

STATE OF CALIFORNIA
SAN FRANCISCO BAY CONSERVATION
AND DEVELOPMENT COMMISSION
ENGINEERING CRITERIA REVIEW BOARD

ENGINEERING CRITERIA REVIEW BOARD MEETING

MILTON MARKS CONFERENCE CENTER
MONTEREY ROOM
455 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA

THURSDAY, MAY 28, 2015

1:00 P.M.

Reported by: John Cota

A P P E A R A N C E SBoard Members

Dr. Roger Borchardt, Chair

Bob Battalio

Mary C. Comerio

Martin Fischer

Jim French

William T. Holmes

Frank L. Rollo

BCDC Staff

Bob Batha, Chief of Permits

John Bowers, Staff Counsel

Brad McCrea, Regulatory Program Director

Rafael Montes, Staff Engineer and Board Secretary

Ming Yeung, Permit Analyst

A P P E A R A N C E SProject Representatives

Treasure Island Development Authority
Robert Beck

Wilson Meany
Kheay Loke
James Suh

ENGE0

Uri Eliahu
Pedro Espinoza
Stefanos Papadopoulos
Josef J. Tootle

Moffatt & Nichol
Marc Percher
Brad Porter
Dilip Trivedi

Treasure Island Job Corps Center
Miles Gullingsrud

Also Present

Malcolm Johnston
Treasure Island Yacht Club

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1 Beck is the Executive Director of Treasure Island
2 Development Authority, which is basically the redevelopment
3 agency of Treasure Island, and he is the public side of the
4 public/private partnership. So co-jointly we are the
5 applicants for the entire project of Treasure Island and
6 Yerba Buena Island.

7 Behind us are all of our experts and our consultants,
8 ENGE0, Moffatt & Nichol. We also have BKF civil engineers
9 who are not here today, but they actually do all the civil
10 work as well. We have a contingent of about five landscape
11 architecture firms working on the project and a whole host
12 of other sub-consultants working on the project.

13 Bob, you have some good news coming up and I don't know
14 if you want to notify everyone, it's up to you.

15 MR. BECK: Well, it's hard for me not to say something
16 now. Robert Beck with the Treasure Island Development
17 Authority. As James said, the public side of the
18 development program here in co-op along with TICD.

19 As James indicated, we do have some good news coming
20 forth. We expect tomorrow that we will close on the first
21 land transfer from the Navy to the City, which will include
22 the northern half of Yerba Buena Island and roughly 50
23 percent of the area of Treasure Island. So with that
24 transfer and the additional engineering work that TICD has
25 been doing we expect to begin mobilizing some of the

1 demolition and hopefully be able to start construction on
2 the infrastructure over the next year.

3 ECRB CHAIR BORCHERDT: Thank you very much for the
4 introductions with respect to Treasure Island Development
5 Authority and Treasure Island Community Development Group.
6 It is definitely appropriate and appreciated but as long as
7 we are on introductions perhaps we could go ahead and just
8 introduce other members. Since this is a public meeting we
9 need to introduce other members of the audience. So I would
10 like to have the consultants for the applicant, ENGEO and
11 Moffatt & Nichol, introduce themselves.

12 MR. TOOTLE: I can start. My name is Joe Tootle, I'm a
13 Principal, geotechnical engineer with ENGEO.

14 MR. PORTER: I'm Brad Porter with Moffatt & Nichol.

15 MR. ESPINOZA: Pedro Espinoza, geotechnical engineer
16 with ENGEO.

17 MR. PERCHER: I'm Marc Percher with Moffatt & Nichol
18 and I'm a project engineer as well.

19 MR. TRIVEDI: And I'm Dilip Trivedi, also with Moffatt
20 & Nichol, coastal engineer.

21 MR. GULLINGSRUD: I'm Miles Gullingsrud, I am the
22 Finance and Administration Director of the Treasure Island
23 Job Corps Center and it is the gray area in the middle of
24 the map there.

25 ECRB CHAIR BORCHERDT: And we will need to have

1 introductions of the other members in the audience for the
2 public record.

3 MR. JOHNSTON: Malcolm Johnston, Treasure Island Yacht
4 Club.

5 MR. BOWERS: I'm John Bowers, Staff Counsel, BCDC.

6 MS. YEUNG: Ming Yeung, Permit Analyst for BCDC.

7 ECRB CHAIR BORCHERDT: Okay, thank you. And we have a
8 court reporter?

9 THE REPORTER: Yes. My name is John Cota; I am the
10 court reporter for the day.

11 ECRB CHAIR BORCHERDT: And you have been, it has been
12 requested by the applicant that you serve as the court
13 reporter?

14 THE REPORTER: Yes.

15 ECRB CHAIR BORCHERDT: To serve as the reporter for the
16 meeting?

17 THE REPORTER: Yes, correct.

18 ECRB CHAIR BORCHERDT: Okay.

19 ECRB CHAIR BORCHERDT: In that case I would like to
20 call the meeting to order.

21 The first item on the agenda has to do with approval of
22 the draft minutes of the last ECRB meeting concerning the
23 Brooklyn Basin project and the MOTCO tunnel.

24 To bring the motion onto the floor I would like to ask
25 for a motion to approve and a second.

1 ECRB MEMBER HOLMES: Motion to approve.

2 ECRB MEMBER FRENCH: Second.

3 ECRB CHAIR BORCHERDT: Discussion?

4 Any suggestions or comments from the Board regarding
5 the previous minutes?

6 ECRB MEMBER FRENCH: I think that Rafael did an
7 excellent job capturing all the comments that were made
8 during the meeting.

9 ECRB CHAIR BORCHERDT: Any additional comments? If not
10 we'll call the vote. All in favor say aye.

11 (Ayes.)

12 ECRB CHAIR BORCHERDT: Any opposed?

13 The motion passes with a unanimous vote.

14 Rafael has kind of mentioned that this is the second
15 ECRB review meeting of the engineering criteria review for
16 the Treasure Island Development Project. We had a previous
17 meeting on January 22nd, 2015 and that one was concerned
18 with the criteria for Sub-phase 1A, for the Sub-phase 1A
19 part of the project. And the design plans at that stage in
20 some cases were at a conceptual stage and others they were
21 at a design stage; less or near 35 percent was kind of the
22 number we picked in discussion.

23 This meeting today is to be concerned with the newly
24 defined sub-phases 1B, 1C and 1E. And these, as I
25 understand, are primarily within the earlier Sub-phase 1A

1 project area.

2 Since the meeting there were comments provided by the
3 ECRB that were responded to by the applicant and there were
4 then responses by the ECRB and these responses and
5 communications are all in the public record.

6 And also since that time new materials have been
7 provided by the applicants and these include the ENGEO
8 response to the ECRB review comments, the draft design
9 geotechnical report, additional sub-service exploration
10 package and then Moffatt & Nichol pier progress design
11 materials. There is also material concerning the sea level
12 risk and adaptive management plan.

13 In addition to these new materials that we will be
14 hearing about today in the presentation, the Executive
15 Director for BCDC has provided the ECRB with a summary of
16 information provided by the applicants and questions for
17 Board consideration and review of the engineering criteria
18 for Sub-phases 1B, 1C and 1E.

19 So as we proceed today with our review we will want to
20 keep these questions in mind.

21 Turning to the presentation, the applicant
22 presentation. As I mentioned, we have new material provided
23 for these newly-defined sub-phases and it will be
24 information on those sub-phases that the applicant will be
25 presenting.

1 From the point of view of the overall Treasure Island
2 Development Project, the comments of the Board today will be
3 addressing only these sub-phases, 1B, 1C and 1E.

4 So with that I would like to turn it over to the
5 applicants for the presentation with respect to the new
6 material.

7 MR. TOOTLE: All right, thank you very much. I wanted
8 to thank the Chair and the Board for having us back again.
9 As was previously stated, this is a follow-up meeting to the
10 meeting we had in January. The questions, comments,
11 requests for some additional information we have provided to
12 the Board and are attempting to summarize in this
13 presentation this afternoon.

14 The dozen or so comments seemed to fall into five
15 general categories that we have listed here, the Ferry Pier,
16 Breakwaters, Perimeter Shoreline, the Causeway and then
17 Seismic Instrumentation; so that is how we formatted the
18 presentation.

19 I will, of course, start with a brief project update.
20 Since January we have continued with the design of the
21 project, so as was mentioned earlier, some of those draft
22 design documents have also been provided to the Board as
23 reference material for their review.

24 We have structured it with the intent of stopping after
25 each of these main bullets to take questions on that topic,

1 at least that was our intent, If that's okay with the Board
2 we will proceed in that manner.

3 So again, just as a summary. The Treasure Island
4 Redevelopment Project encompasses the whole of Treasure
5 Island and the north half of Yerba Buena Island.

6 For reference purposes we did include the BCDC
7 jurisdictional boundary that goes around the perimeter of
8 Treasure Island, the edge of Yerba Buena Island, and of
9 course, the entire Causeway structure that connects the two
10 is within the jurisdiction.

11 And as any project of this size certainly can't be
12 built in a day so it will be built out in phases, as was
13 mentioned previously. This generally has a breakdown of an
14 approximate estimate of what that phasing might look like.

15 So again this is a slide from the previous presentation
16 showing the phase that is currently being designed. And as
17 was mentioned earlier, the designations of the phases and
18 sub-phases have evolved a little bit with the development of
19 the project and so the names have changed a little bit but
20 this is still the area of concern that was mentioned earlier
21 in the opening of this presentation.

22 So a little bit of update. Since we were last here
23 there has been more subsurface exploration performed
24 offshore of the island, so as represented by these blue dots
25 here. The exploration was really in furtherance of the

1 design of the Ferry Pier and the South Breakwater, which the
2 South Breakwater wasn't previously part of that original
3 design scope so that was added. Brad will speak a little
4 bit to some of the design changes that happened in the
5 concept of the pier which facilitated some additional
6 exploration for that design.

7 And then since we had mobilized offshore drilling
8 equipment and were onsite, we decided to get some additional
9 offshore exploration information north of the North
10 Breakwater. And the exploration, the summary is there on
11 the side. There are six borings of CPTs and they range in
12 depth from 100 to 160 feet.

13 This figure presents the current geotechnical
14 mitigation design for the project that is under design, for
15 the Treasure Island portion of the project that is under
16 design. Also for your reference we have kind of screened
17 back the areas of the island that are inboard of BCDC's
18 jurisdiction but still showing the entire design so you can
19 see how it all ties together.

20 So just briefly to walk you through what the current
21 design approach is, all the areas in yellow that you see
22 will receive vibro-compaction of the potentially liquefiable
23 fills and natural shoals that exist on the island, as well
24 as the areas in pink here along the western shoreline and
25 Clipper Cove shoreline, those areas will receive vibro-

1 compaction as well. There is a faint cross-hatching you can
2 see in here. Those areas will not only get the vibro-
3 compaction but also receive a surcharge fill. A surcharge
4 fill will be aided with wick drains to help speed the
5 consolidation of the compressible Bay mud.

6 Getting back to the pink areas here along the south and
7 west edges. That will be a deep soil/cement mix that will
8 go through the sand and through the compressible Bay mud
9 materials along these edges. And that is really intended to
10 go in place where the development improvements encroach
11 relatively close to the shoreline.

12 On this portion of the shoreline we are at a large open
13 space setback. Stone column stabilization ground
14 improvement techniques will be installed along that area.

15 And then finally the Causeway area here. Since it is
16 really the main point of ingress and egress to the island
17 and really kind of a critical piece of infrastructure for
18 safety, it is essentially getting rebuilt. so the hatching
19 you see on here represents removal of really the entire
20 embankment that exists there today. Then improving the
21 foundation of that embankment with, again, deep soil/cement
22 mixing across pretty much the entire footprint of the
23 Causeway and then replacing the embankment fill with modern
24 engineered fills.

25 So that's kind of a summary of the current geotechnical

1 design mitigation for the setting.

2 With that, Brad will give a brief introduction to the
3 design advances that have taken place at the Ferry Pier and
4 the Breakwater.

5 MR. PORTER: Thanks, Joe. I'm Brad Porter with Moffatt
6 & Nichol.

7 The design has progressed since we met back in January
8 and we are currently at greater than 50 percent design. We
9 recently had a 50 percent submittal and I have selected a
10 few of the drawings that kind of encapsulate some of the
11 major changes, although there haven't been real major
12 changes.

13 The plan orientation is pretty much what was presented
14 before, we have the North Breakwater that is about 800 feet
15 long, the South Breakwater, and in the center there is the
16 Ferry Terminal that is the pier, the gangway and the float.
17 And these sheets were -- in the parentheses, that was the
18 Reference 3 that was in the recent submittal in your package
19 there.

20 So here one of the changes is for the slope movement.
21 The slope is going to move, the rock slope is going to move
22 during the large seismic event. So one of the things we
23 have looked at is before we were showing like five or six
24 bands of smaller diameter piles for the ferry pier. What we
25 are going to now are two large diameter steel piles. And

1 these piles will be out so there's just two mono-piles that
2 support the ferry pier. And then the -- we will have a
3 bridge section that is found on the DSM, the soil
4 improvements back on shore, that will span out to the first
5 pile and then the second span out between the two piles.
6 And this is so that this pile will be outside of the area
7 where there might be rock slip movement in a large seismic
8 event.

9 ECRB MEMBER FRENCH: How large is large?

10 MR. PORTER: Fifty-six. On the order of 56 inches
11 diameter.

12 ECRB MEMBER FRENCH: Filled or just hollow?

13 MR. PORTER: They would be --

14 MR. PERCHER: Hollow. They would be -- I'm sorry, Marc
15 Percher. There would be concrete casting.

16 ECRB MEMBER ROLLO: Do you want us to ask questions as
17 we are going along or do you want to -- because obviously
18 this is going to raise a lot of questions.

19 MR. PORTER: Okay. Obviously, do whatever is
20 comfortable. We have tried to break it up to where at the
21 end of each little section we have got the thing for
22 questions. It should still be on topic.

23 ECRB MEMBER ROLLO: It's on topic.

24 MR. PORTER: After this one here we'll get to the
25 questions. There's only just one more slide.

1 ECRB MEMBER ROLLO: Okay, okay.

2 MR. PORTER: If you feel that that's not --

3 ECRB MEMBER FRENCH: I wasn't trying to deflect the
4 conversation, I was just wanting a little bit of additional
5 detail.

6 MR. PORTER: No, I understand. No, that's fine. Sure,
7 sure. But yes, that's those.

8 And then for the -- here is for the breakwater now,
9 this is North Breakwater. But before we were considering
10 doing either a king pile, like steel piles with batters and
11 concrete panels, or concrete sheets. We're going with the
12 concrete sheets now so those will -- these are the sheets in
13 elevation all the way down. Batter piles or concrete batter
14 piles. We are still playing with the spacing. You can kind
15 of see that up here depending on the -- as we get the
16 geotech information of what kind of support we're getting
17 from the batter piles. And again, it goes up and stops shy
18 of the rock dike, just for drivability. And that gets
19 infilled with the rock.

20 So those are kind of the major big picture items that
21 have changed or that have developed in the design since the
22 last submittal. Are there any questions about kind of the
23 changes to the design since the last review?

24 ECRB MEMBER ROLLO: I guess my first question is, how
25 are you going to handle the anticipated or computed lateral

1 displacement of up to anywhere from 8 to 12 feet that will
2 occur outboard? How will you handle that on these piles?

3 MR. PORTER: For the ferry pier?

4 ECRB MEMBER ROLLO: Yes.

5 MR. PORTER: By keeping the pier out of the way.

6 ECRB MEMBER ROLLO: Well then I don't understand the
7 scale. Because if I'm looking at this correctly --

8 MR. PORTER: From here to here? From here to here is
9 about 30 feet.

10 ECRB MEMBER ROLLO: Yes. And according to this,
11 according to this, according to this diagram that is more
12 than 30 feet. That's a significant distance.

13 MR. PORTER: Marc can --

14 MR. PERCHER: There's kind of two different sliding
15 mechanisms. There's the rock dike sliding, which we are
16 intending to stay away from.

17 ECRB MEMBER ROLLO: No, I understand that.

18 MR. PERCHER: And then there is the overall kinematic
19 movement. And for the larger diameter piles, the effective
20 stresses in the pile are pretty close to elastic under that
21 kinematic movement. So the intent is that the larger
22 diameter, steel pile will take the kinematic soil movements
23 and remain with some amounts of deformation.

24 ECRB MEMBER ROLLO: So it will take eight to nine feet?

25 MR. PERCHER: I believe it has been reduced?

1 ECRB MEMBER ROLLO: It has been reduced since this was
2 published?

3 MR. ESPINOZA: That one is for the city side park.
4 Pedro Espinoza with ENGE0.

5 That first section, Mr. Rollo, is for the city side
6 park, which is north of the ferry pier, the north section of
7 the ferry pier. We did kinematic analyses for the ferry
8 pier.

9 ECRB MEMBER ROLLO: Which one of these diagrams
10 represents the pier?

11 MR. ESPINOZA: It's the kinematic load. It's a section
12 in one of the slides. It did not make it into the draft
13 report but it's in one of the slides that we presented under
14 the ferry pier.

15 SPEAKER: These aren't the pier?

16 MR. ESPINOZA: That's not the kinematic load, that's a
17 different measure analysis of the DSM. But kinematic load I
18 think is the next one or a couple of next slides. That one.
19 That one is referring to the ferry pier and that's where we
20 did the --

21 ECRB MEMBER ROLLO: But that's not liquefaction.
22 That's --

23 MR. ESPINOZA: Liquefaction is on the top. There's a
24 few feet of liquefaction which will just go around the pile
25 but the Bay mud is the one that is giving you the kinematic

1 load.

2 ECRB MEMBER ROLLO: But within the Bay mud, based on
3 the new borings that you've drilled, you've got sand.

4 MR. ESPINOZA: We have sand.

5 ECRB MEMBER ROLLO: You have loose sand, loose sand
6 within the Bay mud. What is to prevent that from liquefying
7 and taking that whole mass in a liquefiable mode as opposed
8 to a stability mode?

9 MR. ESPINOZA: Right. So based on a new exploration we
10 actually have found that the depth of the kinematic load
11 section is much shallower. And so this is a very
12 conservative estimate because this is a 65-foot, a 60 to 70-
13 foot filler mechanism. What we found with the new
14 exploration at the mono-piles is that the area of Bay mud
15 and some loose ends within that Bay mud is actually 35 to 40
16 feet deep. So the filler mechanism will be much shallower,
17 the intensity will be much less.

18 ECRB MEMBER ROLLO: Okay, I guess I -- help me to
19 understand it because I want to get this thing today. 2-T-O-
20 B-1, okay. I look at that boring. And at a depth of -- and
21 it's outboard of it, it's outboard of the dike, it's well
22 outboard of the dike. That boring shows between 20 and 23
23 feet, fine grain sand, 5 percent shell fragments, zero PSI.
24 Okay?

25 MR. ESPINOZA: Yes.

1 ECRB MEMBER ROLLO: At 40 to 45 feet it's 800 PSI at 24
2 blows, which will also liquefy. So that's a liquefaction
3 issue.

4 MR. ESPINOZA: Right.

5 ECRB MEMBER ROLLO: So that whole mass, I don't know
6 how you -- whether you -- I'm going to assume it's
7 continuous.

8 MR. ESPINOZA: So the way that we have looked at this
9 right now is basically do a liquefaction analysis on the
10 new, on the new data, plus the much thinner area that is
11 going to mobilize. Because right now, again, that one
12 assumes that it is 45 feet that is going to mobilize -- 65
13 feet. The new data shows that it is 45 feet. All the data
14 is showing that it is going to be lesser movement. That
15 movement, the kinematic movement is going to be taken into
16 the design.

17 ECRB MEMBER ROLLO: So for a depth of 45 feet that
18 block is going to liquefy and move laterally. What is the
19 predicted movement of that block? How much will that block
20 move and what moments will that create on a 56 inch pile
21 that is only plugged at the top? That's what I'm asking.

22 MR. PERCHER: I believe that the predicted movement is
23 in the range of 36 inches. The way that we approach it is
24 to evaluate for the soil -- not pressure but the PY loading
25 onto the pile itself. So we have done a non-linear push

1 using the kinematic movements of the pile, of the soil onto
2 the pile. So we are looking at a system where we evaluate
3 the pile with a two hinge -- with a two node spring that's
4 applied to it. So we are taking the full capacity of the
5 P-Y spring value into that pile, over that, over that pipe.
6 So we are directly evaluating for the movements within the
7 pile but doing that on a non-linear basis. So we are
8 allowing for some --

9 ECRB MEMBER ROLLO: So it's not elastic?

10 MR. PERCHER: It's not elastic.

11 ECRB MEMBER ROLLO: Okay, I was just -- I just -- I
12 thought I heard somebody say it was elastic.

13 MR. PERCHER: No, it's --

14 ECRB MEMBER FRENCH: The pile is elastic, right?

15 MR. PERCHER: Well, I'd have to go back.

16 ECRB MEMBER FRENCH: No, the soil is.

17 MR. PERCHER: I think we actually have to update the
18 most recent data.

19 ECRB CHAIR BORCHERDT: Neither one is.

20 MR. PERCHER: The pile is still evaluated looking at it
21 as a possibly non-linear system. So we do have hinges
22 within the pile that we can evaluate and we are evaluating
23 against strains based on the ASCE 61-14 criteria. And this
24 kind of comes back to, there is an issue with ASCE 7.

25 In particular they reference to evaluate liquefaction

1 on the piles but they won't provide any specific design
2 criteria. So we are looking at ASCE 61-14 because they
3 provide strain values that have been tested and are very
4 well known and used within the community. So that's where
5 we are evaluating for that kinematic movement based on the
6 strain limitations.

7 I'd have to go back and look at the exact value of
8 whether there is non-linear behavior. But typically what we
9 would see is you would see some amount of nonlinearity under
10 a kinematic loading, especially of this magnitude, but it is
11 not going to be life safety concerns.

12 ECRB MEMBER FRENCH: So nonlinearity in the structural
13 response of the pile or in the mud flowing around the pile?

14 MR. PERCHER: Well certainly in the mud flowing around
15 the pile but also within the structural response of
16 (inaudible) but at a strain that is lower than a
17 (inaudible).

18 ECRB MEMBER ROLLO: Okay, so let's keep moving west.
19 So we get to the end of the pier and we go into the float
20 where the ferry will actually attach itself. There it is
21 going to be held by a series of guide piles. And as I read
22 your report, those piles are going to be -- will penetrate
23 six times the diameter. That's what it says in this
24 document that was given to us by you.

25 MR. PERCHER: Again, that may be preliminary

1 information, we haven't completed the --

2 ECRB MEMBER ROLLO: Well it's dated March 31st, 2015.

3 So this isn't up?

4 MR. PERCHER: The guide piles for the float are still
5 under design. We are still in the process of doing that
6 because we need to perform a hydrodynamic analysis for
7 grading the wave loading, so there is still some data that
8 is to be determined.

9 MR. PORTER: That was the reference, that was the one
10 that we submitted to the Port of San Francisco. That was
11 based on the --

12 ECRB MEMBER ROLLO: Well yes, you indicate that this is
13 the criteria. This is the document and the criteria that
14 was accepted by the Port and by DBI. And one of the
15 statements you make is that the pile actual capacity is
16 based on unbraced length and the pile capped at six pile
17 diameters below the mudline. Okay. And I suspect you are
18 not going to use a 56 inch guide pile.

19 MR. PERCHER: Let me clarify on that statement. In the
20 criteria -- what that's addressing is actually the axial
21 capacity of the steel pipe itself.

22 ECRB MEMBER ROLLO: I understand that. No, I
23 understand that. But it is going to be within this block
24 that is moving up to 36 inches or 40 inches.

25 MR. ESPINOZA: The kinematic loads as we have them

1 right now -- apologize, Pedro again with ENGE0 -- they don't
2 show that it goes out that far out into the gangway. It
3 shows that it's about 200 feet. So it stays away from the
4 gangway. But also that again is a conservative cross-
5 section. It doesn't take into account the new data.

6 ECRB MEMBER ROLLO: So the data that is in this
7 document doesn't include the data from these five borings?

8 MR. ESPINOZA: Correct.

9 ECRB MEMBER ROLLO: Okay.

10 MR. TOOTLE: The design of these structures, as you
11 heard, is still underway so what we submitted in response
12 was what we had current as of that date. But we are not at
13 100 percent design yet so some of those things are still
14 under consideration.

15 ECRB MEMBER FRENCH: That's pretty fluid for 50 percent
16 it seems, still, maybe?

17 ECRB MEMBER ROLLO: Well, I just wonder because you
18 make the statement that it is, in fact, the criteria -- that
19 particular is a criterion that was given for the design of
20 the guide piles. So what you're saying is for these guide
21 piles that not only will you address the axial but you'll
22 address the lateral on these guide piles?

23 MR. PERCHER: Certainly.

24 ECRB MEMBER ROLLO: Okay.

25 MR. PORTER: Questions on changes to the project since

1 the last?

2 ECRB MEMBER HOLMES: This is Bill Holmes. I've got a
3 question on the nonlinearity of the steel piles given it's
4 the big event and all that stuff. But is that -- that's not
5 repairable, essentially, it's going to be a permanent
6 deformation.

7 MR. PERCHER: For the kinematic you would have -- it
8 comes back to the question of what the axial loads are and
9 what conditions you would consider acceptable at the end of
10 the day. Yes, you are not going to replace that pile in the
11 ground. You certainly could provide new load transfer
12 mechanisms since it is a structure, but it may also be
13 acceptable to have some amount of, you know, rotation within
14 the pile into the ground. There probably the larger issue
15 is that there is going to be some top-of-deck movements
16 associated with that kinematic motion.

17 ECRB MEMBER FRENCH: Close to as much as the movement
18 of the soil?

19 MR. PERCHER: If not over. So the design intent is
20 that there is a mechanism, there is a fuse at the abutment
21 area where it is allowed to shift along with the structure
22 and on the gangway side it is not an anchor connection so it
23 can also shift along with the structure. So in effect what
24 we may have is 36 inches plus-or-minus some top-of-deck
25 movement associated with this large event.

1 ECRB MEMBER FRENCH: You're looking at median values, I
2 guess?

3 MR. PERCHER: Well, the kinematic I believe is the best
4 testable value.

5 ECRB MEMBER FRENCH: So typically with ground
6 deformations, seismic ground deformations, we think it's,
7 you know, pretty accurate, give or take a factor of two or a
8 factor of half.

9 MR. PERCHER: And certainly --

10 ECRB MEMBER FRENCH: Are you guys okay with two? I'm
11 just curious what happens.

12 MR. PERCHER: Yeah. I mean, there's not a lot of
13 guidance when it comes to kinematic design. The other
14 geotechs that we have talked to besides ENGEO where we are
15 doing some of the projects, generally the agreement is that
16 for that kinematic you usually take a best estimate value.
17 Just because otherwise it can get very extreme, what that
18 range would be. Again, really what we are trying to do is
19 address life safety concerns. Post, you know, a two-thirds
20 MCE event operations is not typically a specific criteria to
21 ask.

