May 2023









MOBILITY ACCESS PROGRAM









JACKSONVILLE TRANSPORTATION AUTHORITY

Note to Document Users:

The document JTA color palette is:

R/G/B	
Red (primary)	203/51/59
Dark Blue	0/4/85
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Quick Reference Guide

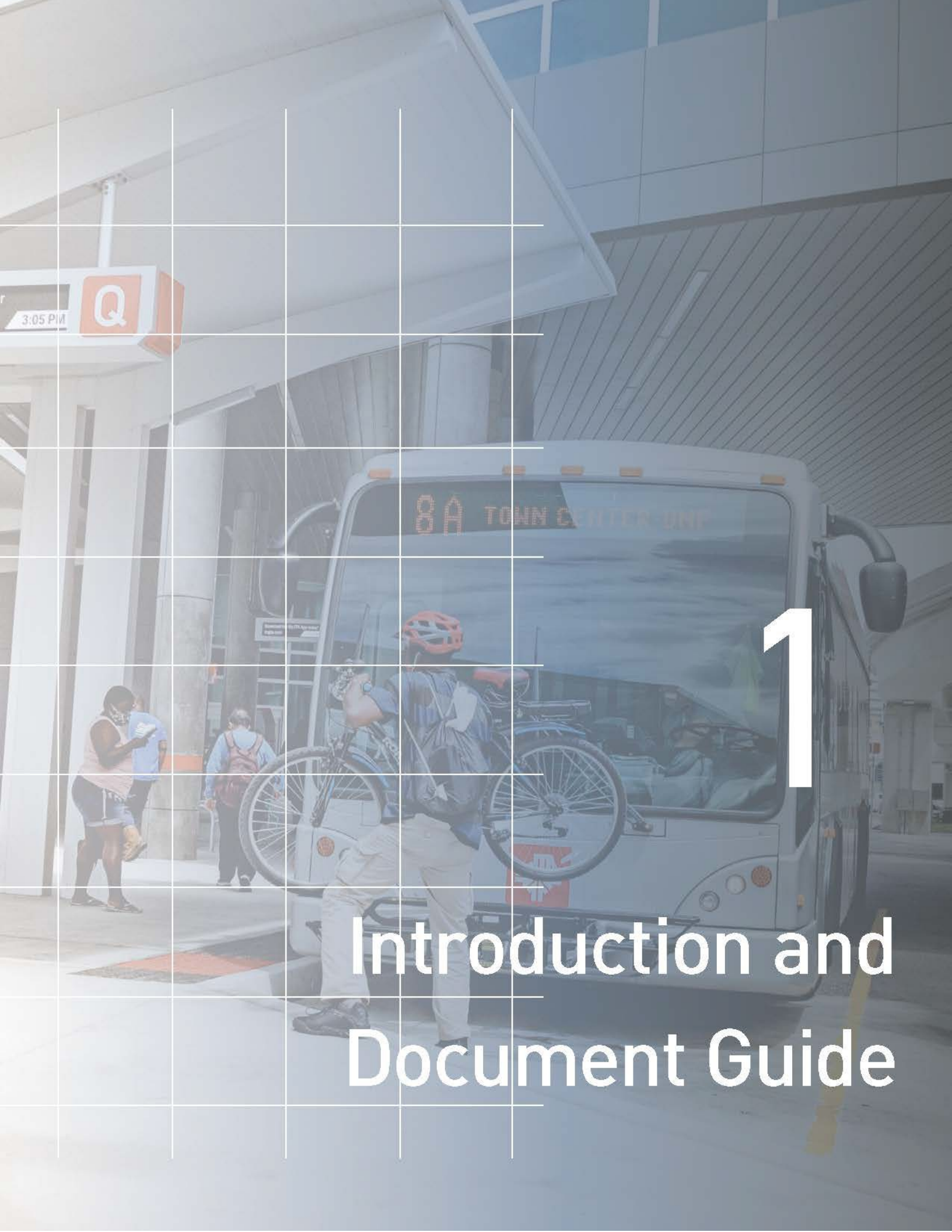
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Questions? Comments?

The JTA's System Development Division welcomes suggestions, comments, and recommended revisions to the Mobility Access Program handbook. Please contact the JTA System Development Division, at (904) 633-8510, or email SysDevPlanningTeam@jtafla.com.

Quick Reference Sites

Item	Reference Sites
1	Jacksonville Transportation Authority
2	Florida Department of Transportation – Transit Facility Design Resources
3	FDOT Design Standard Index
4	Americans with Disabilities Act (ADA)
5	Manual of Uniform Traffic Control Devices (MUTCD)
6	American Association of State Highway and Transportation Officials (AASHTO)
7	Florida Administrative Code
8	Federal Register, 49 CFR Parts 27
9	Federal Register, 49 CFR Parts 37
10	City of Jacksonville



1

Introduction and Document Guide

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1 Introduction and Document Guide

1.1 Context

The Jacksonville Transportation Authority (JTA) is an independent public authority serving Jacksonville and Northeast Florida with multi-modal responsibilities. The JTA offers many public transportation options and is also a builder of roads and bridges to enhance mobility throughout the region.

The JTA provides mobility services for the consolidated city/county of Jacksonville/Duval County which encompasses more than 850 square miles, in addition to connecting to adjacent Baker, Clay, Nassau, and St. Johns Counties. Specifically, JTA provides fixed-route bus, premium bus rapid transit (First Coast Flyer), Express Select, ReadiRide on-demand shuttle service, Skyway (downtown elevated people mover), JTA Connexion (paratransit), St. Johns River Ferry, and Game Day shuttle services.

To achieve its mission to provide seamless mobility for all, the JTA endorses a comprehensive and consistent approach in planning, design, and construction, to ensure all transit services and facilities are safe, equitable, and accessible. The JTA is committed to compliance with Americans with Disabilities (ADA) requirements throughout the transit service area and providing accessible mobility options for all transportation system users.

The **Mobility Access Program (MAP)** was initially established in 2003 to specify guidelines for the design and construction of bus stops throughout the JTA service area. The MAP was updated in 2015, and again in 2018, to bring the guidebook up to date with the most current local, state, and federal standards and criteria and to address the modification and expansion of JTA services and facilities. This document represents the **MAP 2023 Update**. The following section expands upon the purpose of the MAP and its use as a handbook to guide the planning, design, and construction of transit and road infrastructure to maximize mobility for all residents and visitors.

JTA MISSION

A thriving and connected Northeast Florida powered by seamless mobility solutions for all.

JTA VISION

To enhance Northeast Florida's economy, environment, and quality of life for all by providing safe, reliable, innovative, sustainable, and dignified mobility solutions and facilities.

What is the Mobility Access Program (MAP)?

The Mobility Access Program (MAP) serves as guidance for the planning, design, and construction of transit stops, facilities, and passenger amenities throughout the JTA's transportation system.

The *MAP 2023: Implementation Guidelines for Transit Stops, Facilities, and Amenities* is an update to the 2018 version, and serves as a manual to ensure a consistent approach to safety, equity, and accessibility in the implementation of JTA's mobility services and facilities.

1.2 MAP Purpose and User's Guide

The *JTA's MAP: Implementation Guidelines for Transit Stops, Facilities, and Amenities (MAP 2023)* is developed as a manual intended for use by planners, engineers, developers, and construction contractors to understand the physical and operational requirements of providing public transportation in accordance with local, state, and federal standards. This guidebook covers a wide range of topics, from on-street bus stop placement to mobility hubs to passenger amenities, complete streets planning, construction plan submittals, and agency coordination requirements. The guidebook narrative is supported by numerous visuals, including tables, photos, and schematics.

This manual can be used when making decisions regarding the interface of public and private rights-of-way when transit is present or to assess options for a project in the planning, design, or construction phase. This document may also be used by partner agencies and local governments as part of planning, zoning, and other land development, and growth management evaluation processes.

JTA's intent for developing and updating the MAP meets several agency-wide objectives:

- Improve access to transportation services
- Promote safety and security on transit vehicles and at transit stops and facilities
- Support coordination with local and state government agencies
- Ensure the satisfaction of customers, employees, and the public

The MAP 2023 reinforces multiple initiatives outlined in the JTA's Mobility Optimized Through Vision and Excellence (MOVE) 2027 Five-Year Strategic Plan. Specifically, it addresses MobilityWorks, TransitWorks, RegionalWorks, and CustomerWorks initiatives.

The MAP 2023 reflects design standards and operational requirements specific to the JTA's current network of mobility services and facilities, but it is based on various resources and guidance, such as, but not limited to:

- Florida Department of Transportation (FDOT) Accessing Transit
- FDOT Transit Facilities Guidelines
- FDOT Design Standard Index
- Manual of Uniform Traffic Control Devices (MUTCD)
- Florida Administrative Code
- Federal Register, 49 CFR Parts 27 and 37
- American Association of State Highway and Transportation Officials (AASHTO)
- American with Disabilities (ADA) Accessibility Guidelines for Buildings and Facilities
- The City of Jacksonville Ordinance Code

The MAP is a resource to ensure the accessibility, operations, safety, security, and aesthetics of transit stops, facilities, and amenities. To accomplish this, the MAP 2023 consists of nine sections with multiple appendices that contain easy-to-use checklists, design examples, and reference documentation. The MAP sections are briefly described as follows.

Section 1 is this Introduction and Document Guide which contains a brief background, the purpose of developing the MAP manual, and overall JTA objectives for developing and updating the MAP.

Section 2 outlines JTA's current transit stop prototypes and guidelines for the appropriate application of features and passenger amenities relative to transit operations and customer activity.

Section 3 defines the operational service standards which guide the placement of transit stops.

Section 4 specifies transit stop design guidance regarding dimensions, layouts, signage, shelters, and all components related to the overall bus stop design.

Section 5 presents planning and design considerations to make transit more accessible for all transportation system users. This section reviews design requirements to make transit more accessible for persons with disabilities and addresses various techniques, such as transit signal priority, complete streets, and transit-oriented development.

Section 6 reviews safety and security requirements to ensure all mobility services and facilities are safe for all customers, employees, and the public.

Section 7 contains an overview of the JTA Sustainability Program to ensure all JTA transit services and facilities are developed in accordance with sustainability requirements adopted by the JTA.

Section 8 defines the recommended practices, protocols, and procedures for coordination with the JTA, partner jurisdictions, and permitting agencies.

Section 9 presents an overview of a national and international review of best practices in transit service and facility design as information for continuous process improvement and to identify potential strategies for future consideration.

Appendices are supplied to provide easy access to contact information, transit stop design checklists, shelter design examples, public communication templates, and a summary of best practices in the transit design and accessibility arena.

Definition and Process Call Out Boxes are located throughout the MAP document to call attention to a specific design item or to explain a term used in the narrative. A **Quick Reference Guide** is included at the front of the document for frequently asked questions. Each section of the MAP identifies the appropriate JTA Department for questions and follow up.

TOPIC
Definition...

Call Out Box Format

This **MAP 2023** document represents the current guidelines as established by the JTA. This guidebook, including appendices, will be updated periodically to reflect any changes in JTA's overall network of services and facilities, or changes in local, state, or federal standards and criteria necessary to support the implementation and funding of public transportation. When referencing these publications, it is the user's responsibility to ensure the use of the latest version of this manual.

The JTA's System Development Division welcomes suggestions, comments, and recommended revisions to the MAP handbook. All comments, suggestions, and recommended edits submitted will be reviewed by the JTA's System Development Division for approval and implementation.

MAP Document Revisions and Updates

The MAP is a guidebook to be used by JTA staff, planners, designers, and construction contractors to provide a safe, accessible, and equitable public transportation network.

Modifications and updates to various components of the MAP document are expected on a periodic basis and are inherent to the dynamic and innovative transportation system fostered by the JTA.

Revisions or suggested edits to the MAP document text or graphics, such as the inclusion of new shelter designs or customer amenities, or upgrades to bus stop features, or modifications to reflect new local, state, or federal guidance, will be reviewed and approved by the JTA's System Development Division.

A process has been established for submitting, documenting, and tracking proposed revisions and recommended edits. The assigned JTA staff will review proposed revisions and subsequently submit a Request for MAP Review and Determination Form (MAP Request/Determination Form) to the JTA's Vice President of System Development.

The JTA's Vice President of System Development will review proposed revisions outlined in the MAP Request/Determination Form and will decide if a revision or update needs further review and approval by the JTA's Executive Leadership Team.

If necessary, the JTA's Vice President of System Development, in collaboration with the JTA's Executive Leadership Team, will determine a recommended path forward and timeline if a proposed revision requires further review and approval by the JTA's Chief Executive Officer and the JTA Board of Directors.

If a modification is significant, or a recommended revision is impacted by, or leads to a change in JTA policies or procedures, such as ridership thresholds or mandatory safety and security accommodations, then a review and approval by the JTA Chief Executive Officer and the JTA Board of Directors may be warranted.

A comprehensive update to the JTA MAP, such as with this MAP 2023 Update, requires review and approval by the JTA Executive Leadership Team, the JTA Chief Executive Officer and the JTA Board of Directors.



2

Transit Services and Facilities

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2 Transit Services and Facilities

This section of the MAP presents the JTA's spectrum of multimodal transportation services and transit stop classification system. Transit stop classifications were developed to assist with standardizing the application decisions and provide the appropriate level of features relative to customer activity and transit service operations. There are currently five classification types for JTA's transit stops. The transit stop prototypes are defined in Section 2.2.

Section 2 Highlights:

This section provides guidance on:

- ✓ Types of bus stops and required features for each type
- ✓ Types of Transit Facilities and Passenger Mobility Hubs in the system and purpose of each
- ✓ Transit Stop Request and Placement Protocols

Section 2.3 describes the features and prototype designs for Passenger Mobility Hubs, which vary in size, operation, and customer amenities. From a neighborhood hub to a park-and-ride facility, Passenger Mobility Hubs support the JTA's multimodal transportation services.

2.1 Types of Transit Services

The JTA operates a variety of public transportation services to meet the demands of the large geographic area and diverse communities in Northeast Florida. These services are depicted in Figure 1.



Fixed Route Local Bus



First Coast Flyer Premium BRT Service



Express Select Regional Service



Connexion Paratransit Service



Skyway Elevated People Mover (Downtown)



St. Johns River Ferry



ReadiRide on-call curb-to-curb service within specified zones



Game Day Express

Figure 1: JTA Mobility Services

2.2 Transit Stop Prototypes

Prototypes for transit stops were developed to assist in the organization of standards and guidelines to define the recommended features and amenities relative to customer activity and transit service operations. There are five (5) prototypes for transit stops within the JTA transit system. One of the main criteria for the classification of a transit stop is the amount of passenger activity or volume, also referred to as ridership, that typically occurs at a location. The potential ridership at any particular stop can be influenced by several variables, including the population density of the surrounding area, the intensity and types of nearby land uses, the accessibility and design of the site, and the condition of the adjacent roadway.

The transit stop prototypes include:

- Prototype 1: Local Transit Stop
- Prototype 2: Transit Stop with Bench
- Prototype 3: Transit Stop with Shelter
- Prototype 4: High-Frequency Transit Stop
- Prototype 5: First Coast Flyer (FCF) Bus Rapid Transit (BRT) Stop

In addition, the transit service design, or operating plan, can impact transit stop design requirements, such as in the case of multiple routes serving a stop, and accommodations for a passenger transferring between routes. In addition to passenger activity and service design, the following factors assist in selecting the transit stop prototype applicable to a specified location:

- Consistent and appropriate spacing between transit stops
- Increased concentration in downtown and activity centers
- Location (relative to the intersection, historic district, near-side, far-side, mid-block)
- Visibility (for passengers and to the vehicles)
- Relationship to roadway alignment
- Orientation of design and access

All transit stops are required to have an ADA-compliant boarding and alighting area. Refer to Section 4.1.1 and Section 5.1 for additional guidance. See **Appendix A** for contact information for JTA's ADA Coordinator, and JTA's System Development Division personnel.

PASSENGER THRESHOLDS

Thresholds for passenger activity, or ridership, are used as a factor in determining the level of amenities at a specific transit stop. These thresholds are defined in the Operational Standards contained in Section 3 of this document.

ADA COMPLIANT

This term references the Americans with Disabilities Act (ADA) which identifies a design that accommodates mobility devices such as wheelchairs, scooters, etc. to ensure safe access for persons with disabilities. See Section 4 for transit stop pad design details. Additional ADA considerations are discussed in Section 5.

Section 3 provides guidance regarding the operational requirements and placement of transit stops. Transit stop design features and dimensions, and guidance for transit stop amenities, are discussed in greater detail in Section 4.

2.2.1 Prototype 1 – Local Transit Stop

Local transit stops are defined as stops that have low passenger boarding and alighting volumes, with minimal infrastructure. These stops account for the majority of JTA's transit stops along fixed-route services and provide system access over a large geographical area.

The following amenities are required at Prototype 1- Local / Rural Transit Stop:

- Bus stop signage with route information
- Connectivity to the sidewalk
- 5 feet x 8 feet ADA-compliant concrete boarding and alighting area

Although there are existing locations with signage installed in the grass or concrete, the preferred JTA installation method is surface-mounted. The location of the transit stop sign should align with the front of the bus when stopped. The bus stop signage must display the route numbers that serve the stop and the stop number. See **Appendix I** for the JTA transit stop sign details.

A variation of the Local Transit Stop is a Rural Transit Stop. Rural Stops are in rural areas and located near the shoulder of a road, where the road does not have a curb and gutter. The roadway shoulder is used as the accessible route to the transit stop. Rural bus stops require additional review of drainage and connectivity to adjacent parcels to ensure safe access to the transit stop, specifically for passengers who may use mobility devices.

Coordination with the City of Jacksonville or FDOT personnel may be required to address sidewalk connectivity, or other infrastructure improvements, based on the owner of the roadway right-of-way. Contact information for these agencies is provided in **Appendix A**.



Prototype 1 - Local Transit Stop (adjacent to curb)



Prototype 1- Local Rural Transit Stop (no curb)

TRANSIT STOP SIGN PLACEMENT REQUIREMENTS

- Route indicators must be included per ADA
- Signs must be installed outside the accessible path with 5 feet minimum sidewalk clearance maintained
- Vertical clearance for a sign is 7 feet
- Curb cuts and sidewalk connections are required to comply with pedestrian and ADA accessibility requirements

Further design details for transit stops and sign placement can be found in FDOT Accessing Transit.

2.2.2 Prototype 2 – Transit Stop with Bench

Prototype 2 stops are defined as stops that have medium passenger boarding and alighting volumes. It is characterized as a bus (hereinafter referred to as transit) stop with adjacent low-intensity land use.

The following amenities are essential for Prototype 2 – Transit Stop with Bench:

- Bus stop sign with route information
- Connectivity to the sidewalk
- 5 feet x 8 feet minimum, ADA-compliant concrete boarding and alighting area
- Bench
- Trash receptacle (site specific)

There are typically two different types of benches throughout the JTA transit system.

- JTA-owned benches
- Privately-owned benches (non-JTA owned or leased)

Although benches are not a requirement, they are recommended when shelter seating is not provided.

The preferred bench-style seating is strap metal with no back. The JTA Facilities Department can assist with amenities and maintenance concerns. Refer to FDOT's Accessing Transit manual for additional information regarding transit stops with a bench.



Prototype 2 - Transit Stop with Bench

BENCH INSTALLATION REQUIREMENTS

- Maintain minimum dimensions for boarding and alighting in accordance with ADA
- Install outside the clear zone in non-curbed areas
- Maintain a minimum of 5 feet of clearance for pedestrian and wheelchair traffic on all sidewalks
- Coordinate with local jurisdictions and state regulations



Preferred JTA-owned Bench Style, metal, no back



Privately-owned Bench (not JTA Owned)

2.2.3 Prototype 3 – Transit Stop with Shelter

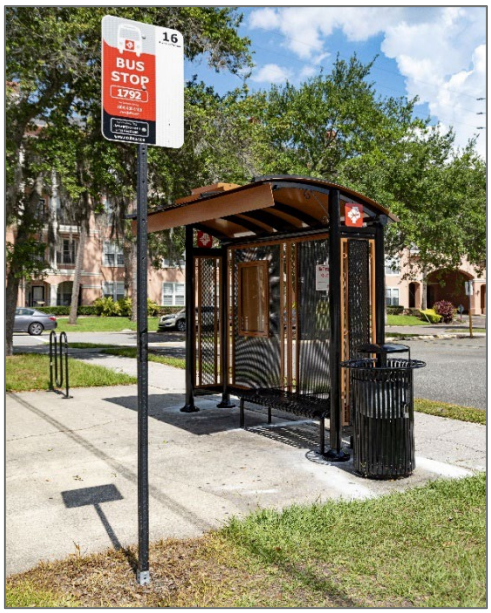
Prototype 3 transit stops are defined as stops that have medium to high passenger boarding and alighting volumes and a shelter is provided for customer comfort. JTA has established ridership thresholds as criteria to guide the installation of amenities at a transit stop. For additional guidance and policies regarding transit stop thresholds for amenities, and requirements for a shelter approval, placement, and installation, please refer to Section 4.4.

For circumstances requiring special accommodations at a transit stop for the elderly, disabled, and children, contact the JTA System Development Division for approval before installing a shelter or other amenities. Contact information is contained in **Appendix A**.

MAP Section 4.3 provides guidance regarding shelter advertisements, signage, and passenger amenities within or adjacent to a shelter. Transit stop example layouts are included in **Appendix G** and specific design details for shelters are contained in **Appendix H**.



Prototype 3 - Transit Stop with Shelter



Transit Stop with Shelter

The following amenities are required for Prototype 3 - Transit Stop with Shelter:

- Bus stop sign with route information
- Connectivity to the sidewalk
- Paved and level shelter pad with an ADA-compliant concrete boarding and alighting area
- Passenger Shelter:
  - *Standard size is 2 feet x 10 feet or 5 feet x 10 feet*
  - *Bench seating for 2 to 4 persons*
  - *30 inches x 48 inches minimum clear and level floor space within the shelter*
  - *Solar lighting, when possible*
  - *System Map*
- Trash Receptacle
- Bike Loop/Rack

2.2.4 Prototype 4 – High-Frequency Corridor Transit Stop

Prototype 4 stops are transit stops with high passenger boarding and alighting volumes. These stops are primarily located on corridors with high ridership and frequent transit service.

The passenger amenities are consistent with this level of transit service. A high-frequency corridor transit stop may be served by multiple types of JTA mobility services.



Prototype 4 - High Frequency Stop

The following amenities are required for Prototype 4 – High-Frequency Transit Stop:

- Bus stop sign with route information
- Connectivity to the sidewalk
- Paved and level shelter pad with minimum 5-feet x 8-feet concrete boarding and alighting area
- Passenger shelter features:
  - *Large size is 2 feet x 15 feet or 5 feet x 15 feet*
  - *Bench seating for 6 to 8 persons*
  - *Solar lighting, when possible*
  - *System Map*
- Trash Receptacle
- Bike Loop/Rack



High Frequency Transit Stop

When appropriate, the following amenities may also be incorporated:

- Real-time Passenger Information variable message sign
- TVM (Ticket Vending Machine)
- LCD screen

Electronic equipment is typically installed at high-frequency transit stops where power is readily available. Most often, if power is available, it may be part of another major project.

It is important to note that provisions must be made for the electronic equipment connections and required communications systems for passenger information. Coordination with **JTA's Technology and Innovation Department and JTA's System Development Division is mandatory.** Refer to the contact information contained in **Appendix A**.

2.2.5 Prototype 5 – First Coast Flyer (FCF) Bus Rapid Transit Stops

Prototype 5 transit stops are defined as stops on high-frequency transit corridors, branded as the First Coast Flyer Bus Rapid Transit (BRT) service. This premium transit service may have frequent service, often 10-minute peak period and 15-minute off-peak period headways, and offers limited stop premium transit service.

The following amenities are required for Prototype 6 - FCF Stations:

- Bus stop signs with route information
- Connectivity to the sidewalk
- Paved and level shelter pad with boarding and alighting area equal to 12 feet x 120 feet
- Two Passenger Shelters – 5 feet x 15 feet (if there are site constraints, consider modifications – see **Appendix B**, Transit Stop Checklist)
- Multiple Seating Benches
- Electricity
- Lighting
- Typically include one trash receptacle and one recycle bin
- Two Bike Racks/Loops
- Totem 10 feet with Real-time Passenger Information and variable message sign
- TVMs in some locations



Prototype 5 - High Frequency Transit (BRT)



First Coast Flyer Bus

JTA's First Coast Flyer premium transit services may also have the following features:

Bus Queue Jumps: A type of roadway geometry used to provide preference to buses at intersections consisting of an additional travel lane on the approach to a signalized intersection restricted to transit and emergency vehicles only.

Transit Signal Priority (TSP): TSP is a signal preference procedure at an intersection for transit and emergency vehicles to improve service and reduce delay at intersections (or junctions) controlled by traffic signals.

TRANSIT SIGNAL PRIORITY

Provisions must be made for the electronic equipment connections and required communications systems. Coordination with JTA's Technology and Innovation Department is Mandatory. Bus pull-off bays are required where appropriate.

Provisions must be made for the electronic equipment connections and required communications systems for the information kiosks and totems placed at the FCF Transit Stops.

Coordination with the JTA's Technology and Innovation Department is mandatory. See **Appendix A** for contact information.

Bus pull-off bays are required where appropriate. See Section 4.7 for additional design details for bus pull-off bays and refer to FDOT Accessing Transit for further design information.



First Coast Flyer Blue Line Stop on Southbank

2.2.6 Additional Transit Stop and Shelter Installation Considerations

Priority for the type of transit is given depending on policies, site location, and/or operating conditions. System equity and funding availability may warrant that the decision regarding the proposed installation is made on a case-by-case basis. Local priorities and neighborhood requests can also influence the decision to include a shelter at a bus stop. As an example, the Downtown Historic District has required the use of the black metal and copper shelter design in designated areas of Jacksonville's urban core.

Other factors that can influence the size of the shelter include the availability of right-of-way width, existing street furniture, utility pole locations, landscaping, existing structures, and maintaining proper circulation distances around existing site features. The location of the curb and sidewalk and the amount of available right-of-way can be determining factors for locating shelters.

Consideration is also given to visual sight clearances for all transportation modes. Ideally, the location of a transit stop shelter should enhance the circulation patterns of passengers or the public, reduce the amount of pedestrian congestion at a transit stop, and minimize conflict with nearby pedestrian activities.

Section 3 of this guidebook addresses additional design considerations for the transit stop placement. Section 4 defines standards for the transit stop design and placement of passenger amenities, including shelters, benches, and bus pad waiting areas.

Request for New Bus Stops

All requests for new transit stops will be reviewed and approved by the following JTA Departments:

- ✓ System Development
- ✓ Facilities
- ✓ Transit Operations/Transit Planning
- ✓ ADA Compliance Coordinator
- ✓ Safety & Security

Contact information can be found in Appendix A.



Shelter Design in Historic Downtown District

2.2.7 Future Ultimate Urban Circulator (U^2C) Stop/Stations

The JTA is developing an autonomous transportation network (U^2C) to replace the existing Skyway automated people mover technology. The proposed U^2C system will operate within the limits of downtown and will utilize a fleet of autonomous vehicles both at the street level and on the existing, elevated Skyway guideway. It is envisioned that the U^2C system will initially utilize existing JTA transit stops at the street level but will also have stops branded for the autonomous circulator service. For more information on the status of the U^2C Program, visit u2c.jtafla.com

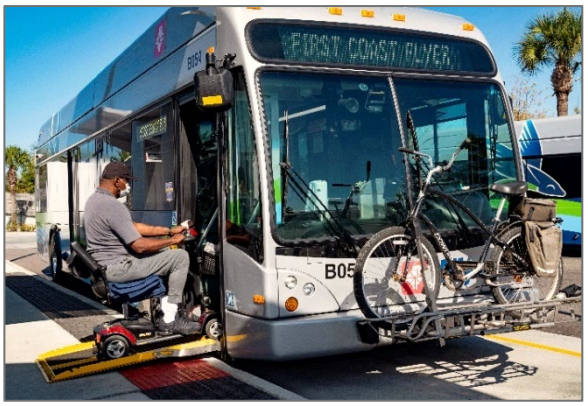


JTA Autonomous Vehicle

2.3 Passenger Mobility Hubs

Beyond the traditional on-street transit stop, the JTA classifies transit service facilities as Passenger Mobility Hubs. There are variations in the types of Passenger Mobility Hubs, based on the number of routes serving the hub, frequency of transit services, customer use, and amenities. The following are categories under the Passenger Mobility Hub classification:

- Neighborhood Hub
- Transit Hub
- Skyway Stations
- Park and Ride Facilities
- Regional Transportation Hub (Jacksonville Regional Transportation Center at LaVilla)



The JTA seeks to have a transit system that is safe, equitable, and accessible for all transportation modes and all transportation system customers. There are several factors involved with the planning, design, and construction of Passenger Mobility Hubs. Each new or reconstructed facility must be examined on a case-by-case basis to determine the facility type needed to meet overall accessibility and operational requirements.

As JTA advances the MOVE2027 Five-Year Strategic Plan initiatives, a refresh and update to the Passenger Mobility Hub classification have been developed to identify current and future hub locations. The "Mobility Hub Typology" created as part of a comprehensive mobility hub analysis, describes variations in specific criteria through mobility hub "tiers" based on operational and accessibility features. The new tier classification is as follows:

Tier I – Primary Hub: identified as a major destination for jobs, entertainment, and activities with the highest level of mobility through multi-modal services, first-mile, and last-mile connections. Tier I Hubs must serve, or be forecasted to serve, over 1,000 daily passenger trips.

Tier II – Access Hub: identified as a primary transfer station between transit modes, including premium transit, with first-mile and last-mile connectivity; and typically located along major transit corridors. Tier II Hubs must serve, or be forecasted to serve, no less than 175 daily passenger trips.

Tier III – Collector Hub: identified as a station that occurs on a high-frequency transit corridor where multiple transit modes and services come together, creating a neighborhood destination. A Tier III Hub designation must serve, or be forecasted to serve, at least 80 daily passenger trips.

Additional information pertaining to JTA's Passenger Mobility Hubs, including a schematic of Existing Mobility Hubs, is contained in **Appendix D.** The following describes the general characteristics of each type of Passenger Mobility Hub, based on current classification and the Mobility Hub typology, along with examples or images of each type within the JTA transportation network.

2.3.1 Neighborhood Hub (Tier I)

A Neighborhood Hub is a larger transit stop, with a bus staging area used where multiple transit or mobility services come together at a point in the system.



Most important for a Neighborhood Hub is for it to be a public space that has a relationship with the community in which it is located. The Neighborhood Hub is typically located near intersecting major arterial roadways, adjacent to a major activity center, and may be a transit system destination or a transfer location.

Neighborhood Hubs may function as key access points to corridor service of express and/or bus rapid transit services. In addition to meeting the minimum requirements for the Prototype 4 – High-Frequency Stop and the Prototype 5 – FCF BRT Stations, the Neighborhood Hub requires a high volume of customers, frequency of services, and significant JTA route transfer activity.

To be designated as a Neighborhood Hub, JTA uses the following criteria to confirm site suitability:

- Major Activity Center/Trip Generators
- Passenger Volumes
- Property Rights of Way
- Pedestrian Access and ADA Accessibility
- Safety Evaluation
- Bus Route Operational Characteristics (multiple routes)
- Stop Spacing
- Land Use Trip Generation
- Customer Requests
- Bus Operator Recommendations

An example Neighborhood Hub is at Pearl and Water Streets in downtown Jacksonville.

2.3.2 Transit Hubs (Tier I and Tier II)

Transit Hubs are strategically located throughout the JTA transportation system to maximize accessibility to the JTA's network of services. Transit Hubs may serve as a transfer point between routes and/or other JTA services. The Transit Hub offers additional comfort and informational passenger amenities, in addition to the ability to purchase passes at some locations.

The following amenities are essential for a Transit Hub:

- Multi-route identification kiosk
- Ticket Vending Machine (TVM)
- Bus staging area
- Paved shelter pad based on shelter size including required ADA 5 feet x 8 feet level boarding and alighting area
- Specialty passenger shelter
- Very large size or multiple large size shelters with
    - System Maps
    - Seating for at least six to eight persons
    - Solar lighting, when possible
    - Real-time Passenger Information variable message sign
    - Trash Receptacle
    - Bike Rack/Loop
- Landscaping



Golfair Transit Hub

Existing Transit Hubs locations include:

- University Transit Hub
- Soutel Transit Hub
- Gateway Transit Hub
- Golfair Transit Hub
- Regency Transit Hub
- Rosa Parks Transit Hub
- Kings Avenue Transit Hub

Two existing Transit Hubs also have an integrated elevated Skyway Station. These Transit Hubs are the Rosa Parks Transit Station and Kings Avenue Transit Station and Parking Garage. Additional information for the Skyway Stations is contained in Section 2.3.3.



Skyway Station Platform Area





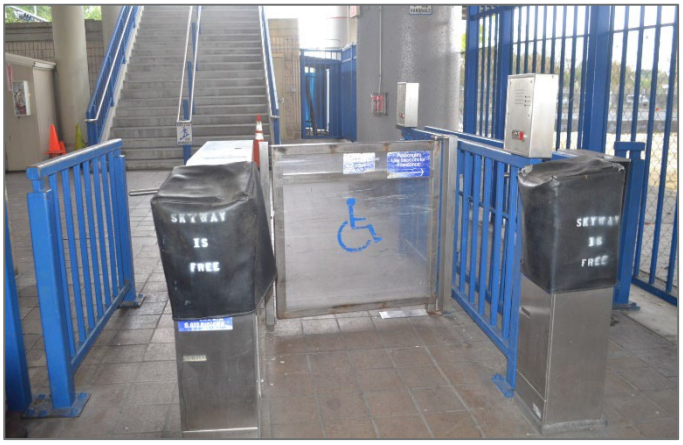
University Transit Hub



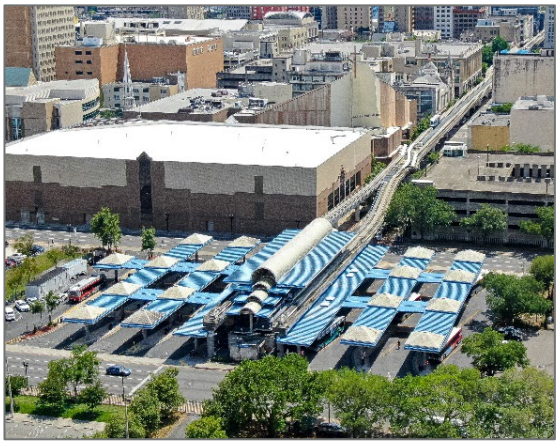
Kings Avenue Transit Hub



Golfair Transit Hub



Rosa Parks Transit Hub Entry Turnstiles



Rosa Parks Transit Hub

2.3.3 Skyway Stations

There are eight Skyway Stations providing access to the Skyway service along the 2.5 miles elevated automated people mover system connecting the north and south banks of Downtown across the St. Johns River. The Skyway Stations serve as passenger mobility hubs with fixed-route and BRT transit services within close proximity to each Skyway Station at the street level. The Skyway service is complimentary. There are turnstiles on the street level at the entrance to the station. Turnstiles are used as an additional measure of passenger activity.

Skyway Station areas and platforms are accessible to all persons. Americans with Disabilities Act (ADA) accessible gates are located adjacent to each set of turnstiles to accommodate access for persons with mobility devices and strollers. The Skyway Stations are equipped with multiple passenger accessibility features due to the need to travel to the elevated platforms to access the Skyway trains. Elevators, as well as stairs, are located at Skyway Stations for passengers. Additionally, escalators are also provided at select Skyway Stations. There are no public restrooms at any of the JTA's Skyway Stations, except the LaVilla Station connected to the Jacksonville Regional Transportation Center (JRTC) at LaVilla.

All of the Skyway Stations are equipped with passenger safety features including security cameras and fire alarm and prevention equipment. Stations are also equipped with Ticket Vending Machines. The existing Skyway Stations include:

- LaVilla Station
- Jefferson Station
- Central Station
- James Weldon Johnson Station
- Rosa Parks Station
- San Marco Station
- Riverplace Station
- Kings Avenue Station



Skyway Platform Level Seating Rosa Parks Station



San Marco Skyway Station Escalator

2.3.4 Park-and-Ride Facilities (Tier I and Tier II)

Park-and-Ride (Park-n-Ride) facilities are Passenger Mobility Hubs with accommodations for vehicle parking to allow commuters to leave their vehicles while they travel on JTA services. Commuters may travel by transit or carpool to their destinations from the Park-n-Ride lot. Park-n-Ride lots intercept traffic flowing through a commuter shed to and from a major employment destination. These facilities also include drop-off and passenger pick-up areas.

To be successful, the following characteristics must typically be present for Park-n-Ride facilities:

- High parking costs in the urban core
- Long commute times
- Heavy roadway congestion
- High fuel prices

Successful Park-n-Ride lots also include the following characteristics:

- **Distance** – located not less than five miles, and preferably 10+ miles from work areas
- **Major congested corridors** - located along major travel corridors having severe traffic congestion and long commute times
- **Safety** - Located to be highly visible from the approach roads that serve the major commuting corridor(s) and well-lit for safety purposes
- **Easy access**
- **Community integration** – connectivity to the surrounding community
- **High land use densities** in the broader areas surrounding the lot
- **Frequent transit service** during peak hours
- **High parking costs** – Parking costs at the destinations may be significantly higher than the combined costs of the Park-n-Ride lot plus transit use
- **Passenger Amenities**

Within the JTA service area, there are informal and formal Park-n-Ride lots. Currently, JTA serves Park-n-Ride lots at the following locations:

- Avenues Walk Park-n-Ride
- Armsdale Park-n-Ride
- JTB Park-n-Ride
- Gateway Mall
- Orange Park Mall (informal)

Additional Park-n-Ride information and the mobility hub analysis are contained in **Appendix D**. **Contact JTA's System Development Division for additional information on Park-n-Ride facilities.**



Avenues Walk Park-n-Ride



Avenues Walk Amenities Building



Armsdale Park-n-Ride

The JTA prepared a Park-n-Ride Study (2009) and a Park-n-Ride Site Selection Study (2010) to identify Park-n-Ride facility criteria and establish a recommended practice for siting future Park-n-Ride facilities throughout the JTA transit system. Since the JTA serves a large geographic area, approximately 850 square miles, the demand to reach a majority of the communities can be challenging and puts extra mileage on the transit vehicles. Park-n-Ride facilities improve the accessibility to the transit system for communities outside of major transportation corridors. An additional reference for Park-n-Ride requirements is the FDOT State Park-and-Ride Guide (2012).

Figures 2 and 3 illustrate prototype design features that are desired for Park-n-Ride lots that support the JTA's transit system. The Avenues Walk Park-n-Ride layout serves as a template for future Park-n-Ride facilities.



Figure 2: Prototype Park-n-Ride Facility Design Features

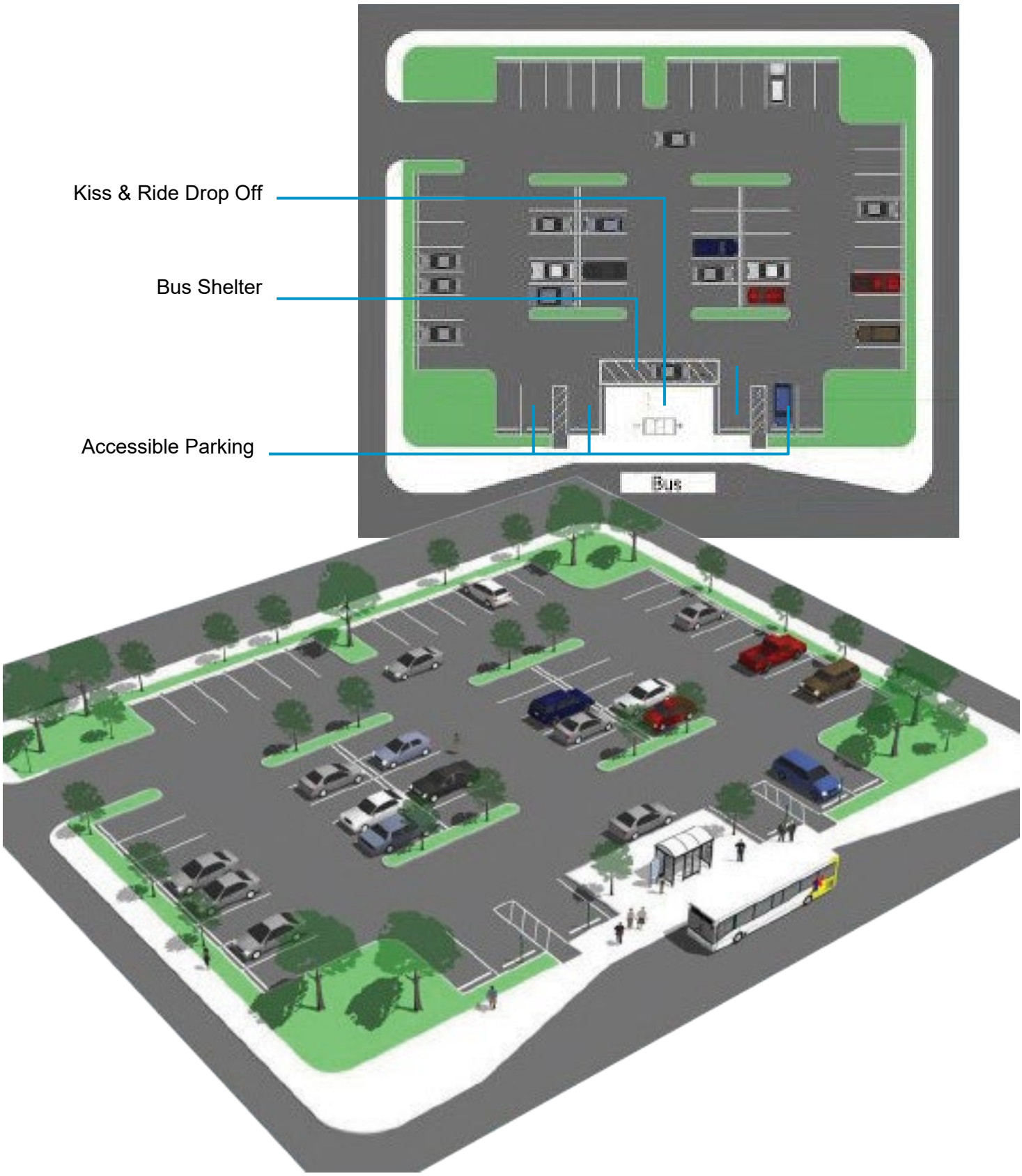


Figure 3: Park-n-Ride Prototype Design

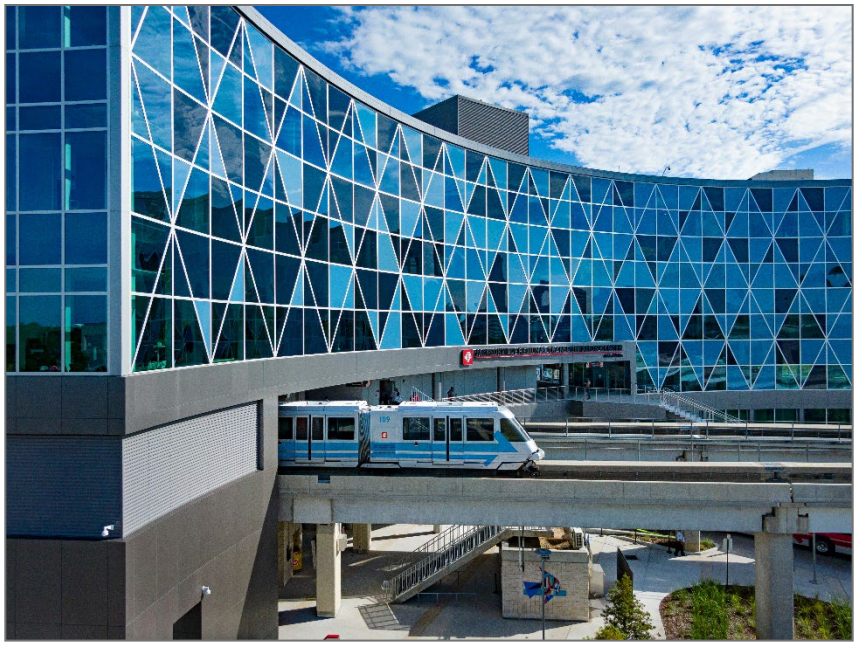


Jacksonville Regional Transportation Center at LaVilla

2.3.5 Jacksonville Regional Transportation Center (JRTC) (Tier 1)

The JRTC at LaVilla is a state-of-the-art transportation hub that connects local, regional, and intercity modes of transportation, including the JTA's fixed route bus, First Coast Flyer, Express Select, ReadiRide, Greyhound, Mega Bus, and other regional services, ride share, and bike share. The Skyway elevated monorail system has its western terminus at the LaVilla Station at the JRTC.

In addition to serving as the main bus transfer center, the JRTC is also the JTA's administrative office with multiple passenger and customer amenities, including information kiosks, transit pass sales, restrooms, and convenience areas. A coffee shop is located on the ground floor. The JRTC is built for everyone to ensure equal access for all, regardless of physical limitations.





JRTC at LaVilla Administration Building and Bus Transfer Facility

2.3.6 Intercity Bus Terminal

The Intercity Bus Terminal is a public ground transportation facility that uses buses or coach services which includes multimodal ground transport to carry passengers significant distances between different cities, towns, or other populated areas. The intercity bus terminal is currently privately operated by Greyhound. The intercity bus terminal is connected by an elevated walkway to the JRTC. Various ride-sharing services also serve the Intercity Bus Terminal.



Intercity Bus Terminal

The primary contact for questions, or additional information with regard to JTA's Passenger Mobility Hubs, contact the JTA's System Development Division.

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3

Operational Standards

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3 Operational Standards

This section of the handbook outlines guidance concerning the operational standards and transit service criteria that influence decisions regarding the planning and location of transit stops and facilities. Factors such as service frequency and location of transit stops and facilities directly impact the customer experience and influence decision-making for potential passengers. Considerations for locating transit stops and other factors which are guided by transit operations are reviewed in this section. Design details for Transit Stops and Amenities are described in Section 4.

Section 3 Highlights:

This section provides guidance on:

- ✓ Placement of Transit Stops
- ✓ Spacing of Transit Stops to meet safety and operational requirements
- ✓ Amenities Determination Process

3.1 Placement of Transit Stops

The willingness of potential customers to use public transportation instead of their automobiles is directly dependent on the convenience with which they can access the transit system. Transit stop spacing and locations are significant factors in designing convenient access to public transportation. Each new transit stop location takes into consideration several factors. The following criteria are used when evaluating the location of a transit stop:

- Availability of Right-of-Way
- Pedestrian Safety and Access
- Stop Spacing Along the Route
- Land Use/Location of Passenger Traffic Generator/Major Activity Center
- Turning Requirements and Curb Clearance
- Bus Route Design and Operational Effectiveness
- Bus Operator Recommendations

MINIMUM REQUIREMENTS FOR TRANSIT STOP PLACEMENT:

- Must be on an accessible route.
- May be on a sidewalk or paved shoulder.
- Must have an accessible approach to the stop.
- Must meet running slope/cross slope criteria.
- Must be firm, stable, and slip-resistant to the maximum extent possible.

FDOT Accessing Transit, 2013

Each new or relocated transit stop must be examined on a case-by-case basis to ensure that all issues are addressed satisfactorily. The actual location of transit stops can influence the convenience of transit access, which, in turn, can impact ridership. For example, JTA's large buses cannot efficiently maneuver through most parking lots. Therefore, JTA transit stops are typically located on the street, rather than at building entrances. Accessible, safe walking paths should be identified in development site plans to accommodate pedestrians as they walk between transit stops and building entrances. Figures 4, 5, and 6 provide guidance on recommended placement, advantages, and disadvantages.

3.1.1 Transit Stop Location Considerations

Near-side Intersection

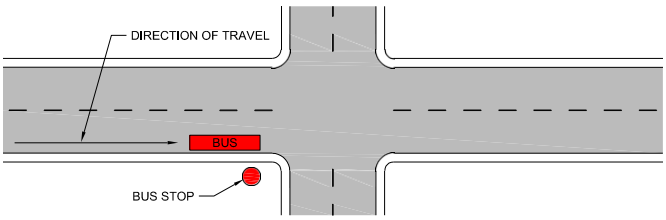


Figure 4: Near-Side Intersection Transit Stop Placement

Advantages:

- Minimizes interference when traffic is heavy on the far side of the intersection
- Passengers access buses closest to the crosswalk

Disadvantages:

- Conflicts with right-turning vehicles are increased
- Stopped buses obscure curbside traffic control devices and crossing pedestrians
- Sight distance is obscured for crossing vehicles stopped to the right of the intersection
- Through lane may be blocked during peak periods by queuing buses
- Increases sight distance problems for crossing pedestrians

Mid-Block

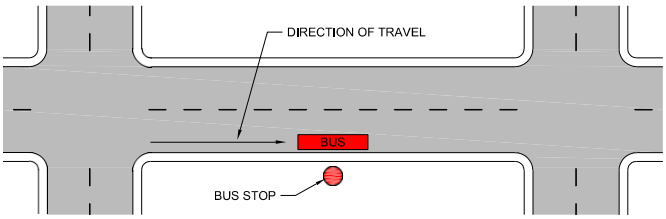


Figure 5: Mid-Block Transit Stop Layout

Advantages:

- Minimizes sight distance problems for vehicles and pedestrians
- Passenger waiting areas experience less pedestrian congestion

Disadvantages:

- Requires additional distance for no parking restrictions
- Encourages patrons to cross the street mid-block crossings can alleviate safety problems)
- Increases walking distance for patrons crossing at intersections

Far-Side Intersection

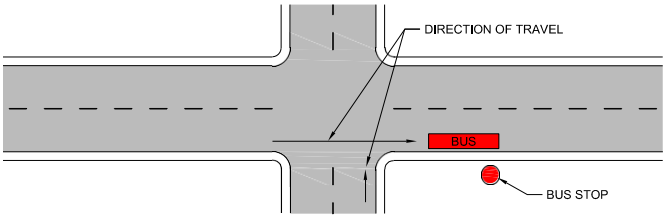


Figure 6: Far-Side Intersection Transit Stop Layout

Advantages:

- Minimizes conflicts between right-turning vehicles and buses
- Provides additional intersection capacity by making curb lane available for traffic
- Minimizes sight distance problems on approaches to an intersection
- Encourages pedestrians to cross behind the bus
- Requires shorter acceleration and deceleration distances for buses
- Gaps in traffic flow are created for buses re-entering the traffic flow at signalized intersections

Disadvantages:

- Intersections may be blocked during peak periods by queuing buses
- Sight distance is obscured for crossing vehicles stopped to the right of the intersection
- Increases sight distance problems for pedestrians
- Conflicts with right-turning vehicles from a side street can result
- Rear-end collisions can increase, as motorists may not expect buses to stop after clearing the intersection

When considering new transit stop locations and sizes, the planner or designer should always consider proximity to single-family residential properties, as well as the preservation of trees when possible. Since street corners naturally attract development, typically they are equipped with pedestrian crosswalks, and often provide an intersection of two major routes, and serve as the best locations for transit stops. While these transit stop placement standards are a general rule, exceptions may be made in special circumstances.

JTA TRANSIT STOP PLACEMENT STANDARDS:

- A near-side stop should be used only where a safe far side location is impossible.
- A mid-block stop only should be used in instances where activity centers are substantial distances from an intersection.
- A far-side stop is preferred in all locations where obstacles do not exist to such a stop.

Sometimes block lengths are long and increase walking distances to mid-block land uses. When this scenario is present, mid-block transit stop locations often are used to provide more direct transit linkages to area land uses.

There are both advantages and disadvantages to the placement of stops at either near-side, far-side, or mid-block locations. Along with the land use mix of the area served by a transit stop, these advantages and disadvantages should be reviewed to ensure a location that will present transit riders with the most convenient access while minimizing traffic congestion and safety concerns. Prioritizing the placement of transit stops near existing lighting should be considered.

JTA TRANSIT STOP REVIEW PROCESS:

Several JTA Departments review and approve requests for new or modified transit stop locations.

These Departments include JTA's Transit Operations and Transit Planning, and System Development Division. A "Transit Stop Decision Process" is shown in Appendix C.

3.2 Spacing of Transit Stops

Well-connected, grid street patterns provide better access to transit lines than curvilinear streets with few route options. Each new transit stop location within the JTA transit service area takes into consideration several factors, as a basis for determining the appropriate location. These factors include, but are not limited to:

- Spacing along the route
- Location of the expected primary passenger traffic generator
- Traffic safety
- Pedestrian safety and access
- Availability of adequate right-of-way
- Curb clearance
- Operational effectiveness issues
- Security

Transit stop spacing is an important consideration in the placement of stops. Transit stop accessibility has a significant influence on a person's decision to utilize transit, and also can impact transit vehicle operation and the overall performance of a transit system. Through JTA's Route Optimization Initiative (ROI), the current bus stop location standards in Section 3.1 were developed. Transit stops should be close enough to maintain a reasonable walking distance but must be balanced with the increase in travel time that occurs with many closely spaced stops.

Available right-of-way, the density of the surrounding geographical boundaries, existing, and potential ridership in the area, traffic conditions, and route operations/efficiency should all be considered in the spacing of stops. In short, spacing should be appropriate for the level of service provided along a corridor, with longer stop spacing on major corridors or those with high ridership. While these spacing standards are the general rule, exceptions may be made in special circumstances.

3.3 Relationship to Land Use and Development

In addition to the general spacing and placement guidelines, local planning and zoning reviews shall consider site-specific needs for transit access by addressing requirements during the development review process. Trip generation data provided by a development application should be used appropriately to determine the quantity and transit stop type needed for development approval.

During site visits, adjacent land uses in close proximity to potential transit stop locations should be documented. The design criteria and considerations for transit stops are discussed in more detail in Section 4. Land use information should be noted on the Transit Stop Checklist. The Transit Stop Checklist is included in **Appendix B**.

3.4 JTA Service Standards

The JTA Transit Planning Department, in consultation with JTA's Transit Operations leadership, has defined the operating standards for JTA public transportation services. The JTA Transit Service Standards and a summary of current transit routes and services are included in **Appendix F**.

The primary contact for questions or additional information with regard to the placement or spacing of transit stops, and JTA's Service Standards, is JTA's Transit Planning Department. Additional reviews and approvals are coordinated with JTA's System Development Division.



First Coast Flyer Red Line Transit Stop

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4

Transit Stops Design Guidelines

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4 Transit Stop Design Guidelines

To help execute the objectives and goals of the JTA's MAP, this handbook was prepared with the intent for use by contractors, consultants, and local governments as part of their planning and zoning process, as well as communities seeking to further the accessibility and mobility of residents and visitors. It also serves as the official guidelines for JTA staff.

This section of the handbook outlines specific guidance to be used when designing transit stops and other JTA transit facilities. Many of the standards are JTA specific enhancements and are based on various resources, such as:

Section 4 Highlights:

This section provides guidance on:

- ✓ Transit Stop Dimensions
- ✓ Boarding & Alighting Areas
- ✓ Transit Stop Sign Details
- ✓ Shelters and Amenities
- ✓ Shelter Placement Criteria
- ✓ Thresholds for Amenity Installation
- ✓ Transit Stop Infrastructure (totems, TVM, etc.)

- FDOT Accessing Transit
- FDOT Transit Facilities Guidelines
- FDOT Design Standard Index
- City Ordinance Code
- Manual on Uniform Traffic Control Devices (MUTCD)
- Public Rights-of-Way Accessibility Guidelines (PROWAG)
- American Association of State Highway and Transportation Officials (AASHTO)
- Federal Register, 49 CFR Parts 27 and 37
- Florida Administrative Code
- ADA Accessibility Guidelines for Buildings and Facilities

When referencing these publications, it is the user's responsibility to ensure the use of the latest version of these manuals. This section of the MAP outlines recommended design practices, resources, and guidance concerning the following:

- Transit Stop Dimensions
- Transit Stop Sign Details
- Shelter Types and Placement
- Other Transit Stop Features (Lighting, etc.

The primary contact for questions or additional information about transit stop design requirements is JTA's System Development Division, Construction and Capital Programs Department, Construction and Engineering.

4.1 Transit Stop Dimensions

Design guidance pertaining to the typical dimensions of JTA's on-street bus stops by type of stop, and the components of a standard transit stop are provided in this section. Detailed schematics of transit stop layouts are contained in **Appendix G**.

4.1.1 Boarding and Alighting Areas

According to transit design guidance, the minimum requirements for a transit stop are a bus stop sign and a boarding and alighting (B&A) area. The passenger B&A area must have a firm, stable, well-drained, non-slippery surface with adequate space for passenger mobility at and around the bus stop.

The B&A area is paved, typically a concrete pad. The dimensions of the B&A area waiting pad may vary in size; however, the minimum requirements per ADA Standards, **shall be 5 feet (measured parallel to the street) by 8 feet (perpendicular to the roadway, measured from the edge of roadway or face of curb).**

Detectable warnings are required where a sidewalk connects the B&A area to the roadway at-grade level. The B&A area concrete pad must be located within the specified clear zone for the roadway environment according to the FDOT Design Standards Index 700. If any transit stop amenities, in addition to the bus stop sign, are provided, the B&A area must be connected to the amenities, streets, sidewalks, and other pedestrian infrastructure by an accessible route in compliance with ADA Standards and the Florida Accessibility Code (Section 402).

4.1.2 Waiting Pad

JTA utilizes several waiting pad size variations to accommodate different configurations and components that may be installed at a specific transit stop. It can contain either a bench or a shelter. Amenities, such as trash receptacles or bike racks, can also be located on the waiting pad. The recommended placement of these additional amenities is discussed in MAP Section 4.3.



Example Transit Stop Waiting Pad

The size of the waiting pad depends on several factors:

- Length and width of shelters and benches to be used at the specific site
- Clearance requirements for street furniture (such as benches, etc.) from accessible paths
- Location of wheelchair lift extension area (front or back door of bus)
- Length of the bus

Waiting pads are usually separated from the sidewalk to preserve the general pedestrian flow. It is recommended that 5 feet of clearance be preserved on sidewalks to reduce potential pedestrian conflicts and limit congestion during boarding and alighting. The pad can be located on either side of the sidewalk, depending on available right-of-way space, utility poles, or buildings. In either case,

a paved surface should be provided from the waiting pad to the back face of the curb to enhance access and comfort.

ADA mobility guidelines should be reviewed when street furniture is included on a waiting pad to ensure adequate clearances for use of mobility equipment (wheelchairs, scooters, etc.). Additional information regarding ADA compliance is the Americans with Disabilities Act: Accessibility Guidelines for Buildings and Facilities, Transportation Facilities, and Transportation Vehicles. U. S. Architectural and Transportation Barriers Compliance Board, Washington, DC, 1994. This guide is commonly known as the ADA Guide. Another resource, which translates the ADA Guide accessibility guidelines into specific design parameters, is the Accessibility Handbook for Transit Facilities. Federal Transit Administration, Report No. FTA- MA-06-0200-92-1, July 1992.

4.1.3 Transit Shelter Pad

In the case of the implementation of a paved shelter pad, the size of the pad will be an important consideration. A 10 feet x 30 feet concrete pad is the standard size for a JTA transit stop if there are no obstructions. Depending on site constraints, the pad size may vary. However, the minimum size for a bus stop pad with a shelter should not be less than 8 feet wide x 20 feet (No Ad Only) to maintain ADA compliance.

The shelter pad length should be based on the maximum length of the buses that will be accessing the stop, as well as the number of buses that will be using the stop simultaneously. Pavement markings must comply with maintaining agency regulations and standards in the Manual of Uniform Traffic Control Devices (MUTCD).

Refer to the Transit Stop Checklist in **Appendix B** and the Transit Stop Decision Process in **Appendix C** for additional guidance when evaluating site constraints that may affect or limit the transit stop pad size for shelters. Table 1 provides standards for transit stop pad sizes and amenities that are typically accommodated for each size. Recommended design configurations for all transit stop types are contained in **Appendix G**.

Table 1: Standard Shelter and Pad Sizes with Amenities

Pad Size (Feet)	Shelter Sizes (Feet)	Amenities (Possible)	Miscellaneous
10 x 30 or larger	5 x 10, 5 x 15, 2 x 10, 2 x 15	Bus Stop Sign, Bike Loop, Bench, Trash Receptacle, Totem, Ad/Non-Ad Panels	TVM, TVM Shelter, Big Belly Compactors, High Mast Lighting
10 x 15	None	Bus Stop Sign, Bike Loop, Bench, Trash Receptacle,	To maintain B&A there is not sufficient room for a shelter & amenities
8 x 30	2 x 10	Bus Stop Sign, Bike Loop, Bench, Trash Receptacle, Non-Ad Panels	
8 x 15	None	Bus Stop Sign, Trash Receptacle, Bench	

A typical paved shelter pad is shown in Figure 7 (Refer to the FDOT Design Standards Manual). Pavement design for waiting pads and shelters pad may vary depending on site conditions and requirements to anchor the transit stop components and amenities.

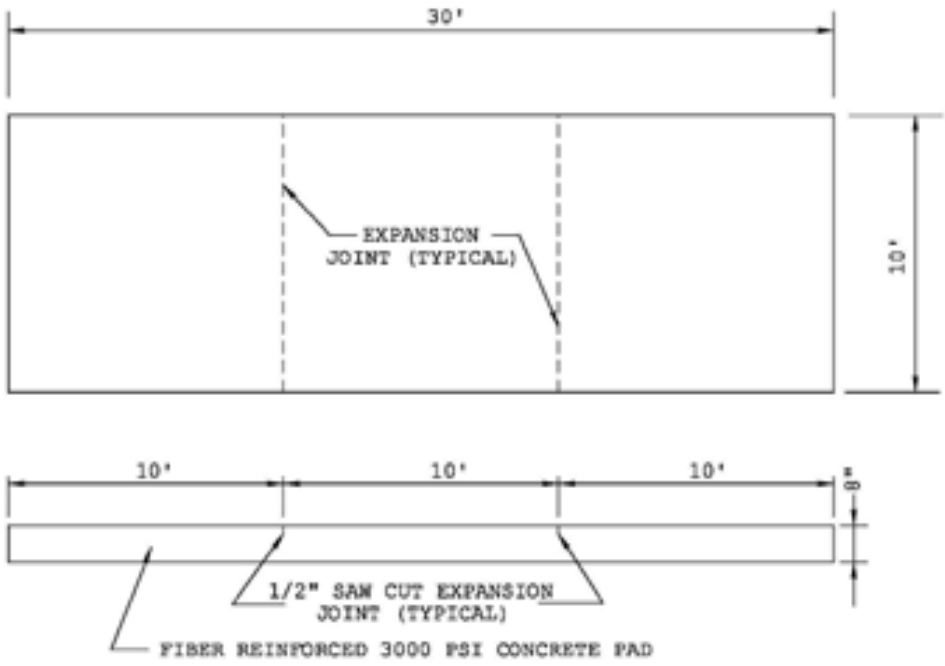


Figure 7: Example Transit Stop Shelter Pad

4.1.4 Temporary or Movable Bus Stop Pads

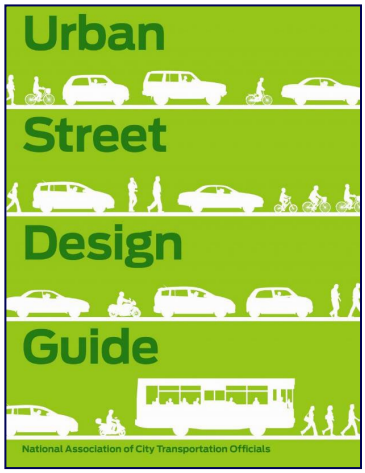
As part of its transit planning and service design process, the JTA plans to consider the use of moveable or temporary bus stop pads for pilot projects or other transit service implementation needs. The decision to deploy moveable pads must consider variables for each location including specific physical features, ADA requirements, expected transit service duration, the projected number of passengers, and other site-specific factors.



