



BUS BULBS

Bus bulbs are a transit bulb-out that facilitates in-lane transit stops on streets with on-street parking. They are also commonly called transit bulbs as well as boarding bulbs or side transit islands depending on the street assemblage. Bus bulbs improve transit operations, speed, and reliability by eliminating the need for buses to merge in and out of traffic at stops. Bus bulbs also can provide additional space for enhanced passenger amenities and highlight the presence (and option) of transit. Bus bulbs shorten the pedestrian crossing distance, benefiting people walking. Bulbs should be prioritized on streets with moderate to high transit ridership volumes and/or streets where transit vehicles may be delayed by merging in and out of traffic at stops.

USE

- Bus bulbs can be used in any location where on-street parking is present. Bus bulbs may not be used on streets where curbside uses are time-restricted (e.g. sometimes travel lanes, sometimes parking).
- Bus bulbs may be used on streets with bicycle facilities (lanes, protected or buffered) with accommodating design at stops (see special design considerations below). In this instance, bus bulbs are commonly called side boarding islands.
- Bus bulbs are most appropriate in commercial or retail areas where they can facilitate pedestrian street crossings. They are also appropriate at transit stops with moderate to high passenger volumes where sidewalk space is insufficient to adequately accommodate both transit passengers and pedestrian needs. Locations where vulnerable users of the street, such as older adults, children, or persons with disabilities frequently cross the street, should also be priorities.

- They may be used for near-side, far-side or midblock stops, though far-side and midblock stops are preferred.

DESIGN

- Bus bulbs can shorten the distance required for transit stops. The length must, however, remain long enough so that all doors of buses may open onto the bus bulb-out “platform”.
- Stops with multiple routes and/or high frequency transit service may require longer bus bulbs to accommodate two or more buses.
- Bus bulbs extend from the curb edge out to within two feet of the outside of the travel lane (the lane in which the bus is traveling) or a bicycle lane.
- Bus bulbs should have a return angle of 45 degrees and five foot radii (to facilitate vehicle turns, snow clearance and/or street sweeping).
- Bus bulbs will generally be designed at a curb height consistent with the rest of the street and join level with the adjacent sidewalk.
- Transit amenities (e.g. transit sign poles, shelters, waste receptacles, seating, etc.) should generally be located on bus bulbs, provided adequate clearance requirements are met for landing zones, adjacent clear pedestrian zone and clearance between fixtures, fixtures and curb, and fixtures and bicycle facility (if present).
- Bus bulbs may be located adjacent to driveways, alleys, and other curb cuts provided that adequate space and return angle is provided for their access and egress. Adequate sight-distance should be provided.

 Bus bulbs provide an opportunity to incorporate pervious pavement and landscaping. Landscaping may include stormwater retention and/or filtration provided it does not conflict with the transit loading space.

SPECIAL CONSIDERATIONS

- On streets with bicycle facilities, provide cut-through for curbside bicycle lanes and cycle tracks behind bus bulbs.
- Near-side bus bulbs with a right turn restriction should be designed with the curb to self-enforce the turn restriction.
- Bus bulbs allow buses to stop in the travel lane and thus may cause occasional traffic delay behind transit vehicles.
- Bus bulb retrofits may require drainage modification.
- When transit vehicles turn right after stopping at a bulb, pulling back the stop bar on the intersecting street ensures that the vehicle can make the right turn.
- Bus bulbs must not impede storm water drainage from the street. Utility vaults should not be located in bus bulbs. Bulbs may be added without reconstruction of the curb, provided that stormwater drainage is adequately handled and sidewalk cross slopes are ADA compliant.

OPERATIONS AND MAINTENANCE

- Bus bulb-outs should not be used for snow storage and should have a maintenance plan for snow clearance.

REFERENCES

- City of Grand Rapids Standard Construction Specifications, 1993 Edition
 - Standard Details P-5 Curb and Separate Gutter, Roll Curb and Gutter and Combined Curb and Gutter Details
- City of Grand Rapids Street Classification Policy, 1996
 - Section 9. Bus Movement
 - Section 10. Streetscape
- City of Grand Rapids Downtown Alliance Streetscape Design Guidelines
 - Corner Bump-out with Transit Stop Option
- NACTO: Urban Street Design Guide, 2013
 - Street Design Elements: Bulb-outs <http://nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/>
- AASHTO: Guide for the Planning, Design, and Operation of Pedestrian Facilities, 2004
 - Section 2.6.2: Traffic-Calming Methods
 - Section 3.3.1: Curb Radii
 - Section 3.3.2: Crossing Distance Considerations
 - Section 3.3.3: Turning Movements
- AASHTO: Guide for the Development of Bicycle Facilities, 2012
 - Section 4.12.6: Bicycles and Traffic Calming
- AASHTO: A Policy on Geometric Design of Highways and Streets (Green Book), 2011
- ITE Designing Walkable Urban Thoroughfares: A Context Sensitive Approach, 2010
 - Chapter 10. Intersection Design Guidelines: Bulb-outs <http://library.ite.org/pub/e1c443c-2354-d714-51d9-d82b39d4dbad>

DETAILS

- City of Grand Rapids Standard Construction Specifications, 1993 Edition
 - Standard Details P-5 Curb and Separate Gutter, Roll Curb and Gutter and Combined Curb and Gutter Details

