WELCOME

Bidder’s Conference
for
Removal of Original SFOBB East Span Superstructure
Thursday, August 21, 2014

Steven Hulsebus, P.E., Design Manager
Toll Bridge Design

Art Shanks, Executive Director
Cypress Mandela Training Center

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
DESIGN

Charles Ho, P.E., Project Engineer
Toll Bridge Design
Removal Limit

ELEVATION

OAKLAND

Yerba Buena Island (YBI)

REMOVAL LIMIT & COMPONENTS
ACCESS TO PROJECT SITE

Reference: Contract Plan CS-1
Std Spec 5.1.32
UPPER DECK ACCESS

West End of 504’/288’

PIER E4

PIER E5

PIER E6

PIER E23

ELEVATION

East End of 504’/288’

Reference: Contract Plan
Sheet No. 26 & 29 of 120

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
COOPERATION AND ACCESS RESTRICTIONS

- 04-0120T4 (YBI2 – Cantilever Removal Contract)
- 04-013534 (Marine Foundation Removal Contract)
- Do not access the bridge decks until 8/1/2015.
- Maintain one 24-ft wide traffic lane on the lower deck from 8/1/2015 to 11/1/2015.
- Do not access area west of Pier E4 until 2/1/2016.

Reference: SSP 5-1.20
SFOBB — EAST SPAN DEMOLITION OF 504' AND 288' SPANS

CONTRACTOR’S OUTREACH

August 2014

Richard Foley, P.E., Assistant Risk Manager

Construction

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SFOBB East Spans

Piers: E9, E4, E11, E17, E1
Over-land concrete spans
Over-land concrete spans
Birds
Birds
Bird Protection Measures
Bird Protection Measures
Limitations

All equipment weights, barge sizes, etc. shown on these slides are preliminary and tentative, and are intended to indicate only a general order of the cost and complexity of the various methods.

The contractor is ultimately responsible for all analysis and technical judgments necessary to safely carry out the work.
Project Restrictions

- Diameter of the piles shall not exceed 36 inches
- Vibrohammer driving of piles is permitted year round
- Impact hammer driving of piles is only allowed from June 1 to November 30 each year
- Materials resulting from the demolition are not permitted to fall into the bay
- Permits allow limited dredging in the Oakland shallows
- For further information see environmental permits (you must read, understand and follow permits)
504' SPANS

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
ORIGINAL CONSTRUCTION

504' SPANS
504' Spans Overview

- Quantity: 5
- Weight each (approximate)
  - Utilities and railing: 500k
  - Concrete decks: 5800k
  - Structural steelwork: 4900k
  - Total per span: 11,200k

- Spans were built using five temporary towers per span and lightweight erection equipment
- Bottom chord is 100% eyebars and so will not tolerate any compression
504' Spans Original Construction

Lightweight derricks
No decking in place
Note support truss for first eyebars
504' Spans Original Construction
504' Spans Original Construction
DISMANTLING METHODS

504' SPANS

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
504' Spans — Method 1
Conventional Dismantling
On Temporary Towers
Step 1:
- Remove concrete, curb, rail, and most stringers from upper deck
- Remove curb, rail, and utilities from lower deck
- Establish contact at all five temporary towers

504' Spans — Reverse of Erection Sequence
Reverse of Erection Sequence

Step 2:
- Remove concrete, deck, and stringers from first two panels of lower deck
- Remove two panels of truss structure

Cable supports for eyebars during demolition

Equipment shown is heavier than that used in erection. Concrete lower deck is retained for access. These additional weights may require strengthening of some members.

504' Spans — Reverse of Erection Sequence
Reverse of Erection Sequence

Step 3:
- Remove upper structure in next two panels

504’ Spans — Reverse of Erection Sequence

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
Reverse of Erection Sequence

Step 4:

- Remove concrete in lower deck in next two panels
- Remove structural steelwork in next two panels

504' Spans — Reverse of Erection Sequence
Reverse of Erection Sequence

Step 5:
- Repeat steps 3 and 4 in next two panels

504' Spans — Reverse of Erection Sequence
Reverse of Erection Sequence

Final Step:

