INTERSTATE 405 Corridor Program
Congestion Relief & Bus Rapid Transit Projects

APPENDIX L

I-405 Urban Design Criteria For Kirkland Stage 1

I-405, SR520 to SR522 Stage 1 (Kirkland Stage 1)

Request For Proposal
July 15, 2005

Washington State Department of Transportation

WALLS
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- Abutment Walls W-2.0
- Noise Walls W-3.0
- Planter Walls W-4.0

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- Roadway Traffic Barrier B-1.0
- Median Bridge Barrier B-2.0
- Barrier Transition B-3.0

SIGNAGE
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FENCING
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LIGHTING
- Pedestrian Lighting LT-1.0

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- Plant List LA-2.0
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- Planting Plan / Sections at Mainlanes LA-4.0
- Typical Planting at Retaining Walls LA-5.0
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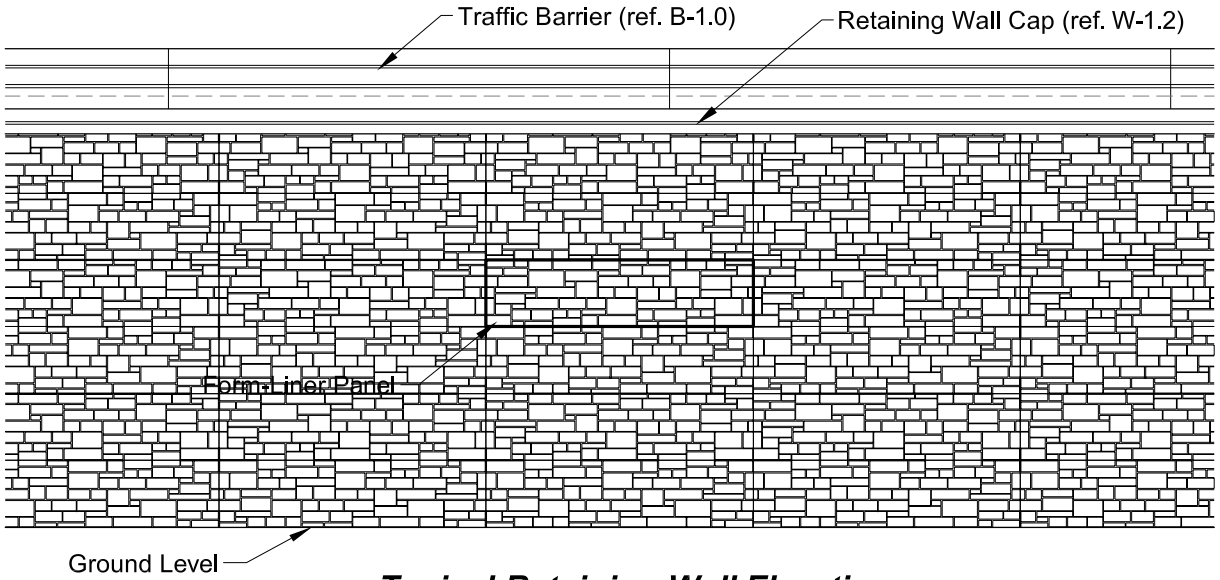
COLOR
- Paint Key C-1.0

COMMUNITY ART
- Art Opportunities A-1.0
- 116th Art Opportunities A-1.1

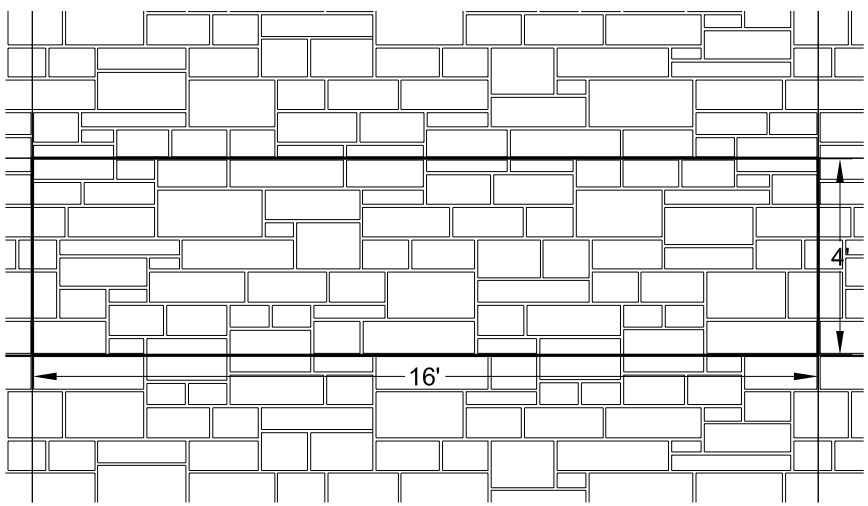


Typical Retaining Wall Elevation

The retaining walls along the I-405 corridor facing the community are to appear as cut ashlar stone block, a look which can be achieved with a standard modular form liner system. A pattern that provides a continuous and realistic look is the most desirable. The form-liner panel used for this exhibit is a standard 4' x 16' ashlar pattern, though any approved equal may be used (an MSE wall system will most likely necessitate another size panel). The purpose of the accompanying graphics is to demonstrate the general character of the retaining wall pattern and the way in which the individual panels should combine with adjacent panels. The same standard pattern should be used on the bridge abutments in the appropriate locations as well.

Other items related to retaining walls found in the Urban Design Criteria are:

- Abutments (p. W-2.0)
- Community Art Opportunities (p. A-1.0)
- Stepped Walls (p. W-1.1)
- Bridge Plans- West/East Planter Walls (p. W-4.0
- Retaining Wall Cap (p. W-1.2).



Form-Liner Panel

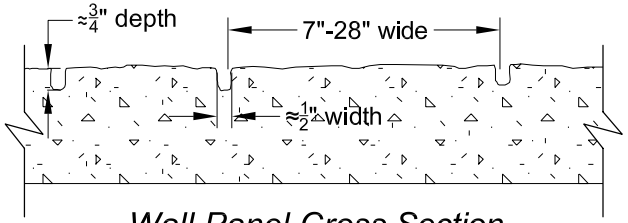
Community Side Wall Texture

Description:

- -Random linear cut ashlar stone block pattern
- -Blocks textured as stone
- -$\frac{3}{4}$" nominal grout depth
- -$\frac{1}{2}$" nominal grout width
- -Block width varies from 7"-28"
- -Block height varies from 3"-12"

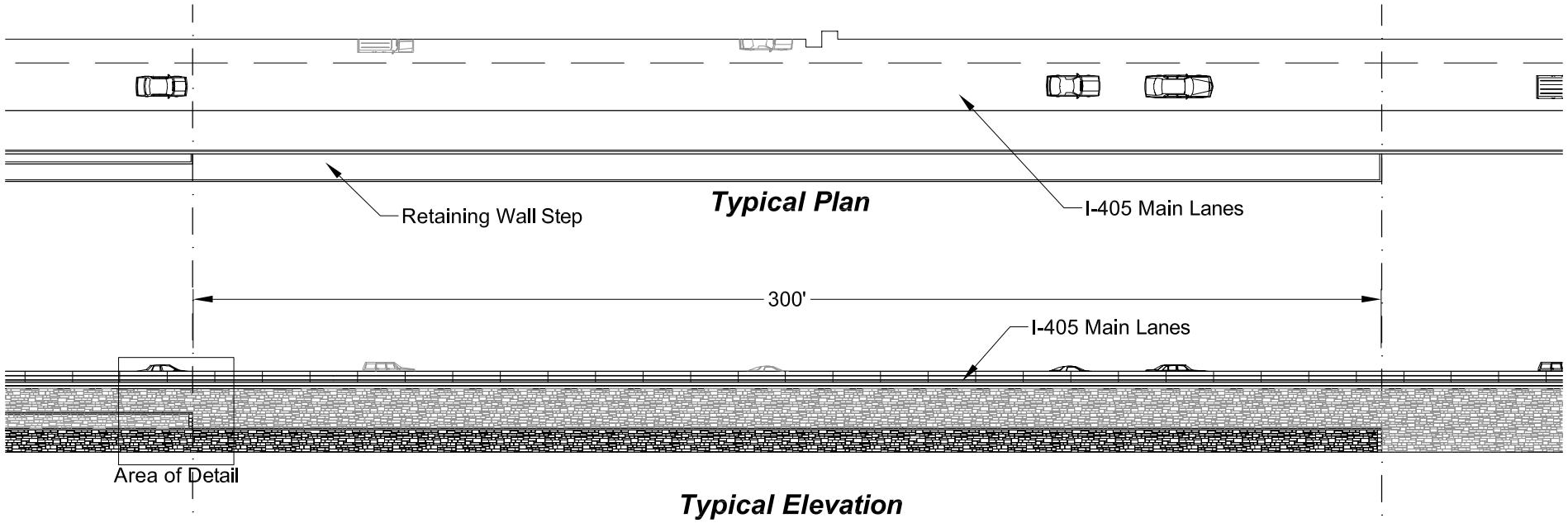
Note: If an MSE system is used, ensure that the seams between panels are *no deeper or wider* than the grout of the ashlar pattern.

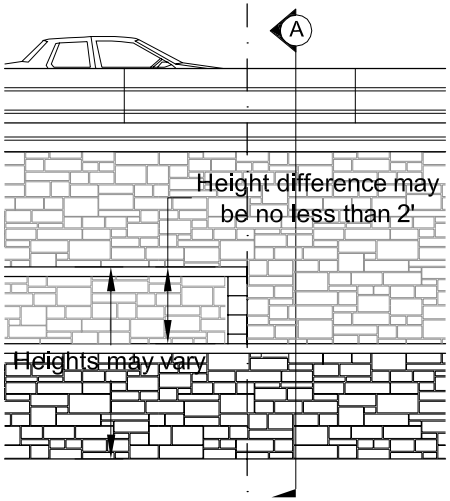
Texture Sample



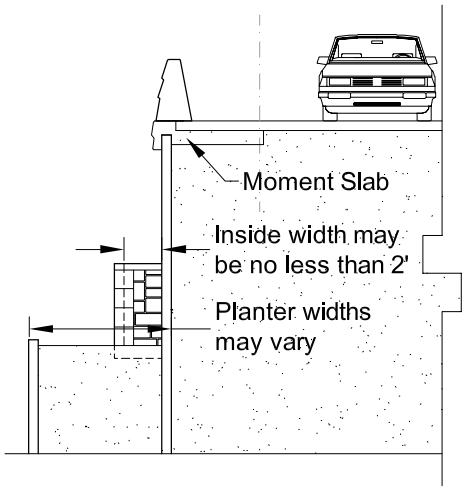
Wall Panel Cross Section

RETAINING WALLS - COMMUNITY SIDE W-1.0





Detail

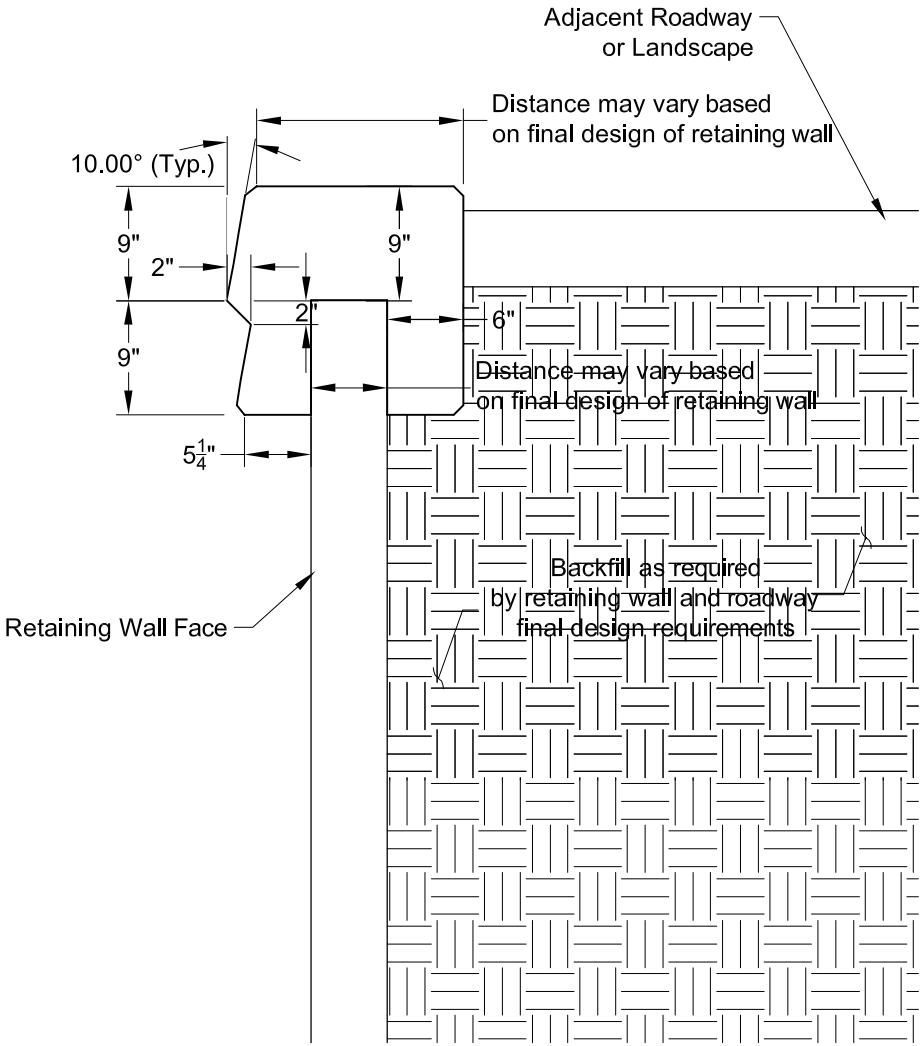


Section/Elevation A

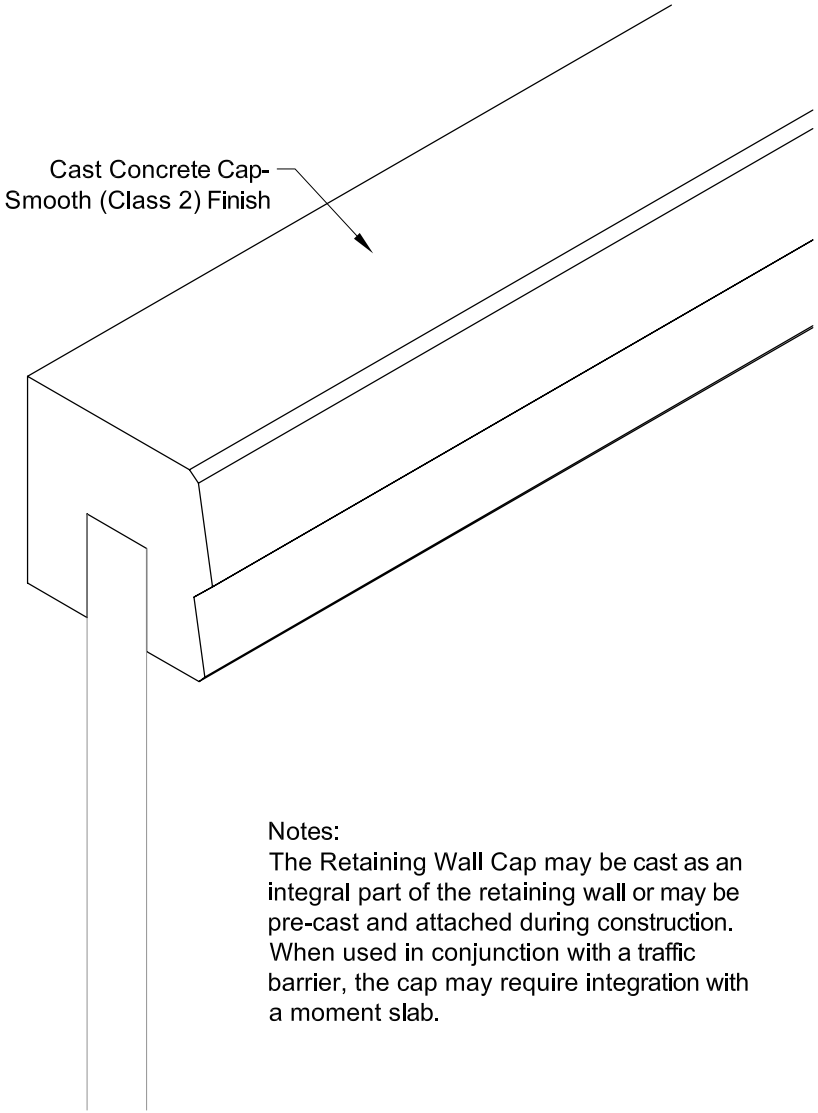
The intent of the stepped retaining wall configuration is to reduce the apparent height of walls and to break up the vertical faces and to allow for planting areas (for landscape criteria see, p. LA-5.0). The following criteria* apply to stepped retaining walls:

- Walls greater than 8' in height should be considered for stepping.
- At least 50% of retaining wall length should be stepped.
- 50% of the stepped portion should have at least two steps.
- Stepped wall configurations should change once for every 300' of wall length.
- Any portion of a retaining wall exceeding 30' in height should have at least 3 steps
- Wall steps should not be allowed to diminish into slopes, roadway edges, or ramps, but should be terminated when their height is no less than 2'.

*Stepped walls should be located in areas that are highly visible to pedestrians, motorists, residents or businesses from the community side and are significant to the local municipality or neighborhood/district. The Kirkland CSS Advisory Committee, the CSS Design Team, and the WSDOT should work together to select walls that meet the above criteria. The final wall selections shall be approved by the WSDOT.



