Advantages of Common Level Boarding

- Improved operations at common stations (TTC, Millbrae, Diridon)
- Improved passenger circulation
- Improved safety
- Improved Reliability and Recovery Capabilities
- Significantly reduced infrastructure costs
- Improved system operations
- Accelerated schedule for Level Boarding at all stations
Goals for Commuter Trainset RFP

- Ensure that Caltrain Vehicle Procurement does not preclude future Common Level Boarding Options
- Ensure that capacity of an electrified Caltrain system is maximized
- Identify strategies that maintain or enhance Caltrain capacity during transition to high level boarding
- Develop transitional strategies for future integrated service

Request for Expressions of Interest

- In January 2015 a REOI was released to identify and receive feedback from firms interested in competing to design, build, and maintain the high-speed rail trainsets for use on the California High-Speed Rail System.
- The Authority’s order will include a base order and options up to 95 trainsets.
Technical Requirements - Trainsets

- Single level EMU:
  - Capable of operating in revenue service at speeds up to 354 km/h (220 mph), and
  - Based on a service-proven trainset in use in commercial high speed passenger service at least 300 km/h (186 mph) for a minimum of five years.

- Width between 3.2 m (10.5 feet) to 3.4 m (11.17 feet)
- Maximum Length of 205 m (672.6 feet).
- Minimum of 450 passenger seats
- Provide level boarding with a platform height above top of rail of 1219 mm – 1295 mm (48 inches – 51 inches)
Submittal Information

- Nine Expressions of Interest (EOI) have been received thus far.
- EOIs will continue to be accepted through the RFP process.
- Submitting an EOI is not a requirement. Firms that do not submit an EOI may still submit a Proposal in response to the RFP.

The Procurement Process

- The REOI did not begin the procurement process.
- A Draft RFP was released for Industry Input and Comment
- The Authority will issue an RFP to begin the procurement process in the Fall of 2015.
- Firms that submitted EOIs were given credentials to ask questions and participate in one-on-ones during the RFP process.
Trainset Boarding Scenarios In Europe and Asia
Frank Banko, PMT Rolling Stock Manager
May 20, 2015

CHSRA – TRAINSET PERFORMANCE CHARACTERISTICS

1. Maximize competition
2. Service-proven design
3. FRA Tier III compliant (crashworthiness, crew/passenger safety)
4. ADA compliant (high-platform level boarding, all coaches accessible)
5. Operating speed (354 km/h (220 mph), subjected to large gradients)
6. Single-level, wide body coach configuration
7. Minimize axle loads
**EXISTING STANDARDS – ADA**

- **United States**
  - Americans with Disabilities Act
  - 49CFR Parts 37 and 38
  - "all cars for high-speed rail systems …shall be designed for high-platform, level boarding…"
  - Vertical gap between trainset floor and platform: ±15.9 mm (± 0.625")
  - Applicable to high-speed trainset stopping at both new and existing stations
  - Horizontal gap: ≤76.2 mm (≤3")
  - CHSRA trainset will be ADA-compliant and have level boarding.

**EXISTING STANDARDS – EUROPEAN PLATFORM HEIGHTS**

- **Europe**
  - High-Speed Infrastructure Technical Specifications for Interoperability (TSI)
    - Section 4.2.20.4: Nominal platform height above the running plane shall be either 550 mm (21.7") or 760 mm (29.9")
    - Section 7.3: Exceptions to Great Britain, Ireland, Northern Ireland, Netherlands, and Sweden
      - GB (Cat. II and III): 865 mm (34.1") to 915 mm (36.0")
      - Ireland/Northern Ireland: 915 mm (36.0")
      - Netherlands (Cat. II and III): 840 mm (33.1")
      - Sweden (Cat. II and III): nominal 580 mm (22.8") or 730 mm (28.7")
EXISTING STANDARDS – ASIAN PLATFORM HEIGHTS

• Japan
  » MLIT’s Technical Standard for Japanese Railway
    • Article 36: “The surface of the platform and the surface of the floor part of the rolling stock where passengers board and alight shall be as flat as possible.”
    » Shinkansen platform height: 1250 mm (49.2”) above top of rail.

• China
  » MOR’s Code for Design of High-Speed Railway
    • Section 10.4.1: Platform height: 1250 mm (49.2”) above top of rail.

HSR TRAINSET FLOOR HEIGHTS

• There are no service-proven HS trainsets capable of operating at 354 km/h (220 mph) that can provide ADA-compliant level boarding at platforms built 635 or 762 mm (25 or 30”) above top of rail.
**LIFECYCLE FOR TRAINSET PROCUREMENT**

- RFP issued - 2015
- Contract awarded to manufacturer - 2016
- Design completed - 2018
- Trainsets manufactured - 2021
- Testing, commissioning, training - 2022
- In-service - 2022

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**HIGH-SPEED TRAINSET FLOOR HEIGHTS**

