

NOTICE OF MEETING AND AGENDA
BART Bicycle Advisory Task Force (BBATF)

May 9, 2022
6:00 p.m. – 8:00 p.m.

BBATF Members: Jon Spangler (Chairperson), Rick Goldman (Vice Chairperson), Jianhan Wang, Jeremiah Maller, Phoenix Mangrum, Bill Pinkham.

Chairperson Jon Spangler has called a meeting of the BART Bicycle Advisory Task Force on May 9, 2022, at 6:00 p.m.

Please note, pursuant to all necessary findings having been made by the Board of Directors of the San Francisco Bay Area Rapid Transit District (for itself as well as all subordinate legislative bodies) to continue remote public meetings in the manner contemplated under urgency legislation Assembly Bill No. 361, public participation for this meeting will be via teleconference only.

To Join the Zoom Meeting Online, visit: <https://us06web.zoom.us/j/88035802213>

To Join the Zoom Meeting via Telephone (audio only), call: +1 720 707 2699 US (Denver)

Meeting ID: 880 3580 2213

AGENDA

1. Self-introductions of members, staff, and guests: All. *(For Information)* 5 min.
2. General discussion and public comment: Jon Spangler. *(For Information)* 5 min.
3. BART Facility Standards Overview: Norman Wong, BART Office of the District Architect. *(For Information)* 30 min.
4. Introduction to Transbay Corridor Core Capacity Program (TCCCP): Siew Chin Yeong, BART Design & Construction. *(For Information)* 30 min.
5. BBATF Member Local Updates: All *(For Information)* 15 min.
6. BART Bike Program Updates: Heath Maddox. *(For Information)* 10 min.
7. Future Agenda Items: All *(For Discussion)* 10 min.

BART provides service/accommodations upon request to persons with disabilities and individuals who are limited English proficient who wish to address Committee matters. A request must be made between one and five days in advance of Board/Committee meetings, depending on the service requested. Please contact the Office of the District Secretary at (510) 464-6083 for information.

CRITERIA ARCHITECTURE

PASSENGER STATIONS

CONTENTS

- 1. GENERAL**
 - 1.1. Application
 - 1.2. Acceptance of Existing Conditions
 - 1.3. Section Includes
- 2. DESIGN PRINCIPLES**
 - 2.1. Patronage
 - 2.2. Service Standards
 - 2.3. Design Capacity
 - 2.4. Train Load
 - 2.5. Headway
 - 2.6. *Pedestrian Hazards*
 - 2.7. Information Display
- 3. BASIC CODE AND BUILDING REQUIREMENTS**
 - 3.1. *Use or Occupancy*
 - 3.2. *General Building Limitations*
 - 3.3. *Building Construction*
 - 3.4. Materials and Finishes
- 4. CONCOURSE**
 - 4.1. General
 - 4.2. Queuing
 - 4.3. *Run-Offs*
 - 4.4. *Station Agent Booth*
 - 4.5. *Service Gate*
 - 4.6. Automatic Fare Collection
 - 4.7. *Patron Amenities and Concessions*
 - 4.8. *Employee Facilites*
- 5. PLATFORM**
 - 5.1. General
 - 5.2. Configuration
 - 5.3. Size

- 5.4. *Clearances*
- 5.5. *Platform Edge Detection*
- 5.6. Station Platform Emergency Third Rail Trip Station
- 5.7. Slope
- 5.8. Circulation

6. STATION INGRESS AND CIRCULATION

- 6.1. General
- 6.2. Station Entrances
- 6.3. Passageway/Portal
- 6.4. Concourse Area
- 6.5. Code Requirement
- 6.6. *Additional Code, Accessibility, and Safety Criteria*
- 6.7. Platform Existing
- 6.8. Concourse Existing
- 6.9. *Preferred Bicycle Route*

7. VERTICAL CIRCULATION

8. STAIRS

- 8.1. General
- 8.2. *Code Requirements*
- 8.3. Bicycle Stair Channel

9. ESCALATORS

- 9.1. General
- 9.2. *Electrical*
- 9.3. *Communications and Seismic Sensor*
- 9.4. Mechanical

10. ELEVATORS

- 10.1. General
- 10.2. Electrical
- 10.3. *Communications and Seismic Sensor*
- 10.4. Mechanical
- 10.5. *Other Requirements*

11. MECHANICAL AND PLUMBING SYSTEMS

- 11.1. General
- 11.2. HVAC Criteria

- 11.3. *Fire Protection Criteria*
- 11.4. Plumbing and Drainage Criteria

12. ELECTRONICS

- 12.1. General
- 12.2. *Public Telephones*
- 12.3. Private Telephones
- 12.4. *Public Address System*
- 12.5. *Trunk Radio System*
- 12.6. *Closed-Circuit Television (CCTV) System*

13. SANITATION AND MAINTENANCE

- 13.1. Basic Design Objectives
- 13.2. *General Criteria*

14. NOISE AND REVERBERATION CONTROL

- 14.1. General
- 14.2. Purpose
- 14.3. Station Interior Acoustical Design
- 14.4. Station Areas Related to Noise from Traffic and Railroad Operations

15. ANCILLARY FACILITIES

- 15.1. General
- 15.2. *Train Control Room*
- 15.3. *Battery Room (UPS)*
- 15.4. Train Control and Communications HVAC Room
- 15.5. Traction Power Substation
- 15.6. *Emergency Management Panel Room*
- 15.7. Standby Generator Room

CRITERIA ARCHITECTURE

PASSENGER STATIONS

1. GENERAL

This Section includes architectural design requirements for passenger stations and associated support facilities.

1.1. APPLICATION

This document applies to all stations, existing and planned, and facilities that are physically connected or adjacent.

1.2. ACCEPTANCE OF EXISTING CONDITIONS

For stations in a state of good repair and adequate operation, the District may accept station elements in their existing condition without mandating conformance to the requirements herein.

1.3. REFERENCE STANDARDS

Design of station shall comply with the principal standards listed below, except when superseded or amended by the District's Facility Design Criteria. The latest edition of any design standards, codes, and regulations shall be used:

- A. California Building Code, as applicable;
- B. NFPA101, 130, 220, as applicable;
- C. California Code of Regulations CCR Title 8, as applicable;
- D. California Code of Regulations CCR Title 24, as applicable;
- E. American with Disabilities Act Accessibility Guidelines, as applicable;
- F. American Society of Mechanical Engineers Safety Code for Elevators and Escalators, ASME A17.1,
- G. Appendices, District Programs and Guidelines, BART Station Access Guidelines.

2. DESIGN PRINCIPLES

Stations shall be designed to make access to the transit system as safe, rapid, and convenient as possible for all potential passengers. There are five main considerations for station design:

- A. **Safety and Security.** Providing adequate station evacuation capacity as well as preventing unsafe conditions such as overcrowded platforms and escalators feeding congested areas. Stations should be planned to have the best possible unobstructed lines of sight and well-lit spaces throughout. Long passageways, dark spots, hiding places and dead ends shall be avoided.
- B. **Passenger Experience.** Ensuring the quality of passenger experience by minimizing congestion. Provide adequate physical clearances and space for smooth flow of passengers, and reasonable comfort level for waiting and circulating in the station. The level of space provision recommended in this guideline is considered to be economically optimal. Stations should be planned to optimize access to stations by all modes of transportation, in accordance with the access hierarchy – see Appendix, BART Station Access Guidelines, Chapter 2, pages 2-4.
- C. **Capacity.** Accommodating demand while optimizing the efficiency of a facility.
- D. **Resiliency.** Providing resiliency to demand surges and maintaining a reasonable quality of service during unusual events such as system delays, partial network closures, and station maintenance.
- E. **Safe and Efficient Operations.** Station planning and design should contribute to the efficient use of energy, facilitate maintenance, and promote smooth and efficient operation of the railway. Pedestrian routes should be free from abrupt obstructions and capacity bottlenecks shall be avoided. Provide effective wayfinding means, such as signs, markings, and textured surfaces, and minimize conflicting flows and travel distance.
- F. **Fare Evasion Control.** The design of the fare barrier system shall clearly delineate the boundary between free and paid areas, and shall be configured to deter fare evasion. Fare barrier shall be constructed as a continuous physical boundary between free and paid areas. The barriers and service gate shall be five (5) feet in height, see-through type, non-climbable.

2.1. PATRONAGE

- A. **Ridership Forecast.** Patronage forecast for station design will be provided or as accepted by the District. Design years to be assessed include 5, 10, 15, and 20 years after station completion, subject to project requirements.
- B. **Peak Demand.** Patronage forecast will be supplied in terms of AM and PM peak hour demand. Peak 15-minute flow data shall be used for sizing new station infrastructure. (Average flow per minute shall be determined by dividing the peak 15-minute demand by 15.)

2.2. SERVICE STANDARDS

2.2.1. Level of Service

Space planning in stations shall be performance based as defined in the pedestrian planning concept of level of service (LOS). The LOS provides a measure of the pedestrian environment based on the freedom to select walking speed, ability to bypass slow-moving pedestrians and relative ease of cross- and reverse- flow at different levels of pedestrian concentration.

2.2.2. Level of Service Description

LOS A – Free Circulation

LOS B – Minor pedestrian conflict

LOS C – Some restrictions in walking speed and ability to pass others

LOS D – Restricted and reduced walking speed for most pedestrians

LOS E – Restricted and reduced walking speed for all pedestrians

LOS F – Shuffling pedestrian movement

Station should be designed to provide an overall LOS C for the design year patronage forecast.

2.3. DESIGN CAPACITY

The element design capacities below in Table 2.3 are deemed appropriate for the District's operations. They provide adequate levels of service without making stations uneconomically large.

Table 2.3 Design Capacity Requirements (Square Footage for Level of Service)	
Area	Quantitative Measure
Open Concourse	11.5 sq ft per person (LOS B)
Queuing/Platform	5 sq ft to 7 sq ft per person (LOS C)
Passageways	
One-way	15 passenger per min per ft (LOS D)
Two-way	12 passenger per min per ft (LOS C)
Stairways	
One-way	11 passenger per min per ft (LOS D)
Two-way	8.5 passenger per min per ft (LOS C)
Escalators	67.5 passenger per min
Platforms	7 sq ft per person (LOS C)

2.4. TRAIN LOAD

For calculating maximum alighting loads, the number of passengers off boarding shall not exceed the maximum train capacity; 200 passengers per car x 10 cars per train = 2000 passengers per train.

2.5. HEADWAY

Train headways shall be in accordance with the service plan to be provided by the District. The minimum peak hour service headway is assumed to be two minutes.

2.6. PEDESTRIAN HAZARDS

- A. *Pedestrians shall not be exposed to bumping or tripping hazards on the platforms, plazas, concourses, or other public occupancy areas.*
- B. *Sufficient clear space shall be provided around overhead and side projections and corners to reduce the potential for bumping and walking into protuberances.*
- C. *Wherever practical, items requiring wall mounting that are within an area from floor level to 7'0" above the floor, shall be recessed. If this is not possible, the wall-mounted object shall not protrude more than four inches from the wall surface. The corners and edges of such objects shall be sufficiently rounded to prevent patron injury. Coordinate with related ADA requirements.*
- D. *Platform shall remain as clear as possible so that emergency evacuation is not impeded.*
- E. *Station design shall attempt to avoid inclusion of bump hazards for the visually impaired, such as free-standing signs and telephone pedestals. Where such hazards cannot be avoided, a device shall be installed that will assure detection of such obstacles by the visually impaired. The design of the detection devices shall require the approval of the BART System Safety Department.*

2.7. INFORMATION DISPLAY

Incorporate an information display system to effectively communicate basic information about using the BART system, specifically about BART fares, schedules, policies, maps, and connecting transit information; tips related to courtesy and security; marketing to encourage more frequent use of BART; and other important BART messages. The system shall also include paid advertisements.

The architectural design should delineate locations for each of the following media:

- A. Free standing kiosks in the free area of the station.
- B. Wall-mounted display cases in the free area of the station and on the platform.
- C. Advertising frames on the walls across the BART tracks from platform waiting areas.

- D. Advertising frames on the walls of the concourse level and free standing kiosks in the free and paid areas of the concourse and patios.
- E. Visual message boards on the concourse and platform levels shall be considered to display real time train arrival information.

3. BASIC CODE AND BUILDING REQUIREMENTS

3.1. USE OR OCCUPANCY

- A. The primary purpose of a station is its use by transit patrons who normally remain in a station for a period of time no longer than necessary to await and enter a departing transit vehicle, or who exit the station after arriving on an incoming transit vehicle. In short, it essentially functions as a means of accessing and egressing transit vehicles.
- B. Station public occupancy shall consist of all areas in which patrons may be allowed to enter, and shall include concession areas and the full length of corridors, stairways, ramps, and passageways required for emergency egress.
- C. Station ancillary occupancy shall consist of all spaces other than station public occupancies defined in 3.1.B. above.

3.2. GENERAL BUILDING LIMITATIONS

Reference is made to CBC.

3.3. BUILDING CONSTRUCTION

3.3.1. Types of Construction

Reference is made to CBC.

3.3.2. Fire Separation

Area separation, exterior wall fire rating and opening protection. Materials and systems used for fire resistive purposes shall be in accordance with the following references unless specifically directed by the District.

- A. *Reference is made to CBC.*
- B. *Fire rating of doors shall be in accordance with NFPA 80.*

Occupancy Separation.

- A. *Station public occupancy shall be separated from station ancillary occupancy by minimum 2-hour fire-rated construction, as defined in NFPA 220. Exceptions: Station Agents' Booths and free-standing concessionaire kiosks (when within the station and in a sprinklered area) shall be constructed of non-combustible materials approved by the District.*

- B. *Station public occupancy shall be separated from power substations and transformer vault areas in station ancillary occupancies by 3-hour fire-rated construction, as defined in NFPA 220.*
- C. *Station public and ancillary occupancies shall be separated from non-transit occupancies by 2-hour fire-rated construction, as defined in NFPA 220.*
- D. *Construction underneath aerial structure shall be Type I or Type II One Hour, in accordance with NFPA 220.*

3.3.3. *Fall Protection for Roofs*

- A. *Provide fall protection for the roofs of buildings in accordance with CCR, Title 8 §3212. Where fall protection is required, parapet walls or guardrails are preferred.*

3.4. MATERIALS AND FINISHES

This Article specifies basic requirements and criteria which have been established for the finish of facilities within the System. While convenience, comfort, and attractiveness will be considered in the selection and application of these finishes, the District shall be also assured that the goals of safety, durability, and economy are achieved. The facilities shall employ standardized materials that are fabricated in such a manner to resist vandalism and provide for ease of maintenance, cleaning, and repair or replacement.

3.4.1. *Basic Goals*

A. *Safety*

1. *Fire Resistance and Smoke Generation: Reduce hazard from fire by using non-combustible materials. A small quantity of combustible materials may be allowed for station map and other information media. Interior finishes shall meet NFPA 101 requirements. Adhesives and sealants shall meet the requirements stated herein.*
2. *Attachment: Eliminate hazard from dislodgement due to temperature change, vibration, wind, seismic forces, aging, or other causes by using proper attachments and adequate bond strength.*
3. *Slip-Resistant: All walking surfaces including the public areas and the ancillary spaces shall be constructed of materials selected for their slip-resistant qualities in both wet and dry states. These materials shall not require maintenance (other than normal housekeeping) to retain their slip-resistant qualities. The following static coefficients of friction are in accordance with Architectural and Transportation Barriers Compliance Board recommendations when tested in accordance with ASTM C1028, Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method, 15.02. The static coefficient of friction shall be not less than 0.6 for walking surfaces of public areas and ancillary spaces include entrances, stairways, platforms, concourse, and areas around equipment. The static coefficient of friction shall not be less than 0.8 at ramps.*

4. *Glazing: Station glazing used in areas such as windbreaks, Station Agent Booths, partition walls, and barriers shall comply with the requirements of CBC.*
- B. Durability. Provide for long and economical service by using materials with wear, strength, and weathering qualities consistent with their initial and replacement costs, and their location. The materials shall maintain their good appearance throughout their useful life. Materials shall be colorfast.
- C. *Resistance to Vandalism. Anti-graffiti coating shall be provided as required.*
 1. Provide materials and details that do not encourage vandalism, that are difficult to deface, damage, or remove.
 2. All surfaces exposed to the public shall be finished in such a manner that the results of graffiti can be readily removed with normal maintenance techniques.
- D. Ease of Maintenance.
 1. Cleaning: Reduce cleaning costs by using materials which do not soil or stain easily, which have surfaces that are easy to clean in a single operation, and on which minor soiling is not apparent. Materials shall be cleanable with standard equipment and cleaning agents. Maintenance procedures shall not require use of JLG lifts.
 2. Repair or Replacement: Reduce maintenance costs by using materials which, if damaged, are easily repaired or replaced without undue interference with the operation of the System. Spare materials shall be provided for tile and other unit materials in a quantity of approximately two percent of the total used.
- E. Aesthetics: Create a feeling of welcoming and timeless quality.

3.4.2. List of Finish Materials

- A. This list provides general guidance as to acceptable and not acceptable materials. Those not specifically mentioned shall be reviewed with the District for acceptability.
- B. This list shall apply to all areas of public use and contact such as entrances, passageways, concourse and platform levels, except as noted for non-public areas. For the use of items listed as "Acceptable", installation is subject to location and environment considerations.

3.4.3. Floor Materials

Acceptable common materials include:

- A. Concrete - all foot traffic areas; hardened finish only in equipment rooms.
- B. Terrazzo (interior only).
- C. Natural granite (public areas only).
- D. Quarry tile.
- E. Brick (dense, hard, full thickness).

- F. Vinyl composition sheet and tile (nonpublic areas only).
- G. Ceramic and porcelain tile, non-slip (interior only).
- H. Unglazed mosaic tile (interior only).
- I. Tactile (detectable) warning material along platform edges*.

*Refer to Article 4.4 herein, for platform edge detection strip.

3.4.4. Wall and Column Cladding Materials

Acceptable common materials include:

- A. Concrete with sealers (smooth finish with sufficient surface texture to conceal minor soiling and damage without complicating maintenance procedures, or constituting a hazard to clothing or skin of patrons).
- B. Cement plaster (smooth finish).
- C. Glazed ceramic mosaic tile (for accent only).
- D. Glazed ceramic facing veneers (4 1/4 inch by 4 1/4 inch minimum size).
- E. Glazed brick.
- F. Precast concrete, smooth finish.
- G. Concrete masonry units (non-public areas or above 8-feet in public areas).
- H. Gypsum board (non-public areas).
- I. Stainless steel.
- J. Natural granite.
- K. Quarry tile.
- L. Laminated tempered glass (for elevator car and hoistway doors, barriers, wind screens, and Station Agent Booth).
- M. Epoxy coatings.

3.4.5. Ceiling Materials

Acceptable common materials include:

- A. Concrete.
- B. Cementitious sprayed acoustic materials.
- C. Acoustical metal panels.

- D. Acoustical tiles (mineral, glass, and wood fiber, vinyl wrapped): Offices and staff break rooms only.

3.4.6. Door Materials and Schedule

Acceptable common materials include:

- A. Flush hollow metal doors and frames (with enamel paint finish).
- B. Laminated tempered glass.
- C. Stainless steel overhead coiling grilles.
- D. Stainless steel doors and frames.

3.4.7. Railings

Acceptable common materials include:

- A. Stainless steel.
- B. Galvanized steel (nonpublic areas only).

4. **CONCOURSE**

4.1. **GENERAL**

This Article describes specific architectural criteria for the concourse area and elements within.

- A. In all public areas, minimum overhead clearance to ceilings shall be 10 feet above finish floor; however, at localized critical points such as beams or signs, clearance may be reduced to not less than 8 feet 6 inches.
- B. Location of Station Agent Booth or Booths, Ticket Vending Machines, Fare Gates, and other Concourse items shall take into account multiple entries, where they occur. Where necessary, items shall be duplicated to accommodate multiple entries.
- C. The concourse shall divide naturally into two distinct areas, the free and paid areas. The free or unpaid area is where passengers digest travel information and purchase tickets before proceeding into a paid area from which access is made to platform level. The layout of the concourse area will be primarily determined by the location of station entrances, location of station agent's booth, and the number and location of the passenger audits or escalators, stairs, and elevators to the platform or platforms.
- D. Station design shall enclose the paid area by a fare barrier, except at fare gates. There shall be only one service gate adjacent to each station agent booth.

The fare gates shall be configured and designed to serve as means of egress during emergencies. The egress design shall comply with NFPA 130.

- E. The size of the concourse in any given station shall satisfy the required operational functions, expected patronage levels, and available site area. The basic dimensions are determined by the gateline width, run-off requirements, queuing space for automatic fare collection (AFC) facilities, circulation space and headroom.
- F. The unpaid areas shall allow space for passengers' decision-making and the provision of public facilities, passenger information, and AFC equipment.
- G. The paid area shall give direct and clearly defined access to the platforms via escalators, elevators, and stairs. Any public facilities in the paid area shall be located away from the direct route to the escalators and stairs.
- H. A single paid area shall be provided, except where the District agrees there are specific station layout constraints that dictate that the paid area should split.



Figure 4.1 – Example of barrier between paid area and non-paid area, with a station agent booth adjacent to service gate and fare collection gates.

4.2. QUEUING

Space shall be provided for queuing at all circulation and passenger service elements. The queuing area provides space for passengers to queue without disrupting flow-routes. Queuing spaces should be placed end to end and should not overlap. Minimum queuing distance requirements are given in Table 4.2. Extra queuing space shall be considered for high-volume, high-transaction and mixed-occupancy (such as intermodal, joint development) stations.

Escalator (from escalator newel)	15'-0" (pending study result)
Stair	15'-0" (pending study result)
Fare Gate	15'-0" (pending study result)
Elevator	8'-0"
Transfer Machine	8'-0"
Ticket Vendor	6'-0"
Add Fare Machine	6'-0"
Parking Control Machine	6'-0"
Change Machine	6'-0"

4.3. RUN-OFFS

- A. Run-off distances allow passengers to be drawn away from escalator, stair and fare gate exit points. This allows time and space for passengers to become oriented, make decisions and initiate actions without blocking following passengers.
- B. *In addition to the required queue space, a 10-foot additional surge space shall be provided to stair and escalator landings that feed fare gates.*

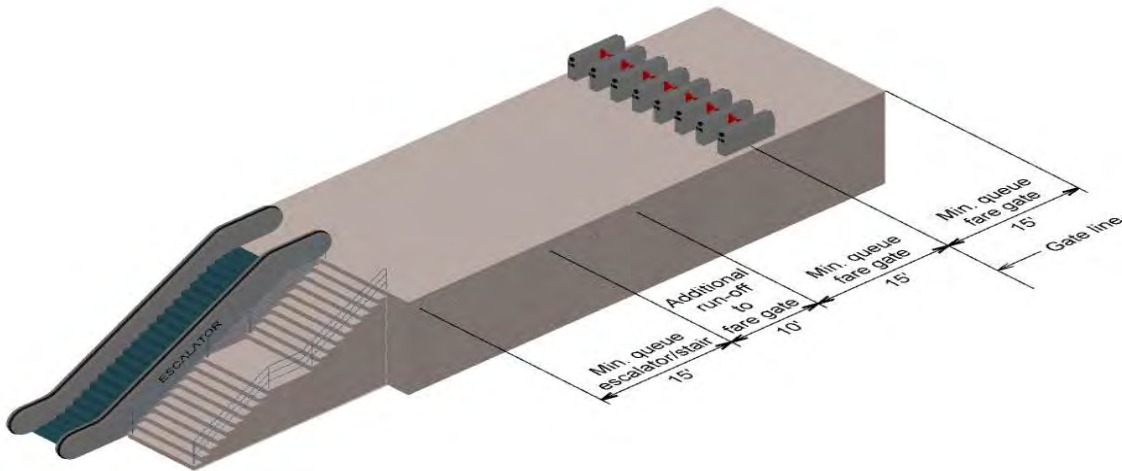


Figure 4.3 - Minimum Queuing Distance Required at Stairs and Fare Gates

4.4. STATION AGENT BOOTH

- A. The station agent is the most important person in the day-to-day operations of the stations. The agent gives information and assistance to passengers, supervises fare collection and vertical circulation equipment, and copes with special conditions as they arise.
- B. The station agent booth shall be located in line with the gates and either centrally located with respect to the gates or to the side of the entry gates as patron circulation dictates.
- C. Where a paid area has two sets of gates, the station agent booth shall be placed adjacent to those gates serving the majority of off-peak users (bus and taxi drop off, off-peak and non-commuter parking). It is expected that these passengers will require more assistance than the regular commuter.
- D. *The booth shall be visible from entire concourse area.* The booth shall be located adjacent to fare gate array separating the free and the paid areas and shall be accessible to patrons in both the free and paid areas. It provides the station agent direct and unobstructed views of the fare gates, ticket vendors, change machines, public toilets, and the vertical circulation elements to the greatest extent possible.
- E. *The Station Agent Booth shall be equipped with consolidated on-site control and communication facilities needed for emergency situations.*
- F. *Construction*
 - 1. *Station Agent Booths shall provide security to Station Agents. The booths shall be constructed to bar public entry.*
 - 2. *Station Agent booth shall have an access floor flush with the station floor thus requiring a recess.*
 - 3. *Booth shall be a standard size and configuration as required by the District.*
- G. *Equipment*
 - 1. For communications and other systems provided in the Station Agents Booth, refer to the appropriate section in the Facility Design Criteria, Electronics. *Systems provided are as follows:*
 - Emergency Telephone*
 - a. *PABX telephone with PA access and with "white" courtesy telephone answering capabilities*
 - b. *Annunciator for Fire Alarm Control Panel*
 - c. *Station Agent Terminal*
 - 1) *Fare Gate Control*
 - 2) *BART ticket reader*

- d. *Control and Annunciator Panel*
 - 1) *Elevators*
 - 2) *Escalator*
 - 3) *PA Access*
 - 4) *Train Information Monitor (TIM)*
 - e. *CCTV monitor*
 - f. *Network monitor, keyboard, and mouse.*
2. *Miscellaneous items including:*
- a. *Keys necessary for access to all areas of station*
 - b. *Maps showing locations of shutoff controls for fire suppression and domestic water systems, gas, electricity (these maps shall also be placed in the room where the fire alarm control panel is located)*
 - c. *Maps showing locations of fire alarm zones, emergency exits, hose cabinets and fire alarm control panel*
 - d. *First Aid Kit*
 - e. *Flashlight*
 - f. *Fire Extinguisher: Refer to Facility Design Criteria, Mechanical, Stations and Station Sites, for specific criteria for fire extinguisher.*
 - g. *120 V ac convenience outlets*
 - h. *Area for temporary storage of lost and founds articles, 14"W x 12"H x 24" D.*

4.5. SERVICE GATE

One service gate shall be provided adjacent to each station agent booth. The purpose of the service gate is to provide access for maintenance personnel and equipment. The gate shall also facilitate access for the elderly, patrons with disabilities, and patrons with large luggage and bicycles.

- A. *The gate shall have a minimum clear opening of 3 feet 6 inches.*
- B. *The gate shall be self-closing and double acting to enable movement in both directions.*
- C. *The gate surface on both sides shall be smooth and solid.*

4.6. AUTOMATIC FARE COLLECTION

Refer to Facility Design Criteria, Electronics, Automatic Fare Collection Equipment for AFC equipment count requirement. Provision shall be made for adopting the AFC system arrangement to accommodate smart card (TRANSLINK) equipment. Consult District for further guidance.

4.6.1. Description of System

- A. Barriers shall be provided to prevent anyone from reaching the paid area without passing through an entry fare gate, or from leaving the paid area without passing through an exit fare gate.
- B. Barriers between paid and free areas shall be designed to provide appropriate physical separation without excessive visual emphasis on security.
- C. Wherever possible, all ticket vendors, moneychangers, addfare machines, and fare gates shall be in direct view and proximity to the Station Agent's Booth. Where this is impossible, they shall be indirectly supervised by means of mirrors or CCTV.
- D. Fare collection equipment shall be arranged in groups and installed in secure vaulted areas.
- E. Refer to Facility Design Criteria, Electronics, Automatic Fare Collection for operations criteria. If not applicable, District will provide Designer with detailed systems requirements for Automatic Fare Collection system.

4.6.2. Fare Collection Sequence

- A. Ticket purchasers may initially go to a ticket vendor; high value and discount tickets may also be purchased by mail or at certain preselected locations.
- B. The ticketing sequence is:
 - 1. Upon entering:
 - a. Bill changer (if needed by individual commuter) and ticket vendor
 - b. Entry fare gates
 - 2. At exit station:
 - a. Addfare machines (if needed by individual commuter)
 - b. Exit fare gates
- C. Entering commuters carrying adequate "stored fare" tickets will not need to stop at bill changers or ticket vendors, but will go directly through the entry fare gates.
- D. Exiting commuters carrying adequate "stored fare" tickets will not need to stop at addfare machines, but will go directly through the exit fare gates.

4.6.3. Ticket Vending Machines

- A. Located in the free area and placed to serve incoming passengers only.
- B. Clearly visible on entering the station but placed so as not to impede the direct flow between entrance and fare gates.

- C. Space and necessary under floor raceway or conduits for an additional 33 percent ticket vending machines shall be provided for future expansion. At minimum provide for one additional ticket vending machine at each Ticket Vending Machine area.
- D. Equipment shall be built-in flush with wall surfaces with front access for maintenance and servicing.
- E. Refer to Facility Design Criteria, Electronics, Automatic Fare Collection Equipment, for detailed specifications.
- F. For minimum queue space in front of machines, refer to Table 4.2 herein.
- G. Include Train Information Monitor at each Ticket Vending Machine area.
- H. Dimensions: 3 feet 4 inches wide by 2 feet 10-5/8 inches deep by 6 feet 6 inches high, spaced 4 feet on center.

4.6.4. Addfare Machines

- A. When passengers arrive at their destination station with insufficient value on their tickets to exit, addfare machines will be needed within the paid area to add value to their tickets. If addfare machines also validate parking (act as parking control machines), addfare machines shall be located to perform this additional function for passengers upon entering station from parking areas. Addfare machines shall be located out of the traveled way.
- B. These machines shall be free standing.
- C. Dimensions: Same as ticket vending machines.
- D. Refer to Facility Design Criteria, Electronics, Automatic Fare Collection Equipment for detailed specifications.
- E. For minimum queue space in front of machines, refer to Table 4.2 herein.

4.6.5. Transfer Machines

- A. For passengers using both rapid transit and feeder services (SamTrans, Muni, AC, VTA, and County Connection), transfer tickets will be issued at the stations and at preselected locations.
- B. Provide space for at least two dispensers within every paid area of the station, located in the vicinity of exiting gates but out of the direct flow of exiting passengers.
- C. The position of the transfer machines shall be in relation to the exit fare gate nearest to the feeder service but out of reach from the free area.
- D. These units may be freestanding, but built-in is preferred. Confirm through the District which kind of machine is available.
- E. For minimum queue space in front of machines, refer to Table 4.2.

4.6.6. Bill Changer

A minimum of two bill changers shall be located in the free area.

4.6.7. *Fare Gates*

- A. All patron entry and exit to the BART system shall be controlled through fare gates.
- B. Satisfy the District's minimum clearance and size requirements as stated herein and in Facility Design Criteria, Electronics, Automatic Fare Collection.
- C. For minimum space on both sides of the fare gates, refer to Table 4.2.
- D. In an array of gates, the right hand gate to the entering flow shall be "entry" gate; the right hand gate to the exiting flow shall be the "exit" gate. This gate will also accommodate patrons with oversized items such as luggage, strollers, and bicycles. The remaining center gates shall be set to suit the major directional flows. There shall be a minimum of six gate aisles per station.
- E. *During emergency evacuation all fare gates shall permit free exiting.*
- F. *One ADA accessible fare gate shall be provided in each fare gate array to accommodate the passage of wheelchairs and persons with special needs.*
- G. Refer to Facility Design Criteria, Electronics, Automatic Fare Collection Equipment for detailed specifications.

4.7. **PATRON AMENITIES AND CONCESSIONS**

Patron amenities and concession spaces shall be located where they will not impede the station's normal and emergency passenger circulation, and will not restrict the visual supervision of the station from any Station Agent Booth. Refer to Facilities Design Criteria, Mechanical, Station and Station Sites for comprehensive mechanical requirements.

4.7.1. Toilet Rooms

- A. Men's room and women's room shall each have a toilet and lavatory with cold water. With District approval, two unisex toilets may be provided in lieu of men and women's toilet rooms.
- B. The men's room shall also have a urinal.
- C. The following toilet accessories shall be provided in each. Note several plumbing items and toilet accessories are Designated Matching Products. Obtain District list:
 - Recessed paper toilet seat cover dispenser
 - Warm air hand dryer
 - Toilet grab bars
 - Recessed liquid soap dispenser, located above the lavatory

- Two recessed toilet tissue holders for sheet type tissue (District furnished, Contractor installed)
 - Recessed sanitary napkin disposal unit
 - Recessed trash receptacle
 - Polished stainless steel frameless mirror (not located over lavatory)
 - Stainless steel shelf
 - Two stainless steel coat hooks (One hook shall be wheelchair accessible height. “Robe hook” style is preferable)
 - Women’s toilet shall also have a recessed napkin disposal unit
- D. Doors shall be lockable from outside by key and from inside by thumb-turn knob. Inside lock shall be a privacy lock with exterior “OCCUPIED/VACANT” indication. Toilet room locksets are Designated Matching products. Doors shall also have kick-down holder.

4.7.2. Maps

In each concourse free area at the station entrance and in the platform area, provide space for, as a minimum, the following mounted maps. At minimum, provide four map cases per station entry and four map cases per platform face. District will furnish maps.

- A. Transit Routes at Concourse: One area vicinity map showing local public transit network including on-street bus routes, light rail tracks, ferry routes, and points of interest.
- B. Transit Stops at Concourse: One immediate vicinity map showing local public transit stops and local points of interest.
- C. Transit Schedules and Fares at Concourse: One map showing public transit schedules and fares.
- D. BART System Map at Concourse and Platform: One map showing the systemwide BART lines and destinations.
- E. Station Map at Concourse of Stations with Multiple Exits: One plan and section showing station exits and vertical circulation modes including elevators, escalators, and stairs.
- F. Exit Directories at Concourse of Stations with Multiple Exits: One plan showing exits and key points of interest.

Refer to Facility Design Criteria, Architecture, Signage, for additional requirements.

4.7.3. Information Boards.

- A. In each concourse free area at the station entrance adjacent to the maps, provide space for, as a minimum, the following mounted boards:
 - 1. Instructions on how to use the BART System and display racks for handout printed schedules.
 - 2. Public notice including code of conduct, public safety, prohibited behavior, and assisted evacuation notices.
- B. In lieu of mounted boards at station entrance, provide free standing triangle information kiosks per District standard design.
- C. Refer to Facility Design Criteria, Architecture, Signage, for additional requirements.

4.7.4. Trash and Newspaper Receptacles

- A. Floor mounted trash receptacles shall be provided at approximately 70 feet on center along platform and shall be large enough to receive discarded newspapers. Trash receptacles are Designated Matching Products. Floor mounted trash receptacles shall be mounted in such a way that they may be removed without marring platform surface.
- B. Trash receptacles shall be provided adjacent to the entry fare gates because eating and drinking, are not permitted within the paid area.
- C. Provide recycling receptacles at concession areas and station entrances. Coordinate types of recycling with local recycling authority. Design of recycling receptacle areas shall be flexible to accommodate changing recycling demands.
- D. Trash receptacles shall be located at each entrance, bus drop-off areas, and kiss-ride areas.
- E. Newspaper-only trash receptacles shall be provided in concourse paid area between the vertical circulation elements and the fare gates. Designer shall propose for District approval a minimum of two newspaper only receptacle locations within paid area and two at free areas.

4.7.5. Drinking Fountains

- A. Provide one set of drinking fountains in the free area and one set in the paid area of the concourse. Both sets of drinking fountains shall include one high fountain and one at wheelchair accessible height, shall be within view of the Station Agent Booth, and shall not be chilled.
- B. Drinking fountain in free areas shall be located within the area secured after operating hours.

4.7.6. Benches

- A. Benches shall be provided on the platform level for patrons waiting for the train. As a minimum they shall be at the platform center and two-thirds the distance from the center to the platform ends.
- B. Benches that are accessible to the elderly and disabled shall be provided. Space for wheelchair shall be included adjacent to benches protected by windscreens.
- C. Benches shall not interfere with passenger circulation.
- D. Refer to Standard Drawings, Architecture for standard bench designs.

4.7.7. Windscreens

When the platform is at or above grade and exposed to the wind, transparent screens shall be provided around the benches to protect the waiting area. The design of windscreen will incorporate features that will shield patrons from weather. Refer to Standard Drawings for windscreen design.

4.7.8. Parking Control Machines

If parking control is not accommodated by addfare machines, Designer shall indicate a location (subject to District approval) for a minimum of two future possible Parking Control Machines within paid area of the concourse and provide electrical outlet for machines.

4.7.9. Bicycle Parking

- A. Provide areas for secure bicycle parking commensurate with station location, design, and potential demand.
- B. Bicycle parking shall be provided in either the paid or free area of the concourse as space permits, without interfering with passenger circulation. To the extent possible, bicycle parking shall be located in the concourse paid area. Refer to Bicycle Access and Parking Plan for bicycle parking supply and demand analysis.
- C. Secure bicycle lockers shall be provided so that security is maximized, pedestrian circulation is not adversely impacted, and lockers can be used to their maximum capacity. Refer to Bicycle Access and Parking Plan for bicycle locker placement criteria.
- D. Attended bicycle parking "Bike Stations" shall be considered at stations where the demand for bicycle parking exceeds 100 bicycles/day; and are most appropriate for stations that have demand during the whole day.
- E. Dimensions required for seven bicycle parking spaces at racks: 9'x10'9". Refer to the BART Bicycle Access and Parking Plan, Appendix B, for bicycle parking installation guidelines.

4.7.10. *Concessions and Other Commercial Uses*

- A. Provide areas for future concessions equaling between 500 and 1000 square feet depending on station location, design, and potential demand. To the extent possible, concession area shall be located in one or two areas permitting partitioning for different size spaces with maximum flexibility for future tenant improvements.
- B. Concessions shall be located in the concourse free area or in kiosks just outside the station entrance. No concession operations shall be permitted on the platforms.
- C. *No combustible construction materials shall be allowed per NFPA 130.*
- D. *Concession areas shall be accessible to disabled operators and patrons in accordance with CBC and ADA requirements.*
- E. *The following utilities shall be provided in each booth for the use of the concessionaire:*
 - 1. Electric power panel, 480v 3 phase, 100 amp, 12 circuit panel located in each booth or concession area. Each concession shall be supplied from a dedicated PG&E metered circuit.
 - 2. Domestic water: 3/4-inch cold water supply with shut-off valve.
 - 3. Drainage: Floor drain in center.
 - 4. Telephone: 2-inch diameter conduit for a private telephone.
 - 5. Fire protection: Automatic sprinkler system in accordance with NFPA 13.
 - 6. Fire detection and alarm system.

4.8. **EMPLOYEE FACILITIES**

4.8.1. General

This Article describes specific architectural criteria for areas in the stations that serve the BART employees and serve as storage areas. Architectural design criteria are mentioned where applicable. These areas shall be accessible to the disabled except where noted otherwise or specifically exempt by the District. Refer to Facilities Design Criteria, Mechanical, Station and Station Sites for comprehensive mechanical requirements.

4.8.2. *Staff Break Room*

A staff break room shall be provided for all station employees. Staff break room equipment and accessories (such as kitchen faucet) include Designated Matching Products. Obtain list from District. Room shall be equipped with the following.

- A. A small kitchen with sink, garbage disposal, microwave, refrigerator, counter top, and storage cabinets, all accessible to the disabled. Towel dispenser.
- B. An eating area for a table and six chairs.

- C. Door to public area with one-way viewport, as applicable.
- D. *Emergency Supply Storage: Separate room or closet off of or adjacent to the Station Agent Break Room for the storage of emergency supplies such as stretcher or stair chair.*
- E. PA speaker, HVAC and convenience outlets.

4.8.3. Staff Toilet Room

Staff toilet room shall be accessible for the disabled and equipped with the following (one unisex toilet room shall be provided unless otherwise indicated on the preliminary engineering documents). Plumbing and toilet accessories include Designated Matching Products. Obtain District list:

- A. Wall mounted toilet.
- B. Urinal (at men's and unisex toilets).
- C. Lavatory with hot and cold water.
- D. Wall mounted recessed liquid soap dispenser mounted above lavatory. Where recessing unit is not possible, surface mounted dispenser permitted.
- E. Warm air hand dryer.
- F. Surface mounted two roll toilet paper dispenser.
- G. Recessed seat cover dispenser. Where recessing unit is not possible, surface mounted dispenser permitted.
- H. Toilet grab bar(s).
- I. Surface mounted towel dispenser except where space restrictions require recessed paper towel dispenser and waste receptacle. (Confirm type of towels with District).
- J. Mirror, 16 inches wide by 30 inches high with stainless steel frame and shelf (not mounted above lavatory).
- K. Two robe hooks (one at wheelchair accessible height).
- L. Lockable door from inside by thumb-turn knob with exterior "OCCUPIED/VACANT" indication.
- M. Sanitary napkin disposal (for women's and unisex toilet rooms).

4.8.4. Police Department Facilities

The following Police Department Facilities shall be incorporated into passenger station design:

- A. Police Station Office at every passenger station

- B. Remote Reporting Location at end-of-line stations and where required by the District
- C. Police Zone Facility every 5 to 7 stations. Police Zone Facility shall typically include Lobby, Record/Dispatch Room, Sally Port, Detention Area, Offices and Open Area Workstations, Training/Squad Room, Exercise Room, Lockers and Restrooms.

For Communications Criteria, refer to Facility Design Criteria, Electronics. For Electrical Criteria, refer to Facility Design Criteria, Electrical.

4.8.5. Maintenance and Engineering Station Office

Each station shall include a Station Office area for Maintenance and Engineering, located to facilitate operational activities. The area shall be designed to accommodate the three major divisions of BART Maintenance and Engineering:

- A. Way and Facility
- B. Power and Mechanical
- C. Systems Maintenance

Refer to Facility Design Criteria, Architecture, Maintenance and Engineering Facilities for space and equipment requirements.

4.8.6. Janitor's Rooms

- A. In the Concourse Janitor's Room, provide the following. Janitor room plumbing fixtures and accessories include Designated Matching Products. Refer to Facility Design Criteria, Mechanical, Stations and Station Sites for plumbing requirements. Obtain District list:

1. Minimum of two 110 V ac GFI duplex outlet, waterproof
2. Two shelves 12-inches deep mounted to wall at 4 feet and at 5-feet-6-inches above floor and over mop sink.
3. Two shelves 18-inches deep mounted to wall at 4 feet and at 5 feet 6 inches above floor
4. Ten anti-slip, spring-loaded, rubber cam stainless steel mop/broom holders
5. Floor space for double-bucket and wringer
6. Floor space for storage of floor scrubber machine
7. Four double-tier lockers
8. For mop sink, fittings, and accessories, refer to Standard Specifications

- B. In the Platform Janitor's Room, provide the following:

1. Minimum of one 110 V ac GFI duplex outlet
2. Two shelves 12-inches deep mounted at 4 feet and at 5-feet-6-inches above floor
3. Ten anti-slip, spring-loaded rubber cam stainless steel mop/broom holders

4.8.7. Storage Room

A separate secured storage room shall be provided with shelving for supplies, brochures, transfer ticket stock, temporary signs, escalator barriers, survey collection equipment, emergency equipment, and lost and found articles. Minimum size room shall be 200 square feet.

4.8.8. End-Of-Line Operations Area

- A. **Supervisor's Booth.** A space shall be provided at the end-of-line station for the train crew supervisor to observe the train operations at the platform and at the end of the track. Supervisor's Booth shall include securable storage lockers. Booth shall be equipped with public pay, PABX, and emergency telephones; train radio monitors; station public address; ATZ logger; Field Services computer network terminal; and CCTV monitors. Refer to Facility Design Criteria, Electronics, for specific communications systems requirements.
- B. **Office.** A separate room shall be provided with a conference table and six chairs for a private environment. It shall have a PABX telephone and a Field Service computer terminal.
- C. **Staff Break Room.** Criteria are the same as for staff break room at stations except that the room shall also include space and utilities for three vending machines (one for hot drinks, one for cold drinks, one for snacks).
- D. **Shower and Toilet Rooms.** Separate men's and women's rooms shall be provided for showering, changing clothes, and toilet facilities. The following shall be provided at each room:
1. One handicapped accessible shower stall with toweling area and bench immediately outside shower. Shower stall provided with shower curtain and toweling area provided with privacy curtain.
 2. Two stainless steel towel hooks for each shower (one at wheelchair accessible height).
 3. One stainless steel soap dish for each shower.
 4. Grab bars for shower and accessible toilet.
 5. Clothes lockers, double tier, 12-inches wide, closed base (may be located in space other than shower/toilet rooms). Quantity of lockers as required by the District.
 6. Bench.
 7. Mirror, full-length with stainless steel frame.
 8. Two lavatories, wall-mounted.
 9. Recessed liquid soap dispensers mounted above lavatories.
 10. Two mirrors, 16 inches wide by 30 inches high, stainless steel frame and shelf (not mounted over lavatory).

11. One recessed paper towel dispenser and waste receptacle (Confirm type of towels with District).
12. Two robe hooks at lavatory area (one at wheelchair accessible height).
13. One water closet for Men's and two water closets for Women's.
14. Toilet partitions, ceiling-mounted.
15. One combination partition-mounted (or recessed) dispenser unit for toilet seat covers and two toilet paper rolls for each toilet (include napkin disposal unit at Women's).
16. Two urinals, wall-mounted, for Men's.
17. Modesty screen between urinals and between lavatory and urinal, if required, for Men's.

End-of-line staff toilet rooms and break room shall be in addition to staff facilities for station staff unless approved otherwise by the District.

4.8.9. Trash Area

Area for trash bins (dumpsters) including recyclable collection bins shall be provided, accessible to janitorial staff and waste management trucks and recycling service trucks. Location shall take into account control of odors and provide for wash down of bins and area.

5. PLATFORM

5.1. GENERAL

This Article describes specific architectural criteria for the platform area and elements within.

Platforms shall be designed to promote easy access, egress and circulation and offer good sightlines by avoiding recesses and indentations that could offer hiding places and litter traps.

Platform length shall be fixed as stated herein under Article 5.3 Size. Platform width shall be determined by a combination of patronage demand, passenger movement, physical clearances, and safety criteria.

Platform vertical circulation elements shall be arranged along the length of the platform to avoid concentrating passengers in one area. The placement shall be designed on a site specific basis and coordinated system wide so that passengers are evenly distributed within trains.

5.2. CONFIGURATION

Platforms are either side platform or center platform. They can be elevated, at grade, or underground in a cut-and-cover station box or in a station tunnel. Center platforms are generally preferred to side platforms. Platform design shall comply with the following:

- A. Wherever possible, no major equipment of support areas shall be located on the platform public areas.
- B. Markings shall be provided on the platform to control the flow of passengers boarding and alighting the trains.
- C. The platform edge shall conform to CBC and ADA.
- D. Space for miscellaneous equipment, including emergency phones, telecommunication equipment, and advertising panels, shall be provided as required by safety and operations concerns. The location and sizes of these spaces shall be integrated with the design of the platforms and station finishes.
- E. As a minimum, platforms shall be covered over 40 percent of their length. Consideration should be given to providing cover for their entire length and width.
- F. Where columns run the whole length of the platform, adequate spacing shall be provided to assure that columns do not form a continuous, or nearly continuous, wall effect. The spacing of columns shall also take into account and coordinate with the train door openings.
- G. Grouping vertical circulation elements in pairs should be considered for more efficient use of space.
- H. No commercial establishments shall be located on platform.

5.3. SIZE

Minimum platform width is a function of the area required for peak passenger loads distributed over the length of the platform and taking into account delay and emergency operation. In many cases actual platform width will also result from the configuration of vertical circulation elements.

Platforms shall be designed to meet the following requirements:

- A. The platform length shall be sufficient to accommodate a full length BART train (700 ft).
- B. Platform widths shall be determined to provide minimum of 5 sf/person under the worst scenario established by the District.
- C. Satisfy the District's minimum clearance and size requirements as stated herein and in Introduction, Common Requirements, Trackway Clearances.

5.4. CLEARANCES

Trainway and platform clearance requirements are as stipulated in Introduction/ Common Requirements/ Trackway Clearances and shall conform to "Deviations from Section 9, General Order No. 26D", State of California Public Utilities Commission (See Appendices, Government Codes & Regulations, California Public Utilities Commission).

The platform design shall be coordinated with the track clearance requirements to provide an acceptable interface between the platform and vehicle. This interface shall minimize horizontal and vertical gaps at the vehicle door threshold. Unless otherwise waived by special instructions from the District, the following criteria shall be used for determination of station clearances with respect to the trainway.

- A. *Platform Walkway Clearance: The minimum allowable distance between an obstruction (e.g.: columns, pilasters, stairways, walls, windscreens, escalators, etc.) and platform edges shall be as indicated on the station platform clearance diagram in Introduction, Common Requirements, Trackway Clearance. Obstructions such as benches and advertising devices shall not be permitted within this clearance. BART signage is excepted.*
- B. *Platforms. For platform height refer in Introduction, Common Requirements, Trackway Clearance.*
- C. *Platform Edge. The platform edge shall provide a gap between the platform edge and vehicle threshold per in Introduction, Common Requirements, Trackway Clearance.*
- D. *Platform End Transition Zone. An 8-foot long transition zone, at both ends of each platform, shall be provided to prevent transit vehicle impact with the blunt end of the platform. At the ends of the platform the platform edge-to-vehicle gap shall be tapered per in Introduction, Common Requirements, Trackway Clearance.*
- E. *Walls Along Platform. Within the length of the station platform, finished surfaces on walls, advertisement boards, artwork, etc., on the opposite side of the track from the platform shall not be closer than the clearance to the centerline of the track indicated for Station Platform Clearances in Introduction, Common Requirements, Trackway Clearance.*
- F. *Walls beyond the ends of the station on the platform side of the track, enclosing stairs or walkways from the platform, shall not be closer than 6'-8" to the centerline of the track.*
- G. *Under Platform Refuge Area: An emergency refuge space shall be provided adjacent to the track, underneath the edge of the platform. The platform over the refuge shall be cantilevered.*
- H. *Undercar Clearance in Trackway: Along entire length of the station platforms, trackway shall contain a continuous depressed trench-like space between rails and under cars. For configuration requirements of the space, see Introduction, Common Requirements, Trackway Clearance.*
- I. *Overhead Obstructions. In all public areas, overhead clearances as indicated on the station platform clearance diagram in Introduction, Common Requirements, Trackway Clearances.*
- J. *To prevent vehicle-to-platform shock hazards. provide isolation of electrically conductive materials used within 6'-0" of platform edge.*

5.5. PLATFORM EDGE DETECTION

Tactile (detectable) warning material along platform edges: A platform edge detection strip, approved by the District, shall be installed along the length of every platform. Its primary function is to provide tactile and visual warning to visually impaired patrons, alerting them that they are approaching the platform edge.

