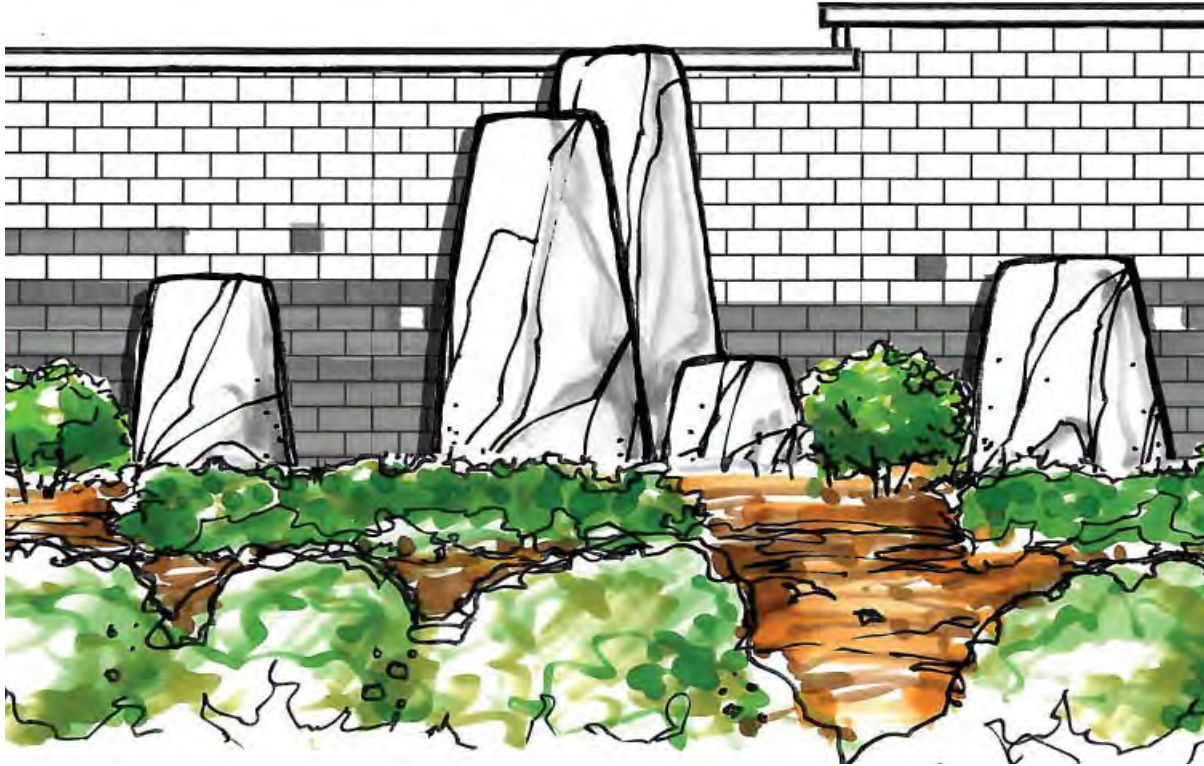


# SOUTHBOUND SOUND WALL



## Design Enhancement Final Concepts I-5 Willamette River Bridge - Jan. 2010





## **Table of Contents**

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<b>Introduction and Final Concept</b>	<b>1</b>
<b>Overall Site Plan &amp; Final Concept Plans</b>	<b>2</b>
<b>Specifications</b>	<b>3-4</b>
<b>Cost Estimate</b>	<b>5</b>



## **INTRODUCTION:**

The Southbound (SB) Sound wall is located on the west side of I-5 southbound on-ramp, south of the Willamette River. The wall is part of acoustic mitigation efforts for projected increased highway traffic noise in the future. It is one of two sound walls to be constructed as a result of the I-5 Willamette River Bridge project; there is also a sound wall adjacent to northbound I-5 traffic lanes at the north end of the project site.

The 2009 February Design Workshops produced a range of potential concepts for sound walls. These concepts were displayed at the April 2009 Laurel Hill Valley Citizens neighborhood organization meeting as part of a broader presentation regarding reasons why a sound wall at the southbound location were justified by the Environmental Assessment. Follow-up communication conveyance of concept options took the form of an on-line survey, and mailings to the neighborhood members indicating response feedback could be returned via email, mailing or using the on-line survey. The responses were in support of a sculpted concrete form indicative of local geology and landforms. ODOT Maintenance were informed of developing concepts and provided input. Desired concepts were also presented to CAG/PDT meetings.

