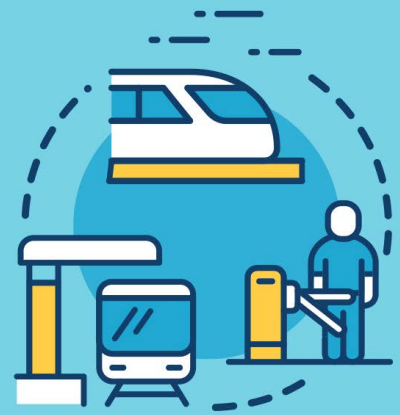




Project Controls Strategies for Today's Complex Passenger Rail Projects

By Niyi Ladipo, CCM, CCP, EVP

I recently had the opportunity to participate in and moderate a panel at the AACE International (AACE) Conference & Expo titled "From High Speed to Light Rail: Project Controls Considerations Across the Spectrum of Transit Projects." Held in Las Vegas, Nevada, the conference brought together project controls professionals from across the industry to discuss the challenges and opportunities shaping major capital projects. During our session, we explored the factors that most influence cost and schedule outcomes on passenger rail projects, as well as the role of project controls in managing project complexity and improving outcomes.

While every project is different, several common themes emerged throughout our session that I believe every passenger rail project sponsor should consider. These takeaways, along with conversations with industry colleagues throughout the conference, reinforced several themes that continue to shape successful project delivery:

TAKEAWAY #1: STRONG GOVERNANCE CREATES THE FOUNDATION FOR PROJECT SUCCESS

Project teams often face challenges with delivery methods, such as progressive design-build, when designs lack the maturity to support anticipated progress, leaving the project team to appear to be "playing catch-up." Sometimes, this situation results in the relaxation of predefined checkpoints so they appear to be met, allowing the next phase to proceed. In some cases, a lack of effective collaboration and/or communication within the project team leads to resistance to implementing critical project control techniques.

Transit projects, while already complex, often involve many stakeholders and funding sources, are executed over many years, and therefore, across multiple political administrations, and are also subject to changing regulatory requirements. For large capital projects, the Project Sponsor, as [defined by the Federal Railroad Administration \(FRA\)](#), is the entity responsible for implementing a capital project, and often pulls together a new, dedicated team that needs time and intentional effort to get accustomed to one another and establish a robust governance structure that runs smoothly.

Transit projects, which are publicly funded, must go through the process for selecting and administering a Locally Preferred Alternative (LPA). This can often be an exceptionally long and arduous task for several reasons. The selection process involves multiple stakeholders, agencies, relevant communities, and parties with opposing political opinions, all competing for their own priorities and perspectives. This combination of attributes makes it particularly challenging to implement and track project controls and performance metrics effectively on transit projects.

TAKEAWAY #2: THE BIGGEST RISKS OFTEN LIE BEYOND THE CONSTRUCTION SITE

Transit projects are highly complex and have many potential risks. Some risks arise due to Right-of-Way (ROW) and utility requirements. These can be significant risks associated with the need to acquire ROW or cross ROW belonging to other owners, and to cross, relocate, or add utilities. The multitude of jurisdictions typically involved can further compound the risks, each one with its own rules and regulations.

During the design and construction phases, regulations, environmental policies, and technologies can change, requiring projects to adapt. Other risks may arise from working with many stakeholders with differing priorities. These projects typically tie in with, cross, or run close to other active projects, such as existing and active transit, freight railroads, highways, bridges, waterways, and other infrastructure, which can lead to a multitude of risks.

If any of these risks occur on a transit project, they are likely to result in major cost and schedule impacts; therefore, the Project Sponsor must work closely with all stakeholders and the project team to carefully consider and assign each risk to the party best positioned to manage it. The Federal Transit Administration (FTA) has a well-established risk management process documented in its [Oversight Procedure-40 – Risk and Contingency Review](#).

TAKEAWAY #3: FUNDING SUCCESS STARTS WITH REALISTIC PLANNING

Funding transit capital projects, whether from federal, state, municipal, or private sources, presents its own challenges. Following the selection of an LPA, there are specific requirements that each Project Sponsor, also known as the Grantee of the capital project, must meet to secure different types of grants, as well as many steps that it must follow.

