DESIGN CRITERIA MANUAL

CHAPTER 7

PUBLIC TRANSPORTATION

MUNICIPALITY OF ANCHORAGE

PROJECT MANAGEMENT & ENGINEERING DEPARTMENT AND PUBLIC TRANSPORTATION

D-R-A-F-T

NOVEMBER 2025

DESIGN CRITERIA MANUAL
REVISION LOG

Chapter 7 – Public Transportation

Rev. No.	Date Executed	Description	Sections Revised or Added	New/*Revised* Template

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

Acronyms and Abbreviations

AADT ..... annual average daily traffic
AASHTO ..... American Association of State Highway and Transportation Officials
ABA ..... Architectural Barriers Act
AC ..... asphalt concrete
ADA ..... Americans with Disabilities Act
ADAAG ..... Americans with Disabilities Act Accessibility Guidelines
ADT ..... average daily traffic
ALUM ..... aluminum
ANSI ..... American National Standards Institute
ASTM ..... American Society of Testing Materials
AWS ..... American Welding Society Specifications
CITY BUS ..... AASHTO City Bus
CBD ..... Central Business District
DCM ..... Design Criteria Manual
DOT&PF ..... State of Alaska Department of Transportation and Public Facilities
DPW ..... State of Alaska Department of Public Works
FHWA ..... Federal Highway Administration
Ft ..... feet
ELEC ..... electricity
GALV ..... galvanized
IAW ..... in accordance with
In ..... inch
Lb ..... pound
LOS ..... level of service
MASS ..... Municipality of Anchorage Standard Specifications
MUTCD ..... Manual on Uniform Traffic Control Devices (FHWA)
OS&HP ..... Official Streets and Highways Plan
NCHRP ..... National Cooperative Highway Research Program
Max ..... maximum
Min ..... minimum
MOA ..... Municipality of Anchorage
MPH ..... miles per hour
PCC ..... Portland Cement Concrete
PGDHS ..... Policy on Geometric Design of Highways and Streets (AASHTO)
PM&E ..... Municipality of Anchorage Project Management and Engineering
PROWAG ..... Public Right-of-Way Accessibility Guidelines
PTD ..... Municipality of Anchorage Public Transportation Department
PUE ..... Public Use Easement
ROW ..... Right-of-Way
TYP ..... typical
USDOT ..... United States Department of Transportation

GLOSSARY

ADA ACCESSIBLE ROUTES
A continuous, unobstructed path connecting all accessible elements and spaces of a building or facility. This path must be usable by individuals with disabilities, including those using wheelchairs or other mobility devices.

APPROACH ANGLE
The maximum angle of a ramp onto which a vehicle can climb without the front of the vehicle hitting the ground before the tires.

CURBSIDE BUS STOP
An on-street bus stop is characterized by the bus stopping in the travel lane, parking lane, at curb extensions, or on an improved shoulder. Separate bus-only areas are not provided. These stops are typically found in major commercial districts.

DEPARTURE ANGLE
The steepest ramp angle from which the vehicle can descend without the rear bumper or undercarriage hitting the ground.

HARDSCAPE
A constructed feature used in landscape or facility infrastructure such as pathways, sidewalks, and bus pads.

MAJOR GENERATORS
A bus stop that produces a significant number of users exceeding the typical threshold of average bus stops.

MICRO TRANSIT
Technology-enabled service that uses multi-passenger vehicles to provide on-demand services with dynamically generated routing. Micro transit services are traditionally provided in designated service areas (zones).

ON-STREET BUS STOP
Bus stops that are located on-street. There are two types of on-street stops: curbside and pullout. See respective definitions for additional information.

PULLOUT BUS STOP
An on-street bus stop is a stop that has a designated space provided for the bus to stop out of the travel lane.

ROLLOVER ANGLE
The angle at which a vehicle, or other object, tips or rolls over. It is the angle at which the object's center of gravity shifts to a point where it can no longer maintain stability and begins to topple over.

SIGHT-DISTANCE
The length of roadway visible to a driver at any given point, enabling them to perceive and react to potential hazards and make safe driving decisions.

TIME STOPS
Stops along a route at which buses are expected to arrive and/or depart at the time indicated. Time Points help pace the bus through the route start to end.

TRANSFER POINTS
Designated bus stops where multiple bus route converge allowing passengers to switch between buses to continue their journey.

TRANSIT AMENITIES
Include items of comfort, convenience, and safety that are available to the general riding public, such as benches, shelters, signage, and trash receptacles.

TRANSIT-SUPPORTIVE DEVELOPMENT CORRIDORS (TSDC)
Corridors defined by Anchorage Municipal Code Section 12.70.080 to encourage transit-oriented development along key transportation routes.

UNDERBODY CLEARANCE
The distance between the lowest point of a vehicle's undercarriage and the ground. This may also be referred to as ground clearance.

SECTION 7.1 OBJECTIVE

The Municipality of Anchorage's (MOA) Public Transportation Department (PTD) operates the largest public transit provider in the State. PTD's mission is to connect the community with safe, reliable transportation options, emphasizing customer service while providing economic, social, and environmental benefits. This chapter provides guidance in the development of transit facilities to meet this mission incorporating regional and national standards, as well as local preferred transit infrastructure and equipment, policies, and regulations.

The guidelines within this chapter describe the recommended methodology for the location and design of bus stops and other public transportation facilities within the MOA. This chapter adheres to the most recent MOA planning efforts to promote sustainable urban growth, improve public transportation infrastructure, and accommodate the increasing need for accessible and efficient public transit options. Land-use and zoning changes, including the adoption of Transit-Supportive Development Corridors (TSDC), encourage transit-oriented development along key transportation routes. These TSDC are key criteria when selecting bus stop locations. Further, the methodologies herein follow a shift in MOA's approach to modal hierarchy, placing higher priority on transit facilities aiming to improve ridership comfort and service within the municipality. Non-motorized and transit facilities take higher precedent over single occupancy vehicles. As the nature of these efforts are continuously under development, the MOA Planning Department should be consulted as planning efforts identify opportunities for public transportation improvements.

Design of transit facilities must account for transit vehicles and pedestrian movement, and how they fit into the larger transportation system. These guidelines endeavor to order and clarify the factors to consider, and to guide the user toward a balancing of the needs of all roadway users. Improved pedestrian sidewalks, paths and trails connected to bus stops will make using the transit system safer and more enjoyable. Bus stops with rider amenities will improve rider comfort. Ensuring bus stop design accounts for maintenance efforts, such as snow storage, will aid in more efficient maintenance efforts and minimize access obstacles. Incorporating U.S. Access Board's Accessibility Guidelines for Pedestrian Facilities in the Right-of-Way (PROWAG) will ensure bus stops are accessible by all users. Appropriately located stops will enhance user safety while minimizing delay to traffic. For lower volume, or inner urban roads, curbside stops are preferred for greater transit efficiency. As barriers to transit use are removed, the transit system will become easier for all residents, and particularly individuals with disabilities, to use.

A number of specific elements are included in this chapter – transit vehicle dimensions, guides to the location and design of bus stops, proper placement of amenities at bus stops, snow storage and winter maintenance strategies, general guidelines for the design of other transit facilities, such as layover areas, and Park-and-Ride lots and Micro Transit services. The primary objective of this effort is to provide engineers, designers, and planners with one document to aid in the functional, legal, and cost-effective development of public transportation facilities during transit-related improvements.

The 2025 update of this chapter includes several updated bus stop amenities to the Public Transportation Standard Details for Construction. Designers should contact the Municipality of Anchorage Public Transportation Department Planning Division or Project Management and Engineering Design Division (PM&E) for the current preferred products prior to proceeding with planning and design.

END OF SECTION 7.1

SECTION 7.2 POLICIES, CODES, AND REGULATIONS

7.2 A Objective

When designing public transportation facilities, it is important to be aware of the policies, codes, and regulations that PTD facilities need to conform to. This section presents the standards policies, codes, and regulations. Other relevant references can be found in Section 7.7.

7.2 B Codes and Regulations

Public Transportation facility design in Anchorage is subject to local, state, and federal regulations, standards, and guidelines. As no single document can ultimately define complete design standards, users of this manual are cautioned to obtain and carefully read codes and other Municipal documents referenced herein to ensure comprehensive design compliance. If conflict appears to exist between the various codes, Municipal policies, this manual, or other Municipal documents, consult with the Municipal Engineer for resolution of these conflicts.

General public transit requirements are found in Anchorage Municipal Code (AMC) AMC 11.70 – Public Transit System. The AMC does not provide requirements or guidance on design of transit facilities, instead it outlines prohibited acts, penalties for violations, and other regulations related to operation of public transit system.

Note: The Anchorage Municipal Code is continually being revised. Always refer to the most recently published edition.

Americans with Disabilities Act (ADA)

In accordance with the ongoing effort to improve the accessibility standards under the Americans with Disabilities Act (ADA), the U.S. Department of Transportation adopted the U.S. Access Board's Accessibility Guidelines for Pedestrian Facilities in the Right-of-Way (PROWAG). All facilities shall adhere to the requirements of PROWAG.

7.2 C Policies

As a rule, policies do not include specific design criteria. For example, AMC Title 11 only provides guidance on the public transportation system, not design of facilities. The design standards contained in this DCM and the specifications contained in the *Municipality of Anchorage Standard Specifications* (M.A.S.S.) establish the particular standards and specifications. Both the DCM and M.A.S.S. are periodically updated and amended by the Municipal Engineer with concurrence from various Departments in the Municipality.

MOA Planning Department Efforts

Several of the MOA Planning Department efforts impact the design approach for public transportation facilities including land-use and zoning, Transit-Supportive Development Corridors (TSDC), and modal hierarchy. Each play a role to promote sustainable urban growth, improve public transportation infrastructure, and accommodate the increasing need for accessible and efficient public transit options.

Section 7.4 incorporates policy guidance into the selection of bus stop types and locations. As policy and guidance documents change, efforts to incorporate and conform the public transportation are continuously

ongoing. The MOA Planning Department should be consulted as planning efforts identify opportunities for public transportation improvements.

Anchorage Metropolitan Area Transportation Solutions (AMATS) Efforts

The Anchorage Metropolitan Area Transportation Solutions (AMATS) organizes transportation improvements in Anchorage. As part of their coordination efforts, a Complete Streets Plan policy was developed to provide guidance for improving the transportation network in Anchorage. Complete streets is a vision for safer, more accessible and more connected streets for everyone.

Similar to MOA Planning efforts, AMATS' efforts are continuous and should be consulted for the most recent guidance.

7.2 D Design Variances

Designers shall adhere to the criteria established in this DCM and other referenced documents, unless compliance with such will compromise their judgment as professional engineers with regard to safety, project impacts, and/or practicality. In such cases, a written variance request of the appropriate standard may be requested from the Municipal Engineer.

Variance(s) should be considered a solution(s) of last resort and should not be used as a standard practice. The maximum or minimum criteria value should only be used occasionally.

Written variance requests shall be submitted through the municipal project manager for a determination by the Municipal Engineer. Variance requests should contain supporting information, justification and alternate solutions considered.

Design variances should be identified in the design study or project planning phase, and detailed variance requests should be submitted not later than the 65 percent level of project design.

Variance request(s) should not be based solely on the difficulty and/or cost of implementing such criteria and must include:

- alternate solutions considered, and discussion on why they are not practical or achievable;
- justification explaining why proposed alternate solution(s) is/are equivalent;
- explanation of why proposed alternative solution is the right solution, and is in the best interest of the public and the Municipality of Anchorage.

In addition to the criteria presented in this manual, the Municipal Engineer may impose additional standards and criteria at his/her sole discretion when deemed appropriate to protect the safety and welfare of the public.

END OF SECTION 7.2

SECTION 7.3 TRANSIT VEHICLE GEOMETRIC CONSIDERATIONS

7.3 A Objective

All street design should consider the existing or future presence of transit vehicles in the flow of traffic. This section presents the current design vehicles in use by the Public Transportation Department's (PTD) People Mover services and their horizontal and vertical clearance requirements. Because transit vehicles are rarely the largest design vehicle anticipated on a roadway facility, most street and highway design controls accommodate transit vehicles. However, the designers and planners should verify that the design metrics developed in this section are satisfied. Where a design criterion is not addressed in this section, the appropriate street and highway design control should be used.

7.3 B Design Vehicle: City Transit Bus (CITY BUS)

People Mover currently uses 41.0-foot long, 8.5- foot wide New Flyer buses in its fleet. The physical characteristics of this bus size should be considered in all transit-related design controls. Because the critical dimensions for this vehicle are consistent with the American Association of State Highway and Transportation Officials (AASHTO) City Transit Bus (CITY-BUS), this Design Vehicle shall be used in determining transit-related geometric design requirements. Figure 7-1 depicts the basic front and side views of a 41.0-foot bus and summarizes its critical dimensions and clearance requirements of the model the system currently operates.

1. Horizontal Clearance - Turning Movements

    a. Desirable Curb Return Radius

    The desirable curb return radius for City Transit Buses with 12-foot entrance and departure lanes is 40 feet. This radius is typically used in arterial applications, with 30 feet standard for collectors and 20 feet for residential streets. It should be noted that for 90-degree turns with curb return radii less than 40 feet, the City Transit Bus will swing into the intersecting street's opposing traffic lane while negotiating the turn.

    b. Minimum Turning Path

    Figure 7-2 presents the Minimum Turning Path for a City Transit Bus. This template should be used to design curve radii and entrance/exit throats on approaches for roadways where City Transit Buses will operate. It is desirable to avoid requiring City Transit Buses to encroach into oncoming lanes or overhang sidewalks during turning movements.

    As indicated in Figure 7-2, the City Transit Bus turns on a minimum inside clearance radius of 23.6-feet and requires an outside clearance of 44 feet.

    Satisfactory horizontal clearance at turns should be verified by the application of appropriate turning path templates. Additional radius should be provided if bus-turning speeds are expected to be greater than 10 mph. Anchorage's design speed for 90-degree turns is 3 to 5 mph.

2. Horizontal Clearance – Lane Width Requirements

    a. Travel Lanes and Curbside Bus Stops without Shoulders, Parking and/or Bike Lanes

Current Municipal Project Management and Engineering Department (PM&E), Alaska Department of Transportation and Public Facilities (DOT&PF), and AASHTO travel lane width requirements (10 to 12 feet) accommodate the City Transit Bus. Consequently, no special requirements for bus lanes or on-street bus stops are necessary.

b. Curbside Bus Stops using Shoulders, Parking and/or Bike Lanes

Where parking lanes, bike lanes, or shoulders are to be used for on-street bus stops, disruption to through-traffic is to be minimized. The combined design width of the outside travel lane and the parking/bike/shoulder lane should be a minimum of 20-feet.

c. Pullout Bus Stops

The desirable width (as measured from lip of curb to edge of the through-travel lane) for bus pullouts is 12-feet. The design minimum width for bus pullouts is 10-feet.

3. Vertical and Underbody Clearance

a. Vertical Clearance

Current City Transit Buses have a maximum overall height of 10-feet, 3-inches. The desirable clearance between the roadway surface and overhead obstructions on transit routes is 16.5-feet, and the minimum is 14-feet.

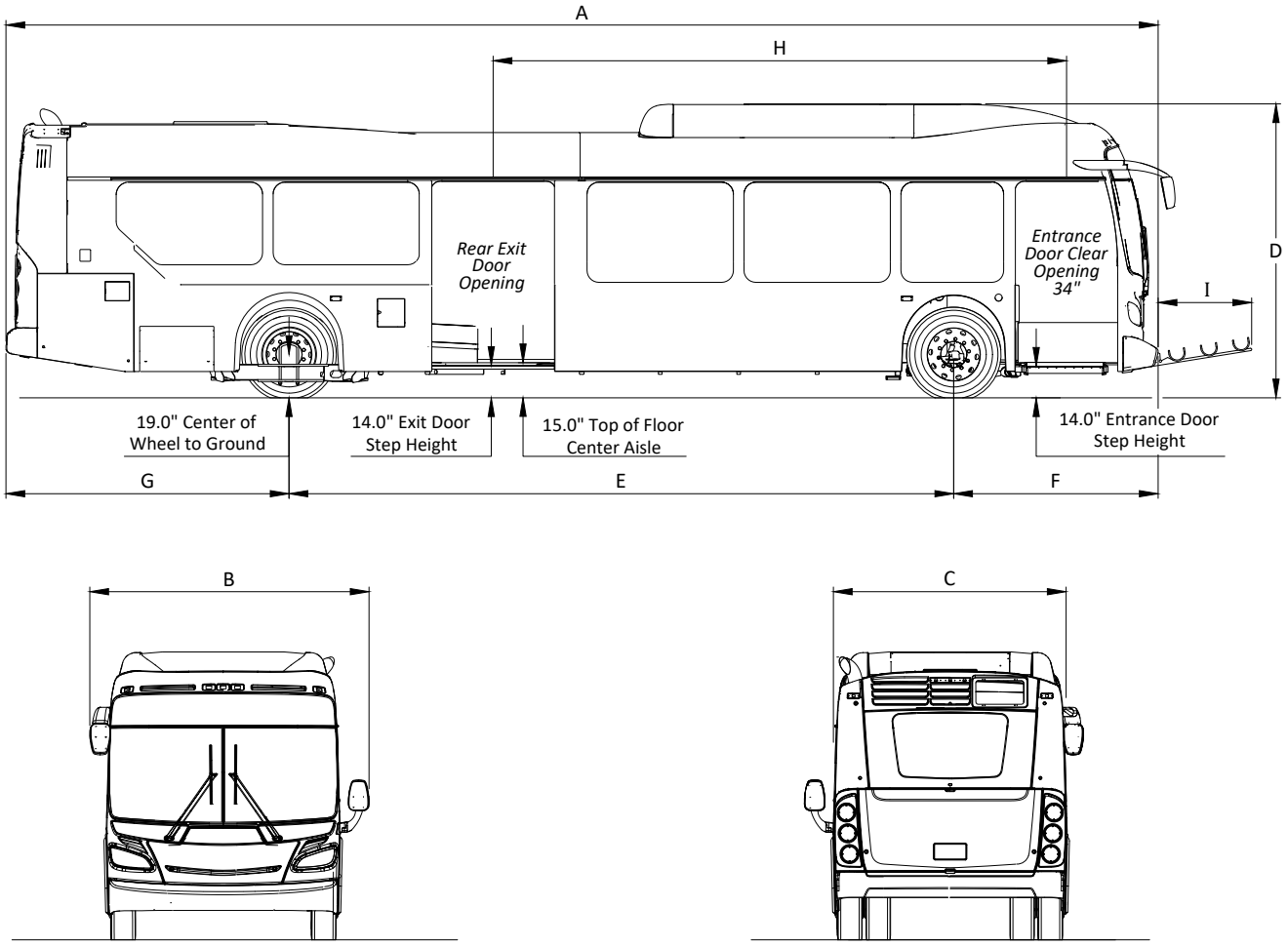
b. Underbody Clearance

Underbody clearance should be considered in the design of intersections, driveways, and off-street facilities. Grade breaks at these locations should be set so that underbody clearance is maintained during three phases of movement over a grade break: Approach, Rollover, and Departure. Figure 7-3 depicts these phases of movements and presents the maximum allowable grade breaks for transit buses: 12% difference for sag vertical curves and 10% for crest vertical curves.

7.3 C Transit Van

PTD's AnchorRIDES service utilizes Transit Vans. These vans are 20-foot cutaway van chassis vehicles. Micro Transit service will also utilize the Transit Van. Micro Transit is not a service currently provided by PTD; see section 7.6 D for additional information. Current PM&E, DOT&PF, and AASHTO street and highway design controls accommodate these vans. Consequently, no special design considerations are necessary for roads on which vans are used.