- Continue repeating steps 3 and 4 to demolish 504’s two panels at a time
- Remove lower deck concrete in last two panels
- Install temporary supports for last eyebars
- Remove structural steel in the last two panels

504’ Spans — Reverse of Erection Sequence

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
Conventional Demolition on Temporary Towers

Step 1:
- Remove concrete, joists, and some stringers from upper deck
- Leave lower deck intact
- Install five temporary pile foundations
- Install five temporary towers
- Establish contact at each tower

Note: Bottom chords are 100% eyebars

504' Spans — Demolition Using Temporary Supports
Conventional Demolition on Temporary Towers

Step 2:
- Remove upper structure as shown

Floor beams and edge stringers remain in upper deck

504' Spans — Demolition Using Temporary Supports
Conventional Demolition on Temporary Towers

Step 3:
- Remove concrete in lower deck and remaining structure one bay at a time

504' Spans — Demolition Using Temporary Supports
504' Spans — Method 2
Dismantling Methods Using Barges
Dismantling Methods Using Barges

a. Entire Truss Floated Out at High Elevation and Demolished at Dockside on Falsework
b. Entire Truss Lowered By Strand Lifters
c. Entire Truss Lowered by Gantry Barge and Strand Lifters
d. Entire Truss Removed by Sheer Leg Crane Barges
Option A: Entire Truss Floated Out at High Elevation and Demolished at Dockside on Falsework

Option A

Concrete, joists, and stringers removed from upper and lower decks. Floor beams and bracing remain

Working deck to support truss during demolition at dockside

Falsework

Ballast tanks on deck — 4-50'Ø x20' high per barge

Support truss at panel points shown to avoid compression in eyebars

Strong backs

2 Barges 100'x400'

Use ballast discharge and rising tide to pick up truss

504' Trusses — Lift and Carry to Dockside for Demolition at High Elevation

Carried weight = 4000 kips, approx.
Option B: Entire Truss Lowered By Strand Lifters

Option B

Strand lifter carrier structure B

Strand lifter carrier structure A

End posts, upper deck, end floor beams, and end stringers removed at each end

Cut and remove after lifters are connected

Approximate equipment weights:
- Carrier Structure A = 280 tons
- Carrier Structure B = 160 tons

55-strand strand lifters
Total — 2x2

Live tieback to previous foundation to reduce pier moment. Approx 200 kips per truss tieback force.

400'x100'x20' barge

504' Span Removal Using Strand Lifters
Lowered weight = 4100 kips, approx.

A:
- Concrete in upper and lower deck removed
- Utilities removed
- Upper deck joists and stringers removed. Floor beams remain.
- Lower deck 50% of stringers removed. Bottom bracing and floor beams remain.
Option B: Entire Truss Lowered By Strand Lifters

B: Shift truss to east approximately 14 feet
Option B: Entire Truss Lowered By Strand Lifters

- Lower truss to barge and support as shown
- Transport to a dismantling location at dockside
Option C: Entire Truss Lowered by Gantry Barge and Strand Lifters

- Cut members after gantry takes load
- Guy wire
- Connecting structure
- 240'x70'x16' barges
- Removal barges
  2 barges 200'x70' or flexi float assembly

Option C Diagram:
- Gantry leg
- Strand lifters
- Strand lifter carrier structure
- Pier
- Connecting structure
- C Pier and barges
- C Bridge
- Gantry leg
- Removal barges
- Barges

- Take weight on strand lifters
- Cut ends of trusses at gantry barge end
- Lowered weight — 4100 kips approximately

Approximate equipment weights:
- Gantry steelwork .................... 775 tons
- Connecting structure .............. 255 tons
- Strand lifter carrier structure ... 125 tons

504' Truss Removal with Gantry Barge and Strand Lifters — A
Option C: Entire Truss Lowered by Gantry Barge and Strand Lifters

- Ends of trusses have been removed
- Back up 504’ truss and gantry approximately 14 feet
- Commence lowering

504’ Truss Removal with Gantry Barge and Strand Lifters — B
Option C: Entire Truss Lowered by Gantry Barge and Strand Lifters

- Lower truss to removal barge and support as shown
- Transport to dockside for demolition

504' Truss Removal with Gantry Barge and Strand Lifters — C
ORIGINAL CONSTRUCTION