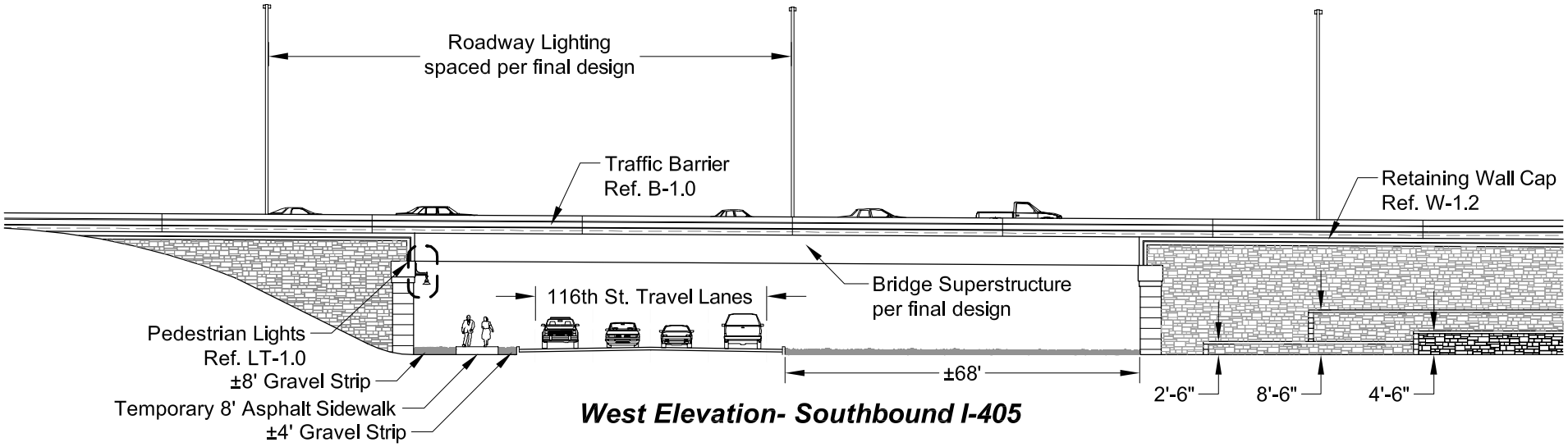
Typical Cross Section



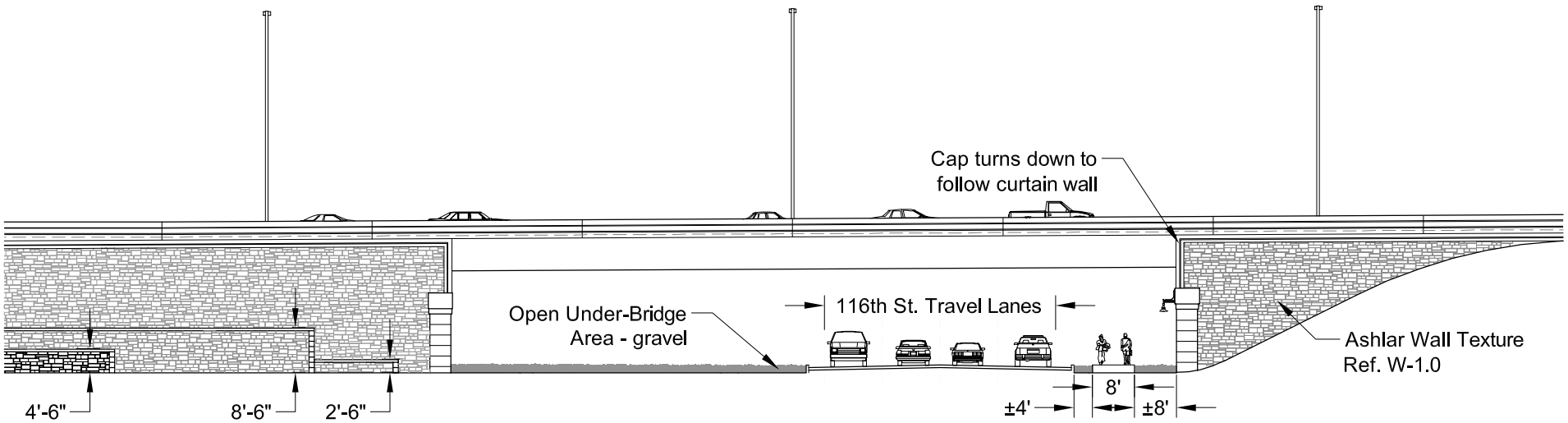
Notes:
The Retaining Wall Cap may be cast as an integral part of the retaining wall or may be pre-cast and attached during construction. When used in conjunction with a traffic barrier, the cap may require integration with a moment slab.

Isometric View

RETAINING WALL - CAP DETAIL W-1.2

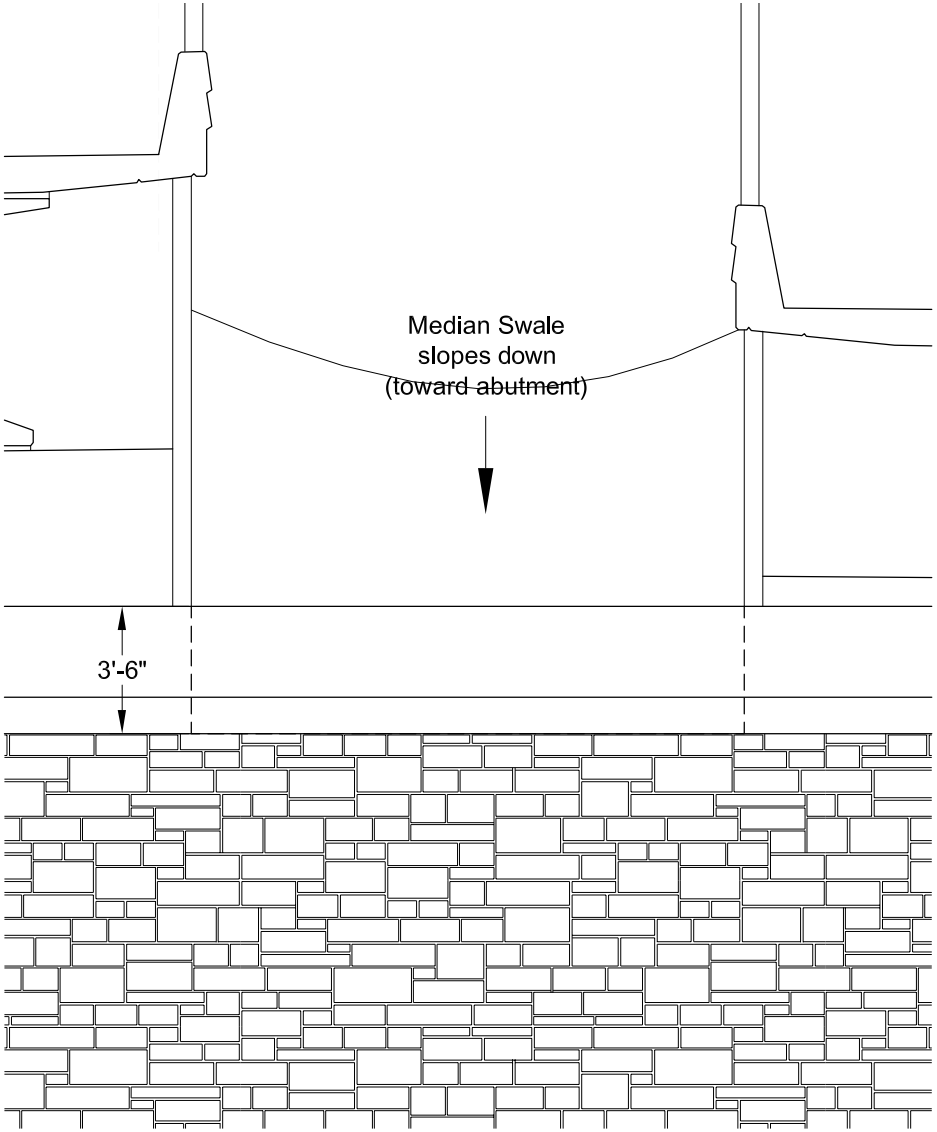


West Elevation- Southbound I-405



East Elevation- Southbound I-405

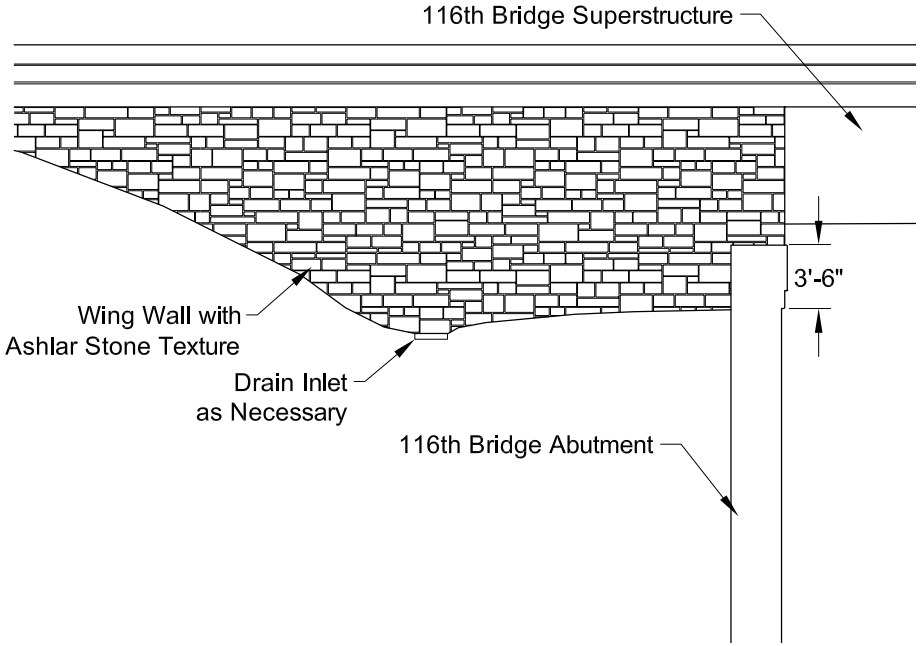
RETAINING WALLS - 116th BRIDGE ELEVATIONS W-1.3



Median Detail

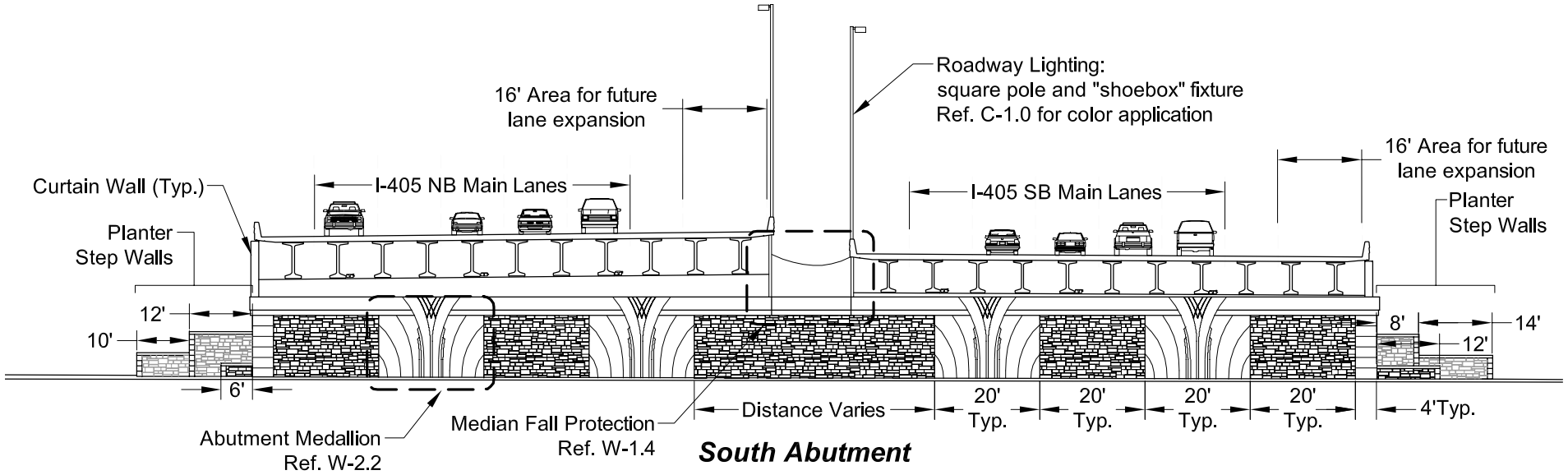
This detail applies to mainline bridge abutments where there is a median between the traffic lanes (specifically at 116th in Kirkland). In these locations provide a minimum 3'-6" barrier above the finish grade at the abutment. Wherever feasible slope the soil in the median to provide the 3'-6" barrier as shown below. Where this is not feasible extend the concrete wall to provide a minimum 3'-6" barrier. Finish the concrete to match the adjacent abutment surfaces in color and texture.

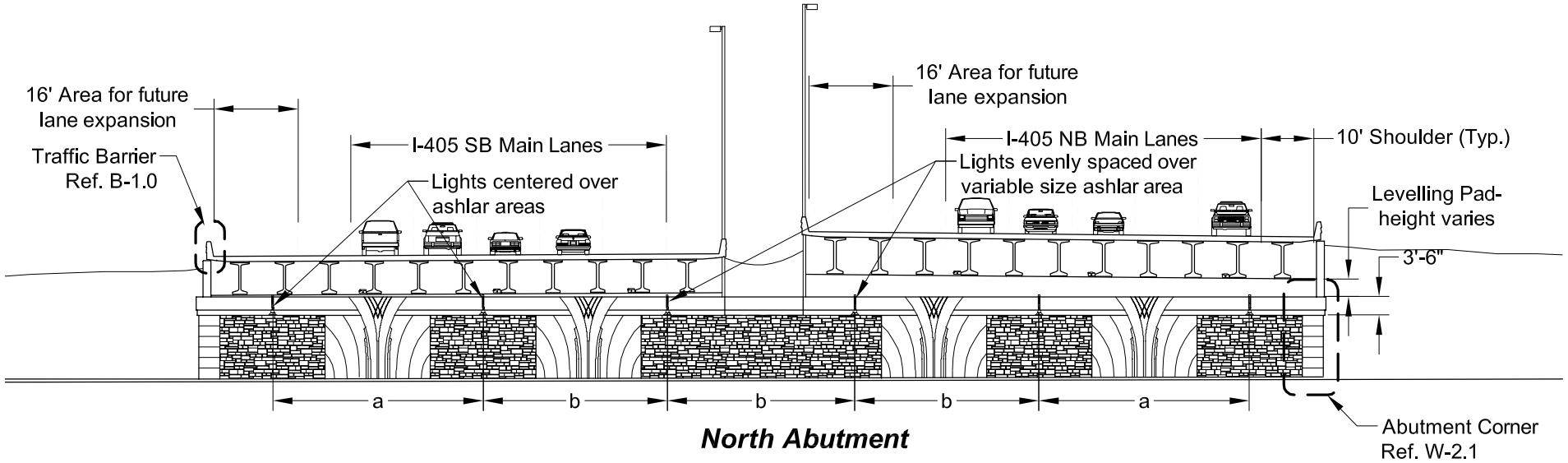
Note: chain link fence or cable fence shall not be used.



