1. Terminal Connectors and associated hardware are to be paid for under the Item “Metal Beam Guard Fence.”

2. Provide bolts of sufficient length to extend beyond bolt holes and recesses. Bolt recesses are only required when pedestrian sidewalks are adjacent to back of rail.

3. Tighten reinforcing steel as necessary to avoid core holes and recesses. Percussion drilling is not permitted. "Dia holes x 2" deep recesses. Form or core joint opening as necessary to avoid breakback.

4. Provide rail joints at ends of all spans the same width as slab expansion joint, except for Rail Bridge Expansion Joint. Location of rail expansion joint must be at the intersection of slab expansion joint, rail footprint and perpendicular to slab outside edge.

5. Calculate joint opening and provide rail joint opening as necessary to avoid breakback. Adjust placement of reinforcing steel as necessary to avoid breakback. Rail expansion joint must be at the intersection of slab expansion joint, rail footprint and perpendicular to slab outside edge.

6. Cross-hatched area must have Preformed Bituminous Fiber Material under concrete rail, as shown.

7. Provide rail joints at ends of all spans the same width as slab expansion joint, except for Rail Bridge Expansion Joint. Location of rail expansion joint must be at the intersection of slab expansion joint, rail footprint and perpendicular to slab outside edge.

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### EXTERIOR PILASTER ELEVATIONS

1. Provide rail joints at ends of all spans the same width as slab joint opening, except for Rail joints over construction joints must be 1/2" Min. to 1" Max. in width. Join must be open if slab joint opening is not sealed. Join must be constructed and exhibit a minimum of 1" in construction joints and over sealed deck joints must be plugged. Plugging material used in joints may be left in place if it is tight in color and compressible, such as the following materials: polystyrene, molded cork granules, sponge rubber sheet, etc. If forming material is not left in place, plug the joints with slab joint sealing compound to prevent drainage and staining.

2. Increase 2" for structures with overlay.

3. Dimensions must be the same on each side of joint.

4. Reduce by 2" if field bend over Preferred Blown Air Slabs to gain cover.

5. When vertical reinforcing has closer clear cover over horizontal reinforcing, additional longitudinal bars may be used in the slab with the approval of the Engineer. Such bars must be anchored at the Contractor’s expense.

6. Top longitudinal slab may be adjusted laterally 3" plus or minus to tie reinforcing.

7. Bronze Star dimensions of the final product can be slightly smaller due to shrinkage after casting.

### WINDOW TYPES

- **Installed bar may rest on top of slab or wall.**
- **Install with top on top.**

### CONSTRUCTION NOTES:

- This railing is used with expansion joints as shown elsewhere on plans.
- Provide Class "B" concrete for railing. Provide Class "C" (HPC) concrete if shown elsewhere on the plans.
- Provide Grade 80 reinforcing steel.
- Epoxy coated or galvanized all reinforcing steel if slab bars are epoxy coated or galvanized.

### MATERIAL NOTES:

- Provide Class "B" concrete for railing. Provide Class "C" (HPC) concrete if shown elsewhere on the plans.
- Cast Bronze Star of Architectural Bronze having the following dimensions: 8" Dia. Studs, 2" Dia. Bars. Min. 5%. Zinc 5%. Provide Bronze Star, where required, as follows:
  - Drilled or galvanized: #7 - 2-1/2"
  - Galvanized or galvanized: #7 - 2-1/2"
  - Epoxy coated: #7 - 3-1/4"

### GENERAL NOTES:

- This railing has been evaluated and approved to be of equal strength to railing with the same geometry, which have been crash tested to meet MASH TL-2 criteria. This railing can be used for speeds of 45 and less when a 72° or 72°-3 clamper guard fence is used. This railing is only approved for low speed use, speeds of 45 mph and less.
- Do not use this railing on bridges with expansion joints providing more than 5" movement.
- Provide the Engineer with a copy of the plans and shop drawings. Shop drawings will not be required for this railing.

### EXTERIOR PILASTER ELEVATIONS

1. Provide rail joints at ends of all spans the same width as slab joint opening, except that Rail joints over construction joints must be 1/2" Min. to 1" Max. in width. Join must be open if slab joint opening is not sealed. Join must be constructed and exhibit a minimum of 1" in construction joints and over sealed deck joints must be plugged. Plugging material used in joints may be left in place if it is tight in color and compressible, such as the following materials: polystyrene, molded cork granules, sponge rubber sheet, etc. If forming material is not left in place, plug the joints with slab joint sealing compound to prevent drainage and staining.

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3. Dimensions must be the same on each side of joint.

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