Presentation to TJPA Board
Caltrain Downtown Extension Project Update

February 15, 2007

Transbay Transit Center

TJPA

Transbay Transit Center

Caltrain Downtown Extension Project (DTX)

Agenda:

1. DTX Project Background
2. LPA Configuration Progress
3. Loop Track VM Study Progress
4. LPA VM Study Progress
5. PE Phase 1 Completion Strategy
6. Near Term VM Study Plan

Transbay Transit Center

DTX Project Background

- Alignment
- Construction Methods
- Status
- Ongoing Studies
- Objectives

Transbay Transit Center

DTX Project Background Alignment

Transbay Transit Center

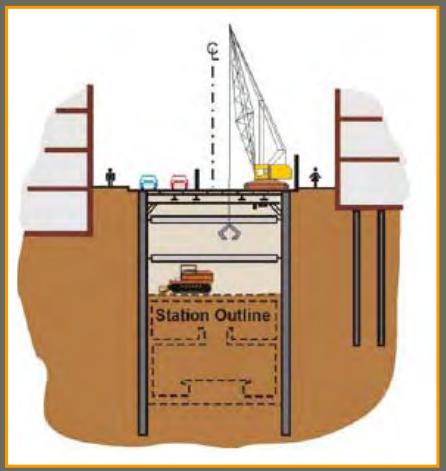
DTX Project Background Construction Methods

- Project Components
  - Surface yard & track
  - Utility relocation
  - Mined tunnel
  - Cut & cover tunnel
  - Track & rail systems
  - Tunnel operating systems
  - Finishes

Transbay Transit Center

DTX Project Background Construction Methods

- Cut and Cover Tunnels
  - DSM support of excavation walls
  - Traffic decking
  - Braced excavation
  - Cast-in-Place concrete tunnel box
  - Waterproofing
  - Backfill
  - Surface reinstatement



Transbay Transit Center

DTX Project Background Construction Methods

- Mined Tunnel Advance Works
  - Shaft construction
  - Ground Improvement (jet grouting)
  - Building protection

Transbay Transit Center

DTX Project Background Construction Methods

- Mined Tunnel
  - Ground pre-support
  - Sequential excavation
  - Initial lining

    Sprayed concrete lining (SCL)
  - Waterproofing membrane
  - Final lining

    Cast-in-Place concrete

Transbay Transit Center

DTX Project Background Status

- LPA Preliminary Eng. Phase 1

  February 2005
- Developed LPA estimate

  January 2006
- VM Studies

  February/March 2006

Transbay Transit Center

DTX Project Background Status

- 40+ recommendations for cost reduction
- Loop Track proposal most significant outcome

Transbay Transit Center

DTX Project Background Ongoing Studies

- Continued Development
  LPA Configuration
- Study of Value Management
  VM Recommendations for LPA
- Study of Value Management
  VM Loop Track Configuration

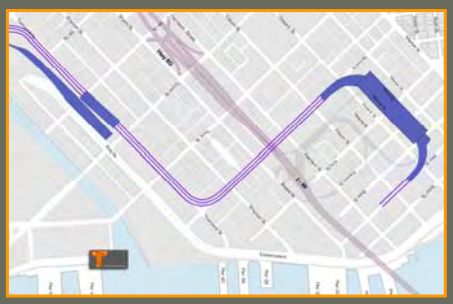
Transbay Transit Center

DTX Project Background Objectives

- Provide an operationally functional DTX
- Minimize initial capital outlay
  - Innovative construction methodologies
  - Phased construction opportunities
- Retain options for system capacity expansion
- Mitigate loss of system capacity during:
  - Operational scenarios
  - System component expansion (Phased Construction)

Transbay Transit Center

LPA Configuration Progress

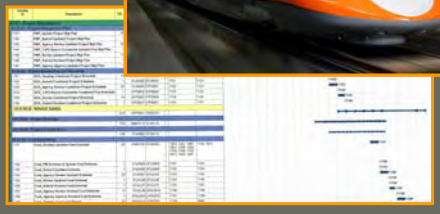


- Updated Schedule for delivery of PE Phase 1
- Draft Sewer Relocation Concept Report

