CHAPTER 3

STATIONS AND FACILITIES

A. GENERAL

The objective of this Chapter is to provide the designers with the minimum requirements for planning and design of new and temporary stations and their related facilities. These facilities include furniture, amenities, signage, fencing, railing, parking, lighting, platform access, etc. All station rehabilitation shall follow the requirements in this Chapter. Any deviations from these minimum requirements shall require a written approval from the Deputy Director of Engineering.

The design requirements for passenger information, fare collection or payment, and for regulatory and safety advisories, as well as security system are covered in the CHAPTER 4 STATION COMMUNICATIONS. The design requirements for the pedestrian at-grade crossings within the stations, and at the vehicular crossings are contained in CHAPTER 7 GRADE CROSSINGS.

The design requirements in this Chapter are generally for Caltrain surface stations, not for multi-modal stations. Multi-modal stations typically involve station buildings or structures, fare paid areas, and additional requirements on safety and security, access and circulation. The stations may include vertical elements for circulation and egress, fire and safety considerations, ventilation requirements and other requirements and elements associated with underground facilities.

The design of stations and their facilities shall generally follow the principles of the CPTED (Crime Prevention Through Environmental Design). In particular the safety and security elements of the design shall be reviewed by appropriate CPTED certified professional from planning through final design.

Caltrain provides detailed standards (layout, location, design, artwork template) for signage. In addition to the Caltrain specific signage standards, each Caltrain station is subject to the San Francisco Bay Area Metropolitan Transportation Commission (MTC) Hub Signage Program (HSP). The HSP implementation requirements for each of the stations it defined in Section H, STATION SIGNAGE.

Caltrain’s stations shall be designed to promote and sustain the ridership growth, enhance the aesthetics of the neighborhood and community, and promote safety and security by maintaining station visibility to the public and local enforcement entities. To the extent possible, Caltrain stations shall also serve as gateways in and out of a community for the origin/destination source of passenger traffic. Specifically, Caltrain’s stations shall:

a. Be a safe and comfortable area for passengers.
b. Be functional, user friendly and convenient and accessible to all users.

c. Provide Caltrain transit information and schedule updates to passengers.

d. Be attractive to passengers and community alike.

A station shall be as pleasant as possible for the passengers. It should to the extent possible provide safe and comfortable circulation space by minimizing overcrowding in certain areas, minimize any obstructions or conflicts. Provide passenger orientation, information, physical barriers, and level changes.

1.0 DESIGN RATIONALE

Caltrain stations consist of site access, parking, platforms, possible buildings, tracks and all appurtenances necessary to provide for public transportation, safety and information.

Stations, to a certain extent, are site specific, however the functionality and physical appearance of the stations shall be practical and to the extent possible, consistent. The design shall incorporate a family of station parts and furnishings that are interchangeable. The station shall be a permanent, functional and pleasant station feature that integrates the character of the neighborhoods and community, yet maintains an overall Caltrain system identity and recognition.

The station design shall be governed by the following:

a. Demonstrated demand projected to 20 years: Request the current and 20-year future ridership demand from Caltrain. Footprint for expanded station and parking shall be delineated.

b. Effect on overall commuter system performance: Analyze how the changes will affect the performance of the Caltrain commuter system as a whole.

c. Safety and accessibility: Provide a safe, secure, friendly and enjoyable transit experience that is easily accessible and complies with ADA requirements.

d. Integration with bus service and other transit systems: Integrate Caltrain with other public transportation systems for the convenience of the passengers and promotion of ridership growth.

e. Joint development opportunity with Local Agency (future development): Provide an architectural and urban design framework that defines and encourages joint development opportunities.

f. Sustainability design requirements: Establish Project specific sustainability goals in accordance with the framework of the California Building Code, Part 11, Green Building Standards Code (CalGreen) in following aspects:
matters efficiency, water efficiency and conservation, materials conservation and resource efficiency, and environmental quality.

2.0 CODES AND REGULATIONS

Stations and facilities design shall comply with this Criteria and the accompanying Caltrain Standard Drawings and Standard Specifications. Stations and facilities design shall comply, unless noted otherwise, with the latest revision of the codes and regulations listed in the **APPENDIX**. Should there be conflicts between codes, then the most restrictive code shall apply.

3.0 CALTRAIN STATIONS

The following **TABLE 3-1 CALTRAIN STATIONS** provides classification and relative ranking of each Caltrain station. The purpose of this table is for design information, in particular for station signage design and environmental clearance.

The classification and ranking have been established based on ridership (relative rank) and connectivity to other transits (including shuttles). The ranking and hierarchy are based on current information and statistics, and their relative positions may change. The table also includes identification of the seven (7) stations with historical elements, which are listed under the National Register of Historic Places (NRHP).

B. SITE CONSIDERATIONS

The development of new or the rehabilitation of stations shall consider other stakeholders such as the local agencies (cities) and the community.

1.0 COMMUNITY INVOLVEMENT

Collaborate and or partner with Local Agency to obtain inputs, including the possible involvement of the community, to establish a sense of “place” of the station and to instill a sense of ownership by the community and as a recognizable feature along the corridor. The following key aspects shall be considered:

a. Station layout: Initiate and coordinate inputs from various stakeholders from the community and Local Agency that will complement station development and increase ridership.

b. Station elements: Select design, and types and materials for canopies, fence, windscreens and other elements within the station.

c. Neighborhood characters: Preserve, maintain and enhance existing qualities or characteristics or architectural elements which are valued.

Station areas or structures designated by the State Historic Preservation Office (SHPO) as of historical value shall address the potential applicability of requirements of the Historic Preservation Act. As part of the environmental clearance process, the
### TABLE 3-1 CALTRAIN STATIONS

<table>
<thead>
<tr>
<th>STATION CLASSIFICATION</th>
<th>RIDERSHIP RANK</th>
<th>TRANSIT CONNECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multi-Modal Stations:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 4th &amp; King</td>
<td>1</td>
<td>Muni (bus &amp; LRT)</td>
</tr>
<tr>
<td>2 Palo Alto</td>
<td>2</td>
<td>SamTrans, VTA (bus)</td>
</tr>
<tr>
<td>3 Mountain View</td>
<td>3</td>
<td>VTA (bus &amp; LRT)</td>
</tr>
<tr>
<td>4 Diridon</td>
<td>4</td>
<td>VTA (bus &amp; LRT)</td>
</tr>
<tr>
<td>5 Millbrae</td>
<td>5</td>
<td>SamTrans, BART, connection to SFO airport</td>
</tr>
<tr>
<td><strong>Tier 1 Stations:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Hillsdale</td>
<td>7</td>
<td>SamTrans, AC Transit, shuttles</td>
</tr>
<tr>
<td>2 Menlo Park</td>
<td>9</td>
<td>SamTrans, shuttles</td>
</tr>
<tr>
<td>3 Redwood City</td>
<td>6</td>
<td>SamTrans, shuttles</td>
</tr>
<tr>
<td>4 Santa Clara</td>
<td>15</td>
<td>VTA, ACE, connection to SJ airport</td>
</tr>
<tr>
<td><strong>Tier 2 Stations:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 San Mateo</td>
<td>10</td>
<td>SamTrans</td>
</tr>
<tr>
<td>2 San Carlos</td>
<td>13</td>
<td>SamTrans, shuttles</td>
</tr>
<tr>
<td>3 Tamien</td>
<td>16</td>
<td>VTA (bus &amp; LRT), Caltrain SJ-Tamien shuttle</td>
</tr>
<tr>
<td>4 California Ave</td>
<td>12</td>
<td>VTA (bus), shuttles</td>
</tr>
<tr>
<td>5 Burlingame</td>
<td>14</td>
<td>SamTrans, shuttles</td>
</tr>
<tr>
<td>6 Belmont</td>
<td>19</td>
<td>SamTrans, shuttles</td>
</tr>
<tr>
<td>7 Bayshore</td>
<td>23</td>
<td>Muni (bus &amp; LRT), SamTrans, shuttles</td>
</tr>
<tr>
<td>8 Sunnyvale</td>
<td>8</td>
<td>VTA (bus)</td>
</tr>
<tr>
<td><strong>Tier 3 Stations:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 22nd Street</td>
<td>11</td>
<td>Muni (bus)</td>
</tr>
<tr>
<td>2 San Antonio</td>
<td>18</td>
<td>VTA (bus), shuttles</td>
</tr>
<tr>
<td>3 Lawrence</td>
<td>17</td>
<td>Shuttles</td>
</tr>
<tr>
<td>4 San Bruno</td>
<td>20</td>
<td>SamTrans</td>
</tr>
<tr>
<td>5 South San Francisco</td>
<td>21</td>
<td>SamTrans, shuttles</td>
</tr>
<tr>
<td>6 Morgan Hill</td>
<td>25</td>
<td>VTA (bus), MST</td>
</tr>
<tr>
<td>7 Hayward Park</td>
<td>22</td>
<td>SamTrans, shuttles</td>
</tr>
<tr>
<td>8 Gilroy</td>
<td>24</td>
<td>VTA (bus), MST, Greyhound</td>
</tr>
<tr>
<td>9 College Park</td>
<td>26</td>
<td>VTA (bus)</td>
</tr>
<tr>
<td>10 Blossom Hill</td>
<td>27</td>
<td>VTA (bus), shuttles</td>
</tr>
<tr>
<td>11 San Martin</td>
<td>28</td>
<td>VTA (bus)</td>
</tr>
<tr>
<td>12 Capitol</td>
<td>29</td>
<td>VTA (bus)</td>
</tr>
</tbody>
</table>