288' SPANS

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
288' Spans Overview

- Quantity: 14
- Weight each (approximate):
  - Utilities and railing: 250k
  - Concrete decks: 3300k
  - Structural steelwork: 2400k
  - Total per span: 5950k
- Spans were built using one or two temporary towers per span and lightweight erection equipment
- There are two types of foundations for the 288' spans:
  - Pier E9 to E16 have steel piers on concrete foundations
  - Piers E17 to E22 have full-height concrete piers
288' Spans Original Construction

- Lightweight derricks
- Erection started in cantilever from previous span

Showing the single tower method which was used for most spans
288' Spans Original Construction

There is no deck in place.

Work continues in cantilever.
Work continues in cantilever beyond the temporary bent to reach the next pier.
DISMANTLING METHODS

288' SPANS

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
288' Spans — Method 1
Conventional Dismantling
On Temporary Towers
Conventional Dismantling on Temporary Towers

1. Three temporary towers
2. Two temporary towers
3. One temporary towers
Method 1-1: Three Temporary Towers

Upper deck floor beams are removed as demolition progresses (typ)

Crane moves back

Upper deck concrete, joists, and stringers already removed throughout span. Floor beams remain.

Concrete in lower deck remains

Tower support

Tower not yet engaged

A:
Three Tower Method for Dismantling of 288’ Spans (Schematic)
No significant truss strengthening is anticipated. The use of three temporary towers allows concrete in lower deck to be retained as a working deck.
Method 1-1: Three Temporary Towers

B: Tower is engaged
Tower is not yet engaged

C: Tower is engaged

D:
Method 1-2: Two Temporary Towers per Original Erection Procedure

Crane does not occupy these panels after disconnect from pier

Temporary towers
Temporary foundations
Jacks
No contact
Piles
Wind guy wires

1. Upper deck — Remove concrete, joists, and stringers. Floor beams remain.
2. Lower deck — Remove concrete. Install timber deck end to end.
3. Remove top chord and post prior to disconnect

288' Spans — Reverse of Two Tower Erection Process — A
Jack at midspan tower to establish cantilever
Method 1-2: Two Temporary Towers per Original Erection Procedure

288' Spans — Reverse of Two Tower Erection Process — B
Continue stick-by-stick removal until first temporary tower is reached.
Method 1-2: Two Temporary Towers per Original Erection Procedure

Crane does not occupy this panel after jacking at Tower B

Temporary towers
Temporary foundations
Wind guy wires

288' Spans — Reverse of Two Tower Erection Process — C

Jack at tower B to free tower A. Continue stick-by-stick removal.
Method 1-2: Two Temporary Towers per Original Erection Procedure

288' Spans — Reverse of Two Tower Erection Process — D
Remove remaining top chord and posts as shown.
Method 1-2: Two Temporary Towers per Original Erection Procedure

288' Spans — Reverse of Two Tower Erection Process — E
Remove remaining members.
Method 1-3: One Temporary Tower per Original Erection Procedure

Crane does not occupy these panels when structure is in cantilever

1. Upper deck — Remove concrete, joists, and stringers. Floor beams remain.
2. Lower deck — Remove concrete. Install timber deck end to end.
3. Remove top chord and post prior to disconnect
4. Establish a tension connection to the adjacent truss
5. Establish a compression connection to the adjacent truss

288' Spans — Reverse of One Tower Erection Process — A
Jack at tower to establish cantilever.
Method 1-3: One Temporary Tower per Original Erection Procedure

288' Spans — Reverse of One Tower Erection Process — B
Continue stick-by-stick removal until temporary tower is reached.
Method 1-3: One Temporary Tower per Original Erection Procedure

Crane does not occupy this panel after temporary tower is disengaged

Temporary tower

Temporary foundation

Piles

No contact

Wind guy wires

288' Spans — Reverse of One Tower Erection Process — C

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
Method 1-3: One Temporary Tower per Original Erection Procedure

Cable to support bottom chord when cut

288' Spans — Reverse of One Tower Erection Process — D
Remove remaining members.

