
MEMORANDUM

AAC-C 2-2021

**Subject: Transit Systems of Niagara – Draft of Bus Stop Accessibility
Criteria & Guidelines**

Date: January 19, 2021

To: Accessibility Advisory Committee

From: Steve Murphy, Accessibility Advisor

Attached is a draft copy of the Bus Stop Accessibility Criteria & Guidelines being put together by Niagara's transit authorities. If Committee Members are interested in providing feedback, please provide any comments to me no later than Tuesday, January 26, 2021, so that it may be shared with the authors.

Respectfully submitted and signed by

Steve Murphy
Accessibility Advisor



TRANSIT SYSTEMS OF NIAGARA

BUS STOP ACCESSIBILITY CRITERIA & GUIDELINES



Transit Systems of Niagara

Transit Bus Stops

Accessibility Criteria & Guidelines

DRAFT

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1.0 Introduction

These criteria and guidelines were developed to verify if a transit bus stop is accessible or not. This document should be used as a reference when designing new roads, bus stops, reconstruction of roads or new developments.

The requirements for persons with disabilities, the dimensional and operational features of the current fleet of buses in the Region, City Site Plan Guidelines and the practices followed in other jurisdictions were considered in the development of these guidelines. The criteria may be considered as the minimum requirements for the Bus Stop Landing Pad and doesn't include areas or facilities beyond the bus stop landing pad.

Since the features and elements of a bus stop have to be designed to suit individual locations, with several other considerations and standards, these criteria may not be complete in all respects. Under such situations, the user should refer to other requirements, existing conditions, and limitations, exercising their best judgment in preparing a final design for a specific location.

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2.0 Accessible vs Inaccessible Bus Stops

For a bus stop to be accessible, it must have a raised landing pad connected to the sidewalk. Without a raised landing pad, the slope of the bus ramp would be too high for mobility device users. Because curbs and sidewalks are generally provided in urban settings only, most rural bus stops are not accessible.

2.1 Accessible Bus Stop Examples



Figure 1: Bus stop on a road with an urban cross section, including municipal sidewalks.



Figure 2: Bus stop on an urban road with a landing pad connected to the sidewalk.

2.2 Inaccessible Bus Stop Example



Figure 3: Non-accessible bus stop on a rural road with no landing pad or sidewalk.

3.0 Accessibility Criteria & Guidelines

3.1 Landing Areas

3.1.1 Landing Pad Dimensions

A minimum 18.6 m x 2.5 m landing pad is provided, with a hard, even surface and minimum 1.6m x 2.5m ramp deployment and loading area.

The types of transit buses currently in use in the Region were considered to determine the minimum length and depth of the landing pad. The longest bus ramp extends to a length of 1.27 metres onto the landing pad when deployed. In order for a mobility device user to comfortably manoeuvre onto and off of the ramp, the landing pad must be at least 2.5 metres deep, as measured from the face of the curb. Where the landing pad abuts a sidewalk, the sidewalk width can be included to achieve a 2.5 metre landing pad depth. Ramps are located at the front doors of buses. In order to span both sets of doors, an 18.6-metre-long landing pad is desirable, in order to provide a hard-even surface for passengers alighting from the rear door. Within the landing pad a clear space of 1.5-metre-wide by 2.5-metre-deep area is required for ramp deployment and loading/unloading purpose (refer to Appendix C-F for layout drawings).



Figure 4: Landing pad is long and deep enough to deploy the ramps and have space to manoeuvre.

3.1.2 Sidewalk Connection

The deployment and loading area are connected to an accessible sidewalk by a hard, even-surfaced pathway with a minimum 1.5 m clearway.

To allow a mobility device user to travel between the loading area and the sidewalk, a hard even-surfaced pathway with a 1.6 metre clearway is required. The sidewalk itself should also be accessible, as defined in Ontario Reg. 191/11.



Figure 5: A landing pad connected to the sidewalk by a concrete pathway with cut-out.

3.1.3 Pathways

The pathways between the landing pad, sidewalk and passenger amenities are unobstructed.

There should not be any obstructions for any user on the paths between the deployment/ loading area, shelter, sidewalk and other passenger amenities.



Figure 6: A stop with smooth unobstructed surfaces between the loading area, sidewalk and passenger amenities.

3.1.4 Curb Depressions

The sidewalk or landing pad has curb depressions where appropriate.

Where appropriate, curb depressions should be provided to enable mobility device users to cross the road. In order for curb depression to be useable for a mobility device, they must have a width of at least 80 centimetres and be provided on both side of the roadway.

3.1.5 Landing Pad Cross Slope

Landing pad cross slope should be no more than 2%.

Cross slope, also known as crossfall, is the slope perpendicular to the direction of the travel. For any paved surface the design practice is to provide a slope for drainage purposes. For a mobility device user to negotiate the path, the slope for the landing pad should not exceed 2%. Site plan guidelines also specify a maximum 2% cross slope for sidewalks and boulevards.

3.1.6 Barriers

Where the bus stop abuts a steep slope, ditch or any other hazardous feature, an appropriate barrier such as a handrail, fence or wall is provided between the landing pad and the feature.

Where a steep slope, ditch or any other hazardous condition abuts the landing pad or sidewalk, a physical barrier such as a handrail, fence or barrier wall should be constructed to protect all users.



Figure 7: A non-accessible stop which lacks a physical barrier between the deployment area and a steep slope.

3.1.7 Shelter Connection

Where shelters are provided, they are connected to the deployment and loading area via hard even surface pathway with a minimum 1.5m clearway.

Where bus shelters are located away from the landing pad, they must be connected to it by a hard, even-surface pathway with a minimum clearway width of 1.6 metres. Standard practice is to provide a concrete pathway.

