ODOT Geotechnical Consultant Workshop
April 15, 2008

ODOT Project Manager’s Perspective of Geotechnical Related Project Items

Doug A. Rogers, P.E.
ODOT, District Two
Production
ODOT District Two

Northwest Ohio bordering Indiana and Michigan

8 counties: Fulton, Henry, Lucas, Ottawa, Sandusky, Seneca, Williams, and Wood

Population 840,814
Geotechnical Relation to Projects

- Communication
- Schedule
- Cost
- Product
Communication

► Request to receive copies of project plans and Stage submittal correspondence

► Address all Geotechnical review comments in writing

► Call or email District Geotechnical Engineer
Communication

- From ODOT Specifications for Geotechnical Explorations, Section 303 Planning:

  “All boring plans must be submitted to the District Geotechnical Engineer and approved before beginning the boring, sampling, and field testing task.”
Communication

- 7 Habits of Highly UNsuccessful Project Managers
  - 1. Make Assumptions For Stakeholders
Schedule

- Understand the expectations from the Design consultant for submittals.

- Request updated copies of the project schedule until all Geotechnical submittals are complete.

- Time really does cost money
### STEP 1 - Work w/Stakeholders for Understanding

#### General Activities

<table>
<thead>
<tr>
<th>ID</th>
<th>Cal</th>
<th>Description</th>
<th>Orig Dur</th>
<th>Early Start</th>
</tr>
</thead>
<tbody>
<tr>
<td>01100</td>
<td>4</td>
<td><em>Begin Step #1 - Involve Stakeholders</em></td>
<td>0</td>
<td>04SEP07</td>
</tr>
<tr>
<td>01200</td>
<td>4</td>
<td>Collect &amp; Review Existing Data &amp; Analysis</td>
<td>20</td>
<td>12SEP07</td>
</tr>
<tr>
<td>01300</td>
<td>4</td>
<td>Meet with Stakeholders &amp; Visit Site</td>
<td>1</td>
<td>14SEP07</td>
</tr>
<tr>
<td>01400</td>
<td>4</td>
<td>Confirm Project Area &amp; Logical Termini</td>
<td>1</td>
<td>17SEP07</td>
</tr>
<tr>
<td>01500</td>
<td>4</td>
<td>Identify Other Planned Work</td>
<td>5</td>
<td>18SEP07</td>
</tr>
</tbody>
</table>

#### Complete Red Flag Summary

<table>
<thead>
<tr>
<th>ID</th>
<th>Cal</th>
<th>Description</th>
<th>Orig Dur</th>
<th>Early Start</th>
</tr>
</thead>
<tbody>
<tr>
<td>01520</td>
<td>4</td>
<td>Identify/Research Design/Geo Red Flags</td>
<td>10</td>
<td>14SEP07</td>
</tr>
<tr>
<td>01510</td>
<td>4</td>
<td>Identify/Research Environmental Red Flags</td>
<td>15</td>
<td>14SEP07</td>
</tr>
<tr>
<td>01530</td>
<td>4</td>
<td>Complete Red Flag Documentation</td>
<td>6</td>
<td>21SEP07</td>
</tr>
<tr>
<td>01550</td>
<td>4</td>
<td>Review &amp; Approval by ODOT</td>
<td>22</td>
<td>12OCT07</td>
</tr>
<tr>
<td>01560</td>
<td>4</td>
<td>Update Ellis</td>
<td>1</td>
<td>13NOV07</td>
</tr>
<tr>
<td>01599</td>
<td>4</td>
<td><em>Step #1 - Involve Stakeholders - Complete</em></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### STEP 2 - Determine Scope, Schedule & Budget

#### General Activities

<table>
<thead>
<tr>
<th>ID</th>
<th>Cal</th>
<th>Description</th>
<th>Orig Dur</th>
<th>Early Start</th>
</tr>
</thead>
<tbody>
<tr>
<td>02100</td>
<td>4</td>
<td><em>Begin Step #2 - Scope, Schedule &amp; Budget</em></td>
<td>0</td>
<td>14NOV07</td>
</tr>
<tr>
<td>02100</td>
<td>4</td>
<td>Confirm CE Level of Environ Doc with NEPA</td>
<td>2</td>
<td>14NOV07</td>
</tr>
<tr>
<td>02200</td>
<td>4</td>
<td>Develop Part 1 Scope of Services - Design/Environ</td>
<td>10</td>
<td>15NOV07</td>
</tr>
<tr>
<td>02210</td>
<td>4</td>
<td>Update Ellis</td>
<td>1</td>
<td>03DEC07</td>
</tr>
<tr>
<td>02220</td>
<td>4</td>
<td>Concurrency 1 (Scope, Schedule &amp; Budget)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>02299</td>
<td>4</td>
<td><em>Step #2 - Scope, Schedule &amp; Budget - Complete</em></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### STEP 3 - Perform Enviro Analysis/Prelim Engineer