Temporary or Movable Bus Stop Pad

Movable or temporary transit stop pads are currently in use in various locations in other cities for pilot projects to serve as an extension of a transit stop from the curbside location or as a connection to a bus-only lane. Additional documentation of other applications is contained in the Best Practices research included as **Appendix P**. Additional guidance can be reviewed in the Urban Street Design Guide, prepared by the National Association of City Transportation Officials.

An analysis of movable bus stop boarding and alighting areas was completed for the Florida Department of Transportation (FDOT) by the Lehman Center for Transportation Research, Florida International University in May of 2013. The study explored the feasibility of using movable and reusable boarding and alighting pads at bus stops. Potential alternatives for materials and structural support were evaluated and recommended for further investigation. At this time, the FDOT has not adopted any standards for movable and reusable bus stop pads.





Movable Bus Boarding Pad, Source: Portland, OR

4.2 Transit Stop Signs

The standard placement of JTA transit stop signs is for the sign to be located at a position that corresponds to the front of a bus when it is stopped to board passengers (i.e., near the front door of the bus). This will help passengers understand where they should stand to wait for a bus; it also will provide a visual cue for the transit vehicle operators to help them position their vehicles at the stop.

The local bus stop signage must display the route numbers that serve the stop and the bus stop number. Signs providing route designations, bus numbers, destinations, and access information must be designed for use by transit riders with vision impairments.

In some cases, two sets of signs may be needed to ensure visibility for most users and to assist users with sight limitations.

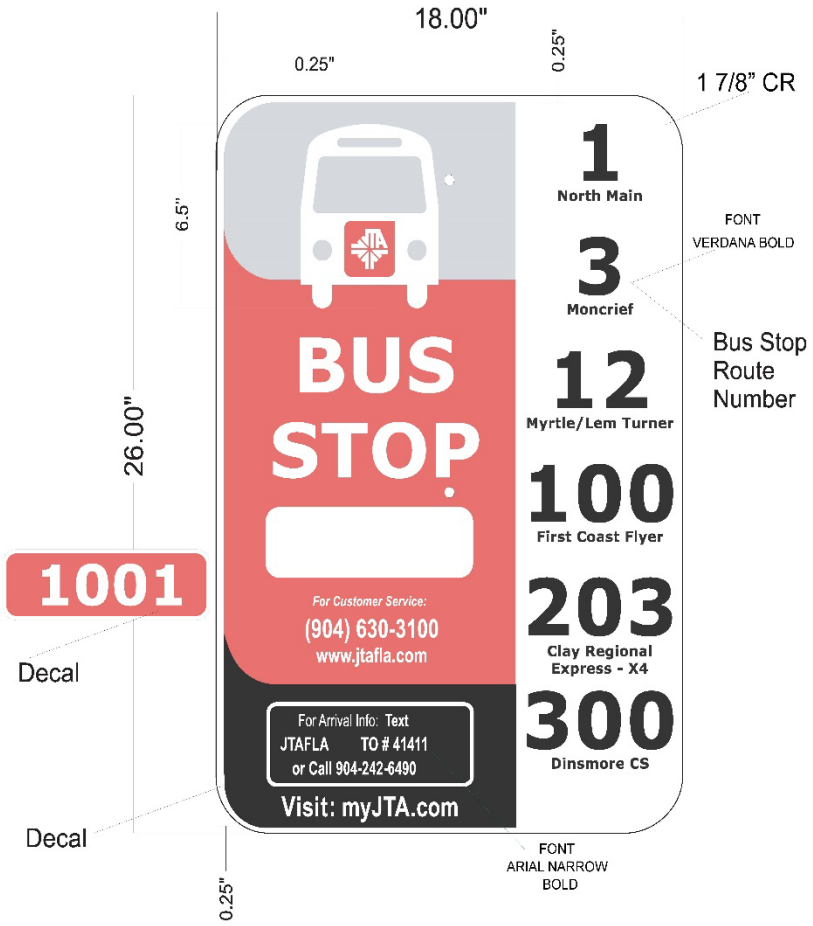


Figure 8: Bus Stop Sign Details (see also Appendix I)

Route maps or timetables are not required at the stop; however, this information is available to passengers through the **MyJTA mobile App**. Additional information for downloading the MyJTA App can be found at www.jtafla.com

Although there are many existing locations with signage installed in the grass or within the concrete, the preferred JTA installation method is surface-mounted. The location of the bus stop sign should align with the front of the bus when stopped.

Specific guidelines for bus stop signs are contained in Section 4.30 of the *Accessibility Guidelines for Buildings and Facilities, Transportation Facilities, and Transportation Vehicles.*

JTA Bus Stop Signs

When installing JTA bus stop signs, the following guidelines are adhered to:

- Route indicators must be included per ADA guidance
- Signs must be installed outside the accessible path with 5 feet minimum sidewalk clearance maintained

See Figure 8 for sign design details. Additional information regarding bus stop signage is provided in the FDOT Accessing Transit manual. See **Appendix I** for the JTA transit stop sign details and dimensions.

4.3 Transit Stop Shelters and Amenities

The standard design configurations and dimensions for JTA's typical shelter types are contained in **Appendix H**. There are neighborhood-specific design criteria for some shelters, such as in the Downtown Historic Districts. **For additional information on shelter types, placement, and recommended manufacturers, contact the JTA's System Development Division, Construction and Capital Programs (see Appendix A – Contact Information).**

A shelter provides protection from the weather and typically offers seating for passengers while waiting for a bus. The JTA often uses standardized shelters that accommodate various site demands and different passenger volumes.

Typically, a shelter is constructed of clear side panels for clear visibility; or a steel mesh material is also used. Depending on demand and frequency of service, a shelter may also have a bench. Design details pertaining to the placement of the shelter on the bus pad are found in Section 4.3.1. The guidelines for bench placement within a shelter or at a transit stop are addressed in Section 4.3.4.

The decision to install a shelter is a result of systemwide policy among transit agencies. Many criteria exist to determine shelter installation at a transit stop. In most instances, the estimated number of passengers boarding at the stop has the greatest influence.

Other criteria used to evaluate the potential for inclusion of a shelter include:

- Number of transfers at a stop
- Availability of space to construct shelters and waiting areas
- Number of elderly or physically challenged individuals in the area
- Proximity to major activity centers
- Frequency of services
- Adjacent land use compatibility



JTA Shelter Types

Priority is given to each of these items depending on policies or current conditions. System equity or funding availability can cause the installation decision to be made on a case-by-case basis. Local priorities and neighborhood requests can also influence the decision to include a shelter at a bus stop. Other factors that can influence the size of the shelter include the availability of right-of-way width, existing street furniture, utility pole locations,

landscaping, existing structures, and maintaining proper circulation distances around existing site features.

Ideally, the location of a transit stop shelter should enhance the circulation patterns of patrons, reduce the amount of pedestrian congestion at a bus stop, and reduce conflict with nearby pedestrian activities.

The location of the curb and sidewalk and the amount of available right-of-way can be the determining factors for locating a bus stop shelter. Additional components which may be found within a shelter may include transit system maps, advertising signage, benches, and trash receptacles.

4.3.1 Shelter Placement

When considering the shelter placement at a specific transit stop, the minimum shelter setback from the curb is 4 ½ feet. However, the desired shelter placement for locations with sufficient right-of-way available includes a setback of at least 6 feet. Additional information regarding the placement of shelters is provided in the FDOT Accessing Transit Manual.

The following guidelines should be used when placing a bus stop shelter on a site:

- Bus stop shelters should not be placed in the 5-foot-by-8-foot wheelchair landing pad.
- General ADA mobility clearance guidelines should be followed around the shelter and between the shelter and other street furniture.
- Locating shelters directly on the sidewalk or overhanging a nearby sidewalk should be avoided because this may block or restrict general pedestrian traffic. A clearance of 3 feet should be maintained around the shelter and an adjacent sidewalk (more is preferred).
- To permit clear passage of the bus and its side mirror, a minimum distance of 2 feet should be maintained between the back face of the curb and the roof or panels of the shelter. Greater distances are preferred to separate waiting for passengers from nearby vehicular traffic.
- The shelter should be located as close as possible to the end of the transit stop zone so it is highly visible to approaching buses and passing traffic. The walking distance from the shelter to the bus is also reduced.
- Locating shelters in front of store windows should be avoided when possible, so as not to interfere with advertisements and displays.

When shelters are directly adjacent to a building, a 12-inch clear space should be preserved to permit trash removal or cleaning of the shelter. In orienting and configuring shelters, personnel should consider each site's physical and environmental characteristics, because placement and design can positively or negatively influence passenger comfort. For example, in hot climates, particularly in areas with few tall



trees, shelters may be uncomfortable if they face directly east or west. When shelter interiors are uncomfortable, patrons will seek relief outside the shelter, which may be nearby private property, for their use.



First Coast Flyer Branded Stop

Transit agencies should be sensitive to this issue when locating a transit stop shelter. Different shelter configurations can be used to reflect site or regional characteristics. Shelters can be completely open to permit unlimited movement of air, or panels can be erected to keep the interior of the bus shelter warm. For southern climates, perforated panels can be used to reduce glare while permitting ventilation. Alternatively, shelters can be fully enclosed by solid panels and the back of the shelter may be rotated to face the street to protect passengers from splashing water.

A **6-inch clearance** between the ground and the bottom of the panels is standard in fully enclosed shelters to enhance ventilation and reduce the clutter that can accumulate inside a shelter.

In all cases, shelters should be coordinated with landscaping to provide maximum protection from the elements and to enhance the visual quality of the transit stop. Shade trees reduce heat at a site and provide additional shade for patrons waiting outside the shelter.

Technology, such as misters or evaporative cooling towers, can also be used to enhance the interior environment, however, such technology may be expensive and maintenance intensive.

4.3.1.1 Sight Line

The sight line is a hypothetical line that extends from a person's eyes to what can be seen. Proper consideration for sight distance from intersections and road offsets for horizontal clearance requirements is imperative. FDOT line of sight (FDOT Standard Index 546 – Sight Distance) and clear zone (FDOT Standard Index 700 – Road Offset) requirements are discussed in full detail within the FDOT Design Standards Manual. Sight lines are to be checked any time an amenity or other structures are placed on a bus pad.

4.3.1.2 Clear Zone

A clear zone is the total roadside border area, starting at the edge of the traveled way, available for safe use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area. The desired minimum width is dependent upon traffic volumes and speeds and on the roadside geometry. Simply stated, it is an unobstructed, relatively flat area beyond the edge of the traveled way that allows a driver to stop safely or regain control of a vehicle that leaves the traveled way. Clear zone considerations must be made when constructing new pads for transit stops. Diagrams depicting the shelter dimensions are contained in **Appendix H.**

4.3.2 Shelter Branding

Branding, marketing, and advertising play important roles in influencing travel behavior and shaping public opinion about public transit. In recent years, marketing efforts in North America have increasingly featured messages that promote the value of riding public transit. These campaigns underscore a broader marketing effort that seeks to distinguish public transportation as a better value than commuting by automobile, a position bolstered by a weak international economy, fuel price fluctuations, and growing public awareness and concern about environmental issues.

JTA offers distinctive mobility services that are branded to reflect the special character of each service. The traditional red and gray colors are typically found on buses and shelters that are a part of the local fixed-route service. The First Coast Flyer (FCF) is considered a premium service. The FCF blue and green colors, along with the flying fish logomark, brands this Bus Rapid Transit (BRT) service. Black and blue colors identify Express Select transit stops.



Express Select Branded Shelter

The historic areas of Jacksonville feature copper and black branded shelters in keeping with the historic feel of these areas. Additional fixtures in the shelter may include a Transit System Map or related passenger information. Transit System Maps located at transit stops in shelters and stations are managed and maintained by the JTA Communications and Marketing team.

4.3.3 Ad versus No Ad Shelter

Many transit agencies have paid advertising in shelters to supplement funding and to provide other benefits. The advertisements are placed in panels attached to the transit shelter to take advantage of the visibility that the transit stop receives from passing traffic. Backlighting is sometimes used to display images at night. Advertisements do not necessarily have to be attached to the shelter. In some areas, kiosks are used to display advertisements. Depending on the design, the kiosk may provide additional protection from the elements at a transit stop.



Advertising Panel on a Transit Shelter

Issues associated with advertisements placed on shelters and kiosks include compatibility with local land uses, ordinances, and safety. The signs can conflict with color schemes or limit views of adjacent storefronts.

Advertising at transit stops must also comply with local sign ordinances, which may hinder installation in some communities. Before deciding if a shelter should be an Ad or Non-Ad Shelter, consult the

following documents: Jacksonville City Ordinance 2009-401-E, COJ Code of Ordinance Chapter 656 Zoning Code, Part 13, COJ Code of Ordinance Chapter 326 Signs & Outdoor Display Structures.

The City of Jacksonville Ordinance 2009-401-E determines where an ad panel may be utilized based on the zoning limitations. The proximity of residential housing, side drains, driveways, as well as fire hydrants, are all additional factors to consider. Once the minimum zoning requirements have been determined, the following additional design criteria must be adhered to before the installation of a JTA shelter:

- Line of sight
- Clear zone
- Right-of-Way

For passenger and pedestrian safety reasons, ensure that advertisements do not limit views in and around a transit stop, making it difficult for bus drivers to see patrons. The panels can also reduce incidental surveillance from passing traffic.

To prevent restricted sight lines, advertising panels, and kiosks should be placed downstream of the traffic flow. An approaching bus driver should be able to view the interior of the shelter easily. Indirect surveillance from passing traffic should be preserved through the proper placement of the panels.

The *FDOT Design Standard Index* is a resource for additional information regarding line of sight and clear zones. **For right-of-way verifications, contact the FDOT District Right-of-Way office.** The contact information is found in **Appendix A**.

The type of shelter to be installed will vary based on the location. Contact the **JTA's System Development Division** for the correct type of amenities and proper installation. See **Appendix H** for sample shelter sizes.

4.3.4 Benches

A bench, even without a shelter at a transit stop, provides comfort and convenience at transit stops. As with shelters, benches are usually installed based on existing or projected passenger activity.

Other factors used in determining bench-only locations include the following:

- The width of the transit stop location
- Transit stops with long headways and little protection from the weather
- Locations where the landowner has denied permission to construct a shelter
- Sites that are frequently used by elderly people or people with disabilities
- Evidence that transit patrons are sitting or standing on nearby land or structures

Two factors that greatly influence the use of benches are crowding at a transit stop and weather. Crowding limits patrons' choices about sitting and waiting and forces patrons to wait nearby, rather than at, the transit stop. Uncomfortable environmental conditions, such as heat and sun, can also discourage the use of the bench. Preserving minimum circulation guidelines, coordinating with existing landscaping, and providing additional waiting areas can improve bench and site utilization.

The following guidelines for bench placement within a shelter:



Standard Bench and Trash Can (Stop 4156)

- Avoid locating benches in completely exposed locations. Coordinate bench locations with existing shade trees if possible. Otherwise, install landscaping to provide protection from wind and other elements.
- Coordinate bench locations with existing streetlights to increase visibility and enhance security at a stop.
- Locate benches on a level, non-slip, properly drained, concrete pad. Avoid locating benches in undeveloped areas of the right-of-way.
- Locate benches away from driveways to enhance patron safety and comfort. Maintain a minimum separation of 3 feet as the minimum required for wheelchairs (preferably 4 feet) between the bench and the back face of the curb. As the traffic speed on the adjacent road increases, the distance from the bench to the curb should be increased to ensure patron safety and comfort.
- Maintain ADA mobility clearances between the bench and other street furniture or utilities at a transit stop.
- Do not install the bench within the 5-foot by 8-foot boarding and alighting area.
- At bench-only stops, an additional waiting area near the bench should be provided (preferably protected by landscaping) to encourage patrons to wait at the transit stop.

For the placement of benches and shelters, Rule 14- 20 Florida Administrative Code (FAC) places the permitting process for state right-of-way with the local jurisdictions. The best practice is to coordinate with the local jurisdiction to review the permitting process.

Consult with JTA's System Development Division, Construction and Capital Programs, for guidance on bench placement.

4.3.5 Trash Receptacles

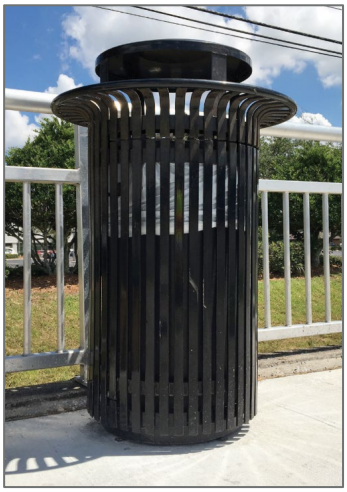
The installation of trash receptacles is typically an Operations and Maintenance decision, and the size, shape, and color reflect JTA's brand. Not all transit stops have trash receptacles. Low patron volumes may not justify the inclusion of this amenity at a transit stop; however, persistent litter issues at a site may warrant the inclusion of a trash receptacle at an otherwise low-volume location. Problems can arise when the receptacles are not regularly maintained or when the transit stop is next to land use that generates considerable trash such as convenience stores and fast food restaurants. In such cases, JTA would seek to work with these establishments to define maintenance responsibilities for the transit stop and the area around the businesses.

Recommendations regarding installing a trash receptacle at a bus stop are as follows:

- Avoid locating the receptacle in direct sunlight. The heat may encourage foul odors to develop.
- Ensure the trash receptacles are accessible by being located adjacent and within reach range from a level, firm, stable, and slip-resistant surface.
- Anchor the receptacle securely to the ground to reduce unauthorized movement.
- Locate the receptacle away from wheelchair landing pad areas and allow for at least a 3-foot separation from other street furniture.
- Locate the receptacle at least 3 feet (minimum required for wheelchairs) from the back of the curb.
- Ensure that the receptacle, when adjacent to the roadway, does not visually obstruct nearby driveways or land uses.
- Avoid installing receptacles that have ledges or other design features that permit liquids to pool or remain near the receptacle which may attract insects.

Big Belly Compactor Bins are placed at all Passenger Mobility Hubs where space is available. These bins provide some beneficial features:

- High Capacity (HC5)
- Smart, Solar-Powered Compacting Model
- Capacity: 150 gallons (~570 liters)
- Built-in compactor (5:1 ratio)
- Senses and communicates fullness
- On-board GPS for geolocation
- Enclosed design with hopper
- Durable and street-tough design



Standard Trash Can



Big Belly Compactor Bins

A schematic of recommended placement of transit stop amenities is illustrated in Figure 9.

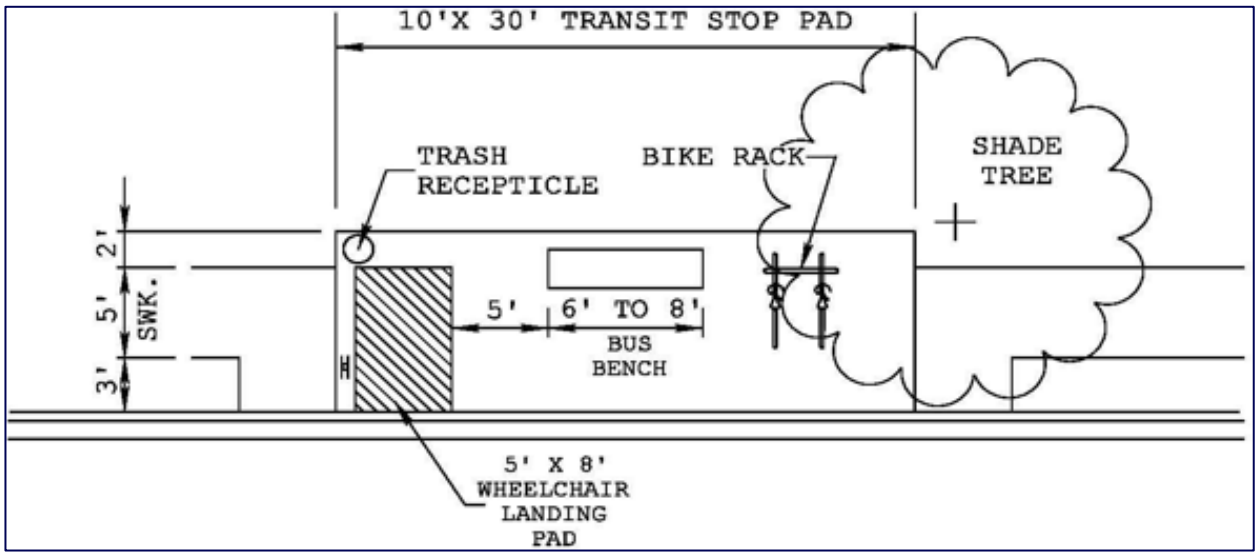


Figure 9: Transit Stop Amenity Placement Schematic

4.3.6 Non-Standard Transit Amenities

The Jacksonville Transportation Authority (JTA) recognizes the importance of creating a comfortable and welcoming environment for passengers at bus stops. To this end, the JTA may, at its discretion, add non-traditional amenities to bus stops in order to improve the overall transit experience for passengers.

In determining whether to add non-traditional amenities to a bus stop, the JTA will consider a range of factors, including passenger needs and preferences, the location of the stop, the cost of the proposed amenities, accessibility considerations, and safety concerns.

Examples of non-traditional amenities that may be added to bus stops, include but are not limited to, solar-powered charging stations, bike sharing and rental services, public art installations, community gardens, Wi-Fi hotspots, real-time information displays, shade structures, and non-sheltered seating.

The JTA will strive to ensure that any non-traditional amenities added to bus stops are accessible to all passengers, including those with disabilities. The JTA will also take steps to ensure that any proposed amenities do not pose a safety risk to passengers or to the general public.

In all cases, the JTA will assess whether the benefits of adding non-traditional amenities to a bus stop are worth the investment. The JTA reserves the right to modify or remove any non-traditional amenities at any time based on changing needs, safety concerns, or other factors.

4.4 Transit Stop Amenities Determination

Section 2 defined the various transit stop layouts (by prototype) used within the JTA's transit system. Transit stop amenities, described in Section 4.3, such as benches or shelters, should provide safety for customers while addressing protection from sun, rain, and other weather conditions. The amenities to be placed at each transit stop are defined primarily by the potential ridership at the specific stop. However, other circumstances may warrant consideration of amenities to be placed at a transit stop.

In the prior JTA MAP guidance, the ridership threshold for shelter installation was 40-weekday passenger boardings per day. This threshold has been modified to 25 passengers per day as depicted in Table 2.

The JTA documents the requests for shelters, benches, or other amenities at a transit stop. If a shelter is requested for a transit stop with less than the required 25 passenger boardings per day, or other amenities are requested that do not meet the thresholds shown in Table 2, the JTA requires an On-Street Transit Amenities Request Determination and Review Process which is described briefly in Figure 10. This process provides an opportunity for local jurisdictions or members of the public to submit a request for on-street transit amenities if the specific transit stop does not meet the JTA's standard thresholds.

Table 2 also identifies a recommended threshold to meet the Federal Transit Administration (FTA) Justice40 initiative guidance. Understanding the community needs is a critical component in the decision process for transit stop and amenities installation.

Decisions are made on a case-by-case basis to determine the best alternative to meet safety, equity, and accessibility guidelines. Additional information for the amenities request and approval process is contained in **Appendix E**. **Contact JTA's System Development Division, Construction and Capital Programs Office for all inquiries related to shelter or amenities requests.**

Table 2: Transit Amenities Passenger Ridership Threshold

AMENITY	STANDARD (PASSENGERS/DAY)	JUSTICE40 (PASSENGERS/DAY)
Shelter	25	20
Bench	15	12
Trash Can	15	12
Bike Loop	Not Ridership Based	
(20% reduction in areas of persistent poverty)*		

FTA JUSTICE40

Justice40 is a goal for delivering 40 percent of the overall benefits of federal investments to disadvantaged communities. A specific community may be determined to be "Disadvantaged" based on a "combination of variables that may include but is not limited to, low income, high and/or persistent poverty, high unemployment, distressed neighborhoods, etc." Persistent poverty identifies the number of individuals living in relative poverty for three or more of the last four years.

JTA ON-STREET TRANSIT AMENITIES REQUEST PROCESS:

An entity or an individual may submit a request to JTA for on-street transit amenities to be placed in a specified area. The following steps are required to review the request to make a determination regarding the feasibility of the on-street amenities.

1. The JTA Transit Planning staff is responsible for evaluating and determining the placement of transit amenities.
2. The JTA GIS Planning staff is responsible for evaluating transit stop amenities based on the criteria established in the JTA Policy.
3. The JTA's System Development Division will make the final decision on the feasibility of the transit amenities placement.

Additional information with regard to an On-Street Transit Amenities Request, and the corresponding evaluation criteria and scoring process, are contained in Appendix E.

Figure 10: Transit Amenities Request Review Process Overview

For special circumstances at a transit stop, such as to accommodate the elderly, disabled, and children, contact the **JTA's System Development Division** for review and approval before installing a shelter and/or transit amenities.

4.5 Transit Stop Removal Process

The location of transit stops, facilities, and amenities is based on a number of factors considered through the transit planning and transit operations process conducted by JTA's Transit Planning and Transit Operations personnel.

However, over time, site conditions or transit service operations may change or warrant an assessment of transit stop locations. The decision to remove or relocate a transit stop, and its associated amenities, is determined on a case-by-case basis. The request to remove or relocate a transit stop may be due to a number of circumstances, including but not limited to a transit service change, a change in adjacent property or site conditions, or due to other conditions to be determined through a site and transit service assessment process. In the assessment process, it is important to understand the status of the transit asset; therefore, it is important to connect with the **JTA's Fixed-Assets Management Coordinator.**

For any questions or inquiries related to the request for the removal of a transit stop, or its associated amenities, contact the **JTA's System Development, Construction and Capital Programs Office.** Construction and Capital Programs personnel will coordinate with Transit Operations and Facilities to review the request. **Appendix A** contains contact numbers for all JTA Departments.

The JTA maintains a transit stop inventory and database. The JTA also monitors the transit stop and amenities program for compliance with Title VI of the Civil Rights Act. The JTA will notify the public about plans to add or remove shelters within JTA's transit system. Public notification and agency coordination procedures are outlined in Section 8. **The primary contact for public notification and stakeholder outreach is JTA's Engagement Department.**

4.6 Transit Stop Infrastructure

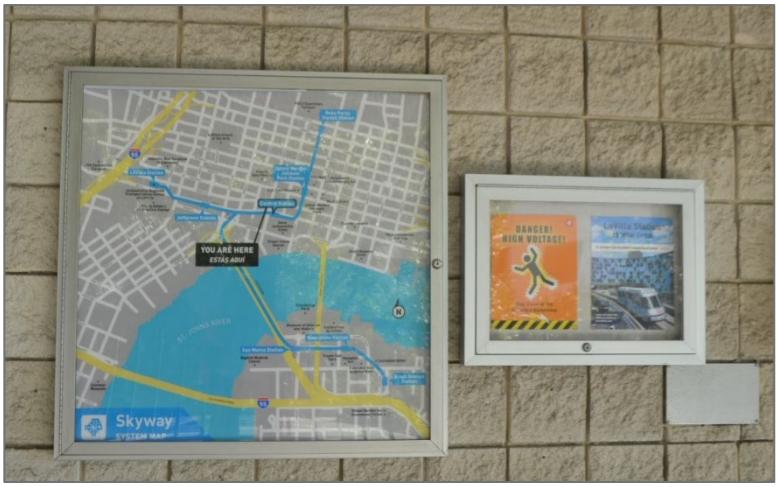
One method to help make transit more attractive to potential riders is to improve the level of infrastructure available at transit stops. A transit stop with seating, a shelter, and route information is much more inviting than a stop that consists of only a bus stop sign.

These infrastructure improvements will also improve the comfort and overall transit experience of patrons. Depending upon area type, ridership volume, frequency, and transit stop classification, the infrastructure found at JTA facilities may vary. Some of the potential infrastructure items that may be incorporated into the range of current JTA facilities can include the following:

- Curb ramp
- Passenger mobility information
- Concrete bus pad
- Bench
- Water fountain
- Real-time passenger information
- Security camera
- Shelter
- Trash receptacle
- Bike rack/loop
- Solar lighting
- System route map and schedule
- Information kiosk
- Textured/colored paving
- Lighting
- Bollards
- Landscaping
- Telephone
- LCD screens
- TVM
- Shopping cart storage
- Automobile parking
- Bus Pull-Off Bay
- Restrooms
- Exercise equipment



Ticket Vending Machine



System Map and Station Signage

4.6.1 Totems

Totems are located at First Coast Flyer transit stops. The totems contain real-time bus arrival informational screens. Inside of the totems, there is Intelligent Transportation System (ITS) equipment that enables the screen to receive real-time bus arrival information. The inside of the totem structure may include all, some, or a combination of the following major equipment:

- Network Switch (ITS Switch)
- MOXA Rugged Computer, Panasonic Tablet, or similarly equipped computer
- Fiber Distribution system
- Power Distribution System
- LED Display Unit



First Coast Flyer Totem

4.6.2 Ticket Vending Machines (TVMs)

Ticket vending machines (TVMs) are a convenient way to purchase JTA transit passes. TVMs are located at various transit facilities throughout Jacksonville. A detailed list is provided in **Appendix M**.

Specifically, TVMs are located at some Neighborhood Hubs and Transit Hubs as well as the JRTC. Select locations include:

- Rosa Parks Transit Hub
- Gateway Transit Hub
- Regency Transit Hub
- James Weldon Johnson Skyway Station
- Riverplace Skyway Station
- Armsdale Park-n-Ride
- Avenues Walk Park-n-Ride

4.6.3 Exercise Equipment

Where adequate space is available, the JTA plans to install stationary exercise equipment within the limits of the transit stop or transit facility. Placement of exercise infrastructure is common in public parks and along dedicated trails, such as the Riverwalk. In cases where a transit stop requires the removal of a shelter and a concrete pad remains, applying an alternate use of the concrete pad, such as with the exercise equipment, would also add to the useful life of the infrastructure. Other transit systems have evaluated the “Workout While Waiting” concept, as well as “Bus Stop Moves,” an arts and health initiative in Cleveland.

Specific criteria for the placement of the exercise equipment, and the type of equipment JTA intends to use, are in development. Additional information is contained in the Best Practices Research contained in **Appendix P**.

4.7 Bus Pull-Off Bays

JTA transit stops that are located on roads with large traffic volumes typically have high ridership or otherwise need longer dwell time. These types of areas are candidates for Bus Pull-Off Bays (or turnouts). Pull-Off Bays enable safe passenger loading and unloading without causing traffic delays.



Bus Pull-Off Bay Adjacent to a Transit Stop

Bus Pull-Offs Bays are not bus passenger amenities. JTA installs them on busy streets at layover locations since JTA transit vehicles should only stop in the moving lane when passengers are boarding or alighting. In the future, one potential application for Bus Pull-Off Bays that JTA will consider is the implementation of a Bus Pull-Off Bay on a high-speed corridor that is utilizing transit signal priority. Example layouts are shown in Figures 11, 12, and 13.

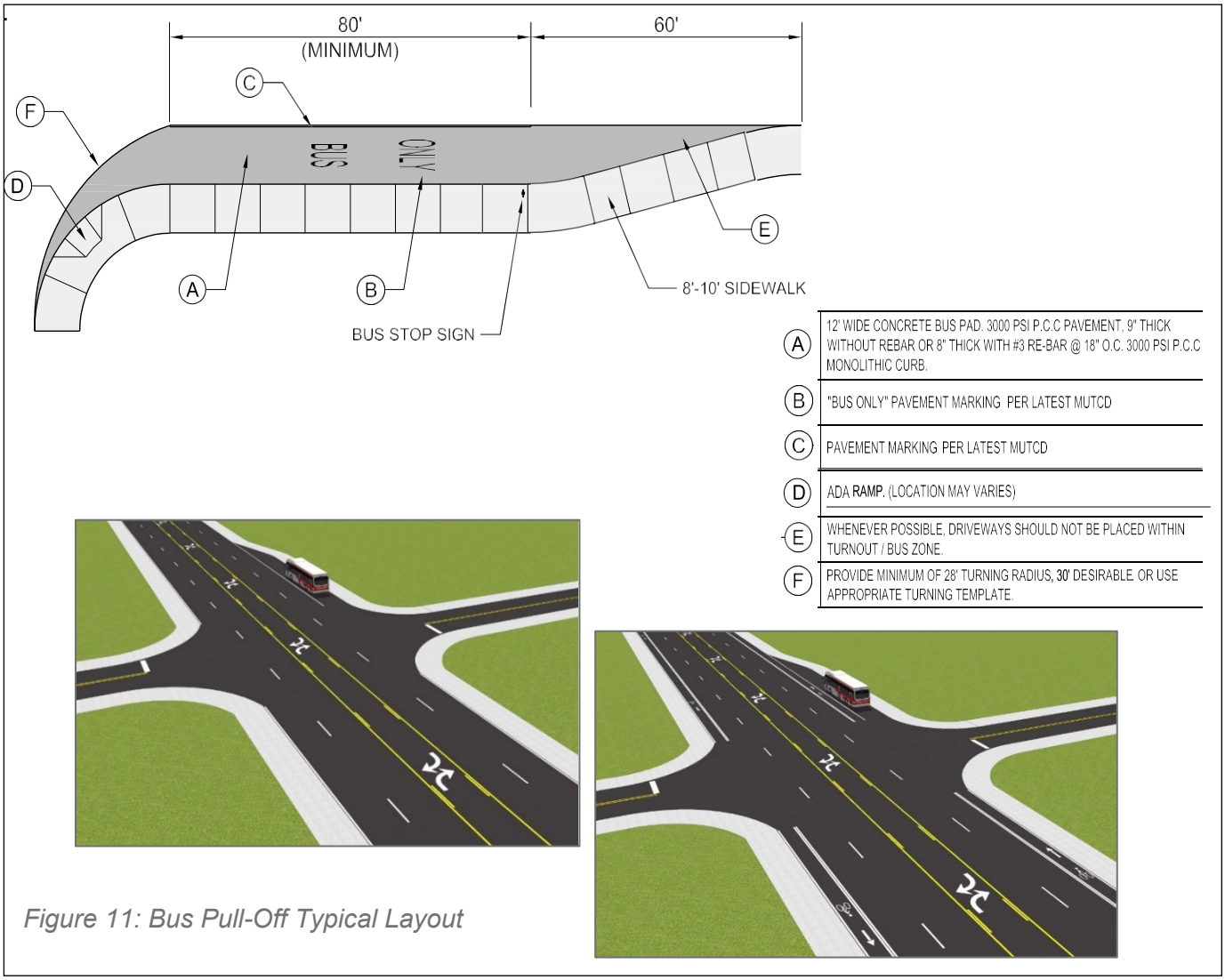
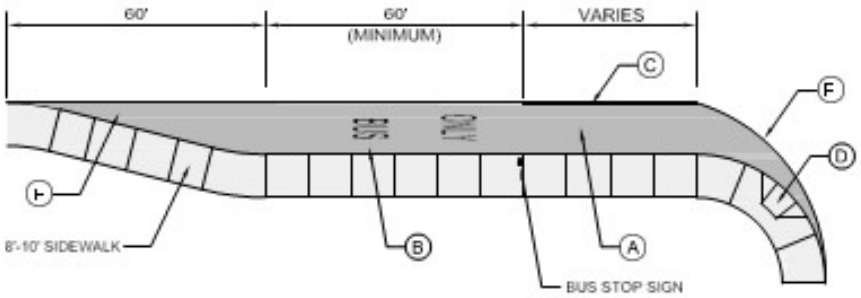


Figure 11: Bus Pull-Off Typical Layout



NEAR-SIDE TURNOUT DESIGN

NOTES:

A	12' WIDE CONCRETE BUS PAD. 3000 PSI P.C.C PAVEMENT, 9" THICK WITHOUT REBAR OR 8" THICK WITH #3 RE-BAR @ 18" O.C. 3000 PSI P.C.C MONOLITHIC CURB.
B	"BUS ONLY" PAVEMENT MARKING PER LATEST MUTCD
C	PAVEMENT MARKING PER LATEST MUTCD
D	ADA RAMP. (LOCATION MAY VARIES)
E	WHENEVER POSSIBLE, DRIVEWAYS SHOULD NOT BE PLACED WITHIN TURNOUT / BUS ZONE.
-	PROVIDE MINIMUM OF 28' TURNING RADIUS, 30' DESIRABLE. OR USE APPROPRIATE TURNING TEMPLATE.

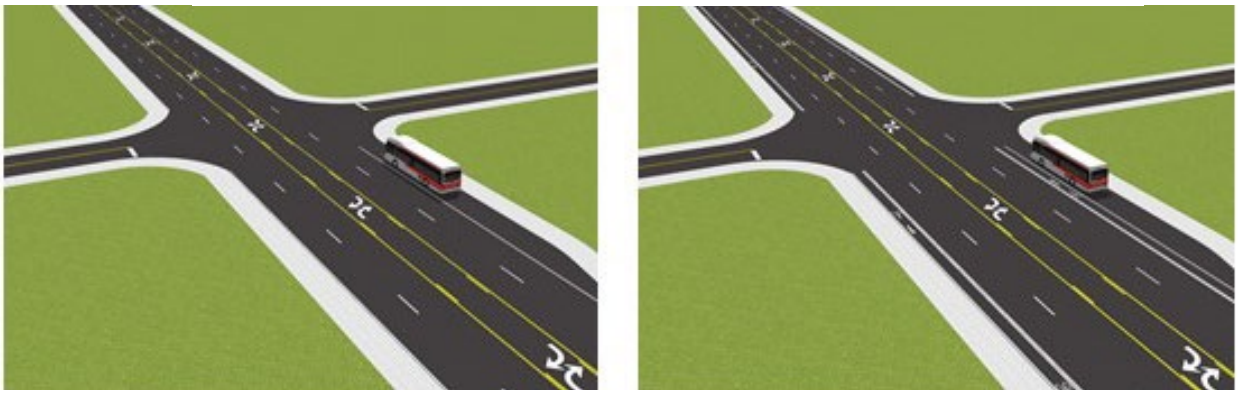
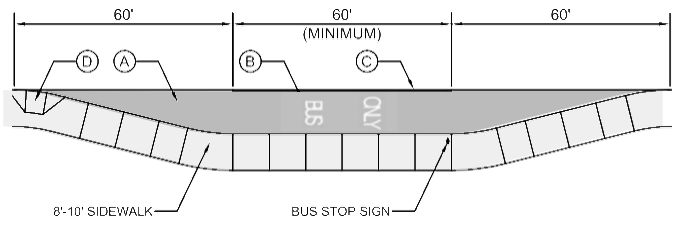


Figure 12: Example Bus Pull-Off Dimensions and Layout

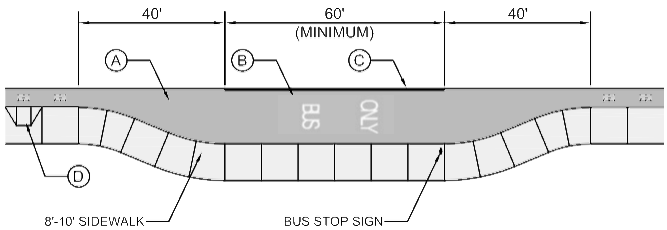


JTA Bus Pull-Off Lane Example



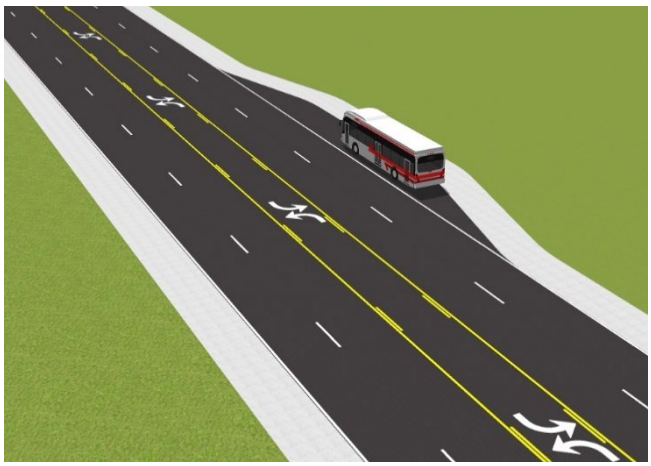
TYPICAL MID-BLOCK TURNOUT DESIGN - TYPE A

A	12' WIDE CONCRETE BUS PAD. 3000 PSI P.C.C PAVEMENT, 9" THICK WITHOUT REBAR OR 8" THICK WITH #3 RE-BAR @ 18" O.C. 3000 PSI P.C.C MONOLITHIC CURB.
B	"BUS ONLY" PAVEMENT MARKING PER LATEST MUTCD
C	PAVEMENT MARKING PER LATEST MUTCD
D	ADA RAMP. (LOCATION MAY VARIES)
E	WHENEVER POSSIBLE, DRIVEWAYS SHOULD NOT BE PLACED WITHIN TURNOUT / BUS ZONE.
F	PROVIDE MINIMUM OF 28' TURNING RADIUS, 30' DESIRABLE. OR USE APPROPRIATE TURNING TEMPLATE.



TYPICAL MID-BLOCK TURNOUT DESIGN - TYPE B

A	12' WIDE CONCRETE BUS PAD. 3000 PSI P.C.C PAVEMENT, 9" THICK WITHOUT REBAR OR 8" THICK WITH #3 RE-BAR @ 18" O.C. 3000 PSI P.C.C MONOLITHIC CURB.
B	"BUS ONLY" PAVEMENT MARKING PER LATEST MUTCD
C	PAVEMENT MARKING PER LATEST MUTCD
D	ADA RAMP. (LOCATION MAY VARIES)
E	WHENEVER POSSIBLE, DRIVEWAYS SHOULD NOT BE PLACED WITHIN TURNOUT / BUS ZONE.
F	PROVIDE MINIMUM OF 28' TURNING RADIUS, 30' DESIRABLE. OR USE APPROPRIATE TURNING TEMPLATE.



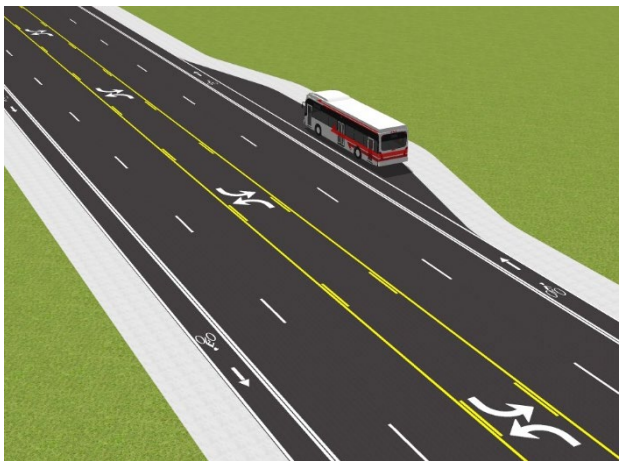


Figure 13: Mid-Block Bus Pull-Off Examples

4.7.1 Pavement Design

Recommended pavement at transit stops for boarding and alighting areas or pads for shelters is typically concrete but may vary depending on site conditions and anchoring required for the various transit stop components and amenities. For more information refer to FDOT Accessing Transit and the FDOT Design Standards Manual.

All transit stop designs are reviewed and approved by JTA's System Development Division, Construction and Capital Programs.

Bus Lane Pavement Design Requirements

Roadway pavement for bus pull-off areas must be able to withstand the axle loads that JTA buses apply on a regular and repetitive basis. Areas of particular concern are those that accommodate bus starts, stops, and turns because of the increased loads associated with these movements.

Therefore, the pavement composition of the streets and roadways that are regularly utilized by buses is an important design consideration. For design specifications for pavement composition for different situational cases, FDOT Design Standards Manual is to be used. An example is shown in Figure 14.

It is important to recognize that exact pavement design will need to be based on particular site-specific characteristics, such as average daily traffic volume and the condition and resistance of the soil at that location. For bus pull-off bays, a standard 9-inch thick fiber reinforced 4,000 psi concrete pad is recommended. Pavement considerations for bus waiting pads are discussed in Section 4.1.2.

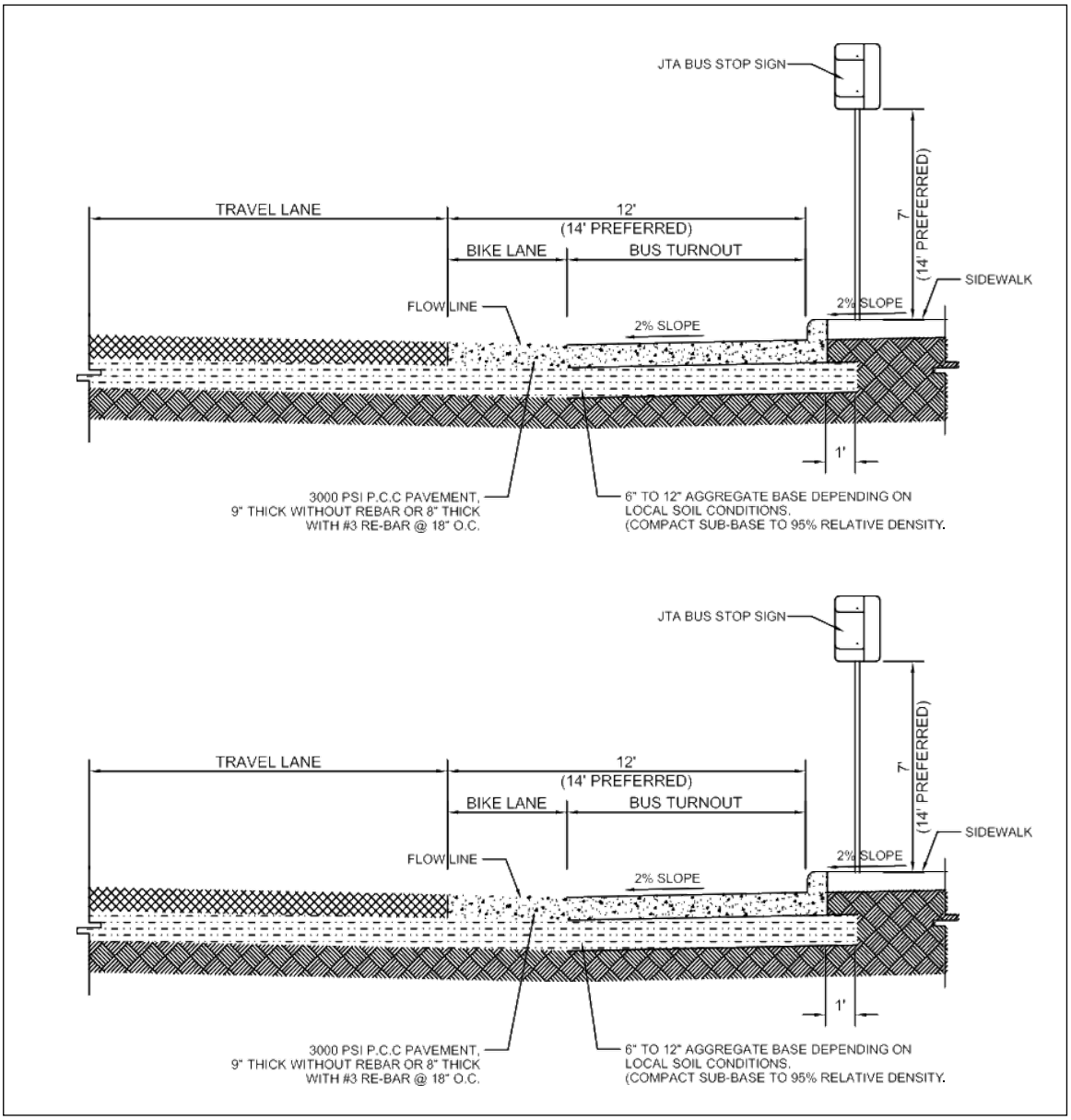


Figure 14: Bus Lane Pavement Design Examples

4.8 Compliance Verification Procedures

4.8.1 Measuring Device

JTA's recommended measuring device is an electronic level with a length of 4 feet and an accuracy of 0.1 degrees. The calibration of the electronic level must be completed a minimum of once per day before any paving operation in accordance with the manufacturer's instructions.

4.8.2 Cross-Slope Measurement

To measure the cross-slope for any paved surface (shelter pad, waiting pad, etc.) place the level at the center of a lane (sidewalk) and perpendicular to the (walkway) roadway centerline. Record the measurement to the nearest 0.1 percent.

Calculate the deviation cross-slope at each measurement (Deviation = Measured cross-slope – Design cross-slope (always 2 percent max) and take the absolute deviation value (Always use the positive value of deviation). Average the absolute deviation of "X" consecutive cross-slope measurements where "X" is determined by the size of the pad or roadway. See Table 3 for Cross-Slope Acceptance Tolerances.

Table 3: Cross-Slope Acceptance Tolerances

Area	Individual Absolute Deviation	Average Absolute Deviation
Roadway	0.4%	0.2%
Sidewalk	0.4%	0.2%
Shoulder	0.5%	0.5%

Pad Size (in Feet)	Number of Consecutive Measurements
10 x 30 or larger	10
10 x 15	5
8 x 30	10
8 x 15	5

Cross-Slope

"Cross-slope is defined as the slope measured perpendicular to the direction of travel. Unlike grade, cross-slope can be measured only at specific points. Steep cross-slopes can make it difficult for wheelchairs or crutch users to maintain lateral balance and can cause wheelchairs to veer downhill or into the street. Cross-slope is determined by taking measurements at intervals throughout a section of sidewalk and then averaging the values."

Source: FHWA, Chapter 4 - Sidewalk Design Guidelines and Existing Practices - Sidewalks - Publications - Bicycle and Pedestrian Program - Environment - FHWA (dot.gov)

4.8.3 Cross-Slope on Variable Areas

For intersections, tapers, crossovers, transitions at the beginning and end of the project, bridge approaches, and similar areas, adjust the cross-slope to match the actual site conditions, or as directed by the Engineer of Record or Project Manager.

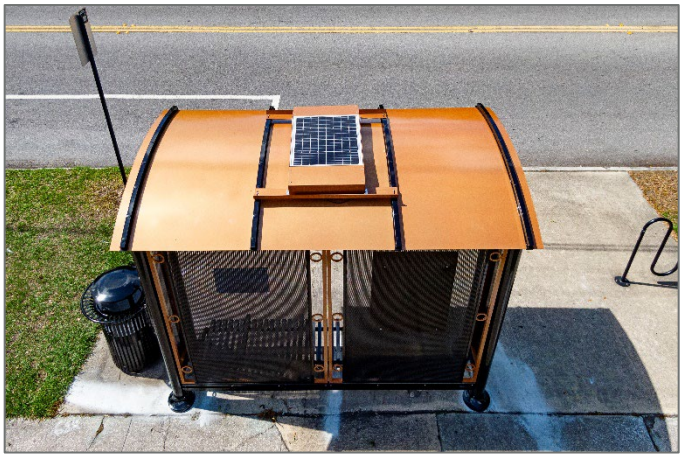
4.8.4 Corrective Actions

If the comparisons are beyond the acceptable comparison tolerance (± 0. 2 percent), stop the paving operations until the problem is resolved to the satisfaction of the Engineer. Correct any cross-slope not meeting the individual deviation acceptance tolerance at no cost to the JTA. The Engineer reserves the right to check the pavement cross-slope at any location at any time.

4.9 Additional Transit Stop and Facilities Considerations

4.9.1 Lighting

JTA's MAP requires grid-based electrical infrastructure at First Coast Flyer BRT and Park-n-Ride stops. All other transit stops and station types are potential candidates for solar-powered lighting systems, with criteria such as passenger volume playing a key role in determining where and when JTA will invest in solar lighting.



JTA Transit Shelter with Solar Panel

Solar Readiness

JTA is developing guidance for designing new shelters for solar-readiness and determining whether solar power is an appropriate power source for existing shelters. A "Solar Readiness Checklist" is in development as a potential guide to planning, design, and construction.

Once a transit stop has been identified as a candidate for a solar-powered lighting system, the checklist should be used to determine suitability. The primary factors considered in the Solar Readiness Checklist, included in **Appendix J**, are summarized as follows.

- The solar array needs to be located so that structures or landscaping do not cast shadows on the PV array since shading of more than 10% of the panel will significantly curtain power production.
- Solar systems have a long lifecycle. Changes on properties to the south of the array, including new buildings or landscaping, must be planned for since access to sunlight is not a protected property right.
- Shelters must have a suitable, contiguous flat or properly sloped roof plane.
- Shelters should be oriented to receive the maximum exposure to the sun. South or Southwest orientations are ideal. West or east-facing roofs may also be acceptable, but further analysis should be conducted to determine the effect on power production. North orientations should be avoided.

4.9.2 Lighting Standards

Refer to the JTA Lighting Standards, included in **Appendix J,** for all guidelines concerning transit stop and shelter lighting requirements. Contact the **JTA's System Development Department** for additional information.

4.9.3 Closed Caption Television

Closed captions are the text version of the spoken part of a television, movie, or computer presentation. Closed captioning was developed to aid the hearing-impaired, but it is useful for a variety of situations. For example, captions can be read when audio cannot be heard, either because of a noisy environment, such as an airport, or because of an environment that must be kept quiet.

4.9.4 Closed-Circuit Television (CCTV)

Generally, use pan tilt zoom cameras (PTZ), for security, surveillance, and/or monitoring purposes. Such cameras are designed to be small, easily hidden, and able to operate unattended; those used in industrial or scientific settings are often meant for use in environments that are normally inaccessible or uncomfortable for humans, and are therefore, hardened for such hostile environments (e.g., radiation, high heat, or toxic chemical exposure). The CCTV equipment is maintained by the JTA's Safety and Security Department. See the contact information in **Appendix A**.

4.9.5 Cameras

Cameras, used to make electronic motion pictures, capture moving images and synchronous sound. Early video cameras were all analog and most modern ones are digital. Analog video cameras produce signals that can be displayed with analog televisions. The signals can be shown at the time or can be stored in an analog format on magnetic tape. Digital video cameras produce digital images. All cameras used throughout the JTA transit system are maintained by the JTA's Safety and Security Department. See **Appendix A** for contact information.

4.9.6 Restrooms

Very few public transportation areas such as transit stops, transit hubs, and park-n-ride lots have public restroom areas. Construction costs, maintenance costs, sanitation, safety, and security concerns are major burdens to transportation agencies.

Within JTA's public transportation system, public restrooms are located at the JRTC. Restroom facilities accessible to operators are located at the JRTC, Avenues Walk Park-n-Ride, Armsdale Park-n-Ride, and the Kings Avenue Skyway Station.

4.10 Transit Vehicle Design Guidelines

4.10.1 Transit Vehicle Dimensions

It is important to consider transit vehicle design dimension standards required for the accommodation of JTA's vehicle fleet in the design and construction of transit stops, facilities, amenities, and other infrastructure. According to FDOT's Accessing Transit Design Handbook for Florida Bus Passenger Facilities, buses should maintain and consider vehicle characteristics such as:

- Dimensions to establish minimum functional street-side standards
- Impacts of roadway grades on bus performance and operations
- Reinforced concrete pads for high bus volume stops

Typical specifications for the traditional bus are 40 feet long, 8.5 feet wide, and x 11.2 feet high. **Appendix K** contains additional vehicle dimensions for the JTA's transit vehicle fleet.



JTA's JRTC Bus Facility

4.10.2 Bus Turning Templates

A significant design consideration for transit vehicle movement is the turning radius of a JTA transit vehicle. This especially is the case in the design of internal parking lot roads. Below are important factors to consider when designing turning radii:

- Add at least 1.5 feet for buses with front-mounted bike racks
- Desirable minimum width for traffic lanes used by buses is 12 feet
- Allow for more turning radii, bus turning speed > 10 mph
- Making reverse turns
- Turns with limits on sight distance
- Turns with changes in pavement grade
- Turns in areas that restrict the movement of the bus overhang

4.10.3 Vertical and Horizontal Clearance

An additional consideration for incorporating safety into the design of JTA transit facilities is ensuring that there is an adequate clear zone around buses, particularly at transit stops and stations. This includes making sure that there are no obstructions overhead or along the roadside and that lane widths are adequate to accommodate typical JTA buses. Vertical and horizontal clearances are

required not only at JTA transit stops, but also along the entire transit route. See the diagram in Figure 15 for a general schematic of required clearances.

If a transit stop will be used by non-typical buses or other transit vehicles, such as intercity and other specialty vehicles, specific horizontal and vertical clearance requirements should be evaluated.

Detailed illustrations and turning templates of the existing transit fleet or inquiries regarding vehicle design can be found by contacting the JTA Maintenance Department. In addition, a summary of current transit vehicles is included in **Appendix K**.

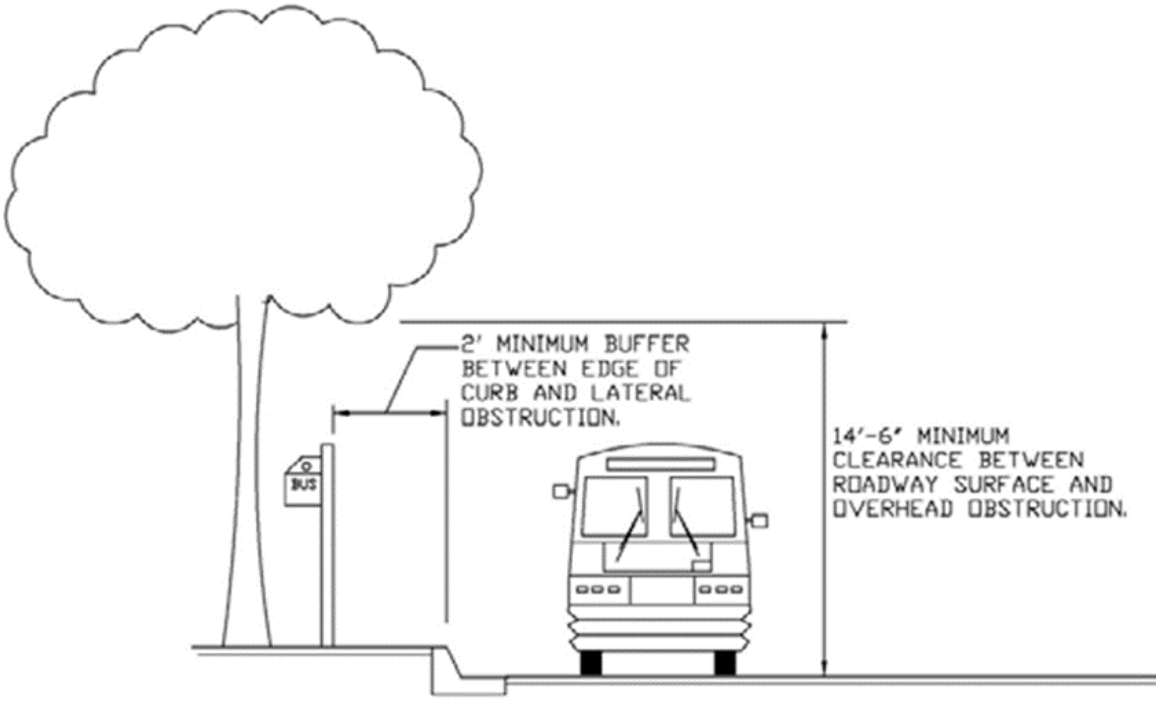


Figure 15: Horizontal and Vertical Clearances for Transit Facilities

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5

Making Transit More Accessible

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5 Making Transit More Accessible

This section of the handbook reviews JTA's guidance to make transit more accessible for all. The strategies outlined in this section address key planning and design practices to make JTA's transit stops and facilities accessible to persons with disabilities and mobility challenges.

This section also reviews recommended approaches to ensure all transportation modes are considered to implement JTA's Complete Streets best practices. Additionally, this section defines design strategies to encourage and facilitate land development around transit facilities through transit-oriented development.

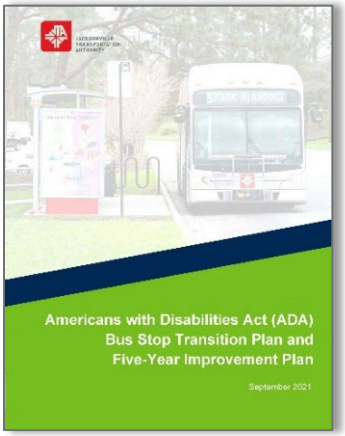
Section 5 Highlights:

- ✓ ADA guidance and accessibility requirements with recommended design practices
- ✓ Introduction to JTA's Complete Streets initiatives
- ✓ Enhancing accessibility through Transit Oriented Development design principles

5.1 ADA Accessibility Guidelines

It is important to understand the effect the Americans with Disabilities Act of 1990 (ADA) and its guidelines have on transit stop planning, design, and construction. The ADA specifies physical dimension requirements and also seeks to ensure the accessibility of persons with disabilities from their point of origin to their final destination.

In the case of a transit trip, the parts of this journey for which JTA has responsibility include barrier-free transit stops and shelters that are connected to sidewalks; nearby curb cuts and other supportive infrastructure; accessible transit vehicles that are either low-floor in nature or have operating wheelchair lifts; and user-friendly transit information that meets the needs of persons with vision impairments, including stop announcements.