Given the prescribed design enhancement budget amount for SB sound wall (\$150,000), the sculpted concrete forms would need to be intermittent. This result was to focus sculpted concrete elements in the highly visible areas on the neighborhood side of the sound wall. Resulting from this focus was the need to develop a concept for enhancements on the highway side. Highway side concept development has included ODOT Maintenance input, public input at Open House, DEP, ADT, and CAG/PDT input.

## **FINAL CONCEPT:**

The I-5 Willamette River Bridge project resides in the transition between the foothills to the south and the valley floor to the north. Two sound walls will be built. A southbound sound wall, located west of I-5, south of the Willamette River, and a northbound sound wall located east of I-5 and north of the Willamette River. Sound wall construction will consist of rough-hewn concrete masonry unit block.

Sound wall design enhancement goals:

- Reflect passage through the local geology of the southern Willamette Valley.
- Embrace the variable speeds and sounds of travel along I-5.
- Incorporate concept ideas generated from February 2009 design workshops
- Blend with other design enhancements and project theme.

SB Sound wall design enhancement concept:

- Create an undulating, pixilated representation of a sound wave as it travels from foothills to valley floor. This form could also be emblematic of local landforms (highway side).
- Develop geometrically-shaped forms that gesture to local geologic forms, such as Judkins Point, Coburg Hills, Mount Pisgah, Laurel Hill (neighborhood side).

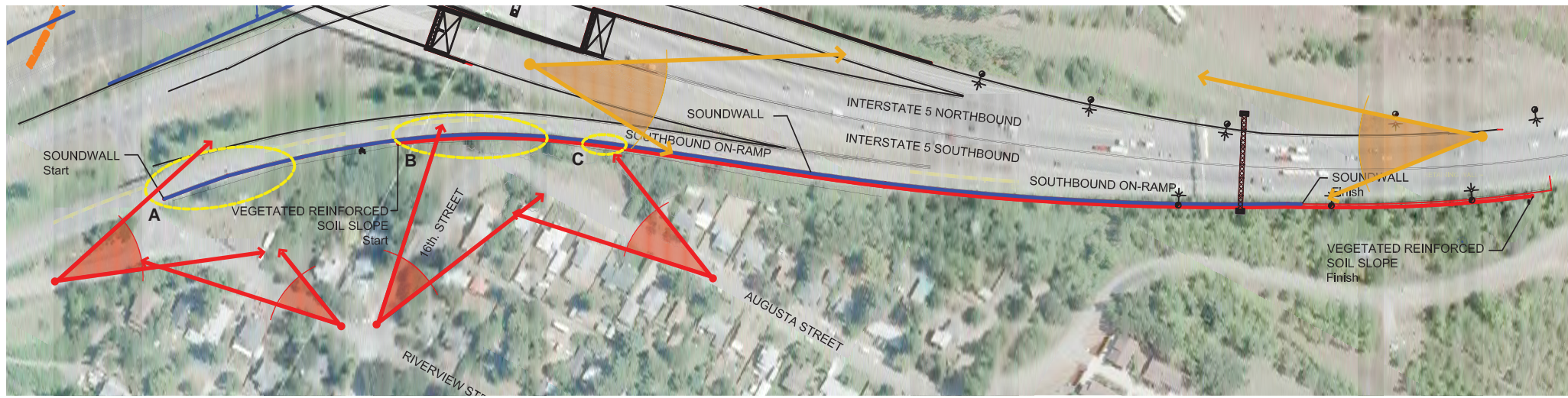
Enhancements viewed from the highway side will use contrasting shades of CMU block. A pixilated articulation undulates as the wall is experienced from travel in either direction. Highway side enhancements may be used for initial concepts for northbound sound wall.



