



Item #9

**DATE** March 6, 2019

**TO** GCTD Board of Directors

**FROM** Austin Novstrup, Transit Planner I *ARN*

**SUBJECT** **Receive Presentation and Provide Input on Draft Bus Stop Guidelines**

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### **SUMMARY**

The attached DRAFT Bus Stops Guidelines have been developed with input of member jurisdictions and GCTD's Technical Advisory Committee (TAC). Staff is recommending that the Board receive a presentation and provide input on the Draft Bus Stop Guidelines and authorize staff to post the guidelines online for a public comment period of 30-days.

### **BACKGROUND**

Bus stops are typically the first interaction people have with GCTD and factor heavily on the rider's experience of using transit, and the public impression of the transit system. While GCTD does not own or maintain any bus stops in its service area, GCTD provides recommendations to cities on the placement and location of bus stops and provides funding annually to member jurisdictions as part of the annual budget process as defined in the District Bylaws.

GCTD staff first developed Bus Stop Guidelines in 2015 in order to assist its member jurisdictions and developers with the design and placement of bus stops and related amenities along our routes. The attached draft guidelines provide updated examples of bus stop designs, ADA specifications, and offer updated recommendations for amenities such as shelters and benches. In addition, the guidelines document member jurisdictions roles in maintaining bus stops, and the process for reviewing land use and roadway plans in order to better incorporate transit into the community.

### **RECOMMENDATION**

**It is recommended that the GCTD Board receive a presentation and provide input on the Draft Bus Stop Guidelines and authorize staff to post the guidelines online for a public comment period of 30-days.** Staff will bring updated guidelines back to the Board for approval at a future meeting.

### **GENERAL MANAGER'S CONCURRENCE**

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Steven P. Brown

### **GOLD COAST TRANSIT DISTRICT**

# BUS STOP GUIDELINES

2019 DRAFT  
MARCH 6, 2019



## **DISCLAIMER**

These guidelines provide suggested design criteria to be considered when designing and placing bus stops and amenities. This information is not to be used as a set of standard details on which to base a final design but should be used in conjunction with sound evaluation of the facts and engineering judgment.

Developers, design professionals, engineers, contractors, and other persons who utilize these guidelines shall be responsible for complying with all applicable laws. To the extent any of a portion of these guidelines is inconsistent with the ADA or any other federal, state, or local laws or regulations, the applicable law or regulation shall control.

Gold Coast Transit District, and its member jurisdictions in adopting these guidelines, indicate their general acceptance of the information provided. Their acceptance of these guidelines does not modify or supersede current standards and/or policies otherwise adopted by the member agency.

## **ACKNOWLEDGEMENTS**

We would like to thank those involved in previous work on bus stop guidelines, including staff from our member jurisdictions, as these were used as base information to develop our local guidelines. We specifically would like to thank OMNITRANS, Santa Barbara Metropolitan Transit District (MTD), Orange County Transit Authority (OCTA), Washington Metropolitan Area Transit Authority (WMATA), National Association of City Transportation Officials, and the Texas Department of Transportation for guidelines or documents referenced.

## **GCTD MISSION STATEMENT**

The mission of the Gold Coast Transit District is to provide safe, responsive, convenient, efficient and environmentally responsible public transportation that serves the diverse needs of our community.

## **ABOUT GCTD**

The Gold Coast Transit District (GCTD) provides safe, responsive, convenient, efficient, and environmentally responsible fixed-route bus and paratransit public transportation that serves the diverse needs of the cities of Ojai, Oxnard, Port Hueneme and Ventura, and in the unincorporated Ventura County areas between the cities. Utilizing a fleet of 56 clean-burning compressed natural gas (CNG) buses, GCTD carries over 3.5 million (FY 17-18) passengers annually on its 20 bus routes. GCTD is a transit district governed by a Board of Directors made up of an elected official from each member agency.

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## 1 INTRODUCTION & PURPOSE

The purpose of this report is to provide jurisdictions within the Gold Coast Transit District, local developers, and other local partners a consistent set of guidelines for designing high-quality transit stops.

**A high-quality transit stop is one that is well connected to the neighborhood or community it serves, accommodates the needs of all transit passengers safely and comfortably, and permits efficient and cost-effective transit operations.**

While GCTD does not own any bus stops, under the GCTD Bylaws the District provides TDA (Transportation Development Act) funds on an annual basis "to member jurisdictions to cover expenditures for operating and maintaining locally-owned transit services and capital needs."

The design guidelines detailed in this document are intended to guide local comprehensive plans, site or subdivision plans, and transportation/mobility plans. These guidelines developed by GCTD in conjunction with its member jurisdictions are based on a review of standards and best practices applied nationally.

GCTD recognizes that every location is unique, and that a given transit stop's jurisdictional and physical context may offer opportunities to meet these guidelines in some ways but not in others. As a result, **this should be viewed as a guiding document, offering templates for desirable facilities and amenities wherever it is possible to provide them.** The guidelines detailed here will lead to a higher-quality, more consistent, more accessible, and better-connected

network of stop facilities over time: project-by-project and stop-by-stop.

## 2 POLICIES AND PROCEDURES

It is GCTD's intent to establish consistent and systematic policies and procedures for the review of proposed bus stops and bus stop revisions. These policies specify the process for making decisions, developing transit plans and reviewing projects that may affect transit operations. These policies and procedures ensure that the bus stops receive the proper assessment and technical review before bus stops are moved or constructed.

### 2.1 INDIVIDUAL STOP REQUESTS

Requests for new bus stop locations or concerns regarding existing stops may originate from any number of sources including administrative staff, bus operators, the public, developers, and member agencies. These requests may include issues such as requests to add, move, or remove bus stops or amenities; or may be operational and/or safety issues related to the stop location. The process for these requests is as follows:

**The process for bus stop requests is:**

**Submission:** Bus stop requests may be made directly to GCTD or to a member agency. All bus stop requests will be reviewed by GCTD staff. If the member agency receives the request, it will be forwarded to GCTD staff for action.

**Review:** Planning staff will coordinate the review of bus stop requests. Planning and operations staff will evaluate the potential impacts on passengers, residents, businesses in the surrounding area as well as GCTD operations. A site

visit by both GCTD staff and the member agency staff may be scheduled at the discretion of GCTD to determine whether the request is feasible.

**Recommendation:** In accordance with these guidelines GCTD will develop a recommendation and planning staff will advise the appropriate member jurisdiction of GCTD's recommendation. Based on GCTD's recommendation, the member agency may determine whether to implement the change.

**Implementation & Monitoring:** GCTD and the member agency will establish an implementation plan. Plans will include outreach to affected passengers and adjacent property owners, a schedule for the implementation of recommended changes, and a process for monitoring usage or impacts of recommended changes. GCTD and/or the member agency may install temporary stops or make changes to amenities on a trial basis before making changes permanent.

## 2.2 BUS STOP OPTIMIZATION

To improve the quality and reliability of bus service, when resources are available, GCTD will periodically review the placement, spacing, and amenities of existing stops. The goal of these reviews will be to identify redundant bus stops, determine where additional bus stops may be needed, and to verify that amenity placement is consistent with stop utilization. Recommendations based on these reviews will follow the same process for implementation and monitoring as individual stop requests.

## 2.3 DEVELOPMENT PLAN REVIEW

With each new development proposal, there is an opportunity to incorporate

transit into the planning process. Plans which include one or more of the following criteria shall be sent to GCTD for review:

- Street(s) with existing transit routes,
- Proposed street(s) with public transit identified in General, Community or Specific Plans,
- Major arterial or connector streets,
- Proposed high density development, including residential, commercial, industrial, educational or medical institutions,
- Developments that are anticipated to have a high number of transit riders, or
- Any other project that in the member agency's opinion should be assessed for current or future transit needs.

GCTD shall be provided the opportunity to review and respond to all proposed plan changes before and during the public review process. Any amendments to these plans that will have a direct impact on the location of current or proposed stops should be forwarded to GCTD for review and comment.

Communications should include the name of the contact person at the member agency, and the name and contact information of the contact person of the developer. GCTD will review the plans and consult with the member agency or others as necessary to properly comment on the plans. GCTD will provide written comments on the plans to the member agency. Revised plans should be returned to GCTD along with prior comments for subsequent reviews.



Meeting invitations, notices, scoping letters, and copies of plans should be sent to:

Planning@goldcoasttransit.org  
Or mailed to:  
Planning Department, Gold Coast Transit District  
1901 Auto Center Drive  
Oxnard, CA 93033

**Review:** The member agency should send one (1) set of development plans to GCTD and include basic project information such as proposed usage, the name of the contact person at the member agency, and the name and contact information for the project.

**Recommendation:** GCTD planning staff will review and provide comments on plans including recommended placement of bus stops, amenities, pedestrian connectivity, and bus movement paths. Revised plans should be returned to GCTD along with prior comments for subsequent reviews.

Member agencies should also consider the requiring that contractors and property developers coordinate with GCTD. Below is some sample language that can be used in development conditions of approval:

*Contact and coordinate with the local transportation agency, Gold Coast Transit District, on bus stop design prior to final building permits of any bus stop being constructed as part of this development. Additional guidance for bus stop construction specifications can be found in Gold Coast Transit Bus Stop Design Guidelines document.*

## 2.4 GENERAL, MASTER, & SPECIFIC PLAN REVIEW

It is the intent of GCTD to have quality public transit included in future land use and roadway plans. When a member agency begins the process to create or update a general plan, master plan, or specific plan, consideration should be given for policies and practices that support and promote transit use in our communities.

GCTD shall be provided the opportunity to review and respond to all proposed plan changes that may result in impacts to the transit system before and during the public review process. Any amendments to these plans that will have a direct impact on the location of current or proposed bus stops should be forwarded to GCTD for review and comment.

Communications should include the name of the contact person at the member agency overseeing the plan development or review process. GCTD will review draft plans and consult with the member agency or others as necessary to properly comment on the plans. GCTD will provide written comments on the plans to the member agency.

Meeting invitations, notices, scoping letters, and copies of plans should be sent to the same address listed above.

To further improve coordinating of transit and local land use plans, jurisdictions should also consider the following suggestions:

- Include a **Mobility Element** in community general plans including information such as existing and

proposed transit corridors, facilities and routes.

