

## SECTION 02861

# PRECAST RETAINING/NOISE WALLS

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Materials and procedures for constructing Precast Retaining/Noise Wall.

#### 1.2 RELATED SECTIONS

- A. Section 01571: Temporary Environmental Controls
- B. Section 02061: Select Aggregates
- C. Section 03055: Portland Cement Concrete
- D. Section 03152: Concrete Joint Control
- E. Section 03211: Reinforcing Steel and Welded Wire
- F. Section 03390: Concrete Curing
- G. Section 03392: Penetrating Concrete Sealer

#### 1.3 REFERENCES

- A. AASHTO Standard Specifications for Highway Bridges
- B. UDOT Quality Management Plans

#### 1.4 SUBMITTALS

- A. Lifting devices: Submit calculations and shop drawings for approval.
- B. Precast Concrete Panels: Submit for approval samples of the exposed aggregate finish before casting the panels.

## **1.5 HANDLING, SHIPPING, AND STORAGE**

- A. Shipment Acceptance: Panels or posts may be accepted for shipment and marked with an orange UDOT sticker if they:
  - 1. Meet the 28 day compression test.
  - 2. Are cured and sealed according to specification.
  - 3. Are not cracked or damaged.
- B. Do not ship any panel or post that does not satisfy strength requirements.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS FOR PRECAST NOISE WALLS AND RETAINING WALLS**

- A. Precast Wall Panels and Posts:
  - 1. Concrete Class AA(AE). Refer to Section 03055.
  - 2. Type II cement.
  - 3. Slump requirement need not be met.
  - 4. 28 day minimum compressive strength of 5,000 psi.
- B. Post Hole Concrete: Concrete Class B(AE). Refer to Section 03055.
- C. Reinforcing Steel: Coated Grade 60. Refer to Section 03211.
- D. Welded Wire Fabric: Coated. Refer to Section 03211.
- E. Curing Compound: Type I, Class A. Refer to Section 03390.
- F. Gravel for Post Holes: Free Draining Granular Backfill Borrow. Follow Section 02061.
- G. Elastomeric Bearing Pad: 60 hardness. As specified in AASHTO Standard Specifications for Highway Bridges, Division II, Article 18.2.
- H. Backer Rod: Refer to Section 03152.
- I. Construction Adhesive: Select from the Performance Data Products Listing (PDPL) maintained by the UDOT Research Division.
- J. Wood Shims: Any grade fir.

## **2.2 ADDITIONAL MATERIALS FOR RETAINING WALLS**

- A. Composite Drainage Material: Two-layer composite, consisting of non-woven silt fence geotextile and matting surface that are heat bonded together.
  - 1. Polyester non-woven fabric. Follow Section 01571.
  - 2. Compression resistant matting of three-dimensional construction capable of multidirectional flow.

## **2.3 LIFTING DEVICES**

- A. Galvanized flush-type that do not project beyond the edge of the panels.
- B. Capable of lifting the maximum size of panels (11.5 ft x 7 ft x 5 inches) and of tilting them from horizontal position to vertical position.
- C. Shear factor of safety of 2.66:1 for lifting from a flat position and a tension factor of safety of 4:1 for lifting from a vertical position.
- D. Designed for shear so that the panels can be lifted from either side.
- E. Provide a sealing cover.

## **2.4 CONCRETE POSTS**

- A. Cast posts in metal forms.
- B. Permanently mark each post with date of casting and post the identification number supplied by the inspector. Place markings in fresh concrete in the portion of the post that will be embedded in soil.
- C. Department accepts posts if they:
  - 1. Meet the 28 day compressive strength.
  - 2. Are cured and sealed according to specification. Refer to Section 03390 and 03392.
  - 3. Have been visually inspected and accepted by the Engineer.
  - 4. Have sides that do not deviate from a straight line by more than 3/8 inch per post height.
- D. Replace posts that are:
  - 1. Cracked or damaged.
  - 2. Not permanently marked.

## **2.5 PRECAST CONCRETE PANELS**

- A. Fabricator will be pre-qualified as a supplier of pre-cast concrete products in accordance with the Quality Management Plan.
- B. Cast the panels to required tolerances regarding all dimensions.
  - 1. Cast in metal forms.
  - 2. Do not use coloring additives.
  - 3. Make panels match in contrast.
- C. Permanently stamp panel identification number supplied by Engineer in the top surface of one lifting device prior to casting.
- D. Expose the aggregate on both sides. Remove all residue from exposed surfaces.
- E. Department accepts panels when they:
  - 1. Meet the 28 day compressive strength.
  - 2. Are cured and sealed according to specification. Refer to Section 03390 and 03392.
  - 3. Have been visually inspected and accepted by the Engineer.
  - 4. Have sides that do not deviate from a straight line by more than 1/8 inch.
- F. Replace panels that:
  - 1. Are cracked or damaged.
  - 2. Do not match in contrast.
  - 3. Are not permanently marked.

## **PART 3 EXECUTION**

### **3.1 LIMITATIONS**

- A. Refer to Section 03055 for hot and cold weather limitations.

### **3.2 CURING**

- A. Refer to Section 03390.

### **3.3 POST HOLES**

- A. Refer to SW series Standard Drawings.
- B. Place edge of post holes no nearer than 2 ft from any underground utility.

### **3.4 LIFTING DEVICES**

- A. Place waterproof caps in the lifting devices after the panels are permanently placed.

### **3.5 CONCRETE POSTS**

- A. Set true to line and grade. Reject and replace posts more than 1/2 inch out of plumb in exposed length.
- B. Replace posts that do not adequately support or accept insertion of the precast panels.
- C. Replace cracked or damaged posts.
- D. Glue elastomeric bearing pads to the concrete post for Precast Retaining/Noise Wall, following the manufacturer's recommendations.

### **3.6 PRECAST CONCRETE PANEL PLACEMENT**

- A. Set elevations in the field for Engineer's acceptance. Stake elevations to the bottom of the bottom panel. Align as shown on the plans.
- B. Place the panels in the posts with the form side facing the highway.

### **3.7 RETAINING WALLS**

- A. Follow SW series Standard Drawings.
- B. Composite drainage material:
  - 1. Place behind the wall panels at each weep hole location.
  - 2. Place the fabric side of the material against the fill. Extend the length of the material from the bottom of the wall panel to the top of the fill.
- C. Filter Fabric: Place around the back side of the posts as shown in the plans. Extend the material from the bottom of the wall panel to the top of the fill.
- D. Free Draining Granular Backfill Borrow: Place and tamp down behind the wall panels, between the posts to the fill height and length, and at the locations shown on the plans.

END OF SECTION