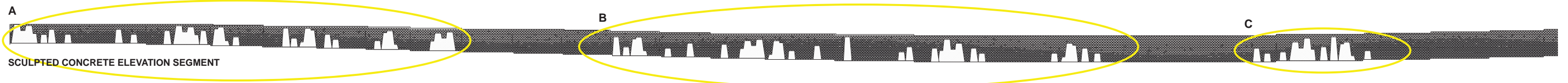








**OVERALL SITE PLAN AND VIEW POINT ANALYSIS**



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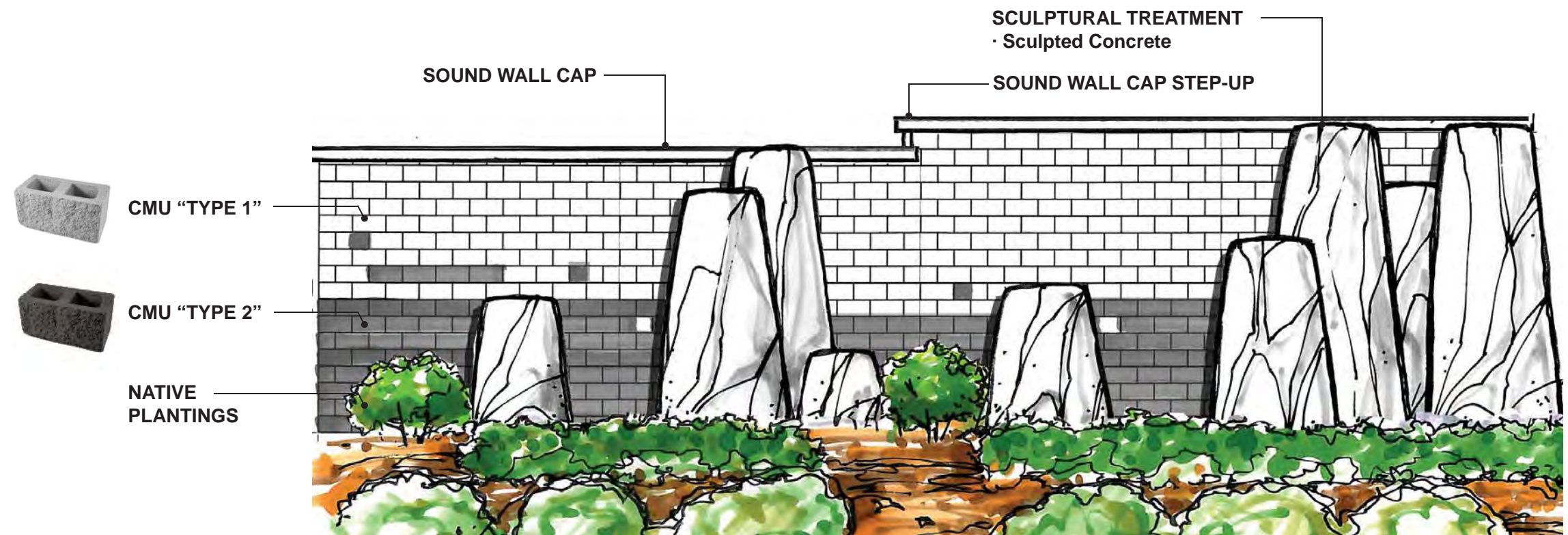
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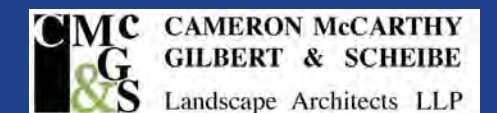
Enhancements viewed from the highway side will use contrasting shades of CMU block. A pixilated articulation undulates as the wall is experienced from travel in either direction. Highway side enhancements may be applied to the northbound sound wall.