#### Preliminary Engineering Study/Mult Alternatives

#### General Activities

<table>
<thead>
<tr>
<th>ID</th>
<th>Cal</th>
<th>Description</th>
<th>Orig Dur</th>
<th>Early Start</th>
</tr>
</thead>
<tbody>
<tr>
<td>03100</td>
<td>4</td>
<td><em>Begin Step #3 - Enviro Analysis/Prelim Eng</em></td>
<td>0</td>
<td>05DEC07</td>
</tr>
<tr>
<td>03110</td>
<td>4</td>
<td>Submit Rainfall Intensity Curves</td>
<td>1</td>
<td>05DEC07</td>
</tr>
<tr>
<td>03120</td>
<td>4</td>
<td>Review Environmental Commitments</td>
<td>1</td>
<td>05DEC07</td>
</tr>
<tr>
<td>03130</td>
<td>4</td>
<td>Obtain &amp; Review Existing Docs - Concept Alts</td>
<td>5</td>
<td>06DEC07</td>
</tr>
<tr>
<td>03140</td>
<td>4</td>
<td>Complete Survey</td>
<td>45</td>
<td>12FEB07</td>
</tr>
<tr>
<td>03150</td>
<td>4</td>
<td>Complete Soil Borings</td>
<td>1</td>
<td>03MAR08</td>
</tr>
<tr>
<td>03160</td>
<td>4</td>
<td>Identify Potential Design Exceptions</td>
<td>5</td>
<td>03MAR08</td>
</tr>
<tr>
<td>03170</td>
<td>4</td>
<td>Perform Subsurface Investigation &amp; Eval Geo Issues</td>
<td>15</td>
<td>04MAR08</td>
</tr>
<tr>
<td>03180</td>
<td>4</td>
<td>Prepare Preliminary Construction Limits</td>
<td>5</td>
<td>31MAR08</td>
</tr>
</tbody>
</table>

#### Culvert/Drainage

<table>
<thead>
<tr>
<th>ID</th>
<th>Cal</th>
<th>Description</th>
<th>Orig Dur</th>
<th>Early Start</th>
</tr>
</thead>
<tbody>
<tr>
<td>03210</td>
<td>4</td>
<td>Determine County Drainage</td>
<td>10</td>
<td>05DEC07</td>
</tr>
<tr>
<td>03220</td>
<td>4</td>
<td>Prepare Culvert Design</td>
<td>1</td>
<td>03MAR08</td>
</tr>
<tr>
<td>03230</td>
<td>4</td>
<td>Size Culverts Greater Than 36” &amp; Stream Sewer</td>
<td>5</td>
<td>03MAR08</td>
</tr>
</tbody>
</table>

#### Structure

<table>
<thead>
<tr>
<th>ID</th>
<th>Cal</th>
<th>Description</th>
<th>Orig Dur</th>
<th>Early Start</th>
</tr>
</thead>
<tbody>
<tr>
<td>03270</td>
<td>4</td>
<td>Prepare Structure Type Studies</td>
<td>20</td>
<td>03MAR08</td>
</tr>
<tr>
<td>03280</td>
<td>4</td>
<td>Determine Subsurface Drainage Requirements</td>
<td>1</td>
<td>12AUG08</td>
</tr>
<tr>
<td>03290</td>
<td>4</td>
<td>Submit Non-Stand Falling, Design &amp; Critical Minor</td>
<td>20</td>
<td>12AUG08</td>
</tr>
</tbody>
</table>
References

- **GB5 – Geotechnical Submission Guidelines**, Released August 13, 2007


Project Development Process (PDP)

http://www.dot.state.oh.us/pdp/
Cost

- Provide cost-effective engineering solutions
- Design/recommendations agree with scope
- Construction delays are considered in the design/recommendations
- Delays in design can result in substantial cost increases
FY08'-09' Business Plan Inflation Calculator:

Last Projection Update: December 5th, 2007

Enter VALUES in the Yellow Areas Only:

Today's Date: March 3, 2008

Estimation Start Date:
Less than or Equal to Today's Date
(mm/dd/yyyy)

3/3/2008

Enter Construction Mid-Point Date:
(cannot exceed 06/01/2025)
(mm/dd/yyyy)

7/1/2009

Present-Day Estimated Cost:

$ 10,000,000.00

Estimated Dollar Amount:

Inflation - Start to Mid-Point of Construction:
(Semi-annually compounded growth)

Business Plan 10.7%

Inflated Dollar Amount:

