ITEM 10

Resolution for Approval of Excess Salvaged Bay Bridge Steel for Creating a Bay Bridge Series Award
Resolution No. 121217
Bay Bridge Salvaged Steel For NBC Sports
Major League Baseball Bay Bridge Series Trophy

WHEREAS, The Toll Bridge Program Oversight Committee’s (TBPOC) Bay Bridge Steel Program has been completed, and the California Department of Transportation (Caltrans) possesses an inventory of unallocated steel salvaged from the original East Span of the San Francisco-Oakland Bay Bridge; and

WHEREAS, This unallocated salvage steel already has been treated to remove lead paint, and a small piece about the size of home plate can be sourced from excess because it has little or no value and the Department has no use planned for it; and

WHEREAS, the original 1936 two mile long steel Bay Bridge East Spans Bridge crossed the Oakland and San Francisco City limit line carrying more than 4 billion passengers over 77 years, with most of them A’s or Giants fans; and

WHEREAS, NBC Sports has requested from Caltrans District 4 a small piece of salvaged steel to be fashioned into a trophy that would be presented annually to the winner of the series of games contested each season by Major League Baseball’s San Francisco Giants and Oakland Athletics member clubs; and

WHEREAS, The transfer of a small piece of salvaged steel to NBC Sports for this purpose would involve only a negligible cost to either Caltrans or the TBPOC for a contracted firm to cut this piece from a larger section of salvaged steel, and that the additional cost of fashioning this steel for use as a trophy would be borne by NBC Sports; and

WHEREAS, Both the small piece of salvaged steel that would be transferred from the Caltrans inventory and the finished trophy would be the property of NBC Sports; and

WHEREAS, Completion of this transfer will oblige NBC Sports to complete a Materials Transfer Agreement liability waiver; and

WHEREAS, NBC Sports intends to introduce the trophy fashioned from the salvaged steel during the Spring Training portion of the 2018 Major League Baseball season; and

WHEREAS, Pitchers and catchers report in fewer than 65 days.

NOW, THEREFORE, BE IT RESOLVED, the TBPOC and its member agencies, in the spirit of good sportsmanship present to NBC Sports cleaned steel salvaged from the original Bay Bridge East Span to be repurposed as the Bay Bridge Series trophy that will commemorate both the 1989 Loma Prieta Earthquake and the 1989 World Series between the Athletics and the Giants, and will forever fuel the friendly rivalry between the communities on either side of the Bay Bridge on this day December 12, 2017.
Resolution No. 121217
Bay Bridge Salvaged Steel For NBC Sports
Major League Baseball Bay Bridge Series Trophy

RECOMMENDED BY:

BIJAN SARTIPI
District 4 Director, Caltrans Bay Area

DAN MCELHINNEY
District 4 Chief Deputy Director, Caltrans Bay Area

ANDREW FREMIER
Executive Deputy Director, Bay Area Toll Authority

STEPHEN MALLER
Deputy Director/Chief Engineer, California Transportation Commission

APPROVED BY:

MALCOLM DOUGHERTY, TBPOC Chair
Director, California Department of Transportation

SUSAN BRANSEN
Executive Director, California Transportation Commission

STEVE HEMINGER
Executive Director, Bay Area Toll Authority

12.12.17
Date

12.12.2017
Date

12.12.2017
Date

12.12.2017
Date

12.12.2017
Date
TBPOC Members Sign Resolution on December 12, 2017
For Bay Bridge Series Trophy Award

Above Photo (l to r): Andrew Fremier, Stephen Maller, Dan McElhinney, Bijan Sartipi, TBPOC Steve Heminger, Susan Bransen, Malcolm Dougherty, NBC Brodie Brazil, Ahmed Fareed

1936 Bay Bridge Excess Salvaged Steel in Yard Ready For NBC Sports Major League Baseball Bay Bridge Series Trophy
Photo Taken at TBPOC 12/12/17 Meeting – Resolution for Approval of Excess Salvaged Bay Bridge Steel for Creating a Bay Bridge Series Award
ITEM 2

Chairs Report
Toll Bridge Program Oversight Committee
Chair’s Report
Malcolm Dougherty

Agenda Item 2
December 12, 2017
Innovation Item Presented at the December 6 CTC Meeting
Examples of Innovation
Bay Bridge East Span

How the new Bay Bridge was designed to withstand earthquakes

The tower
The four-column tower is tied together by shear link beams. They absorb most of the shock and are easier to replace than the columns.

Deeper foundations
To distribute a quake’s energy more evenly, the piers on Yerba Buena Island were dug deeper to compensate for the depth of the piers in the bay.

Motion sensors
Three hundred 3-D motion sensors collect data that allows engineers to analyze how the bridge reacted during an earthquake.

Columns
Instead of stiff steel-reinforced concrete columns that could snap in an earthquake, engineers opted for ductile columns. They can withstand shaking and twisting at forces up to three times greater than expected in a major quake.

Bedrock
Piles of concrete incased in steel are driven 340 feet into bedrock.

Sediment

Shear keys and bearings
Seismic stabilizers called shear keys and bearings work in tandem to limit sway and uplift. They are sandwiched between the road deck and the top of the columns east and west of the main span tower.

Expansion joint
Larger-than-normal expansion joints between the bridge’s 12 segments (six in each direction) will allow the bridge to safely move as much as 2 feet during a quake.

Hinge-pipe beams
Twenty steel hinge-pipe beams, each of which weigh a ton, straddle the bridge segments below the road deck. The beams have lubricated sleeves that slide horizontally to control back-and-forth movement.

