



Presentation to TJPA CAC Caltrain Downtown Extension Project Update

September 8, 2009

Transbay Transit Center

TJPA





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Caltrain Downtown Extension Project

Agenda:

- Project Status
- Project Development
 - Operator Coordination
 - CAC Comments
- Questions





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Project Status

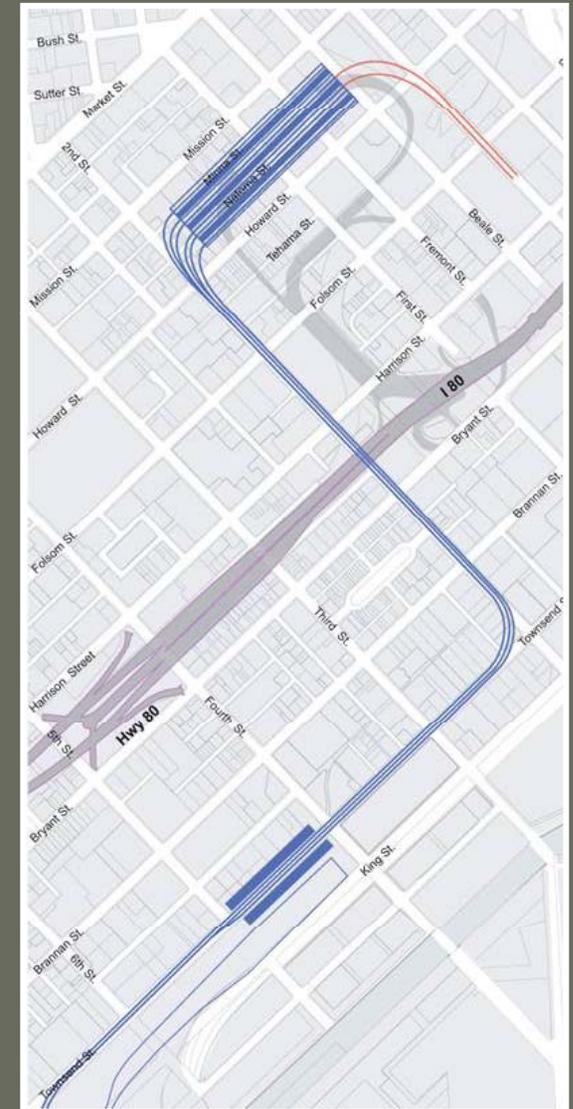
- Term 2 of Preliminary Engineering
- 30% Engineering Design:
 - Configuration defined
 - Structure sizes known
 - Systems requirements identified
 - Cost estimate updated
- Notice to proceed July 1, 2008
- Scheduled Completion June 30, 2010



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Project Status

- 2-track lead to DTX tunnel system
- Fourth/Townsend Underground Station
- 3 Track Tunnel on Townsend & 2nd Streets
- TTC with 3 Platforms and 6 Tracks
- At-grade Rail Car Storage within Caltrain yard
- Tail Tracks deferred until operationally required





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Project Status

- Program configuration defined in FEIS/FEIR
- The Federal Record of Decision (ROD) provides environmental clearances for the project contained in the FEIS/FEIR
- TJPA leeway to revise the project is limited
- Addenda/refinements must “not trigger the need for subsequent environmental review pursuant to Public Resources Code section 21166 and Section 15162 of CEQA Guidelines”
- Significant changes – DTX alignment, train box location will jeopardize the ROD, and reopen the environmental process



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Project Development

- Project Configuration
 - Platforms
 - Tail tracks
- Alignment
 - Curvature
 - HSR vehicle selection
 - Approach speeds
 - Capacity
- Tunneling Methods

