



City of Vancouver

# NE 18th Street Corridor Design Guidelines

*September 2009*



# Acknowledgements

## Design Guidelines Committee

**Design Guidelines Committee members were provided all project communications and invited to Committee meetings and open houses. Approximately 30 members were in attendance at each meeting.**

Albert Angelo III, Al Angelo Company  
Anna Alexander, North Image Neighborhood Association  
Kathy Baghdanov, Countryside Woods Neighborhood Association  
Fred Bateman, Neighborhood Traffic Safety Alliance  
Joe Beaudoin, Joe's Place Farm  
Tim Buck, City of Vancouver Operations  
David Copenhaver, Gramor Development  
Lynda David, Regional Transportation Council  
George Dawson, Cimarron Neighborhood Association  
Christine Derbyshire, Burnt Bridge Creek Neighborhood Association  
Dawneen Dostert, Bonneville Power Administration  
Chad Eiken, City of Vancouver Development Review Services  
Jeff Gaines, City of Vancouver Fire Department  
Lisa Goorjian, Vancouver Clark Parks & Recreation  
Ken Hash, WSDOT SW Region Local Programs  
Ron Hulse, SW Washington Medical Center  
Kathy Huss, Ogden Neighborhood Association  
Bill Stewart, Ogden Neighborhood Association  
Ejaz Khan, Clark County Public Works

Mike Knotts, City of Vancouver Police  
Frank LAMie, Vancouver Housing Authority  
Mary Levie, Sunrise Glen Homeowners Association  
John Lovejoy, Fircrest Neighborhood Association  
Chris Mason, Forest Ridge Neighborhood Association  
Rob McDonald, American Medical Response  
Ross Montgomery, Airport Green Neighborhood Association  
Susan Page, First Place Neighborhood Association  
Don Palen, Northwood Neighborhood Association  
Charles Ray, Urban Forestry  
Les Rivera, Burton Evergreen Neighborhood Association  
Annie Selander, North Hearthwood Neighborhood Association  
Larry Sickles, Oakbrook Neighborhood Association  
Rich Smith, McMenamins  
Sue Steinbrenner, Evergreen School District  
Charles Stemper, Marrion Neighborhood Association  
Diane Stockton, C-TRAN  
Mike Swanson, Engineering Surface Water  
Dan Swensen, City of Vancouver Construction  
Dick Towner, Landover Sharmel Neighborhood Association  
Bob Voller, North Garrison Heights Neighborhood Association  
Mike Warren, Image Neighborhood Association



## City of Vancouver

Hassan Abdalla, Engineering Manager  
Chris Malone, Project Manager  
Brooke Porter, Public Involvement

## Consultants

### **HDR Engineering, Inc., *Prime Consultant***

Claude Sakr, Project Manager  
Don Moe, Design Task Lead  
Dustin Cooley, Senior Roadway Designer

### **Normandeau Associates, *Public Involvement***

Karen Ciocia, Public Involvement Task Lead  
Kyle Brown, Project Task Manager  
Dena Horton, Public Involvement Project Manager

### **Crandall Arambula, *Design Guidelines***

George Crandall, Design Guidelines Task Lead  
Don Arambula, Principal  
Jessie Maran, Urban Designer



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Introduction





# The Project

## Project Background

City of Vancouver and Clark County officials have identified NE 18th Street between NE 86th Avenue and NE 192nd Avenue as a major east-west arterial since the late 1970s. Between 2003 and 2006, the City of Vancouver led an Environmental Assessment (EA) and preliminary engineering design of the NE 18th Street Corridor. The Environmental Assessment includes:

- Constructing new roadway between NE 86th Avenue and NE 92nd Avenue and between NE 97th Avenue and NE 100th Avenue
- Widening the existing roadway between NE 92nd Avenue and NE 192nd Avenue
- Constructing bicycle lanes, sidewalks, and a multi-use trail linking to existing and proposed regional trails

The project will be constructed in segments as funding becomes available. The following segments—roughly the same as the four segments discussed in the EA—have been identified for the purposes of this design guidelines document:

- NE 86th Avenue to Interstate 205
- Interstate 205 to NE 138th Avenue
- NE 138th Avenue to NE 162nd Avenue
- NE 162nd Avenue to NE 192nd Avenue

Final design for the Interstate 205 to NE 138th Avenue segment is to be completed first. Construction of a portion of this segment is anticipated to follow. Subsequent segments will be designed and constructed as funds become available.

## Goals

The Environmental Assessment identifies seven goals for the NE 18th Street Corridor project. Two of these are specifically supported by the design guidelines:

- Encourage safe, multi-modal transportation along the corridor by creating sidewalks, crossings, bicycle lanes, and multi-use paths/trails that link schools, residences, community facilities, work places, and recreational sites.
- Connect pedestrians and bicyclists to the Burnt Bridge Creek Trail to provide community access to the Burnt Bridge Creek wetlands, floodway, and regional trail system.



NE 18th Street Corridor Regional Context

# The Corridor

The 5.5-mile NE 18th Street Corridor serves:

- Thirteen neighborhoods
- Elementary, Middle, and High schools
- Neighborhood and regional parks and sports facilities
- Commercial and retail businesses

The Corridor is bordered to the south by a 300-ft. wide Bonneville Power Association (BPA) transmission line easement. Joe's Place Farm utilizes significant portions of the land within the easement for agricultural production and u-pick operations.

## Relevant Projects

WSDOT anticipates constructing a new off-ramp from Interstate 205 to NE 18th Street as part of the I-205/Mill Plain-NE 112th Connector project. Design guidelines for the portion of NE 18th Street over Interstate 205 have not been included in this document and will be determined by WSDOT and the City of Vancouver as part of the Connector project.

Section 30, located at the eastern end of the corridor, is currently undergoing subarea planning. The draft Section 30 subarea plan identifies this area as an urban employment center with the potential to include:

- Office, industrial and commercial land uses
- Urban neighborhoods
- Harmony Fields Sport Complex
- Public and private shooting ranges
- Large water feature amenity(s)



# Design Guidelines

*The NE 18th Street Corridor Design Guidelines provide a framework for design and construction of the corridor and ensure a degree of consistency, harmony, and quality throughout the corridor.*

The Design Guidelines identified in this document reflect:

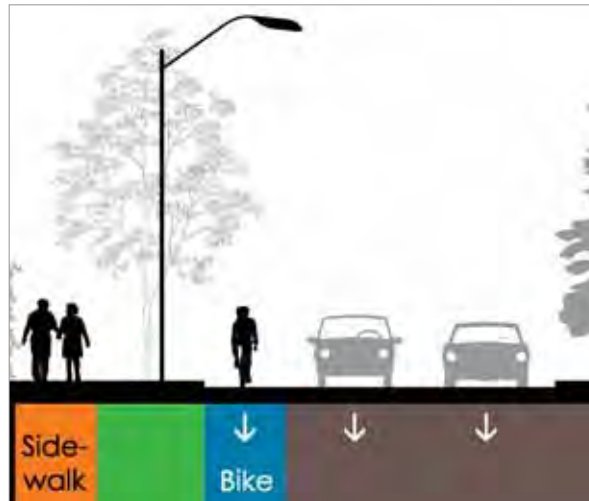
- Proposed actions outlined in the Environmental Assessment
- Final design for the corridor between NE 112th Avenue and NE Four Seasons Lane
- Aesthetic preferences stated by the City of Vancouver and the NE 18th Street Corridor Design Guidelines Committee

The *NE 18th Street Corridor Design Guidelines* document includes the following sections:

- **General Guidelines**—identifies the locations of pedestrian and bicycle facilities, roadway elements, sound and retaining walls, lighting, and landscape palettes
- **Segment Types**—illustrates typical arrangements of general guideline elements within each corridor segment
- **Corridor Details**—guides construction and specification of corridor elements



General Guidelines



Segment Types



Corridor Details



**General Guidelines**



## Overview

*General guidelines locate elements to be described in the Segment Types and Corridor Details sections.*

Alignments shown are diagrammatic and will be refined during final design. Elements may be adjusted to accommodate existing uses and features.





## Pedestrian and Bicycle

In addition to providing connections to the numerous neighborhood parks and schools along the corridor, facilities for pedestrians and bicycles provide links to existing regional trail systems to the east and west of the corridor, including:

- **Burnt Bridge Creek Trail** at NE 86th/87th Avenue
- **Lacamas Heritage Trail** east of NE 192nd Avenue

Pedestrian and bicycle facilities include:

- **Sidewalks**—provide east-west pedestrian access along the north side of the roadway
- **Powerline Trail**—provides protected east-west pedestrian and bicycle access along the south side of the roadway

For sidewalk and Powerline Trail details, please refer to the Corridor Details section of this document.

The following elements are shown for reference only and are not detailed by the design guidelines:

- On-street bicycle lanes
- Pedestrian signals
- Traffic signals

## NE 86th Avenue to Interstate 205

### Sidewalk

The north side sidewalk:

- Connects to the Burnt Bridge Creek Trail (BBCT) at Meadowbrook Park to reduce Corridor footprint at Meadowbrook Marsh
- Parallels the roadway between the BBCT and Interstate 205, providing pedestrian access to the corridor for residential areas to the north and east-west access along the corridor
- Connects to a future sidewalk at the Interstate 205 interchange to be constructed as part of the WSDOT I-205/Mill Plain-NE 112th Connector project

### Powerline Trail

The south side Powerline Trail:

- Connects to the Burnt Bridge Creek Trail at NE 86th Avenue to provide seamless regional pedestrian and bicycle access; details of the connection will be developed during final design of this segment
- Meanders through the BPA easement between NE 86th and 100th Avenue to take advantage of views to of Meadowbrook Marsh and transition between the typically suburban character of the corridor and the riparian character of Burnt Bridge Creek
- Parallels the roadway between NE 100th Avenue and NE 107th Avenue



NE 86th Avenue to Interstate 205 Pedestrian and Bicycle Facilities

## Interstate 205 to NE 138th Avenue

### Sidewalk

The north side sidewalk:

- Connects to a future sidewalk at the I-205 interchange to be constructed as part of the WSDOT I-205/Mill Plain-NE 112th Connector project
- Parallels the roadway between Interstate 205 and NE 126th Avenue, providing pedestrian access to the corridor for residential areas to the north and east-west access along the corridor
- Parallels the north side of the frontage road providing east-west pedestrian access along the corridor for residents and students from nearby schools
- Parallels the roadway at the NE 138th Avenue intersection

### Powerline Trail

The south side Powerline Trail:

- Parallels the roadway between Interstate 205 and NE 138th Avenue



Interstate 205 to NE 138th Avenue Pedestrian and Bicycle Facilities

## NE 138th Avenue to NE 162nd Avenue

### Sidewalk

The north side sidewalk:

- Parallels the roadway between NE 138th Avenue and NE 162nd Avenue, providing pedestrian access to the corridor for residential areas and schools to the north and east-west access along the corridor

### Powerline Trail

The south side Powerline Trail:

- Parallels the roadway between NE 138th Avenue and NE 162nd Avenue
- Meanders away from the roadway at the NE 148th Avenue and NE 155th Avenue intersections



NE 138th Avenue to NE 162nd Avenue Pedestrian and Bicycle Facilities

# NE 162nd Avenue to NE 192nd Avenue

## Sidewalk

The north side sidewalk:

- Parallels the roadway between NE 162nd Avenue and NE 192nd Avenue, providing pedestrian access to the corridor for residential areas and schools to the north and east-west access along the corridor
- Connects to existing sidewalk at NE 192nd Avenue

## Powerline Trail

The south side Powerline Trail:

- Parallels the roadway between NE 138th Avenue and NE 162nd Avenue
- Connects to future Lacamas Heritage Trail east of NE 192nd Avenue



NE 162nd Avenue to NE 192nd Avenue Pedestrian and Bicycle Facilities



## Roadway

The design guidelines cover the following roadway elements:

- **Hardscape Medians**—provide a buffer between travel directions
- **Landscape Medians**—provide a buffer between travel directions and opportunities for landscaping

For median details, please refer to the Corridor Details section of this document.

## NE 86th Avenue to Interstate 205

### Landscaped Medians

- West of the NE 97th Avenue intersection
- Alternate with left-turn lanes between the NE 97th Avenue intersection and NE 107th Avenue



NE 86th Avenue to NE 112th Avenue Roadway



# Interstate 205 to NE 138th Avenue

## Hardscaped Medians

- Alternate with left-turn lanes between Interstate 205 and NE 138th Avenue



NE 112th Avenue to NE 138th Avenue Roadway

## NE 138th Avenue to NE 162nd Avenue

### Landscaped Medians

- Alternate with left-turn lanes at the NE 138th Avenue intersection
- Between NE 141st Avenue and NE 159th Avenue



NE 138th Avenue to NE 162nd Avenue Roadway

# NE 162nd Avenue to NE 192nd Avenue

## Landscaped Medians

As shown between:

- NE 164th Avenue and NE 170th Avenue
- NE 172nd Avenue and NE 177th Avenue

## Hardscaped Medians

- Alternate with left-turn lanes east of the NE 180th Avenue intersection



NE 162nd Avenue to NE 192nd Avenue Roadway



## Sound and Retaining Walls

Two types of walls have been deemed necessary for specific points along the corridor:

- **Sound Walls**—reduce noise impacts on adjacent properties where predicted noise levels approach or exceed the FHWA's established noise abatement criteria or substantially exceed existing noise levels
- **Retaining Walls**—provide significant vertical grade changes with minimal horizontal disturbance, reducing construction and acquisition impacts on properties adjacent to the corridor

For sound and retaining wall details, please refer to the Corridor Details section of this document.

## NE 86th Avenue to Interstate 205

### Retaining Walls

- Retain fill areas along the north side of the corridor at Meadowbrook Marsh
- Retain cut areas along the south side of the corridor between NE 92nd Avenue and NE 97th Avenue and between NE 97th Avenue and NE 104th Avenue

### Sound Walls

- Buffer residential areas on the north side of the corridor between Meadowbrook Park and Interstate 205

### Retaining Wall/Sound Wall Combinations

- Retain fill areas and buffer residential areas along the north side of the corridor



NE 86th Avenue to NE 112th Avenue Sound and Retaining Walls

## Interstate 205 to NE 138th Avenue

### Retaining Walls

- Retain cut areas on the east and west sides of NE 112th Avenue at the NE 18th Street intersection
- Retain cut areas on the south side of the corridor along Joe's Place Farm and the BPA Easement between NE 112th Avenue and NE 119th Avenue

### Sound Walls

- Buffer residential areas on the north side of the corridor between NE 121st Avenue and NE 126th Avenue
- Buffer residential areas at the frontage road between NE 126th Avenue and the Landover Sharmel Condominiums near NE 138th Avenue

### Retaining Wall/Sound Wall Combination

- Sound wall added to existing retaining wall at the Mission Hills Apartments



NE 112th Avenue to NE 138th Avenue Sound and Retaining Walls

## NE 138th Avenue to NE 162nd Avenue

### Sound Walls

- Buffer residential areas on the north side of the corridor between NE 194th Avenue and NE 155th Avenue



NE 138th Avenue to NE 162nd Avenue Sound and Retaining Walls



# NE 162nd Avenue to NE 192nd Avenue

## Sound Walls

- Buffer residential areas on the north side of the corridor at NE 172nd Avenue



NE 162nd Avenue to NE 192nd Avenue Sound and Retaining Walls



## Street Lighting

All lighting needs along the corridor are met with the City of Vancouver's standard cobra-head street light. Two versions of the street light are used:

- Single-fixture
- Double-fixture

For street light details, please refer to the Corridor Details section of this document.

## NE 86th Avenue to Interstate 205

### Single-Fixture Street Lights

- Illuminate the north and south sides of the corridor between NE 86th Avenue and Interstate 205



NE 86th Avenue to Interstate 205 Lighting



## NE 138th Avenue to NE 162nd Avenue

### Single-Fixture Street Lights

- Illuminate the north and south sides of the corridor between NE 138th Avenue and NE 162nd Avenue



NE 138th Avenue to NE 162nd Avenue Lighting

# NE 162nd Avenue to NE 192nd Avenue

## Single-Fixture Street Lights

- Illuminate the north and south sides of the corridor between NE 162nd Avenue and NE 192nd Avenue



NE 162nd Avenue to NE 192nd Avenue Lighting





## Landscape

Landscape design for the corridor will be determined during final design. The following palettes are identified to ensure a consistent visual character along the corridor

- **Typical Palette**—low-maintenance and drought-tolerant species for use in disturbed areas throughout the corridor
- **Special Palette A**—native and water-conserving species that reflect the natural regional landscape of the Pacific Northwest to be used at the western end of the corridor adjacent to the Burnt Bridge Creek Trail and Meadowbrook Park.
- **Special Palette B**—Special median planting recommended in areas of notable existing landscape character
- **Wall Palette**—Low-maintenance and drought-tolerant vine species recommended to soften wall appearance, provide seasonal color, and inhibit graffiti

For details of the landscape palettes, please refer to the Corridor Details section of this document.

### BPA Easement

Due to BPA height restrictions, landscape materials within the easement must be under 10 ft. tall at maturity.