Worker next to a shear key

Source: Caltrans
PHOTO BY KARL MORDEN; GRAPHIC BY SFG/BAY AREA NEWS GROUP

2009 Roll Out Roll In

Rendering provided by Caltrans

3
Examples of Innovation in the Toll Bridge Program

- The Toll Bridge Program (from LP to NR earthquakes)
- AB144 AND TBPOC 2005- CT MTC CTC
- RISK MANAGEMENT SYSTEM
  - Weekly cabinet Meetings (environmental, design, construction, PM)
- Peer Review in Design & Construction (SFOBB East Spans, Dumbarton & Antioch)
- Pre-bid Contractor Technical Outreach
- Pre-bid fabricator audits
- Pre-bid engineering approval
  - (YBI rollout-rollin, OTD SSD, Cantilever)
- Pier E3 Implosion Demonstration Project
- Pile Driving Demonstration Project
- Caged Fish Study
- Pile Driving Energy Attenuator and Demonstration
- Blast Attenuation System

- Probabilistic Seismic Ground Motions (SFOBB East Spans, Dumbarton, Antioch and now spreading)
- Probabilistic Estimating
- High Performance Concrete (but not exotic)
- A706M Reinforcing Steel
  - Large Diameter Battered Piles to control Seismic Motions
- Pile tip Acceptance Criteria
- Overlapping staged Construction Contracts
- Quarterly Reports to the Legislature
- Concept of Project & Program Contingency
- Pier 7 (“Campus Concept”)
- Group Environmental Resource Agency Meetings
- Contractor-Constructed proto-types and proof tests
- BRIM (bridge information Management
- Post-Future EQ User’s Manual
- Lane-by-Lane Deck Joint
- …and many many more.
The Innovation Continues

- Major Marine Piers (E3 – E18) Successfully Removed
- With Environmental Responsibility
- Under Budget Saving Over $10 million
- Ahead of Schedule One Year
- Last implosions of E17 and E18 - November 11 with the debris completely removed from the Bay on November 17, 2017.
The 6 Remaining Marine Piers

Piers E2 (YBI) and E19-E22 (OTD)

Under Consideration for Retention

- Increase focus on restoring public access to the Bay
- Experience the new bridge
- Water access opportunities
- Connect with history
- Timeliness
ITEM 4

Marine Foundation Demolition Early Completion Plan Update (Piers E6-E18 Old Bay Bridge)
Marine Foundations
E4 through E18
FIRST BLAST – 9/2/17; E7 & E8
SECOND BLAST – 9/16/17; E6
THIRD BLAST – 9/30/17; E9 & E10
FOURTH BLAST – 10/14/17; E11, E12, E13
FIFTH BLAST – 10/28/17; E14, E15, E16
SIXTH BLAST – 11/11/17; E17 & E18
KEY CALTRANS STAFF

- Deanna Vilcheck
- Brian Boal
- Jeannie Balderramos
- Brian Maroney
- Chris Traina
- Stefan Galvez
- Hardeep Takhar
KIEWIT MANSON, JV

• Jeff Arviso
• Ryan King
• Greg Mix
• Fritz Lausier
• Zach Reilly
• Dave Nielsen
• Ken Tully
MARI NE FOUNDATIONS - Time

- First working day: April 15, 2016
- Contract completion date: December 28, 2018
- E4: October 15, 2016
- E5: October 29, 2016
- Remaining piers E6 – E18: 2017
- Contract Acceptance (TBD): December 2017
• Bid Price $101,031,750
• Est. at Completion $111,300,000
• Est. Contingency $ 16,000,000
MARINE FOUNDATIONS
Looking West
ITEM 5

FHWA 2017 Environmental Excellence Award
ITEM 6

Briefing on Electroslag Welding (ESW) Research Testing
San Francisco-Oakland Bay Bridge
T1 Tower
San Francisco-Oakland Bay Bridge
T1 Tower
San Francisco-Oakland Bay Bridge
T1 Tower
San Francisco-Oakland Bay Bridge
T1 Tower
Near the Base of Tower
Showing Connecting Shear-Plates
Electroslag Weld Sample Removed by ABF
No longer the same steel plate…
No longer the same steel plate…
ESW Sample Machined into FHWA Large Scale Test Specimen

Crosshatched area represents fabrication drop sections discussed in Material Testing chapter

(units in inches)
FHWA ESW Test Specimen
In Test Rig
SAW

ESW

2947 kips (78 ksi)
FHWA Small Scale Test Specimen Machined from Leftover Steel After ESW Specimen Machining
Results from FHWA Small Scale Tensile Tests of Thin Plate
Results from FHWA Small Scale Tensile Tests of Thick Plate

Minimum Tensile Strength for ASTM A709 Grade 50

Minimum Yield Strength for ASTM A709 Grade 50
Results from FHWA Small Scale Tensile Tests

![Engineering Stress vs. Engineering Strain Graph]

- Minimum Tensile Strength for ASTM A709 Grade 50
- Minimum Yield Strength for ASTM A709 Grade 50
Results from FHWA Small Scale Tensile Tests
Contractor-Construction-METS QC & QA for Yield Strength
Contractor-Construction-METS QC & QA for Ultimate Strength

Tensile Strength

Heat Number Designation

MPa

A B C D E F

MTR QA

450

0 100 200 300 400 500 600 700
Contractor-Construction-METS QC & QA for Elongation