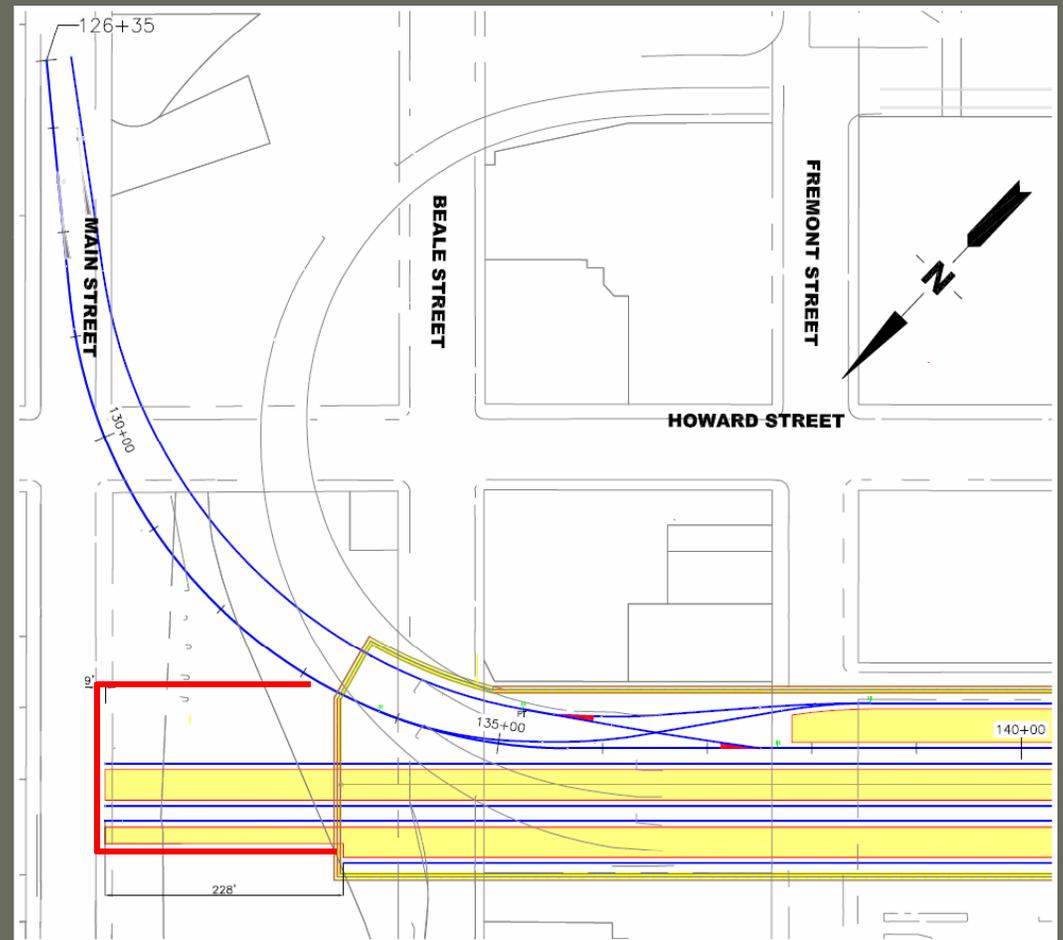




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Project Configuration

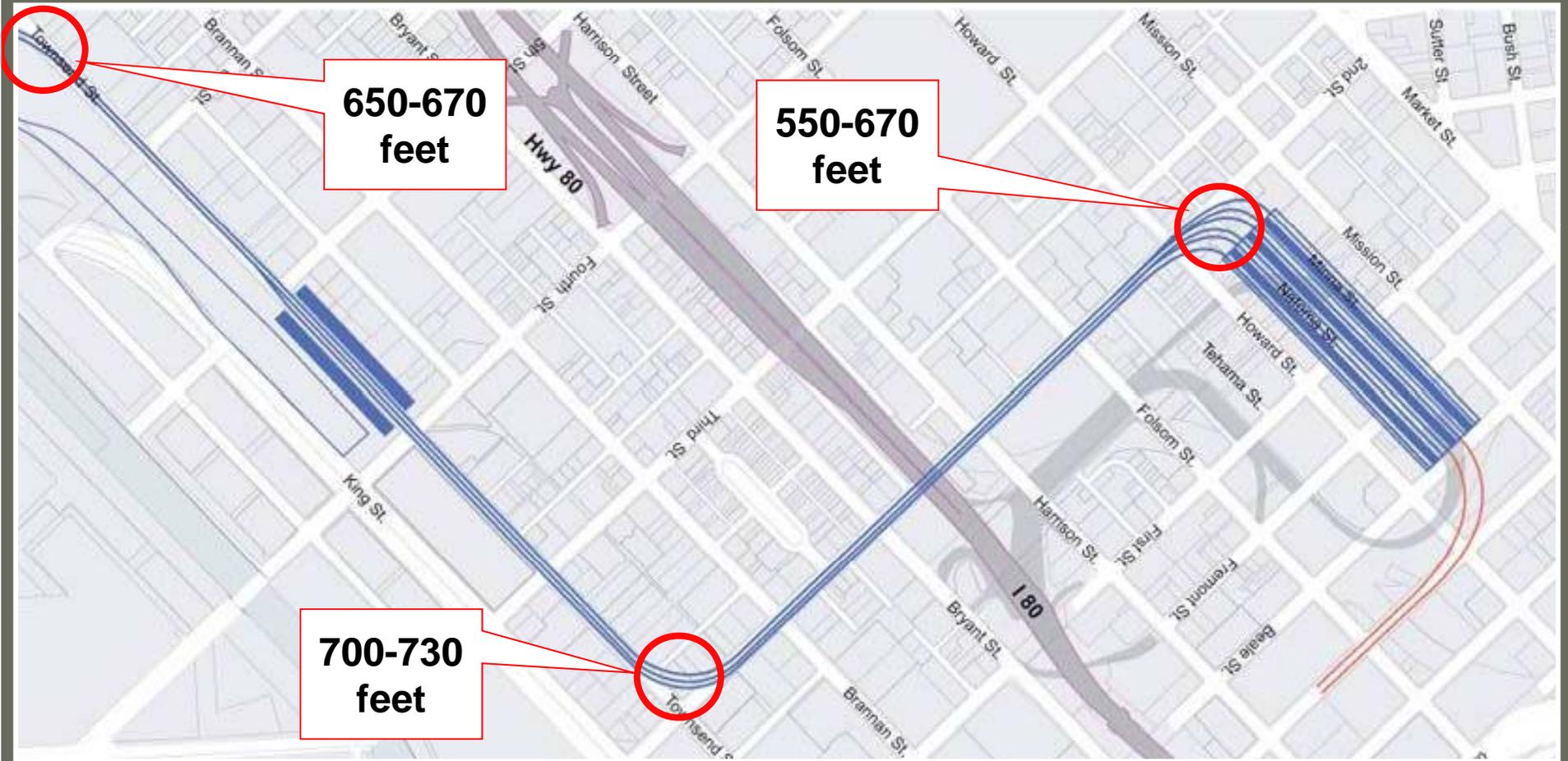
- Train box extended to Main Street to provide CAHSR tangent platform length
- Arrival of CHSRA – tail tracks required for Caltrain
- Provides Caltrain operational flexibility/redundancy