5.6. STATION PLATFORM EMERGENCY THIRD RAIL TRIP STATION

Refer to Facility Design Criteria, Electrical, Traction Power.

5.7. SLOPE

Finished surfaces of platforms shall be sloped at one percent from the center towards the platform edge to allow for drainage and a maximum of one percent from one end to the other.

5.8. CIRCULATION

For center platforms, 50 percent of escalators should be paired with exit stairs. Stairs may be emergency exit only stairs.

6. STATION INGRESS AND CIRCULATION**6.1. GENERAL**

Station layouts should allow passengers to transfer simply and efficiently between trains, the surrounding environs, and other means of transportation. The circulation movement of passengers governs the placement of station elements. Station access and circulation design for a specific application may be impacted by the additional criteria identified in the Facility Design Criteria.

Some of the basic principles to consider in planning station circulation are as follows:

- A. Patron circulation shall be arranged to minimize walking distances and offer clearly marked routes and decision points.
- B. People tend to keep to the right, and for that reason, right-hand flows are recommended. Patron flow patterns in the stations shall maintain a right-hand circulation where possible and shall be as simple as practicable.
- C. Any cross-flow of passengers is highly undesirable; separate passenger flows moving in opposite directions wherever possible.
- D. Dead-end conditions shall be avoided wherever possible.
- E. Any design features or vistas which may distract patrons at the head or foot of stairs and escalators should be avoided.

- F. Pedestrians shall not be exposed to bumping or tripping hazards on the platforms, plazas, concourses, or other public occupancy areas.
- G. Sufficient clear space shall be provided around overhead and side projections and corners to reduce the potential for bumping and walking into protuberances.
- H. Station design shall attempt to avoid inclusion of bump hazards for the visually impaired, such as free-standing signs and telephone pedestals. Where such hazards cannot be avoided, a device shall be installed that will assure detection of such obstacles by the visually impaired. The design of the detection devices shall require the approval of the District and coordinated with related ADA requirements.

6.2. STATION ENTRANCES

- A. Station entrances provide the link between the station concourse and the surrounding area. The form and configuration of station entrances shall be provided as required by projected patronage demand, capacity calculations, and site context.
- B. Entrances lead into the concourse area containing the Ticket Vending Machine (TVM) and entry and exit gates. Position TVMs and gates to minimize conflicting movements between arriving and departing passengers.
- C. In general, provide easily identified and located entrances leading directly from street level to the concourse area to provide convenient access for passengers. The siting of the street level portion of each entrance depends upon factors such as the physical constraints of the surrounding streets.
- D. Other entrances may connect directly to the basements of buildings, to pedestrian subways, etc. In some instances, it may be necessary to consider these as auxiliary entrances and to take no account of them in capacity calculations if there is provision for the entrance to be closed by an authority outside the control of the District.
- E. Additional factors that shall affect the siting of entrances are access consideration for the disabled, the predicted passenger movements, interchange with other forms of transport, and the presence of nearby developments that may require a longer direct connection to the station.
- F. Provision shall be made for the entrance to be closed by means of roll-down grilles. Refer to Facility Design Criteria, Architecture, Facilities Security.

6.3. PASSAGEWAY/PORTAL

Entrances and passageways should be designed to promote easy access, egress and circulation and offer good sightlines by avoiding recesses and indentations that could offer hiding places and litter traps.

The minimum width of a passageway is eight feet. The width of a passageway between junctions shall be uniform along its entire length.

Provide passageways with emergency lighting and ventilation.

6.4. CONCOURSE AREA

Refer to concourse area requirements.

6.5. CODE REQUIREMENT**6.5.1. Station Ingress and Egress Facilities**

- A. *The minimum criteria for design of station egress facilities shall comply with the provisions of the CBC and NFPA 130.*
- B. Occupancy Load Data
 - 1. *The load on any single train is limited to the maximum train capacity which is assumed to be 2000.*
 - 2. *For future stations, the exiting capacity computations shall use projected patronage data provided by the BART Planning Department. The data shall be based on predicted BART patronage ten years, minimum, after commencement of service at the new station.*
- C. Patronage Analysis: Patronage Analysis will be prepared by the District and provided to the Designer, as applicable.
- D. Egress Requirement
 - 1. *There shall be sufficient means of exit to evacuate the station occupant load from the station platforms in four minutes or less.*
 - 2. *The station shall be designed to permit evacuation from the most remote point on the platform to a point of safety in six minutes or less.*
 - 3. *Stations shall have at least two exits placed a distance apart equal to not less than one half the length of the maximum overall diagonal dimension of the station.*
 - 4. *No point of station platforms shall be more than 300 feet from a point of safety.*
 - 5. Enclosed (and underground) station platforms shall have a minimum of one exit within 20 feet from each end. Routes from platform ends into the underground guideway shall not be considered as exits for calculating exiting requirements.
 - 6. Egress path shall be continuous from platform to outside of station.
 - 7. Exit hatches shall not be used as a means of egress from underground stations.
- E. *End of Platform Ingress Requirements: Access/egress shall be provided between trainway and platform per CBC. Means of egress shall be provided from each trainway to the platform, meeting the following requirements:*
 - 1. *A 2'-10" minimum clear width stairway, or other arrangement having equivalent capacity, shall be provided at each end of the platform, arranged so as not to restrict exiting capacity from either trainway.*

2. *Gates at the top of each stairway shall swing in the direction of access to the platform and shall not restrict patron flow rate from the walkway to the platform. Gates shall be locally alarmed.*
 3. *Gates, stairs, and landings shall conform to requirements of NFPA 101.*
 4. *The platform gates are intended to deter patrons from entering onto the trackway. The gates shall have a sign or signs installed, facing the platform, bearing the words. Refer to Standard Drawings for "end of platform warning sign" for sign detail.*
- F. *Egress from Utility and Equipment Rooms: All utility and equipment rooms shall have a sufficient number of exits which lead to a point of safety, as defined in CBC. The exit capacity shall be based upon normal occupancy and use of such rooms and conform to the CBC.*
- G. Refer to Facility Design Criteria, Electrical, for station emergency lighting.

6.6. ADDITIONAL CODE, ACCESSIBILITY, AND SAFETY CRITERIA

- A. Protection From Flammable And Combustible Liquid Intrusion: Refer to Facility Design Criteria, Civil, Basic Design Policies, for requirements for protection of underground trainways from intrusion of flammable or combustible liquids. These requirements shall be applied to underground stations.
- B. Protection From Water Infiltration And Flooding: Structures shall be designed to minimize water infiltration and the probability of flooding. Stations shall be protected from flooding as specified for underground trainways.
- C. Materials: Combustible adhesives and sealants may be used when the requirements of Article 2.4.1A. under Fire Resistance and Smoke Generation are met.
- D. *Railings and guardrail shall comply with the requirements of CBC.*
- E. *Provide a tactile guide strip on the walking surface from bus unloading area through the accessible fare gate to the stairs leading to the platform for cane using visual impaired passengers. This strip shall be architecturally integrated using a textured surface of contrasting color.*

6.7. PLATFORM EXITING

Refer to Article 6.5 above.

6.8. CONCOURSE EXITING

- A. Integrated Entrances. These entrances are those that directly connect to another property development without allowing access to a public way. These generally will be part of an adjacent retail or commercial property development. Since the operation of the property can affect the station entrance, they shall receive special consideration as follows:

1. Exiting. An integrated entrance shall not be designated as a station or development emergency exit and therefore not be included in calculating exit capacity.
 2. Fire Separation. Fire separation will be maintained between the Station and adjacent development via fire rated entrance enclosures, walls, floor, roof, etc. The station area shall be separated from the development entrance via fire doors or fire shutters. The fire doors or shutters shall be operated manually by station staff.
 3. Fire and smoke control. Provisions shall be made to assure that fire, contaminated air, or other emergency conditions in adjacent development shall not endanger the Station.
- B. Refer NFPA 130 and NFPA 101:
1. Mixed Occupancy egress requirement
 2. Materials

6.9. **PREFERRED BICYCLE ROUTE**

- A. At each station, one or more routes, that includes public use stairs to each level, shall be designated as a preferred bicycle route for the convenience of bicyclists and safety of passengers. The preferred bicycle route shall be a logical path of travel for the bicyclist from street to bike parking on the concourse level or to the platform level.
- B. *Stairs identified as part of the route shall be designed and constructed to include bicycle stair channels (BSC).* Refer to BSC described herein and the 2017 Bicycle Program Capital Plan for stair channel priority rankings.
- C. Consider the following when identifying the stairways of the route:
 1. *Stairways with switchbacks shall not have BSC.* Switch-back stairways make it more challenging to construct a functional stair channel because of the multiple transition points and congestion that occurs at each direction change.
 2. Shallower stairways are easier to use, and preferred over steep stairways.
 3. Stairway should lead to fare gate array that includes an accessible fare gate.
 4. Elevators and escalators shall not be part of the preferred bicycle route.

7. **VERTICAL CIRCULATION**

Some of the basic principles to consider in planning station vertical circulation including stairs, escalators, and elevators are as follows:

- A. Escalators, elevators, and stairs shall be so situated that they carry passengers directly to the platform at locations convenient for boarding their particular train.
- B. Changes of direction should be avoided whenever possible.

- C. Vertical circulation elements shall be located at all levels to make direct routing possible.
- D. Elevators shall be provided to make the system accessible to the handicapped as well as to other passengers and staff personnel.
- E. Where escalators are provided, layout of vertical circulation elements shall facilitate the use of escalators in preference to stairs wherever possible.
- F. At center platform stations, provide at least two escalators between the platform and the concourse to permit simultaneous escalator operation up and down. In addition, include at least one stairway to provide an alternative route from platform to concourse.
- G. At side platform stations, provide a minimum of one escalator and one stair per platform in the station core.
- H. Consideration should be given to provide additional escalators at high traffic stations.
- I. Provide 8 feet 6 inches minimum headroom above these vertical circulation elements; 10 feet is preferred.
- J. Locations of vertical circulation elements shall be strategically designed to minimize local concentrations of patrons at either platform or concourse, and maximize even distribution of patrons along the entire length of a train.
- K. In addition to complying with minimum requirements indicated in item F and item G, use the following diagram as a guideline to select additional vertical transportation devices.

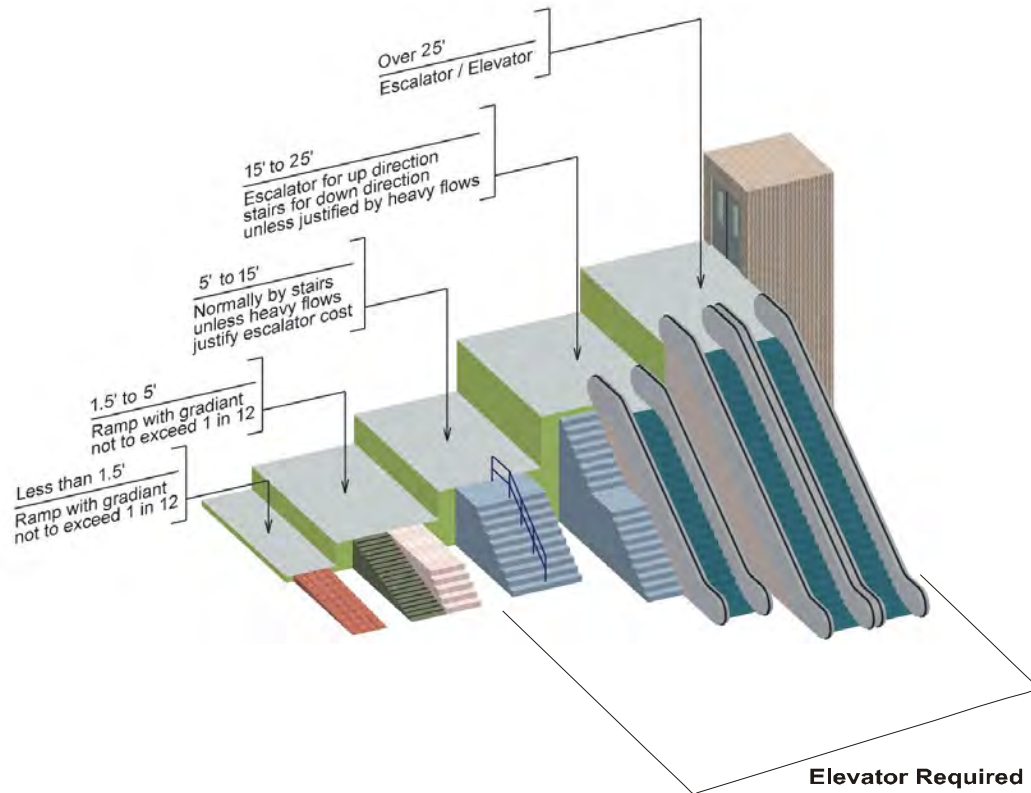


Figure 7.1 - Vertical Circulation Types Recommended based on Elevation Change

8. STAIRS

8.1. GENERAL

This article includes facility criteria of stairs located in passenger stations and parking structures. The criteria provide specific requirements for District facilities and identifies facility interfaces.

Stairs are the preferred means of vertical circulation for low rises (i.e., up to 15 ft); they are most cost effective and require low maintenance.

- A. See Table 4.2 regarding run-off/queue space at top and bottom of stair landings.
- B. Public use stairs shall be designed and constructed so that they offer maximum flexibility for possible future replacement with escalators with minimal disruption to station operations.
- C. Stairs fed by escalators shall be sufficiently wide to provide capacity at least equal to that of the escalator. Stairs adjacent to single escalators shall be considered as having a downward flow.
- D. Changes in direction at landings shall be avoided. Winding, curved, and spiral stairs shall not be allowed.

8.2. CODE REQUIREMENTS

- A. *Stairs and handrails shall meet the requirements of the California Building Code. Refer to CBC.*
- B. *Noncombustible materials shall be used for stair construction.*
- C. *The stairs shall be of a slip-resistant material with a nosing that is distinct and meets the requirements of ANSI A117.1 and CBC. The slip-resistant materials used shall not require maintenance (other than normal housekeeping) to retain their slip-resistant qualities. The static coefficient of friction shall not be less than 0.6 when tested in accordance with ASTM (C 1028) 15.02.*
- D. *Minimum unobstructed space in front of stairs, at top and bottom, shall be 15 feet beyond the last riser. For stairs wider than six feet, the minimum distance shall be increased proportionally to the nearest whole foot.*
- E. *In any one flight, the minimum number of risers shall be two.*
- F. *For stairs used by the public (other than emergency exit only stairs), straight run stairs are preferable. Winders, curved stairs, and spiral stairs are prohibited.*
- G. *Where a stair is adjacent to an escalator, align the lower working points of both stair and escalator.*
- H. *Gutters and/or runnels along sides of stairs are not acceptable.*

8.2.1. Stair Widths

- A. *Public use: 5 feet 6 inches minimum (three exit lanes at 22 inches each).*
- B. *Service stairs (staff use only): 3 feet 8 inches minimum (two exit lanes at 22 inches each).*
- C. *Access/egress stairs from track bed to ends of platform: two feet 10 inches minimum; however, previous BART criteria, 2'-6" minimum may be acceptable if specifically approved by the District.*
- D. *Emergency stairs: 3 feet 8 inches minimum (two exit lanes at 22 inches each). Provide areas of refuge for disabled where required by code.*
- E. *Total width of stairs shall meet emergency egress capacity requirements.*

8.2.2. Stair Landings

Straight run stair: Length of landing shall be 4 feet 6 inches minimum.

8.2.3. Tread-Riser Relationship

For public use stairs (other than emergency exit only stairs), the slope shall be 30 degrees. Tread and riser relationship shall have a component slope of 30 degrees

to the horizontal with a minimum riser of 6-1/2 inches and a maximum riser of 7 inches. A 6-3/4 inch riser and 12 inch tread is preferred.

8.2.4. *Headroom*

- A. *For protruding objects, measured perpendicular to the tread at nosing: 8 feet 6 inches minimum.*
- B. *For continuous soffits or ceilings, without obstructions: 10 feet minimum.*

8.2.5. *Handrails*

- A. *All stairs in excess of 5 feet 6 inches wide shall have center handrails.*
- B. *Height of handrail at stairs, stair landings, and top and bottom of stairs: 2 feet 10 inches measured vertically from the top of the tread, at the nosing, to the top of the handrail.*
- C. *Handrails shall be continuous and meet the requirements of ANSI A117.1 and CCR, Title 24. Handrails shall be continuous through landings for the full length of the stair.*
- D. *Where a stair is adjacent to an escalator, the stair handrail shall not be higher than the escalator handrail decking.*
- E. *Avoid handrails extensions terminating downward to avoid conflicts with bicycles on BSC.*

8.2.6. *Stairway Marking*

- A. *Nosings of each step and landing shall be slip-resistant and of contrasting color and texture to alert the visually impaired. Nosing shall be a minimum of three inches wide and include the nose of the step or landing.*
- B. *When stairs are poured-in-place concrete finish, a manufactured integral nose guard meeting the above requirements shall be used.*

8.3. BICYCLE STAIR CHANNEL

A. **General**

1. **Avoid collisions or interference with adjacent surfaces, handrails, guardrails, and stairs.**
2. **Accommodate for tires between 7/8 and 4 inches thick.**
3. **Accommodate bike frame sizes between 14 and 19 inches (full bicycle height 2 feet 8 inches and 3 feet 4 inches).**
4. **For retrofits, recalculate required egress width to demonstrate no conflicts per Article 8.3C, Size.**

B. **Placement**

1. Place BSC parallel to the run of the stair. The BSC shall be at the corner where the stair meets a wall or a guardrail; or bisecting the stairway if there is an accompanying handrail that also bisects the stairway.
2. Design BSC to prevent a foot or toe from getting wedged underneath to avoid toe-pinching or tripping. For BSCs located less than 4 inches measured from the edge of the nosing to the bottom of the stair channel, close gaps between stair channel and BSC with a solid vertical surface along the side of the channel

C. Size

1. The BSC shall not impact the stairway design capacity requirements per Article 2.3, Design Capacity herein.
2. BSC shall not protrude greater than eight inches beyond the handrail to maintain a reasonable distance between a pedestrian and the handrail. The stairways handrail may overlap above the width of the BSC by up to four inches without impacting its use.
3. BSC shall not be narrower than 4 1/2 inches.
4. BSC shall comply to CBC 1012.8 Projections.

D. Shape

1. The shape of the bicycle channel shall guide the bicycle in a straight line and prevent pedals and handlebars from colliding with elements adjacent to the stair channel such as escalator walls, handrail posts, or solid walls.
2. In a wider channel, the shape shall encourage an upright handling of the bicycle. In a narrower channel, the shape shall encourage a tilted handling so as not to scrape or interfere with the adjacent walls or handrails.

E. Materials

1. BSC shall have adequate friction or grip to prevent tire slip. Stainless steel does not have adequate friction. Three-dimensional decoration or a textured finish may be used to provide friction or grip.
2. For wider channels, provide skate deterrents along the edge to discourage skateboard use.

F. Transitions

1. Provide smooth transitions at landings, and at top and bottom of stairway. Provide transitions that diverge from the slope of stairs so that pedals do not collide with stairs. See Fig. 8.3.5 and Fig. 8.3.6 for an illustration of these conditions.
2. Transitions shall not cause a trip hazard.

G. Visibility

1. Mark edge of the BSC in a high contrasting color and pattern.
2. Illumination may be used to increase visibility.

3. Provide tactile strip at the beginning and end of BSC.

H. Signage

1. Provide signage to guide bicyclists to stair channels and to inform bicyclists how to utilize the channel, with information including, if necessary, tilting and using the brakes.

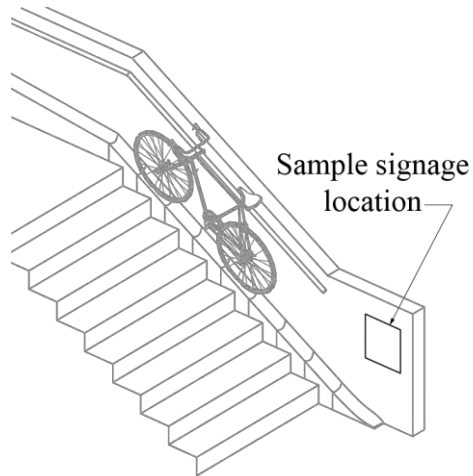


Figure 8.3.1 – Sample of Signage Location for BSC

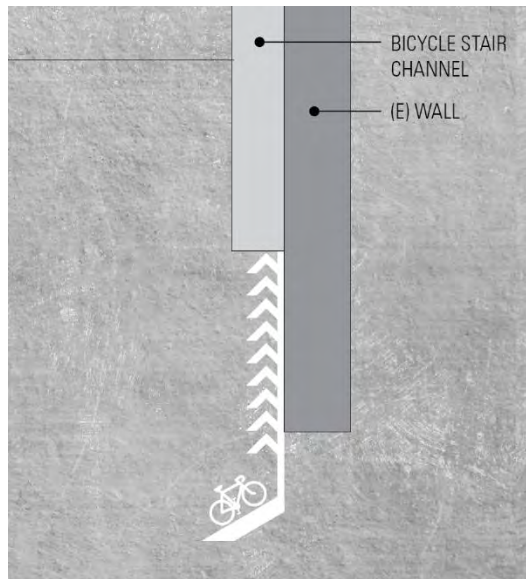


Figure 8.3.2 – Sample of Floor Signage in Plan View

PASSENGER STATIONS

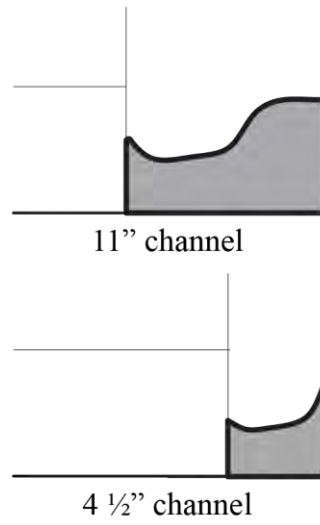


Figure 8.3.3 – Illustration of Channel Shapes for Different Widths

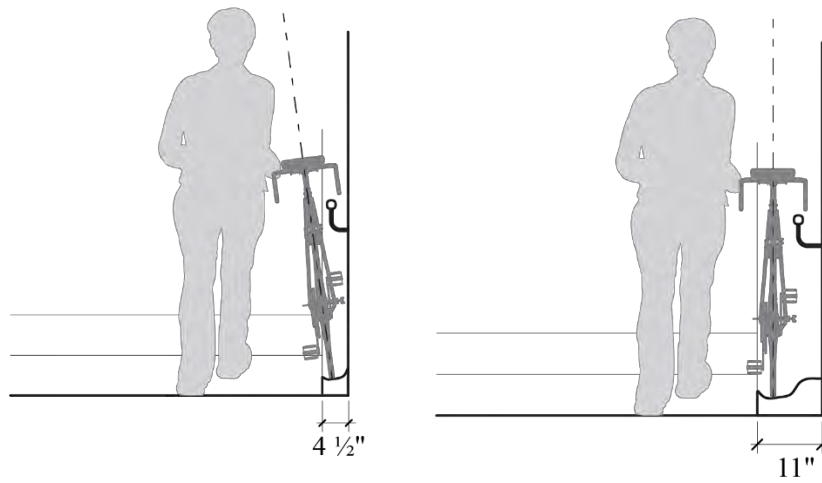


Figure 8.3.4 – Illustration of Bike Orientation for Different Channel Widths

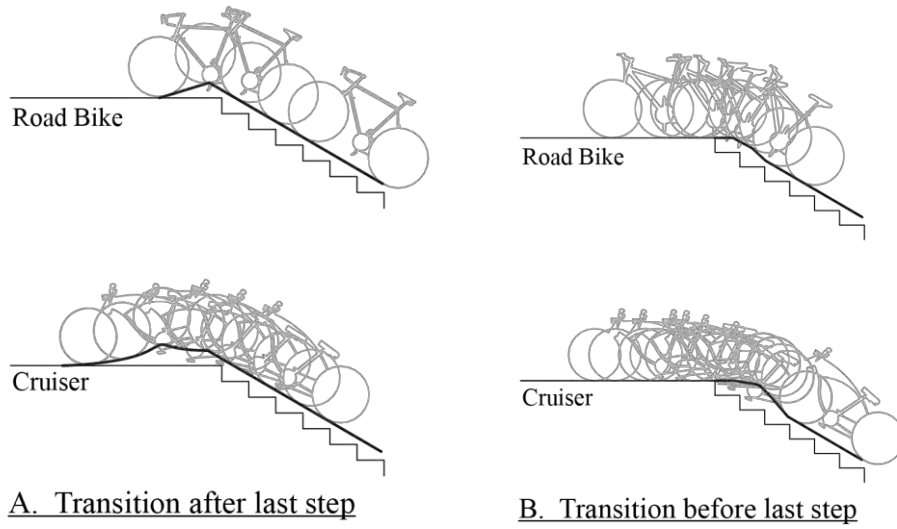


Figure 8.3.5 – Illustration of Acceptable Transitions at Top of Stair

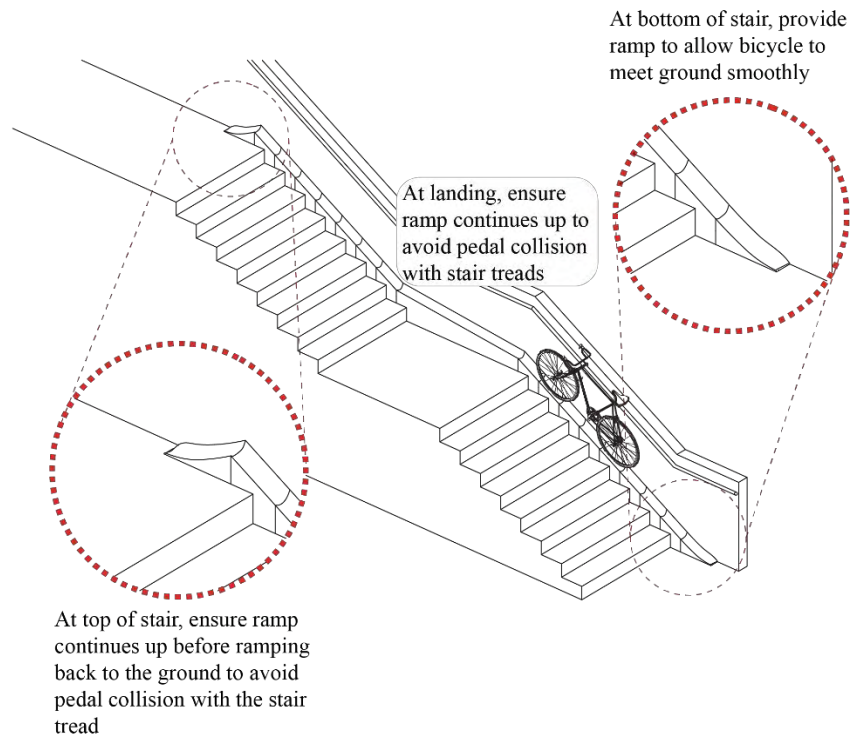


Figure 8.3.6 – Illustration of Acceptable Transitions at Top, Bottom, and Landing of Stair

9. **ESCALATORS**

9.1. **GENERAL**

This article includes facility criteria of escalators located in passenger stations and parking structures. The criteria provide specific requirements for District facilities and identify facility interfaces. Specific criteria for the manufacturing are identified in Standard Specifications Section 14 31 00, Escalators.

Escalators are most suitable for high traffic volume or medium rises (i.e., 10 ft to 30 ft).

- A. All escalators shall be 48 inches in nominal width and have three flat steps at top and bottom landings and shall be bi-directional.
- B. All escalators shall be of weatherproof construction, regardless of location, so that water, wind or temperature will not interfere with normal operation.
- C. Escalators shall be in a secured area when the stations are closed and shall be located under cover. Escalators to street level from downtown underground stations shall be provided with weather-shielding enclosures. Enclosure shall be securable.
- D. For the purpose of determining the number of escalators required, the nominal egress capacity for escalators shall be based on the following rates:
 - 1. Escalators at 90 fpm – 4050 passengers/hour (67.5 passengers per minute (ppm))
 - 2. Escalators at 100 fpm – 4500 passengers/hour (75 ppm)
 - 3. Escalators at 120 fpm – 5400 passengers/hour (90 ppm)

A consistent speed for all escalators in a station is recommended. The speed of 100 fpm is preferred.
- E. For the purpose of determining other requirements, such as number of fare gates and surrounding space requirements, these items shall be designed based on the maximum capacity of escalators which is the double rate listed in above paragraph E.
- F. See Table 4.2 regarding run-off/queue space at top and bottom of escalator landings.
- G. At the top and bottom, the distance between the escalator working point and the pit opening shall be at least 12 feet to provide adequate maintenance space in the escalator pits.
- H. At the top and bottom of each escalator, there shall be a barrier along both sides to assist in queuing/run-off at the escalator. The barrier shall be between 36 to 42 inches high and between 36 to 48 inches in length measured from the escalator newel as described in paragraph G.
- I. Escalator well ways shall not be used as easements for any other systems that are not related to the escalator.

- J. Architectural cladding surrounding the escalator well way shall not be supported by the escalator truss.

9.2. **ELECTRICAL**

- A. All escalators shall be operated by 480 volt, 3-phase power. Controllers for escalator shall be located next to, below, or adjacent to the escalator that they are operating. Remote escalator controllers are not acceptable.
- B. A dedicated 120 volt circuit shall be provided to each escalator wellway for pit lighting and receptacles. If 120 volt power is required for the operation of the escalator, then a step down transformer shall be powered from the main 480 volt escalator power.
- C. Illuminated signage near the entrances of the escalator shall be interfaced with the escalator if there is no adjacent stair. The signage shall be 277 volt power and be controlled based on the direction of the escalator. A separate conduit shall be provided from the signage to the escalator controller.
- D. *The lighting levels along the entire escalator shall comply with the requirements of the Facility Design Criteria, Electrical.*
- E. *Electrical Interlocking with Rolling Grille: When an escalator may discharge patrons into an area bounded by a rolling grille, the following code requirements shall be applied, as applicable. An electrical interlock shall stop the escalator from running when the coiling grill is not fully opened. Electrical interlock with rolling grille shall meet the requirements CCR Title 8.*

9.3. **COMMUNICATIONS AND SEISMIC SENSOR**

- A. Refer to Facility Design Criteria, Electronics, Public Address and Electrical for detailed requirements of public address announcement and escalator shut-down in the event of fire alarm within the station.
- B. *All escalators shall be stopped in the event of seismic event near the Station. The station seismic sensor shall be installed in the Train Control Room or Communications Room in the Station. The switch shall activate and shutdown the escalators upon excitation in a vertical direction of not more than 0.15 times gravity acceleration. The frequency response of the switch shall be 1HZ to 10HZ. Upon shutdown, the escalator shall activate the emergency alarm bell for at least 15 seconds but not more than 20 seconds, at which time the main power shall be interrupted from the escalator drive machine and the escalator brake shall be applied.*
- C. For escalator remote monitoring and indication at the Station Agents Booth, refer to Facility Design Criteria, Electronics, Supervisory Control and Data Acquisition (SCADA).
- D. Refer to Station Agent Booth requirements herein. Escalator running up/running down/stop signal for each escalator shall be provided at the Station Agent's booth.

9.4. MECHANICAL

- A. The escalator well way shall be equipped with a floor drain at the lower end. Refer to Facility Design Criteria, Mechanical, Stations and Station Sites for requirements for drainage from escalator. The escalator well way shall be of continuous concrete construction or continuous heavy gauge galvanized steel oil/water drip pan with side walls at least three feet high installed within a minimum 2-hr fire rated well way structure.

10. ELEVATORS**10.1. GENERAL**

This article includes facility criteria of elevators located in passenger stations and parking structures. The criteria provide specific requirements for District facilities and identifies facility interfaces. Specific criteria for the manufacturing are identified in Standard Specifications Section 14 21 00, Electric Traction Elevators, and Section 14 24 00, Hydraulic Elevators.

Elevators are most suitable for high rises and constrained sites and meet the needs of nearly all passengers.

- A. In all stations, at least one elevator shall serve the platform, concourse, and street levels. Where the configuration of the station is such that one elevator cannot serve all levels and areas, additional elevators shall be installed to provide full access for the elderly and disabled. If additional elevators are necessary to reach all levels of the station, then the elevators shall be located as close as possible to each other. Free and paid areas shall not be accessible from the same elevator (i.e. the elevator to the train platform shall be located within the paid area of the station).
- B. Refer to California Code of Regulations to determine the number of elevators required for access by patrons with disabilities. Where a second elevator is required for access by disabled patrons, the second elevator may, with District approval, serve both free and paid areas with provision to block access to paid areas except when first elevator is out of service. In addition, where the capacity of a station and the configuration of vertical transportation indicate the need for more than one elevator, consider additional elevators.
- C. A duplicate elevator that serves all levels shall be considered for stations that have patronage in excess of 15,000 patrons per day.
- D. A dedicated room shall be provided as the elevator machine room. An elevator machine room may service multiple elevators.
- E. Elevator machine rooms shall be located as close as possible to the elevator hoistway, but shall not exceed 100 feet.
- F. Refer to Facility Design Criteria, Electronics, Telephone Systems for communication requirements in regard to elevators.

- G. Wayfinding signage to assist patrons in locating elevators shall be provided. Signage shall be accessible to patrons with disabilities. Signage indicating elevator locations shall be carefully designed so as not to misdirect passengers toward the sign but away from the elevator. Elevators shall be signed as part of bicycle access routes.
- H. Elevator hoistways shall be constructed to meet the code requirements of the building but shall be a minimum of 2-hr fire rated construction.

10.2. ELECTRICAL

- A. All elevators shall be operated by 480 volt, 3-phase power from the emergency power source of the 480-volt switchboard or emergency generator.
- B. There shall be a minimum of four dedicated 120 volt circuits provided for each elevator, unless the elevators are group by one controller; elevator cab lighting and ventilation, CCTV, elevator machine room lighting and receptacles, and hoistway pit lighting and receptacles.
- C. The lighting levels in the elevator cab, at hoistway entrances, and in machine rooms shall comply with the requirements of the Facility Design Criteria, Electrical.
- D. Elevator machine rooms shall be equipped with smoke detectors that interface with the elevator controller via the main fire alarm panel.

10.3. COMMUNICATIONS AND SEISMIC SENSOR

- A. *All station and parking structure elevators shall be shutdown upon occurrence of a seismic event near the Station. The elevators shall be connected to the seismic sensor described in paragraph 7.3 above. If a separate seismic sensor is provided in the parking structure, it shall be installed in one of the auxiliary communications room in the structure.*
- B. For communications systems related to elevators including white courtesy telephone inside and at entrances to elevators, fire alarm, seismic, CCTV cameras, remote monitoring and control indication of elevators in the Station Agent's Booth, refer to the appropriate section in the Facility Design Criteria, Electronics.

10.4. MECHANICAL

- A. Refer to Facility Design Criteria, Mechanical, Stations and Station Sites for requirements for drainage from elevator pits.

10.5. OTHER REQUIREMENTS

- A. The hoistway doors shall be a minimum of 42 inches in width and 84 inches in height at side opening doors. The hoistway doors shall be a minimum of 48 inches in width and 84 inches in height at center opening doors. The use of center or side opening doors is dependent upon the size of the cab to accommodate an ambulance stretcher. Elevator doors and hoist way doors shall have glass vision panels.

- B. *The elevators shall be equipped for Fire Service II according to ASME A17.1.*
- C. *Elevators shall be sized for emergency evacuation of a horizontally positioned stretcher 24 inches by 84 inches.*
- D. Interior of elevator hoistway and outside of elevator car shall be painted.
- E. Station elevators shall typically be hydraulic type; parking structure elevators shall be traction type.
- F. Finish floor at entrances to elevators shall slope away from hoistways to prevent direct flow of water towards cabs and pits.
- G. Elevator machine rooms and auxiliary machine spaces shall be sized to accommodate the elevator and related equipment with ample space for maintenance and replacement of all equipment located in the machine room. The main machine room floor area shall be at least 150 percent of the square footage required by NEII.
- H. Machine room shall have clear headroom of 84 inches minimum. Auxiliary machine spaces located at the top of hoistway shall have clear headroom of 60 inches minimum.
- I. For platform signs directing passengers to the elevators, the font and size displaying an elevator's location within the station shall be consistent with the Wayfinding Hierarchy as defined by the District Architect.

11. MECHANICAL AND PLUMBING SYSTEMS

11.1. GENERAL

This Article establishes the architectural facilities criteria of the mechanical systems for the stations, parking structures, station sites, and miscellaneous facilities. The mechanical systems are heating, ventilation, and air conditioning (HVAC); fire protection; and plumbing and drainage. For specific mechanical criteria refer to Facility Design Criteria, Mechanical, Stations and Station Sites.

Common utilities chase/routes shall be provided throughout the station to accommodate immediate and anticipated future requirements. Utility chases shall be concealed from public view and accessible for maintenance and future modifications.

11.2. HVAC CRITERIA

The following general architectural design guidelines shall apply wherever mechanical ventilation systems are required.

- A. The wall-mounted thermostat shall be located 5'-6" high.
- B. Sound attenuators shall be provided in heating, ventilating, and air-conditioning systems to meet the requirements of the Noise and Vibration criteria.

- C. Air outlets shall be located to minimize the impact of noise on the neighbors and no lower than eight feet at station public areas.
- D. Door openings to mechanical rooms shall be a minimum 6 feet wide.

11.3. FIRE PROTECTION CRITERIA

- A. *Fire Hose Cabinets. Cabinets shall be recess mounted in station public areas where possible and surface mounted elsewhere. In public areas, they shall be satin finished stainless steel construction with hinged door unless otherwise shown on the Standard Drawings. Except as otherwise shown on Standard Drawings, fire hose cabinets shall be as required by code, in unlocked stainless steel cabinets with solid doors labeled "FIRE HOSE CABINET" in red color at parking structures and black for stations. Fire hose cabinets at parking structures which only contain fire hose may be commercially available stainless steel cabinet, in lieu of cabinet shown in Standard Drawings.*
- B. *Fire Suppression System. Fire suppression system shall be provided in the train control and communication rooms. Refer to Standard Specifications Section 21 22 00, Clean Agent Fire Extinguishing System.*
- C. *Automatic Fire Sprinklers. Automatic fire sprinkler head locations shall be in straight alignment and coordinated with light fixtures, air outlets and other items attached to ceiling and surroundings. In public areas and other areas with finished ceilings, piping shall be concealed. Where exterior exposed piping is permitted, piping shall be mounted flush to bird roosts.*
- D. *Fire Water. Fire water pipe shall enter into the building through the outside wall rather than underground through the perimeter foundation or floor slab. Where the fire water pipe enters building through an outside wall, it shall be concealed from public view.*
- E. *Fire Extinguishers. Fire extinguishers shall be provided as required by code and these criteria in unlocked recessed stainless steel cabinets in public areas. Fire extinguisher cabinets in non-public areas may be surface mounted. Cabinets shall have solid doors labeled "FIRE EXTINGUISHER" in red in parking structures and in black in stations.*
- F. *If District requires, provide cabinets (for extinguishers and hoses) with glazed panels in doors so that District personnel can check for hidden objects within opening cabinet.*

11.4. PLUMBING AND DRAINAGE CRITERIA

Domestic Water Supply. Where the domestic water supply pipe enters building through an outside wall, it shall be concealed from public view. Isolation valves shall be located within a non-public room or an enclosed area. If it must be located outside, it shall be in a valve box concealed from view. When the valves are located in a room, the pipes shall enter through the outside wall rather than underground through the

perimeter foundation or floor slab. These exposed pipes shall be concealed from public view. All valves shall be accessible without use of ladders or lifts.

11.4.1. Domestic Water System.

- A. Pressure reducing manifold shall be located within a non-public room or an enclosed area. When the valves are located in a room, the pipes shall enter through the outside wall rather than underground through the perimeter foundation or floor slab. The exposed pipe shall be concealed from public view.
- B. When hose bibs or wall hydrants are required in the same room or area as electrical receptacles, they shall be aligned, arranged symmetrically, or otherwise organized so that such devices so not appear haphazard.

11.4.2. Sanitary and Industrial Waste Drainage Systems.

- A. Floor clean-out locations in public and staff spaces shall be coordinated with the architectural floor finish pattern and as approved by the District.
- B. Wall clean-out access panel locations in public and staff spaces shall be coordinated with the architectural wall finish pattern and as approved by the District.

11.4.3. Storm Water Drainage Systems

- A. All floors in spaces requiring floor drains shall be sloped to the drain a minimum of 1/8-inch vertical in 12 inches horizontal.
- B. Roofs shall be sloped to the drains a minimum of 1/4-inch vertical per 12 inches horizontal. Downspouts for roof drains shall be accessible for maintenance and replacement and shall be concealed from public view wherever possible unless a daylighted drainage program calls for visible drainage. Drains and downspouts shall meet all maintenance and safety requirements.
- C. Under platform utility chase shall be provided with floor drains, unless chase is protected from water intrusion.

12. **ELECTRONICS**

12.1. **GENERAL**

The station shall be equipped with Communications systems for use by BART operations staff and the convenience of patrons. This Article provides a brief description of these systems and detailed requirements including equipment and device locations within the station are covered in the Facility Design Criteria, Electronics. Refer to Facility Design Criteria, Electronics, Telephone Systems for the following telephone systems:

- A. PABX Telephones
- B. Courtesy Telephones

- C. Emergency Call Boxes
- D. Fire Phone
- E. Emergency Telephone

12.2. PUBLIC TELEPHONES

- A. *Public pay phones shall be provided in both free and paid areas of each station. Public phones shall be located so that they will not interfere with pedestrian flow. A minimum of one public pay telephones shall be located in each of the free and paid areas on the concourse level. Unless otherwise indicated, the District will make arrangements for public telephone installation.*
- B. Wall-mounted telephones are preferred to freestanding booths.
- C. *One telecommunication display device for the hearing impaired (TDD) shall be provided where a public pay phone is located.*
- D. *Public telephones shall comply with CBC and ADA accessibility requirements including mounting heights and signage.*
- E. *At least one telephone in each bank of public telephone shall be mounted to be accessible to the disabled. A bank consists of two or more adjacent phones.*
- F. *Emergency "911" service shall be provided at each pay phone. Money will not be needed to access the "911" service. Signage shall be provided by each telephone station indicating the availability of the "911" service and procedure for its use.*

12.3. PRIVATE TELEPHONES

Conduit and terminal space shall be provided for each concession booth or kiosk for future service from the telephone service company.

12.4. PUBLIC ADDRESS SYSTEM

- A. *All stations shall have a public address system for communicating with patrons and employees. This system provides one-way voice communication from the Station Agent Booth, from PABX telephone sets with PA access, from the Emergency Management Panel, and from Central Control to the patrons by means of speakers located throughout the station public and ancillary areas. Refer to Facility Design Criteria, Electronics, Public Address System.*
- B. *The station audible fire alarm signaling shall be via the PA System as described in Facility Design Criteria, Electronics, Public Address System and Electrical. The design of the PA System shall be subject to the review and approval of the local jurisdictional authority.*

12.5. TRUNK RADIO SYSTEM

An antenna system shall be located on the concourse and platform levels as well as in long corridors and pedestrian underpasses to provide radio coverage in all areas of the station. The system shall be concealed or otherwise made unobtrusive within the station architecture. Refer to Facility Design Criteria, Electronics, Trunk Radio System.

12.6. CLOSED-CIRCUIT TELEVISION (CCTV) SYSTEM

A CCTV system is provided for surveillance of public areas in the station and station site from the Station Agents Booth, Central Control, Police Rooms, and Emergency Management Panel Room. Refer to Facility Design Criteria, Electronics, Closed-Circuit Television System.

13. SANITATION AND MAINTENANCE**13.1. BASIC DESIGN OBJECTIVES**

- A. To provide facilities for an efficient maintenance program.
- B. To integrate maintenance elements in the basis of station design, without detracting from the appearance of the stations.
- C. To provide standardized facilities within each station and, where possible, between stations to minimize the inventory of replacement items.

13.2. GENERAL CRITERIA

- A. A program of routine maintenance requires access to many parts of stations and their sites. Elevated areas of stations shall be accessible for maintenance by portable equipment such as ladders. Stations requiring special maintenance equipment are unacceptable, unless specifically approved by the District.
- B. A truck-mounted "cherry-picker" can be used for maintenance of pole-mounted lighting on station sites and for other relatively inaccessible portions of station exteriors.
- C. In the maintenance of station interiors, access shall be provided to lighting fixtures and other equipment located directly above stairs, escalators, or light wells. Access shall also be provided for maintenance of wall surfaces adjacent to and above escalators and stairs. Access to roof-mounted equipment shall be by fixed ladders.
- D. Normal station maintenance shall not be conducted from the trainway (except for maintenance of the trainway area itself), nor shall maintenance equipment normally be brought into stations through the trainway. Maintenance and operation programs requiring the use of trainway areas and equipment will not be acceptable.
- E. Horizontal ledges shall be avoided to minimize the collection of dust and debris and to prevent bird roosting. The exposed top surfaces of outriggers, beams, parapets,

and window ledges shall have a minimum slope of 35 degrees to horizontal. Elements such as signs and lighting fixtures shall be selected and designed to prevent bird roosting.

1. Where architectural treatment of stairs, escalators, and visual openings include use of parapets or otherwise create horizontal ledges, slope the top of parapet or ledge away from the vertical circulation elements and visual openings to prevent objects being placed upon them.
- F. *Handrails, door pulls, and other protruding elements shall have a 1-1/2-inch minimum clear space behind them. Refer to CBC for maximum clearance for certain elements, i.e. handrails.*
 - G. Signs and advertising panels shall be designed and located to require minimum maintenance.
 - H. Cleanouts and access panels shall be located inconspicuously and to the extent practicable in non-public areas. In public areas, access panels shall be provided with key lock.
 - I. *Wall-mounted equipment, including portable equipment, shall be flush, unless required otherwise by the District.*
 - J. Notches in walls for flush-mounted equipment shall not extend down to the floor unless necessary to provide access for the disabled. Bottoms of such notches shall be not less than six inches above the adjacent floor at any point. Objects which project from walls more than three inches shall be mitigated at floor level for the sight impaired in accordance with ADA requirements.
 - K. Where equipment is freestanding, it shall have its own integral base fitted tight to the floor. Where equipment is grouped, flush closure strips shall be used to cover spaces between units.
 - L. Structural and architectural elements which project from walls shall be avoided. Where an element projects more than three inches from a wall, verify that floor and wall surfaces below or adjacent to the projecting element are easily accessible for cleaning.
 - M. Signs, handrails, and benches shall be securely anchored with phillips head or allen head screws or bolts. If heads are exposed, use flush spanner head screws. Use socket head screws if heads are concealed from view.
 - N. *Areas under stairs and escalators with headroom of less than 8-foot-6-inches shall be enclosed to prevent collection of debris and to eliminate headroom hazard.*
 - O. Refer to Article entitled Trash and Newspaper Receptacles herein.
 - P. Bases shall be covered for floor cleaning machines.

14. NOISE AND REVERBERATION CONTROL

14.1. GENERAL

These provisions apply to the design of stations.

14.2. PURPOSE

The inclusion of acoustical treatment in the design of stations is required to accomplish four major purposes:

- A. Control and reduction of noise from transit vehicle operations.
- B. Provisions for good intelligibility of announcements from the public address system.
- C. Control of noise in enclosed areas generated by patrons and/or exterior sources.
- D. Assistance in the control of noise from station air handling equipment, vertical circulation equipment, and any other station mechanical equipment.

The design goal maximum noise levels in stations are presented in Table 14.2-1. The noise levels inside stations are dependent on the design of the transit vehicles and station mechanical equipment, noise from traffic outside station, and on the acoustic treatment in stations. The criteria for the acoustic treatment take into account the general architectural characteristics of the BART stations and the noise to be radiated by the transit cars and other noise sources.

Table 14.2-1 Maximum Noise Levels in Stations	
On platform, trains entering and leaving:	
Ballast and tie trackbed	75-80 dBA
Concrete trackbed	80-85 dBA
On platform or in concourse areas, noise from traffic on nearby streets, highways or expressways (peak hour)	70 dBA L_{eq}
On platform or other public areas, noise from any ancillary mechanical or vertical circulation equipment	55 dBA
Noise in station agent booths or offices due to ventilation system and booth equipment	50 dBA

Table 14.2-2 summarizes the criteria for reverberation time and acoustic treatment of the various enclosed or partially enclosed areas of stations.

Table 14.2-2 Summary of Station Acoustic Design Criteria
(Applicable to enclosed or partially enclosed areas)

Table 14.2-2 Summary of Station Acoustic Design Criteria (Applicable to enclosed or partially enclosed areas)			
	Areas Exposed to Street Traffic and Railroad Noise	Concourse Areas	Enclosed Platform Areas (Train Rooms)
Maximum Reverberation Time (500 Hz)	1.2 to 1.4 sec.	1.2 sec.	1.5 sec.
Maximum Mechanical Equipment Noise		55 dBA	55 dBA**
Treatment: Minimum wall/ceiling area	20-25%*	35%***	35%***
Minimum ceiling only	70-100%*		
Treatment Properties: Minimum 500 Hz absorption coefficient	0.6	0.6	0.6****
Minimum Noise Reduction Coefficient	0.6	0.6	0.6****

- * Large openings in enclosed spaces may be considered as acoustical treatment for the purpose of calculation.
- ** 50 dBA maximum in station agent booths.
- *** Including at least 50% of ceiling area.
- **** Underplatform treatment also required--minimum absorption coefficient of all acoustical treatment at 250 Hz: 0.4; at 500 Hz: 0.65.