Transbay Transit Center

LPA Configuration Progress

Updated PE Phase 1 Schedule



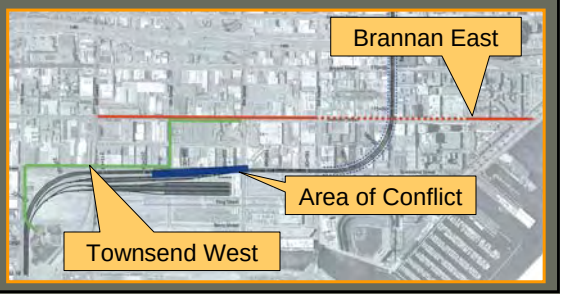
- Road map for PE Phase 1 completion
- Demonstrates logic for integration of:
  - *LPA Studies*
  - *LPA VM Studies*
  - *Loop Track VM Study*
- Completion in December 2007

LPA Configuration Progress

Transbay Transit Center

Draft Storm Sewer Relocation Concept Report

- Lateral conflict with DTX on Townsend Street at 4th, 5th and 6th Streets
- Comparison of 2 relocation concepts:
  - Brannan East
  - Townsend West
- SFPUC
  - Review & comment



LPA Configuration Progress

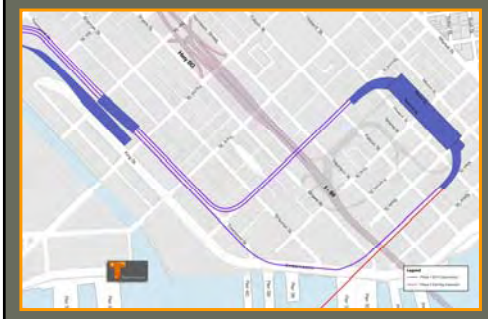
Transbay Transit Center

The following Deliverables were progressed

- Updated Project Management Plan
- Cut and Cover Structure Evaluations
- Draft Track Structure Report
- Draft Historic Building Preservation Study Report

Transbay Transit Center

Loop Track VM Study Progress



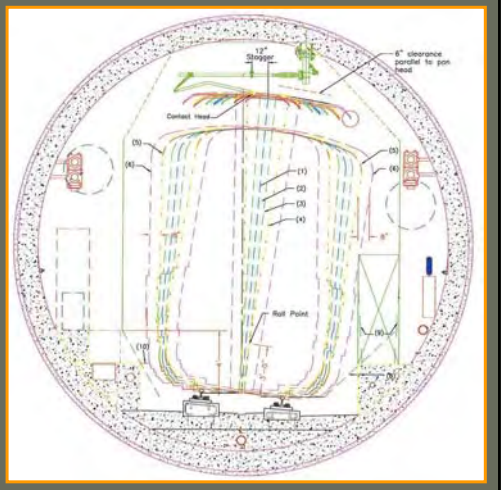
- Typical Tunnel Section
- Alignment Plan & Profile Drawings
  - *Connectivity with future East Bay Extension*
- Rail Operations
- Rough Order of Magnitude (ROM) Cost Estimate

Transbay Transit Center

Loop Track VM Study Progress

Typical Tunnel Section

- 25-ft Internal Diameter
- Larger than VM Team suggestion
- Driven by:
  - Vehicle height
  - Electrification
  - Track structure
  - Safety Requirements