## NE 86th Avenue to Interstate 205

### Typical Palette

The typical palette is recommended for most planting areas within the corridor. These species have been selected for their ability to perform well in a variety of conditions with minimal maintenance. Located between NE 97th Avenue and Interstate 205 in:

- Planting areas
- Medians
- BPA Easement

### Special Palette A

These species have been selected to complement the existing vegetation—some of which will be preserved through construction—and the plant materials found along the Burnt Bridge Creek trail. Located west of NE 97th Avenue in:

- Planting areas
- Medians
- BPA Easement

### Wall Palette

The wall palette vine species have been selected for their hardiness and fall color. Located on the:

- South side of sound walls and along the face of retaining walls



NE 86th Avenue to Interstate 205 Landscape

# Interstate 205 to NE 138th Avenue

## Typical Palette

Located between Interstate 205 and NE 138th Avenue in:

- Planting areas
- BPA Easement

## Wall Palette

Located on the:

- South side of sound walls and along the face of retaining walls



Interstate 205 to NE 138th Avenue Landscape

## NE 138th Avenue to NE 162nd Avenue

### Typical Palette

Located between NE 97th Avenue and Interstate 205 in:

- Planting areas
- Median between NE 138th Avenue and NE 141st Avenue
- BPA Easement

### Special Palette B

Special palette B species have been selected to complement existing mature landscape that will be preserved. Located in medians between NE 141st Avenue and NE 162nd Avenue

### Wall Palette

Located on the:

- South side of sound walls and along the face of retaining walls



NE 138th Avenue to NE 162nd Avenue Landscape

# NE 162nd Avenue to NE 192nd Avenue

## Typical Palette

Located between NE 162nd Avenue and NE 192nd Avenue in:

- Planting areas
- Medians
- BPA Easement

## Wall Palette

Located on the:

- South side of sound walls and along the face of retaining walls



NE 162nd Avenue to NE 192nd Avenue Landscape



Segment Types





## Overview

This section describes typical conditions along the corridor and illustrates typical arrangements of the general guideline elements within each of the following segments:

- NE 86th Avenue to Interstate 205
- Interstate 205 to NE 138th Avenue
- NE 138th Avenue to NE 162nd Avenue
- NE 162nd Avenue to NE 192nd Avenue

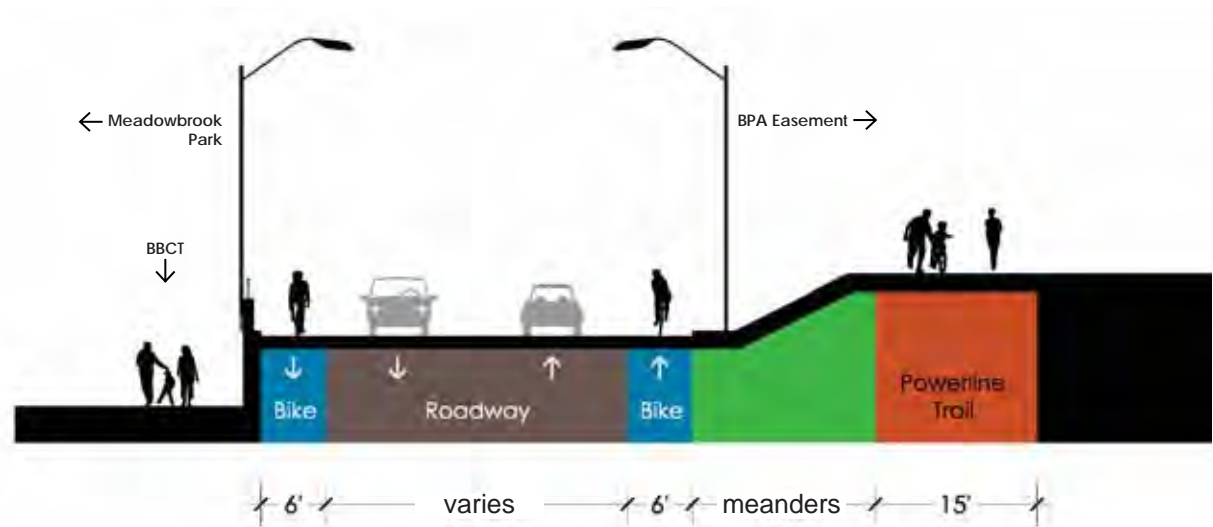
# NE 86th Avenue to Interstate 205

## Type A

At the western end of the corridor the roadway footprint is reduced to minimize adverse impacts to Meadowbrook Marsh.

- North side retaining wall separates the roadway from adjacent Meadowbrook Marsh and Burnt Bridge Creek Trail
- No sidewalk
- No median
- Powerline Trail meanders through the BPA easement, taking advantage of views afforded by raised elevation

Alignments and wall heights shown are diagrammatic and will be refined during final design. Elements may be adjusted to accommodate existing uses and features.



Type A

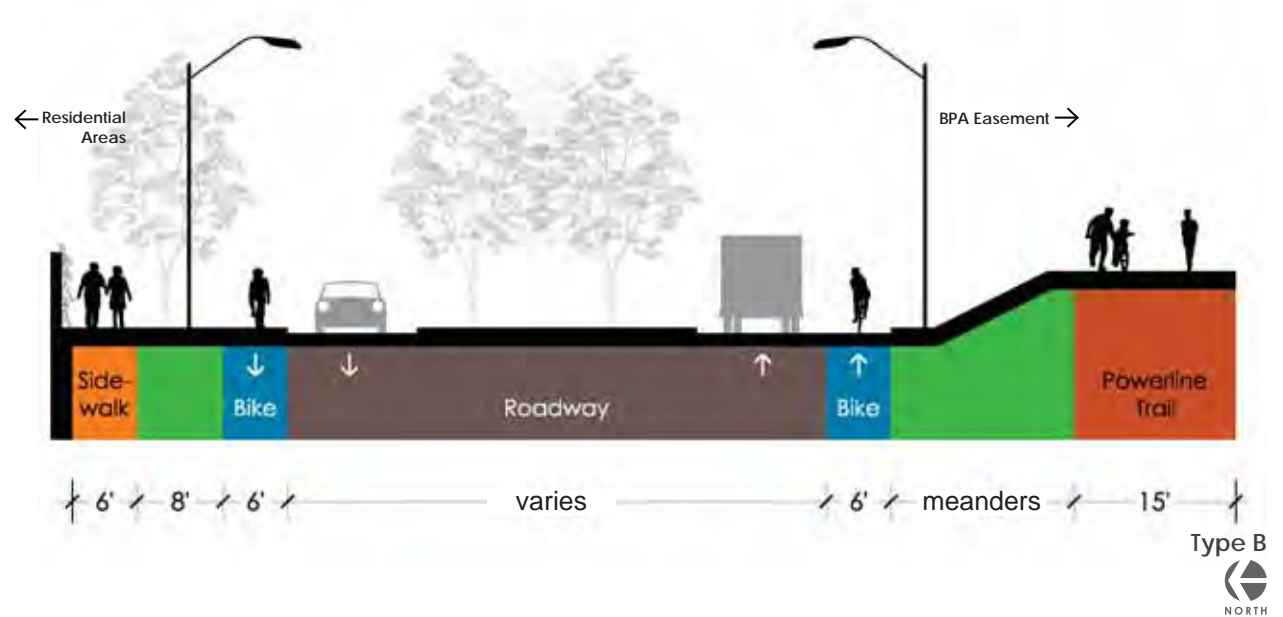


## Type B

Between Meadowbrook Park and NE 97th Avenue, the corridor includes a large median to accommodate existing mature vegetation. In addition:

- Sound walls, retaining walls, and wall combinations buffer residential areas to the north
- Powerline Trail meanders through the BPA easement, taking advantage of views afforded by raised elevation

Alignments and wall heights shown are diagrammatic and will be refined during final design. Elements may be adjusted to accommodate existing uses and features.

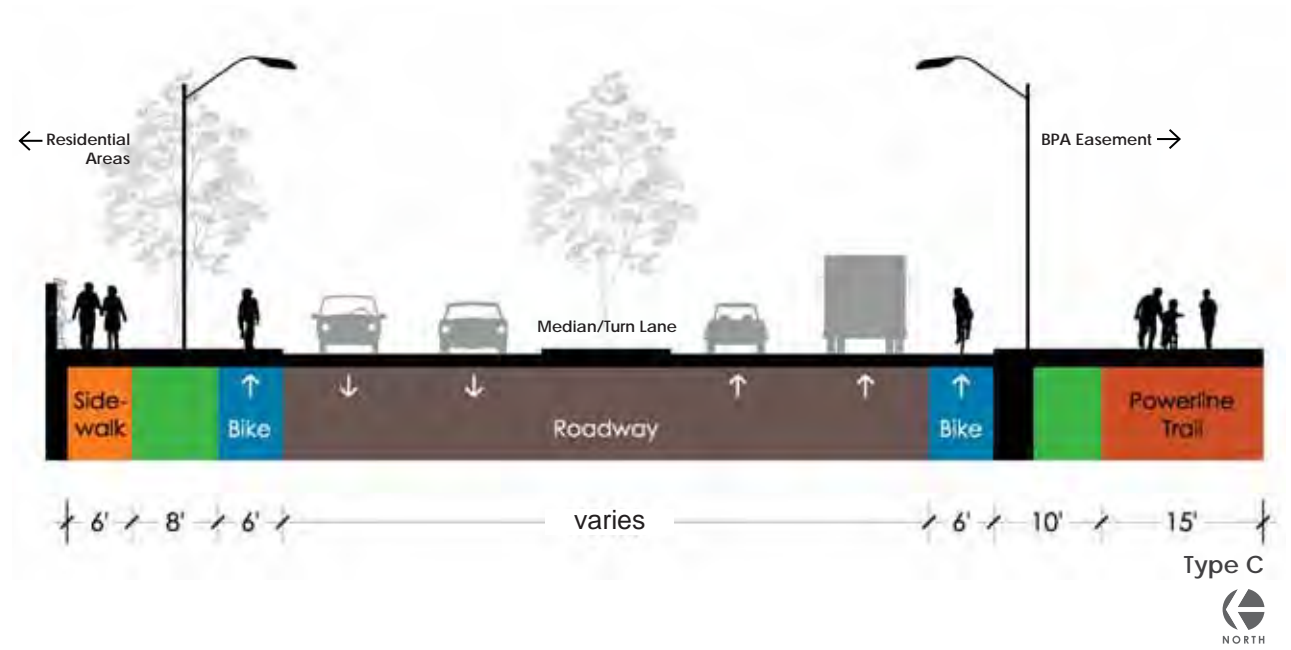


## Type C

Between NE 97th Avenue and Interstate 205, the corridor travels through variable topography. The corridor in this area typically includes:

- Retaining walls on both the north and south sides
- Powerline Trail 10 ft. south of the roadway and the south side retaining wall
- Sound walls on the north side to buffer residential areas

Alignments shown are diagrammatic and will be refined during final design. Elements may be adjusted to accommodate existing uses and features.



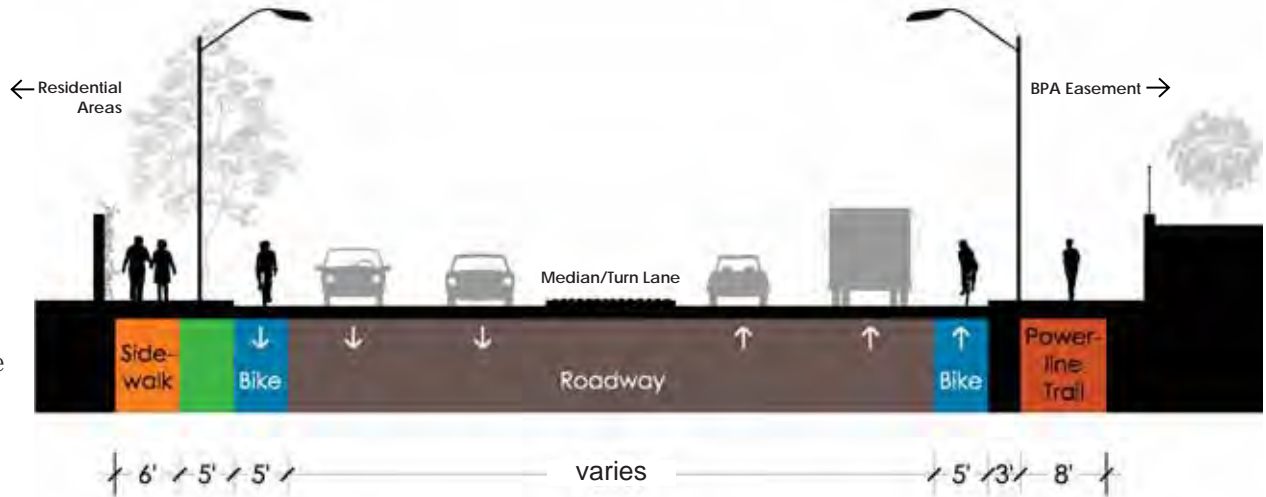
# Interstate 205 to NE 138th Avenue

## Type D

Between Interstate 205 and NE 126th Avenue, the roadway footprint is reduced to minimize impacts to Joe's Place Farm's agricultural operations within the BPA easement.

- Powerline Trail reduced to 8 ft.
- Powerline Trail buffer reduced to 3 ft.
- On-street bike lanes reduced to 5 ft.
- Sidewalk buffer reduced to 5 ft.

Alignments and wall heights shown are diagrammatic and will be refined during final design. Elements may be adjusted to accommodate existing uses and features.



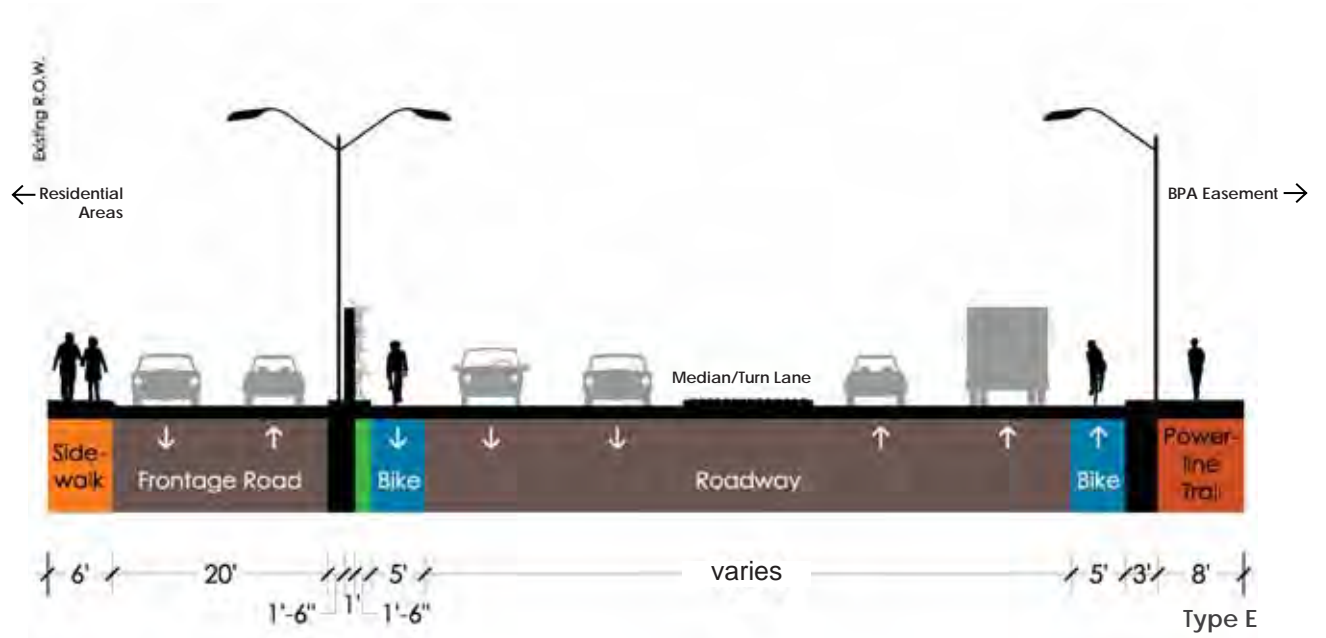
## Type E

Between NE 126th Avenue and the Landover Sharmel Condominiums near NE 138th Avenue, the corridor includes a frontage road on the north side in order to eliminate direct residential access onto NE 18th Street.

Modifications to minimize impacts to Joe's Place Farm's agricultural operations within the BPA easement include:

- Powerline Trail reduced to 8 ft.
- Powerline Trail buffer reduced to 3 ft.
- On-street bike lanes reduced to 5 ft.

Alignments and wall heights shown are diagrammatic and will be refined during final design. Elements may be adjusted to accommodate existing uses and features.



