

VERTI-CRETE

SPECIFICATIONS FOR PRECAST WALL SYSTEM

SECTION 03 45 13 PRECAST ARCHITECTURAL CONCRETE

PART I: GENERAL

1.01 SUMMARY

A. This Section specifies requirements for precast concrete screening walls, perimeter fencings and noise walls and installation instructions as required for complete, high quality and long lasting walls and including the following.

1. Furnishing and installing new fencing and initial mock-up section of fence.

1.02 QUALITY ASSURANCE

A. **INSTALLER QUALIFICATIONS:** Engage an experienced Installer who has experience with architectural precast concrete screening wall or noise barrier projects with similar material and of similar scope to that indicated for this Project with a successful construction record of in-service performance. Installer must submit names, location, and phone number of three references as well as description of the project successfully completed for each reference.

1. Installer shall be registered and/or licensed and approved by authorities having jurisdiction.

B. **SINGLE SOURCE RESPONSIBILITY:**

1. Obtain concrete fence materials manufactured in the United States from a single source duly licensed or authorized to manufacture or distribution Verti-Crete™ precast wall panels, columns and caps.

C. **MANUFACTURER QUALIFICATION:** Engage a firm experienced in producing precast concrete screening wall or noise barrier units in accordance with those indicated for the Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.

1. Manufacturer must be licensed by Verti-Crete, LLC as a Producer of Verti-Crete™ precast wall panels, columns and caps.
2. Manufacturer shall be registered and approved by authorities having jurisdiction.

1.03 SUBMITTALS

GENERAL: Submit the following according to the Conditions of the Project and Division Specification Sections.

1. Product Data: Furnish manufacturer's literature for each architectural precast concrete screening wall or noise barrier.
2. Color Chart: Show full range of available base and accent colors
3. Shop Drawings: Provide working drawings indicating all information necessary for precasting screening wall or noise barrier elements. Drawings shall illustrate the shape and dimension of precast components; the size, quantity and details of the reinforcing steel; the quantity, type, size and details of connection and lifting hardware. Drawings shall bear the seal of a New York State registered professional engineer.

PART II: PRODUCTS

2.01 MANUFACTURERS

[Insert Closest Producers]

[See list on <http://www.verti-crete.com/find-a-producer.jsp>]

2.02 MATERIALS

A. WALL SYSTEM (PANELS AND COLUMNS)

1. 6' high
2. Panels shall have a molded stone or masonry pattern on both sides.
3. Columns shall have a molded stone pattern on all four sides except where the notch appears to receive the connecting panel.
4. Panels shall be monolithic.
5. Columns shall be monolithic.
6. Columns shall have a concrete cap
7. Panels, columns and caps shall be constructed from normal weight concrete having sand and gravel or crushed stone aggregates mixed with ASTM-C150, Type 1 or Type III Portland Cement and shall have a minimum compression strength of 4,000 psi @ 28 days.
8. Color: Concrete shall be colored after installation with a 100% acrylic/polysiloxane structural concrete stain.
9. Column footings: 13' 2" on-center (maximum); depth and width and steel reinforcing as per approved engineer's drawings in accordance with local building code requirements. Footings may be closer and panels cut to accommodate changes in direction to fit property lines and/or project requirements.
10. Panel Reinforcing: Minimum perimeter rectangle of #4 steel rebar 6" from all four edges of each panel. Additional reinforcing (if required) as per approved engineer's drawings in accordance with local building code requirements.
11. Column Reinforcing: Minimum of 4, #4 verticals with #3 horizontal rings at 12" centers as per approved engineer's drawings. Additional reinforcing (if required) as per approved engineer's drawings in accordance with local building code requirements.

12. Footing/Column Connection: two 6' long #4 (minimum) imbedded in the center of each footings. 3' should be imbedded into footing leaving 3' exposed to then protrude through the center of each column (each column shall be cast with a hollow center)
13. Loading: Wind loading and surcharge loads, will be applied to the panels, columns and foundations components per local building code requirements.

B. Component Dimensions

1. Columns shall have a typical width of 20" x 20" square with 3" minimum depth notch to receive the tapered ends of each panel. Each column shall have a tapered hollow center, 8" x 8" at the top down to 6" x 6" at the bottom.
2. Panels shall have a typical dimension of 12' long by 8' tall by 4" thick (4" minimum thickness, 7" maximum thickness at the false cap)
3. Caps shall have a typical dimension of 22" x 22"
4. Columns shall be installed on top of pier footings previously poured in place as per engineer's drawings. Column shall be secured by a rebar anchor embedded into the footing that protrudes through the through the hollow center of the column. After a section of fence is installed each column shall be filled with concrete to a minimum level 6" above the height of the rebar anchor.
5. Panel/Column connection shall be tongue and groove construction.
6. Panel Reinforcing: Minimum perimeter rectangle of #4 steel rebar 6" from all four edges of each panel. Additional reinforcing (if required) as per approved engineer's drawings in accordance with local building code requirements.
7. Column Reinforcing: Minimum of 4, #4 verticals with #3 horizontal rings at 12" centers as per approved engineer's drawings. Additional reinforcing (if required) as per approved engineer's drawings in accordance with local building code requirements.