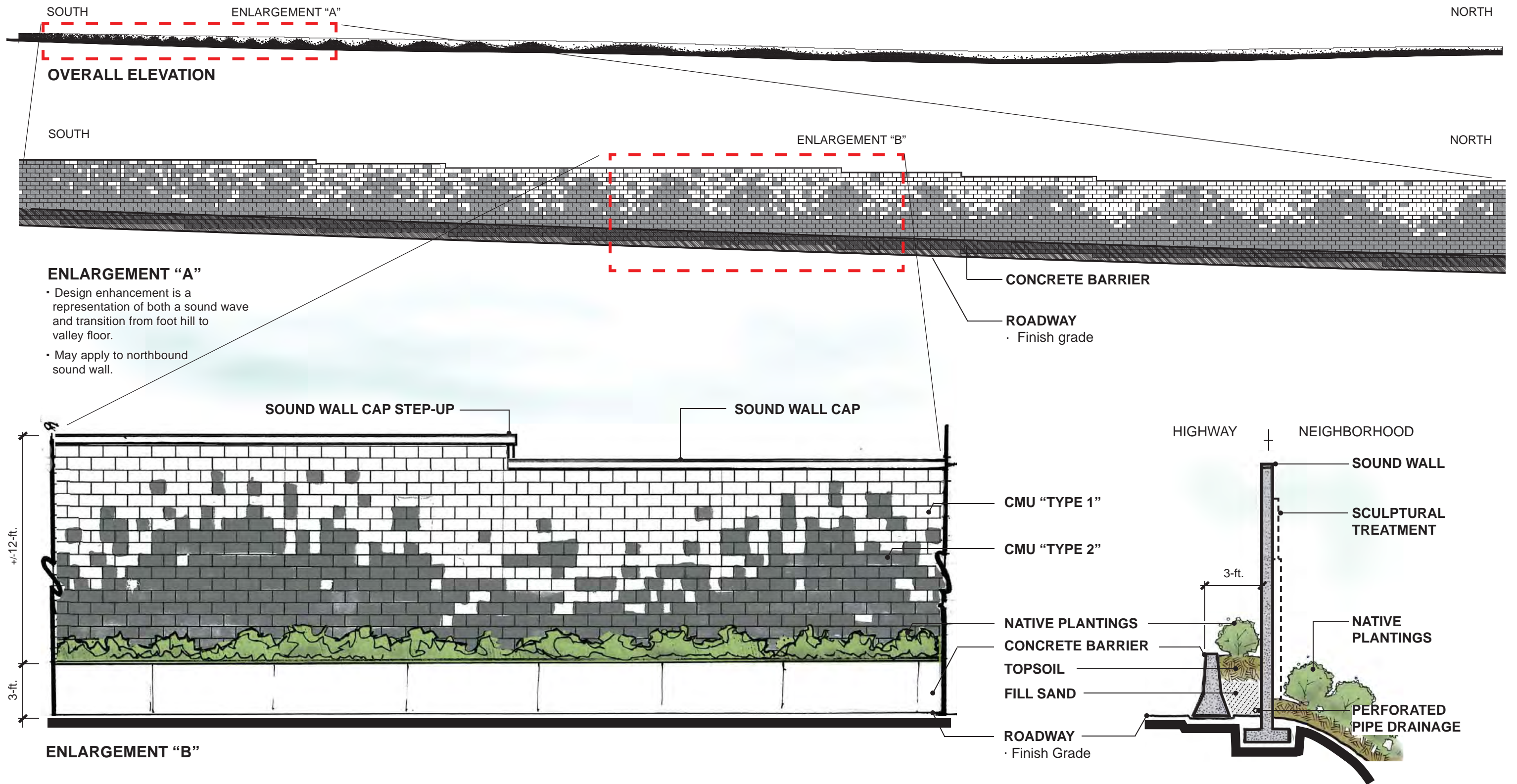
**SOUND WALL: Neighborhood Side (Laurel Hill Valley Citizens Neighborhood)**

**SOUND WALLS: CONCEPT, OVERALL SITE PLAN, AND NEIGHBORHOOD ILLUSTRATIVE**

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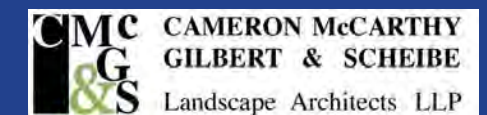






# SOUND WALLS: HIGHWAY ILLUSTRATIVE SECTION AND ELEVATIONS

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# SB SOUNDWALL DESIGN ENHANCEMENT CONCEPT SPECIFICATION

## MATERIALS

1. CMU Block:  
8"x8"x16" and 8"x8"x8" sizes. Two colors and finishes of CMU block will be used:
  - a. Black-color CMU block. Split-faced finish on both faces. Color additive black in color to match sample to be provided. CMU block must use black pumice as mix additive. No white pumice additive. "Midnight" by Willamette Graystone or approved equal.
  - b. Standard grey CMU block. Standard finish on both faces.
2. CMU Wall Cap:  
4"x8"x16" size. Standard grey CMU block.
3. Sculptural Treatment Panels:
  - a. Reinforcement: Rebar cage form structures. Materials will be determined by Structural Engineer or Contractor.
  - b. Concrete Mix: Mix to be determined by Contractor. Contractor to provide sample for review and approval.