22 ECRB MEMBER FRENCH: So the way you're describing it, I
23 think though, is that the piles are not resisting the ground
24 movement against them, they're going for the ride, and their
25 survival is not based on the strength of the piles to resist

1 the ground movement but it's based on the magnitude of
2 deformation that the piles are undergoing and that that
3 magnitude is acceptable. And in magnitude of deformation,
4 you have just reduced it from 8-10 to 3. That's a pretty
5 fuzzy analysis. I'll have some questions later on, I guess,
6 about what you used, the NCHRP 611, which of their methods.
7 There's lots of approximation in there. And if their
8 survival is based on your -- the reliability of your
9 estimates of magnitude of deformation, I just have questions
10 about how confident you are in that?

11 MR. PERCHER: I am highly confident because we have
12 seen this in previous events where for steel pipe piles,
13 especially there's a very large amount of ductility in that
14 pipe section. So the strain limits may be actually lower
15 than what would be close to a rupture level for the pipe.
16 And additionally, the hinging mechanism is occurring pretty
17 deep in the ground. So even if you were to theoretically
18 rupture that pipe it is not really a collapse hazard so much
19 as it is a lateral movement of the structure.

20 So if you, for instance, when we are looking at
21 concrete piles or timber piles having kinematic movement,
22 you can have a rupture in the soil and the structure will
23 shift along with that soil through. But it doesn't
24 necessarily mean that it is going to collapse because there
25 is still a load transfer mechanism. You are still going to

1 -- you probably would have some vertical settlement to the
2 system but it is not a life safety issue.

3 ECRB MEMBER ROLLO: As I read this, you've got at least
4 75 feet before you develop a hinge, if I believe these shear
5 strengths. Your shear strengths range from --

6 MR. ESPINOZA: That --

7 ECRB MEMBER ROLLO: Go ahead.

8 MR. ESPINOZA: That cross-section --

9 ECRB MEMBER ROLLO: Is not right either.

10 MR. ESPINOZA: It's the city side. It's the city side.

11 MR. TOOTLE: It's a different location than the pier.

12 ECRB MEMBER ROLLO: Okay.

13 MR. ESPINOZA: It's northern from -- the northern area.

14 ECRB MEMBER ROLLO: Is there a -- I'm sorry. Is there
15 a cross-section that depicts the subsurface conditions along
16 the alignment of the pier and the float?

17 MR. ESPINOZA: It should be Section E of the GCR, which
18 is Appendix A of the draft report.

19 ECRB MEMBER ROLLO: Was it -- I didn't print the whole
20 draft report. Is it included in the -- Joe, the document
21 you prepared?

22 (Board Members looking through their documents.)

23 MR. ESPINOZA: This is the Ferry Terminal. But this
24 needs to be updated as well.

25 ECRB MEMBER ROLLO: Yes, that's what I'm saying. If I

1 -- if I go by this section -- I'm sorry, Frank Rollo.

2 If I go by this section I've got at least -- well, at
3 least 60 feet, and in the worst case up to 75 feet of what
4 you call very soft, young Bay mud. And your shear strengths
5 that you've defined in there, the only data I have available
6 to me is that long -- is this. It varies from -- it varies
7 from -- until I get into the old Bay clay it's --

8 MR. ESPINOZA: It's probably between 100 and 400.

9 ECRB MEMBER ROLLO: Yeah, 100 and 400. So you're going
10 to get. Your right in that you've got a lot of pile to work
11 with in the deformations because you haven't got anything --
12 I mean, it probably starts at 50 at the surface.

13 MR. ESPINOZA: Yes, pretty --

14 ECRB MEMBER ROLLO: So you've got -- so you can
15 accommodate whatever stress, whatever deflections you get
16 within that hinge point, all the way down possibly 60 feet.

17 MR. PERCHER: And it's kind of the relationship becomes
18 more --

19 THE REPORTER: Excuse me, Marc. Could I get you to
20 stand? It gets a better recording. Thank you.

21 MR. PERCHER: Also kind of a situation where as the
22 soils get softer there's less load transfer to the pile.
23 And that actually becomes more realistic than the pile would
24 stay elastic. So it's usually -- that's kind of the reason
25 that we wanted it to get away from the rock dike area

1 because that is such a stiff set of kind of soil and rock
2 that it would actually load up the pile much more
3 significantly than the soft soils would.

4 ECRB MEMBER ROLLO: Thank you.

5 ECRB MEMBER FRENCH: Pedro, what figure did you say
6 that was in?

7 MR. ESPINOZA: It's --

8 ECRB MEMBER ROLLO: T3-17.

9 ECRB MEMBER FRENCH: You have that one there? Okay.
10 Is that the latest one?

11 MR. ESPINOZA: That's not the latest, we don't have the
12 latest --

13 ECRB MEMBER FRENCH: So this report doesn't have it.

14 ECRB MEMBER ROLLO: No.

15 MR. ESPINOZA: That is not the latest.

16 ECRB MEMBER ROLLO: The latest, they haven't developed
17 it from these borings yet. But we do have the borings?

18 MR. ESPINOZA: You do have the borings, the draft
19 borings. They're draft borings. We go in the lab, in the
20 analysis lab. So some of those interpretations are
21 interpretations by the staff engineer who was on the boat so
22 they haven't been identified.

23 ECRB MEMBER ROLLO: So when I look at -- I'm sorry to
24 sidetrack here but it's to get an understanding of the
25 onshore. When I look at boring 2-T-O-C-1, okay, that's

1 offshore. I notice that there you plot tip resistance and
2 frictional resistance, which are essentially zero.

3 MR. ESPINOZA: Right. So what happened is that the
4 intention was to do CPTs, most of them to do CPTs. But once
5 you get out of the Bay mud, which is soft, you get into this
6 very dense sand. So the cone with the winch of the boat
7 would tip out. And then we changed it and did a mud rotary.

8 ECRB MEMBER ROLLO: Okay, I understand that. But there
9 is no classification here. I'm just curious why these logs
10 don't have any classification whatsoever --

11 MR. ESPINOZA: Right.

12 ECRB MEMBER ROLLO: -- until you get down to 52 feet
13 and then you call it a sand with a blow count of 60.

14 MR. ESPINOZA: Right. So the CPT in those draft logs
15 don't have interpretation. We have the CPT logs from Greg
16 and I think those were attached in the reference. So the
17 interpretation is in those CPT logs. And the CPT log
18 proposal that is sent to Greg.

19 ECRB MEMBER ROLLO: Were we provided with those? I
20 don't believe so.

21 MR. ESPINOZA: I am not sure.

22 ECRB MEMBER ROLLO: I don't believe so.

23 MR. TOOTLE: The additional exploration done right
24 before we submitted the results. So you had the draft logs
25 and where we were drilling, where it was an auger and a

1 person on the boat that see the soil, you have the
2 description. Where we just have the CPT data that had not
3 yet been incorporated into the log that we had at the time.
4 We have since done that and we are also completing the
5 laboratory testing that was associated with the samples that
6 were recovered, so that is being worked into the final
7 design documents.

8 ECRB MEMBER ROLLO: But we can assume that it is young
9 Bay mud.

10 MR. ESPINOZA: Yes.

11 ECRB MEMBER ROLLO: And we can assume that based on
12 this that it goes from maybe 50 to 400. And we can assume
13 that it has sand lenses in it and we can --

14 MR. ESPINOZA: Yes.

15 ECRB MEMBER ROLLO: And you are going to assume that it
16 is all liquefiable?

17 MR. PERCHER: The sand layers are liquefiable, yes.

18 ECRB MEMBER ROLLO: Yes.

19 MR. TOOTLE: And the Bay mud is compressible, soft,
20 yes.

21 ECRB MEMBER ROLLO: But I am more interested in the
22 lateral movement right now.

23 MR. PERCHER: Correct.

24 ECRB MEMBER ROLLO: Thanks.

25 ECRB CHAIR BORCHERDT: One technical point before we

1 proceed that I failed to mention or think about was that
2 with the proceedings of the meeting being recorded, that
3 recording is part of the public record, must necessarily be
4 part of the public record since this is a public meeting.
5 So I presume what will be necessary will be that your
6 recordings, as they are made of this meeting and document
7 the proceedings of this meeting, they will become available
8 to BCDC and be part of the public record.

9 THE REPORTER: This recording is provided to the person
10 that contracted us, and what they do with it --

11 ECRB CHAIR BORCHERDT: That is not going to work, I
12 don't think.

13 MR. SUH: We can make it available.

14 ECRB MEMBER ROLLO: This is a public forum so that --

15 ECRB MEMBER FRENCH: Well, the recorder is just saying
16 he is not going to turn it over but the client says he is
17 going to turn it over, so I think we're set.

18 ECRB CHAIR BORCHERDT: Okay, okay. Technical point
19 made. Proceed, please.

20 MR. PORTER: Okay, the ferry pier. Just again, kind of
21 the same isometric of the whole terminal with the shelter
22 and the pier and the gangway and then the float.

23 Since our last meeting, one of the questions was who
24 will be the authority having jurisdiction to review the
25 design of the Ferry Terminal.

1 Since then we have approached -- the Port of San
2 Francisco will be reviewing the design. We met with them
3 and we created a basis of design that we -- that's the
4 reference that you were referring to there, Frank. And that
5 was based largely on the criteria that we presented to you
6 in January to the ECRB.

7 So we met with them, they have approved that. The
8 criteria that we are using is, as before, we are using the
9 Risk Category 2 as we read Table 1604 of the CBC. But
10 recognizing that it is -- the Causeway is the primary means
11 off the island in a major event.

12 But recognizing that the ferry may need to remain
13 operational. In that instance we have added the provisions
14 Marc was talking about earlier of ASCE 61-14. We will
15 design it to what they call a high level of design so it
16 will remain operational after a seismic event; a 72 year
17 event in this case.

18 ECRB MEMBER HOLMES: That's pretty small, it's a pretty
19 small event. So if you designed it for the regular code
20 requirement you would probably nearly be at a 72 year event
21 anyway. You are not having to add much for that performance
22 it seems to me.

23 MR. PORTER: I think it also is the method of analysis
24 as well, as I understand it. Maybe Marc can just speak a
25 bit to that.

1 MR. PERCHER: Yes, I would agree. The intent here is
2 meet operational results. So to a major degree, yes, the
3 event size is smaller than a two-thirds MCE event. In this
4 case actually, the two-thirds MCE as opposed to the 475 year
5 return event. But the reason we selected the 72 year event
6 is because that is the guidance that is given in ASCE 61-14.
7 And typically that size event is associated with -- where it
8 comes from is kind of the development for petrochem
9 facilities, container work facilities, where they typically
10 would look at a two scenario, a two-event scenario. So it
11 would have a larger event where they have to, say, shut
12 down, and a smaller event where they continue operations.

13 ECRB MEMBER HOLMES: No, I just wanted the Board to be
14 aware that the 72 event, compared to your design event, is
15 pretty tiny. You would expect it to be almost elastic
16 structure anyway, without any extra design required.

17 ECRB MEMBER ROLLO: You made a statement that this is
18 one of two ways -- one of three ways of getting off this
19 island, the Causeway, the ferry and swimming. And I don't
20 think anybody is going to go with the swimming so --

21 MR. PORTER: I don't recall mentioning swimming but it
22 could be counted.

23 ECRB MEMBER ROLLO: There is no question that 61-14
24 puts this in at the 72 year, the 50 and 50 in a high
25 category. But the reality is when you're dealing with these

1 other projects, you're dealing with many ways of getting
2 around a facility. I mean, there's an infinite way and it's
3 usually attached to a land, not attached to an island.

4 Still it boggles me that we're dealing with Category 2
5 and we're dealing with a 50 and 50 or a 72 year return
6 period. I guess that's -- and I know the City has signed
7 off on it, I know the Port has signed off on it. But we as
8 BCDC, I just think that's -- I would expect zero damage,
9 quite frankly, in this event. If you can predict that there
10 won't be any damage then I'd be happy with a 50.

11 MR. PERCHER: And so we have evaluated the structure
12 with the pushover methods that are in ASCE 61-14 and shown
13 that it does meet the operational requirement.

14 ECRB MEMBER HOLMES: Frank -- this is Bill Holmes
15 again. Frank, are you asking to be "no damage" in the 72
16 year event?

17 ECRB MEMBER ROLLO: No, I am asking if there would be
18 no damage in a 475 --

19 ECRB MEMBER HOLMES: Oh, well that's a whole
20 different --

21 ECRB MEMBER ROLLO: And a 10 at 50.

22 MR. PERCHER: It also comes back to kind of the
23 criteria selected. In this case, ASCE 7 doesn't really have
24 anything related to operational performance, it is all in
25 terms of life safety. So we have decided to select a

1 standard marine structure document that has a criteria
2 related to continued operations after an event.

3 ECRB MEMBER ROLLO: But it applies to -- I guess my
4 only -- it applies to -- people -- a way for people to get
5 off this island. I mean, to get off the Chevron dock at
6 Point Richmond, because it's connected to the land and you
7 can just walk. Here, you have no way of getting off unless
8 you swim or use the Causeway if damage occurs. And I would
9 think that the more common earthquake would be the 10 at 50.
10 If I were to -- that's what I'm saying, I would have used
11 the 10 at 40. I would have talked to my client and asked
12 them to look more seriously at a more conservative event.

13 ECRB MEMBER FISCHER: Martin Fischer. I concur. I
14 mean, it's exactly in a 475 year event. That's when you
15 want the terminal, I would think. I mean, this is a
16 different situation, right? These tables were made for
17 typical situations and this is not a typical situation,
18 where you find yourself on this little island surrounded by
19 all the places where you need to get help or you want to get
20 to.

21 MR. SUH: This is James Suh with TICD. As was stated
22 at the last presentation but some may have forgotten, this
23 is a new terminal that doesn't exist today, and the
24 Causeway, are not the only means off the island. There are
25 other areas --

1 MR. PORTER: Pier 1, there is a pier on the east side.

2 MR. SUH: That full context.

3 ECRB MEMBER ROLLO: Yes, but that Pier 1; are you
4 analyzing Pier 1? So you haven't analyzed Pier 1 so you
5 haven't even studied what impact liquefaction will have on
6 that pier. Because I worked on the original one. I agree.
7 James, I understand what you're saying.

8 MR. SUH: It's just context.

9 ECRB MEMBER ROLLO: But within the context of this
10 design, this is what we are dealing with. And that's all
11 I'm saying.

12 MR. PERCHER: So if I understand correctly, the
13 preference of the Board would be that --

14 ECRB MEMBER ROLLO: I can't speak for the Board, I'm
15 just speaking for myself.

16 MR. PERCHER: The preference for yourself would be that
17 you would consider a 475 year return period event evaluated
18 using the same methodology as in 61-14 as being acceptable?

19 ECRB MEMBER ROLLO: Yes.

20 MR. PERCHER: And then corresponding to the operational
21 event, there is a set of strain requirements that are more
22 limited for the post -- an operational response versus the
23 -- versus the typical large event response of a set of
24 strains. So within ASCE 61-14, the 475 year event is
25 typically used at that larger strain response. So I guess

1 my question would be, would you consider that larger strain
2 response to be acceptable because it is not going to be
3 anywhere close to a life safety/collapse prevention strain
4 limitations.

5 ECRB MEMBER ROLLO: I don't understand that last part,
6 say it another way.

7 MR. PERCHER: The amount of damage that you are going
8 to see with the L1 versus -- so there is a first level,
9 there is a second level --

10 ECRB MEMBER ROLLO: Right, right.

11 MR. PERCHER: -- and then there is the DE, which is the
12 code minimum requirements. So the amount of strain that you
13 see at the Level 2, would that be acceptable because it is
14 still not a life safety hazard?

15 ECRB MEMBER FRENCH: So I think, Frank, you had asked
16 earlier, for 475 you wanted no damage. I am not sure if
17 this is what you are saying but I would have expected not
18 necessarily damage but operational would be nice.

19 ECRB MEMBER ROLLO: Yes, I want people -- I want a -- I
20 want a very warm, comfortable feeling that people will still
21 be able to access this pier and get off this island; that's
22 what I'm asking for. Operational, that's a better term.
23 That's what I would like to see.

24 ECRB CHAIR BORCHERDT: And I believe the response in
25 the technical memorandum number 3 from the applicant does

1 indicate that you do want continued performance for the
2 terminal.

3 ECRB MEMBER HOLMES: But that's only in a 72 year
4 event.

5 ECRB MEMBER ROLLO: That's only in a 72.

6 ECRB CHAIR BORCHERDT: But you're saying that's what
7 you want with the 475 year.

8 ECRB MEMBER ROLLO: Right. Considering -- to me, it's
9 the only one of three ways of getting off this island,
10 because we don't know how that other pier is going to
11 behave.

12 ECRB MEMBER FRENCH: I think you were saying it's still
13 going to be non-collapsed at 475, you're pretty confident.

14 ECRB MEMBER ROLLO: Yes.

15 ECRB MEMBER FRENCH: It's not going to be undamaged at
16 475. And the question is then, I think, that you're
17 wondering, you're processing in your head right now, and I
18 guess we're processing, will it be operational at 475? Can
19 people get off the island at 475?

20 ECRB MEMBER HOLMES: Almost by definition not because
21 it is being designed to be operational at 72, so 475 is
22 probably a factor of 3 or 4 more load. So almost by
23 definition it won't be operational.

24 MR. PERCHER: And I do also want to clarify that we
25 have not really considered what the alternate means of

1 egress from the island, what their return period events are.
2 I just want to say, the bridge, certainly it will take a
3 much larger event than the 475 year return event.

4 ECRB MEMBER ROLLO: Oh, yes.

5 MR. PERCHER: So the criteria that this has to be
6 operational when the bridge is not, I don't think the 475
7 year return period event has been satisfied.

8 ECRB MEMBER ROLLO: The "bridge" being the Bay Bridge.

9 MR. PERCHER: The Bay Bridge.

10 ECRB MEMBER ROLLO: You're saying the Bay Bridge is not
11 going to be operational in a 475 --

12 MR. PERCHER: No, I'm saying the Bay Bridge will be
13 operational.

14 ECRB MEMBER ROLLO: Yes, so am I. So you are saying
15 that the Causeway will be operational in a 475 event?

16 MR. PERCHER: Yes.

17 MR. PORTER: It is the primary means of emergency
18 evacuation.

19 ECRB MEMBER ROLLO: So even at 72 years if we lose the
20 Ferry Terminal, we can still walk up and walk across the
21 bridge.

22 MR. PORTER: There is going to be more on the
23 Causeway --

24 ECRB MEMBER ROLLO: Provided the welds haven't corroded
25 by the time we have the event.

1 (Laughter.)

2 MR. TOOTLE: We do have a presentation on the Causeway.

3 ECRB MEMBER ROLLO: Thank you.

4 MR. PORTER: We'll move on to the -- still as far as
5 the geotechnical part of the presentation I'll turn it back
6 over to Joe.

7 The geotechnical points related to the ferry pier. We
8 might have talked beyond some of the slides that are in this
9 presentation already. Really I think they fall into two
10 different categories, the deformation of the slope, which
11 we've talked a little bit about, the kinematic loads that
12 that would impose on the pier structure or the pier
13 foundation; and then as well as the site response impacts
14 from the soft materials that you were talking about earlier,
15 Frank.

16 So we prepared this figure really as a qualitative,
17 non-quantitative illustration of the "without project" and
18 "with project" scenarios to get a perspective of what
19 condition the island is in now and what we are looking to
20 improve it to.

21 So the bottom picture is an illustration of kind of a
22 flow liquefaction event where very large quantities of
23 material mobilize during a seismic event and spread out
24 laterally and to the Bay. There is very little lateral
25 containment in the relatively deep, potentially liquefiable

1 soils are near the surface.

2 So the "with project" scenario, this illustration is
3 with the deep soil/cement mix that is being proposed. At
4 the ferry pier is where this improvement is being proposed.

5 Where those lateral deformations still do occur
6 outboard of that, are now where we are proposing to place
7 the outboard edge of the edge stabilization about 10 to 12
8 feet back from top-of-bank. So there is an area of the
9 existing slope that we still anticipate moving during the
10 seismic event, although the amount of material we would
11 expect to move into the Bay would be greatly reduced to this
12 very large flow kind of failure that would head towards the
13 Bay. That was the intent of this illustration.

14 And then this is just a picture of a site where sort of
15 large deformations occurred during a seismic event and so
16 that's what we are looking to prevent.

17 We talked a little bit about this already and it was
18 mentioned the NCHRP method for evaluating lateral
19 deformations.

20 We used three different methods, not only the NCHRP but
21 as well as Bray and Travassarou and then we did -- both of
22 those are limit equilibrium-based analyses.

23 We also did finite element analyses to take a look at
24 what the strains or what the potential deformations would
25 be.

1 Our design criteria resulted in trying to limit lateral
2 deformations to a foot or less behind that improved area,
3 really stabilizing that edge. But as you can see in this
4 strain representation here from PLAXIS as well as the
5 deformation outputs, you do still get deformations outboard
6 of that stabilization.

7 ECRB MEMBER FRENCH: I'm sorry, can you go back to that
8 just one second?

9 MR. TOOTLE: Sure.

10 ECRB MEMBER ROLLO: That was done with the shear
11 strength -- with the data that you had prior to the new
12 borings?

13 MR. TOOTLE: Yes. And these models we developed, as
14 far as the PLAXIS modeling and the limit equilibrium
15 analyses, with ourselves, Bob Kirby of TERRA was involved in
16 that design. And then we took it upon ourselves to have an
17 independent technical review by Professor Juan Pestana with
18 UC Berkeley. So these models were developed were developed
19 in conjunction with them. But what is showing here on the
20 screen predated some of the additional exploration of that.

21 ECRB MEMBER FRENCH: What's the difference between the
22 two different images?

23 MR. TOOTLE: Well this is intended to represent where
24 the strains are the greatest, so where it is a lighter color
25 there is more strain taking place. And this is kind of a

1 heat map of where the deformations occur.

2 Seismic response was one of the comments that we did
3 receive. As we had mentioned in January, where you do have
4 these longer period structures like the pier, site response
5 is going to become a very important part of the design. So
6 we developed models for the --

7 The pier and south breakwater had very similar
8 subsurface conditions so the same model was used for that
9 and that's what is represented here.

10 Because there is some variability in the strengths of
11 the Bay mud, as Frank said earlier, we looked at what would
12 happen if you had sort of lower-bound values of mud
13 strength-wise as well as upper-bound values. So in these,
14 in these graphs, this blue line here and this blue line
15 here, are the same code line. So you can see the effects of
16 what happens when you have softer materials; much more site
17 response occurs than when they are a little stiffer.

18 So we did both of these. We selected like five
19 earthquake time histories in conjunction with Shaw Vindani.
20 We worked with him to pick what we thought would be the most
21 representable earthquake motions to replicate what might be
22 the design event for Treasure Island.

23 And then the graph over here just shows what the code
24 spectra would be and then our design spectra, both for the
25 MCE and the design event.

1 ECRB MEMBER FRENCH: This is a shake-equivalent linear?

2 MR. ESPINOZA: Yes.

3 ECRB MEMBER FRENCH: And was Shaw involved with the
4 site response also or just the picking of the time
5 histories?

6 MR. ESPINOZA: Shaw was involved in the site response
7 on a similar analysis at Treasure Island, so yes.

8 ECRB MEMBER FRENCH: He was involved throughout? He
9 developed, he helped develop the site response?

10 MR. ESPINOZA: He helped develop the ground motions,
11 the ground motions and the monitor, yes.

12 ECRB MEMBER FRENCH: Okay, good, okay.

13 MR. TOOTLE: And then this is similar analyses for the
14 north breakwater. Like I said, the Bay muds are thicker
15 there. So again you see different site response due to
16 that. Basically the same, the same design methodology was
17 used for this location as well but they are different
18 subsurface conditions, so we ended up with different design
19 spectra for the use of the breakwater.

20 ECRB CHAIR BORCHERDT: Excuse me. Before you leave
21 that - Roger Borchardt - a couple of comments.

22 First of all, have these estimates of site response
23 been compared with what was observed from the Loma Prieta
24 earthquake by Rollins and others?

25 MR. ESPINOZA: This is Pedro again.

1 Yes, in order to get a sensitivity of the model that we
2 had, a shake, we used Rollins' paper. We used a YBI output
3 motion to put it in our model to see if we were within the
4 ranges that he got in his paper. And we are most definitely
5 in the range of the results that he got.

6 ECRB CHAIR BORCHERDT: And so the profiles, the
7 velocity profiles that you are basing these on are for a
8 hole that was referenced I think in one of the reports that
9 I had to trace back through and find. But there is a hole
10 that you have had logged on Treasure Island; is that true?

11 MR. ESPINOZA: Yes, we had -- we had people --

12 ECRB CHAIR BORCHERDT: Where did that log come from?

13 MR. ESPINOZA: From our exploration.

14 ECRB CHAIR BORCHERDT: But do you know, can you show me
15 on the map where that hole is located?

16 MR. ESPINOZA: TMR3 is --

17 ECRB CHAIR BORCHERDT: And the reason I am asking you
18 that particular question, and I am assuming that any log
19 that you derive from one spot, depending on what the
20 conditions are, you would adjust it based on what you know
21 about the cross-sections and so forth --

22 MR. ESPINOZA: Right, correct.

23 ECRB CHAIR BORCHERDT: -- with respect to the
24 thicknesses of the materials.

25 MR. ESPINOZA: Yes.

1 ECRB CHAIR BORCHERDT: But my real point here is that
2 when I looked up your hole, the coordinates for that hole
3 indicate it is not on Treasure Island.

4 MR. ESPINOZA: TMR3 --

5 MR. TOOTLE: The latitude and longitude?

6 ECRB CHAIR BORCHERDT: Yes. The longitude for the hole
7 is 121 degrees something-something west and the longitude
8 for Treasure Island is 122 degrees something-something west.

9 MR. TOOTLE: We appreciate that comment, we'll go back
10 and revise that. But we can point to where the log is, it's
11 in that spot right there.

12 ECRB CHAIR BORCHERDT: Okay, good.

13 MR. TOOTLE: We'll make note of that coordinate and
14 update that, appreciate it.

15 ECRB CHAIR BORCHERDT: I thought you would interested
16 in that, for sure. It's actually out in Delhi or somewhere.

17 MR. TOOTLE: We were looking at this earlier. So
18 again, the same deformation analyses were used to calculate
19 the kinematic loadings on the pile and then that provided to
20 Moffatt and Nichol for their structural analysis of the
21 pier.

22 I'll just pause there to see if there are any more
23 questions.

24 ECRB MEMBER BATTALIO: I wanted to ask the Chair if we
25 were going to talk about the coastal side of the ferry berth

1 or when you wanted to do that or?

2 ECRB CHAIR BORCHERDT: That will be --

3 ECRB MEMBER BATTALIO: I've got the agenda.

4 ECRB MEMBER ROLLO: It's number 4.

5 ECRB MEMBER BATTALIO: Okay. Oh no, not the sea level
6 rise, just the wave exposure elements of the ferry berth. I
7 didn't know when the Chair wanted to address those, if we
8 were moving on. I think there is a question about the
9 foundation, the breakwater.

