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**GENERAL NOTES:**

1. **CONCRETE:** Use Class II concrete for all barriers constructed in slightly aggressive environments, and use Class IV Concrete for all barriers constructed in moderately or extremely aggressive environments. On all exposed surfaces, apply a Class 3 surface finish in accordance with Specification 400.

2. **STEEL BAR REINFORCEMENT:** Where required to maintain continuity, provide lap splices of at least 18 inches for No. 4 bars and 20 inches for No. 5 bars, unless otherwise shown herein (including shorter splices as provided by the default bar bending diagrams).

3. **REINFORCING DETAILS:** Where shown, the default reinforcing details are intended to show required reinforcing locations and provide for a constructible design. However, with the approval of the Engineer, alternate steel configurations may be used in the same locations shown herein, given that the equivalent strength reinforcing is provided and the cover, maximum spacing, and continuity requirements are maintained.

4. **OPTIONAL WELDED WIRE REINFORCEMENT:** With the approval of the Engineer, steel welded wire reinforcement in accordance with Specification 415 may be substituted for the steel bars shown herein. Place the welded wire in the same locations specified for the steel bars, and maintain the equivalent strength, cover, maximum spacing, and continuity requirements.

5. **TOP FACE LONGITUDINAL REINFORCEMENT:** Unless otherwise specified, the longitudinal reinforcement shown closest to the top face of the barrier has a maximum cover of 4½", measured from the top face of the barrier.

6. **MINIMUM BARRIER LENGTH:** Unless otherwise shown in the Plans, the minimum Concrete Barrier length is 40 feet.

7. **CONSTRUCTION JOINTS:** Install Construction Joints only as needed for discontinuous concrete casting or cold joints. Maintain continuity of steel reinforcement across Construction Joints. Construction Joints are classified herein as Transverse Joints or Longitudinal Joints.

8. **FINISH GRADE ELEVATION:** At the barrier face location, the finish grade pavement has a vertical position tolerance of ±1" from the locations shown herein, relative to the barrier elevation. Maintain visually smooth and even pavement at the barrier face, per the approval of the Engineer.

9. **DRAINAGE INLETS:** Where called for in the Plans, install corresponding inlets per Indexes 425-030 thru 425-032.

10. **LIGHT POLE MOUNTING:** Where called for in the Plans, install aluminum light poles per Index 715-002.

11. **SUBGRADE:** Compact the top layer of subgrade with Type B Stabilization, LBR 40 (12 in.).

12. **FOOTING BOTTOM CONCRETE COVER:** At the bottom of barrier footings shown throughout this Index, up to 2 inches of additional concrete cover is permitted beyond what is shown herein to accommodate soil grade irregularities.

13. **FINISH GRADE ELEVATION:** At the barrier face location, the finish grade pavement has a vertical position tolerance of ±1" from the locations shown herein, relative to the barrier elevation. Maintain visually smooth and even pavement at the barrier face, per the approval of the Engineer.

14. **DRAINAGE INLET:** Where called for in the Plans, install corresponding inlets per Index 425-030 thru 425-032.

15. **LIGHT POLE MOUNTING:** Where called for in the Plans, install aluminum light poles per Index 715-002.

16. **SUBGRADE:** Compact the top layer of subgrade with Type B Stabilization, LBR 40 (12 in.).

17. **FOOTING BOTTOM CONCRETE COVER:** At the bottom of barrier footings shown throughout this Index, up to 2 inches of additional concrete cover is permitted beyond what is shown herein to accommodate soil grade irregularities.

18. **FINISH GRADE ELEVATION:** At the barrier face location, the finish grade pavement has a vertical position tolerance of ±1" from the locations shown herein, relative to the barrier elevation. Maintain visually smooth and even pavement at the barrier face, per the approval of the Engineer.

19. **DRAINAGE INLET:** Where called for in the Plans, install corresponding inlets per Index 425-030 thru 425-032.

20. **LIGHT POLE MOUNTING:** Where called for in the Plans, install aluminum light poles per Index 715-002.

21. **SUBGRADE:** Compact the top layer of subgrade with Type B Stabilization, LBR 40 (12 in.).

