



## HIGH-SPEED RAIL INDUSTRY LEADERS GROUP

### High-speed rail stations: What sets them apart from other passenger handling facilities?

Gary Newgard  
Parsons Brinckerhoff

Check in, check bags, pass security, buy a coffee and wait for the flight. This now familiar sequence makes terminal-side air travel almost instinctive. Whilst an HST station is a close cousin to a Mass Rapid Transit (MRT) station, in many respects an HST station bears more similarities to an airport, and it's widely recognised that in order for future systems to be successful, passengers in HST stations need to feel a similar kind of familiarity and comfort. What characteristics though, set a high-speed train station apart from other passenger handling facilities?

PB's Program Management Team for the California High-Speed Train Project (CHSTP) has sought to define the essence of station design for the first truly high-speed rail system in the US. PB's architects have established planning guidelines and design principles which will guide regional consultant teams toward functional commonality among California's twenty-four unique HST stations. They considered the following elements:

#### Station Location

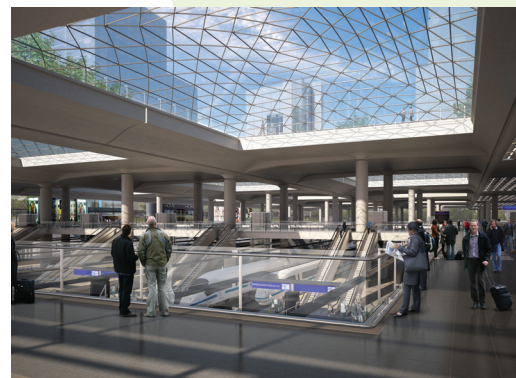
Accommodating a tangent (straight) 1,400yd HST platform length presents challenges unfamiliar to designers of MRT stations where platforms are one-third to one-half of this length. But in the same way that MRT stations are integrated into neighbourhoods, HST stations will complement community connectivity; access may be via foot or bicycle as well as vehicles.

#### Platforms

The long HST platforms offer a hidden benefit: passengers are distributed over a larger area, significantly reducing passenger density. While a typical MRT vehicle may squeeze 3,000 to 4,000 passengers into a vehicle less than half the HST length, HST seat no more than 1,000 passengers, meaning that the long platforms will provide ample space for boarding and alighting.

#### Vertical Circulation

Platform occupant load, normally a critical design factor in MRT station planning is seldom a concern in lower-density HST stations. Provision of adequate escalators, stairs and elevators (Vertical Circulation Elements) between platform and concourse is simplified in that the long platform offers many placement opportunities. Rather than a need to move great volumes of passengers, the factor typically dictating placement of HST VCEs is the maximum allowable distance to a platform exit (325 yds).





## HIGH-SPEED RAIL INDUSTRY LEADERS GROUP

### High-speed rail stations: What sets them apart from other passenger handling facilities?

Gary Newgard  
Parsons Brinckerhoff

#### Passenger Safety

Without an HSR precedent in the US, PB's architects are basing station life-safety provisions on the well-tested National Fire Protection Association (NFPA) 130 as well as the 2010 California Building Code which has added new references to high-speed rail. Although both HST and MRT stations serve fixed-guideway vehicles, fundamental operational differences diminish the applicability of NFPA 130 for HST. NFPA addresses high-density platform loadings, frequent trains, missed headways, concurrent multi-train emergencies, etc., none of which typically apply to HST. Nevertheless, this document must be relied upon in the US until a more appropriate HST document is developed.

#### Fare Collection

While air travel generally requires advance ticket purchase and MRT allows for stored value or single ride ticketing, HST ticketing will fall somewhere between the two, with reserved-seat tickets available either online or inside stations. Entrance to the station paid zone will be via the familiar electronic fare collection gate rather than collected by an agent.

#### Public Amenities

HST passengers will likely expect station amenities akin to those of airports. Trains may depart hourly or more frequently at major stations. Due to significant trip distances, passengers may arrive at the HST station in advance of their ticketed departure time and will expect amenities to pass the waiting time, which may include comfortable, airport-style seating both inside and outside the paid areas, TVs, public restrooms, magazine and sundries kiosks, coffee shops, travellers' assistance, rental car kiosks, etc. – amenities unnecessary at MRT stations where trains often depart every two minutes.

#### Architectural Image

Like airport terminals, which often become signature architectural statements by which communities put themselves 'on the map', dramatic high-speed rail stations, as seen in France, Germany, Belgium, China and elsewhere, can become destinations unto themselves. HST station designers will seek to collaborate with each community to generate planning and architectural goals for their station, whether that may mean understated simplicity or iconic drama.

