

DURA-CRETE S-SERIES PRECAST CONCRETE WALL SPECIFICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete Screen Wall

Description: Work under this item shall consist of furnishing and erecting a wall in accordance with the locations, dimensions, lines, grades and design specified in the contract documents, approved drawings and this written specification.

1.02 REFERENCES

- A. ASTM A123 for Hot dip Galvanized Finishes
- B. ASTM A615 for Rebar Reinforcing
- C. ASTM D 1557 for Density Testing of Compacted Soils
- D. ACI 318 7.7.2 for reinforcing coverage
- E. AWS D1.1 Structural Steel Welding

1.03 SUBMITTALS

- F. Changes in specifications may not be made after the published date of bid. All submittals of substitutions must be approved before bid date.
- G. Shop drawing of wall with all dimensions, details, and finishes. Drawings must include post foundations.
- H. Product data: Manufacturer's catalog indicating materials and a letter certifying that all conditions of the specifications have been met.

PART 2 GENERAL

2.01 MANUFACTURER

- A. The units shall be manufactured in a concrete products plant with approved facilities. Before proceeding with production, a model precast modular unit shall be provided by the Fabricator for the Engineer's approval to establish a guide and standard for the type of finish to be furnished. This model shall be kept at the Fabricator's plant to be used for comparison purposes during production.
- B. Wall panels and posts must be obtained from a single source.
- C. Approved Manufacturer: Dura-Crete Concrete Products, Warren, MI
www.Dura-crete.net info@dura-crete.net (586) 759-4286

2.02 MATERIALS

- A. Pattern: Dura-Crete wall system to have [offset block] [vertex] decorative design and texture on front and back.
- B. Colors: Selected by the manufacturer's range of colors, provide [natural grey] [mesa buff] [coral rose]. Custom colors may be produced, contact manufacturer for details.
- C. Reinforcing Steel: All reinforcing steel shall conform to ASTM A615 Grade 60 Epoxy Coated Bars. Panel reinforcement to be no less than #4 bars with post reinforcement and no less than 2 pcs. of #6 bar.
- D. Concrete: Concrete used for the foundations shall be composed of Portland cement, fine and coarse aggregates, admixtures, and water, equating to a minimum material weight of .150 kcf.
- Concrete to be 3000 PSI minimum 28 day compressive strength.
- Minimum concrete cover over reinforcing steel to be in accordance with ACI 318 7.7.2(a).
- D. Air Entraining: Air entraining is not required in dry mix concrete panels or posts. Cast in place foundations should be air entrained between 4% - 7%.
- E. Forms: Forms for the units shall be constructed of steel with dimensional tolerances that will assure the production of uniform units.
- F. Precast Panels: The precast concrete panels should be manufactured on machinery suitable for producing compacted, vibrated, dry mix concrete. Panel type to be Dura-Crete S-Series with either S-series concrete posts or steel I-Beams as specified. Panels shall have typical dimension of 115" long by 8" high and up to 3" thick with a minimal thickness of 2 1/8" at the panel/post interlocking assembly point.
- G. Posts: [Dura-Crete S-Series] or [W6x15 Wide Flange Steel]
Galvanizing: Where steel posts are proposed, all welded attachments and posts shall be hot dip galvanized after fabrication in accordance with the requirements of ASTM A 123.
Welds: All welds shall conform to AWS D1.1.
- Concrete S-Series posts are set 10 feet on center and have a minimum cross sectional dimension of 5 5/8" x 7 7/8".
- W6x15 Wide Flange beam posts are set at 9'-8 1/2" on center and contains welded 1/4"x2-1/2" flat stock webbing.

2.03 MIXING AND PLACING CONCRETE

- A. Mixing: The concrete mix as designed shall be proportioned and mixed in a batch mixer to produce a homogeneous concrete conforming to the requirements. The transporting, placement, and compaction of concrete shall be by methods that will prevent segregation of the concrete materials and the displacement of the reinforcement steel from its proper position in the form. Concrete shall be carefully placed in the forms and vibrated sufficiently to produce a surface free from imperfections such as honeycomb, segregation, or cracking.
- B. Curing: Precast units shall be cured by a method or combination of methods that will give satisfactory results in accordance with accepted local practices and standards.