22. **FOOTING BOTTOM CONCRETE COVER:** At the bottom of barrier footings shown throughout this Index, up to 2 inches of additional concrete cover is permitted beyond what is shown herein to accommodate soil grade irregularities.

23. **FINISH GRADE ELEVATION:** At the barrier face location, the finish grade pavement has a vertical position tolerance of ±1" from the locations shown herein, relative to the barrier elevation. Maintain visually smooth and even pavement at the barrier face, per the approval of the Engineer.

24. **DRAINAGE INLET:** Where called for in the Plans, install corresponding inlets per Index 425-030 thru 425-032.

25. **LIGHT POLE MOUNTING:** Where called for in the Plans, install aluminum light poles per Index 715-002.

26. **SUBGRADE:** Compact the top layer of subgrade with Type B Stabilization, LBR 40 (12 in.).

27. **FOOTING BOTTOM CONCRETE COVER:** At the bottom of barrier footings shown throughout this Index, up to 2 inches of additional concrete cover is permitted beyond what is shown herein to accommodate soil grade irregularities.
**DESCRIPTION:**

**REVISION**

**REVISION**

**LAST**

**REV**

**INDEX**

**CONCRETE BARRIER**

**521-001**

**2 of 22**

---

**NOTE:**

1. **BARRIER RUN SEGMENT:** Within the Barrier Run Segment, either the 38" Height Median Barrier or one of the differing Median Barrier sections shown throughout the Index may be placed as required per the Plans.

2. **SECTION VIEWS:** For additional Views A-A and B-B, see Sheet 3.

3. **DOWELED JOINTS:** See the General Notes on Sheet 1 for usage of joint types. Space Doweled Joints at 100-foot maximum intervals. Place steel reinforcing with a longitudinal 3" cover adjacent to the joint face(s) in the barrier. Use ASTM A36 smooth round bars with hot-dip galvanization.

   For the dowel connection into the first casting, the dowel may be cast-in-place for new concrete or placed into a 1 3/8" x 1 3/8" drilled hole for cured concrete. For drilled holes larger than 1 3/8", secure the dowel with adhesive in accordance with Specification 416. No load testing is required.

   For the dowel connection into the second casting, use a 1 5/8" Schedule 80 PVC pipe with a sealed cap, cast-in-place as shown.

4. **OPTIONAL LONGITUDINAL JOINT:** When a longitudinal joint is placed above the footing, use the Optional 3/4" Dowelled Joint. A substitute for the Shear Key, the concrete footing's top surface may be raked to provide additional shear friction. Rake the fresh concrete surface so that about half of the surface area consists of approximately 45° depth longitudinal grooves, distributed evenly and approved by the Engineer.

5. **TRAFFIC RAILING CONNECTIONS:** Align the barrier and Traffic Railing faces and connect with the 3/4" Dowelled Joint.

6. **GUARDRAIL CONNECTIONS:** Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001 in conjunction with the 38" Barrier Run Segment for Guardrail shown herein.

7. **CRASH CUSHION CONNECTIONS:** Connect Crash Cushions per Index 544-001 in conjunction with the 38" Guardrail Transition for Guardrail shown herein.

8. **FREE ENDS:** When the barrier end does not terminate with a Traffic Railing Connection, Guardrail Connection, Crash Cushion Connection, or Sloped End Treatment as called for in the Plans, terminate in accordance with the Free End Reinforcing detail on Sheet 3.
Plan View - 38" Height Median Barrier
Free End Reinforcing (See Note 3)

Plan View - End Segment for
Guardrail Connection (See Note 3)

Section A-A
38" Height
Median Barrier

Concrete Bcy. = 0.20 Cft
Steel Wts. = 11.8 lb/ft

View B-B
Reduced Section
Of End Transition
For Guardrail
(End of Barrier)

Notes:
1. General: Work with the Plan and Elevation Views
   on Sheet 2.
2. Bar Bending Diagrams: For additional
   information on Bars 4V1 and 4U1, see the details
   on Sheet 2.
3. Plan Views: Only top and bottom longitudinal
   reinforcing is shown for clarity. For all
   longitudinal steel locations, see the section views.