**Notes:**

1. As part of the ADA requirements, FTA designated the following 10 stations to be key access stations are: 4th & King, SanMateo, Hillsdale, Redwood City, Palo Alto, Mountain View, Sunnyvale, Santa Clara, Diridon, and Tamien. These stations are currently FTA compliant.
2. Station names in bold are listed on the National Register of Historic Places (NRHP).
3. Only Palo Alto station is under the purview of SHPO, not SBHRS.
4. Palo Alto station is owned by Stanford University.
designers shall collaborate with the South Bay Historical Railroad Society (SBHRS), representing SHPO, and its counterparts within the Cities and Counties to identify and evaluate potential impacts as well as mitigation measures to the historical areas or structures in station and site design.

2.0 JOINT DEVELOPMENT

Caltrain and community planners shall explore potential opportunities to develop transit-oriented development (TOD) adjacent to Caltrain stations. TOD, however, needs to occur with a balance toward providing a convenient and pleasant experience for Caltrain passengers and providing opportunities for mixed use development.

For existing station rehabilitation and renovation, the design should generally match the existing architectural elements. On new station construction, the design should follow the guidelines below:

a. Recognize emerging development that can compliment station development and increase ridership.

b. Initiate and coordinate programs with the community that limit local traffic impacts and minimize disruption during and after the implementation phase.

C. CLEARANCES

All facilities adjacent to track shall meet the requirements of California Public Utilities Commission (CPUC) GO 26-D for clearances. Caltrain has additional clearance requirements that are more stringent than CPUC. Refer to FIGURES 3-1 and 3-2 for Caltrain’s minimum clearances (horizontal and vertical) for various elements at station platforms.

1.0 OBJECTIVES

The horizontal clearances at the stations are established for the following passenger safety and operations requirements. The clearance requirements are safety critical due to the current operational characteristics of Caltrain, namely express trains through most stations and high frequency of train service.

a. Passenger access and circulation

b. Special consideration for mobility impaired persons, their space needs and special boarding needs

c. Clear sight distance for passengers of at-grade pedestrian crossing warning system, the Visual Message Sign (VMS), and the approaching trains

d. Clear sight distance for passengers of the signage

e. Clear sight distance for train crew
FIGURE 3-1  MINIMUM CLEARANCES AT STATION PLATFORMS
OUTBOARD PLATFORM
FIGURE 3-2 MINIMUM CLEARANCES AT STATION PLATFORMS
CENTER ISLAND PLATFORM

Note: Buildings, communications equipment room, signal house at 25’ from the closest track centerline.
f. Operations configuration: bike car, ADA accessible car, Boarding Assistance Area, and mini-high platforms are located on the north third of platforms

g. Increasing amount of passengers requiring more space (mobility impaired persons, bicyclists, persons with luggages, children and strollers)

h. Uneven platform usage: tendency of passengers to congregate on the north third of platform

i. Bike users

2.0 HORIZONTAL AND VERTICAL CLEARANCES

2.1 Horizontal Clearances

The following minimum horizontal clearances from nearest track center shall be observed. Any deviation from these clearances must be approved by the Caltrain Deputy Director of Engineering. Refer to FIGURES 3-1 and 3-2. For mini-high platforms, see Caltrain Standard Drawings.

a. **Permanent Structures:** 25 feet

   Permanent structures include station buildings, Communications Equipment Room (CER), trees (any size), etc.

b. **Semi-permanent Structures:** 16 feet

   Semi-permanent structures include canopies, passenger and Ticket Vending Machines (TVM)/Stand Alone Validators (SAV) shelters, light poles, signage and display case posts, benches, trash receptacles, Boarding Assistance Area (bench and wheel chair lift), landscaping, etc.

c. **At-grade Pedestrian Crossing:** 10 feet

   Crossing closest structures include swing gate, tip of automatic pedestrian gate arm, railing, signal apparatus, etc.

d. **Signal Houses:** 16 feet, preferably 25 feet

   Signal houses need to be located such that they provide sight view required for the signal maintainers. The houses shall be located as far away as possible from the tracks, but within the existing right-of-way.

e. **Visual Message Signs:** 9 feet

   The edge of the panel board of the Visual Message Sign (VMS) shall be no closer than nine (9) feet from the nearest track center.

f. **Return Fence:** 9 feet
i. Right-of-way Fence: 12 feet

2.2 Vertical Clearances

Any new overhead structures shall be designed with a minimum vertical clearance shall be 24 feet 6 inches (24'-6") from top of rail. The overhead structures include bridges, overhead pedestrian crossings, signal bridges, etc. Overhead utilities of any kinds are not allowed.

D. STATION CONFIGURATION

Consideration shall be given to possible track additions and possible extensions in the future, for longer train consists. The station designers shall seek inputs from Caltrain in determining requirements for possible future station expansion and provision for future Electrification of the system.

The station layout shall include provisions for roadway maintenance trucks to access the tracks on both sides of the station. If this access is to be provided from the public parking or driveway areas, a locked gate shall be installed to keep unauthorized vehicles from entering the right-of-way.

1.0 BOARDING PLATFORMS

The two preferred alternatives for Caltrain station platforms are as follows:

a. Outboard Platforms: Outboard platforms are side platforms located directly opposite one another, each servicing one mainline track.

b. Center Island Platform: Center island platform is a single platform that services tracks located on each side of the platform. The center island platform arrangement is considered to offer the most efficient use of platform space and furnishings.

The staggered platforms are outboard platforms where the platforms do not align, or are staggered either around or not around an adjacent street. These platforms are neither efficient nor convenient for passengers, and may be used on a temporary basis such as temporary station during construction. See FIGURES 3-3 and 3-4 for typical platform arrangements. See Caltrain Standard Drawings (SD 3000 series) for further details.

