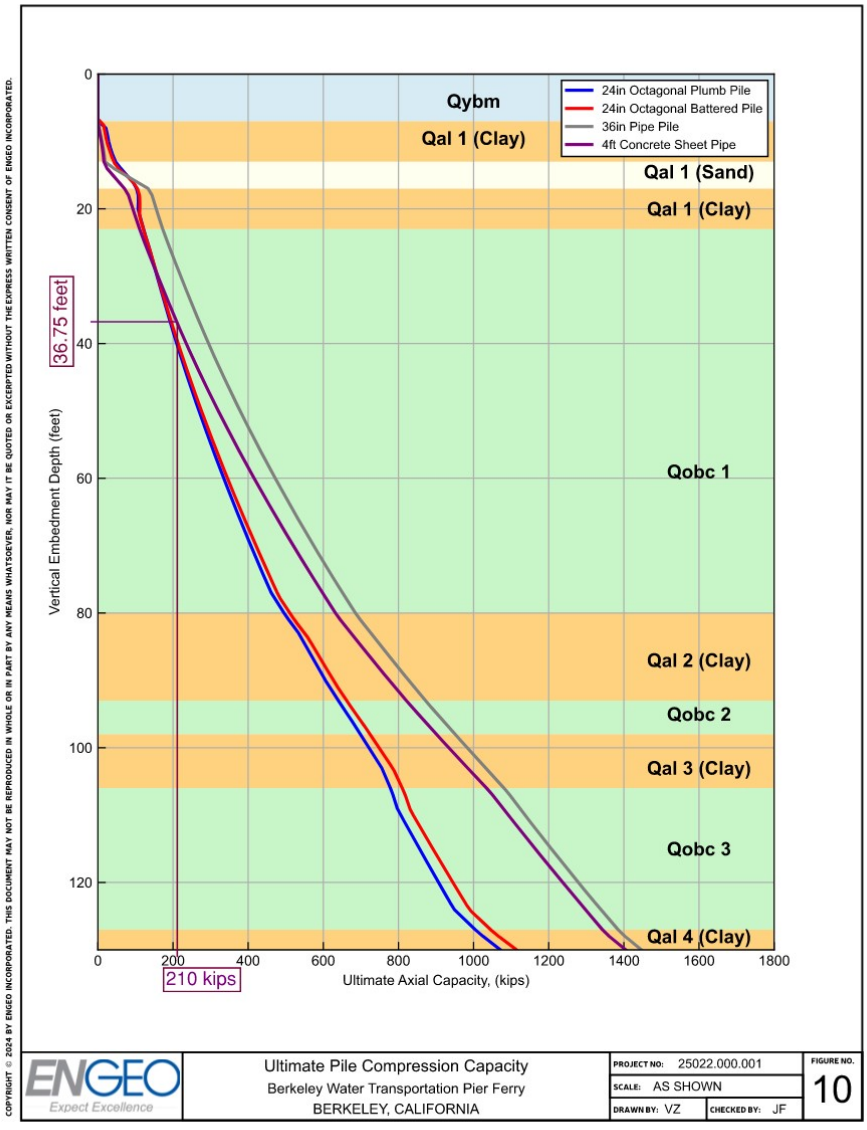



*Figure 11 - Ultimate Pile Compression Capacity*

$h_{req\_comp} := 36.75\ ft$ Required height below mudline

**ii. Tension**

Figure 12 shows the depth below the mudline for the piles reduced tension axial capacity.

$$P_{utot\_controlling\_ten\_axial\_reduced} := \frac{P_{utot\_controlling\_axial\_ten\_overall\_sheet}}{r_{ten\_factor}} = 179.125\ kip$$ Axial Capacity used for Design

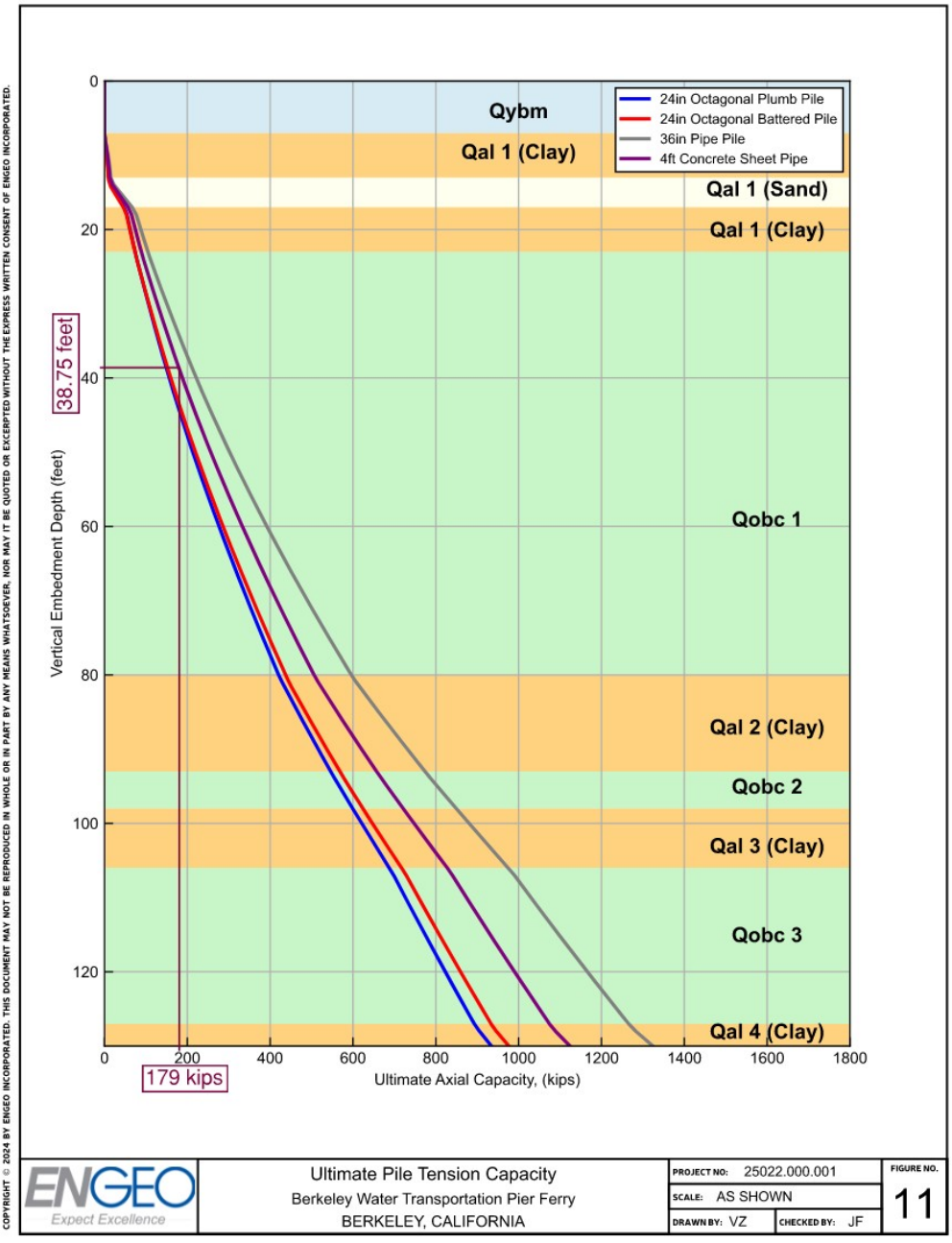



*Figure 12 - Ultimate Pile Tension Capacity*

$h_{req\_ten} := 38.75\ ft$ Required height below mudline

**iii. Design**

$h_{req} := \max\left(h_{req\_comp}, h_{req\_ten}\right) = 38.8\ ft$ Controlling required height below mudline

$L_{pile\_min} := E_{slab} - \frac{h_2}{2} + h_1 + h_{req} = 59.9\ ft$ Minimum required length of pile

$L_{pile} := 65\ ft$ Chosen length of pile

$$\begin{cases} \text{if } L_{pile\_min} \le L_{pile} \\ \quad \text{“OK”} \\ \text{else} \\ \quad \text{“NG”} \end{cases} = \text{“OK”}$$

Therefore, minimum length is satisfied.

$E_{pile} := -\left(L_{pile} - \left(E_{slab} - \frac{h_2}{2}\right)\right) = -49.9\ ft$ Pile Tip Elevation

**END OF CALCULATIONS**

# 5 Canopy Calculations

ALAMEDA COUNTY, CALIFORNIA

**PROJECT # PRWWF 24-002**

SPECICATION # 32400202

Berkeley Water Transportation Pier Ferry Project

# Berkeley Water Transportation Pier Ferry

Canopy Design

ALAMEDA COUNTY, CALIFORNIA

**PROJECT # PRWWF 24-002**

SPECICATION # 32400202

Berkeley Water Transportation Pier Ferry Project

# Berkeley Water Transportation Pier Ferry

## Canopy Design

| | |
|---|---|
| Contract | Berkeley Water Transportation Pier Ferry Project |
| Document no. | Canopy Design Calculations |
| Version | 60% Design |
| Date of issue | |
| Prepared | Adel Beddai |
| Checked | Jacob Shaw |
| Approved | |

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# 1. Introduction

The following design package *Canopy design* contains the calculations for the design of the canopy of the Berkeley Water Transportation Pier Ferry.

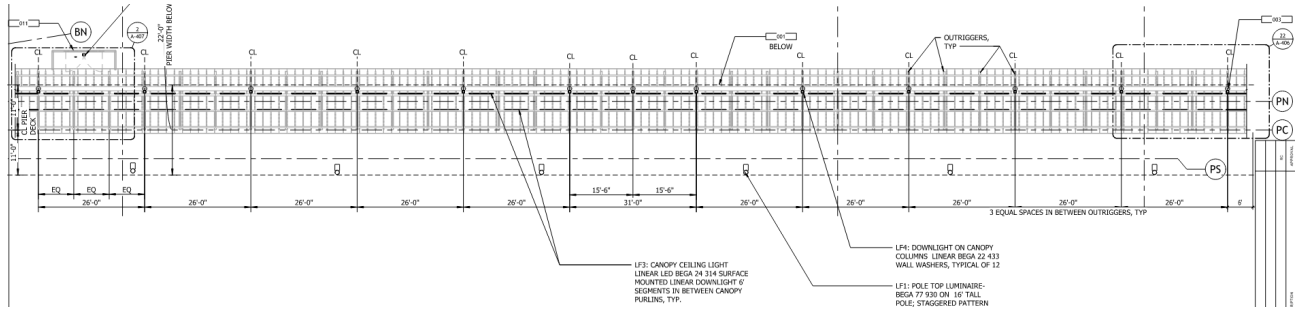



*Figure 1-1: Overall Canopy Ceiling Plan*

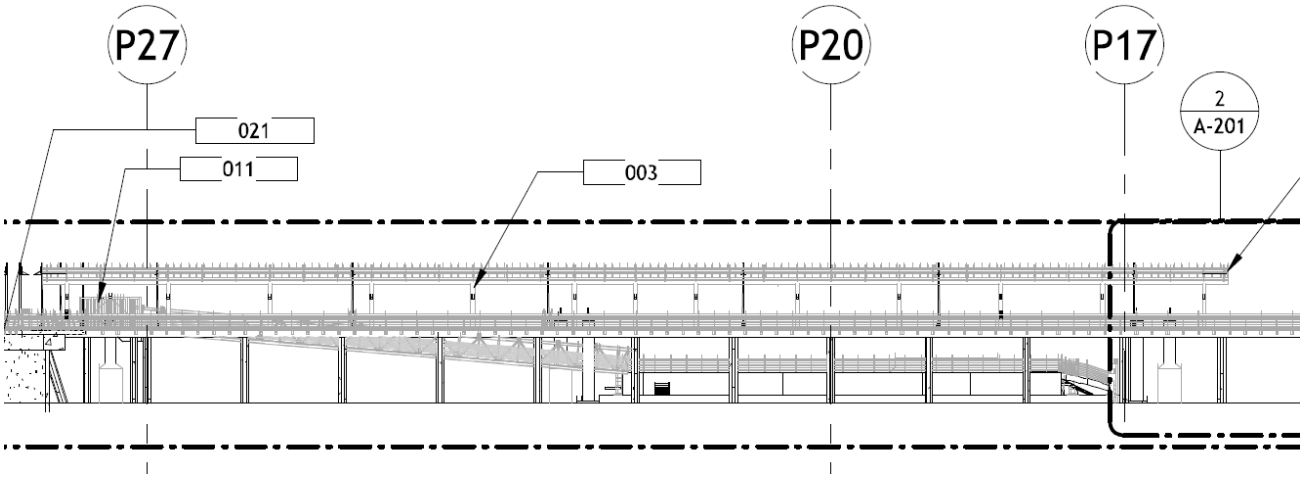



*Figure 1-2: Pier Enlarged South Elevation - Canopy Segment*

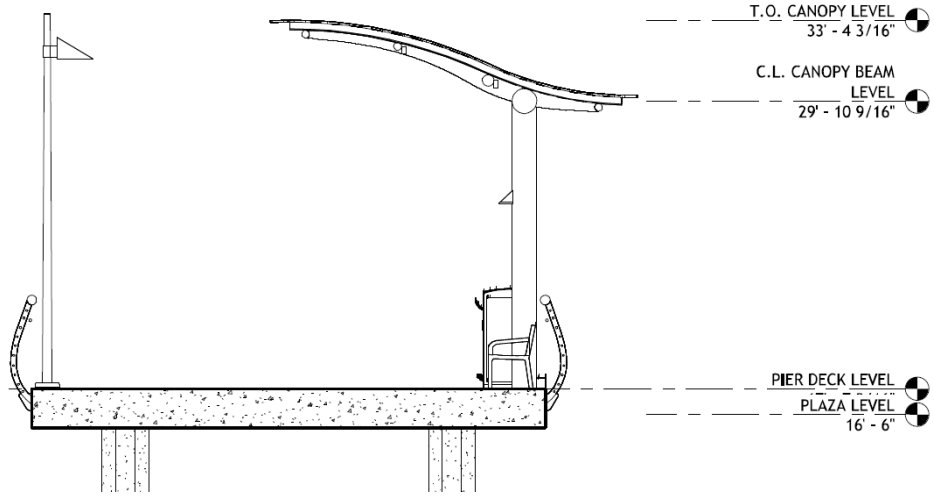



*Figure 1-3: Canopy Cross Section*

### a. Scope of Work

The canopy design calculation includes the following components:

1. Analysis of Gravity and Wind Loads on the Canopy.
2. Design of Canopy members.

### b. Governing Code

California Building Standards Commission, (California Building Code 2016)

### c. References

American Society of Civil Engineers

- ASCE 7-10, Minimum Design Loads for Buildings (Loads & Load Combinations)

American Institute of Steel Construction

- AISC 360-22 (Specification for Structural Steel Buildings) (Steel Design)

The Aluminum Association

- Aluminum Design Manual 2020 (Aluminum Design)

COWI

- Basis of Design (60% Submittal) – Berkeley Water Transportation Pier Ferry Project (Basis of Design)
- Structural Drawings – Berkeley Water Transportation Pier Ferry Project (Drawings)
- Specifications – Berkeley Water Transportation Pier Ferry Project (Specifications)

### d. Design Life

The design life for the project is 50 years. This design life assumes that a regular inspection and maintenance program is implemented to repair damage and deterioration.

### e. Design Summary

The canopy consists of a 7/8” thick x 24” wide translucent cellular polycarbonate panels secured to aluminum curved frame mullions; clear anodized finish; supported by steel frame outriggers, round HSS purlins, beams and columns attached to the pier deck.

#### i. Aluminum Member

| | | |
|---|---|---|
| Material: | Structural Aluminum Tubes: | ASTM B429 6061-T6 (Fty=35 ksi) |
| Geometry: | Mullions: | RT 3 x 2 x 1/4 |

#### ii. Steel Members

| | | |
|---|---|---|
| Material | Structural Steel Shapes: | A992 Gr.50 (Fy=50 ksi) |
| Geometry: | Purlins 1: | HSS 6 x 0.250 |
| | Purlins 2: | HSS 4 x 0.226 |
| | Outriggers: | WT 12 x 51.5 |
| | Beams: | HSS 12.750 x 0.188 |
| | Columns: | HSS 12.750 x 0.500 |

### f. Seismic Performance Criteria

The seismic performance criteria will be defined at a later stage.

### g. Methodology

The canopy is designed for wind and gravity load cases.

The finite element model created using SAP 2000 for the canopy analysis is used to obtain the demands. The development of the model and assumptions in the model are discussed in Appendix B.

## 2. Wind and Gravity Loads

The wind and gravity loads applied on the structure and the SAP2000 model are summarized below. The SAP2000 input for loads is included in Appendix B.

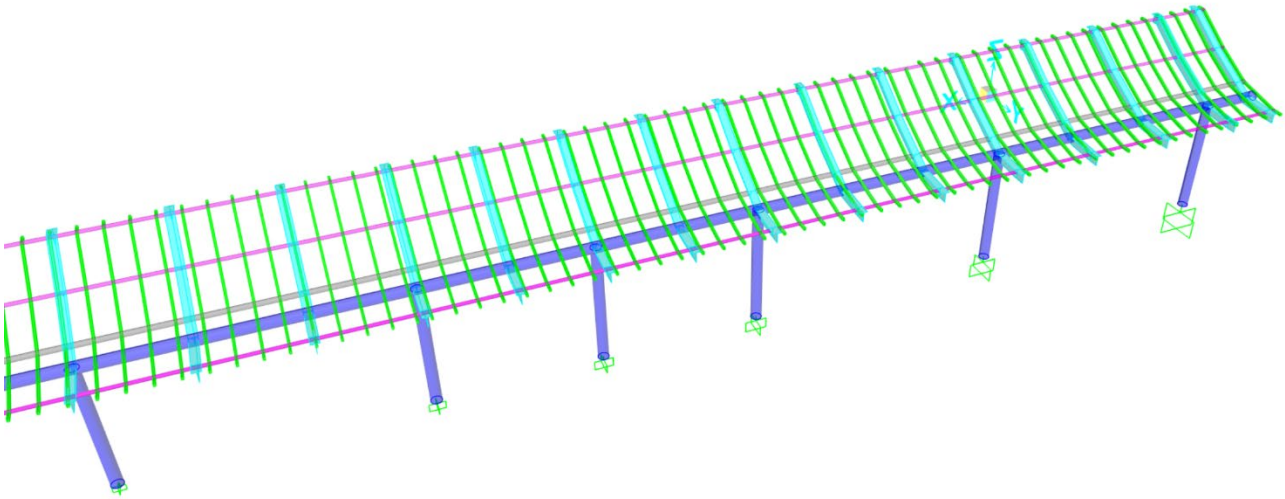


*Figure 2-1: SAP2000 Canopy Finite Element Model*

### a. Dead Loads

The following dead loads are applied to the structure.

Self-weight:

Aluminum: 175 pcf

Steel: 490 pcf

Self-weights are applied automatically to the model by SAP2000.

### b. Live Loads

The following live load is included in the SAP2000 model.

Roof Live Load: 500 lbf (point load to account for maintenance worker)

See Attachment A for detailed calculation of the wind load.

### c. Live Load Patterns

Roof live load is patterned to maximize the internal force demands on the canopy.

### d. Load Combinations

The following wind and gravity load combinations are considered for the design of the canopy (ASCE 7-22):

LRFD:

1.2D+1W

1.2D+1.6Lr

ASD:

D+0.6W

D+0.75Lr

## 3. Canopy Demands

The Canopy LRFD and ASD demands are obtained from the SAP2000 model and summarized in Annex 2.

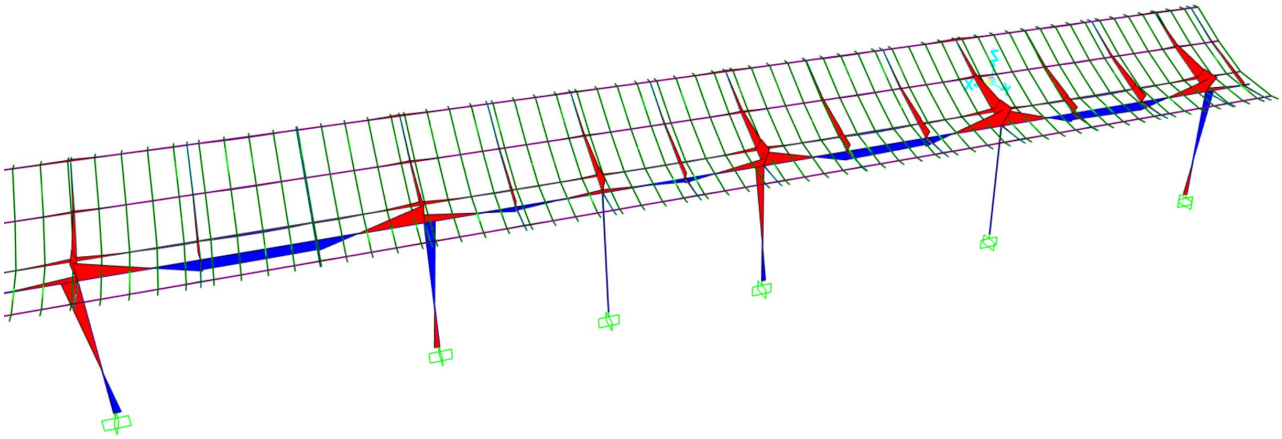


*Figure 3-1: SAP2000 Canopy Demands (Bending Moment About Major Axis Shown)*

## 4. Canopy Evaluation

The canopy is evaluated in accordance with the provisions of AISC 360-22 for steel members and ADM 2020 for aluminum members to ensure that the demands on each member, as well as the combined demands, do not exceed the limits specified in the respective standards.

See Attachment B for detailed evaluation.

# 5. Canopy Connections Design

## 6. Summary and Evaluation

The demands of the canopy members are within the limits specified in ADM 2020 (aluminum member design) and AISC 360-22 (steel members design).

See Attachment B for detailed evaluation results.

# Appendix A: Wind Load Calculation

# Canopy Wind Loads

based on ASCE 7-22 Wind Pressure

This calculations shows the design wind pressures on the gangway canopy MWFRS and CC per ASCE 7-22

## Wind Load parameters (Section 27.2.1 and Section 26)

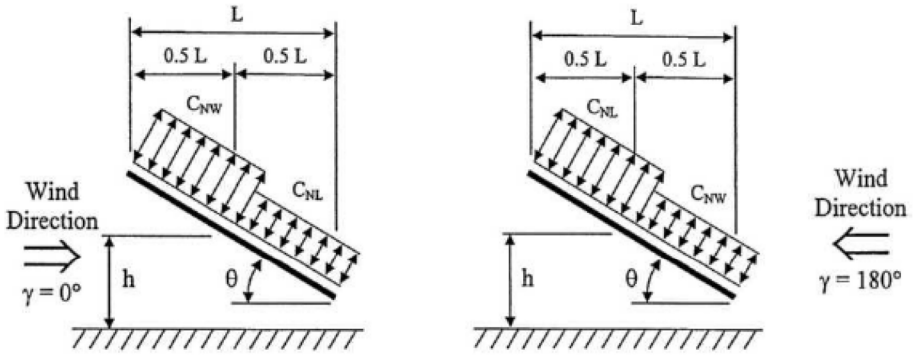
| | | | |
|---|---|---|---|
| Length of column | $L := 11 \cdot ft$ | | *Input* |
| Elevation of Deck | $z_{deck} := 17.6 \cdot ft$ | | *Output* |
| *Elevation* | $z := L + z_{deck} = 28.6\ ft$ | | *Worst – Case* |
| Gable Angle | $\theta := 18.6$ | | |
| Risk Category | $C_{risk} := \text{“IV”}$ | Essential Facility | |
| Basic Wind Speed | $V := 105 \cdot mph$ | Per ASCE 7-22 Section 26.5 | |
| Directionality Factor | $K_d := 0.85$ | per ASCE 7-22 Section 26.6 | |
| Exposure Category | $C_{exp} := \text{“D”}$ | per ASCE 7-22 Section 26.7.3 open with Risk Catagory 4 | |
| Topographic Factor | $K_{zt} := 1.0$ | per ASCE 7-22 Section 26.8 no ridge effects | |
| Elevation Factor | $K_e := 1.0$ | per ASCE 7-22 Section 26.9 assume 1.0 conservative | |
| atmo bound. layer | $z_g := 1935 \cdot ft$ | per ASCE 7-22 Table 26.11-1 | |
| 3s gust power law exp | $\alpha := 11.5$ | per ASCE 7-16 Table 26.11-1 | |
| press. exp. coeff | $K_z := 2.41 \cdot \left(\max\left(z, 15 \cdot ft\right) \div z_g\right)^{2 \div \alpha} = 1.16$ | | per ASCE 7-22 Table 26.10-1 |
| velocity pressure | $q_z := 0.00256 \cdot psf \cdot K_z \cdot K_{zt} \cdot K_d \cdot K_e \cdot \left(V \div mph\right)^2 = 27.78\ psf$ | | per ASCE 7-22 Equation 26.10-1 |
| Gust Effect | $G_f := 1$ | per ASCE 7-22 Section 26.11.5 | |
| Enclosure Condition | *Open* | Per ASCE 7-22 Section 26.12/26.2 | |
| Internal Pressure Coef | $GC_{pi} := 0.0$ | Per ASCE 7-22 Section 26.13/ Table 26.13-1 | |

velocity pressure

$q_h := q_z = 27.78$ *psf*

Gust effect factor

$G_f = 1$




***Notation***

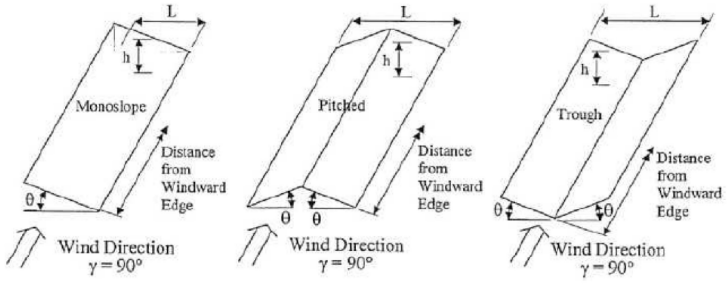
$L$ = Horizontal dimension of roof, measured in the along-wind direction, ft (m).
$h$ = Mean roof height, ft (m).
$\gamma$ = Direction of wind, degrees.
$\theta$ = Angle of plane of roof from horizontal, degrees.

## Open Monoslope Roof Velocity Pressure Wind to Bottom face γ=0 (Table 27.3-4)

| | Angles for Interpolation | | Interpolation of net pressure Coefficient | Net Wind Pressure |
|---|---|---|---|---|
| Windward Pressure A | $C_{Nx} := -0.9$ | $C_{Ny} := -1.5$ | $C_{N1} := C_{Nx} + (C_{Ny} - C_{Nx}) \cdot \frac{(\theta - \theta_x)}{(\theta_y - \theta_x)} = -1.19$ | $p_1 := q_h \cdot G_f \cdot C_{N1} = -33$ *psf* |
| Leeward Pressure A | $C_{Nx} := -1.3$ | $C_{Ny} := -1.6$ | $C_{N2} := C_{Nx} + (C_{Ny} - C_{Nx}) \cdot \frac{(\theta - \theta_x)}{(\theta_y - \theta_x)} = -1.44$ | $p_2 := q_h \cdot G_f \cdot C_{N2} = -40.11$ *psf* |
| Windward Pressure B | $C_{Nx} := -1.9$ | $C_{Ny} := -2.4$ | $C_{N3} := C_{Nx} + (C_{Ny} - C_{Nx}) \cdot \frac{(\theta - \theta_x)}{(\theta_y - \theta_x)} = -2.14$ | $p_3 := q_h \cdot G_f \cdot C_{N3} = -59.45$ *psf* |
| Leeward Pressure B | $C_{Nx} := 0$ | $C_{Ny} := -0.3$ | $C_{N4} := C_{Nx} + (C_{Ny} - C_{Nx}) \cdot \frac{(\theta - \theta_x)}{(\theta_y - \theta_x)} = -0.14$ | $p_4 := q_h \cdot G_f \cdot C_{N4} = -4$ *psf* |

## Open Monoslope Roof Velocity Pressure Wind to top face γ=180 (Table 27.3-4)

| | Angles for Interpolation | | Interpolation of net pressure Coefficient | Net Wind Pressure |
|---|---|---|---|---|
| Windward Pressure A | $C_{Nx} := 1.3$ | $C_{Ny} := 1.7$ | $C_{N5} := C_{Nx} + (C_{Ny} - C_{Nx}) \cdot \frac{(\theta - \theta_x)}{(\theta_y - \theta_x)} = 1.49$ | $p_5 := q_h \cdot G_f \cdot C_{N5} = 41.45$ *psf* |
| Leeward Pressure A | $C_{Nx} := 1.6$ | $C_{Ny} := 1.8$ | $C_{N6} := C_{Nx} + (C_{Ny} - C_{Nx}) \cdot \frac{(\theta - \theta_x)}{(\theta_y - \theta_x)} = 1.7$ | $p_6 := q_h \cdot G_f \cdot C_{N6} = 47.12$ *psf* |
| Windward Pressure B | $C_{Nx} := 1.8$ | $C_{Ny} := 2.2$ | $C_{N7} := C_{Nx} + (C_{Ny} - C_{Nx}) \cdot \frac{(\theta - \theta_x)}{(\theta_y - \theta_x)} = 1.99$ | $p_7 := q_h \cdot G_f \cdot C_{N7} = 55.34$ *psf* |
| Leeward Pressure B | $C_{Nx} := 0.6$ | $C_{Ny} := 0.7$ | $C_{N8} := C_{Nx} + (C_{Ny} - C_{Nx}) \cdot \frac{(\theta - \theta_x)}{(\theta_y - \theta_x)} = 0.65$ | $p_8 := q_h \cdot G_f \cdot C_{N8} = 18$ *psf* |




***Notation***

$L$ = Horizontal dimension of roof, measured in the along-wind direction, ft (m).
$h$ = Mean roof height, ft (m). See Figs. 27.3-4, 27.3-5, or 27.3-6 for a graphical depiction of this dimension.
$\gamma$ = Direction of wind, degrees.
$\theta$ = Angle of plane of roof from horizontal, degrees.

## Open Gable Roof Velocity Pressure (Table 27.3-7)

| | | |
|---|---|---|
| Windward Pressure A, within L<h | $C_{N9} := 0.8$ | $p_9 := q_h \cdot G_f \cdot C_{N9} = 22.22$ **psf** |
| Windward Pressure A, within h<L<2h | $C_{N10} := 0.5$ | $p_{10} := q_h \cdot G_f \cdot C_{N10} = 13.89$ **psf** |
| Windward Pressure A, within 2h<L | $C_{N11} := 0.3$ | $p_{11} := q_h \cdot G_f \cdot C_{N11} = 8.33$ **psf** |
| Windward Pressure B, within L<h | $C_{N12} := -0.8$ | $p_{12} := q_h \cdot G_f \cdot C_{N12} = -22.22$ **psf** |
| Windward Pressure B, within h<L<2h | $C_{N13} := -0.6$ | $p_{13} := q_h \cdot G_f \cdot C_{N13} = -16.67$ **psf** |
| Windward Pressure B, within 2h<L | $C_{N14} := -0.3$ | $p_{14} := q_h \cdot G_f \cdot C_{N14} = -8.33$ **psf** |

## Wind Pressure Parameters Summary

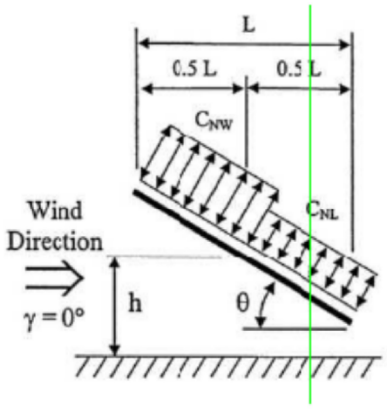
| | | | | |
|---|---|---|---|---|
| $z = 28.6$ ***ft*** | $\theta = 18.6$ | $K_d = 0.85$ | $K_{zt} = 1$ | $z_g = 1935$ ***ft*** |
| $C_{risk} =$ "IV" | $V = 105$ ***mph*** | $C_{exp} =$ "D" | $K_e = 1$ | $\alpha = 11.5$ |

## Velocity Pressure Summary (Section 27.3)

minimum wind pressure of 16psf is applied per Section 27.1.5

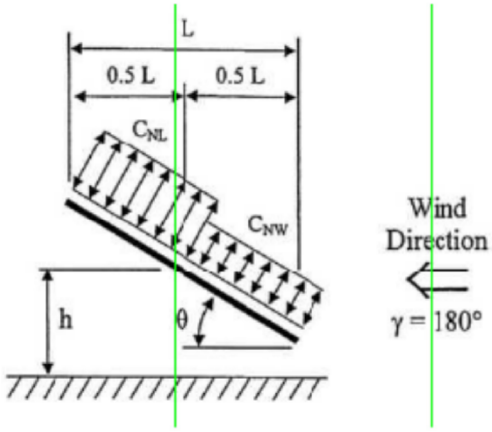
### Monoslope wind under slope

| *CASE* | *A* | *B* |
|---|---|---|
| $C_{NW}$ | $p_1 = -33$ ***psf*** | $p_3 = -59.45$ ***psf*** |
| $C_{NL}$ | $p_2 = -40.11$ ***psf*** | $p_4 = -4$ ***psf*** |



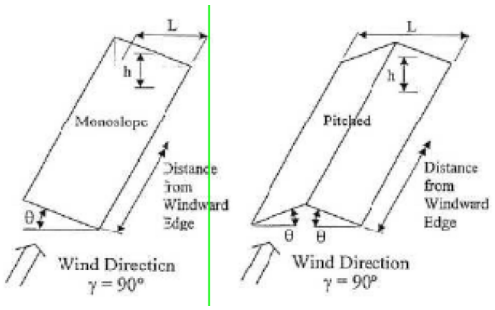

### Monoslope wind above slope

| *CASE* | *A* | *B* |
|---|---|---|
| $C_{NW}$ | $p_5 = 41.45$ ***psf*** | $p_7 = 55.34$ ***psf*** |
| $C_{NL}$ | $p_6 = 47.12$ ***psf*** | $p_8 = 18$ ***psf*** |




### Along Ridge

| *CASE* | *A* | *B* |
|---|---|---|
| L<h | $p_9 = 22.22$ ***psf*** | $p_{12} = -22.22$ ***psf*** |
| h<L<2h | $p_{10} = 13.89$ ***psf*** | $p_{13} = -16.67$ ***psf*** |
| 2h<L | $p_{11} = 8.33$ ***psf*** | $p_{14} = -8.33$ ***psf*** |

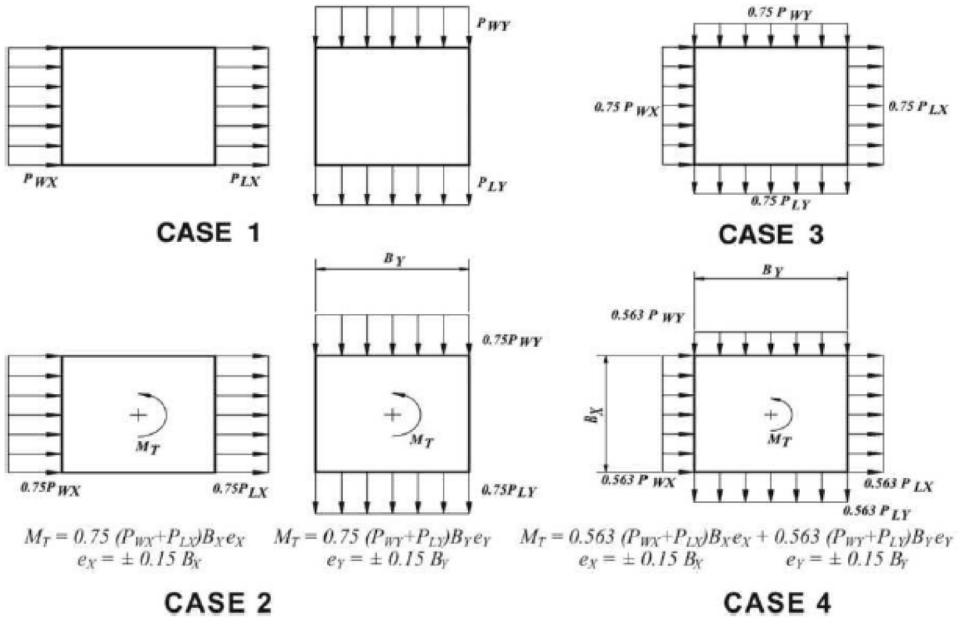


# Appendix

## Load Cases

From Figure 27-3.8, the following load Cases are considered: Case 1 and Case 3. Torsional Load cases (Case 2 and 4) are not considered as exception D.2 from appendix 2 apply (the structure is 1 story and less than 30ft)

***Diagrams***




***Notation***

$P_{WX}$, $P_{WY}$ = Windward face design pressure acting in the $x$, $y$ principal axis, respectively.
$P_{LX}$, $P_{LY}$ = Leeward face design pressure acting in the $x$, $y$ principal axis, respectively.
$e(e_X, e_Y)$ = Eccentricity for the $x$, $y$ principal axis of the structure, respectively.
$M_T$ = Torsional moment per unit height acting about a vertical axis of the building.

**Case 1.** Full design wind pressure acting on the projected area perpendicular to each principal axis of the structure, considered separately along each principal axis.
**Case 2.** Three-quarters of the design wind pressure acting on the projected area perpendicular to each principal axis of the structure in conjunction with a torsional moment as shown, considered separately for each principal axis.
**Case 3.** Wind loading as defined in Case 1, but considered to act simultaneously at 75% of the specified value.
**Case 4.** Wind loading as defined in Case 2, but considered to act simultaneously at 75% of the specified value.

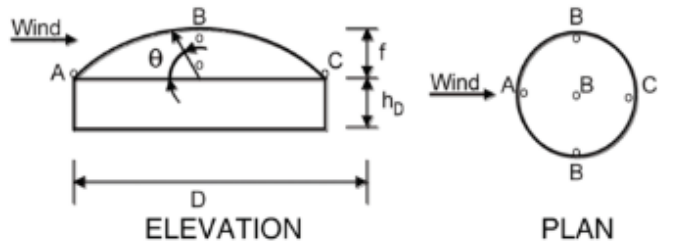
***Notes***

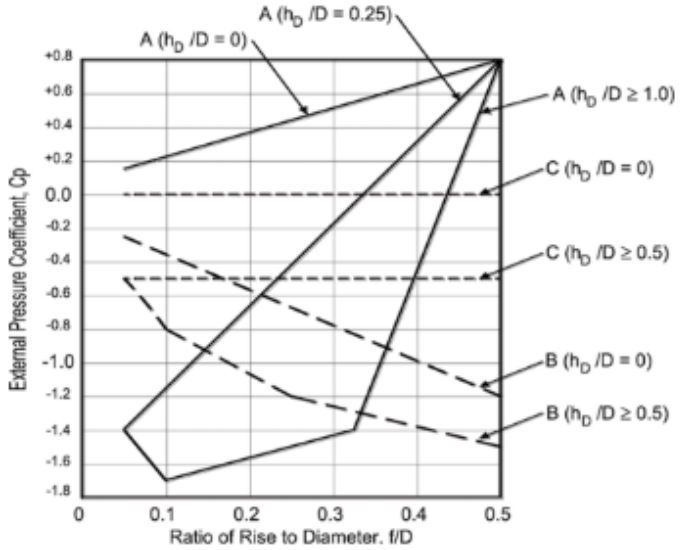
1. Design wind pressures for windward and leeward faces shall be determined in accordance with the provisions of Sections 27.3.1 and 27.3.2 as applicable for buildings of all heights.
2. Diagrams show plan views of buildings.

**FIGURE 27.3-8 Main Wind Force Resisting System, Part 1 (All Heights): Design Wind Load Cases**

***Diagrams***

**External Pressure Coefficients for Domes with Circular Base**




***Notation***

$f$ = Dome rise, ft (m)

$h_D$ = Height to base of dome, ft (m)

$D$ = Diameter, ft (m)

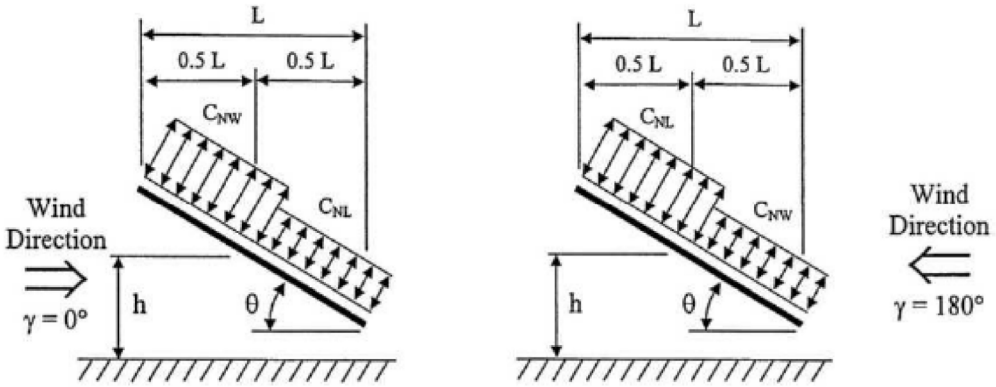
$\theta$ = Angle of plane of roof from horizontal, degrees

***Notes***

1. Two load cases shall be considered:
   Case A: $C_p$ values between $A$ and $B$ and between $B$ and $C$ shall be determined by linear interpolation along arcs on the dome parallel to the wind direction;
   Case B: $C_p$ shall be the constant value of $A$ for $\theta \le 25°$ and shall be determined by linear interpolation from 25 degrees to $B$ and from $B$ to $C$.
2. Values denote $C_p$ to be used with $q_{(h_{D+f})}$, where $h_{D+f}$ is the height at the top of the dome.
3. Plus and minus signs signify pressures acting toward and away from the surfaces, respectively.
4. $C_p$ is constant on the dome surface for arcs of circles perpendicular to the wind direction; for example, the arc passing through $B - B - B$ and all arcs parallel to $B - B - B$
5. For values of $h_D/D$ between those listed on the graph curves, linear interpolation shall be permitted.
6. $\theta = 0$ degrees on dome springline $\theta = 90$ degrees at dome center top point. $f$ is measured from springline to top. ,
7. The total horizontal shear shall not be less than that determined by neglecting wind forces on roof surfaces.
8. For $f/D$ values less than 0.05, use Figure 27.3-1.

**Figure 27.3-2. Main wind force resisting system: external pressure coefficients, $C_p$, for enclosed, partially enclosed, and partially open buildings and structures—domed roofs with a circular base.**

### Diagrams




### Notation

$L$ = Horizontal dimension of roof, measured in the along-wind direction, ft (m).
$h$ = Mean roof height, ft (m).
$\gamma$ = Direction of wind, degrees.
θ = Angle of plane of roof from horizontal, degrees.

### Net Pressure Coefficient, $C_N$

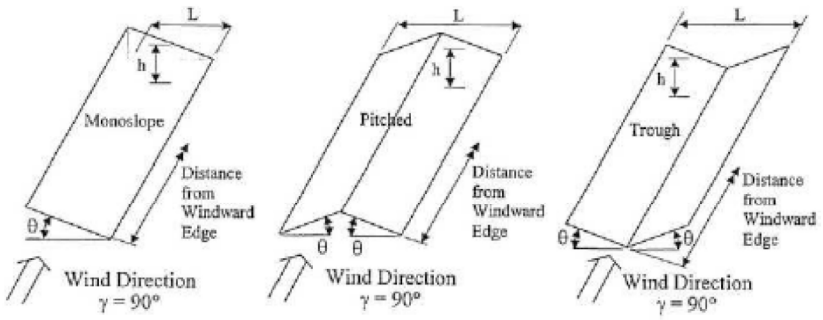
| | | Wind Direction, $\gamma = 0°$ | | | | Wind Direction, $\gamma = 180°$ | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Clear Wind Flow | | Obstructed Wind Flow | | Clear Wind Flow | | Obstructed Wind Flow | |
| Roof Angle, θ | Load Case | $C_{NW}$ | $C_{NL}$ | $C_{NW}$ | $C_{NL}$ | $C_{NW}$ | $C_{NL}$ | $C_{NW}$ | $C_{NL}$ |
| 0° | A | 1.2 | 0.3 | −0.5 | −1.2 | 1.2 | 0.3 | −0.5 | −1.2 |
| | B | −1.1 | −0.1 | −1.1 | −0.6 | −1.1 | −0.1 | −1.1 | −0.6 |
| 7.5° | A | −0.6 | −1.0 | −1.0 | −1.5 | 0.9 | 1.5 | −0.2 | −1.2 |
| | B | −1.4 | 0.0 | −1.7 | −0.8 | 1.6 | 0.3 | 0.8 | −0.3 |
| 15° | A | −0.9 | −1.3 | −1.1 | −1.5 | 1.3 | 1.6 | 0.4 | −1.1 |
| | B | −1.9 | 0.0 | −2.1 | −0.6 | 1.8 | 0.6 | 1.2 | −0.3 |
| 22.5° | A | −1.5 | −1.6 | −1.5 | −1.7 | 1.7 | 1.8 | 0.5 | −1.0 |
| | B | −2.4 | −0.3 | −2.3 | −0.9 | 2.2 | 0.7 | 1.3 | 0.0 |
| 30° | A | −1.8 | −1.8 | −1.5 | −1.8 | 2.1 | 2.1 | 0.6 | −1.0 |
| | B | −2.5 | −0.5 | −2.3 | −1.1 | 2.6 | 1.0 | 1.6 | 0.1 |
| 37.5° | A | −1.8 | −1.8 | −1.5 | −1.8 | 2.1 | 2.2 | 0.7 | −0.9 |
| | B | −2.4 | −0.6 | −2.2 | −1.1 | 2.7 | 1.1 | 1.9 | 0.3 |
| 45° | A | −1.6 | −1.8 | −1.3 | −1.8 | 2.2 | 2.5 | 0.8 | −0.9 |
| | B | −2.3 | −0.7 | −1.9 | −1.2 | 2.6 | 1.4 | 2.1 | 0.4 |

### Notes

1. $C_{NW}$ and $C_{NL}$ denote net pressures (contributions from top and bottom surfaces) for windward and leeward half of roof surfaces, respectively.
2. Clear wind flow denotes relatively unobstructed wind flow with blockage less than or equal to 50%. Obstructed wind flow denotes objects below roof inhibiting wind flow (>50% blockage).
3. For values of θ between 7.5° and 45°, linear interpolation is permitted. For values of θ less than 7.5°, use load coefficients for 0°.
4. Plus and minus signs signify pressures acting toward and away from the top roof surface, respectively.
5. All load cases shown for each roof angle shall be investigated.

**FIGURE 27.3-4 Main Wind Force Resisting System, Part 1 ($0.25 \le h/L \le 1.0$): Net Pressure Coefficient, $C_N$, for Open Buildings with Monoslope Free Roofs, $\theta \le 45°$, $\gamma = 0°$, 180°)**

### Diagrams




### Notation

$L$ = Horizontal dimension of roof, measured in the along-wind direction, ft (m).
$h$ = Mean roof height, ft (m). See Figs. 27.3-4, 27.3-5, or 27.3-6 for a graphical depiction of this dimension.
$\gamma$ = Direction of wind, degrees.
$\theta$ = Angle of plane of roof from horizontal, degrees.

### Net Pressure Coefficient, $C_N$

| Horizontal Distance from Windward Edge | Roof Angle θ | Load Case | Clear Wind Flow $C_N$ | Obstructed Wind Flow $C_N$ |
|---|---|---|---|---|
| $<h$ | All shapes | A | −0.8 | −1.2 |
| | θ < 45° | B | 0.8 | 0.5 |
| $>h, <2h$ | All shapes | A | −0.6 | −0.9 |
| | θ < 45° | B | 0.5 | 0.5 |
| $>2h$ | All shapes | A | −0.3 | −0.6 |
| | θ < 45° | B | 0.3 | 0.3 |

### Notes

1. $C_N$ denotes net pressures (contributions from top and bottom surfaces).
2. Clear wind flow denotes relatively unobstructed wind flow with blockage less than or equal to 50%. Obstructed wind flow denotes objects below roof inhibiting wind flow (>50% blockage).
3. Plus and minus signs signify pressures acting toward and away from the top roof surface, respectively.
4. All load cases shown for each roof angle shall be investigated.
5. For monoslope roofs with θ less than 5 degrees, $C_N$ values shown apply also for cases where $\gamma = 0$ degrees and 0.05 less than or equal to $h/L$ less than or equal to 0.25. See Fig. 27.3-4 for other $h/L$ values.

**FIGURE 27.3-7 Main Wind Force Resisting System, Part 1 ($0.25 \le h/L \le 1.0$): Net Pressure Coefficient, $C_N$, for Open Buildings with Free Roofs, $\theta \le 45°$, $\gamma = 90°, 270°$**

# Appendix B: Canopy Design Calculation

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| | | | |
|---|---|---|---|
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| CHECKED BY | | DATE | |

**Legend**

| |
|---|
| Inputs |
| Dependent |
| Outputs |

*Comments / Notes*

**Canopy Properties**

**Elevations**

| | | | |
|---|---|---|---|
| $N_C$ | 211.19 | [in] | *pier deck level* |
| $N_C$ | 358.56 | [in] | *C.L. canopy beam level* |
| $N_C$ | 400.19 | [in] | *T.O. canopy level* |
| | 38.13 | [in] | *canopy heigh (top of northend to top of south end panel)* |
| | 17.00 | [in] | *canopy heigh (top of northend to top of south end panel)* |

**HSS Column**

| | | | |
|---|---|---|---|
| | 141.00 | [in] | *clearance: from T.O. deck to B.O. beam* |
| $H_C$ | 147.38 | [in] | *column height (T.O. deck to C.L. of beam)* |
| $OD_{CO}$ | 12.50 | [in] | *column outside diameter* |
| $N_C$ | 13 | [] | *number of columns* |
| $S_{C5*2}$ | 312.00 | [in] | *column spacing for 5 1st spans (excluding end cantilever)* |
| $S_{C5*2}$ | 186.00 | [in] | *column spacing for 2 center spans* |

Shape section from AISC 325

| | | | |
|---|---|---|---|
| shape | HSS12.750X0.500 | | |
| W | 65.48 | [lb/ft] | *nominal weight* |
| A | 17.90 | [$in^2$] | *area* |
| OD | 12.80 | [in] | *outside diameter* |
| $t_{des}$ | 0.465 | [in] | *design thickness* |

**HSS beam**

| | | | |
|---|---|---|---|
| $L_T$ | 3638.25 | [in] | *beam Length (continuous)* |
| $D_{BO}$ | 12.50 | [in] | *beam outside diameter* |
| $L_T$ | 72.00 | [in] | *end longitudinal cantilever length* |

Shape section from AISC 325

| | | | |
|---|---|---|---|
| shape | HSS12.750X0.188 | | |
| W | 25.18 | [lb/ft] | *nominal weight* |
| A | 6.89 | [$in^2$] | *area* |
| OD | 12.80 | [in] | *outside diameter* |
| $t_{des}$ | 0.174 | [in] | *design thickness* |

WT-Shape outrigger **Modified**

2 outriggers per span + the ones at the columns. Only 1 outrigger for the 2 center spans.

| | | | |
|---|---|---|---|
| $b_f$ | 5.00 | [in] | *flange width of WT-shape* |
| $S_{O5*2}$ | 61.00 | [in] | *cantilever outrigger spacing (column outrigger with end outrigger)* |
| $S_{O5*2}$ | 104.00 | [in] | *outrigger spacing for 5 1st spans (excluding end cantilever)* |
| $S_{O1*2}$ | 93.00 | [in] | *outrigger spacing for 2 center spans* |

max web depth (at beam)

| | | | |
|---|---|---|---|
| shape | WT12X51.5 | | |
| W | 51.50 | [lb/ft] | *nominal weight* |
| $b_f$ | 9.00 | [in] | *width of flange* |
| tf | 0.98 | [in] | *thickness of flange* |
| d | 12.30 | [in] | *overall depth of member* |
| $t_w$ | 0.55 | [in] | *thickness of web* |

min web depth (at north and south purlins)

| | | | |
|---|---|---|---|
| | 4.92 | [in] | *target depth to maintain the original 2.5 ratio between max and min depth* |
| shape | WT5X27 | | |
| W | 27.00 | [lb/ft] | *nominal weight* |
| $b_f$ | 10.00 | [in] | *width of flange* |
| tf | 0.62 | [in] | *thickness of flange* |
| d | 5.05 | [in] | *overall depth of member* |
| $t_w$ | 0.37 | [in] | *thickness of web* |

*The width of the WT5×27 shape differs from that of the WT12×51.5 shape. However, the approximation remains conservative given the smaller web and flange thicknesses.*

HSS Purlin

| | | | |
|---|---|---|---|
| $D_{P1}$ | 6.00 | [in] | *outside diamerter of closest purlin to beam (2nd from the south)* |

Shape section from AISC 325

| | | | |
|---|---|---|---|
| shape | HSS6.000X0.250 | | |
| W | 15.37 | [lb/ft] | *nominal weight* |
| A | 4.22 | [$in^2$] | *area* |
| OD | 6.00 | [in] | *outside diameter* |
| $t_{des}$ | 0.233 | [in] | *design thickness* |

| | | | |
|---|---|---|---|
| $D_{P2}$ | 4.00 | [in] | *outside diamerter of remaining 3 purlins* |

Shape section from AISC 325

| | | | |
|---|---|---|---|
| shape | HSS4.000X0.226 | | |
| W | 9.12 | [lb/ft] | *nominal weight* |
| A | 2.50 | [$in^2$] | *area* |
| OD | 4.00 | [in] | *outside diameter* |
| $t_{des}$ | 0.21 | [in] | *design thickness* |

Aluminum mullion (rectangle) - HSS

| | | | |
|---|---|---|---|
| $W_M$ | 2 | [in] | *width of mullion* |
| $D_M$ | 3.5 | | *depth of mullion* |

Shape section from Aluminum Design Manuel

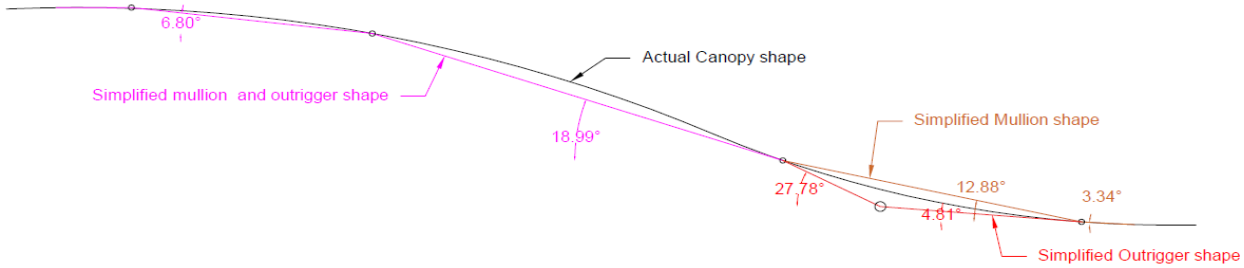
| | | | |
|---|---|---|---|
| shape | RT 3 x 2 x 1/4 | | |
| W | 2.65 | [lb/ft] | *nominal weight* |
| A | 2.25 | [$in^2$] | *area* |
| d | 3.00 | [in] | *depth of mullion* |
| b | 2.00 | [in] | *width of mullion* |
| t | 0.25 | [in] | *thickness* |

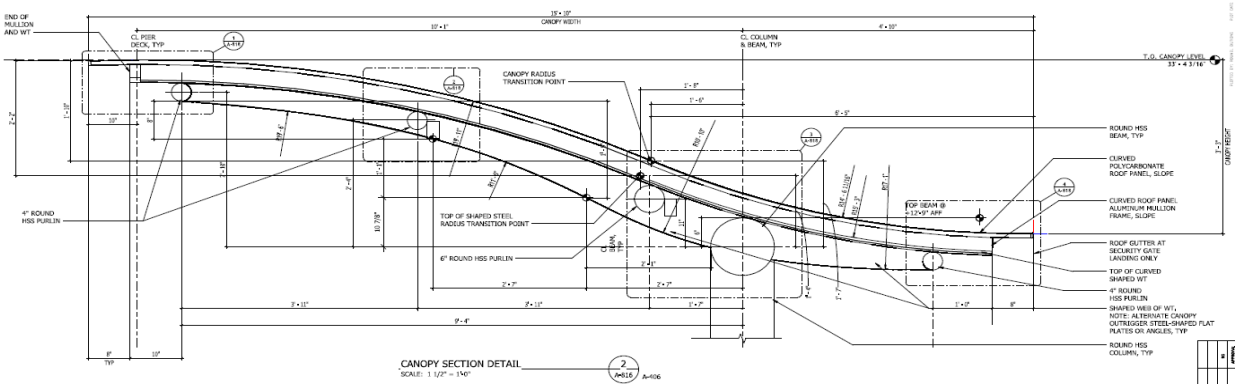
| | | | |
|---|---|---|---|
| $S_{C5*2}$ | 23.50 | [in] | *mullion spacing* |

## Curved Roof Panel

| | | | |
|---|---|---|---|
| $L_T$ | 3638.25 | [in] | *roof panels total length* |
| $W_T$ | 190.00 | [in] | *roof panel projected width* |
| $Th_{RP}$ | 0.875 | [in] | *thickness of roof panels* |
| $L_{RP}$ & $W_{RP}$ | 24.00 | [in] | *length and width of each panel* |

| | | |
|---|---|---|
| 8.00 | [in] | *projected length of north cantilever portion of panel, past mullion* |
| 8.00 | [in] | *projected length of south cantilever portion of panel, past mullion* |
| 174.00 | [in] | *projected length of mullion* |



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| **PROJECT** | BWTPF Project | CONT | |
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| CALCULATIONS BY | AEAL | DATE | 1-Dec-25 |
| CHECKED BY | | DATE | |

**Legend**

| |
|---|
| Inputs |
| Dependent |
| Outputs |

*Comments / Notes*

**Loads**

| | | | | |
|---|---|---|---|---|
| DL | - | [lbf] | *roof panels load* | not considered |
| Lr | 500 | [lbf] | *roof live load (point load) to account for maintenance worker, vertically applied* | |
| WL | 60 | [psf] | *wind load "acts perpendicularly to the canopy surface"* | |
| | 23.50 | [in] | *mullions tributary width* | |
| | 11.75 | [in] | *end mullions tributary width* | |
| | 9.79 | [lbf/in] | *wind line load on mullions, except end mullions* | |
| | 4.90 | [lbf/in] | *wind line load on end mullions* | |

**Load combinations**

| | | |
|---|---|---|
| LRFD | Strength design | 4a. 1.2D+1W and 3a.1.2D+1.6Lr |
| ASD | Allowable stress design | 5a. D+0.6W and 6.a D+0.75Lr |

**SAP2000 Model**

- Only extremity bays, center bays (2), and intermediate bays were modeled because, the other spans are identical.

- The spacing between the two mullions at 5th pier is 14" inch and is wrong. The correct spacing is 23.5" but it wasn't corrected as its effects are limited and easily identifiable, and correcting it would require changing the spacing of all mullions. The demands at that location are higher and were ignored.
- All connections are considered to be fixed including mullion-purlin connection.
- Roof panels load has not been provided and was not considered as it is assumed to not be impactful compared to other loads.

- The Lr (maintenace load) is alternatively applied at the north end of the 1st mullion, between the north ends of the 2nd and 3rd mullions, and along the 2nd purlin from the north, to produce the highest demands.