Median Barrier - Reinforcing Details
REVISION DESCRIPTION:

REVISION LAST

STANDARD PLANS FY 2018-19

SHEET INDEX

38' Height Median Barrier

(See Sheet 2)

Sloped End Treatment (Linear Transition)

2'-0" Min.

Bars 4U1 (Typ.)

Optional Transverse Joint (Typ.)

Tapering No. 4 Bars

Top of Barrier (Constant Slope - Linear Transition)

3'-9" (±3"

No. 4 Bars (Cut & Field Bend as Reqd.)

3'-9" (±3"

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(See Sheet 2)

1'-6" Min.

6"

6"

2'-0"

Cover (Typ.)

2'-0"

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Elev. & Field Bend as Reqd.)

Finish Grade

3'-9" (±3"

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.

Bars 4U1 @ 18" Sp. Max.

(Cut & Field Bend as Reqd.)

No. 4 Bars (or Cut Bars 4V1) & Bars 4U1 @ 18" Sp. Max.

18" Max.
NOTES:

1. GENERAL: Install the Grade-Separated sections where shown in the Plans and as required to accommodate vertical offsets in pavement of Height Y. Dowelled joints are not permitted within Grade-Separated sections.

2. CONNECTIONS BETWEEN DIFFERENT SECTIONS: Connect Short Grade-Separated sections and Tall Grade-Separated sections using a continuous pour or Transverse Joint, where longitudinal steel that aligns within the adjacent section is maintained continuously between sections or has a full lap splice with the adjacent section's longitudinal steel. Connect Short Grade-Separated sections and 38" Height Median Barrier sections of Sheet 2 using a 5Y Dowelled Joint.

3. SHORT GRADE-SEPARATED SECTIONS: Bars 4C1 and the two uppermost longitudinal bars may be omitted for sections where Y ≤ 2'.

4. TALL GRADE-SEPARATED SECTIONS: For the vertical and transverse steel reinforcement shown in the Tall Grade-Separated Sections, bar bending diagrams are not provided due to varying section dimensions and Longitudinal Joint locations. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

Longitudinal joints are permitted between the vertical limits shown, and must remain level and at a consistent height per each continuous casting of concrete. Longitudinal joints may change elevations at Transverse Joint locations. Field bending of bars is permitted at Longitudinal Joint locations.

Transverse Joints between Tall Grade-Separated Sections do not require continuous steel across the joint if the following conditions are met:

- The barrier length on both sides is at least 40 feet, where each segment has continuous steel reinforcement.
- The barrier's vertical steel spacing is reduced to 4" O.C. for a total of 12 spaces on both sides of the joint.

Grade separation Heights of Y ≤ 9" are permitted on a limited basis using the Tall Grade-Separated section; this is to accommodate cases where maintaining the spread footing through lower height segments is more practical than changing to the Short Grade-Separated section.

CONCRETE BARRIER

MEDIAN BARRIER - GRADE-SEPARATED

TALL GRADE-SEPARATED

SECTION FOR Y = 4'-0"

TALL GRADE-SEPARATED

HEEL FOOTING SECTION

FOR Y = 4'-0"

TALL GRADE-SEPARATED

TOE FOOTING SECTION

FOR Y = 4'-0"

TALL GRADE-SEPARATED SECTIONS

DIMENSION TABLE

<table>
<thead>
<tr>
<th>Max. Height, Y</th>
<th>1'-0&quot;</th>
<th>1'-6&quot;</th>
<th>2'-0&quot;</th>
<th>2'-6&quot;</th>
<th>3'-0&quot;</th>
<th>3'-6&quot;</th>
<th>4'-0&quot;</th>
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<tbody>
<tr>
<td>Footing Width, W</td>
<td>2'-0&quot;</td>
<td>2'-6&quot;</td>
<td>3'-0&quot;</td>
<td>3'-6&quot;</td>
<td>4'-0&quot;</td>
<td>4'-6&quot;</td>
<td>4'-6&quot;</td>
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</tbody>
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LAST REVISION 01/01/17
DESCRIPTION: FY 2018-19 STANDARD PLANS
INDEX 521-001
SHEET 5 of 22
1. PROJECT-SPECIFIC REINFORCING: For footing and barrier reinforcing required for the overhead sign support, see the project-specific design in the Plans.