Platforms including potential extensions will be located at least 100 feet from the nearest road crossing in order to prevent the locomotive of a stopped train from obstructing the crossing. If the location of the station causes train operations to be affected by the “Train Delayed within a Block” rule (GCOR 9.9), the station project shall include modifications to the signal system to avoid such a delay. This is usually accomplished by adding or re-spacing automatic block signals.
FIGURE 3-3  TYPICAL CENTER ISLAND PLATFORM ARRANGEMENTS

TYPICAL 2-TRACK WITH CENTER ISLAND PLATFORM

TYPICAL 4-TRACK WITH CENTER ISLAND PLATFORM

TYPICAL 4-TRACK WITH 2-CENTER ISLAND PLATFORMS

LOOKING SOUTH
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TYPICAL 2-TRACK WITH OUTBOARD PLATFORM

TYPICAL 4-TRACK WITH OUTBOARD PLATFORM

TYPICAL 4-TRACK WITH OUTBOARD AND CENTER ISLAND PLATFORMS

LOOKING SOUTH

FIGURE 3-4  TYPICAL OUTBOARD PLATFORM ARRANGEMENTS
FIGURE 3-5 TYPICAL PLATFORM FOOTPRINT REQUIREMENTS
1.1 Platform Dimensions

Platforms shall be at an elevation eight (8) inches above the top of rail. The platform edge shall be 5 feet 4 inches (5'-4") from the centerline of nearest track. Platforms are to be constructed of concrete with flush vertical wall on the track side. Designer shall seek inputs from Caltrain on the final profile and alignment for the tracks through the station area to establish the platform elevation.

The following are criteria for platform dimensions. See Caltrain Standard Drawings for further details.

a. Platform length: Caltrain train consists are composed of different cars and locomotives necessitating additional platform lengths. The standard platform length shall be 700 feet to accommodate a six (6) car train consist. See FIGURE 3-5 for station “footprint” requirements and platform configurations. Platform design shall consider or not preclude a possible expansion of platform length to 1000 feet to accommodate an eight (8) car train consist. At the San Francisco and San Jose Diridon terminal stations, the station platforms shall be designed to accommodate two (2) 8-car trains.

b. Platform width: The platform shall be a minimum of 16 feet (20 feet preferred) wide for an outboard platform and a minimum of 28 feet (32 feet preferred) wide for a center island platform. The wider center platform is needed to accommodate stairway, ramps, and/or elevator, shelters, and passenger access and circulation safety. A minimum clear walkway width of seven (7) feet from the edge of the yellow safety stripe shall be maintained for the entire length of the platform for outboard platforms. However, for center island platform, the clear walkway width shall be increased to a minimum eight (8) feet from the edge of the yellow safety stripe to the platform structures (stairways, elevators).

c. Platform longitudinal slope: The station platforms shall be on a track segment that is tangent and on level surface. Track grades through station of more than one (1) % shall not be considered.

d. Platform cross slope: This slope is required for drainage purposes. The slope shall generally be 1% (2% maximum per ADA Standards) and shall be sloped away from the tracks. The rationale for this is to minimize the risk of rolling effect of persons on wheel chairs by not providing the natural rolling effects toward the tracks. The other consideration is for track drainage by directing away the surface water away from track structure. At center island platforms an underdrain shall be provided at the center of the platform width.

e. Platform curve: Station through curved track, either horizontal or vertical curve shall be avoided. If unavoidable, the curve shall be as shallow a curve as possible to no more than one (1) degree and 30 minutes, and at either ends of the platforms. Platform located on the curve shall require prior approval from Caltrain Deputy Director of Engineering.
f. Track centers: Track centers at station platforms shall be expanded to 18 feet minimum to accommodate center fencing so that the fence is at least 8 feet six inches (8’-6”) clear from the track center. The center fence shall extend 100 feet minimum beyond the ends of the platforms. If there are at-grade pedestrian crossings at the stations, then the fence shall continue to the edge of the crossings, and extend a minimum of 100 feet beyond past the at-grade pedestrian crossings.

1.2 Temporary Station

To allow continued passenger service at the station during construction activities, a temporary station shall be constructed as part of the construction staging. Requirements of temporary station platform are generally the same as for the permanent station with the following exceptions:

a. Minimum platform length is 500 feet with a minimum platform width of 12 feet. This platform length allows for a functional operations of a 5-train consist.

b. Platform may be constructed of asphalt concrete to expedite construction, however, the platform edge or platform surface to receive the warning tactile shall be of concrete. Asphalt concrete is not compatible to the installation of the warning tactile.

2.0 ADA REQUIREMENTS

Access to the station shall conform to the requirements of the Americans with Disabilities Act (ADA), Title II, and California accessibility regulations, CCR Title 24. At least one accessible route shall be provided within the site from accessible parking spaces and accessible passenger loading zones; public streets and sidewalks; public transportation stops to the accessible building or facility entrance they serve. All platform and parking lot facilities must comply with the referenced codes. Refer to Caltrain Standard Drawings for further details of each of the element below.

2.1 Detectable Warning Tactile

The tactile is an ADA requirement safety feature providing a band of contrasting color and texture for the sight impaired persons to demark the safe setback from moving trains and to warn of the platform edge and drop off to the track. And at at-grade pedestrian platform crossings, the tactile also identifies track crossings and to signify clear point of crossing.

The tactile shall be ADA compliant, and is of staggered dome design or configuration and is installed at the following locations:

a. Platform edge on the track side: 2-foot wide along the entire length of the platform, and 3-foot wide at the returns at each end of the platforms.

b. Edge of the mini-high platforms facing the track: 2-foot wide along the edge of the mini-high platforms.
c. Station at-grade pedestrian crossings: 3-foot wide placed in front of the crossing gates. This shall not be confused with the tactile at the vehicular crossings which calls for in-line dome design.

See Caltrain Standard Drawings (SD-2000 series) for further details.

2.2 Yellow Safety Stripe

A 6 inch wide yellow stripe (Federal yellow) shall be painted behind the tactile that the far side of the stripe marks a distance of 9 feet from the center of the track. Six (6) inch high letters “WAIT BEHIND YELLOW LINE” is painted behind the stripe to indicate where passengers shall stand. The marking shall line up with the car door. Mini-high platforms is also treated with similar 2 foot-wide tactile.

For stations with at-grade pedestrian crossings, similar tactile but 3 foot-wide is provided behind the crossing gate at the approach to the crossings. The wider tactile is required for approach to at-grade rail crossings.

2.3 Detectable Directional Tactile

Platforms shall be treated with directional and guide tactile to assist the sight impaired in locating the PNA shelter, and one of the TVMs at each platform. The tactile is also installed to identify the limits of the mini-high platforms. See Caltrain Standard Drawings (SD-2000 series) for further details.

2.4 Mini-High Platform

Mini-high platform, currently available at some stations is installed to assist with boarding of mobility impaired persons at all stations. The mini-high platform shall be located in line with the second train car from the north. See Caltrain Standard Drawings for details of the design of the mini-high platform.

2.5 Boarding Assistance Area

A boarding assistance area shall be provided on each platform. The boarding assistance area will be located in line with the second train car from the north. The area shall be marked “BOARDING ASSISTANCE AREA” and must include a shelter dedicated for use by mobility impaired persons.

2.6 Wheel Chair Lift

All stations are equipped with a manually operated wheel chair lift. The lift is located adjacent to shelter at the Boarding Assistance Area. The lift shall be secured inside a lockable metal shed only accessible to the train operations personnel. Caltrain Standard Specifications for the technical requirements of the lift and shed.
2.7 **Level Boarding**

Level boarding platforms for the Caltrain will require extensive upgrade and are not planned at this time. However, the ramps to the at-grade pedestrian crossings shall be extended to 40 feet to allow for potential higher boarding level in the future.

3.0 **UTILITIES**

The platform surface shall be as smooth and uniform as possible. The utilities duct bank shall be located at the back of the platforms so that the utilities access covers such as vaults, pull boxes, handholes, and maintenance holes are not in the main pedestrian walkways or passenger circulation area. The access covers shall be flush with the platform surface.

4.0 **DRAINAGE**

Positive drainage away from the walkways, tracks and platforms shall be provided. Drain the entire station site and contiguous railroad right-of-way.

For safety consideration, all platform surfaces shall slope at one (1)% (2% maximum per ADA) away from the track in order to eliminate the positive rolling effect of wheel chairs towards the tracks.

The other reason is for track drainage, i.e., by not draining water runoff (from rain and platform maintenance) unnecessarily to the track structure, which requires effective drainage. Less surface water runoff onto the tracks has the benefit of not unnecessarily taxing the track center underdrain system.