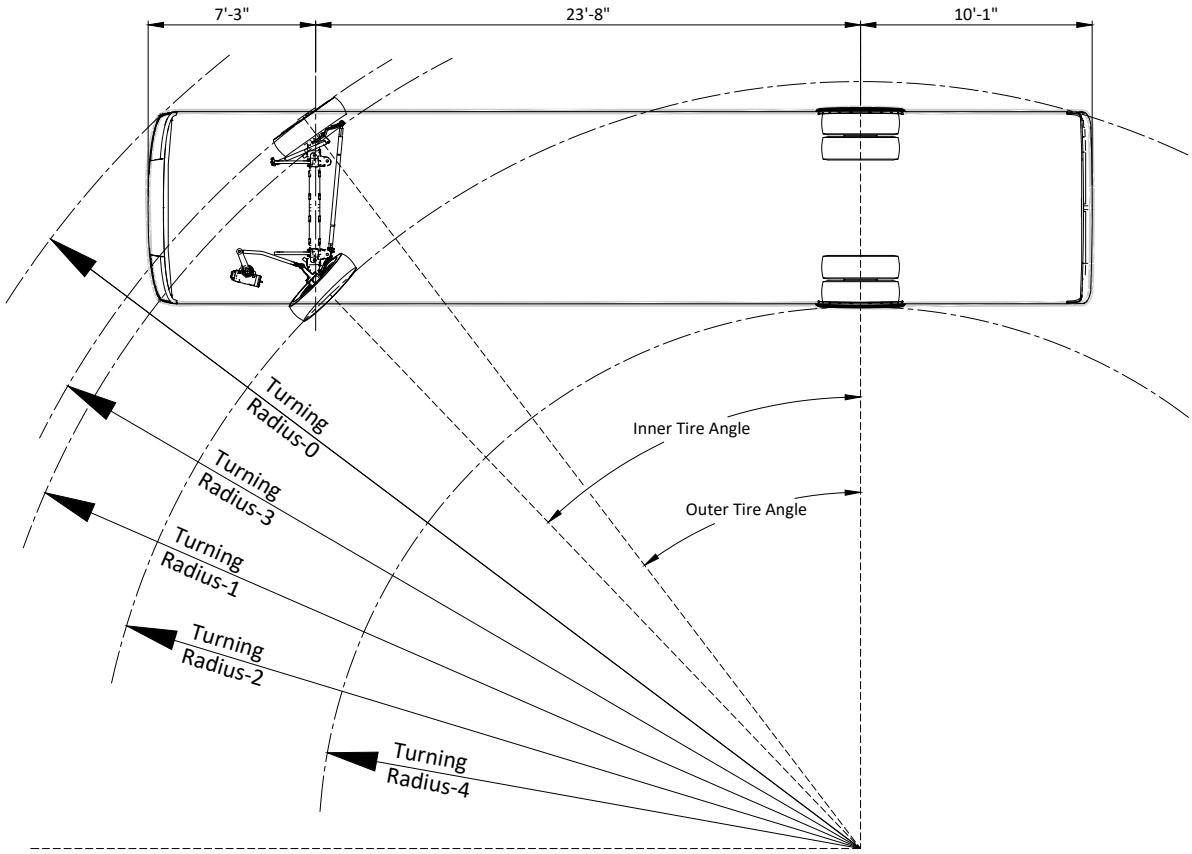
END OF SECTION 7.3



BUS DIMENSIONS (NEW FLYER)		
A.	Overall Length	41'- 0"
B.	Overall Width (W/ Mirrors)	± 9'-11"
C.	Overall Width (W/Out Mirrors)	8'-6"
D.	Overall Height	10'-3"
E.	Wheelbase Length	19'-11"
F.	Front Overhang	7'-3"
G.	Rear Overhang	10'-1"
H.	Door to Door (center)	26'-6"
I.	Front Bike Rack Extension Length	3'-4"

NOT TO SCALE

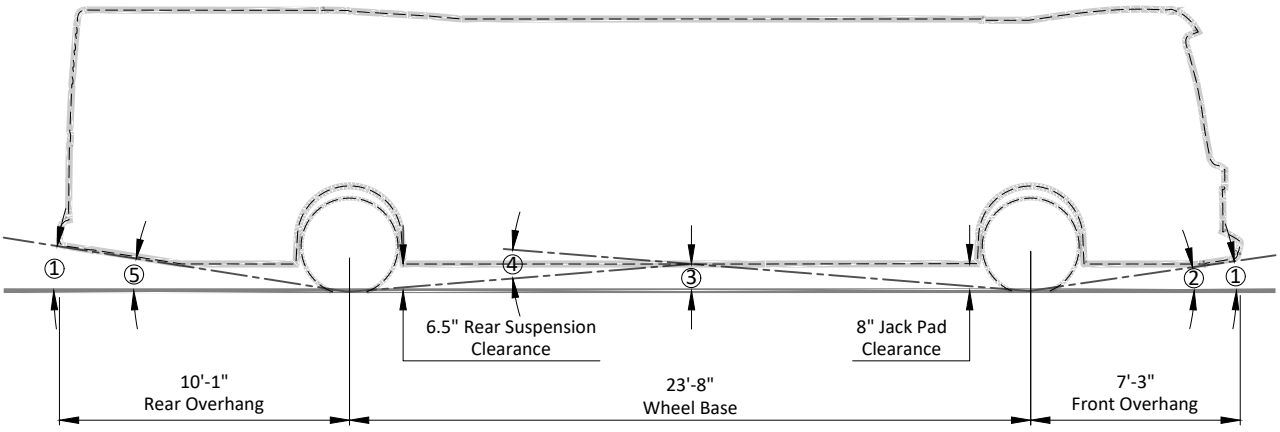
Figure 7-1: City Transit Bus (41-foot Bus)



BUS TURNING RADIUS CHARACTERISTICS (MAXIMUM VALUES)	
TR0	44'
TR1	39'
TR2	34'
TR3	40'
TR4	24'
Inner Tire Angle	46°
Outer Tire Angle	39°

NOT TO SCALE

Figure 7-2: Turning Path for City Transit Bus



UNDERBODY CLEARANCE FOR DRIVEWAY DESIGN			
No.	Description	Degrees	Dimensions
1	Ground to Bumper Clearance (Front/Back)	-	11"
2	Approach Angle	9°	-
3	Underbody Clearance	-	10"
4	Rollover Angle	9°	-
5	Departure Angle	9°	-

NOT TO SCALE

Figure 7-3: Underbody Clearance for Driveway Design

SECTION 7.4 BUS STOP LOCATION AND TYPE

7.4 A Objective

Decisions regarding bus stop frequency, location, and length, call for careful analysis of passenger service requirements, the type of bus service provided, and the interaction of stopped buses with general traffic flow. These factors are often dependent upon existing land-use development along the road in question as well as planning efforts encouraging transit-oriented development such as Transit Supportive Development Corridors (TSDC). Alternative modes of travel are emphasized on these corridors with increased use of pedestrian, bicycle, and transit design elements. Further, MOA modal hierarchy places higher priority on non-motorized and transit facilities aiming to improve ridership comfort and service within the municipality. This prioritization should be accounted for when balancing the convenience to the bus passenger and convenience to the auto user. This section contains guidelines for selection of bus stop placement, spacing and type, along with methodologies to help the designer and planner in achieving the successful balance. Flowcharts that depict the location and stop type decision process are presented in Figures 7-4 and 7-5.

7.4 B Bus Stop Spacing and Location

The proper location of a bus stop requires a site investigation of the stop(s) under consideration; no standard type of stop can be recommended for all locations. Utilizing the MOA Planning Department adopted TSDC, which encourages transit-oriented development along key transportation routes, should be the first consideration for bus stop locations. New stops are not required to be in a TSDC; however, they are encouraged. MOA's Land Use Plan Map defines the TSDC within the MOA. Designers and planners should always reference the most up to date Land Use Plan Map as planning efforts are continuous. An inventory of land-uses within a quarter-mile corridor of the road under consideration should be developed, making certain those uses which serve as major trip producers and attractors are noted. In particular, these categories should be included in the inventory:

- High-density residential units (R-3 and R-4 zoning) normally generate sizeable numbers of transit trips because of typical income levels and density
- Public institutions (schools, hospitals, libraries, etc.)
- Office buildings
- Retail malls

1. Selection of Preliminary Bus Stop Locations

Once the major trip generators within the corridor have been identified, the next step is to begin locating bus stops. Needed transit information can be obtained from the MOA PTD Planning Staff, which include:

- The portion of the length of the road the route operates, or will, operate in the future.
- At which intersections do, or will, other routes connect. Assume riders will transfer from one route to another at these intersections.
- Number of ridership by stop, if the road has existing stops.
- Forecasted ridership, in cases where development is anticipated.

a) Sequence of Decisions

Step 1: Stops at Major Generators

The first stops established are those adjacent to major trip generators. Stops should be located within a short walk from schools, major retail malls, office buildings and multi-unit apartments to provide access to the public transportation system. At these major passenger generators, bus stops should be located to balance rider access with pedestrian safety. Stops should be located close to the main entrance to minimize the distance users have to travel through parking lots. Stop locations should minimize the potential for jaywalking as well as minimizing user walking distance and avoiding unnecessary crosswalk movements (disincentives for public transportation users).

Step 2: Stops at Transfer Points

The next stops to locate are at intersections of streets served by other bus routes. These stops will allow transfers with other buses, which are necessary to provide connections to areas of the community that have no direct routing from a rider's origin. Hassle-free transfers are an important element of a successful transit system. The maximum walking distance between two bus stops serving connecting routes should be no more than 300 feet.

Step 3: Stops at Signalized Intersections

The next category of stops to establish includes those at signalized intersections. Whether curbside or pullout, stops at the far-side (Figure 7-8) of signalized intersections can operate conveniently for both auto and transit users. Buses can use the gaps in the stream of traffic created by the signal to transfer passengers and then re-enter traffic travel-lane.

Step 4: Intermediate Stops

Once stops have been placed at transfer points, major generators and signalized intersections, additional stops are added to complete the set of stops for the route or street. A standard in the transit industry suggests that most riders will not want to walk farther than one quarter-mile to a bus stop. The additional stops for areas of low to moderate passenger demand should be established by applying standard bus stop spacing criteria.

Bus stop spacing should be related to ridership density; stops should be close together in the major commercial districts and farther apart in the outlying areas. Ideally, stops should be as far apart as possible without adversely affecting passenger convenience. TSDC are key when selecting intermediate bus stop locations. The use of ranges for these two zone areas is recommended for MOA. The recommended ranges for bus stop spacing are as follows:

- Within TSDC – 500 to 800 feet
- Outside of TSDC – 800 to 1,300 feet

Consideration to existing or proposed roadway configurations should be evaluated for intermediate stops. Locations should be evaluated on a case-by-case basis considering number of vehicle travel lanes, one-way versus two-way roads, speed of the roadway, presence of a roadway median, and sight distance. The following table provides guidance on conditions metrics to consider for intermediate stops.

	Conditions in Favor of an Intermediate Stop	Conditions to Reconsider an Intermediate Stop
Number of Total Vehicle Lanes	1-3	3+
Roadway Speed	30pmh or less	Above 30 mph
Other	Presence of Median One-way Vehicle Travel	Sight Distance Issues

TABLE 7- 1 CONSIDERATIONS FOR INTERMEDIATE BUS STOP PLACEMENT

In low density housing and commercial areas, consideration should be given to how far a person must walk to get to the street with bus service. For areas where much of the development is off the road, stops should be closer than where all development occurs on the road.

Stops on both sides of a two-way street should be paired up whenever possible to provide passengers with transfer points near one another. These stops should be placed in proximity to existing marked crosswalks or evaluate installing a marked pedestrian crosswalk per the current versions of the Alaska Traffic Manual and the Manual on Uniform Traffic Control Devices.

2. Refine Bus Stop Locations

Generally, bus stops should be located after (far-side of) an intersection to facilitate bus and traffic operations. However, far-side stops are occasionally impractical or conflict with existing commercial development. Long blocks and arterials with long distances between intersecting streets also require mid-block stops. On rare occasions, land use, bus routing or other factors will dictate the use of a near-side stop.

Other specific attributes of the preliminary location should be reviewed. Sight distance issues due to roadway geometry (e.g. curves, hills) or obstructions should be evaluated. Sight distance constraints can reduce the bus driver's ability to safely reenter traffic and following vehicles' ability to safely avoid a stopped or merging bus. If sight distance issues are present, the proposed stop should be relocated. Driveway curb cuts should generally be avoided, with the stop placed far-side of the driveway. If necessary, driveway cuts can be placed in the entrance taper or the first part of the bay of a pullout (see also Section 7.4 B.2 b., below).

The following criteria, advantages and disadvantages for far-side, near-side and mid-block stops are guidelines for refining stop locations:

a) Far-Side Stops

A far-side bus stop is located immediately after an intersection, or after major commercial driveway.

Conditions where far-side stops are recommended:

- At intersections controlled by signals, stop or yield signs.
- The traffic is heavier on the approach side than on the departure side of an intersection.

- The intersecting street is a one-way street with traffic moving from left to right (when viewed as one approaches the intersection).
- At intersections where heavy left or right turns occur.
- At intersections where the bus route and heavy traffic movements diverge.

Advantages of far-side bus stops:

- Reduced conflicts between right turning vehicles and stopped buses.
- Additional intersection capacity is provided by making the approach curb lane available for traffic.
- Sight-distance deficiencies created by buses stopped near-side of the intersection are eliminated.
- Pedestrian crossing at rear of the bus is encouraged; in front of the bus discouraged.
- Shorter maneuvering distances for the buses to enter and leave moving traffic are required.
- Increased ease and speed for bus reentering traffic stream during heavy traffic, as a result of platooning of traffic at signalized intersections.

Disadvantages of far-side bus stops:

- Intersections may be blocked if other vehicles park illegally in the bus stop, thereby obstructing buses and causing traffic to back up across the intersection.
- A bus standing at a far side stop may obscure sight distance to the right of a driver entering the intersection from the right.
- Where the bus stop is too short for occasional heavy demand (i.e., multiple buses stopping at the same time), the overflow may obstruct the cross street.

b) Near-Side Stops

A near-side stop is one which is located immediately before an intersection, including major commercial driveways.

Conditions where near-side stops are recommended:

- Traffic is heavier on the departure side than on the approach side of the intersection.
- The cross street is a one-way street where traffic flows from right to left.
- Where the bus route turns right, if curb space is critical, a near-side stop should be established before the turn.
- At intersections controlled by signals or stop or yield signs, when transit operations are more critical than traffic or parking.

- At intersections where a free right turn leads into the direction of bus route traffic.

Advantages of near-side bus stops:

- Create a minimum of interference at locations where traffic is heavier on the far side than on the approach side of an intersection.
- Passengers generally board buses close to a crosswalk, which minimizes walking distance.

Disadvantages of near-side bus stops:

- Heavy vehicular right turns can cause conflicts, especially where a vehicle makes a right turn from the left of a stopped bus.
- Buses may obscure stop signs, traffic signals, or other control devices as well as pedestrians crossing in the front of the bus.
- A bus standing at a near-side stop diminishes the sight distance of a driver entering the intersection from the right.
- Where the bus stop is too short for occasional heavy demand (multiple buses), the overflow may obstruct the traffic lane.
- The bus reentering traffic flow after stopping often must wait through several light cycles as vehicles trap the bus in the stop bay or departure zone.
- Lengthy separate right turn lanes (pockets) cause the bus stop to be located too far from the intersection.

c) Mid-Block Stops

A mid-block stop is one which is located 300 feet or more beyond or before an intersection, or after major commercial driveways.

It should be noted that in the case of arterials with long stretches between signalized intersections, mid-block stops present a hazard to the bus rider who often must cross the road on the way from the trip origin or to his or her destination. A raised median can lessen the hazard, allowing the pedestrian to cross half the road at a time. In cases in which a particularly attractive major trip generator exists mid-block, a signalized crosswalk or pedestrian overpass may be warranted. Providing a marked crosswalk should be evaluated per the current versions of the Alaska Traffic Manual and the Manual on Uniform Traffic Control Devices. Designers and planners need to coordinate with MOA Traffic Department and DOT&PF per the designated roadway ownership, respectively.

Conditions under which mid-block stops are recommended:

- Traffic or physical street characteristics prohibit a near- or far-side stop next to an intersection.
- Large bus passenger generators exist, and heavy ridership makes the location desirable.
- Blocks are exceptionally long and allow adequate distance for the bus to merge into a left-turn lane, if required.

- A median island exists in the roadway or space for construction of a median island is available.

Advantages of mid-block bus stops:

- Buses create a minimum of interference with sight distance of both vehicles and pedestrians.
- Waiting passengers assemble at less crowded sections of the sidewalk.

Disadvantages of mid-block bus stops:

- The removal of multiple curb parking may be required.
- Patrons coming from a cross street may have to walk farther to board the bus.
- Pedestrian jaywalking is more prevalent, thereby increasing vehicular friction, congestion and accident potential.

3. Controlled Access Roads

Freeway bus stops should only be provided at interchanges. They may be placed on either the on-ramp (desirable) or the off-ramp if the bus will not be turning onto the local street network. The bus pullout location and design should meet the requirements for pullouts on arterial facilities. Pullouts are difficult to provide effectively within cloverleaf or directional-type interchanges and should be omitted or located on the frontage road or cross street beyond the limits of the interchange.

Under special circumstances bus stop pullouts may be provided on freeways. This type of bus stop must be constructed so that the deceleration, standing, and acceleration of buses occur on pavement areas clear of, and separated from, the through traffic lanes. Costly features such as speed change lanes and pedestrian overpass facilities are required. The decision about whether to construct these facilities must be based on a cost analysis that compares all benefits with the cost to construct and maintain.

4. Roundabouts

Transit considerations at a roundabout are similar to those at a conventional intersection. If the roundabout has been designed using the appropriate design vehicle, a bus should have no physical difficulty negotiating the intersection. To minimize passenger discomfort, if the roundabout is on a bus route, it is preferable that scheduled buses are not required to use the truck-apron if present. Bus stops should be located carefully to minimize the probability of vehicle queues spilling back into the circulatory roadway. This typically means that bus stops located on the far-side of the roundabout intersection need to have pullouts or be further downstream than the splitter island.

Bus stops situated on an entrance leg should be positioned 50 feet or greater before the splitter island and crosswalk.

Pedestrian access routes to transit should be designed for safety, comfort, and convenience. If demand is significant, such as near a transit/transfer facility, pedestrian crossing capacity should be accounted for.