The graph shows the elongation percentage for different heat number designations (A to F). The blue bars represent the MTR (Minimum Tensile Requirements) and the green bars represent QA. The horizontal dashed line at 21% indicates the acceptable elongation limit.
Field Testing of Steel
Field Hardness Testing of Steel

ESW Sample Coupon Area (Outside) – Vickers Hardness

ESW Sample Coupon Area (Thickness) – Vickers Hardness
Field Hardness Testing of Steel – Converted to Yield Strengths

ESW Sample Coupon Area (Outside) – Yield Strengths (ksi)*
*Assumed hardness to yield strength correlation, YS [MPa] = -90.7 + 2.876HV (Pavilina and Van Tyne, 2008)

ESW Sample Coupon Area (Thickness) – Yield Strengths (ksi)*
*Assumed hardness to yield strength correlation, YS [MPa] = -90.7 + 2.876HV (Pavilina and Van Tyne, 2008)
Summary

FHWA Test Results are Within Reason:

1) An unrepaired electroslag weld test specimen carried high loads for many cycles.

2) The subject plate steel met all Quality Control as well as all Quality Assurance plate test requirements per the construction contract documents.

3) Post-construction steel has reserve ultimate strength.

4) Post-construction steel has reserve elongation capacity.

5) There is some variation in resulting test data, but it is not significant and that variation is likely due to a combination of:
   a) expected variation of properties in the thick steel material,
   b) expected fabrication and construction effects, and
   c) expected rate-of-loading effects during the laboratory tests.
Conclusions

1) The ESW meets or exceeds the construction contract requirements.
2) The steel is strong and tough, the bridge is safe, and expected to perform very well in a future design-level earthquake.
San Francisco-Oakland Bay Bridge
Tower ESW Shear Plates
Verification of Material Properties

Electroslag welds in Bay Bridge Tower base
QC & QA records for steel plates
ESW sample coupon cutout area for hardness testing
ESW sample coupon
Calibrating hardness testing machine
Performing hardness testing on tower shear plate
Tensile pull testing
Stress-strain curve from tensile pull test
San Francisco-Oakland Bay Bridge Tower ESW Shear Plates
Verification of Material Properties

LIST OF CONTRIBUTORS

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**Maintenance**
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Mohammad Awal, Ph.D., P.E.

**Materials Engineering and Testing Services (METS)**
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Keith Hoffman, P.E.

**T.Y. Lin International**
Marwan Nader, Ph.D., P.E.
James Duxbury, P.E.

**Alta Vista Solutions**
Mazen Wahbeh, Ph.D., P.E.
Mohammad Fatemi, Ph.D., P.E.
Michael Foerder, ASNT Level III
Irene Kwan
Jacob Kobliska
Photos Taken at TBPOC 12/12/17 Meeting – METS Hardness Testing Equipment and Materials
Page 1 of 2
Photos Taken at TBPOC 12/12/17 Meeting – Page 2 of 2
ITEM 7

Marine Foundation Pier Retention (Piers E2, E19-23)
Recommendation for Public Access Facilities
## SFOBB Pier Retention Decision Tree

### Alternatives

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Capital ($)</th>
<th>COS ($)</th>
<th>Total for (Cap+COS) only</th>
<th>Risk 50% Confidence not to exceed</th>
<th>Risk 85% Confidence not to exceed</th>
<th>Total (Cap+COS+Risk50%)</th>
<th>Total (Cap+COS+Risk85%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retain Piers Basic Alt</td>
<td>$29 to $39M</td>
<td>$11.3M</td>
<td>$40.3 to $50.3M</td>
<td>$20.0M*</td>
<td>$23.4M*</td>
<td>$60.3 to $70.3M*</td>
<td>$63.7 to $73.7M*</td>
</tr>
<tr>
<td>Retain Piers Enhanced Arch. Alt.</td>
<td>$35 to $45M</td>
<td>$13.5M</td>
<td>$48.5 to $58.5M</td>
<td>$22.6M*</td>
<td>$26.4M*</td>
<td>$71.1 to $81.1M*</td>
<td>$74.9 to $84.9M*</td>
</tr>
<tr>
<td>Remove Piers</td>
<td>$29 to $35M</td>
<td>$6.5M</td>
<td>$35.5 to $41.5M</td>
<td>$14.1M</td>
<td>$18.0M</td>
<td>$49.6 to $55.6M</td>
<td>$53.5 to $59.5M</td>
</tr>
</tbody>
</table>

* Does not include risk that E19 & E20 may have to be removed in Retention Alternatives.

P($) = Probable COST (APS CO + COS + risk) for each alternative
## SFOBB Pier Retention Decision Tree

P($) = Probable COST (APS CO + COS + risk) for each alternative

---

### Alternatives

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Capital ($)</th>
<th>COS ($)</th>
<th>Total for (Cap+COS) only</th>
<th>Risk 50% Confidence not to exceed</th>
<th>Risk 85% Confidence not to exceed</th>
<th>Total (Cap+COS+Risk50%)</th>
<th>Total (Cap+COS+Risk85%)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>$29 to $39M</td>
<td>$11.3M</td>
<td>$40.3 to $50.3M</td>
<td>$20.0M*</td>
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<td>$60.3 to $70.3M*</td>
<td>$63.7 to $73.7M*</td>
</tr>
<tr>
<td>Retain Piers Enhanced Arch. Alt.</td>
<td>$35 to $45M</td>
<td>$13.5M</td>
<td>$48.5 to $58.5M</td>
<td>$22.6M*</td>
<td>$26.4M*</td>
<td>$71.1 to $81.1M*</td>
<td>$74.9 to $84.9M*</td>
</tr>
<tr>
<td>Remove Piers</td>
<td>$29 to $35M</td>
<td>$6.5M</td>
<td>$35.5 to $41.5M</td>
<td>$14.1M</td>
<td>$18.0M</td>
<td>$49.6 to $55.6M</td>
<td>$53.5 to $59.5M</td>
</tr>
</tbody>
</table>

