



# BUS STOP MASTER PLAN

2023





Bus Stop  
Master  
Plan

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## Executive Summary

Because of the expansive inventory of more than 5,200 bus stops, stops are most often public's first impression of UTA and its presence in the community. This is true whether or not people ride transit. Bus stops are ubiquitous from suburban neighborhoods to downtown cores. UTA's objective is to make bus stops a positive contribution to the community, both for riders and people who host them in their neighborhood. Bus stops should contribute to the streetscape and be a place where all riders can obtain transit related information. Stops should be a community asset as well and provide easy, intuitive access to transit service for people of all ages and abilities.

It is important that bus stops, to the maximum extent possible, are easily identifiable, clean, safe, accessible, and a comfortable place to wait for the bus. Although, there may be underdeveloped bus stops that do not currently achieve all of the standards outlined in the following pages, this master plan and associated guidelines provide a framework for retrofitting, maintaining and building new bus stops in order to make the entire system as accessible and user friendly as possible.

In addition to providing an inventory of existing conditions, this document is intended to provide a common set of goals, design principles, design guidelines and policies to promote consistency in the design and provision of bus stops and their associated amenities. The aim is to ensure that stops are suited to their location, operationally functional and attractive to current and potential riders.

The Bus Stop Master Plan outlines and encourages partnerships with local governments and property owners. UTA is continually working with communities to improve access to bus stops, including sidewalks, street crossings, curb ramps and bicycle lanes. UTA continually affirms that the quality of the streetscape is critical to the success of the bus stop improvement program.

The primary objectives of this document are to identify and outline each of the elements of UTA bus stops, set design guidelines for the bus stops including placement and amenities and to describe the process for developing and managing a comprehensive bus stop inventory at UTA.

This document will also act as the basis for annual Capital Improvement budgets that will be used in combination with a prioritized program of bus stop projects that support the stated goals of the plan.

This document contains four major sections. They are (1) a brief introduction to the purpose and need as well as the goals for the master plan, (2) a description of the existing conditions, (3) the design criteria and guidelines (4) a prioritization methodology for managing the bus stop capital improvement program.

## Introduction

The need for this plan is rooted in a bus stop management process that has focused on improvements upon request and has resulted in an inconsistent inventory of stops that ranges from exceptional to less than ideal. During 2016-2017 there was a proactive effort in the UTA Planning Department to inventory, document, and catalog every bus stop in the system. This inventory was the first-ever comprehensive collection of organized and accurate data on the bus stops. To date, there has not been a cohesive strategy for organizing, tracking and prioritizing any proposed changes to bus stops.

Work on bus stops has traditionally been done on an *ad hoc* basis through an internal work order system, via email, or oral request. These improvements were most often based on customer or stakeholder comments or feedback, as a result of a specific grant project or based on staff priorities. While this approach has improved a large number of stops, it has often led to an inefficient and ineffective use of capital. Specifically reviewing individual stops for improvement rather than looking at the network of stops as a system has led to inconsistencies and potential misallocation of improvement funds.

Perhaps more important than a process for addressing complaints and route changes is the fact that UTA lacks any current standard for bus stop design. Bus stops are the public's primary interface with the UTA system. In some cases stop conditions are more than adequate however there are also a large number of noncompliant or under improved stops. The need for a set of minimum standards, guidelines and policies for UTA's bus stop system will be addressed in this plan.

The purpose of this Bus Stop Master Plan is to create a guiding document for UTA that can be used for strategically identifying, analyzing and prioritizing improvements to all bus stop amenities throughout the UTA system. The overarching intent of the Bus Stop Master Plan is *to enhance the customer experience by creating safe, comfortable, easy to use bus stops and amenities that are ADA accessible.*

The plan will provide a prioritized and phased schedule, design criteria and cost estimates for bus stop improvements. The schedule and prioritization will be based on different criteria including but not limited to average daily total stop activity (TSA), compliance with the Americans with Disabilities Act and safety. The Bus Stop Master Plan will transform the network of stops into an asset that enhances the experience for existing customers, operators and the public and draws potential new riders to the UTA system.

### ***Bus Stop Master Plan Goals***

UTA has established a basic set of universal requirements that are addressed as every bus stop is considered. Each stop should, at a minimum:

- Meet minimum federal ADA and safety requirements which consists of a reasonably sloped, paved surface with access to a safe pedestrian pathway to and from the stop, where applicable
- Be designed to meet *Crime Prevention through Environmental Design* (CPTED) recommendations
- Have visible, consistent and easily identifiable signage
- Be unobscured and clearly visible by approaching bus where possible
- Be safely and conveniently accessed by a typical UTA fixed-route or Flex route vehicle
- Allow for the most effective and efficient system operation
- Provide accurate, up-to-date information for riders about services at the stop
- Provide placement and improvements which are sensitive to the community setting
- Where applicable, meets local codes and ordinances

## Existing Conditions

UTA serves more than 2 million people along the Wasatch Front, with about 44% of that population living within ¼ mile of a bus stop. For many communities, the bus stop is the first and primary interaction they have with UTA. As of June 2023 the UTA System has 5,243 total active bus stop locations.

### ADA Compliance

Existing bus stops that are currently not fully ADA compliant make it difficult for those persons with disabilities, or using mobility devices to enter and exit the bus safely (See Figure 1). Even passengers not faced with ability challenges must still give attention to potential obstacles (i.e. snow, mud, guy wires etc.) and terrain faced when boarding and alighting the bus.



FIGURE 1 - NON-COMPLIANT UTA BUS STOP

In addition, bus operators are also faced with challenges when servicing a bus stop that is not ADA compliant.

They are left to use their best judgment to find a suitable location to unload or pick up passengers in mobility devices or those with other disabilities. The Federal Transit Administration (FTA) provides guidance for ADA compliance for both new and existing stops. The guidance states that, to the maximum extent practicable:

- *New, altered, or relocated bus stops must have a firm, stable surface and must provide a clear length of 96 inches (8 feet), measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches (5 feet), measured parallel to the vehicle roadway.*
- *Bus stops must also connect via an accessible route to streets, sidewalks or pedestrian paths.*
- *The slope of the bus boarding and alighting area in the direction parallel to the roadway must be the same as that of the roadway to the maximum extent practicable. Perpendicular to the roadway, the slope must not exceed 1:48, that is, not more than 1 inch of rise over a horizontal distance of 48 inches<sup>1</sup> (2%).*

For existing stops, there is no explicit language in the guidance that exempts transit agencies from providing accessible bus stops, but rather the guidance states:

- *An individual with a disability who could otherwise ride an accessible bus but cannot reach the bus stop due to the lack of an accessible route would be eligible for complementary paratransit, at least on a conditional basis.*
- *FTA encourages transit agencies to inventory the location of their bus stops in relation to accessible pedestrian routes, and coordinate with owners of public rights-of-way (e.g., local municipalities) to help ensure connections to stops are as accessible as possible<sup>2</sup>.*

For UTA specifications on minimum standard bus stop design requirements, see Appendix B - *Landing Zone and Accessible Route Requirement*

### Obstructions

Stop locations in proximity to obstacles or obstructions such as power/telephone poles, guy wires, hydrants, and utility boxes also pose additional barriers and not just to those persons with disabilities. These obstructions represent the potential of interruption in service and damage to property if vehicle contact is made with any of these obstacles. For example, when the curbside mirror of the bus makes contact with an obstruction, this is a minimum Class 1 accident of with a replacement cost of \$1,500

<sup>1</sup> Americans with Disabilities Act of 1990 (ADA), Section 810.2

<sup>2</sup> Americans with Disabilities Act of 1990 (ADA), Section 209.2.3

dollars. In addition to the financial cost of the incident, the operator must stop to file a report causing an interruption of service. If the damage is severe enough to where the bus is inoperable, the bus must remain at the location until a replacement bus is called out. This pulls a mechanics away from his or her duties leading to more time lost and costs continue to cascade. This can all be mitigated if the bus stop is properly assessed and can be redesigned or relocated to a more ideal location free of obstructions.

### Existing Bus Stop Amenities

While ADA compliance and safety are the primary criteria to be used when evaluating stops, many stops are “underserved” in terms of the level of additional amenities. Amenities refer to those attributes of a bus stop beyond UTA and ADA minimum compliance standards (i.e. benches, trashcans, shelters, informational signage, etc.). In addition to a firm stable landing surface for ADA compliance, a sign pole and a route sign there are a range of amenities present at some but not all bus stops throughout the system. These amenities include:

- Shelters
- Benches
- Trash Cans
- Lighting
- Bike Racks
- Simme-Seats
- Electronic Signs

Prior to this plan, the determination of which stops in the system received additional amenities were determined on an *ad hoc* basis using a simple metric of bus stop activity as the primary indicator of performance. Decisions on which stops to improve have also often been based on things such as complaints, rider requests, elected official comments, special grants received to improve routes or corridors or staff recommendations. In recent years UTA has addressed many individual bus stop related problems and the agency intends to continue this forward progress. This plan will just provide a more structured and measurable approach to stop improvements.

The Bus Stop Master Plan provides a clear, consistent, quantitative methodology for assessing the current conditions of a bus stop, determining the appropriate level of amenities and prioritizing the budgeting, construction and placement of stops and amenities.

### Existing Bus Stop Inventory

In 2016 UTA conducted a comprehensive inventory of the status of all of the bus stops within the UTA system. This inventory included all of the amenities present at each stop as well as other information related to the general condition of the stop, including accessibility. As part of that inventory process, many variables associated with each stop were identified as being present or not present at any given stop location. The inventory process is an ongoing function of the Service Planning staff. The continual cataloging of every bus stop is ongoing and is critical in meeting the goal to implement system-wide consistency and improvement. Table 1 shows the amenity categories that are currently documented and maintained.

Inventory Category		
• ADA Access	• Obstruction - Guy Wire	• Sidewalk
• Bench	• Park Strip	• Park and Ride
• Shelter	• Pole and sign	• Trash Cans
• Lighting	• Bike Lane - Buffered	• Quartz Heaters (not applicable)
• Schedule Holder	• Bike Rack	• Call box
• Route Information	• Operator Restroom	• Schedule holder

TABLE 1 - EXISTING AMENITY CATEGORIES

## Planned Bus Stop Amenity Levels

As part of the planning for bus stop improvements, certain ‘Levels’ of amenities have been developed. These levels have been determined by assessing the average daily total boardings at each stop. The use of boardings as the determining factor in the level of amenities allows the Service Planning staff along with the Customer Experience team to ensure that stops with more activity have suitable amenities to meet the needs of the customers using the stop.

Table 2 provides descriptions of the levels including required average daily boardings associated with each set of amenities.

Stop Level	Headway	Avg. Daily Boarding's	Amenities			
Level I - A	15 Min or Less	0 to 9	• Pole • Sign	• ADA Pad		
Level I - B	Greater than 15 Min	0 to 4	• Pole • Sign	• ADA Pad		
Level II - A	15 Min or Less	10 to 39	• Pole • Sign	• ADA Pad • Bench	• Trash Can	
Level II - B	Greater than 15 Min	5 to 9	• Pole • Sign	• ADA Pad • Bench		
Level III - A	15 Min or Less	40 to 59	• Pole • Sign	• ADA Pad • Bench	• Trash Can • 4'x8' Shelter**	
Level III - B	Greater than 15 Min	10 to 19	• Pole • Sign	• ADA Pad • Bench	• Trash Can • 4' x 8' Shelter**	
Level IV - A	15 Min or Less	60 to 79	• Pole • Sign	• ADA Pad • Bench	• Trash Can • 6' x 12' Shelter**	
Level IV - B	Greater than 15 Min	20 - 29	• Pole • Sign	• ADA Pad • Bench	• Trash Can • 6' x 12' Shelter**	
Level V - A	15 Min or Less	80 to 99	• Pole • Sign	• ADA Pad • Trash Can	• Two (2) Benches • 6' x 12' Shelter**	
Level VI - A	15 Min or Less	100 to 149	• Pole • Sign	• ADA Pad • Trash Can	• 6' x 16' Shelter** • Two (2) Benches	• Light Fixture
Level VII - A	15 Min or Less	150 +	• Pole • Sign	• ADA Pad • Trash Can	• Two (2) Benches • Custom Shelter	• Light Fixture • Digital Sign

TABLE 2 – BUS STOP LEVELS BY BOARDINGS

\*\*Cantilever option available

NOTE: The amenity levels shown are based upon UTA being the sole provider of the amenity and performing the upgrades at the bus stop location. Actual amenity levels may vary based upon local partnerships or third party financial participation. On-site topographic conditions and availability of property may also limit recommended upgrades. See also the section on Funding in this document.

These bus stop levels are also stratified by the frequency of the route(s) that serve any given stop. The two frequency thresholds used are:

- 15 minute or less frequency
- Greater than 15 minute frequency

### Bus Stop Spacing and Placement

Bus stop spacing and location has a major impact on transit performance. In general, stops located on the far-side of intersections are preferable; however, other types of stops may be unavoidable or justified in certain situations. There are advantages and disadvantages to each location. There are also opportunities

to work with local municipalities and UDOT to take advantage of queue jump technology and Traffic Signal Prioritization (TSP) in order to optimize bus stop locations and minimize impacts to local automobile traffic. Extensive discussion and guidance for determining proper bus stop locations, including traffic signals and operations, are provided in the Transit Street Design Guide published by NACTO<sup>3</sup>. Assuming that all stop location variables are equal, Figure 2 shows the recommended stop locations for basic, fixed route and ADA accessible service.

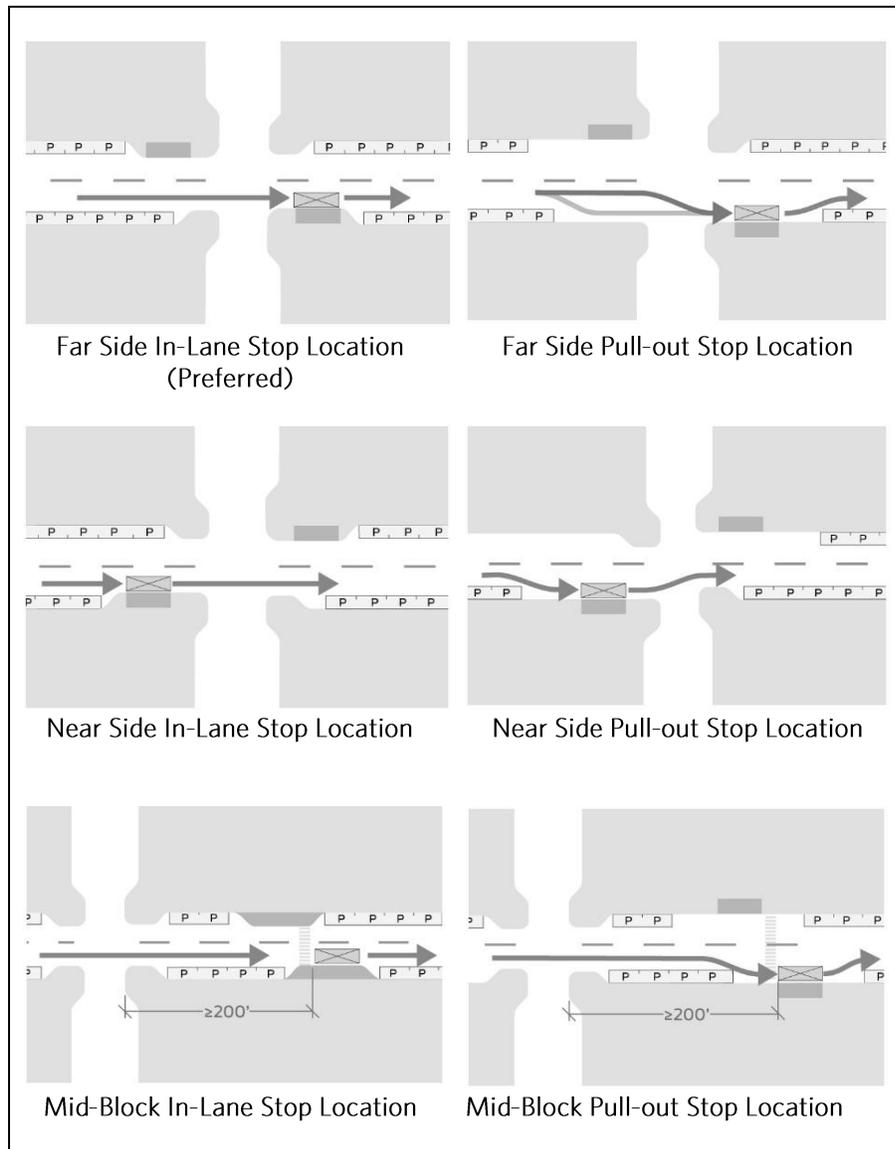


FIGURE 2 - STOP LOCATION RECOMMENDATIONS

Stop spacing affects both access time and line-haul time, and therefore affects the demand for transit service. In general, there is a tradeoff between: (a) closely spaced, frequent stops and shorter walking distance, but more time on the vehicle and (b) stops spaced further apart and longer walking distance, but less time on the vehicle.

Industry practices on spacing vary, as different agencies opt for different bus stop spacing standards. Often, bus stops are added on an as-requested basis along existing bus routes. The addition of bus stops should be evaluated carefully prior to implementation to ensure that operational efficiencies in bus

<sup>3</sup> Transit Street Design Guide, National Association of City Transportation Officials, 2016 <https://nacto.org/publication/transit-street-design-guide/>

services are not degraded and they do not negatively impact service reliability. Additionally, a periodic reexamination of stop spacing is recommended. Table 3 provides one example of typical industry practices. NOTE: These numbers represent typical fixed-route bus service and should not be applied to BRT service.

Environment <sup>4</sup>	Stop Spacing (in feet)
Central Business District (CBD)	400-800
Urban Areas	500-1,000
Suburban	600-1,200
Rural	800 (as needed based on surrounding development and activities)

TABLE 3 - TYPICAL STOP SPACING

Design drawings and more specific planning and design guidance for recommended siting, location and designs are included in Appendix A - *Guidelines for the Location and Design of Bus Stops*.

### ***Bus Stop Elimination and Consolidation***

While there are far more opportunities for improvements to existing bus stops or even adding new stops to the system, there is also a need to monitor, analyze and assess whether a stop is necessary any longer. There may be an opportunity to eliminate or consolidate one or more stops. This decision is not a trivial one and should be based on a series of steps before any stops are eliminated or moved. These steps include using the same evaluation methodology as outlined in this document but elimination and consolidations requires much more community and rider engagement than would be needed for new stop installations or improvements. For more guidance on stop elimination and consolidation see *“Best Practices in Bus Stop Consolidation and Optimization”*<sup>5</sup>

### ***Bus Stop Amenities & Design Principles***

The basis for providing amenities and particular bus stops takes into account multiple factors. As mentioned above, one key factor is the average daily total boardings. Other factors include wayfinding, safety, comfort and curb appeal in order to make UTA stops attractive as assets to a community. As cities, communities and neighborhoods become more concerned about the surrounding environment and impacts to such. In addition to the physical location of a bus stop, the design and amenities should be considered in terms of having a minimal visual and physical impact to the surrounding environment, especially in residential areas. Each of the available amenities for certain stops are described below, including the UTA design standards for each amenity.

### ***Seating and Trash Receptacles***

Benches are a simple yet easy and cost-effective way to provide comfort and security for waiting passengers and help in wayfinding. UTA currently uses four styles of seating at bus stops: Park benches, Team benches, custom pedestal benches and Simme seats. Limiting the number of styles of benches in the system helps to keep maintenance costs low and allows for purchasing contracts that include multi-year options. This design criteria also provides uniformity in appearance at the bus stops across the system. This, in turn, helps passengers and operators quickly identify bus stops especially those unfamiliar with a route. As far as trash receptacles, a galvanized mesh steel can is used so that facilities maintenance crews can see from their vehicles if a trashcan needs to be emptied. The lids (dome tops) are a tight fitting, wide rim door specification for durability. Lids are cable tied to the cans to reduce vandalism and theft. For UTA

<sup>4</sup> Central Business Districts are loosely defined as a one (1) mile radius around the geographic city center or city hall

Urban Areas are areas defined by the US Census that contain 50,000 or more people.

Suburban Areas can be generally defined as the area outside of a central business district but still within the limits of the official census urban area

Rural areas can generally be defined as those areas outside of the official census urban areas

<sup>5</sup> *“Best Practices in Bus Stop Consolidation and Optimization”* <https://issuu.com/uclapubaffairs/docs/2/>

specifications for standard trash receptacles and bus benches, see Appendix B - *Trash Can and Bus Bench Specifications*

### ***Shelters***

While shelters require increased capital costs associated with the construction and maintenance of a bus stop, they provide greater security, protection and wayfinding for passengers and operators alike. Typically bus stops with higher boardings will receive shelters and depending on the number of boardings, the sizes of those shelters will vary to accommodate the volume of waiting passengers.

A recent study<sup>6</sup> shows that providing shelters at bus stops will not only increase ridership but more importantly help retain ridership, especially during inclement weather. This is especially true when transfers are required as most riders can control the initial point of origin when taking public transit (i.e. leaving home, workplace, etc.). A 2015 UTA rider survey found that a single rider transfers an average of 1.39 times. When offering shelters at high boarding stops and focusing on transfer points it influences choices people make in relation to using transit on days when the weather is a factor (i.e. heat, cold, rain, snow). For UTA specifications for standard bus shelters, see Appendix B - *Shelter Design Specifications (Typical)*

### ***Signage***

The Bus Stop Master Plan will always refer to the signage standards as presented in the current UTA Customer Information Standards and UTA Wayfinding Strategy documents.

The signage standards and wayfinding strategy have been structured to support the needs of each affected group within the UTA system. In addition, the sign standards are organized into families of sign types, bus stops signs are represented independently in the standards (See Section 13 – Customer Information Standards). Within the bus stop sign family, there are design specifications for specific sign types, each with physical characteristics tailored to fit specific information and site-specific needs. For instance in remote locations on rural routes there is no need for sophisticated multi-route information signs. In this situation a simple post and bus stop sign serves perfectly to mark a bus stop. However, as population and route density increase approaching population centers, more and more sophisticated signs are required to handle the greater information density. The standards include details regarding the information display requirements, a set of detailed construction drawings, specifications, and typical installation.

Finally, the mechanism for planning, procurement, management and maintenance of the sign program is essential to the success of the sign and information design. An internal administration process, including procurement, installation and removal is included in Appendix D - *Policies & Standard Operating Procedures*.