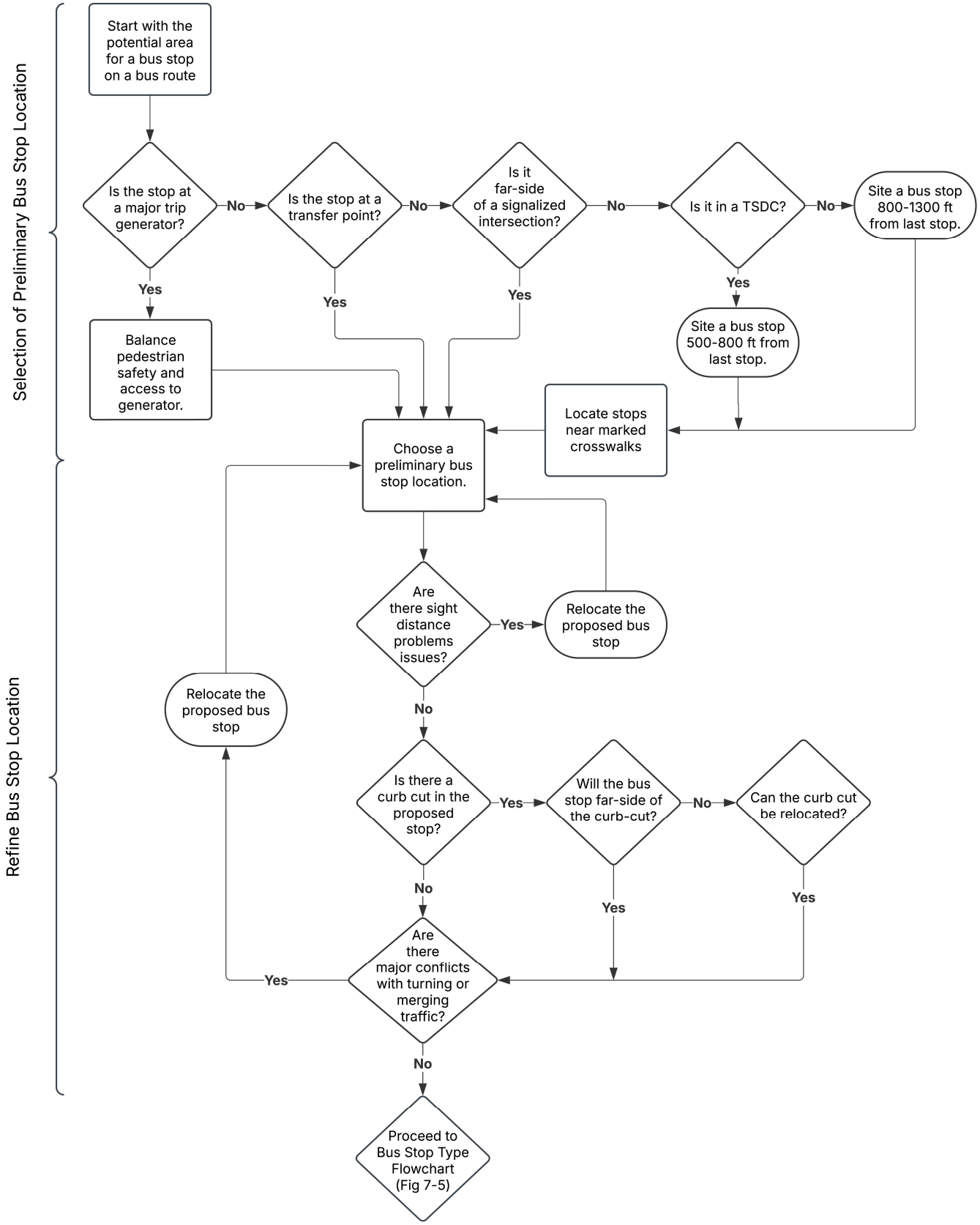


Figure 7-4: Bus Stop Location Flowchart

7.4 C Bus Stop Type – On-Street (Curbside or Pullout) or Off-Street?

This decision depends first on the stop sequence on the route. Terminus of routes should be off-street stops where space is available; this is also referred to as a bus layover area (see section 7.5A). All other stops should be on-street. The two types of on-street stops are curbside and pullout. Which on-street stop type depends on the functional classification of the road, anticipated transit ridership, traffic volume and speed, and other factors. It is normal practice to have buses stop in the traveled way on residential streets, collectors and some minor arterials. In addition, buses will normally stop curbside (in the parking lane) in the major commercial districts. Typical curbside stops are in a parking lane, in the travel lane, at curb extensions, or on an improved shoulder. On major arterials, and some minor arterials, many bus stops are pullouts with a designated space provided for the bus to stop out of the travel lane.

The design of a bus stop on a major arterial is often the most difficult case, because the tradeoffs between general vehicular traffic and transit are difficult to predict and quantify. Lack of quick reentry into the traffic stream from a pullout will, especially if repeated often; increase the transit trip time and the disincentive to ride the bus. However, stopping in the through lane may reduce the roadway level-of-service (LOS) and may precipitate rear-end accidents. Therefore, the decision to place a pullout stop should be made carefully. Cumulatively, the decisions will affect the ability of the roadway and transit to move people safely and quickly. This section contains a decision-making process that will help the planner or engineer make consistent decisions. The sequence is diagramed in Figure 7-5.

1. Sequence of Decisions

Step 1: Is the stop a route terminus?

If the answer is yes, go on to step 2; an off-street stop is warranted. If the answer is no, go to step 4.

Step 2: Is there a parking lot in the vicinity?

If the answer is no, utilize a pullout stop; go to step 8. If yes, go on to step 3.

Step 3: Can a public use easement (PUE) be obtained from the parking lot owner?

If the answer is no, utilize a pullout stop; go to step 8. If yes, establish an off-street stop/layover area.

Step 4: Is the road an arterial?

If the answer is no, establish a curbside bus stop. If yes, go on to step 5. Pullouts are not necessary on collector level or lower roadway functional classifications.

Step 5: Is the stop a Time Point?

If the answer is yes, go to step 7. If no, proceed to step 6.

A Time Point is a location, typically a bus stop, along a route at which buses are expected to arrive and/or depart at the time indicated. Time Points help pace the bus through the route start to end. Buses should never leave a time point bus stop early and thus may need to wait at the stop until the scheduled departure time. Pullout stops are ideal in this scenario as they allow the bus to wait outside of the travel lane.

Step 6: Is the stop a transfer point for connecting bus routes?

If the answer is no, go to step 7. If yes, go on to step 8.

Far-side bus pullouts should be constructed where bus routes intersect. This allows a bus to wait for transferring passengers safely out of the curbside travel lane, and to use the signal red phase to reenter the travel lane.

Curbside bus stops on arterials are recommended to be placed when there is a dedicated right-turn lane on the near-side of an intersection. The curbside stop can be placed at the beginning of the dedicated turn lane. Placement shall be approved by PTD, and MOA Traffic, and DOT&PF staff, respectively per roadway ownership. See figure 7-8 for additional information.

Step 7: Is the speed limit of the roadway 50 mph or higher?

If the answer is no, build a curbside stop. If yes, go on to step 8.

Curbside bus stops on arterials where the speed limit is 50 mph or more are not recommended.

Step 8: Is there sufficient right-of-way (ROW) for an off-street stop?

If yes, establish a pullout stop. If no, consider property acquisition, and go on to step 9.

Step 9: Can a PUE be obtained?

If yes, secure the easement and establish pullout stop. If no, proceed to step 10 and consider a friendly ROW acquisition.

Step 10: Can a friendly ROW take be obtained?

If yes, acquire the property and establish a pullout stop. If no, proceed to step 11 and consider condemnation of the property.

Step 11: Is condemnation feasible?

If yes, condemn the property and establish the pullout stop. If no, establish a curbside stop or consider relocating the bus stop; utilize flowchart in Figure 7-4.

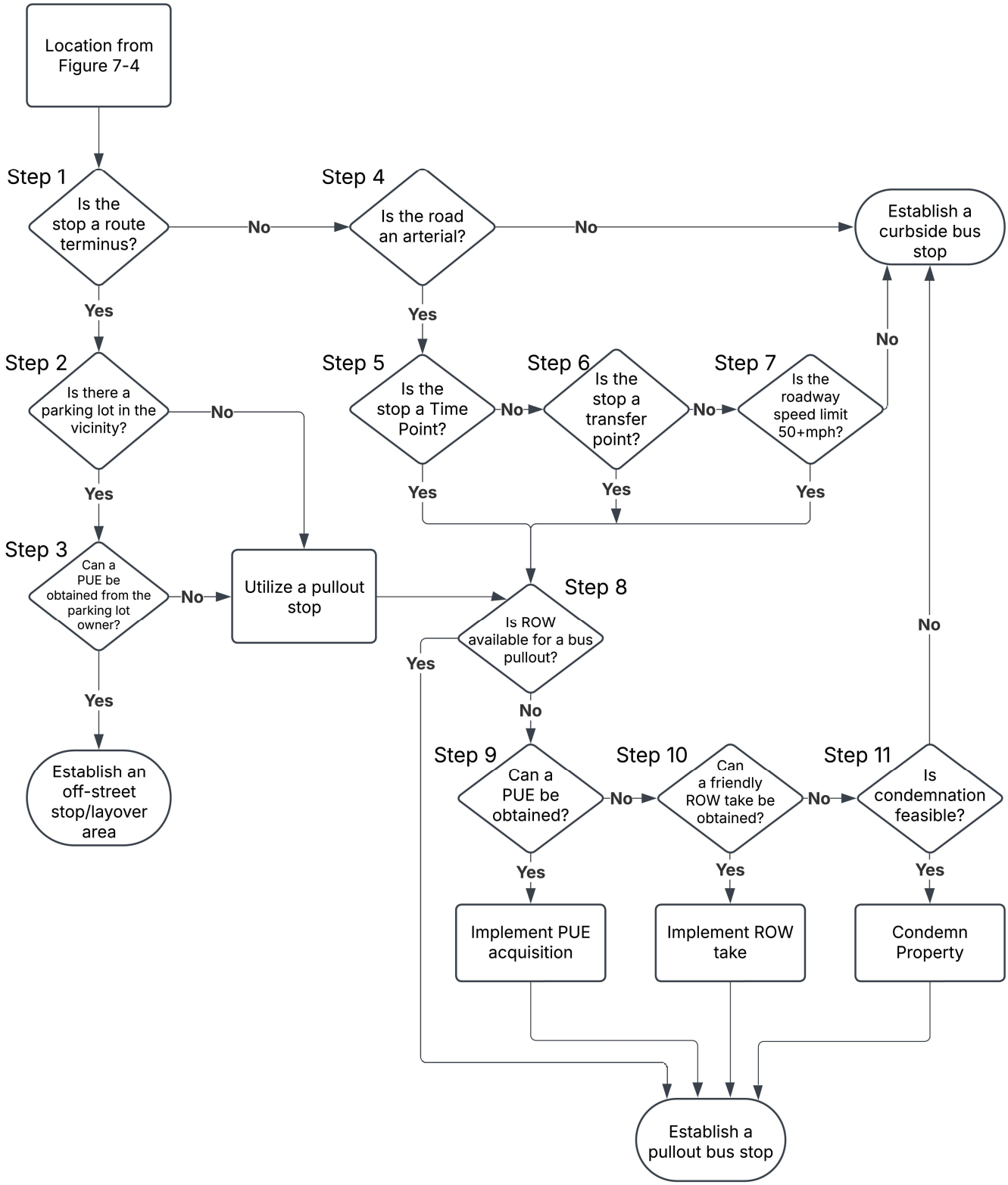


Figure 7-5: Bus Stop Type Flowchart

2. Other Issues to Consider

a. If real estate acquisition is necessary, will it make the affected property(s) a non-conforming land use? If so, can a variance be obtained? If a variance cannot be obtained, will the entire parcel have to be purchased?

Strip development often results in parking spaces constructed right up to the public ROW. The installation of a bus pullout at such locations can be very expensive. Besides purchasing sufficient developed property to build the pullout, it sometimes becomes necessary to purchase the entire lot, because the acquisition puts the development into a non-conforming status or creates a site that is no longer economically viable. It may be more appropriate to install curbside stop in such cases, and avoid the need for expensive property acquisition. In addition, the already significant turbulence in traffic flow created by many turning movements to and from commercial sites means the occasional stopped bus is a marginal contributor to auto user delay.

b. Will a pullout stop severely impact transit operations? Would a bus stopped in the pullout regularly have to wait more than 30 seconds to reenter traffic flow?

If the answer to one or both questions is yes, consider whether the stop should be relocated or made into a curbside bus stop.

7.4 D Micro Transit Stops

Micro Transit services do not utilize fixed locations for stops but rather virtual bus stops within specified zones. Micro Transit zones are typically areas that are poorly served by regular fixed route service. The virtual bus stop locations are variable as the service is on-demand and pick-up/drop-off locations can be at a rider's door or at a nearby intersections depending on service operations. Riders should typically not have to walk more than two blocks to a virtual stop. Amenities are not provided as stops are not fixed.

No design is required for these stops; however, parameters may be placed on the service depending on target user group, community context, and trip types. Parameters may include restricting virtual stops to only door-to-door or corner-to-corner; or limiting drop-offs to high demand locations or transit stations.

7.4 E Decommissioning of Pullout Bus Stops

Existing bus stops constructed using pullout configurations may be decommissioned during reconstruction of roadways or other transportation improvement projects. Decommissioning may include removal of no longer used stops or transitioning to a curbside stop. Decommissioning of pullout bus stops should be evaluated to determine whether use of the bus stop may be desired in the future, type of roadway, accessible routes, traffic geometry, and public use safety. Evaluation should utilize Figure 7-5 Bus Type Flowchart; if the existing pullout stop does not meet the criteria for a pullout, it should be decommissioned to a curbside stop if feasible. Decommissioning of pullout bus stops should consider the impacts to utilities and to the existing pedestrian accessible routes. Each decommissioned pullout bus stop will require a case-by-case evaluation of these impacts and coordination with other MOA departments, DOT&PF, and affected utilities prior to a final determination. Refer to Section 7.5 E for design considerations for decommissioning.

END OF SECTION 7.4

SECTION 7.5 BUS STOP DESIGN

7.5 A Objective

Bus stops serve as interface points between sidewalk/trail systems, street networks, and transit routes. Consequently, bus stop design should provide access to, through, and around for vehicles and non-motorized travelers; safe passenger waiting areas with amenities as applicable; and space for snow storage and maintenance activities. MOA modal hierarchy places higher priority on non-motorized and transit facilities, with single occupancy vehicle travel having less priority in the transportation system. This approach aims to improve ridership comfort and service within the municipality. The location, placement, and type of stop discussed in the previous section, used in conjunction with the information this section is intended to guide engineers and planners to bus stop design to balance the needs of all roadway users.

7.5 B Design

1. Curbside Bus Stops

Figure 7-6 presents desirable curbside bus stop layouts for far-side, near-side, and mid-block locations. The stop lengths shown for each location indicate the minimum length of roadway which should be signed and/or painted for "No Parking" and cleared of any landscaping, street hardware, signs, etc. which may interfere with the loading and unloading of passengers and other transit-related operations.

Curbside Bus Stops assume one of three conditions:

- Condition 1: The bus will dwell in a traffic through-lane;
- Condition 2: There is a combined through lane + shoulder + parking/bike lane width of 20 feet available for the bus to clear the travel lane during stops.
- Condition 3: There is a Curb Extension which utilizes less curb space than pullouts.

If none of those conditions apply, or the desired stop is along an arterial, a pullout should be designed in accordance with Section 7.5 B.2, Pullout, below.

a) Curbside Bus Stops - Condition 1 Bus Fully in Travel Lane

For curbside bus stops meeting Condition 1, no roadway improvements are required. Access shall be provided in accordance with section 7.4 C., Facility Access. Where possible, a waiting area and amenities should be provided in accordance with Section 7.4 D., Bus Stop Amenities.

b) Curbside Bus Stops - Condition 2 Bus Partially in Travel Lane

The design of curbside bus stops under Condition 2 should consider location factors (such as traffic volumes and turning movements—reference Section 7.4), traffic control, parking, intersection characteristics, and pedestrian movements. Each curbside bus stop should incorporate an entrance length, a bay length, and a departure length (presented in Figure 7-6). Desirable entrance lengths are 60 feet, and minimum lengths shall be 40 feet. Bay lengths shall be 45 feet plus 50 feet for each additional bus scheduled to dwell simultaneously at the stop. Departure lengths shall be a minimum of 30 feet. Note that these lengths are not identical to pullout stop dimensions. Curb corresponding to the entrance, bay, and departure segments of the stop shall be painted red.

For bus stops on the near side of intersections, the width of the crosswalk, curb return, and cross-street should provide sufficient reentry space. For bus stops on the far side of intersections, see Figure 7-8 for minimum distances from intersection curb return to start of the stop bay.

Access to the stop shall be provided in accordance with section 7.5 C., Facility Access. Where possible, a waiting area and amenities for curbside stops should be provided in accordance with section 7.5 D., Bus Stop Amenities.

c) Curbside Bus Stops – Condition 3 - Curb Extensions

On streets with parallel parking, near-side and far-side bus stops may benefit from curb extensions. Curb extensions allow the bus to stage alongside the curb, allowing passengers to board or disembark the bus without stepping onto the street. If curb extensions are not possible, or available, and passengers are required load or disembark onto the street a direct ADA accessible route is required. (Figure 7-7).

In urban areas where on-street parking is at a premium, mid-bock bus stops with curb extensions can be installed (see Figure 7-8). The mid-block curb extension stops utilize less curb space than pullouts and minimize obstructions to pedestrian traffic—essentially becoming a curbside stop that maintains available parking and pedestrian flow.

The curb extension tapers should be sharp enough to discourage additional parking, but shallow enough to facilitate snow removal and street maintenance.

2. Pullouts

Bus pullouts are widened sections of roadway designed for buses to pull out of the traffic through-lane. (see Figure 7-9). Pullouts should be considered integral to the roadway and maintain its functional elements. The following presents standards for the geometric layout and typical sections of pullouts. Access to the pullouts shall be provided in accordance with Section 7.5 C., Facility Access. Where possible, a waiting area and amenities for passengers should be provided in accordance with Section 7.5 D., Bus Stop Amenities.

a) Geometric Lay-Out

Entrance and departure lengths shall be developed by tapering the roadway limits (Figure 7-9). Entrance tapers shall have a desirable 6:1 and minimum 5:1 longitudinal to transverse ratio. Desirable bay lengths shall be 80 feet, with a minimum of 50 feet. Also, a minimum of 50 feet shall be provided for each additional bus scheduled to dwell simultaneously at the stop. Departure tapers shall have a desirable 6:1 and minimum 3:1 longitudinal to transverse ratio. Where the pullout is on the near side of an intersection, the width of the cross street is usually great enough to provide the necessary merging space

Longer bus pullouts increase the speed of bus maneuvers and lessen interference with through traffic. Figure 7-9 presents a typical geometric layout for a bus pullout. If right-of-way (ROW) or other constraints do not allow construction of the desirable pullout dimensions, the bay length should be modified first, followed by the departure taper, and lastly the entrance taper.

Driveway access should generally be avoided; however, where site conditions demand, a bus pullout may be located such that the curb cut is placed in the approach taper, or in the approach end of the central portion of the pullout. In such cases the bay shall be lengthened by an amount equal to the width of the curb cut. The curb cut shall not be placed in the departure taper.

Pullouts should not be located where there are potential rear-sight distance problems. Generally, pullouts shall not be located on horizontal curves to the right.

b) Typical Cross-Section

Bus pullouts should extend the typical section of the adjoining roadway, including curb and gutter treatment, cross-slope, drainage pattern, and structural fill. However, because traffic volumes in the pullout will be significantly less than the roadway, a depth of pavement of three (3) inches is permissible. On roadways with flat grades, protraction of the cross slope across the bay width may disrupt drainage patterns both on the roadway and adjacent properties. The engineer should design the vertical alignment to maintain minimum grades in the gutter or provide appropriate inlet treatment. Particular attention should be paid to pullout drainage with roadway flow grades of 0.5% or less. Typically, this creates ponding in the pullouts which is problematic for passengers waiting at the stop due to water spray and sidewalk icing (see Figure 7-9, Note 4).

7.5 C Facility Access

The location and design of new bus stops shall be accessible to persons with disabilities and provide for safely and fully deploying lifts and ramps on transit vehicles in accordance with the requirements of this section as much as is structurally practicable. It is noted that cost is not a factor in determining structural practicability in new construction.