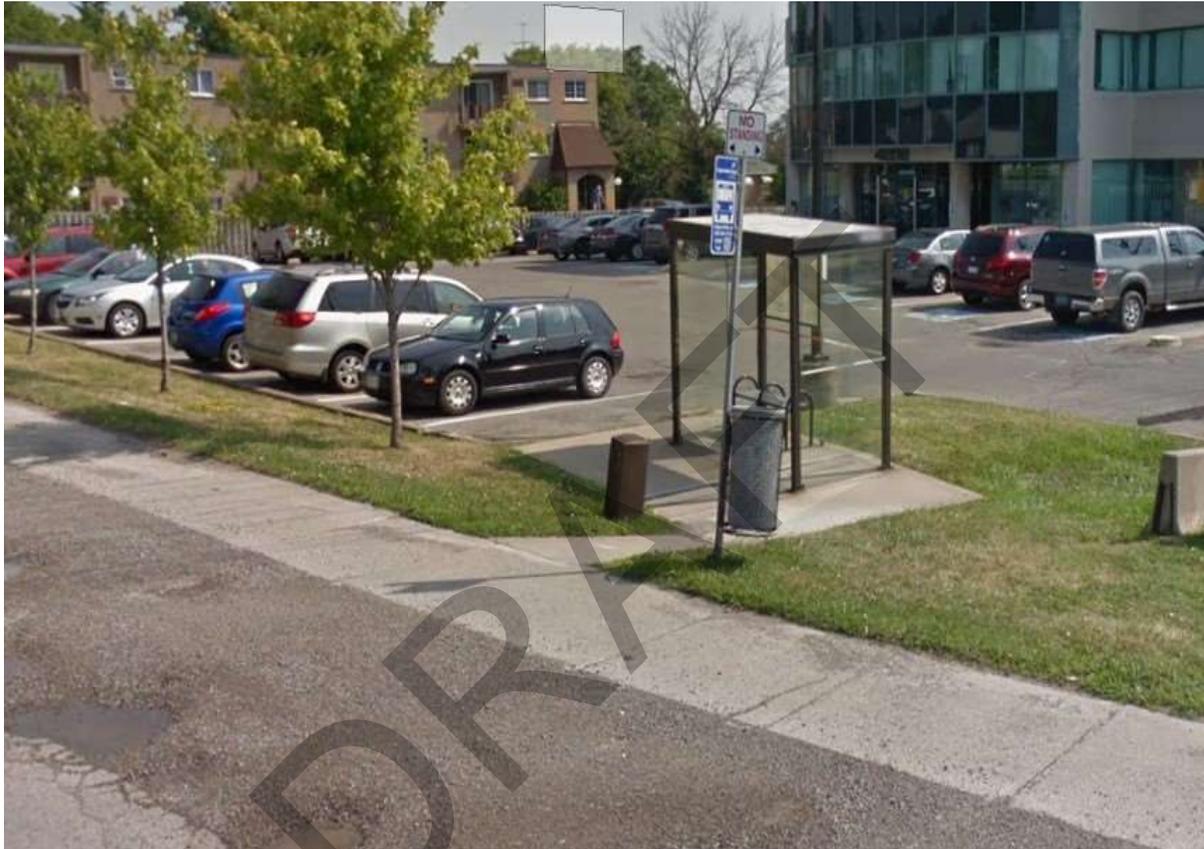


Figure 8: A non-accessible stop with shelter connected to the loading area by a concrete sloped pathway.

3.1.8 Vertical Obstructions

The passenger deployment areas have a vertical clearance of at least 2.1m and any vertical obstructions that cannot be relocated are clearly marked.

To ensure the safety of all users, vertical obstructions should be avoided below an elevation of 2.1 metres. Where obstructions cannot be removed or adjusted, they should be clearly marked (for example, a yellow sheath on a utility guy wire). Common vertical obstructions include guy wires, tree limbs, advertisement boards and utility wires.



Figure 9: A non-accessible bus stop with a utility guide wire obstructing the landing area with reflective sheath.



Figure 10: A bus stop with a tree with low-hanging branches.

3.2 Street Furniture

To ensure that the transit stop is entirely accessible, service contracts entered into for the operation, maintenance and retrofitting works should require AODA-compliant design and construction. This would include the design, installation, location and maintenance of the pathways and amenities within the bus stop area. See Appendix C-F for typical bus stop area examples.

3.3 Bus Stop Infrastructure

Bus stops are the public's first actual interaction with public transit and provide an economical way to educate the public about basic information about the service.

The following should be available at each bus stop:

- a. Phone number
- b. Website address
- c. Stop Number/Identifier
- d. Bus stop signs should be double sided with the international bus pictogram (or similar)
- e. Bus stop signs should use 3M reflective sheeting material to enable bus drivers to easily view them during low visibility periods.

4.0 Passenger Amenities

The following guidelines outline the level of passenger amenities which may be provided at these locations based on the number of passengers using the facility, the number of routes servicing the stop, and the environmental conditions.

4.1 Level 1 – Regular Bus Stop

Basic bus stop amenities are found at all locations where passengers can board or exit a transit vehicle. These bus stops can be served by any number of routes, and all bus stops are marked by a bus stop sign that meets the standards in section 11. Where possible, these stops will have a landing pad.

4.2 Level 2 – Sheltered Stop

In addition to a marked bus stop, these locations include a concrete landing pad and passenger shelter. A regular bus stop is a candidate to have a shelter installed if there are more than 100 passenger boardings per day. Shelters may be considered in some circumstances with lower volumes (i.e. stops with 50-99 boardings per day), such as when the stop is adjacent to seniors manors or community centre, or if environmental conditions warrant a passenger shelters (i.e. stop is located in a particularly exposed or windy location). Due to maintenance contracts, resource availability, and space constraints, not all stops which meet these criteria can receive shelters.

4.3 Level 3 – Enhanced Stop

Enhanced bus stops are typically found at major intersections and/or transfer locations for a large volume of passengers. This classification represents a new level of investment, meant to facilitate the transfer required to complete a trip in the transit network. A bus stop is a candidate to become an enhanced bus stop if there are more than 250 boardings per day, and the stop is serviced by at least two routes and/or is located at a city destination or intermodal transportation hub. Bus stops will be upgraded to enhanced bus stops based on resource availability.