14.3. STATION INTERIOR ACOUSTICAL DESIGN

The design of absorption treatment for enclosed areas consists of three basic steps:

- A. Determine required reverberation times and quantities of absorption.
- B. Determine locations that will provide maximum control of noise.
- C. Select acoustical materials and design material installations.

14.3.1. Reverberation Time and Absorption Quantity

As summarized in Table 14.2-2, the acoustical criteria for stations include maximum reverberation time at 500 Hz, minimum areas for treatment, and minimum absorption properties.

- A. Enclosed Platform Areas (Train Rooms):
- B. Analysis of enclosed platform areas indicates that optimum treatment is obtained with a reverberation time of about 1.3 seconds. Reverberation time in the platform areas shall be 1.2 to 1.5 seconds.

- C. The acoustical treatment shall be continuous and uniform for the entire length of the enclosed space. When the enclosed platform areas have a relatively constant cross-section, it is most appropriate to define the quantity of treatment in terms of treatment per foot of station platform length. From this, the width of treatment required as a function of the absorption coefficient of the material can be determined.
- D. Concourse and Corridor Areas:
- E. The reverberation time shall not exceed 1.2 seconds for enclosed concourse areas such as fare collection areas and corridors.
- F. Station Areas At- or Above-Grade:
- G. Areas exposed to street noise can be increased to the range of 1.2 to 1.4 seconds at 500 Hz.
- H. Ancillary Areas:
- I. For the purposes of acoustical design, ancillary areas include service rooms, toilets, mechanical/electrical equipment rooms, and train control and communications equipment rooms. Access to these noisy areas shall be through double-entrance doors or sound treated doors. Any of these areas used by the public or next to public spaces shall receive appropriate acoustical treatment.

14.3.2. Location of Absorption Material

The preferred locations for acoustical treatment in stations are described below.

A. Enclosed Platform Areas (Train Rooms):

Continuous treatment of the under platform overhang surface in enclosed platform areas shall be provided for the effective control of train noise since most train noise originates in this area. Although it is also very effective to treat the side walls opposite the platform, spray acoustical material shall not be used in this area because it becomes dirty and unsightly. Refer to Standard Specifications, Section 09 83 14, Acoustic Coating, for spray-applied acoustical finish for under platform surfaces.

The criteria call for coverage of 35 percent of the total projected wall and ceiling area with acoustical treatment in addition to the under platform treatment.

B. Concourse and Corridor Areas:

All enclosed public areas of the station shall receive acoustical treatment equal to a minimum of 35 percent of the total projected wall and ceiling area, or the equivalent, including coverage of at least 50 percent of the ceiling area where possible. In narrow spaces, treatment may be concentrated on the ceiling, covering 70 percent to 100 percent of the ceiling area. Acoustical material in public areas shall be placed a minimum of 9 ft from floor surfaces. Large openings in enclosed spaces may be considered as acoustical treatment for the purpose of calculation.

Ceiling treatment shall be placed between structural members or directly on the ceiling surface for flat ceilings. Wall treatment shall use appropriate panel assemblies or direct wall-mounted materials.

C. Ancillary Areas:

As required, toilet, locker and service rooms shall have acoustical treatment applied to the ceilings for control of reverberation and noise. The acoustical absorption material shall have an NRC of at least 0.55.

As required, electrical equipment rooms with noise generating equipment shall have acoustical treatment covering the ceiling. The acoustical material shall be an equipment room type of ceiling/wall treatment, for example, 1" thick glass fiber boards, and shall have an NCR of at least 0.65. Mechanical equipment rooms housing fans, pumps, and other equipment which generate high sound levels shall have a sound absorption treatment equivalent to 2" thick glass fiber board or blanket (minimum NRC of 0.75) applied to cover the ceiling and wall areas as required. In other spaces with equipment which generates only low or moderate noise, the acoustical treatment shall be as indicated above for electrical equipment rooms.

14.3.3. Acoustical Materials and Installations

This Article covers the selection and application of appropriate acoustical materials for stations. Acoustical treatment for transit system stations consists of three elements: The sound absorption media or material, a protective covering, and an architectural or trim facing.

A. Materials: All acoustical materials, covers and trim shall be in accordance with NFPA-130. Typically, spray-applied material is used in non-public spaces only (and under platform areas). Glass fiber blankets shall be used in dry areas only. Absorption materials for wall and ceiling treatment shall be:

1. Cellular glass blocks behind corrosion-resistant perforated sheet metal facings or slit-and-slat system facing. The material shall be of 2" or 4" thickness in platform areas, 2" thickness in concourse areas and 1.0" to 1.5" thickness at other locations. This material is to be used because of its non-flammability and lack of need for protective covering or mechanical protection in most applications.
2. Spray-applied cement base acoustic finish material that is free of asbestos and mineral fibers. The material should be 1.5" to 2" thickness in platform areas, 1.5" thickness in concourse areas and 1" to 1.5" thickness at other locations. This material is to be used because of its non-flammability, applicability to irregular surfaces, and lack of need for protective covering or mechanical protection in most applications. For design purposes, the expected sound absorption coefficients for cementitious spray-on material are given in Table 14.3-1.

Table 14.3-1 Cementitious Spray-On Sound-Absorption Coefficient*							
Material Thickness	Frequencies in Hz						NRC**
	125	250	500	1000	2000	4000	
1"	0.18	0.30	0.64	0.73	0.73	0.77	0.60
1.5"	0.36	0.51	0.64	0.74	0.84	0.91	0.70

* Sound absorption coefficients for cementitious spray-on, sound absorption material with proper application on solid backing with no air gap--as measured by ASTM C423 (may vary from manufacturer to manufacturer)

** Noise Reduction Coefficient

- a. Glass fiber blankets wrapped in close-weave glass cloth or other non-flammable sheeting not to exceed 0.004" thickness. This material shall be of 2 to 16 lb/cu ft density and of 2" to 4" thickness in platform areas, 2" thickness in concourse areas and 1" thickness at other locations. Mechanical protection facings of hardware cloth, expanded metal or architectural facings, or perforated metal or slit-and-slat panels shall be used with this material, as indicated on the Contract Drawings. For design purposes, the expected sound absorption coefficients for glass fiber treatment are given in Table 14.3-2.

Material Thickness	Frequencies in Hz					NRC**
	125	250	500	1000	2000	
1"	.08	.30	.65	.80	.85	.65
2"	.20	.55	.80	.95	.90	.80
3"	.45	.80	.90	.95	.90	.90

* Typical sound absorption coefficient to be expected from glass fiber sound control materials mounted directly against a concrete surface.

** Noise Reduction Coefficient.

B. Installation:

1. Wherever perforated metal or slit-and-slat facings are used, the open area shall be at least 30 percent of the total area. Air space should be provided around the edges to allow free circulation of air to prevent loading of the acoustical material panels due to air pressure transients created by the train movements. Panels with perforated metal or slit-and-slat facings for ceiling and wall installations shall have a dimpled screen placed between the metal facing and the face of the acoustic blanket to establish an air space of approximately 0.5" thickness between the perforated facing and the blanket or glass-cloth bag.
2. If a continuous panel acoustical system or a suspended acoustical tile ceiling is used, openings shall be provided to permit free air flow between the panels and the concrete surface behind. This shall be done in order to prevent loading of the acoustical panel by the air pressure transients created by train piston action on the air. All acoustical systems shall have positive mechanical anchorage designed to resist the shock of transient air pressure produced by the movement of a train moving through a station at maximum speed.

14.4. STATION AREAS RELATED TO NOISE FROM TRAFFIC AND RAILROAD OPERATIONS

A. Criteria:

The following areas of the stations shall be shielded from highway and railroad noise to the extent possible:

1. Entrance areas
2. Stairs
3. Escalators
4. Elevators
5. Platforms
6. Corridor and concourse areas
7. Staffed facilities

The reverberation time of enclosed areas shall be in the range of 1.2 to 1.4 seconds at 500 Hz when the area is unoccupied.

- ##### **B. Acoustical Treatment:** A width of treatment equivalent to 20 percent to 25 percent of the cross-sectional perimeter, or 70 percent to 100 percent of the ceiling, is required. The treatment can consist of an absorptive wall panel system, an acoustical panel, an acoustical absorption assembly applied to the ceiling, or a combination of these. The acoustical treatment shall have a Noise Reduction Coefficient (NRC) of at least 0.60, and a minimum sound absorption coefficient of 0.60 at 500 Hz.

15. ANCILLARY FACILITIES

15.1. GENERAL

This Article describes specific architectural criteria for non-public areas in the stations other than those areas, which serve the BART employees and serve as storage areas. Architectural design criteria are mentioned where applicable. These areas shall be accessible to the disabled except where noted otherwise or specifically except by the District. For additional architectural criteria and specific electrical and mechanical design criteria, refer to other articles in this Section and Facility Design Criteria, Mechanical and Electrical.

15.2. TRAIN CONTROL ROOM

- A. The train control room shall contain all apparatus and systems required for the control of trains on the main line and in the yards. Train control room shall be sized at least 30 percent over the necessary designed capacity.
- B. The floor shall be finished with resilient tile and cove base.

- C. Provide a space of 10' x 10' for a drawing storage rack cabinet, a drawing reference table, and an office chair to be provided by the District.
- D. The roof/ceiling structure shall be designed to support cable trays as well as conduit, ducts, and lights.
- E. Lighting shall be located over the aisles between cabinets.
- F. *Provide a ramp for equipment removal if the floor elevation of the train control room is different than the floor elevation of the adjoining area. Size door openings to permit equipment removal and replacement.*
- G. Room shall contain terminal cabinets for communications, automatic fare collection, radio, computer systems, and other communication systems.
- H. No equipment other than train control and communications shall be located within this room. No utility shall be routed through this room unless it serves the train control and communications equipment or the space itself. Power transformers and other large heat emitting components shall not be located in the Train Control Room.
- I. *Provide 3/4 thick fire-retardant treated plywood (5 ply, CDX grade) panels at all walls used for mounting equipment. Panel shall be 4 by 8 feet mounted horizontally with the bottom of panels at the height of 3 or 4 feet above the foot.*

15.3. BATTERY ROOM (UPS)

- A. *Battery systems shall be in a separate enclosed room next to the Train Control Room.*
- B. *Battery rooms shall not be located beneath any means of egress. Locate Battery Room adjacent to outside wall when possible to facilitate provisions for natural ventilation.*
- C. *Battery rooms, containing liquid-filled batteries, shall have spill control containment around battery racks.*
 - 1. *Spill control containment shall be designed for containment and neutralization of electrolyte.*
 - 2. *The storage capacity of the containment shall be sufficient to hold a spill from the largest battery container.*
 - 3. *An emergency eyewash shall be provided for personnel decontamination, and shall be located in the battery and battery charging room(s). The emergency eyewash shall be permanently connected to the potable water supply. Unit shall be located near the exit door. This unit will have integral signage that meets OSHA standards.*
 - 4. *Flame arrestors shall be installed in all new stationary battery installations to comply with NEMA and NFPA.*

5. *The entire floor shall be coated with acid-resistant epoxy and sloped to an acid-resistant coated floor drain.*
- D. *The interior walls and ceiling shall be painted or sealed for a nondusting finish.*
- E. *Battery racks shall be provided for maximum protection against battery damage and earthquakes, and for ease of accessibility. The battery racks shall be braced for seismic restraint and shall be coated with acid-resistant paint.*
- F. *The floor and base shall be finished with a novolac epoxy or vinyl ester coating.*
- G. *The battery racks shall be arranged so that the racks are held away from the wall at 2 feet minimum, not stacked on top of each other preventing removal of the lower battery, and shall have at least 3 feet clear space in front.*
- H. *The battery room light switch shall be installed outside the battery room.*
- I. *The battery charger shall be installed outside the battery room*
- J. *For ventilation and plumbing requirements, refer to Facility Design Criteria, Mechanical, Stations and Stations Sites.*
- K. *Signage shall be posted on the doorways to battery rooms prohibiting smoking and use of equipment which creates, sparks or open flames because of the possible presence of hydrogen gas. Signage prohibiting access by unauthorized personnel shall also be posted on the battery room doors. Refer to Facility Design Criteria, Architecture, Signage.*

15.4. TRAIN CONTROL AND COMMUNICATIONS HVAC ROOM

Separate room for HVAC equipment for Train Control and Communications Room shall be provided. If required by the local fire department, fans shall reverse direction in case of fire for smoke removal.

15.5. TRACTION POWER SUBSTATION

If the Station includes a traction power substation, provide a separate secured area to enclose its equipment. Access shall be provided to allow the removal and replacement of the largest single piece of equipment. For maximum security fencing, see Facility Design Criteria, Civil, Miscellaneous Standards.

15.6. EMERGENCY MANAGEMENT PANEL ROOM

The Emergency Management Panel (EMP) is provided to serve as a Fire Command Station during fire or other emergency conditions. The EMP shall be provided with Electronic Systems controls and monitoring in accordance with CBC. The EMP Room shall be a minimum of 7 by 7 foot clear and shall have a continuous counter along the wall opposite the door. Counter shall be built-in, 30 inches deep, and designed to accommodate EMP equipment. EMP Room shall be located within or adjacent to station envelope at concourse level. Room shall have at minimum

two 20 amp 120 Vac circuits from the essential power panel. Location shall be subject to local fire marshal approval. Also, refer to Facility Design Criteria, Electronics, for details.

15.7. STANDBY GENERATOR ROOM

A separate secured room shall be provided for the standby generator that provides emergency power for the station in the event of PG&E failure. The generator shall be oriented so that the exhaust air vent and exhaust piping are not in public view. Provisions shall be included for access for servicing and for fueling. Doors or hatches shall be sized to permit removal and replacement of equipment.

END

**CRITERIA
ARCHITECTURE**

PASSENGER STATION SITES

CONTENTS

1. GENERAL

- 1.1 Related Sections
- 1.2 Reference Standards
- 1.3 *Regulations and Safety Requirements*
- 1.4 Definitions
- 1.5 Basic Goals
- 1.6 Traffic Modes

2. PEDESTRIAN AND BICYCLE ACCESS

- 2.1 Pedestrian Access – Basic Design
- 2.2 *General – Accessibility and Safety*
- 2.3 *Pedestrian Overpasses and Underpasses - General*
- 2.4 *Pedestrian Overpasses*
- 2.5 Pedestrian Underpasses
- 2.6 Sidewalks
- 2.7 Pedestrian Paving
- 2.8 Bicycle Basic Design
- 2.9 Bicycle Paths
- 2.10 Bicycle Signage
- 2.11 Bicycle Parking

3. VEHICULAR ACCESS

- 3.1 General
- 3.2 Vehicular Access Principles
- 3.3 Other Transit Systems Including Buses, Light Rail and Shuttles
- 3.4 Drop-Off Pick-Up (Including Taxis)
- 3.5 *Buses and Taxis*
- 3.6 Station Parking Basic Design
- 3.7 Station Surface Parking
- 3.8 Motorcycle Parking
- 3.9 Entrances and Exits

4. BART SYSTEM STREETS

- 4.1 BART System Streets Basic Design
- 4.2 Design Vehicles and Design Speed
- 4.3 Clearances
- 4.4 Curvature
- 4.5 Weaving Length
- 4.6 Grade
- 4.7 Intersections
- 4.8 Crown
- 4.9 Curbs and Gutters

5. *PARKING STRUCTURES*

- 5.1 Parking Structures - Basic Goals
- 5.2 Vehicle Ingress and Egress
- 5.3 Pedestrian Access
- 5.4 Layout
- 5.5 Vertical Circulation
- 5.6 *Safety and Security*
- 5.7 Striping and Marking
- 5.8 Electrical
- 5.9 Expansion and Construction Joints
- 5.10 *Parking Structures Communications*

6. SITE LIGHTING

7. MISCELLANEOUS SITE DEVELOPMENT

- 7.1 Site Furniture
- 7.2 Screen and Barrier Walls, Fences, Or Screen Planting
- 7.3 Retaining Walls
- 7.4 Bollards
- 7.5 Trash Enclosures

CRITERIA ARCHITECTURE

PASSENGER STATION SITES

1. **GENERAL**

This Section lists the design requirements relevant to station site development, including parking, vehicular and pedestrian circulation, parking structures, and traffic considerations.

1.1 RELATED SECTIONS

Refer to Facility Design Criteria, Architecture, Landscaping and Vegetation Control, for landscaping and irrigation requirements.

Refer to Facility Design Criteria, Civil, Streets and Parking Facilities and Facility Design Criteria, Architecture, Passenger Station Sites.

Refer to Appendices, District Programs and Guidelines, Station Access Guidelines.

Refer to Appendices, District Programs and Guidelines, Transit-Oriented Development Guidelines.

Refer to Appendices, District Policies, BART Station Access Policy.

1.2 REFERENCE STANDARDS

- A. California Fire Code, as applicable
- B. California Building Code, as applicable
- C. ASTM C1028
- D. Caltrans Bridge Design Details, as applicable
- E. California Code of Regulations, CCR Title 24
- F. Code of Federal Regulations
 - 1. 49 CFR 37
 - 2. 41 CFR Chapter 101, Appendix A
- G. Americans with Disabilities Act (ADA) Accessibility Guidelines (ADAAG), as applicable
- H. Caltrans Highway Design Manual, Chapter 1000
- I. State Water Resources Control Board Phase II Small MS4 General Permit
- J. Appendices, BART Station Access Guidelines
- K. Appendices, BART Transit-Oriented Development Guidelines
- L. Appendices, BART Bicycle Access & Parking Plan
- M. American Association of State Highway and Transportation Officials (AASHTO) Standards

1.3 REGULATIONS AND SAFETY REQUIREMENTS

A. Emergency Access to Stations

- *Access to station entrances, pedestrian bridges, facilities, parking structures, and emergency egress locations shall be from public streets, BART parking lots, or an access road with a minimum paved width of 20 feet in accordance with California Fire Code (CFC) Section 503.*
- *An access road to a station shall be continuous from a public street to a public street, or a 66-foot outside radius turnaround shall be provided.*

B. Fire lanes shall be provided, from a public street to the station, through parking lots, meeting the requirements of the CFC, Section 503, and shall have minimum radii for inside and outside paths of 30 feet and 50 feet respectively.

- *Fire truck access shall be provided to all building structures, especially the station entrance. Access roads and parking lot perimeter roads shall accommodate fire trucks. Confirm turning radius and access requirements with local fire department.*

C. Refer to Facility Design Criteria, Civil, Basic Design Policies, for Underground Trainway Protection Against Hazardous Substance Intrusion.

1.4 DEFINITIONS

Terms used in this Station Site Facilities Design Criteria.

- **Access Roadway:** A BART System roadway which is the primary means of vehicular access to a BART facility from the adjoining street and highway network.
- **Park and Call:** stall that permits, at designated times, a driver to park with intent to pick up passenger, driver must be present while parked during the specified parking hours. The stall may function as a regular stall during park and call hours.
- **BART System Street:** A BART access, circulation, maintenance or service roadway, or other thoroughfare within the BART System right-of-way.
- **Drop-Off Pick-up:** Vehicle mode in which passenger cars stop only to load or unload passengers at curbside and/or designed parking areas.
- **Level of Service (LOS):** Description of the ease or difficulty of traffic flow.
- **Public Street:** A public thoroughfare inside, outside or crossing the BART System right-of-way which is under the jurisdiction of a public agency.
- **Roadway:** That portion of a highway included between the outside lines of the sidewalks, or curbs and gutters, or side ditches including all of the appertaining structures and all slopes, ditches, channels, waterways, and other features necessary for proper drainage and protection.

- **Station Access Hierarchy:** The order of priority, by mode, of accommodating station access established by the District and defined in the Access Guidelines. Refer to Access Hierarchy Chart.
- **Station Area:** The area surrounding a BART station described approximately by a circle with half-mile radius. The actual boundaries of the station area will be established by the District for each project.
- **Volume, Pedestrian:** The pedestrian volume, measured in terms of number of pedestrians per unit of time (usually a peak hour, peak 15 minutes or peak five minutes). Pedestrian volumes generated by BART System patrons shall be determined from data provided by the District. Pedestrian volumes not generated by BART System patrons shall be obtained from the appropriate agency as available.
- **Volume, Vehicular:** The vehicular volume, measured in terms of number of vehicles per unit of time (usually an average weekday peak hour, peak 15 minutes or peak five minutes). BART system vehicular design volumes shall be determined from data provided by the District. Vehicular volumes on public streets shall be obtained from the appropriate public agency as available.

1.5 BASIC GOALS

- Accommodate all modes of BART patron circulation without compromise to quality of transit service, capacity of the station, and safety of riding public.
- Prioritize modes of BART patron circulation consistent with BART's Station Access Hierarchy to allow for convenient, rapid, and safe access to and egress from the station, parking facilities, and the surrounding neighborhoods.
- Use innovative approaches and best practices to design a station site that is a community-oriented, lively, walkable, and sustainable human environment.
- Design of a passenger station site may include studies for future joint development opportunities between the District and other entities to increase property value and maximize use of BART services. Such study may explore potential joint uses of additional properties adjacent to a passenger station that can be potentially subject to the District's acquisition.
- Provide access for patrons with disabilities as required by State and Federal statutes. Provide additional accessible amenities as required by the local disabled communities and as required by the District.
- Site shall be designed in accordance to Appendices, District Programs and Guidelines, Multimodal Access Design Guidelines and designed to be supportive of Transit-Oriented Development. Refer to Appendices, District Programs and Guidelines, Transit-Oriented Development Guidelines.

1.6 TRAFFIC MODES

BART System patrons will arrive at, and depart from, the station in different ways or modes including pedestrian, bicycle, transit, drop-off pick-up, and auto parking. The order of priority shall be in accordance with the BART Station Access Policy, Figure 1, Station Access Design Hierarchy.

2. PEDESTRIAN AND BICYCLE ACCESS

2.1 PEDESTRIAN ACCESS – BASIC DESIGN

- A. Direct and safe approach for pedestrians shall be provided from all adjacent streets into the station area. A pedestrian's path from bus drop-off areas and light rail stops to station entrance shall be as direct as possible. The design of pedestrian approaches from parking areas to the station entrances shall be contingent upon the location of other, more primary station area pedestrian walkways serving the Station Area and the location and orientation of station area development.
- B. Parking pattern shall be designed so the pedestrians walk down the aisles toward the station, minimizing traffic crossings, or along a major walkway.
- C. Pedestrian walkways shall be provided in certain locations to discourage interference with vehicular traffic. Walkways may be provided to minimize pedestrian use of an aisle, or may be provided to minimize the number of points at which pedestrians cross a circulation road. Where pedestrians approach the station from major on- and off-site destinations and important intersections, consideration shall be given to the provision of a walkway which extends toward the station in a nearly straight line. Aisles serving pedestrians who originate from outlying parts of a large parking lot shall be designed to support the walkway described above, where feasible. Where this is not feasible, consideration shall be given to provision of an additional walkway extending toward the station entrance from these outlying parking areas.
- D. Pedestrian crossings shall have good visibility both for pedestrians and drivers.
- E. Surface Treatment:
 1. Pavers, tiles, and other architectural materials shall be considered for creating attractive walking environment and enhancing zones and sense of direction that are associated with functional areas such as drop-off pick-up, other transit stops, as well as disabled access and very young-aged activities. Landscaping should be used to effectively reinforce this association.
 2. The major pedestrian walks and the areas in front of the fare gates should have special paving to signify the prominence of these areas.
 3. An open area with architectural floor or paving treatment shall be provided to collect pedestrians from the major walkways and allow a milling area adjoining the entry or exit from the station. Changes in texture or color of the vehicular paving at pedestrian crossings should be considered.

- F. Barriers: If necessary, pedestrian barriers shall be provided to either discourage or prevent pedestrians from crossing vehicular traffic at locations where unsafe conditions would otherwise result. Pedestrian barriers may consist of railing, fencing, walls or landscaping that are architecturally harmonious with the site.

2.2 GENERAL – ACCESSIBILITY AND SAFETY

- A. *Pedestrian walkways shall be paved and free of tripping hazards.*
- B. A one foot wide minimum paving feature strip which incorporates a material, pattern, or texture detectable to blind and low-vision patrons shall be provided from bus loading and drop-off pick-up area(s) through the station main entrance and accessible fare gate(s) to the stairs leading to the platform level. The feature strip shall provide a clear unobstructed linear pathway with 90 degree or greater turns. Arcs or curves are not allowed. Strip shall be raised a minimum of 1/8 inch to a maximum of 1/4 inch above adjacent paving and shall be a color, texture and material that contrasts with the adjacent paving.
- C. *Wheelchair curb ramps, complying with the CBC, Section 1127.B.5, shall be provided wherever a pedestrian traffic lane crosses a curb. A separate ramp shall be provided for each crosswalk rather than one serving both crosswalks. A single curb ramp may be used where curb space at intersecting crosswalk is too small for two curb ramps.*
- D. Pedestrian crossings which are part of an accessible route shall be emphasized with concrete pavement raised one-half inch above roadway with 12-inch thermoplastic edge markings to avoid confusion with other pavement markings. The width of the crossing shall be at least equal to the width of the adjacent pedestrian walks, but not less than seven feet in width.
- E. *Crosswalks shall be clearly defined and well marked. Crosswalks and sidewalks shall be provided with slip-resistant surfaces. The static coefficient of friction shall not be less than 0.6 when tested in accordance with ASTM C1028, Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method, 15.02. “Zebra Stripe (Continental)” pavement marking shall be used for crosswalks to provide maximum visibility.*
- F. Where direct connections to commercial, retail, or residential facilities are provided or where elements are provided to facilitate future direct connections, such connections shall have an accessible route to boarding platforms and other transportation system elements used by the public. Refer to ADA Guidelines, 402 and 206.4.4.2.
- G. *Walkway Fencing*
- *When passengers or pedestrian walkways are provided above trackways, highways, or streets, the walkways shall be fenced.*
 - *The walkway fence shall be constructed in accordance with Caltrans Bridge Design Details – Chain Link Railing Type 3, Chain Link Railing Type 3L, or*

Chain Link Railing Type 4 (or use other design details which will provide equal or better means of preventing persons from climbing over it and falling to the surface below, and preventing trash or other objects from being thrown onto the trackway).

- *Walkway fencing will be so designed to provide a timeless aesthetic, and a positive experience for pedestrians and motorists.*

2.3 PEDESTRIAN OVERPASSES AND UNDERPASSES - GENERAL

- A. Avoid or minimize pedestrian overpasses and underpasses.
- B. Provide features that maximize safety and protection of pedestrians when an overpass or an underpass is necessary.
- C. Wherever possible, there shall be unobstructed visibility from one end of the overpass or underpass to the other and also from the sides of the overpass. If unobstructed visibility from one end of overpass or underpass to the other is not possible, CCTV coverage shall be provided and monitored in Station Agent's Booth. Refer to Facilities Design Criteria, Electronic, Closed-Circuit Television Systems, for station CCTV.
- D. *When a pedestrian overpass or underpass is part of the exit way, the minimum unobstructed width as required by code for exiting shall be maintained to a point of safety.*
- E. *Comply with code requirements in regard to fire resistance. Fire resistance of construction materials, at minimum:*
 - *Overpasses shall be constructed of "fire resistive materials".*
 - *Underpasses shall be constructed with "non-combustible materials".*
- F. Finishes of overpasses and underpasses shall be durable and maintenance-free.

2.4 PEDESTRIAN OVERPASSES

- A. When a pedestrian overpass is part of the route between bus drop off areas and the train platform, an overhead covering and wind protection shall be provided. Minimum head clearance shall be eight feet six inches to minor obstructions and 10 feet to continuous soffits/ceilings.
- B. For the primary drainage system, the overhead covering shall be sloped and drained by screened roof drains and downspouts rather than by naturally draining over roof edges. Downspouts shall be concealed.
- C. Drainage of the walking surface shall be designed so that water does not flow over the side edges, but is channeled into an internal system.
- D. A toe guard of six inches minimum height shall be provided at the overpass edge which will also function as a wheel guide for those in wheelchairs.

- E. Pedestrian overpasses shall be as level as possible. When ramping is necessary, the slope shall be no greater than one foot vertical in 15 feet horizontal.
- F. *When overpasses are over trackways, highways, or streets, barriers shall be provided to prevent persons from climbing over and falling to surface below, and to prevent trash and other objects from being thrown to the surface below. When barriers are combined with overhead coverings, provisions for ventilation shall be included in the design.*
 - *Barriers shall be a minimum height of eight feet.*
 - *When an open material or design is used as a barrier, the openings shall not be larger than one inch in any dimension.*
 - *Barriers shall not be opaque.*
- G. Handrails shall be provided at both sides of the overpass whether or not a barrier is provided and regardless of slope or lack of slope.
- H. Benches shall be provided at 150-foot intervals.

2.5 PEDESTRIAN UNDERPASSES

- A. Minimum head clearance shall be eight feet six inches to minor obstructions and ten feet to continuous ceilings. The ceiling shall be as high as practical.
- B. The entire underpass enclosure structure shall be waterproofed on the exterior surface.
- C. Surface drainage system of area drains or trench drains shall prevent surface water from entering pedestrian undercrossings.
- D. Underpasses shall be lighted and include call boxes for safety.
- E. Underpasses shall be designed to maximize accessibility, usability, and friendliness for pedestrians.

2.6 SIDEWALKS

- A. Sidewalks shall include curb ramps and other accessibility features as required by CAC Title 24, and 49 CFR 37. A sidewalk shall be provided contiguous to all curb-side parking lanes and to all loading zones. Crosswalks and pedestrian ramps shall have a maximum slope in conformance with Title 24 and ADAAG requirements.
- B. Sidewalks intended for use by the general public shall have a minimum width of five feet six inches for two-way pedestrian volumes (two-direction total count) not exceeding 70 pedestrians per minute. Where pedestrian volumes exceed this amount, an additional two feet six inches of sidewalk width shall be provided for every additional 35 pedestrians per minute. The minimum width of sidewalk adjacent to a bus, taxi, or drop-off pick-up loading zone shall be 12 feet six inches or the adjacent sidewalk width plus seven feet, whichever is greater.

- C. Sidewalks providing access to service and maintenance facilities shall have a minimum width of three feet.
- D. Sidewalks, paths, and plaza areas that are designed to allow for mixed-use, including bicycle and pedestrian traffic, shall be at least 10 feet to 14 feet wide, depending on pedestrian and bicycle volumes. Refer to AASHTO Standards "Guide for the development of bicycle facilities," pp. 35-36.

2.7 PEDESTRIAN PAVING

- A. Provisions for pedestrian paving apply to sidewalks and other pedestrian areas, i.e. pedestrian overpasses and plazas.
- B. Finishes on all paving and steps shall be slip resistant and matte with adequate expansion and control joints. Exposed aggregate concrete shall not be used in pedestrian paving at station site because of the difficulty and expense in matching it with replacement concrete when necessary due to utility work or repairs.
- C. The longitudinal slope of walkways shall be five percent maximum. Minimum grades for adequate surface drainage of various paving materials are as follows:
 - Broom finish concrete, 1.5 percent
 - Asphalt, 1.5 percent
 - Brick or stone set in sand, 2 percent
 - Brick or stone set in mortar, 1.5 percent
 - Crushed stone, decomposed granite, 1 percent
- D. Design of pedestrian walkways shall take into account maximum cross slopes designated in California Code of Regulations, Title 24, Part 2, and Americans With Disabilities Act (ADA) Accessibility Guidelines, as applicable.

2.8 BICYCLE BASIC DESIGN

- A. The design of bicycle facilities shall reflect principles stated in the BART Bicycle Access & Parking Plan, and BART Station Access Guidelines.
- B. Bicycles approaching the station structure shall be able to reach the main entrance by a safe and relatively direct route. Parking for bicycles shall be prioritized inside the paid area as space permits, or in the free area of the concourse within sight of the station agent. Parking for bicycles outside of the station shall be covered and located within sight of the station agent, vendors, passing pedestrians, or in a highly visible area with heavy foot traffic. Refer to BART Bicycle Access and Parking Plan for guidelines.
- C. Bikeways shall be designed to provide a direct, convenient connection between the station and any existing or proposed bike routes throughout the community.

- D. Bikeways shall avoid undue conflicts with motor vehicles moving parallel to the path, turning across the path, and crossing the bikeway at street intersections.
- E. Bikeways shall be designed to promote public safety. Paths that are hidden from the view of the general public shall be avoided as well as bikeways near steps, curbs, and over drainage grates.
- F. Bikeways shall be designed to pass through an uninterrupted corridor with access to station bicycle parking facilities. Pavement shall be asphalt or concrete, or pavers. Where bikeway is a continuation of a jurisdictional authority's bikeway, consideration shall be given to matching its paving.
- G. Attended bicycle storage facility shall be provided if directed by the District.
- H. Accessible fare gates shall be installed at every gate array to improve access for bicyclists as well as to provide for patrons with disabilities.
- I. Signage directing bicyclists throughout the station shall be placed to provide for general wayfinding and directions to bicycle facilities, preferred routes, bicycle stair channels, elevators, etc.

2.9 BICYCLE PATHS

- A. When it is not a part of a walkway, a bicycle path shall have a width of eight feet. Additional width may be justified for heavily used paths or those adjacent to a walkway. Paths shall have a minimum of two feet clearance from the edge of any permanent obstacle. Refer to Caltrans Highway Design Manual, Chapter 1000 "Bikeway Planning and Design". Follow Caltrans standards at minimum; in areas with high volumes of bicycle and pedestrian traffic exceed minimum standards for safety.
- B. Bicycle paths shall be crowned or shall have a cross slope for positive drainage. Bicycle paths will generally not be curbed. If curbs are necessary, inlets or other drainage provisions shall be provided (preferably on the outside edges) and consideration shall be given to widening the path to maintain the eight foot width not including the inlets. All inlets shall have bicycle-proof grates.
- C. Bicycle paths shall avoid unnecessary curvature or excessively steep grades. Gradients for bike paths shall comply with the following requirements:

<u>Gradient</u>	<u>Normal Length, Feet</u>	<u>Maximum Length, Feet</u>
1.5 %	1200	---
3.0 %	400	800
4.5 %	150	300
10.0 %	30	60

- D. Horizontal curve radii will be measured on the inside edge of the path. The desirable minimum curve radius is 35 feet; the absolute minimum curve radius is 15 feet.

2.10 BICYCLE SIGNAGE

- A. Wayfinding signage should be posted on the closest arterial and bikeways to connect cyclists to the station along the most bicycle-friendly routes. Bicycle routes and signage shall be coordinated with local jurisdictions. Refer to Bicycle Access and Parking Plan for guidelines.
- B. Based upon the adjacent roadway configuration and location of existing bikeways, a separate bicycle entrance to the station may be preferable and available; these should be identified and clearly marked.
- C. Signage is needed to direct bicyclists into and through the station area and to the bicycle parking areas or onto the platform itself.

2.11 BICYCLE PARKING

- A. Either Class 1 or Class 2 bicycle parking shall be provided at each station. In new construction, both Class 1 and Class 2 shall be provided.
- B. Bicycle parking shall not interfere with passenger circulation and shall be located outside the path of travel for people with disabilities. If necessary, paving, curbs, or railings shall be used to provide a detectable warning for the visually impaired.
- C. Both Class 1 and Class 2 bicycle parking shall be clustered as much as possible for convenience and theft prevention.
- D. Class 1 bicycle parking shall consist of perforated metal bicycle lockers that include an electronic locking system accessed by smart card. Bicycle lockers shall be provided at all stations with space for installation at the street level or in an external plaza. The minimum number of lockers shall be two lockers (accommodating four bicycles). Obtain the required number of lockers for a given station from the Bicycle Program Manager who will base it on anticipated demand.
 - Obtain current specifications for bicycle lockers from the Bicycle Program Manager.
 - Bicycle lockers shall be installed on a concrete or asphalt platform with a maximum slope of 1.5 percent. Other surfaces may be approved if compatible with locker installation requirements.
 - Electrical design shall provide a one-inch conduit with pull wire from electrical equipment room to designated bicycle parking area with necessary junction boxes to serve electronic bicycle lockers.
 - Communications design shall provide a one-inch conduit with pull wire from communications source to designated bicycle parking area with necessary junction boxes to serve electronic bicycle lockers.
- E. In areas of high demand for bicycle parking, or if bicycle lockers cannot be provided, the construction of attended bike stations or unattended bicycle parking cages shall be considered, as demand warrants.

- F. Class 2 bicycle parking consists of bicycle racks. Primary locations for bicycle racks shall be in either the paid or the free area of the concourse and within sight of the station agent's booth, if space permits. Secondary locations for bicycle racks shall be visible and well lighted areas as near as possible to the station entrance. Racks shall be located in areas of high pedestrian activity and visibility.
- Obtain specifications and typical installation details for racks from the Bicycle Program Manager.
 - Class 2 bicycle parking shall consist of surface mounted bicycle racks that allow the two wheels and frame to be securely locked.
 - Preferred racks shall be square tube U type racks. Five loop wave racks shall be used where U racks are not practical.
 - For outdoor installations, cover bicycle racks with a roof or locate under a structural overhang wherever possible.
- G. Bicycle parking facilities shall be identified by signage in accordance with Facility Design Criteria, Architecture, Wayfinding and Signage.

3. VEHICULAR ACCESS

3.1 GENERAL

- A. Refer to "Regulations and Safety Requirements" herein for fire truck access criteria.
- B. Site access points shall be located to minimize traffic congestion, and traffic patterns for vehicles and pedestrians shall be clearly marked.*
- C. Automobile traffic patterns that cross or result in counterflow shall be minimized.*
- D. Drop-off/pick-up zones and stops of other transit systems shall be located to minimize patron exposure to traffic. Where practical, patrons shall be able to move directly from zones and stops of other transit systems to the station entrance without crossing traffic lanes.*
- E. Placement of loading zones on access roadways shall reflect the following order of preference with respect to proximity of the loading zone to the station concourse:
1. Other transit systems, i.e. buses, light rail, and shuttles
 2. Drop-off pick-up
 3. Taxis

- F. Location of bus and taxi loading zones:
 - 1. Loading zones for buses and taxis shall be separate and located on station access roadways wherever practicable. Where such a location is not practicable, the loading zones in order of preference may be located within a special area or upon a roadway reserved exclusively for loading purposes, or they may be located on an adjacent public street.
 - 2. Loading zones for buses and taxis shall preferably be located along that side of a roadway or street which is nearest the station concourse entrances.
- G. Vehicular entrances shall be so located that the traffic loads will be evenly distributed over all traffic facilities surrounding the site.
- H. The number of vehicular entrances along any one street shall be kept to a minimum.
- I. Turn lanes that cross major pedestrian walkways shall generally be discouraged. However, if specifically required for traffic mitigation, turn lanes shall be provided for entering or exiting vehicles and controlled by signs or signals to prioritize pedestrian access. Push-button activation for pedestrians which subordinate automobile traffic to pedestrian traffic should only be used as a last resort on turn lanes when it cannot be demonstrated that pedestrian-priority devices such as stop signs, tight curb radii, and sidewalk bulbs are reasonably safe alternatives.
- J. The spacing of right-hand-turning points is less critical than left-hand-turning points. The minimum spacing shall be determined by the storage and weaving length as required by street pattern and traffic.
- K. Use speed limit restrictions to enhance pedestrian access.
- L. An access road with a minimum paved width of 20 feet shall be provided for access to the station main electrical rooms. A minimum clear area of 30 feet by 50 feet adjacent to the main electrical rooms shall be provided for future replacement of large electrical equipment and temporary generators.

3.2 VEHICULAR ACCESS PRINCIPLES

- A. Vehicular entrances shall be from minor roads wherever possible, with provision for sufficient waiting and stacking space provided at intersections with major roads.
- B. Entrance and exit roads for station parking facilities are recommended to be separate from bus and auto drop-off circulation systems.
- C. Right turns in and out of the station are preferable to left turns. A left turn in is less objectionable than a left turn out.
- D. The separation of left turns in and out is desirable, where the length of frontage permits.

3.3 OTHER TRANSIT SYSTEMS INCLUDING BUSES, LIGHT RAIL AND SHUTTLES

- A. Whenever possible, stations should be located within the existing fabric of an urban center. Whenever possible, station access shall be oriented toward existing transit routes and services, especially trunk lines. Design guidelines of transit agencies shall be consulted and shall be accommodated wherever possible.
- B. If the station design requires rerouting through routes to the station, transit service in and out of the station site shall be as direct as possible. A “transit street” serving the station site shall be identified. For through routes, curb bulb-outs shall be provided, whenever possible, to allow these routes to stop in-lane. These transit streets shall not feature angled parking for either cars or busses, and shall not be designated as key bicycle routes. Where bus turning is required, curb radii shall be adequate to allow for turning without crossing the centerline. Station transit streets shall generally be two-way streets allowing for transit travel in both directions.
- C. An exclusive area for bus loading and unloading shall be provided near the main station entrance to facilitate BART patrons to access BART services.
- D. The path from the bus loading and unloading area to the station entrances shall be as short and direct as possible.
- E. Loading and unloading area shall be located away from residential areas when practical.
- F. Buses which terminate at the station shall be able to move from the unloading area to a waiting area and back to the loading area without excessively circuitous travel.
- G. If a BART station is located adjacent to a light rail station, the path from light rail station to BART station entrance shall be as short and direct as possible. In addition, the bus loading zone shall be located to facilitate transfers between buses and light rail.

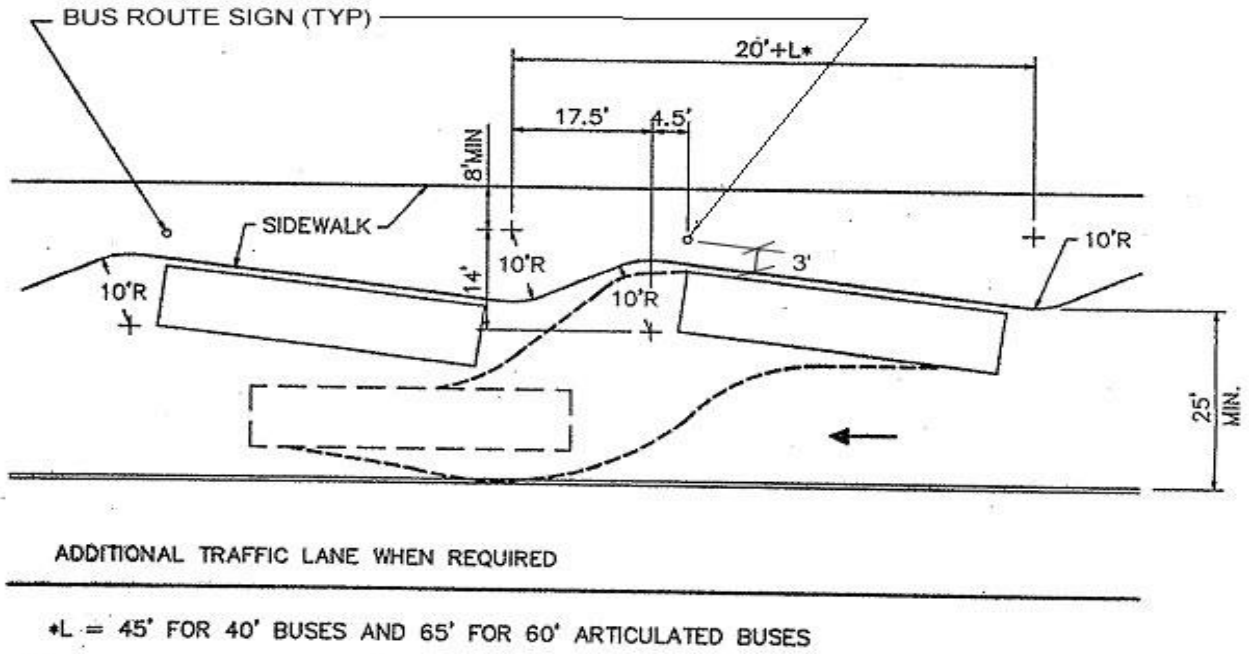
3.4 DROP-OFF PICK-UP (INCLUDING TAXIS)

- A. Drop-off pick-up is defined as the vehicle mode in which passenger cars stop only to load or unload passengers at curbside or designated parking areas. A canopy for weather protection shall be considered.
- B. A drop-off pick-up zone, preferably with loading on the right-hand side, shall be provided adjacent to the main entrance of the station. A curb ramp shall be provided within or adjacent to the drop-off pick-up area for patrons with disabilities.
- C. The drop-off pick-up parking area shall be more convenient to the main station entrance than the other parking areas. It shall have a convenient approach and departure from all directions. This parking area for persons waiting to pick up passengers shall be conveniently located close to the pick-up zone to give good visibility of the station exit, and to permit easy re-circulation.

- D. The drop-off pick-up area shall be designed for one-way traffic.
- E. The length of the drop-off and pick-up zone and the number of drop-off pick-up parking spaces will be established based on station capacity, other access modes on site, and as approved by the District.

3.5 BUSES AND TAXIS

- A. Capacity: The required bus or taxi design capacity for a station will be established by the District. The minimum design capacity for any bus loading zone or any taxi loading zone shall be two vehicles.
- B. *Boarding and off-loading of bus patrons shall be protected from vehicular traffic. Where practical, bus loading and unloading zones shall be located so that patrons do not have to cross traffic lanes. Where this is not possible, bus patrons can be protected by:*
 - *Prohibiting automobile traffic in bus loading areas or,*
 - *Providing controlled crosswalks (controlled by stop signs) to permit bus patrons to safely cross vehicular traffic lanes.*
- C. Bus stop design and choice of stop type shall be made in cooperation with local bus operators. The stops will reflect the design criteria of local operators as much as possible.
- D. Sawtooth platform arrangement shall be as illustrated below. Note: Consider sharpening radius to make curb detectable to sightless pedestrians.



SHALLOW SAWTOOTH PLATFORM
BUS LOADING ZONE

FIGURE 1: SHALLOW SAWTOOTH PLATFORM BUS LOADING ZONE

- E. Provide bus bollards at the head end of each sawtooth bus bay capable of stopping a 60 foot articulated coach at 15 mph in accordance with FTA regulations.
- F. Bus loading areas shall have adequate clear space to allow for deployment of a wheelchair lift from either the front or rear bus doors. Provide a continuous unobstructed loading zone along the entire length of bus berth curb(s). Zone shall be area from face of curb to minimum 8 feet back from the curb. Designer shall verify requirements with the bus transit system.
- G. Flow of water at bus loading zones shall be minimized in order of preference: first by sloping the pavement away from the curb, and second by providing sufficient inlets.
- H. Passenger shelters shall be provided. The shelter shall be eight feet to 10 feet high and its canopy shall be located no closer than two feet six inches from the face of curb.
- I. Weather protection, including canopies, shall be provided for passengers from the bus stop to the station entrance point.
- J. Bus stops shall have signs on poles at the head of the stop.
- K. Taxi zones shall have a minimum lane width of eight feet. Parking spaces for taxis shall be 25 feet long and shall not be closer than 20 feet to a crosswalk.

3.6 STATION PARKING BASIC DESIGN

- A. The design layout of parking facilities shall be based on the following BART operations policies:
 - 1. Entrance to the parking facilities will be available to the public at all times. Each parking facility shall have multiple points of entry and exit.
 - 2. The principal objective is to provide as convenient and inviting access as possible to BART patrons.
 - 3. Parking Areas shall consist of Mid-Day Parking, Reserve Parking, Handicapped Parking, Motorcycle Parking, Bicycle Parking, and, if applicable, Long-Term Parking, and Park and Call Parking. Guidelines for Handicapped Parking, Motorcycle Parking, and Bicycle Parking are given elsewhere in this Section.
 - 4. Designated Mid-day Parking Areas: The need for reserved parking space for shoppers at non-commute hours is recognized by the District, and site planning shall include provisions for this facility. Allowable hours for parking in the designated Mid-Day Parking area are limited to a prescribed time. A portion of each parking facility, as established by the District, shall be designated as mid-day parking. This area shall be located in the portion of the parking lot closest to the station entrance and shall, in general, include all Reserve Parking areas after the morning “reserve period” has expired.

5. Park and Call: District may utilize Park and Call parking to provide additional capacity to pick-up functions. Any Park and Call parking shall be located closest to the drop-off pick-up zone and signed.
 6. Fencing: Perimeter fencing will not be provided for suburban station parking lots as a general rule. Where local ordinances require this, the matter should be referred to the District for resolution on an individual basis. Plans shall not include provisions for fencing off remote parking section during nights, weekends, or holidays.
- B. Capacity: Parking facility capacities will be established by the District, based on a consideration of patronage estimates and budget limitations.
 - C. Capacity for Parking Expansion: The District will base its parking expansion strategy on the principle of establishing expansion parking goals on a line segment rather than strictly on a station by station basis in order to balance development and access objectives.
 - D. Circulation: The system of traffic circulation produced by the arrangement of parking aisles and stalls shall be designed to minimize vehicular travel distances, conflicting movements, and number of turns.
 - E. Reservoir Areas: Every entrance and exit to a parking facility shall be provided with a reservoir area for the storage of entering and leaving vehicles. The storage of vehicles entering or leaving the parking lot shall not interfere with the normal activity of parking and unparking of vehicles at stalls. The size of every reservoir area shall be sufficient to store the number of vehicles that enter or leave the parking lot during the peak hour in conformance with queue length requirements dictated by the LOS calculation.
 - F. If required by the District, make accommodations for future paid parking at surface parking areas. Refer to "Parking Structures", for required provisions for future paid parking at parking structures.
 - G. Planted Areas. Planted areas shall be provided within parking areas and at perimeters except where the provision of such areas is incompatible with surrounding development and is approved by the District. Planted areas at lot perimeters shall typically be 15 feet wide. Refer to Introduction, Common Requirements, Sustainability Guidelines, for requirements in regard to possible use of shade trees to reduce non-roof heat islands.