COWI

| | | | |
|---|---|---|---|
| PROJECT | BWTPF Project | CONT | |
| SUBJECT | Canopy Design | PAGE | |
| CALCULATIONS BY | AEAL | DATE | 1-Dec-25 |
| CHECKED BY | | DATE | |

**Legend**

| |
|---|
| Inputs |
| Dependent |
| Outputs |

*Comments / Notes*

Aluminum mullion (rectangle) Alloy 6061-T6

**Aluminum Resistance factors**

| | | | |
|---|---|---|---|
| $\Phi_T = \Phi b = \Phi v$ | 0.75 | [] | *design strength factor for rupture limit state* |
| $\Omega_T = \Omega b = \Omega v$ | 1.95 | [] | *allowable strength factor for rupture limit state* |
| $\Phi_c = \Phi b = \Phi v$ | 0.90 | [] | *design strength for other limit states* |
| $\Omega_c = \Omega b = \Omega v$ | 1.65 | [] | *allowable strength factor for other limit states* |

**Geometry and material properties**

| | | | |
|---|---|---|---|
| shape | RT 3 x 2 x 1/4 | | |
| W | 2.65 | [lb/ft] | *nominal weight* |
| $A_g$ | 2.25 | [$in^2$] | *cross-sectional area* |
| d | 3.00 | [in] | *depth of mullion* |
| bm | 2.00 | [in] | *width of mullion* |
| t | 0.25 | [in] | *thickness of the HSS* |
| $W_d$ | 2.50 | [in] | *clear height of the web* |
| $S_{C5*2}$ | 23.50 | [in] | *mullion spacing* |
| C | 2.23 | [$in^3$] | *HSS torsional shear constant* |
| $C_w$ | 2.52 | [$in^6$] | *warping constant* |
| J | 2.57 | [$in^4$] | *torsion constant* |
| $Z_x$ | 2.16 | [$in^3$] | *plastic section modulus* |
| $S_x$ | 1.70 | [$in^3$] | *elastic section modulus* |
| $L_z$ | 23.50 | [in] | *unbraced length for twisting* |
| $K_z$ | 1.00 | [] | *effective length factor for torsional buckling* |
| $I_x$ | 2.55 | [$in^4$] | *moment of inertia about x* |
| $I_y$ | 1.06 | [$in^4$] | *moment of inertia about y* |
| $r_y$ | 0.76 | [in] | *radius of gyration (chose ry as it's lower)* |
| $A_{web}$ | 0.63 | [$in^2$] | *net area of web (1 leg)* |
| $A_{wz}$ | 0.50 | [$in^2$] | *area of weld-affected zone (approximation)* |
| E | 10100 | [ksi] | *modulus of elasticity* |
| G | 3800.00 | [ksi] | *shear modulus of elasticity* |

**Rectangular Aluminum HSS Subjected to Torsion, Flexure, Shear and Compression**

### H.3.2 Curved Elements

Stresses in curved elements subject to torsion, flexure, shear, and/or axial compression shall satisfy the following:

$$f_c/(\phi F_c) + f_b/(\phi F_b) + [f_s/(\phi F_s)]^2 \le 1.0 \qquad \text{(H.3-2 LRFD)}$$

$$f_c/(F_c/\Omega) + f_b/(F_b/\Omega) + [f_s/(F_s/\Omega)]^2 \le 1.0 \qquad \text{(H.3-2 ASD)}$$

where

$f_c$ = compressive stress due to axial compression
$f_b$ = compressive stress due to flexure
$f_s$ = shear stress due to shear and torsion
$F_c$ = axial compressive stress corresponding to the nominal axial compressive strength
$F_b$ = flexural compressive stress corresponding to the nominal flexural compressive strength
$F_s$ = shear stress corresponding to the nominal shear strength

### Axial Compressive Strength

| | | | |
|---|---|---|---|
| b/t | 10 | [] | *slenderness* |
| $F_{co} / \Omega_T$ | 21.2 | [ksi] | *allowable compressive strength stress, if no parts of the cross section were weld-affected* |
| $F_{co}$ | 35.0 | [ksi] | *stress, if no parts of the cross section were weld-affected* |
| $F_{cw} / \Omega_T$ | 9.4 | [ksi] | *allowable compressive strength stress, if the entire cross section were weld-affected* |
| $F_{cw}$ | 15.5 | [ksi] | *stress, if no parts of the cross section were weld-affected* |
| | | | For welded elements: $F_c = F_{co}(1 - A_{wc}/A_g) + F_{cw} A_{wc}/A_g$ (B.5-4) |
| $F_c$ | 30.7 | [ksi] | *nominal stress corresponding to the uniform compressive strength* |
| $\Phi_T F_c$ | **27.6** | [ksi] | *design stress corresponding to the uniform compressive strength* |
| $F_c / \Omega_T$ | **18.6** | [ksi] | *allowable stress corresponding to the uniform compressive strength* |

### Flexural Strength

| | | | |
|---|---|---|---|
| b/t | 10 | [] | *slenderness* |
| $A_{gc}$ | 1.13 | [$in^2$] | *cross-sectional area of the element in compression* |
| $F_{bo} / \Omega_T$ | 31.8 | [ksi] | *allowable flexural compressive stress, if no parts of cross section were weld-affected* |
| $F_{bo}$ | 52.5 | [ksi] | *stress, if no parts of the cross section were weld-affected* |
| $F_{bw} / \Omega_T$ | 13.6 | [ksi] | *allowable compressive strength stress,if entire cross section were weld-affected* |
| $F_{bw}$ | 22.4 | [ksi] | *stress, if no parts of the cross section were weld-affected* |
| $F_b$ | 39.1 | [ksi] | *nominal stress corresponding to the flexural compressive strength* For welded elements: $F_b = F_{bw}(1 - A_{wc}/$ |
| $\Phi_T F_b$ | **35.2** | [ksi] | *design stress corresponding to the flexural compressive strength* |
| $F_b / \Omega_T$ | **23.7** | [ksi] | *allowable stress corresponding to the flexural compressive strength* |

### Shear Strength

| | | | |
|---|---|---|---|
| b/t | 10 | [] | *slenderness* |
| $A_n$, $A_v$ | 1.25 | [$in^2$] | *shear area* |
| $F_{so} / \Omega_T$ | 12.7 | [ksi] | *allowable shear strength stress, if no parts of the cross section were weld-affected* |
| $F_{so}$ | 21.0 | [ksi] | *stress, if no parts of the cross section were weld-affected* |
| $F_{sw} / \Omega_T$ | 5.5 | [ksi] | *allowable shear strength stress, if the entire cross section were weld-affected* |
| $F_{sw}$ | 9.1 | [ksi] | *stress, if no parts of the cross section were weld-affected* |
| $V_n$ | 20.3 | [kips] | *nominal shear strength* For welded members: $V_n = F_{so}(A_v - A_{wc}) + F_{sw} A_{wc}$ (G.1-2) |
| $F_s$ | 16.2 | [ksi] | *nominal stress corresponding to the uniform shear strength* |
| $\Phi_V F_s$ | **14.6** | [ksi] | *design stress corresponding to the uniform shear strength* |
| $F_s / \Omega_v$ | **9.8** | [ksi] | *allowable stress corresponding to the uniform shear strength* |

**AISC Resistance factors**

| | | | |
|---|---|---|---|
| $\Phi_T = \Phi b = \Phi v$ | 0.90 | [] | *design torsional strength factor* |
| $\Omega_T = \Omega b = \Omega v$ | 1.67 | [] | *allowable torsional strength factor* |

HSS Purlin

**Geometry and material properties**

Shape section from AISC 325

| | | | |
|---|---|---|---|
| shape | HSS6.000X0.250 | | |
| W | 15.37 | [lb/ft] | *nominal weight* |
| A | 4.22 | [$in^2$] | *area* |
| OD | 6.00 | [in] | *outside diameter* |
| $t_{des}$ | 0.233 | [in] | *design thickness* |
| L | 104.00 | [in] | *unbraceed length (max outrigger spacing)* |
| r | 2.040 | [in] | *radius of gyration* |
| C | 11.70 | [$in^3$] | *torsional constant* |
| E | 29000 | [ksi] | *modulus of elasticity of steel* |
| $F_y$ | 50 | [ksi] | *specified minimum yield stress* |

Shape section from AISC 325

| | | | |
|---|---|---|---|
| shape | HSS4.000X0.226 | | |
| W | 9.12 | [lb/ft] | *nominal weight* |
| A | 2.50 | [$in^2$] | *area* |
| OD | 4.00 | [in] | *outside diameter* |
| $t_{des}$ | 0.21 | [in] | *design thickness* |
| L | 104.00 | [in] | *unbraceed length (max outrigger spacing)* |
| r | 1.340 | [in] | *radius of gyration* |
| C | 4.50 | [$in^3$] | *torsional constant* |
| E | 29000 | [ksi] | *modulus of elasticity of steel* |
| $F_y$ | 50 | [ksi] | *specified minimum yield stress* |

**MEMBER SUBJECTED TO COMBINED TORSION, FLEXURE, SHEAR, AND AXIAL FORCE**

**HSS Subjected to Torsion**

HSS6X0.250

| | | | |
|---|---|---|---|
| $0.6F_y$ | 30.00 | [ksi] | *limit for Fcr* |
| $F_{CR}$ 1 | 147.70 | [ksi] | |
| $F_{CR}$ 2 | 133.15 | [ksi] | |
| $F_{CR}$ | 30.00 | [ksi] | *buckling stress for the section as determined by analysis* |
| $T_n$ | 351 | [kip-in] | *nominal torsional strength* |
| Available torsional strength $T_C$ | | | |
| $\Phi_T T_n$ | **316** | [kip-in] | *design torsional strength Tc* |
| $T_n / \Omega_T$ | **210** | [kip-in] | *allowable torsional strength Tc* |
| Tr/Tc | 0.09 | [] | *LRFD* |
| Tr/Tc | 0.08 | [] | *ASD* |

Tr is < 20% of Tc --> Torsional effects may be neclected and sextion H1 may be used

(1) $\frac{1.23E}{\sqrt{\frac{L}{D}\left(\frac{D}{t}\right)^{5/4}}}$ (2) $F_{cr} = \frac{0.60E}{\left(\frac{D}{t}\right)^{3/2}}$

HSS4X0.226

| | | | |
|---|---|---|---|
| $0.6F_y$ | 30.00 | [ksi] | *limit for Fcr* |
| $F_{CR}$ 1 | 175.80 | [ksi] | |
| $F_{CR}$ 2 | 209.31 | [ksi] | |
| $F_{CR}$ | 30.00 | [ksi] | *buckling stress for the section as determined by analysis* |
| $T_n$ | 135 | [kip-in] | *nominal torsional strength* |
| Available torsional strength $T_C$ | | | |
| $\Phi_T T_n$ | **275** | [kip-in] | *design torsional strength Tc* |
| $T_n / \Omega_T$ | **81** | [kip-in] | *allowable torsional strength Tc* |
| Tr/Tc | 0.06 | [] | *LRFD* |
| Tr/Tc | 0.13 | [] | *ASD* |

Tr is < 20% of Tc --> Torsional effects may be neclected and sextion H1 may be used

(1) $\frac{1.23E}{\sqrt{\frac{L}{D}\left(\frac{D}{t}\right)^{5/4}}}$ (2) $F_{cr} = \frac{0.60E}{\left(\frac{D}{t}\right)^{3/2}}$

### Round HSS Subjected to Axial Compression

| | | | | |
|---|---|---|---|---|
| HSS6X0.250 | k | 1 | [] | *effective length factor (1 is conservative, could be takedn as 0.65)* |
| | Lc | 9 | [ft] | *effective length* |
| | Lc/r | 4 | [] | *effective length / radius of gyration* |
| | Available strength in axial compression | | | |
| | $\Phi_c P_n$ | **182.0** | [kips] | *design strength in axial compression* |
| | $P_n / \Omega_c$ | **121.0** | [kips] | *allowable strength in axial compression* |

| | | | | |
|---|---|---|---|---|
| HSS4X0.226 | k | 1 | [] | *effective length factor (1 is conservative, could be takedn as 0.65)* |
| | Lc | 9 | [ft] | *effective length* |
| | Lc/r | 6 | [] | *effective length / radius of gyration* |
| | Available strength in axial compression | | | |
| | $\Phi_c P_n$ | **91.1** | [kips] | *design strength in axial compression* |
| | $P_n / \Omega_c$ | **60.6** | [kips] | *allowable strength in axial compression* |

### Round HSS Subjected to Flexion

| | | | | | |
|---|---|---|---|---|---|
| | Available flexural strength | | | | |
| HSS6X0.250 | $\Phi_c P_n$ | **349.2** | [kip-in] | *design flexural strength* | *Mcx Mcy* |
| | $P_n / \Omega_c$ | **231.6** | [kip-in] | *allowable flexural strength* | *Mcx Mcy* |

| | | | | | |
|---|---|---|---|---|---|
| | Available flexural strength | | | | |
| HSS4X0.226 | $\Phi_b M_n$ | **135.6** | [kip-in] | *design flexural strength* | *Mcx Mcy* |
| | $M_n / \Omega_b$ | **90.4** | [kip-in] | *allowable flexural strength* | *Mcx Mcy* |

### Round HSS Subjected to Shear

| | | | | | | |
|---|---|---|---|---|---|---|
| HSS6X0.250 | Lv | 12 | [in] | *distance from maximum to zero shear force* | | $F_{cr} = \frac{1.60E}{\sqrt{\frac{L_v}{D}}\left(\frac{D}{t}\right)^{\frac{5}{4}}}$ |
| | $0.6F_y$ | 30.00 | [ksi] | *limit for Fcr* | | |
| | $F_{CR}$ 1 | 571.58 | [ksi] | | | $F_{cr} = \frac{0.78E}{\left(\frac{D}{t}\right)^{\frac{3}{2}}}$ |
| | $F_{CR}$ 2 | 173.10 | [ksi] | | | |
| | $F_{CR}$ | 30.00 | [ksi] | *buckling stress for the section as determined by analysis* | | |
| | $V_n$ | 63 | [kips] | *nominal shear strength* | $V_n = F_{cr} A_g / 2$ | (G5-1) |
| | Available shear strength | | | | | |
| | $\Phi_b V_n$ | **57** | [kip-in] | *design shear strength* | *Vc* | |
| | $V_n / \Omega_b$ | **38** | [kip-in] | *allowable shear strength* | *Vc* | |

| | | | | | | |
|---|---|---|---|---|---|---|
| HSS4X0.226 | Lv | 12 | [in] | *distance from maximum to zero shear force* | | $F_{cr} = \frac{1.60E}{\sqrt{\frac{L_v}{D}}\left(\frac{D}{t}\right)^{\frac{5}{4}}}$ |
| | $0.6F_y$ | 30.00 | [ksi] | *limit for Fcr* | | |
| | $F_{CR}$ 1 | 680.34 | [ksi] | | | $F_{cr} = \frac{0.78E}{\left(\frac{D}{t}\right)^{\frac{3}{2}}}$ |
| | $F_{CR}$ 2 | 272.10 | [ksi] | | | |
| | $F_{CR}$ | 30.00 | [ksi] | *buckling stress for the section as determined by analysis* | | |
| | $V_n$ | 38 | [kips] | *nominal shear strength* | $V_n = F_{cr} A_g / 2$ | (G5-1) |
| | Available shear strength | | | | | |
| | $\Phi_b V_n$ | **34** | [kip-in] | *design shear strength* | *Vc* | |
| | $V_n / \Omega_b$ | **22** | [kip-in] | *allowable shear strength* | *Vc* | |

WT-Shape outrigger at beam (max web depth)

| | | | |
|---|---|---|---|
| $S_{O5*2}$ | 61.00 | [in] | *cantilever outrigger spacing (column outrigger with end outrigger)* |
| $S_{O5*2}$ | 104.00 | [in] | *outrigger spacing for 5 1st spans (excluding end cantilever) and max unbraced length* |
| $S_{O1*2}$ | 93.00 | [in] | *outrigger spacing for 2 center spans* |
| L | 104.00 | | *Laterally unbraced length* |

| | | | |
|---|---|---|---|
| shape | WT12X51.5 | | |
| W | 51.50 | [lb/ft] | *nominal weight* |
| $b_f$ | 9.00 | [in] | *width of flange* |
| bf/2 | 4.50 | [in] | *half width of flange* |
| tf | 0.98 | [in] | *thickness of flange* |
| d | 12.30 | [in] | *overall depth of member* |
| $t_w$ | 0.55 | [in] | *thickness of web* |
| rx | 3.67 | [in] | *radius of gyration* |
| ry | 1.99 | [in] | *radius of gyration* |
| Zx | 39.20 | [$in^3$] | *plastic section modulus taken about strong axis* |
| Zy | 20.70 | [$in^3$] | *plastic section modulus taken about weak axis* |
| Sx | 22.00 | [$in^3$] | *elastic section modulus about strong axis* |
| Sy | 13.30 | [$in^3$] | *elastic section modulus about weak axis* |
| E | 29000 | [ksi] | *modulus of elasticity of steel* |
| $F_y$ | 50 | [ksi] | *specified minimum yield stress* |

**MEMBER SUBJECTED TO FLEXURE AND AXIAL FORCE**

**Classification of section**

| | | | |
|---|---|---|---|
| b/t | 4.59 | [] | *width/2 to thickness ratio* |
| $\lambda_r$ | 13.49 | [] | *0.56sqrt(E/Fy) limiting value for axial compression* |
| $\lambda_r$ | 24.08 | [] | *1.0sqrt(E/Fy) limiting value for flexure* |
| $\lambda_p$ | 9.15 | [] | *0.38sqrt(E/Fy) limiting value for flexure* |

| | | |
|---|---|---|
| Condition | Non slender | *axial compression: D/t < λr ?* |
| Condition | Non-compact | *flexure: D/t < λr ?* |
| Condition | Compact | *flexure: D/t < λp ?* |

**WT Subjected to Axial Compression**

| | | | |
|---|---|---|---|
| k | 1 | [] | *effective length factor (1 is conservative, could be takedn as 0.65)* |
| Lc | 9 | [ft] | *effective length* |
| Lc/rx | 9 | [] | *effective length / radius of gyration* |

Available strength in axial compression

| | | | |
|---|---|---|---|
| $\Phi_c P_n$ | **601.0** | [kips] | *design strength in axial compression* |
| $P_n / \Omega_c$ | **400.0** | [kips] | *allowable strength in axial compression* |

**WT Subjected to Flexion**

| | | | |
|---|---|---|---|
| $C_b$ | 1 | | *lateral-torsion buckling modification factor* |
| Yielding | | | |
| $M_{px}$ | 1960.0 | [kip-in] | *plastic moment* |
| $M_{yx}$ | 1100.0 | [kip-in] | *yield moment about the axis of bending* |
| $M_{nx1}$ | 1100 | [kip-in] | *flexural strength for yielding (plastic moment) limit state (very conservative)* |
| $M_{py}$ | 1035.0 | [kip-in] | *plastic moment* |
| $M_{yy}$ | 665.0 | [kip-in] | *yield moment about the axis of bending* |
| $M_{ny}$ | 665 | [kip-in] | *flexural strength for yielding (plastic moment) limit state (very conservative)* |
| Lateral-Torsional Buckling | | | |
| $L_b$ | 10 | [in] | *Length between points braced against lateral displacement of compression flange* |
| $L_p$ | 84 | [in] | *Limiting laterally unbraced length for the limit state of yielding* |
| | OK | | |
| | When Lb ≤ Lp, the limit state of lateral-torsional buckling does not apply. | | |

Flange Local Buckling of Tees and Double-Angle Legs

For sections with a compact flange in flexural compression, the limit state of flange local buckling does not apply.

Local Buckling of Tee Stems in Flexural Compression

| | | | |
|---|---|---|---|
| d/tw | 22 | [] | *depth of tee / thickness of web* |
| | 20.23 | [] | *0.84sqrt(E/Fy) limiting value for d/tw* |
| | 37 | [] | *1.52sqrt(E/Fy) limiting value for d/tw* |
| | --> case 1: Fcr = Fy | | |
| $F_{cr}$ | 50 | [ksi] | *critical stress* |
| $M_{n4}$ | 1100 | [kip-in] | |
| $M_{nx}$ | 1100 | [kip-in] | *nominal flexural strength about strong axis* |
| $M_{ny}$ | 665 | [kip-in] | *nominal flexural strength about weak axis* |
| Available flexural strength | | | |
| $\Phi_b M_{nx}$ | **990** | [kip-in] | *design flexural strength* *Mcx* |
| $M_{nx} / \Omega_b$ | **659** | [kip-in] | *allowable flexural strength* *Mcx* |
| $\Phi_b M_{ny}$ | **599** | [kip-in] | *design flexural strength* *Mcy* |
| $M_{ny} / \Omega_b$ | **398** | [kip-in] | *allowable flexural strength* *Mcy* |

**WT Subjected to Shear**

| | | | |
|---|---|---|---|
| $k_v$ | 5.34 | | *web plate shear buckling coefficient* |
| | 61.22 | | *limiting value for h/tw* |
| | d/tw=19 < 61.22 --> Cv2 = 1 | | *limiting value for h/tw* |
| $C_{v2}$ | 1.00 | | *web shear buckling coefficient* |
| $V_n$ | 333 | [kips] | *nominal shear strength* $V_n = 0.6F_y b t C_{v2}$ |
| Available shear strength | | | |
| $\Phi_v V_n$ | **300** | [kip-in] | *design shear strength* |
| $V_n / \Omega_v$ | **199** | [kip-in] | *allowable shear strength* |

WT-Shape - outrigger at north and south purlins (min web depth)

| | | | |
|---|---|---|---|
| $S_{O5*2}$ | 61.00 | [in] | *cantilever outrigger spacing (column outrigger with end outrigger)* |
| $S_{O5*2}$ | 104.00 | [in] | *outrigger spacing for 5 1st spans (excluding end cantilever) and max unbraced length* |
| $S_{O1*2}$ | 93.00 | [in] | *outrigger spacing for 2 center spans* |
| L | 104.00 | | *Laterally unbraced length* |

| | | | |
|---|---|---|---|
| shape | WT5X27 | | |
| W | 27.00 | [lb/ft] | *nominal weight* |
| $b_f$ | 10.00 | [in] | *width of flange* |
| bf/2 | 5.00 | [in] | *half width of flange* |
| tf | 0.62 | [in] | *thickness of flange* |
| d | 5.05 | [in] | *overall depth of member* |
| $t_w$ | 0.37 | [in] | *thickness of web* |
| rx | 1.19 | [in] | *radius of gyration* |
| ry | 2.56 | [in] | *radius of gyration* |
| Zx | 5.05 | [$in^3$] | *plastic section modulus taken about strong axis* |
| Zy | 15.60 | [$in^3$] | *plastic section modulus taken about weak axis* |
| Sx | 2.64 | [$in^3$] | *elastic section modulus about strong axis* |
| Sy | 10.30 | [$in^3$] | *elastic section modulus about weak axis* |
| E | 29000 | [ksi] | *modulus of elasticity of steel* |
| $F_y$ | 50 | [ksi] | *specified minimum yield stress* |

**MEMBER SUBJECTED TO FLEXURE AND AXIAL FORCE**

**Classification of section**

| | | | |
|---|---|---|---|
| b/t | 8.13 | [] | *width/2 to thickness ratio* |
| $\lambda_r$ | 13.49 | [] | *0.56sqrt(E/Fy) limiting value for axial compression* |
| $\lambda_r$ | 24.08 | [] | *1.0sqrt(E/Fy) limiting value for flexure* |
| $\lambda_p$ | 9.15 | [] | *0.38sqrt(E/Fy) limiting value for flexure* |

| | | |
|---|---|---|
| Condition | Non slender | *axial compression: D/t < λr ?* |
| Condition | Non-compact | *flexure: D/t < λr ?* |
| Condition | Compact | *flexure: D/t < λp ?* |

**WT Subjected to Axial Compression**

| | | | |
|---|---|---|---|
| k | 1 | [] | *effective length factor (1 is conservative, could be takedn as 0.65)* |
| Lc | 9 | [ft] | *effective length* |
| Lc/rx | 9 | [] | *effective length / radius of gyration* |

Available strength in axial compression

| | | | |
|---|---|---|---|
| $\Phi_c P_n$ | **150.0** | [kips] | *design strength in axial compression (conservative: WT 5*22.5 strength considered)* |
| $P_n / \Omega_c$ | **100.0** | [kips] | *allowable strength in axial compression (conservative: WT 5*22.5 strength considered)* |

**WT Subjected to Flexion**

| | | | |
|---|---|---|---|
| $C_b$ | 1 | | *lateral-torsion buckling modification factor* |
| Yielding | | | |
| $M_{px}$ | 252.5 | [kip-in] | *plastic moment* |
| $M_{yx}$ | 132.0 | [kip-in] | *yield moment about the axis of bending* |
| $M_{nx1}$ | 132 | [kip-in] | *flexural strength for yielding (plastic moment) limit state (very conservative)* |
| $M_{py}$ | 780.0 | [kip-in] | *plastic moment* |
| $M_{yy}$ | 515.0 | [kip-in] | *yield moment about the axis of bending* |
| $M_{ny}$ | 515 | [kip-in] | *flexural strength for yielding (plastic moment) limit state (very conservative)* |
| Lateral-Torsional Buckling | | | |
| $L_b$ | 10 | [in] | *Length between points braced against lateral displacement of compression flange* |
| $L_p$ | 109 | [in] | *Limiting laterally unbraced length for the limit state of yielding* |
| | OK | | |
| | When Lb ≤ Lp, the limit state of lateral-torsional buckling does not apply. | | |

Flange Local Buckling of Tees and Double-Angle Legs

For sections with a compact flange in flexural compression, the limit state of flange local buckling does not apply.

Local Buckling of Tee Stems in Flexural Compression

| | | | |
|---|---|---|---|
| d/tw | 14 | [] | *depth of tee / thickness of web* |
| | 20.23 | [] | *0.84sqrt(E/Fy) limiting value for d/tw* |
| | 37 | [] | *1.52sqrt(E/Fy) limiting value for d/tw* |
| | --> case 1: Fcr = Fy | | |
| $F_{cr}$ | 50 | [ksi] | *critical stress* |
| $M_{n4}$ | 132 | [kip-in] | |
| $M_{nx}$ | 132 | [kip-in] | *nominal flexural strength about strong axis* |
| $M_{ny}$ | 515 | [kip-in] | *nominal flexural strength about weak axis* |
| Available flexural strength | | | |
| $\Phi_b M_{nx}$ | **119** | [kip-in] | *design flexural strength* *Mcx* |
| $M_{nx} / \Omega_b$ | **79** | [kip-in] | *allowable flexural strength* *Mcx* |
| $\Phi_b M_{ny}$ | **464** | [kip-in] | *design flexural strength* *Mcy* |
| $M_{ny} / \Omega_b$ | **308** | [kip-in] | *allowable flexural strength* *Mcy* |

**WT Subjected to Shear**

| | | | |
|---|---|---|---|
| $k_v$ | 5.34 | | *web plate shear buckling coefficient* |
| | 61.22 | | *limiting value for h/tw* |
| | d/tw=14 < 61.22 --> Cv2 = 1 | | *limiting value for h/tw* |
| $C_{v2}$ | 1.00 | | *web shear buckling coefficient* |
| $V_n$ | 82 | [kips] | *nominal shear strength* $V_n = 0.6F_y b t C_{v2}$ |
| Available shear strength | | | |
| $\Phi_v V_n$ | **74** | [kip-in] | *design shear strength* |
| $V_n / \Omega_v$ | **49** | [kip-in] | *allowable shear strength* |

HSS beam

**Geometry and material properties**

| | | | |
|---|---|---|---|
| $L_T$ | 3638.25 | [in] | *beam length (continuous)* |
| | 312.00 | [in] | *unbraced length (max column to column spacing)* |
| $L_T$ | 72.00 | [in] | *end longitudinal cantilever length* |
| shape | HSS12.750X0.188 | | |
| W | 25.18 | [lb/ft] | *nominal weight* |
| A | 6.89 | [$in^2$] | *area* |
| OD | 12.80 | [in] | *outside diameter (D)* |
| $t_{des}$ | 0.17 | [in] | *design thickness* |
| r | 4.45 | [in] | *radius of gyration* |
| Z | 27.60 | [$in^3$] | *plastic section modulus taken about the axis of bending* |
| S | 21.40 | [$in^3$] | *elastic section modulus about the axis of bending* |
| C | 42.70 | [$in^3$] | *torsional constant* |
| E | 29000 | [ksi] | *modulus of elasticity of steel* |
| $F_y$ | 50 | [ksi] | *specified minimum yield stress* |

**Classification of section**

| | | | |
|---|---|---|---|
| D/t | 73.56 | [] | *width to thickness ratio (Diameter to wall thickness)* |
| $\lambda_r$ | 63.80 | [] | *0.11E/Fy limiting value for axial compression* |
| $\lambda_r$ | 179.80 | [] | *0.31E/Fy limiting value flexure* |
| $\lambda_p$ | 40.60 | [] | *0.07E/Fy limiting value flexure* |
| Condition | Slender | | *axial compression: D/t < λr ?* |
| Condition | Non-compact | | *flexure: D/t < λr ?* |
| Condition | Non-compact | | *flexure: D/t < λp ?* |

**MEMBER SUBJECTED TO COMBINED TORSION, FLEXURE, SHEAR, AND AXIAL FORCE**

**HSS Subjected to Torsion**

| | | | |
|---|---|---|---|
| $0.6F_y$ | 30.00 | [ksi] | *limit for Fcr* |
| $F_{CR}$ 1 | 33.54 | [ksi] | |
| $F_{CR}$ 2 | 27.58 | [ksi] | |
| $F_{CR}$ | 30.00 | [ksi] | *buckling stress for the section as determined by analysis* |
| $T_n$ | 1281 | [kip-in] | *nominal torsional strength* |

Available torsional strength $T_C$

| | | | |
|---|---|---|---|
| $\Phi_T$ Tn | **1153** | [kip-in] | *design torsional strength Tc* |
| $T_n / \Omega_T$ | **767** | [kip-in] | *allowable torsional strength Tc* |
| Tr/Tc | 0.26 | [] | *LRFD* |
| Tr/Tc | 0.25 | [] | *ASD* |

(1) $\frac{1.23E}{\sqrt{\frac{L}{D}}\left(\frac{D}{t}\right)^{5/4}}$ (2) $F_{cr}=\frac{0.60E}{\left(\frac{D}{t}\right)^{3/2}}$

$$\left(\frac{P_r}{P_c}+\frac{M_{rx}}{M_{cx}}+\frac{M_{ry}}{M_{cy}}\right)+\left(\frac{V_r}{V_c}+\frac{T_r}{T_c}\right)^2 \le 1.0 \qquad \text{(H3-6)}$$

Tr exceeds 20% of Tc --> H3-6 formula

**Round HSS Subjected to Axial Compression**

| | | | |
|---|---|---|---|
| k | 1 | [] | *effective length factor (1 is conservative, could be takedn as 0.65)* |
| Lc | 312 | [in] | *effective length* |
| Lc/r | 70 | [] | *effective length / radius of gyration* |
| | case (b) | | *formula for Ae* |
| $A_e$ | 6.66 | [$in^2$] | *effective area* |
| $F_e$ | 58.2 | [ksi] | *elastic buckling stress* |
| | case (b) | | *formula for Fn* |
| $F_n$ | 51 | [ksi] | *nominal stress* |
| $P_n$ | 340 | [kips] | *nominal strength in axial compression* |

Available strength in axial compression

| | | | |
|---|---|---|---|
| $\Phi_c P_n$ | **306.0** | [kips] | *design strength in axial compression* |
| $P_n / \Omega_c$ | **203.6** | [kips] | *allowable strength in axial compression* |

**Round HSS Subjected to Flexion**

| | | | |
|---|---|---|---|
| 0.45E/Fy | 261 | [] | *limiting value for axial compression - F8* |
| Condition | AISC 360-22 section F8 is applicable | | D/t < 0.45E/Fy ? |

| | | | | |
|---|---|---|---|---|
| $M_{n1} = M_p$ | 1380 | [kip-in] | *flexural strength for yielding (plastic moment) limit state* | |
| $M_{n2}$ | 1247 | [kip-in] | *flexural strength for buckling limit state* | |
| $M_n$ | 1247 | [kip-in] | *nominal flexural strength* | |

Available flexural strength

| | | | | |
|---|---|---|---|---|
| $\Phi_b M_n$ | **1122** | [kip-in] | *design flexural strength* | *Mcx Mcy* |
| $M_n / \Omega_b$ | **747** | [kip-in] | *allowable flexural strength* | *Mcx Mcy* |

**Round HSS Subjected to Shear**

| | | | |
|---|---|---|---|
| Lv | 104 | [in] | *distance from maximum to zero shear force* |
| $0.6F_y$ | 30.00 | [ksi] | *limit for Fcr* |
| $F_{CR}$ 1 | 75.56 | [ksi] | |
| $F_{CR}$ 2 | 35.85 | [ksi] | |
| $F_{CR}$ | 30.00 | [ksi] | *buckling stress for the section as determined by analysis* |

$$F_{cr} = \frac{1.60E}{\sqrt{\frac{L_v}{D}}\left(\frac{D}{t}\right)^{\frac{5}{4}}}$$

$$F_{cr} = \frac{0.78E}{\left(\frac{D}{t}\right)^{\frac{3}{2}}}$$

| | | | | |
|---|---|---|---|---|
| $V_n$ | 103 | [kips] | *nominal shear strength* | $V_n = F_{cr} A_g / 2$ (G5-1) |

Available shear strength

| | | | | |
|---|---|---|---|---|
| $\Phi_v V_n$ | **93** | [kip-in] | *design shear strength* | *Vc* |
| $V_n / \Omega_v$ | **62** | [kip-in] | *allowable shear strength* | *Vc* |

HSS Column

**Geometry and material properties**

Shape section from AISC 325

| | | | |
|---|---|---|---|
| shape | HSS12.750X0.500 | | |
| W | 65.48 | [lb/ft] | *nominal weight* |
| A | 17.90 | [in$^2$] | *area* |
| OD | 12.80 | [in] | *outside diameter* |
| $t_{des}$ | 0.465 | [in] | *design thickness* |
| r | 4.350 | [in] | *radius of gyration* |
| L | 147.38 | [in] | *unbraceed length (column heigth)* |
| Z | 70.20 | [in$^3$] | *plastic section modulus taken about the axis of bending* |
| S | 53.20 | [in$^3$] | *elastic section modulus about the axis of bending* |
| C | 106.00 | [in$^3$] | *torsional constant* |
| E | 29000 | [ksi] | *modulus of elasticity of steel* |
| $F_y$ | 50 | [ksi] | *specified minimum yield stress* |

**Classification of section**

| | | | |
|---|---|---|---|
| D/t | 27.53 | [] | *width to thickness ratio (Diameter to wall thickness)* |
| $\lambda_r$ | 63.80 | [] | *0.11E/Fy limiting value for axial compression* |
| $\lambda_r$ | 179.80 | [] | *0.31E/Fy limiting value flexure* |
| $\lambda_p$ | 40.60 | [] | *0.07E/Fy limiting value flexure* |

| | | |
|---|---|---|
| Condition | Non slender | *axial compression: D/t < λr ?* |
| Condition | Non-compact | *flexure: D/t < λr ?* |
| Condition | Compact | *flexure: D/t < λp ?* |

**MEMBER SUBJECTED TO COMBINED TORSION, FLEXURE, SHEAR, AND AXIAL FORCE**

**HSS Subjected to Torsion**

| | | | |
|---|---|---|---|
| $0.6F_y$ | 30.00 | [ksi] | *limit for Fcr* |
| $F_{CR}$ 1 | 166.72 | [ksi] | |
| $F_{CR}$ 2 | 120.48 | [ksi] | |
| $F_{CR}$ | 30.00 | [ksi] | *buckling stress for the section as determined by analysis* |

(1) $\frac{1.23E}{\sqrt{\frac{L}{D}}\left(\frac{D}{t}\right)^{5/4}}$ (2) $F_{cr}=\frac{0.60E}{\left(\frac{D}{t}\right)^{3/2}}$

| | | | |
|---|---|---|---|
| $T_n$ | 3180 | [kip-in] | *nominal torsional strength* |

Available torsional strength $T_C$

| | | | |
|---|---|---|---|
| $\Phi_T$ Tn | **2862** | [kip-in] | *design torsional strength Tc* |
| $T_n / \Omega_T$ | **1904** | [kip-in] | *allowable torsional strength Tc* |

| | | | |
|---|---|---|---|
| Tr/Tc | 0.10 | [] | *LRFD* |
| Tr/Tc | 0.02 | [] | *ASD* |

$$\left(\frac{P_r}{P_c}+\frac{M_{rx}}{M_{cx}}+\frac{M_{ry}}{M_{cy}}\right)+\left(\frac{V_r}{V_c}+\frac{T_r}{T_c}\right)^2 \le 1.0 \qquad \text{(H3-6)}$$

Tr does not exceed 20% of Tc --> both H3-6 formula or H1 section can be used

**Round HSS Subjected to Axial Compression**

| | | | |
|---|---|---|---|
| k | 1 | [] | *effective length factor (1 is conservative, could be takedn as 0.65)* |
| Lc | 147 | [in] | *effective length* |
| Lc/r | 34 | [] | *effective length / radius of gyration* |
| | D/t<=0.11E/Fy | | *formula for Ae* |
| $A_e$ | 26.27 | [in$^2$] | *effective area* |
| $F_e$ | 249.4 | [ksi] | *elastic buckling stress* |
| | case (b) | | *formula for Fn* |
| $F_n$ | 219 | [ksi] | *nominal stress* |

| | | | |
|---|---|---|---|
| $P_n$ | 5744 | [kips] | *nominal strength in axial compression* |

Available strength in axial compression

| | | | |
|---|---|---|---|
| $\Phi_c P_n$ | **5169.6** | [kips] | *design strength in axial compression* |
| $P_n / \Omega_c$ | **3439.5** | [kips] | *allowable strength in axial compression* |

**Round HSS Subjected to Flexion**

| | | | |
|---|---|---|---|
| 0.45E/Fy | 261 | [] | *limiting value for axial compression - F8* |
| Condition | AISC 360-22 section F8 is applicable | | *D/t < 0.45E/Fy ?* |

| | | | |
|---|---|---|---|
| $M_{n1} = M_p$ | 3510 | [kip-in] | *flexural strength for yielding (plastic moment) limit state* |
| $M_{n2}$ | 25828 | [kip-in] | *flexural strength for buckling limit state* |
| $M_n$ | 3510 | [kip-in] | *nominal flexural strength* |
| Available flexural strength | | | |
| $\Phi_b M_n$ | **3159** | [kip-in] | *design flexural strength* *Mcx Mcy* |
| $M_n / \Omega_b$ | **2102** | [kip-in] | *allowable flexural strength* *Mcx Mcy* |

(b) For noncompact sections

$$M_n = \left[\frac{0.021E}{\left(\frac{D}{t}\right)} + F_y\right] S$$

**Round HSS Subjected to Shear**

| | | | |
|---|---|---|---|
| Lv | 147.38 | [in] | *distance from maximum to zero shear force* |
| $0.6F_y$ | 30.00 | [ksi] | *limit for Fcr* |
| $F_{CR}$ 1 | 216.88 | [ksi] | |
| $F_{CR}$ 2 | 156.62 | [ksi] | |
| $F_{CR}$ | 30.00 | [ksi] | *buckling stress for the section as determined by analysis* |

$$F_{cr} = \frac{1.60E}{\sqrt{\frac{L_v}{D}}\left(\frac{D}{t}\right)^{\frac{5}{4}}}$$

$$F_{cr} = \frac{0.78E}{\left(\frac{D}{t}\right)^{\frac{3}{2}}}$$

| | | | | |
|---|---|---|---|---|
| $V_n$ | 269 | [kips] | *nominal shear strength* $V_n = F_{cr} A_g / 2$ | (G5-1) |
| Available shear strength | | | | |
| $\Phi_v V_n$ | **242** | [kip-in] | *design shear strength* *Vc* | |
| $V_n / \Omega_v$ | **161** | [kip-in] | *allowable shear strength* *Vc* | |

COWI

| | | | |
|---|---|---|---|
| PROJECT | BWTPF Project | CONT | |
| SUBJECT | Canopy Design | PAGE | |
| CALCULATIONS BY | AEAL | DATE | 1-Dec-25 |
| CHECKED BY | | DATE | |

**Legend**

| |
|---|
| Inputs |
| Dependent |
| Outputs |

*Comments / Notes*

For members under multiple force components (except outriggers), each component's maximum value was conservatively used for design, despite the fact that their peak values occur at different locations along the member or on different members.

**Mullion Geometric Properties (stresses calculation)**

| | | | |
|---|---|---|---|
| $A_g$ | 2.25 | [$in^2$] | *cross-sectional area* |
| $A_{web}$ depth | 1.25 | [$in^2$] | *net area of web (2 legs in y depth direction)* |
| $A_{web}$ width | 1.00 | [$in^2$] | *net area of web (2 legs in x width direction)* |
| $I_x$ | 2.55 | [$in^4$] | *moment of inertia about x* |
| $I_y$ | 1.06 | [$in^4$] | *moment of inertia about y* |
| y1 | 1.5 | [in] | *neutral axis to extreme fiber in y direction* |
| x1 | 1 | [in] | *neutral axis to extreme fiber in x direction* |
| J | 2.57 | [$in^4$] | *torsion constant* |
| Ai | 4.8125 | [$in^2$] | *interior area* |

## LRFD

| Element | Combination | Loading | | Stress Demand | Stress Demand | Capacity | D/C | AISC Condition |
|---|---|---|---|---|---|---|---|---|
| Mullion | 1.2D+1W | Bending x (ksi) | fb | 24 | 14.00 | 35 | 0.68 | 0.66 |
| | 1.2D+1.6Lr | | | 8 | 4.82 | 35 | 0.23 | |
| | 1.2D+1W | Shear (ksi) | fs | 1 | 0.56 | 15 | 0.05 | |
| | 1.2D+1.6Lr | | | 1 | 0.64 | 15 | 0.05 | |
| | 1.2D+1.6Lr | Torsion (kip-in) | | 9 | 3.91 | - | - | |
| | 1.2D+1W | Compression (ksi) | fc | 10.06 | 4.47 | 28 | 0.36 | |
| | 1.2D+1.6Lr | | | 2 | 1.29 | 28 | 0.06 | |
| Purlin HSS * 1 | 1.2D+1W | Bending x (kip-in) | | 120 | | 349 | 0.34 | 0.35 |
| | 1.2D+1.6Lr | | | 7 | | 349 | 0.02 | |
| | 1.2D+1W | Bending y (kip-in) | | 16 | | 349 | 0.05 | |
| | 1.2D+1.6Lr | | | 7 | | 349 | 0.02 | |
| | 1.2D+1W | Shear (kips) | | 6 | | 57 | 0.11 | |
| | 1.2D+1W | | | 10 | | 57 | 0.17 | |
| | 1.2D+1.6Lr | | | 1 | | 57 | 0.02 | |
| | 1.2D+1.6Lr | | | 1 | | 57 | 0.02 | |
| | 1.2D+1W | Torsion (kip-in) | | 29 | | 316 | 0.09 | |
| | 1.2D+1.6Lr | | | 10 | | 316 | 0.03 | |
| | 1.2D+1W | Compression (kips) | | 1 | | 182 | 0.01 | |
| | 1.2D+1.6Lr | | | 1 | | 182 | 0.01 | |
| Purlin HSS * 3 | 1.2D+1W | Bending x(kip-in) | | 32 | | 232 | 0.14 | 0.35 |
| | 1.2D+1.6Lr | | | -9 | | 232 | -0.04 | |
| | 1.2D+1W | Bending y (kip-in) | | 54 | | 232 | 0.23 | |
| | 1.2D+1.6Lr | | | 10 | | 232 | 0.04 | |
| | 1.2D+1W | Shear (kips) | | 2 | | 34 | 0.07 | |
| | 1.2D+1W | | | 11 | | 34 | 0.31 | |
| | 1.2D+1.6Lr | | | 1 | | 34 | 0.02 | |
| | 1.2D+1.6Lr | | | 2 | | 34 | 0.05 | |
| | 1.2D+1W | Torsion (kip-in) | | 17 | | 275 | 0.06 | |
| | 1.2D+1.6Lr | | | 9 | | 275 | 0.03 | |
| | 1.2D+1W | Compression (kips) | | 3 | | 136 | 0.02 | |
| | 1.2D+1.6Lr | | | 0.2 | | 136 | 0.00 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Outrigger max | 1.2D+1W | Bending/x (kip-in) | 832 | 990 | 0.84 | 0.850 |
| | 1.2D+1.6Lr | | 134 | 990 | 0.13 | |
| | 1.2D+1W | Bending/y (kip-in) | 2 | 599 | 0.00 | |
| | 1.2D+1.6Lr | | 1 | 599 | 0.00 | |
| | 1.2D+1W | Torsion (kip-in) | - | - | - | |
| | 1.2D+1.6Lr | | - | - | - | |
| | 1.2D+1W | Compression (kips) | 8 | 601 | 0.01 | |
| | 1.2D+1.6Lr | | 2 | 601 | 0.00 | |
| | 1.2D+1W | Shear (kips) | 12 | 300 | 0.04 | 0.04 |
| | 1.2D+1.6Lr | | 2 | 300 | - | |
| Outrigger min | 1.2D+1W | Bending/x (kip-in) | 62 | 119 | 0.52 | 0.723 |
| | 1.2D+1.6Lr | | 24 | 119 | 0.20 | |
| | 1.2D+1W | Bending/y (kip-in) | 81 | 464 | 0.17 | |
| | 1.2D+1.6Lr | | 8 | 464 | 0.02 | |
| | 1.2D+1W | Torsion (kip-in) | - | - | - | |
| | 1.2D+1.6Lr | | - | - | - | |
| | 1.2D+1W | Compression (kips) | 7 | 150 | 0.05 | |
| | 1.2D+1.6Lr | | 1 | 150 | 0.00 | |
| | 1.2D+1W | Shear (kips) | 5 | 74 | 0.06 | 0.06 |
| | 1.2D+1.6Lr | | 1 | 74 | - | |
| Beam | 1.2D+1W | Bending/x (kip-in) | 509 | 1122 | 0.45 | 0.76 |
| | 1.2D+1.6Lr | | 98 | | | |
| | 1.2D+1W | Bending/y (kip-in) | 193 | 1122 | 0.17 | |
| | 1.2D+1.6Lr | | 15 | | | |
| | 1.2D+1W | Shear (kips) | 7 | 93 | 0.08 | |
| | 1.2D+1.6Lr | | 2 | | | |
| | 1.2D+1W | Torsion (kip-in) | 300 | 1153 | 0.26 | |
| | 1.2D+1.6Lr | | 93 | | | |
| | 1.2D+1W | Compression (kips) | 6 | 306 | 0.02 | |
| | 1.2D+1.6Lr | | 1.5 | | | |
| Column | 1.2D+1W | Bending/x (kip-in) | 324 | 3159 | 0.10 | 0.87 |
| | 1.2D+1.6Lr | | 43 | 3159 | 0.01 | |
| | 1.2D+1W | Bending/y (kip-in) | 2396 | 3159 | 0.76 | |
| | 1.2D+1.6Lr | | 263 | 3159 | 0.08 | |
| | 1.2D+1W | Shear (kips) | 8 | 242 | 0.03 | |
| | 1.2D+1.6Lr | | 0 | 242 | 0.00 | |
| | 1.2D+1W | Torsion (kip-in) | 66 | 2862 | 0.02 | |
| | 1.2D+1.6Lr | | 8 | 2862 | 0.00 | |
| | 1.2D+1W | Compression (kips) | 30 | 5170 | 0.01 | |
| | 1.2D+1.6Lr | | 7 | 5170 | 0.00 | |

**ASD**

| Element | Combination | Loading | | Stress Demand | Stress Capacity | Capacity | D/C | AISC Condition |
|---|---|---|---|---|---|---|---|---|
| Mullion | D+0.6W | Bending (kip-in) | fb | 15 | 8.68 | 24 | 0.62 | 0.71 |
| | D+0.75Lr | | | 4 | 2.35 | 24 | 0.17 | |
| | D+0.6W | Shear (kips) | fs | 1 | 0.40 | 10 | 0.05 | |
| | D+0.75Lr | | | 0 | 0.32 | 10 | 0.04 | |
| | D+0.75Lr | Torsion (kip-in) | | 4 | 3.91 | - | - | |
| | D+0.6W | Compression (kips) | fc | 6 | 2.77 | 19 | 0.34 | |
| | D+0.75Lr | | | 1 | 0.51 | 19 | 0.06 | |
| Purlin HSS * 1 | D+0.6W | Bending x (kip-in) | | 75 | | 232 | 0.32 | 0.40 |
| | D+0.75Lr | | | 12 | | 232 | 0.05 | |
| | D+0.6W | Bending y (kip-in) | | 28 | | 232 | 0.12 | |
| | D+0.75Lr | | | 5 | | 232 | 0.02 | |
| | D+0.6W | Shear (kips) | | 4 | | 38 | 0.09 | |
| | D+0.75Lr | | | 1 | | 38 | 0.02 | |
| | D+0.6W | Torsion (kip-in) | | 18 | | 210 | 0.08 | |
| | D+0.75Lr | | | 4 | | 210 | 0.02 | |
| | D+0.6W | Compression (kips) | | 1 | | 121 | 0.01 | |
| | D+0.75Lr | | | 1 | | 121 | 0.01 | |
| Purlin HSS * 3 | D+0.6W | Bending x (kip-in) | | 20 | | 90 | 0.22 | 0.59 |
| | D+0.75Lr | | | 6 | | 90 | 0.06 | |
| | D+0.6W | Bending y (kip-in) | | 39 | | 90 | 0.43 | |
| | D+0.75Lr | | | 5 | | 90 | 0.05 | |
| | D+0.6W | Shear (kips) | | 1.6 | | 22 | 0.07 | |
| | D+0.6W | | | 7 | | 22 | 0.29 | |
| | D+0.75Lr | | | 0.4 | | 22 | 0.02 | |
| | D+0.75Lr | | | 1 | | 22 | 0.05 | |
| | D+0.6W | Torsion (kip-in) | | 10 | | 81 | 0.13 | |
| | D+0.75Lr | | | 4 | | 81 | 0.05 | |
| | D+0.6W | Compression (kips) | | 2 | | 90 | 0.02 | |
| | D+0.75Lr | | | 0.2 | | 90 | 0.00 | |
| Outrigger max | D+0.6W | Bending/x (kip-in) | | 529 | | 659 | 0.80 | 0.81 |
| | D+0.75Lr | | | 112 | | 659 | 0.17 | |
| | D+0.6W | Bending/y (kip-in) | | 1 | | 398 | 0.00 | |
| | D+0.75Lr | | | 1 | | 398 | 0.00 | |
| | D+0.6W | Torsion (kip-in) | | - | | - | - | |
| | D+0.75Lr | | | - | | | | |
| | D+0.6W | Compression (kips) | | 5 | | 400 | 0.01 | |
| | D+0.75Lr | | | 2 | | 400 | 0.01 | |
| | D+0.6W | Shear (kips) | | 7 | | 199 | 0.04 | 0.04 |
| | D+0.75Lr | | | 2 | | 199 | | |
| Outrigger min | D+0.6W | Bending/x (kip-in) | | 41 | | 79 | 0.52 | 0.610 |
| | D+0.75Lr | | | 13 | | 79 | 0.16 | |
| | D+0.6W | Bending/y (kip-in) | | 24 | | 308 | 0.08 | |
| | D+0.75Lr | | | 5 | | 308 | 0.02 | |
| | D+0.6W | Torsion (kip-in) | | - | | - | - | |
| | D+0.75Lr | | | - | | - | - | |
| | D+0.6W | Compression (kips) | | 3 | | 100 | 0.03 | |
| | D+0.75Lr | | | 1 | | 100 | 0.01 | |
| | D+0.6W | Shear (kips) | | 3 | | 49 | 0.06 | 0.06 |
| | D+0.75Lr | | | 1 | | 49 | - | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Beam | D+0.6W | Bending/x (kip-in) | 329 | 747 | 0.44 | 0.72 |
| | D+0.75Lr | | 82 | | | |
| | D+0.6W | Bending/y (kip-in) | 119 | 747 | 0.16 | |
| | D+0.75Lr | | 12 | | | |
| | D+0.6W | Shear (kips) | 5 | 62 | 0.08 | |
| | D+0.75Lr | | 1 | | | |
| | D+0.6W | Torsion (kip-in) | 189 | 767 | 0.25 | |
| | D+0.75Lr | | 53 | | | |
| | D+0.6W | Compression (kips) | 4 | 204 | 0.02 | |
| | D+0.75Lr | | 1 | | | |
| Column | D+0.6W | Bending/x (kip-in) | 211 | 2102 | 0.10 | 0.81 |
| | D+0.75Lr | | 37 | 2102 | 0.02 | |
| | D+0.6W | Bending/y (kip-in) | 1477 | 2102 | 0.70 | |
| | D+0.75Lr | | 186 | 2102 | 0.09 | |
| | D+0.6W | Shear (kips) | 2 | 161 | 0.01 | |
| | D+0.75Lr | | 0 | 161 | 0.00 | |
| | D+0.6W | Torsion (kip-in) | 40 | 1904 | 0.02 | |
| | D+0.75Lr | | 6 | 1904 | 0.00 | |
| | D+0.6W | Compression (kips) | 20 | 3439 | 0.01 | |
| | D+0.75Lr | | 6 | 3439 | 0.00 | |

# 6 Retaining Wall Calculations

Berkeley Transportation Pier Ferry
Precast Panel Mechanically Stabilized Earth Seawall
ENGEO
12/12/2025
Software Version: RSWall 1.001

# Project Summary

| | |
|---|---|
| Project Name: | BERKELEY WATER TRANSPORTATION PIER FERRY |
| Analysis: | PRECAST PANEL MSE SEAWALL |
| Author: | VZ/JAF |
| Company: | ENGEO |
| Date Created: | 12/12/2025 |

# Project Settings

## Units

| | |
|---|---|
| Unit system: | Imperial, stress as psf |

## Wall Type

| | |
|---|---|
| Wall type: | Segmental retaining wall |

## Design standard

| | |
|---|---|
| Selected design standard: | AASHTO 2020 |
| Base design standard: | AASHTO 2020 |

# Segmental Wall Unit Properties

### 0+00 to 0+45 and 2+52 to 3+57

| | |
|---|---|
| Height: | 4.2 ft |
| Depth: | 0.625 ft |
| Width: | 357 ft |
| Center of gravity: | 0.23 ft |
| Unit weight: | 150 lbs/ft3 |

### 0+45 to 1+32 and 2+13 to 2+52

| | |
|---|---|
| Height: | 6.3 ft |
| Depth: | 0.625 ft |
| Width: | 357 ft |
| Center of gravity: | 0.23 ft |
| Unit weight: | 150 lbs/ft3 |

### 1+32 to 1+62 and 1+84 to 2+13

| | |
|---|---|
| Height: | 9.3 ft |
| Depth: | 0.625 ft |
| Width: | 357 ft |
| Center of gravity: | 0.23 ft |
| Unit weight: | 150 lbs/ft3 |

# Soil Properties

| | |
|---|---|
| **Retained Backfill** | |
| Unit weight: | 125 lbs/ft3 |
| Friction angle: | 32° |
| Soil-structure friction angle: | 21.3° |
| Long-term cohesion: | 0 psf |
| Interface adhesion ratio: | 0 |
| Water confined: | No |
| **Lightweight Cellular Concrete** | |
| Unit weight: | 50 lbs/ft3 |
| Friction angle: | 35° |
| Soil-structure friction angle: | 23° |
| Long-term cohesion: | 0 psf |
| Interface adhesion ratio: | 0 |
| Water confined: | No |
| **Existing Fill** | |
| Unit weight: | 120 lbs/ft3 |
| Friction angle: | 0° |
| Soil-structure friction angle: | 0° |
| Long-term cohesion: | 500 psf |
| Interface adhesion ratio: | 0 |
| Water confined: | No |
| **Rip Rap** | |
| Unit weight: | 135 lbs/ft3 |
| Friction angle: | 40° |
| Soil-structure friction angle: | 26° |
| Long-term cohesion: | 0 psf |
| Interface adhesion ratio: | 0 |
| Water confined: | No |
| **Concrete Leveling Pad** | |
| Unit weight: | 150 lbs/ft3 |
| Friction angle: | 0° |
| Soil-structure friction angle: | 0° |
| Long-term cohesion: | 14400 psf |
| Interface adhesion ratio: | 0 |
| Water confined: | No |

# Reinforcement Properties

| | |
|---|---|
| **ParaWEB 2** | |
| **General** | |
| Coverage: | 33.2 |
| **Geosynthetic Properties** | |
| Allowable tensile strength (static): | 7455.61 lbs/ft |
| Allowable tensile strength (seismic): | 10288.7418 lbs/ft |
| Creep factor: | 1.38 |
| Secant stiffness: | 68521.7660918697 lbs/ft |
| **Interaction** | |
| **Friction Factor Function** | |
| F* at top: | 2 |
| F* at reference depth: | 0.7 |
| Reference depth: | 20 ft |
| Alpha coefficient: | 0.9 |
| Interface sliding friction angle: | 25.27° |
| **Connection Properties** | |
| **Connection Strength Function (constant)** | |
| Constant strength: | 35073 lbs/ft |

# Results

## List of symbols

| | |
|---|---|
| $(0.5H_2)$ | Width of zone for seismic inertia calculations (Eq. 11.10.7.1-4) |
| $\Delta M_{r,U}$ | Reduction to resisting moment due to base porewater |
| $\Delta\sigma_{H,P'_{hLS,1}}(Z)$ | Incremental horizontal earth pressure due to surcharge PhLS,1 at depth Z (Fig. 11.10.10.1-1) |
| $\Delta\sigma_{H,P_{hLS,1}}(Z)$ | Incremental horizontal earth pressure due to surcharge PhLS,1 at depth Z (Fig. 11.10.10.1-1) |
| $\Delta\sigma_{H,max,P_{hLS,1}}$ | Maximum incremental horizontal earth pressure due to surcharge (PhLS,1) (Fig. 3.11.6.3-2) |
| $\Delta\sigma_{H,max,P'_{hLS,1}}$ | Maximum incremental horizontal earth pressure due to surcharge (PhLS,1) (Fig. 3.11.6.3-2) |
| $\Delta\sigma_{V,P'_{vES,1}}(Z)$ | Incremental vertical earth pressure due to surcharge PvES,1 at depth Z (Fig. 3.11.6.3-1) |
| $\Delta\sigma_{V,P_{vES,2}}(Z)$ | Incremental vertical earth pressure due to surcharge PvES,2 at depth Z (Fig. 3.11.6.3-1) |
| $\Delta\sigma_{V,P_{vLS,1}}(Z)$ | Incremental vertical earth pressure due to surcharge PvLS,1 at depth Z (Fig. 3.11.6.3-1) |
| $A_f$ | Area of soil above reinforced zone within active zone for internal analysis (Fig. 11.10.7.2-1) |
| $B'$ | Effective length for bearing (Article 11.10.5.4) |
| $B$ | Length of wall base (Fig. 11.10.2-1) |
| $CDR_{bearing}$ | Capacity demand ratio (bearing) (Article 10.6.3.1) |
| $CDR_{conn}$ | Capacity demand ratio (connection strength) (Article 11.10.6.4.1-2) |
| $CDR_{overturning}$ | Capacity demand ratio (overturning) (Article C11.6.3.3) |
| $CDR_{pullout}$ | Capacity demand ratio (pullout) (Article 11.10.6.3.2-1) |
| $CDR_{sliding,ext}$ | Capacity demand ratio (base sliding) (Article 10.6.3.4) |
| $CDR_{tensile}$ | Capacity demand ratio (tensile strength) (Article 11.10.6.4.1-1) |
| $c_{fnd}$ | Cohesion of foundation soil (Eq. 10.6.3.1.2a-1) |
| $C_{wq}$ | Factor applied to unit weight to account for reduction of bearing capacity due to groundwater within Df (Eq. 10.6.3.1.2a-1; Table 10.6.3.1.2a-2) |
| $C_{w\gamma}$ | Factor applied to unit weight to account for reduction of bearing capacity due to groundwater below the base of the wall (Eq. 10.6.3.1.2a-1; Table 10.6.3.1.2a-2) |
| $D_1(Z)$ | Effective width of applied load at depth Z (Fig. 3.11.6.3) |
| $D'_f$ | Embedment at bottom of pad (Fig. 10.6.3.1) |
| $D_f$ | Embedment of wall footing (Fig. 10.6.3.1) |
| $e$ | Eccentricity of vertical bearing resultant at wall base (Article 11.6.3.2) |
| $e_{(CaseI)}$ | Eccentricity of vertical bearing resultant at wall base (Article 11.6.3.2) |
| $e_{(CaseII)}$ | Eccentricity of vertical bearing resultant at wall base (Article 11.6.3.2) |
| $F^*$ | Pullout friction factor (Eq. 11.10.6.3.2-1) |
| $F'_1$ | Active force due to retained soil (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F'_{1h}$ | Horizontal component of active force due to retained soil (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F'_{1v}$ | Vertical component of active force due to retained soil (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F_{2,LS}$ | Active force due to uniform surcharge (live) (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F_{2h,LS}$ | Horizontal component of active force due to uniform surcharge Active force due to uniform surcharge (live) (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F_{2v,LS}$ | Vertical component of active force due to uniform surcharge Active force due to uniform surcharge (live) (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F_{phP_{hLS,1}}$ | Active force due to load PhLS,1 (horizontal component) (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |

| | |
|---|---|
| $F_{phP'_{hLS,1}}$ | Active force due to load PhLS,1 (horizontal component) (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F_{pP'_{hLS,1}}$ | Active force due to load PhLS,1 (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F_{pP_{hLS,1}}$ | Active force due to load PhLS,1 (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F_{pvP'_{hLS,1}}$ | Active force due to load PhLS,1 (vertical component) (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F_{pvP_{hLS,1}}$ | Active force due to load PhLS,1 (vertical component) (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $F_T$ | Active force due to retained soil and surcharges (Fig. 3.11.) |
| $F_{Th}$ | Horizontal component of active force due to retained soil and surcharges (Fig. 3.11.) |
| $F_{Tv}$ | Vertical component of active force due to retained soil and surcharges (Fig. 3.11.) |
| $F_{wa}$ | Hydrostatic force from active zone |
| $F_{wadyn}$ | Hydrodynamic force |
| $F_{wah}$ | Horizontal component of hydrostatic force from active zone |
| $F_{wav}$ | Vertical component of hydrostatic force from active zone (positive downwards) |
| $F_{wp}$ | Hydrostatic force from active zone |
| $F_{wph}$ | Horizontal component of hydrostatic force from active zone |
| $F_{wpv}$ | Vertical component of hydrostatic force from active zone (positive downwards) |
| $G_u$ | Centroid distance of block unit from face of wall |
| $h$ | Height of horizontal earth pressure diagram (Fig. 3.11.5.8.1; Fig. 3.11.5.9) |
| $H$ | Height of wall (Fig. 3.11.5.8.1) |
| $h_1$ | Height of active resultant from backfill soil (Fig. 11.10.5.2-1; Fig. 11.10.10.1-1) |
| $h_a$ | Height of seismic active force resultant above pivot (Article A11.3.1) |
| $h_{P'_{hLS,1}}$ | Height of resultant active force due to strip or point load PhLS,1 (Fig. 11.10.10.1-1) |
| $h_{P_{hLS,1}}$ | Height of resultant active force due to strip or point load PhLS,1 (Fig. 11.10.10.1-1) |
| $h_{P_{PIR}}$ | Height of PIR above pivot |
| $h_{Pp}$ | Vertical arm of passive resultant above bottom of wedge |
| $h_T$ | Height of active force resultant above pivot |
| $H_u$ | Segmental facing block unit height (Fig. 11.10.6.4.4b) |
| $h_{V1}$ | Height of V1 above pivot |
| $h_{V2}$ | Height of V2 above pivot |
| $h_{wa}$ | Height of water table above analysis depth |
| $h_{wp}$ | Height of water table above analysis depth |
| $h_{W_{surcharge}}$ | Height of Wsurcharge above pivot |
| $h_{W_w}$ | Height of Ww above pivot |
| $I_1$ | Height of horizontal stress distribution below concentrated load (internal stability) (Fig. 3.11.6.3-1(a)) |
| $k_{abh}$ | Active earth pressure coefficient for wall with batter considered (stiffness method) (Eq. C11.10.6.2.1e-2) |
| $K_{AE}$ | Active earth pressure coefficient (Eq. A11.3.1-1) |
| $K_{af}$ | Active earth pressure coefficient in backfill region (Fig. 11.10.2-1; Fig. 11.10.5.2-1; Fig. 11.10.6.2.1d-2) |
| $k_h$ | Seismic horizontal acceleration coefficient (Fig. 11.6.5.1-1; Article 11.6.5.2) |
| $k_p$ | Passive earth pressure coefficient (Eq. 3.11.5.4) |
| $k_r$ | Active earth pressure coefficient in reinforced region (Fig. 11.10.2-1; Article 11.10.6.2.1) |
| $k_v$ | Seismic vertical acceleration coefficient (Article 11.6.5.2) |
| $L'$ | Length of the reinforcement zone (excluding facing) (Fig. 11.10.5.2-1) |
| $L_a$ | Length of reinforcement inside active zone (not including any portion within the wall profile) (Fig. 11.10.6.3.1-1) |
| $L_e$ | Length of reinforcement in resistant zone (Fig. 11.10.6.3.1-1) |
| $L_{e,req}$ | Required length of reinforcement in resistant zone (Fig. 11.10.6.3.2-1) |
| $M_{o,F_1}$ | Driving moment due to backfill soil (Fig. 11.6.3.2) |
| $M_{o,F_{2LS}}$ | Driving moment due to surcharge (live) (Fig. 11.6.3.2) |

| | |
|---|---|
| $M_{o,F_{qLS}}$ | Driving moment due to point loads (live) (Fig. 11.6.3.2) |
| $M_{o,F_T}$ | Driving active moment (Fig. 11.6.3.2) |
| $M_{o,F_{wa}}$ | Driving moment due to hydrostatic active force (Fig. 11.6.3.2) |
| $M_{o,P_{IR}}$ | Driving moment due to seismic inertial forces (Fig. 11.6.3.2) |
| $M_{o,AE}$ | Driving moment due to seismic active force (Fig. 11.6.3.2) |
| $M_{o,seis}$ | Total driving moment due to seismic and earth pressure loading (with considering non-concurrency) (Article 11.6.5.1) |
| $M_{r,F_1}$ | Resisting moment due to backfill (Fig. 11.6.3.2) |
| $M_{r,F_{2LS}}$ | Resisting moment due to uniform surcharge (live) (Fig. 11.6.3.2) |
| $M_{r,F_{pLS}}$ | Resisting moment due to uniform surcharge (live) (Fig. 11.6.3.2) |
| $M_{r,F_f}$ | Resisting moment due to backfill (Fig. 11.6.3.2) |
| $M_{r,F_{wp}}$ | Resisting moment due to hydrostatic passive force (Fig. 11.6.3.2) |
| $M_{r,P_p}$ | Resisting moment due to passive soil (Fig. 11.6.3.2) |
| $M_{r,V_1}$ | Resiting moment due to V1 (Fig. 11.6.3.2) |
| $M_{r,V_2}$ | Resisting moment due to V2 (Fig. 11.6.3.2) |
| $M_{r,\Sigma V_{qES}}$ | Resisting moment due to surcharges above reinforced zone (earth) (Fig. 11.6.3.2) |
| $M_{r,\Sigma V_{qLS}}$ | Resisting moment due to surcharges above reinforced zone (live) (Fig. 11.6.3.2) |
| $M_{r,AE}$ | Resisting moment due to seismic active force (Fig. 11.6.3.2) |
| $M_{r,seis}$ | Total resisting moment due to seismic and earth pressure loading (with considering non-concurrency) (Article 11.6.5.1) |
| $M_{r,w}$ | Resisting moment due to weight of wall (Fig. 11.6.3.2) |
| $N'$ | Total effective normal force (Eq. 10.6.3.4-2) |
| $N_c$ | Bearing capacity coefficient (Table 10.6.3.1.2a-1) |
| $N_{cm}$ | Bearing capacity coefficient (Eq. 10.6.3.1.2a-2) |
| $N_q$ | Bearing capacity coefficient (Table 10.6.3.1.2a-1) |
| $N_{qm}$ | Bearing capacity coefficient (Eq. 10.6.3.1.2a-3) |
| $N_u$ | Number of courses in the wall |
| $N_\gamma$ | Bearing capacity coefficient (Table 10.6.3.1.2a-1) |
| $N_{\gamma m}$ | Bearing capacity coefficient (Eq. 10.6.3.1.2a-4) |
| $P'_{AE}$ | Seismic active force (effective) (Eq. 11.6.5.3-2; Fig. 11.10.7.1.1) |
| $P_{AE}$ | Seismic active force (Eq. 11.6.5.3-2; Fig. 11.10.7.1.1) |
| $P_{AEH}$ | Seismic active force (horizontal component) (Fig. 11.10.7.1-1) |
| $P'_{AEH}$ | Seismic active force (effective) (horizontal component) (Fig. 11.10.7.1-1) |
| $P_{AEV}$ | Seismic active force (vertical component) (Fig. 11.10.7.1-1) |
| $P'_{AEV}$ | Seismic active force (effective) (vertical component) (Fig. 11.10.7.1-1) |
| $P_{hLS,1}$ | Lateral strip load 1 (live) (Article 3.11.6.3) |
| $P'_{hLS,1}$ | Concentrated lateral load 1 (live) (Article 3.11.6.3) |
| $P_i$ | Inertial force due to weight of internal active zone (Eq. 11.10.7.2-2) |
| $P_{IR}$ | Seismic inertial force (Eq. 11.10.7.1-2) |
| $P'_p$ | Passive force (Article 3.11.5.4) |
| $P_{PE}$ | Seismic passive force (Fig. 11.6.5.1-1) |
| $P_{PEH}$ | Seismic passive force (horizontal component) (Fig. 11.6.5.1-1) |
| $P_{PEV}$ | Seismic passive force (vertical component) (Fig. 11.6.5.1-1) |
| $P'_{pH}$ | Passive force (horizontal component) (Article 3.11.5.4) |
| $P'_{pV}$ | Passive force (vertical component, positive downwards) (Article 3.11.5.4) |
| $P_r$ | Pullout resistance (Fig. C11.10.6.3.2) |
| $P_{r,f}$ | Factored pullout resistance (Eq. 11.10.6.3.2-1) |
| $P_{seis,H}$ | Total lateral force due to seismic and earth pressure loading (with considering non-concurrency) (Article 11.6.5.1) |
| $P_{seis,V}$ | Total vertical force due to seismic and earth pressure loading (with considering non-concurrency) (Article 11.6.5.1) |
| $P'_{vES,1}$ | Concentrated vertical load 1 (earth) (Article 3.11.6.3) |
| $P_{vES,2}$ | Vertical strip load 2 (earth) (Article 3.11.6.3) |

| | |
|---|---|
| $P_{vLS,1}$ | Vertical strip load 1 (live) (Article 3.11.6.3) |
| $q_{LS}$ | Distributed surcharge load (live) (Article 3.11.6; Fig. 11.10.5.2) |
| $q_{LS,1}$ | Distributed surcharge load 1 (live) (Article 3.11.6; Fig. 11.10.5.2) |
| $q_n$ | Nominal bearing resistance (Article 10.6.3.1.1-1) |
| $q_R$ | Factored bearing resistance (Article 10.6.3.1.1-1) |
| $R$ | Factored base reaction (Article 11.6.3.2) |
| $R_c$ | Reinforcement coverage ratio (Article 11.10.6.4.1) |
| $R_{ep}$ | Nominal passive resistance of soil available throughout the design life of the structure (Article 10.6.3.4-1) |
| $R_R$ | Factored resistance against failure by sliding (Article 10.6.3.4-1) |
| $R_\tau$ | Nominal sliding resistance between soil and foundation (Article 10.6.3.4-1) |
| $S_{0.7H}$ | Average height of soil surcharge within 0.7H of back of wall face (Fig. 11.10.6.2.1a-1) |
| $\beta$ | Slope angle (Fig. 3.11.5.3) |
| $\beta_{front}$ | Slope angle (front face) (Fig. 3.11.5.3) |
| $S_u$ | Undrained shear strength (Fig. 10.6.3.4-1) |
| $S_v$ | Tributary height of reinforcement layer (Fig. 11.10.6.2.1b-1) |
| $T_{ac}$ | Nominal long-term reinforcement strength (Eq. 11.10.6.4.1-2) |
| $T_{ac,f}$ | Factored long-term reinforcement strength (Eq. 11.10.6.4.1-2) |
| $T_{al}$ | Nominal long-term reinforcement strength (Eq. 11.10.6.4.1-1) |
| $T_{maxpo}$ | Maximum tensile force in reinforcement (pullout) (Article 11.10.6.2.1) |
| $T_{maxtens}$ | Maximum tensile force in reinforcement (strength) (Article 11.10.6.2.1) |
| $T_{md}$ | Incremental dynamic inertia force at layer of reinforcement (Eq. 11.10.7.2-2) |
| $T_o$ | Applied load at reinforcement/facing connection (Article 11.10.6.2.2; Eq. 11.10.6.4.1-2) |
| $T_{r,f}$ | Factored tensile resistance (Eq. 11.10.6.4.1-1) |
| $T_{totalf}$ | Total factored reinforcement tensile force (Article 11.10.6.4.1) |
| $T_{totalf,adj}$ | Total factored reinforcement tensile force, with dynamic component adjusted to short-term equivalent (Article 11.10.7) |
| $T_{totalof}$ | Total factored connection force (Article 11.10.6.4.1) |
| $u$ | Hydrostatic pressure at analysis depth |
| $U$ | Hydrostatic force acting at base of analysis |
| $V$ | Total vertical force (Eq. 10.6.3.4-2) |
| $V_1$ | Weight of rectangular soil backfill region (Fig. 11.10.5.2-1) |
| $W_a$ | Weight of active zone (Eq. 11.10.7.2-2) |
| $W_{surcharge}$ | Weight of dead surcharge (Fig. 11.6.5.1-1) |
| $W_u$ | Unit width of segmental facing (Article 11.3.1) |
| $W_w$ | Weight of wall (Article 11.3.1) |
| $x_{infl}$ | Horizontal extent of active zone behind the back of wall (Fig. 11.10.10.1-1) |
| $x_{int}$ | Horizontal distance to the start of active zone wedge behind the back of wall at the ground surface |
| $X_{V1}$ | Moment arm to V1 (Fig. 11.6.3.2) |
| $X_W$ | Moment arm to wall centroid (Fig. 11.6.3.2) |
| $X_{\Sigma VqES}$ | Moment arm to Vq (earth) (Fig. C11.5.6.3) |
| $X_{\Sigma VqLS}$ | Moment arm to Vq (live) (Fig. C11.5.6.3) |
| $Z$ | Depth below top of wall elevation (Fig. 11.10.6.2.1a-1) |
| $z_2$ | Depth where effective width intersects back of wall face (Fig. 3.11.6.3-1) |
| $Z_p$ | Depth below ground surface at center of pullout zone (Fig. 11.10.6.3.2-1) |
| $z_{passive}$ | Depth of passive soil |
| $z_{wback}$ | Depth of groundwater below top of wall (behind wall) |
| $z_{wfront}$ | Depth of groundwater below top of wall (in front of wall) |
| $\gamma_{EQ}$ | Load factor (earthquake loads) (Article 3.4.1; Article 11.5.6) |
| $\gamma_f$ | Unit weight of foundation soil below bearing depth (Eq. 10.6.3.1.2a-1) |
| $\gamma_{fill}$ | Unit weight of retained fill (Fig. 11.10.2-1) |
| $\gamma_{fnd}$ | Unit weight of foundation soil (Article 10.6.3.1) |