For the rehabilitation or improvement of existing bus stops, the provision of access to persons with disabilities and adequate area for the safe deployment of lifts and ramps is required. Providing access to an improved bus stop is required to the extent practicable as required by accessibility guidelines.

Where the engineer believes that implementation of the requirements of this section are not structurally practicable, a written documentation presenting this assessment and for rationale shall be provided. PTD staff will have final determination.

1. Bus Stop Pads

Bus stop pads that provide a minimum clear space for deploying a lift and ramp from a transit vehicle shall be developed for all bus stops. Where feasible, the pad shall be a paved area with the following minimum dimensions:

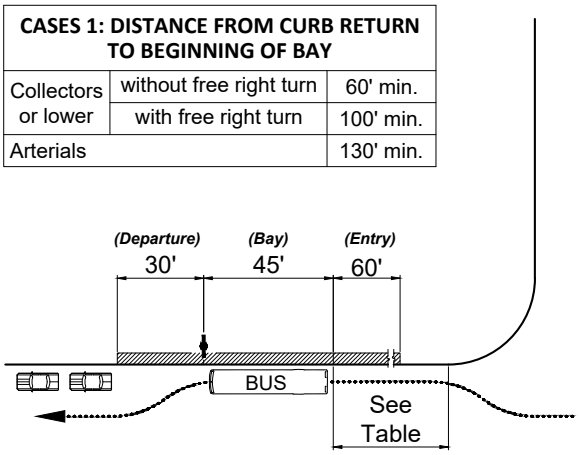
Thirty (30) feet long, as measured parallel to the roadway, and eight (8) feet wide as measured perpendicular from the back of curb or roadway shoulder. For bus stops with amenities such as benches, trash receptacles, and lights, a width of 13 feet is desirable. For bus stop locations where this much space is not available, the clear space shall be a minimum of 5 feet by 8 feet at the bus door (see Figures 7-10, 7-11, and 7-12).

Assuming the bus dwells with its front approximately even with the transit sign, the pad should be placed at the front door of the bus where the lifts and ramps are deployed. A pad at the rear door location is also desirable. The bus stop boarding pad should extend from the front door to the rear door of the bus.

CASE 1: Far-Side Stop

Total Minimum Length = 135'

CASES 1: DISTANCE FROM CURB RETURN TO BEGINNING OF BAY		
Collectors or lower	without free right turn	60' min.
	with free right turn	100' min.
Arterials		130' min.

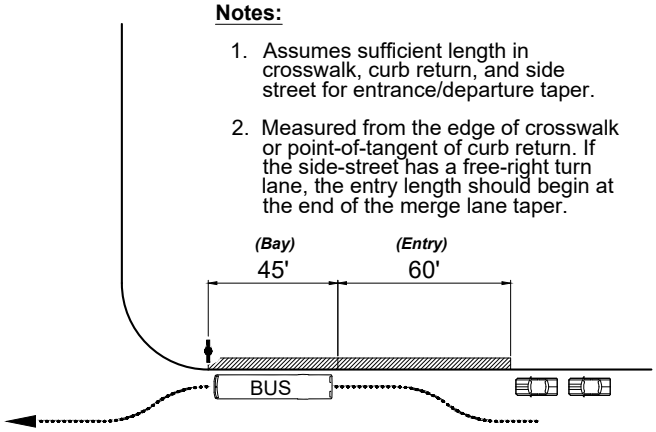


CASE 2: Near-Side Stop

Total Minimum Length = 105'

Notes:

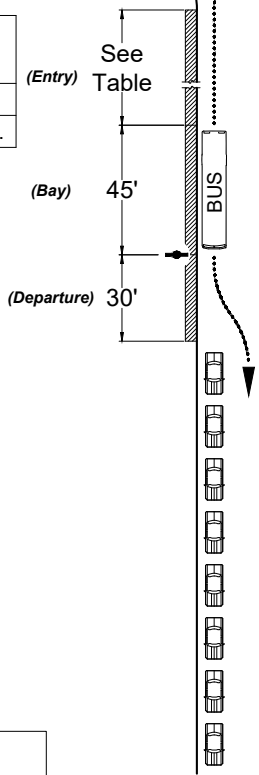
1. Assumes sufficient length in crosswalk, curb return, and side street for entrance/departure taper.
2. Measured from the edge of crosswalk or point-of-tangent of curb return. If the side-street has a free-right turn lane, the entry length should begin at the end of the merge lane taper.



CASE 4: Far-Side Stop After Bus Turn

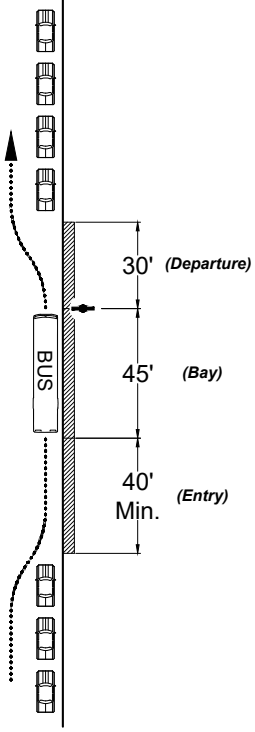
Total Minimum Length = 135' Min.

CASES 3: DISTANCE FROM CURB RETURN TO BEGINNING OF BAY	
Collectors or lower	60' min.
Arterials	130' min.



CASE 3: Mid-Block Stop

Total Minimum Length = 115'



Note:

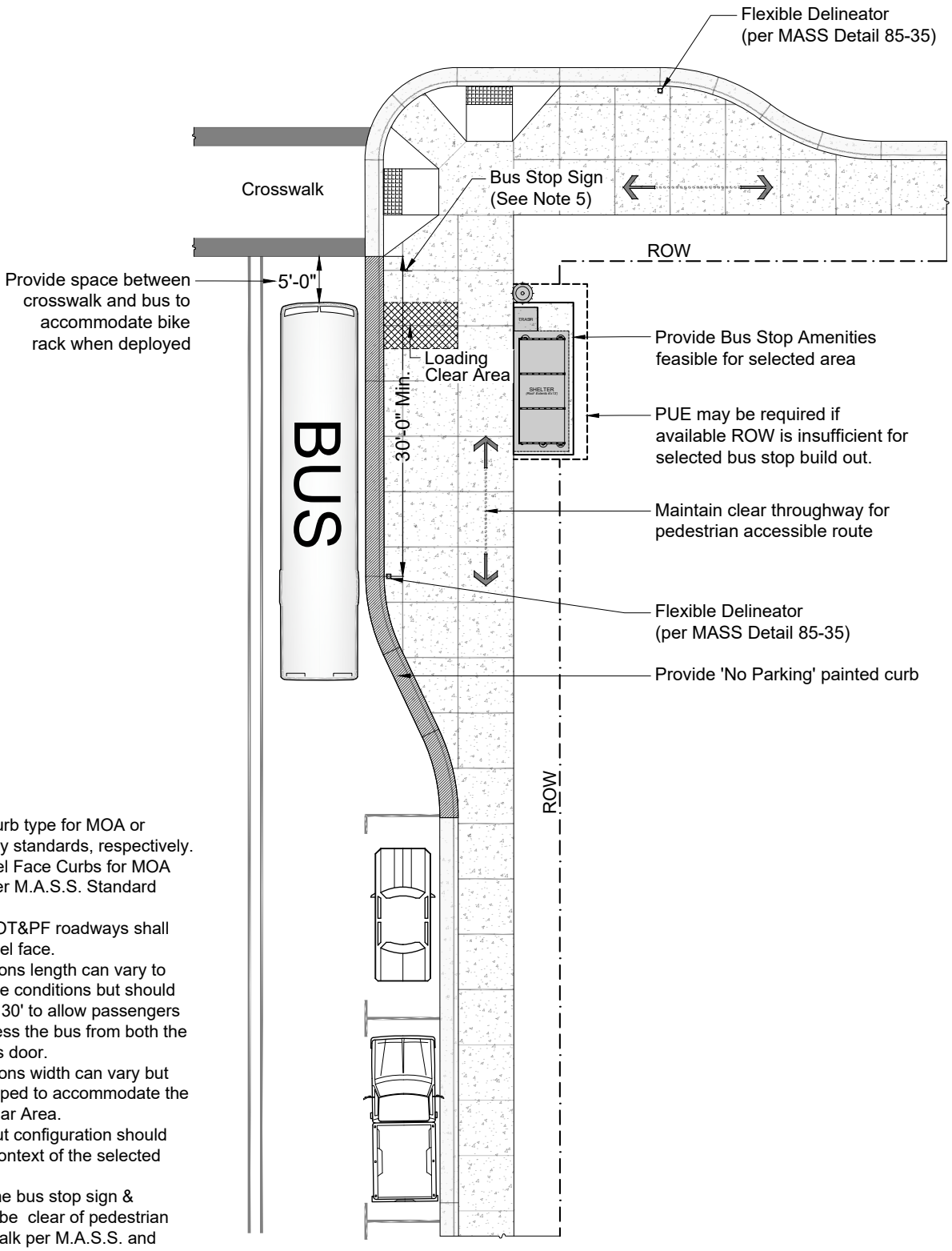
1. Add 50' to bay length for each additional standard bus expected to use the stop at the same time.

Legend

⊸	Location of bus stop sign
▨	Painted curb

NOT TO SCALE

Figure 7-6: Curbside Bus Stop Layouts

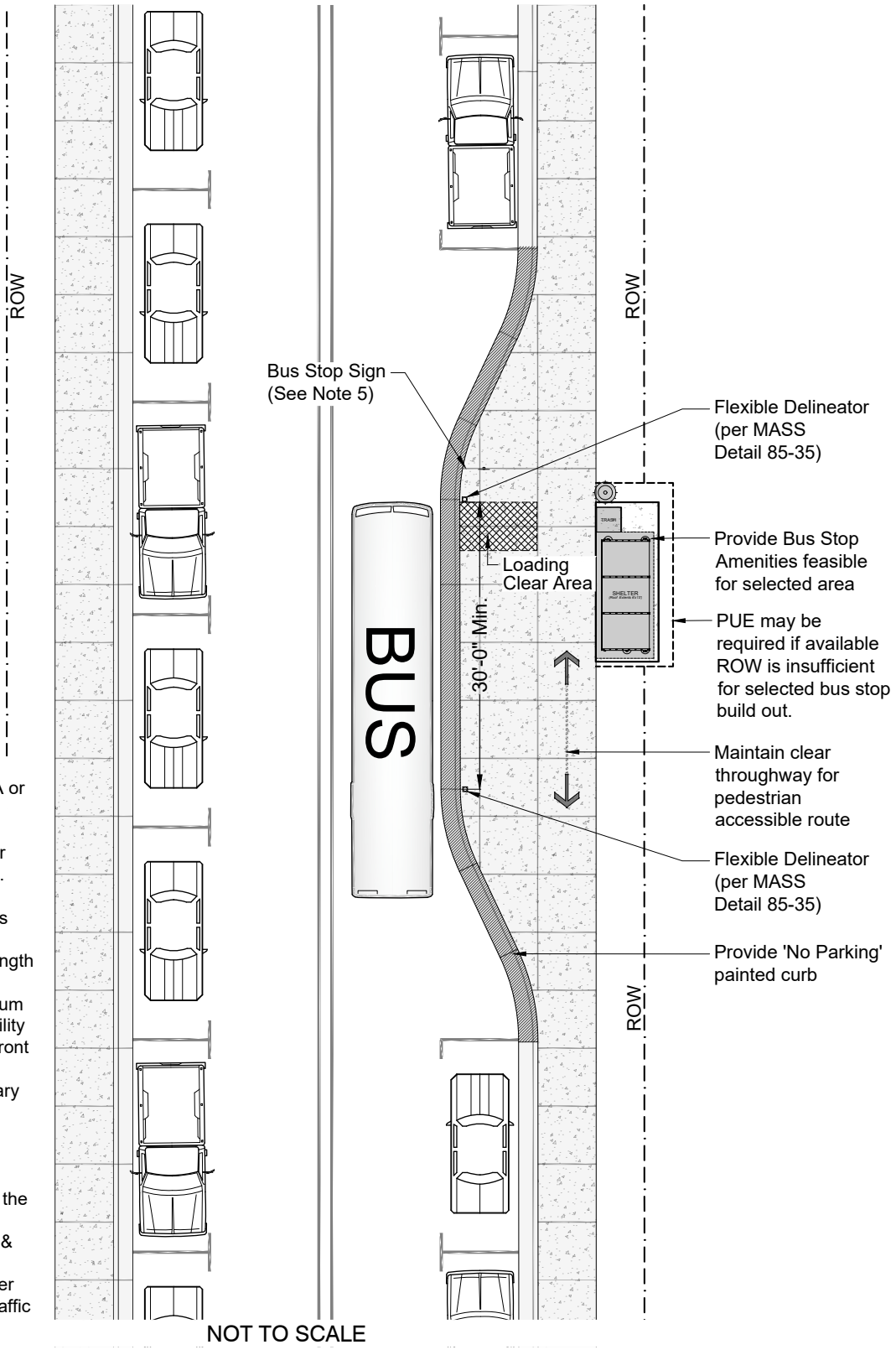


Notes:

1. Provide typical curb type for MOA or DOT&PF roadway standards, respectively.
   1.1. Provide Steel Face Curbs for MOA roadways per M.A.S.S. Standard Detail 30-5.
   1.2. Curbs on DOT&PF roadways shall not have steel face.
2. Sidewalk extensions length can vary to accommodate site conditions but should be a minimum of 30' to allow passengers the ability to access the bus from both the front and mid-bus door.
3. Sidewalk extensions width can vary but should be developed to accommodate the 5'x8' Loading Clear Area.
4. Bus Stop build out configuration should meet need and context of the selected location.
5. The location of the bus stop sign & schedule should be clear of pedestrian accessible sidewalk per M.A.S.S. and MOA / DOT&PF Traffic Engineer.

NOT TO SCALE

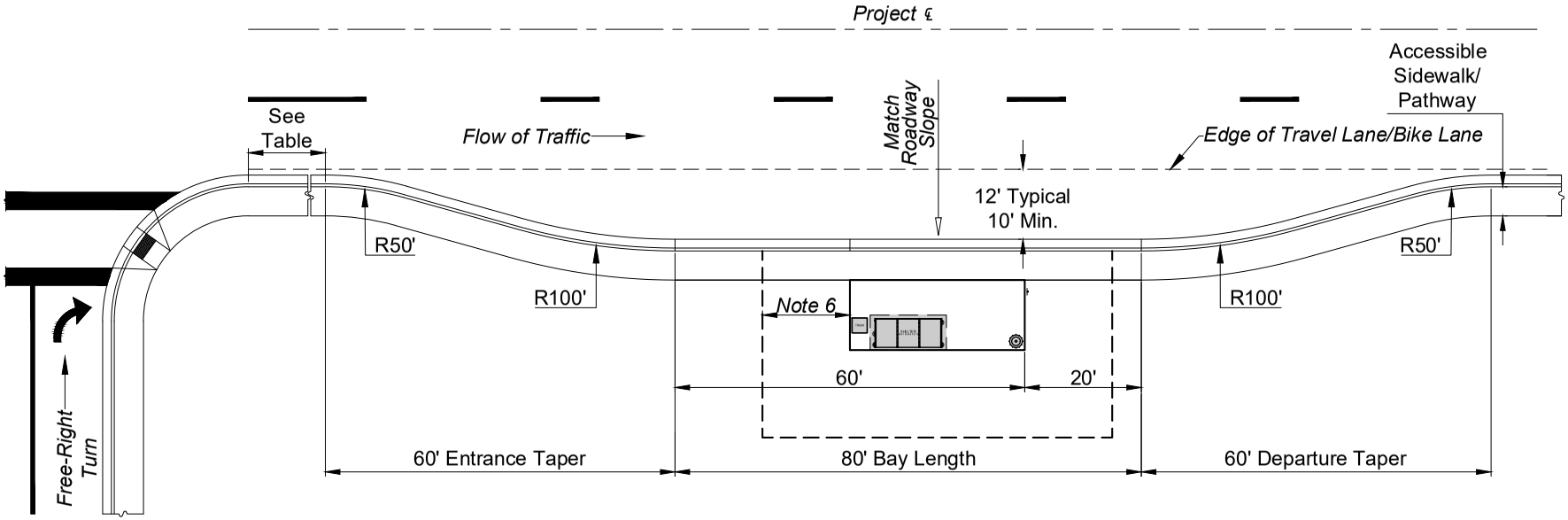
Figure 7-7: Curb Extensions at Intersections



Notes:

1. Provide typical curb type for MOA or DOT&PF roadway standards, respectively.
   1.1. Provide Steel Face Curbs for MOA roadways per M.A.S.S. Standard Detail 30-5.
   1.2. Curbs on DOT&PF roadways shall not have steel face.
2. Mid-Block sidewalk extensions length can vary to accommodate site conditions but should be a minimum of 30' to allow passengers the ability to access the bus from both the front and mid-bus door.
3. Sidewalk extensions width can vary but should be developed to accommodate the 5'x8' Loading Clear Area.
4. Bus Stop build out configuration should meet need and context of the selected location.
5. The location of the bus stop sign & schedule should be clear of pedestrian accessible sidewalk per M.A.S.S. and MOA / DOT&PF Traffic Engineer.

