GENERAL NOTES
1. PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH SPECIFICATIONS, PUBLICATION 408, 19.0.15 BRIDGE BUILDING AIDS AND THE SPECIAL PROVISIONS.
2. DESIGN SPECIFICATIONS ASAP TO BRIDGE DESIGN SPECIFICATIONS AS SUPPLIED IN PAR. 2.0.17 INTEGRATED BRIDGE SYSTEMS DESIGN.
3. USE CLASS A CONCRETE FOR CONCRETE MASONRY UNIT FILL AND COPING.
4. PROVIDE GRADE 60 REINFORCING BARS THAT MEET THE REQUIREMENTS OF ASTM A 615, 4.0.1.2, STEEL. A TYPICAL EYELESS TYPE OF REINFORCING BARS ARE NOT RECOMMENDED.
5. REINFORCED SOIL FOUNDATION SHALL BE BUILT EXACTLY AS DESIGNED OR APPROVED IN WRITING FROM THE SUPERVISORY LOCAL JURISDICTION DIVISION OFFICIAL.
6. USE REINFORCED GRADE Armor 40, 50, 70 OR A COMBINATION THEREOF, WITH ALL AGGREGATES TYPE A.
7. USE REINFORCEMENT SQUARE AND LEVEL WITHOUT THE BEAM SEAT AND THE CONCRETE OR STEEL BEAMS TO PROVIDE ADDITIONAL STABILITY.
8. RECOMMENDED SCHEDULE DISTRIBUTION ARMOR 40, 50, 70 OR A COMBINATION THEREOF, WITH ALL AGGREGATES TYPE A.
9. USE A WIDER GRADE RANGE OF GRANULAR MATERIALS TO MATCH THE DESIGN.
10. CONSIDER USE OF GEOSYNTHETIC MATERIALS TO REDUCE THE THICKNESS OF THE CONSTRUCTION.

DESIGN METHOD (CONTINUED)
1. PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH PUBLICATION 408, 19.0.15 BRIDGE BUILDING AIDS AND THE SPECIAL PROVISIONS.
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**WINGWALLS FOLDED OUT FOR ELEVATION VIEW.**

* BENCH WINGWALL AS NECESSARY.

ON WALL FACE:

- RSF
- CMU BLOCK FACE
- GRS WALL
- WET CAST COPING
- DEFLECTION
- GUIDERAIL

**BENCH HEIGHT (b)**

**LENGTH (L)**

**ELEVATION (H)**

**BEARING BED**

**CASEMENT**

**GUIDE RAIL**

**ROADWAY**

**PLATE**

**SOLID CMU**

**TOP ROW**

**GALVANIZED REBAR**

**#4 EPOXY OR WALL FILL**

**CONCRETE BLOCK**

**CONCRETE FILLED HOLLOW CMU**

**GEOSYNTHETIC**

**GRS-IBS**

**ABUTMENT WALL**

**FACE OF GRS ABUTMENT**

**BEAM SEAT ZONE**

**PLAN VIEW**

**GRS-IBS ABUTMENT**

**ARUBMENT WIDTH (L)**

**SUPERSTRUCTURE WIDTH (B)**

**FORM BOARD (TYP.)**

**4" THICK P.C.P.**

**COMMONWEALTH OF PENNSYLVANIA**

**DEPARTMENT OF TRANSPORTATION**

**STANDARD CHIEF BRIDGE ENGINEER**

**RECOMMENDED PLAN AND ELEVATION**

**INTEGRATED BRIDGE SYSTEM**

**TYPICAL BEAM SEAT (ISOMETRIC VIEW)**

**GRS-IBS ABUTMENT PLAN VIEW**

**BD-697M**

**REVIEWED APR.29, 2016**

**DIRECTOR, BUREAU OF PROJECT DELIVERY**

**COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY**

**STANDARD GEOSYNTHETIC REINFORCED SOIL INTEGRATED BRIDGE SYSTEM PLAN AND ELEVATION**

**RECOMMENDED APR.29, 2016**

**APPROVED APR.29, 2016**

**BD-697M**

**NOTES**

1. Insert #4 rebars into the top 3 rows of CMU's and all rows of corner CMU's above the riprap line and fill with concrete.

2. Superstructure crown or super-elevation can be provided by grading the reinforced fill, providing reinforcing for full thickness areas up to 10 cmu heights, and securing top or grades filled with geosynthetic, and individually stoping or cutting blocks to water edge using a concrete cut-off or circular saw.

3. Adjut length and angle of ripspills for siteSPECIFIC conditions: Minimum length consideration should include preventing erosion of the abutment fill from stream flow, including the effects of estimated channel migration.

4. If ripspill is not used beneath the ripspills, then additional ripspill bearing fill thicknesses should be considered to accommodate the stability of the ripspills.

