SECTION 534
NOISE AND PERIMETER WALLS

534-1 Description.

534-1.1 Precast Concrete Noise Walls:

Furnish and install concrete noise walls with piles, posts and panels constructed in accordance with Design Standards, Index No. 5200; unless the Plans indicate otherwise. Secure joints and connections in a structurally sound manner without openings in the system that would allow transmission of sound.

534-1.2 Perimeter Walls:

Furnish and install perimeter walls and foundations in accordance with Design Standards, Index No. 5250 for either the precast concrete or the masonry option.

534-2 Materials.

Meet the following requirements:

Portland Cement Concrete .....Section 346
Reinforcing Steel .....Section 415
Welded Wire Reinforcement (WWR) .....Section 415
Concrete Masonry Units (CMU) .....ASTM C90
Mortar .....ASTM C270
Grout .....ASTM C476
Horizontal Joint Reinforcing.....
..... ASTM A951* or ASTM A580
Control Joints.....ACI 530.1 Article 2.5 A or B
* Galvanized in accordance with ASTM A153

534-3 Requirements.

Construct concrete components in accordance with Section 400.

534-3.1 Precast Concrete Requirements:

Obtain precast concrete components from a plant that is currently on the list of Producers with Accepted Quality Control (QC) Programs. Producers seeking inclusion on the list must meet the requirements of Section 105.

Producer will permanently and clearly stamp the tongue and groove portion of the panel and post with the type, date cast, project number, and the manufacturer's name or symbol.

534-3.2 Masonry Requirements:

Conform to the requirements of Specification for Masonry Structures (TMS 602/ACI 530.1/ASCE6), except as modified by the Plans or this Specification. Submit to the Engineer a certification that materials provided meet the requirements of this Section.

534-4 Shop Drawing Submittal.

Submit shop drawings for precast elements, when required, in accordance with Section 5, showing a plan and elevation with the following project specific information:

1. Begin and end wall stations with offsets
2. Horizontal and vertical alignments of the wall
3. Panel locations
    a. Graphic details and graphic panel locations (noise walls only)
    b. Drainage panel locations and Type

c. Location and length of side installed panels (when required)

4. Post locations and lengths
5. Elevations of top of panel, bottom of panel, and panel joints
6. Existing and proposed ground elevations
7. Non-standard precast component details
8. Non-standard post and pile connection details
9. Lifting devices

534-5 Construction.

Keep to minimum the clearing and grubbing; trim trees and shrubs only to the extent necessary to construct the walls, unless otherwise shown in the Plans. Keep right-of-way fence that is scheduled to be salvaged in place until completing the wall or as otherwise directed by the Engineer.

Prior to beginning earthwork on the project, stake the wall location in the field and establish the final ground line elevations at the base of the walls. Use these elevations to develop the shop drawings. Protect the final ground elevations established in the field for the duration of the project, and do not adjust without prior approval of the Engineer. When constructing earthern berms to raise the base elevation of walls, construct the berms of fill material compacted to 95% of the maximum density as determined by AASHTO T99. After erecting the wall, return the disturbed area to preconstruction condition unless otherwise indicated in the Plans.

534-5.1 Precast Construction.

Shimming of wall panels between the pile collar and the bearing pads is permitted, up to a maximum of 1-1/2 inches. Shims must be either stainless steel or engineered copolymer plastic. Copolymer plastic shims must have a minimum compressive strength of 8,000 psi, without any fractures. Stacked shim plates must be bonded together with a compatible epoxy adhesive. Stacking of shims is permitted as follows:

1. For heights of one inch or less, provide up to four 1/4 inch shims.
2. For heights greater than one inch, use a minimum of one 3/4 inch shim.

Erection Tolerances:

1. Variation from plumb: plus or minus 1/4 inch per 10 feet
2. Panel alignment: plus or minus 1/4 inch
3. Top of panel elevation: plus or minus 3/4 inch
4. Elevation difference of adjacent panels: plus or minus 1/2 inch
5. Joint taper over panel length: plus or minus 1/2 inch
6. Top of collar elevation: plus or minus 3/4 inch
7. Post placement:
    a. variation from specified location plus or minus 1 inch
    b. variation from specified elevation plus or minus 1/4 inch
8. Continuity of graphics, fracture fins, etc across joints: 1/4 inch

534-5.2 Concrete Masonry Construction.

Grout all cells that contain horizontal or vertical reinforcing bars.

534-6 Test Wall.

Erect a test wall section not less than 50 feet in length before starting general wall construction at the project site. The Engineer will use the erection of the test wall to verify the Contractor’s methods and equipment are sufficient to produce a wall that meets the requirements of the Contract Documents. Build the test wall at a permanent wall location, as agreed to by the

Engineer. If the test wall does not meet construction tolerances, remove and dispose of it at no expense to the Department. Include the cost of the test wall in the cost of the wall.

534-7 Repairs or Rejection.

For precast concrete components that have not been installed, evaluate cracks, spalls and other deficiencies in accordance with 450-12. Repair deficiencies in accordance with 450-13 or with the plant's approved repair methods that are included as part of the Quality Control Plan (QCP). Ensure that the original performance and durability of repaired components are maintained. Use materials for concrete repair that will meet or exceed the strength requirement for the class of concrete used. Materials meeting the requirements of Section 930 may be substituted for non-shrink grout when required by 450-13. Precast concrete components are subject to rejection if they fail to conform to any of the requirements after repair. For precast components that have been installed, the disposition of concrete cracks shall be in accordance with 400-21.

534-8 Method of Measurement.

The quantity to be paid for will be the plan quantity, in square feet, measured in place, completed and accepted, of the area bounded by the top of the wall (including wall cap) and the bottom of the wall elements without deductions for openings from the beginning to end limits shown in the control drawings.

534-9 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including but not limited to, furnishing all materials and labor required to construct the wall including caps and foundations.

Payment will be made under:

Item No. 534- 72-	Concrete Noise Wall - per square foot.
Item No. 534- 73-	Perimeter Wall – per square foot.