$ 11,070,000.00
## FY08'-09' Business Plan Inflation Calculator:

**Last Projection Update:** December 5th, 2007  
**Today's Date:** March 3, 2008

**ENTER VALUES in the Yellow Areas Only:**

**Estimation Start Date:**  
Less than or Equal to Today's Date  
(mm/dd/yyyy)

3/3/2008

**Enter Construction Mid-Point Date:**  
(cannot exceed 06/01/2025)  
(mm/dd/yyyy)

9/1/2009

**Present-Day Estimated Cost:**

$10,000,000.00

**Estimate Start Date to Construction Mid-Point Date:**  
17 Months

**Inflation - Start to Mid-Point of Construction:**

(Semi-annually compounded growth)

**Business Plan**  
12.0%

**Inflated Dollar Amount:**

$11,199,150.00
Inflation Effect

- Project Cost = $10 Million
- Delay in midpoint date of Construction = 2 months
- Net cost increase to project = $129,150.00
FY08'-09' Business Plan Inflation Calculator:

Last Projection Update: December 5th, 2007

Today's Date: April 10, 2008

ENTER VALUES in the Yellow Areas Only:

Estimation Start Date:
Less than or Equal to Today's Date
(mm/dd/yyyy)

4/10/2008
Start Date:

Enter Construction Mid-Point Date:
(cannot exceed 06/01/2025)
(mm/dd/yyyy)

2/1/2009
Construction Mid-Point Date:

Present-Day Estimated Cost:

$ 1,300,000,000.00
Estimated Dollar Amount:

Business Plan:

Inflation - Start to Mid-Point of Construction:

(Semi-annually compounded growth)

6.4%

Inflated Dollar Amount:

$ 1,383,344,444.44
FY08'-09' Business Plan Inflation Calculator:

Last Projection Update: December 5th, 2007

ENTER VALUES in the Yellow Areas Only:

Today's Date: April 10, 2008

Estimation Start Date: Less than or Equal to Today's Date (mm/dd/yyyy)

Enter Construction Mid-Point Date: (cannot exceed 06/01/2025) (mm/dd/yyyy)

4/10/2008

3/1/2009

Construction Mid-Point Date:

Start Date:

Construction Mid-Point Date:

Present-Day Estimated Cost:

$1,300,000,000.00

Estimated Dollar Amount:

10 Months

Estimate Start Date to Construction Mid-Point Date:

Months

Inflation - Start to Mid-Point of Construction:

(Semi-annually compounded growth)

Inflated Dollar Amount:

Business Plan 7.1%

$1,392,155,555.56
Inflation Effect

- Program Cost = $1.3 Billion
- Delay in midpoint date of Construction = 1 month
- Net cost increase to program = $8,811,111.12

Ohio Gas Tax 28¢/gal = 317.3 Million Gallons
Crude Oil Contracts

- Resistance by OPEC to increase crude production has pushed near-term crude prices to historically high prices.

- In February, ExxonMobil Corp. took legal action against Venezuelan owned PDVSA. In response, Venezuela threatened to terminate all national oil exports to the U.S. Since this row began, oil prices have climbed over 4%.

- Only one U.S. oil firm is finding as much new oil as they are extracting from the ground. All other major Western oil companies extracted more oil than they found for the period 2004 through 2006. Excluding acquisitions, the firm only found 75% as much new oil as they extracted during the same time.

- Oil is internationally traded in US dollars. When the value of the dollar declines against other currencies -while the intrinsic value of oil remains the same- it requires more dollars to purchase that same oil.

- International and domestic energy groups are reporting that supply may be unable to meet world demand as early as 10 years from now. This may impact most significantly speculation prices for 2015 and 2016.

1. Kingsbury, Kevin Exxon Mobil Replaces All of 2007 Output, WSJ, 2/15/2008,
2. International Energy Agency and the National Petroleum Council
Product

- Provide cost-effective engineering solutions
- Change Orders
- ODOT measures: Geo Project Performance, Consultant Ratings
Change Orders

► Per Ohio Revised Code 5525.14
  ► Original Contract Price  Contract Limits
    $500,000 or lower  $25,000
    $500,001 to $2,000,000  5% or Total Contract
    Over $2,000,000  $100,000

► ODOT Policies 510-010(SP) and 27-010(P)
► Each District has a Change Order Review Team
► Controlling Board including Director Beasley
# Geo Project Performance

Data based on Projects with "Physical Work Complete" between 04/01/07 and 3/31/08