3.7 STATION SURFACE PARKING

- A. Parking layout requirements shall comply with the applicable provisions of Article 5, herein. Grading and other requirements for surface parking are included in Facility Design Criteria, Civil, Streets and Surface Parking.
- B. Wheel stops within each parking space unit shall not be used except at accessible parking spaces.
- C. Accessible parking spaces (designated for use by the physically impaired) shall be located close to the facility entrance and shall not require crossing traffic lanes

nor require patrons to move behind vehicles. A path shall be provided in front of vehicles leading from accessible parking spaces to accessible route. The minimum number of accessible parking spaces shall be in accordance with the CCR, State Building Code, Title 24, Part 2, Americans with Disabilities Act (ADA) Accessibility Guidelines, or 41 CFR Chapter 101, Appendix A, whichever requires the greater number of spaces.

- D. Stalls shall be numbered sequentially.
- E. Alpha Designators: Each lot shall have its own discrete alpha designator. Signs indicating the lot designator shall be provided on the associated lighting standards.
- F. Clearances:
- Minimum vertical clearance between any overhead obstruction and parking lot surfaces shall be 15 feet, except that an eight foot six inch clearance may be used for stalls provided that vehicular passage beneath the structure restricting the clearance is prevented by curbs, fencing or an equivalent type of barrier.
 - At the head end of parking stalls, horizontal clearance shall be two feet six inches from the front face of curbs or wheel bumpers to any obstruction. At the side of stalls, no horizontal clearance need be provided between stalls and obstructions except at walls, where a one foot clearance shall be provided.
- G. Parking along BART System roadways: Parking on BART System roadways shall be parallel to the curb. Parking spaces for passenger cars shall not be closer than 20 feet to a crosswalk.
- H. Curbs and Medians:
- Curbs shall be provided around the entire outer edge of parking lot pavement to protect landscaping or fencing from vehicular damage. Curbs shall also be provided along circulation roads, at raised concrete medians, and at intermediate points in the larger lots as necessary. Exposed corners of curbs shall have a minimum radius (to inside face of curb) of 12-inches. Curb return radii not intended to permit turns shall be five feet. Curb return radii permitting turns for passenger cars shall be 20 feet.
 - Where columns supporting structures are to be located in a parking lot, a raised concrete island shall be provided between head ends of abutting stalls. Curb shall provide a minimum two foot six inch clearance between face of curb and column.
 - Curbs and tree pocket curbs shall be a minimum of six inches high.
 - Curbs not designated for parking shall be painted the appropriate color (yellow, red, etc.).
 - Where the side of a parking stall is edged with a curb and planting area, provide an 18 inch wide paved strip along the inside face of curb or increase

the width of the parking stall accordingly to help prevent patrons from stepping into planters when entering and exiting vehicles.

- I. Designate the following reserved vehicle parking spaces for District and Police use. Locations as approved by the District.
 - One car stall near the Police Room, if applicable, shall be designated for “Police Only.”
 - Two car stalls shall be designated for “Staff Only” and located near the station employee entrance/exit.
 - Two stalls shall be designated for “Maintenance Only” and located near the ancillary rooms.
 - Parking at terminal stations containing “End of Line” Facilities shall provide 30 dedicated spaces for personnel using these facilities.
 - Parking at front entrance of station for cash collection tractor trailer.

3.8 MOTORCYCLE PARKING

- A. Separate parking areas for motorcycles shall be provided at each station.
- B. At minimum, provide four motorcycle spaces.
- C. Motorcycle parking shall be separated from automobile parking by curbs or bollards to prevent automobile parking in motorcycle spaces.

3.9 ENTRANCES AND EXITS

- A. Entrances or exits shall not be closer than 150 feet apart and not closer than 150 feet to a public intersection, all measured centerline to centerline. Where the capacity of the parking area does not exceed 150 stalls, the above spacings may be reduced to 100 feet. Entrances and exits shall preferably be located so that they are available for use by vehicles with any applicable direction of approach from the adjacent street, or any applicable direction of departure onto the adjacent street.
- B. A sufficient number of entrances and exits shall be provided so that the volume per lane does not exceed 300 vehicles per peak hour. The number of entrances and exits shall be kept as few as circulation requirements indicate necessary, but not less than two of each. Continuous curb access shall not be provided under any circumstances.

4. BART SYSTEM STREETS

4.1 BART SYSTEM STREETS BASIC DESIGN

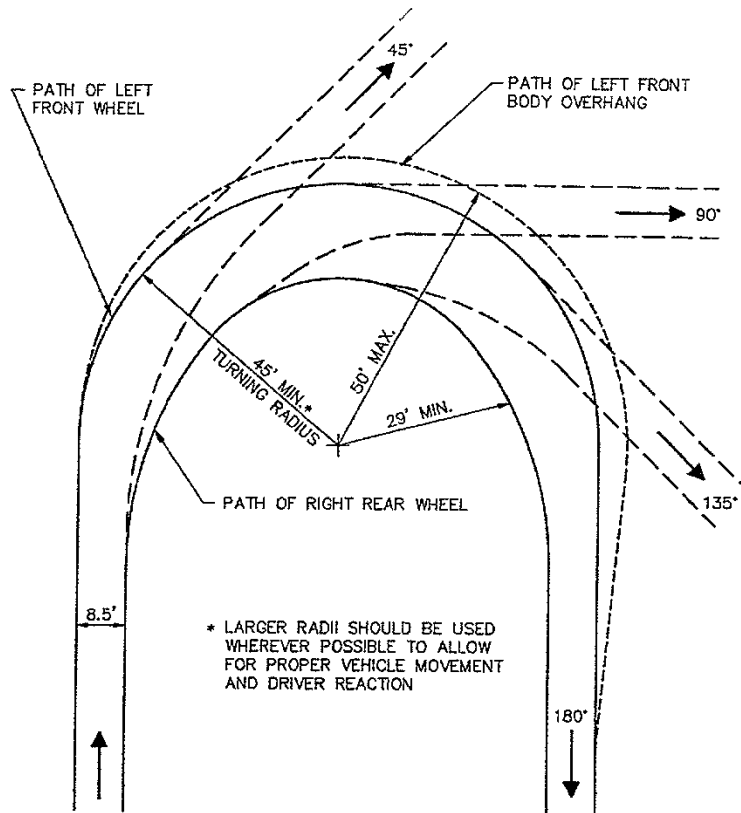
- A. Except as described for one-way access roadways, roadways other than those used mainly for service or maintenance purposes shall have at least one traffic lane for each direction of travel. Where these roadways are one-way and have only a single traffic lane, the roadbed width shall be 12 feet, except if the

roadway is for the exclusive use of buses or is a fire lane the roadbed width shall be 20 feet. (Note, one-way access roadways shall have a minimum of two traffic lanes.) Lane width in all other cases, shall preferably be 12 feet, but shall not be less than 11 feet.

- B. Roadways to be used by emergency fire fighting equipment shall be a minimum of 20 feet wide and are subject to review and approval by the local fire protection jurisdiction.
- C. Roadway width in all cases shall be exclusive of the gutter width where gutters occur.
- D. Level of service (LOS) for intersections of BART system roadways with adjacent public roadways shall conform to LOS standards of the public agency having jurisdiction over the public roadway, or shall conform to alternative, accepted measures for evaluating traffic performance that favor transit access or pedestrian mobility and are recognized by the jurisdiction. Level of service for intersections of BART system roadways within BART right-of-way shall generally be at a "C" designation, and at a "D" during peak hour.
- E. Traffic Medians. The minimum width of a median within a two-way access roadway shall be four feet curb face to curb face, except that the width of medians designed as an integral part of a left-turn storage lane may, when space is limited, be reduced to a minimum of two feet. Two-foot wide medians shall not be used if the installation of a lighting standard or traffic signal standard within the two foot wide section of the median is planned or appears probable in the future. If a push button signal post is warranted, the minimum width of median shall be six feet. If either or both sides of a median strip are to be utilized for curbside parking and the subsequent loading and unloading of passengers, the median shall have a minimum width of 12 feet, curb face to curb face. Isolated raised traffic medians shall be not less than 15 feet in overall length.

4.2 DESIGN VEHICLES AND DESIGN SPEED

BART System roadways shall be designed to accommodate passenger cars, single unit trucks, fire trucks, or buses, as applicable. The dimensions and turning paths for passenger cars, single unit trucks, and fire trucks shall be as per "A Policy on Geometric Design of Highway and Streets," by AASHTO, and those for buses shall be as illustrated below:

BUSDESIGN VEHICLE AND MINIMUM TURNING PATHS**FIGURE 2: BUS DESIGN VEHICLE AND MINIMUM TURNING PATHS**

Designer shall verify dimensions and turning paths of buses with the appropriate bus transit authorities. The design speed for BART System roadways shall not exceed 15 miles per hour.

4.3 CLEARANCES

Minimum vertical clearance between any structure and street surface shall be 15 feet. Minimum horizontal clearance between any structure and inside face of curb, or edge of shoulder, shall be two feet six inches, except that this clearance may be reduced to two feet at signs, fences, base of light standards, and at pedestrian barriers. Sidewalk clearances shall be in accordance with California Code of Regulations, Title 24, Part 2, and ADA Guidelines.

4.4 CURVATURE

The radius of horizontal curves, measured to the center of the traveled way, shall be not less than 150 feet, except as specified in under "Intersections" herein. In special purpose areas and roadways, where the design is sufficiently restrictive so that speeds will not exceed seven miles per hour, the applicable design vehicle turning path shall be used.

Parabolic vertical curves shall be used to effect a gradual change between breaks in

street grade. The minimum length of vertical curve on roadways shall be determined from the following formula:

$L = KA$, but not less than 75 feet where:

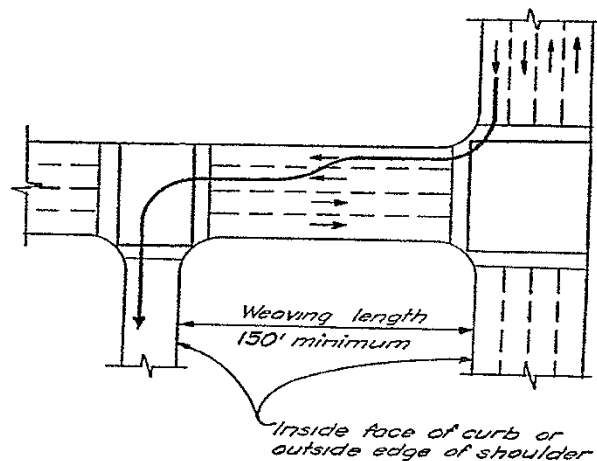
L = Length of curve, feet

A = Algebraic difference in grades, percent

K = 28 for crest curves, 20 for sag curves

4.5 WEAVING LENGTH

Where vehicles must move across the path of other vehicles moving in the same direction, a minimum weaving length shall be provided as shown below:



Note Weaving length shown is for one lane of transition. Add 75 feet for each additional lane of transition.

WEAVING LENGTH

FIGURE 3: WEAVING LENGTHS

4.6 GRADE

The maximum grade of BART System streets for public use shall be preferably eight percent or less, but shall in no case exceed 10 percent. The minimum grade of streets shall preferably be 0.50 percent but shall in no case be less than 0.30 percent.

4.7 INTERSECTIONS

4.7.1 General

- a) No intersection shall be closer than 150 feet, measured centerline to centerline, to any other intersection. The creation of "dog leg" movements at intersections shall be avoided if possible by aligning BART System streets.

- b) Intersection angles shall be 90 degrees where possible. When intersection angles are skewed more than 30 degrees from a right angle, consideration shall be given to realignment of the streets. Grades at intersections shall be as flat as practical, but shall be such as to provide adequate drainage. It is recommended that intersecting streets not have horizontal curvature within 150 feet of the centerline of the intersection. Where it is intended that certain turns be permitted at an intersection, curb return radii (to inside face of curb) shall be 20 feet except when bus or truck traffic is anticipated, in which case the radii shall be as illustrated below. Where the intersection design is not intended to permit certain turns, curb return radii shall be five feet.
- c) The number of intersections designed for wide vehicular turning radiances shall be minimized to promote pedestrian mobility and calmed traffic.

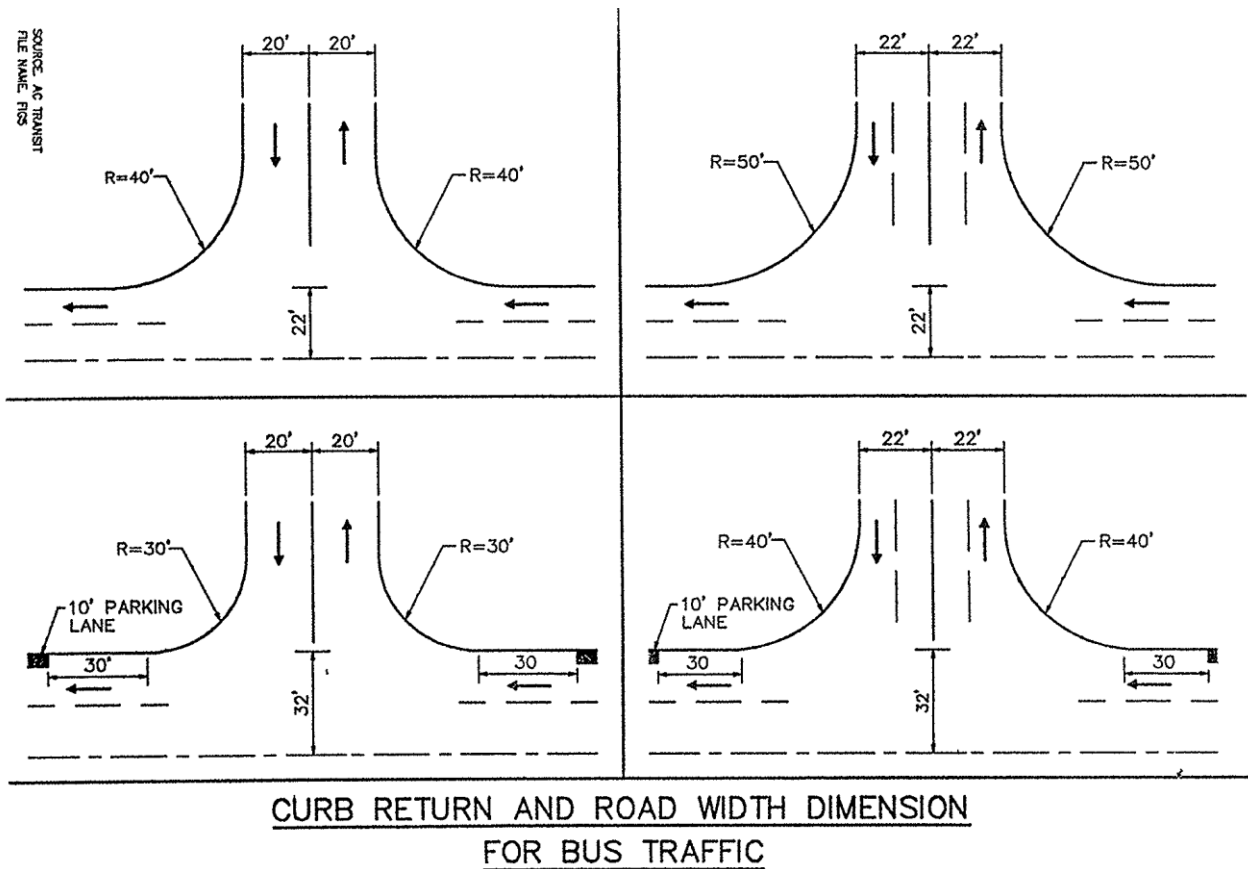
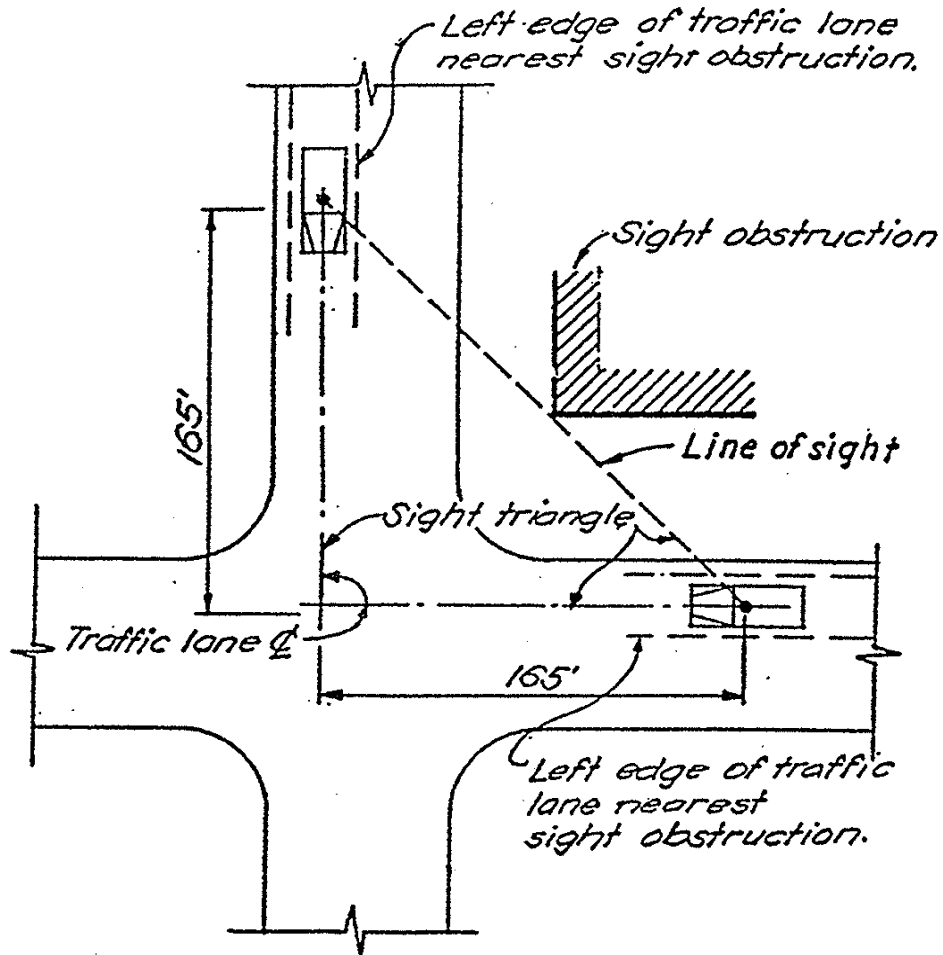


FIGURE 4: CURB RETURN AND ROAD WIDTH DIMENSION FOR BUS TRAFFIC

4.7.2 Sight Distance. Vehicular intersections in parking lots or parking lot vehicular entryways and exit ways shall not have landscaping or other obstructions which would diminish driver visibility of traffic in or approaching such intersections. At all intersections, objects more than three feet above the high point of the traveled way shall be excluded from areas referred to as “sight triangles.”

- a) At intersections where no stop sign or traffic signal control is provided, sight triangles shall be as defined in diagram below:

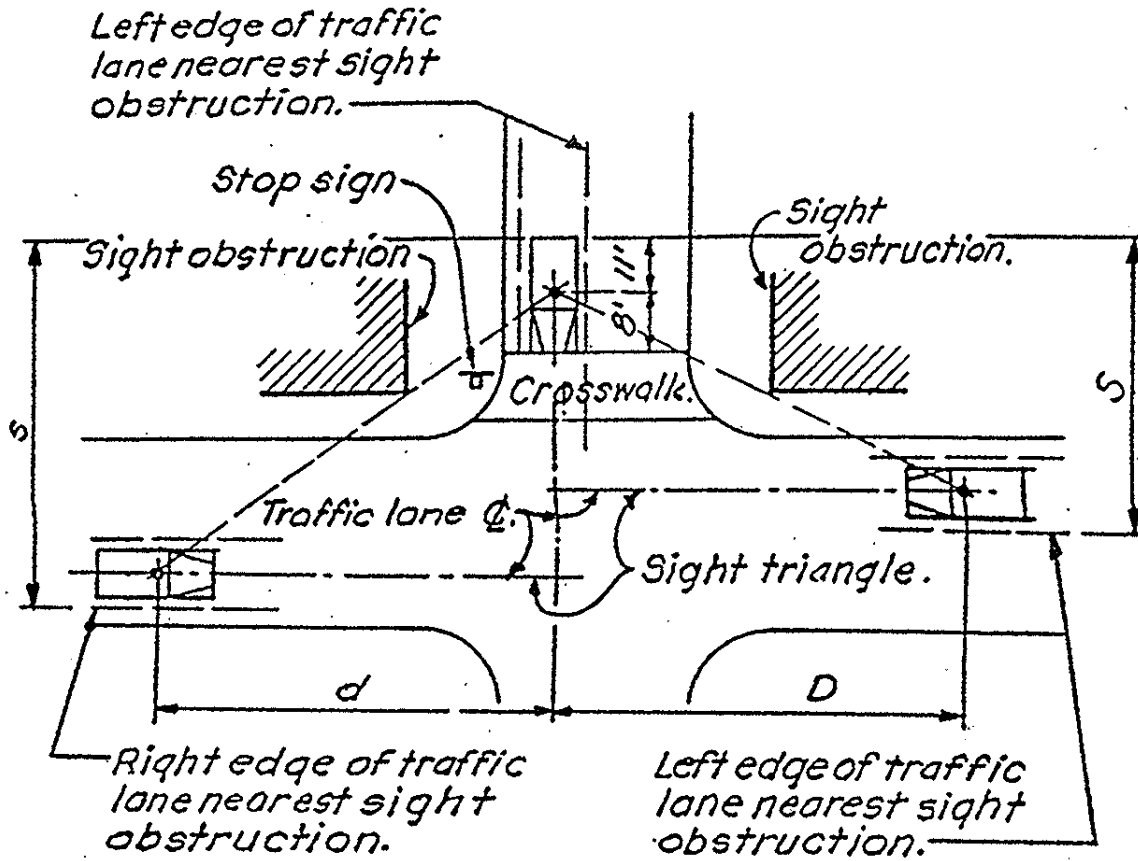


- Notes : 1. Sight distances shown are based on a design speed of 25 miles per hour.
2. Objects exceeding 3'-0" in height shall not be placed within the sight triangle.

INTERSECTION SIGHT DISTANCES UNCONTROLLED INTERSECTION

FIGURE 5: INTERSECTION SIGHT DISTANCES – UNCONTROLLED INTERSECTION

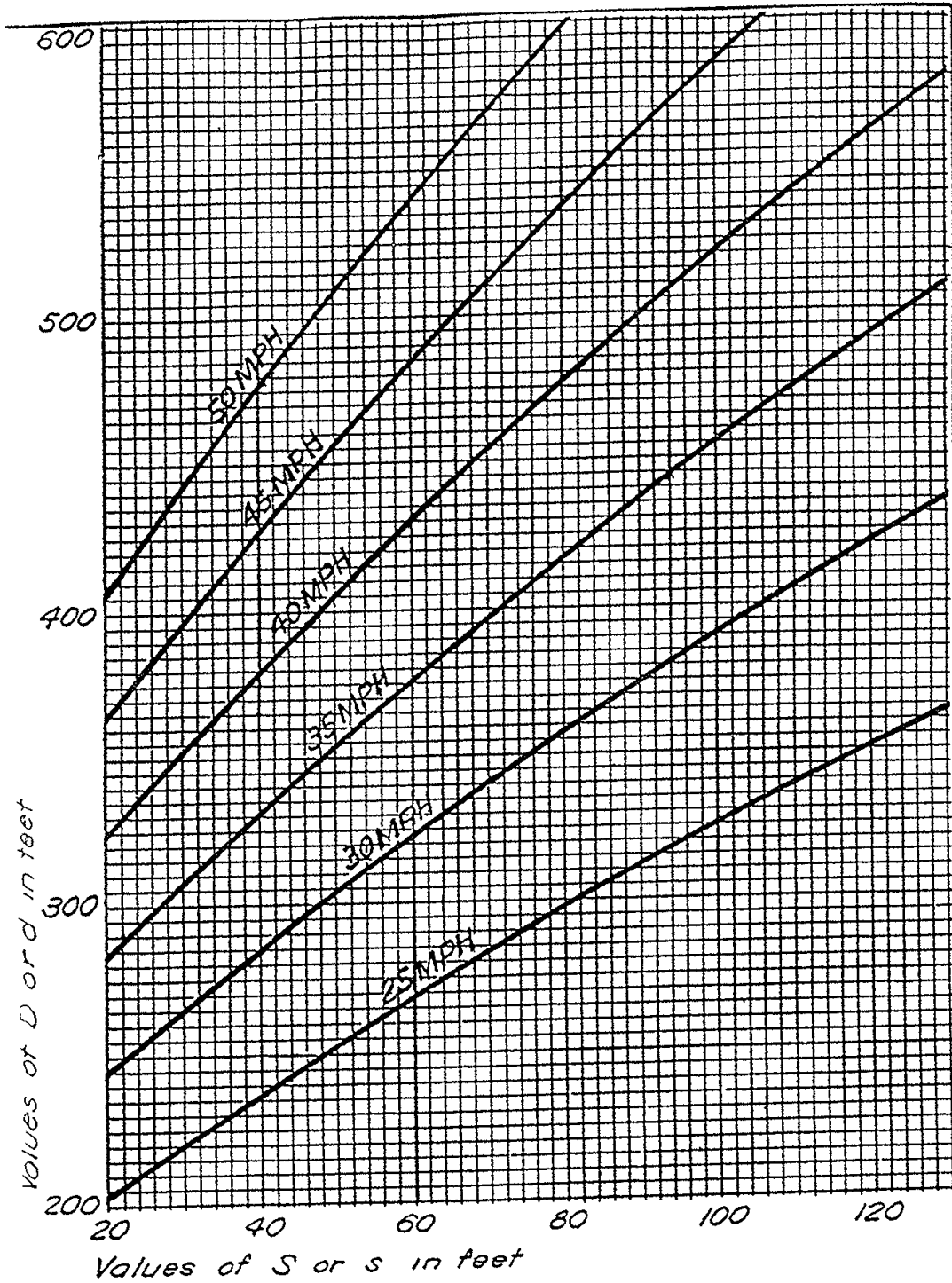
b) At intersections where stop sign control is provided for one of the streets sight triangles shall be as defined in the following diagram:



- Notes:
1. For relationship between S and D or s and d see Figure 6.8
 2. Objects exceeding 3'-0" in height shall not be placed within the sight triangles.
 3. Sight distances are based on use of a passenger vehicle.

INTERSECTION SIGHT DISTANCES STOP CONTROLLED INTERSECTION

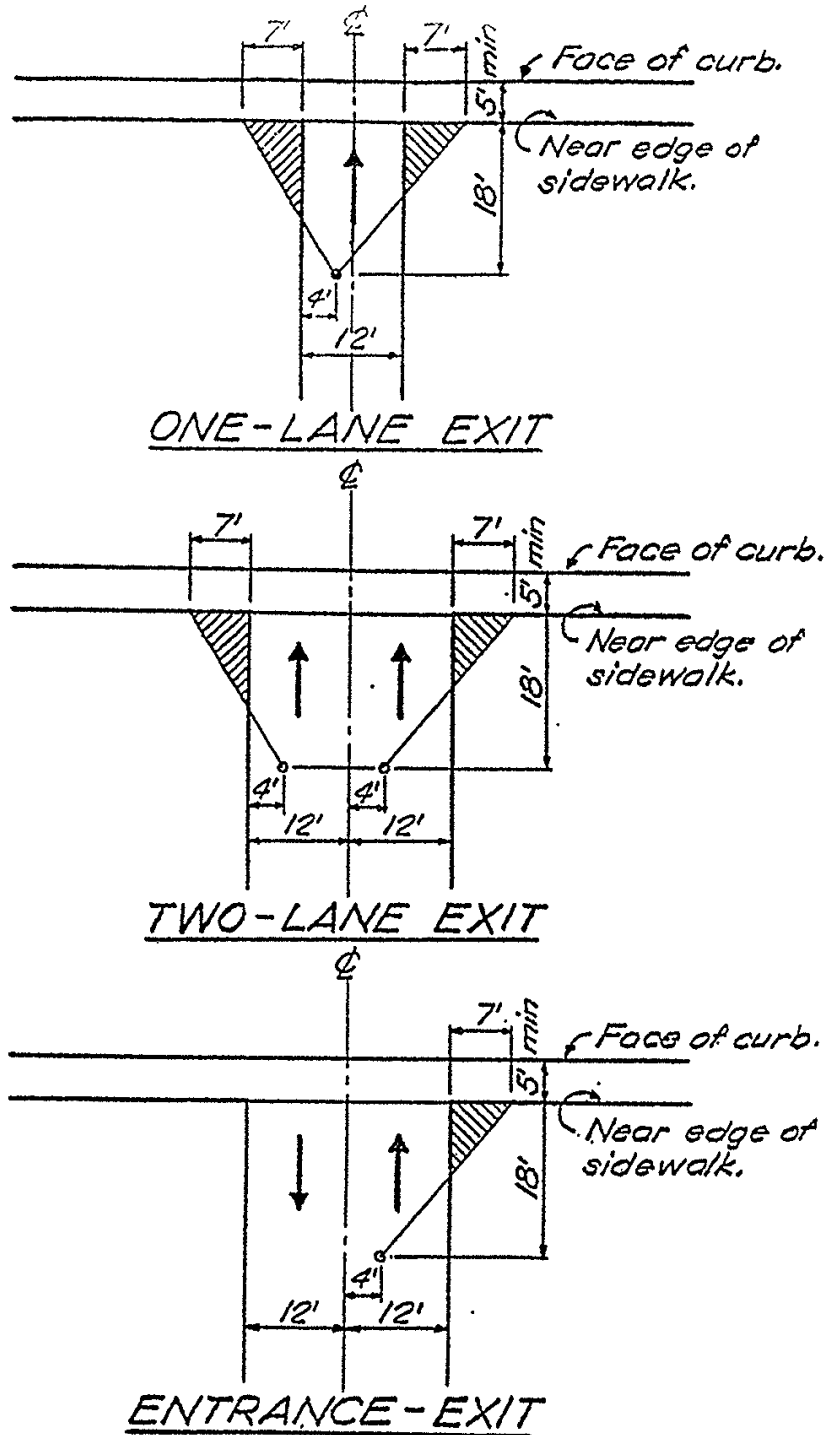
FIGURE 6: INTERSECTION SIGHT DISTANCES – STOP CONTROLLED INTERSECTION



INTERSECTION SIGHT DISTANCES
STOP CONTROLLED INTERSECTION

FIGURE 7: INTERSECTION SIGHT DISTANCES – STOP CONTROLLED INTERSECTION

- c) At parking structure entrances and exits, sight distance shall be as defined in the following diagram:



Note: exclude objects more than 3'-0" high from shaded area.

FIGURE 8: PARKING STRUCTURE EXIT AND ENTRANCE SIGHT DISTANCES

4.8 CROWN

Crown slope shall be two percent. On undivided roadways, the high point of the crown should be centered on the pavement and the pavement sloped toward the edges on a uniform grade. On divided roadways, each pavement should have a uniform cross slope with the high point at the edge nearest the median except as modified by superelevation requirements. At intersections or in unusual situations the crown position may vary, depending upon drainage requirements. Bus loading zones may have a reverse crown as a means of minimizing flow of water adjacent to passenger loading and unloading areas.

4.9 CURBS AND GUTTERS

In general, all roadways shall have curbs and gutters. Where drainage is away from the curbs, gutters may be omitted. Curbs shall be Portland cement concrete.

Valley gutters shall not extend across any bus or auto access roadways. At other streets, the use of valley gutters shall be minimized.

5. PARKING STRUCTURES

Provide parking structure at BART Station where determined by the District with the capacity as determined by the District.

5.1 PARKING STRUCTURES - BASIC GOALS

- A. The District's objective is to obtain a complete, operable parking structure which will be structurally sound and constructed in conformity with applicable codes, these BART Facilities Standards, and the preliminary engineering documents.
- B. The parking structure shall be designed to provide an optimum level of safety and security for users and BART employees at all times. Dark, confined, and indefensible spaces shall be avoided. Visibility from surrounding structures, walks, roads, etc., is essential to safe passage by the users of the facility.
- C. All elevated parking levels shall be made watertight and require as little maintenance as possible. See Facility Design Criteria, Architecture, Passenger Stations, under "Sanitation and Maintenance", for additional maintenance requirements.
- D. Design is encouraged to consider convertibility of parking garage structures to other uses such as residential or commercial purposes for adaptable land use and station area development.

5.2 VEHICLE INGRESS AND EGRESS

- A. Parking structure ingress and egress for vehicles shall be accomplished using the street system and access points indicated on the preliminary engineering documents. If preliminary engineering documents do not indicate ingress and egress points, the Designer shall propose such points in conformance with the Station Access Hierarchy as part of its site design for District approval. A

minimum of two vehicle ingress and egress points shall be located along the perimeter of the structure at a minimum of 100 feet apart.

- B. Visual obstructions shall be avoided at these points and extreme care shall be taken to allow drivers unobstructed visibility of all other automobile and pedestrian traffic.
- C. Refer to Facility Design Criteria, Architecture, Passenger Station Sites for requirements regarding sight distances for exiting parking structures.

5.3 PEDESTRIAN ACCESS

- A. Pedestrian access points to the structure shall be oriented to primary walkways in the Station.
- B. Provide concrete sidewalks, as needed, to properly access key destinations including pedestrian nodes, transit stops, and parking structures. Also, provide concrete sidewalks from all stairs and exits to the closest road and or street walks. All walks shall be not less than 4 feet in width.
- C. Provide pedestrians with safe crossings of major streets, installing traffic signals where necessary for pedestrian safety. Minimize signal cycle lengths to promote pedestrian movement while discouraging jaywalking.
- D. Pedestrian crossings shall be treated so as to be prominent and durable (e.g. textured, colored, concrete). At a minimum crossings shall be painted with "Zebra Stripe (Continental)" markings.
- E. Provide direct pedestrian access between station entrances, surface transit corridor stops and activity nodes. Avoid barriers including long walks, crossing multiple lane streets, meandering routes, visual obstructions, circuitous crossing, dark or unpleasant locations, or unnecessary changes of grade.
- F. Refer Facility Design Criteria, Architecture, Passenger Station Sites under "Pedestrian Paving" for additional walkway criteria.

5.4 LAYOUT

- A. Ramps and Floor Slopes: Ramps containing parking stalls, and used by pedestrian for exiting shall not exceed a slope of six percent. Ramps not containing parking stalls and not required for use by pedestrian, shall not exceed a slope of 12 percent. Floors shall be cross-sloped for drainage at a minimum 1 1/2 percent slope.
- B. Parking Stall Design: The parking layouts shall be designed to provide the optimum traffic flow while providing the number of stalls indicated on the preliminary engineering documents. Parking spaces shall be eight feet six inches by 18 feet per stall, at 90-degree angles either side of driveway. Driveway shall be 24 feet wide. Parking spaces shall be self-parking type; i.e., no spaces shall be "buried" or situated in such a manner that it would become necessary to move another car to utilize the parking space. Six-inch-high continuous concrete curbs shall be provided at the nose of parking stalls in the structure. Provide a

raised minimum three feet wide concrete curb at the perimeter of each level. Curb shall provide a minimum two feet six inches clearance between face of curb and face of column. Encroachment into parking spaces by columns shall maintain adequate clearance for use by full-size automobiles.

- C. Accessible parking stalls shall be provided to comply with ADA and CBC accessibility requirements. Locate accessible stalls close to the elevators.
- D. Clearances: The minimum vertical clearance at any point in the basement and first/ground level shall be eight feet six inches. On other levels the minimum vertical clearance shall be seven feet six inches. This clearance shall be maintained at ramps and traffic lanes. Lighting fixtures, conduits, and pipes shall not encroach into these clearances.
- E. Columns and Vertical Elements: No columns shall be located in drive aisles. Columns and vertical elements shall have corners armored to protect them from spalling if struck.
- F. Ingress and egress shall be designed to accommodate possible addition of paid parking gates including clearances and shall be sized for the appropriate revenue control equipment. Three one-inch conduits (with pull wires) shall be run from each location that will have parking control equipment to the electric equipment room. At each entry/exit a junction box and a one-inch conduit back to the electrical equipment room shall be installed in the overhead slab soffit for future electrified signs.

5.5 VERTICAL CIRCULATION

- A. Stairs. Cast-in-place reinforced concrete stairs and risers. Treads shall have non-slip grit impregnated in surfaces. Refer Facility Design Criteria, Architecture, Passenger Stations, for additional requirements.
- B. Stairs shall be open to the greatest extent possible with open railings to maximize visibility and security.
- C. Elevators. There shall be a minimum of two elevators. Elevator capacity shall be based on the entire parking structure capacity is filled or emptied in one hour and run trip time shall not exceed 100 seconds. Elevators shall be traction type; hydraulic elevators will not be acceptable. Elevator entries shall be at garage floor level (no curbs or curb ramps); and floor slabs shall be sloped away from elevator door openings. Provide canopies at exposed elevator lobbies and landings. Refer Facility Design Criteria, Architecture, Passenger Stations, for additional requirements.

5.6 SAFETY AND SECURITY

- A. *Security Closure: A vertical screen system shall be installed for security purposes at the first level on all sides of the parking structure. The screen shall be continuous and secure. At vehicular entry/exit points, motorized overhead coiling grilles shall be provided. At pedestrian entry/exit points, full height doors with closers, panic hardware, and external access via key in lock cylinder shall be provided.*

- B. Railings as required by applicable codes shall protect interior slab edges. Exterior slab edge spandrels, rails, and connections shall be designed for a minimum horizontal ultimate load of 6,000 pounds applied at 18 inches above the floor, over a one square foot area of the barrier or as require by applicable codes whichever is more restrictive.

5.7 STRIPING AND MARKING

- A. In addition to signage, striping and painted directional arrows on the driving deck shall be provided to direct and identify the most convenient means of access and egress. A single yellow stripe shall be painted down the middle of all two-way driveway aisles.
- B. Stalls shall be sequentially numbered. Numbering shall be coordinated with numbering of surface parking areas.

5.8 ELECTRICAL

- A. Electrical design shall provide three one-inch conduits with pull wires from electrical equipment room to parking ingress and egress area to serve parking control equipment and junction boxes and conduits to serve possible future electrified signs over parking ingress and egress area.
- B. Electrical conduits and junction boxes shall be concealed within stair walls and floors. Multiple electrical conduits running under the base floor slab shall be encased in a reinforced concrete ductbank. Refer to Facility Design Criteria, Civil, Utilities, under "Electrical Power Facilities" for additional encasement criteria.
- C. Waterproof electrical outlets shall be provided for charging electric/hybrid vehicles.

5.9 EXPANSION AND CONSTRUCTION JOINTS

- A. Joints in parking structure shall be closed with expansion joint assemblies, i.e. rod and sealants.

5.10 *PARKING STRUCTURES COMMUNICATIONS*

All multi-level parking structures shall be equipped with a security closed circuit television monitor system, a PA system, and at least one "White" Courtesy Telephone per level. Refer to Facility Design Criteria, Architecture and Electronics for requirements.

6. SITE LIGHTING

- A. Refer to electrical design criteria for specific criteria related to lighting.
- B. Site illumination shall be used to provide safety, to ensure visibility, and give direction.
- C. Unattended parking areas shall be adequately lit for security.

- D. Directional, informational warning, and regulatory signage shall be adequately illuminated.
- E. Landscape elements, in particular plant material, shall not hinder the illumination of signage information which motorists and pedestrians may require for direction.
- F. Selection and placement of plant material and luminaires shall be coordinated and shall take into account plant material growth. Landscape development shall not diminish the general illumination of walkways, parking areas, driveways, or plazas by planting too close to the light source or in the path of the available light.
- G. In all installations of lighting, care shall be taken to minimize spill light into adjacent residential areas and minimize light directed towards motorists or pedestrians to prevent harsh glare or dangerous blind spots. In addition to the extent possible, eliminate light trespass to the night sky.
- H. Lighting shall be designed to exhibit the following characteristics:
- General vehicular/pedestrian lighting, medium height pole mounted fixtures coordinated with landscaping so that unobstructed light reaches the parking area and avoids sight lines into adjacent residential areas
 - Pedestrian walkway lighting, medium to low height, pole mounted or low-mount bollard fixtures
 - Pedestrian lighting fixture illumination shall in general be directed toward the pedestrian walkway, as opposed to omni directional.
- I. The recommended spacing for pedestrian-scale lighting is every 50 feet along streets, and every 30 feet along walkways and trails.
- J. Lighting standards may be placed in one of the following locations:
- In areas not used for parking such as at the end of rows, adjacent to walkways or in corners of a lot
 - In reserved strips between parking stalls
- K. Where light standards are placed in uncurbed areas or closer than two feet six inches clear to the inside face of a curb, the standard shall be protected from physical damage by a concrete base of at least 24 inches diameter which extends not less than 30 inches above grade.
- L. A beacon light shall be provided at each side of the bus loading/unloading area to notify bus operators that a train is arriving at the station. The light shall begin flashing one minute before each train enters the station and shall continue for at least one minute thereafter.

7. MISCELLANEOUS SITE DEVELOPMENT

7.1 SITE FURNITURE

- A. Exterior benches shall be protected from the weather. Benches shall be designed to discourage use for sleeping. If armrests are used, they shall be spaced at intervals not greater than four feet.
- B. Trash receptacles shall be provided.
- C. Accessibility Considerations:
 - Obstacles such as site furniture must be a minimum of 6 inches high so as to be detected by visually impaired patrons using a cane and should not have any protruding edges or sharp corners.
 - Locate site furniture out of the traveled way.

7.2 SCREEN AND BARRIER WALLS, FENCES, OR SCREEN PLANTING

- A. No standard cyclone fencing shall be used in the station area.
- B. Screening or barriers shall be provided when insufficient depth of land is available on the perimeter for safety requirements or for visual control. These elements shall be enhanced with vines when neighborhood conditions dictate additional treatment.
- C. The areas of land surrounding the perimeter of the site not intended for near-term station area development should be landscaped with groundcover and trees. The landscape design shall integrate with the surroundings.

7.3 RETAINING WALLS

- A. Retaining walls shall be stepped where possible to reduce their overall mass and cost. Refer to Facility Design Criteria, Architecture, Landscaping and Vegetation Control under "Planting Areas" for related sloped planting and terraced planter requirements.
- B. Retaining wall structures and barriers shall be enhanced with vines when neighborhood conditions (existing land improvements, topographical features and landscaping) dictate additional treatment.

7.4 BOLLARDS

Bollards may be used to control vehicular access or to deter unsafe pedestrian movements. When bollards are used as traffic barriers where District maintenance access may be required, bollard shall be removable and lockable. Bollards shall be a minimum of 36 inches in height and shall resist a force of 12,000 pounds.

7.5 TRASH ENCLOSURES

Trash enclosures shall be provided for stations with a designated outdoor trash storage area. Area shall be sized to accommodate recycling and landfill storage needs. Enclosure shall be designated to provide access for waste pick up from collection trucks. Enclosure shall use metal gate. Enclosure shall be designed to meet the state Water Resources Control Board Phase II Small MS4 General Permit requirements. LED lighting shall be provided for trash enclosure including related wires, conduit, and pullboxes within the work area. Trash enclosure shall have a sanitary sewer connection and clean out to prevent leaks from leaving the designated area. Grades shall slope to hold trash container in place within the enclosure and assist the drainage of leaks.

END

CRITERIA ARCHITECTURE

WAYFINDING AND SIGNAGE

CONTENTS

- 1. GENERAL**
 - 1.1 Application
 - 1.2 Reference Standards
 - 1.3 Purposes of Wayfinding and Signage
 - 1.4 Wayfinding and User Groups
 - 1.5 Design Principles - Wayfinding
 - 1.6 Design Principles - Signage

- 2. SIGNAGE TYPES**
 - 2.1 Station Identification
 - 2.2 Transit Wayfinding
 - 2.3 Regulatory Signs
 - 2.4 Safety and Security Signage
 - 2.5 Tactile Signs
 - 2.6 Advertising and Concession Signage
 - 2.7 Temporary Signs and Banners

- 3. SIGN FORMAT AND DESIGN**
 - 3.1 Elements of Signage
 - 3.2 Sign Layout
 - 3.3 Exit Identification
 - 3.4 Emergency Exit Identification
 - 3.5 Platform Station Identification

- 4. SIGNAGE LOCATIONS**
 - 4.1 Sign Placement By Sign Type
 - 4.2 Sign Placement

- 5. SIGN TYPES ILLUSTRATED**
 - 5.1 Transit-related Wayfinding
 - 5.2 Transit-Related Identification
 - 5.3 System Information, Maps and Wayfinding
 - 5.4 Regulatory
 - 5.5 Safety and Security Signage
 - 5.6 Temporary Signs and Banners
 - 5.7 Station Exterior: Station Identification
 - 5.8 Station Exterior: Parking Identification & Regulatory

- 6. MATERIALS AND CONSTRUCTION**
 - 6.1 General Considerations

- 7. APPENDIX: INVENTORY OF BART APPROVED PICTOGRAMS**

- 8. APPENDIX: STATION EXIT IDENTIFICATION**
 - 8.1 Assigning Codes To Station Exits
 - 8.2 Descriptive Text (Street Destination)

CRITERIA ARCHITECTURE

WAYFINDING AND SIGNAGE

1. GENERAL

This Section describes criteria for wayfinding and signage for BART patrons, starting from the wider community to the BART station, including ingress through the BART system, and egress from BART back into the community.

1.1 APPLICATION

This section applies to all BART facilities including passenger stations, garages, parking lots, and other facilities. Wayside facilities include line sections, traction power substations, vent structures, yards and shops, other BART facilities as required by the District.

This section applies to signage for those traveling to and away from BART stations by bicycle, automobile, and on foot and for those connecting to and from other transit systems. Note that signage away from District property is subject to requirements of and collaboration with other jurisdictions.

Utilize these wayfinding and signage criteria to develop signage for new facilities as well as for retrofitting and maintaining signage at existing facilities. Criteria shall be used to develop an on-going signage program adaptable to changing needs for permanent and temporary signage.

Where Transit-Oriented Development (TOD) exists or is developed at a BART station, wayfinding and signage should be developed jointly by the District and by the developer or community leaders. Refer to the Appendices/ District Programs and Guidelines/ BART Transit-Oriented Development Guidelines for additional information.

This document may serve as a tool for wayfinding system planning by other agencies within the BART area, particularly for other transit operators with connecting service. In particular, the sections on ADA compliance and universal design for wayfinding have wide application.

1.2 REFERENCE STANDARDS

- California Building Code
- California Fire Code
- California Accessibility Regulations
- California Vehicle Code
- “Traffic Manual”, State of California Department of Transportation
- “Construction Manual”, State of California Department of Transportation
- “Manual on Uniform Traffic Control Devices for Streets and Highways”, U.S. Department of Transportation
- The American Institute of Graphic Arts, AIGA
- Metro Transportation Commission, Regional Transit Wayfinding Guidelines and Standards
- U.S. Department of Transportation, Reproduction Art and Guidelines
- BART TOD Guidelines
- BART Access Guidelines
- BART Access Plan
- ADA and ABA Accessibility Guidelines for Buildings and Facilities (ADA means Americans with Disabilities Act and ABA means Architectural Barriers Act)

- Transportation Research Board, Transit Cooperative Research Program (TCRP)
- TCRP Report 12, Guidelines for Transit Facility Signing and Graphics (note in particular, Chapter 6)

1.3 PURPOSES OF WAYFINDING AND SIGNAGE

Wayfinding should guide the public to the BART system, through station areas, boarding vehicles, and connecting to other transit providers, then out of the system to the community and on to their ultimate destination. The wider purpose of these criteria is to increase the ease of using public transportation, thereby increasing people's mobility.

It is the intention of these criteria to be used in partnerships with airports, other transit operators, and cities to improve signage. These criteria recommend that BART participate in the adoption of wayfinding conventions to be used to improve connectivity among transportation agencies. Connectivity conventions should extend wayfinding into the communities beyond the transportation stations and stops.

Purposes of wayfinding and signage include:

- To safely and efficiently guide and direct the public in use of the BART system and its connections to other transportation systems.
- To safely and efficiently guide BART employees in operation and maintenance of the BART System, and guide emergency personnel in protecting patrons and facilities.

In doing so, signage will comply with code and regulatory requirements, i.e. Americans with Disabilities Act, building codes, and California Public Utility Commission requirements.

In addition, advertisements and concession-related signage help earn revenue for the District which helps defray operating costs and control fare rates. Advertisements also offer information and entertainment to BART patrons, and concessions offer their services and goods.

1.4 WAYFINDING AND USER GROUPS

1.4.1 Scope of Wayfinding

Beginning at the BART patron's starting point (home, airport, hotel, or office), wayfinding guides the individual to BART. Within the BART system, wayfinding guides patron from sidewalk or parking lot to station entry, to fare collection machines and system maps through fare gates and to correct platform. Within the train, too, wayfinding helps orient riders to the BART system and verify their transfer or end station. Station wayfinding resumes when patrons exit the train to either transfer to another BART line or to exit the station. Wayfinding continues through the station area and on to the patron's destination. In some cases, wayfinding guides the individual to another transportation system with connections to the BART system. Information regarding connections to other transportation systems (bus, other rail, taxi, ferry, and shuttle) is discussed under "transit hubs" herein.

Wayfinding addresses needs of various groups, including bike riders, pedestrians, disabled patrons, and those traveling by automobile or other transportation system such as bus or light rail.