* Does not include risk that E19 & E20 may have to be removed in Retention Alternatives.
# SFOBB Pier Retention Decision Tree Costs

## On Oakland Side & YBI Side

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Capital $</th>
<th>COS $</th>
<th>Total for (Cap+COS) only</th>
<th>Risk 50% confidence of nonexceedance</th>
<th>Risk 85% confidence of nonexceedance</th>
<th>Total (Cap+COS+Risk50%)</th>
<th>Total (Cap+COS+Risk85%)</th>
</tr>
</thead>
</table>
| **Retain Piers Fundamental Alternative** | $29 to $39M  
Oak: $20.4M  
YBI: $13.6M | $11.3M  
Oak: $6.8M  
YBI: $4.5M | $40.3 to $50.3M  
Oak: $27.2M  
YBI: $18.1M | $20.0M  
Oak: $11.6M  
YBI: $8.4M | $23.4M  
Oak: $13.4M  
YBI: $10.0M | $60.3 to $70.3M  
Oak: $38.8M  
YBI: $26.5M | $63.7 to $73.7M  
Oak: $40.6M  
YBI: $28.1M |
| **Retain Piers Enhanced Arch. Alt.** | $35 to $45M  
Oak: $24.8M  
YBI: $15.2M | $13.5M  
Oak: $8.1M  
YBI: $5.4M | $48.5 to $58.5M  
Oak: $32.9M  
YBI: $20.6M | $22.6M  
Oak: $13.2M  
YBI: $9.4M | $26.4M  
Oak: $15.4M  
YBI: $11.0M | $71.1 to $81.1M  
Oak: $46.1M  
YBI: $30.0M | $74.9 to $84.9M  
Oak: $48.6M  
YBI: $31.6M |
| **Remove Piers**              | $29 to $35M  
Oak: $14M  
YBI: $18M | $6.5M  
Oak: $2.6M  
YBI: $3.9M | $35.5 to $41.5M  
Oak: $16.6M  
YBI: $21.9M | $14.1M  
Oak: $5.4M  
YBI: $8.7M | $18.0M  
Oak: $7.0M  
YBI: $11.0M | $49.6 to $55.6M  
Oak: $22.0M  
YBI: $30.6M | $53.5 to $59.5M  
Oak: $23.6M  
YBI: $32.9M |

BHM 10/2017
ITEM 8

Yerba Buena Island Transition Span 2 Contract
YBITS2
YBITS2 CONTRACT COMPLETED
MAINLINE AND EB ONRAMP
AT YBI LANDING LOOKING EAST
KEY CALTRANS STAFF

- Bill Howe
- Gilel Klebanov
- Mehran Ardakanian
- Mahbub Hossain
- Carlos Tongson
- Mark Shindler
- Greg Ressio - USCG
CEC SILVERADO, JV

- Wahid Tadros
- Saif Lodi
- Steve Banke
- Dave Piermarini
- Rich Riggs
- Scott Soldis
- Jay Marambe
- Johnathan Tadros
- Roger Brown
<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Working Day</td>
<td>March 6, 2013</td>
</tr>
<tr>
<td>Start cantilever demo</td>
<td>October 1, 2013</td>
</tr>
<tr>
<td>Complete cantilever demo</td>
<td>October 31, 2015</td>
</tr>
<tr>
<td>Open EB onramp</td>
<td>June 2, 2016</td>
</tr>
<tr>
<td>Open bike pedestrian path</td>
<td>October 24, 2016</td>
</tr>
<tr>
<td>Complete ECS</td>
<td>November 20, 2017</td>
</tr>
<tr>
<td>Project completion</td>
<td>November 29, 2017</td>
</tr>
</tbody>
</table>
YBITS2 - FINANCIALS

• Bid Price $86,086,656
• Est. at Completion $189,000,000
• Est. Contingency $2,000,000
PROJECT COMPLETION
ITEM 9

Program Budget/Risks Management Update for FY 17-18
(Capital Outlay/Capital Outlay Support/Risk Management)
December 12\textsuperscript{th}, 2017

Item 9

Program Budget/Risks Update for FY 17/18

(Capital Outlay/ Capital Outlay Support/ Risk Management)
4 Key Strategic and Innovative Decisions by the TBPOC have enabled the Project Team to cut at least three years off Old Bay Bridge Demolition Schedule:

1. 2014 Accelerate Steel Truss Cantilever Dismantling (Between Piers E2/E3) by 1 year.
2. 2014 Allowing Caltrans to pursue marine foundation demolition by implosion controlled charges instead of large cofferdams.
3. 2015 Procuring by CMGC contract has saved at least 1 year in permitting.
4. 2017 now obtaining design/permits allowing opportunity for multiple pier demo events early completion, saving 1 year and over $10M.

