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We're driving projects to success.

TRIPLE CONSTRAINTS
Fact Sheet

Creating new infrastructure to deliver the movement LA needs, now and in the future, is challenging. As Metro manages our projects, we must trade between three constraints: budget, scope and schedule. Change one, and the other two change as well. These interrelated factors need to be considered together through the project development process.

Project Development Process

Planning: Define what the project will be by identifying funding options and requirements, including the neighborhoods served, anticipated impacts and benefits, mode of travel and station locations.

Environmental Review: A formal, regulated process where Metro meets specific criteria outlined by the state and federal government to clear the project for construction.

Engineering: Determine the overall budget, how the project is to be built and what additional resources, like required improvements to adjacent utilities, are needed for construction and operation of the project.

Design: Define the look, shape and feel of the project to ensure that all that was planned for the project, including providing services to the neighborhoods, is delivered with minimized negative impacts and maximized benefits.

Construction: Activities may include utility relocation, development of the alignment and installation of communication systems.

Operations: Implementation of the planned project.

Maintenance: Ensuring Metro capital facilities maintain a state of good repair.

Interrelated Factors

The triple constraints of a project are scope, schedule and budget.

> **Scope:** The tasks required to meet the project goals. These are formed in early planning and engineering, and continue through design and construction.

> **Schedule:** The time for a project to reach completion. The schedule is defined in environmental review and design and can continue to change throughout construction.

> **Budget:** The financial constraints of a project. The budget is determined in environmental review, engineering and design.

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The triple constraints are interrelated and the quality of the outcome is impacted when one variable is impacted. A project must address the triple constraints due to unforeseen variables that arise during construction. For example, if additional items are added to the scope, it is likely the budget will increase, and the schedule lengthened. When budgets are reduced, the project's scope and schedule are impacted. Or a project may dedicate more budgetary resources to advancing the project, in an attempt to shorten a project construction schedule.

Interrelated Factors

Project Delivery Methods and Risk Allocation

Metro chooses a project delivery method based on the risk allocation between the owner and the contract. Once we understand the risks, the delivery method is chosen depending on how Metro thinks the risks should be best allocated. A project's constraints with scope, schedule and budget depend on how risk is allocated in the project delivery process.

For example, Design-Build projects provide the contractor with more risk. With Design-Bid-Build projects, the owner, Metro, takes on the risk.

Metro's current project delivery methods:

> Crenshaw/LAX Transit Project:
Design-Build

> Regional Connector Transit Project:
Design-Build

> Purple (D Line) Extension Transit Project – Sections, 1, 2, 3:
Design-Build

Other examples:

> OCTA 91 Express Lanes:
Design-Build-Finance-Operate-Maintain (DBFOM) franchise

> City of Santa Monica City Net:
Design-Build-Operate

CONTACT US

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