GENERAL NOTES

1. WHERE THE CONCRETE BARRIER IS ADDED TO THE FACE OF EXISTING CONCRETE STRUCTURE, MATCH EXISTING WEEP HOLES.

2. EXPANSION JOINTS IN CONCRETE BARRIER SHALL BE LOCATED AT ALL DECK AND PRINCIPAL WALL JOINTS. EXPANSION JOINT FILLER MATERIAL SHALL BE THE SAME SIZE AS JOINT OF 1/2" MINIMUM.

3. HIDE VERTICAL ROADWAY OFFSET THAT 1" USE TYPE A.

4. PLACE BARRIER PERPENDICULAR TO SHOULDER GRADE, UNLESS INDICATED IN PLAN.

5. EXCEPT IN ANCHORS, VERTICAL REINFORCING STIRRUP NOT REQUIRED FOR ROADWAY OFFSETS LESS THAN 1' - 0".

6. FOR TYPE S32, TYPE S36, TYPE S42 AND TYPE S56 MONOLITHIC FOOTING OR DOWELED FOOTING 2 - #8 X 8" @ 2'- 0".

7. STAGGER LAPPING OF LONGITUDINAL STEEL. MINIMUM OVERLAP OF STEEL 2 FEET. BARS AT LAPS TO BE FIRMLY TIED OR CONNECTED.

8. 4000 PSI CONCRETE AIR ENTRAINMENT PER STANDARD SPECIFICATION 501.

9. WHEN SWITCHING BETWEEN SLIP FORM AND CAST-IN-PLACE OPERATIONS, EXTEND LONGITUDINAL STEEL 3 FEET BEYOND SLIP FORMING CUT-OFF POINT. EXPOSED STEEL INTO NEXT POURS REINFORCEMENT. LAPS TO BE FIRMLY TIED.

10. USE 3/4" BEVEL OR 1" RADIUS ON ALL EXPOSED SHARP EDGES UNLESS OTHERWISE NOTED.

11. 2" CLEAR COVER TYPICAL

12. COLD-JOINTS MAY BE USED BETWEEN ANCHOR INSTALLATIONS. WHEN A COLD JOINT IS NEEDED, 3 FEET OF LAP OF LONGITUDINAL STEEL IS REQUIRED. LAPS TO BE FIRMLY TIED.

13. IN TYPE S32, TYPE S36, TYPE S42 AND TYPE S56 NO ADDITIONAL VERTICAL STEEL IS NEEDED. IN TYPE S32A, TYPE S36A, TYPE S42A AND TYPE S56A REQUIRES VERTICAL STEEL. SEE OTHER DETAIL.

14. IN TYPE S32, TYPE S36, TYPE S42 AND TYPE S56 DEPTH OF FOOTING 10". IN TYPE S32A, TYPE S36A, TYPE S42A AND TYPE S56A MATCH TOTAL HEIGHT OF SINGLE SLOPE BARRIER RETAINING WALL.

15. FOR ALL BARRIER TYPES SHOWN, ANCHOR IS REQUIRED AT CONCRETE BARRIER ENDS AND AT INTERRUPTIONS IN CONCRETE BARRIER. ANCHOR MAY BE AS SHOWN ON DRAWING OR DETAILS SHOWN ON S.D.D. 14B33. ANCHORS INCIDENTAL TO CBSS.

16. CONCRETE PAD UNDER CBSS MAY BE PLACED INTEGRAL WITH BARRIER, PLACED SEPARATELY OR PLACED WITH CONCRETE SHOULDER AND SAWED FULL DEPTH. SAWING OF CONCRETE SHOULDER IS INCIDENTAL TO CONCRETE BARRIER-RELATED ITEMS. CONCRETE PAD MINIMUM HEIGHT IS 6 INCHES OR EQUAL TO THE DEPTH OF THE CONCRETE SHOULDER.

17. CONSTRUCTION JOINTS MAY BE ELIMINATED WHEN CONCRETE SHOULDER IS LESS THAN 10'.

18. SEE SDD 14B32-a FOR DETAILS TYPING BARRIER FOOTING TO ADJACENT CONCRETE.

19. PROVIDE A 1" DEEP, " Wide Contraction Joint in Barrier Footing and Barrier. Joint is to MATCH ADJACENT CONCRETE JOINTS. IF ADJACENT TO ASPHALT, CONTRACTION JOINT IS REQUIRED EVERY 18'.

SECTION A - A
GENERAL NOTES
1. INSTALL 1 INCH DIAMETER DRAIN PIPE EVERY 20 FEET OF CROSS SECTION
2. BETWEEN CONCRETE BARRIER WALLS FILL WITH FOUNDATION BACKFILL.
3. REINFORCING STEEL SHALL EXTEND CONTINUOUS THROUGH CONSTRUCTION JOINTS.
4. ADJUST HEIGHT OF CONCRETE BARRIER WALL ON LOW SIDE OF OFFSET OR SUPERELEVATED ROADWAYS TO PROVIDE LEVEL GRADE ACROSS TOP OF CONCRETE CAP.
5. IF FIXED OBJECT PROTECTION IS INSTALLED FIRST, USE COLD JOINTS. IF CBSS PLACED FIRST, USE EXPANSION JOINT.
6. USE NO. 3 BAR SPACED 12 INCHES CENTER TO CENTER (PLACED IN EACH DIRECTION) OR EQUIVALENT WIRE MESH.
7. CONCRETE PAD UNDER CBSS MAY BE PLACED INTEGRAL WITH BARRIER, PLACED SEPARATELY OR PLACED WITH CONCRETE SHOULDER AND SAWED FULL DEPTH. SAWING OF CONCRETE SHOULDER IS INCIDENTAL TO CONCRETE BARRIER BID ITEM.
8. CONSTRUCTION JOINTS MAY BE ELIMINATED WHEN CONCRETE SHOULDER IS LESS THAN 10 FT.
9. SEE SDD 13C1 FOR DETAILS TYING BARRIER FOOTING TO ADJACENT CONCRETE.