These decisions have saved over $90 million in conventional demolition costs/permits and 3 or more years of added time/support costs.
East Span Program COS Forecast

East Span Forecast from Q3 2017 Quarterly Report

<table>
<thead>
<tr>
<th>TBPOC Approved Budget</th>
<th>Cost To Date</th>
<th>COS Cost Forecast</th>
<th>COS Cost Remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3 2017</td>
<td>$1,349.4M</td>
<td>$1,327.3M</td>
<td>$1,382.7M</td>
</tr>
</tbody>
</table>

• COS Forecast Peaked in Q4 2015, $22 million reduction since then

<table>
<thead>
<tr>
<th>Contract</th>
<th>SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine Foundation Removal (E4 to E18)</td>
<td>$8.5M</td>
</tr>
<tr>
<td>504/288</td>
<td>$12.0M</td>
</tr>
<tr>
<td>YBITS2</td>
<td>$8.0M</td>
</tr>
<tr>
<td>Southgate Rd  BATA to SFCTA</td>
<td>-$6.4 m</td>
</tr>
<tr>
<td>TOTAL COS SAVINGS SEPT 2017</td>
<td>$22.1M</td>
</tr>
</tbody>
</table>
The page contains two tables: Table 1 - State Staff Plan Detail ($ in thousands) and Table 2 - A&E Contracts Plan Detail ($ in thousands). The tables show the scope of services, work description, contracts, vendors, and budget dollars for various projects and divisions.

Additional Notes:
1. Assumptions in this COS Budget Action Plan include no contingency or risk reserve for scope or schedule changes at this time, as these changes will only be presented as separate future budget requests if unmitigated risks, scope or schedule changes occur.
2. COS savings within contracts listed above will be shifted to other contracts within the same list if needed.
3. A&E Budgets listed were developed in task order discussions to balance workload, expertise, and cost effectiveness within budgets shown.
### Table 1 - State Staff Plan Detail ($ in thousands)

<table>
<thead>
<tr>
<th>Contracts</th>
<th>Division</th>
<th>FY17/18 FTE</th>
<th>FY17/18 Budget Dir</th>
<th>Exp FY thru Oct</th>
<th>Exp Dir thru Oct</th>
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<tbody>
<tr>
<td>CONST</td>
<td></td>
<td>10.26</td>
<td>$2,515</td>
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<td>TB Const - D04</td>
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<td>TB DGN</td>
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<td>2.67</td>
<td>$850</td>
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<td>TOLL BR DGN Total</td>
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<td>1.13</td>
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<td>REGULAR PROJECTS</td>
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<td>0.14</td>
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<td>TOLL BR DGN Total</td>
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<td>$48</td>
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<tr>
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<tr>
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<td>0.19</td>
<td>$56</td>
<td>0.06</td>
<td>$16</td>
<td></td>
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<tr>
<td>TOLL BR DGN Total</td>
<td>0.2</td>
<td>$56</td>
<td>0.06</td>
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<tr>
<td>RODS/GROUT REPAIR Total</td>
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<td>$530</td>
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<td>TOLL BR DGN Total</td>
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<td>0.14</td>
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<tr>
<td>Dist 4 Support</td>
<td>0.19</td>
<td>$56</td>
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<tr>
<td>MGMT MT</td>
<td>0.19</td>
<td>$56</td>
<td>0.06</td>
<td>$16</td>
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<td>TOLL BR DGN Total</td>
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<td>$56</td>
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<td>CATHODIC PROTECTION Total</td>
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<td>0.72</td>
<td>$220</td>
<td>0.00</td>
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<td>PIER RETENTION (E2, E19 to E23)</td>
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<td>$278</td>
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<td>0.06</td>
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<tr>
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<td>0.00</td>
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### Table 2 - A&E Contracts Plan Detail ($ in thousands)

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<thead>
<tr>
<th>Work Description</th>
<th>Division</th>
<th>Contract</th>
<th>Vendor</th>
<th>Scope of Services</th>
<th>Task Manager</th>
<th>FY17/18 Budget Dir</th>
<th>Estimated Work FY17/18 thru Oct</th>
</tr>
</thead>
<tbody>
<tr>
<td>REGULAR PROJECTS</td>
<td></td>
<td>ENV</td>
<td>Stefan G.</td>
<td>AECOM</td>
<td>Brown and Caldwell</td>
<td>Hardeep T.</td>
<td>$1,800</td>
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<tr>
<td>RODS/GROUT REPAIR</td>
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<td>ENV</td>
<td>Stefan G.</td>
<td>AECOM</td>
<td>Brown and Caldwell</td>
<td>Hardeep T.</td>
<td>$1,502</td>
</tr>
<tr>
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<td></td>
<td>ENV</td>
<td>Stefan G.</td>
<td>AECOM</td>
<td>Brown and Caldwell</td>
<td>Hardeep T.</td>
<td>$0</td>
</tr>
<tr>
<td>PIER RETENTION (E2, E19 to E23)</td>
<td></td>
<td>ENV</td>
<td>Stefan G.</td>
<td>AECOM</td>
<td>Brown and Caldwell</td>
<td>Hardeep T.</td>
<td>$0</td>
</tr>
</tbody>
</table>

### Additional Notes:
1. Assumptions in this COS Budget Action Plan include no contingency or risk reserve for scope or schedule changes at this time, as these changes will only be presented as separate future budget requests if unmitigated risks, scope or schedule changes occur.
2. COS savings within contracts listed above will be shifted to other contracts within the same list if needed.
3. A&E Budgets listed were developed in task order discussions to balance workload, expertise, and cost effectiveness within budgets shown.
## TBSRP FY 17/18 COS BUDGET
### SUMMARY BY CONTRACT
Based on Action Plan Sept 2017