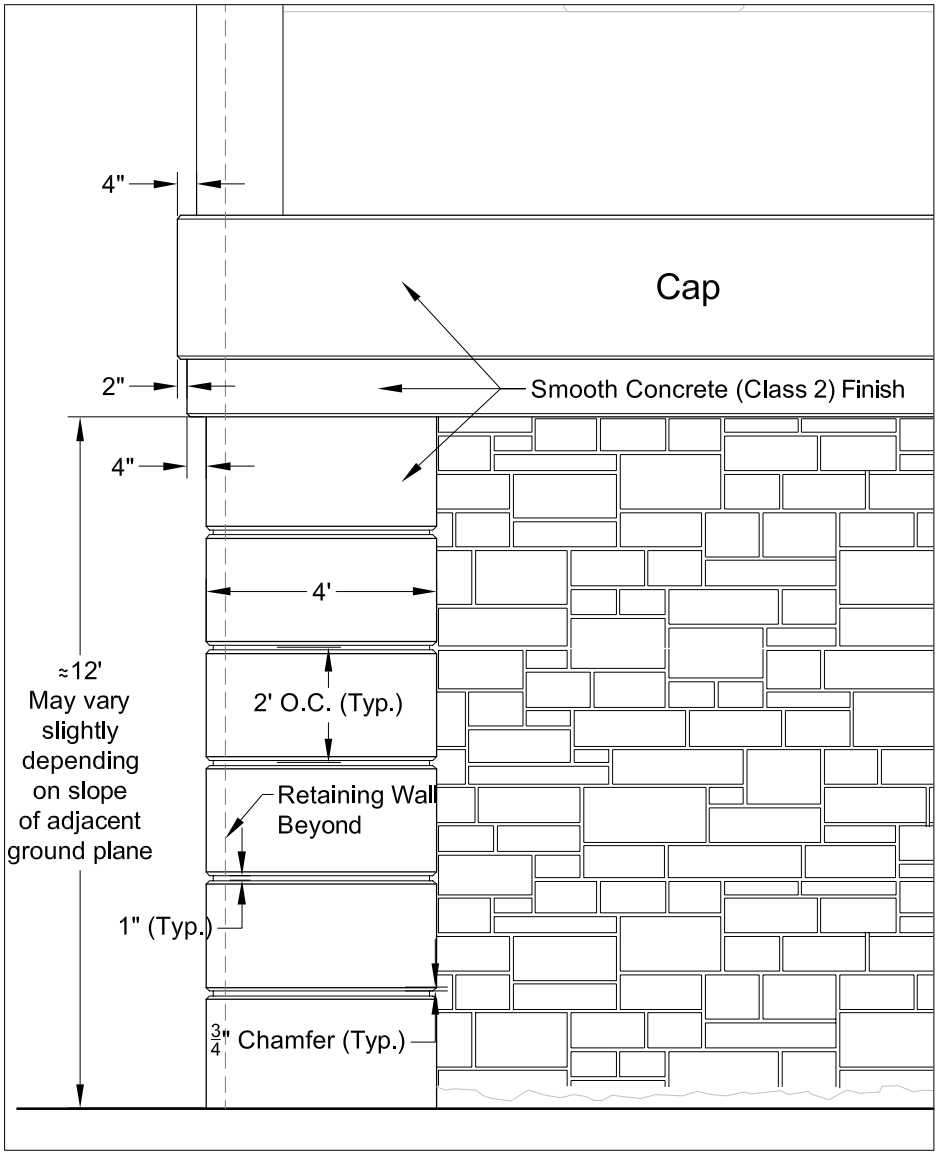
Median Section/Elevation

RETAINING WALLS - MEDIAN FALL PROTECTION W-1.4

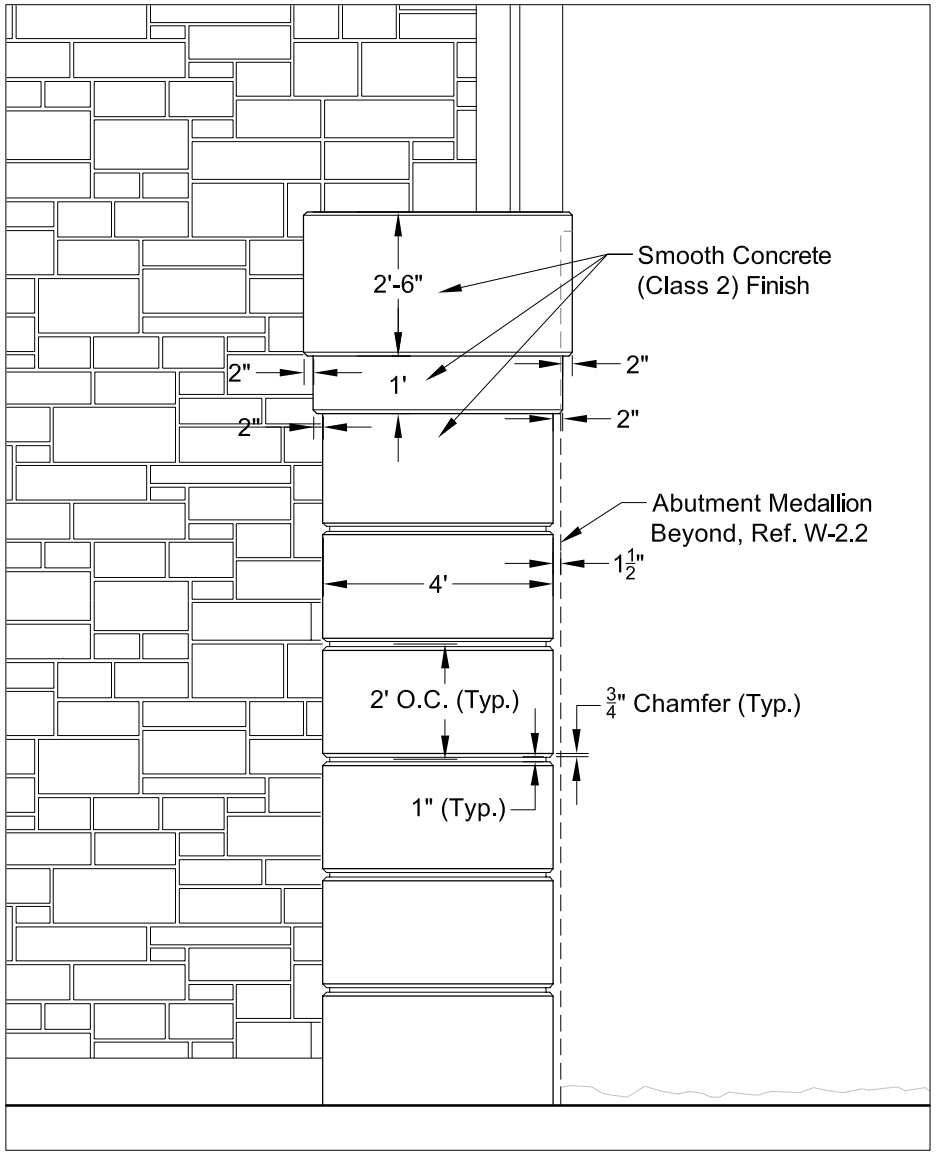




ABUTMENT WALLS - 116th BRIDGE SECTIONS/ELEVATIONS W-2.0



Front Elevation

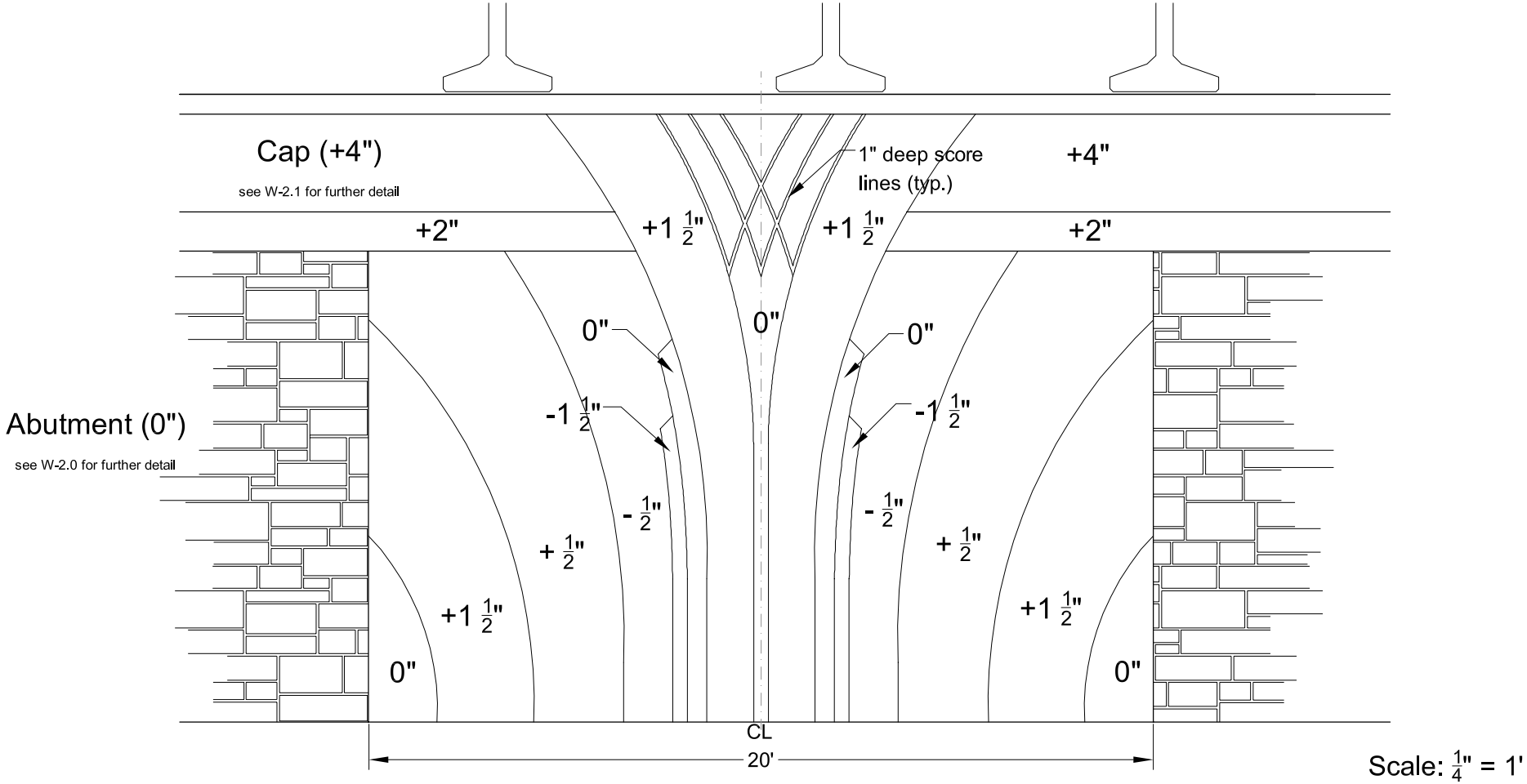


Side Elevation

ABUTMENT WALLS - CORNER DETAILS W-2.1

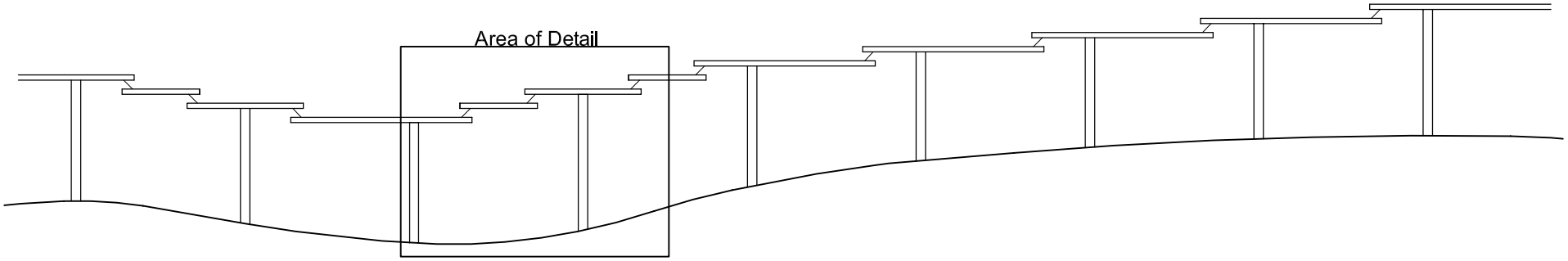
Notes:

- The Abutment Medallion pattern is meant to be equal throughout the corridor; to the extent possible the same custom form liner should be used for all occurrences in the project, and at least in all occurrences on any given bridge abutment.
- The Abutment Medallion pattern is symmetrical around the indicated center line.
- 0" on rustication plan indicates base exterior level of abutment walls.
- The shop drawings for the Medallion should be reviewed and approved for accuracy before construction.

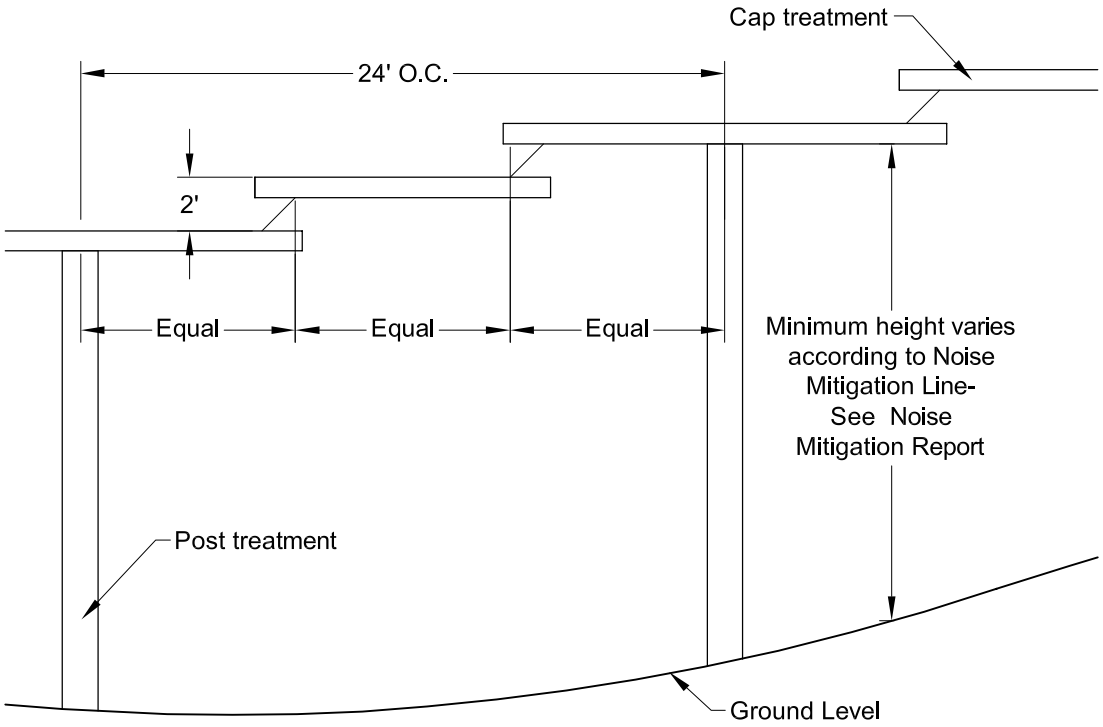


Rustication Detail

ABUTMENT WALLS - MEDALLION DETAIL W-2.2



Typical Elevation- Corridor Side

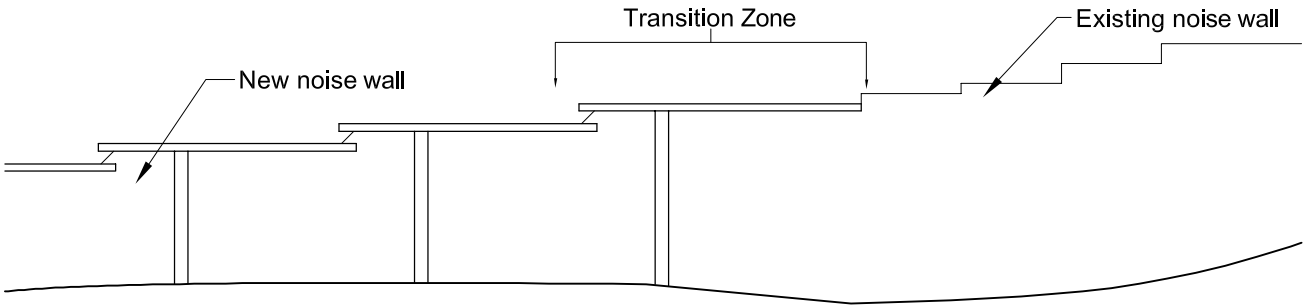


Detail

The following criteria apply to the Corridor's new noise walls:

- The distance between posts (or aesthetic post treatment) on the corridor/traffic side should be approximately 24'.
- If noise wall is constructed using shaft foundation, pilaster spacing should follow requirements of WSDOT Standard Plans for such (approx. 12' O.C.) In this case, every other pilaster shall be visible from the corridor/traffic side, treated according to the criteria found in W-3.0-3.2. The other pilasters shall be hidden from the corridor/traffic side, and shall recieve the required aesthetic treatment on the community/right-of-way side.
- The noise walls shall incorporate an angled step to navigate the terrain along the corridor. The height of the wall shall be as established in the Noise Mitigation Report. The step should be a 45° 2' drop at 8' intervals (2 maximum per 24' section) as shown at left.
- For noise wall textures refer to p. W-3.1.
- For post and cap treatments refer to p. W-3.2.
- For transition from existing/remaining noise wall to new noise wall refer to p. W-3.1.
- For noise wall end treatment refer to p. W-3.2.

Note: the noise walls are meant to be constructed using standard WSDOT plans, with the appropriate aesthetic modifications. For further information refer to WSDOT Standard Plans, Section D.



Typical Elevation

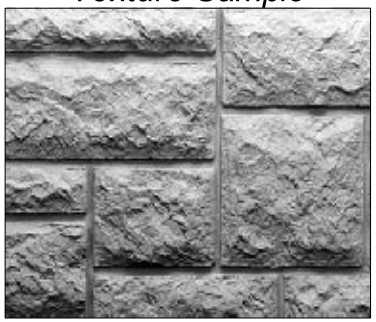
The Transition Zone is meant to create a transition between new and existing noise walls that is not abrupt or obvious, where the Noise Mitigation Report requires them to meet. The new noise wall cap should not end directly at the last post, but should extend some distance beyond it.

In locations where the transition is near a juncture of two properties, separated by a fence or wall, effort should be made to place the transition at that juncture. The walls should end at the property line so that only one wall type is visible from either property.

Community Side Wall Texture

Description:
- Random linear cut ashlar stone block pattern
- Blocks textured as stone
- Paint Color A (ref. pg. C-1.0)
- $\frac{3}{4}$" nominal grout depth
- $\frac{1}{2}$" nominal grout width
- Block width varies from 7"-28"
- Block height varies from 3"-12"

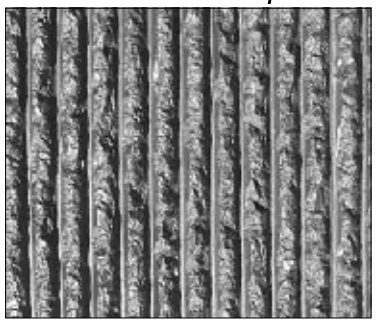
Texture Sample

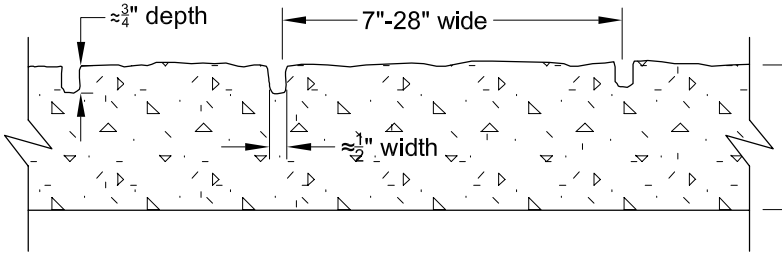


Corridor Side Wall Texture

Description:
- Standard fractured fin
- Paint Color A (ref. pg. C-1.0)
- $1\frac{1}{2}$" spacing
- $\frac{3}{4}$" deep

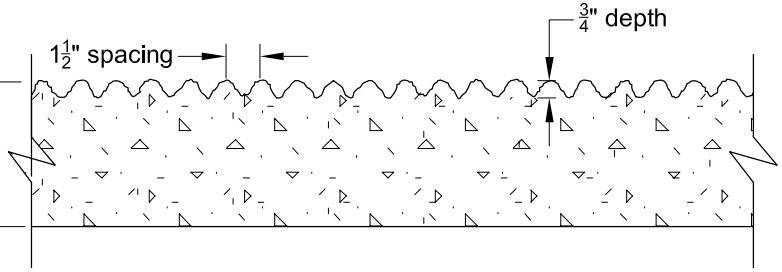
Texture Sample



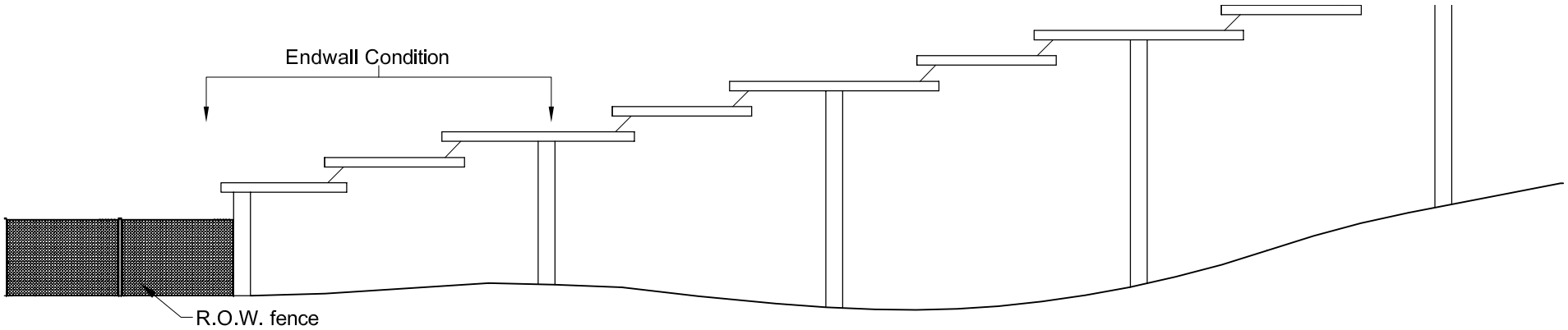


Wall Texture Cross Section

May not reflect actual wall panel thickness

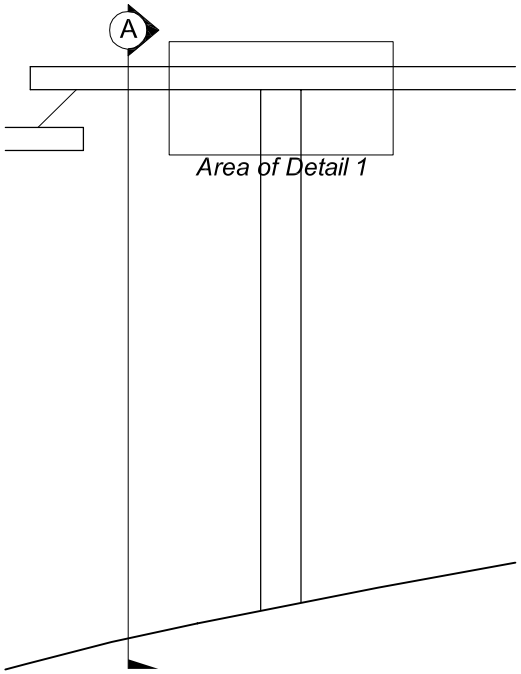


Wall Texture Cross Section

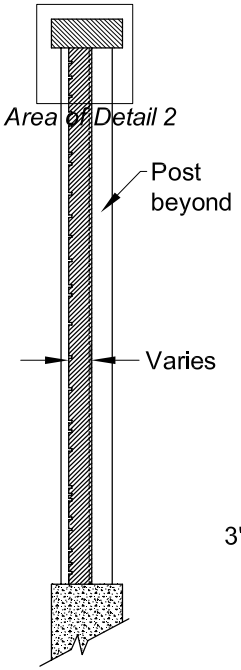


Elevation- Corridor Endwall Conditon

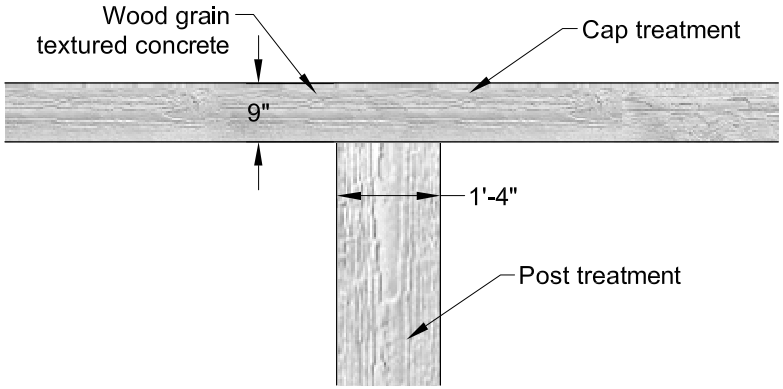
In locations where new noise walls terminate along the corridor, the Corridor Endwall Condition should be applied. The new noise wall should appear to step down and end no less than 6' above ground level. The end of the noise wall should be screened with plantings according to the Endwall and Transition Zone Planting criteria (see pg. LA-6.0)