<table>
<thead>
<tr>
<th>District</th>
<th>Geo CO Amount ($)</th>
<th>Geo Bid Amount ($)</th>
<th>Geo CO / Geo Bid (%)</th>
<th>Geo Change Amount ($)</th>
<th>Geo Change / Geo Bid (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$183,892.13</td>
<td>$1,777,526.73</td>
<td>10.35</td>
<td>$439,008.05</td>
<td>24.70%</td>
</tr>
<tr>
<td>2</td>
<td>$840,569.82</td>
<td>$6,725,453.52</td>
<td>12.50</td>
<td>$1,332,008.30</td>
<td>19.81%</td>
</tr>
<tr>
<td>3</td>
<td>$3,118,766.98</td>
<td>$21,249,032.92</td>
<td>14.68</td>
<td>$5,757,073.54</td>
<td>27.09%</td>
</tr>
<tr>
<td>4</td>
<td>$1,917,129.50</td>
<td>$6,922,484.26</td>
<td>27.69</td>
<td>$3,595,268.92</td>
<td>51.94%</td>
</tr>
<tr>
<td>5</td>
<td>$371,789.77</td>
<td>$7,010,699.91</td>
<td>5.30</td>
<td>$1,039,254.57</td>
<td>14.82%</td>
</tr>
<tr>
<td>6</td>
<td>$1,722,160.67</td>
<td>$15,678,013.62</td>
<td>10.98</td>
<td>$2,691,793.89</td>
<td>17.17%</td>
</tr>
<tr>
<td>7</td>
<td>$87,875.67</td>
<td>$1,410,159.66</td>
<td>6.23</td>
<td>$268,937.49</td>
<td>18.36%</td>
</tr>
<tr>
<td>8</td>
<td>$1,633,997.00</td>
<td>$6,512,306.71</td>
<td>25.08</td>
<td>$2,362,154.28</td>
<td>36.27%</td>
</tr>
<tr>
<td>9</td>
<td>$88,287.55</td>
<td>$1,435,518.53</td>
<td>4.76</td>
<td>$449,409.75</td>
<td>31.31%</td>
</tr>
<tr>
<td>10</td>
<td>$982,328.73</td>
<td>$13,629,957.13</td>
<td>7.21</td>
<td>$11,733,271.63</td>
<td>66.08%</td>
</tr>
<tr>
<td>11</td>
<td>$159,138.62</td>
<td>$595,774.39</td>
<td>26.71</td>
<td>$197,354.62</td>
<td>33.13%</td>
</tr>
<tr>
<td>12</td>
<td>$155,972.09</td>
<td>$1,878,201.25</td>
<td>8.30</td>
<td>$688,380.45</td>
<td>36.65%</td>
</tr>
<tr>
<td>ODOT</td>
<td>$11,241,008.53</td>
<td>$84,825,128.63</td>
<td>13.25</td>
<td>$30,543,915.49</td>
<td>36.01%</td>
</tr>
</tbody>
</table>

## Work Type Category

<table>
<thead>
<tr>
<th>Work Type Category</th>
<th>Geo CO Amount ($)</th>
<th>Geo Bid Amount ($)</th>
<th>Geo CO / Geo Bid (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expansion</td>
<td>$3,371,484.25</td>
<td>$17,091,729.69</td>
<td>19.73</td>
</tr>
<tr>
<td>New Alignment / Profile</td>
<td>$4,354,369.01</td>
<td>$32,769,007.15</td>
<td>13.29</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$61,664.46</td>
<td>$3,837,827.52</td>
<td>1.61</td>
</tr>
<tr>
<td>Preservation</td>
<td>$2,796,089.65</td>
<td>$20,161,436.36</td>
<td>13.87</td>
</tr>
<tr>
<td>Safety</td>
<td>$263,209.60</td>
<td>$5,833,326.34</td>
<td>4.51</td>
</tr>
<tr>
<td>Other</td>
<td>$394,191.36</td>
<td>$5,131,801.58</td>
<td>7.68</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geo Change Amount ($)</th>
<th>Geo Change / Geo Bid (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5,579,762.03</td>
<td>32.65%</td>
</tr>
<tr>
<td>$17,243,347.19</td>
<td>52.62%</td>
</tr>
<tr>
<td>$809,015.20</td>
<td>21.08%</td>
</tr>
<tr>
<td>$5,265,365.49</td>
<td>26.12%</td>
</tr>
<tr>
<td>$1,040,243.94</td>
<td>17.83%</td>
</tr>
<tr>
<td>$606,181.64</td>
<td>11.81%</td>
</tr>
</tbody>
</table>
Product

- 7 Habits of Highly UNsuccessful Project Managers
  - 1. Make Assumptions For Stakeholders

- Please refer to the Specifications for Geotechnical Explorations to determine amount of soil borings and laboratory testing

- When in Doubt, please ask.
Thank you.

Doug A. Rogers, P.E.
ODOT District Two Production
419-373-4397
drogers2@dot.state.oh.us