Figure 7-8: Mid-Block Bus Stop with Curb Extensions



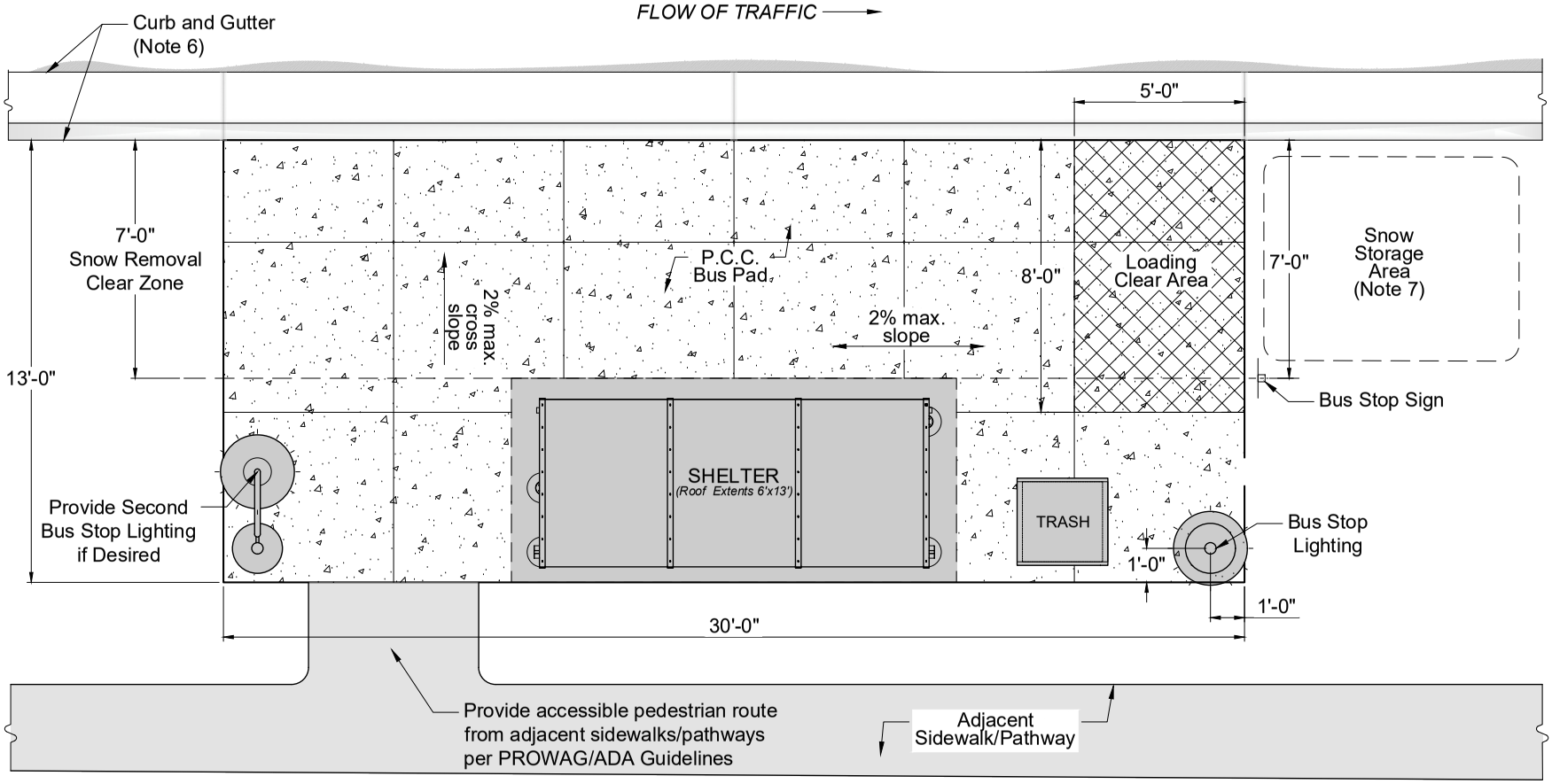
Intersection Layout	Begin Entrance Taper
Intersection with **no** free-right turn	50'
Intersections with free-right turn (see Note 7)	100'

Notes:

1. Pullouts only allowable on Arterials. If a pullout is desired on collector (or lower), approval from PTD and MOA Traffic Engineer is required.
2. Construct curb angles to the radii shown.
3. All bus turnouts shall have, as a minimum, an 8-foot wide by 5-foot long paved loading area for wheelchair lift operation and disabled user access.
4. When drainage will not clear pullout, install catch basin or M.O.A. Type III curb and valley gutter system.
5. This drawing shows the Standard Geometric layout for the typical bus pullout. All other types are modifications based upon location and type of roadway where installed.
6. Provide accessible route tie-in 15-feet max. beyond bus stop for retrofits or upgrades per PROWAG/ADA Guidelines.
7. For pullout bus stops located immediately after intersections (far-side bus stops) and with free-right turns, additional distance should be placed between the intersection and pullout. The additional distance increases clear views and reaction time for bus drivers to determine safe departure.

NOT TO SCALE

Figure 7-9: Geometric Layout for Typical Bus Pullout

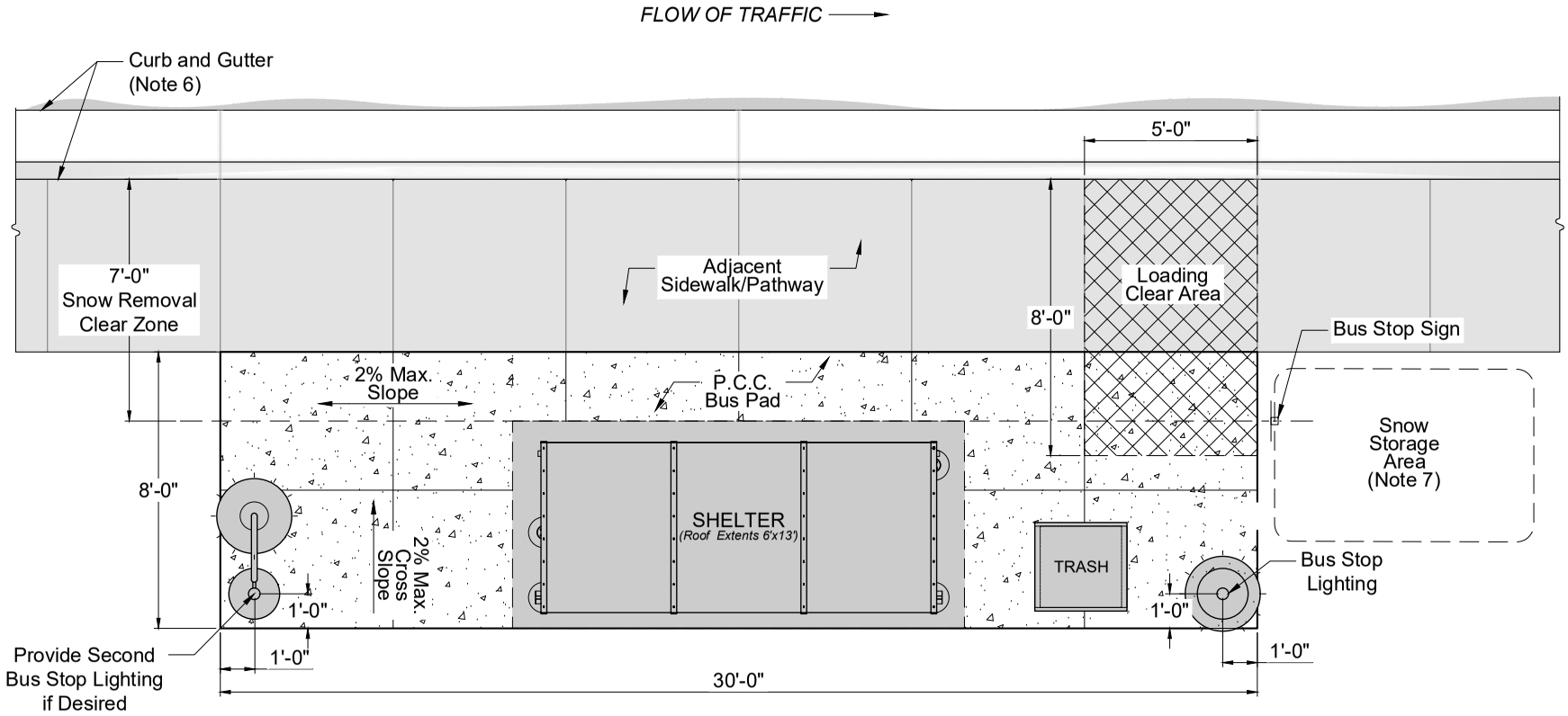


Notes:

1. Pathway, shelter and bench pad to be constructed with 6-inch thick P.C.C.
2. Shelter and/or bench may be relocated; maintain 5-ft width x 8-ft length min. width for the Loading Clear Area.
3. When possible, install light at sign location and mount sign on pole I.A.W. M.O.A. Standard Detail 85-26.
4. Supplemental illumination to be placed near-side of shelter, and/or bench, and/or at sign location.
5. Optional amenities: transit information sign/kiosk.
6. Provide typical curb and gutter per MOA or DOT&PF roadway designation.
   - 6.1. Provide Steel Face Curbs for MOA roadways per M.A.S.S. Standard Detail 30-5.
   - 6.2. Curbs on DOT&PF roadways shall not have steel face.
7. Preferred snow storage location is the downstream side of bus pad, but alternate locations may be provided if coordinated with MOA Transit M&O or DOT&PF M&O as applicable. Dedicated areas for snow storage should be considered for both street maintenance and Transit M&O. Snow storage areas should be kept back a minimum 3-ft clear of Loading Clear Zone and 3-ft from back of curb.

NOT TO SCALE

Figure 7-10: Layout for Typical Bus Stop Pad at Back of Curb

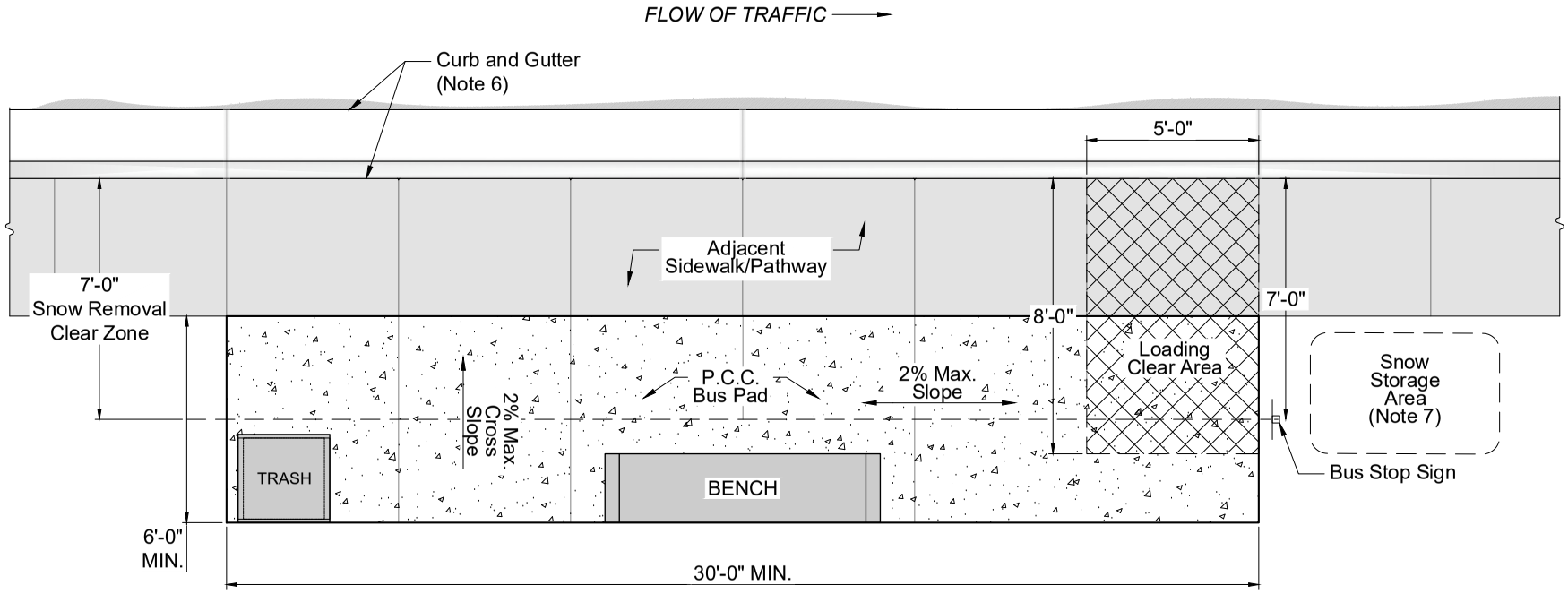


Notes:

1. Pathway, shelter and bench pad to be constructed with 6-inch thick P.C.C.
2. Shelter and/or bench may be relocated; maintain 5-ft width x 8-ft length min. width for the Loading Clear Area.
3. When possible, install light at sign location and mount sign on pole I.A.W. M.O.A. Standard Detail 85-26.
4. Supplemental illumination to be placed near-side of shelter, and/or bench, and/or at sign location.
5. Optional amenities: transit information sign/kiosk.
6. Provide typical curb and gutter per MOA or DOT&PF roadway designation.
   - 6.1. Provide Steel Face Curbs for MOA roadways per M.A.S.S. Standard Detail 30-5.
   - 6.2. Curbs on DOT&PF roadways shall not have steel face.
7. Preferred snow storage location is the downstream side of bus pad, but alternate locations may be provided if coordinated with MOA Transit M&O or DOT&PF M&O as applicable. Dedicated areas for snow storage should be considered for both street maintenance and Transit M&O. Snow storage areas should be kept back a minimum 3-ft clear of Loading Clear Zone and 3-ft from back of curb.

NOT TO SCALE

Figure 7-11: Layout for Typical Bus Stop Pad Street-Side Sidewalk



Notes:

1. Pathway, shelter and bench pad to be constructed with 6-inch thick P.C.C.
2. Shelter and/or bench may be relocated; maintain 5-ft width x 8-ft length min. width for the Loading Clear Area.
3. When possible, install light at sign location and mount sign on pole I.A.W. M.O.A. Standard Detail 85-26.
4. Supplemental illumination to be placed near-side of shelter, and/or bench, and/or at sign location.
5. Optional amenities: transit information sign/kiosk.
6. Provide typical curb and gutter per MOA or DOT&PF roadway designation.
   - 6.1. Provide Steet Face Curbs for MOA roadways per M.A.S.S. Standard Detail 30-5.
   - 6.2. Curbs on DOT&PF roadways shall not have steel face.
7. Preferred snow storage location is the downstream side of bus pad, but alternate locations may be provided per coordination with MOA Transit Maintenance & Operations or DOT&PF M&O as applicable.

NOT TO SCALE

Figure 7-12: Layout for Typical Bus Stop Pad (Limited Build Out)

2. Accessible Routes

Bus stops shall be connected with an accessible route to all streets, sidewalks, pathways, and/or trails within the site boundary. The site boundary is considered to be defined by the beginning and end of the bus stop, the adjacent street, and the ROW line for the street segment containing the bus stop. Accessible routes shall comply with all ADA guidelines, including but not limited to, width, clearances, surfaces, grades, and cross slopes. Exterior accessible routes may include parking access aisles, curb ramps, crosswalks at vehicular ways, walks, ramps and lifts. Figure 7-9 depicts a typical minimum site boundary for a bus pullout. Where a bus stop serves as a transfer point, the site boundary and an accessible route shall extend to the connecting route bus stops. Where a bus stop is the closest stop to an intersection, major generator or other private development, it is necessary to extend the site boundary and an accessible route to the intersection, and desirable to extend both boundary and route to the generator or development. In the case of a mid-block stop with no adjacent sidewalk or trail, it is desirable to provide an accessible route to the nearest intersection or signal-protected crosswalk.

a) Width of Walks and Ramps

Accessible routes should be at least 5 feet wide. A minimum width of 4 feet is acceptable within the MOA if 5- foot by 5-foot passing spaces are provided at intervals of 200 feet or less. Sidewalks and pathways narrower than 4-feet create issues for mechanized snow removal equipment, making regular and quick maintenance impracticable.

b) Side and Vertical Clearance

Accessible routes must be completely clear of any objects protruding from the surface or from the sides that narrow the pathway such as fire hydrants, parking meters, sign posts, benches, landscaping, etc. A minimum clear headroom of 80-inches shall be maintained on accessible pathways.

c) Surfacing

Surfaces along accessible routes shall be stable, firm and slip resistant. Avoid materials or construction methods that create bumpy and uneven surfaces in areas and along routes required to be accessible. Imprinted concrete, decorative pavers, and excessive concrete joints can be difficult and sometimes painful to negotiate with wheeled mobility aids due to the vibrations. It is recommended that routes be paved with either 4-inch thick Portland Cement Concrete or 2-inch asphalt concrete pavement. An appropriate foundation shall be provided for the surfacing.

d) Grades, Changes in Level, and Cross-slopes

Any part of an accessible route with a slope greater than 5% shall be considered a ramp and comply with subsection 3, Ramps, below. Changes in level greater than ¼-inch shall be accommodated in accordance with subsection 3, Ramps, below. The maximum permissible cross-slope is 2%.

e) Utility Grates

Utility grates with openings should not be placed in accessible routes. If utility grates must be located in the route, they shall have openings no greater than ½-inch wide in one direction. If utility grates have elongated openings, they shall be placed so that the long dimension is perpendicular to the direction of travel.

3. Ramps

Segments of accessible routes with grades greater than 5% or changes in level greater than ¼-inch shall be designed in accordance with this section. All other accessible route requirements shall be applied to ramps.

a) Grades

The maximum slope for any segment of a ramp is 8.3%. However, where site infeasibility precludes a slope of 8.3%, the least possible running slope shall be provided. The maximum rise for any segment of an accessible route with a grade greater than 5% is 30 inches. All ramps must comply with ADA guidelines. All ramps are required to be equipped with detectable warning tiles. To the extent feasible, all slopes, cross slopes, and grades must adhere to ADA guidelines. A landing shall be constructed on the ramp after each 30 inches of rise. Minimum landing size shall be 5 feet by 5 feet.

b) Changes in Level

Any abrupt change in level on a bus stop pad or accessible route greater than ¼-inch but less than ½- inch must be beveled to a slope of no more than 1 inch of rise for 2 inches of run. Particular attention shall be emphasized with respect to surface tolerances when using surface materials such as concrete brick pavers and imprinted Portland concrete cement.

Any change in level on a bus stop pad or accessible pathway greater than ½-inch requires a ramp. Curb ramps shall meet the requirements of ADAAG.

7.5 D Bus Stop Amenities

The DCM provides guidance on the design of bus stop amenities and placement of the desired amenities within a bus stop. To determine when amenities are warranted, see the most recent version of MOA PTD's Bus Stop Amenity Guidelines.

1. Waiting Areas

Regardless of the location and type of stop, all new or rebuilt bus stops must provide a bus stop pad as described above in Section 7.4 C. The improved stop should include adequate area and clearance for passenger access to buses, bus stop amenities, and connecting sidewalks and trails. Waiting areas should be removed from the through sidewalk or trail. Figures 7-10, 7-11, and 7-12 depict fully-developed waiting area and the desirable location of amenities for potential configurations when the site may be constrained.

2. Benches

a) Design

PTD has a specified bench that is installed at its facilities. The bench standardizes and provides recognition of public transportation facilities. Benches are installed at stops based upon the average number of boardings and/or if the stop provides service for senior citizens or people with disabilities.

PTD may provide benches for the project and designers should contact PTD staff for arrangements and/or equipment specifications.

b) Placement

Benches should be placed no closer than 7-feet from the back of curb to avoid injuries to persons waiting at the benches by the opening of bus doors, to allow passengers to pass people sitting on the bench, and to facilitate regular winter maintenance.

At least 60 inches of clearance for wheelchairs should be provided on either the front or backside of the bench (see Figures 7-12). Seating should be placed no closer than 5-feet and no further than 15 feet from a bus stop sign post.

3. Trash Receptacles

PTD has two specified types of trash receptacles that are installed at its facilities. One is ground mounted, and the other is mounted to the shelter. The shelter mounted trash receptacles should be considered where space is limited. If available, PTD may be able to provide trash receptacles for the project. The designer should contact PTD staff for arrangements and/or equipment specifications.

4. Shelters

PTD encourages construction of shelters that provide protection from rain, wind and snow for transit passengers.

a) Design

Bus shelter designs shall provide for ready use by individuals in wheelchairs. The following minimum features should be incorporated into a shelter:

- Complete roof
- Optional walls
- Inside bench with outside bench if site conditions allow
- Interior and exterior lighting
- Display area for route and schedule information
- Concrete base for bus shelters shall be a minimum of 6-inch thick Portland Concrete Cement. The Engineer shall provide recommendations for rebar reinforcing.

PTD has a specified bus shelter to be installed at its facilities. If available, PTD may be able to provide bus shelters for the project. A typical shelter design used in Anchorage is shown in Appendix 7A. The designer should contact the PTD staff for arrangements and/or equipment specifications. Shelters can also be increased in size for high ridership stops. Shelters should be located behind the bus stop boarding area and be set back from back of curb or edge of pavement at least 7- feet to leave room for the full bus stop pad. If the shelter cannot be located next to the bus stop pad, an accessible route shall be constructed between the two. Electricity should be provided for illumination of the shelter interior, in accordance with Municipal Code requirements.