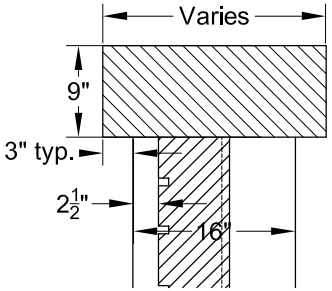
Elevation- Post and Cap



Section A



Detail 1

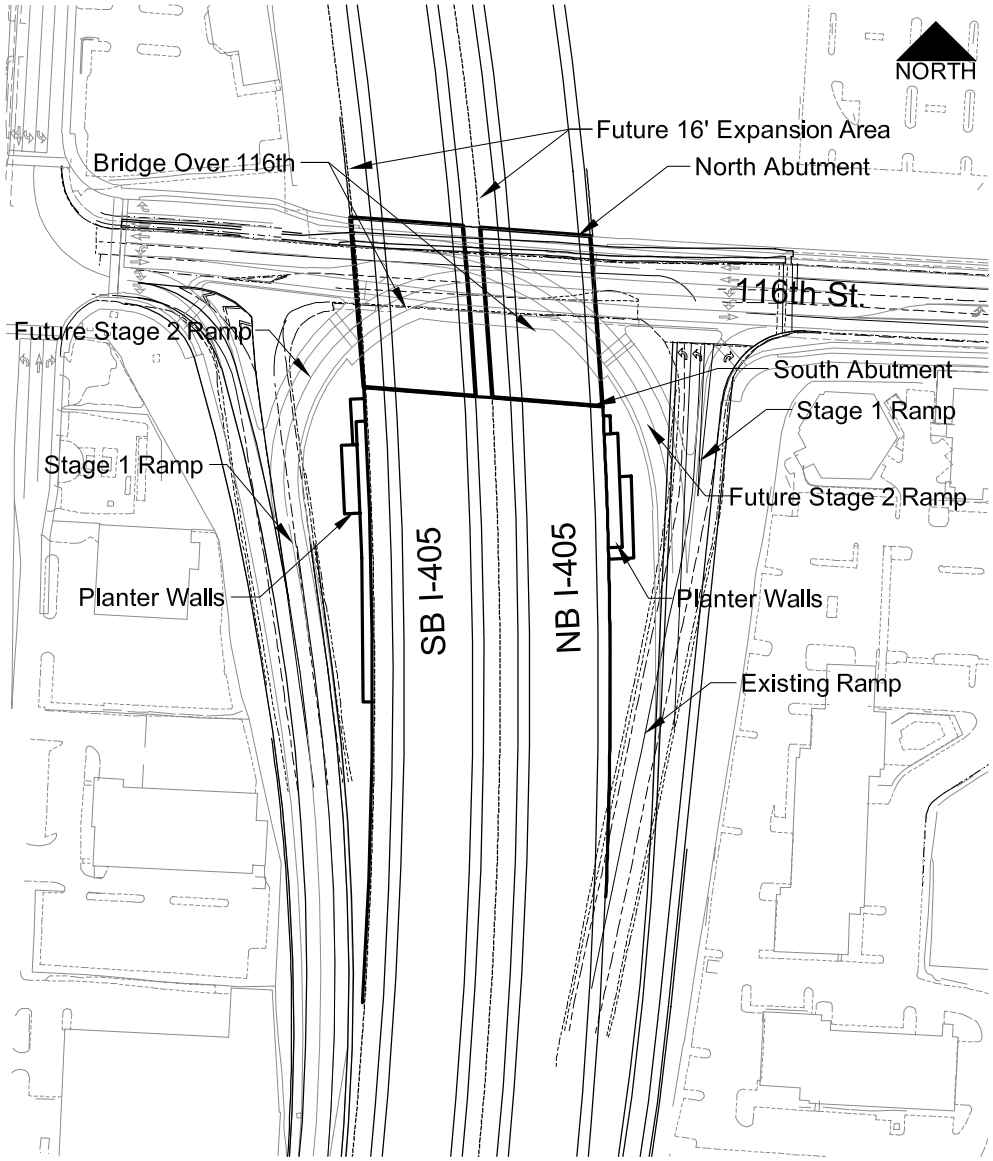


Detail 2

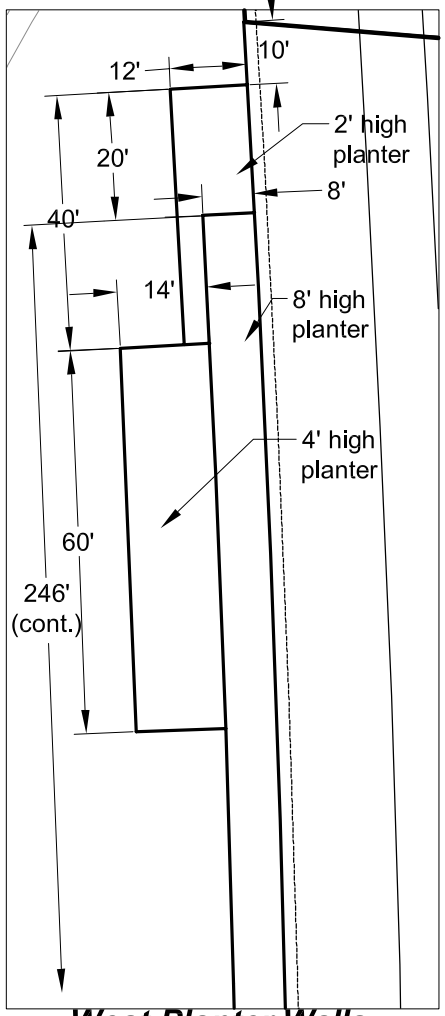
The new noise wall incorporates an aesthetic post and cap treatment. These elements may be integrally cast as part of the wall panel system or pre cast elements attached during construction. The exterior faces of the post and cap should resemble lumber with visible wood grain textures (see graphic above) and painted to match Color C (Paint Key, pg. C-1.0).

NOISE WALLS - ENDWALL AND POST DETAILS W-3.2

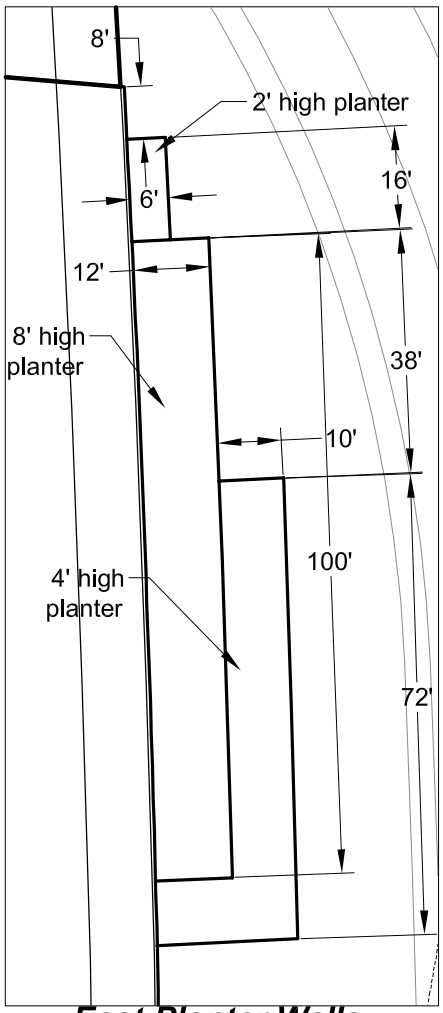
The planter walls at the 116th St. abutment area should be designed as closely as possible to the graphics below. The Criteria are specific for the 116th area planters only, and have been approved by the KAC and WSDOT. For other retaining walls throughout the corridor the stepped retaining wall criteria should be followed (refer to pg. W-1.1).



Overall View

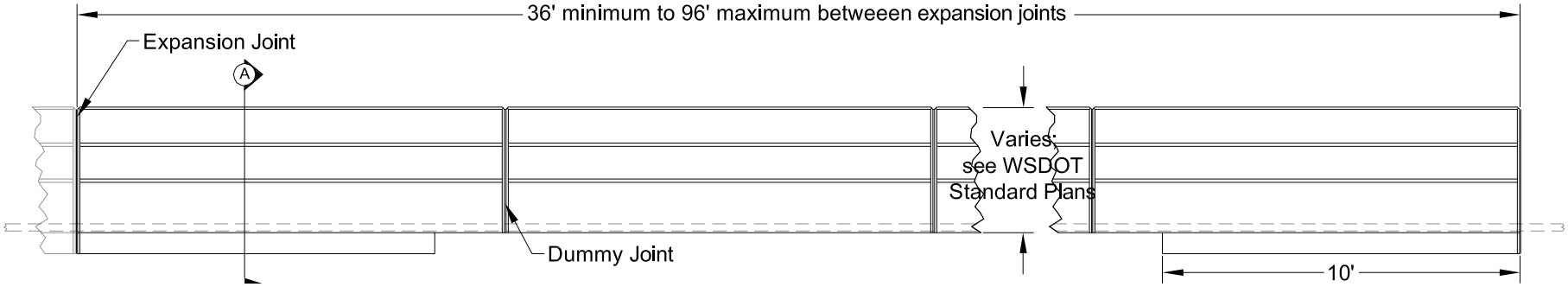


West Planter Walls

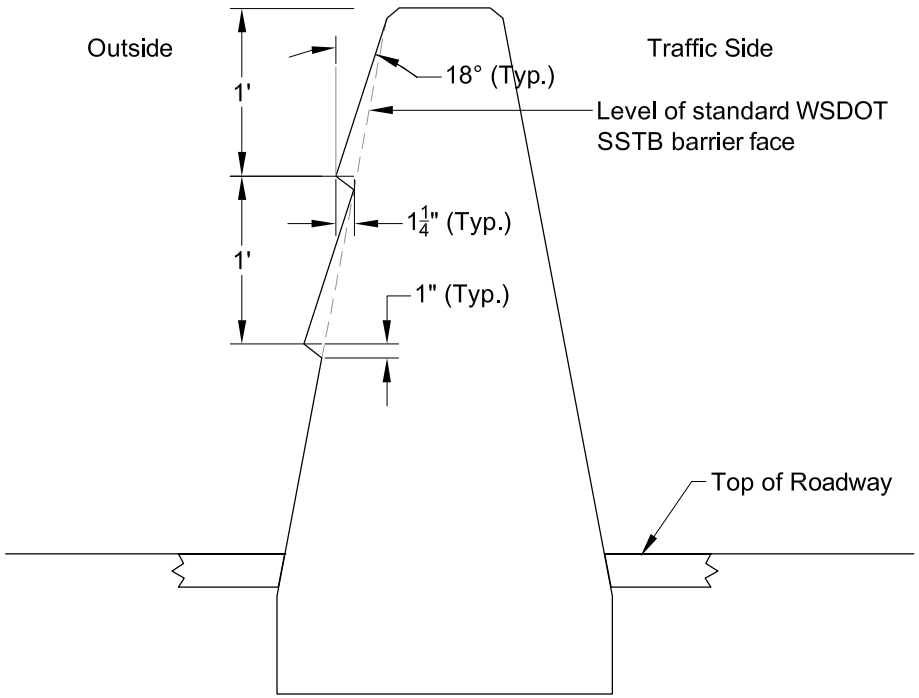


East Planter Walls

PLANTER WALLS - 116th BRIDGE PLANS W-4.0



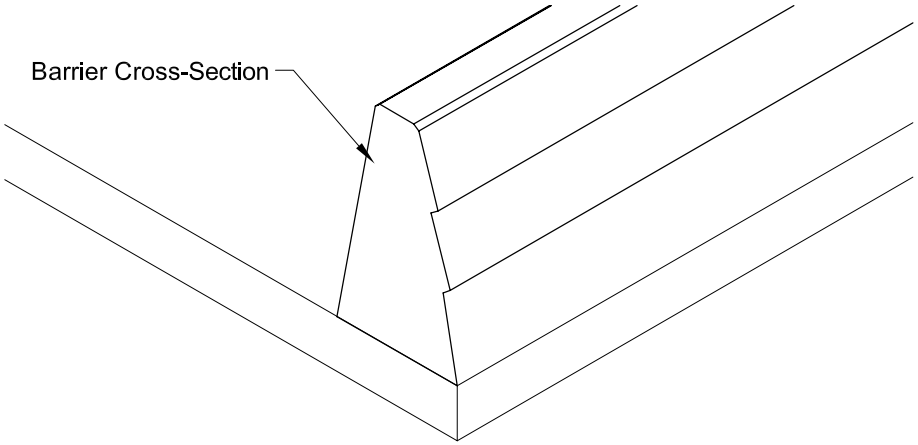
Elevation of Outside Face



Cross Section A

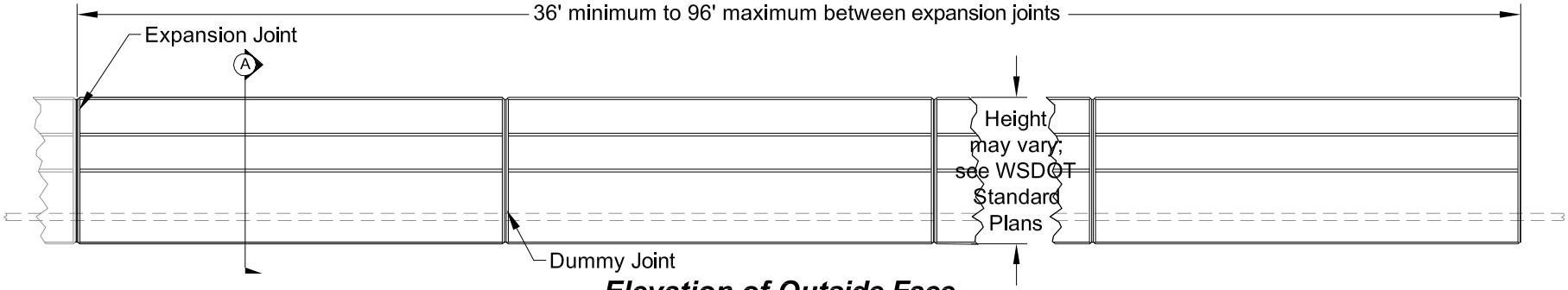
The traffic barrier is a modification of WSDOT's current standard cast-in-place Single-Slope Concrete Barrier (Standard Plan C-14a). The Criteria's only deviation from the standard is to the outside face (the face visible from outside the roadway) and C-14a should be referenced for all dimensions not covered here. Where there is no outside face, or for center barriers, or other conditions not covered by this criteria, the applicable WSDOT standards for single-slope barriers (Standard Plans C-14a to C-14j) should be followed.

See Outside Traffic Barrier Transition details on page B-3.0 for criteria on transitioning from Mainline Bridge Barrier to Roadway Traffic Barrier.



Isometric View

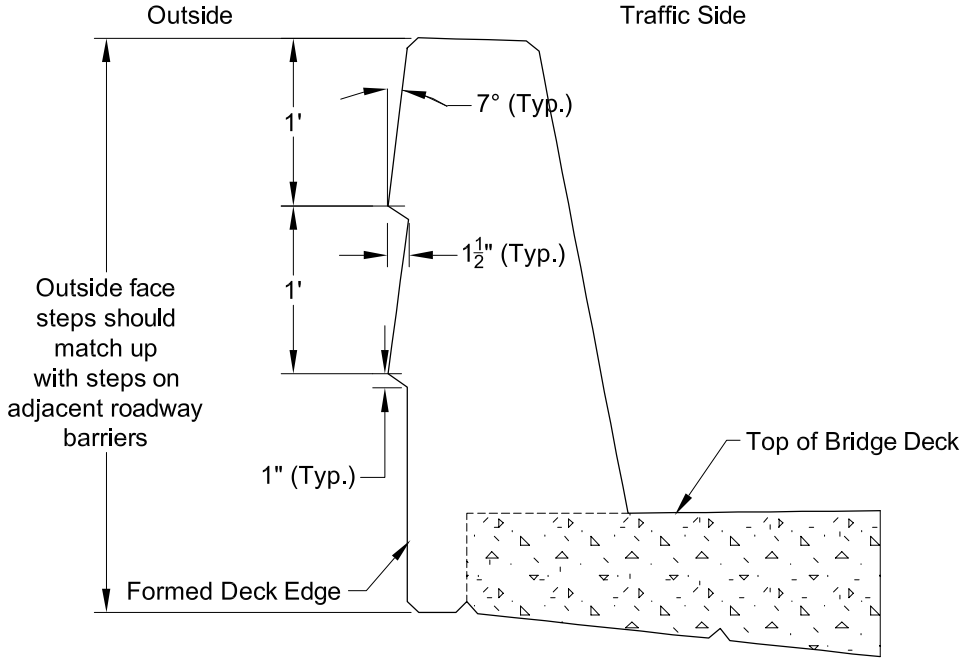
BARRIER - ROADWAY TRAFFIC BARRIER B-1.0



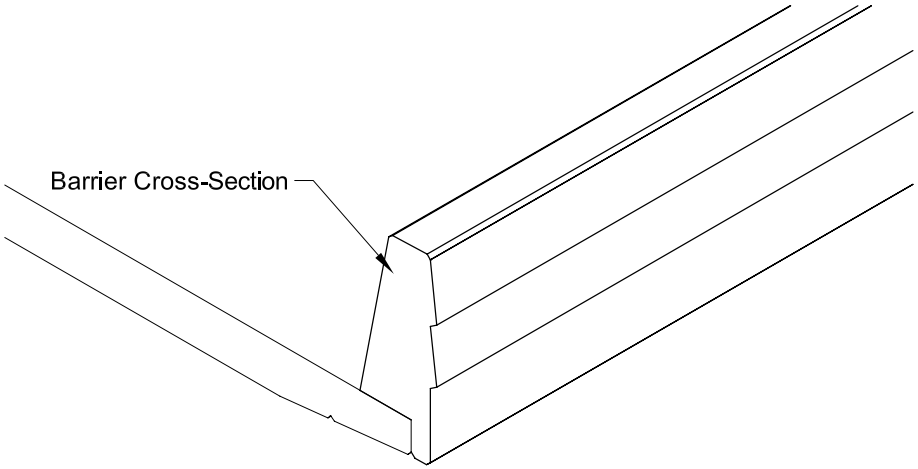
Elevation of Outside Face

The bridge rail barrier is a a modification of WSDOT's current standard cast-in-place Single-Slope Concrete Barrier (Bridge Standard Drawings 8.3-A7-1, 2, and 3). It is similar in all aspects except for the outside face. The Criteria's Bridge Barrier is similar to the Roadway Traffic Barrier (ref. B-1.0) in regards to the decorative stepping on the outer face. WSDOT Bridge Standard Drawings should be referenced for all other dimensions and criteria not covered here.