### ***Art Installations***

Any art installations on or adjacent to the UTA pad must not impede the FTA-required pathway. Art installations shall not interfere with patron safety and must comply with federal and local regulations, including those related to accessibility. All art installations are subject to UTA approval. If an art installation has been commissioned and paid for by a third party that party will be solely responsible for the cost of maintenance and repair, removal, or replacement of the artwork. UTA agrees to clean the Artwork during its routine cleaning of the Bus Stop Pad. UTA will provide occasional inspections of the condition of the artwork as they conduct routine maintenance, including trash collection and cleaning of amenities. If at any point UTA determines that the condition of the Artwork has deteriorated to such a degree that a safety hazard is presented or the Artwork has been damaged, UTA will notify the artist or third party that the Artwork must be repaired or removed.

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<sup>6</sup> *Impacts of Bus Stop Improvements*, University of Utah Department of City and Metropolitan Planning, 2018, K. Bartholomew et. al.

If the third party elects to remove the artwork at any time and replace it with another, it will do so at its own cost and to the standards set forth herein, including protection of the UTA amenities located on the bus stop pad from damage.

### ***Bus Stop Design – CEPTD Principles***

One of the key components to a successful bus stop location is the design and how safe a customer feels while waiting for their bus to arrive. While there are service planning principles that are used to determine the optimal locations for efficient bus operations, there are also safety and security principles that can help keep bus stop locations free from crime, loitering and vandalism. *Crime Prevention Through Environmental Design* (CPTED) theory contends that consideration and implementation of a few fundamental principles can create a climate of safety in a community. CPTED’s goal is to prevent crime by designing a physical environment that positively influences human behavior. The theory is based on three principles:

- Natural access control
- Natural surveillance
- Territorial Reinforcement

In the case of bus stops, these principles should be applied in the following ways.

#### ***Natural Access Control***

This is the physical guidance of people coming and going from a space by the judicious placement of entrances, fences, landscaping, and lighting. This principle helps deter access to a crime target or victim and creates a perception of risk to a perpetrator.

For the design of a typical bus stop, natural access controls should include:

- Clear, identifiable wayfinding and signage to direct/lead customers safely to poles, shelters and other amenities
- Clearly marked transitional zones (i.e. making it clear where the bus stop limits are vs. public space such as sidewalks)
- Unobstructed walkways in safe, visible locations for pedestrians, with unobstructed views

#### ***Natural Surveillance***

This principle limits the opportunity for crime by taking steps to increase the perception that people can be seen. Natural surveillance occurs by designing the placement of physical features, activities and people in such a way as to maximize visibility and foster positive social interaction. Potential offenders feel increased scrutiny and perceive few escape routes.

For the design of a typical bus stop, natural surveillance controls should include:

- Illumination. This can be direct or indirect lighting but must be sufficient to allow customers to clearly see and observe others and also be seen by others.
- In the case of shelters, clear windows on all sides of the shelter allowing for full, unobstructed visibility of the area surrounding the bus stop
- If there is landscaping or vegetation, low growing varieties

#### ***Territorial Reinforcement***

This principle uses the physical design to create or extend a sphere of influence. It provides customers with a sense of territorial control, while potential offenders perceive this control and are discouraged from their criminal intentions. Territorial reinforcement is promoted by features that define property lines and distinguish private spaces from public spaces, such as low growing plantings, pavement design, and fences.

For the design of a typical bus stop, territorial reinforcement controls should include:

- Clear, identifiable signage that identifies the bus stop as a unique public space
- Sense of ownership of the stop and amenities by the surrounding community
- Care and upkeep of the stop and amenities to indicate that someone is frequently coming by
- Security awareness programs (See something, say something)
- Prompt response/reaction to criminal incidents
- Enforce zero tolerance policy to graffiti & vandalism

## Stop Assessment Methodology

This section outlines the methodology that is being used by UTA to evaluate the existing conditions of the stops in the system. While the level of stop amenities is determined by the average daily boardings at the stop, these recommended amenities come with a significant capital and operating cost. This methodology is used to determine *which* stops will receive improvements and thus appropriate the limited amenity resources equitably.

Before determining what design level will be assigned to a stop, there are several key factors, or minimum standards, that must be met. These factors are driven by federal ADA standards, UTA safety standards and bus stop operations serviceability standards. These standards provide the first level of screening for each of the stops within the system.

Over the lifetime of a bus stop, the largest cost is operation and maintenance (i.e. cost to maintain trash receptacle, shelter, and lighting etc.) of the amenities located at any particular bus stop. Because of this ongoing cost, the initial installation and purchase of the amenities to be installed is evaluated and carefully considered before approving amenities to be installed at a stop. This is done to ensure that stops with the most daily activity receive priority of UTA's limited resources. In order to determine what bus stops are improved on a prioritized basis, UTA has developed a Bus Stop Scoring Matrix where each stop is assigned "points" (see Table 4).

The matrix below has been approved by the FTA to comply with Civil Rights, ADA and Title VI regulations. By evaluating each stop location and scoring the various categories at each stop, the highest-scoring stops are prioritized and addressed first. While the Bus Stop Master Plan is designed to address all the bus stops system-wide, this process helps UTA prioritize a limited annual budget for bus stop improvements. The underlying assumption associated with the Bus Stop Scoring Matrix is that it is used to address only those stops in the UTA system that are currently non-ADA compliant. The reasoning is that if UTA has funds to improve stops in the system, the first stops to be improved should be those that do not meet federal ADA compliance standards.

**NOTE:** For the sake of efficiency in the construction of these stops, groups of stops targeted for improvements may be organized by routes. This process allows for a construction contractor to plan for work in the same general area, rather than having to mobilize construction crews multiple times to construct individual stops and various locations across the county or the region.

Category	1 Point	2 Points	3 Points	4 Points	5 Points
Non-ADA Compliant*	-	-	-	-	Yes
Total Stop Activity (TSA) – Average Daily Weekday**	1 to 19	20 to 39	40 to 59	60 to 79	80 +
Total Annual Bus Ramp Deployments	1 to 49	50 to 99	100 – 149	150 – 199	200+
<b>Transfer Point***</b>					
Equal to or Greater than 30 min. freq.	1 Route	2 Routes	3 Routes	4 Routes	5+ Routes
Less than 29 the min. freq.	1 Route	2 Routes	3 Routes	4 Routes	5+ Routes
<b>Serves Title VI Community</b>					
					Title VI Route/Area
<b>Safety</b>					
Intersection	1 of 5 Elements	2 of 5 Elements	3 of 5 Elements	4 of 5 Elements	5 of 5 Elements
Parking Allowed					
Obstacle(s) Present					
No lighting Present					
Sidewalk Not Level					
<b>Social</b>					
Education Adjacent					Yes
Library Adjacent					Yes

Table 4 - Bus Stop Scoring Matrix

\* Non-ADA compliant bus stop locations automatically receive five (5) points

\*\* TSA is calculated using the average weekday boardings and alightings taken from the last eight change day periods

\*\*\*One (1) additional point is assessed each route at a transfer point with 30 minute or less frequency

The results of this methodology are compiled annually into the Bus Stop Planning Reports. These reports represent the top tier of bus stops that UTA has prioritized as needing to be addressed for one or more of the screening criteria listed above.

## Funding

One purpose of this Master Plan is to develop a 5 year capital development strategy and budget for bus stop improvements. The development and administration of this strategy involves the Service Planning Department, working with the Customer Experience and Capital Development to prepare an annual budget associated with a prioritized schedule of bus stop improvements or new construction. This budget should include capital costs as well as operating and maintenance costs for the life of the stop.

It should also be noted there are opportunities for cities and counties to participate in contributing additional funding for local stops in their communities. The form of these contributions can take several forms other than cash. Partners can offer to provide the right-of-way or offer to perform some of the construction of the stops such as the concrete pads or sidewalks. UTA also recognizes that outside

funding contributions may not always completely align with the schedule or prioritization that UTA has prepared for stop improvements. In these cases, the Service Planning and Capital Development teams will work directly with city or county staff in preparing a work scope, budget and schedule for these situations. The responsibility for the maintenance and upkeep of the stops, shelters and amenities paid for by others become will be explicitly outlined in a Memorandum of Understanding or Memorandum of Agreement between UTA and the contributing agency. This agreement may also call for UTA to maintain the facility as part of its routine operations and maintenance and be reimbursed by the contributing agency. For more guidance on this process, see Appendix D - *Policies & Standard Operating Procedures*.

## New Bus Routes and Route Modifications

In the case of new routes or new service being introduced, the Service Planner(s), regardless of the levels or type of stops that may be required, will collaborate and together evaluate and select the optimal locations of bus stops and plan the stop locations according to the guidelines established in this document. Stop amenities at the new stops will be based on estimated ridership using UTA’s travel demand modeling tools (TBEST or REMIX). At a minimum, every new stop will require all of the Level I stop amenities in order to be ADA compliant. Sufficient time for both planning, ordering and installing new stop amenities needs to be provided. In no case should a new route start operation without proper, accessible, safe bus stops in the designated locations.

Routes are often modified to improve operational efficiency and provide access to a new customer base. All new bus stops on modified routing must be made ADA compliant to the maximum extent practicable. This is true where the change originated with UTA. Where the change was forced by an outside factor, stop locations may receive temporary placards until the location can be improved.

## Bus Stop Administration

The UTA Service Planning Manager is responsible for coordinating with other UTA departments all of the work that is done with regard to the planning, feasibility, design, installation and maintenance of any UTA bus stop. This does not necessarily mean that he or she is responsible for the actual tasks associated with the design, installation and maintenance, rather ensuring their proper execution according to the Bus Stop Master Plan. UTA has established processes and procedures that are used for everything from planning and installation of bus stops to the procurement of shelters and amenities to the removal or replacement of existing amenities. UTA also has an adopted *Bus Stop Improvement Program Standard Operating Procedure* (SOP XX) that outlines the entire bus stop administration process, including explicit steps and persons responsible for each step. This SOP can be found in Appendix D - *Policies & Standard Operating Procedures*.

## Annual Bus Stop Planning Reports

Bus Stop Planning reports are generated and reviewed annually in order to track progress on the improvements<sup>7</sup> made to bus stops throughout the system. These reports are generated prior to the UTA budget period so that capital budget requests can be made by the Service Planning Team for the following year. These requests represent the total estimated cost of the cumulative work identified in the prioritization matrix. The costs are based on the unit construction and amenity costs as outlined in this document. See Appendix C - *Cost Estimates*. These reports are subject to review, and change, by executive leadership in order to make sure the program of bus stop improvements is in line with the annual goals as established by the Board of Trustees. Since local revenue is generated at the county level, these reports are generated on a county-by-county basis and represent the total capital that is anticipated to be spent bus stops and amenities in any particular county. This allows for UTA to also report to local municipal and county leaders how their tax dollars are being spent in their respective jurisdictions.

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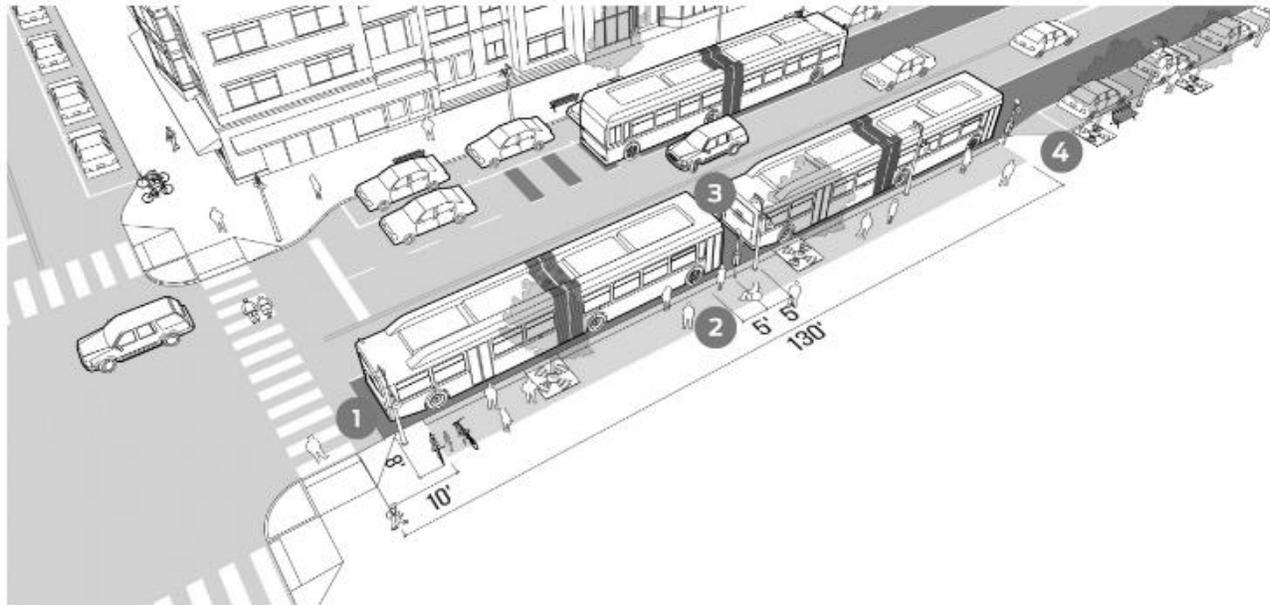
<sup>7</sup> It should be noted that these reports also contain recommendations for stops that should be consolidated or completely eliminated.

## Appendix A – Guidelines for the Location and Design of Bus Stops

NOTE: All references and images in this section are from 'NACTO Transit Street Design Guide April 2016'  
<https://nacto.org/publication/transit-street-design-guide/stations-stops/>

A no parking zone is required at all bus stops. The length of the no parking zone is dependent on the length of the bus operating on the stop's route. The next section describes the required length of the no parking zones in front of bus stops depending on whether the bus stop is an 'in lane' stop or a 'pull out' stop.

### Stop/Platform Lengths



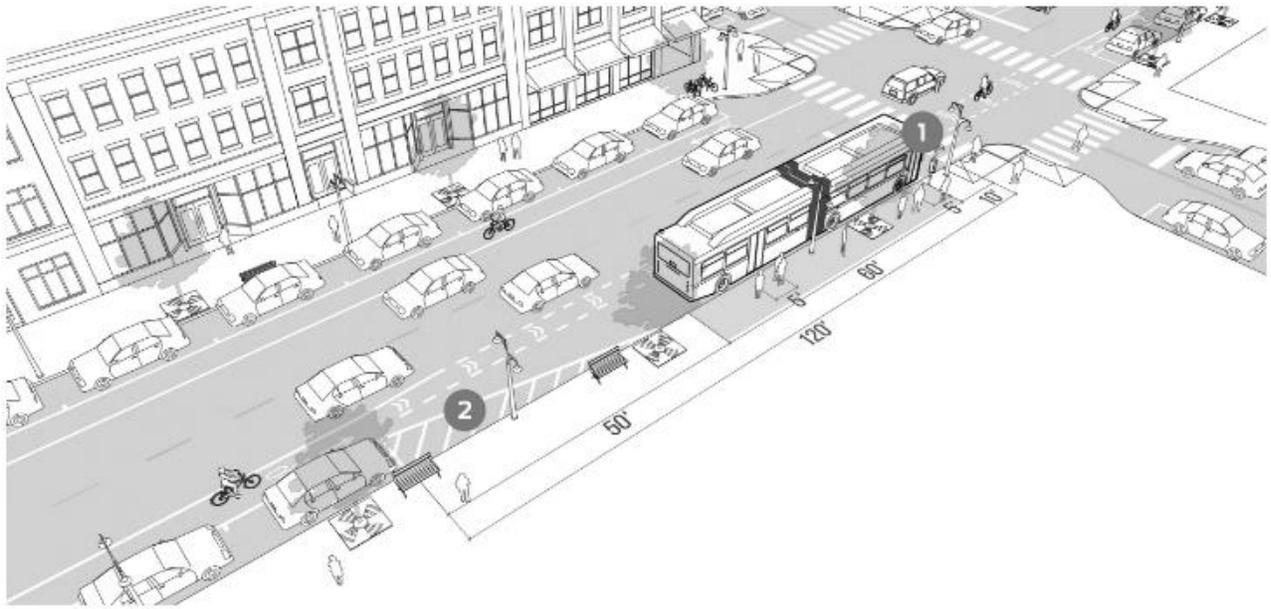
#### In-Lane Stops

Desired Minimum Stop/Platform Length by Vehicle Type (feet)*				
Stop Location	40' Bus	60' Bus	2 x 40' Bus	2x 60' Bus
Near-side	35	55	80	115
Far-side	45	65	90	130
Mid-block	35	55	80	115

\*Bus stop/platform lengths also represent the distances where 'No Parking' restrictions should be enforced in the street.

#### NOTES:

- 1 Locate stop zone with at least 10 feet of clear distance from crosswalk or curb return. Measure to transit stop pole at near-side, or rear of transit vehicle at far-side.
- 2 5 feet is the minimum curb length for a receiving facility at each boarding door (ADA Std. §810.2.2), design platforms to be continuous through all doors, and consider additional elements to improve passenger comfort
- 3 Provide 5-10 feet of distance between each additional transit vehicle expected to be dwelling at the platform consistently throughout the day.
- 4 Design boarding bulbs and islands to accommodate proper drainage and sweeping; tight radii may require maintenance agreements to ensure bulbs are properly cleaned and maintained.



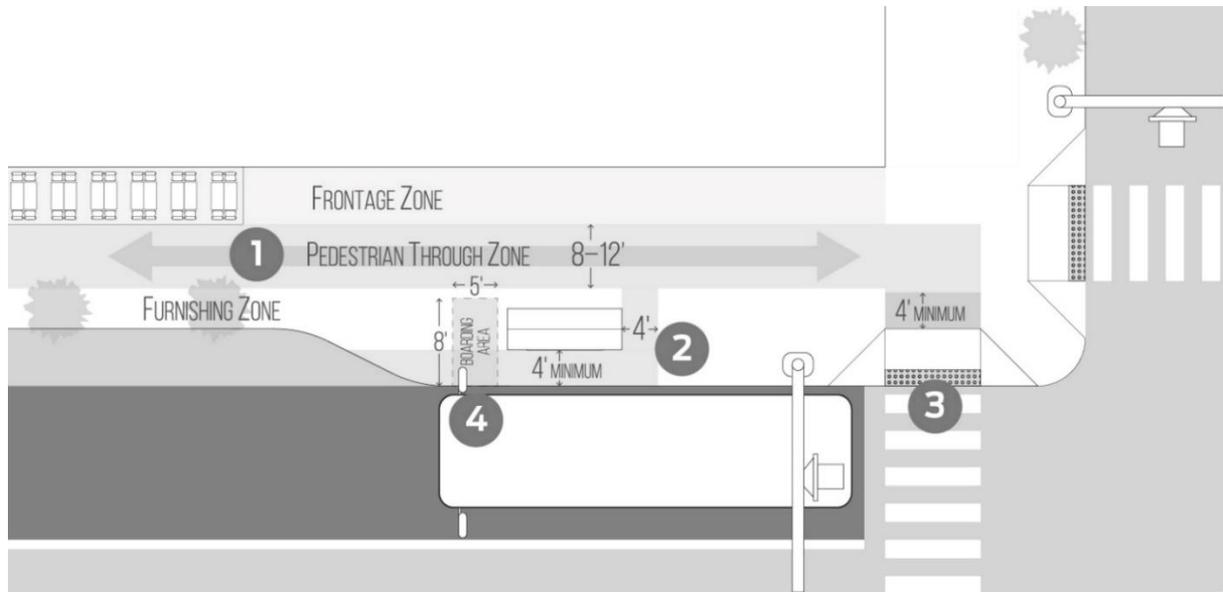
### Pull-out Stops

Desired Minimum Stop/Platform Length by Vehicle Type (feet)*				
Stop Location	40' Bus	60' Bus	2 x 40' Bus	2x 60' Bus
Near-side	100	120	145	185
Far-side	80	100	125	165
Far-side (right turn)	140	160	140	230
Mid-block	120	145	185	210

\*Bus stop/platform lengths also represent the distances where 'No Parking' restrictions should be enforced in the street.

#### NOTES:

- 1 Locate stop zone with at least 10 feet of clear distance from crosswalk or curb return. Measure to transit stop pole at near-side, or rear of transit vehicle at far-side.
- 2 White diagonal hatch line markings may be striped to delineate the entry and exit tapers and discourage blocking. Provide 5-10 feet of distance between each additional transit vehicle expected to be dwelling at the platform consistently throughout the day.



Accessible Paths and Slopes

Desired Minimum Stop/Platform Length by Vehicle Type (feet)*				
Stop Location	40' Bus	60' Bus	2 x 40' Bus	2x 60' Bus
Near-side	35	55	80	115
Far-side	45	65	90	130
Mid-block	35	55	80	115

\*Bus stop/platform lengths also represent the distances where 'No Parking' restrictions should be enforced in the street.

NOTES:

- 1 For pedestrian travel paths, a clear width of 8-12 feet is preferred where transit is present, and may be wider based on pedestrian and transit rider capacity. Pinch-points less than 6 feet wide create capacity and comfort issues and should be avoided. A 4-foot clear width is acceptable around some design elements like shelters and seating, and may be used especially where access is helpful but not essential, such as between a curb and the back of a building-facing shelter. Shelters and seating should be positioned so that all riders can comfortably wait, board, and alight without obstruction.
- 2 5 feet is the minimum curb length for a receiving facility at each boarding door (ADA Std. §810.2.2), design platforms to be continuous through all doors, and consider additional elements to improve passenger comfort
- 3 Provide 5-10 feet of distance between each additional transit vehicle expected to be dwelling at the platform consistently throughout the day.
- 4 Design boarding bulbs and islands to accommodate proper drainage and sweeping; tight radii may require maintenance agreements to ensure bulbs are properly cleaned and maintained.

## Appendix B – Bus Stop Construction Standards & Design Specifications

As of 2018 UTA will consider the 2015 circular from the FTA the primary authority yet the 2015 circular does not void the guidelines in place in the 2010 DOJ and the 2006 FTA ADA guidelines. These guidelines will be supplemental and referenced within this document.

<https://www.transit.dot.gov/regulations-and-guidance/fta-circulars/fta-circulars>

ADA requirements state the landing zone must be 5' x 8' (See Figure 1) and less than 2% sloping toward the road. UTA standards have increased the size of the required landing zone to 6' x 8' to accommodate a stop flag. The stop flag will be installed on the far side of the landing zone 1.5 feet away from the curb. See SHEET #1 (Plan View). Slope of all concrete flatwork shall not exceed 2%. Concrete flatwork should drain toward the roadway where possible.