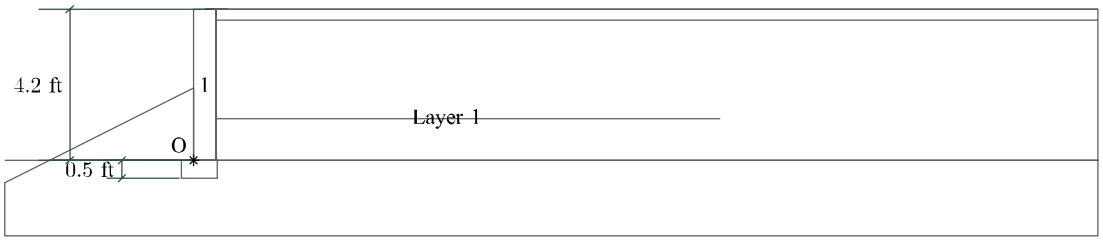
| | |
|---|---|
| $\gamma_{LS}$ | Load factor (live surcharge) (Table 3.4.1-1) |
| $\gamma_p$ | Unit weight of passive soil (Eq. 3.11.5.4-1) |
| $\gamma_{p-DC}$ | Load factor (components and attachments) (Table 3.4.1-2) |
| $\gamma_{p-DC(max)}$ | Load factor (components and attachments) (Table 3.4.1-2) |
| $\gamma_{p-DC(min)}$ | Load factor (components and attachments) (Table 3.4.1-2) |
| $\gamma_{p-EH}$ | Load factor (horizontal earth pressure) (Table 3.4.1-2) |
| $\gamma_{p-EH(max)}$ | Load factor (horizontal earth pressure) (Table 3.4.1-2) |
| $\gamma_{p-ES}$ | Load factor (earth surcharge) (Table 3.4.1-2) |
| $\gamma_{p-ES(max)}$ | Load factor (earth surcharge) (Table 3.4.1-2) |
| $\gamma_{p-EV}$ | Load factor (vertical earth pressure) (Table 3.4.1-2) |
| $\gamma_{p-EV(max)}$ | Load factor (vertical earth pressure) (Table 3.4.1-2) |
| $\gamma_{p-EV(min)}$ | Load factor (vertical earth pressure) (Table 3.4.1-2) |
| $\gamma_q$ | Unit weight of foundation soil above bearing depth (Eq. 10.6.3.1.2a-1) |
| $\gamma_r$ | Unit weight of reinforced soil zone (Fig. 11.10.2-1) |
| $\gamma_{sat,fill}$ | Unit weight (saturated) of retained fill (Fig. 11.10.2-1) |
| $\gamma_{sat,fnd}$ | Unit weight (saturated) of foundation soil (Article 10.6.3.1) |
| $\gamma_{sat,p}$ | Unit weight (saturated) of passive soil (Eq. 3.11.5.4-1) |
| $\gamma_{sat,r}$ | Unit weight (saturated) of reinforced soil zone (Fig. 11.10.2-1) |
| $\gamma_u$ | Unit weight of wall units |
| $\gamma_w$ | Unit weight of water (Article 12.3) |
| $\gamma_{WA}$ | Load factor (water load) (Table 3.4.1-1) |
| $\delta$ | Friction angle between fill and wall (Table 3.11.5.3) |
| $\delta_f$ | Friction angle between fill and wall (backfill soil) (Table 3.11.5.3) |
| $\delta_p$ | Friction angle between fill and wall (passive soil) (Table 3.11.5.3) |
| $\delta_r$ | Friction angle between fill and wall (reinforced soil) (Table 3.11.5.3) |
| $\theta$ | Angle of back face of wall to the horizontal (Fig. 3.11.5.3) |
| $\theta_{MO}$ | Mononobe-Okabe seismic angle (Eq. A11.3.1-1) |
| $\Sigma\Delta\sigma_{H,LS}$ | Superimposed horizontal earth pressures due to point and line surcharges (live) (Eq. 11.10.10.1) |
| $\Sigma\Delta\sigma_{V,ES}$ | Superimposed vertical earth pressures due to point and line surcharges (earth) (Eq. 11.10.10.1) |
| $\Sigma\Delta\sigma_{V,LS}$ | Superimposed vertical earth pressures due to point and line surcharges (live) (Eq. 11.10.10.1) |
| $\sigma_{1-po}$ | Vertical stress from reinforced soil (Fig. 11.10.6.3.2-1) |
| $\sigma_2$ | Vertical stress from soil surcharge above reinforced soil (strength) (Eq. 11.10.6.2.1a-1) |
| $\sigma_{2-po}$ | Vertical stress from soil surcharge above reinforced soil (pullout) (Eq. 11.10.6.2.1a-1) |
| $\Sigma F_h$ | Sum of horizontal active forces (Fig. 11.10.5.2-1) |
| $\Sigma L_{ci}$ | Total effective length of all reinforcement layers (Eq. 11.10.7.2-1) |
| $\Sigma M_{o(CaseI)}$ | Sum of driving moments (Case I) (Fig. 11.6.3.2) |
| $\Sigma M_{o(CaseII)}$ | Sum of driving moments (Case II) (Fig. 11.6.3.2) |
| $\Sigma M'_r$ | Sum of effective resisting moments (Fig. 11.6.3.2) |
| $\Sigma M_{r(CaseI)}$ | Sum of resisting moments (Case I) (Fig. 11.6.3.2) |
| $\Sigma M_{r(CaseII)}$ | Sum of resisting moments (Case II) (Fig. 11.6.3.2) |
| $\sigma'_n$ | Effective normal stress at reinforcement layer for pullout calculations (Eq. 11.10.6.3.2-1) |
| $\sigma'_n$ | Effective normal bearing stress (Eq. 11.6.3.2-1) |
| $\sigma_n$ | Normal bearing stress (Eq. 11.6.3.2-1) |
| $\sigma'_n$ | Effective normal stress at reinforcement layer for strength calculations (Eq. 11.10.6.2.1a-1) |
| $\Sigma N'$ | Total effective normal force assumed for bearing (Article 11.6.3.2) |
| $\Sigma V$ | Total vertical force assumed for bearing (Article 11.6.3.2) |
| $\Sigma V_{qES}$ | Vertical resultant due to uniform surcharge above reinforced zone (earth) (Fig. C11.5.6.3) |
| $\Sigma V_{qLS}$ | Vertical resultant due to uniform surcharge above reinforced zone (live) (Fig. C11.5.6.3) |

| | |
|---|---|
| $\phi_b$ | Resistance factor for foundation bearing (Table 11.5.7-1; Article 11.5.8) |
| $\phi_{cp}$ | Resistance factor for passive earth pressure component of sliding resistance (Table 10.5.5.2.2-1) |
| $\phi_{fill}$ | Internal friction angle of backfill soil (Fig. 11.10.2) |
| $\phi_{fnd}$ | Internal friction angle of foundation soil (Fig. 10.6.3.4-2) |
| $\phi_p$ | Internal friction angle of passive soil (Article 3.11.5.4) |
| $\phi_p$ | Resistance factor for reinforcement pullout (Table 11.5.7-1; Article 11.5.8; Article B11.2) |
| $\phi_r$ | Internal friction angle of reinforced soil (Article 11.10.5.2) |
| $\phi_t$ | Resistance factor for reinforcement tension (Table 11.5.7-1; Article 11.5.8; Article B11.2) |
| $\phi_\tau$ | Resistance factor for shear resistance between soil and foundation (Table 11.5.7-1) |
| $\Psi_{ext}$ | Inclination angle of Coulomb active zone (external) (Fig. 11.10.6.3.1) |
| $\Psi_{int}$ | Inclination angle of Coulomb active zone (internal) (Fig. 11.10.6.3.1) |
| $\omega$ | Wall batter (Article 11.3.1) |

# STRENGTH LIMIT STATE - SEGMENT 1 (Stationing 0+00 to 0+45 and 2+52 to 3+57)

## 1. Model properties

### 1.1. Wall properties




$H = 4.2$ ft

(Fig. 3.11.5.8.1)

$H_u = 50.4$ in

(Fig. 11.10.6.4.4b)

$W_u = 7.5$ in

(Article 11.3.1)

$\gamma_u = 150$ lbs/ft$^3$

$G_u = 2.76$ in

$N_u = 1$

$\omega = 0°$

(Article 11.3.1)

$\theta = 90°$

(Fig. 3.11.5.3)

$D_f = 2$ ft

(Fig. 10.6.3.1)

$D'_f = 2.5$ ft

(Fig. 10.6.3.1)

$B = 14.625$ ft

(Fig. 11.10.2-1)

### 1.2. Backslope geometry

$\beta = 0°$

(Fig. 3.11.5.3)

$(0.5H_2) = 2.1$ ft

(Eq. 11.10.7.1-4)

### 1.3. Groundwater

$\gamma_w = 62.449$ lbs/ft$^3$

(Article 12.3)

$z_{wback} = 0.3$ ft

$z_{wfront} = 4.2$ ft

### 1.4. Soils (unfactored)

$\phi_r = 35^\circ$

(Article 11.10.5.2)

$\delta_r = 23^\circ$

(Table 3.11.5.3)

$\gamma_r = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,r} = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fill} = 32^\circ$

(Fig. 11.10.2)

$\delta_f = 21.3^\circ$

(Table 3.11.5.3)

$\gamma_{fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fnd} = 0^\circ$

(Fig. 10.6.3.4-2)

$c_{fnd} = 500 \text{ psf}$

(Eq. 10.6.3.1.2a-1)

$\gamma_{fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\gamma_{sat,fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\phi_p = 40^\circ$

(Article 3.11.5.4)

$\delta_p = 26^\circ$

(Table 3.11.5.3)

$\gamma_p = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

$\gamma_{sat,p} = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

## 1.5. Seismic inputs

$k_h = 0.43$

(Fig. 11.6.5.1-1)
(Article 11.6.5.2)

$k_v = 0$

(Article 11.6.5.2)

Calculate the Mononobe-Okabe seismic angle.

$$\theta_{MO} = \beta + \tan^{-1}\left(\frac{k_h}{1 - k_v}\right)$$
$$\rightarrow \theta_{MO} = (0^\circ) + \tan^{-1}\left(\frac{(0.43)}{1 - (0)}\right)$$
$$\rightarrow \theta_{MO} = 23.3^\circ$$

(Eq. 11.6.5.3-1)

$\phi_{fill} \geq \beta + \theta_{MO} \rightarrow PASS$

(Eq. 11.6.5.3-1)

## 1.6. Surcharges

$q_{LS,1} = 250 \text{ psf}$

(Article 3.11.6)
(Fig. 11.10.5.2)

$P_{vLS,1} = 50 \text{ lbs/ft}$

(Article 3.11.6.3)

$P_{vES,2} = 50 \text{ lbs/ft}$

(Article 3.11.6.3)

$P_{hLS,1} = 50 \text{ lbs/ft}$

(Article 3.11.6.3)

$P'_{vES,1} = 200 \text{ lbs}$

(Article 3.11.6.3)

$P'_{hLS,1} = 200 \text{ lbs}$

(Article 3.11.6.3)

### 1.7. Calculate **δ** (external)

Compute interface friction angle for external stability of wall.

$$\delta = \min(\delta_f, \delta_r)$$
$$\rightarrow \delta = \min((21.3°), (23°))$$
$$\rightarrow \delta = 21.3°$$

(Article 11.10.5.2)

### 1.8. Calculate Ka

Calculate the active earth pressure coefficient, static method.

$$K_{af} = \frac{\sin^2(\theta + \phi_{fill})}{\sin^2(\theta)\sin(\theta - \delta)\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta)}{\sin(\theta-\delta\sin(\theta+\beta))}}\right]^2}$$
$$\rightarrow K_{af} = \frac{\sin^2((90°) + (32°))}{\sin^2((90°))\sin((90°) - (21.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°))}{\sin((90°)-(21.3°)\sin((90°)+(0°)))}}\right]^2}$$
$$\rightarrow K_{af} = 0.275$$

(Eq. 3.11.5.3)

Calculate the active earth pressure coefficient, seismic method.

$$K_{AE} = \frac{\cos^2(\phi_{fill} + \omega - \theta_{MO})}{\cos(\theta_{MO})\cos^2(\omega)\cos(\delta - \omega + \theta_{MO})\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta-\theta_{MO})}{\cos(\delta-\omega+\theta_{MO})\cos(\omega+\beta)}}\right]}$$
$$\rightarrow K_{AE} = \frac{\cos^2((32°) + (0°) - (23.3°))}{\cos((23.3°))\cos^2((0°))\cos((21.3°) - (0°) + (23.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°)-(23.3°))}{\cos((21.3°)-(0°)+(23.3°))\cos((0°)+(0°))}}\right]}$$
$$\rightarrow K_{AE} = 0.747$$

(Eq. A11.3.1-1)

### 1.9. Critical failure plane

Calculate the inclination of the assumed failure plane.

$$\Psi_{ext} = 45^\circ + \frac{\phi_{fill}}{2}$$
$$\rightarrow \Psi_{ext} = 45^\circ + \frac{(32^\circ)}{2}$$
$$\rightarrow \Psi_{ext} = 61^\circ$$

(Fig. 11.10.6.3.1-1)

Calculate the inclination of the assumed failure plane.

$$\Psi_{int} = 45^\circ + \frac{\phi_r}{2}$$
$$\rightarrow \Psi_{inl} = 45^\circ + \frac{(35^\circ)}{2}$$
$$\rightarrow \Psi_{int} = 62.5^\circ$$

(Fig. 11.10.6.3.1-1)

## 1.10. Front face

$$\beta_{front} = -26.6^\circ$$

(Fig. 3.11.5.3)

## 1.11. Load combinations

### 1.11.1. Factors (Strength Limit State)

$\gamma_{p-DC(max)} = 1.25$

(Table 3.4.1-2)

$\gamma_{p-DC(min)} = 0.9$

(Table 3.4.1-2)

$\gamma_{p-EH(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{p-EV(max)} = 1.35$

(Table 3.4.1-2)

$\gamma_{p-EV(min)} = 1$

(Table 3.4.1-2)

$\gamma_{p-ES(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{EQ} = 0$

(Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1.75$

(Table 3.4.1-1)

$\gamma_{WA} = 1$

(Table 3.4.1-1)

$\phi_p = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.65$

(Table 11.5.7-1)
(Article 11.5.8)

$\phi_r = 1$

(Table 11.5.7-1)

$\phi_{ep} = 0.5$

(Table 10.5.5.2.2-1)

### 1.11.2. Factors (Extreme Limit State)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-EH} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-ES} = 1$ (Table 3.4.1-2)

$\gamma_{EQ} = 1$ (Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1$ (Table 3.4.1-1)

$\gamma_{WA} = 1$ (Table 3.4.1-1)

$\phi_p = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.9$ (Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$ (Table 11.5.7-1)

$\phi_{ep} = 1$ (Table 10.5.5.2.2-1)

## 1.12. Reinforcements

Determine length of reinforced zone excluding wall facing.

$L' = B - W_u$
$\rightarrow L' = (14.625 \text{ ft}) - (7.5 \text{ in})$
$\rightarrow L' = 14 \text{ ft}$ (Fig. 11.10.5.2-1)

## 1.13. Global reinforcement data

$A_f = 0 \text{ ft}^2$

(Fig. 11.10.7.2-1)

Calculate the average height of soil surcharge within 0.7H of back of wall face.

$S_{0.7H} = (0.5)(0.7H)\tan(\beta)$
$\rightarrow S_{0.7H} = (0.5)\Big(0.7(4.2 \text{ ft})\Big)\tan((0°))$
$\rightarrow S_{0.7H} = 0 \text{ ft}$

(Eq. 11.10.6.2.1a-2)

Determine simplified Coulomb lateral earth pressure coefficient.

$$k_{abh} = \frac{\sin^2(\theta + \phi_r)}{\sin^3(\theta)\left[1 + \frac{\sin(\phi_r)}{\sin(\theta)}\right]^2}$$
$$\rightarrow k_{abh} = \frac{\sin^2((90°) + (35°))}{\sin^3((90°))\left[1 + \frac{\sin((35°))}{\sin((90°))}\right]^2}$$
$\rightarrow k_{abh} = 0.271$

(Eq. 11.10.6.2.1c-2)

$\omega \leq (20°) \rightarrow PASS$

(Article 11.10.6.2.1)

### 1.14. Backslope properties

$x_{int} = 14 \text{ ft}$

Compute height of sloped backfill for earth pressure calculations.

$h = H$
$\rightarrow h = 4.2 \text{ ft}$

(Fig. 3.11.5.9)
(Fig. 3.11.5.8.1)

## 2. Strength Limit State

### 2.1. Summary

#### 2.1.1. External stability - Strength Limit State

| Failure mode | CDR |
|---|---|
| Base sliding | 2.157 |
| Overturning | 2.405 |
| Bearing | 2.617 |

#### 2.1.2. Reinforcement stability - Strength Limit State

| Layer | Tensile strength | Connection | Pullout |
|---|---|---|---|
| 1 | 2.19 | 2.19 | 4.139 |

### 2.2. External forces

#### 2.2.1. Weights

Compute the weight of the wall facing.

$$W_w = W_u H_u \gamma_u N_u$$
$$\rightarrow W_w = (7.5 \text{ in})(50.4 \text{ in})(150 \text{ lbs/ft}^3)(1)$$
$$\rightarrow W_w = 393.75 \text{ lbs/ft}$$

(Eq. C11.10.5.3)

Calculate the horizontal offset of the wall centroid from the center of the analysis layer.

$$X_W = \frac{B}{2} - G_u$$
$$\rightarrow X_W = \frac{(14.625 \text{ ft})}{2} - (2.76 \text{ in})$$
$$\rightarrow X_W = 7.082 \text{ ft}$$

(Fig. 11.6.3.2)

$h_{W_w} = 2.1$ ft

$V_1 = 2940$ lbs/ft

(Fig. 11.10.5.2-1)

$X_{V1} = 0.313$ ft

(Fig. 11.6.3.2)

$\Sigma V_{qLS} = 3549.996$ lbs/ft

(Fig. C11.5.6.3)

$X_{\Sigma VqLS} = 0.214$ ft

(Fig. C11.5.6.3)

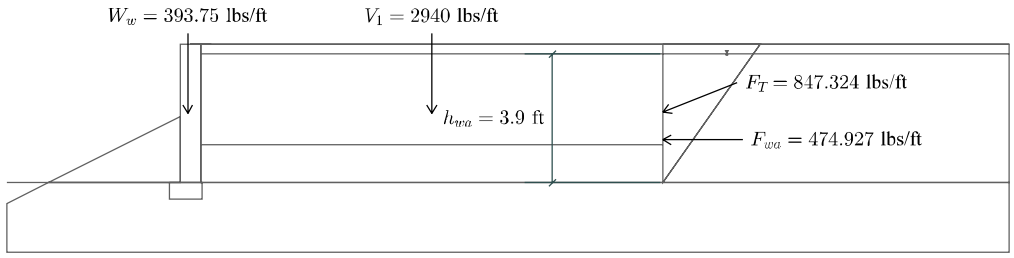
$\Sigma V_{qES} = 370$ lbs/ft

(Fig. C11.5.6.3)

$X_{\Sigma VqES} = -6.687$ ft

(Fig. C11.5.6.3)

### 2.2.2. Earth forces




$h_{wa} = 3.9$ ft

$F_1' = 172.603$ lbs/ft

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

$h_1 = 1.476$ ft

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Compute the horizontal component of F1.

$$F_{1h}' = F_1' \cos(\delta)$$
$$\rightarrow F_{1h}' = (172.603 \text{ lbs/ft}) \cos((21.3°))$$
$$\rightarrow F_{1h}' = 160.813 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

(Fig. 3.11.5.9-1)

Compute the vertical component of F1.

$$F'_{1v} = F'_1 \sin(\delta)$$
$$\rightarrow F'_{1v} = (172.603 \text{ lbs/ft}) \sin((21.3^\circ))$$
$$\rightarrow F'_{1v} = 62.698 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute hydrostatic force.

$$F_{wa} = \frac{\frac{1}{2} h_{wa}^2 \gamma_w}{\sin(\theta)}$$
$$\rightarrow F_{wa} = \frac{\frac{1}{2}(3.9 \text{ ft})^2 (62.449 \text{ lbs/ft}^3)}{\sin((90^\circ))}$$
$$\rightarrow F_{wa} = 474.927 \text{ lbs/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Compute hydrostatic force (horizontal component).

$$F_{wah} = F_{wa} \sin(\theta)$$
$$\rightarrow F_{wah} = (474.927 \text{ lbs/ft}) \sin((90^\circ))$$
$$\rightarrow F_{wah} = 474.927 \text{ lbs/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Compute hydrostatic force (vertical component, positive downwards).

$$F_{wav} = +F_{wa} \cos(\theta)$$
$$\rightarrow F_{wav} = +(474.927 \text{ lbs/ft}) \cos((90^\circ))$$
$$\rightarrow F_{wav} = 0 \text{ lbs/ft}$$

(Article 3.7.1)
(Article 3.11.3)

$$x_{infl} = 16.328 \text{ ft}$$

(Fig. 11.10.10.1-1)

Sum up surcharges within influence zone.

$$q_{LS} = q_{LS,1}$$
$$\rightarrow q_{LS} = 250 \text{ psf}$$

(Fig. 11.10.10.1-1)

Compute the active force due to surcharge.

$$F_{2,LS} = q_{LS} h K_{af}$$
$$\rightarrow F_{2,LS} = (250 \text{ psf})(4.2 \text{ ft})(0.275)$$
$$\rightarrow F_{2,LS} = 288.784 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Compute the horizontal component of F2.

$$F_{2h,LS} = F_{2,LS}\cos(\delta)$$
$$\rightarrow F_{2h,LS} = (288.784 \text{ lbs/ft})\cos((21.3^\circ))$$
$$\rightarrow F_{2h,LS} = 269.058 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the vertical component of F2.

$$F_{2v,LS} = F_{2,LS}\sin(\delta)$$
$$\rightarrow F_{2v,LS} = (288.784 \text{ lbs/ft})\sin((21.3^\circ))$$
$$\rightarrow F_{2v,LS} = 104.901 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Convert concentrated lateral load into resultant active force.

$$F_{pP_{hLS,1}} = P_{hLS,1}$$
$$\rightarrow F_{pP_{hLS,1}} = 50 \text{ lbs/ft}$$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$$F_{phP_{hLS,1}} = F_{pP_{hLS,1}}$$
$$\rightarrow F_{phP_{hLS,1}} = 50 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$$h_{P_{hLS,1}} = H - z_P - I_2/3$$
$$\rightarrow h_{P_{hLS,1}} = (4.2 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$$
$$\rightarrow h_{P_{hLS,1}} = 4.2 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$F_{pvP_{hLS,1}} = 0 \text{ lbs/ft}$$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Convert concentrated lateral load into resultant active force.

$$F_{pP'_{hLS,1}} = P'_{hLS,1}/L_f$$
$$\rightarrow F_{pP'_{hLS,1}} = (200 \text{ lbs})/(357 \text{ ft})$$
$$\rightarrow F_{pP'_{hLS,1}} = 0.56 \text{ lbs/ft}$$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$$F_{phP'_{hLS,1}} = F_{pP'_{hLS,1}}$$
$$\rightarrow F_{phP'_{hLS,1}} = 0.56 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$$h_{P'_{hLS,1}} = H - z_P - I_2/3$$
$$\rightarrow h_{P'_{hLS,1}} = (4.2 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$$
$$\rightarrow h_{P'_{hLS,1}} = 4.2 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$F_{pvP'_{hLS,1}} = 0 \text{ lbs/ft}$$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Sum all the active horizontal earth forces.

$$F_{Th} = \gamma_{p-EII(max)} F'_{1h} + \gamma_{LS}\left(F_{phP_{hLS,1}} + F_{phP'_{hLS,1}} + F_{2h,LS}\right)$$
$$\rightarrow F_{Th} = (1.5)(160.813 \text{ lbs/ft}) + (1.75)\left((50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft}) + (269.058 \text{ lbs/ft})\right)$$
$$\rightarrow F_{Th} = 800.551 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

$$h_T = 2.144 \text{ ft}$$

Compute vertical resultant.

$$F_{Tv} = \gamma_{p-EII(max)} F'_{1v} + \gamma_{LS}\left(F_{2v,LS} + F_{pvP_{hLS,1}} + F_{pvP'_{hLS,1}}\right)$$
$$\rightarrow F_{Tv} = (1.5)(62.698 \text{ lbs/ft}) + (1.75)\left((104.901 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\right)$$
$$\rightarrow F_{Tv} = 277.625 \text{ lbs/ft}$$

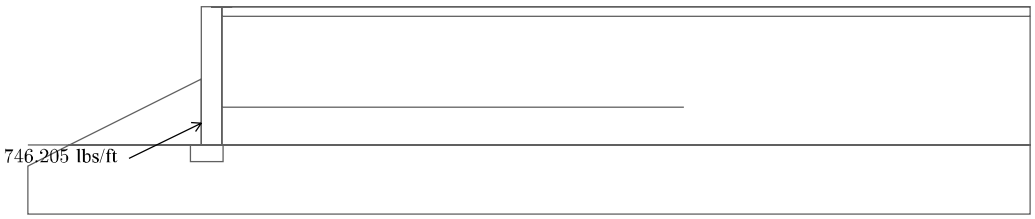
(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Total factored active resultant.

$$F_T = \sqrt{F_{Th}^2 + F_{Tv}^2}$$
$$\rightarrow F_T = \sqrt{(800.551 \text{ lbs/ft})^2 + (277.625 \text{ lbs/ft})^2}$$
$$\rightarrow F_T = 847.324 \text{ lbs/ft}$$

(Fig. 11.6.3.2-2)

### 2.2.3. Front face resistance




$$z_{passive} = 2 \text{ ft}$$

Select the passive earth pressure coefficient.

$$k_p = f(\phi_p, \beta_{front}, \omega_{passive}, \delta_p)$$
$$\rightarrow k_p = f((40°), (-26.6°), (0°), (26°))$$
$$\rightarrow k_p = 2.764$$

(Caquot & Kerisel 1949 pp. 116-127)

$h_{wp} = 0 \text{ ft}$

Calculate the height of the passive resultant above the bottom of the passive wedge.

$h_{Pp} = z_{passive}/3$
$\rightarrow h_{Pp} = (2 \text{ ft})/3$
$\rightarrow h_{Pp} = 0.667 \text{ ft}$

$P'_p = 746.205 \text{ lbs/ft}$

(Article 3.11.5.4)

$h_{Pp} = 0.667 \text{ ft}$

Compute the horizontal component of Pp.

$P'_{pH} = P'_p \cos(\delta_p)$
$\rightarrow P'_{pH} = (746.205 \text{ lbs/ft}) \cos((26°))$
$\rightarrow P'_{pH} = 670.685 \text{ lbs/ft}$

Compute the vertical component of Pp.

$P'_{pV} = -P'_p \sin(\delta_p)$
$\rightarrow P'_{pV} = -(746.205 \text{ lbs/ft}) \sin((26°))$
$\rightarrow P'_{pV} = -327.115 \text{ lbs/ft}$

Compute hydrostatic force.

$F_{wp} = \frac{\frac{1}{2} h_{wp}^2 \gamma_w}{\sin(\theta)}$
$\rightarrow F_{wp} = \frac{\frac{1}{2} (0 \text{ ft})^2 (62.449 \text{ lbs/ft}^3)}{\sin((90°))}$
$\rightarrow F_{wp} = 0 \text{ lbs/ft}$

(Article 3.7.1)
(Article 3.11.3)

Compute hydrostatic force (horizontal component).

$F_{wph} = F_{wp} \sin(\theta)$
$\rightarrow F_{wph} = (0 \text{ lbs/ft}) \sin((90°))$
$\rightarrow F_{wph} = 0 \text{ lbs/ft}$

(Article 3.7.1)
(Article 3.11.3)

Compute hydrostatic force (vertical component, positive downwards).

$F_{wpv} = -F_{wp} \cos(\theta)$
$\rightarrow F_{wpv} = -(0 \text{ lbs/ft}) \cos((90°))$
$\rightarrow F_{wpv} = 0 \text{ lbs/ft}$

(Article 3.7.1)
(Article 3.11.3)

### 2.2.4. External moments

Determine driving moment from F1.

$$M_{o,F_1} = F'_{1h} h_1$$
$$\rightarrow M_{o,F_1} = (160.813 \text{ lbs/ft})(1.476 \text{ ft})$$
$$\rightarrow M_{o,F_1} = 237.308 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from F1.

$$M_{r,F_1} = F'_{1v} B$$
$$\rightarrow M_{r,F_1} = (62.698 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,F_1} = 916.964 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine driving moment from active hydrostatic force.

$$M_{o,F_{wa}} = F_{wah}\left(\frac{h_{wa}}{3}\right) - F_{wav}\left(B + \left(\frac{h_{wa}}{3}\right)\tan(\theta - 90^\circ)\right)$$
$$\rightarrow M_{o,F_{wa}} = (474.927 \text{ lbs/ft})\left(\frac{(3.9 \text{ ft})}{3}\right) - (0 \text{ lbs/ft})\left((14.625 \text{ ft}) + \left(\frac{(3.9 \text{ ft})}{3}\right)\tan((90^\circ) - 90^\circ)\right)$$
$$\rightarrow M_{o,F_{wa}} = 617.405 \text{ lbsft/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Determine driving moment from F2 (live).

$$M_{o,F_{2LS}} = F_{2h,LS} h/2$$
$$\rightarrow M_{o,F_{2LS}} = (269.058 \text{ lbs/ft})(4.2 \text{ ft})/2$$
$$\rightarrow M_{o,F_{2LS}} = 565.022 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from F2 (live).

$$M_{r,F_{2LS}} = F_{2v,LS} B$$
$$\rightarrow M_{r,F_{2LS}} = (104.901 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,F_{2LS}} = 1534.182 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Sum of driving moments due to point loads (live).

$$M_{o,F_{qLS}} = F_{phP_{hLS,1}} h_{P_{hLS,1}} F_{phP'_{hLS,1}} h_{P'_{hLS,1}}$$
$$\rightarrow M_{o,F_{qLS}} = (50 \text{ lbs/ft})(4.2 \text{ ft})(0.56 \text{ lbs/ft})(4.2 \text{ ft})$$
$$\rightarrow M_{o,F_{qLS}} = 2197.945 \text{ lbsft/ft}$$

Sum of resisting moments due to point loads (live).

$$M_{r,F_{pLS}} = F_{pvP_{hLS,1}}\left(B - h_{P_{hLS,1}}\cot\left(\theta\right)\right) + F_{pvP'_{hLS,1}}\left(B - h_{P'_{hLS,1}}\cot\left(\theta\right)\right)$$
$$\rightarrow M_{r,F_{pLS}} = (0\text{ lbs/ft})\left((14.625\text{ ft}) - (4.2\text{ ft})\cot\left((90^\circ)\right)\right) + (0\text{ lbs/ft})\left((14.625\text{ ft}) - (4.2\text{ ft})\cot\left((90^\circ)\right)\right)$$
$$\rightarrow M_{r,F_{pLS}} = 0\text{ lbsft/ft}$$

Determine driving active moment.

$$M_{o,F_T} = F_{Th}h_T$$
$$\rightarrow M_{o,F_T} = (800.551\text{ lbs/ft})(2.144\text{ ft})$$
$$\rightarrow M_{o,F_T} = 1716.368\text{ lbsft/ft}$$

Determine resisting moment from FT.

$$M_{r,F_T} = F_{Tv}B$$
$$\rightarrow M_{r,F_T} = (277.625\text{ lbs/ft})(14.625\text{ ft})$$
$$\rightarrow M_{r,F_T} = 4060.264\text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine hydrostatic force at base of wall.

$$U = \bar{h}_w B\gamma_w$$
$$\rightarrow U = (1.95\text{ ft})(14.625\text{ ft})(62.449\text{ lbs/ft}^3)$$
$$\rightarrow U = 1780.976\text{ lbs/ft}$$

Determine reduction in resisting moment due to porewater at base of wall.

$$\Delta M_{r,U} = U\frac{B}{2}$$
$$\rightarrow \Delta M_{r,U} = (1780.976\text{ lbs/ft})\frac{(14.625\text{ ft})}{2}$$
$$\rightarrow \Delta M_{r,U} = 13023.388\text{ lbsft/ft}$$

Determine driving moment from passive force.

$$M_{r,P_p} = P'_{pH}(h_{Pp} - h_{shear-key})$$
$$\rightarrow M_{r,P_p} = (670.685\text{ lbs/ft})\left((0.667\text{ ft}) - (0\text{ ft})\right)$$
$$\rightarrow M_{r,P_p} = 447.123\text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from passive hydrostatic force.

$$M_{r,F_{wp}} = F_{wph}(h_{wp} - h_{shear-key})$$
$$\rightarrow M_{r,F_{wp}} = (0\text{ lbs/ft})\left((0\text{ ft}) - (0\text{ ft})\right)$$
$$\rightarrow M_{r,F_{wp}} = 0\text{ lbsft/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Determine resisting moment from wall weight.

$$M_{r,w} = W_w[B/2 - X_W]$$
$$\rightarrow M_{r,w} = (393.75 \text{ lbs/ft})\Big[(14.625 \text{ ft})/2 - (7.082 \text{ ft})\Big]$$
$$\rightarrow M_{r,w} = 90.563 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V1.

$$M_{r,V_1} = V_1[X_{V1} + B/2]$$
$$\rightarrow M_{r,V_1} = (2940 \text{ lbs/ft})\Big[(0.313 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_1} = 22417.501 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V2.

$$M_{r,V_2} = V_2[X_{V2} + B/2]$$
$$\rightarrow M_{r,V_2} = (0 \text{ lbs/ft})\Big[(0 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_2} = 0 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qLS}} = \Sigma V_{qLS}[X_{\Sigma VqLS} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = (3549.996 \text{ lbs/ft})\Big[(0.214 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = 26718.722 \text{ lbsft/ft}$$

* Only applies when computing eccentricity for bearing capacity under maximum vertical load conditions.

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qES}} = \Sigma V_{qES}[X_{\Sigma VqES} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = (370 \text{ lbs/ft})\Big[(-6.687 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = 231.25 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CaseI)} = \gamma_{p-EH(max)} M_{o,F_1} + \gamma_{LS}\big(M_{o,F_{2LS}} + M_{o,F_{qLS}}\big) + \gamma_{WA} M_{o,F_{wa}}$$
$$\rightarrow \Sigma M_{o(CaseI)} = (1.5)(237.308 \text{ lbsft/ft}) + (1.75)\Big((565.022 \text{ lbsft/ft}) + (2197.945 \text{ lbsft/ft})\Big) + (1)(617.405 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseI)} = 5808.558 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r(CaseI)} = \gamma_{p-EH(max)} M_{r,F} + \gamma_{p-EV(min)}(M_{r,V_1} + M_{r,V_2}) + \gamma_{LS}(M_{r,F_{2LS}} + M_{r,F_{qLS}}) + \gamma_{p-DC(min)}(M_{r,w} + M_{r,\Sigma V_{qLS}}) + \phi_{sp} M_{r,P_p} + \gamma_{WA} M_{r,F_w}$$
$$\rightarrow \Sigma M_{r(CaseI)} = (1.5)(916.964 \text{ lbsft/ft}) + (1)\Big((22417.501 \text{ lbsft/ft}) + (0 \text{ lbsft/ft})\Big) + (1.75)\Big((1534.182 \text{ lbsft/ft}) + (0 \text{ lbsft/ft})\Big) + (0.9)\Big((90.563 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\Big) + (0.5)(147.123 \text{ lbsft/ft}) - (1)(0 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{r(CaseI)} = 26990.958 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

$$\Sigma M_r' = \Sigma M_{r(CaseI)} - \Delta M_{r,U}$$
$$\rightarrow \Sigma M_r' = (26990.958 \text{ lbsft/ft}) - (13023.388 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_r' = 13967.57 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CaseII)} = \gamma_{p-EII(max)} M_{o,F_1} + \gamma_{LS}\left(M_{o,F_{2LS}} + M_{o,F_{qLS}}\right) + \gamma_{WA} M_{o,F_{wa}}$$
$$\rightarrow \Sigma M_{o(CaseII)} = (1.5)(237.308 \text{ lbsft/ft}) + (1.75)\Big((565.022 \text{ lbsft/ft}) + (2197.945 \text{ lbsft/ft})\Big) + (1)(617.405 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseII)} = 5808.558 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r(CaseII)} = \gamma_{p-EII(max)} M_{r,F_1} + \gamma_{p-EII,max}\left(M_{r,V_c} - M_{r,F_1}\right) - \gamma_{LS}\left(M_{r,F_{2LS}} - M_{r,SW_{sfc}} - M_{r,SW_{qLS}}\right) - \gamma_{p-EC,max}\left(M_{r,w} - M_{r,SW_{cfs}}\right) + \phi_{vp} M_{r,F_2} + \gamma_{WA} M_{r,F_{wa}}$$
$$\rightarrow \Sigma M_{r(CaseII)} = (1.5)(916.964 \text{ lbsft/ft}) \quad (1.35)\Big((22417.501 \text{ lbsft/ft}) \quad (0 \text{ lbsft/ft})\Big) + (1.75)\Big((1534.182 \text{ lbsft/ft}) + (0 \text{ lbsft/ft}) + (26718.722 \text{ lbsft/ft})\Big) + (1.25)\Big((90.563 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\Big) + (0.5)(417.123 \text{ lbsft/ft}) + (1)(0 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{r(CaseII)} = 81707.48 \text{ lbsft/ft}$$

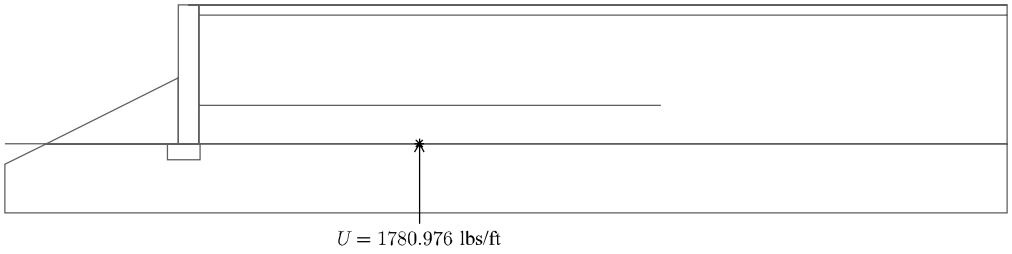
(Fig. 11.10.5.2-1)

Determine effective resisting moment.

$$\Sigma M_r' = \Sigma M_{r(CaseII)} - \Delta M_{r,U}$$
$$\rightarrow \Sigma M_r' = (81707.48 \text{ lbsft/ft}) - (13023.388 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_r' = 68684.093 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

### 2.2.5. Sum of external forces




Sum all the active horizontal earth forces.

$$\Sigma F_h = \gamma_{p-EH(max)} F'_{1h} + \gamma_{LS}\left(F_{2h,LS} + F_{phP_{hLS,1}} + F_{phP'_{hLS,1}}\right) + \gamma_{WA} F_{wah}$$
$$\rightarrow \Sigma F_h = (1.5)(160.813 \text{ lbs/ft}) + (1.75)\Big((269.058 \text{ lbs/ft}) + (50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft})\Big) + (1)(474.927 \text{ lbs/ft})$$
$$\rightarrow \Sigma F_h = 1275.478 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Compute vertical resultant.

$$V = \gamma_{p\ EH(max)} F'_{1v} + \gamma_{p\ DC(min)}(W_w + \Sigma V_{uLS}) + \gamma_{LS}\left(F_{2v,LS} + F_{pvP_{hLS,1}} - F_{pvP'_{hLS,1}}\right) + \gamma_{p\ EH(min)}(V_1 + V_2) + \phi_{vp} F'_{pV} + \gamma_{WA}(F_{wwv} - F_{wpv})$$
$$\rightarrow V = (1.5)(62.698 \text{ lbs/ft}) - (0.9)\Big((393.75 \text{ lbs/ft}) + (270 \text{ lbs/ft})\Big) + (1.75)\Big((104.901 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big) + (1)\Big((2910 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big) + (0.5)(-327.115 \text{ lbs/ft}) - (1)\Big((0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big)$$
$$\rightarrow V = 3741.443 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

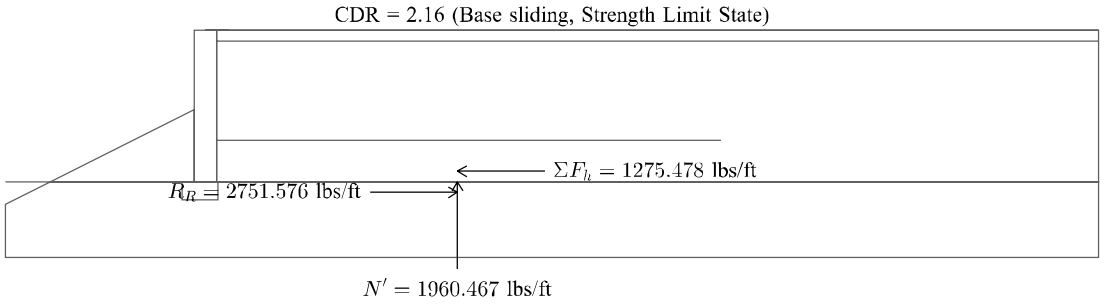
Determine hydrostatic force at base of wall.

$$U = \bar{h}_w B \gamma_w$$
$$\rightarrow U = (1.95 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 1780.976 \text{ lbs/ft}$$

Determine effective normal force.

$$N' = V - U$$
$$\rightarrow N' = (3741.443 \text{ lbs/ft}) - (1780.976 \text{ lbs/ft})$$
$$\rightarrow N' = 1960.467 \text{ lbs/ft}$$

## 2.3. Base sliding




Determine passive resistance.

$$R_{ep} = P'_{pH} + F_{wph}$$
$$\rightarrow R_{ep} = (670.685 \text{ lbs/ft}) + (0 \text{ lbs/ft})$$
$$\rightarrow R_{ep} = 670.685 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute the eccentricity of the bearing reaction.

$$e = \frac{B}{2} - \frac{\Sigma M_{r(CaseI)} - \Sigma M_{o(CaseI)}}{V}$$
$$\rightarrow e = \frac{(14.625 \text{ ft})}{2} - \frac{(26990.958 \text{ lbsft/ft}) - (5808.558 \text{ lbsft/ft})}{(3741.443 \text{ lbs/ft})}$$
$$\rightarrow e = 1.651 \text{ ft}$$

(Fig. 11.6.3.2)

Calculate normal stress distribution based on eccentricity.

$$\sigma_n = \frac{V}{B - 2(\max(0, e))}$$
$$\rightarrow \sigma_n = \frac{(3741.443 \text{ lbs/ft})}{(14.625 \text{ ft}) - 2\Big(\max\Big(0, (1.651 \text{ ft})\Big)\Big)}$$
$$\rightarrow \sigma_n = 330.425 \text{ psf}$$

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Compute the frictional resistance against sliding.

$$R_\tau = \min(0.5\sigma'_n, S_u)B$$
$$\rightarrow R_\tau = \min(0.5\sigma'_n, S_u)(14.625 \text{ ft})$$
$$\rightarrow R_\tau = 2416.234 \text{ lbs/ft}$$

(Eq. 10.6.3.4-2)

Compute the factored resistance against sliding.

$$R_R = \phi_\tau R_\tau + \phi_{ep} R_{ep}$$
$$\rightarrow R_R = (1)(2416.234 \text{ lbs/ft}) + (0.5)(670.685 \text{ lbs/ft})$$
$$\rightarrow R_R = 2751.576 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute CDR for base sliding.

$CDR_{sliding,ext} = R_R / \Sigma F_h$

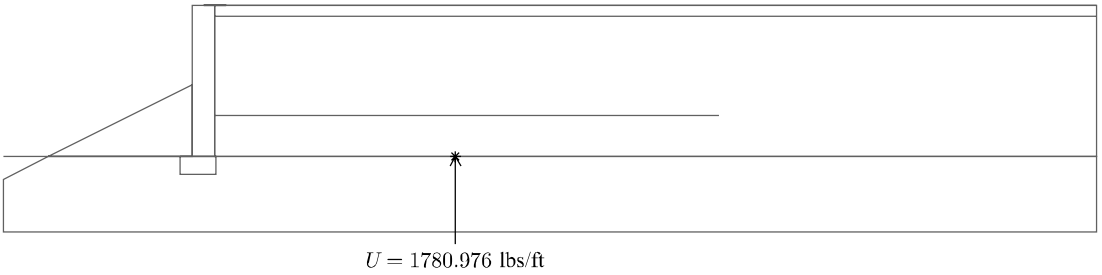
$\rightarrow CDR_{sliding,ext} = (2751.576 \text{ lbs/ft}) / (1275.478 \text{ lbs/ft})$

$\rightarrow CDR_{sliding,ext} = 2.16$

(Article 10.6.3.4)

$CDR_{sliding,ext} > 1 \rightarrow PASS$

## 2.4. Eccentricity




Compute vertical resultant.

$R = N'$

$\rightarrow R = 1960.467 \text{ lbs/ft}$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Compute vertical resultant.

$\Sigma V = \gamma_{p\_FR(max)} F'_{fc} + \gamma_{p\_DC(max)} (W_w + \Sigma V_{dLS}) + \gamma_{LS} \left( F_{bsLS} + F_{pwP_{wLS}} - F_{pwP'_{sLS}} + \Sigma V_{dLS} \right) - \gamma_{p\_EV(max)} (V_1 + V_2) + c_{ep} P'_{ep} + \gamma_{wA} (F_{wsw} - F_{wpw})$

$\rightarrow \Sigma V = (1.5)(62.698 \text{ lbs/ft}) + (1.25)\left( (393.75 \text{ lbs/ft}) + (379 \text{ lbs/ft}) \right) - (1.75)\left( (104.901 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (3549.996 \text{ lbs/ft}) \right) - (1.35)\left( (2940 \text{ lbs/ft}) + (0 \text{ lbs/ft}) \right) + (0.5)(-327.115 \text{ lbs/ft}) + (1)\left( (0 \text{ lbs/ft}) + (0 \text{ lbs/ft}) \right)$

$\rightarrow \Sigma V = 11250.249 \text{ lbs/ft}$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Determine hydrostatic force at base of wall.

$U = \bar{h}_w B \gamma_w$

$\rightarrow U = (1.95 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$

$\rightarrow U = 1780.976 \text{ lbs/ft}$

Determine effective normal force.

$\Sigma N' = \Sigma V - U$

$\rightarrow \Sigma N' = (11250.249 \text{ lbs/ft}) - (1780.976 \text{ lbs/ft})$

$\rightarrow \Sigma N' = 9469.273 \text{ lbs/ft}$

Compute the eccentricity of the bearing reaction.

$$e_{(CaseI)} = \frac{B}{2} - \frac{\Sigma M'_r - \Sigma M_{o(CaseI)}}{R}$$

$$\rightarrow e_{(CaseI)} = \frac{(14.625 \text{ ft})}{2} - \frac{(13967.57 \text{ lbsft/ft}) - (5808.558 \text{ lbsft/ft})}{(1960.467 \text{ lbs/ft})}$$

$\rightarrow e_{(CaseI)} = 3.151 \text{ ft}$

(Fig. 11.6.3.2)

$e_{(CaseI)} \leq (0.333)B = (58.5 \text{ in}) \rightarrow PASS$

(Article 10.6.3.3)
(Article 11.6.3.3)

Compute the eccentricity of the bearing reaction.

$$e_{(CaseII)} = \frac{B}{2} - \frac{\Sigma M'_r - \Sigma M_{o(CaseII)}}{\Sigma N'}$$

$$\rightarrow e_{(CaseII)} = \frac{(14.625 \text{ ft})}{2} - \frac{(68684.093 \text{ lbsft/ft}) - (5808.558 \text{ lbsft/ft})}{(9469.273 \text{ lbs/ft})}$$

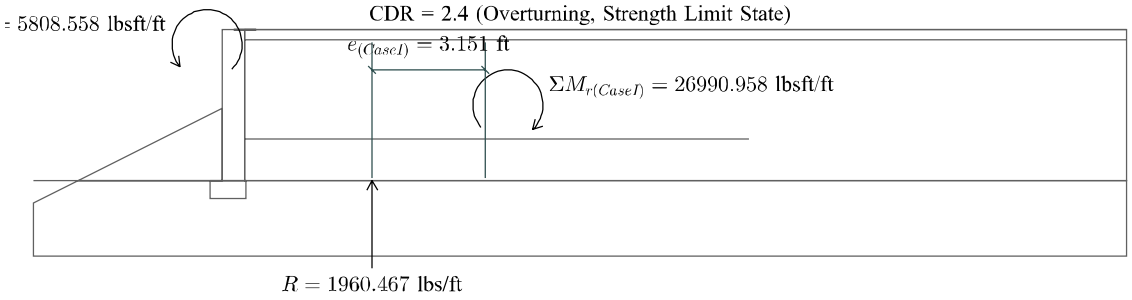
$$\rightarrow e_{(CaseII)} = 0.673 \text{ ft}$$

(Fig. 11.6.3.2)

$e_{(CaseII)} \leq (0.333)B = (58.5 \text{ in}) \rightarrow PASS$

(Article 10.6.3.3)
(Article 11.6.3.3)

## 2.5. Overturning




Compute CDR for external overturning.

$$CDR_{overturning} = \Sigma M'_r / \Sigma M_{o(CaseI)}$$

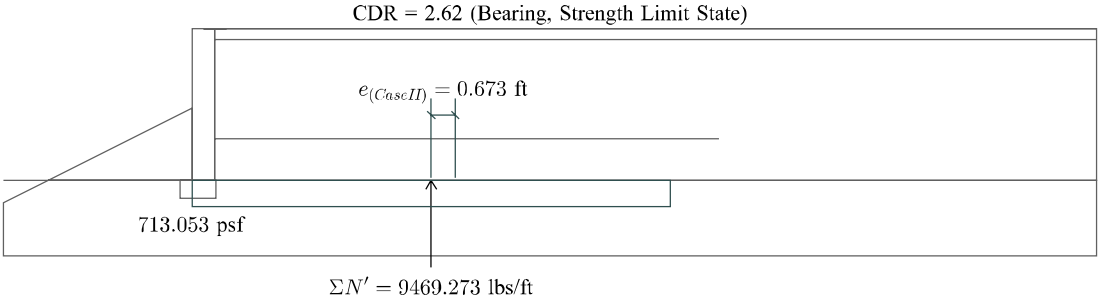
$$\rightarrow CDR_{overturning} = (13967.57 \text{ lbsft/ft})/(5808.558 \text{ lbsft/ft})$$

$$\rightarrow CDR_{overturning} = 2.4$$

(Article C11.6.3.3)

$CDR_{overturning} > 1 \rightarrow PASS$

## 2.6. Bearing




Calculate the effective bearing width.

$$B' = B - 2e_{(CaseII)}$$

$$\rightarrow B' = (14.625 \text{ ft}) - 2(0.673 \text{ ft})$$

$$\rightarrow B' = 13.28 \text{ ft}$$

(Article C11.10.5.4)

Calculate uniform vertical bearing stress.

$$\sigma_n' = \frac{\Sigma N'}{B'}$$
$$\rightarrow \sigma_n' = \frac{(9469.273 \text{ lbs/ft})}{(13.28 \text{ ft})}$$
$$\rightarrow \sigma_n' = 713.053 \text{ psf}$$

(Fig. 11.6.3.2)

Calculate the Nq coefficient for foundation soil (Reissner 1924 method).

$$N_q = \exp(\pi + \tan(\phi_{fnd}))\tan^2(\pi/4 + \phi_{fnd}/2)$$
$$\rightarrow N_q = \exp(\pi + \tan((0^\circ)))\tan^2(\pi/4 + (0^\circ)/2)$$
$$\rightarrow N_q = 1$$

Calculate the Nc coefficient for foundation soil (Prandtl 1921 method).

$$N_c = (N_q - 1)\cot(\phi_{fnd})$$
$$\rightarrow N_c = ((1) - 1)\cot((0^\circ))$$
$$\rightarrow N_c = 5.142$$

Calculate the Ngamma coefficient for foundation soil (Vesic 1975 method).

$$N_\gamma = 2(N_q + 1)\tan(\phi_{fnd})$$
$$\rightarrow N_\gamma = 2((1) + 1)\tan((0^\circ))$$
$$\rightarrow N_\gamma = 0$$

Determine Nqm.

$$N_{qm} = N_q$$
$$\rightarrow N_{qm} = 1$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-3)

Determine Ncm.

$$N_{cm} = N_c$$
$$\rightarrow N_{cm} = 5.142$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-2)

Determine Ngamma,m.

$$N_{\gamma m} = N_\gamma$$
$$\rightarrow N_{\gamma m} = 0$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-4)

$$\gamma_q = 120 \text{ lbs/ft}^3$$

(Eq. 10.6.3.1.2a-1)

$\gamma_f = 120 \text{ lbs/ft}^3$

(Eq. 10.6.3.1.2a-1)

$C_{wq} = 1$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

$C_{w\gamma} = 1$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

Calculate nominal bearing resistance.

$q_n = c_{fnd} N_{cm} + \gamma_q D'_f N_{qm} C_{wq} + 0.5 \gamma_f B' N_{\gamma m} C_{w\gamma}$
$\rightarrow q_n = (500 \text{ psf})(5.142) + (120 \text{ lbs/ft}^3)(2.5 \text{ ft})(1)(1) + 0.5(120 \text{ lbs/ft}^3)(13.28 \text{ ft})(0)(1)$
$\rightarrow q_n = 2870.797 \text{ psf}$

(Fig. 10.6.3.1.2a-1)

Factor the bearing resistance.

$q_R = q_n \phi_b$
$\rightarrow q_R = (2870.797 \text{ psf})(0.65)$
$\rightarrow q_R = 1866.018 \text{ psf}$

(Fig. 10.6.3.1.1-1)

Compute CDR for bearing.

$CDR_{bearing} = q_R / \sigma'_n$
$\rightarrow CDR_{bearing} = (1866.018 \text{ psf})/(713.053 \text{ psf})$
$\rightarrow CDR_{bearing} = 2.62$

(Article 10.6.3.1)

$CDR_{bearing} > 1 \rightarrow PASS$

## 2.7. Reinforcement precalculations

### 2.7.1. Reinforcement data (layer 1)

$Z = 3.05 \text{ ft}$

(Fig. 11.10.6.2.1a-1)

$F^* = 1.802$

(Eq. 11.10.6.3.2-1)

$S_v = 4.2 \text{ ft}$

(Fig. 11.10.6.2.1b-1)

$S_v \leq (2.7 \text{ ft}) \rightarrow FAIL$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$k_r = (1.0) k_{abh}$
$\rightarrow k_r = (1.0)(0.271)$
$\rightarrow k_r = 0.271$

(Fig. B11.2-1)

### 2.7.2. Pullout length (layer 1)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan(\Psi_{int})}$$
$$\rightarrow L_a = \frac{(4.2 \text{ ft}) - (3.05 \text{ ft})}{\tan((62.5°))}$$
$$\rightarrow L_a = 0.599 \text{ ft}$$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$$L_e = L' - L_a$$
$$\rightarrow L_e = (14 \text{ ft}) - (0.599 \text{ ft})$$
$$\rightarrow L_e = 13.401 \text{ ft}$$

(Fig. 11.10.6.3.1-1)

$$L_e \geq (3 \text{ ft}) \rightarrow PASS$$

(Article 11.10.6.3.2)

## 2.8. Tensile forces

### 4.8.1. Tmax (layer 1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (3.05 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 1.838 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50 \text{ lbs/ft})/(1.838 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 27.211 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,LS} = 27.211 \text{ psf}$$

(Eq. 11.10.10.1)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{II,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50 \text{ lbs/ft})/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$

$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$

$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$

(Eq. 3.11.6.3-2)

$I_1 = 0 \text{ ft}$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$\Delta\sigma_{H,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$

$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200 \text{ lbs})/(357 \text{ ft})\Big)/(0 \text{ ft})$

$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$I_1 = 0 \rightarrow \Delta\sigma_{II,P'_{hLS,1}}(Z) = 0$

$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$

$\rightarrow \Delta\sigma_{II,P'_{hLS,1}}(Z) = 0 \text{ psf}$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{II,P'_{hLS,1}}(Z)$

$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0 \text{ psf}) + (0 \text{ psf})$

$\rightarrow \Sigma\Delta\sigma_{H,LS} = 0 \text{ psf}$

(Eq. 11.10.10.1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$D_1(Z) = \dfrac{b_f + Z}{2} + d$

$\rightarrow D_1(Z) = \dfrac{(0.625 \text{ ft}) + (3.05 \text{ ft})}{2} + (0 \text{ ft})$

$\rightarrow D_1(Z) = 1.838 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$

$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50 \text{ lbs/ft})/(1.838 \text{ ft})$

$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 27.211 \text{ psf}$

(Eq. 3.11.6.3-1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\text{ ft}) + (3.05\text{ ft})}{2} + (0\text{ ft})$$
$$\rightarrow D_1(Z) = 1.838\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{(200\text{ lbs})}{(1.838\text{ ft})\Big((0.625\text{ ft}) + (3.05\text{ ft}) - (0\text{ ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = 29.617\text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,ES} = \Delta\sigma_{V,P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (27.211\text{ psf}) + (29.617\text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 56.828\text{ psf}$$

(Eq. 11.10.10.1)

Determine hydrostatic pressure at analysis depth.

$$u = h_{wa}\gamma_w$$
$$\rightarrow u = (-2.75\text{ ft})(62.449\text{ lbs/ft}^3)$$
$$\rightarrow u = -171.736\text{ psf}$$

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$
$$\rightarrow \sigma_2 = (0\text{ ft})(125\text{ lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0\text{ psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma'_n = \sigma_1 + \sigma_2 - u + q_{LS,1}$$
$$\rightarrow \sigma'_n = (152.5\text{ psf}) + (0\text{ psf}) - (-171.736\text{ psf}) + (250\text{ psf})$$
$$\rightarrow \sigma'_n = 574.236\text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtens} = S_v(k_r\sigma'_n)$$
$$\rightarrow T_{maxtens} = (4.2\text{ ft})\Big((0.271)(574.236\text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 653.571\text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$T_{maxpo} = T_{maxtens}$

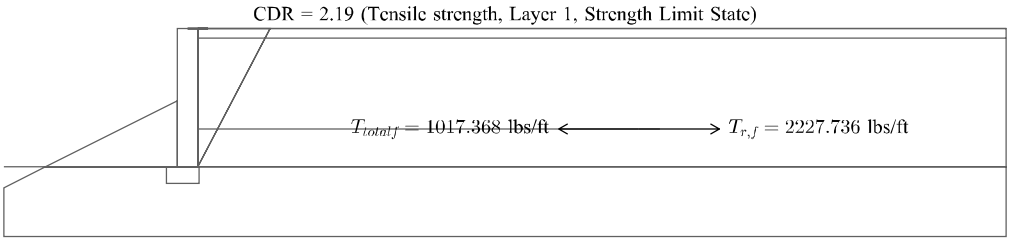
$\rightarrow T_{maxpo} = 653.571 \text{ lbs/ft}$

(Article 11.10.6.2.1)

## 2.9. Tensile strength

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 2.9.1. Tensile strength (layer 1)




Determine total factored tension force in reinforcement.

$T_{totalf} = \gamma_{p-EV(max)} T_{maxtens} + \gamma_{LS} S_v (k_r \Sigma\Delta\sigma_{V,LS} + \Sigma\Delta\sigma_{H,LS}) + \gamma_{p-DC(max)} S_v (k_r \Sigma\Delta\sigma_{V,ES} + \Sigma\Delta\sigma_{H,ES})$

$\rightarrow T_{totalf} = (1.35)(653.571 \text{ lbs/ft}) + (1.75)(4.2 \text{ ft})\Big((0.271)(27.211 \text{ psf}) + (0 \text{ psf})\Big) + (1.25)(4.2 \text{ ft})\Big((0.271)(56.828 \text{ psf}) + (0 \text{ psf})\Big)$

$\rightarrow T_{totalf} = 1017.368 \text{ lbs/ft}$

(Eq. 11.10.10.1-1)

Calculate factored tensile strength.

$T_{r,f} = \phi_t R_c T_{al}$

$\rightarrow T_{r,f} = (0.9)(0.332)(7455.61 \text{ lbs/ft})$

$\rightarrow T_{r,f} = 2227.736 \text{ lbs/ft}$

(Eq. 11.10.6.4.1-2)

$T_{al} = 7455.61 \text{ lbs/ft}$

(Eq. 11.10.6.4.1-1)

$\phi_t = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$R_c = 0.332$

(Article 11.10.6.4.1)

Compute CDR for tensile strength.

$$CDR_{tensile} = \frac{\phi_t T_{al} R_c}{T_{totalf}}$$

$$\rightarrow CDR_{tensile} = \frac{(0.9)(7455.61 \text{ lbs/ft})(0.332)}{(1017.368 \text{ lbs/ft})}$$

$\rightarrow CDR_{tensile} = 2.19$

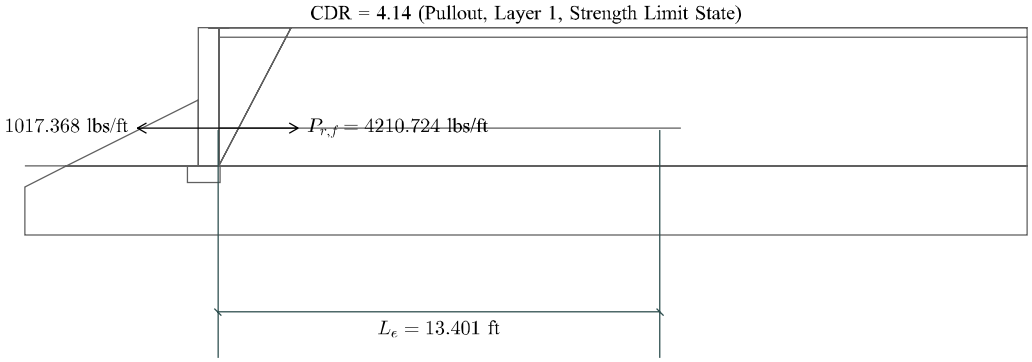
(Eq. 11.10.6.4.1-2)

$CDR_{tensile} > 1 \rightarrow PASS$

. Pullout

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 2.10.1. Pullout (layer 1)




$\sigma_{1-po} = 152.5 \text{ psf}$

(Fig. 11.10.6.3.2-1)

$Z_p = 3.05 \text{ ft}$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (above pullout region only).

$$\sigma_{2-po} = \gamma_r(Z_p - Z)$$
$$\rightarrow \sigma_{2-po} = (50 \text{ lbs/ft}^3)\Big((3.05 \text{ ft}) - (3.05 \text{ ft})\Big)$$
$$\rightarrow \sigma_{2-po} = 0 \text{ psf}$$

(Eq. 11.10.6.3.2-1)

Calculate vertical stress on reinforcement.

$$\sigma'_n = \sigma_{1-po} + \sigma_{2-po} - u$$
$$\rightarrow \sigma'_n = (152.5 \text{ psf}) + (0 \text{ psf}) - (-171.736 \text{ psf})$$
$$\rightarrow \sigma'_n = 324.236 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Determine total factored tension force in reinforcement.

$$T_{totalf} = \gamma_{p-EV(max)} T_{maxpo} + \gamma_{LS} S_v(k_r \Sigma\Delta\sigma_{V,LS} + \Sigma\Delta\sigma_{H,LS}) + \gamma_{p-DC(max)} S_v(k_r \Sigma\Delta\sigma_{V,ES} + \Sigma\Delta\sigma_{H,ES})$$
$$\rightarrow T_{totalf} = (1.35)(653.571 \text{ lbs/ft}) + (1.75)(4.2 \text{ ft})\Big((0.271)(27.211 \text{ psf}) + (0 \text{ psf})\Big) + (1.25)(4.2 \text{ ft})\Big((0.271)(56.828 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{totalf} = 1017.368 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate the pullout resistance.

$$P_r = F^* \alpha \sigma'_n C R_c L_e$$
$$\rightarrow P_r = (1.802)(0.9)(324.236 \text{ psf})(2)(0.332)(13.401 \text{ ft})$$
$$\rightarrow P_r = 4678.582 \text{ lbs/ft}$$

(Article C11.10.6.3.2)

Calculate the factored pullout resistance.

$$P_{r,f} = \phi_p P_r$$
$$\rightarrow P_{r,f} = (0.9)(4678.582 \text{ lbs/ft})$$
$$\rightarrow P_{r,f} = 4210.724 \text{ lbs/ft}$$

(Article C11.10.6.3.2-1)

Determine required length of reinforcement outside active zone.

$$L_{e,req} = \frac{T_{totalf}}{\phi_p F^* \alpha \sigma'_n C R_c}$$
$$\rightarrow L_{e,req} = \frac{(1017.368 \text{ lbs/ft})}{(0.9)(1.802)(0.9)(324.236 \text{ psf})(2)(0.332)}$$
$$\rightarrow L_{e,req} = 3.238 \text{ ft}$$

(Fig. 11.10.6.3.2-1)

Compute CDR for pullout.

$$CDR_{pullout} = L_e / L_{e,req}$$
$$\rightarrow CDR_{pullout} = (13.401 \text{ ft})/(3.238 \text{ ft})$$
$$\rightarrow CDR_{pullout} = 4.14$$

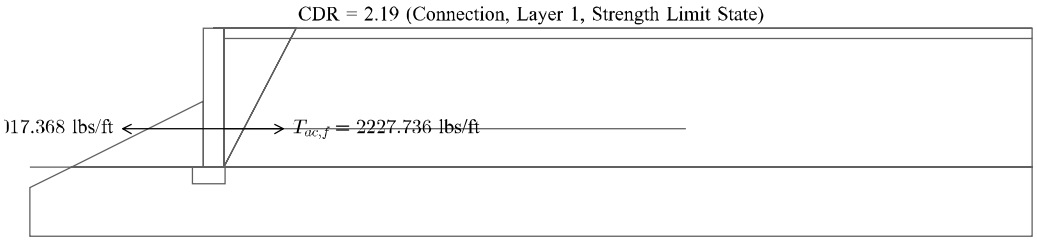
(Eq. 11.10.6.3.2-1)

$$CDR_{pullout} > 1 \rightarrow PASS$$

## 2.11. Connection

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 2.11.1. Connection (layer 1)




Determine connection force.

$$T_o = T_{maxtens}$$
$$\rightarrow T_o = 653.571 \text{ lbs/ft}$$

(Eq. 11.10.6.2.2)

Determine total factored connection force for reinforcement.

$$T_{totalof} = T_{totalf}$$
$$\rightarrow T_{totalof} = 1017.368 \text{ lbs/ft}$$

(Eq. 11.10.10.1-2)

Connection strength is limited by tensile strength.

$$T_{ac} = \min(T_{ac}, T_{al})$$
$$\rightarrow T_{ac} = \min\Big(T_{ac}, (7455.61 \text{ lbs/ft})\Big)$$
$$\rightarrow T_{ac} = 7455.61 \text{ lbs/ft}$$

$T_{ac} = 35073$ lbs/ft

(Eq. 11.10.6.4.1-2)

$\phi_t = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$R_c = 0.332$

(Article 11.10.6.4.1)

Compute the factored connection strength.

$$T_{ac,f} = \phi_t T_{ac} R_c$$
$$\rightarrow T_{ac,f} = (0.9)(7455.61 \text{ lbs/ft})(0.332)$$
$$\rightarrow T_{ac,f} = 2227.736 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

Compute CDR for connection strength.