See Outside Traffic Barrier Transition details on page B-3.0 for criteria on transitioning from Mainline Bridge Barrier to Roadway Traffic Barrier.

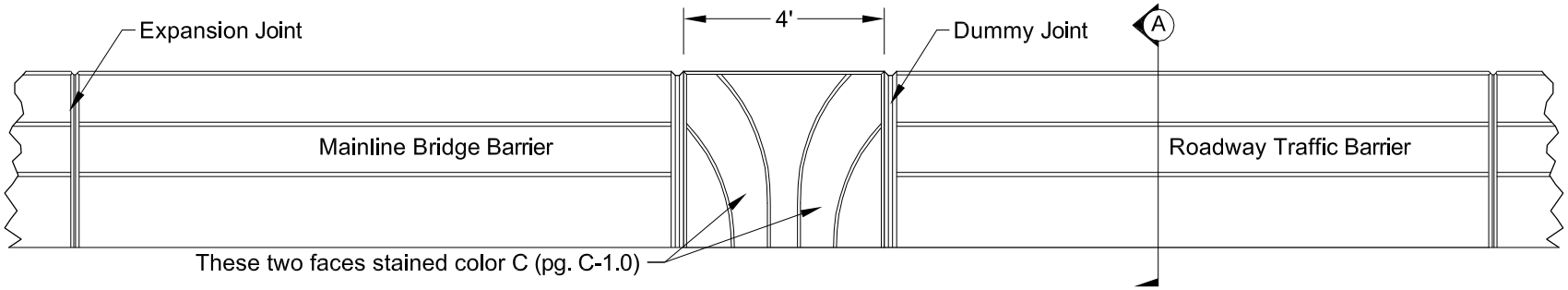


Cross Section A



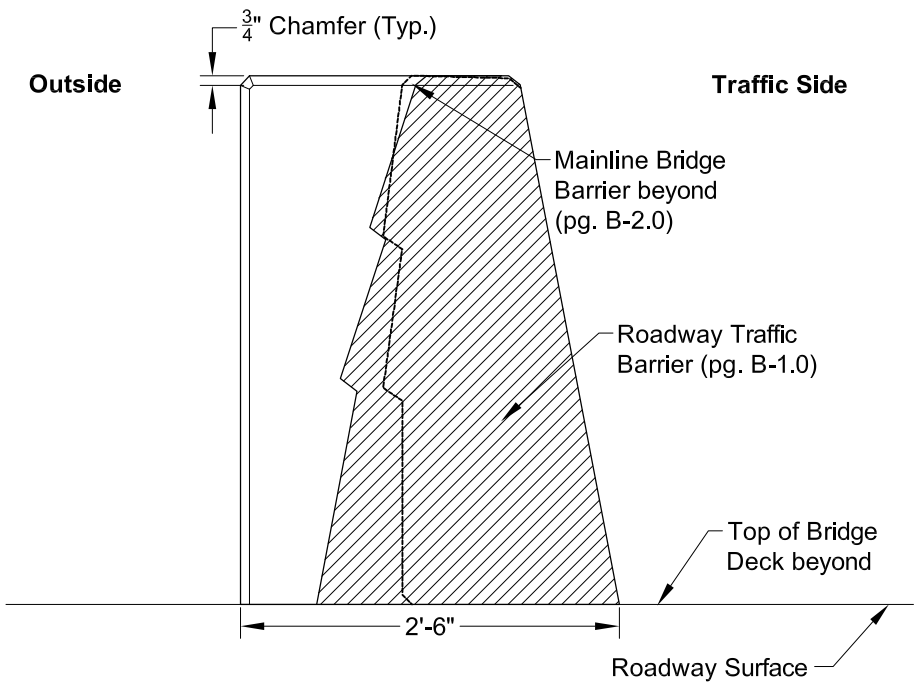
Isometric View

BARRIER - MAINLINE BRIDGE BARRIER B-2.0

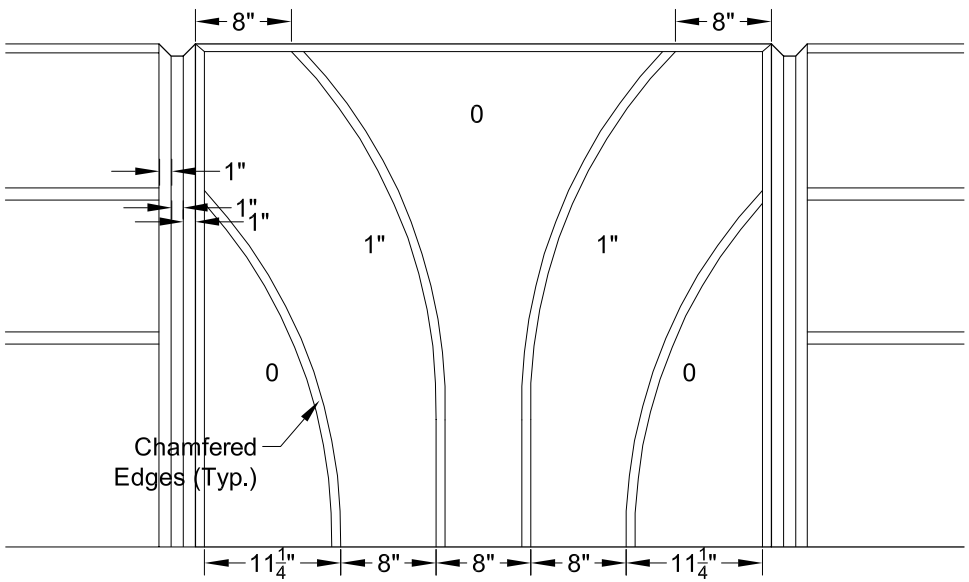


Elevation of Outside Face

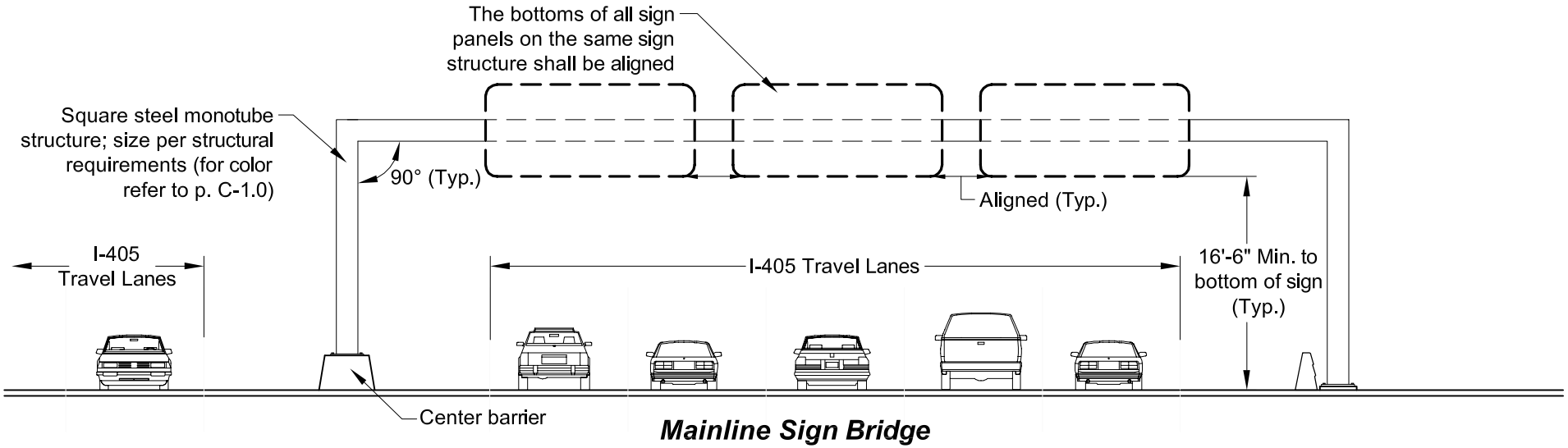
The Barrier Transition provides an attractive means of transitioning from the main roadside traffic barrier to the bridge barrier, which have different outside vertical profiles. It will also alleviate any visual incongruity caused by the difference in height of the two barriers, if any. This transition should be used in all the locations where the two barriers meet, usually at bridges or ramps.



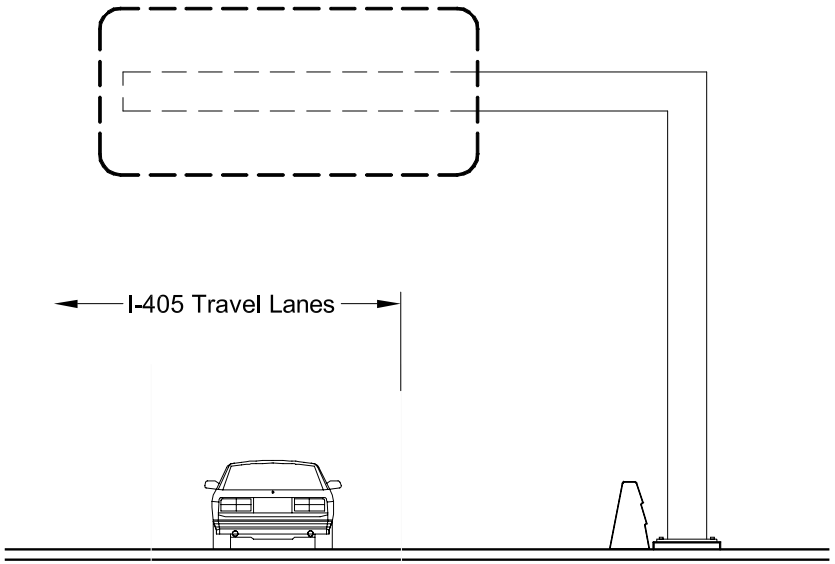
Cross Section A



Transition Rustication



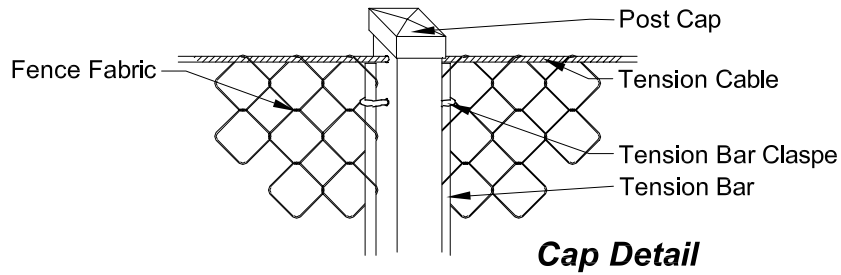
Mainline Sign Bridge



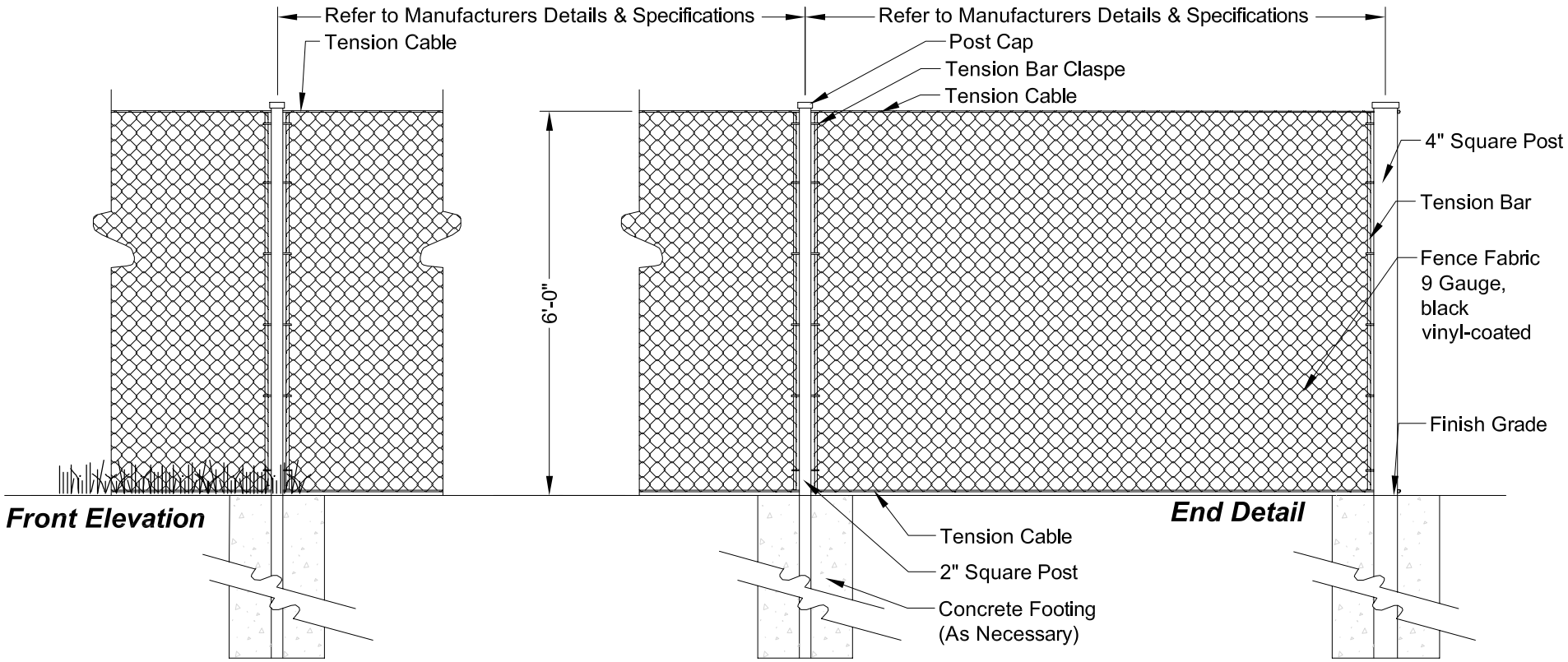
Single Cantilever

The intent of the signage criteria is to minimize the negative visual effects of common roadway signs. This is achieved by: ensuring overhead sign panels are of equal size (when possible), aligning overhead sign panels, and painting the sign post structure with a dark color to reduce glare and contrast.

The Right-of-Way fence is a basic chain-link sytem with black vinyl-coated fence fabric.



