



Presentation to TJPA Board Caltrain Downtown Extension Project Update

June 21, 2007

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Caltrain Downtown Extension Project (DTX)

Topics:

- DTX Progress
- HSR QA Initiative
- Next Steps





DTX Progress



DTX Progress

- DTX HSR Design Assessment Report
- Continue Development of RLPA
 - Tunnels Report
 - Signals
 - Utilities
- Study Options for RLPA Cost Reduction
- Finalize VM Loop Track Summary Report
 - Vibration Assessment
- Initiate VM Loop Track Environmental Study
- Coordination w/ Operators & Stakeholders:
 - Caltrain
 - CA HSRA
 - CAPUC





DTX HSR Design Assessment

“DTX Quality Assurance Initiative”



DTX High-Speed Rail Design Assessment

Topics:

- DTX HSR Design Assessment
- Independent Design Validation
- Design Assessment Conclusions





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DTX HSR Design Assessment

“DTX Quality Assurance Initiative”



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DTX HSR Design Assessment *Quality Assurance Objectives*

- Assess Current Design
 - Design Concepts Consistent w/ Project Objectives
 - Engineering Compatible w/ Operator Requirements
- Provide Assurance for Rail Operations
 - DTX Minimum Radius of Curvature
 - Platform Curvature and Resultant Platform Gap
 - Availability of HSR Rolling Stock w/o Modification
 - Track Geometry Result in Reasonable Travel Times



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DTX HSR Design Assessment *TJPA Required Mandates*

- **Regional Measure 2 - Senate Bill 916 : Oct. 03**
 - Regional, Local & Intercity Bus
 - Caltrain Downtown Extension
 - Accommodate Future HSR
 - Accommodate Eventual East Bay Extension
- **Senate Bill 1856 : Sep. 02**
 - HSR connect SF Transbay Terminal to LA Union Station
- **Proposition H : Nov. 99**
 - City to Extend Caltrain to Downtown SF (TTC)
 - Caltrain Extension ROW : No Conflicting Use/Development
- ***Design Conforms to Statutory Requirements***



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DTX HSR Design Assessment *CHSRA Station Location*

Objectives:

- Maximize Ridership & Revenue Potential
- Maximize Connectivity & Accessibility
- Maximize Compatibility w/ Existing & Planned Development





DTX HSR Design Assessment *CHSRA Station Location*

Evaluation Criteria:

- Travel Time, Population/Employment Catchment Area, Ridership & Revenue Forecasts
- Intermodal Connections
- Land use Compatibility & Conflicts, Visual Quality Impacts, Transit Oriented Development Potential



Current Design Consistent w/ CHSRA Objectives & Criteria



DTX HSR Design Assessment *Engineering Design Criteria*

Provide Assurance for HSR Rail Operations:

- DTX Minimum Radius of Curvature
- Platform Curvature / Resultant Platform Gap
- Available HSR Rolling Stock
- Station Approach Speed
- Destination Journey Time





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DTX HSR Design Assessment *Minimum Curve Radii Criteria*

Agency/System	Reference	Minimum Horizontal Radius Design Criteria
California High-Speed Rail	HSR Operating Criteria October 2004	152.4 m (500 ft)
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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DTX HSR Design Assessment *In-Service 524.8 Ft Radius*

- Cologne Central Station
 - 525-foot approach radius
 - Physical Constraints
 - Historic Properties
 - City Center Preferred Location
 - Multi-Track Station
 - High Volume Station
 - 12 ICE per Hour (6 in/out)
 - Serviced by Multiple HSR
 - ICE, Thalys

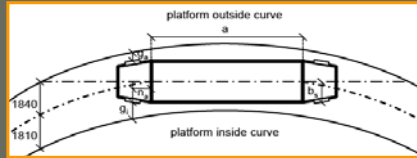


DTX Curve Radius Design Support by International Practice



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HSR Design Assessment In-Service Platform Curvature



- Waterloo Station →
Eurostar
- Cologne Central ↙
ICE, TGV



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DTX HSR Design Assessment In-Service Platform Gap Solutions

- US DOT Realizes meeting/maintaining ADA "gap" requirement infeasible for most commuter/intercity rail
- Allows other solutions for access to train cars
- Accessibility reviewed independently on case by case basis



Develop Solution when Caltrain/HSR Rolling Stock Selected



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DTX HSR Design Assessment *Available Rolling Stock*

Manufacturers Reviewed

- Kawasaki Heavy Industries
- Alstom
- Bombardier
- Siemens
- Talgo



**Identified HSR Rolling Stock
can Operate on DTX**



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DTX HSR Design Assessment *Approach Operating Speed*

Constraints:

- Track curvature
- Special trackwork
- Shared track w/ commuter service

Precedent:

- Cologne Central Station 25mph
- Berlin Stadtbahn - 37mph



DTX 30 mph Design Speed

- **Consistent with Currently Operating HSR Systems**



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DTX HSR Design Assessment *Destination Journey Times*

Favorable DTX - TTC Journey Times

- Transfer Modes @ 4th & King Station:
 - Muni / Taxi / Foot (7-20 Minutes)
- DTX 7th & Irwin Streets to TTC
 - 5 minutes or less
- DTX Reliably Surpasses Most Optimistic Alternative Mode Transfer Times
- ***Deliver HSR Patrons to Downtown San Francisco***
 - ***DTX Most Efficient & Reliable Alternative***



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DTX HSR Design Assessment *Engineering Criteria Findings*

- DTX Horizontal Curvature Criteria:
 - ***within current stds. accepted by HSR networks worldwide***
- Platform Curvature and Resultant Platform Gap:
 - ***safely addressed by operational and mechanical methods***
- Operate Existing HSR Rolling Stock on DTX alignment:
 - ***Alstom, Siemens, Bombardier, Talgo and Kawasaki***
- DTX Terminal Approach Speeds:
 - ***comparable to other major terminals in Europe***





Independent Design Validation



Independent Design Validation

- DB International GmbH - Operator & Engineer
- Review Concept Design for:
 - Feasibility and Int'l Best Practice
- Provide Examples of Precedent
- Provide Professional Opinion:
 - Operational Concepts
 - Alignment Geometry
 - Trackwork
 - Platform Geometry
 - HSR Vehicles
- Recommendation





Independent Validation Review Findings

- TTC San Francisco –
Preferred HSR Train Destination
- DTX Design Suitable –
Operation of HSR Rolling Stock
- Proven Solutions to –
Accommodate Curved Platforms
- Proven Measures to –
Enhance Track Performance



DTX HSR Design Assessment Study Conclusions



DTX HSR Design Assessment Conclusions

The Assessment Study Concludes:

- Precedents supports finding:
 - *HSR will safely operate on the DTX*
- DTX design criteria consistent with current:
 - *engineering practice*
 - *rail technology*
- Alignment Refinements will continue to be sought to:
 - *optimize track geometrics*
 - *operational improvements*



Next Steps

- Finalize TJPA HSR Design Assessment Report
- Assess & incorporate Independent Review Findings:
 - optimize track geometrics
 - operational improvements
- Continue VM/VE design opportunities
- Continue coordination with CHSRA (22 Jun 07)
- Continue coordination with Caltrain & Regional Rail Planning (TBD)





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Questions?

