

441-3441

*SEATTLE CENTRAL LINK LIGHT RAIL
PROJECT*

DELOITTE & TOUCHE
PERFORMANCE AUDIT

Prepared for Sound Transit Board Meeting -- September 13, 2001

**Deloitte
& Touche**

ASSIGNMENT

CONDUCT PERFORMANCE AUDIT OF SOUND TRANSIT COST ESTIMATING AND PROJECT CONTROL SYSTEMS

WORKPLAN

- INITIAL DOCUMENT REVIEW FOR BACKGROUND OF THE COST ESTIMATING AND REPORTING PROCEDURES AND METHODOLOGY
- INTERVIEWS AND MEETINGS WITH SOUND TRANSIT, CONSULTANTS AND FORMER MANAGEMENT PERSONNEL
- DETAILED REVIEW OF COST ESTIMATING PROCEDURES & METHODOLOGY
- DETAILED REVIEW OF REPORTING PROCEDURES & METHODOLOGY
- DELIVERABLES TO SOUND TRANSIT

FINDINGS AND RECOMMENDATIONS

- COST ESTIMATING AND PROJECT CONTROL
- REPORTING / MONITORING
- ORGANIZATIONAL STRUCTURE

COST ESTIMATING

- Cost estimating guidelines issued in February 1999 are comprehensive but were not fully implemented during development of earlier estimates.

- Deficiencies in development of prior estimates included:

- Development of estimates to match a budget

- Overly optimistic estimates

- Inadequate contingencies

- Contingencies prematurely reduced

- Inadequate/insufficient data (e.g. no soils data, ROW based on FIS, etc.)

- Inadequate soft costs

cash flow

what abt
ignoring
row costs
of in-line
P/E Dept.?

COST ESTIMATING - continued

- Current cost estimates have been developed with implementation of many of the cost estimating guidelines:
 - Work Breakdown Structures being developed
 - Contingencies set at appropriate levels
 - Escalation analysis to midpoint of construction (using cost loaded schedule)
- Additional cost estimating guidelines should be implemented:
 - Development of appropriate baseline and control estimates
 - Sound Transit Project Controls to review estimates in detail
 - Sound Transit Project Controls to prepare variance reports
 - "Basis of Estimate" to be developed for each contract estimate

COST ESTIMATING - continued

- Current cost estimates developed using adequate methodology & data
- Current cost estimates supported by detailed documentation
- Detailed reviews of the current estimate have been conducted by Sound Transit middle and top management to determine the adequacy and completeness of the estimate

PROJECT CONTROL

- Project control includes cost, schedule and financial control of the project
- Cost estimating is integral part of project controls
- Historically, the project control function has not been properly implemented by Sound Transit management
- Project Management Plan (developed between 1999-2001) contains comprehensive project control procedures including:
 - Configuration management
 - Change control
 - Schedule control
 - Cost estimates
 - Cost control
 - Cost forecasting

PROJECT CONTROL - continued

- Agency moving towards further implementation and development of the proper project control tools
 - Change control procedures
 - Cost forecasting procedures
 - Reporting procedures
- Agency has been proactive in developing Sound Transit Project Controls function
- Implementation of appropriate project control system essential for project success

REPORTING / MONITORING

- Accurate and timely reporting of project cost/schedule status is essential for informed management decisions
- Historically, project reporting had significant deficiencies:
 - Monthly reports not issued in a timely fashion
 - Monthly reporting did not contain essential information
 - Budget breakdown not in sufficient detail for monitoring costs
 - Actual cost data too general
 - No data with respect to forecasting, trending or estimated costs to complete
 - Insufficient detail/information regarding schedule status
 - Monthly Agency Progress Reports include combined Central and Tacoma Link costs

REPORTING / MONITORING - continued

- Currently monthly reporting structure is being developed
 - Status of cost and schedule for individual construction contracts is being reported in Agency Progress Report
 - Status of cost and schedule for individual design contracts is being reported in Agency Progress Report
 - Status not rolled up to summary project level

REPORTING / MONITORING - continued

- Historically and currently, the cost, schedule and financial management systems have not provided sufficient cost data for effective project management and control
 - Currently, Agency involved in major effort to integrate the financial management system (One-World) with the project management systems (Primavera Expedition and P3)
 - Engineer's estimate needs to be developed at a detailed level for accumulating and tracking actual costs for forecasting purposes

ORGANIZATIONAL STRUCTURE

- Historically, the estimating process has been fragmented among the different Departments and/or Consultants
- Currently compilation of cost estimates from each of the major Project elements by PSTC and not Sound Transit Project Controls
- For project controls function to succeed, Agency's top management support is essential:
 - Historically, this support has been lacking
 - Currently, Agency's top management is committed to developing and implementing the project control function

ORGANIZATIONAL STRUCTURE - continued

- Agency must assign overall responsibility for project budget and estimates:
 - Agency should consider appointing a single person to be responsible for overall project estimates and budget for Link projects
 - Agency should consider appointing a Link Project Control Manager reporting directly to Link Project Director
 - Agency should also consider appointing a Project Control Director reporting directly to Deputy or Executive Director of Sound Transit

per COB
or for all?

FUTURE RISKS

- Project Schedule in sufficient detail for future monitoring
- Without monthly reporting, cost/schedule cannot be properly managed and/or monitored
- Continuous monitoring of scope creep (configuration management)
- Switch from Northern to Southern focus in June 2001:
 - Construction risk is reduced due to less underground construction
 - Design risk is increased due to less mature design
 - New ROW analysis
 - New 3rd Party Agreements
- Management must ensure that Change Control Board does not become a bottleneck during design and construction creating unnecessary delays

CCB = PCO? (see p. 16)

RECOMMENDATIONS

- After Budget is adopted the Project estimate should be broken down at a lower level of detail in order to:
 - Capture Actual Costs
 - Monitor Scope Changes = highest risk element
 - Track Cost Trends
 - Identify Cost variances

→ same as CCB?
- Establish an effective Project Control Organization within Sound Transit and Link Project
- Agency must enforce strict guidelines for configuration management including:
 - Necessity
 - Cost
 - Schedule
 - Technical Impact

RECOMMENDATIONS - continued

- Configuration management must be enforced by the Executive Director
- Contingencies (Design, Construction and Project Reserve) should not be used for Configuration Changes
- Develop and Implement effective Project Controls including:
 - Project Schedule
 - Procedures for Scope Control
 - Change Order Control System
 - Cost Forecasting
 - Cost and Schedule Reporting