Implementation Meeting

Advanced Methodology to Determine Highway Construction Cost Index (HCCI)

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Agenda

- Brief Review
- Recommendations / Discussions
Research Goal

Develop an advanced methodology to calculate Highway Construction Cost Indexes (HCCIs) using historical bid data.
Current MDT HCCI Methodology

- Indexing formula used: Laspeyres (Young) index
- 9 categories of 71 items (2013)

<table>
<thead>
<tr>
<th>Item categories</th>
<th>Weights (2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excavation</td>
<td>21.18%</td>
</tr>
<tr>
<td>Aggregate Base</td>
<td>11.95%</td>
</tr>
<tr>
<td>Surfacing</td>
<td>46.38%</td>
</tr>
<tr>
<td>Drainage</td>
<td>2.57%</td>
</tr>
<tr>
<td>Concrete</td>
<td>3.18%</td>
</tr>
<tr>
<td>Reinforcing Steel</td>
<td>1.24%</td>
</tr>
<tr>
<td>Bridge</td>
<td>2.85%</td>
</tr>
<tr>
<td>Traffic</td>
<td>7.57%</td>
</tr>
<tr>
<td>Misc. Items</td>
<td>3.08%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
New HCCI Methodology

- Chained Fisher Index (FHWA’s recommendation)
- Approximately 650 bid items used annually (about 8 times more)
- Covers more than 70% of total construction costs
- Multi-dimensional HCCIs

- Bid data used
  - Data from 2010 to 2014
  - Dollar value: over $1.8 billion
  - Number of projects: 687
  - Number of item records: 33,975
Dyna-Mu-HCCI System

- User’s manual (Appendix)
MDT - HCCIs

MDT HCCI with Dynamic Item Basket vs Current Item Basket

OLD

NEW
Multi-dimensional HCCIs

HCCIs by project type

HCCIs by project size

HCCIs by project location
Recommendations / Discussions

- Designate a MDT staff member for managing the HCCI system
  - Identify useful and meaningful sub-HCCIs
  - Update and publish those HCCIs in the MDT website annually

- Use new HCCIs for budgeting and early cost estimating
  - Use the average cost increase rate for the past three to five years as the future construction cost inflation rate to account for regional market condition and changes
    - Consider project type, project location, etc.

- Use the project type HCCIs for determining the escalation rates for ID/IQ projects
Recommendations / Discussions

• In developing engineer’s estimates, use the bid item level historical cost trend as a reference

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