

# DRAFT

## WisDOT and Division of Transportation Districts Engineering Cost Comparison April 20, 2004

### Engineering Costs Have Declined 25% Over the Last Decade

- The Division of Transportation Districts tracks the cost of delivering closed state highway improvement projects by both consultant and in-house staff as a percent of construction costs. Because this historical trend data is based on closed projects, it is not completely current and is dependent on the timing of administrative closings.
- Over the last decade, this Engineering Cost Index shows that the cost for engineering services has declined by approximately 25%.

### Costs Are Lower For In-house Led Projects

- In response to a legislative request in 2001, DTD developed a method to calculate more current engineering costs for comparison purposes. This method was used to calculate the costs reported here.
- Comparison cost data for the four years from FY1999 to FY2002 shows that:
  - In-house Design engineering costs were lower in four of five improvement categories
  - In-house Construction engineering costs were lower in all five improvement categories
  - Total in-house engineering costs averaged 21.8% and total consultant engineering costs averaged 25.7% of construction costs.
- With the loss of each in-house FTE, the Department pays approximately \$19,000 (or 18%) more for consultant engineering services to deliver the same amount of the program as the in-house FTE.
- The four-year Design total might have been \$21.6 million less if consultant led projects had been delivered at the in-house delivery percent.
- The four-year Construction total might have been \$6.0 million less if consultant led projects had been delivered at the in-house delivery percent.
- The data reported is from state fiscal years 1999-2002 for projects that were determined to be at least 95% complete.

### In-house Costs Include Overhead

- WisDOT first developed an in-house engineering services overhead rate in the early 1990's to compare the cost of in-house and consultant provided services.

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## Engineering Cost Comparison 1999-2002 Complete and Almost Complete Projects

SFY 1999 to 2002 Type of Project (least complex to most complex)	Consultant, % (A)	In-House, % (B)	Difference, % (A-B)	Consultant Relative % More or Less
SHRM *	18.7	13.0	5.7	+43.8
Bridge Replacement	28.6	29.7	-1.1	-3.7
Rehabilitation **	22.9	20.4	2.5	+12.3
Reconstruction ***	28.8	25.7	3.1	+12.1
Major Projects	25.4	21.2	4.2	+19.8
ALL PROJECT TYPES	25.7	21.8	3.9	+17.9

\* SHRM (State Highway Roadway Maintenance) includes low level roadway and bridge preservation.

\*\* The category for rehabilitation work includes resurfacing, reconditioning, pavement replacement and bridge rehabilitation

\*\*\* The category for reconstruction includes roadway replacement and, in some cases, expansion below the major project threshold.

### **WisDOT Provides Important Competition**

- WisDOT continues to perform highway engineering work to maintain:
  - competition and, thus, control costs
  - flexibility to outsource the right mix of work
  - expertise necessary to maintain quality and to oversee consultant work
- WisDOT's goal has been not more than 50% outsourced engineering work; somewhat less than that would increase flexibility.
- Consultant expenditures for engineering services have increased from approximately \$65 million in FY1999 to \$116 million in FY2003.
- WisDOT's increasing cost advantage has tempered its loss of market share, however in-house work has declined from 59% in FY1999 to 46% in FY2003. In-house work as a percent of engineering work is expected to decline again in FY2004.
- WisDOT believes that effective competition has contributed to its declining costs; preserving competition is important to continued and improved efficiency.

## WisDOT Engineering Cost Comparison Methodology - Details

### INTRODUCTION

#### Projects included in study

State Trunk Highway Improvement Projects  
Appropriations 363 / 383 and 362 / 392

Design Projects – from inception of project to bid letting

Construction Projects – from letting to completion of construction

#### The study is conducted on basis of fully absorbed costs (actual costs plus overhead)

In order for WisDOT to make a valid cost comparison between In-House and Consultant Led engineering efforts, WisDOT developed an In-House engineering services overhead rate that is applied to In-House and Consultant labor.

### STEPS

I. Draw list of projects that meet criteria listed above from source and download to Excel spreadsheets

II. Report on projects that are substantially complete to accurately forecast engineering costs.

The entire population of data includes projects that are not substantially complete. We maintain a record of these projects apart from this study for reference.

III. Sort State Trunk Highway Projects into the five Improvement Categories we report

Reconstruction  
Rehabilitation  
Bridge Replacement  
SHRM (General Maintenance)  
Major Projects

IV. Calculate Engineering Cost as a percent of the construction costs

For Design – engineering charges to a project divided by what we expect to pay to build the project

For Construction – engineering charges to a project divided by what we actually pay the road contractor

Total Engineering Cost is the sum of total Design and Construction