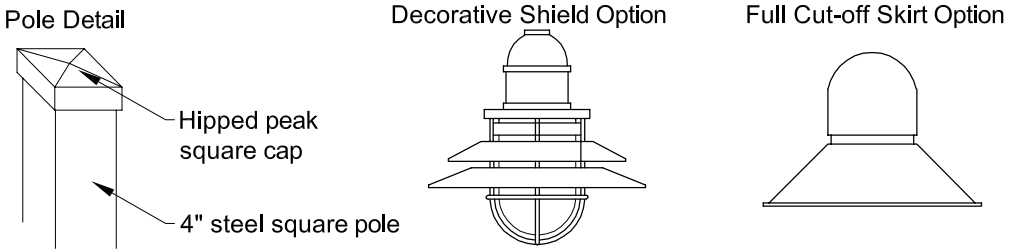
Cap Detail

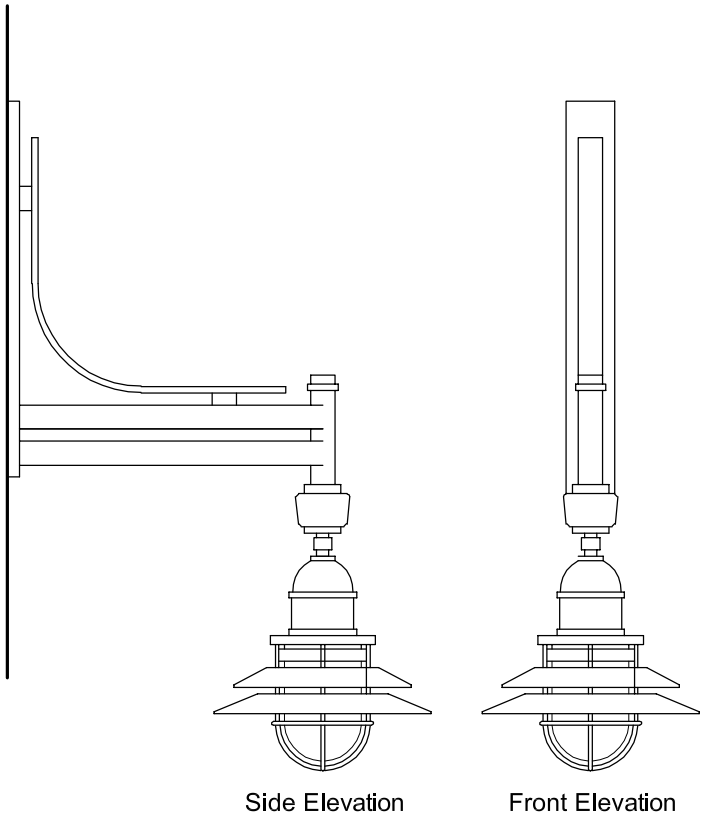


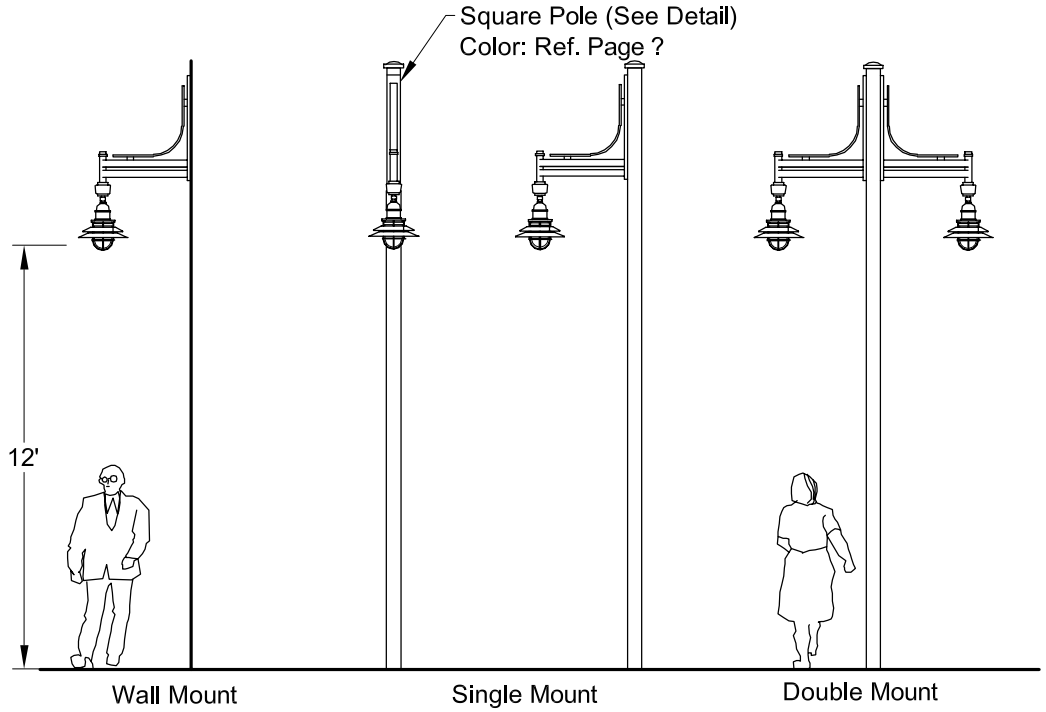
Front Elevation

End Detail

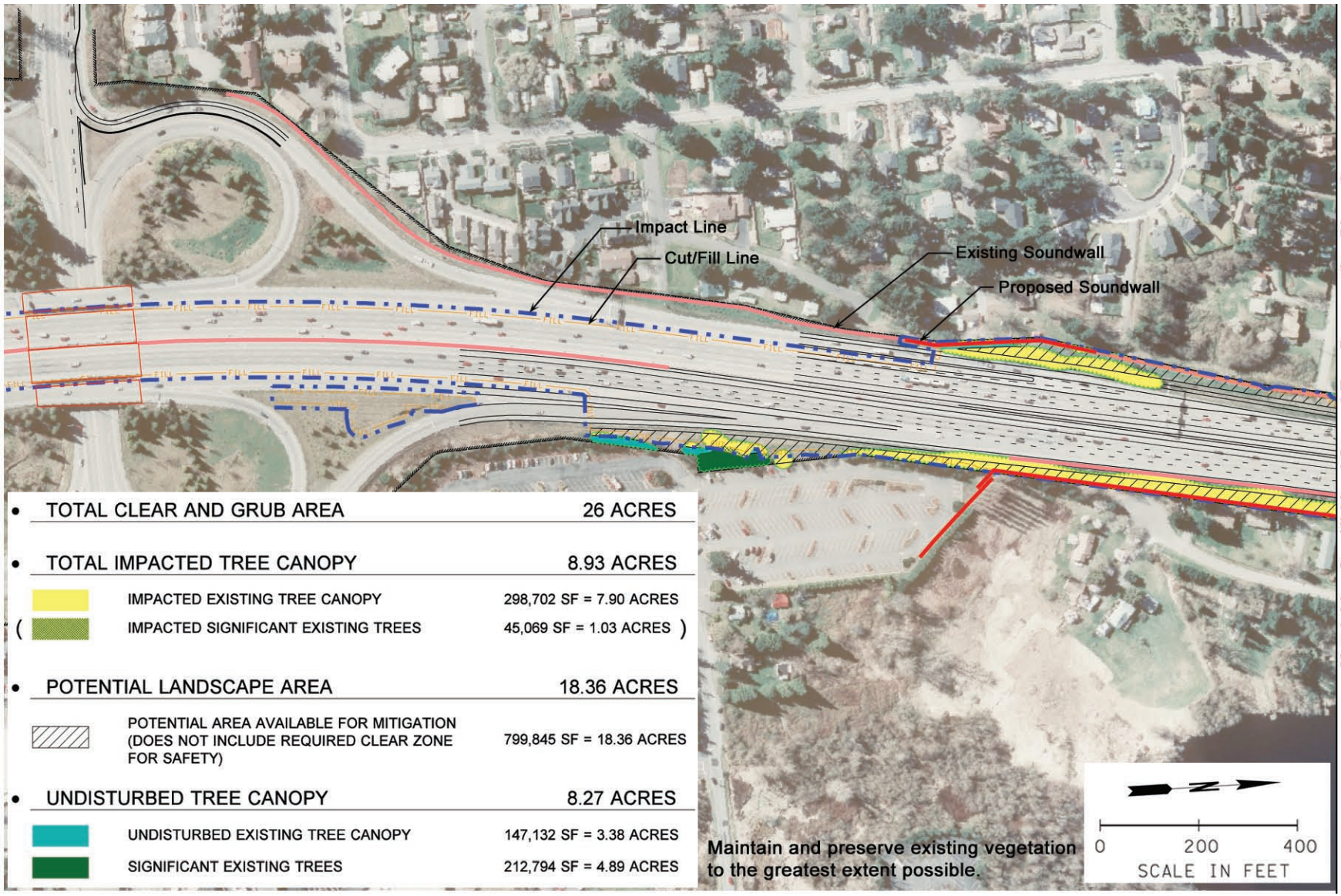
Notes:
The arms, poles and fixtures shown here are for visual reference. The designer should select high-quality products, complete with standard attachment features and easily maintained elements that match the look of the shown pedestrian lights. All selections must be approved by WSDOT.



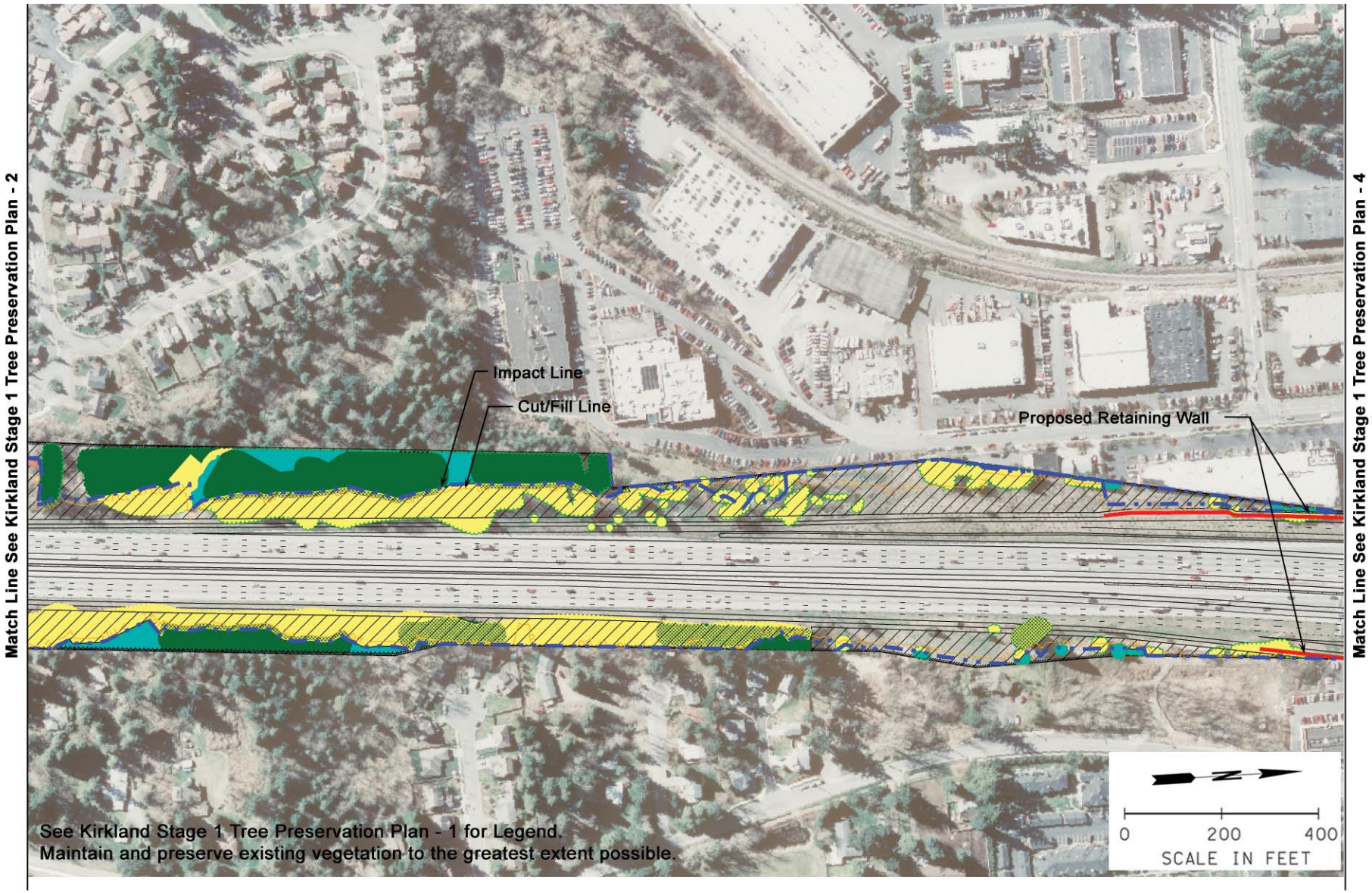


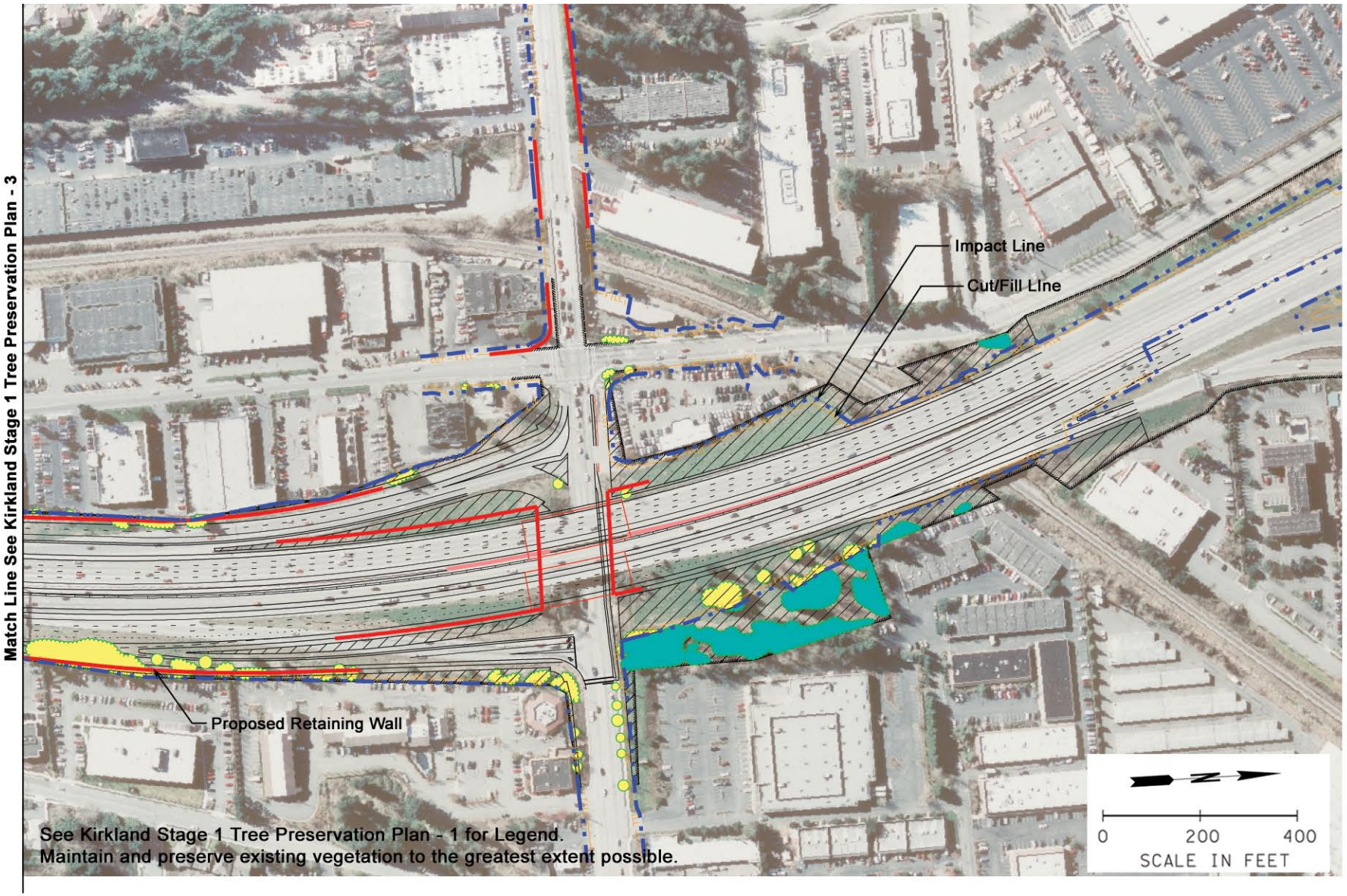


Pole Mounted Alternatives


Impact Line
Cut/Fill Line
Existing Soundwall
Proposed Soundwall
Match Line See Kirkland Stage 1 Tree Preservation Plan - 2
• TOTAL CLEAR AND GRUB AREA 26 ACRES
• TOTAL IMPACTED TREE CANOPY 8.93 ACRES
IMPACTED EXISTING TREE CANOPY 298,702 SF = 7.90 ACRES
(IMPACTED SIGNIFICANT EXISTING TREES 45,069 SF = 1.03 ACRES)
• POTENTIAL LANDSCAPE AREA 18.36 ACRES
POTENTIAL AREA AVAILABLE FOR MITIGATION (DOES NOT INCLUDE REQUIRED CLEAR ZONE FOR SAFETY) 799,845 SF = 18.36 ACRES
• UNDISTURBED TREE CANOPY 8.27 ACRES
UNDISTURBED EXISTING TREE CANOPY 147,132 SF = 3.38 ACRES
SIGNIFICANT EXISTING TREES 212,794 SF = 4.89 ACRES
Maintain and preserve existing vegetation to the greatest extent possible.
N
0 200 400
SCALE IN FEET

Match Line See Kirkland Stage 1 Tree Preservation Plan - 1
Impact Line
Cut/Fill Line
Existing Soundwall
Proposed Soundwall
See Kirkland Stage 1 Tree Preservation Plan - 1 for Legend.
Maintain and preserve existing vegetation to the greatest extent possible.
N
0
200
400
SCALE IN FEET
Match Line See Kirkland Stage 1 Tree Preservation Plan - 3


Match Line See Kirkland Stage 1 Tree Preservation Plan - 2
Impact Line
Cut/Fill Line
Proposed Retaining Wall
Match Line See Kirkland Stage 1 Tree Preservation Plan - 4
See Kirkland Stage 1 Tree Preservation Plan - 1 for Legend.
Maintain and preserve existing vegetation to the greatest extent possible.
0
200
400
SCALE IN FEET


Match Line See Kirkland Stage 1 Tree Preservation Plan - 3
Impact Line
Cut/Fill LIne
Proposed Retaining Wall
See Kirkland Stage 1 Tree Preservation Plan - 1 for Legend.
Maintain and preserve existing vegetation to the greatest extent possible.
N
0
200
400
SCALE IN FEET

	Symbol	Botanical Name	Common Name	Size	Percentage
Enhanced Plant Mix	**Enhanced Tree Mix**		Plant Spacing for Entire Mix to be 20' O.C.		
		Acer rubrum Acer glabrum Acer circinatum Thuja plicata Pseudotsuga menziesii	Red Maple Rocky Mountain Maple Vine Maple Western Red Cedar Douglas Fir	1¼" Cal. 1" Cal. 6' HT 6-8' HT 6-8' HT	25 % 25 % 16.7% 16.7% 16.7%
	Enhanced Shrub Mix		Plant Spacing for Entire Mix to be 5' O.C.		
		Mahonia aquifolium Euonymus alatus 'Compactus' Cistus X hybridus Symphoricarpus alba	Oregon Grape Burning Bush White Rockrose Snowberry	1 Gal. 2 Gal. 2 Gal. 1 Gal.	25 % 25 % 25 % 25 %
Corridor Plant Mix	**Corridor Tree Mix**		Plant Spacing for Entire Mix to be 10' O.C.		
		Acer platanoides Acer circinatum Thuja plicata Pseudotsuga menziesii	Norway Maple Vine Maple Western Red Cedar Douglas Fir	24" HT / 48" HT 24" HT / 48" HT 24" HT / 48" HT 24" HT / 48" HT	25 % 25 % 25 % 25 %
	Corridor Shrub Mix		Plant Spacing for Entire Mix to be 5' O.C.		
		Mahonia aquifolium Amelanchier alnifolia Oelmeria cerasiformis Corylus cornuta 'Calfornica' Philadelphus lewisii Symphoricarpus alba Cornus sericea Myrica californica	Oregon Grape Serviceberry Indian Plum Western Hazelnut Wild Mock Orange Snowberry Red Osier Dogwood Pacific Wax Myrtle	18" HT 18" HT 18" HT 18" HT 18" HT 18" HT 18" HT 18" HT	12.5 % 12.5 % 12.5 % 12.5 % 12.5 % 12.5 % 12.5 % 12.5 %
Riparian Plant Mix	**Riparian Tree Mix**		Plant Spacing for Entire Mix to be 10' O.C.		
		Thuja plicata Salix scouleriana Salix Sitchensis	Western Red Cedar Scouler's Willow Sitka Willow	24" HT Bare Root 18" HT Bare Root 18" HT	33.3 % 33.3 % 33.3 %
	Riparian Shrub Mix		Plant Spacing for Entire Mix to be 5' O.C.		
		Cornus sericea Cornus sericea 'Flaviraemea' Rosa nutkana	Red Osier Dogwood Yellow Twig Dogwood Nootka Rose	18" HT 18" HT 18" HT	33.3 % 33.3 % 33.3 %
	Vines		Plant Spacing for Entire Mix to be 5' O.C.		
		Parthenocissus tricuspidata 'Veitchii'	Boston Ivy 'Vietchii'	1 Gal.	100 %

Plants should be laid out in informal, slightly irregular masses that reflect a scale that is appropriate to the viewing speed according to the Roadside Classification Plan and the Roadside Manual. The following criteria apply to each plant mix:

-Enhanced Plant Mix is intended to act as the transition into communities with appropriate plant selection and arrangements that blend into existing or planned community plantings.