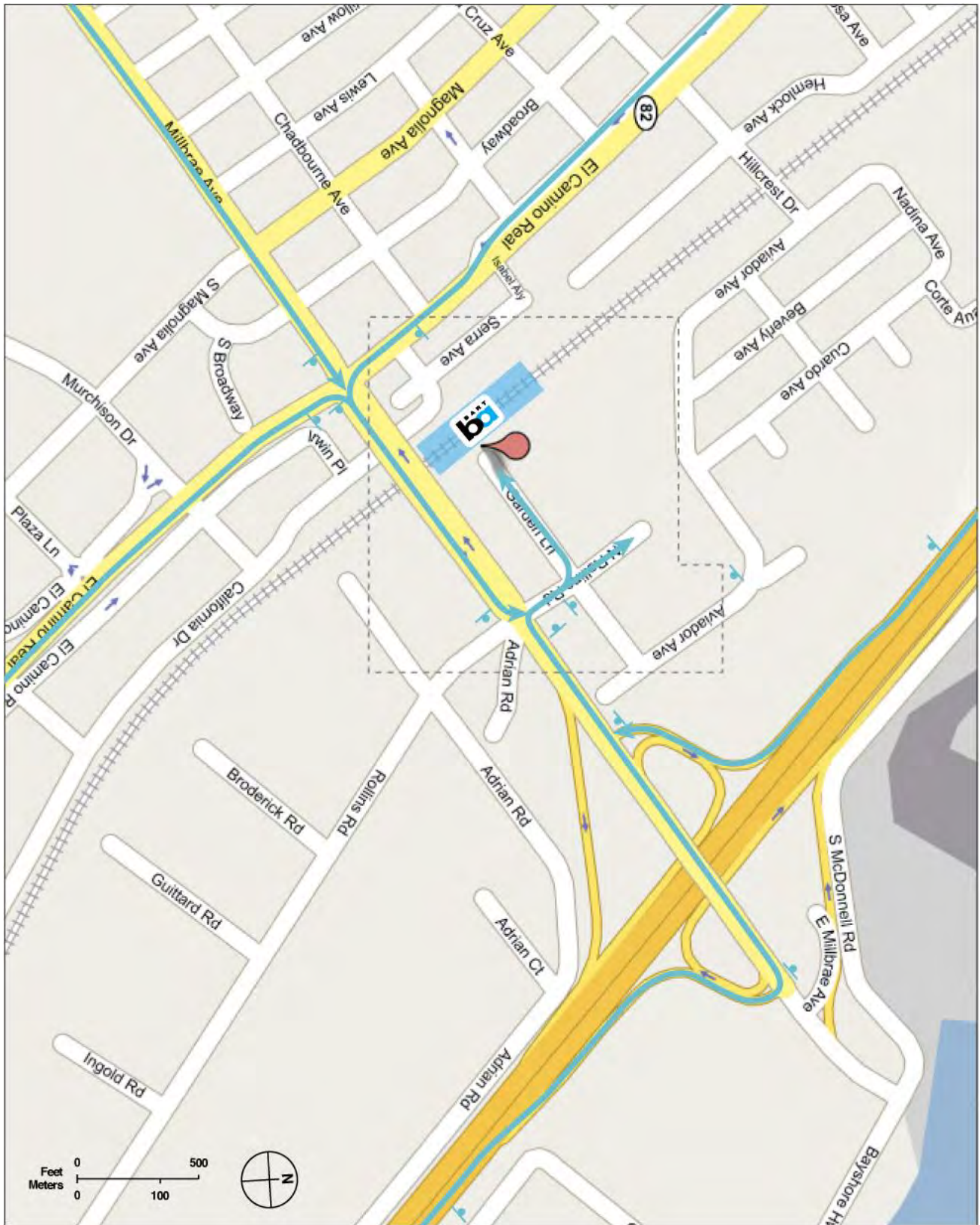


Figure 1.4.1.1: Example of wayfinding to station: Plan of Millbrae Station area showing vehicular approach routes and typical sign locations

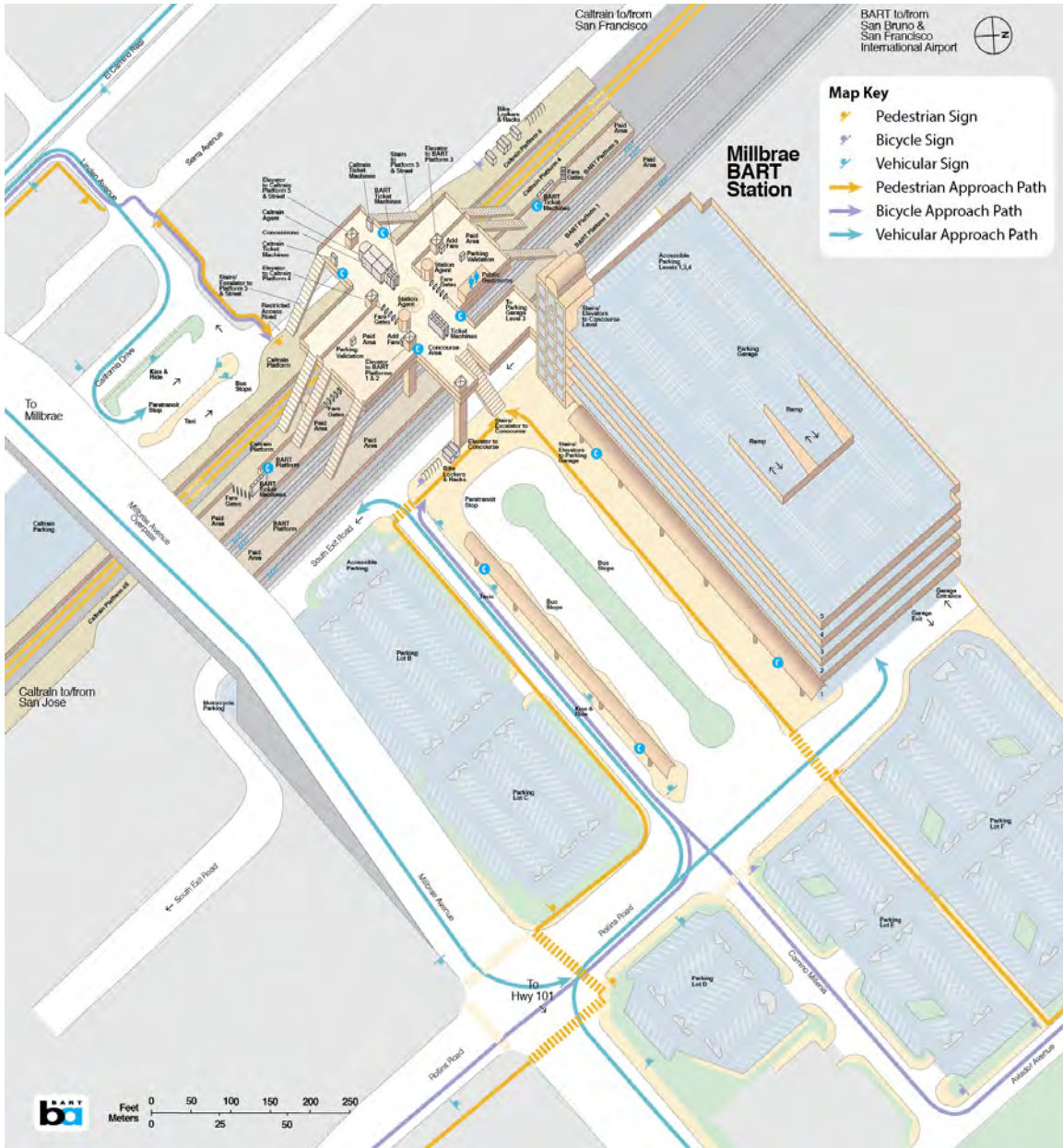


Figure 1.4.1.2: Detail Plan of Millbrae Station showing vehicular, pedestrian and bicycle approach routes and typical sign locations

1.4.2 Wayfinding and Transit Hubs

The public’s ease of transferring from one transit system to another is deemed “connectivity”. The Bay Area Metropolitan Transportation Commission (MTC) reported on this subject in its “MTC Transit Connectivity Study”. Transit hub wayfinding and information systems are important parts of connectivity. The MTC Study distinguishes a transit station as a hub when it provides connections between several different service operators, has a very high level of transferring between services of different operators, or has a prominent geographic or strategic location. Because BART is a regional transit system and BART stations are transfer points to various modes from local buses and to international flights, every BART station should be considered a transit hub in regard to wayfinding.

1.4.3 Wayfinding Step-by-Step for Transit Patrons

- A. Patrons looking for BART station from freeways and roads are served by roadside signage.



Figure 1.4.3.1: Typical roadside wayfinding sign

- B. Patrons navigating city streets, as they approach a station, benefit from signage which addresses various wayfinding questions, i.e. location of station, general parking, and disabled parking, and whether the specific route is for cars, bikes, or pedestrians. Note that specific signs are subject to negotiation with the local jurisdiction.
- C. Signage at bus stop shelters identifies specific bus stops and directs patrons to adjacent BART station.
- D. Signage at station entry both identifies station (transit hub) by name and includes prominent operator logo(s) so that various user groups (pedestrians, bicyclists, private automobile users, and transit riders) recognize its location and entrances, and which transit services are available at the hub.



Figure 1.4.3.2: Example: Station entrance sign

- E. Inside the station concourse, signage directs patrons to fare gates and exits. Concourse level wayfinding aids include a map of the concourse level to aid in orientation. Other signage identifies station agent booths, ticket vending machines, and vertical access locations.

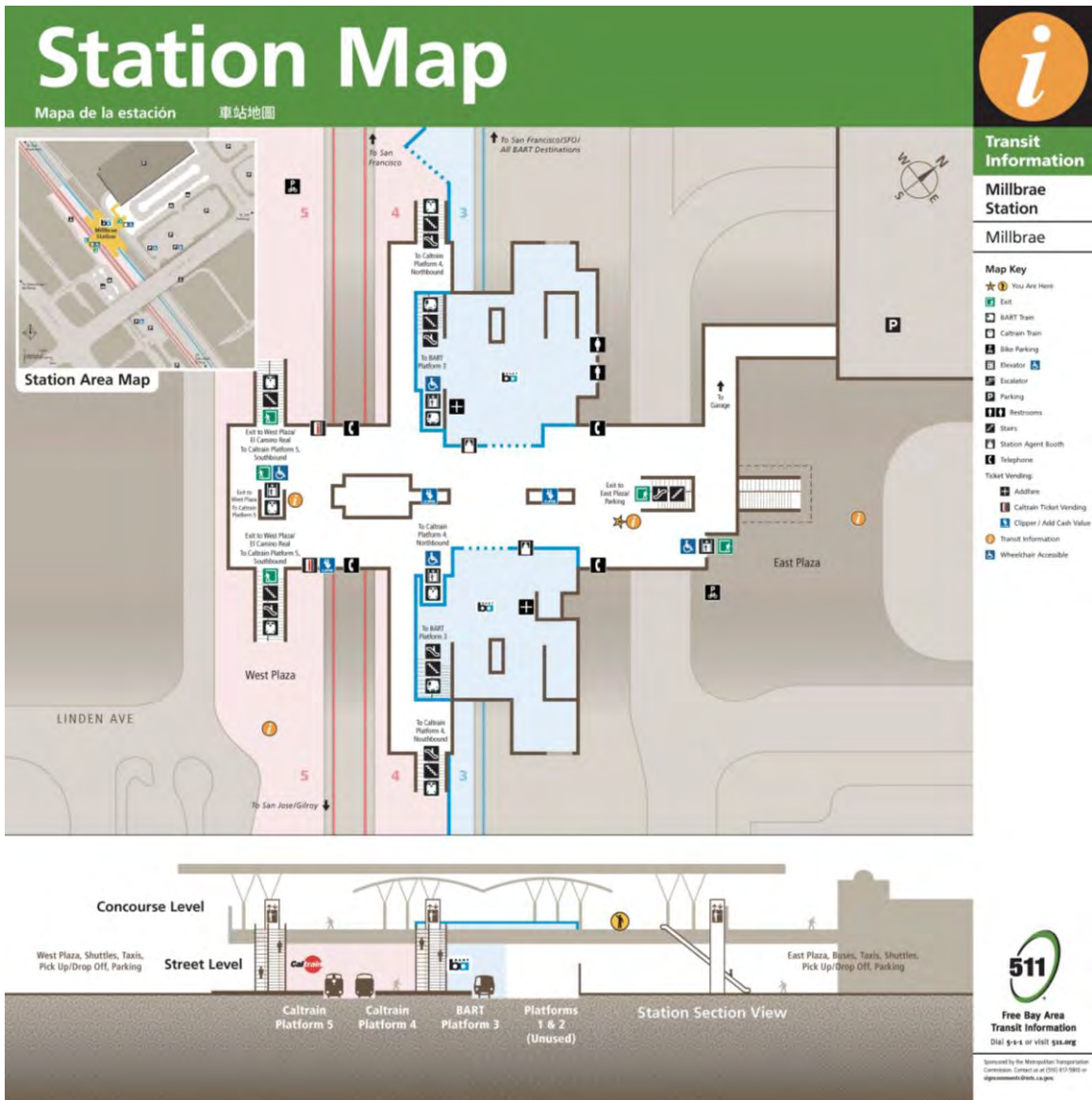


Figure 1.4.3.3: Typical station map



Figure 1.4.3.4: Fare gate identification sign

- F. Interior wayfinding in BART stations should also consider the destinations surrounding the station. These include cultural venues, museums, hospitals, government services, neighborhoods and shopping districts, landmarks and tourist attractions. These generally do not include hotels, stores, or commercial or financial institutions. Exits should be identified with the names of landmarks, streets, or intersections. Local area maps aid orientation to the surrounding area.
- G. Within the transit hub, wayfinding is required to connecting bus stops, shuttle stops, taxi stands, and bicycle and pedestrian routes. This includes transit connectivity maps and exit directories. There should be clear identification of local transit connections. Operator logos and branding colors should be used to identify various transit services. Destinations and routes should be clearly marked. The information provided should be sufficient to enable patrons to determine which transit system/route will get them to their destination, the location of the transit stop, and the particular schedule for the connecting service. In addition, there should be an explanation of payment (such as fares, “exact change” requirement, and acceptability of transfers and Smart Cards). Information should be presented in a consistent manner among transit systems.
- H. Signage on the station platform should clearly identify the destinations of the trains operating on each track. Other signage will prominently identify the station in a manner readable from within the train cars. Consideration should be given to helping disembarking patrons identify the easiest exit paths to various exterior destinations, insofar as this is practical.



Figure 1.4.3.5: Station identification at platform level



Figure 1.4.3.6: Exit sign with street names and landmarks



Figure 1.4.3.7: Exit Directory

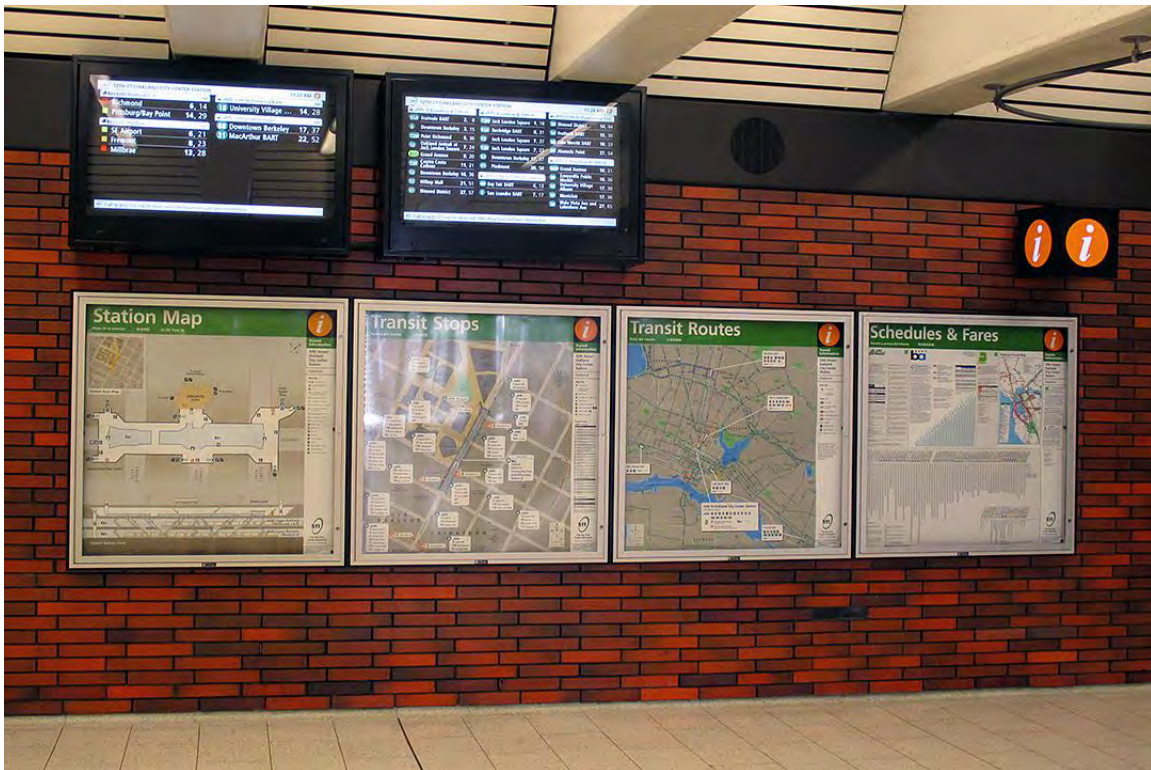


Figure 1.4.3.8: Transit Information Displays within station



Figure 1.4.3.9: Transit Information kiosk outside of station

- I. Another element of connectivity is providing “real time” information. This consists of electronic displays telling patrons when the next train or bus departs for a particular destination. This is important to connectivity because it builds patron confidence, which encourages use of transit requiring transfers between systems. These displays should be located, to the extent possible, outside the paid area of stations, i.e. next train information for BART should be located at the concourse or street level of stations.



Figure 1.4.3.10: Real-time Transit Information Display

- J. The presence of transit connectivity information and the use of real-time transit information displays make it imperative to implement and maintain a robust system to insure that information about other transit systems' stops, routes, fares, and schedules remains up-to-date.

1.5 DESIGN PRINCIPLES - WAYFINDING

Wayfinding is defined as the process that allows people to determine their location, choose their destination, and develop and follow a plan that will help take them from their location to their destination.

1.5.1 Wayfinding Principles

- A. Develop wayfinding as an integral part of the architecture and site design and not as an afterthought.
- B. Design site and facility for clarity of wayfinding; i.e. make stations recognizable within the urban fabric (recognizable image); make entries prominent and easily accessed; arrange routes so that next destinations are visible whenever possible, i.e. being able to see elevator and escalators from fare gates; and vary design of spaces to avoid confusing sameness, i.e. one station or exit looking exactly like another, while being consistent in placement of elements such as fare gates in relation to station agent's booth and signage to doorways.
- C. Spatial planning should include analysis of the series of trip segments that an individual must take such as the following: from surrounding streets to station parking, from car to entrance, from entrance to ticket vending area, through fare gates, from fare gates to platform, and from platform to train.
- Understanding these segments (which compose the circulation system) serves as a framework for identifying decision points and, ultimately, for signing the site and facility.

- Decision points are locations where an individual addresses the mid-level wayfinding decisions like locating entrances and exits and major destinations points within the site or facility.
 - Wayfinding signage should not be only installed at intersections. Information must be perceived at or shortly before a decision point otherwise it might not be noticed. Consider lighting levels, ceiling heights, and density of user traffic in facility in establishing acceptable locations for signage relative to decision points.
- D. Design of facility and its wayfinding devices shall encourage right-hand traffic wherever possible.

1.5.2 Universal Design Principles

Design facility and its wayfinding devices in accordance with principles of universal design set forth in **Facilities Design/ Architecture/ General** to maximize facilities' accessibility, usability, and friendliness for all BART patrons and employees. These patrons potentially include:

- Mobility impaired
- Visually impaired
- Hearing impaired
- Cognitive impaired (i.e. learning disabled, mentally retarded, and mentally disturbed,)
- Elderly
- Very young
- First time patrons and infrequent patrons
- Non-English speakers and foreign visitors
- Literacy impaired

Universal design principles in regard to wayfinding include:

- A. Recognize that all patrons regardless of their abilities and experience are, foremost, patrons. Signing and wayfinding for all patrons should be addressed as an integrated design incorporating multiple devices and approaches. In practical terms, this is manifested as redundancy — providing information in more than one format or medium. Examples of redundancy include signs with both words and pictograms; audio messages repeated on visual message boards; tactile/visual maps in addition to signage; signs which have letters which are both high-contrast color and tactile with message repeated in Braille; and schedule information available on the internet, by phone, and printed in brochures and posters.
- Code-mandated accessible route signs and tactile/Braille signs shall be integrated to the extent possible with overall wayfinding and identification signage.
 - Wayfinding design shall also recognize that decision points (see following section) vary among patrons, i.e. some patrons need to find elevators and others want to find the escalators.
 - Physically-impaired users (visually, hearing, mobility) and elderly may need technological assists and other devices designed to address different “abilities”.
 - Very young patrons, first-time patrons, infrequent patrons, and non-English speaking and foreign patrons need graphical instructions.
 - Bicyclists may be best served through outreach brochures or posters rather than extensive signage that may only serve a small number of patrons.

- B. In regard to the visually impaired, large spaces can be disorienting and audible wayfinding cues may be masked. Where possible, large spaces should be broken down into smaller areas. For example, different textured flooring may be used (busy floor patterns, however, can be confusing and shall be avoided.). Main walkways should be consistent in floor texture, color, and resiliency.
- C. Install hearing loops to assist the hearing-impaired at the following locations:
 - Station agent booths – At station agent booths, hearing loops can assist customers in communicating with station agents.
 - Full length of platforms – For customers who wear hearing aids, hearing loops at platforms can enhance the audibility of announcements.
- D. In addition to signage (both visual and tactile) and audible information regarding wayfinding, provide human information to the extent possible in the form of station agents or others at strategic locations and hours. This is more important at stations frequently used by foreign visitors and first-time users of the BART system.
- E. Explore the concept of using a video to orient new patrons, particularly foreign visitors. Video would be similar to airline safety video and would show how to buy a ticket and how to use the system. Video could be configured to allow the patron to re-start. Video could be available with verbal instructions and subtitles in different languages.

1.6 DESIGN PRINCIPLES - SIGNAGE

1.6.1 Overview

- A. Signs shall fulfill an important need.
- B. Signage shall be located where most effective in regard to decision points and other information needs. Avoid over-signing in any area. (See Section 1.5.1.C)
- C. Provide sufficient and consistent transit information throughout passenger stations.
- D. Signs shall convey a clear, simple, and appropriate message.
- E. Consistently use graphic symbols (pictograms) in combination with text messages. Use graphic symbols alone in cases where they are easily understood and unambiguous.
- F. Ensure visibility, legibility and readability.
- G. Ensure consistency throughout the District by adhering to standards governing all sign characteristics.
- H. Signs shall be subject to District approval.
- I. Signage shall be in accordance with the applicable codes and standards.
- J. Signage including advertisements should facilitate and enhance the patrons' experience, not detract.

1.6.2 Decision Points

- A. Identify routes for pedestrians, bicycles, and automobiles.
- B. Identify decision points along each route. A decision point is a location where a patron needs to make a choice between multiple paths depending on the intended destination.



Figure 1.6.2.1: Wayfinding signs at decision point

- C. Provide appropriate and sufficient information for patrons at each decision point.
- D. Provide signs at appropriate intervals to reassure patrons regarding previous wayfinding decisions.
- E. Provide facility identification signs as targets to help patrons move on to their destinations.
- F. Along the main circulation path, provide “you are here” map for general orientation and to help patron understand the “big picture” (example: Station Map TID).
- G. At exits, provide information about exterior destinations and landmarks (example: Exit Directory).

1.6.3 Continuity and Reinforcement

- A. Provide continuous wayfinding leading from the local community through station site and station, within train cars, then out through station and station site to local destinations.
- B. Reinforce wayfinding messages and guide patrons along route. Wayfinding signage shall continue along entire route between decision points in order to prevent patron from feeling that they have been led to nowhere or may have misunderstood and wasted time traveling along the wrong route.
- C. Provide wayfinding signage in an appropriate sequence and appropriate level of detail and specificity, for example, “early” signage directing patrons to platform may state “All Trains”, and signage closer to platforms would then orient patrons to which side of the platform is connected with which destinations.



Figure 1.6.3.1: Wayfinding sign with “All Trains” message



Figure 1.6.3.2: Platform sign specifies platform number and destinations

- D. Provide continuity of wayfinding on-board BART trains via system maps and diagrams, informational boards and posters, and public address system. To effectively provide continuity of wayfinding on-board, consider the audio quality of the public address system so that messages are easily understood.
- E. Consider the following wayfinding features as a part of future upgrades of vehicles, advertisement contracts, and procurement of new revenue vehicles:
- Recorded wayfinding messages including next station announcements that are cued by automated means such as a Global Positioning System (GPS).
 - In-car visual message devices to address the wayfinding and other informational needs of hearing impaired and possibly non-English speakers. Such devices can be installed in various locations within a vehicle.



Figure 1.6.3.3: Next generation car will introduce advanced communication features

1.6.4 Consistency

Signage will be consistent with District standards regarding the following characteristics:

- Size and shape
- Layout and graphic format
- Message nomenclature and terminology
- Use of colors, finishes and reflective materials
- Method and location of mounting
- Construction and materials
- Functionality

Moreover, signs will be placed within stations in a consistent manner; for example, at matching heights, and aligned along the station axis, or the center of a walkway.

1.6.5 Visibility and Readability

- A. Locate signs where the message will be visible from an appropriate viewing distance, and not obscured by architecture or other objects. In dark locations, use illuminated signs or provide additional illumination.
- B. Within stations, locate directional signs overhead for maximum visibility.
- C. Utilize font and symbol size appropriate for viewing distance, and in the case of signage being viewed from moving vehicle, speed. Use appropriate contrasting background, and minimize glare to ensure legibility.
- D. In regard to electronic variable message signs, ensure that the rate of change of the message display takes into consideration the perceptive abilities of people with sensory and cognitive limitations.
- E. Use upper- and lower-case text for easier word recognition.
- F. Signage identifying station entry shall be prominent and integrated with station architecture; it should include operator logos for easy recognition.

1.6.6 Hierarchy of Placement

- A. Overhead wayfinding signage is generally reserved for information essential to guide patrons to transit services and to their destinations. This consists of overhead ceiling-hung signs and similar signs mounted on walls at the same height. Messages allowed include: Destination, operator name and logo for multi-model stations (i.e. BART, MUNI), train and platform information. Provide overhead signs at decision points such as:
 - Fare Gates: Operator's name and logo
 - Station Entries: Station Name, operator logo(s)
 - Exits: Street names, landmarks, major buildings, parking, and transit connections

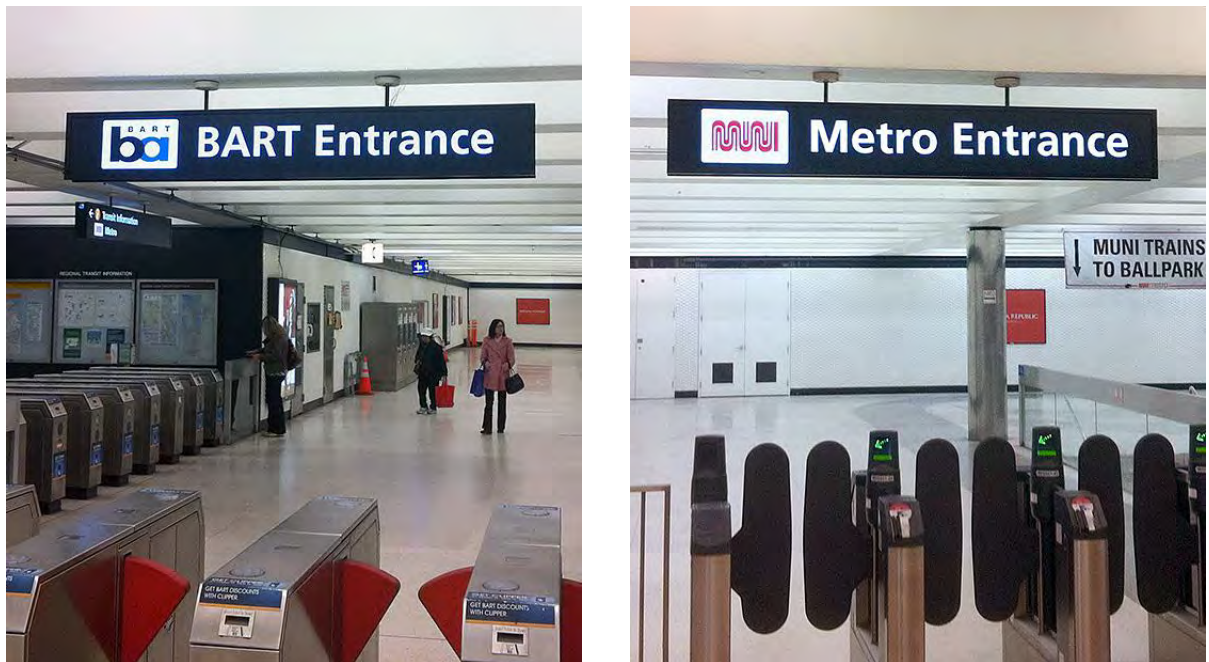


Figure 1.6.6.1: Fare gate identification signs feature operator logos

- B. Identification signs for facilities and amenities within the station (such as ticket vending, or lost & found) use a similar format, but are considered lower priority. These functions may also be identified on flag-mounted signs or wall plaques.



Figure 1.6.6.2: Station amenity and facility identification signs

- C. Regulatory messages such as “No Smoking” are not allowed on overhead signs; these are confined to standardized wall plaques or flag-mounted panels.

Figure 1.6.6.3 – Regulatory messages on wall plaques and illuminated signs



Figure 1.6.6.3: Regulatory messages on wall plaques and illuminated signs

- D. Use real-time information display devices/technology (i.e. electronic variable message signs) for information related to operations, i.e. real time schedule and service information. Another application for variable message technology is to label escalators that reverse direction depending on time of day (although this has repercussions for visually-impaired users). A

potential use that has not yet been implemented would be to display information in alternative languages.

1.6.7 Specificity and Clarity

- A. At a multi-modal station, identify operator (i.e. BART, MUNI, or Caltrain) at each fare gate. Use operator's logo and reinforce with words.
- B. Identify each station agent's booth with operator's logo.
- C. Do not use general language such as "All Trains" in unpaid areas at multi-modal stations. Identify operator and mode if there is any possibility of confusion.



Figure 1.6.7.1: BART station agent's booth identified by the BART logo

1.6.8 Language

- A. The primary way that BART takes into account non-English speakers is by the consistent use of pictorial symbols or pictograms to represent functions or services. Space on wayfinding signs is extremely limited, and text messages are provided only in English. Most messages consist of a pictogram plus text; the exceptions are mostly place names or locations (for example: city names, station names, street names, landmark names).
- B. BART wayfinding should also take into account non-English speakers through use of multi-lingual means of communication such as multi-lingual videos, brochures, and signs, and graphic communications. Although the entire BART system needs to take into account non-English speakers, additional accommodations may be appropriate at stations with connections to airports and at stations serving concentrations of non-English speaking residents or visitors.

2. SIGNAGE TYPES

2.1 STATION IDENTIFICATION

2.1.1 Exterior Station Identification Signage

This includes identification of the particular station at the station site and station entrances, including use of BART logo.



Figure 2.1.1.1: Examples: Large scale station identification integrated into station architecture



Figure 2.1.1.2: Examples: Station identification signs at station entrances



Figure 2.1.1.3: Station identification pylon at underground station entrance

2.1.2 Platform Level Station Identification Signage

This includes identification of the station at the platform for patrons who are either identifying the station as their destination or tracking their progress when passing through the station onboard a train.



Figure 2.1.2.1: Station identification at platform level



Figure 2.1.2.2: Wall-mounted station identification sign in trackway

2.2 TRANSIT WAYFINDING

2.2.1 Directional Signs

A. External

- Signage directing patrons to station from bike and pedestrian paths, streets, and freeways



Figure 2.2.1.1: External wayfinding sign, to station

- Signage directing patrons outward when exiting station site



Figure 2.2.1.2: External wayfinding sign, outbound from station

B. Station Site

- Signs directing patrons within station site to station entrance, parking or other facilities



Figure 2.2.1.3: External wayfinding sign, station site

C. Interior

- Signs directing patrons to platform from the fare gates and from platform to platform when transferring



Figure 2.2.1.4: Wayfinding sign directing to specific platform

- Signs directing patrons to particular exits within stations
- Signs directing patrons to bus stops and other transit system-to-system transfer points (Transit Connections)



Figure 2.2.1.5: Interior wayfinding sign directing to specific exit and to transit connections

- Signs directing patrons to specific vertical access points within stations (elevators, escalators and stairs)



Figure 2.2.1.6: Interior wayfinding sign directing to vertical access (elevator)

- Signs directing to other station features or amenities (rare)

2.2.2 Transit Facility Identification Signs

A. Station Site

- Station identification at site perimeter (see Section 2.1.1)
- Entrance identification (see Section 2.1.2)
- Taxi area
- Bicycle route and bike parking



Figure 2.2.2.1: Bicycle wayfinding on station site

- Automobile and motorcycle parking; disabled parking; BART program parking such as mid-day parking, paid parking, long-term parking



Figure 2.2.2.2: Permit parking sign



Figure 2.2.2.3: Color-coding of garage levels

- Parking structure – identification and color-coding of floor levels: Floor levels shall be numbered and color-coded to aid drivers and pedestrians. All interior columns, and interior face of all exterior columns shall be color-coded as approved by the District. Painted interior columns shall also be marked to indicate the floor level as approved by the District. Obtain District approval for the breakpoint for color-coding between levels. Corresponding color-coding shall also be used on floor descriptions in elevator cars.
- Drop-off and pick-up area (kiss and ride)
- Bus/other transit stops



Figure 2.2.2.4: Identification of drop-off/pick-up area and shuttle stops

B. Interior

- Bicycle access and parking within station
- Ticket machines
- Phones
- Elevators, escalators, and stairs
- Toilet rooms
- Staff only areas



Figure 2.2.2.5: Bicycle facilities signage inside stations



Figure 2.2.2.6: Signage on platform directing to stairs and escalator



Figure 2.2.2.7: Signage identifying restrooms

2.2.3 Transit Information Displays (TIDs)

These include information about how to use BART, fares, schedules, policies, maps, and connecting transit information. The signs may be categorized based on the common display formats.

A. Wall-mounted display cabinets

- BART train schedules
- BART system map
- Other maps, including station map showing “you are here” and local area maps
- Maps and schedules for other transit operators
- MTC Transit Hub standard transit information, including:
 - Station map
 - Transit Stops map
 - Transit Routes map
 - Schedule and Fare Information (all operators)
 - BART rules & regulations
 - Exit Directories

Guidelines for TID Usage:

Free areas should include the following:

- BART System Map
- BART Schedule
- MTC Transit Hub TIDs (Station Map, Stops Map, Routes Map, Schedules & Fares)
- These should be placed near the main paths of circulation, in multiple locations if necessary.
- Real-Time Displays should be co-located with the TIDs, if possible, so that patrons can

find all relevant information at one location.

- Stations with multiple exits should include Exit Directories near each exit.

Concourse paid areas should include:

- BART System Map
- BART Schedule

Platforms should include:

- BART System Map
- BART Schedule

Ideally, there would be a prominent place for BART Rules & Regulations just inside each entrance to the station, to aid enforcement, but this would require a concerted effort to implement — it is unlikely that suitable cases are available in most stations. Alternately, a standardized central location could be designated, possibly adjacent to a station agent booth.

Maps and schedules for other operators would be subject to space available, and to local requirements — the MTC Hub information is intended to replace these, for the most part, but in some locations there is a legitimate need for more detailed information about local services.

The existing BART Local Area Maps are generally out of date, and are considered redundant to the new MTC Stops Maps, which enjoy the advantage of a system in place to ensure regular updating.



Figure 2.2.3.1: Transit Information Display case with BART schedule



Figure 2.2.3.2: MTC Transit Hub Information

B. Three-sided information kiosks

- Typically display similar information to the wall-mounted cabinets
- May display other types of information such as advisory notices or multi-lingual placards
- Often include literature racks



Figure 2.2.3.3: BART 3-sided information display case

C. Station agent booth standard notices

- “Station agent has no money”
- Fare chart
- Legal notices (see Regulatory Signs)
- Ideally, the number of notices allowed on the booths should be strictly limited, and the content and format should be standardized, both for a businesslike appearance and for a consistent presentation of information, in order to avoid patron confusion.



Figure 2.2.3.4: Typical signage on station agent's booth

D. Machine Signage

Signs include instructions and identification on fare gates, ticket vending machines, change machines, parking validation machines, Addfare machines, and station agent assistance phones. Signage should be developed along with design of machines themselves. Signage on machines shall, in general, be tactile signage with raised characters contrasting with their background color and Braille characters in conformance with Standards for Accessible Design (SAD). Signage on machines should incorporate pictograms or illustrations where possible. When additional permanent or temporary signage becomes necessary, i.e. further instructions are needed, design this signage to match other signage on machine and apply it consistently throughout the system. Changing such signage should be done methodically, involving trials at a few stations followed by implementation across the entire BART System.

- Design of ticket vending machines and their areas should take into account that the signage will need refinement after machines are put into use. Signage at ticket vending machines should be both durable and changeable.
- Design of machine signage should take into account the fact that some stations may require additional signage, i.e. stations with many first-time users. This additional signage should also be implemented in the context of standard signage at the machines.

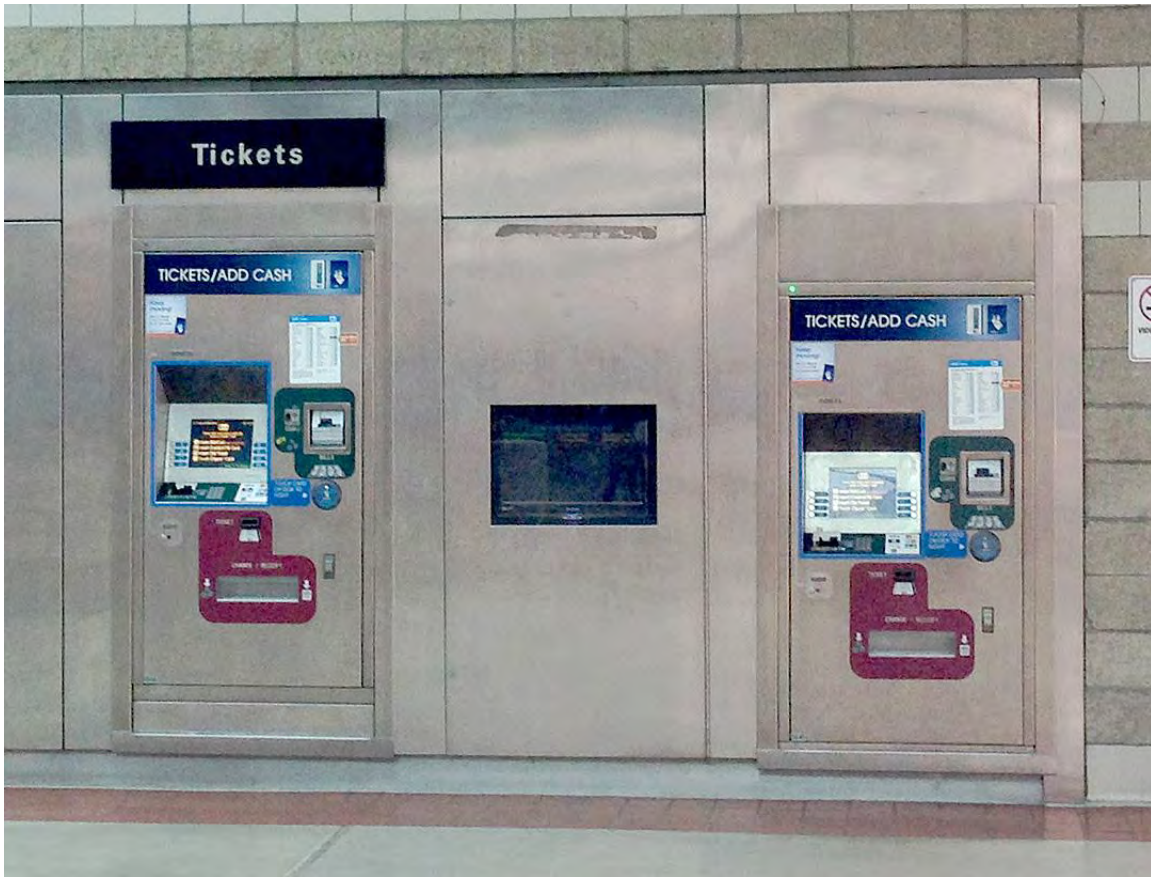


Figure 2.2.3.5: Typical ticket machine signage

E. Electronic variable message signs

Includes real-time schedule/destination displays on the concourse and platform levels. Such variable message signs are standard on BART platforms. On the concourse level variable message signs or similar displays should be in locations visible from ticket vending machines and fare gates (for maximum effectiveness of real-time train arrival information). On the concourse level and to a lesser extent on the platform, these devices may integrate transit information such as train arrival time/train length/train destination with public announcements, advertisements, news, and entertainment. At the concourse level, adding information regarding relative locations of various trains in the vicinity of the station should be considered. One benefit of “real-time” messages located to provide patrons with information prior to entering the paid area would be to reduce stress for those purchasing a ticket who are not familiar with the train schedule. Train arrival time information at the concourse level would also allow patrons to spend more time patronizing concessions.



Figure 2.2.3.6: Platform variable message LED sign



Figure 2.2.3.7: Real-time Transit Information Display

2.3 REGULATORY SIGNS

2.3.1 Regulatory signs guide patrons in safe use of the system, and define prohibited behaviors. Regulatory signs instruct the general public, patrons and District employees. Regulatory signs may announce regulations and subsequent penalties. Regulatory signs are often dictated by specific regulations and District requirements.

- A. These signs convey BART rules and regulations to the public.
- No smoking / No vaping
 - No eating or drinking
 - No littering
 - No entry
 - No graffiti
 - No loitering
 - Each person must have a ticket (fare evasion)
 - BART policy signs
- B. Additional examples of site-located regulatory signs
- Wrong Way
 - No Parking
 - Bus and Taxi stopping zones
 - Escalator Warning
 - Parking regulations
- C. Regulatory signage at parking structures:
- No bicycles or skateboards allowed in parking structure.



Figure 2.3.1.1: Escalator warning graphics

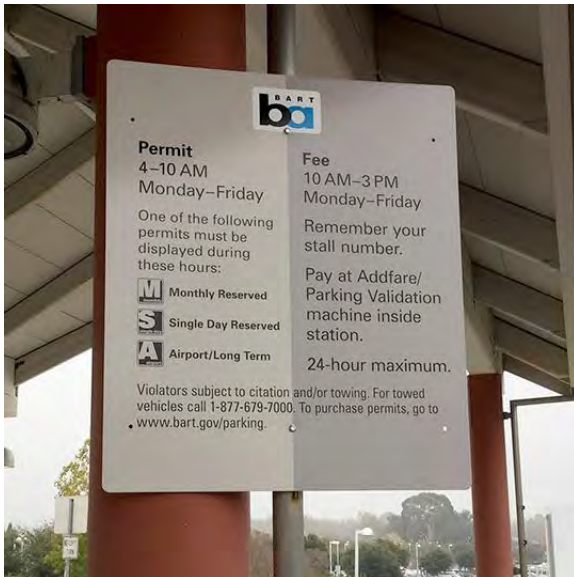


Figure 2.3.1.2: Parking regulatory signs

2.4 SAFETY AND SECURITY SIGNAGE

2.4.1 Signage

- A. Code-mandated signage
- B. Traffic signs, curb delineation, and pavement stripping and marking. See Manual of Uniform Traffic Control Devices
- C. Warning signs include the following:
 - Code-Mandated Emergency Exit



Figure 2.4.1.1: Emergency exit sign

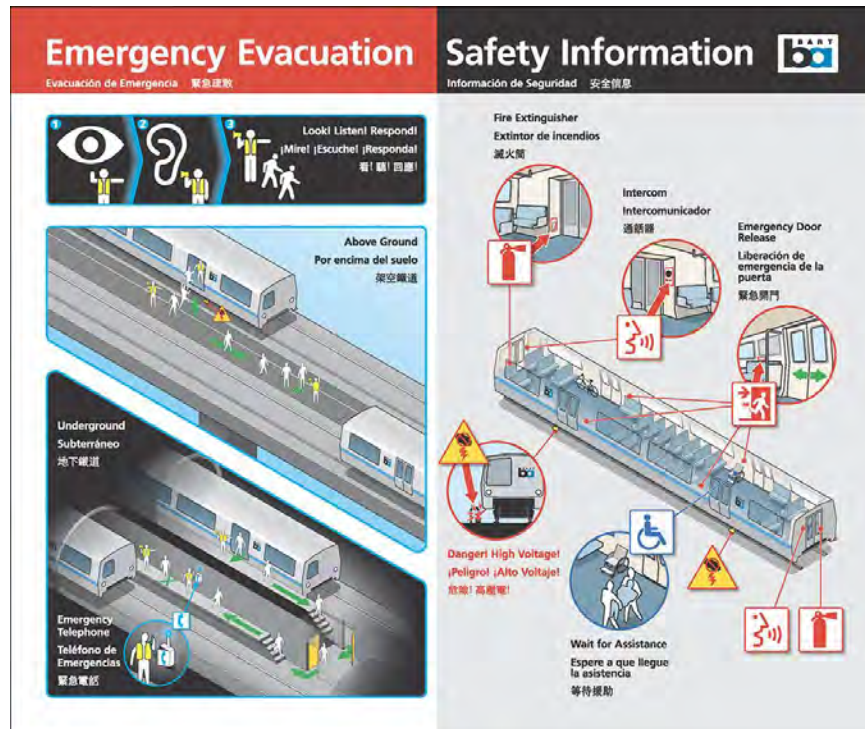


Figure 2.4.1.2: Train car emergency evacuation poster

- No Entry
- Watch the Gap

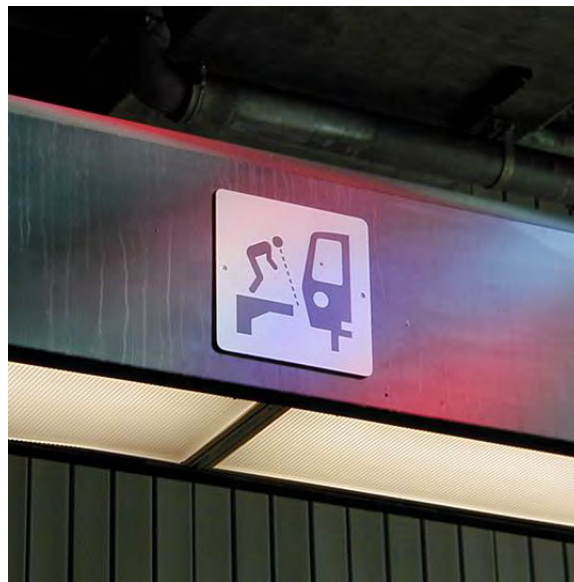


Figure 2.4.1.3: Watch the Gap warning sign at station platform

- Safety Zone
- Electric 3rd Rail
- Do Not Use Elevator in Case of Emergency
- Regarding code-mandated accessible route signs and tactile/Braille signs, see Section 2.5.
- Provide wet standpipe inlet connection signage and graphics, refer locations to Facilities Criteria, Mechanical, Line sections.

D. EXIT Signs

Exit signs shall be in accordance with the California Fire Code, CCR Title 24, Part 9, Section 1011.

- An exit sign with capital typeface “EXIT” not less than 6 inches high is required above each exit.
- The word “EXIT” shall be in high contrast with the background and shall be illuminated at all times. The face of an exit sign illuminated from an external source shall have an intensity of not less than 5 foot-candles.
- The sign illumination circuit shall be connected to an emergency power system to ensure continued illumination for a duration of not less than 90 minutes in case of primary power loss.



Figure 2.4.1.4: Photo, illuminated exit sign

E. Wayside signage (refer to the appendices of this section) includes the following:

- High voltage traction power coverboard warnings
- Right-of-way hazard warnings
- No trespassing signs
- Trainway milepost signs
- Cross-passage door information
- Emergency exit information
- Distance to emergency exits and cross-passages
- Walkway and crosswalk directions
- Maintenance-of-way access identification
- Right-of-way emergency access markers
- Electrical equipment area warning signs

2.5 TACTILE SIGNS

2.5.1 Tactile Signs

- A. Sign panels incorporating both raised character letters and Braille letters will be referred to as “tactile signs”. Raised character letters and Braille letters shall be combined in a single sign. Raised character letters shall contrast with sign background color as required for visual characters unless sign panel also incorporates characters complying with visual character requirements. Tactile signs shall be surrounded by a raised border and have rounded corners. Tactile signs shall comply with ADA and ABA Accessibility Guidelines for Buildings and Facilities, 703 Signs.
- B. Tactile Signs shall be provided at the following locations:
- Station Entrances: provide station identification signs.
 - Station Exits: provide sign identifying exit and prominent destinations in the vicinity of exit, i.e. 12th Street/Broadway.



Figure 2.5.1.1: Tactile signs at station entrance and at vertical access

- Platforms: provide platform identification signs. Place at uniform locations along BART system station platforms.
- Platforms: provide signs identifying vertical egress routes; include destinations in the vicinity of station at egress point.
- Concourse: provide signs identifying vertical access routes to platform.

2.6 ADVERTISING AND CONCESSION SIGNAGE

2.6.1 District Marketing

- A. District marketing messages include the following:
- Tips related to courtesy and security.
 - Marketing to encourage more frequent use of BART.
 - Paid advertising to raise revenues for the District.
 - Signage for concessions that raise revenues for the District.
 - Other important BART messages, such as messages regarding security and special events.
- B. District marketing is primarily displayed in the following formats and areas:
- Wall-mounted display cases in the free area of the station and on the platform.
 - One area adjacent to each array of fare gates where portable display units, dispensers, and/or distribution racks can be located primarily for distribution of BART information.
 - Advertising frames on the walls across the BART tracks from platform. Size to be uniform and as approved by BART.
 - Advertising frames on the walls of the concourse level and free-standing kiosks in the free and paid areas of the concourse and patios. These signs may include back-lit signage (requiring integration with station lighting and electrical design).
 - A Public Address system to broadcast public service announcements.
 - Variable message signs on the concourse and platform levels. Refer to Signage Types, Transit Wayfinding and Identification, herein, for more detailed discussion.
 - Marketing banners. When locating banners, care should be taken to avoid obscuring wayfinding signage or blocking the field of view of security video cameras.
 - Special format signs, i.e. signage adhered to floor.
 - Concession identification signage.



