TWO SIDED PIER PROTECTION RAIL PLAN

SECTION A-A

1. Provide extruded polystyrene formed sheet with a 3 1/2" Min thickness between column and rail conforming to ASTM C393 Type 1.
2. Fill leave-outs with no more than a 2-yard grout mixture (1 part cement, 5 parts water, and 14 parts sand by volume) with a 20-day compressive strength of approximately 120 psi or less. Provide uncompacted aggregate at a consistency that will flow into and completely fill all voids.

SECTION B-B

1. If barrier height does not match rail transition height, upper rail transition design down to barrier height. Bars M40 and bars STG(E) will taper down appropriately.
2. Provide 2" PVC pipe Sch 40 drain holes spaced along rail at every 10 ft or as directed by the Engineer.
3. Increase 2" for overlay.

SECTION C-C

4. Rail transition drill shaft anchorage option, slab reinforcing and grade beam reinforcing not shown for clarity.
**CONSTRUCTION NOTES:**

- The back of railing must be vertical unless otherwise shown on the plans or approved by the Engineer.

**MATERIAL NOTES:**

- Provide Class "C" concrete for rail and transition.
- Provide Class "C" concrete for riprap unless otherwise shown on the plans or approved by the Engineer.
- Provide reinforced concrete (WWR) meeting ASTM A1064.
- Provide deformed welding wire reinforcement (WWR).
- Provide deformed welding wire reinforcement (WWR).
- Provide reinforcing bars, deformed WWR, or any suitable combination of both types for riprap reinforcing, unless otherwise shown on the plans or approved by the Engineer.

**GENERAL NOTES:**

- Use of these details will result in a railing acceptable for MASH Test Level 5.
- See T80PP-15 standard for details and notes not shown.
- Payment for railing will be as per Item 450, "Railing" (ty T80PP-15).
- Use elsewhere in the plans for foundation type.
- Shop drawings are not required for this rail.
- All details shown herein are subsidiary to T80PP-15 standard. Pole reinforcement rail, rail foundations are paid for elsewhere.

**SECTION D-D**

If barrier height does not match rail transition height, taper rail transition height down to barrier height. Bars R(#6) and bars S/#5 will taper down appropriately.

- Provide 2" PVC pipe Sch 40 drain holes spaced along rail at every 10 ft or as directed by the Engineer.
- Increase 2" for overlay.
- See T80PP-15 standard for rail foundation options.

**WARR or reinforcing steel is continuous through riprap construction joints. Provide WWR or reinforcing steel that extends 1'-6" minimum into adjacent riprap on each side of construction joint even if synthetic fiber is utilized.

- Provide reinforcing bar at 12" spacing c-c or welded wire reinforcement (WWR) at E6x-8x-6 or D3xD3. Combinations of WWR and reinforcing bars may be used. Use lap connections of a minimum 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars, unless shown otherwise.

**RIPRAPH REINFORCEMENT DETAILS**

- Provide bar laps, where required, as follows:
  - Epoxy coated ~ #6 = 3'-7"
  - Uncoated or galvanized ~ #6 = 2'-5"
  - Epoxy coated ~ #6 = 3'-7"
- Epoxy coat or galvanize all reinforcing steel if required elsewhere.
- Provide bar laps, where required, as follows:
  - Epoxy coated ~ #6 = 3'-7"
  - Uncoated or galvanized ~ #6 = 2'-5"

**GENERAL NOTES:**

- Use of these details will result in a railing acceptable for MASH Test Level 5.
- See T80PP-15 standard for details and notes not shown.
- Payment for railing will be as per Item 450, "Railing" (ty T80PP-15).
- Use elsewhere in the plans for foundation type.
- Shop drawings are not required for this rail.
- All details shown herein are subsidiary to T80PP-15 standard. Pole reinforcement rail, rail foundations are paid for elsewhere.

**CONSTRUCTION NOTES:**

- The back of railing must be vertical unless otherwise shown on the plans or approved by the Engineer.

**MATERIAL NOTES:**

- Provide Class "C" concrete for rail and transition.
- Provide Class "C" concrete for riprap unless otherwise shown on the plans or approved by the Engineer.
- Provide reinforced concrete (WWR) meeting ASTM A1064.
- Provide deformed welding wire reinforcement (WWR).
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- Provide reinforcing bars, deformed WWR, or any suitable combination of both types for riprap reinforcing, unless otherwise shown on the plans or approved by the Engineer.

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- Use of these details will result in a railing acceptable for MASH Test Level 5.
- See T80PP-15 standard for details and notes not shown.
- Payment for railing will be as per Item 450, "Railing" (ty T80PP-15).
- Use elsewhere in the plans for foundation type.
- Shop drawings are not required for this rail.
- All details shown herein are subsidiary to T80PP-15 standard. Pole reinforcement rail, rail foundations are paid for elsewhere.

**SECTION D-D**

If barrier height does not match rail transition height, taper rail transition height down to barrier height. Bars R(#6) and bars S/#5 will taper down appropriately.

- Provide 2" PVC pipe Sch 40 drain holes spaced along rail at every 10 ft or as directed by the Engineer.
- Increase 2" for overlay.
- See T80PP-15 standard for rail foundation options.

**WARR or reinforcing steel is continuous through riprap construction joints. Provide WWR or reinforcing steel that extends 1'-6" minimum into adjacent riprap on each side of construction joint even if synthetic fiber is utilized.

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