### *Landing Zone and Accessible Route Requirement*

UTA standards require an accessible route complying with Chapter 4 of the 2010 ADA guidelines connecting the bus shelter, the landing zone and the sidewalk (See Figure 1). If a sidewalk is not present sidewalk should be constructed. If sidewalk construction will exceed 20% of the cost of the bus stop, alternative construction options will be considered. A possible alternative could include a curb ramp into the roadway but the location's specific needs must be analyzed by UTA's Capital Development and Civil Rights Departments.

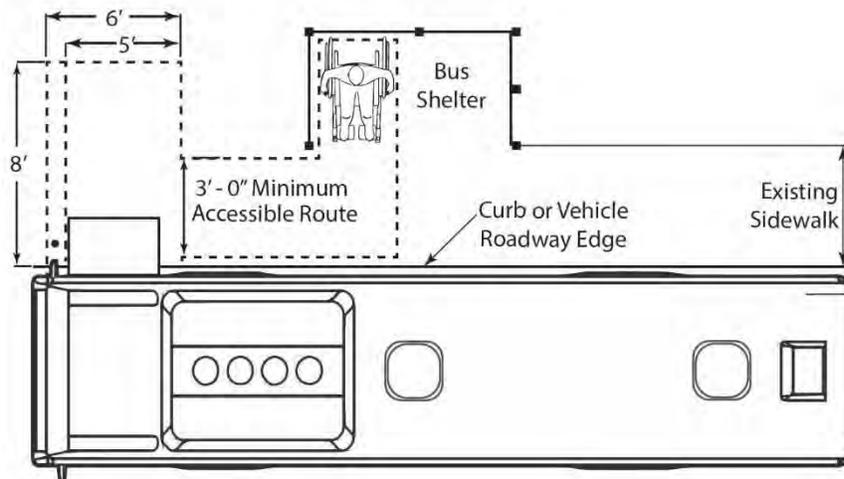
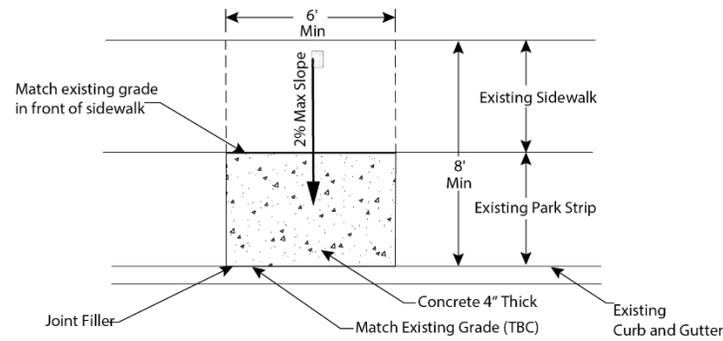
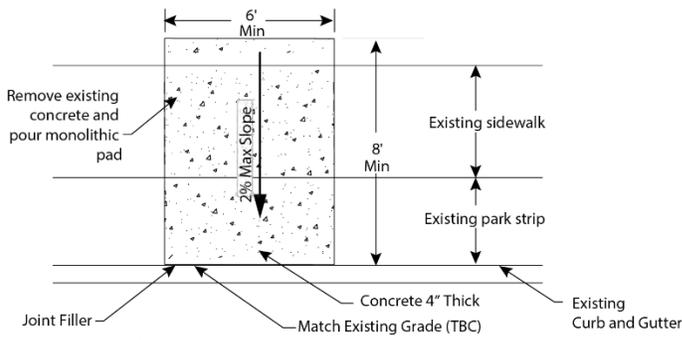


FIGURE 3 - ACCESSIBLE ROUTE DIAGRAM

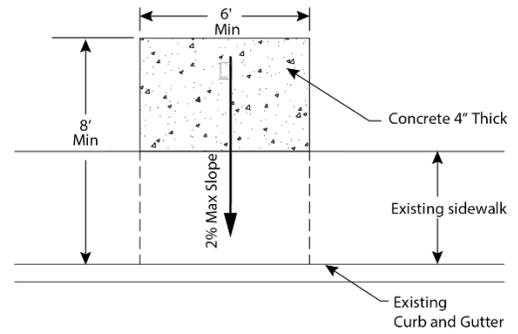
1. Bus stops require a Landing Zone complying with 810 of the 2010 ADA guidelines. The landing zone must be 6' x 8' as indicated in Figure 2 and less than 2% sloping toward the road. See Figure 4 below.
2. This Landing Zone must be connected to the sidewalk and shelter with an accessible route complying with 402 of the 2010 ADA guidelines.
  - a. The accessible route must be at least 3 feet wide and have a slope less than 2% in any direction.
  - i. If 2% cannot be achieved, an ADA ramp may be employed to connect the landing zone and the sidewalk. The ramp must comply with Fig. 5 below. The ramp may have a maximum slope of 5% unless handrails are included increasing the maximum slope to 8.3% (or 1:12).



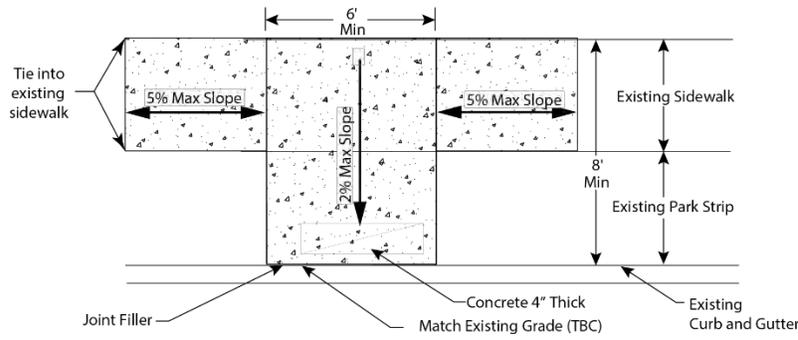
**ADA Pad Layout 1**



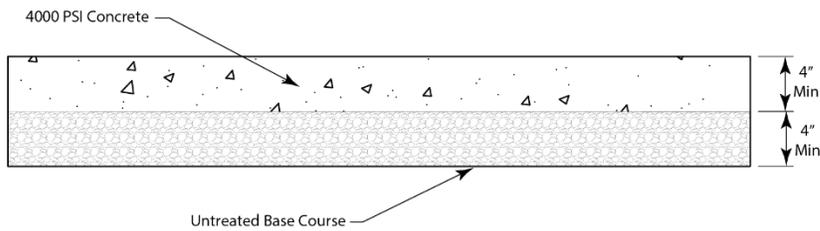
**ADA Pad Layout 2**



**ADA Pad Layout 3**



**ADA Pad Layout 4**



**Typical Cross Section**

FIGURE 4 - ADA PAD CONFIGURATIONS

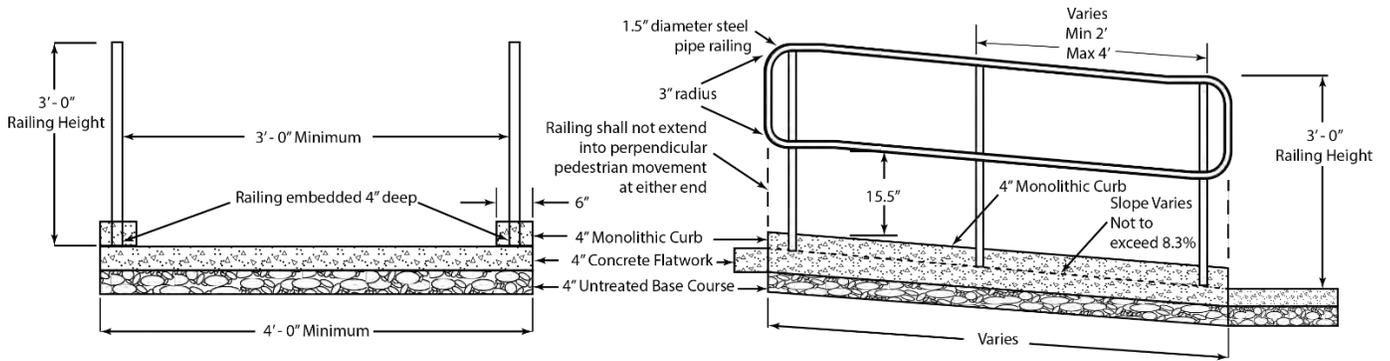


FIGURE 5 - ADA RAMP DESIGN

- ii. If the length of the ramp exceeds 10 feet, stairs must be installed concurrent with the ramp in accordance with the detail in Figure 6.
  - iii. If the length of the ramp reaches 30 feet a 5 foot landing must be installed where the slope is reduced to below 2% in the direction of the ramp. (Reconsideration of the ramp route or stop location may be appropriate.)
3. Amenities shall be installed with 1/2" clearance between appurtenances.

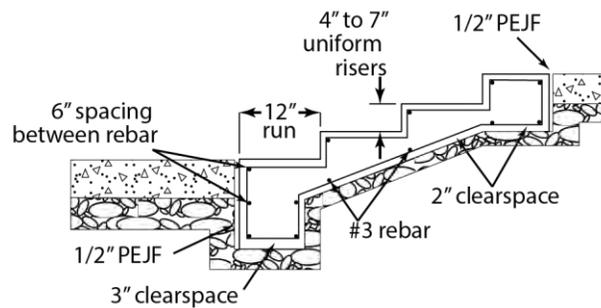


FIGURE 5 - STAIR DETAIL

**Hardware**

1. Bus Stop Pole Specifications
  - a. Poles are NEX® 2.0" x 2.0", Octagonal (see Figure 6)
  - b. 12' length
  - c. Galvanized Steel
  - d. Powder Coat Color BL01



FIGURE 6- NEX® OCTAGONAL POLE

2. Bus Stop Pole Mount Installations\*

- a. Pole mounts are a NEX® flange plate welded to a 2 1/4" X 6" 12 ga. non-perforated square tube. (See Fig. 8)
- b. Powder coat BLO1 (BLUE)
- c. The mount must remain in the "mount alley"
- d. The mount alley consists of the 2 foot corridor perpendicular to the roadway on the farside of the landing zone. (See Fig. 9)
- e. Mount the bus stop pole 2'-0" feet from the Top Back of Curb. The edge of the mount should be 6 inches from the far edge of the concrete in the "mount alley". (See Fig. 9)
- f. Place the pole inside the pole mount using manufacturer recommended tools and instructions (See Figure 8)

\* Performed by UTA Facilities Road Crew

Mounting Hardware Type	Application
Simpson Strong-Tie THD37400H4SS Titen HD Concrete Screw 3/8" x 4" 304SS <ul style="list-style-type: none"> <li>• Stainless steel with carbon-steel threads</li> <li>• 304SS, 50ct THD37400H4SS8</li> </ul>	New installations of bus stops benches and poles
Simpson Strong-Tie THD50400H4SS Titen HD Concrete Screw Anchor 1/2 x 4" <ul style="list-style-type: none"> <li>• Stainless steel with carbon-steel threads</li> <li>• 304SS, 20ct THD50400H4SS6</li> </ul>	Removal and replacement of bus stop, bench or pole
1/2" Galvanized Bonded Sealing Washer (Fastenal Part No. 33158) <ul style="list-style-type: none"> <li>• 1/2" Galvanized Steel- EPMD</li> <li>• Thickness 0.098" -0.122"</li> </ul>	

TABLE 5 - MOUNTING HARDWARE SPECIFICATIONS

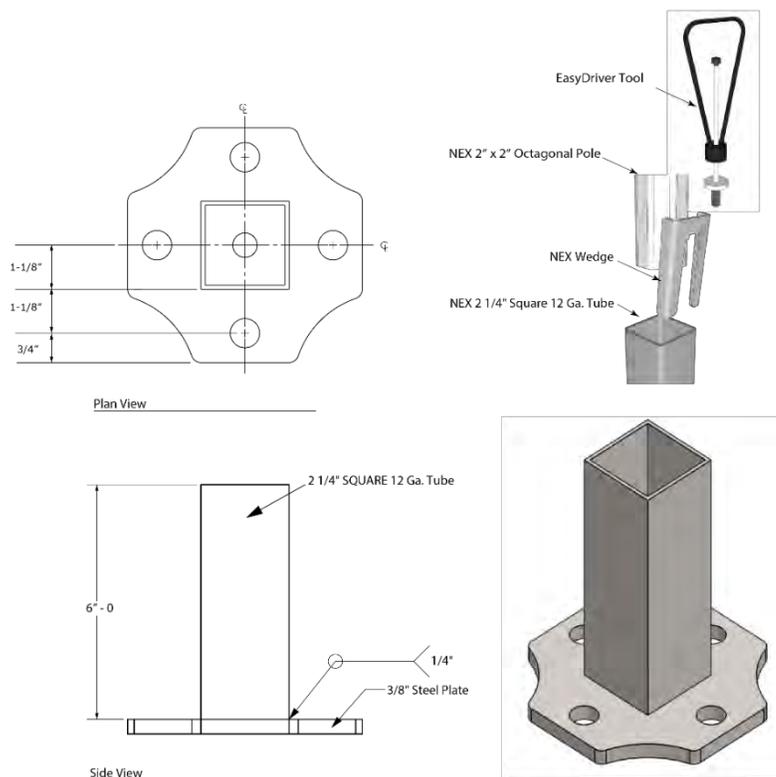


FIGURE 8 - BASE FLANGE FLAG MOUNT (TYPICAL)



*Bus Stop Amenity Specifications (Typical)*

*Materials (UTA Minimum Standard - Traditional Brasco Slimline Series Shelters - See Figure 12)*

- Brasco Slimline Series with standing seam hip roof with fascia and gutter system
- Dark bronze anodized aluminum structure and canopy
- 1/4" clear tempered safety glass
- Partial length aluminum bench with backrest

*Post Anchors (Traditional Aluminum Shelters)*

See Figure 10.

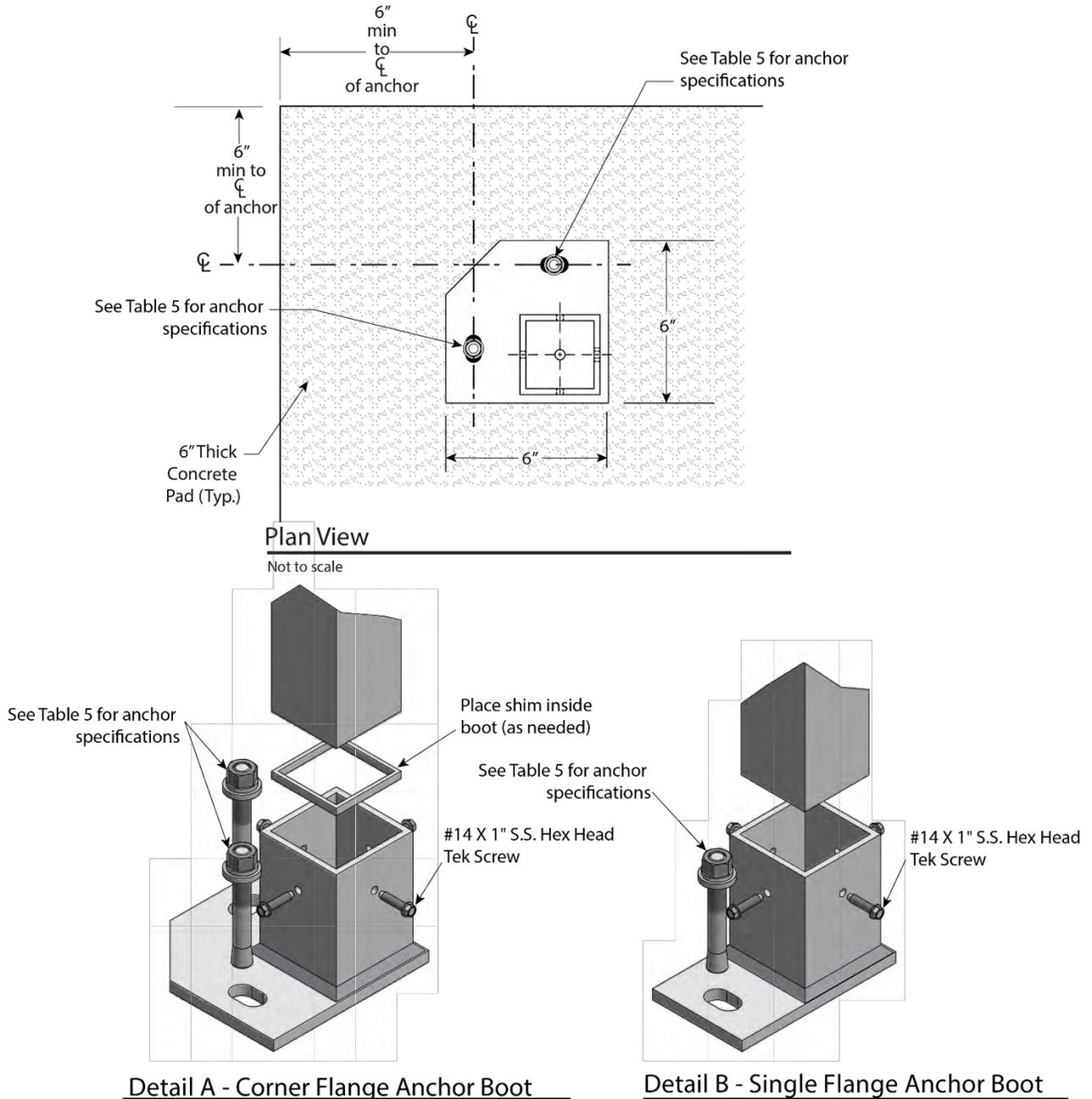


FIGURE 10 - TRADITIONAL SHELTER POST ANCHORS

*Custom Shelters (Betterment for all Core Route designated stops – Brasco Eclipse Series Shelter – See Figure 13)*

- White Aluminum Powder Coat Painted Finish - RAL 9006
- 3/8" Clear Laminated Safety Glass with Stainless Steel
- 1/8" aluminum flat Roof with

*Post Anchors (Custom Shelters)*

See Figure 11.

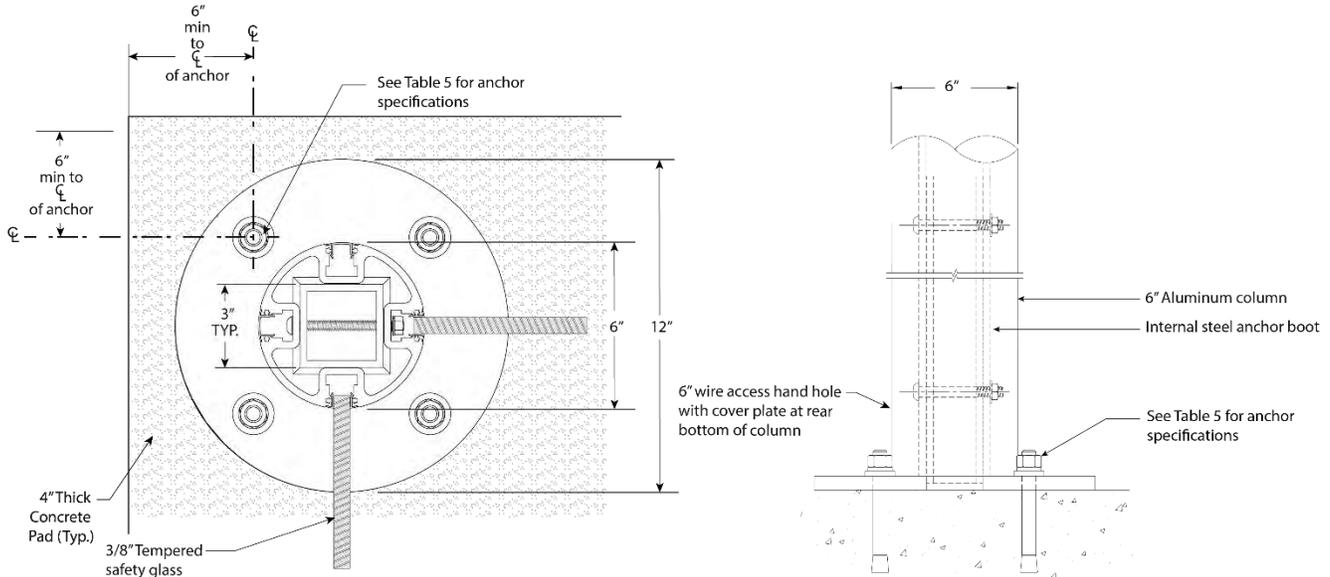


FIGURE 11 - CUSTOM SHELTER POST ANCHORS

*Lighting (Betterment for Level V Stop Amenities and above)*

- UTA prefers to install internally lit shelters at all new or refurbished Level V, Level VI and Level VII bus stops
- Standard, commercial, outdoor lighting fixtures should be used at bus stops because they are easier and less costly to maintain than uniquely designed or custom fixtures

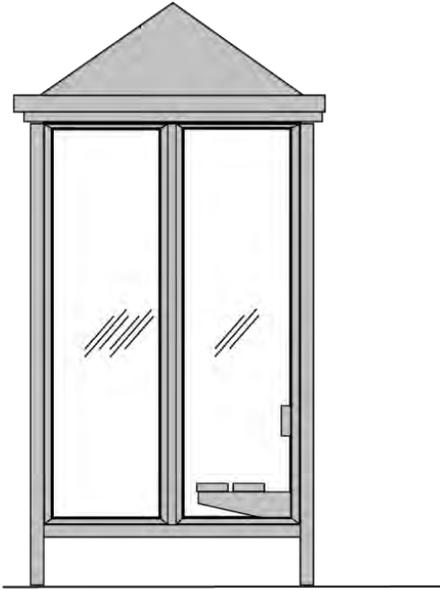
*Artwork (For all Stop Levels)*

- Artwork at any UTA bus stop will be managed through the Art in Transit program which is administered by the Community Engagement Department.

