

## SECTION 323223 – SEGMENTAL CONCRETE RETAINING WALLS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this section.

#### 1.2 SUMMARY

- A. Provide all labor, materials and equipment as necessary to complete all work as indicated on the Drawings and specified herein.
- B. This section includes segmental concrete retaining walls.
- C. Related sections include the following:
  - 1. Division 31 Section “Earthwork.”
  - 2. Division 33 Section “Storm Drainage.”

#### 1.3 REFERENCES

- A. MDOT – Michigan Department of Transportation Standard Specification for Construction – 1990.

#### 1.4 SUBMITTALS

- A. Product Data:
  - 1. Submit for:
    - a. Segmental retaining wall system.
    - b. Drainage piping.
    - c. Geotextiles.
    - d. Aggregate.
    - e. Adhesive.
  - 2. Required Information:
    - a. Dimensions.
    - b. Details of construction and installation.
    - c. Name of manufacturer.
    - d. Model.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer’s Services: Submit manufacturer’s sworn statements that the materials furnished comply with this section.

## 1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original, unbroken, brand marked containers or wrapping as applicable.
- B. Handle and store materials in a manner which will prevent deterioration or damage, contamination with foreign matter, damage by weather or elements, and in accordance with manufacturer's directions.
- C. Reject damaged, deteriorated or contaminated material and immediately remove from the site. Replace rejected materials with new materials at no additional cost to Owner.

## PART 2 - PRODUCTS

### 2.1 SEGMENTAL CONCRETE RETAINING WALLS

- A. Keystone Segmental Retaining Wall System:
  - 1. Straight Split Face MINI Units: 4-inch high x 18-inch wide x 11-inch deep.
  - 2. Universal Cap Unit: 3-1/2-inch high x 18-inch wide x 12-inch deep.
  - 3. Pins: 1/2-inch x 5-1/4-inch Keystone high strength fiberglass pins.
  - 4. Manufacturer/Supplier: Fendt Builders Supply; 734-663-4277.
  - 5. Color: Gray.

### 2.2 ADHESIVE

- A. SB-10 Paver Bond Adhesive, SRW Adhesive or Keystone Kapseal Adhesive.

### 2.3 LEVELING PAD

- A. MDOT 22AA.

### 2.4 BACKFILL

- A. MDOT 6A or 2NS sand as indicated on Drawings.

### 2.5 PLANTING SOIL

- A. In accordance with Division 31 Section "Earthwork."

### 2.6 GEOTEXTILE

- A. Geosynthetic Woven Fabric: Amoco 2044; or approved equal.

### 2.7 GEOGRID

- A. Synteen SF35 grid.

## 2.8 DRAIN TILE

- A. Manufactured by ADS (Advanced Drainage Systems); or approved equal.
- B. Perforated corrugated pipe with filter sock.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Alignment and Grade: If there is a grade discrepancy or an obstruction which is not indicated on the Drawings, notify Project Representative and obtain instructions prior to proceeding.

### 3.2 CONTROL

- A. Level and Grade Rod:
  - 1. Check line and grade at each course of block
  - 2. Allowable Deviation:
    - a. Horizontal: 0.05 feet.
    - b. Vertical: 0.05 feet.

### 3.3 SUBGRADE

- A. Excavate subgrade below bottom block course to 12 inches.
- B. Excavate slope grade behind block course to 12 inches minimum beyond back of block course.
- C. Proof compact existing subgrade to 95% Modified Proctor.

### 3.4 DRAIN TILE OUTLET

- A. Excavate trench from drain tile to point of connection with underdrain system as indicated on the Drawings. Slope trench for positive outfall.
- B. Install drain tile to retaining wall in accordance with Division 33 Section "Storm Drainage."
- C. Drain tile to be installed as indicated on Drawings.

### 3.5 LEVELING PAD

- A. Wrap excavation with geofabric providing adequate amount of fabric to wrap across the top of the leveling pad.
- B. Place aggregate material in 6-inch lifts to a total depth of 12 inches.
- C. Compact each 6-inch lift to 95% Modified Proctor.

- D. Leveling pad shall be prepared so that the length and width of the concrete units come in contact with leveling pad.

### 3.6 INSTALLATION OF WALL UNITS

- A. Place geofabric on top of leveling pad to function as a separator between the stone and backfill to create the dike.
- B. Place Keystone units side by side over prepared base. Split face exposed to the [ north ].
- C. Level each unit side to side and front to back.
- D. Line up pins or back edge of the unit for straight wall alignment.
- E. Place the reinforcing pins into the paired holes in each unit.
- F. Fill voids in and between units and behind units 12 inches and compact.
- G. Place the next course of units over the positioned fiberglass pins. Each unit shall be centered on and bridge 2 units below in a running bond pattern. Pins shall fit into the kidney-shaped recesses on bottom of unit. Pull the unit module toward the face of the wall until the module makes full contact with both pins. Wall shall be a vertical installation.

### 3.7 INSTALLATION OF GEOGRID

- A. Repeat steps B, C, D, E and F until a height of 24 inches is achieved.
- B. Wrap geofabric over top of stone backfill before installing the geogrid.
- C. Cut sections of geogrid off roll to a length of 24 inches measured from the back of wall and as required to hook over the pin.
- D. Place geogrid in proper orientation (roll out from wall toward the embankment).
- E. Pretension geogrid, by pulling the pinned geogrid taut to eliminate loose folds. Stake or secure back edge of the geogrid prior to and during backfilling and compaction.
- F. Place geofabric on top of geogrid to separate stone backfill from planting soil for planter.
- G. Continue installation steps A, B, C, D, E and F.

### 3.8 CAP UNIT INSTALLATION

- A. Place two 1/4-inch beads of adhesive (1 front, 1 back) of unit cap will sit upon.
- B. Cut cap units to fit curve of wall. Cut to be perpendicular to front face and back of unit. Cap is to sit at elevation indicated on the Drawings.

END OF SECTION 323223