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## Transit Design Standards and Guidelines

Grand Junction/Mesa County Metropolitan Planning Organization

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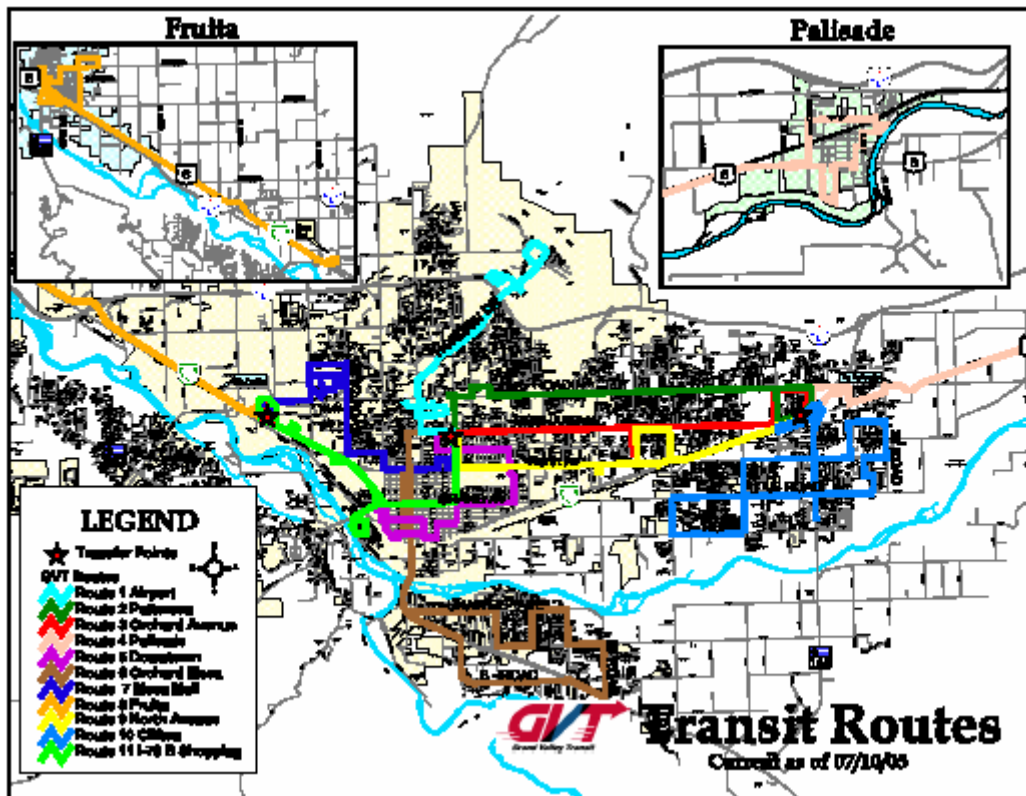
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## Objectives and Transit Service Area

These guidelines describe the recommended methodology for the location and design of transit stops and other transit facilities within the Grand Valley Transit service area. A number of specific elements are included – guides to the location and design of stops, proper placement of amenities at stops, and general guidelines for other transit facilities.

Although the process of location and designing bus stops would appear fairly simple to the casual observer, creating a design with optimal transit facilities requires the consideration of many factors. The ideal arrangement of bus stops from the transit user's point of view includes frequent stops in the travel lane of the roadway and sidewalk or trail connections to the users' destination. However, from the perspective of the other users of the roadway, the ideal arrangement for bus stops is infrequent stops placed in turnouts out of the travel lane. These guidelines seek a balance of the needs of all roadway users.

Improved pedestrian systems connected to transit stops will make using the transit system safer and more enjoyable. Appropriately located turnouts will enhance user safety while minimizing delay to traffic. As barriers to transit use are removed, the system will become easier for all residents to use.



# Transit Stop Location and Type

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Decisions regarding bus stop frequency, location and length call for careful analysis of passenger service requirements, the type of service provided and the interaction of stopped buses with general traffic flow. Achieving a balance of convenience to both the transit passenger and the auto user is a prime objective.

