



SOUTHBOUND SOUNDWALL

DESIGN ENHANCEMENT: FINAL CONCEPT

I-5 Willamette River Bridge Oregon Department of Transportation
January 2010

INTRODUCTION


- Located on west side of I-5 southbound on-ramp, south of Willamette River
- Part of acoustic mitigation efforts for projected increased highway traffic noise
- One of two sound walls to be constructed
- Feb. 2009 Design Workshop produced range of potential concepts for sound walls.
- Concepts displayed at April 2009 Laurel Hill Valley Citizens neighborhood meeting
- Follow-up communication of concept options with neighborhood resulted in support for sculpted concrete forms indicative of local geology and landforms.
- Given prescribed design enhancement budget amount for SB sound wall, (\$150,000), sculpted concrete forms would need to be intermittent.
- Focus sculpted concrete elements in highly visible areas on neighborhood side



CONCEPT GOALS

- Develop cost-effective highway side enhancement concept
- Reflect passage through local geology of southern Willamette Valley.
- Embrace variable speeds and sounds of travel along I-5.
- Blend with other design enhancements and project theme.

CONCEPT DEVELOPMENT INPUT

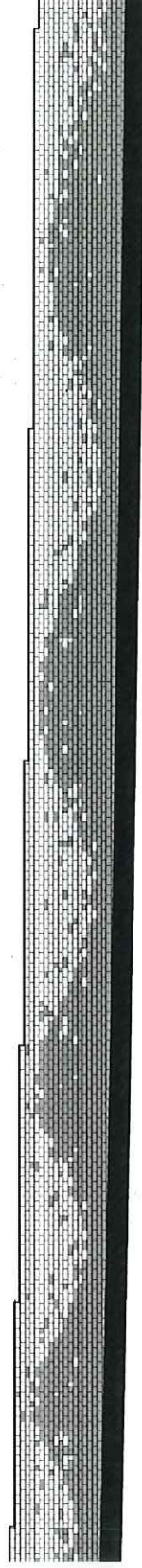
- Neighborhood side: Involved LHVC and ODOT Maintenance input and public input at Open House. February 2009 Design Workshop produced basic concept soundwall concepts.
 - Highway side: Involved the above, plus DEP and ADT input.
 - Concepts for both sides have been presented at CAG/PDT meetings.
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FINAL CONCEPT

FINAL DESIGN ENHANCEMENT CONCEPT:

HIGHWAY SIDE

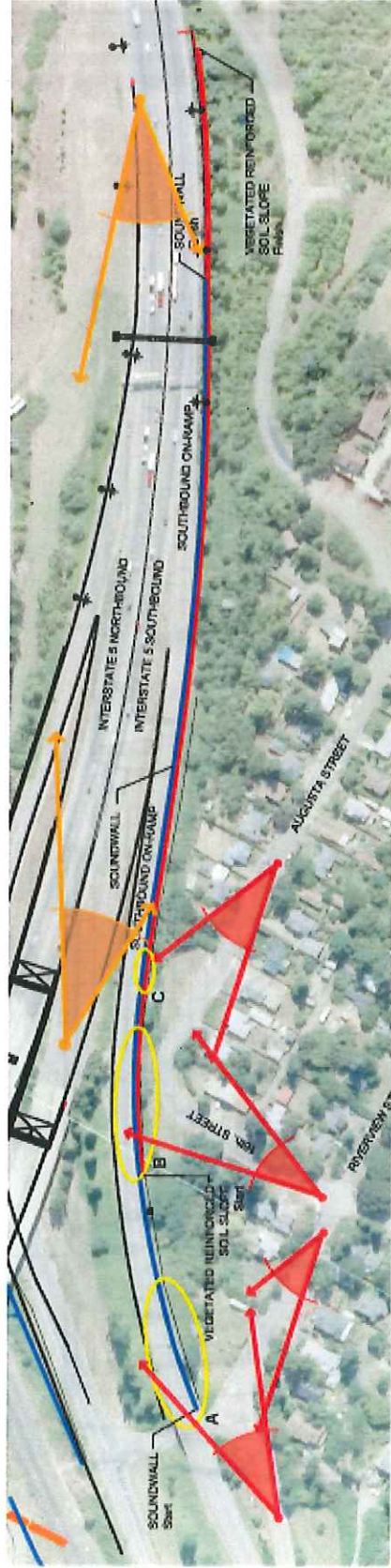
- Undulating, pixilated representation of a sound wave passage from foothills to valley floor. Form also emblematic of local landforms.
- Enhancements use contrasting shades of CMU block. Highway side enhancements may be used for initial concepts for northbound sound wall.



NEIGHBORHOOD SIDE

- Develop geometrically-shaped forms that gesture to local geologic forms, such as Judkins Point, Coburg Hills, Mount Pisgah, Laurel Hill.

