



Peer Review Conference Report

for

Missouri Dept. of Transportation

September 22, 2000



The Team is Reporting on Four Processes

- Estimating
- Bid Analysis
- Documentation
- Staffing



Estimating Process



Estimating Process

- It was the consensus of the Panel that an Engineer's Estimate should be:
 - A Benchmark used for Evaluating Bids Received at the Letting
 - A Fair Market representation of the cost to perform the work
- Engineer's Estimate should not be:
 - A prediction of the low bidder's price



Estimating Process

- MoDOT's Estimating Process consists of:
 - 80% Historical Price applied to quantities
 - 20% Detailed Costing of individual items which are cost and project detail sensitive
- Estimating Judgment is applied to modify unit costs to account for known project requirements and general market conditions



Estimating Process

- Is MoDOT's process for Engineer's Estimates comparable to Industry Standards?
 - There is no Industry Standard per-se
 - MoDOT's Engineer's Estimate Process is in line with other State DOT's Best Practices



Estimating Process

- MoDOT's process for Engineer's Estimates is working, however the following was noted:
 - Time allowed to develop Engineer's Estimate is compressed because of process scheduling and management
 - Communications between District Estimators and Jefferson City Estimators could improve
 - Software tools are not fully or properly utilized
 - As experience increases more cost based estimating should be included in all estimates



Estimating Process

- Estimate methodology should include a mix of:
 - Historical Unit Rates for standard items of work
 - Detailed costing of major work items which reflect immediate or rapid changes in the market place
 - Use of estimating guides, and estimating software.
 - The estimator's judgment and experience.



Estimating Process

- Additional Recommendations:
 - Estimate Documentation is critical, especially when changes / deviations from historical pricing are utilized
 - Plans and Specifications should be scrutinized to:
 - Subsidiary / Incidental Construction Items should be used carefully
 - Communicate MoDOT's intentions to Bidding Contractors
 - Minimize Quantity "Busts"



Estimating Process

- Recommendations
 - District Designers should provide more input to Jeff City Estimators as it relates to location specific elements of the estimate:
 - Local Market Conditions - Contractors, Suppliers and Materials Sources
 - Details not specifically shown on plans
 - Documentation and Communication of District's Estimate (2-Way Street)
 - Management must understand that the timing and nature of DBE Requirements Impact Final Pricing



Estimating Process

- Recommendations on the Department's Use of Estimate 2000 Software
 - Expand the use and capabilities of Est2000
 - Est2000 should allow for better Documentation of Modifications to Line Items made by Estimator
 - Estimating Judgment must be Integrated with Est2000
 - Est2000 should allow for Picking of Pricing Relative to Specific Project Location & Requirements



Estimating Process

- Program Scheduling Impacts a Quality Engineer's Estimate:
 - Time is compressed pushing the Engineer's Estimate to just 5 weeks prior to Letting
 - Monthly Bid Letting level needs to be adjusted to:
 - Better timing of Contract Award for economical project execution
 - Balance the volume of work Let each month
 - Balance the content of the work to improve competition



Estimating Process

- Good Estimating requires two-way exchange of information:
 - Designer to Estimator: Designer has most knowledge of Project and should provide insight on work items to Estimator
 - Estimator to Designer: Estimator is new to Project and assessing details that Designer may overlook or assume is "understood"
 - Designer and Estimator need to agree on means and methods of constructing the work, including any staging or sequencing



Bid Analysis Process



Bid Analysis Process

- Is MoDOT's process for Analyzing Bids for the Purpose of Accepting the Low Bid comparable to Industry Standards?:
 - No Published Industry Standard -- There are recommendations from FHWA and others
 - MoDOT generally follows the Analysis Process that is the Best Practice of other DOT's
 - The Panel's Consensus was that as long as the Analysis Process is well documented that the decision to award or reject a bid should be flexible



Bid Analysis Process

- Bid Analysis Recommendations:
 - Better communication to District and all bidding Contractors of Bid Rejection
 - Need a formal process of debriefing bidders when a bid is rejected
 - Department may want to consider soliciting apparent low bidder project specific information prior to awarding or rejecting a bid



Documentation



Documentation

- Issue

- Documentation is lacking and is not shared between MODOT Headquarters and District personnel



Documentation

■ Finding

- The district uses automated pricing in Estimate 2000 and may change prices without documentation to why or how the the price is adjusted. Or may use the supplied price without showing good documentation how the price is developed
- Documentation developed in the field or in headquarters is not being shared to the fullest extent between groups, especially project facts and assumptions
- General documentation could be made to be obtained more easily