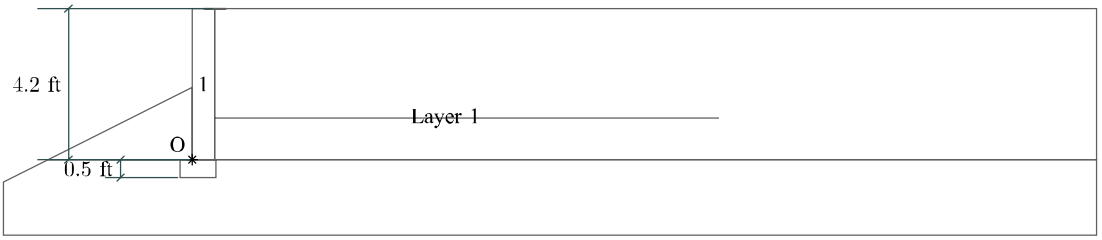
$$CDR_{conn} = \frac{T_{ac,f}}{T_{totalof}}$$
$$\rightarrow CDR_{conn} = \frac{(2227.736 \text{ lbs/ft})}{(1017.368 \text{ lbs/ft})}$$
$$\rightarrow CDR_{conn} = 2.19$$

(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

$CDR_{conn} > 1 \rightarrow PASS$

# EXTREME LIMIT STATE - SEGMENT 1 (Stationing 0+00 to 0+45 and 2+52 to 3+57)

## 3. Model properties




### 3.1. Wall properties

$H = 4.2$ ft (Fig. 3.11.5.8.1)

$H_u = 50.4$ in (Fig. 11.10.6.4.4b)

$W_u = 7.5$ in (Article 11.3.1)

$\gamma_u = 150$ lbs/ft$^3$

$G_u = 2.76$ in

$N_u = 1$

$\omega = 0°$ (Article 11.3.1)

$\theta = 90°$ (Fig. 3.11.5.3)

$D_f = 2$ ft (Fig. 10.6.3.1)

$D'_f = 2.5$ ft (Fig. 10.6.3.1)

$B = 14.625$ ft (Fig. 11.10.2-1)

### 3.2. Backslope geometry

$\beta = 0°$ (Fig. 3.11.5.3)

$(0.5H_2) = 2.1$ ft (Eq. 11.10.7.1-4)

### 3.3. Groundwater

$\gamma_w = 62.449$ lbs/ft$^3$

$z_w = 9.8$ ft (Article 12.3)

### 3.4. Soils (unfactored)

$\phi_r = 35^\circ$

(Article 11.10.5.2)

$\delta_r = 23^\circ$

(Table 3.11.5.3)

$\gamma_r = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,r} = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fill} = 32^\circ$

(Fig. 11.10.2)

$\delta_f = 21.3^\circ$

(Table 3.11.5.3)

$\gamma_{fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fnd} = 0^\circ$

(Fig. 10.6.3.4-2)

$c_{fnd} = 500 \text{ psf}$

(Eq. 10.6.3.1.2a-1)

$\gamma_{fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\gamma_{sat,fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\phi_p = 40^\circ$

(Article 3.11.5.4)

$\delta_p = 26^\circ$

(Table 3.11.5.3)

$\gamma_p = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

$\gamma_{sat,p} = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

## 3.5. Seismic inputs

$k_h = 0.43$

(Fig. 11.6.5.1-1)
(Article 11.6.5.2)

$k_v = 0$

(Article 11.6.5.2)

Calculate the Mononobe-Okabe seismic angle.

$$\theta_{MO} = \beta + \tan^{-1}\left(\frac{k_h}{1 - k_v}\right)$$
$$\rightarrow \theta_{MO} = (0^\circ) + \tan^{-1}\left(\frac{(0.43)}{1 - (0)}\right)$$
$$\rightarrow \theta_{MO} = 23.3^\circ$$

(Eq. 11.6.5.3-1)

$\phi_{fill} \geq \beta + \theta_{MO} \rightarrow PASS$

(Eq. 11.6.5.3-1)

## 3.6. Surcharges

$P_{vLS,1} = 50$ lbs/ft

(Article 3.11.6.3)

$P_{vES,2} = 50$ lbs/ft

(Article 3.11.6.3)

$P_{hLS,1} = 50$ lbs/ft

(Article 3.11.6.3)

$P'_{vES,1} = 200$ lbs

(Article 3.11.6.3)

$P'_{hLS,1} = 200$ lbs

(Article 3.11.6.3)

### 3.7. Calculate **δ** (external)

Compute interface friction angle for external stability of wall.

$$\delta = \min(\delta_f, \delta_r)$$
$$\rightarrow \delta = \min((21.3°), (23°))$$
$$\rightarrow \delta = 21.3°$$

(Article 11.10.5.2)

### 3.8. Calculate Ka

Calculate the active earth pressure coefficient, static method.

$$K_{af} = \frac{\sin^2(\theta + \phi_{fill})}{\sin^2(\theta)\sin(\theta - \delta)\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta)}{\sin(\theta-\delta\sin(\theta+\beta))}}\right]^2}$$
$$\rightarrow K_{af} = \frac{\sin^2((90°) + (32°))}{\sin^2((90°))\sin((90°) - (21.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°))}{\sin((90°)-(21.3°)\sin((90°)+(0°)))}}\right]^2}$$
$$\rightarrow K_{af} = 0.275$$

(Eq. 3.11.5.3)

Calculate the active earth pressure coefficient, seismic method.

$$K_{AE} = \frac{\cos^2(\phi_{fill} + \omega - \theta_{MO})}{\cos(\theta_{MO})\sin^2(\omega)\cos(\delta - \omega + \theta_{MO})\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta-\theta_{MO})}{\cos(\delta-\omega+\theta_{MO})\cos(\omega+\beta)}}\right]}$$
$$\rightarrow K_{AE} = \frac{\cos^2((32°) + (0°) - (23.3°))}{\cos((23.3°))\cos^2((0°))\cos((21.3°) - (0°) + (23.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°)-(23.3°))}{\cos((21.3°)-(0°)+(23.3°))\cos((0°)+(0°))}}\right]}$$
$$\rightarrow K_{AE} = 0.747$$

(Eq. A11.3.1-1)

### 3.9. Critical failure plane

Calculate the inclination of the assumed failure plane.

$$\Psi_{ext} = 45^\circ + \frac{\phi_{fill}}{2}$$
$$\rightarrow \Psi_{ext} = 45^\circ + \frac{(32^\circ)}{2}$$
$$\rightarrow \Psi_{ext} = 61^\circ$$

(Fig. 11.10.6.3.1-1)

Calculate the inclination of the assumed failure plane.

$$\Psi_{int} = 45^\circ + \frac{\phi_r}{2}$$
$$\rightarrow \Psi_{inl} = 45^\circ + \frac{(35^\circ)}{2}$$
$$\rightarrow \Psi_{int} = 62.5^\circ$$

(Fig. 11.10.6.3.1-1)

## 3.10. Front face

$$\beta_{front} = -26.6^\circ$$

(Fig. 3.11.5.3)

## 3.11. Load combinations

### 3.11.1. Factors (Strength Limit State)

$\gamma_{p-DC(max)} = 1.25$

(Table 3.4.1-2)

$\gamma_{p-DC(min)} = 0.9$

(Table 3.4.1-2)

$\gamma_{p-EH(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{p-EV(max)} = 1.35$

(Table 3.4.1-2)

$\gamma_{p-EV(min)} = 1$

(Table 3.4.1-2)

$\gamma_{p-ES(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{EQ} = 0$

(Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1.75$

(Table 3.4.1-1)

$\gamma_{WA} = 1$

(Table 3.4.1-1)

$\phi_p = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.65$

(Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$

(Table 11.5.7-1)

$\phi_{ep} = 0.5$

(Table 10.5.5.2.2-1)

### 3.11.2. Factors (Extreme Limit State)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-EH} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-ES} = 1$ (Table 3.4.1-2)

$\gamma_{EQ} = 1$ (Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1$ (Table 3.4.1-1)

$\gamma_{WA} = 1$ (Table 3.4.1-1)

$\phi_p = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.9$ (Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$ (Table 11.5.7-1)

$\phi_{ep} = 1$ (Table 10.5.5.2.2-1)

## 3.12. Reinforcements

Determine length of reinforced zone excluding wall facing.

$L' = B - W_u$
$\rightarrow L' = (14.625 \text{ ft}) - (7.5 \text{ in})$
$\rightarrow L' = 14 \text{ ft}$ (Fig. 11.10.5.2-1)

## 3.13. Global reinforcement data

$A_f = 0 \text{ ft}^2$

(Fig. 11.10.7.2-1)

Calculate the average height of soil surcharge within 0.7H of back of wall face.

$S_{0.7H} = (0.5)(0.7H)\tan(\beta)$
$\rightarrow S_{0.7H} = (0.5)\Big(0.7(4.2 \text{ ft})\Big)\tan((0°))$
$\rightarrow S_{0.7H} = 0 \text{ ft}$

(Eq. 11.10.6.2.1a-2)

Determine simplified Coulomb lateral earth pressure coefficient.

$$k_{abh} = \frac{\sin^2(\theta + \phi_r)}{\sin^3(\theta)\left[1 + \frac{\sin(\phi_r)}{\sin(\theta)}\right]^2}$$
$$\rightarrow k_{abh} = \frac{\sin^2((90°) + (35°))}{\sin^3((90°))\left[1 + \frac{\sin((35°))}{\sin((90°))}\right]^2}$$
$\rightarrow k_{abh} = 0.271$

(Eq. 11.10.6.2.1c-2)

$\omega \leq (20°) \rightarrow PASS$

(Article 11.10.6.2.1)

### 3.14. Backslope properties

$x_{int} = 14 \text{ ft}$

Compute height of sloped backfill for earth pressure calculations.

$h = H$
$\rightarrow h = 4.2 \text{ ft}$

(Fig. 3.11.5.9)

## 3. Extreme Limit State

### 3.1. Summary

#### 3.1.1. External stability - Extreme Limit State

| Failure mode | CDR |
|---|---|
| Base sliding | 1.778 |
| Overturning | 5.403 |
| Bearing | 8.373 |

#### 3.1.2. Reinforcement stability - Extreme Limit State

| Layer | Tensile strength | Connection | Pullout |
|---|---|---|---|
| 1 | 9.632 | 9.632 | 6.85 |

### 4.2. External forces

#### 4.2.1. Weights

Compute the weight of the wall facing.

$$W_w = W_u H_u \gamma_u N_u$$
$$\rightarrow W_w = (7.5 \text{ in})(50.4 \text{ in})(150 \text{ lbs/ft}^3)(1)$$
$$\rightarrow W_w = 393.75 \text{ lbs/ft}$$

(Eq. C11.10.5.3)

Calculate the horizontal offset of the wall centroid from the center of the analysis layer.

$$X_W = \frac{B}{2} - G_u$$
$$\rightarrow X_W = \frac{(14.625 \text{ ft})}{2} - (2.76 \text{ in})$$
$$\rightarrow X_W = 7.082 \text{ ft}$$

(Fig. 11.6.3.2)

$$h_{W_w} = 2.1 \text{ ft}$$

Compute the weight of reinforced soil above base of wall.

$$V_1 = \gamma_r H L'$$
$$\rightarrow V_1 = (50 \text{ lbs/ft}^3)(4.2 \text{ ft})(14 \text{ ft})$$
$$\rightarrow V_1 = 2940 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Compute the arm of V1.

$$X_{V1} = \frac{B}{2} - \frac{L'}{2}$$
$$\rightarrow X_{V1} = \frac{(14.625 \text{ ft})}{2} - \frac{(14 \text{ ft})}{2}$$
$$\rightarrow X_{V1} = 0.313 \text{ ft}$$

(Fig. 11.6.3.2)

$$\Sigma V_{qLS} = 50 \text{ lbs/ft}$$

(Fig. C11.5.6.3)

$$X_{\Sigma VqLS} = -6.687 \text{ ft}$$

(Fig. C11.5.6.3)

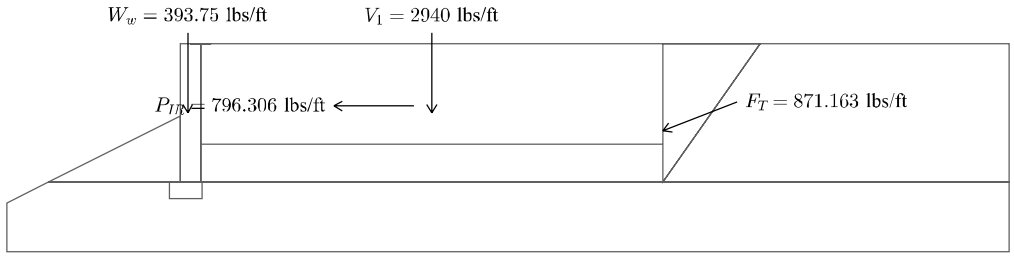
$$\Sigma V_{qES} = 370 \text{ lbs/ft}$$

(Fig. C11.5.6.3)

$$X_{\Sigma VqES} = -6.687 \text{ ft}$$

(Fig. C11.5.6.3)

### 4.2.2. Earth forces




Compute the active force due to backfill soil.

$$F_1 = \frac{1}{2}\gamma_{fill} h^2 K_{af}$$
$$\rightarrow F_1 = \frac{1}{2}(125 \text{ lbs/ft}^3)(4.2 \text{ ft})^2(0.275)$$
$$\rightarrow F_1 = 303.224 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the horizontal component of F1.

$$F_{1h} = F_1 \cos(\delta)$$
$$\rightarrow F_{1h} = (303.224 \text{ lbs/ft}) \cos((21.3^\circ))$$
$$\rightarrow F_{1h} = 282.511 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the vertical component of F1.

$$F_{1v} = F_1 \sin(\delta)$$
$$\rightarrow F_{1v} = (303.224 \text{ lbs/ft}) \sin((21.3^\circ))$$
$$\rightarrow F_{1v} = 110.146 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Calculate the seismic active force.

$$P_{AE} = 0.5\gamma_{fill} h^2 K_{AE}$$
$$\rightarrow P_{AE} = 0.5(125 \text{ lbs/ft}^3)(4.2 \text{ ft})^2(0.747)$$
$$\rightarrow P_{AE} = 823.863 \text{ lbs/ft}$$

(Article 11.6.5.3)

Compute the horizontal component of PAE.

$$P_{AEH} = P_{AE} \cos(\delta)$$
$$\rightarrow P_{AEH} = (823.863 \text{ lbs/ft}) \cos((21.3^\circ))$$
$$\rightarrow P_{AEH} = 767.586 \text{ lbs/ft}$$

* Modified to account for wall friction

(Fig. C11.5.6)

Compute the vertical component of PAE.

$$P_{AEV} = P_{AE} \sin(\delta)$$
$$\rightarrow P_{AEV} = (823.863 \text{ lbs/ft}) \sin((21.3^\circ))$$
$$\rightarrow P_{AEV} = 299.269 \text{ lbs/ft}$$

* Modified to account for wall friction

(Fig. C11.5.6)

Assume height of seismic active resultant.

$$h_a = 0.33h$$
$$\rightarrow h_a = 0.33(4.2 \text{ ft})$$
$$\rightarrow h_a = 1.386 \text{ ft}$$

(Article A11.3.1)

Convert concentrated lateral load into resultant active force.

$$F_{pP_{hLS,1}} = P_{hLS,1}$$
$$\rightarrow F_{pP_{hLS,1}} = 50 \text{ lbs/ft}$$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$$F_{phP_{hLS,1}} = F_{pP_{hLS,1}}$$
$$\rightarrow F_{phP_{hLS,1}} = 50 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$$h_{P_{hLS,1}} = H - z_P - I_2/3$$
$$\rightarrow h_{P_{hLS,1}} = (4.2 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$$
$$\rightarrow h_{P_{hLS,1}} = 4.2 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$F_{pvP_{hLS,1}} = 0 \text{ lbs/ft}$$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Convert concentrated lateral load into resultant active force.

$$F_{pP'_{hLS,1}} = P'_{hLS,1}/L_f$$
$$\rightarrow F_{pP'_{hLS,1}} = (200 \text{ lbs})/(357 \text{ ft})$$
$$\rightarrow F_{pP'_{hLS,1}} = 0.56 \text{ lbs/ft}$$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$$F_{phP'_{hLS,1}} = F_{pP'_{hLS,1}}$$
$$\rightarrow F_{phP'_{hLS,1}} = 0.56 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$$h_{P'_{hLS,1}} = H - z_P - I_2/3$$
$$\rightarrow h_{P'_{hLS,1}} = (4.2 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$$
$$\rightarrow h_{P'_{hLS,1}} = 4.2 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$F_{pvP'_{hLS,1}} = 0 \text{ lbs/ft}$$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Sum all the active horizontal earth forces.

$$F_{Th} = P_{AEII} + \gamma_{EQ}\left(F_{phP_{hLS,1}} + F_{phP'_{hLS,1}}\right)$$
$$\rightarrow F_{Th} = (767.586 \text{ lbs/ft}) + (1)\Big((50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft})\Big)$$
$$\rightarrow F_{Th} = 818.146 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

$$h_T = 1.56 \text{ ft}$$

Compute vertical resultant.

$$F_{Tv} = P_{AEV} + \gamma_{EQ}\left(F_{pvP_{hLS,1}} + F_{pvP'_{hLS,1}}\right)$$
$$\rightarrow F_{Tv} = (299.269 \text{ lbs/ft}) + (1)\Big((0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big)$$
$$\rightarrow F_{Tv} = 299.269 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Total factored active resultant.

$$F_T = \sqrt{F_{Th}^2 + F_{Tv}^2}$$
$$\rightarrow F_T = \sqrt{(818.146 \text{ lbs/ft})^2 + (299.269 \text{ lbs/ft})^2}$$
$$\rightarrow F_T = 871.163 \text{ lbs/ft}$$

(Fig. 11.6.3.2-2)

$$x_{infl} = 16.328 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$x_{infl} = 16.328 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$W_{surcharge} = 370 \text{ lbs/ft}$$

(Fig. 11.6.5.1-1)

$$h_{W_{surcharge}} = 4.2 \text{ ft}$$

Calculate the seismic inertial force.

$$P_{IR} = 0.5k_h(W_w)$$
$$\rightarrow P_{IR} = 0.5(0.43)\Big((393.75 \text{ lbs/ft})\Big)$$
$$\rightarrow P_{IR} = 796.306 \text{ lbs/ft}$$

(Eq. 11.10.7.1-1)

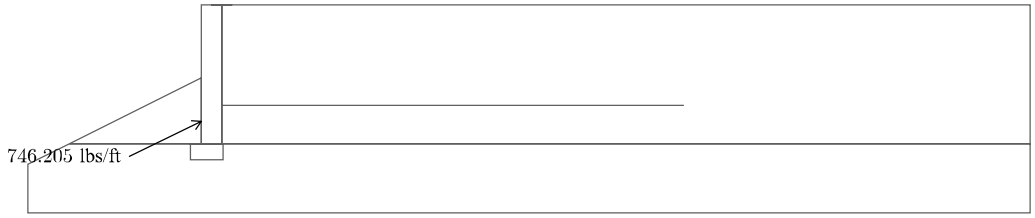
$$h_{V1} = 2.1 \text{ ft}$$

$$h_{V2} = 0 \text{ ft}$$

Calculate the height of the inertial force.

$$h_{P_{IR}} = \frac{h_{W_w}W_w + h_{W_{surcharge}}W_{surcharge} + h_{V1}V_1 + h_{V2}V_2}{W_w + W_{surcharge} + V_1 + V_2}$$
$$\rightarrow h_{P_{IR}} = \frac{(2.1 \text{ ft})(393.75 \text{ lbs/ft}) + (4.2 \text{ ft})(370 \text{ lbs/ft}) + (2.1 \text{ ft})(2940 \text{ lbs/ft}) + (0 \text{ ft})(0 \text{ lbs/ft})}{(393.75 \text{ lbs/ft}) + (370 \text{ lbs/ft}) + (2940 \text{ lbs/ft}) + (0 \text{ lbs/ft})}$$
$$\rightarrow h_{P_{IR}} = 2.31 \text{ ft}$$

### 4.2.3. Front face resistance




$z_{passive} = 2 \text{ ft}$

Select the passive earth pressure coefficient.

$k_p = f(\phi_p, \beta_{front}, \omega_{passive}, \delta_p)$
$\rightarrow k_p = f((40^\circ), (-26.6^\circ), (0^\circ), (26^\circ))$
$\rightarrow k_p = 2.764$

(Caquot & Kerisel 1949 pp. 116-127)

Calculate the height of the passive resultant above the bottom of the passive wedge.

$h_{Pp} = z_{passive}/3$
$\rightarrow h_{Pp} = (2 \text{ ft})/3$
$\rightarrow h_{Pp} = 0.667 \text{ ft}$

Calculate the passive pressure force.

$P_p = \frac{1}{2} k_p \gamma_p z_{passive}^2$
$\rightarrow P_p = \frac{1}{2}(2.764)(135 \text{ lbs/ft}^3)(2 \text{ ft})^2$
$\rightarrow P_p = 746.205 \text{ lbs/ft}$

(Article 3.11.5.4)

Compute the horizontal component of Pp.

$P_{pH} = P_p \cos(\delta_p)$
$\rightarrow P_{pH} = (746.205 \text{ lbs/ft}) \cos((26^\circ))$
$\rightarrow P_{pH} = 670.685 \text{ lbs/ft}$

Compute the vertical component of Pp.

$P_{pV} = -P_p \sin(\delta_p)$
$\rightarrow P_{pV} = -(746.205 \text{ lbs/ft}) \sin((26^\circ))$
$\rightarrow P_{pV} = -327.115 \text{ lbs/ft}$

Take seismic passive force based on static analysis.

$P_{PE} = P_p$
$\rightarrow P_{PE} = 746.205 \text{ lbs/ft}$

Take seismic passive force based on static analysis.

$$P_{PEH} = P_{pH}$$
$$\rightarrow P_{PEH} = 670.685 \text{ lbs/ft}$$

Take seismic passive force based on static analysis.

$$P_{PEV} = P_{pV}$$
$$\rightarrow P_{PEV} = -327.115 \text{ lbs/ft}$$

### 4.2.4. External moments

Determine driving moment from F1.

$$M_{o,F_1} = F_{1h}(h/3)$$
$$\rightarrow M_{o,F_1} = (282.511 \text{ lbs/ft})(1.4 \text{ ft})$$
$$\rightarrow M_{o,F_1} = 395.516 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from F1.

$$M_{r,F_1} = F_{1v}B$$
$$\rightarrow M_{r,F_1} = (110.146 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,F_1} = 1610.892 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine driving moment from PAEH.

$$M_{o,AE} = P_{AEH}h_a$$
$$\rightarrow M_{o,AE} = (767.586 \text{ lbs/ft})(1.386 \text{ ft})$$
$$\rightarrow M_{o,AE} = 1063.874 \text{ lbsft/ft}$$

(Fig. 11.6.5.1-1)
(Article A11.3.1)

Determine resisting moment from F1.

$$M_{r,AE} = P_{AEV}B$$
$$\rightarrow M_{r,AE} = (299.269 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,AE} = 4376.812 \text{ lbsft/ft}$$

(Fig. 11.6.5.1-1)
(Article A11.3.1)

Sum of driving moments due to point loads (live).

$$M_{o,F_{qLS}} = F_{phP_{hLS,1}}h_{P_{hLS,1}}F_{phP'_{hLS,1}}h_{P'_{hLS,1}}$$
$$\rightarrow M_{o,F_{qLS}} = (50 \text{ lbs/ft})(4.2 \text{ ft})(0.56 \text{ lbs/ft})(4.2 \text{ ft})$$
$$\rightarrow M_{o,F_{qLS}} = 2197.945 \text{ lbsft/ft}$$

Sum of resisting moments due to point loads (live).

$$M_{r,F_{pLS}} = F_{pvP_{hI,S,1}}\left(B - h_{P_{hI,S,1}}\cot\left(\theta\right)\right) + F_{pvP'_{hI,S,1}}\left(B - h_{P'_{hI,S,1}}\cot\left(\theta\right)\right)$$
$$\rightarrow M_{r,F_{pLS}} = (0\text{ lbs/ft})\left((14.625\text{ ft}) - (4.2\text{ ft})\cot\left((90°)\right)\right) + (0\text{ lbs/ft})\left((14.625\text{ ft}) - (4.2\text{ ft})\cot\left((90°)\right)\right)$$
$$\rightarrow M_{r,F_{pLS}} = 0\text{ lbsft/ft}$$

Determine driving active moment.

$$M_{o,F_T} = F_{Th}h_T$$
$$\rightarrow M_{o,F_T} = (818.146\text{ lbs/ft})(1.56\text{ ft})$$
$$\rightarrow M_{o,F_T} = 1276.227\text{ lbsft/ft}$$

Determine resisting moment from FT.

$$M_{r,F_T} = F_{Tv}B$$
$$\rightarrow M_{r,F_T} = (299.269\text{ lbs/ft})(14.625\text{ ft})$$
$$\rightarrow M_{r,F_T} = 4376.812\text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine hydrostatic force at base of wall.

$$U = h_w B\gamma_w$$
$$\rightarrow U = (0\text{ ft})(14.625\text{ ft})(62.449\text{ lbs/ft}^3)$$
$$\rightarrow U = 0\text{ lbs/ft}$$

Determine reduction in resisting moment due to porewater at base of wall.

$$\Delta M_{r,U} = U\frac{B}{2}$$
$$\rightarrow \Delta M_{r,U} = (0\text{ lbs/ft})\frac{(14.625\text{ ft})}{2}$$
$$\rightarrow \Delta M_{r,U} = 0\text{ lbsft/ft}$$

Determine driving moment from passive force.

$$M_{r,P_p} = P_{pH}(h_{Pp} - h_{shear-key})$$
$$\rightarrow M_{r,P_p} = (670.685\text{ lbs/ft})\left((0.667\text{ ft}) - (0\text{ ft})\right)$$
$$\rightarrow M_{r,P_p} = 447.123\text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from wall weight.

$$M_{r,w} = W_w[B/2 - X_W]$$
$$\rightarrow M_{r,w} = (393.75\text{ lbs/ft})\left[(14.625\text{ ft})/2 - (7.082\text{ ft})\right]$$
$$\rightarrow M_{r,w} = 90.563\text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V1.

$$M_{r,V_1} = V_1[X_{V1} + B/2]$$
$$\rightarrow M_{r,V_1} = (2940 \text{ lbs/ft})\Big[(0.313 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_1} = 22417.501 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V2.

$$M_{r,V_2} = V_2[X_{V2} + B/2]$$
$$\rightarrow M_{r,V_2} = (0 \text{ lbs/ft})\Big[(0 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_2} = 0 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qLS}} = \Sigma V_{qLS}[X_{\Sigma VqLS} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = (50 \text{ lbs/ft})\Big[(-6.687 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = 31.25 \text{ lbsft/ft}$$

* Only applies when computing eccentricity for bearing capacity under maximum vertical load conditions.

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qES}} = \Sigma V_{qES}[X_{\Sigma VqES} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = (370 \text{ lbs/ft})\Big[(-6.687 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = 231.25 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine driving moment from seismic inertial force.

$$M_{o,P_{IR}} = P_{IR} h_{P_{IR}}$$
$$\rightarrow M_{o,P_{IR}} = (796.306 \text{ lbs/ft})(2.31 \text{ ft})$$
$$\rightarrow M_{o,P_{IR}} = 1839.298 \text{ lbsft/ft}$$

(Fig. 11.10.7.1-1)

Calculate the inertial force from the soil surcharge.

$$M_{o,seis} = M_{o,AE} + M_{o,P_{IR}}$$
$$\rightarrow M_{o,seis} = (1063.874 \text{ lbsft/ft}) + (1839.298 \text{ lbsft/ft})$$
$$\rightarrow M_{o,seis} = 2903.172 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Calculate the inertial force from the soil surcharge.

$$M_{r,seis} = M_{r,AE}$$
$$\rightarrow M_{r,seis} = 4376.812 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CasecI)} = \gamma_{p-EH} M_{o,scis} + \gamma_{EQ} M_{o,F_{qLS}}$$
$$\rightarrow \Sigma M_{o(CaseI)} = (1)(2903.172 \text{ lbsft/ft}) + (1)(2197.945 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseI)} = 5101.117 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r(Case I)} = \gamma_{p-EH} M_{r,scis} + \gamma_{p-EV}(M_{r,V_1} + M_{r,V_2}) - \gamma_{LS} M_{r,F_{qLS}} + \gamma_{p-DC}\left(M_{r,w} + M_{r,\Sigma V_{qLS}}\right) + \phi_{ep} M_{r,P_p}$$
$$\rightarrow \Sigma M_{r(Case I)} = (1)(4376.812 \text{ lbsft/ft}) + (1)\left((22417.501 \text{ lbsft/ft}) + (0 \text{ lbsft/ft})\right) + (1)(0 \text{ lbsft/ft}) + (1)\left((90.563 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\right) + (1)(447.123 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{r(Case I)} = 27563.249 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

$$\Sigma M_r' = \Sigma M_{r(CaseI)} - \Delta M_{r,U}$$
$$\rightarrow \Sigma M_r' = (27563.249 \text{ lbsft/ft}) - (0 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_r' = 27563.249 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Calculate the inertial force from the soil surcharge.

$$M_{o,scis} = M_{o,AE} + M_{o,P_{ild}}$$
$$\rightarrow M_{o,scis} = (1063.874 \text{ lbsft/ft}) + (1839.298 \text{ lbsft/ft})$$
$$\rightarrow M_{o,scis} = 2903.172 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Calculate the inertial force from the soil surcharge.

$$M_{r,scis} = M_{r,AE}$$
$$\cot \rightarrow M_{r,scis} = 4376.812 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CasecII)} = \gamma_{p-EH} M_{o,scis} + \gamma_{EQ} M_{o,F_{qLS}}$$
$$\rightarrow \Sigma M_{o(CaseII)} = (1)(2903.172 \text{ lbsft/ft}) + (1)(2197.945 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseII)} = 5101.117 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r(CaseII)} = \gamma_{p\ EH} M_{r,scis} - \gamma_{p\ EV}(M_{r,V_1} + M_{r,V_2}) + \gamma_{LS}\left(M_{r,F_{qLS}} - M_{r,\Sigma V_{qLS}}\right) + \gamma_{p\ DC}\left(M_{r,w} + M_{r,\Sigma V_{qLS}}\right) + \phi_{ep} M_{r,P_p}$$
$$\rightarrow \Sigma M_{r(CaseII)} = (1)(4376.812 \text{ lbsft/ft}) - (1)\left((22417.501 \text{ lbsft/ft}) + (0 \text{ lbsft/ft})\right) + (1)\left((0 \text{ lbsft/ft}) - (31.25 \text{ lbsft/ft})\right) + (1)\left((90.563 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\right) + (1)(447.123 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{r(CaseII)} = 27594.499 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

$$\Sigma M_r' = \Sigma M_{r(CaseII)} - \Delta M_{r,U}$$
$$\rightarrow \Sigma M_r' = (27594.499 \text{ lbsft/ft}) - (0 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_r' = 27594.499 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

### 4.2.5. Sum of external forces

Calculate the inertial force from the soil surcharge.

$$P_{seis,H} = P_{AEH} + P_{IR}$$
$$\rightarrow P_{seis,H} = (767.586 \text{ lbs/ft}) + (796.306 \text{ lbs/ft})$$
$$\rightarrow P_{seis,H} = 1563.892 \text{ lbs/ft}$$

(FHWA HIF-24-002 )

Sum all the active horizontal earth forces.

$$\Sigma F_h = P_{seis,H} + \gamma_{EQ}\left(F_{phP_{hLS,1}} + F_{phP'_{hLS,1}}\right)$$
$$\rightarrow \Sigma F_h = (1563.892 \text{ lbs/ft}) + (1)\left((50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft})\right)$$
$$\rightarrow \Sigma F_h = 1614.452 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Calculate the inertial force from the soil surcharge.

$$P_{seis,V} = P_{AEV}$$
$$\rightarrow P_{seis,V} = 299.269 \text{ lbs/ft}$$

(FHWA HIF-24-002 )

Compute vertical resultant.

$$V = P_{seis,V} + W_w + \Sigma V_{qFS} + V_1 + V_2 + P_{PEV} + \gamma_{EQ}\left(F_{pvP_{hLS,1}} + F_{pvP'_{hLS,1}}\right)$$
$$\rightarrow V = (299.269 \text{ lbs/ft}) + (393.75 \text{ lbs/ft}) + (370 \text{ lbs/ft}) + (2940 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (-327.115 \text{ lbs/ft}) + (1)\left((0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\right)$$
$$\rightarrow V = 3675.905 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

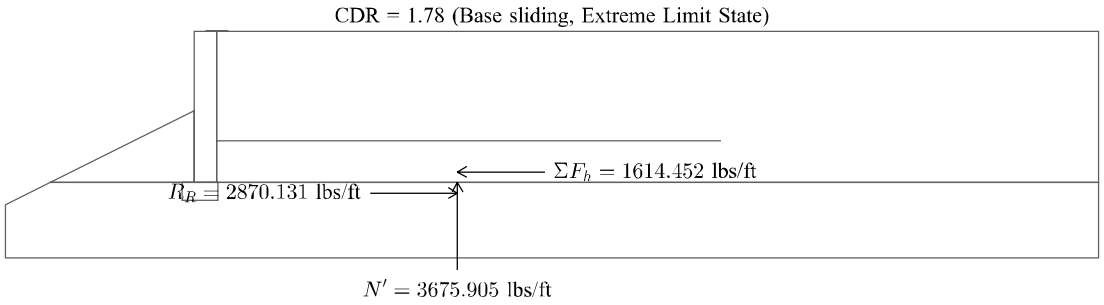
Determine hydrostatic force at base of wall.

$$U = h_w B \gamma_w$$
$$\rightarrow U = (0 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 0 \text{ lbs/ft}$$

Determine effective normal force.

$$N' = V - U$$
$$\rightarrow N' = (3675.905 \text{ lbs/ft}) - (0 \text{ lbs/ft})$$
$$\rightarrow N' = 3675.905 \text{ lbs/ft}$$

## 4.3. Base sliding




Determine passive resistance.

$$R_{ep} = P_{PEH}$$
$$\rightarrow R_{ep} = 670.685 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute the eccentricity of the bearing reaction.

$$e = \frac{B}{2} - \frac{\Sigma M_{r(CaseI)} - \Sigma M_{o(CaseI)}}{V}$$
$$\rightarrow e = \frac{(14.625 \text{ ft})}{2} - \frac{(27563.249 \text{ lbsft/ft}) - (5101.117 \text{ lbsft/ft})}{(3675.905 \text{ lbs/ft})}$$
$$\rightarrow e = 1.202 \text{ ft}$$

(Fig. 11.6.3.2)

Calculate normal stress distribution based on eccentricity.

$$\sigma_n = \frac{V}{B - 2(\max(0, e))}$$
$$\rightarrow \sigma_n = \frac{(3675.905 \text{ lbs/ft})}{(14.625 \text{ ft}) - 2\Big(\max\Big(0, (1.202 \text{ ft})\Big)\Big)}$$
$$\rightarrow \sigma_n = 300.779 \text{ psf}$$

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Compute the frictional resistance against sliding.

$$R_\tau = \min(0.5\sigma_n', S_u)B$$
$$\rightarrow R_\tau = \min(0.5\sigma_n', S_u)(14.625 \text{ ft})$$
$$\rightarrow R_\tau = 2199.446 \text{ lbs/ft}$$

(Eq. 10.6.3.4-2)

Compute the factored resistance against sliding.

$$R_R = \phi_\tau R_\tau + \phi_{ep} R_{ep}$$
$$\rightarrow R_R = (1)(2199.446 \text{ lbs/ft}) + (1)(670.685 \text{ lbs/ft})$$
$$\rightarrow R_R = 2870.131 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute CDR for base sliding.

$$CDR_{sliding,ext} = R_R / \Sigma F_h$$
$$\rightarrow CDR_{sliding,ext} = (2870.131 \text{ lbs/ft})/(1614.452 \text{ lbs/ft})$$
$$\rightarrow CDR_{sliding,ext} = 1.78$$

(Article 10.6.3.4)

$$CDR_{sliding,ext} > 1 \rightarrow PASS$$

## 4.4. Eccentricity

Compute vertical resultant.

$$R = N'$$
$$\rightarrow R = 3675.905 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Calculate the inertial force from the soil surcharge.

$$P_{seis,V} = P_{AEV}$$
$$\rightarrow P_{seis,V} = 299.269 \text{ lbs/ft}$$

(FHWA HIF-24-002 )

Compute vertical resultant.

$$\Sigma V = \gamma_{p-EH} P_{seis,V} + \gamma_{p-DC}(W_w + \Sigma V_{qDS}) + \gamma_{pQ}\left(F_{pePh_{HS,1}} + F_{pePh'_{LS,1}} + \Sigma V_{qLS}\right) + \gamma_{p-EV}(V_1 + V_2) + \phi_{ep} P_{PEV}$$
$$\rightarrow \Sigma V = (1)(299.269 \text{ lbs/ft}) + (1)\Big((393.75 \text{ lbs/ft}) + (370 \text{ lbs/ft})\Big) + (1)\Big((0 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (50 \text{ lbs/ft})\Big) + (1)\Big((2940 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big) + (1)(-327.115 \text{ lbs/ft})$$
$$\rightarrow \Sigma V = 3725.905 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Determine hydrostatic force at base of wall.

$$U = h_w B \gamma_w$$
$$\rightarrow U = (0 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 0 \text{ lbs/ft}$$

Determine effective normal force.

$$\Sigma N' = \Sigma V - U$$
$$\rightarrow \Sigma N' = (3725.905 \text{ lbs/ft}) - (0 \text{ lbs/ft})$$
$$\rightarrow \Sigma N' = 3725.905 \text{ lbs/ft}$$

Compute the eccentricity of the bearing reaction.

$$e_{(CaseI)} = \frac{B}{2} - \frac{\Sigma M'_r - \Sigma M_{o(CaseI)}}{R}$$

$$\rightarrow e_{(CaseI)} = \frac{(14.625 \text{ ft})}{2} - \frac{(27563.249 \text{ lbsft/ft}) - (5101.117 \text{ lbsft/ft})}{(3675.905 \text{ lbs/ft})}$$

$$\rightarrow e_{(CaseI)} = 1.202 \text{ ft}$$

(Fig. 11.6.3.2)

$$e_{(CaseI)} \leq \left(\frac{1}{3} + \frac{\gamma_{EQ}}{15}\right) B \rightarrow PASS$$

(Article 11.6.5.1)

Compute the eccentricity of the bearing reaction.

$$e_{(CaseII)} = \frac{B}{2} - \frac{\Sigma M'_r - \Sigma M_{o(CaseII)}}{\Sigma N'}$$

$$\rightarrow e_{(CaseII)} = \frac{(14.625 \text{ ft})}{2} - \frac{(27594.499 \text{ lbsft/ft}) - (5101.117 \text{ lbsft/ft})}{(3725.905 \text{ lbs/ft})}$$

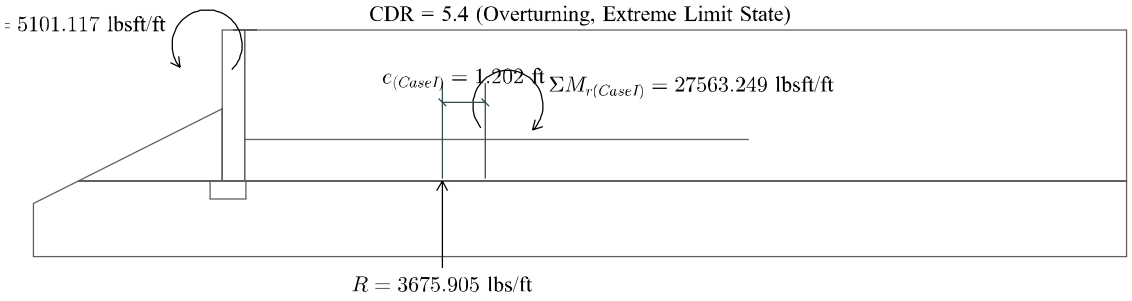
$$\rightarrow e_{(CaseII)} = 1.275 \text{ ft}$$

(Fig. 11.6.3.2)

$$e_{(CaseII)} \leq \left(\frac{1}{3} + \frac{\gamma_{EQ}}{15}\right) B \rightarrow PASS$$

(Article 11.6.5.1)

## 4.5. Overturning




Compute CDR for external overturning.

$$CDR_{overturning} = \Sigma M'_r / \Sigma M_{o(CaseI)}$$

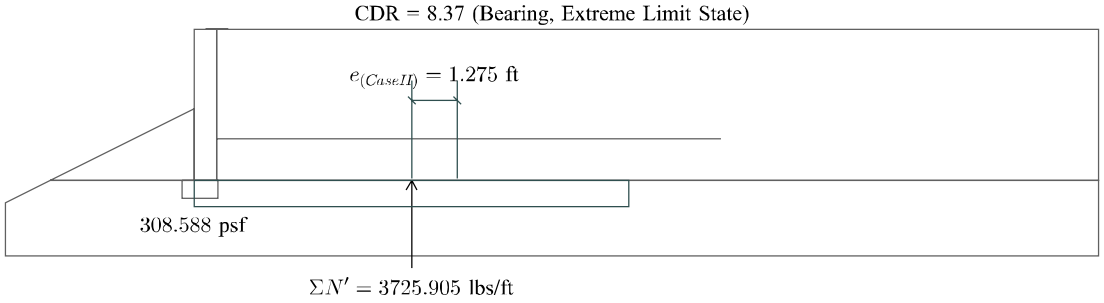
$$\rightarrow CDR_{overturning} = (27563.249 \text{ lbsft/ft}) / (5101.117 \text{ lbsft/ft})$$

$$\rightarrow CDR_{overturning} = 5.4$$

(Article C11.6.3.3)

$$CDR_{overturning} > 1 \rightarrow PASS$$

## 4.6. Bearing




Calculate the effective bearing width.

$$B' = B - 2e_{(CaseII)}$$
$$\rightarrow B' = (14.625 \text{ ft}) - 2(1.275 \text{ ft})$$
$$\rightarrow B' = 12.074 \text{ ft}$$

(Article C11.10.5.4)

Calculate uniform vertical bearing stress.

$$\sigma'_n = \frac{\Sigma N'}{B'}$$
$$\rightarrow \sigma'_n = \frac{(3725.905 \text{ lbs/ft})}{(12.074 \text{ ft})}$$
$$\rightarrow \sigma'_n = 308.588 \text{ psf}$$

(Fig. 11.6.3.2)

Calculate the Nq coefficient for foundation soil (Reissner 1924 method).

$$N_q = \exp(\pi + \tan(\phi_{fnd}))\tan^2(\pi/4 + \phi_{fnd}/2)$$
$$\rightarrow N_q = \exp(\pi + \tan((0°)))\tan^2(\pi/4 + (0°)/2)$$
$$\rightarrow N_q = 1$$

Calculate the Nc coefficient for foundation soil (Prandtl 1921 method).

$$N_c = (N_q - 1)\cot(\phi_{fnd})$$
$$\rightarrow N_c = ((1) - 1)\cot((0°))$$
$$\rightarrow N_c = 5.142$$

Calculate the Ngamma coefficient for foundation soil (Vesic 1975 method).

$$N_\gamma = 2(N_q + 1)\tan(\phi_{fnd})$$
$$\rightarrow N_\gamma = 2((1) + 1)\tan((0°))$$
$$\rightarrow N_\gamma = 0$$

Determine Nqm.

$$N_{qm} = N_q$$
$$\rightarrow N_{qm} = 1$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-3)

Determine Ncm.

$N_{cm} = N_c$
$\rightarrow N_{cm} = 5.142$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-2)

Determine Ngamma,m.

$N_{\gamma m} = N_\gamma$
$\rightarrow N_{\gamma m} = 0$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-4)

$\gamma_q = 120 \text{ lbs/ft}^3$

(Eq. 10.6.3.1.2a-1)

$\gamma_f = 120 \text{ lbs/ft}^3$

(Eq. 10.6.3.1.2a-1)

$C_{wq} = 1$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

$C_{w\gamma} = 1$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

Calculate nominal bearing resistance.

$q_n = c_{fnd} N_{cm} + \gamma_q D'_f N_{qm} C_{wq} + 0.5 \gamma_f B' N_{\gamma m} C_{w\gamma}$
$\rightarrow q_n = (500 \text{ psf})(5.142) + (120 \text{ lbs/ft}^3)(2.5 \text{ ft})(1)(1) + 0.5(120 \text{ lbs/ft}^3)(12.074 \text{ ft})(0)(1)$
$\rightarrow q_n = 2870.797 \text{ psf}$

(Fig. 10.6.3.1.2a-1)

Factor the bearing resistance.

$q_R = q_n \phi_b$
$\rightarrow q_R = (2870.797 \text{ psf})(0.9)$
$\rightarrow q_R = 2583.717 \text{ psf}$

(Fig. 10.6.3.1.1-1)

Compute CDR for bearing.

$CDR_{bearing} = q_R / \sigma'_n$
$\rightarrow CDR_{bearing} = (2583.717 \text{ psf}) / (308.588 \text{ psf})$
$\rightarrow CDR_{bearing} = 8.37$

(Article 10.6.3.1)

$CDR_{bearing} > 1 \rightarrow PASS$

## 4.7. Reinforcement precalculations

### 4.7.1. Reinforcement data (layer 1)

$Z = 3.05 \text{ ft}$

(Fig. 11.10.6.2.1a-1)

$F^* = 1.802$

(Eq. 11.10.6.3.2-1)

$S_v = 4.2 \text{ ft}$

(Fig. 11.10.6.2.1b-1)

$S_v \leq (2.7 \text{ ft}) \rightarrow FAIL$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$k_r = (1.0)k_{abh}$
$\rightarrow k_r = (1.0)(0.271)$
$\rightarrow k_r = 0.271$

(Fig. B11.2-1)

### 4.7.2. Pullout length (layer 1)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan(\Psi_{int})}$$
$$\rightarrow L_a = \frac{(4.2 \text{ ft}) - (3.05 \text{ ft})}{\tan((62.5°))}$$
$\rightarrow L_a = 0.599 \text{ ft}$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$L_e = L' - L_a$
$\rightarrow L_e = (14 \text{ ft}) - (0.599 \text{ ft})$
$\rightarrow L_e = 13.401 \text{ ft}$

(Fig. 11.10.6.3.1-1)

$L_e \geq (3 \text{ ft}) \rightarrow PASS$

(Article 11.10.6.3.2)

### 4.7.3. Seismic inertia

$\Sigma L_a S_v = 2.514 \text{ ft}^2$

(Fig. 11.10.7.2-1)

Compute the weight of the internal active zone.

$W_a = A_f \gamma_{fill} + \Sigma L_a S_v \gamma_r$
$\rightarrow W_a = (0 \text{ ft}^2)(125 \text{ lbs/ft}^3) + (2.514 \text{ ft}^2)(50 \text{ lbs/ft}^3)$
$\rightarrow W_a = 125.717 \text{ lbs/ft}$

(Fig. 11.10.7.2-1)

Calculate the internal seismic inertial force.

$P_i = k_h W_a$
$\rightarrow P_i = (0.43)(125.717 \text{ lbs/ft})$
$\rightarrow P_i = 54.058 \text{ lbs/ft}$

(Fig. 11.10.7.2-1)

$\Sigma L_{ci} = 13.401 \text{ ft}$

(Eq. 11.10.7.2-1)

## 4.8. Tensile forces

### 4.8.1. Tmax (layer 1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$D_1(Z) = \frac{b_f + Z}{2} + d$
$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (3.05 \text{ ft})}{2} + (0 \text{ ft})$
$\rightarrow D_1(Z) = 1.838 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$
$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50 \text{ lbs/ft})/(1.838 \text{ ft})$
$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 27.211 \text{ psf}$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$
$\rightarrow \Sigma\Delta\sigma_{V,LS} = 27.211 \text{ psf}$

(Eq. 11.10.10.1)

$I_1 = 0 \text{ ft}$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$\Delta\sigma_{H,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$

$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50 \text{ lbs/ft})/(0 \text{ ft})$

$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity \text{ psf}$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$

$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$

$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$

(Eq. 3.11.6.3-2)

$I_1 = 0 \text{ ft}$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$\Delta\sigma_{H,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$

$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200 \text{ lbs})/(357 \text{ ft})\Big)/(0 \text{ ft})$

$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$I_1 = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$

$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$

$\rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0 \text{ psf}$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{H,P'_{hLS,1}}(Z)$

$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0 \text{ psf}) + (0 \text{ psf})$

$\rightarrow \Sigma\Delta\sigma_{H,LS} = 0 \text{ psf}$

(Eq. 11.10.10.1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$

$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (3.05 \text{ ft})}{2} + (0 \text{ ft})$$

$\rightarrow D_1(Z) = 1.838 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$

$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50 \text{ lbs/ft})/(1.838 \text{ ft})$

$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 27.211 \text{ psf}$

(Eq. 3.11.6.3-1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (3.05 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 1.838 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{(200 \text{ lbs})}{(1.838 \text{ ft})\Big((0.625 \text{ ft}) + (3.05 \text{ ft}) - (0 \text{ ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = 29.617 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,ES} = \Delta\sigma_{V,P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (27.211 \text{ psf}) + (29.617 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 56.828 \text{ psf}$$

(Eq. 11.10.10.1)

Calculate the incremental dynamic inertia force.

$$T_{md} = P_i/n$$
$$\rightarrow T_{md} = (54.058 \text{ lbs/ft})/(1)$$
$$\rightarrow T_{md} = 54.058 \text{ lbs/ft}$$

(Eq. 11.10.7.2-1)

Compute vertical stress from reinforced soil.

$$\sigma_1 = \gamma_r Z$$
$$\rightarrow \sigma_1 = (50 \text{ lbs/ft}^3)(3.05 \text{ ft})$$
$$\rightarrow \sigma_1 = 152.5 \text{ psf}$$

(Fig. 11.10.6.2.1a-1)

$$\sigma_{1-po} = 152.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$
$$\rightarrow \sigma_2 = (0 \text{ ft})(125 \text{ lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0 \text{ psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma_n = \sigma_1 + \sigma_2$$
$$\rightarrow \sigma_n = (152.5 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \sigma_n = 152.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtens} = S_v(k_r\sigma_n)$$
$$\rightarrow T_{maxtens} = (4.2 \text{ ft})\Big((0.271)(152.5 \text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 173.569 \text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

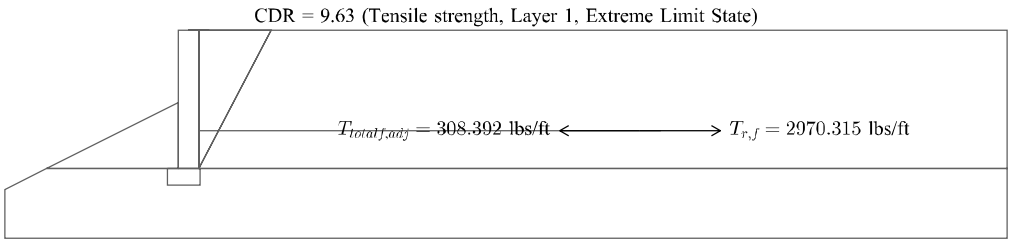
$$T_{maxpo} = T_{maxtens}$$
$$\rightarrow T_{maxpo} = 173.569 \text{ lbs/ft}$$

(Article 11.10.6.2.1)

## 4.9. Tensile strength

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 4.9.1. Tensile strength (layer 1)




Determine total factored tension force in reinforcement.

$$T_{totalf,adj} = \gamma_{p-PV} T_{maxtens} + \gamma_{seis} T_{md}/RF_{CR} + \gamma_{EQ} S_v(k_r \Sigma\Delta\sigma_{V,LS} + \Sigma\Delta\sigma_{H,LS}) + \gamma_{EQ} S_v(k_r \Sigma\Delta\sigma_{V,ES} + \Sigma\Delta\sigma_{H,ES})$$
$$\rightarrow T_{totalf,adj} = (1)(173.569 \text{ lbs/ft}) + (1)(54.058 \text{ lbs/ft})/(1.38) + (1)(4.2 \text{ ft})\Big((0.271)(27.211 \text{ psf}) + (0 \text{ psf})\Big) + (1)(4.2 \text{ ft})\Big((0.271)(56.828 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{totalf,adj} = 308.392 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate factored tensile strength.

$$T_{r,f} = \phi_t R_c T_{al}$$
$$\rightarrow T_{r,f} = (1.2)(0.332)(7455.61 \text{ lbs/ft})$$
$$\rightarrow T_{r,f} = 2970.315 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)

$$T_{al} = 7455.61 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-1)

$$\phi_t = 1.2$$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$$R_c = 0.332$$

(Article 11.10.6.4.1)

Compute CDR for tensile strength.

$$CDR_{tensile} = \frac{\phi_t T_{al} R_c}{T_{totalf,adj}}$$
$$\rightarrow CDR_{tensile} = \frac{(1.2)(7455.61 \text{ lbs/ft})(0.332)}{(308.392 \text{ lbs/ft})}$$
$$\rightarrow CDR_{tensile} = 9.63$$

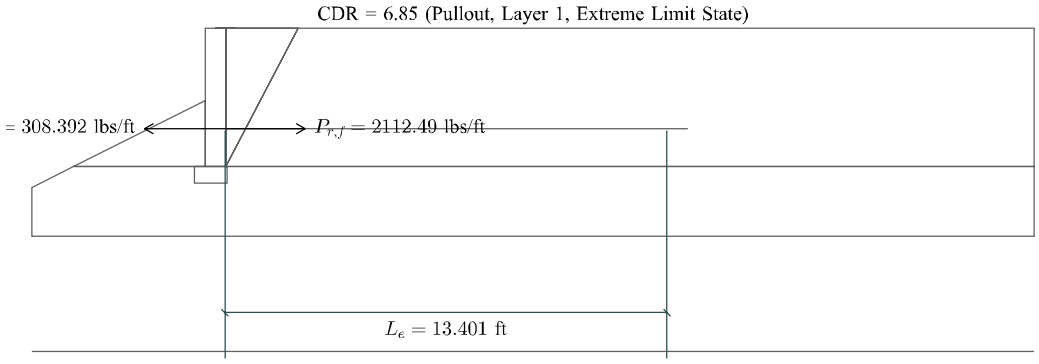
(Eq. 11.10.6.4.1-2)

$$CDR_{tensile} > 1 \rightarrow PASS$$

## 4.10. Pullout

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 4.10.1. Pullout (layer 1)




Compute vertical stress from reinforced soil.

$$\sigma_{1-po} = \gamma_r Z$$
$$\rightarrow \sigma_{1-po} = (50 \text{ lbs/ft}^3)(3.05 \text{ ft})$$
$$\rightarrow \sigma_{1-po} = 152.5 \text{ psf}$$

(Fig. 11.10.6.2.1a-1)

$$Z_p = 3.05 \text{ ft}$$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (above pullout region only).

$$\sigma_{2-po} = \gamma_r (Z_p - Z)$$
$$\rightarrow \sigma_{2-po} = (50 \text{ lbs/ft}^3)\Big((3.05 \text{ ft}) - (3.05 \text{ ft})\Big)$$
$$\rightarrow \sigma_{2-po} = 0 \text{ psf}$$

(Eq. 11.10.6.3.2-1)

Calculate vertical stress on reinforcement.

$$\sigma_{n-po} = \sigma_{1-po} + \sigma_{2-po}$$
$$\rightarrow \sigma_{n-po} = (152.5 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \sigma_{n-po} = 152.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Determine total factored tension force in reinforcement.

$$T_{total,adj} = \gamma_{p\_EV} T_{max,po} + \gamma_{scis} T_{md}/RF_{CR} + \gamma_{EQ} S_v (k_r \Sigma\Delta\sigma_{V,LS} + \Sigma\Delta\sigma_{H,LS}) + \gamma_{EQ} S_v (k_r \Sigma\Delta\sigma_{V,ES} + \Sigma\Delta\sigma_{H,ES})$$
$$\rightarrow T_{total,adj} = (1)(173.569 \text{ lbs/ft}) + (1)(54.058 \text{ lbs/ft})/(1.38) + (1)(4.2 \text{ ft})\Big((0.271)(27.211 \text{ psf}) + (0 \text{ psf})\Big) + (1)(4.2 \text{ ft})\Big((0.271)(56.828 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{total,adj} = 308.392 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate the pullout resistance.

$$P_r = 0.8 F^* \alpha \sigma_{n-po} C R_c L_e$$
$$\rightarrow P_r = 0.8(1.802)(0.9)(152.5 \text{ psf})(2)(0.332)(13.401 \text{ ft})$$
$$\rightarrow P_r = 1760.409 \text{ lbs/ft}$$

(Eq. 11.10.7.2-7)

Calculate the factored pullout resistance.

$$P_{r,f} = \phi_p P_r$$
$$\rightarrow P_{r,f} = (1.2)(1760.409 \text{ lbs/ft})$$
$$\rightarrow P_{r,f} = 2112.49 \text{ lbs/ft}$$

(Eq. 11.10.7.2-7)

Determine required length of reinforcement outside active zone.

$$L_{e,req} = \frac{T_{totalf,adj}}{\phi_p (0.8) F^* \alpha \sigma_{n-po} C R_c}$$
$$\rightarrow L_{e,req} = \frac{(308.392 \text{ lbs/ft})}{(1.2)(0.8)(1.802)(0.9)(152.5 \text{ psf})(2)(0.332)}$$
$$\rightarrow L_{e,req} = 1.956 \text{ ft}$$

(Eq. 11.10.7.2-7)

Compute CDR for pullout.

$$CDR_{pullout} = L_e / L_{e,req}$$
$$\rightarrow CDR_{pullout} = (13.401 \text{ ft})/(1.956 \text{ ft})$$
$$\rightarrow CDR_{pullout} = 6.85$$

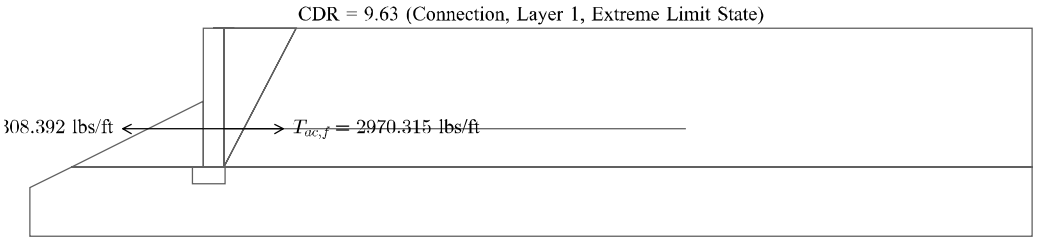
(Eq. 11.10.6.3.2-1)

$$CDR_{pullout} > 1 \rightarrow PASS$$

## 4.11. Connection

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 4.11.1. Connection (layer 1)




Determine connection force.

$$T_o = T_{maxtens}$$
$$\rightarrow T_o = 173.569 \text{ lbs/ft}$$

(Eq. 11.10.6.2.2)

Determine total factored connection force for reinforcement.

$$T_{totalof} = T_{totalf,adj}$$
$$\rightarrow T_{totalof} = 308.392 \text{ lbs/ft}$$

(Eq. 11.10.10.1-2)

Connection strength is limited by tensile strength.

$$T_{ac} = \min(T_{ac}, T_{al})$$
$$\rightarrow T_{ac} = \min\Big(T_{ac}, (7455.61 \text{ lbs/ft})\Big)$$
$$\rightarrow T_{ac} = 7455.61 \text{ lbs/ft}$$

$T_{ac} = 35073$ lbs/ft

(Eq. 11.10.6.4.1-2)

$\phi_t = 1.2$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$R_c = 0.332$

(Article 11.10.6.4.1)

Compute the factored connection strength.

$$T_{ac,f} = \phi_t T_{ac} R_c$$
$$\rightarrow T_{ac,f} = (1.2)(7455.61 \text{ lbs/ft})(0.332)$$
$$\rightarrow T_{ac,f} = 2970.315 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

Compute CDR for connection strength.

$$CDR_{conn} = \frac{T_{ac,f}}{T_{totalof}}$$
$$\rightarrow CDR_{conn} = \frac{(2970.315 \text{ lbs/ft})}{(308.392 \text{ lbs/ft})}$$
$$\rightarrow CDR_{conn} = 9.63$$

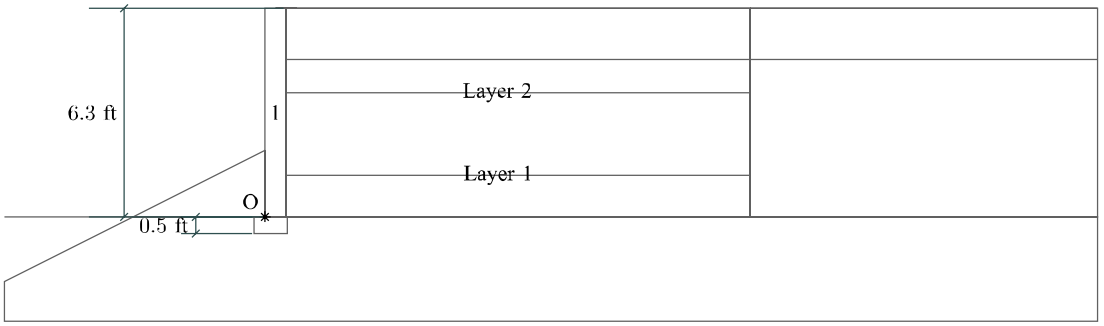
(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

$CDR_{conn} > 1 \rightarrow PASS$

# STRENGTH LIMIT STATE - SEGMENT 2 (Stationing 0+45 to 1+32 and 2+13 to 2+52)

## 1. Model properties

### 1.1. Wall properties




$H = 6.3$ ft (Fig. 3.11.5.8.1)

$H_u = 75.6$ in (Fig. 11.10.6.4.4b)

$W_u = 7.5$ in (Article 11.3.1)

$\gamma_u = 150$ lbs/ft$^3$

$G_u = 2.76$ in

$N_u = 1$

$\omega = 0°$ (Article 11.3.1)

$\theta = 90°$ (Fig. 3.11.5.3)

$D_f = 2$ ft (Fig. 10.6.3.1)

$D'_f = 2.5$ ft (Fig. 10.6.3.1)

$B = 14.625$ ft (Fig. 11.10.2-1)

### 1.2. Backslope geometry

$\beta = 0°$ (Fig. 3.11.5.3)

$(0.5H_2) = 3.15$ ft (Eq. 11.10.7.1-4)

### 1.3. Groundwater

$\gamma_w = 62.449$ lbs/ft$^3$ (Article 12.3)

$z_{wback} = 1.55$ ft

$z_{wfront} = 6.3$ ft

### 1.4. Soils (unfactored)

$\phi_r = 35^\circ$

(Article 11.10.5.2)

$\delta_r = 23^\circ$

(Table 3.11.5.3)

$\gamma_r = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,r} = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fill} = 32^\circ$

(Fig. 11.10.2)

$\delta_f = 21.3^\circ$

(Table 3.11.5.3)

$\gamma_{fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fnd} = 0^\circ$

(Fig. 10.6.3.4-2)

$c_{fnd} = 500 \text{ psf}$

(Eq. 10.6.3.1.2a-1)

$\gamma_{fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\gamma_{sat,fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\phi_p = 40^\circ$

(Article 3.11.5.4)

$\delta_p = 26^\circ$

(Table 3.11.5.3)

$\gamma_p = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

$\gamma_{sat,p} = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

## 1.5. Seismic inputs

$k_h = 0.43$

(Fig. 11.6.5.1-1)
(Article 11.6.5.2)

$k_v = 0$

(Article 11.6.5.2)

Calculate the Mononobe-Okabe seismic angle.

$$\theta_{MO} = \beta + \tan^{-1}\left(\frac{k_h}{1 - k_v}\right)$$
$$\rightarrow \theta_{MO} = (0^\circ) + \tan^{-1}\left(\frac{(0.43)}{1 - (0)}\right)$$
$$\rightarrow \theta_{MO} = 23.3^\circ$$

(Eq. 11.6.5.3-1)

$\phi_{fill} \geq \beta + \theta_{MO} \rightarrow PASS$

(Eq. 11.6.5.3-1)

## 1.6. Surcharges

$q_{LS,1} = 250 \text{ psf}$

(Article 3.11.6)
(Fig. 11.10.5.2)

$P_{vLS,1} = 50 \text{ lbs/ft}$

(Article 3.11.6.3)

$P_{vES,2} = 50 \text{ lbs/ft}$

(Article 3.11.6.3)

$P_{hLS,1} = 50 \text{ lbs/ft}$

(Article 3.11.6.3)

$P'_{vES,1} = 200 \text{ lbs}$

(Article 3.11.6.3)

$P'_{hLS,1} = 200 \text{ lbs}$

(Article 3.11.6.3)

### 1.7. Calculate **δ** (external)

Compute interface friction angle for external stability of wall.

$\delta = \min(\delta_f, \delta_r)$
$\rightarrow \delta = \min((21.3°), (23°))$
$\rightarrow \delta = 21.3°$

(Article 11.10.5.2)

### 1.8. Calculate Ka

Calculate the active earth pressure coefficient, static method.

$$K_{af} = \frac{\sin^2(\theta + \phi_{fill})}{\sin^2(\theta)\sin(\theta - \delta)\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta)}{\sin(\theta-\delta\sin(\theta+\beta))}}\right]^2}$$
$$\rightarrow K_{af} = \frac{\sin^2((90°) + (32°))}{\sin^2((90°))\sin((90°) - (21.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°))}{\sin((90°)-(21.3°)\sin((90°)+(0°)))}}\right]^2}$$
$$\rightarrow K_{af} = 0.275$$

(Eq. 3.11.5.3)

Calculate the active earth pressure coefficient, seismic method.

$$K_{AE} = \frac{\cos^2(\phi_{fill} + \omega - \theta_{MO})}{\cos(\theta_{MO})\cos^2(\omega)\cos(\delta - \omega + \theta_{MO})\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta-\theta_{MO})}{\cos(\delta-\omega+\theta_{MO})\cos(\omega+\beta)}}\right]}$$
$$\rightarrow K_{AE} = \frac{\cos^2((32°) + (0°) - (23.3°))}{\cos((23.3°))\cos^2((0°))\cos((21.3°) - (0°) + (23.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°)-(23.3°))}{\cos((21.3°)-(0°)+(23.3°))\cos((0°)+(0°))}}\right]}$$
$$\rightarrow K_{AE} = 0.747$$

(Eq. A11.3.1-1)

### 1.9. Critical failure plane

Calculate the inclination of the assumed failure plane.

$$\Psi_{ext} = 45^\circ + \frac{\phi_{fill}}{2}$$
$$\rightarrow \Psi_{ext} = 45^\circ + \frac{(32^\circ)}{2}$$
$$\rightarrow \Psi_{ext} = 61^\circ$$

(Fig. 11.10.6.3.1-1)

Calculate the inclination of the assumed failure plane.

$$\Psi_{int} = 45^\circ + \frac{\phi_r}{2}$$
$$\rightarrow \Psi_{inl} = 45^\circ + \frac{(35^\circ)}{2}$$
$$\rightarrow \Psi_{int} = 62.5^\circ$$

(Fig. 11.10.6.3.1-1)

## 1.10. Front face

$$\beta_{front} = -26.6^\circ$$

(Fig. 3.11.5.3)

## 1.11. Load combinations

### 1.11.1. Factors (Strength Limit State)

$\gamma_{p-DC(max)} = 1.25$

(Table 3.4.1-2)

$\gamma_{p-DC(min)} = 0.9$

(Table 3.4.1-2)

$\gamma_{p-EH(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{p-EV(max)} = 1.35$

(Table 3.4.1-2)

$\gamma_{p-EV(min)} = 1$

(Table 3.4.1-2)

$\gamma_{p-ES(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{EQ} = 0$

(Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1.75$

(Table 3.4.1-1)

$\gamma_{WA} = 1$

(Table 3.4.1-1)

$\phi_p = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.65$

(Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$

(Table 11.5.7-1)

$\phi_{ep} = 0.5$

(Table 10.5.5.2.2-1)

### 1.11.2. Factors (Extreme Limit State)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-EH} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-ES} = 1$ (Table 3.4.1-2)

$\gamma_{EQ} = 1$ (Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1$ (Table 3.4.1-1)

$\gamma_{WA} = 1$ (Table 3.4.1-1)

$\phi_p = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.9$ (Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$ (Table 11.5.7-1)

$\phi_{ep} = 1$ (Table 10.5.5.2.2-1)

## 1.12. Reinforcements

Determine length of reinforced zone excluding wall facing.

$L' = B - W_u$
$\rightarrow L' = (14.625 \text{ ft}) - (7.5 \text{ in})$
$\rightarrow L' = 14 \text{ ft}$ (Fig. 11.10.5.2-1)

## 1.13. Global reinforcement data

$A_f = 0 \text{ ft}^2$

(Fig. 11.10.7.2-1)

Calculate the average height of soil surcharge within 0.7H of back of wall face.

$S_{0.7H} = (0.5)(0.7H)\tan(\beta)$
$\rightarrow S_{0.7H} = (0.5)\Big(0.7(6.3 \text{ ft})\Big)\tan((0°))$
$\rightarrow S_{0.7H} = 0 \text{ ft}$

(Eq. 11.10.6.2.1a-2)

Determine simplified Coulomb lateral earth pressure coefficient.

$$k_{abh} = \frac{\sin^2(\theta + \phi_r)}{\sin^3(\theta)\left[1 + \frac{\sin(\phi_r)}{\sin(\theta)}\right]^2}$$
$$\rightarrow k_{abh} = \frac{\sin^2((90°) + (35°))}{\sin^3((90°))\left[1 + \frac{\sin((35°))}{\sin((90°))}\right]^2}$$
$\rightarrow k_{abh} = 0.271$

(Eq. 11.10.6.2.1c-2)

$\omega \leq (20°) \rightarrow PASS$

(Article 11.10.6.2.1)

### 1.14. Backslope properties

$x_{int} = 14 \text{ ft}$

Compute height of sloped backfill for earth pressure calculations.

