Revised Draft Report For the Expert Review Panel For the Assessment of Cost Estimating Methodology and Sample Cost Estimates For Sound Transit ST3 Projects

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BACKGROUND

Value Management Consulting, Inc. (VMC)

- Was hired by the ERP for review of ST2
- Was hired again by the ERP for review of ST3

VMC has been in business for over 20 years

- Mike Morrison is the founder, and president
- Provides cost estimating for transportation programs

Mike Morrison's background

- 50 years experience in consulting
- Began estimating in 1969

SCOPE OF WORK

VMC was engaged to provide the following services:

- To review Sound Transit's methodology
- To review whether or not Sound Transit's methodology is consistent with best practices
- Review the methodology and procedures for preparation of the cost estimates for projects that may be part of the ST3 program

GOOD PRACTICES

Sound Transit has made good use of knowledge and experience:

- From Sound Move projects
- ST2 projects

Development of a Unit Cost Library provides

- A consistent basis for unit costs and
- Is a superior practice and
- Is appropriate tool for planning level cost estimates

GOOD PRACTICES

The Capital Cost Methodology is a document with references to several organizations:

- AACEI (formerly known as the Association for the Advancement of Cost Engineering International)
- American National Standards Institute (ANSI)
- Construction Specifications Institute (CSI)
- Federal Transportation Administration (FTA)

References to external standards is a good practice

Use of terms for clarity of context

- "allowance", "contingency", and "management reserve"
- This is a good practice
- Clearly state any differences to industry standards
- Use consistently in all communications

Including "soft costs" within the Cost Estimating Methodology is a good practice since it avoids the potential for an undisciplined approach

We understand that risk assessment/analysis is planned.

The use of FTA codes is a good practice and avoids the potential for errors in translating from any other codes.

Sound Transit gets good value from the use of expert review panels and peer reviews.

The tracking done in an Excel file helps maintain clarity in the versions since Sound Transit is currently updating many potential projects.

The Unit Cost Library has component costs for labor, material and equipment which makes updating more accurate than applying a cost index to a composite cost, such as ENR

The Cost Estimating Methodology correctly states that the planning level estimates will have "*varying degrees of design*"

The review shows that the cost estimates prepared show that Sound Transit has used the procedures that they have developed and produced credible cost estimates for planning purposes

SOME SUGGESTIONS

The Cost Estimating Methodology could be used to explain how other tasks will be included in the project total costs:

- Risk assessment/analysis
- Escalation to year of expenditure
- Potential cost impacts of phasing or staging

Clear up-to-date definitions of terms, such as "assumptions" and "exclusions" should exist only in the Basis of Estimate and only referenced to the Basis of Estimate in the Cost Estimate Methodology

"Range" should not be used for single value cost additions

SOME SUGGESTIONS (continued)

It is not possible to develop a programmatic schedule at this time. Such a schedule should be developed as soon as possible. Phasing or staging of projects could add to the costs.

Consider using life-cycle analyses for conceptual value assessment at a very preliminary stage of evolution of the projects.

There are two terms in the Cost Estimate Methodology that are not explained and need clarification. They are "Integration" and "Innovation"

SOME SUGGESTIONS (continued)

Consider eliminating a fixed percentage adder for ROW risk in the development of the cost estimates.

- It is shown as 7% in the Methodology
- It is shown as 15% in the Basis of Estimate

The percentage used is not known to this reviewer.

The potential for variation in the ROW cost has been far greater in recent years than the construction cost. Therefore, we believe that the ROW risk should be included in Sound Transit's risk assessment

COST ESTIMATES

Unit Cost Library:

- Built on experience from Sound Move and ST2
- Additional costs developed using proprietary cost estimating software

Right-of-Way Cost (ROW) Development:

- Alignments developed
- Standard assumptions used to develop properties required
- Property specialists used to complete the ROW \$

COST ESTIMATES (continued)

Quantity Survey Development:

- Alignments developed (as used for ROW)
- Most quantities are used in conjunction with assembly costs found in the library
- Considers vertical alignment

Assembly costs are developed from Unit Costs

- Includes a smaller number of allowances for detailed assemblies (e.g. 3 for At-Grade Roadway)
- Includes a larger number of allowances for less detailed assemblies (e.g. 9 for Maintenance Facilities)



COST ESTIMATES (continued)

Review for selected projects:

- Project description reviewed
- Excel files reviewed
- Costs compared to Dec. 4 costs
- Summaries developed for options and segments

LIST: PROJECTS REVIEWED

We were asked to review 11 projects, including:

Five Light Rail Projects

- Lynnwood to Everett
- Totem Lake to Issaquah
- Ballard to Downtown Seattle
- Downtown Seattle to West Seattle
- Kent/Des Moines to Tacoma Dome

One Link Project (which is not available for review now)

LIST: PROJECTS REVIEWED (continued)

Three Light Rail Stations

- In the vicinity of SR99 and Harrison Street
- Infill Light Rail Station: Graham Street
- Infill Light Rail Station: Boeing Access Road

Two Bus Rapid Transit Projects

- SR523/145th Street & SR522/Bothell Way
- I-405 Lynnwood to SeaTac

LIGHT RAIL PROJECTS

Each of these projects have multiple options Five Light Rail Projects

- Lynnwood to Everett (3 options)
- Totem Lake to Issaquah (2 options)
- Ballard to Downtown Seattle (4 options)
- Downtown Seattle to West Seattle (3 options)
- Kent/Des Moines to Tacoma Dome (2 options)

LIGHT RAIL PROJECTS

Light Rail Projects have the following:

- Stations, Light Rail, Vehicles and completion of related projects
- Need for agreement with other agencies
- Some options require considerable right-of-way

All options had detailed assumptions used to generate the costs, including:

- Alignment and elevation
- Number and location of stations
- List of specific assumptions and exclusions

LIGHT RAIL STATIONS

Three Light Rail Stations

- In the vicinity of SR99 and Harrison Street
- Infill Light Rail Station: Graham Street
- Infill Light Rail Station: Boeing Access Road

Light Rail Stations do not have as many components as Light Rail projects.

Greater reliance on allowances within the assembly costs.

BUS RAPID TRANSIT PROJECTS

Two Bus Rapid Transit Projects

- SR523/145th Street & SR522/Bothell Way
 - These projects work together
 - Higher percentage of ROW to total cost
- I-405 Lynnwood to SeaTac
 - Many segments
 - Lower and Intensive Capital Cost Options
 - Several segments from Bellevue south
 - Two different southern destinations



NEEDED TO COMPLETE

Finish updating the existing options for projects

Complete other tasks that contribute to total costs

- Risk assessment/analysis
- Escalation to Year of Expenditure
- Finance costs

Caution to look at other factors for decisions when the costs of options are comparable