The amenities at each enhanced bus stop will vary based on site conditions, but in addition to a shelter, they may be equipped with additional seating, lighting, passenger information (route maps or schedule information), waste receptacles, and/or larger shelters.

4.4 Level 4 – Transit Centre

The level of bus stop amenity is often found at transit terminals that do not have indoor passenger waiting area, and in other major transit centres/transfer locations with more than 500 boardings per day. This level of stop is a transfer node and may also have a Park & Ride facility. In addition to level III amenities, these locations could be candidates to be fitted with electronic message boards, bike racks, and pay phones, where space permits.

4.5 Level 5 – Interior Passenger Space

This level only exists at transit terminals that have interior passenger waiting space. Amenities can include a protected interior waiting space, public washrooms, drinking fountains, availability of refreshments, and interior seating.

Note: All standards and regulations in the AODA and Ontario Regulation 191/11 Integrated Accessibility Standards apply and govern. The above guidelines are intended to supplement AODA and all applicable standards. Ontario Regulation 239/02 shall also be used as a resource with this guideline.

Appendix A: Measurements Quick Reference

Bus Measurements

1270 mm ramp extends from the bus
813 mm width of the ramp

Conventional Bus

12192 mm bumper to bumper
7620 mm front of the front door to the rear of the rear door

Articulated Bus

18288 mm bumper to bumper
6427 mm front of the front door to the front of the mid door
915 mm width of mid door
5563 mm rear of the mid door to the front of the rear door
915 mm width of rear door
13820 mm front of the front door to the rear of the rear door

Accessibility Measurements

1500 mm required path
2100 mm headroom

Snow Removal Equipment

1524 mm width of Niagara Falls' sidewalk plow blade
1524 mm width of St. Catharines' sidewalk plow blade
1474 mm width of St. Catharines' sidewalk "V" plow blade

Stop Amenities Dimensions (approximate)

1524 mm x 2134 mm Creative Outdoor Standard bench
1524 mm x 3048 mm Pattison Shelters Standard shelter

Design Standards

2.5 m x 15 m minimum size pad to cover two doors of a bus
2.5 m x 18.6 minimum size pad to cover three doors of a bus
2.5 m minimum area clear for the front door ramp deployment
2100 mm minimum overhead clearance
1600 mm clear path between furniture and from landing pad to sidewalk

Appendix B: Information Gathering Form

Stop ID: _____ Location/Description: _____

Area: Urban Rural

Even, hard, non-slippery landing pad provided? Yes No

Concrete or asphalt pad? Concrete Asphalt

Pad measurements (Meters) Length _____ Width _____

Clear area available for ramp deployment? Yes No

Bus shelter/furniture Exists? Yes No

Sidewalk exists? Yes No

Curb cut exists? Yes No

Paved connections/access between pad, sidewalk, shelter, and/or furniture? Yes No

Bus target within a bus length of a driveway or sidewalk? Yes No

Vertical headroom clearance of 2.1 meters over all passenger, deployment and loading areas AND pathway available? Yes No

Do hazards or obstructions currently exist? Yes No

NOTES:

This stop is considered:

Fully Accessible Accessible via other means Non-Accessible

Appendix C: Bus Stop with Landing Pad

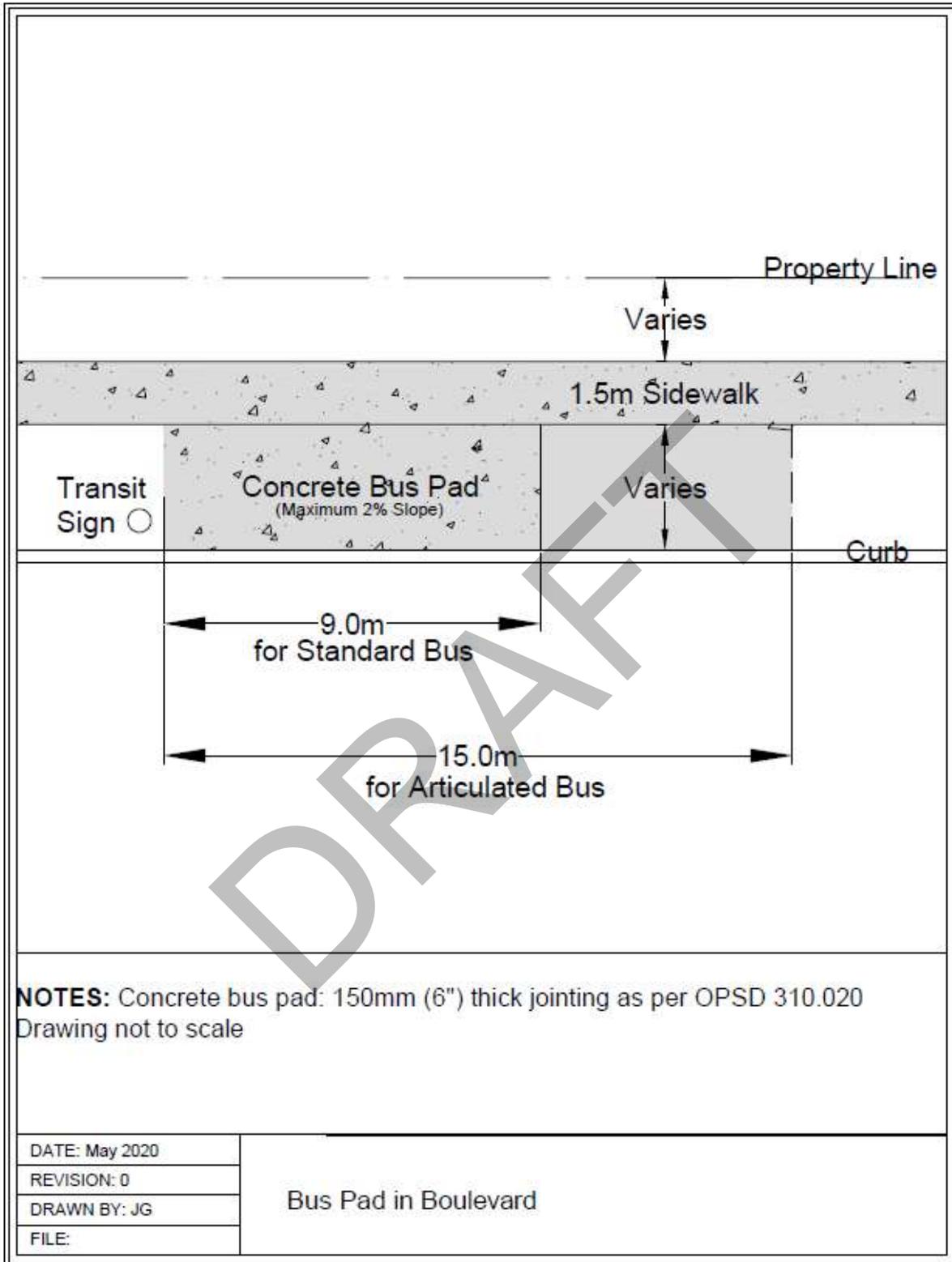


Figure 11: Diagram of bus pad in boulevard.

Appendix D: Bus Stop with Bus Shelter

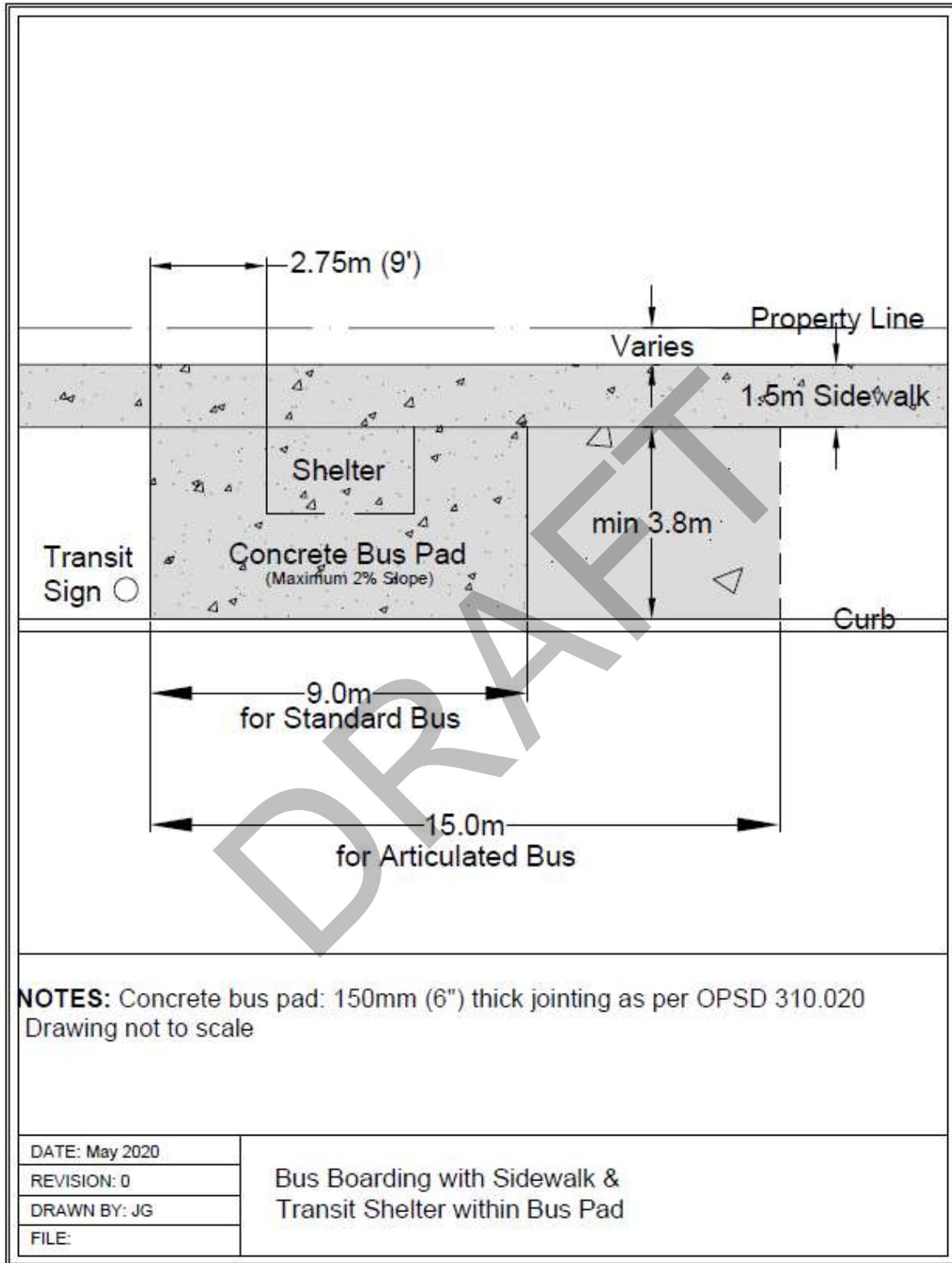


Figure 12: Diagram of bus boarding with sidewalk and transit shelter within bus pad.

