INSTRUCTION FOR USING STANDARD SOUND WALL DETAIL SHEETS PRECAST CONCRETE PANEL

These instructions are for use with the standard sound wall detail sheets: Sound Wall – Precast Concrete Panel, Sound Wall – Precast Concrete Panel on Barrier, and Sound Wall – Offset Precast Concrete Panel.

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 Making copies from a film already on hand has resulted in project plans going to contract with outdated details.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.

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

The precast concrete panels with post supports *are not* to be used for retaining earth and *are not* to be used at locations 15 feet or less from the edge of pavement unless protected from traffic by an intervening concrete safety-shaped barrier. The details from these standard sheets are not to be used on bridges or retaining walls or at locations where the design 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.

Details for access openings are included on the sheets for the panel on barrier standard. Note that the maximum wall height for those panels with access openings is 14'-0". Since the precast panels with post supports are designed to span horizontally between posts, access openings through these panels will not be appropriate. It can be anticipated that additional posts will be required on each side of any access opening for the post and panel wall system. To eliminate the need for a special access opening design, it is suggested that, where possible, the wall be overlapped to provide access between adjacent panels. The length of longitudinal overlap should be three times the lateral distance between wall panels.

Users of these standard sound wall details are cautioned to verify that the wall heights, ground conditions and soil properties for each wall and wall site agree with the design parameters shown.

All posts or pilasters are required to be set vertical or plumb.

When showing the elevation views of the post and panel wall, indicate the bottom of wall elevations and the wall heights ("H") with their limits. For walls located on sloping ground where the bottom of wall panel is parallel to the slope, show top of pile or top of concrete backfill elevations at the centerline of posts and show the top of panel elevations. In addition to the elevations, it is suggested that the design wall height of those posts that are located in sloping ground also be shown in order to assure that the correct tabular post data will be used. The bottom of wall should be set to provide a minimum of 6" embedment below the finished ground line. After establishing the embedment, verify that the resulting exposed wall height above ground line meets the required heights for sound attenuation.

The elevation views of the precast panel wall on barrier should show the profile grade, the wall heights with their limits and the depth of barrier ("HE" dimension), if Case 2 applies. It is common practice to show the pile spacings on the elevation view also. Special attention must be given to piles that are located near existing facilities. A minimum clear distance of 1 to 1½ feet between the pile and existing structure is recommended. The maximum spacing for expansion joints in the barrier is 80'-0". It is suggested that the actual joint locations be shown on the elevation view.

Where the finished ground is level on both sides of the sound wall (*Ground Line 1* for the post and panel type wall and *Case 1* for the precast panel on barrier wall), the detail sheets show foundation designs for two allowable ultimate lateral soil pressures. The proper one to be used will be determined by the Engineering Geology and Technical Services Branch of the Transportation Laboratory. To make the soil pressure and soil property determination the Geology Branch requires a preliminary wall plan, a site plan, and 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 condition *must be determined* during the design phase. Add a note to the plans that indicates whether the post or pile data is to be taken from the tabular values of Ground Line 1, Ground Line 2, Case 1 or Case 2. Should the condition for level ground on both sides of the wall apply, add the allowable ultimate lateral soil pressure value recommended by the Geology Branch to Note S of the General Notes. The "Log of Test Borings" sheet accompanying the foundation report must be included with the contract plans.

Aesthetic features must be indicated on Sound Wall Standard Aesthetic Features sheets XS 3-77.13, Precast Concrete Panels – Posts Both Sides or XS 3-77.14, Precast Concrete Panels – Post One Side. The District must choose either a Landscape Architect or the Aesthetics and Models Unit to provide the aesthetic features.

The methods described on "Precast Panels with Posts – Instructions and Information" describe a variety of architectural treatments. When architectural treatments are used it is estimated that the panel costs will increase from 5 to 25 percent depending upon the complexity of the treatment and the number of repetitive uses. Painting may also be considered as an alternative method of changing the appearance of the wall.

The Aesthetics and Models Section, telephone 916-445-2138 (ATSS 8-485-2138), can provide assistance in selecting the optional features and the architectural treatments.

The Special Provisions will allow the contractor to use any of the four alternative post types shown for the post and panel type wall but will allow only one post type on a given wall or project.

The pay items will be as follows:

Sound Wall - Precast Concrete Panel

Sound Wall (Precast Concrete Panel)	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 wall and the horizontal length of the wall with no deductions for the posts. 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 - Precast Concrete Panel on Barrier

