

SECTION 450 — RETAINING WALLS

450.01 DESCRIPTION. This work shall consist of the construction of cast-in-place reinforced concrete footings and stems conforming to the AASHTO definitions of rigid retaining walls. The retaining wall shall be constructed as shown in the Contract Documents. Included in the retaining wall shall be all anchorage assemblies for mounting noise barriers when retaining wall mounted noise barriers are specified in the Contract Documents. All components shall be as specified unless prior approval for alternatives is obtained from the Administration.

When piles or drilled shafts (caissons) are specified in the Contract Documents, they shall conform to Sections 410 and 412, respectively.

450.01.01 Preapproved Alternate Retaining Walls. Alternate retaining walls shall only be used when specified in the Contract Documents. When alternate retaining walls are included in the Contract Documents, only those retaining walls specified will be permitted, and only one type retaining wall shall be used throughout the Contract.

Alternate retaining walls are selected from the list of Preapproved Alternate Retaining Walls, which is maintained by the Office of Bridge Development. Procedures for adding products to the prequalified list may be obtained from the Office of Bridge Development.

Contract Documents for Preapproved Alternates. When the Contract Documents permit and the Contractor elects to use preapproved alternate retaining wall systems, substitute Plans, design calculations, and specifications shall be submitted by the Contractor. The Plans shall be similar in size and detail to advertised documents, and shall include drainage details and all revisions required to construct the alternate retaining wall system. All Plans, calculations, and specifications shall be prepared, signed, and sealed by a professional engineer registered in the State of Maryland who has experience in design of the proposed alternate retaining wall system. The substitute Plans shall bear the Administration's title block and be furnished on reproducible linen or plastic. These Plans will be issued as a Contract revision replacing the Administration's Plans and be kept by the Administration as permanent records. All work pertaining to Contract Documents for preapproved alternates shall be done at no additional cost to the Administration.

After substitute Plans are approved and issued as a redline revision, working drawings bearing the fabricator or supplier's title block shall be submitted for review and approval to the Administration or directly to the consulting engineer as directed by Section 499.

450.02 MATERIALS. Refer to 420.02. When retaining wall mounted noise barriers are specified in the Contract Documents, the anchorage materials shall conform to 455.02.

Sample Panel. Whenever the Contract Documents specify that the retaining wall shall include an architectural finish, a sample panel measuring 24 x 24 in. shall be prepared and delivered to the construction site. The panel shall be typical of the architectural finish and stain to be used on the project. The Administration's approval of the panel shall be received before full-size retaining walls are constructed. The sample panel shall remain on the project site and all subsequent retaining wall sections shall be equal in appearance to this approved panel.

Some projects may require a specified surface such as an ashlar stone pattern, or matching a similar structure or stonework in the area. The Contractor may request or the Engineer may direct that the sample of the texture be submitted for approval prior to submission of the sample panel containing the stain specified in the Contract Documents.

450.02.01 Reinforcement. Reinforcement bars and welded wire fabric in retaining walls that are less than 10 ft from the edge of paved surface (includes shoulders) shall be epoxy coated. Supports for epoxy coated reinforcement shall be coated the same as the reinforcing steel.

450.02.02 Backfill for Preapproved Alternates. Size No. 57 stone shall be used for backfill for all preapproved alternate retaining walls regardless of the type backfill recommended or specified by the retaining wall manufacturer. Geotextile shall be used when specified in the Contract Documents.

450.02.03 Concrete Stain. When a color is specified in the Contract Documents for the exposed surfaces of the retaining wall, the stain shall be selected from the Prequalified List of concrete stains maintained by the Office of Materials and Technology. The color number shall conform to Federal Standard 595.

450.02.04 Textures.

- (a) Unless otherwise specified in the Contract Documents, the exposed surfaces of the retaining wall shall receive a special surface treatment as specified in 420.03.07(b).
- (b) When a special texture is specified in the Contract Documents, it shall be produced by placing an approved form liner in the face of the form.

450.03 CONSTRUCTION. Retaining walls shall be constructed as shown on the Plans, as specified in 420.03, and herein. Contract Documents for construction of alternate retaining walls shall conform to the Policy and Procedures of the Office of Bridge Development. Alternate retaining walls shall be constructed in conformance with the details, specifications, etc. that are on file with the Office of Bridge Development. Should any detail, specification, etc., change, the retaining wall firm shall submit the revision for review and approval prior to using that revision on Administration projects. Revisions shall not be submitted for projects that are already bid.

Loads are not permitted (backfill, noise barriers, concrete traffic barriers, light standards, etc.) on retaining wall concrete until the concrete in that portion has attained a minimum compressive strength of 3000 psi. Retaining walls shall be backfilled prior to placing these loads on them.

450.03.01 Concrete Stain. When specified in the Contract Documents, two coats of concrete stain shall be applied in conformance with the manufacturer's recommendations and as directed by the Engineer. Before application of the stain, all surfaces shall be structurally sound, clean, dry, fully cured, and free from dust, curing agents or form release agents, efflorescence, scale, or other foreign materials.

450.03.02 Galvanizing. When anchorage assemblies are required for mounting noise barriers, light standards, etc., all holes and welding required in the assemblies shall be done before galvanizing. All assemblies shall be free of oil or any mill coating.

450.04 MEASUREMENT AND PAYMENT. Retaining walls will not be measured but will be paid for at the Contract lump sum price for the pertinent Retaining Wall item. The payment will be full compensation for all piles and caissons (unless specific items are included in the Contract Documents), footings, forms and form removal, architectural treatment, reinforcement steel, concrete, curing, anchorage assemblies, stains and coatings, excavation, sheeting and shoring, backfill (including size no. 57 stone and geotextiles for alternate retaining walls) and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

When specific items for Piles for Retaining Walls are included in the Contract Documents, they will be measured and paid for as specified in 410.04.

When specific items for Drilled Shafts (Caissons) for Retaining Walls are included in the Contract Documents, they will be measured and paid for as specified in 412.04.