1. Project Overview

- Building a new six-lane bridge over the Mobile River
- Replacing the existing Bayway with an eight-lane structure
- Reconstructing seven interchanges along the corridor
- Facilitated through Public Private Partnership (P3)
- The Concession Agreement will be 55 years, including design, construction, maintenance and operations
- ALDOT estimates the cost at approximately $2 billion
2. Decisions.....Decisions (Factors for a Pre-Bid Load Test)

Decisions.....Decisions.....

ALDOT Leadership

1. What are my project risks with foundations?
2. How much will it cost?
   (Better question: How much will this save us?)
3. Why is this important to the project?

Decisions.....Decisions.....

1. What are my Project Risks with Foundations?

   • Critical path item in the schedule for construction which has risk to engineering performance and construction
   • High foundation loads including vessel impact, storm events, etc.
   • Performance issues include axial side and base resistance values / lateral soil resistance in different soil strata
   • Drivability, needs for pile driving aids, hammer size, required bearing without pile damage

2. Decisions.....Decisions.....

   • Geotechnical Information Provided to the teams included over 24,000 ft of soil borings including up to 320 ft depths at the main piers in Subsurface Data Reports
     • Consolidation Information
     • Shear Strength of the Soils
     • Cone Penetrometer Data
     • Index Testing (Soil Classification)
   • Post award Geotechnical Exploration by successful team
   • Load Tests during Construction

   IS THIS ENOUGH INFORMATION???????
2. How much will it cost?

- The ALDOT team estimated Foundation costs on could be as much as 40% of the total cost of the project.

  Project Cost: $1.5 billion
  40% PC: $600 million

  if we save 1% of foundation cost……

  **$6.0 million**

2. How much will it cost? (cont’d)

- Bayway – approximately 7 miles long (2 directions – 14 miles)
- Span lengths of 65 ft
- Assume 3 foundation piles per bent
- Assume piles are shortened 10 ft length (load test vs no load test)

  Equates to over 34,000 ft of pile driving eliminated and cost savings to the project and schedule

3. Why is this important to this project?

- Provides information on performance of various foundation types
- Mitigation of Risk and Unknowns as it relates to installation techniques (Means and Methods)
- Provides information concerning unit side and base resistance
- Improves reliability therefore, reducing risk
- Reduces unknowns for the ALDOT and Concessionaire

3. Why is this important to the project? (cont’d)

- Evaluates long term pile setup and compare dynamic/static/statnamic testing for these soil conditions
- Assists in establishing specifications for the pile installation for different pile types
- Helps the teams reduces the amount of “contingency” put into the foundations
- Helps the teams in developing a foundation installation schedule
- Provides the same information to all of the teams

3. Load Test Program

Six Phases of a Project (PM 101)

1. Enthusiasm
2. Disillusionment
3. Panic
4. Search for the Guilty
5. Punishment of the Innocent
6. Praise and Honors for the non-participants
Load Test Program Schedule

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Anticipated Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Test Proposal Submitted</td>
<td>August 2017</td>
</tr>
<tr>
<td>Load Test Approval by ALDOT</td>
<td>August 2017</td>
</tr>
<tr>
<td>Plans</td>
<td>October 2017</td>
</tr>
<tr>
<td>ALDOT Office Engineer</td>
<td>November 2017</td>
</tr>
<tr>
<td>Letting</td>
<td>December 2017</td>
</tr>
<tr>
<td>Notice To Proceed</td>
<td>January 2018</td>
</tr>
<tr>
<td>Complete Load Test Program</td>
<td>May/June 2018</td>
</tr>
</tbody>
</table>

Bids:
- Jordan Pile Driving                           $3,398,815.00
- Massman Construction                           $4,216,156.25

Load Test Program

- Drilled Shaft - 72in (with 78in steel casing)
  - Bi-directional (AFT Cell)
  - Lateral Rapid Load Testing

-Driven Piles
  - H-Piles 14x89 (2 Piles)
    - Dynamic Testing (EOD, 1 day, 7 day and 12 day restrikes)
    - Static Testing
  - PPC 18 inch Square (2 Piles)
    - Dynamic Testing (EOD, 1 day, 7 day and 13 day restrikes)
    - Static Testing

Load Test Program

- PPC 30 inch Square (1 Pile)
  - Dynamic Testing (EOD, 1 day, 7 day and 15 day restrikes)
  - Rapid Load Testing
- 54 in Concrete Cylinder Spun Cast Piles - (5 Piles)
  - 5 Locations along Bayway
  - Typical EOD, 1 day, 14 day restrikes
  - Rapid Load Testing (2100 ton device)
  - Jetting (required to a minimum elevation vs. allowed)
- 60 in Steel Pipe Pile - 375 ft in length (1 Pile)
  - Vibrated in 75 ft Section
  - Drive 300 ft Section
  - EOD and 13 day restrike
  - Rapid Load Testing (2100 ton device)
4. Results

**Driven Pile Summary**

<table>
<thead>
<tr>
<th>Pile Number</th>
<th>Pile Type</th>
<th>Pile Diameter</th>
<th>Tip Elevation</th>
<th>End of Drive Resistance (kips)</th>
<th>Dynamic Max Restrike Resistance (kips)</th>
<th>Dynamic Static Resistance (kips)</th>
<th>Statnamic Resistance (kips)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP-10A-1H</td>
<td>H-Pile</td>
<td>14x89</td>
<td>65.3</td>
<td>179</td>
<td>238</td>
<td>367</td>
<td></td>
</tr>
<tr>
<td>TP-10B-11</td>
<td>PPC</td>
<td>8</td>
<td>60.9</td>
<td>355</td>
<td>510</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP-10B-21</td>
<td>PPC</td>
<td>8</td>
<td>60.9</td>
<td>375</td>
<td>483</td>
<td>674</td>
<td>2705</td>
</tr>
<tr>
<td>TP-23A-54</td>
<td>Spun Cast Pipe</td>
<td>108</td>
<td>108.5</td>
<td>1081</td>
<td>1500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP-23B-54</td>
<td>Spun Cast Pipe</td>
<td>123</td>
<td>99.6</td>
<td>1050</td>
<td>1237</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP-23C-30</td>
<td>PPC Square</td>
<td>6</td>
<td>97.6</td>
<td>440</td>
<td>770</td>
<td></td>
<td>1060</td>
</tr>
<tr>
<td>TP-111A-54</td>
<td>Spun Cast Pipe</td>
<td>115</td>
<td>115.4</td>
<td>1410</td>
<td>1950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP-111B-54</td>
<td>Spun Cast Pipe</td>
<td>116</td>
<td>116.4</td>
<td>1437</td>
<td>2250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP-WPA-60</td>
<td>Steel Pipe</td>
<td>60</td>
<td>168</td>
<td>1850</td>
<td>2700</td>
<td></td>
<td>2980</td>
</tr>
</tbody>
</table>

**Drilled Shaft Summary**

- Drilled Shaft Summary
- Drilled Shaft Summary
5. Going Forward...

Going Forward

- Data has been provided to teams
- Schedule allows the teams to incorporate and use the data for their bids - using the load test for design rather than proof testing
- Selection of resistance factors by the team is still guided by AASHTO
- Technical Provisions still require additional loads tests for verification of design (pile driving equipment, installation means and methods, etc.)
- The teams have installation information (pile records, installation techniques, etc.) to better assess risk and reduce contingencies

Load Test Program Team

ALDOT

Follow our progress
MobileRiverBridge.com

Questions?