5. Solid core CMU's shall be placed up to the ripspill height.

6. CMU blocks are staggered, including corners, so there are no vertical joints greater than 1 cmu block height.

7. Geogrids to be designed by others in accordance with required standards.

8. Channel type and location to be designed by others in accordance with required standards.

9. When necessary, grade a drainage channel offset from the back of the ripspills and lined with geosynthetics and ripspills, translating ripspills away from ripspills with a slope leading to the channel.

**COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY**

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SECTION A-A

BEAM SEAT & INTEGRATED APPROACH DETAIL

NOTES

1. FINISH CMU CONCRETE FILL AT TOP OF CMU'S UNDER BRIDGE END DIAPHRAGM TO DRIP EDGE. SEE COPING DETAIL ON SHEET 4.

2. ON TOP ROW OF CMU'S CREATE A MORTAR CAPING APPROXIMATELY 1½" THICK. SEE COPING DETAIL ON SHEET 4.

3. THE SOLID CMU IN BEAM SEAT MUST ENGAGE THE UPPER-MOST CONCRETE FILLED CMU RACING BY 1/3 OF THE BLOCK HEIGHT.

4. WATERPROOFING METHODS ARE DEPENDENT ON THE SUPERSTRUCTURE TYPE, BUT CAN INCLUDE SODIUM CHLORIDE WATERPROOFING, CONCRETE FILLED CMU FACING BY 1/3 OF THE BLOCK HEIGHT.

5. THE SOLID CMU IN BEAM SEAT MUST ENGAGE THE UPPER-MOST CONCRETE FILLED CMU RACING BY 1/3 OF THE BLOCK HEIGHT.

6. EXCAVATION SLOPE IN ACCORDANCE WITH RC-11M OR OSHA SAFETY REGULATION (29 CFR, PART 1926, SUBPART P, EXCAVATION). TEMPORARY SUPPORT OF EXCAVATION (SHORING) MAY BE REQUIRED IN SOME APPLICATIONS. CUTOFF WALLS MUST BE USED WHERE CONCRETE CUT-OFF OR CIRCULAR SAW OR PURCHASE AS HALF HEIGHT.

7. FULL HEIGHT BLOCK IS TYPICAL IN FRONT OF BEARING SEAT BUT A DEPTH DESIGNED TO SATISFY INTERNAL STABILITY WITH MINIMUM OF 5 LAYERS OF BEARING BED REINFORCEMENT VERTICAL SPACING FOR THE INTEGRATED APPROACH IS A MAXIMUM OF 12 INCHES.

8. PRIMARY WRAP REINFORCEMENT VERTICAL SPACING FOR THE INTEGRATED APPROACH IS A MAXIMUM OF 12 INCHES.

9. EXCAVATION SLOPE IN ACCORDANCE WITH RC-11M OR OSHA SAFETY REGULATION (29 CFR, PART 1926, SUBPART P, EXCAVATION). TEMPORARY SUPPORT OF EXCAVATION (SHORING) MAY BE REQUIRED IN SOME APPLICATIONS. CUTOFF WALLS MUST BE USED WHERE CONCRETE CUT-OFF OR CIRCULAR SAW OR PURCHASE AS HALF HEIGHT.

10. PRIMARY WRAP REINFORCEMENT VERTICAL SPACING FOR THE INTEGRATED APPROACH IS A MAXIMUM OF 12 INCHES.

11. VERTICAL WALL FACE BATTER = 0°

12. SOLID CMU'S BEHIND RIPRAP.

13. CMU WITH REBAR CONCRETE FILLED CMU CUTOFF OR CIRCULAR SAW OR PURCHASE AS HALF HEIGHT.

14. PRIMARY WRAP REINFORCEMENT VERTICAL SPACING FOR THE INTEGRATED APPROACH IS A MAXIMUM OF 12 INCHES.

15. EXCAVATION SLOPE IN ACCORDANCE WITH RC-11M OR OSHA SAFETY REGULATION (29 CFR, PART 1926, SUBPART P, EXCAVATION). TEMPORARY SUPPORT OF EXCAVATION (SHORING) MAY BE REQUIRED IN SOME APPLICATIONS. CUTOFF WALLS MUST BE USED WHERE CONCRETE CUT-OFF OR CIRCULAR SAW OR PURCHASE AS HALF HEIGHT.

16. PRIMARY WRAP REINFORCEMENT VERTICAL SPACING FOR THE INTEGRATED APPROACH IS A MAXIMUM OF 12 INCHES.

17. VERTICAL WALL FACE BATTER = 0°

18. PRIMARY WRAP REINFORCEMENT VERTICAL SPACING FOR THE INTEGRATED APPROACH IS A MAXIMUM OF 12 INCHES.

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20. PRIMARY WRAP REINFORCEMENT VERTICAL SPACING FOR THE INTEGRATED APPROACH IS A MAXIMUM OF 12 INCHES.