Shelters can also be designed into the architectural theme of a building. Shelters integrated into building facades can vary considerably depending on the purpose and style of the building. There should, however, be at least 30 inches of roof overhang to protect waiting passengers.

b) Location

Refer to the most recent version of MOA PTD's Bus Stop Amenity Guidelines to determine which conditions warrant a bus shelter.

c) Other Considerations

Shelters need to be aesthetically and functionally compatible with nearby uses; a shelter should not severely affect an adjacent residence or business. Every effort should be made to minimize potential impacts before proceeding with an installation. Passenger shelters are generally located within the available public right-of-way, on sites that allow for clear and open pedestrian movements. Locations at or near existing street lighting are also preferred.

d) Utilities

Utilities are a consideration for bus stops where it is anticipated that a shelter will be required. If the location is a transfer point and/or abuts a land use expected to generate significant passenger activity then it is likely that a passenger shelter will be installed. A power connection will be required to provide illumination inside the shelter. The field location can often be adjusted to some extent to minimize the power drop and corresponding capital costs.

In scenarios where existing infrastructure such as utility poles, power transformers, signal switching boxes, other utilities conflict with the location of an pullout bus stop, the cost of utility relocation may be prohibitive. The bus stop configuration may need to be modified to develop the optimal location and/or design.

e) Coordination with Property Owners

Coordination with adjacent property owners can sometimes produce more cost-effective bus stop improvements. Examples of benefits include benches integrated into the design of fences or walls, and awnings or building overhangs used as passenger protection. This approach can produce attractive improvements at minimal agency cost.

5. Bus Stop Signs

All bus stops should be conspicuously signed. Unlike most street signage, bus stop signs serve both informational and marketing functions, and are designed to be viewed both by drivers and pedestrians. Signs are intended to be immediately identifiable as transit stops in order to make the system easier to use for existing riders and to attract new users. People Mover bus stop signs are produced by the Municipal Sign Shop.

Regular bus stop signs shown in Appendix 7A are placed at all authorized bus stops. Sign placement for bus pullouts should be located immediately at the end, or downstream side of the bus pad. Signs should be set 7-feet back from the back of curb or roadside edge in accordance with MASS Division 85.

Although the bus stop sign may be mounted with a "No Parking" sign, generally, it should be mounted independently of other signage on its own pole. The sign face should be mounted at a 93° to 97° angle to

the direction of travel. When a sign must overhang an accessible pathway, it shall be mounted 7-feet above the finished grade.

Where applicable, bus stop signs can be mounted on bus stop light poles if the light location is installed at the appropriate sign location. Lighting at bus stops is encouraged. Signs and schedules can be easily read when mounted on the light pole.

Central Business District and Downtown: Signs should not be closer than 19 inches from back of curb to avoid contact with bus mirrors. Signs shall be located between the curb and the main walking corridor when separated from the curb.

Outside Central Business District: Signs should not be obstructed by trees, buildings or other signs, shall be set back 7-feet from the curb face, and should face oncoming traffic. If there is a sidewalk or adjacent bike trail, the sign should be placed outside the sidewalk or bike trail, unless the distance is more than 10 feet from the curb line.

6. Bus Route and Schedule Information

The People Mover has two types of bus stop route and schedule information signage: schedule information holders and A-frame signs. Schedule information holders are 8.5-inch by 21-inch cast metal units mounted to bus stop sign posts, light poles, or shelter frames. The holders display one to five schedules.

a) Design

Schedule information holders are designed to display a schematic route map and schedule of each route that serves the stop. At stops used by the visually impaired it is also desirable to include an information placard, which would contain the route number, direction (inbound or outbound), and location of the stop printed in Braille.

b) Location

Schedule information holders are placed at all authorized bus stops.

A-frame signs are placed in areas of high foot traffic, high visibility, and/or where multiple routes intersect. A-frame signs should be placed such that at least 40 inches of clearance is provided for the passage of disabled persons.

7. Illumination

Passenger safety is enhanced by adequate lighting of the stop; riders feel more comfortable waiting for a bus at a lighted stop. Direct illumination of waiting passengers by a streetlight located near the start of the bus stop allows the bus driver to easily see waiting passengers.

Installing a supplemental light at the sign location provides light to read schedules and the bus stop sign can be mounted on the light pole (see Appendix 7A). Light poles shall be placed in locations to facilitate regular maintenance for snow removal equipment.

Illumination for bus stops shall be in accordance with the Design Criteria Manual Section 5.040 B and with ADA (ADAAG 4.30.8) illumination requirements. A further recommendation is that the illumination level on the surface of the sign not be significantly exceeded by a visible bright lighting source behind or

in front of the sign. When street lighting does not provide the minimum illumination levels established in the Design Criteria Manual, new or supplemental lighting should be considered.

PTD has identified a pedestrian scale light for bus stops. The light is manufactured by Lumec, Identification No. CANC3_47150A; telephone (514) 430-7040, Fax (514) 430-1453. (see Appendix 7A).

7.5 E Decommissioning of Bus Stops

Scope of decommissioning bus stops is at the discretion of PTD. A bus stop may cease to be used or may transition between types as routes change.

Simple decommissioning, such as during a bus route and schedule adjustment, may be limited to sign and schedule removal. These routes and stops may become active again in the future.

A full decommissioning involves complete removal of all amenities, including hardscape, bus pad, lighting, and curb reconstruction as applicable. All vertical elements shall be removed. Full decommission may occur at any time; however, is advantageous during reconstruction of roadways or other transportation improvement projects. Reallocation of the space should conform to the context of the adjacent land uses while maintaining accessible routes through the stop area. Designer shall coordinate with PTD Maintenance and Operations staff regarding salvage of amenities. Each decommissioned bus stop will require a case-by-case evaluation of impacts and coordination with PTD and other MOA departments, DOT&PF, and affected utilities prior a final determination.

END OF SECTION 7.5

SECTION 7.6 OTHER TRANSIT FACILITIES & SERVICES

7.6 A Objective

Transit service is not limited to fixed route services and facilities. On-street bus stops are not the only transit facilities that require consideration and design. Bus layovers and park-and-ride facilities are two facilities that are currently utilized by MOA's PTD. Further, transit services continue to evolve and incorporate alternative services such as Micro Transit. This section provides guidance on other transit facilities and services.

7.6 B Bus Layover Areas

A bus layover area is a bus parking area provided at a terminus of each bus route. The area is out of the traffic flow, and is used to give the driver a rest break, an opportunity to prepare for the return trip, and recovery time to ensure on-schedule operation. Turnouts will work as layover areas if no other option is available. Better locations are designated corners of shopping mall parking lots (malls often serve as route ends), or other lots or areas where the driver can safely leave the bus.

1. Design

The appropriate length of a layover area is determined by the number of routes sharing the zone, the scheduled overlap of layovers (if any), and any sight clearance problems for nearby driveways or intersections.

For additional information concerning design criteria, see Section 7.5 B.2., Off-Street Bus Turnouts and Section 7.6 C., Park and Ride Facilities.

2. Location

Bus layover areas should be located as close as possible to existing bus stops serving major passenger generators (hospitals, malls, schools, recreation facilities, etc.).

Bus layover areas should be close to restroom facilities so drivers can refresh themselves before beginning another trip. A site with a restaurant nearby is desirable, although not necessary.

7.6 C Park-and-Ride Facilities

A Park-and-Ride Facility is an area providing parking for commuters in rural and lower density areas of the Municipality. These facilities are designed to provide an incentive for time-sensitive commuters to use mass transit. Park-and-Ride facilities can be a stand-alone development or can be created in partnership with strategically located commercial or other uses.

The People Mover system currently has one Park-and-Ride lot located at Business Boulevard in Eagle River at the Eagle River Transit Center.

1. Design

Design criteria for park-and-ride facilities follow the same design standards as any other parking lot, and should be coordinated with either MOA PM&E or DOT&PF, depending on the location and ownership of the sites. Lots should have a minimum of 10 spaces available for park-and-ride use and should provide for internal circulation.

Bus loading areas and auto drop-off (park-and-ride) areas should be designed to be near building/facility entrances to permit easy and fast transit bus access and egress.

The design criteria for Bus Pullouts and Bus Layover Areas shall be applied to the bus loading area. The full range of stop amenities should be provided at park-and-ride facilities. Access standards must conform to Section 7.4 C.

2. Location

Lots should be located along corridors that experience significant actual or perceived traffic congestion. It is desirable for the lots to be visible from the corridor, and located so that potential users do not have to alter their travel patterns to use the lot. Good access and egress are essential.

Lots must be located on or close to (within one block) at least one bus line, and preferably more than one bus line. Lots should be at least four (4) miles from the Anchorage downtown area.

7.6 D Micro Transit

Micro Transit is a transit service between fixed route transit and ride hailing services such as Uber or Lyft. Micro Transit is typically app-based, on-demand service available to the general public. Some transit providers may utilize a call-in option as well. Riders can expect solo-rides or small carpool. Services are provided in specified zones generally in areas that are poorly served by fixed route service. Micro Transit operations can be tailored to the target user group, community context, and trip types.

Micro Transit is complementary to traditional fixed route service. Micro Transit can provide transportation during time periods outside of fixed service hours and to fixed route stops enhancing connectivity. PTD does not currently have a Micro Transit service; however, guidance on anticipated vehicle and virtual stops have been provided in Sections 7.3 and 7.4, respectively, for future use.

END OF SECTION 7.6

SECTION 7.7 REFERENCES

Chapter 7 – Public Transportation

Industry Standard Guidance

Agency	Publication
AASHTO	A Policy on Geometric Design of Highways and Streets
AASHTO	Guide for High-Occupancy Vehicle (HOV) Facilities
AASHTO	Guide for the Geometric Design of Transit Facilities on Highways and Streets
AASHTO	American Association of State Highway and Transportation Officials
APTA	Design of On-street Transit Stops and Access from Surrounding Area
FTA	Optimization Models for Prioritizing Bus Stop Facility Investment for Riders with Disabilities
FTA	Americans with Disabilities Act (ADA): Guidance (FTA C 4710.1)
NACTO	Transit Street Design Guide
TCRP	Transit Agency Relationships and Initiatives to Improve Bust Stops and Pedestrian Access
TCRP	Better On-Street Bus Stops
TCRP	Managing Extreme Weather at Bus Stops

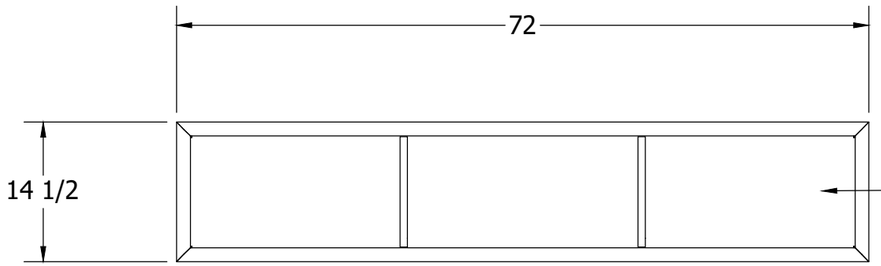
Applicable Regulation

Agency	Publication/Regulation
USAB	Americans with Disabilities Act Accessibility Standards
ATBCB	Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way

END OF SECTION 7.7

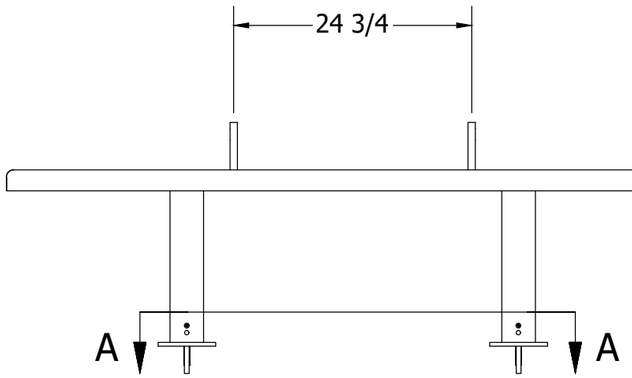
APPENDIX 7A

Bus Stop Amenity Details

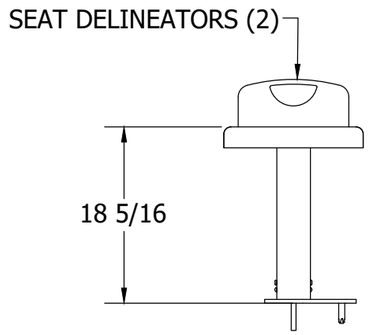


PERFORATED SEATING AREA,
1/8" THICK PERFORATED ALUMINUM SHEET
PATTERN:
Ø1/4" HOLES ON 3/8" STAGGERED

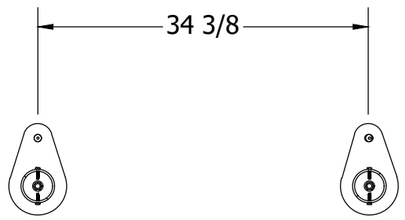
TOP VIEW
SCALE 3/4"=1'-0"



FRONT VIEW
SCALE 3/4"=1'-0"



SIDE VIEW
SCALE 3/4"=1'-0"



SECTION A-A
SCALE 3/4"=1'-0"

CONFIGURATION A	
1	PLANT 1
2	PLANT 2

CONFIGURATION B - ANCHORS	
0	NO ANCHORS
1	1/2" X 3 3/4" SUP-R ANCHORS, ZINC
2	1/2" X 3 3/4" SUP-R ANCHORS, STN STL
3	1/2" X 4 1/4" SUP-R ANCHORS, ZINC
4	1/2" X 4 1/4" SUP-R ANCHORS, STN STL
5	1/2" X 3 3/4" HILTI TZ ANCHORS, ZINC
6	1/2" X 3 3/4" HILTI TZ ANCHORS, STN STL
7	1/2" X 4 1/2" HILTI TZ ANCHORS, ZINC
8	1/2" X 4 1/2" HILTI TZ ANCHORS, STN STL
9	SPECIAL - SPECIFIED ON SALES ORDER

CONFIGURATION C - FINISH	
0	NONE
1	STANDARD POWDER COAT
2	STANDARD POWDER COAT WITH CLEAR COAT
3	PREMIUM POWDER COAT
4	PREMIUM POWDER COAT WITH CLEAR COAT
5	TBD
6	TBD
7	TBD
8	TBD
9	SPECIAL - SPECIFIED ON SALES ORDER

EXAMPLE: 4 8 9 2 4 - 1 2 1

- 4 8 9 2 4 — DRAWING NUMBERS
- 1 — CONFIGURATION A
- 2 — CONFIGURATION B
- 1 — CONFIGURATION C

TOLAR MANUFACTURING COMPANY, INC
258 Mariah Circle, Corona CA. 92879

DESCRIPTION: 6'EUROBNCHPERF2VB (MODIFIED)

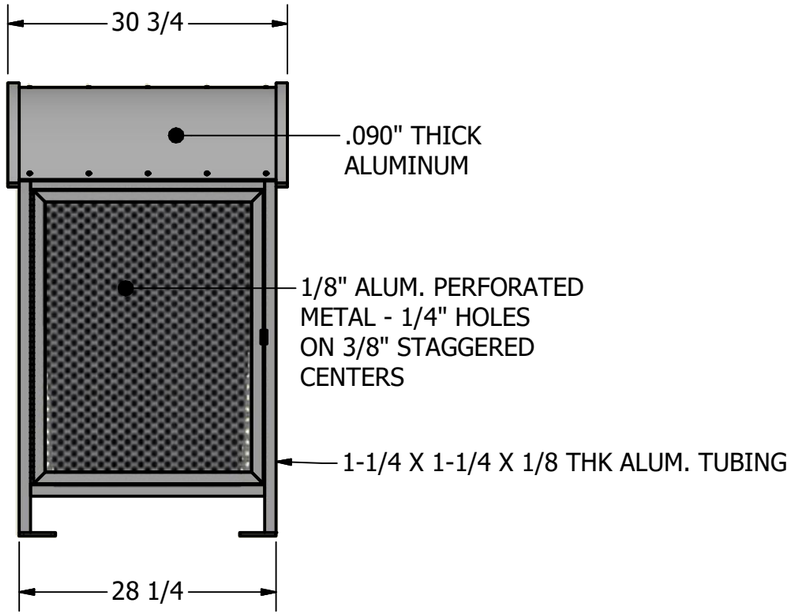
CUSTOMER/VENDOR: BLACKSBURG, VA

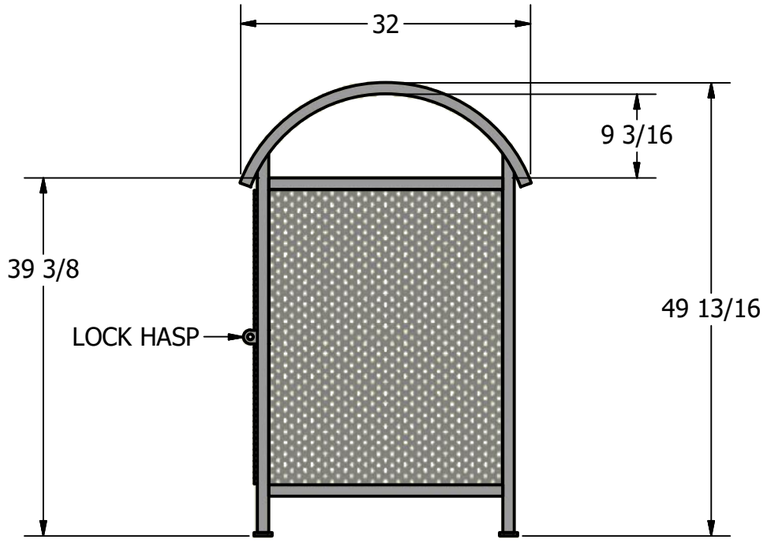
PAGE: 1 OF 1

SIZE	MATL.	DWG NO.	REV
B	VARIES	48924	-

SCALE: AS NOTED | DATE: 1/8/2024 | DRAWN BY: E. ROMERO

T:\Inventor\Benches\48924.idw





CONFIGURATION B - ANCHORS	
0	NO ANCHORS
1	1/2" X 3 3/4" SUP-R ANCHORS, ZINC
2	1/2" X 3 3/4" SUP-R ANCHORS, STN STL
3	1/2" X 4 1/4" SUP-R ANCHORS, ZINC
4	1/2" X 4 1/4" SUP-R ANCHORS, STN STL
5	1/2" X 3 3/4" HILTI TZ ANCHORS, ZINC
6	1/2" X 3 3/4" HILTI TZ ANCHORS, STN STL
7	1/2" X 4 1/2" HILTI TZ ANCHORS, ZINC
8	1/2" X 4 1/2" HILTI TZ ANCHORS, STN STL
9	SPECIAL - SPECIFIED ON SALES ORDER

CONFIGURATION C - FINISH	
0	NONE
1	STANDARD POWDER COAT
2	STANDARD POWDER COAT WITH CLEAR COAT
3	PREMIUM POWDER COAT
4	PREMIUM POWDER COAT WITH CLEAR COAT
5	TBD
6	TBD
7	TBD
8	TBD
9	SPECIAL - SPECIFIED ON SALES ORDER

EXAMPLE: 1 6 3 7 0 - 1 1 1

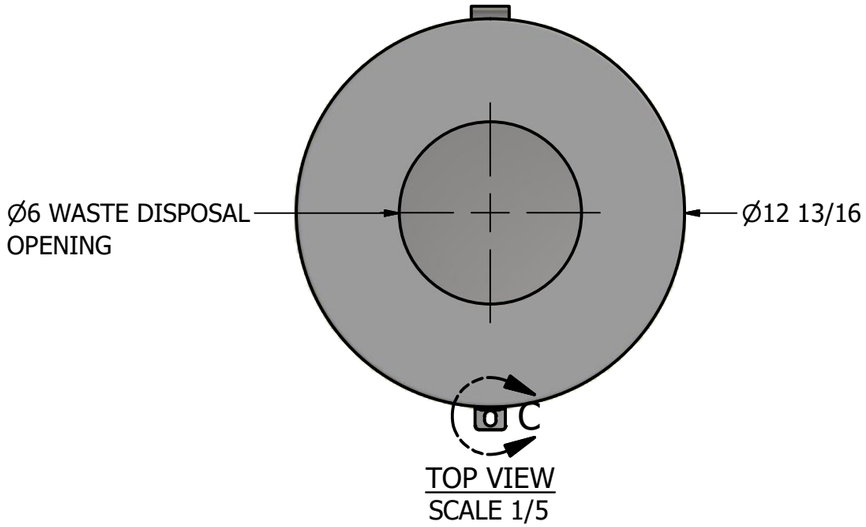
- 16370 — DRAWING NUMBER
- 1 — CONFIGURATION A
- 1 — CONFIGURATION B
- 1 — CONFIGURATION C

