

# Design Guidelines Checklist



## New & Upgraded Bus Stop Siting Considerations:

### Is a “Trip Generator” present at the proposed stop location?

- Employment Center with 1000+employees
- Residential with 500+units or 5000/sqmi
- Retail with 400,000s.f. of leasable space
- Education centers with 2500+ students
- High density with 500-1500ft walking distance, 5000+people/sqmi, & residential 18 DU/acre or commercial over 0.50 FAR
- Medium density with 900-2000ft walking distance of 3500+people/sqmi, 7+DU/acre, or Commercial 0.35+FAR
- Low Density with 1500-3000ft walking distance to less than 3500people/sqmi, less than 7DU/Acre, or Commercial below 0.35 FAR

### Bus Stop Placement Considerations

- What's the proximity to trip generators?
- Presence of sidewalks/curb ramps/connectivity within ¼ mile radius?
- What's the width, placement, condition of existing sidewalks within ¼ mile radius?
- Is there room for additional standing/waiting areas at heavy ridership stops?
- Are protected crosswalks at signalized stop-controlled intersections or crosswalks present?
- Are there convenient transfers if routes cross?
- Are there negative effects on adjacent property owners?
- Are there possible conflicts b/w bus and bikes, traffic, and pedestrians?
- What is the level of pedestrian activity at intersections?
- Are there open and visible spaces for pedestrian security and passenger visibility?
- Are streetlights present?
- Is there the ability to restrict parking and move parking and truck delivery zones?
- Is there adequate curb space for the number of buses expected?
- What are the traffic volumes and turning movements of other traffic?
- What is the proximity and traffic volumes of nearby driveways?
- What is the existing street and sidewalk grade?
- Is it easy for the bus to re-enter the traffic system?
- Are unusual intersection angles and predominant turning movements present?
- What is the proximity to rail crossings and emergency driveways?
- Is there adequate sight distance at adjacent intersections and driveways?



## ✉ Safety & Security Considerations

- Are storm drains and catch basins away from the boarding/alighting area?
- Are uneven surfaces present?
- What is the slope of terrain adjacent to boarding/alighting (uphill/stumble into travel lane) downhill (stumble into a ravine)?
- Is there jagged edges, broken furniture, other hazardous objects?
- What is the surface traction like (i.e. stone aggregate is slippery for wheelchairs)?
- Does water accumulate in areas (slippery and/or muddy)?
- Do overgrown bushes/landscaping pose security and encroachment hazards?
- Are obstacles forcing pedestrians to walk in the street?
- Does the area have adequate lighting?
- Is installation of new lighting during design, construction, and installation of other elements needed?
- Are newspaper and vendor boxes present? Free vendor boxes are discouraged because of trash.
- VRT does not grant installation of vendor boxes, see jurisdiction for permission.

## ✉ Good Pedestrian Access Considerations

- Stops should accommodate all users (disabled, elderly, children).
- There should be convenient connections b/w destinations; residential, schools, shopping, public services and institutions, recreation, transit?
- Dedicated sidewalks/bike paths should be present, safe and directly connect to the bus stop.
- Design should minimize the distance b/w buildings through proximity and orientation.
- Design pathways that are straight and direct. Restrict meandering paths, walled communities, and expansive parking lots
- Identify and eliminate barriers such as unnecessary sound walls, landscaping, berms, fences, that impede access or visibility of pedestrians.
- Pave pedestrian pathways and ensure accessibility through curb cuts, ramps, visual guides, signage (visual and braille) and railings, include ADA compliant curb ramps at each intersection corner.
- Avoid pooling and muddy conditions.
- Street lighting should be adequate for safety and visibility.
- New residential development should provide breaks in the walls b/w properties to allow pedestrian access.
- In rural areas with no sidewalks, a minimum 4' wide paved shoulder of decomposed granite compacted and stabilized should be provided.
- In rural areas, solid surface 35'x8' is desirable and 5'x8' minimum for a lift operation, a tactile warning device should be placed b/w road at the stop so visually impaired citizens can identify the bus stop.
- Paved connection b/w bus stop transfer points.
- Pathway cannot exceed slopes over 5% (1' vertical over 20' horizontal) Cross slope cannot to exceed 2% (1' vertical over 50' horizontal).
- Horizontal pathway clearance 48"-60" should be maintained along the path.
- Vertical pathway clearance 84" should be maintained along the path.