2. BARRIER REINFORCING: Maintain the 38" Height Median Barrier's longitudinal steel reinforcing continuously through the barrier height transition and pedestal. Provide the additional No. 4 Bars and taper as required to maintain a 46" maximum cover from the top of the barrier.

3. PROJECT-SPECIFIC PEDESTAL WIDTH & SETBACK: The pedestal width is governed by the size requirements of the overhead sign support, as detailed in the Plans. Likewise, the setback distance from the sign support base to the barrier face is governed by the anchor bolt cover requirements, as defined per the Plans. The minimum pedestal width is 2'-0", where a complete removal of the gutter line taper is permitted.

4. PLAN VIEW: Only top and bottom longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.

NOTES:

1. For the vertical and transverse reinforcement requirements shown in Sections A-A through C-C, our bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

2. PROJECT-SPECIFIC FOUNDATION: Rebar footings are shown, Drilled Shaft Similar) (Typ.) (Spread Footing Shown, Project-Specific Foundation as Required to Accommodate Shift No. 4 Bars up to 3" Above (Reinforcing Steel Not Shown) (See Note 1)

3. MEDIAN BARRIER - 56" HEIGHT SECTION FOR BARRIER-MOUNTED SIGN SUPPORT SHIELDING - SYMMETRICAL FOR BARRIER-MOUNTED SIGN MEDIAN BARRIER - 56" HEIGHT SECTION

4. PLAN VIEW: Only top and bottom longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.
**DESCRIPTION:**

Revision of Standard Plans FY 2018-19 Sheet Index

**ELEVATION**

- 38" Height Median Barrier
- Optional Transverse Joint (Typ.)
- No. 4 Bars @ 12" Sp. Max. (Typ.)
- Additional No. 4 Bars (Parallel to Top of Barrier)
- 3/4" V-Groove (All Faces)
- Project Specific Foundation (Spread Footing Shown, Drilled Shaft Similar) (See Note 1)
- Shift No. 4 Bars up to 7" as Required to Accommodate Project Specific Reinforcing (Not Shown) (See Note 1)

**SECTION A-A**

- 1" Min. (Typ.)
- 2" Cover (Typ.)
- Joint (Typ.)
- Transverse Optional Barrier)

**SECTION B-B**

- No. 4 Bars
- 12" Sp. Max. (Typ.)
- *Varies (Typ.)

**SECTION C-C**

- End Transition (56" Height Section)
- Additional No. 4 Bars
- No. 4 Bars @ 12" Sp. Max. (Typ.)
- Partial Section Cover (Typ.)

**SECTION D-D**

- Reinforcing Steel Not Shown for Clarity
- Project Specific Anchor Bolts (See Notes 1 & 3)
- Support Overhead Sign Project Specific

**NOTES:**

1. PROJECT-SPECIFIC REINFORCING: For footing and barrier reinforcing required for the overhead sign support, see the project-specific design in the Plans.

2. BARRIER REINFORCING: Maintain the 38" Height Median Barrier's longitudinal steel reinforcing continuously through the barrier height transition and pedestal. Provide the Additional No. 4 Bars and taper as required to maintain a 46" maximum cover from the top of the barrier.

3. PROJECT-SPECIFIC PEDESTAL WIDTH & SETBACK: The pedestal width is shown herein, as approved by the Engineer. For the vertical and transverse reinforcement requirements shown in Sections A-A through C-C, our bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

4. PLAN VIEW: Only top and bottom longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.

**MEDIAN BARRIER - 56" HEIGHT SECTION FOR BARRIER-MOUNTED SIGN SUPPORT SHIELDING - ASYMMETRICAL**

**REVISIONS:**

- LAST REVISION: 01/01/17
- FY 2018-19 STANDARD PLANS
- INDEX 521-001
- SHEET 7 of 22
1. **OVERHEAD SIGN SUPPORT:** The overhead sign support shown is an example only; see the Plans for the actual shape dimensions and requirements. The overall length and width of the split barrier system is governed by the project-specific overhead sign support dimensions, as defined in the Plans.

2. **MULTIPLE SIGN SUPPORTS:** The parallel segment may be lengthened to accommodate multiple sign supports, with the approach and trailing tapers located 1 foot measured longitudinally, upstream and downstream from the first and last sign support bases, respectively.