10 ECRB CHAIR BORCHERDT: Does your particular question
11 pertain to the Ferry Terminal?

12 ECRB MEMBER BATTALIO: It does. I have a couple of
13 questions. But I didn't want to interrupt the discussion on
14 the geostructural elements and seismic elements but I didn't
15 want to miss the chance to say something about waves
16 relative to the Ferry Terminal.

17 MR. PORTER: If I might? Bob, we've got the thing on
18 the overtopping. There is a slide where we talk about that
19 later on and we can talk to that at that time, if that would
20 be okay?

21 ECRB MEMBER BATTALIO: Sure, whenever it's convenient.
22 I probably interrupted more than I intended already.

23 ECRB MEMBER COMERIO: This is Mary Comerio. I have an
24 extremely mundane question. Because I wasn't here at the
25 last presentation, I apologize, I had to have some emergency

1 surgery that wasn't planned for that day, needless to say,
2 so I have been trying to catch up.

3 The summary that you submitted, and there is this sort
4 of ten or a dozen questions, do those -- do those map with
5 the way the agenda is laid out? I am just trying to make
6 sure that I have a relationship between what you are
7 presenting and what I am reading in here. I am just trying
8 to work out the mapping between those two.

9 MR. TOOTLE: We believe that all 12 questions are
10 contained within the presentation.

11 ECRB MEMBER COMERIO: In this, okay.

12 MR. TOOTLE: Like I said, we tried to group them into
13 design elements of the project.

14 ECRB MEMBER COMERIO: Okay.

15 MR. TOOTLE: That was our intent.

16 ECRB MEMBER ROLLO: Mary, did you get the copy of the
17 technical memorandum?

18 ECRB MEMBER COMERIO: Yes, yes, this one, I have that.
19 I was just trying to map this relationship to the
20 presentation because I wasn't here last time so I am -- I am
21 trying to catch up on understanding a lot of the details.

22 ECRB CHAIR BORCHERDT: That is a little bit difficult.
23 It would be good if we could indicate which one of the
24 comments. There are a couple, there are some previous ECRB
25 comments that basically the numbers -- I forgot what the

1 numbers are, 2 and 5 or 3 and 5 or something, but that do
2 map into the way you've got it organized.

3 MR. TOOTLE: It seemed like the order of -- that the
4 order of the comments did sort of jump around a little bit
5 and so it was our intent to make it easier and group them
6 together, but maybe that caused confusion so I apologize if
7 it has, but that was our intent.

8 ECRB MEMBER COMERIO: No. But if somebody could just
9 like work out a mapping of the comments to the presentation
10 that would be really helpful.

11 MR. TOOTLE: Okay.

12 ECRB MEMBER COMERIO: Just for me, anyway.

13 ECRB CHAIR BORCHERDT: All right.

14 ECRB MEMBER FRENCH: I had a question maybe about --
15 like maybe this is the right time. When you're doing the
16 DSM what did you use for strengths in that? It was moving
17 still a foot or two or three or something like that.

18 MR. ESPINOZA: So the criteria -- this is Pedro from
19 ENGEIO. The criteria that we developed with the deformation
20 analysis was about a foot of the formation. So we -- then
21 again, we designed the DSM, based on the FHWA method for DSM
22 design and we enhanced it with TERRA's experience with DSM
23 for dams in California. The DSM that FHWA designs is mainly
24 for static conditions so we enhanced that for seismic
25 conditions. So the strength of the DSM varies between 150

1 PSI to about 200.

2 ECRB MEMBER FRENCH: And how much brittleness does it
3 have then? If it moves a foot does the outside set of
4 columns -- if you've lost the outboard soil does the
5 outboard pier fall off? Is it brittle?

6 MR. ESPINOZA: What we modeled in conjunction with
7 TERRA is basically what would happen to the outboard DSM if
8 the route were to fail. Does everything just collapse? So
9 because of the spacing between the shear walls of the DSM
10 that we selected to design to, which is about 10 feet,
11 actually 8 feet, there is not enough -- there is enough
12 resistance within those shear walls to keep the soil in
13 place and not push the outboard DSM wall out. And that
14 should have been -- that analysis is an attachment to our
15 report. It was done in PLAXIS and it was with the
16 assumption that there was going to be liquefaction
17 mitigation in-between the cells of the DSM.

18 ECRB MEMBER FRENCH: In addition to the DSM or that the
19 DSM does the --

20 MR. ESPINOZA: In addition to it, yes.

21 MR. TOOTLE: If that wasn't clear in that first picture
22 where we tried to summarize the mitigation. So the yellow
23 area was where vibro-compaction would be. And it also
24 overlaps where the DSM is along the western shore of the
25 island and the southern shore. So you get densified sand

1 within the cells of the DSM.

2 ECRB CHAIR BORCHERDT: One quick question. Is it
3 feasible to add an additional piling farther out and to
4 reduce the amount of material that moves laterally?

5 MR. TOOTLE: The difficulty of that is really in the
6 manner in which the island was constructed with a series of
7 rock dikes. And so that is the main reason we pulled that
8 edge treatment back about ten feet from the edge; just
9 because there is a tremendous amount of rock that was used
10 to build the edge of the island. Drilling through that is
11 just extremely difficult and almost impractical,
12 unfortunately.

13 ECRB MEMBER FRENCH: So when you modeled that in your
14 slope stability then you took an average of soil versus --

15 MR. ESPINOZA: Correct. So FHWA is going to ask you to
16 develop an average based on your replacement ratio and your
17 DSM and use that average to put it into your slide analysis.

18 ECRB MEMBER FRENCH: And you used 50 percent.

19 MR. ESPINOZA: But then we added PLAXIS to give a
20 strength compatibility to see how the Bay mud and the
21 compactable sands move together with the DSM.

22 ECRB MEMBER ROLLO: You used the 50 percent, you used
23 the 50 percent ratio?

24 MR. ESPINOZA: We used a 50 percent ratio, I think it's
25 in the Causeway. I think on the Ferry Terminal it's like 35

1 percent.

2 ECRB MEMBER ROLLO: Less than the 40 that's usually --

3 MR. ESPINOZA: I'm sorry?

4 ECRB MEMBER ROLLO: Less than the 40 that we usually
5 work with then?

6 MR. ESPINOZA: I don't know if it's usual but I think
7 it's -- I forget exactly what the replacement ratio is on
8 the Ferry Terminal. It's between 35 and 40 percent.

9 ECRB MEMBER FRENCH: So PLAXIS typically gets confused
10 with large strains, though, and you're talking about
11 multiple feet of strains.

12 MR. ESPINOZA: Well, right. So what we did with PLAXIS
13 on the Ferry Terminal, because we were not so much concerned
14 with liquefaction because we are improving liquefaction, is
15 to relate the pseudostatic rotation to some movement that we
16 did, that we got from the deformation analysis that was used
17 in Bray and Travassarou and the NCHRP. And so the main
18 purpose to run PLAXIS was to say, okay, is this information
19 analysis too simplistic that we're missing something with
20 the strain and compatibility of the shore. And that was the
21 main purpose that we did PLAXIS. When we ran PLAXIS with a
22 similar pseudostatic analysis, with a similar pseudostatic
23 coefficient, it gave us less than a foot of deformation in
24 the back of the DSM, which implies that the simplified
25 deformation analyses are actually conservative.

1 ECRB MEMBER FRENCH: PLAXIS was a static analysis?

2 MR. ESPINOZA: Pseudostatic. At the Ferry Terminal it
3 was pseudostatic.

4 ECRB MEMBER FRENCH: So you're not running -- you're
5 not running a time history through PLAXIS for this
6 deformation?

7 MR. ESPINOZA: We did a time history full dynamic
8 analysis on the city side shore, which is north of the ferry
9 pier, because there is no liquefaction outside of the stone
10 columns. So we really wanted to know what the response was
11 of that ground and to see if it made any damage to our
12 setback.

13 ECRB MEMBER FRENCH: And Juan was looking at the PLAXIS
14 analysis?

15 MR. ESPINOZA: Juan, yes, he helped. He reviewed and
16 helped us model the full dynamic analysis.

17 ECRB MEMBER FRENCH: And the static analysis as well?

18 MR. ESPINOZA: He looked at it as well.

19 ECRB MEMBER ROLLO: I guess I don't -- when I reviewed
20 the design geotechnical report I didn't find any reference
21 to the 35 percent, the only thing I found was the reference
22 to the 40 and 50 percent on the Causeway. So maybe you
23 can -- it says page 17, Ferry Terminal.

24 MR. ESPINOZA: Yes, you're correct. The stability of
25 Clipper Cove and the Ferry Terminal we're using about 40

1 percent.

2 ECRB MEMBER ROLLO: Okay, okay, thank you.

3 MR. TOOTLE: Any other ferry pier questions. We are in
4 the process of giving you a summary of which of those 12
5 items are covered in each section.

6 ECRB MEMBER COMERIO: Thank you.

7 MR. TOOTLE: The next discussion was on the breakwater.
8 Dilip, if you want.

9 MR. TRIVEDI: Thank you. I'm Dilip Trivedi, for the
10 record. The next couple of slides here are addressing two
11 questions in particular, one on the overtopping and then one
12 on sedimentation effects, or are there any effects of the
13 breakwater on littoral processes in the area.

14 This shows pretty much the cross-section design --

15 THE REPORTER: Excuse me. I can't turn these mics off
16 and I'm getting terrible feedback and it won't be able to be
17 transcribed.

18 ECRB MEMBER COMERIO: Oh, I'm sorry.

19 MR. TOOTLE: Wait until Brad finishes.

20 ECRB CHAIR BORCHERDT: Actually, Brad, why don't you
21 just share it on the mic so that --

22 MR. PORTER: To map kind of the responses in the memo
23 in your packet there with the order of the presentation.

24 I'm just going off the first slide here. So the Project
25 Update corresponded to number 1, the Ferry Pier is 2 through

1 5 and Item 9, the Breakwaters are Items 6 and 7, the
2 Perimeter Shoreline, the lateral deformation is 5 and 9 and
3 the Sea Level Rise is 10 and 11, underneath perimeter
4 shoreline. The Causeway is 8 and 9 and Seismic
5 Instrumentation is 12. So it roughly follows the order and
6 there is some overlap between items but that is a pretty
7 good mapping of what was in the packet.

8 ECRB MEMBER ROLLO: The Breakwater is 6 and 7?

9 MR. PORTER: Yes.

10 ECRB MEMBER ROLLO: Okay, got it.

11 MR. TRIVEDI: So this particular slide is addressing
12 the question on overtopping. And what we are showing here
13 in the table, and this was I think provided -- the method
14 that is shown in here with the CEM. I don't believe it was
15 in the package that was sent over to you. So this was
16 directly in response; it's really answering the question.
17 But the proposed crest elevation of the pile cap is 15 feet
18 NAVD, so it's about 6 feet of freeboard at 100 year tide.

19 And what we did in here was to look at different
20 combinations of events which all, roughly, are in excess of
21 a 100 year return period occurrence. The mean higher high
22 water and the 100 year wave down to a 100 year tide and an
23 annual wave. And in all of those, these different
24 combinations itself, what we computed was the actual, you
25 know, the discrete overtopping itself and it's near zero for

1 the existing case. Under existing sea level states it is
2 almost zero. The highest number there is I think 1.3
3 gallons per minute per foot of breakwater length. With 3
4 feet of sea level rise, and that was there just as an
5 additional information, you know, we do start seeing an
6 increase in the amount of overtopping.

7 This particular event here with the really high water
8 level and the large wave event, you start seeing 30 gallons
9 per minute. This is 36 inch sea level rise. It is right
10 at, about the end of the designed life or maybe even before
11 the designed life of the structure.

12 And there are ways -- you know, we have confirmed with
13 the structural engineers that there are ways to add in maybe
14 a recov wall on top of the pile cap itself in the event that
15 this overtopping starts creating an issue.

16 There's two reasons we are not really going higher.
17 Fifteen feet is above the elevation of the perimeter
18 shoreline improvements in that area outside the breakwater.
19 It's actually higher than the perimeter elevation within the
20 ferry plaza itself. So it's already high.

21 The other reason was, even if there is an overtopping
22 element in there, the dock itself is a sufficient distance
23 away from the breakwater. The amount of overtopping there
24 which would occur under a really large storm event would not
25 be when ferries would be operational anyway.

1 So in terms of berthing, it wasn't much of an issue.
2 In terms of loadings on the float itself, we verified that
3 the amount of water and the wave energy that would be
4 associated with it is definitely much less than what it is
5 being designed for with the kinematic loading and everything
6 else that we are talking about.

7 ECRB MEMBER BATTALIO: So the waves incident to this
8 breakwater are primarily wind waves, they'll be kind of
9 choppy, under these design conditions?

10 MR. TRIVEDI: And for the north breakwater the swell
11 component is pretty significant.

12 ECRB MEMBER BATTALIO: There is a swell component?

13 MR. TRIVEDI: Yes.

14 ECRB MEMBER BATTALIO: Okay. So that will be a little
15 more coherent in terms of like the overtopping.

16 MR. TRIVEDI: Right.

17 ECRB MEMBER BATTALIO: But the choppier wind waves -
18 I'm Bob Battalio - the choppier wind waves are unlikely to
19 produce a coherent wave on the back side because of the kind
20 of randomness of the splashes due to the divergent crests
21 and scalloping. But the swell will be pretty coherent and
22 that would probably have a higher transmission.

23 MR. TRIVEDI: Correct.

24 ECRB MEMBER BATTALIO: But it still should be a lot
25 smaller than --

1 MR. TRIVEDI: They are a lot smaller than the wave
2 heights that are being used for the overtopping movement
3 calcs for the breakwater. You know, what we are seeing is
4 that the local seas are really governing the wave loading
5 itself at high water level. So what is being -- what it is
6 being designed for is it is actually a pretty high water
7 level with a higher, much higher than this condition.

8 ECRB MEMBER BATTALIO: So I think what you are saying
9 here is you are not worried. The wave run-up would exceed
10 the crest. There will be some splash and spray if the wind
11 is blowing in the right direction but it won't really
12 produce a coherent, transmitted wave that causes a problem.

13 MR. TRIVEDI: That's right.

14 ECRB MEMBER BATTALIO: And then with sea level rise
15 there would be greater overtopping. But then, I guess, you
16 could modify the structure in some way.

17 MR. TRIVEDI: We could modify the structure. You know,
18 I think we verified just as a back of the envelope kind of
19 stuff, you know, if you are using the high -- not a
20 significant but if you use the 110, and if you superimpose a
21 90 percent reflection off of these vertical sheet pile
22 elements, even under that condition, you know, that was
23 actually turning out to be actually just a little -- you
24 know, that's more of a deterministic approach to finding out
25 what the water surface profile elevation would be rather

1 than the overtopping. We were getting zero. The water
2 surface profile was below the crest elevation for the
3 existing case and it was just above for the three feet of
4 sea level rise case.

5 ECRB MEMBER BATTALIO: Okay. It's interesting you use
6 gallons/minute/foot, I'm used to cubic feet/second.

7 MR. TRIVEDI: You know, the method in the CEM is
8 actually - I think it's cubic meters/second/meter length.
9 And this was -- GPM seems to be more intuitive.

10 ECRB MEMBER BATTALIO: I guessed that. But it doesn't
11 -- I mean, once you get to 36 inches of sea level rise you
12 have a, it seems like a fair amount of overtopping.

13 MR. TRIVEDI: That's a fair amount.

14 ECRB MEMBER BATTALIO: But then the implication is the
15 water, some of that splashes on the harbor side, some of it
16 splashes on the Bay side. The stuff that splashes on the
17 harbor side is deep enough that it will just circulate out.
18 It doesn't seem to -- it creates some waves but it doesn't
19 seem to --

20 MR. TRIVEDI: Yes, yes. And this is a state which is
21 60, 70, depending on how many years, you know. Maybe over
22 100 years out. You know, at that point there probably will
23 be significant improvements.

24 ECRB MEMBER BATTALIO: We'll be using hovercraft by
25 then.

1 MR. TRIVEDI: We'll be using hovercrafts hopefully.

2 ECRB MEMBER BATTALIO: But so for the existing
3 conditions, this doesn't really seem to -- I'm not sure.
4 Was this issue really raised, the overtopping of the
5 breakwater, in our comments? It didn't seem like that was
6 the main focus of our comments.

7 ECRB CHAIR BORCHERDT: No, I don't think so. And of
8 course, in the case of the overtopping situation, if the
9 storm does come up and we do have overtopping, it's always a
10 situation, as you mentioned, that the ferry service can be
11 temporarily interrupted. I don't think there is a real life
12 safety issue here or anything having -- associated with the
13 overtopping.

14 ECRB MEMBER BATTALIO: I don't know when a good time
15 is.

16 MR. TRIVEDI: This might be, you know.

17 ECRB MEMBER BATTALIO: I did raise before in our last
18 meeting a question about wave reflection, off the harbor
19 side of the north breakwater in particular. With the
20 asymmetric layout of the breakwaters it looks pretty
21 unlikely you would get much reflection of the south
22 breakwater. But the north breakwater, I'm looking at this
23 figure in the handout.

24 ECRB CHAIR BORCHERDT: Before you proceed though with
25 that, Bob.

1 Do you have, do you have additional slides with respect
2 to sedimentation and some of the other issues?

3 MR. TRIVEDI: Yes I do, yes.

4 ECRB CHAIR BORCHERDT: So maybe what we should do is
5 postpone that and continue with your slides and then we'll
6 come back?

7 ECRB MEMBER BATTALIO: Sure, absolutely.

8 MR. TRIVEDI: Sure. And on the specific question
9 related to sedimentation. You know, what we had done in
10 that same -- the reference source is the 2009 coastal report
11 that we had used for developing the CEQA document. And in
12 there we looked at aerial photographs going back to the '40s
13 and we don't really -- we did not really see any evidence of
14 a significant sand buildup or beach along the Causeway.

15 Given the dynamic nature of, you know, the wave
16 conditions here, there really isn't a lot of sediment that
17 is within the system that is staying on the shoreline
18 itself. And so our question that we were trying to address
19 in the EIR was, would the construction of the breakwaters
20 pose a growing sort of effect on sediment transport. And
21 the answer was we really didn't see anything down coast, if
22 you will, for the predominant wave conditions where
23 Sedimentation processes would be affected so that's sort of
24 where we left it.

25 The hydrodynamic modeling that was done along with the

1 waves to produce these other reports, what we did look at
2 was the location of the sediment that would come along the
3 shoreline and would be deflected offshore. And with the
4 angular nature of the breakwaters we felt that there was
5 enough energy to keep that sediment moving along the
6 alignment of the breakwater and out into deep water, which
7 is about 20, 25 feet deep at low tide.

8 The only issue with the whole sedimentation subject
9 was, is there a need for dredging the entrance. Our
10 preliminary calculations here showed that there really isn't
11 an issue with accumulation of sediment until really far into
12 the future when there might be. The issue perhaps is more
13 related to finer sediments that would come in and deposit
14 within the harbor where the energy is substantially lower.

15 So that was, so far, our answer to both of those
16 subjects itself. I know there was another question raised
17 in terms of the ambient wave energy so if there is no
18 further questions on the sedimentation issue and overtopping
19 we can certainly get into the wave exposure.

20 ECRB CHAIR BORCHERDT: Does this conclude your
21 presentation with respect to the breakwaters?

22 MR. TRIVEDI: Yes. Yes.

23 ECRB CHAIR BORCHERDT: I would just like to say that we
24 appreciate receiving the additional information with respect
25 to the field volumes associated with the breakwaters.

1 And I think it -- the breakwater and the Ferry Terminal
2 bring up a big question that has to be asked. And if it is
3 not asked now it is going to be asked later and it has to be
4 asked from the BCDC perspective. And that is that how do we
5 keep fills to a minimum in San Francisco Bay? And if fills
6 are needed then they need to be engineered well and to be
7 crucial or important for functions.

8 The basic question that comes to mind in this regard is
9 basically, is this the best location for a Ferry Terminal
10 with respect to the potential problems associated with
11 putting in the breakwaters and all of the other things? And
12 it is a very -- it is a location on the island that is
13 exposed to a lot of wave action from storms because it is
14 open and it is actually open clear to the ocean. Or would a
15 better location be on the southeastern corner of the island
16 where the large naval vessel dock is? Because in that
17 location that's a leeward side of the island so that it's
18 protected from the wind. It's basically a side of the
19 island where no fill -- it's a location probably where no
20 fill with respect to breakwaters would need to be emplaced.
21 It could be a much more cost-effective solution from the
22 point of view of providing ferry access to the island.

23 And so an important question is, is there a better
24 location for the Ferry Terminal? And so I guess my point is
25 first of all, has this question been addressed? And then

1 second of all, as part of the proceedings of this public
2 meeting I think it would be extremely important to provide,
3 if the current selected location is the best location for
4 the Ferry Terminal, then basically provide justification in
5 the minutes in the proceedings of this meeting as to why the
6 current location was selected as the preferred location.

7 MR. TRIVEDI: Do you want me to start, maybe, and then
8 I can have Bob and James --

9 The CEQA document did look at alternatives. There were
10 two elements that were looked at, one was alternatives
11 transportation modes. The ferry transportation mode is a
12 critical backbone of the transportation plan for Treasure
13 Island and so the shortest route or the quickest route to
14 San Francisco was definitely a driving criteria. That was
15 one.

16 Secondly, the depths and potential sensitive nature of
17 some of the habitats in the south part of Clipper Cove
18 between YBI and Treasure Island. The time was, I think when
19 we looked at it, it was about three times the times that it
20 would take to come here.

21 ECRB CHAIR BORCHERDT: How much? How much additional
22 time?

23 MR. TRIVEDI: It was about three times. This was about
24 10 to -- it was about less than 15 minutes as a ride from
25 San Francisco downtown, downtown Ferry Terminal to Treasure

1 Island. And right around -- going all the way around, I
2 think the distance element and the wake element, which was
3 to slow down the ferries, was adding a significant amount of
4 time to each transit.

5 ECRB CHAIR BORCHERDT: I assume the ferries from San
6 Francisco would come in from the south side or around on the
7 eastern side of Yerba Buena Island, correct? Beneath the
8 Bridge in the shipping channel?

9 ECRB MEMBER ROLLO: The ferry building.

10 MR. TRIVEDI: Right now it -- we don't have a whole
11 baywide picture here. But the shortest distance is from the
12 downtown ferry terminal to Building 1.

13 ECRB MEMBER ROLLO: Ferry Building across.

14 MR. TRIVEDI: Yes, Ferry Building, straight across.

15 ECRB CHAIR BORCHERDT: I can understand that, that
16 reason makes sense.

17 MR. TRIVEDI: That was one of the main elements in
18 there. And as I said, with the amount of initial dredging,
19 maintenance dredging and the sensitive nature of some of the
20 habitat that was observed southeast of Treasure Island, were
21 significant enough impacts that this was a preferred
22 location even though breakwaters were necessary.

23 Bob, do you want to add anything else on that?

24 MR. BECK: I'll just say a few more words as it relates
25 to the transit time. I didn't work on the environmental

1 document but my understanding of the analysis is similar to
2 what Dilip said, that the transit time was a critical factor
3 in the decision-making.

4 There are two issues there. One is to promote choice.
5 If you increase the trip time a lot people are going to be
6 less likely to utilize the ferry versus driving or -- well,
7 particularly versus driving, because our entire focus with
8 the transit is to keep people off of the Bay Bridge. So
9 increasing the transit time decreased the utilization of the
10 ferry.

11 But then also the cost of operating the ferry. Being
12 able to -- right now the analysis is with transit and
13 loading and unloading we can make two trips an hour with a
14 ferry. With the longer transit time the number of ferries
15 we would have to have in service in order to provide the
16 service went up and it was a huge cost driver on the overall
17 transportation program.

18 So even though there are additional dredging costs and
19 so forth associated with the location, they are far
20 outweighed by the savings of operating the ferry system.

21 MR. TRIVEDI: There are two vessels --

22 ECRB CHAIR BORCHERDT: I guess what I am saying with
23 respect to this issue is that -- and I think it's important
24 that these facts and this information that you are
25 presenting here basically be formalized so that later down

1 the road as the construction begins and people start seeing
2 these built, appear in the Bay and they are going to be
3 blocking some of the view with respect to the island and so
4 forth, that -- and then we've got to worry about how those
5 fills are going to be taken to the island, what the impact
6 is going to be on transportation routes and so forth and so
7 on. So I think it is important that a pretty thorough
8 justification be put together for why this is the preferred
9 location.

10 ECRB MEMBER ROLLO: The EIR addresses it in detail.

11 MR. TRIVEDI: Yes, the EIR does.

12 ECRB MEMBER ROLLO: So that -- can we -- would it be
13 helpful if we referenced in our minutes, referenced that
14 document that explains why the west side of Treasure Island
15 is the preferred alternative for the selection of a ferry
16 terminal. I mean, at least if we had that document
17 referenced.

18 MR. MONTES: I also was going to mention that BCDC is
19 going to have to make the case that there is no other
20 alternative upland location or anywhere else. Because
21 before -- as the Chair mentioned, before doing any more fill
22 in the Bay, in order to recommend the project before the
23 Commission the staff has to analyze and make sure that the
24 arguments are there to put more fill in the Bay rather than
25 not. And since there is already a pier there, you know, you

1 have to give us the reasons why, you know, that, why
2 constructing, developing and designing a new ferry terminal
3 is better than utilizing the existing facility from the
4 other side.

5 ECRB MEMBER ROLLO: Yes, but again, if we --

6 MR. MONTES: Besides cost.

7 ECRB MEMBER ROLLO: Yes. But if we reference, at least
8 reference the EIR, that's a step forward because there is a
9 whole section on this, quite a bit of presentation on this
10 issue. But isn't there a -- can BCDC suggest to the
11 applicant that they need to find a place where they can
12 remove fill to balance the amount of fill they are putting
13 in?

14 MR. PERCHER: Yes, if there is fill in the Bay,
15 sometimes they have to mitigate for the fill that is going
16 to be placed there. Ming can --

17 MR. SUH: This is James Suh. We have actually done
18 that calculation on that fill removal and we have located --
19 it just happens to be on the same side, on the west side
20 there is a pier that is currently red-tagged and off-limits
21 because it is falling into the Bay. So that actually would
22 more than compensate for the amount of breakwater and ferry
23 pier. So that is going to be looked at for sure.

24 MS. YEUNG: And the applicants have spoken with the
25 staff about it.

1 ECRB CHAIR BORCHERDT: Yes, that's what I thought.

2 MS. YEUNG: We are analyzing the Bay fill in the
3 mitigation.

4 ECRB CHAIR BORCHERDT: Yes, that's what I thought.

5 MR. TRIVEDI: There is a net, there is a net credit at
6 the end after removal of this. It is actually larger
7 removal than the amount of fill that is going into the
8 breakwaters.

