

Specification Guidelines: Pinnacle Modular Retaining Wall

SECTION I

PART 1: GENERAL

1.1 Scope

Work includes furnishing and installing Pinnacle modular concrete block retaining wall units to the lines and grades designated on the construction drawings and as specified herein.

1.2 Sections

Section 02300—Earthwork

1.3 Reference Standards

ASTM C1372 Standard Specifications for Segmental Retaining Wall Units; 2004

1.4 Delivery, Storage and Handling

- A. Contractor shall check the materials upon delivery to assure proper material has been received.
- B. Contractor shall prevent excessive mud, wet cement and like materials from coming in contact with the materials.
- C. Contractor shall protect the material from damage. Damaged material shall not be used.

PART 2: MATERIALS

2.1 Modular Wall Units

- A. Wall units shall be Pinnacle Retaining Wall Units.
- B. Wall units shall have minimum 28 day compressive strength of 3000 psi (20.7MP) in accordance with ASTM C1372. The concrete units shall have adequate freeze-thaw protection with an average absorption rate of 8%.
- C. Exterior dimensions shall be uniform and consistent. Maximum dimensional deviations shall be .125 inch (3mm) not including split face.
- D. Wall units shall provide a minimum of 120 pounds total weight per square foot of wall face area (1,761kg/m²). Fill contained within the units may be considered 80% effective weight.
- E. Exterior face shall be rock face textured. Color shall be natural gray unless specified by owner.
- F. Alignment Clips shall be injection molded polypropylene.

2.2 Geogrid Reinforcement

- A. Geogrid shall be high tenacity polyester yarns in a protective coating specifically fabricated for use as a soil reinforcement material.

- B. Geogrid shall be the type and strength as shown on the drawings.

2.3 Base, Unit Drainage and Backfill Material

- A. Base material shall be well graded compacted crushed stone with 100% passing the 1 1/2 inch sieve and 10% or less passing the #200 sieve or un-reinforced concrete as shown on the plans.
- B. Drainage material shall be free draining crushed stone with 100% passing the 1 inch sieve and less than 10% passing the #4 sieve.
- C. Backfill material may be site excavated soils when approved by the Engineer unless otherwise specified in the drawings. Unsuitable soils for backfill (heavy clay or organic soils) shall not be used in the reinforced soil mass.
- D. When additional fill is required, contractor shall submit sample and specifications to the Engineer for approval.

PART 3: WALL CONSTRUCTION

3.1 Excavation

- A. Contractor shall excavate to the lines and grades shown on the construction drawings. Use caution not to over-excavate beyond the lines shown or disturb the base elevations beyond those shown.
- B. Foundation soil shall be examined by the Engineer to verify that the actual foundation soil strength meets or exceeds assumed design strength. Soil not meeting the required strength shall be removed and replaced with acceptable material.

3.2 Base Leveling Pad

- A. Base material shall be placed as shown on construction drawings. Top of base shall be located to allow bottom wall units to be buried to proper depths as per wall heights and specifications.
- B. Base material shall be installed on undisturbed native soils or suitable replacements fills compacted at 95% standard proctor.
- C. Base shall be compacted at 95% standard proctor to provide a level hard surface on which to place the first course of blocks. The base shall be constructed to insure proper wall embedment and to achieve the final elevation shown on the plans.

- D. Base material shall be a minimum depth of 6 inch (150mm), or as shown on the structural retaining wall drawings..

3.3 Unit Installation

- A. The first course of wall units shall be placed on the prepared base. The units shall be checked for level and alignment as they are placed.
- B. Insure that the units are in full contact with base. Proper care shall be taken to develop straight lines and smooth curves on base course as per wall layout.
- C. All cores in and around the base row shall be filled with base materials and compacted. Backfill front and back of entire base row to firmly lock in place. Check again for level and alignment. All excess material shall be swept from top of units.
- D. Install PAC Clip to provide alignment of wall.
- E. Install next course of wall units on top of base row. Position blocks to be offset from seams of blocks below. Perfect “running bond” is not essential. Check each block for proper alignment and level. Fill all cavities in and around units to a 12 inch (305mm) depth behind block with drainage material. Spread backfill in uniform lifts not exceeding 8 inches (200mm). Use lightweight compaction equipment that will not disrupt the stability or batter of the wall. Hand-operated plate compaction equipment shall be used on the block and within 3 feet (.9m) of wall to achieve compaction.
- F. Install additional courses with the same procedure.

3.4 Geogrid Installation

- A. Install Pinnacle wall to designated height of the first geogrid layer, backfill and compact behind wall to depth equal to designated grid length.
- B. Cut geogrid to designated embedment length and place on top of Pinnacle unit to within 2” of front face. Extend horizontally on compacted backfill. Install PAC Clips.
- C. Place next course of Pinnacle on top of grid and fill unit cores with drainage fill to lock in place. Remove slack in grid and stake to maintain tension.
- D. Lay geogrid at the proper elevation and orientation as shown on the construction drawings or as directed by the Engineer.
- E. Follow manufacturers’ guidelines for overlap requirements.

3.5 3.5

Fill Placement and Backfill Placement

- A. Backfill material shall be placed in lifts and compacted as specified under Section 1, Part 3.4, Unit Installation.
- B. Backfill shall be placed in such a way as to minimize the development of wrinkles in the geogrid.
- C. Only hand-operated compaction equipment shall be allowed within 3 feet (.9m) of the wall face.
- D. Tracked construction equipment shall not be operated directly on the geogrid. A minimum backfill thickness of 6 inches (150mm) is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
- E. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds, less than 10 MPH (16 Km/H). Sudden braking and sharp turning shall be avoided.
- F. The backfill shall be compacted to achieve 95% standard proctor (ASTM 695).
- G. At end of each days operation, slope backfill away from the wall units. Do not allow surface water in the wall construction area.

3.6 Cap Installation

- A. Glue cap units to underlying units with an all-weather adhesive recommended by the manufacturer.

3.7 Field Tolerances

- A. Vertical Alignment: Plus/minus 1 1/2 inches over any 10 foot (37.5mm in 3m) distance.
- B. Wall Batter: Within 2 degrees of design batter.
- C. Horizontal Alignment: Plus/minus 1 1/2 inches over any 10 foot (37.5mm in 3m) distance; corners, bends and curves plus/minus 1 foot (305mm) to designed location.
- D. Maximum horizontal gap between erected units: ½ inch (12mm).

3.8 Field Quality Control

- A. The Owner will engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction. This does not relieve the Contractor from securing the necessary construction control testing during construction.