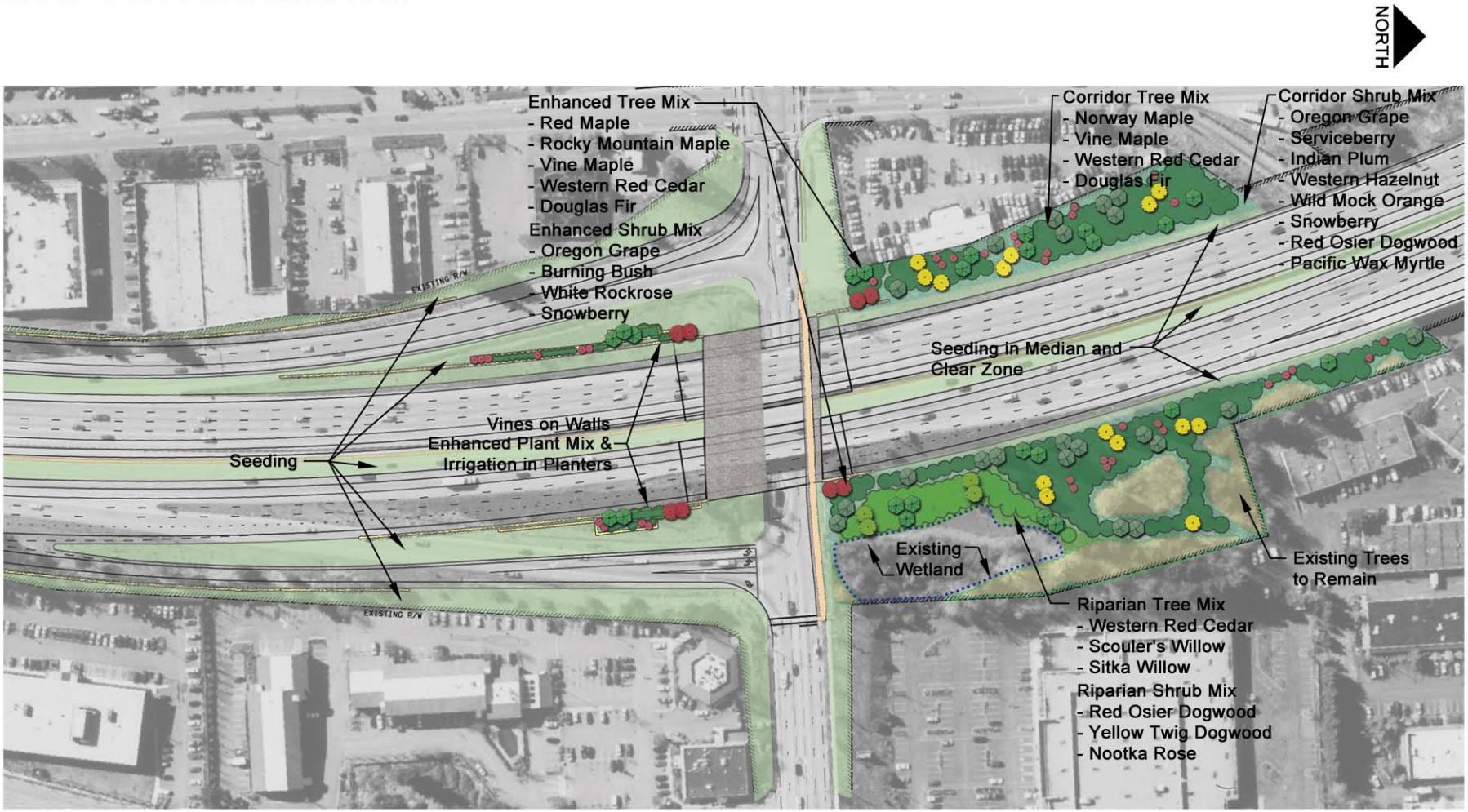
-Corridor Plant Mix should consist of primarily native species both trees and shrubs arranged in natural patterns to emulate surrounding vegetation and corridor character.

-Riparian Plant Mix should consist of tree and shrub species which can withstand wet conditions and should be used in the vicinity of wetlands and detention ponds.

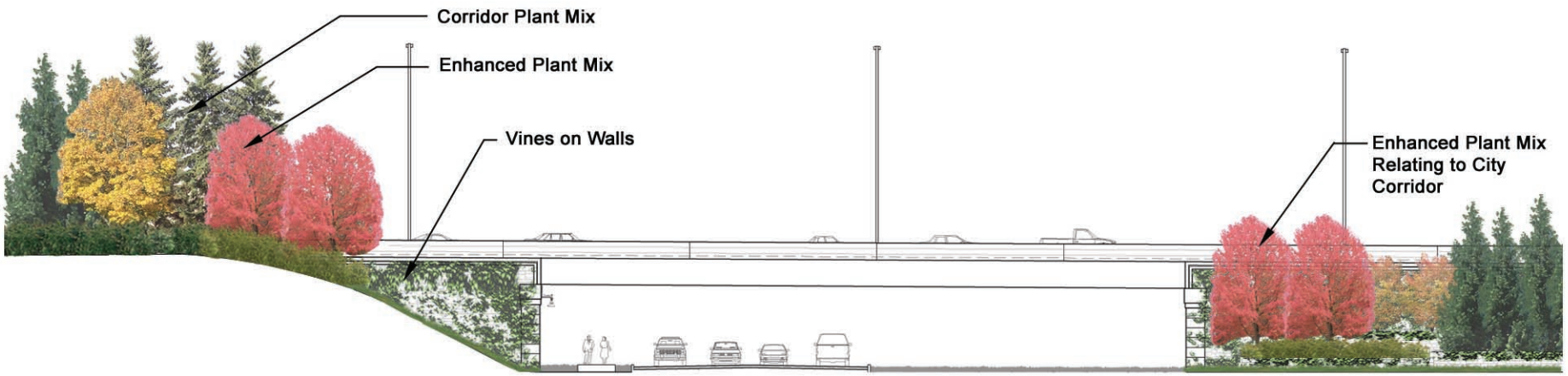
-Vine planting is intended to soften the expanse of the walls with relatively random spaced groupings. Vines shall only be used where wall is exposed to view and limited space areas.

-Where Corridor Tree Mix are identified, adjacent to residential and not receiving sound wall, 48" HT trees shall be installed.

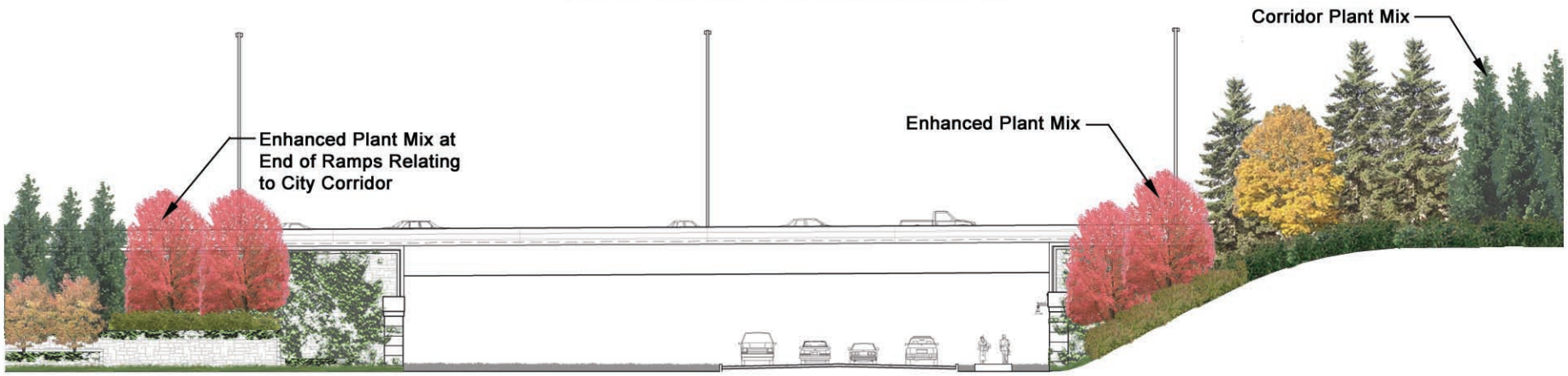
116th RESTORATION PLAN



116th RESTORATION ELEVATION

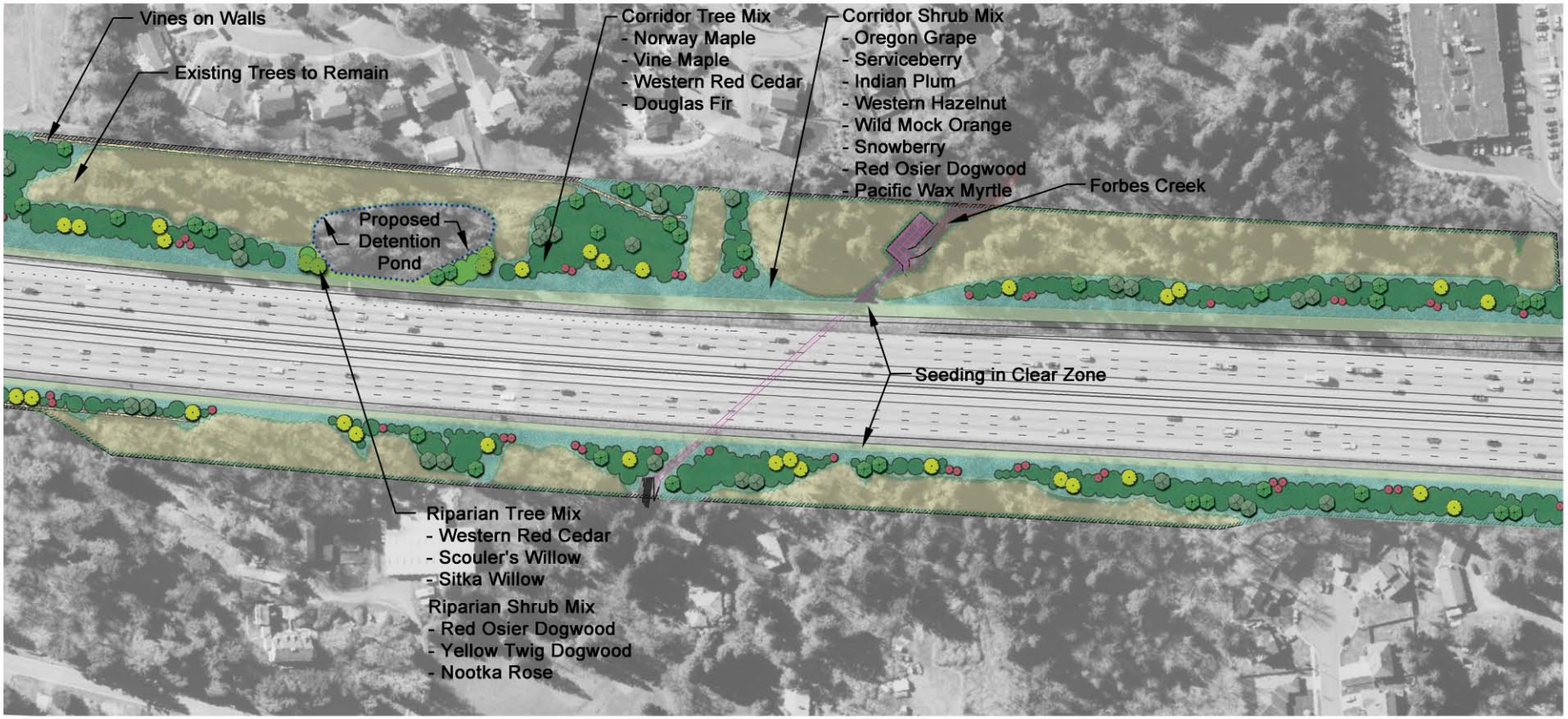


West Elevation- Southbound I-405



East Elevation- Northbound I-405

CORRIDOR ROADSIDE RESTORATION

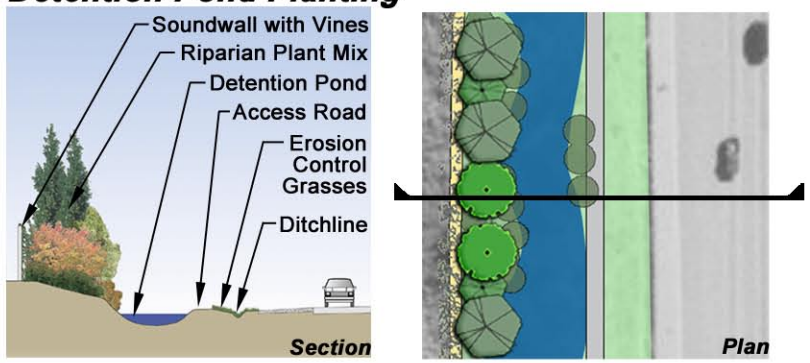


Maintain and preserve existing vegetation to the greatest extent possible.
All areas within the Right-of-Way shall be planted, with the exception of trees and understory to be preserved and protected as indicated in the Tree Preservation Plan.