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Alignment

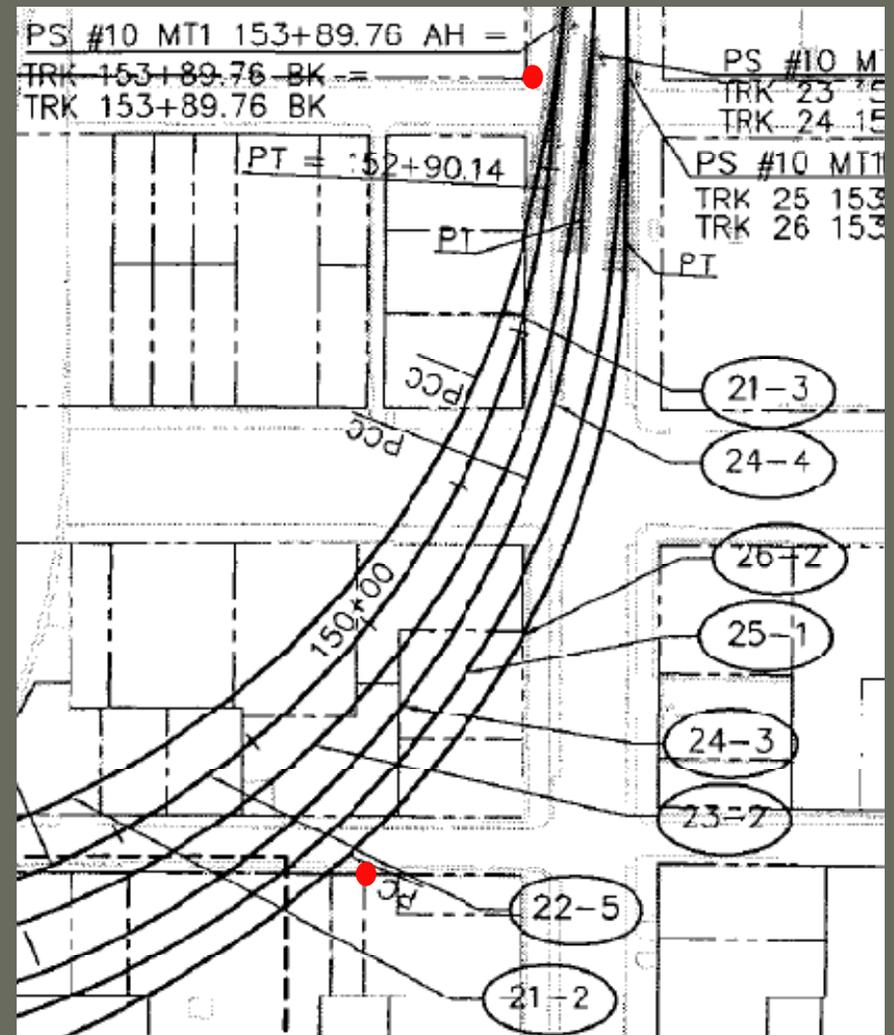




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Alignment

- Can it be Improved?
- Constraints
 - Pinch points
 - Right of way
 - Tangent platform
 - East Bay extension
- Only minor adjustments to trackwork can be made

