

Impact of Contract Type on Long-Term Maintenance

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Impact?

Does contract type affect long-term maintenance?

- **Regardless of type, the contract does have an impact on long-term maintenance**
- **Each contract type has strengths and weaknesses**
- **Must know the weaknesses and address in contract documents**



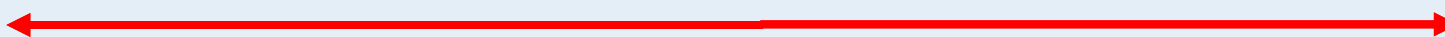
Contract Type

Fixed Price, Cost Plus, etc.

- Spectrum of contract (payment) types

Fixed Price

Cost Plus



- Contractors behave very differently
- Most transit projects are fixed price

Design-Bid-Build, Design-Build, or DBOM

- All have their strengths and weakness
- Can have good or bad maintainability will all



Procurement Approach

Best Value vs Low Bid

- Type of procurement could be factor
- Best value might be beneficial for maintainability

Pre-qualification

- Pre-qualification could be factor
- Consider pre-qualification if using low bid



Ways to Improve Maintainability

General Ways to Address Maintenance

- Understand weaknesses of contract type and procurement approach
- Determine what areas are most important
- Develop strategies that address each area that is most important
- Implement strategies



Ways to Improve Maintainability (Continued)

Specific Ways to Address Maintenance

- **Prescriptive Specifications**
- **Owner Furnished Material**
- **IDIQ Contract**
- **“Or Approved Equivalent” Language**
- **Systems Assurance Program**
- **System Performance Demonstration Test**
- **Change Order**



Ways to Improve Maintainability (Continued)

Prescriptive Specifications

- Provide detailed requirements of certain project components (the important ones)
- Examples on Foothill Extension
 - Train Control
 - Station Architectural Elements



Ways to Improve Maintainability (Continued)

Owner Furnished Material

- Buy what you want and provide it to contractor for installation
- Helps ensure certain products are used but is difficult to manage
- Examples on Foothill Extension
 - Traction Power Substations
 - Ticket vending equipment



Ways to Improve Maintainability (Continued)

Indefinite Delivery Indefinite Quantity (IDIQ) Contract

- To ensure commonality among lines being built at different times or by different contractors
- Owner can establish IDIQ contract and then require contractor to contract with IDIQ vendor
- Example on Foothill Extension
 - Communications system



Ways to Improve Maintainability (Continued)

“Or Approved Equivalent” Language

- Usually restricted from sole source specification
- Use “or approved equivalent” language to communicate what owner wants
- Examples on Foothill Extension
 - Wheel truing machine
 - Crossing panels
 - Crossing gates and track circuits
 - Sound walls and fencing



Ways to Improve Maintainability (Continued)

Systems Assurance Program

- **Require contractor to prepare a systems assurance program that includes the following maintenance considerations:**
 - **Accessibility**
 - **Modular design**
 - **Interchangeability**
 - **Limitations on special tools**
 - **Test point requirements**
 - **Panels and openings**



Ways to Improve Maintainability (Continued)

Systems Performance Demonstration Test

- **Required to achieve certain reliability standards after revenue operations begin**
- **Prerequisite of final acceptance and final payment**
- **Provides some incentive for the contractor to provide a well-functioning system**



Ways to Improve Maintainability (Continued)

Change Order

- When all else fails – and it's important – issue a change order to get what owner wants
- Examples on Foothill Extension
 - Car wash piping improvements
 - Local Control Panel (LCP) reduction
 - Emergency generator upsize



Conclusion

How to Improve Maintainability

- Understand weaknesses of contract type and procurement approach
- Determine what areas are most important
- Develop strategies that address each area that is most important
- Implement strategies