## A. Stop Spacing and Location

The proper location of a transit stop requires a site investigation of the stop(s) under consideration; no standard type of stop can be recommended for all locations. An inventory of land uses within a quarter-mile corridor of the road under consideration should be developed, noting uses that serve as major trip producers and attractions. The Bus Stop Location flow chart outlines the sequence of decisions for locating a transit stop. The Administrative Regulation details the process for requesting changes to stops.

## B. Stops at Major Generators

Stops should be located within a short walk from schools, major retail malls, office buildings and multi-unit apartments. These stops provide access to the transit system for uses that generally produce numerous transit riders. Bus stops should be located to balance good rider access with pedestrian safety. Stop locations should minimize the potential for jaywalking while minimizing rider walking distance and avoiding unnecessary crosswalk movements.

## C. Stops at Signalized Intersections

Stops at the far-side of signalized intersections can operate conveniently for both auto and transit users. Buses can use the gaps in the traffic stream created by the signal to pick up and discharge passengers and to reenter traffic.

## D. Intermediate Stops

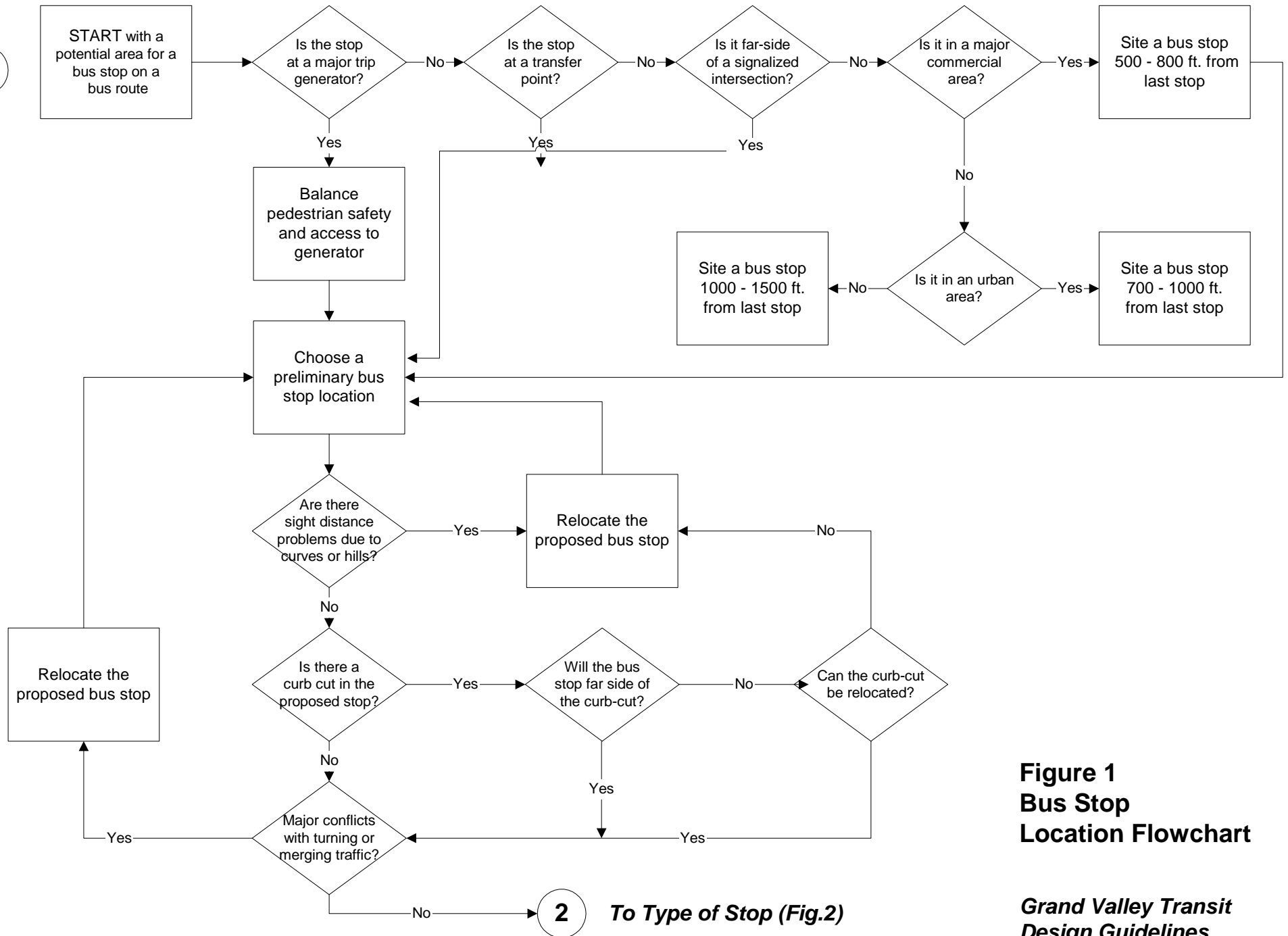
Transit industry standards suggest that most riders will not want to walk more than ¼ mile to a bus stop. Stops for areas of low to moderate passenger demand should be preliminarily established by applying the ¼ mile criteria. Bus stop spacing should be related to ridership density; stops should be closer together in the major commercial districts and farther apart in the outlying areas. Ideally, stops should be as far apart as possible without adversely affecting passenger convenience. Recommended ranges for bus stop spacing are as follows:

Major Commercial Areas	500-800 feet
Urban	700-1000 feet
Suburban	1000-1500 feet

In suburban areas, consideration should be given to how far a person must walk to get to the

street with bus service. Stops on both sides of a two-way street should be paired up whenever possible to provide passengers with boarding and alighting points near one another.

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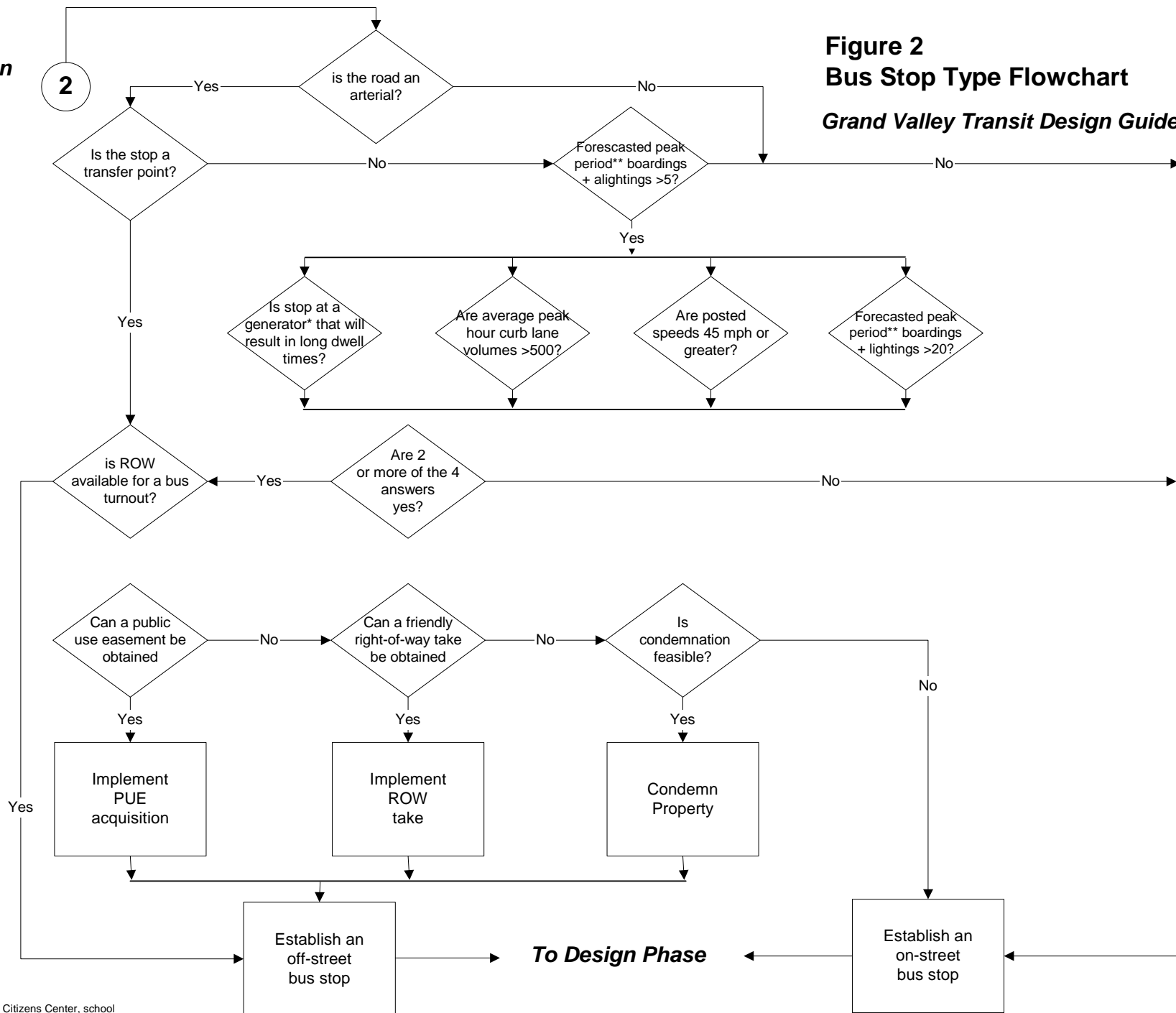