9 ECRB MEMBER ROLLO: Can you provide us with a -- do you
10 have a copy of the EIR?

11 MR. MONTES: I don't have a copy of the EIR.

12 ECRB MEMBER ROLLO: Can you provide us with a copy of
13 the EIR? And also can you let the minutes show that you
14 referenced -- the document that you referenced, the date,
15 and when it was vetted and when it was accepted. I assume
16 all those things have occurred, right?

17 MR. PORTER: I have the final EIR here, I can give it
18 to you electronically.

19 ECRB MEMBER ROLLO: Yes, take care of it as part of
20 your minutes here.

21 MR. MONTES: We have run beyond the 2:30 mark. Can
22 we --

23 MR. TOOTLE: Do you want to address the one last
24 question.

25 MR. TRIVEDI: Yes. Is there anything else from Bob in

1 terms of the -- there was a question about the orientation
2 of the breakwaters and then three breakwater versus two
3 breakwater.

4 ECRB MEMBER BATTALIO: I just want to ask the Chair, is
5 this a good time for me to -- Roger, is this a good time for
6 me to ask my question about the reflected waves?

7 ECRB MEMBER ROLLO: He wants to talk about the
8 breakwater orientation.

9 ECRB CHAIR BORCHERDT: Sure.

10 ECRB MEMBER BATTALIO: Okay.

11 ECRB CHAIR BORCHERDT: A few comments here.

12 ECRB MEMBER BATTALIO: So I'm looking at this graphic
13 in the handout and it shows -- let's just look at the north
14 berth. The north berth has the wave rows and it shows the
15 waves approaching from, you know, kind of west-southwest and
16 I assume that's after they have been affected by the
17 breakwaters and the like.

18 But when I look at that wave approach orientation and
19 the north breakwater orientation, it appears to me that you
20 would get some reflected waves off of that, that north
21 breakwater, that would then be directed at the berth. And
22 the concern is not that those waves, I mean, they should be
23 smaller than the incident waves. But the concern is, that I
24 have or I guess my question is, whether or not that has been
25 considered?

1 Because I do recall years ago at the downtown ferry
2 terminal we had a situation like this and the effect of
3 having waves simultaneously arriving at two directions at 30
4 to 40 degrees off caused some pretty extreme motions in the
5 float, which once it was analyzed there were some spikes in
6 the load time series because of the way the piles and the
7 floats move and how they respond against the incoming waves
8 and the like.

9 And so what we concluded when we were working on the
10 downtown ferry terminal is that having the simultaneous
11 condition of incident and reflected waves, almost -
12 regardless of the fact that reflected waves would be
13 smaller, causes a wave feel that really increases the loads
14 on their pilings and also affects your operational motions.
15 The motions might be too great, too much motion for people
16 to access safely.

17 And I brought this concern up before and I don't expect
18 you to necessarily address it now if you haven't analyzed it
19 but I do recommend that you take a close look at that, both
20 in terms of your pile loadings and also in terms of your
21 vessel -- your float motions and the motions that people
22 will experience as they are walking on the gangways and
23 whether or not that knocks off some of your operational
24 time.

25 MR. TRIVEDI: Sure, yes. I mean, that was -- a

1 specific surge modeling or analysis was not undertaken at
2 the time when we did this work, primarily because the
3 original plan was to have a mole -- we don't have that
4 figure in the presentation. But the way the breakwater --
5 imagine this is the northern breakwater. We had a
6 significant portion of the connector from the rock dike to
7 the sheet pile element with a rock mole, which is absorbing.

8 ECRB MEMBER BATTALIO: It dissipates.

9 MR. TRIVEDI: Yes, dissipating. And through the
10 discussions with the resource agencies and BCDC staff and
11 others, you know, that was taken off, primarily because of
12 the amount of bay fill that it was adding to the project.
13 And so at the present time I would say that either leaving a
14 gap of some kind, which would be -- I should mention in here
15 that the design level of the Ferry Terminal, since there are
16 so many different ways.

17 As is typical in marine engineering, we take it to a
18 level of design and the contractor does come up with
19 different alternatives perhaps, and that is exactly what
20 happened with the downtown ferry terminal. We designed a
21 type of structure which ended up being not what was
22 constructed because of the design nature. That's probably
23 what is going to happen here also. And so if the results
24 show that a gap at the connector to the rock dike is
25 necessary, is advantageous, it will be left in there.

1 ECRB MEMBER BATTALIO: Yes. I think that that would
2 help quiet the basin a bit and certainly you will have some
3 enhanced run-up and choppiness in that corner. So I think
4 leaving a gap certainly would be something that would occur
5 to me or to provide some sort of wave dissipation mechanism
6 still, I think, at the ferry float. I think your wave
7 climate is not going to be as good as these numbers
8 indicate, because of the reflected wave, which isn't
9 represented here.

10 ECRB MEMBER ROLLO: You're referencing Figure 5.26?

11 ECRB MEMBER BATTALIO: It's Alternative 3.

12 ECRB MEMBER ROLLO: Yes.

13 ECRB MEMBER BATTALIO: And it's called -- yes, 5.26 in
14 the back of the handout.

15 ECRB MEMBER ROLLO: So the north berth gets a wave of
16 1.48 max and the south gets .41?

17 ECRB MEMBER BATTALIO: Yes. And if you look at the --
18 it says, for example, about a one foot wave, .8 to 1.2 feet
19 is about 1.38 hours per year. That seems low to me. My gut
20 feeling is that if you added boat weight in you would get,
21 you would get some half-foot waves at least, especially for
22 the monohulls you'd have a little bit more than that. So I
23 think what this is is a wind-wave analysis for instant waves
24 only without the reflected waves. And with that it's maybe
25 a little on the lower side, I think. I would guess. It's

1 certainly within method uncertainty, but if you added in a
2 few things you would get these waves a little more often.
3 Whether or not that's a problem operationally, I'm not
4 clear.

5 MR. TRIVEDI: I should point out that these are not the
6 waves that are being used to design the float.

7 ECRB MEMBER BATTALIO: Right.

8 MR. TRIVEDI: This is an incident wave climate.

9 ECRB MEMBER BATTALIO: Yes, for operational.

10 MR. TRIVEDI: More for an operational analysis of how
11 many hours in a year the Ferry Terminal might be affected.

12 MR. PORTER: Dil, if I might, Brad with Moffatt &
13 Nichol. We were designing -- we are analyzing the float
14 right now and I think that is the analysis that Rod is going
15 to offer analysis. So Bob, yes, we are looking at reflected
16 waves.

17 ECRB MEMBER BATTALIO: Yes, I think that's my main
18 point is I would encourage you to look at that. I think you
19 are going to have to do something to deal with those
20 reflected waves off the harbor side of the north breakwater.
21 And you maybe do want to leave a gap just so you don't get
22 hyper-splash up on the shore there.

23 ECRB MEMBER ROLLO: What is considered an acceptable
24 hours/year for a one foot?

25 ECRB MEMBER BATTALIO: I would have to look back,

1 because we looked at this in ferry for the downtown ferry
2 terminal.

3 ECRB MEMBER ROLLO: Yes.

4 ECRB MEMBER BATTALIO: And I'd have to look back at
5 that. I mean, these, you know, one hour per year is almost
6 nothing.

7 ECRB MEMBER ROLLO: Yes.

8 ECRB MEMBER BATTALIO: You know, that could happen at
9 night when you're not running the ferry, so I think that's
10 great. It could easily be higher than that though,
11 especially with reflected waves.

12 I think there -- I think looking at the downtown ferry
13 terminal you might some criteria. I haven't -- I'd have to
14 look back at the notes.

15 MR. TRIVEDI: And again, the purpose of that exercise
16 that we did in 2009 or 2008 was primarily to justify the
17 need for a breakwater. And so we ended up doing these
18 analysis with and without a breakwater to compare how many
19 hours would be lost if we did build a breakwater and how
20 transit would be affected. So that was primarily the
21 reason.

22 ECRB MEMBER ROLLO: So how many hours would you lose,
23 if you didn't build a breakwater. Because that speaks to
24 the question of fill in the Bay.

25 MR. TRIVEDI: Yes. And so that was the previous. In

1 fact, here I have the --

2 ECRB MEMBER ROLLO: Which one is that?

3 MR. TRIVEDI: I thought that particular one was in
4 there but this --

5 ECRB MEMBER ROLLO: Alternative 1? No, that's a
6 symmetrical breakwater. Alternative 2 was a --

7 MR. TRIVEDI: Yes, there was the initial condition
8 which was no breakwater, which is in reference -- the
9 Appendix B. And there we were looking at 27.5 days in the
10 year that the northern berth will be affected with waves
11 which are greater than one foot.

12 ECRB MEMBER ROLLO: That wasn't handed out then?

13 MR. PORTER: Frank, that was part of our submittal back
14 in January.

15 ECRB MEMBER ROLLO: Okay.

16 MR. PORTER: That's the reference.

17 MR. TRIVEDI: That's the original reference itself, the
18 2009.

19 ECRB MEMBER ROLLO: Okay.

20 MR. PORTER: It was submitted to the ECRB in January.

21 MR. TRIVEDI: And 28 days, but 28 days in three hour
22 increments could be, you know, three months or four months
23 in a year. And so it clearly did not work without a
24 breakwater.

25 ECRB MEMBER ROLLO: Okay.

1 ECRB CHAIR BORCHERDT: Roger Borchardt. And I suspect
2 that some of your largest waves are going to be coming in
3 from the south because the storms in the Bay, the larger
4 storms often come from the south. They generate waves that
5 are going to be traveling north. And probably this
6 configuration alternate, Alternative 3, is going to allow
7 some of those waves really to get into the harbor.

8 Now the point is that, you know, how many hours is that
9 going to disrupt ferry service. I think it probably will
10 disrupt ferry service a significant portion of the time that
11 these storms are going on and so that should be built into
12 these costs with respect to thinking about which route is
13 the best. In any case, a solution to that, of course, is to
14 go to Alternative 2, which is to put another breakwater out.
15 But unless that is really needed I wouldn't want to
16 encourage that because that means more fill in the Bay.

17 MR. TRIVEDI: It definitely makes it, you know, calmer
18 in the harbor itself but it comes at the expense of a lot of
19 maneuvering and dredging that would be needed.

20 ECRB CHAIR BORCHERDT: That's correct.

21 MR. TRIVEDI: They work counter to each other. You
22 know, a calm harbor means more sediment deposition.

23 ECRB MEMBER BATTALIO: And I agree with Roger's
24 comments. I mean, even though we are talking about the
25 operational I think that's an issue of whether or not when

1 you consider reflections it would lower your operational
2 time below some threshold, I'm not sure. It might.

3 But I'm using this figure because it has a nice graphic
4 to it and I can see the refractive and transform wave
5 approach direction and I don't see that for the extremes.
6 In the extreme condition the 100 year southerly storm might,
7 I would expect, be your design condition with a reflected
8 wave and I don't think that's a minor consideration at all.
9 You know, the solution might be to put some sort of
10 dissipation on the back side of that north breakwater. And
11 as far as the gap goes, yes, you're probably going to want
12 something like that. You are not going to want to trap the
13 waves inside the, inside of the harbor.

14 Just some comments. I'm sure you'll get into this as
15 you get into the design.

16 MR. TRIVEDI: And then the next one is the perimeter
17 shoreline.

18 MR. TOOTLE: Did you want to take a break?

19 MR. MONTES: Should we break now for maybe five minutes
20 and come back?

21 ECRB CHAIR BORCHERDT: Yes, we can break for five
22 minutes. We do have to stay on schedule here, though,
23 because I think we still have quite a bit of material to
24 cover. So let's take a -- if people would like to have a
25 five minute break let's have a five minute break.

1 MR. MONTES: Just five minutes. We'll come back at
2 3:00 o'clock.

3 (Off the record at 2:49 p.m.)

4 (On the record at 2:57 p.m.)

5 MR. MONTES: Before we start the discussions again I
6 wanted to let the audience know that we have the Chief of
7 Permits and Director of Permits here. Introduce yourselves.

8 REGULATORY PROGRAMS DIRECTOR McCREA: Hi, good
9 afternoon, I'm Brad McCrea; I am the director of the
10 regulatory program at BCDC.

11 CHIEF OF PERMITS BATHA: And I'm Bob Batha; I'm the
12 Chief of Permits.

13 MR. MONTES: And anybody else that came in later,
14 please introduce themselves.

15 MR. LOKE: My name is Kheay Loke; I'm with TIDC, the
16 developer. I work with James.

17 MR. ELIAHU: Uri Eliahu with ENGE0.

18 MR. MONTES: Thank you.

19 MR. PAPADOPOULOS: Stefanos Papadopoulos with ENGE0.

20 MR. MONTES: And a reminder to please put your name on
21 that sheet of paper in back. Chair?

22 ECRB CHAIR BORCHERDT: Thank you. So now we start with
23 the perimeter shoreline.

24 MR. TOOTLE: All right. So we have covered a little
25 bit of this topic from a geotechnical perspective when we

1 were talking about the ferry pier so if some of this is a
2 little bit of a repeat again, I just want to emphasize that
3 the perimeter and the non-project scenario, we would
4 anticipate very large lateral deformations with good
5 portions of the island going in towards the Bay and then the
6 with-project scenario mitigating that substantially.

7 In addition to the deep soil mixing at Clipper Cove and
8 at the ferry pier, as I have mentioned earlier, where the
9 development setback is much greater, particularly next to
10 what we call City Side Park north of the north breakwater.
11 We had a less rigid, spreading mitigation alternative
12 proposed, which was a stone column ground improvement
13 technique right behind the top of slope. And so for that
14 analysis you mentioned earlier whether the PLAXIS was
15 pseudostatic or fully dynamic? We did do a fully dynamic
16 PLAXIS model on this location; we figured this condition
17 warranted it. This is a summary of that result.

18 We did have six earthquake motions that we took a look
19 at. And so this plot on the top is deformation in feet, as
20 is right on the vertical axis, and distance from the
21 shoreline so it is scaled to the figure below. So zero
22 being the top of slope with the deformations going down as
23 you move inland. We used the same deformation criteria of a
24 foot or less at our setback location. This shows the
25 results of various earthquake motions and the resulting

1 deformation out here at the setback.

2 And then for reference we wanted to plot the lateral
3 deformations observed during Loma Prieta. Although the
4 thickness of the line at this scale almost went right across
5 to zero I just put the circle in here to say that we had
6 some deformations in this location, that we are on the order
7 of less than half a foot and they kind of went to zero as
8 you got about 80 to 100 feet inland. So just sort of a
9 relative perspective from the design event or something
10 closer to a design event as compared to Loma Prieta.

11 ECRB MEMBER FRENCH: And this was including
12 liquefaction then?

13 MR. TOOTLE: Yes.

14 ECRB MEMBER FRENCH: So the strengths you put in, was
15 PLAXIS liquefying the soil or you gave it a -- started with
16 a liquefied strength?

17 MR. TOOTLE: Correct me if I'm wrong but we used the
18 liquefied strength when we did the PLAXIS analysis.

19 ECRB MEMBER FRENCH: What kind of strengths did you
20 use, just out of --

21 MR. ESPINOZA: We used all three relationships, we used
22 Seed and Harder. So it's an average between 200 PSF up to
23 400 PSF on the higher, local material in the Bay.

24 MR. TOOTLE: and then this is just a representation of
25 one of those earthquake motions in the zero degree direction

1 and 90 degree direction. Or maybe I got those backwards.
2 But again, the deformation contours and the strain
3 development locations, comparing what you would get from a
4 one-dimensional shake analysis and the PLAXIS analysis. We
5 felt they matched up very well. And again, showed the
6 deformation is limited really to the edge and not
7 propagating that far back into the development.

8 ECRB MEMBER FRENCH: Those spectra are taken where, at
9 the ground surface?

10 MR. ESPINOZA: The spectra are taken at the development
11 site.

12 ECRB MEMBER FRENCH: At the ground surface?

13 MR. ESPINOZA: Yes.

14 MR. TOOTLE: And then sea level rise is also a concern
15 on the perimeter shoreline. So that concluded the geotech
16 portion of the remaining perimeter shoreline because
17 everything else was the deep soil mixing that we talked about
18 with the ferry pier. So if we wanted to move on to the
19 shoreline, we can.

20 MR. TRIVEDI: I am just going to breeze through this
21 very quickly because it is really part of a package that had
22 been done for staff. It shows for Sub-phase 01 what is
23 being initially constructed along the shoreline in terms of
24 perimeter improvements and what the potential options
25 available to go beyond the -- you know, well beyond even end

1 of century levels of sea level rise. We are showing in here
2 up to 5.5 feet of sea level rise that can be accommodated.

3 So for Clipper Cove Promenade. That's one of the main
4 things I would say has changed as the design developed over
5 the past few months has been rather than to go to a 16
6 inches of sea level rise allowance at the time of
7 construction itself, the difference between going to that
8 and just a little bit higher, which is 36. So in terms of
9 20 inches, given the type of improvements that are being
10 made on the perimeter, which is rock, we felt it was
11 warranted to just go ahead and go up to a much higher level
12 of allowance and bring up grades on the back side also for
13 the promenades to not have a visual obstruction.

14 So with that, these elevations here are showing that
15 the perimeter is well beyond what current levels of sea
16 state would require and 36 inches of sea level rise is being
17 included in the initial construction itself.

18 ECRB MEMBER BATTALIO: Dil, before you move on I just
19 want to, if I could?

20 MR. TRIVEDI: Yes.

21 ECRB MEMBER BATTALIO: Just to make sure I understand.
22 So that light blue line with the data triangle thing, it is
23 the 100 year wave run-up elevation or total water level?

24 MR. TRIVEDI: For this particular location, Clipper
25 Cove, there's no waves.

1 ECRB MEMBER BATTALIO: Okay.

2 MR. TRIVEDI: So it's all the 100 year tide, which is
3 9.2; 3 feet of sea level rise on top of that, which would be
4 12; freeboard above that, some amount of freeboard. So the
5 proposed elevation is about 12.5 along Clipper Cove.

6 ECRB MEMBER BATTALIO: And then in other places where
7 you are actually including the wave run-up.

8 MR. TRIVEDI: It is much higher.

9 ECRB MEMBER BATTALIO: But you are including that in
10 your flood elevation that you're adding sea level rise to?

11 MR. TRIVEDI: Yes.

12 ECRB MEMBER BATTALIO: That was one of the things that
13 was a little confusing before, prior to this version. So
14 now you've actually, you're raising the perimeter.

15 MR. TRIVEDI: Yes, we are raising the perimeter.
16 Depending on where you are -- maybe I can go to Waterfront
17 Plaza here, for example. This is within the harbor so maybe
18 this is really not the one. But an exposed -- so this is
19 the exposed shoreline right there.

20 ECRB MEMBER BATTALIO: Okay.

21 MR. TRIVEDI: There the proposed elevations here that
22 are shown are 15.5.

23 ECRB MEMBER BATTALIO: So that's the 100 year total
24 water level --

25 MR. TRIVEDI: It's the total water level plus 3 feet.

1 ECRB MEMBER BATTALIO: -- with sea level added to that,
2 okay.

3 MR. TRIVEDI: Yes. So 3 feet above -- well, not 3 feet
4 above. It's the runoff associated with a higher stage in
5 the Bay.

6 ECRB MEMBER BATTALIO: Right, it's the 100 year total
7 water level.

8 MR. TRIVEDI: Yes, it's the total water level as
9 calculated based on the slopes that we are using.

10 ECRB MEMBER ROLLO: Dilip? Frank Rollo.

11 The gray shading, is that the -- is that the buttress?

12 MR. TRIVEDI: So this is the existing rock right now.
13 So this is all of the existing --

14 ECRB MEMBER ROLLO: Right. But the gray block behind
15 it?

16 MR. TRIVEDI: This right here? Yes, these are, in this
17 particular location, stone columns.

18 MR. TOOTLE: That's the stone column.

19 ECRB MEMBER ROLLO: That's the stone column. And you
20 are also doing some -- that's all stone columns, right?

21 MR. TRIVEDI: Yes. So it's DSM at Clipper Cove and the
22 Ferry Plaza and along City Side Park it's all stone columns.

23 ECRB MEMBER ROLLO: So all the added fill, where fill
24 will be added to accommodate the 36 inch sea level rise or
25 the 66, will those areas be surcharged to accommodate that

1 additional added height of fill?

2 MR. TOOTLE: The additional fill is not that much. I
3 think it's on the order of a foot or so to get to that level
4 of protection.

5 ECRB MEMBER ROLLO: Well here. But about where you are
6 adding 66?

7 MR. TRIVEDI: With the 66 the options are shown as in
8 -- when the need arises, for example, at 66 --

9 ECRB MEMBER ROLLO: Right. No, when the need arises
10 you are going to raise the grade.

11 MR. TRIVEDI: Yes.

12 ECRB MEMBER ROLLO: I'm asking, will you --

13 MR. TRIVEDI: Yes, on DSM, yes. It will only be on --
14 because at that point it will be functioning as a levee.

15 ECRB MEMBER ROLLO: Yes.

16 MR. TRIVEDI: And for a levee, you know, it's either a
17 -- in the stone column areas there is a seepage cutoff and
18 the foundation of the levee is on the stone columns
19 themselves.

20 ECRB MEMBER ROLLO: So it will only be in the areas
21 where ground improvement has occurred.

22 MR. TRIVEDI: Yes.

23 ECRB MEMBER ROLLO: There will be no added fill 30
24 years from now to accommodate the additional three feet.

25 ECRB MEMBER ROLLO: We are not -- for the extreme sea

1 level rise that could happen in the future.

2 ECRB MEMBER ROLLO: Yes.

3 MR. TOOTLE: We are not pre-mitigating those conditions
4 today. We are going to mitigate for what has being
5 constructed today.

6 ECRB MEMBER BATTALIO: I think what Frank is asking is
7 whether or not the soil will be strong enough to accommodate
8 the --

9 ECRB MEMBER ROLLO: Yes, but I'm worried about
10 settlement. I guess I'm asking the question, you are
11 anticipating a 36 inch rise. Whatever height of fill you
12 are placing to accommodate the 36 inch rise will be placed
13 over the -- in the buttress areas. There won't be any fill
14 extending beyond that?

15 MR. TOOTLE: That's primarily true, yes.

16 MR. TOOTLE: Okay.

17 MR. TRIVEDI: In this area.

18 ECRB MEMBER ROLLO: Yes. But at some point in time you
19 may have to add another 30 inches, correct? And now does
20 that 30 inches, will that added 30 inches extend beyond the
21 area --

22 MR. TRIVEDI: Yes.

23 ECRB MEMBER ROLLO: Okay. Will the ground that is
24 beyond the buttress be surcharged to accommodate this added
25 weight of fill that you are going to be placing at some time

1 in the future?

2 MR. TOOTLE: No, we are not going to pre-mitigate for
3 potential consolidation of that future public works. That
4 work will have to be -- that impact will have to be included
5 in that future design.

6 ECRB MEMBER ROLLO: So because that falls within our
7 boundary that means you have to come back to us -- I won't
8 be here, some of you will. But you are going to have to
9 come back to us because you will be raising the grade an
10 additional 30 inches.

11 MR. TOOTLE: Yes. I think that -- whatever that
12 project is, I think conceptually we have plenty of room to
13 accommodate lots of different potential alternatives. But
14 whatever the selected alternative is, we would envision
15 coming back to this Board if it exists at that time or
16 whatever --

17 ECRB MEMBER ROLLO: Wait, wait, wait.

18 MR. TOOTLE: In whatever form it existed or whatever,
19 that would have to be re-permitted. But we are not trying
20 to pre-design for it now.

21 ECRB MEMBER ROLLO: We might outlast the island.

22 (Laughter.)

23 MR. TRIVEDI: In the three separate areas what we were
24 showing, our intent here was to show that our options in
25 this particular Clipper Cove area, this would become a

1 levee. So you can either make it a levee -- there's enough
2 land there and benefits there to perhaps not even construct
3 a levee but just construct the entire 100 foot and just make
4 it a natural high ground.

5 As far as the wharf and plaza, yes, there will be a
6 need in the future to raise the elevations that are under
7 the shelter. Again, we are talking 66 inches, so this would
8 be after 3 feet has already occurred, you know. Again I
9 would say, well beyond the life of this particular -- the
10 design life of the structure.

11 Options that exist. You know, very similar. Along
12 City Side Park. This is being added at the current time and
13 it is not on improved soil but that settlement is being
14 taken into account. It's the feature back here that will be
15 on improved soils at that time.

16 ECRB MEMBER BATTALIO: Question. So you all are
17 working with the BCDC staff on this?

18 MR. TRIVEDI: Yes, that's correct.

19 ECRB MEMBER BATTALIO: I think I know the answer but I
20 want to ask it anyway for the record.

21 MR. TRIVEDI: Sure.

22 ECRB MEMBER BATTALIO: When the new FEMA maps come out,
23 and I don't know, I guess they are being reviewed but we
24 can't see them, they're sequestered in the review process or
25 something. But when they do come out, all the living

1 quarters will be above and beyond the flood zones in the 100
2 year maps?

3 MR. TRIVEDI: Without improvements and during
4 construction, you mean?

5 ECRB MEMBER BATTALIO: Well no.

6 MR. TRIVEDI: Oh, after construction.

7 ECRB MEMBER BATTALIO: After the project is built.

8 MR. TRIVEDI: Everything is. I mean, after the
9 shoreline, the promenade is beyond the FEMA flood zone.

10 ECRB MEMBER BATTALIO: The existing or the proposed?

11 MR. TRIVEDI: The proposed. The existing shoreline
12 areas --

13 ECRB MEMBER ROLLO: So the ground floor of all
14 residential development will be above any -- any standard
15 established --

16 MR. TRIVEDI: It will be above the FEMA flood zone even
17 after 36 inches of sea level rise has been added.

18 ECRB MEMBER BATTALIO: I just wanted to make sure
19 because that was one of the questions we had.

20 MR. TRIVEDI: Yes.

21 ECRB MEMBER BATTALIO: Knowing that the new FEMA maps
22 are coming out it would seem beneficial to have the
23 residences above those flood lines.

24 MR. TRIVEDI: Yes. The new FEMA maps are going to
25 show, you know, somewhere -- hopefully it shows exactly what

1 we had calculated, you know, plus or minus a few inches.
2 But it's in the 9.5 range, 9.2 to 9.5 would be the FEMA
3 flood zone. At a minimum a finished floor is 12.5.

4 ECRB MEMBER BATTALIO: Well that's the still water
5 level or the Bay water level.

6 MR. TRIVEDI: They are 300 feet in back of the --

7 ECRB MEMBER BATTALIO: And with the wave run-up and
8 overtopping that would occur right now, but with your new
9 perimeter maybe not. Regardless of all that, right now on
10 the existing raise the FEMA maps will show wave action
11 propagating over the top of the shore and into the site.

12 MR. TRIVEDI: Yes, until the energy falls off. They
13 are showing as Zone B --

14 ECRB MEMBER BATTALIO: Right.

15 MR. TRIVEDI: Which is only along the perimeter. It
16 should be to some distance inboard. We will be way above
17 that.

18 ECRB MEMBER BATTALIO: So my question is, just to be
19 really clear, is that based on what everybody knows right
20 now, we are anticipating that the residences will be above
21 and beyond the new FEMA maps that are presently under review
22 but not available for us to look at.