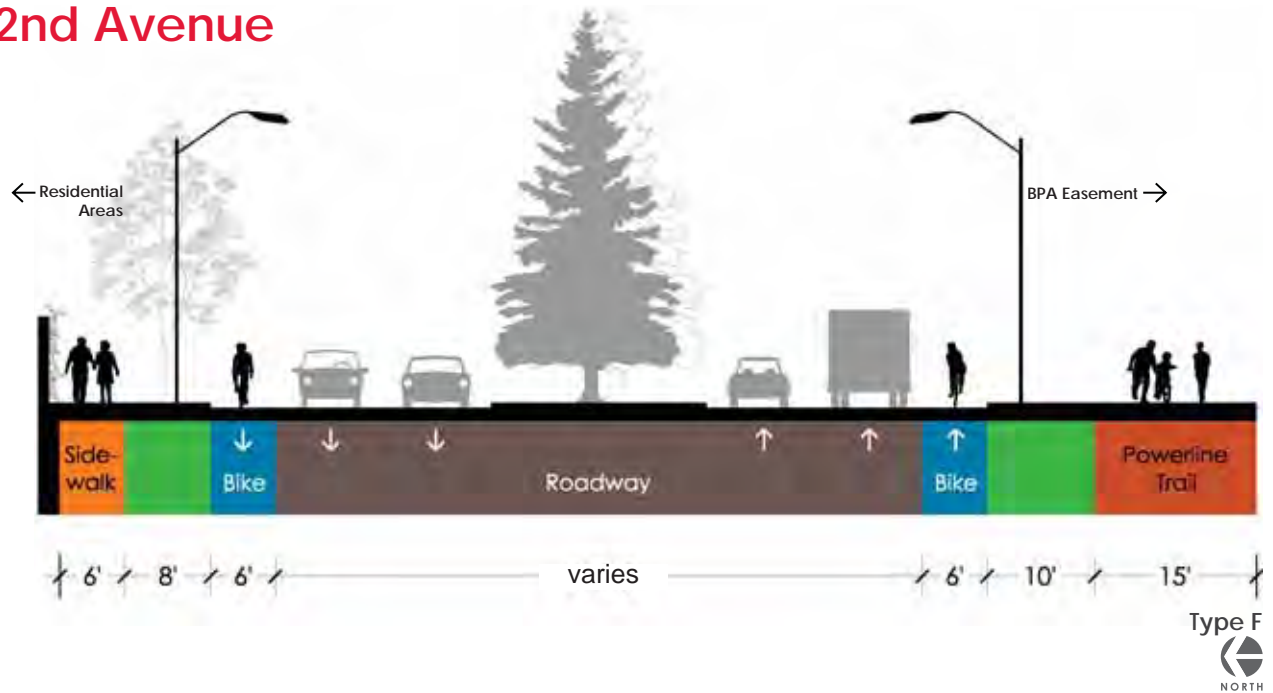
# NE 138th Avenue to NE 162nd Avenue

## Type F

Between NE 138th Avenue and NE 162nd Avenue, the corridor travels through relatively flat topography and is relatively unconstrained. The corridor in this area typically includes:

- 50-ft. landscaped medians to accommodate existing mature trees
- Retaining walls on the north side to buffer residential areas
- 15-ft. Powerline Trail located 10 ft. south of the roadway
- 6-ft. sidewalk and 8-ft. planting area on the north side of the roadway

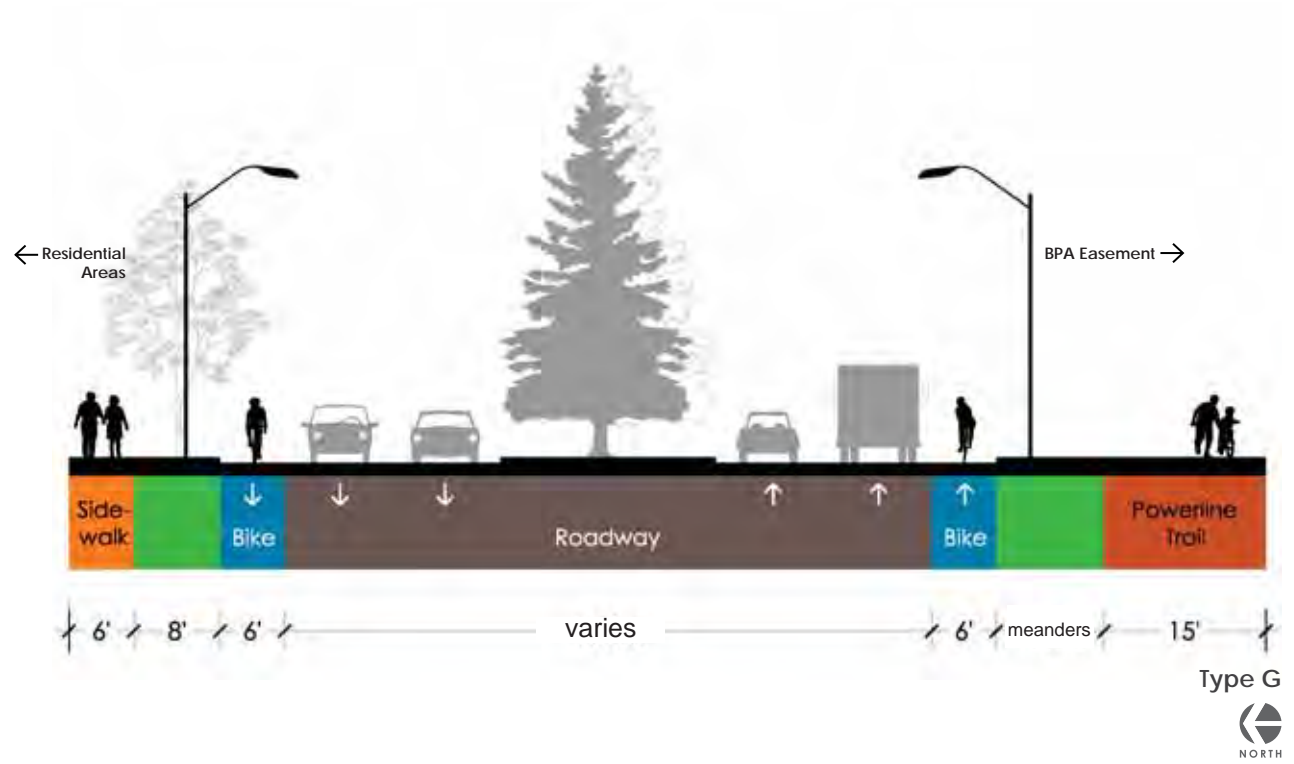
Alignments shown are diagrammatic and will be refined during final design. Elements may be adjusted to accommodate existing uses and features.



## Type G

At the intersections of NE 18th Street with NE 148th Avenue and NE 155th Avenue, the Powerline Trail meanders through the BPA easement.

Alignments shown are diagrammatic and will be refined during final design. Elements may be adjusted to accommodate existing uses and features.





# NE 162nd Avenue to NE 192nd Avenue

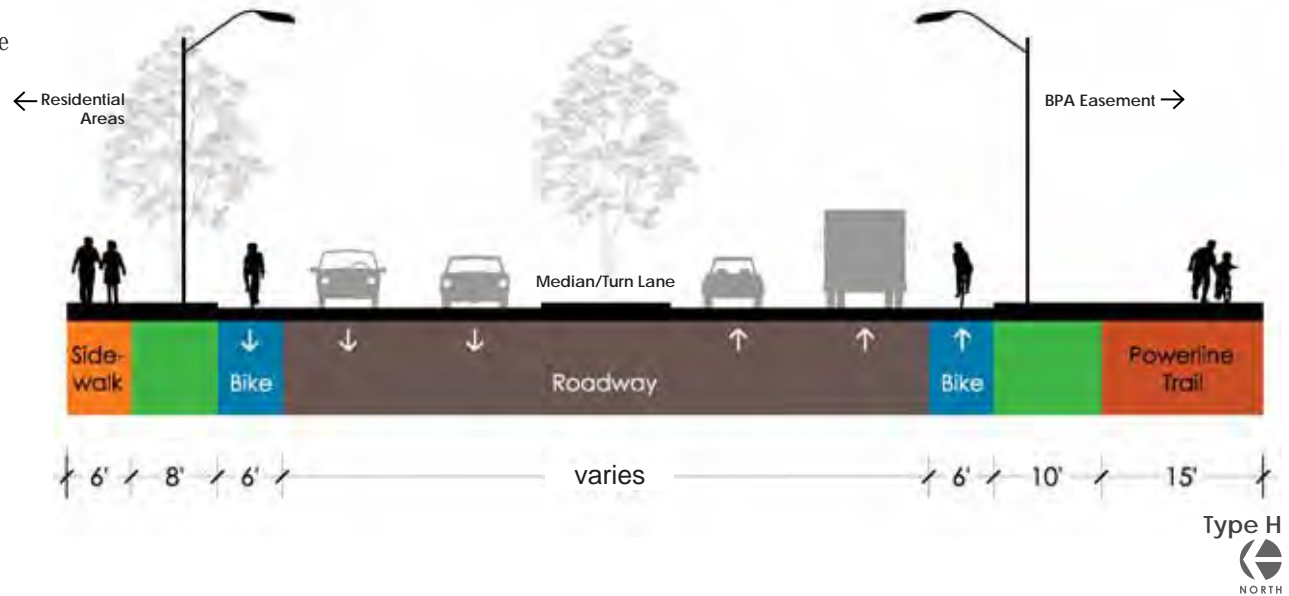
## Type H

Between NE 162nd Avenue and NE 192nd Avenue, the corridor travels through relatively flat topography and is relatively unconstrained. The corridor in this area typically includes:

- Landscaped medians
- 15-ft. Powerline Trail located 10 ft. south of the roadway
- 6-ft. sidewalk and 8-ft. planting area on the north side of the roadway

Alignments shown are diagrammatic and will be refined during final design. Elements may be adjusted to accommodate existing uses and features.

The Powerline Trail has been constructed along the Pacific Park frontage. The constructed portion is a 12 ft. wide, meandering asphalt trail.





Corridor Details



## Overview

This section provides details to guide construction of corridor elements. These details will:

- Facilitate a consistent look throughout the entire corridor despite long-term phased construction of the segments
- Support continuity within the larger pedestrian/ bicycle system by utilizing design motifs and furnishings from the adjacent Burnt Bridge Creek Trail
- Reduce maintenance requirements by specifying City standard fixtures and low-maintenance plant materials



## Powerline Trail

The Powerline Trail provides protected east-west pedestrian and bicycle access along the south side of the roadway.

The typical trail surface is concrete and reflects the detailing of the Burnt Bridge Creek Trail. The Design Guidelines Committee has expressed a preference for permeable pavement which may be used if cost and maintenance criteria can be met. Where necessary due to site conditions, asphalt may be substituted.

Three detail variations of the Powerline Trail occur within the Corridor:

- Typical
- Interstate 205 to NE 138th Avenue
- Meandering

Conceptual plan details for a mid-block crossing are also identified.



Sample Trail Detail

## Typical

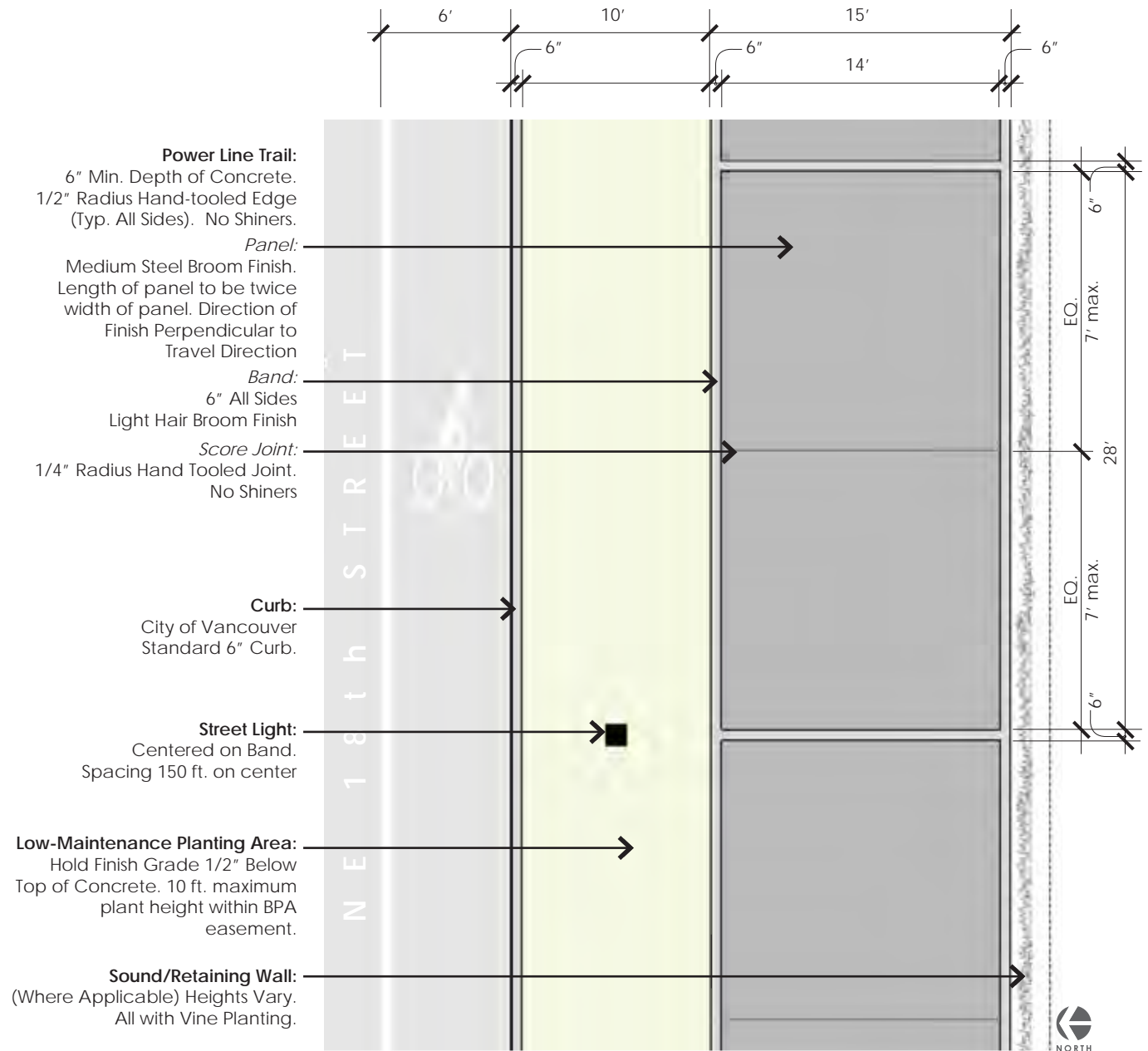
Typical portions of the Powerline Trail:

- Accommodate bidirectional pedestrian and bicycle travel on a 15-ft. concrete trail
- Are separated from street traffic by a 10-ft. planting area



Typical Powerline Trail Character





Typical Powerline Trail Plan

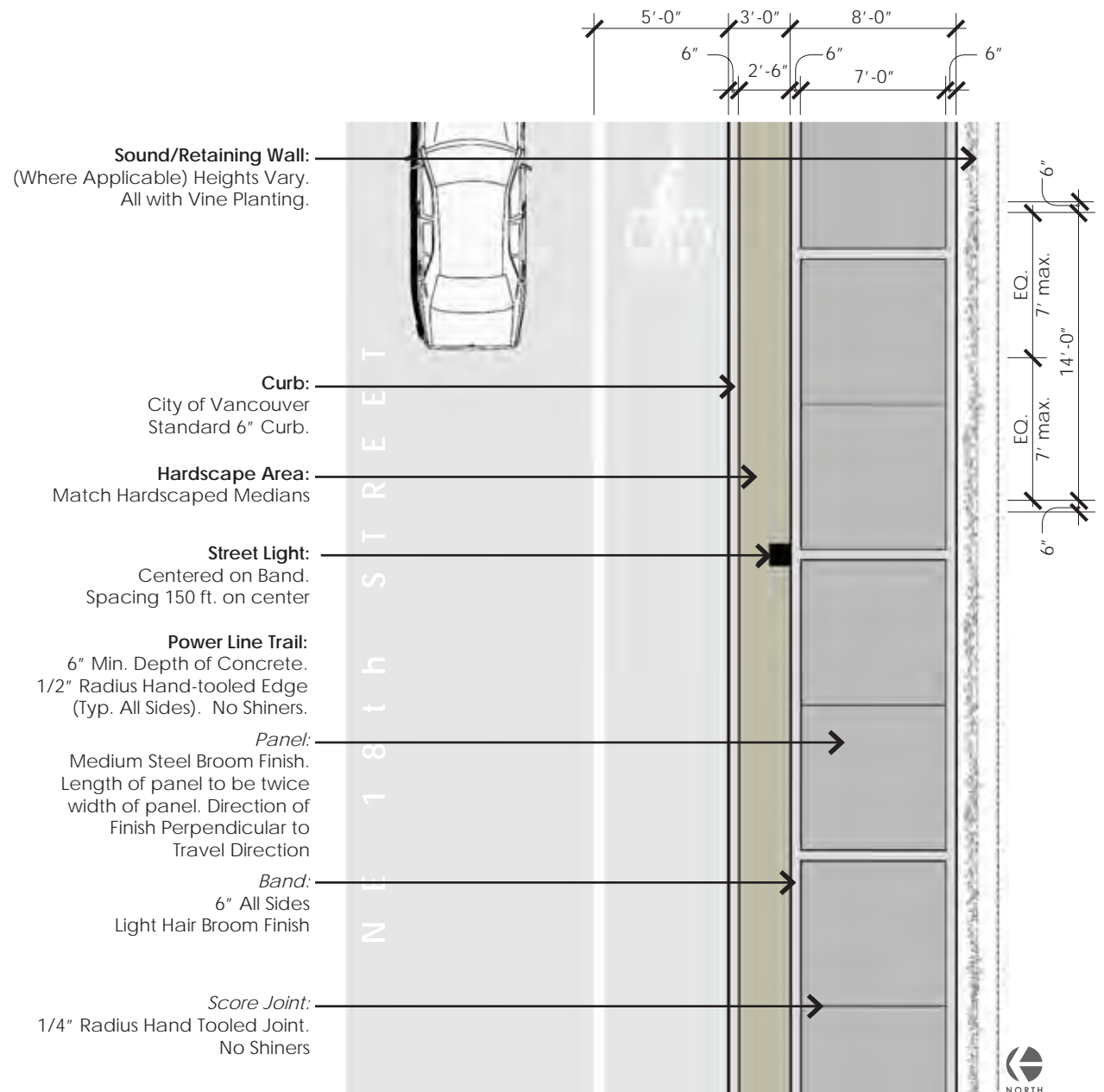
## Interstate 205 to NE 138th Avenue

In order to reduce impacts to Joe's Farm agricultural land on the south side of the corridor, the Powerline Trail detail is narrowed between Interstate 205 and 138th Avenue. In this segment, the trail:

- Accommodates bidirectional pedestrian and bicycle travel on an 8-ft. concrete trail
- Is separated from vehicular traffic by a 3-ft. hardscaped strip



Interstate 205 and NE 138th Powerline Trail Character



Interstate 205 to NE 138th Avenue Powerline Trail Plan

## Meandering

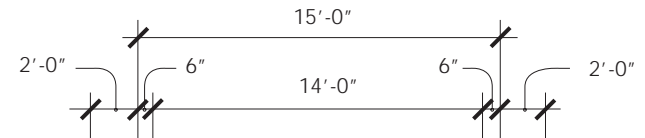
East of NE 100th Street and at NE 148th Avenue and NE 155th Avenue the powerline trail winds through the BPA easement 10 ft. to 300 ft. south of the NE 18th Street curb line. The meandering powerline trail:

- Accommodates bidirectional pedestrian and bicycle travel on a 15-ft. concrete trail
- Is bordered on both sides by a level 2-ft. gravel shoulder

The Powerline Trail section should be thickened as necessary to accommodate BPA maintenance vehicles.



