IMTT Wharf Modification Project
Prevention First 2014

Presentation Contributors:
IMTT, Liftech Consultants Inc., SGH, Ellen Johnck, Manson Construction
## Presentation Outline

### Project Overview
- Background
- Goals and Features

### Permitting
- Requirements & Challenges
- Approach & Strategy

### Design/Construction/Commissioning
- Basis
- Key Issues
- Solutions
- Lessons Learned

### Key Lessons Learned

### Questions and Answers
- MOTEMS Compliance (initial Audit 2010)
  - Insufficient Seismic Capacity
  - Deficient Fender System
  - Lack of Redundant Fire Water Supply
- Opportunity for Improvement
  - Extended Operational Life of the Marine Terminal
  - Elimination of Timber Maintenance Issues
  - Improve Operational Safety
  - Improved Environmental Protection
Project Overview

**Owner**
IMTT
INTERNATIONAL-MATEK TANK TERMINALS

**Contractor**
Manson Construction Co.

**Design Team**
Liftech
Treadwell & Rollo
V&A

**Permitting Agent**
Ellen Joslin Johnck, RPA

**Owner Oversight / MOTEEMS TOLs**
Simpson Gumpertz & Heger

**Initial MOTEEMS Audit Work**
Halcrow

Oct. 7, 2014
IMTT Wharf Modification Project
Prevention First 2014
Overview

Project Goals
- Compliance with MOTEMS – California Building Code Chapter 31
- Significant safety improvements
- Limit downtime during construction
- 50-year design Life

Project Features
- Demolition of 20,000 sf of existing timber wharf
- Construction of approximately 10,000 sf of new structures and pipelines
Project Overview
New Components

- Dolphin
- Barge Loading Platform
- Aluminum Walkway
- Main Loading Platform
- Fire Pump Platform
- Pipelines
- Aluminum Bridge
Project Overview

Construction - Operational Phasing

Install piling, landside footings, some pipelines

Install barge platform, some dolphin platforms, some walkways
Project Overview

Construction – Operational Phasing

Install Main platform and more pipelines

After Main platform is operational, remove original manifolds, install last dolphins

Remove additional portions of original wharf and install additional walkways

Future: After excessive deterioration, remove remaining wharf and install more walkways
Project Overview

Project Schedule

Basis of Design and Concept Layout
- 35% Design
- Construction Permitting - All
- Initial CSLC submittal
- Permitting submittals

95% Design & Mods to reduce costs
- Final design
- Construction
- CSLC Acceptance

Q4  Q1  Q2  Q3  Q4  Q1  Q2  Q3  Q4  Q1  Q2  Q3  Q4  Q1

2012
2013
2014

Oct. 7, 2014  |  IMTT Wharf Modification Project
Prevention First 2014
<table>
<thead>
<tr>
<th>Agency</th>
<th>Agency Contact</th>
<th>Agency Main Role</th>
<th>Agency Involvement by Topic</th>
<th>Environmental</th>
<th>Security</th>
<th>Agency Primary Actions</th>
<th>Description</th>
<th>When</th>
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<tbody>
<tr>
<td>City of Richmond</td>
<td>Lina Velasco</td>
<td>Lead</td>
<td>Bidg Dept. Plan Check</td>
<td>Planning Dept to issue CEQA Categorical exemption (Cat Ex)</td>
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<td></td>
<td>Bidg. Dept Plan Check Permit ; Cat Ex Letter</td>
<td>8/31/2013</td>
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<tr>
<td>BCDC/ECRB</td>
<td>Rafael Montes</td>
<td>Engr, environmental, sea level rise, seismic safety</td>
<td>Phase 2A wharf mod; ECRB approved Dec 2012</td>
<td>Wharf mod comply SF Bay Plan policies incl. bay fill, climate change covering sea level rise and tsunami, effect on Bay resources, seismic, offsite public access (none required)</td>
<td></td>
<td></td>
<td>nonmaterial amendment to 1987BCDC018.07</td>
<td>31-Aug-13</td>
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<tr>
<td>CSLC</td>
<td>Kendra Oliver</td>
<td>MOTEMS compliance</td>
<td>Review for compliance with the CBC-MOTEMS</td>
<td>Review MOTEMS elements built per drawings</td>
<td>Fire suppression &amp; seismic safety</td>
<td></td>
<td>Letter confirming compliance</td>
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<tr>
<td>USACE</td>
<td>Gregory Brown</td>
<td>civil, environmental</td>
<td>Construction op. plan; NMFS consultation ESA and EFH</td>
<td>Nationwide Permit #3 (NWP#3)</td>
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<td>NWP#3 plus consultation with NMFS</td>
<td>permit issued 08/14/13</td>
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<tr>
<td>SFBRWQCB</td>
<td>Katie Hart</td>
<td>water quality</td>
<td>Construction Work Plan required; NMFS consultation concurrence</td>
<td>Water quality CWA Sec 401 WQC Permit</td>
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<td>CWA Sec 401 WQC</td>
<td>8/23/2013</td>
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<tr>
<td>BAAQMD</td>
<td></td>
<td>air quality</td>
<td>Compliance with existing air emissions permit for equipment</td>
<td></td>
<td></td>
<td></td>
<td>IMTT staff verifies compliance with existing permit</td>
<td>8/1/2013</td>
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<tr>
<td>CaDFW</td>
<td>Am Aareeberg</td>
<td>CESA</td>
<td>Unnecessary as actions are ministerial; CEGA CatEx</td>
<td>Informal consultation with BCDC on CESA unecessary</td>
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<td>CDFW letter wharf mod to BCDC unnecessary</td>
<td>N/A</td>
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<tr>
<td>NOAA Fisheries</td>
<td>Gary Stern</td>
<td>ESA Sec 7</td>
<td>Informal consultation with USACE</td>
<td>Biological Assessment required; informal consultation w/USACE on ESA includes permit conditions.</td>
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<td></td>
<td>letter to USACE re consultation concurrence</td>
<td>issued 08/07/13</td>
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<tr>
<td>NOAA Fisheries</td>
<td>Autumn Cleave</td>
<td>EFH</td>
<td>Essential Fish Habitat (EFH)</td>
<td>Biological Assessment required; informal consultation w/USACE on EFH</td>
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<td>letter to USACE re consultation agreement</td>
<td>issued 07/16/13 &amp; 08/07/13</td>
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<tr>
<td>USCG</td>
<td>Captain of the Port</td>
<td></td>
<td>Navigational Safety</td>
<td>Navigational Safety</td>
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<td>Letter confirming compliance?</td>
<td></td>
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<tr>
<td>U.S. EPA Region IX</td>
<td>Dep Director</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Delegated authority to USACE and SFBRWQCB</td>
<td>none</td>
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<tr>
<td>State Water Resources Board</td>
<td>Bill Orme</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Delegated permit authority to SFBRWQCB</td>
<td>see RWQCB WQC target date for issuance</td>
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<tr>
<td>USFWS</td>
<td>Ryan Olah</td>
<td></td>
<td></td>
<td>USACE NWP# 3 in navigation channel does not require USFWS; defers authority to NMFS for anadromous fish species</td>
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## Permitting Challenges and Solutions

