NORTHERN VIRGINIA DISTRICT

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June 4, 2019
NORTHERN VIRGINIA DISTRICT PROJECT DEVELOPMENT PROGRAM

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June 4, 2019
NOVA District - Project Development Program

- **Program**: strong with significant locality participation
  - 297 projects in development @ $2.376 Billion; 75% by localities
  - Major projects to be advertised in 2019 are mostly locally administered

- **Dashboard**: inaugural year for Dashboard 3.0 nearly complete
  - On-time performance @ 54% — a weakness that needs improvement
  - On-budget performance @ 72% — on the margin of the target
  - Better schedules and budgets are essential to our success

- **Estimates**: current VDOT process under review
  - Bids for several high-profile projects in Northern Virginia were substantially more than the construction and engineer’s estimate
  - Statewide issue occurring in other Districts
  - Difference between low-to-high bids have often been wide-ranging
Route 7 Corridor Improvements

Area Description

Major transportation arterial for commuter and commercial traffic from Alexandria-Leesburg-Winchester

- Serves local residents and in/out-of-state commuters traveling to private, local, state, & federal employment centers in the DC Metro area
- Project limits are the last 4-lane segment (6.9 miles) of Route 7 between Leesburg & the Capital Beltway (I-495)
- Current ADT of 55,000; heavily congested at peak hours

- Urban residential area
  - 56 Homeowner Associations
  - 230 parcels impacted (95% residential)
- Sensitive historical and environmental area at Colvin Mill and Difficult Run
- Major utility corridor
  - More than 20 utility companies including underground water, gas, sewer, and under/above ground electric, telephone, & fiber communications
Route 7 Corridor Improvements
Bid Analysis

- SMART SCALE project with approved budget of $234 Million
- The highest previous contractor’s award for a design-build widening project in NOVA was $23.9M per mile. VDOT’s total estimate of the bid equated to $26.5M per mile and the budget was $34M per mile. Bottom line – based on previous results there was reasonable confidence that the budget was sufficient.
- Price proposals were received in March 2018; the low bid was $278M—$95M (52%) above the estimated bid of $183M, equating to $40.4M per mile.

<table>
<thead>
<tr>
<th>Estimated Bid</th>
<th>Actual Bid</th>
<th>Δ</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>$156M</td>
<td>± $200M</td>
<td>$47M</td>
</tr>
<tr>
<td>Other</td>
<td>$27M</td>
<td>± $78M</td>
<td>$51M</td>
</tr>
</tbody>
</table>

- VDOT’s estimate did not predict the market response to the project. Why not?
  - Utilities, design were significant misses; full pavement reconstruction was a significant change
  - Compared to other design-build projects in NOVA:
    - Project duration was 6 years – other projects took approximately 3 years
    - Project length was nearly 7 miles – other projects (outside of P3/Mega projects) have averaged 3-4 miles
    - 20 utility companies involved – previously, the maximum was 12 and the average was 8
    - 230 properties affected – previously, the maximum was 64 and the average was 30
  - Other contributing factors are concerns on labor availability, market saturation, uncertainty on material costs

- Mitigation strategy from Jan 2017 Risk Assessment: “Monitor the market”
- Normal practice is (was?) to mitigate risks with measures other than increasing the unit price and estimate ⇒ e.g., agreement with Washington Gas

“Outside the box”

conditions affected pricing

Estimated Bid
Actual Bid
Δ
Difference

- Construction
  - $156M
  - ± $200M
  - $47M
  - Pricing & multiple items that added up – full pavement reconstruction, mobilization, sound walls, retaining walls, et. al.
- Other
  - $27M
  - ± $78M
  - $51M
  - Utilities (>30M), Design (>16M), QA/QC
**MD & DC**

- Silver Line PH I, $2.9 Billion
- Silver Line PH II, $2.7 Billion
- I-695 HOT, $1.4 Billion
- I-95/395 Express, $925 Million
- I-395 EXT, $336M
- RTE 7 CIP, $312 Million
- I-66 ITB, $125 Million
- I-66 OTB, $3.7 Billion

**VA**

- I-495 HOT, $1.4 Billion
- I-95/395 Express, $925 Million
- I-66/Rte 29 Interchange, $212 Million
- Rte 7 CIP, $278M, 152%
- Rte 50, $67.8M, 123%
- Little Rocky Run, $11.4M, 131%
- Braddock/PV Roundabout, $4.1M, 167%
- Rte 7 & DTR, $39.9M, 128%

- Significant Regional Projects > $100M
  - Rte 7 CIP, $312 Million
  - 234/BF, $145M
  - Rte 28, $80M
  - I-495 NEXT, $500 Million
  - Rte 1, $250 Million

- MD Toll Lanes, $9 Billion
- Purple Line, $5.6 Billion
- Capital Crossing, $200 Million
- Frederick Douglass Bridge, $441 Million
- Arlington Memorial Br, $235 Million

- • 18 of 27 (67%) of contracts awarded < RFP estimate
- • 6 of 27 (23%) contracts awarded > 110% of the RFP estimate

**NOVA Design-Build Projects**

- Estimated Contract Value from RFP
- Actual Contract Awarded
National Highway Construction Cost Index (NHCCI) 2.0

Excerpt from Chief Engineer’s Briefing to the CTB on May 20, 2019

Design Bid Build - January 2017 - April 2019 L&D Estimate to Bid Comparison

Number of Contracts Awarded

<table>
<thead>
<tr>
<th>Deviation Range</th>
<th>Number of Contracts</th>
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<tbody>
<tr>
<td>30% - 20%</td>
<td>41</td>
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<tr>
<td>20% - 15%</td>
<td>39</td>
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<td>0% - 7%</td>
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<tr>
<td>15% - 20%</td>
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<tr>
<td>20% - 30%</td>
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<tr>
<td>30%+</td>
<td>63</td>
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<tr>
<td>50%+</td>
<td>44</td>
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</tbody>
</table>

45% Estimate Deviation BELOW Awarded Bid
55% Estimate Deviation OVER Awarded Bid

Virginia Department of Transportation
Improving Project Cost Estimating

• **Review national best practices**
  - NCHRP 574 — Guidance for Cost Estimation and Management for Highway Projects During Planning, Programming, and Preconstruction
  - Consult other DOTs and national experts
• **Economic and market forecasts**
  - VDOT engaged consultant to develop regional forecasts of economic factors and market conditions
  - Construction Cost Index that looks ahead
• **Project Estimating Task Group**
  - Review VDOT estimating procedures and develop, by May 1, 2020, an estimating system tailored to our program, SMART SCALE, State of Good Repair and other streams of funding
  - End project is an estimating manual and a cradle-to-grave estimating system