

5300102 SPECIFICATION
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

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Comments: (5-15-15)

In the first paragraph we reference shop drawings, I believe this should be vendor drawings. Shop drawing are used to modify an already approved drawing.

Response:

The wording has been updated to the following:

grades, design, and dimensions shown in the Plans. Submit ~~shop~~ **vendor** drawings for review and approval by the Engineer ~~in accordance with Section 5~~. Provide signed and sealed calculations of

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Comments: (5-15-15)

We are in full agreement that revetment systems should be designed in accordance with the National Concrete Masonry Association (NCMA) Design Manual for Articulating Concrete Block Revetment Systems, 2nd Edition, or the National Highway Institute, Hydraulic Engineering Circular (HEC) No. 23 Publication No. FHWA NHI 09-110, however, we are concerned with respect to the statement that “Blocks must be open cell and non-tapered unless otherwise stated in the Plans”.

As you may be aware, both the NCMA and HEC-23 design guidelines allow for both open and closed cell blocks as well as different block geometries including cabled, non-cabled, and various shapes and sizes.

In specifying a particular revetment block for a project, the most important criteria must be the stability of the revetment block under the applied flow and shear conditions. Secondary design considerations would include block shape and openings for aesthetic purposes. Block shape and aesthetics will vary from project to project based on the engineer’s and client’s requirements.

It is our recommendation that you modify the language in the specification from:

“Blocks must be open cell and non-tapered unless otherwise stated in the Plans” to: “Blocks shall designed and installed in accordance with the project plans and specifications and as approved by the project engineer”

In doing so, this allows for flexibility in the design, shape, application and aesthetics of a particular block and does not restrict the block selection process for any given project while at the same time ensuring that the Factor of Safety as calculated by the NCMA or HEC-23 guidelines are maintained.

In addition, we are concerned about the requirement for the cable to be “free to move within the block”.

The cables in any revetment system are primarily used to assist with installation. If the proper block is selected in accordance with HEC-23, the issue of cable movement should not be a concern. In the case of International Erosion Control System blocks, the cable is installed into the molds and the concrete is cast around the cable. In addition, the HEC-23 guideline, specifically excludes any cable effects in the calculations.

We recommend that you also modify the following language from: **“Cable must be polyester and free to move within the block”** to: **“Cable must be polyester or stainless steel and can embedded in the block or free to move within the block as approved by the project engineer”**.

Response:

No change to the specification language.

The Department prefers the default ACB option to be open-cell blocks, to allow for the water-quality benefits of infiltration and vegetation growth. However, if project constraints necessitate a closed cell block, and approved by the District Drainage Engineer, closed cell block may be used.

Cabling must be free to move within the block to allow for maximum articulation. When cabling is integral to the block, the result is similar to a grout filled mattress or monolithic structure that does not provide maximum flexibility and self-healing properties.