3. **STIRRUP BARS:** For the vertical and transverse reinforcement requirements shown in Sections A-A and B-B, bar bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

4. **PLAN VIEW:** Only outermost longitudinal reinforcing is shown for clarity. For all longitudinal reinforcing locations, see the Section Views.

**NOTES:**

**SECTION A-A**

**TRANSITION SECTION (AT BEGIN SPLIT SECTIONS)**

**SECTION B-B**

**38" HEIGHT SPLIT SECTION (OPPOSITE SIDE SIMILAR BY OPPOSITE HAND)**

**SECTION C-C**

**OVERHEAD SIGN SUPPORT BASE PLATE**

**STANDARD PLANS**

**FY 2018-19**

**CONCRETE BARRIER**

**INDEX**

**521-001**

**8 of 22**
1. SECTION VIEWS: See Sheet 10 for Section Views A-A through D-D and corresponding reinforcing steel details.

2. PIER: The round pier shown is an example only, and project-specific pier shapes may vary. For actual dimensions and requirements, see the Plans. The overall length and width of the split barrier system is governed by the project-specific pier dimensions, as defined in the Plans.

3. MULTIPLE PIERS: The parallel segment may be lengthened to accommodate multiple consecutive piers, with the approach and trailing tapers located 1 foot, measured longitudinally, upstream and downstream from the first and last piers, respectively.

MEDIAN BARRIER - 44 INCH HEIGHT SPLIT SECTION FOR PIER SHIELDING

NOTES: (See Section Views on Sheet 10 for All Longitudinal Steel Locations)
MEDIAN BARRIER - 44 INCH HEIGHT
SPLIT SECTION PIER SHIELDING - DETAILS

NOTES:

1. GENERAL: Work with the Plan and Elevation views on Sheet 9.

2. LONGITUDINAL REINFORCING CONTINUITY: Maintain all longitudinal steel reinforcing shown in Section C-C continuously into Section D-D (spliced where required). The additional longitudinal reinforcing shown in Section D-D does not require continuity into Section C-C, and it starts 3" from the construction joint or edge of concrete per the details shown on Sheet 9.

3. STIRRUP BARS: For the vertical and transverse reinforcement requirement shown, bar bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.
**SECTION A-A**
**BEGIN TRANSITION - OPTION 'A'**
MATCH SINGLE-SLOPE 38" HEIGHT MEDIAN BARRIER

**SECTION A-A**
**BEGIN TRANSITION - OPTION 'B'**
MATCH SINGLE-SLOPE 36" HEIGHT TRAFFIC RAILING (Bridge Applications)

**SECTION B-B**
**INTERMEDIATE SECTION OF LINEAR TRANSITION**

**SECTION C-C**
**END TRANSITION**
MATCH 32" HEIGHT F-SHAPE SECTION

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**NOTES:**

1. **GENERAL:** Construct the Connection Segment as required per the Plans to connect existing F-Shape sections to Single-Slope Median Barrier or Traffic Railing sections. Construct Option 'A' or 'B' as required to match the heights of the connecting sections.

2. **DOWELED JOINT:** Install Dowel Bars per the Dowel Details on Sheet 2.

3. **TRAFFIC RAILING CONNECTION:** For the Option 'B' connection, use a Doweled Joint per Sheet 2 and the additional Free End Reinforcing with reduced bar spacing per Sheet 3.

4. **STIRRUP BARS:** For the vertical and transverse reinforcement requirements shown, bar bending diagrams are not provided due to varying section dimensions. Use any combination of spliced reinforcing steel to position the reinforcement with the same cover, spacing, continuity, and equivalent strength shown herein, as approved by the Engineer.