2.04 QUALITY CONTROL

- A. Testing: Panels and posts should be tested for compressive strength in the following manner, as deemed necessary to ensure maintenance of quality control:
1. A panel or panels should be produced without steel reinforcing using the standard mix design.
 2. After 28 days, three sections of the panel should be cut for testing. The size of each test section should be 3" x 3" x panel thickness.
 3. The test sections should be loaded in the same direction as they were cast and should be tested in a dry condition.
 4. The average of the three test results should be used to determine the compressive strength.
- B. Repairs at Plant: Before shipment, surfaces of all precast units shall be examined. If the exposed face of a unit is below the standard of the approved model then it shall be properly repaired to conform to the balance of the work with respect to appearance, strength and durability.
- C. Inspection and Rejection: The quality of materials, the process of manufacture, and the finished units shall be subject to inspection by the Engineer prior to shipment. Precast units may be subject to rejection on account of failure to conform to the specification requirements. Individual units may be rejected because of any of the following:
1. Variations that substantially deviate from the approved model as to texture in accordance with precast concrete industry standards.
 2. Dimensions not conforming to the following tolerances:
Length or height: 1/8".

3. Substandard texture not properly repaired.
4. Defects, which would affect the structural integrity of the unit.

E. Handling and Storage:

Care shall be taken during storage, transporting, hoisting and handling of all units to prevent cracking or damage. Units damaged by improper storing, transporting or handling shall be replaced or repaired to the satisfaction of the Engineer.

E. Shipment:

The precast units shall not be shipped before attaining two-thirds of the required 28-day concrete strength (fc').

3.01 CONSTRUCTION

A. Site Grading and Preparation:

Grading and or berm preparation associated with the barrier installation shall be completed to within 1" below the barrier prior to constructing the barrier footings.

Grading up to a depth of 3" shall be included as part of the wall construction.

Materials excavated for the placing of the noise barrier and footings, if acceptable, shall be deposited on the adjacent terrain and spread in thin uniform layers.

Surplus excavated material shall be disposed of off the contract site at the owner's expense.

There shall be no visible gaps between any barrier panels nor beneath the bottom panels after completion of the barrier.

Tree pruning and or removal, if required in the contract and approved by the owner, shall be kept to a minimum.

B. Footings:

Concrete footings shall be cast entirely against undisturbed soil. Should the footings be formed, the excavation shall be backfilled with granular materials and compacted to at least 95% Proctor density when tested in accordance with ASTM D 1557.

Where required, the tops of all footings shall be placed a minimum of 4 hours prior to the installation of the post. Where required, the tops of all footings are to be shaped to provide for full horizontal seating of panels, the remaining surface area is to be domed to shed water.

Stepped footings are to be constructed to accommodate grade changes as needed with the use of fiber forms.

The depth and diameter of the footings shall be constructed in accordance with the approved shop drawings.

C. Tolerances:

1. Vertical alignment for barriers and posts shall be: 1/2 inch for barrier heights to 8 feet.

2. Horizontal alignment for barriers shall be in reasonably close alignment to that shown on Plans.
3. Post spacing's shall be set +_ 1/2 inch of their intended location.

3.02 REPAIR PROCEDURES

Cosmetic repairs can be made at the site using the following methods and materials:

1. Featheredging of concrete repair materials shall not be permitted.
2. An approved bonding agent shall be used on the existing concrete and in the repair mix.
3. The repair mix shall be prepared at the plant (in dry form) using the same materials used in the original production.
4. When the original concrete is made from grey cement only, some white cement may be added to the mix so as to match the color.

Structural repairs may not be done unless supervised by the engineer.

Damage may be considered structural when one of the following appears:

1. Reinforcement is exposed.
2. Cracking occurs in a bearing area.
3. Cracks extend from one face to the other
4. Cracks are larger than 1/4" wide and longer than 3 7/8".

Cracks may be repaired using epoxy injection methods or other proprietary products.

3.03 CLEANING

A. Clean up debris and remove from the site.