INSTRUCTIONS FOR USING STANDARD SOUND WALL DETAIL SHEETS MASONRY BLOCK

These instructions are for use with the following standard sound wall detail sheets: Sound Wall – Masonry Block on Footing, Sound Wall – Masonry Block on Pile Cap, Sound Wall – Masonry Block on Piles, and Sound Wall – Masonry Block on Barrier.

Since changes can be made on the standard details from time to time, it is important to always order new copies from the original tracings. Making copies from a film already on hand has resulted in project plans going to contract with outdated details. Duplicate vellums of the original standard details for use by Office of Structure Design and District Project Development may be ordered from the Floor Clerks, telephone 916-324-0553 (ATSS 8-454-0553) or telephone 916-327-2004 (ATSS 8-467-2004). Duplicate reproducibles for use by private consultants can be obtained from the Technical Publications Section, telephone 916-324-7439 (ATSS 8-454-7439). There is a charge to the consultants unless the request is made for them through the Externally Financed Branch for jobs being constructed on the State Highway System.

Using the sound wall detail sheets is similar to using the retaining wall detail sheets shown in the book of Standard Plans. The sound wall detail sheets show only the structural details of the wall. The plan, elevation and architectural requirements, if any, must be shown on other sheets.

The Block on Pile Cap, Block on Piles and Block on Footing designs *are not* to be used for retaining earth and they *are not* to be used at locations 15 feet or less from the edge of concrete safety shaped barrier. Also, the details from these standard sound wall sheets are not to be used on bridges or retaining walls or at locations where the wind pressure is greater than 15 pounds per square foot. Local building officials can normally provide information on wind loads. The 15 pounds per square foot wind pressure shown in the design notes is based on a wind velocity of approximately 55 miles per hour.

When using these standard sound wall details it is necessary to verify that the wall heights, ground conditions and soil properties for each wall and wall site agree with the design notes shown on the Standards.

When showing the plan and elevation for the Block on Footing, Block on Pile Cap or Block on Piles sheets, indicate the bottom of wall elevations and the wall heights ("H") with their limits. The foundation grade line should, where possible, parallel the finished ground line. The lengths of steps which may be required at the changes in wall "H" should be in multiples of 16" in order to be consistent with the given block lengths. After the bottom of wall elevations have been established, verify that the resulting exposed wall height above the ground line meets the required heights for sound attenuation.

The elevation view for the Block on Barrier sheet should show the profile grade, the wall heights with their limits and the depth of barrier ("HE" dimension), if Case 2 applies.

Where the finished ground is level on both sides of the sound wall, the detail sheets show foundation design for two allowable ultimate lateral soil pressures. The proper one to be used will be recommended by the Engineering Geology and Technical Services Branch of the Transportation Laboratory. To make the soil pressure determination, the Geology Branch requires a preliminary wall plan, an index map and any other pertinent information that applies. The criteria for level ground on both sides of the wall are shown on Figure 1. The finished ground *must be* determined during the design phase. Add a note to the plans that indicates whether the pile or trench footing data is to be taken from the tabular values of Ground Line G-1, Ground Line G-2, Case 1 or Case 2. Should the condition for level ground on both sides of the wall apply, add the allowable ultimate soil pressure value recommended by the Geology branch to Note S of the General Notes. The "Log of Test Borings" sheets accompanying the foundation report must be included with the contract plans.

Where piles are used, it is common practice to show the pile spacings on the elevation views. Special attention must be given to piles that are located near existing facilities. A minimum clear distance of 1'-6" between the pile and the existing structure is recommended.

The architectural requirements should be shown on the typical section and elevation views. A variety of architectural treatments are possible with the use of the Standard Aesthetic Features sheets. Duplicate autopositive films of these Standard Aesthetic Features sheets are available for use in the Project Plans. Note that the standard sound wall details have been designed to include the aesthetic features that are on the Standard Aesthetic Features sheets. If the aesthetic features are revised or modified or if special architectural treatments are used, it will be necessary to verify that the standard details are structurally adequate. All sound walls that are designed in the District without architectural review, either in-house or from other sources, are to be submitted to the Office of Structure Design for such a review prior to finalizing plans.

Block colors should be selected from and be restricted to those that are commercially available. The special provisions will specify that the colors be selected from the manufacturer's standard and may require the contractor to furnish samples of the block he proposed to use, for color conformance. The Engineer will approve the color before the contractor orders block for the project. Since colored block can possibly cost an additional $0.25 per square foot the standard block color will be grey.

