Index D6025 GRS-IBS

Design Criteria


Design Assumptions and Limitations

Design GRS-IBS in accordance with *SDG 3.13.4*. Include these additions and modifications while using the Design Methods presented in Appendix C of the *FHWA-HRT-11-026 "Geosynthetic Reinforced Soil Integrated Bridge System Interim Implementation Guide"*.

*The use of these Developmental Design Standards will typically be restricted by the SDO and not approved for use on limited access facilities, four-lane roadways with high ADT, water crossings subject to stream flow in excess of 7 ft/sec, or locations with sufficient wave action to displace scour countermeasures.*

*When using these Developmental Design Standards, the designer must request Developmental Specification Dev549 from the District Specifications Office.*

This Developmental Design Standard is for use only with standard CMUs having nominal dimensions of 8" x 8" x 16"; therefore, if other block types and/or dimensions are desired (e.g. those used for Modular Block Walls), provide project specific designs in the plans.

Details presented in this Developmental Design Standard are intended for use with flat slab type superstructures. Standardized details will be developed for beam type superstructures in the future.

Plan Content Requirements

Insert the entire *Developmental Design Standards* Index, received from the Central Office monitor, into the appropriate component plan set in accordance with *PPM*, Volume 2, Section 3.8.

In the Structures Plans:

A full height block is typical in front of the bearing seat; however, a half-height block and/or special height polystyrene board may be required to accommodate elevations. If this is required, show project specific details in the plans.

When specifying color, do not specify "brick red" for the textured blocks if scour countermeasures are shown. "Brick red" is reserved for the solid blocks hidden by the scour countermeasure in order to assist Maintenance in determining effectiveness of the countermeasure.

Where beam type superstructures are used, show project specific details in the plans for grade beam and backwall. In these cases, expansion joints will be required between the backwall and bridge deck.
When a backwall is used, Begin/End Bridge Stations will be at FFBW. Otherwise, Begin/End Bridge Stations will be located at ends of the superstructure.

Show details for filling CMU with concrete and rebar for special locations such as corners of wingwall and face of abutment.

Complete the following data tables and notes and include them in the plans. Use additional sheets as necessary. Supplemental details and notes to Standard Drawings and Tables are permitted as required to address special conditions. Include these items in the plans. However, the data tables themselves should not be modified when using Standard Drawings. See Introduction I.3 for more information regarding use of Data Tables.

Detail scour countermeasures in Data Table as follows:

When detailing scour countermeasures, indicate Finish Grade Elev. as "N/A".

Indicate the contraction scour elevation as the Scour Elev. in the data table. Indicate the countermeasure type and finish slope in the notes. Ensure the finish slope and EL. RR provide for at least 2.5 feet of cover over RSF when Bank and Shore Riprap is used. When scour design procedures do not apply, indicate "N/A".
Note to Designer:
The Geotechnical Engineer shall provide the values within the red boxes designated below in a signed and sealed report to the Structural Engineer.

**TABLE OF ELEVATIONS**

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**GRS-IBS QUANTITIES**

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<th>WALL NO.</th>
<th>GRS B</th>
<th>KSF B</th>
<th>RKF B</th>
<th>SRF B</th>
<th>GRS BACKFILL (CU YD)</th>
<th>KSF BACKFILL (CU YD)</th>
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(1) The estimated materials quantities correspond to the dimensions on the accompanying plans sheets. Deviation from the dimensions on the plans sheets will void the quantities.

**CMU COLORS:**
- Hollow, textured CMU = [color #] / none
- Solid, smooth-faced CMU = Brk Net

**CMU TEXTURE:**
- For hollow, textured CMU, provide Split Face texture.

**SCOUR COUNTERMEASURE:**
- Scour Protection Type: [description]
- Finish Slope: [details]

**DESIGN LOADS:**
- Combined load: Superstructure (pli + plb) = 2.5 SF maximum (factored design load)
- Roadway live load surcharge: [value] psf uniform vertical

**SOIL PROPERTIES:**
- GAB unit weight = [value]pcf
- GRS backfill: Unit weight = 115 psf, friction angle = 38°, cohesion = 0 psf
- Retained backfill: Unit weight = [value] pcf, friction angle = [value]°, cohesion = [value] psf
- Foundation soil: Unit weight = [value] pcf (submerged), friction angle = [value]°, cohesion = [value] psf

**GEOTEXTILES:**
- All reinforcement approved for use in Steepened Slopes (Approved Application Usage 1 or 3)
- Use woven geotextile with a maximum AID of 0.035 in. and the following minimum strength:
  - [value] lb/ft (both machine and cross directions)
- All Other Reinforcement:
  - Use geogrid or woven geotextile having the following minimum strengths:
    - [value] = [value] lb/ft (both machine and cross directions)
    - [value] = [value] lb/ft (both machine and cross directions)
### Payment

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<td>549-2</td>
<td>GRS Bridge Abutment</td>
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<tr>
<td>549-3</td>
<td>Gravel Fill</td>
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