For each capital project, the Project Sponsor typically works with multiple funding organizations, each with its own steps, compliance requirements, regulations, and oversight requirements. Furthermore, as an added complexity, because these capital projects take many years from planning through construction and delivery, the funds granted often have limitations on the period during which they can be spent before expiring. For example, to secure an [FTA Capital Investment Grant \(CIG\)](#), a capital project must follow multiple critical steps throughout its development cycle to secure and maintain funding, and these steps are shaped by the [category to which the project belongs](#). The capital project must also go through a rigorous, competitive, multi-step evaluation process, including a statutory evaluation, to obtain and remain eligible for a grant.

After an LPA has been identified, the project enters the engineering phase, which includes, but is not limited to, preliminary engineering design, budget, and schedule development. As the project advances through these stages, the project's cost estimators, schedulers, and risk manager work closely with the rest of the project team to develop comprehensive risk-based cost estimates and schedules with robust contingencies. For example, for FRA funding, during the project's life cycle, Project Sponsors must meet requirements for [project readiness and maturity, cost-benefit analysis, a sound financial commitment, community and safety impacts](#), and more.

Several obstacles are encountered when developing capital cost estimates and risk-based contingencies. These include underestimating the cost and schedule complexities of getting utility owners to identify, plan, design, and implement utility relocation and new locations. These processes have often led to redesigning the project's components to meet the utility owner's needs and wants. Another obstacle involves changes to requirements by the authority having jurisdiction (AHJ), resulting in major cost and schedule impacts. Obstacles have also been encountered due to changes in environmental policy criteria and in the federal administration.

A further obstacle sometimes encountered is concern within the Project Sponsor's team that the cost and schedule contingencies and the overall capital costs developed are too high and may prevent approval of the required grants needed to move the project forward. These obstacles are best addressed early, and with the involvement of all stakeholders and decision-makers.

TAKEAWAY #4: PROJECT CONTROLS MUST ADAPT AS PROJECTS EVOLVE

We discussed how project controls can help teams respond when changing conditions threaten cost, schedule, or overall project performance. I provided an example of a significant change in environmental regulations that led to a major scope change on a capital project. This change occurred during the final design phase, when the design-build contractor was well into the design. It resulted in significant delays in decision-making and in the progression of design and construction, with many other cost and schedule impacts along the way. The decision-making process involved many parties, including the Project Sponsor, stakeholders, and AHJs, resulting in a domino effect on design and construction activities and major impacts on cost and schedule.

The availability of labor, the escalation of costs of labor and materials, and supply chain issues are common risks and occurrences on projects. Good contracts are written to accommodate changes in the market economy that affect the project by including clauses that address price adjustments for specific materials. However, a recent event like the COVID-19 pandemic was a unique occurrence that led to unexpected risks and impacts not anticipated or included in the project contingency.

SUMMARY OF RECOMMENDATIONS

Below is a summary of key recommendations and lessons learned that our panel proposed Project Sponsors should embrace to improve the performance of project controls techniques and produce better project outcomes:

- Implement earlier planning and more comprehensive analysis, including all stakeholders.
- Start collaborating with the stakeholders, AHJs, environmental agencies, and permitting consultants early in the planning phase.
- Risk management should support the evaluation of LPAs and work closely with the project team to determine and incorporate likely cost and schedule impacts in contingencies into each phase, including environmental analysis.
- Develop capital cost estimates with a comprehensive and robust basis of estimate at each stage of design, covering the project's life cycle. Refer to AACE [Recommended Practice 34R-05: Basis of Estimate, dated October 5, 2021](#).
- Create and maintain comprehensive and realistic schedules that consider actual data from completed projects.
- Expand risk-based cost and schedule analysis and management to all stakeholders.
- Implement and utilize robust methods to document, track, forecast, and evaluate the project's performance, and develop lessons learned information for use on future projects.

The conversations at AACE highlighted that effective project controls extend well beyond cost and schedule tracking. They require collaboration, informed decision-making, proactive risk management, and the flexibility to respond as projects evolve. I appreciate the opportunity to participate in and moderate this discussion, and hope these takeaways encourage continued conversations about how we can collectively improve outcomes on complex passenger rail projects.

Finally, I would like to thank my fellow panelists, H. Lance Stephenson, CCP, FAACE Hon. Life, of AECOM; Vishwa Kumbharathi, CEP, PSP, of Amtrak; and MBP's Justin Jacobsen, CCM, PMP, PMI-RMP, PRMP, PSP, CM-Lean, for sharing their expertise and perspectives. It was a privilege to moderate such a knowledgeable panel, and I appreciate the thoughtful discussion and insights each of them brought to the conversation.

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