<table>
<thead>
<tr>
<th>CONTRACTS</th>
<th>Const Staff</th>
<th>Support Staff</th>
<th>State Staff Total</th>
<th>A&amp;E Support</th>
<th>Contingency or Risk Reserve</th>
<th>COS Action Budget Total</th>
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<tr>
<td>YBITS2 (0120T) + Cantilever</td>
<td>4.9</td>
<td>6.0</td>
<td>10.9</td>
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<td>0.1</td>
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<td>Subtotal Contracts</td>
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<td>33.8</td>
<td>8,748</td>
<td>8,502</td>
<td>$17,250</td>
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</table>

Notes:
1. Assumptions in this COS Budget include no contingency nor risk reserve for the potential scope or schedule changes, which, if necessary, will be presented to TBPOC as separate supplemental budget requests.
2. COS savings within contracts listed above will be shifted to other contracts within the same list if needed.
3. Budget request does not include any budget for potential PS&E costs for a cathodic protection system, but those costs are likely to be $1.5 million. Any PS&E budget would need to be approved by the TBPOC later.
FY COS Expenditure by Quarter

In Thousands

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<thead>
<tr>
<th>Quarter</th>
<th>FY14/15</th>
<th>FY15/16</th>
<th>FY16/17</th>
<th>FY17/18</th>
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<td>$4,749</td>
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FY14/15 - FY17/18

Exp

projection
East Span Construction Schedule

Seismic Safety Opening 8/28/2013

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<td>YBITS #2</td>
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<td>YBI Landscape **</td>
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<tr>
<td>504/288 Dismantling</td>
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<td>Pier E4-E18 *</td>
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<td>Pier E2, E19-E22* (Demolition/Retention)</td>
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</table>

* CMGC contract has no RTL, or ADV
** Work transferred to YBITS 2 and SFCTA YBI South Gate Road Improvement Project

Risk

July 2017

Sep 2017
TBPOC Dec 12th, 2017 – Item ?

Toll Bridge Seismic Retrofit Program
CO and COS Cash Flow for East Span Projects
Expenditure thru Sep 2017

**CAPITAL**

Current Approved Budget: $5,177.7M  
Forecast at Completion: $5,208.6M  
Expenditure thru Sept 2017: $4,998.1M

**SUPPORT**

Current Approved Budget: $1,349.4M  
Forecast at Completion: $1,382.9M  
Expenditure thru Sep 2017: $1,327.3M

Notes:  
1) CO and COS forecasts are based on 3rd QTR 2017 Financial and Risk Management Reports.  
2) Forecasts include 3rd QTR 2017 risk of $33.5M COS.  
3) COS forecasts for future years is being evaluated to reduce up to 25%.  
4) Total Forecast & Expenditure includes $6.371M that TBPOC authorized BATA to spend on the Southgate Road  
5) 18/19 Fiscal Year Expenditures assumes SAS arbitration gets resolved by June 2019.

Date: 12/01/2017
## Pier Retention/Demo Potential Funding

### Potential Capital Funding

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Approved CO Budget</th>
<th>Dec 12th 2017 Forecast</th>
<th>Dec 12th 2017 Contingency</th>
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</thead>
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<tr>
<td>Cantilever</td>
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<td>$69.0 M</td>
<td>$0 M</td>
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<tr>
<td>504/288</td>
<td>$103.5 M</td>
<td>$81.8 M</td>
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<td>E3</td>
<td>$17.5 M</td>
<td>$16.8 M</td>
<td>$0.7 M</td>
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<td>E4-E18</td>
<td>$131.5 M</td>
<td>$120.0 M</td>
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<td>Total CO Budget</td>
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Note: *Savings may exceed $11.5 M @ end Q4 2017

### Potential COS Funding

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<th>Description</th>
<th>Amount</th>
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<td>COS Approved Budget Dec 12th 2017</td>
<td>$1,349.4 M</td>
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<tr>
<td>COS Cost Thru June 30th 2017</td>
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<tr>
<td>COS 17/18 Action Plan Budget</td>
<td>$17.5 M</td>
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<tr>
<td>Projected COS Cost Thru June 30th 2018</td>
<td>$1,340.5 M</td>
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<tr>
<td>Projected COS Budget Remaining June 30th 2018</td>
<td>$8.9 M</td>
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TBPOC Briefing
Risk Management Results
Third Quarter 2017

TBPOC Meeting,
December 12, 2017, 1:30 PM
Presented By Patrick Treacy, SFOBB Risk Manager
Toll Program Risk Management

- **Quarterly Reporting Since Q1 2006**
  
  47th Report to TBPOC on status of risks in program
  
  Since 2006 Project Teams have identified 2,032 Risks in 23 Projects

- **Currently Quantifying Risks on 5 Projects and the Program**
  
  90 Active Risks Being Quantified Each Quarter
  
  58 Active Capital Outlay Risks
  
  32 Active Cost of Support (COS) Risks
Summary of Q3 2017 Cost Risk Results

Adequacy of Reserves

Potential Draw on Program Contingency

- Q3 2017 Program Contingency: $14.8 Million
- Q2 2017 Program Contingency: $28.3 Million
- Q3 2017 50% Probable Draw: $69.3 Million
- Q2 2017 50% Probable Draw: $100.5 Million
$17.8 Million Improvement in “Bottom-line” this Quarter

- $17.0 million decrease to Capital Outlay Forecast in Q3 2017
  - $11.9 million reduction on Marine Foundations forecast
  - $3.7 million reduction on YBITS #2 forecast
  - $1.0 million reduction in Program-level risks
  - $0.4 million reduction in SAS Tower Rod Grouting forecast