The JTA developed the ***ADA Bus Stop Transition Plan and Five-Year Improvement Plan (2021)*** to monitor and upgrade existing bus stop locations to improve overall safety and accessibility. The plan focuses on facility needs over the next ten years to include shelter upgrades as well as ADA access improvements prioritized in a five-year action plan. The JTA uses TrackIt to monitor the inventory and condition of transit stops.

5.1.1 Design Guidance for ADA Accessibility

The JTA desires to have a transportation system that accommodates all users of the system. Decisions regarding the refurbishment of existing transit stops or the planning, design, and construction of new transit stops must consider the use of mobility devices such as wheelchairs, scooters, and walkers. The following section outlines design considerations for the various components of transit accessibility for all fixed routes and premium transit services, including passenger mobility hubs. Additionally, a Transit Stop Checklist is contained in **Appendix B**, as a quick guide to examining sites for transit stop readiness.

Transit stop readiness review should consider the following components:

Boarding and Alighting (B&A) Areas: All B&A areas must maintain the following:

- Minimum of 5 feet x 8 feet of clear space
- Connection to streets, sidewalks, or pedestrian paths by an accessible route
- Minimum clear width of 4 feet and a vertical clearance of 7 feet from the sidewalk to the bus stop
- Maximum allowed cross slope is 2 percent

Bus Stop Pads: Bus stops where a lift or ramp is to be deployed should have a firm, stable bus pad with a minimum clear length of 8 feet (measured from the curb or vehicle roadway edge) and a minimum clear width of 5 feet (measured parallel to the vehicle roadway).

Accessible Routes: All transit stops should be connected to streets, sidewalks, or pedestrian paths by an accessible route that has a minimum clear width of 36 inches. The *Proposed Right-of-Way Accessibility Guidelines (*PROWAG) suggest 42 inches, which is also adopted by FDOT. However, 36 inches is acceptable to JTA.

Surfaces: Surfaces at transit stops must be stable, firm, and slip resistant. Abrupt changes in grade should be avoided and any drop greater than ½ inch or surface grade steeper than 1:20 requires a ramp.

Clear Space: The minimum clear floor or ground space requirement to accommodate a single, stationary wheelchair and occupant is 30 inches by 48 inches and may be positioned for a forward or parallel approach to an object.

Forward and Side Reach: If the clear floor space only allows a forward approach to an object, the maximum high forward reach allowed is 48 inches and the minimum low forward reach is 15 inches. If the clear floor space allows parallel approach by a person in a wheelchair, the maximum high and low side reaches allowed are no more than 54 inches and no less than 9 inches, respectively.

Bus Stop Signage: Bus stop signs must include route information. The wheelchair logo is optional.

Bus Benches: Benches must not obstruct the 5-foot x 8-foot minimum B&A area.

Bike Racks/Bike Loops: Bike racks, or loops, may not be installed within the B&A area and must not obstruct the 5 feet x 8 feet minimum B&A area.

Additional information regarding ADA design at bus stops is provided in the FDOT Accessing Transit manual as well as the FDOT Design Standard Index.

Specific guidance on design considerations for persons with disabilities can also be found in the latest version of the ADA Accessibility Guidelines for Buildings and Facilities (ADAAG). This document can be found at ADA Standards.

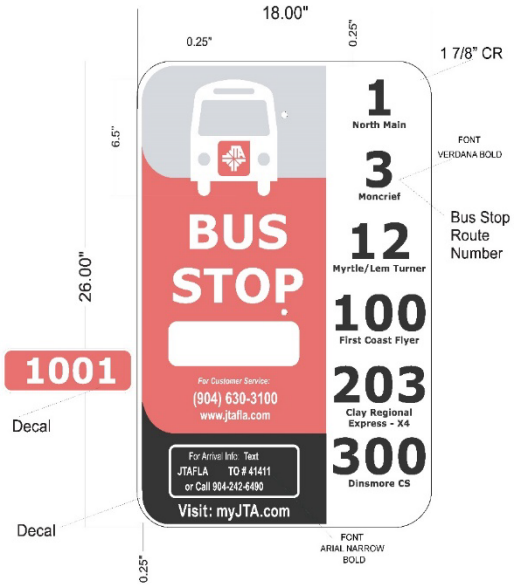
Additional references for designing accessible routes, clear space and reach allowances, wheelchair lifts, passenger loading zones, and other related issues with applications to transit stops and facilities include the following:

- 2011 PROWAG, released by the U.S. Access Board as a guideline for accessible right-of-way.
- Easter Seals Project ACTION website found at www.project-action.org as well as ADA.gov.

5.1.2 Route Identification

Route identification must be posted on all bus stop signs. At transit stops that serve more than one route, the transit agency must provide a means by which an individual who is blind or has a vision impairment or other disability can identify the proper vehicle to enter or be identified to the vehicle operator as a person seeking a ride on a particular route.

Route identification assists riders who may not be able to recognize the bus route or destination to know when the desired bus has arrived. This requirement applies both to buses and all forms of passenger rail. Bus stop signs also provide information to contact **JTA's Customer Service in case of emergency**. Additional details regarding the Bus Stop Signs design is contained in MAP Section 4.2.



Example Bus Stop Sign

5.1.3 Paratransit Services

Connexion is JTA's paratransit service providing transportation for people with disabilities and mobility challenges who are unable to use regular accessible fixed-route bus service for some or all of their transportation needs. It also serves people who are Transportation Disadvantaged (TD). The Connexion service operates within three-quarters of a mile from the fixed--bus route. To qualify, customers must meet the eligibility assessment requirements and be ruled eligible to ride under the ADA for the complimentary service. Outside three-quarters of a mile radius from any fixed-bus route, the JTA offers the TD service. Unlike the disabled-based paratransit service, TD is based in part on income.

All JTA transit vehicles are ADA accessible and equipped with ramps or wheelchair lifts to assist passengers upon request. Additionally, accessible boarding for wheelchair users is available at all Skyway stations as well as many of the transit facilities.

Other examples of special accommodations that are currently in use throughout the JTA transportation system include the following:

- Ticket Vending Machines (TVMs) (braille and audio options)
- Water fountain elevations
- Reduced-fare STAR Card
- Wheelchair-accessible ADA entry gate at Skyway stations (braille and audio options)
- Warning flashing lights with audio alarm at exposed Skyway rails

A customer may contact the JTA Customer Service department for special accommodations. Most requests take approximately seven to ten days for processing.

The JTA Connexion Riders' Guide provides information on reduced-fare STAR Cards, reservations, service hours, and more. It can be found on the JTA website at www.jtafla.com.

For more information, contact the JTA ADA & Paratransit Services, or JTA's ADA Coordinator for more details on requirements for ADA accommodations at JTA transit stops and facilities. All contact information for these departments is contained in Appendix A.

5.1.4 Visual Aides/Braille Requirements

Public transportation is key to independence, productivity, and community participation for people who are blind or severely visually impaired, most of whom are not able to drive a motor vehicle because of their visual impairment. Public transit services such as buses, trains, or special paratransit vans are frequently the only options blind or visually impaired people have for traveling independently to school, work, health care facilities, shopping centers, and a host of other places in the community.

Transit agencies have unique obligations under the ADA. The ADA requires transportation systems to remove barriers for persons who are blind or visibly impaired, primarily by making visible information accessible and usable. Techniques to consider in the planning, design, and placement of transit stops and amenities include the following measures:

- Providing large-print, high-contrast, and non-glare informational signs in terminals, at bus stops, and on transit vehicles.
- Placing braille and tactile information regarding available service at consistent locations near the entrances to and within transit stations.
- Installing a tactile domed high-contrast warning surface along platform edges.
- Making stop announcements inside transit vehicles at main points along a bus or train route.
- Providing external speakers that announce vehicle identification information.
- Providing ticket vending machines with braille and large-print markings, or audible output devices.
- Training transit personnel to meet the specific needs of persons with visual impairments who use public transportation.





Braille Signage at JRTC

Special accommodations such as braille and large print of all JTA printed documents are available upon request. Contact the **JTA's ADA Coordinator** for assistance with these requests.

5.1.5 Audio/Hearing Impaired Requirements

Public transit agencies have developed techniques to accommodate passengers who may be hearing impaired. As an example, on fixed-route transit service, ADA requires transit agencies to announce stops, at:

- Transfer points with other fixed routes.
- Other major intersections and destination points.
- Intervals along a route sufficient to permit individuals who are blind or have vision impairments or other disabilities to be oriented to their location.
- Any requested stop.

Stop announcements must be made regardless of whether the transit operator sees a passenger with a disability. These requirements apply to all forms of fixed-route bus and passenger rail service, including Amtrak and light, rapid, and commuter rail.

JTA Transit Operations staff work with the JTA Communications personnel to ensure that all stop announcements are updated with all transit service changes. See the Transit Accessibility section of JTA's website for JTA's policies and procedures to ensure accessibility for all persons.

The primary contact for additional information about compliance with ADA, as well as other accessibility inquiries, is JTA's ADA Coordinator or the Office of Diversity, Equity, Inclusion, and Belonging. See Appendix A for contact information.

5.2 Complete Streets

The JTAMobilityWorks program was introduced in 2014. The program includes roadway projects and mobility corridor enhancements throughout Duval County. A subprogram of JTAMobilityWorks is JTA's Complete Streets initiative.

A planning study was completed in 2016 following a series of public charrettes and workshops held for each of the 13 mobility corridors included in the JTAMobilityWorks program. Five keystone projects were approved for implementation through the program and potential long-term improvements were identified for each corridor. Additional Complete Streets projects are included in JTA's Capital Programs plan.

The Complete Streets model promotes the design of streets to be safe and accessible for all people using the transportation system and for all modes of transportation. Projects include roadway modifications, lighting improvements, transit stop enhancements including improved amenities, sidewalks, and more to provide a safe environment for all users.

Key to the foundation of the JTA's Complete Streets Program is the intentional focus on safety, accessibility, and sustainability in alignment with the JTA's mission to provide seamless mobility for all. Advancing Complete Streets design principles is an initiative recognized in JTA's MOVE2027 Five-Year Strategic Plan.

COMPLETE STREETS

In September 2014, the Florida Department of Transportation (FDOT) adopted the Statewide Complete Streets Policy (Topic No. 000-625-017-a). Complete Streets serve the transportation needs of transportation system users of all ages and abilities, including pedestrians, bicyclists, transit riders, motorists, and freight handlers. A transportation system based on Complete Streets principles can help to promote safety, quality of life, and economic development.

Implementing Complete Streets is an FDOT department-wide priority. The Complete Streets approach builds on flexibility and innovation in roadway planning and design to put the right street in the right place.

The primary contact for additional information about JTA's Complete Streets policies and procedures is JTA's System Development Division.

5.3 Transit-Oriented Development

Improving the design of public transportation facilities not only means improving bus service, transit stops, and transit facilities, but it also means orienting development patterns to be more conducive to transit use. Transit-Oriented Development (TOD) encompasses this development practice. Generally, TOD is most often characterized by compact, dense activity centers and land uses that are served and connected by high-quality public transportation services. More efficient service creates "transit-friendly" nodes and corridors, resulting in increased transit use, walking, and bicycling. Automobile use is still accommodated in a TOD but is not treated as the sole mode of transportation.

Some significant site-related development characteristics that should be considered in a TOD include the location of automobile parking, building location and design, and accessible paths. The JTA seeks to advance and incorporate TOD principles to improve access and attractiveness of transit. Several initiatives focused on TOD principles and implementation are defined in the JTA's MOVE2027 Five-Year Strategic Plan.

To advance TOD to enhance accessibility to transit, the JTA is in coordination with local and state agency partners to develop policies and ordinances to encourage and facilitate TOD. A copy of the draft ordinance, currently in development is included in **Appendix L**. This section outlines various components of a TOD implementation to be considered in the planning, design, and construction of JTA's transit stops and facilities.

The primary contact for additional information about TOD and JTA's current policies and procedures is JTAs Economic Development Department.

5.3.1 Location of Parking

The easiest way to locate buildings close to the street is to move automobile parking away from the street. Vehicle parking does not have to be in the front of a building to be convenient for patrons. When all or part of a parking lot is located behind the building, the development can be made more pedestrian and transit friendly. This design shortens walking distances between transit vehicles and building entrances, as well as between adjacent buildings.

5.3.2 Building Location and Design

Buildings should be located as close as possible to the street to make them more accessible to those choosing alternative transportation modes. Most of JTA's transit stops are located on the street to maintain schedules. Entering parking lots is cumbersome and time-consuming for large buses. Therefore, riding JTA buses is friendlier when buildings are also located near the street. Upon exiting JTA buses, passengers will have shorter and more pleasant walks to reach their destination when at least part of the land use fronts the street. Locating at least part of a development on the street also improves aesthetics by relocating automobile parking.

5.3.3 Clustered Development

To enhance transit friendliness, other building design and location features should be incorporated into new development and redevelopment projects. These include:

- Clustering multiple buildings together
- Developing and filling in street corners first

When more than one building makes up the site (clustered), they should be located close together to minimize walking distances. Existing or new JTA bus stops should be located in a central location to the buildings.

Typically, on dense street corners, JTA transit stops are often located at or near street corners, which often serve as natural focal points. Corners should be developed with transit-supportive commercial uses, such as convenience stores, restaurants, and services such as banks and dry cleaners. Such development patterns make it easier for transit users to conduct many of their daily business activities without getting into an automobile.

5.3.4 Land Use and TOD

Certain land uses are better suited for a TOD than others. Those land uses that are typical of a higher density, integrate a mix of uses, and do not have to rely strongly on automobile access for their patronage should be sited in a TOD or other area identified for increased transit, bicycle, and

walking access. Land uses that cater to the motorist should not be located in an area being developed as a TOD.

5.3.5 Pedestrian Access to Transit



Pedestrian-friendly design features are inherently also transit friendly, since all transit trips include a walking segment, and should be incorporated throughout areas serviced by JTA. Pedestrian-friendly design features related to and supported by TOD design and location include:

- Interesting and varied facades
- Shaded, wide, continuous sidewalks and/or plazas linking all probable pedestrian movements
- Comfortable and functional street furniture that is shaded and protected from rainfall
- Buffering from vehicular traffic
- Traffic calming in areas where vehicles and pedestrians interact
- Minimized views of parking areas and other blank spaces
- Pedestrian-scale signage
- Textured, colored pavement and other features to delineate pedestrian areas from automobile areas

Pedestrian Crossings: Pedestrian systems and vehicle systems overlap at intersections, posing conflicts between different modes of travel. Marked crosswalks guide pedestrians to walk at the safest location and alert vehicle operators to the potential of a pedestrian's presence.

Crosswalks are essential to bus passengers who may have origins or destinations on either side of the roadway. Therefore, it is preferable that all streets directly served by transit should also be designed or retrofitted to serve crossing pedestrians. Streets within walking distance from a transit stop should be designed to accommodate pedestrians with an emphasis on pedestrian safety.

Pedestrian Islands: Pedestrian islands (also known as refuge islands) are extensions of the median into the crosswalk area in order to improve safety for pedestrians and vehicles. They provide an area within an intersection where pedestrians may safely wait until vehicular traffic clears, allowing them to cross streets. These islands are particularly helpful for older and disabled pedestrians unable to cross the street during the available signal time.

Raised Pedestrian Crossing/Speed Table: Speed tables raise the surface of the road over a short distance and promote the smooth flow of traffic at slow speeds at pedestrian crossings.

5.3.6 Bicycling and Transit

Successfully integrating bicycle transportation with public transportation means more than equipping JTA buses with bicycle racks. Other design improvements can be made to create a convenient intermodal transfer. These include improved bicycle travel facilities between residential areas and transit facilities and improved storage facilities at transit facilities.



Examples of bicycle facility improvements that can enhance the integration of bicycle travel with JTA services include the following:

- Bicycle-compatible roadways or bicycle lanes along transit station access roads
- Bicycle paths into and through Park-n-Ride lots
- Priority locations of bicycle parking/storage facilities near the transit vehicle loading zone
- Bicycle paths from neighboring communities that are narrower in length than roadways
- Clearly visible signs using the bicycle symbol for bicycle routes, parking/storage facilities, and bus stops serving bicyclists
- Transit station design and siting accommodating to bicycles (e.g., curb cuts at parking locations, locating parking/storage facilities in convenient locations that do not require bicycles to be carried up or down stairs or through crowds of people, and locating parking/storage facilities in clear view of the general public or station attendants)
- Lighting
- Protection from weather conditions at parking/ storage sites.

Bicycles are allowed all day on the Skyway, as long as there is room in the train for the bike to ride safely. Additional considerations concerning bicycle-friendly planning and design for transit include the following:

Bikes on Buses: Traveling with bikes on buses is a free and convenient option for customers who want to ride their bikes and ride the bus.

Bike Lanes: Bike lanes are portions of the right-of-way set aside for exclusive or preferential use by bicyclists. They are designated by striping, signage, and surface treatments. If properly designed, bike lanes provide a viable transportation network in a balanced transportation system.

Additional information on bicycle facilities can be found in the Guide for the Development of Bicycle Facilities published by AASHTO. FDOT has bicycle policies and design criteria that can be found by looking on both the design office website https://www.fdot.gov/roadway/bikeped/default.shtm and the safety office website Pedestrian and Bicycle Safety (fdot.gov). An additional resource for local requirements is the City of Jacksonville Bicycle and Pedestrian Master Plan. For additional information, refer to **Appendix A - Contact Information** for the City of Jacksonville Planning Department.

Bike networks should connect with other modes of transportation. The use of bikes in combination with public transit ensures improved low-density, urban, and suburban public transportation. When designing bike lanes, conflict with other modes of transportation should be minimized. When conflicts are inevitable, the shared area should be marked for visual attention.

When a transit stop is located in a bus pull-off bay, for example, a potential conflict will result between bicycles and transit vehicles. To alert to such potential conflicts, dashed line pavement markings are used where buses are allowed to move in and out of bike lanes.



Example Bike Lane

Bicycle Storage: The popularity of the bicycle as an access mode to transit has increased significantly, especially since the implementation of bike racks on JTA's buses. Bicycle storage areas are included at many JTA transit stops and facilities.

Implementation of proper planning and design is of utmost importance to accommodate bicycle use within the community. These racks will help prevent damage to transit facility infrastructure that can occur due to improperly stored and/or secured bicycles.



Bicycle Storage Area at JRTC at LaVilla

Electronic Lockers: The JTA is in the process of procuring new electronic bike lockers at select locations throughout Jacksonville in the vicinity of JTA transit hubs. The electronic bike lockers will interface with the JTA STAR Card system. All buses have bike racks that accommodate only two bikes at a time. The electronic bike lockers are meant to further strengthen and encourage the connection for patrons who ride bikes and take transit as their means of transportation around Jacksonville.

The primary contact for questions or additional information pertaining to access to transit, specifically for accommodating pedestrians and bicycles in planning and design, contact JTA's System Development Division and the Construction and Capital Programs Office.



Bicycle Storage at FCF Red Line Transit Stop



6

Safety & Security

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6 Safety & Security

Safety and security are paramount in all transportation-related activities. The JTA is committed to developing Safety Policies and Procedures, implementing Safety Risk Management, and improving Safety Assurance and Safety Promotion to ensure that JTA's public transportation services and facilities uphold the highest level of safety performance and meet or exceed national and industry standards.

Section 6 Highlights:

This section provides:

- ✓ Information pertaining to JTA's current safety and security practices
- ✓ Guidance on incorporating JTA's policies on safety and security at all transit stops and facilities

Based on this level of commitment, the Safety Management System (SMS) for managing safety risks has been formally adopted by the JTA. The SMS is a top-down data-driven system of managing risks, which moves from reactive measures to predictive measures.

6.1 Safety Considerations

Well-maintained facilities typically lead people to feel safer and more comfortable waiting for the bus and increase choice riders. Two important factors associated with lower crime rates are:

- Pedestrian presence
- High visibility



JTA Safety Logo

A high pedestrian presence in any particular area of a transit stop provides more surveillance of the environment. No matter the classification of the transit stop along the fixed-route system, the safety of patrons at transit stops and transit facilities should receive top consideration. As such, there is much that can be done through the design of transit facilities to ensure passenger safety.

The absence of visual obstructions creates high visibility. This allows law enforcement, passers-by, local businesspeople, passing motorists, random area security cameras, and others to keep an eye on the bus stop. All these measures can aid in the elimination of places to easily hide, lurk, or loiter without notice.

6.2 See Something, Say Something

JTA depends on its employees and passengers to form a partnership to proactively manage safety and security issues. The "I am Safety" campaign encourages everyone to practice the "If I See Something, I will Say Something" principle. The JTA See & Say mobile app is one of the tools utilized to report hazards and suspicious activity by sending text (with or without pictures) and video. This feature is also incorporated into the MyJTA Mobile App.



JTA See & Say Mobile App

The app also is equipped with a "Text-A-Tip" feature for use at (904) 800-4314. Customers, employees, and the public can also call the JTA Safety Hotline: 1-844-SAFE-JTA.

6.3 Security Officers and Local Police

The JTA uses a combination of contracted private security officers, dedicated on-duty Jacksonville Sheriff's Office (JSO) officers as well as off-duty JSO officers. These officers patrol the Jacksonville Regional Transportation Center at LaVilla (JRTC), Skyway stations, and throughout the transit system to provide a consistent security presence at the JRTC and major transit hubs.

JTA Safety and Security personnel use a strategic approach to customer safety, with initiatives including:

- JSO riding both random and targeted transit routes
- JSO Hop-on/Hop-off to check in with JTA Transit Operators and passengers
- JSO and security personnel patrol the Skyway during all hours of operation
- Multiple vehicle patrols throughout the JTA transit service area

6.4 Prevention of Crime

On average, non-transit riders are more likely than transit riders to perceive bus passenger facilities as unsafe and dangerous because of area crime. There is a strong correlation between perceptions of personal security and willingness to ride the bus. Due to these sensitivities and JTA's desire to increase the number of choice riders, it is imperative to convey to the wider public that transit passenger facilities are safe, secure, and crime free. The JTA also supports and participates in other programs to ensure safety throughout the community.

Safety Programs

JTA participates in the Jacksonville Urban Blight program. This program addresses ways to mitigate urban blight across the city.

Additionally, JTA participates in routine Pedestrian Road Safety Audits (PRSA) in conjunction with local law enforcement, the City of Jacksonville's Road Maintenance and Bicycle/Pedestrian Departments, FDOT as well as architectural and engineering consulting firms. These safety audits intend to identify current roadway deficiencies and make recommendations to improve safety. The ultimate goal is to reduce pedestrian, bike, and vehicular crashes.

Landscaping

Because overgrown brush can potentially present a security hazard and obstruct the walkway to bus stops, JTA regularly maintains the landscaping around and near the bus stops and transit facilities. The transit stop environment is also kept free of graffiti and litter, thus sending the message that the bus stop environment is actively maintained and well-kept.

Lighting

Providing sufficient lighting is paramount at all types of transit stops, especially at stops served by night routes (if streetlights do not provide ample illumination). JTA typically installs either solar-

powered or LED lighting that is both resistant to tampering and energy efficient. Additional information about JTA's lighting standards and policies can be found in Section 4.9.

Warning Signage

In addition to the rear bus safety messages, there are decals, signs, and placards throughout the JTA transportation system to alert and warn passengers for a safer riding experience. Signage also includes any potential health safety recommendations.



JTA Signage for COVID Awareness

Mirrors

JTA has strategically placed beveled and low-lying mirrors in various locations throughout the transportation system as well as on the bus to enable passengers and drivers to have a clear view from behind.

Alarms

Loud noises from an alarm in conjunction with bright flashing lights help alert passengers to a potential danger for the prevention of injuries. These features are located throughout the JTA transit system on infrastructure such as elevators, automatic doors, buses, Skyway, escalators, and more. When activated, a similar alarm is activated inside the control center where the surveillance cameras are monitored. All warning devices, including fire emergency equipment, are regularly inspected to ensure performance requirements are met.

Video Cameras

Depending on the priority, JTA installs closed-circuit video cameras to monitor transit facilities including some transit stops. Monitored security surveillance is also installed on both levels of each Skyway station and on the buses. These cameras have assisted local officials in solving many ADA issues, injuries, and crimes.

Visibility

Bike racks and other transit amenities are installed in highly visible areas. When possible, see-through shelters are utilized in high crime neighborhoods. If fencing is used near a transit stop or transit facility, it is chain link to increase visibility.

Safe Place

Safe Place is a local program that enables anyone, especially children, to get to a safe place when they feel they are lost or in danger. Since JTA is a participant in the national Safe Place Program, all JTA fixed-route buses and JTA transit facilities are considered Safe Place areas. Not only do children benefit from this service, but any passenger or customer that feels threatened or unsafe can receive assistance.

6.5 Minimization of Injuries

In addition to JTA's strategies to increase perceptions of safety at bus passenger facilities, there are many methods in use to minimize passenger injury.

Bus Pull-Off Bays and Signal Controls: When possible, JTA installs bus pull-off bays to allow the bus a safer stopping point and re-entry into the traffic flow. Many automobile-pedestrian and bus-automobile conflicts occur during the bus re-entry into the flow of traffic. Signal controls similar to those used on the BRT system, provide a safer way to merge into the travel lanes.

Informational Signage: While various types of signage are used to assist in crime prevention, it similarly provides information to minimize injuries and accidents. At signalized crosswalks near transit stops, the installation of pedestrian signals enhances the safety of both bicyclists and pedestrians.

ADA Compliance: Installation and maintenance of ADA-compliant infrastructure such as the landing pads, and the surrounding transit stop surface, should be kept free of debris and obstruction. The ADA Accessibility Guidelines offer more information for compliance at fixed-route bus stops, as well as for the paratransit services that integrate with the overall transportation system. Additional guidance about ADA compliance is presented in Section 5.1 of this MAP document.

Maintenance: Regular maintenance should be performed to ensure that sidewalks and other pedestrian routes remain accessible and free of obstacles. Hazardous objects should be identified, repaired, or replaced upon notice. Typically, within public rights of way, the City of Jacksonville maintains the sidewalks that may be adjacent to or connect to JTA bus stops. The JTA's Facilities and Maintenance Department is responsible for maintaining bus stops and bus stop pads.

Assistance Devices: Wayfinding devices accessible by all are imperative for the prevention of passenger injuries. It is especially helpful to those with impairments (mobility, visual, hearing), as well as the learning disabled, to have these devices installed as appropriate. When used in combination with alarms and flashing lights, many unnecessary accidents are prevented.

6.6 Customer Code of Conduct

JTA Rule No. 009 outlines JTA's Customer Code of Conduct. This rule defines standards of conduct and behavior that apply to all JTA transit services and/or facilities to ensure a safe, equitable, and accessible public transportation system for all.

The Customer Code of Conduct is available on JTA's website www.jtafla.com (and is included in **Appendix N** for quick reference).

See **Appendix A, Contact Information**, for Safety and Security personnel contact numbers.



7

Sustainability Program

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7 Sustainability Program

7.1 Sustainability Program Overview

Section 7 Highlights:

This section provides guidance on:

- ✓ JTA's Sustainability Commitments
- ✓ JTA's Sustainability Initiatives incorporated into agency programs and policies

The JTA signed the American Public Transportation Association (APTA) Sustainability Commitment in 2013. Following the formal commitment, a Sustainability Committee was formed in 2014. The committee meets monthly, and its role is to develop, prioritize, and drive sustainable initiatives. In September 2017, JTA updated its Mission Statement and strategic goals to include sustainability. In 2019, JTA completed its first Sustainability Action Plan (SAP). The SAP set a baseline and defined a vision, mission, and goals to lead by example for the industry, in operating a low-impact and efficient transportation agency.

The JTA is committed to several long-term organizational goals to ensure the success and vitality of generations to come. These goals include reducing greenhouse gas emissions, electric consumption, water usage, and waste by 10% in each area over the next 10 years. Nationally, JTA has received silver-level recognition from APTA for its sustainability accomplishments. JTA strives to be a leader in Duval County and the entire State of Florida to ensure sustainability for future generations.

7.2 Sustainability Initiatives

Sustainability measures should be considered as part of the overall planning, design, and construction of JTA's transit stops and facilities. A sustainability review is included in the Bus Stop Checklist as part of the overall bus stop site review. JTA's sustainability achievements and ongoing initiatives considered for bus stops and transit facilities include the following:

Reduction of Energy Usage and Greenhouse Gas Emissions

- Solar-powered lighting and lighting upgrades
- Conversion to primarily alternative fuel fleet
- Installation of electric charging stations
- Anti-idling technology

Reduce, Reuse, and Recycle

- Implementation of an Authority recycling program
- Expand recycling infrastructure at bus stops
- Installation of solar-powered recycling/trash compactors at transit hubs

Health, Wellness, and Livability

- ADA accessibility improvements
- Alternative mode access at bus stops and facilities
- Expand local/healthy food programs
- Support bike share

Safety Improvements and Renewable Energy

- Lighting improvements for bus shelters and stops
- Installation of solar-powered lighting for bus shelters and Stops
- Upgrade lighting from florescent to light-emitting diodes (LED) at JTA-owned parking areas, bus shelters, and facilities
- Upgrade lighting to motion sensor technology at JTA-owned parking areas, bus shelters, and facilities

Complete Streets

- See Section 5.2 for JTA's Complete Street Program.

Transit-Oriented Development

- See Section 5.3 for JTA's programs and procedures to encourage TOD.

FUTURE SUSTAINABILITY PROGRAMS

Additional sustainability initiatives are planned to include construction of mobility hubs, introduction of bike sharing, additional lighting automation, new technology and automation for bus stop amenities, development of sustainable landscaping standards, and much more. For additional information, contact JTA's Sustainability & Resiliency Department. See Appendix A for contact information.





8

Agency Coordination

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8 Agency Coordination

The purpose of this section is to provide the standard protocols and guidance for coordinating with the JTA and partner agencies about the transit stop and facilities planning, design plan approval, permitting, and construction process.

This section also outlines JTA's recommended procedures for notifying the public and adjacent property owners when transit stop modifications or related construction may occur in the area.

Section 8 Highlights:

This section provides guidance on:

- ✓ Plans Submittal and Review Process
- ✓ Coordination with Other Agencies
- ✓ Permit Readiness and Coordination Process
- ✓ Public Notification Procedures during Construction

All planning, design, and construction of transit stops, amenities, and other transit facilities are coordinated through the JTA's Transit Operations and System Development Divisions.

8.1 Plan Review and Submittals

The JTA's Transit Planning Department is responsible for the overall review and recommendations regarding the operational requirements of identifying transit stop needs throughout the JTA's transit system.

The siting, design, and construction of the transit stops, facilities, and amenities are conducted with guidance, supervision, and approval of the JTA's System Development Division, Construction and Capital Programs Department.

All transit stops, facilities, and amenities plans will also be reviewed by the Facilities Department.

Additionally, the designated JTA ADA Coordinator will review all transit stops, facilities, and amenities design and construction plans. Compliance with ADA requirements is critical to ensure all transit stops and facilities are safe and accessible for all persons, especially those persons who require mobility devices or are mobility impaired. The ADA assessment requirements are outlined in Section 5.1. Additional guidance related to ADA and transit stops is also depicted in the Transit Stop Decision Process in **Appendix C**.

Early coordination, identifying and documenting any issues requiring additional reviews or require design modifications must be discussed in advance of the plans submittal process. Advance coordination with permitting agencies and adjacent property owners is necessary for the project design and construction to move forward.

The plans review and submittal guidance are summarized in Figure 16.

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JTA PLANS REVIEW AND SUBMITTAL GUIDANCE:

- Plans are reviewed by JTA's Construction and Capital Programs, Facilities, Transit Planning, and ADA Coordinator.
- All documents submitted for review must be in PDF format.
- Plans that are digitally signed and sealed cannot be locked (password protected.)
- Plan Reviews typically require a 30 Day Minimum.
- Any comments or information to the reviewer must be documented in a separate PDF and emailed to the lead reviewer in Construction and Capital Programs Office.
- Email Notification regarding the completion of the review process will be sent out by the lead reviewer in the JTA's Construction and Capital Programs Office.

Figure 16: JTA Plans Review and Submittal Process

8.2 Preliminary Coordination

The focal point of all new transit stops and facilities is the placement and design and associated amenities. The JTA designs and constructs transit amenities and other transportation facilities, including roads and bridges, which are located most often within the public right-of-way. The public rights-of-way are under the jurisdiction of the City of Jacksonville, the Florida Department of Transportation (FDOT), or in some cases, under municipalities such as the Cities of Atlantic Beach, Neptune Beach, and Jacksonville Beach. For this reason, any construction within the public rights-of-way, or private rights-of-way, must adhere to coordination requirements with the partner government agency. Additionally, other key stakeholders may include businesses, homeowners, neighborhood associations, utility companies, Sunshine 811, as well as JTA customers.

Proper planning for coordination can make all the difference when seeking a successful design and review process. When submitting plans or other related documents to the JTA, the following are crucial for the process to move forward smoothly:

1. Coordination
   - Identify the main contact for each JTA department
   - Identify key stakeholders
   - Know when and where to meet
   - Understand JTA processes
   - Be aware of current related issues
   - Hold meetings as necessary to review progress and discuss concerns
2. Review and Comments



JTAMobilityWorks Project Construction Sign

- Obtain review comments in writing
- Be specific regarding concerns
- Have realistic expectations

3. Follow-up

- Return calls promptly
- Be on time
- Create practical schedules
- Be willing to accept input

There are certain areas and jurisdictions in Jacksonville, where specific amenities are required, such as in the Downtown Historic District, Riverside-Avondale, Springfield, and San Marco historic or overlay that restricts advertising and requires a select style.

For example, Downtown Jacksonville is under the review of the Downtown Development Review Board (DDRB) and the Downtown Investment Authority (DIA). When seeking to plan, design or construct transit amenities within the limits of Downtown, it is the responsibility of the project team to confirm required coordination and plan reviews with the DDRB and DIA, and the City of Jacksonville. Sections 2, 3, and 4 of the MAP handbook provide guidance on the types of transit amenities and specific design guidelines to be used and coordination necessary for implementation.

The JTA's website provides up-to-date information on transit services, events, and JTA projects under construction. The JTA will inform the public about plans to install or remove transit shelters and amenities within the JTA's transit system.

8.3 Provisions During Construction

Roadway construction or transit improvement projects should have a Temporary Traffic Control Plan, which is a set of specific sheets included in the construction plans. The Temporary Traffic Control Plan references standard (typical) layouts, and/or notes on roadway plans describing how traffic should be controlled through a work zone. If a road improvement project affects transit services, transit agencies should be involved in the planning of traffic control during construction.



Example Notice to Pedestrians

At transit stops, provisions should be made to ensure passengers can safely board and depart from transit vehicles. Careful consideration should be given to transit operations and necessary arrangements should be made to minimize inconvenience to transit patrons.

The following should be considered while drafting the traffic control plan:

- Traffic control devices should not be placed in locations where they will block transit stops or passenger access to transit stops.
- When detours are required, the geometry of the detour route should be compared against the operational requirements of transit vehicles.
- While designing detours, ADA requirements should be considered.
- If a transit stop or route needs to be relocated, appropriate signage and advance notification to passengers should be provided.
- **Contact the JTA Transit Amenities Coordinator for assistance at least 14 days in advance.**

8.4 Public Notification Procedures

Communication is essential. This procedure is designed to ensure that the public (with specific attention to businesses, property owners, or persons within 300 feet of the roadway center line) receives notification at least 14 days in advance of the start of any construction or pre-construction projects. It is important to notify the public of construction activities that may impact access to their property or access to JTA's transit services. Sufficient notification is highly recommended to minimize disruptions to property access or travel through the construction site.



JTAMobilityWorks Project Construction Sign

The following should be considered for public notification when a project is advanced to construction:

- JTA Marketing Department requires three weeks advance notification for mailings of less than 300 pieces.
- Any mailings requiring 300 pieces or more must be submitted four weeks in advance.
- The requestor, or project manager, will provide the designated Communications and Marketing Department Liaison, with an excel spreadsheet consisting of occupants and property owners (if names are not the same), project specifics, and a first draft of the communication.
- Communications to property owners may include more than one technique, such as letters and flyers. Examples are contained in **Appendix O.**
- Other communications may include but are not limited to roadside signage and social media updates.
- If project construction causes a bus route to deviate from its normal travel pattern, JTA's Engagement Department is responsible for designing and creating the appropriate collateral as a communication tool to notify customers and businesses of the inconvenience. The distribution may require additional outreach effort on the part of the project consultant, contractor, or the requesting JTA department.

The JTA is customer-focused and seeks the input of the community it serves. Members of the public are encouraged to provide feedback on JTA projects. JTA's website (www.jtafla.com) is a primary source for navigating the JTA's projects, activities, and policies. There are multiple ways to provide

comments or request information. Additional information on the website and a sample comment form are contained in **Appendix O**.

The primary contact for questions or information about public notification requirements is JTA's Engagement Department. JTA's Marketing personnel and Public Information Officer (PIO) are in the JTA's Engagement Department. See **Appendix A** for contact information.

8.5 Permitting

For placement of benches and shelters, Rule 14- 20 Florida Administrative Code (FAC) places the permitting process for state right-of-way with the local jurisdictions. The best practice is to coordinate with the local jurisdiction to issue the permit. Also, contacting the FDOT District Maintenance Office and working with the FDOT District ADA Coordinator for ADA-related concerns is recommended.

A Right-of-Way Permit is needed for any new work proposed within the City of Jacksonville right of way. The Contractor will request the permit based on the approved plan(s). The Right-of-Way Permit ensures the contractor is properly bonded to work in the City of Jacksonville Right-of-Way. With regard to modification to existing facilities (replacing a bench or trash receptacle for example) a permit is not required.

For permitting of transit stops with the City of Jacksonville (COJ), the following guidance is required:

- Contractor required to pull a Right-of-Way Permit with COJ
- Contractor will submit bus stop permit drawing package to COJ Planning Department/ Development Services Division
- Once the permit package is approved by COJ, the Contractor can submit for a Right-of-Way Permit (using approved permit drawings/package)
- Once the Right-of-Way Permit is issued to the Contractor, the Contractor can schedule and begin work

Similarly, for any construction within the FDOT Right-of-Way, coordination is required with FDOT District 2.

The primary contact for questions regarding permits, is the JTA's System Development Division, Construction and Capital Programs Office. Refer to Appendix A for contact information.

8.6 Roadway Coordination Requirements

There are guidelines for transit facility related issues applicable to both state and non-state roads. These references are noted throughout the MAP document. While FDOT is responsible for the construction, maintenance, and operation of state roads and transit facilities along state roads, non-state roads are maintained by local and county governments. Typically, county governments are responsible for traffic operations and other issues related to county roads. Local roads are mostly under the jurisdiction of local governments and constitute a high proportion of roadway mileage in the State of Florida.

All applicable departments within the FDOT and/or local or county governments should be contacted during the planning process to identify site-specific construction procedures and specifications.

Agencies responsible for the following should be contacted during the planning process:

- Utilities
- Electricity supply and maintenance
- Traffic impacts and related issues
- Environmental planning
- Historic preservation
- Adjacent property owners

The primary contact for questions regarding roadway construction, or construction activities associated with transit stops, facilities, and amenities, is the JTA's System Development Division, Construction and Capital Programs Office.



9

Best Practices and Resources

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9 Best Practices and Resources

The JTA created the MAP handbook as a reference for the planning, design, and construction of transit stops and facilities throughout the JTA's transportation system and to ensure consistent design features to make transit safe and accessible for its customers.

This handbook is updated periodically to address changes in JTA's transit services and adhere to any changes in local, state, or federal standards governing the design and construction of transit facilities recommended by the FTA and FDOT.

Section 9 Highlights:

This section provides :

- ✓ Overview of Best Practices conducted for this MAP Update
- ✓ Resources and references recommended for this transit stop, facilities and amenity design and implementation

A periodic review of best practices and related references is also conducted as part of the MAP update to identify new and/or innovative approaches within the industry to accommodate the needs of JTA customers, employees, and the public. An overview of best practices related to transit design for this MAP Update is provided in the following section.

9.1 Best Practices Overview

As part of the MAP 2023 Update, an extensive review of best practices in the planning, design, and construction of transit stops, facilities, and amenities was conducted. A summary of best practices research for bus stop layout and placement included recommendations from the FTA, American Public Transportation Association (APTA), peer transit agencies, and transportation associations.

While each transit agency and jurisdiction have its guidelines and standards for transit stop design and placement, laws, and regulations about micro-mobility options, several best practices are agreed upon.

First, the spacing, placement, and design of transit stops affect bus operations and patron satisfaction. Better transit stops (i.e., better amenities) and better experiences walking and biking to bus stops encourage ridership and improve the user experience.

Transit stops should be universally designed and accessible by everyone to the greatest extent possible. Transit providers should also incorporate safeguards to protect both drivers and patrons.

Coordination and communication with partners are key to success. Transit agencies alone cannot create a successful transit system. Local jurisdictions play a role in funding and building bicycle and pedestrian infrastructure and bus stop/bus stop amenities. They also establish development regulations that require developers to support the existing and planned bus network. Partnerships with micromobility and rideshare providers ensure necessary first-mile/last-mile connections.

Collecting and analyzing data on the condition of transit stops, transit stop amenities, ridership, injury data, etc. is critical to ensuring successful design and placement. A mix of qualitative and quantitative data should be used.

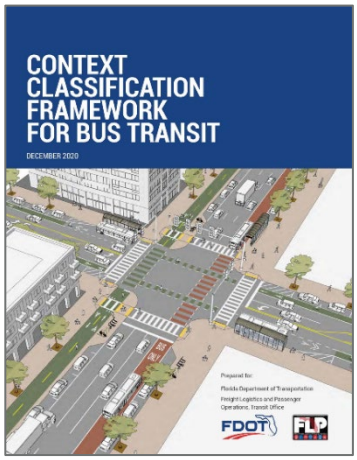
Appendix P contains a Best Practices summary, with recommended website links, related to the following areas:

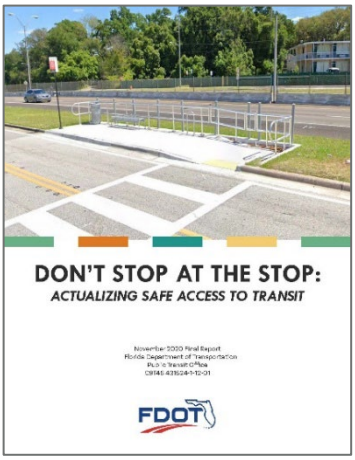
- Transit Stop Layout and Placement
- Transit Stop Amenities
- Non-Permanent/Movable Bus Stop Pads
- Exercise Equipment at Transit Stops

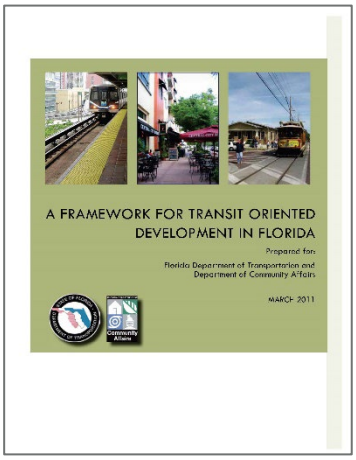
9.2 Additional References and Resources

The MAP 2023 Update was completed to ensure the JTA's recommended design practices for transit stops, facilities, and amenities, are in accordance with the most recent local, state, and federal guidelines. In addition to the Best Practices Review of the industry, additional recommended references include:

- Florida Department of Transportation (FDOT) Accessing Transit
- FDOT Transit Facilities Guidelines
- FDOT Design Standards
- Manual of Uniform Traffic Control Devices (MUTCD)
- Florida Administrative Code
- Federal Register, 49 CFR Parts 27 and 37
- American Association of State Highway and Transportation Officials (AASHTO)
- American with Disabilities (ADA) Accessibility Guidelines for Buildings and Facilities
- Public Rights-of-Way Accessibility Guidelines (PROWAG)
- City of Jacksonville Ordinance Code
- Additional resources as shown below









Appendices

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Appendices

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Appendix B Transit Stop Checklist
Appendix C Transit Stop Decision Matrix
Appendix D Mobility Hubs and Facilities
Appendix E Transit Stop Amenities Request Process
Appendix F JTA Service Standards and Route Summary
Appendix G Transit Stop Example Layouts
Appendix H Transit Shelters and Amenities
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Appendix J JTA Lighting Standards and Solar Readiness
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Appendix L Transit-Oriented Development
Appendix M Customer and Amenities Information
Appendix N Customer Code of Conduct
Appendix O Public Communication & Notification Examples
Appendix P Best Practices Research

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December 2022





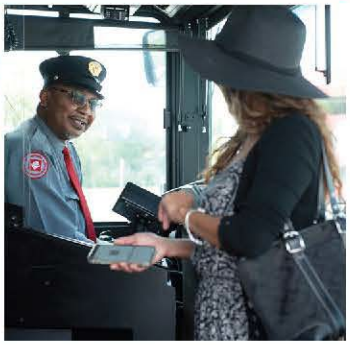




MOBILITY ACCESS PROGRAM









JACKSONVILLE TRANSPORTATION AUTHORITY



Appendices

Appendices

Appendix A Contact Information

Appendix B Transit Stop Checklist

Appendix C Transit Stop Decision Matrix

Appendix D Mobility Hubs and Facilities

Appendix E Transit Stop Amenities Request Process

Appendix F JTA Service Standards and Route Summary

Appendix G Transit Stop Example Layouts

Appendix H Transit Shelters and Amenities

Appendix I Transit Stop Sign Design Details

Appendix J JTA Lighting Standards and Solar Readiness

Appendix K Transit Vehicle Dimensions

Appendix L Transit-Oriented Development

Appendix M Customer and Amenities Information

Appendix N Customer Code of Conduct

Appendix O Public Communication & Notification Examples

Appendix P Best Practices Research

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A

Contact Information

CONTACT INFORMATION

CONTACT INFORMATION (AS OF DECEMBER 2022)		
Department	**Phone Number**	**Additional Information** *(General Email or Website)*
Jacksonville Transportation Authority		
Main Number	(904) 630-3181	jtafla.com
ADA Compliance Coordinator	(904) 630-3181	ADASuport@jtafla.com
Automation, Innovation & Skyway	(904) 633-8548	
Connexion (Paratransit Customer Service)	(904) 265-8928	
Construction & Capital Programs	(904) 632-5213	
Construction & Engineering	(904) 632-5279	
Communications, Executive Director/PIO	(904) 630-3185	
Customer Service	(904) 630-3100	Customer-svc@jtafla.com
Diversity, Equity, Inclusion & Belonging	(904) 632-5298	
Economic Development (Main)	(904) 632-5256	
Engagement	(904) 632-5522	
Facilities (Transit Amenities)	(904) 633-8518	
Facilities (Buildings)	(904) 633-8518	
Governmental Affairs	(904) 630-3160	
Maintenance (Transit Amenities)	(904) 633-8518	
Marketing & Communications, Director	(904) 630-3109	
Media Relations (Tucker Hall)	(904) 493-5006	
Planning & Sustainability	(904) 630-3147	
Public Relations, Director	(904) 632-5232	
Safety HOTLINE	1-844-SAFE-JTA	
Safety & Security, Main	(904) 632-5519	Safety@jtafla.com
Security, Director	(904) 598-8762	
System Development Division, Main	(904) 633-8510	SysDevPlanningTeam@jtafla.com
Technology & Innovation, Main	(904) 632-3813	
Transit Advertising	(904) 630-3109	
Transit Operations, Chief Transportation Officer	(904) 630-3101	
Transit Planning	(904) 633-8510	
Transportation Resource Center	(904) 265-6001	ResourceDevelopment@jtafla.com
City of Jacksonville		
Main Number	(904) 630-CITY	coj.net
Building Department	(904) 255-8799	
City Council	(904) 255-5200	
Community Planning	(904) 255-7800	
Disabled Services Division	(904) 630-4940	
Downtown Development Review Board (DDRB)	(904) 630-2689	
Downtown Investment Authority (DIA)	(904) 255-5693	dia.coj.net
Planning and Development	(904) 255-7817	
Public Works	(904) 255-8786	Issues use 630-2489
Permits	(904) 255-8786	
Right-of-Way	(904) 255-8700	
Temporary Road Closure Information	(904) 255-8786	PWAdmn@coj.net

CONTACT INFORMATION

CONTACT INFORMATION (AS OF DECEMBER 2022)		
Department	**Phone Number**	**Additional Information** *(General Email or Website)*
Florida Department of Transportation		
Main Number (Jacksonville Urban Office)	(904) 360-5400	Alternate (800) 207-8236
Main Number (District 2 Lake City)	(800) 749-2967	fdot.gov
Construction/Public Information	(904) 360-5457	
District Construction Engineer	(386) 961-7730	
District Maintenance Engineer	(386) 758-3744	
Maintenance	(904) 360-5200	
Permitting	(904) 360-5375	
Right-of-Way	(386) 961-7403	
Urban Transportation Development Manager	(904) 360-5646	
Atlantic Beach		
Main Number	(904) 247-5800	coab.us/directory
Building Department	(904) 247-5826	
Planning and Zoning	(904) 247-5800	
Public Works	(904) 247-5886	
Jacksonville Beach		
Main Number	(904) 247-6100	jacksonvillebeach.org
Building Division	(904) 247-6235	
Community Redevelopment	(904) 247-6231	
Planning Division	(904) 247-6231	
Public Works	(904) 247-6219	
Neptune Beach		
Main Number	(904) 270-2400	nbfl.gov
Capital Projects	(904) 270-2400	Alt. (904) 270-2423
Planning & Community Development	(904) 270-2400	Extension 4
Public Works	(904) 270-2423	
Jurisdictions/Community Organizations		
Downtown Vision, Inc.	(904) 634-0303	downtownjacksonville.org
Jacksonville Chamber of Commerce	(904) 366-6600	myjaxchamber.com
Riverside-Avondale Preservation	(904) 389-2449	riversideavondale.org
San Marco Preservation Society	(904) 396-0081	smpsjax.com
Springfield Preservation Revitalization (SPAR)	(904) 353-7727	sparcouncil.org
Note: Contact Information as of Dec 2022. Due to potential fluctuations in personnel assignments, personal emails were not used for this publication.		

B

Transit Stop Checklist

The **Transit Stop Checklist** is used to document site conditions and various circumstances regarding the planning, design, and construction of transit stops. The Transit Stop Checklist involves a process to review the placement, relocation, and removal of transit stops and related amenities, such as shelters and benches.

JTA's Transit Planning, Transit Operations, Facilities, and System Development regularly update a transit stop inventory in TrackIt. When evaluating the placement, relocation, and/or removal of a transit stop; please refer to the transit stop inventory in TrackIt to determine if there are site conditions or operating information to be verified.

The following is a summary of the Transit Stop Checklist topic areas. The definition and measure of each component are shown in Table 1.

The Transit Stop Checklist – Decision Support Form is also included in this appendix.

Table 1: Transit Stop Checklist Topic Areas

	A	Location		H	Streets Furniture
	B	Homeowners		I	Environmental
	C	Coordination		J	Security
	D	Compatibility		K	Lighting
	E	Access to a Bus Stop		L	Sight Line
	F	Impervious Ground Surface		M	Maintenance
	G	Pedestrian Circulation			Photos, Additional Information

Transit Stop Checklist – Component Descriptions

The Transit Stop Checklist includes topics that should be reviewed to ensure:

- Safety
- Security
- Accessibility
- Customer Comfort
- Customer Convenience

The Transit Stop Checklist topics range from general (such as locating a transit stop in the community) to specific (such as preserving sight lines). The Transit Stop Decision Support Chart should also be reviewed when considering the placement, relocation, and/or removal of a transit stop and coordination to ensure ADA compliance.

A **Locations Within the Community:** The location of the transit stop should be coordinated with the business community and neighborhood. Businesses want to preserve clear views of storefronts and maintain open circulation spaces in and around the storefronts. Although improperly located shelters can obstruct business activities, bus stops can enhance both transit and business activities when sited properly.

B **Homeowners and Property Owners** are another influential voice in the community. Typically, they do not want stops in front of their properties. Efforts to maintain bus stops in residential neighborhoods may reduce the "not-in-my-backyard" attitudes.

C **Coordination:** between governmental agencies can enhance or impede this process. Liability can be a major issue for governmental agencies and businesses. This is especially true when improvements are made to sidewalks at or near bus stops. Transit agencies can create their own regulatory hurdles to avoid liability. However, this action comes at the expense of the transit patron, the ultimate customer. Coordination and cooperation with The City Of Jacksonville and/or FDOT can improve this process.

D **Compatibility:** Transit stops should be located to limit conflicts with pedestrians and other activities. Transit stops that create conflict points with pedestrians and bicyclists or reduce the capacity of existing sidewalks should be avoided. Benches, shelters, and other bus-related facilities should be separated from pedestrian or bicycle facilities when space permits. Because bus stops are commonly placed near parking lots, bollards and/or a raised curb would prevent cars from damaging bus facilities (e.g., bus shelters) or interfering with bus activities and patrons. Bus stops should be located to provide safe separation of passengers and vehicles from nearby land uses. They should not be directly next to the curb, which puts patrons close to passing vehicles. This is especially true for stops on roads with high traffic speeds. The zone of comfort or separation for patrons from high-speed traffic may be violated when the shelter or bench is too close to the edge of the roadway. The minimum acceptable offset for benches and shelters from the back face of the curb is 2 feet. This distance should increase with higher speed limits.

E **Access to Transit Stop:** Landscaping, berms, security walls, large parking lots, and circuitous sidewalks can decrease the convenience of using transit by increasing the walking time between the origin or destination and the bus stop. Direct access to and from the transit stop is critical to the convenience of using transit. The JTA can work with

local jurisdictions or developers to ensure that direct sidewalks are installed near transit stops from the intersection or adjacent land uses. Defined paths or walkways can be installed through parking lots or landscaping to reduce walking times and improve safety.

F

Impervious Ground Surfaces: Avoid locating transit stops on exposed soil, grass, or uneven ground. For passenger comfort and convenience, a waiting pad constructed of impervious nonslip material should be provided at the transit stop. This should be graded for proper runoff control and meet ADA requirements for cross slopes. The transit stop should be coordinated with existing sidewalks to provide defined and controlled access to the stop. In developing areas, JTA can coordinate transit stop locations with sidewalk locations and installation through local government, COJ, FDOT, or developers.

G

Pedestrian Circulation: Utility poles, fire hydrants, and street furniture can reduce the available space for bus patrons to maneuver. Avoid locating stops near items that may restrict proper movement in and around a bus stop. Appropriate spacing of items at a transit stop should also be maintained to allow proper access for wheelchairs and pass-by pedestrian traffic. Shelters, benches, utility poles, and other street furniture should not intrude on the ADA landing pad, which should be at least 5 feet (measured parallel to the curb) by 8 feet (measured perpendicular from the back face of the curb). At least 3 feet of clearance should be maintained to enable wheelchair access to and from the stop and around any transit amenities, posts, poles, fire hydrants, vending machines, or other fixtures that might be present. Ideally, high-volume stops should have clear pedestrian access from both bus doors.

H

Existing Street Furniture: Selecting sites with existing street furniture can save the transit agency money while providing patrons with amenities, such as benches, vending machines, and phones. JTA will review the condition of the amenities to make sure the items are properly maintained and free of graffiti or other signs of wear. JTA will also note the placement of any existing street furniture. When additional improvements are made to the site because of the installation of a bus stop, the location of existing street furniture may reduce circulation space and accessibility.

I

Environmental Conditions: Existing site conditions can be used to enhance the environmental comfort of a bus stop. Sun/shade patterns provided by existing vegetation or structures can contribute to the comfort of waiting bus patrons. The final design of the transit stop shelter should also respond to the environmental demands of a site (e.g., sun/shade patterns, winds, and precipitation). Panel placement, orientation, and materials should be selected to provide maximum comfort to patrons. The site should also be well-drained.

J

Security: Perception of security at a transit stop can have a significant influence on the comfort level of patrons using that bus stop. To enhance the security of bus stops, regularly remove graffiti and trash (to discourage repeat occurrences), ensure indirect surveillance from nearby land uses and passing traffic, and avoid locating stops where there is an opportunity for concealment. When landscaping is involved, use low-growing shrubs that preserve sight lines.

K

Lighting: Bus stops may include lighting or be located near existing streetlights that provide indirect lighting to enhance the security of a stop. Interior shelter lighting can be

a critical amenity when patrons arrive and return in the dark. The interior lighting elements should be resistant to vandalism and be maintained regularly. Bus shelters without interior lights should, whenever possible, have translucent roofs.

Pedestrian-oriented lighting should be encouraged in new developments or when major infrastructure work is being planned. Indirect lighting from nearby businesses can also enhance surveillance of the site from these land uses.

L

Sight Line: The transit stop should be visible for both safety and security reasons. Stops obscured by existing structures or vegetation are difficult for bus drivers to see. Passing vehicles may be unaware of the presence of pedestrians near or on the roadways; this increases the chance that accidents will occur. Right turns on red can increase the likelihood of pedestrian-vehicle conflicts. The transit stop site should be inspected carefully to detect any potential sight-related problems. For security reasons, sight lines should be preserved to maintain direct and indirect surveillance of the bus stop. Landscaping, walls, advertising panels, and structures can restrict sight lines and provide spaces to hide. Bus stops should be easily viewed from nearby land uses and passing traffic to enhance the security of the stop. Bus shelters should be constructed of materials that allow clear, unobstructed visibility of patrons waiting inside. Bus patrons also need to be able to observe their surroundings when inside the shelter.

M

Maintenance: Proper maintenance of bus facilities is crucial to preserving a positive image of JTA. Trash and graffiti should be removed as soon as possible to prevent further degradation of the facilities. A database containing maintenance schedules can be created to track the condition of the facilities, including pavement surface conditions; the age of the facilities; history of damage; and condition of shelter, benches, or other transit amenities. Transit stop maintenance can be costly and time-consuming. Working agreements with local businesses or commercial centers can reduce the financial responsibilities of the JTA. For stops next to convenience stores, the JTA will try to obtain a working agreement with the local store or businesses to provide trash removal and general maintenance at the bus stop. Agreements with commercial-strip centers should also be obtained to remove used shopping carts from transit stop regularly. Shopping carts abandoned around bus stops are visually unappealing and restrict movement through a site.

TRANSIT STOP CHECKLIST

Stop Location/Description: (include nearby intersecting streets, etc.)	**Date of Site Visit:**

✓		Area of Review	Comments
	A	Location Details	
	B	Ownership/Right-of-Way Information	
	C	Agency Coordination (City or FDOT?)	
	D	Compatibility	
	E	Transit Stop Access	
	F	Impervious Ground Surface	
	G	Pedestrian Circulation	

✓		Area of Review	Comments
	H	Existing Street Furniture	
	I	Environment	
	J	Security	
	K	Lighting	
	L	Sight Line	
	M	Maintenance	

Note Photos Taken / Additional Comments

Transit Stop Checklist Review – Decision Support

Transit Stop Checklist Summary			
	Transit Stop Location Description:		Boarding Data:
	City Council District:		Is there an ADA Issue?
	FDOT or City-Owned Roadway?		Is there a Lighting issue?
	Photos? Provide a link or attach.		Any special conditions

See attached.