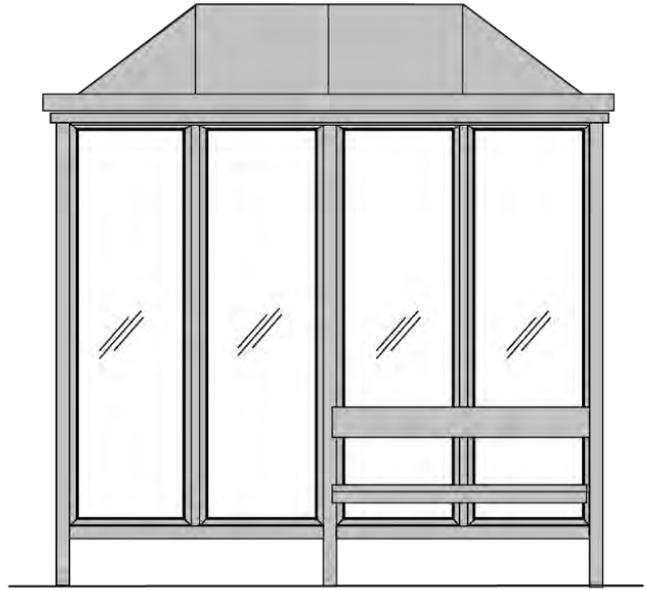
*Benches (Betterment for Level II Stop Amenities and above)*

- Benches should be provided in all shelters
- A single park bench is provided at all Level II bus stops.
- Additional benches are placed outside Level III through Level VII shelters
- Benches may be installed at stops where a shelter is warranted but will not fit due to limited right-of-way

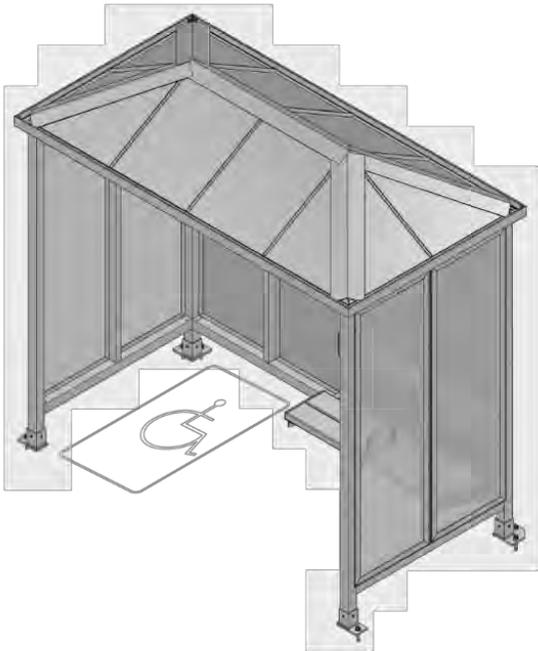
Typical Slimline Series Shelter



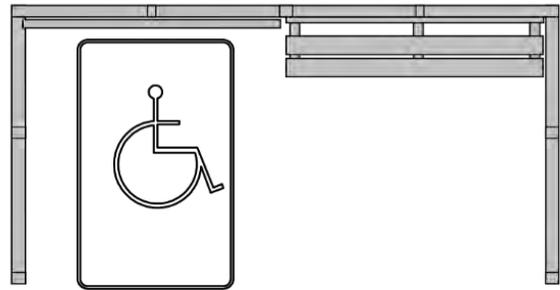
**Side Elevation**  
Not to Scale



**Front Elevation**  
Not to Scale



**Typical Slimline Series Shelter**



**Plan View**  
Not to Scale

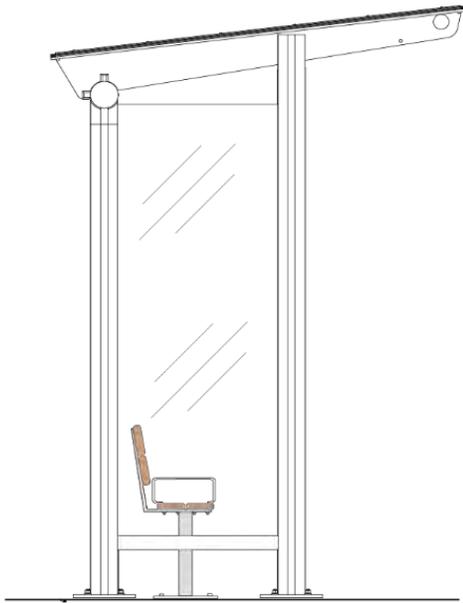


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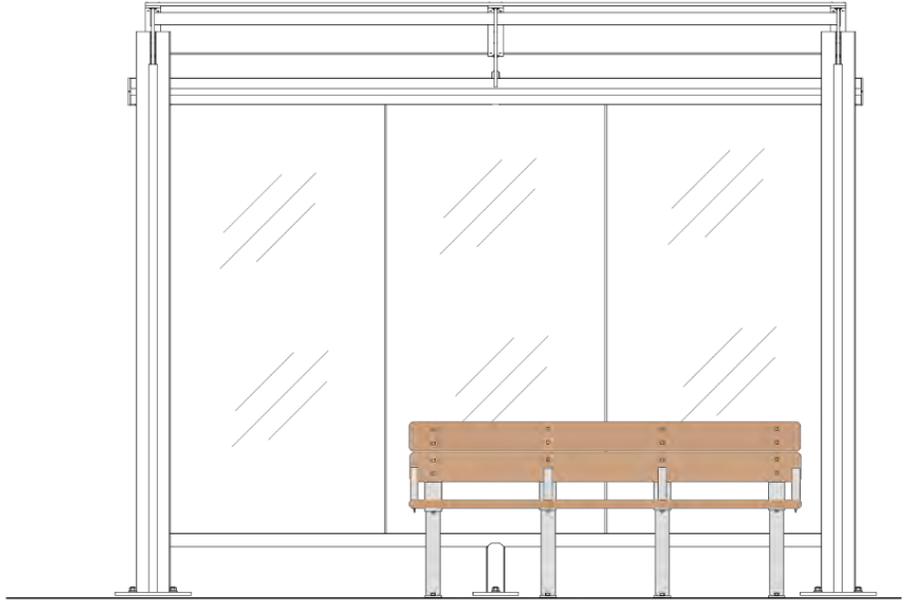
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FIGURE 12 - TYPICAL SLIMLINE SERIES SHELTER

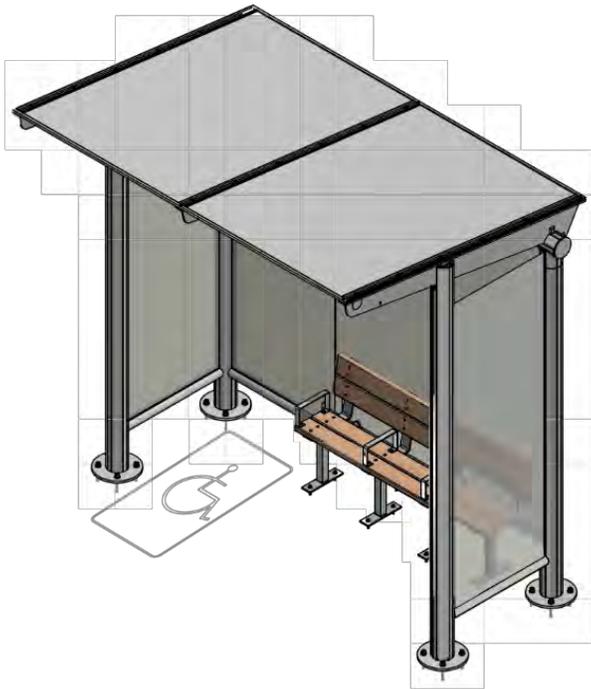
Typical Eclipse Cantilever Series Shelter



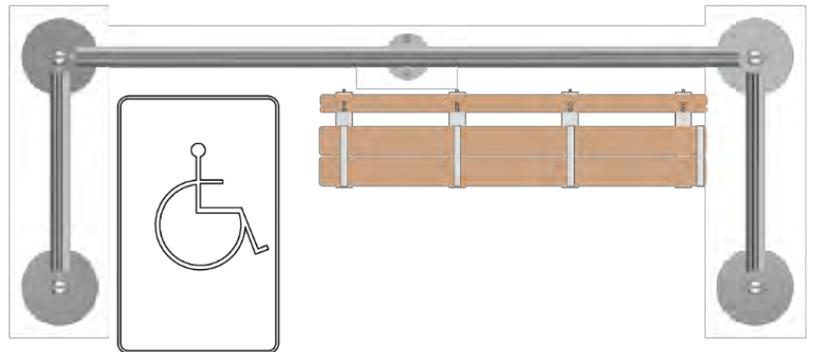
Side Elevation



Front Elevation



Typical Eclipse Cantilever Series Shelter



Plan View

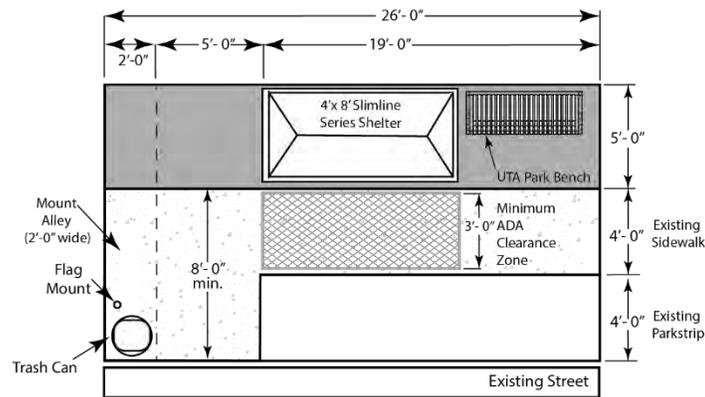


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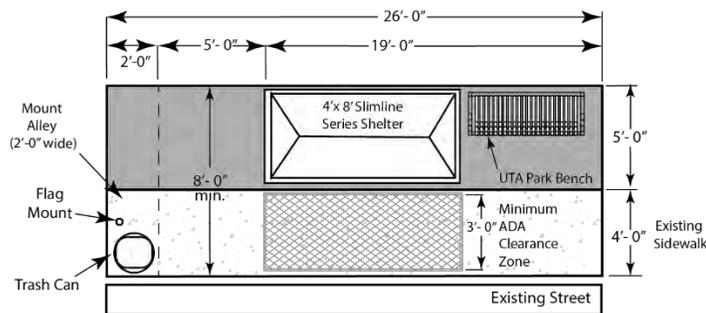
FIGURE 13 - TYPICAL BRASCO ECLIPSE CANTILEVER SHELTER

Bus Pad Configurations (Typical)



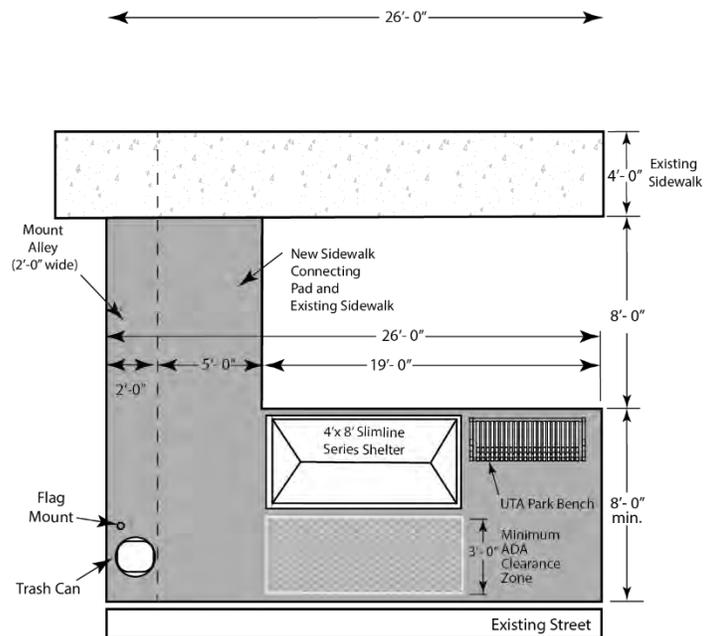
**Existing 4'-0" Parkstrip Adjacent to Curb and Street**

Not to Scale



**Existing 4'-0" Sidewalk Adjacent to Curb and Street**

Not to Scale

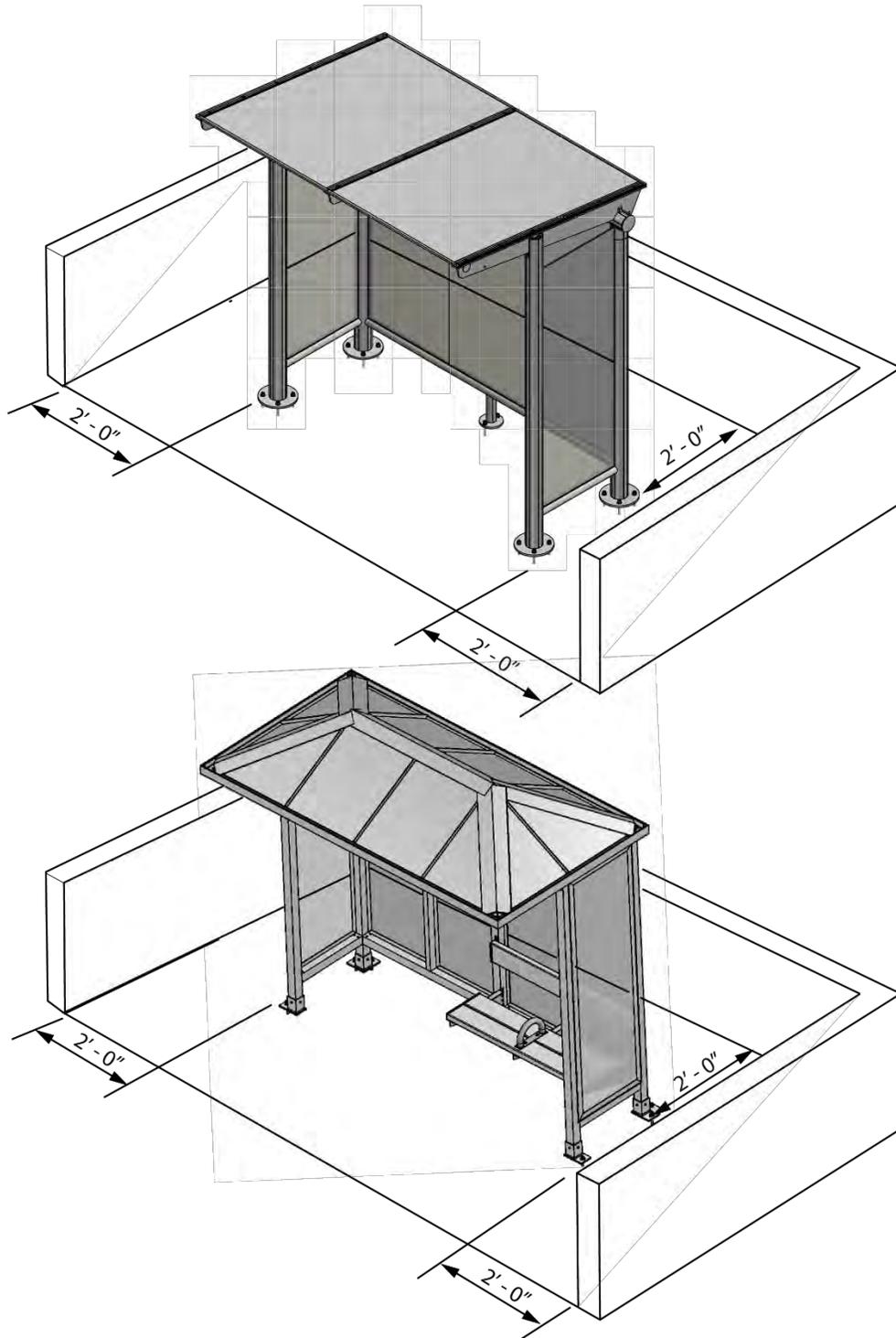


**Existing 16'-0" Parkstrip Adjacent to Curb and Street**

Not to Scale

*Shelters with Retaining Walls*

When a shelter is placed on a pad with a retaining wall, there should be a minimum of 2'-0" from the outside edge of the anchor flange of the shelter to the edge of the retaining wall. This is to allow for access for cleaning and repairs.



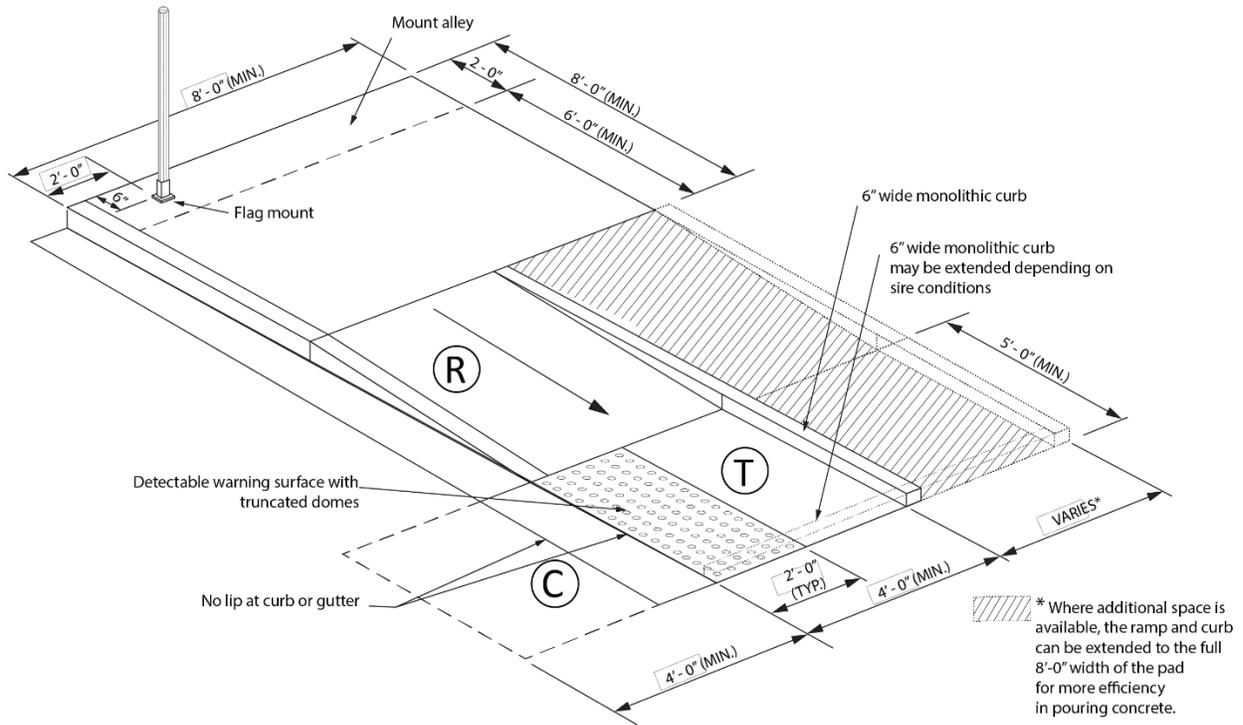
### *Carlisle Bus Pad Types (Typical)*

---

When there is no physical connection to an adjacent sidewalk, a bus stop pad may be installed and connected directly to the adjacent street. While this is not an ideal situation, it does give UTA options for installing a bus stop where one may be warranted but no sidewalk network exists. These stops may be designed with and without amenities.

## Carlisle Bus Stop - without Amenities (Typical)

Not to scale

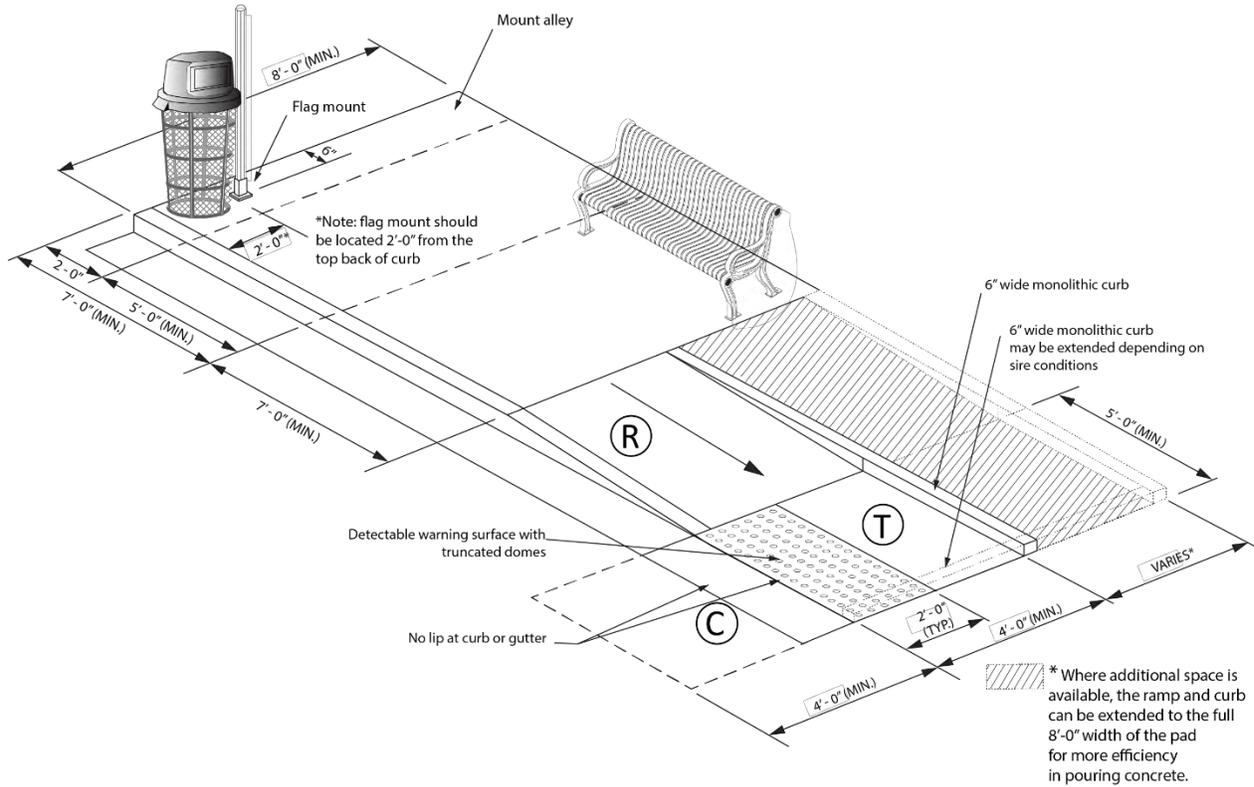


**SLOPE TABLE (UDOT 2020 STANDARDS)**

		MAX. RUNNING SLOPE	MAX. CROSS SLOPE	MIN. DIMENSIONS
(S)	SIDEWALK	ROAD GRADE (IN ROW) 5.0% OUT OF ROW	2%	4' WIDE
(T)	TURNING SPACE	2%	2%	4' x 5' WIDE
(R)	RAMP	8.30%	2%	4' WIDE
(C)	CLEAR SPACE	5%	2%	4' x 4' WIDE