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Vehicle</th>
<th>Floor Height in mm (inches)</th>
<th>Continent/Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alstom</td>
<td>AGV</td>
<td>1160 (45.7)</td>
<td>Europe (Italy)</td>
</tr>
<tr>
<td>Alstom</td>
<td>Duplex</td>
<td>306 (12.1)¹</td>
<td>Europe (France)</td>
</tr>
<tr>
<td>Bombardier</td>
<td>Zefiro 380</td>
<td>1250 (49.2)</td>
<td>China</td>
</tr>
<tr>
<td>Bombardier</td>
<td>V300 Zefiro</td>
<td>1250 (49.2)</td>
<td>Europe (Italy)</td>
</tr>
<tr>
<td>Siemens</td>
<td>Velaro CN</td>
<td>1260 (49.6)</td>
<td>China</td>
</tr>
<tr>
<td>Siemens</td>
<td>Velaro D</td>
<td>1240 (48.8)</td>
<td>Europe (Germany)</td>
</tr>
<tr>
<td>Sumitomo</td>
<td>N700</td>
<td>1300 (51.2)²</td>
<td>Japan</td>
</tr>
<tr>
<td>Talgo</td>
<td>350</td>
<td>760 (29.9)</td>
<td>Europe (Spain)</td>
</tr>
<tr>
<td><strong>TBD</strong></td>
<td><strong>TBD</strong></td>
<td><strong>1219 to 1295 (48 to 51)</strong></td>
<td>US - CHSRA</td>
</tr>
</tbody>
</table>

¹ The lower floor of the Duplex can be elevated to provide level boarding at a 550 mm (21.7”) platform height
² Same floor height for CRH380A
**ALSTOM AGV**

- Operated in Italy
- Vehicle floor height: 1160 mm (45.7”)
  - Platform height: 550 or 760 mm (21.7 or 29.9”)
- **Half width of trainset: 1500 mm (59.0”)**
  - Platform offset from track centerline: 1661.5 mm (65.4”)

**ALSTOM EURODUPLEX (TGV 2N2)**

- Operated in France
- Vehicle floor height: 306 mm (12.1”)
  - Platform height: 550 or 760 mm (21.7 or 29.9”)
- **Half width of trainset: 1450 mm (57.1”)**
  - Platform offset from track centerline: 1650 to 1700 mm (65.0 to 66.9”)
ALSTOM EURODUPLEX (TGV 2N2)

- Operated in China
- Vehicle floor height: 1250 mm (49.2”)
  » Platform height: 1250 mm (49.2”)
- Half width of trainset: 1680 mm (66.1”)
  » Platform offset from track centerline: 1750 mm (68.9”)

BOMBARDIER ZEFIRO 380
**BOMBARDIER V300 ZEFIRO**

- To be operated in Italy in June 2015
- Vehicle floor height: 1250 mm (49.2”)
  » Platform height: 550 or 760 mm (21.7 or 29.9”)
- Half width of trainset: 1450 mm (57.1”)
  » Platform offset from track centerline: 1661.5 mm (65.4”)

**SIEMENS VELARO CN**

- Operated in China
- Vehicle floor height: 1260 mm (49.6”)
  » Platform height: 1250 mm (49.2”)
- Half width of trainset: 1640 mm (64.6”)
  » Platform offset from track centerline: 1750 mm (68.9”)

**SIEMENS VELARO D**

- Operated in Germany
- Vehicle floor height: 1240 mm (48.8”)
  - Platform height: 760 mm (29.9”)
- Half width of trainset: 1460 mm (57.5”)
  - Platform offset from track centerline: 1650 to 1700 mm (65.0 to 66.9”)

![SIEMENS VELARO D](image1)

**SUMITOMO N700 SERIES SHINKANSEN**

- Operated in Japan
- Vehicle floor height: 1300 mm (51.2”)
  - Platform height: 1250 mm (49.2”)
- Half width of trainset: 1680 mm (66.1”)

![SUMITOMO N700 SERIES SHINKANSEN](image2)
**TALGO 350**

- Operated in Spain
- **Vehicle floor height: 760 mm (29.9”)**
  - Platform height: 550 or 760 mm (21.7 or 29.9”)
- **Half width of trainset: 1470 mm (57.9”)**
  - Platform offset from track centerline: 1650 to 1700 mm (65.0 to 66.9”)

**TALGO 350**

- The Talgo 350 trainset can provide level boarding at platforms built 762 mm (30”) above top of rail.
  - Maximum design speed of 354 km/h (220 mph)
    - Certified at 330 km/h (205 mph)
    - Operating speed is 300 km/h (186 mph)
      - Does not meet the required operating speed of 354 km/h (220 mph)
      - CHSR Trainset to be tested at 390 km/h (242 mph)
RSSB PLATFORM TRAIN INTERFACE STRATEGY

• In 2013, the Railroad Safety and Standards Board (RSSB) investigated PTI risk and develop a strategy that would:
  » Reduce safety risk
  » Optimize operational performance
  » Optimize availability of access

• RSSB Platform Train Interface (PTI) Strategy Report issued January 2015

• Identified areas of design and operation that are not always compatible:
  » Platform clearances for passenger, freight, and other vehicles
  » Platform and passenger vehicle floor heights
  » Step and gap configurations for passengers with and without mobility issues and those using wheelchairs
  » Passenger train designs, including door configurations, train capacity, provision for luggage; and how these might affect overall performance

IMPORTANCE OF PASSENGER TRAIN INTERFACE (PTI)

• Optimizing the step and gap will:
  » Reduce dwell times
  » Optimize capacity
  » Improve passenger experience
  » Reduce anxiety
  » Increase accessibility
  » Overall encourage the use of the railway
QUESTIONS AND ANSWERS