Checklist Review Approvals

System Development Division
signature

Print name

Safety
signature

Print name

Construction & Capital Programs
signature

Print name

Facilities
signature

Print name

Transit Planning
signature

Print name

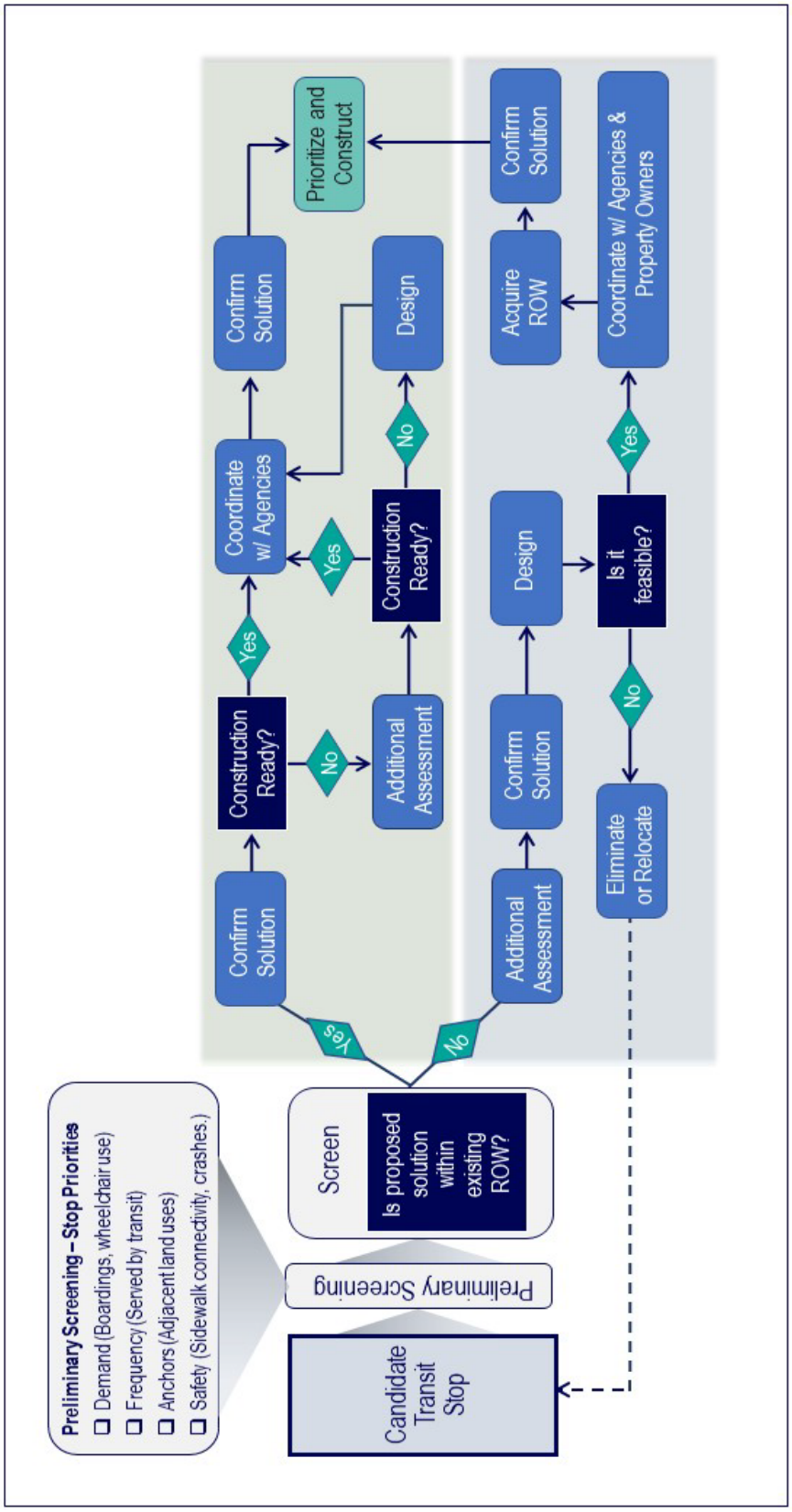
ADA Coordinator
signature

Print name

C

Transit Stop Decision Matrix

TRANSIT STOP DECISION MATRIX



D

Mobility Hubs and Facilities

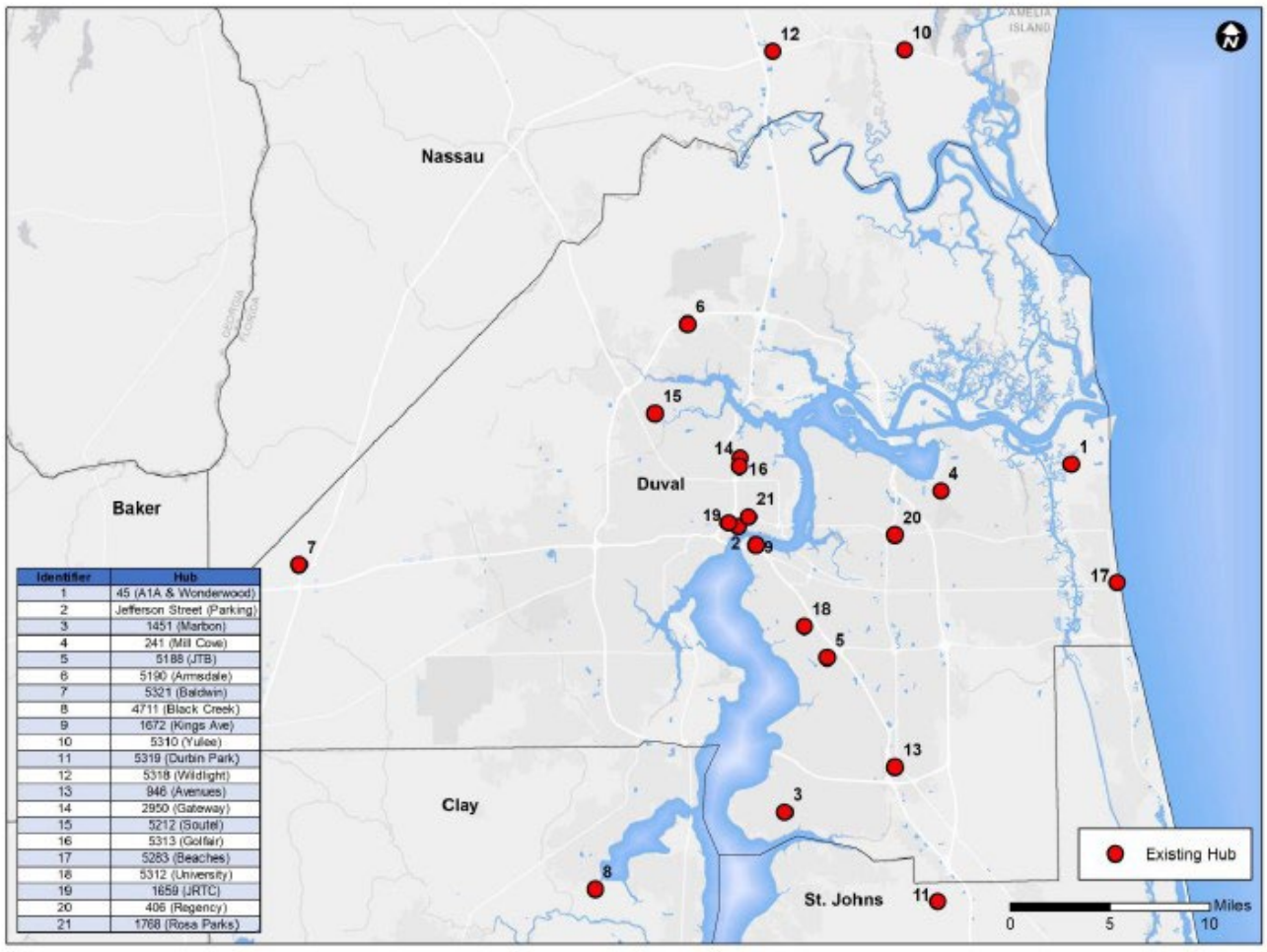
APPENDIX D

Appendix D contains the following information pertaining to JTA's Mobility Hubs, Park and Ride, and Skyway Facilities

- JTA Existing Mobility Hub Map
- JTA Park and Ride Facilities
- JTA Skyway Facilities
- FDOT Park and Ride Resource (cover page)
- JTA Mobility Hub Analysis (August 2020)

Existing Mobility Hub Map

Source: JTA Mobility Hub Analysis (August 2020)



Identifier	Hub
1	45 (A1A & Wonderwood)
2	Jefferson Street (Parking)
3	1451 (Marbon)
4	241 (Mill Cove)
5	5188 (JTB)
6	5190 (Armsdale)
7	5321 (Baldwin)
8	4711 (Black Creek)
9	1672 (Kings Ave)
10	5310 (Yulee)
11	5319 (Durbin Park)
12	5318 (Wildlight)
13	946 (Avenues)
14	2950 (Gateway)
15	5212 (Soutel)
16	5313 (Golfair)
17	5283 (Beaches)
18	5312 (University)
19	1659 (JRTC)
20	406 (Regency)
21	1768 (Rosa Parks)

JTA PARK AND RIDE FACILITIES

PARK-N-RIDE LOTS:

- A1A & Wonderwood Lot
  1206 Wonderwood Drive
  Atlantic Beach, Fl 32233
  73 parking spaces
- Armsdale Park-n-Ride
  3191 Armsdale Road
  Jacksonville, FL 32218
  53 parking spaces
- Avenues Walk Park-n-Ride Center
  10508 Avenues Walk Boulevard
  Jacksonville, FL 32256
  88 parking spaces
- Clay Express Select Lot
  2511 CR 220
  Middleburg, FL 32068
  50 parking spaces
- Baldwin Lot
  801 W. Beaver Street
  Baldwin, FL 32234
  21 parking spaces
- Kings Avenue Garage
  1201 Kings Avenue
  Jacksonville, FL 32207
  1,717 parking spaces
- Marbon Lot
  Marbon Rd & FL-13
  Jacksonville, FL 32223
  15 parking spaces
- Philips Highway & JTB Lot
  7000 Philips Highway
  Jacksonville, FL 32216
  76 parking spaces

AVENUES WALK PARK-N-RIDE CENTER

The Avenues Walk Park-n-Ride Center is located at 10508 Avenues Walk Boulevard. It serves as the southernmost stop for the First Coast Flyer Blue Line and integrates with several other regional transportation systems.

The Center was designed to enhance travel time, encourage connections to other modes of transportation, and minimize boarding and waiting times. With parking for up to 88 vehicles and a 1,400-square-foot customer service building featuring a waiting area, restrooms, vending machines, energy-efficient LED lighting, security, and customer service offices, the Avenues Walk Park-n-Ride Center has been designed with the customer in mind.

Additional features include:

- 3 bus bays
- 3 bus shelters
- bike racks
- First Coast Flyer totems with up-to-the-minute arrival and departure details
- ticket vending machines (TVMs)
- solar trash and recycling receptacles

SKYWAY PARK-N-RIDE

Park at one of our Skyway lots and ride the Skyway for free! There is a fee required, except for select events in downtown Jacksonville. Learn more HERE.



PARK-N-RIDE

The Skyway station at Kings Avenue offers inexpensive Park-n-Ride facilities for commuters and visitors. For a monthly pass or information on our metered parking, call (904) 630-3100.

NO CHARGE

The Skyway is a complimentary service. There is no charge!

FAST FREQUENCY

Peak Hours
6 - 9 a.m. and 4 - 7 p.m.
Trains arrive every 4 minutes

Off-Peak Hours
Trains arrive every 8 minutes

SAFE AND RELIABLE

In addition to electronic message boards with real-time arrival and departure times, all Skyway stations are monitored by closed-circuit television and fully equipped with two-way voice communication and video cameras.

BIKES ON THE SKYWAY

Have your bike with you? No problem. JTA allows you to bring your bike on the Skyway as space permits, at no cost.

SKYWAY STATIONS

LAVILLA STATION
BAY ST. & LEE ST.

- **Close to:** Jacksonville Regional Transportation Center at LaVilla, Intercity Bus Terminal (Greyhound, Megabus, Red Coach), Prime Osborn Convention Center
- Ticket Vending Machine available at ground level

JEFFERSON STATION
BAY ST. & JEFFERSON ST.

- **Close to:** Federal Reserve Building, Interline Brands, Sally Corporation
- JTA Park-n-Ride lot available

CENTRAL STATION
BAY ST. & JULIA ST.

- **Close to:** Times-Union Center for the Performing Arts, Northbank Riverwalk
- Ticket Vending Machine available at ground level

JAMES WELDON JOHNSON PARK STATION
HOGAN ST. & MONROE ST.

- **Close to:** City Hall, Main Library, Museum of Contemporary Art (MOCA), United States Courthouse, Visit Jacksonville
- Ticket Vending Machine available at ground level

ROSA PARKS TRANSIT STATION
HOGAN ST. & UNION ST.

- **Close to:** First Baptist Church, FSCJ Downtown Campus
- Ticket Vending Machine available at ground level

SAN MARCO STATION
MARY ST. & SAN MARCO BLVD.

- **Close to:** Friendship Park, Museum of Science & History (MOSH), Prudential Building, Southbank Riverwalk

RIVERPLACE STATION
MARY ST. & FLAGLER AVE.

- **Close to:** Southbank Riverwalk, Treaty Oak Park, hotels, residential towers

KINGS AVENUE STATION
KINGS AVE. AND NIRA ST.

- **Close to:** Hotels, dining, entertainment, and residential towers. Covered walkway to the Kings Avenue Parking Garage.
- Ticket Vending Machine available at ground level
- JTA Park-n-Ride lot available

FLORIDA DEPARTMENT OF TRANSPORTATION

STATE PARK-AND-RIDE GUIDE

Prepared for:

FLORIDA DEPARTMENT OF TRANSPORTATION TRANSIT OFFICE

Florida Department of Transportation
Office of Freight, Logistics and Passenger Operations, Transit Office
605 Suwannee Street, MS 26
Tallahassee, FL 32399-0450

Revised:
June 1, 2012

JTA Mobility Hubs

Typology Development, Suitability Analysis and Investment Prioritization





AUGUST 2020

Jacksonville Transportation Authority
Planning & System Development

JACKSONVILLE TRANSPORTATION AUTHORITY

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JTA Mobility Hub Typologies **6**

Mobility Hub Analysis and Prioritization **10**

Conclusion **21**

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Mobility Hub Overview

The JTA Mobility Hub Program seeks to integrate shared use mobility options including improved pedestrian, rideshare, carshare, bikeshare and microtransit feeder networks into the mainline frequent or premium transit services provided by JTA to create nodes within the transit network. To be effective, these nodes need to be strategically located to feed the overall transit system, especially high frequency corridors. Additionally, they need to be in a setting that is conducive to shared mobility services. This includes areas with greater population density and a concentration of shorter transit trips, bike and pedestrian friendly infrastructure, and a street network that can support smaller low speed vehicles.

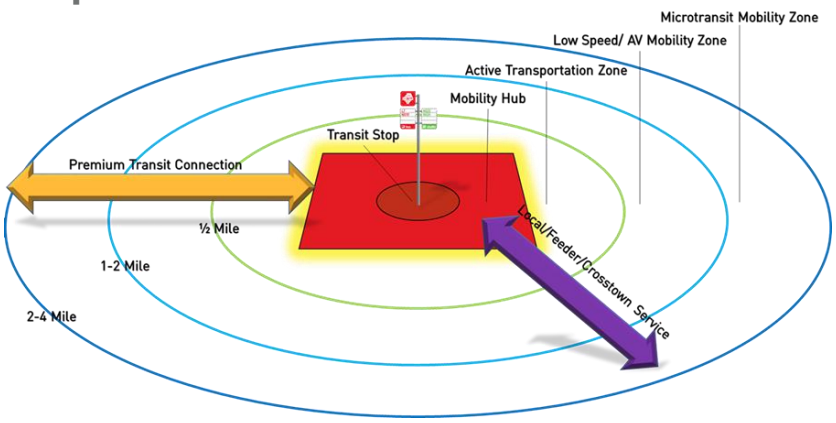
Highly
Utilized
Boarding
Sites

Mobility Hubs are the second smallest level in the “Mobility Spectrum”, which characterizes the various levels of transit service zones. Mobility Hubs are constrained to a physical footprint, but are larger bus staging areas used where multiple services come together at a point in the transit system. They provide more than a traditional standalone transit stop, with improved wayfinding, easier access to transit boarding areas, and improved connection to other services and surrounding locations. Mobility hubs are comprehensively designed to maximize the footprint of the parcel and make them welcoming, with ample amenities and opportunities to access transit. Mobility Hubs can come in a variety of sizes and types, however, the primary focus is on place making to improve transit use.

To simplify the process of planning and constructing Mobility Hubs, the JTA developed typologies to identify current and future hub locations. There are three typologies that characterize the Mobility Hubs. The typologies include Primary Hubs, Access Hubs, and Collector Hubs. All hubs are required to meet ridership criteria, as well as other factors, which help determine the specific amenities for each location. Amenities are grouped into four core areas. Each area focuses on a different aspect of the passenger’s interaction with the hub and surrounding areas. Amenities help create an environment that provides a holistic experience for transit patrons while at the hubs.

JTA seeks to build a Mobility Hubs program that enhances its transit system, and creates a rider experience that is safe and reliable while being efficient and sustainable. This program seeks to offer equitable access to community resources for the entire regions population.

Mobility Zone Spectrum



Transit Stop – The transit stop is the physical location where passengers board transit. There are three primary stop types. Each type of transit stop includes specific amenities identified in the JTA Mobility Access Program (MAP) Handbook in Section 2 Design Guidelines.

Mobility Hub – Mobility hubs are larger bus staging areas used where multiple services come together at a point in the system. They provide more than a traditional standalone transit stop, with improved wayfinding, easier access to transit boarding areas, and improved connection to other services and surrounding locations. Mobility hubs are comprehensively designed to maximize the footprint of the parcel and make them welcoming, with ample amenities and opportunities to access transit. Mobility hubs can come in a variety of sizes and types, however the main focus of them all is place making to improve transit use.

Active Transportation Zone – The Active Transportation Zone is the ½ mile area surrounding the mobility hub. This area is the focus for Transit-Oriented Development, which aims to increase transit ridership through increased residential and commercial density, and improved pedestrian and bicycle infrastructure. This area is easily accessed from the transit stop via walking and bikeshare/scooters in under 15 minutes. Transportation facilities constructed within the ½ mile must adhere to the FTA *de facto* pedestrian catchment area guidelines to be eligible for federal grants.

Low Speed/ AV Mobility Zone – The Low Speed/ AV Mobility Zone is the area ranging from ½ mile to 1-2 miles around the mobility hub, depending on physical/geographic barriers. Integration with the mobility hub is less prevalent, however, this area is easily accessed by low speed modes including, bikeshare, scooters, and Autonomous Vehicle (AV) shuttles.

Microtransit Zone – The Microtransit Zone is the area ranging from 1-2 miles to 2-4 miles around the mobility hub, depending on physical/ geographic barriers. Integration with the mobility hub is greatly reduced and emphasis is on higher speed modes of travel, such as transit shuttles, carshare, and lengthier bikeshare and scooter trips. Transportation facilities

constructed within a 3-mile radius of the Microtransit Zone must adhere to the FTA *de facto* bicycle catchment area guidelines to be eligible for federal grants.

Premium Transit Services

A premium transit station is a station served by either a fixed guideway service, such as BRT, rail, or the Skyway/U2C, or a station serving as a Mobility Hub. Premium Transit Stations provide service at higher-speed and higher-frequency than typical transit stops, usually with service frequencies at 15 minutes or less. Premium Transit Stations also include more infrastructure and amenities to serve higher passenger activity. Amenities can include; on-board amenities, such as seating, comfort and cleanliness; station design features, such as real-time passenger information, shelters, and lighting; and other features, such as reliability, service frequency, and parking.

Amenities

The intent for amenities within public transportation mobility hubs is to enhance and compliment premium transit service. The Transportation Research Board (TRB) emphasizes the influence transit amenities can have on current and potential customers. The proper amenities within a mobility hub can enhance the customer experience, improve ridership, beautify the surrounding community and create an inclusive travel option for those with disabilities that affect independent travel. These types of facilities can become new downtown anchors, function as central squares, and help revitalize city centers.

Amenities are not just placed for visual impact. The proper amenity types help to increase security, improve route efficiency, and create a comforting environment. The emphasis on transit amenities is integral in obtaining choice riders. Customer satisfaction has also been shown to improve overall for mobility hubs, bus stops and rolling stock when amenities are given the appropriate amount of fiscal and managerial focus.

Transit mobility hubs are considered the “waiting environment” within our transit system. At a minimum, the amenities for these facilities are a route identifier map, ADA compliant boarding and alighting areas with the appropriate amount of seating. Additional elements will be considered and employed when discussing customer comfort, rider recruitment, security, and ADA enhancements.

> ***"The nature of amenity is not static, it's very dynamic. You can't just do it, brush off your hands, and walk away. You have to keep revisiting it."***

-Howard P Benn, World Transit Research.

The JTA strives to go beyond the minimum amenity installments for its mobility hubs. A substantive evaluation and subsequent improvement program of all mobility hubs is essential to JTA's regional expansion, customer satisfaction and overall ridership performance.

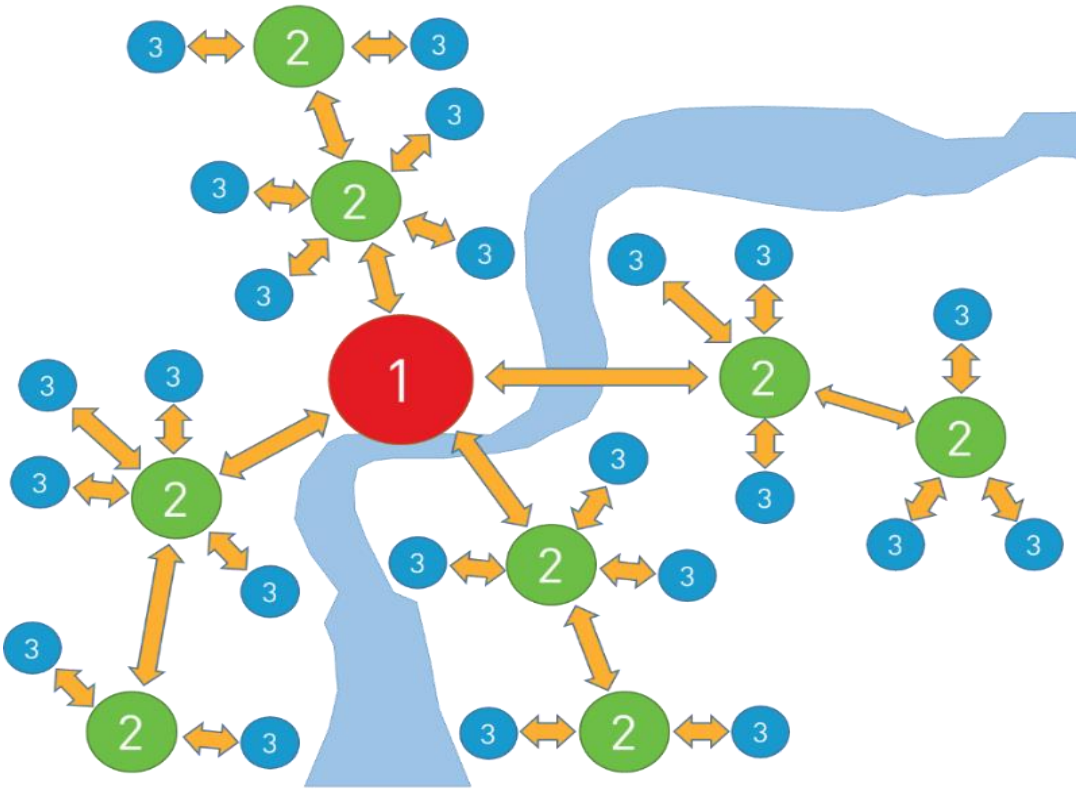
JTA Mobility Hub Typologies

Tier I – Primary Hub - A Tier I Hub is a major destination for jobs, entertainment, and activities in the region, and provides the highest level of mobility through the availability of multi-modal services and first and last mile connections to nearby destinations. They are located in dense urban areas, Transit-Oriented Development (TOD) zones, or end of line stations. To qualify as a Tier I Hub, the transit station must serve, or be forecasted to serve, over 1,000 daily trips.

Tier II – Access Hub - A Tier II Hub is a primary transfer station between transit modes, and is the major access point, for premium services including Express Bus, BRT, Commuter Rail, and Downtown Circulators. Tier II hubs provide sufficient first mile and last mile connections through local bus and alternative services, as well as built out pedestrian and bicycle infrastructure. They are located along major transit corridors throughout the network, and where local services intersect premium transit options. To qualify as a Tier II Hub, the transit station must serve, or be forecasted to serve, no less than 175 daily trips.

Tier III – Collector Hub - A Tier III Hub is a station that occurs on a high frequency corridor where multiple transit modes and services come together, creating a neighborhood destination that generates a significant amount of origins for the regional transit network. It is a key access point to transit vehicles, but is often found in more suburban, low-density, auto-oriented areas. They offer basic amenities for transfer stations. To qualify as a Tier III Hub, the transit station must serve, or be forecasted to serve, at least 80 daily trips.

Example of a connected Mobility Hub network



Mobility Hub Amenities

The amenities offered at each hub are determined by the hub's typology, as well as its scale. Amenities are grouped into four core areas. Each area focuses on a different aspect of the passenger's interaction with the hub, and surrounding areas. Amenities help create an environment that provides a holistic experience for transit patrons while at the hubs.

Transit Infrastructure

Transit Infrastructure Amenities includes features that create a safe and accessible environment for all mode users, especially pedestrians and bicyclists. Active Transit Amenities primarily include infrastructure that improves the environment around the hub and creates connections between modes and surrounding locations.

- Sidewalk Connections
- Crossings
- Bikeways
- Bike Parking
- Vehicle Parking
- Sustainable Landscaping
- Shelter
- Solar Trash Compactor
- Bicycle Parking
- Customer Waiting Area

Shared Mobility Solutions

Shared Mobility Solutions help improve the accessibility of the network through the use of a variety of transit modes. While hubs are located along premium transit modes, the inclusion of Shared Mobility Services helps satisfy the crucial need for first and last mile connections within the transit network

- Premium Transit Modes
- Alternative Transit Modes
- Bike/Scooter Share
- Carshare
- Rideshare
- Microtransit

Support Services and Features

Support Services and Features help improve the accessibility and comfort of the transportation system for all users. A combination of signage, technology and personnel to assist passengers, helps make the system more user-friendly, and draws in ridership from surrounding areas.

- EV Charging

- Wayfinding
- Fare
- Public Art
- Open Space
- Administrative Service
- Customer Service
- Maintenance Service
- Automated Fare Technology
- Safety & Security (Personnel or Call Box)

Transit Technology Services

Transit Technology Services transform the transit network by improving its efficiency and safety, while gathering data which will be used for further development. Connected vehicles communicating with infrastructure and other sensors will help create a safer environment for all users, while amenities, like Wi-Fi and cellular service will help connect the passenger with the transit network, improving accessibility and ease of use.

- Wi-Fi/ Cellular Connectivity
- Lighting (Solar when applicable)
- Real-time passenger information
- ITS (TSP, Pedestrian Sensors, Smart Parking)

Table 1. Recommended Amenities by Typology

	Amenities	Primary	Access	Collector
Transit Infrastructure	Sidewalk Connections	●	●	●
	Crossings	●	●	●
	Bikeways	●	■	■
	Bike Parking	●	●	●
	Sustainable Landscaping	●	○	■
	Parking	■	○	●
	Shelter	●	●	●
	Customer Waiting Area	●	■	■
	Big Belly Solar Trash Compactor	●	○	■
Shared Mobility Solutions	Premium Transit Mode	●	●	○
	Alternative Transit Modes	●	○	■
	Bike/Scooter Share	●	○	■
	Carshare	●	○	■
	Rideshare	●	○	■
	Microtransit	■	○	●
Support Services and Features	EV Charging	●	○	■
	Wayfinding	●	●	●
	Automated Fare Technology	●	○	○
	Maintenance Service	●	■	■
	Administrative Service	●	■	■
	Customer Service	●	○	■
	Public Art	○	■	■
	Open Space	●	■	■
	Safety & Security (Personnel or Call Box)	●	○	■
Transit Technology Services	Wi-fi/ Cellular Connectivty	●	●	■
	Lighting	●	●	■
	Real-time travel information	●	●	○
	ITS (TSP, Pedestrian Sensors, Smart Parking)	●	●	■

●	Essential
○	Recommended
■	Optional

Mobility Hub Analysis and Prioritization

An analysis was conducted on JTA's service region, which established criteria to evaluate existing hubs and identify potential opportunity areas for future regional mobility hub placement. This criteria and analysis is meant to compliment the Premium Transit Data Analysis project. Research emphasizes the importance of including variables that have an impact on customers, agency partners and the general service area of public transportation agencies when analyzing the prioritization of fund expenditures and mobility hub placement.

The use of demographics ensures the equitable dispersion of public transportation services and accompanying infrastructure among those populations with a high need for public transportation. Demographic attributes are selected based on criteria that can affect the ability to travel independently: Age, income, disabilities, and current means of transportation are strong variables that associate with this concept. These data points can help transportation agencies to better plan to meet the needs of the community, support the local government and reduce road congestion.

Public transportation is a substantive mechanism in supporting and improving economies, especially in sectors that suffer the most during economic downturns. Investments in public transportation have been shown to give an economic return one to two times greater than what is initially invested to expand its infrastructure and services. As such, projected employment and population growth along with parcel land use are taken into consideration in the placement of mobility hubs to ensure public transportation compliments and enables a growing economy, infrastructure and population.

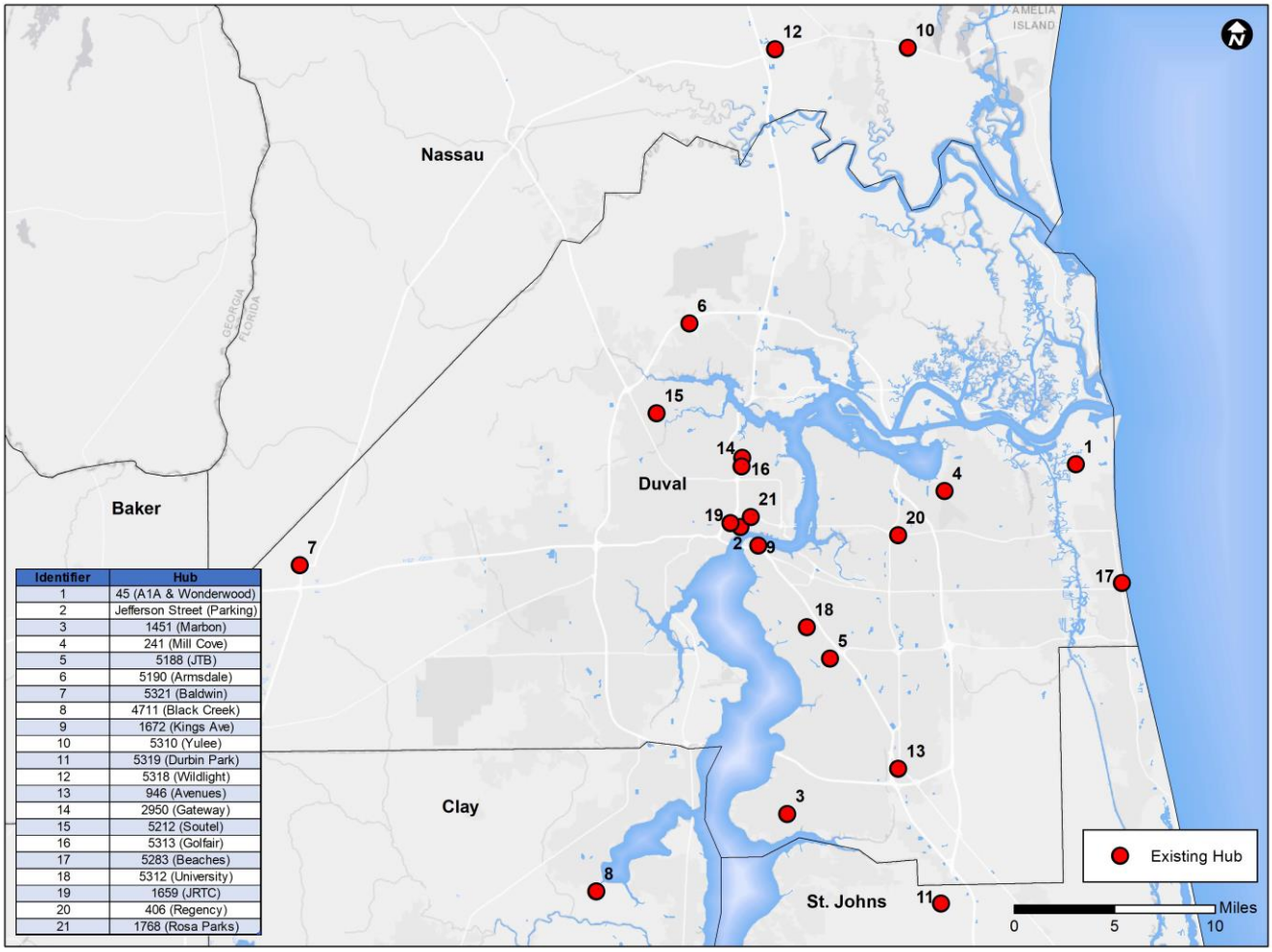
The strategic placement of mobility hubs also enables those who live in underserved areas such as food deserts the access to necessary items that would be difficult to obtain without the use of public transportation and mobility hubs. JTA's commitment to serve the community includes the ability to obtain fresh foods without facing major transportation challenges.

Public transportation offers an alternative to private means of travel. The reduction of private transportation helps to reduce roadway congestions, carbon emissions, roadway accidents, and increases the lifespan of public infrastructure. Areas with high pedestrian and bicycle traffic can benefit from the extension of public transportation hubs that offer a safer means of transportation while continuing to enable the autonomy of walking and bicycling.

Existing Mobility Hub Amenity Analysis

Existing JTA mobility hubs were analyzed using an existing condition evaluation paired with geospatial analysis to determine the necessities lacking to meet mobility hub typology recommended amenities, and to determine the order in which these improvements should be prioritized. The initial assessment was conducted utilizing a combination of data from JTA's TrackIt asset management database, information from relevant team members, GIS data and site visits. JTA's 21 existing hubs that were analyzed can be found on the map below. The results of the amenity assessment are summarized on the next page. These hubs were also included in the Mobility Hub Suitability Index Analysis. *Wildlight Hub is still in the real estate phase, but was included for planning continuity.

Map 1. JTA Existing Transit Hubs



Identifier	Hub
1	45 (A1A & Wonderwood)
2	Jefferson Street (Parking)
3	1451 (Marbon)
4	241 (Mill Cove)
5	5188 (JTB)
6	5190 (Armsdale)
7	5321 (Baldwin)
8	4711 (Black Creek)
9	1672 (Kings Ave)
10	5310 (Yulee)
11	5319 (Durbin Park)
12	5318 (Wildlight)
13	946 (Avenues)
14	2950 (Gateway)
15	5212 (Soutel)
16	5313 (Golfair)
17	5283 (Beaches)
18	5312 (University)
19	1659 (JRTC)
20	406 (Regency)
21	1768 (Rosa Parks)

Table 2. Summary of Existing Transit Hub Amenities

	Amenities	Primary	Access	Collector	45 A1A & Wonderwood	Johnson Street (Parking)	1451 Marbon	241 Mill Cove	5188 JTB	5190 Armsdale	5321 Baldwin	4711 Black Creek	1672 Kings Ave	5310 Yulee	5319 Durbin Park	5318 Wildlight	946 Avenues	2950 Gateway	5212 South	5313 Golfair	5283 Beaches	5312 University	1659 JRTC	406 Regency	1768 Rosa Parks
Transit Infrastructure	Sidewalk Connections	●	●	●	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X	✓	✓	✓	✓	✓	✓	✓	X	✓
	Crossings	●	●	●	✓	✓	X	X	✓	X	✓	X	X	X	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Bikeways	●	■	■	✓	X	X	✓	X	X	X	✓	✓	X	X	X	X	X	X	X	X	X	X	✓	X
	Bike Parking	●	●	●	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Sustainable Landscaping	●	○	■	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Parking	■	○	●	✓	✓	✓	X	✓	✓	✓	✓	✓	X	X	X	✓	X	X	X	X	X	X	X	X
	Shelter	●	●	●	X	X	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	X
	Customer Waiting Area	●	■	■	X	X	X	X	X	✓	X	X	X	X	X	X	✓	X	X	X	X	X	✓	X	X
	Big Belly Solar Trash Compactor	●	○	■	X	X	X	X	✓	✓	X	X	X	X	X	X	✓	✓	X	X	X	✓	✓	✓	X
Shared Mobility Solutions	Premium Transit Mode	●	●	○	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓
	Alternative Transit Modes	●	○	■	✓	X	X	X	X	X	X	X	X	X	X	X	X	✓	✓	✓	✓	X	X	✓	✓
	Bike/Scooter Share	●	○	■	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Carshare	●	○	■	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Rideshare	●	○	■	✓	X	X	X	✓	✓	✓	✓	✓	X	X	X	✓	X	X	X	X	X	✓	X	X
	Microtransit	■	○	●	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Support Services and Features	EV Charging	●	○	■	X	X	X	X	X	✓	X	X	✓	X	X	X	✓	X	X	X	X	X	X	X	X
	Wayfinding	●	●	●	X	X	X	X	X	X	X	X	✓	X	X	X	X	X	X	X	X	X	✓	X	X
	Automated Fare Technology	●	○	○	X	X	X	X	X	✓	X	X	✓	X	X	X	✓	✓	✓	X	X	X	✓	✓	✓
	Maintenance Service	●	■	■	X	X	X	X	X	✓	X	X	X	X	X	X	✓	X	X	X	X	X	✓	X	X
	Administrative Service	●	■	■	X	X	X	X	X	✓	X	X	X	X	X	X	✓	X	X	X	X	X	✓	X	X
	Customer Service	●	○	■	X	X	X	X	X	✓	X	X	X	X	X	X	✓	X	X	X	X	X	✓	X	X
	Public Art	○	■	■	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	X	X
	Open Space	●	■	■	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	X	X
	Safety & Security (Personnel or Call Box)	●	○	■	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Transit Technology Services	Wi-fi/ Cellular Connectivty	●	●	■	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	X	X
	Lighting	●	●	■	S	H	S	S	H	H	S	S	H	S	S	S	H	S	S	S	S	H	H	H	H
	Real-time travel information	●	●	○	X	X	X	X	✓	✓	X	X	X	X	X	X	✓	✓	X	✓	✓	✓	✓	✓	✓
	ITS (TSP, Pedestrian Sensors, Smart Parking)	●	●	■	X	X	X	X	✓	X	X	X	X	X	X	X	X	✓	X	✓	✓	X	✓	X	X

S=Solar
H=Hardwire

Suitability Index Analysis

This suitability analysis evaluates the areas of the Northeast Florida region that are most appropriate for the placement of a mobility hub. The concept of suitability within JTA's needs is a combination of demographic variables, economic drivers such as parcel types, income levels and transportation based attributes such as transit modes and accidents. The numerical value of the weighting is lowest to highest and reflects the desired suitability of the area: A scale of 0 to 10, 0 would be least suitable and 10 would be the most suitable. This value scheme is reflected within all the GIS data points and subsequent analysis.

Existing hubs have been evaluated using the most current and accurate data available. This data does not explicitly reflect the hubs suitability during its historical planning phases, construction phases and installation. Many areas within the region have shifted demographics, parcel types, economic outputs and even traffic patterns within the last 5,10 and even later years. The suitability of an existing mobility hub based on present quantitative spatial data does not equate to what the spatial data was during the preliminary planning phase of past mobility hub projects. The natural shift in an areas overall make up could

reduce the spatial suitability of an existing hub, even if it is historically a well performing mobility hub.

The shifting dynamics of a mobility hubs surrounding population demographics, economy and infrastructure requires that quantitative data is balanced by the input from subject matter experts (SME) who have real world knowledge and experience with the needs and geographic make up of JTA's customers and community.

The following information details the spatial quantitative data analysis, real world SME evaluation and subsequent investment priorities based on the combination of the respective analytic and evaluative methods.

GIS Suitability Analysis

The suitability analysis consisted of mapping geo-spatial data within the Northeast region of Florida.

The regional county lines were clipped to JTA's regional footprint and established as the extent for all subsequent spatial data and analysis (Appendix A-1 for region boundary data and method). The region consists of the following counties: Baker, Clay, Duval, Nassau, Putnam and St. Johns.

ReadiRide Zones, active stops and express routes were applied spatially to obtain the current amenities of each mobility hub. ReadiRide zones were intersected with existing hubs and the tabular data was exported. The express routes were retrieved from the Operations Planning Route Table and applied to Table 2 (Appendix A-2 for data and method). The data was then processed into the Table 2: Summary of Existing Transit Hub Amenities of this analysis.

The demographic data from the 2015 American Community Survey, which consisted of age, poverty levels, transportation modes, income levels and disability attributes were rasterized, reclassified 1-9 and applied to the region (Appendix A-3 for data and method). These attributes were chosen as the demographic attributes most likely to have a need for transportation.

The parcel land use was obtained from the Department of Revenue and concentrated into three categories of Residential, Commercial and Institutional. This data was then rasterized, reclassified 1-9 and applied to the region. (Appendix A-4 for data and method). These parcel land uses are considered economic drivers and vital areas that JTA needs to offer its services.

Intersection data was obtained from the FDOT. This data was aggregated for density, then reclassified 1-9 and applied to the region (Appendix A-5 for data and method). Intersections

provide ease of travel for buses and encourage the use of public transportation when the proper transportation facilities are constructed.

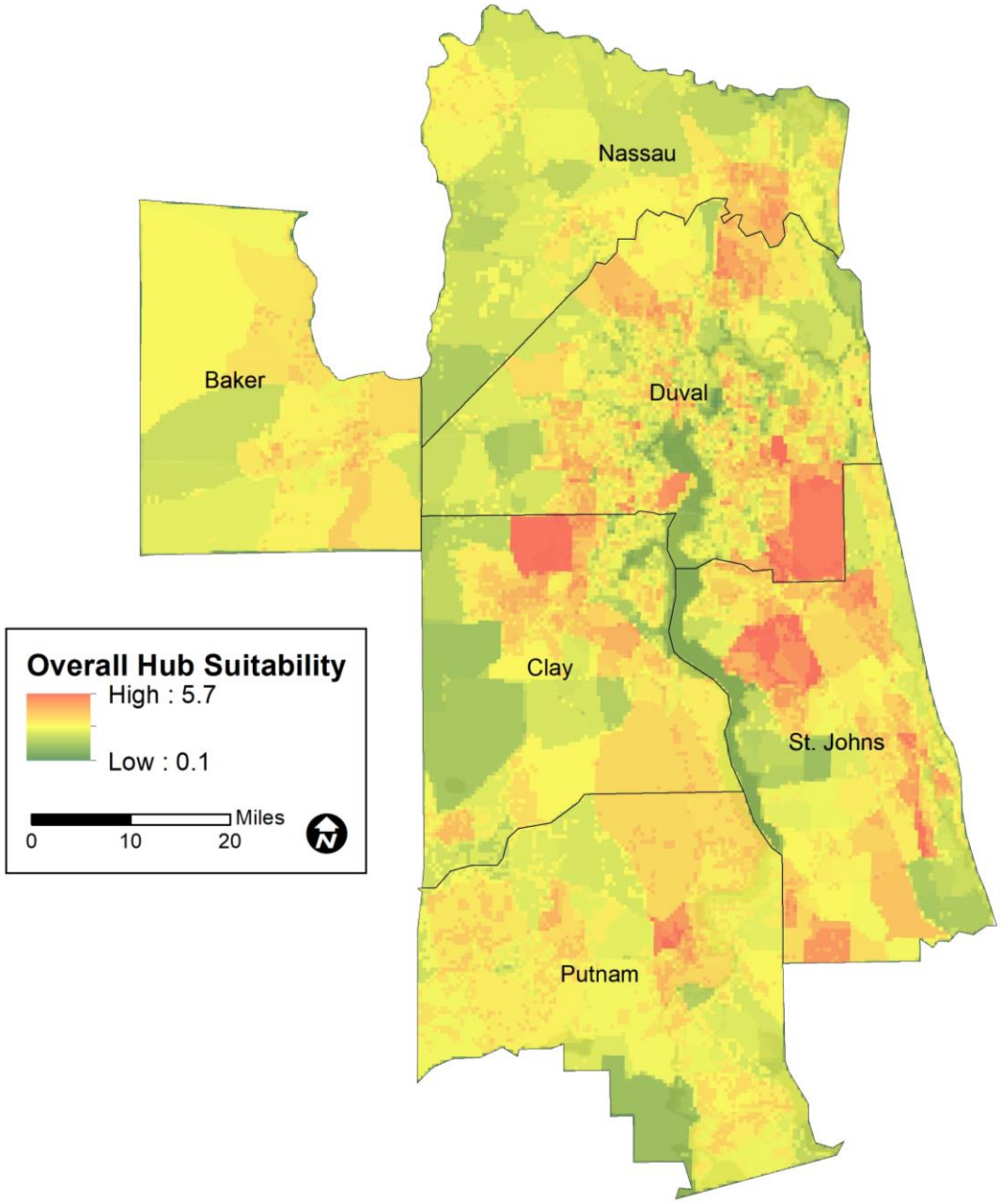
Pedestrian and bicyclist roadway accident data was obtained from the FDOT. This data was aggregated for density, then reclassified 1-9 and applied to the region (Appendix A-6 for data and method). Public transportation and accompanying facilities can help to offer pedestrians and bicyclists safer transportation modes, resulting in fewer accidents and reduced roadway congestion.

Food desert spatial data was obtained from the USDA Economic Research Service. This data was rasterized, reclassified 0 and 5 and applied to the region (Appendix A-7 for data and method). Public transportation can offer the means to obtain fresh food for resident livings in food desert, where they otherwise would not have the capability to obtain fresh food. This helps to reduce health issues such as childhood diabetes within vulnerable and underserved populations.

Projected employment and population growth data was obtained from the North Florida Transportation Planning Organization (TPO). This data was separated into two unique data layers, rasterized, reclassified 1-9, and applied to the region (Appendix A-8 for data and method). This data is important for route planning, existing hub investment and future capital and operational expansions for the JTA. This data will allow JTA to evaluate its current footprint and help to guide the Regional Transit Vision.

The aforementioned attribute's geospatial data were combined into a singular suitability layer using the Geographic Information Systems (GIS) Spatial Analyst tool (Appendix B for data and method). This tool calculated the mean average of all the combined data points within the Northeast Florida region. (Baker, Clay, Duval, Nassau, Putnam, and St. Johns) The results culminated in a value range from 0.1 to 5.7., with the lowest value being a location with the overall poorest suitability for a mobility hub and the highest value being a location with the overall the best location for a mobility hub. The map below shows the results of the suitability analysis. There are clear areas of need within every county of the Northeast region in which JTA could expand its services.

Map 2. Mobility Hub Suitability Analysis



Existing Hub Suitability

The spatial data from the Mobility Hub Suitability Analysis was used to determine the current state of JTA's existing hubs by way of aggregating the suitability data within a half-mile service radius of each hub. A ½ mile buffer was ran with a subsequent Spatial Analyst tool ran using the buffer as the mask for the hubs parcel data. (Appendix C for data and method). This kept the score range within the original numerical scheme and ensured no skewing of data. The overall suitability data indicated that within a scoring range between 0.1 and 5.7, none of the existing mobility hubs scored higher than 3.5 (JRTC) in average suitability. The top ten scoring hubs consisted of JRTC, JTB, Armsdale, Durbin Park, Jefferson St., Yulee, Avenues, Wildlight, University and Kings. Ave., respectively. The placement of JRTC, the expansion of the BRT routes and construction of new regional stops were well executed and indicative of a thorough planning process from JTA's previous projects. Many of JTA's hubs are well suited for present and future public transportation needs. Although Regency scored the lowest spatially, it is one of the highest utilized hubs. It is recommended that JTA develop a long range Alternative Hub Location Plan for the lowest scoring mobility hubs in Duval; Regency and Beaches specifically to prevent future ridership collapse and avoid unnecessary infrastructure investment.

The suitability model was implemented to evaluate the 21 JTA hubs in service as of June 2020, as well as determining the best locations for the placements future regional mobility hubs. The suitability model scores for the existing hubs can be found on the table to the right.

Table 3. Existing Hub Suitability Score

Hub	Suitability Score
1659 (JRTC)	3.5
5188 (JTB)	3.1
5190 (Armsdale)	3.1
5319 (Durbin Park)	3.1
Jefferson Street (Parking)	3
5310 (Yulee)	3
946 (Avenues)	3
5318 (Wildlight)	2.6
5312 (University)	2.6
1672 (Kings Ave)	2.5
5212 (Soutel)	2.4
5313 (Golfair)	2.4
1768 (Rosa Parks)	2.4
45 (A1A & Wonderwood)	2.3
2950 (Gateway)	2.3
1451 (Marbon)	2.2
241 (Mill Cove)	2.1
5321 (Baldwin)	2.1
4711 (Black Creek)	2.1
5283 (Beaches)	2
406 (Regency)	1.9

JTA Internal Ranking

In addition to the suitability score, JTA conducted an internal evaluation of the existing hubs. The existing hubs were reviewed by JTA employees familiar with the Authority's customer demographics, infrastructure, security, and route operations (Appendix D for data and method). The employees ranked the hubs based on the necessity of future investments that would best serve JTA's regional service expansion. The 21 mobility hubs were ranked from least vital as 1 and most vital as 21. These scores were averaged and multiplied by a .1 multiplier for value continuity within the suitability analysis. The highest score was 1.9 (Gateway) and the lowest score was 0.6 (Black Creek). The top ten scoring hubs consisted of Gateway, Regency, Kings Ave., Avenues, Soutel, Armsdale, Marbon, JTB, Golfair and Beaches respectively. This is indicative of a public transportation team that is cognizant of its customer base, current state of good repair, and regional demographics.

Table 4. JTA Internal Ranking

Hub	JTA Internal Ranking
2950 (Gateway)	1.9
406 (Regency)	1.8
1672 (Kings Ave)	1.7
946 (Avenues)	1.4
5212 (Soutel)	1.4
5190 (Armsdale)	1.3
1451 (Marbon)	1.2
5188 (JTB)	1.2
5313 (Golfair)	1.2
5283 (Beaches)	1.2
5312 (University)	1.2
1659 (JRTC)	1.2
5321 (Baldwin)	0.8
45 (A1A & Wonderwood)	0.7
241 (Mill Cove)	0.7
5310 (Yulee)	0.7
Jefferson Street (Parking)	0.6
4711 (Black Creek)	0.6
5319 (Durbin Park)	0.6
5318 (Wildlight)	0.4

In addition to the suitability score, JTA conducted an internal evaluation of the existing hubs. The existing hubs were reviewed by JTA employees familiar with the customer demographics, infrastructure, security, and route operations. The employees ranked the hubs based on the necessity of future investment that would best serve JTA's regional service expansion.

Mobility Hub Investment Prioritization

The score from the suitability analysis and the internal JTA rankings were combined to develop a Mobility Hub Investment Prioritization (IP) Score (Appendix E for data and methods). This scoring scheme prioritizes the hubs from most essential to least essential for further investment in JTA's regional expansion.

Example: Gateway obtained a 2.3 suitability score, which was the 16th lowest of the 21 mobility hubs. Internally, Gateway was ranked by JTA at 1.9, which was the highest among the 21 mobility hubs. The IP Score for Gateway culminated in a 4.2 score, which is the 6th highest among the 21 hubs.

This prioritization represents a holistic approach to current and future needs that takes into account quantitative and qualitative data points. The result will be a transportation agency that is better equipped to plan for regional expansion while enhancing existing facilities and services. The table below shows the final scores of the combined analysis from the quantitative spatial data in Table 3, and the internal SME data from Table 4, which is guided by real world expertise and balances Table 3 input.

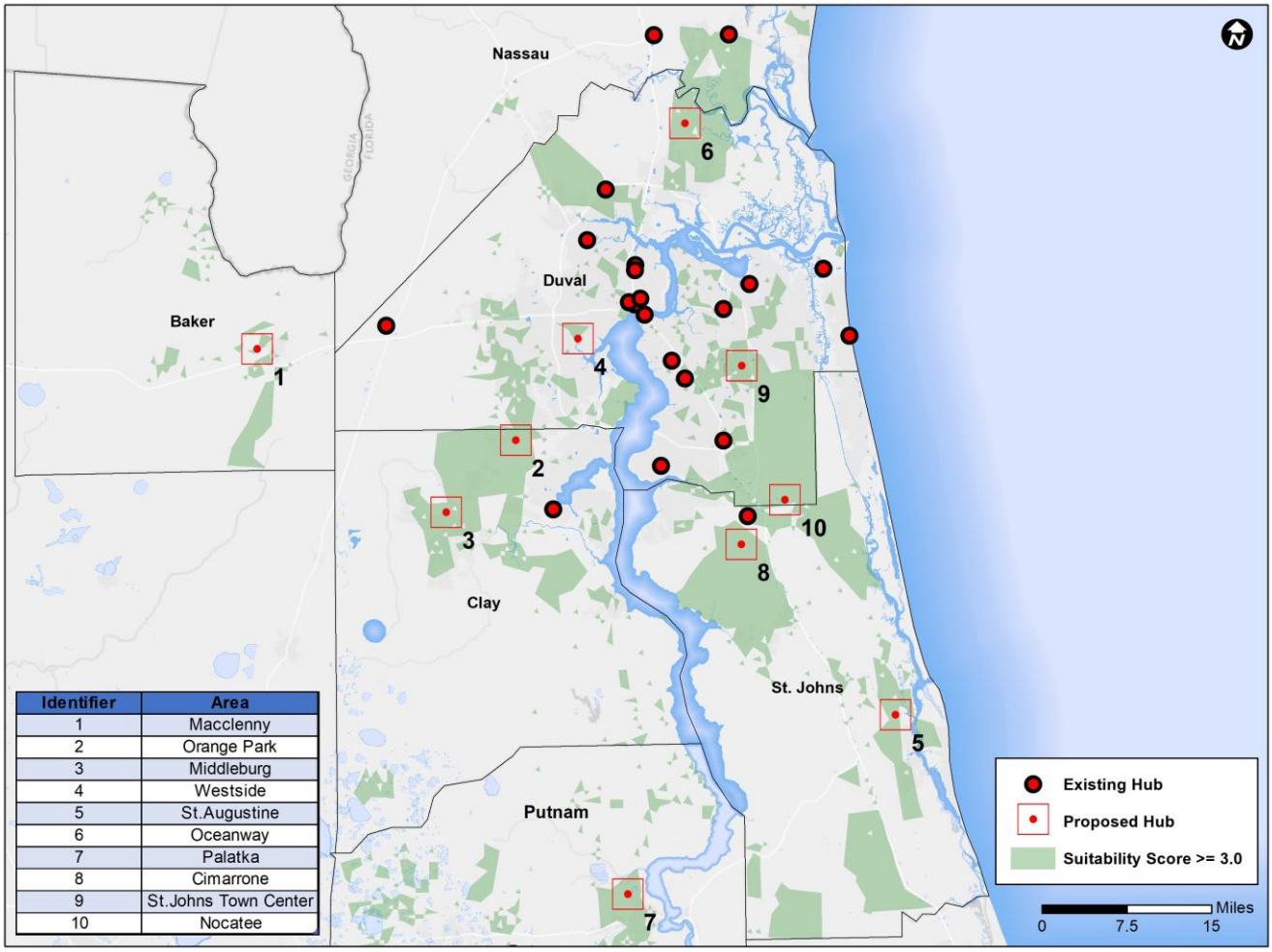
Table 5. Mobility Hub Investment Prioritization Score

Hub	IP Score
1659 (JRTC)	4.7
5190 (Arnsdale)	4.4
946 (Avenues)	4.4
5188 (JTB)	4.3
1672 (Kings Ave)	4.2
2950 (Gateway)	4.2
5212 (Soutel)	3.8
5312 (University)	3.8
1768 (Rosa Parks)	3.8
5310 (Yulee)	3.7
5319 (Durbin Park)	3.7
406 (Regency)	3.7
Jefferson Street (Parking)	3.6
5313 (Golfair)	3.6
1451 (Marbon)	3.4
5283 (Beaches)	3.2
45 (A1A & Wonderwood)	3
5318 (Wildlight)	3
5321 (Baldwin)	2.9
241 (Mill Cove)	2.8
4711 (Black Creek)	2.7

Future Hub Analysis

Ten proposed future hub selections were based on the proximity of existing JTA facilities and areas of 3.0 or higher suitability as they already meet the criteria of land use, demographics, transportation and growth. These locations offer JTA the opportunity to expand into areas that have a need for public transportation, but do not currently house the proper facilities. These locations while suitable are still dependent on the goals determined by the JTA in the regional transit vision and are subject to change. The map below shows areas deemed suitable for existing mobility hubs, and proposed mobility hub locations.

Map 3. Future Hub Locations



Identifier	Area
1	Macclenny
2	Orange Park
3	Middleburg
4	Westside
5	St.Augustine
6	Oceanway
7	Palatka
8	Cimarrone
9	St.Johns Town Center
10	Nocatee

Conclusion

Existing Mobility Hub Analysis

The culmination of the Investment Prioritization Scoring analysis displayed strong correlations between the top nine mobility hubs: JRTC, Armsdale, Avenues, JTB, Kings Ave, Gateway, Soutel, University, and Rosa Parks. These mobility hubs all service a BRT route, thus ensuring a mobility hub focal point for all existing BRT routes. These mobility hubs offer community anchors within geo-specific areas of Jacksonville, ensuring a comprehensive transportation option to the diverse population groups within the city limits.

There is a noticeable lack of mobility hub coverage within the west and southwest areas of Duval County. This gap will be reduced by the introduction of the BRT Orange Line, which is expected to arrive late in 2021.

Of the 21 existing mobility hubs, seven (Armsdale, Baldwin, Black Creek, Yulee, Durbin, Wildlight, JRTC) service Regional Express Routes. Of these seven, only Armsdale and JRTC service routes beyond a singular Regional Express route. Route offerings are considered an amenity and this is an area that should be enhanced to enable a successful transition into full regional service.

The top nine mobility hubs from the IP scoring should be evaluated for the potential in adding regional Express routes and the five mobility hubs that only offer Regional Express routes should be evaluated for additional route coverage.

Overall JTA's existing mobility hubs present strong evidence (based on the suitability analysis and JTA internal ranking) that further investment and enhancements via additional amenities and service options can help sustain ridership while developing a service culture that invites choice riders and furthers regional expansion.

Table 6. Mobility Hub Investment Prioritization Score by Typology

Typology	Hub	Typology	IP Score
Tier I	1659 (JRTC)	I	4.7
	5190 (Armsdale)	I	4.4
	946 (Avenues)	I	4.4
	1672 (Kings Ave)	I	4.2
	2950 (Gateway)	I	4.2
Tier II	5188 (JTB)	II	4.3
	5212 (Soutel)	II	3.8
	5312 (University)	II	3.8
	1768 (Rosa Parks)	II	3.8
	406 (Regency)	II	3.7
	5313 (Golfair)	II	3.6
	1451 (Marbon)	II	3.4
	5283 (Beaches)	II	3.2
Tier III	5310 (Yulee)	III	3.7
	5319 (Durbin Park)	III	3.7
	Jefferson Street (Parking)	III	3.6
	45 (A1A & Wonderwood)	III	3
	5318 (Wildlight)	III	3
	5321 (Baldwin)	III	2.9
	241 (Mill Cove)	III	2.8
	4711 (Black Creek)	III	2.7

The table on the right shows the final IP scores by typology type for JTA's existing hubs. Typologies were assigned based on existing amenities and ridership potential.

Future Mobility Hub Analysis

The intent and purpose of the proposed mobility hub locations is to compliment current services by existing and potential transportation partners while enabling JTA to structure its service routes into a sustainable regional footprint. Areas of the region that rated 3.0 and higher were chosen as they contain the necessary attributes to support mobility hubs while encouraging choice ridership. Careful consideration was taken when analyzing the areas within each county.

Baker

Macclenny was chosen as the hosting area for Baker County as it has the most transit supportive land use within the county, within a large food desert. JTA does not currently house any mobility hubs in Baker County, the placement of a mobility hub could help to create a new economic anchor and help to alleviate food allocation issues for the county.

Clay

Middleburg was chosen within Clay County as it host a strong array of suitable land uses, and is considered non-walking distance from the proposed BRT Orange end of line. The placement of a mobility hub within Middleburg also positions JTA to support transportation efforts of the VA and traditional hospital systems in Alachua County.
The Orange Park area was chosen due to the planned expansion JTA's BRT service with the Orange Line. This mobility hub could serve as a connector facility that is able to house multiple regional transportation partners. A large portion of Clay County residents commute to Duval for work, this mobility hub placement could offer a more convenient form of transportation for choice riders. This mobility hub has the potential to become a keystone in expanding service beyond the northeast region of Florida.

Duval

The mobility hub on the Westside of Duval County lies within the Hillcrest area. This location could help to address the lack of mobility hubs within the geographical area. It has the potential to establish an economic link between the Normandy and Riverside areas and help to expand fixed route options for underserved portions of the Westside.
The large population and residential growth in Oceanway, is an opportunity for JTA to establish the required infrastructure to attract choice riders who would like to avoid the long commutes for work. This mobility hub could also help expand fixed routes further north into Duval County and connect to the Regional Express partners, thus allowing even greater autonomy and travel destinations for northern-based choice riders.

The St. Johns Town Center was chosen as a hub location due to the expansive economic and residential growth occurring. With the potential for a commuter rail within the southeast region of Jacksonville, this mobility hub could become a multimodal service area, much like the JRTC. These additional travel options could help to draw choice riders who commute to and from this area for work.

Putnam

Palatka hosts a strong area of suitability and connection to regionally connected primary roadways. A placement of a mobility hub could help to bring a diverse employee base throughout the region and enable the region to gain economic growth in areas that have lower than average employment.

St. Johns

Nocatee is an area that has experienced a large residential boom and continues to do so. The area is developing a strong workforce that commutes within Duval and St. Johns County. A hub in this area can offer choice riders an option to travel regional or locally. There is a potential to create a route much like the BRT Red line that travels to the coast, offering riders an inexpensive and convenient transportation mode for weekend trips.

Northwest St. Johns County is an area that has seen an explosion of residential development in recent years, with continued residential growth and new commercial growth in the Durbin area. A mobility hub in this location could help to connect major areas that are transit supportive in St. Johns County and Duval County, thus enabling regional economic growth.

St. Augustine has many employees that are residents of northern St. Johns County and Duval County. A mobility hub could help anchor a new pool of employers and employees that could utilize regional services or the proposed commuter rail service. A mobility hub could also support St. Augustine’s large tourism industry, providing tourists an opportunity to experience the area car-free.

Regional Transit Vision

The analysis of the existing and proposed mobility hubs are key components within a regional service analysis. Currently JTA operates the Black Creek mobility hub in Clay County, the Yulee (Tentatively Wildlight as well) mobility hub in Nassau County and the Durbin Park mobility hub in St. Johns County. Each of these facilities are in close proximity to high suitability areas and can help build extensions of JTA's Duval County route services and subsequently creating the initial footprint for regional expansion.

The placement of a mobility hub should not only satisfy the transportation needs of the surrounding area, but be built with future strategies and opportunities in mind. All four of the existing mobility hubs located outside of Duval are within close proximity to proposed locations; this creates the potential for local mobility hub to mobility hub local circulators. While these locations are well suited at the moment, ultimately the leveraging of JTA property outside Duval County, potential transit partnerships and the regional transit vision will influence their final locations.

Appendix

A

1. Regional Footprint: County Lines cb_2017_us_county_5m
https://www.census.gov/geographies/mapping-files/2017/geo/carto-boundary-file.html

Use: The county lines were used to select the following regional counties:
Baker, Clay, Duval, Nassau, Putnam, St. Johns

Method: The Clip tool was used to establish the footprint. All subsequent data manipulation was maintained within this regional footprint.

2. Hubs, Park and Ride, ReadiRide Zones, Active Stops and Express Routes: JTA Operations Planning, JTA Enterprise Portal

Use: The hubs point data was used to locate and categorize existing JTA hubs. Active Stops and Express Routes were used to display current operational footprint of the Authority regionally. ReadiRide Zones were used to help categorize the existing hubs typology.

Method: The Hubs and Park and Ride layers were joined to consolidate all existing hubs. A field was added to the attribute table to assign typology, as the analysis deemed proper. ReadiRide zones were intersected (Intersect Tool) with the consolidated Hubs layer to determine which hubs hosted the service.