23 MR. TRIVEDI: Yes.

24 ECRB MEMBER BATTALIO: Thank you.

25 ECRB CHAIR BORCHERDT: This is Roger Borchardt; just to

1 follow on with one question.

2 What are the anticipated sources of the fill and how is
3 it going to be transported to the island?

4 MR. TRIVEDI: That might be you, Stefanos.

5 MR. PAPADOPOULOS: Stefanos Papadopoulos. I can answer
6 to that.

7 We have been actually bringing fill to the site over
8 the past several years. We brought all of the fill that
9 came out from the fourth bore of the Caldecott Tunnel; other
10 sources are the excavation of the Central Subway station,
11 also the Transbay Terminal tower. So those resources alone
12 is about half a million to 600,000 cubic yards of soil. And
13 of course, even more dirt will be coming --

14 ECRB MEMBER ROLLO: Including the Bay mud?

15 MR. PAPADOPOULOS: No.

16 ECRB MEMBER ROLLO: So not all is soil.

17 MR. PAPADOPOULOS: No. I mean, pseudo-new soil.

18 ECRB MEMBER ROLLO: Okay.

19 ECRB CHAIR BORCHERDT: And you say that has already
20 been recovered or it is still in place?

21 MR. PAPADOPOULOS: About 250,000 yards of it has been
22 already stockpiled at this point.

23 ECRB MEMBER ROLLO: Are you stockpiling it on YB, on
24 Yerba Buena, or are you stockpiling it on Treasure Island?

25 MR. PAPADOPOULOS: Treasure Island.

1 ECRB MEMBER ROLLO: So you are surcharging now?

2 MR. PAPADOPOULOS: Yes.

3 ECRB MEMBER ROLLO: Is it a controlled surcharge?

4 MR. PAPADOPOULOS: Well, we have some monuments.

5 ECRB MEMBER ROLLO: The answer is, no.

6 MR. PAPADOPOULOS: The contractor wants to know how
7 much dirt he is going to lose.

8 ECRB MEMBER ROLLO: So you're creating a -- okay,
9 that's all right.

10 MR. TRIVEDI: Yes. It is not part of the project at
11 this time. Because not even the land transfer hasn't gone
12 through.

13 ECRB MEMBER ROLLO: Yes, yes, that's okay, I don't want
14 to know. I don't want to know.

15 ECRB CHAIR BORCHERDT: And the material from the
16 Caldecott boring, has that already been --

17 MR. PAPADOPOULOS: Yes. (Inaudible) is the material
18 from the Caldecott boring.

19 ECRB CHAIR BORCHERDT: And that's what we'd get for
20 building dikes and whatever.

21 MR. PAPADOPOULOS: Yes, I mean --

22 ECRB MEMBER FRENCH: Claystone rock.

23 (Several people speaking at once.)

24 ECRB CHAIR BORCHERDT: Thank you.

25 MR. PAPADOPOULOS: You're very welcome.

1 ECRB MEMBER ROLLO: So you guys are doing Atterberg
2 limits tests on it because now you're going to create an
3 expansive soil issue now?

4 (Laughter.)

5 ECRB MEMBER FRENCH: Actually there's hydrocarbons in
6 that too, there's some oil, some petroleum in that Caldecott
7 Tunnel. Naturally occurring.

8 ECRB MEMBER ROLLO: James doesn't want to hear that.
9 James doesn't want to hear that.

10 MR. ELIAHU: It's a story with NGOs. No, it went
11 through a very exhaustive range of tests before it was ever
12 loaded onto a truck and brought to the island. So there was
13 material on the surface that had been impacted by years of
14 exhaust fumes and that was not brought to Treasure Island.

15 ECRB MEMBER FRENCH: No, there was naturally-occurring
16 ancient --

17 MR. ELIAHU: Lignite, right.

18 ECRB MEMBER FRENCH: Well, some of it was oily and
19 sticky.

20 MR. ELIAHU: But there was not, none of that was
21 brought to Treasure Island. Everything was tested before
22 it --

23 ECRB MEMBER FRENCH: I wasn't meaning to --

24 MR. TOOTLE: The Causeway. So as I mentioned earlier,
25 the Causeway is considered the primary point of ingress and

1 egress from the island. This slide has a few figures you
2 have seen before and maybe a few different modifications.
3 There's been lots of exploration within the Causeway. This
4 is a geologic cross-section cut from Yerba Buena Island
5 going to Treasure Island, which is oriented this way, so
6 Yerba Buena over here and Treasure Island over there.

7 We took a look at several different cross-sections
8 through the Causeway. Cross-section H is what is presented
9 in this presentation. It was considered the most critical
10 section given the height of the embankment and the relative
11 thickness of the Bay mud. The Bay mud does get thicker as
12 you move towards Treasure Island and then the embankment
13 gets lower so that conditions were considered most critical
14 here at this cross-section.

15 So we have added to this figure kind of the 100 year
16 water surface elevation as well as the depth of removal that
17 is going to take place. We mentioned earlier in the
18 presentation that the mitigation for the Causeway is to
19 remove the majority of the embankment fill that exists now,
20 get down to this elevation of this orange line and then do
21 the deep soil cement mixing across pretty much the entire
22 foundation bottom of the Causeway, stabilize the foundation
23 and then replace the embankment with new engineered fill.

24 ECRB MEMBER FRENCH: So that is a significant
25 excavation before you begin trimming and replacing.

1 MR. TOOTLE: Obviously, you know, as you get closer to
2 Yerba Buena the cuts are deeper. That is going to have to be
3 staged, obviously. We are not going to cut off access to
4 the project site when we do that. So it is going to require
5 shoring, it is going to require staging to take it out and
6 put back in pieces. But that is the design that is
7 currently used to stabilize the Causeway and make sure that
8 after the design event it is still intact.

9 ECRB MEMBER ROLLO: Frank Rollo. So you are going to
10 leave in up to 30 feet of fill in the vicinity of boring --
11 what is that, 122-C-9? Or 10 -- yes, 122-C-9 or B-5, in
12 that area. Did you consider -- a couple of questions.

13 Question one is, you indicated that you are going to do
14 the fill work before you do the ground improvement. Did you
15 consider doing the ground improvement, taking advantage of
16 the improved ground as a -- as a way of stabilizing the
17 cuts?

18 MR. TOOTLE: Well the intent is to remove the fill, do
19 the ground improvement and then replace the fill.

20 ECRB MEMBER ROLLO: I'm sorry, then I misunderstood.
21 So the fill removal will be all the way across, not just the
22 center portion?

23 MR. TOOTLE: Exactly.

24 ECRB MEMBER FRENCH: It is the whole length but you are
25 doing right and left, half at a time, right? On H you're

1 going to do one side and then the other side.

2 MR. TOOTLE: Exactly. So --

3 ECRB MEMBER FRENCH: On G you're going to do the whole
4 length of it.

5 MR. TOOTLE: The means and methods obviously will be
6 dependent on the contractor to some degree. But how we
7 envision the construction occurring would be to put in
8 shoring down the middle of the Causeway, remove the material
9 all the way down to this orange line, go in with sole cement
10 and treat the foundation materials and then replace that
11 section. And do that along one side of the Causeway and
12 then repeat the process on the other side of the Causeway.

13 ECRB MEMBER ROLLO: Yes, but what about the center?

14 ECRB MEMBER FRENCH: That's an awful big wall.

15 ECRB MEMBER ROLLO: What about the center? Are you
16 doing the ground improvement in the center portion too?

17 ECRB MEMBER FRENCH: Well, there is --

18 ECRB MEMBER ROLLO: I guess I -- then I didn't read
19 your --

20 ECRB MEMBER FRENCH: Longitudinally it's the whole
21 length.

22 MR. TOOTLE: Yes, so --

23 ECRB MEMBER ROLLO: Yes, I understand that.

24 MR. TOOTLE: So there's a -- there's all kinds of --
25 skip psst these. So this is a plan view along cross-section

1 H-H.

2 ECRB MEMBER ROLLO: Yes.

3 MR. TOOTLE: And so essentially the whole footprint, I
4 mean, we've shaded in as getting treated. So the shoring
5 will go down the middle. The DSM improvement is
6 predominately closed cell, so you can see all the cells are
7 closed. The cell in the middle will be open essentially the
8 length of the Causeway although it's closed at both ends
9 with the improvements that are going on at Treasure Island
10 and with the geology that's on Yerba Buena Island. So in
11 effect you have open cell DSM improvement right down the
12 center and then closed cell on either side.

13 In the design section that is shown here you can see
14 there's different replacement ratios. A higher replacement
15 ratio near the edge and lower replacement ratio in the
16 middle. And part of that is during the design process --
17 I'll back up a little bit. We started looking at
18 stabilizing the edges as we poured the rest of the island.
19 But once we started doing the PLAXIS analysis we realized
20 that even though we were showing deformations at the back of
21 the DSM that met our criteria there was lots of deformation,
22 vertical deformation occurring in the center, so the center
23 was sagging even though the sides were kind of staying in
24 place. And so that's why additional DSM was added towards
25 the center to support the center of the Causeway.

1 ECRB MEMBER FRENCH: Why would they -- are you raising
2 the existing grade of road or are you putting it back to
3 where it is currently?

4 MR. TOOTLE: We are putting it back to where it is
5 currently?

6 ECRB MEMBER FRENCH: So why would it sag much? Hasn't
7 it already settled?

8 MR. TOOTLE: Well, there is seismically-induced
9 settlement that can occur as well.

10 ECRB MEMBER ROLLO: Okay, but I'm looking at T3-18, the
11 sketch. Okay. This shows, as I read this --

12 MR. TOOTLE: That's similar --

13 ECRB MEMBER ROLLO: The yellow is the -- the yellow is
14 the DSM, the blue is the DSM compacted fill.

15 MR. TOOTLE: No, it --

16 ECRB MEMBER ROLLO: What is the blue -- what is the
17 blue -- What is the blue that I'm looking at?

18 MR. TOOTLE: The blue is still DSM although it's -- the
19 replacement ratio isn't as robust as on the sides in the
20 yellow.

21 ECRB MEMBER ROLLO: Okay. So then what is the white
22 gap in the middle?

23 ECRB MEMBER ROLLO: That would be where the open cell
24 DSM is. Essentially where the shoring would have to go to
25 facilitate the construction. And so --

1 ECRB MEMBER FRENCH: What kind of shoring are you
2 using?

3 MR. TOOTLE: We haven't designed the shoring, like I
4 said.

5 ECRB MEMBER FRENCH: What if you specify it as being a
6 DSM?

7 ECRB MEMBER ROLLO: I mean, DSM --

8 ECRB MEMBER ROLLO: Before you get to that just
9 explain. So this isn't open. But then is there any -- what
10 compaction is occurring. What densification is occurring in
11 that gap?

12 MR. TOOTLE: The only, the only improvement that you
13 get in the gap is what is ancillary to the improvement that
14 is going on at either side.

15 ECRB MEMBER ROLLO: Okay.

16 MR. ELIAHU: But only at -- sorry, this is Uri with
17 ENGE0. That's at the lower elevation.

18 ECRB MEMBER FRENCH: Right. Above you have the
19 compacted fill.

20 MR. TOOTLE: Yes.

21 MR. ELIAHU: Above it's all --

22 ECRB MEMBER FRENCH: You're excavating to this dashed
23 line.

24 MR. TOOTLE: Correct.

25 ECRB MEMBER FRENCH: Right there.

1 MR. TOOTLE: Right there.

2 ECRB MEMBER FRENCH: Is that correct?

3 MR. TOOTLE: That's correct.

4 ECRB MEMBER FRENCH: Which is the interface between the
5 blue and the yellow.

6 MR. TOOTLE: Yes.

7 ECRB MEMBER FRENCH: Okay, okay.

8 MR. TOOTLE: And that figure you're looking at, we have
9 different colors for very similar things so we thought it
10 would be clearer to show it -- everything is essentially
11 being treated but they are all slightly different levels of
12 treatment as you go across the footprint. But the result o
13 that when you look at the PLAXIS analyses that we've done is
14 there's very little straining. You can see with that
15 improvement a little bit of strain has developed in the
16 middle, these are the plastic deformation points down here.
17 And then when you look at the actual deformation there is
18 very little deformation being predicted of the Causeway.

19 ECRB MEMBER ROLLO: Because this is the primary access-
20 egress because we are designing a terminal for a 72 year
21 turnaround period, this will remain open during improvement?

22 MR. TOOTLE: Yes. While we're -- while we're
23 constructing it we're intending to be done in stages so
24 ingress and egress will remain open to the island.

25 ECRB MEMBER ROLLO: So you're going to go down to a

1 half-a-lane road? Right now we're talking about 50, 37, 30,
2 but the reality is the roadway itself is only 67 feet.

3 MR. TOOTLE: At this elevation. Although --

4 ECRB MEMBER ROLLO: But what I'm saying is if you are
5 going to do --

6 MR. TOOTLE: -- during construction you could lower
7 those grades and put in ramps to give you a wider footprint
8 for temporary construction.

9 ECRB MEMBER ROLLO: Oh really? So you're going to
10 steepen the slopes on the perimeter? What I'm suggesting
11 is --

12 ECRB MEMBER FRENCH: No, they're going to lower the
13 whole grade and so it will be wider between the existing --

14 ECRB MEMBER ROLLO: But they're lowering the grade.
15 But they're lowering the grade. See that -- they're
16 lowering the grade and in some areas it's at or near the
17 water level, is it not?

18 MR. TOOTLE: The 100 year water level, yes.

19 ECRB MEMBER ROLLO: Yes. So you're going to expect --

20 MR. TOOTLE: We don't anticipate that being --

21 ECRB MEMBER ROLLO: -- you're going to have people
22 driving on this roadway that is down 30 feet lower than it
23 currently is?

24 MR. TOOTLE: No, we would not have traffic driving at
25 that temporary construction grade, they will still be

1 driving at the existing grade.

2 MR. ELIAHU: This is Uri with ENGE0. There is enough
3 width --

4 ECRB MEMBER FRENCH: They're going to squeeze in to
5 just the north side -- the east side or just the west side.

6 MR. ELIAHU: There is enough width to maintain two-way
7 traffic flow on half of the prism Causeway cross-section at
8 all times.

9 ECRB MEMBER ROLLO: Okay, that's fine. Thank you.

10 ECRB MEMBER FRENCH: And you got up to, what is it?
11 What's the maximum height there, 50 feet?

12 MR. TOOTLE: I think that's correct.

13 ECRB MEMBER FRENCH: That's a honking big height. And
14 then you've got what, another bunch of feet of Bay mud. I
15 mean, you can have 70 feet before you get firm ground in
16 some of the spots.

17 ECRB MEMBER ROLLO: Yes.

18 ECRB MEMBER FRENCH: So you're going to have, you're
19 going to have four foot soil-cement soldier piles or slurry
20 wall or something. The middle is going to be better than
21 anything else is.

22 ECRB MEMBER ROLLO: Yes.

23 ECRB MEMBER FRENCH: Actually you're going to have hard
24 points there.

25 ECRB MEMBER ROLLO: I just for the life of me don't see

1 how you can -- it's not going to be a tied-back wall because
2 there is nothing to tie it to because you're dealing with a
3 weak material.

4 ECRB MEMBER FRENCH: Well you are going to tie it back
5 with deadman another --

6 ECRB MEMBER ROLLO: It's not -- That's beyond --

7 MR. TOOTLE: We're not -- I think we're getting into
8 construction means and methods, which --

9 ECRB MEMBER FRENCH: They're not going to cantilever
10 that thing.

11 ECRB MEMBER ROLLO: No, so they're going to have to do
12 it with some sort of --

13 ECRB MEMBER FRENCH: Have to put deadman across it.

14 ECRB MEMBER ROLLO: Either that or they're going to
15 have to do cross ply with pin piles in the middle. Go
16 ahead.

17 MR. TOOTLE: I think we're at the question slide.

18 (Laughter.)

19 MR. JOHNSTON: My question is a very obvious one that's
20 going to be asked at some time in the future. It relates to
21 the Causeway but it also relates to Clipper Cove.

22 Clipper Cove, as you probably know, is going to have a
23 new marina in it. There will be another breakwater at the
24 east end of the cove, which will cut off the cove so it will
25 be almost a lake. The flow through that lake is not going

1 to be very much, so then you have a problem that would
2 relate to BCDC where you have potentially a very polluted
3 lake that is going to be a marina.

4 And this where it relates to the Causeway, this is an
5 ideal time to actually create flow through Clipper Cove by
6 having flow coming through underneath the Causeway. And
7 perhaps right where you have that gap that could, in fact,
8 be a bridge. or not necessarily a bridge but actually a
9 channel through which tidal water can flow and flush all of
10 Clipper Cove. Just a thought for the future.

11 ECRB MEMBER FRENCH: Not open for sailing, just open
12 for water?

13 MR. JOHNSTON: No.

14 ECRB MEMBER ROLLO: A culvert.

15 ECRB MEMBER BATTALIO: You know, a comment on that.
16 There is a culvert like that through Pier 45 in Fisherman's
17 Wharf, are envisioning what you're suggesting, there is a
18 culvert there. Pier 45 is on fill mostly. In prior studies
19 that culvert did provide a fair amount of flushing relative
20 to the condition of it not being there.

21 MR. JOHNSTON: Yes.

22 ECRB MEMBER BATTALIO: I think that hydrodynamics would
23 result in some exchange.

24 MR. JOHNSTON: Any flow through there would help
25 regulate. We currently have only three feet at mean mid low

1 water. So the channel is -- the actual berm that is going
2 across from where the new bridge support is has almost
3 reached the other side, so it is going to have to be dredged
4 continuously and any flow through there will help with the
5 -- will reduce the dredging but it will most certainly make
6 it much more environmentally healthy.

7 ECRB MEMBER BATTALIO: I don't think that's a life
8 safety issue for us but I follow what you're suggesting,
9 hydrodynamically.

10 ECRB MEMBER ROLLO: But this new breakwater -- I guess
11 this new breakwater would then be a part of our review
12 process.

13 MR. ESPINOZA: It's a separate project, right, James?

14 MR. SUH: Yes. I'm sorry, this is interesting you
15 mention that. We just -- the BCDC staff has just seen the
16 most recent design from a separate entity, Treasure Island
17 Enterprises, which actually will be bringing the whole
18 marina and the renewed breakwater in front of the staff, the
19 Commission, as a separate project.

20 ECRB MEMBER ROLLO: Okay.

21 MR. SUH: The co-applicant will also be TIDA.

22 ECRB MEMBER ROLLO: Okay.

23 MR. SUH: That's in the future.

24 ECRB MEMBER ROLLO: But it isn't part of the private
25 development.

1 MR. SUH: It is not part of this project.

2 ECRB MEMBER ROLLO: Okay.

3 ECRB CHAIR BORCHERDT: It does seem to me from the
4 point of view of BCDC and from the point of view of fill in
5 the Bay, if there is a sedimentation problem in Clipper Cove
6 that is beginning to develop that as the Causeway is being
7 built, as it was mentioned, it's an opportune time to be
8 thinking in terms of some culvert or something that could be
9 put in place because you are going to be down close to water
10 level.

11 ECRB MEMBER ROLLO: Yes.

12 ECRB CHAIR BORCHERDT: Basically to provide drainage
13 through, you know, the cove, to provide circulation into the
14 cove and keep the sediment moving out with the tide. This
15 might be something that has probably not been considered
16 before, that probably -- I don't know if Moffatt and Nichol
17 or anybody, has anybody given this any thought? It wouldn't
18 be a very expensive adventure and it may have a huge
19 positive impact on the Bay, and that's what we BCDC advisors
20 are all about.

21 MR. TRIVEDI: You know, as James mentioned, it is a
22 separate project which is on its own time line and has
23 different principles.

24 ECRB CHAIR BORCHERDT: But I think that project,
25 Mr. Suh, if I can inquire, basically has to do with

1 construction -- is going to probably have to do with
2 construction of the marina and so forth. But I am not sure
3 it will be --

4 MR. SUH: To be honest, to be frank with you, that
5 project may never happen.

6 ECRB CHAIR BORCHERDT: May never happen?

7 MR. SUH: May never happen. It's just the one
8 consideration we should think about. And I think that it
9 should be in front of the staff again this year, to
10 understand a little bit more about what the hydrology is
11 once we start doing that analysis.

12 ECRB CHAIR BORCHERDT: I'm wondering if this isn't a
13 topic that we should put down as something that would merit,
14 you know, additional looking into and seeing what the
15 feasibility is, because it might be very positive from the
16 point of view of the Bay and positive for the project.
17 Because I think one of the things that is going to be key to
18 the economic success of the Treasure Island development is
19 going to be that marina. That marina is basically going to
20 bring in a lot of people, it's going to provide a very nice
21 setting and so on and so on. And so it may be really
22 worthwhile to look into how to keeping that marina as
23 healthy as possible, which may be the circulation that's
24 been suggested.

25 MR. SUH: We are working -- we are actually working

1 hand in hand with TID on some of the facilities for them for
2 the future on the land side so we can actually follow-up and
3 actually talk to them a little bit more about this.

4 MR. TRIVEDI: Dilip, for the record. And all I'll say
5 is that, you know, an issue like that requires its own
6 environmental review. And I don't think it's an easy add-on
7 to a project like ours, you know, to just add something like
8 that on. Our existing documentation would probably be
9 inadequate to address the benefits or the merits for that
10 particular connection between --

11 ECRB MEMBER FRENCH: What's the time frame when you
12 might start doing the Causeway work?

13 MR. TRIVEDI: It's phased development, they're looking
14 at sub-phase 01.

15 ECRB MEMBER FRENCH: So next year, potentially?

16 MR. SUH: Yes.

17 ECRB MEMBER FRENCH: So I think there's just a
18 technical perspective. If it's going to be done at some
19 point it would be a lot easier to do it now than ever after.
20 It wouldn't be a simple, easy project because you've got a
21 60 foot excavation and you're adding 20 feet below that
22 cross-wise so there's a distinct chance it's not a cheap
23 add-on and permitting-wise and environmentally I'm sure
24 there's plenty of issues on top of it. On the other hand,
25 if it doesn't get done now it may be much harder to add it

1 on later. I mean, tunneling it or jacking it or underwater
2 through your danged, improved ground.

3 ECRB CHAIR BORCHERDT: I thought the -- I thought the
4 studies that Moffatt & Nichol did with respect to the three
5 alternatives for the breakwaters basically was pretty
6 impressive with respect to sedimentation and a lot of other
7 things. I am just wondering if with those kinds of
8 resources it wouldn't be possible for you to easily do some
9 kind of a study that would have to do -- that could provide
10 perspective on what the benefit of this could be from the
11 point of view of keeping sediment out of Clipper Cove.

12 MR. TRIVEDI: All I'll say is that yes, that's a good
13 question. The level of analysis for water quality benefits
14 and for depositional environment on the back side is
15 substantially more than what we have done.

16 MR. SUH: We are submitting for permits, though, just
17 so you understand, I believe by October.

18 ECRB CHAIR BORCHERDT: Right.

19 MR. SUH: So that's a major environmental analysis.

20 MR. TRIVEDI: It's a CEQA analysis.

21 ECRB CHAIR BORCHERDT: No, no, no, we would not -- I
22 mean, this is just a suggestion for everyone to be aware of
23 and to be thinking about and seeing if there is not
24 something here that could be done that would be beneficial
25 to everyone in the end.

1 MR. TOOTLE: Back to the agendized project. Any other
2 questions on the Causeway?

3 Then the final question --

4 ECRB MEMBER FRENCH: I actually -- sorry. I think this
5 is a Causeway question then; it's not really related to what
6 you have been presenting yet. But in a seismic event,
7 Treasure Island is going to be soft and it is going to be
8 shaking back and forth, long period slope, long distances
9 also. Compared to Yerba Buena which is hard rock, it's
10 going to shake back and forth really high-frequency and not
11 move back and forth and not oscillate very far. Between the
12 two there is a connector and that connector is going to get
13 strained through the differential seismic displacements.
14 Transient displacements, not necessarily permanent offset,
15 but transiently during the earthquake there is going to be a
16 lot of movement. If you have rigid utilities coming through
17 there they will be challenged. So I'm just wondering if you
18 have looked into out-of-phase or even just different
19 magnitudes. It might even be in -- I mean, they will be not
20 perfectly in phase but the magnitudes will be different.
21 Displacement time history would be interesting to see how
22 many feet of displacement you get on Treasure Island and
23 compare that to Yerba Buena, which will be probably, you
24 know, a small fraction, a few tenths of a foot, perhaps.

25 MR. TOOTLE: Well we have been looking at flexible

1 utility connections for that Causeway area, mainly because
2 -- well, when we were first looking at what the differential
3 lateral movements might be. But I think in the longitudinal
4 direction the condition still exists. So I think flexible
5 utility connections through there has been envisioned as
6 part of the project.

7 ECRB MEMBER FRENCH: What does a "connection" mean?
8 I'm thinking it could be longitudinally along the entire
9 length of it, not just here and there and wherever you have
10 a connection off of a -- I'm not sure a connection means
11 from a main into a lateral or a lateral into a building or
12 something. But I think this is different, just the whole
13 alignment along the Causeway is going to be doing this. But
14 it may be doing -- you don't know exactly how that
15 differential is distributed longitudinally, which is --

16 MR. TOOTLE: Well that's why I think you'd have to take
17 it at the connections, right? The pipe itself is going
18 to --

19 ECRB MEMBER ROLLO: No, you may need -- you may need to
20 design some sort of a pipeline similar to the Golden Gate
21 Bridge barrier. Sort of an articulated, short sections that
22 can -- each joint can accommodate movements that ultimately
23 may culminate. It's not going to be from the island to the
24 Causeway, the Causeway to the -- it's going to be happening
25 all along the Causeway.

1 ECRB MEMBER FRENCH: Or at any point along the way that
2 is hard to predict and know where it might be.

3 ECRB MEMBER HOLMES: Well, but if they put in flexible
4 joints in their pipe system or conduits or whatever they
5 are.

6 ECRB MEMBER ROLLO: Right.

7 ECRB MEMBER FRENCH: Agree, but that's different than a
8 flexible connection at a lateral.

9 ECRB MEMBER ROLLO: Yes.

10 ECRB MEMBER HOLMES: No, no, they're not talking about
11 the lateral. No lateral is coming off the Causeway.

12 MR. TOOTLE: It's a main line.

13 ECRB MEMBER HOLMES: It's a straight shot.

14 ECRB MEMBER ROLLO: Yes. So the main line, instead of
15 using 30 foot sections, maybe you need to use a 15 foot
16 section. And that's what Jim is suggesting, he might want
17 to look at the displacements.

18 ECRB MEMBER FRENCH: So you're flexible connections
19 mean at every point pipe joint you're putting a flexible
20 connection?

21 MR. TOOTLE: The utility design is not finalized for
22 the area so I can't speak to exactly what the utility design
23 is. But because we knew there was potential for
24 differential movement within the Causeway that has been
25 considered since the beginning of the project.