C. Color

1. Fence shall be colored after installation where possible with a 100% acrylic/polysiloxane concrete stain. (i.e. Kwal Paint Stone-FX Acrylic/Polysiloxane Stain #727)
2. When coloring the fence after installation is not possible (i.e. because of weather, interference with traffic, accessibility or concern from overspray onto adjacent structures or property), the concrete elements may be pre-stained by coloring them in the manufacturer's facility. The fence should then be touched up after installation to ensure a consistent, natural looking and complete finish.
3. Base color should be applied with an airless sprayer; accent colors should be applied with sponges
4. Colors selected from manufacturer's color chart.

D. Column Footings

1. 13' 2" on center (maximum)
2. Diameter: 24" typical
3. Depth: 3' minimum or as per approved engineer's drawings in accordance with local building code requirements.
4. Reinforcing: 4-#4 vertical bars with #3 ties on 12" centers or as per approved engineer's drawings in accordance with local building code requirements.

5. Concrete shall be normal weight concrete having sand and gravel or crushed stone aggregates mixed with ASTM-C150, Type 1 or Type III Portland Cement and shall have a minimum compression strength of 3,000 psi @ 28 days.

E. Mow Strip (not required structurally)

1. Continues with fence line
2. Width: 20" (typical) to match the width of the columns
3. Depth: 4" (typical)
4. Concrete shall be normal weight concrete having sand and gravel or crushed stone aggregates mixed with ASTM-C150, Type 1 or Type III Portland Cement and shall have a minimum compression strength of 3,000 psi @ 28 days.

2.03 General

A. Load Criteria: Based on the following Minimum Soil Properties and Local Codes

1. Soil Type: Sandy Silty Clay
2. Soil Compaction: 95% Standard Proctor
3. Minimum soil lateral bearing allowable: 150 PSF/FT of depth below grade
4. Minimum soil bearing pressure allowable : 2000 PSF
5. Design wind speed 90-120 MPH (depending on local building requirements)

2.04 Concrete

A. Concrete Material

1. Concrete shall be normal weight concrete having sand and gravel or crushed stone aggregates mixed with ASTM-C150, Type 1 or Type III Portland Cement and shall have a minimum compression strength as follows:
 - a. Panels/Columns/Caps: 4,000 psi @ 28 days
 - b. Footings: 3,000 psi @ 28 days
 - c. Column Centers 3,000 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 for panels, columns or footings shall contain an air-entraining admixture resulting in 5% (+/- 1%) entrained air or as per local building code requirements.

B. Reinforcing Materials:

1. All reinforcing steel shall be deformed type bars or welded wire mesh. All deformed type bars shall conform to ASTM – A615, Grade 60, placed as show on approved drawings. All welded wire mesh shall conform to ASTM – A185, Grade 60, placed as shown on approved drawings (if required).

2. All ties and stirrups shall conform to the requirements of ASTM – A615, Grade 60.

PART III: EXECUTION

Installation

- A. General: Installation shall be as per manufacturer's recommendations.
 1. **Utility Lines.** Contact local "Utility Locator" to have all underground power lines marked BEFORE installation begins.
 2. **Grade.** The ground should be prepared to a grade 4" below the final grade. This allows for a 3" tall footing form to square off top of footing and then 1" of backfill to cover bottom of wall for final grade or mow strip.
 3. **Soil.** Excavation for footings to undisturbed soil should be minimum 2' in diameter by a depth of 3' for 6' high wall and 4' for 8' high wall or as per local building code requirements. Leave bottom-bearing surface clean and smooth. If footing excavations are made deeper than intended, only concrete shall be used for fill.
 4. **Reinforcing.** Reinforcing steel for footings should be installed as per engineer's drawings with the minimum clearance of 3" from all sides
 5. **Form Footings.** The top of each footing should be formed to a square and level surface 2' x 2' with the square pad having a minimum thickness of 3".
 6. **Footing Elevations.** Wall panels will span from footing to footing and should rest on two level points. When the relative heights of the top of two adjacent footings differ, the downhill side of the uphill footing should be notched out to allow the panel to rest on two level surfaces. This notch may be formed as part of the footing form or may be created by removing a portion of the concrete footing with a square nose shovel while the concrete is still green. Alternately, the bottom corner of the panel may be cut to allow the panel to rest level. Notch should be no more than 8" long by 8" wide by 12" deep.
 7. **Rebar Anchors.** Footings should have rebar anchors cast into each center as per engineer's drawings.
 8. **Level.** Panels and Columns should be plumb and level. Plastic or other non-organic shims may be used where necessary to ensure that each panel and post is square and level.
 9. **Fill Posts.** Columns should be filled with concrete to a minimum height 6" above the top of the rebar anchor. If a gate or any other structure will be mounted to a column, the column should be filled to the top. Columns should not be left unattended or without bracing until filled with concrete (with or without panels installed).
 10. **Set Caps.** Caps should be set on top of each column after column is filled with concrete. Cap may be set with masonry adhesive or a standard masonry grout.

If masonry adhesive is used the seam should be calked between the column and the cap to ensure a solid cosmetic seal.

11. **Stain.** Wall should be colored with a 100% acrylic/polysiloxane concrete stain. (i.e. Kwal Paint Stone-FX™ Acrylic/Polysiloxane Stain #727) Base color should be applied in two coats using an airless spray gun. Accent colors may be applied after base color dries using a sponge, brush or roller. Before staining, concrete surface should be clean and free from any dirt or debris.

END OF SECTION