## Carlisle Bus Stop - with Amenities (Typical)

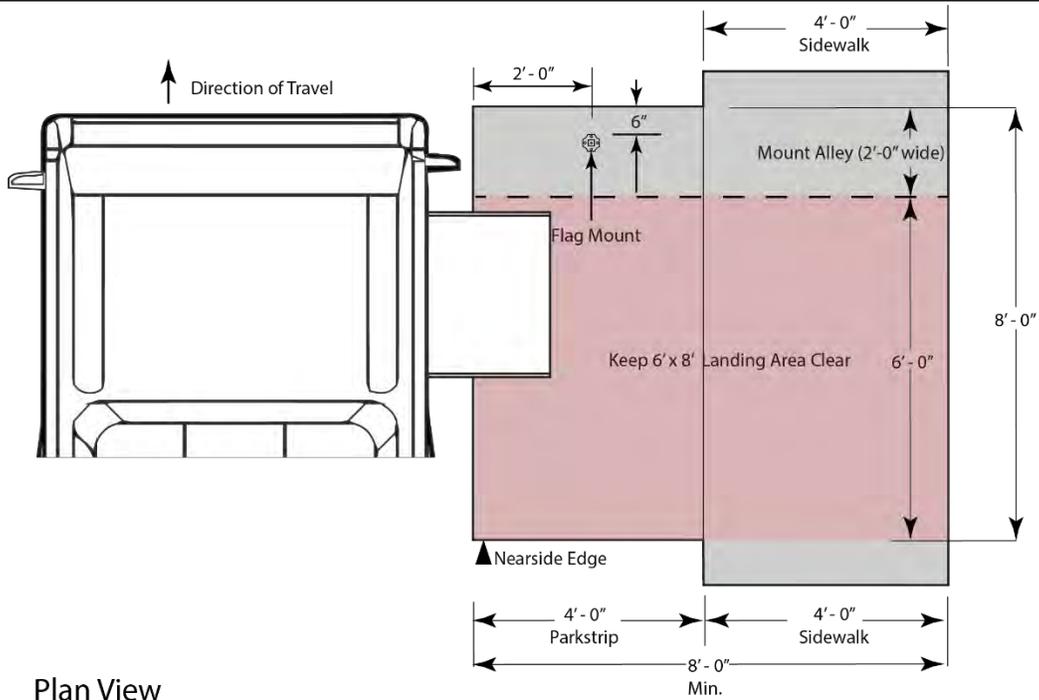
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**SLOPE TABLE (UDOT 2020 STANDARDS)**

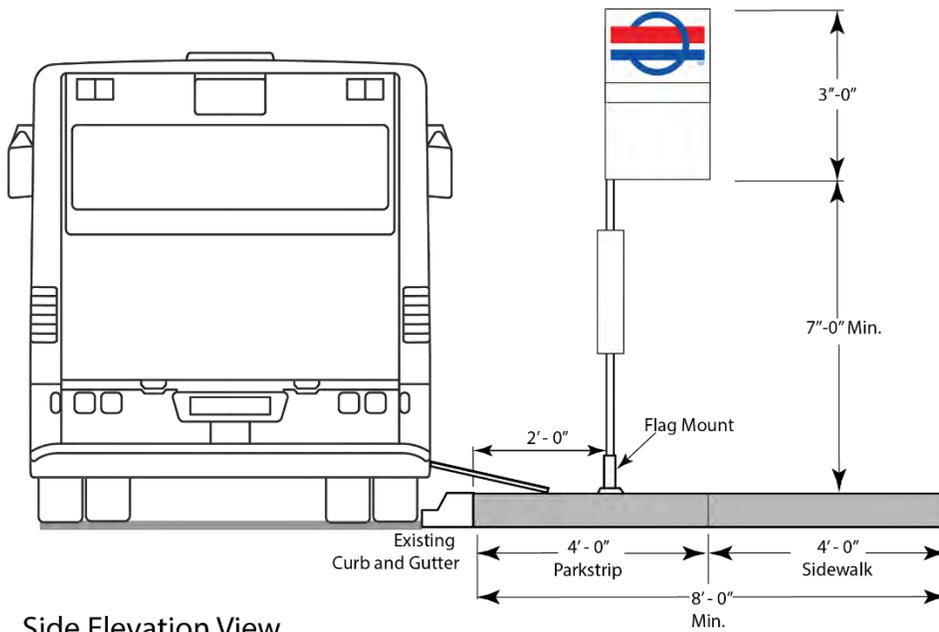
		MAX. RUNNING SLOPE	MAX. CROSS SLOPE	MIN. DIMENSIONS
(S)	SIDEWALK	ROAD GRADE (IN ROW) 5.0% OUT OF ROW	2%	4' WIDE
(T)	TURNING SPACE	2%	2%	4' x 5' WIDE
(R)	RAMP	8.30%	2%	4' WIDE
(C)	CLEAR SPACE	5%	2%	4' x 4' WIDE

### Level I Standard Bus Stop (Typical)



**Plan View**

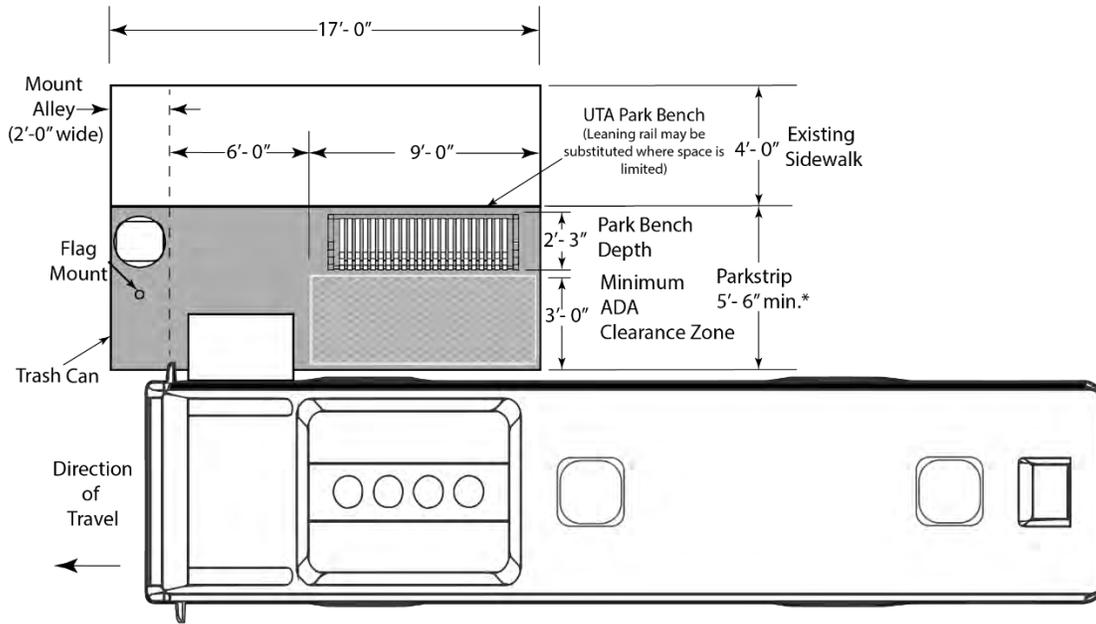
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**Side Elevation View**

Not to scale

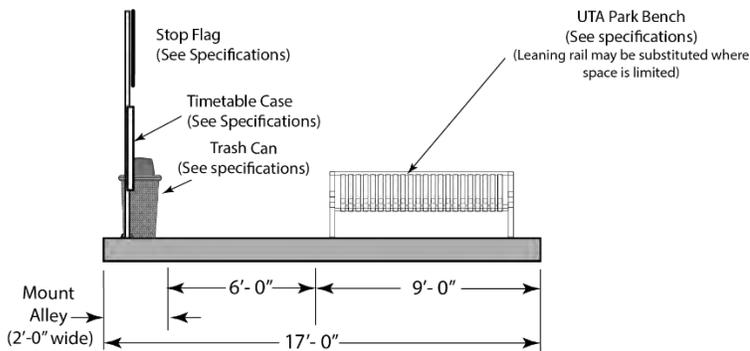
## Level II Standard Bus Stop (Typical)\*



### Plan View

Not to scale

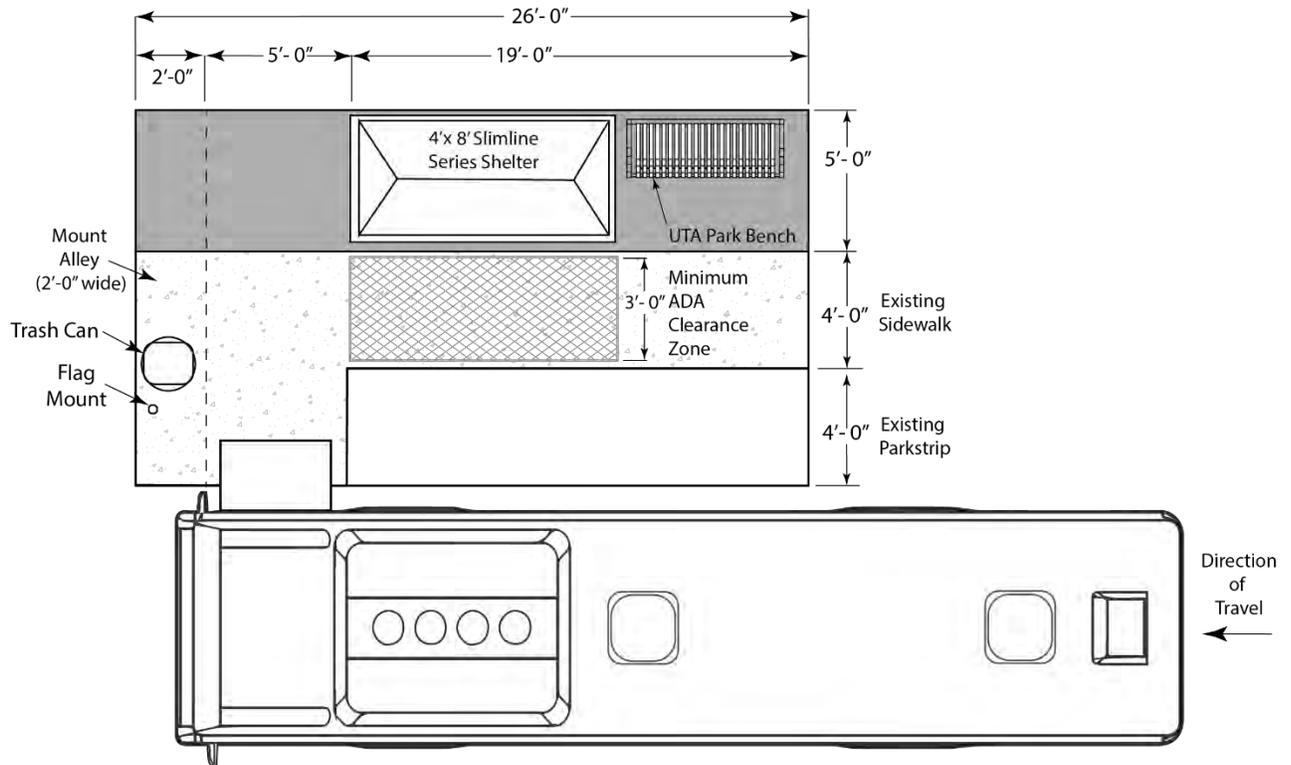
\*This design is for roads with a 30 MPH speed limit and below. For roads with higher speeds, the park strip must be a minimum of 6'-0" deep with a minimum 4'-0" of clearance from the face of curb to the front edge of the bench or leaning rail.



### Front Elevation View

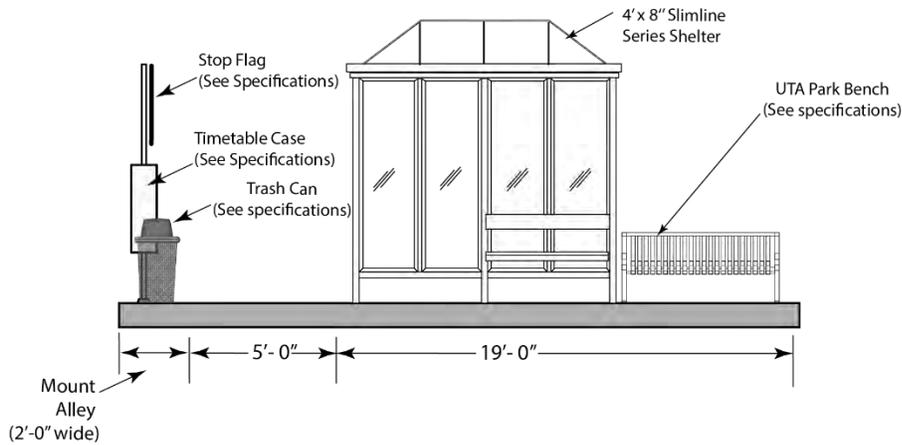
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## Level III Standard Bus Stop (Typical)



### Plan View

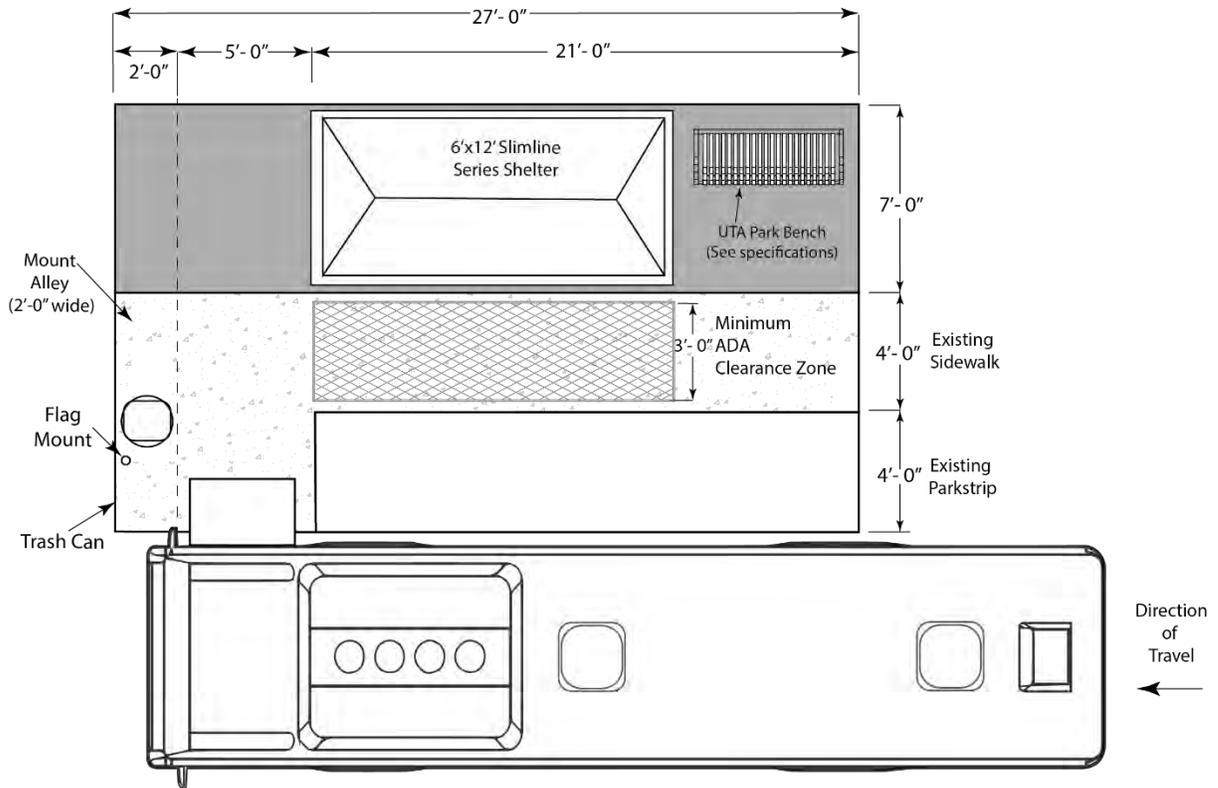
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### Front Elevation View

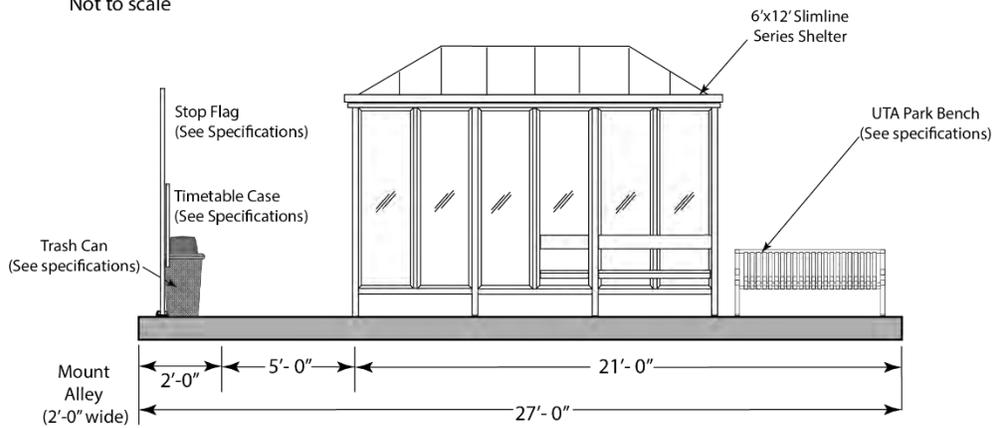
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### Level IV Standard Bus Stop (Typical)



### Plan View

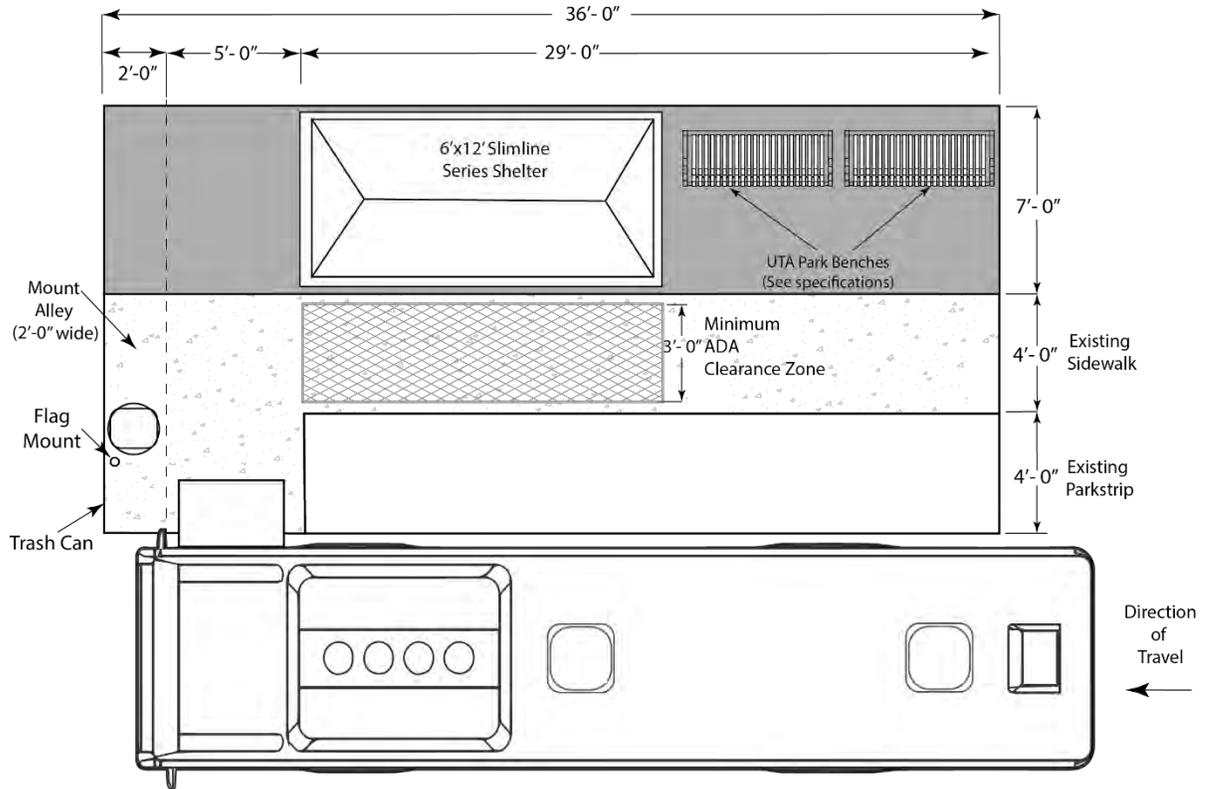
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### Front Elevation View

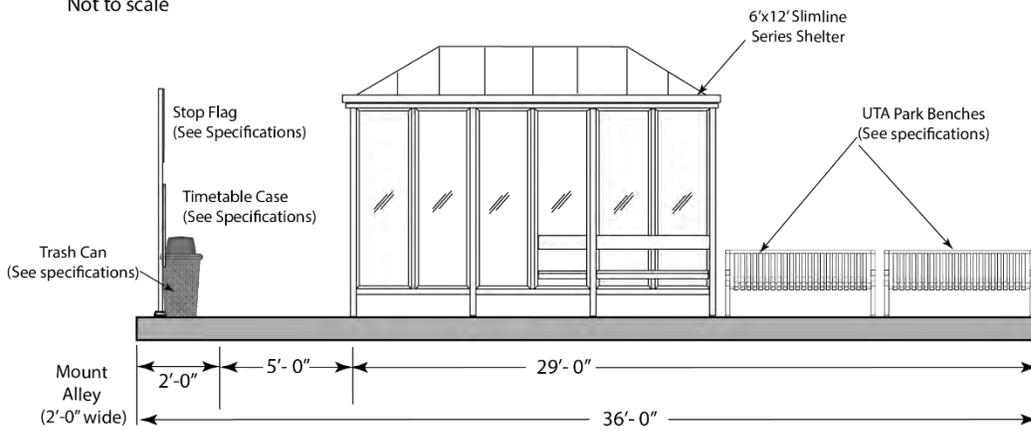
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## Level V Standard Bus Stop (Typical)