Meandering Powerline Trail Character



**Power Line Trail:**  
 6" Min. Depth of Concrete.  
 1/2" Radius Hand-tooled Edge  
 (Typ. All Sides). No Shiners.

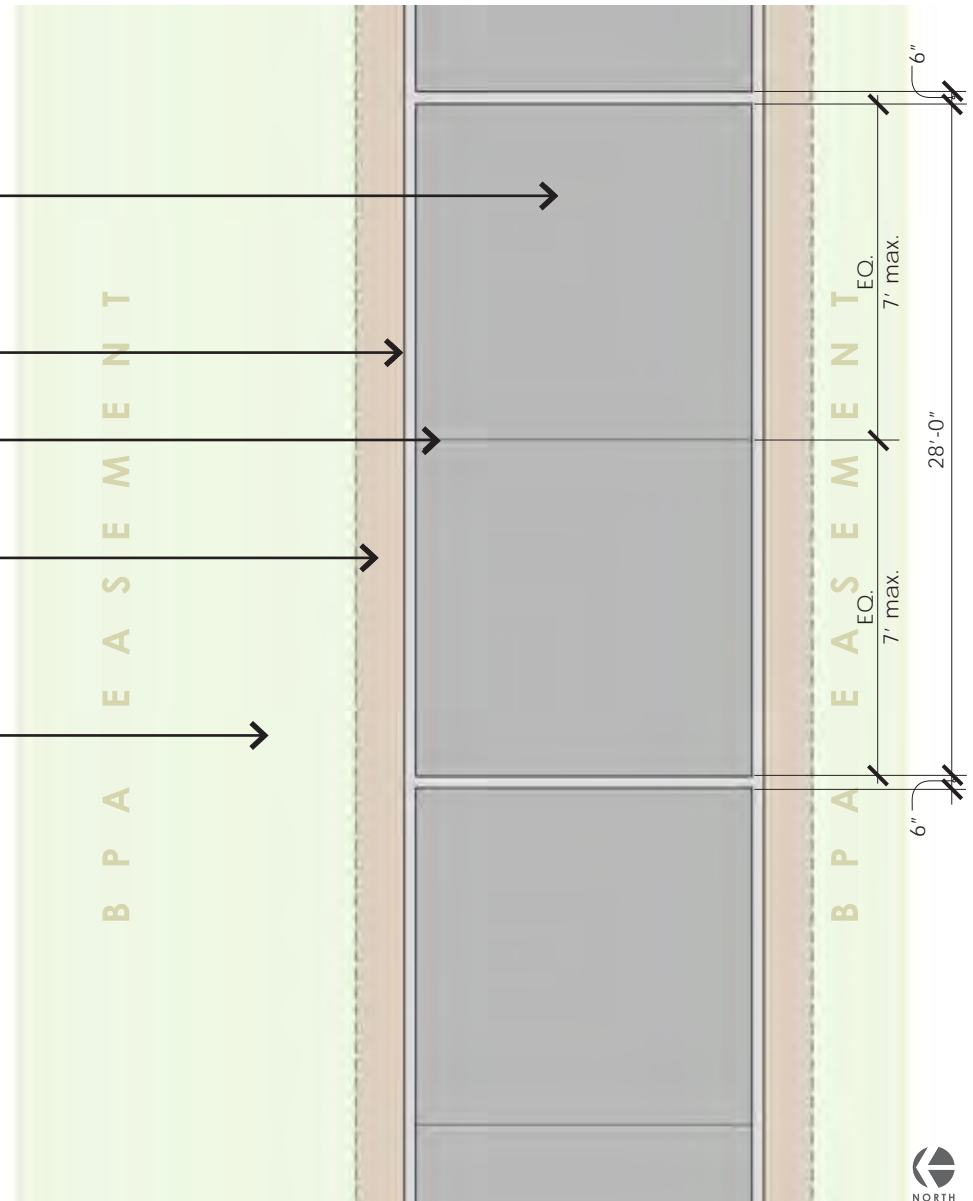
*Panel:*  
 Medium Steel Broom Finish.  
 Length of panel to be twice  
 width of panel. Direction of  
 Finish Perpendicular to  
 Travel Direction

*Band:*  
 6" All Sides  
 Light Hair Broom Finish

*Score Joint:*  
 1/4" Radius Hand Tooled Joint.  
 No Shiners

**Shoulder:**  
 2 ft. Level Shoulder Both Sides  
 of Powerline Trail. 1 1/2" Minus  
 Baserock. Hold Finish Grade 1/2"  
 Below Top of Concrete.

**Low-Maintenance Planting Area:**  
 10 ft. Maximum Height within BPA  
 Easement.



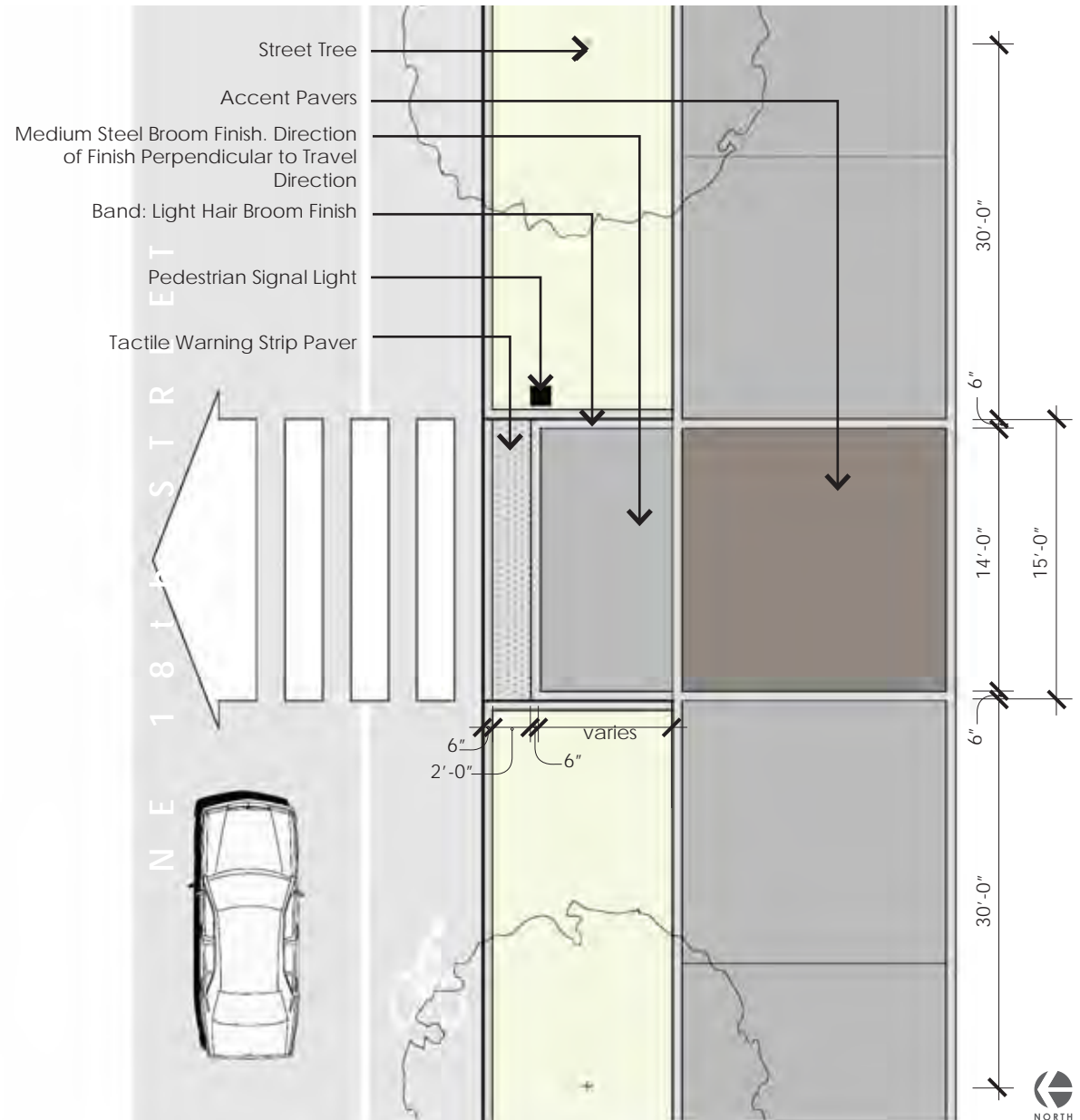
Meandering Powerline Trail Plan



## Mid-Block Crossing at Powerline Trail

Locations for mid-block crossings have not been located during the design guidelines process. Should final design of any segment of the Corridor call for mid-block crossings, they should:

- Be highlighted by accent pavers
- Establish clear views at crossings with street trees held back 30 ft.



Mid-Block Crossing at Powerline Trail

## Sidewalk

The sidewalk provides east-west pedestrian access along the north side of the roadway.

The typical sidewalk surface is concrete and reflects the detailing of the Burnt Bridge Creek Trail. The Design Guidelines Committee has expressed a preference for permeable pavement which may be used if cost and maintenance criteria can be met.

Three detail variations of the sidewalk occur within the Corridor:

- Typical
- Interstate 205 to NE 126th Avenue
- Frontage Road

Conceptual plan detail for a mid-block crossing is also identified.



Sample Sidewalk Detail



## Typical

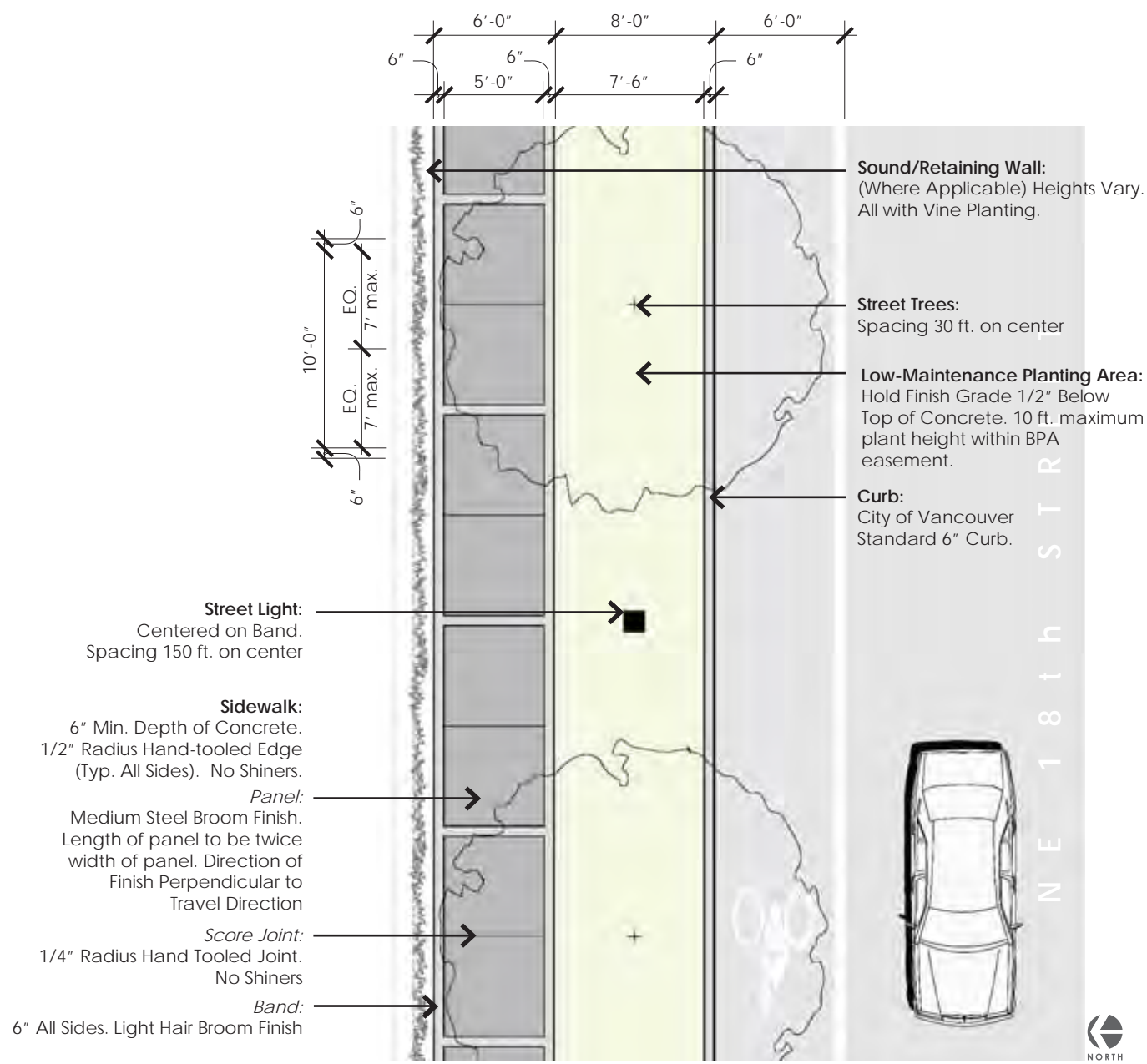
Typical portions of the sidewalk:

- Accommodate pedestrians on a 6-ft. concrete sidewalk
- Are buffered from vehicular traffic by an 8-ft. planting area
- Are shaded by street trees in the planting area, set at 30-ft. on center