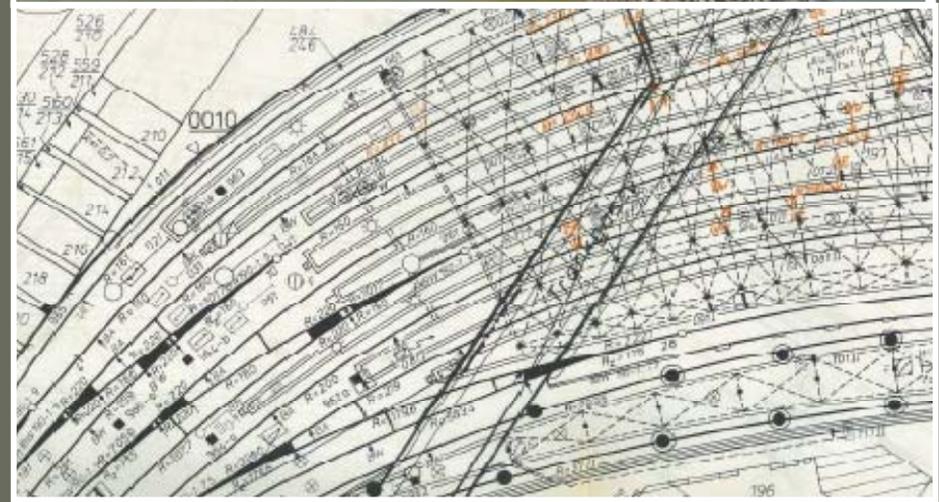




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Alignment

- Cologne Central Station
 - City center location
 - Physical constraints
 - Used by ICE & TGV Thalys
 - 525 ft approach radius





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Alignment

Agency/System	Reference	Minimum Horizontal Radius Design Criteria
<i>California High-Speed Rail</i>	<i>HSR Operating Criteria</i>	<i>152.4 m (500 ft)</i>
European Railways Agency	Technical Specifications for Interoperability TSI L245	150 m (492 ft)
French Railways (TGV)	www.Trainweb.org	125 m (410 ft) Terminal Approach
German Railways	Standard DS 800.0110	150 m (492 ft) Revenue Service
Taiwan High Speed Rail	DB Int'l Report on DTX	200 m (656 ft)
JIR : Shinkansen	TJPA Mtg.. 27 Feb, 2006	Trainsets Suitable for CHSR Criteria 152.4 m (500 ft)



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Alignment

- Approach Speeds:
 - Comparable with European Terminals
 - Average 20-30 mph on DTX alignment
 - Negligible impact on HSR travel time





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Alignment

- Capacity:
 - Not constrained by curved throat
 - Constraint is platform dwell time
 - CAHSR 30-40 min
 - Caltrain 18 min

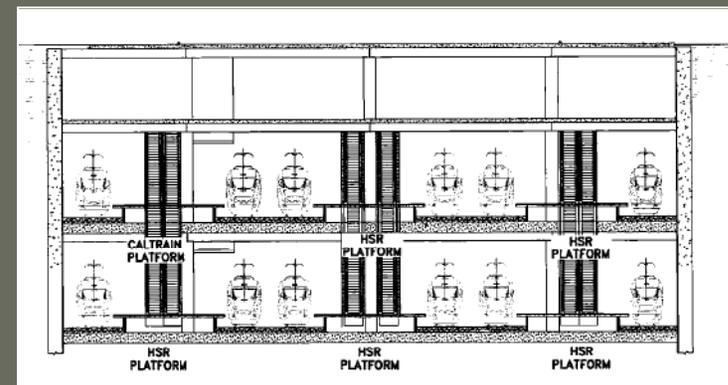
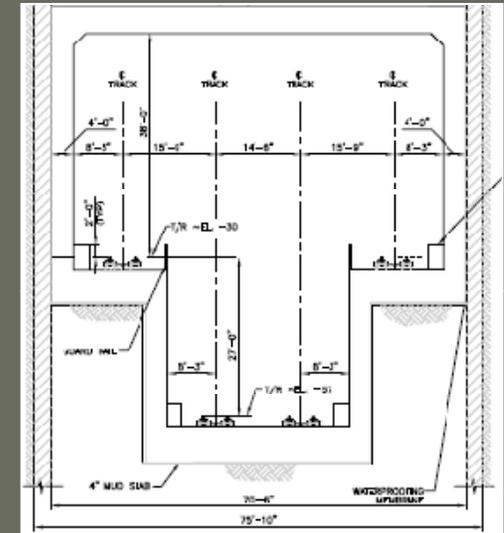




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Alignment

- Coordination with CHSRA:
 - Investigated doubling TTC capacity to meet projected level of service
 - Agreed to maintain TTC and take overspill to 4th and King
 - Actual level of service to be determined