3. Census Data: FGDL.org 2015 CENSUS BLOCK GROUPS IN FLORIDA (WITH SELECTED FIELDS FROM THE 2014-2018 AMERICAN COMMUNITY SURVEY)
https://fgdl.org/metadataexplorer/full_metadata.jsp?docId=%7BA2E03458-CCAA-4F78-B7FB-DCCC623FDD30%7D&loggedIn=false
Attributes used for Raster layers:
Attribute Label: AGE_65_UP
Attribute Alias: AGE_65_UP
Attribute Type: Number
Attribute Width: 10
Attribute Definition: Population 65 and up - [B01001_020] + [B01001_044] + [B01001_021] + [B01001_045] + [B01001_022] + [B01001_046] + [B01001_023] + [B01001_047] + [B01001_024] + [B01001_048] + [B01001_025] + [B01001_049
Attribute Label: HBELOW_POV
Attribute Alias: HBELOW_POV
Attribute Type: Number

Attribute Width: 10
Attribute Definition: Households with income in the past 12 months below poverty level - [B17017_002]
Attribute Label: TRAN_BIKE
Attribute Alias: TRAN_BIKE
Attribute Type: Number
Attribute Width: 10
Attribute Definition: Means of Transportation to Work Bicycle - [B08301_018]
Attribute Label: TRAN_PUB
Attribute Alias: TRAN_PUB
Attribute Type: Number
Attribute Width: 10
Attribute Definition: Means of Transportation to Work Public transportation (excluding taxicab) - [B08301_010]
Attribute Label: TRAN_WALK
Attribute Alias: TRAN_WALK
Attribute Type: Number
Attribute Width: 10
Attribute Definition: Means of Transportation to Work Walked - [B08301_019]
Attribute Label: HH_PUBA
Attribute Alias: HH_PUBA
Attribute Type: Number
Attribute Width: 10
Attribute Definition: Households with public assistance income - [B19057_002]
Attribute Label: VEHICLE_0
Attribute Alias: VEHICLE_0
Attribute Type: Number
Attribute Width: 10
Attribute Definition: Occupied Housing Units with No vehicle available - [B25044_003] + [B25044_010]
Attribute Label: DIS_2064
Attribute Alias: DIS_2064
Attribute Type: Number
Attribute Width: 10
Attribute Definition: Population 20 to 64 Years with Income in the past 12 months below and above poverty level with a disability - [B23024_003] + [B23024_018]

Use: The following Census data points were used as the criteria of public transportation necessity. Each data point lends itself towards a predication of use or need of public transportation. Census data contains attributes that helps transportation agencies to better

plan to meet the needs of the community, support the local government and reduce road congestion[1].

Method: The Census shapefile was clipped (Clip Tool) to the regional footprint. To establish a hierarchal symbology the layer's polygon data was converted to raster (Polygon to Raster) for all aforementioned attributes. All raster layers were re-classed (Reclassify) in a one through nine weighting scheme; with one being the least essential (lowest population) and nine being the most essential (highest population) in terms of public transportation necessity.

4. DOR Data: FGDL.org FLORIDA PARCEL DATA STATEWIDE - 2018 (FGDC) / parcels_2018 (ISO)
https://fgdl.org/metadataexplorer/full_metadata.jsp?docId=%7BEB713FDC-4D44-48ED-A45E-86BE37CCB201%7D&loggedIn=false
Attribute Label: DORUC
Attribute Definition: DOR classification code. Land use codes for assessment purposes. This field indicates the land use code associated with each type of property. This entry has a fixed length and should appear as a three-digit number ranging from 000 through 099.

Use: The Department of Revenue (DOR) Data was used to classify parcel types where public transportation is likely needed the most: Residential, Commercial, and Institutional were rated as essential while all other parcel types were classified as non-essential for public transportation necessity. These parcels types are geographic keystones in the economic process of the regions. Public transportation is a substantive mechanism in supporting and improving economies, especially in sectors that suffer the most during economic downturns[2]. Investments in public transportation have been shown to give an economic return one to two times greater than what is initially invested to expand its infrastructure and services[3].

Method: The DOR data was clipped (Clip Tool) to the regional footprint. An additional field was added to the attribute table to allow for the consolidation of the enumerated numeric values into grouped text fields as the following:
Residential 000-009
Commercial 010-039
Industrial 040-049
Agricultural 050-069
Institutional 070-079
Governmental 080-089
Miscellaneous 090-097
Centrally Assessed 098

[1] https://www.nap.edu/read/4805/chapter/19#302
[2] https://www.epi.org/publication/ib334-assessing-economic-benefits-transit-rail/
[3] https://www.infrastructureusa.org/the-economic-impact-of-public-transportation/

Non-Agricultural Acreage Not Zoned 099-102
To establish a hierarchal symbology the layer's polygon data was converted to raster (Polygon to Raster) data for all aforementioned attributes. The raster layers attributes we re-classed (Reclassify) in the following manner: Residential, Commercial and Institutional were given the value of five (most essential for public transportation), the remaining attributes were given a value of zero (least essential for public transportation).

5. FDOT Intersections: Roadway Characteristic Data - Shapefiles of GIS Road Data Layers: Intersections
https://www.fdot.gov/statistics/gis/default.shtm

Use: The intersection point data was used to establish infrastructure feasibility for the placement of future hubs. Roadways with greater intersections lanes are preferred for ease of travel, central locations and potential increase of ridership. Studies have shown that the greater amount of intersections in an area increases the likelihood of public transportation being used by local residents[4]

Method: A kernel density (tool) was ran on the point data to conglomerate intersections and visualize lane density. All attributes were then re-classed (Reclassify) in a one through nine weighting scheme; With one being the least essential and nine being the most essential in terms of public transportation necessity.

6. Ped-Bike Accidents: Florida NonMotorist Fatal and Serious Injuries 2018
FDOT Open Data Source
https://gis-fdot.opendata.arcgis.com/datasets/florida-nonmotorist-fatal-and-serious-injuries-2018

Use: The intersection point data was used to establish infrastructure feasibility for the placement of future hubs. Areas with high pedestrian and bicycle traffic can benefit from the extension of public transportation hubs that offer a safer means of transportation while continuing to enable the autonomy of walking and bicycling[5].

Method: A kernel density (tool) was ran on the point data to conglomerate all pedestrian and bicycle accidents to visualize the density of the occurrences. The raster layer was re-classed (Reclassify) in a one through nine weighting scheme, with one having minimal accidents and having the most accidents. The hubs would be most essential in areas experiencing high levels of accidents.

[4] https://enviroatlas.epa.gov/enviroatlas/DataFactSheets/pdf/Supplemental/PedestrianOrientedStreetIntersectionDensity.pdf & http://pedshed.net/?p=574
[5] https://www.eesi.org/topics/public-transit-walking-biking/description

7. Food Desert: USDA 2014 USDA Food Desert areas for Florida defined by 2010 US Census tract. Based on LILATract_1And10 field census data. Developed by the USDA Economic Research Service (ERS) as part of the Food Access Research Atlas. https://hub.arcgis.com/datasets/FDACS::usda-food-deserts?geometry=-83.992%2C29.870%2C-79.820%2C30.700

Use: The food desert polygon data was used to establish the areas where a transportation hub would be most beneficial is alleviating the challenges in living in food desert areas. Central transportation hubs enable food challenged persons greater access to fresh goods. Public transportation can help increase food access substantially[6]

Method: A kernel density (tool) was ran on the polygon data to conglomerate all identified food desert areas. The raster layer was re-classed (Reclassify) in the following manner: All areas located within a food desert were given the value of five for the necessity of hub placement. The remaining attributes were given a value of zero as these areas have access to fresh goods and the placement of a hub would not be the best use of resources in terms of food access equity.

8. TDP Employment and Population Projections: Data provided by Planner II Jeremy Norsworthy from the TDP via North Florida Transportation Planning Organization. Location: O:\Planning\Jeremy\GIS\Data Request\Transit Vision

Use: The projected growth of the region is key in determining the most equitable and effective placement of JTA mobility hubs. JTA can help reduce congestion and increase economic contributing infrastructure by placing hubs in areas with projections of large employment and population growth.

Method: The polygon data from the employment and population attributes were converted to raster separately. The raster layers were re-classed (Reclassify) in a one through nine weighting scheme; with one being the least essential (lower growth) and nine being the most essential (higher growth) in terms of public transportation necessity.

[6] https://ascelibrary.org/doi/10.1061/9780784481295.037 & https://pdfs.semanticscholar.org/a127/b2492ca59777df44a5a479a7810ebe529f86.pdf

B

Regional Map Raster:
This map is the combination of all weighted raster layers that display the prioritization for transit mobility hubs. The data analyzed the JTA service region for areas that do not currently have mobility hubs, but display the necessary attributes to have a hub located in the area. Additionally, the existing hubs were examined for rated current prioritization based on the given criteria.

Method:
The following layers were combined to achieve a regional average (mean) using the Spatial Analyst tool Cell Statistics.

- Food Desert
- Department of Revenue Landuse Parcel Data
- Zero Vehicle Households
- Households below the Poverty Level
- Households using Public Assistance
- Means of transportation: Walking
- Means of transportation: Bicycle
- Means of transportation: Public Transportation
- Population aged 65 and up
- Projected employment growth
- Projected population growth
- Population with a disability above and below the poverty line ages 20 to 65
- FDOT Intersections
- FDOT Bike and Pedestrian accidents
-

The Output Layer was labeled **Regional Average**. The scale was given a green to red intensity for best visual representation.

The combination of the layers with zero to five and zero to nine scales gave a numerical output value range of 0.1 to 5.71429.

C

Existing Hub Analysis: This sub analysis of the Regional Average map was conducted to evaluate JTA's current hub suitability.

Method: A half-mile buffer (tool) was implemented on the JTA Hubs layers. This buffer was used as the footprint for the Regional Average Raster layer in the execution of the Zonal Statistic to Table. The tool was ran to obtain the average (mean) suitability score for the existing JTA mobility hubs. The executed table was joined to the JTA Hubs layer for practical examination.

Hub	Suitability Score
1659 (JRTC)	3.5
5188 (JTB)	3.1
5190 (Armsdale)	3.1
5319 (Durbin Park)	3.1
Jefferson Street (Parking)	3
5310 (Yulee)	3
946 (Avenues)	3
5318 (Wildlight)	2.6
5312 (University)	2.6
1672 (Kings Ave)	2.5
5212 (Soutel)	2.4
5313 (Golfair)	2.4
1768 (Rosa Parks)	2.4
45 (A1A & Wonderwood)	2.3
2950 (Gateway)	2.3
1451 (Marbon)	2.2
241 (Mill Cove)	2.1
5321 (Baldwin)	2.1
4711 (Black Creek)	2.1
5283 (Beaches)	2
406 (Regency)	1.9

Table 1

D

The quantitative data from the suitability analysis provides numerical value alone. An additional element to public transportation is the historical and expert knowledge of ones customers, demographics, economy and local institutions. The JTA team of employees host a number of subject matter experts that are familiar with the JTA and the region.
Internal rankings were conducted by JTA employees from Planning and System Development, Business Intelligence, Operation Planning, Construction& Engineering, Diversity &Equity who have experience and knowledge in the areas of Title VI, infrastructure, amenities, customer service and roadway behaviors. All hubs were ranked 1 to 21, the 1 being the hub whose investment is least vital to JTA regional expansion and 21 being the whose investment is most vital to JTA's regional expansion. The totality of the scores were averaged for each mobility hub and given a multiplier of 0.1 to ensure numerical coherence among the multiple scoring matrices. The result was then rounded to a single decimal place for the value continuity with the addition to the suitability score.

Internal JTA Ranking

Hub	Wendi	Ken	Andy	Jeremy	Suraya	Xan	Fred	Mike	Josh	Donovan	Average	Multiplier
Jefferson Street (Parking)	1	1	1	1	9	3	12	1	16	16	6.1	0.6
1451 Marbon	14	12	18	14	13	2	10	13	13	8	11.7	1.2
1659 JRTC	2	21	21	21	21	21	1	2	9	1	12	1.2
1672 Kings Ave	21	5	8	18	18	20	21	19	21	21	17.2	1.7
1768 Rosa Parks	17	9	2	20	10	17	17	15	15	15	13.7	1.4
241 Mill Cove	9	8	7	6	8	1	11	7	1	14	7.2	0.7
2950 Gateway	20	15	19	16	20	19	19	20	17	20	18.5	1.9
406 Regency	19	19	15	19	19	18	20	21	14	17	18.1	1.8
45 A1A & Wonderwood	10	4	3	10	7	6	14	9	2	7	7.2	0.7
4711 Black Creek	3	3	13	4	6	7	7	8	6	5	6.2	0.6
5188 JTB	15	10	9	11	14	5	15	14	18	9	12	1.2
5190 Armsdale	16	13	11	12	16	12	9	17	10	12	12.8	1.3
5212 Soutel	12	18	6	13	12	14	18	16	12	18	13.9	1.4
5283 Beaches	11	14	16	9	11	11	13	12	8	11	11.6	1.2
5310 Yulee	5	7	17	2	4	10	6	5	5	4	6.5	0.7
5312 University	8	11	14	17	15	15	2	11	20	2	11.5	1.2
5313 Golfair	7	17	5	8	1	16	16	10	19	19	11.8	1.2
5318 Wildlight	4	2	4	3	2	4	4	4	3	6	3.6	0.4
5319 Durbin Park	13	6	10	7	3	9	5	3	4	3	6.3	0.6
5321 Baldwin	6	9	12	5	5	8	8	6	7	10	7.6	0.8
946 Avenues	18	16	20	15	17	13	3	18	11	13	14.4	1.4

Table 2

Summarized JTA Internal Ranking

Hub	JTA Internal Ranking
2950 (Gateway)	1.9
406 (Regency)	1.8
1672 (Kings Ave)	1.7
946 (Avenues)	1.4
5212 (Soutel)	1.4
5190 (Armsdale)	1.3
1451 (Marbon)	1.2
5188 (JTB)	1.2
5313 (Golfair)	1.2
5283 (Beaches)	1.2
5312 (University)	1.2
1659 (JRTC)	1.2
5321 (Baldwin)	0.8
45 (A1A & Wonderwood)	0.7
241 (Mill Cove)	0.7
5310 (Yulee)	0.7
Jefferson Street (Parking)	0.6
4711 (Black Creek)	0.6
5319 (Durbin Park)	0.6
5318 (Wildlight)	0.4

Table 3

E

The internal rankings (Table 3) were combined with the suitability score (Table 1) from the GIS analysis to derive a Mobility Hub Investment Prioritization Score (IP Score, Table 4), which can be used to parcel out future funds appropriately.

The IP score holds the value of the spatial attributes used within the suitability analysis and JTA internal rankings. This combines quantitative and analyzable data with the real world knowledge of JTA's subject matter experts. The resulting scores are considered a holistic value that considers the objective data and subjective goals without allowing one to take precedent over the other. The IP score can be included in future regional transit vision plans to help guide JTA's mission goals.

Internal Prioritization

Hub	IP Score
1659 (JRTC)	4.7
5190 (Armsdale)	4.4
946 (Avenues)	4.4
5188 (JTB)	4.3
1672 (Kings Ave)	4.2
2950 (Gateway)	4.2
5212 (Soutel)	3.8
5312 (University)	3.8
1768 (Rosa Parks)	3.8
5310 (Yulee)	3.7
5319 (Durbin Park)	3.7
406 (Regency)	3.7
Jefferson Street (Parking)	3.6
5313 (Golfair)	3.6
1451 (Marbon)	3.4
5283 (Beaches)	3.2
45 (A1A & Wonderwood)	3
5318 (Wildlight)	3
5321 (Baldwin)	2.9
241 (Mill Cove)	2.8
4711 (Black Creek)	2.7

Table 4

Overall Existing Mobility Hub Value Matrix

Hub	Suitability Score	JTA Internal Ranking	IP Score
1659 JRTC	3.5	1.2	4.7
946 Avenues	3	1.4	4.4
5190 Armsdale	3.1	1.3	4.4
5188 JTB	3.1	1.2	4.3
1672 Kings Ave	2.5	1.7	4.2
2950 Gateway	2.3	1.9	4.2
5312 University	2.6	1.2	3.8
5319 Durbin Park	3.1	0.6	3.7
1768 Rosa Parks	2.4	1.4	3.8
5212 Soutel	2.4	1.4	3.8
406 Regency	1.9	1.8	3.7
5310 Yulee	3	0.7	3.7
Johnson Street (Parking)	3	0.6	3.6
5313 Golfair	2.4	1.2	3.6
1451 Marbon	2.2	1.2	3.4
5283 Beaches	2	1.2	3.2
45 A1A & Wonderwood	2.3	0.7	3
5318 Wildlight	2.6	0.4	3
5321 Baldwin	2.1	0.8	2.9
241 Mill Cove	2.1	0.7	2.8
4711 Black Creek	2.1	0.6	2.7

Table 5

F

Secondary Analysis: The Regional Average raster layer was analyzed for locations with high suitability scores, but do not house a mobility hub in the surrounding area.

Method: A test selection of the top range (5.0 and higher) suitability scores was ran using Raster Calculator to analyze the geographic footprint of the most suitable areas. This test displayed a disproportionately small geographic area that did not meet the socioeconomic needs of JTA's customers or the community. To ensure equitable dispersion of future funds and infrastructure among Jacksonville and Northeast Florida's most in need communities, areas with a suitability score of 3.0 and higher were selected using Raster Calculator. The Raster to Polygon tool was then ran on these areas in order to smooth the boundaries and manipulate the symbology display. Utilizing the suitability analysis, ten site locations were selected in areas throughout Northeast Florida that would enable JTA's successful expansion into the regional. All site locations meet a 3.0 or higher suitability score and have close proximity to main roadways. Locations were also chosen with a spatial buffer between existing hubs in order to maximize JTA's service range and avoid mobility hub redundancy.

Future Hub Locations

Identifier	Area	County
1	Macclenny	Baker
2	Orange Park	Clay
3	Middleburg	Clay
4	Westside	Duval
5	St. Augustine	St. Johns
6	Oceanway	Duval
7	Palatka	Putnam
8	Cimarrone	St. Johns
9	St. Johns Town Center	Duval
10	Nocatee	Duval

Table 6

E

Transit Stop Amenities Request Process

TRANSIT STOP AMENITIES REQUEST

The following is the preliminary process designed to respond to a request for **On-Street Transit Stop Amenities.** When a specific transit stop location may not meet the documented minimum thresholds for amenities installation, a request may be submitted to evaluate the transit stop site conditions to determine if amenities placement is feasible. A financial commitment may be required. An entity or member of the public may submit a formal request.

The draft documentation will be replaced once a solution has been determined. The process is in development by the JTA's System Development Division.

On-Street Transit Amenities Request Process

*The JTA created an **On-Street Transit Amenities Exemption Request Process** to provide an equitable solution to transit stop amenity placements.*

When considering a bus stop amenities request, bus stop criteria must follow scoring criteria to determine whether further investment, usually in the form of additional amenities or relocation, is appropriate. Bus stop amenities such as shelters should provide safety for its patrons while addressing climate protection from sun, rain, and the elements. Additionally, this policy could help assess the incorporation of other amenities within the JTA service area such as, but not limited to, bicycle fix-it stations.

JTA's response is to provide equitable bus stop amenities for all its patrons in its service area. This exemption policy will be used to assess transit amenities requests at locations that do not meet JTA's standards and ridership thresholds for amenities placement and consider equity when making final determinations on amenities placement.

An entity or an individual may submit a request to JTA for a bus stop amenity to be placed in your area. It is a three-step process for determination.

1. *The Service Planning staff is responsible for evaluating and determining the placement of bus stop amenities.*
2. *The GIS Planning staff is responsible for evaluating bus stop amenities based on the criteria established in this Policy.*
3. *The Construction and Capital Programs Office shall make the final decision on the feasibility of the bus stop amenity placement.*

To qualify for an on-street amenity placement under this exemption policy, a request must score 50+ points according to the criteria in Table 1. In addition, to the criteria in Table 1, the site must be evaluated for feasibility including right-of-way, funding, and construction engineering.

Businesses, organizations, and the public who request transit amenities that do not meet JTA's standards and ridership thresholds for amenities placement will be required to financially contribute to purchasing or maintaining on-street transit amenities such as shelters, trash receptacles, benches, etc.

Table 1: On-Street Transit Amenities Exemption Criteria

Criteria	*Responsibility*	*Points*
Passenger Activity (average weekday boardings)	*If average weekday is 1-8*	*5*
	If average weekday is 9-16	*10*
	If average weekday is 17-24	*20*
Zero-vehicle households and Environmental Justice Area	*If the average number of vehicles per household in the surrounding census area is less than JTA's service area average (1.79 autos per household)*	*10*
	If the stop is located in an Environmental Justice Area (Justice 40 Area)	*10*
	If both criteria are met	*20*
Significant Transfer Point	*2 or more routes serve stop*	*20*
Proximity to major activity centers	*Near Essential Services, Significant Civic Buildings, or Educational Institutions (¼-mile)*	*20*
Part of corridor or neighborhood initiative to strengthen identity	*Complete Streets, Documented Neighborhood Plan*	*20*

Volunteer sponsorship

Businesses, organizations, and the public may want to financially contribute to purchasing and/or maintaining on-street transit amenities such as shelters, trash receptacles, benches, etc. Through a volunteer partnership, an entity or individual can execute a memorandum of understanding (MOU) with the JTA where they can either share in expenses or pay for the entire infrastructure improvement.

BACKGROUND AND HISTORY

While the JTA has an adopted policy and process for transit amenity placement, the Authority is striving to provide equity at all of our bus stops. The JTA has a standard for bus stop infrastructure placement that is dependent upon area type, ridership volume and frequency, and transit stop classification. See Section 4 Transit Stop Design Guidelines of

JTA's Mobility Access Program. Part of JTA's mission and vision is to expand transit infrastructure that addresses equity, access, and improved service to underserved communities.

Under the established policy, the number of boardings at a bus stop determines bus stop amenity placements. However, many communities may not have the ridership to justify shelter placements at a bus top.

F

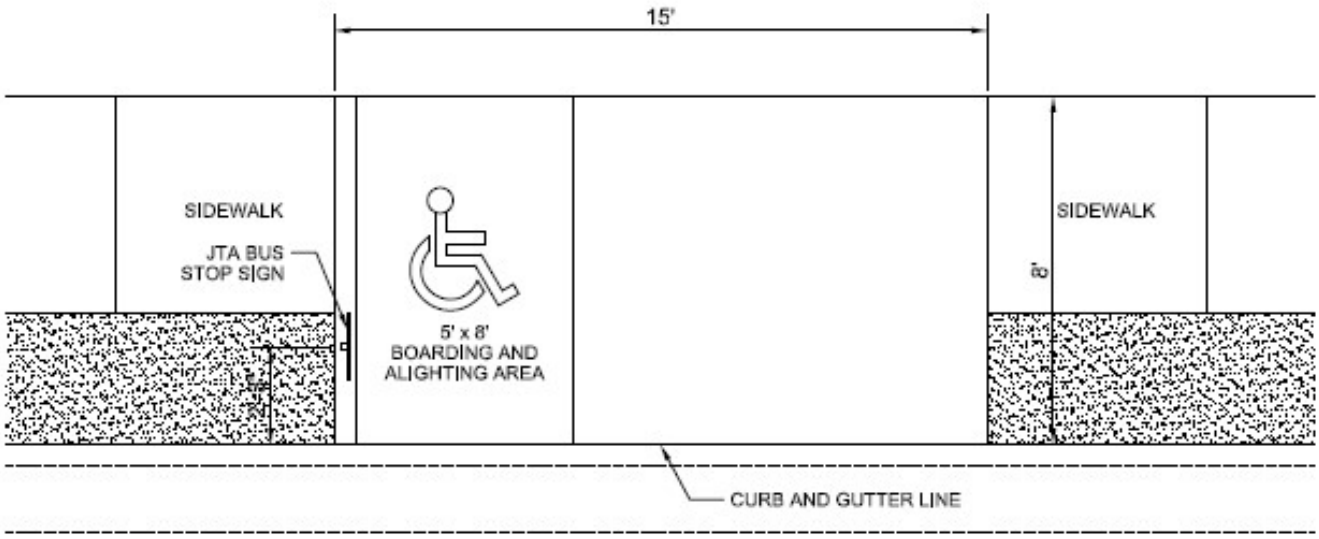
JTA Service Standards and Route Summary

JTA Service Standards (as of November 2022)				
Service Type	Daytime Frequency	Minimum Service Hours	Weekends	Stop Spacing
First Coast Flyer	15 – 30 minutes	5 a.m. - midnight	Yes	1-2 per mile
Frequent Routes	15 – 30 minutes	5 a.m. - midnight	Yes	3-4 per mile
Radial Routes	30 – 60 minutes	6 a.m. – 10:30 pm	Yes	5-7 per mile
Connectors / Feeders	>60 minutes	6 a.m. – 8 p.m.	Saturday	5-7 per mile
Express Select Regional	4-5 Trips per day	6 a.m. to 7 p.m. Peak Only	No	Select Stops
ReadiRide	On-demand, curb-to-curb, reservations required, 2-hours in advance	6 a.m. – 7 p.m.	Saturday	Designated Zone
Skyway	Peak (6 am – 7 pm) Trains arrive every 10-12 minutes Off Peak (7 pm – 9 pm) Trains arrive every 15 – 17 minutes	6 a.m. – 9 p.m.	Special Events Only	Eight Stations (elevated)
Ferry	Mayport Side: Departs on the hour and the half-hour Fort George side: Departs at quarter past the hour and quarter until the top of the hour	**Mayport Side:** **Mon – Thurs** 6 a.m. – 7 p.m. **Friday** 6 a.m. – 8:30 p.m. **Sat – Sun** 7 a.m. – 8:30 p.m. **Fort George Side:** **Mon – Thurs** 6:15 a.m. – 7:15 p.m. **Friday** 6:15 a.m. – 8:45 p.m. **Sat – Sun** 7:15 a.m. – 8:45 p.m.	Yes	Mayport Village and Fort George Island

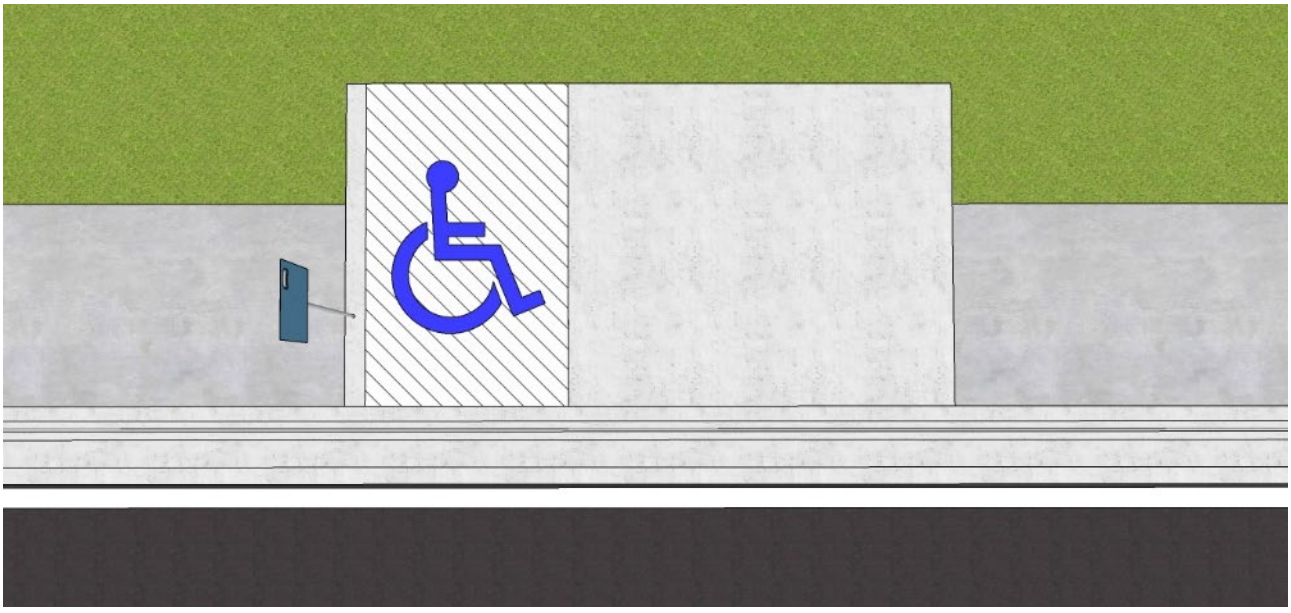
JTA Route Summary (As of November 2022)	
Route Type	**Routes**
First Coast Flyer	Green Line, Blue Line, Red Line, Orange Line
Frequent Routes	1, 3, 8, 19, 50
Radial Routes	4, 10, 11, 12, 13, 14, 16, 17, 18, 51, 53
Connectors/Feeders	21, 22, 23, 24, 25, 27, 28, 30, 31, 32, 80, 81, 82
Express	202, Nassau Express Select, St. Johns Express Select, Clay Express Select

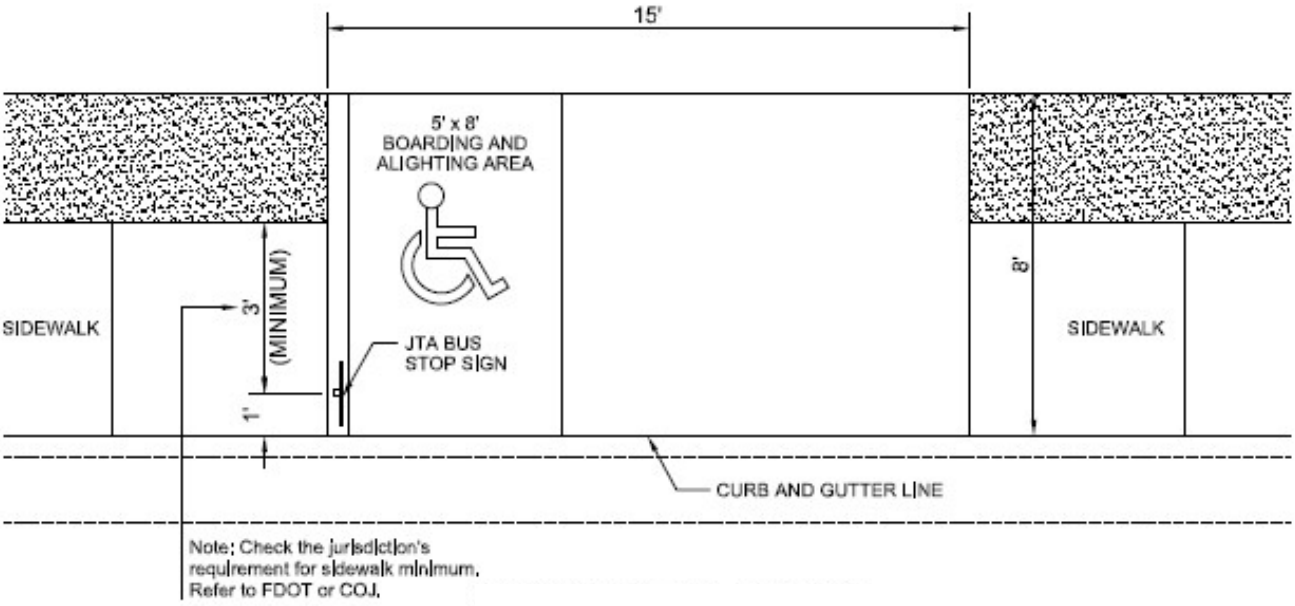
G

Transit Stop Example Layouts

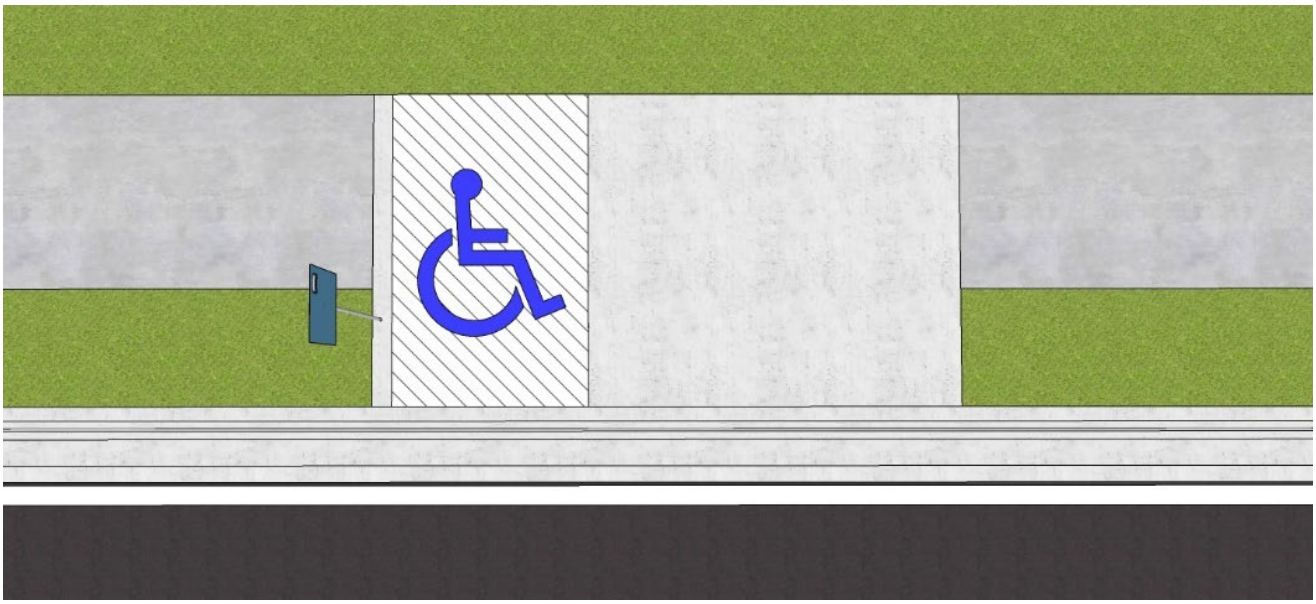


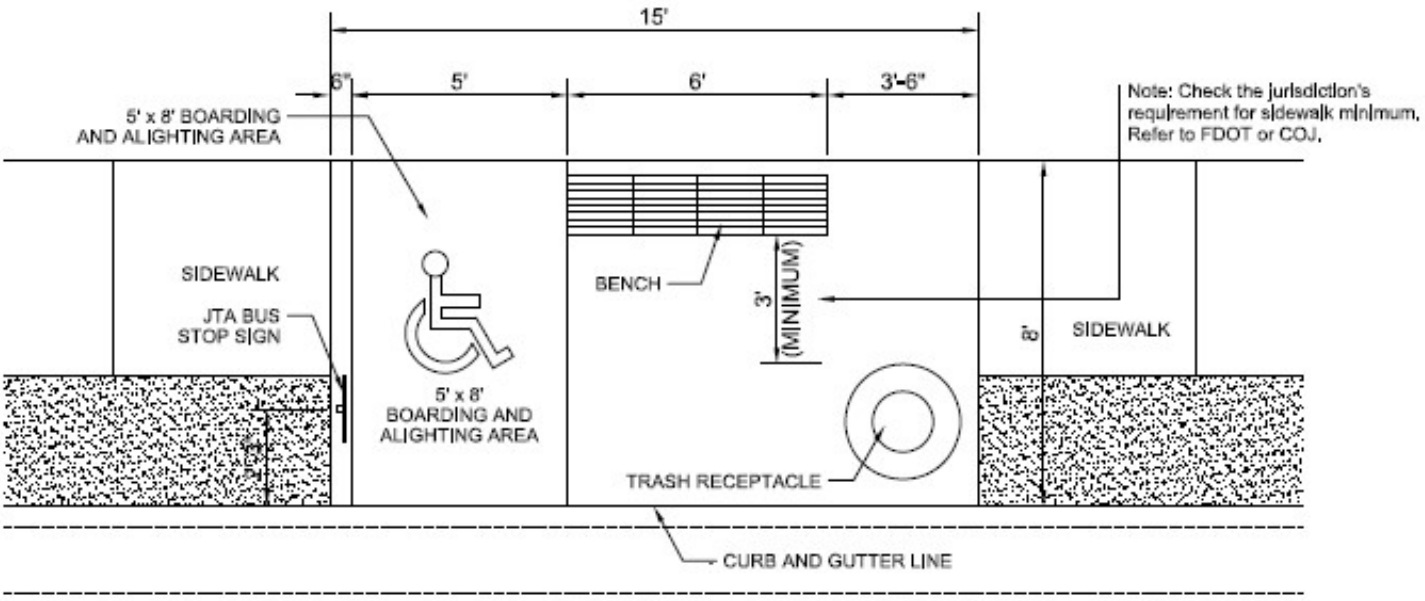
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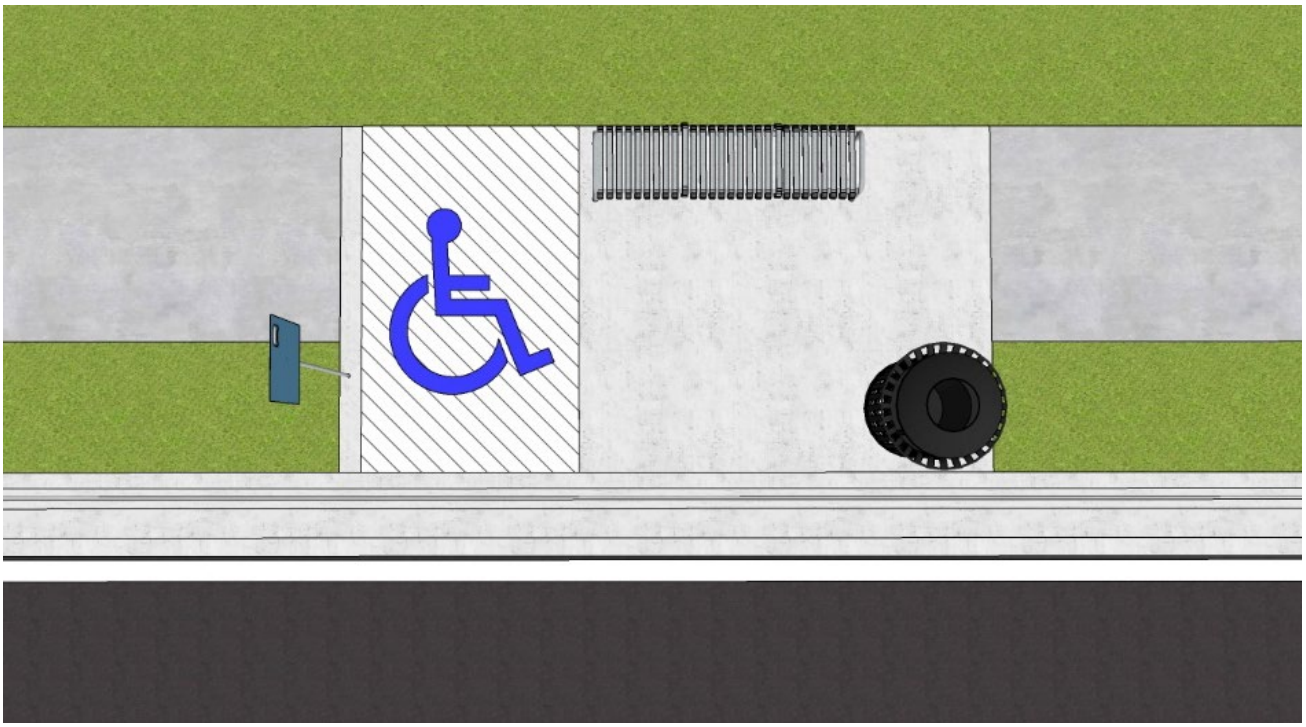


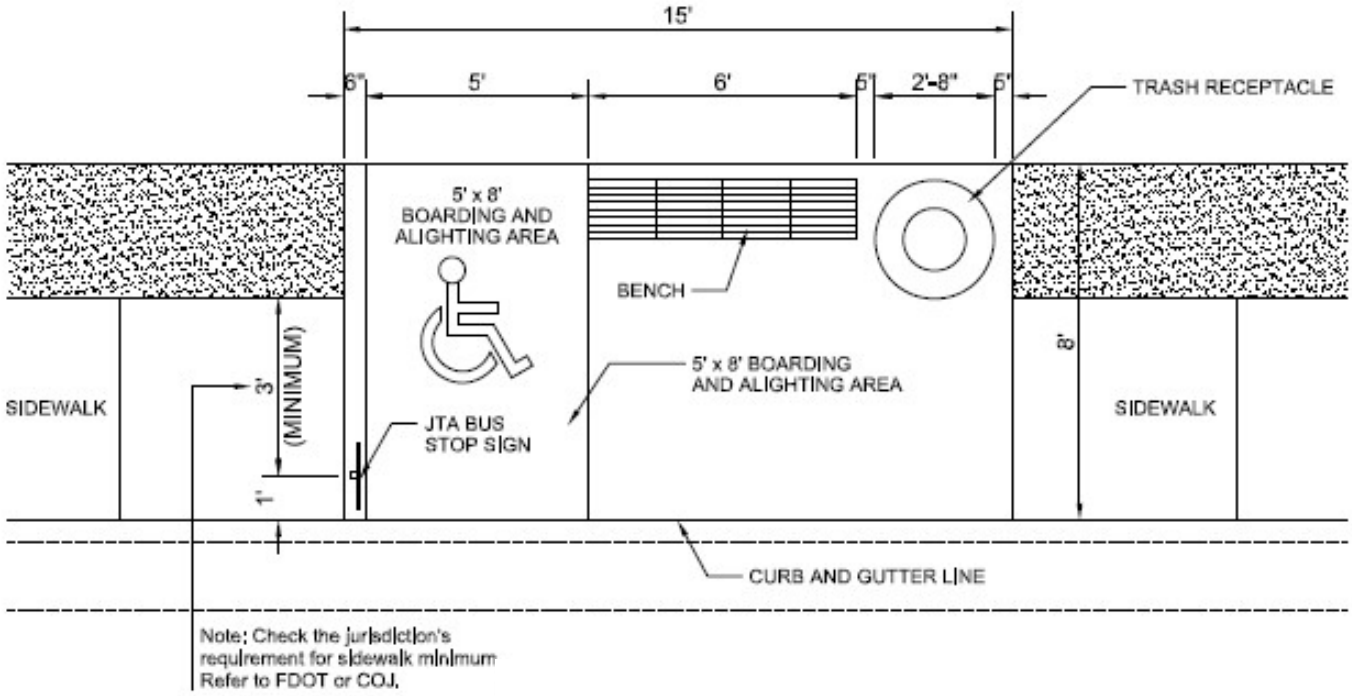
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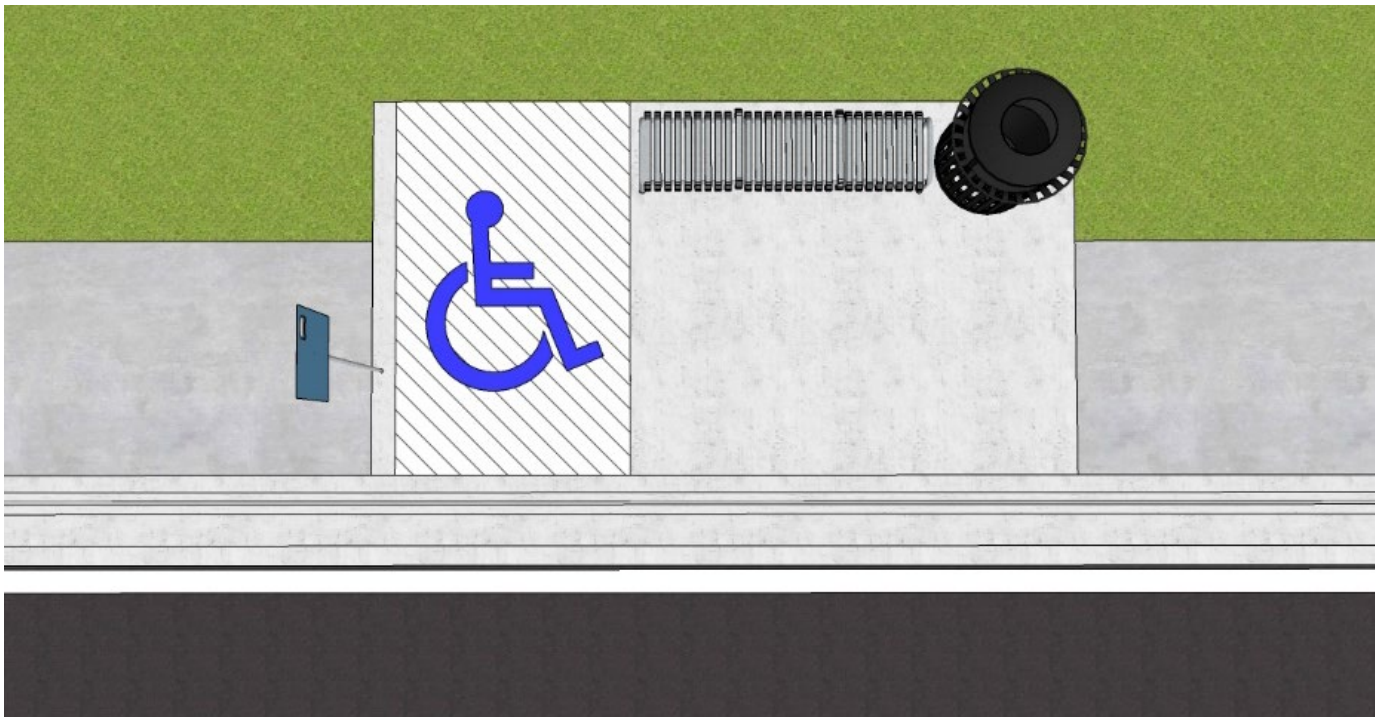


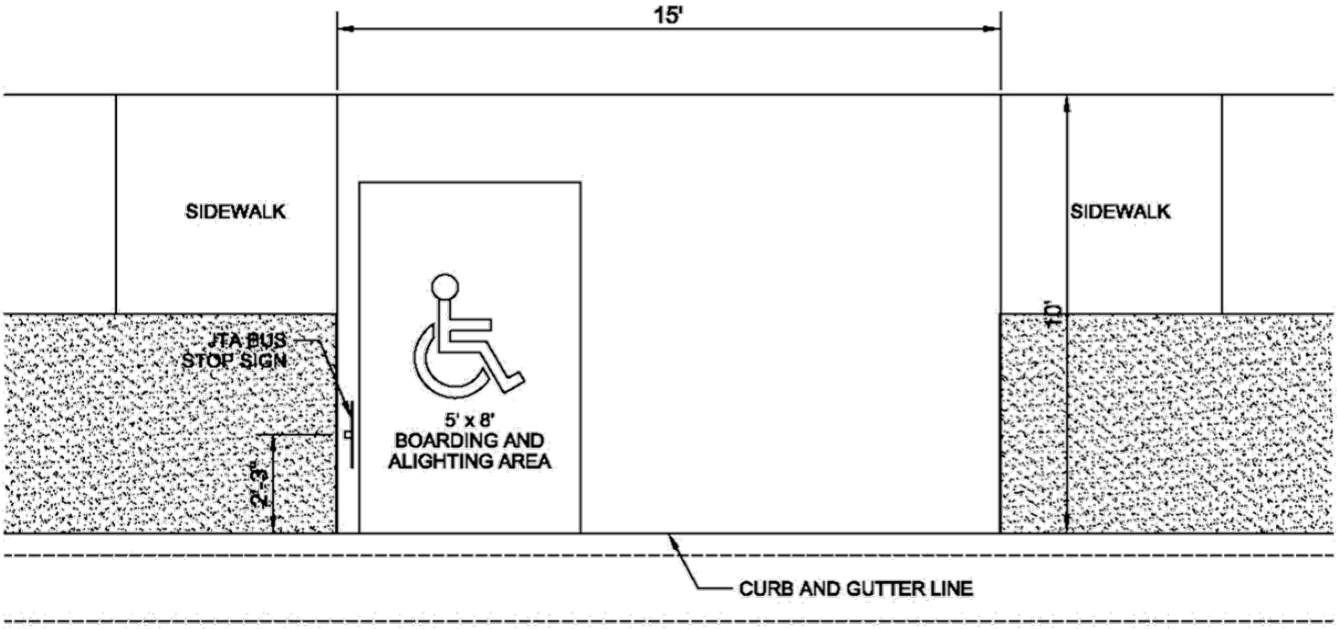
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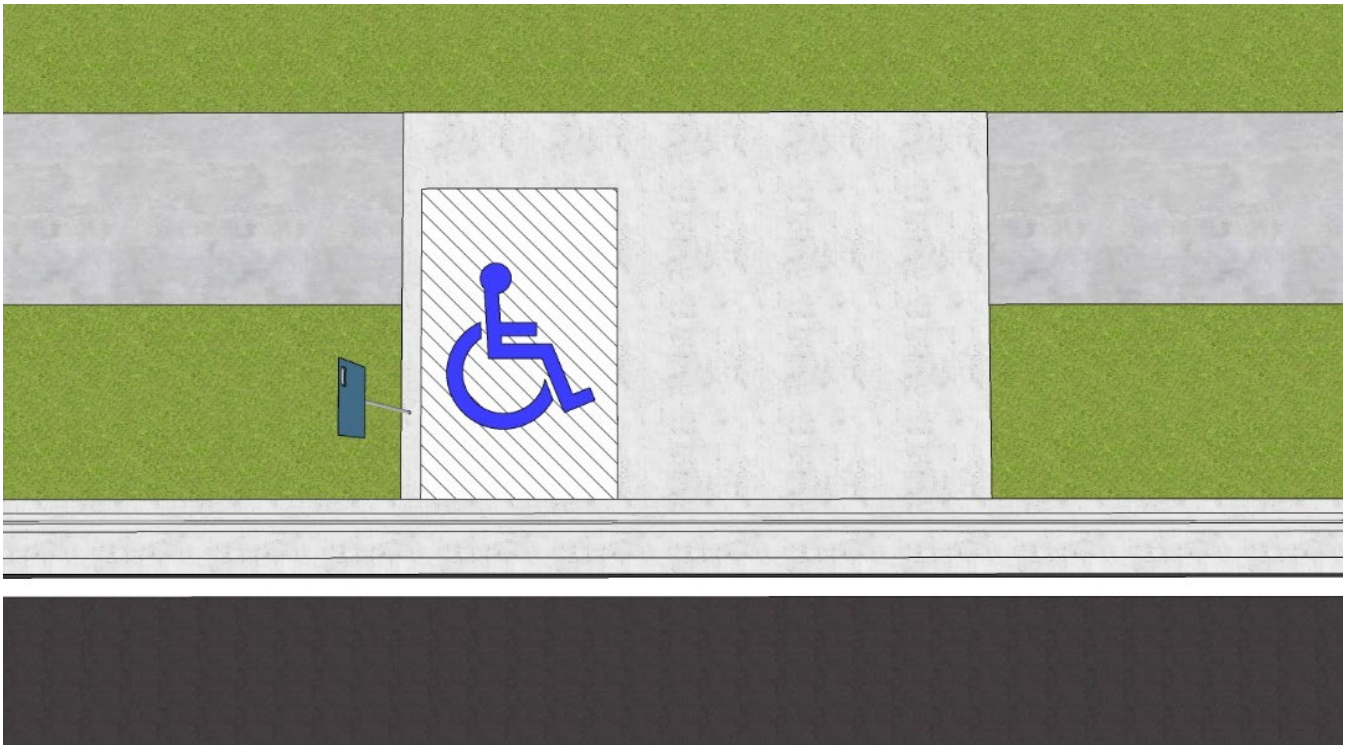