1 ECRB MEMBER FRENCH: Okay. So I guess as an
2 Engineering Criteria Review Board comment, this is an
3 engineering criteria that says there's another modality, an
4 additional modality of the same type of concern that you're
5 talking about but it's a seismic due to differential time
6 history, displacement time history on Yerba Buena from
7 Treasure Island.

8 MR. TOOTLE: In the longitudinal direction along the
9 Causeway.

10 ECRB MEMBER FRENCH: No, no, no. No. It's transverse
11 across -- well, it would be both, in fact. But I'm thinking
12 in particular -- yeah, it's going to be both.

13 ECRB MEMBER HOLMES: Longitudinal might be worse.

14 ECRB MEMBER FRENCH: Sure.

15 ECRB MEMBER ROLLO: It's going to be like this.

16 ECRB MEMBER FRENCH: It could be both.

17 ECRB MEMBER ROLLO: It's going to want to do that.

18 ECRB MEMBER HOLMES: It could be worse than
19 transversal.

20 ECRB MEMBER ROLLO: And the question is, do you provide
21 enough short connections all the way along to accommodate
22 the displacement?

23 ECRB MEMBER FRENCH: So it will be transverse and it
24 will be longitudinal accordion stuff too.

25 MR. TOOTLE: I think certainly we can look into it and

1 incorporate it into the design as appropriate.

2 ECRB MEMBER FRENCH: Yes, I think it needs to be looked
3 into.

4 MR. ESPINOZA: As a comment, we are stiffening the
5 Causeway quite a bit.

6 ECRB MEMBER FRENCH: I understand. But still at some
7 point you're going to have the island -- the island --
8 Treasure Island moving back and forth a lot because it is on
9 top of soft mud. You are not going to stiffen the entire
10 island, it's still going to move. And you guys have done
11 the site response, so just print out the displacement time
12 histories and see what the displacement time histories look
13 like. Compare that to a firm ground displacement time
14 history of the same record, subtract the two and you will
15 see that they are not going to look alike.

16 ECRB MEMBER HOLMES: But even, perhaps even worse is
17 where the utilities come off the Causeway, which is very
18 stiff, onto a very soft, into very soft ground.

19 MR. ESPINOZA: As we enter the island there is also the
20 DSM, the island is being buttressed by DSM below the young
21 Bay mud.

22 ECRB MEMBER HOLMES: But somewhere you're going to get
23 into soft ground.

24 MR. ESPINOZA: I agree.

25 ECRB MEMBER FRENCH: I think you can't wave your hands

1 and say it's going to be okay, I think it has to be
2 analyzed. I don't know how bad the problem is going to be
3 but I think it needs to be looked at.

4 ECRB MEMBER ROLLO: There was talk a long, long time
5 ago of some sort of a utility door of improved ground, where
6 you carry all the utilities from YBI through the Causeway.
7 in the Causeway you have the improved ground and then you
8 would have the improved ground.

9 MR. TOOTLE: Where the design is now, the entire
10 Causeway is essentially improved ground.

11 ECRB MEMBER ROLLO: Right. So maybe --

12 MR. TOOTLE: So that it's that corridor, now it is the
13 whole Causeway. So I think we can take the comment under
14 advisement and take a look at what the phase difference may
15 be to make sure that what has been contemplated all along is
16 appropriately designed when we get to the final, when we get
17 to the final plans.

18 ECRB MEMBER FRENCH: Yes. And there's some stuff about
19 this in -- ASCE has a -- it's not a numbered thing but ASCE
20 has a seismic pipe design thing that's old and -- Mike
21 O'Rourke has an updated one, in 2004, I think.

22 ECRB MEMBER HOLMES: Well, it's the same problem we
23 dealt with with the oil terminal. Because the end of the
24 terminal is on hard ground and the other end is on soft, the
25 same problem.

1 ECRB MEMBER ROLLO: We just went through this.

2 ECRB MEMBER FRENCH: But this is all -- yes, but this
3 is buried and not necessarily as easy to just put pipe
4 slides and things.

5 ECRB CHAIR BORCHERDT: This is Roger Borchardt. I
6 really agree with Mr. French's point. I think that's really
7 an important point and I'll have to ask another kind of big
8 picture question though. And that is, has an alternative
9 solution to the Causeway been considered? Is it more --
10 would it be more economically feasible to put some kind of a
11 bridge across or something? Because this conversation
12 reminds me of what we have on the east span of the San
13 Francisco-Oakland Bay Bridge going from rock island to the
14 soil. But it is possible by putting a bridge in, or some
15 bridge-type structure that is not a very long distance, to
16 put seismic joints in.

17 ECRB MEMBER ROLLO: Yes, just have Willie and Jerry and
18 Arnold Schwarzenegger get together and they'll give us a
19 budget for it.

20 (Laughter.)

21 ECRB CHAIR BORCHERDT: Well that might be why that
22 hasn't been considered but at least I would like to put it
23 on the table.

24 ECRB MEMBER ROLLO: And speaking back to Jim's point.
25 This is a criterion issue.

1 ECRB CHAIR BORCHERDT: That's right, really.

2 MR. TOOTLE: And it's something we have been
3 anticipating so it can certainly be addressed. I think,
4 like you mentioned, we have the information already
5 developed to compare it and provide that feedback to the
6 designer of the pipelines.

7 ECRB MEMBER FRENCH: Well you have some initial pieces
8 of it, at least and I think you know how it's distributed.
9 Strain is what's critical, right, not differential movement.
10 If it's three feet different over 600 feet, who cares? But
11 depending on how abruptly it changes from several feet to --
12 it's going to be some judgmenty kind of stuff, some fuzzy,
13 good old geotech fuzzy stuff. But I think it needs to be
14 looked at.

15 MR. TOOTLE: That's why we're here.

16 And I think the final question that was provided after
17 our last meeting was on seismic instrumentation. We had a
18 program envisioned at the time. It's evolved a little bit,
19 mainly based on the feedback that we received in January.

20 And so we are currently contemplating looking at the
21 California Geological Survey's Strong Ground Motion
22 Instrumentation Program and our instrumentation be
23 consistent with that.

24 There was comment of having a downhole array in this
25 area here, these structures we have been talking about.

1 This is a highly congested area, there are lots of utilities
2 and other features, so we are trying right now to work with
3 the civil engineer to pick the best location, not only for
4 the instrumentation from a geotechnical data collection
5 point of view but also around all the other infrastructure
6 that is going to that location. Having it accessible but
7 then also secured so it doesn't get vandalized. So that
8 would be somewhere in this area so we're --

9 I think once the civil design gets a little further
10 along we can better pick the location that's going to be
11 most appropriate to have telemetry hookups and power hookups
12 and those kinds of things that we are going to need, as well
13 as even possibly where the Bay muds are thicker and the
14 island is softer.

15 And also we are going to propose surveying monument
16 pairs, so you have a pair both on the improved ground as
17 well as outboard of the improved ground. So we can survey
18 those after the construction is done and then following a
19 seismic event go back to those fixed points and survey those
20 as well.

21 So the plan is under development. We don't have one
22 prepared today. But like I said, use some of the
23 coordination with all the other infrastructure that we are
24 trying to squeeze into a relatively congested area currently
25 is what we are working through.

1 And then we want to make sure we time the installation
2 properly as well so that it doesn't get damaged during
3 construction. We have it installed and we can use it
4 afterwards. So it's currently what the program is
5 envisioned to be so that's where we are at on the
6 instrumentation.

7 ECRB MEMBER ROLLO: Did you consider, quote, "the free
8 field", close quote. Maybe out where you don't have any
9 ground improvement, where you don't have the influence of
10 any structures, and put an array there? I mean, these
11 circles you're drawing are going to be either near improved
12 ground or some significant structures, both in the Causeway
13 and out in the northwest corner. Maybe going into the
14 fields, into the parks or just setting up an array.

15 MR. TOOTLE: I think we'd certainly be willing to take
16 that under consideration. At that point the biggest
17 constraint will be telemetry and power hookups, so we'd want
18 to make sure that we have those available. But, you know, I
19 think if this Board thinks that more valuable to collect
20 information there to increase the geotechnical knowledge
21 around the Bay I think we'd be happy to consider it.

22 MR. SUH: James with TICD. There is actually one
23 existing today on improved ground.

24 ECRB MEMBER ROLLO: Right. That's down toward Clipper
25 Cove though, isn't it?

1 MR. SUH: No, no.

2 MR. TOOTLE: I think it's out further in this area back
3 here.

4 MR. SUH: And that will be in the later phases of the
5 project when we'll develop that area, so there will actually
6 be some houses that have been approved and the ferry
7 building down --

8 ECRB MEMBER ROLLO: That'll be good.

9 MR. TOOTLE: But certainly this is -- we were planning
10 on two of them. And so if there is a preference from this
11 board we would be happy to take that under consideration.

12 ECRB CHAIR BORCHERDT: Roger Borchardt. I'll make a
13 few comments.

14 First of all, I am really pleased to see this progress
15 with respect to the instrumentation. But I think there's --
16 having been in this business for longer than I want to
17 admit, basically there is a key element here that is really
18 important. And that is, I think -- it could basically be
19 stated as establishing a close relationship with CGS, which
20 has got a long history in terms of maintenance of the
21 instrumentation. We have seen it before with BART and other
22 projects. It does no good to install the instruments unless
23 it is linked to a long-term maintenance program. And the
24 California Geological Survey operates the best or the finest
25 instrumentation program from an engineering perspective in

1 the state of California.

2 And so what I would really encourage you to do is to
3 link up with CGS sooner than later. And basically we've got
4 some very successful projects with respect to cooperative
5 instrumentation projects that have been established on
6 various BCDC permit approved projects. And of course there
7 is a requirement as far as Policy Number 3 of BCDC that
8 instrumentation be installed and so I would recommend that
9 you use the examples. And I think Rafael has got some
10 examples with him today that indicate how instrumentation
11 projects can be set up with CGS and be successful.

12 And the key thing there is that they have lots of
13 experience with respect to where to put the instruments and
14 what kind of instruments. They'll help with the purchasing,
15 they'll help with the installation. And basically the costs
16 to the applicant are really for -- primarily usually mostly
17 for the instrumentation. They'll even put in telemetry
18 systems and archive the data and continually maintain the
19 systems. So it's a great deal from the perspective of the
20 applicants. And so I really encourage you to take advantage
21 of these examples that Rafael has got and to connect with
22 CGS as soon as you can with respect to that and then proceed
23 to develop a good plan.

24 ECRB MEMBER ROLLO: Roger, is there a name you could
25 give them?

1 ECRB CHAIR BORCHERDT: Tony Shakal is a --

2 MR. MONTES: Tony Shakal. And I have the two samples
3 here that I am going to give the applicant.

4 MR. TOOTLE: And we have been in contact with him
5 already for this project and we have had that experience
6 when we have worked with them instrumenting the Bay Bridge,
7 the western span already. I think they are great to work
8 with and our intent would be to have them, you know, do the
9 monitoring and everything you just said.

10 ECRB CHAIR BORCHERDT: So all that goes off your plate.

11 MR. TOOTLE: That's exactly what we'd like to do, yes.

12 ECRB CHAIR BORCHERDT: And so it becomes, you know,
13 it's kind of a given as to how to proceed and so I think
14 that's really great.

15 MR. TOOTLE: Yes.

16 ECRB CHAIR BORCHERDT: Now a couple of comments with
17 respect to your instrumentation. First of all with respect
18 to the downhole arrays. It would seem to me that having one
19 near the Causeway is an important location.

20 MR. TOOTLE: Yes.

21 ECRB CHAIR BORCHERDT: Because as Jim has just
22 mentioned, we are going to have lots of differential
23 movements and may want to have one there and then a few back
24 on Yerba Buena Island. But there are already some
25 instrumentation installed, some of that by CGS and some of

1 it by USGS. You want to make sure where that
2 instrumentation is because it won't be necessary for you to
3 reduplicate that information.

4 One of that porthole sites, as was pointed out earlier,
5 goes to bedrock. It was funded by the National Science
6 Foundation following the Loma Prieta earthquake. That
7 information I might comment on, also is pertinent to some of
8 your other efforts. And that is that there are several
9 recordings now on that array, say for example from the
10 recent Napa Valley earthquake, that can provide real insight
11 with respect to what the site response looks like on
12 Treasure Island and can provide a reference as Frank was
13 earlier mentioning. And so it is not necessary to duplicate
14 that instrumentation.

15 Then going on, from the point of view of the arrays,
16 though. It would seem to me it would be very important to
17 have sensors, not only three component accelerometers but
18 also port pressure transducers in the zone sand layers where
19 you are likely to have liquefaction. And that's important
20 because as you get these smaller, moderate, regional
21 earthquakes it is going to give you information on the
22 properties of those soils and so forth and so on. So as the
23 development of the project proceeds you are basically going
24 to have basis for improved parameters to do things in a more
25 cost-effective way. And so I'd recommend that one of those

1 arrays at least have port pressure transducers, three
2 component accelerometers and so forth. And I'm sure if you
3 get together with Tony Shakal he will provide those
4 suggestions.

5 Now we can also think about instrumentation that might
6 be helpful to you in proceeding as to what the response of
7 the soils are where you are doing the deep soil mixing
8 versus where you're putting stone columns. And there you
9 might again find that some of this instrumentation could be
10 useful to you and the data from it in terms of future
11 development of the island. So I would suggest that that be
12 considered.

13 And I was thinking that while you could have -- if you
14 are going to do one there at the corner of the Causeway
15 where the Causeway is, which I think is really a good place;
16 and maybe you can even put it out on the Causeway. This
17 instrumentation doesn't necessarily take up a lot of room.

18 But then do you need another small array somewhere
19 close to where you have the stone column mixing?

20 And I would suggest that these arrays go in as part of
21 -- and what we are really commenting on here is
22 instrumentation for Sub-phases 1C, 1B and 1E. And that's
23 farther down and that second circle doesn't apply to that.

24 MR. TOOTLE: It's a little beyond the first phase.

25 ECRB CHAIR BORCHERDT: That's something in the future

1 so I would suggest that we consider another site closer in.
2 And you are also going to want to have measurements with
3 respect to the effectiveness of the pile buttresses that have
4 been put in.

5 MR. TOOTLE: I think those are great suggestions and
6 I --

7 MR. MONTES: I was going to add to that that in the
8 past the ECRB reviews the instrumentation plan that is being
9 proposed. And Tony Shakal is not going to know exactly what
10 the intricacies of the criteria are. He's going to,
11 perhaps, get some advice from the ECRB, from you, as to, you
12 know, where to put those sensors. Like you were mentioning,
13 the sand layers all the way to the DSM, you know, where they
14 have the tip elevation and so forth. Ultimately, once you
15 put together a proposed plan the ECRB is going to have to
16 approve it, you know, to make sure that you are not putting
17 sensors where they don't make sense, basically.

18 ECRB CHAIR BORCHERDT: But what has worked really well
19 in the past is that when you really get -- and we have had
20 first kind of an overall group meeting with the applicant
21 and Tony Shakal and his crew and basically kind of develop a
22 framework for what's going to be done.

23 And then you set down -- and then the program will work
24 with the applicant to develop a detailed plan. And the way
25 they operate is they develop something called a technical

1 specification letter and that really details where every
2 sensor is going to go, how it is going to be done, who is
3 going to be responsible for the maintenance and so forth and
4 so on.

5 And they draw that up again. So you get to provide
6 input into it but this technical specification letter then
7 provides an ideal framework for us to review and quickly
8 approve. It provides an ideal framework for you to know
9 what's going on and, bingo, it's just -- it's a great way to
10 go. Again, a couple of meetings and a couple of meetings
11 with CGS would basically make this a very easy task for you
12 to accomplish.

13 Now I've got one other question. I keep coming up with
14 these questions. One of them has to do with I was looking
15 at the review of the EIR report prepared by Boulanger, Ross
16 Boulanger, Jim Mitchell, Ed Idriss and Ray Seed. And I
17 think one of their last recommendations was to install slope
18 inclinometers on the north side of the island. And this
19 was, I guess, in their review that was in 2009. There were
20 a number of things that they thought would be useful, that
21 would be useful information that could be gained from that
22 that would be helpful in moving forward with respect to
23 confronting the geotechnical stabilization problems. And so
24 my question is, has there been any action on that?

25 MR. BECK: I don't believe so.

1 ECRB CHAIR BORCHERDT: Okay. But that might be
2 something else that would be useful to take into
3 consideration with respect to the instrumentation. And from
4 that point of view again, I think probably conversations
5 with the state could be helpful to you.

6 MR. TOOTLE: And I think this was the final closing
7 slide for all questions, if we have missed anything along
8 the way.

9 ECRB MEMBER FISCHER: I have kind of a different
10 question brought to mind by your reminder that our task is
11 to make sure that we impact the Bay as little as possible.
12 So with that backdrop the question I have is, you have shown
13 us mostly 2D drawings and some 3D renderings. Is the
14 project designed in 2D or in 3D?

15 MR. SUH: From a landscape architect standpoint it's
16 been designed, I think they use both. They use both as a
17 design tool.

18 ECRB MEMBER FISCHER: But the civil, the civil work.
19 All of the structures that go into the Bay, the breakwaters,
20 the fills, the --

21 MR. PORTER: It also depends on whether the drawing or
22 the analysis -- I mean, it's done in both.

23 ECRB MEMBER FISCHER: I think the documentation is
24 important.

25 MR. TRIVEDI: The documentation, there are some

1 renderings that show the breakwater. One is standing at the
2 ferry part and looking towards San Francisco, seeing what it
3 looks like. There are a couple of renderings.

4 ECRB MEMBER FISCHER: The construction bidding will be
5 on the basis of 2D drawings? Well, this is after all 2015.
6 I mean, the reason I am asking is that I don't think you can
7 guarantee that you have used -- you have really documented
8 the optimal design when you document it in 2D. And you
9 cannot guarantee that the contractor really understood the
10 design and quality control becomes harder. So it's a
11 suggestion that in terms of at least from the task we have,
12 in terms of insuring minimal impact on the Bay, we would
13 have a better chance if it's documented in 3D.

14 MR. TOOTLE: I think the grading plans from --

15 ECRB MEMBER FISCHER: Maybe you're doing more than 3D,
16 it's difficult to tell.

17 MR. PORTER: Is this the final design we're talking
18 about?

19 ECRB MEMBER FISCHER: Yes.

20 MR. TOOTLE: The grading plans, I believe, have -- in
21 the CAD files the contours are elevated, if that's what
22 you're talking about.

23 ECRB MEMBER FISCHER: Because they are in 3D you have
24 to work on all the interfaces, right.

25 MR. TOOTLE: Now whether their improvement plans are, I

1 am not sure. But from a grading plan standpoint, which I
2 think probably impacts the Bay the most - underground
3 utilities obviously are inboard of the edge - they have
4 elevated contours in the CAD files. But I believe the plan
5 is to go out to bid with two-dimensional presentations of
6 those three-dimensional drawings.

7 MR. PERCHER: This is Marc. I'd like to clarify that
8 the package that we are delivering is a bid for a design-
9 builder, so the final contractor will be also the engineer.
10 So there is plenty of opportunity for them internally to do
11 their own three-dimensional modeling and to capture all of
12 those issues.

13 ECRB MEMBER FISCHER: Chairman, if they are finished
14 with their formal presentation, the Board in the review
15 comments of our minutes specifically asked us to seek --
16 they wished to seek our advice with respect to the proposed
17 project in light of the BCDC laws and policies. And they
18 specifically had six questions and the questions are:

19 Has the impact of earthquake-induced liquefaction and
20 lateral failures of the structures been properly addressed
21 in the proposed criteria?

22 Is this occupancy level, which relates to the occupancy
23 level of the Ferry Terminal, adequate to respond to
24 earthquake emergency scenarios?

25 Are the measures -- and this has to do with geologic

1 hazards. Are the measures considered sufficient to preclude
2 for potential failures of the shoreline public access in
3 light of the Causeway being considered a critical lifeline
4 for the island?

5 And then they speak to the response spectra where they
6 are developing spectra for each structure later on. Is this
7 an appropriate approach toward the overall site's safety
8 evaluation?

9 And then finally, are the flood risk assessments and
10 the adaptation measures adequate and conservative for the
11 life of the project, which we understand to be 80 years.

12 So I think we should go on the record with -- we need
13 to go on the record with responses to each of these.

14 ECRB CHAIR BORCHERDT: Okay.

15 ECRB MEMBER ROLLO: So the first one was: Has the
16 impact of earthquake-induced liquefaction and lateral
17 failures on the --

18 ECRB MEMBER COMERIO: Can you tell us where you're
19 reading from?

20 ECRB MEMBER ROLLO: Yes. This is a document that was
21 sent to us dated May 15.

22 MR. MONTES: It's the summary of the project, page 12.

23 ECRB MEMBER COMERIO: Okay.

24 ECRB MEMBER ROLLO: I'm sorry, page 12 and 13. So the
25 first one: Has the impact of earthquake-induced liquefaction

1 and lateral failures on the structure been properly
2 addressed in the proposed criteria?

3 I believe in light of the fact that we are now, we
4 learned today that you have done more borings and you are
5 doing more analysis and you are refining your numbers even
6 further -- I guess the way I would respond is I think you
7 understand the problem. I believe you are using all the
8 tools available in geotechnical and earthquake engineering
9 to address them.

10 I am not comfortable from a geotechnical standpoint to
11 remain operational only to the 72 year reoccurrence
12 interval. It doesn't really sit well with me, especially as
13 I understand it. They have come out with new probabilities
14 of occurrence and what we are saying is the likelihood of
15 smaller earthquakes and the reduced return interval on a
16 large earthquake has been shortened from 600 years to down
17 to 474 years. It just seems to me as we get more and more
18 data we become more concerned that a 6.7 to 7.1 earthquake
19 isn't really that far away and should we be working toward
20 providing more conservatism in our design? So that would be
21 my response to the first one. Jim?

22 ECRB MEMBER FRENCH: I'm not sure, is that a ECRB
23 decision?

24 ECRB MEMBER ROLLO: The 72 year versus question?

25 ECRB MEMBER FRENCH: Yes.

1 ECRB MEMBER ROLLO: No.

2 ECRB MEMBER FRENCH: Yes. I'm not sure that's our role
3 exactly.

4 ECRB MEMBER ROLLO: I don't know.

5 ECRB CHAIR BORCHERDT: Let me interrupt just a second.
6 I think I agree with what Frank had just said. I think that
7 our comments, our responses to these specific questions have
8 to be framed in the context of what information we have
9 presented with to make decisions.

10 And I think one of the things I would have to say, as I
11 think Frank has said, is that I think we have received a lot
12 of additional information. We have much better insight now
13 with respect to, you know, a pretty extensive effort that
14 has been being put into place with respect to these things.
15 I think that whether -- I think it is a really important
16 project and we all want to be sure that the project moves
17 forward in a way that's appropriate for public safety and is
18 in conformance of BCDC policies. But there are some real
19 challenges and I think that in a situation like this it is
20 better to err on the conservative side than on the other
21 side. And as Frank has said, it might be a lot better to be
22 using the 475 year return period earthquake. It would
23 certainly be more conservative than using the 72 year.

24 That's the kind of thinking I've got. But that doesn't
25 mean that that's the -- you know, the project can just move

1 forward with respect to the insights that the Board has
2 provided. That's kind of where I come from.

3 ECRB MEMBER ROLLO: I believe that you've used the
4 tools that are available to us today. I believe you
5 properly characterized the site. I believe you are making
6 every effort to be well aware of life safety issues. It's
7 just that it comes down to what level of conservative should
8 we design? Which really speaks to the second one, which is
9 basically: Is this occupancy level design category 2
10 adequate to respond to earthquake emergency scenarios?

11 Questions one and two are the same thing. We have
12 heard Bill Holmes speak to maybe it should be 3 or 4.
13 You've presented an argument, you've presented code. You've
14 said the City has bought off on it, you've said the Port has
15 bought off on it, but we still raise a question.

16 ECRB MEMBER HOLMES: We've raised the question a lot of
17 times. It is not totally clear. If you say -- if Roger
18 says, we've raised the question and they can deal with it, I
19 don't understand what that means. I mean, we either -- it
20 seems like we either approve it or we don't approve it. If
21 they deal with it, we know what they're going to do, it's
22 Category 2. I mean, they stated that and everybody bought
23 off on it.

24 ECRB CHAIR BORCHERDT: Well maybe I didn't phrase that
25 quite right, Bill. I didn't mean it to be -- but I'm

1 thinking in terms of our role of being one in terms of
2 providing review comments that are both helpful to the
3 applicant, they -- basically review comments that are
4 helpful to the BCDC from the point of making sure the
5 criteria are in conformance with BCDC policies and then
6 points that basically are advisory to the BCDC. And so then
7 it is their responsibility to take that next step with
8 respect to what additional needs to be done with respect to
9 responding to those comments.

10 ECRB MEMBER ROLLO: It seems to me, Roger, whether I
11 was sitting on this side of the table or sitting against the
12 wall, we are all design professionals. We all put safety,
13 life safety as our primary -- has to be our primary
14 objective when we do a design. And as I understand the
15 approach that you have taken with regard to this category 2,
16 it is not a life safety issue, you don't believe it's a life
17 safety issue. And if you think that it is not a life safety
18 issue and you are doing the design then you have actually
19 put your professional -- you've given a professional
20 opinion. And we are sitting on this side and we're saying,
21 we're scratching our heads saying, we've got all these
22 geologic hazards, we've got all these issues to deal with,
23 we've got all these earthquake-induced hazards. We would
24 think that you would want to build a certain level of
25 conservatism into the design.

1 MR. MONTES: And let me give you a perspective from
2 BCDC.

3 ECRB MEMBER ROLLO: Sure.

4 MR. MONTES: When BCDC wrote these summaries and
5 questions to you, they are addressing the question to you
6 because we are seeking your advice, right?

7 ECRB MEMBER ROLLO: Right.

8 MR. MONTES: You are not advising the applicant, you're
9 advising BCDC as to what to do.

10 ECRB CHAIR BORCHERDT: No, that's a good point, that's
11 a good point.

12 ECRB MEMBER FRENCH: So maybe you can just take Frank's
13 and Bill's words and direct them to the BCDC and say, you
14 know, we think that it makes sense to be more conservative.
15 But it is not necessarily within our purview, our authority,
16 to make that determination. In terms of codes and such, it
17 seems a little bit ambiguous perhaps. It seems like there
18 is value in making it, you know, 475. There is some cost
19 that goes with the value. And how that gets worked with,
20 decided by the Board is decided by the Board.

21 ECRB MEMBER HOLMES: The question as framed here. I am
22 not totally clear who wrote that question. It's an opinion.
23 There is no absolute answer to the question "Is this
24 occupancy level design category adequate to respond to
25 earthquake emergency scenarios?" You can't do a calculation

1 with an engineer and figure that out, it's a matter of
2 opinion. There's a thousand different earthquake emergency
3 scenarios that you could dream up and, you know. It's a
4 matter of opinion so it's a tough question for a Board to
5 answer.