- Seek to coordinate land use and transportation goals for greenhouse gas emission reduction, carefully focusing new development in high quality transportation areas (HQTA). The following is sample language that can be used in general plans to incorporate transit supportive policies into land use planning:

*Create diverse housing options along the transit corridors and in the activity centers, replacing some commercial potential with additional affordable and workforce housing, and encouraging affordable workforce housing near transit stations.*

*Encourage mixed-use development close to transit to provide housing opportunities for the community support local businesses and reduce reliance on automobiles.*

*Encourage adaptive reuse of historically or architecturally interesting buildings in cases where the new use would be compatible with the structure itself and the surrounding area.*

*Utilize transportation demand management to facilitate efficient use of parking resources, shared and reduced parking opportunities and trip reduction goals.*

*Require the future development of communitywide serving facilities to be sited in transit-ready areas that can be served and made accessible by public transit. Conversely, plan (and coordinate with other transit agencies*

*to plan) future transit routes to serve existing community facilities.*

- Improve active transportation (bike and pedestrian) facilities that decrease reliance on automobiles; increase walking, bicycling and transit use, to improve community quality of life. The following is sample language that can be used in general plans to incorporate transit supportive policies into land use planning:

*Continue to make investments in Complete Streets around HQTA's. Complete streets are streets designed, funded and operated to enable safe access for roadway users of all ages and abilities, including pedestrians, bicyclists, motorists and transit riders*

*Continue to consult with regional transit operators to maintain and improve the coverage and frequency of transit service in the City.*

*Consult with GCTD to establish and maintain transit hubs at key locations throughout city, both existing and planned.*

*Enhance pedestrian and bicycle access to local and regional transit, including facilitating connections to transit.*

- Require property developers to construct and maintain transit facilities and amenities in conjunction with private development. The following is sample language that can be used in general plans to integrate transit into community design:

*In addition to requiring private development to provide transit amenities, consult with regional transit operators to provide attractive and convenient bus stops, including shade/weather protection, seats, transit information, and bus shelters as appropriate.*

*Continue to require that the siting and architectural design of new development, infill or redevelopment projects promotes safety, pedestrian friendly design, and access to transit facilities.*

*Continue to require that new development participates in the cost of transportation mitigation and improvements necessitated by new development, including non-automobile solutions.*

*Require that new and substantially renovated office, retail, industrial, and multi-family developments implement transit amenities, including bus pull-outs, transit shelters, and other streetscape elements, as appropriate.*

## **2.5 SPECIAL EVENT AND CONSTRUCTION IMPACTS TO BUS OPERATIONS**

Some events and construction projects will temporarily disrupt a bus route(s) or bus stop(s), even if there is no long-term effect on transit operations or bus stops. Prior to approval of traffic mitigation plans, it is highly desirable that GCTD is notified by the member agency or the project proponent. For short term disruptions, GCTD should be notified no less than two weeks before construction. Longer term disruption should be reviewed and discussed in a manner similar to the development plan review

process discussed in section 2.3. GCTD staff will work with the member agency to develop a plan that maintains reasonable transit access and operations while the project is being constructed.

To minimize service disruption to passengers during construction projects, the following guidance should be followed:

- Contractors shall make every effort to schedule their work to minimize impacts and duration of impacts to transit operations and the general public.
- Contractors shall invite GCTD to the project pre-construction conference.
- Whenever possible, maintain access to the existing bus stop during construction. However, if that is not possible, a temporary bus stop location should be identified and discussed with GCTD for approval.
- All work shall conform to the requirements of the Americans with Disabilities Act (ADA) including provisions for temporary access to and from bus stops and providing temporary bus stop locations.
- The contractor shall provide GCTD with the name and telephone number of the contractor's construction manager prior to the commencement of all construction projects involving bus stops or bus route detours.
- The contractor shall receive approval from the member agency for the location of street furniture placement prior to construction of the passenger boarding area.
- GCTD will provide and/or post the appropriate temporary bus sign signage.
- The contractor shall notify GCTD in advance of construction completion

to allow GCTD to reinstate normal operations.

It is the contractor's responsibility to reinstall the bus stop sign or reconstruct the stop as soon as reasonably feasible after work is performed.

## **2.6 BUS STOP MAINTENANCE**

With the exception of bus stop information panels installed at select bus stops, GCTD does not own or maintain any bus stops or amenities system-wide. However, GCTD provides funding to its member agencies to provide for the maintenance of bus stops and stop amenities in their jurisdictions. Maintenance of transit facilities is essential to providing a safe and welcoming environment to our customers. Damaged street furniture, litter and soiled sidewalks make waiting for our service unpleasant and should be addressed in a timely manner to maintain a positive impression for our patrons and the general public.

Formal maintenance agreements between GCTD and Member agencies should establish well-defined regular maintenance schedules and processes for addressing bus stop deficiencies.

Agreements should outline processes for identifying and addressing:

- Safety concerns
- Repair or replacement of existing amenities
- Customer requests

Additionally, agreements should provide for the following routine maintenance tasks:

- Full wash down of shelter and accessories.
- Removal of all dirt, graffiti, pasted material, or stickers.

- Removal and replacement of trash bags at least once a week depending on the amount of trash that accumulates at the stop.
- Litter pick up around the stop.
- Manual or chemical removal of weeds when needed.
- Pruning of obstructing foliage (in particular branches in advance of the bus stop).
- Touch up of marred or chipped paint.
- Verifying shelter lighting levels and replacement of bad bulbs and ballasts.

Finally, agreements should provide that if member agencies establish agreements or enter into contracts with vendors for the provision of stop amenities or for stop maintenance that GCTD be given the opportunity to review and comment as those agreements or contracts are developed.

## **3 BUS STOP SPACING & PLACEMENT**

The proper spacing and placement of bus stops is critical to the safety of passengers and motorists, and for the efficiency of transit operations. Because of the number of factors involved, each new or relocated stop must be examined on a case-by-case basis. However, general guidelines for stop spacing and placement are as follows.

### **3.1 SPACING ALONG THE ROUTE**

Bus stops should be spaced close enough together so that our customers can reach them easily and far enough apart so that the bus is not continually stopping and starting, which would make trips excessively slow.

TABLE 1: SCENARIOS AND PREFERRED PLACEMENT

Situation	Preferred Placement
Any signalized intersection where bus can stop out of travel lane.	Farside
If bus turns at intersection.	Farside
Intersection with many right turns.	Farside
Complex intersections with multi-phase signals or dual turn lanes.	Farside
If nearside curb extension prevents auto from turning right in front of bus.	Nearside
If two or more consecutive stops have signal	Alternate nearside and farside (starting nearside to maximize advantage from timed signals.
If obvious, heavy single direction transfer activity	One nearside; one farside to eliminate crossing required to transfer
If blocks are too long to have all stops at intersections	Midblock
Major transit generators not served by stops at intersections	Midblock
Midblock pedestrian-crossing defined by refuge island and/or striping	Midblock
Major Transit generator that cannot be served by on-street stop, or where ridership gain will far outweigh inconvenience to passengers already on board.	Off-street

Generally, bus stops should be spaced every 1/4-mile (0.25 mile) in urban areas and in rural areas spacing may be 1/2-mile apart (0.5 mile). In order to facilitate the operation of rapid service the stop spacing for corridors served with headways of 30 minutes or less should be spaced every 1/3-mile (0.33 mile).

### 3.2 MAJOR ACTIVITY CENTERS

Bus stops should always be placed at major trip generators, including major employment centers, dense residential areas (>20 units per acre), major retail centers, educational centers, and major medical facilities. When feasible, a bus stop should be located to minimize

walking distances to the major activity center.

### 3.3 MAJOR TRANSFER LOCATIONS

At locations where transfer activity between routes is heavy, stops should be located as near to each other as possible to shorten paths for passengers transferring to other routes.

### 3.4 PLACEMENT OF BUS STOPS AT INTERSECTIONS

Bus stops are generally located at intersections, on either the near-side (before the intersection) or far-side (after the intersection). Under certain circumstances or to accommodate

a major trip generator, bus stops may also be placed at a mid-block location. It is most often recommended to place bus stops on the far-side of the intersection unless special circumstances exist where that is infeasible or would be unsafe to do so. It should be noted, where feasible, stops should be located as near to a crosswalk as possible (within 200 feet). Table 1 provides scenarios where the different stop types are most appropriate. Table 2 summarizes the major advantages and disadvantages related to locating bus stops either nearside, far-side, or mid-block of an intersection.

### **3.5 ADDITIONAL CONSIDERATIONS FOR STOP PLACEMENT**

It is important to consider operational needs and the unique circumstances at each potential bus stop location, including:

- Relation to driveways and rail crossings, and bus turning requirements,
- Length of curb clearance to allow for re-entering the travel lane,
- Presence of protected crossings at signalized or stop controlled intersections,
- Availability of adequate sidewalks and right-of-way (meets minimum ADA standards),
- Pedestrian access to adjacent properties,
- Open and visible passenger waiting areas for personal security and passenger visibility,
- Adequate illumination including street lighting and pedestrian path lighting,

- Areas which tend to accumulate standing water, as pooling and muddy conditions can be a problem.

### **3.6 PEDESTRIAN NETWORK OR TRANSIT WALKSHED**

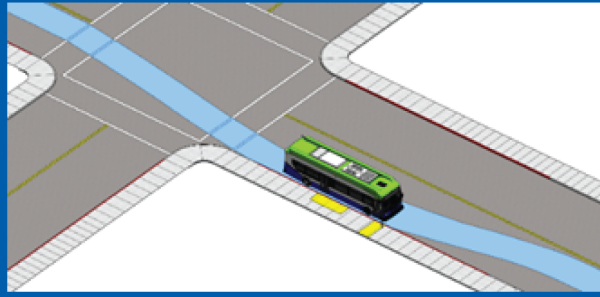
All transit passengers begin and end their trips as pedestrians. Stops should be positioned to maximize the size of the available transit walkshed. Stops should have access to continuous sidewalks connected by reasonably spaced, legal, and safe pedestrian crossings. Gaps in the pedestrian networks and other substandard conditions force pedestrians to walk unsafely and severely limit the attractiveness of transit by discouraging pedestrians from being present on a street. Member agencies should prioritize pedestrian network improvements where transit services already exist and coordinate improvements with future transit services in mind. Where few pedestrians are present, pedestrians and bicyclists may be accommodated on shared-use paths on one or both sides of a street.

### **3.7 BUS STOPS AND DRIVEWAYS**

If a bus stop must be placed near a driveway, it is best to place it on the far-side of the driveway where it will not impede with entering and exiting traffic. If blocking a driveway is unavoidable, special design considerations shall be given to prevent vehicles from attempting to maneuver around the bus in a situation with reduced sight distance. When there are two driveways to a parcel on the same street, it is better to block the upstream driveway forcing vehicles to turn behind the bus to access the driveway.

**Table 2: EVALUATING PLACEMENT OF BUS STOPS AT INTERSECTIONS****Advantages**

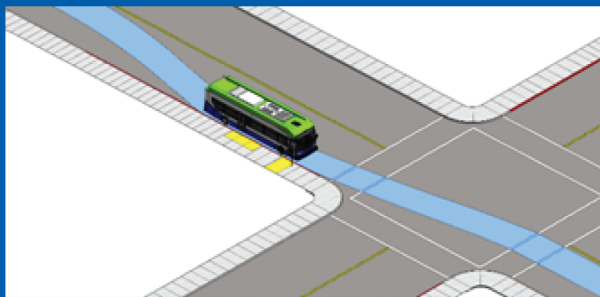
- Minimizes conflicts with right-turning vehicles.
- Encourages pedestrians to cross behind bus.
- Deceleration zone overlaps with intersection reducing need for curb clearance.
- Signalized intersections provide gaps allowing bus to re-enter traffic flow more easily.

**Far-side Stop****Disadvantages**

- Bus stopped near intersection may block sightlines for pedestrians and vehicles crossing intersection.
- Rear-end accidents may occur if distracted drivers do not realize bus is stopping beyond the intersection.

**Advantages**

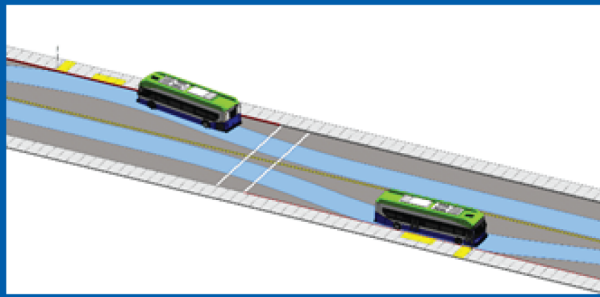
- Boardings occur closer to crosswalk.
- Acceleration zone overlaps with intersection reducing need for curb clearance.
- Can be coordinated with far-side stop on cross street to eliminate need to cross street.

**Near-side Stop****Disadvantages**

- Conflicts between bus and right-turning vehicles.
- Pedestrian sightline to oncoming traffic obstructed.
- Bus obscures sightlines to signals and intersection for vehicles approaching the intersection.

**Advantages**

- Passenger convenience at key mid-block trip generators.
- Traffic conflicts minimized away from intersection.
- More spacious waiting areas because stop is located away from intersection congestion.

**Mid-block Stop****Disadvantages**

- Mid-block crosswalk must be provided.
- Safety concerns related mid-block crossing.
- Requires curb clearance for both deceleration and acceleration



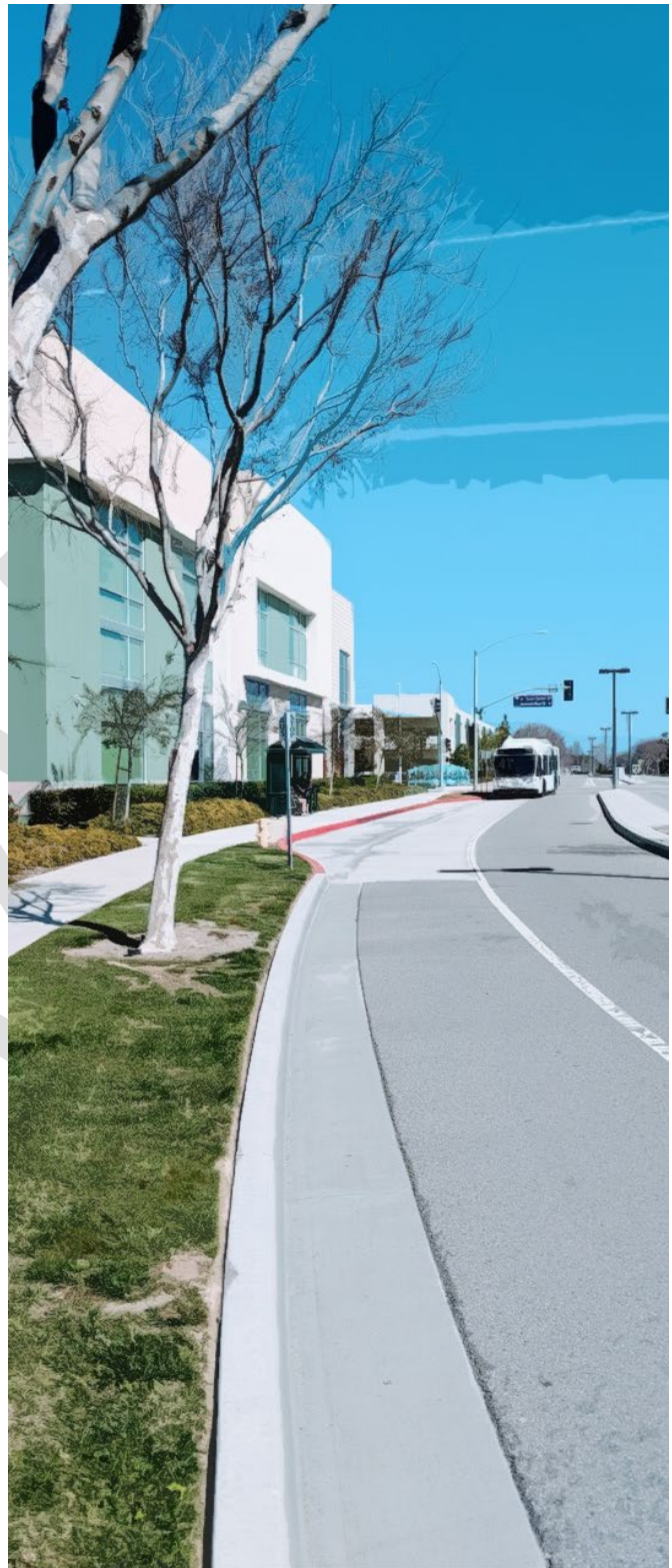
## 4 IN-STREET DESIGN GUIDELINES

The bus zone refers to the area of the street devoted to bus movements around a bus stop. All bus zones consist of the area buses use to pull to the curb, the area where buses sit while loading and unloading passengers, and the area buses use to re-enter traffic. The geometry of the street around stop should accommodate both transit vehicle movement and general traffic. Bus zones require a stop location within the roadway that provides the vehicles sufficient space for deceleration and acceleration (to exit and reenter traffic flow), with a clear area to discharge and receive passengers efficiently and safely.

### 4.1 TYPICAL BUS ZONE CONFIGURATION

Typical bus zone types fall into two major categories: **in-line** and **off-line** with respect to the roadway. In-line stops are designed as part of the street and participate in the general pattern of traffic flow. The loading and unloading of passengers occur at the roadway edge.

Off-line stops are out of the path of the roadway and are often designated as “bus only” locations, such as within a transportation center, shopping center, or park-and-ride facility. Passenger loading takes place in special designated areas. Although off-line facilities may have more space available and consequently permit the provision of more amenities than in-line facilities. The use of off-line facilities is discouraged as deviations into off-line facilities adds to a route's travel time.





## 4.2 CURBSIDE STOP

The in-line curbside stop is the most common bus stop type within GCTD's system.

The bus zone is located in the road, usually in a parking and/or loading lane area, with a typical width of 10 feet. The parking lane should ideally be marked to identify the loading and maneuvering area for transit vehicles.

The bus zone treatment typically includes red painted curbing indicating the roadway the area as a "no stopping" or "no parking" location.

Typical curbside bus zone length is 90 feet for far-side stops, 100 feet for near-side stops, and 150 feet for midblock stops. An additional 20 feet should be provided for articulated buses, plus appropriate transition zones where traffic speeds are higher.

Curbside stops are accommodated into the normal flow of traffic, can be integrated easily within most street design schemes, and are used most effectively when traffic speeds are lower than 45 mph.

FIGURE 1 TYPICAL FAR-SIDE CURBSIDE STOP CONFIGURATION

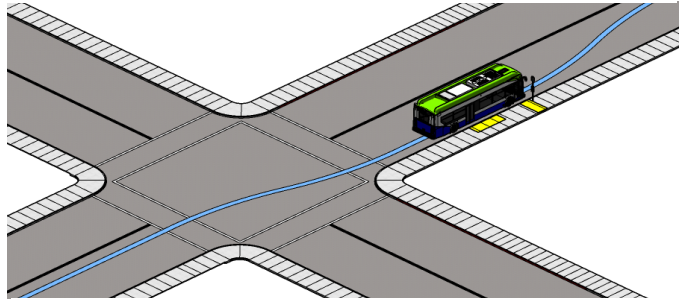


FIGURE 2 TYPICAL NEAR-SIDE CURBSIDE STOP CONFIGURATION

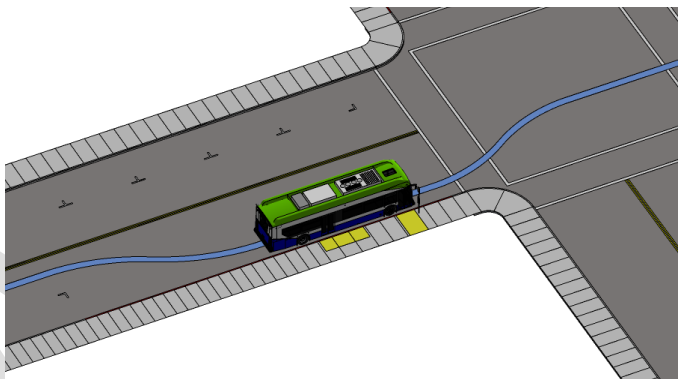
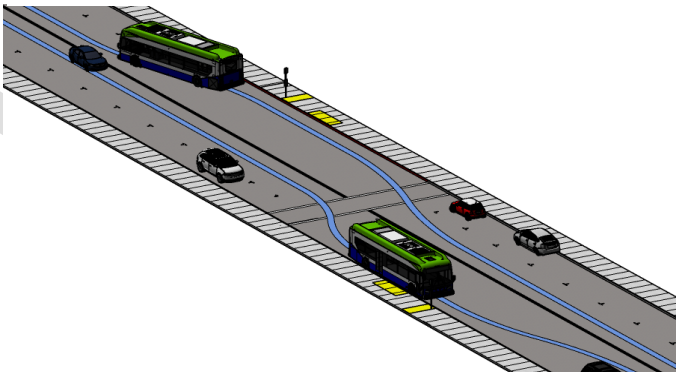


FIGURE 3 MID-BLOCK CURBSIDE STOP CONFIGURATION



### 4.3 CURB EXTENSION

A curb extension (or “bus bulb”) is a modification of the sidewalk to extend the bus loading/waiting area into the roadway. Because a curb extension can be as short as 15 feet—see Table 3—it can conserve curbside space for parking relative to a curbside stop with a bus zone. It is most effectively used when travel speeds are lower than 30 mph, where pedestrian volumes are high, or where the sidewalk is narrow and additional waiting space is required.



FIGURE 4 CURB EXTENSION STOP CONFIGURATION

The curb extension provides a larger waiting area for passengers, with less interference with pedestrians on the sidewalk, and can also improve pedestrian safety by shortening the crossing distance. Curb extensions are most appropriate for near-side stops where there are parking lanes or far-side stops where there are multiple travel lanes.

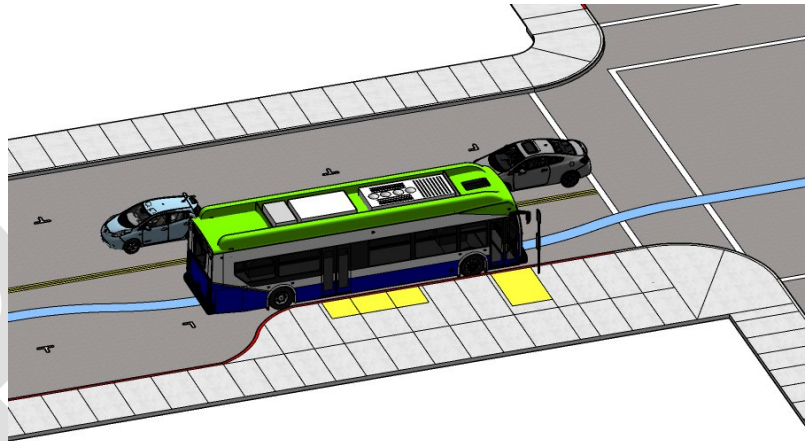


TABLE 3 CURB EXTENSIONS SPACE REQUIREMENTS

Vehicle	Bulb length*	Doors served	Bulb On-street parking displaced**	Curbside On-street parking displaced**
All vehicle types: front doors only (min. length)	15'	1	1 space	5 spaces
Standard bus	30'	2	2 spaces	5 spaces
Articulated bus	50'	3	3 spaces	6 spaces

\*Plus 10-foot safety buffer from the crosswalk

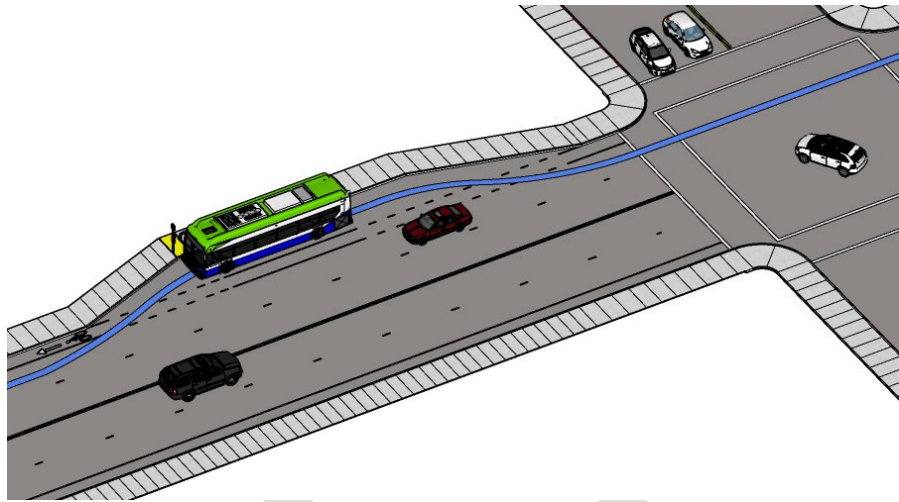
\*\*Assuming 20 feet length per parking stall, rounded up to the next stall

#### 4.4 BUS BAY/ PULL-OUT

The bus bay or pull-out is a location off-line with respect to the travel lanes, with a special curbed pull-out for buses. The bus bay allows general traffic to pass around a loading bus and interferes less with right-turning vehicles at the intersection. **Typical dimensions are 170**

**feet long by 10 feet wide.** This configuration is appropriate where an intersection presents a particular hazard or conflict with transit operations. It is most effectively used where traffic speeds are higher, high volume loading is anticipated, or as a system layover stop.

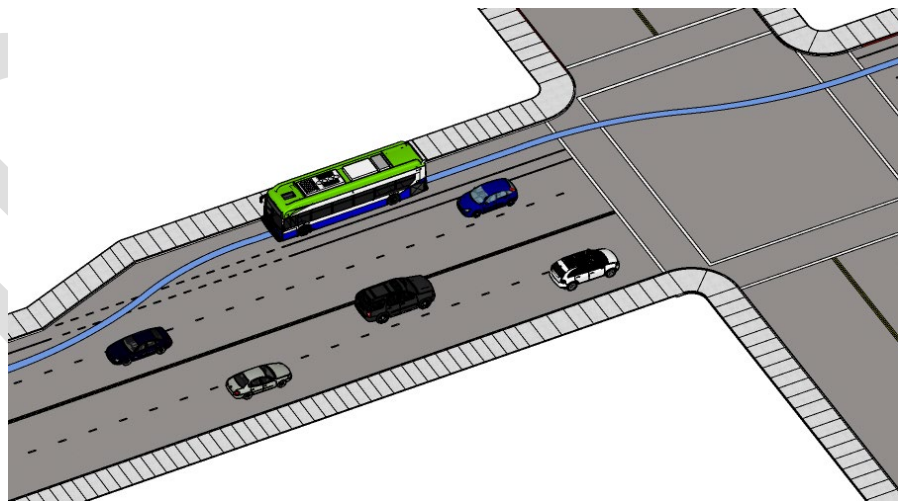
FIGURE 5 BUS BAY CONFIGURATION



#### 4.5 OPEN BUS BAY

The open bus bay is a variation on the bus bay which provides more maneuverability toward the upstream side of traffic flow. Typically used within a transportation center or depot setting, a "saw-toothed" arrangement is typical. **Dimensions are 120 ft. for a standard bus—add 20 ft. for an articulated**

FIGURE 6 OPEN BUS BAY CONFIGURATION



**bus—plus length for acceleration and deceleration zones where required by travel speeds.** In the far-side example above (Figure 5), the intersection is used as the deceleration zone. A near-side open bus bay can also be used effectively as a queue-jump lane in a Transit Signal Priority (TSP) scheme.

## 4.6 ENGINEERING TO ACCOMMODATE BUSES

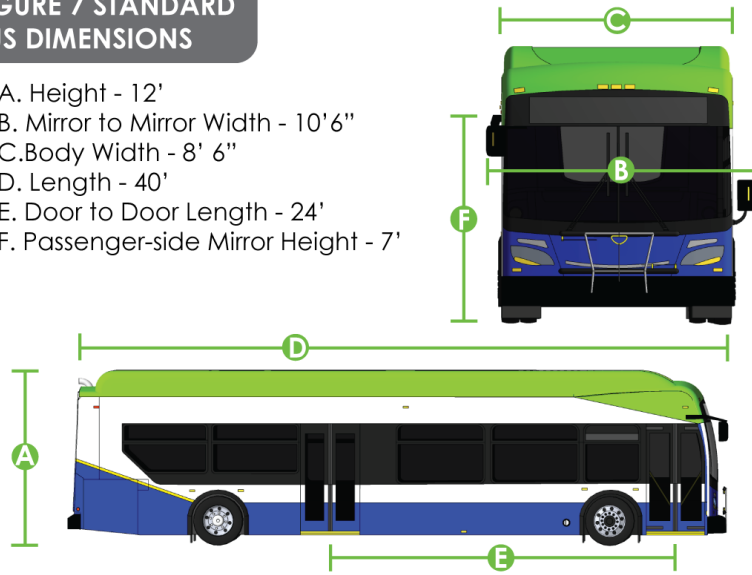
### Vehicle Dimensions

Vehicle dimensions for bus equipment in the U.S. are commonly 40 feet long for a standard bus and 60 feet for an articulated bus.

Consideration in the bus zone should also be given to the loading and unloading of bicycles from the front-of-bus rack, which adds an additional six feet to the loading zone vehicle length. Vehicle height is 12 feet for both types. Vehicle width from mirror to mirror is 10.5 feet.

**FIGURE 7 STANDARD BUS DIMENSIONS**

- A. Height - 12'
- B. Mirror to Mirror Width - 10' 6"
- C. Body Width - 8' 6"
- D. Length - 40'
- E. Door to Door Length - 24'
- F. Passenger-side Mirror Height - 7'



### Curb Clearance

In-street stop design also requires consideration of horizontal and vertical clearances for both passengers and vehicles. The curbside stop area should be free of horizontal obstructions at least two feet from the curb face. Vertical obstructions should be clear from the loading area surface to a height of at least 12 feet.

### Paving Requirements

Roadway pavements (or shoulders, if that is where the buses stop) need to be of sufficient strength to accommodate repetitive bus axle loads of up to 25,000 pounds. Stops that have high ridership or where buses make a turn are of particular concern because of the increased loads associated with these activities. In these areas, using reinforced concrete pavement pads (shown below) reduces pavement failure problems that are common with asphalt.

The pad should be a minimum of 10 feet wide with a pavement section of at least 9-inches of Class A 3,000 psi concrete with adequate sub-grade preparation to accommodate anticipated loading.



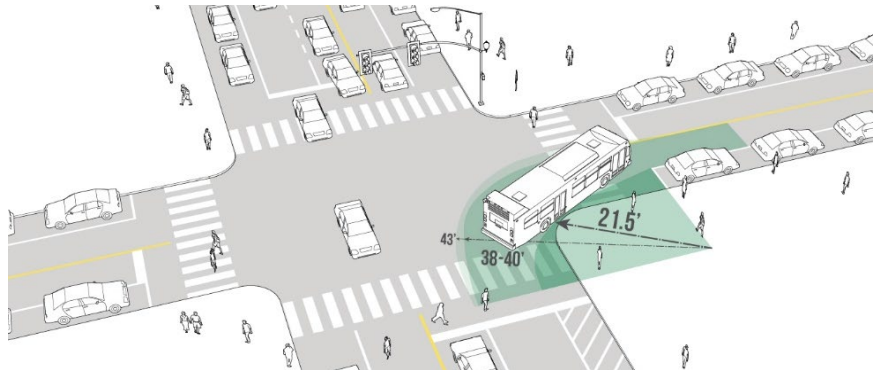


### Turning Radii

Turning radii are important considerations for stop locations where the bus makes a turn or deviates from its primary corridor. The required turning radius must be accommodated so a bus will not halt in the pedestrian way or impede other traffic flow. As a general rule to permit comfortable bus movements, corners should be designed for 50 feet outside and 30 feet inside turning radii.

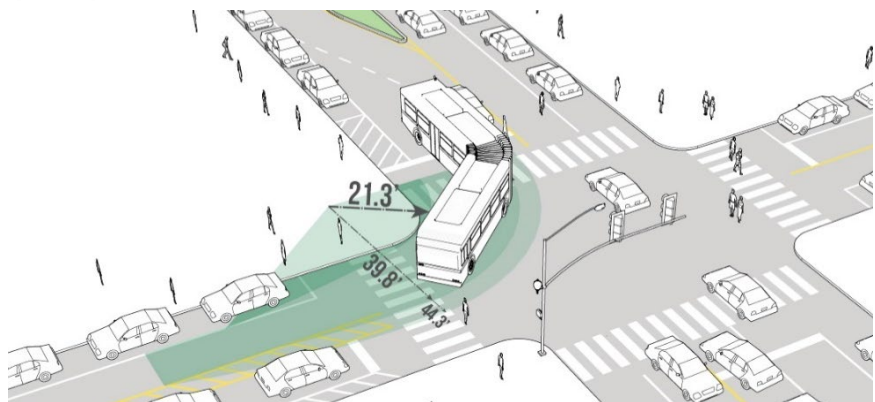
### Transit Signal Priority

Transit Signal Priority (TSP) tools modify traffic signal timing or phasing when transit vehicles are present either conditionally for late runs or unconditionally for all arriving transit. TSP can be a powerful tool to improve both reliability and travel time, especially on arterial streets with long signal cycles and distances between signals. As TSP benefits are significantly amplified when implemented alongside other strategies like dedicated transit lanes or open bus bays consideration should be given for the possibility of future TSP implementation.



(ABOVE) FIGURE 8 STANDARD 40' BUS TURNING RADIUS

(BELOW) FIGURE 9 STANDARD 60' ARTICULATED BUS TURNING RADIUS



## 5 CURBSIDE DESIGN

Curbside design addresses all aspects of the interface between a transit stop and the area it serves. The physical configuration of stops impact how riders interact with the transit system. Transit stops are a significant improvement to the streetscape and can be used not only to provide comfortable and accessible transit access, but also to organize traffic interactions and manage curbside activity.

### 5.1 UNIVERSAL AND ADA DESIGN

Universal design means that facilities for transportation are designed to be not only used easily by those with disabilities, but also by users who may be temporarily encumbered, such as someone carrying a large load of groceries, a parent with a stroller, or someone temporarily using crutches. Special attention is given to the path of travel for pedestrians to the bus stop, the loading area clearances, and any furnishings that may be part of the bus stop. All new or newly renovated facilities must be designed and upgraded to meet current Americans with Disabilities Act (ADA) accessibility standards.

### 5.2 CURBSIDE PASSENGER FACILITY DESIGN

Curbside passenger facilities have three primary elements: a loading area, which provides ample space for loading and unloading passengers; an adjacent waiting area; and an accessible pedestrian path to reach the stop. Appropriate stop dimensions and amenities are determined using factors such as passenger volume, nearby trip generation, and local needs. When evaluating stops, consideration should be given to persons with disabilities.

#### Loading area:

A level loading area should be provided at a minimum where the front doors of the bus open to receive and discharge passengers. Locating a clear area at the front of the bus allows easy deployment of the front door ramp or the kneeling feature of the vehicle for disabled persons. Where space permits, a second loading pad should also be installed to provide space for passengers alighting from the bus's rear doors. **Loading areas/pads should be a minimum of five feet wide along the curb by eight feet deep, which is the ADA standard.**

Loading pads can be configured with a detectible edge to be easily located by drivers and passengers, and should be comprised of a firm, slip resistant surface suitable for use in all weather conditions. Items such as utility poles, trash cans and landscaping should be arranged outside of the loading area and in such a way that they do not inhibit access to the loading areas.

#### Waiting area:

A bus stop waiting area should be sized to reflect expected passenger volumes and, at a minimum, be wide enough at the curb to provide a safe place for passengers to wait outside of the loading area. In locations where both pedestrian volumes and the number of transit passengers expected to use a stop are relatively low, the waiting area may overlap with the pedestrian path. Where pedestrian and/or passenger volumes are higher, care should be given to separate the waiting area and pedestrian path to the greatest extent practical.

A detectable edge at the curb in loading areas that clearly defines the bus stop is desirable and can be comprised of any appropriate material in a contrasting color. Well-defined waiting

and loading areas speed up passenger movements. The surface must be durable, slip resistant, and free of horizontal or vertical obstructions or tripping hazards.

### **Pedestrian Access to Stops:**

A minimum four-foot-wide clear pedestrian path should be provided for access to the bus stop waiting area and loading area. A sidewalk that connects the bus stop to adjacent development or neighborhoods is the most common solution. The sidewalk or trail should provide a clear pedestrian path to and from the bus stop area, the bus stop loading pad, and the bus shelter or bench, when present.

A stop location adjacent to a trail can be accommodated by providing a short pedestrian link to the bus pad and waiting area. The trail can be used as a loading pad if it is wide enough to provide pedestrian passing space in addition to the loading pad area and is located adjacent to the roadway. Cinder, gravel, or dirt trail surfaces are not suitable to withstand wear from waiting passengers. A hard or impervious surface can be incorporated into the area of the trail used for the bus stop.

### **5.3 BUS STOP SIGNS**

Each bus stop must be marked with a sign indicating where the bus will stop. Bus stop signs inform passengers what routes stop at the bus stop, as well as

publicize the availability of transit service to the general public.

GCTD staff will work with staff of the member agencies to determine best bus stop sign location. Once the location is determined, GCTD will provide the sign to the respective member agency to complete installation.

The following are general guidelines for installation and placement of bus stop poles and signs:

- Whenever possible bus stop signs should be placed independently of all other street signs, on its own pole, to maintain transit stop identity.
- The pole should be set back 24 inches from the curb face to prevent the sign from being struck by bus mirrors.

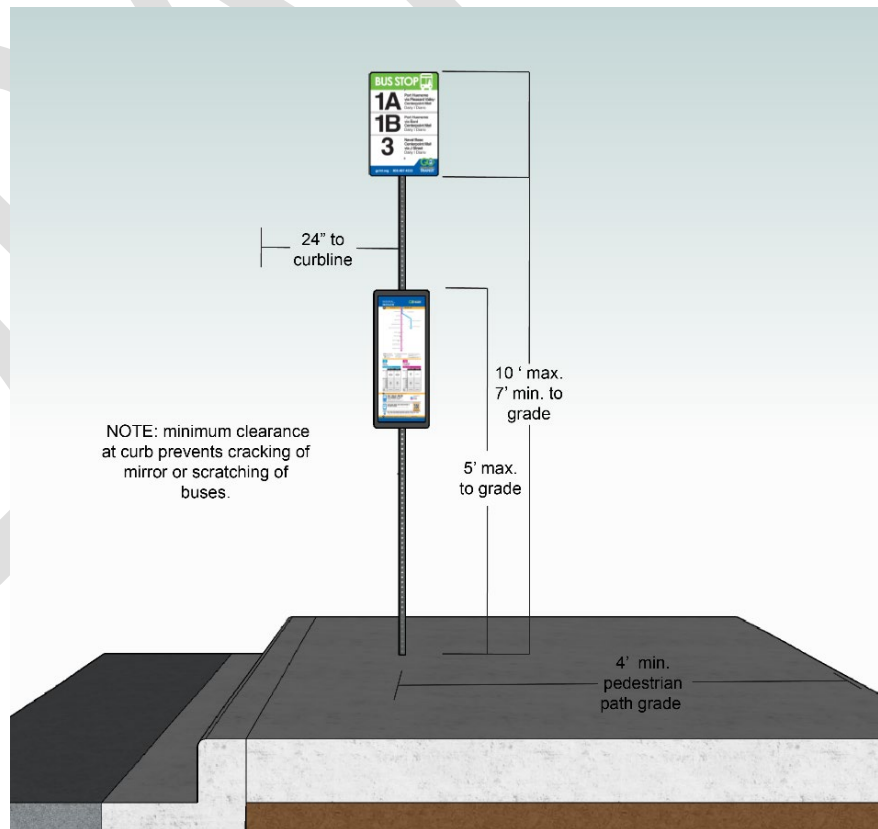


FIGURE 10 BUS STOP SIGN AND WAY FINDING PLACEMENT

- The sign should be located at the front of each bus stop zone, nearest to the bus's front door when stopped at the location.
- The sign must be located so it is easily visible to the approaching bus driver.
- The bottom of the sign should be seven feet above grade and no higher than 10 feet, consistent with the figure 10 on page 10.

GCTD will provide bus stop signs to member agencies for installation. Below are characteristics GCTD's bus stop signs:

- All signs include GCTD Logo and the route numbers of all buses using that stop.
- Route numbers are 3 inches high in order to meet ADA minimum specifications.
- Easy to read, sans-serif fonts are used for route number and directional information.
- Signs utilize reflective material on both sides, so they are visible at night.
- Signs are given an anti-graffiti overlay on both sides.
- Standard signs are 12" W. by 18" H. for stops served by 4 or more route Large signs are 12" W by 24" H.

#### 5.4 LIGHTING

Since all of GCTD's bus stops are served after dark, lighting should be provided at all bus stops and sidewalks leading to bus stops to improve visibility. Lighting helps passengers feel safe and also helps the bus operator see passengers waiting at the bus stop.

To determine if a bus stop has adequate lighting, stops should be visited at nighttime to determine if the lighting provided by existing street lights is adequate.

To reduce maintenance costs whenever possible LED lighting should be used. If a shelter is present, both interior and area lighting should be provided. The placement and maintenance of lighting is the responsibility of the member agency.

At bus stops where additional lighting would be beneficial, the following may be solutions:

- Ornamental lighting
- Solar lighting
- Motion/Push to activate Lighting
- Pole mounted lighting

Examples of these solutions can be found in the appendix.

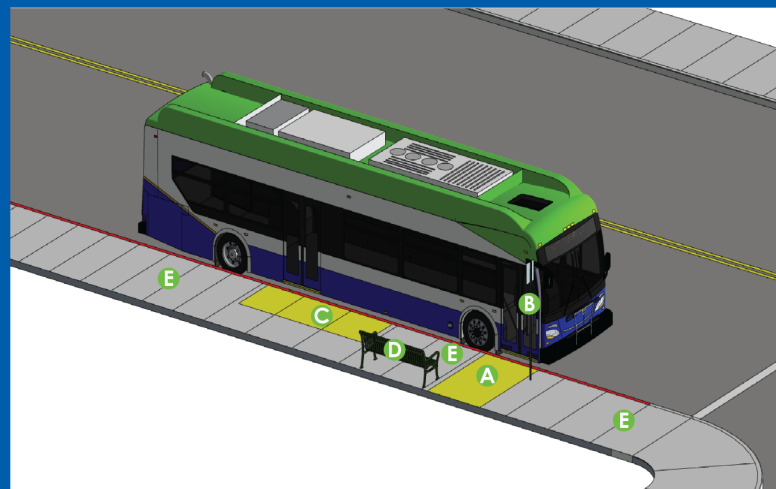
#### 5.5 CURBSIDE DESIGN CONFIGURATION

Table 4 details common curbside configurations for the three different classifications of bus stop. **Each stop type includes the basic building block of a five-foot-long parallel to the curb by eight foot deep loading pad connected to a pedestrian path that is four feet wide or wider, as called for by local sidewalk standards.** Waiting areas are separate from the loading pad. Bus stops can be sized to meet community-specific needs; however, the minimum bus loading pad should be maintained.

This reference table is not intended to be exhaustive, since every situation has unique characteristics. Rather, it should be used as guidance to inform design decisions based on individual stop conditions.



TABLE 4 CURBSIDE DESIGN CONFIGURATIONS

**CLASS III - BASIC STOP DIAGRAM****CLASS III - BASIC STOP COMPONENTS**

- A. Loading pad: ADA compliant, 8' x 5' area should be solid level surface clear of obstructions connected to accessible pathway. **(required)**
- B. Bus stop sign and Wayfinding Information: placed adjacent to loading pad. Post should be no less than 2' from curblin with information oriented toward loading and waiting areas. **(required)**
- C. Rear door alighting area: 5' deep by 12' long area positioned 9' from loading pad. Area should be clear of obstacles to passengers exit rear doors.
- D. Stop seating: positioned a minimum of 2' from curblin. On narrow sidewalk benches should be positioned at rear of sidewalk as shown.
- E. Accessible pathway: A minimum of 4' wide clear pedestrian path providing access to and from the loading pad. **(required)**

**CLASS II - STANDARD STOP COMPONENTS**

Class II stops include all Class I stop components as well as the components listed below:

- F. Waste receptacles: Place waste receptacles near waiting areas but not directly next to seating. Where possible place bins for both refuse and recycling.
- G. Bus shelter: positioned adjacent to loading pad. Seating in shelters should be positioned to provide wheelchair users direct access to loading pad.
- H. Lighting: Lighting should be provided at all stops. Shelters should include interior lighting. Where shelters are installed without access to electricity, solar lighting is recommended. **(required)**
- I. Bicycle securement: place bike racks at rear of bus stop away from loading and waiting areas. Consider how bike will be position to prevent obstruction of accessible pathway.

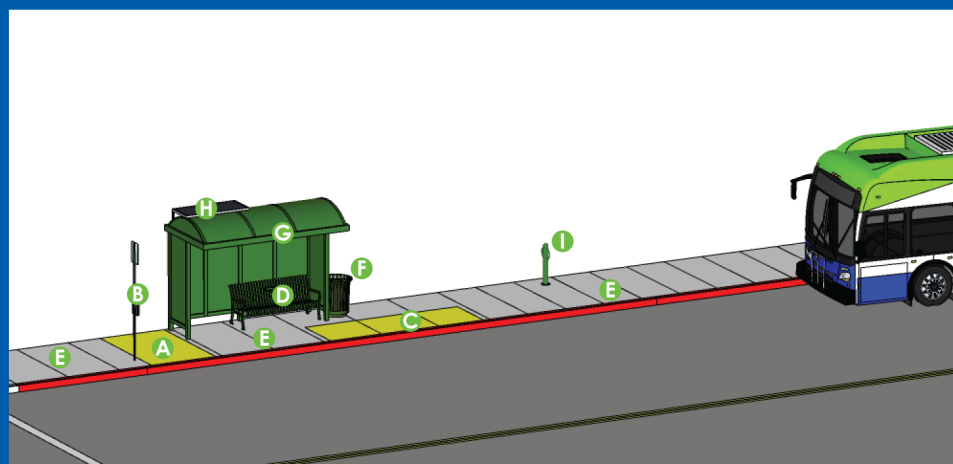
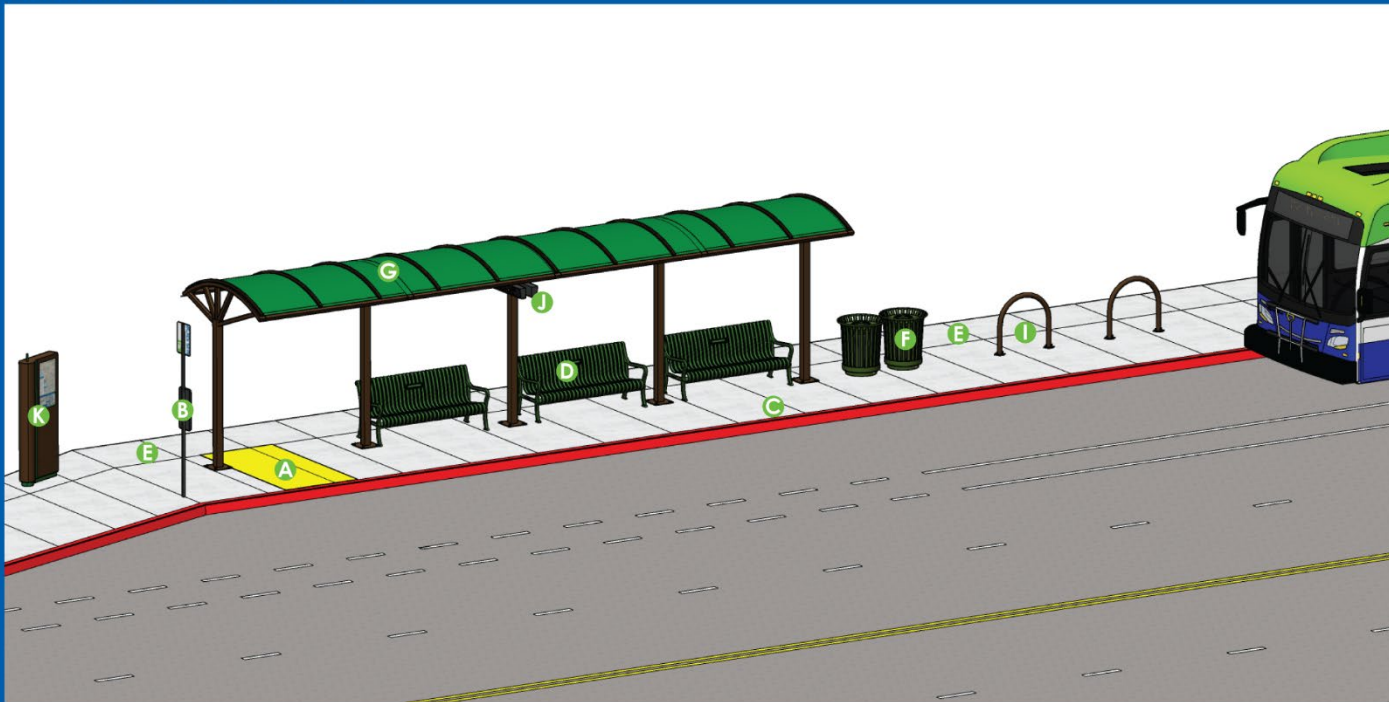
**CLASS II - STANDARD STOP DIAGRAM**

TABLE 4 CURBSIDE DESIGN CONFIGURATIONS

## CLASS I - ENHANCED STOP DIAGRAM



## CLASS I - ENHANCED STOP COMPONENTS

Class III stops include all Class I & II stop components with some modification and additional components as listed below:

- D. Stop seating: provide additional stop seating distributed throughout waiting area.
- E. Accessible pathway: positioning amenities to front of accessible pathway reduces conflicts between passersby and passengers in the waiting area.
- F. Waste receptacles: provide additional waste receptacles to accommodate additional usage.
- G. Bus shelter: provide larger or additional shelters to accommodate larger volumes of waiting passengers. Where passenger demand is higher consider shelter designed to match surrounding streetscape and structures.
- H. Lighting: provide additional lighting to insure entire waiting area is well lit. Consider lighting conditions in surrounding area particularly on accessible paths to and from bus stop.
- J. Digital displays: digital displays can provide real-time arrival information and courtesy announcements to improve passenger confidence in system reliability and security.
- K. Pedestrian Wayfinding: digital kiosks can combine transit service information and maps of the immediate area to effectively guide passengers from stop to final destination.

## 6 PASSENGER AMENITIES

Passenger amenities are the stop features that provide added convenience and comfort to the trip. GCTD encourages member agencies and developers to choose stop amenities that reflect a visual identity treatment appropriate for each locality, so they are embraced as a community asset. Collectively, passenger amenities help enhance the visibility of transit in a corridor and raise general awareness of transit as a mobility option. The design of bus stop waiting areas and provision of amenities to enhance passenger security and comfort plays a significant role in a person's decision to use transit. The following section details the types of amenities appropriate for bus stops in our service area.

### 6.1 BUS STOP CLASSIFICATION AND RECOMMENDED AMENITIES

In order to prioritize the distribution of amenities at bus stops, the bus stop classification system below should be

used to determine the minimum recommended amenities to be installed at bus stops.

The recommended amenities listed below should be used as a minimum guideline. Additional amenities may be added based on other factors, including:

- Proximity to major trip generators,
- Passenger transfer activity,
- Planned neighborhood improvements,
- Equity among neighborhoods in the communities,
- Proximity of other nearby sheltered areas, and
- Customer and community requests.

### 6.2 BUS SHELTERS

Bus Shelters are provided by the member agencies at selected bus stops to provide weather and sun protection as well as seating for waiting passengers.

Cities are encouraged to develop their own bus shelter programs. For example,

Table 5 Bus Stop Classification and Recommended Amenities			
Amenities	Class I	Class II	Class III
	21 + daily boardings	10 to 20 daily boardings	< 10 daily boardings
Pole with Bus Stop Sign and Route Number	Required at all stops		
Red Curb or No Parking Restriction			
Lighting	Provide		
Seating	Provide*	Provide	Recommended
Waste Receptacles	Provide	Provide	Optional
Shelter	Provide*	Recommended	Optional
Bike Rack	Optional	Optional	Optional

\*Stops with 50 or more daily boardings may require more than one shelter and bench.

the City of Oxnard has developed a shelter program that provides for the installation of shelters by a private provider, which installs and maintains the shelter without cost to GCTD or the member agency by including advertising in the shelter design. Member agencies are encouraged to use site specific criteria when determining the style of shelter to be installed at a given location.

Member agencies staff should coordinate with GCTD staff prior to installing a shelter to ensure good placement. In general, the following design factors should be considered:

- Use of materials and paint treatments resistant to weather, graffiti, cutting, etc.
- Required dimensions of the concrete pad to ensure wheelchair accessibility. Per ADA regulations, clear floor space for people in wheelchairs must be provided.
- Provision of electrical or solar conduits for lighting or future communication panels. Placement of a shelter should not block sight distance at intersections or driveways. This can normally be accomplished by placing the shelter more than 25 feet from the beginning or end of curb return of an intersection or driveway.
- Minimum of 7.5 feet clearance between the underside of the roof and sidewalk should be provided.
- Minimum of 2 feet clearance between overhead canopy and curb face is recommended.
- Shelter canopy should be waterproof with provisions for drainage away from waiting passengers and boarding area.
- The shelter should be located in reasonably close proximity to where

the front door of the bus will open to facilitate timely passenger loading.



In denser downtown areas and at some major trip generators developers are encouraged to use architectural shelters. Architectural shelters are designed as part new construction by either setting the shelter back into the footprint of the adjacent building or by designing the building to overhang the waiting area. Architectural shelters can also be designed as free standing structures that match the architectural style of an adjacent building. By designing shelters to match the architecture of the surrounding built environment a seamless transition is created between a development and surrounding public space. By creating a consistent aesthetic for the streetscape an architectural shelter makes buildings and transit facilities more inviting.

### **6.3 STOP SEATING**

Providing passengers with a comfortable place to wait for the bus makes waiting more tolerable for everyone but



especially for elderly or disabled passengers. Benches are the primary form of stop seating, however, alternatives such as leaning benches or bars, formed concrete wall seating, and simme seats should be considered as alternatives. Examples of alternative seating can be found in the appendix.

The following should be considered when installing benches at a bus stop:

- Benches need to be placed on a firm surface facing the street.
- Use of materials and paint treatments should be resistant to weather conditions, graffiti, cutting, fire, and other forms of vandalism.
- Benches on sidewalks should be placed on the back side of the sidewalk unless available space allows for accessible pathway both in front of and behind the bench.
- Bench placement must follow ADA regulations and allow clear floor space for people in wheelchairs to board the bus.



#### **6.4 WASTE RECEPTACLES**

It is recommended that stops with a high volume of foot traffic and/or trash in the area have a trash can installed. GCTD relies on member agencies to provide receptacles and collect trash. Developers and member agencies may design a special style to fit into the landscape and/or complement the architectural style of their project or streetscape. Trash cans must be placed to maintain proper clearances for passage and wheelchair boarding areas. Trash cans should be made of materials and paint treatments resistant to weather conditions, graffiti, cutting, fire, and other forms of vandalism.



#### **6.5 WAYFINDING INFORMATION**

Wayfinding signage addresses needs of a number of groups, including the first time and infrequent users, non-English speakers, foreign visitors, the elderly, and the physically and mentally impaired. These potential customers travel to and from the transit stops and rely on wayfinding signage to navigate the transit system.

### **Passenger Information Panels**

Passenger Information panels, also known as Guide-a-Ride panels, provide trip information to passengers waiting at the stop. For all timepoint stops, the Guide-a-Ride panels show bus arrival times. For non-timepoint stops that have Guide-a-Ride panels, route frequency is shown.

GCTD installs and maintains all Guide-a-Ride panels throughout the system. GCTD staff will determine the best placement for Guide-a-Ride panel locations.

Installation and maintenance considerations:

- Guide-a-Ride panels should be directly mounted on the bus stop pole facing the same direction as the bus stop sign itself.
- The top of the Guide-a-Ride panels should be placed no higher than 60 inches from the ground.
- Panels should be laminated and encased in a metal or other damage resistant frame.
- Plexiglas covers should be kept graffiti and sticker free.

### **Real-time Arrival Information**

GCTD's fleet is equipped with an Automatic Vehicle Location system (AVL) that transmits real-time vehicle location data to digital displays as well as through smartphone apps. Currently, digital displays are mainly located at transit centers and major transfer points. With a recent upgrade to the AVL system the cost of installing and operating these displays has decreased making their deployment to an increased number of stops feasible.

### **Pedestrian Wayfinding**

If member jurisdictions elect to require pedestrian wayfinding from residential projects of certain unit size, the sign should incorporate transit wayfinding information. The signage should direct employees, visitors, and residents to/from the project site and the nearest public transit locations, including bus stops and transit stations. Static and digital wayfinding plans should be developed in coordination with GCTD planning staff to ensure accurate transit information is integrated appropriately.

### **6.6 BICYCLE RACKS AT BUS STOPS**

Bicycle parking facilities, such as bike racks and storage lockers, may be provided at bus stops by member agencies or adjacent property owners for the convenience of bicyclists using transit. Bicycle racks give passengers the option to park their bike when the racks on the bus are full and can discourage the practice of locking bicycles onto bus facilities or adjacent property. Placement of bike racks should be planned in coordination with GCTD planning staff to ensure they do not impact pedestrian access to the bus stop.

### **6.7 LANDSCAPE FEATURES**

Landscaping enhances the level of passenger comfort and attractiveness of transit. Trees and bushes around transit waiting areas can provide shade and wind protection. Additionally, landscaping can significantly improve the aesthetics of a stop.

In order to minimize water usage and maintenance needs landscaping should consist of drought tolerant and native or non-invasive plant species.

Positioning trees and bushes behind and beyond loading and waiting areas preserves the sightline for approaching vehicles and decreases the likelihood that these elements conflict with the path of the bus. Tree branches that extend into the roadway below 12 feet must be trimmed back at least two feet from the curb; otherwise, they become an obstacle that the bus driver may or may not be able to avoid hitting. All landscaping elements must be maintained so that they do not limit the accessibility or visibility of the stop.

#### **6.8 NEWSPAPER AND VENDOR BOXES**

Placement of newspaper and vendor boxes can provide waiting transit customers with convenient access to reading material. However, newspaper boxes can obstruct access to the landing area, sidewalk, shelter, or posted transit information. Additionally, discarded newspapers, magazines, etc. often contribute to litter at stops and on-board buses. If newspaper boxes are placed at stops they should not be chained or otherwise affixed to the bus stop sign pole, shelter, or bench.

#### **6.9 TRANSIT CENTERS AND MAJOR BUS STOP HUBS**

Transit Centers and major bus stop hubs are where several bus routes connect so that passengers can easily transfer between routes. GCTD has three major Transit Centers (Oxnard Transit Center, Ventura Transit Center, and C St Transfer Center), and seven major bus stop hubs (where four or more routes stop) including Esplanade Shopping Center, Rose & Gonzales/St. Johns, Ventura College, Oxnard College, C & 4th/5th, 4th & B St. and the Ventura County Government Center.

At transit centers and major stops, route information needs to be provided for all routes. Space for a sign holder, kiosk or other information delivery systems should be provided. Extra space for passenger waiting, along the shelter or clear curb space, should be included in design. Due to the variation in needs between the different transit centers, each one should be designed specifically based on the proposed operation and locale of the center.

At major bus stop hubs, additional shelters, trash cans, and benches may help improve the functionality and attractiveness of the bus stop.

#### **6.10 RAPID AND EXPRESS STOP AMENITIES**

Although GCTD does not currently operate rapid or express services these services may be offered in the future. As part of implementing these services GCTD should provide unique signage and/or amenities that would help customers to identify stops served by these premium services. Distinct branding could be incorporated onto existing bus stop signs or new bus stop signage could be developed to further set these stops apart. Special shelter designs and street furniture designs could also be incorporated to further enhance the premium quality of these stops and promote the attractiveness of these premium services. Examples where these services have been implemented in other areas are included in the appendix.

### 6.11 BIKE AND SCOOTER SHARE

As valuable first mile/last mile solutions bike share and scooter share programs complement conventional transit. Siting drop-off and pick-up locations for these services at or near transit stops enhances both services. However, since transit stops are likely to have heavier than average pedestrian volumes it is important that areas designated for these services, particularly dock-less services, are chosen not to impede pedestrian access to bus or transit stops. It also important to distinctly mark pick-up and drop-off areas to discourage users from leaving bike or scooters outside of designated areas. Cities permitting these services should also require that operators have a process for the timely removal of errant equipment.

### 6.12 UTILIZING ALTERNATIVE DESIGNS

In general, standard amenity designs are preferred as standard designs make repairing and replacing amenities easier and more cost effective. However, in instances where relying solely on standard designs would limit amenity placement GCTD encourages the use of alternative designs.

A common limitation when installing new bus stops or adding amenities to existing bus stops is space. In many cases standard shelter and bench designs are too large and would result in inadequate pedestrian access or insufficient space for an ADA compliant loading pad. Alternatives, such as, cantilevered shelters or leaning benches can preserve space while allowing amenities to be added where otherwise passengers would have to do without. An example application of alternative design is shown on the right. Additional alternative designs can be found in appendix I.

**Before:** The J Street and Kamala bus stop, shown below, is placed on a narrow sidewalk. The bench and bus stop pole both encroach upon the accessible pedestrian pathway. As stop face the west there is no protection from the afternoon sun.



**After:** Using alternative designs the J Street and Kamala bus stop could be improved. Installing a cantilever shelter and leaning bench, as shown in the conceptual drawing below, would clear the pedestrian pathway. Moving the bus stop sign to the shelter and removing the sign post would provide additional clearance.





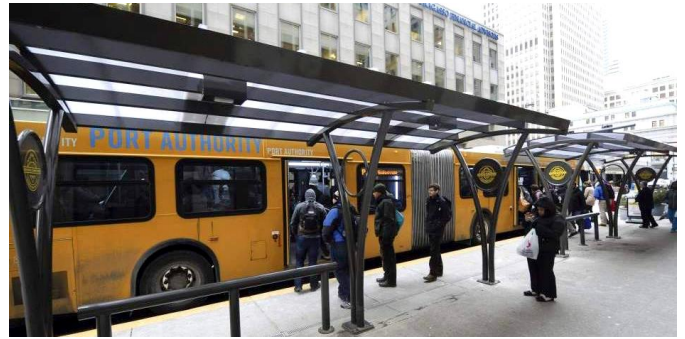
## APPENDIX I – ALTERNATE DESIGN

### ALTERNATIVE SHELTER STYLES

Most shelter designs are modular and can be ordered in varying sizes. Sizing shelters TO maximize use of available space and meet expected ridership demands can make the most of space in the streetscape.



In conjunction with a bus bulb, Canopy Shelters provide needed shade while allowing passengers to circulate on and off of vehicles separate from a primary pedestrian thoroughfare.



Advertising shelters can generate revenue to offset bus stop maintenance and capital costs.



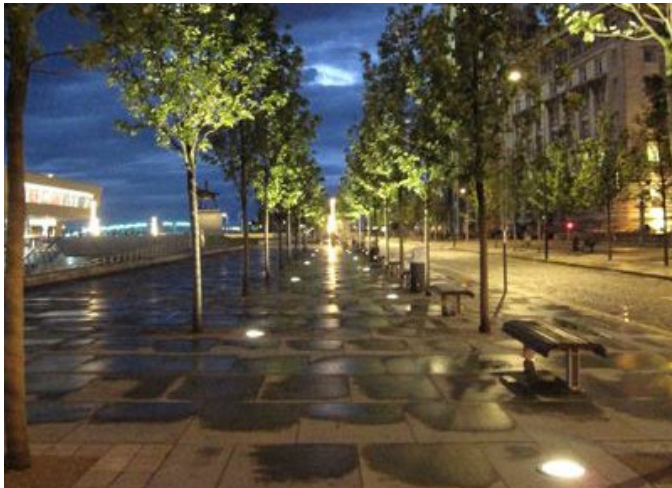


## LIGHTING ALTERNATIVES

Pole mounted lighting solutions utilize solar power systems. These light can be activated by a push-button, motion detector, or ambient light sensor.



Landscape or Ornamental is an aesthetically attractive way to provide additional lighting and bus stop and along pedestrian pathways.



Where a standard electrical connection is not feasible solar lighting systems can easily be incorporated into shelter designs.



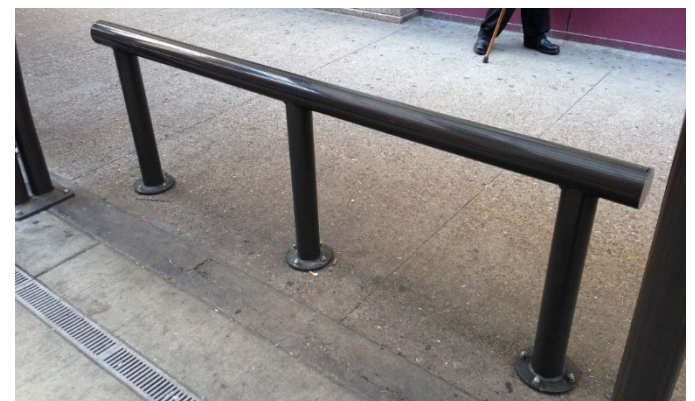
## SEATING ALTERNATIVES



A simple seat can provide minimal seating where space or ridership limits make other amenities infeasible.



Leaning benches provide a place for waiting passengers while discouraging loitering or camp at bus stops



At locations with limited sidewalk where a bench would impede pedestrian traffic, leaning rails can give waiting passengers a place to rest and delineate pedestrian traffic flow.





A wide formed concrete wall can be used to create a planter or retaining wall and provide seating for waiting passengers.

### BIKE RACK ALTERNATIVES



Hitch style bike racks are narrow limiting their impact on pedestrian pathways when not in use.



Hoop style bike racks are wider providing more support to bikes while cyclist secure them.



Artistic bike racks can add to the aesthetic appeal of a stop while serving a utilitarian purpose.

### RAPID AND EXPRESS STOP AMENITIES



Los Angeles Metro Rapid stop features sleek metal and glass amenities as well as additional the unique branding of their rapid service.



King County RapidRide bus stop with distinctive red and white branding.

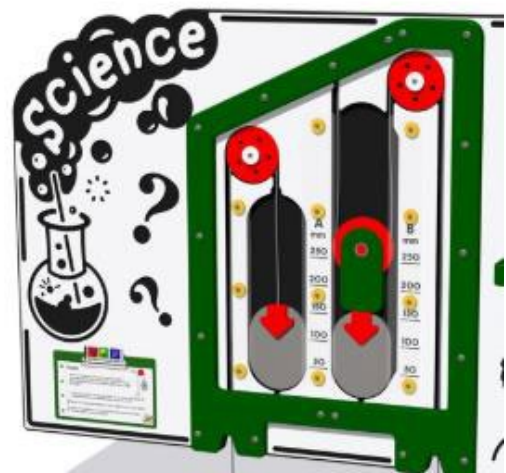
GCTD Rapid service stop concept. Stop feature bright blue accents and sleek furniture design to signify speed and convenience rapid service.



## CHILDREN AND EDUCATIONAL STOP AMENITIES



Including activities for children at bus stops can help to pass the time and make riding as a family fun experience.





## APPENDIX II – DETAILED DIMENSIONS

FIGURE 11 ADA DETAILED DIMENSIONS

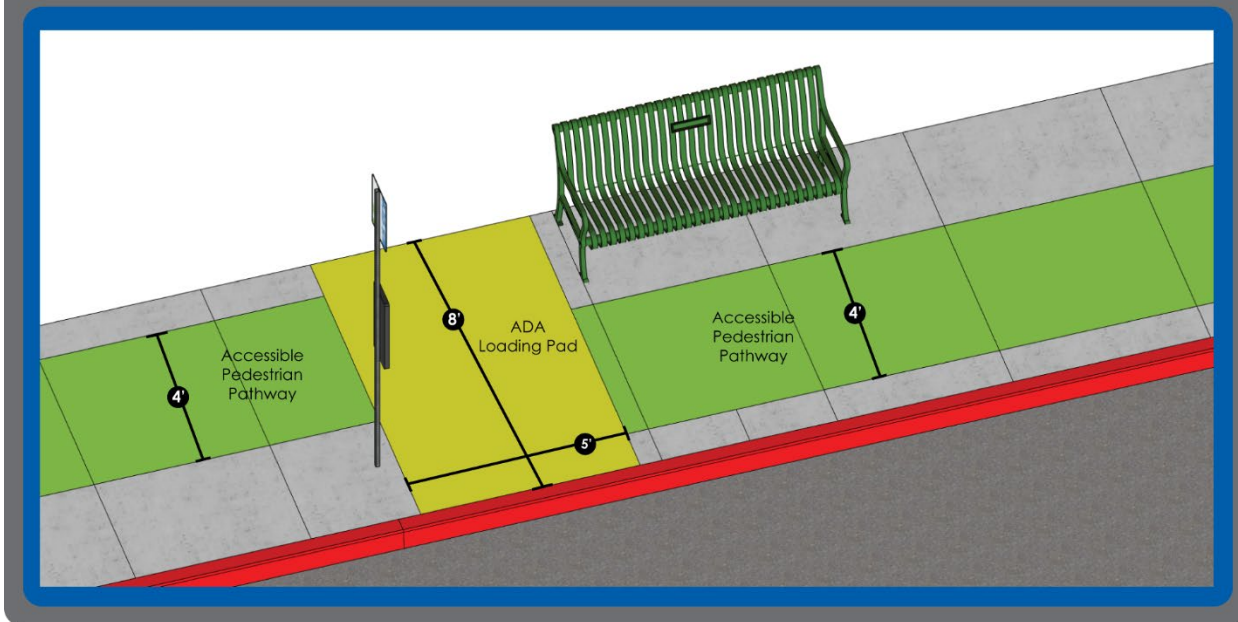


FIGURE 12 DETAILED DIMENSIONS OF AMENITY PLACEMENT