Like block colors, block textures should be selected from those that are commercially available. Special textures such as split face, scores, fluted, split-score and combed texture are more costly. For that reason the smooth or plain face block will be the standard. Fluted or scored block must be detailed on the plans. The number and the approximate dimensions of the scores or flutes can be shown on a plan view or isometric drawing. In order to permit the use of the greatest number of commercially available scored or fluted blocks, it is recommended that tolerances in the dimensions be shown and that an optional number of flutes or scores be allowed. The use of the 12" wide projecting block with the cell dimensions of the 8" wide block will not be cost effective when compared with other type of blocks. This cost difference should be considered when selecting the features to be used. The 12" wide block is not allowed within 6'-0" of profile grade at the wall base.

The alternative aesthetic features were developed by the Aesthetics and Models Section, telephone 916-445-2138 (ATSS 8-485-2138). This section can provide assistance in selecting the standard alternatives, in determining the variable features and in designing the sculptural patterns.

There are no major problems laying block on the grades and vertical curves that are used along freeway sections and along the typical on and off ramps. Experience to date indicates that the appearance of vertical joints between blocks, expansion joints and ends of walls will be satisfactory and no special leveling course details will be required for grades up to 6 percent.

Masonry for wall stems may be hand-laid or preassembled by machine-laid methods. The Block on Piles detail is more adaptable to the use of preassembled panels, while the masonry details for Block on Footing, Block on Pile Cap and Block on Barrier are better suited to the hand laid method. At locations where both piles and footing foundations are acceptable, indicate both options on the plans. This would provide the opportunity for the most competitive bid. Generally, the machine laid preassembled block panel will be more economical.

The maximum spacing for expansion joints is 80'-0". It is best to show the actual joint locations on the elevation view. The spacing of the expansion joints should be approximately equal and should be in multiples of 16". It is recommended that joints be located at angle points in the horizontal alignment of the wall. The minimum suggested distance from access gates to expansion joints is 8'-0".

The pay items will be as follows:

Sound Wall - Masonry Block

Sound Wall Masonry Block	SQ FT

The total area of sound wall will be measured using the vertical limits between the top elevation line and bottom elevation line of the wall and the horizontal length of the wall. The pay item for sound wall without a barrier is square feet of sound wall. The pay item will be three groups H = 6' to 8', H = 10' to 12', H = 14' to 16'. The square foot cost includes all types of supports (footings, piles and pile caps).

Sound Wall - Masonry Block on Barrier

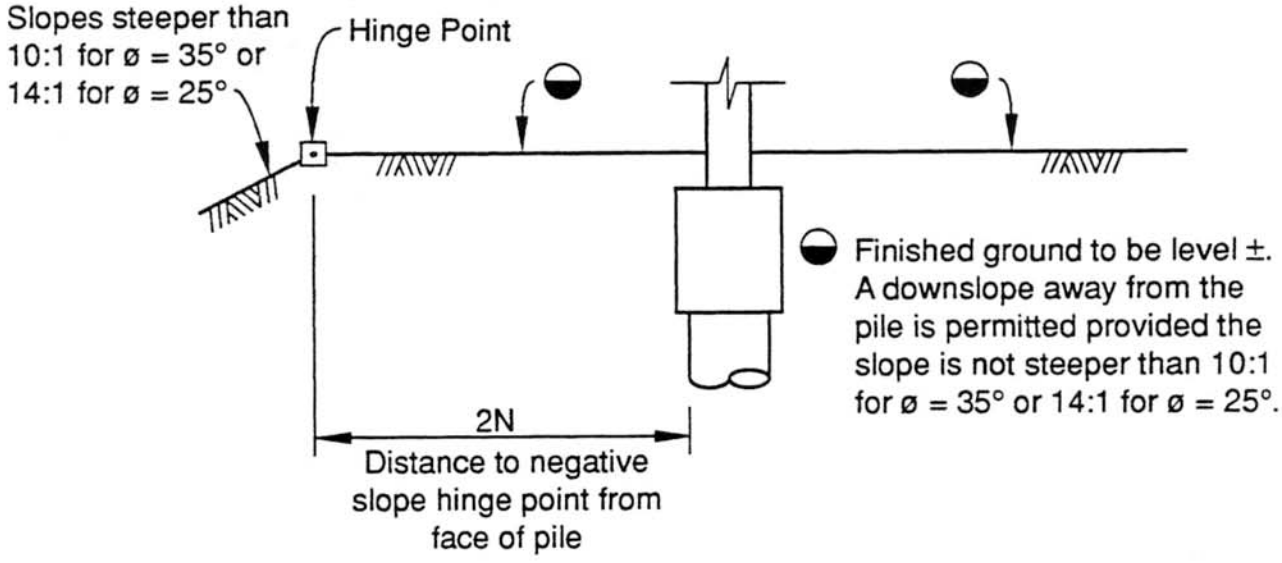
Sound Wall Masonry Block	SQ FT
Concrete Barrier	LF
C.I.D.H. Concrete Piling	LF