For center island platforms, the platform drain shall be at the center of the platform with area drains such as trench drains for discharge to the nearest municipal drainage collection system.

To enhance the effectiveness of the drainage at the station area, the track structure, the subballast shall be constructed with eight (8) inches thick Hot Mixed Asphalt Concrete (HMAC). The HMAC shall extend 10 feet beyond the limits of the platforms or through the at-grade pedestrian crossing and 10 feet beyond. Six (6) inch PVC perforated underdrain pipe shall be installed between the tracks to collect and carry the water to the municipal storm water system. Track structure drainage shall be provided with a 2% slope towards the underdrain.

Pedestrian underpass drains need to discharge to the appropriate municipal collection system.

Drainage design shall be in accordance with the standards and practices of the site specific local jurisdictions. In a case where the local jurisdictions have no codes or standards, Caltrans standards and/or Caltrain standards shall be followed. Caltrain drainage requirements are covered in **CHAPTER 8 CIVIL DESIGN.**
E. Access and Circulation

Caltrain passengers access the stations by bus, automobile, motorcycle, bike, foot, and other transit systems (SamTrans, AC Transit, Muni, VTA, Amtrak, BART, ACE, Capital Corridor, etc.) To promote the use of the station and to reduce dependence on the automobile, Caltrain encourages the provision of intermodal connections at its stations. The overall station layout shall afford the following:

a. Operational efficiencies that simplify modal interchange and passenger processing

b. A safe, efficient and convenient configuration for inter-modal transfer at the station

c. Clear and easily understood transit information that can be referenced quickly and that minimizes disorientation

Good pedestrian access and circulation to and from, station entrances, parking, and across train platforms are essential for the smooth and safe operation of stations. Access and circulation patterns should be as simple, obvious, and comfortable as possible.

1.0 Practical Design Considerations

The following are the major points that warrant careful review for applicability and consideration in achieving good pedestrian access and circulation.

a. Avoid unnecessary turns and dead ends. Pedestrian access from bus, kiss-and-ride and park-and ride areas must be as clear and as simple as possible.

b. Use color, texture and sight distances to increase visual pleasure, guidance, patron safety and security at all circulation elements.

c. Provide adequate space to avoid bottlenecks.

d. Avoid cross-circulation at fare collection and decision points. Generally provide right-hand circulation.

e. Provide adequate space so that queues at fare collection areas do not block the pedestrian traffic.

f. Locate passage ways, shelters and stairways to encourage balanced train loading and unloading. Because Caltrain bike car and ADA car are the north first and second cars, and the TVMs are also located near the north end of the platforms, passengers tend to congregate at the north end of the platforms.

g. Minimize grade changes. Where necessary, grade changes shall conform to slope criteria for disabled access.
h. Cross flows, dead ends, and turns greater than 90 degrees are undesirable for both patron security and circulation.

i. Design circulation to provide ample space adjacent to, but out of the mainstream of, pedestrian flow. This will accommodate for disabled, infrequent or waiting patrons.

j. Provide surge and queuing spaces ahead of every barrier and change in circulation, direction, or mode.

k. Avoid obstructions such as telephone booths, pylons, advertising displays, coin changers, concessions, seating or maps within the pedestrian through zone.

l. Avoid locating platform components such as railings or windbreaks or other obstructions that would impact the locomotive engineer’s line of sight as the train approaches or leaves the station.

m. Provide a minimum of two (2) points of access/egress from the platform that meet the requirements of NFPA 130.

2.0 ACCESS MODES TO STATIONS

Foot:  Provide the shortest travel path from station entrance to the platforms. All access paths shall be ADA compliant, and distinctly not interfered by other access modes.

Bicyclists:  Space shall be provided for bicycle lockers and racks at every station. These facilities shall be located to minimize conflicts with pedestrian and vehicular traffic, make the most effective use of roadways and curb cuts, and reduce the need for special graphics.

Automobiles:  Auto access shall be provided in a manner that meets all state and local codes. To the extent practical, provide a “Kiss and Ride” or auto drop-off area near a platform access as part of the parking area layout. Depending on the need and ridership of the station, a Taxi Waiting area may also need to be provided as part of the parking area layout. Provide adequate ADA parking stalls near to the primary platform entrances with accessible routes clearly delineated markings and signage.

Motorcyclists: Motorcycle parking shall be considered and separate provisions shall be made in the layout for secure and economical parking of motorcycles close to the platform in areas where car parking may not be possible.

Public Transit: Passengers transferring from other public transit services require high quality connections to Caltrain. The design of these connections should minimize travel distance and provide way-finding signage and information to maximize customer convenience.
3.0 STATION CIRCULATION

Safety is the utmost important design consideration regarding passenger circulation on platforms. A minimum 7 feet wide passenger circulation path from the edge of the yellow safety stripe shall be provided along the entire length of the platform to promote a wide and clear line of sight or visibility of approaching trains. There shall be no columns, posts, and other structures within this path. This will allow sufficient width for the passing of 2 wheel chairs side by side, or 4 person side by side. This will also allow for ease of boarding and alighting of passengers, passengers with carry on items (luggage, strollers, etc.), or bikes, and operation of wheel chair lift.

3.1 Pedestrian Crossings

Pedestrian crossings include pedestrian overpasses, underpasses and at-grade crossings. The preferred design shall have completely grade separated pedestrian access to separate platforms for each operating track, with a center fence between the tracks to prevent persons from crossing between platforms at grade.

Pedestrian at-grade crossings are intended for station circulation only and are generally not a part of an overall circulation for public at large. All new at grade pedestrian crossings require a formal CPUC application process. Pedestrian underpass is preferred than the overpass because of its much shorter travel distance. If designed attractively, the underpass enhances usage.

An emergency service crossing is typically for use of maintenance vehicles, and may also be included in the stations with pedestrian underpasses or overpasses. Designers shall consult with Caltrain of applicability of this service crossing.

Structural design of pedestrian overpasses and underpasses shall be in accordance with PCJPB Standards for Design and Maintenance of Structures.

3.1.1 Pedestrian Overpass

A pedestrian overpass is typically considered where the track is below natural grade. The overpass span shall be a minimum of 24 feet six inches (24'-6") clear above top of rail and shall be a minimum of 12 feet wide. The overpass can be served by a stair, ramp or elevator system complying with ADA requirements. A stair and ramp design is preferred. A barrier system, such as a vertical rolling door, shall be installed at entrances to both ends of the overpass for security at night when Caltrain does not provide service.

The overpass tower structure shall be 16 feet minimum clear from the centerline of track. Overpasses with open sides shall have protective railings and shall be equipped with security screens for the full height of the sides to prevent the dropping of objects from the overpass. Particular attention must be paid to wayside signal line of sight when overpasses are constructed.
3.1.2 Pedestrian Underpass

The use of a pedestrian underpass is generally the preferable alternative to an overpass where the track is at a level grade or elevated on an embankment. Underpasses shall be straight runs without corners or curves to provide through visibility. The underpass at the stations shall be at least 16 feet wide and 10 feet high at the crown (nine (9) feet at the side walls), creating an arch to soften the passage perception. The underpass shall be located where it is most convenience to the users.

For underpasses where there is considerable use by public at large (pedestrians, bicycles, etc.) and as part of the local planning, the width should be increased to 20 feet and 12 feet high (crown) and 10 feet (side). ADA compliant access must be provided in a similar manner to the overpasses discussed above. CCTV shall be installed at all pedestrian underpasses. Electrical and communications conduits should be installed at each end of an underpass to support electronic signage and CCTV. A barrier system, such as a vertical rolling door, shall be included at entrances to both ends of the underpass for security at night when Caltrain does not provide service.

3.1.3 At-Grade Crossings

At-grade crossings are clearly defined crossings whose surface is level with the top of rails and surrounding area for pedestrians. At-grade crossings at stations shall be constructed at the end(s) of the platform. This eliminates blockage of the crossing by a standing train, as opposed to having open crossings at the end of the platform where passengers can walk in front of a standing train when crossing warning devices have recovered. All at-grade pedestrian crossings shall be equipped with automatic warning devices. Crossing surfaces shall be a minimum of 10 feet wide and with end ramps of hot mixed asphalt at 1:8 slope.