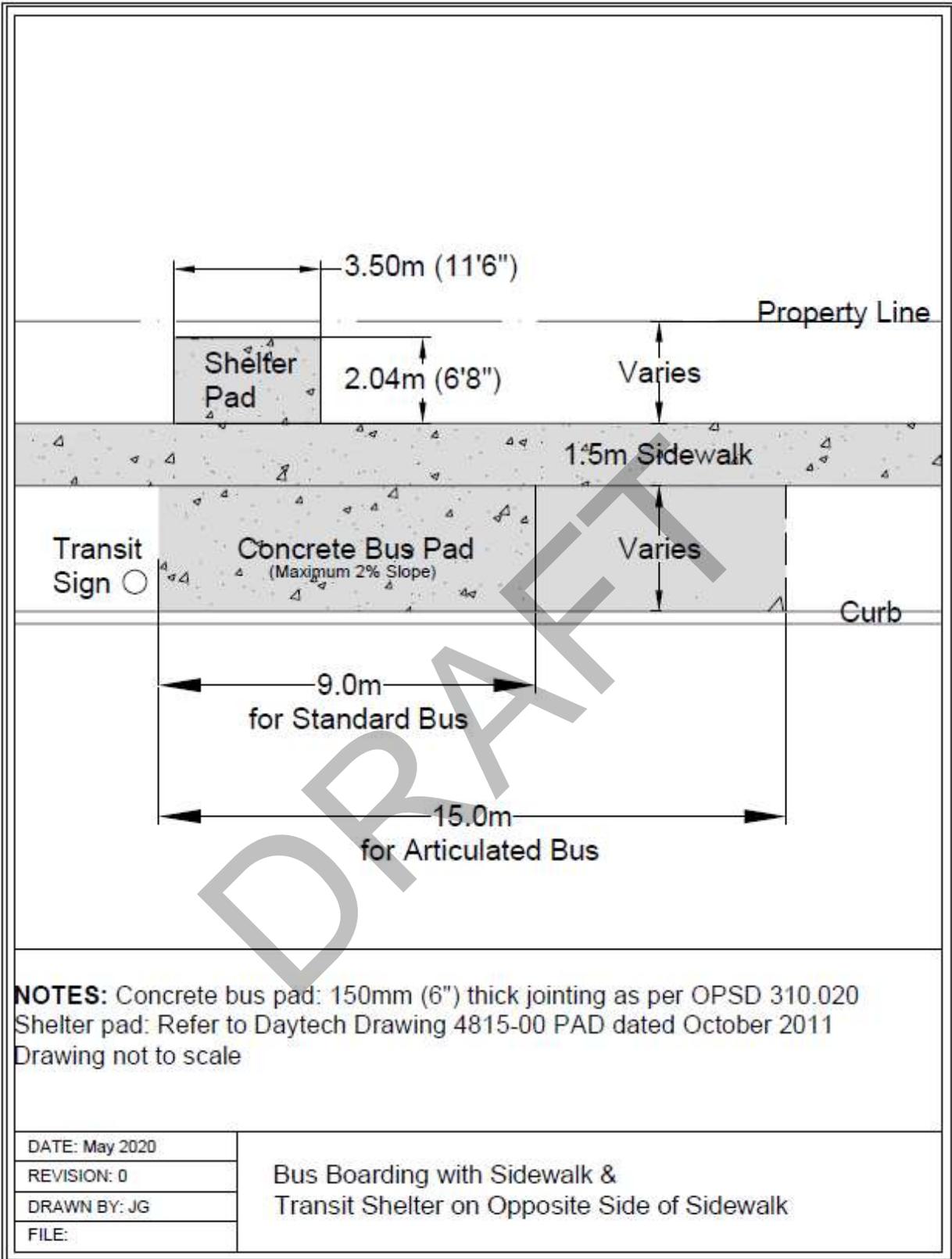


Figure 13: Diagram of bus boarding with sidewalk and transit shelter on opposite side of sidewalk.