- $0.8 million decrease in Capital Outlay Support Forecast in Q3 2017
  - $1.6 million reduction in Marine Structure Dismantling COS risks
  - $0.8 million increase in SAS COS risks

- $14.77 Million Remaining in Program Contingency Q3 2017
  - $13.5 million reduction for COS Budget Increase (BATA August 2017)

- Cost of Pier Retention Exceeding Cost of Pier Demolition not in Program Forecast
  - Q3 2017 Carrying Cost of Pier E2, E19 to E22 demolition in Program Forecast
### Q3 RMC Results

#### 50% Probable Risk Management Cost

<table>
<thead>
<tr>
<th>Description</th>
<th>Q3 2017</th>
<th>Q2 2017</th>
<th>Change</th>
<th>% Change</th>
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</thead>
<tbody>
<tr>
<td>Marine Structure Dismantling E4-E18</td>
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<td>26,902,000</td>
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</tr>
<tr>
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<td>SAS Tower Rod Grouting</td>
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<td>(100)</td>
</tr>
<tr>
<td>YBI#2 Post Traffic Switch</td>
<td>2,618,000</td>
<td>9,788,000</td>
<td>(7,170,000)</td>
<td>(73)</td>
</tr>
<tr>
<td><strong>Total East Span</strong></td>
<td><strong>79,705,000</strong></td>
<td><strong>95,541,000</strong></td>
<td><strong>(15,836,000)</strong></td>
<td><strong>(17)</strong></td>
</tr>
<tr>
<td>Program-level risks (not in a contract)</td>
<td>13,564,000</td>
<td>14,513,000</td>
<td>(949,000)</td>
<td>(7)</td>
</tr>
<tr>
<td><strong>Total Capital Outlay Risk</strong></td>
<td><strong>93,269,000</strong></td>
<td><strong>110,054,000</strong></td>
<td><strong>(16,785,000)</strong></td>
<td><strong>(15)</strong></td>
</tr>
<tr>
<td>COS Risks</td>
<td>35,600,000</td>
<td>50,300,000</td>
<td>(14,700,000)</td>
<td>(29)</td>
</tr>
<tr>
<td><strong>Total Risk</strong></td>
<td><strong>128,869,000</strong></td>
<td><strong>160,354,000</strong></td>
<td><strong>(31,485,000)</strong></td>
<td><strong>(20)</strong></td>
</tr>
<tr>
<td>Draw on Program Contingency</td>
<td>69,229,000</td>
<td>100,484,000</td>
<td>(31,255,000)</td>
<td>(31)</td>
</tr>
<tr>
<td>Contract Contingency</td>
<td>59,640,000</td>
<td>59,870,000</td>
<td>(230,000)</td>
<td></td>
</tr>
<tr>
<td>Program Contingency Balance</td>
<td>14,770,000</td>
<td>28,270,000</td>
<td>(13,500,000)</td>
<td></td>
</tr>
<tr>
<td><strong>Total Contingency</strong></td>
<td><strong>74,410,000</strong></td>
<td><strong>88,140,000</strong></td>
<td><strong>(13,730,000)</strong></td>
<td></td>
</tr>
</tbody>
</table>
Trend of Potential Draw on Program Contingency

- Program Contingency Balance
- 99% Confidence Limit of Potential Draw
- 1% Confidence Limit of Potential Draw
Program Balance

Trend of Program Balance

- Trend if $130 M not removed*
- $75.5

- Program Contingency Redirection
  - $130 M (removed 11/05/13)

- Current Trend
  - -$54.5
Recent Changes in Draw Trend

Draw Trend Improving For Last Seven Quarters
• Forecast Program Contingency deficit at program completion decreased by $17.8 million this quarter to $54.6 million
• Forecast deficit has decreased by $89 million (62%) from peak of $143.2 million in Q3 2015

Improvement Attributable To Minimizing Delays & Advancing Work
• E3 Contract: No Delays To Contract
• 504’/288’ Contract: CCO Delays & Weather Days Mitigated
• E4-E18 Contract: No CCO or Weather Delays to-date

Improving Trend To Continue in Q4 2017
• Project Team advanced all Marine Foundation work into 2017 implosion season
# 50% Probable Risk vs. Remaining Contingency