6 ECRB MEMBER ROLLO: But Bill, you put it in the context
7 of, again, where this site lies in relation to when these
8 categories -- in relation to sites that were probably the
9 basis for establishing the categories. I mean, we're
10 sitting on an island, that's sitting on a bowl of Jell-O,
11 that's been created by dumping loose sand through the water
12 column. And we're sitting several miles from very active
13 faults, many active faults. And I guess when you add all
14 those factors together -- and the fact that there's only
15 three ways off, in my mind. So, I mean, the Causeway or the
16 boat.

17 But you're right, it's an opinion. But it's their
18 judgment as to which category. We have, we have to give
19 them our opinion but you guys have to come up with
20 engineering judgment in establishing the criteria that you
21 are going to use for design. And so we're expressing our
22 opinion.

23 MR. MONTES: And that's all we are seeking.

24 ECRB MEMBER ROLLO: Okay.

25 MR. MONTES: Your opinion.

1 ECRB MEMBER ROLLO: Okay.

2 MR. MONTES: Otherwise, what opinion do we get?

3 ECRB MEMBER ROLLO: But in the end we are going to have
4 to make a motion to the Commission as to move forward with
5 this project.

6 I think the rest of these questions that were asked, I
7 think they have been properly addressed, they have been
8 properly vetted in this forum. You know, the idea, the fact
9 that they are going to do site response analysis for the
10 structures and is this an appropriate approach.

11 ECRB MEMBER FRENCH: Also I think they have the right
12 criteria in place --

13 ECRB MEMBER ROLLO: Yes.

14 ECRB MEMBER FRENCH: -- and they are in the process --

15 ECRB MEMBER ROLLO: Yes.

16 ECRB MEMBER FRENCH: -- still of completing it.

17 ECRB MEMBER ROLLO: I think the only two that we are
18 really struggling with is the category 2 and this 72 years
19 versus 475.

20 ECRB CHAIR BORCHERDT: And it is possible --

21 ECRB MEMBER FRENCH: And the addition of one new
22 criterion with the island shaking.

23 ECRB MEMBER ROLLO: Right, right, right. And the one
24 that Jim brought up, how are you going to handle, make sure
25 that it remains functional. That in fact the fire

1 department can in fact get water to the fire.

2 ECRB CHAIR BORCHERDT: Frank, as we have functioned in
3 the past, it is definitely possible -- you know, we usually
4 put together a motion and make recommendations and then
5 there's usually a couple of contingencies with respect to
6 that. And so I think we could certainly -- your concern
7 about the 475 year event, then we can basically have that be
8 one of the contingencies.

9 One of the purposes of the board meetings, the public
10 meetings, is basically one in which to develop a consensus,
11 a set of recommendations for the BCDC with respect to permit
12 approval. That consensus is basically based on the input of
13 all the different board members. And so in that context I
14 think what I'd like to do is to start thinking in terms of
15 what a motion might be. I put an outline together for what
16 that motion might be and with the thought being that
17 different members would contribute items and we would delete
18 other items and modify the writing on it.

19 But before we do that so that there's no bias with
20 respect to any of this in terms of anything that I might
21 provide to the Board Members I think that probably the first
22 thing to do would be to kind of go down through a few of the
23 items.

24 And one of them, of course, that's always in the motion
25 and we are concerned about is whether there is going to be a

1 need for a third public meeting with respect to the
2 criteria; and we can either discuss that now or we can wait
3 until we have gone through what some of the other
4 contingencies might be.

5 And I think what might be the best thing to do would be
6 to put that one on the back burner for the moment and
7 basically the Board go ahead through and touch on some of
8 these other items. I have a slightly different arrangement
9 to things but they are pretty similar to the comments as
10 they are arranged. Mine are more based on these comments.
11 But they are pretty similar to the arrangement here or we
12 can think about them in the arrangement that has basically
13 been presented for the agenda.

14 And the first one I had on the agenda for discussion
15 was the site-specific response spectra for Site Class F
16 sites, which the applicants have made a serious effort to
17 respond to.

18 One of the contingencies that I mentioned had to do
19 with getting the right coordinates on the side that you used
20 for the logs.

21 Then I had thought about it would also be important to
22 have -- maybe before I say what my next one is, basically
23 I'd like to go to the Board and ask the Board if you have
24 contingencies with respect to the ground motions as they
25 were being specified in the site-specific response factor.

1 Any suggestions or advice?

2 ECRB MEMBER ROLLO: No. I believe that they have
3 assembled a really good team of people to develop -- to do
4 the analysis and develop the site spectra. I have no more
5 comments. I am pleased that they did look at the Site Class
6 F designation.

7 ECRB CHAIR BORCHERDT: And the only other comment I had
8 was that the spectra be developed for the Causeway and the
9 ferry building based on the best estimates for the seismic
10 velocity logged below each site. But I believe you've done
11 that.

12 And then the other comment would be that the applicant
13 be encouraged to compare these spectra with those for areas
14 where various soil improvement methods have been
15 implemented.

16 I think the response that was provided in the Technical
17 Memorandum Number 3 indicated that you expected the response
18 to be considerably different for the soil improvement areas.
19 I would suggest that you put those areas through the same
20 numerical programs to see what the site response looked
21 like. Because I think soil improvements will affect the
22 short periods but probably not the longer period so much, so
23 you may still want to have those complete site-specific
24 spectra available, as opposed to just -- in my
25 recommendation, you want to have those available as opposed

1 to just dropping back on code-supplied factors.

2 And the next item has to do with the Ferry Terminal.

3 MR. MONTES: Dr. Borchardt, would like them to comment
4 while you are drafting the motion?

5 ECRB CHAIR BORCHERDT: I am going to -- what I wanted
6 to do here was just hit the high points. Then I'm going to
7 come back and provide basically a written statement of what
8 these points are so there is no confusion, as apparently
9 there was confusion in the past. So I would like to have --
10 and I'll provide a specific statement for the Board to look
11 at. But I didn't want to provide that to the Board first
12 because I wanted the Board's independent input.

13 So if we could turn then to the Ferry Terminal and I'll
14 look to the Board for suggestions of contingencies or items
15 that they might want to have the applicant look into more
16 completely.

17 ECRB MEMBER FRENCH: I said a little bit earlier, I
18 guess, something to emphasize again that not just with the
19 Ferry Terminal but with any slope stability around that
20 deformation is give or take 2 or a half. And in the
21 writings, in the write-ups discuss the significance of
22 uncertainty in the analysis, in the deformation analysis.

23 ECRB MEMBER ROLLO: So is that where we are suggesting
24 that they err on the side of conservatism?

25 ECRB MEMBER FRENCH: I am not saying that I guess right

1 now.

2 ECRB MEMBER ROLLO: Okay.

3 ECRB MEMBER FRENCH: I'm saying I do want you to
4 address the uncertainty. It could be double, it could be
5 half, and what's the significance.

6 ECRB MEMBER ROLLO: Okay.

7 ECRB MEMBER FISCHER: And what you do with the
8 conservatism is between you and the client, I guess.

9 ECRB CHAIR BORCHERDT: So how would you phrase that
10 succinctly?

11 ECRB MEMBER FRENCH: That was pretty succinct for me.

12 ECRB MEMBER ROLLO: I guess what you're saying is, do a
13 parametric evaluation and use good judgment.

14 ECRB MEMBER HOLMES: There is a certain strain that
15 they suggested in those large diameter steel piles. And if
16 the deformation is twice what's going to happen at that
17 point? Maybe there's just more strain.

18 ECRB MEMBER FRENCH: So maybe, Roger, I would say,
19 address in final analyses and reporting the significance of
20 typical uncertainty in deformation calculations.
21 Specifically seismic deformations are often considered to be
22 plus-or-minus a factor of 2.

23 MR. PERCHER: And this is something you would like to
24 see?

25 ECRB MEMBER FRENCH: I would like -- it's something I

1 would like to see included in the final report.

2 ECRB CHAIR BORCHERDT: Other points?

3 ECRB MEMBER FRENCH: Whether we see it or not is a
4 different question, I guess.

5 ECRB CHAIR BORCHERDT: Okay, with respect to the Ferry
6 Terminal. I basically have already indicated this point.
7 And I wrote down something here but it has to do with
8 considering the policy for minimizing fill in San Francisco
9 Bay I have suggested that the ECRB request that information
10 be provided that justifies why the existing large vessel
11 dock on the southwestern corner of Treasure Island is not
12 being considered as the site for the new Ferry Terminal.
13 And this is just a formal statement of what I suggested
14 earlier.

15 ECRB MEMBER HOLMES: Well that was discussed.

16 ECRB CHAIR BORCHERDT: It was already discussed but I
17 am just asking for it to be formally put together.

18 ECRB MEMBER ROLLO: Reference it in the EIR.

19 ECRB CHAIR BORCHERDT: And it could be referenced
20 through the EIR, in the EIR report or whatever.

21 ECRB MEMBER ROLLO: Right.

22 ECRB CHAIR BORCHERDT: and then I guess the other thing
23 then that would be a contingency here would be your 475 year
24 event for the Ferry Terminal.

25 ECRB MEMBER ROLLO: Yes. I'll say it again. I believe

1 since our last meeting you have done a very -- you have done
2 more investigation, done what I consider exhaustive
3 analysis. You've used all the tools that are available to
4 come up with a best guesstimate based on the parameters that
5 we -- based on the properties of the material and the
6 environment that we're in and based on the assumptions
7 you've made. The biggest one to me is the 72 years. But if
8 you believe on the basis of your knowledge of the materials
9 you are working with and the site that you are sitting on
10 that it is not a life safety issue then I am not going to
11 take any exception to it. You're the designers.

12 ECRB MEMBER HOLMES: There has never been a question of
13 whether it's a life safety issue, you were concerned about
14 operations.

15 ECRB MEMBER ROLLO: Well yes, that becomes a life --

16 ECRB MEMBER HOLMES: In structural-speak that's
17 different. Life safety means something is going to rash on
18 your head, not you can't get the people off the island,
19 that's a different issue.

20 ECRB CHAIR BORCHERDT: This is a situation that
21 Technical Memorandum Number 3 does indicate that -- the
22 continuity of performance is something that, you know, was a
23 design objective. So if the 475 year event is what's
24 required to do that then that would be --

25 ECRB MEMBER HOLMES: What is the system of the Ferry

1 Terminal structural system?

2 MR. PERCHER: The structure itself, effectively what
3 you have in the longitudinal direction is a moment frame and
4 in the transverse direction it's basically a lollipop
5 structure. So that's the structural response.

6 ECRB MEMBER HOLMES: A lollipop structure?
7 Cantilevered out of the ground?

8 MR. PERCHER: Cantilevered.

9 ECRB MEMBER HOLMES: Out of the ground?

10 ECRB MEMBER ROLLO: Say that again?

11 MR. PERCHER: Yes, it's a pile with a massive top.

12 ECRB MEMBER ROLLO: An inverse pendulum.

13 ECRB MEMBER FRENCH: With a fat popsicle stick.

14 MR. PERCHER: So your dominant response is moment frame
15 longitudinally and just an inverted pendulum transversely.

16 ECRB MEMBER HOLMES: That lollipop is about at the
17 lowest possible redundancy in the structural engineering
18 design. Zero redundancy.

19 MR. PERCHER: It is not uncommon for marine structures.

20 MR. TRIVEDI: One point that I could perhaps add to
21 this is that the discussion of 475 or higher is driven by
22 the emergency access. Maybe the bigger question that I'm
23 hearing from you is to have an alternate access evacuation
24 route other than the Causeway. That seems to be the
25 fundamental question.

1 ECRB MEMBER ROLLO: Yes.

2 MR. TRIVEDI: And how that plays out in the structure
3 is a separate matter because the ferry facility essentially
4 is a link of many different elements that float.

5 ECRB MEMBER ROLLO: Yes.

6 MR. TRIVEDI: The dike piles, there's a gangway,
7 there's a pier element and then there's a land element. The
8 issue that we have right now, and it is not just a matter of
9 just adding two more piles. It's the little pier, that's
10 what the issue is. And given the condition of the soil and
11 the slope failure playing there it is difficult for us to do
12 anything there, even by adding two more piles. Now, if an
13 alternate scenario needs to be considered in an emergency
14 evacuation sense from the drive, then that's really what the
15 comment is. I think we should then address it that way.

16 ECRB MEMBER ROLLO: Well it is, except that you've now
17 -- I mean, we've heard from Bill Holmes, who we all respect
18 as a well-qualified senior structural engineer. If it's a
19 structure with the least redundancy and we're designing for
20 50 and 50, I mean, it doesn't leave me with a warm,
21 comfortable feeling.

22 ECRB MEMBER HOLMES: I think you're suggesting, perhaps
23 you're suggesting that the Ferry Terminal building is maybe
24 not needed to have that emergency access. Because we are
25 not only talking about evacuation, I think we're talking

1 about help coming in; it's egress and ingress. If an
2 alternate access, emergency access alternate to the Causeway
3 somehow is developed, I think that would satisfy us.

4 I mean, designing the Ferry Terminal to the criteria
5 you're using with certain strains and you jump from a 72 to
6 a 475 year event, from a structural engineering standpoint
7 that is going to be very difficult. If you use some sort of
8 more loose, performance-based engineering where you use your
9 judgment to look at what's going to happen to the structure
10 in a 475 and not be tied to the criteria of ASCE, that may
11 be one way of doing it. The other way is to come up with
12 some other alternate, I don't know what you have in mind,
13 but if there is some other alternate emergency access that
14 you could develop, that's another way, it seems.

15 MR. TRIVEDI: There are several different criteria that
16 are forcing us to build the pier, primarily being ADA. And
17 that is the reason we are going out over the water and not
18 just having the gangway go directly to that and eliminating
19 the pier entirely because we will not be able to meet the
20 ADA access. So on the days when the (inaudible) has closed
21 the pier, given the slight conditions. We have gone from
22 the traditional concrete piles to mono-piles.

23 ECRB MEMBER ROLLO: And you really don't need a -- you
24 really don't need a ferry terminal. You could actually have
25 a tent.

1 MR. PORTER: The shelter, as we call it.

2 ECRB MEMBER ROLLO: Yes, just a shelter, right?

3 MR. PORTER: It's pretty much wind protection.

4 ECRB MEMBER ROLLO: Yes, that's all you need is
5 something to get people out of the elements.

6 ECRB MEMBER HOLMES: The decision of risk level 2 or 3
7 or 4, whatever it is, that criteria affects more than the
8 shelter, though, right? It affects the pier and the whole
9 system. The design of all that system.

10 MR. TRIVEDI: The breakwater.

11 ECRB MEMBER HOLMES: But your two large diameter steel
12 piers are affected by this criteria, would be affected by
13 this criteria, right?

14 MR. PORTER: That's the type of structure, large-
15 diameter steel mono-pile that was used for the most recently
16 constructed ferry terminal, that's the one in South San
17 Francisco.

18 ECRB MEMBER ROLLO: What was that? Was that a Category
19 2? That wasn't a Category 2.

20 MR. TRIVEDI: I think the pier was essentially 7.

21 ECRB MEMBER ROLLO: Yes.

22 MR. PERCHER: That's a situation where you were going
23 to have a standing pier.

24 ECRB MEMBER ROLLO: Exactly.

25 MR. PERCHER: I mean, there is a similar rationale

1 which is, the downtown ferry facilities and a lot of the
2 other ferry facilities are not designed to that higher
3 criteria. So there is a question of where throughout the
4 rest of the system --

5 ECRB CHAIR BORCHERDT: One question in this regard as
6 an alternate. Has the other dock on the island been
7 considered as a ferry terminal alternate in the case of an
8 emergency?

9 MR. TRIVEDI: In an emergency scenario the analysis is
10 not good.

11 ECRB CHAIR BORCHERDT: Why not?

12 MR. TRIVEDI: Whether the pier will be operational
13 after a 475 year.

14 ECRB CHAIR BORCHERDT: Are you talking about -- I'm
15 talking about the large dock on the southeastern corner.

16 MR. PORTER: Right, right. I think that that was
17 looked into, as we have talked about. There was a previous
18 study done. But I think they found that for transit times
19 and other considerations. There's also the intermodal
20 connection to the bus and everything there. That was --

21 (Several people speaking at once.)

22 ECRB CHAIR BORCHERDT: But I think from a transit time
23 point of view I think that's -- I mean, we're talking about
24 10 minutes or 15 minutes at most. We're not talking about a
25 half hour or hour or longer to get there. Talking about

1 actually coming around the other side of the island as
2 opposed to this side. I mean, the other side of Yerba Buena
3 Island coming from San Francisco. I don't think that's a
4 big increase in the transit time.

5 MR. TRIVEDI: And again, the focus seems to be that San
6 Francisco will be the only place where all services would
7 come from. Which may not necessarily be true under that
8 scenario because the City will be dealing with its own
9 problems. Maybe the help might come from Berkeley or
10 Emeryville.

11 ECRB CHAIR BORCHERDT: But that channel on the other
12 side, you know, basically is a shipping channel and was used
13 as a shipping channel so it's -- there's deep water and it's
14 possible to move probably large vessels. And of course you
15 can tell from where the Navy selected to put that dock that
16 it's a good dock from a marine perspective in terms of wave
17 impact on the vessels and so forth and so on.

18 ECRB MEMBER ROLLO: Well, they also had to deal with
19 the issue that the goal was -- at some point in time was to
20 bring a ship in that generated power, nuclear power, and you
21 had to have a -- having been involved in the design, you had
22 to have a radius. You had to be far enough away so that the
23 radius of when something went wrong didn't kill everybody in
24 San Francisco.

25 MR. MCCREA: Mr. Chair, with regard to the project that

1 is before you, that being the Ferry Terminal on the west
2 side of the island, we have heard your concerns and your
3 comments, we have noted them. The conversation seems to be
4 starting to loop around on itself a little bit. At the
5 point the advice that you have given, the Board has given
6 us, us clear.

7 ECRB CHAIR BORCHERDT: Okay.

8 MR. McCREA: I think what we should do is take it. The
9 staff, Bob and Ming, we'll talk amongst ourselves and we'll
10 be working with the applicant to address these issues and
11 sort of hone in on them.

12 With regard to the Navy pier, Pier 1. It's an
13 alternative. Staff's analysis of alternatives for fill and
14 that's something that the Commission will determine. It's
15 not really the Board's purview. I'm glad that you brought
16 it up. It's an interesting point of conversation I'm sure
17 that the Commission needs to be hearing. We will discuss it
18 among ourselves.

19 ECRB CHAIR BORCHERDT: So from the point of view of
20 proceeding, shall we go ahead and try to draw up a motion
21 that would be --

22 MR. McCREA: I think that would be very helpful.

23 ECRB CHAIR BORCHERDT: Conclude the meeting and then
24 let this, based on the conversations that we just had and
25 what's been discussed earlier.

1 ECRB MEMBER ROLLO: Just one last point. We started by
2 asking -- you started by asking the question: Do we believe
3 there will be a need for a third meeting? I do not believe
4 there is a need for a third meeting. I believe that we
5 vetted this project. And again, I'll say, all we would be
6 seeing is the results of more analysis. We now know the --
7 we have a sense of what the magnitude of the movements are.
8 We have a sense of the size of the pier and just -- it would
9 be a matter of refining and I don't think we need to sit
10 through this.

11 However, it would be helpful if we know that -- and it
12 could be something that could be given to Rafael that yes,
13 we did look at the impact of out-of-phase motion, out-of-
14 direction movement, out-of-displacement, variable
15 displacements and this is how we are accommodating it. Yes,
16 we did look at Roger's concern about what happens to the
17 site response analysis on improved ground versus a not-
18 improved ground. And just maybe handle those in a Design
19 Memorandum Number 4 and just make it available to us. But I
20 don't see the need for, personally don't see the need.

21 ECRB CHAIR BORCHERDT: What about input from the other
22 Board Members?

23 ECRB MEMBER HOLMES: I agree, I don't think we need
24 another meeting.

25 ECRB MEMBER COMERIO: I would agree as well.

1 ECRB MEMBER BATTALIO: I agree, I don't think we need
2 another meeting.

3 ECRB CHAIR BORCHERDT: It sounds like we have a
4 consensus, good. Okay.

5 Now what I did was try to put together a statement or a
6 draft outline for this motion. This is kind of new
7 territory for us. The intent is, as you can tell, we have
8 lots of comments and discussion but it is difficult to get
9 those capsulated down into nice, succinct recommendations.
10 So that's what the purpose here is. The purpose also was to
11 put together some information that could be put before the
12 entire board and it could be modified accordingly and have
13 it be information that represents somewhat of a consensus
14 recommendation to BCDC for actions they see fit.

15 And so in that regard I think we have got a number of
16 different items that have been raised and I think things
17 going down into a very accurate record. It will be possible
18 to go back and see what those comments are.

19 So with that as a context then, the objective here is
20 to try to put together a memo that will represent the key
21 points that have been brought up today. Some of those
22 points have been hit here, some of them haven't, and so I
23 have to take a quick look at this thing and modify it
24 accordingly. So with that I'll give each one of the Board
25 Members a copy of this draft that I put together.

1 So I'll explain this draft a little bit. First of all,
2 it's going to put together -- the first part is really a
3 preamble and basically just sets the framework for what we
4 considered. I'll read it quickly so the applicant can hear
5 what it states. It says:

6 With the understanding that the applicants for permit
7 approval are Treasure Island Redevelopment Authority and the
8 Treasure Island Community Redevelopment Project.

9 And with the understanding that the ECRB reviewed the
10 engineering criteria for Sub-phase 1A of the Treasure Island
11 Redevelopment Project on January 22, 2015, when the project
12 was in an earlier design stage of less than 35 percent.

13 And also with the understanding that the applicant's
14 consultants, ENGE0 and Moffatt & Nichol have provided
15 additional information as documented in Technical Memorandum
16 Number 3, including ENGE0 responses to the ECRB Sub-phase 1A
17 review comments. The various reference materials you
18 provided, I don't if I need to read those, you all know what
19 those are. The ENGE0 draft design geotechnical report, the
20 sub-service exploration package and the Moffatt & Nichol
21 pier design package and then also the sea level risk and the
22 active management plan.

23 And then also with the understanding that the following
24 ECRB comments are based on referenced information and
25 pertain only to the shoreline jurisdictional zones for Sub-

1 phases 1B, 1C and 1E that pertain to San Francisco Bay
2 Conservation and Development piers.

3 Then the final one is that the ECRB -- with the
4 understanding that the ECRB recommends review of the
5 engineering criteria for future Treasure Island
6 Redevelopment Projects affecting the San Francisco BCDC
7 Treasure Island jurisdictional zone.

8 Now with all that said as the preamble and the
9 background then these are the recommendations:

10 The ECRB suggests that the Sub-phase 1B, C and E
11 portions of the Treasure Island Redevelopment Project move
12 forward based on the contingencies indicated by ECRB review
13 comments and based on the materials in discussion in the
14 public record. And that includes the materials that we've
15 talked about before and the contingencies specifically
16 stated below.

17 And the first one is: Concerns whether we have a third
18 public meeting. I think we clearly got a Board consensus
19 that that's not necessary. The way this is written is it
20 says that the ECRB suggests that the additional review of
21 Sub-phases 1B, 1C and 1E in a public meeting shall be
22 contingent upon the ECRB receipt and approval of the written
23 responses from the applicant to the contingencies stated
24 below. So that means, if there are written responses to
25 some of these contingencies that we've brought up then

1 basically - and they're approved - there is no need for a
2 third public meeting.

3 ECRB MEMBER ROLLO: Could we just consider that it is
4 the consensus of the ECRB that a third meeting is not
5 necessary provided the applicant adequately addresses the
6 issues listed below. I mean, just saying it a little
7 differently.

8 ECRB CHAIR BORCHERDT: That can certainly be reworded.

9 ECRB MEMBER ROLLO: That's all I'm suggesting.

10 ECRB CHAIR BORCHERDT: I just said it should be
11 contingent upon ECRB receipt and approval.

12 ECRB MEMBER ROLLO: Yes, see, that's the part that
13 I'm --

14 ECRB MEMBER FRENCH: How about if you just -- how about
15 "after a public meeting" insert "shall not be required,
16 contingent upon ECRB receipt and approval."

17 ECRB MEMBER ROLLO: Well, "adequately addresses." We
18 are not going to approve their response, we're going to --
19 we just want to make sure -- we're trying to -- did you
20 adequately address?

21 ECRB CHAIR BORCHERDT: Yes, but adequately has to be
22 defined. Who is going to define adequately?

23 ECRB MEMBER ROLLO: Or that they address the
24 displacement issue between the island and the -- between the
25 two islands.

1 ECRB CHAIR BORCHERDT: I hear what you're saying but I
2 think it's just simpler to ask them to submit the written
3 response like they have in the past and we'll, as a group,
4 respond independently back to BCDC staff as to whether we
5 approve it.

6 ECRB MEMBER ROLLO: Okay.

7 ECRB CHAIR BORCHERDT: And if there's -- and there
8 probably will be either unanimous approval or not approval
9 and we move forward. And that doesn't mean that the project
10 has to stop or anything like that, the project should move
11 forward.

12 ECRB MEMBER ROLLO: Okay.

13 ECRB CHAIR BORCHERDT: And then on the site-specific
14 response spectra. There's a little bit of overplay. But
15 classification of site conditions in Sub-phase 1 projects
16 according to ASCE 7-10 and CBC 2013 standards. Implies that
17 the sites are classified s Site Class F. We all know that.
18 And that this design response spectra be computed using
19 site-specific techniques as specified in the codes.

20 And it states that the applicant has to provide a
21 requested site-specific response spectra for a single site
22 based on the velocity log obtained for one location.

23 And then it says, the ENGEEO response comment to
24 Technical Memorandum Number 3.

25 And the only comments there are: Fix the coordinates of

1 121 degrees for the ENGEO bore hole. It indicates the bore
2 hole is not located on Treasure Island. ECRB requests
3 information showing the correct coordinates and location of
4 the borehole for the site specific response spectra.

5 And the next item is estimates of the site-specific
6 response spectra for the Causeway and the Ferry Building
7 sites would require estimates based on the seismological
8 bedrock at those sites. In other words, it is just saying
9 that that site-specific estimate should be modified for the
10 soil profiles at those two sites.

11 ECRB MEMBER ROLLO: I think this is the appropriate
12 location to talk about -- well, I was going to say, as you
13 look at the displacement between the island --

14 ECRB MEMBER FRENCH: Is that the Causeway?

15 ECRB MEMBER ROLLO: No, because it's the Causeway and
16 the island. Between the Causeway and the --

17 ECRB MEMBER FRENCH: It's really between the two
18 islands, which is the Causeway.

19 ECRB MEMBER ROLLO: Yeah, between. Yeah.

20 ECRB CHAIR BORCHERDT: Yeah, maybe we ought to put that
21 into the Causeway.

22 ECRB MEMBER FRENCH: I like it in the Causeway.

23 ECRB MEMBER ROLLO: Okay, it's fine.

24 ECRB MEMBER FRENCH: It's between the two islands,
25 which is the Causeway.

1 ECRB MEMBER ROLLO: Okay.

2 ECRB CHAIR BORCHERDT: Okay. The next one is the Ferry
3 Terminal. Again the statement I have already read and I
4 don't want to go through it again about the idea of
5 considering the possible location, the clear understanding
6 on that. Then --

7 ECRB MEMBER HOLMES: Well --

8 ECRB CHAIR BORCHERDT: You want to say --

9 ECRB MEMBER HOLMES: Well no. I mean, we talked --
10 we've done a lot of talking today and this was written
11 before.

12 ECRB MEMBER ROLLO: Right. So I don't --

13 ECRB MEMBER HOLMES: I give you credit, you know, for
14 coming up with all this but we can't wordsmith all this. I
15 don't see how we are going to wordsmith it to change, to
16 consider the fact that we had this meeting.