### Plan View

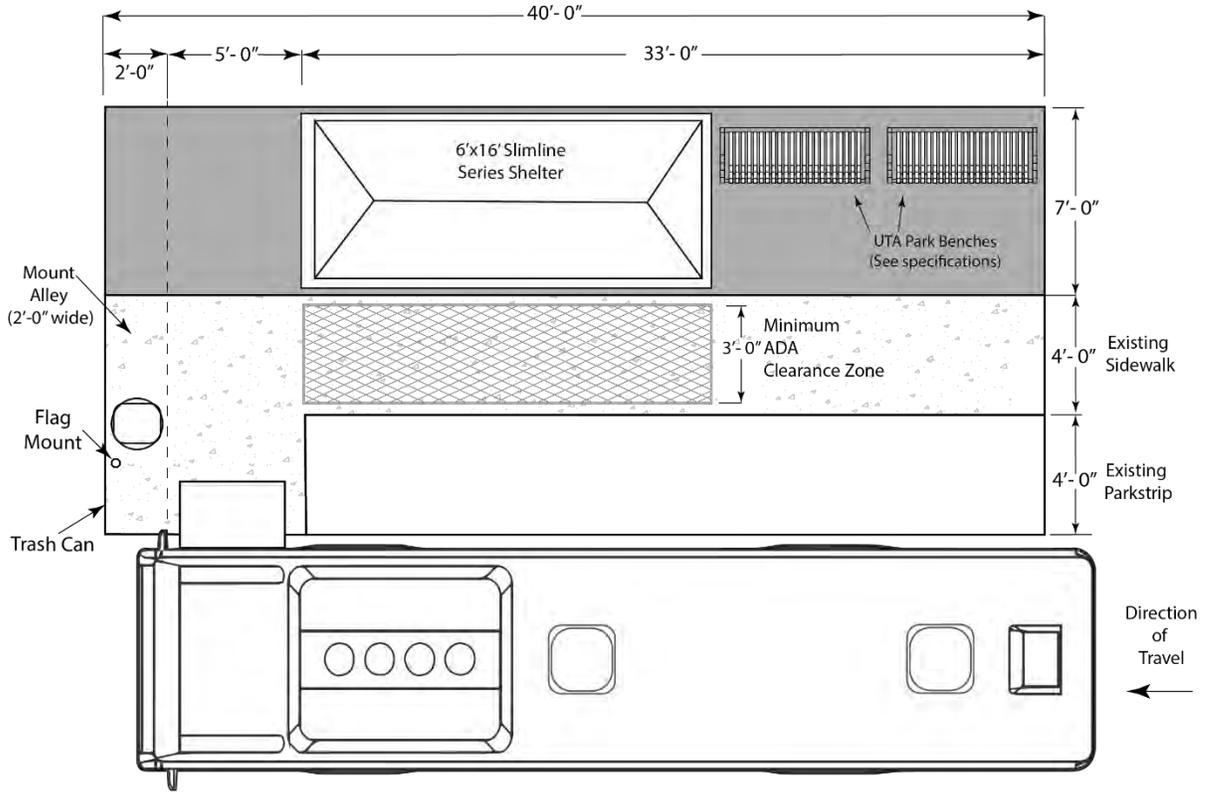
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### Front Elevation View

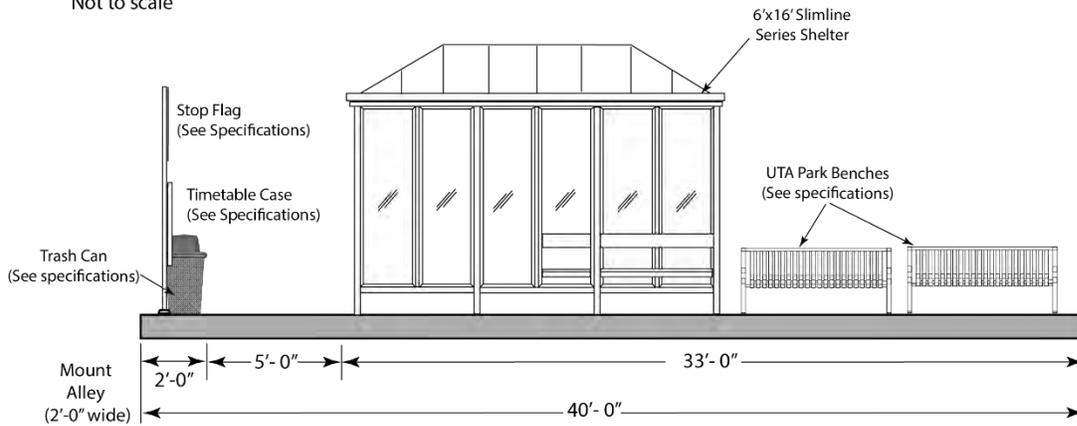
Not to scale

### Level VI Standard Bus Stop (Typical)



### Plan View

Not to scale



### Front Elevation View

Not to scale

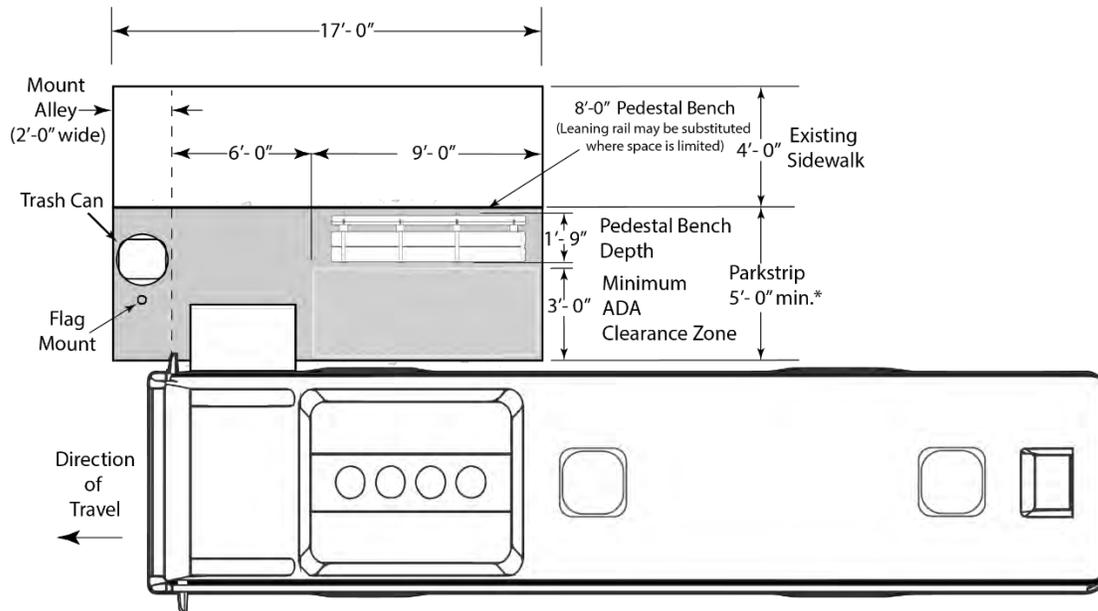


## Eclipse Style Series Bus Stops

### NOTES

- UTA has chosen the Brasco Eclipse Style series for custom shelter applications
- Shelters are available in typical depths of 5' and 7' and typical widths of 8', 10', 12', 14', 16', 20'
- Shelters may be customized with features such as interior lighting, branded glass panels and digital real-time signage

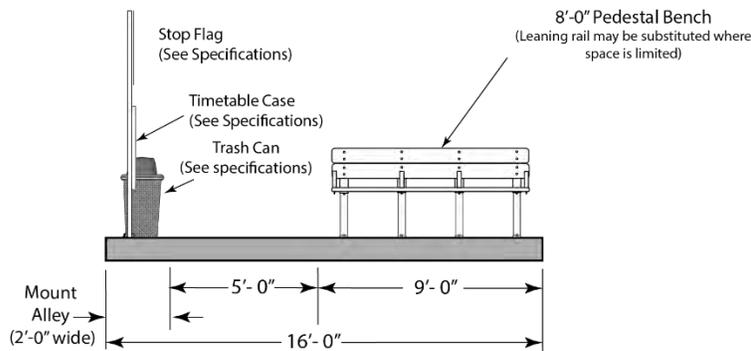
## Level II Eclipse Style Bus Stop (Typical)\*



### Plan View

Not to scale

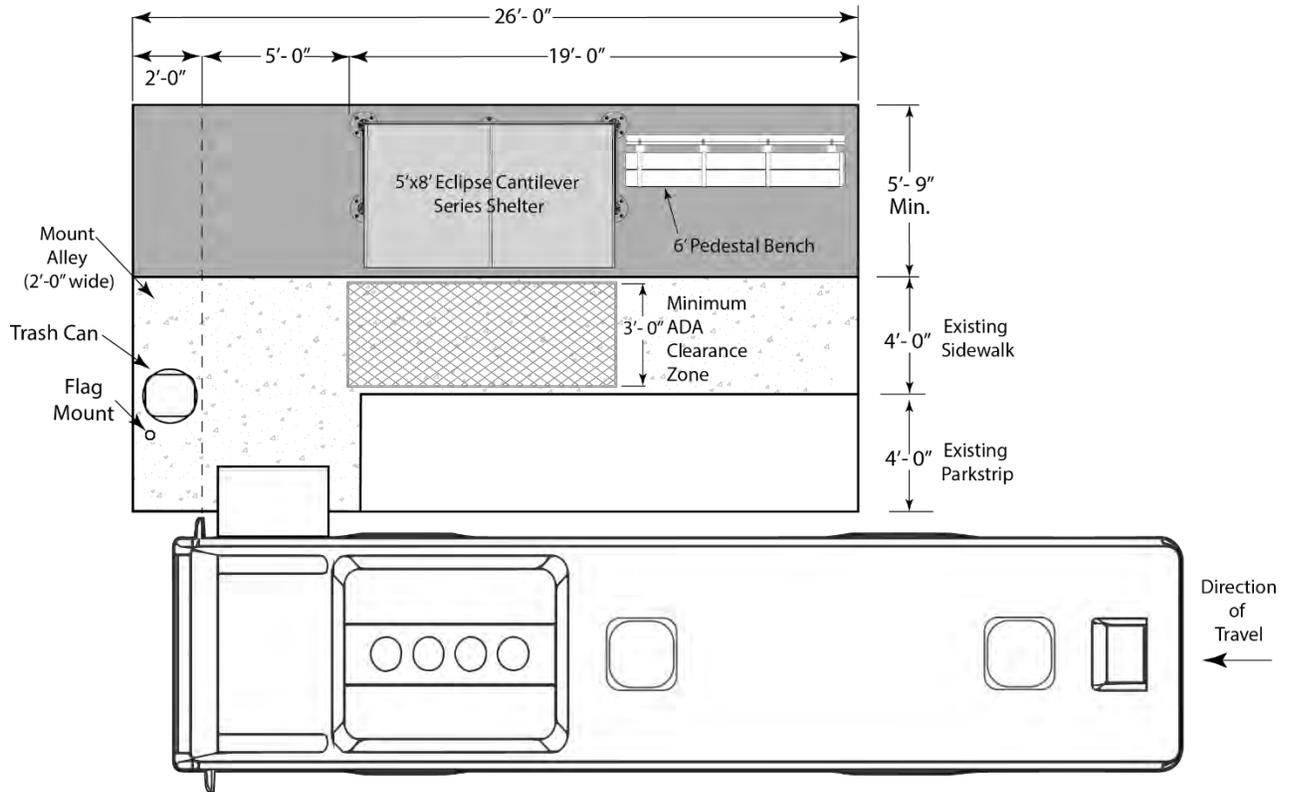
\*This design is for roads with a 30 MPH speed limit and below. For roads with higher speeds, the park strip must be a minimum of 6'-0" deep with a minimum 4'-0" of clearance from the face of curb to the front edge of the bench or leaning rail.