- Curb ramps are required to be installed at intersection corners and meet ADA guidance, failing ramps should be replaced.

### **Pedestrian Considerations Obstructions and Connections**

- Boarding/alighting area is connected to a sidewalk at minimum 4 feet wide (ADA).
- Curb cuts are no steeper than 1 inch level across 12 inches.
- No encroachments shall constrict the sidewalk to less than 4 feet wide.
- Sidewalks may need to be widened or extended.
- If no sidewalks are available, place stop next to nearest firm level surface that allows a safe travel path,
- Areas with existing bushes/trees should be trimmed to prevent brushing the bus and encroaching on the sidewalk.
- Remove existing curbside parking for a bus stop or provide sidewalk extension curb bulb for direct pedestrian access to the bus.

### **Right-Of-Way**

- Is there adequate ROW to install a bus stop with amenities?
- Is there adequate ROW to accommodate transfer locations?
- Minimize passenger street crossings to crosswalks.

### **Visibility**

- Bus stop should not be located over the crest of a hill.
- Bus stop should not be located on the right after a curve.
- Bus stop should not be located anywhere that limits visibility.

### **Bus stop & driveways**

- Block/use downstream driveway when there are two driveways, keep one entrance/exit open.
- Fully block driveway for safety.
- Place driveways behind bus stops.
- Ensure safe waiting area for passengers.

### **Drainage**

- Avoid or improve areas with standing water.
- Don't block bicycle travel lanes with drainage features.
- Don't block pedestrian access or boarding areas with drainage features.

## ✉ Infrastructure Guidelines:

### ✉ Boarding/Alighting Area

- ADA lifts/ramps must be deployed onto a firm surface.
- A 5'x8' contiguous concrete monolithic slab contiguous to the curb and parallel to the street, that is firm, stable, and slip resistant.
- A 30ft alighting area from rear of bus for ADA lifts.
- Additional boarding/alighting areas are provided when more than one bus is stopping at the same time.
- An ADA lift ramp can be asphalt in uncurbed shoulder areas.
- Boarding/alighting area is elevated above street and slopes meet ADA.
- Clearance at boarding/alighting areas should be 48"horizontal x 84"vertically.
- No obstructions allowed in boarding/alighting area including signage, benches, newspaper boxes, bike racks, drainage features, landscaping etc.

### ✉ Curb Clearance Requirements

- Farside block should be 65ft from intersection.
- Midblock should be 120ft from intersection.
- Bus bay should be 13ft wide from the edge of travel (not preferred) on streets above 45mph.
- Coordinate no parking signage to protect passenger access, safe site distance, bus operations and traffic movement.

### ✉ Bus Pads Guidelines

- Roadway pavement must support bus axel loads up to 25,000lbs.
- Reinforced concrete is to be located where buses stop, start, or turn or where pavement is insufficient in strength or failing.
- Concrete pad should be 11'-12' feet wide to accept loadings.
- Pad length should be based on the length of the serving bus and number of buses that will stop simultaneously.

### ✉ Park & Ride Facilities Guidelines

- Boarding/alighting area designed from travel lane is preferred.
- Boarding/alighting area maybe designed inside the park and ride facility, if there is enough room to accommodate a large bus.
- Is the location pedestrian and bike friendly including sidewalks, crosswalks, bike paths, connections, bike racks, etc?
- Follow AASHTO's guide for the Design of Park & Ride Facilities.

### ✉ Bulb-outs & Transit Islands

- Should be located on collector streets and other low-volume and low-speed roads
- Should be located in neighborhoods and designated pedestrian districts.
- Transit islands can be located in congested areas to prevent the bus from crossing the bike lane for boarding/alighting.

- Features must accommodate vehicle turning movements including buses.

### **Bus Stop Signs Guidelines**

- Identify location as a designated bus stop.
- Provide specific route information for that location.
- VRT will install signs, or some local jurisdictions will do so.
- Signpost is to be located no closer than 36" to curb face.
- Signs mounted on Telspar style posts to guide the visually impaired to locate the bus stop.
- Bus stop signs placed independently of other signs to maintain transit stop identity.
- Bottom of sign 7ft above grade and higher than 10ft (MUTCD) and (ISPWC).

### **Round-A-Bout Guidelines**

- Mountable curb.
- Near-side bus stop should be placed before the round-a-bout.
- Large enough round-a-bout to accommodate a 40ft bus.

