

PILE/PANEL RETAINING WALL, PATTERNED GROUND ANCHORS, AND ROCKFALL RETAINING WALL:

(SPECIAL)

Construct a pile and precast concrete panel retaining wall, patterned ground anchors, and a rockfall retaining wall at the locations indicated in the plans and in accordance with the details in the plans, following the special provision and as directed by the Engineer.

Schedule a pre-construction conference with the Contractor (including the drilling superintendent), the Resident Engineer (including the inspector), the Area Bridge Construction Engineer and the Geotechnical Engineering Unit Engineer to discuss construction and inspection of the pile/panel retaining wall, patterned ground anchors, and rockfall retaining wall. This conference must be completed a minimum of 5 days prior to beginning any work for the pile/panel wall, patterned ground anchors, or rockfall retaining wall.

Steel Piles

Provide HP steel piles conforming to Sections 450 and 1084 of the Standard Specifications and these provisions. Steel piles shall be ASTM A709, grade 50 structural steel, hot dipped galvanized in accordance with ASTM standards. Pile size shall be as shown on the plans.

Install the piles to grade using the lengths and cut-off elevations shown in the plans by pre-augering or drilling as specified in the plans. Backfill the hole with concrete as specified in the plans.

Where the alignment of the wall is curved, lay out the piles on chords and align them such that their flanges are tangent to the curve at the web.

Install piles to within 2 inches of their plan location, and the center to center distance between piles must not differ from the plans more than 3 inches after installation.

The plumbness of the piles shall not vary from the vertical by more than 1/8 inch per foot. In general, installed piles for pile panel walls shall be acceptable if the precast concrete panels, when installed, have an acceptable appearance without significant gaps between the face of the panels and the pile flanges. The precast concrete panels must have a minimum 2 inch bearing on the pile flanges.

Splice piles subject to the Engineer's approval and in accordance with the plans. Splices will not be permitted in the portion of the pile permanently exposed. Welding must conform to the requirements of Article 1072-20 of the Standard Specification.

Wall No. 1 Tie Backs

The contractor is referred to the appropriate plan sheets for details and notes on tie backs.

Precast Concrete Panels

Concrete materials for precast panels must be class AA concrete conforming to the applicable parts of the Standard Specifications and these special provisions.

Concrete for the precast panels shall have a minimum 28 day strength of 4,000 psi. The panels shall be cast with fill face up. Exposed face of the panel shall be smooth and of natural concrete color. Do not remove panels from the forms until sufficient strength to prevent damage has been attained. Cracked, spalled or discolored panels shall be rejected.

Furnish three (3) 12"x12" sample panels for approval, which shall establish the acceptable variations in color, texture, and uniformity. Manufacture production panels only after furnished samples have been approved and accepted by the Resident Engineer and a representative(s) of the Eastern Band Cherokee Indians.

Place panels between pile flanges such that sides are plumb and have a minimum bearing distance of 2 inches on the pile flanges. Place half-inch thick expansion joint material between the panels and pile flanges for the width of the bearing surface. Seat panels firmly on the cushioning material and hold securely against the pile flanges until the backfill is placed to hold panels in place. Panels shall not be placed until the drilled pile concrete has cured for a minimum of three days.

C.I.P. Coping

The work covered by this provision consists of construction of Portland cement concrete coping in accordance with the details in the plans and the following provisions.

- (1) Use Class AA concrete conforming to the applicable requirements of Sections 420 and 1000 of the Specifications.
- (2) Supply reinforcing steel conforming to the requirements of Sections 425 and 1070 of the Specifications.

Expansion joints are not permitted, but construction joints may be used where coping changes slopes and at 90 foot centers.

Shaft Excavation and Concrete

Shaft excavation shall conform to the applicable provisions of Section 410 of the Standard Specifications. Use drilled pier concrete meeting the requirements of Sheet S-14 and Section 1000 of the Standard Specifications.

Excavate the shaft, as shown in the plans, by drilling, augering, or coring to a depth sufficient to set the entire pile to grade. If rock is encountered during drilling or pre-augering as determined by the Engineer, pile tip elevation may be raised if a rock socket of at least 10 feet in length is maintained. Cast shaft concrete in accordance with Section 825 of the Standard Specifications and against undisturbed ground unless otherwise

permitted by the Engineer. If over-excavation occurs vertically, backfill with No. 57 stone before setting the pile. Remove all loose and soft material and dewater the excavation immediately before and during the concrete casting operation. Make the top of the concrete shafts generally level.

If necessary, take special precautions to insure the stability of the shaft, such as installing temporary casings prior to drilling, installing the pile and placing concrete immediately after the shaft is excavated before caving occurs, installing well points or other measures. If caving occurs, halt the shaft excavation operation until special measures are implemented.

Do not install concrete panels until the shaft concrete has cured a minimum of three (3) days.

Excavation and Backfill

Where necessary for safety, the excavation must be sloped or shored in accordance with local and state safety standards. It is suggested to use timber lagging in conjunction with the permanent retaining wall piles as excavation shoring. Alternate methods may be used provided they are submitted to the Engineer for review and acceptance.