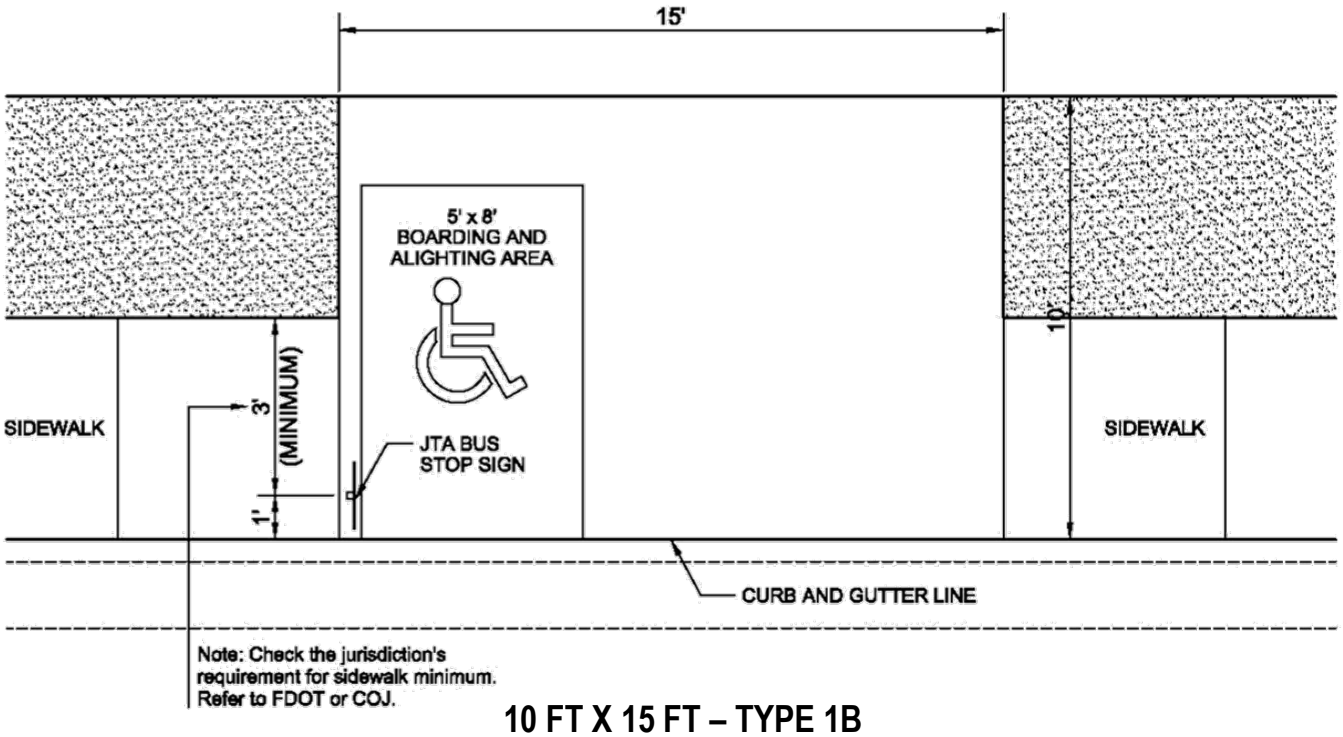
8 FT X 15 FT – TYPE 2B



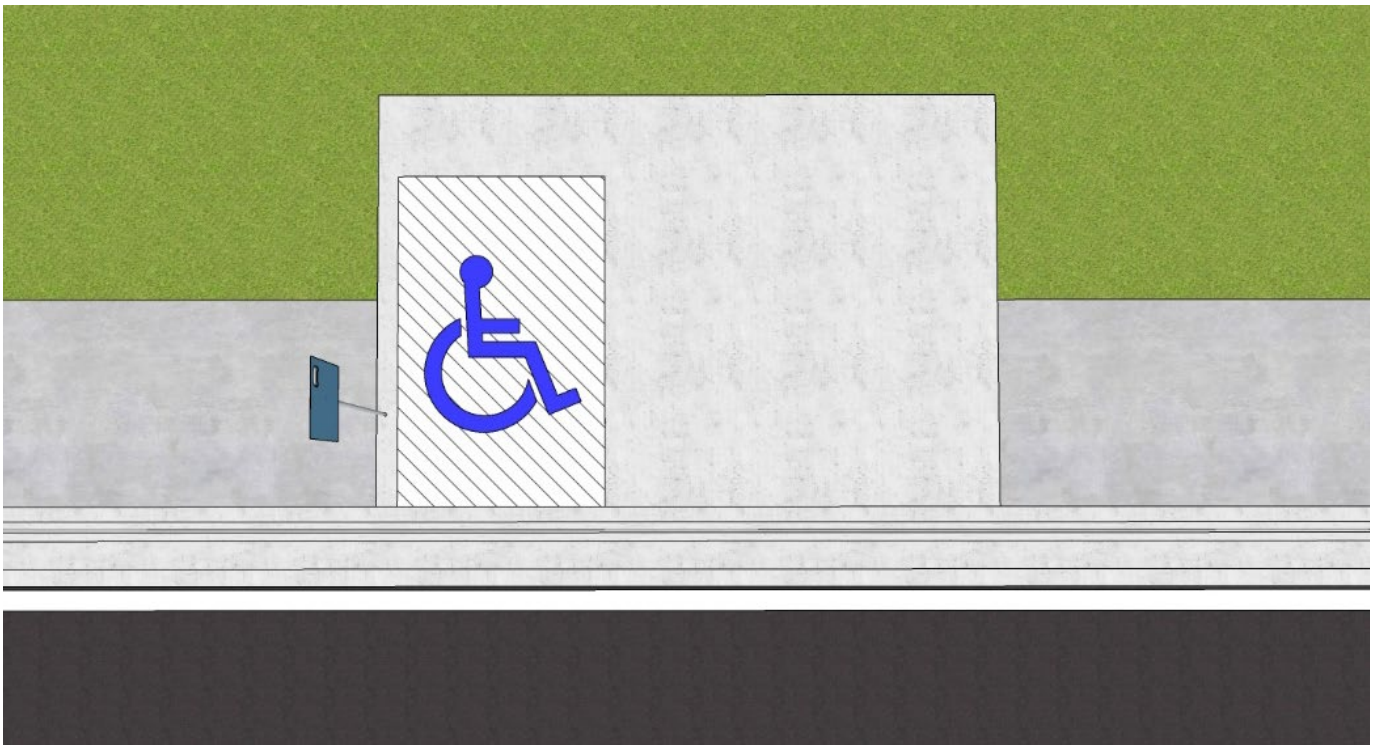


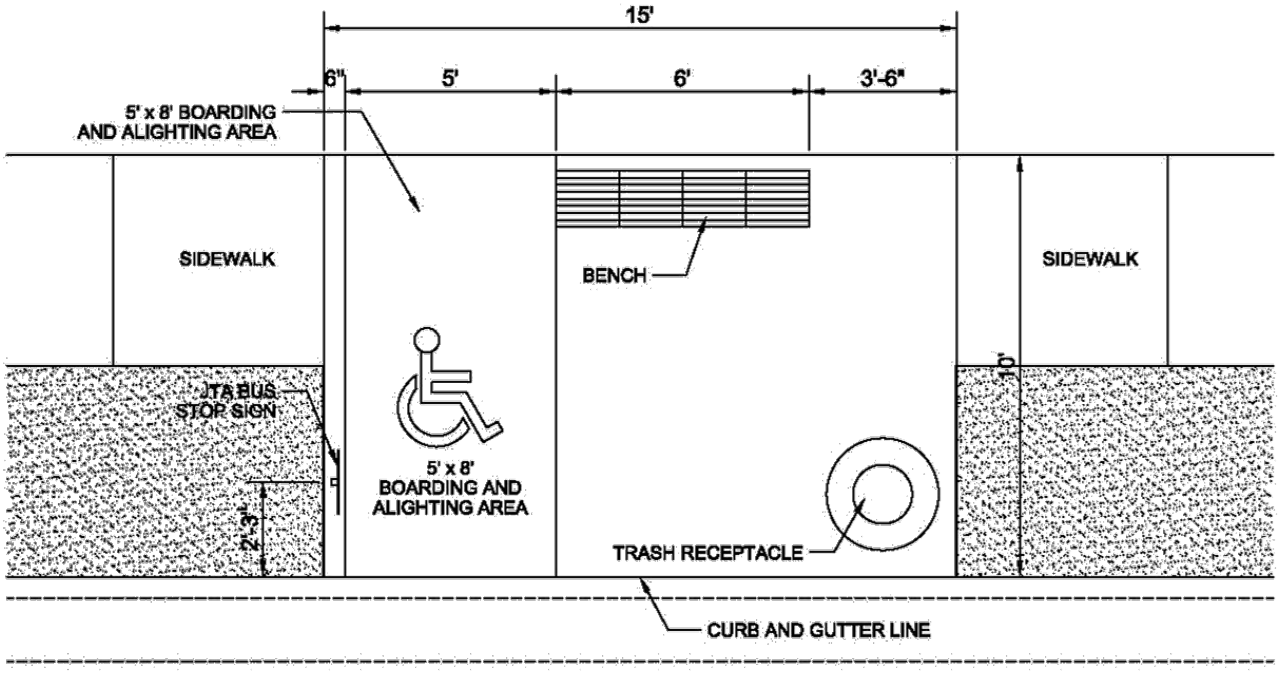
10 FT X 15 FT – TYPE 1A



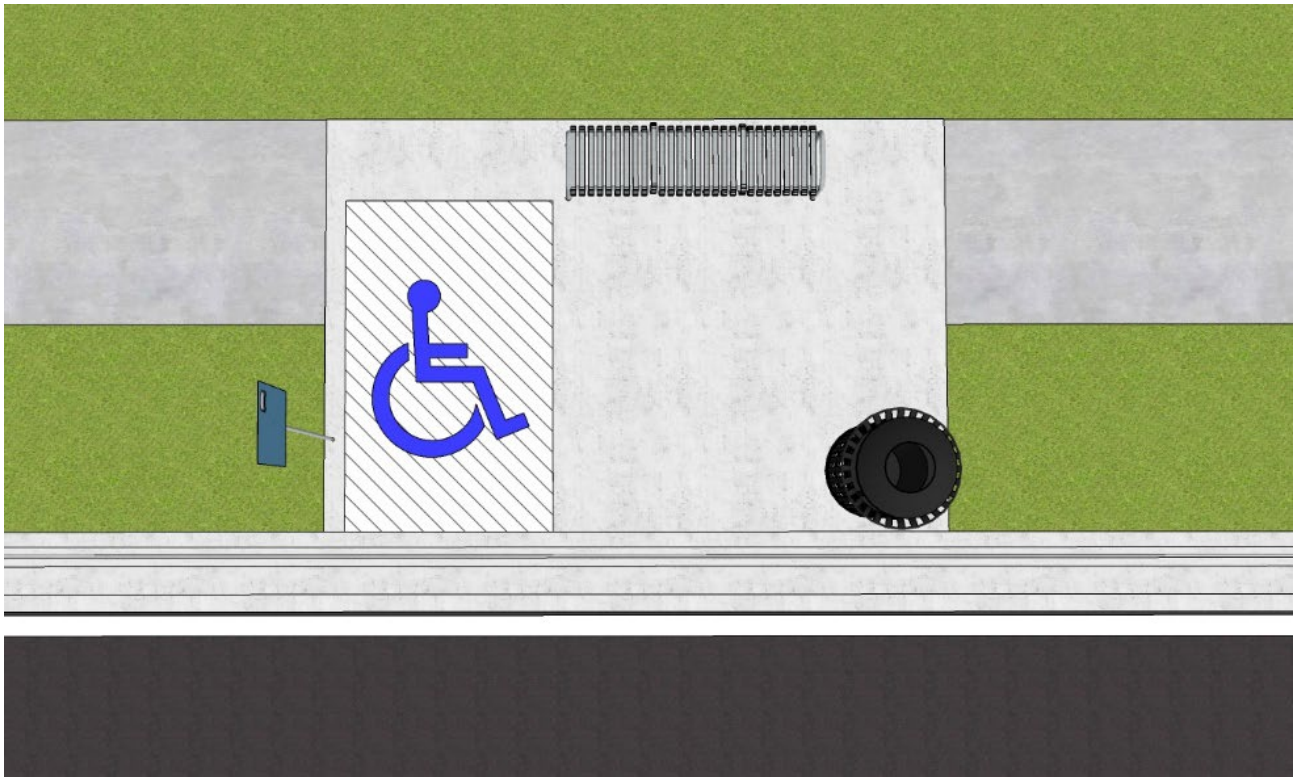


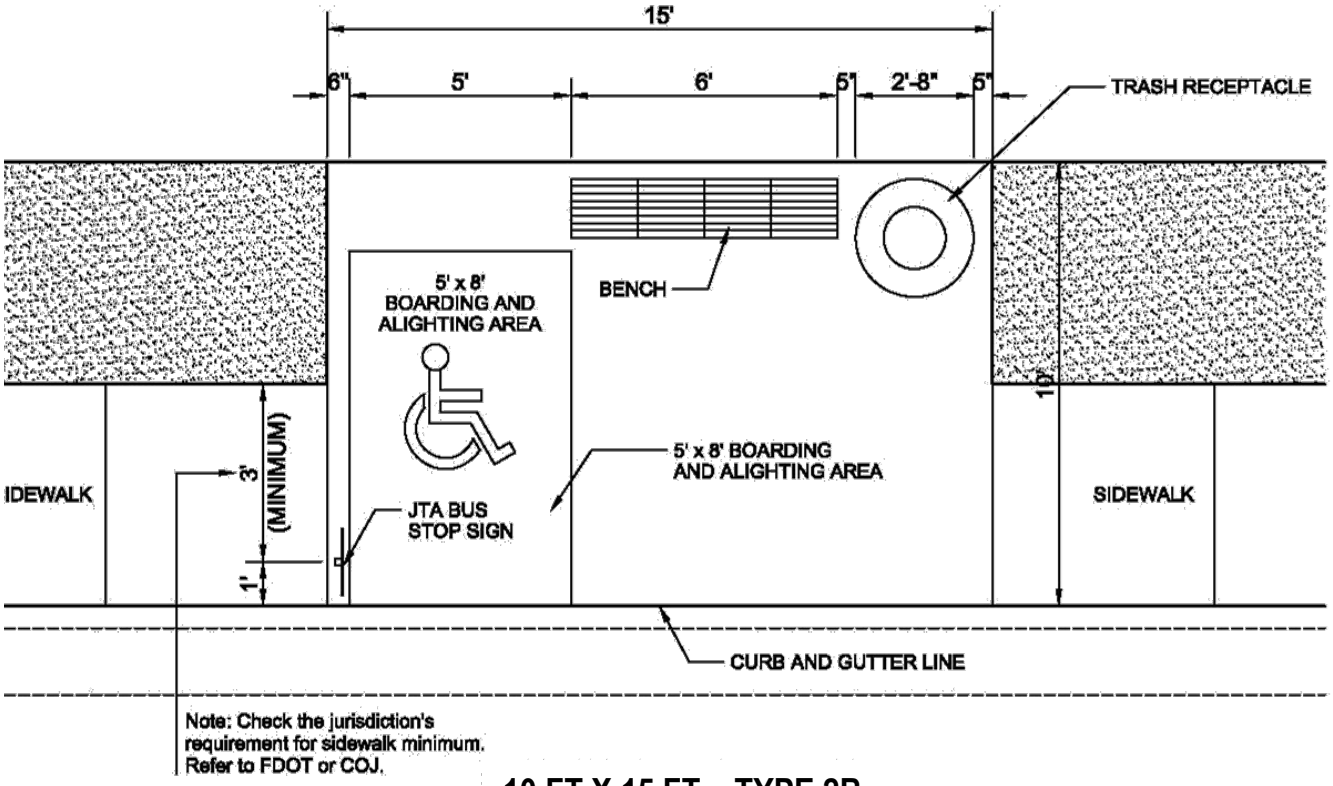
10 FT X 15 FT – TYPE 1B



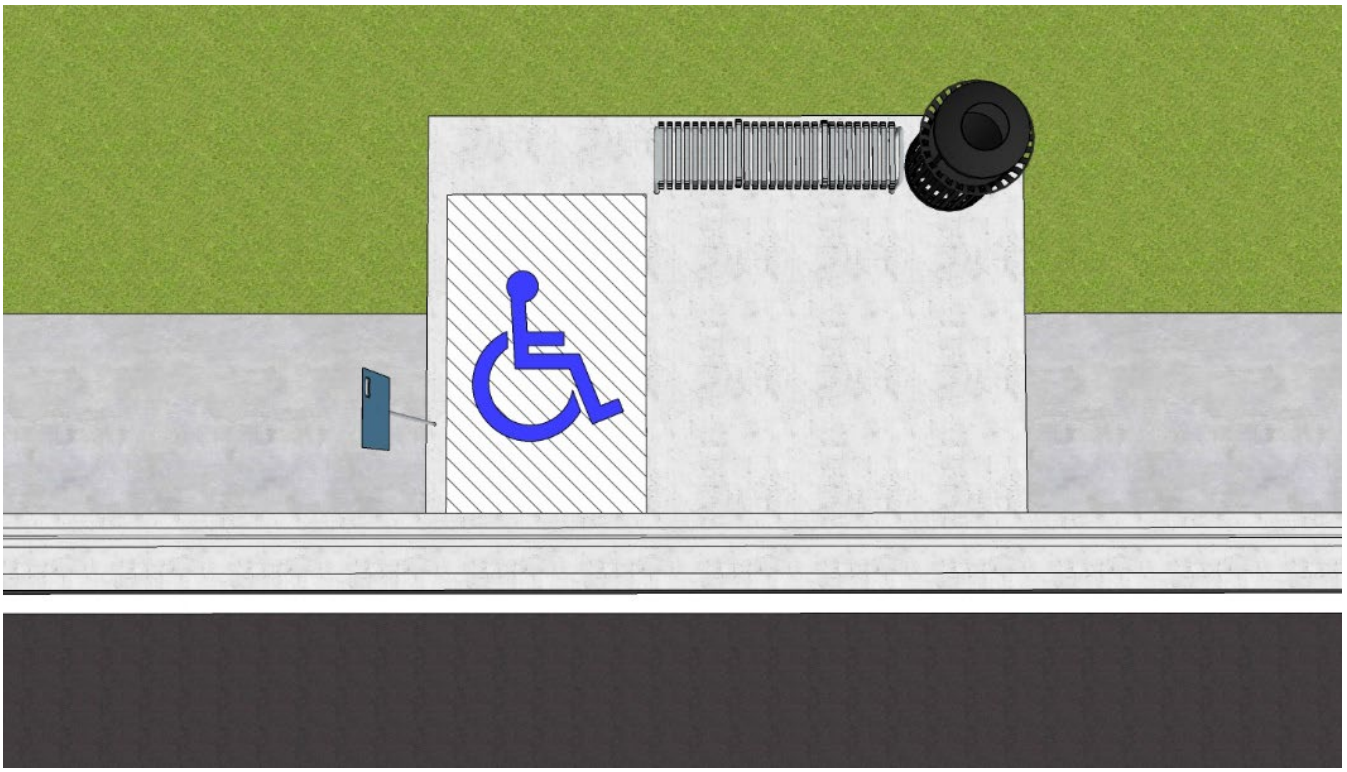


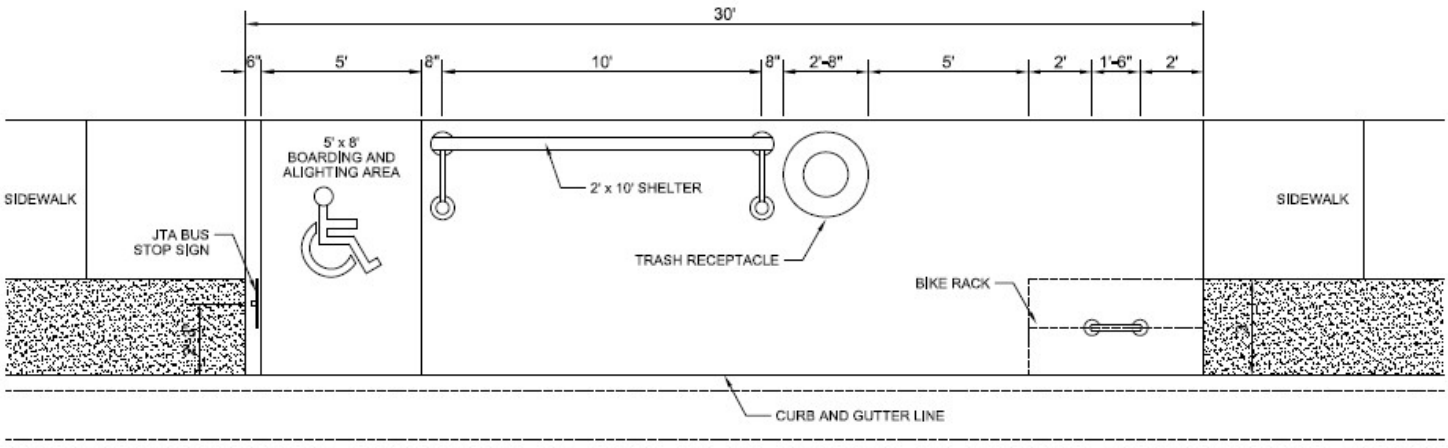
10 FT X 15 FT – TYPE 2A



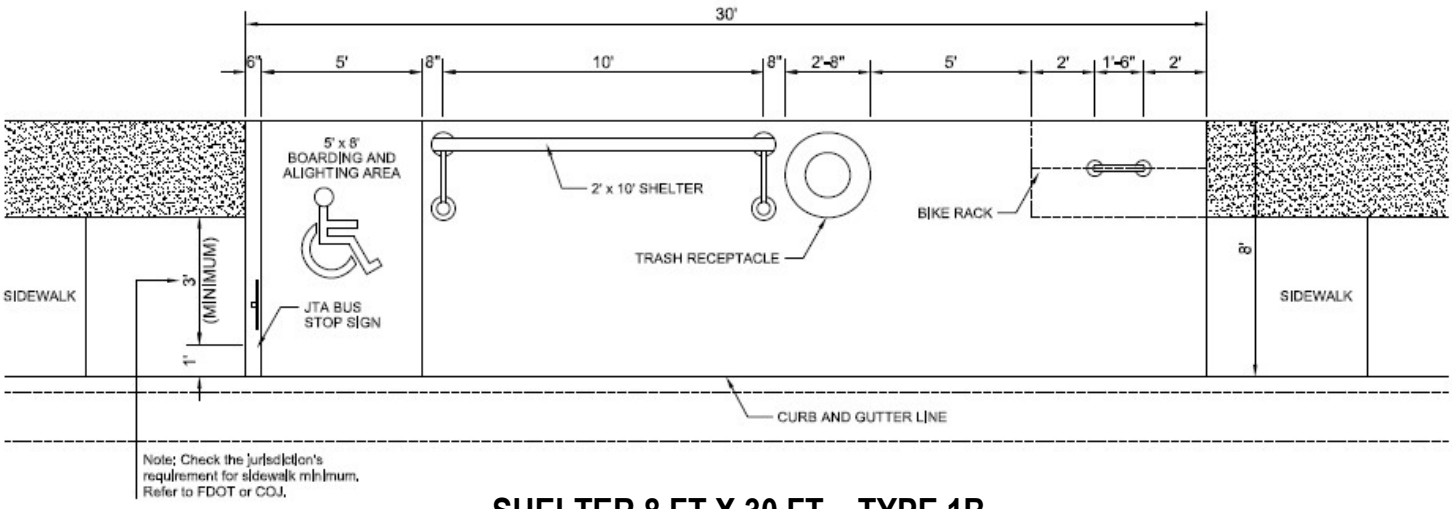


10 FT X 15 FT – TYPE 2B

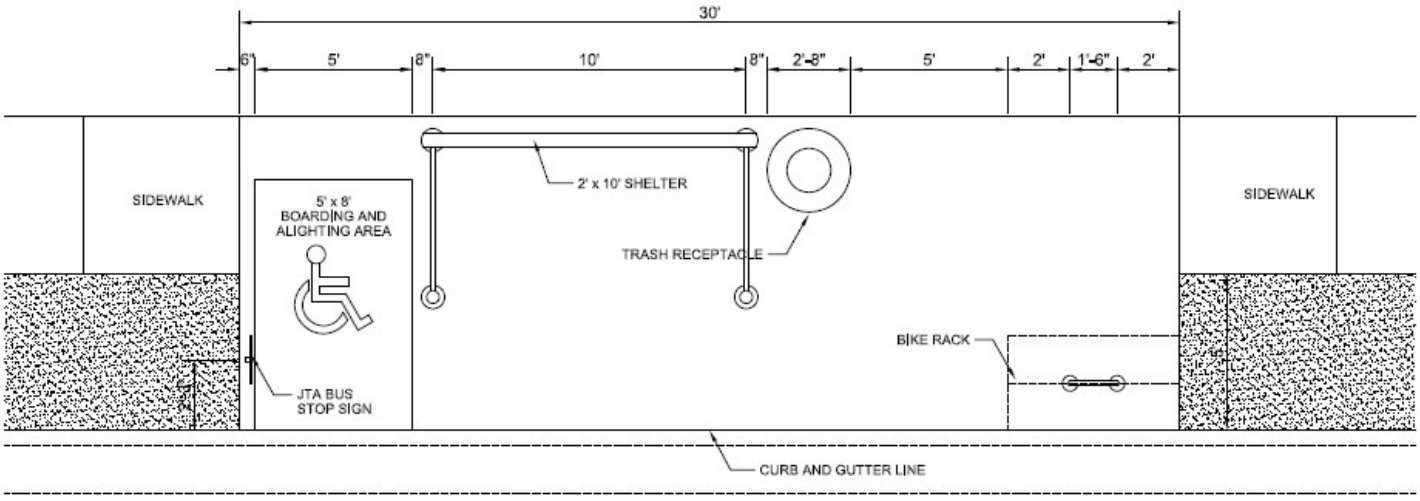




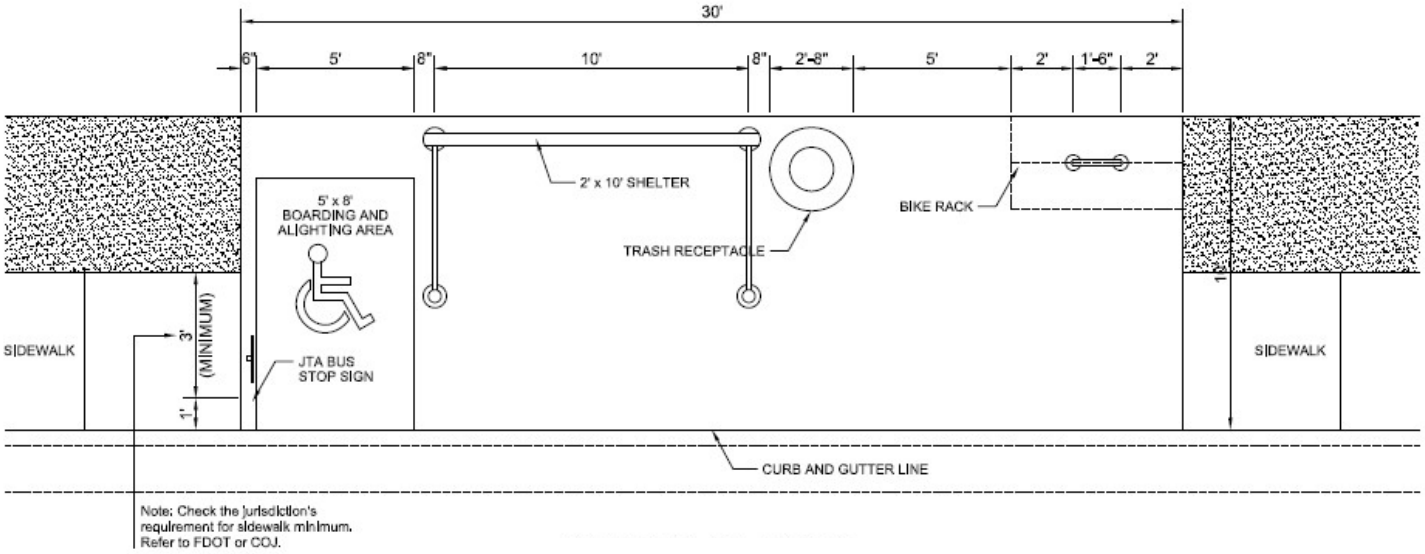
SHELTER 8 FT X 30 FT – TYPE 1A



SHELTER 8 FT X 30 FT – TYPE 1B



SHELTER 10 FT X 30 FT – TYPE 1A

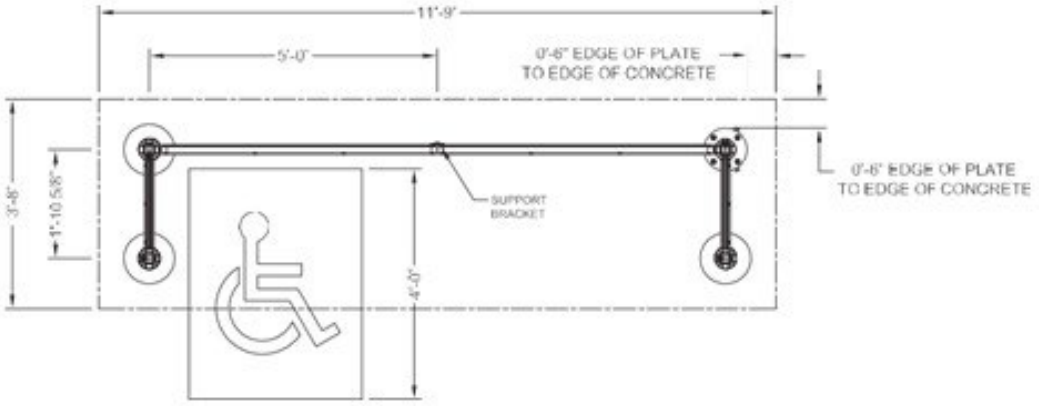


SHELTER 10 FT X 30 FT – TYPE 1B

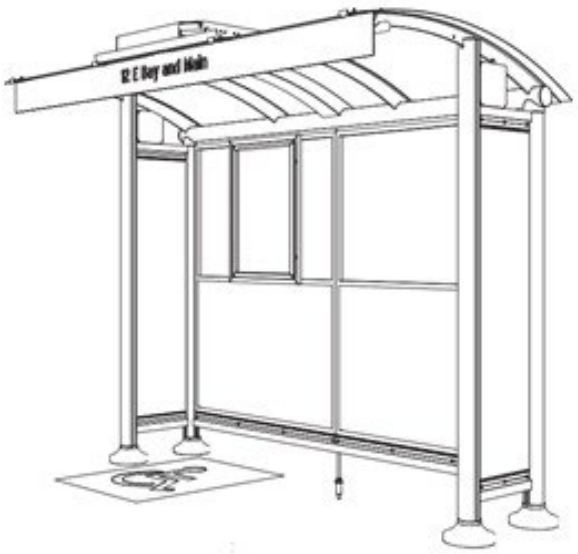
H

Transit Shelters and Amenities

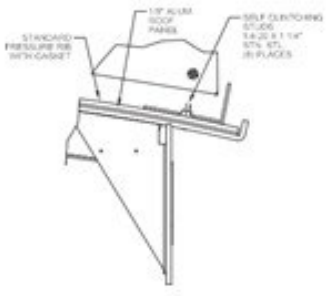
NON-AD SHELTER 2' X 10'



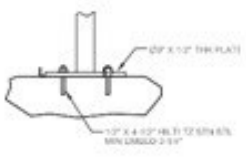
PLAN VIEW



ISOMETRIC VIEW

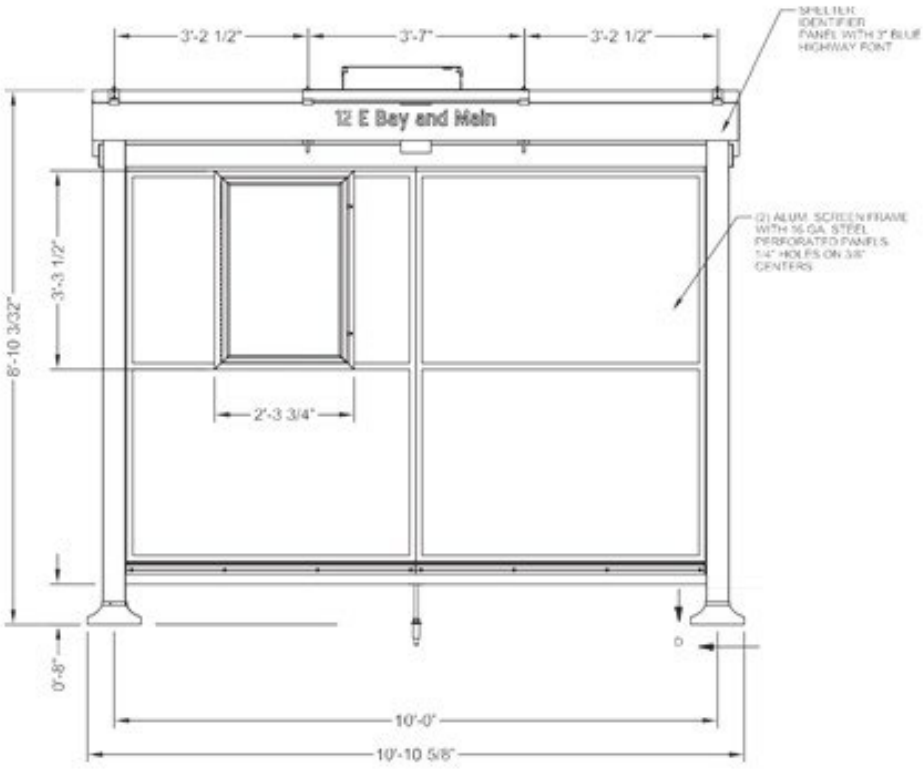


DETAIL B

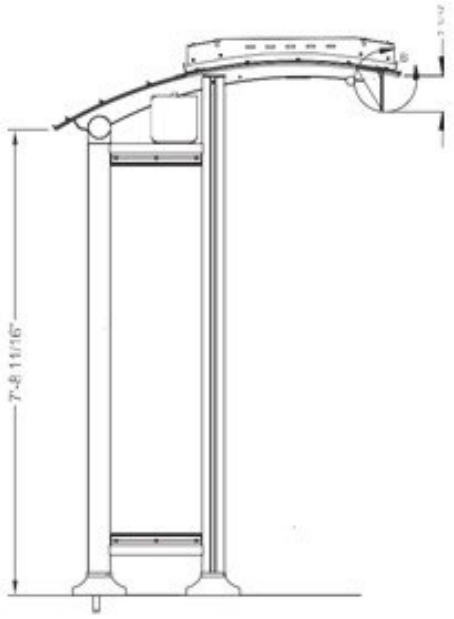


DETAIL D

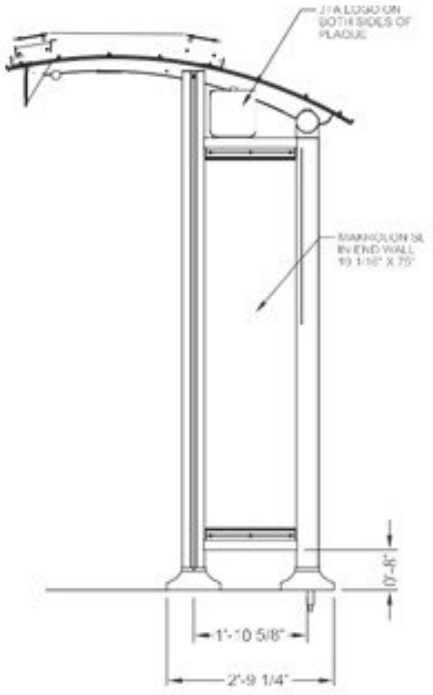
NON-AD SHELTER 2' X 10'



LONGITUDINAL SECTION

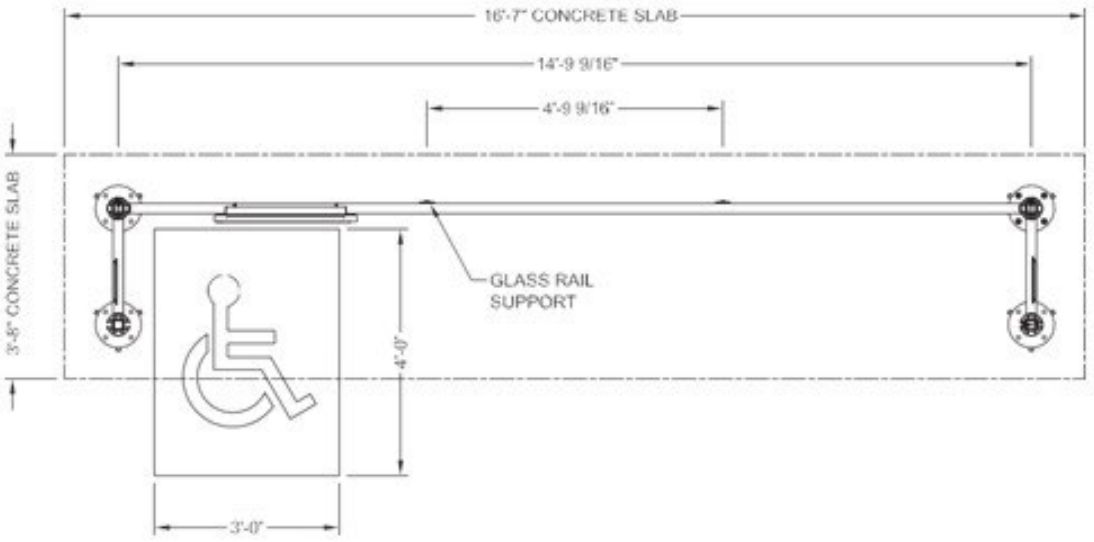


CROSS SECTION - RIGHT

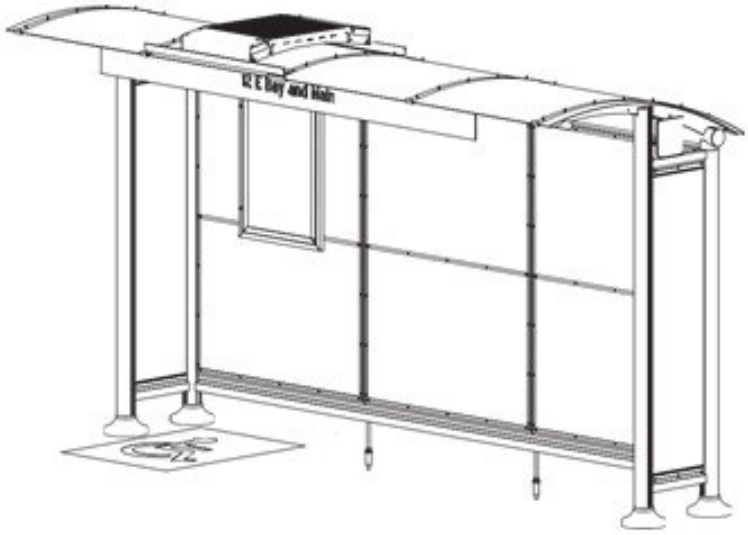


CROSS SECTION - RIGHT

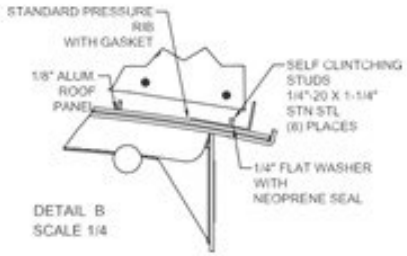
NON-AD SHELTER 2' X 15''

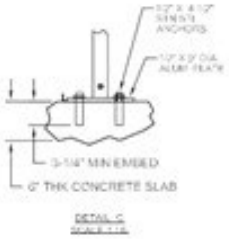


PLAN VIEW

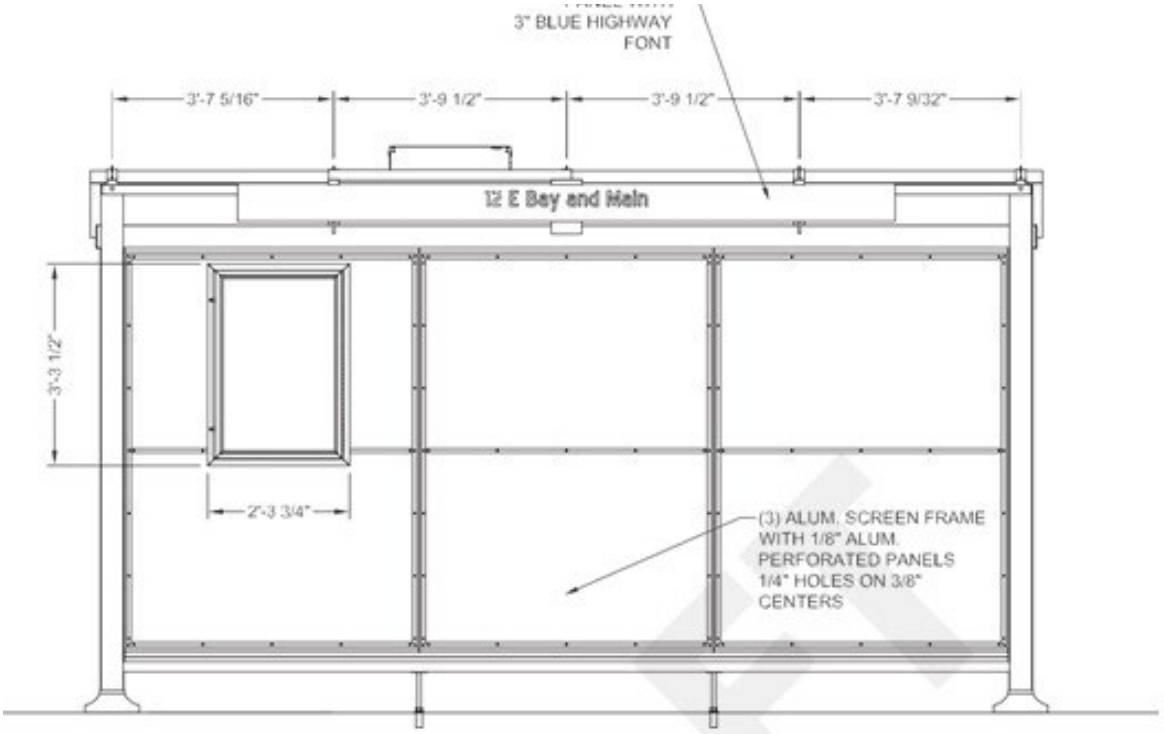


ISOMETRIC VIEW

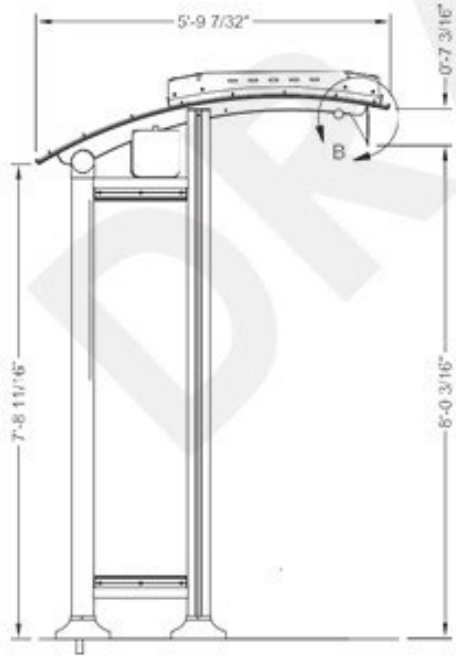




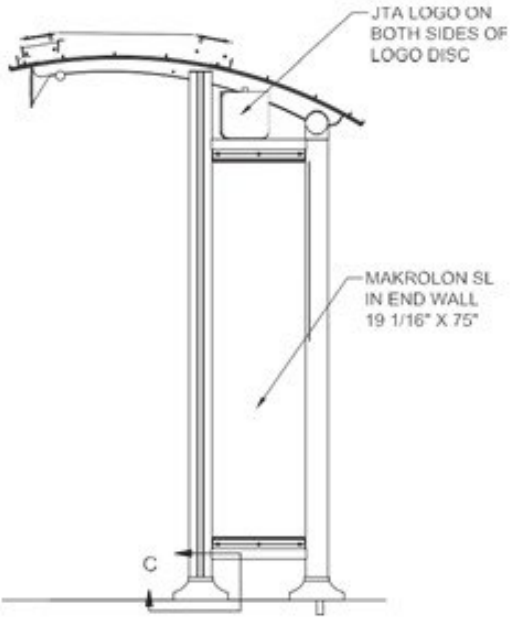
NON-AD SHELTER 2' X 15''



FRONT VIEW



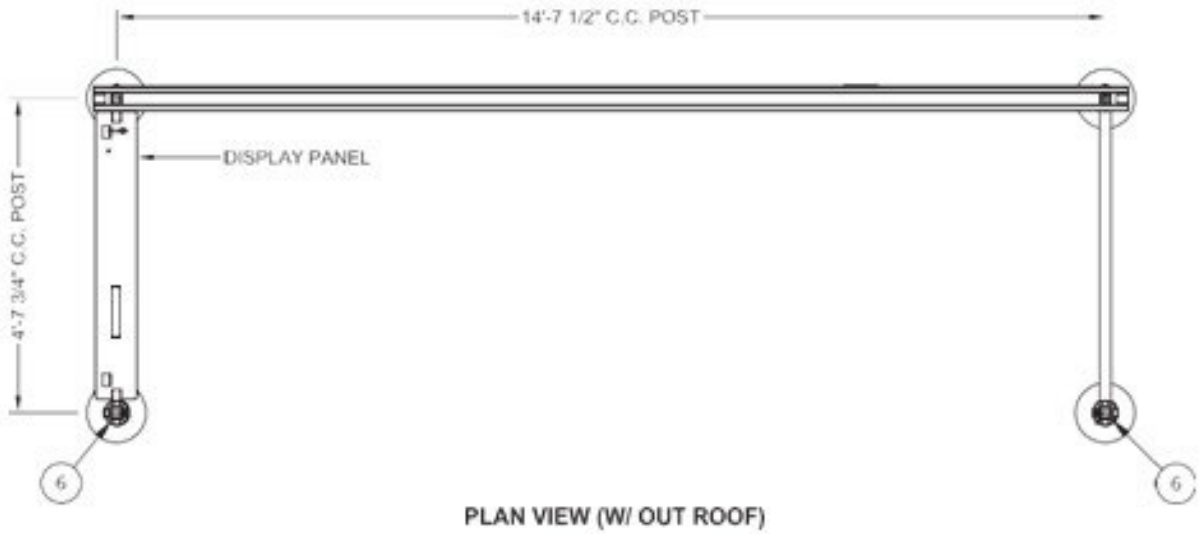
LEFT SIDE VIEW



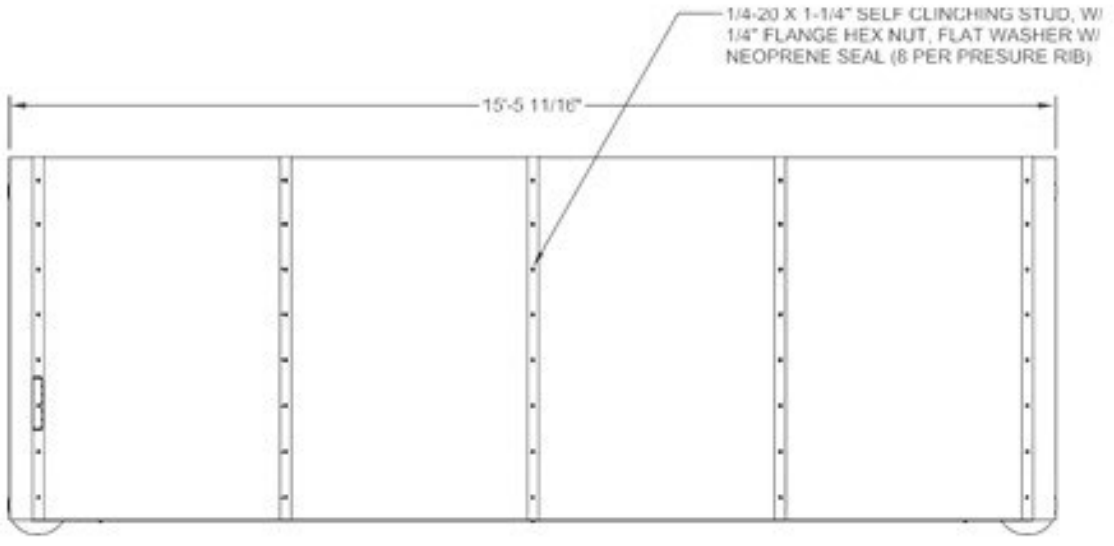
RIGHT SIDE VIEW

DRAFT

NON-AD SHELTER 5' X 15''

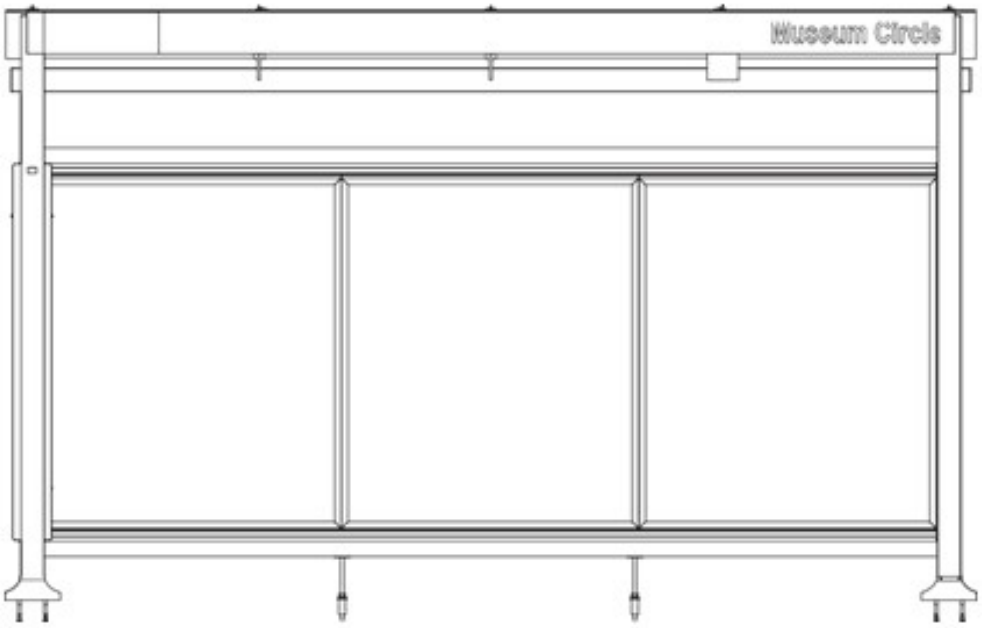


PLAN VIEW (W/ OUT ROOF)

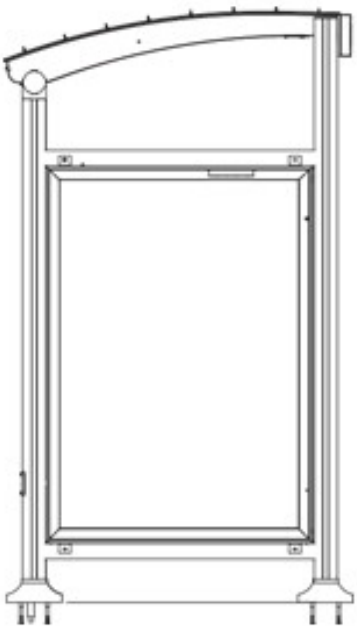


PLAN VIEW (WITH ROOF)

NON-AD SHELTER 5' X 15''

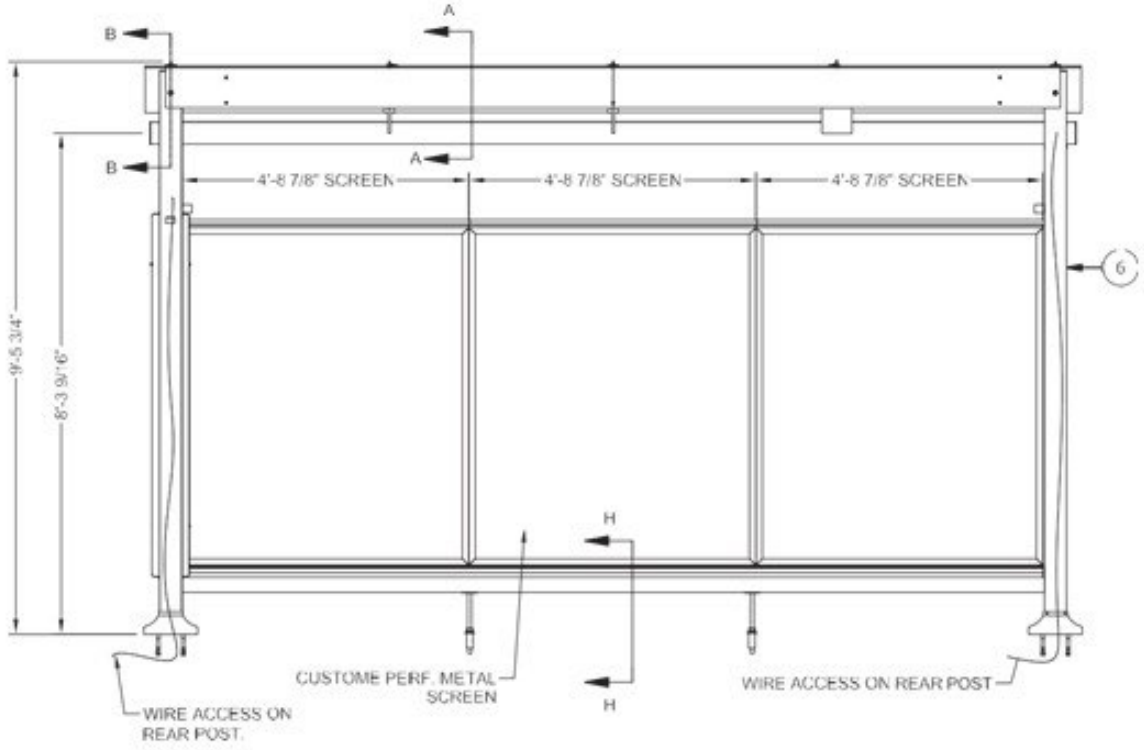


FRONT VIEW

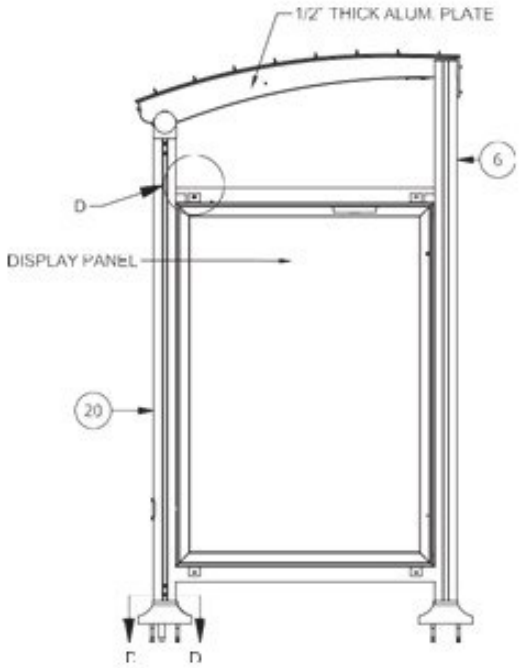


LEFT SIDE VIEW

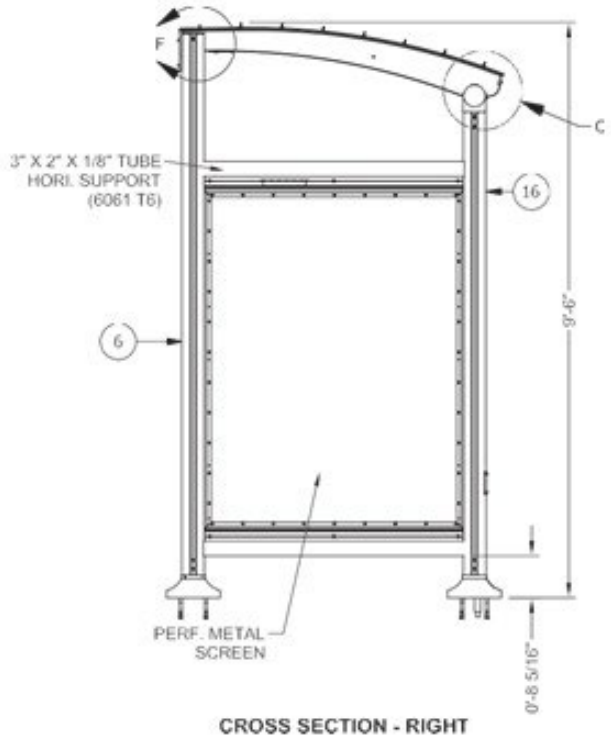
SHELTER SECTION VIEWS



LONGITUDINAL SECTION

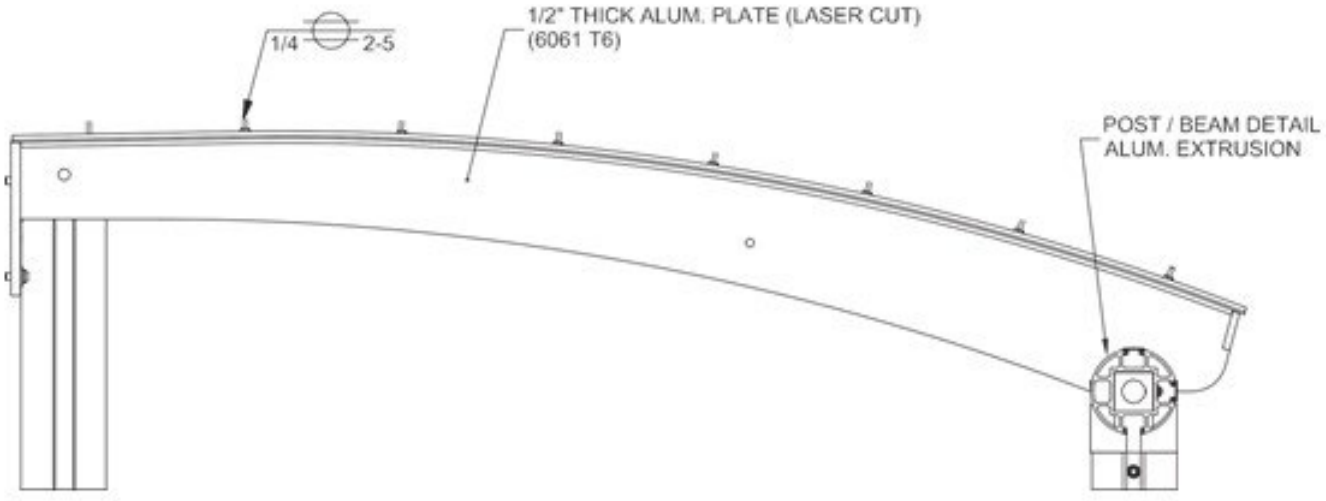


CROSS SECTION - LEFT

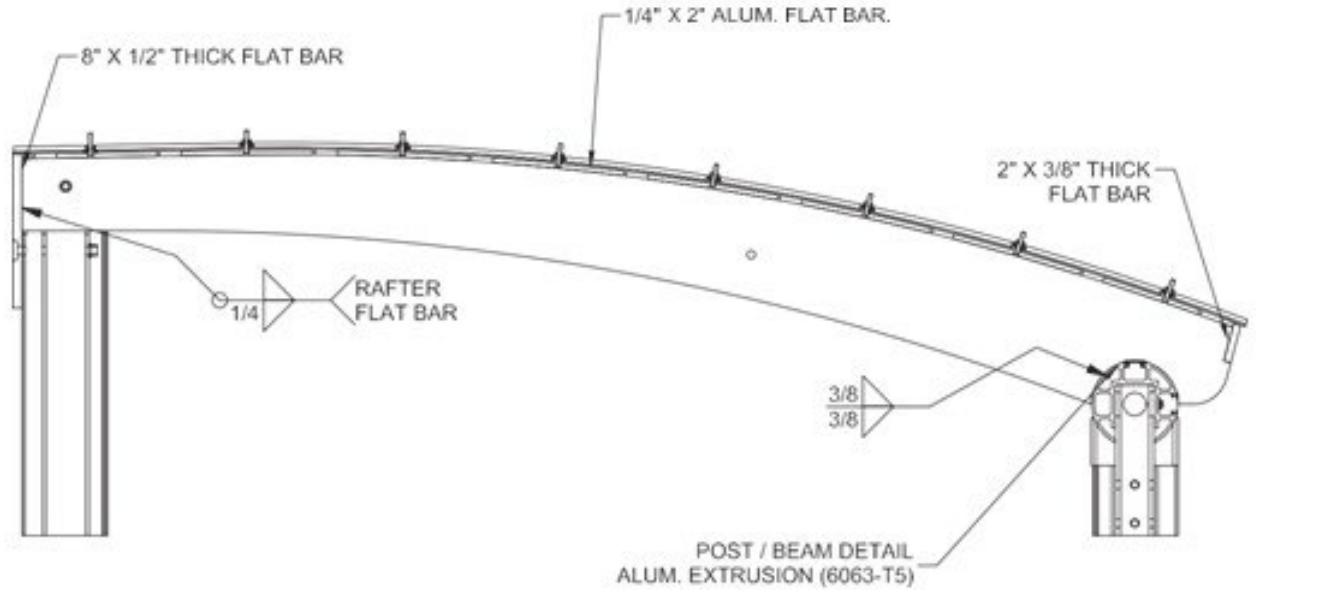


CROSS SECTION - RIGHT

SHELTER SECTION VIEWS

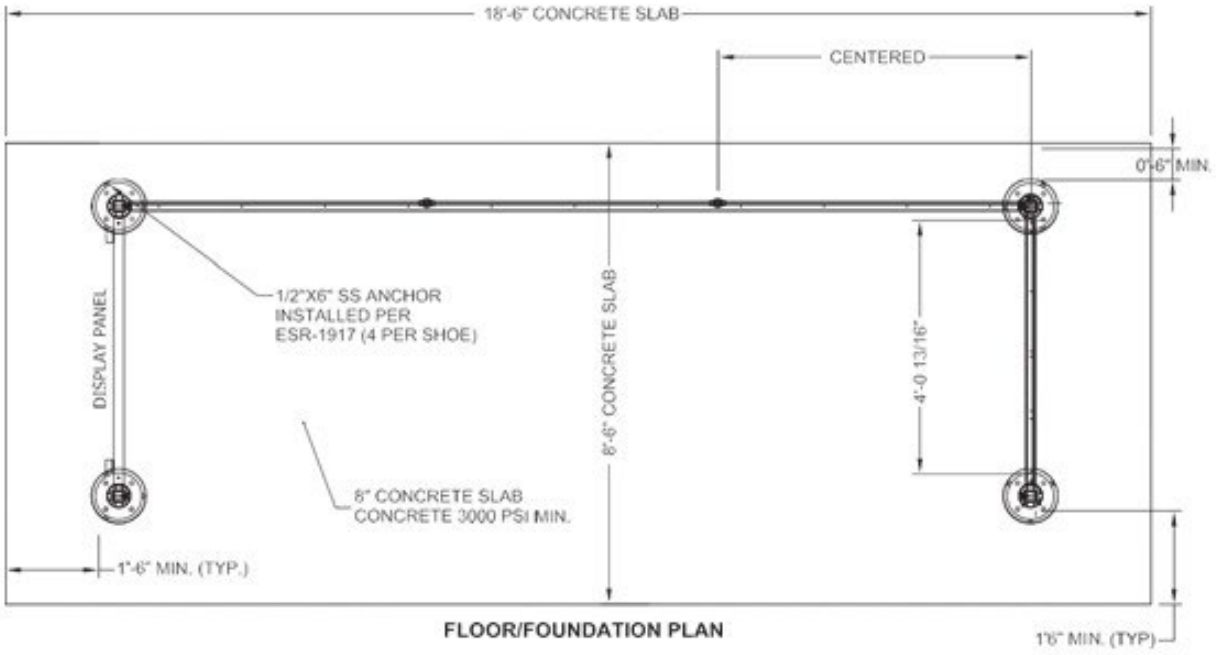


SECTION A-A

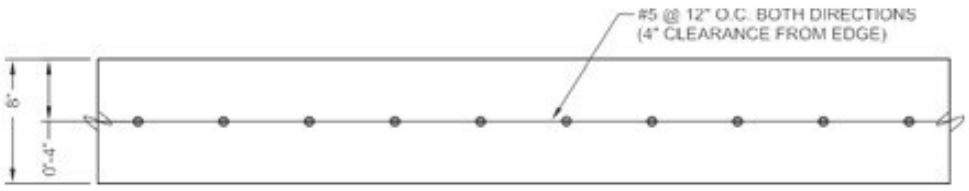


SECTION B-B

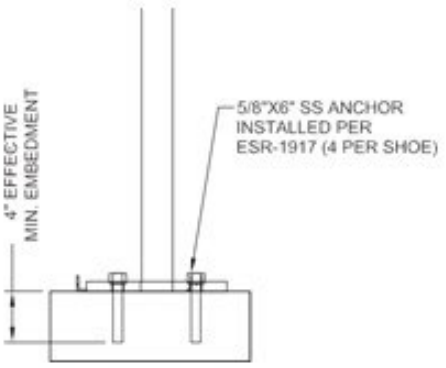
SHELTER ANCHORS & SUPPORTS



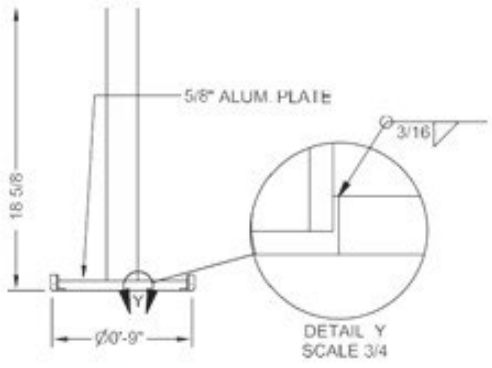
FLOOR/FOUNDATION PLAN



TYPICAL SLAB SECTION

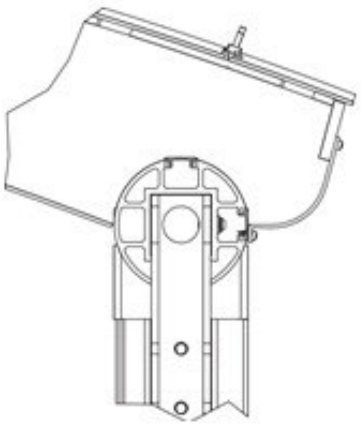


ANCHORING DETAIL

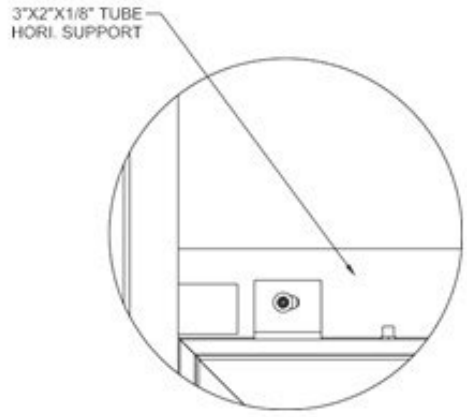


SHOE WELDMENT

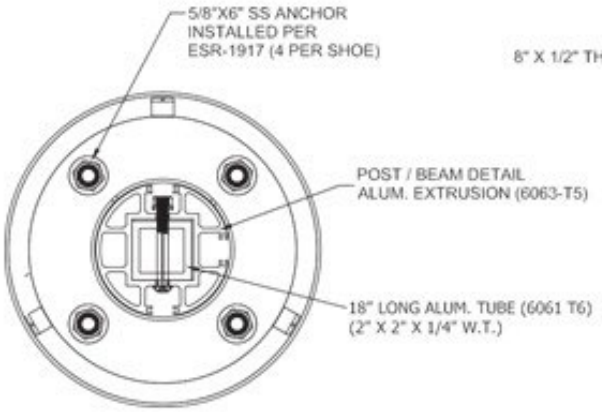
SHELTER ANCHORS & SUPPORTS



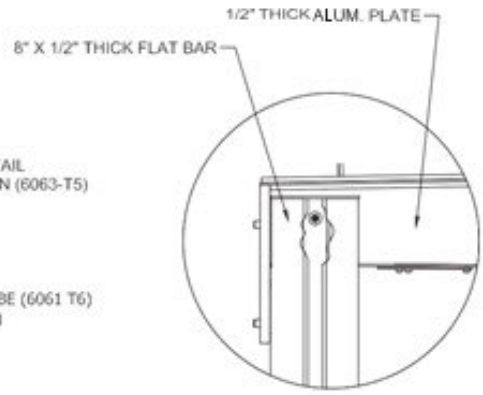
DETAIL C



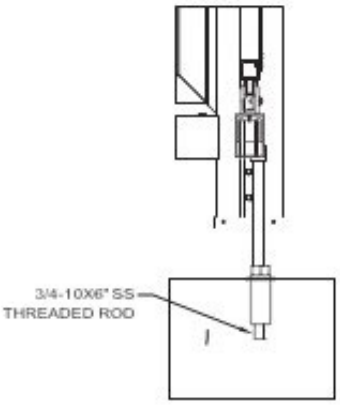
DETAIL D



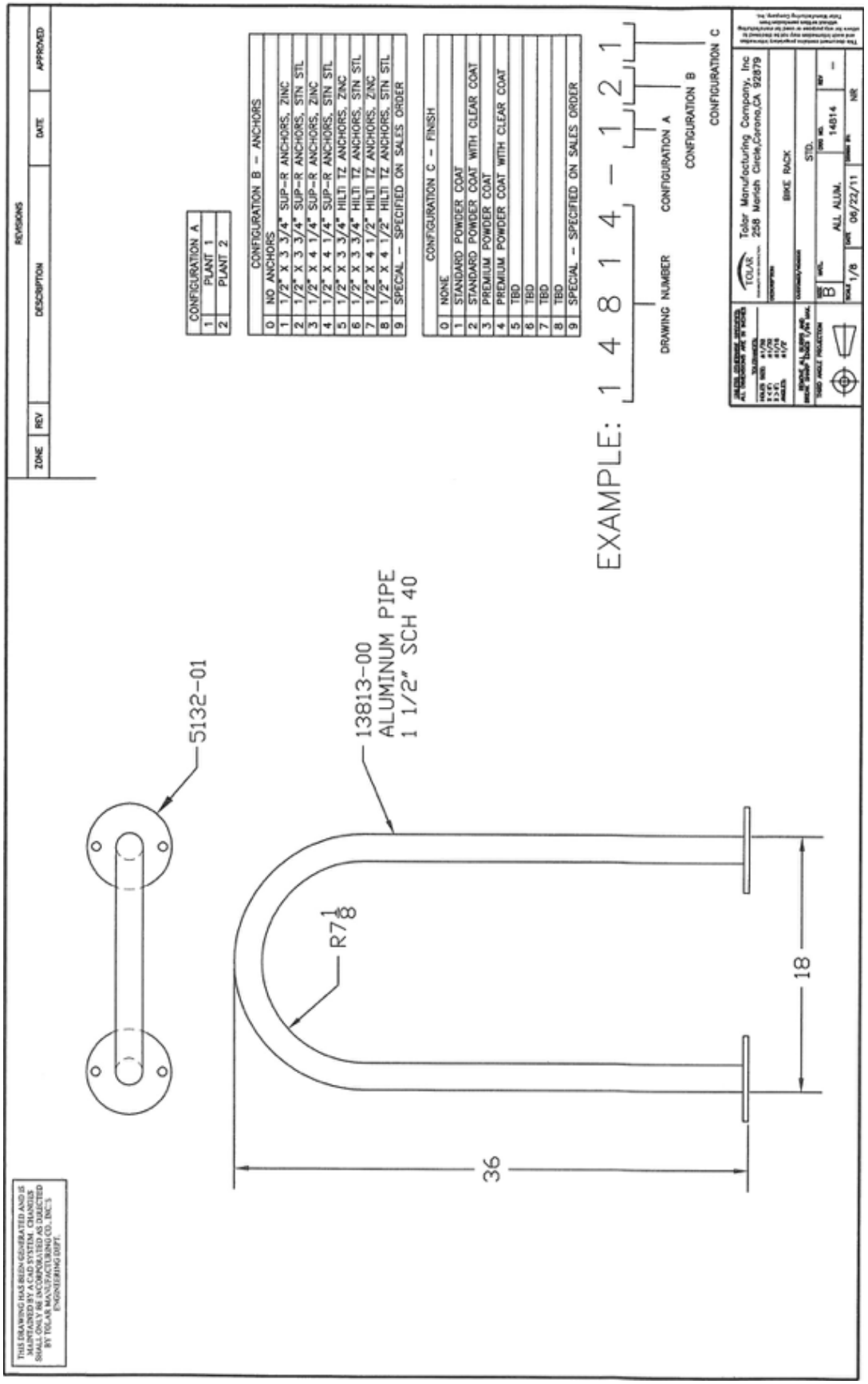
SECTION D-D
SHOE CONNECTION

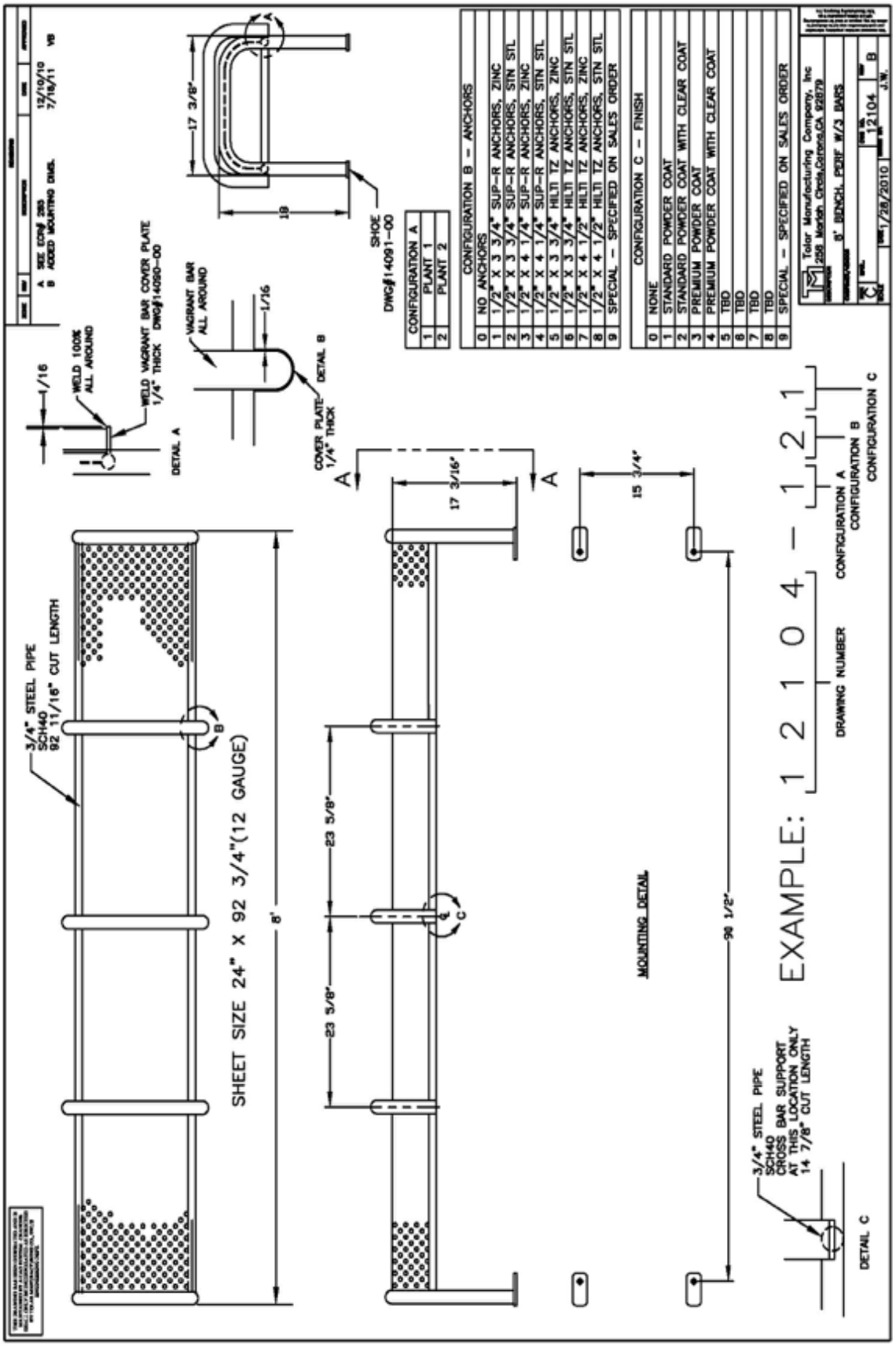


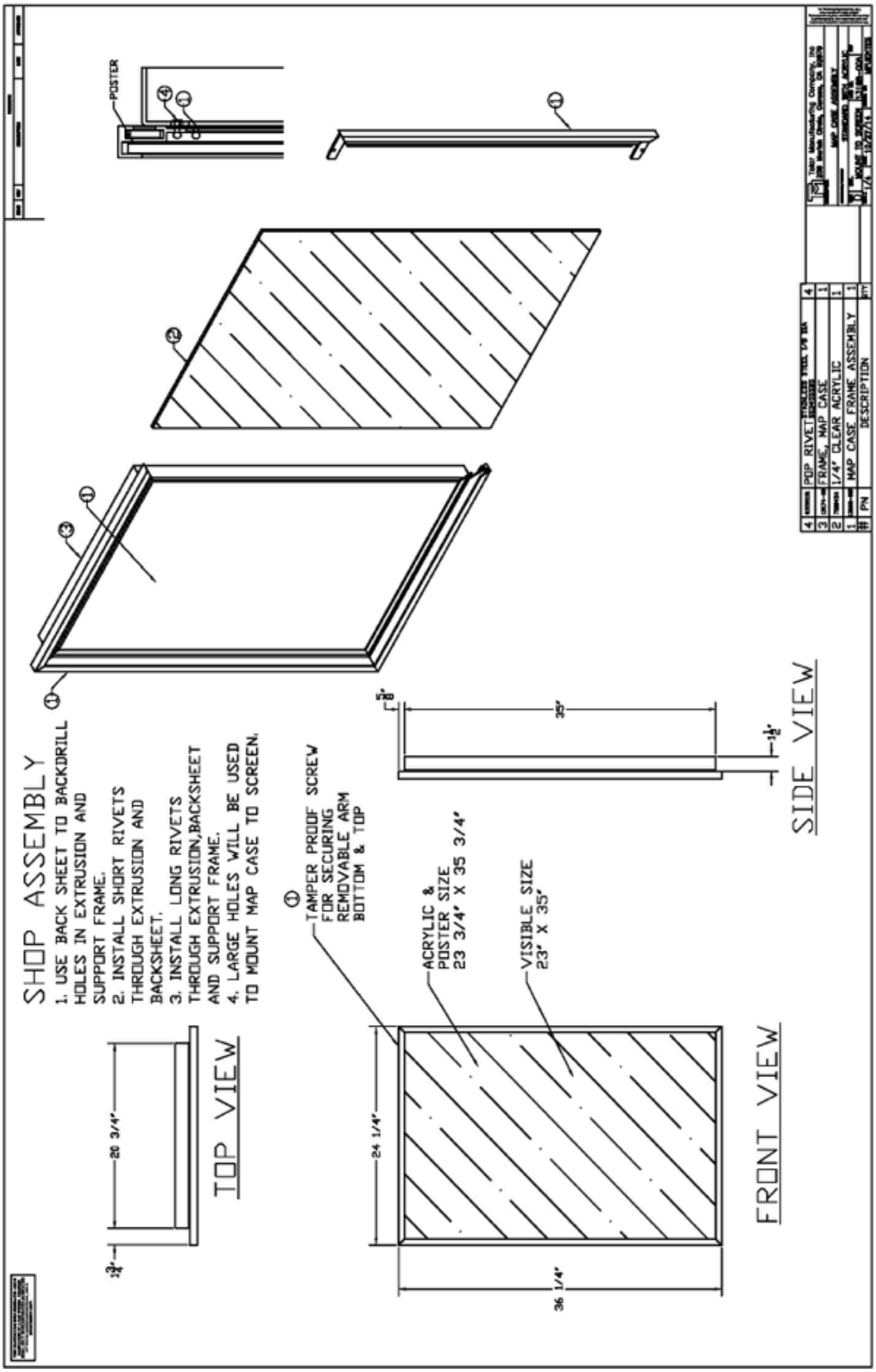
SECTION F



SECTION H-H
SCREEN SUPPORT


EXAMPLE: 1 4 8 1 4 - 1 2 1
DRAWING NUMBER
CONFIGURATION A
CONFIGURATION B
CONFIGURATION C
5132-01
13813-00
ALUMINUM PIPE
1 1/2" SCH 40
R7 1/8
18
36
CONFIGURATION A
0 PLANT 1
1 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
REVISIONS
ZONE REV DESCRIPTION DATE APPROVED
Tolar Manufacturing Company, Inc
258 Merlish Circle,Corona,CA 92879
BIKE RACK
STD.
ALL ALUM.
14814
06/22/11
1/8
B
THIS DRAWING HAS BEEN GENERATED AND IS MAINTAINED BY A CAD SYSTEM. CHANGES SHALL ONLY BE INCORPORATED AS DIRECTED BY TOLAR MANUFACTURING CO., INC.'S ENGINEERING DEPT.