If an existing roadway crossing equipped with automatic warning devices exists directly adjacent to a station, it may be an acceptable at-grade passenger/pedestrian crossing. It is preferable to utilize an existing crossing rather than add an additional at-grade crossing. The station designer shall seek input from Caltrain and evaluate the existing crossing to determine if improvements are necessary.

At-grade crossings are described in more details in **CHAPTER 7 GRADE CROSSINGS**.

3.2 Walkways

Walkways shall be 8 feet wide to allow for passage between pedestrians and bicyclists, except at crossing, the walkways shall be 10 feet wide. Provide adequate sight distance and visibility along pedestrian routes. Pedestrian walkways shall be well lit. Refer to **Section I** of this Chapter for lighting requirements.
3.3 Vertical Circulation

Provide stairs and ramps if required. Elevators and escalators are not preferred. Site selection, however, should serve to eliminate the need for vertical circulation. All vertical circulation elements shall conform to all building code requirements and accessibility standards per American with Disabilities Act Accessibility Guidelines (ADAAG) and California Code of Regulations (CCR), Title 24.

3.3.1 Stairs and Ramps

Stairs and ramps shall be provided where changes in grade make vertical access to platforms a necessity. At locations where grade changes of 10 feet or more occur, for example at pedestrian overpass, elevators may be considered. Exterior stairs at Caltrain stations are cast-in-place concrete. Use of precast concrete or steel stairs is discouraged.

3.3.2 Elevators

Elevators may be considered for platform access only where vertical distance makes ramps impractical, which is generally defined as greater than 12 feet. Installation of elevators only with approval of Caltrain Deputy Director of Engineering. Elevators should be located adjacent to the main access point of platforms.

Elevators are typically prone to maintenance for functional and general upkeep, hence they are generally economically prohibitive. The machinery require mandatory regular safety inspections as part of permitting by the state.

3.3.3 Escalators

Escalators may be considered for platform access where stair rise exceeds 24 feet in height and where justified by passenger volume, and only with approval of Caltrain Deputy Director of Engineering. Escalators serving platforms shall be fully enclosed in weather-tight structures and enclosed landings shall be provided at platform level.

4.0 PARKING

Parking lots/structures are elements that are determined by ridership and available land use and ownership. Caltrain will coordinate through local jurisdiction for parking lot requirements. Parking structures shall be addressed on a project-specific basis.

The size and shape of the site are the principal determinants in designing the most efficient parking lot layout, with positive drainage away from the tracks. Parking layout should minimize the length of the accessible route to the platform. Whenever the site permits, parking lot aisles should be oriented and located perpendicular to the platforms to facilitate access to/from the platform, and to avoid the need for passengers to walk between parked cars.

The required number of parking spaces shall be based on ridership and will be provided by Caltrain. Allowances shall be made for accessible spaces, motorcycle
parking, and bicycle lockers, and potential van and carpool spaces. Loading and unloading areas for buses, minibuses, vanpools and cars shall be provided as appropriate for the anticipated vehicle population.

Right-of-way availability may constrain the provision of the minimum required spaces. The designer shall seek inputs from Caltrain on a case-by-case basis in determining the minimum required spaces.

Parking lot walkways shall have a minimum 8 foot clear path of travel. Vehicles shall not encroach on the path of travel.

Parking areas adjacent to the Caltrain right-of-way shall be fenced as per Section F of this Chapter.

F. FURNISHINGS AND AMENITIES

All station platform furnishings and amenities shall be standardized to provide familiarity to the users and to provide a uniform appearance. The standardization also facilitates ease of maintenance and replacement. Station furnishings include shelters, bike lockers, bike racks, benches, news racks, trash receptacles. Station amenities includes passenger information system, and fare payment system.

The principles of Crime Prevention Through Environmental Design (CPTED) shall be applied to all furnishings and amenities. To prevent vandalism each of the furnishings and amenities shall be securely fastened to the platform, and those secured on the poles or posts shall be at adequate height.

Caltrain Standard Drawings provide a general layout and design requirements of each of the furnishings and amenities.

1.0 FURNISHINGS

Station furnishings include all furniture located on the platforms and station buildings for the comfort and convenience of passengers. For placement of furniture and signs on the platforms, see Caltrain Standard Drawings. As a minimum, the station furnishings shall include shelters, including those for the mobility impaired, benches, and trash receptacles. The minimum amenities shall include passenger information system, namely public information case, electronic messaging system (Visual Message Signs and Public Address System), and fare payment system.

1.1 Shelters

A shelter is a metal roofed, free-standing structure provided for the comfort of passengers and for protection from weather for passengers. All shelters shall conform to the requirements of the Americans with Disabilities Act (ADA), Title II, and California accessibility regulations, Title 24.
The shelters shall be nominally 7 feet deep and 18 feet wide for outboard platforms. The shelters shall be 8 feet deep for center island platforms. See Caltrain Standard Drawings for design requirements of these shelters.

Shelter posts or columns shall be clear a minimum of 16 feet from the centerline of track. Shelter elements shall have sufficient transparency to provide adequate visual surveillance of the station area to discourage vandalism and enhance users safety. Shelters should not create hiding areas. Shelter materials shall be of vandal resistant. Each shelter shall have a bench that is integrated and secured to the shelter structure.

The clear height of passenger shelters shall be a minimum of 6 feet 8 inches (6'-8") and a maximum of 8 feet above top of platform.

Each shelter shall be illuminated. Illumination requirements for platforms and other station areas are contained in Section I ELECTRICAL SYSTEMS.

There are 2 types of shelters for different use, namely passenger shelters, including for the mobility impaired, and TVM shelters. Each of these is described below.

1.1.1 Passenger Shelters

In general one shelter per platform shall be provided for each car. The shelter shall line up with the car door, as shown in the Caltrain Standard Drawings. The shelters shall be 18 feet wide, vandal resistant, and furnished with two (2) lamps located at the opposite end of the shelter, and a bench.

A smaller shelter shall be provided one per platform for the use of the mobility impaired. This shelter shall be located in the Boarding Assistance Area (BAA).

The clear height of passenger shelters shall be a minimum of 6 feet 8 inches (6'-8") and a maximum of 8 feet above top of platform.

1.1.2 Ticket Vending Machines (TVM) Shelters

Shelters shall be provided for the Ticket Vending Machines (TVMs) and the public pay phone. These shelters are of similar design as those for passengers, but configured for adequate space (width and depth) for wheelchair maneuver. The shelter posts are also configured to accommodate wheel chair access to the TVM units. There will not any bench inside these shelters.

1.2 Benches

These benches are to be located along the platform. The benches are of outdoor environment (not inside the shelters) hence they shall be heavy duty, scratch and vandal resistant, and secured to the platform. The benches have arm rest in the middle to discourage sleeping on the benches and used as skateboard ramps. Benches shall be placed to line up with each car. Refer to Caltrain Standard Drawings.
1.3 Trash Receptacles

Trash receptacles shall be provided on each platform at the following locations:

a. At each side of the passenger shelter and TVM shelter
b. At each bench
c. At or near platform entrances
d. At parking areas near the stairways and ramps

Trash can receptacle shall be of concrete construction and standardized top loading heavy type as a deterrent to vandalism. Trash cans shall have minimal exposure of opening to wind and rain. At certain high volume and key stations, recycle receptacles shall be provided. Trash receptacles shall not interrupt passenger flow and shall be placed in visible locations that are accessible to cleaning crews. See Caltrain Standard Drawings.

1.4 Bike Lockers and Racks

As a general rule, the number of bike lockers and bike racks shall generally be one (1) locker and six (6) bike racks for every 100 passengers. The amount may vary due to local demand and ridership which will be provided by Caltrain.

