Development of the SP-SSA International Terminal
Cai Mep, Vietnam

Chris Cornell, PE, SE, M.ASCE
View of Cai Mep Area
Building on the Past, Respecting the Future

Masterplan Rendering

<table>
<thead>
<tr>
<th>Terminal Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concession</td>
<td>60 Ha</td>
</tr>
<tr>
<td>Structures</td>
<td>5.3 Ha</td>
</tr>
<tr>
<td>Quay</td>
<td>600 m</td>
</tr>
<tr>
<td>Barge Quay</td>
<td>300 m</td>
</tr>
<tr>
<td>Container Yard</td>
<td>50 Ha</td>
</tr>
<tr>
<td>Thruput</td>
<td>1.4 Million TEU</td>
</tr>
</tbody>
</table>
Program Information

Timeline
Due Diligence – July 2006
Soft Opening – August 2011
Estimated Terminal Operation – July 2012

Total Program Cost - $255 million
Total Construction Cost - $127 million
Total Equipment Cost - $128 million

Container Handling Equipment
- 4 Ship-to-Shore 22-Wide Gantry Cranes w/ Extended Backreaches
- 16 – ERTG’s
- Miscellaneous Top-picks, Sidepicks, Hustlers, and Bombcarts
# Soil Profile

<table>
<thead>
<tr>
<th>Depth</th>
<th>Description</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>+3.00±</td>
<td>Existing Ground Surface</td>
<td></td>
</tr>
<tr>
<td>+2.67</td>
<td>MSL</td>
<td></td>
</tr>
<tr>
<td>-24.00±</td>
<td>VERY SOFT CLAY, BLUISH GREY, DARK GREY, O &lt; N &lt; 2</td>
<td></td>
</tr>
<tr>
<td>-34.00±</td>
<td>SOFT CLAY, BLUISH GREY, DARK GREY, 2 &lt; N &lt; 4</td>
<td></td>
</tr>
<tr>
<td>-43.00±</td>
<td>MEDIUM TO COARSE SAND, MEDIUM CLAY, BLUISH GREY, DARK GREY, 4 &lt; N &lt; 8</td>
<td></td>
</tr>
<tr>
<td>-67.00±</td>
<td>MEDIUM TO COARSE SAND WITH SOME CLAY, BLUISH GREY, DENSE TO VERY DENSE STATE, N &gt; 50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FINE SAND AND GRANITE, VERY DENSE STATE, N &gt; 50</td>
<td></td>
</tr>
</tbody>
</table>
Site Challenges
Contract Packaging

**Contract 1000 – Land Reclamation**
- Sand
- Wick Drains
- Slope Protection

**Contract 2000 – Marine Works**
- Main Quay
- Barge Quay
- Trestles

**Contract 3000 – Civil Works**
- Utilities
- Paving
- Buildings
Contract 1000 – Land Reclamation

- Sand – 4,000,000 cubic meters
- Wick Drains – 265,000 or 6.6 km
- Slope Protection – 100,000 cubic meters rock

Construction Cost - $35.4 million
April 2008 - April 2010
Contract 2000 – Marine Works

- Surface Area – 5.3 Ha
- Piles – 900mm diameter x 55m x 1125
- Cost - $810/sm

Construction Cost - $47.3 million
January 2010 – July 2012
Contract 3000 – Civil Works

- Paving
- Utilities
- Buildings

Construction Cost - $44.0 million
August 2010 – July 2012
Construction Challenges
Quality Control / Quality Assurance
Onsite Inspection
Construction Challenges
Construction Size
Settlement Plates
Settlement Data

Contract 1000B - Surcharge Program - Site 3 Test Results

Displacement (mm)

Date

PORTS 2010 Building on the Past, Respecting the Future
Settlement Data

Contract 1000B - Surcharge Program - Plate S2-14

Displacement (mm)

Date

1-Jun-08  9-Sep-08  18-Dec-08  28-Mar-09  6-Jul-09  14-Oct-09  22-Jan-10  2-May-10  10-Aug-10
Sloped Revetment
Sloped Revetment
Quay Plan

600 m Quay

6 m Standoff

30.48 m Gage

22 m

Crane Shop

18 m Trestle

300 m Barge Quay

Top of Scope
Quay Typical Section

180 m Face of Container Yard

60 m Quay Width

60 m Barge Slip

22 m Barge Quay Width
Quay and Barge Quay Rendering
Container Yard
Utilities
Paving
Completed Rendering