Documentation

■ Recommendations

- District Documentation Requirements
 - Need an estimate folder containing:
 - Quantity calculations
 - Estimate 2000 PS&E Estimate
 - Support information
 - Original Program Estimate
 - Project facts and assumptions



Documentation

- Recommendations (cont.)
 - District Documentation Requirements
 - Estimate 2000 requirements:
 - Ad Hoc Item back-up
 - Quotes from suppliers
 - Project facts and assumptions



Documentation

- Recommendations (cont.)
 - District Documentation Requirements
 - Estimate 2000 requirements:
 - Needs better selection methods to allow user to pick prices that include bid tab data
 - Should be able to select by item and like items
 - Should be able to select by project
 - Should be able to select by district
 - Need back-up document that shows the selections a 'Unit Price Analysis' sheet (this data should show and pertinent project facts and assumptions)



Documentation

- Recommendations (cont.)
 - Headquarters Engineer's Estimate Group
 - Needs an Estimate Folder
 - A copy of the District Estimate Folder
 - Estimate 2000/Bid tab program information
 - Cost based data
 - Support information
 - Final Engineer's Estimate
 - Bid tabulations
 - Bid Analysis



Documentation

- Recommendations (cont.)
 - Headquarters Engineer's Estimate Group
 - Include all items in the District Estimate Folder



Documentation

- Recommendations (cont.)
 - Headquarters Engineer's Estimate Group
 - Estimate 2000/Bid Tabulation Data
 - Needs better selection methods to allow user to pick prices that include bid tab data
 - Should be able to select by item and like items
 - Should be able to select by project
 - Should be able to select by district
 - Needs a Unit Price Analysis back-up similar to District's that documents how prices are developed



Documentation

- Recommendations (cont.)
 - Headquarters Engineer's Estimate Group
 - Keep and expand Cost based data
 - Existing spreadsheet system – developing additional cost based spreadsheets as experience and time allows
 - Back-up data that is used in the spreadsheets



Documentation

- Recommendations (cont.)
 - General documentation
 - Unit Price Book
 - Cost based data
 - Engineer's Estimates back-up data



Documentation

- Recommendations (cont.)
 - Unit Price Book
 - Include bid tabulation data
 - Place data on the internet for MODOT (Adobe format)



Documentation

- Recommendations (cont.)
 - Cost based data
 - Current cost based data should be made available for District use
 - Support data shared with District



Documentation

- Recommendations (cont.)
 - Engineer's Estimates backup data
 - Data selectively provided to the District, only after award, specific problem areas found. (eg. Linear grading pay item being used out of normal context, when volume measurement would be more applicable)



Staffing

- ISSUE
 - Estimator staffing adequate to ensure quality and timeliness of the Engineer's Estimate.

- FINDING:
 - Current staffing and organization need to be improved to obtain the best Engineer's Estimate prior to the letting.



Staffing

- RECOMMENDATIONS:
 - Establish estimator positions at General Headquarters and districts (dual responsibility) in adequate numbers to complete quality estimates in a timely manner
 - Grades should be structured to provide upward mobility and stability of estimating expertise
 - Trainee and technician level positions should be established to gain the best productivity at the lowest possible cost



Staffing

- RECOMMENDATIONS (cont.)
 - Estimator position should include ½ FTE (full time equiv.), or more per district.
Workload include as a minimum, develop engineer's estimate, conduct field visits, bid analysis, research and update historical rates, respond to requests for assistance from Program Developers and field personnel and perform special studies
 - Estimator training will improve accuracy and productivity
 - Continuous training of District and General Headquarters junior staff will promote teamwork, productivity and accuracy



Staffing

- RECOMMENDATIONS (cont.)
 - Higher graded estimator should attend conferences, seminars and other events to improve skills take pride in the estimator importance and contribution to MODOT.
 - Familiarization of Designs with estimating techniques, needs and documents will lessen the chance of improper assumptions and errors during design.
 - Junior Staff Estimator should mentor district estimator and trainees.



Staffing

- RECOMMENDATIONS (cont.)
 - Manage Estimator workload by:
 - Leveling the project delivery schedule
 - Empower Project Managers to keep projects moving to award by insulating them from departmental/district control
 - PM's should be assigned a project for its entire life cycle.
 - Get PS&E to GHQ earlier