### 3604 Precast Articulated Concrete

###  3604.1 SCOPE

Provide manufactured articulated concrete block and mat revetment systems to protect embankment slopes, river channels, spillways, and vehicle accesses where the soil may erode.

###  3604.2 REQUIREMENTS

A Revetment Systems

A.1 Articulated Block Mat

Provide closed cell or open cell articulated block mat consisting of blocks cabled together into a prefabricated mat placed on a geotextile fabric meeting ASTM D 6684-04. Place the mats side-by-side, and clamp and anchor to provide one homogeneous erosion protection system. Provide blocks for the mats ranging in thickness and weight meeting the bed shear requirements in accordance with Table 3604‑1, “Bed Shear Requirements.” Determine the type in accordance with Table 3604‑1, “Bed Shear Requirements” for Type A, Type B, Type C, Type D, and Type E.

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| **Table 3604‑1Bed Shear Requirements** |
| **Type** | **Minimum Bed Shear,*lb/sq. ft***  |
| A | 10  |
| B | 15  |
| C | 20  |
| D | 25  |
| E | 30  |

A.2 Articulated Interlocking Block Mat

Provide closed cell or open cell articulated interlocking block consisting of hand placed concrete blocks placed on a geotextile fabric and locked together to form a soil protecting paver system. Provide blocks ranging in thickness and weight meeting the bed shear requirements in accordance with Table 3604‑1, “Bed Shear Requirements.” Determine the type in accordance with Table 3604‑1, “Bed Shear Requirements” for Type A, Type B, and Type C.

Provide open cell units with an open area of at least 20 percent when measured at the bottom of the block in the system. Provide closed cell systems with an open area no greater than 10 percent when measured at the bottom of the block in the system.

B Concrete

Provide blocks meeting Specification 2461, “Structural Concrete” and the following:

1. Manufactured in a plant with a Department approved quality control plan,
2. Design air content of 6.5 percent for wet cast blocks,
3. Less than 1.0 percent loss in 100 freeze/thaw cycles when tested in accordance with ASTM C 1262 using a distilled water solution or less than 1.0 percent loss in 50 freeze/thaw cycles when tested in accordance with ASTM C 67,
4. Absorption no greater than 7.0 percent when tested in accordance with ASTM C 140, and
5. Minimum Design Strength at 28 days when tested in accordance with ASTM C 140:
	1. 4000 psi for wet cast
	2. 5800 psi for dry cast

C Cable

For systems using cables, provide stainless steel or coated high-strength polyester cables compatible with the system and designed to meet a 5:1 factor of safety in accordance with ASTM D 6684. Use stainless steel cable at least 3/16 in thick and use high-strength polyester cable at least ¼ in thick.

D Geotextile Filter

Provide geotextile appropriate for the soil conditions in accordance with the manufacture’s recommendations and 3733, “Geotextiles.” The Engineer will make the final approval of the geotextile type.

E Clamps

Use stainless-steel wire rope clamps and sleeves to secure loops of adjoining mats.

F Anchors

Use helical or duckbill anchors with a pull resistance of 4,000 lbs to secure the top and exposed sides of the articulating block system.

###  3604.3 SAMPLING AND TESTING

Submit to the Engineer a manufacture’s Certificate of Compliance for the revetment system and components that meets the requirements of ASTM D 7277 and ASTM D 7276.

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