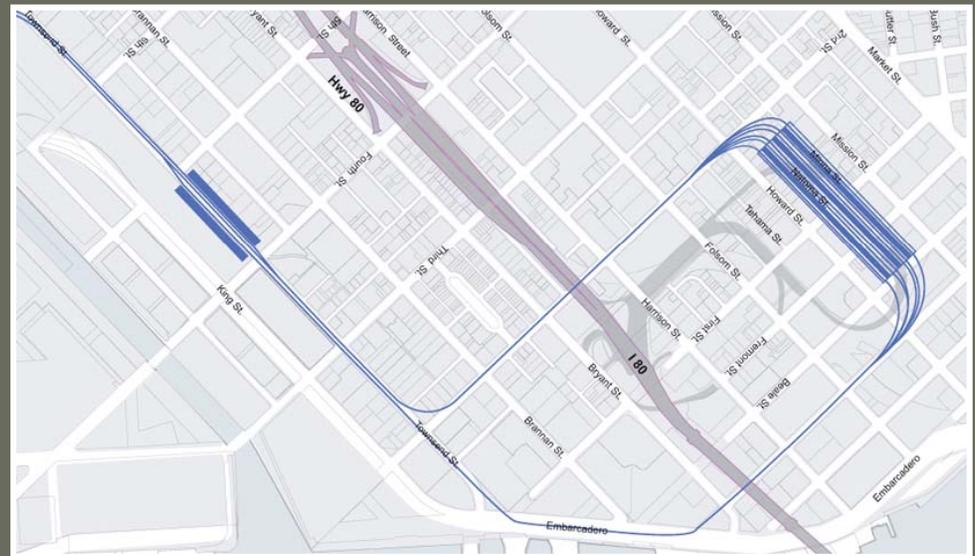




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Alignment

- Loop:
 - Caltrain dwell time reduces to 10 minutes
 - Increases Caltrain capacity
 - No reduction in CHSRA dwell time
 - No increased CHSRA capacity





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Tunneling Methods

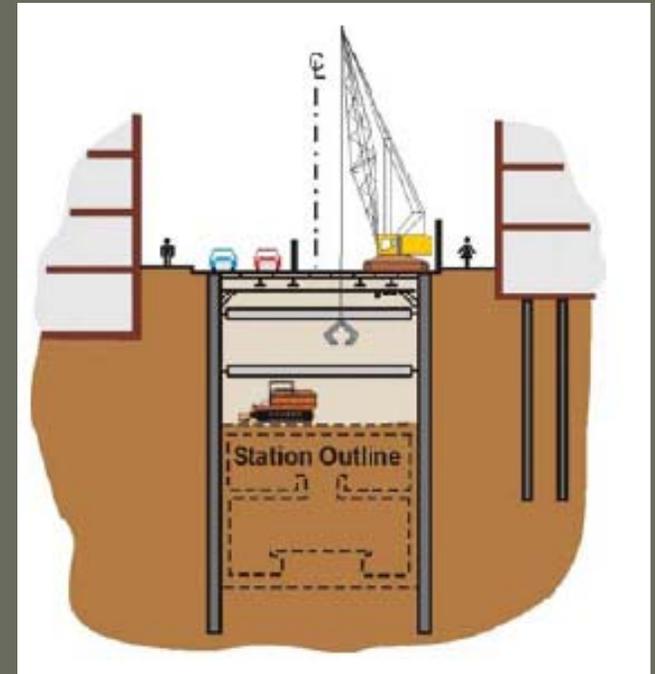




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Tunneling Methods

- Cut and Cover Structures
 - Install support of excavation walls
 - Street decking
 - Sequentially excavate and install internal bracing
 - Cast permanent structure
 - Backfill
 - Street restoration