**Figure 1  
Bus Stop  
Location Flowchart**

**Grand Valley Transit  
Design Guidelines**

From Location (Fig.1)

Figure 2  
Bus Stop Type Flowchart  
Grand Valley Transit Design Guidelines



\*e.g. Senior Citizens Center, school  
\*\*See text for computational method

## **E. Refining Transit Stop Locations**

In general, stops should be located after (far-side of) an intersection to facilitate bus and traffic operations. However, far-side stops are occasionally impractical or conflict with existing development.

Specific attributes of potential transit stops must be reviewed. Sight distance is critical. Transit drivers need to be able to see to the rear sufficiently to safely re-enter traffic, following vehicles need to see the stopped bus in time to safely stop or merge left, and vehicles on side streets or driveways need to be able to see oncoming traffic.

*Far-side transit stops are recommended under the following conditions:*

- At intersections controlled by signals, stop or yield signs.
- The traffic is heavier on the approach side than on the departure side of an intersection.
- The intersecting street is a one-way street with traffic moving from left to right when viewed as one approaches the intersection.
- At intersections where heavy left or right turns occur.
- At intersections where the bus route and heavy traffic movements diverge.

*Advantages of far-side stops:*

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

*Disadvantages of far-side stops:*

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

*Near-side stops are recommended under the following conditions:*

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

*Advantages of near-side stops:*

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

*Disadvantages of near-side stops:*

- Heavy vehicular right turns can cause conflicts, especially where a vehicle makes a right turn from the left of a stopped bus.
- Buses often obscure stop signs, traffic signals, or other control devices, as well as pedestrians crossing in front of the bus.
- The sight distance of a driver entering an intersection is diminished from the right.
- The bus re-entering traffic flow after stopping often must wait through several cycles.
- Lengthy separate right-turn lanes cause the bus stops to be located too far from the intersection.

*Mid-block stops are recommended under the following conditions:*

- Traffic or street characteristics prohibit a near or far-side stop at an intersection.
- Large transit passenger generators exist and heavy ridership makes the location desirable.
- Blocks are exceptionally long and allow adequate distance for the bus to merge into a left-turn lane if required.
- A median island exists in the roadway.

*Advantages of mid-block stops:*

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

*Disadvantages of mid-block stops:*

- The removal of curbside parking may be required.
- Patrons from a cross-street may have to walk farther to board the bus.
- Pedestrian jaywalking is more prevalent, resulting in increased friction, congestion and potential accidents.

## **F. On-Street or Off-Street?**

The decision to place a bus stop off-street in a turnout should be made carefully. The decisions will affect the ability of the roadway and transit to move people safely and quickly. The Bus Stop Type flow chart depicts the decision-making process.

The Regional Transportation Planning Advisory Committee and the Mesa County Regional Transportation Planning Office

# **POLICY 1.0 – GRAND VALLEY TRANSIT POLICIES & PROCEDURES BUS STOP SITING AND REVIEW**

## **ARTICLE I, PURPOSE**

This policy and procedure establishes a systematic process for the purpose of siting new bus stops and reviewing current bus stops if any under scrutiny. This allows all staff, citizens and public officials to know exactly how new bus stops are sited and how bus stops can be reviewed in the case of criticism or complaints. This policy and procedure also ensures that the bus stops receive the proper technical review before they are moved or established.