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
288' Spans — Method 2
Alternate To Pile Foundations
Method 2: Alternate to Piled Foundations for Temporary Towers E9 to E15

Upper deck concrete, joists, and stringers already removed. Floor beams remain

Falsework towers supported on trusses

Guy wires

Temporary trusses
Approx. weight = 900 tons

Floor beams remain

Trusses are supported on pier concrete

- See three tower method sequence for dismantling details

288' Span Demolition Using Three Towers and Temporary Trusses (E9 to E15)
Method 2: Alternate to Piled Foundations for Temporary Towers E16 to East End

Upper deck concrete, joists, and stringers already removed

Temporary trusses
Approx. weight = 900 tons

Upper deck floor beams remain in place

Recesses in concrete piers to receive truss ends

Falsework towers
Recesses in concrete piers
Trusses

288' Span Demolition Using Three Towers and Temporary Trusses (E16 to East End)

• See three tower method sequence for dismantling details
288' Spans — Method 3
Full Span Cantilever Piecemeal Removal
Method 3: Full Span Cantilever Piecemeal Removal
Option A: Continuity Over Pier Using Existing Members

Option A

- Strengthen top and bottom chords
- Tension connection
- Compression blocking
- Concrete remains in place on upper and lower decks in adjacent span
- Extent of timber deck
- 288' span will be in cantilever

- Remove concrete, joists, and stringers from upper deck. Floor beams remain.
- Remove concrete from lower deck and replace with partial-width timber decking
- Strengthen members indicated
- Connect top and bottom chords across pier

288' Spans: Cantilever From Adjacent Span and Remove Piecemeal — 1A

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
Option A

Crane does not advance beyond this panel

Strengthen top and bottom chords

Compression blocking

Concrete remains in place on upper and lower decks in adjacent span

- Demolish 288' span stick by stick cantilevering over pier

288' Spans: Cantilever From Adjacent Span and Remove Piecemeal — 2A

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
Method 3, Option A: Members Requiring Strengthening

Option A

288' Spans: Cantilever From Adjacent Span and Remove Piecemeal — 3A

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
Option B

- Remove concrete, joists, and stringers from upper deck. Floor beams remain.
- Remove concrete and joists from lower deck and replace with partial-width timber decking
- Strengthen members indicated
- Install mast and stays
- Connect top and bottom chords across pier

288' Spans: Cable-Stayed Cantilever From Adjacent Span and Piecemeal Removal — 1B
Method 3: Full Span Cantilever Piecemeal Removal
Option B: Continuity Over Pier by Cable-Stayed Support

Option B

- Crane does not advance beyond this panel
- Tension tie across joint
- Mast
- Stressable backstays
- Crane
- Strengthen top and bottom chords
- Compression blocking at joint
- Demolish 288’ span stick by stick cantilevering over pier
- When demolition reaches forestays, remove mast and stays, and continue in unstayed cantilever

288’ Spans: Cable-Stayed Cantilever From Adjacent Span and Piecemeal Removal — 2B
Method 3, Option B: Members Requiring Strengthening

Option B

288' Spans: Cable-Stayed Cantilever From Adjacent Span and Piecemeal Removal — 3B
288' Spans — Methods 4–8
Dismantling Using Barges
Method 4: Pier Lift and Carry Entire Truss to a Lowering Station — Lifting Truss

Option A

Lower deck concrete may remain in place

Upper deck concrete, joists, and stringers removed. Floor beams remain.

Tension/compression connections to truss

Modular falsework and barge stabilization

Floor beams remain in place

250'x72'x16' barges

- Use ballasting and rising tide to engage and lift span
- Transfer to lowering station
- No major retrofit of the spans is anticipated
- Highest span is shown

Lifting Out 288' Span for Subsequent Lowering
Carried weight = 4000 kips, approx.
Method 4: Pier Lift and Carry Entire Truss to a Lowering Station — Lowering Station

- 55-strand strand lifters — total 2x2
- Purpose-built towers for strand lifters
- 288' span floated in for lowering

- At the lowering station, span is lowered onto a deck barge for transport to a truss dismantling location at dockside

Lowering Station for 288' Spans
Lowered weight = 4000 kips, approx.
Method 5: Entire Truss Floated Out for Demolition at High Level at Dockside

Upper and lower deck joists, stringers, and concrete already removed. Floor beams and bracing remain.