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Tunneling Methods





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Tunneling Methods





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Tunneling Methods





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Tunneling Methods





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Tunneling Methods





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Tunneling Methods

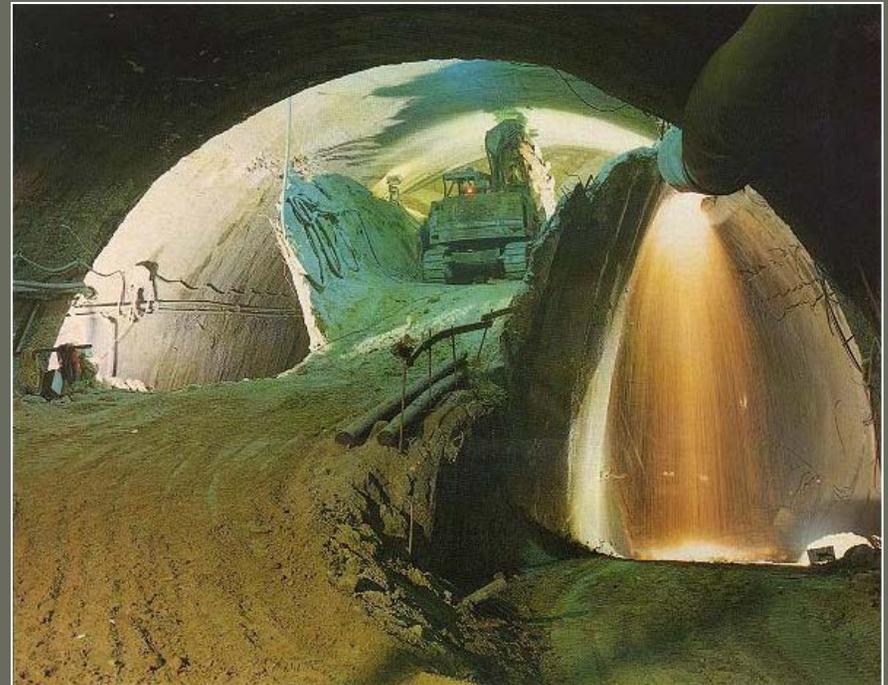




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Tunneling Methods

- Mined Tunnel
- Construction methods:
 - Tunnel Boring Machine
 - Stacked Drift
 - Sequential Excavation Method
- Evaluation Criteria:
 - Cost
 - Schedule
 - Risk





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Tunneling Methods





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Tunneling Methods

- Tunnel Boring Machine
 - Three track alignment exceeds available right of way
 - Can't accommodate track crossovers
 - Short drive length – high unit costs
 - Learning curve under buildings