Figure 2.6.1.1: Advertising panels in trackway



Figure 2.6.1.2: Advertising panel on station concourse



Figure 2.6.1.3: Electronic advertising panel in trackway

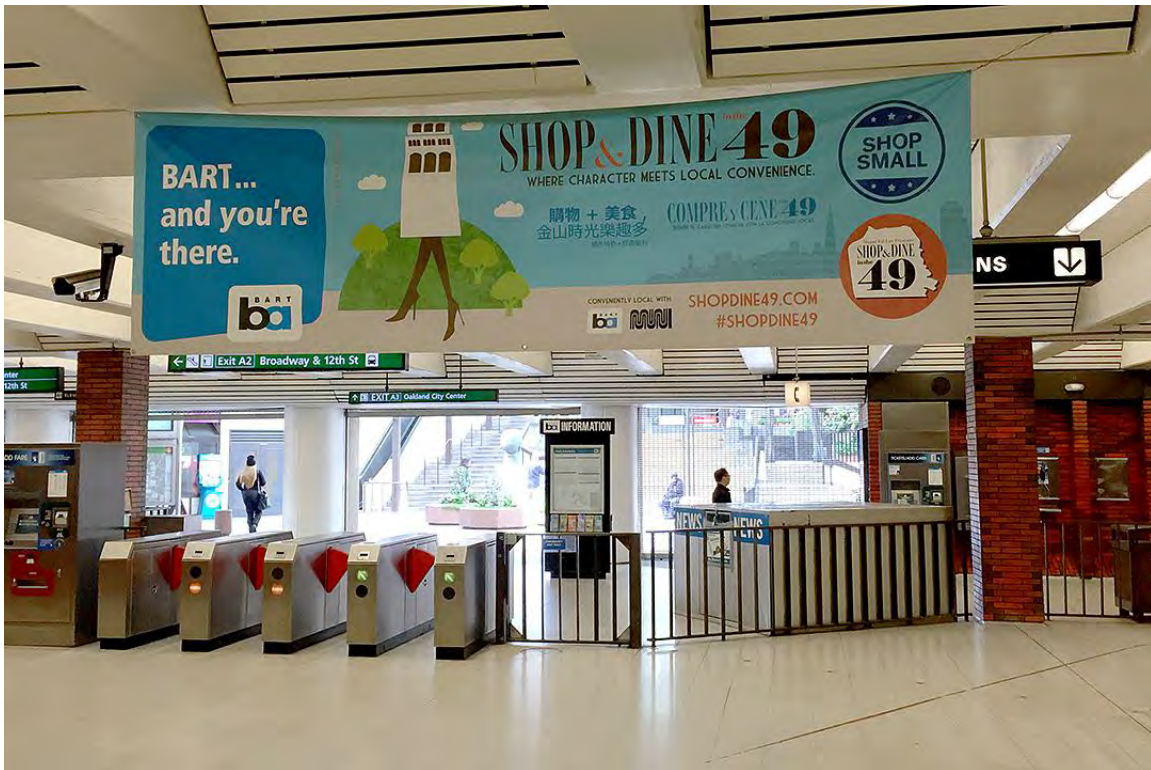


Figure 2.6.1.4: Marketing banner in station paid area

2.7 TEMPORARY SIGNS AND BANNERS

2.7.1 Standards for Temporary Signs and Banners

A. Temporary signs should be standardized and modularized. Temporary signs can be categorized in the following groups:

- Wayfinding; i.e, special event wayfinding, entry directions for fast pass users.
- Regulatory; i.e, instructions for use of special event passes.
- Emergency; i.e, earthquake, crime scene detours, etc.

Temporary signs may also be required to explain new or temporary policies, new machines, construction detours, and new stations.

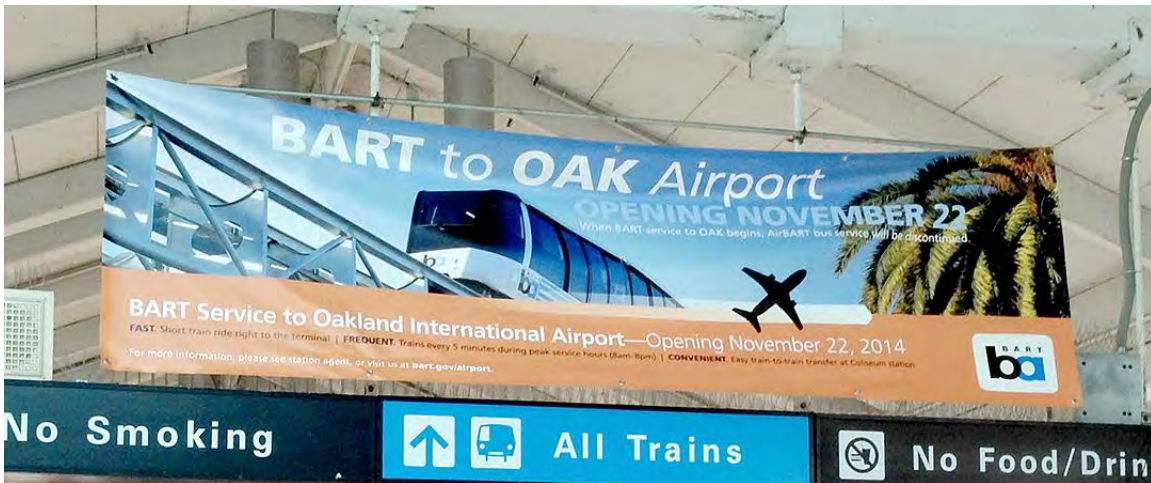


Figure 2.7.1.1: Temporary banner announcing new service

- B. This signage may last for a few hours or few weeks. This signage may also be periodic, like once-a-month Flea Market.
- C. Signage that is needed repeatedly (i.e. reoccurring special events or typical emergencies) should match permanent signs in construction and appearance.
- D. Provide standard locations and devices for mounting temporary signs, i.e. standard portable easels for wayfinding and permanent brackets for wayfinding or instructional signs.
- E. Design of station agent's booths should also take into account evolving and temporary signage needs; thereby avoiding the patchwork look of ad-hoc signs. For example, station agent's booths shall have permanent frames for temporary signs or programmable LED display screens to shown programmed changing messages and capable of being overridden by station agent for special messages.

3. SIGN FORMAT AND DESIGN

3.1 ELEMENTS OF SIGNAGE

Signs are composed of elements including text, symbols, directional arrows, logos, colors, borders, and rules regarding the arrangement of these elements. This section will introduce the standard elements used for BART wayfinding signage. The following section will discuss the rules for using these elements to create signs consistent with BART standards.

3.1.1 Graphic Symbols (Pictograms)

A pictogram is a symbolic presentation of information through pictures. Pictograms are intended to visually resemble the object to which they refer and do not depend on language. Pictograms have the advantage of being concise and rapidly perceived. Pictograms may or may not require text augmenting their message. In BART wayfinding, the standard convention is to use both pictograms and text for most messages.

- A. Standard Pictograms – Also known as “international” or “universal” pictograms, these are available as sets of graphically-coherent symbols from professional design organizations such as SEG D and AIGA. BART has adopted many of these symbols that pertain to transit-related functions.
- B. Custom Pictograms – Over time, BART has found a need for certain symbols that are not available in universal sets, and has created or commissioned new artwork in a complementary style.
- C. Logos – For signage purposes, the BART logo and other operator logos are treated in a similar manner to pictograms.



Figure 3.1.1.1: Typical pictograms, from left: Escalator (standard pictogram, AIGA/DOT); International Symbol of Accessibility; Transit Information (custom pictogram, MTC/BART); AC Transit Logo

Most pictograms are rendered in black against a white square field with radiused corners. Some pictogram art may be in color, as shown in the examples above. The pictograms illustrated in this document are shown against a black background, representing the standard background of the wayfinding signs. In some cases, pictograms may be used against other color backgrounds — see Section 3.2 Sign Layout for examples of use.

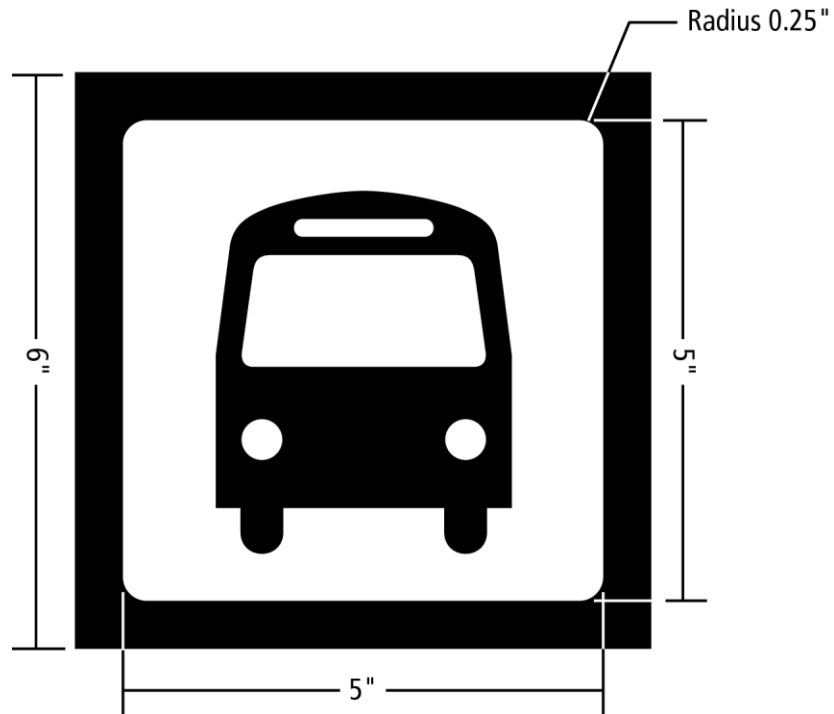


Figure 3.1.1.2: Basic pictogram dimensions for overhead wayfinding signs

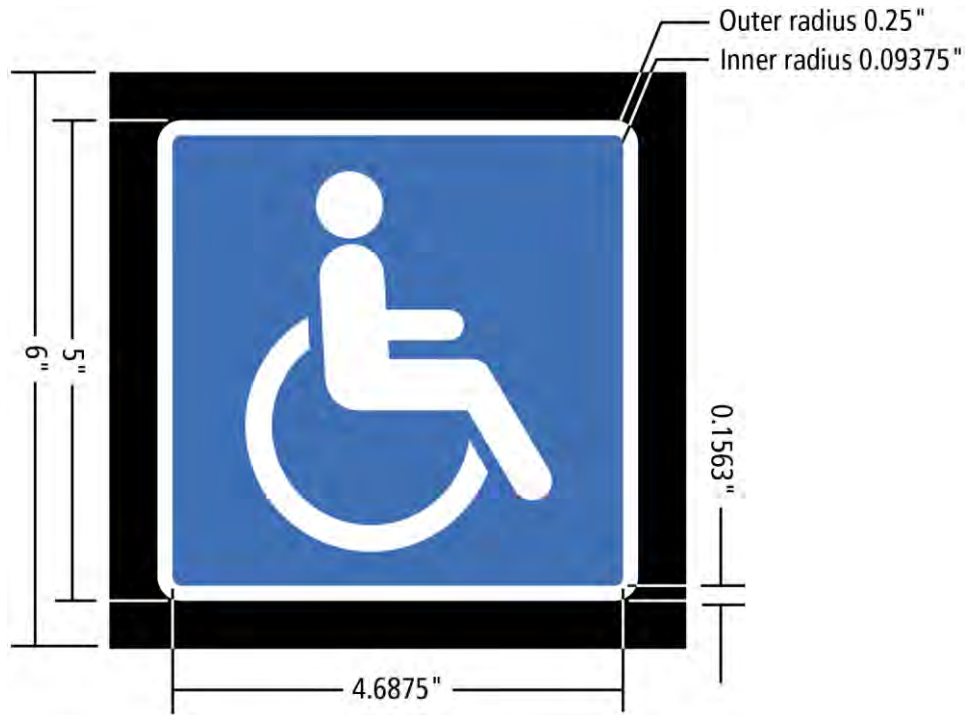


Figure 3.1.1.3: The International Symbol of Accessibility pictogram has a border; dimensions as shown.

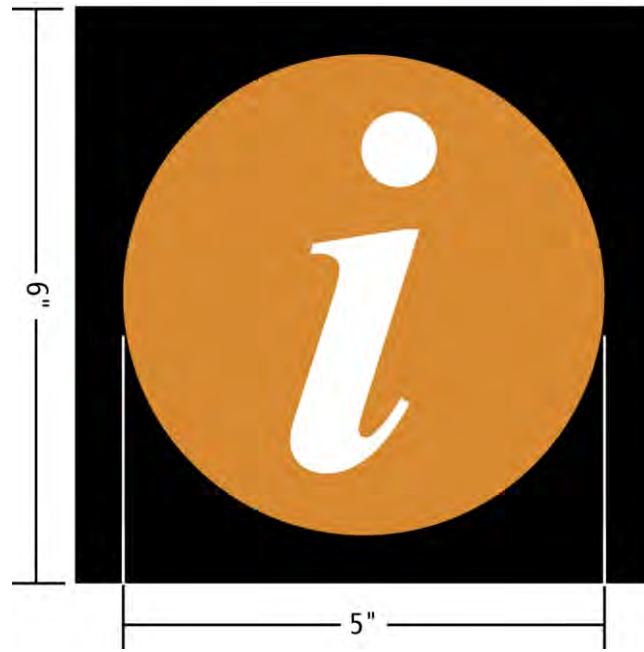


Figure 3.1.1.4: The Transit Information pictogram does not have a white field.

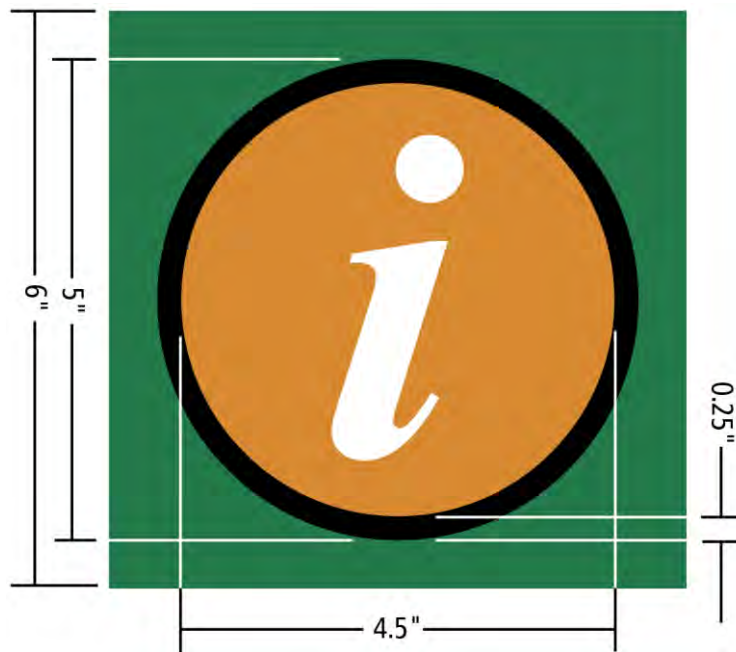


Figure 3.1.1.5: When the Transit Information pictogram is used on a sign with an exit message, the background color is green, and the circle gets a black border for contrast.

See Appendix 7 herein for illustrations of the complete set of BART approved pictograms. Additional pictograms may be used subject to District approval.

3.1.2 Directional Arrows

BART uses a standard set of directional arrows, formatted to conform to the size and layout of the standard signs. Not only the graphic appearance but the use of each type of arrow is dictated by the signage standards. The following table shows the standard arrow types, labeled with their official names, and describes the appropriate uses. The black square background shown corresponds to the standard sign grid, and is used for aligning the arrow symbols in the sign layout (see Section 3.2).

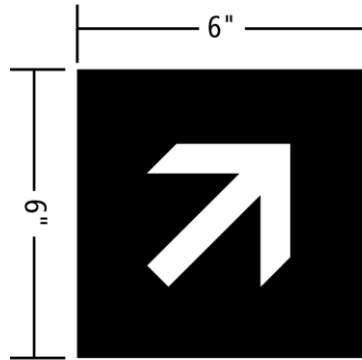
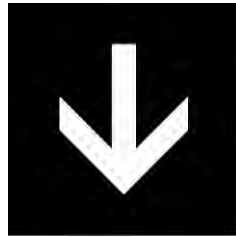


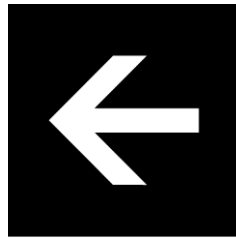
Figure 3.1.2.1: Detail, arrow layout for standard overhead illuminated sign. The art for the arrow is pre-aligned within the grid square, so no alignment dimensions are given.

Arrow, Down



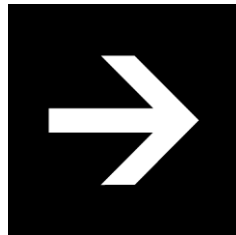
Use at head of stairs or escalator to indicate destination on lower level; proceed downward.

Arrow, Left



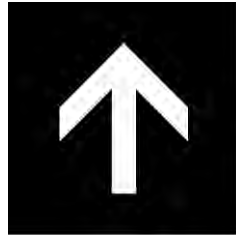
Destination to the left; turn left at this point; or turn left immediately

Arrow, Right



Destination to the right; turn right at this point; or turn right immediately

Arrow, Up



Use at foot of stairs or escalator to indicate destination on upper level; proceed upward

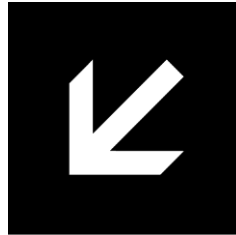
Use to indicate destination ahead; proceed in a forward direction

Make sure that the meaning is clear. Do not use two of these arrows, each with a different meaning, on a single combination sign. Physically separate such messages to avoid ambiguity.

The following arrows (Arrow Down Left, Arrow Down Right, Arrow Up Left, and Arrow Up Right) shall be used only as necessary due to available sign locations making the use of down, up, left or right arrows impractical. For example, the following arrows should not be used when an escalator or stairway is of a sufficient distance from the sign that a horizontal arrow would be appropriate, followed by a down arrow at the head of the escalator or stairway.

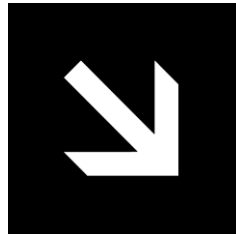
Figure 3.1.2.2: Basic arrows

Arrow, Down Left



Escalator or stairway leading downward, located to the left of the reader.

Arrow, Down Right



Escalator or stairway leading downward, located to the right of the reader.

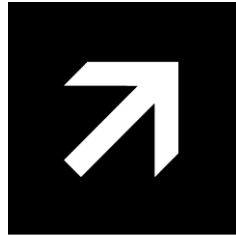
Arrow, Up Left



Escalator or stairway leading upward, located to the left of the reader.

Subject to approval of District on a case-by-case basis, this arrow may also be used to indicate a destination ahead and to the left; proceed forward, bearing left.

Arrow, Up Right



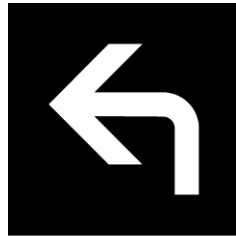
Escalator or stairway leading upward, located to the right of the reader.

Subject to approval of District on a case-by-case basis, this arrow may also be used to indicate a destination ahead and to the right; proceed forward, bearing right.

The following arrows shall be used only when necessary due to physical obstructions and limitations to sign placement.

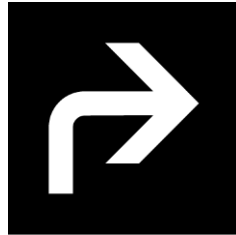
Figure 3.1.2.3: Angled arrows

Arrow, Forward Left 90°



Proceed forward (around this obstacle), then left.

Arrow, Forward Right 90°



Proceed forward (around this obstacle), then right.

Arrow, Left Forward 90°



Proceed left (around this obstacle), then forward.

Arrow, Right Forward 90°



Proceed right (around this obstacle), then forward.

Figure 3.1.2.4: “Bent” arrows

3.1.3 Typeface

Wayfinding signs shall use Frutiger 65 Bold. Exception: informational posters, maps and diagrams may use other fonts in the Frutiger family for emphasis and clarity.

**ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&**

Figure 3.1.3.1: Frutiger 65 Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&

Figure 3.1.3.2: Frutiger 55 Roman

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&

Figure 3.1.3.3: Frutiger 57 Condensed

**ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890.,/-!?!&**

Figure 3.1.3.4: Frutiger 67 Bold Condensed

3.1.4 Message Conventions

A. Nomenclature

The specific words used to identify features, functions, and destinations in signage should be consistent across all signs in a station and across all stations. Many typical message phrases may be found in the list of pictograms in Appendix 7.

Prepositions are omitted at the beginning of a message; example: “Fremont”, not “To Fremont”.

Use the phrase “All Trains” when the platform access leads to the only platform or all platforms at a station.

When a station has separate access to each platform, list the actual destinations and associate them with the platform number.

Avoid use of terms familiar to District employees and consultants but not meaningful to patrons such as “revenue service”.

B. Capitalization

Wayfinding messages are set in upper and lower case type, not in all caps (except for acronyms). Examples: “BART Tickets”, “Bike Parking”, “Pittsburg / Bay Point”. Prepositions, such as the word “to”, are not capitalized. Example: “Elevator to Street”.

C. Abbreviations

Use an ampersand “&” instead of “and” when connecting two words which naturally belong together because of similarity of function or geographical proximity. For example, a street intersection may be described as “8th & Market St”. Use of an ampersand is also permitted when space constraints do not allow use of the word “and”.

Names of station destinations shown on signs may also need to be abbreviated due to space constraints. Where abbreviation is necessary, it is important that the name be abbreviated in the same way each time. The following list shows the standard abbreviation for each station name as used in wayfinding and station identification signage (excluding electronic message signs).

Full Station Name	Signage Abbreviation
12th St. Oakland City Center	12th St Oakland
16th St. Mission (SF)	16th St Mission
19th St. Oakland	19th St Oakland
24th St. Mission (SF)	24th St Mission
Antioch	Antioch
Ashby (Berkeley)	Ashby
Balboa Park (SF)	Balboa Park
Bay Fair (San Leandro)	Bay Fair
Berryessa	Berryessa
Castro Valley	Castro Valley
Civic Center/UN Plaza (SF)	Civic Center
Coliseum	Coliseum
Colma	Colma
Concord	Concord
Daly City	Daly City
Downtown Berkeley	Downtown Berkeley
Dublin/Pleasanton	Dublin/Pleasanton
El Cerrito del Norte	El Cerrito del Norte
El Cerrito Plaza	El Cerrito Plaza
Embarcadero (SF)	Embarcadero
Fremont	Fremont
Fruitvale (Oakland)	Fruitvale
Glen Park (SF)	Glen Park
Hayward	Hayward

Full Station Name	Signage Abbreviation
Lafayette	Lafayette
Lake Merritt (Oakland)	Lake Merritt
MacArthur (Oakland)	MacArthur
Millbrae	Millbrae
Milpitas	Milpitas
Montgomery St. (SF)	Montgomery
North Berkeley	North Berkeley
North Concord/Martinez	N Concord/Martinez
Oakland Int'l Airport	OAK
Orinda	Orinda
Pittsburg/Bay Point	Pittsburg/Bay Point
Pleasant Hill/Contra Costa Centre	Pleasant Hill
Powell St. (SF)	Powell
Richmond	Richmond
Rockridge (Oakland)	Rockridge
San Bruno	San Bruno
San Francisco Int'l Airport	SFO
San Leandro	San Leandro
South Hayward	South Hayward
South San Francisco	South San Francisco
Union City	Union City
Walnut Creek	Walnut Creek
Warm Springs/South Fremont	Warm Springs
West Dublin/Pleasanton	W Dublin/Pleasanton
West Oakland	West Oakland

Other than station names, limit use of abbreviations to the most common and widely understood terms, such as the following:

St	Street
Ave	Avenue
Bl	Boulevard
Rd	Road
Dr	Drive
N	North
S	South
E	East
W	West
Sq	Square

D. Punctuation

Minimize use of punctuation while maintaining clarity of meaning and consistency with good grammatical form.

Use a comma between items in a series and two separate two pieces of information, i.e. “City Center, City Hall”.

On wayfinding signs, for efficient use of space and typographic clarity, do not use a period after an abbreviation. Within informational text, use standard English punctuation. In posted schedule information, do not use a period in the abbreviated versions of morning and evening, i.e. “am” and “pm”.

Joint station names are shown with a “/”; for example: Pittsburg / Bay Point. To avoid confusion, do not use the “/” character for any other purpose in station wayfinding signage. For example, do not use “Spear St/Market St” to refer to a station exit — use either “Spear St, Market St” or “Spear & Market St”, whichever is more appropriate.

Multiple line destinations, when combined on a single platform identification sign, were previously shown without punctuation, merely a small additional space; for example:



Figure 3.1.4.1: Platform destination sign, previous practice (discontinued)

Changes in service have resulted in situations where long lists of destinations are required on signs. For readability, these are separated with commas; for example:



Figure 3.1.4.2: Platform destination signs, current practice

3.1.5 Colors

Standard wayfinding signage features a black background with white letters and arrows, consistent with the existing signage color conventions. There are three specific exceptions to this standard:

- Messages pertaining to station exits use a green background. In these cases, the background of the full length of the sign on that message line is green — do not combine exit messages with other messages on the same line of a sign. See Section 3.2 Sign Layout for examples of use.
- Illuminated station identification signs on the platform level use a white background with black text and arrows (the reverse of the standard scheme). Pictogram colors are also reversed (white on a black field).
- Emergency exit signs use a red background. See Figure 5.5.0.1 for an illustrated example.

Other color schemes are subject to special review by the District and may be approved on a case-by-case basis.

NOTE: Color samples depicted in this document are for general identification purposes only. Do not use these color swatches for color matching. Use only manufacturer’s official color swatches. Consult fabrication specifications for specific sign types for appropriate materials and finishes.

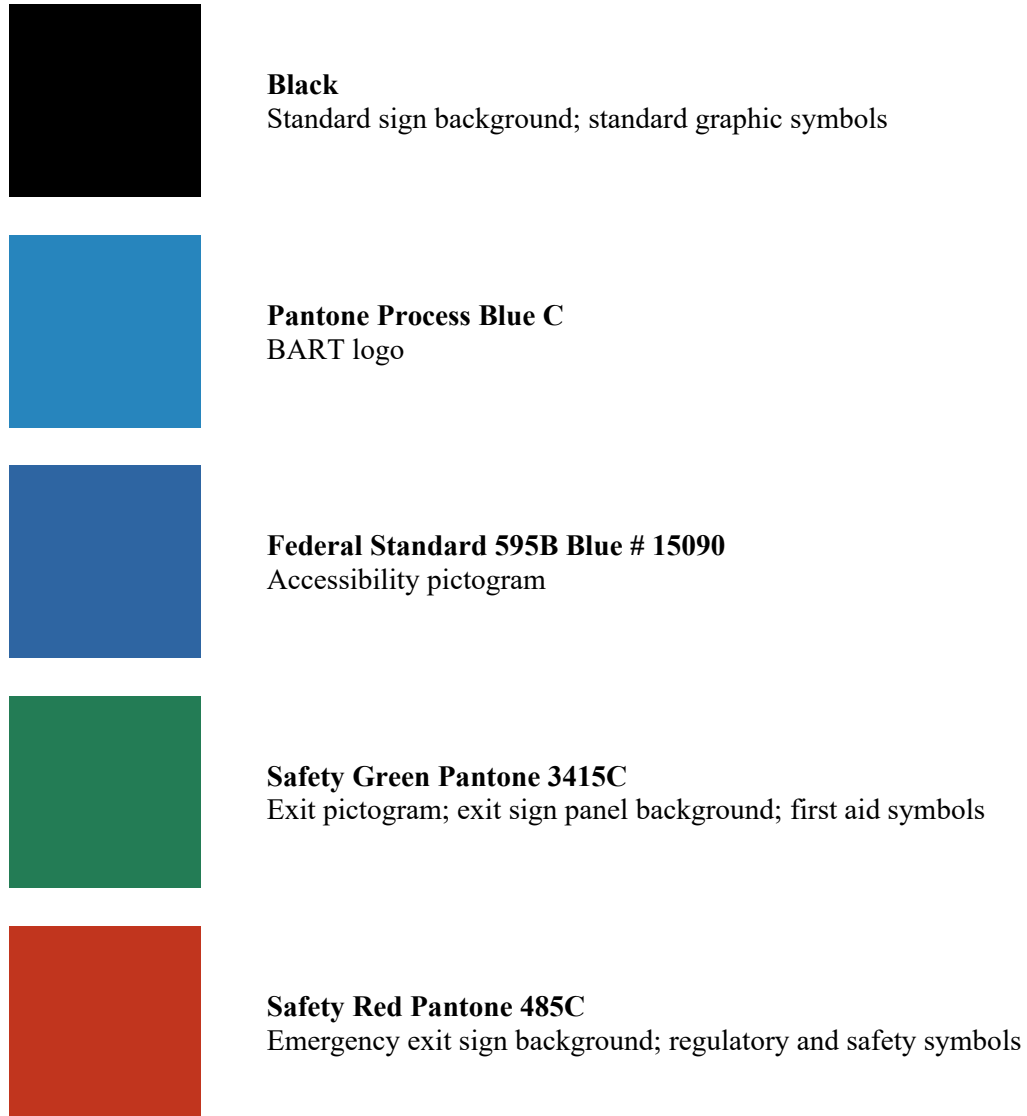


Figure 3.1.5.1: Standard signage colors (overhead signs)

3.2 SIGN LAYOUT

Wayfinding signage should be consistent in its format and design through the public’s experience whether in finding BART, negotiating their way within stations and station sites, riding trains, or finding destinations in the vicinity of BART stations. Ideally, this consistency should extend to other transit systems.

3.2.1 Grid

- A. The BART interior signage system as described herein is based on a square grid module, with a standard size of six by six inches. The purpose of the six-inch grid is to impose uniformity upon the layout of the sign message area.

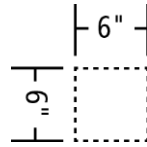


Figure 3.2.1.1: Basic grid module dimensions

- B. This means that sign dimensions will nominally consist of multiples of this module; for example, 48 by 6 inches, or 12 by 18 inches. This is strictly true in the case of simple panel signs (non-self-illuminated).

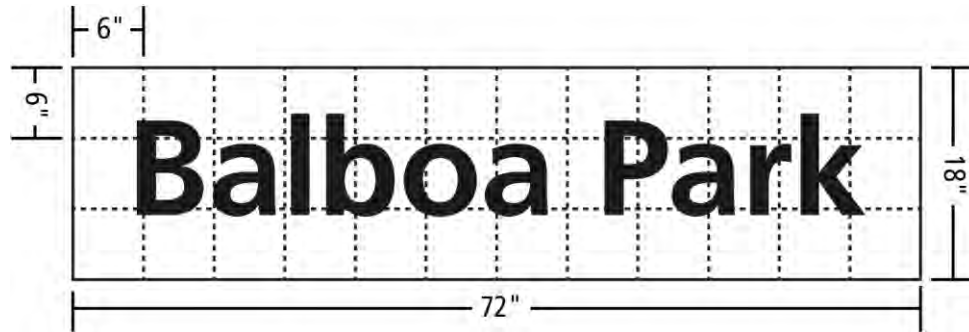


Figure 3.2.1.2: Grid applied to typical panel sign (trackway station identification sign, described in Section 3.5.2.)

- C. For certain practical reasons, the grid is applied in a different manner to the self-illuminated overhead wayfinding signs.

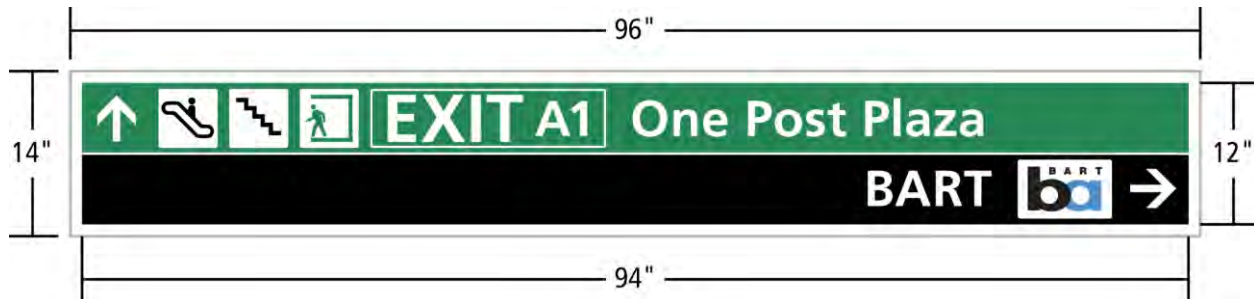


Figure 3.2.1.3: Typical overhead illuminated sign cabinet. The overall dimension of the outer bezel (represented by the gray line) is 96 x 14 inches. The visible message panel dimension is 94 x 12 inches. 6 vertical inches are allocated to each message line.

As can be seen in Figure 3.2.1.3, the overall length of the cabinet outer bezel is constrained to increments of six inches. The 96-inch length shown above is typical. The overall height of the message area is also constrained to increments of six inches. Overhead illuminated signs are generally limited to one or two message lines — a message area of either 6 or 12 vertical inches. With the bezel, the overall cabinet height would be 8 or 14 inches, respectively.

- D. Overall sign length is determined by the length required for the longest message. Typical examples are illustrated in this chapter. For practical reasons, standard illuminated cabinets are available in a limited number of lengths, including 48-inch, 72-inch, 96-inch and 120-inch. Flat panels, as used in the trackway station identification signs (see Figure 3.5.2.1), are also constrained to a small selection of standard sizes.
- E. The vertical dimension of each standard message line is one grid module, or six inches. The grid is used to space and align the arrows and pictograms. The grid can be subdivided into three-inch

squares for the purpose of centering symbols in the six-inch grid, and for alignment of odd-sized elements.

- F. Artwork for pictograms and arrows includes the grid square, so spacing and alignment are automatic.

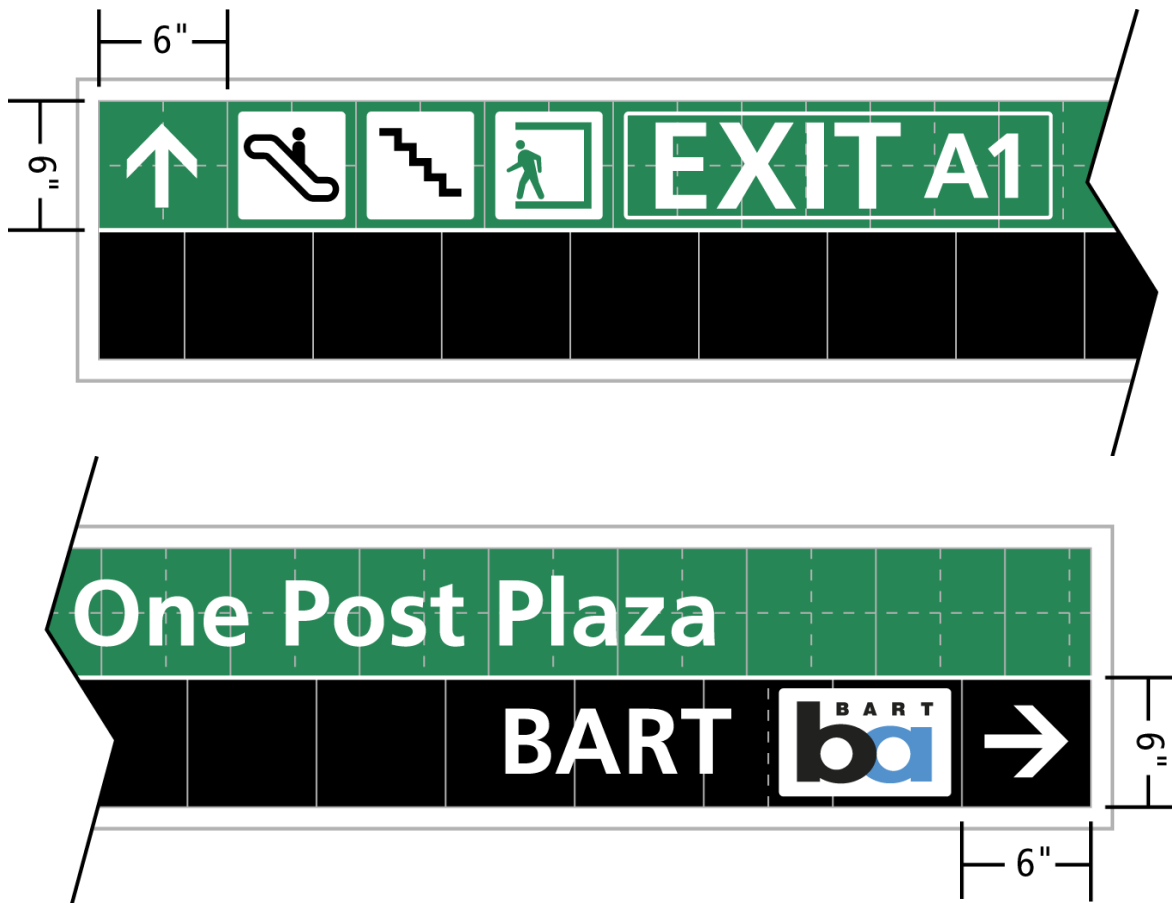


Figure 3.2.1.4: Detail, typical overhead illuminated sign cabinet. In this example, the layout grid is applied to the top message line starting from the left, because this message is aligned to the left. The bottom message is aligned to the right, and so is the grid. Note how the “EXIT” box and the BART logo pictogram are fit into the three-inch sub-grid.

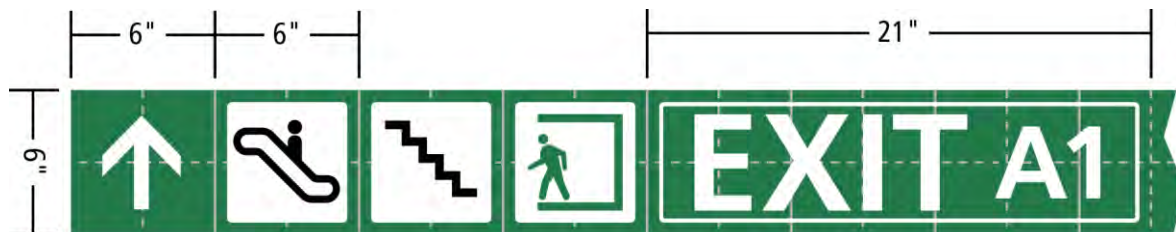


Figure 3.2.1.5: Detail, message line layout. The art for the arrows and pictograms includes the grid squares, so these elements are self-spacing and self-centering. The exit identification boxes are also designed to fit the grid precisely.

- G. Message text does not fall precisely on the grid lines — see Section 3.2.2 Message Alignment. The standard size for message text is defined as three-inch “cap height”, where cap height is the measured height of the capital “H”. Cap height is used to define type size in signage because the

traditional typographic units (“point size”) are font-dependent and are not directly measurable. Three-inch cap height is considered to be the minimum type size for overhead signs.

- H. For increased visibility, some signs are designed with larger type and pictograms. In these cases, the module size is doubled from 6 inches to 12 inches, with all components scaled proportionally. These signs use six-inch cap height for text.

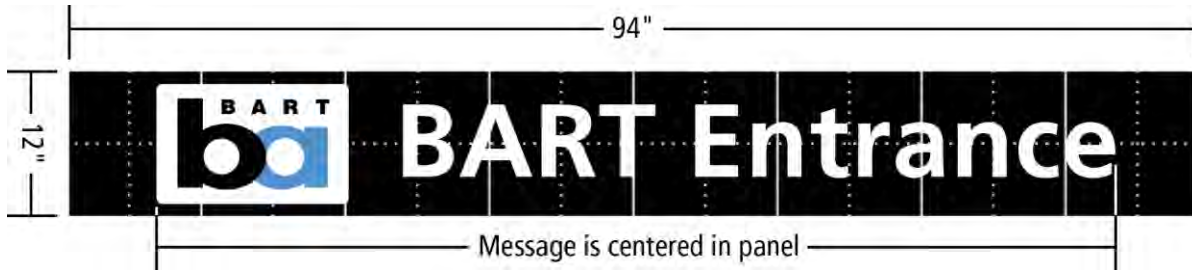


Figure 3.2.1.6: The fare gate identification sign uses six-inch cap height on a twelve-inch grid.

3.2.2 Message Alignment

- A. Right-aligned vs. left-aligned

Any message with a right-facing arrow is right-aligned, with the arrow appearing at the right-hand margin (this includes angled and “bent” arrows described as “right” in Section 3.1.2). On these lines, the grid is calculated starting at the right margin, as well. All other messages are generally left-aligned, with the arrow appearing at the left-hand margin. However, in cases where the final destination is located to the right-hand side of the path of travel, it is preferable to align the Up arrow (straight ahead) message to the right margin, in order to conform to the follow-up message at the upcoming decision point. It is also conceivable that in some cases the physical location of the sign may cause an Up or Down arrow to appear to be pointing directly at an inappropriate object or access (for example, a “wrong way” escalator); in these cases this particular message may be aligned with the arrow at the opposite end of the panel.

See Figure 3.2.1.4 for typical wayfinding message alignment. Identification messages (messages without directional arrows) may be centered on the sign panel (see Figure 3.2.1.6). Other common situations are illustrated below.



Figure 3.2.2.1: At this particular location, the user will eventually need to bear to the right to reach this destination. In order to indicate this, and to be consistent with the follow-up wayfinding signs, the message is aligned to the right.



Figure 3.2.2.2: In this example, the destination at top is located straight ahead along a corridor. The second destination is a vertical access point (escalator) immediately to the left of the viewer — the “up left” arrow is used to indicate this (see Figure 3.1.2.3).



Figure 3.2.2.3: This sign would be used at the top of an escalator leading down to the platform. Message is left-aligned by default. The BART Train symbol follows the vertical access symbol.

B. Sequence of message elements

In the case of a left-aligned message, the sequence of elements from left to right will be Arrow, Symbol, Text. A right-aligned message would use the same sequence starting from the right.

Many messages use multiple symbols. While it is impractical to describe every possible combination of symbols, there are a few simple rules to help ensure that the messages are presented in a consistent manner. All rules are given for the case of a left-aligned message, reading left to right.

- The Arrow pictogram is always first (if present).
- Vertical access pictograms follow the arrow. These are: Elevator, Escalator, Stairs. Where more than one is used in the same message, the sequence is alphabetical (as given above). See Figure 3.2.1.6.
- The International Symbol of Accessibility is always used in messages that contain the Elevator pictogram, as this denotes the accessible path. It is placed at the end of the sequence of symbols, adjacent to the text message, for prominence (Figure 3.2.2.4). The exception is on exit signs, where it is placed after the Exit symbol but before the “Exit box” for appearance reasons, in order to keep all the square symbols together (Figure 3.2.2.5)



Figure 3.2.2.4: The Accessibility symbol is placed adjacent to the text message.



Figure 3.2.2.5: The Accessibility symbol is placed before the “Exit box”.

- An exception to the alphabetical sequence is made when the sign is placed directly at the top or bottom of a vertical access that includes both a stairs and an escalator — to avoid cognitive dissonance, the order of the symbols should be consistent with the physical arrangement of the access. That is, the Stairs symbol would be on the left if the actual stairway were to the left, and the Escalator symbol would be aligned with the actual escalator.
- If present, the Exit pictogram follows the vertical access pictogram(s). The Exit “box” (the rectangle containing the word “Exit” or “EXIT”, with or without the alphanumeric designation) follows the Exit pictogram.
- The text message follows the pictogram(s). In rare cases where sign space is extremely constrained, additional symbols may appear after the text message (see Figure 3.2.2.2 for a typical example).
- Another message that may require multiple symbols is Transit Connections. This message would be accompanied by individual symbols for each transit mode, in

alphabetical order (for example: Bus, Rail, Taxi). In situations where the additional information is of value to patrons, the transit operator logos may be associated with the transit mode symbols. The sequence would be: Mode Symbol (example: Bus), Bus Operator 1, Bus Operator 2, Mode Symbol (example: Light Rail), Rail Operator 1, and so on (Figure 3.2.2.6).



Figure 3.2.2.6: Example showing multiple operators and transit modes.

3.2.3 Symbol Alignment

A. Pictogram “Facing”

Some pictograms have a “facing” attribute — the illustration itself implies a particular direction. Examples of this include the pictograms for Exit, Stairs, and Escalator. In order to avoid creating a cognitive conflict between the arrow direction and the pictogram “implied direction”, the convention is to use either a left-facing or right-facing version of the pictogram, whichever agrees with the arrow alignment associated with that message. Examples are shown above. In Figure 3.2.2.1, the message is right-aligned, and the implied direction of the Stairs and Escalator pictograms is Up and to the Right. If this stairway led to a lower level, the symbols would be flipped, to imply the direction Down and to the Right. In Figure 3.2.2.2, the implied direction of the little walking figure in the Exit pictogram is to the Left, in agreement with the alignment of the messages.

B. List of Facing Pictograms (see Appendix 7 for illustrations)

- ADA Accessibility (ISA)
- Exit
- Emergency Exit
- Escalator
- Stairs

3.2.4 Text Alignment

A. Vertical Alignment

On overhead wayfinding signs, the “cap height” of the message text is three inches. This dimension is vertically centered on the six-inch grid (see Figure 3.2.4.1). Always measure and align the cap height using a capital letter with a flat bottom and a flat top, such as F, H, L or T. Aligning the curved portion of a letter such as C, G, O or U will result in inconsistent alignment. Never use lower case letters for vertical alignment.

B. Horizontal Alignment

Text on wayfinding signs is aligned according to the arrow direction, as explained in Section 3.2.2. However, the text characters are not strictly aligned to the grid, as are the arrows and pictograms. For readability and appearance, extra space is allocated between a pictogram and the adjacent text. Measured from the pictogram’s grid square, the extra space is 1.75 inches. However, as the grid is not visible on the actual sign art, it is more convenient to measure from the white pictogram field, in which case the space would measure 2.25 inches.

On signs with centered messages, the entire message (all pictograms plus the text, including the extra space described above) should be centered as a single unit on the sign panel (see Figure 3.2.1.6).

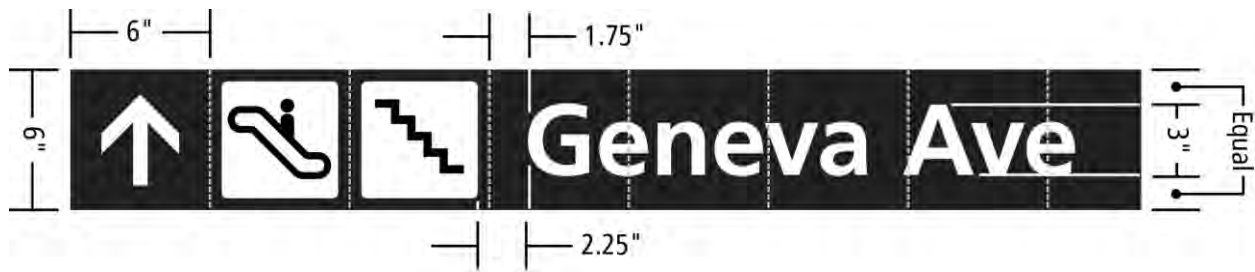


Figure 3.2.4.1: Vertical and horizontal text alignment.

3.2.5 Message Hierarchy

The order of the messages on a multi-message sign may be determined by applying two principles, and two specific rules.

A. Principles

1. Arrow Direction

Where multiple messages are shown in a horizontal arrangement, the messages should be organized in order of arrow directions, from left to right, as follows:

Left Arrow

Arrow, Up Left

Up Arrow

Arrow, Up Right

Right Arrow

This arrangement conforms to common sense, in that destinations located to the left of the reader are placed near the left end of the sign, and so forth. Note that this arrangement is atypical — it usually occurs only where multiple overhead sign units are installed side-by-side spanning a wide area.

Where messages are stacked in a vertical arrangement, the sequence from top to bottom should be:

Up Arrow

Arrow, Up Left

Left Arrow

Arrow, Up Right

Right Arrow

On overhead signs, the number of message lines is generally either one or two. Other sign types may have as many as seven.

The Down Arrow should not be combined with any other arrow direction on the same sign panel, as this may lead to confusion. In general, the principle would be that vertical access directions should not be combined with same-level directions on the same sign unit. See Figure 3.2.2.3 for an exception to this guideline.

Many signs will feature multiple destinations in the same direction. The applicable principle in this case is:

2. Proximity

Where multiple destinations are shown in the same direction, the nearest destination should be listed first, then the next nearest, and so forth.

B. Special Rules

However, there are two specific rules that override these principles. The first applies to station interior overhead signs:

1. Exit messages (messages with a green background) always appear above other messages (messages with a black background). This rule overrides both arrow direction and proximity. In the case where all messages on the sign are exit messages, the normal principles apply.



Figure 3.2.5.1: Two messages in the same direction. The Exit message (green background) always appears on top. The messages are separated by a white horizontal rule.

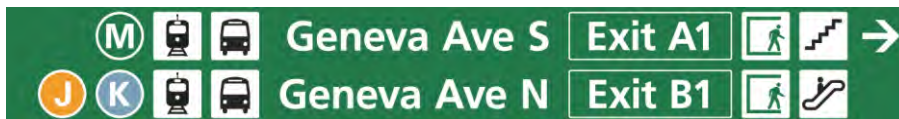


Figure 3.2.5.2: Two messages in the same direction. Both are Exit messages (green background), so they appear in order of proximity. Only one arrow is shown, and there is no horizontal dividing rule (see Section 3.2.5).

The other special rule applies to exterior signs; the most common example is the two-sided map kiosk with wayfinding messages.

