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Challenges to Cost-Loading a Project Schedule

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Challenges to Cost-Loading a Project Schedule

WELCOME

Ladies and Gentlemen

Challenges to Cost-Loading a Project Schedule

The Question

Is it possible to adequately "cost-load" a project schedule to reflect the true costs of the project?

Challenges to Cost-Loading a Project Schedule

The Assumptions

- Applicable to all contract types
 - lump sum
 - unit price
 - GMP
- Important to all parties involved
- Includes all components of cost
 - resources
 - overhead
 - profit
- Incorporated into schedule

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The Discussion

- Contract requirements
- Parties involved
- Cost definitions
- Schedule development
- Approaches

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Pareto's Rule

(Vilfredo Pareto, Italian economist, 1848-1923)

“80 percent of the outcome of any project is determined by 20 percent of its included elements”

Challenges to Cost-Loading a Project Schedule

- Contract requirements

Challenges to Cost-Loading a Project Schedule

- Contract requirements
 - Purpose
 - To establish goals for project
 - To allow measurement of project progress
 - To allow forecasting of end result

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- Contract requirements
 - It is typical for a project contract to have a requirement that the project baseline schedule be cost-loaded.
 - The project schedule is usually the basis for progress payment applications.

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- Contract requirements
 - Sample 1 – Schedule (see note 1)
 - The Project Schedule shall be cost loaded. Precedence scheduling format shall be used in accordance with accepted practice and the scheduling references described in Section 5.2, insofar as they pertain to precedence format and cost-loading.

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- Contract requirements
 - Sample 2 - Payment (see note 2)
 - Payment shall be based on actual progress achieved against the cost loaded Project Schedule.
 - Each invoice shall (a) document the progress of the Work by activity number, (b) set forth the amount then due associated with such progress in accordance with the approved Project Schedule, ...

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- Parties involved

Challenges to Cost-Loading a Project Schedule

- Parties involved
 - Each party has the intent to fulfill the contract requirements
 - Each party may have a different concept as to what “cost-loaded” infers.

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■ Parties involved

- Owner
- Designer (not typically involved)
- Construction Manager
- General Contractor / Sub-Contractors

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■ Parties involved

□ Owner

- Wants to stay within budget

□ Construction Manager

- Wants to monitor costs

□ General Contractor / Sub-Contractors

- Wants control over how “costs” are entered

Challenges to Cost-Loading a Project Schedule

- Cost definitions

Challenges to Cost-Loading a Project Schedule

- Cost definitions
 - Project Budgeted Cost
 - Establishes the baseline project cost
 - Cost Breakdown Structure (CBS)
 - Provides the framework by which cost information is gathered and reported
 - Includes all elements in the budget that have been given a dollar amount

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- Cost definitions

- Sample 3 (see note 3)

- Level 8: Cost Code - The cost code of the Project will be defined by the Contractor. However, the cost code needs to follow the guidelines of WBS herein.

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- Schedule development

Challenges to Cost-Loading a Project Schedule

- Schedule development
 - Work Breakdown Structure (WBS)
 - Establishing activities for the Scope of Work
 - Activity development
 - Should all activities be cost-loaded?

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- Schedule development
 - Sample 4 (see note 4)
 - The WBS provides a hierarchical structure to segregate Project elements to facilitate the collection and analysis of Project Data and to serve as a mechanism for payment and scheduling for Project design, procurement and construction.

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- Schedule development
 - Sample 4 continued
 - The WBS for the Double Track Corridor Improvement Program consists of eight levels of detail, which are: 1) Full Funded Grant Agreement (FFGA), 2) TRI-RAIL Phases, 3) Category, 4) Location, 5) Subcategory, 6) Work Element, 7) Work Detail, and 8) Cost Code.

Challenges to Cost-Loading a Project Schedule

- Approaches

Challenges to Cost-Loading a Project Schedule

- Approaches

- Purpose

- To provide framework by which information is gathered and stored on a project

Challenges to Cost-Loading a Project Schedule

■ Approaches

□ Accounting structures

■ Schedule of Values

In conjunction with Bid Estimate

■ Assembly loading

To analyze cost and efficiency of different operations (assembly)

■ Resource loading

To manage labor, material, equipment and o&p

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The Conclusion

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The Conclusion

- Schedules can be adequately cost-loaded.
- Contract should stipulate cost-loading structure.
- Multiple coding and accounting structures should be used.

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Pareto's Rule

Applied to Construction

A project control system needs to identify the major cost elements of the project early and develop a system of controls to monitor and manage these elements.

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Questions ?

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Notes

1. Taken from Book II: Contractual Terms and Conditions, Section 5 – Project Schedule Requirements, Subsection 5.5 of Agreement No. 01-839 between Tri-County Commuter Rail Authority and The Washington Group International for TRI-RAIL Double Track Improvement Program New River Bridge Project.
2. Taken from Book II: Contractual Terms and Conditions, Section 10 – Payment, Subsection 10.4 of Agreement No. 01-839 between Tri-County Commuter Rail Authority and The Washington Group International for TRI-RAIL Double Track Improvement Program New River Bridge Project.

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Notes

3. Taken from Book III: Project Provisions, Section 8 – Work Breakdown Structure, Subsection 8.3 of Agreement No. 01-839 between Tri-County Commuter Rail Authority and The Washington Group International for TRI-RAIL Double Track Improvement Program New River Bridge Project.
4. Taken from Book III: Project Provisions, Section 8 – Work Breakdown Structure, Subsections 8.1 and 8.2 of Agreement No. 01-839 between Tri-County Commuter Rail Authority and The Washington Group International for TRI-RAIL Double Track Improvement Program New River Bridge Project.

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References

- ❑ Managing the Construction Process
by F.E. Gould, PE, AIC
- ❑ Construction Project Planning and Scheduling
by C. Patrick, PE, CSIT
- ❑ Construction Planning and Scheduling
by J.W. Hinze, PhD
- ❑ TRI-RAIL Double Track Improvement Program
New River Bridge Project
Agreement No. 01-839

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