

02862 CONCRETE FENCING

GENERAL

.01 SUMMARY

- A. Section includes:
 - 1. Furnishing and installing concrete pre-cast concrete screening walls.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 3 Section “Cast-in-Place Concrete” for concrete for post footings below grade.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Project, including General and Supplementary Condition Division 1 Specification Sections, apply to this Section.

1.03 REFERENCES

- A. PCI’s MNL-117 “Manual for Quality Control for Plants and Production of Architectural Pre-cast Concrete Products:
- B. PCI’s MNL-120 “PCI Design Handbook – Pre-cast and Prestressed Concrete”
- C. ACI 318 (ACI 318M) “Building Code Requirements for Reinforced Concrete”
- D. ACI 305R – “Hot-Weather Placement”
- E. ACI 306R – “Cold-Weather Placement”
- F. CRSI’s “Manual of Standard Practice” for fabricating, placing and supporting reinforcement.
- G. ASTM A82 – “Reinforcing Wire”
- H. ASTM A615 – “Reinforcing Bars”
- I. ASTM C33 – “Coarse Aggregate”
- J. ASTM C33 – “Fine Aggregate”
- K. ASTM C150 – “Portland Cement”
- L. ASTM C260 – “Air-Entraining Admixture”
- M. ASTM C494 – “High-Range, Water-Reducing Admixture”
- N. ASTM C1107 – “Non-Shrink Grout”
- O. ASTM E90-75 “Standard Recommended Practice for Laboratory Measurements of Airborne Sound Transmission Loss of Building Partitions”

1.04 SUBMITTALS (RECORD COPY ONLY)

- A. General: Submit the following according to the Conditions of the Project and Division 2 Specification Sections.
 - 1. Product Data: Furnish manufacturer’s literature for pre-cast concrete screening wall.
 - 2. Color Chart: Show color as selected for verification.
 - 3. Shop Drawings: Provide working drawings indicating all information necessary for pre-cast screening wall. Drawings shall illustrate the shape and dimension of pre-cast components; the size, quantity and details of the reinforcing steel; the quantity, type, size and details of connection and lifting hardware (if needed); the size and location of drain openings; and any additional details necessary. Drawings shall bear the seal of a registered professional engineer.
 - 4. Design Calculation: When required, furnish design calculations which include a summary of all design parameters used, including material types, strength values, allowable stresses, assumed loads and load combinations. Calculations

shall be submitted covering the range of heights and loading conditions on the project. Calculations shall bear the seal of a registered professional engineer.

5. Certification: Furnish manufacturer's membership to the National Pre-cast Concrete Association (NPCA) or an equivalent organization such as the Pre-cast/Prestressed Concrete Institute's (PCI).

1.05 QUALITY ASSUANCE

- A. Installer Qualifications: Engage an experienced Installer who has experience with architectural pre-cast concrete screening wall or noise barrier projects with same material and of similar scope to that indicated for this Project with a successful construction record of in-service performance. Installer must submit the names, location, phone numbers of three references as well as description of the project successfully completed for each reference.
- B. Single-Source Responsibility:
 1. Obtain concrete fence materials manufactured in the United States from a single source.
- C. Manufacturer Qualifications: Engage a firm experienced in producing pre-cast concrete screening wall units in accordance to those indicated for this Project and with a record of success in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.
 1. Manufacturer must own a manufacturing facility that produces pre-cast concrete screening wall.
 2. Manufacturer shall be a member of the National Pre-cast Concrete Association (NPCA) or an equivalent organization such as the Pre-cast/Prestressed Concrete Institute's (PCI).
 3. Manufacturer shall be registered and approved by authorities having jurisdiction.

1.06 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for fences and gates shown on the Drawings in relation to the property survey and existing structures. Verify dimensions by field measurements.
- B. All existing fence or fence line obstructions to be removed prior to commencement of work. Ref. Site Clearing and Earthwork.

2.0 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
- B. Basis-of-Design Product: The following is a Town of Flower Mound standard. The design for each product is based on the product named. Subject to compliance with requirements.
 1. Verti-Crete Pre-Cast Concrete Walls as manufactured by Hawk Construction Co., LLC, Princeton, Texas.

