Benchmarking and the Alberta Report – a Government/Industry Partnership

Alberta Report Phase I Results

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Number of Project Data in COAA DB by Month (last updated Oct. 24th, 08)

- Training #1: Nov. 05
- Training #2: Oct. 06
- Training #3: Nov. 07
- Training #4: May 08

Round 1
Data Cut Off: Aug. 1st, 08
Sample Box and Whisker Diagram

- **Outlier Symbol**
- **Last Observation below (Q3 + 1.5IQR)**
- **Median**
- **First Quartile (Q1)**
- **Last Observation above (Q1 - 1.5IQR)**
- **Third Quartile (Q3)**
- **Mean**
Figure 4-3 Construction Indirect / Direct Work hours (%)
Figure 4-4 Construction Indirect Cost / Total Project Cost (%)
Figure 4-5 Modularization by Project Nature

<table>
<thead>
<tr>
<th>Modularization/Total Project Cost(%)</th>
<th>Addition</th>
<th>Grass Roots</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>12.31</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>19.41</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td></td>
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<tr>
<td></td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>(N=17)</td>
<td>(N=13)</td>
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</tr>
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</table>
Figure 4-6 Project Cost Growth by Project Delivery System
Figure 4-7 Project Schedule Growth by Project Delivery System
Figure 4-8 Effect of % Engineering Completed before Substantial Construction Started
Figure 4-9 Actual / Estimated Number of Peak Construction Workforce

- Project Cost Growth
- Actual/Estimated Peak Construction Workforce
Figure 4-15 Workface Planning vs. Construction Schedule Growth

Not Enough Data to Comment
Figure 4-16 Project Size ($M CDN, in 2007)
Figure 4-17 Contingency Budget (%)
Figure 4-18 Project Cost Growth

The diagram shows the project cost growth for Alberta and the U.S. with the following data:

- **Alberta** (N=24): The median cost growth is 0.19.
- **U.S.** (N=352): The median cost growth is 0.03.

The chart compares the project cost growth between the two regions, highlighting the differences in cost increase or decrease.
Figure 4-19

Project Schedule Growth

- Alberta: 0.17 (N=24)
- U.S.: 0.06 (N=338)
Figure 4-20
Development and Scope Change Cost Factor

<table>
<thead>
<tr>
<th>Change Cost Factor</th>
<th>Scope_Change</th>
<th>Development_Change</th>
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</thead>
<tbody>
<tr>
<td>Alberta</td>
<td>0.40</td>
<td>0.30</td>
</tr>
<tr>
<td>U.S.</td>
<td>0.20</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>-0.10</td>
<td>-0.20</td>
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<tr>
<td></td>
<td>N=11</td>
<td>N=14</td>
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<tr>
<td></td>
<td>N=13</td>
<td>N=14</td>
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</table>
Figure 4-21
Comparison of Project Size ($M CDN, in 2007) for Engineering Productivity Dataset

![Adjusted Project Cost Comparison](image)
Figure 4-22
Comparison of Concrete Engineering Productivity

(WH/ Cubic Meter)
Figure 4-23
Comparison of Structural Steel Engineering Productivity (WH/ Metric Ton)
Figure 4-24
Comparison of Piping Engineering Productivity
(WH/ Linear Meter)
Figure 4-XX
Comparison of Electrical Engineering Productivity

Not enough data to produce results.

More projects required.
Figure 4-XX
Comparison of Instrumentation Engineering Productivity

Not enough data to produce results.

More projects required.
Figure 4-25
Comparison of Project Size ($M CDN, in 2007) for Construction Productivity
Figure 4-26
Comparison of Total Concrete Construction Productivity (WH/ m³)

(U.S.)

Alberta

Total Concrete Productivity Rate (WH/ CM)

19.39
13.10
9.72

(N=12)
(N=32)

(U.S.)
Figure 4-27
Comparison of Total Structural Steel Construction Productivity

- **Alberta** (N=21) - Total Steel Prod. Rate = 37.96
- **U.S.** (N=32) - Total Steel Prod. Rate = 36.37
Figure 4-XX
Comparison of Total Piping Construction Productivity

Not enough data to produce results.

More projects required.
Not enough data to produce results.

More projects required.
Figure 4-28

Instrumentation – Devices Construction Productivity

![Chart showing comparison of Instrumentation Devices Construction Productivity between Alberta and the U.S.](chart.png)

- Alberta:
  - Mean: 13.37
  - Count: 9
  - Median: 21.40

- U.S.:
  - Mean: 13.53
  - Count: 22
  - Median: 8.28
Figure 4-29
Comparison of Insulation-Piping Construction Productivity (WH/Linear Meter)

<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>Alberta</th>
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<tbody>
<tr>
<td>Average</td>
<td>2.19</td>
<td>1.90</td>
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<tr>
<td>Median</td>
<td>0.16</td>
<td>0.141</td>
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<tr>
<td>N</td>
<td>15</td>
<td>16</td>
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</table>

Comparison of Insulation-Piping Construction Productivity (WH/Linear Meter)
Figure 4-31
Actual / Estimated Construction Productivity Rate by Work Discipline

<table>
<thead>
<tr>
<th></th>
<th>Total Concrete (N=8)</th>
<th>Total Steel (N=17)</th>
<th>Total Piping (N=10)</th>
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<tbody>
<tr>
<td>Actual / Estimated Productivity Rate</td>
<td>1.45</td>
<td>1.22</td>
<td>1.04</td>
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</tbody>
</table>
Phase II - DRAFT Simplified Schedule

- Input Projects: 2009 - 2012
- Company Analysis: 2009 - 2012
- Define Enhancements: 2010, Phase 2 Begins, Enhancement Scope Frozen
- Test: 2011
# Project Status – 2 year look ahead

<table>
<thead>
<tr>
<th></th>
<th>WIP Projects on Hold/Dead</th>
<th>Valid WIP Projects</th>
<th>New Projects</th>
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<tbody>
<tr>
<td><strong>OWNER</strong></td>
<td>11</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td><strong>CONTRACTOR</strong></td>
<td>7</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>18 of 41</td>
<td>77</td>
<td>12</td>
</tr>
</tbody>
</table>
Thank-You

Not enough data to produce results.

More projects required.