## **ARTICLE II, BACKGROUND**

Mesa County's contracted transit services, known as Grand Valley Transit (GVT), are overseen by the Regional Transportation Planning Office (RTPO). It has been the intent of the RTPO that all GVT bus stops are in compliance with the regulations that govern these types of uses in each applicable jurisdiction. It is also the RTPO's intent to provide an established and consistent method for the review of current bus stops when one is under scrutiny.

## **ARTICLE III, FARE INCREASE AND MAJOR SERVICE CHANGES**

### **1. Initial Coordination by the Regional Transportation Planning Office (RTPO)**

The suggestion of a potential bus stop location may originate from any of a number of sources. Each potential bus stop suggestion will be referred to the RTPO for coordination among the requisite agencies.

### **2. Functionality Assessment**

Once a potential bus stop location has been proposed, the RTPO's Transit Coordinator will meet with the Operations Manager from Grand Valley Transit (GVT) to assess the functionality of the proposed bus stop. If the proposed stop meets GVT's functionality requirements, the Transit Coordinator will proceed with approval by the appropriate Traffic and/or Planning Departments and review of bench and/or shelter feasibility.

### **3. Bench and/or Shelter Feasibility**

The Transit Coordinator will meet with a representative of the transit amenities provider to study the feasibility of adding a bench and/or shelter at the proposed stop either

directly or in the future. If it is feasible for a bench and/or shelter to be installed at the proposed bus stop location, it is the responsibility of the transit amenities provider to obtain all necessary permits and/or other required documentation from the appropriate local agency and/or private property owner before the transit amenity is installed. If no bench and/or shelter is proposed, no further action in this area will be taken.

#### 4. Approval by Traffic Departments

The proposed bus stop location must be approved to meet all of the appropriate Traffic Department's regulations for safety and access management.

#### 5. Approval by Planning Departments

If there is a feasibility of adding a transit amenity to the proposed bus stop, the Transit Coordinator will forward the proposed stop location to the appropriate Planning Department for review of code compliance and zoning designation of the proposed stop.

#### 6. Feedback Coordination by RTPO

Revisions by any of the participating agencies to the original bus stop location proposal will be referred to the Transit Coordinator for modification of the original proposal and re-sent to the appropriate agency for approval.

#### 7. Notification to Agencies and Affected Property Owners

The Transit Coordinator will provide notification to the appropriate agency upon completion of the approval process. A letter of notification will be sent to any affected property owner/s informing him or her of the forthcoming bus stop.

#### 8. Implementation

Implementation of a new or revised bus stop location will not commence until after the completion of the Bus Stop Siting Policy and Procedures process.

#### 9. Complaint Procedure

Any complaints regarding an existing bus stop location will follow the adopted Bus Stop Siting Policy and Procedures process.

**THE REGIONAL TRANSPORTATION POLICY ADVISORY COMMITTEE HEREBY APPROVES AND ADOPTS THE BUS STOP SITING POLICY AND PROCEDURES ON JANUARY 17, 2002.**