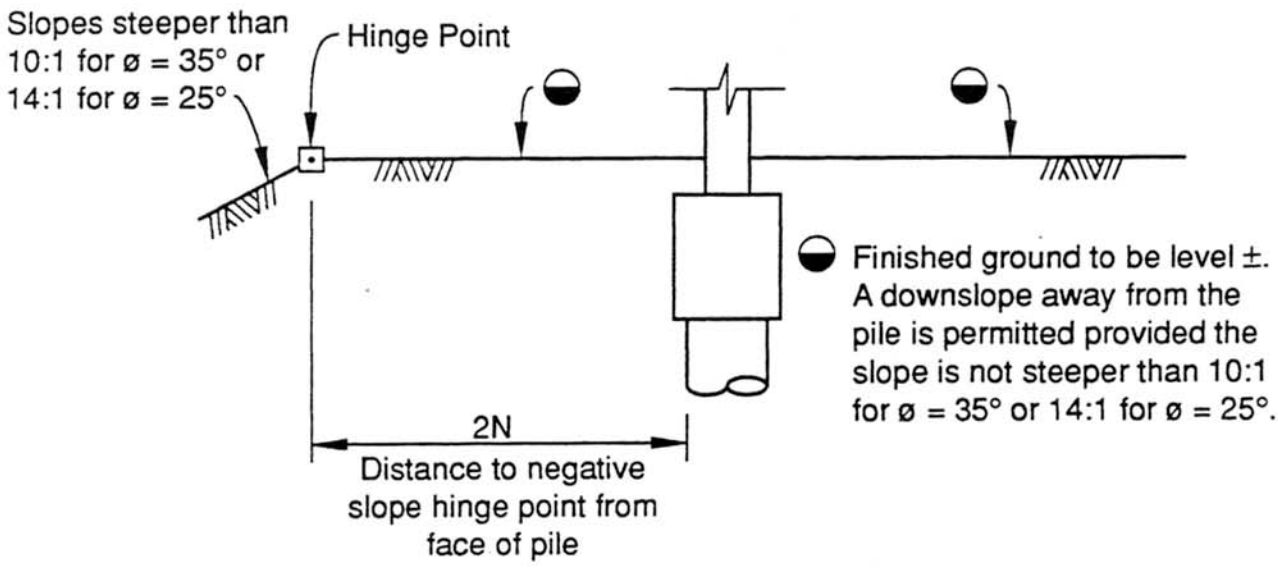
Sound Wall (Precast Concrete Panel)	SQ FT
Concrete Barrier	LF
C.I.D.H. Concrete Piling	LF

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

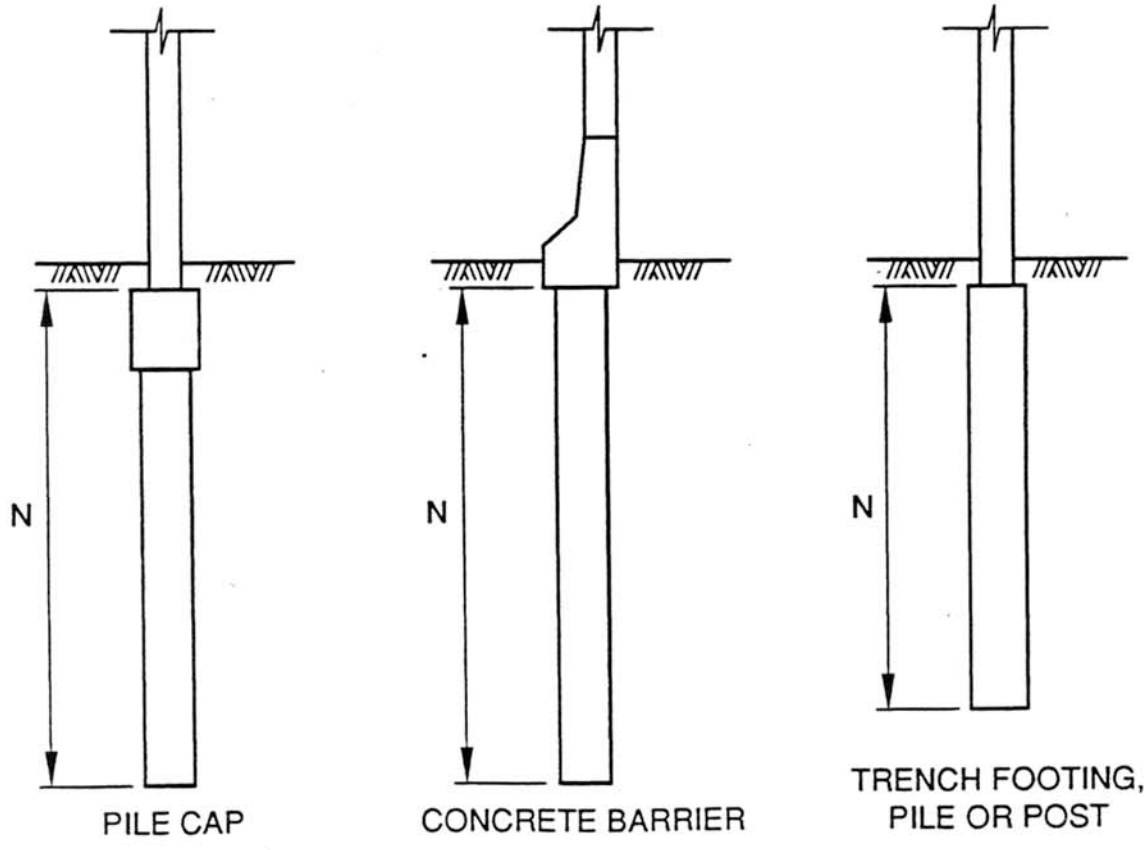
Construction Considerations

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 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