### **Bus Pull-Out Bays (Not Preferred by VRT)**

- Design to follow AASHTO standards.
- Design review & approval by VRT.
- Placement on the farside of an intersection with a que-jump bus bay, 11'-13' pullout width.

### **Bus Shelter Considerations**

- Shelter should not block site distance, crosswalks, intersections, or driveways.
- Canopy size should be 72sqft and a minimum 8ft wide.
- Canopy is waterproof with drainage away from the shelter.
- Shelter owner's name and contact phone number for emergency is on shelter.
- Seating for at least 2 people under canopy.
- Accessories to include an emergency phone, lean rail, bench, and info panels by the local authority.
- A lighting level of 2 foot candles.
- Shelter is located close to where the front door of the bus opens.
- Back of the shelter located no closer than 12" from a building face, wall, or other broad vertical surfaces to facilitate trash removal and panel cleaning.
- Shelter should not block building exits.
- Shelter should not block commercial building display windows.
- Shelter placement to avoid splashing water from traffic or run-off from buildings and landscaping.
- Shelter placed to protect against weather such as, wind, rain, sun angle, and allow maximum shade in the afternoon.
- Postings to shelters should follow all local codes and allowable advertising.

## ✉ Signage Considerations

- Securely mounted to its own post perpendicular to the street.
- VRT sign is not blocking other signs or blocked by other signs.
- Sign is visible to the approaching bus driver.
- Signs are located to prevent being struck from passing bus and bicycles and not impede travel.
- Header sign is placed 1 ft beyond the far side of boarding/alighting area served by front lift buses.
- Sign contains name of routes that service the stop & telephone number for more information.
- Sign meets ADA specs for signs posted at 80" and letters have a width-height ratio b/w 3:5 & 1:1 and a stroke to width ratio 1:15 & 1:10.
- Route information is placed at bus stops.

## ✉ Bus Rapid Transit Guidelines

- Requires a dedicated and exclusive bus lane.
- Transit mall in urban center with all lanes dedicated to exclusive bus use.
- Bus signal preference and pre-emption (TSP) intersection priority with extension of green time or actuation of green light.
- Traffic management improvements which may include traffic signal prioritization, bus boarding islands, bulb-outs, and/or curb alignments.
- Faster boarding with pre-payment of fares, so passengers can board through all doors to bus or automated fare collection and a level boarding platform.

## ✉ Construction Impacts to Bus Operations Guidelines

- Standard and construction plans and specifications should contain language requiring contractor to maintain access and signage.
- A minimum 4ft wide walkway to/from bus stop.
- Temporary access to bus stop zones during construction need to be approved by VRT.
- For minor roadway/shoulder impacts with "NO detour" **notify VRT 5 days** in advance to temporarily to relocate stops/signage (notify VRT Operations Manager).
- For detours and street closures, **notify VRT 10 days** in advance to allow detour planning, public notification, and avoid compliance issues. (notify VRT Operations Manager).
- Contractor should work with VRT to establish a temporary bus stop outside the work zone, temporary ADA infrastructure maybe needed.
- VRT will provide and post appropriate temporary bus stop signage.
- Contractor should **notify VRT 5 days** in advance of construction completion so sign re-installations can be checked by VRT.
- No bus stop sign should be removed without authorization from VRT.
- All work conforms to ADA requirements including provisions for temporary access to/from bus stops.
- Contractor is responsible for all costs incurred for loss or damage to bus stop signs and hardware and street furniture.
- 30-day advance notice** to remove street furniture during construction provided to VRT, City and street furniture owner.

- Contractor is responsible for construction of the passenger boarding pad on which street furniture will be placed. Pad must be designed and located in conformance with local authority standard details, any necessary deviations require written approval from local authority.
- Contractor should receive approval from local authority for the location of street furniture placement prior to construction of the passenger boarding area
- Local authority must inspect and approve all bus stop related improvements prior to acceptance and release of certificate of occupancy
- A minimum of **48 hours of advance notice** to the local authority and VRT for final inspections is required
- Construction plans should show existing and proposed bus stop locations
- Contractor should provide VRT with the Construction Managers name and contact info prior to commencement of construction projects involving bus stops or route detours
- The contractor is responsible for the construction of the passenger boarding area
- A representative of VRT should be invited to the project's pre-construction conference