EXAMPLE: 12104 - 121
DRAWING NUMBER
CONFIGURATION A
CONFIGURATION B
CONFIGURATION C
SHEET SIZE 24" X 92 3/4"(12 GAUGE)
3/4" STEEL PIPE SCH40 92 11/16" CUT LENGTH
MOUNTING DETAIL
DETAIL A
DETAIL B
DETAIL C
WELD 100% ALL AROUND
WELD VAGRANT BAR COVER PLATE 1/4" THICK DWG#14090-00
VAGRANT BAR ALL AROUND
COVER PLATE 1/4" THICK
SHOE DWG#14091-00
3/4" STEEL PIPE SCH40 CROSS BAR SUPPORT AT THIS LOCATION ONLY 14 7/8" CUT LENGTH
CONFIGURATION A
0 PLANT 1
1 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
A SEE ECN# 283 ADDED MOUNTING DIMS. 12/10/10 7/18/11 VB
Talor Manufacturing Company, Inc 2598 Marsh Circle,Corona,CA 92879
8' BENCH, PERF W/3 BARS
12104
1/28/2010
J.W.

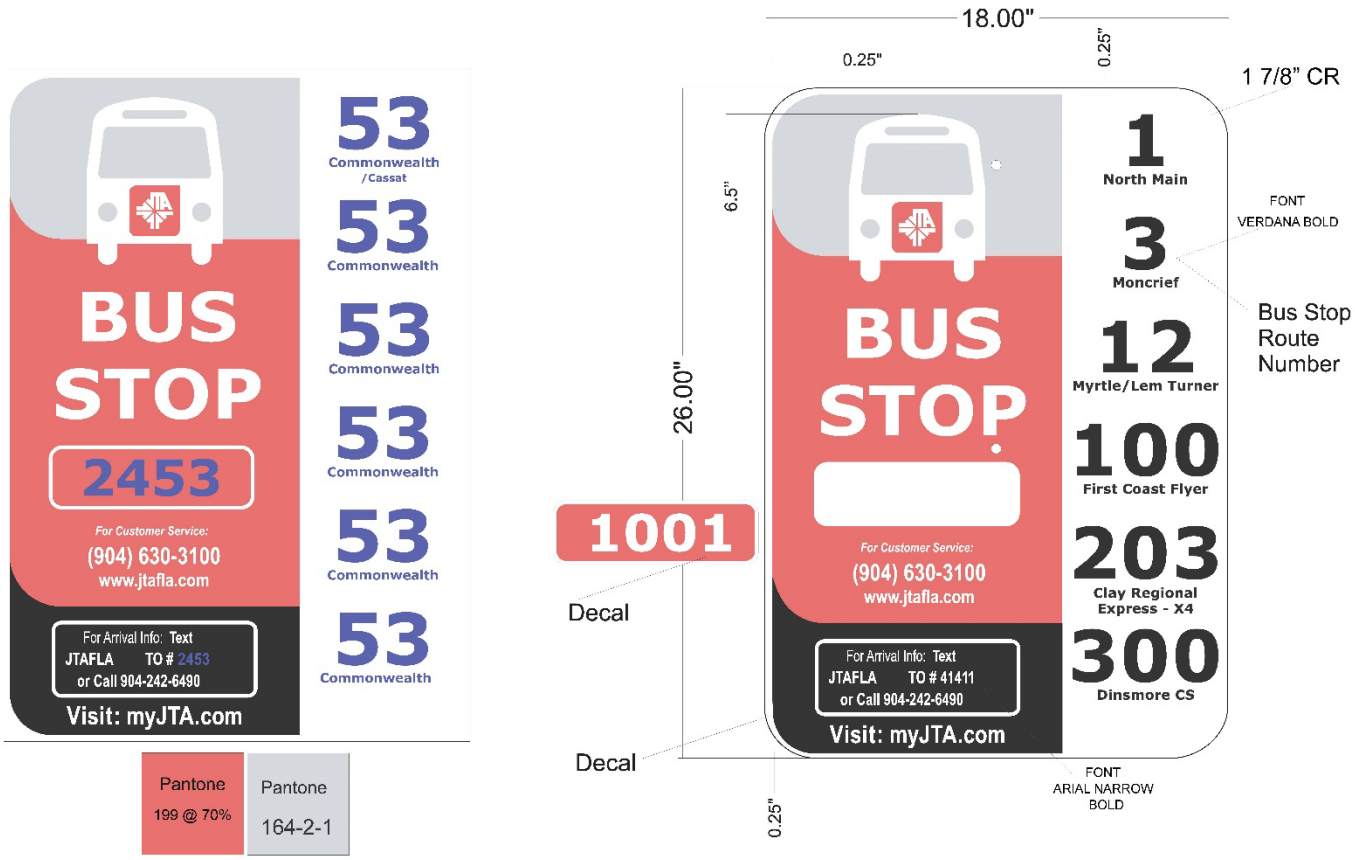

SHOP ASSEMBLY
1. USE BACK SHEET TO BACKDRILL HOLES IN EXTRUSION AND SUPPORT FRAME.
2. INSTALL SHORT RIVETS THROUGH EXTRUSION AND BACKSHEET.
3. INSTALL LONG RIVETS THROUGH EXTRUSION,BACKSHEET AND SUPPORT FRAME.
4. LARGE HOLES WILL BE USED TO MOUNT MAP CASE TO SCREEN.
TOP VIEW
26 3/4"
1 3/4"
TAMPER PROOF SCREW FOR SECURING REMOVABLE ARM BOTTOM & TOP
ACRYLIC & POSTER SIZE 23 3/4" X 35 3/4"
VISIBLE SIZE 23" X 35"
24 1/4"
36 1/4"
FRONT VIEW
SIDE VIEW
35"
1 1/2"
POSTER
4 POP RIVET
3 FRAME, MAP CASE
2 1/4" CLEAR ACRYLIC
1 MAP CASE FRAME ASSEMBLY
PN DESCRIPTION

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I

Transit Stop Sign Design Details

TRANSIT STOP SIGN DETAILS



Design layout to show FINAL PRODUCT

J

JTA Lighting Standards and Solar Readiness

JTA Transit Stop Lighting Standard

1 General:

1.1 Summary

1.1.1 Lighting is a priority for all types of JTA transit stops to promote passenger safety and comfort.

1.1.2 This standard includes requirements for lighting JTA transit stops indirectly or directly.

1.1.2.1 Indirect lighting may be provided via streetlights, pedestrian lights, or floodlights.

1.1.2.2 Direct lighting will be LED and powered via either hard-wired infrastructure or solar-powered systems.

1.1.3 JTA's fixed-route system includes six classification of transit stops, including (1) Local Transit Stops, (2) Transit Stops with Bench, (3) Transit Stops with Shelter, (4) High Frequency Corridor Stops, (5) Neighborhood Hubs and (6) Park-n-Ride Facilities.

1.1.4 All work shall comply with all applicable codes as a minimum and with the additional requirements called for in this standard.

1.2 Buy America Compliance: Transit stop illumination components shall comply with 49 U.S.C. 53230) and 49 CFR Part 661, where applicable, which provide that Federal funds may not be obligated unless steel, iron, and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by the FTA, or the product is subject to a general waiver, unless otherwise approved by JTA.

1.3 Submittals: JTA approval is required for all submittals, as applicable.

1.3.1 Shop Drawings, including complete system components and interconnection wiring diagrams, installation and assembly details

1.3.2 Product Data

1.3.2.1 LED Luminaires

1.3.2.2 Photovoltaic Modules

1.3.2.3 Batteries

1.3.2.4 Lighting controls

1.3.2.5 Battery charger/ controls

1.3.2.6 Monitoring equipment

1.3.3 Design Data, including calculations for photometrics and solar power-systems

1.3.4 Certificates, including Buy America, DLC / Energy Star

1.3.5 Manufacturer's Instructions for installation, operations, and maintenance

1.3.6 Closeout Submittals, including warranty documentation

2 Indirect-Illumination: JTA prefers to locate all transit stop classifications adjacent to existing light sources (indirect-illumination), where feasible.

2.1 Indirect-illumination can include streetlights, pedestrian lights, or floodlights.

2.2 While JTA does not control planning, design, construction, operations or maintenance of indirect illumination, JTA transit stops shall be located such that:

2.2.1 Indirect-illumination shall be available from dawn to dusk, 365 days per year, where feasible.

2.2.2 Sign posts, furniture, shelters and other structures shall be within the flood of indirect-illumination within 30 feet of the overhead light source, but not closer than 15 feet so that average illumination shall be a minimum average of 2.0 foot candles within a 2 foot radius of the transit stop sign post at ground-level, where feasible.

3 Direct-Illumination: JTA prefers to install illumination at transit stop sign posts for transit stop classifications 1 and 2, and within bus shelters for classifications 3 through 6 (direct-

illumination) at all new or refurbished transit stops to promote the comfort and safety of passengers. Direct-illumination can also assist operators see waiting passengers.

3.1 Illumination shall be provided from dawn to dusk, 365 days per year for both sign posts and shelters.

3.2 Sign Posts

3.2.1 Illumination shall be a minimum average of 2.5 foot-candles of illumination within a 2 foot radius of the transit stop sign post at ground-level.

3.3 Shelters

3.3.1 Illumination shall be a minimum average of 2.5 foot-candles within a 4 foot by 8 foot interior footprint at bench height with a minimum illumination of 0.1 foot-candles within the shelter. Luminaires associated with internally-illuminated advertising panels shall not be included in lighting design to meet this standard.

3.3.2 Shelters may include internally-illuminated advertising panels. Internally-illuminated advertising panels, as applicable, shall be illuminated from dusk to 2:00 AM, 365 days per year.

4 Luminaires: LED lighting technology shall be used with a minimum lifetime operation rating of 50,000 hours.

4.1 LED luminaires must be qualified by the Design Lights Consortium (DLC) or ENERGY STAR. The list of DLC qualified products are found at the following website: www.designlights.org/QPL. Alternative luminaires will be considered and reviewed by JTA on a case-by-case basis.

4.2 LED luminaires shall be rated for operation within an ambient temperature range of minus 22 degrees Fahrenheit to 104 degrees Fahrenheit.

4.3 LED luminaires shall be listed and labeled for wet locations in accordance with OSHA-listed nationally recognized testing laboratories as specified in 6.1.1 below..

4.4 Optical compartment for LED luminaires shall be sealed and rated a minimum of IP65 per NEMA IEC 60529.

4.5 LED light sources Correlated Color Temperature (CCn shall be 4000).

4.6 LED Power Supply Unit (Driver) current to each individual LED shall not exceed 600 mA, or within an operating range of 10 percent

4.7 Excepting internally-illuminated advertising panels, the light source shall be fully shielded with opaque materials and directed downwards. Fully shielded shall mean no light is emitted above the horizontal plane located at lowest point of the fixture's shielding. Shielding must be permanently attached.

4.8 Except as provided below, luminaires shall be controlled by a photocell or real time clock to prevent operation of illumination from dawn to dusk.

5 Power Source: Directly-illuminated shelters may be provided with hard-wired infrastructure or solar power.

5.1 Shelters should be planned and designed for hard-wired power infrastructure so that it may be accommodated in the future once infrastructure is in place.

5.2 Where hard-wired infrastructure is challenging to install, or not available, solar-power infrastructure shall be used.

5.2.1 When planning and designing a transit stop that will utilize solar power, its proximity to structures and trees must be considered and located away from shadows that might block the solar panel's access to sunlight.

6 Solar-Powered Lighting Systems: Systems shall provide illumination using solar photovoltaics and batteries integrated with a programmable controller.

6.1 General Requirements:

6.1.1 Solar-powered lighting systems shall only be installed at "Solar Ready" sites as defined by JTA's Solar Readiness Checklist.

6.1.2 Solar-powered lighting systems shall meet National Electric Code (NEC) standards for stand-alone photovoltaic systems.

6.1.3 Solar-powered lighting systems must be listed and labeled in accordance with OSHA-listed nationally recognized testing laboratories, e.g. CSA (Canadian

Standards Association), ETL (Edison Testing Laboratory) and UL (Underwriters Laboratories).

6.1.4 Calculations demonstrating that the PV array and battery components are appropriately sized shall be provided. Calculations shall not assume optimal tilt and orientation of the PV array. Calculations shall assume the lowest monthly insolation value for Jacksonville, Florida. Array charging efficiency and functional battery capacity shall be stipulated in the calculations.

6.1.5 Photometric plots or .ies files shall be provided for approval for each shelter/stop with schedules showing horizontal and vertical illuminance, as applicable; average, maximum, and minimum foot-candle levels and maximum to minimum ratio for horizontal illuminance. Luminaire(s) associated with internally- illuminated advertising panels or rider-activated bus-signalling illumination shall not be included in photometric plots for calculating illuminance.

6.1.6 Engineering drawings signed and sealed by a licensed State of Florida Professional Engineer shall be provided with structural and wind load calculations for the proposed system in accordance with FOOT Modifications to LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (Structures Manual Volume 3).

6.2 Compatibility with Transit Stop Sign Posts and Shelters

6.2.1 Sign Posts

6.2.1.1 Solar systems shall be installed at Class 1 or 2 transit stops sign posts, where feasible.

6.2.1.2 System shall be compatible with JTA's transit stop pole standards and contractor shall be responsible for certifying that the pole shall meets these standards.

6.2.1.3 Exposed metalwork shall be powder coated with option to match requested colors for both sign posts and shelters.

6.2.1.4 System shall be consistent with breakaway requirements as defined by the American Association of State Highway and Transportation Officials LRFD Specification and Structural Supports for Highway Signs, Luminaires and

Traffic Signals, and the AASHTO Roadside Design Guide.

6.2.2 Shelters

6.2.2.1 Solar systems shall be installed at Class 3 - 6 transit stops where feasible and where hard-wired infrastructure is unavailable or impractical.

6.2.2.2 Shelters are a variety of sizes with varying functionality. Systems shall provide required illumination for shelters ranging from 9 to 16 feet in length.

6.2.2.3 System shall be capable of providing illumination for both the shelter and internally-illuminated advertising panels, as specified.

6.2.2.4 System components shall easily mount to new or existing bus shelters.

6.3 Photovoltaic Modules

6.3.1 PV modules must be IEC 61215 or IEC 61646 compliant and manufactured in an ISO 9001 certified facility.

6.3.2 PV modules must be of the same manufacturer and model number.

6.4 Batteries

6.4.1 Batteries shall carry a safe and effective operating temperature range of at least -40°F / -40°C to 176°F / +80°C. Shielding may be used to accomplish this rating.

6.4.2 Battery autonomy shall be a minimum of 3 days for systems mounted to sign posts and 5 days for systems mounted to shelters.

6.5 Solar-powered Lighting System Controller

6.5.1 Controller shall carry a safe and effective operating temperature range of at least -40°F / -40°C to 176°F / +80°C.

6.5.2 Controller shall at minimum digitally regulate battery charging and operate shelter lighting from dusk until dawn.

6.5.3 Controller shall operate lighting via photocell or a real time clock that automatically adjusts for daylight savings time. The real time clock shall be

factory-programmed for conditions in Jacksonville, Florida.

6.5.4 The controller must have the capacity to log trend and diagnostics data, including but not limited to illumination on and off times, runtimes, battery voltage, photovoltaic production and system alarms, exportable by JTA via USB, or equivalent, in a format compatible with Microsoft Excel. Alternative trend and diagnostic data capabilities will be considered and reviewed by JTA on a case-by- case basis.

6.5.5 Installation, Operations and Maintenance Systems and components shall be designed for easy install without hoist or crane by a crew of one to two people.

6.5.6 Components shall be designed to withstand abuse, resist corrosion, and utilize vandal-resistant hardware.

6.5.7 Components (PV panel, batteries, controller, LED lamps/panels, wiring) must be field-replaceable, and replacement part numbers must be provided.

6.5.8 Components must be of modular design, allowing for independent replacement of photovoltaic panels, batteries, LED lamps/panels, and controller.

6.5.9 System and its components shall be easily dismounted for service.

6.5.10 System operation, including illumination, PV modules, batteries and controller shall be readily and definitively testable during the day without use of any specialty tools.

6.5.11 JTA shall be provided and trained in the use of any software necessary to program the controller and export and analyze trend and diagnostics data, as applicable. Software shall be capable of exporting data to Microsoft Excel.

6.5.12 System performance shall have the option to be remotely monitorable with the capability to notify JTA of failures as feasible. Alternative system performance monitoring will be considered and reviewed by JTA on a case-by-case basis.

6.6 Warranty

6.6.1 A complete system, including finishes, LED components, controllers, PV panels, wiring, hardware, and metalwork shall have a minimum of a 5-year warranty.

6.6.2 System components shall have the following warranties:

6.6.2.1 LED luminaires shall have a minimum warranty of 10 years.

6.6.2.2 Photovoltaic panels shall have a minimum warranty of 25 years.

6.6.2.3 Batteries shall carry a minimum of a 5-year prorated warranty.

6.6.2.4 Replacement components under warranty shall be delivered within 4 weeks of reported claim and agreed-upon remedy.

Solar Readiness Checklist

JTA's Mobility Access Program requires grid-based electrical infrastructure at BRT and Park-n-Ride stations. All other station types are potentially candidates for solar-powered lighting systems, with criteria such as passenger volume playing a key role in determining whether JTA will invest in such a system.
Once stop has been identified as a candidate for a solar-powered lighting system, this checklist (Figure 1) should be used to determine suitability. Issues considered by the checklist are described below.

1. ARE ADJACENT STRUCTURES ON SITE OR ON ADJACENT SITES?

The solar array needs to be located so that structures do not cast shadows on the PV array. Consider if structures (buildings, utility poles, overhead wires) are on-site or on adjacent sites that could shade the PV array.

2. ARE LANDSCAPING ELEMENTS ON SITE OR ON ADJACENT SITES?

The solar array needs to be located so that mature trees or shrubs do not cast shadows on the PV array. Consider if landscaping elements are on-site or on adjacent sites that could shade the PV array.

3. DO STRUCTURES / VEGETATION SHADE PV PANELS BY 10% OR MORE?

Shading 10% of a PV panel will reduce output by much more than 10% and may significantly curtail power production.

Determine if shading of 10% or greater will occur. If so, the site is not solar ready. Further evaluation is required to justify installation of a solar system.

4. COULD OBSTRUCTIONS SHADE PV PANELS BY 10% OR MORE IN THE FUTURE?

A solar system is a 30 – 40-year investment. Consider potential alterations on properties to the south of the proposed solar array allowed under the applicable zoning district, as well as the growth of trees.

Achieving and maintaining solar access may require agreements with neighboring property owners regarding heights of future buildings and landscaping. Access to sunlight is not a protected property right; forethought and proactive steps are needed to ensure long-term viability of a solar resource. Investigate applying a solar access easement with adjacent property owners.

5. DOES THE SHELTER HAVE A FLAT OR PROPERLY SLOPED ROOF?

Confirm that the shelter has a suitable, contiguous flat or properly sloped roof plane. On pitched roofs, always plan for a system that will be flush-mounted.
On a flat roof, a system may be flush mounted or mounted at an angle for greater power production. While a 35-37° angle is ideal, angles between 25-45° will absorb at least 95% of available solar energy.

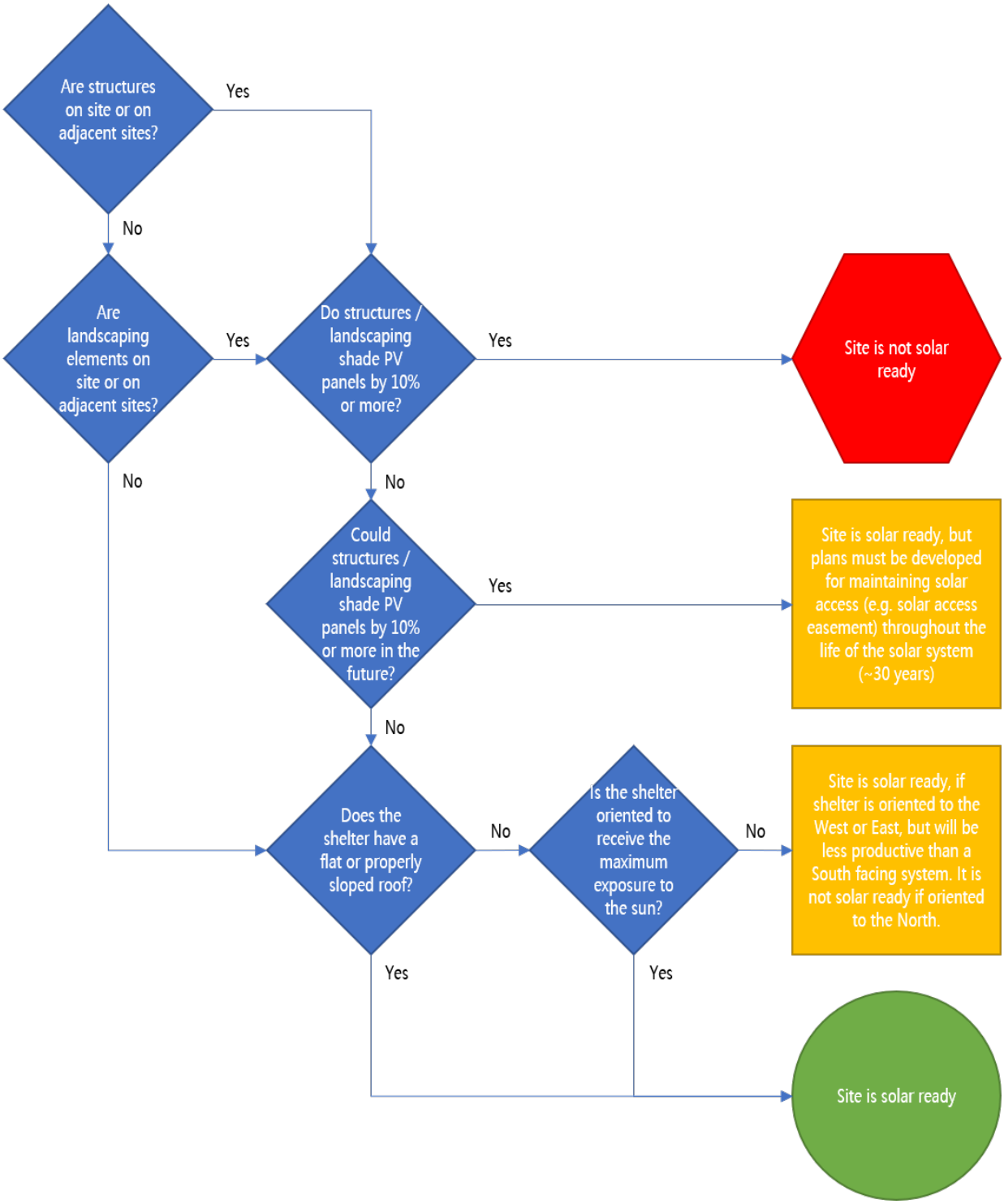
6. ORIENTATION

Orient the building so that the solar array can be installed to receive the maximum exposure to the sun.

If the shelter roof is pitched, South or Southwest orientation of photovoltaic modules is preferred. West or east facing roofs may also be acceptable, but further analysis should be conducted to determine the affect on power production. PV Watts (https://pvwatts.nrel.gov/pvwatts.php) is a resource for modeling the effect of angle (tilt) and orientation (azimuth) on power production relative to ideal conditions.

North orientations should be avoided.

Figure 1: Solar Readiness Checklist



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Transit Vehicle Dimensions

TRANSIT VEHICLE DIMENSIONS

JTA TRANSIT VEHICLE TYPICAL STANDARD DIMENSIONS				
VEHICLE TYPE	SERIES	DIMENSIONS	CLEARANCE	TURNING RADIUS
Gillig Low Floor (short)	1400 series (1426-1446)	35'L x 8.5'W x 9' 5"H	11' 5"V x 11' 5"H	37' 4"
Gillig Low Floor (long)	1400 series (1401-1425) 1600 series 1700 series 1900 series 2100 series 2900 series 3000 series 3101,3113 - 3116 series	40'L x 8.5'W x 9' 5"H	11' 5"V x 11' 5"H	43' 11"
Gillig Low Floor Hybrid	2200 series (2201-2206) 2400 series	40'L x 8.5'W x 11' 5"H	13' 5"V x 11' 5"H	43' 9"
Gillig Low Floor Non-Hybrid	CNG (2501-2512, 2601, 2701-2716)	40'L x 8.5'W x 11' 5"H	13' 5"V x 11' 5"H	43' 9"
Gillig Low Floor BRT (short)	CNG (2602-2610) 3100 series	35'L x 8.5'W x 11' 11"H	14'V x 11' 5"H	37' 3"
Gillig Low Floor BRT (long)	2200 series (2207-2213) CNG (B001-B024) B025-B058	40'L x 8.5'W x 11' 11"H	14'V x 11' 5"H	43' 9"
Gillig Trolley (short)	2000 series (2009-2017)	30'L x 8.5'W x 11' 5"H	13' 5"V x 11' 5"H	30' 10"
Gillig Trolley (long)	2000 series (2018-2020)	40'L x 8.5'W x 11' 5"H	13' 5"V x 11' 5"H	43' 3"
Gillig Electric	E2909-E2910	40'L x 8.5'W x 11' 5"H	13' 5"V x 11' 5"H	44'9

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Transit-Oriented Development

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Goal		Corridor	Sub District	Station
1	Encourage Development Near Transit			
	Foster mixed-uses, vitality and growth (population growth and economic development)	*	*	
	Ensure compact and dense development around transit stations as an alternative to urban sprawl.			*
	Coordinate land uses with transportation and other district needs such that they are compatible and complementary.		*	*
2	Create Affordable Housing Opportunities			
	Increase supply of affordable housing for diversity of household income levels			*
	Ensure depth of affordability meets the needs of subdistrict residents		*	
3	Create Amenities and Public Realm Improvements			
	Improve multi-modal connectivity, streetscapes, and accessibility near transit			*
	Improve public and open space near transit			*
	Provide recreation amenities in support of the *Duval County Community Health Improvement Plan*		*	*
4	Increase Public Transit Ridership and Promote Transportation Mode Shift			
	Reduce overall car ownership and vehicle miles traveled	*	*	
	Increase use of first mile/last mile options		*	
	Support transportation infrastructure with complementing land uses		*	*
5	Promote Joint Development and Create Resources to Implement TOD			
	Share public and private resources to promote more mixed-use projects		*	
	Pilot new value capture tools to support transit and TOD	*		
	Improve inter-agency and government-public coordination to support transit and TOD	*		
6	Protect Natural Resources and Promote Environmentally Conscious Development			
	Avoid development within flood plain zones and wetlands	*	*	*
	Protect native habitat and ecologically sensitive areas	*	*	*
	Protect agricultural and silvicultural land	*	*	*
7	Promote Safety and Accessibility for All TOD Users			
	Incorporate design elements that increase safety for drivers, cyclists, and pedestrians			*
	Minimizing the threat to health, safety and welfare posed by hazards, nuisances, incompatible land uses and environmental degradation.	*	*	*
8	Community and Neighborhood Creation and Preservation			
	Protect historic and archeological resources	*	*	
	Create new communities that provide socio-spatial opportunities, high quality of life and promote a sense of place.			*
	Provide land uses and amenities in support of enhancing existing communities		*	*

PART 14. TRANSIT ORIENTED DEVELOPMENT[1]

Sec. 656.1401. Purpose.

The purpose of this Part 14 is to create hereby a two-phase procedure for the establishment of Transit-Oriented Development (TOD) overlay zones to encourage TOD throughout the City, and thereby to implement the provisions of the Comprehensive Plan pertaining to TOD. TOD, as contemplated in this Part 14, is intended to encourage a more sustainable model for development centered on transit stations which promotes mixtures of uses and permits greater density and intensity of activity and development around transit stations, leading to increases in transit ridership and encouraging the use of alternative modes of transportation. The end goal of TOD is to promote a lively, prosperous area that serves as an attractive place to live, work, shop, and recreate with less reliance on the automobile, which in turn will decrease traffic congestion and auto-pollution while increasing social interaction and promoting healthier lifestyles. The City, in partnership with the Jacksonville Transportation Authority (JTA), intends to achieve this objective by creating a pedestrian-, bicycle-, and transit-friendly environment, combining automobile uses with complementary land uses, and creating streets with high levels of connectivity all within comfortable walking or cycling distance to JTA-transit stations.

(Ord. 2022-526-E , § 1)

Sec. 656.1402. Definitions.

The definitions contained in Part 16 of the Zoning Code shall be applicable to this Part 14. In addition, for the purposes of this Part 14, the following terms, phrases, words, and their derivations, as listed in alphabetical order herein, shall have the meanings contained below, or as referenced within specific Sections.

Absolute TOD area means an area within a radius of ½ mile measured from a JTA existing or planned premium transit station and designated as such in the applicable TOD master plan, serving as an aspirational area for development and infrastructure improvements.

Actual TOD area means an area located within a 15-minute ped-shed, the distance covered in 15 minutes at a normal walking pace traveled using the existing or proposed pedestrian network, of a JTA existing or planned premium transit station designated as such in the applicable TOD master plan.

Mobility hub means a transit station where multiple services come together at a point in the transit system, accomplishing the integration of shared-use mobility options, including improved pedestrian and bicycle, ride share, car share, bike share, and microtransit feeder networks into mainline frequent or premium transit services. Mobility hubs provide improved wayfinding, easier access to transit boarding areas, and improved connectivity to other services and surrounding locations. Mobility hubs are comprehensively designed to maximize the footprint of the TOD site and make it welcoming, with ample amenities and opportunities to access transit.

Premium transit station means a transit station served by either a fixed guideway service, such as BRT, rail, or the Skyway/U2C, or a station serving as a mobility hub. Premium transit stations provide service at higher-speed and higher-frequency than typical transit stops, usually with service frequencies at 15 minutes or less. Premium

[1]Editor's note(s)—Ord. 2022-526-E , § 1, amended the Code by repealing former Part 14, §§ 656.1401—656.1404, and adding a new Part 14. Former Part 14 pertained to similar subject matter, and derived from Ord. 2007-587-E, § 1, and Ord. 2017-475-E , § 1.

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transit stations also include more infrastructure and amenities to serve higher passenger activity. Amenities can include on-board amenities, such as seating, comfort and cleanliness; station design features, such as real-time passenger information, shelters, and lighting; and other features, such as reliability, service frequency, and parking.

Transit-Oriented Development (TOD) means development consisting of mixed-use medium to high density development designed and intended to reduce personal automobile use through the incorporation of premium transit services, alternative mobility solutions, and infrastructure for active modes, such as walking and biking, and reduced parking requirements.

TOD-1 area means an area designated as such in the applicable TOD master plan up to and within an absolute radius of ¼ of a mile from a TOD-designated transit station used for planning purposes and to support transitions from the TOD to surrounding uses.

TOD-2 area means an area designated as such in the applicable TOD master plan that lies between absolute radii of ¼ of a mile and up to ½ of a mile from a TOD-designated transit station and is adjacent to a TOD-1 area used for planning purposes and to support transitions from the TOD to surrounding uses.

(Ord. 2022-526-E , § 1)

Sec. 656.1403. Applicability.

This Part 14 shall apply to lands designated as an absolute TOD area in a TOD master plan within which an appropriate TOD typology shall be designed, appropriate transitions in density and intensity in relation to established residential areas within and adjacent to the TOD shall be addressed, and appropriate land use strategies, urban design standards, zoning recommendations, and implementation strategies shall be articulated in order to implement the TOD. In conjunction with a TOD master plan, the TOD zoning overlay will build, refine, and codify the implementation tools outlined in the TOD master plan, and should reflect the recommended zoning, land uses, densities, height limitations, transitions to existing neighborhoods, sidewalk widths, building frontages, entrance locations, and other design aspects for the TOD. The TOD zoning overlay and designated land use categories serve as the mechanisms for allocation of entitlements within the absolute TOD area. As provided herein, each TOD zoning overlay will be submitted to City Council for review and approval concurrently with the review and approval of the TOD master plan.

(Ord. 2022-526-E , § 1)

Sec. 656.1404. Locational criteria.

To be eligible for TOD designation under this Part 14, the land under consideration must meet the following criteria:

(a) Be located entirely within a ½ mile radius of a premium transit station;

(b) Not be located within the Rural Area as defined by the Future Land Use Element of the Comprehensive Plan;

(c) Be consistent with the City's mobility goals; and

(d) Not negatively impact surrounding neighborhoods.

(Ord. 2022-526-E , § 1)

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Sec. 656.1405. General development standards.

(a) The TOD master plan and zoning overlay should reflect form-based zoning principles and be generally consistent with the City of Jacksonville Land Development Procedures Manual.

(b) In addition to minimum development standards provided herein, the TOD master plan and zoning overlay shall be evaluated in accordance with the following standards:

(1) *Walkability.* Utilize neighborhood designs that promote walking.

(2) *Cycling.* Prioritize non-motorized transport networks.

(3) *Connectivity.* Create dense networks of streets and paths.

(4) *Transit.* Locate development near high-quality public transport.

(5) *Mixture.* Plan for mixed use.

(6) *Densification.* Optimize density and transit capacity.

(7) *Compactness.* Create regions with short commute

(8) *Mobility.* Increase mobility by regulating parki g and road use.

(Ord. 2022-526-E , § 1)

Sec. 656.1406. TOD master plan and zoni overl dev opment.

Sites proposed by JTA deemed su ble r TOD gnation by the City and JTA will undergo a two-phased process for the development of a TO zoning erlay. T first phase includes the creation of a TOD master plan, the identification of the TOD area, t assign nt of a TO typology, and the development of a vision and implementation strategy for the TOD. T second ph is the codification of the development principles identified in the TOD master plan thro estab hment of the TOD zoning overlay for property located within the TOD master plan area.

The following proce es shall app with respect to the designation and establishment of a Transit-Oriented Development:

(a) *Phase I - TOD Master* ne TOD master plan is created to provide a vision and plan tailored to the specific context in and around each TOD. It includes designations of both the absolute TOD area and the actual TOD area. Building upon the assigned TOD typology, the TOD master plan addresses the appropriate land use strategies, urban design standards, zoning recommendations, and implementation strategies to realize the vision. The TOD master plan should be oriented toward the future, but based in reality. The TOD master plan should take into account what is financially feasible and responsive to citywide goals and market forces, while still being reflective of the vision of the TOD and its principles. In the development of the TOD master plan, sites located in the actual TOD area are presumed to be suitable locations and are encouraged for TOD as described in this Part 14, subject to a case-by-case review of consistency with state and regional plans, the Comprehensive Plan, and adopted neighborhood plans and studies. The TOD master plan is not the mechanism for the allocation of entitlements. In creating a TOD master plan, area identification and locational criteria shall be applied and typology assigned as provided herein.

(1) *TOD area identification and locational criteria.* An area that is up to and within a ¼ mile radius of a TOD designated transit station shall be classified as TOD-1. An area that lies between a ¼ of a mile radius and up to ½ of a mile radius from a TOD designated transit station, and is adjacent to a TOD-1 area, shall be classified as TOD-2.

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(2) *Typology assignment.* The TOD master plan shall identify a contextually sensitive TOD typology to guide the TOD area. TOD typologies provide minimum density goals. While the TOD master plan will recommend suitable density for each area, the TOD zoning overlay and designated land use categories will determine the actual maximum and minimum allowable densities. The applicable TOD typologies and their descriptions and goals are as follows:

(i) *Type 1 - Urban Center Typology.* The Urban Center Typology applies to lands located in the most heavily urbanized areas. Its infrastructure should include a dense grid block structure street design and high vertical development to support a high diversity of uses, high residential and employment densities, and greater volume of pedestrian activity. Modes of transportation should include a premium transit service, such as Bus Rapid Transit (BRT), rail, and/or the Skyway/Ultimate Urban Circulator (U^2C), or a mix of local or express bus services and alternative mobility solutions, including personal and shared automobiles. Alongside these premium transit services, non-motorized transportation (walking and bicycling) should be integrated with the essential infrastructure in place to support the use and accomplish the Complete Streets component of a comprehensive transportation network. A progressive parking requirement shall enforce integrated structured parking, off-street structured parking, and on-street parking, with no minimum parking requirement. The minimum residential density goals for the Urban Center typology are 50 dwelling units per acre (DU/Acre) in the TOD-1 area and 20 DU/Acre in the TOD-2 area to support a mix of housing types. Uses include mid- and high-rise condominium residential use and multifamily residential use, large retail and office uses, and mixed-use buildings.

(ii) *Type 2 - Regional Center Typology.* The Regional Center Typology applies to lands located at emerging centers of regional significance. Regional Centers are medium- to high-density areas that occur outside of the urban core. They should be primarily commercial in nature, which draws patrons in from across the region. The moderate mix of uses supports a medium to high density when compared to other typologies. Due to their location outside the urban core, Regional Centers consist of mid- and low-rise buildings, and their infrastructure is comprised of irregular street patterns. The mix of infrastructure and residential density supports a medium to high volume of pedestrian activity within the station area. Modes of transportation should include a premium transit service, such as BRT or rail, or a mix of local or express bus services and alternative mobility solutions which emphasize feeding the premium transit service. There should also be an emphasis on active modes, such as walking and bicycling. Parking requirements shall enforce off-street structured parking, rear surface parking, and on-street parking, with no minimum parking requirement. The minimum-residential density goals for the Regional Center typology are 40 DU/Acre in the TOD-1 area and 15 DU/Acre in the TOD-2 area to support the commercial activity within the district. Uses include mid-rise condominium residential use and multifamily residential use, major retail and office uses, and mixed-use buildings.

(iii) *Type 3 - Core Neighborhood Typology.* The Core Neighborhood Typology applies to lands located within the neighborhoods adjacent to the Central Business District (CBD). These neighborhoods are primarily residential and support the commercial nature of the CBD. Due to the proximity to the urban core, buildings range from mid- to high-rise, and the street network is less dense than the urban core, comprised of a grid and alley network, usually with a "Main Street" urban design. The infrastructure supports a moderate mix of uses and a medium to high volume of pedestrian activity. Modes of transportation should include a premium transit service, such as BRT, rail, and/or the U^2C, or a mix of local or express services and alternative mobility solutions which favor low-speed options to compliment active modes, like walking and bicycling. Parking design requirements shall be consistent with the Urban Center typology with integrated structured parking, off-street

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structured parking, and on-street parking, with no minimum parking requirement. The minimum-residential density goals for the Core Neighborhood typology are 30 DU/Acre in the TOD-1 area and 15 DU/Acre in the TOD-2 area to support a mix of housing types. Uses include townhouse residential use, low- and mid-rise condominium residential use and multifamily residential use, retail and office uses, and mixed-use buildings.

(iv) *Type 4 - Suburban Neighborhood Typology.* The Suburban Neighborhood Typology applies to lands located at commercial/retail nodes that support surrounding residential developments outside of the urban core. These sites are comprised of low-rise buildings, with suburban block patterns abutting a suburban "Main Street" urban design. The suburban scale of these areas supports both medium-low residential and employment density, as well as moderate pedestrian activity. Modes of transportation should include a mix of BRT and local and express bus, walking and biking. Rear surface and on-street parking designs shall be required to ensure streetscapes can fully accommodate non-motorized modes, with no minimum parking requirement. Pedestrian and bicycle infrastructure should provide good connections to encourage these active uses. The minimum-residential density goals for the Suburban Neighborhood typology are 20 DU/Acre in the TOD-1 area and 15 DU/Acre in the TOD-2 area to provide adequate housing to support commercial uses. Uses include small lot single-family residential use, single-family residential use with an accessory dwelling unit, townhouse residential use, low-rise condominium residential use and multifamily residential use, neighborhood retail and office uses, and mixed-use buildings.

(v) *Type 5 - Special Use Typology.* The Special Use Typology applies to lands located at destinations that have a singular use/functionality, which generate high transit ridership, but do not align with traditional mixed-use TOD pattern. Examples include airports, hospitals, schools, universities, and entertainment venues. Residential density will vary at these locations, but the intensity and pedestrian activity will be high. Modes of transportation should include premium transit service which can adequately handle the demand, and low-speed alternative mobility solutions which help create connections from the transit station to nearby destinations. Parking design requirements within this typology also varies based on location, but should prioritize vertical parking structures that efficiently utilize parking footprints, and incorporate ground floor retail or commercial uses.

(b) *Elements of the TOD master plan.* The TOD master plan shall address the following elements:

(1) *Community vision.* A vision for the community should be developed through an educational and participatory planning process utilizing tools such as informational sessions, public workshops, and smaller stakeholder meetings to isolate major themes expressed by the community. Resultant themes should be used to craft an overall vision for the TOD, which acts as the foundation for the development of the TOD master plan and its accompanying zoning overlay.

(2) *Urban design.* The TOD master plan should recommend design standards that affect at a minimum sidewalk and building placement, sidewalk width, building articulation, and relationship of buildings to the street. These design standards are more rigorous than those included in other provisions of the *Ordinance Code.* In providing regulations that promote walkability, multiple modes of travel, a mix of housing, quality active recreation and open space, and complementary design features, the TOD master plan is able to steer development in a direction that supports the community vision while promoting interconnecting neighborhoods and communities.

(3) *Connectivity.* The TOD master plan should encourage dense development at activity nodes such as transit stations, providing much needed mobility options for all members of the community.

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Additionally, the TOD master plan should develop an integrated street and pathway network to ensure safe and convenient travel for all modes of transportation. The network should encourage additional streets to make smaller, more manageable blocks for people traveling on foot. The network should also include enhanced connections to existing and proposed trail systems, encouraging access to recreational opportunities, while on-street bicycle lanes and facilities make bike-riding safer and more efficient.

(4) *Active recreation and open space.* The TOD master plan should recognize that integrated, well designed, and accessible active recreation and open space is critical to achieving the vision of the TOD. In particular, the higher density and compact character of TOD development requires an approach to active recreation and open space that recognizes the different needs of TOD inhabitants. Denser, more urban communities require increased urban active recreation and open spaces such as plazas, private open space, storm water gardens, water efficiency landscapes, on-site renewable energy systems, and landscape methods that can reduce the urban heat island effects. Alternatively, more residential districts should be connected with active recreation and open space such as pocket parks which provide open space at a more local level. The TOD master plan should recognize the different needs of varying areas within the TOD area and include specific regulations based on such needs.

(5) *Land use and density.* Providing a mix of uses in close proximity to one another is vital to the prosperity of a TOD. The TOD master plan should analyze existing land use and zoning within the TOD boundary. The analysis should cover current land use trends such as undeveloped or vacant properties and existing zoning, including those developed through existing Neighborhood Plans. After reviewing the existing land use patterns, the TOD master plan shall recommend land use designations that encourage an appropriate mix of residential, commercial, retail, office and other suitable uses. The TOD master plan shall further recommend building height, Floor-Area Ratio (FAR), and housing densities to support transit in the area while integrating the TOD into the surrounding community.

(6) *Sustainability.* Achieving a sustainable future means meeting the needs of today without compromising the needs of the future. Under this philosophy, this process aims to build more livable communities. The primary goal of the TOD zoning overlays is to promote development and redevelopment in areas well supported by transit. Compact and connected development will help the City and the region address continued population growth and increasing greenhouse gas emissions, resulting in impacts on climate change. Additionally, setting sustainability goals for the built environment is an important component of an environmentally responsible community. The TOD master plan should promote sustainability and active measures to protect against unwanted environmental impacts. The TOD master plan should set specific goals for green building, renewable energy, and sustainable technologies and incorporate these measures into the larger community vision for the TOD.

(7) *Affordability.* Including affordable housing in TODs can provide lower income households with improved transportation access to employment and services. Reduced transportation costs can improve the ability of low-income families to afford housing payments. The TOD master plan should take into account affordable housing needs and include an affordable housing analysis and feasibility review that describes potential strategies for achieving affordable housing goals.

(8) *Infrastructure Assessment.* Some TOD areas may be located within existing urban environments, while others are located in or near currently undeveloped areas of the City. TODs encourage density and connectivity, but acknowledge the necessity of infrastructure support for this type of development. The TOD master plan shall provide an analysis of existing conditions including water, wastewater, and stormwater systems, which can identify future needs and methods for addressing flood, water quality, and erosion issues.

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(9) *Financial analysis.* Projects incorporating higher density development with increased multi-modal connectivity tend to have higher construction costs than those with less dense and less connected development patterns. A TOD area located within a moderate financial market may require additional economic support to offset what could be higher construction costs. The TOD master plan shall evaluate market conditions within each TOD and then evaluate financial strategies that can be applied to realize the TOD vision. Some financial tools include the creation of parking districts, the assembly of a development site that can be sold or leased at a discount to developers, and catalyst projects. In particular, catalyst projects can be used to demonstrate creative approaches to tackling issues such as affordable housing, infrastructure costs, and parking and serve to stimulate subsequent development to provide mixed-income and market-rate residential projects. In addition, the TOD master plan should provide a future financing implementation plan that takes into consideration a range of market issues.

(10) *Implementation plan.* The implementation of the plan, along with other TODs surrounding the existing and proposed JTA premium transit stations, is expected to support ridership on JTA services and take full advantage of public transit investments and the development potential of the station areas. The TOD master plan shall outline partnerships and mechanisms for TOD implementation including financing and value capture strategies as well as governance structure.

(c) *Phase II - TOD Zoning Overlay.* In accordance with the TOD master plan, the TOD zoning overlay shall be created which builds, refines, and codifies the implementation tools outlined in the TOD master plan, and should reflect the zoning, land uses, densities, active recreation and open space, height limitations, transitions to existing neighborhoods, sidewalk widths, building frontages, entrance locations, and other design aspects as addressed in the TOD master plan. The boundaries of the TOD zoning overlay may be less than the boundaries of the TOD master plan. The TOD zoning overlay is the mechanism for the allocation of entitlements within the TOD area.

(d) *Elements of the TOD zoning overlay.* The TOD zoning overlay shall include and address, as appropriate, the following elements:

(1) A narrative describing zoning, land uses, densities, height limitations, transitions to existing neighborhoods, sidewalk widths, building frontages, entrance locations, and other design aspects as addressed in the TOD master plan;

(2) A site plan at suitable scale depicting and labeling the zoning and land uses of all areas within the TOD zoning overlay, as well as proposed street and sidewalk layouts, building frontages, entrance locations, landscaping, open spaces and any other design aspects as addressed in the TOD master plan capable of graphic depiction;

(3) A description of all entitlement allocations within the TOD zoning overlay;

(4) A description of all development standards; and

(5) Mechanisms and incentives promoting orderly development within the TOD zoning overlay so that each designated use may be realized within a reasonable time horizon in order that the integrated, interconnected, pedestrian-friendly and transit-oriented goals of the TOD master plan can be achieved.

(e) *Executive summary.* Following the completion of the TOD zoning overlay, JTA shall prepare an executive summary or similar document explaining in reasonable detail how the TOD master plan and zoning overlay address each of the requirements and elements provided in this Part 14, and identifying all land uses and entitlements established in the TOD zoning overlay.

(f) *Comprehensive Plan.* The TOD master plan and zoning overlay must be consistent with the applicable provisions and requirements of the Comprehensive Plan.

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(Ord. 2022-526-E , § 1)

Sec. 656.1407. Procedure.

(a) *Pre-application charettes.* Prior to the preparation of an application for the establishment of a site-specific TOD master plan and zoning overlay under this Part 14, JTA shall conduct a series of charettes with written notice to the Department, the Public Works Department, other affected and/or interested City departments as requested by the Department, the Council member of the district within which the proposed TOD is located, the Citizen Planning Advisory Committee of the district within which the proposed TOD is located, any registered neighborhood organizations serving a neighborhood area located within 350 feet of any boundary of the proposed TOD, each owner of real property located within the boundaries of the proposed TOD and within 350 feet of any boundary of the proposed TOD, and the Florida Department of Transportation. The purpose of the charettes is first to educate stakeholders about the TOD vision and the TOD master plan and zoning overlay concept, then to present initial proposals for the TOD master plan and zoning overlay and solicit comments, and last to present final proposed versions of the TOD master plan and zoning overlay. JTA will be responsible for documenting the charette process and providing minutes or written summaries of the presentations made and comments received. JTA shall also document the evolution of the TOD master plan and zoning overlay through the charette process and JTA's reaction to the comments received. JTA must support the development of the TOD master plan and zoning overlay with appropriate data and analysis, which must be presented in reasonable detail to the charette participants. To the extent reasonably practicable, JTA should endeavor to develop the TOD master plan and zoning overlay such that the same accommodates as many stakeholder interests as possible. As they become available, JTA should post the TOD master plan and zoning overlay and the revisions thereof throughout the stages of development on a separate page linked to the home page of its website and devoted exclusively to the proposed TOD.

(b) *Charette notices.*

(1) *Mailed notice.* Each charette notice required under Section 656.1407(a) must include a conspicuous heading stating that it is a notice of a public meeting for the development of a Transit-Oriented Development master plan and zoning overlay, must identify the date, time and place of the meeting, must state that the purpose of the meeting is the development by JTA of a site-specific TOD master plan and zoning overlay under this Part 14, must include a graphic depiction showing the location of the proposed TOD and the immediately-surrounding area with street names and/or other landmarks sufficient to identify the impacted area, must include sufficient information for interested parties to contact JTA regarding the proposed TOD, and must state that all interested persons are invited to attend. Each notice must be mailed to the stakeholders identified in 656.1407(a) at least 14 days prior to each charette. Notices to the owners of real property located within the proposed TOD and within 350 feet of any boundary thereof shall be mailed to the address of each according to the most recent ad valorem tax roll. JTA shall prepare a certificate of its compliance with the mailing requirements of this subsection identifying all addressees and their addresses for filing with the application under subsection (e) of this Section.

(2) *Published notice.* JTA must publish a notice of each charette in a newspaper of general circulation published in the City at least 10 days prior to the date thereof. The published notice must contain the same items and information specified for mailed notices under Section 656.1407(b)(1).

(3) *Website notice.* JTA must post a notice of each charette in a conspicuous location on its website. The posted notice must contain the same items and information specified for mailed notices under Section 656.1407(b)(1).

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(c) *Pre-application conference.* Following the completion of the charette process, and prior to preparing an application for the establishment of a site-specific TOD master plan and zoning overlay, JTA shall schedule a pre-application conference with the Department to discuss the same. The purpose of the pre-application conference is for JTA to inform the Department regarding its intent to prepare and file the application, to assist JTA in causing the application to be as consistent as practicable with these and other applicable regulations, to provide JTA recommendations to inform and assist with the preparation of the application and its components, and to address any other matters deemed relevant and appropriate by the Department.

(d) *Authorization to file an application for establishment of a site-specific TOD master plan and zoning overlay.* Following the pre-application conference, a written application for the establishment of a site-specific TOD master plan and zoning overlay shall be prepared by JTA and submitted to the Department prior to filing. The Department shall verify that the application is complete and sufficient for review, including any specific requirements from the pre-application conference. The Department shall notify the JTA in writing regarding its sufficiency determination. If the application is determined to be insufficient, JTA may revise and resubmit the same to the Department for a further sufficiency determination. Upon the determination by the Department that the application is sufficient, JTA may formally file the same with the Department through such process or portal as the Department may direct.

(e) *Application for Establishment of a Site-Specific TOD Master Plan and Zoning Overlay.* The application shall identify the name of the TOD and be accompanied by the following, in sufficient copies as deemed necessary by the Department for referrals and recommendations:

(1) The TOD master plan and zoning overlay as finalized during the charette process;

(2) The executive summary or similar document required under Section 656.1406(e);

(3) A description of the land within the proposed TOD sufficiently detailed for physically locating the same;

(4) A map of suitable scale depicting and labeling each parcel within the proposed TOD, together with a table identifying the owner(s) of each parcel and the mailing address(es) thereof on the latest ad valorem tax roll;

(5) A list of the dates, times and locations of each charette;

(6) The minutes or written summaries for each charette;

(7) A specimen copy of the notice of each charette and the certificate of mailing thereof;

(8) Proof of the publication of the notice of each charette;

(9) All data and analysis used in the development of the TOD master plan and zoning overlay; and

(10) Such other information or documentation as may reasonably be approved or required by the Department.

(f) *Processing of an application.* An application for the establishment of a site-specific TOD master plan and zoning overlay shall proceed in general as other applications for rezoning.

(Ord. 2022-526-E , § 1)

Sec. 656.1408. Approved status.

Upon City Council approval of a TOD master plan and its corresponding zoning overlay, the zoning classifications of the land within the TOD shall be as depicted and described in the TOD zoning overlay.

(Ord. 2022-526-E , § 1)

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Sec. 656.1409. Zoning amendments within a TOD.

(a) *Applications and Recommendations.* Applications filed by individual property owners, or JTA, to amend or modify the adopted TOD zoning overlay or overlay provisions, to add land to the TOD zoning overlay, and/or to remove land from the TOD zoning overlay, shall be processed in accordance with Section 656.121, *Ordinance Code.* Applications and additional documents subsequently filed by the applicant with the Department shall be provided to JTA for review and comment regarding consistency of the application with the TOD master plan and TOD zoning overlay. A copy of the Department recommendation report shall be provided to JTA.

(b) *Additional Criteria.* In addition to the criteria set forth in Section 656.125, Ordinance Code, an applicant for a proposed zoning request has the burden of proving by substantial, competent evidence that the proposed application is consistent with the following criteria:

(1) Whether the proposed request is consistent with the TOD development standards set forth in Section 656.1405, Ordinance Code; and

(2) Whether the proposed request furthers the vision, goals, and elements of the designated TOD master plan and zoning overlay.

Approval of the proposed zoning request shall be accomplished by an appropriate amendment to the TOD master plan or TOD zoning overlay, or both.