Typical Sidewalk Character





Typical Sidewalk Plan

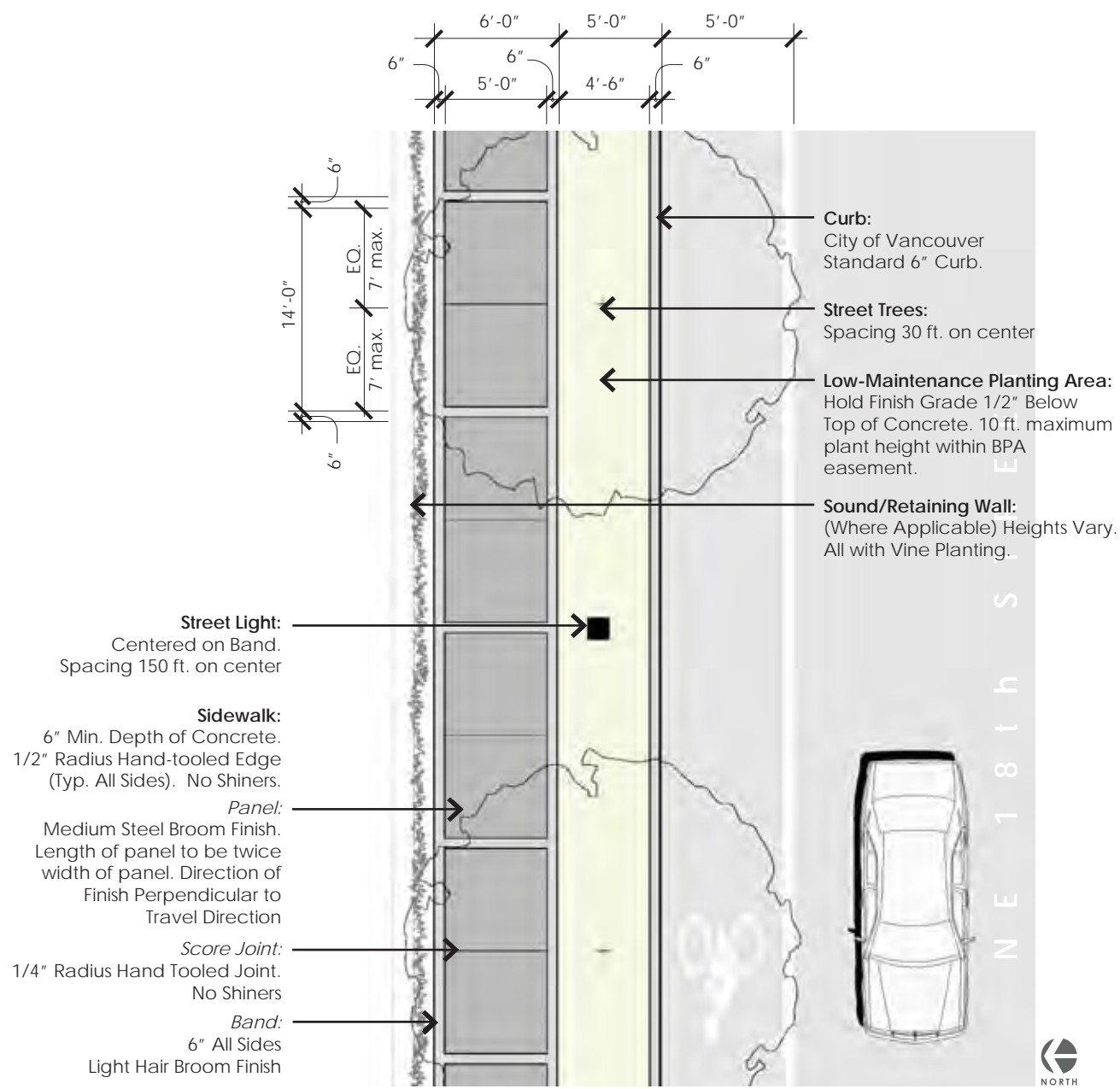
## Interstate 205 to NE 126th Avenue

In order to reduce impacts to Joe's Place Farm agricultural land on the south side of the corridor, the sidewalk detail is narrowed between Interstate 205 and NE 126th Avenue. In this segment, the sidewalk:

- Accommodates pedestrians on a 6-ft. concrete sidewalk
- Is buffered from vehicular traffic by a 5-ft. planting area
- Is shaded by street trees at 30-ft. on center



Interstate 205 to NE 126th Avenue Sidewalk Typical Character

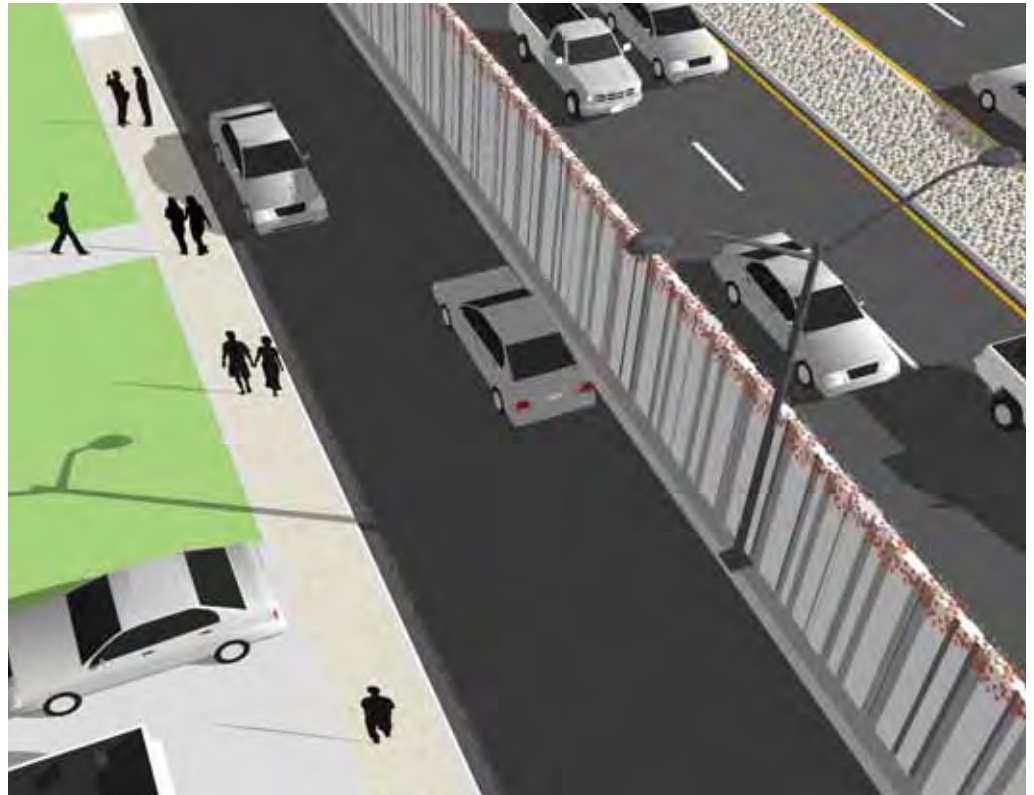


Interstate 205 to NE 126th Avenue Sidewalk Plan

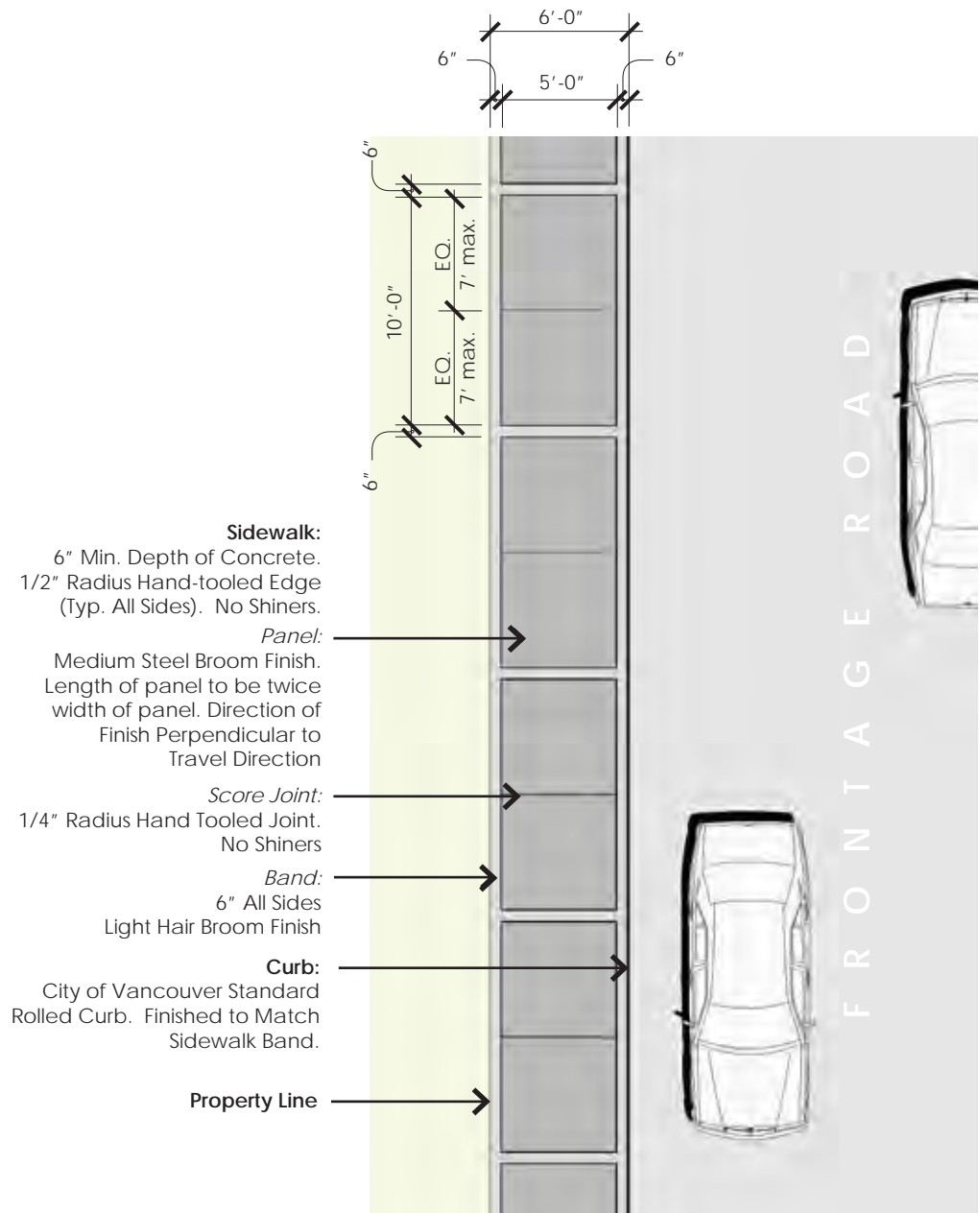
## Frontage Road

A sidewalk runs along property line on the north side of the frontage road. The sidewalk:

- Accommodates pedestrians on a 6-ft. concrete sidewalk
- Is flush with the frontage road curb-line



Frontage Road Sidewalk Character



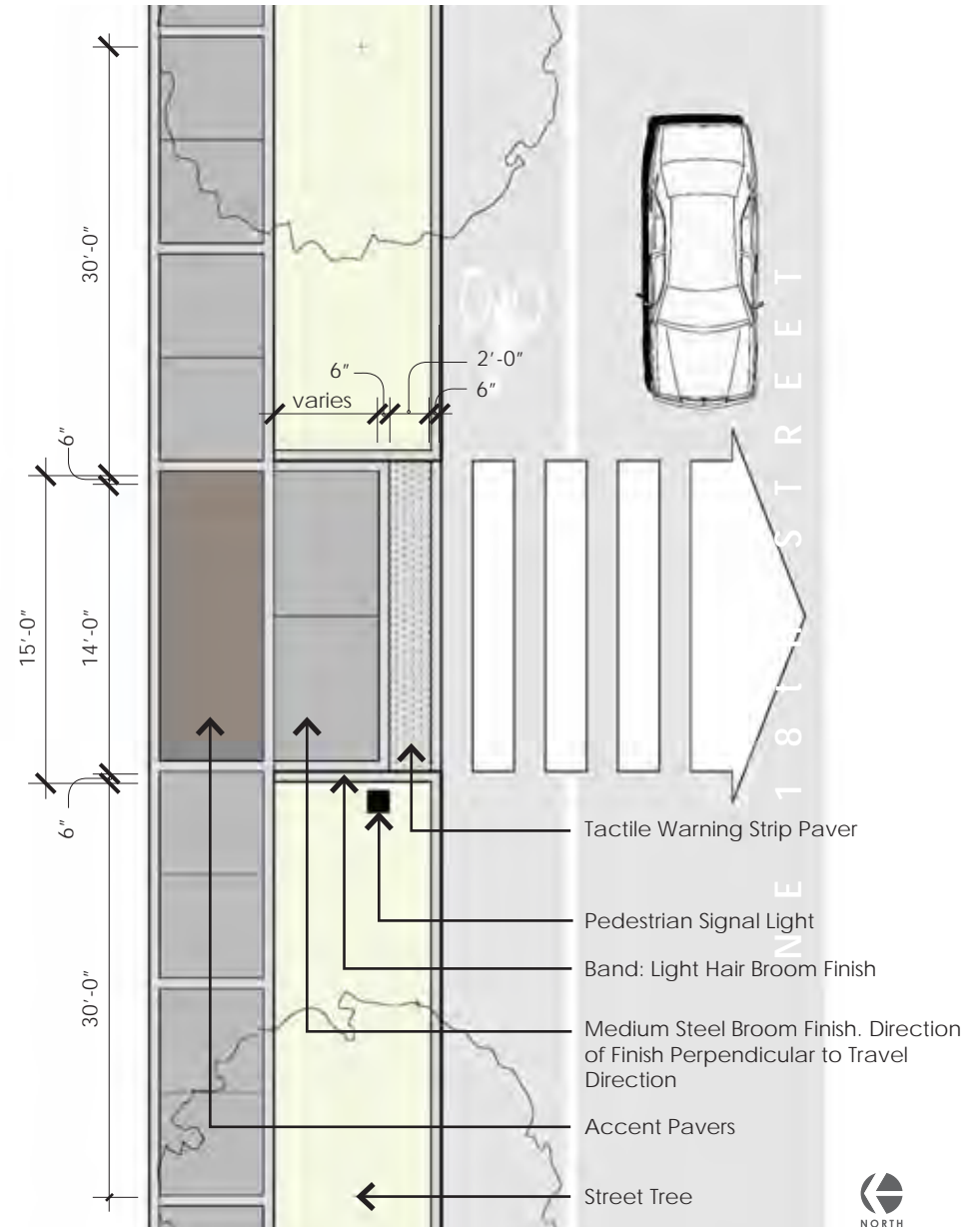
Frontage Road Sidewalk Plan



## Mid-Block Crossing

Locations for mid-block crossings have not been located during the design guidelines process. Should final design of any segment of the Corridor call for mid-block crossings, they should:

- Be highlighted by accent pavers
- Establish clear views at crossings with street trees held back 30 ft.



Mid-Block Crossing at Sidewalk



## Walls

Two types of walls have been deemed necessary along the corridor:

- **Sound Walls**—reduce noise impacts on adjacent properties
- **Retaining Walls**—provide significant vertical grade changes with minimal horizontal disturbance

Sound and retaining walls are to receive the same finish throughout the corridor. The poured-in-place, board-formed concrete walls are:

- Visually consistent at variable wall heights and lengths
- Modular
- Cost efficient

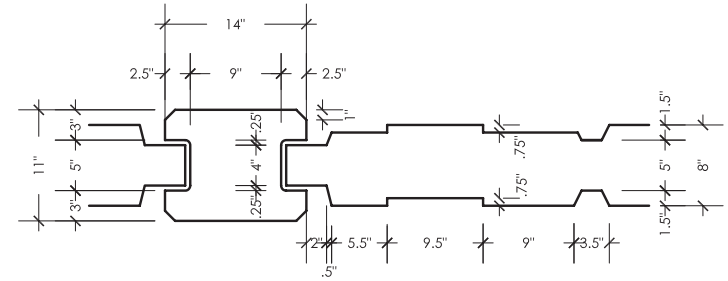
The soundwall indicated at the Mission Hills Apartments would be built on an existing retaining wall of unknown structural capacity. If it is determined that the preferred wall type indicated here can not be supported by the existing wall, an inconsistent wall type may be used.



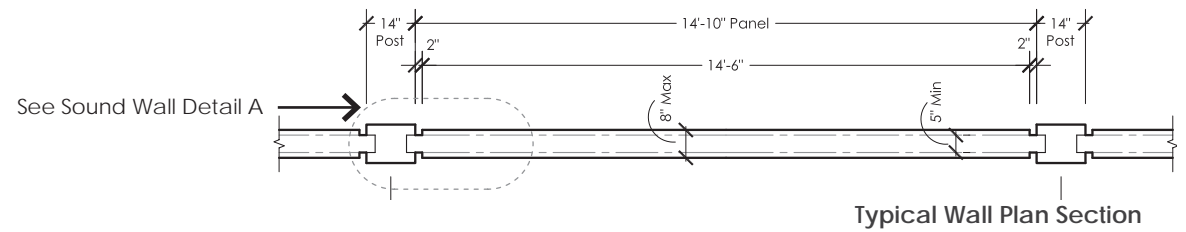
Sample Wall

## Sound Wall

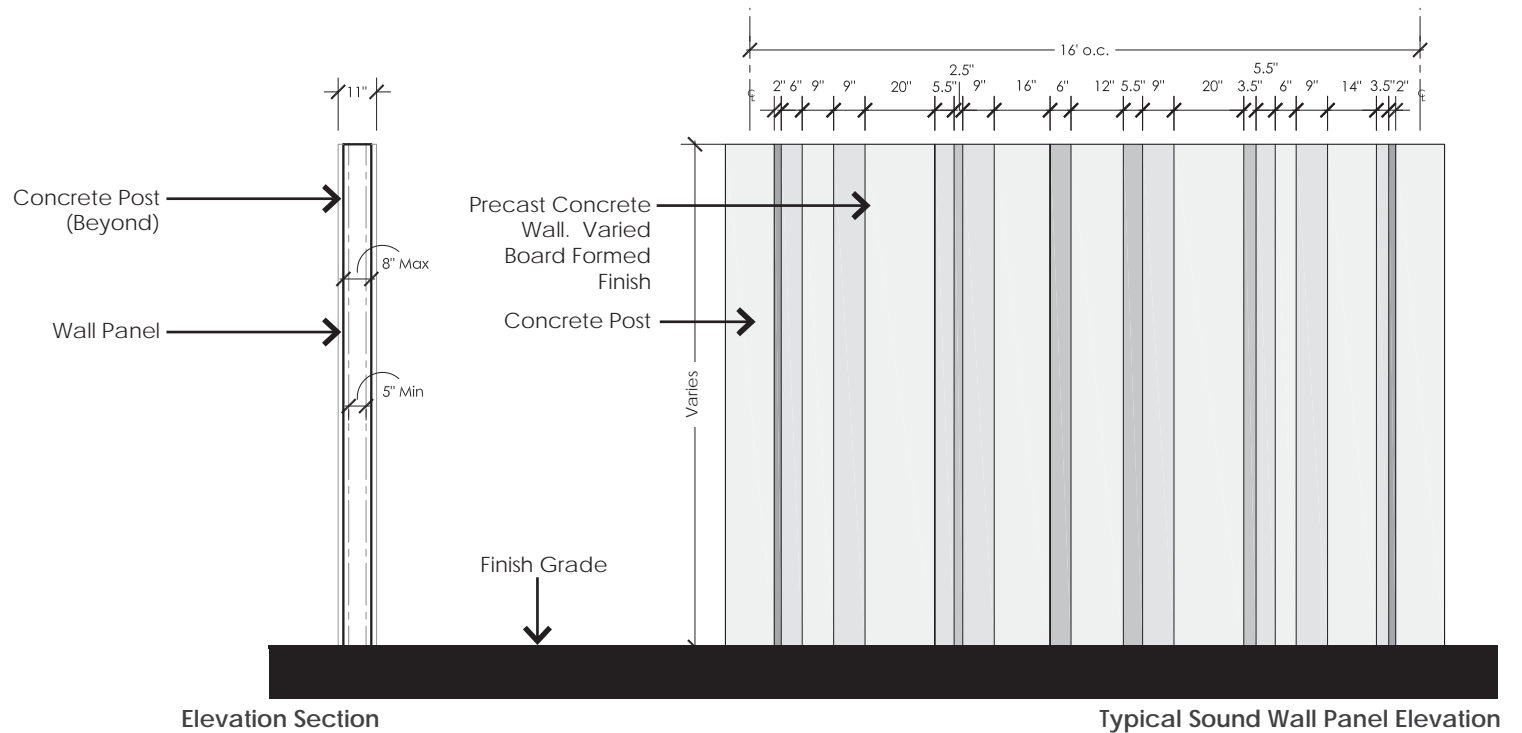
Sound walls are located on the north and south sides of the corridor, where necessary to abate predicted noise levels.