2. On exterior wayfinding signs, transit-related messages appear above other messages, when both are in the same direction. This rule overrides the principle of proximity, but not the principle of arrow direction (otherwise the layout of the messages would become chaotic). For example, “BART Civic Center Station” would appear above “City Hall”, regardless of relative proximity.

In general, transit-related wayfinding messages take priority over other messages; see Figure 3.2.6.2 for example. The message directing to transit service (the BART entrance) is placed above the message directing to Transit Information. A message directing to a station amenity would be lower priority than either of these.

3.2.6 White Rules

On overhead wayfinding signs, white horizontal rules are used to separate messages, according to the following principles:

1. If the messages use different arrow directions, always separate them with a white rule.
2. If the messages use different background colors, always separate them with a white rule.
3. If both arrows are in the same direction, and both messages have the same color background, use one arrow for both messages, and no separating rule.



Figure 3.2.6.1: Two messages in different directions on the same background color. The messages are separated by a white horizontal rule.



Figure 3.2.6.2: Two messages in the same direction on the same background color. Only one arrow is shown, and no separating rule.

The width (or line weight) of this rule is 3/16 inch (0.1875).

3.2.7 Other Layouts

In order to avoid sign clutter, and to maximize efficient utilization of available space, it is sometimes expedient to combine two messages at opposite ends on a single line of an overhead sign. This is allowed under certain conditions:

- the direction of the message on the left end must be left or ahead;
- the direction of the message on the right end must be right or ahead;
- there should not be any logical conflict between the message position on the sign and the physical location of the message destination. In other words, the message shown on the right should not require a left-hand turn further along the path to the destination, or at least not as the next directional message. In the example shown in Figure 3.2.7.1, after proceeding 50 feet along this path, the next directional message for “BART” will be a left turn; the next direction for “Ocean Avenue” will be a right turn.



Figure 3.2.7.1: Example: two different messages on the same line.

Figure 3.2.7.2 shows another scenario that meets the criteria above. This layout should only be used when necessitated by space constraints, and if there remains sufficient horizontal space between the messages to ensure clarity.



Figure 3.2.7.2: Example: two different directions on the same line.

3.3 EXIT IDENTIFICATION

3.3.1 Exit Sign Conventions

There are a number of conventions regarding wayfinding to station exits. In stations with more than one exit, it is important that exits be individually identified for orientation purposes. In all stations, it is crucial to provide a clear exit path for users.

- A. The Exit pictogram is displayed in all messages pertaining to exits.



Figure 3.3.1.1: EXIT pictogram (standard facing). In signage, symbol is green on a white field.

- B. The word “EXIT” or “Exit” is displayed inside a white outline rectangular box with radiused corners. See Section 3.3.3 for dimensions.
- C. An alphanumeric designation follows the word “Exit” inside the box, in cases where a specific exit from the station to the exterior is indicated. This is not used on signs that are merely referring to an exit from the platform level, or in stations with only a single exterior exit. See Appendix 8 for guidelines on labeling station exits.



Figure 3.3.1.2: The word EXIT and the alphanumeric designation (if present) are enclosed in a white outline box in order to separate them from the text message.

- D. A descriptive text message provides information about exterior destinations or locations, typically a street name, intersection, or landmark.
- E. The entire message is shown on a green background. This creates a visual “exit path” for patrons, by following the green signs.

3.3.2 Use of “EXIT” versus “Exit”

Signs located at station exits (e.g. the last sign in the exit path) display the word “EXIT” in all capital letters (Figure 3.3.2.1). Signs directing to an exit or exits use upper & lower case for the word “Exit” (Figure 3.3.2.2).



Figure 3.3.2.1: This sign is located at Exit A1 (at the foot of the stairs leading up to the street).



Figure 3.3.2.2: This sign is located at the fare gates in the concourse, and directs to exits located some distance away.

3.3.3 White Outline Box Dimensions

The white outline box around the Exit designation is treated similarly to a pictogram. The width of the white stroke (line weight) is 5/32 inch (0.1563). The outer radius of the corner is 1/4 inch (0.25).

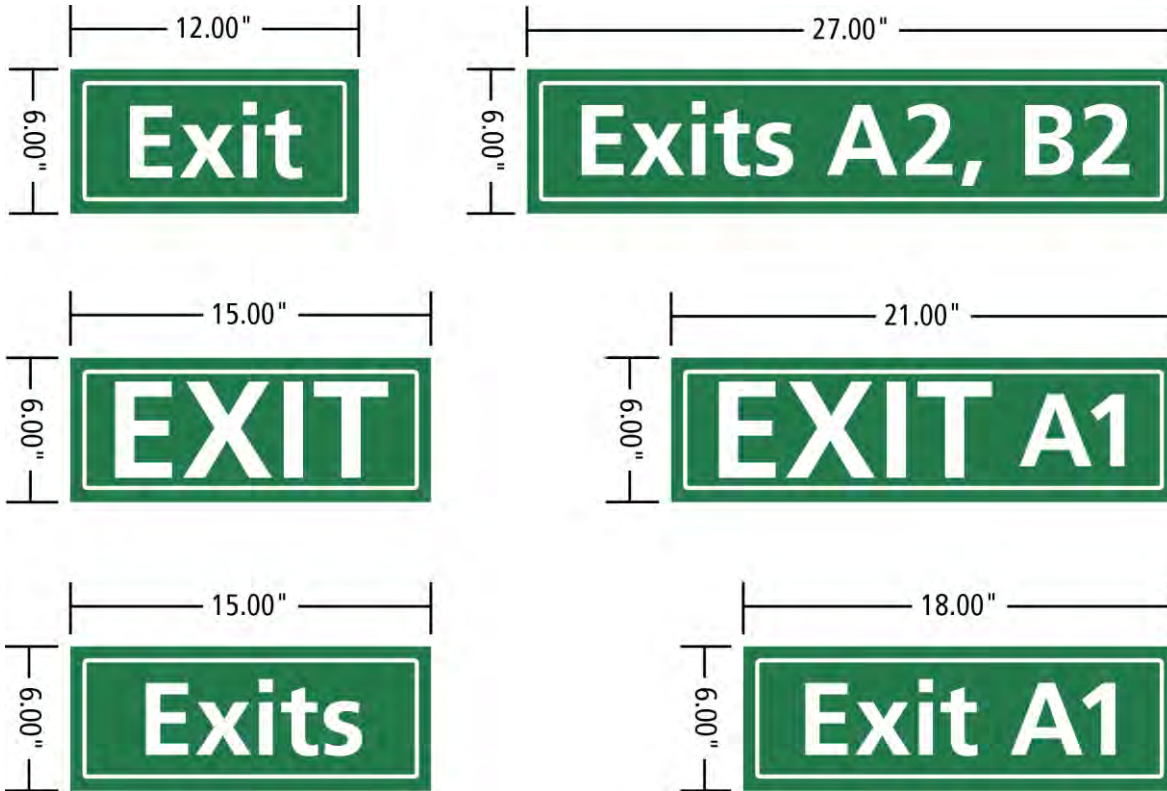


Figure 3.3.3.1: The word EXIT and the alphanumeric designation (if present) are enclosed in a white outline box, which is resized to fit the required text. All sizes are in increments of three inches, in order to fit the sign grid.

3.4 EMERGENCY EXIT IDENTIFICATION

3.4.1 Illuminated emergency exit identification sign

The illuminated emergency exit identification sign is the only illuminated sign with a red background. In order to fit the word “EXIT” in 6-inch caps, this sign features a unique layout, as shown in Figure 3.4.0.1.

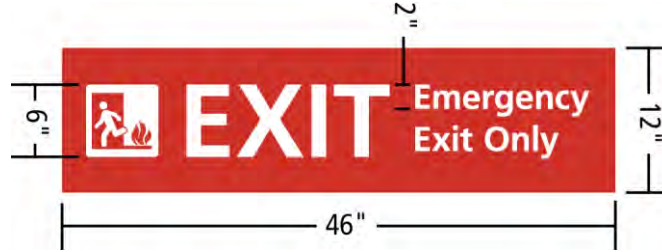


Figure 3.4.1.1: Emergency Exit sign layout

3.5 PLATFORM STATION IDENTIFICATION

3.5.1 Illuminated Station Identification

The overhead station identification signs at the platform level include several features intended to maximize readability:

- The sign is internally illuminated using white LEDs;
- The sign background is white, instead of black, creating a large, bright target;
- The station name uses 6-inch cap height characters (twice the size of regular overhead messages).

These signs also include wayfinding features to aid patrons in locating the exits from the platform. The pictograms for stairs, escalators, and elevator plus accessibility are shown with arrows indicating direction.

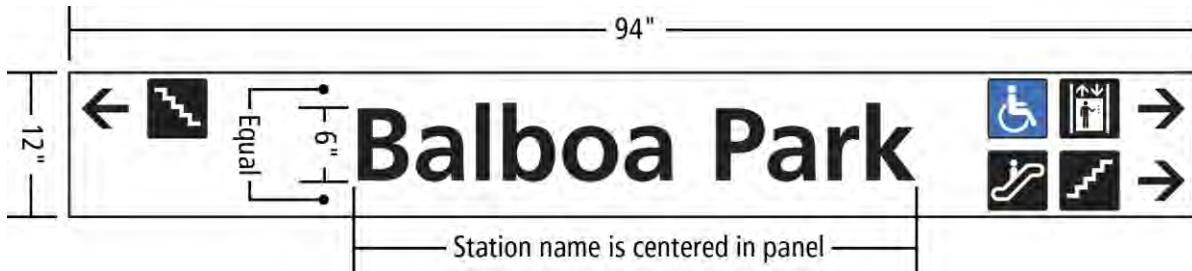


Figure 3.5.1.1: Illuminated station identification sign. Type and arrows are black on a white background. Symbols are white on a black field.

3.5.2 Station Identification along Trackways

Underground stations feature non-illuminated station identification panels on the trackway walls. At above-ground stations these may be mounted to fences or on posts. These panels use a white background and black type, with an 8-inch cap height. Dimensions will vary based on length of message.



Figure 3.5.2.1: Trackway station identification signs. Type and arrows are black on a white background. Size of panel varies by length of message.

4. SIGNAGE LOCATIONS

4.1 SIGN PLACEMENT BY SIGN TYPE

4.1.1 Overhead Signs

Reserved for transit wayfinding.

- Clearance between floor and overhead sign is as described in Facilities Design/ Criteria/ Architecture/ Passenger Stations (8'-6" minimum), or as approved by BART.
- Specific area at platform reserved for Destination Sign is shown in BART Facilities Standards/ Introduction/ Common Requirements/ Trackway Clearance.
- Parking garage signage clearance subject to vehicle clearance requirements. This may differ between van accessible areas (typically ground floor level) and areas only accessible to other passenger vehicles.

4.1.2 Wall-mounted and Flag-mounted Signs

Appropriate for regulatory, informational, and safety-related messages. When overhead space is not available, primary destination messages may be reinforced on these units.

4.1.3 Regulatory Signs

Should be placed in plain sight, yet avoid conflict with wayfinding signage. Regulatory messages shall not be placed on overhead wayfinding signs.

4.1.4 Advertisements and Concession Signage:

Group advertisements in areas such as trackway wall (typical), and concourse walls, as approved.

Ensure that advertising does not obscure or distract from transit- or safety-related signage.

4.1.5 Right-of-way Fencing

Locate any signs along the right of way fencing so that they are readily visible and identifiable, but not in the forefront of sightlines or obstructing vistas.

4.2 SIGN PLACEMENT

4.2.1 Spatial Hierarchy

- A. Signage should be located for maximum effectiveness while maintaining harmony with the spatial context (station architecture or outdoor environment) and with other signage.
- B. Transit wayfinding shall have priority over other types of signage.
- C. Regulatory signage shall be next in prominence.
- D. The placement of safety and security signage is usually dictated by regulation (i.e. building code or CPUC) or BART policy. Like all signage, safety and security signage placement should also consider the needs of its target audience, i.e. maintenance personnel, evacuating patrons, station agent, etc.
- E. Temporary Signage: Follow criteria for the particular type of sign.
- F. Advertisement and concession identification shall complement station design.

The following illustrations show sign placement hierarchy in a typical station.

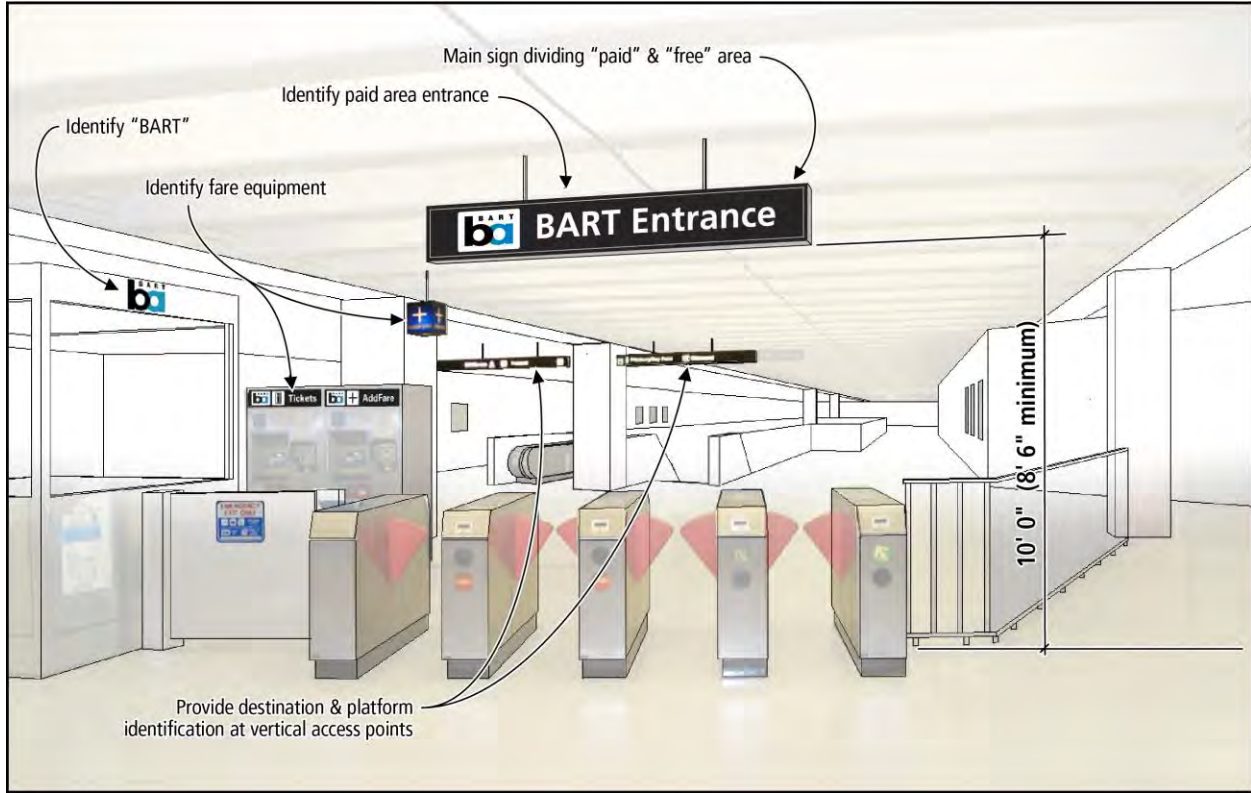


Figure 4.2.1.1: Transit Destination Wayfinding: Entering Paid Area

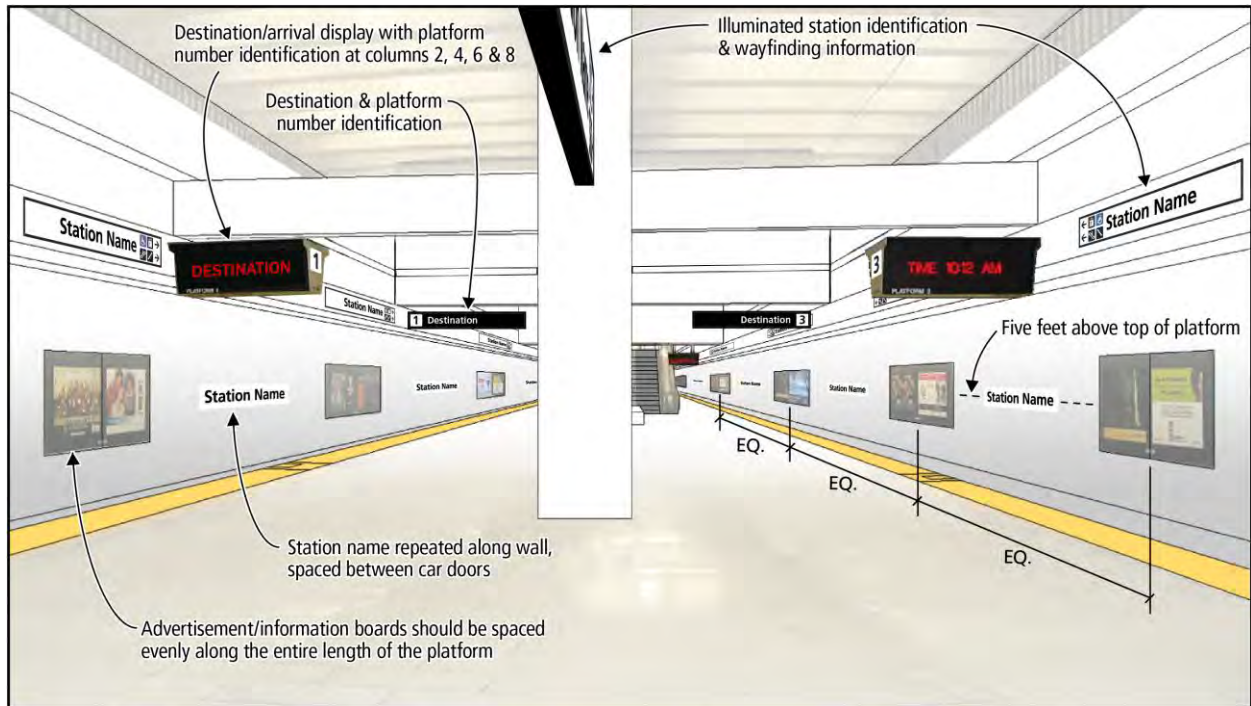


Figure 4.2.1.2: Placement Hierarchy: Underground Center Platform

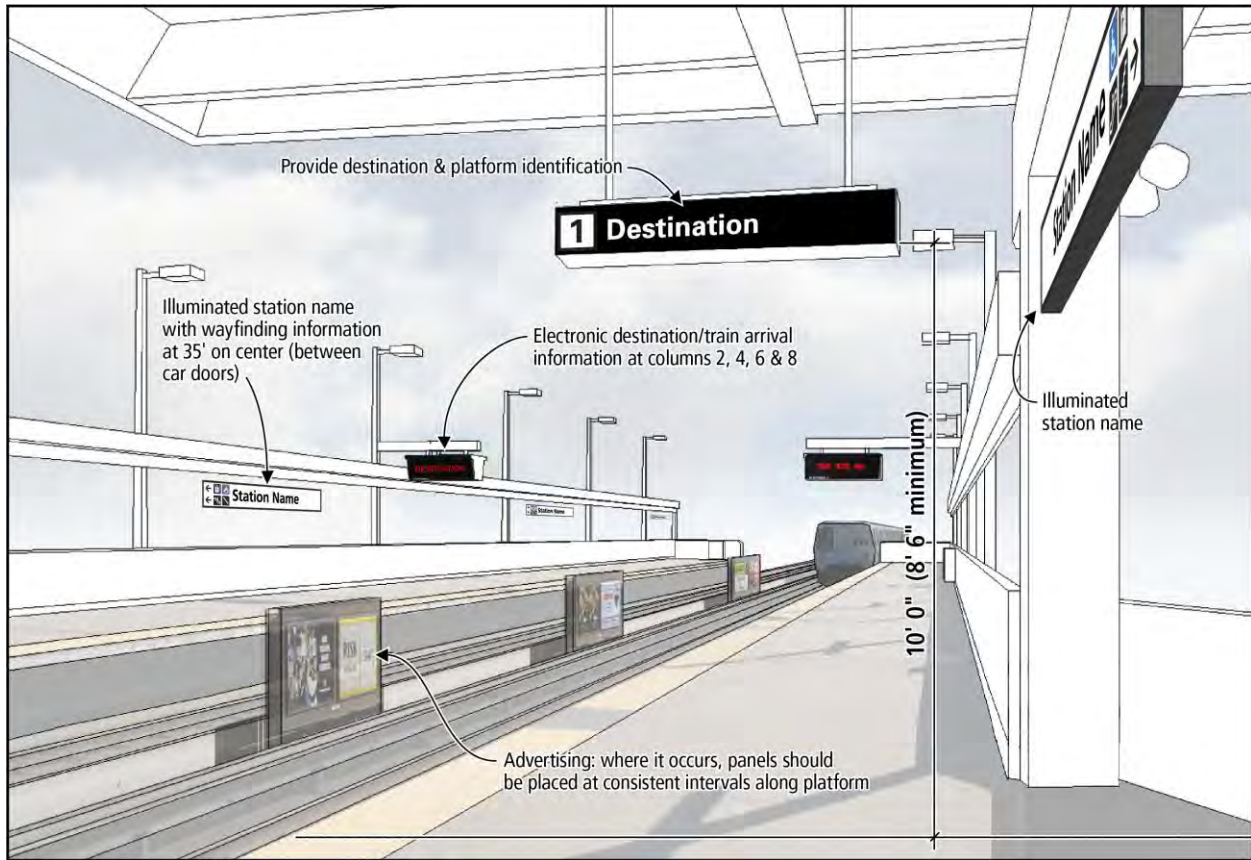


Figure 4.2.1.3: Placement Hierarchy: Aerial Side Platforms

5. SIGN TYPES ILLUSTRATED

5.1 TRANSIT-RELATED WAYFINDING

Transit-related wayfinding signs are ceiling-hung and self-illuminated. The following are examples of typical wayfinding signs at particular locations.

5.1.1 Station Interior: Free Areas: Entering

Appropriate messages include the fare gates or entrances for BART and other transit services, transit information display (TID) locations, and ticket purchase locations.



Figure 5.1.1.1: Wayfinding to transit services in station concourse.

Typical module: 2 line x 8 ft.

Overall dimensions: 96 x 14 in.

Visible message panel (shown): 94 x 12 in



Figure 5.1.1.2: Fare gate identification.

Module: 2 line x 8 ft.

Overall dimensions: 96 x 14 in.

Visible message panel (shown): 94 x 12 in

5.1.2 Station Interior: Free Areas: Exiting

Appropriate messages include station exits (with exterior location and landmark information), elevators, transit connection information, and transit information display (TID) locations.



Figure 5.1.2.1: Wayfinding to station exit and external transit services from station concourse.

Typical module: 2 line x 8 ft.

Overall dimensions: 96 x 14 in.

Visible message panel (shown): 94 x 12 in.



Figure 5.1.2.2: Wayfinding to train platform from station concourse; separate platforms.

Typical module: 2 line x 8 ft.

Overall dimensions: 96 x 14 in.

Visible message panel (shown): 94 x 12 in.

5.1.3 Station Interior: Paid Areas: Wayfinding to Platforms/Destinations

At stations with a single platform, the standard message is “All Trains”. At stations with separated platforms, the principle is to identify line destinations and platform numbers at the vertical access to platforms. When directing to multiple destinations, maintain “one-to-one” correspondence between platform number and destination.



Figure 5.1.3.1: Wayfinding to train platform from station concourse; single central platform.

Typical module: 1 line x 4 ft.
Overall dimensions: 48 x 8 in.
Visible message panel (shown): 46 x 6 in.



Figure 5.1.3.2: Wayfinding to train platform from station concourse; separate platforms

Typical module: 1 line x 8 ft.
Overall dimensions: 96 x 8 in.
Visible message panel (shown): 94 x 6 in

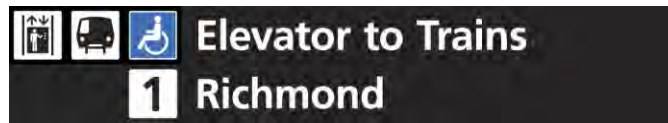


Figure 5.1.3.3: Elevator identification; to train platform from station concourse; separate platforms.

Typical module: 2 line x 6 ft.
Overall dimensions: 72 x 14 in.
Visible message panel (shown): 70 x 12 in.

5.1.4 Station Interior: Platform Exit Wayfinding

In general, signs directing to exits from the platform level simply read “exit” and include the pictograms for vertical access type. As all exits lead to the concourse level, it is not necessary to individually label them.



Figure 5.1.4.1: Wayfinding to exit on train platform.

Typical module: 1 line x 4 ft.
Overall dimensions: 48 x 8 in.
Visible message panel (shown): 46 x 6 in.



Figure 5.1.4.2: Wayfinding at exit on train platform.

Typical module: 1 line x 4 ft.
Overall dimensions: 48 x 8 in.
Visible message panel (shown): 46 x 6 in.

At some stations, exit signs at platforms name surface streets. This is useful when the station has more than one paid area on the concourse level, each associated with different street exits.

It is usually only practical when the street names are very short, as the signs allocated for this purpose tend to be the smaller units.



Figure 5.1.4.3: Wayfinding at exit on train platform, with exterior destination.

Typical module: 1 line x 4 ft.

Overall dimensions: 48 x 8 in.

Visible message panel (shown): 46 x 6 in.

At stations with multiple platform levels, it is important that the exits to the concourse level be distinguished from access to the other platforms, and that these other platforms be identified for patrons that may be transferring to other trains.



Figure 5.1.4.4: Wayfinding from train platform to other platform and to concourse.

Typical module: 2 line x 8 ft.

Overall dimensions: 96 x 14 in.

Visible message panel (shown): 94 x 12 in.



Figure 5.1.4.5: Wayfinding from train platform to other platform.

Typical module: 1 line x 6 ft.

Overall dimensions: 72 x 8 in.

Visible message panel (shown): 70 x 6 in.

5.2 TRANSIT-RELATED IDENTIFICATION

In order for wayfinding to be effective, all destinations must be clearly and consistently identified. The following are examples of identification signage.

5.2.1 Station Entrance Identification

At grade pedestrian entrances should be identified with the name of the station and the logo of the prime operator(s). Typically, this message can be placed on the opposite face of the station exit wayfinding sign at that location.



Figure 5.2.1.1: Station Identification at station entrance.

Typical module: 2 line x 8 ft.

Overall dimensions: 96 x 14 in.

Visible message panel (shown): 94 x 12 in.

5.2.2 Station Interior: Station, Platform and Destination Identification

Riders arriving via train are looking for station identification at the platform level. Patrons entering from the street and transfer riders are looking for platform identification and destination information. Placement of signs shall take into consideration the sightlines of seated and standing patrons on trains.

Station Identification: May be ceiling-hung along central axis of platform (preferred), or mounted on the face of the soffit over the trackway (facing the opposite trackway). The station name is large (6 in. cap height), and the background is white for visibility. Wayfinding information to platform exits is provided at either end, in the form of pictograms.



Figure 5.2.2.1: Station Identification at platform level; illuminated sign.

Typical module: 2 line x 8 ft.

Overall dimensions: 96 x 14 in.

Visible message panel (shown): 94 x 12 in.

Trackway Station Identification: In underground stations, non-illuminated station identification panels are placed at regular intervals along the trackway walls. At above grade stations, signs may be on posts or attached to fences. The text size is even larger than on the illuminated signs (8 in. cap height). These signs also have a white background for visibility. Dimensions will vary depending on the station name.



Figure 5.2.2.2: Station Identification at platform level; trackway sign.

Typical module: Size based on length of station name

Overall dimensions (example shown): 60 x 18 in.

Platform and Destination Identification: Ceiling-hung perpendicular to trackway. Platform number is always oriented toward the trackway. The principle of consistency calls for the train line destination to be combined with the platform number in both wayfinding and identification signage.



Figure 5.2.2.3: Platform Identification sign.

Typical module: 1 line x 6 ft.

Overall dimensions: 72 x 8 in.

Visible message panel (shown): 70 x 6 in.



Figure 5.2.2.4: Platform Identification sign.

Typical module: 2 line x 6 ft.

Overall dimensions: 72 x 14 in.

Visible message panel (shown): 70 x 12 in.

Platform Identification Numeral: Numeral is placed on the end of the electronic variable message sign unit, facing the platform. Number is large for visibility.



Figure 5.2.2.5: Platform Identification numeral on electronic variable message sign.

5.2.3 Station Interior: Transit-Related Amenities Identification

These signs may be wall-mounted or suspended from the ceiling.

Note: The following layouts have not been implemented system-side.



Figure 5.2.3.1: Ticket vending



Figure 5.2.3.2: Parking validation



Figure 5.2.3.3: Bill Changing

5.2.4 Station Interior: Miscellaneous Identification



Figure 5.2.4.1: Station agent assistance



Figure 5.2.4.2: Toilet rooms

Note: California Title 24 code-mandated signs shall also be provided.

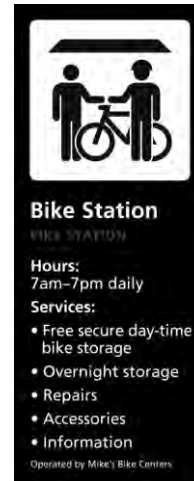


Figure 5.2.4.3: Bike station

5.3 SYSTEM INFORMATION, MAPS AND WAYFINDING

5.3.1 Inserts

Every station has a mix of information kiosks, panels, and wall-mounted frames displaying BART System Maps and Schedules, and a wide variety of other information, as printed inserts with a standard set of dimensions. Some of these printed inserts, such as schedules, regulatory information and materials pertaining to other transit agencies, are outside the scope of this document. The BART System Map, station maps, vicinity maps, and station-specific wayfinding information shall be considered a part of the signage program.

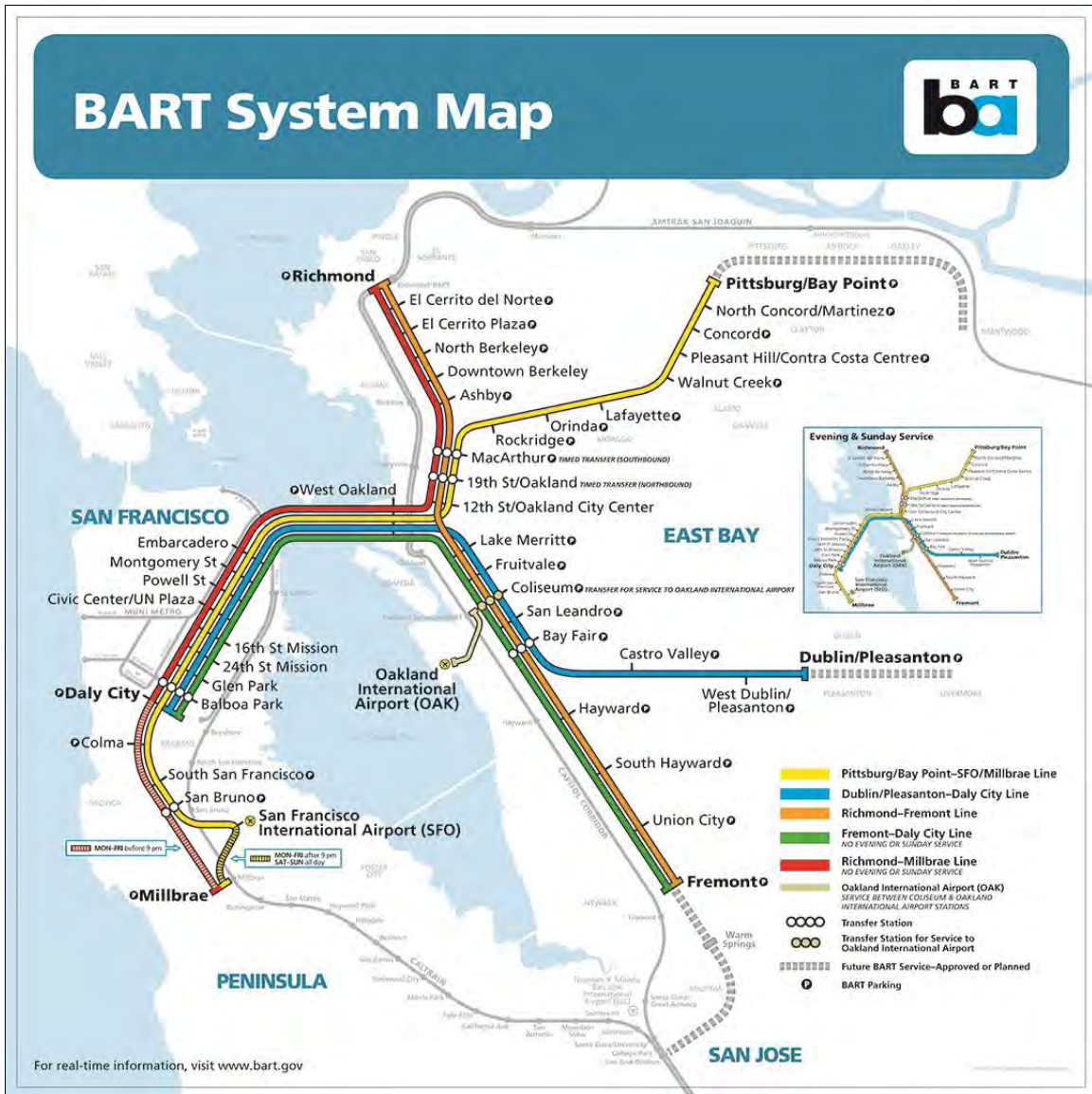


Figure 5.3.1.1: BART System Map, standard insert
 Overall dimensions: 47 x 47 in.
 Visible area: 45 x 45 in.

Train Schedules

Rockridge



To Daly City/Millbrae/SF Airport (SFO) →

MTWTFSS	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	AM	PM
5:00*	6:05*	7:00*	8:00*	8:55*	9:50*	10:55*	11:55*	12:55*	1:55*	2:55*	3:55*	4:55*	5:00*	6:00*	7:00*	8:15*	9:15*	10:15*	11:15*	12:15*			

To Pittsburg/Bay Point

MTWTFSS	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	AM	PM
5:11	6:11	7:11	8:11	9:11	10:11	11:11	12:11	1:11	2:11	3:11	4:11	5:11	6:11	7:11	8:11	9:11	10:11	11:11	12:11				

To Oakland Airport (OAK) →

For Oakland Airport (OAK) see Airport Service section of this schedule

- Last Stops**
 - Last Stop Daily City Station
 - Last Stop SF Airport (SFO) Station
 - Last Stop Millbrae Station
 - Last Stop Emeryville Station
 - Last Stop Fremont Station
 - Last Stop South Fremont Station
- Service Note**
 - Operating 10 days per week
 - The schedule is not valid for all lines.



This Station is: Rockridge

Please watch overhead destination signs on platforms.

Platform 1-Northbound
 Trains arriving on this platform go to Pittsburg/Bay Point.
 For San Francisco/Daly City/SF Airport (SFO)/Millbrae train go to Platform 2.

Platform 2-Southbound
 Trains arriving on this platform go to San Francisco/Daly City/SF Airport (SFO)/Millbrae.
 For Pittsburg/Bay Point trains go to Platform 1.

Transfer Information
 For Warm Springs/South Fremont trains go to Platform 2 (Southbound) and board a San Francisco/Daly City/SF Airport (SFO)/Millbrae train to MacArthur Station, then go to Platform 2 for a Warm Springs/South Fremont train.
 For Richmond trains go to Platform 2 (Southbound) and board a San Francisco/Daly City/SF Airport (SFO)/Millbrae train to MacArthur Station, then cross through the station to Platform 1 for a bidirectional train.
 For Dublin/Pleasanton trains go to Platform 2 (Southbound) and board a San Francisco/Daly City/SF Airport (SFO)/Millbrae train to MacArthur Station, then transfer to a Warm Springs/South Fremont train, then transfer again at Bay Fair Station to a Dublin/Pleasanton train.
 Weekdays for Millbrae trains go to Platform 2 (Southbound) and board a San Francisco/Daly City/SF Airport (SFO) train to Balboa Park Station, then transfer to a Millbrae train.

Airport Service
 For Oakland International Airport (OAK) take a San Francisco/Daly City/SF Airport (SFO)/Millbrae train and transfer to a Warm Springs/South Fremont train at MacArthur Station. Exit at Coliseum Station platform, follow signs to Oakland Airport.
 For San Francisco/Daly City/SF Airport (SFO)/Millbrae trains go to Platform 2.

Figure 5.3.1.2: BART Schedule, typical insert
 Overall dimensions: 47 x 47 in.
 Visible area: 45 x 45 in.

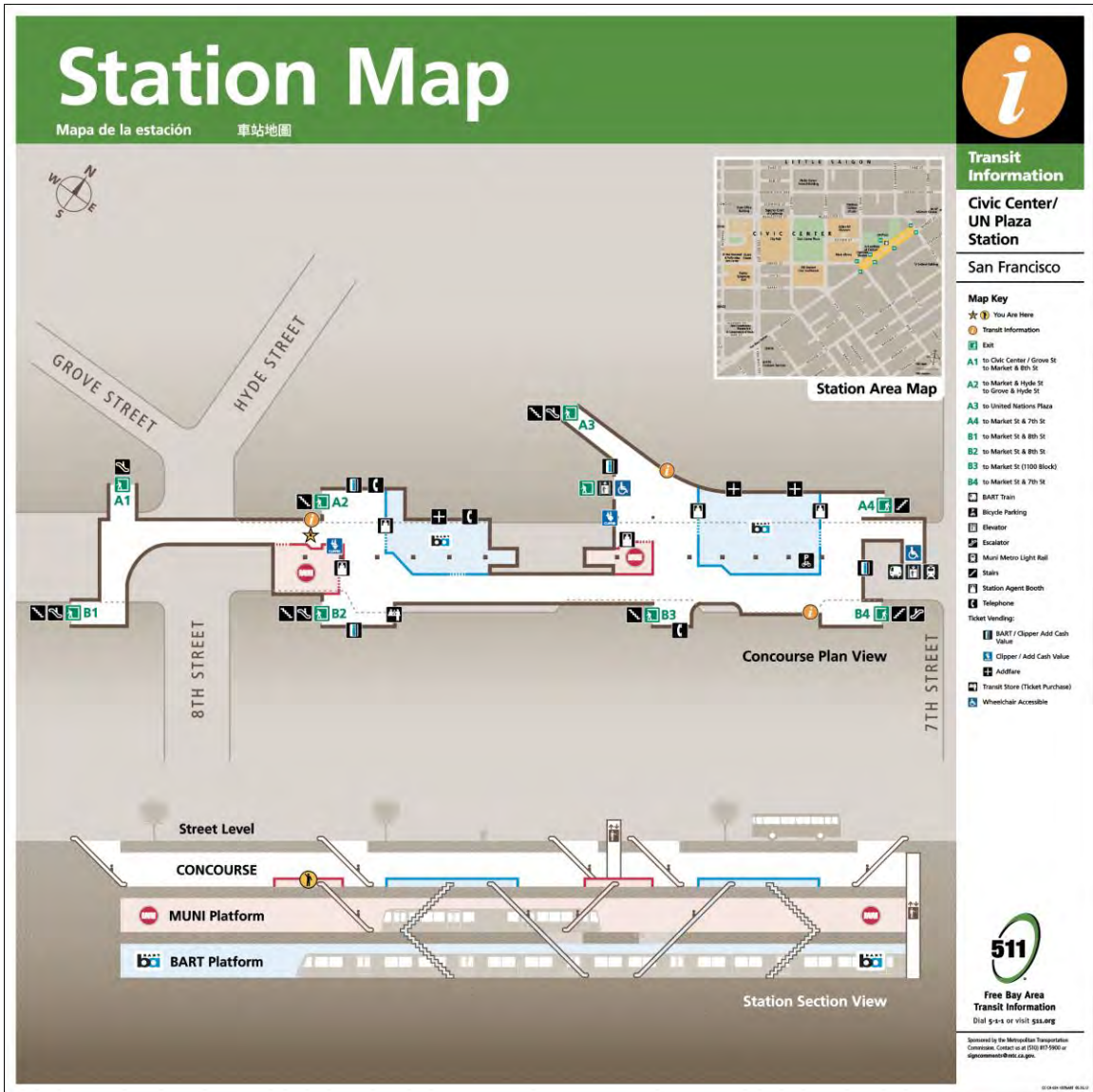


Figure 5.3.1.3: Station Map, standard insert
 Overall dimensions: 47 x 47 in.
 Visible area: 45 x 45 in.




Figure 5.3.1.4: Transit Stops Map, standard insert
 Overall dimensions: 47 x 47 in.
 Visible area: 45 x 45 in.




Figure 5.3.1.5: Transit Routes Map, standard insert
 Overall dimensions: 47 x 47 in.
 Visible area: 45 x 45 in.

Schedules & Fares

Horario y precios del tránsito 時刻表與車費



Regional Transit Map



Schedule Information

See schedule pages throughout this book, or pick up a free schedule guide at a BART station. BART System Map and other information are available at www.bart.gov.

San Francisco Bay Area Rapid Transit (BART) System Map


See the BART System Map for details on routes, stations, and fares. The BART System Map is available at www.bart.gov and at all BART stations.

Fare Information

Check out our fare information page for details on fares, tickets, and discounts. The fare information page is available at www.bart.gov and at all BART stations.


Golden Gate Transit Basic Service Bus Frequency Guide

See the Golden Gate Transit Basic Service Bus Frequency Guide for details on bus routes, schedules, and fares. The frequency guide is available at www.goldengate.com and at all Golden Gate Transit stations.



Golden Gate Transit Basic Service Bus Frequency Guide

See the Golden Gate Transit Basic Service Bus Frequency Guide for details on bus routes, schedules, and fares. The frequency guide is available at www.goldengate.com and at all Golden Gate Transit stations.



Muni

San Francisco Municipal Railway

See the Muni website for details on routes, schedules, and fares. The Muni website is available at www.muni.org and at all Muni stations.

Fare Information


Check out our fare information page for details on fares, tickets, and discounts. The fare information page is available at www.muni.org and at all Muni stations.

San Francisco Municipal Railway

See the Muni website for details on routes, schedules, and fares. The Muni website is available at www.muni.org and at all Muni stations.

Fare Information

Check out our fare information page for details on fares, tickets, and discounts. The fare information page is available at www.muni.org and at all Muni stations.



samtrans

San Mateo County Transit District

See the samtrans website for details on routes, schedules, and fares. The samtrans website is available at www.samtrans.com and at all samtrans stations.

Fare Information

Check out our fare information page for details on fares, tickets, and discounts. The fare information page is available at www.samtrans.com and at all samtrans stations.

511 Real-Time Departures

See the 511 website for real-time departure information. The 511 website is available at www.511.org and at all 511 stations.

Bicycles on Transit

See the Bicycles on Transit page for details on bicycle policies. The Bicycles on Transit page is available at www.bicyclesontransit.org and at all Bicycles on Transit stations.

Get Clippit!

See the Get Clippit! page for details on the Clippit! program. The Get Clippit! page is available at www.getclippit.com and at all Get Clippit! stations.

511 Real-Time Departures

See the 511 website for real-time departure information. The 511 website is available at www.511.org and at all 511 stations.

Bicycles on Transit

See the Bicycles on Transit page for details on bicycle policies. The Bicycles on Transit page is available at www.bicyclesontransit.org and at all Bicycles on Transit stations.

Get Clippit!

See the Get Clippit! page for details on the Clippit! program. The Get Clippit! page is available at www.getclippit.com and at all Get Clippit! stations.

511 Real-Time Departures

See the 511 website for real-time departure information. The 511 website is available at www.511.org and at all 511 stations.

Bicycles on Transit

See the Bicycles on Transit page for details on bicycle policies. The Bicycles on Transit page is available at www.bicyclesontransit.org and at all Bicycles on Transit stations.

Get Clippit!

See the Get Clippit! page for details on the Clippit! program. The Get Clippit! page is available at www.getclippit.com and at all Get Clippit! stations.

511 Real-Time Departures

See the 511 website for real-time departure information. The 511 website is available at www.511.org and at all 511 stations.

Bicycles on Transit

See the Bicycles on Transit page for details on bicycle policies. The Bicycles on Transit page is available at www.bicyclesontransit.org and at all Bicycles on Transit stations.

Get Clippit!

See the Get Clippit! page for details on the Clippit! program. The Get Clippit! page is available at www.getclippit.com and at all Get Clippit! stations.

511 Real-Time Departures

See the 511 website for real-time departure information. The 511 website is available at www.511.org and at all 511 stations.

Bicycles on Transit

See the Bicycles on Transit page for details on bicycle policies. The Bicycles on Transit page is available at www.bicyclesontransit.org and at all Bicycles on Transit stations.

Get Clippit!

See the Get Clippit! page for details on the Clippit! program. The Get Clippit! page is available at www.getclippit.com and at all Get Clippit! stations.

511 Real-Time Departures

See the 511 website for real-time departure information. The 511 website is available at www.511.org and at all 511 stations.

Bicycles on Transit

See the Bicycles on Transit page for details on bicycle policies. The Bicycles on Transit page is available at www.bicyclesontransit.org and at all Bicycles on Transit stations.

Get Clippit!

See the Get Clippit! page for details on the Clippit! program. The Get Clippit! page is available at www.getclippit.com and at all Get Clippit! stations.

Figure 5.3.1.6: Schedules & Fares, standard insert
 Overall dimensions: 47 x 47 in.
 Visible area: 45 x 45 in.

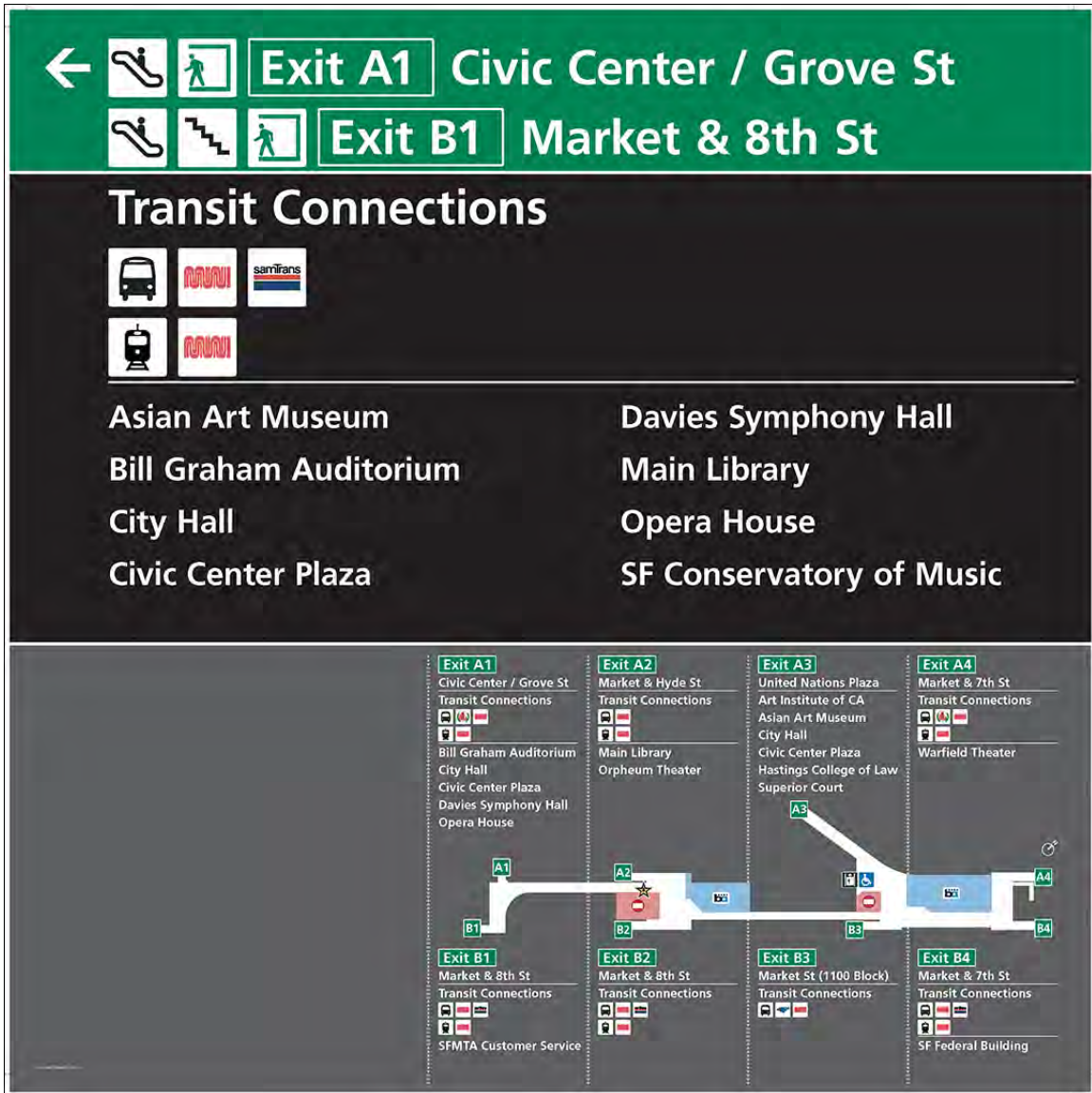


Figure 5.3.1.7: Exit Directory (typical), standard insert
Overall dimensions: 47 x 47 in.
Visible area: 45 x 45 in.

5.3.2 Line/Destination Diagram

- Graphic representations of the sequence of stops on a line can help patrons grasp the intricacies of the BART system.
- Example: This diagram would typically be mounted on wall or barrier on far side of the trackway across from the platform. Artwork shown is a design study.