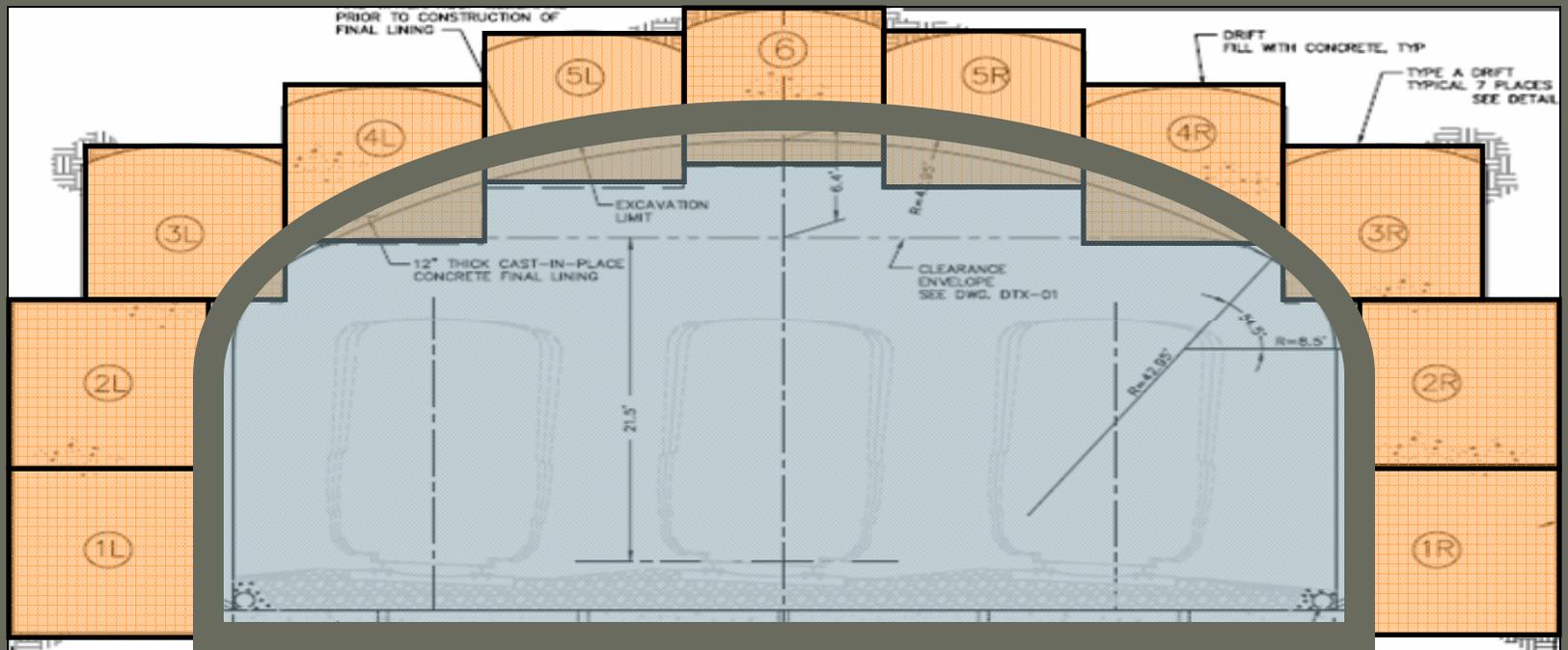


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Tunneling Methods

Stacked Drift Concept

41' (12.5 m) High



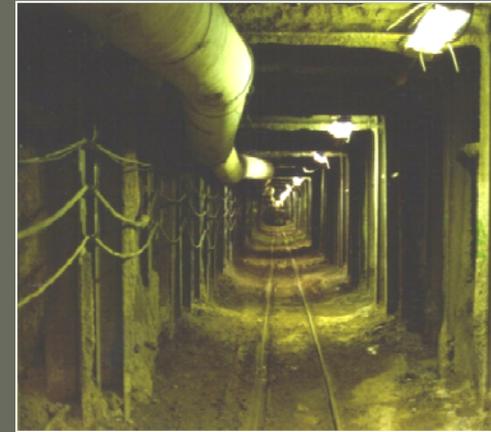
77' (23.5 m) Wide



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Tunneling Methods

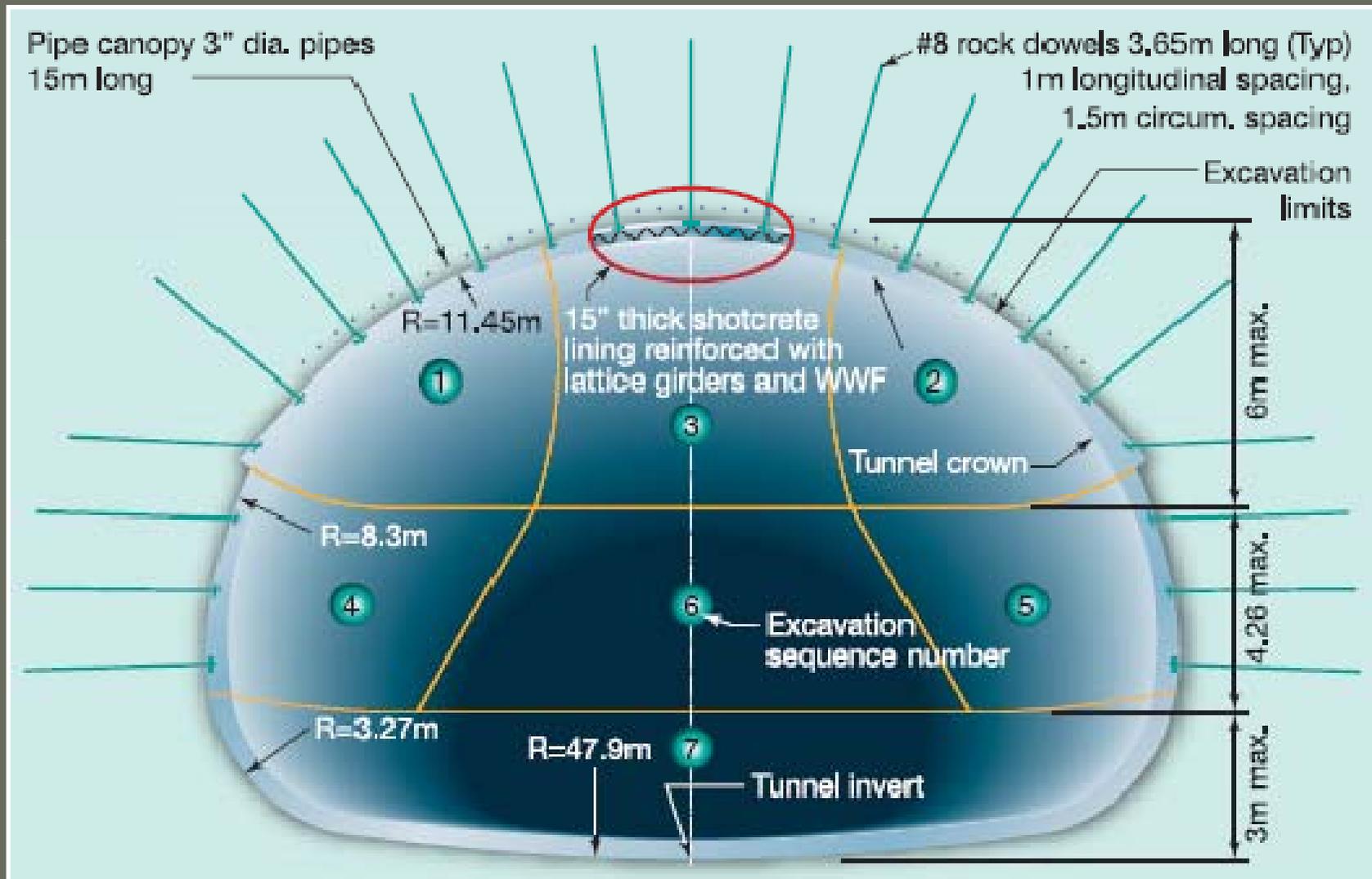
- Stacked Drift Concept
 - Slowest to construct
 - Most expensive to construct
 - High volumes of truck traffic during core excavation