Sound Wall Detail A



Typical Wall Plan Section



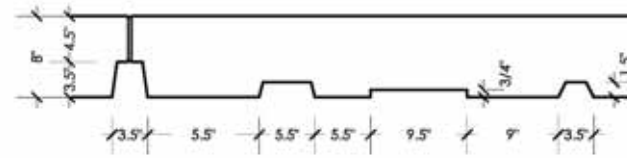
Elevation Section

Typical Sound Wall Panel Elevation



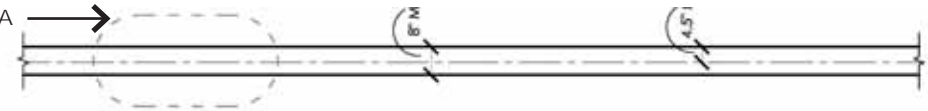
## Retaining Wall

Retaining walls are located on the north and south sides of the corridor west of NE 121st Avenue.

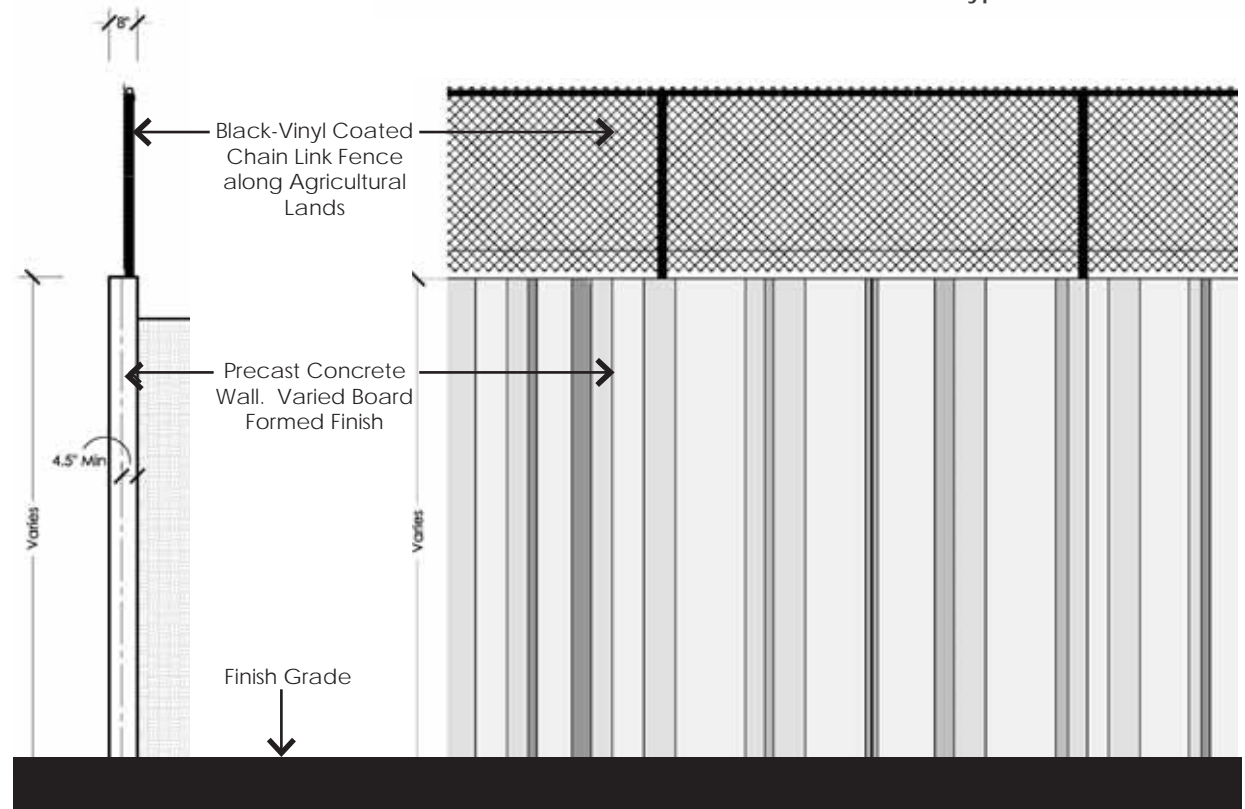


Sound Wall Detail A

See Sound Wall Detail A



Typical Wall Plan Section



Elevation Section

Typical Retaining Wall Panel Elevation

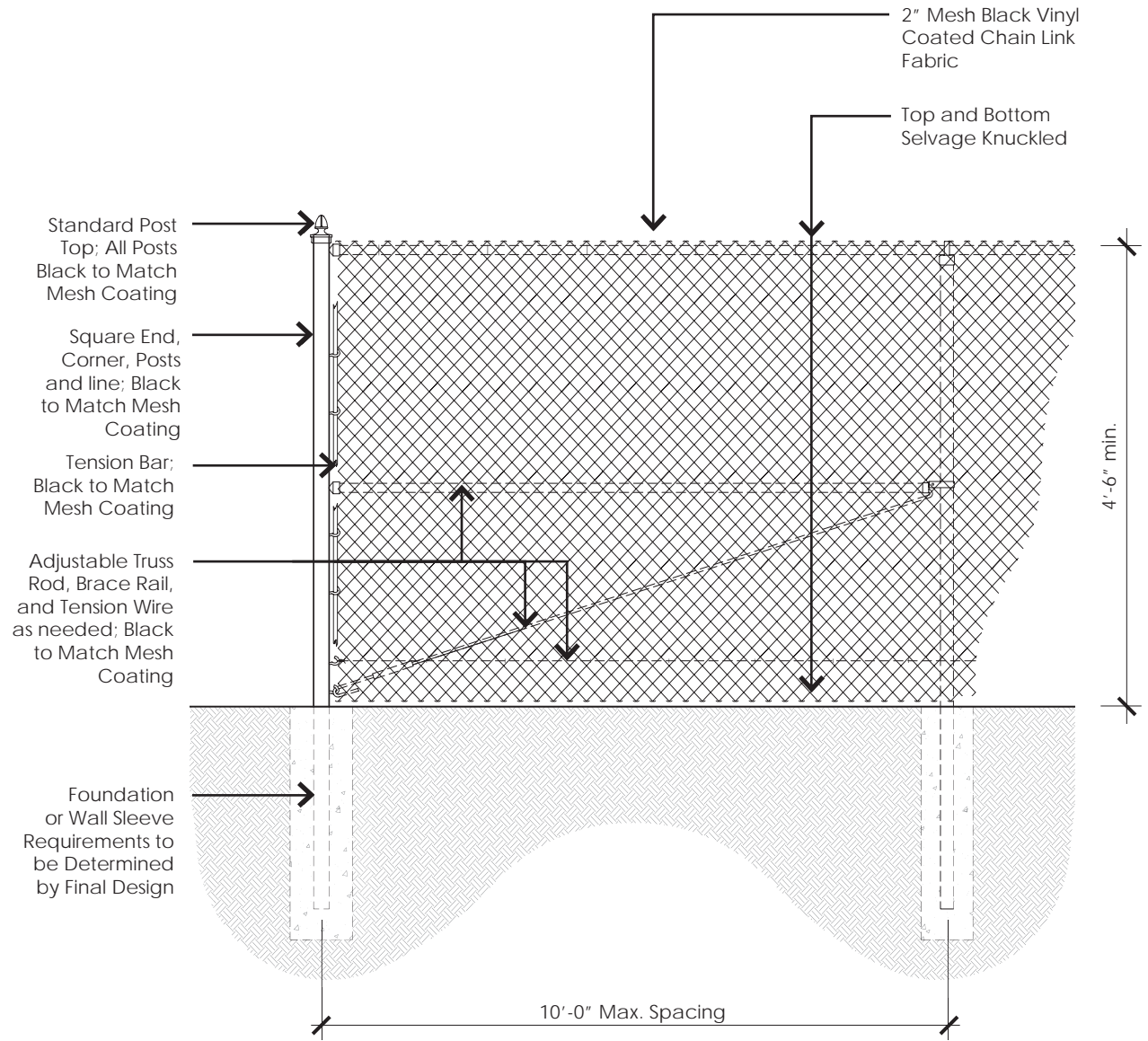
# Fencing

Black-vinyl coated chain link fencing is located adjacent to existing agricultural uses along the south side of the corridor. Fencing is to be installed:

- To reduce trespassing, theft and vandalism on agricultural land
- On top of retaining walls to prevent people and equipment from falling off the wall



Sample Fencing



Fencing

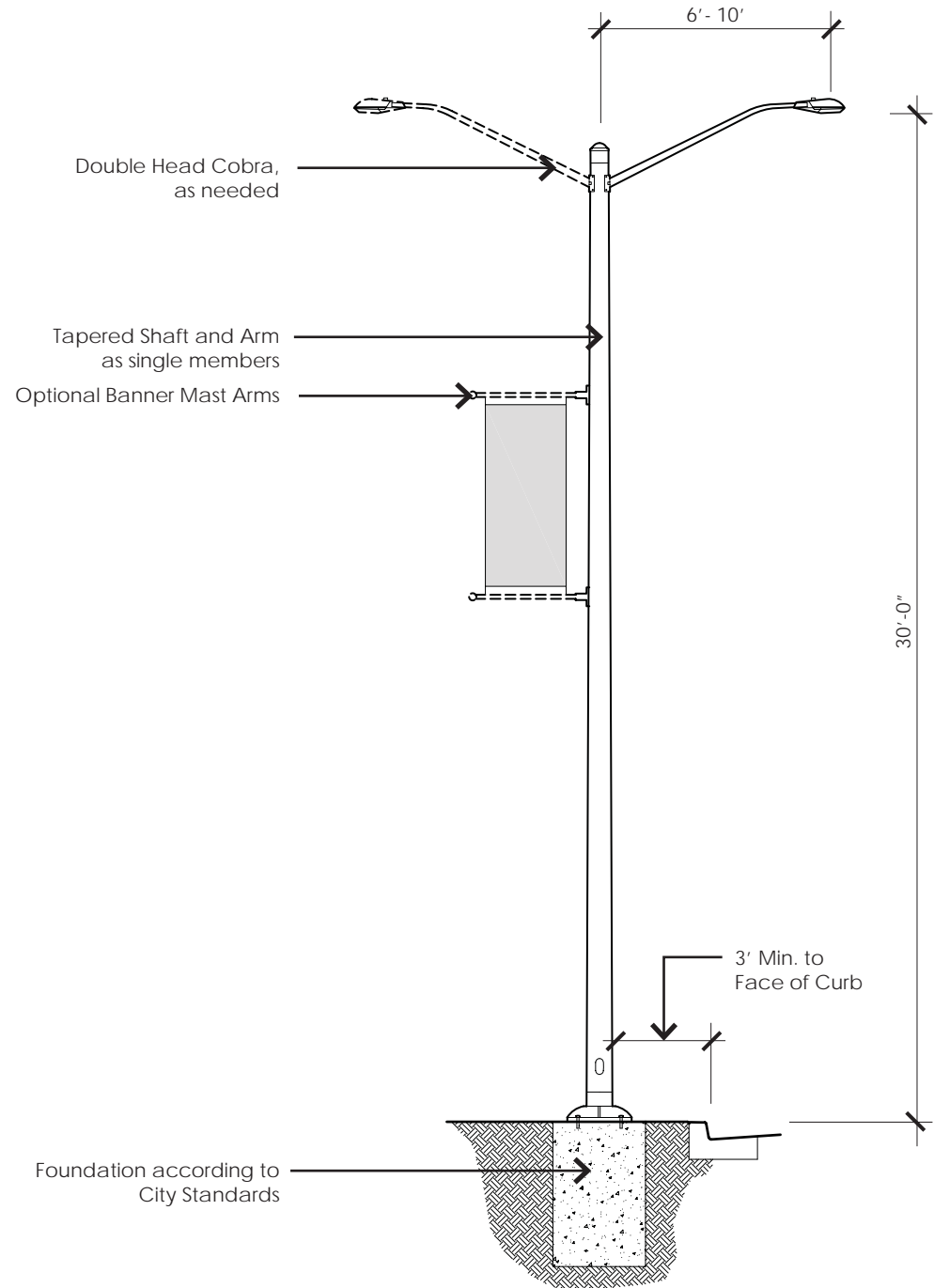
# Street Lights

All facilities along the NE 18th St. corridor are lit by city of Vancouver standard light type A. Specifications for the standard light include:

- Valmont aluminum pole (Model no. 32708450674)
- Valmont mast arm (Model no. 1MA0632B45)
- Lumec cobra-head HPS Mognl base 120/240; wattage to be determined by engineer during final design
- ALR Quich photo control 2090 NPS
- All components to be powder coat gray no. 7022 to match Burnt Bridge Creek Trail furnishings



City of Vancouver Standard Light Type A



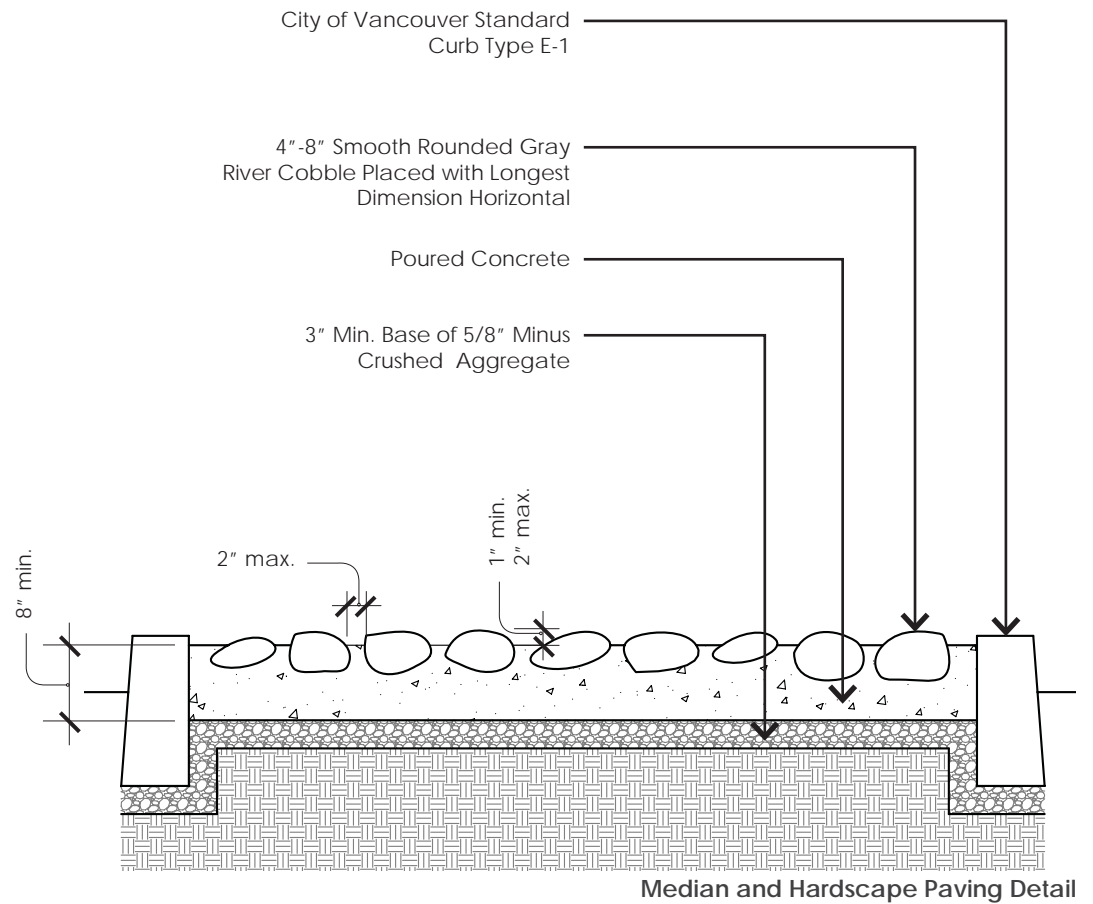
City of Vancouver Standard Light Type A Detail with Banner Mast Arm

# Hardscape

Concrete-set river cobble paving is used in hardscape medians and along the Powerline Trail between Interstate 205 and NE 38th Avenue. River Cobbles should be locally sourced and medium gray in color.