## CONSTRUCTION

1. CMU Block Wall:  
Mason contractor will construct walls using Plan Sheets to be provided. It is intended that mason will be hired by Project CM/GC.  
  
Block Pattern will be provided in elevation. Pattern crest (top) and trough (bottom) will be provided station points to guide pattern installation. Approximate dimensions from top of soundwall footing to crest and trough at each station will be provided. The intent of the CMU block pattern is to guide the CMU block pattern installation by contractor.  
  
Contractor will be required to provide a to-be-determined length of soundwall or a detail of the soundwall pattern as a mock-up in-place on-site or optionally provide mock-up off-site for review and approval by Landscape Architect. After initial approval, periodic reviews will continue until wall completion. Each review will require approval prior to continuance of wall construction.

2. **Sculptural Treatment Panels:**  
Mason contractor will construct sculptural treatment using Plan Sheets to be provided. It is intended that mason contractor will be hired by Project CM/GC.

Sculptural treatment locations will be given stations for layout in elevation. Dimensions for panels will be provided both in details and sections. Sculptural treatment detail concept graphic and description of desired look will be provided.

Contractor will be required to provide sample texture and color for review and approval by Landscape Architect. Contractor-provided shop drawings for sculptural treatment reinforcement will likely be required. Contractor will be required to install a sample sculptural treatment panel(s) either in-place on-site or at an off-site location for review and approval by Landscape Architect. After initial approval, periodic reviews will continue until sculptural treatment completion. Each review will require approval prior to continuance of sculptural treatment construction.

## **MAINTENANCE AND OWNERSHIP**

SB sound wall and sound wall design enhancements would be owned and maintained by the Oregon Department of Transportation after the one-year warranty following Final Completion of work.

No regular maintenance is anticipated. Vandalism may occur. If vandalism takes the form of spray-paint or other graphic tagging, the recommended maintenance would be to attempt to wash off tags. If washing does not achieve removal, recommend using standard grey paint to cover tags. Paint should be applied in 8"x16" increments following the form of the CMU block. This recommendation is made so that corrective maintenance for vandalism on CMU block maintains the integrity of the block pattern.

## SB SOUNDWALL CONCEPT COST ESTIMATE COMPARISON

PRELIMINARY COST ESTIMATE (NO DESIGN ENHANCEMENT)					
STATEMENT OF PROBABLE DIRECT CONSTRUCTION COSTS					
QUANTITIES FROM CONCEPT DESIGN DRAWINGS					1/22/2010
ITEM	QUAN	UNIT	PRICE	COST	SUBTOTAL
<b>STANDARD CMU BLOCK WALL (No Design Enhancements)</b>					
CMU Block Soundwall (does not include footing, reinforcements)	24500	sf	12.00	\$294,000	
<b>Subtotal (Direct Construction Costs)</b>					\$294,000
Construction Cost Contingency (10% of Direct)**					\$29,400
<b>Total Estimated Construction Costs</b>					<b>\$323,400</b>

PRELIMINARY COST ESTIMATE (WITH DESIGN ENHANCEMENT)					
STATEMENT OF PROBABLE DIRECT CONSTRUCTION COSTS					
QUANTITIES FROM CONCEPT DESIGN DRAWINGS					1/22/2010
ITEM	QUAN	UNIT	PRICE	COST	SUBTOTAL
<b>CMU BLOCK WALL (with Design enhancements)</b>					
CMU Block Soundwall (does not include footing, reinforcements)	24500	sf	15.00	\$367,500	
Sculpted concrete	2000	sf	30.00	\$60,000	
<b>Subtotal (Direct Construction Costs)</b>					\$427,500
Construction Costs Contingency (10% of Direct)**					\$42,750
<b>Total Estimated Construction Costs</b>					<b>\$470,250</b>

\*\* Construction Cost Contingency allows for possible unforeseen changes

<b>TOTAL DESIGN ENHANCEMENT COST ESTIMATE:</b>	<b>\$146,850</b>
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