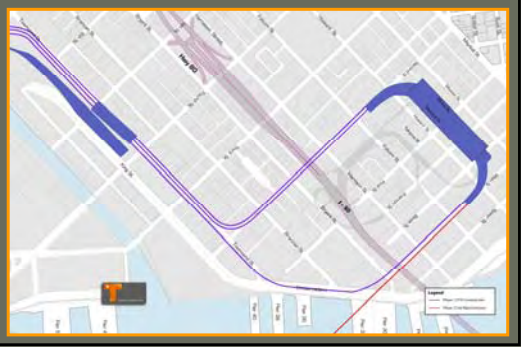


Transbay Transit Center

Loop Track VM Study Progress

Alignment Plan & Profile

- Loop Alternatives:
  - *Within Street Right-of-Way*
  - *Within Caltrain/HSR criteria for grades & curvature*
  - *Accommodate a future East Bay Extension*
- Presented findings to MTC Regional Rail Committee



Transbay Transit Center

Loop Track VM Study Progress

Rail Operations: 3 Alternatives Under Study

Alternative No. 1 *(1 Track Loop)*

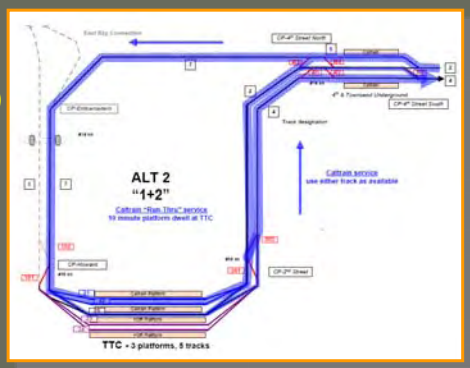
Single track loop w/ 4 track TTC

Alternative No. 2 *(1+2 Track Loop)*

Single loop track, two tracks on Second Street, w/ 5 track TTC

Alternative No. 3 *(2+2 Track Loop)*

Double track loop w/ 5 track TTC



Loop Track VM Study Progress

Rail Operations

- Initial simulations complete
- Preliminary Conclusions:
  - *Alternative 1: performance appears to be below that of the stub end LPA, offers limited capacity for expansion, and high risk of delay*
  - *Alternative 2 & 3 performance is superior to LPA*
  - *Alternative 2 & 3 6 track TTC will further improve operational capacity w/ minimal cost impact*
- Further Rail Ops simulations ongoing

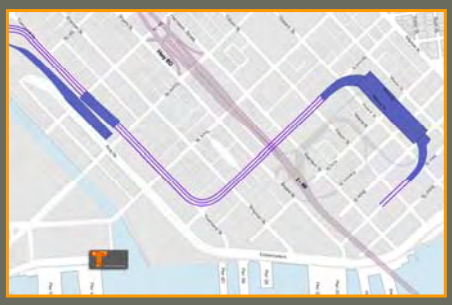
Loop Track VM Study Progress

Rough Order of Magnitude Cost Estimate

- Developed for comparison with 3-track LPA
- Draft ROM for 3 Loop Alternatives under review
- Recommendation to TJPA Board based on outcome of:
  - *Developed ROM Cost Estimate*
  - *Rail Operations*
  - *Ability to Phase Construction & Funding Requirements*

Transbay Transit Center

LPA VM Study Progress



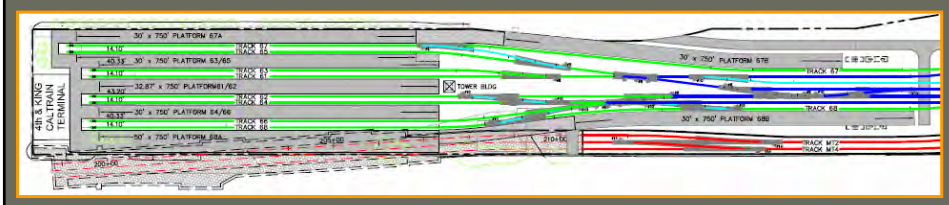
- Caltrain Storage
- Clearances
- Cut and Cover Structures
- Mined Tunnel
- Design & Contracting

Transbay Transit Center

LPA VM Study Progress

Caltrain Storage

- LPA / EIR included underground storage box
- Structure construction cost approx. $130 million
- TJPA-Caltrain coordinated to provide storage at-grade
- Significant cost saving in excess of $100 million