(Ord. 2022-526-E , § 1)

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Customer and Amenities Information

JTA Ticket Vending Machine (TVM) Locations		
Cash & Credit/ Cash	**TVM Number**	**Address**
Cash & Credit	*Rosa Parks - TVM #401*	Rosa Parks Transit Station W State St, Jacksonville, FL 32202
Cash & Credit	*Rosa Parks - TVM #402 (Not Active)*	Rosa Parks Transit Station W State St, Jacksonville, FL 32202
Cash & Credit	*Rosa Parks - TVM #403*	Rosa Parks Transit Station W State St, Jacksonville, FL 32202
Cash & Credit	*JRTC - TVM #101*	100 LaVilla Center Drive Jacksonville Fl 32204
Cash & Credit	*JRTC - TVM #102*	100 LaVilla Center Drive Jacksonville Fl 32204
Cash & Credit	*JRTC - TVM #103*	100 LaVilla Center Drive Jacksonville Fl 32204
Cash & Credit	*JRTC - TVM #104*	100 LaVilla Center Drive Jacksonville Fl 32204
Cash & Credit	*JRTC - TVM #105*	100 LaVilla Center Drive Jacksonville Fl 32204
Cash & Credit	*Hemming Plaza - TVM #106*	Hemming Plaza Station N Hogan St, Jacksonville, FL 32202
Cash & Credit	*Central - TVM #107*	Central Station W Bay St, Jacksonville, FL 32202
Cash & Credit	*Kings Ave - TVM #108*	1003 Kings Ave, Jacksonville, FL 32207
Cash & Credit	*Gateway Hub - TVM #109*	5000 Norwood Ave, Jacksonville, FL 32208
Cash & Credit	*Gateway Hub - TVM #110*	5000 Norwood Ave, Jacksonville, FL 32208
Cash & Credit	*Regency Hub - TVM #111*	9501 Arlington Exwy, Jacksonville, FL 32225
Cash & Credit	*Regency Hub - TVM #112*	9501 Arlington Exwy, Jacksonville, FL 32225

JTA Ticket Vending Machine (TVM) Locations		
Cash & Credit/ Cash	**TVM Number**	**Address**
Cash & Credit	*Pearl & Water St. - TVM #113*	2 South Pearl St, Jacksonville, FL 32202
Credit Only	*Bay & Jefferson WB - TVM #201*	1101 West Bay St, Jacksonville, FL 32204
Credit Only	*Forsyth St. & Madison - TVM #202*	700 West Forsyth St, Jacksonville, FL 32204
Credit Only	*LaVilla & Jefferson - TVM #203*	600 N Jefferson St, Jacksonville, FL 32202
Credit Only	*Courthouse & Jefferson - TVM #204*	200 North Jefferson St, Jacksonville, FL 32202
Credit Only	*Courthouse & Broad - TVM #205*	201 Broad St, Jacksonville, FL 32202
Credit Only	*Museum Circle EB - TVM #220*	1000 Gulf Life Dr, Jacksonville, FL 32207
Credit Only	*MOSH - TVM #221*	1025 Museum Circle, Jacksonville, FL 32207
Credit Only	*Riverplace - TVM #222*	1200 Riverplace Blvd, Jacksonville, FL 32207
Credit Only	*Riverplace - TVM #223*	1300 Riverplace Blvd, Jacksonville, FL 32207
Credit Only	*Armsdale Outside - TVM #224*	3191 Armsdale Rd. Jacksonville, FL 32218
Cash & Credit	*Soutel - TVM# 301*	5133 Soutel Dr, Jacksonville, FL 32204
Cash & Credit	*Avenues Walk - TVM# 302*	10508 Avenues Walk Blvd., Jacksonville FL 32258
Cash & Credit	*Avenues Walk (Inside) - TVM# 303*	10508 Avenues Walk Blvd., Jacksonville FL 32258
Cashier	*JRTC 1st floor Secured Room 114*	100 LaVilla Center Drive Jacksonville Fl 32204

N

Customer Code of Conduct

Customer Code of Conduct

JTA Rule No. 009

I. PURPOSE AND SCOPE

This Code of Conduct for the Jacksonville Transportation Authority (JTA) helps you to acquaint yourself with our current standards of conduct and behavior that is applicable to all JTA transit services and/or facilities for your safety, security and comfort. The following rules are designed to preserve our customers' right to free speech, while simultaneously ensuring the safety and comfort of all customers, operators and the public at large. The Code of Conduct applies to all modes and means of JTA transportation, including but not limited to the following:

- Transit buses, community shuttles, Paratransit service, and Skyway
- Charter service/special services vehicles
- Park and ride lots
- Transit shelters and all other customer facilities

II. RULES OF TRANSIT

All customers are required to understand this "Code of Conduct for Transit Customers" to ensure that all JTA customers enjoy a comfortable ride on the JTA.

1. Please think of others and follow our no eating, drinking or smoking policy on-board any JTA vehicle.
2. Please do not open containers of food or drink. Not only are they not allowed on the JTA, this rule also help us to keep our vehicles clean and comfortable.
3. We are very protective of our customers, including you, so please don't use physical violence, profanity, intimidation, and/or harass other passengers or the operator. All of these actions are prohibited by JTA.
4. Possession or consumption of illegal drugs is not allowed by law.
5. To assure the safety of you, our operator and our customers, please remain behind the yellow line and minimize conversation with the operator.
6. Please remain seated and/or secure yourself until the vehicle comes to a complete stop.
7. Panhandling, sales, or solicitation is prohibited on-board a JTA vehicle. The distribution of printed materials at JTA public facilities should not interfere with bus operations.
8. The use of sound-generating electronic devices – like cell phones or portable disc players can only be used on our buses if you are using earphones. Conversations and other noises should be kept at a level that does not disturb other passengers or the operator.

9. Weapons, except those lawfully owned and possessed pursuant to Florida Statute, and flammable materials are prohibited on JTA vehicles, transit shelters, and other JTA customer facilities.
10. 1All objects, such as strollers, should be folded prior to boarding and cannot block the aisle or stairway.
11. Appropriate clothing (shirt and shoes) is required to board the bus.
12. Operating or tampering with any JTA equipment is dangerous and prohibited.
13. Children under six years of age must be accompanied by an adult or guardian 13 years of age or older. JTA employees are not allowed to accept responsibility for unaccompanied minors.
14. All animals are prohibited unless used as a service animal.
15. Vandalism or graffiti of JTA vehicles or property is illegal and therefore prohibited.

III. CUSTOMER COURTESY

- Please have the correct fare ready when boarding.
- Please occupy only one seat and make room for other passengers.
- Please exit at the rear door to make room for the flow of incoming passengers.
- Please consider offering your seat to the elderly or disabled passengers when possible.
- Please keep conversations and other noises to a minimum for the comfort of all JTA customers.
- Please allow customers in wheelchairs to board the bus first.
- Please reserve front seats for customers with disabilities.

IV. PENALTIES

Persons who violate the Code of Conduct are subject to penalties, up to and including suspension of services. A range of penalties may be used to address non-compliance with the Code of Conduct. Non-compliance with the Code of Conduct may include one or any combination of the following:

1. Verbal warning by transit operator or JTA supervisor to correct a customer's non-compliance with JTA rules.
2. Offensive conduct on the part of a JTA customer may require their removal from the transit vehicle. If a passenger is removed from a transit vehicle, the passenger is suspended from riding privileges on any JTA vehicle and from use of any JTA transit shelter or passenger facility for the remainder of the day. When a passenger is in violation of the Code of Conduct and is asked to leave a JTA vehicle, their fare is forfeited. If a suspended passenger is seen on another JTA vehicle or at a JTA transit shelter or other passenger facility during the suspension period, the passenger will be considered trespassed and law enforcement will be contacted.

O

Public Communication & Notification Examples

JTAMobilityWorks

SMART
SAFE
SUSTAINABLE CHOICES

XXXXXX, 2022

Dear Resident/Property Owner:

The Jacksonville Transportation Authority (JTA) continues to make great progress on our Alta Drive JTAMobilityWorks Project. As construction continues, we will update you on any significant changes to your daily drive along the route.

From **Friday, March 25, 2022, through Sunday, March 27, 2022**, our crews will enter a new phase of construction at the Port of Jacksonville Parkway and Alta Drive intersection. This work requires the detour of traffic from Port of Jacksonville Parkway:

- All Alta Drive northbound traffic will be detoured to New Berlin Road.
- All Alta Drive southbound traffic will be detoured to Faye Road

Traffic through the Port of Jacksonville Parkway and Alta Drive intersection will be re-opened Monday, March 28, 2022.

Although there is a potential that night work will be required, during construction, the JTA will not close driveways. We will maintain access to and from your property at all times. Any driveways impacted from our work will have complete access restored by 5 p.m. each day.

My role is to serve as your point of contact. If you have questions or concerns related to the project, please do not hesitate to contact me at (904) 632-5233 or at mobilityworks@jtafla.com. I will work diligently to address your concerns as efficiently as possible.

The JTA apologizes for any inconvenience this project may cause as we improve this section of Alta Drive. Your patience is greatly appreciated. To learn more about the Alta Drive Improvements project visit us online at mobilityworks.jtafla.com.

Sincerely,

Community Relations Manager
Jacksonville Transportation Authority
100 LaVilla Center Drive
Jacksonville, FL 32204
Office: (904) 632-5297
mobilityworks@jtafla.com

Jacksonville Transportation Authority
100 LaVilla Center Drive
Jacksonville FL, 32204



Contact

Stay connected with us

PHONE: (904) 630-3181

ADDRESS: 100 N Myrtle Ave, Jacksonville, FL 32204

- ☐ Sign Up
- ☐ Comment

Sign-Up for Project Notifications

To receive notifications and updates about project changes, please choose at least one project and enter your name and email.

SELECT PROJECT(S)

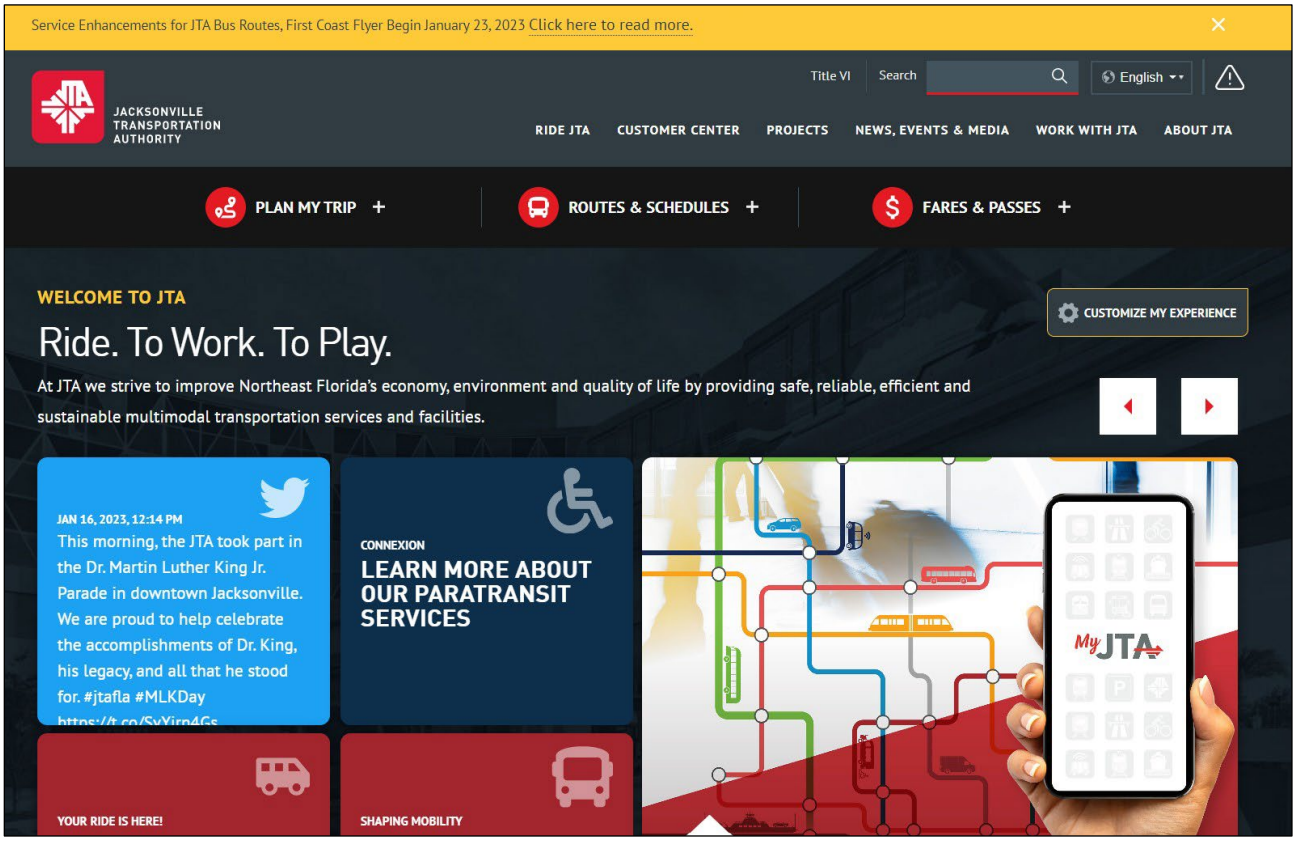
- ☐ McDuff Avenue - 5th Street (Phase III)
- ☐ San Pablo Road (Beach Boulevard to Atlantic Boulevard)
- ☐ Moncrief-Myrtle-8th Street Corridor
- ☐ Normandy Boulevard-Cassat Avenue-Lenox Avenue Corridor
- ☐ Parramore Road Extension (Parramore Road to Youngerman Circle)
- ☐ Southside and Atlantic Boulevard Intersection
- ☐ Tinseltown Intersections
- ☐ Alta Drive (South of Faye Road North to Burkit Lane)

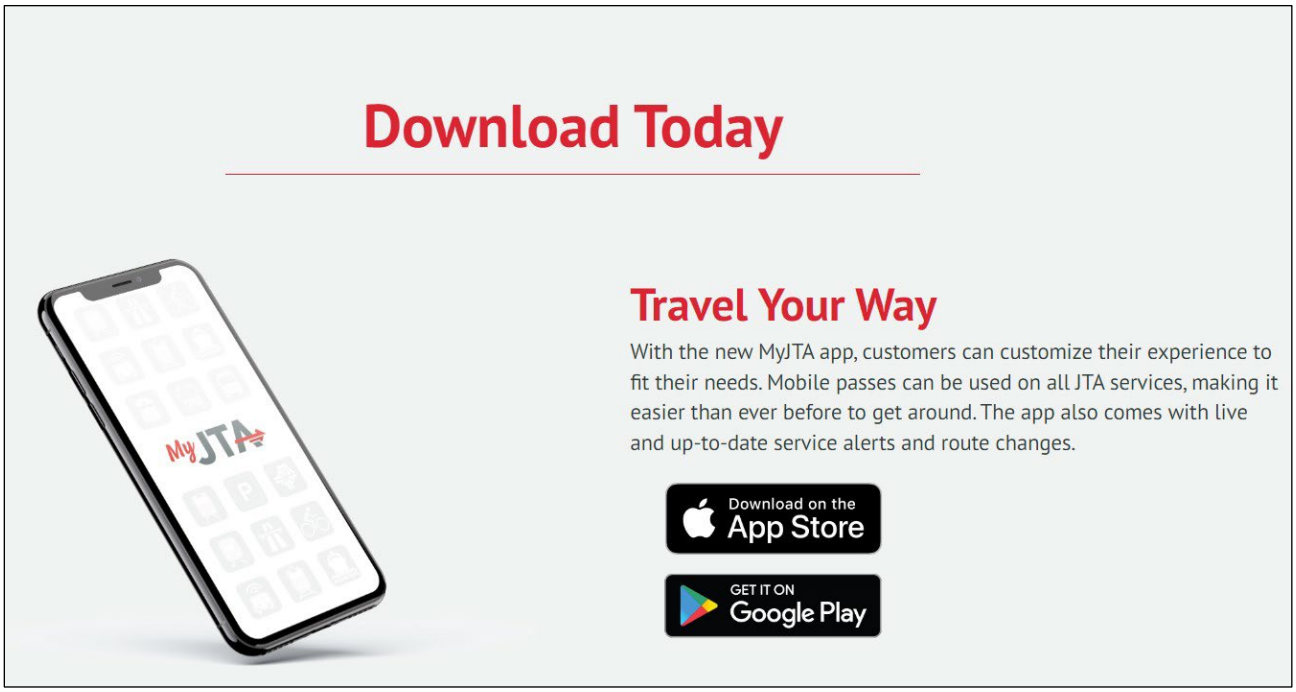
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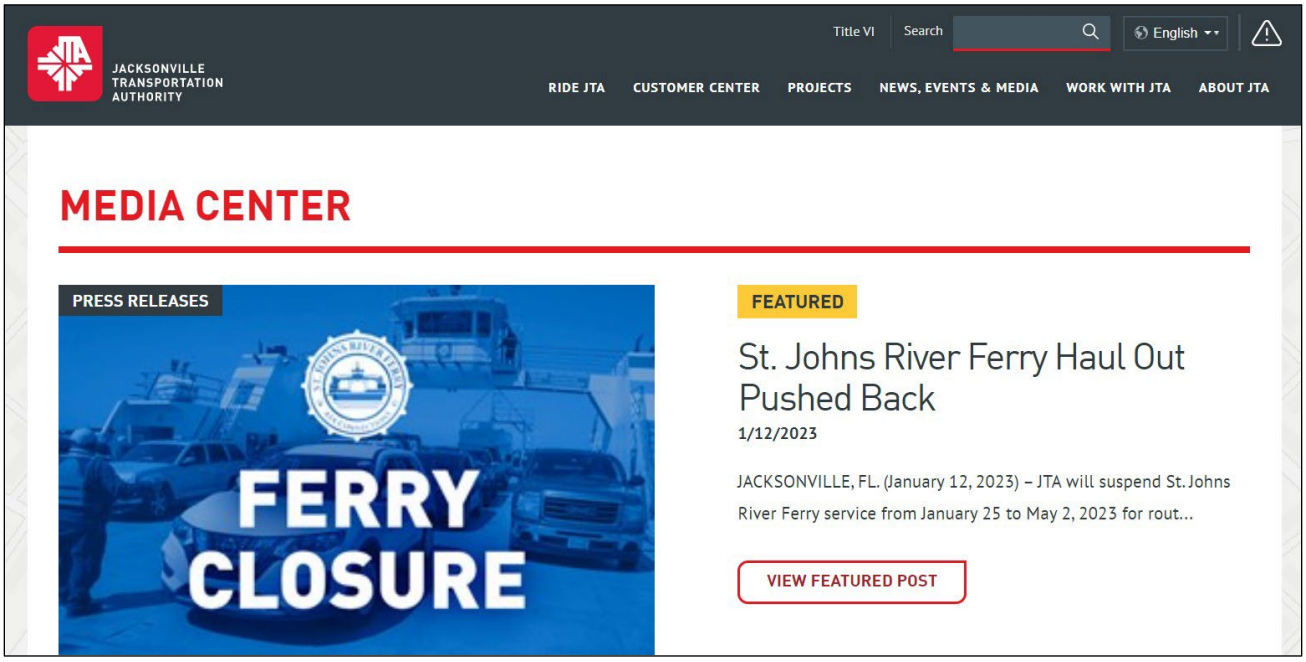
Last name*

Email*

Submit


Service Enhancements for JTA Bus Routes, First Coast Flyer Begin January 23, 2023 Click here to read more.
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CUSTOMER CENTER
PROJECTS
NEWS, EVENTS & MEDIA
WORK WITH JTA
ABOUT JTA
PLAN MY TRIP +
ROUTES & SCHEDULES +
FARES & PASSES +
WELCOME TO JTA
Ride. To Work. To Play.
CUSTOMIZE MY EXPERIENCE
At JTA we strive to improve Northeast Florida's economy, environment and quality of life by providing safe, reliable, efficient and sustainable multimodal transportation services and facilities.
JAN 16, 2023, 12:14 PM
This morning, the JTA took part in the Dr. Martin Luther King Jr. Parade in downtown Jacksonville. We are proud to help celebrate the accomplishments of Dr. King, his legacy, and all that he stood for. #jtafla #MLKDay
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1/12/2023
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JTA Making Moves
JTA Making Moves: November 2022
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MAKING MOVES

P

Best Practices Research

The following is a summary of best practices research for transit stop layout and placement by the American Public Transportation Association (APTA), the Federal Transit Administration (FTA), transit agencies, and transportation associations. A summary of links and resources is provided at the end of the narrative.

Overview of Best Practices

While each transit agency and jurisdiction have their own guidelines and standards for bus stop design and placement, and laws and regulations pertaining to micro-mobility options, there are several best practices that are agreed upon.

First, the spacing, placement, and design of bus stops affect bus operations and patron satisfaction. Better bus stops (i.e., better amenities) and better experiences walking and biking to bus stops encourage ridership and improve the user experience.

Bus stops should be universally designed and accessible by everyone to the greatest extent possible. Transit providers should also incorporate safeguards to protect both drivers and patrons.

Coordination and communication with partners is key to success. Transit agencies alone cannot create a successful transit system. Local jurisdictions play a role in funding and building bicycle and pedestrian infrastructure and bus stops/bus stop amenities. They also establish development regulations that require developers to support the existing and planned bus network. Partnerships with micromobility and rideshare providers ensure necessary first-mile/last-mile connections.

Collecting and analyzing data on the condition of bus stops, bus stop amenities, ridership, injury data, etc. is critical to ensuring successful design and placement. A mix of qualitative and quantitative data should be used.

Post Pandemic Trends

While no direct correlation has been found between public transit and the transmission of COVID-19, transit agencies are implementing several safeguards to protect riders and drivers. While some safeguards like protective barriers for operators, smartphone-based fare collection, and regulations like mask requirements apply more on buses themselves, some changes to the layout, placement, and design of bus stops have also been introduced in response to COVID-19.

Transit agencies are giving more thought to bus stop design in an attempt to strike a balance between protecting people from the elements (rain, wind, sun) and improving ventilation and/or filtration. Additional features, like physical distancing markers and hand sanitizer stations, have been added at bus stops. Many transit agencies also sanitize their bus stops daily and frequently disinfect high-touch surfaces. Transit agencies have also increased rider communication, including information at bus stops, to rebuild public confidence in transit.

Historically, transit agencies have been focused on siting bus stops near jobs and concentrating services at peak hours to align with office schedules. There is now a greater emphasis on siting bus stops in proximity to where frontline workers live and work as well as near essential services and

grocery stores. Transit agencies are also spreading out service throughout the day to better align with service industry schedules.

Transit agencies have also started increasing frequency (running more buses), running longer routes, and limiting on-board passenger capacities to reduce crowding. Transit agencies have also improved their data technology, sharing real-time or historical data on crowding with riders.

Micro-Mobility Accommodation

Micromobility has become a popular transportation option for many users as an alternative mode for short trips and active transportation. While still a relatively new and emerging mobility option, it has proven to be a convenient and affordable way to address the first-mile/last-mile challenge of traveling to and from a bus stop. Transit agencies are now working to address challenges and unforeseen impacts associated with micro-mobility options including integrating them into the layout and placement of bus stops.

Scooter

While scooters are a viable transportation option for getting to and from the bus stop, safety concerns have led to cities and states establishing rules and laws for riding and parking. These rules vary across jurisdictions. Most cities and states prohibit riding on the sidewalks and allow scooters on the road or in designated bike lanes. As a result, it is important to have bicycle infrastructure that connects directly to desired parking areas near bus stops as well as curb ramps leading up to bus stops and safe crossings immediately adjacent to bus stops.

Scooters are dockless and the majority of jurisdictions do not have designated parking spaces for them. Those riding scooters must understand local rules pertaining to where and how to park them. Some jurisdictions allow riders to park scooters on the sidewalk close to the street in areas that do not clutter sidewalks or impede access for pedestrians or people with disabilities or bus loading zones. Scooters must be parked in an upright position away from street corners or intersections, building façades, fire hydrants, and bus stop amenities. Other jurisdictions encourage riders to park the scooters at public bike racks or in public bike parking areas. For better compliance, some jurisdictions have developed designated scooter hubs and use signage to alert people to available parking. Others have worked with scooter companies to restrict riding in certain areas via GPS and some companies use their apps to warn riders when they are in no parking zones. To be effective as a first-mile/last-mile option, parking must be convenient to bus stops (visible from the bus stop is preferred).

In order to prevent states and cities from outlawing scooters, most scooter companies have developed products and dashboards for transportation authorities to track and analyze scooters, along with other micro-mobility vehicles across platforms to see where they all are located, where the broken ones are, and where usage is concentrated at any given time. Some companies are partnering with rideshare companies and some rideshare companies are adding micro-mobility options so that consumers can open one app and compare ride times and costs and book all from one app.

Cities are also focused on making sure scooters are an option for all incomes and abilities. Some cities have launched adaptive scooter pilot programs to make shared micromobility more accessible to people with disabilities. They have introduced incentive programs and undertaken equity-focused

outreach. Many cities require vendors to offer income-eligible reduced-fare plans, materials translated into other languages, and require vendors to deploy a certain number of devices in low-income and minority neighborhoods.

Most local transit authorities prohibit scooters on public transit.

Bicycle

Like scooters, bicycles are another micromobility option that can address the first-mile/last-mile challenge of traveling to and from a bus stop.

As with scooters, bicycle parking must be convenient and is most successful when it is visible from a bus stop in full view of sidewalks and pedestrian paths. Ideally, bike parking is directly adjacent to bus waiting areas within 50 feet of a bus stop. Bike parking should also be near the paths cyclists are most likely to travel. It should be connected to bike lanes and other bicycle infrastructure and accessible by a bike.

For most bike and e-bike rentals, cities have designated stations with secured docks managed by private companies where riders pick up and drop off bikes. However, there are also many people who ride a personal bike. While most transit providers have bike racks on buses so riders can take their bike with them, many cyclists need a place to park their bikes when they arrive at their destination. Many cities provide a range of bicycle parking that provides both short-term and long-term options including bike racks, corrals, and secure parking areas (lockers, cages). The best bicycle parking areas are secure, well-lit, in populated areas, and protected from the weather. Additionally, signage should direct cyclists to parking and denote parking areas. Bike parking should complement other furniture at bus stops when possible.

Ideally, there is a clear zone around the bicycle parking to avoid impeding traffic (including near transit vehicle doors), on adjacent sidewalks, and through long-term storage facilities. When using bicycle racks, design is important. Bicycle racks should have at least two points of contact with the bike frame. Some preferred rack styles include Inverted U, Post & Ring, and Wheelwell-Secure. If multiple bicycle racks are installed, they should be placed at least three feet apart to allow convenient, uncluttered access. Many cities monitor bicycle parking areas to ensure the number of spaces matches the number of users and that wrongly placed and abandoned bicycles are removed. Some cities have added surveillance cameras and controlled door access in long-term parking areas to improve security.

Some transit agencies have partnered with bike share services so riders can identify the availability of bikes or docking stations near bus stops.

Access/Connectivity to Multimodal Network

Creating a community that supports public transportation starts by making a walkable and bikeable community. Jurisdictions with strong public transportation require and provide sidewalks on both sides of roadways with existing or planned transit routes and ensure sidewalks are in good repair. They make sure there is an attractive and safe environment for walking by adding landscaping,

buffered planting strips, street trees for shade, lighting, and streetscape enhancements. Routes to transit stops are safe, convenient, and direct.

Jurisdictions with strong public transportation also provide and promote both on-road and off-road bicycle facilities that connect to transit routes. This includes curb ramps and safe crossing opportunities in proximity to bus stops.

Amenities

The type, number, and design of amenities vary at bus stops based on a number of factors including boarding count, whether the stop is utilized by people with special needs, wait times, exposure to elements, and citizen requests. The optimum location and design of the amenities should permit 360-degree visibility in and around the bus stop at all times.

Some common amenities at bus stops include signage, landing pads, shelters, benches/leaning rails, trash receptacles, lighting, and bicycle/scooter parking. Some jurisdictions are adding more innovative amenities related to technology and sustainability. Ideally, bus stops are also located in areas where sidewalks and crosswalks are present.

Bus Stop Sign

The bus stop sign is the single most important element of a bus stop, and it must be placed at every single stop in the network. The sign marks the area where passengers should stand while waiting to board a bus, provides passengers with essential information about the routes serving a stop, and serves as a guide for the operator of where to stop. Ideally, bus stop signage is mounted on its own pole at an angle perpendicular to the street. The sign should not be obstructed by trees, bushes, or other objects and should be at least 7 feet and no more than 10 feet from the ground. The sign should be located far enough from the curb to prevent being struck by the bus mirrors, but close enough to be easily visible to the bus driver (typically between 2-4 feet from the curb).

Landing Pad

Landing pads are often incorporated in both pullout and curbside bus stop designs. While not all bus stops have landing pads, they are typically made of concrete and generally found at stops with frequent service, significant ridership, or where heavy bus braking and acceleration are necessary. The minimum size for a landing pad is 5 feet wide by 8 feet long, with the 5 feet edge parallel to the curb and the 8 feet edge perpendicular to the curb.

The landing pad should remain clear of obstructions, including other bus stop amenities. It should connect to the curb as well as a paved sidewalk with a curb cut at the corner nearest the bus stop with a matching curb cut on at least one adjacent corner. The landing pad should be sloped (parallel to the roadway) the same as the roadway, to the maximum extent practicable. Perpendicular to the roadway, the slope of the landing pad should not be steeper than 1:48 to ensure wheelchairs can access the landing pad from the roadway.

Shelter

The size of a bus shelter depends on an area's climate as well as the number of people who are expected to use it, but all shelters must have a 36" wide x 48" deep floor space for persons in wheelchairs. The long side of the shelter should be parallel to the sidewalk to minimize interference with pedestrian traffic. The side of the shelter facing the street should be open to allow passengers to board and exit the bus easily. If side panels are used, the shelter should provide more than one exit. Elements such as kiosks or maps should be located "downstream" of the shelter so as to not obstruct the view of oncoming buses. There should be a minimum clearance of 3 feet between the shelter and the curb face.

The shelter should be placed between the front and rear wheelchair boarding areas, 6 feet-24 feet from a bus stop sign.

The best materials and finishes for a shelter vary for different areas, but shelters should be vandal-resistant and graffiti-resistant and be well-maintained and managed.

Benches/Leaning Rails

Benches should have back support, armrests, a seat height of 17 inches – 19 inches above the ground and be at least 43 inches long and 20 inches-24 inches wide. They should be placed on the back side of the sidewalk outside of the front door and rear door wheelchair boarding areas so as not to create barriers to accessible bus boarding or sidewalk usage. Benches should face the street and be located 6 feet to 9 feet from the bus stop sign. They should be anchored to prevent unauthorized movement but constructed for easy relocation to allow for bus route changes, street improvement projects, etc.

At stops with high boardings, leaning rails are sometimes used to provide opportunities for rest as they take up less space than benches. Leaning rails should be 30 inches – 38 inches above the ground. They can be used to channelize pedestrian movements to and from boarding areas when placed at the back of the boarding area.

Trash Receptacles

Trash receptacles should be installed in shaded areas, not attached to the pole sign, 3 feet – 4 feet from a bench or shelter, and outside of boarding areas. For ease of collection, trash containers should be located 1' to 2' from the back of the curb. The size of the receptacle and its opening vary depending on the situation but should be at least 10 inches wide to accommodate a folder newspaper or takeout food container and not more than 36 inches above the ground so that it can be used by the handicapped. People should not have to touch the waste receptacle or push open a door in order to use it. Jurisdictions should use color or signage so that the receptacle stands out and people know it's there. Some jurisdictions are also replacing standard trash receptacles with blast-resistant receptacles in high-traffic areas in response to terror attacks in recent years.

Lighting

Lighting improves the safety and security of those at bus stops and shelters and is also used to light bus schedules, routes, and other important information. Bus stops that are served after dark should

be located where they will be illuminated at night, preferably from an overhead streetlight. Stops should be located within 30 feet of an overhead light source and maximize existing lighting whenever possible.

If this is not possible, then lighting should be installed at the stop and in the shelter if one is present. Illumination standards are often a policy of the local jurisdiction that installs and maintains street lighting. APTA recommends multiple lights rather than single fittings to provide consistent lighting levels and to reduce the contrast between shadow and light, placing lighting where it will not be blocked by mature vegetation, avoiding placement of unshielded lighting at eye level, and installing lighting at height levels that resist vandalism. Lighting can be hard-wired or solar-powered.

Other

Some transit providers and jurisdictions are adding digital signs and/or ads at bus stops, providing commuters with engaging and informative content (oftentimes in real-time) or an opportunity to view and consume advertising content. Some are also incorporating Wi-Fi and charging stations or adding public art and enhanced design elements to improve the experience while waiting for the bus.

Lastly, many transit providers and jurisdictions are making their bus stops more sustainable or eco-friendly by using recycled materials, adding green roofs, or harvesting rainwater.

Portability and Reuse of Amenities

Transit agencies are constantly reevaluating bus stop spacing and locations and stops are added, moved, and removed to improve access, increase convenience, and enhance safety. While amenities need to be anchored to prevent unauthorized movement, they should be durable and constructed for easy relocation.

Scalability and Flexibility

The placement, number, design, and amenities of bus stops vary based on many factors, including density, land use, trip generators, ridership demand, service type, transfer points, accessibility, and safety.

Generally, the more urban and pedestrian-oriented an area is the greater density of stops needed. Typically stops in central business districts are the closest together, followed by urban areas, then suburban areas, and then rural areas.

Bus stops are either located at the near side of an intersection, the far side of an intersection, or at mid-block. In general, far-side stops are preferable, but there are advantages and disadvantages to each location. Each transit agency and jurisdiction should discuss and review available guidance when determining the proper bus stop location for a given site context.

In addition to where to locate the stop, there are also various design configurations that also each have advantages and disadvantages. Factors to consider include cost, passenger safety, and ease of access for the bus driver. Each transit agency and jurisdiction should also discuss and review the advantages and disadvantages of each design configuration when preparing to develop a new stop.

Urban bus stops are more complex because they have more riders, more buses and routes, more driveways, and more modes operating within the right-of-way. Additional considerations at urban bus stops that are less relevant at more rural bus stops include merging traffic, parking, access management, and other road users.

Suburban and rural areas are less dense and more dispersed than urban areas. Getting to and from the bus stop is more challenging. Instead of sidewalks, the preferred facility is a 4-foot-wide paved shoulder. Few people will walk to the bus stop (due to distance and lack of facilities) and people will more likely rely on friends, family, or demand response service providers for a ride. While some people may bike to a rural bus stop, this distance may be greater than most people feel comfortable biking. Considerations for siting of rural bus stops include drainage ditches, topography, and the ability to access the stop after heavy rains and inclement weather. ADA accommodations will also be limited as it may not be possible to install concrete waiting areas/landing pads or pathways to the bus stop.

Post-Pandemic Best Practices and Resource Links

- Service Adjustments
  - Evaluating bus routes/adding routes and stops based on where frontline workers live and work
  - Shifting service toward service workers and low-income riders (increasing service in Low-income and minority neighborhoods)
  - Reevaluating service times – more spread out throughout the day and not as concentrated at peak hours (bringing commuting patterns more in line with the service industry and not office schedules)
  - When siting stops there is less of a focus on location of jobs and more of a focus on location of essential services (pharmacies, hospitals, etc.) and grocery stores
  - Adjusting service to meet new demand patterns and as a means to reduce crowding
  - More buses running so they aren't as full (increasing frequency)/longer routes
  - Considering the idea of bus rides by reservation (MTA)
- Health Procedures and Policies
  - For drivers
    - Barrier partitions between drivers and passengers
    - Safe area behind bus operator
    - Distribution of masks and gloves to operators
    - Require employees to wear face coverings
    - Rear entry boarding/suspension of fare payment (temporarily)
    - Requiring daily health checks
    - Vaccination incentives
  - For patrons
    - Visual clues (stickers, tape, markers) at stops
    - COVID-19 signage/decals at stops
    - Mask mandates
    - Distribution of free masks at stops and on buses
    - Limiting on-board passenger capacities (blocking off seats, skipping stops)
    - Frequent disinfection of high touch surfaces
    - Daily sanitation of bus stops/buses
    - Airflow improvements/ventilation protocols
    - Quiet service (ask passengers to refrain from talking)
- Technology Enhancements
  - Piloting of UV light disinfectant technology and other cleaning technologies
  - Air purification systems/devices
  - Tracking occupancy rates and adjusting loading as needed
  - Incorporating occupancy data into apps and websites to inform riders of real-time crowding conditions
  - Contactless fare payment systems/smartphone-based fare collecting
  - Bus shelters that scan the temperature of commuters and refuse entry to anyone with a fever (Seoul, South Korea)
- Increased/Improved Communications

  - Dedicated websites, press, public service announcements, tweets, social media posts to notify riders about service changes, rider etiquette, and agency efforts regarding cleaning and prevention
  - Promoting the relative safety of transit and mitigation measures being instituted
  - Collecting information from riders on new travel patterns and needs
  - Messaging to riders and employees to avoid public transit if exposed to COVID-19 or feeling ill
- Sources
  - https://www.apta.com/wp-content/uploads/APTA_Covid_Best_Practices_09.29.2020.pdf
  - https://www.apta.com/wp-content/uploads/COVID-19_Transit_Guide_REVISON-2020_08_11.pdf
  - https://www.apta.com/wp-content/uploads/APTA_WP_Cleaning_and_Disinfecting_Transit_Vehicles_and_Facilities_During_a_Contagious_Virus_Pandemic_FINAL_6-22-2020.pdf
  - https://www.transit.dot.gov/sites/fta.dot.gov/files/2022-01/TSO-COVID-19-Recovery-Practices-in-Transit-20220120.pdf
  - https://www.transit.dot.gov/research-innovation/public-transportation-covid-19-research-demonstration-grant-program-selected
  - https://www.pbs.org/newshour/nation/public-transit-post-pandemic
  - https://abc7ny.com/subway-future-social-distancing-reservations-coronavirus-nyc/6178657/
  - In the age of coronavirus, South Korea's new bus shelters refuse entry to anyone with a fever | CNN Travel

Micro-Mobility Accommodation & Access/Connectivity to Multimodal Network Best Practices

- Infrastructure Policies/Regulations
  - Adopt clear plans and policies to support active transportation connections to transit
  - Provide and promote both on-road and off-road bicycle facilities that connect to transit routes
  - Connect bicycle infrastructure directly to desired parking areas near bus stops
  - Require sidewalks on both sides of roadways with existing or planned transit routes
  - Ensure sidewalks on existing or planned transit routes are in good repair
  - Require marked crosswalks
  - Install curb ramps leading up to bus stops and safe crossings immediately adjacent to bus stops
- Placemaking
  - Develop public spaces on streets and near bus stops that are welcoming, safe, and fun
  - Add landscaping, buffered planting strips, street trees, lighting, and streetscape enhancements
  - Bike racks should complement other furniture and amenities at bus stops
  - Create convenient and direct routes to bus stops
- Parking
  - Ensure bicycle and scooter parking is convenient to and visible from the bus stop
  - Install signage to alert people where to park scooters and bikes
  - Designate scooter hubs
  - Ensure bicycle parking areas are secure, well-lit, in populated areas, and protected from the weather
  - Establish a clear zone around bicycle parking
  - Place bicycle parking near the paths cyclists are most likely to travel
  - Have both short-term and long-term bicycle parking available near bus stops (bike racks, corrals, lockers, cages)
  - Install bike racks that have at least two points of contact with the bike frame
  - If multiple bicycle racks are installed, they should be placed at least 3 feet apart to allow convenient, uncluttered access
  - Monitor bicycle parking areas to ensure the number of spaces matches the number of users and that wrongly placed and abandoned bicycles are removed
  - Add surveillance cameras and controlled door access in long-term parking areas to improve security
- Safety (note – infrastructure policies/regulations apply here as well)
  - Set service areas
  - Determine/set maximum device speeds
  - Restrict vehicle speeds or times of operation in areas with dense ridership
  - Incentivize helmet use
- Partnerships
  - Micromobility providers should collect and provide more data (on injuries, where scooters are located, where broken scooters are located, and where usage is

concentrated) to jurisdictions to better inform regulations and policies around scooters
    - Combine bus, scooter, and bike services on one app/pass to simplify booking for customers and make it easy for riders to compare ride times and costs and identify the availability of bikes or docking stations near bus stops
    - Rideshare providers are adding micromobility options to their services
    - Work with scooter companies to restrict riding in certain areas via GPS and use their apps to warn riders when they are in no parking zones or prevent riders from ending a trip until the scooter is parked in a designated area/space
    - Institute regular coordination between transit agencies, jurisdictions, MPOs, State DOTs
- Equity
    - Launch an adaptive scooter program
    - Introduce incentive programs
    - Undertake equity-focused outreach
    - Require providers to offer reduced-cost riding plans, translate materials into other languages, and deploy a certain number of devices in low-income and minority neighborhoods

- Sources
    - https://www.apta.com/research-technical-resources/mobility-innovation-hub/first-last-mile-solutions/
    - https://highways.dot.gov/public-roads/spring-2021/02
    - https://nap.nationalacademies.org/read/26386/chapter/1#v
    - https://new.mta.info/bike-micromobility-strategic-action-plan
    - https://publichealth.jhu.edu/2022/e-scooters-and-micromobility-are-potential-public-health-game-changers-for-transportation-and-equity
    - https://www.forbes.com/sites/adeyemiajao/2019/02/01/everything-you-want-to-know-about-scooters-and-micro-mobility/?sh=654c49065de6
    - https://freemotionshop.com/e-scooter-rules-of-the-road/#:~:text=E-scooters%20must%20always%20be%20parked%20in%20an%20upright,handicap%20ramps%20or%20parked%20in%20automobile%20parking%20areas
    - https://seattle.gov/documents/departments/sdot/newmobilityprogram/scootershare_pilot_report_final.pdf#:~:text=Equity%3AScooter%20vendors%20met%20the%20goal%20of%20deploying%20at,14%25%20of%20respondents%20reported%20incomes%20below%20%2425%2C000%20annually
    - https://www.smartcitiesdive.com/news/minneapolis-pilots-mobility-hubs/564026/
    - https://www.cityoftacoma.org/government/city_departments/public_works/mobility_options/micromobility
    - https://kingcounty.gov/depts/transportation/metro/travel-options/bike/parking.aspx
    - https://nacto.org/publication/transit-street-design-guide/station-stop-elements/stop-elements/bike-parking/
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    - https://www.transit.dot.gov/research-innovation/mobility-demand-mod-sandbox-program#:~:text=The%20goals%20of%20FTA%E2%80%99s%20MOD%20Sandbox

%20Program%20are,of%20transit%20through%20enabling%20technologies%20and%20innovative%20partnerships

- https://sdg.minneapolismn.gov/design-guidance/boulevards-and-furnishings/bicycle-and-micro-mobility-parking
- https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/64496/ftareportno0111.pdf
- https://www.transportation.gov/mission/health/Multimodal-Access-to-Public-Transportation
- https://www.changelabsolutions.org/sites/default/files/MoveThisWay_FINAL-20130905.pdf
- https://trimet.org/pdfs/publications/pedestrian-study-fact-sheet.pdf

Amenities Best Practices

- Overall
  - Locate and design amenities in such a way as to permit 360-degree visibility in and around the bus stop at all times
- Bus Stop Sign (basic amenity)
  - Mounted on its own pole, perpendicular to the street, between 7-10 ft from ground
  - Clear of obstructions from trees, bushes, and other objects
  - Located far enough from the curb to prevent being struck by the bus mirrors, but close enough to be easily visible to the bus driver (typically between 2-4 feet from the curb)
  - Many providers moving to digital signage for easier and more timely service updates
- Landing Pad (enhanced)
  - Made of concrete
  - 5 feet x 8 feet min
  - Clear of obstructions
  - Connect to curb and paved sidewalk, with a curb cut at the corner nearest the bus stop with a matching curb cut on at least one adjacent corner
  - Sloped (parallel to the roadway) the same as the roadway
  - Perpendicular to the roadway, the slope of the landing pad should not be steeper than 1:48
- Shelter (enhanced)
  - Min 36 inches wide x 48 inches deep floor space for persons in wheelchairs
  - Long side of the shelter should be parallel to the sidewalk to minimize interference with pedestrian traffic
  - The side of the shelter facing the street should be open to allow passengers to board and exit the bus easily
  - If side panels are used, the shelter should provide more than one exit
  - Elements such as kiosks or maps should be located “down-stream” of the shelter so as to not obstruct the view of oncoming buses
  - Provide a minimum clearance of 3 feet between the shelter and the curb face
  - Locate between the front and rear wheelchair boarding areas, 6 feet-24 feet from bus stop sign
  - Use vandal-resistant and graffiti-resistant materials
  - Manage and maintain regularly
- Bench (enhanced)
  - Choose benches with back support and arm rests
  - Benches should be 17 inches – 19 inches above the ground and at least 43 inches long and 20 inches-24 inches wide
  - Place the bench on the back side of the sidewalk outside of the front door and rear door wheelchair boarding areas and 6 ft – 9 ft from the bus stop sign
  - Benches should face the street
  - Benches should be anchored to prevent unauthorized movement but constructed for easy relocation to allow for bus route changes, street improvement projects, etc.
- Trash receptable (enhanced)
  - Installed in shaded areas

  - Do not attach to bus stop sign
  - Place 3 feet – 4 feet from a bench or shelter
  - Place outside of wheelchair boarding areas
  - Opening should be at least 10 inches wide and no more than 36 inches above the ground
  - People should not have to touch the waste receptacle or push open a door in order to use it
  - Use color or signage so that the receptable stands out and people know it's there
  - In high traffic areas, consider replacing standard trash receptables with blast-resistant receptacles in response to terror attacks in recent years
- Lighting (enhanced)
  - Bus stops that are served after dark should be located where they will be illuminated at night, preferably from an overhead streetlight
  - Stops should be located within 30 feet of an overhead light source and maximize existing lighting whenever possible
  - If existing lighting is not available, lighting should be installed at the stop and shelter (if there is one)
  - Use multiple lights rather than single fittings to provide consistent lighting levels and to reduce contrast between shadow and light
  - Place lighting where it will not be blocked by mature vegetation
  - Avoid placement of unshielded lighting at eye level
  - Install lighting at height levels that resist vandalism
  - Consider solar lighting (environmental benefits, does not require a utility connection, easy and less expensive to install)
- Other Enhanced Amenities
  - Digital signs/ads
  - Charging ports
  - Wi-Fi
  - Public art/enhanced design elements
  - Sustainable/eco-friendly elements (recycled materials, green roofs, solar lighting, rainwater collection)
- Sources
  - https://www.apta.com/wp-content/uploads/Standards_Documents/APTA-SS-SIS-RP-008-10.pdf#:~:text=APTA%20Transit%20Infrastructure%20Security%20Working%20Group%20Bus%20Stop,considering%20the%20design%20and%20placement%20of%20bus%20stops
  - https://www.apta.com/wp-content/uploads/200304_Modernizing-Transit-Stops_v13.pdf
  - https://www.apta.com/wp-content/uploads/APTA-BTS-BRT-RP-002-10_Rev1.pdf
  - https://nacto.org/docs/usdg/bus_stop_guidelines_trimet.pdf
  - https://nacto.org/docs/usdg/bus_stop_safety_design_guidelines_kimley.pdf
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- https://transitforwardri.com/pdf/Strategy%20Paper%2017%20Better%20Bus%20Stops%20190709%20FINAL.pdf
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- https://laist.com/news/fancy-bus-stops
- https://nextcity.org/urbanist-news/public-art-bus-stops-photos
- https://greendiary.com/7-bus-stops-that-revel-in-sustainable-design.html
- https://builderbaron.com/bus-stop-features/

Scalability and Flexibility Best Practices

- Community Context
  - Reflect on different environments (rural, suburban, urban) when designing a bus stop, its configuration, and its amenities
  - Consider different challenges in different environments
    - Urban stops have more riders, more buses operating, more routes, more driveways to contend with, and more modes operating
    - Considerations in urban areas include number of travel lanes, speed, parking access management, multi-modal considerations
    - Meeting ADA accessibility regulations more challenging in rural areas
    - Other more common challenges in rural areas are lack of infrastructure, greater distances to travel, drainage
- Spacing
  - Balance convenience and speed
  - Fewer stops generally equal faster service
  - Place bus stops closer together in more urban, pedestrian-oriented areas
  - When deciding the distance between stops, consider several factors including roadway type, land use, ridership patterns, demographics, public input, and speed
  - Whenever possible, bus stop locations should be paired
  - At locations where transfer activity between routes is heavy, bus stops for the intersecting routes should be located as close to each other as possible in order to shorten travel for passengers transferring between routes
- Placement
  - Near side, far side, mid-block

  - Advantages and disadvantages to all options
  - Far side stop typically preferred at signalized intersections
  - Nearside stop typically preferred at uncontrolled intersections and intersections with stop signs
  - Mid-block stops are used sparingly, typically when block lengths are long
- Types and Configurations
  - Should be based on transit typology, vehicle dimension, capacity, ridership, and frequency
  - Consider the local context and advantages and disadvantages of different stop configurations for different stop types

Scalability and Flexibility Sources

- https://www.transit.dot.gov/research-innovation/stops-spacing-location-and-design
- https://www.apta.com/wp-content/uploads/SMW19_Bus-Stop-Spacing-and-Reliability_Jimi-Mitchell.pdf
- https://www.apta.com/wp-content/uploads/200304_Modernizing-Transit-Stops_v13.pdf
- https://www.penndot.pa.gov/Doing-Business/Transit/InformationandReports/Documents/BetterBusStops_Complete_Resource_Guide_Web.pdf
- https://planning.westchestergov.com/images/stories/pdfs/2018busstop.pdf
- https://nacto.org/docs/usdg/bus_stop_safety_design_guidelines_kimley.pdf
- http://design.omnitrans.org/wp-content/uploads/2014/03/OmnitransDesignGuidelines-05.pdf
- https://www.bcdcog.com/wp-content/uploads/2021/11/2.-Bus-Stop-Spacing-and-Placement.pdf
- https://transitcenter.org/publication/sorry-to-superb/
- https://www.apta.com/wp-content/uploads/APTA-Mobility-Innovation-Case-Studies-Final-Report-07.28.21.pdf
- https://globaldesigningcities.org/publication/global-street-design-guide/designing-streets-people/designing-transit-riders/transit-stops/stop-types/

Larger System/Agency Best Practices

Chicago Transit Authority (CTA)

- Post Pandemic
  - Extensive cleaning – buses, trains, stations cleaned multiple times a day
  - Efficient air circulation – air on buses and trains is filtered and exchanged about every minute and doors frequently open to bring in fresh air
  - Rider tools – ridership dashboards to help riders determine the least-crowded times to travel
  - Adjusting service schedules
    - Less customers traveling at peak hours; more travel during midday, evening, and weekend hours
  - On-site vaccination program/Employee protections
  - Travel Healthy Kits (THKs) – free kits that include reusable cloth mask, 2 oz bottle of hand sanitizer, healthy travel tips guide
- Service Standards and Policies
  - Siting of bus shelters managed by City of Chicago
    - The standard bus shelter requires a minimum 12'6" sidewalk width and is either 5'4"x 9' or 5'4"x 13'
    - Shelter installation is 38 inches from back of curb and must maintain a 4-foot minimum clear sidewalk.
    - Shelters must be at least 7' from adjacent light poles and 3 feet from [the edge of] all other objects
    - Typical CTA bus stops are 85 feet in length on the near side of an intersection, and up to 100 feet on the far side of an intersection
  - Signage required at every stop; other amenities (seating, trash receptables, shelters) based on number of passenger boardings
  - Key route network – in more densely populated parts of the service areas with high transit usage
    - Typically spaced one mile apart which allows for approximately a one-half mile journey to reach a route in the network
  - Bus stop spacing
    - Ideal: every 660-1,320 feet
    - Wider space of up to one-quarter mile in areas with low ridership, poor pedestrian access
    - On routes where CTA is moving a large number of customers over a long distance, stops can be spaced every half mile, or 2,640 feet.
  - Location
    - Bus stops are generally located at intersections
    - Preference is for farside stops at signalized intersections and nearside stops at uncontrolled intersections and intersections with stop signs
- Sources
  - https://www.transitchicago.com/ready/

- https://www.transitchicago.com/assets/1/6/Chicago_Transit_Authority_Service_Standards.pdf#:~:text=The%20ideal%20bus%20stop%20spacing%20on%20most%20routes,be%20spaced%20every%20half%20mile%2C%20or%202%2C640%20feet.
- https://www.chicago.gov/content/dam/city/depts/cdot/StreetandSitePlanDesignStandards407.pdf

Massachusetts Bay Transportation Authority (MBTA)

- Post Pandemic
  - Providing face coverings to riders
  - Cleaning and disinfecting buses on a daily basis
  - Buses recycle and refresh filtered air every 60 seconds and completely exchange air at least 10 times every hour
  - Upgraded air filtration in all vehicles to the maximum levels the HVAC systems allow
  - Have deployed hand sanitizer dispensers, disinfectant wipes, and cleaning sprays at MPTA facilities and stations throughout the system
  - All vehicles have protective barriers to help maintain distance between riders and operations; riders are encouraged to board at front door and exit at rear door
  - Encourage people to wear masks, stay home if sick, and clean frequently touched areas
- Service Standards and Policies
  - Have set performance metrics for service delivery, coverage, station accessibility, reliability, etc. that they measure regularly
- Complete Street Guidelines
  - All bus shelter installations must be approved by the City's Coordinated Street Furniture Program
  - Bus shelters on all key bus routes
  - When providing a bus shelter, an ADA compliant, 5' long (parallel to the curb) by 8' deep landing zone should be provided at all bus doors
  - Shelter placement must allow for unobstructed loading and unloading
  - Shelters must provide at a minimum the stop ID, route information, name of shelter's owner, telephone number for maintenance, protection from the weather, seating or leaning bars.
  - Factors for shelter installation include the amount of weekday daily boardings, Key Bus Route designation; senior, disabled, medical or social services; key municipal facilities close to the stop; community recommendations; bus route transfer points; infrequent service; poor side conditions; or if the shelter promotes adjacent development/increased ridership
- Bus Stop Planning & Design Guide
  - When deciding where to place a bus stop, take several factors into consideration including proximity to cross street, proximity to expected customer trip generators, pedestrian safety, availability of sidewalk and curb, proximity, and usage of nearby driveways
  - Have determined that 10-20% of their stops are too closely spaced; discusses the advantages and disadvantages of increasing bus stop spacing

        - Advantages: reduces parking impacts, shorter trip times, increased reliability, less potential interference with vehicular traffic
        - Disadvantages: customers have to walk further, hardship for seniors and persons with disabilities
    - Provide adequate space at bus stop for buses to maneuver around parked cars and other obstacles and re-enter traffic stream
    - Bus stop length should be sufficient to accommodate the largest bus likely to be used on the route
    - Bus stops must meet accessibility requirements
    - Recognize the role bus stop amenities have in attracting and retaining customers; discusses the factors considered when decided which amenities to install at each bus stop
- Sources
    - https://www.mbta.com/covid19/ride-safer?utm_campaign=curated-content&utm_content=Ride+Safer&utm_medium=whats-happening&utm_source=homepage&utm_term=null
    - https://d2o8eokdkim9o8.cloudfront.net/sites/default/files/2021-06/2021-service-delivery-policy.pdf
    - https://www.boston.gov/departments/transportation/boston-complete-streets
    - https://d2o8eokdkim9o8.cloudfront.net/sites/default/files/engineering/001-design-standards-and-guidelines/2018-04-01-bus-stop-planning-and-design-guide.pdf

Washington Metropolitan Area Transit Authority (WMATA)

- Post Pandemic
    - Masks were required, but became optional/encouraged in April 2022 based on federal guidance
    - Regularly monitor and update confirmed COVID-19 cases and ridership statistics and make that information publicly available
    - Handing out masks to riders
    - Air filtration – fresh air is circulated into trains and buses every three minutes
    - Offer touchless payment
    - Variety of tools available to riders: TripPlanner, busETA, Next Train, and Metro Alerts
- Station Area Planning Guide
    - Recognize that fewer people will use Metrorail if connecting bus service is slow, infrequent, and/or unreliable
    - Goals
        - Invest in place making-attractive and well-designed transit sites can improve the quality of life of users and residents in surrounding areas
        - Encourage transit-oriented development
    - Chapter 3 contains principles and practices that guide the design and planning of connecting bus facilities
- Bus Stop Amenity Reference Guide
    - Best practices for the siting and design of bus stops
- Guidelines for the Design and Placement of Transit Stops for WMATA

  - Provides specific physical design criteria to be integrated with local comprehensive plan policies, land use ordinances, pedestrian plans, and street design guidelines
  - Appendix A includes detailed documentation of existing bus stop standards, guidelines, policies, and practices
  - Appendix B includes a detailed summary of locally and nationally published bus stop design resources and examples of standards and guidelines in other areas
- Strategic Plan
  - Plan in response to the creation of dedicated funding for Metro; focuses on stabilizing costs and revenues
  - Discusses ways to improve service delivery and enhance cost efficiencies (includes bus system)
- Bus Transportation Project
  - Strategy and Action Plan that includes 26 recommendations for improving the quality of bus service
- Sources
  - https://wmata.com/service/covid19/
  - https://wmata.com/business/real-estate/upload/Station-Area-Planning-Guide-October-2017.pdf
  - https://wmata.com/initiatives/plans/upload/WMATA_MCEP_Bus-Stop-Amenity-Guide_20190809.pdf
  - https://wmata.com/initiatives/plans/upload/WMATA-Guidelines-Design-and-Placement-of-Transit-Stops.pdf
  - https://www.wmata.com/initiatives/strategic-plans/upload/KMSRA-Strategic-Plan-Jan-2019.pdf
  - https://bustransformationproject.com/

Metropolitan Atlanta Rapid Transit Authority (MARTA)

- Post Pandemic
  - Added antimicrobial air filters on buses
  - Daily sanitation/disinfection of buses
  - Provided one-time $3500 COVID-19 pandemic payment to frontline employees
  - Implemented 80 hours of additional paid sick leave for employees affected by COVID-19
  - Partnered with DeKalb County to encourage vaccinations by displaying the county's media campaign "Get Vaxxed DeKalb" on buses and provided a bus shuttle to food pantries that couldn't be reached due to reduced bus service
  - Provide masks, gloves, and sanitizing wipes to all employees
  - Attaching posters on buses and affixing "Do Not Sit" signs on certain seats to allow for more spacing; no standing in aisles allowed
  - Established a dedicated hotline for customers to report a full bus and request another one

- Service Standards (FY2022)
  - Details process for changing service, service design guidelines, service standards, and service delivery standards

- Bus Stop Improvement Guide
  - Provides tips for riders on how to start the process of improving their bus stop
- One Atlanta Strategic Transportation Plan
  - Plan includes several relevant goals, objectives, and polices related to buses and micromobility
    - Build a 21st Century Transit Network for Atlanta
    - Make Bicycling and Micromobility a Safe Transportation Option for More Atlantans
- Connect Atlanta Plan
  - Discusses strategies for building transit infrastructure and improving existing transit service
- Sources
  - https://www.itsmarta.com/MARTA-takes-additional-steps-covid-19-pandemic.aspx
  - https://www.itsmarta.com/coronavirus.aspx
  - https://www.itsmarta.com/uploadedfiles/FY22_ServiceStandards_Final_reduced.pdf
  - https://www.martaarmy.org/bus-stop-improvement-guide
  - https://itsmarta.com/guidelines-policies.aspx
  - https://www.atlantaga.gov/home/showpublisheddocument/43742/637091918730400000
  - https://www.atlantaga.gov/home/showpublisheddocument/19348/636245709418400000

Metropolitan Transportation Authority (MTA)

- Post Pandemic
  - 13-point Action Plan
  - Free covid testing for employees
  - Social distancing rules
  - COVID-19 Leave Guidance for employees
  - Employee hotline
  - Public Service Announcements in multiple languages
  - COVID-19 Response Challenge to engage the private tech industry to deploy innovative technologies that make public transit safer, healthier, and more responsive
- Plans & Programs
  - Safe Routes to Transit Program
    - Program to reduce barriers and address problems with pedestrian and bicycle access to public transportation
  - Better Buses Action Plan
    - Focused on improving bus speeds citywide by 25% and reversing downward bus ridership trends
  - Bus Network Redesign
    - Taking a comprehensive look at bus service patterns in each borough to better match service with current and future travel demands
- Guidance for traveling with a bike on public transit

- Have portals to report inaccurate information on bus arrival signs, report bus signs in need of repair, and to request a new Real-Time Passenger Information sign be placed on a bus stop sign pole
- Have portal to report bus stop shelter repair and maintenance issues
- 2020-2024 Capital Program
    - $54.8 billion going toward public transportation projects
    - Core values: accessibility, equity, sustainability, cost-consciousness

- Sources
    - https://new.mta.info/coronavirus/reopening-plan
    - https://new.mta.info/coronavirus/cleaning
    - https://new.mta.info/safety-and-security/nyct-mask-compliance
    - https://new.mta.info/coronavirus/ridership
    - https://new.mta.info/covid-19/employees/policies-and-guidelines
    - https://www.hstoday.us/subject-matter-areas/transportation/mta-challenges-industry-to-find-covid-19-response-innovations/
    - https://www1.nyc.gov/html/dot/html/pedestrians/safertstransit.shtml
    - https://new.mta.info/project/bus-network-redesign
    - https://new.mta.info/guides/bikes
    - https://new.mta.info/transparency/strategic-priorities
    - https://portal.311.nyc.gov/article/?kanumber=KA-03486
    - https://portal.311.nyc.gov/article/?kanumber=KA-01071

Non-Permanent Shelters

1. It is being experimented with more in other countries – mostly in response to overcrowding and heat.
2. There are companies who are making temporary bus shelters, but no examples of places (especially in the US) using/buying them.
    a. Some areas, for example Arlington, VA, are using prefabricated shelters, but not on a temporary/non-permanent basis.
    b. The use of the prefabricated shelters is to save time and money, however there are some issues with quality
3. In US, the use is for temporary bus stops used during construction projects.
    a. Some cities, such as Pittsburg, PA, have detailed guidelines for temporary bus stops for when other bus stops are temporarily moved or closed during construction projects.
    b. The typical requirements for shelters to be durable and secured to a reinforced concrete foundation and for seating to also be secured, prohibits a non-permanent shelter in most cases.
    c. Some of the design guidelines had info about temporary bus stops requirements/guidelines, but nothing on temporary shelters.

International Examples

- http://www.natsearle.com/temporary-bus-shelter/
- https://thegremlin.co.za/george-news/wordpress/2016/01/26/passengers-welcome-temporary-bus-shelters/
- https://timesofindia.indiatimes.com/city/trichy/diwali-rush-temporary-bus-stands-opened-in-trichy/articleshow/87461227.cms
- https://www.thehansindia.com/news/cities/hyderabad/tsrtc-erects-24-temporary-bus-shelters-743643

Manufacturers

- https://www.externiture.com/bus-stops/temporary-bus-stops

Prefabricated Shelters

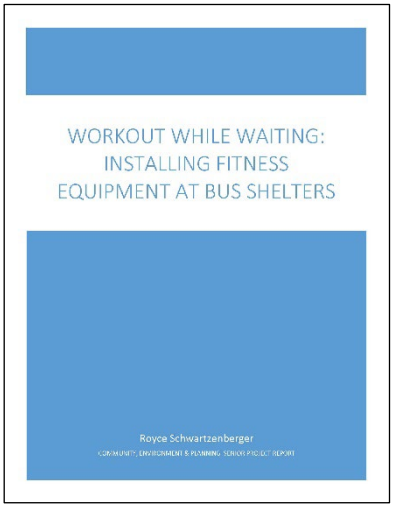
- https://www.arlnow.com/2021/09/16/county-modified-columbia-pike-transit-project-after-bus-shelters-found-faulty/

Temporary Bus Stops

- https://apps.pittsburghpa.gov/redtail/images/5571_Temporary_Bus_Stop_Relocation_Permit_02_20_19.pdf
- https://www.portauthority.org/siteassets/inside-the-pa/surveys-and-reports/bsgfinal.pdf
- http://design.omnitrans.org/wp-content/uploads/2014/03/OmnitransDesignGuidelines.pdf
- Analysis of Movable Bus Stop Boarding and Alighting Areas – National Center for Transit Research (usf.edu)

Exercise Equipment at Transit Facilities

Workout While Waiting: Installing Fitness Equipment at Bus Shelters - (uw.edu)



Also, for additional research, the following link is for a supplier of outdoor exercise equipment.

Outdoor Fitness Equipment — Outdoor Workout Supply