17 ECRB MEMBER ROLLO: It seems to me the Ferry Terminal
18 we've expressed, we've expressed our opinion regarding the
19 seismic earthquake reoccurrence interval and the category.

20 ECRB MEMBER HOLMES: But his Item 3-A, Frank, is
21 talking about using the other rotation.

22 ECRB MEMBER ROLLO: A, B and C, I would take all three
23 of them out, I don't think they're applicable. I mean,
24 you're talking about 2 to 10 feet toward the Bay. We've
25 already addressed that. We've got some detailed analysis

1 now, we've got additional borings. I don't think it's
2 applicable.

3 ECRB MEMBER HOLMES: That's what I'm saying.

4 ECRB CHAIR BORCHERDT: So you don't think any --

5 ECRB MEMBER ROLLO: No, all I would say is that the
6 applicant has --

7 ECRB MEMBER HOLMES: I don't think they have to write
8 yet another description of what they've done, they already
9 had done that today.

10 ECRB MEMBER ROLLO: Exactly. And all we would say is
11 that the applicant presented the results of additional
12 exploration analysis and refined the displacements and the
13 Board accepts the criteria and results. Which we do.

14 ECRB CHAIR BORCHERDT: Right, okay. Well, let me say
15 first of all, in regard to this first issue about the
16 alternate terminal. The only thing there that was being
17 requested -- and maybe it should be written just to
18 reference the EIR report?

19 ECRB MEMBER ROLLO: Yes, yes, that's fine, absolutely.
20 Just say, the justification for this location was evaluated
21 as part of the EIR and properly vetted in public forums and
22 has been discussed with the Commission. Isn't that true?
23 Is that true?

24 MR. McCREA: I'm sorry, say it again?

25 ECRB MEMBER ROLLO: The applicant has discussed -- the

1 EIR, you've gone -- The staff has looked at the EIR.

2 MR. McCREA: Yes.

3 ECRB MEMBER ROLLO: They did not file an objection to
4 the location for the current Ferry Terminal; is that
5 correct?

6 MR. McCREA: That's correct. The location of the Ferry
7 Terminal has been discussed for many meetings.

8 ECRB MEMBER ROLLO: Yes.

9 MR. McCREA: So no need to discuss it anymore.

10 ECRB CHAIR BORCHERDT: So no further you feel needs to
11 be provided.

12 MR. McCREA: No, not at this time. I think when it
13 gets to the Commission it will be a -- as I said before,
14 with all fill in the Bay one of the requirements under the
15 law is that we analyze whether or not there is an
16 alternative upland location; that's why the Navy Pier idea
17 is interesting to us. However, the staff didn't note that
18 as a viable option. We take the project before us and we
19 are analyzing it on the respected space.

20 ECRB CHAIR BORCHERDT: We are advisory to you. So, I
21 mean, as far as I'm concerned, if you feel no further
22 information is needed with respect to this in the public
23 record for your position then I say we strike it.

24 ECRB MEMBER ROLLO: Well before you answer. It just
25 seems to me that -- but we did make a big point of saying --

1 it seems that we should say that the EIR evaluated
2 alternative locations and found this to be the preferred
3 location. We could say that and then reference the EIR
4 date. And two, that staff had no --

5 ECRB CHAIR BORCHERDT: But see, what I'm -- sorry for
6 interrupting, Frank.

7 ECRB MEMBER ROLLO: Sure.

8 ECRB CHAIR BORCHERDT: But what I'm asking is that I'm
9 just asking the applicant to provide that information. They
10 reference the EIR and say that this has been treated in the
11 past and that's the end of the issue.

12 ECRB MEMBER ROLLO: Okay.

13 ECRB CHAIR BORCHERDT: Okay? The issue was raised in
14 the public forum. You have indicated that -- the applicant
15 can indicate that it has been dealt with.

16 ECRB MEMBER ROLLO: Okay, okay, all right.

17 ECRB CHAIR BORCHERDT: So that's all I'm asking for.

18 ECRB MEMBER ROLLO: Okay.

19 ECRB CHAIR BORCHERDT: And then with respect to this
20 next one. We can spend an awful lot of time if we get into
21 wordsmithing and that's why tying these motions together and
22 being specific is very -- it's a very difficult task.

23 But the second item basically is, I think is probably
24 not worded correctly. But what we are asking, aren't we, is
25 that the Board receive copies of the revised design criteria

1 potentially based on 475 years?

2 ECRB MEMBER ROLLO: No.

3 ECRB MEMBER COMERIO: No.

4 ECRB CHAIR BORCHERDT: Or do you want to suggest --

5 ECRB MEMBER ROLLO: No. No, no, no.

6 ECRB MEMBER FISCHER: We're certainly not asking that.

7 ECRB MEMBER ROLLO: No, not we're not.

8 ECRB CHAIR BORCHERDT: Okay.

9 ECRB CHAIR BORCHERDT: Let's then that strike that item
10 as well. And the last one I know doesn't pertain.

11 ECRB MEMBER ROLLO: Yes. So it's just the first one.

12 And you can --

13 ECRB CHAIR BORCHERDT: But what you do want to say
14 about --

15 ECRB MEMBER ROLLO: We can say the Board expressed its
16 opinion regarding the return period using the design.

17 ECRB MEMBER HOLMES: How about, the Board expressed
18 concern about alternate emergency access to the island.

19 ECRB MEMBER ROLLO: Yes. Or another way is, in light
20 of the low return period used in design, the Board requests
21 that alternative methods of access and egress be evaluated.

22 ECRB MEMBER FISCHER: Emergency access and egress.

23 ECRB MEMBER ROLLO: Emergency access and egress be
24 evaluated. Then that gives us they'll come back and say,
25 yeah, we looked at that and we can jump off of the Navy Pier

1 or whatever.

2 ECRB CHAIR BORCHERDT: Okay. What I have written down
3 is the Board expressed concern about --

4 ECRB MEMBER FISCHER: Given the low return period.

5 MR. TOOTLE: The 72 year return period criteria. The
6 Board requested -- in light of the use of a 72 year the
7 Board requested that alternative access and egress be
8 evaluated. That's what I'd said.

9 ECRB CHAIR BORCHERDT: Okay. And you've got this down
10 and we've got a complete record of it so I am not going to
11 continue to try to get it just right. But I think the total
12 intent here is clear.

13 Okay, what about shoreline geotechnical hazards? The
14 ENGeo and Technical Memorandum Number 3 has indicated that
15 you'd be happy to provide copies of the final designs for
16 the DSM barriers, the Causeway and the various structures
17 that we've talked about and so this is just a statement that
18 you plan to do that.

19 ECRB MEMBER HOLMES: And provide final designs to us.

20 ECRB MEMBER ROLLO: I don't know, I don't know that we
21 need that, Roger. I mean, they've indicated that they are
22 using a 40 percent pattern on the shoreline, they're using a
23 55 percent pattern on the Causeway. That's criteria that's
24 standard FHWA and a common standard of practice. They've
25 demonstrated that they have evaluated the subsurface

1 conditions. I would just say that --

2 This isn't going to be a design-build, is it? Is the
3 stabilization of the Causeway going to be design-build?

4 MR. ELIAHU: This is Uri with ENGEQ. The DSM portion
5 will have a design that goes out to bid that is ready to
6 build but it's based on, you know, three foot diameter DSM
7 at eight feet on center.

8 ECRB MEMBER ROLLO: They can come back with an
9 alternative.

10 MR. ELIAHU: Every contractor has a proprietary
11 technology with different diameters and different groupings
12 of augers and so they will come back with recommended
13 alternatives and those will have to be evaluated. So in
14 that sense there will be a design-build component to the DSM
15 only. The other measures, the stone columns, the vibro-
16 compaction, the surcharging, are all --

17 ECRB MEMBER ROLLO: Well, it is not a design-build
18 component, it's an alternative design based on --

19 MR. PERCHER: Design to be built with an RFI process.

20 ECRB MEMBER ROLLO: Yes, thank you.

21 (Laughter.)

22 ECRB MEMBER ROLLO: So, Roger, I think all we need to
23 say here is that the applicant has adequately has adequately
24 addressed the soil stabilization of the causeway and the
25 shoreline.

1 ECRB CHAIR BORCHERDT: Or maybe we don't have to say
2 anything, maybe just strike it if there's no contingencies.

3 ECRB MEMBER ROLLO: There's no contingencies.

4 ECRB CHAIR BORCHERDT: If there's no contingencies then
5 we just strike it.

6 ECRB MEMBER FRENCH: I wanted to encourage them to
7 address the impact of uncertainty in the analysis. We got a
8 bunch of single numbers and I think it's important for
9 geotechs not to believe single numbers. It's what I said
10 previously. I'd like to have them address in their analysis
11 and final report the impact of uncertainty in deformation,
12 seismic deformation estimates.

13 ECRB CHAIR BORCHERDT: So you would add, you would add
14 a contingency on the shoreline geotechnical hazards.
15 Parametric analyses.

16 ECRB MEMBER FRENCH: I didn't say "parametric" I said
17 "impact of uncertainty." Which may include parametric and
18 may include just sort of, you know, Bartlett and Youd
19 factors of two and a half or whatever. However they want to
20 address uncertainty, just recognize that --

21 Sometimes it's not so important but when you say that
22 the design, your large diameters are just riding with the
23 deformation, if it deforms twice as much that's going to
24 have a different impact on your shift.

25 MR. ELIAHU: Uri with ENGEEO. Point of clarification.

1 That comment relates to the cross-section at the ferry
2 structure; is that correct?

3 ECRB MEMBER FRENCH: I was going to put it everywhere.
4 There's uncertainty in all the deformation, all deformation
5 analyses. All seismic deformation analyses.

6 MR. ESPINOZA: Pedro with ENGE0. On the city side
7 shoreline where we developed the six ground motions. I
8 think that that gives us an analysis regarding the ground
9 motions and deformation analysis because that's where the
10 curves come from.

11 ECRB MEMBER HOLMES: So say that that's your
12 uncertainty then, that's fine.

13 MR. ESPINOZA: Okay.

14 ECRB MEMBER FRENCH: Sometimes there needs to be a lot
15 of additional effort. Maybe in that particular case you've
16 done, you've addressed, you've enveloped in certainty
17 already.

18 ECRB MEMBER ROLLO: What you showed us has not been
19 submitted to us. Remember, it was shown only to us as a
20 slide.

21 MR. ESPINOZA: That's part of the city side lot
22 improvement.

23 ECRB MEMBER ROLLO: The city side. You're right,
24 you're right, the city side. Then let's just say it the way
25 Jim suggested, we'd like the applicant to address the

1 uncertainty.

2 ECRB MEMBER FRENCH: Request the applicant to address
3 the impact of uncertainty in seismic deformation analyses on
4 the design of the project.

5 ECRB CHAIR BORCHERDT: Okay. And I guess we have
6 consensus on this as we move forward.

7 The next one is the instrumentation.

8 ECRB MEMBER ROLLO: The Causeway.

9 ECRB MEMBER COMERIO: The Causeway.

10 ECRB CHAIR BORCHERDT: The Causeway, the Causeway.

11 ECRB MEMBER FRENCH: We had the insert about the -- do
12 you already have that maybe, about the different
13 displacement time histories in the two islands?

14 ECRB CHAIR BORCHERDT: We have to figure out how --
15 we'll have -- we'll need to --

16 ECRB MEMBER FRENCH: Figure out how to word it?

17 ECRB MEMBER ROLLO: Can we just say the applicant
18 should address the variations in displacement going from
19 Yerba Buena Island to the Causeway to Treasure Island?

20 ECRB MEMBER HOLMES: And its effect on the utilities.

21 ECRB MEMBER ROLLO: And its impact on utilities. Just
22 say it that way.

23 ECRB CHAIR BORCHERDT: That sounds good to me.

24 ECRB MEMBER ROLLO: Okay.

25 ECRB CHAIR BORCHERDT: Everybody agree?

1 ECRB MEMBER HOLMES: Yes.

2 ECRB MEMBER HOLMES: Yes.

3 ECRB CHAIR BORCHERDT: That's in the record. Now
4 you're going to get a copy --

5 MR. MONTES: I'm going to get a copy.

6 ECRB MEMBER FRENCH: I might just insert the word
7 "transient" in there because it is not just the major
8 displacements. Because you're going to look at the
9 earthquake and it goes like this and it comes back right
10 here and it says, not a problem.

11 ECRB CHAIR BORCHERDT: Okay, good.

12 ECRB MEMBER ROLLO: Transient displacements between the
13 three components.

14 MR. ESPINOZA: Three components?

15 ECRB MEMBER FRENCH: Two islands and the connection; X,
16 Y, Z.

17 ECRB MEMBER ROLLO: Okay, Roger, the next one is all
18 yours.

19 ECRB CHAIR BORCHERDT: Instrumentation, right. So I
20 made a lot of these comments already. I don't know whether
21 to go through all this again but for the applicant's benefit
22 I really should read it really quickly. And if any Board
23 Members have any input or disagree or whatever, please speak
24 up. The intent here is really to come up with a consensus.
25 This material was prepared prior to the meeting.

1 ECRB MEMBER COMERIO: Out of respect, Roger, can I just
2 as a point of order -- I mean, I can't vote on something
3 that I haven't seen written out. I mean, we are rewriting
4 this as we talk. I think we have to -- I don't know if we
5 can -- I'm not comfortable voting on wording that I haven't
6 seen.

7 ECRB CHAIR BORCHERDT: Okay.

8 ECRB MEMBER COMERIO: I mean, I agree in the sense of
9 what we have just discussed. I just have trouble with a
10 thing that was written before the meeting and now it is
11 being wordsmithed and I am being asked to vote on it when I
12 don't know what the final document actually is going to look
13 like, the final motion is going to look like. It's a very
14 inappropriate thing to vote on in the meeting. And
15 especially when it's four pages long, you know.

16 ECRB CHAIR BORCHERDT: Well, I think you have a very
17 good point. The way we've proceeded in the past is that we
18 -- well, anyway, the way we've proceeded in the past is that
19 there is this verbal discussion with respect to what we
20 think are contingencies. We've tried to come up with some
21 wording that is appropriate for it, then we look back to the
22 Secretary that's taking notes to basically provide the
23 actual words. And then a copy of those minutes will come
24 back before all of the Board Members to look at. And if
25 there's -- and then those minutes will come back again

1 before -- well, I guess those minutes then go out to all of
2 the Board Members and then they come back to the Board for
3 approval at the next meeting.

4 ECRB MEMBER ROLLO: Roger, just a suggestion; Mary has
5 a good point. It seems to me we could pull out the motion
6 out of the minutes, we could request that whoever, the
7 applicant, provide us with the motion portion of the
8 discussion and provide that to Rafael. And Rafael then
9 could put that in the form of a draft motion and then we
10 could vote on it. We could edit it, give it back to you and
11 then just poll us by phone. That's acceptable isn't it?

12 MR. McCREA: There's a few different ways you can do
13 it, there's ways you have done it in the past. I think what
14 you're trying to do today is a little bit different,
15 slightly different, because you are trying to get some
16 clarity on the motion. And I applaud you for that because
17 there is nothing more frustrating for the staff than we go
18 into conversations and have heard different things and we
19 argue about it, so clarity is good.

20 That said, it also might be just as easy or easier for
21 you and just as useful for us for you to rely on the
22 statements made during the meeting. The verbal summary that
23 you have made of the points that were made during the
24 meeting such as the comments that you made around the 72 and
25 475 and the comments that you made around -- the other

1 comments that you made.

2 And I think that the staff, we are very comfortable
3 listening, relying on the minutes, relying on Rafael's
4 notes, to take that and run with that advice. That's my
5 personal feeling. The Chief of Permits is nodding behind
6 me. I applaud you for trying to be clear but I also
7 understand at the end of a long meeting it is difficult to
8 sort of get a detailed resolution. And for our purposes we
9 don't really need that detail, we heard you loud and clear
10 what you said today.

11 ECRB MEMBER ROLLO: So you don't need a motion from us?

12 MR. McCREA: Well, it's interesting. The Design Review
13 Board is the second advisory board. We have two advisory
14 boards that report to the Commission, the Engineering
15 Criteria Review Board and the Commission's Design Review
16 Board. The Design Review Board does a sort of summary
17 approach and they don't do a motion, they don't do a motion
18 and vote. You always have and that works equally as well.
19 But the motion could be made on a series of points rather
20 than a written, edited version that's crafted in the
21 meeting.

22 ECRB MEMBER FRENCH: So this final point could be
23 something like "We request that they implement an
24 instrumentation plan as discussed during the meeting."

25 MR. McCREA: Correct.

1 ECRB MEMBER ROLLO: We recommend that they reevaluate
2 the return periods and address alternative emergency access
3 and egress.

4 We recommend that they review, that they expand the
5 instrumentation program to include slope inclinometers and
6 also we encourage them to meet with the state regarding
7 design of and installation of an instrumentation program.

8 ECRB CHAIR BORCHERDT: And that's basically what this
9 says, what you just said.

10 ECRB MEMBER ROLLO: And there are some of us that
11 recommend that the applicant keep the team together that's
12 been working on this project, including the earthquake
13 engineering consultant that was retained to assist you,
14 Pedro, on the development of the time histories. I'm not
15 going to mention his name but you know who he is.

16 MR. MONTES: Frank, I don't want to rob your time
17 anymore here but let me just say regarding the phone call,
18 that caught me off guard. But then you can vote, just vote,
19 you know, for a motion by e-mail.

20 ECRB MEMBER ROLLO: Okay.

21 MR. MONTES: If they provide you with information
22 you're asking for, all you have to say is, I agree. That's
23 all you have to say to me via e-mail.

24 ECRB CHAIR BORCHERDT: But from a public meeting point
25 of view and from a public forum point of view I think it is

1 important that we -- and that's what the motion has always
2 been. It has always been a formal means of stating a
3 consensus of the Board Members. So I think that we could --
4 next time we could come up with a summary that's much more
5 brief, maybe as Frank has suggested. But in the past we
6 have been challenged with respect to these informal
7 summaries because one person hears one thing and someone
8 else hears something else.

9 So since we have this framework in front of us with
10 respect to these points, we've got them clearly articulated
11 now down to the last one which is the instrumentation, and
12 basically the points there are to get together with the
13 state program so that you can have a long-term maintenance
14 program. And then there are a couple of suggestions with
15 respect to the sensor layouts and then this other thing with
16 respect to the previous recommendation in the EIR report
17 review.

18 So with that said, then what I would suggest is that I
19 would suggest we would go ahead now that we have gone this
20 far and we have in our motion -- our framework for a motion.
21 I as Chair would like to suggest that I will entertain a
22 motion or approval as it has been stated and put together
23 and discussed here today, and a second and open it up for
24 discussion with respect to whether additional points or
25 whatever need to be made. And that way there's formal

1 closure to this thing, you have a recommendation, it's all
2 down with specificity, and so you are not in a position of
3 having to go back and try to pull this out of the discussion
4 and that out of the discussion with respect to what you
5 thought the key points were. And I think we have hit on the
6 key points in this. Not that I'm pushing my memo because I
7 am quite willing to strike out items, any items that the
8 Board wants to strike out.

9 ECRB MEMBER ROLLO: I'll make the motion that we
10 approve the Treasure Island phases brought before the ECRB
11 with the understanding that certain issues, concerns will be
12 addressed by the applicant. And those issues relate to site
13 response spectra, instrumentation, deformation and
14 continuity of the applicant's design team.

15 ECRB CHAIR BORCHERDT: That's a different motion than
16 what we have before us, the five items that we have before
17 us.

18 ECRB MEMBER ROLLO: I know, I was just making it --
19 take the last one out.

20 ECRB CHAIR BORCHERDT: And what the Chair said they
21 were going to entertain.

22 ECRB MEMBER ROLLO: Okay, okay, I'll take the last one
23 out. All right.

24 ECRB MEMBER COMERIO: That's still not every -- you've
25 missed some of the points that were in here so it's a very

1 awkward motion.

2 MR. MONTES: The motion is going to be based on what
3 you said on the record, that you are requesting, not
4 necessarily the paper.

5 ECRB CHAIR BORCHERDT: Yes. I think we've gone through
6 it pretty completely here with respect to this -- you know,
7 there has been a real effort put together with respect to
8 providing the preamble for the motion and then basically
9 what the key items are, and I think we've covered all the
10 key items that Frank just indicated.

11 ECRB MEMBER COMERIO: Yes.

12 ECRB CHAIR BORCHERDT: And there is a pretty precise
13 statement of a lot of that.

14 ECRB MEMBER BATTALIO: I could make a motion that the
15 document that you wrote, modified by our discussion today,
16 is the Board's resolution of review of the project.

17 MR. MONTES: But then you would be relying on a piece
18 of paper and not some --

19 ECRB MEMBER BATTALIO: Well, no. I think that what was
20 written plus our discussion and then I think that we would
21 subsequently have the opportunity to look at this.

22 ECRB MEMBER FRENCH: Roger has an edited version. I'm
23 just watching him over his shoulder writing things up. I
24 haven't read what he wrote exactly but I saw writing the
25 notes. And the one thing he didn't mark up was the segment

1 of that which was about instrumentation, which I think has
2 probably not really changed very much from the discussion
3 that we had. I think it would be reasonable if we moved to
4 approve the motion as Roger has prepared originally and
5 edited based on our discussions here.

6 MR. MONTES: And stated. As stated, right?

7 ECRB MEMBER FRENCH: Yes, with modifications as
8 discussed over the last 40 minutes.

9 ECRB MEMBER BATTALIO: And it was the last -- are we
10 going to have a discussion on that now that we have had
11 the --

12 ECRB CHAIR BORCHERDT: Do we have a second on that one?

13 ECRB MEMBER ROLLO: I'm not even sure what we're --

14 ECRB CHAIR BORCHERDT: On your proposed motion.

15 ECRB MEMBER COMERIO: Robert's Rules of Order say
16 you've got to --

17 ECRB MEMBER FRENCH: I'm throwing words out before
18 actually moving them.

19 ECRB MEMBER COMERIO: Those two have to withdraw their
20 motions before yours is okayed.

21 ECRB MEMBER FRENCH: No, it doesn't belong to the group
22 until he states it as a motion so it doesn't have to be
23 withdrawn.

24 ECRB MEMBER ROLLO: No, I think there was no -- Mary,
25 there wasn't any second to mine.

1 ECRB MEMBER COMERIO: All right.

2 ECRB MEMBER FRENCH: Seconding doesn't matter, he has
3 to state it first.

4 ECRB MEMBER ROLLO: Yes. Okay. So what we are saying
5 is the motion is as summarized in a draft motion outline
6 prepared by Roger dated 5/28/2018 (sic) and amended during
7 the course of the meeting.

8 ECRB MEMBER HOLMES: As amended during.

9 ECRB MEMBER ROLLO: As amended during the course of the
10 meeting.

11 ECRB MEMBER FRENCH: So moved.

12 ECRB MEMBER BATTALIO: That was a second, right?

13 ECRB MEMBER FRENCH: Did you move it?

14 ECRB MEMBER ROLLO: Yes.

15 ECRB MEMBER BATTALIO: Frank made the motion.

16 THE REPORTER: I guess you're looking for a second now.
17 He just made the motion, you just said "so moved."

18 ECRB MEMBER FRENCH: Did you actually move it?

19 ECRB MEMBER ROLLO: Okay, I'll move it.

20 ECRB MEMBER FRENCH: I think he just sort of threw
21 words out without saying "I move."

22 ECRB MEMBER ROLLO: Okay. So do you want to second it?

23 ECRB MEMBER FRENCH: Second.

24 ECRB MEMBER ROLLO: There you go.

25 ECRB MEMBER BATTALIO: Now we have discussion?

1 ECRB MEMBER FRENCH: Hearing no further discussion.

2 (Laughter.)

3 ECRB MEMBER BATTALIO: No, I actually -- I need to say
4 something. So the last item here is sea level rise. And my
5 understanding is that the applicant has been working with
6 the staff and then one of the things we discussed is that it
7 would be -- it's good that they are working with the staff
8 to clear up the sea level rise issues.

9 The one contingency I would add is that the applicant
10 continues to work with the staff to confirm that the
11 dwellings which have low adaptive capacity, being raised by
12 three feet with a half-foot freeboard, is consistent with
13 the recent NRC 2012 report high sea level rise curve within
14 the project life. And it's kind of close, you know. If you
15 look at the high curve around 2080, depending on if you're
16 starting from zero or later on, it's kind of close. That's
17 new information since the work had been originally
18 developed.

19 MR. McCREA: So what is the short form of your
20 amendment?

21 ECRB CHAIR BORCHERDT: Yes.

22 ECRB MEMBER BATTALIO: The short form is I would like
23 the applicant to continue to work with BCDC staff and come
24 to a conclusion and inform us of their conclusion as to
25 whether or not they are satisfied that the elevation of the

1 dwellings are consistent with the NRC 2012 high curve.

2 ECRB MEMBER ROLLO: Okay, I will accept --

3 ECRB MEMBER BATTALIO: Within the project life.

4 MR. MONTES: But the dwellings are beyond the
5 jurisdiction of BCDC. They are not in the purview.

6 ECRB MEMBER BATTALIO: I can still make the motion or
7 no?

8 MR. MONTES: Sure, you can make the motion.

9 ECRB MEMBER BATTALIO: I think that the intent was not
10 to debate but rather to come to an agreement with the BCDC
11 staff because the development is low and within sea level
12 rise and we have discussed that the dwellings are being
13 raised. So I think the jurisdictional consideration might
14 not -- the applicant maybe not have to conform to our
15 request but I am asking anyway because I think it's --

16 ECRB MEMBER ROLLO: I'll accept the addendum.

17 ECRB MEMBER FRENCH: And as seconder I accept also.

18 ECRB CHAIR BORCHERDT: Any other discussion?

19 Call the vote. All in favor?

20 (Ayes.)

21 ECRB CHAIR BORCHERDT: Any opposed?

22 (No response.)

23 ECRB CHAIR BORCHERDT: The motion passes.

24 ECRB MEMBER ROLLO: Mary abstained.

25 ECRB MEMBER COMERIO: But I do want to request that we

1 see the final draft motion, Rafael, so that if there is
2 something that doesn't seem consistent we have a chance to
3 comment.

4 ECRB CHAIR BORCHERDT: I think that's a --

5 ECRB MEMBER FRENCH: It's part of the minutes and we
6 always have a record through the minutes.

7 ECRB CHAIR BORCHERDT: So meeting adjourned. And thank
8 you very much.

9 (The meeting was adjourned at 5:19 p.m.)

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