### Front Elevation View

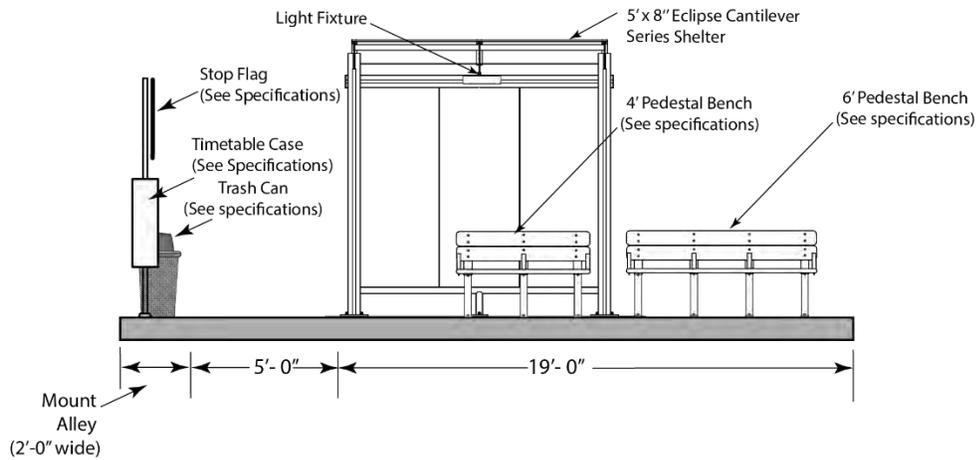
Not to scale

### Level III Eclipse Bus Stop (Typical)



### Plan View

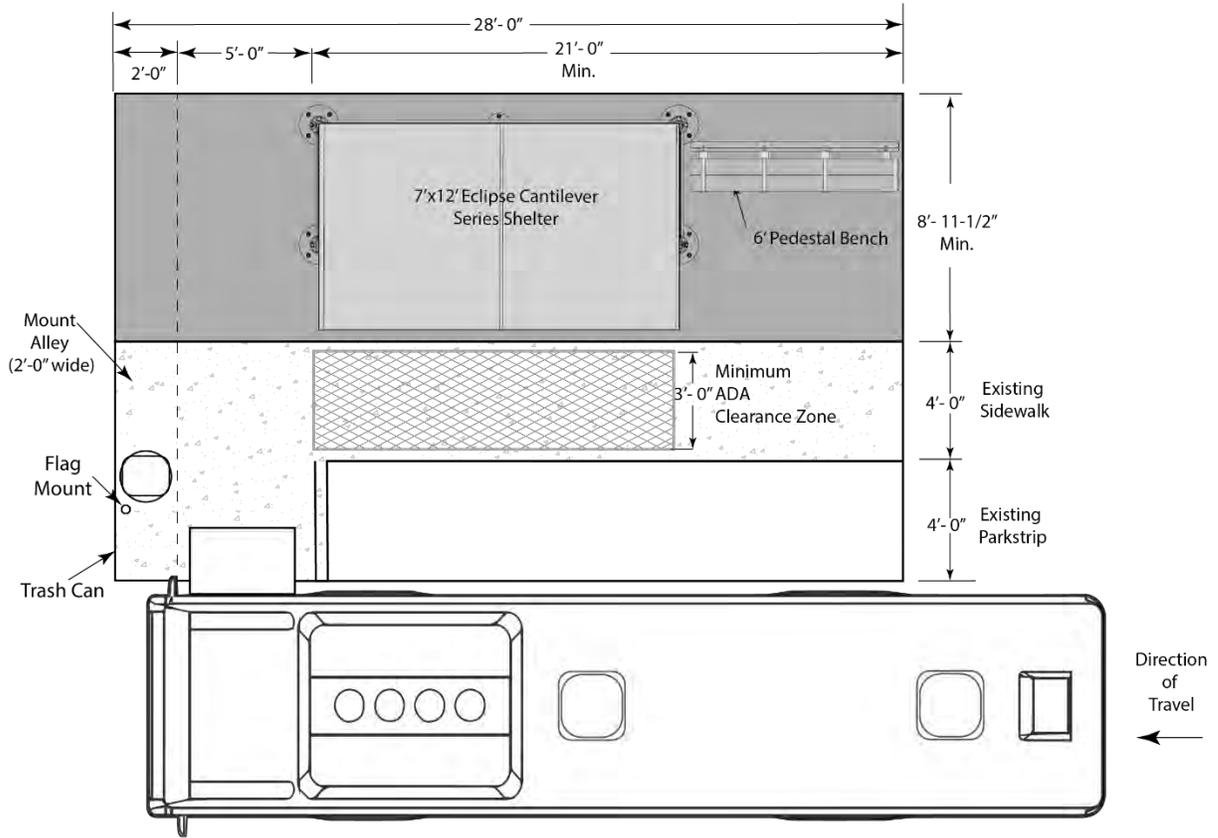
Not to scale



### Front Elevation View

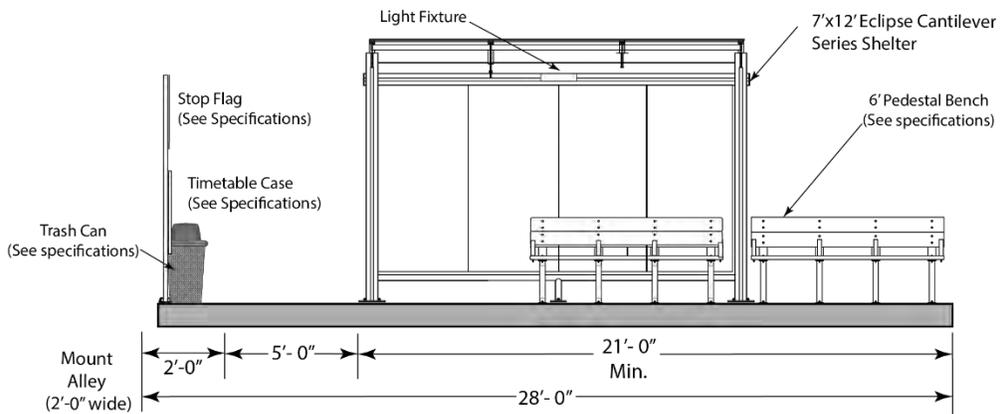
Not to scale

### Level IV Eclipse Cantilever Style Bus Stop - 7x12 (Typical)



### Plan View

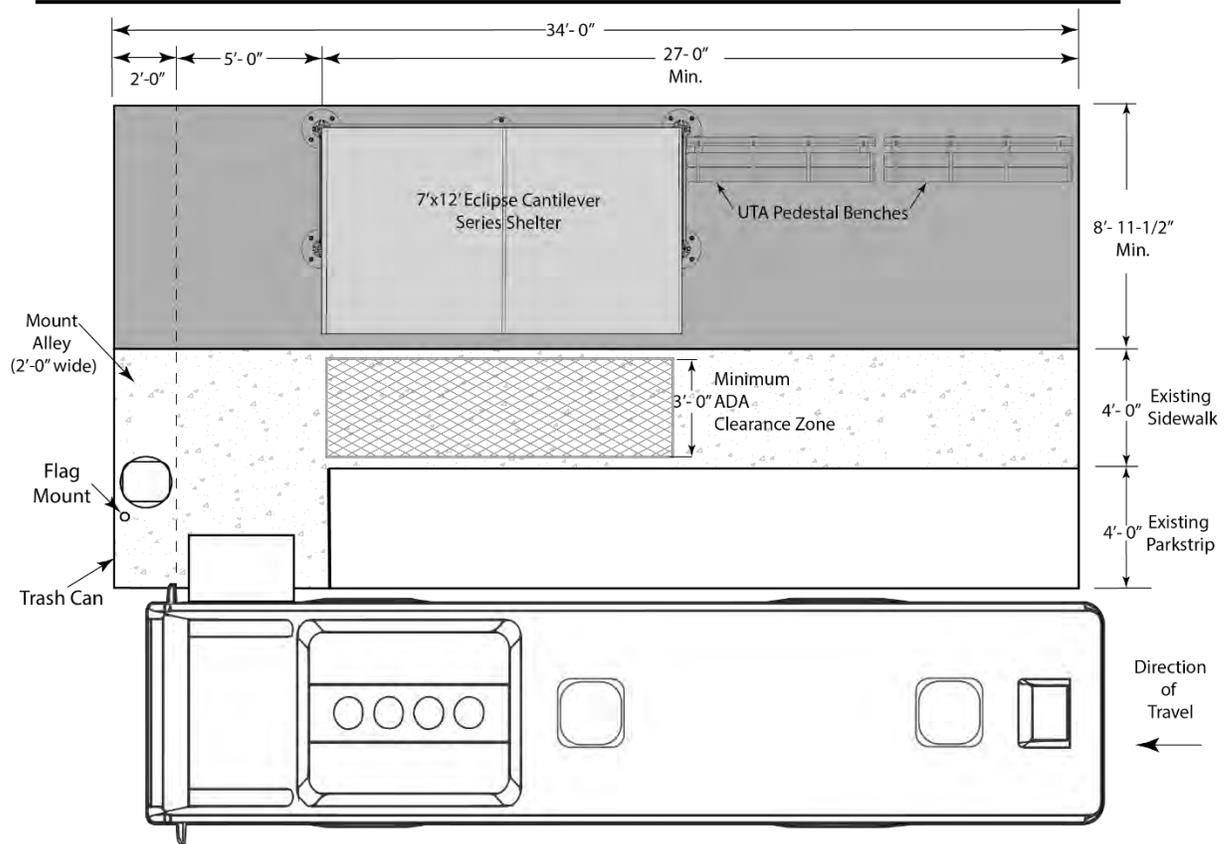
Not to scale



### Front Elevation View

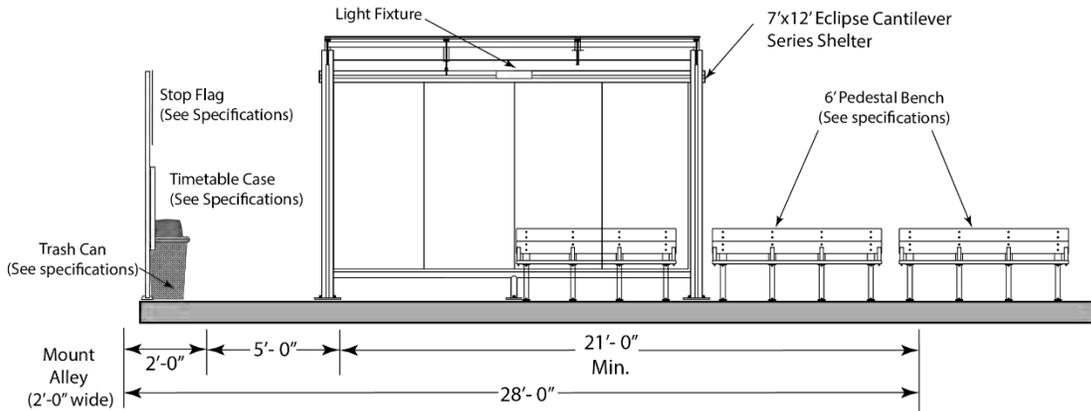
Not to scale

### Level V Eclipse Cantilever Style Bus Stop - 7x12 (Typical)



### Plan View

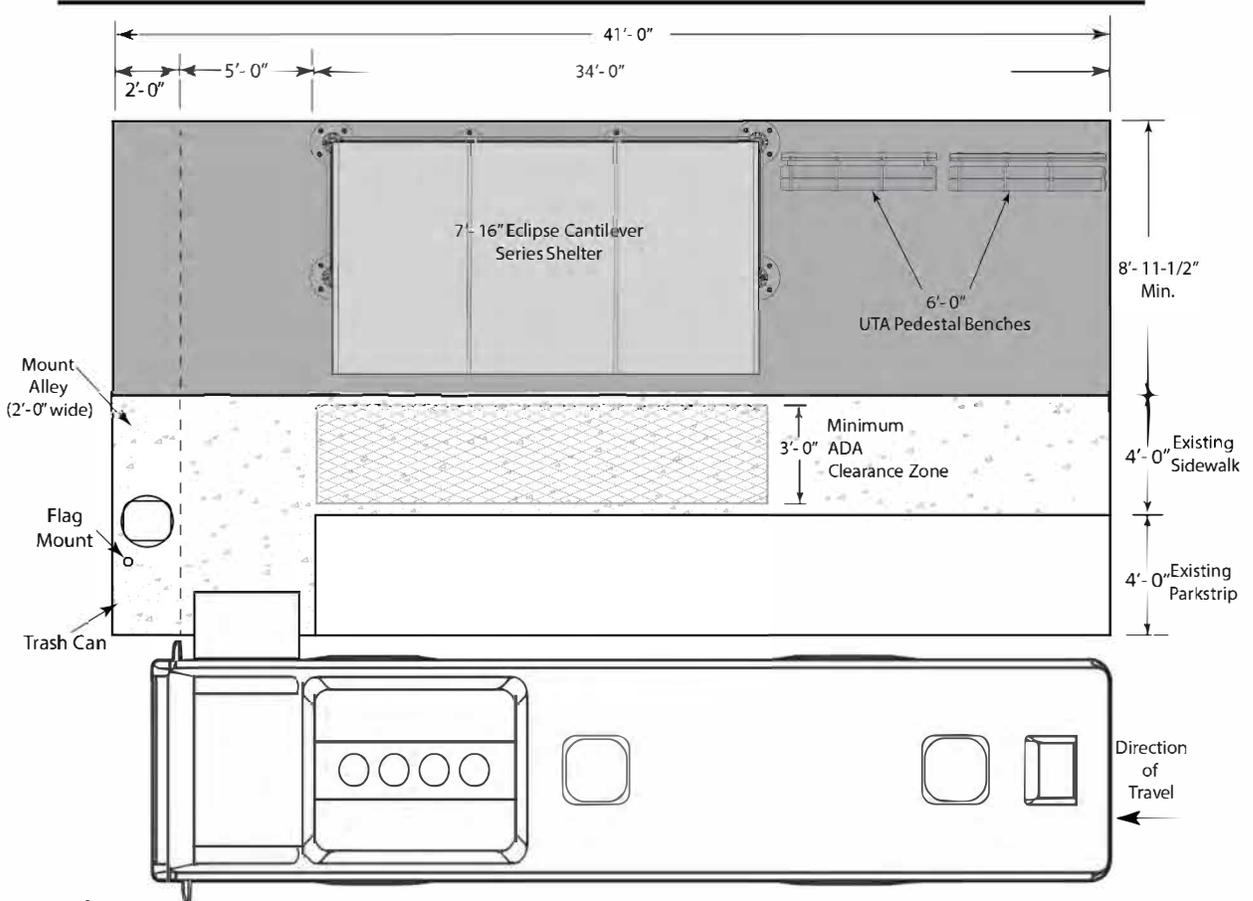
Not to scale



### Front Elevation View

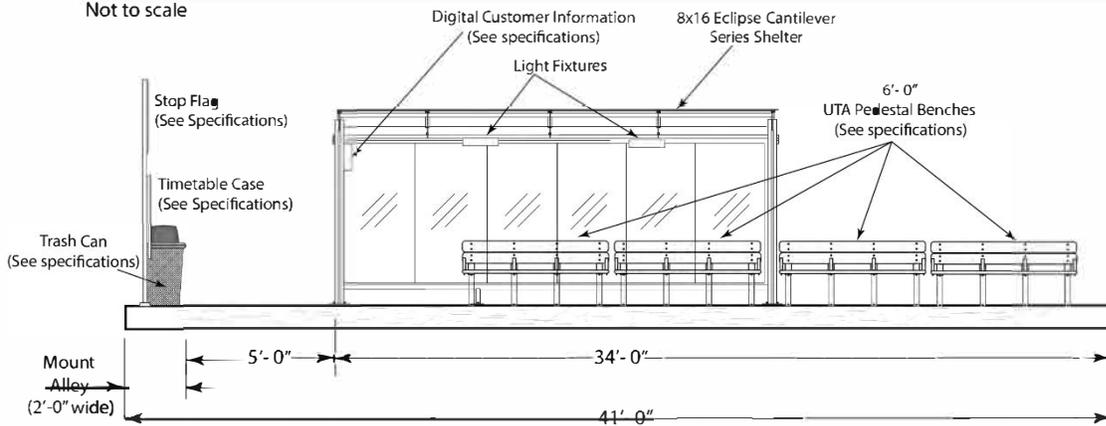
Not to scale

### Level VI & VII Eclipse Style Bus Stop (Typical)



### Plan View

Not to scale



### Front Elevation View

Not to scale

## Trash Can Specifications (Typical) Not to scale



Top View

24"



Side View

20"

33"



Bottom View

### Trash Container

- Dimensions: 33" high x 24" Top Dia. and 19" Bottom diameter
- Weight: 33 lbs.
- Finish: Hot dipped galvanized
- Capacity 45 gal.
- UPS: Can ship UPS. Ships at UPS 70 LB. rate
- Sides are constructed of 16 gauge steel, with vertical and horizontal ribs for reinforcement
- Base is constructed of 18 gauge steel - perforated
- Color: Galvanized Steel

### Trash Container Dome Top

- Black
- 26" x 17-1/2"
- Wide rim with grab handles and tight-fitting door
- Rain deflector
- Fits the Huskee container model #4442, 4443 & 4444



Front View

26"

30"

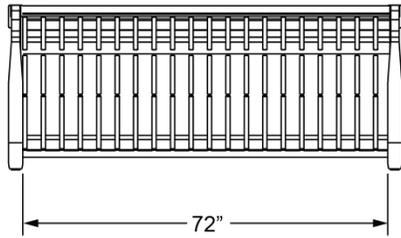


Rotated View

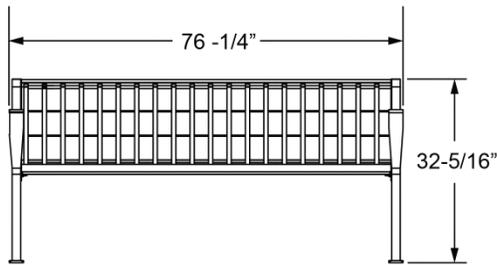
### Park Bench Specifications (Typical)

---

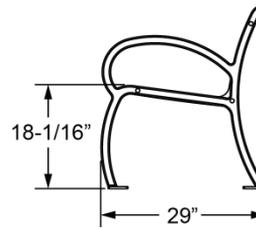
- Winchester - 6' Bench w/back, w/arms - slat
- Powder Coated Black



Plan View

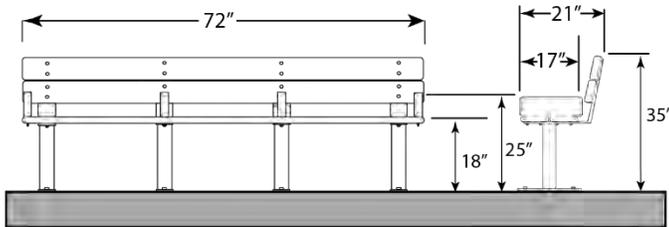


Front Elevation



Side Elevation

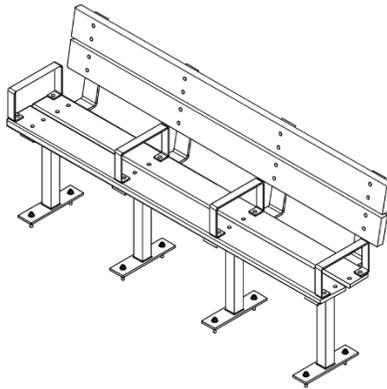
## Pedestal and Simme Seat Specifications (Typical)



Not to scale

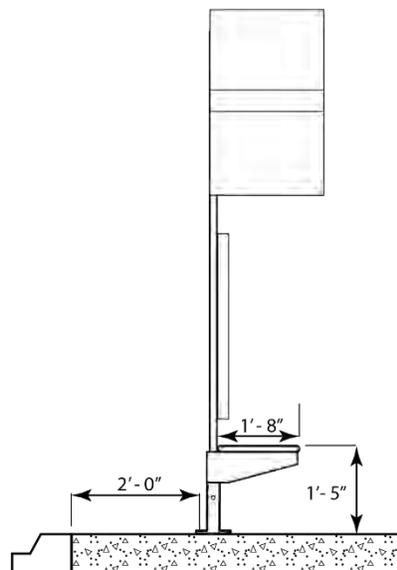
### Pedestal Bench

- Overall Length: 76"
- Overall Height: 33"
- Overall Depth: 25"
- Seat Height: 18"
- Seat Slats: 2" wide (3/16" gauge) mild steel slats with 1" space
- Legs and brace: 1/4" gauge mild steel legs and cross braces
- Center Brace: 1/2" steel rod
- Tube Rails: 1" (14 gauge)
- Finish: Electrostatically applied polyester power coated over shot blasted and zinc primer coated substrate
- Hardware: Benches should be knock-down condition in the largest modular sections possible. Benches will be assembled upon delivery by UTA personnel
- Mounting: Surface mount is required with mounting hardware
- Warranty: Benches should be fully warranted from defects for 1 year from date of delivery



### Simme Seat

- Simme bus stop seat shall include a tube dimensioned to encompass a 2" x 2" sign post.
- The Simme-Seat mounts to a 2" x 2" square steel bus stop sign pole or a seat divider.
- The seat may consist of a single or pair of rigid seats connected to the tube on opposite sides of the tube.
- Seats are 17 inches in height above grade and provide seating for one or two people.
- Seat shall be powdered coated steel and designed for external use.
- Seat shall be rated to hold 500 pounds on per seat
- Seat divider is 1" bent tubing fabricated in a 14" half round and mounted on square tubing that can be secured in the receiver in the Simme Seat
- Seat shall meet American with Disability Act (ADA) requirements.
- Seat shall include an anchoring metal plate attached to the lower end of the center tube.

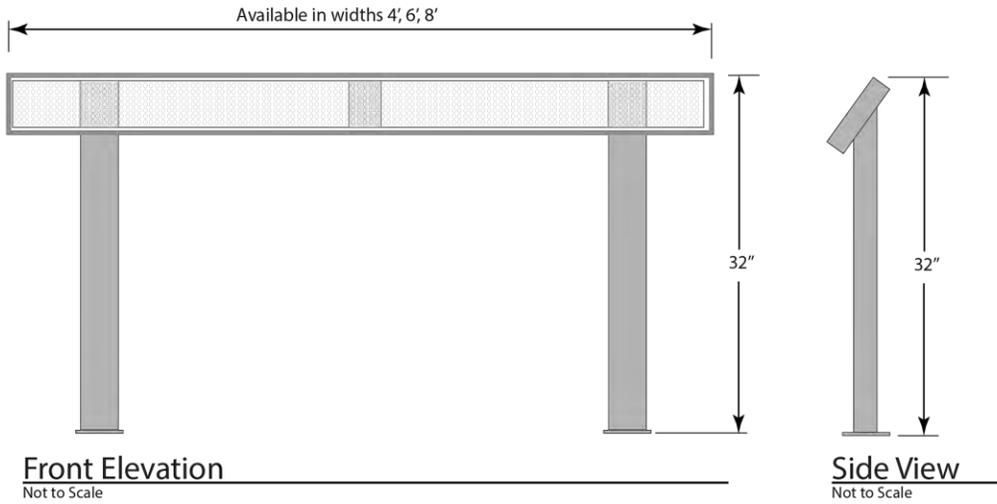


## Leaning Rail Specifications (Typical)

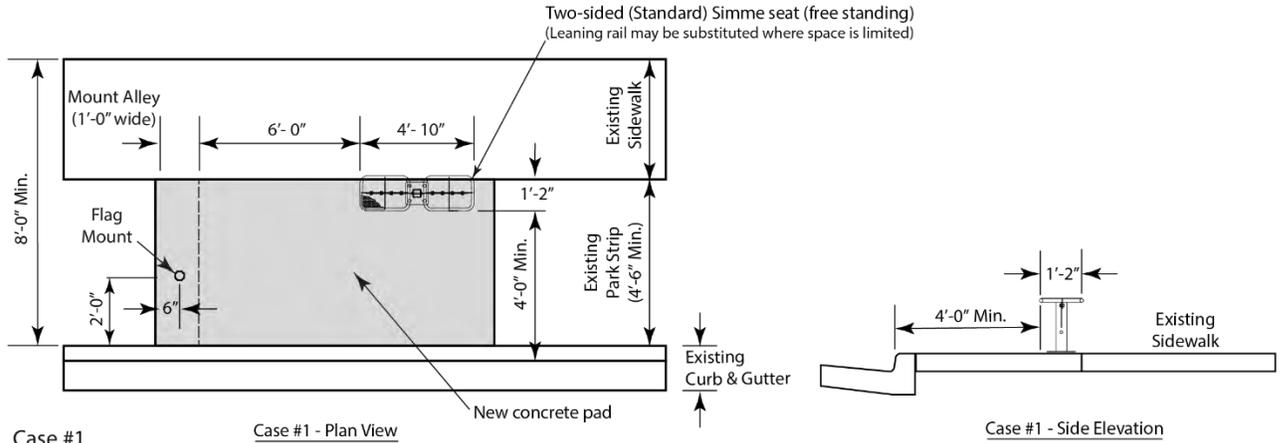
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### Leaning Rail

- Leaning rails can be either surface-mounted or affixed to shelter or wall.
- Solid aluminum frame construction with either HDPE slats or perforated aluminum infill.
- Available in 4', 6' and 8' lengths and a 32" height, but custom lengths and heights are possible upon request.
- Frame is powder BL01 (Blue)



## Simme Seat Placement Guidance

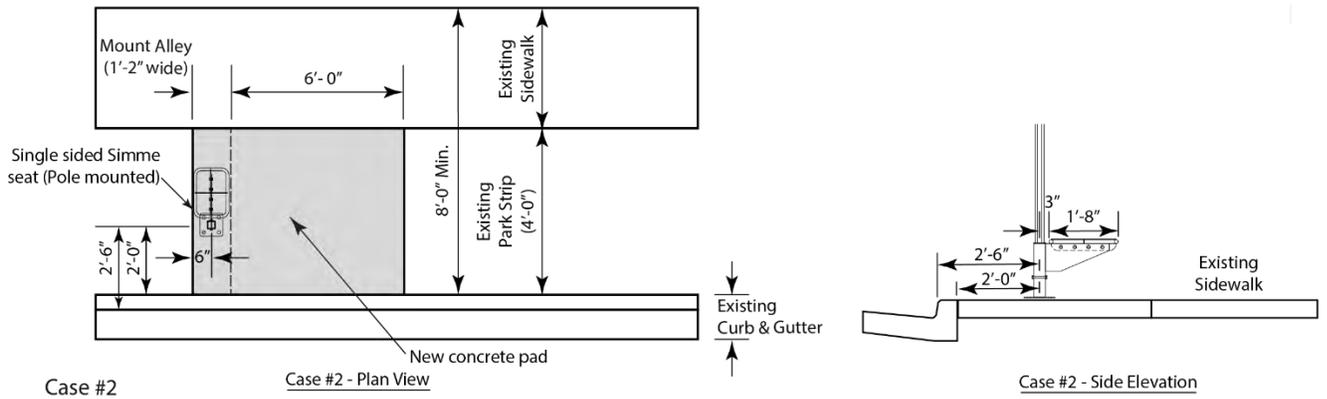


Case #1

Case #1 - Plan View

Case #1 - Side Elevation

Greater than 4'-0" from front face of curb to the street side edge of the bench (No restrictions)



Case #2

Case #2 - Plan View

Case #2 - Side Elevation

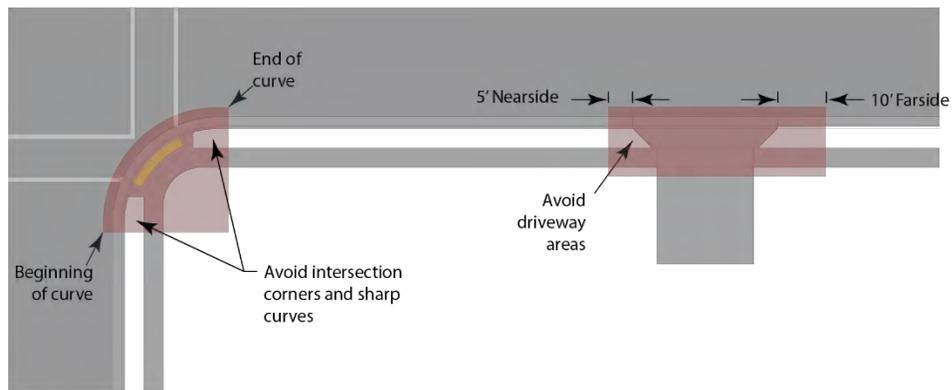
Less than 4'-0" but greater than 2'-6" from the front face of curb to the street side edge of the street  
On roads with speed limits of 30 MPH or less, install a single sided Simme seat oriented away from the street

Case #3

Less than 2'-6" from the front face of curb to the street side edge of the street (DO NOT INSTALL SEAT)

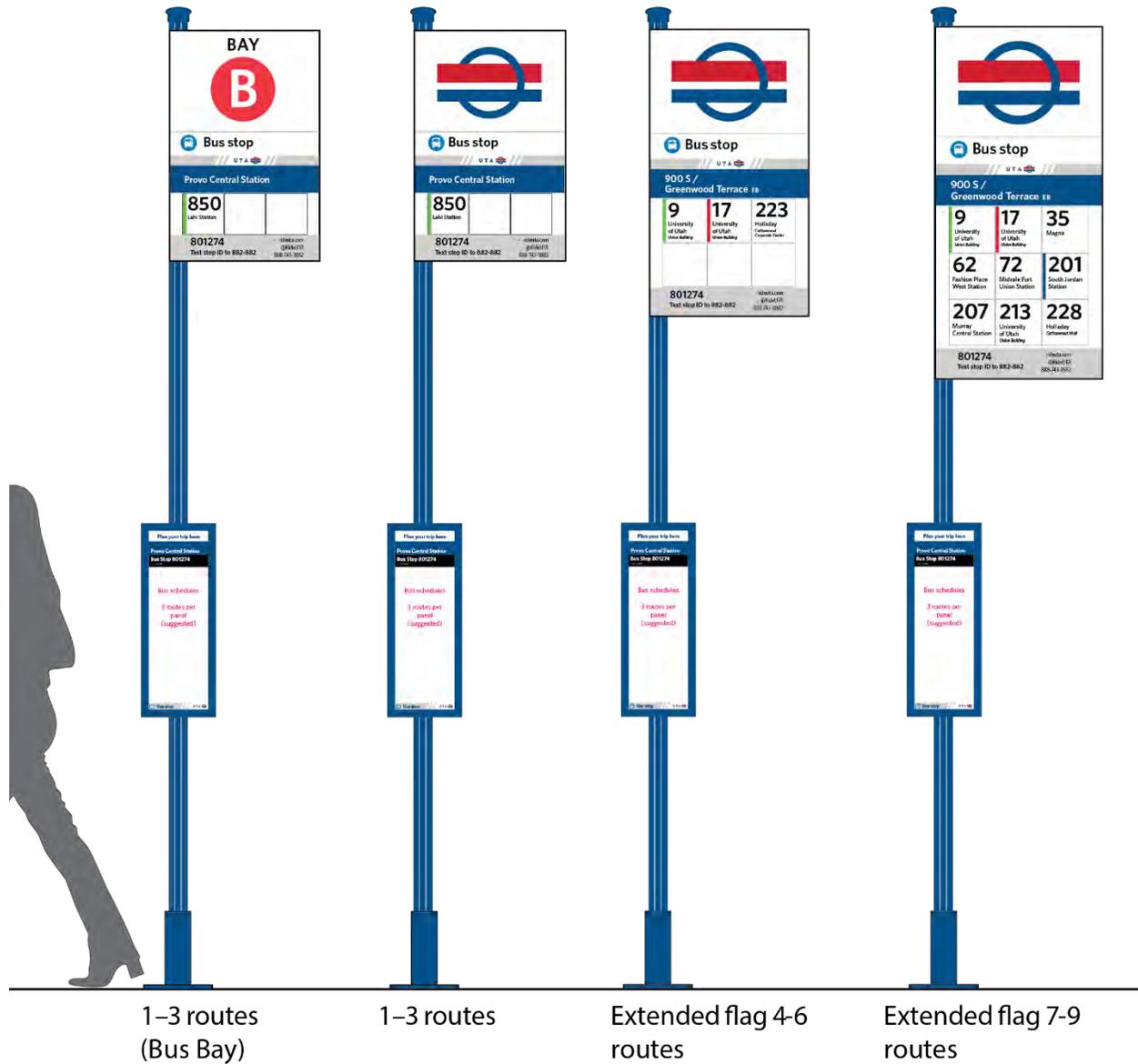
### Notes:

Avoid placing bus stop seating at high risk locations  
See bus stop seating placement restrictions diagram below

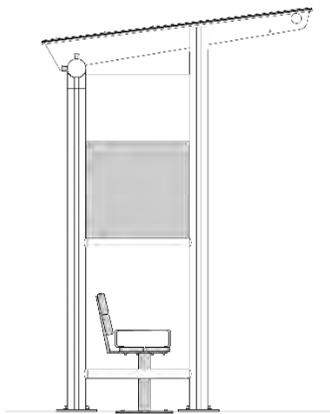


Bus Stop Seating Placement Restrictions

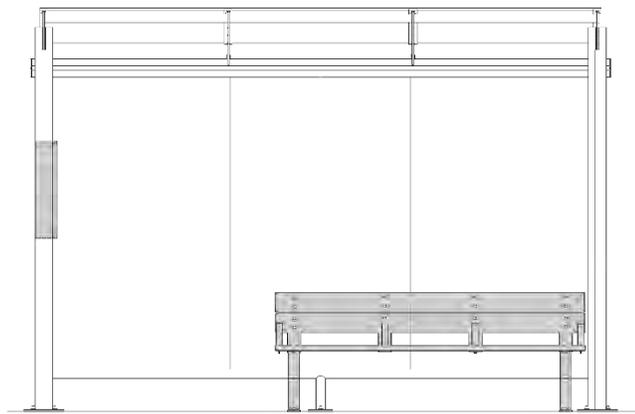
Bus Stop Signage (Typical)



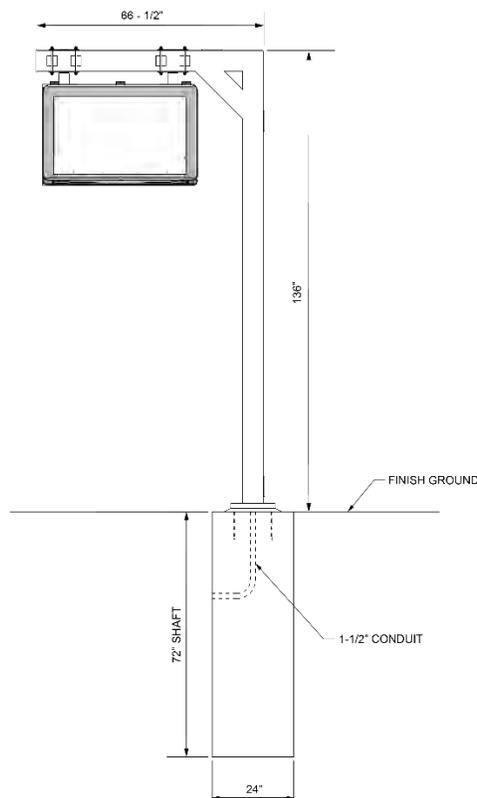
UTA has continued to improve the customer experience through access to technology that is provided to the customers. For instance in 2019 UTA entered into a partnership with the Transit app developers. This is the preferred mobile trip planning endorsed by UTA. This app gives customer access to real time information about a customer’s journey. In 2021 UTA utilized funds from a federal grant to provide digital real time departure signage at a few key bus hub locations. While there have always been digital real time departure signage at all of the FrontRunner and TRAX rail platforms, there has not been similar signage at any bus stop locations. UTA selected a digital sign vendor and has begun the deployment of a pilot program to test the new technology. This page contains graphic representations of the signs and the two potential applications (pole mounted and shelter mounted) where the signs will be installed.



