AGENDA

• Introduction
• Project Overviews
• Discussion

May 6, 2010
• LOCATION: Route 84 connecting Alameda and San Mateo Counties
• STRUCTURE:
  – Land Approaches: Reinforce Concrete Slab Spans
  – Waterway Approaches: Precast/Prestressed Delta Girder
  – Main Channel: Steel Box Girder
• LENGTH: Total length 1.6 miles
• LANES: 3 in each direction – 1 bike/pedestrian path
• ADT: 64,000 (both directions)
• VERTICAL CLEARANCE: 85 feet
• CHANNEL SPAN: 340 feet
• OPENED: October 1982
• SEISMIC: Met seismic standard during design in mid 1970’s
DUMBARTON BRIDGE  Seismic Safety Retrofit Project
--- State Route 84

Dumbarton Bridge Multiple Structure Types

Main Channel Crossing Piers 16-31
East Approach Structure Pier 32-Pier 40
West Approach Structure Abutment 1-Pier 15
Land Structure
Current Railing Configuration

**Westbound**

2'-0"

11'-8"

Splice

11'-8"

Splice

11'-8"

11'-8"

Splice

11'-8"

33'

22'

8'-0"

BICYCLE/PED LANE

1'-6"

2'-0"

11'-8"

11'-8"

11'-8"

42'-6"

42'-6"

**Eastbound**

TYPICAL CROSS SECTION - CONCRETE BOX GIRDER
Current Railing Configuration
Proposed Temporary Barrier and Drainage (West)
A barrier is proposed along the edge of the frontage road to minimize the bay tidal impacts and reduce flooding to the parking lot.

A drainage system with pump station are proposed to discharge the surface runoff to the bay.
Seismic Safety Retrofit Project

DUMBARTON BRIDGE
--- State Route 84 ---

West Trestle Structure
600’ + 150’ Maintenance Building

West Approach
2100’

Main Channel
3150’

East Approach
1950’

East Trestle Structure
600’ + 50’ Box Structure

Total Length = 8600’

General Plan

[Diagram showing the layout of the bridge with details on lengths and structures]
West Approach

- Remove old fishing pier (Ravenswood Pier).
- Construct temporary trestles to retrofit main span.
- Overlay the existing access road and parking lot.
• Construct temporary trestles between pier 17 to 31.
• Overlay the existing access road and parking lot.
• The existing fishing pier will remain in use during construction.
• All work within deep water in main channel will be done using barges.
Aesthetics

Trestle Structure
Main Channel Crossing

Install Isolation Bearings
Bent Cap Strengthening
Existing Hollow Concrete Piles

TYPICAL SECTION: PIER 16 TO PIER 31 (PIER TABLE)
TYPICAL SECTION: PIER 17 TO PIER 30 (PILE CAP)
Construction Duration approximately 2.5 years

- Conventional Highway Partial Closures approx with one or two adjacent lanes open in direction of travel.
- Extended Weekend Full Closures – Two 79 hours over Labor Day and Memorial Day Holiday weekends.
Construction activities may require partial closure

- Transporting structural materials in the steel Box grider.
- Installing cross bracing within the steel box grider.
- Jacking and installing isolation bearings at the piers.
- Replacing expansion joints at pier 16 and 31 by seismic isolation joints.

Construction activity will require the full closure

- Two seismic joints will be created at pier 16 and pier 31.
Existing 8” fiber optic cable inside the steel box grider
### Lane Closure Charts

**Conventional Lane Requirement Chart in NB direction**

#### Chart No. 1

**Freeway/Expressway Lane Requirements**

<table>
<thead>
<tr>
<th>County: San Mateo / Alameda</th>
<th>Route/Direction: 84 Northbound</th>
<th>PM: SM/ALA-29.0-30.15/0.0-3.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closure Limits: At Dumbarton Bridge</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FROM HOUR TO HOUR</th>
<th>24</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mondays through Thursdays</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fridays</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturdays</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sundays</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**

1. Provide at least one through freeway lane open in direction of travel
2. Provide at least two adjacent through freeway lanes open in direction of travel

**Work permitted within project right of way where shoulder or lane closure is not required.**

**REMARKS:**
# Lane Closure Charts

Conventional Lane Requirement Chart in SB direction

<table>
<thead>
<tr>
<th>FROM HOUR TO HOUR</th>
<th>24</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mondays through Thursdays</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fridays</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturdays</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sundays</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**