$h = H$
$\rightarrow h = 6.3 \text{ ft}$

(Fig. 3.11.5.9)
(Fig. 3.11.5.8.1)

## 2. Strength Limit State

### 2.1. Summary

#### 2.1.1. External stability - Strength Limit State

| Failure mode | CDR |
|---|---|
| Base sliding | 2.03 |
| Overturning | 1.934 |
| Bearing | 1.987 |

#### 2.1.2. Reinforcement stability - Strength Limit State

| Layer | Tensile strength | Connection | Pullout |
|---|---|---|---|
| 1 | 3.156 | 3.156 | 8.011 |
| 2 | 2.931 | 2.931 | 2.971 |

### 2.2. External forces

#### 2.2.1. Weights

Compute the weight of the wall facing.

$$W_w = W_u H_u \gamma_u N_u$$
$$\rightarrow W_w = (7.5 \text{ in})(75.6 \text{ in})(150 \text{ lbs/ft}^3)(1)$$
$$\rightarrow W_w = 590.625 \text{ lbs/ft}$$

(Eq. C11.10.5.3)

Calculate the horizontal offset of the wall centroid from the center of the analysis layer.

$$X_W = \frac{B}{2} - G_u$$
$$\rightarrow X_W = \frac{(14.625 \text{ ft})}{2} - (2.76 \text{ in})$$
$$\rightarrow X_W = 7.082 \text{ ft}$$

(Fig. 11.6.3.2)

$h_{W_w} = 3.15$ ft

$V_1 = 4410$ lbs/ft

(Fig. 11.10.5.2-1)

$X_{V1} = 0.313$ ft

(Fig. 11.6.3.2)

$\Sigma V_{qLS} = 3549.996$ lbs/ft

(Fig. C11.5.6.3)

$X_{\Sigma VqLS} = 0.214$ ft

(Fig. C11.5.6.3)

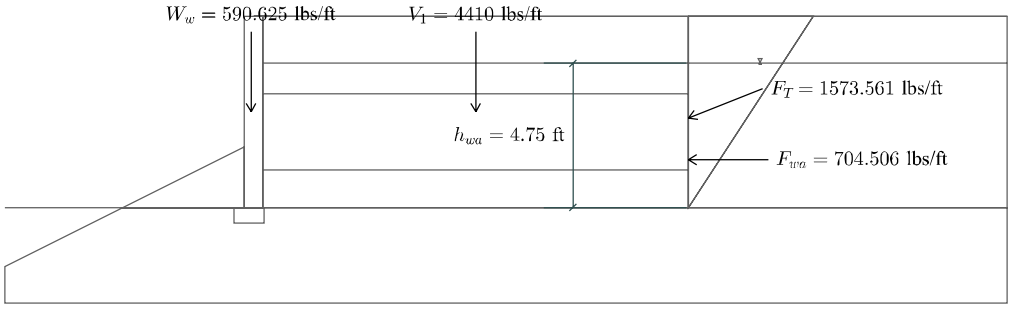
$\Sigma V_{qES} = 370$ lbs/ft

(Fig. C11.5.6.3)

$X_{\Sigma VqES} = -6.687$ ft

(Fig. C11.5.6.3)

### 2.2.2. Earth forces




$h_{wa} = 4.75$ ft

$F_1' = 488.492$ lbs/ft

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

$h_1 = 2.305$ ft

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Compute the horizontal component of F1.

$$F'_{1h} = F'_1 \cos(\delta)$$
$$\rightarrow F'_{1h} = (488.492 \text{ lbs/ft}) \cos((21.3^\circ))$$
$$\rightarrow F'_{1h} = 455.123 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the vertical component of F1.

$$F'_{1v} = F'_1 \sin(\delta)$$
$$\rightarrow F'_{1v} = (488.492 \text{ lbs/ft}) \sin((21.3^\circ))$$
$$\rightarrow F'_{1v} = 177.445 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute hydrostatic force.

$$F_{wa} = \frac{\frac{1}{2} h_{wa}^2 \gamma_w}{\sin(\theta)}$$
$$\rightarrow F_{wa} = \frac{\frac{1}{2}(4.75 \text{ ft})^2 (62.449 \text{ lbs/ft}^3)}{\sin((90^\circ))}$$
$$\rightarrow F_{wa} = 704.506 \text{ lbs/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Compute hydrostatic force (horizontal component).

$$F_{wah} = F_{wa} \sin(\theta)$$
$$\rightarrow F_{wah} = (704.506 \text{ lbs/ft}) \sin((90^\circ))$$
$$\rightarrow F_{wah} = 704.506 \text{ lbs/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Compute hydrostatic force (vertical component, positive downwards).

$$F_{wav} = +F_{wa} \cos(\theta)$$
$$\rightarrow F_{wav} = +(704.506 \text{ lbs/ft}) \cos((90^\circ))$$
$$\rightarrow F_{wav} = 0 \text{ lbs/ft}$$

(Article 3.7.1)
(Article 3.11.3)

$$x_{infl} = 17.492 \text{ ft}$$

(Fig. 11.10.10.1-1)

Sum up surcharges within influence zone.

$$q_{LS} = q_{LS,1}$$
$$\rightarrow q_{LS} = 250 \text{ psf}$$

(Fig. 11.10.10.1-1)

Compute the active force due to surcharge.

$$F_{2,LS} = q_{LS} h K_{af}$$
$$\rightarrow F_{2,LS} = (250 \text{ psf})(6.3 \text{ ft})(0.275)$$
$$\rightarrow F_{2,LS} = 433.177 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Compute the horizontal component of F2.

$$F_{2h,LS} = F_{2,LS}\cos(\delta)$$
$$\rightarrow F_{2h,LS} = (433.177 \text{ lbs/ft})\cos((21.3^\circ))$$
$$\rightarrow F_{2h,LS} = 403.587 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the vertical component of F2.

$$F_{2v,LS} = F_{2,LS}\sin(\delta)$$
$$\rightarrow F_{2v,LS} = (433.177 \text{ lbs/ft})\sin((21.3^\circ))$$
$$\rightarrow F_{2v,LS} = 157.352 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Convert concentrated lateral load into resultant active force.

$$F_{pP_{hLS,1}} = P_{hLS,1}$$
$$\rightarrow F_{pP_{hLS,1}} = 50 \text{ lbs/ft}$$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$$F_{phP_{hLS,1}} = F_{pP_{hLS,1}}$$
$$\rightarrow F_{phP_{hLS,1}} = 50 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$$h_{P_{hLS,1}} = H - z_P - I_2/3$$
$$\rightarrow h_{P_{hLS,1}} = (6.3 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$$
$$\rightarrow h_{P_{hLS,1}} = 6.3 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$F_{pvP_{hLS,1}} = 0 \text{ lbs/ft}$$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Convert concentrated lateral load into resultant active force.

$$F_{pP'_{hLS,1}} = P'_{hLS,1}/L_f$$
$$\rightarrow F_{pP'_{hLS,1}} = (200 \text{ lbs})/(357 \text{ ft})$$
$$\rightarrow F_{pP'_{hLS,1}} = 0.56 \text{ lbs/ft}$$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$$F_{phP'_{hLS,1}} = F_{pP'_{hLS,1}}$$
$$\rightarrow F_{phP'_{hLS,1}} = 0.56 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$$h_{P'_{hLS,1}} = H - z_P - I_2/3$$
$$\rightarrow h_{P'_{hLS,1}} = (6.3 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$$
$$\rightarrow h_{P'_{hLS,1}} = 6.3 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$F_{pvP'_{hLS,1}} = 0 \text{ lbs/ft}$$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Sum all the active horizontal earth forces.

$$F_{Th} = \gamma_{p-EH(max)} F'_{1h} + \gamma_{LS}\left(F_{phP_{hLS,1}} + F_{phP'_{hLS,1}} + F_{2h,LS}\right)$$
$$\rightarrow F_{Th} = (1.5)(455.123 \text{ lbs/ft}) + (1.75)\left((50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft}) + (403.587 \text{ lbs/ft})\right)$$
$$\rightarrow F_{Th} = 1477.442 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

$$h_T = 2.948 \text{ ft}$$

Compute vertical resultant.

$$F_{Tv} = \gamma_{p-EH(max)} F'_{1v} + \gamma_{LS}\left(F_{2v,LS} + F_{pvP_{hLS,1}} + F_{pvP'_{hLS,1}}\right)$$
$$\rightarrow F_{Tv} = (1.5)(177.445 \text{ lbs/ft}) + (1.75)\left((157.352 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\right)$$
$$\rightarrow F_{Tv} = 541.534 \text{ lbs/ft}$$

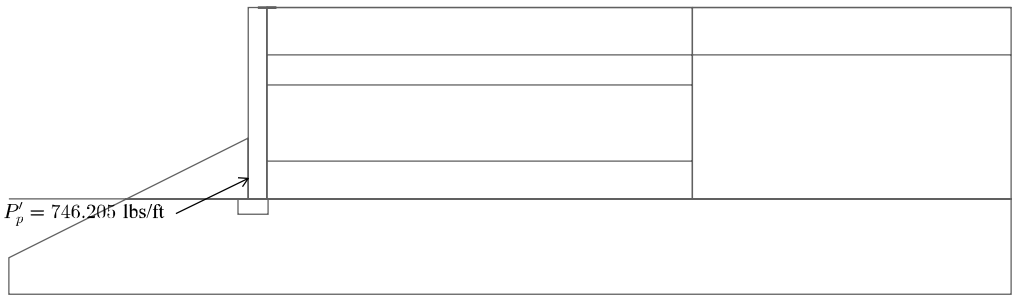
(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Total factored active resultant.

$$F_T = \sqrt{F_{Th}^2 + F_{Tv}^2}$$
$$\rightarrow F_T = \sqrt{(1477.442 \text{ lbs/ft})^2 + (541.534 \text{ lbs/ft})^2}$$
$$\rightarrow F_T = 1573.561 \text{ lbs/ft}$$

(Fig. 11.6.3.2-2)

### 2.2.3. Front face resistance



$z_{passive} = 2 \text{ ft}$

Select the passive earth pressure coefficient.

$k_p = f(\phi_p, \beta_{front}, \omega_{passive}, \delta_p)$
$\rightarrow k_p = f((40°), (-26.6°), (0°), (26°))$
$\rightarrow k_p = 2.764$

(Caquot & Kerisel 1949 pp. 116-127)

$h_{wp} = 0 \text{ ft}$

Calculate the height of the passive resultant above the bottom of the passive wedge.

$h_{Pp} = z_{passive}/3$
$\rightarrow h_{Pp} = (2 \text{ ft})/3$
$\rightarrow h_{Pp} = 0.667 \text{ ft}$

$P'_p = 746.205 \text{ lbs/ft}$

(Article 3.11.5.4)

$h_{Pp} = 0.667 \text{ ft}$

Compute the horizontal component of Pp.

$P'_{pH} = P'_p \cos(\delta_p)$
$\rightarrow P'_{pH} = (746.205 \text{ lbs/ft}) \cos((26°))$
$\rightarrow P'_{pH} = 670.685 \text{ lbs/ft}$

Compute the vertical component of Pp.

$P'_{pV} = -P'_p \sin(\delta_p)$
$\rightarrow P'_{pV} = -(746.205 \text{ lbs/ft}) \sin((26°))$
$\rightarrow P'_{pV} = -327.115 \text{ lbs/ft}$

Compute hydrostatic force.

$F_{wp} = \frac{\frac{1}{2} h_{wp}^2 \gamma_w}{\sin(\theta)}$
$\rightarrow F_{wp} = \frac{\frac{1}{2} (0 \text{ ft})^2 (62.449 \text{ lbs/ft}^3)}{\sin((90°))}$
$\rightarrow F_{wp} = 0 \text{ lbs/ft}$

(Article 3.7.1)
(Article 3.11.3)

Compute hydrostatic force (horizontal component).

$F_{wph} = F_{wp} \sin(\theta)$
$\rightarrow F_{wph} = (0 \text{ lbs/ft}) \sin((90°))$
$\rightarrow F_{wph} = 0 \text{ lbs/ft}$

(Article 3.7.1)
(Article 3.11.3)

Compute hydrostatic force (vertical component, positive downwards).

$$F_{wpv} = -F_{wp}\cos(\theta)$$
$$\rightarrow F_{wpv} = -(0 \text{ lbs/ft})\cos((90°))$$
$$\rightarrow F_{wpv} = 0 \text{ lbs/ft}$$

(Article 3.7.1)
(Article 3.11.3)

### 2.2.4. External moments

Determine driving moment from F1.

$$M_{o,F_1} = F'_{1h}h_1$$
$$\rightarrow M_{o,F_1} = (455.123 \text{ lbs/ft})(2.305 \text{ ft})$$
$$\rightarrow M_{o,F_1} = 1049.031 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from F1.

$$M_{r,F_1} = F'_{1v}B$$
$$\rightarrow M_{r,F_1} = (177.445 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,F_1} = 2595.135 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine driving moment from active hydrostatic force.

$$M_{o,F_{wa}} = F_{wah}\left(\frac{h_{wa}}{3}\right) - F_{wav}\left(B + \left(\frac{h_{wa}}{3}\right)\tan(\theta - 90°)\right)$$
$$\rightarrow M_{o,F_{wa}} = (704.506 \text{ lbs/ft})\left(\frac{(4.75 \text{ ft})}{3}\right) - (0 \text{ lbs/ft})\left((14.625 \text{ ft}) + \left(\frac{(4.75 \text{ ft})}{3}\right)\tan((90°) - 90°)\right)$$
$$\rightarrow M_{o,F_{wa}} = 1115.468 \text{ lbsft/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Determine driving moment from F2 (live).

$$M_{o,F_{2LS}} = F_{2h,LS}h/2$$
$$\rightarrow M_{o,F_{2LS}} = (403.587 \text{ lbs/ft})(6.3 \text{ ft})/2$$
$$\rightarrow M_{o,F_{2LS}} = 1271.299 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from F2 (live).

$$M_{r,F_{2LS}} = F_{2v,LS}B$$
$$\rightarrow M_{r,F_{2LS}} = (157.352 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,F_{2LS}} = 2301.272 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Sum of driving moments due to point loads (live).

$$M_{o,F_{qLS}} = F_{phP_{hLS,1}} h_{P_{hLS,1}} F_{phP'_{hLS,1}} h_{P'_{hLS,1}}$$
$$\rightarrow M_{o,F_{qLS}} = (50 \text{ lbs/ft})(6.3 \text{ ft})(0.56 \text{ lbs/ft})(6.3 \text{ ft})$$
$$\rightarrow M_{o,F_{qLS}} = 4945.376 \text{ lbsft/ft}$$

Sum of resisting moments due to point loads (live).

$$M_{r,F_{pLS}} = F_{pvP_{hLS,1}}\left(B - h_{P_{hLS,1}} \cot(\theta)\right) + F_{pvP'_{hLS,1}}\left(B - h_{P'_{hLS,1}} \cot(\theta)\right)$$
$$\rightarrow M_{r,F_{pLS}} = (0 \text{ lbs/ft})\left((14.625 \text{ ft}) - (6.3 \text{ ft}) \cot((90°))\right) + (0 \text{ lbs/ft})\left((14.625 \text{ ft}) - (6.3 \text{ ft}) \cot((90°))\right)$$
$$\rightarrow M_{r,F_{pLS}} = 0 \text{ lbsft/ft}$$

Determine driving active moment.

$$M_{o,F_T} = F_{Th} h_T$$
$$\rightarrow M_{o,F_T} = (1477.442 \text{ lbs/ft})(2.948 \text{ ft})$$
$$\rightarrow M_{o,F_T} = 4355.746 \text{ lbsft/ft}$$

Determine resisting moment from FT.

$$M_{r,F_T} = F_{Tv} B$$
$$\rightarrow M_{r,F_T} = (541.534 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,F_T} = 7919.929 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine hydrostatic force at base of wall.

$$U = h_w B \gamma_w$$
$$\rightarrow U = (2.375 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 2169.138 \text{ lbs/ft}$$

Determine reduction in resisting moment due to porewater at base of wall.

$$\Delta M_{r,U} = U \frac{B}{2}$$
$$\rightarrow \Delta M_{r,U} = (2169.138 \text{ lbs/ft}) \frac{(14.625 \text{ ft})}{2}$$
$$\rightarrow \Delta M_{r,U} = 15861.818 \text{ lbsft/ft}$$

Determine driving moment from passive force.

$$M_{r,P_p} = P'_{pH}(h_{Pp} - h_{shear-key})$$
$$\rightarrow M_{r,P_p} = (670.685 \text{ lbs/ft})\left((0.667 \text{ ft}) - (0 \text{ ft})\right)$$
$$\rightarrow M_{r,P_p} = 447.123 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from passive hydrostatic force.

$$M_{r,F_{wp}} = F_{wph}(h_{wp} - h_{shear-key})$$
$$\rightarrow M_{r,F_{wp}} = (0 \text{ lbs/ft})\Big((0 \text{ ft}) - (0 \text{ ft})\Big)$$
$$\rightarrow M_{r,F_{wp}} = 0 \text{ lbsft/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Determine resisting moment from wall weight.

$$M_{r,w} = W_w[B/2 - X_W]$$
$$\rightarrow M_{r,w} = (590.625 \text{ lbs/ft})\Big[(14.625 \text{ ft})/2 - (7.082 \text{ ft})\Big]$$
$$\rightarrow M_{r,w} = 135.844 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V1.

$$M_{r,V_1} = V_1[X_{V1} + B/2]$$
$$\rightarrow M_{r,V_1} = (4410 \text{ lbs/ft})\Big[(0.313 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_1} = 33626.252 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V2.

$$M_{r,V_2} = V_2[X_{V2} + B/2]$$
$$\rightarrow M_{r,V_2} = (0 \text{ lbs/ft})\Big[(0 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_2} = 0 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qLS}} = \Sigma V_{qLS}[X_{\Sigma VqLS} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = (3549.996 \text{ lbs/ft})\Big[(0.214 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = 26718.722 \text{ lbsft/ft}$$

* Only applies when computing eccentricity for bearing capacity under maximum vertical load conditions.

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qES}} = \Sigma V_{qES}[X_{\Sigma VqES} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = (370 \text{ lbs/ft})\Big[(-6.687 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = 231.25 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CaseI)} = \gamma_{p-EH(max)} M_{o,F_1} + \gamma_{LS}\big(M_{o,F_{2LS}} + M_{o,F_{qLS}}\big) + \gamma_{WA} M_{o,F_{wa}}$$
$$\rightarrow \Sigma M_{o(CaseI)} = (1.5)(1049.031 \text{ lbsft/ft}) + (1.75)\Big((1271.299 \text{ lbsft/ft}) + (4945.376 \text{ lbsft/ft})\Big) + (1)(1115.468 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseI)} = 13568.195 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r(CaseI)} = \gamma_{p-EH(max)} M_{r,F_1} + \gamma_{p-EV(min)} \left(M_{r,V_1} + M_{r,V_2}\right) + \gamma_{LS} \left(M_{r,F_{2,S}} + M_{r,F_{qLS}}\right) + \gamma_{p-DC(min)} \left(M_{r,DC} + M_{r,SW_{DC}}\right) + \phi_{ep} M_{r,P_e} + \gamma_{WA} M_{r,F_{wa}}$$

$$\rightarrow \Sigma M_{r(CaseI)} = (1.5)(2595.135 \text{ lbsft/ft}) + (1)\left((33626.252 \text{ lbsft/ft}) - (0 \text{ lbsft/ft})\right) + (1.75)\left((2301.272 \text{ lbsft/ft}) - (0 \text{ lbsft/ft})\right) + (0.9)\left((135.844 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\right) + (0.5)(447.123 \text{ lbsft/ft}) + (1)(0 \text{ lbsft/ft})$$

$$\rightarrow \Sigma M_{r(CaseI)} = 42100.127 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

$$\Sigma M_r' = \Sigma M_{r(CaseI)} - \Delta M_{r,U}$$

$$\rightarrow \Sigma M_r' = (42100.127 \text{ lbsft/ft}) - (15861.818 \text{ lbsft/ft})$$

$$\rightarrow \Sigma M_r' = 26238.309 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CaseII)} = \gamma_{p\ \ EH(max)} M_{o,F_1} + \gamma_{LS}\left(M_{o,F_{2,LS}} + M_{o,F_{qLS}}\right) + \gamma_{WA} M_{o,F_{wa}}$$

$$\rightarrow \Sigma M_{o(CaseII)} = (1.5)(1049.031 \text{ lbsft/ft}) + (1.75)\Big((1271.299 \text{ lbsft/ft}) + (4945.376 \text{ lbsft/ft})\Big) + (1)(1115.468 \text{ lbsft/ft})$$

$$\rightarrow \Sigma M_{o(CaseII)} = 13568.195 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r(CaseII)} \quad \gamma_{p-EH(max)} M_{r,F_1} + \gamma_{p-EV(max)} \left(M_{r,V_1} + M_{r,V_2}\right) + \gamma_{LS} \left(M_{r,F_{2,LS}} + M_{r,F_{qLS}}\right) + \gamma_{p-DC(max)} \left(M_{r,DC} + M_{r,SW_{DC}}\right) - \phi_{ep} M_{r,P_e} - \gamma_{WA} M_{r,F_{wa}}$$

$$\rightarrow \Sigma M_{r(CaseII)} = (1.5)(2595.135 \text{ lbsft/ft}) + (1.35)\left((33626.252 \text{ lbsft/ft}) - (0 \text{ lbsft/ft})\right) + (1.75)\Big((2301.272 \text{ lbsft/ft}) \quad (0 \text{ lbsft/ft}) \quad (26718.722 \text{ lbsft/ft})\Big) + (1.25)\Big((135.844 \text{ lbsft/ft}) \quad (231.25 \text{ lbsft/ft})\Big) + (0.5)(447.123 \text{ lbsft/ft}) + (1)(0 \text{ lbsft/ft})$$

$$\rightarrow \Sigma M_{r(CaseII)} = 100755.561 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

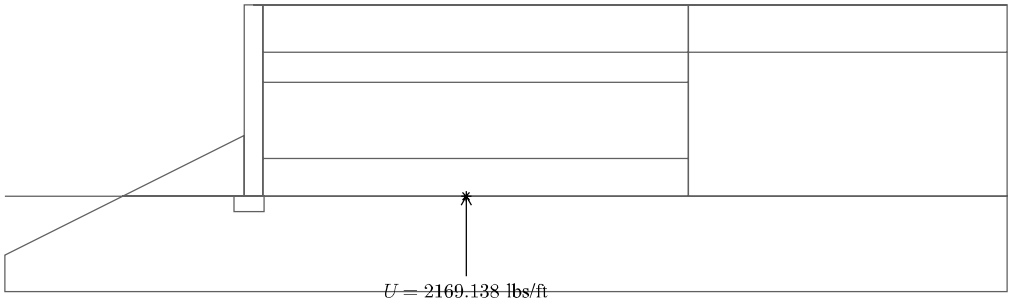
$$\Sigma M_r' = \Sigma M_{r(CaseII)} - \Delta M_{r,U}$$

$$\rightarrow \Sigma M_r' = (100755.561 \text{ lbsft/ft}) - (15861.818 \text{ lbsft/ft})$$

$$\rightarrow \Sigma M_r' = 84893.743 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

### 2.2.5. Sum of external forces




Sum all the active horizontal earth forces.

$$\Sigma F_h = \gamma_{p-EH(max)} F'_{1h} + \gamma_{LS}\left(F_{2h,LS} + F_{phP_{hLS,1}} + F_{phP'_{hLS,1}}\right) + \gamma_{WA} F_{wah}$$
$$\rightarrow \Sigma F_h = (1.5)(455.123 \text{ lbs/ft}) + (1.75)\Big((403.587 \text{ lbs/ft}) + (50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft})\Big) + (1)(704.506 \text{ lbs/ft})$$
$$\rightarrow \Sigma F_h = 2181.949 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Compute vertical resultant.

$$V = \gamma_{p-LL(max)} F'_{1v} - \gamma_{p-DC(min)}(W_w + \Sigma V_{pEs}) - \gamma_{LS}\left(F_{2v,LS} + F_{pvP_{hLS}} + F_{pvP'_{hLS,1}}\right) + \gamma_{p-EV(min)}(V_1 + V_2) + \gamma_{EP} P'_{pV} + \gamma_{WA}(F_{vwa} - F_{vpw})$$
$$\rightarrow V = (1.5)(177.415 \text{ lbs/ft}) + (0.9)\Big((590.625 \text{ lbs/ft}) + (370 \text{ lbs/ft})\Big) + (1.75)\Big((157.352 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big) + (1)\Big((1410 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big) + (0.5)(-327.115 \text{ lbs/ft}) + (1)\Big((0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big)$$
$$\rightarrow V = 5652.539 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

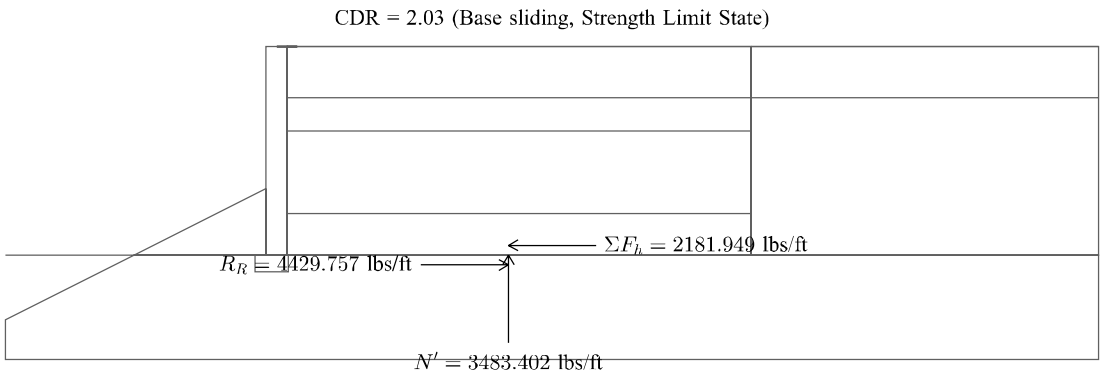
Determine hydrostatic force at base of wall.

$$U = \bar{h}_w B \gamma_w$$
$$\rightarrow U = (2.375 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 2169.138 \text{ lbs/ft}$$

Determine effective normal force.

$$N' = V - U$$
$$\rightarrow N' = (5652.539 \text{ lbs/ft}) - (2169.138 \text{ lbs/ft})$$
$$\rightarrow N' = 3483.402 \text{ lbs/ft}$$

## 2.3. Base sliding



Determine passive resistance.

$$R_{ep} = P'_{pH} + F_{wph}$$
$$\rightarrow R_{ep} = (670.685 \text{ lbs/ft}) + (0 \text{ lbs/ft})$$
$$\rightarrow R_{ep} = 670.685 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute the eccentricity of the bearing reaction.

$$e = \frac{B}{2} - \frac{\Sigma M_{r(CaseI)} - \Sigma M_{o(CaseI)}}{V}$$
$$\rightarrow e = \frac{(14.625 \text{ ft})}{2} - \frac{(42100.127 \text{ lbsft/ft}) - (13568.195 \text{ lbsft/ft})}{(5652.539 \text{ lbs/ft})}$$
$$\rightarrow e = 2.265 \text{ ft}$$

(Fig. 11.6.3.2)

Calculate normal stress distribution based on eccentricity.

$$\sigma_n = \frac{V}{B - 2(\max(0, e))}$$
$$\rightarrow \sigma_n = \frac{(5652.539 \text{ lbs/ft})}{(14.625 \text{ ft}) - 2\Big(\max\Big(0, (2.265 \text{ ft})\Big)\Big)}$$
$$\rightarrow \sigma_n = 559.921 \text{ psf}$$

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Compute the frictional resistance against sliding.

$$R_\tau = \min(0.5\sigma'_n, S_u)B$$
$$\rightarrow R_\tau = \min(0.5\sigma'_n, S_u)(14.625 \text{ ft})$$
$$\rightarrow R_\tau = 4094.415 \text{ lbs/ft}$$

(Eq. 10.6.3.4-2)

Compute the factored resistance against sliding.

$$R_R = \phi_\tau R_\tau + \phi_{ep} R_{ep}$$
$$\rightarrow R_R = (1)(4094.415 \text{ lbs/ft}) + (0.5)(670.685 \text{ lbs/ft})$$
$$\rightarrow R_R = 4429.757 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute CDR for base sliding.

$CDR_{sliding,ext} = R_R / \Sigma F_h$

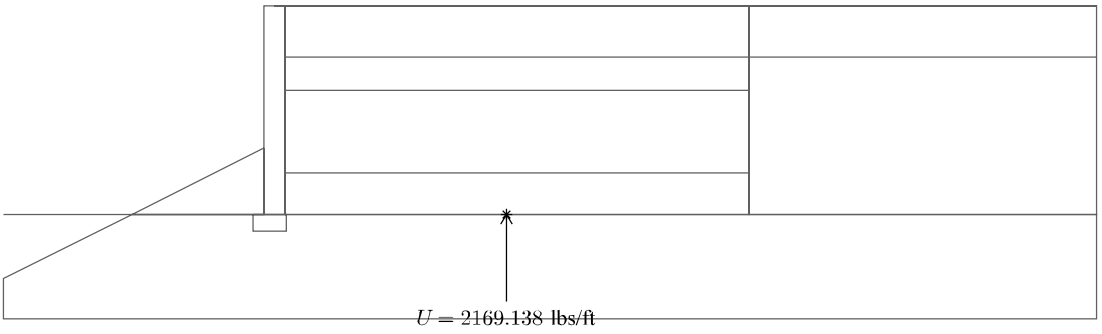
$\rightarrow CDR_{sliding,ext} = (4429.757 \text{ lbs/ft}) / (2181.949 \text{ lbs/ft})$

$\rightarrow CDR_{sliding,ext} = 2.03$

(Article 10.6.3.4)

$CDR_{sliding,ext} > 1 \rightarrow PASS$

## 2.4. Eccentricity




Compute vertical resultant.

$R = N'$

$\rightarrow R = 3483.402 \text{ lbs/ft}$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Compute vertical resultant.

$\Sigma V = \gamma_{p-EH(max)} F'_{1v} + \gamma_{p-DC(max)} (W_w + \Sigma V_{ftS}) + \gamma_{LS} \left( F_{ps1LS} + F_{ps1_{LS3}} \quad F_{ps1_{LS(5)}} + \Sigma V_{ftLS} \right) + \gamma_{p-EV(max)} (V_1 + V_2) + \phi_{ep} F'_{p1} + \gamma_{WA} (F_{wwc} + F_{wpc})$

$\rightarrow \Sigma V = (1.5)(177.445 \text{ lbs/ft}) + (1.25)\left((590.625 \text{ lbs/ft}) + (370 \text{ lbs/ft})\right) + (1.75)\left((157.352 \text{ lbs/ft}) - (0 \text{ lbs/ft}) + (0 \text{ lbs/ft}) - (3549.996 \text{ lbs/ft})\right) + (1.35)\left((1110 \text{ lbs/ft}) - (0 \text{ lbs/ft})\right) + (0.5)(-327.115 \text{ lbs/ft}) - (1)\left((0 \text{ lbs/ft}) - (0 \text{ lbs/ft})\right)$

$\rightarrow \Sigma V = 13744.751 \text{ lbs/ft}$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Determine hydrostatic force at base of wall.

$U = \bar{h}_w B \gamma_w$

$\rightarrow U = (2.375 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$

$\rightarrow U = 2169.138 \text{ lbs/ft}$

Determine effective normal force.

$\Sigma N' = \Sigma V - U$

$\rightarrow \Sigma N' = (13744.751 \text{ lbs/ft}) - (2169.138 \text{ lbs/ft})$

$\rightarrow \Sigma N' = 11575.614 \text{ lbs/ft}$

Compute the eccentricity of the bearing reaction.

$$e_{(CaseI)} = \frac{B}{2} - \frac{\Sigma M'_r - \Sigma M_{o(CaseI)}}{R}$$

$$\rightarrow e_{(CaseI)} = \frac{(14.625 \text{ ft})}{2} - \frac{(26238.309 \text{ lbsft/ft}) - (13568.195 \text{ lbsft/ft})}{(3483.402 \text{ lbs/ft})}$$

$$\rightarrow e_{(CaseI)} = 3.675 \text{ ft}$$

(Fig. 11.6.3.2)

$$e_{(CaseI)} \leq (0.333)B = (58.5 \text{ in}) \rightarrow PASS$$

(Article 10.6.3.3)
(Article 11.6.3.3)

Compute the eccentricity of the bearing reaction.

$$e_{(CaseII)} = \frac{B}{2} - \frac{\Sigma M'_r - \Sigma M_{o(CaseII)}}{\Sigma N'}$$

$$\rightarrow e_{(CaseII)} = \frac{(14.625 \text{ ft})}{2} - \frac{(84893.743 \text{ lbsft/ft}) - (13568.195 \text{ lbsft/ft})}{(11575.614 \text{ lbs/ft})}$$

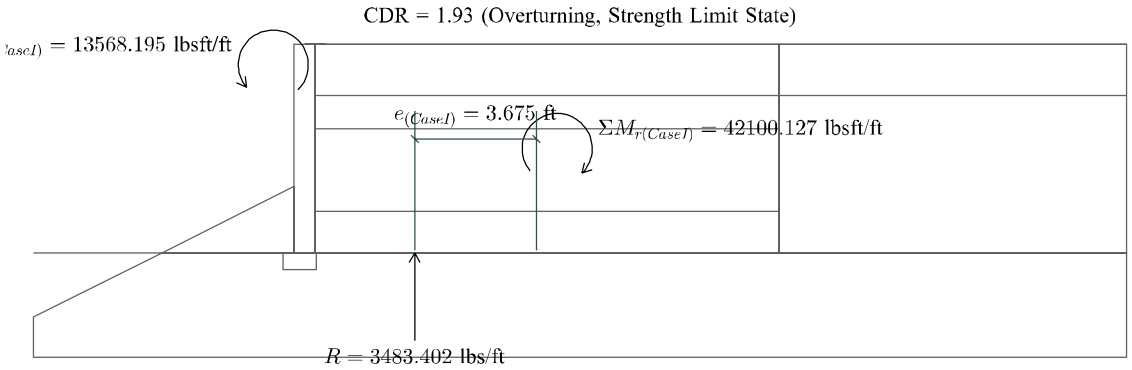
$$\rightarrow e_{(CaseII)} = 1.151 \text{ ft}$$

(Fig. 11.6.3.2)

$$e_{(CaseII)} \leq (0.333)B = (58.5 \text{ in}) \rightarrow PASS$$

(Article 10.6.3.3)
(Article 11.6.3.3)

## 2.5. Overturning




Compute CDR for external overturning.

$$CDR_{overturning} = \Sigma M'_r / \Sigma M_{o(CaseI)}$$

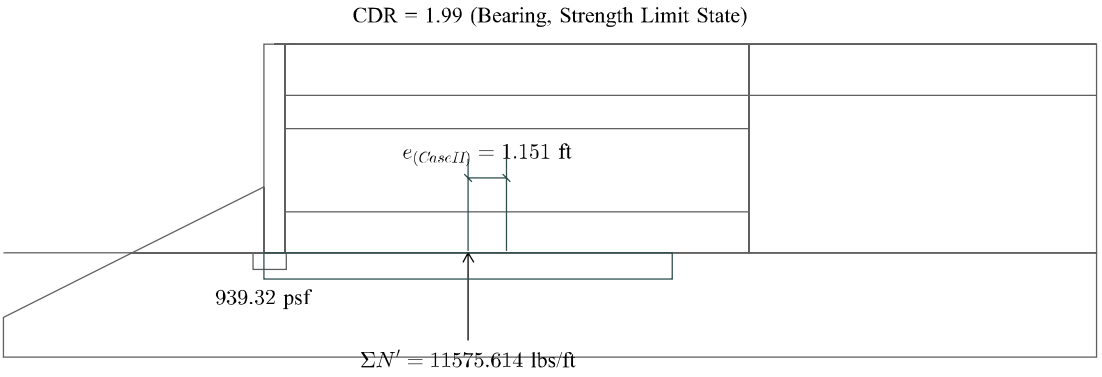
$$\rightarrow CDR_{overturning} = (26238.309 \text{ lbsft/ft})/(13568.195 \text{ lbsft/ft})$$

$$\rightarrow CDR_{overturning} = 1.93$$

(Article C11.6.3.3)

$$CDR_{overturning} > 1 \rightarrow PASS$$

## 2.6. Bearing




Calculate the effective bearing width.

$$B' = B - 2e_{(CaseII)}$$
$$\rightarrow B' = (14.625 \text{ ft}) - 2(1.151 \text{ ft})$$
$$\rightarrow B' = 12.323 \text{ ft}$$

(Article C11.10.5.4)

Calculate uniform vertical bearing stress.

$$\sigma'_n = \frac{\Sigma N'}{B'}$$
$$\rightarrow \sigma'_n = \frac{(11575.614 \text{ lbs/ft})}{(12.323 \text{ ft})}$$
$$\rightarrow \sigma'_n = 939.32 \text{ psf}$$

(Fig. 11.6.3.2)

Calculate the Nq coefficient for foundation soil (Reissner 1924 method).

$$N_q = \exp(\pi + \tan(\phi_{fnd}))\tan^2(\pi/4 + \phi_{fnd}/2)$$
$$\rightarrow N_q = \exp(\pi + \tan((0^\circ)))\tan^2(\pi/4 + (0^\circ)/2)$$
$$\rightarrow N_q = 1$$

Calculate the Nc coefficient for foundation soil (Prandtl 1921 method).

$$N_c = (N_q - 1)\cot(\phi_{fnd})$$
$$\rightarrow N_c = ((1) - 1)\cot((0^\circ))$$
$$\rightarrow N_c = 5.142$$

Calculate the Ngamma coefficient for foundation soil (Vesic 1975 method).

$$N_\gamma = 2(N_q + 1)\tan(\phi_{fnd})$$
$$\rightarrow N_\gamma = 2((1) + 1)\tan((0^\circ))$$
$$\rightarrow N_\gamma = 0$$

Determine Nqm.

$$N_{qm} = N_q$$
$$\rightarrow N_{qm} = 1$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-3)

Determine Ncm.

$$N_{cm} = N_c$$
$$\rightarrow N_{cm} = 5.142$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-2)

Determine Ngamma,m.

$$N_{\gamma m} = N_\gamma$$
$$\rightarrow N_{\gamma m} = 0$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-4)

$$\gamma_q = 120 \text{ lbs/ft}^3$$

(Eq. 10.6.3.1.2a-1)

$$\gamma_f = 120 \text{ lbs/ft}^3$$

(Eq. 10.6.3.1.2a-1)

$$C_{wq} = 1$$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

$$C_{w\gamma} = 1$$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

Calculate nominal bearing resistance.

$$q_n = c_{fnd} N_{cm} + \gamma_q D'_f N_{qm} C_{wq} + 0.5 \gamma_f B' N_{\gamma m} C_{w\gamma}$$
$$\rightarrow q_n = (500 \text{ psf})(5.142) + (120 \text{ lbs/ft}^3)(2.5 \text{ ft})(1)(1) + 0.5(120 \text{ lbs/ft}^3)(12.323 \text{ ft})(0)(1)$$
$$\rightarrow q_n = 2870.797 \text{ psf}$$

(Fig. 10.6.3.1.2a-1)

Factor the bearing resistance.

$$q_R = q_n \phi_b$$
$$\rightarrow q_R = (2870.797 \text{ psf})(0.65)$$
$$\rightarrow q_R = 1866.018 \text{ psf}$$

(Fig. 10.6.3.1.1-1)

Compute CDR for bearing.

$$CDR_{bearing} = q_R / \sigma'_n$$
$$\rightarrow CDR_{bearing} = (1866.018 \text{ psf})/(939.32 \text{ psf})$$
$$\rightarrow CDR_{bearing} = 1.99$$

(Article 10.6.3.1)

$$CDR_{bearing} > 1 \rightarrow PASS$$

## 2.7. Reinforcement precalculations

### 2.7.1. Reinforcement data (layer 1)

$Z = 5.05 \text{ ft}$

(Fig. 11.10.6.2.1a-1)

$F^* = 1.672$

(Eq. 11.10.6.3.2-1)

$S_v = 2.5 \text{ ft}$

(Fig. 11.10.6.2.1b-1)

$S_v \leq (2.7 \text{ ft}) \rightarrow PASS$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$k_r = (1.0)k_{abh}$
$\rightarrow k_r = (1.0)(0.271)$
$\rightarrow k_r = 0.271$

(Fig. B11.2-1)

### 2.7.2. Pullout length (layer 1)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan(\Psi_{int})}$$
$$\rightarrow L_a = \frac{(6.3 \text{ ft}) - (5.05 \text{ ft})}{\tan((62.5°))}$$
$\rightarrow L_a = 0.651 \text{ ft}$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$L_e = L' - L_a$
$\rightarrow L_e = (14 \text{ ft}) - (0.651 \text{ ft})$
$\rightarrow L_e = 13.349 \text{ ft}$

(Fig. 11.10.6.3.1-1)

$L_e \geq (3 \text{ ft}) \rightarrow PASS$

(Article 11.10.6.3.2)

### 2.7.3. Reinforcement data (layer 2)

$Z = 2.55 \text{ ft}$

(Fig. 11.10.6.2.1a-1)

$F^* = 1.834$

(Eq. 11.10.6.3.2-1)

$S_v = 3.8 \text{ ft}$

(Fig. 11.10.6.2.1b-1)

$S_v \leq (2.7 \text{ ft}) \rightarrow FAIL$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$k_r = (1.0)k_{abh}$
$\rightarrow k_r = (1.0)(0.271)$
$\rightarrow k_r = 0.271$

(Fig. B11.2-1)

### 2.7.4. Pullout length (layer 2)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan(\Psi_{int})}$$
$$\rightarrow L_a = \frac{(6.3\text{ ft}) - (2.55\text{ ft})}{\tan((62.5°))}$$
$$\rightarrow L_a = 1.952\text{ ft}$$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$$L_e = L' - L_a$$
$$\rightarrow L_e = (14\text{ ft}) - (1.952\text{ ft})$$
$$\rightarrow L_e = 12.048\text{ ft}$$

(Fig. 11.10.6.3.1-1)

$$L_e \geq (3\text{ ft}) \rightarrow PASS$$

(Article 11.10.6.3.2)

## 2.8. Tensile forces

### 2.8.1. Tmax (layer 1)

$$z_2 = 0\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\text{ ft}) + (5.05\text{ ft})}{2} + (0\text{ ft})$$
$$\rightarrow D_1(Z) = 2.837\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50\text{ lbs/ft})/(2.837\text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 17.621\text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,LS} = 17.621\text{ psf}$$

(Eq. 11.10.10.1)

$$I_1 = 0\text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{II,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50\text{ lbs/ft})/(0\text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity\text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\left((200 \text{ lbs})/(357 \text{ ft})\right)/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{II,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{II,P'_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{II,P'_{hLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = 0 \text{ psf}$$

(Eq. 11.10.10.1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (5.05 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 2.837 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50 \text{ lbs/ft})/(2.837 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 17.621 \text{ psf}$$

(Eq. 3.11.6.3-1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\text{ ft}) + (5.05\text{ ft})}{2} + (0\text{ ft})$$
$$\rightarrow D_1(Z) = 2.837\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{(200\text{ lbs})}{(2.837\text{ ft})\Big((0.625\text{ ft}) + (5.05\text{ ft}) - (0\text{ ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = 12.42\text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,ES} = \Delta\sigma_{V,P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (17.621\text{ psf}) + (12.42\text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 30.041\text{ psf}$$

(Eq. 11.10.10.1)

Determine hydrostatic pressure at analysis depth.

$$u = h_{wa}\gamma_w$$
$$\rightarrow u = (-3.5\text{ ft})(62.449\text{ lbs/ft}^3)$$
$$\rightarrow u = -218.573\text{ psf}$$

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$
$$\rightarrow \sigma_2 = (0\text{ ft})(125\text{ lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0\text{ psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma'_n = \sigma_1 + \sigma_2 - u + q_{LS,1}$$
$$\rightarrow \sigma'_n = (252.5\text{ psf}) + (0\text{ psf}) - (-218.573\text{ psf}) + (250\text{ psf})$$
$$\rightarrow \sigma'_n = 721.073\text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtens} = S_v(k_r\sigma'_n)$$
$$\rightarrow T_{maxtens} = (2.5\text{ ft})\Big((0.271)(721.073\text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 488.509\text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxpo} = T_{maxtens}$$
$$\rightarrow T_{maxpo} = 488.509 \text{ lbs/ft}$$

(Article 11.10.6.2.1)

### 2.8.2. Tmax (layer 2)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (2.55 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 1.588 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50 \text{ lbs/ft})/(1.588 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 31.496 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,LS} = 31.496 \text{ psf}$$

(Eq. 11.10.10.1)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50 \text{ lbs/ft})/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200\text{ lbs})/(357\text{ ft})\Big)/(0\text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity\text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow (0\text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0\text{ psf}$$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{H,P'_{hLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0\text{ psf}) + (0\text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = 0\text{ psf}$$

(Eq. 11.10.10.1)

$$z_2 = 0\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\text{ ft}) + (2.55\text{ ft})}{2} + (0\text{ ft})$$
$$\rightarrow D_1(Z) = 1.588\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50\text{ lbs/ft})/(1.588\text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 31.496\text{ psf}$$

(Eq. 3.11.6.3-1)

$$z_2 = 0\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\text{ ft}) + (2.55\text{ ft})}{2} + (0\text{ ft})$$
$$\rightarrow D_1(Z) = 1.588\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$

$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{(200\text{ lbs})}{(1.588\text{ ft})\Big((0.625\text{ ft}) + (2.55\text{ ft}) - (0\text{ ft})\Big)}$$

$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = 39.68\text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,ES} = \Delta\sigma_{V,P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$

$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (31.496\text{ psf}) + (39.68\text{ psf})$$

$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 71.176\text{ psf}$$

(Eq. 11.10.10.1)

Determine hydrostatic pressure at analysis depth.

$$u = h_{wa}\gamma_w$$

$$\rightarrow u = (-1\text{ ft})(62.449\text{ lbs/ft}^3)$$

$$\rightarrow u = -62.449\text{ psf}$$

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$

$$\rightarrow \sigma_2 = (0\text{ ft})(125\text{ lbs/ft}^3)$$

$$\rightarrow \sigma_2 = 0\text{ psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma'_n = \sigma_1 + \sigma_2 - u + q_{LS,1}$$

$$\rightarrow \sigma'_n = (127.5\text{ psf}) + (0\text{ psf}) - (-62.449\text{ psf}) + (250\text{ psf})$$

$$\rightarrow \sigma'_n = 439.95\text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtens} = S_v(k_r\sigma'_n)$$

$$\rightarrow T_{maxtens} = (3.8\text{ ft})\Big((0.271)(439.95\text{ psf})\Big)$$

$$\rightarrow T_{maxtens} = 453.043\text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxpo} = T_{maxtens}$$

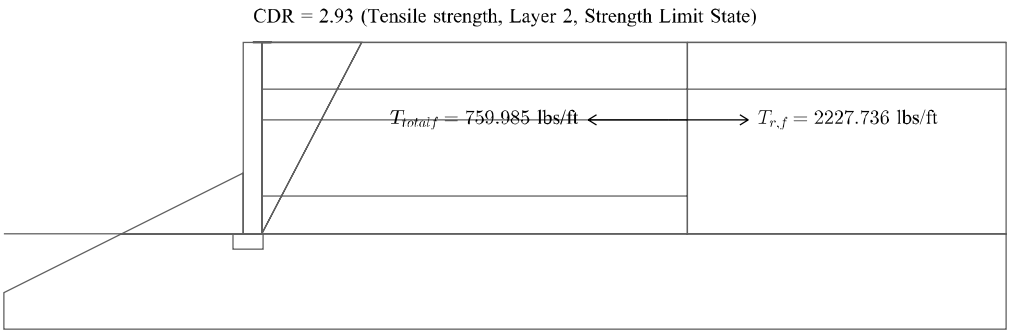
$$\rightarrow T_{maxpo} = 453.043\text{ lbs/ft}$$

(Article 11.10.6.2.1)

## 2.9. Tensile strength

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 2.9.1. Tensile strength (layer 2)




Determine total factored tension force in reinforcement.

$$T_{totalf} = \gamma_{p-EV(max)} T_{maxtens} + \gamma_{LS} S_v (k_r \Sigma\Delta\sigma_{V,LS} + \Sigma\Delta\sigma_{H,LS}) + \gamma_{p-DC(max)} S_v (k_r \Sigma\Delta\sigma_{V,ES} + \Sigma\Delta\sigma_{H,ES})$$
$$\rightarrow T_{totalf} = (1.35)(453.043 \text{ lbs/ft}) + (1.75)(3.8 \text{ ft})\Big((0.271)(31.496 \text{ psf}) + (0 \text{ psf})\Big) + (1.25)(3.8 \text{ ft})\Big((0.271)(71.176 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{totalf} = 759.985 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate factored tensile strength.

$$T_{r,f} = \phi_t R_c T_{al}$$
$$\rightarrow T_{r,f} = (0.9)(0.332)(7455.61 \text{ lbs/ft})$$
$$\rightarrow T_{r,f} = 2227.736 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)

$$T_{al} = 7455.61 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-1)

$$\phi_t = 0.9$$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$$R_c = 0.332$$

(Article 11.10.6.4.1)

Compute CDR for tensile strength.

$$CDR_{tensile} = \frac{\phi_t T_{al} R_c}{T_{totalf}}$$
$$\rightarrow CDR_{tensile} = \frac{(0.9)(7455.61 \text{ lbs/ft})(0.332)}{(759.985 \text{ lbs/ft})}$$
$$\rightarrow CDR_{tensile} = 2.93$$

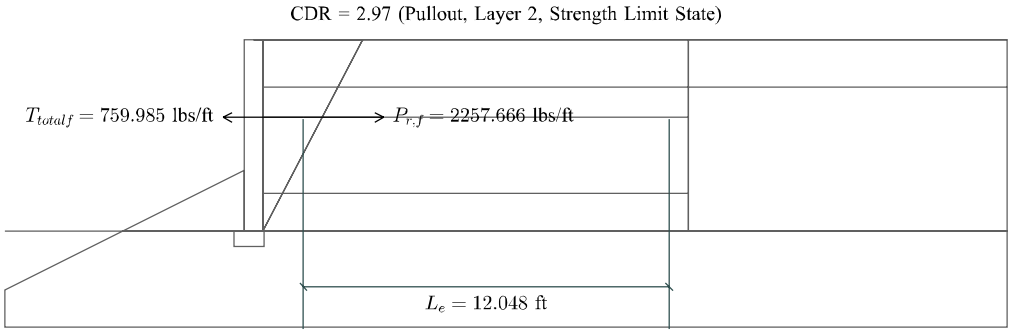
(Eq. 11.10.6.4.1-2)

$$CDR_{tensile} > 1 \rightarrow PASS$$

## 2.10. Pullout

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 2.10.1. Pullout (layer 2)




$\sigma_{1-po} = 127.5 \text{ psf}$

(Fig. 11.10.6.3.2-1)

$Z_p = 2.55 \text{ ft}$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (above pullout region only).

$$\sigma_{2-po} = \gamma_r(Z_p - Z)$$
$$\rightarrow \sigma_{2-po} = (50 \text{ lbs/ft}^3)\Big((2.55 \text{ ft}) - (2.55 \text{ ft})\Big)$$
$$\rightarrow \sigma_{2-po} = 0 \text{ psf}$$

(Eq. 11.10.6.3.2-1)

Calculate vertical stress on reinforcement.

$$\sigma'_n = \sigma_{1-po} + \sigma_{2-po} - u$$
$$\rightarrow \sigma'_n = (127.5 \text{ psf}) + (0 \text{ psf}) - (-62.449 \text{ psf})$$
$$\rightarrow \sigma'_n = 189.95 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Determine total factored tension force in reinforcement.

$$T_{lolalf} = \gamma_{p-EV(max)} T_{maxpo} + \gamma_{LS} S_v(k_r \Sigma\Delta\sigma_{V,LS} + \Sigma\Delta\sigma_{H,LS}) + \gamma_{p-DC(max)} S_v(k_r \Sigma\Delta\sigma_{V,ES} + \Sigma\Delta\sigma_{H,ES})$$
$$\rightarrow T_{lolalf} = (1.35)(453.043 \text{ lbs/ft}) + (1.75)(3.8 \text{ ft})\Big((0.271)(31.496 \text{ psf}) + (0 \text{ psf})\Big) + (1.25)(3.8 \text{ ft})\Big((0.271)(71.176 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{totalf} = 759.985 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate the pullout resistance.

$$P_r = F^* \alpha \sigma'_n C R_c L_e$$
$$\rightarrow P_r = (1.834)(0.9)(189.95 \text{ psf})(2)(0.332)(12.048 \text{ ft})$$
$$\rightarrow P_r = 2508.518 \text{ lbs/ft}$$

(Article C11.10.6.3.2)

Calculate the factored pullout resistance.

$$P_{r,f} = \phi_p P_r$$
$$\rightarrow P_{r.f} = (0.9)(2508.518 \text{ lbs/ft})$$
$$\rightarrow P_{r.f} = 2257.666 \text{ lbs/ft}$$

(Article C11.10.6.3.2-1)

Determine required length of reinforcement outside active zone.

$$L_{e,req} = \frac{T_{totalf}}{\phi_p F^* \alpha \sigma'_n C R_c}$$

$$\rightarrow L_{e,req} = \frac{(759.985 \text{ lbs/ft})}{(0.9)(1.834)(0.9)(189.95 \text{ psf})(2)(0.332)}$$

$$\rightarrow L_{c,req} = 4.056 \text{ ft}$$

(Fig. 11.10.6.3.2-1)

Compute CDR for pullout.

$$CDR_{pullout} = L_e / L_{e,req}$$

$$\rightarrow CDR_{pullout} = (12.048 \text{ ft})/(4.056 \text{ ft})$$

$$\rightarrow CDR_{pullout} = 2.97$$

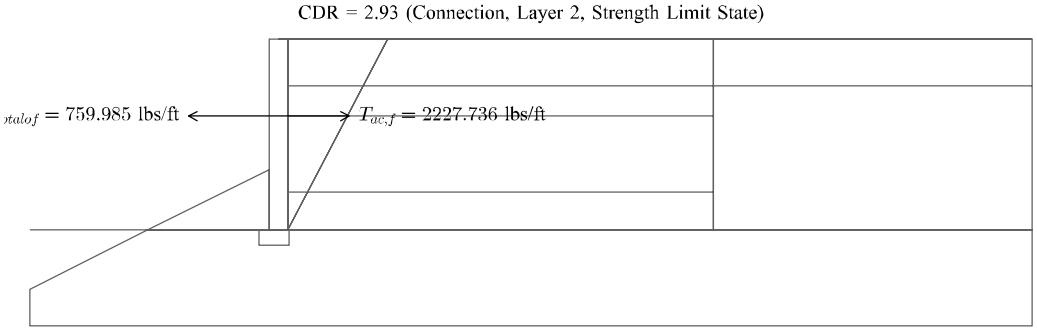
(Eq. 11.10.6.3.2-1)

$$CDR_{pullout} > 1 \rightarrow PASS$$

## 2.11. Connection

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 2.11.1. Connection (layer 2)




Determine connection force.

$$T_o = T_{maxtens}$$

$$\rightarrow T_o = 453.043 \text{ lbs/ft}$$

(Eq. 11.10.6.2.2)

Determine total factored connection force for reinforcement.

$$T_{totalof} = T_{totalf}$$

$$\rightarrow T_{totalof} = 759.985 \text{ lbs/ft}$$

(Eq. 11.10.10.1-2)

Connection strength is limited by tensile strength.

$$T_{ac} = \min(T_{ac}, T_{al})$$

$$\rightarrow T_{ac} = \min\Big(T_{ac}, (7455.61 \text{ lbs/ft})\Big)$$

$$\rightarrow T_{ac} = 7455.61 \text{ lbs/ft}$$

$$T_{ac} = 35073 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)

$$\phi_t = 0.9$$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$$R_c = 0.332$$

(Article 11.10.6.4.1)

Compute the factored connection strength.

$$T_{ac,f} = \phi_t T_{ac} R_c$$
$$\rightarrow T_{ac,f} = (0.9)(7455.61 \text{ lbs/ft})(0.332)$$
$$\rightarrow T_{ac,f} = 2227.736 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

Compute CDR for connection strength.

$$CDR_{conn} = \frac{T_{ac,f}}{T_{totalof}}$$
$$\rightarrow CDR_{conn} = \frac{(2227.736 \text{ lbs/ft})}{(759.985 \text{ lbs/ft})}$$
$$\rightarrow CDR_{conn} = 2.93$$

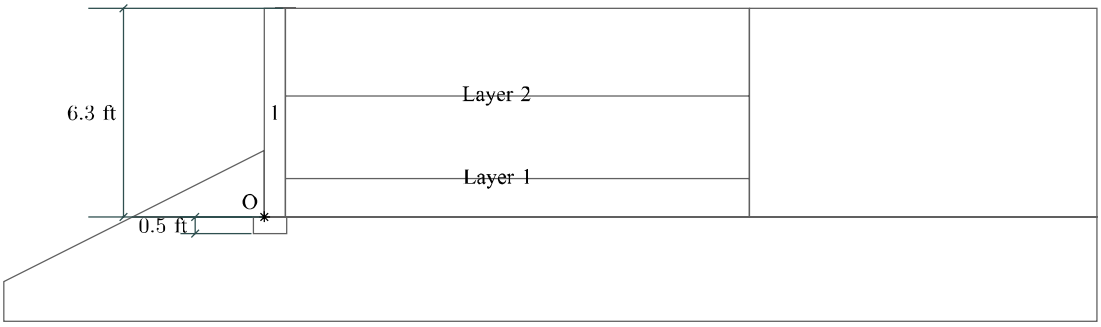
(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

$$CDR_{conn} > 1 \rightarrow PASS$$

# EXTREME LIMIT STATE - SEGMENT 2 (Stationing 0+45 to 1+32 and 2+13 to 2+52)

## 3. Model properties

### 3.1. Wall properties




$H = 6.3$ ft (Fig. 3.11.5.8.1)

$H_u = 75.6$ in (Fig. 11.10.6.4.4b)

$W_u = 7.5$ in (Article 11.3.1)

$\gamma_u = 150$ lbs/ft$^3$

$G_u = 2.76$ in

$N_u = 1$

$\omega = 0°$ (Article 11.3.1)

$\theta = 90°$ (Fig. 3.11.5.3)

$D_f = 2$ ft (Fig. 10.6.3.1)

$D'_f = 2.5$ ft (Fig. 10.6.3.1)

$B = 14.625$ ft (Fig. 11.10.2-1)

### 3.2. Backslope geometry

$\beta = 0°$ (Fig. 3.11.5.3)

$(0.5H_2) = 3.15$ ft (Eq. 11.10.7.1-4)

### 3.3. Groundwater

$\gamma_w = 62.449$ lbs/ft$^3$ (Article 12.3)

$z_w = 11.05$ ft

### 3.4. Soils (unfactored)

$\phi_r = 35^\circ$

(Article 11.10.5.2)

$\delta_r = 23^\circ$

(Table 3.11.5.3)

$\gamma_r = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,r} = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fill} = 32^\circ$

(Fig. 11.10.2)

$\delta_f = 21.3^\circ$

(Table 3.11.5.3)

$\gamma_{fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fnd} = 0^\circ$

(Fig. 10.6.3.4-2)

$c_{fnd} = 500 \text{ psf}$

(Eq. 10.6.3.1.2a-1)

$\gamma_{fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\gamma_{sat,fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\phi_p = 40^\circ$

(Article 3.11.5.4)

$\delta_p = 26^\circ$

(Table 3.11.5.3)

$\gamma_p = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

$\gamma_{sat,p} = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

## 3.5. Seismic inputs

$k_h = 0.43$

(Fig. 11.6.5.1-1)
(Article 11.6.5.2)

$k_v = 0$

(Article 11.6.5.2)

Calculate the Mononobe-Okabe seismic angle.

$$\theta_{MO} = \beta + \tan^{-1}\left(\frac{k_h}{1 - k_v}\right)$$
$$\rightarrow \theta_{MO} = (0^\circ) + \tan^{-1}\left(\frac{(0.43)}{1 - (0)}\right)$$
$$\rightarrow \theta_{MO} = 23.3^\circ$$

(Eq. 11.6.5.3-1)

$\phi_{fill} \geq \beta + \theta_{MO} \rightarrow PASS$

(Eq. 11.6.5.3-1)

## 3.6. Surcharges

$P_{vLS,1} = 50$ lbs/ft

(Article 3.11.6.3)

$P_{vES,2} = 50$ lbs/ft

(Article 3.11.6.3)

$P_{hLS,1} = 50$ lbs/ft

(Article 3.11.6.3)

$P'_{vES,1} = 200$ lbs

(Article 3.11.6.3)

$P'_{hLS,1} = 200$ lbs

(Article 3.11.6.3)

### 3.7. Calculate **δ** (external)

Compute interface friction angle for external stability of wall.

$$\delta = \min(\delta_f, \delta_r)$$
$$\rightarrow \delta = \min((21.3°), (23°))$$
$$\rightarrow \delta = 21.3°$$

(Article 11.10.5.2)

### 3.8. Calculate Ka

Calculate the active earth pressure coefficient, static method.

$$K_{af} = \frac{\sin^2(\theta + \phi_{fill})}{\sin^2(\theta)\sin(\theta - \delta)\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta)}{\sin(\theta-\delta\sin(\theta+\beta))}}\right]^2}$$
$$\rightarrow K_{af} = \frac{\sin^2((90°) + (32°))}{\sin^2((90°))\sin((90°) - (21.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°))}{\sin((90°)-(21.3°)\sin((90°)+(0°)))}}\right]^2}$$
$$\rightarrow K_{af} = 0.275$$

(Eq. 3.11.5.3)

Calculate the active earth pressure coefficient, seismic method.

$$K_{AE} = \frac{\cos^2(\phi_{fill} + \omega - \theta_{MO})}{\cos(\theta_{MO})\cos^2(\omega)\cos(\delta - \omega + \theta_{MO})\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta-\theta_{MO})}{\cos(\delta-\omega+\theta_{MO})\cos(\omega+\beta)}}\right]}$$
$$\rightarrow K_{AE} = \frac{\cos^2((32°) + (0°) - (23.3°))}{\cos((23.3°))\cos^2((0°))\cos((21.3°) - (0°) + (23.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°)-(23.3°))}{\cos((21.3°)-(0°)+(23.3°))\cos((0°)+(0°))}}\right]}$$
$$\rightarrow K_{AE} = 0.747$$

(Eq. A11.3.1-1)

### 3.9. Critical failure plane

Calculate the inclination of the assumed failure plane.

$$\Psi_{ext} = 45^\circ + \frac{\phi_{fill}}{2}$$
$$\rightarrow \Psi_{ext} = 45^\circ + \frac{(32^\circ)}{2}$$
$$\rightarrow \Psi_{ext} = 61^\circ$$

(Fig. 11.10.6.3.1-1)

Calculate the inclination of the assumed failure plane.

$$\Psi_{int} = 45^\circ + \frac{\phi_r}{2}$$
$$\rightarrow \Psi_{inl} = 45^\circ + \frac{(35^\circ)}{2}$$
$$\rightarrow \Psi_{int} = 62.5^\circ$$

(Fig. 11.10.6.3.1-1)

## 3.10. Front face

$$\beta_{front} = -26.6^\circ$$

(Fig. 3.11.5.3)

## 3.11. Load combinations

### 3.11.1. Factors (Strength Limit State)

$\gamma_{p-DC(max)} = 1.25$

(Table 3.4.1-2)

$\gamma_{p-DC(min)} = 0.9$

(Table 3.4.1-2)

$\gamma_{p-EH(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{p-EV(max)} = 1.35$

(Table 3.4.1-2)

$\gamma_{p-EV(min)} = 1$

(Table 3.4.1-2)

$\gamma_{p-ES(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{EQ} = 0$

(Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1.75$

(Table 3.4.1-1)

$\gamma_{WA} = 1$

(Table 3.4.1-1)

$\phi_p = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.65$

(Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$

(Table 11.5.7-1)

$\phi_{ep} = 0.5$

(Table 10.5.5.2.2-1)

### 3.11.2. Factors (Extreme Limit State)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-EH} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-ES} = 1$ (Table 3.4.1-2)

$\gamma_{EQ} = 1$ (Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1$ (Table 3.4.1-1)

$\gamma_{WA} = 1$ (Table 3.4.1-1)

$\phi_p = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.9$ (Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$ (Table 11.5.7-1)

$\phi_{ep} = 1$ (Table 10.5.5.2.2-1)

## 3.12. Reinforcements

Determine length of reinforced zone excluding wall facing.

$L' = B - W_u$
$\rightarrow L' = (14.625 \text{ ft}) - (7.5 \text{ in})$
$\rightarrow L' = 14 \text{ ft}$

(Fig. 11.10.5.2-1)

## 3.13. Global reinforcement data

$A_f = 0 \text{ ft}^2$

(Fig. 11.10.7.2-1)

Calculate the average height of soil surcharge within 0.7H of back of wall face.

$S_{0.7H} = (0.5)(0.7H)\tan(\beta)$
$\rightarrow S_{0.7H} = (0.5)\Big(0.7(6.3 \text{ ft})\Big)\tan((0°))$
$\rightarrow S_{0.7H} = 0 \text{ ft}$

(Eq. 11.10.6.2.1a-2)

Determine simplified Coulomb lateral earth pressure coefficient.

$$k_{abh} = \frac{\sin^2(\theta + \phi_r)}{\sin^3(\theta)\left[1 + \frac{\sin(\phi_r)}{\sin(\theta)}\right]^2}$$
$$\rightarrow k_{abh} = \frac{\sin^2((90°) + (35°))}{\sin^3((90°))\left[1 + \frac{\sin((35°))}{\sin((90°))}\right]^2}$$
$\rightarrow k_{abh} = 0.271$

(Eq. 11.10.6.2.1c-2)

$\omega \leq (20°) \rightarrow PASS$

(Article 11.10.6.2.1)

### 3.14. Backslope properties

$x_{int} = 14 \text{ ft}$

Compute height of sloped backfill for earth pressure calculations.