VIEW ANALYSIS

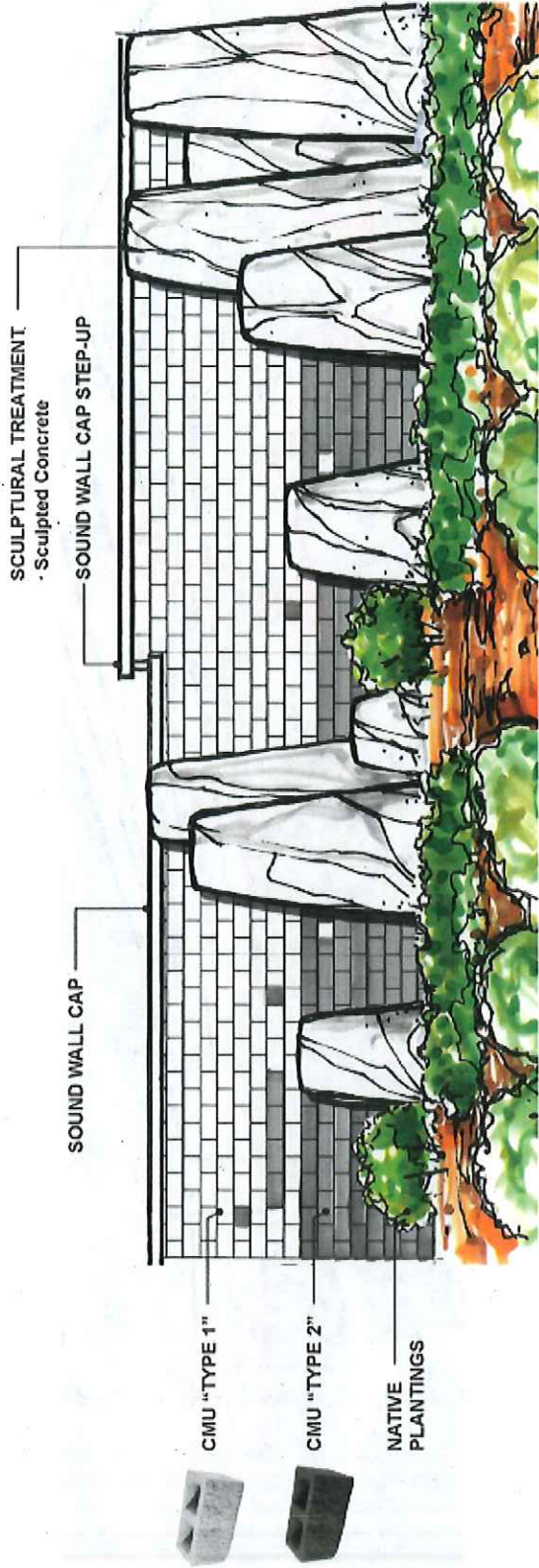


OVERALL SITE PLAN AND VIEW POINT ANALYSIS



- Analysis looks at where primary views will likely be for both neighborhood-side and highway-side users
- Yellow oval indicates most highly visible sides of sound wall on neighborhood side

NEIGHBORHOOD ENHANCEMENTS



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

NEIGHBORHOOD ELEVATION DETAIL



NEIGHBORHOOD ELEVATION ENLARGEMENT

HIGHWAY ENHANCEMENTS

SOUND WALL NORTH END 



 SOUND WALL SOUTH END



MATERIALS, CONSTRUCTION MAINTENANCE and OWNERSHIP

MATERIALS

1. CMU Block: 8"x8" 16" 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.

MATERIALS, CONSTRUCTION MAINTENANCE and OWNERSHIP

CONSTRUCTION

1. CMU Block Wall:

- Mason to construct using Plan Sheets to be provided. Intended that mason be hired by Project CM/GC.
- Wave pattern crest (top) and trough (bottom) will be provided station points to guide pattern installation.
- Approx. dimensions from top of soundwall footing to crest and trough at each station will be provided.
- Construction Review and Approval: Mock-ups will be required for approval. Periodic construction reviews will be utilized to ensure installation meets intent of pattern.

2. Sculptural Treatment Panels:

- Mason to construct using Plan Sheets to be provided. Intended that mason be hired by Project CM/GC.
- Sculptural panels will be stationed for layout in elevation. Dimensions for panels will be provided both in details and sections. Sculptural treatment graphic and description of desired look will be provided.
- Construction Review and Approval: Sample texture and color will be required for approval. Contractor-provided shop drawings for sculptural treatment reinforcement will likely be required. Mock-ups will be required for approval. Periodic construction reviews will be utilized to ensure installation meets intent of pattern.



MATERIALS, CONSTRUCTION MAINTENANCE and OWNERSHIP

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.
- For spray-paint/graphic vandalism, recommended maintenance would be to attempt to wash off vandalism.



- If washing does not achieve removal, recommend using standard grey paint to cover tags. Apply paint in 8"x16" increments following CMU block pattern form. This recommendation made so that corrective maintenance for vandalism on CMU block maintains integrity of block pattern.



COST ESTIMATE

- CMU Block installed costs based on installed costs provided by Willamette Graystone. Square-foot cost increase includes complexity of pattern and use of 2-sided split-face colored block.
- Sculptural concrete installed costs provided by Victory Builders, which specializes in sculptural concrete. Square-foot costs include reinforcement, concrete, sculpting/texture, and coloring.

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	COSTSUBTOTAL	TOTALS
	STANDARD CMU BLOCK WALL (No Design Enhancements)					
	CMU Block Soundwall (does not include footing, reinforcements)	24500	sf	12.00	\$294,000	
	Subtotal (Direct Construction Costs)				\$294,000	
	Construction Cost Contingency (10% of Direct)**					\$29,400
	Total Estimated Construction Costs					\$323,400

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

** Construction Cost Contingency allows for possible unforeseen changes

TOTAL DESIGN ENHANCEMENT COST ESTIMATE: \$146,850