Appendix E: Bus Stop with Bench

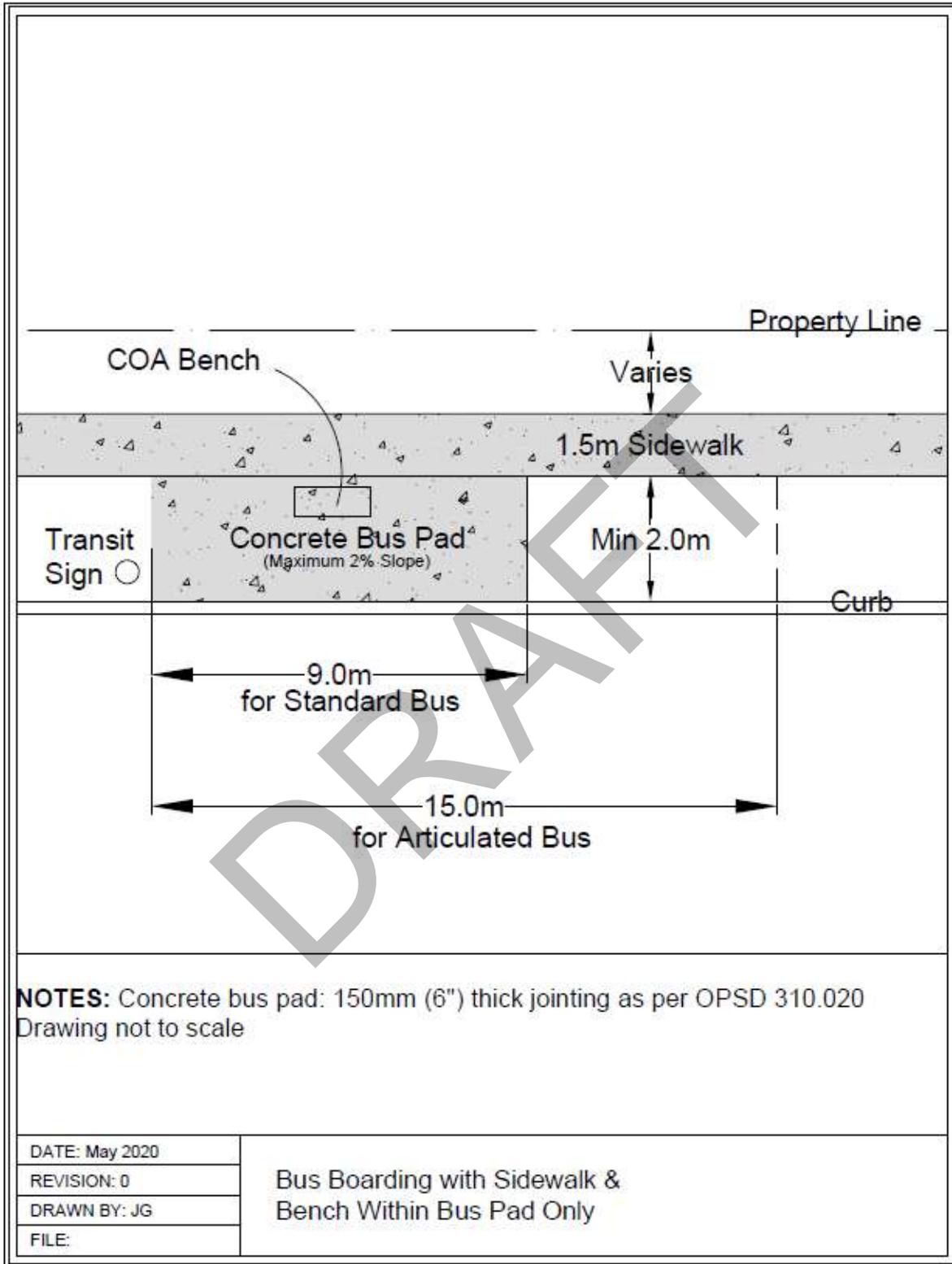


Figure 14: Diagram of bus boarding with sidewalk and bench within bus pad only.

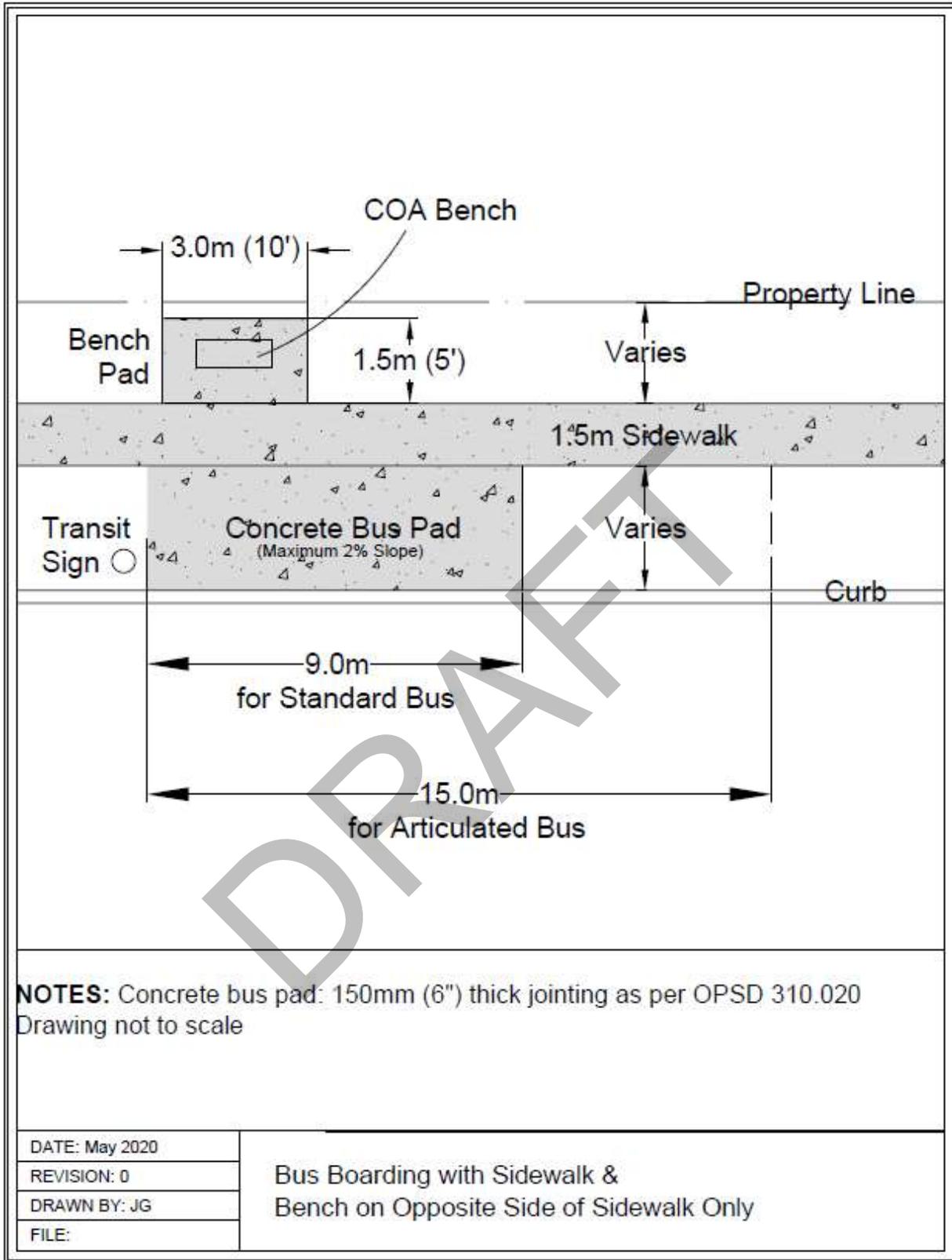


Figure 15: Diagram of bus boarding with sidewalk and bench on opposite side of sidewalk only.