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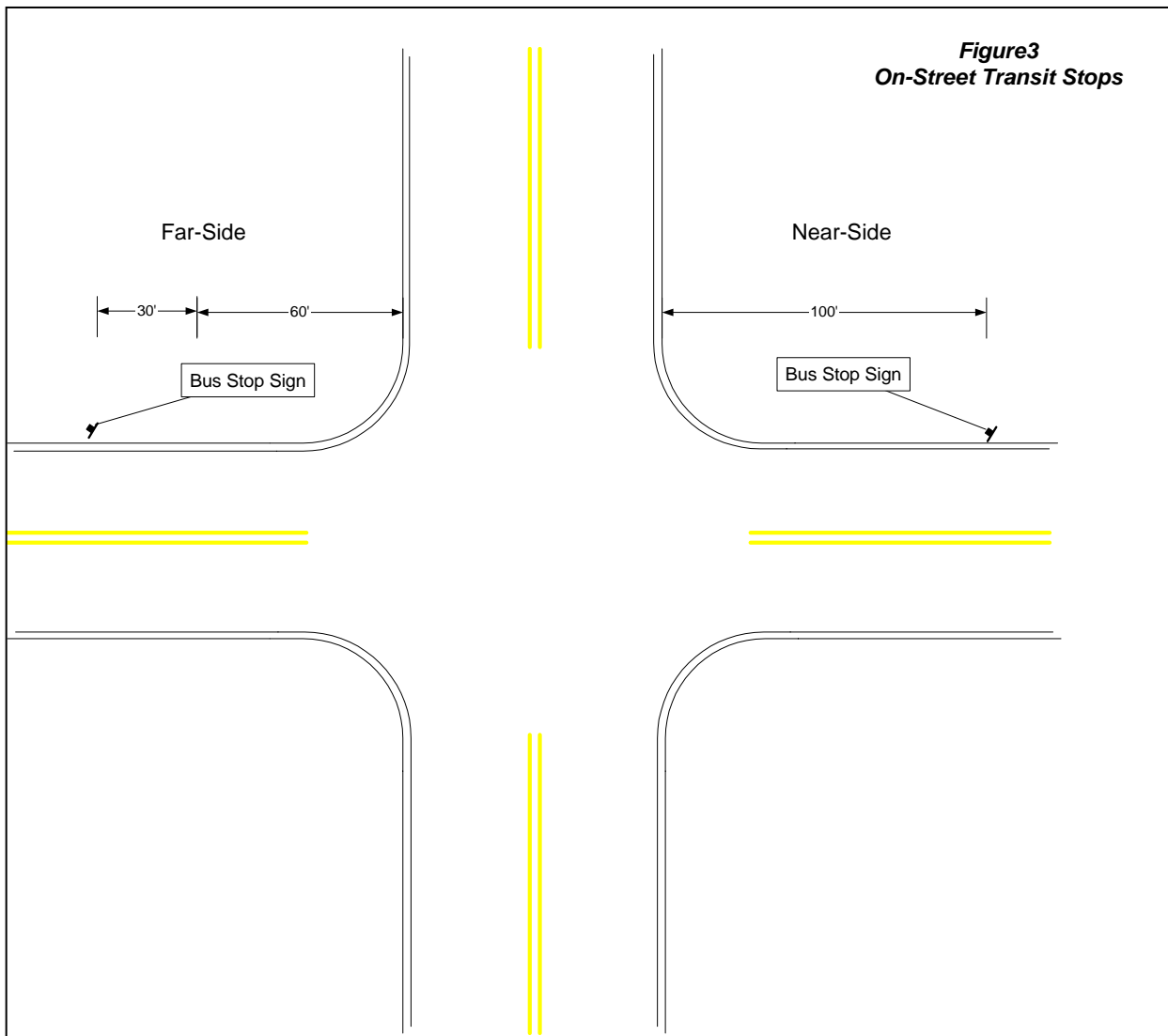
**Kathy Hall**  
**Chair, Regional Transportation Policy Advisory Committee**

# Transit Stop Design

Transit stops serve as interface points between sidewalk/trail systems, street networks and transit routes. Consequently, transit stop designs should provide access, temporary and permanent storage capacity and through traffic bypass capacity.