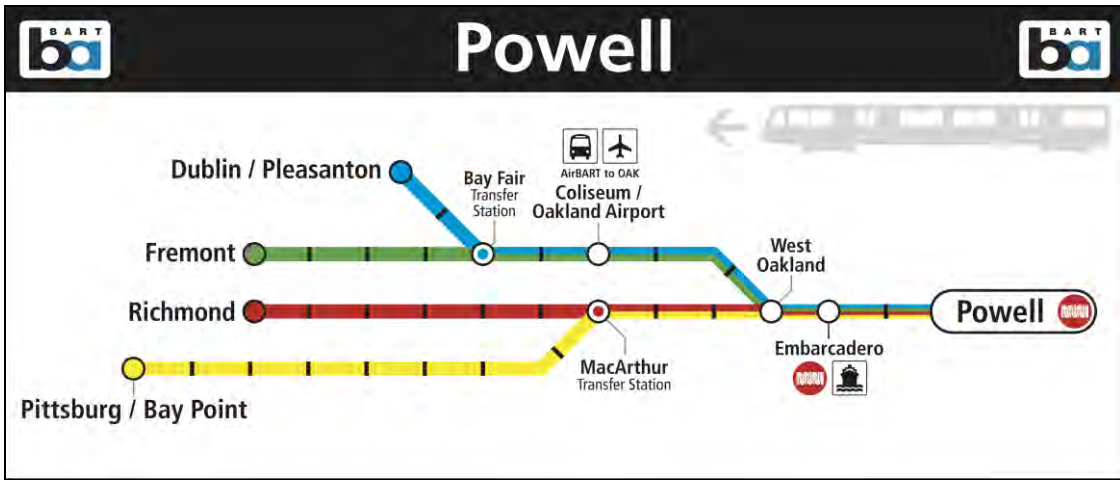


Figure 5.3.2.1: Trackway lines & destinations diagram concept

5.4 REGULATORY

5.4.1 Regulatory Signs

Regulatory information should be presented in a consistent manner across all stations. Regulatory signs should be attractive and easy to read. While they must be prominent in order to serve their function, they should not dominate patrons’ view of the facility. The following are examples of regulatory signs that have been developed recently.

Note: These examples are depicted at the same scale to demonstrate the various sizes used for different applications.



Figure 5.4.1.1: New layout showing prohibited behaviors.
36 x 23 in.
Overlay for existing sign panels.



Figure 5.4.1.2: Compact layout using pictograms.
15 x 15 in.



Figure 5.4.1.3: Regulatory sticker for train cars.
4 x 12 in.



Figure 5.4.1.4: Examples of other regulatory messages.
12 x 18 in.



Figure 5.4.1.5: BART Police notice.
12 x 15 in.

5.5 SAFETY AND SECURITY SIGNAGE

5.5.1 Emergency and Safety Signs



Figure 5.5.1.1: Emergency Exit sign; illuminated cabinet (see Section 3.4)
Module: 2 line x 4 ft.
Overall Dimensions: 48 x 14 in.
Visible message area (shown): 46 x 12 in.



Figure 5.5.1.2: Safety Refuge sign (trackway)
12 x 18 in.



Figure 5.5.1.3: Escalator Warning Graphic (lefthand version)
Overall dimensions: 25 x 22 in.

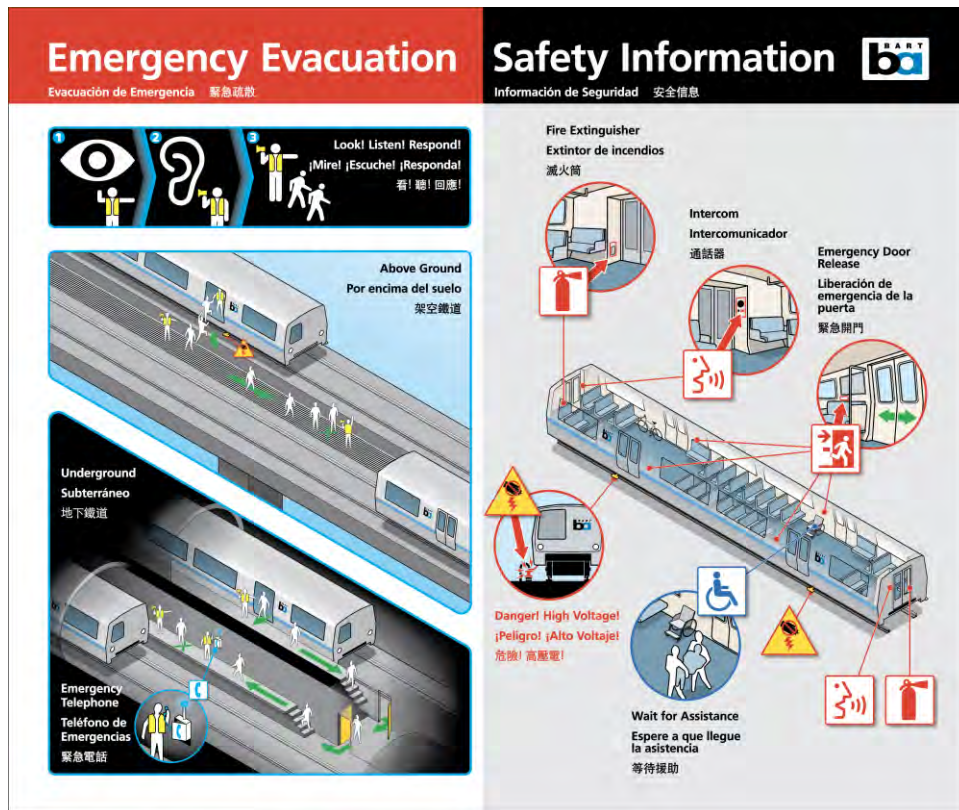


Figure 5.5.1.4: Onboard Safety Poster
Overall Dimensions: 39 x 33.5 in.

5.6 TEMPORARY SIGNS AND BANNERS

5.6.1 Note: These examples may not be typical of current practice.



Figure 5.6.1.1: Flash Pass Holders' Route

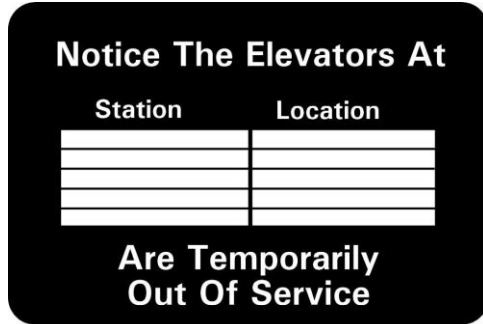


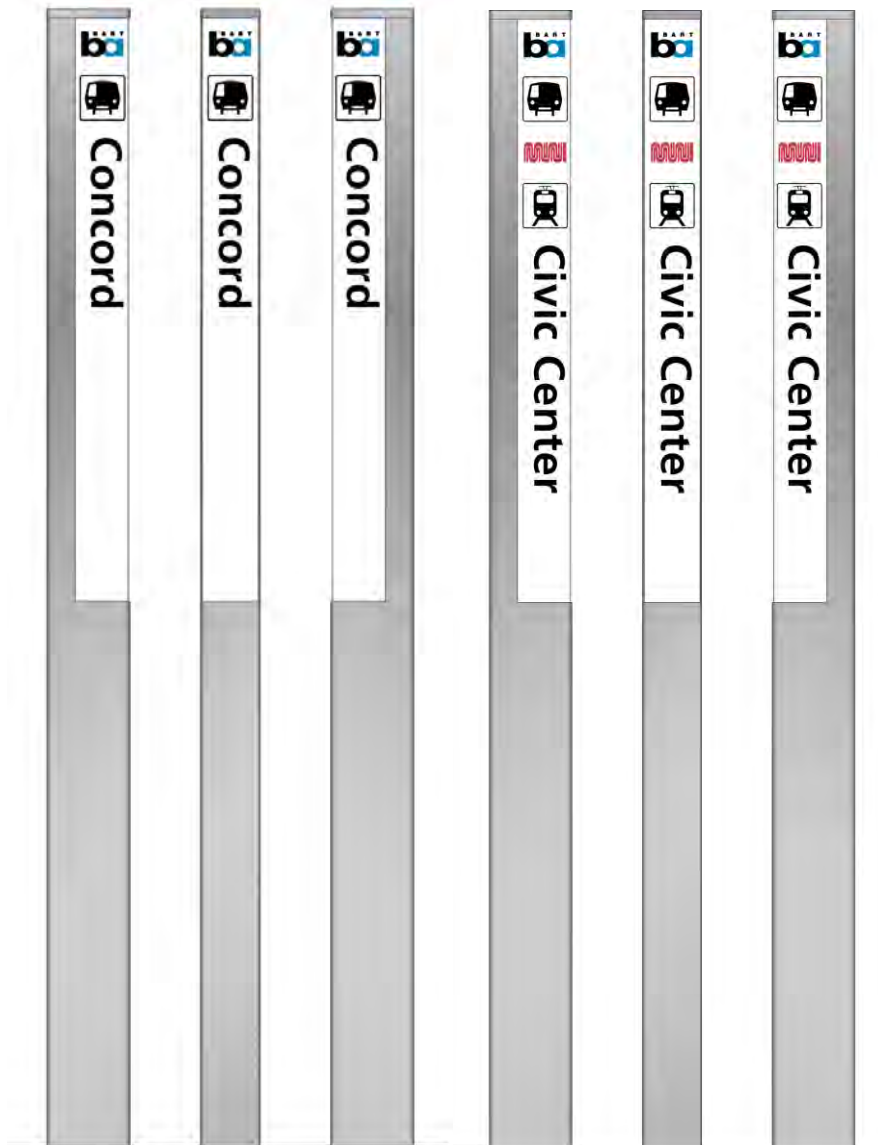
Figure 5.6.1.2: Elevators Out of Service

5.7 STATION EXTERIOR: STATION IDENTIFICATION

Exterior station identification may take different forms depending on the architectural context. When such signs are incorporated into new stations, these signs shall typically be illuminated and also display the station name.

5.7.1 Station Entrances

A standard design of illuminated pylon is used for identifying station entrances. It features the BART logo and the BART Train symbol at the top, above the station name. Shared stations (example: Civic Center) also show a logo and symbol for the other operator (example: Muni Metro).



**Figure 5.7.1.1: BART Station Identification illuminated pylon.
Overall Dimensions: 10 x 14 x 192 in.**

5.8 STATION EXTERIOR: PARKING IDENTIFICATION & REGULATORY

The following signs have been developed for the parking areas at BART stations that have instituted a parking fee program.

5.8.1 Fee Parking and Permit



Figure 5.8.1.1: Fee Parking entrance sign, Module: F-1

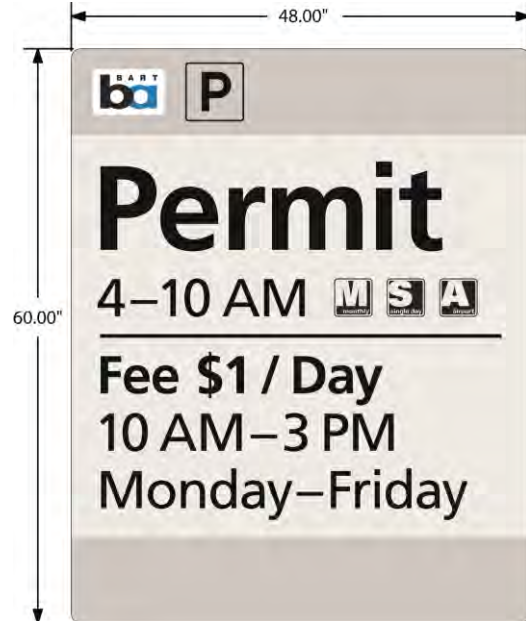


Figure 5.8.1.3: Permit Parking entrance signs, Module: P-1



Figure 5.8.1.2: Fee Parking regulatory sign, Module F-2

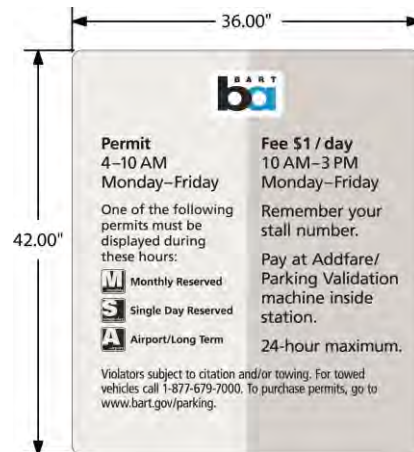


Figure 5.8.1.4: Permit Parking regulatory sign, Module: P-2

6. MATERIALS AND CONSTRUCTION

6.1 GENERAL CONSIDERATIONS

- A. **Materials:** Typically, non-flammable, permanent, and non-fading. Construct signage of durable materials such as extruded painted aluminum, fiberglass embedded panels, or porcelain enamel, especially where signage is located within human reach. Consider potential vandalism as well as wear from contact.
- B. **Construction:** Build to resist seismic events, wind, moisture, and vandalism. Select materials and design assemblies that require minimal long-term maintenance.
- C. Provide lighting fixtures within sign assemblies with long-lasting lamps or use external lighting; consider retro-reflective backgrounds and messages, and luminance (glow in the dark). Take advantage of energy-efficient lighting technology such as LED.
- D. Hand in hand with good material selection and construction is regularly scheduled inspection and maintenance, including re-lamping and surface cleaning.
- E. Standardize designs, materials, assemblies, and attachment methods. Refer to the Standard Plans and Standard Specifications for details and materials for signage elements.
- F. Where appropriate, metal plaque signs should have an anti-graffiti coating.
- G. Installation options (see Section 4.1 for applicability):
 - Ceiling hung
 - Wall mounted; mounted to beams or similar structural members
 - Wall mounted on brackets (Flag mounted)
 - Floor mounted – usually the least desirable in regard to patron circulation, disabled accessibility, and maintenance (floor washing and sweeping) especially in parking structures
 - Adhered to floor (generally only for short-term advertising use)

7. APPENDIX: INVENTORY OF BART APPROVED PICTOGRAMS

Artwork provided is for visual reference only. Use only original vector artwork for reproduction — do not cut-and-paste images for use as artwork. Refer to specific agencies for current logo artwork. Confirm current designs and verify exact colors.







The pictogram consists of the symbol and the white square field around it. The black frame shown represents the grid used in the overhead signage (see Section 3). When used on maps, the colors of the standard pictograms may be the reverse of what is shown here — a white symbol on a black square — and the “grid” frame is omitted. This transformation is easily accomplished using the original vector artwork. Never reverse the colors of agency logos.

Some pictograms are shown in two versions — left-facing and right-facing. When these pictograms are used in wayfinding messages, they are oriented to match the arrow direction and the alignment of the message text (see Section 3). When used in maps and other materials, the standard orientation is used (as labeled).

Some logos are shown in a larger rectangular field. This format is used for the logos of the primary transit agency or agencies within a station. Wayfinding messages referring to transit connections to other services located outside the station will use the typical square format.

7.1.1 Standard pictograms

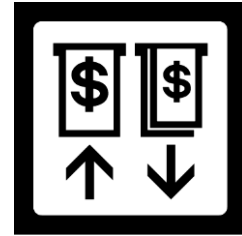
Figure 7.1.1.1: Index of standard pictograms

<p>ADA Accessibility (International Symbol of Accessibility) left-facing</p>		<p>Air Transportation {uncommon}</p>	
<p>ADA Accessibility (International Symbol of Accessibility) standard, right-facing</p>		<p>Airport, OAK (refers specifically to Oakland Int'l Airport as a BART destination)</p>	
<p>Addfare</p>		<p>Airport, SFO (refers specifically to San Francisco Int'l Airport as a BART destination)</p>	

Area of Rescue Assistance



Bill Changing



Automobile (uncommon)



Bus (also used for shuttles and MUNI trolley coaches)



Bicycle



CCTV (used in regulatory signs)



Bike Channel



Do Not Enter (No Entry, Wrong Way)



Bike Parking



Drop-off/Pick-up



Bike Station



Elevator, down (used when there is a choice between two elevators at this level)



Elevator, standard
(2-way)



Exit, left-facing



Elevator, up
(used when there is a choice between two elevators at this level)



Exit, standard, right-facing



Emergency Exit, left-facing



Fire Extinguisher



Emergency Exit, standard, right-facing



First Aid



Escalator, left-facing
(down to right, up to left)



Ground Transportation
(used at airports; **not** used for Transit Connections)



Escalator, standard
(up to right, down to left)



Hearing Loop



WAYFINDING AND SIGNAGE

Information, general
(used at station agent
booth)



No Bicycles



Litter Disposal



No Eating or
Drinking (No Food
or Drink)



Logo, BART Police



No Luggage Carts



Logo, Clipper



No Parking



Logo, East Bay
Regional Parks (used
on maps)



No Pedestrian
Access



Lost & Found



No Smoking
(No Vaping)



No Strollers



Platform 4



No Ticket Purchase from Unauthorized Persons (regulatory)



Rail, BART Train



Parking



Rail, Heavy (Amtrak, Caltrain)



Platform 1



Rail, Light, Airport Connector (OAC)



Platform 2



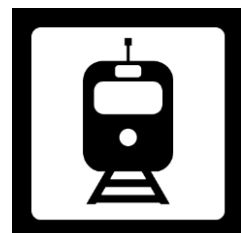
Rail, Light (AirTrain, SFO)



Platform 3



Rail, Light (MUNI Historical)

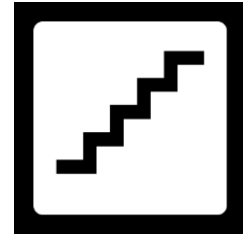


WAYFINDING AND SIGNAGE

Rail, Light (MUNI Metro)



Stairs, standard (up to right, down to left)



Rail, Light (SF Cable Car)



Station Agent



Restroom, Men's



Taxi



Restroom, Women's



Telecommunications Device for the Deaf (TDD)



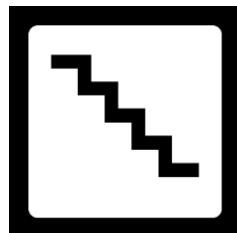
Restrooms or Unisex Restroom



Telephone



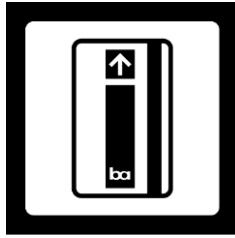
Stairs, left-facing (down to right, up to left)



Telephone, Volume Control



Tickets, BART



Walk Bikes
(regulatory)



Transit Information,
on exit sign



Watch the Gap
(safety/regulatory)



Transit Information,
standard



Water
Transportation
(Ferries)



Figure 7.1.1.2: Major Transit Agency Logos

AC Transit Logo,
standard



AC Transit Logo,
large



Amtrak Logo,
standard



Amtrak Logo,
large



BART Logo,
standard



BART Logo,
large



Caltrain Logo,
standard



Caltrain Logo,
large



MUNI Logo,
standard



MUNI Logo,
large



SamTrans Logo,
standard



SamTrans Logo,
large



8. APPENDIX: STATION EXIT IDENTIFICATION

8.1 ASSIGNING CODES TO STATION EXITS

Assigning alphanumeric codes to station exits is done by referring to the station plan, in the orientation it is viewed in the Station Map TID. Ideally, in this view, north will be towards the top of the map; but regardless, the long axis of the station concourse should be oriented horizontally. Stations will fall into one of three categories:

8.1.1 Complex Stations

These are stations with three or more separate exits. These include the typical underground urban stations.

Figure 8.1.1.1 and Figure 8.1.1.2 show the alphanumeric exit numbering scheme applied to two underground stations. Exits on the north side of the station axis are assigned the letter “A”; exits on the south side are assigned the letter “B”. Both sets of exits are numbered consecutively from left to right (west to east) in standard plan view (north at the top). Each exit has a unique two-character identifier.

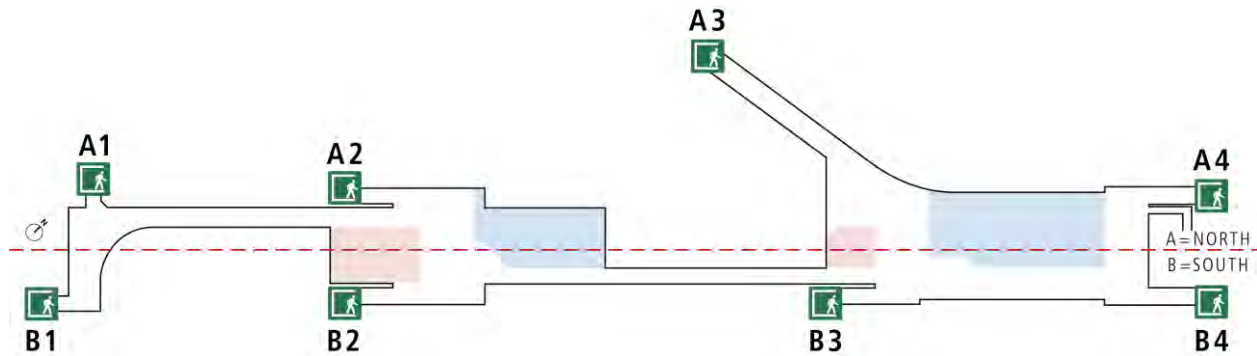


Figure 8.1.1.1: Example: Civic Center Station

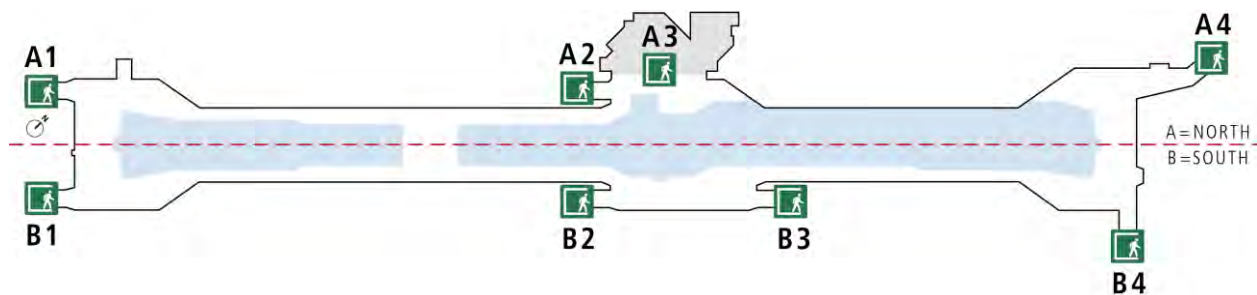


Figure 8.1.1.2: Example: 12th Street/Oakland City Center Station

As a general rule, stations that require this two-digit coding scheme will also require Exit Directory signage at each exit location.

8.1.2 Simple Stations

A station with only two exits, at opposite ends, would simply use “Exit A” and “Exit B”. In this case, “Exit A” would be assigned to the dominant or most used exit (not necessarily the northernmost exit).

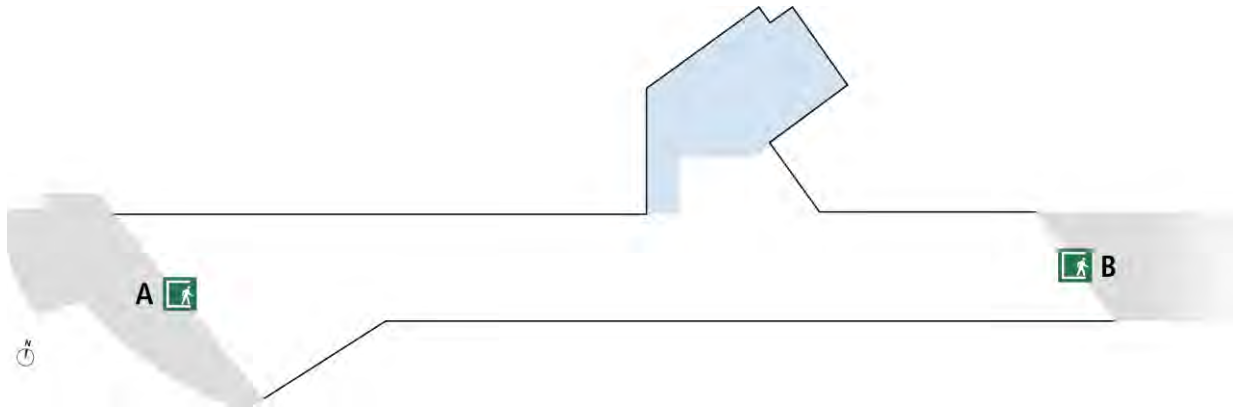


Figure 8.1.2.1: Example: Richmond Station

As a general rule, stations that require this A-B coding scheme will require Exit Directory signage at each exit location.

8.1.3 Single Exit Station

A station with a single fare gate exiting into an open lobby or plaza would not use any alphanumeric identifier, only the word “Exit”.

This type of station does not require Exit Directory signage.

8.2 DESCRIPTIVE TEXT (STREET DESTINATION)

In addition to the Exit symbol, “Exit” text, and alphanumeric identification (if present), wayfinding signs directing to exits also display a text description, typically a street name or intersection (example: “Market & Drumm St”) or landmark (example: “Constitution Plaza”). These descriptions should be unique to each exit. If two exits emerge on the same street or at the same intersection, additional descriptors such as “East” or “West” can be used to differentiate them.

END

**CRITERIA
CIVIL**

STREETS AND SURFACE PARKING

CONTENTS

- 1. GENERAL**
- 2. BART SYSTEM STREETS – PAVEMENT SECTION DESIGN**
 - 2.1 Pavement Section Description
 - 2.2 Structural Design of the Pavement Section
- 3. BART SYSTEM STREETS – DESIGN DETAILS**
 - 3.1 Shoulders
 - 3.2 Side Slopes
- 4. OTHER PAVED AREAS – PAVEMENT SECTION DESIGN**
 - 4.1 Parking Lot Pavement Section Description
 - 4.2 Structural Design of Parking Lots and Bicycle Paths
- 5. OTHER PAVED AREAS – DESIGN DETAILS**
 - 5.1 Parking Drainage and Grading
 - 5.2 Driveways
 - 5.3 Sidewalks
 - 5.4 Maintenance Shops and Yards
- 6. TRAFFIC CONTROL DEVICES**
 - 6.1 General
 - 6.2 Signs
 - 6.3 Traffic Stripes
 - 6.4 Pavement Markings (Other Than Traffic Stripes) – General
 - 6.5 Pavement Markings – Pedestrian Crossings at Roadways
 - 6.6 Pavement Markings – Other Specific Requirements
 - 6.7 Curb Markings

CRITERIA CIVIL

STREETS AND SURFACE PARKING

1. GENERAL

This Section establishes criteria for the design of access and circulation roadways, parking facilities, pedestrian facilities, bicycle paths, access roads, signing and marking for the station sites and wayside facilities.

City street construction, relocation, and reconstruction shall be designed in accordance with the applicable requirements of the jurisdictional authority.

Refer to BART Facilities Standard (BFS), Introduction, Common Requirements, Sustainability Guidelines, for requirements for non-roof heat island reduction in regard to pavement design and shading. Non-roof heat island reduction may require use of Portland cement concrete paving in lieu of asphalt concrete paving.

2. BART SYSTEM STREETS – PAVEMENT SECTION DESIGN

2.1 Pavement Section Description

The pavement cross section shall consist of (from top to bottom) pavement, base, subbase, filter course, and basement subgrade material. The subbase course may be eliminated where the basement subgrade material has a Sand Equivalent of 20 minimum and a Resistance (R) Value in excess of 40 when tested in accordance with California Test Methods CT217 and CT301 respectively. The filter course may not be eliminated.

- A. Pavement. All pavement other than that at bus loading and unloading zones shall be dense graded asphalt concrete consisting of PG64-10 asphalt binder and close graded mineral aggregates, Caltrans Type A, unless otherwise required due to special conditions or use.
 - 1. Bus loading and unloading zones shall have a Portland cement concrete pavement monolithic with the curb as shown in BART Standard Drawings. The Portland cement concrete shall extend throughout the entire length of the bus loading zone.
- B. Base. Aggregate base shall be used under all pavements, conforming to the class designated and requirements in the BFS Standard Specifications.
- C. Subbase. Subbase shall be of a granular material conforming to the class designated and requirements in the BFS Standard Specifications.
- D. Filter Course. The filter course shall consist of one layer of filter fabric placed on the subgrade below the aggregate subbase course. The basement upon which the filter fabric is placed shall have been compacted to the requirements in the BFS Standard Specifications.

2.2 Structural Design of the Pavement Section

The required thickness of the individual layers making up the pavement section shall be determined from the following considerations and procedures.

- A. For purposes of structural design of the pavement section only, BART System pavements shall be classified according to the character of traffic thereon as follows:
- Type A Pavement: Pavement which will carry bus or truck traffic, except those classified as Type C, shall be classified as Type A. Type A pavement may carry passenger car traffic.
 - Type B Pavement: Pavement which will carry only passenger cars shall be classified as Type B.
 - Type C Pavement: Pavement having a low volume of traffic, on the order of not more than 25 cars or five trucks daily, which will be used for service or maintenance purposes, and are not intended for use by the general public, shall be classified as Type C. Bicycle paths shall also be classified as Type C.
- B. Structural design of the pavement section shall be in accordance with the procedure for design of flexible pavements in the "California Department of Transportation Highway Design Manual", Chapter 630, Design of Structural Section. A Traffic Index of 9.0 shall be used for Type A Pavement, a Traffic Index of 7.0 for Type B Pavement, and a Traffic Index of 6.0 for Type C Pavement. The additional gravel equivalent thickness for "Factor of Safety" shall be provided as prescribed in the Highway Design Manual.
- The structural design of the pavement section shall be reviewed and approved by the responsible Engineer.
- C. Resistance (R) Value. Structural design of the pavement section shall be based on the use of Resistance (R) values, representing the structural quality of the basement material. The determination of the (R) value of a given material requires a soil test which shall conform to California Test Method CT 301.
- Determination of Thickness. The thickness of the individual layers of the pavement section shall be determined using data shown above and Caltrans 633.1 Empirical Method. Minimum asphalt concrete layer thickness shall be four inches for all pavement types.
- D. Variations in Design. In the application of these criteria, the Designer shall consider variations in design where it is possible to obtain a more economical pavement section by adapting the design for local conditions. For design variations, designer shall prepare calculations and justification and be submitted for review during the initial technical review by BART M&E Civil Engineering Department.
- E. Where imported borrow is required over all or a portion of a site, it may be possible to substitute borrow for a portion of the required subbase depth. Imported borrow with resistance values as high as $R = 30$ may be available

within an economical haul distance with total cost less than that of subbase. Such materials shall be specified and the required pavement structural section adjusted accordingly.

Pavement design calculations shall follow procedures described above. A memorandum shall be prepared describing anticipated facility use, and design thickness calculations and submitted to BART Maintenance & Engineering Civil Engineering Department for review and approval prior to inclusion in project drawings and specifications.

3. BART SYSTEM STREETS – DESIGN DETAILS

3.1 Shoulders

- A. Shoulders shall be provided where curbs do not occur. Shoulders shall be three feet wide and shall be paved with asphalt concrete. Pavement thickness shall match roadway thickness and slope away. Shoulders without dikes shall have an eight percent cross slope.
- B. Dikes shall be used to confine drainage where required to protect slopes susceptible to erosion. Dikes shall be constructed of extruded asphalt concrete, shaped and compacted to the required cross section.

3.2 Side Slopes

- A. Side slopes shall be as flat as available right-of-way permits, except that slopes flatter than ten horizontal to one vertical shall not be used.
- B. When the right-of-way is restricted, cut slopes shall be two horizontal to one vertical, unless otherwise recommended by the soils report. The top of all cut slopes, other than those in rock, shall be rounded between points, desirable ten feet-zero inches and minimum two feet-zero inches, on both sides of the intersection of the slope planes.
- C. When the right-of-way is restricted, fill slopes for embankments over 12 feet shall be two horizontal to one vertical, unless otherwise recommended by the soils report. Where heights are less than four feet, slopes shall be four horizontal to one vertical or flatter. Slope rounding shall be used at the top of fill slopes in the same manner as prescribed for cut slopes.

4. OTHER PAVED AREAS – PAVEMENT SECTION DESIGN

4.1 Parking Lot Pavement Section Description

Parking lot pavement section, which includes parking areas as well as aisles and circulation roads, shall consist of the pavement, base, subbase, filter course, and subgrade.

4.2 Structural Design of Parking Lots and Bicycle Paths

- A. Parking Lots: Parking lots which will contain only passenger cars shall have the pavement section layer thicknesses as prescribed for Type B pavement. The results of nearby soils investigations may be used as a basis for

determining the “R” value of the basement soil. Parking lots in the shop or yard areas which contain bus or truck traffic shall be design as Type A pavement.

- B. Bicycle paths immediately adjacent to the station concourse shall be designed as Portland cement concrete sidewalks. Paths away from the concourse area will generally be constructed of asphalt concrete. Most paths will be used occasionally by maintenance vehicles, and therefore will have a pavement structure equivalent to a BART Type C pavement.

5. OTHER PAVED AREAS – DESIGN DETAILS

5.1 Parking Drainage and Grading

- A. Refer to BFS Facility Design Criteria, Civil, Drainage, for design of drainage.
- B. Slope of pavement shall be not less than two percent and shall not be more than six percent. Drainage shall be directed away from areas where pedestrians will walk. Catch basins shall preferably not be located in the aisles or circulation roads. Site drainage shall be reviewed for compliance with the latest Municipal Separate Storm Sewer Systems (MS4) Permit requirements.
- C. No parking stall shall have a slope from the head end to the back end greater than three percent.
- D. Accessibility parking stalls and aisle slopes shall conform to the requirements prescribed in the latest edition of the California Building Code (CBC) for parking and passenger loading zones.

5.2 Driveways

Where driveways cross sidewalks which are the jurisdiction of another agency, the driveway/sidewalk details shall be governed by the more stringent requirement of either the governing agency or BART.

Driveway entrances which provide access to service and maintenance facilities shall normally be paved per Standard Drawing CS05 details. This pavement shall be considered adequate for normal truck use and for infrequent overloads. Greater pavement thickness shall be provided where warranted by the volumes or type of traffic using the driveway.

5.3 Sidewalks

Sidewalks providing access to service and maintenance facilities shall have a minimum width of three feet. For design details see BART Standard Drawings.

5.4 Maintenance Shops and Yards

Access roads and other paved areas within maintenance shops and yards shall be designed as prescribed for BART Type A pavement, with a TI = 9.0 for adequate structural pavement section thickness for anticipated loads from equipment and trucks.

Parking lots for maintenance shops and yards shall follow requirements as described for BART Type B pavement where trucks and other heavy equipment are not anticipated.

6. TRAFFIC CONTROL DEVICES

6.1 General

Except as herein required, the application of all traffic control devices shall conform to the requirements of the governing agency or municipality. In absence of any such criteria, the following references in the order of preference shown:

1. "California Vehicle Code", Sections 21100.1, 21400, and 21401.
2. "Traffic Manual", State of California Department of Transportation, latest edition.
3. "Construction Manual", State of California Department of Transportation, latest edition.
4. "Manual on Uniform Traffic Control Devices for Streets and Highways", U.S. Department of Transportation, latest edition.
5. BART Civil Standard Drawings.

6.2 Signs

Refer to BFS, Facility Design Criteria, Architecture, Signage.

6.3 Traffic Stripes

Traffic stripes shall be painted on all roadways having two or more lanes.

Traffic stripes on BART System streets and parking lots shall be as shown on the Standard Drawings.

Traffic stripes on non-BART System streets and parking lots shall conform to the "Traffic Manual" of the State of California Department of Transportation.

6.4 Pavement Markings (Other Than Traffic Stripes) – General

Pavement markings shall be used in roadways to supplement traffic signs in conveying certain messages or directions to the motorist, particularly at locations where pavement width or dense traffic prevent the motorist from readily seeing the signs.

Pavement markings shall conform to the "Traffic Manual", except as modified by the Standard Drawing and these criteria.

6.5 Pavement Markings – Pedestrian Crossings at Roadways

- A. Crosswalk lines shall preferably be located only at intersections. Crosswalk lines shall be used when sidewalks are present and any of the following conditions prevail:

- At signalized intersections across all approaches
 - At stop-controlled intersections across the controlled approaches
 - At any intersection across those approaches with a pedestrian volume exceeding 50 pedestrians in any hour
 - At any location where it is desired to encourage pedestrian travel
 - At any location where pedestrians could not otherwise recognize the intended place to cross a roadway
- B. In those cases where a STOP sign is employed at a painted crosswalk, the word STOP shall be placed in advance of the crosswalk.
- C. In those cases where a PED XING sign is used at a painted crosswalk, the words PED XING may be painted in white on the approach pavement lane or lanes.
- D. Walkways shall be delineated with pavement markings similar to those of crosswalks.

6.6 Pavement Markings – Other Specific Requirements

- A. Limit Lines. The word STOP in eight-foot letters shall be placed eight feet in advance of the limit line.
- B. Speed Limit Markings. Pavement markings with appropriate figures may be used to supplement speed limit signs, particularly at locations where width of pavement and heavy traffic volumes or other features may prevent the motorist from readily seeing the signs.
- C. Turning Lanes. Pavement markings with appropriate messages may be used to advise motorists of turning movements.
- D. Bicycle Signal Actuator Markings. Where signals are actuated by bicycles, pavement markings shall be provided.

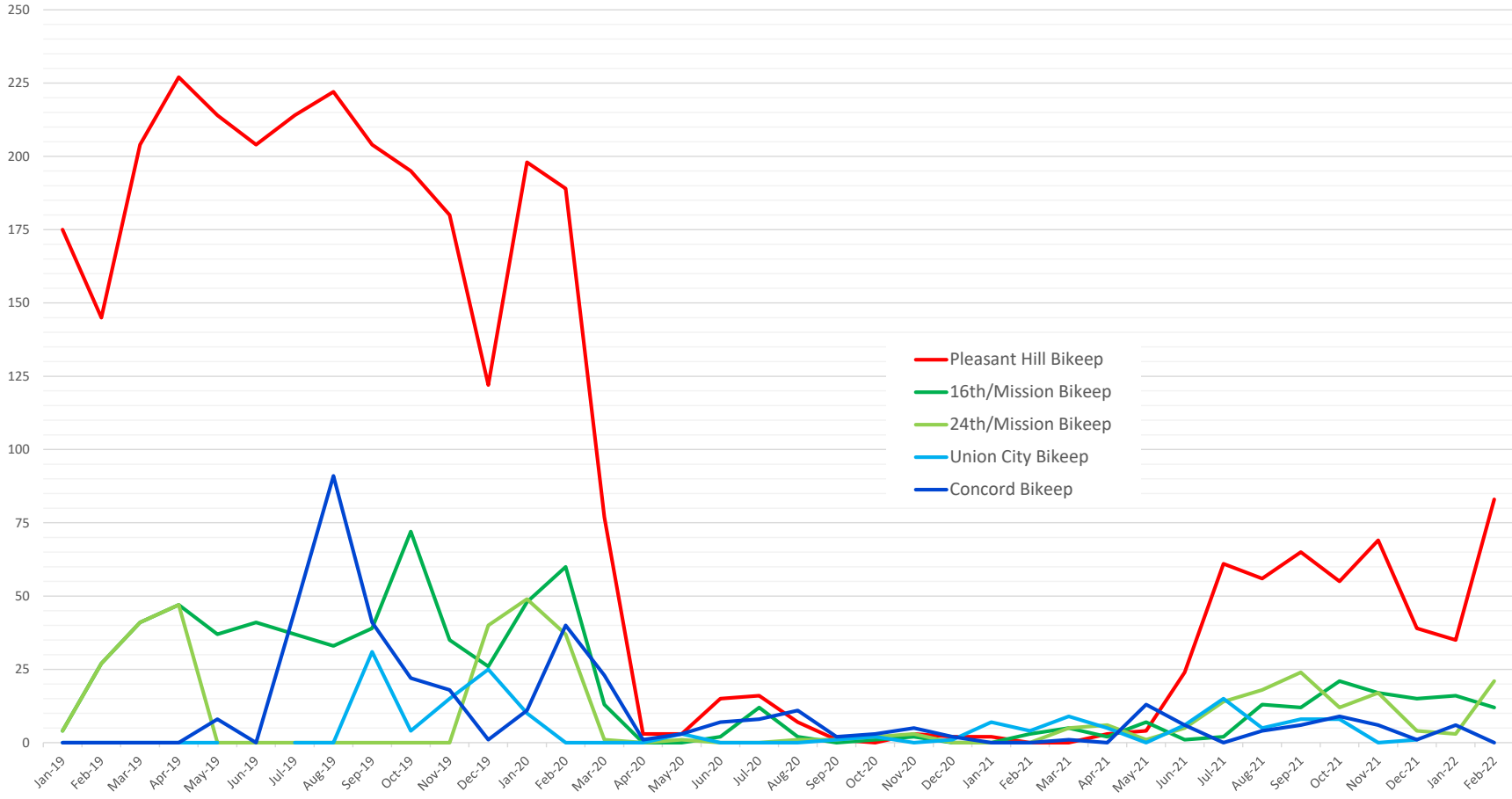
6.7 Curb Markings

- A. Curb markings shall be used to indicate parking prohibitions or restriction at the following locations:
- All bus and taxi zones
 - All commercial loading zones
 - No-stopping and no-parking zones less than 150 feet long
 - Time limit and kiss/ride parking zones within roadways where the zones are less than 150 feet long
 - Accessible parking
- B. Curbs shall be marked to indicate no parking for a distance of 20 feet from the end of the curb return or the crosswalk line at unsignalized intersections. At the near right side approaching signalized intersection, curbs shall be similarly marked for a distance of 40 feet.

- C. Curb markings shall be painted on the top and inside face of curb. Curb markings shall not be beaded. Curb markings shall indicate parking regulations as follows:
- Red shall indicate no-stopping, standing, or parking except that a bus may stop in a red zone sign posted as a bus zone. No supplemental message shall be painted on the curb.
 - Yellow shall indicate a commercial loading zone for the purpose of loading or unloading freight. The time limit, applicable hours and days of exception shall be sign posted. Yellow paint shall not be used for painting curbs at other than commercial loading zones.
 - White shall indicate a passenger loading zone for the purpose of loading or unloading passengers. The time limit, applicable hours and days of exception shall be sign posted.
 - Green shall indicate time limit parking. The time limit, applicable hours and days of exception shall be sign posted.
 - The curb color applied in taxi loading zones shall be that color employed by the governing jurisdiction of the adjacent public streets. In the absence of a firm and consistent policy (or a policy of no color) by the governing jurisdiction, the curb colors over the entire length of zone shall be repeating two-foot long bands of green, yellow, and white in that order. This marking shall not be supplemented by a sign.
 - Blue shall indicate accessible parking only.

END

Monthly Volumes at BART Bikeeep Smart Racks Jan 2019-March 2022



Heath Maddox

From: BART Customer Service <webcustomerservices@bart.gov>
Sent: Thursday, April 28, 2022 6:14 PM
To: Heath Maddox
Subject: RE: Case 00282609: Bike Racks on new Trains [ref:_00Dd0hrYV._5006T1xDng1:ref]

Hi Heath:

Can you reply to this customer? Thanks.

Regards,

Samson Wong
BART Customer Services

=====
Case 00282609: Bike Racks on new Trains

First name: John

Email: [REDACTED]
Phone: [REDACTED]

Subject: Bike Racks on new Trains

Comment:

It is very hard to know where or if bike racks are on the new trains, especially when many people are on the train. How about a bike symbol up high on the wall above them so it can be visible above the crowd of people? Something. Also, many cars don't seem to have bike racks, I can't find them???? Also more of the old style bike rack along the wall with straps. The new style where you have to wedge your tire into it are absolutely horrible, absolutely horrible!!!

Check Before You Go! Sign up for email and text alerts about BART service, improvements, and emergencies at <https://www.bart.gov/alerts>.
ref:_00Dd0hrYV._5006T1xDng1:ref

Heath Maddox

From: BART Customer Service <webcustomerservices@bart.gov>
Sent: Thursday, April 7, 2022 3:51 PM
To: Heath Maddox
Subject: RE: Case 00281685: Allow bikes on escalators [ref:_00Dd0hrYV._5006T1xB2YI:ref]

Hi Heath:

FYI.

Regards,

Samson Wong
BART Customer Services

=====
Case 00281685: Allow bikes on escalators

Customer: n/a
Phone: [REDACTED]
Date/Time of Call: 1105 am, 4/7/22

Customer Report: Customer/bicyclist said there's a rule against riders with bikes using escalator. Montreal allows it. Customer feels it should be allowed.

Customer feels that using stairs is dangerous to carry a bike, especially thru 3 flights of stairs. He prefers escalator and feels no need to cite people for this. It's being violated daily.

Customer was informed that there is attempt to install bike rails in stairwells.

Check Before You Go! Sign up for email and text alerts about BART service, improvements, and emergencies at <https://www.bart.gov/alerts>.
ref:_00Dd0hrYV._5006T1xB2YI:ref

Heath Maddox

From: Robert Prinz [REDACTED] >
Sent: Wednesday, March 30, 2022 10:26 AM
To: Heath Maddox
Cc: Bart Webcustomerservices
Subject: Re: Case 00280958: BART car bicycle storage [ref:_00Dd0hrYV._5006T1w7fAA:ref]

Great thanks and I'll pass along that tip.

--



Robert Prinz | Education Director
Pronouns: he/him
Mail: PO Box 1736 Oakland, CA 94604
Office: 466 Water Street Oakland, CA 94607
P: [REDACTED] x2 | E: [REDACTED]

*** **

Spread the bike love by attending a free class or requesting one for your East Bay community group!
Visit BikeEastBay.org/BikeEdOnline for info.

*** **

On Wed, Mar 30, 2022 at 10:25 AM Heath Maddox <hmaddox@bart.gov> wrote:

Hi Robert,

FYI, I heard back from a shop supervisor on the strap maintenance issue, and he informs that cars are inspected at regular intervals for missing equipment, and he informed me that the quickest way for the public to get train equipment issues resolved is to contact the Train Operator via the intercom while riding the train. If customers suspect a car has an issue, they should have them note the 4 digit car number and let the Train Operator know via intercom so that he or she can report the problem to our Operations Control Center.

Thanks,

Heath

-----Original Message-----

From: Heath Maddox
Sent: Friday, March 25, 2022 8:05 AM
To: Robert Prinz [REDACTED]
Cc: BART Customer Service <webcustomerservices@bart.gov>
Subject: RE: Case 00280958: BART car bicycle storage [ref:_00Dd0hrYV._5006T1w7fAA:ref]

Hi Robert,

It was nice to see you last night at Jennifer's retirement--what a great gathering!

Thank you for relaying the complaints from Bike East Bay members regarding the straps in the bicycle area on BART trains.

I sincerely wish there were a simple solution we could offer. Clearly, to serve all potential cyclists and their foreseeable loads, the bike straps could be longer. The straps went through extensive and iterative testing but I'm afraid that, as is often the case, the final result was a compromise that responded to a number of competing priorities.

Our initial design for the straps was in fact longer, to better accommodate wider or loaded bikes. Unfortunately, however, we were unable to implement the longer straps due to the potential for the straps to be sucked onto and obstruct the air intake grate immediately below the bike lean bar on both old and new BART cars (see attached photo). Due to the very real potential for compromising the climate control and air filtration system on the cars, having longer straps was unfortunately non-negotiable. We did try a number of different buckle and strap configurations to address the issue while still providing sufficient length for wider bikes, but were ultimately unsuccessful.

All that said, and your members' experience notwithstanding, the feedback we have received on the straps so far has been overwhelmingly positive and reinforces the decision to halt installation of the clamper-style racks that were initially deployed on the new cars and replace all existing racks with bars and straps.

To my knowledge, the straps have not been shortened, nor would there have been any reason to do so since the only reason the straps are not longer is to clear the intake grate, and the initial design, of which I purchased 2,700, accomplished this. I have noticed a slight uptick in complaints about the short straps lately, but I attribute this to increased ridership and the now more widespread implementation of the straps, which has been taking place through an extended retrofit process during a COVID-induced lull in ridership.

Regarding missing and broken buckles, I will certainly share this observation with our maintenance team and ask that their continued attention be given to keeping the straps functional.

A few final things to consider:

* One observation that my colleagues and I made during testing was that if the bike nearest the lean bar is secured with a strap and additional bikes are leaned against this secured bike without being strapped themselves, the outer bikes are actually fairly stable since the handlebars, pedals, etc tend to keep them from rolling away.

* When I load my bicycle for touring or carrying a lot of cargo, I will almost always have an extra strap or bungee which can easily be put into service tethering my bike. If you know you will be riding BART with a loaded bike, bringing an extra strap is a good idea, just in case you can't get the spot closest the rail. In a pinch, a helmet strap can sometimes work to tether to the adjacent bike.

* As a longtime BART-with-bike user, before the straps were implemented, I would try to sit in the seat nearest to my bike so I could keep a hand on it to keep it from rolling away. If a seat were not available, I'd either stand near my bike, or sometimes politely ask the person sitting nearest the bike area if they could perhaps move to a nearby seat.

Again, thanks for your note. I hope my long-winded response has given you some insights that you can share with your members to make riding BART with a loaded bike more convenient and safe despite the less-than-perfect straps.

Sincerely,

Heath Maddox
Manager of Bicycle Access Programs
Bay Area Rapid Transit District
2150 Webster Street, 8th Floor
Oakland, CA 94612
415.728.1352

-----Original Message-----

From: BART Customer Service <webcustomerservices@bart.gov>

Sent: Thursday, March 24, 2022 5:21 PM

To: [REDACTED]

Subject: RE: Case 00280958: BART car bicycle storage [ref:_00Dd0hrYV._5006T1w7fAA:ref]

Hi Robert,

Thank you for the feedback. We'll let our bike team know. Thank you.

Regards,

Samson Wong
BART Customer Services

cc: station access - bike

=====

Case 00280958: BART car bicycle storage

First name: Robert Prinz

Email: [REDACTED]

Phone: [REDACTED]

Subject: BART car bicycle storage

Comment:

Our organization Bike East Bay has received a number of complaints about the strap design for the BART car bicycle storage.

The intention was for three bicycles to be stored and secured using the straps/clips, but the straps are not long enough to reach a third bicycle, and it is often a struggle to even secure two bikes side by side.

Additionally we have received reports of the clips used to secure the straps being broken, and I have observed this on multiple cars as well.

It seems as though when the bicycle straps/clips were first implemented the straps were longer and able to reach around multiple bikes more easily, but have since been shortened.

Either way, the current solution isn't providing the intended level of bike storage and I would be interested in hearing from staff on possible solutions. Thank you.

Check Before You Go! Sign up for email and text alerts about BART service, improvements, and emergencies at <https://www.bart.gov/alerts>.

ref:_00Dd0hrYV._5006T1w7fAA:ref