Sample River Cobble Paving





# Landscape

Landscape palettes identified in this section include species appropriate to the character of each area of the corridor and will combine to create a unified aesthetic for the entire corridor.

Four palettes have been identified:

- **Typical Palette**—low-maintenance and drought-tolerant species for use in disturbed areas throughout the corridor
- **Special Palette A**—native and water-conserving species that reflect the natural regional landscape of the Pacific Northwest to be used at the western end of the corridor adjacent to the Burnt Bridge Creek Trail and Meadowbook Park.
- **Special Palette B**—Special median planting recommended in areas of notable existing landscape character
- **Wall Palette**—Low-maintenance and drought-tolerant vine species recommended to soften wall appearance, provide seasonal color, and inhibit graffiti

Specification and placement of landscape materials will be made during final design and should result in a consist and harmonious aesthetic throughout the Corridor. Where possible, final design should preserve and incorporate mature trees and existing vegetation.

## Trees

Recommended street and median tree species have been selected from the City of Vancouver's *Street Tree Selection* list to establish palettes that are:

- Drought-tolerant and low-maintenance
- Long-lived, insect and disease resistant
- Appropriate for the character and growing conditions of the proposed location

Final species selection and placement should maximize tree canopy cover along the corridor to:

- Mitigate storm water run-off
- Improve air quality
- Reduce atmospheric carbon dioxide,
- Reduce heat island effect

## Shrubs and Groundcovers

Shrub and groundcover species have been selected to complement the recommended tree species and are:

- Drought-tolerant and low-maintenance
- Insect and disease resistant
- Appropriate for the growing conditions of the proposed location

## BPA Easement

Due to BPA height restrictions, landscape materials within the easement must be no more than 10 ft. tall at maturity.



Jeffersred Maple



Ginkgo Biloba



Arctostaphylos uva-ursi

## Typical Palette

The following species are recommended for most planting areas within the corridor. These species have been selected for their ability to perform well in a variety of conditions with minimal maintenance.

### Street and Median Trees

- *Acer x freemanii* 'Jeffersred' (autumn blaze maple)
- *Acer miyabei* 'Morton' (State Street Miyabei maple)
- *Acer rubrum* 'Franksred' (red sunset maple)
- *Acer rubrum* 'Schlesingeri' (Schlesinger red maple)
- *Acer rubrum* 'October Glory' (October Glory red maple)
- *Acer saccharum* 'Bonfire' (Bonfire sugar maple)
- *Acer saccharum* 'Legacy' (Legacy sugar maple)
- *Acer saccharum* 'Green Mountain' (Green Mountain sugar maple)
- *Quercus garryana* (Garry oak)
- *Quercus phellos* (willow oak)
- *Fraxinus pennsylvanica* (green ash)

### Large Accent Trees

- *Ulmus parvifolia* 'Frontier' (Frontier elm)
- *Quercus phellos* (willow oak)
- *Ginkgo Biloba* (maidenhair)

### Small Accent Trees

- *Amelanchier laevis* 'JFS-Arb' (Spring Flurry Serviceberry)
- *Prunus* 'Cascade Snow' (Cascade Snow flowering cherry)
- *Prunus* 'Snow Goose' (Snow Goose flowering cherry)
- *Prunus* 'Berry' (Berry flowering cherry)
- *Koelreuteria paniculata* (goldenrain tree)
- *Tilia tomentosa* 'Green Mountain' (Green Mountain linden)
- *Tilia cordata* 'Sterling' (Sterling linden)
- *Ginkgo Biloba* 'Princeton Sentry' (Princeton Sentry maidenhair)

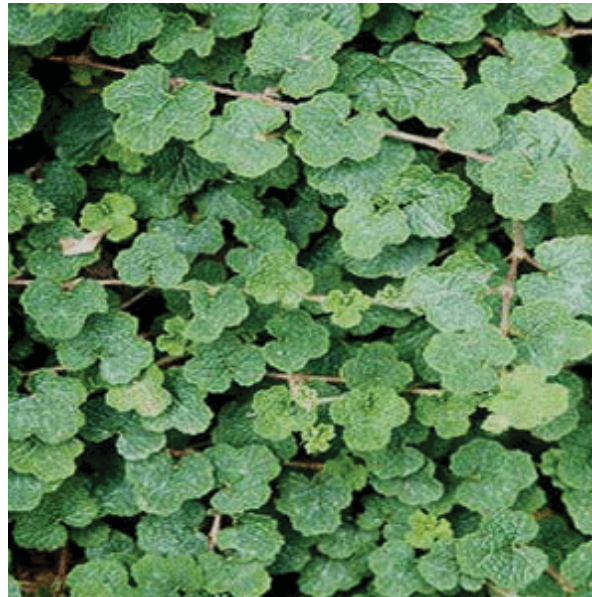
### Shrubs and Groundcovers

- *Arctostaphylos uva-ursi* 'Massachusetts' (Massachusetts kinnikinnik)
- *Arctostaphylos uva-ursi* 'Wood's Compacta' (Wood's compact kinnikinnik)
- *Cotoneaster dammeri* 'Coral Beauty' (Coral Beauty bearberry)
- *Cotoneaster dammeri* 'Eichholz' (Eichholz bearberry)
- *Hypericum calycinum* (creeping St. Johnswort)
- *Rubus calycinoides* 'Emerald Carpet' (ornamental raspberry)
- *Juniperus communis* 'Repanda' (Repanda juniper)
- *Rosa nutkana* (Nootka rose)
- *Rosa rugosa* 'Fru Dagmar Hastrup' (Fru Damar Hastrup ramanas rose)
- *Cotoneaster acutifolius* 'Peking' (Peking bearberry)





*Fraxinus latifolia*



*Rubus calycinoides*



*Rosa nutkana*

## Special Palette A

The following species are recommended for planting areas west of NE 97th Avenue. These species have been selected to complement the existing vegetation—some of which will be preserved through construction—and the plant materials found along the Burnt Bridge Creek trail. Restoration of the Burnt Bridge Creek and Meadowbrook Marsh riparian areas may include species from this palette but should be evaluated separately prior to final design.

### Trees

- *Acer macrophyllum* (bigleaf maple)
- *Fraxinus latifolia* (Oregon ash)
- *Pseudotsuga menziesii* (Douglas fir)
- *Thuja plicata* (western red cedar)

### Shrubs and Groundcovers

- *Arctostaphylos uva-ursi* (kinnikinnik)
- *Cornus sericea* 'Kelseyi' (Kelsey red-osier dogwood)
- *Symphoricarpos mollis* (trailing snowberry)
- *Gaultheria shallon* (salal)
- *Cornus sericea* (red-osier dogwood)
- *Cornus sericea* 'Isanti' (Isanti dogwood)
- *Lonicera involucrata* (twinberry honeysuckle)
- *Mahonia aquifolium* (Oregon grape)
- *Mahonia aquifolium* 'Compacta' (compact Oregon grape)
- *Myrica californica* (Pacific wax myrtle)
- *Ribes sanguineum* (fuchsia-flowering gooseberry)
- *Ribes sanguineum* 'King Edward VII' (King Edward VII gooseberry)
- *Rubus calycinoides* (ornamental raspberry)

- *Sambucus caerulea* (blue elderberry)
- *Rhus aromatica* 'Gro-Low' (Gro-Low fragrant sumac)
- *Rosa rugosa* 'Fru Dagmar Hastrup' (Fru Damar Hastrup ramanas rose)
- *Rosa nutkana* (Nootka rose)



*Pseudotsuga menziesii*



*Mahonia aquifolium*



*Parthenocissus tricuspidata*

## Special Palette B

The following species are recommended for the median between NE 141st Avenue and NE 162nd Avenue and have been selected to complement existing mature landscape that will be preserved.

- *Pseudotsuga menziesii* (Douglas fir)
- *Thuja plicata* (western red cedar)

## Shrubs and Groundcovers

- *Arctostaphylos uva-ursi* (kinnikinnik)
- *Cornus sericea* 'Kelseyi' (Kelsey redberry dogwood)
- *Symphoricarpos mollis* (trailing snowberry)
- *Gaultheria shallon* (salal)
- *Cornus sericea* 'Isanti' (Isanti dogwood)
- *Mahonia aquifolium* 'Compacta' (compact Oregon grape)

## Wall Palette

The following species are recommended for the face of all retaining walls and the south side of all sound walls. They have been selected for their hardiness and fall color.

### Vines

- *Parthenocissus tricuspidata* (Boston ivy)
- *Parthenocissus quinquefolia* (Virginia creeper)



# Furnishings

## Bench

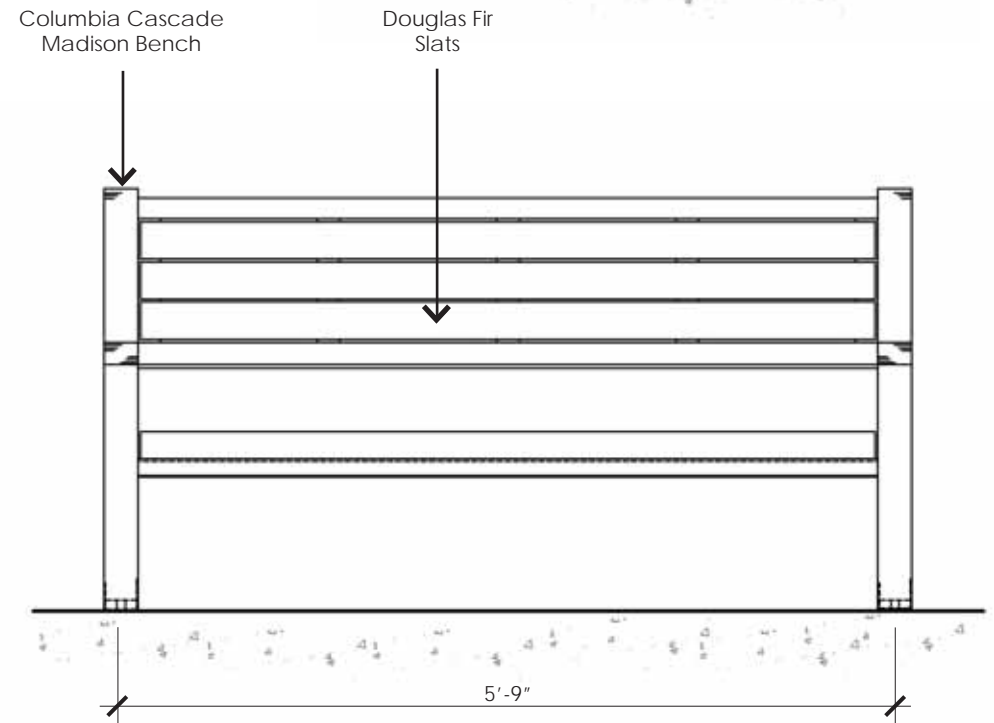
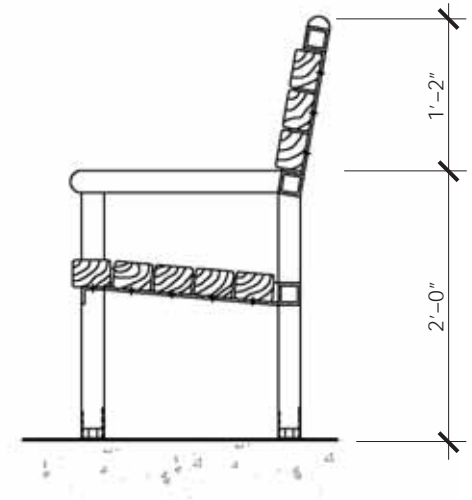
Locations for benches have not been identified during the design guidelines process. Should final design of any segment of the Corridor call for benches, they should be:

- Columbia Cascade 6-ft. Madison Bench with armrests, embedded mount (Model No. 2847-6-E)
- Powdercoat finish Gray No. 7022
- Douglas Fir Slats

An ADA compliant bench of similar character to the model shown here may be designated during final design. Benches should be located in conjunction with trash receptacles



Columbia Cascade Madison Bench



Bicycle Rack Detail

## Trash Receptacle

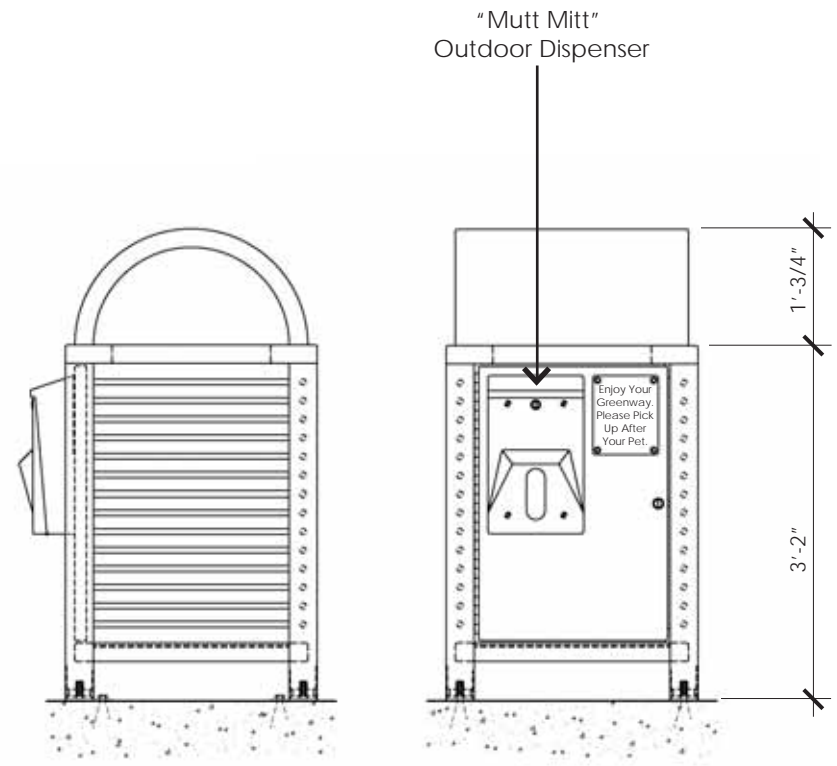
Locations for trash receptacles have not been identified during the design guidelines process. Should final design of any segment of the Corridor call for trash receptacles, they should be:

- Columbia Cascade custom receptacle, embedded mount
- Powdercoat finish Gray No. 7022

Trash receptacles should be located in conjunction with benches.



Burnt Bridge Creek Trail Trash Receptacle



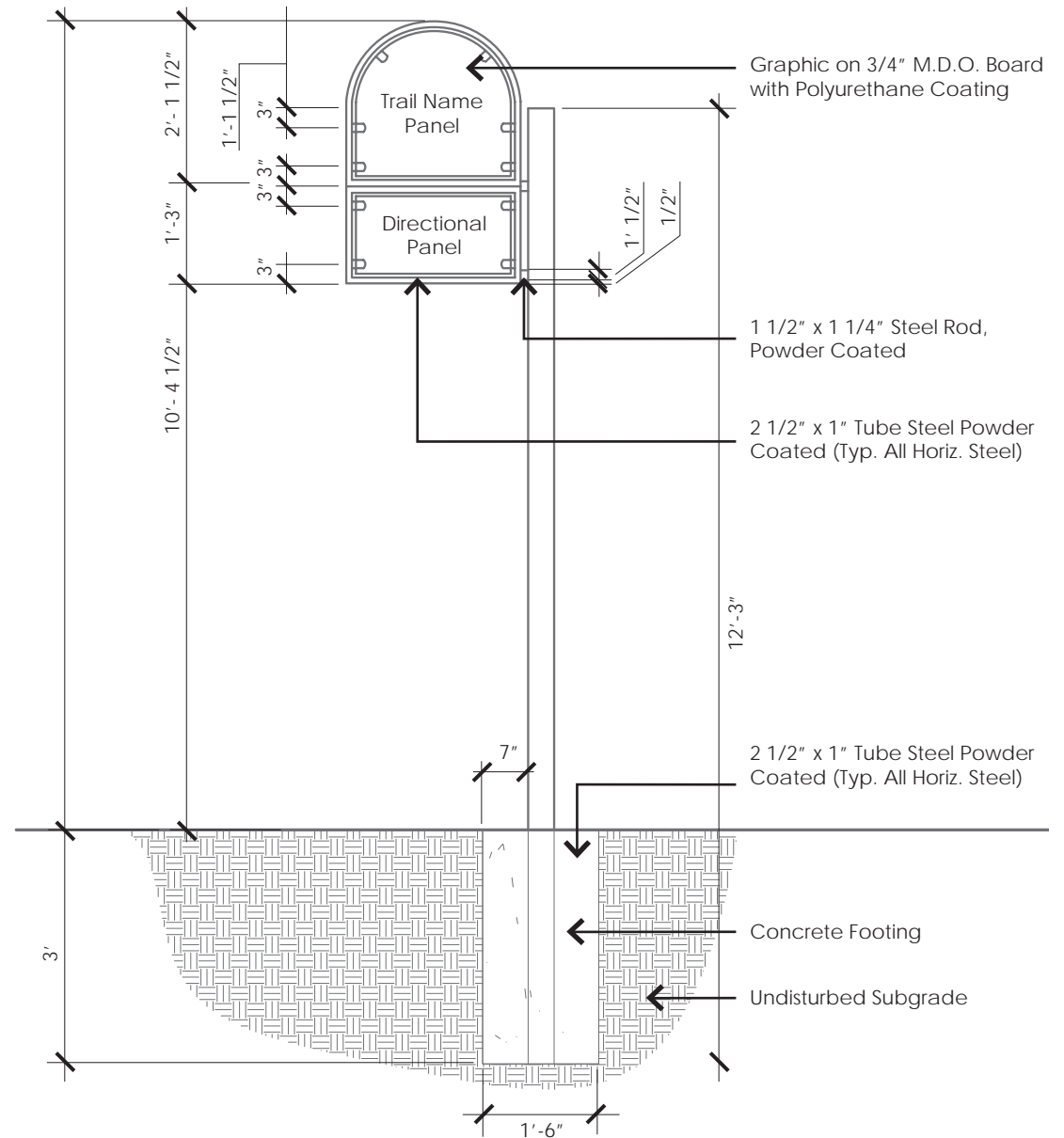
Burnt Bridge Creek Trail Trash Receptacle Detail

## Signs

All signs for the 18th Street corridor are to match the Burnt Bridge Creek Trail signs. Location and types of signs will be determined during final design.