$h = H$
$\rightarrow h = 6.3 \text{ ft}$

(Fig. 3.11.5.9)
(Fig. 3.11.5.8.1)

## 4. Extreme Limit State

### 4.1. Summary

#### 4.1.1. External stability - Extreme Limit State

| Failure mode | CDR |
|---|---|
| Base sliding | 1.508 |
| Overturning | 3.565 |
| Bearing | 4.956 |

#### 4.1.2. Reinforcement stability - Extreme Limit State

| Layer | Tensile strength | Connection | Pullout |
|---|---|---|---|
| 1 | 11.137 | 11.137 | 12.361 |
| 2 | 9.493 | 9.493 | 5.373 |

### 4.2. External forces

#### 4.2.1. Weights

Compute the weight of the wall facing.

$$W_w = W_u H_u \gamma_u N_u$$
$$\rightarrow W_w = (7.5 \text{ in})(75.6 \text{ in})(150 \text{ lbs/ft}^3)(1)$$
$$\rightarrow W_w = 590.625 \text{ lbs/ft}$$

(Eq. C11.10.5.3)

Calculate the horizontal offset of the wall centroid from the center of the analysis layer.

$$X_W = \frac{B}{2} - G_u$$
$$\rightarrow X_W = \frac{(14.625 \text{ ft})}{2} - (2.76 \text{ in})$$
$$\rightarrow X_W = 7.082 \text{ ft}$$

(Fig. 11.6.3.2)

$$h_{W_w} = 3.15 \text{ ft}$$

Compute the weight of reinforced soil above base of wall.

$$V_1 = \gamma_r H L'$$
$$\rightarrow V_1 = (50 \text{ lbs/ft}^3)(6.3 \text{ ft})(14 \text{ ft})$$
$$\rightarrow V_1 = 4410 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Compute the arm of V1.

$$X_{V1} = \frac{B}{2} - \frac{L'}{2}$$
$$\rightarrow X_{V1} = \frac{(14.625 \text{ ft})}{2} - \frac{(14 \text{ ft})}{2}$$
$$\rightarrow X_{V1} = 0.313 \text{ ft}$$

(Fig. 11.6.3.2)

$$\Sigma V_{qLS} = 50 \text{ lbs/ft}$$

(Fig. C11.5.6.3)

$$X_{\Sigma V qLS} = -6.687 \text{ ft}$$

(Fig. C11.5.6.3)

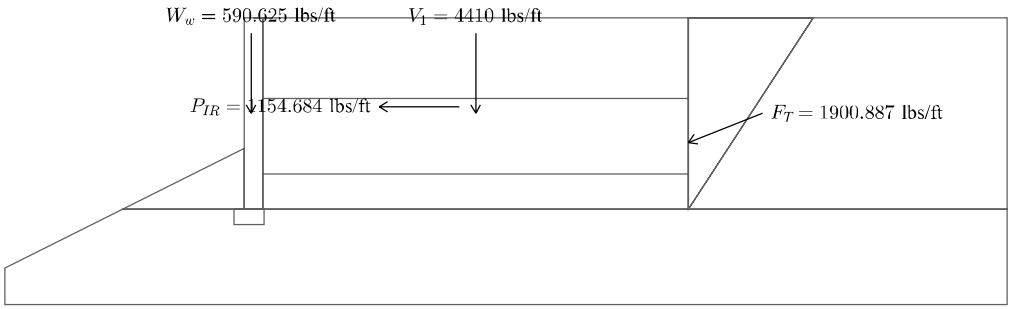
$$\Sigma V_{qES} = 370 \text{ lbs/ft}$$

(Fig. C11.5.6.3)

$$X_{\Sigma V qES} = -6.687 \text{ ft}$$

(Fig. C11.5.6.3)

### 4.2.2. Earth forces



Compute the active force due to backfill soil.

$$F_1 = \frac{1}{2}\gamma_{fill} h^2 K_{af}$$
$$\rightarrow F_1 = \frac{1}{2}(125 \text{ lbs/ft}^3)(6.3 \text{ ft})^2(0.275)$$
$$\rightarrow F_1 = 682.254 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the horizontal component of F1.

$$F_{1h} = F_1 \cos(\delta)$$
$$\rightarrow F_{1h} = (682.254 \text{ lbs/ft}) \cos((21.3°))$$
$$\rightarrow F_{1h} = 635.65 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the vertical component of F1.

$$F_{1v} = F_1 \sin(\delta)$$
$$\rightarrow F_{1v} = (682.254 \text{ lbs/ft}) \sin((21.3°))$$
$$\rightarrow F_{1v} = 247.83 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Calculate the seismic active force.

$$P_{AE} = 0.5\gamma_{fill} h^2 K_{AE}$$
$$\rightarrow P_{AE} = 0.5(125 \text{ lbs/ft}^3)(6.3 \text{ ft})^2(0.747)$$
$$\rightarrow P_{AE} = 1853.691 \text{ lbs/ft}$$

(Article 11.6.5.3)

Compute the horizontal component of PAE.

$$P_{AEH} = P_{AE} \cos(\delta)$$
$$\rightarrow P_{AEH} = (1853.691 \text{ lbs/ft}) \cos((21.3°))$$
$$\rightarrow P_{AEH} = 1727.068 \text{ lbs/ft}$$

* Modified to account for wall friction

(Fig. C11.5.6)

Compute the vertical component of PAE.

$$P_{AEV} = P_{AE} \sin(\delta)$$
$$\rightarrow P_{AEV} = (1853.691 \text{ lbs/ft}) \sin((21.3°))$$
$$\rightarrow P_{AEV} = 673.356 \text{ lbs/ft}$$

* Modified to account for wall friction

(Fig. C11.5.6)

Assume height of seismic active resultant.

$h_a = 0.33h$

$\rightarrow h_a = 0.33(6.3 \text{ ft})$

$\rightarrow h_a = 2.079 \text{ ft}$

(Article A11.3.1)

Convert concentrated lateral load into resultant active force.

$F_{pP_{hLS,1}} = P_{hLS,1}$

$\rightarrow F_{pP_{hLS,1}} = 50 \text{ lbs/ft}$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$F_{phP_{hLS,1}} = F_{pP_{hLS,1}}$

$\rightarrow F_{phP_{hLS,1}} = 50 \text{ lbs/ft}$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$h_{P_{hLS,1}} = H - z_P - I_2/3$

$\rightarrow h_{P_{hLS,1}} = (6.3 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$

$\rightarrow h_{P_{hLS,1}} = 6.3 \text{ ft}$

(Fig. 11.10.10.1-1)

$F_{pvP_{hLS,1}} = 0 \text{ lbs/ft}$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Convert concentrated lateral load into resultant active force.

$F_{pP'_{hLS,1}} = P'_{hLS,1}/L_f$

$\rightarrow F_{pP'_{hLS,1}} = (200 \text{ lbs})/(357 \text{ ft})$

$\rightarrow F_{pP'_{hLS,1}} = 0.56 \text{ lbs/ft}$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$F_{phP'_{hLS,1}} = F_{pP'_{hLS,1}}$

$\rightarrow F_{phP'_{hLS,1}} = 0.56 \text{ lbs/ft}$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$h_{P'_{hLS,1}} = H - z_P - I_2/3$

$\rightarrow h_{P'_{hLS,1}} = (6.3 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$

$\rightarrow h_{P'_{hLS,1}} = 6.3 \text{ ft}$

(Fig. 11.10.10.1-1)

$F_{pvP'_{hLS,1}} = 0 \text{ lbs/ft}$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Sum all the active horizontal earth forces.

$$F_{Th} = P_{AEH} + \gamma_{EQ}\left(F_{phP_{hLS,1}} + F_{phP'_{hLS,1}}\right)$$
$$\rightarrow F_{Th} = (1727.068 \text{ lbs/ft}) + (1)\Big((50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft})\Big)$$
$$\rightarrow F_{Th} = 1777.628 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

$$h_T = 2.199 \text{ ft}$$

Compute vertical resultant.

$$F_{Tv} = P_{AEV} + \gamma_{EQ}\left(F_{pvP_{hLS,1}} + F_{pvP'_{hLS,1}}\right)$$
$$\rightarrow F_{Tv} = (673.356 \text{ lbs/ft}) + (1)\Big((0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big)$$
$$\rightarrow F_{Tv} = 673.356 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Total factored active resultant.

$$F_T = \sqrt{F_{Th}^2 + F_{Tv}^2}$$
$$\rightarrow F_T = \sqrt{(1777.628 \text{ lbs/ft})^2 + (673.356 \text{ lbs/ft})^2}$$
$$\rightarrow F_T = 1900.887 \text{ lbs/ft}$$

(Fig. 11.6.3.2-2)

$$x_{infl} = 17.492 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$x_{infl} = 17.492 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$W_{surcharge} = 370 \text{ lbs/ft}$$

(Fig. 11.6.5.1-1)

$$h_{W_{surcharge}} = 6.3 \text{ ft}$$

Calculate the seismic inertial force.

$$P_{IR} = 0.5k_h(W_w)$$
$$\rightarrow P_{IR} = 0.5(0.43)\Big((590.625 \text{ lbs/ft})\Big)$$
$$\rightarrow P_{IR} = 1154.684 \text{ lbs/ft}$$

(Eq. 11.10.7.1-1)

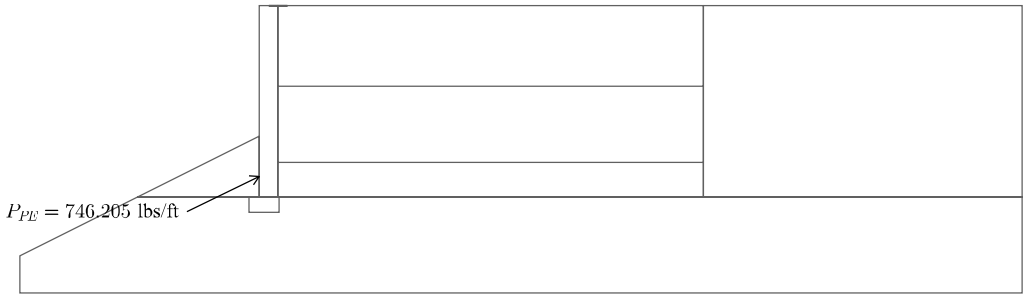
$$h_{V1} = 3.15 \text{ ft}$$

$$h_{V2} = 0 \text{ ft}$$

Calculate the height of the inertial force.

$$h_{P_{IR}} = \frac{h_{W_w}W_w + h_{W_{surcharge}}W_{surcharge} + h_{V1}V_1 + h_{V2}V_2}{W_w + W_{surcharge} + V_1 + V_2}$$
$$\rightarrow h_{P_{IR}} = \frac{(3.15 \text{ ft})(590.625 \text{ lbs/ft}) + (6.3 \text{ ft})(370 \text{ lbs/ft}) + (3.15 \text{ ft})(4410 \text{ lbs/ft}) + (0 \text{ ft})(0 \text{ lbs/ft})}{(590.625 \text{ lbs/ft}) + (370 \text{ lbs/ft}) + (4410 \text{ lbs/ft}) + (0 \text{ lbs/ft})}$$
$$\rightarrow h_{P_{IR}} = 3.367 \text{ ft}$$

### 4.2.3. Front face resistance




$z_{passive} = 2$ ft

Select the passive earth pressure coefficient.

$k_p = f(\phi_p, \beta_{front}, \omega_{passive}, \delta_p)$
$\rightarrow k_p = f((40^\circ), (-26.6^\circ), (0^\circ), (26^\circ))$
$\rightarrow k_p = 2.764$

(Caquot & Kerisel 1949 pp. 116-127)

Calculate the height of the passive resultant above the bottom of the passive wedge.

$h_{Pp} = z_{passive}/3$
$\rightarrow h_{Pp} = (2 \text{ ft})/3$
$\rightarrow h_{Pp} = 0.667$ ft

Calculate the passive pressure force.

$P_p = \frac{1}{2} k_p \gamma_p z_{passive}^2$
$\rightarrow P_p = \frac{1}{2}(2.764)(135 \text{ lbs/ft}^3)(2 \text{ ft})^2$
$\rightarrow P_p = 746.205$ lbs/ft

(Article 3.11.5.4)

Compute the horizontal component of Pp.

$P_{pH} = P_p \cos(\delta_p)$
$\rightarrow P_{pH} = (746.205 \text{ lbs/ft}) \cos((26^\circ))$
$\rightarrow P_{pH} = 670.685$ lbs/ft

Compute the vertical component of Pp.

$P_{pV} = -P_p \sin(\delta_p)$
$\rightarrow P_{pV} = -(746.205 \text{ lbs/ft}) \sin((26^\circ))$
$\rightarrow P_{pV} = -327.115$ lbs/ft

Take seismic passive force based on static analysis.

$P_{PE} = P_p$

$\rightarrow P_{PE} = 746.205$ lbs/ft

Take seismic passive force based on static analysis.

$P_{PEH} = P_{pH}$

$\rightarrow P_{PEH} = 670.685$ lbs/ft

Take seismic passive force based on static analysis.

$P_{PEV} = P_{pV}$

$\rightarrow P_{PEV} = -327.115$ lbs/ft

### 4.2.4. External moments

Determine driving moment from F1.

$M_{o,F_1} = F_{1h}(h/3)$

$\rightarrow M_{o,F_1} = (635.65 \text{ lbs/ft})(2.1 \text{ ft})$

$\rightarrow M_{o,F_1} = 1334.865$ lbsft/ft

(Fig. 11.10.5.2-1)

Determine resisting moment from F1.

$M_{r,F_1} = F_{1v}B$

$\rightarrow M_{r,F_1} = (247.83 \text{ lbs/ft})(14.625 \text{ ft})$

$\rightarrow M_{r,F_1} = 3624.508$ lbsft/ft

(Fig. 11.10.5.2-1)

Determine driving moment from PAEH.

$M_{o,AE} = P_{AEH}h_a$

$\rightarrow M_{o,AE} = (1727.068 \text{ lbs/ft})(2.079 \text{ ft})$

$\rightarrow M_{o,AE} = 3590.574$ lbsft/ft

(Fig. 11.6.5.1-1)
(Article A11.3.1)

Determine resisting moment from F1.

$M_{r,AE} = P_{AEV}B$

$\rightarrow M_{r,AE} = (673.356 \text{ lbs/ft})(14.625 \text{ ft})$

$\rightarrow M_{r,AE} = 9847.827$ lbsft/ft

(Fig. 11.6.5.1-1)
(Article A11.3.1)

Sum of driving moments due to point loads (live).

$$M_{o,F_{qLS}} = F_{phP_{hLS,1}} h_{P_{hLS,1}} F_{phP'_{hLS,1}} h_{P'_{hLS,1}}$$
$$\rightarrow M_{o,F_{qLS}} = (50 \text{ lbs/ft})(6.3 \text{ ft})(0.56 \text{ lbs/ft})(6.3 \text{ ft})$$
$$\rightarrow M_{o,F_{qLS}} = 4945.376 \text{ lbsft/ft}$$

Sum of resisting moments due to point loads (live).

$$M_{r,F_{pLS}} = F_{pvP_{hLS,1}}\left(B - h_{P_{hLS,1}} \cot(\theta)\right) + F_{pvP'_{hLS,1}}\left(B - h_{P'_{hLS,1}} \cot(\theta)\right)$$
$$\rightarrow M_{r,F_{pLS}} = (0 \text{ lbs/ft})\left((14.625 \text{ ft}) - (6.3 \text{ ft}) \cot((90^\circ))\right) + (0 \text{ lbs/ft})\left((14.625 \text{ ft}) - (6.3 \text{ ft}) \cot((90^\circ))\right)$$
$$\rightarrow M_{r,F_{pLS}} = 0 \text{ lbsft/ft}$$

Determine driving active moment.

$$M_{o,F_T} = F_{Th} h_T$$
$$\rightarrow M_{o,F_T} = (1777.628 \text{ lbs/ft})(2.199 \text{ ft})$$
$$\rightarrow M_{o,F_T} = 3909.104 \text{ lbsft/ft}$$

Determine resisting moment from FT.

$$M_{r,F_T} = F_{Tv} B$$
$$\rightarrow M_{r,F_T} = (673.356 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,F_T} = 9847.827 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine hydrostatic force at base of wall.

$$U = \bar{h}_w B \gamma_w$$
$$\rightarrow U = (0 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 0 \text{ lbs/ft}$$

Determine reduction in resisting moment due to porewater at base of wall.

$$\Delta M_{r,U} = U \frac{B}{2}$$
$$\rightarrow \Delta M_{r,U} = (0 \text{ lbs/ft}) \frac{(14.625 \text{ ft})}{2}$$
$$\rightarrow \Delta M_{r,U} = 0 \text{ lbsft/ft}$$

Determine driving moment from passive force.

$$M_{r,P_p} = P_{pH}(h_{Pp} - h_{shear-key})$$
$$\rightarrow M_{r,P_p} = (670.685 \text{ lbs/ft})\left((0.667 \text{ ft}) - (0 \text{ ft})\right)$$
$$\rightarrow M_{r,P_p} = 447.123 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from wall weight.

$$M_{r,w} = W_w[B/2 - X_W]$$
$$\rightarrow M_{r,w} = (590.625 \text{ lbs/ft})\Big[(14.625 \text{ ft})/2 - (7.082 \text{ ft})\Big]$$
$$\rightarrow M_{r,w} = 135.844 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V1.

$$M_{r,V_1} = V_1[X_{V1} + B/2]$$
$$\rightarrow M_{r,V_1} = (4410 \text{ lbs/ft})\Big[(0.313 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_1} = 33626.252 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V2.

$$M_{r,V_2} = V_2[X_{V2} + B/2]$$
$$\rightarrow M_{r,V_2} = (0 \text{ lbs/ft})\Big[(0 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_2} = 0 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qLS}} = \Sigma V_{qLS}[X_{\Sigma VqLS} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = (50 \text{ lbs/ft})\Big[(-6.687 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = 31.25 \text{ lbsft/ft}$$

* Only applies when computing eccentricity for bearing capacity under maximum vertical load conditions.

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qES}} = \Sigma V_{qES}[X_{\Sigma VqES} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = (370 \text{ lbs/ft})\Big[(-6.687 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = 231.25 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine driving moment from seismic inertial force.

$$M_{o,P_{IR}} = P_{IR}h_{P_{IR}}$$
$$\rightarrow M_{o,P_{IR}} = (1154.684 \text{ lbs/ft})(3.367 \text{ ft})$$
$$\rightarrow M_{o,P_{IR}} = 3887.838 \text{ lbsft/ft}$$

(Fig. 11.10.7.1-1)

Calculate the inertial force from the soil surcharge.

$$M_{o,seis} = M_{o,AE} + M_{o,P_{IR}}$$
$$\rightarrow M_{o,seis} = (3590.574 \text{ lbsft/ft}) + (3887.838 \text{ lbsft/ft})$$
$$\rightarrow M_{o,seis} = 7478.413 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Calculate the inertial force from the soil surcharge.

$$M_{r,seis} = M_{r,AE}$$
$$\rightarrow M_{r,seis} = 9847.827 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CaseI)} = \gamma_{p-EH} M_{o,seis} + \gamma_{EQ} M_{o,F_{qLS}}$$
$$\rightarrow \Sigma M_{o(CaseI)} = (1)(7478.413 \text{ lbsft/ft}) + (1)(4945.376 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseI)} = 12423.789 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r(CaseI)} = \gamma_{p-EH} M_{r,seis} + \gamma_{p-EV}(M_{r,V_1} + M_{r,V_2}) + \gamma_{LS} M_{r,F_{qLS}} + \gamma_{p-DC}(M_{r,w} + M_{r,\Sigma V_{qES}}) + \phi_{cp} M_{r,P_p}$$
$$\rightarrow \Sigma M_{r(CaseI)} = (1)(9847.827 \text{ lbsft/ft}) + (1)\left((33626.252 \text{ lbsft/ft}) + (0 \text{ lbsft/ft})\right) + (1)(0 \text{ lbsft/ft}) + (1)\left((135.844 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\right) + (1)(447.123 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{r(CaseI)} = 44288.296 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

$$\Sigma M'_r = \Sigma M_{r(CaseI)} - \Delta M_{r,U}$$
$$\rightarrow \Sigma M'_r = (44288.296 \text{ lbsft/ft}) - (0 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M'_r = 44288.296 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Calculate the inertial force from the soil surcharge.

$$M_{o,seis} = M_{o,AE} + M_{o,P_{ir}}$$
$$\rightarrow M_{o,seis} = (3590.574 \text{ lbsft/ft}) + (3887.838 \text{ lbsft/ft})$$
$$\rightarrow M_{o,seis} = 7478.413 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Calculate the inertial force from the soil surcharge.

$$M_{r,seis} = M_{r,AE}$$
$$\rightarrow M_{r,seis} = 9847.827 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CaseII)} = \gamma_{p-EH} M_{o,seis} + \gamma_{EQ} M_{o,F_{qLS}}$$
$$\rightarrow \Sigma M_{o(CaseII)} = (1)(7478.413 \text{ lbsft/ft}) + (1)(4945.376 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseII)} = 12423.789 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r(CaseII)} = \gamma_{p-EH} M_{r,seis} + \gamma_{p-EV}(M_{r,V_1} + M_{r,V_2}) + \gamma_{LS}(M_{r,F_{qLS}} + M_{r,\Sigma V_{qES}}) + \gamma_{p-DC}(M_{r,w} + M_{r,\Sigma V_{qES}}) \quad \phi_{cp} M_{r,P_p}$$
$$\rightarrow \Sigma M_{r(CaseII)} = (1)(9847.827 \text{ lbsft/ft}) + (1)\left((33626.252 \text{ lbsft/ft}) + (0 \text{ lbsft/ft})\right) + (1)\left((0 \text{ lbsft/ft}) + (31.25 \text{ lbsft/ft})\right) + (1)\left((135.844 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\right) + (1)(447.123 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{r(CaseII)} = 44319.546 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

$$\Sigma M_r' = \Sigma M_{r(CaseII)} - \Delta M_{r,U}$$
$$\rightarrow \Sigma M_r' = (44319.546 \text{ lbsft/ft}) - (0 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_r' = 44319.546 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

### 4.2.5. Sum of external forces

Calculate the inertial force from the soil surcharge.

$$P_{scis,H} = P_{AEH} + P_{IR}$$
$$\rightarrow P_{seis,H} = (1727.068 \text{ lbs/ft}) + (1154.684 \text{ lbs/ft})$$
$$\rightarrow P_{seis,H} = 2881.752 \text{ lbs/ft}$$

(FHWA HIF-24-002 )

Sum all the active horizontal earth forces.

$$\Sigma F_h = P_{seis,H} + \gamma_{EQ}\left(F_{phP_{hLS,1}} + F_{phP'_{hLS,1}}\right)$$
$$\rightarrow \Sigma F_h = (2881.752 \text{ lbs/ft}) + (1)\left((50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft})\right)$$
$$\rightarrow \Sigma F_h = 2932.313 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Calculate the inertial force from the soil surcharge.

$$P_{seis,V} = P_{AEV}$$
$$\rightarrow P_{scis,V} = 673.356 \text{ lbs/ft}$$

(FHWA HIF-24-002 )

Compute vertical resultant.

$$V = P_{seis,V} + W_w + \Sigma V_{qES} + V_1 + V_2 + P_{PEV} + \gamma_{EQ}\left(F_{pvP_{hLS,1}} + F_{pvP'_{hLS,1}}\right)$$
$$\rightarrow V = (673.356 \text{ lbs/ft}) + (590.625 \text{ lbs/ft}) + (370 \text{ lbs/ft}) + (4410 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (-327.115 \text{ lbs/ft}) + (1)\left((0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\right)$$
$$\rightarrow V = 5716.866 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

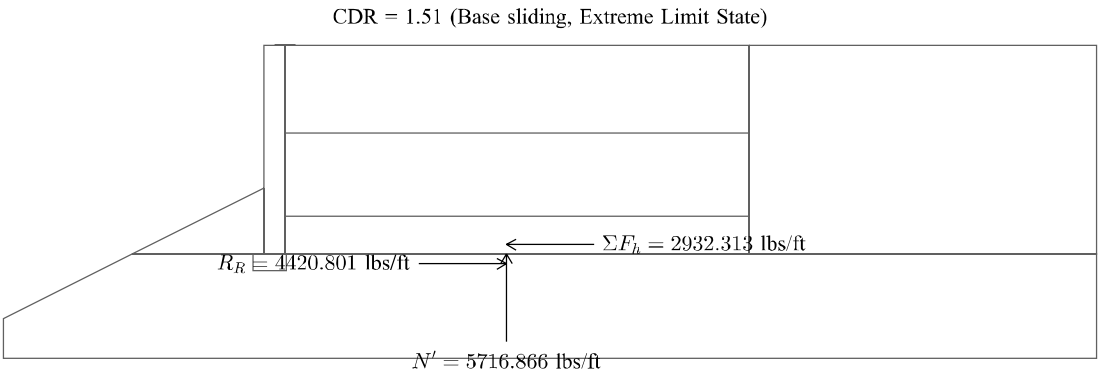
Determine hydrostatic force at base of wall.

$$U = \bar{h}_w B \gamma_w$$
$$\rightarrow U = (0 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 0 \text{ lbs/ft}$$

Determine effective normal force.

$$N' = V - U$$
$$\rightarrow N' = (5716.866 \text{ lbs/ft}) - (0 \text{ lbs/ft})$$
$$\rightarrow N' = 5716.866 \text{ lbs/ft}$$

## 4.3. Base sliding




Determine passive resistance.

$$R_{ep} = P_{PLH}$$
$$\rightarrow R_{cp} = 670.685 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute the eccentricity of the bearing reaction.

$$e = \frac{B}{2} - \frac{\Sigma M_{r(CaseI)} - \Sigma M_{o(CaseI)}}{V}$$
$$\rightarrow e = \frac{(14.625 \text{ ft})}{2} - \frac{(44288.296 \text{ lbsft/ft}) - (12423.789 \text{ lbsft/ft})}{(5716.866 \text{ lbs/ft})}$$
$$\rightarrow e = 1.739 \text{ ft}$$

(Fig. 11.6.3.2)

Calculate normal stress distribution based on eccentricity.

$$\sigma_n = \frac{V}{B - 2(\max(0, e))}$$
$$\rightarrow \sigma_n = \frac{(5716.866 \text{ lbs/ft})}{(14.625 \text{ ft}) - 2\left(\max\left(0, (1.739 \text{ ft})\right)\right)}$$
$$\rightarrow \sigma_n = 512.837 \text{ psf}$$

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Compute the frictional resistance against sliding.

$$R_\tau = \min(0.5\sigma'_n, S_u)B$$
$$\rightarrow R_\tau = \min(0.5\sigma'_n, S_u)(14.625 \text{ ft})$$
$$\rightarrow R_\tau = 3750.116 \text{ lbs/ft}$$

(Eq. 10.6.3.4-2)

Compute the factored resistance against sliding.

$$R_R = \phi_\tau R_\tau + \phi_{ep} R_{ep}$$
$$\rightarrow R_R = (1)(3750.116 \text{ lbs/ft}) + (1)(670.685 \text{ lbs/ft})$$
$$\rightarrow R_R = 4420.801 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute CDR for base sliding.

$$CDR_{sliding,ext} = R_R / \Sigma F_h$$
$$\rightarrow CDR_{sliding,ext} = (4420.801 \text{ lbs/ft})/(2932.313 \text{ lbs/ft})$$
$$\rightarrow CDR_{sliding,ext} = 1.51$$

(Article 10.6.3.4)

$$CDR_{sliding,ext} > 1 \rightarrow PASS$$

## 4.4. Eccentricity

Compute vertical resultant.

$$R = N'$$
$$\rightarrow R = 5716.866 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Calculate the inertial force from the soil surcharge.

$$P_{scis,V} = P_{AEV}$$
$$\rightarrow P_{scis,V} = 673.356 \text{ lbs/ft}$$

(FHWA HIF-24-002 )

Compute vertical resultant.

$$\Sigma V = \gamma_{p-EH} P_{scis,V} + \gamma_{p-DC}(W_w + \Sigma V_{uES}) + \gamma_{EQ}\left(F_{pv}P_{uLS,1} + F_{pv}P'_{ult,1} + \Sigma V_{uLS}\right) + \gamma_{p-EV}(V_1 + V_2) + \phi_{ep} P_{PEV}$$
$$\rightarrow \Sigma V = (1)(673.356 \text{ lbs/ft}) + (1)\Big((590.625 \text{ lbs/ft}) + (370 \text{ lbs/ft})\Big) + (1)\Big((0 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (50 \text{ lbs/ft})\Big) + (1)\Big((4410 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big) + (1)(-327.115 \text{ lbs/ft})$$
$$\rightarrow \Sigma V = 5766.866 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Determine hydrostatic force at base of wall.

$$U = \bar{h}_w B \gamma_w$$
$$\rightarrow U = (0 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 0 \text{ lbs/ft}$$

Determine effective normal force.

$$\Sigma N' = \Sigma V - U$$
$$\rightarrow \Sigma N' = (5766.866 \text{ lbs/ft}) - (0 \text{ lbs/ft})$$
$$\rightarrow \Sigma N' = 5766.866 \text{ lbs/ft}$$

Compute the eccentricity of the bearing reaction.

$$e_{(CaseI)} = \frac{B}{2} - \frac{\Sigma M_r' - \Sigma M_{o(CaseI)}}{R}$$
$$\rightarrow e_{(CaseI)} = \frac{(14.625 \text{ ft})}{2} - \frac{(44288.296 \text{ lbsft/ft}) - (12423.789 \text{ lbsft/ft})}{(5716.866 \text{ lbs/ft})}$$
$$\rightarrow e_{(CaseI)} = 1.739 \text{ ft}$$

(Fig. 11.6.3.2)

$$e_{(CaseI)} \leq \left(\frac{1}{3} + \frac{\gamma_{EQ}}{15}\right) B \rightarrow PASS$$

(Article 11.6.5.1)

Compute the eccentricity of the bearing reaction.

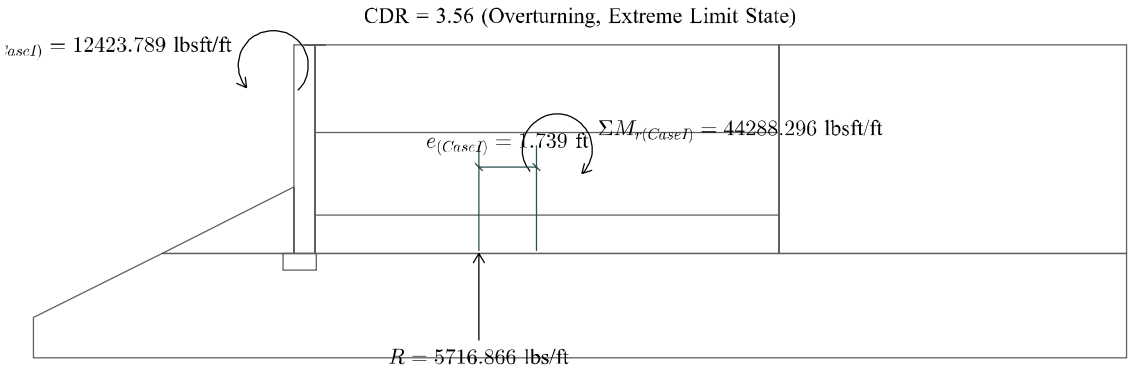
$$e_{(CaseII)} = \frac{B}{2} - \frac{\Sigma M_r' - \Sigma M_{o(CaseII)}}{\Sigma N'}$$
$$\rightarrow e_{(CaseII)} = \frac{(14.625 \text{ ft})}{2} - \frac{(44319.546 \text{ lbsft/ft}) - (12423.789 \text{ lbsft/ft})}{(5766.866 \text{ lbs/ft})}$$
$$\rightarrow e_{(CaseII)} = 1.782 \text{ ft}$$

(Fig. 11.6.3.2)

$$e_{(CaseII)} \leq \left(\frac{1}{3} + \frac{\gamma_{EQ}}{15}\right) B \rightarrow PASS$$

(Article 11.6.5.1)

## 4.5. Overturning



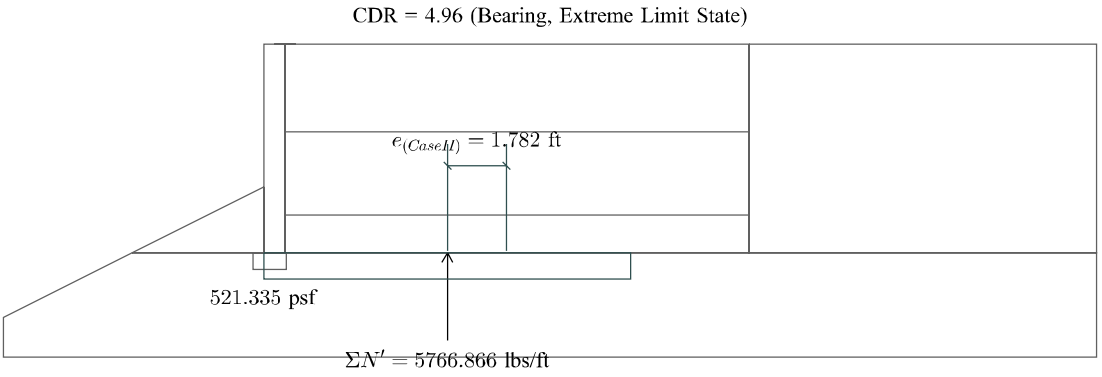

Compute CDR for external overturning.

$$CDR_{overturning} = \Sigma M_r' / \Sigma M_{o(CaseI)}$$
$$\rightarrow CDR_{overturning} = (44288.296 \text{ lbsft/ft}) / (12423.789 \text{ lbsft/ft})$$
$$\rightarrow CDR_{overturning} = 3.56$$

(Article C11.6.3.3)

$$CDR_{overturning} > 1 \rightarrow PASS$$

## 4.6. Bearing




Calculate the effective bearing width.

$$B' = B - 2e_{(CaseII)}$$
$$\rightarrow B' = (14.625 \text{ ft}) - 2(1.782 \text{ ft})$$
$$\rightarrow B' = 11.062 \text{ ft}$$

(Article C11.10.5.4)

Calculate uniform vertical bearing stress.

$$\sigma'_n = \frac{\Sigma N'}{B'}$$
$$\rightarrow \sigma'_n = \frac{(5766.866 \text{ lbs/ft})}{(11.062 \text{ ft})}$$
$$\rightarrow \sigma'_n = 521.335 \text{ psf}$$

(Fig. 11.6.3.2)

Calculate the Nq coefficient for foundation soil (Reissner 1924 method).

$$N_q = \exp(\pi + \tan(\phi_{fnd}))\tan^2(\pi/4 + \phi_{fnd}/2)$$
$$\rightarrow N_q = \exp(\pi + \tan((0^\circ)))\tan^2(\pi/4 + (0^\circ)/2)$$
$$\rightarrow N_q = 1$$

Calculate the Nc coefficient for foundation soil (Prandtl 1921 method).

$$N_c = (N_q - 1)\cot(\phi_{fnd})$$
$$\rightarrow N_c = ((1) - 1)\cot((0^\circ))$$
$$\rightarrow N_c = 5.142$$

Calculate the Ngamma coefficient for foundation soil (Vesic 1975 method).

$$N_\gamma = 2(N_q + 1)\tan(\phi_{fnd})$$
$$\rightarrow N_\gamma = 2((1) + 1)\tan((0^\circ))$$
$$\rightarrow N_\gamma = 0$$

Determine Nqm.

$$N_{qm} = N_q$$
$$\rightarrow N_{qm} = 1$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-3)

Determine Ncm.

$$N_{cm} = N_c$$
$$\rightarrow N_{cm} = 5.142$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-2)

Determine Ngamma,m.

$$N_{\gamma m} = N_\gamma$$
$$\rightarrow N_{\gamma m} = 0$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-4)

$$\gamma_q = 120 \text{ lbs/ft}^3$$

(Eq. 10.6.3.1.2a-1)

$$\gamma_f = 120 \text{ lbs/ft}^3$$

(Eq. 10.6.3.1.2a-1)

$$C_{wq} = 1$$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

$$C_{w\gamma} = 1$$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

Calculate nominal bearing resistance.

$$q_n = c_{fnd} N_{cm} + \gamma_q D'_f N_{qm} C_{wq} + 0.5 \gamma_f B' N_{\gamma m} C_{w\gamma}$$
$$\rightarrow q_n = (500 \text{ psf})(5.142) + (120 \text{ lbs/ft}^3)(2.5 \text{ ft})(1)(1) + 0.5(120 \text{ lbs/ft}^3)(11.062 \text{ ft})(0)(1)$$
$$\rightarrow q_n = 2870.797 \text{ psf}$$

(Fig. 10.6.3.1.2a-1)

Factor the bearing resistance.

$$q_R = q_n \phi_b$$
$$\rightarrow q_R = (2870.797 \text{ psf})(0.9)$$
$$\rightarrow q_R = 2583.717 \text{ psf}$$

(Fig. 10.6.3.1.1-1)

Compute CDR for bearing.

$$CDR_{bearing} = q_R / \sigma'_n$$
$$\rightarrow CDR_{bearing} = (2583.717 \text{ psf})/(521.335 \text{ psf})$$
$$\rightarrow CDR_{bearing} = 4.96$$

(Article 10.6.3.1)

$$CDR_{bearing} > 1 \rightarrow PASS$$

## 4.7. Reinforcement precalculations

### 4.7.1. Reinforcement data (layer 1)

$Z = 5.15 \text{ ft}$

(Fig. 11.10.6.2.1a-1)

$F^* = 1.665$

(Eq. 11.10.6.3.2-1)

$S_v = 2.4 \text{ ft}$

(Fig. 11.10.6.2.1b-1)

$S_v \leq (2.7 \text{ ft}) \rightarrow PASS$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$k_r = (1.0)k_{abh}$
$\rightarrow k_r = (1.0)(0.271)$
$\rightarrow k_r = 0.271$

(Fig. B11.2-1)

### 4.7.2. Pullout length (layer 1)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan(\Psi_{int})}$$
$$\rightarrow L_a = \frac{(6.3 \text{ ft}) - (5.15 \text{ ft})}{\tan((62.5°))}$$
$\rightarrow L_a = 0.599 \text{ ft}$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$L_e = L' - L_a$
$\rightarrow L_e = (14 \text{ ft}) - (0.599 \text{ ft})$
$\rightarrow L_e = 13.401 \text{ ft}$

(Fig. 11.10.6.3.1-1)

$L_e \geq (3 \text{ ft}) \rightarrow PASS$

(Article 11.10.6.3.2)

### 4.7.3. Reinforcement data (layer 2)

$Z = 2.65 \text{ ft}$

(Fig. 11.10.6.2.1a-1)

$F^* = 1.828$

(Eq. 11.10.6.3.2-1)

$S_v = 3.9 \text{ ft}$

(Fig. 11.10.6.2.1b-1)

$S_v \leq (2.7 \text{ ft}) \rightarrow FAIL$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$k_r = (1.0)k_{abh}$
$\rightarrow k_r = (1.0)(0.271)$
$\rightarrow k_r = 0.271$

(Fig. B11.2-1)

### 4.7.4. Pullout length (layer 2)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan(\Psi_{int})}$$
$$\rightarrow L_a = \frac{(6.3 \text{ ft}) - (2.65 \text{ ft})}{\tan((62.5°))}$$
$$\rightarrow L_a = 1.9 \text{ ft}$$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$$L_e = L' - L_a$$
$$\rightarrow L_e = (14 \text{ ft}) - (1.9 \text{ ft})$$
$$\rightarrow L_e = 12.1 \text{ ft}$$

(Fig. 11.10.6.3.1-1)

$$L_e \geq (3 \text{ ft}) \rightarrow PASS$$

(Article 11.10.6.3.2)

#### 4.7.5. Seismic inertia

$$\Sigma L_a S_v = 8.847 \text{ ft}^2$$

(Fig. 11.10.7.2-1)

Compute the weight of the internal active zone.

$$W_a = A_f \gamma_{fill} + \Sigma L_a S_v \gamma_r$$
$$\rightarrow W_a = (0 \text{ ft}^2)(125 \text{ lbs/ft}^3) + (8.847 \text{ ft}^2)(50 \text{ lbs/ft}^3)$$
$$\rightarrow W_a = 442.352 \text{ lbs/ft}$$

(Fig. 11.10.7.2-1)

Calculate the internal seismic inertial force.

$$P_i = k_h W_a$$
$$\rightarrow P_i = (0.43)(442.352 \text{ lbs/ft})$$
$$\rightarrow P_i = 190.211 \text{ lbs/ft}$$

(Fig. 11.10.7.2-1)

$$\Sigma L_{ei} = 25.501 \text{ ft}$$

(Eq. 11.10.7.2-1)

### 4.8. Tensile forces

#### 4.8.1. Tmax (layer 1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (5.15 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 2.887 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50 \text{ lbs/ft})/(2.887 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 17.316 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,LS} = 17.316 \text{ psf}$$

(Eq. 11.10.10.1)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50 \text{ lbs/ft})/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200 \text{ lbs})/(357 \text{ ft})\Big)/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{H,P'_{hLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = 0 \text{ psf}$$

(Eq. 11.10.10.1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (5.15 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 2.887 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50 \text{ lbs/ft})/(2.887 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 17.316 \text{ psf}$$

(Eq. 3.11.6.3-1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (5.15 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 2.887 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{(200 \text{ lbs})}{(2.887 \text{ ft})\Big((0.625 \text{ ft}) + (5.15 \text{ ft}) - (0 \text{ ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = 11.994 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,ES} = \Delta\sigma_{V,P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (17.316 \text{ psf}) + (11.994 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 29.31 \text{ psf}$$

(Eq. 11.10.10.1)

Calculate the incremental dynamic inertia force.

$$T_{md} = P_i/n$$
$$\rightarrow T_{md} = (190.211 \text{ lbs/ft})/(2)$$
$$\rightarrow T_{md} = 95.106 \text{ lbs/ft}$$

(Eq. 11.10.7.2-1)

Compute vertical stress from reinforced soil.

$$\sigma_1 = \gamma_r Z$$
$$\rightarrow \sigma_1 = (50 \text{ lbs/ft}^3)(5.15 \text{ ft})$$
$$\rightarrow \sigma_1 = 257.5 \text{ psf}$$

(Fig. 11.10.6.2.1a-1)

$$\sigma_{1-po} = 257.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$
$$\rightarrow \sigma_2 = (0 \text{ ft})(125 \text{ lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0 \text{ psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma_n = \sigma_1 + \sigma_2$$
$$\rightarrow \sigma_n = (257.5 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \sigma_n = 257.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtens} = S_v(k_r\sigma_n)$$
$$\rightarrow T_{maxtens} = (2.4 \text{ ft})\Big((0.271)(257.5 \text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 167.472 \text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxpo} = T_{maxtens}$$
$$\rightarrow T_{maxpo} = 167.472 \text{ lbs/ft}$$

(Article 11.10.6.2.1)

### 4.8.2. Tmax (layer 2)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (2.65 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 1.637 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50 \text{ lbs/ft})/(1.637 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 30.534 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,LS} = 30.534 \text{ psf}$$

(Eq. 11.10.10.1)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50 \text{ lbs/ft})/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200 \text{ lbs})/(357 \text{ ft})\Big)/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{H,P'_{hLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{II,LS} = 0 \text{ psf}$$

(Eq. 11.10.10.1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (2.65 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 1.637 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50 \text{ lbs/ft})/(1.637 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 30.534 \text{ psf}$$

(Eq. 3.11.6.3-1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (2.65 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 1.637 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{(200 \text{ lbs})}{(1.637 \text{ ft})\Big((0.625 \text{ ft}) + (2.65 \text{ ft}) - (0 \text{ ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = 37.294 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,ES} = \Delta\sigma_{V,P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (30.534 \text{ psf}) + (37.294 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 67.828 \text{ psf}$$

(Eq. 11.10.10.1)

Calculate the incremental dynamic inertia force.

$$T_{md} = P_i/n$$
$$\rightarrow T_{md} = (190.211 \text{ lbs/ft})/(2)$$
$$\rightarrow T_{md} = 95.106 \text{ lbs/ft}$$

(Eq. 11.10.7.2-1)

Compute vertical stress from reinforced soil.

$$\sigma_1 = \gamma_r Z$$
$$\rightarrow \sigma_1 = (50 \text{ lbs/ft}^3)(2.65 \text{ ft})$$
$$\rightarrow \sigma_1 = 132.5 \text{ psf}$$

(Fig. 11.10.6.2.1a-1)

$$\sigma_{1-po} = 132.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$
$$\rightarrow \sigma_2 = (0 \text{ ft})(125 \text{ lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0 \text{ psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma_n = \sigma_1 + \sigma_2$$
$$\rightarrow \sigma_n = (132.5 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \sigma_n = 132.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtens} = S_v(k_r\sigma_n)$$
$$\rightarrow T_{maxtens} = (3.9 \text{ ft})\Big((0.271)(132.5 \text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 140.034 \text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxpo} = T_{maxtens}$$
$$\rightarrow T_{maxpo} = 140.034 \text{ lbs/ft}$$

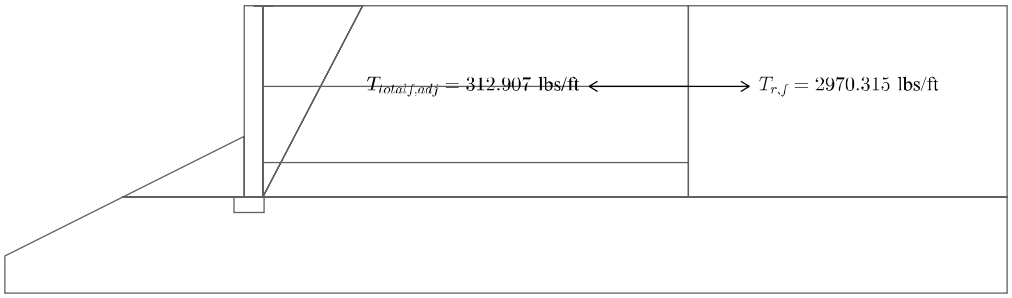
(Article 11.10.6.2.1)

### 4.9. Tensile strength

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

#### 4.9.1. Tensile strength (layer 2)

CDR = 9.49 (Tensile strength, Layer 2, Extreme Limit State)




Determine total factored tension force in reinforcement.

$$T_{totalf,adj} = \gamma_{p-EV} T_{maxtens} + \gamma_{sesis} T_{ind}/RF_{CR} + \gamma_{EQ} S_v (k_r \Sigma \Delta\sigma_{V,LS} + \Sigma \Delta\sigma_{H,LS}) + \gamma_{EQ} S_v (k_r \Sigma \Delta\sigma_{V,ES} + \Sigma \Delta\sigma_{H,ES})$$
$$\rightarrow T_{totalf,adj} = (1)(140.034 \text{ lbs/ft}) + (1)(95.106 \text{ lbs/ft})/(1.38) + (1)(3.9 \text{ ft})\Big((0.271)(30.534 \text{ psf}) + (0 \text{ psf})\Big) + (1)(3.9 \text{ ft})\Big((0.271)(67.828 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{totalf,adj} = 312.907 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate factored tensile strength.

$$T_{r,f} = \phi_t R_c T_{al}$$
$$\rightarrow T_{r,f} = (1.2)(0.332)(7455.61 \text{ lbs/ft})$$
$$\rightarrow T_{r,f} = 2970.315 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)

$$T_{al} = 7455.61 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-1)

$$\phi_t = 1.2$$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$$R_c = 0.332$$

(Article 11.10.6.4.1)

Compute CDR for tensile strength.

$$CDR_{tensile} = \frac{\phi_t T_{al} R_c}{T_{totalf,adj}}$$
$$\rightarrow CDR_{tensile} = \frac{(1.2)(7455.61 \text{ lbs/ft})(0.332)}{(312.907 \text{ lbs/ft})}$$
$$\rightarrow CDR_{tensile} = 9.49$$

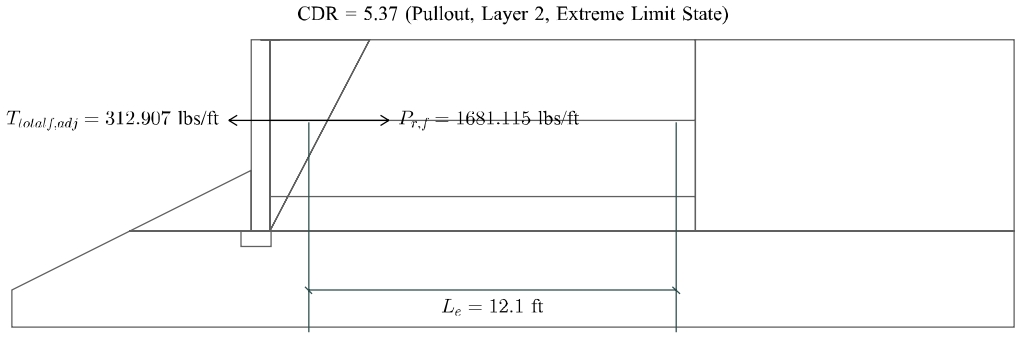
(Eq. 11.10.6.4.1-2)

$$CDR_{tensile} > 1 \rightarrow PASS$$

## 4.10. Pullout

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 4.10.1. Pullout (layer 2)




Compute vertical stress from reinforced soil.

$$\sigma_{1-po} = \gamma_r Z$$
$$\rightarrow \sigma_{1-po} = (50 \text{ lbs/ft}^3)(2.65 \text{ ft})$$
$$\rightarrow \sigma_{1-po} = 132.5 \text{ psf}$$

(Fig. 11.10.6.2.1a-1)

$$Z_p = 2.65 \text{ ft}$$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (above pullout region only).

$$\sigma_{2-po} = \gamma_r (Z_p - Z)$$
$$\rightarrow \sigma_{2-po} = (50 \text{ lbs/ft}^3)\Big((2.65 \text{ ft}) - (2.65 \text{ ft})\Big)$$
$$\rightarrow \sigma_{2-po} = 0 \text{ psf}$$

(Eq. 11.10.6.3.2-1)

Calculate vertical stress on reinforcement.

$$\sigma_{n-po} = \sigma_{1-po} + \sigma_{2-po}$$
$$\rightarrow \sigma_{n-po} = (132.5 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \sigma_{n-po} = 132.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Determine total factored tension force in reinforcement.

$$T_{totalf,adj} = \gamma_{p\_EV} T_{maxpo} + \gamma_{scis} T_{md}/RF_{CR} + \gamma_{EQ} S_v (k_r \Sigma\Delta\sigma_{V,LS} + \Sigma\Delta\sigma_{H,LS}) + \gamma_{EQ} S_v (k_r \Sigma\Delta\sigma_{V,ES} + \Sigma\Delta\sigma_{H,ES})$$
$$\rightarrow T_{totalf,adj} = (1)(140.034 \text{ lbs/ft}) + (1)(95.106 \text{ lbs/ft})/(1.38) + (1)(3.9 \text{ ft})\Big((0.271)(30.534 \text{ psf}) + (0 \text{ psf})\Big) + (1)(3.9 \text{ ft})\Big((0.271)(67.828 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{totalf,adj} = 312.907 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate the pullout resistance.

$$P_r = 0.8 F^* \alpha \sigma_{n-po} C R_c L_e$$
$$\rightarrow P_r = 0.8(1.828)(0.9)(132.5 \text{ psf})(2)(0.332)(12.1 \text{ ft})$$
$$\rightarrow P_r = 1400.929 \text{ lbs/ft}$$

(Eq. 11.10.7.2-7)

Calculate the factored pullout resistance.

$$P_{r,f} = \phi_p P_r$$
$$\rightarrow P_{r,f} = (1.2)(1400.929 \text{ lbs/ft})$$
$$\rightarrow P_{r,f} = 1681.115 \text{ lbs/ft}$$

(Eq. 11.10.7.2-7)

Determine required length of reinforcement outside active zone.

$$L_{e,req} = \frac{T_{totalf,adj}}{\phi_p (0.8) F^* \alpha \sigma_{n-po} C R_c}$$
$$\rightarrow L_{e,req} = \frac{(312.907 \text{ lbs/ft})}{(1.2)(0.8)(1.828)(0.9)(132.5 \text{ psf})(2)(0.332)}$$
$$\rightarrow L_{e,req} = 2.252 \text{ ft}$$

(Eq. 11.10.7.2-7)

Compute CDR for pullout.

$$CDR_{pullout} = L_e / L_{e,req}$$
$$\rightarrow CDR_{pullout} = (12.1 \text{ ft})/(2.252 \text{ ft})$$
$$\rightarrow CDR_{pullout} = 5.37$$

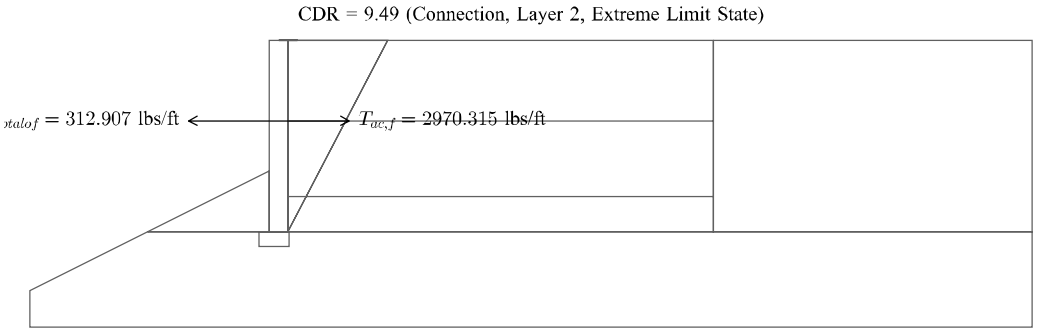
(Eq. 11.10.6.3.2-1)

$$CDR_{pullout} > 1 \rightarrow PASS$$

## 4.11. Connection

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 4.11.1. Connection (layer 2)




Determine connection force.

$$T_o = T_{maxtens}$$
$$\rightarrow T_o = 140.034 \text{ lbs/ft}$$

(Eq. 11.10.6.2.2)

Determine total factored connection force for reinforcement.

$$T_{totalof} = T_{totalf,adj}$$
$$\rightarrow T_{totalof} = 312.907 \text{ lbs/ft}$$

(Eq. 11.10.10.1-2)

Connection strength is limited by tensile strength.

$T_{ac} = \min(T_{ac}, T_{al})$

$\rightarrow T_{ac} = \min\Big(T_{ac}, (7455.61 \text{ lbs/ft})\Big)$

$\rightarrow T_{ac} = 7455.61 \text{ lbs/ft}$

$T_{ac} = 35073 \text{ lbs/ft}$

(Eq. 11.10.6.4.1-2)

$\phi_t = 1.2$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$R_c = 0.332$

(Article 11.10.6.4.1)

Compute the factored connection strength.

$T_{ac,f} = \phi_t T_{ac} R_c$

$\rightarrow T_{ac,f} = (1.2)(7455.61 \text{ lbs/ft})(0.332)$

$\rightarrow T_{ac,f} = 2970.315 \text{ lbs/ft}$

(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

Compute CDR for connection strength.

$$CDR_{conn} = \frac{T_{ac,f}}{T_{totalof}}$$

$$\rightarrow CDR_{conn} = \frac{(2970.315 \text{ lbs/ft})}{(312.907 \text{ lbs/ft})}$$

$\rightarrow CDR_{conn} = 9.49$

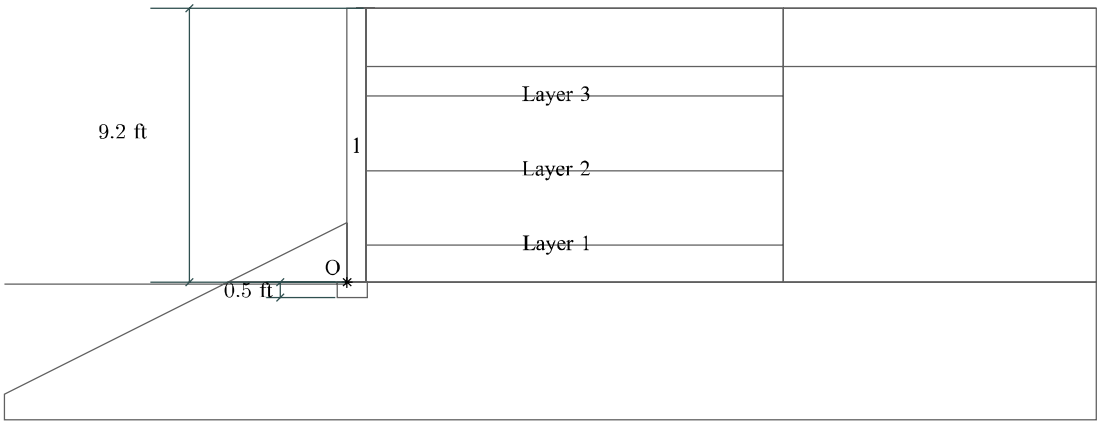
(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

$CDR_{conn} > 1 \rightarrow PASS$

# STRENGTH LIMIT STATE - SEGMENT 3 (Stationing 0+45 to 1+32 and 2+13 to 2+52)

## 1. Model properties

### 1.1. Wall properties




$H = 9.2$ ft (Fig. 3.11.5.8.1)

$H_u = 110.4$ in (Fig. 11.10.6.4.4b)

$W_u = 7.5$ in (Article 11.3.1)

$\gamma_u = 150$ lbs/ft$^3$

$G_u = 2.76$ in

$N_u = 1$

$\omega = 0^\circ$ (Article 11.3.1)

$\theta = 90^\circ$ (Fig. 3.11.5.3)

$D_f = 2$ ft (Fig. 10.6.3.1)

$D'_f = 2.5$ ft (Fig. 10.6.3.1)

$B = 14.625$ ft (Fig. 11.10.2-1)

### 1.2. Backslope geometry

$\beta = 0^\circ$ (Fig. 3.11.5.3)

$(0.5H_2) = 4.6$ ft (Eq. 11.10.7.1-4)

### 1.3. Groundwater

$\gamma_w = 62.449$ lbs/ft$^3$ (Article 12.3)

$z_{wback} = 1.95$ ft

$z_{wfront} = 9.25$ ft

### 1.4. Soils (unfactored)

$\phi_r = 35^\circ$

(Article 11.10.5.2)

$\delta_r = 23^\circ$

(Table 3.11.5.3)

$\gamma_r = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,r} = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fill} = 32^\circ$

(Fig. 11.10.2)

$\delta_f = 21.3^\circ$

(Table 3.11.5.3)

$\gamma_{fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fnd} = 0^\circ$

(Fig. 10.6.3.4-2)

$c_{fnd} = 500 \text{ psf}$

(Eq. 10.6.3.1.2a-1)

$\gamma_{fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\gamma_{sat,fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\phi_p = 40^\circ$

(Article 3.11.5.4)

$\delta_p = 26^\circ$

(Table 3.11.5.3)

$\gamma_p = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

$\gamma_{sat,p} = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

## 1.5. Seismic inputs

$k_h = 0.43$

(Fig. 11.6.5.1-1)
(Article 11.6.5.2)

$k_v = 0$

(Article 11.6.5.2)

Calculate the Mononobe-Okabe seismic angle.

$$\theta_{MO} = \beta + \tan^{-1}\left(\frac{k_h}{1 - k_v}\right)$$
$$\rightarrow \theta_{MO} = (0^\circ) + \tan^{-1}\left(\frac{(0.43)}{1 - (0)}\right)$$
$$\rightarrow \theta_{MO} = 23.3^\circ$$

(Eq. 11.6.5.3-1)

$\phi_{fill} \geq \beta + \theta_{MO} \rightarrow PASS$

(Eq. 11.6.5.3-1)

## 1.6. Surcharges

$q_{LS,1} = 250 \text{ psf}$

(Article 3.11.6)
(Fig. 11.10.5.2)

$P_{vLS,1} = 50 \text{ lbs/ft}$

(Article 3.11.6.3)

$P_{vES,2} = 50 \text{ lbs/ft}$

(Article 3.11.6.3)

$P_{hLS,1} = 50 \text{ lbs/ft}$

(Article 3.11.6.3)

$P'_{vES,1} = 200 \text{ lbs}$

(Article 3.11.6.3)

$P'_{hLS,1} = 200 \text{ lbs}$

(Article 3.11.6.3)

### 1.7. Calculate **δ** (external)

Compute interface friction angle for external stability of wall.

$\delta = \min(\delta_f, \delta_r)$
$\rightarrow \delta = \min((21.3°), (23°))$
$\rightarrow \delta = 21.3°$

(Article 11.10.5.2)

### 1.8. Calculate Ka

Calculate the active earth pressure coefficient, static method.

$$K_{af} = \frac{\sin^2(\theta + \phi_{fill})}{\sin^2(\theta)\sin(\theta - \delta)\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta)}{\sin(\theta-\delta\sin(\theta+\beta))}}\right]^2}$$
$$\rightarrow K_{af} = \frac{\sin^2((90°) + (32°))}{\sin^2((90°))\sin((90°) - (21.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°))}{\sin((90°)-(21.3°)\sin((90°)+(0°)))}}\right]^2}$$
$\rightarrow K_{af} = 0.275$

(Eq. 3.11.5.3)

Calculate the active earth pressure coefficient, seismic method.

$$K_{AE} = \frac{\cos^2(\phi_{fill} + \omega - \theta_{MO})}{\cos(\theta_{MO})\cos^2(\omega)\cos(\delta - \omega + \theta_{MO})\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta-\theta_{MO})}{\cos(\delta-\omega+\theta_{MO})\cos(\omega+\beta)}}\right]}$$
$$\rightarrow K_{AE} = \frac{\cos^2((32°) + (0°) - (23.3°))}{\cos((23.3°))\cos^2((0°))\cos((21.3°) - (0°) + (23.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°)-(23.3°))}{\cos((21.3°)-(0°)+(23.3°))\cos((0°)+(0°))}}\right]}$$
$\rightarrow K_{AE} = 0.747$

(Eq. A11.3.1-1)

### 1.9. Critical failure plane

Calculate the inclination of the assumed failure plane.

$$\Psi_{ext} = 45^\circ + \frac{\phi_{fill}}{2}$$
$$\rightarrow \Psi_{ext} = 45^\circ + \frac{(32^\circ)}{2}$$
$$\rightarrow \Psi_{ext} = 61^\circ$$

(Fig. 11.10.6.3.1-1)

Calculate the inclination of the assumed failure plane.

$$\Psi_{int} = 45^\circ + \frac{\phi_r}{2}$$
$$\rightarrow \Psi_{inl} = 45^\circ + \frac{(35^\circ)}{2}$$
$$\rightarrow \Psi_{int} = 62.5^\circ$$

(Fig. 11.10.6.3.1-1)

## 1.10. Front face

$$\beta_{front} = -26.6^\circ$$

(Fig. 3.11.5.3)

## 1.11. Load combinations

### 1.11.1. Factors (Strength Limit State)

$\gamma_{p-DC(max)} = 1.25$

(Table 3.4.1-2)

$\gamma_{p-DC(min)} = 0.9$

(Table 3.4.1-2)

$\gamma_{p-EH(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{p-EV(max)} = 1.35$

(Table 3.4.1-2)

$\gamma_{p-EV(min)} = 1$

(Table 3.4.1-2)

$\gamma_{p-ES(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{EQ} = 0$

(Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1.75$

(Table 3.4.1-1)

$\gamma_{WA} = 1$

(Table 3.4.1-1)

$\phi_p = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.65$

(Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$

(Table 11.5.7-1)

$\phi_{ep} = 0.5$

(Table 10.5.5.2.2-1)

### 1.11.2. Factors (Extreme Limit State)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-EH} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-ES} = 1$ (Table 3.4.1-2)

$\gamma_{EQ} = 1$ (Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1$ (Table 3.4.1-1)

$\gamma_{WA} = 1$ (Table 3.4.1-1)

$\phi_p = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.9$ (Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$ (Table 11.5.7-1)

$\phi_{ep} = 1$ (Table 10.5.5.2.2-1)

## 1.12. Reinforcements

Determine length of reinforced zone excluding wall facing.

$L' = B - W_u$
$\rightarrow L' = (14.625 \text{ ft}) - (7.5 \text{ in})$
$\rightarrow L' = 14 \text{ ft}$ (Fig. 11.10.5.2-1)

## 1.13. Global reinforcement data

$A_f = 0 \text{ ft}^2$

(Fig. 11.10.7.2-1)

Calculate the average height of soil surcharge within 0.7H of back of wall face.

$S_{0.7H} = (0.5)(0.7H)\tan(\beta)$
$\rightarrow S_{0.7H} = (0.5)\Big(0.7(9.2 \text{ ft})\Big)\tan((0°))$
$\rightarrow S_{0.7H} = 0 \text{ ft}$

(Eq. 11.10.6.2.1a-2)

Determine simplified Coulomb lateral earth pressure coefficient.

$$k_{abh} = \frac{\sin^2(\theta + \phi_r)}{\sin^3(\theta)\left[1 + \frac{\sin(\phi_r)}{\sin(\theta)}\right]^2}$$
$$\rightarrow k_{abh} = \frac{\sin^2((90°) + (35°))}{\sin^3((90°))\left[1 + \frac{\sin((35°))}{\sin((90°))}\right]^2}$$
$\rightarrow k_{abh} = 0.271$

(Eq. 11.10.6.2.1c-2)

$\omega \leq (20°) \rightarrow PASS$

(Article 11.10.6.2.1)

### 1.14. Backslope properties

$x_{int} = 14 \text{ ft}$

Compute height of sloped backfill for earth pressure calculations.

$h = H$
$\rightarrow h = 9.2 \text{ ft}$

(Fig. 3.11.5.9)
(Fig. 3.11.5.8.1)

## 2. Strength Limit State

### 2.1. Summary

#### 2.1.1. External stability - Strength Limit State

| Failure mode | CDR |
|---|---|
| Base sliding | 1.837 |
| Overturning | 1.235 |
| Bearing | 1.379 |

#### 2.1.2. Reinforcement stability - Strength Limit State

| Layer | Tensile strength | Connection | Pullout |
|---|---|---|---|
| 1 | 2.313 | 2.313 | 8.538 |
| 2 | 3.092 | 3.092 | 7.269 |
| 3 | 2.631 | 2.631 | 2.591 |

### 2.2. External forces

#### 2.2.1. Weights

Compute the weight of the wall facing.

$$W_w = W_u H_u \gamma_u N_u$$
$$\rightarrow W_w = (7.5 \text{ in})(110.4 \text{ in})(150 \text{ lbs/ft}^3)(1)$$
$$\rightarrow W_w = 862.5 \text{ lbs/ft}$$

(Eq. C11.10.5.3)

Calculate the horizontal offset of the wall centroid from the center of the analysis layer.

$$X_W = \frac{B}{2} - G_u$$
$$\rightarrow X_W = \frac{(14.625 \text{ ft})}{2} - (2.76 \text{ in})$$
$$\rightarrow X_W = 7.082 \text{ ft}$$

(Fig. 11.6.3.2)

$h_{W_w} = 4.6$ ft

$V_1 = 6440$ lbs/ft

(Fig. 11.10.5.2-1)

$X_{V1} = 0.313$ ft

(Fig. 11.6.3.2)

$\Sigma V_{qLS} = 3549.996$ lbs/ft

(Fig. C11.5.6.3)

$X_{\Sigma VqLS} = 0.214$ ft

(Fig. C11.5.6.3)

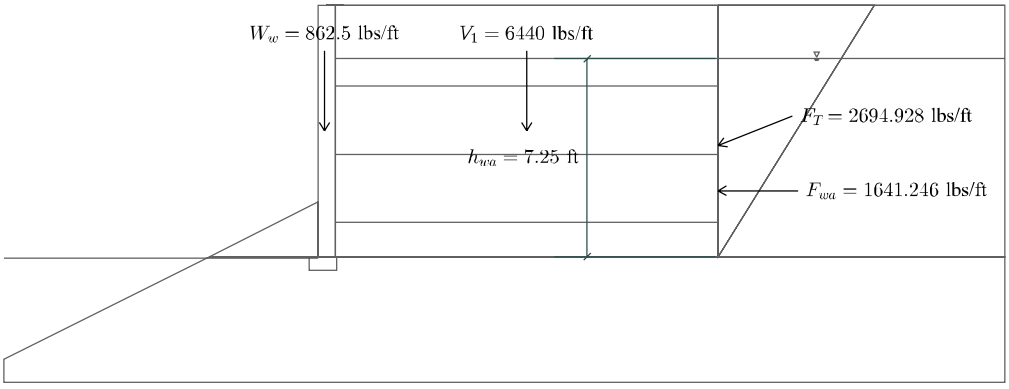
$\Sigma V_{qES} = 370$ lbs/ft

(Fig. C11.5.6.3)

$X_{\Sigma VqES} = -6.687$ ft

(Fig. C11.5.6.3)

### 2.2.2. Earth forces




$h_{wa} = 7.25$ ft

$F_1' = 1003.528$ lbs/ft

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

$h_1 = 3.359$ ft

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Compute the horizontal component of F1.

$$F'_{1h} = F'_1 \cos(\delta)$$
$$\rightarrow F'_{1h} = (1003.528 \text{ lbs/ft}) \cos((21.3^\circ))$$
$$\rightarrow F'_{1h} = 934.978 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the vertical component of F1.

$$F'_{1v} = F'_1 \sin(\delta)$$
$$\rightarrow F'_{1v} = (1003.528 \text{ lbs/ft}) \sin((21.3^\circ))$$
$$\rightarrow F'_{1v} = 364.533 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute hydrostatic force.

$$F_{wa} = \frac{\frac{1}{2} h_{wa}^2 \gamma_w}{\sin(\theta)}$$
$$\rightarrow F_{wa} = \frac{\frac{1}{2} (7.25 \text{ ft})^2 (62.449 \text{ lbs/ft}^3)}{\sin((90^\circ))}$$
$$\rightarrow F_{wa} = 1641.246 \text{ lbs/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Compute hydrostatic force (horizontal component).

$$F_{wah} = F_{wa} \sin(\theta)$$
$$\rightarrow F_{wah} = (1641.246 \text{ lbs/ft}) \sin((90^\circ))$$
$$\rightarrow F_{wah} = 1641.246 \text{ lbs/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Compute hydrostatic force (vertical component, positive downwards).

$$F_{wav} = +F_{wa} \cos(\theta)$$
$$\rightarrow F_{wav} = +(1641.246 \text{ lbs/ft}) \cos((90^\circ))$$
$$\rightarrow F_{wav} = 0 \text{ lbs/ft}$$

(Article 3.7.1)
(Article 3.11.3)

$$x_{infl} = 19.1 \text{ ft}$$

(Fig. 11.10.10.1-1)

Sum up surcharges within influence zone.

$$q_{LS} = q_{LS,1}$$
$$\rightarrow q_{LS} = 250 \text{ psf}$$

(Fig. 11.10.10.1-1)

Compute the active force due to surcharge.

$$F_{2,LS} = q_{LS} h K_{af}$$
$$\rightarrow F_{2,LS} = (250 \text{ psf})(9.2 \text{ ft})(0.275)$$
$$\rightarrow F_{2,LS} = 632.575 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Compute the horizontal component of F2.

$$F_{2h,LS} = F_{2,LS}\cos(\delta)$$
$$\rightarrow F_{2h,LS} = (632.575\ \text{lbs/ft})\cos((21.3^\circ))$$
$$\rightarrow F_{2h,LS} = 589.365\ \text{lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the vertical component of F2.

$$F_{2v,LS} = F_{2,LS}\sin(\delta)$$
$$\rightarrow F_{2v,LS} = (632.575\ \text{lbs/ft})\sin((21.3^\circ))$$
$$\rightarrow F_{2v,LS} = 229.784\ \text{lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Convert concentrated lateral load into resultant active force.

$$F_{pP_{hLS,1}} = P_{hLS,1}$$
$$\rightarrow F_{pP_{hLS,1}} = 50\ \text{lbs/ft}$$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$$F_{phP_{hLS,1}} = F_{pP_{hLS,1}}$$
$$\rightarrow F_{phP_{hLS,1}} = 50\ \text{lbs/ft}$$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$$h_{P_{hLS,1}} = H - z_P - I_2/3$$
$$\rightarrow h_{P_{hLS,1}} = (9.2\ \text{ft}) - (0\ \text{ft}) - (0\ \text{ft})/3$$
$$\rightarrow h_{P_{hLS,1}} = 9.2\ \text{ft}$$

(Fig. 11.10.10.1-1)

$$F_{pvP_{hLS,1}} = 0\ \text{lbs/ft}$$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Convert concentrated lateral load into resultant active force.

$$F_{pP'_{hLS,1}} = P'_{hLS,1}/L_f$$
$$\rightarrow F_{pP'_{hLS,1}} = (200\ \text{lbs})/(357\ \text{ft})$$
$$\rightarrow F_{pP'_{hLS,1}} = 0.56\ \text{lbs/ft}$$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$$F_{phP'_{hLS,1}} = F_{pP'_{hLS,1}}$$
$$\rightarrow F_{phP'_{hLS,1}} = 0.56 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$$h_{P'_{hLS,1}} = H - z_P - I_2/3$$
$$\rightarrow h_{P'_{hLS,1}} = (9.2 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$$
$$\rightarrow h_{P'_{hLS,1}} = 9.2 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$F_{pvP'_{hLS,1}} = 0 \text{ lbs/ft}$$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Sum all the active horizontal earth forces.

$$F_{Th} = \gamma_{p-EH(max)} F'_{1h} + \gamma_{LS}\left(F_{phP_{hLS,1}} + F_{phP'_{hLS,1}} + F_{2h,LS}\right)$$
$$\rightarrow F_{Th} = (1.5)(934.978 \text{ lbs/ft}) + (1.75)\left((50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft}) + (589.365 \text{ lbs/ft})\right)$$
$$\rightarrow F_{Th} = 2522.337 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

$$h_T = 4.071 \text{ ft}$$

Compute vertical resultant.

$$F_{Tv} = \gamma_{p-EH(max)} F'_{1v} + \gamma_{LS}\left(F_{2v,LS} + F_{pvP_{hLS,1}} + F_{pvP'_{hLS,1}}\right)$$
$$\rightarrow F_{Tv} = (1.5)(364.533 \text{ lbs/ft}) + (1.75)\left((229.784 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\right)$$
$$\rightarrow F_{Tv} = 948.921 \text{ lbs/ft}$$

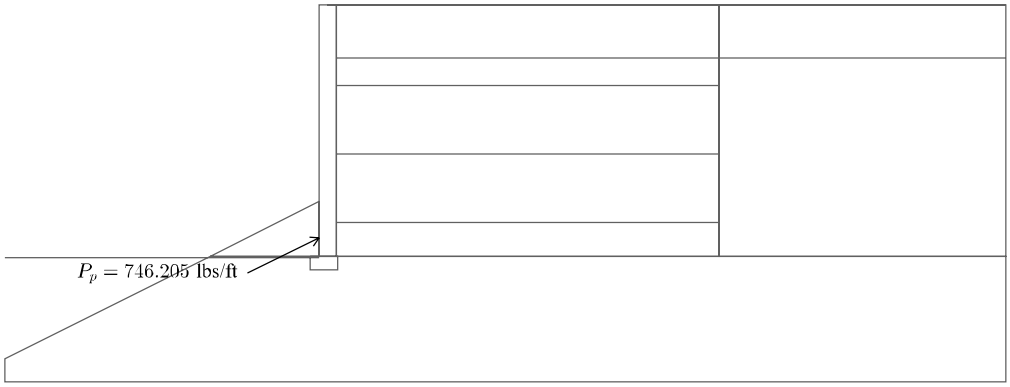
(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Total factored active resultant.

$$F_T = \sqrt{F_{Th}^2 + F_{Tv}^2}$$
$$\rightarrow F_T = \sqrt{(2522.337 \text{ lbs/ft})^2 + (948.921 \text{ lbs/ft})^2}$$
$$\rightarrow F_T = 2694.928 \text{ lbs/ft}$$

(Fig. 11.6.3.2-2)

### 2.2.3. Front face resistance




$z_{passive} = 2$ ft

Select the passive earth pressure coefficient.