- Use ballasting and rising tide to engage and lift span
- No retrofit of the spans is anticipated
- Dismantling of steel work takes place at dockside using large crane on dock

Floating Out 288' Spans for Subsequent Demolition at Dockside
(Highest span shown)
Carried weight = 2000 kips, approx.
Method 6: Entire Truss Lowered by Gantry Barge and Strand Lifters

- Cut off last panel after gantry barge has taken weight
- Top deck and posts removed at ends of trusses
- Strand jacks
- Strand carriers structure
- New bridge
- Removal barge
- 280' x 70' x 12' shown
- 240' x 70' barges
- Gantry leg
- Gantry barge
- Strand lifters

- Remove concrete, joists and stringers in upper deck
- Remove post, upper chord, and floorbeam at end panels
- Concrete in lower deck may remain
- Take weight with gantry barge and strand lifters
- Cut off left end of truss
- Shift truss to left approximately 14 feet
- Lower onto removal barge
- Remove to dockside for demolition

Note: Proximity to new bridge will limit the utility of this method

288' Span Removal with Gantry Barge and Strand Lifters

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
Traditional Bridge Pier Removal
Expected Over Land
Final Thoughts

- Safety First
- Environmental Responsibility
- Public Dollars (schedule is just one part of this)
# "DRAFT" Dismantling Contracts - Summary Schedule

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## YBITS 2-CEC
- Bike Path to Landing Area
- S&G ETI Removal, On Ramp, Bike Path, Landing, Island Completion Work

## Midspan to West Anchor Arm
- Midspan to Pier E3 Removal
- East Anchor Removal

## Pier E3 Tower Removal
- Turnover to 504/288
- 6/1/15
- 10/31/15

## 504/288 Contract (650 WD)
- Advertisement to Award
- Award: 1/18
- NTP: 2/2
- Submittals: 5/27

## Foundations CMGC Contract
- CMGC Contract RFQ / Selection
- CMGC Contractor Foundation Demonstration Plan
- 1st Package PS&E
- Award / NTP
- off site Demonstration Test

## CMGC E3 Foundation Removal Demonstration Mock-up
- Permit Approval / Design / CMGC
- PS&E: Prep & Remove E3 Fndn
- Negotiation / Award

## Foundation Removal CMGC Contracts
- Remove Foundations As Areas Become Available From 504/288 Contractor

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**THE SAN FRANCISCO-OAKLAND BAY BRIDGE EAST SPAN SEISMIC SAFETY PROJECT**
PLANNED ADDENDUM
MAJOR CHANGES

Steve Margaris, P.E.,
Structures Specifications Manager,
Toll Bridge Design

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
Planned Addendum Items

1) Add Special Provisions section 14-6.05 Contractor-Supplied Biologist
   a) Provide 2 full-time biologists to monitor, protect and prevent nesting birds
   b) Prepare and implement Bird Protection Plan and Bird Deterrence Plan
   c) Monitor bird nesting and effectiveness of deterrence measures
   d) Prepare and submit monitoring reports
Planned Addendum Items

1) Add SP section 14-6.05 Contractor-Supplied Biologist (cont’ed)

   e) Establish bid item for work included in this specification
Planned Addendum Items

2) Revise Section 14-6.03 BIRD PROTECTION of the Standard Specifications.
   a) Install Bird Deterrents to prevent nesting on the bridge and temporary structures as required by the contract
   b) Maintain Bird Deterrents to prevent nesting
   c) Establish bid item for implementing Bird Deterrents
Planned Addendum Items

3) Revise or add plan sheets to show details of deterrent types and locations to clarify scope of bird deterrent installation.

4) Add applicable bid items to the Bid Item List for Contractor-Supplied Biologist and Bird Deterrents.

5) Revise Special Provisions section 5-1.20A to delete provisions related to coordination with bird deterrent contractor and delete provisions facilitating bird deterrent contractor access through the construction zone.
Planned Addendum Items

6) Revise Special Provisions section 48-8 Marine Access Dredging to conform to permit requirements.


8) Revise Salvage Steel quantity to add approximately 600 tons.