TOLAR
DURABILITY WITH DISTINCTION

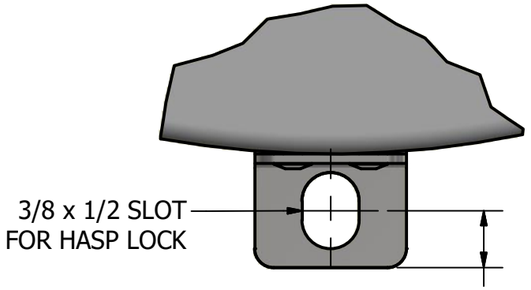
Tolar Manufacturing Company, Inc
258 Mariah Circle, Corona CA. 92879

DESCRIPTION: 44 GALLON TRASH RECEPTACLE, RECTANGULAR , ALL ALUM. CONST.			
CUSTOMER/VENDOR			SHEET NO.: 1 OF 1
SIZE: B	MATL.	DWG NO.: 20953-00	REV. NO.
SCALE	DATE: 2/13/2014	DRAWN BY: RGARCIA	

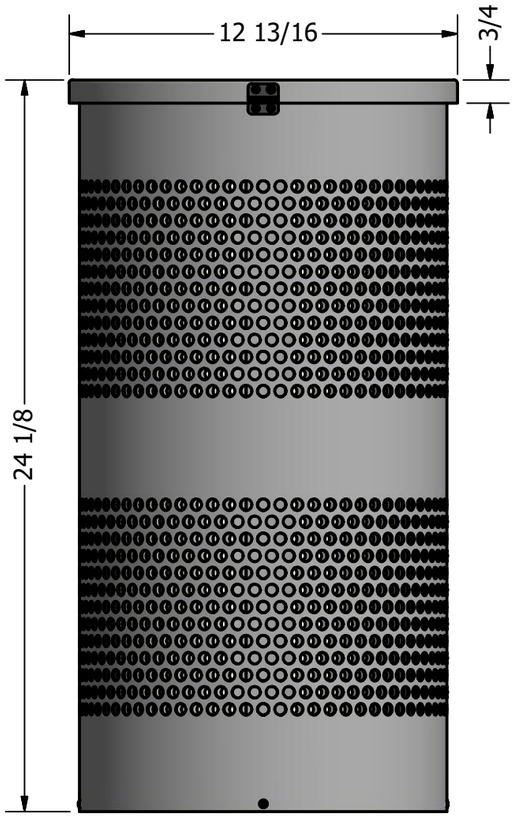
T:\Inventor\Trash Cans\20953-00.idw



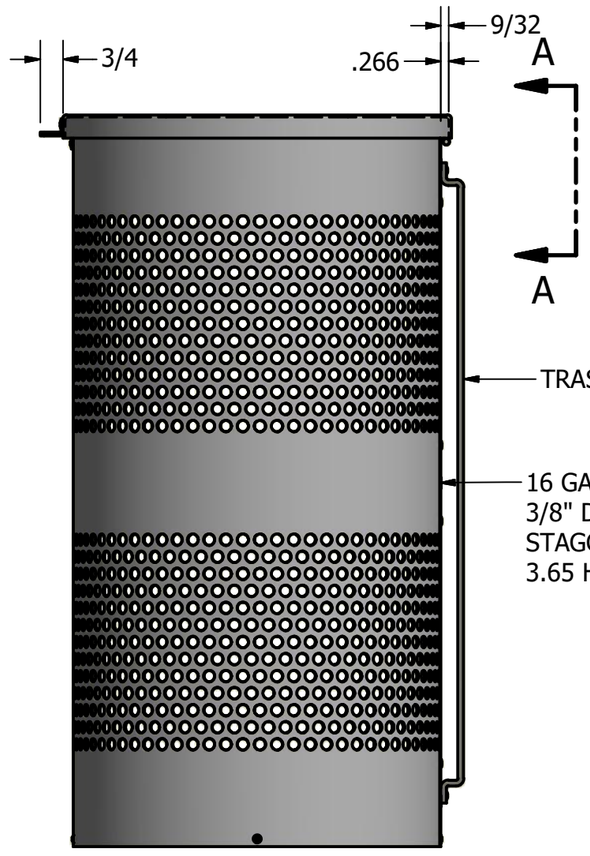
TOP VIEW
SCALE 1/5



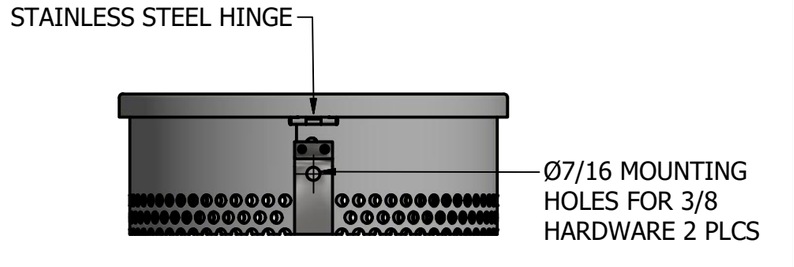
DETAIL C
SCALE 1:1



FRONT VIEW
SCALE 1/5



SIDE VIEW
SCALE 1/5



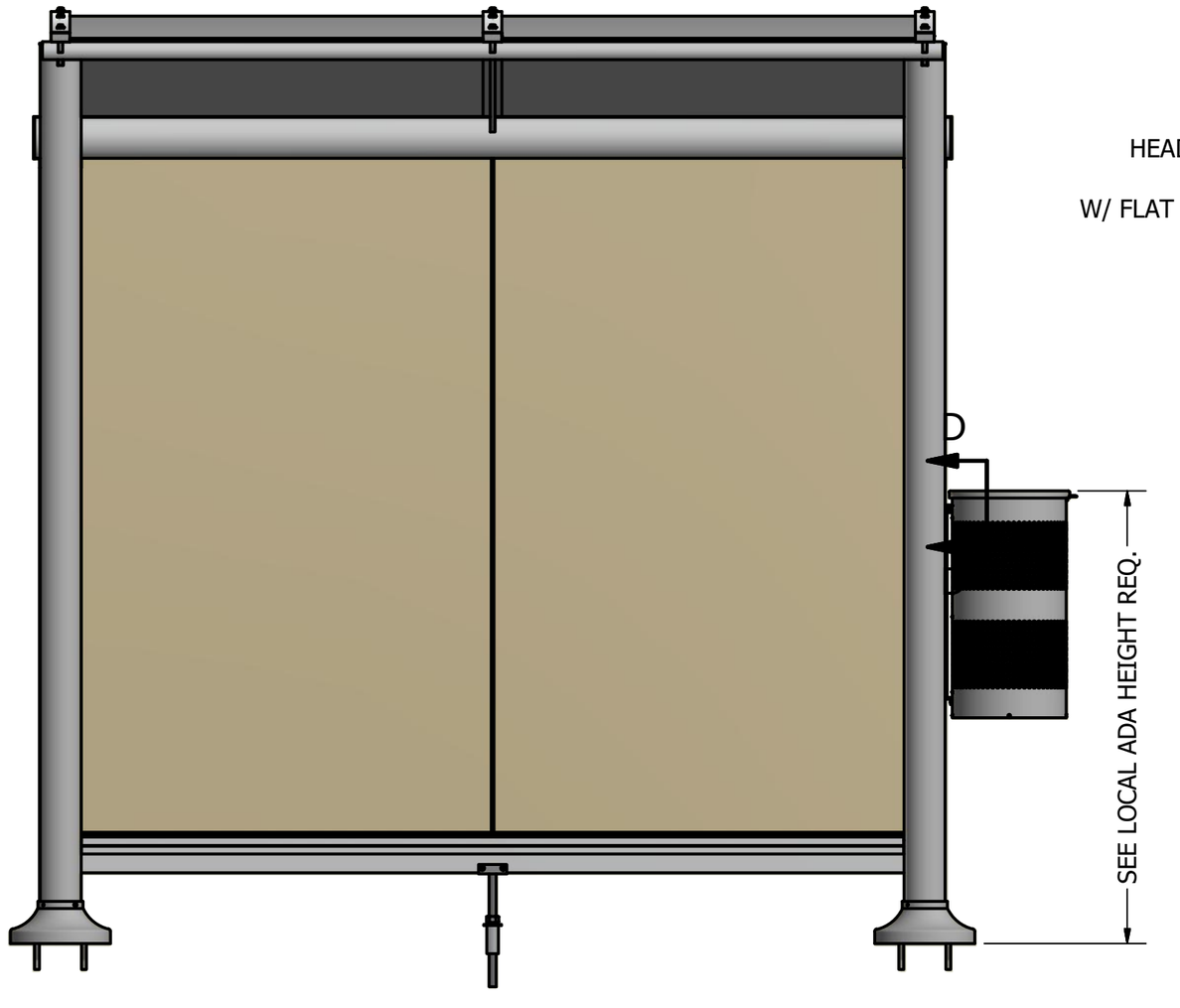
VIEW A-A
SCALE 1/5

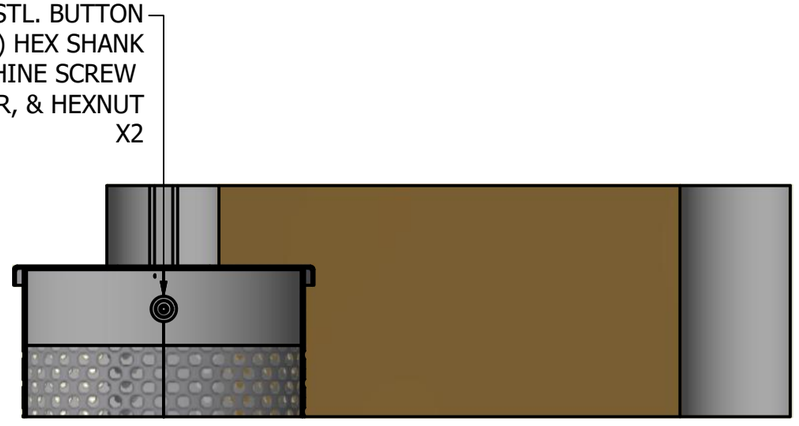
Tolar Manufacturing Company, Inc
258 Mariah Circle, Corona CA. 92879

DESCRIPTION: 10 GAL. POLE MOUNT T. CAN W/ TOP HINGE LID

CUSTOMER/VENDOR		SHEET NO.
KNOXVILLE, TN		1 OF 2
SIZE: B	MATL.: ALL STEEL	DWG NO.: 35013-00 / REV. NO.:
STOCK #:	DATE: 7/8/2019	DRAWN BY: RFarr

T:\Inventor\Trash Cans\35013-00.idw





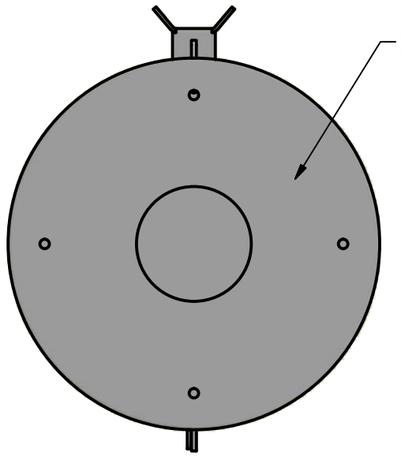
SECTION D-D
SCALE 1/6

TOLAR
DISABILITY WITH DISTINCTION

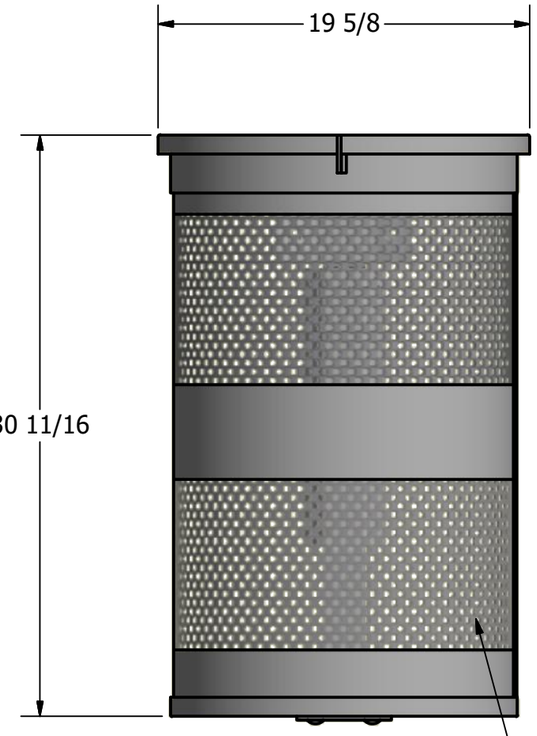
Tolar Manufacturing Company, Inc
258 Mariah Circle, Corona CA. 92879

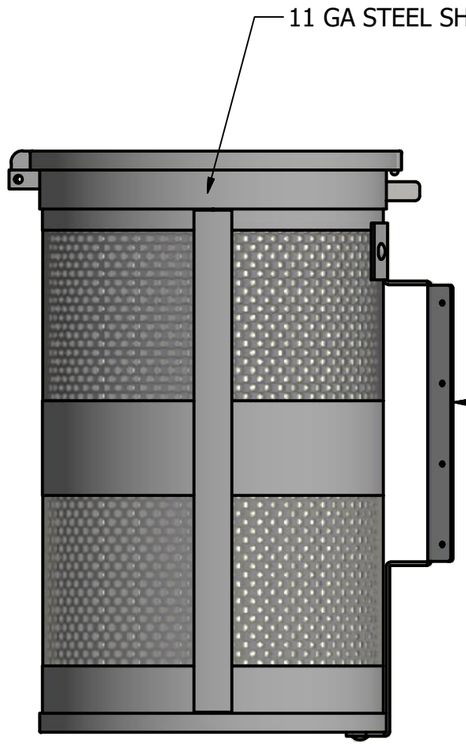
DESCRIPTION			
CUSTOMER/VENDOR KNOXVILLE, TN			SHEET NO. 2 OF 2
SIZE B	MATL. ALL STEEL	DWG NO. 35013-00 (MOUNTED)	REV. NO.
STOCK #:	DATE 7/8/2019	DRAWN BY: RFarr	

T:\Inventor\Trash Cans\35013-00.idw

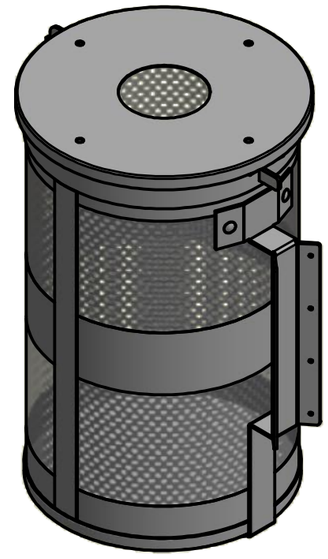


NOTE:
USE (8) #14 X 1-1/4" PAN HEAD
TORX TAMPER PROOF STN. STL.
SHEET METAL SCREWS TO INSTALL





**NOTE: MOUNTING BRACKET FOR
SUNSET SERIES SHELTERS ONLY
FOR NIAGARA SHELTERS USE PART# 31688-00**



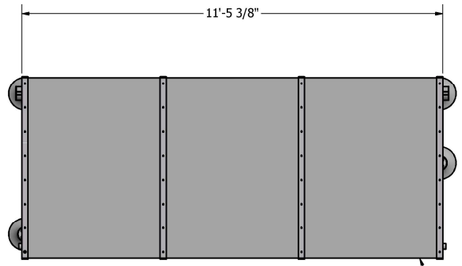
ISOMETRIC VIEW

Tolar Manufacturing Company, Inc 258 Mariah Circle, Corona CA. 92879			
DESCRIPTION: 22 GAL CUSTOM TRASH CAN			
CUSTOMER/VENDOR: MTS SAN DIEGO			SHEET NO.: 1 OF 1
SIZE: B	MATL.: ALL STEEL	DWG NO.: 29225-00	REV. NO.: -
SCALE: 1/8	DATE: 1/3/2017	DRAWN BY: EROMERO	

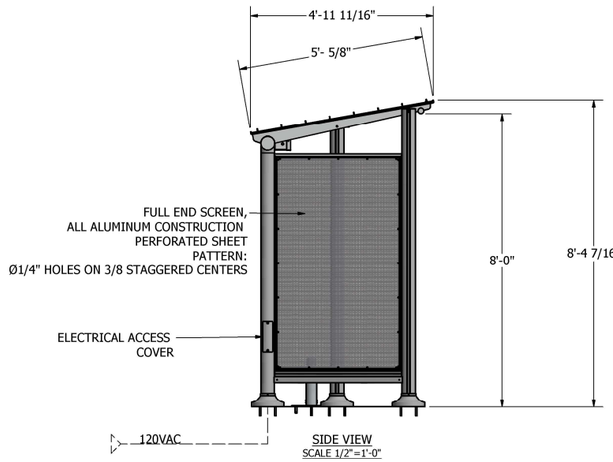
T:\Inventor\Trash Cans\29225-00.idw

GENERAL NOTES:

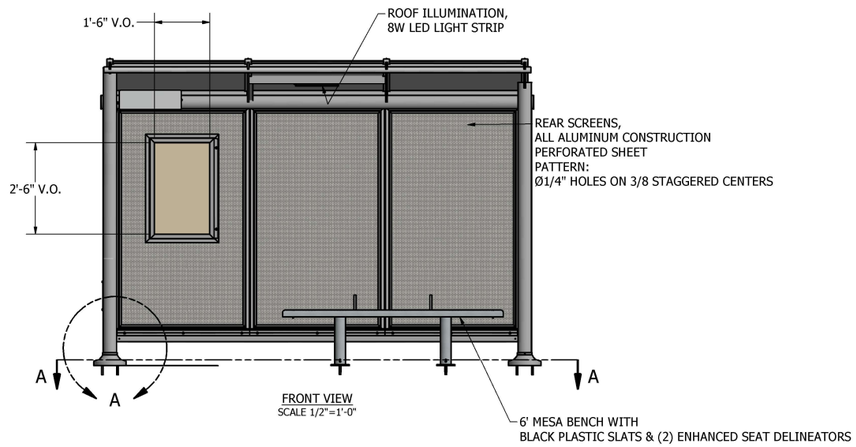
1. ALL STRUCTURAL STEEL, UNLESS OTHERWISE NOTED, SHALL BE ASTM A-36, MINIMUM YIELD STRENGTH 36,000 PSI.
2. ALL STRUCTURAL ALUMINUM MEMBERS, UNLESS OTHERWISE NOTED, SHALL BE OF ALLOY 6063-T5 OR GREATER.
3. ALL HOLES TO BE DRILLED OR PUNCHED.
4. STEEL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STANDARD D1. 1-10. ELECTRODES SHALL CONFORM TO AWS 5.1, CLASS E70S-5.
5. ALUMINUM WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STANDARD D1. 2-08. ELECTRODES SHALL CONFORM TO AWS/SFA 5.10 CLASS ER4043.
6. ALL WELDING TO BE DONE AT TOLAR MANUFACTURING COMPANY, INC. FACILITY.
7. ALL CORPORATE PROCEDURES, INCLUDING FABRICATION, MUST BE IN COMPLIANCE WITH TOLAR MANUFACTURING CO. INC'S QUALITY CONTROL MANUAL
8. THE CONCRETE PAD SIZES SHOWN ARE STANDARD MINIMUM REQUIREMENTS FOR THE STRUCTURE AND ARE FOR REFERENCE ONLY. THE PAD MAY NEED TO BE REINFORCED OR ENLARGED DEPENDING ON LOCAL CODES AND LOADING CONDITIONS AND DOES NOT INCLUDE ADA CLEAR PATH REQUIREMENTS.