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Solution</th>
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</thead>
<tbody>
<tr>
<td>- Uncharted territory</td>
<td>- Educate agencies early</td>
</tr>
<tr>
<td>- Schedule</td>
<td>- Project Description is key -- define what is proposed early</td>
</tr>
<tr>
<td>- Agency jurisdiction overlap and dependencies</td>
<td>- 35% design suitable to start filing permits</td>
</tr>
<tr>
<td>- EIR or no EIR? New vs. old</td>
<td>- Interagency coordination meeting early; ongoing coordination</td>
</tr>
<tr>
<td>- BCDC requires “public access” for any new</td>
<td>- Clarify environmental safety benefits, “maintenance” project</td>
</tr>
<tr>
<td>shoreline projects</td>
<td></td>
</tr>
<tr>
<td>- Pile driving and fish window</td>
<td>- Maintenance project exempts this requirement</td>
</tr>
<tr>
<td></td>
<td>- Vibratory hammer</td>
</tr>
</tbody>
</table>
Permitting

Lessons Learned

- Permitting consultant critical
- Interagency coordination essential
- Control project scope with permitting agencies
- Agency support of project valuable, e.g., CSLC championing the MOTEMS purpose
- Phasing of project facilitated permitting and shortened overall schedule
- Construction permitting went fairly smooth with above
- CSLC approval process difficult
  - Complicated project (first “new” MOT since mid-1990’s)
  - No clear path forward for approvals
## Design Challenges and Solutions

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>- No terminal downtime</td>
<td>- Concept that allows continued use of existing systems</td>
</tr>
<tr>
<td></td>
<td>- Prefabrication offsite</td>
</tr>
<tr>
<td></td>
<td>- Detailing to facilitate assembly onsite</td>
</tr>
<tr>
<td>- Continued use of existing structures, e.g., dolphins</td>
<td>- Submit and get approval early</td>
</tr>
</tbody>
</table>
Limit Downtime – Limit Piling
Limit Downtime – Extensive Prefabrication
Limit Downtime – Extensive Prefabrication
Limit Downtime – Extensive Prefabrication
Limit Downtime – Connection Details that Limit Time Onsite
Lessons Learned

- Start mechanical, electrical, and operational design work as early as practical, many considerations and iterations
- Consider 3D piping and hose layout to help avoid access issues
- Designs for offsite fabrication and onsite assembly worked better than expected
- Consideration of fabrication and pile alignments critical—provide for large tolerances to facilitate construction
Challenges and Solutions

- No Terminal Downtime
- Vessel Traffic

- Prefabrication offsite
- 12 hour barge operation window / no window for ships
- Communication with ship agent/customer
Lessons Learned

- Plan for pile driving difficulties including refusal at shallower depth – what is acceptable and other hammer options
- Mechanical and electrical work took longer than expected
- A good local fabricator was critical
- 3D shop drawings were beneficial during fabrication
- Nearby construction yard was extremely valuable
## Challenges and Solutions

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ops Manual approval required before operations can start</td>
<td>Submit manual early</td>
</tr>
<tr>
<td>MOTEEMS Initial Audit required before operations can start</td>
<td>Submit audit in stages</td>
</tr>
<tr>
<td>How to get approval of new ops manual?</td>
<td>Lots of dialog with CSLC, both locally and with Long Beach</td>
</tr>
<tr>
<td>How to approve blended ops?</td>
<td>Interim TOLs</td>
</tr>
<tr>
<td>Training is part of Ops Manual</td>
<td>Begin training on new systems early in the process</td>
</tr>
</tbody>
</table>
Commissioning

Lessons Learned

- Early is not early enough! Ops Manual review and approval process takes significant time and effort
- “New” Ops Manual review process more stringent than Amendment review process - Don’t rely on what worked before in the old Ops Manual
- Training can be a challenge to do before all systems installed
- Process for the final “blessing” is unclear – who needs to see what when?
- Make sure all systems are in place and fully operational prior to the final inspection.
Lessons Learned – Six Key Lessons

- Permitting assistance and support essential to success
- Project team corporation was critical to keep project on track
- Understanding and agreement with CSLC on process for approvals and commissioning (dialog)
- Keep customers and employees informed on project status and goals
- Be prepared to deal with changes throughout the project (flexibility)
- There will be a project completion but it will never be “done”
New Main Platform
Questions and Answers