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**ELEVATION**
(Reverse Direction Similar by Opposite Hand)
SECTION A-A
38" HEIGHT SHOULDER BARRIER
(See Sheet 13 for Reinforcing Steel Details)

NOTES:
1. BARRIER RUN SEGMENT: Either the 38" Height Shoulder Barrier or the differing Shoulder Barrier sections shown throughout the Index may be placed within this segment as required per the Plans.
2. SECTION VIEWS: For additional Views A-A and B-B, see Sheet 13.
3. DOWELED JOINTS: See the General Notes on Sheet 1 for usage of joint types. Place steel reinforcing with a longitudinal 3" cover adjacent to the joint face in the barrier. Use ASTM A36 smooth round bars with hot-dip galvanization. For the dowel connection into the first casting, the dowel may be cast-in-place for new concrete or placed into a 1½" x 13" (± 1") drilled hole for cured concrete. For drilled holes larger than 1½", secure the dowel with adhesive in accordance with Specification Section 416. No load testing is required.
4. TRAFFIC RAILING CONNECTIONS: Align the barrier and Traffic Railing faces and connect with the ⅛" Dowelled Joint.
5. GUARDRAIL CONNECTIONS: Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001 in conjunction with the 16'-0" End Segment for Guardrail shown herein.
6. CRASH CUSHION CONNECTIONS: Connect Crash Cushions per Index 544-001 in conjunction with the 3’-0" End Transition for Guardrail as shown herein.
7. FREE ENDS: When the barrier end does not terminate with a Traffic Railing Connection, Guardrail Connection, or Crash Cushion Connection as called for in the Plans, terminate in accordance with the Free End Reinforcing Note on Sheet 13.
NOTES:

1. GENERAL: Work with the Plan and Elevation Views on Sheet 12. The Section Option footings shown on Sheet 14 may be substituted where called for in the Plans.

2. FREE END REINFORCING: Where shown in the Plans, terminate the 38" height Barrier section with a transverse vertical end face. Reduce the spacing of Bars SV2 and SV3 to 6" for 5 Spaces, placed with 3" cover from the barrier's end face.

3. BAR BENDING DIAGRAMS: For additional details for bars SV2 and SV3, see the Bar Bending Diagrams on Sheet 22.

PLAN VIEW - END SEGMENT FOR GUARDRAIL CONNECTION
(Longitudinal Steel Not Shown for Clarity)
**FRONT-FLUSH SECTION** (Where Required For Barrier Inlet Locations)

Concrete Qty. = 0.26 CY/FT
Steel Qty. = 46.6 LB/FT

**RETAILING SECTION**

Concrete Qty. = 0.36 CY/FT
Steel Qty. = 55.3 LB/FT

**TRENCH FOOTING SECTION**

Concrete Qty. = 0.35 CY/FT
Steel Qty. = 46.2 LB/FT

**NOTES:**

1. **GENERAL:** Install the differing Section Options as required per the Plans.

2. **CONNECTIONS BETWEEN DIFFERENT SECTIONS:** Connect differing Shoulder Barrier sections using a continuous pour or Transverse Joint, where longitudinal steel that aligns within the adjacent section is maintained continuously between sections. Alternatively, a Doweled Joint may be used as shown on Sheet 12.

3. **FLUSH RETAINING SECTION COMBINATION:** Where Barrier Joints are required in retaining segments, install the Flush Section, except replace the 1'-0" General Heel with the 2'-0" Extended Heel as shown in the Retaining Section. Use longer lateral reinforcing bars of 2-1/2 length to maintain the cover shown.
1. GENERAL: See the applicable Notes on Sheet 14.
**PLAN - ROUND PIER EXAMPLE REAR-FLUSH SECTION**
(See Section View for All Longitudinal Steel Locations)

**PLAN - SQUARE PIER EXAMPLE REAR-FLUSH SECTION**
(See Section View for All Longitudinal Steel Locations)

**SHOULDER BARRIER - 38" HEIGHT REAR-FLUSH SECTION**
FOR REDUCED SETBACK PIER SHIELDING
(Design Speed ≤ 45 MPH)

**NOTE:**
1. **1. Piers:** The piers shown herein are example shapes only; see the plans for the project-specific dimensions. The details shown herein are minimum requirements for protection per the AASHTO LRFD requirements. For piers requiring protection, see Index 521-002.
**DESCRIPTION:**

1. Piers: The piers shown herein are example shapes only; see the Plans for the actual pier shapes. The details shown herein are only for use when piers do not require protection per the AASHTO LRFD requirements. For piers requiring protection, see Index 521-002.