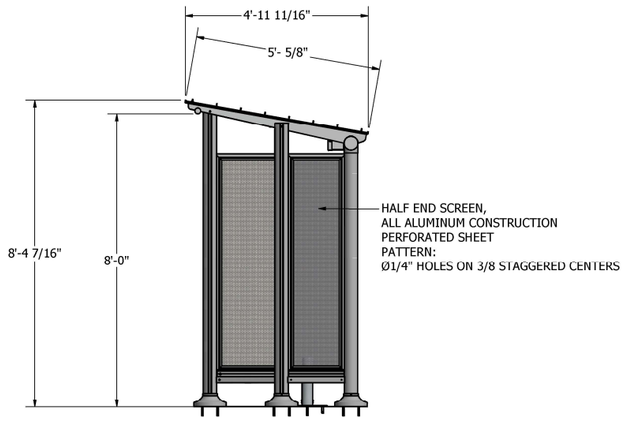
TOP VIEW
SCALE 1/2"=1'-0"



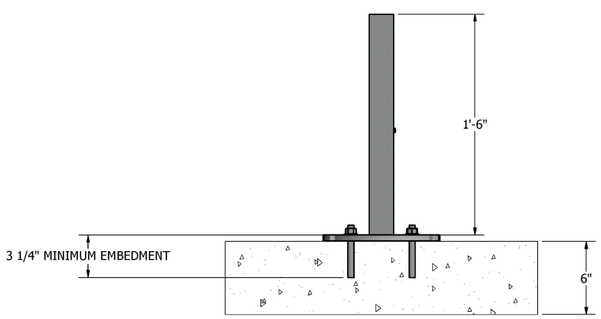
SIDE VIEW
SCALE 1/2"=1'-0"



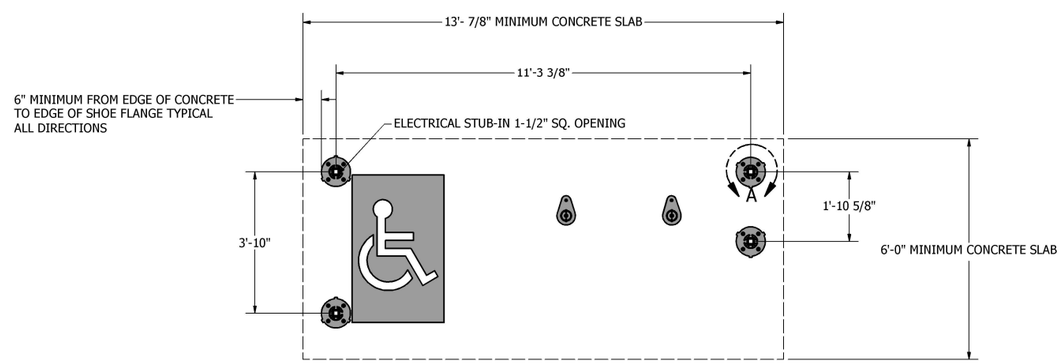
FRONT VIEW
SCALE 1/2"=1'-0"



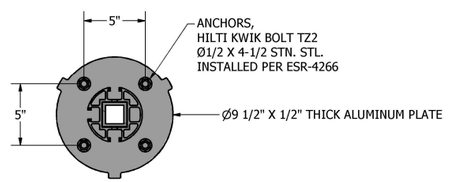
SIDE VIEW
SCALE 1/2"=1'-0"



DETAIL A
SCALE 2" = 1'-0"



SECTION A-A
SCALE 1/2"=1'-0"



DETAIL A
SCALE 2" = 1'-0"

TOLAR MANUFACTURING COMPANY, INC
258 Mariah Circle, Corona CA. 92879

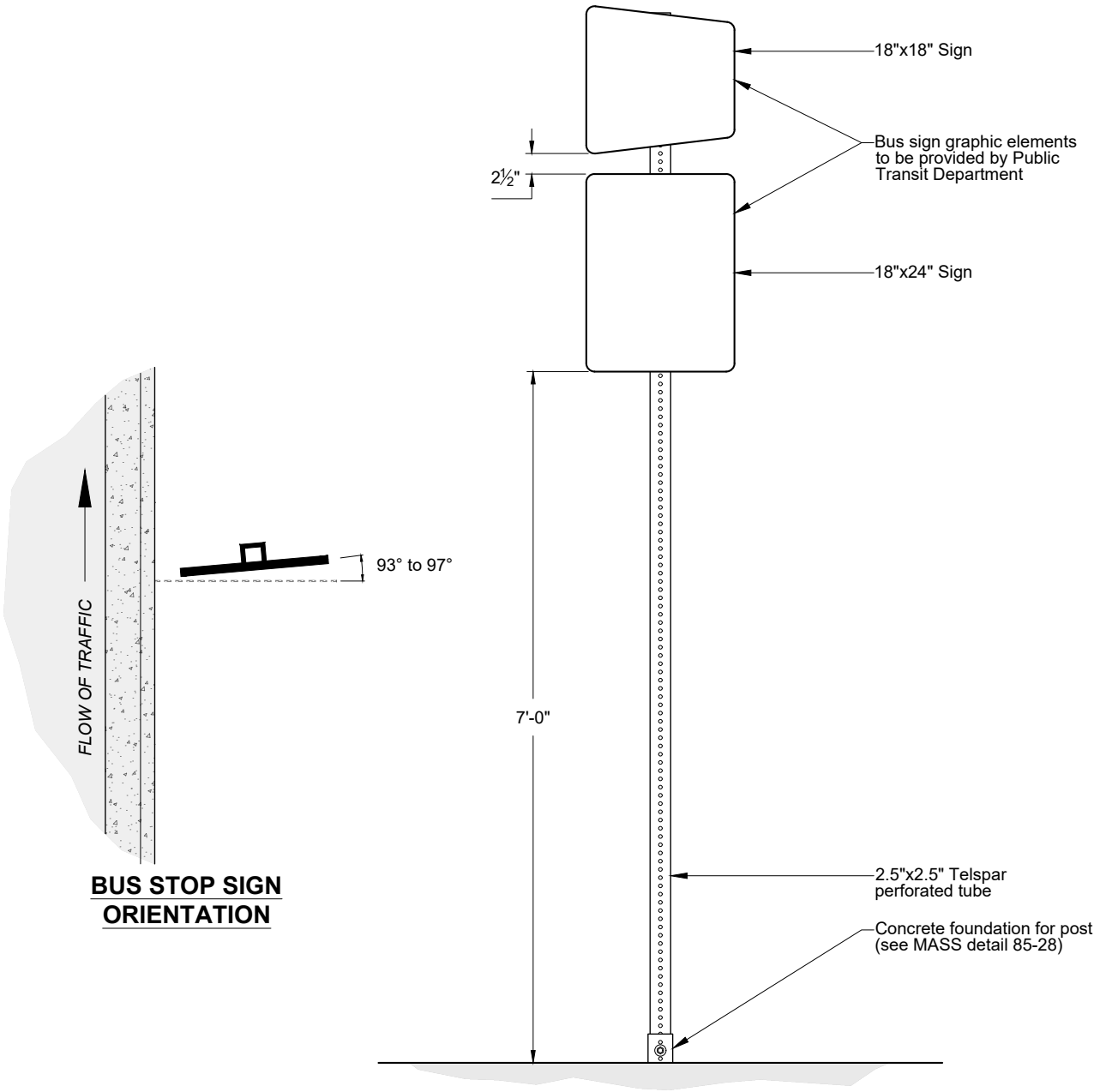
DESCRIPTION	12NAEMPPM120VAC		
CUSTOMER/VENDOR	ANCHORAGE, AK	PAGE:	1 OF 2
SIZE: D	MATL: VARIES	DWG NO.: 48964-00	REV: -
SCALE: AS NOTED	DATE: 6/28/2023	DRAWN BY: RFarr	

T:\Inventor\Shelters\Non Ad Flat Roof\48964-00.idw

TOLAR
ENGINEERED METAL FABRICATION
TOLAR MANUFACTURING COMPANY, INC
258 Mariah Circle, Corona CA. 92879

DESCRIPTION			
CUSTOMER/VENDOR	ANCHORAGE, AK		PAGE: 2 of 2
SIZE: D	MATL.: VARIES	DWG NO.:	REV
SCALE: AS NOTED	DATE: 6/28/2023	DRAWN BY: RFarr	

T:\Inventor\Shelters\Non Ad Flat Roof\48964-00.idw

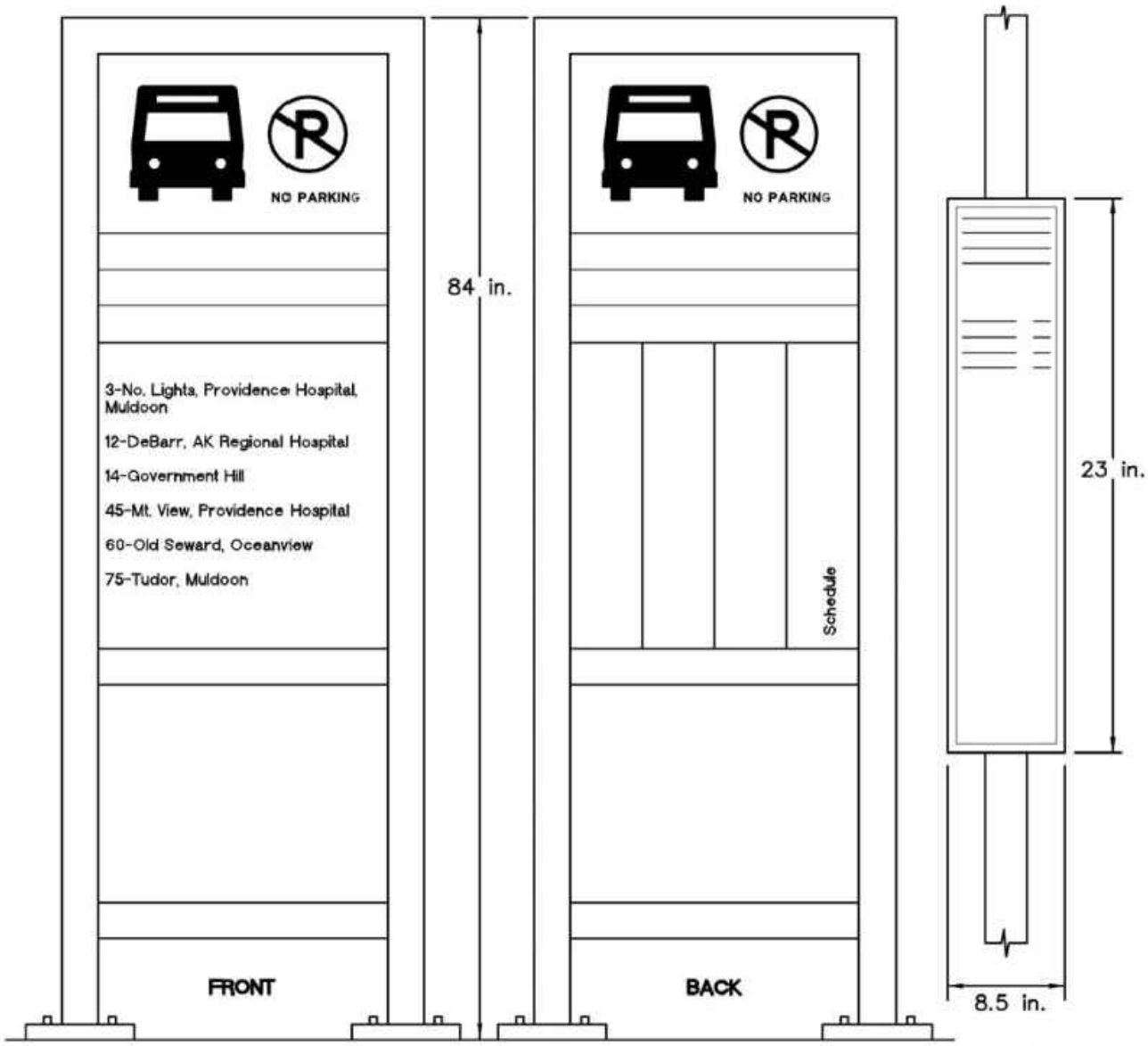


BUS STOP SIGN ORIENTATION

BUS STOP SIGN

NOT TO SCALE

Bus Stop Sign

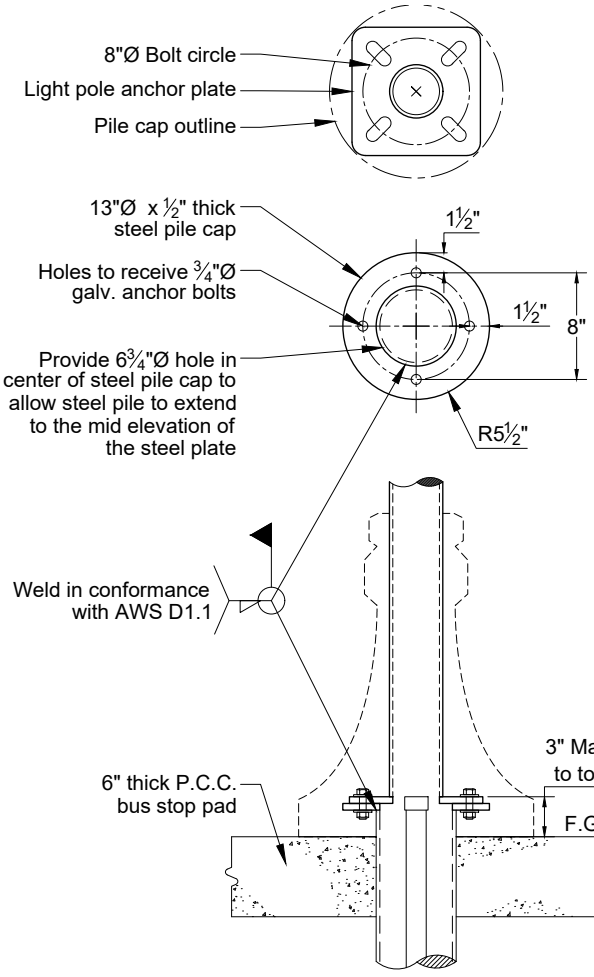


Bus Stop A-Frame Sign and Schedule Holder

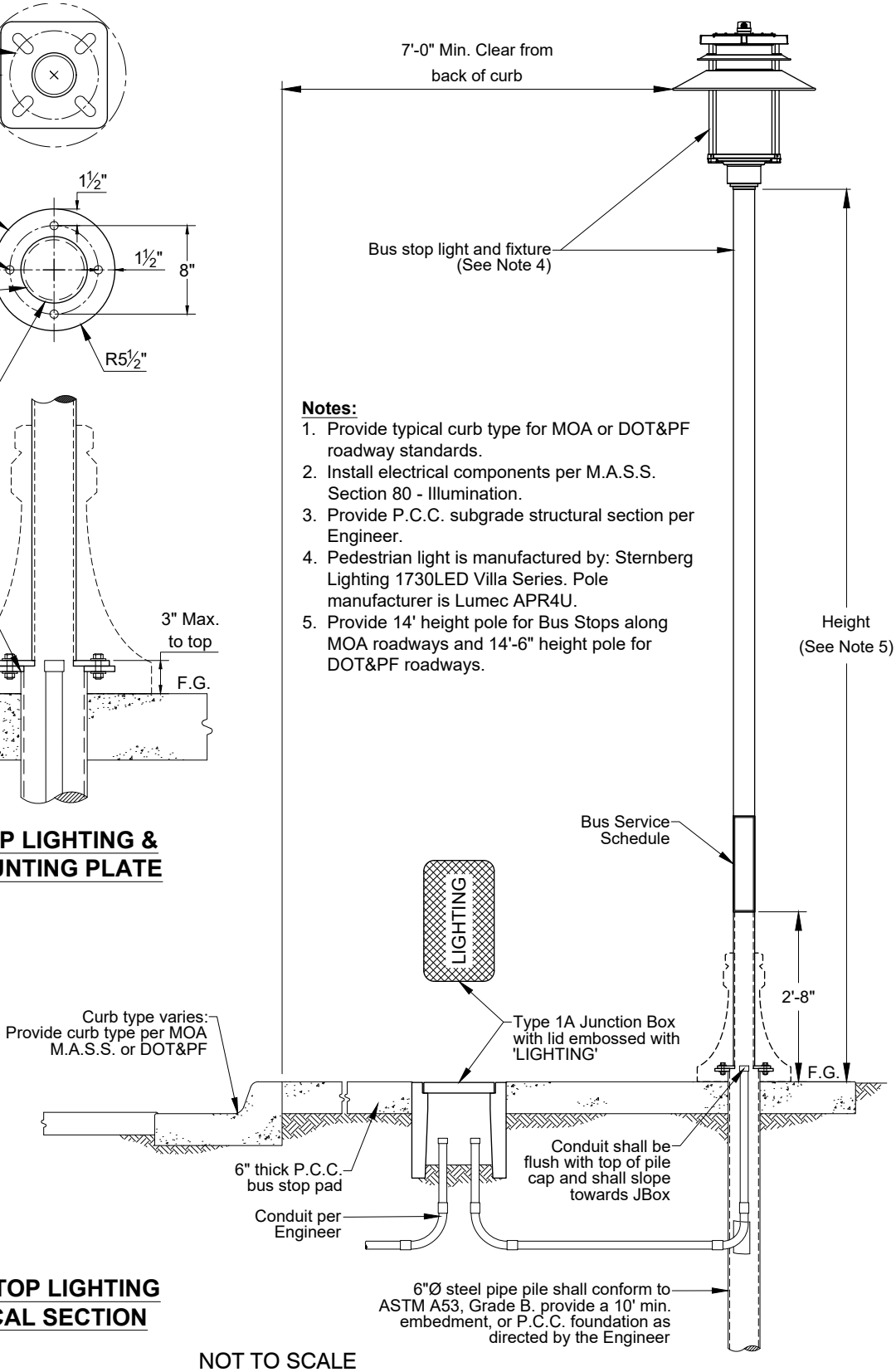
Anchorage Transit Design Guidelines

NOT TO SCALE

Bus Stop Lighting



BUS STOP LIGHTING & PILE MOUNTING PLATE



Notes:

1. Provide typical curb type for MOA or DOT&PF roadway standards.
2. Install electrical components per M.A.S.S. Section 80 - Illumination.
3. Provide P.C.C. subgrade structural section per Engineer.
4. Pedestrian light is manufactured by: Sternberg Lighting 1730LED Villa Series. Pole manufacturer is Lumec APR4U.
5. Provide 14' height pole for Bus Stops along MOA roadways and 14'-6" height pole for DOT&PF roadways.

BUS STOP LIGHTING TYPICAL SECTION

NOT TO SCALE

Bus Stop Lighting