1. Provide at least one through freeway lane open in direction of travel
2. Provide at least two adjacent through freeway lanes open in direction of travel

Work permitted within project right of way where shoulder or lane closure is not required.
## Lane Closure Charts

Lane Requirements for 79 hrs extended holiday weekend closure on Labor Day & Memorial Day

<table>
<thead>
<tr>
<th>Lane Requirements for 79 hr holiday weekend closure with Monday being the holiday</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chart No. 3</strong> Complete Freeway/Expressway Closure Hours</td>
</tr>
<tr>
<td>County: San Mateo/Alameda</td>
</tr>
<tr>
<td>Closure Limits: At Dumbarton Bridge</td>
</tr>
<tr>
<td>FROM HOUR TO HOUR</td>
</tr>
<tr>
<td>Mondays</td>
</tr>
<tr>
<td>Tuesdays</td>
</tr>
<tr>
<td>Wednesdays through Thursdays</td>
</tr>
<tr>
<td>Fridays</td>
</tr>
<tr>
<td>Saturdays</td>
</tr>
<tr>
<td>Sundays</td>
</tr>
</tbody>
</table>

**Legend:**

- **C** Freeway or expressway may be closed completely.
- No complete freeway or expressway closure is permitted.

**REMARKS:**

1) 79 hr extended weekend closure with a Monday holiday. Beginning Friday @ 9pm and opening Tuesday @ 5am

2) See Detour map and description in the TMP
NB 84 will be closed at University Ave and Bayfront Expressway. Motorist going NB will have the option of using Route 237 or Route 92 from Highway 101.

RTE 84 to Dumbarton bridge will be closed at University and Bayfront Express.
SB 84 will be closed at Thornton Ave and Paseo Padre Parkway, Motorist going SB will have the option of using Route 237 or Route 92 from Interstate 880.
TMP Strategies

Construction Strategies

Coordination with other major construction projects and local jurisdictions regarding major events.
TMP Strategies

Alternate Route (Detour)

The detouring for this full closure scenario is two routes:

- A northern route along the Route 92.
- A southern route along Highway 237.
Available Detours for Full Closure

- **Dark Green** – North Detour
- **Light Green** – South Detour
Contingency Plan

The contractor will be required to submit a traffic contingency plan at least 60 working days prior to full freeway closure and seven days prior to any standard lane closure. The traffic control plan shall contain a detailed contingency plan to ensure opening of the freeway by the designated time.

Traffic Contingency Plan
( CMS, FSP, TMT & COZEEP )
### TMP Strategies

#### Construction Strategies

Liquidated damages for late re-opening of closures

<table>
<thead>
<tr>
<th>Type of Facility</th>
<th>Route or Segment</th>
<th>Period</th>
<th>Damages/Interval ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainline</td>
<td>84 Complete Closure (NB)</td>
<td>1st half hour</td>
<td>$40,500 / 10 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd half hour</td>
<td>$60,800 / 10 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd hour and beyond</td>
<td>$81,000 / 10 minutes</td>
</tr>
<tr>
<td>Mainline</td>
<td>84 Complete Closure (SB)</td>
<td>1st half hour</td>
<td>$40,900 / 10 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd half hour</td>
<td>$61,600 / 10 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd hour and beyond</td>
<td>$83,000 / 10 minutes</td>
</tr>
<tr>
<td>Mainline</td>
<td>84 Nightly Partial Closure (NB)</td>
<td>1st half hour</td>
<td>$1,000 / 10 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd half hour</td>
<td>$1,200 / 10 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd hour and beyond</td>
<td>$1,600 / 10 minutes</td>
</tr>
<tr>
<td>Mainline</td>
<td>84 Nightly Partial Closure (SB)</td>
<td>1st half hour</td>
<td>$1,600 / 10 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd half hour</td>
<td>$2,200 / 10 minutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd hour and beyond</td>
<td>$2,900 / 10 minutes</td>
</tr>
</tbody>
</table>

**Damages are limited to five percent of project cost per occurrence and will not be assessed when the Engineer requests that closure remain in place beyond the scheduled pickup time.**
POTENTIAL OPPORTUNITIES FOR SMALL BUSINESSES

- Provide Portable Changeable Message Signs
- Remove/Install Thermoplastic Traffic Stripe
- Remove/Install Pavement Markers and Delineators
- Construction Area Signs
- Sign Relocation
- Furnish Plastic Pipe
- Steel Sheet Piling
- Install Electrical System
POTENTIAL OPPORTUNITIES FOR SMALL BUSINESSES