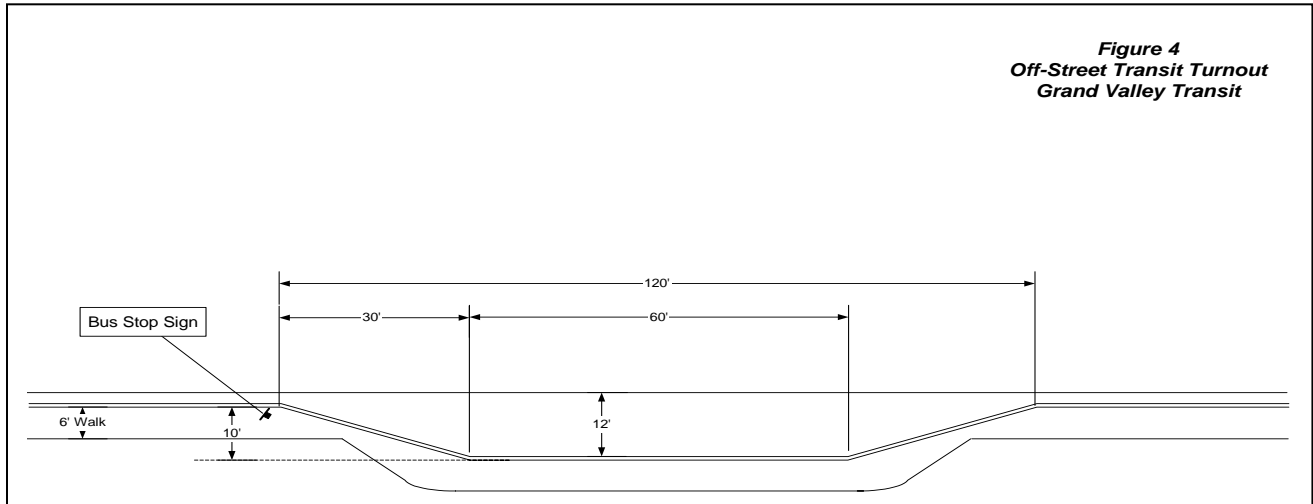
## A. On Street Stops

On-street stops need to be located minimum distances from intersections and driveways to avoid conflicts. On streets with on-street parking, the parking must be removed to allow for the stop and is a consideration in siting stops. Figure 3 shows the minimum distances from intersections for stops.



## B. Off Street Turnouts

Off street turnouts allow buses to pull out of the traffic stream. The geometric layout is shown in Figure 4. Turnouts should not be located where there are potential rear sight distance problems. The desirable surface material for turnouts is concrete pavement. If asphalt pavement is used, the pavement design must be structurally sufficient for the shear forces created by buses turning into and out of the turnout.



### C. Facility Access

Transit stops shall be connected with an accessible route to all streets, sidewalks and/or trails within the site boundary. The site boundary defined by the beginning and end of the transit stop, the adjacent street and the right-of-way line for the street segment. Where a transit stop serves as a transfer point, the site boundary and an accessible route shall extend to the connecting route bus stops. Where a bus stop is the closest stop to an intersection, major generator or other private development, it is necessary to extend the site boundary and route to the generator or development. In the case of a mid-block stop with no adjacent sidewalk or trail, it is desirable to provide an accessible route to the nearest intersection or signalized crosswalk.

Accessible routes shall meet adopted standards for sidewalks and trails, including accessible standards for grades and ramps.

### D. Transit Stop Amenities

Amenities include the following:

1. **Waiting Areas.** The stop should include adequate area and clearance for passenger access to buses, other amenities, and connecting sidewalks and trails.
2. **Benches.** Bench placement shall be no closer than five feet from the curb where the posted speed limit is 35 MPH or less; no closer than 10 feet from the curb where the posted speed limit is greater than 35 MPH; and no closer than 10 feet where there is no curb. Bench design and construction must conform to the applicable Zoning and Development Code.
3. **Shelters.** Shelter placement shall meet the minimum standards established for benches. Shelters need to be aesthetically and functionally compatible with nearby uses. A shelter should not severely affect an adjacent residence or business use. Shelters should be

considered at the following locations:

- Any stop serving more than 40 boarding/transferring passengers per day within major commercial areas.
  - Any stop serving more than 25 boarding/transferring passengers per day within urban and suburban areas.
  - Any stop that is a major transfer point between routes.
  - Any stops located near schools, senior citizen housing facilities or community recreation centers where large concentrations of the young or elderly are expected.
4. Signs. All bus stops will be signed. Sign placement is shown in Figures 3 & 4.
  5. Route and Schedule Information. Information including bus route, numbers, schedule information, transit riding tips and other appropriate information should be placed at all stops.
  6. Illumination. Passenger safety is enhanced by adequate lighting. Direct illumination of waiting passengers by a streetlight allows the transit driver to easily see waiting passengers. Supplemental lighting shall be provided at shelters in accordance with the applicable Zoning & Development Code requirements.