**SIDE ELEVATION**



**FRONT ELEVATION**



**POLE SIGN  
FRONT ELEVATION**

## Appendix C -Capital, O&M and Total Lifecycle Costs by Stop Level Type

### Standard Series Capital and Operating Costs

	UTA Standard Amenity Cost LEVEL I	UTA Standard Amenity Cost LEVEL II	UTA Standard Amenity Cost LEVEL III	UTA Standard Amenity Cost LEVEL IV	UTA Standard Amenity Cost LEVEL V	UTA Standard Amenity Cost LEVEL VI	UTA Standard Amenity Cost LEVEL VII
Contractor Mobilization	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000
Pole, Mount, Sign and Timetable Case	\$296	\$296	\$296	\$296	\$296	\$296	\$296
Pole, Mount, Sign and Timetable Install Labor	\$126	\$126	\$126	\$126	\$126	\$126	\$126
ADA Landing Zone Pad (6' x 8')	\$1,041						
LEVEL II 16' x 5' Concrete Pad - Standard		\$1,886					
LEVEL III 26' x 5' Concrete Pad - Standard			\$3,278				
LEVEL IV 29' x 7' Concrete Pad - Standard				\$5,119			
LEVEL V 36' x 7' Concrete Pad - Standard					\$6,354		
LEVEL VII 40' x 7' Concrete Pad - Standard						\$7,060	
LEVEL III 26' x 6' Concrete Pad - Premium							
LEVEL IV 29' x 10' Concrete Pad - Premium							
LEVEL V 36' x 10' Concrete Pad - Premium							
LEVEL VI 40' x 10' Concrete Pad - Premium							
LEVEL VII 44' x 10' Concrete Pad - Premium							\$11,095
Team Blue Bench		\$350					
Blue Bench Assembly & Install		\$168					
Park Bench			\$900	\$900	\$1,800	\$1,800	
Park Bench Assembly & Install			\$168	\$168	\$336	\$336	
6' Pedestal Bench for Premium Shelter							\$3,200
Pedestal Bench Assembly & Install							\$336
Simmee - Two-seat model	\$550						
Simmee - Two-seat model Installation	\$168						
Simmee - Single seat model							
Simmee - Single seat model Installation							
Trash Can		\$275	\$275	\$275	\$275	\$275	\$275
4x8 Shelter - Standard			\$3,555				
4x8 Shelter - Standard - Assembly & Installation			\$336				
6x12 (Four Sides) Shelter - Standard				\$4,700	\$4,700		
6x12 Shelter Assembly & Installation				\$1,008	\$1,008		
6x16 (Four sides) Shelter - Standard						\$6,595	
6x16 Shelter Assembly & Installation						\$1,008	
4x8 Shelter - Premium							
4x8 Shelter - Premium - Assembly & Installation							
8x12 Shelter - Premium							
8x12 Shelter - Premium - Assembly & Installation							
8x16 Shelter (Three side) - Premium							
8x16 Shelter - Premium - Assembly & Installation							
Custom Aluminum Shelter (i.e. Ski Shelter)							\$14,995
Custom Shelter Assembly & Installation							\$3,360
Lighting Fixture						\$700	\$700
Light Fixture Installation						\$252	\$252
Digital Customer Information							\$10,000
Bike Rack							
Bike Rack Installation							
<b>Total Capital &amp; Labor Cost</b>	<b>\$6,181</b>	<b>\$7,101</b>	<b>\$12,934</b>	<b>\$16,592</b>	<b>\$18,895</b>	<b>\$22,448</b>	<b>\$48,635</b>
<b>Engineering, Design and ROW*</b>	<b>\$0</b>	<b>\$0</b>	<b>\$8,540</b>	<b>\$9,124</b>	<b>\$9,516</b>	<b>\$9,516</b>	<b>\$9,740</b>
<b>Total Estimated Cost</b>	<b>\$6,181</b>	<b>\$7,101</b>	<b>\$21,474</b>	<b>\$25,716</b>	<b>\$28,411</b>	<b>\$31,964</b>	<b>\$58,375</b>

\* Assumes that each stop, except for LEVEL I and LEVEL II, requires design, topo and right-of-way

	Level I	Level II	Level III	Level IV	Level V	Level VI	Level VII
Power Washing	\$81	\$134	\$218	\$341	\$423	\$470	\$470
Window Cleaning*	-	-	\$188	\$423	\$423	\$517	\$659
Trash Pick-up**	-	\$504	\$504	\$504	\$1,008	\$1,008	\$1,008
General Maintenance & Repairs	\$1,545	\$1,775	\$3,234	\$4,148	\$4,724	\$5,612	\$19,454
Removal & Demolition	\$1,545	\$1,775	\$3,234	\$4,148	\$4,724	\$5,612	\$12,159
<b>Total Estimated Annual O&amp;M</b>	<b>\$3,171</b>	<b>\$4,189</b>	<b>\$7,378</b>	<b>\$9,564</b>	<b>\$11,302</b>	<b>\$13,220</b>	<b>\$33,750</b>
<b>Total Estimated Lifecycle O&amp;M***</b>	<b>\$64,964</b>	<b>\$85,558</b>	<b>\$150,786</b>	<b>\$195,435</b>	<b>\$230,773</b>	<b>\$270,014</b>	<b>\$687,154</b>

#### Labor Assumptions

Fully Loaded Hourly Rate \$42.00 = \$26.00/hr \* 1.6 (Benefits)

Power Washing 30 min. per 100 sf @ 4 x year

Window Cleaning\* 30 min. per 100 sf @ 4 x year

Trash Pick-up\*\* 30 min. per can @ 24 x year

General Maintenance & Repairs (Standard Shelters) 25% of capital cost

General Maintenance & Repairs (Premium Shelters) 40% of capital cost

Removal & Demolition 25% of capital cost

Amenities Lifecycle 20 years

\* Window Cleaning for Premium shelters is estimated at 60 min. per 100 sf

\*\* For higher ridership volume stops trash pickup is assumed to be weekly

\*\*\* Removal and demolition costs are only included in the estimated lifecycle costs

## Monument Series Capital and Operating Costs

	UTA Provided Premium Amenity Cost LEVEL I	UTA Provided Premium Amenity Cost LEVEL II	UTA Provided Premium Amenity Cost LEVEL III	UTA Provided Premium Amenity Cost LEVEL IV	UTA Provided Premium Amenity Cost LEVEL V	UTA Provided Premium Amenity Cost LEVEL VI	UTA Provided Premium Amenity Cost LEVEL VII
Contractor Mobilization	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000
Pole, Mount, Sign and Timetable Case	\$296	\$296	\$296	\$296	\$296	\$296	\$296
Pole, Mount, Sign and Timetable Install Labor	\$126	\$126	\$126	\$126	\$126	\$126	\$126
ADA Landing Zone Pad (6' x 8')	\$1,041						
LEVEL II 16' x 5' Concrete Pad - Standard		\$1,886					
LEVEL III 26' x 5' Concrete Pad - Standard							
LEVEL IV 29' x 7' Concrete Pad - Standard							
LEVEL V 36' x 7' Concrete Pad - Standard							
LEVEL VII 40' x 7' Concrete Pad - Standard							
LEVEL III 26' x 6' Concrete Pad - Premium			\$3,934				
LEVEL IV 29' x 10' Concrete Pad - Premium				\$7,313			
LEVEL V 36' x 10' Concrete Pad - Premium					\$9,078		
LEVEL VI 40' x 10' Concrete Pad - Premium						\$10,086	
LEVEL VII 44' x 10' Concrete Pad - Premium							\$11,095
Team Blue Bench							
Blue Bench Assembly & Install							
Park Bench							
Park Bench Assembly & Install							
6' Pedestal Bench for Premium Shelter		\$800	\$800	\$800	\$1,600	\$1,600	\$3,200
Pedestal Bench Assembly & Install		\$168	\$168	\$168	\$336	\$336	\$336
Simmee - Two-seat model	\$550						
Simmee - Two-seat model Installation	\$168						
Simmee - Single seat model							
Simmee - Single seat model Installation							
Trash Can		\$275	\$275	\$275	\$275	\$275	\$275
4x8 Shelter - Standard							
0							
6x12 (Four Sides) Shelter - Standard							
6x12 Shelter Assembly & Installation							
6x16 (Four sides) Shelter - Standard							
6x16 Shelter Assembly & Installation							
4x8 Shelter - Premium			\$6,495				
4x8 Shelter - Premium - Assembly & Installation			\$1,428				
8x12 Shelter - Premium				\$8,975	\$8,975		
8x12 Shelter - Premium - Assembly & Installation				\$2,016	\$2,016		
8x16 Shelter (Three side) - Premium						\$12,325	
8x16 Shelter - Premium - Assembly & Installation						\$2,688	
Custom (i.e. Ski Shelter etc)							\$14,995
Custom Shelter Assembly & Installation							\$3,360
Lighting Fixture						\$700	\$700
Light Fixture Installation						\$252	\$252
Digital Customer Information							\$10,000
Bike Rack	\$555	\$555	\$555	\$555	\$555	\$555	\$555
Bike Rack Installation	\$168	\$168	\$168	\$168	\$168	\$168	\$168
<b>Total Capital Cost w/ Flatwork Engineering, Design &amp; ROW by UTA*</b>	<b>\$6,904</b>	<b>\$8,274</b>	<b>\$18,245</b>	<b>\$24,692</b>	<b>\$27,425</b>	<b>\$33,407</b>	<b>\$49,358</b>
<b>Total Cost</b>	<b>\$6,904</b>	<b>\$8,274</b>	<b>\$26,993</b>	<b>\$32,482</b>	<b>\$37,805</b>	<b>\$44,107</b>	<b>\$60,378</b>

\* Assumes that each stop, except for LEVEL I and LEVEL II, requires design, topo and right-of-way

	Level I	Level II	Level III	Level IV	Level V	Level VI	Level VII
Power Washing	\$81	\$134	\$44	\$146	\$181	\$134	\$269
Window Cleaning*	-	-	\$188	\$235	\$329	\$329	\$659
Trash Pick-up**	-	\$504	\$504	\$504	\$1,008	\$1,008	\$1,008
General Maintenance & Repairs	\$181	\$293	\$4,064	\$5,729	\$6,246	\$7,751	\$289
Removal & Demolition****	\$1,726	\$2,069	\$4,561	\$6,173	\$6,856	\$8,352	\$12,340
<b>Total Estimated Annual O&amp;M</b>	<b>\$1,987</b>	<b>\$3,000</b>	<b>\$9,361</b>	<b>\$12,787</b>	<b>\$14,621</b>	<b>\$17,574</b>	<b>\$14,564</b>
<b>Total Estimated Lifecycle O&amp;M***</b>	<b>\$41,472</b>	<b>\$62,074</b>	<b>\$191,789</b>	<b>\$261,912</b>	<b>\$299,275</b>	<b>\$359,839</b>	<b>\$303,621</b>

### Labor Assumptions

Fully Loaded Hourly Rate \$42.00 = \$26.00/hr \* 1.6 (Benefits)

Power Washing 30 min. per 100 sf @ 4 x year

Window Cleaning\* 30 min. per 100 sf @ 4 x year

Trash Pick-up\*\* 30 min. per can @ 24 x year

General Maintenance & Repairs (Standard Shelters) 25% of capital cost

General Maintenance & Repairs (Premium Shelters) 40% of capital cost

Removal & Demolition 25% of capital cost

Amenities Lifecycle 20 years

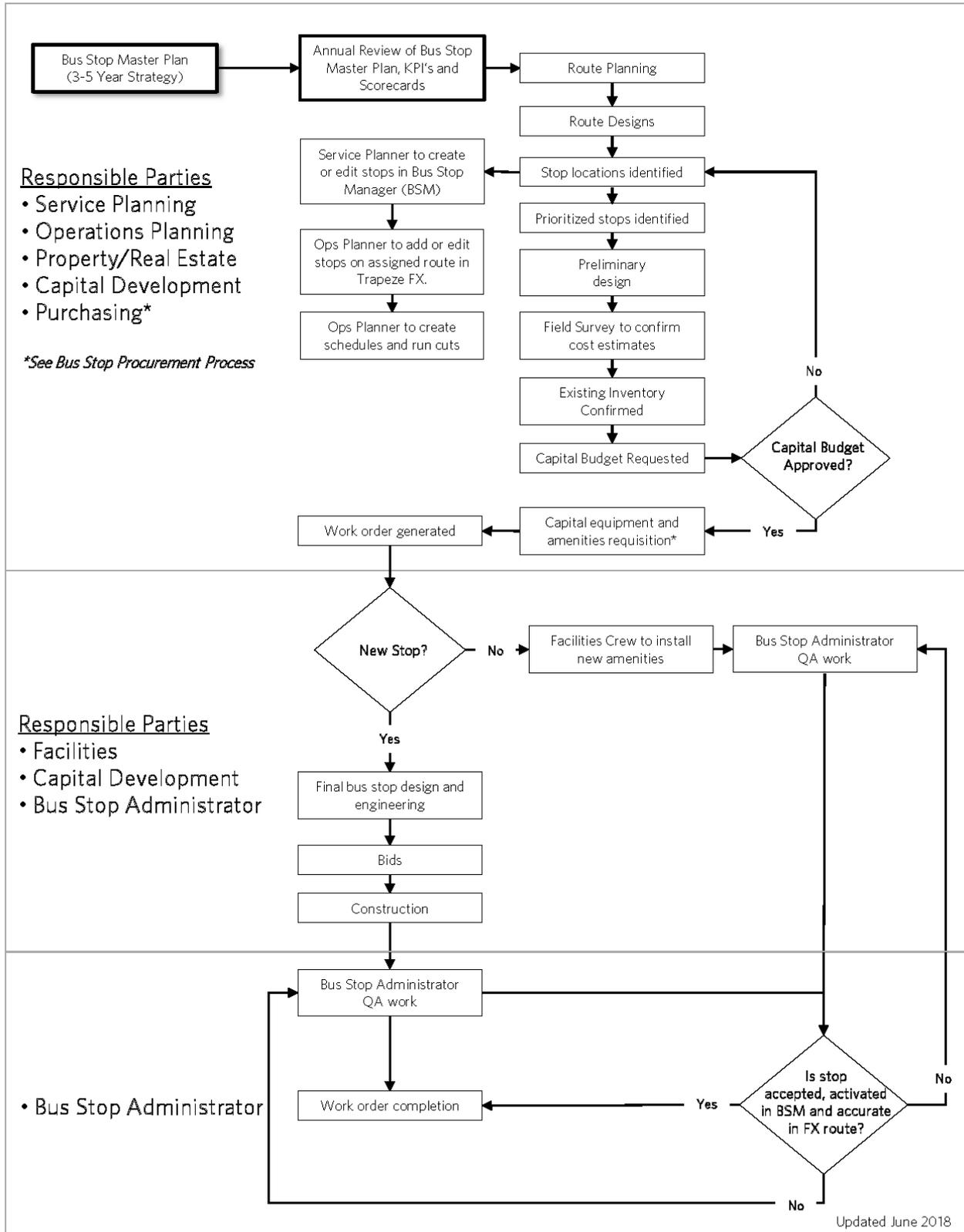
\* Window Cleaning for Premium shelters is estimated at 60 min. per 100 sf

\*\* For higher ridership volume stops trash pickup is assumed to be weekly

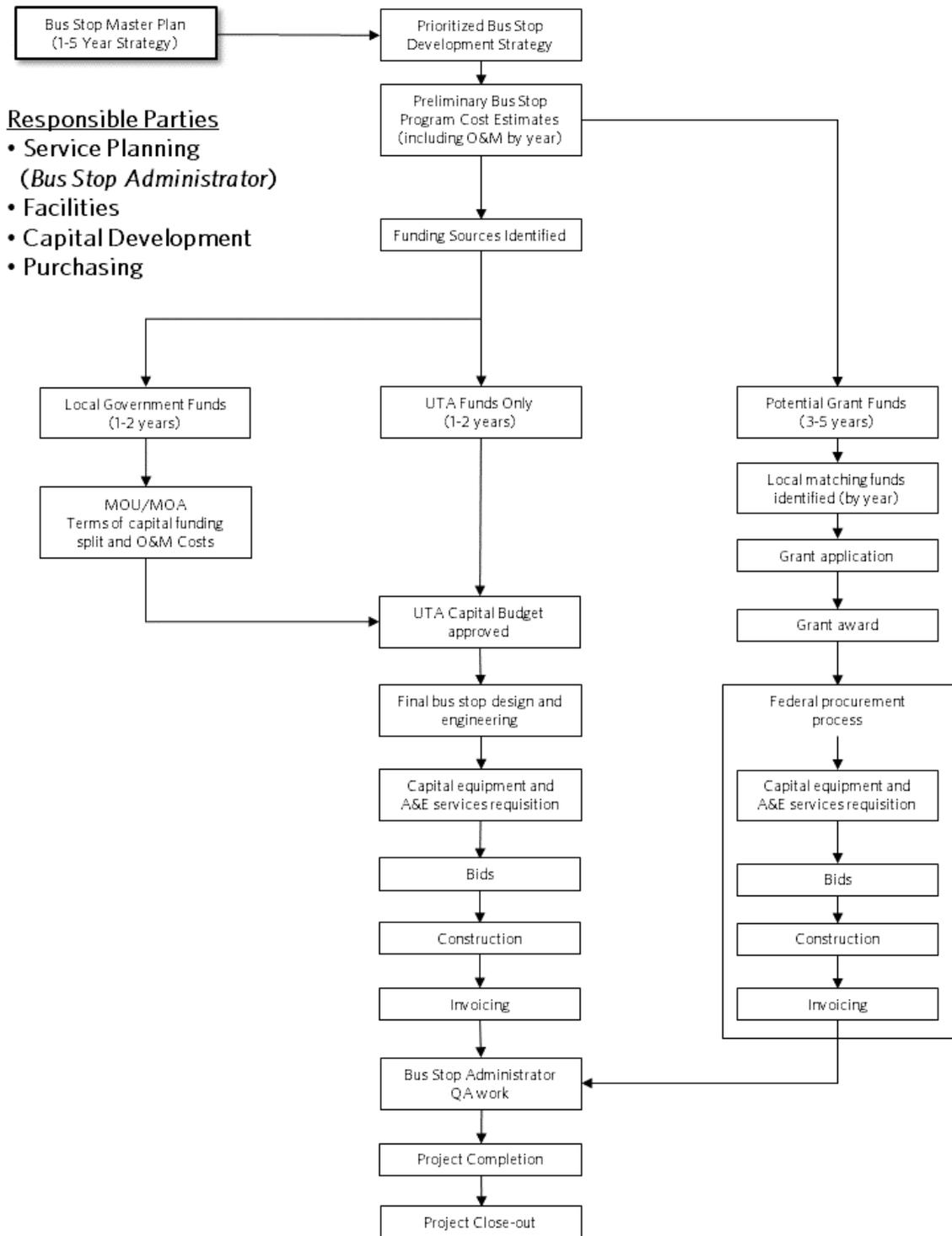
\*\*\* Removal and demolition costs are only included in the estimated lifecycle costs

Appendix D – Processes

Bus Stop Administration Process



## Bus Stop Capital Construction Process



Updated June 2018



## Appendix E - Policies & Standard Operating Procedures

*Bus Stop Relocation System Standard Operating Procedure*  
[Currently being updated]