Appendix F: Bus Stop with Bus Shelter and Bench

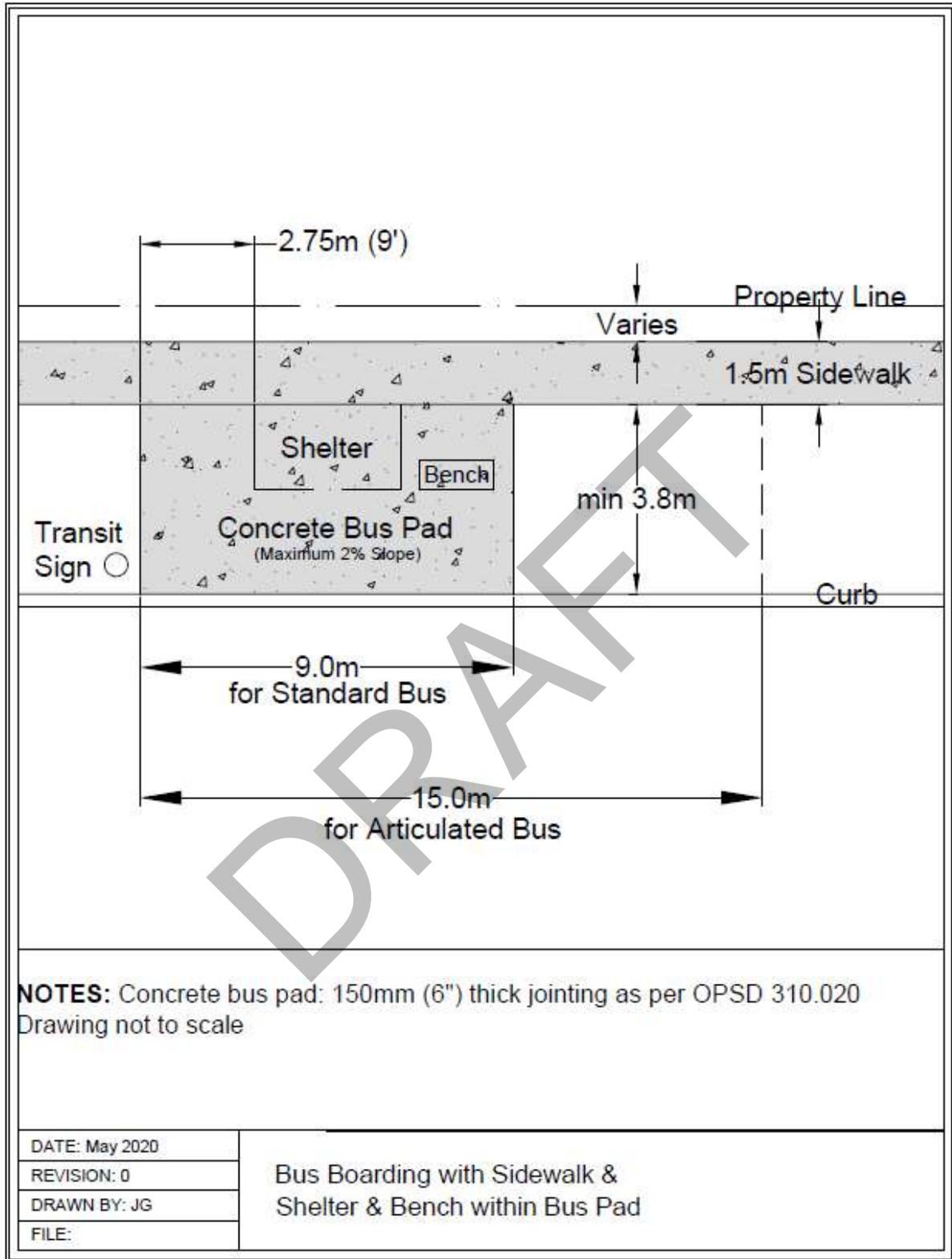


Figure 16: Diagram of bus boarding with sidewalk, shelter and bench within bus pad.