Take care to minimize the excavation necessary to place cushioning material and panels. Backfill the excavation immediately after panels are placed with No. 57 stone. Limit excavation to install panels and timber lagging to 6 inches behind the panels. Backfill any over-excavation with No. 57 stone.

No. 57 stone must conform to the applicable requirements of Section 1005 of the Standard Specifications and these provisions.

Compact No. 57 stone backfill to the satisfaction of the Engineer. Rod and spread the stone in order to fill all voids and insure maximum density. Compact larger areas with hand operated equipment. Flushing the stone with water shall not be permitted. Heavy compaction equipment shall not be permitted behind the wall.

Patterned Ground Anchors

The contractor is referred to the appropriate plan sheets for details and notes on patterned ground anchors.

Rockfall Retaining Wall

The work covered by this provision consists of construction of a rockfall retaining wall in accordance with the details in the plans and the following provisions.

- 1) Use Class AA concrete conforming to the applicable requirements of Sections 420, 453 and 1000 of the Specifications.

- 2) Supply reinforcing steel conforming to the requirements of Sections 425 and 1070 of the Specifications.

Measurement and Payment

The quantity of steel piles to be measured and paid for will be the actual number of linear feet of piles that have been incorporated into the completed and accepted retaining wall.

The quantity of tie backs to be to be measured and paid for will be the actual number of linear feet of tie backs that have been incorporated into the completed and accepted retaining wall.

The quantity of patterned ground anchors to be to be measured and paid for will be the actual number of linear feet of patterned ground anchors that have been incorporated into the completed and accepted retaining wall.

The quantity of pile excavation in soil and not in soil to be measured and paid for will be the linear feet to the elevation of the bottom of the pile as completed and accepted.

The quantity of No. 57 stone to be measured and paid for will be the tons of No. 57 stone incorporated into the completed and accepted retaining walls.

The quantity of Class AA concrete to be measured and paid for will be the actual number of cubic yards of class AA concrete for precast concrete panels, CIP coping, and rockfall retaining wall incorporated into the completed and accepted retaining walls.

The quantity of reinforcing steel to be measured and paid for will be the actual number of pounds of reinforcing steel incorporated into the completed and accepted retaining walls.

The quantity of drilled pier concrete encasement to be measured and paid for will be the actual number of cubic yards of drilled pier concrete above the elevation of the bottom of the pile incorporated into the completed and accepted retaining walls.

Excavation of material relating to site preparation for the walls will be measured and paid for as "Unclassified Excavation" in accordance with Section 225 of the Standard Specifications.

Such price and payment shall be full compensation for all work covered by this provision including, but not limited to, shaft excavation, stabilization and dewatering of the shafts, furnishing and placing steel piles, shaft concrete, precast concrete panels, rockfall wall concrete, No. 57 stone, construction of C.I.P. coping, tiebacks, ground anchors, and all other incidental work and materials necessary to construct the pile/panel retaining walls, patterned ground anchors, and rockfall retaining wall.

Pay Items:	Pay Unit
HP12X53 GALVANIZED STEEL PILES (RETAINING WALL)	LINEAR FOOT
GENERIC RETAINING WALL ITEM W 6X8.5 STEEL PILES	LINEAR FOOT
GENERIC RETAINING WALL ITEM TIEBACKS	LINEAR FOOT
GENERIC RETAINING WALL ITEM GROUND ANCHORS	LINEAR FOOT
PILE EXCAVATION IN SOIL	LINEAR FOOT
PILE EXCAVATION NOT IN SOIL	LINEAR FOOT
NO. 57 STONE BACKFILL	TON
GENERIC RETAINING WALL ITEM CLASS AA CONCRETE	CY
REINFORCING STEEL (RETAINING WALL)	LB
GENERIC RETAINING WALL ITEM DRILLED PIER CONCRETE ENCASEMENT	CY

STRUCTURAL TREATED TIMBER:**(SPECIAL)****DESCRIPTION**

Construct timber lagging as indicated on the plans in conformity with the lines, profile grades, dimensions, and design shown, and in compliance with the requirements of these specifications.

CONSTRUCTION METHODS**(A) Handling and Storing Materials:**

Store lumber and timber in piles at the site unless immediately placing in the structure. Neatly pile structural timber on blocking above the ground and protect it from the sun when necessary to prevent warping. Open-stack untreated timber at least 12 inches (300 mm) above the ground surface, stacked to shed water and prevent warping, and protected from the weather by suitable covering. Neatly stack all lumber and timber with ends exposed and handle in a manner that will avoid injury or breakage. Handle treated timber with rope slings. Do not use cant hooks, peaveys, or other sharp instruments in handling treated timber. Clear the ground of weeds and rubbish under and in the vicinity of all material stacks.

METHOD OF MEASUREMENT

The quantity of structural timber to be paid for is the number of cubic yards of timber that is actually incorporated in and becomes a part of the completed and accepted structure. Measurement is based on the nominal timber sizes and the lengths shown on the plans or designated by the Engineer.

BASIS OF PAYMENT

The quantity of structural timber, measured as provided above, will be paid for at the contract unit price per cubic yard for "Treated Structural Timber".