Revise plans to show details of additional steel to be salvaged

Revise specification to clarify

Increase bid item quantity for salvage steel
Possible Addendum Items

1) Revise Standard Specifications section 5-1.32 Areas of Use

Designates area for contractor use for the duration of the contract.
ENVIRONMENTAL CONSIDERATIONS and PERMITS

Stefan Galvez, Toll Bridge Environmental Manager
Chief, Office of Environmental Analysis
Environmental Regulatory Agency Permits

San Francisco Bay Conservation & Development Commission (BCDC)

State and Regional Water Quality Control Boards

California Department of Fish & Wildlife (CDFW)

United States Fish & Wildlife Service (USFWS)

United States Coast Guard (USCG)

United States Army Corp of Engineers (ACOE)

National Oceanic and Atmospheric Administration’s National Marine Fisheries Service (NMFS)
Biological Resources

- Double-Crested Cormorant (*MBTA, CDFG Watch List*)
- American Peregrine Falcon (*fully protected species, CFGC*)
- California Least Tern (*endangered*)
- Western Gull (*MBTA*)
- Pacific Herring (*State Managed Commercial Fishery*)
- Chinook Salmon & Steelhead (*endangered/threatened*)
- Green Sturgeon (*threatened*)
- Longfin Smelt (*threatened*)
- Marine Mammals (*MMPA*)
- Eelgrass Beds (*Special Aquatic Habitats*)
Environmentally Sensitive Areas
SFOBB Nesting Birds

The Bay Bridge provides Nesting Habitat for Birds. Project permits and state and federal laws (including the Migratory Bird Treaty Act) regulate protection of special status & nesting birds in the project area.

Peregrine Falcon
Pair currently nesting at pier E8. Typically pair has nested on Cantilever section currently being dismantled.

Double-crested Cormorant
Documented to nest from pier E3 to E16, most commonly nest from E7-E10. This is one of the largest colonies in California.

Western Gull
Nests on marine foundations and flat surfaces throughout the project area.
Avian Nesting Season and Schedule

- **Nesting Season is February 1-August 31**

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- First day of project access for 504/288 dismantling is **August 1, 2015**.
  - Nesting season ends after **August 31st**
  - Bird deterrence installation before 2015 nesting season (prior to **February 1, 2015**)

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
Highlights of Bird Protection & Monitoring

• Contractor will hire 2 (or more) full-time, District-approved Bird Biologists.

• Contractor will be responsible for installing deterrence measures per contract specs and plans, as well as provide supplemental deterrence measures.

• Contractor and Contractor Supplied Biologists are expected to work closely and cooperatively with the Department to avoid impacts and resolve issues.
Highlights of Bird Protection & Monitoring

• Contractor Supplied Biologists are responsible for:
  • Preparing and implementing Bird Protection Plan and Bird Deterrence Plan
  • Avoidance of impacts through:
    • Bird monitoring
    • Scheduling of construction activities
    • Implementing and maintaining bird deterrence and exclusion measures
    • Establishing no-work exclusion zones for active nests
    • Preparing Weekly and Annual Reports

• Monitoring requires a minimum of:
  • Every day of the week, including weekends and holidays, from Jan 1st through Aug 31st
  • 1 time per week from Sep 1st – Dec 31st
Highlights of Bird Protection & Monitoring

- Deterrence Measures to be implemented
  - Seasonal Avoidance
  - Suspended Scaffolding System
  - Netting
  - Bird-Spikes
  - Bird-Slope Panels
  - Bird-Wire System
  - Welded Wire Hardware Cloth
  - Hazing
Highlights of Bird Protection & Monitoring

- Suspended Scaffolding System (SSS)
  - Exclusion
  - Access
  - Containment

- ~2066-ft installed in advance of demolition scheduled to occur during nesting seasons
  - Enough to span 4 X 504-ft spans + 50-ft;
  - or 7 X 288-ft spans + 50ft

- Netting
  - To exclude sides and openings of SSS
  - High density (50-70%) knitted polyethylene mesh
  - Same as seen on Piers E2 and E3

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
Pile Driving

Marine Mammals and listed fish including Steelhead, Salmon, Green Sturgeon, Herring and Longfin Smelt occur within the project area. Underwater noise generated by pile driving can harm or kill marine life.
Pile Driving Restrictions

- Pipe piles maximum diameter is 36 inches. Piles must be initially installed with a vibratory hammer for the majority of the total pile length (greater than 50% of the pile length).