Transbay Transit Center

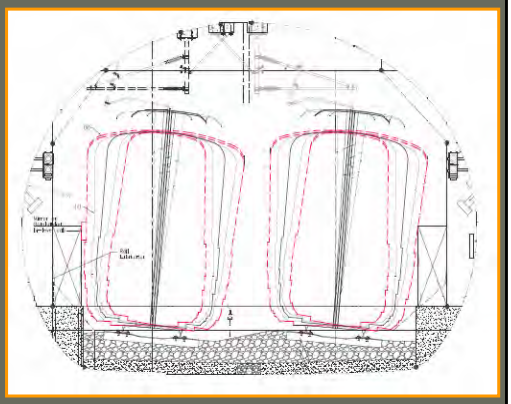
LPA VM Study Progress

Tunnel Clearances

- Team to minimize clearance envelope
- CPUC General Order 26-D

  Design as PDL Railroad

  "Not Transporting Freight Cars"
- Schedule CPUC Meeting

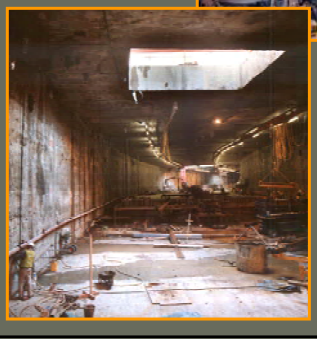


Transbay Transit Center

LPA VM Study Progress

Cut and Cover Structures

- Minimize tail track structure
- Integral support of excavation
- Use of top-down construction
- Tie backs vs internal bracing
- Waterproofing membrane



Transbay Transit Center

LPA VM Study Progress

Mined Tunnel

- Evaluate drift sequence
- Utilize additional headings
- Necessity for waterproofing

Transbay Transit Center

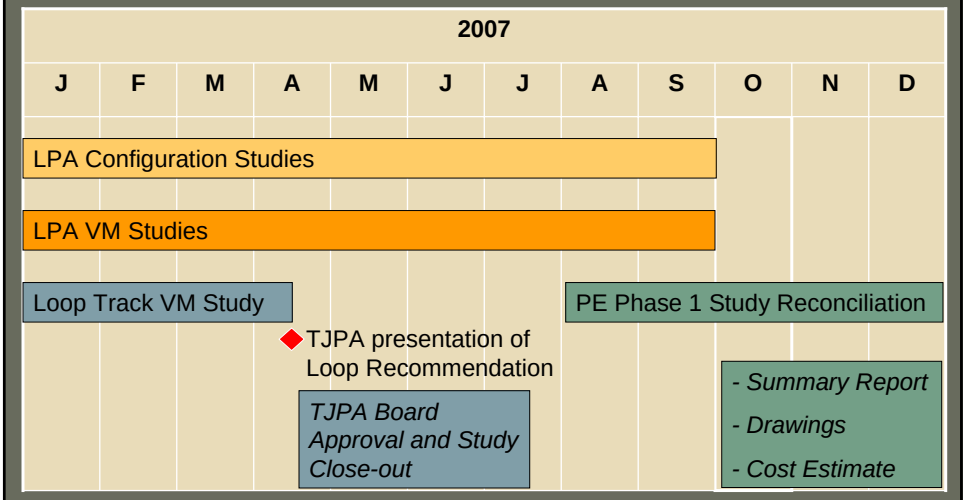
LPA VM Study Progress

Design and Contracting

- Review HAZMAT assumptions
- Review communications systems estimate
- Review use of design/build delivery
- Optimize number of contract packages

PE Phase 1 Completion Strategy

Transbay Transit Center



Near Term LPA & VM Study Plan

Transbay Transit Center

Next Steps

- Loop Study VM
  - Finalize Rail Operations
  - Develop Loop Phasing Concepts
  - Develop ROM Cost Comparison for Phasing Alternatives w/ SFCTA
- LPA VM Studies
  - Meet with CPUC
  - Coordination/resolution of items with Caltrain

Transbay Transit Center

Questions?