The vertical limits to be used for calculating the total area of the barrier supported masonry block will be between the top elevation line and top of barrier. The supporting piles or footings and barrier are separate pay items.

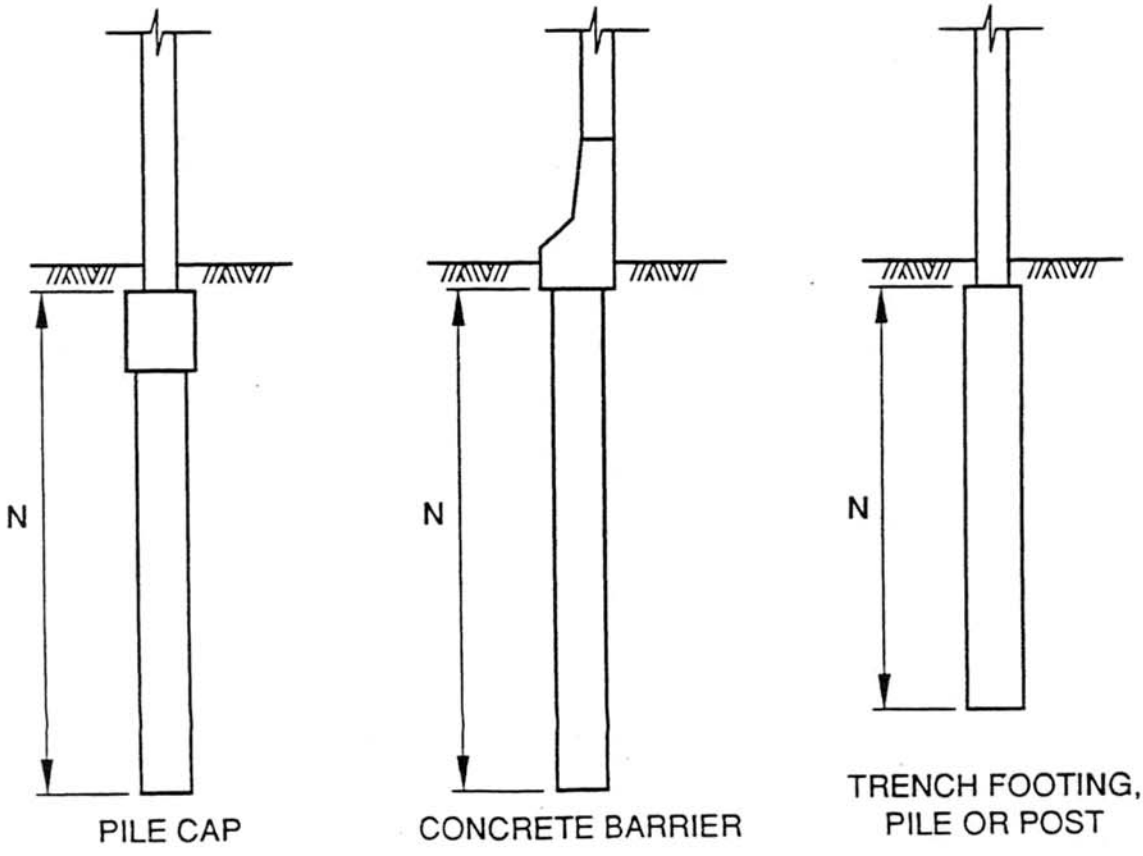
Construction Considerations

To facilitate building this sound wall a minimum of 2' wide access is required on both sides of the sound wall. Also the existence of overhead or underground utilities may limit the use of construction equipment as specified by OSHA. Review by Construction may assist in preparing the final plans.

Questions regarding the use of the standard detail sheets or the instructions should be directed to the Walls and Railings staff specialist, telephone 916-445-9196 (ATSS 8-485-9196).



Note: If the location of the slope hinge point is less than 2N, the level ground ground condition *cannot* be used.



CRITERIA FOR LEVEL GROUND

Figure 1