- If pipe piles are entirely installed with a vibratory hammer, a maximum of 10% of those piles may be proof-tested with an impact hammer. Proof-testing is limited to 2 piles per day for less than 1 minute per pile, with a maximum of 20 blows per pile. Proof-testing may be performed year-round and no sound attenuation system is required.

- Impact driving allowed only between June 1st and November 30th.

- Impact driving of pipe piles requires attenuation (eg bubble curtain) max. 20 piles per day.
Pile Driving Restrictions (cont.)

- The Contractor must coordinate schedule and access with the Department to allow biological and hydroacoustic monitoring to be performed by the Department in accordance with project permits.

- The Contractor must stop or delay pile installation activities when directed by the Engineer in accordance with project permits to protect fisheries and marine mammals.

- Herring spawns may delay in-water work within 200 meters (656 ft) for 14 days.
Dredging

• Dredging is limited to **June 1 – November 30**

• Draghead must be operated at or below the surface of the material being removed

• Draghead can never be more than three feet above the bed
Project Permits and Monitoring Plans and Reports can be found at:

www.biomitigation.org
Water Quality Permit Compliance

Contractor must comply with the following State and Regional Water Quality Control Board permits and plans as applicable:

- State NPDES Construction General Permit (CGP) DWQ 2009-0009
- State Industrial General Permit (IGP) 97-03-DWQ
- Caltrans Statewide MS4 NPDES Permit DWQ 99-06
- SFOBB Water Quality Certification Order 01-120 (401 Cert)
- SFOBB Waste Discharge Requirements Order R2-2002-0011 (WDRs)
- SF RWQCB Basin Plan
- Other associated permits (POTW)
Waste Discharge Requirements

Waste Discharge Requirements, R2-2002-0011 and Basin Plan include water quality objectives for:

- Turbidity
- Floatables
- Petroleum Hydrocarbons
- Dissolved Oxygen
- Dissolved Sulfide
- pH
- Other Constituents

RWQCB Order/WDRs also include:

- Self Monitoring Program (performed by Department)
- Notification Requirements
Storm Water Pollution Prevention Plan (SWPPP)

Contractor must submit a SWPPP to identify pollutant sources, minimize discharges and prevent material or equipment from falling into or being discharged to waters through the use of Best Management Practices.

504/288 Contract Risk Level 2 SWPPP shall includes:

- Construction Site Monitoring Program (CSMP)
- Sampling and Analysis Plan (SAP)
- Rain Event Action Plan (REAP)
- Dewatering & Discharge or Active Treatment System Plan
- Turbidity Control Plan
- Daily and Weekly Inspection & Reporting
- Material Containment Collection Handling Work Plan (MCCHWP includes Debris Containment System)
Debris Containment System

Project water quality permits prohibit the direct discharge of wastes including: steel, asphalt, concrete, sawdust, bird nesting material, and other material into bay waters.

A written Material Containment, Collection and Handling Work Plan (MCCHWP) is required.

The MCCHWP is part of the SWPPP.
Debris Containment System (cont.)

- The MCCHWP has a Debris Containment System which includes:
  - Installation
  - Maintenance
  - Removal of the system
  - Design and oversight by PE registered in California

- The Debris Containment System must:
  - Prevent burning metal debris from falling through.
  - The sides tall enough and all seams sealed to prevent debris from falling.
  - Lower bridge deck may serve as containment when feasible.

- Water Pollution Control (WPC) Manager
  - Monitors solid waste storage
  - Monitors disposal procedures
  - Inspects the site daily for the operation of the debris containment system.
Hazardous Material

- Existing paint system includes red lead primer: may contain up to 40 percent lead (400,000 parts per million)
- There is potential for other hazardous materials to be present:
  - Lead in AC grindings and striping
  - PCB in bridge joints and electrical systems
  - Asbestos
  - Mercury in lighting fixtures
- Ensure worker protection with applicable PPE
- Work & disposal must comply with all applicable State and Federal laws
THANK YOU

THE SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT