CHAPTER 13

PUBLIC TRANSIT

FIGURES

CHAPTER 13

PUBLIC TRANSIT

A INTRODUCTION

All usual modes of transportation (autos, trucks, transit vehicles, rails, aircraft, water craft, bicyclistbikes, and pedestrians) should be considered when planning, designing, and constructing the surface transportation system. Where there is a demand for highways to serve vehicles, there could also be a demand for public transit or public transportation. Public transit should be considered in all phases of a project, including planning, preliminary design and engineering, design, construction, and maintenanceetc. Coordination with the appropriate public transit provider(s) will help determine the need for transit related infrastructureand justification of bus bays on a project-by-project basis. With the recent passing of various legislation, multimodalism is the ultimate goal. The integration of public transit street side facilities along with pedestrian and bicycle facilities furthers the implementation of this goal.

Planning and designing for public transit is important because it is an integral part of the overall surface transportation system. Public transit is defined as passenger transportation service, local or regional in nature, thatnature, which is available to any person. It operates on established schedules along designated routes or lines with specific stops and is designed to move relatively large numbers of people at one time. Public transit includes bus, light rail, street carstrolleys,and bus rapid transit and paratransit. Public transportation is similar in definition because it serves the general public, it also includes non-fixed route services that are door-to-door or paratransit services[mak1].

With rising levels of congestion resulting in the use of new strategies to effectively and efficiently manage mobility, there is an increased demand for accessible and user friendly public transit. New strategies include increased emphasis on public transit and new emphasis on Transportation System Management (TSM), as well as Transportation Demand Management (TDM). TSM is the use of low cost capital improvements to increase the efficiency of roadways and transit services such as, retiming traffic signals or predesignatingpredestinating traffic flow. TDM focuses on people reducing the number of personal vehicle trips, especially during peak periods. TDM includes the promotion of alternatives to the single occupant vehicle, including public transportation, carpooling, vanpooling, bicycling, walking, and telecommuting, as well as other methods for reducing peak hour travel.

Federal and State legislation provide the stimulus for planning, designing, and constructing a fully integrated transportation system benefiting the traveling public and the environment. Examples of legislation include the Moving Ahead for Progress in the 21st Century Act Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (MAP-21SAFETEA-LU), The Americans with Disabilities Act of 1990 (ADA), and The Clean Air Act Amendment of 1990 (CAAA). In response to this legislation, the surface transportation system should provide for concurrent use by automobiles, public transit and rail, and, to the extent possible, bicycles and pedestrians.

Throughout the entire process, coordination with transit as if it were a utility is essential.

B OBJECTIVE

There are a number of methods to efficiently develop a coordinated surface transportation system. Coordination among agencies is necessary during the planning and design stages to:

- incorporate transit needs and during the construction phase for re-routing bus (and complementary pedestrian) movements, and
- for actual transit agency specific requirements (e.g., bus stop sign replacement, shelter installations, etc.).

For planning purposes, the state and local Transportation Improvement Program (TIP) should be referenced. Additionally, individual transit authorities have five ten year Transit Development Plans (TDPs) that are updated annually. The TDP can be used as a guide for planned transit needs along existing and new transportation corridors so transit consideration and transit enhancements can be incorporated where appropriate.

C TRANSIT COMPONENTS

C.1 Boarding and Alighting (B&A) Areas ~~Stops and Station Areas~~

Boarding and Alighting (B&A) areas help to create an accessible bus stop by providing a raised platform that is compatible with a bus that kneels or extends a ramp. ~~Where new bus stops are located with bus bays, or other areas where a lift or ramp is to be deployed, they shall have A~~a B&A ~~boarding and alighting~~ area has~~consisting of~~ a firm, stable and slip-resistant surface with a minimum clear length of 8.0 feet~~96 inches~~ (measured perpendicular ~~from~~ to the curb or ~~vehicle~~ roadway edge), and a minimum clear width of 5.0 feet~~60 inches~~ (measured parallel to the ~~vehicle~~ roadway). Firm, stable, and slip resistant B&A areas are required if amenities such as benches or~~,~~ shelters are added to a bus stop. ~~to the maximum extent allowed by legal or site restraints, and shall be connected to streets, sidewalks, or pedestrian paths by an accessible route.~~ B&A areas are not required at bus stops on flush shoulder roadways where only a bus stop sign is provided. Coordinate with the appropriate public transit provider(s) to determine compatibility with equipment and transit vehicles.

The slope of the B&A ~~boarding and alighting~~ area parallel to the roadway shall to the extent practicable, be the same as the roadway. For water drainage, a maximum slope of 1:50 (2%) perpendicular to the roadway is allowed. ~~In cases where there are no sidewalks or curbs, bus stop boarding and alighting areas may be necessary to allow the wheelchair passengers to board or alight from a transit vehicle.~~ Benches and other site amenities must not be placed on the B&A area. The B&A area can be located either within or outside the shelter, and shall be connected to streets, sidewalks, or pedestrian circulation paths by an accessible route.

On flush shoulder roadways, a B&A area may be constructed at the shoulder point (or edge of shoulder pavement on roadways with a design speed of 45 mph or less) as shown in Figures 13-1 and 13-2. A Type “E” curb (5” curb height) should be used.

A sidewalk and/or ramp provided with the B&A area shall be a minimum of 5 feet in width,~~;~~ and the ramp shall not exceed a slope of 1:12. A detectable warning is required where a sidewalk associated with a B&A area connects to the roadway at grade. Except for the area adjacent to the 5” curb, the areas surrounding the B&A area shall be flush with the adjacent shoulder and side slopes and designed

to be traversable by errant vehicles. On the upstream side of the platform, a maximum slope of 1:12 should be provided, and may be grass or a hardened surface. The B&A area (and ramp and level landing if needed) should be constructed with 6" thick concrete.

~~Coordinate~~ion with the appropriate public transit provider(s) is necessary.

Figure 13 – 1

Boarding and Alighting Area for Flush Shoulder Roadways with Connection to the Roadway

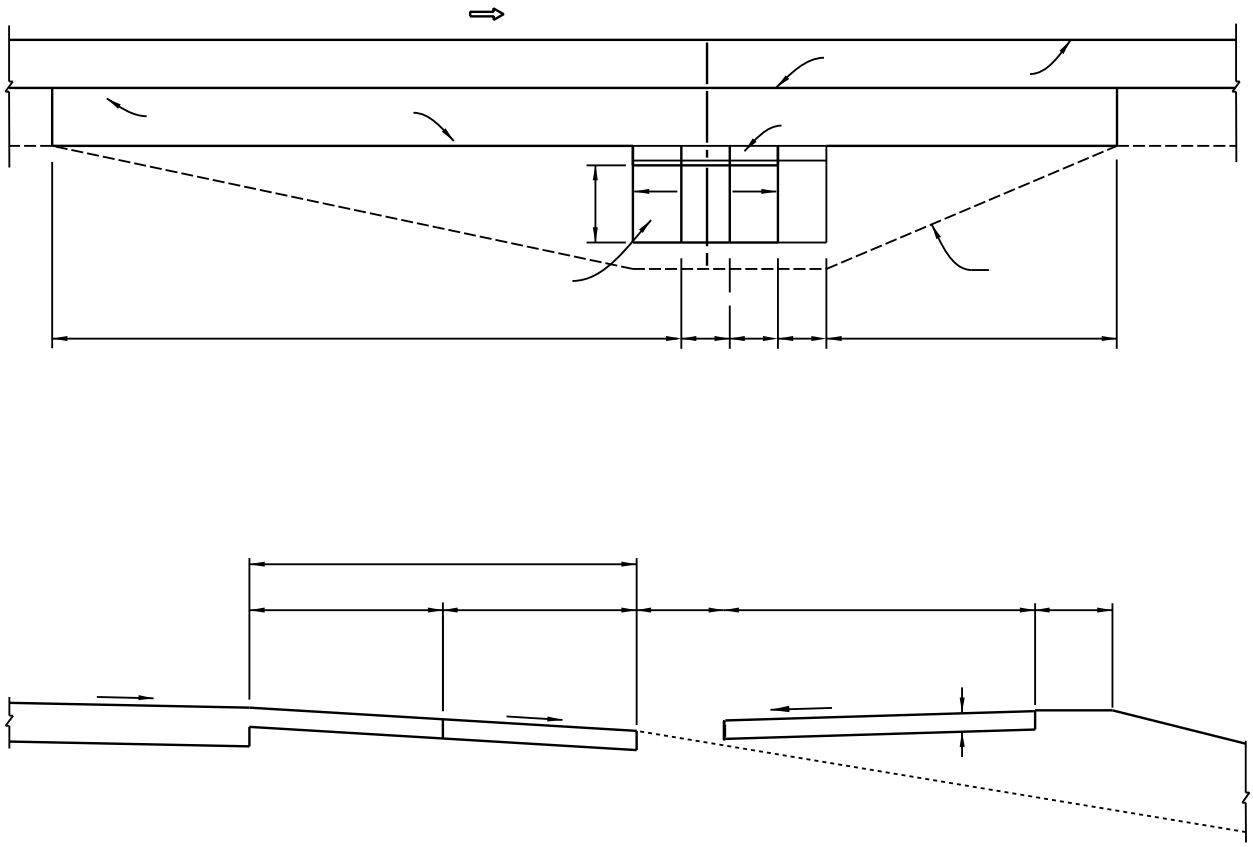
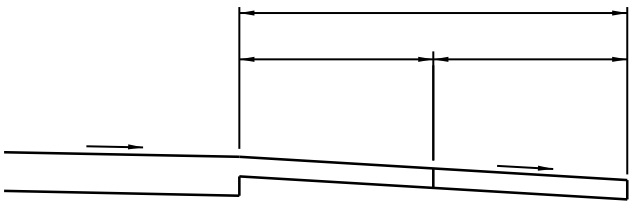


Figure 13 – 2

Boarding and Alighting Area for Flush Shoulder Roadways with Connection to the Sidewalk



C.2 Shelters

Every public transit system has different needs with regards to shelters and corresponding amenities (e.g., benches, information kiosks, leaning posts, trash receptacles, etc.). Shelter foundation and associated pad size vary from stop to stop based on right of way availability, line of sight, and facility usage, etc. New or replaced bus shelters shall be installed or positioned as to permit a wheelchair or mobility aid user to enterto provide an accessible route from the public way (sidewalk or roadway)) and to reach a location therein that hashaving a minimum clear floor area of 30 inches by 48 inches, entirely within the perimeter of the shelter.

Such Sshelters shall be connected by an accessible route to a B&A the boarding and alighting area. provided under C.1 Stops and Station Areas, this Chapter. Coordinateion with the appropriate public transit provider(s) is necessary. Where feasible, All sSshelters should provide a location for a bicycle rack. Shelters should be installed at locations where demand warrants installation and in accordance with clear zone criteria in CHAPTER 3 – GEOMETRIC DESIGN (C.10.e and Table 3-13) of this Manual.

Incorporate shelter example.

C.3 Benches

If a bench is provided, it should be on an accessible route, Bench placement shall be in an accessible location (i.e., not on the far side of a drainage ditch from the actual bus stop), on an accessible route appropriately out of the path of travel on a sidewalk. BenchesThey and shall have an adjacent firm, stable and slip-resistant surface at least 30 inches wide and 48 inches deep to allow a user of a wheelchair user to sit next to the bench, permitting the user shoulder-to-shoulder seating with a companion. Connection between the bench, the sidewalk and/or bus stop B&A boarding and alighting area shall be provided. Coordinateion with the Public Transportation Office and the local public transit provider(s) is necessary.

C.4 Stops and Station Areas

Transit stops should be located so that there is a level and stable surface for boarding vehicles. Locating transit stops at signalized intersections increases

the usability for pedestrians with disabilities.

Concrete Bus Stop Boarding and Alighting Areas

Although not always practical, there are situations where concrete bus stop boarding and alighting areas should be incorporated into the pavement design of a project. Frequent stopping transit vehicles in a particular location is an example where concrete pads may be warranted.

C.5 Bus Bays (Pullout or Turnout Bays)

In some situationsturnoutBbus bays for transit vehicles are appropriatemay be necessary (ei.ge., extended dwell time,consistent slow boarding layover needs, safety reasons, high volumes or speed of traffic, etc.). Bus bays can be designed for one or more buses. Coordinateion with the Public Transportation Office and/or thelocal public transit provider(s) will to help determine the need forand justification of bus bays. When possible, bus bays should be located on the far side of a signalized intersection. The traffic signal will create the critical gap needed for bus re-entry into traffic. There are several publications available which provide additional design information for transit system applications. The Department District Public Transportation Office(s) maintains a library of these publications.

C.6 Promote Public Transit

All citizens and businesses in the State of Florida are encouraged to promote public transit. This can be done in many ways, from providing employees reduced fares to providing route maps and schedules. Work with your local transit agency to provide service to large employment areas and major attractions. Assist local transit agencies in providing such things as bus lanes, park and ride lots and easements for bus shelters and bicycle parking. Encourage businesses or neighborhoods to hold a "Commuter Choices Week" and invite your transit agencies to provide information on the advantages of using transit. "Commuter Choices Week" is a state sponsored event that promotes alternative transportation in the work place (walk, bike, bus, transit, telecommuting).

D PUBLIC TRANSIT FACILITIES

When a project includes a public transit route, curb-side and street-side transit facilities for bus stops should be considered in the roadway design process. Transit facilities shall comply with Chapter 14-20, Florida Administrative Code, Following is a link to the code:
https://www.flrules.org/gateway/ChapterHome.asp?Chapter=14-20

The "Accessing Transit: Design Handbook for Florida Bus Passenger Facilities" and "Transit Vehicles and Facilities on Streets and Highways" provides guidance relating to provisions for curb-side and street-side facilities.

D.1. Curb-Side Facilities

Curb-side facilities are the most common, simple and convenient form of facilities at a bus stop. These include bus stop signs, passenger waiting shelters, bus stop wheelchair access padB&A areas, benches, bike racks, leaning rails, and shelter lighting. Chapter 1 of "Accessing Transit" provides additional details and guidelines for each type of transit facility that may be considered as guidelines. Coordinateion with the appropriate public transit provider(s) may be necessary into determine the appropriate type and placement of amenitiesdeveloping the bus stop plans.

D.2 Street-Side Facilities

Bus stop locations can be categorized as far side, near side and mid block stops. Bus stops may be designed with a bus bay or pullout to allow buses to pick up and discharge passengers in an area outside of the travel lane. This design feature allows traffic to flow freely without the obstruction of stopped buses. See Figure 13 - 31 for typical detail for the bus stop and bus bay categories. Chapter 2 of "Accessing Transit" provides additional details that may be considered as guidelines. Far side bus stops and bays are preferred. See ***Accessing Transit*** for a more detailed discussion of the location of the bus stop or bay.

Bus bays can be closed-ended, open-ended, or nubs/bulbs, and can be positioned near-side, far-side, or mid-block in relation to an intersection, as illustrated in Figure 13 - 3. The greater distance placed between waiting passengers and the travel lane increases safety at a stop. Bus bays are classified as 'closed', 'open' or 'bulbs'. Detailed standard drawings that may be

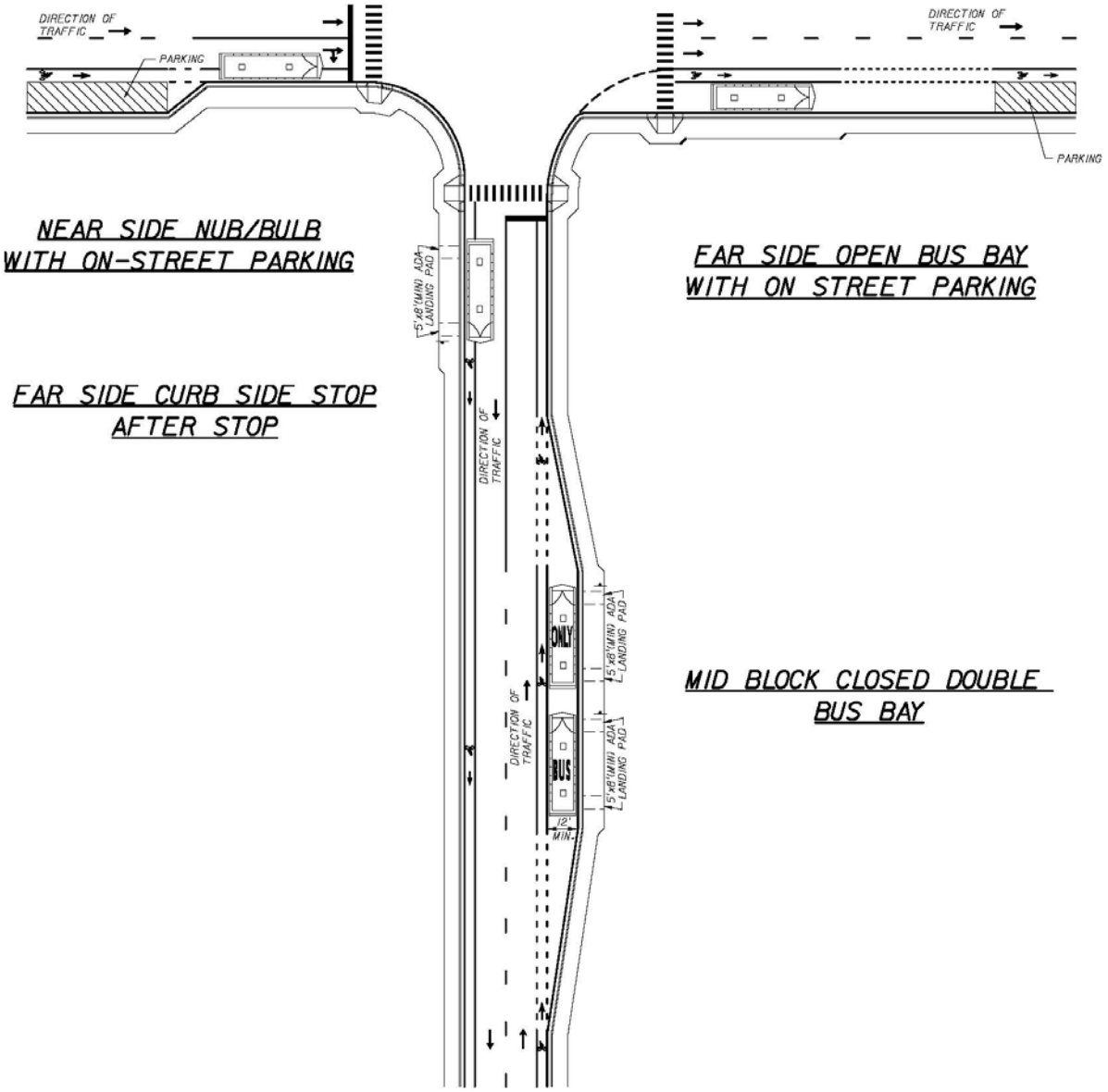
~~considered for various bus bay configurations are provided in "Transit Facilities Guidelines" provide detailed standard drawings that may be considered for various bus bay configurations on the Department's Public Transportation Office website: http://www.dot.state.fl.us/transit/.~~

The total length of the bus bay should allow room for an entrance taper, a stopping area, and an exit taper as a minimum. However, in some cases it may be appropriate to consider providing acceleration and deceleration lanes depending on the volume and speed of the through traffic. This decision should be based upon site specific conditions. "Accessing Transit" provides detailed bus bay dimensions for consideration with various right of way and access conditions.~~when right of way is unlimited and access points are limited.~~

D.3 Bus Stop~~Bay~~ Lighting

Lighting design for bus ~~bay pavement areas~~stops should meet the same criteria for minimum illumination levels, uniformity ratios and max-to-min ratios that are being applied to the adjoining roadway based on CHAPTER 6 – ROADWAY LIGHTING of this Manual. If lighting is not provided for the adjoining roadway, coordinate~~ion~~ with the transit agency ~~may be considered~~ to determine if lighting ~~is to~~should be provided for the bus stop area, particularly when night transit services are provided. A decision to install lighting for the adjoining bus stop area may include illumination of the bus bay pavement area. The use of solar panel lighting for bus bays is another option that should be considered.

Figure 13 – 3~~1~~
Bus Bay Locations~~Categories~~



E REFERENCES FOR INFORMATIONAL PURPOSES

The following is a list of publications that may be referenced for further guidance:

- FDOT "Accessing Transit Design Handbook for Florida Bus Passenger Facilities" on the Public Transportation Office web site: http://www.dot.state.fl.us/transit/NewTransitPlanning.shtm

- FDOT "Transit Facilities Guidelines" on the Public Transportation Office web site: http://www.dot.state.fl.us/transit/NewTransitPlanning.shtm

- ~~"Transit Vehicles and Facilities on Streets and Highways", from Transit Cooperative Research Program (TCRP) of the Transportation Research Board of the National Research Council January 2007~~

AASHTO Transit Guide

TCRP – Guidance for Rail Design

Sunrail for 201? – Sunrail, Commuter Rail, BRT