2.02 MATERIALS

- A. Verti-Crete Pre-Cast Concrete Wall system (panels and columns):
 1. Panels and posts to have same rock texture on both sides.
 2. Panels to be one monolithic panel between two separate columns.

3. Panels, columns, and caps shall be normal weight concrete having sand and gravel or crushed stone aggregates (minimum 3/4") mixed with ASTM-C150, Type 1 or Type III Portland Cement and shall have a minimum compression strength of 4,000 psi @ 28 days.
 4. Loading: Wind loading will be applied to the panels, columns, and foundation components per local building code requirements.
- B. Piers (Post Footings) Design (non-retaining)
1. Diameter: 18" (minimum)
 2. Depth: Wall height (minimum)
 3. Reinforcement: As determined by registered professional engineer
 4. Concrete shall be normal weight concrete having sand and gravel or crushed stone aggregates (minimum 3/4") mixed with ASTM-C150, Type 1 or Type III Portland Cement and shall have a minimum compression strength of 3,000 psi @ 28 days.
 5. Pier design is tentative and shall be based on Structural Engineer's review of the Geotechnical Report that will be provided at a later date.

2.03 CONCRETE

A. Concrete Material

1. Concrete shall be normal weight concrete having sand and gravel or crushed stone aggregates (3/4" minimum), mixed with ASTM-C150, Type 1 or Type III Portland Cement to meet the minimum compressive strengths as follows:
 - a. Panels & Columns: 4000 psi @ 28 days
 - b. Footings & Piers: 3000 psi @ 28 days
2. Water used for concrete shall be clean water and free from injurious amounts of oils, alkalis, organic or other deleterious substances.
3. All concrete permanently exposed to the weather shall contain an air entraining admixture resulting in 3% to 6% entrained air or as recommended by the manufacturer.

B. Reinforcing Materials:

1. All reinforcing steel shall be deformed type bars and conform to ASTM – A615, Grade 60 placed as shown on the drawings.
2. All ties and stirrups shall conform to the requirements of ASTM – A615, Grade 40.

C. Color: As selected from manufacturer's full range of colors.

1. Color shall be tan or other engineering approved alternate.
2. Concrete shall be painted or stained no sooner than 28 days after casting. Prior to painting or staining, concrete shall be pressure washed and cleaned of any releasing agent and any loose materials.

3.0 EXECUTION

3.01 INSTALLATION

A. General: Install per manufacturer's recommendations.

1. Reinforcing Workmanship

- a. Reinforcement steel shall be fabricated in accordance with the CRSI Standard Details. Reinforcing bars shall be cold-bent only. Use of heat to bend reinforcement steel shall be cause for rejection.
- b. Reinforcement steel, bars and wire fabric shall be accurately positioned and secured in place.

- c. Install all reinforcement with the following clearances between reinforcing steel and face of concrete:
 - 1) Footing, pier or beam bottom: 3"
 - 2) Earth-formed pier or beam sides exposed: 1"
 - 3) Formed footing, pier or beam sides exposed: 1"
 - 4) Pre-cast exposed to weather: panels $\frac{3}{4}$ "; columns $1\frac{1}{4}$ "
 - d. Splices within continuous unscheduled reinforcing steel shall have a minimum lap of 30 bar diameters.
2. Soils:
- a. Footing size is based on soil properties at site. Minimum diameter shall be 18".
3. Concrete Workmanship
- a. Fresh poured concrete shall be tamped into place by steel rammer, slicing tools or mechanical vibrator until concrete is thoroughly compacted and without void.
 - b. Make excavations for footing to undisturbed soil to the depth noted on the drawings. Leave the bottom-bearing surface clean and smooth. If footing excavations are made deeper than intended, only concrete shall be used for fill. Remove all loose material from grade beam excavations prior to concrete pour.
- B. Align, level, and plumb columns and panels to be plumb. Adjust columns and panels as required for site elevation changes. Maintain 2" – 4" clearance where applicable.

3.02 DAMAGED UNITS

- A. Replace panels and other components of work that have been damaged upon installation.
- B. Cleaning: Prior to Substantial Completion, clean surfaces of fence as recommended by fence manufacturer.