$k_p = f(\phi_p, \beta_{front}, \omega_{passive}, \delta_p)$
$\rightarrow k_p = f((40°), (-26.6°), (0°), (26°))$
$\rightarrow k_p = 2.764$

(Caquot & Kerisel 1949 pp. 116-127)

Calculate the height of the passive resultant above the bottom of the passive wedge.

$h_{Pp} = z_{passive}/3$
$\rightarrow h_{Pp} = (2 \text{ ft})/3$
$\rightarrow h_{Pp} = 0.667 \text{ ft}$

Calculate the passive pressure force.

$P_p = \frac{1}{2} k_p \gamma_p z_{passive}^2$
$\rightarrow P_p = \frac{1}{2}(2.764)(135 \text{ lbs/ft}^3)(2 \text{ ft})^2$
$\rightarrow P_p = 746.205 \text{ lbs/ft}$

(Article 3.11.5.4)

Compute the horizontal component of Pp.

$P_{pH} = P_p \cos(\delta_p)$
$\rightarrow P_{pH} = (746.205 \text{ lbs/ft}) \cos((26°))$
$\rightarrow P_{pH} = 670.685 \text{ lbs/ft}$

Compute the vertical component of Pp.

$P_{pV} = -P_p \sin(\delta_p)$
$\rightarrow P_{pV} = -(746.205 \text{ lbs/ft}) \sin((26°))$
$\rightarrow P_{pV} = -327.115 \text{ lbs/ft}$

### 2.2.4. External moments

Determine driving moment from F1.

$$M_{o,F_1} = F'_{1h} h_1$$
$$\rightarrow M_{o,F_1} = (934.978 \text{ lbs/ft})(3.359 \text{ ft})$$
$$\rightarrow M_{o,F_1} = 3140.633 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from F1.

$$M_{r,F_1} = F'_{1v} B$$
$$\rightarrow M_{r,F_1} = (364.533 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,F_1} = 5331.293 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine driving moment from active hydrostatic force.

$$M_{o,F_{wa}} = F_{wah}\left(\frac{h_{wa}}{3}\right) - F_{wav}\left(B + \left(\frac{h_{wa}}{3}\right)\tan(\theta - 90°)\right)$$
$$\rightarrow M_{o,F_{wa}} = (1641.246 \text{ lbs/ft})\left(\frac{(7.25 \text{ ft})}{3}\right) - (0 \text{ lbs/ft})\left((14.625 \text{ ft}) + \left(\frac{(7.25 \text{ ft})}{3}\right)\tan((90°) - 90°)\right)$$
$$\rightarrow M_{o,F_{wa}} = 3966.344 \text{ lbsft/ft}$$

(Article 3.7.1)
(Article 3.11.3)

Determine driving moment from F2 (live).

$$M_{o,F_{2LS}} = F_{2h,LS} h/2$$
$$\rightarrow M_{o,F_{2LS}} = (589.365 \text{ lbs/ft})(9.2 \text{ ft})/2$$
$$\rightarrow M_{o,F_{2LS}} = 2711.079 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from F2 (live).

$$M_{r,F_{2LS}} = F_{2v,LS} B$$
$$\rightarrow M_{r,F_{2LS}} = (229.784 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,F_{2LS}} = 3360.588 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Sum of driving moments due to point loads (live).

$$M_{o,F_{qLS}} = F_{phP_{hLS,1}} h_{P_{hLS,1}} F_{phP'_{hLS,1}} h_{P'_{hLS,1}}$$
$$\rightarrow M_{o,F_{qLS}} = (50 \text{ lbs/ft})(9.2 \text{ ft})(0.56 \text{ lbs/ft})(9.2 \text{ ft})$$
$$\rightarrow M_{o,F_{qLS}} = 10546.148 \text{ lbsft/ft}$$

Sum of resisting moments due to point loads (live).

$$M_{r,F_{pLS}} = F_{pvP_{hLS,1}}\left(B - h_{P_{hLS,1}}\cot(\theta)\right) + F_{pvP'_{hLS,1}}\left(B - h_{P'_{hLS,1}}\cot(\theta)\right)$$
$$\rightarrow M_{r,F_{pLS}} = (0 \text{ lbs/ft})\left((14.625 \text{ ft}) - (9.2 \text{ ft})\cot((90°))\right) + (0 \text{ lbs/ft})\left((14.625 \text{ ft}) - (9.2 \text{ ft})\cot((90°))\right)$$
$$\rightarrow M_{r,F_{pLS}} = 0 \text{ lbsft/ft}$$

Determine driving active moment.

$$M_{o,F_T} = F_{Th} h_T$$
$$\rightarrow M_{o,F_T} = (2522.337 \text{ lbs/ft})(4.071 \text{ ft})$$
$$\rightarrow M_{o,F_T} = 10269.357 \text{ lbsft/ft}$$

Determine resisting moment from FT.

$$M_{r,F_T} = F_{Tv} B$$
$$\rightarrow M_{r,F_T} = (948.921 \text{ lbs/ft})(14.625 \text{ ft})$$
$$\rightarrow M_{r,F_T} = 13877.97 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine hydrostatic force at base of wall.

$$U = h_w B \gamma_w$$
$$\rightarrow U = (3.625 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 3310.789 \text{ lbs/ft}$$

Determine reduction in resisting moment due to porewater at base of wall.

$$\Delta M_{r,U} = U \frac{B}{2}$$
$$\rightarrow \Delta M_{r,U} = (3310.789 \text{ lbs/ft}) \frac{(14.625 \text{ ft})}{2}$$
$$\rightarrow \Delta M_{r,U} = 24210.143 \text{ lbsft/ft}$$

Determine driving moment from passive force.

$$M_{r,P_p} = P_{pH}(h_{Pp} - h_{shear-key})$$
$$\rightarrow M_{r,P_p} = (670.685 \text{ lbs/ft})\Big((0.667 \text{ ft}) - (0 \text{ ft})\Big)$$
$$\rightarrow M_{r,P_p} = 447.123 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from wall weight.

$$M_{r,w} = W_w[B/2 - X_W]$$
$$\rightarrow M_{r,w} = (862.5 \text{ lbs/ft})\Big[(14.625 \text{ ft})/2 - (7.082 \text{ ft})\Big]$$
$$\rightarrow M_{r,w} = 198.375 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V1.

$$M_{r,V_1} = V_1[X_{V1} + B/2]$$
$$\rightarrow M_{r,V_1} = (6440 \text{ lbs/ft})\Big[(0.313 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_1} = 49105.003 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V2.

$$M_{r,V_2} = V_2[X_{V2} + B/2]$$
$$\rightarrow M_{r,V_2} = (0 \text{ lbs/ft})\Big[(0 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_2} = 0 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qLS}} = \Sigma V_{qLS}[X_{\Sigma VqLS} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = (3549.996 \text{ lbs/ft})\Big[(0.214 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = 26718.722 \text{ lbsft/ft}$$

* Only applies when computing eccentricity for bearing capacity under maximum vertical load conditions.

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qES}} = \Sigma V_{qES}[X_{\Sigma VqES} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = (370 \text{ lbs/ft})\Big[(-6.687 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = 231.25 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CaseI)} = \gamma_{p-EH(max)} M_{o,F_1} + \gamma_{LS}\big(M_{o,F_{2LS}} + M_{o,F_{qLS}}\big) + \gamma_{WA} M_{o,F_{wa}}$$
$$\rightarrow \Sigma M_{o(CaseI)} = (1.5)(3140.633 \text{ lbsft/ft}) + (1.75)\Big((2711.079 \text{ lbsft/ft}) + (10546.148 \text{ lbsft/ft})\Big) + (1)(3966.344 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseI)} = 31877.44 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r,CaseI)} \quad \gamma_{p\ EH(max)} M_{r,F_1} + \gamma_{p\ EV(min)}(M_{r,V_1} + M_{r,V_2}) \quad \gamma_{LS}\big(M_{r,F_{2LS}} + M_{r,F_{qLS}}\big) + \gamma_{p\ DC(min)}\big(M_{r,w} + M_{r,\Sigma V_{qES}}\big) + \phi_{cp} M_{r,P_c}$$
$$\rightarrow \Sigma M_{r(CaseI)} = (1.5)(5331.293 \text{ lbsft/ft}) + (1)\Big((49105.003 \text{ lbsft/ft}) + (0 \text{ lbsft/ft})\Big) + (1.75)\Big((3360.588 \text{ lbsft/ft}) - (0 \text{ lbsft/ft})\Big) + (0.9)\Big((198.375 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\Big) + (0.5)(447.123 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{r(CaseI)} = 63593.196 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

$$\Sigma M'_r = \Sigma M_{r(CaseI)} - \Delta M_{r,U}$$
$$\rightarrow \Sigma M'_r = (63593.196 \text{ lbsft/ft}) - (24210.143 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M'_r = 39383.053 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CaseII)} = \gamma_{p-EH(max)} M_{o,F_1} + \gamma_{LS}\big(M_{o,F_{2LS}} + M_{o,F_{qLS}}\big) + \gamma_{WA} M_{o,F_{wa}}$$
$$\rightarrow \Sigma M_{o(CaseII)} = (1.5)(3140.633 \text{ lbsft/ft}) + (1.75)\Big((2711.079 \text{ lbsft/ft}) + (10546.148 \text{ lbsft/ft})\Big) + (1)(3966.344 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseII)} = 31877.44 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$\Sigma M_{r(CaseII)} = \gamma_{p-EH;max} M_{r,V_1} + \gamma_{p-EV;max}\left(M_{r,V_2} + M_{r,V_3}\right) + \gamma_{LS}(M_{r,H_{LS}} + M_{r,H_{pLS}} + M_{r,V_{pLS}}) + \gamma_{p-DC;max}(M_{r,w} \quad M_{r,V_{pDC}}) \quad \phi_{rp} M_{r,V_p}$

$\rightarrow \Sigma M_{r(CaseII)} = (1.5)(5331.293 \text{ lbsft/ft}) + (1.35)\Big((49105.003 \text{ lbsft/ft}) + (0 \text{ lbsft/ft})\Big) + (1.75)\Big((3360.588 \text{ lbsft/ft}) + (0 \text{ lbsft/ft}) + (29718.722 \text{ lbsft/ft})\Big) + (1.25)\Big((198.375 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\Big) + (0.5)(147.123 \text{ lbsft/ft})$

$\rightarrow \Sigma M_{r(CaseII)} = 127688.079 \text{ lbsft/ft}$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

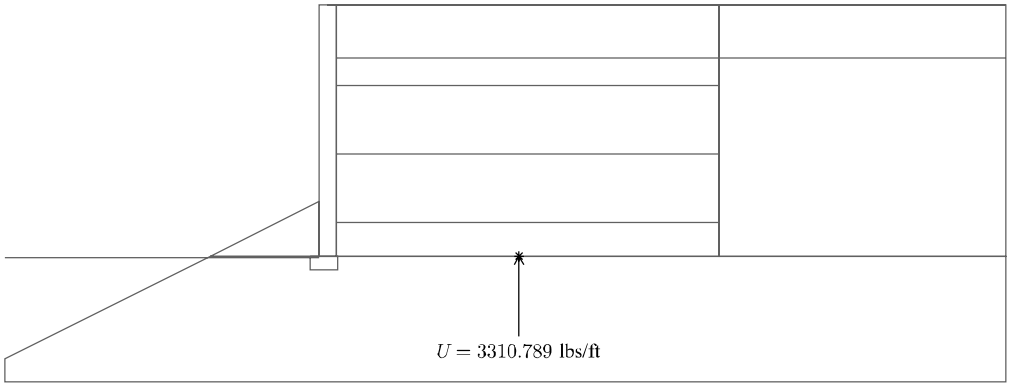
$$\Sigma M_r' = \Sigma M_{r(CaseII)} - \Delta M_{r,U}$$

$$\rightarrow \Sigma M_r' = (127688.079 \text{ lbsft/ft}) - (24210.143 \text{ lbsft/ft})$$

$$\rightarrow \Sigma M_r' = 103477.935 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

### 2.2.5. Sum of external forces




Sum all the active horizontal earth forces.

$$\Sigma F_h = \gamma_{p-EH(max)} F'_{1h} + \gamma_{LS}\left(F_{2h,LS} + F_{phP_{hLS,1}} + F_{phP'_{hLS,1}}\right) + \gamma_{WA} F_{wah}$$
$$\rightarrow \Sigma F_h = (1.5)(934.978 \text{ lbs/ft}) + (1.75)\Big((589.365 \text{ lbs/ft}) + (50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft})\Big) + (1)(1641.246 \text{ lbs/ft})$$
$$\rightarrow \Sigma F_h = 4163.583 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Compute vertical resultant.

$$V \quad \gamma_{p-EH(max)} F'_{1v} \quad \gamma_{p-DC(min)}(W_w + \Sigma V_{qFS}) + \gamma_{LS}\left(F_{2v,LS} + F_{pvP_{hLS,1}} + F_{pvP'_{hLS,1}}\right) + \gamma_{p-EV(min)}(V_1 + V_2) + \phi_{vp} P_{pV} + \gamma_{WA} F_{wav}$$
$$\rightarrow V = (1.5)(364.533 \text{ lbs/ft}) - (0.9)\Big((862.5 \text{ lbs/ft}) + (370 \text{ lbs/ft})\Big) + (1.75)\Big((229.784 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big) + (1)\Big((6410 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big) + (0.5)(-327.115 \text{ lbs/ft}) + (1)(0 \text{ lbs/ft})$$
$$\rightarrow V = 8334.614 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Determine hydrostatic force at base of wall.

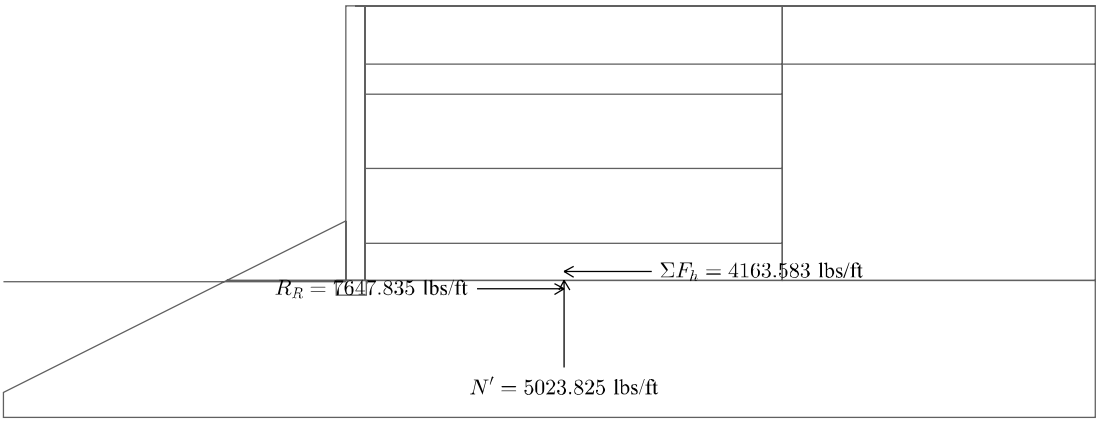
$$U = \bar{h}_w B \gamma_w$$
$$\rightarrow U = (3.625 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 3310.789 \text{ lbs/ft}$$

Determine effective normal force.

$$N' = V - U$$
$$\rightarrow N' = (8334.614 \text{ lbs/ft}) - (3310.789 \text{ lbs/ft})$$
$$\rightarrow N' = 5023.825 \text{ lbs/ft}$$

## 2.3. Base sliding

CDR = 1.84 (Base sliding, Strength Limit State)




Determine passive resistance.

$$R_{cp} = P_{pH}$$
$$\rightarrow R_{cp} = 670.685 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute the eccentricity of the bearing reaction.

$$e = \frac{B}{2} - \frac{\Sigma M_{r(CaseI)} - \Sigma M_{o(CaseI)}}{V}$$
$$\rightarrow e = \frac{(14.625 \text{ ft})}{2} - \frac{(63593.196 \text{ lbsft/ft}) - (31877.44 \text{ lbsft/ft})}{(8334.614 \text{ lbs/ft})}$$
$$\rightarrow e = 3.507 \text{ ft}$$

(Fig. 11.6.3.2)

Calculate normal stress distribution based on eccentricity.

$$\sigma_n = \frac{V}{B - 2(\max(0, e))}$$
$$\rightarrow \sigma_n = \frac{(8334.614 \text{ lbs/ft})}{(14.625 \text{ ft}) - 2\left(\max\left(0, (3.507 \text{ ft})\right)\right)}$$
$$\rightarrow \sigma_n = 1095.132 \text{ psf}$$

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Compute the frictional resistance against sliding.

$$R_\tau = \min(0.5\sigma'_n, S_u)B$$
$$\rightarrow R_\tau = \min(0.5\sigma'_n, S_u)(14.625 \text{ ft})$$
$$\rightarrow R_\tau = 7312.492 \text{ lbs/ft}$$

(Eq. 10.6.3.4-2)

Compute the factored resistance against sliding.

$$R_R = \phi_\tau R_\tau + \phi_{cp} R_{cp}$$
$$\rightarrow R_R = (1)(7312.492 \text{ lbs/ft}) + (0.5)(670.685 \text{ lbs/ft})$$
$$\rightarrow R_R = 7647.835 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

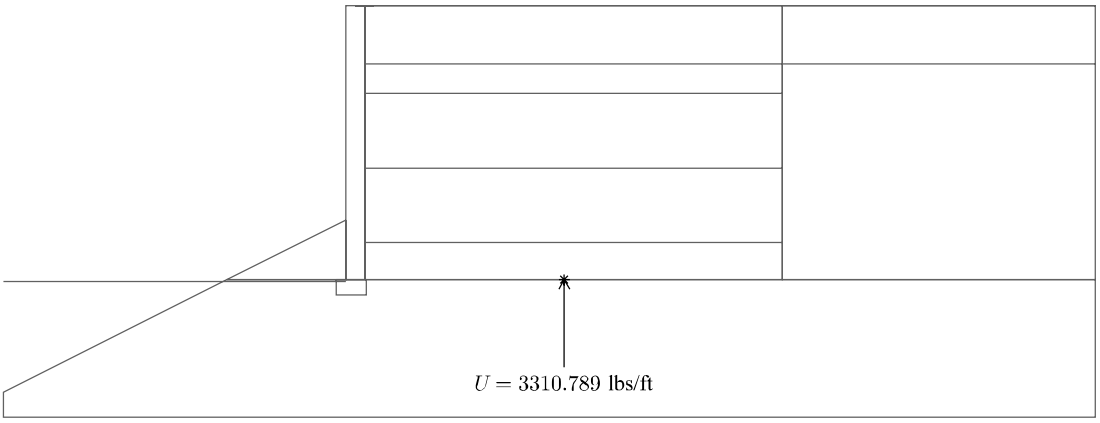
Compute CDR for base sliding.

$$CDR_{sliding.ext} = R_R/\Sigma F_h$$
$$\rightarrow CDR_{sliding,ext} = (7647.835 \text{ lbs/ft})/(4163.583 \text{ lbs/ft})$$
$$\rightarrow CDR_{sliding,ext} = 1.84$$

(Article 10.6.3.4)

$$CDR_{sliding.ext} > 1 \rightarrow PASS$$

## 2.4. Eccentricity




Compute vertical resultant.

$$R = N'$$
$$\rightarrow R = 5023.825 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Compute vertical resultant.

$$\Sigma V = \gamma_{\mu-EH(max)} F'_{1c} + \gamma_{\mu-DC(max)}(W_w + \Sigma V_{qlcS}) + \gamma_{LS}\left(F_{2c,LS} - F'_{\mu\omega F_{2,ES}} + F'_{\mu qlF'_{1,bS}} + \Sigma V'_{qLS}\right) + \gamma_{\mu-EV(max)}(V_1 + V_2) + \phi_{cp} P'_{pV} - \gamma_{WA} F_{wav}$$
$$\rightarrow \Sigma V = (1.5)(364.533 \text{ lbs/ft}) + (1.25)\left((862.5 \text{ lbs/ft}) + (370 \text{ lbs/ft})\right) + (1.75)\left((229.784 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (3549.996 \text{ lbs/ft})\right) + (1.35)\left((6440 \text{ lbs/ft}) + (0 \text{ lbs/ft})\right) + (0.5)(-327.115 \text{ lbs/ft}) + (1)(0 \text{ lbs/ft})$$
$$\rightarrow \Sigma V = 17232.483 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Determine hydrostatic force at base of wall.

$$U = \bar{h}_w B \gamma_w$$
$$\rightarrow U = (3.625 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 3310.789 \text{ lbs/ft}$$

Determine effective normal force.

$$\Sigma N' = \Sigma V - U$$
$$\rightarrow \Sigma N' = (17232.483 \text{ lbs/ft}) - (3310.789 \text{ lbs/ft})$$
$$\rightarrow \Sigma N' = 13921.694 \text{ lbs/ft}$$

Compute the eccentricity of the bearing reaction.

$$e_{(CaseI)} = \frac{B}{2} - \frac{\Sigma M_r' - \Sigma M_{o(CaseI)}}{R}$$
$$\rightarrow e_{(CaseI)} = \frac{(14.625 \text{ ft})}{2} - \frac{(39383.053 \text{ lbsft/ft}) - (31877.44 \text{ lbsft/ft})}{(5023.825 \text{ lbs/ft})}$$
$$\rightarrow e_{(CaseI)} = 5.818 \text{ ft}$$

(Fig. 11.6.3.2)

$$e_{(CaseI)} \leq (0.333)B = (58.5 \text{ in}) \rightarrow FAIL$$

(Article 10.6.3.3)
(Article 11.6.3.3)

Compute the eccentricity of the bearing reaction.

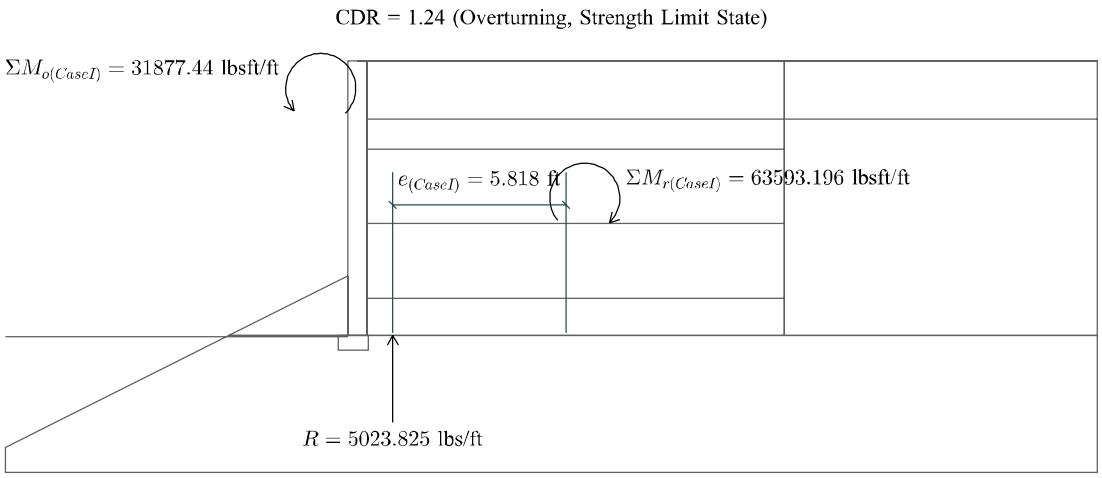
$$e_{(CaseII)} = \frac{B}{2} - \frac{\Sigma M_r' - \Sigma M_{o(CaseII)}}{\Sigma N'}$$
$$\rightarrow e_{(CaseII)} = \frac{(14.625 \text{ ft})}{2} - \frac{(103477.935 \text{ lbsft/ft}) - (31877.44 \text{ lbsft/ft})}{(13921.694 \text{ lbs/ft})}$$
$$\rightarrow e_{(CaseII)} = 2.169 \text{ ft}$$

(Fig. 11.6.3.2)

$$e_{(CaseII)} \leq (0.333)B = (58.5 \text{ in}) \rightarrow PASS$$

(Article 10.6.3.3)
(Article 11.6.3.3)

## 2.5. Overturning




Compute CDR for external overturning.

$CDR_{overturning} = \Sigma M_r' / \Sigma M_{o(CaseI)}$

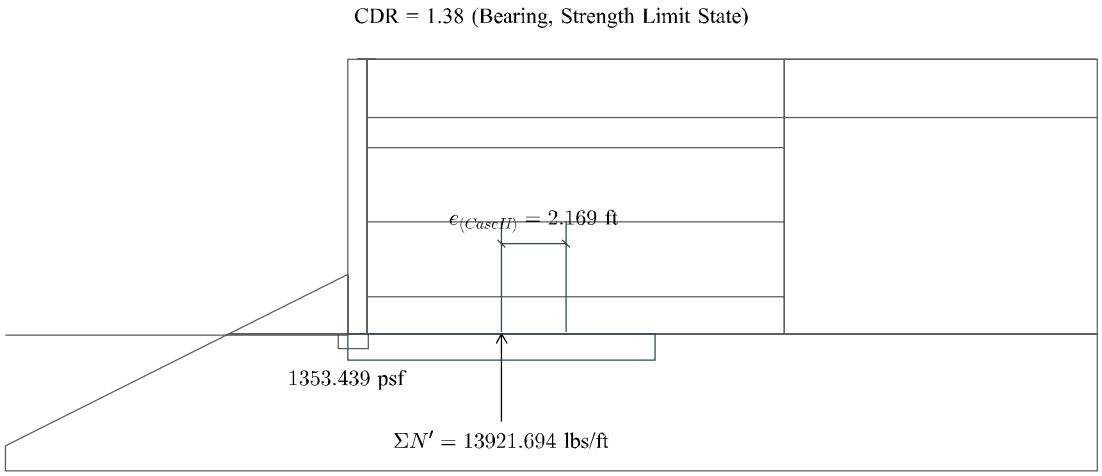
$\rightarrow CDR_{overturning} = (39383.053 \text{ lbsft/ft}) / (31877.44 \text{ lbsft/ft})$

$\rightarrow CDR_{overturning} = 1.24$

(Article C11.6.3.3)

$CDR_{overturning} > 1 \rightarrow PASS$

## 2.6. Bearing




Calculate the effective bearing width.

$B' = B - 2e_{(CaseII)}$

$\rightarrow B' = (14.625 \text{ ft}) - 2(2.169 \text{ ft})$

$\rightarrow B' = 10.286 \text{ ft}$

(Article C11.10.5.4)

Calculate uniform vertical bearing stress.

$$\sigma'_n = \frac{\Sigma N'}{B'}$$
$$\rightarrow \sigma'_n = \frac{(13921.694 \text{ lbs/ft})}{(10.286 \text{ ft})}$$
$$\rightarrow \sigma'_n = 1353.439 \text{ psf}$$

(Fig. 11.6.3.2)

Calculate the Nq coefficient for foundation soil (Reissner 1924 method).

$$N_q = \exp(\pi + \tan(\phi_{fnd}))\tan^2(\pi/4 + \phi_{fnd}/2)$$
$$\rightarrow N_q = \exp(\pi + \tan((0^\circ)))\tan^2(\pi/4 + (0^\circ)/2)$$
$$\rightarrow N_q = 1$$

Calculate the Nc coefficient for foundation soil (Prandtl 1921 method).

$$N_c = (N_q - 1)\cot(\phi_{fnd})$$
$$\rightarrow N_c = ((1) - 1)\cot((0^\circ))$$
$$\rightarrow N_c = 5.142$$

Calculate the Ngamma coefficient for foundation soil (Vesic 1975 method).

$$N_\gamma = 2(N_q + 1)\tan(\phi_{fnd})$$
$$\rightarrow N_\gamma = 2((1) + 1)\tan((0^\circ))$$
$$\rightarrow N_\gamma = 0$$

Determine Nqm.

$$N_{qm} = N_q$$
$$\rightarrow N_{qm} = 1$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-3)

Determine Ncm.

$$N_{cm} = N_c$$
$$\rightarrow N_{cm} = 5.142$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-2)

Determine Ngamma,m.

$$N_{\gamma m} = N_\gamma$$
$$\rightarrow N_{\gamma m} = 0$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-4)

$$\gamma_q = 120 \text{ lbs/ft}^3$$

(Eq. 10.6.3.1.2a-1)

$$\gamma_f = 120 \text{ lbs/ft}^3$$

(Eq. 10.6.3.1.2a-1)

$$C_{wq} = 1$$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

$C_{w\gamma} = 1$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

Calculate nominal bearing resistance.

$q_n = c_{fnd} N_{cm} + \gamma_q D'_f N_{qm} C_{wq} + 0.5 \gamma_f B' N_{\gamma m} C_{w\gamma}$
$\rightarrow q_n = (500 \text{ psf})(5.142) + (120 \text{ lbs/ft}^3)(2.5 \text{ ft})(1)(1) + 0.5(120 \text{ lbs/ft}^3)(10.286 \text{ ft})(0)(1)$
$\rightarrow q_n = 2870.797 \text{ psf}$

(Fig. 10.6.3.1.2a-1)

Factor the bearing resistance.

$q_R = q_n \phi_b$
$\rightarrow q_R = (2870.797 \text{ psf})(0.65)$
$\rightarrow q_R = 1866.018 \text{ psf}$

(Fig. 10.6.3.1.1-1)

Compute CDR for bearing.

$CDR_{bearing} = q_R / \sigma'_n$
$\rightarrow CDR_{bcaring} = (1866.018 \text{ psf}) / (1353.439 \text{ psf})$
$\rightarrow CDR_{bcaring} = 1.38$

(Article 10.6.3.1)

$CDR_{bcaring} > 1 \rightarrow PASS$

## 2.7. Reinforcement precalculations

### 2.7.1. Reinforcement data (layer 1)

$Z = 7.95 \text{ ft}$

(Fig. 11.10.6.2.1a-1)

$F^* = 1.483$

(Eq. 11.10.6.3.2-1)

$S_v = 2.5 \text{ ft}$

(Fig. 11.10.6.2.1b-1)

$S_v \leq (2.7 \text{ ft}) \rightarrow PASS$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$k_r = (1.0) k_{abh}$
$\rightarrow k_r = (1.0)(0.271)$
$\rightarrow k_r = 0.271$

(Fig. B11.2-1)

### 2.7.2. Pullout length (layer 1)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan(\Psi_{int})}$$
$$\rightarrow L_a = \frac{(9.2\text{ ft}) - (7.95\text{ ft})}{\tan((62.5°))}$$
$$\rightarrow L_a = 0.651\text{ ft}$$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$$L_e = L' - L_a$$
$$\rightarrow L_e = (14\text{ ft}) - (0.651\text{ ft})$$
$$\rightarrow L_e = 13.349\text{ ft}$$

(Fig. 11.10.6.3.1-1)

$$L_e \geq (3\text{ ft}) \rightarrow PASS$$

(Article 11.10.6.3.2)

### 2.7.3. Reinforcement data (layer 2)

$$Z = 5.45\text{ ft}$$

(Fig. 11.10.6.2.1a-1)

$$F^* = 1.646$$

(Eq. 11.10.6.3.2-1)

$$S_v = 2.5\text{ ft}$$

(Fig. 11.10.6.2.1b-1)

$$S_v \leq (2.7\text{ ft}) \rightarrow PASS$$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$$k_r = (1.0)k_{abh}$$
$$\rightarrow k_r = (1.0)(0.271)$$
$$\rightarrow k_r = 0.271$$

(Fig. B11.2-1)

### 2.7.4. Pullout length (layer 2)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan(\Psi_{int})}$$
$$\rightarrow L_a = \frac{(9.2\text{ ft}) - (5.45\text{ ft})}{\tan((62.5°))}$$
$$\rightarrow L_a = 1.952\text{ ft}$$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$$L_e = L' - L_a$$
$$\rightarrow L_e = (14\text{ ft}) - (1.952\text{ ft})$$
$$\rightarrow L_e = 12.048\text{ ft}$$

(Fig. 11.10.6.3.1-1)

$$L_e \geq (3\text{ ft}) \rightarrow PASS$$

(Article 11.10.6.3.2)

#### 2.7.5. Reinforcement data (layer 3)

$Z = 2.95 \text{ ft}$

(Fig. 11.10.6.2.1a-1)

$F^* = 1.808$

(Eq. 11.10.6.3.2-1)

$S_v = 4.2 \text{ ft}$

(Fig. 11.10.6.2.1b-1)

$S_v \leq (2.7 \text{ ft}) \rightarrow FAIL$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$k_r = (1.0)k_{abh}$
$\rightarrow k_r = (1.0)(0.271)$
$\rightarrow k_r = 0.271$

(Fig. B11.2-1)

#### 2.7.6. Pullout length (layer 3)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan(\Psi_{int})}$$
$$\rightarrow L_a = \frac{(9.2 \text{ ft}) - (2.95 \text{ ft})}{\tan((62.5°))}$$
$\rightarrow L_a = 3.254 \text{ ft}$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$L_e = L' - L_a$
$\rightarrow L_e = (14 \text{ ft}) - (3.254 \text{ ft})$
$\rightarrow L_e = 10.746 \text{ ft}$

(Fig. 11.10.6.3.1-1)

$L_e \geq (3 \text{ ft}) \rightarrow PASS$

(Article 11.10.6.3.2)

### 2.8. Tensile forces

#### 2.8.1. Tmax (layer 1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (7.95 \text{ ft})}{2} + (0 \text{ ft})$$
$\rightarrow D_1(Z) = 4.288 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50 \text{ lbs/ft})/(4.288 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 11.662 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,LS} = 11.662 \text{ psf}$$

(Eq. 11.10.10.1)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50 \text{ lbs/ft})/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200 \text{ lbs})/(357 \text{ ft})\Big)/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{H,P'_{hLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{II,LS} = 0 \text{ psf}$$

(Eq. 11.10.10.1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\text{ ft}) + (7.95\text{ ft})}{2} + (0\text{ ft})$$
$$\rightarrow D_1(Z) = 4.288\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50\text{ lbs/ft})/(4.288\text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 11.662\text{ psf}$$

(Eq. 3.11.6.3-1)

$$z_2 = 0\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\text{ ft}) + (7.95\text{ ft})}{2} + (0\text{ ft})$$
$$\rightarrow D_1(Z) = 4.288\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{(200\text{ lbs})}{(4.288\text{ ft})\Big((0.625\text{ ft}) + (7.95\text{ ft}) - (0\text{ ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = 5.44\text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,ES} = \Delta\sigma_{V,P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (11.662\text{ psf}) + (5.44\text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 17.102\text{ psf}$$

(Eq. 11.10.10.1)

Determine hydrostatic pressure at analysis depth.

$$u = h_{wa}\gamma_w$$
$$\rightarrow u = (-6\text{ ft})(62.449\text{ lbs/ft}^3)$$
$$\rightarrow u = -374.696\text{ psf}$$

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H\gamma_{fill}}$$
$$\rightarrow \sigma_2 = (0 \text{ ft})(125 \text{ lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0 \text{ psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma'_n = \sigma_1 + \sigma_2 - u + q_{LS,1}$$
$$\rightarrow \sigma'_n = (397.5 \text{ psf}) + (0 \text{ psf}) - (-374.696 \text{ psf}) + (250 \text{ psf})$$
$$\rightarrow \sigma'_n = 1022.197 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtcns} = S_v(k_r\sigma'_n)$$
$$\rightarrow T_{maxtens} = (2.5 \text{ ft})\Big((0.271)(1022.197 \text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 692.512 \text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxpo} = T_{maxtcns}$$
$$\rightarrow T_{maxpo} = 692.512 \text{ lbs/ft}$$

(Article 11.10.6.2.1)

### 2.8.2. Tmax (layer 2)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (5.45 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 3.038 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50 \text{ lbs/ft})/(3.038 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 16.461 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,LS} = 16.461 \text{ psf}$$

(Eq. 11.10.10.1)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50 \text{ lbs/ft})/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{II,P_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{II,P_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200 \text{ lbs})/(357 \text{ ft})\Big)/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{H,P'_{hLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{II,LS} = (0 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{II,LS} = 0 \text{ psf}$$

(Eq. 11.10.10.1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (5.45 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 3.038 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50\ \text{lbs/ft})/(3.038\ \text{ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 16.461\ \text{psf}$$

(Eq. 3.11.6.3-1)

$$z_2 = 0\ \text{ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\ \text{ft}) + (5.45\ \text{ft})}{2} + (0\ \text{ft})$$
$$\rightarrow D_1(Z) = 3.038\ \text{ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{(200\ \text{lbs})}{(3.038\ \text{ft})\Big((0.625\ \text{ft}) + (5.45\ \text{ft}) - (0\ \text{ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = 10.838\ \text{psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,ES} = \Delta\sigma_{V,P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (16.461\ \text{psf}) + (10.838\ \text{psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 27.299\ \text{psf}$$

(Eq. 11.10.10.1)

Determine hydrostatic pressure at analysis depth.

$$u = h_{wa}\gamma_w$$
$$\rightarrow u = (-3.5\ \text{ft})(62.449\ \text{lbs/ft}^3)$$
$$\rightarrow u = -218.573\ \text{psf}$$

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$
$$\rightarrow \sigma_2 = (0\ \text{ft})(125\ \text{lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0\ \text{psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma'_n = \sigma_1 + \sigma_2 - u + q_{LS,1}$$
$$\rightarrow \sigma'_n = (272.5\ \text{psf}) + (0\ \text{psf}) - (-218.573\ \text{psf}) + (250\ \text{psf})$$
$$\rightarrow \sigma'_n = 741.073\ \text{psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtcns} = S_v(k_r\sigma'_n)$$
$$\rightarrow T_{maxtens} = (2.5\text{ ft})\Big((0.271)(741.073\text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 502.058\text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxpo} = T_{maxtcns}$$
$$\rightarrow T_{maxpo} = 502.058\text{ lbs/ft}$$

(Article 11.10.6.2.1)

### 2.8.3. Tmax (layer 3)

$$z_2 = 0\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\text{ ft}) + (2.95\text{ ft})}{2} + (0\text{ ft})$$
$$\rightarrow D_1(Z) = 1.788\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50\text{ lbs/ft})/(1.788\text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 27.972\text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,LS} = 27.972\text{ psf}$$

(Eq. 11.10.10.1)

$$I_1 = 0\text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50\text{ lbs/ft})/(0\text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity\text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{II,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200 \text{ lbs})/(357 \text{ ft})\Big)/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{H,P'_{hLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = 0 \text{ psf}$$

(Eq. 11.10.10.1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (2.95 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 1.788 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50 \text{ lbs/ft})/(1.788 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 27.972 \text{ psf}$$

(Eq. 3.11.6.3-1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\text{ ft}) + (2.95\text{ ft})}{2} + (0\text{ ft})$$
$$\rightarrow D_1(Z) = 1.788\text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V;P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V;P'_{vES,1}}(Z) = \frac{(200\text{ lbs})}{(1.788\text{ ft})\Big((0.625\text{ ft}) + (2.95\text{ ft}) - (0\text{ ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V;P'_{vES,1}}(Z) = 31.297\text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V;ES} = \Delta\sigma_{V;P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (27.972\text{ psf}) + (31.297\text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 59.269\text{ psf}$$

(Eq. 11.10.10.1)

Determine hydrostatic pressure at analysis depth.

$$u = h_{wa}\gamma_w$$
$$\rightarrow u = (-1\text{ ft})(62.449\text{ lbs/ft}^3)$$
$$\rightarrow u = -62.449\text{ psf}$$

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$
$$\rightarrow \sigma_2 = (0\text{ ft})(125\text{ lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0\text{ psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma'_n = \sigma_1 + \sigma_2 - u + q_{LS,1}$$
$$\rightarrow \sigma'_n = (147.5\text{ psf}) + (0\text{ psf}) - (-62.449\text{ psf}) + (250\text{ psf})$$
$$\rightarrow \sigma'_n = 459.95\text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtens} = S_v(k_r\sigma'_n)$$
$$\rightarrow T_{maxtens} = (4.2\text{ ft})\Big((0.271)(459.95\text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 523.495\text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxpo} = T_{maxlens}$$

$$\rightarrow T_{maxpo} = 523.495 \text{ lbs/ft}$$

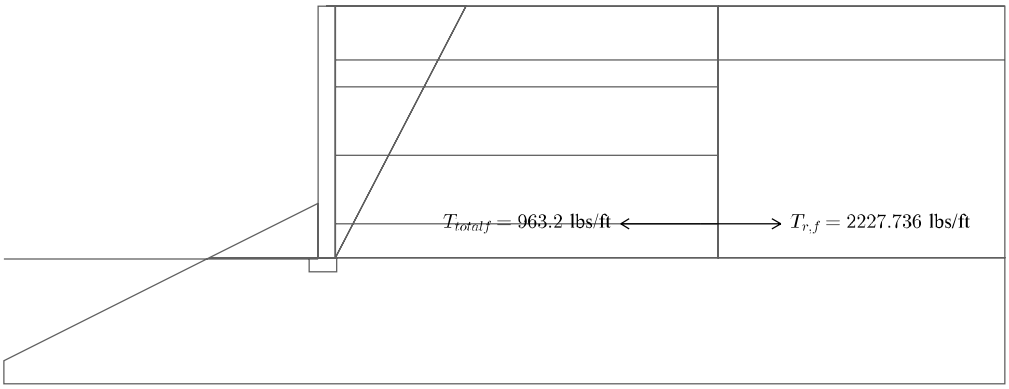
(Article 11.10.6.2.1)

## 2.9. Tensile strength

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 2.9.1. Tensile strength (layer 1)

CDR = 2.31 (Tensile strength, Layer 1, Strength Limit State)




Determine total factored tension force in reinforcement.

$$T_{totalf} = \gamma_{p-EV(max)} T_{maxtens} + \gamma_{LS} S_v (k_r \Sigma\Delta\sigma_{V,LS} + \Sigma\Delta\sigma_{H,LS}) + \gamma_{p-DC(max)} S_v (k_r \Sigma\Delta\sigma_{V,ES} + \Sigma\Delta\sigma_{H,ES})$$
$$\rightarrow T_{totalf} = (1.35)(692.512 \text{ lbs/ft}) + (1.75)(2.5 \text{ ft})\Big((0.271)(11.662 \text{ psf}) + (0 \text{ psf})\Big) + (1.25)(2.5 \text{ ft})\Big((0.271)(17.102 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{totalf} = 963.2 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate factored tensile strength.

$$T_{r,f} = \phi_t R_c T_{al}$$
$$\rightarrow T_{r,f} = (0.9)(0.332)(7455.61 \text{ lbs/ft})$$
$$\rightarrow T_{r,f} = 2227.736 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)

$$T_{al} = 7455.61 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-1)

$$\phi_t = 0.9$$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$$R_c = 0.332$$

(Article 11.10.6.4.1)

Compute CDR for tensile strength.

$$CDR_{tensile} = \frac{\phi_t T_{al} R_c}{T_{totalf}}$$
$$\rightarrow CDR_{tensile} = \frac{(0.9)(7455.61 \text{ lbs/ft})(0.332)}{(963.2 \text{ lbs/ft})}$$
$$\rightarrow CDR_{tensile} = 2.31$$

(Eq. 11.10.6.4.1-2)

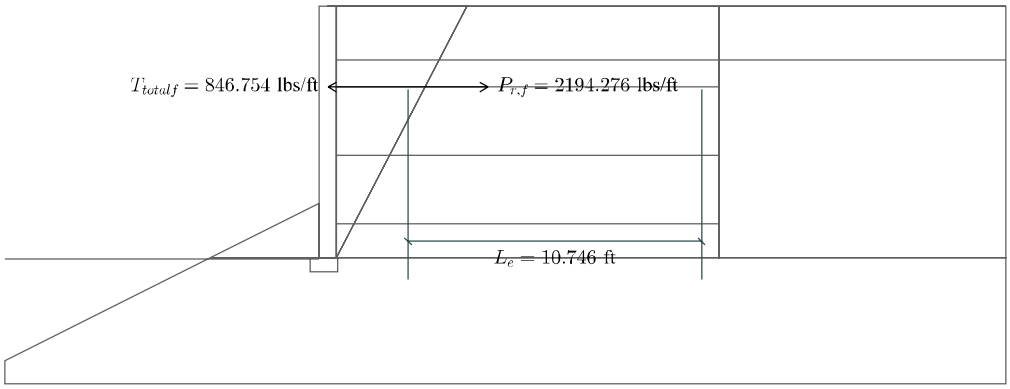
$$CDR_{tensile} > 1 \rightarrow PASS$$

## 2.10. Pullout

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 2.10.1. Pullout (layer 3)

CDR = 2.59 (Pullout, Layer 3, Strength Limit State)




$\sigma_{1-po} = 147.5$ psf

(Fig. 11.10.6.3.2-1)

$Z_p = 2.95$ ft

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (above pullout region only).

$$\sigma_{2-po} = \gamma_r(Z_p - Z)$$
$$\rightarrow \sigma_{2-po} = (50 \text{ lbs/ft}^3)\Big((2.95 \text{ ft}) - (2.95 \text{ ft})\Big)$$
$$\rightarrow \sigma_{2-po} = 0 \text{ psf}$$

(Eq. 11.10.6.3.2-1)

Calculate vertical stress on reinforcement.

$$\sigma'_n = \sigma_{1-po} + \sigma_{2-po} - u$$
$$\rightarrow \sigma'_n = (147.5 \text{ psf}) + (0 \text{ psf}) - (-62.449 \text{ psf})$$
$$\rightarrow \sigma'_n = 209.95 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Determine total factored tension force in reinforcement.

$$T_{totalf} = \gamma_{p-EV(max)} T_{maxpo} + \gamma_{LS} S_v (k_r \Sigma\Delta\sigma_{V,LS} + \Sigma\Delta\sigma_{H,LS}) + \gamma_{p-DC(max)} S_v (k_r \Sigma\Delta\sigma_{V,ES} + \Sigma\Delta\sigma_{H,ES})$$
$$\rightarrow T_{totalf} = (1.35)(523.495 \text{ lbs/ft}) + (1.75)(4.2 \text{ ft})\Big((0.271)(27.972 \text{ psf}) + (0 \text{ psf})\Big) + (1.25)(4.2 \text{ ft})\Big((0.271)(59.269 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{totalf} = 846.754 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate the pullout resistance.

$$P_r = F^* \alpha \sigma'_n C R_c L_e$$
$$\rightarrow P_r = (1.808)(0.9)(209.95 \text{ psf})(2)(0.332)(10.746 \text{ ft})$$
$$\rightarrow P_r = 2438.085 \text{ lbs/ft}$$

(Article C11.10.6.3.2)

Calculate the factored pullout resistance.

$$P_{r,f} = \phi_p P_r$$
$$\rightarrow P_{r,f} = (0.9)(2438.085 \text{ lbs/ft})$$
$$\rightarrow P_{r,f} = 2194.276 \text{ lbs/ft}$$

(Article C11.10.6.3.2-1)

Determine required length of reinforcement outside active zone.

$$L_{e,req} = \frac{T_{totalf}}{\phi_p F^* \alpha \sigma_n' C R_c}$$

$$\rightarrow L_{e,req} = \frac{(846.754 \text{ lbs/ft})}{(0.9)(1.808)(0.9)(209.95 \text{ psf})(2)(0.332)}$$

$$\rightarrow L_{e,req} = 4.147 \text{ ft}$$

(Fig. 11.10.6.3.2-1)

Compute CDR for pullout.

$$CDR_{pullout} = L_c / L_{c,req}$$

$$\rightarrow CDR_{pullout} = (10.746 \text{ ft})/(4.147 \text{ ft})$$

$$\rightarrow CDR_{pullout} = 2.59$$

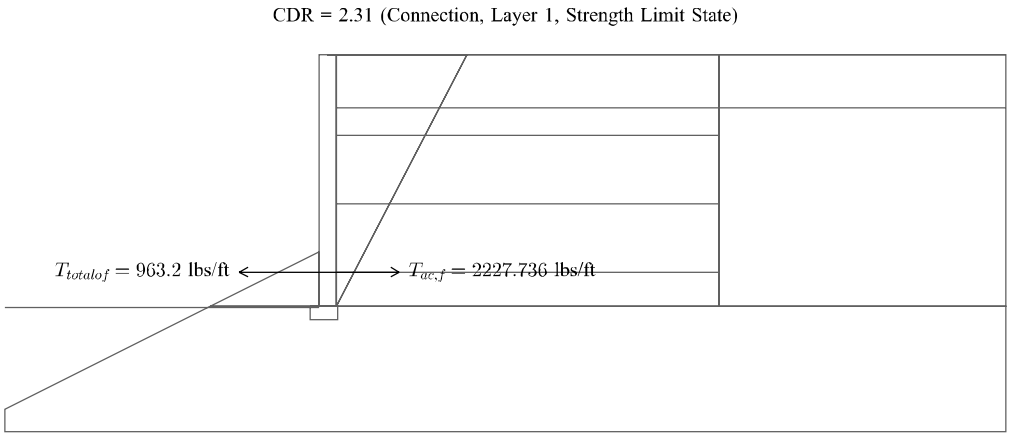
(Eq. 11.10.6.3.2-1)

$$CDR_{pullout} > 1 \rightarrow PASS$$

## 2.11. Connection

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 2.11.1. Connection (layer 1)




Determine connection force.

$$T_o = T_{maxtens}$$

$$\rightarrow T_o = 692.512 \text{ lbs/ft}$$

(Eq. 11.10.6.2.2)

Determine total factored connection force for reinforcement.

$$T_{lolalof} = T_{lolalf}$$

$$\rightarrow T_{totalof} = 963.2 \text{ lbs/ft}$$

(Eq. 11.10.10.1-2)

Connection strength is limited by tensile strength.

$$T_{ac} = \min(T_{ac}, T_{al})$$
$$\rightarrow T_{ac} = \min\Big(T_{ac}, (7455.61 \text{ lbs/ft})\Big)$$
$$\rightarrow T_{ac} = 7455.61 \text{ lbs/ft}$$

$T_{ac} = 35073$ lbs/ft

(Eq. 11.10.6.4.1-2)

$\phi_t = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$R_c = 0.332$

(Article 11.10.6.4.1)

Compute the factored connection strength.

$$T_{ac,f} = \phi_t T_{ac} R_c$$
$$\rightarrow T_{ac,f} = (0.9)(7455.61 \text{ lbs/ft})(0.332)$$
$$\rightarrow T_{ac,f} = 2227.736 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

Compute CDR for connection strength.

$$CDR_{conn} = \frac{T_{ac,f}}{T_{totalof}}$$
$$\rightarrow CDR_{conn} = \frac{(2227.736 \text{ lbs/ft})}{(963.2 \text{ lbs/ft})}$$
$$\rightarrow CDR_{conn} = 2.31$$

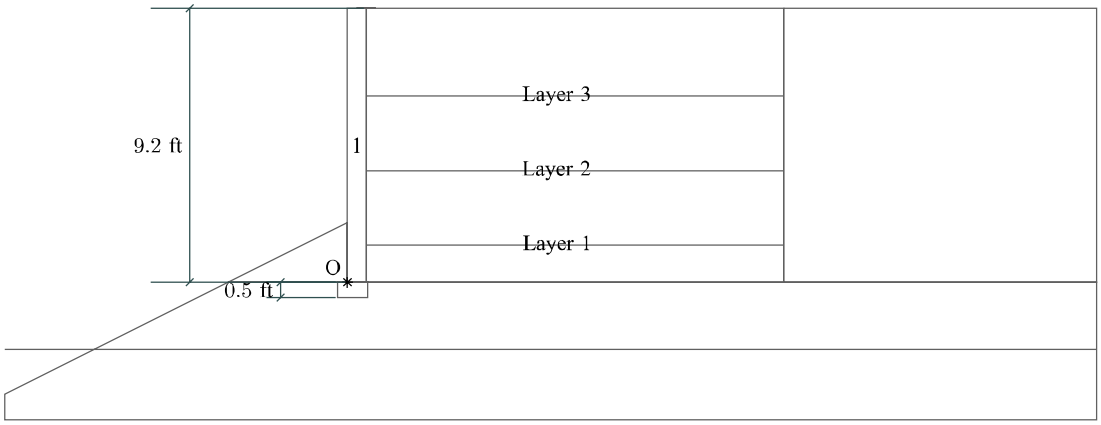
(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

$CDR_{conn} > 1 \rightarrow PASS$

# EXTREME LIMIT STATE SEGMENT 3 (Stationing 0+45 to 1+32 and 2+13 to 2+52)

## 3. Model properties

### 3.1. Wall properties




$H = 9.2$ ft (Fig. 3.11.5.8.1)

$H_u = 110.4$ in (Fig. 11.10.6.4.4b)

$W_u = 7.5$ in (Article 11.3.1)

$\gamma_u = 150$ lbs/ft$^3$

$G_u = 2.76$ in

$N_u = 1$

$\omega = 0^\circ$ (Article 11.3.1)

$\theta = 90^\circ$ (Fig. 3.11.5.3)

$D_f = 2$ ft (Fig. 10.6.3.1)

$D'_f = 2.5$ ft (Fig. 10.6.3.1)

$B = 14.625$ ft (Fig. 11.10.2-1)

### 3.2. Backslope geometry

$\beta = 0^\circ$ (Fig. 3.11.5.3)

$(0.5H_2) = 4.6$ ft (Eq. 11.10.7.1-4)

### 3.3. Groundwater

$\gamma_w = 62.449$ lbs/ft$^3$ (Article 12.3)

$z_w = 11.45$ ft

### 3.4. Soils (unfactored)

$\phi_r = 35^\circ$

(Article 11.10.5.2)

$\delta_r = 23^\circ$

(Table 3.11.5.3)

$\gamma_r = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,r} = 50 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fill} = 32^\circ$

(Fig. 11.10.2)

$\delta_f = 21.3^\circ$

(Table 3.11.5.3)

$\gamma_{fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\gamma_{sat,fill} = 125 \text{ lbs/ft}^3$

(Fig. 11.10.2-1)

$\phi_{fnd} = 0^\circ$

(Fig. 10.6.3.4-2)

$c_{fnd} = 500 \text{ psf}$

(Eq. 10.6.3.1.2a-1)

$\gamma_{fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\gamma_{sat,fnd} = 120 \text{ lbs/ft}^3$

(Article 10.6.3.1)

$\phi_p = 40^\circ$

(Article 3.11.5.4)

$\delta_p = 26^\circ$

(Table 3.11.5.3)

$\gamma_p = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

$\gamma_{sat,p} = 135 \text{ lbs/ft}^3$

(Eq. 3.11.5.4-1)

## 3.5. Seismic inputs

$k_h = 0.43$

(Fig. 11.6.5.1-1)
(Article 11.6.5.2)

$k_v = 0$

(Article 11.6.5.2)

Calculate the Mononobe-Okabe seismic angle.

$$\theta_{MO} = \beta + \tan^{-1}\left(\frac{k_h}{1 - k_v}\right)$$
$$\rightarrow \theta_{MO} = (0^\circ) + \tan^{-1}\left(\frac{(0.43)}{1 - (0)}\right)$$
$$\rightarrow \theta_{MO} = 23.3^\circ$$

(Eq. 11.6.5.3-1)

$\phi_{fill} \geq \beta + \theta_{MO} \rightarrow PASS$

(Eq. 11.6.5.3-1)

## 3.6. Surcharges

$P_{vLS,1} = 50$ lbs/ft

(Article 3.11.6.3)

$P_{vES,2} = 50$ lbs/ft

(Article 3.11.6.3)

$P_{hLS,1} = 50$ lbs/ft

(Article 3.11.6.3)

$P'_{vES,1} = 200$ lbs

(Article 3.11.6.3)

$P'_{hLS,1} = 200$ lbs

(Article 3.11.6.3)

### 3.7. Calculate **δ** (external)

Compute interface friction angle for external stability of wall.

$$\delta = \min(\delta_f, \delta_r)$$
$$\rightarrow \delta = \min((21.3°), (23°))$$
$$\rightarrow \delta = 21.3°$$

(Article 11.10.5.2)

### 3.8. Calculate Ka

Calculate the active earth pressure coefficient, static method.

$$K_{af} = \frac{\sin^2(\theta + \phi_{fill})}{\sin^2(\theta)\sin(\theta - \delta)\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta)}{\sin(\theta-\delta\sin(\theta+\beta))}}\right]^2}$$
$$\rightarrow K_{af} = \frac{\sin^2((90°) + (32°))}{\sin^2((90°))\sin((90°) - (21.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°))}{\sin((90°)-(21.3°)\sin((90°)+(0°)))}}\right]^2}$$
$$\rightarrow K_{af} = 0.275$$

(Eq. 3.11.5.3)

Calculate the active earth pressure coefficient, seismic method.

$$K_{AE} = \frac{\cos^2(\phi_{fill} + \omega - \theta_{MO})}{\cos(\theta_{MO})\cos^2(\omega)\cos(\delta - \omega + \theta_{MO})\left[1 + \sqrt{\frac{\sin(\phi_{fill}+\delta)\sin(\phi_{fill}-\beta-\theta_{MO})}{\cos(\delta-\omega+\theta_{MO})\cos(\omega+\beta)}}\right]}$$
$$\rightarrow K_{AE} = \frac{\cos^2((32°) + (0°) - (23.3°))}{\cos((23.3°))\cos^2((0°))\cos((21.3°) - (0°) + (23.3°))\left[1 + \sqrt{\frac{\sin((32°)+(21.3°))\sin((32°)-(0°)-(23.3°))}{\cos((21.3°)-(0°)+(23.3°))\cos((0°)+(0°))}}\right]}$$
$$\rightarrow K_{AE} = 0.747$$

(Eq. A11.3.1-1)

### 3.9. Critical failure plane

Calculate the inclination of the assumed failure plane.

$$\Psi_{ext} = 45^\circ + \frac{\phi_{fill}}{2}$$
$$\rightarrow \Psi_{ext} = 45^\circ + \frac{(32^\circ)}{2}$$
$$\rightarrow \Psi_{ext} = 61^\circ$$

(Fig. 11.10.6.3.1-1)

Calculate the inclination of the assumed failure plane.

$$\Psi_{int} = 45^\circ + \frac{\phi_r}{2}$$
$$\rightarrow \Psi_{inl} = 45^\circ + \frac{(35^\circ)}{2}$$
$$\rightarrow \Psi_{int} = 62.5^\circ$$

(Fig. 11.10.6.3.1-1)

## 3.10. Front face

$$\beta_{front} = -26.6^\circ$$

(Fig. 3.11.5.3)

## 3.11. Load combinations

### 3.11.1. Factors (Strength Limit State)

$\gamma_{p-DC(max)} = 1.25$

(Table 3.4.1-2)

$\gamma_{p-DC(min)} = 0.9$

(Table 3.4.1-2)

$\gamma_{p-EH(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{p-EV(max)} = 1.35$

(Table 3.4.1-2)

$\gamma_{p-EV(min)} = 1$

(Table 3.4.1-2)

$\gamma_{p-ES(max)} = 1.5$

(Table 3.4.1-2)

$\gamma_{EQ} = 0$

(Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1.75$

(Table 3.4.1-1)

$\gamma_{WA} = 1$

(Table 3.4.1-1)

$\phi_p = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 0.9$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.65$

(Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$

(Table 11.5.7-1)

$\phi_{ep} = 0.5$

(Table 10.5.5.2.2-1)

### 3.11.2. Factors (Extreme Limit State)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-DC} = 1$ (Table 3.4.1-2)

$\gamma_{p-EH} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-EV} = 1$ (Table 3.4.1-2)

$\gamma_{p-ES} = 1$ (Table 3.4.1-2)

$\gamma_{EQ} = 1$ (Article 3.4.1)
(Article 11.5.6)

$\gamma_{LS} = 1$ (Table 3.4.1-1)

$\gamma_{WA} = 1$ (Table 3.4.1-1)

$\phi_p = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_t = 1.2$ (Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$\phi_b = 0.9$ (Table 11.5.7-1)
(Article 11.5.8)

$\phi_\tau = 1$ (Table 11.5.7-1)

$\phi_{ep} = 1$ (Table 10.5.5.2.2-1)

## 3.12. Reinforcements

Determine length of reinforced zone excluding wall facing.

$L' = B - W_u$
$\rightarrow L' = (14.625 \text{ ft}) - (7.5 \text{ in})$
$\rightarrow L' = 14 \text{ ft}$ (Fig. 11.10.5.2-1)

## 3.13. Global reinforcement data

$A_f = 0 \text{ ft}^2$

(Fig. 11.10.7.2-1)

Calculate the average height of soil surcharge within 0.7H of back of wall face.

$S_{0.7H} = (0.5)(0.7H)\sin(\beta)$
$\rightarrow S_{0.7H} = (0.5)\Big(0.7(9.2 \text{ ft})\Big)\tan((0°))$
$\rightarrow S_{0.7H} = 0 \text{ ft}$

(Eq. 11.10.6.2.1a-2)

Determine simplified Coulomb lateral earth pressure coefficient.

$$k_{abh} = \frac{\sin^2(\theta + \phi_r)}{\sin^3(\theta)\left[1 + \frac{\sin(\phi_r)}{\sin(\theta)}\right]^2}$$
$$\rightarrow k_{abh} = \frac{\sin^2((90°) + (35°))}{\sin^3((90°))\left[1 + \frac{\sin((35°))}{\sin((90°))}\right]^2}$$
$\rightarrow k_{abh} = 0.271$

(Eq. 11.10.6.2.1c-2)

$\omega \leq (20°) \rightarrow PASS$

(Article 11.10.6.2.1)

### 3.14. Backslope properties

$x_{int} = 14 \text{ ft}$

Compute height of sloped backfill for earth pressure calculations.