Bike lockers and racks shall not be located near the one third end of a platform north entrance. Instead they shall be located in a well lighted area and in a highly visible location within view of the public and police patrols. A minimum clear distance of six (6) feet shall be maintained around bike lockers and racks. Clear signage shall be provided directing users to them. Bike racks or lockers are not allowed to be located on the platform.

Bike lockers shall be secured modular units. Bike racks shall be square metal tubes that provide two points of contacts for each bike. See Caltrain Standard Drawings.

1.5 Newspaper Racks and Vending Machines

Newspaper Racks and Vending Machines are not allowed on platforms. This is to avoid unnecessary congestion to passenger access and circulation. The racks and machines may be placed inside the station concourse or passenger waiting area. If the station does not have a waiting area, then the racks and machines may be placed on the City’s sidewalks near the station entrances.

No food and beverages concessions are allowed on the platforms. Trash that inadvertently land on tracks are not only a maintenance issue, but is potentially hazardous for passengers and public at large upon passing trains.

2.0 STATION AMENITIES

Station amenities generally refer to passenger information system, fare collection system, and security system. Communication to the passengers is through the Caltrain Central Control Facility (CCF) in San Jose. The remaining subsystems (fare
collection and security cameras) are connected to Caltrain headquarters in San Carlos.

All station amenities shall be securely fastened to the platform or pole/post as applicable. For placement of station amenities on the platforms, see Caltrain Standard Drawings. For technical details, refer to CHAPTER 4 STATION COMMUNICATIONS.

2.1 Passenger Information System

Information system provided to the passengers consists of Visual Message Sign (VMS), Public Address System (PAS) and Public Information Cases. Each of these is described below.

2.1.1 Visual Message Sign (VMS)

The Visual Message Sign (VMS) is an electronic messaging system designed as one of the means to communicate with the passengers. The VMS is also required by ADA to augment and complement audio public address messaging for the benefit of the hearing impaired.

Each VMS unit has two (2) identical sides to display identical messages, capable of streaming 2 parallel lines. A minimum of two (2) VMS boards per boarding platform shall be provided for viewing convenience and for redundancy. The VMS board shall be located approximately one third of the platform distance from each platform end. Typical vertical clearance from the platform floor to the message board is 8 feet 2 inches and maximum clearance of 9 feet. The edge of the VMS board shall not be closer than nine (9) feet from track center, but for maximum visibility, not be more than 11 feet from track center.

2.1.2 Public Address System (PAS)

The Public Address System (PAS) provides clear, audible communication to passengers waiting at a station. The PAS augments and complements the VMS system.

The PAS consists of speakers located along boarding platforms. A pair of PAS speakers shall be mounted on every other light pole beginning at the second light pole on the north end of the platforms. The speakers shall be mounted at such a height to provide the optimum broadcasting and to prevent vandalism.

2.1.3 Public Information Case

Public Information Case (Info Case) is designed to post schedule, system map, “You Are Here” map, and advisory bulletins. The Info Case shall be provided as close to the platform entrances and TVMs as possible. Provide one display case adjacent to the TVM shelter and other display case as shown on Caltrain Standard Drawings.

The Info Case shall be lockable with multiple lock points. The case shall be provided with vent holes to minimize fogging on the glass by reducing the collection of
moisture inside the case. The Info Case shall be heavy duty and suitable for exterior environment. Detailed design of this Info Case is provided in the Caltrain Standard Drawings.

2.1.4 Talking Signs

Talking signs for the visually impaired persons are currently available at the Caltrain terminal stations at San Francisco 4th & King Station and the San Jose Diridon Station. Talking signs are not an ADA requirement.

2.1.5 Public Pay Phones

One telephone per platform shall be provided to improve the sense of security and convenience, as most stations are not staffed. The phone shall be located inside the TVM shelter as indicated in the Caltrain Standard Drawings.

2.2 Fare Collection System

The Fare Collection System consists of Ticket Vending Machines (TVM) for train ticket purchase and parking fee, and for Clipper, the regional smart card system or Clipper. Both the TVMs and Clipper are located on the platforms and in a well lighted area during hours of darkness.

2.2.1 Ticket Vending Machines (TVM)

The TVM is for ticket purchase and for payment of parking. There shall be a minimum of two (2) units or a pair of TVMs per platform area. The two (2) TVMs and a public pay phone are housed inside a shelter. The location of this shelter shall be such so as not to cause congestion from passengers using the equipment. The TVMs shall be located and housed approximately 220 feet from the northern edge of the platform. The proposed layout is shown in more details in the Caltrain Standard Drawings.

At stations with high ridership a second pair of TVMs shall be provided per platform. The second TVM pair shall be located not more than 300 feet apart from the other pair.

2.2.2 Clipper

The Metropolitan Transportation Commission (MTC) comprising of nine (9) counties within the San Francisco Bay Area implements Clipper, a smart card fare payment technology. Clipper allows public transit riders to use Bay Area public transit regardless of the varying fare structures on different transit systems and without having to carry cash, ticket books or passes. Caltrain is implementing this program, which is designed, installed, and managed by MTC.

As part of the Clipper, a device called Card Interface Device (CID) is installed on the platforms. A minimum of three (3) CIDs are provided on each platform: one is located toward the center of the platform preferably near a TVM shelter, and one each toward each end of the platform and near an entrance to the platform.
G. SAFETY AND SECURITY

The principles of Crime Prevention Through Environmental Design (CPTED) shall be applied to Safety and Security. The design from the preliminary to final shall be reviewed by a CPTED certified professional.

Detectable warning tactile, yellow safety stripe, and detectable directional tactile described earlier in the Chapter also function as enhancement to safety.

1.0 LIGHTING

Provide lighting at all station and parking areas, and eliminate any dark spots. Refer to Section 1 ELECTRICAL SYSTEMS for details of illumination level of lighting.

2.0 HANDRAILS AND GUARDRAILS

Guardrails (3 feet 6 inches high) with base curb plate shall generally be provided at the back side of the platform where there is a grade drop of six (6) inches or more for fall protection purposes. Handrails and guardrails shall also be provided in all appropriate locations and shall conform to all building code requirements and accessibility standards per ADAAG and CCR, Title 24. Guardrails shall not have an ornamental pattern that would provide a ladder effect.

3.0 FENCING

3.1 Center Fence

Where two (2) or more tracks serve a station, a center fence shall be provided for the full length of the platforms and to the at-grade pedestrian crossings, and further at least 100 feet beyond the crossings. The fence shall be six (6) feet in height from top of tie to act as a deterrent to climbing and prevent from passing through the fence, as well as indirectly guide passengers to the pedestrian crossings. The fence design shall be in accordance with the Caltrain Standard Drawings. The design is a balance between the aesthetic look and the structural sturdiness and strength in order to withstand vandalism and through express trains, and to allow for hanging of various station signage. Centerline of fence shall be 8 feet 6 inches (8'-6") minimum clear from centerline of track as per FIGURE 3-1.

The fence shall be sturdy to allow for mounting of the majority of station signage.

3.2 Right-of-Way Fencing

Within the vicinity of a station the right-of-way fencing shall be installed to prevent any unsafe short cut to the platform and to guide the passengers to the designated platform entrances. The fencing shall be a minimum of six (6) feet high.

Fencing shall be installed along the entire length of all parking areas adjacent to Caltrain right-of-way. Fences adjacent to roadways and parking lots should be set back and protected by curbing to allow for vehicular overhangs. The fencing outside of the station area shall generally be eight (8) feet high ROW fencing, and a
minimum of 10 feet from the nearest track center (more on curved tracks). Right-of-
way fencing includes access gates for maintenance personnel.

4.0 CLOSED CIRCUIT TELEVISION (CCTV) CAMERAS

Closed Circuit Televisions will be installed on the platforms at intermodal stations,
and as directed by Caltrain. If CCTVs are installed in the parking area at intermodal
stations, Caltrain will coordinate with the local enforcement agency for possible
monitoring. CCTVs shall be installed in the pedestrian undercrossings and
underneath the bridges where the stations are located. Caltrain will coordinate with
local enforcement agency for monitoring possibility and logistical requirements or
preferences. Effective use of the cameras at night will be dependent upon the level
of illumination at the camera locations. This shall be determined by the CPTED
certified personnel in collaboration with Caltrain.