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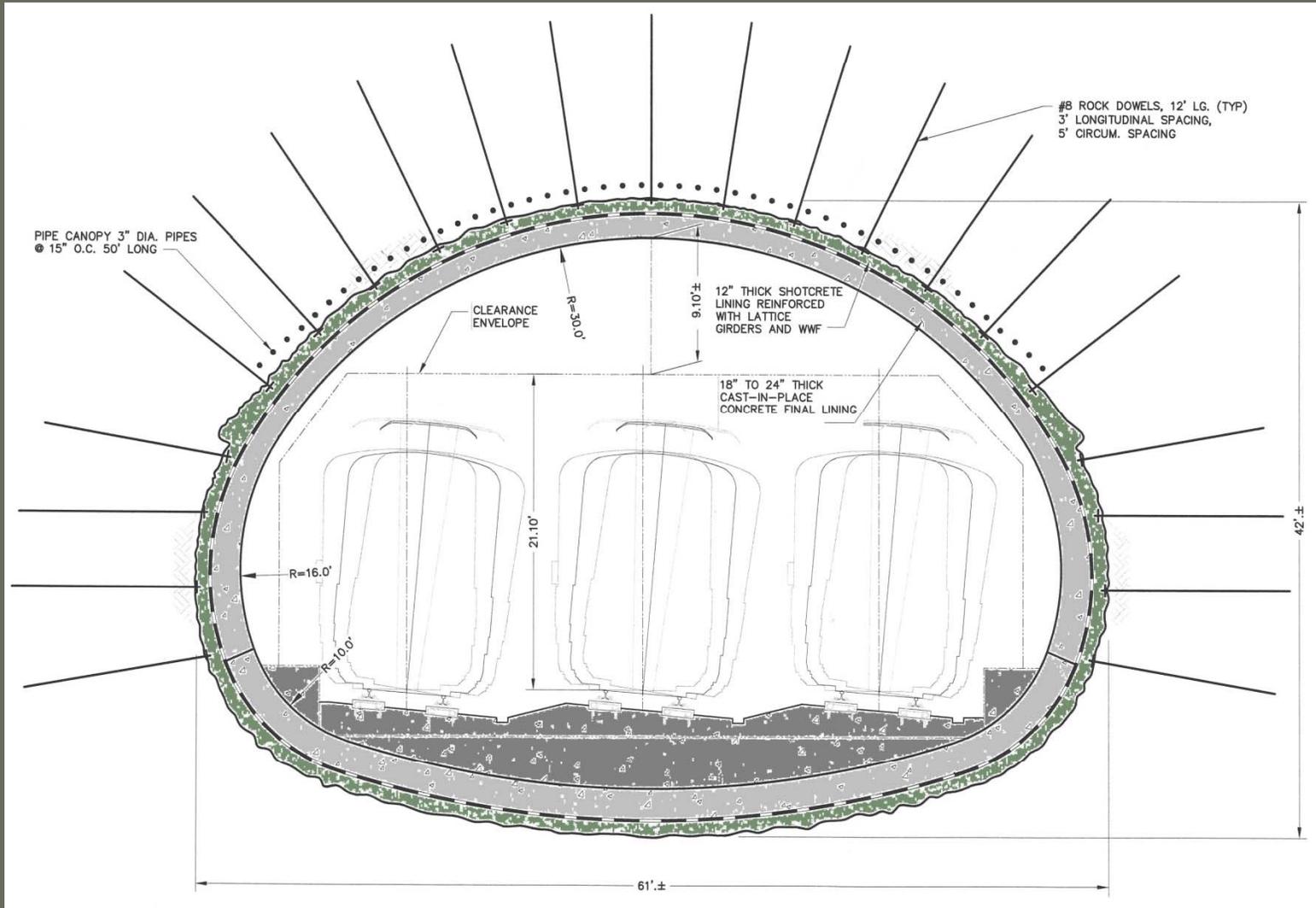
Tunneling Methods





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Tunneling Methods

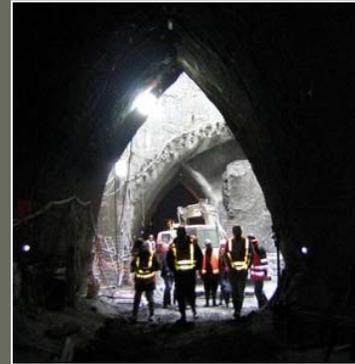




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Tunneling Methods

- Sequential Excavation method
 - Almost 2 years faster to construct than stacked drift
 - \$80-million less expensive than stacked drift
 - Ground movements and building risk minimized
 - Limited opening size
 - Pipe canopy





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Questions?