- Spot Blast, Clean and Paint Structural Steel
- Remove Existing Trestle
- Built Temporary Trestle
- Street Sweeping
- Clearing and Grubbing
- Rock Slope Protection
- Remove Concrete
- Furnish and Place Polyester Concrete Overlay
- Roadway Lighting
- Pump Plant Electrical System and Circuitry
Environmental
Environmental Setting

Southern part of San Francisco Bay:

- Don Edwards National Wildlife Refuge
- Tidal mud flats, native marshes, salt ponds
- Special Status plants
- Special Status fish, bird, and mammal species
- Protected marine mammals
- Migratory bird habitat
Protected and Special Status Species Onsite

- Salt marsh harvest mouse
- Clapper rail
- Snowy plover
- California least tern
- Cliff Swallows
- Green sturgeon
- Steelhead
- Marine mammals
Potential Environmental Considerations During Construction

- Noise (air and in water);
- Turbidity changes;
- Potential spills;
- Disruption of cliff swallows
- Potential to encroach on wetlands and/or habitat for listed species
Environmental Permits

- USFWS Biological Opinion, August 2009
- NMFS Biological Opinion, August 2009
- NOAA Incidental Harassment Authorization
- USACE, Nationwide Permits 3 and 14, October 2009
- RWQCB, Water Quality Certification
- BCDC Permit, October 2009
Permit Conditions – General

See Special Provisions 5-1.15 to 5-1.19

• Exclusion fencing for special-status species
  – Standard ESA and wildlife exclusion fencing (5-1.19)
  – Bird exclusion fencing along Marshland Road (5-1.19)
  – Mouse-proof barrier (10-1.14)

• Storm Water and Spill Prevention BMPs (10-1.03, 10-1.04)

• Upland disposal of mud and materials (10-1.04)
Permit Conditions—Pile Driving

• All in-water piles must be driven with a vibratory hammer (soft start required)
• In-water piles installed during daylight hours
• Can be proofed with an impact hammer (1 pile per day)
• Temporary piles and pier supports removed or cut below mud line
• Seasonal restrictions for on-shore piles and in-Bay pile proofing with impact hammer
Pile Driving Seasonal Restrictions

<table>
<thead>
<tr>
<th>J</th>
<th>F</th>
<th>M</th>
<th>A</th>
<th>M</th>
<th>J</th>
<th>J</th>
<th>A</th>
<th>S</th>
<th>O</th>
<th>N</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- OK to Drive Piles (land); proof in-Bay piles within 800 ft of shore
- Pile Driving on land and in-Bay proofing within 800 ft of shore restricted (if nests present)

- Permanent piles on land must be installed October 1 to January 31
- Within 800 feet of shore: Proofing of in-Bay piles with impact hammer only Oct 1 to Jan 31 if nesting birds are present
- No seasonal restrictions on proofing in-bay piles farther than 800 ft from shore
Bird Nest Removal

- Bird Nest Removal Plan must be submitted (5-1.15)
- Nest removal techniques specified (5-1.15)
- Only unoccupied nests can be removed
- Netting or other techniques described in SP 5-1.15 should be used to keep birds (particularly cliff swallows) from re-nesting on bridge work areas.
Bird Protection Buffers
Special Status Species

Nesting Bird Non-Disturbance Buffers (5-1.16):
(If nests with young are present)

<table>
<thead>
<tr>
<th>Species</th>
<th>Buffer Radius (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>California clapper rail</td>
<td>700</td>
</tr>
<tr>
<td>Western snowy plover</td>
<td>600</td>
</tr>
<tr>
<td>California least tern</td>
<td>300</td>
</tr>
</tbody>
</table>

Nesting Season: Feb 1 to Sept 30
DUMBARTON BRIDGE Seismic Retrofit Project

Question and Answer Session

Land Structure

(CONCRETE)

- Typical Land X-Section

- Strengthen trestle structure with steel pipe piles
- Replace selected existing deck joints

Superstructure Hinge

PIER 16 AND PIER 31

- Remove existing steel and deck joints
- Install isolation bearings
- Raise main span by 5 inches
- Pier Cap Strengthening
- Footing Strengthening

Geologic Site Condition

TYPICAL SECTION: PIER 16 TO PIER 31