H. STATION SIGNAGE

Caltrain station signage include sign panels and platform markings, collectively
referred as signs. The signage serves to provide clear directions and information to
passengers without additional assistance. Some of the signs is required by law such
as ADA related signs, while others are safety and other regulatory advisories. Signs
shall be placed at sufficiently frequent intervals and at visible locations, and generally
and to the extent possible in well lighted area.

Caltrain Signage Standards are contained in the Caltrain Standard Drawings under
Stations and Facilities. The signs are grouped into different types based on their
functionality. Each sign is labeled and numbered sequentially with the initial
identifying its type. The Standards also includes dimensions and specifications of
the panel material, the graphic, as well as applicable mounting details. To ensure a
high level of consistency and uniformity of the sign products, Caltrain will provide the
artwork of these signs to the sign vendor. The artwork does not include markings,
municipal traffic signs, or standard regulatory signs such as railroad signs.

As part of the station design, designer shall prepare a sign schedule specific to the
station. The schedule shall include in details the sign type, sign number, description,
quantity, locations, additional mounting details, etc. consistent with what is shown in
the Caltrain Standard Drawings. In addition to Caltrain standard signs, designers
shall identify and provide any additional signs such as wayfinding signs that may be
required for the station. Design of the signage shall conform to the goals and
purpose of the MTC’s HSP (Hub Signage Program). More about this Program
follows.

1.0 CALTRAIN SIGNAGE

Caltrain signs are static. The signage, including wayfinding signage are for
placement on the platforms as well as in parking lots. Dynamic signs are provided
typically at multi-modal stations in accordance with the MTC’s HSP (Hub Signage
Program).
1.1 Signage Types

There are nine (9) different sign types based on their functions and purposes as follows. See Caltrain Standard Drawings (SD 3000 series) for further details.

Type 1 - Station Identifier
Station name or station identification. They include station name mounted on the light poles, and Caltrain corporate logo on the shelters.

Type 2 - Operations Signs
Information for both passengers and train operations crew. The include Spot cabs, and Information case.

Type 3 - Boarding Assistance Signs
Information to assist for Persons Needing Assistance (PNA). They include BAA signs on PNA shelters, and bench card.

Type 4 - Station Directional Signs
Information for passengers showing train service direction so they are on the correct platforms. These signs are mounted on the center fence.

Type 5 - Regulatory and Warning Signs
These signs are safety advisory (regulations and warning) signs located at various locations. They include No Fun signs (No Smoking, No Skateboarding, No Smoking), Keep Right/Keep Left signs (mounted on return fence at the limits of the platforms), Look Before Crossing and Trespassing/Suicide Hotline signs (at the at-grade pedestrian crossings).

Type 6 - Proof of Payment
Fare collection or ticketing advisory.

Type 7 - Wayfinding Signs
Include various information mainly around the station area.

Type 8 - Parking Signs
General and ticketing information for parking, and restricted parking information, as well as general parking signs (No Parking, ADA Parking, etc.). These signs are provided at the entrance to the parking area.

Type 9 - Grade Crossing Signs
Safety and warning signs mounted on the pedestrian exit gates at the pedestrian at-grade crossings.

1.2 Wayfinding Signage

Additional wayfinding signs may be required and located well in advance of station destinations and in areas where there are no obstructions. Wayfinding signs shall be placed to provide directions from highway or major arteries.
1.3 Signage Placement

These signs are to be placed principally at three (3) locations: on the platforms (including on the electrical poles), on the center fence and in parking lots. The vast majority of the signs are mounted on the center fence (for outboard platforms), and on the right-of-way fence (for center island platform). The signs on center fence provide a much higher level of feasibility to the public, while at the same time minimize clutter on the platforms. Additional benefits include a much reduced maintenance of these signs due to less potential vandalism.

1.4 Station Markings

The markings are painted on the station platforms and mini-high platforms consist of the following. For longer performance, the markings shall be painted first with primer to seal the surface porosity, and at least two coats.

a. Boarding Assistance Area:
   This marking consists of an ADA logo, and is painted on the platform toward the north end of the platform designated as the Boarding Assistance Area (BAA).

b. “Wait Behind Yellow Line”
   The text “Wait Behind Yellow Line” advises waiting to be behind the yellow safety stripe which is behind the warning tactile. The edge of this line marks a distance of nine (9) feet from the track center.

c. “Wait Behind The Yellow Tiles”
   This advisory note is a marking on the mini-high platform cautioning passengers to stay behind the warning tactile on the mini-high platform.

d. “Warning. Not a Waiting Area”
   This text marking is on the station platform between the safety yellow line and the mini-high platform.

2.0 MTC HUB SIGNAGE PROGRAM

In 2010 the Metropolitan Transportation Commission for the San Francisco Bay Area (MTC) implements a Hub Signage Program (HSP) for all transit agencies in the Bay area. Its purpose is to elevate the functionality of the transit center through streamlined and consistent wayfinding signage and consolidated schedule and fare information for transit passengers traveling throughout the Bay area.

The MTC has identified 21 initial regional transit hubs in the Bay area, 5 of which are Caltrain stations because of their hierarchy as multi-modal stations. These 5 stations are San Francisco (4th and King), Millbrae, Palo Alto, Mountain View, and San Jose (Diridon). Except for Millbrae, which will be implemented soon, the HSP implementation at all other Caltrain four (4) stations have recently been completed (2011). See TABLE 3-1 CALTRAIN STATIONS.
2.1 HSP Standards

The MTC has established technical standards by which design elements and guidance on where to locate them, and the signs affected include directional signs, way-finding kiosks, transit information displays, real-time transit information displays.

When implementing the HSP, designer shall consult the latest version of the MTC Standards & Guidance Document for further guidance on the content, where, when and how to install the signage types. (See link below):

http://mtcfilehost.net/hub_signage/final_standards/

The HSP consists of six (6) types of signs, graphic examples and design details can be found in Appendix A of the MTC HSP Standards document:

Type 1: Wayfinding (static signs)
Type 2: Transit Center ID (static signs)
Type 3: Transit Information Displays (TIDs) – (static signs)
Type 4: Wayfinding Kiosk (static signs)
Type 5: Information “Flag” Sign (static signs)
Type 6: Real time Information Displays (dynamic signs)

3.0 CALTRAIN HSP IMPLEMENTATION

For stations outside the five (5) multi-modal stations, a tiered approach will be used to implement additional HSP sign types for each of the Caltrain stations. During the planning process for any major rehabilitation of stations, designer shall through Caltrain collaborate with the MTC to ensure the appropriate level of signage under the HSP is applied, and for any exception to the MTC Standards.

During the design, it is also prudent to update the station ranking and hierarchy because as density and transit access around stations increase, it will result in a greater application of the HSP at stations that may not trigger a significant level of wayfinding signage today. See TABLE 3-1 CALTRAIN STATION (RANKING AND HIERARCHY)

As a general guidance, the HSP sign implementation may be as follows. However, the final determination of the signs shall consider the need to maintain the familiarity and feel of Caltrain that the public has been accustomed to.

a. For Multi-Modal Stations: MTC HSP all 6 types
b. For Tier 1 stations: MTC HSP Sign types 1, 2, 3, 4, and 5
c. For Tier 2 stations: MTC HSP Sign types 1, 2, 3 and 5
d. For Tier 3 stations: MTC HSP Sign types 1, 3, and 5

I. ELECTRICAL SYSTEMS

The electrical systems shall be functional for the supply, control, and protection of all ac power electrical requirements. All exposed conduit on platform structures shall be painted to match the structure. The power requirements at the station include the following:

a. Lighting (platforms, shelters, parking, access, etc.)
b. Fare Collection Equipment
c. Station Communications Devices such as VMS and PAS
d. Safety and Security Devices such as CCTVs
e. Pedestrian Crossings Signal Equipment, although the power is included in the Signaling system
f. Emergency Lighting and Power Systems (if required)
g. Mechanical Equipment (if applicable)

1.0 ELECTRICAL SERVICE

The electrical service shall consist of two (2) separate systems. One service is for the mission critical signaling system. The other service is for all other station needs, such as general lighting, communications devices, fare collection systems, mechanical equipment, etc. Designer shall coordinate with various discipline users for load requirements and overall electrical system design.