Burnt Bridge Creek Trail Directional Sign



Directional Sign Details

## Mile Markers

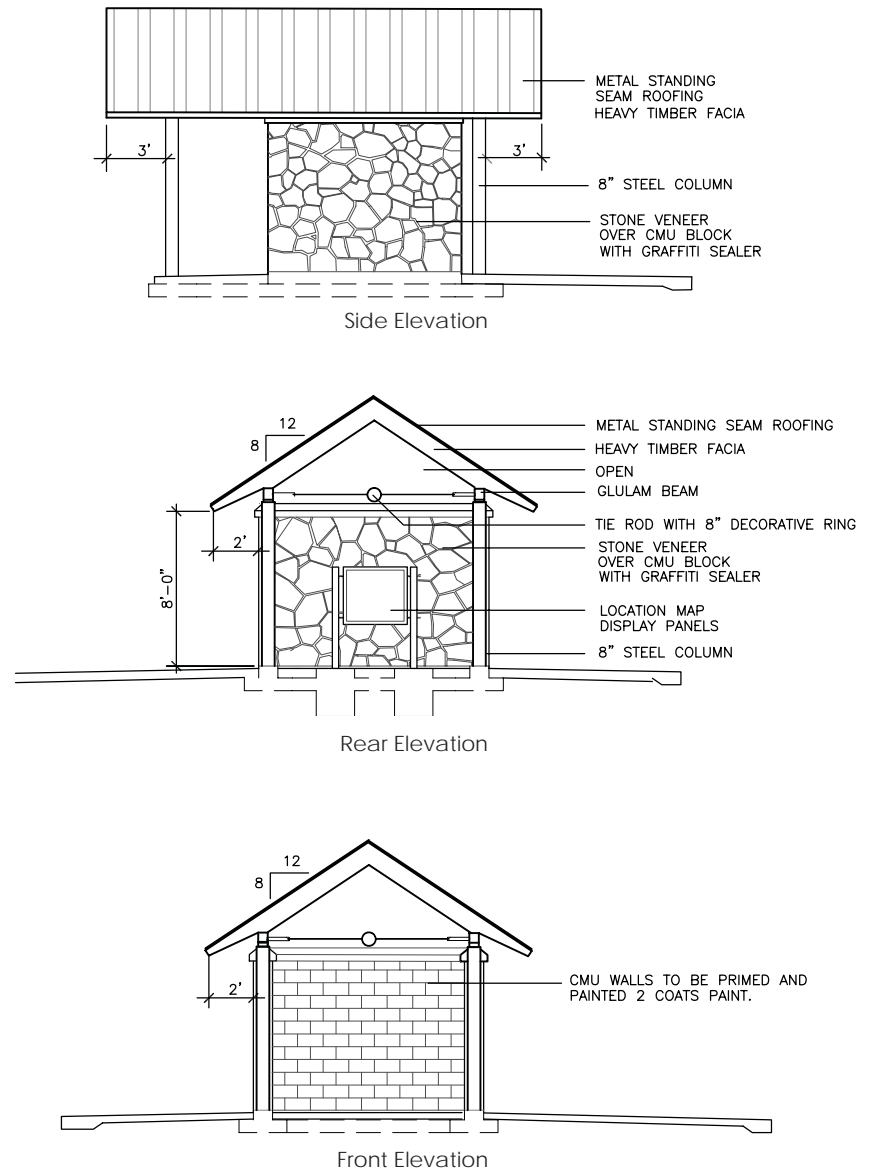
Mile markers are standard on City of Vancouver trails and should be installed in the center of the Powerline Trail at  $\frac{1}{4}$  mile and .4 kilometer intervals.



Sample Mile Marker

## Restroom Facilities

Restroom facilities have not been located along the Powerline Trail. Should facilities be determined to be necessary in the future, shelter design should match the Stewart Glen facility.



Stewart Glen Toilet Shelter

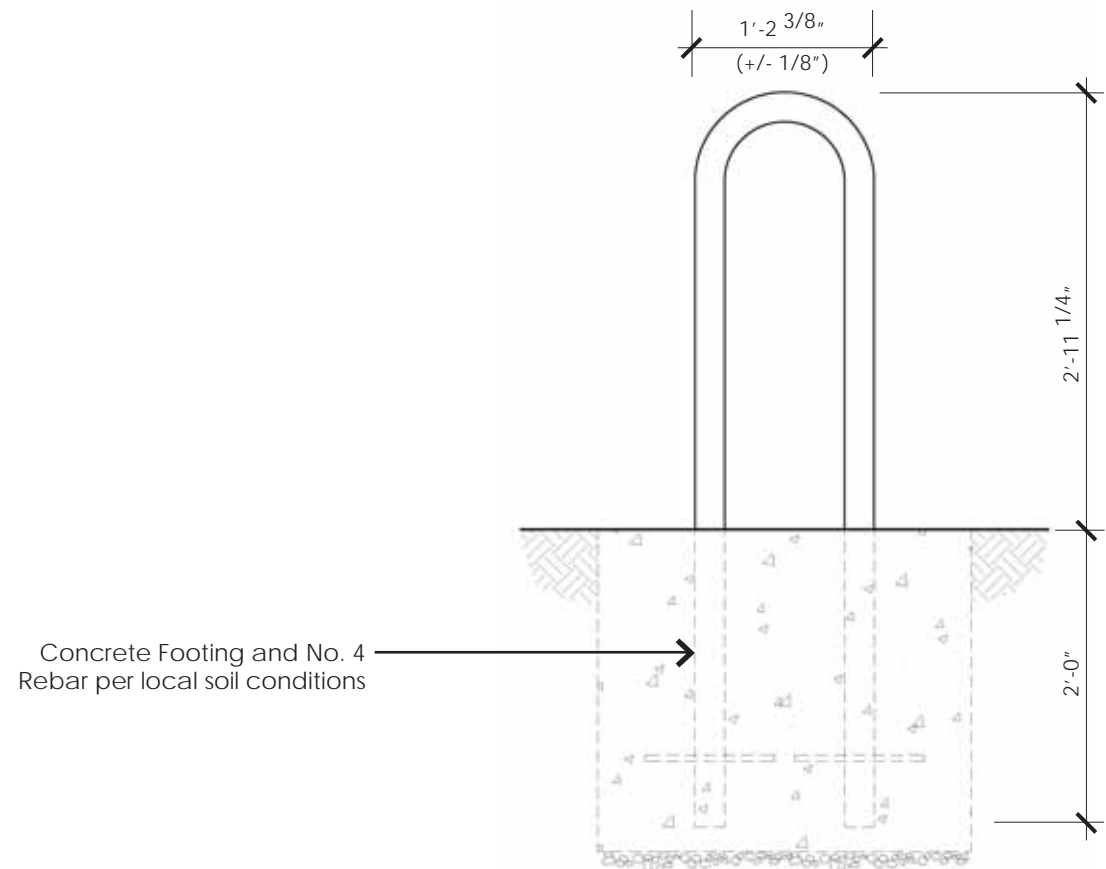
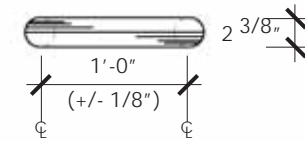
## Bicycle Rack

Specifications for the bicycle rack are:

- Timberform Cycloops, embedded mount (Model No. 2170-3-E-M)
- Powdercoat finish Gray No. 7022



Sample Bicycle Rack



Bicycle Rack Detail



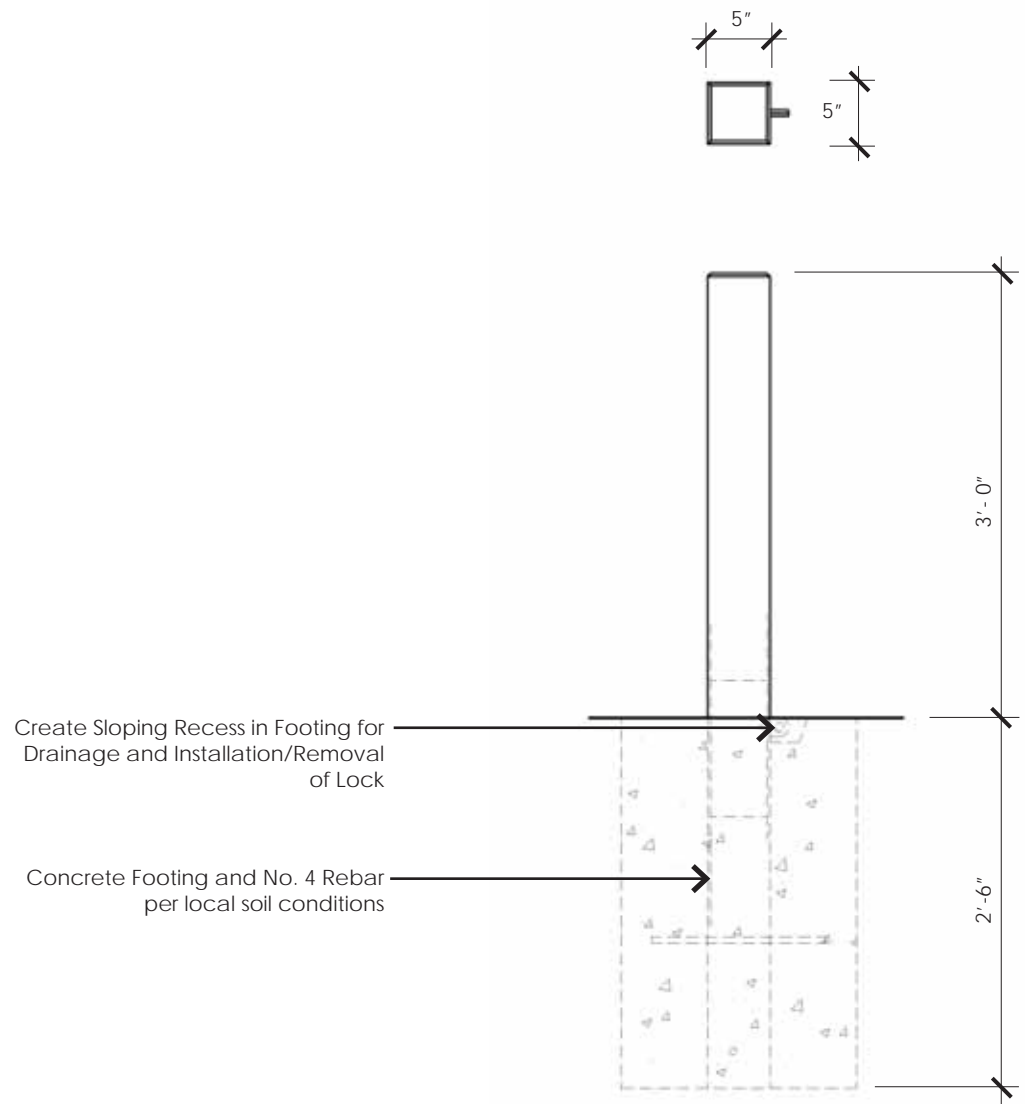
## Bollards

Where bollards are required, they should match Burnt Bridge Creek Trail furnishings as specified below:

- Timberform 4"x4"x2' metal bollard with flat top, removable (Model No. 2190-R-M)
- Powdercoat finish Gray No. 7022



Bollard



Bollard Detail

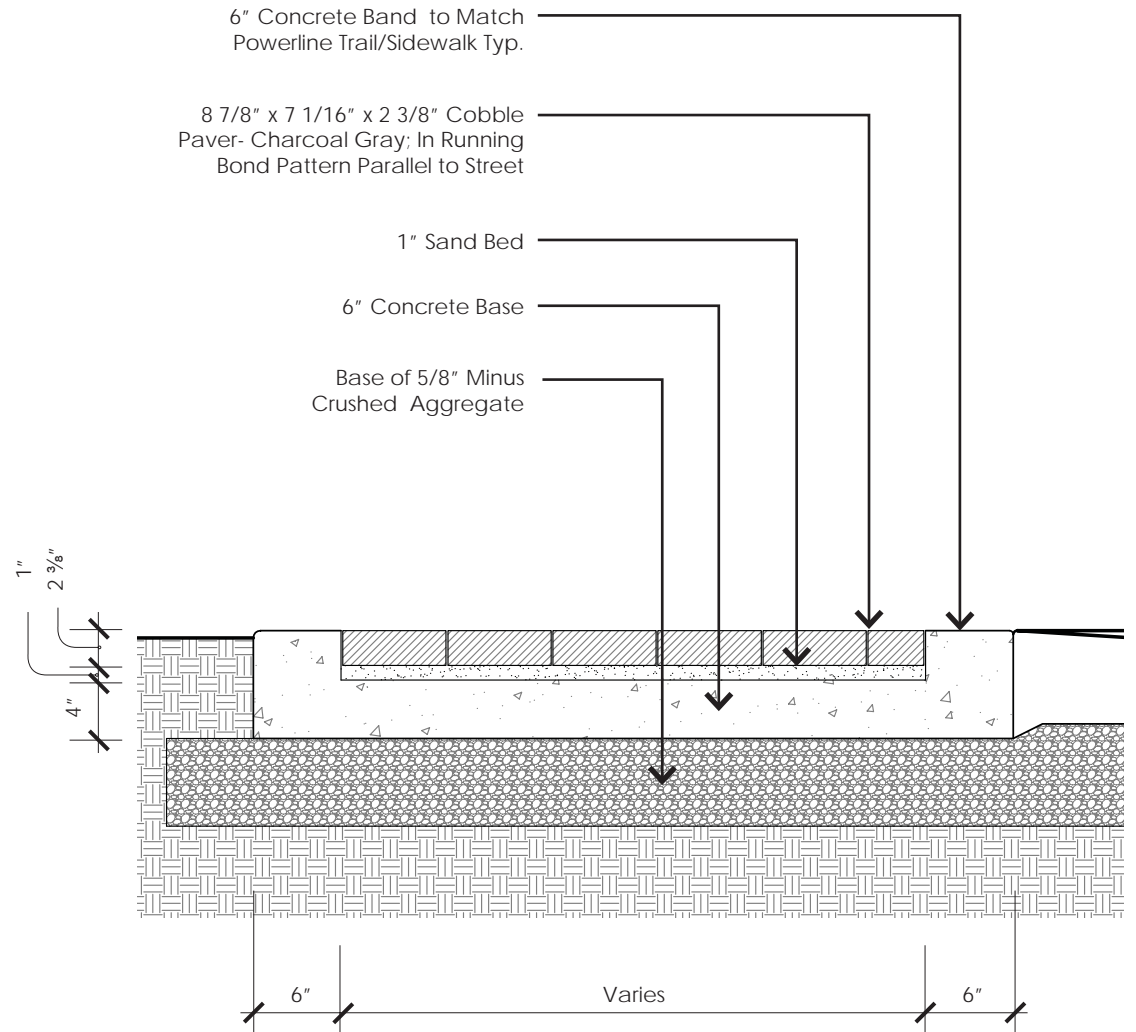
## Accent Pavers

Accent Pavers are used to mark intersections, such as mid-block crossings, in the Powerline Trail and sidewalk and should meet the following specifications:

- Mutual Materials Co. 8 7/8" x 7 1/16" x 2 3/8" tumbled Roman Cobblestone paver
- Charcoal gray color
- Running bond installation



Accent Paver



Accent Paver Detail







*Revitalizing America's Cities*