$h = H$
$\rightarrow h = 9.2 \text{ ft}$

(Fig. 3.11.5.9)
(Fig. 3.11.5.8.1)

# 4. Extreme Limit State

## 4.1. Summary

### 4.1.1. External stability - Extreme Limit State

| Failure mode | CDR |
|---|---|
| Base sliding | 1.393 |
| Overturning | 2.391 |
| Bearing | 2.738 |

### 4.1.2. Reinforcement stability - Extreme Limit State

| Layer | Tensile strength | Connection | Pullout |
|---|---|---|---|
| 1 | 7.548 | 7.548 | 11.474 |
| 2 | 9.311 | 9.311 | 9.716 |
| 3 | 7.986 | 7.986 | 4.421 |

## 4.2. External forces

### 4.2.1. Weights

Compute the weight of the wall facing.

$$W_w = W_u H_u \gamma_u N_u$$
$$\rightarrow W_w = (7.5 \text{ in})(110.4 \text{ in})(150 \text{ lbs/ft}^3)(1)$$
$$\rightarrow W_w = 862.5 \text{ lbs/ft}$$

(Eq. C11.10.5.3)

Calculate the horizontal offset of the wall centroid from the center of the analysis layer.

$$X_W = \frac{B}{2} - G_u$$
$$\rightarrow X_W = \frac{(14.625 \text{ ft})}{2} - (2.76 \text{ in})$$
$$\rightarrow X_W = 7.082 \text{ ft}$$

(Fig. 11.6.3.2)

$$h_{W_w} = 4.6 \text{ ft}$$

Compute the weight of reinforced soil above base of wall.

$$V_1 = \gamma_r H L'$$
$$\rightarrow V_1 = (50 \text{ lbs/ft}^3)(9.2 \text{ ft})(14 \text{ ft})$$
$$\rightarrow V_1 = 6440 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Compute the arm of V1.

$$X_{V1} = \frac{B}{2} - \frac{L'}{2}$$
$$\rightarrow X_{V1} = \frac{(14.625 \text{ ft})}{2} - \frac{(14 \text{ ft})}{2}$$
$$\rightarrow X_{V1} = 0.313 \text{ ft}$$

(Fig. 11.6.3.2)

$$\Sigma V_{qLS} = 50 \text{ lbs/ft}$$

(Fig. C11.5.6.3)

$$X_{\Sigma VqLS} = -6.687 \text{ ft}$$

(Fig. C11.5.6.3)

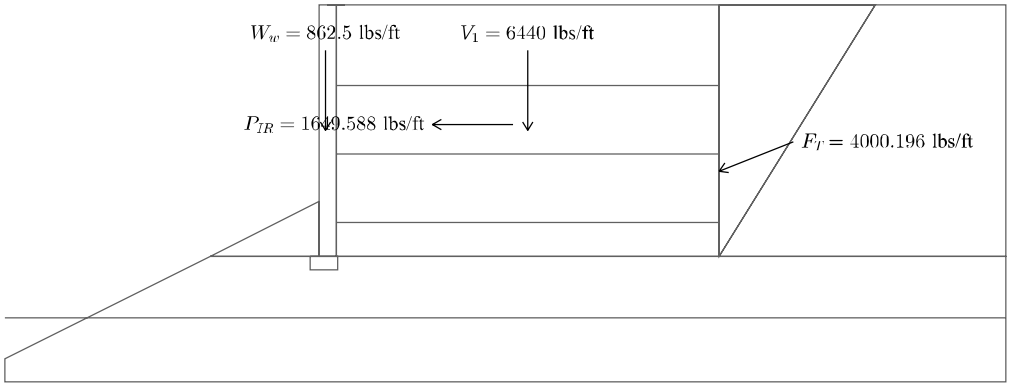
$$\Sigma V_{qES} = 370 \text{ lbs/ft}$$

(Fig. C11.5.6.3)

$$X_{\Sigma VqES} = -6.687 \text{ ft}$$

(Fig. C11.5.6.3)

### 4.2.2. Earth forces




Compute the active force due to backfill soil.

$$F_1 = \frac{1}{2}\gamma_{fill}h^2K_{af}$$
$$\rightarrow F_1 = \frac{1}{2}(125 \text{ lbs/ft}^3)(9.2 \text{ ft})^2(0.275)$$
$$\rightarrow F_1 = 1454.925 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the horizontal component of F1.

$$F_{1h} = F_1 \cos(\delta)$$
$$\rightarrow F_{1h} = (1454.925 \text{ lbs/ft}) \cos((21.3^\circ))$$
$$\rightarrow F_{1h} = 1355.541 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Compute the vertical component of F1.

$$F_{1v} = F_1 \sin(\delta)$$
$$\rightarrow F_{1v} = (1454.925 \text{ lbs/ft}) \sin((21.3^\circ))$$
$$\rightarrow F_{1v} = 528.503 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)
(Fig. 3.11.5.9-1)

Calculate the seismic active force.

$$P_{AE} = 0.5\gamma_{fill}h^2K_{AE}$$
$$\rightarrow P_{AE} = 0.5(125 \text{ lbs/ft}^3)(9.2 \text{ ft})^2(0.747)$$
$$\rightarrow P_{AE} = 3953.047 \text{ lbs/ft}$$

(Article 11.6.5.3)

Compute the horizontal component of PAE.

$$P_{AEH} = P_{AE} \cos(\delta)$$
$$\rightarrow P_{AEH} = (3953.047 \text{ lbs/ft}) \cos((21.3^\circ))$$
$$\rightarrow P_{AEH} = 3683.019 \text{ lbs/ft}$$

* Modified to account for wall friction

(Fig. C11.5.6)

Compute the vertical component of PAE.

$$P_{AEV} = P_{AE}\sin(\delta)$$
$$\rightarrow P_{AEV} = (3953.047 \text{ lbs/ft})\sin((21.3^\circ))$$
$$\rightarrow P_{AEV} = 1435.949 \text{ lbs/ft}$$

* Modified to account for wall friction

(Fig. C11.5.6)

Assume height of seismic active resultant.

$$h_a = 0.33h$$
$$\rightarrow h_a = 0.33(9.2 \text{ ft})$$
$$\rightarrow h_a = 3.036 \text{ ft}$$

(Article A11.3.1)

Convert concentrated lateral load into resultant active force.

$$F_{pP_{hLS,1}} = P_{hLS,1}$$
$$\rightarrow F_{pP_{hLS,1}} = 50 \text{ lbs/ft}$$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$$F_{phP_{hLS,1}} = F_{pP_{hLS,1}}$$
$$\rightarrow F_{phP_{hLS,1}} = 50 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$$h_{P_{hLS,1}} = H - z_P - I_2/3$$
$$\rightarrow h_{P_{hLS,1}} = (9.2 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$$
$$\rightarrow h_{P_{hLS,1}} = 9.2 \text{ ft}$$

(Fig. 11.10.10.1-1)

$$F_{pvP_{hLS,1}} = 0 \text{ lbs/ft}$$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Convert concentrated lateral load into resultant active force.

$$F_{pP'_{hLS,1}} = P'_{hLS,1}/L_f$$
$$\rightarrow F_{pP'_{hLS,1}} = (200 \text{ lbs})/(357 \text{ ft})$$
$$\rightarrow F_{pP'_{hLS,1}} = 0.56 \text{ lbs/ft}$$

Calculate resultant of horizontal stress distribution due to PhLS,1.

$$F_{phP'_{hLS,1}} = F_{pP'_{hLS,1}}$$
$$\rightarrow F_{phP'_{hLS,1}} = 0.56 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)
(Fig. 3.11.5.3-1)

Calculate the height of resultant active force due to individual horizontal surcharge.

$h_{P'_{hLS,1}} = H - z_P - I_2/3$

$\rightarrow h_{P'_{hLS,1}} = (9.2 \text{ ft}) - (0 \text{ ft}) - (0 \text{ ft})/3$

$\rightarrow h_{P'_{hLS,1}} = 9.2 \text{ ft}$

(Fig. 11.10.10.1-1)

$F_{pvP'_{hLS,1}} = 0 \text{ lbs/ft}$

(Fig. 11.10.5.2-1)
(Fig. 11.10.10.1-1)

Sum all the active horizontal earth forces.

$F_{Th} = P_{AEH} + \gamma_{EQ}\left(F_{phP_{hLS,1}} + F_{phP'_{hLS,1}}\right)$

$\rightarrow F_{Th} = (3683.019 \text{ lbs/ft}) + (1)\left((50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft})\right)$

$\rightarrow F_{Th} = 3733.58 \text{ lbs/ft}$

(Eq. 11.10.5.2-1)

$h_T = 3.119 \text{ ft}$

Compute vertical resultant.

$F_{Tv} = P_{AEV} + \gamma_{EQ}\left(F_{pvP_{hLS,1}} + F_{pvP'_{hLS,1}}\right)$

$\rightarrow F_{Tv} = (1435.949 \text{ lbs/ft}) + (1)\left((0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\right)$

$\rightarrow F_{Tv} = 1435.949 \text{ lbs/ft}$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Total factored active resultant.

$F_T = \sqrt{F_{Th}^2 + F_{Tv}^2}$

$\rightarrow F_T = \sqrt{(3733.58 \text{ lbs/ft})^2 + (1435.949 \text{ lbs/ft})^2}$

$\rightarrow F_T = 4000.196 \text{ lbs/ft}$

(Fig. 11.6.3.2-2)

$x_{infl} = 19.1 \text{ ft}$

(Fig. 11.10.10.1-1)

$x_{infl} = 19.1 \text{ ft}$

(Fig. 11.10.10.1-1)

$W_{surcharge} = 370 \text{ lbs/ft}$

(Fig. 11.6.5.1-1)

$h_{W_{surcharge}} = 9.2 \text{ ft}$

Calculate the seismic inertial force.

$P_{IR} = 0.5 k_h (W_w)$

$\rightarrow P_{IR} = 0.5(0.43)\left((862.5 \text{ lbs/ft})\right)$

$\rightarrow P_{IR} = 1649.588 \text{ lbs/ft}$

(Eq. 11.10.7.1-1)

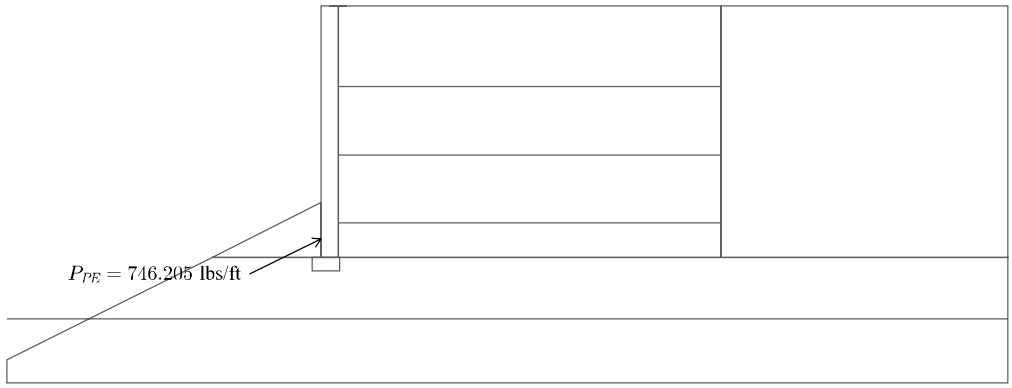
$h_{V1} = 4.6 \text{ ft}$

$h_{V2} = 0$ ft

Calculate the height of the inertial force.

$$h_{P_{IR}} = \frac{h_{W_w} W_w + h_{W_{surcharge}} W_{surcharge} + h_{V1} V_1 + h_{V2} V_2}{W_w + W_{surcharge} + V_1 + V_2}$$
$$\rightarrow h_{P_{IR}} = \frac{(4.6 \text{ ft})(862.5 \text{ lbs/ft}) + (9.2 \text{ ft})(370 \text{ lbs/ft}) + (4.6 \text{ ft})(6440 \text{ lbs/ft}) + (0 \text{ ft})(0 \text{ lbs/ft})}{(862.5 \text{ lbs/ft}) + (370 \text{ lbs/ft}) + (6440 \text{ lbs/ft}) + (0 \text{ lbs/ft})}$$
$$\rightarrow h_{P_{IR}} = 4.822 \text{ ft}$$

### 4.2.3. Front face resistance




$z_{passive} = 2$ ft

Select the passive earth pressure coefficient.

$$k_p = f(\phi_p, \beta_{front}, \omega_{passive}, \delta_p)$$
$$\rightarrow k_p = f((40°), (-26.6°), (0°), (26°))$$
$$\rightarrow k_p = 2.764$$

(Caquot & Kerisel 1949 pp. 116-127)

Calculate the height of the passive resultant above the bottom of the passive wedge.

$$h_{Pp} = z_{passive}/3$$
$$\rightarrow h_{Pp} = (2 \text{ ft})/3$$
$$\rightarrow h_{Pp} = 0.667 \text{ ft}$$

Calculate the passive pressure force.

$$P_p = \frac{1}{2} k_p \gamma_p z_{passive}^2$$
$$\rightarrow P_p = \frac{1}{2}(2.764)(135 \text{ lbs/ft}^3)(2 \text{ ft})^2$$
$$\rightarrow P_p = 746.205 \text{ lbs/ft}$$

(Article 3.11.5.4)

Compute the horizontal component of Pp.

$P_{pH} = P_p \cos(\delta_p)$
$\rightarrow P_{pH} = (746.205 \text{ lbs/ft}) \cos((26°))$
$\rightarrow P_{pH} = 670.685 \text{ lbs/ft}$

Compute the vertical component of Pp.

$P_{pV} = -P_p \sin(\delta_p)$
$\rightarrow P_{pV} = -(746.205 \text{ lbs/ft}) \sin((26°))$
$\rightarrow P_{pV} = -327.115 \text{ lbs/ft}$

Take seismic passive force based on static analysis.

$P_{PE} = P_p$
$\rightarrow P_{PE} = 746.205 \text{ lbs/ft}$

Take seismic passive force based on static analysis.

$P_{PEH} = P_{pH}$
$\rightarrow P_{PEH} = 670.685 \text{ lbs/ft}$

Take seismic passive force based on static analysis.

$P_{PEV} = P_{pV}$
$\rightarrow P_{PEV} = -327.115 \text{ lbs/ft}$

### 4.2.4. External moments

Determine driving moment from F1.

$M_{o,F_1} = F_{1h}(h/3)$
$\rightarrow M_{o,F_1} = (1355.541 \text{ lbs/ft})(3.067 \text{ ft})$
$\rightarrow M_{o,F_1} = 4156.993 \text{ lbsft/ft}$

(Fig. 11.10.5.2-1)

Determine resisting moment from F1.

$M_{r,F_1} = F_{1v}B$
$\rightarrow M_{r,F_1} = (528.503 \text{ lbs/ft})(14.625 \text{ ft})$
$\rightarrow M_{r,F_1} = 7729.362 \text{ lbsft/ft}$

(Fig. 11.10.5.2-1)

Determine driving moment from PAEH.

$M_{o,AE} = P_{AEH} h_a$
$\rightarrow M_{o,AE} = (3683.019 \text{ lbs/ft})(3.036 \text{ ft})$
$\rightarrow M_{o,AE} = 11181.647 \text{ lbsft/ft}$

(Fig. 11.6.5.1-1)

(Article A11.3.1)

Determine resisting moment from F1.

$M_{r,AE} = P_{AEV}B$

$\rightarrow M_{r,AE} = (1435.949 \text{ lbs/ft})(14.625 \text{ ft})$

$\rightarrow M_{r,AE} = 21000.758 \text{ lbsft/ft}$

(Fig. 11.6.5.1-1)
(Article A11.3.1)

Sum of driving moments due to point loads (live).

$M_{o,F_{qLS}} = F_{phP_{hLS,1}} h_{P_{hLS,1}} F_{phP'_{hLS,1}} h_{P'_{hLS,1}}$

$\rightarrow M_{o,F_{qLS}} = (50 \text{ lbs/ft})(9.2 \text{ ft})(0.56 \text{ lbs/ft})(9.2 \text{ ft})$

$\rightarrow M_{o,F_{qLS}} = 10546.148 \text{ lbsft/ft}$

Sum of resisting moments due to point loads (live).

$M_{r,F_{pLS}} = F_{pvP_{hLS,1}}\left(B - h_{P_{hLS,1}} \cot(\theta)\right) + F_{pvP'_{hLS,1}}\left(B - h_{P'_{hLS,1}} \cot(\theta)\right)$

$\rightarrow M_{r,F_{pLS}} = (0 \text{ lbs/ft})\left((14.625 \text{ ft}) - (9.2 \text{ ft}) \cot((90°))\right) + (0 \text{ lbs/ft})\left((14.625 \text{ ft}) - (9.2 \text{ ft}) \cot((90°))\right)$

$\rightarrow M_{r,F_{pLS}} = 0 \text{ lbsft/ft}$

Determine driving active moment.

$M_{o,F_T} = F_{Th} h_T$

$\rightarrow M_{o,F_T} = (3733.58 \text{ lbs/ft})(3.119 \text{ ft})$

$\rightarrow M_{o,F_T} = 11646.801 \text{ lbsft/ft}$

Determine resisting moment from FT.

$M_{r,F_T} = F_{Tv}B$

$\rightarrow M_{r,F_T} = (1435.949 \text{ lbs/ft})(14.625 \text{ ft})$

$\rightarrow M_{r,F_T} = 21000.758 \text{ lbsft/ft}$

(Fig. 11.6.3.2)

Determine hydrostatic force at base of wall.

$U = h_w B \gamma_w$

$\rightarrow U = (0 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$

$\rightarrow U = 0 \text{ lbs/ft}$

Determine reduction in resisting moment due to porewater at base of wall.

$$\Delta M_{r,U} = U\frac{B}{2}$$
$$\rightarrow \Delta M_{r,U} = (0 \text{ lbs/ft})\frac{(14.625 \text{ ft})}{2}$$
$$\rightarrow \Delta M_{r,U} = 0 \text{ lbsft/ft}$$

Determine driving moment from passive force.

$$M_{r,P_p} = P_{pH}(h_{Pp} - h_{shear-key})$$
$$\rightarrow M_{r,P_p} = (670.685 \text{ lbs/ft})\Big((0.667 \text{ ft}) - (0 \text{ ft})\Big)$$
$$\rightarrow M_{r,P_p} = 447.123 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine resisting moment from wall weight.

$$M_{r,w} = W_w[B/2 - X_W]$$
$$\rightarrow M_{r,w} = (862.5 \text{ lbs/ft})\Big[(14.625 \text{ ft})/2 - (7.082 \text{ ft})\Big]$$
$$\rightarrow M_{r,w} = 198.375 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V1.

$$M_{r,V_1} = V_1[X_{V1} + B/2]$$
$$\rightarrow M_{r,V_1} = (6440 \text{ lbs/ft})\Big[(0.313 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_1} = 49105.003 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from V2.

$$M_{r,V_2} = V_2[X_{V2} + B/2]$$
$$\rightarrow M_{r,V_2} = (0 \text{ lbs/ft})\Big[(0 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,V_2} = 0 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qLS}} = \Sigma V_{qLS}[X_{\Sigma VqLS} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = (50 \text{ lbs/ft})\Big[(-6.687 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qLS}} = 31.25 \text{ lbsft/ft}$$

* Only applies when computing eccentricity for bearing capacity under maximum vertical load conditions.

(Fig. 11.6.3.2)

Determine resisting moment from dead load surcharges above reinforced zone.

$$M_{r,\Sigma V_{qES}} = \Sigma V_{qES}[X_{\Sigma VqES} + B/2]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = (370 \text{ lbs/ft})\Big[(-6.687 \text{ ft}) + (14.625 \text{ ft})/2\Big]$$
$$\rightarrow M_{r,\Sigma V_{qES}} = 231.25 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Determine driving moment from seismic inertial force.

$$M_{o,P_{IR}} = P_{IR} h_{P_{IR}}$$
$$\rightarrow M_{o,P_{IR}} = (1649.588 \text{ lbs/ft})(4.822 \text{ ft})$$
$$\rightarrow M_{o,P_{IR}} = 7954.033 \text{ lbsft/ft}$$

(Fig. 11.10.7.1-1)

Calculate the inertial force from the soil surcharge.

$$M_{o,scis} = M_{o,AE} + M_{o,P_{IR}}$$
$$\rightarrow M_{o,scis} = (11181.647 \text{ lbsft/ft}) + (7954.033 \text{ lbsft/ft})$$
$$\rightarrow M_{o,scis} = 19135.68 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Calculate the inertial force from the soil surcharge.

$$M_{r,scis} = M_{r,AE}$$
$$\rightarrow M_{r,scis} = 21000.758 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CaseI)} = \gamma_{p-EH} M_{o,scis} + \gamma_{EQ} M_{o,F_{hLS}}$$
$$\rightarrow \Sigma M_{o(CaseI)} = (1)(19135.68 \text{ lbsft/ft}) + (1)(10546.148 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseI)} = 29681.827 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r(CaseI)} = \gamma_{p\_EH} M_{r,scis} + \gamma_{p\_EV}(M_{r,V_1} + M_{r,V_2}) + \gamma_{LS} M_{r,F_{hLS}} + \gamma_{p\_DC}\left(M_{r,w} + M_{r,\Sigma V_{qLS}}\right) + \phi_{rp} M_{r,P_p}$$
$$\rightarrow \Sigma M_{r(CaseI)} = (1)(21000.758 \text{ lbsft/ft}) + (1)\Big((49105.003 \text{ lbsft/ft}) + (0 \text{ lbsft/ft})\Big) + (1)(0 \text{ lbsft/ft}) + (1)\Big((198.375 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\Big) - (1)(447.123 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{r(CaseI)} = 70982.509 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

$$\Sigma M'_r = \Sigma M_{r(CaseI)} - \Delta M_{r,U}$$
$$\rightarrow \Sigma M'_r = (70982.509 \text{ lbsft/ft}) - (0 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M'_r = 70982.509 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

Calculate the inertial force from the soil surcharge.

$$M_{o,scis} = M_{o,AE} + M_{o,P_{IR}}$$
$$\rightarrow M_{o,scis} = (11181.647 \text{ lbsft/ft}) + (7954.033 \text{ lbsft/ft})$$
$$\rightarrow M_{o,scis} = 19135.68 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Calculate the inertial force from the soil surcharge.

$$M_{r,scis} = M_{r,AE}$$
$$\rightarrow M_{r,scis} = 21000.758 \text{ lbsft/ft}$$

(FHWA HIF-24-002 )

Determine total driving moment about toe of wall.

$$\Sigma M_{o(CaseII)} = \gamma_{p-EH} M_{o,seis} + \gamma_{EQ} M_{o,F_{qLS}}$$
$$\rightarrow \Sigma M_{o(CaseII)} = (1)(19135.68 \text{ lbsft/ft}) + (1)(10546.148 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{o(CaseII)} = 29681.827 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine total resisting moment about toe of wall.

$$\Sigma M_{r(CaseII)} = \gamma_{p-EH} M_{r,seis} + \gamma_{p-EV}(M_{r,V_1} + M_{r,V_2}) + \gamma_{LS}(M_{r,F_{qLS}} + M_{r,\Sigma V_{qLS}}) + \gamma_{p-DC}(M_{r,W} + M_{r,\Sigma V_{qSS}}) - \phi_{ep} M_{r,P_p}$$
$$\rightarrow \Sigma M_{r(CaseII)} = (1)(21000.758 \text{ lbsft/ft}) + (1)\Big((49105.003 \text{ lbsft/ft}) + (0 \text{ lbsft/ft})\Big) + (1)\Big((0 \text{ lbsft/ft}) \quad (31.25 \text{ lbsft/ft})\Big) + (1)\Big((198.375 \text{ lbsft/ft}) + (231.25 \text{ lbsft/ft})\Big) \quad (1)(447.123 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M_{r(CaseII)} = 71013.759 \text{ lbsft/ft}$$

(Fig. 11.10.5.2-1)

Determine effective resisting moment.

$$\Sigma M'_r = \Sigma M_{r(CaseII)} - \Delta M_{r,U}$$
$$\rightarrow \Sigma M'_r = (71013.759 \text{ lbsft/ft}) - (0 \text{ lbsft/ft})$$
$$\rightarrow \Sigma M'_r = 71013.759 \text{ lbsft/ft}$$

(Fig. 11.6.3.2)

### 4.2.5. Sum of external forces

Calculate the inertial force from the soil surcharge.

$$P_{seis,H} = P_{AEH} + P_{IR}$$
$$\rightarrow P_{seis,H} = (3683.019 \text{ lbs/ft}) + (1649.588 \text{ lbs/ft})$$
$$\rightarrow P_{seis,H} = 5332.607 \text{ lbs/ft}$$

(FHWA HIF-24-002 )

Sum all the active horizontal earth forces.

$$\Sigma F_h = P_{scis,H} + \gamma_{EQ}\left(F_{phP_{hl,S,1}} + F_{phP'_{hl,S,1}}\right)$$
$$\rightarrow \Sigma F_h = (5332.607 \text{ lbs/ft}) + (1)\Big((50 \text{ lbs/ft}) + (0.56 \text{ lbs/ft})\Big)$$
$$\rightarrow \Sigma F_h = 5383.167 \text{ lbs/ft}$$

(Eq. 11.10.5.2-1)

Calculate the inertial force from the soil surcharge.

$$P_{seis,V} = P_{AEV}$$
$$\rightarrow P_{seis,V} = 1435.949 \text{ lbs/ft}$$

(FHWA HIF-24-002 )

Compute vertical resultant.

$$V = P_{seis,V} + W_w + \Sigma V_{qES} + V_1 + V_2 + P_{PEV} + \gamma_{EQ}\left(F_{pvP_{hLS,1}} + F_{prP'_{hLS,1}}\right)$$
$$\rightarrow V = (1435.949 \text{ lbs/ft}) + (862.5 \text{ lbs/ft}) + (370 \text{ lbs/ft}) + (6440 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (-327.115 \text{ lbs/ft}) + (1)\Big((0 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big)$$
$$\rightarrow V = 8781.335 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Determine hydrostatic force at base of wall.

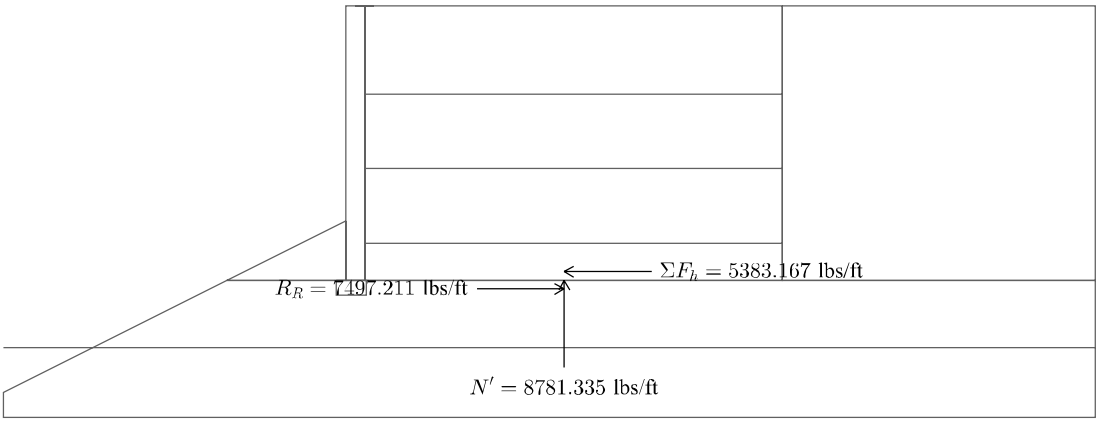
$$U = \bar{h}_w B \gamma_w$$
$$\rightarrow U = (0 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 0 \text{ lbs/ft}$$

Determine effective normal force.

$$N' = V - U$$
$$\rightarrow N' = (8781.335 \text{ lbs/ft}) - (0 \text{ lbs/ft})$$
$$\rightarrow N' = 8781.335 \text{ lbs/ft}$$

## 4.3. Base sliding

CDR = 1.39 (Base sliding, Extreme Limit State)




Determine passive resistance.

$$R_{cp} = P_{PEH}$$
$$\rightarrow R_{cp} = 670.685 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute the eccentricity of the bearing reaction.

$$e = \frac{B}{2} - \frac{\Sigma M_{r(CaseI)} - \Sigma M_{o(CaseI)}}{V}$$
$$\rightarrow e = \frac{(14.625 \text{ ft})}{2} - \frac{(70982.509 \text{ lbsft/ft}) - (29681.827 \text{ lbsft/ft})}{(8781.335 \text{ lbs/ft})}$$
$$\rightarrow e = 2.609 \text{ ft}$$

(Fig. 11.6.3.2)

Calculate normal stress distribution based on eccentricity.

$$\sigma_n = \frac{V}{B - 2(\max(0, e))}$$
$$\rightarrow \sigma_n = \frac{(8781.335 \text{ lbs/ft})}{(14.625 \text{ ft}) - 2\left(\max\left(0, (2.609 \text{ ft})\right)\right)}$$
$$\rightarrow \sigma_n = 933.543 \text{ psf}$$

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Select the undrained shear strength value for clay.

$$S_u = c_{fnd}$$
$$\rightarrow S_u = 500 \text{ psf}$$

(Fig. 10.6.3.4-1)

Compute the frictional resistance against sliding.

$$R_\tau = \min(0.5\sigma'_n, S_u)B$$
$$\rightarrow R_\tau = \min(0.5\sigma'_n, S_u)(14.625 \text{ ft})$$
$$\rightarrow R_\tau = 6826.526 \text{ lbs/ft}$$

(Eq. 10.6.3.4-2)

Compute the factored resistance against sliding.

$$R_R = \phi_\tau R_\tau + \phi_{ep} R_{ep}$$
$$\rightarrow R_R = (1)(6826.526 \text{ lbs/ft}) + (1)(670.685 \text{ lbs/ft})$$
$$\rightarrow R_R = 7497.211 \text{ lbs/ft}$$

(Eq. 10.6.3.4-1)

Compute CDR for base sliding.

$$CDR_{sliding.ext} = R_R / \Sigma F_h$$
$$\rightarrow CDR_{sliding,ext} = (7497.211 \text{ lbs/ft})/(5383.167 \text{ lbs/ft})$$
$$\rightarrow CDR_{sliding,ext} = 1.39$$

(Article 10.6.3.4)

$$CDR_{sliding.ext} > 1 \rightarrow PASS$$

## 4.4. Eccentricity

Compute vertical resultant.

$$R = N'$$
$$\rightarrow R = 8781.335 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Calculate the inertial force from the soil surcharge.

$$P_{seis,V} = P_{AEV}$$
$$\rightarrow P_{seis,V} = 1435.949 \text{ lbs/ft}$$

(FHWA HIF-24-002 )

Compute vertical resultant.

$$\Sigma V = \gamma_{p\ EH} P_{seis,V} + \gamma_{p\ DC}(W_w + \Sigma V_{qES}) + \gamma_{EQ}\left(F_{pvP_{hI,S,1}} + F_{pvP'_{hI,S,1}} + \Sigma V_{qLS}\right) + \gamma_{p\ EV}(V_1 + V_2) + \phi_{ep} P_{PEV}$$
$$\rightarrow \Sigma V = (1)(1435.949 \text{ lbs/ft}) + (1)\Big((862.5 \text{ lbs/ft}) + (370 \text{ lbs/ft})\Big) + (1)\Big((0 \text{ lbs/ft}) + (0 \text{ lbs/ft}) + (50 \text{ lbs/ft})\Big) + (1)\Big((6440 \text{ lbs/ft}) + (0 \text{ lbs/ft})\Big) + (1)(-327.115 \text{ lbs/ft})$$
$$\rightarrow \Sigma V = 8831.335 \text{ lbs/ft}$$

(Fig. C11.5.6-2)
(Eq. 10.6.3.4-2)

Determine hydrostatic force at base of wall.

$$U = h_w B \gamma_w$$
$$\rightarrow U = (0 \text{ ft})(14.625 \text{ ft})(62.449 \text{ lbs/ft}^3)$$
$$\rightarrow U = 0 \text{ lbs/ft}$$

Determine effective normal force.

$$\Sigma N' = \Sigma V - U$$
$$\rightarrow \Sigma N' = (8831.335 \text{ lbs/ft}) - (0 \text{ lbs/ft})$$
$$\rightarrow \Sigma N' = 8831.335 \text{ lbs/ft}$$

Compute the eccentricity of the bearing reaction.

$$e_{(CaseI)} = \frac{B}{2} - \frac{\Sigma M'_r - \Sigma M_{o(CaseI)}}{R}$$
$$\rightarrow e_{(CaseI)} = \frac{(14.625 \text{ ft})}{2} - \frac{(70982.509 \text{ lbsft/ft}) - (29681.827 \text{ lbsft/ft})}{(8781.335 \text{ lbs/ft})}$$
$$\rightarrow e_{(CaseI)} = 2.609 \text{ ft}$$

(Fig. 11.6.3.2)

$$e_{(CaseI)} \leq \left(\frac{1}{3} + \frac{\gamma_{EQ}}{15}\right) B \rightarrow PASS$$

(Article 11.6.5.1)

Compute the eccentricity of the bearing reaction.

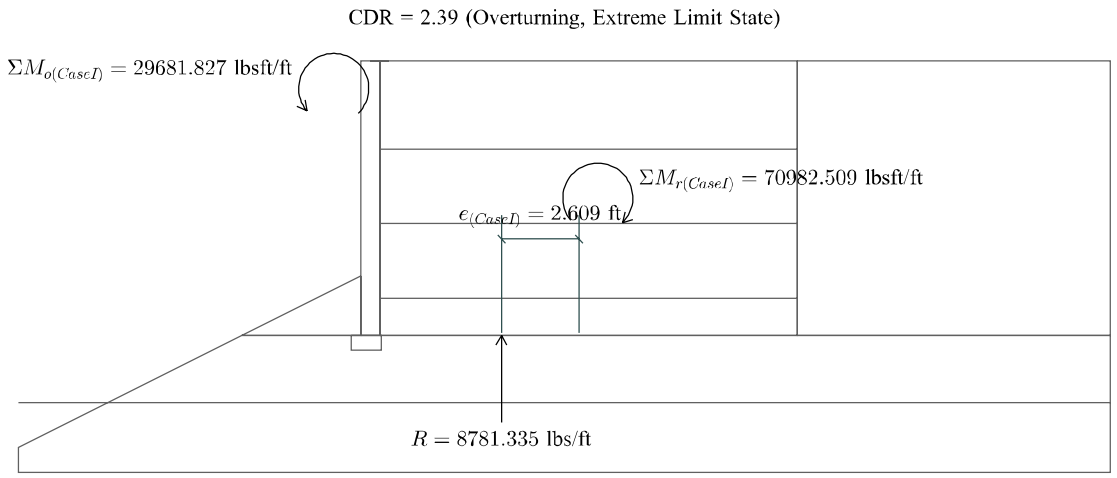
$$e_{(CaseII)} = \frac{B}{2} - \frac{\Sigma M'_r - \Sigma M_{o(CaseII)}}{\Sigma N'}$$
$$\rightarrow e_{(CaseII)} = \frac{(14.625 \text{ ft})}{2} - \frac{(71013.759 \text{ lbsft/ft}) - (29681.827 \text{ lbsft/ft})}{(8831.335 \text{ lbs/ft})}$$
$$\rightarrow e_{(CaseII)} = 2.632 \text{ ft}$$

(Fig. 11.6.3.2)

$$e_{(CaseII)} \leq \left(\frac{1}{3} + \frac{\gamma_{EQ}}{15}\right) B \rightarrow PASS$$

(Article 11.6.5.1)

## 4.5. Overturning




Compute CDR for external overturning.

$CDR_{overturning} = \Sigma M_r' / \Sigma M_{o(CaseI)}$

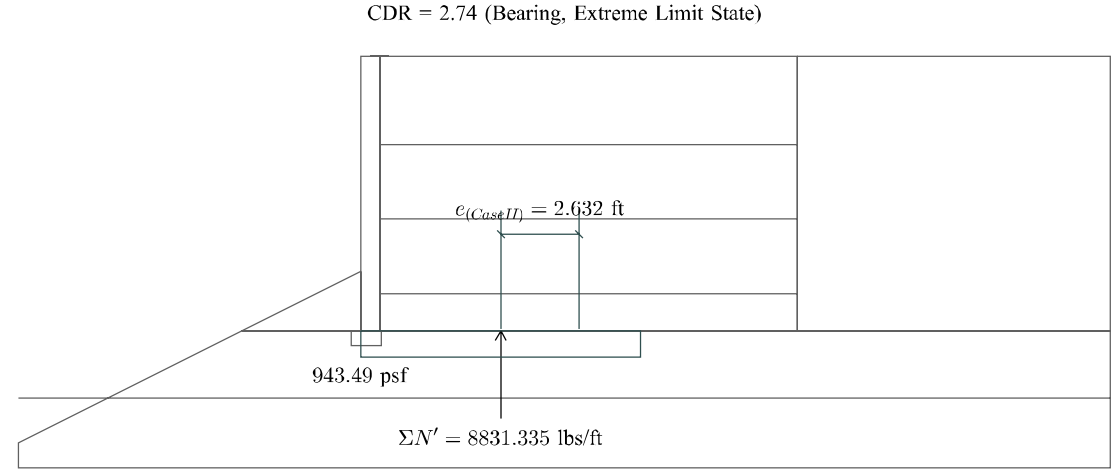
$\rightarrow CDR_{overturning} = (70982.509 \text{ lbsft/ft}) / (29681.827 \text{ lbsft/ft})$

$\rightarrow CDR_{overturning} = 2.39$

(Article C11.6.3.3)

$CDR_{overturning} > 1 \rightarrow PASS$

## 4.6. Bearing




Calculate the effective bearing width.

$B' = B - 2e_{(CaseII)}$

$\rightarrow B' = (14.625 \text{ ft}) - 2(2.632 \text{ ft})$

$\rightarrow B' = 9.36 \text{ ft}$

(Article C11.10.5.4)

Calculate uniform vertical bearing stress.

$$\sigma'_n = \frac{\Sigma N'}{B'}$$
$$\rightarrow \sigma'_n = \frac{(8831.335 \text{ lbs/ft})}{(9.36 \text{ ft})}$$
$$\rightarrow \sigma'_n = 943.49 \text{ psf}$$

(Fig. 11.6.3.2)

Calculate the Nq coefficient for foundation soil (Reissner 1924 method).

$$N_q = \exp(\pi + \tan(\phi_{fnd}))\tan^2(\pi/4 + \phi_{fnd}/2)$$
$$\rightarrow N_q = \exp(\pi + \tan((0^\circ)))\tan^2(\pi/4 + (0^\circ)/2)$$
$$\rightarrow N_q = 1$$

Calculate the Nc coefficient for foundation soil (Prandtl 1921 method).

$$N_c = (N_q - 1)\cot(\phi_{fnd})$$
$$\rightarrow N_c = ((1) - 1)\cot((0^\circ))$$
$$\rightarrow N_c = 5.142$$

Calculate the Ngamma coefficient for foundation soil (Vesic 1975 method).

$$N_\gamma = 2(N_q + 1)\tan(\phi_{fnd})$$
$$\rightarrow N_\gamma = 2((1) + 1)\tan((0^\circ))$$
$$\rightarrow N_\gamma = 0$$

Determine Nqm.

$$N_{qm} = N_q$$
$$\rightarrow N_{qm} = 1$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-3)

Determine Ncm.

$$N_{cm} = N_c$$
$$\rightarrow N_{cm} = 5.142$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-2)

Determine Ngamma,m.

$$N_{\gamma m} = N_\gamma$$
$$\rightarrow N_{\gamma m} = 0$$

* For continuous walls, s and i are equal to 1

(Eq. 10.6.3.1.2a-4)

$$\gamma_q = 120 \text{ lbs/ft}^3$$

(Eq. 10.6.3.1.2a-1)

$$\gamma_f = 120 \text{ lbs/ft}^3$$

(Eq. 10.6.3.1.2a-1)

$$C_{wq} = 1$$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

$C_{w\gamma} = 1$

(Eq. 10.6.3.1.2a-1)
(Table 10.6.3.1.2a-2)

Calculate nominal bearing resistance.

$q_n = c_{fnd} N_{cm} + \gamma_q D'_f N_{qm} C_{wq} + 0.5 \gamma_f B' N_{\gamma m} C_{w\gamma}$
$\rightarrow q_n = (500 \text{ psf})(5.142) + (120 \text{ lbs/ft}^3)(2.5 \text{ ft})(1)(1) + 0.5(120 \text{ lbs/ft}^3)(9.36 \text{ ft})(0)(1)$
$\rightarrow q_n = 2870.797 \text{ psf}$

(Fig. 10.6.3.1.2a-1)

Factor the bearing resistance.

$q_R = q_n \phi_b$
$\rightarrow q_R = (2870.797 \text{ psf})(0.9)$
$\rightarrow q_R = 2583.717 \text{ psf}$

(Fig. 10.6.3.1.1-1)

Compute CDR for bearing.

$CDR_{bearing} = q_R / \sigma'_n$
$\rightarrow CDR_{bearing} = (2583.717 \text{ psf}) / (943.49 \text{ psf})$
$\rightarrow CDR_{bearing} = 2.74$

(Article 10.6.3.1)

$CDR_{bearing} > 1 \rightarrow PASS$

## 4.7. Reinforcement precalculations

### 4.7.1. Reinforcement data (layer 1)

$Z = 7.95 \text{ ft}$

(Fig. 11.10.6.2.1a-1)

$F^* = 1.483$

(Eq. 11.10.6.3.2-1)

$S_v = 2.5 \text{ ft}$

(Fig. 11.10.6.2.1b-1)

$S_v \leq (2.7 \text{ ft}) \rightarrow PASS$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$k_r = (1.0) k_{abh}$
$\rightarrow k_r = (1.0)(0.271)$
$\rightarrow k_r = 0.271$

(Fig. B11.2-1)

### 3.7.2. Pullout length (layer 1)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan\left(\Psi_{int}\right)}$$
$$\rightarrow L_a = \frac{(9.2\text{ ft}) - (7.95\text{ ft})}{\tan\left((62.5°)\right)}$$
$$\rightarrow L_a = 0.651\text{ ft}$$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$$L_e = L' - L_a$$
$$\rightarrow L_e = (14\text{ ft}) - (0.651\text{ ft})$$
$$\rightarrow L_e = 13.349\text{ ft}$$

(Fig. 11.10.6.3.1-1)

$$L_e \geq (3\text{ ft}) \rightarrow PASS$$

(Article 11.10.6.3.2)

### 4.7.3. Reinforcement data (layer 2)

$$Z = 5.45\text{ ft}$$

(Fig. 11.10.6.2.1a-1)

$$F^* = 1.646$$

(Eq. 11.10.6.3.2-1)

$$S_v = 2.5\text{ ft}$$

(Fig. 11.10.6.2.1b-1)

$$S_v \leq (2.7\text{ ft}) \rightarrow PASS$$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$$k_r = (1.0)k_{abh}$$
$$\rightarrow k_r = (1.0)(0.271)$$
$$\rightarrow k_r = 0.271$$

(Fig. B11.2-1)

### 4.7.4. Pullout length (layer 2)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan\left(\Psi_{int}\right)}$$
$$\rightarrow L_a = \frac{(9.2\text{ ft}) - (5.45\text{ ft})}{\tan\left((62.5°)\right)}$$
$$\rightarrow L_a = 1.952\text{ ft}$$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$$L_e = L' - L_a$$
$$\rightarrow L_e = (14\text{ ft}) - (1.952\text{ ft})$$
$$\rightarrow L_e = 12.048\text{ ft}$$

(Fig. 11.10.6.3.1-1)

$$L_e \geq (3\text{ ft}) \rightarrow PASS$$

(Article 11.10.6.3.2)

### 4.7.5. Reinforcement data (layer 3)

$Z = 2.95 \text{ ft}$

(Fig. 11.10.6.2.1a-1)

$F^* = 1.808$

(Eq. 11.10.6.3.2-1)

$S_v = 4.2 \text{ ft}$

(Fig. 11.10.6.2.1b-1)

$S_v \leq (2.7 \text{ ft}) \rightarrow FAIL$

(Fig. 11.10.6.2.1-b)

Determine the value of Kr (simplified method).

$k_r = (1.0)k_{abh}$
$\rightarrow k_r = (1.0)(0.271)$
$\rightarrow k_r = 0.271$

(Fig. B11.2-1)

### 4.7.6. Pullout length (layer 3)

Determine length of active zone in reinforcement layer.

$$L_a = \frac{H - Z}{\tan(\Psi_{int})}$$
$$\rightarrow L_a = \frac{(9.2 \text{ ft}) - (2.95 \text{ ft})}{\tan((62.5°))}$$
$\rightarrow L_a = 3.254 \text{ ft}$

(Fig. 11.10.6.3.1-1)

Determine length of resistant zone in reinforcement layer.

$L_e = L' - L_a$
$\rightarrow L_e = (14 \text{ ft}) - (3.254 \text{ ft})$
$\rightarrow L_e = 10.746 \text{ ft}$

(Fig. 11.10.6.3.1-1)

$L_e \geq (3 \text{ ft}) \rightarrow PASS$

(Article 11.10.6.3.2)

### 4.7.7. Seismic inertia

$\Sigma L_a S_v = 20.172 \text{ ft}^2$

(Fig. 11.10.7.2-1)

Compute the weight of the internal active zone.

$W_a = A_f \gamma_{fill} + \Sigma L_a S_v \gamma_r$
$\rightarrow W_a = (0 \text{ ft}^2)(125 \text{ lbs/ft}^3) + (20.172 \text{ ft}^2)(50 \text{ lbs/ft}^3)$
$\rightarrow W_a = 1008.599 \text{ lbs/ft}$

(Fig. 11.10.7.2-1)

Calculate the internal seismic inertial force.

$P_i = k_h W_a$
$\rightarrow P_i = (0.43)(1008.599 \text{ lbs/ft})$
$\rightarrow P_i = 433.697 \text{ lbs/ft}$

(Fig. 11.10.7.2-1)

$\Sigma L_{ci} = 36.144 \text{ ft}$

(Eq. 11.10.7.2-1)

## 4.8. Tensile forces

### 4.8.1. Tmax (layer 1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$D_1(Z) = \frac{b_f + Z}{2} + d$
$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (7.95 \text{ ft})}{2} + (0 \text{ ft})$
$\rightarrow D_1(Z) = 4.288 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$
$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50 \text{ lbs/ft})/(4.288 \text{ ft})$
$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 11.662 \text{ psf}$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$
$\rightarrow \Sigma\Delta\sigma_{V,LS} = 11.662 \text{ psf}$

(Eq. 11.10.10.1)

$I_1 = 0 \text{ ft}$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$\Delta\sigma_{H,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$

$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50 \text{ lbs/ft})/(0 \text{ ft})$

$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity \text{ psf}$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$

$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$

$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$

(Eq. 3.11.6.3-2)

$I_1 = 0 \text{ ft}$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$\Delta\sigma_{H,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$

$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200 \text{ lbs})/(357 \text{ ft})\Big)/(0 \text{ ft})$

$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$I_1 = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$

$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$

$\rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0 \text{ psf}$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{H,P'_{hLS,1}}(Z)$

$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0 \text{ psf}) + (0 \text{ psf})$

$\rightarrow \Sigma\Delta\sigma_{H,LS} = 0 \text{ psf}$

(Eq. 11.10.10.1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$D_1(Z) = \dfrac{b_f + Z}{2} + d$

$\rightarrow D_1(Z) = \dfrac{(0.625 \text{ ft}) + (7.95 \text{ ft})}{2} + (0 \text{ ft})$

$\rightarrow D_1(Z) = 4.288 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$

$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50 \text{ lbs/ft})/(4.288 \text{ ft})$

$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 11.662 \text{ psf}$

(Eq. 3.11.6.3-1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (7.95 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 4.288 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{(200 \text{ lbs})}{(4.288 \text{ ft})\Big((0.625 \text{ ft}) + (7.95 \text{ ft}) - (0 \text{ ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = 5.44 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,ES} = \Delta\sigma_{V,P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (11.662 \text{ psf}) + (5.44 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 17.102 \text{ psf}$$

(Eq. 11.10.10.1)

Calculate the incremental dynamic inertia force.

$$T_{md} = P_i/n$$
$$\rightarrow T_{md} = (433.697 \text{ lbs/ft})/(3)$$
$$\rightarrow T_{md} = 144.566 \text{ lbs/ft}$$

(Eq. 11.10.7.2-1)

Compute vertical stress from reinforced soil.

$$\sigma_1 = \gamma_r Z$$
$$\rightarrow \sigma_1 = (50 \text{ lbs/ft}^3)(7.95 \text{ ft})$$
$$\rightarrow \sigma_1 = 397.5 \text{ psf}$$

(Fig. 11.10.6.2.1a-1)

$\sigma_{1-po} = 397.5 \text{ psf}$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$
$$\rightarrow \sigma_2 = (0 \text{ ft})(125 \text{ lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0 \text{ psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma_n = \sigma_1 + \sigma_2$$
$$\rightarrow \sigma_n = (397.5 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \sigma_n = 397.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtens} = S_v(k_r\sigma_n)$$
$$\rightarrow T_{maxtens} = (2.5 \text{ ft})\Big((0.271)(397.5 \text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 269.296 \text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxpo} = T_{maxtens}$$
$$\rightarrow T_{maxpo} = 269.296 \text{ lbs/ft}$$

(Article 11.10.6.2.1)

### 4.8.2. Tmax (layer 2)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (5.45 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 3.038 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50 \text{ lbs/ft})/(3.038 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 16.461 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,LS} = 16.461 \text{ psf}$$

(Eq. 11.10.10.1)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50 \text{ lbs/ft})/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$

$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$

$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$

(Eq. 3.11.6.3-2)

$I_1 = 0 \text{ ft}$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$\Delta\sigma_{H,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$

$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200 \text{ lbs})/(357 \text{ ft})\Big)/(0 \text{ ft})$

$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$I_1 = 0 \rightarrow \Delta\sigma_{II,P'_{hLS,1}}(Z) = 0$

$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$

$\rightarrow \Delta\sigma_{II,P'_{hLS,1}}(Z) = 0 \text{ psf}$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{II,P'_{hLS,1}}(Z)$

$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0 \text{ psf}) + (0 \text{ psf})$

$\rightarrow \Sigma\Delta\sigma_{H,LS} = 0 \text{ psf}$

(Eq. 11.10.10.1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$D_1(Z) = \dfrac{b_f + Z}{2} + d$

$\rightarrow D_1(Z) = \dfrac{(0.625 \text{ ft}) + (5.45 \text{ ft})}{2} + (0 \text{ ft})$

$\rightarrow D_1(Z) = 3.038 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$

$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50 \text{ lbs/ft})/(3.038 \text{ ft})$

$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 16.461 \text{ psf}$

(Eq. 3.11.6.3-1)

$z_2 = 0 \text{ ft}$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\ \text{ft}) + (5.45\ \text{ft})}{2} + (0\ \text{ft})$$
$$\rightarrow D_1(Z) = 3.038\ \text{ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = \frac{(200\ \text{lbs})}{(3.038\ \text{ft})\Big((0.625\ \text{ft}) + (5.45\ \text{ft}) - (0\ \text{ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V,P'_{vES,1}}(Z) = 10.838\ \text{psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,ES} = \Delta\sigma_{V,P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (16.461\ \text{psf}) + (10.838\ \text{psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 27.299\ \text{psf}$$

(Eq. 11.10.10.1)

Calculate the incremental dynamic inertia force.

$$T_{md} = P_i/n$$
$$\rightarrow T_{md} = (433.697\ \text{lbs/ft})/(3)$$
$$\rightarrow T_{md} = 144.566\ \text{lbs/ft}$$

(Eq. 11.10.7.2-1)

Compute vertical stress from reinforced soil.

$$\sigma_1 = \gamma_r Z$$
$$\rightarrow \sigma_1 = (50\ \text{lbs/ft}^3)(5.45\ \text{ft})$$
$$\rightarrow \sigma_1 = 272.5\ \text{psf}$$

(Fig. 11.10.6.2.1a-1)

$$\sigma_{1-po} = 272.5\ \text{psf}$$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$
$$\rightarrow \sigma_2 = (0\ \text{ft})(125\ \text{lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0\ \text{psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma_n = \sigma_1 + \sigma_2$$
$$\rightarrow \sigma_n = (272.5 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \sigma_n = 272.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtens} = S_v(k_r \sigma_n)$$
$$\rightarrow T_{maxtens} = (2.5 \text{ ft})\Big((0.271)(272.5 \text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 184.612 \text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxpo} = T_{maxtens}$$
$$\rightarrow T_{maxpo} = 184.612 \text{ lbs/ft}$$

(Article 11.10.6.2.1)

### 4.8.3. Tmax (layer 3)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (2.95 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 1.788 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (live) surcharge.

$$\Delta\sigma_{V,P_{vLS,1}}(Z) = P_{vLS,1}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = (50 \text{ lbs/ft})/(1.788 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vLS,1}}(Z) = 27.972 \text{ psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V,LS} = \Delta\sigma_{V,P_{vLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,LS} = 27.972 \text{ psf}$$

(Eq. 11.10.10.1)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{H,max,P_{hLS,1}} = 2P_{hLS,1}/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P_{hLS,1}} = 2(50 \text{ lbs/ft})/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{II,max,P_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

$$I_1 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1(a))

Calculate maximum horizontal stress from (live) surcharge.

$$\Delta\sigma_{II,max,P'_{hLS,1}} = 2\left(P'_{hLS,1}/L_f\right)/I_1$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = 2\Big((200 \text{ lbs})/(357 \text{ ft})\Big)/(0 \text{ ft})$$
$$\rightarrow \Delta\sigma_{H,max,P'_{hLS,1}} = Infinity \text{ psf}$$

(Eq. 3.11.6.3-2)

Calculate horizontal stress increment from live surcharge surcharge.

$$I_1 = 0 \rightarrow \Delta\sigma_{II,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow (0 \text{ ft}) = 0 \rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0$$
$$\rightarrow \Delta\sigma_{H,P'_{hLS,1}}(Z) = 0 \text{ psf}$$

(Eq. 3.11.6.3-2)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{H,LS} = \Delta\sigma_{H,P_{hLS,1}}(Z) + \Delta\sigma_{II,P'_{hLS,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = (0 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \Sigma\Delta\sigma_{H,LS} = 0 \text{ psf}$$

(Eq. 11.10.10.1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625 \text{ ft}) + (2.95 \text{ ft})}{2} + (0 \text{ ft})$$
$$\rightarrow D_1(Z) = 1.788 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V,P_{vES,2}}(Z) = P_{vES,2}/D_1(Z)$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = (50 \text{ lbs/ft})/(1.788 \text{ ft})$$
$$\rightarrow \Delta\sigma_{V,P_{vES,2}}(Z) = 27.972 \text{ psf}$$

(Eq. 3.11.6.3-1)

$$z_2 = 0 \text{ ft}$$

(Fig. 3.11.6.3-1)

Calculate the effective width of applied load at analysis depth below ground.

$$D_1(Z) = \frac{b_f + Z}{2} + d$$
$$\rightarrow D_1(Z) = \frac{(0.625\ \text{ft}) + (2.95\ \text{ft})}{2} + (0\ \text{ft})$$
$$\rightarrow D_1(Z) = 1.788\ \text{ft}$$

(Fig. 3.11.6.3-1)

Calculate vertical stress increment from (earth) surcharge.

$$\Delta\sigma_{V;P'_{vES,1}}(Z) = \frac{P'_{vES,1}}{D_1(Z)(L_f + Z - z_P)}$$
$$\rightarrow \Delta\sigma_{V;P'_{vES,1}}(Z) = \frac{(200\ \text{lbs})}{(1.788\ \text{ft})\Big((0.625\ \text{ft}) + (2.95\ \text{ft}) - (0\ \text{ft})\Big)}$$
$$\rightarrow \Delta\sigma_{V;P'_{vES,1}}(Z) = 31.297\ \text{psf}$$

(Eq. 3.11.6.3-1)

Sum up incremental stresses.

$$\Sigma\Delta\sigma_{V;ES} = \Delta\sigma_{V;P_{vES,2}}(Z) + \Delta\sigma_{V,P'_{vES,1}}(Z)$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = (27.972\ \text{psf}) + (31.297\ \text{psf})$$
$$\rightarrow \Sigma\Delta\sigma_{V,ES} = 59.269\ \text{psf}$$

(Eq. 11.10.10.1)

Calculate the incremental dynamic inertia force.

$$T_{md} = P_i/n$$
$$\rightarrow T_{md} = (433.697\ \text{lbs/ft})/(3)$$
$$\rightarrow T_{md} = 144.566\ \text{lbs/ft}$$

(Eq. 11.10.7.2-1)

Compute vertical stress from reinforced soil.

$$\sigma_1 = \gamma_r Z$$
$$\rightarrow \sigma_1 = (50\ \text{lbs/ft}^3)(2.95\ \text{ft})$$
$$\rightarrow \sigma_1 = 147.5\ \text{psf}$$

(Fig. 11.10.6.2.1a-1)

$$\sigma_{1-po} = 147.5\ \text{psf}$$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (for entire region above reinforced zone).

$$\sigma_2 = S_{0.7H}\gamma_{fill}$$
$$\rightarrow \sigma_2 = (0\ \text{ft})(125\ \text{lbs/ft}^3)$$
$$\rightarrow \sigma_2 = 0\ \text{psf}$$

(Eq. 11.10.6.2.1a-1)

Calculate vertical stress on reinforcement.

$$\sigma_n = \sigma_1 + \sigma_2$$
$$\rightarrow \sigma_n = (147.5\ \text{psf}) + (0\ \text{psf})$$
$$\rightarrow \sigma_n = 147.5\ \text{psf}$$

(Fig. 11.10.6.3.2-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxtens} = S_v(k_r\sigma_n)$$
$$\rightarrow T_{maxtens} = (4.2\text{ ft})\Big((0.271)(147.5\text{ psf})\Big)$$
$$\rightarrow T_{maxtens} = 167.878\text{ lbs/ft}$$

(Eq. 11.10.6.2.1d-1)

Compute the maximum tensile force in reinforcement.

$$T_{maxpo} = T_{maxtens}$$
$$\rightarrow T_{maxpo} = 167.878\text{ lbs/ft}$$

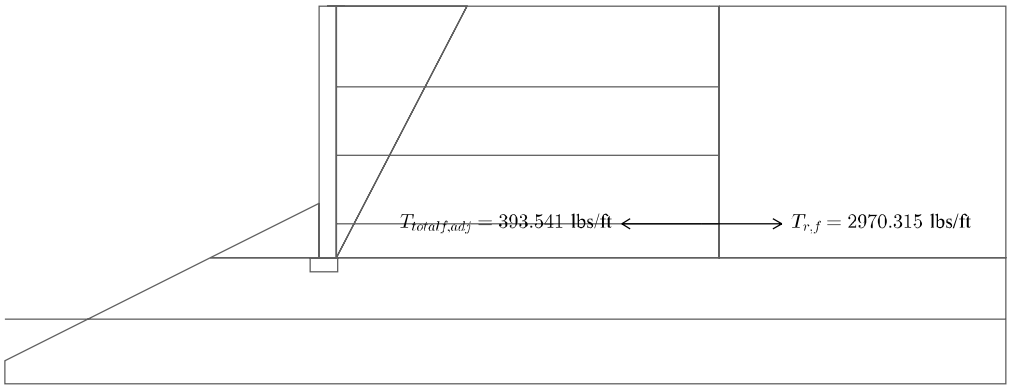
(Article 11.10.6.2.1)

## 4.9. Tensile strength

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 4.9.1. Tensile strength (layer 1)

CDR = 7.55 (Tensile strength, Layer 1, Extreme Limit State)




Determine total factored tension force in reinforcement.

$$T_{totalf,adj} = \gamma_{p-EV} T_{maxtens} + \gamma_{seis} T_{md} / RF_{CR} + \gamma_{EQ} S_v (k_r \Sigma \Delta\sigma_{V,LS} + \Sigma \Delta\sigma_{H,LS}) + \gamma_{EQ} S_v (k_r \Sigma \Delta\sigma_{V,ES} + \Sigma \Delta\sigma_{H,ES})$$
$$\rightarrow T_{totalf,adj} = (1)(269.296 \text{ lbs/ft}) + (1)(144.566 \text{ lbs/ft})/(1.38) + (1)(2.5 \text{ ft})\Big((0.271)(11.662 \text{ psf}) + (0 \text{ psf})\Big) + (1)(2.5 \text{ ft})\Big((0.271)(17.102 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{totalf,adj} = 393.541 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate factored tensile strength.

$$T_{r,f} = \phi_t R_c T_{al}$$
$$\rightarrow T_{r,f} = (1.2)(0.332)(7455.61 \text{ lbs/ft})$$
$$\rightarrow T_{r,f} = 2970.315 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)

$$T_{al} = 7455.61 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-1)

$$\phi_t = 1.2$$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$$R_c = 0.332$$

(Article 11.10.6.4.1)

Compute CDR for tensile strength.

$$CDR_{tensile} = \frac{\phi_t T_{al} R_c}{T_{totalf,adj}}$$
$$\rightarrow CDR_{tensile} = \frac{(1.2)(7455.61 \text{ lbs/ft})(0.332)}{(393.541 \text{ lbs/ft})}$$
$$\rightarrow CDR_{tensile} = 7.55$$

(Eq. 11.10.6.4.1-2)

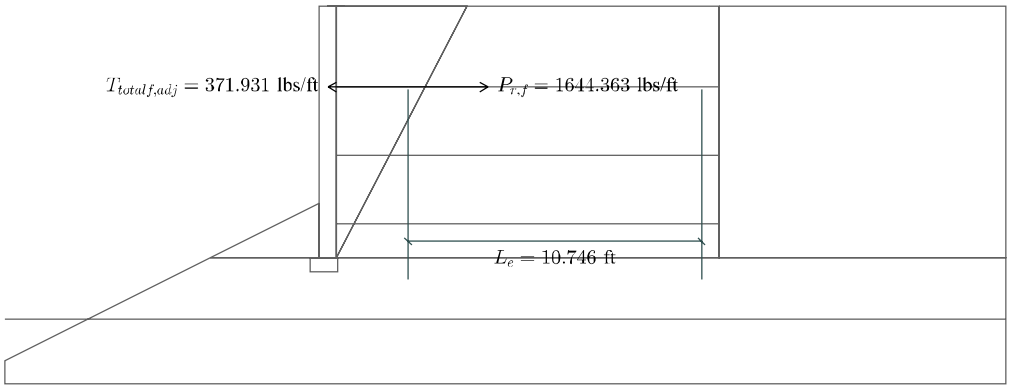
$$CDR_{tensile} > 1 \rightarrow PASS$$

## 4.10. Pullout

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 4.10.1. Pullout (layer 3)

CDR = 4.42 (Pullout, Layer 3, Extreme Limit State)




Compute vertical stress from reinforced soil.

$$\sigma_{1-po} = \gamma_r Z$$
$$\rightarrow \sigma_{1-po} = (50 \text{ lbs/ft}^3)(2.95 \text{ ft})$$
$$\rightarrow \sigma_{1-po} = 147.5 \text{ psf}$$

(Fig. 11.10.6.2.1a-1)

$$Z_p = 2.95 \text{ ft}$$

(Fig. 11.10.6.3.2-1)

Compute vertical stress from soil surcharge (above pullout region only).

$$\sigma_{2-po} = \gamma_r (Z_p - Z)$$
$$\rightarrow \sigma_{2-po} = (50 \text{ lbs/ft}^3)\Big((2.95 \text{ ft}) - (2.95 \text{ ft})\Big)$$
$$\rightarrow \sigma_{2-po} = 0 \text{ psf}$$

(Eq. 11.10.6.3.2-1)

Calculate vertical stress on reinforcement.

$$\sigma_{n-po} = \sigma_{1-po} + \sigma_{2-po}$$
$$\rightarrow \sigma_{n-po} = (147.5 \text{ psf}) + (0 \text{ psf})$$
$$\rightarrow \sigma_{n-po} = 147.5 \text{ psf}$$

(Fig. 11.10.6.3.2-1)

Determine total factored tension force in reinforcement.

$$T_{totalf,adj} = \gamma_{p-EV} T_{max,po} + \gamma_{seis} T_{ml}/RF_{CR} + \gamma_{EQ} S_v (k_r \Sigma\Delta\sigma_{V,LS} + \Sigma\Delta\sigma_{H,LS}) + \gamma_{EQ} S_v (k_r \Sigma\Delta\sigma_{V,ES} + \Sigma\Delta\sigma_{H,ES})$$
$$\rightarrow T_{totalf,adj} = (1)(167.878 \text{ lbs/ft}) + (1)(144.566 \text{ lbs/ft})/(1.38) + (1)(4.2 \text{ ft})\Big((0.271)(27.972 \text{ psf}) + (0 \text{ psf})\Big) + (1)(4.2 \text{ ft})\Big((0.271)(59.269 \text{ psf}) + (0 \text{ psf})\Big)$$
$$\rightarrow T_{totalf,adj} = 371.931 \text{ lbs/ft}$$

(Eq. 11.10.10.1-1)

Calculate the pullout resistance.

$$P_r = 0.8 F^* \alpha \sigma_{n-po} C R_c L_e$$
$$\rightarrow P_r = 0.8(1.808)(0.9)(147.5 \text{ psf})(2)(0.332)(10.746 \text{ ft})$$
$$\rightarrow P_r = 1370.302 \text{ lbs/ft}$$

(Eq. 11.10.7.2-7)

Calculate the factored pullout resistance.

$$P_{r,f} = \phi_p P_r$$
$$\rightarrow P_{r,f} = (1.2)(1370.302 \text{ lbs/ft})$$
$$\rightarrow P_{r,f} = 1644.363 \text{ lbs/ft}$$

(Eq. 11.10.7.2-7)

Determine required length of reinforcement outside active zone.

$$L_{e,req} = \frac{T_{totalf,adj}}{\phi_p (0.8) F^* \alpha \sigma_{n-po} C R_c}$$
$$\rightarrow L_{e,req} = \frac{(371.931 \text{ lbs/ft})}{(1.2)(0.8)(1.808)(0.9)(147.5 \text{ psf})(2)(0.332)}$$
$$\rightarrow L_{e,req} = 2.431 \text{ ft}$$

(Eq. 11.10.7.2-7)

Compute CDR for pullout.

$$CDR_{pullout} = L_e / L_{e,req}$$
$$\rightarrow CDR_{pullout} = (10.746 \text{ ft})/(2.431 \text{ ft})$$
$$\rightarrow CDR_{pullout} = 4.42$$

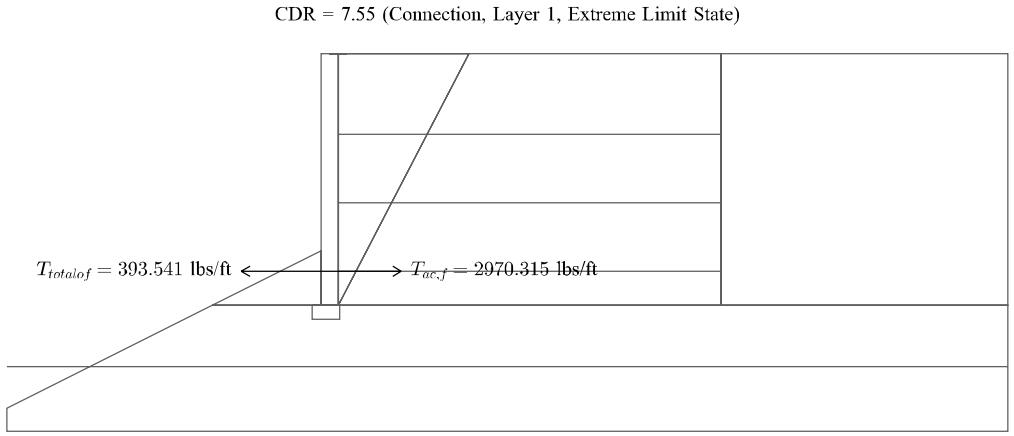
(Eq. 11.10.6.3.2-1)

$$CDR_{pullout} > 1 \rightarrow PASS$$

## 4.11. Connection

Note: Displaying result for critical layer only. See the summary section for a table of results for all layers, or enable display of all layers in the Display Options.

### 4.11.1. Connection (layer 1)




Determine connection force.

$$T_o = T_{maxtens}$$
$$\rightarrow T_o = 269.296 \text{ lbs/ft}$$

(Eq. 11.10.6.2.2)

Determine total factored connection force for reinforcement.

$$T_{totalof} = T_{totalf,adj}$$
$$\rightarrow T_{totalof} = 393.541 \text{ lbs/ft}$$

(Eq. 11.10.10.1-2)

Connection strength is limited by tensile strength.

$$T_{ac} = \min(T_{ac}, T_{al})$$
$$\rightarrow T_{ac} = \min\Big(T_{ac}, (7455.61 \text{ lbs/ft})\Big)$$
$$\rightarrow T_{ac} = 7455.61 \text{ lbs/ft}$$

$$T_{ac} = 35073 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)

$$\phi_l = 1.2$$

(Table 11.5.7-1)
(Article 11.5.8)
(Article B11.2)

$$R_c = 0.332$$

(Article 11.10.6.4.1)

Compute the factored connection strength.

$$T_{ac,f} = \phi_t T_{ac} R_c$$
$$\rightarrow T_{ac,f} = (1.2)(7455.61 \text{ lbs/ft})(0.332)$$
$$\rightarrow T_{ac,f} = 2970.315 \text{ lbs/ft}$$

(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

Compute CDR for connection strength.

$$CDR_{conn} = \frac{T_{ac,f}}{T_{totalof}}$$
$$\rightarrow CDR_{conn} = \frac{(2970.315 \text{ lbs/ft})}{(393.541 \text{ lbs/ft})}$$
$$\rightarrow CDR_{conn} = 7.55$$

(Eq. 11.10.6.4.1-2)
(Article 11.10.7.3)

$$CDR_{conn} > 1 \rightarrow PASS$$

# 7 Abutment Calculations (Pending)

# 8 Misc Calculations (Pending)