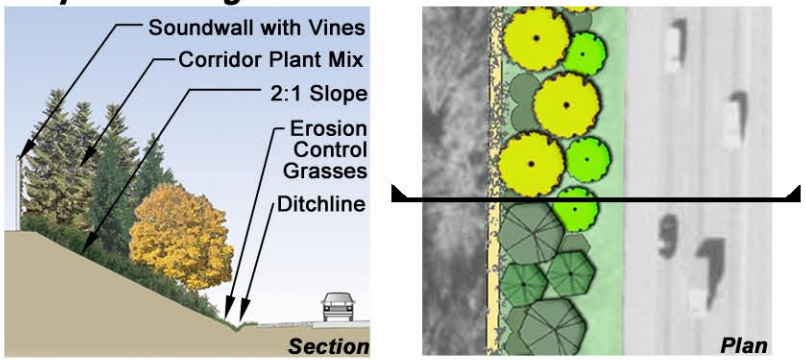
ROADSIDE RESTORATION - PLANTING PLAN AT MAINLANES LA-4.0

CORRIDOR PLANTING

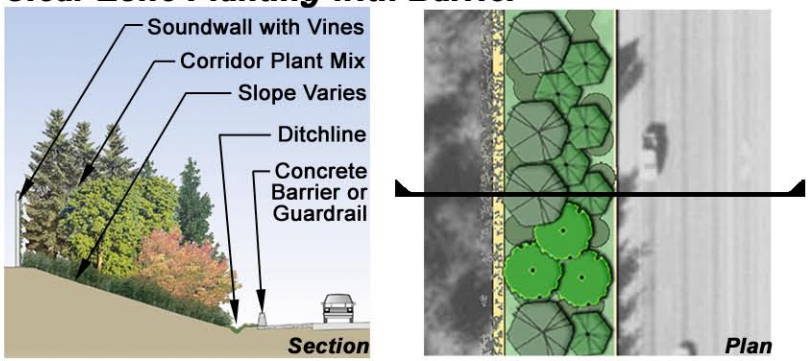
Detention Pond Planting



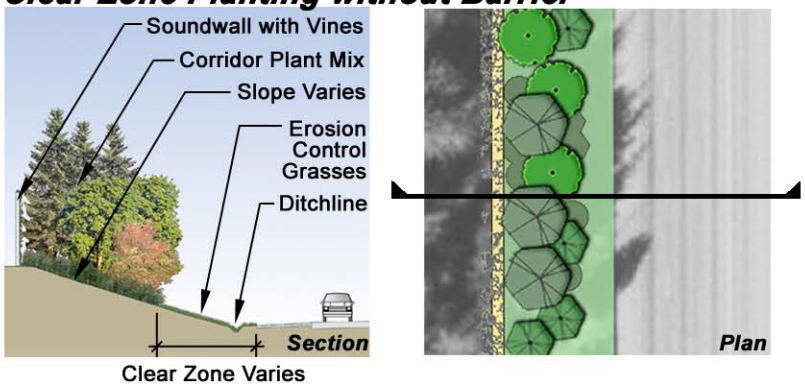
Slope Planting



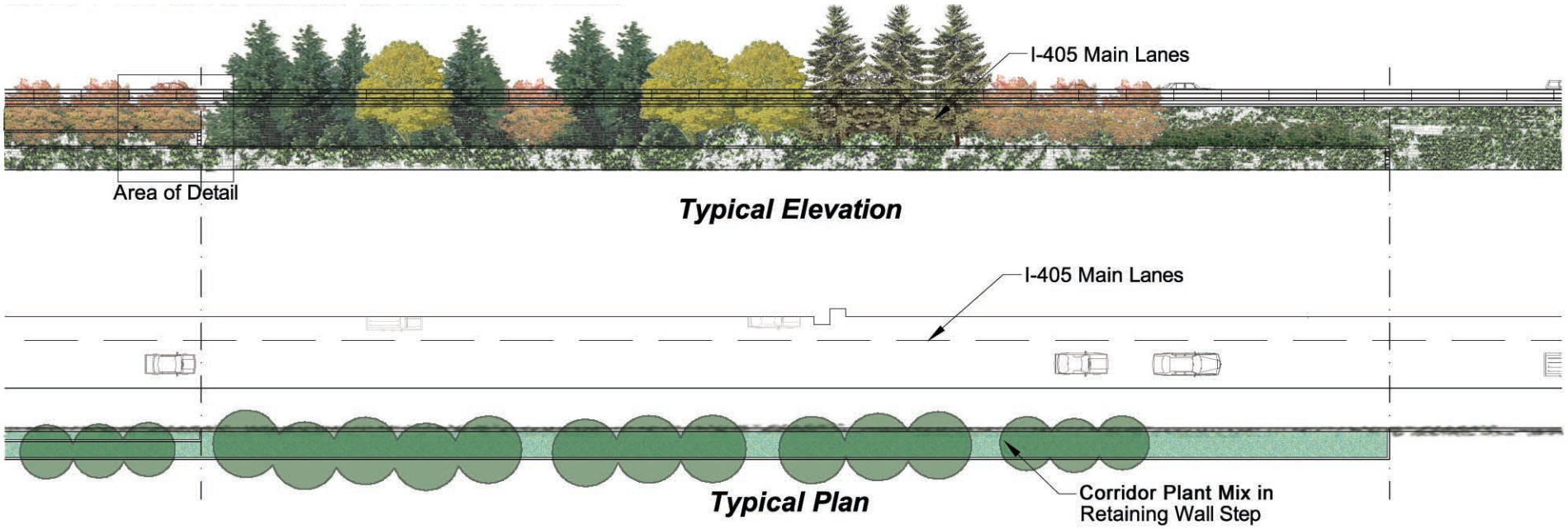
Clear Zone Planting with Barrier

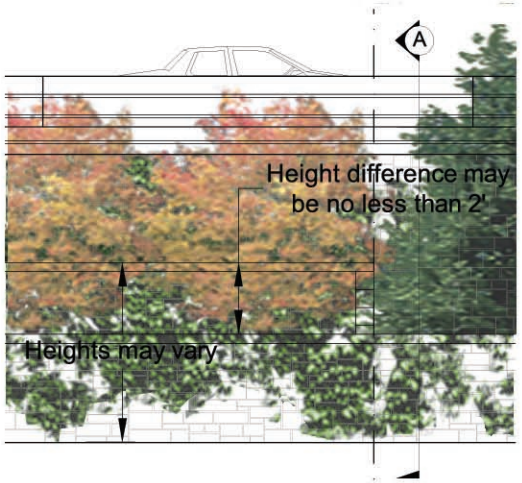


Clear Zone Planting without Barrier

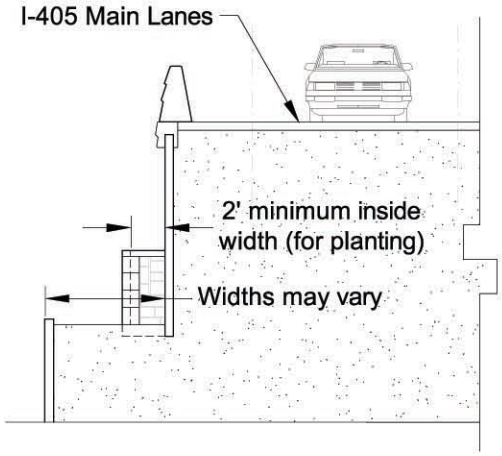


ROADSIDE RESTORATION - TYPICAL PLANTING SECTIONS AT MAINLANES LA-4.1





Detail



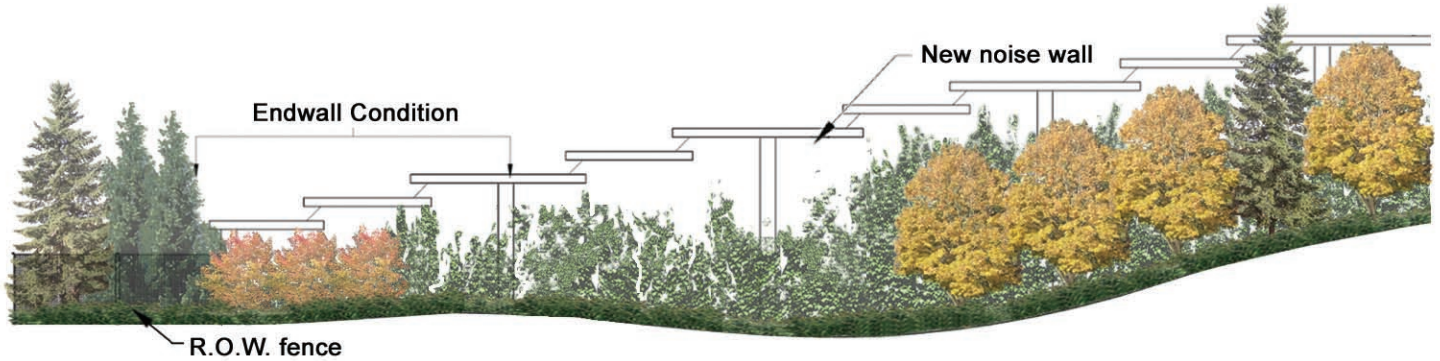
Section/Elevation A

The intent of the stepped retaining wall planting is to soften the expanse of the walls. The following criteria apply to the planting design:

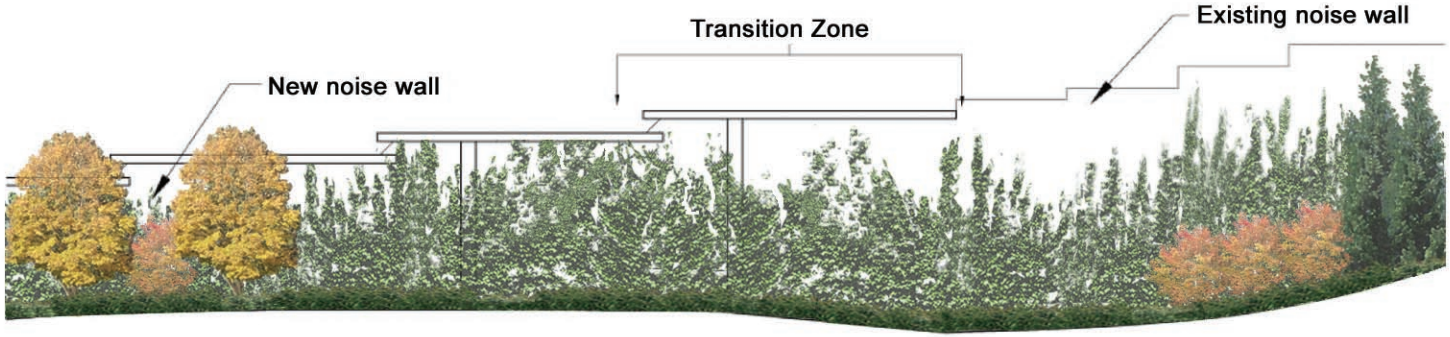
-The following dimensions of retaining wall steps apply for various plant types.
- **2' minimum inside for vines**
- **4' minimum inside for shrubs**
- **8' minimum inside for trees**

-Slightly irregular linear tree masses should be created and regular patterns and designs in the tree layout should be avoided.
-Masses and configuration of shrubs should be in informal and slightly irregular patterns consistent with tree layout.
-Permanent irrigation system must be provided in retaining wall steps.

ROADSIDE RESTORATION - TYPICAL PLANTING AT RETAINING WALLS LA-5.0



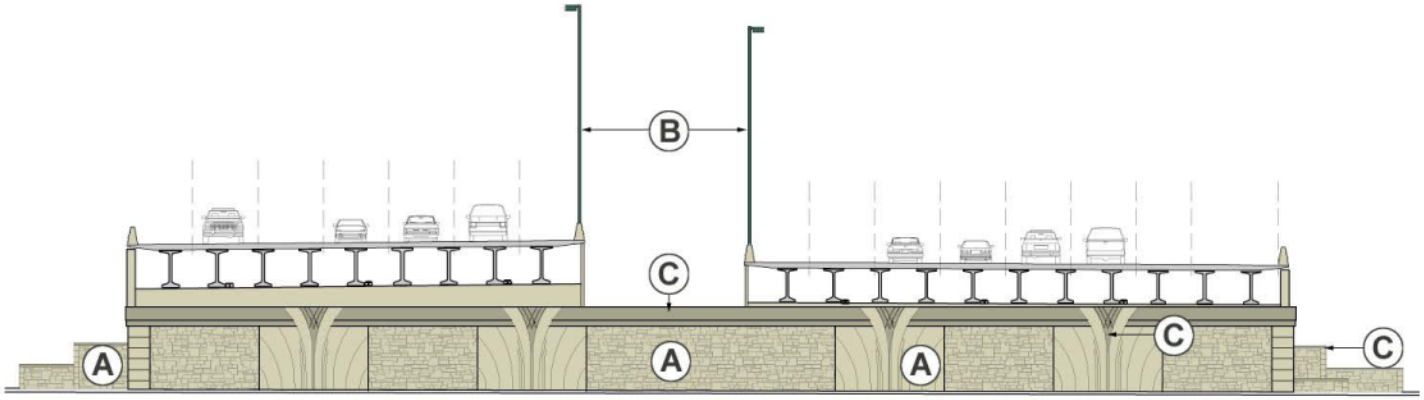
Endwall Condition with Planting



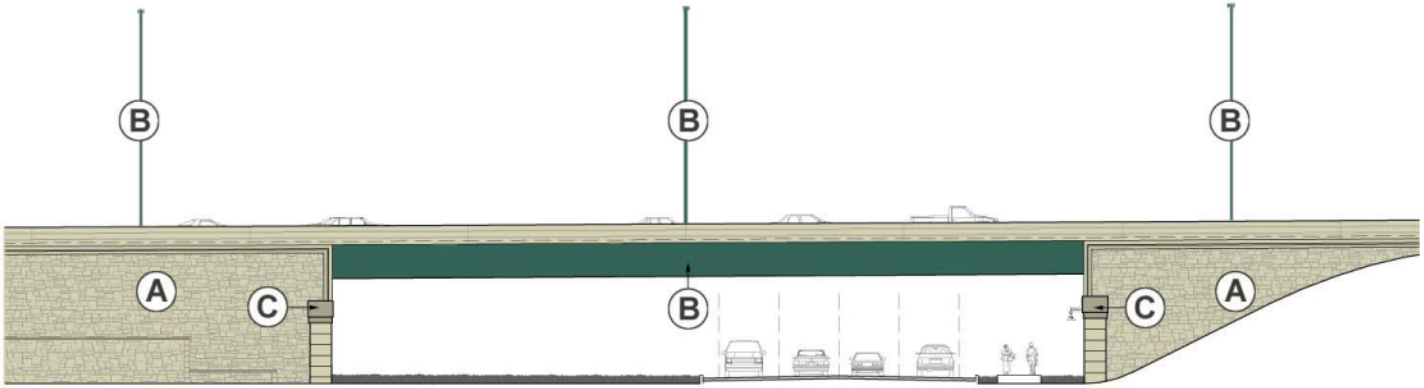
Transition Zone with Planting

Corridor Plant Mix and vines shall be used in front of noise walls in order to ease the visual transition at the Endwall Condition and the Transition Zone.

ROADSIDE RESTORATION - TYPICAL PLANTING AT NOISE WALLS (CORRIDOR SIDE) LA-6.0



Under Bridge Section/Elevation



Side Elevation

KEY

A

Color A:
WSDOT Standard Color:
'Mount St. Helens Gray'
(or Federal Color equal)

Applications:
Base Color Throughout:
Barriers
Retaining Walls
Abutment Walls
Noise Walls
Bents
Columns

B

Color B:
Rock Garden SW 6195
Sherwin Williams Exteriors
(or Federal Color equal)

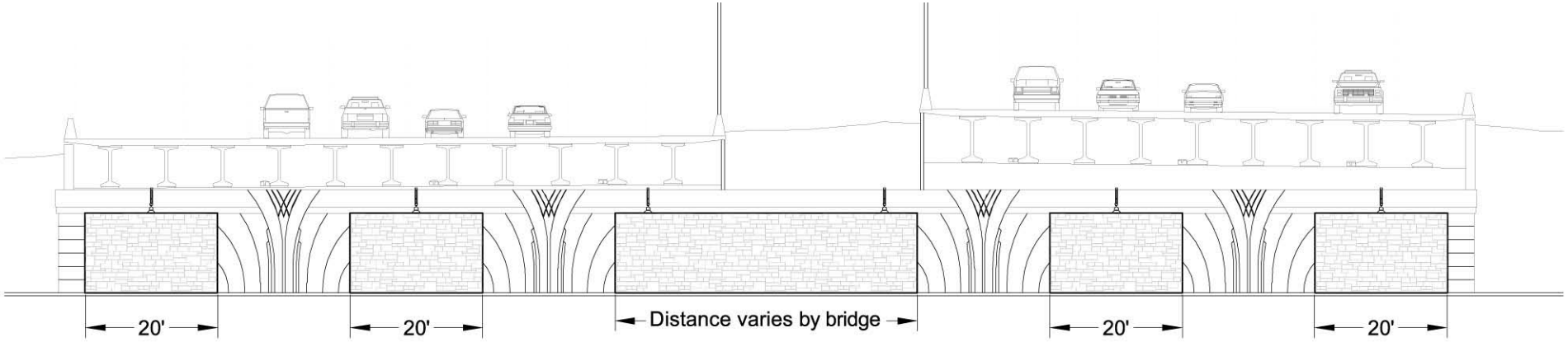
Applications:
Bridge Super-Structure
All Metal Work:
Fencing
Mainlane Lighting
Pedestrian Lighting
Underbridge Lighting
Sign Structures
Signal Light Structures
ITS Equipment (poles, cabinets, etc.)

C

Color C:
Sycamore Tan SW 2855
Sherwin Williams Exteriors
(or Federal Color equal)

Applications:
Accent Areas:
Abutment Cap
Abutment Medallion Inset
Bent Cap
Planter Wall Cap

COLOR - PAINT KEY C-1.0



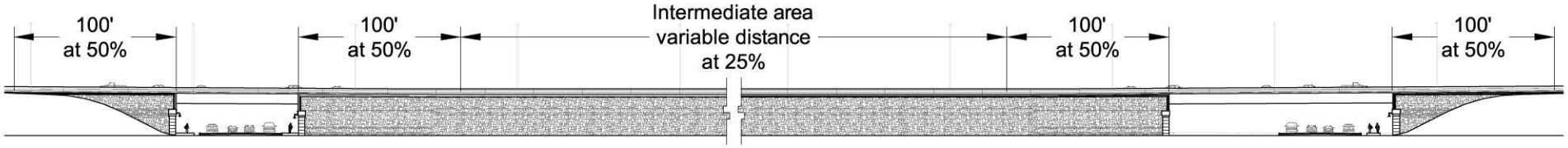
Vertical Abutment Face

Community art opportunities are available on the community side of abutments and retaining walls throughout the corridor. Such art should be achieved with textures, patterns or colors that can be easily integrated into the surfaces of the corridor's wall systems. The art should take place in locations that are significant to the community and/or highly visible to motorists or pedestrians, preferably concentrated near the abutments. It should not be visible from the Interstate corridor. Retaining wall areas that are not ideal for stepping (ref: W-1.1) or planting, according to the Urban Design Criteria but that are highly visible, should be considered for community art opportunities. Besides the following criteria, all design and installation of community art will follow WSDOT's procedures concerning art within its right-of-way.

-The areas noted below and on the graphics are available for community art. The percentage refers to the amount of the wall that may be used for community art. The intent is to concentrate the art as it approaches the abutments. When possible the art should be dispersed evenly on the face of the wall at the appropriate percentage:

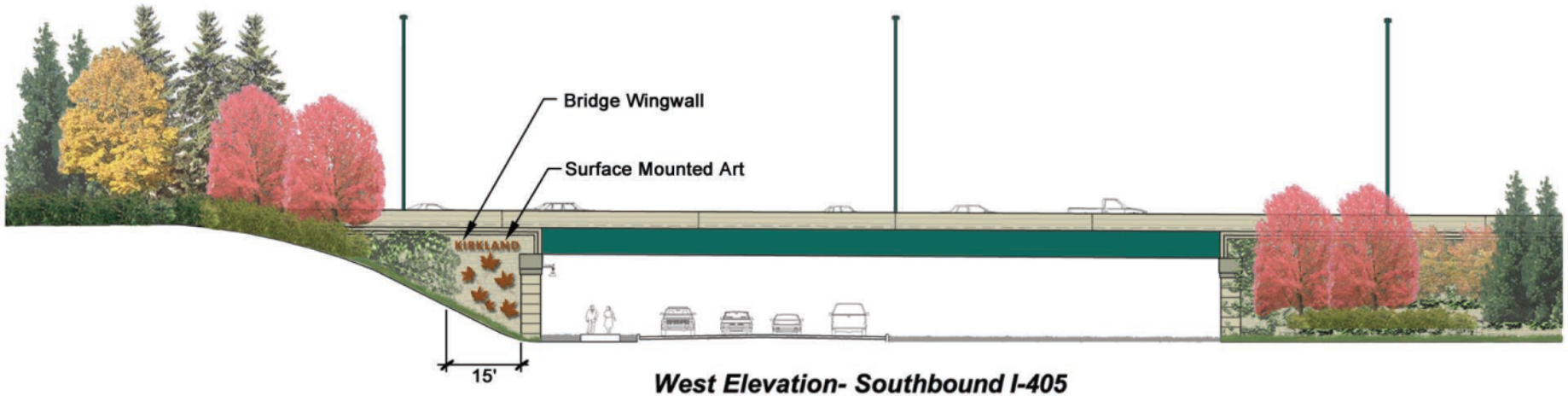
- 100% of the area marked A .
- 50% of the area on the retaining wall adjacent to the abutment, marked B , up to 100' away from the abutment corner.
- 25% of the "intermediate area" between abutments, marked C .

- Any art placed within the Interstate 405 right-of-way shall not detract from the overall Corridor Theme, as prescribed in the Master Plan document.

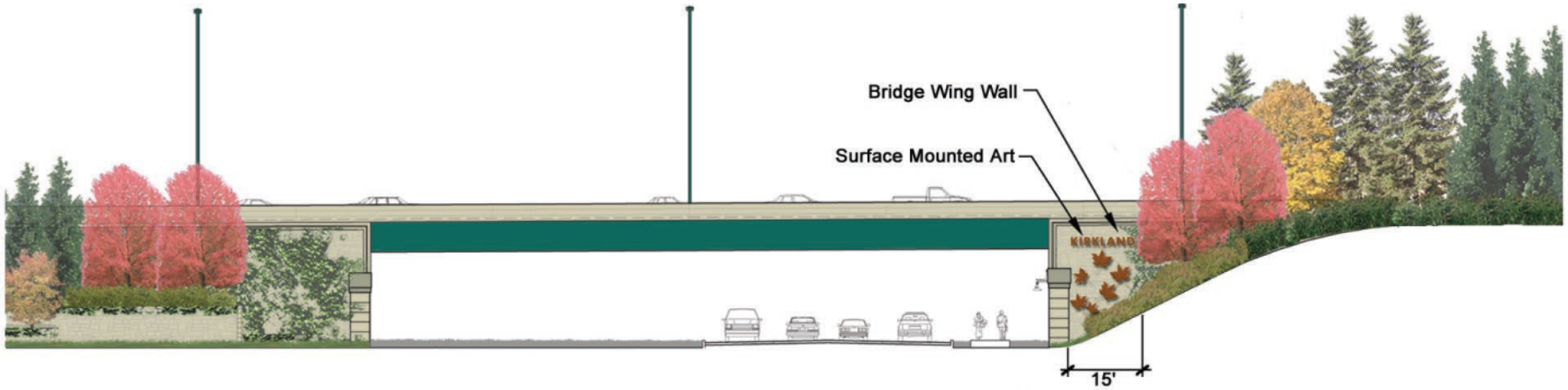


Areas Available for Community Art on Retaining Walls

116th PERMISSIBLE LOCATIONS OF SURFACE MOUNTED ART



West Elevation- Southbound I-405



East Elevation- Northbound I-405