Platform power requirements typically shall have 120/208V, 3-Phase, 4-Wire, 100 amp minimum capacity for general lighting. Power requirement for parking areas is dependent on the proposed power usage. The power requirements for communications devices are included in CHAPTER 4 STATION COMMUNICATIONS, and the requirements for signaling system are included in CHAPTER 5 SIGNALS.

Each station typically has a Communications Equipment Room (CER), and other communication cabinets. The main electrical service drop will be co-located in the CER. Electrical service drop for signal equipment will be located near the signal house(s). The CER also houses the electronic equipment for all station communications devices such as fare collection systems (Ticket Vending Machines, Clipper or Regional Translink Pay System), and passenger information systems (Visual Message Signs, Public Address or PA System), as well as possibly CCTV cameras. See CHAPTER 4 STATION COMMUNICATIONS for further details.
2.0 CONDUIT SYSTEMS

Station platforms and facilities shall contain power and communications conduits and pull boxes required to support all Caltrain equipment, including ticket vending machines (TVMs), Clipper, public address (PA) speakers, visual message signs (VMSs), and closed circuit televisions (CCTVs).

All conduit systems (electrical, communications, and signals) shall be located within the utility corridor located behind the platform to prevent platform closure in the event that there is a failure in the conduit system requiring excavation within the platform area. All conduit runs other than short laterals shall be a minimum of two (2) inches diameter. One (1) empty spare conduit with a pull cord shall be provided for each conduit crossing beneath the tracks. Spare conduits shall be the same size as that installed. Exposed wiring or conduit serving passenger shelters, lighting, PA speakers, electronic message boards, ticket and closed circuit televisions is not permitted.

The right-of-way is also used for fiber optic and signal lines which are buried in conduit systems within the right-of-way. To prevent closure of the platform and to allow excavation for these lines, it is Caltrain’s policy to provide at least four (4) inch diameter conduits for the full length of the platform with four (4) feet square pull boxes. These conduits will be installed in addition to any other conduit systems installed for the platform.

3.0 LIGHTING DESIGN REQUIREMENTS

3.1 General Hardware Requirements

All luminares and lamp types shall be standardized system wide to provide design and perceptual unity and simplify maintenance requirements. All site lighting fixtures should be waterproof and vandal-resistant and should have tight gaskets to prevent infiltration of dust. Luminares shall function effectively for a minimum of 20 years, allowing for routine maintenance.

3.2 Illumination Levels

Illumination levels shall define and differentiate between task areas, decision and transition points, and areas of potential hazard. Passengers will perceive greater security when platforms, walkways and parking lots are properly illuminated. Platform lighting is essential to safety and security of station facilities and will provide increase safety of the passengers as they board and alight trains.

In addition to quantity of light, it is essential that illumination be designed to minimize glare and provide uniformity level of 3:1 (average to minimum). Luminares shall be selected, located, and/or aimed to accomplish their primary purpose while producing a minimum of objectionable glare and/or interference with task accuracy, vehicular traffic and neighboring areas.

The illumination levels shall be as shown in TABLE 3-2 ILLUMINATION LEVELS.
3.3 Lighting Requirements

Station lighting includes internal site circulation and access to the station. The placement of luminaires shall not obstruct the movement of vehicles. Luminaire placement shall be coordinated with the landscape and site plan to protect light standards which are located adjacent to roadways, and to ensure that plantings will not obscure the lighting distribution pattern. Vehicular access lighting shall provide a natural lead-in to the bus area and Kiss and Rides. The illumination on all access and egress roads shall be graduated up or down to the illumination level of the adjacent street or highway.

Pedestrian access way lighting shall define pedestrian walkways, crosswalks, ramps, stairs, tunnels and bridges.

Platform area lighting shall be as shown in Caltrain Standard Drawings. The lighting elements shall extend the entire length of the platform and shall demarcate the platform and emphasize the platform edge and vertical vehicle surfaces. Care shall be taken to avoid "blinding" train engineers or other vehicle drivers with excessive or misdirected lighting. Similarly, platform lighting shall also not direct to the adjacent residence. For placement of platform luminaires, see Caltrain Standard Drawings.

### TABLE 3-2 ILLUMINATION LEVELS

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>ILLUMINATION LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boarding Platform and Waiting Areas</td>
<td>5 foot candles - average</td>
</tr>
<tr>
<td>Emergency Lighting: Aerial (pedestrian overpass), Underpasses, Stairways, Escalators and Elevators</td>
<td>2 foot candles - minimum</td>
</tr>
<tr>
<td>Emergency Lighting: Parking Garage</td>
<td>1 foot candles - minimum</td>
</tr>
<tr>
<td>Escalators and Elevators</td>
<td>10 foot candles - average</td>
</tr>
<tr>
<td>Shelters: Passengers</td>
<td>10 foot candles - minimum</td>
</tr>
<tr>
<td>Shelters: TVM and public phone</td>
<td>15 foot candles - average</td>
</tr>
<tr>
<td>Parking Lots</td>
<td>2 foot candles - average</td>
</tr>
<tr>
<td>Parking Garages</td>
<td>4 foot candles - average</td>
</tr>
<tr>
<td>Parking Permit Machines</td>
<td>10 foot candles - minimum</td>
</tr>
<tr>
<td>Pedestrian Underpass</td>
<td>10 foot candles - average</td>
</tr>
<tr>
<td>Signage</td>
<td>10 foot candles - average</td>
</tr>
<tr>
<td>Stairs and Ramps</td>
<td>10 foot candles - average</td>
</tr>
<tr>
<td>Station Building: Primary Public Entrances and Exits</td>
<td>10 foot candles - average</td>
</tr>
<tr>
<td>Walkways, Entrances and Exits</td>
<td>10 foot candles - average</td>
</tr>
<tr>
<td>Yard Lighting</td>
<td>5 foot candles - average</td>
</tr>
</tbody>
</table>
3.4 Control of Lighting Systems

Lighting control shall be designed to use energy efficiently. Automatic and manual control arrangements shall ensure efficient utilization of energy and maintenance procedures. All exterior site areas shall be controlled by a photocell with time clock and manual override.

J. LANDSCAPING AND IRRIGATION

1.0 LANDSCAPING

Landscaping shall be designed to enhance the overall aesthetic value of the station. Ideally, landscaping shall define areas, direct pedestrian traffic and provide shade and screening from adjacent properties. Landscaping shall also provide proper site drainage and stabilize slopes and embankments. Landscaping shall be low-maintenance and drought resistant.

Landscaping shall not impede visibility of the platform areas, or in the parking lots. The principles of CPTED shall be applied so as not to create hiding spaces or security barriers or interfere with access to any facility for maintenance. Landscaping shall not obstruct electronic or static signage, or impede line of sight for the train operations. Landscaping shall not be included on the platform.

All landscaping shall be a minimum of 16 feet clear from the centerline of track. Trees and shrubs shall be located so that the anticipated growth will not encroach closer than 16 feet to the centerline of the nearest track. No trees shall be planted closer than 25 feet from the centerline of track.

2.0 IRRIGATION

Where irrigation is used, the water spray and drainage shall be designed to maximize coverage and reduce overspray, and shall be directed away from tracks, platforms and walkways. Drainage requirements are covered in CHAPTER 8 CIVIL DESIGN.

3.0 PLATFORM WASHDOWN FACILITY

Platforms shall be provided with quick connect couplers in recessed boxes at the back of the platform. The couplers shall be at approximately 85 feet on center to allow full coverage with a 50 foot hose. Drainage requirements are covered in CHAPTER 8 CIVIL DESIGN.

END OF CHAPTER