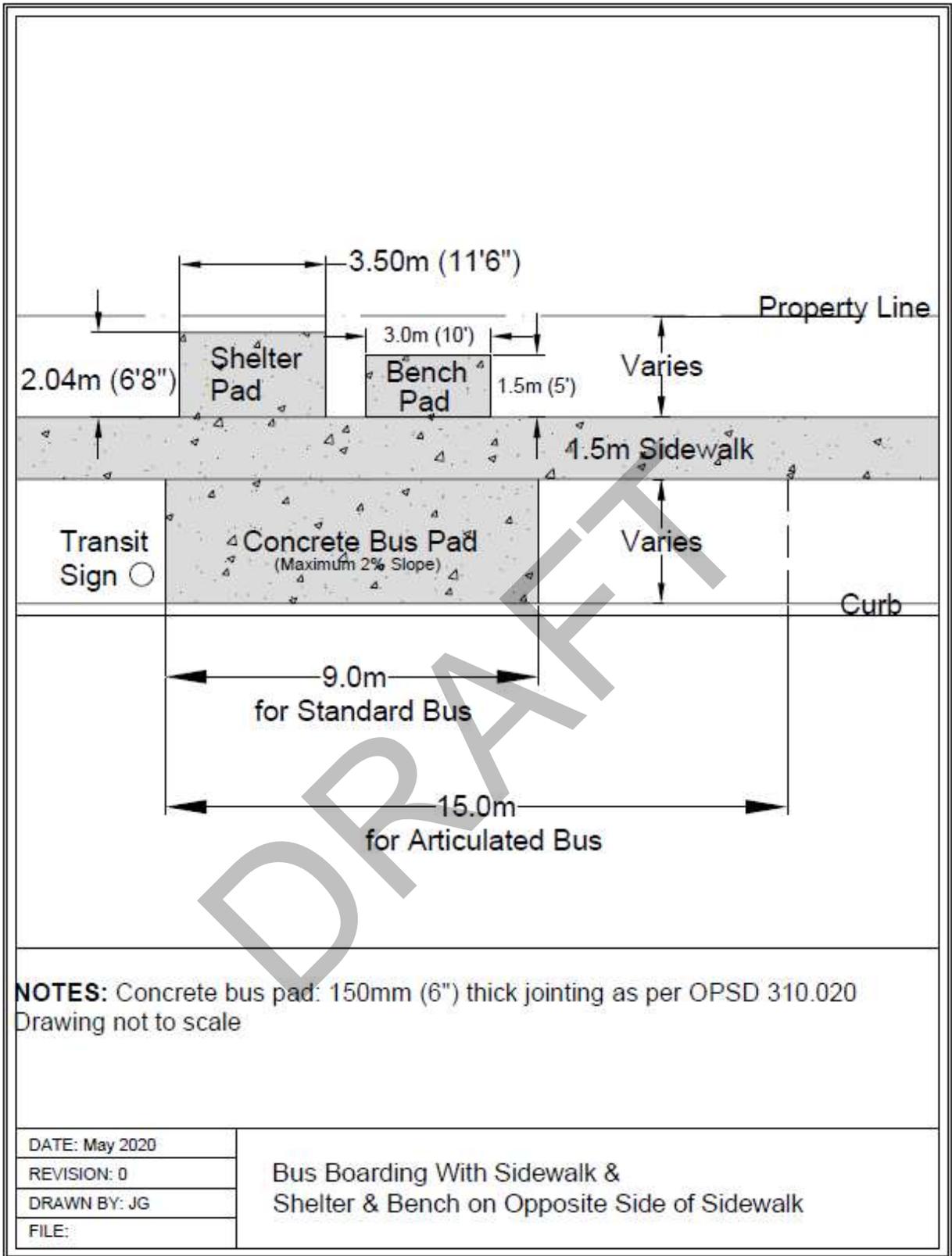


Figure 17: Diagram of bus boarding with sidewalk, shelter and bench on opposite side of sidewalk.

Appendix G: Typical Bus Stop and Furnishing Layout

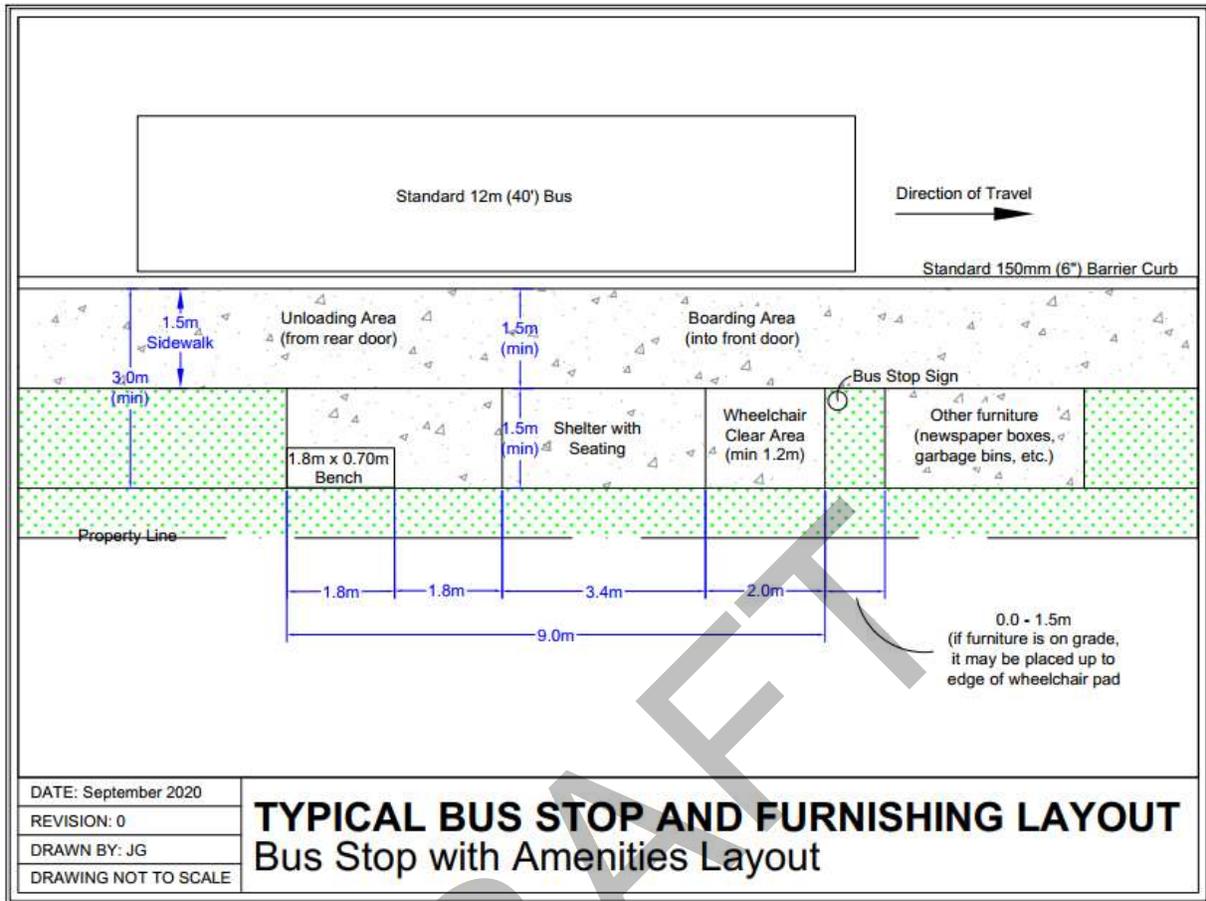


Figure 18: A diagram of the layout of a typical bus stop with furnishings.

Appendix H: References

City of Hamilton Public Work Department, Transportation Division – Transit Bus Accessibility Criteria & Guidelines

Transit Consulting Network – Town of Fort Erie Transit Phase III Bus Stop and Facility Improvement Plan

Halifax Transit – Moving Forward Together

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