<table>
<thead>
<tr>
<th>Project Description</th>
<th>50% Probable Risk ($M)</th>
<th>Remaining Contract Contingency ($M)</th>
<th>Draw on Program Contingency ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTD1 Westbound</td>
<td>2.47</td>
<td>(2.47)</td>
<td></td>
</tr>
<tr>
<td>Skyway</td>
<td>1.07</td>
<td>(1.07)</td>
<td></td>
</tr>
<tr>
<td>Stormwater</td>
<td>1.37</td>
<td>(1.37)</td>
<td></td>
</tr>
<tr>
<td>West Approach</td>
<td>1.90</td>
<td>(1.90)</td>
<td></td>
</tr>
<tr>
<td>South South Detour</td>
<td>(0.05)</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>OTD Detour</td>
<td>0.30</td>
<td>(0.30)</td>
<td></td>
</tr>
<tr>
<td>OTD2 Eastbound</td>
<td>1.37</td>
<td>(1.37)</td>
<td></td>
</tr>
<tr>
<td>Self-Anchor Suspension</td>
<td>35.00</td>
<td>32.90</td>
<td>2.10</td>
</tr>
<tr>
<td>YBI#1 Mainline Structures</td>
<td>(0.11)</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>Pier E3 Demonstration</td>
<td>0.66</td>
<td>(0.66)</td>
<td></td>
</tr>
<tr>
<td>Dumbarton</td>
<td>1.73</td>
<td>(1.73)</td>
<td></td>
</tr>
<tr>
<td>Antioch</td>
<td>0.01</td>
<td>(0.01)</td>
<td></td>
</tr>
<tr>
<td>Submarine Cable</td>
<td>(0.04)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Cantilever Dismantling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Completed Projects</strong></td>
<td><strong>35.00</strong></td>
<td><strong>43.58</strong></td>
<td><strong>(8.58)</strong></td>
</tr>
<tr>
<td>YBI#2 Post Traffic Switch</td>
<td>2.62</td>
<td>0.16</td>
<td>2.46</td>
</tr>
<tr>
<td>YBI#3</td>
<td></td>
<td></td>
<td>0.00</td>
</tr>
<tr>
<td>SAS Tower Rod Grouting</td>
<td></td>
<td>3.12</td>
<td>(3.12)</td>
</tr>
<tr>
<td>Program-level risks (not in a contract)</td>
<td>13.56</td>
<td>13.56</td>
<td></td>
</tr>
<tr>
<td>COS Risks</td>
<td>35.60</td>
<td>35.60</td>
<td></td>
</tr>
<tr>
<td>Right-of-way and Mitigation</td>
<td></td>
<td>2.40</td>
<td>(2.40)</td>
</tr>
<tr>
<td>Project Indirects</td>
<td>4.52</td>
<td></td>
<td>(4.52)</td>
</tr>
<tr>
<td>Miscellaneous Contingencies</td>
<td></td>
<td>2.77</td>
<td>(2.77)</td>
</tr>
<tr>
<td>Marine Structures Dismantling E4-E18</td>
<td>19.55</td>
<td>6.20</td>
<td>13.35</td>
</tr>
<tr>
<td>Marine Structures Dismantling E2, E19-E22</td>
<td>22.31</td>
<td>(25.00)</td>
<td>47.31</td>
</tr>
<tr>
<td>504’ &amp; 288’ Steel Structures Dismantling</td>
<td>0.23</td>
<td>21.90</td>
<td>(21.67)</td>
</tr>
<tr>
<td><strong>Ongoing Projects</strong></td>
<td><strong>93.87</strong></td>
<td><strong>16.07</strong></td>
<td><strong>77.80</strong></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>128.87</strong></td>
<td><strong>59.65</strong></td>
<td><strong>69.22</strong></td>
</tr>
<tr>
<td><strong>Program Contingency Balance ($M)</strong></td>
<td></td>
<td></td>
<td><strong>14.77</strong></td>
</tr>
</tbody>
</table>
“Costs” carried in Risk Forecast

Data from Q3 2017 Quarterly Report:

- Forecast to Completion: $9,006.6 million
- Cost To Date: $8,697.1 million
- Work Remaining (inc. Risk): $309.5 million
- Total Risks: $145.8 million (47% of Work Remaining)
- Costs carried in Risk Forecast*: $76.1 million
- Future Risk: $69.7 million (23% of Work Remaining)

* Costs carried in Risk Forecast:
  - $16.9 million: 2005 Deck Joint Repair on Richmond/San Rafael Br.
  - $8.1 million: Vincent Thomas funding shortfall (2005 AB144)
  - $13.3 million: E2, E19-E23 Cost Uncertainty
  - $35.0 million: SAS Close Out Cost
  - $17.6 million: Baseline COS costs thru Program Completion
  - ($14.8) million: West Approach Land Sales ($7 million returned to BATA)
  - $76.1 million: Total Costs being carried in Risk Forecast
## Action Plan for Addressing “Costs” Carried as Risks

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (millions)</th>
<th>Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>R/SR Br Deck Joint Repair</td>
<td>$16.9</td>
<td>BATA to Address Q4 2017</td>
</tr>
<tr>
<td>Vincent Thomas Funding</td>
<td>$8.1</td>
<td>BATA Finance has already assumed shortfall. TBPOC need to identify replacement funds or approve adjustment to the funding table.</td>
</tr>
<tr>
<td>E2, E19 to E23 Cost Uncertainty</td>
<td>$13.3</td>
<td>Pending Pier Retention Q4 2017 Estimate Update</td>
</tr>
<tr>
<td>SAS Close Out Cost</td>
<td>$35.0</td>
<td>Subject to timeline of Arbitration process</td>
</tr>
<tr>
<td>Baseline COS thru Completion</td>
<td>$17.6</td>
<td>Fiscal Yr 18/19 to TBPOC in Q2 2018</td>
</tr>
<tr>
<td>West Approach Land Sales</td>
<td>$14.8</td>
<td>Requires budget adjustment by BATA</td>
</tr>
</tbody>
</table>
• Budget Adjustments From Project/Program Contingency:
  1. Transfer residual Capital Outlay funds from E3 ($0.7 million), 504’/288’ ($21 million) and E4 to E18 ($11.5 million) to Pier Retention/Demo: action needed Q4 2017
  2. Adjust Budgets in closed out projects, releasing approximately $10 million to Program Contingency: action needed Q1 2018
  3. At least one year of COS 18/19: action needed Q2 2018
• Negotiate & Award Marine Foundation Retention/Removal contract by March 2018.
• Manage COS expenditures to proposed budget.
• Project close-out – SAS Arbitration
Questions?

Also the TBPOC is at 1:30 pm tomorrow.