**Schematic Plan View - Opposing Lane Approach**

**Length of Advancement - Tapered End Transition (40 MPH or Less)**

**Design Notes:**

1. The minimum length of advancement for both near lane and opposing lane approaches is 20'.
2. For Design Speeds greater than 40 mph the Tapered End Transition is not permitted. See Index No. 400 for length of Advancement of guardrail or other project specific end treatments.

**Notes:**

- The Tapered End Transition should only be used when space is limited which precludes the use of a guardrail end treatment or crash cushion.

- **D** = Distance in feet from near edge of near approach traffic lane to face of traffic railing:
  - (a) for the back of hazard, when the hazard is located inside the clear zone or horizontal clearance;
  - (b) for the clear zone or horizontal clearance outer limits, when hazard extends to, or goes beyond the clear zone or horizontal clearance limits.

- For left side hazards on two way divided facilities, "D" is measured from the inside edge of the near approach traffic lane as shown above.

- **d** = Distance in feet from near edge of near approach traffic lane to face of traffic railing (at offset control point). For left side hazards on two way divided facilities, "d" is measured from the inside edge of the nearest opposing traffic lane as shown above.

**Design Speed**

**Length of Advancement, Ft. (X)**

<table>
<thead>
<tr>
<th>Design Speed (mph)</th>
<th>Length of Advancement, Ft. (X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 40</td>
<td>= 16 ( (D-d) )</td>
</tr>
</tbody>
</table>

**Design Speed (mph)**

- ≤ 40

**Notes:**

- The minimum length of advancement for both near lane and opposing lane approaches is 20'.
- For Design Speeds greater than 40 mph the Tapered End Transition is not permitted. See Index No. 400 for length of Advancement of guardrail or other project specific end treatments.

**CROSS REFERENCES:**

- For General Notes, Dowel Details, Expansion Dowel Details, Reinforcing Steel Notes and Reinforcing Steel Bending Diagram see Index No. 480.
CROSS REFERENCES:
For Section A-A, B-B and X-X see Sheet 4.

DETAIL "B"
TRANSITION TO NON-CURB APPROACH
(Reinforcing Not Shown For Clarity)
NOTES:
1. On approach end provide a Roadway Guardrail Transition, Index No. 402 (Sheet 16 - Scheme 1) or other site specific treatment. See Roadway Plans for limiting station of Roadway Guardrail Transition or other site specific treatment.
2. Provide Railing & Curb Base Transitions (as shown) if curb does not extend beyond end of Spread Footing Approach, see Roadway Plans. Railing End Transition & Railing & Curb Base Transitions may be omitted on trailing ends with no opposing traffic.

CROSS REFERENCES:
For Section A-A, C-C and X-X see Sheet 4.
SCHEME 1 - MODIFICATION FOR INDEX NO. 481, 482 AND 483 - SCHEME 1
RAILING END TREATMENT FOR PERPENDICULAR OR ANGLED WING WALLS WITH NARROW CURBS (SHOWN), WIDE CURBS AND INTERMEDIATE CURBS (SIMILAR)

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies and Bars 4C not shown for clarity)

Note:
** Match curb height of adjacent bridge and approach slab.

PARTIAL PLAN

CROSS REFERENCE:
For Section A-A see Sheet 4
For Expansion Dowel Assemblies and placement of Dowel Bars 6D Details see Index 480.
**Notes:**

1. Remove existing concrete along saw cut joints. Existing reinforcing steel may be cut at joint or extended into new concrete. Exposed existing reinforcing not encased in new concrete shall be removed 1" below existing concrete surface and grouted over.

2. Match curb height at adjoining existing end bent wing.

**CROSS REFERENCES:**

For Section A-A see Sheet 4.
For Section D-D see Sheet 5.
For Expansion Dowel Assembly and placement of Dowel Bars 6D Details see Index 480.
Existing Flared Wing Post to be removed to top of curb
Curb & portion of Approach Slab (when present, shown shaded) to be removed
Existing Approach Slab to be removed to top of curb
Bond Breaker along end bent wing wall only
Curb & portion of Approach Slab
Bars 4G (Typ.)
Bar 5F @ 8" spacing
Max. (Typ.) Clip bars as reqd. to maintain Cover
Bars 5E @ 8" spacing
Max. (Typ.) tied to Bars 5F (this bars minimally as required)
Bars 5S
Edge of Existing Approach Slab (Location Varies)
Final Riding Surface
Top of Curb
Bar 5S
Bars 5F @ 8" spacing
Max. (Typ.) Clip bars as reqd. to maintain Cover
Asphalt Overlay when present
Varies
3" Cover (Typ. ends)
Existing Approach Slab
3" Cover
2" Cover
Varies
Existing Flared Wing Post to be removed
to top of curb
Bond Breaker, 2 layers of 30#
Smooth Roofing Paper along joint
Construction Joint Permitted
Varies
10"
Varies
1" ± 2" Cover
Bars 5S (Typ.)
3" (Min.)
Existing End Bent Wing
Surrer Line 3/8" Chamfer 1'-3" Max. Spacing
Front Face of Backwall, Begin or End Bridge & Match Line (See Index No. 481, Sheet 3)

PARTIAL PLAN OF RAILING

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies and Bars 4C not shown for clarity)

SCHEME 3 - MODIFICATION FOR INDEX NO. 481 SCHEME 3
RAILING END TREATMENT FOR FLARED WING WALLS WITH NARROW CURBS

Note:
** Match curb height at adjoining existing end bent wing.

CROSS REFERENCES:
For Section A-A see Sheet 4.
For Section D-D see Sheet 5.
For Section F-F see Sheet 6.
For Expansion Dowel Assemblies Details and placement of Dowel Bars 6D see Index 480.

TRAFFIC RAILING - (VERTICAL FACE RETROFIT) SPREAD FOOTING APPROACH

INDEX NO. 484

7 of 10
PARTIAL PLAN OF RAILING

Bars 5E @ 8" spacing Max. (Typ.) tied to Bars 5F

Top of Curb

Final Riding Surface

Asphalt Overlay when present (Varies)

SCHEME 4 ~ MODIFICATION FOR INDEX NO. 482 SCHEME 2
RAILING END TREATMENT FOR PARALLEL CURBS AND WING WALLS WITH WIDE CURBS

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Existing Wing Post, Expansion Dowel Assemblies and Bars 4C not shown for clarity)

CROSS REFERENCES:
For Section A-A see Sheet 4
For Section D-D see Sheet 5.
For Section G-G see Sheet 7.
For Expansion Dowel Assemblies Details see Index 480.

TRAFFIC RAILING - (VERTICAL FACE RETROFIT)
SPREAD FOOTING APPROACH
SCHEME 7 — MODIFICATION FOR INDEX NO. 483 SCHEME 3
RAILING END TREATMENT FOR PARALLEL CURBS AND FLARED WING WALLS WITH INTERMEDIATE CURBS

PARTIAL PLAN OF RAILING

PARTIAL ELEVATION OF INSIDE FACE OF RAILING
(Expansion Dowel Assemblies and Bars 4C not shown for clarity)

Note:
** Match curb height at adjoining existing end bent wing.