**NOTE:**

**SHOULDER BARRIER - 44" HEIGHT REAR-FLUSH SECTION FOR REDUCED SETBACK PIER SHIELDING**
**SECTION A-A CURB & GUTTER BARRIER**

**SECTION C-C CURB & GUTTER BARRIER WITH DRAINAGE SLOT**

**ISOMETRIC VIEW CURB GUTTER BARRIER WITH DRAINAGE SLOT**

**DRAINAGE SLOT NOTES:**

1. **GENERAL:** Place 20" x 18" Drainage Slots at locations and/or spacing called for in the Plans.

2. **STEEL REINFORCEMENT CONFLICT:** When the Drainage Slot encounters a conflict with reinforcing steel, shift or cut the reinforcing steel to provide 20" x 18" of concrete cover for the reinforcing around the Drainage Slot. If cutting the vertical bars, maintain 8" bar spacing. If shifting the vertical bars, move the bars from the standard 8" spacing location to the closest end of the drainage slot and distribute additional vertical reinforcement evenly on each side of the Drainage Slot.

3. **DOWELED JOINTS:** See the General Notes on Sheet 1 for usage of joint types. Where required, install 3/8" Doweled Joints as defined on Sheet 12.

4. **TRAFFIC RAILING CONNECTIONS:** Align the barrier and Traffic Railing faces and connect with the 3/8" Dowel Joint per Sheet 12.

5. **GUARDRAIL CONNECTIONS:** Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001 in conjunction with 3/8" End Transition for Guardrail as shown herein.

6. **FREE ENDS:** When the barrier end does not terminate with a Traffic Railing connection or Guardrail connection as called for in the Plans, terminate the barrier in accordance with the Free End Reinforcing Note on Sheet 20.

**CURB AND GUTTER BARRIER NOTES:**

1. **SECTION VIEWS:** For additional Views A-A and B-B, see Sheet 20.

2. **EXPANSION JOINTS:** Place 10" with transverse expansion joints through the barrier and footing spaced at 100-foot maximum intervals. On both sides of each joint, use the Free End Reinforcing bar spacing per Sheet 20.

3. **DOWELED JOINTS:** See the General Notes on Sheet 1 for usage of joint types. Where required, install 3/8" Doweled Joints as defined on Sheet 12.

4. **TRAFFIC RAILING CONNECTIONS:** Align the barrier and Traffic Railing faces and connect with the 3/8" Dowel Joint per Sheet 12.

5. **GUARDRAIL CONNECTIONS:** Connect Guardrail using the Transition Connections to Rigid Barrier per Index 536-001 in conjunction with 3/8" End Transition for Guardrail as shown herein.

6. **FREE ENDS:** When the barrier end does not terminate with a Traffic Railing connection or Guardrail connection as called for in the Plans, terminate the barrier in accordance with the Free End Reinforcing Note on Sheet 20.
NOTES:
1. GENERAL: Work with the Plan and Elevation Views on Sheet 19.
2. FREE END REINFORCING: Where shown in the Plans, terminate the 38” Curb & Gutter Barrier section with a transverse vertical end face. Reduce the spacing of Bars SV2 and S54 to 6” for 5 Spaces, placed with 3” cover from the barrier’s end face.
3. BAR BENDING DIAGRAMS: For additional details for bars SV2 and S54, see the Bar Bending Diagrams on Sheet 19.

PLAN VIEW - END SEGMENT FOR GUARDRAIL CONNECTION
(Longitudinal Steel Not Shown for Clarity)

CURB AND GUTTER BARRIER - REINFORCING DETAILS

CONCRETE BARRIER
NOTES:

1. GENERAL: Install a Sloped End Treatment only where called for in the Plans, using either a 10'-0" length or 25'-0" length treatment as specified in the Plans. The 10'-0" length option is shown herein, while the 25'-0" length option requires additional trimmed Bars 5V2 & 5U4 at the same 9" longitudinal spacing.

2. BAR BENDING DIAGRAMS: For additional details on Bars 5V2 & 5U4, see the Bar Bending Diagrams on Sheet 22.
BILL OF REINFORCING STEEL

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NOTES:
1. Work with the Standard Bar Bending Details per Index 415-001.
2. All bar dimensions in the bending diagrams are out to out.