SECTION B - B
SECTION C - C
SECTION D - D

LARGE FIXED OBJECTS PROTECTION (TYPE S32, TYPE S36, TYPE S42, TYPE S56)

SMALL FIXED OBJECTS PROTECTION (TYPE S32, TYPE S36, TYPE S42, TYPE S56)

GENERAL NOTES
1. INSTALL 1 INCH DIAMETER DRAIN PIPE EVERY 20 FEET OF CROSS SECTION B - B. MINIMUM ONE DRAIN CAVITY.
2. BETWEEN CONCRETE BARRIER WALLS FILL WITH FOUNDATION BACKFILL.
3. REINFORCING STEEL SHALL EXTEND CONTINUOUS THROUGH CONSTRUCTION JOINTS.
4. ADJUST HEIGHT OF CONCRETE BARRIER WALL ON LOW SIDE OF OFFSET OR SUPERELEVATED ROADWAYS TO PROVIDE LEVEL GRADE ACROSS TOP OF CONCRETE CAP.
5. IF FIXED OBJECT PROTECTION IS INSTALLED FIRST, USE COLD JOINTS. IF CBSS PLACED FIRST, USE EXPANSION JOINT.
6. USE NO. 3 BAR SPACED 12 INCHES CENTER TO CENTER (PLACED IN EACH DIRECTION) OR EQUIVALENT WIRE MESH.
7. CONCRETE PAD UNDER CBSS MAY BE PLACED INTEGRAL WITH BARRIER, PLACED SEPARATELY OR PLACED WITH CONCRETE SHOULDER AND SAWED FULL DEPTH. SAWING OF CONCRETE SHOULDER IS INCIDENTAL TO CONCRETE BARRIER BID ITEM.
8. CONSTRUCTION JOINTS MAY BE ELIMINATED WHEN CONCRETE SHOULDER IS LESS THAN 10 FT.
9. SEE SDD 13C1 FOR DETAILS TYING BARRIER FOOTING TO ADJACENT CONCRETE.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER SINGLE SLOPE (CBSS)

PAGE 6 OF 6

720:

440:

144:

SECTION A - A
SECTION B - B
SECTION C - C
SECTION D - D
GENERAL NOTES
1. SAWING OF CONCRETE SHOULDER IS INCIDENTAL TO CONCRETE BARRIER BID ITEM.
   SEE SDD 13C18 FOR JOINT DEPTH AND WIDTH. CONCRETE PAD MINIMUM DEPTH IS
   6 INCHES, OR EQUAL TO THE DEPTH OF THE CONCRETE SHOULDER.
2. CONSTRUCTION JOINTS MAY BE ELIMINATED WHEN CONCRETE SHOULDER IS LESS THAN 10',
3. SEE SDD 13C1 FOR DETAILS TYING BARRIER FOOTING TO ADJACENT CONCRETE.

ELEVATION VIEW
TRANSITION TO CBSS CLASS A
(TYPE S32A, TYPE S36A, TYPE S42A, TYPE S56A)

PLAN VIEW
TRANSITION TO CBSS CLASS A
(TYPE S32A, TYPE S36A, TYPE S42A, TYPE S56A)

SECTION A - A
SECTION B - B
SECTION C - C
STEEL REINFORCEMENT DETAIL

DOUBLE COLD JOINT HEIGHT TRANSITION

BARRIER DIMENSIONS

<table>
<thead>
<tr>
<th>BARRIER HEIGHT</th>
<th>A INCHES</th>
<th>B INCHES</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>36</td>
<td>6 1/2</td>
<td>6 1/2</td>
</tr>
<tr>
<td>42</td>
<td>5 1/2</td>
<td>6 1/2</td>
</tr>
<tr>
<td>56</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

MULTIPLE HEIGHT TRANSITIONS MAY BE USED IN SEQUENCE TO GET TO APPROPRIATE HEIGHT.

USE COLD JOINT TO CONNECT MULTIPLE HEIGHT TRANSITIONS.

32 36 42

BARRIER HEIGHT INCHES

A INCHES

B INCHES

LENGTH OF DOUBLE COLD JOINT INCLUDED IN THE TOTAL LENGTH OF CBSS.

BARRIER BARS

<table>
<thead>
<tr>
<th>H₁</th>
<th>H₂</th>
<th>L*</th>
<th>NUMBER OF NO. 5 BARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>32&quot;</td>
<td>36&quot;</td>
<td>10' - 0&quot;</td>
<td>8</td>
</tr>
<tr>
<td>36&quot;</td>
<td>42&quot;</td>
<td>10' - 6&quot;</td>
<td>10</td>
</tr>
<tr>
<td>42&quot;</td>
<td>56&quot;</td>
<td>24' - 0&quot;</td>
<td>11</td>
</tr>
</tbody>
</table>

* LENGTH OF DOUBLE COLD JOINT INCLUDED IN THE TOTAL LENGTH OF CBSS.
GENERAL NOTES
1. THE NUMBER OF DRILL HOLES IS EQUAL TO THE NUMBER OF REBAR IN BARRIER (SEE OTHER DETAILS).
2. MINIMUM DEPTH OF DRILL HOLES IS 1' - 3".
3. DRILL HOLES TO BE A MINIMUM OF 4 INCHES FROM THE EDGE OF CONCRETE.
4. INSTALL EPOXY COATED NO. 5 BARS IN DRILL HOLES.
5. END ANCHORAGE MAY OR MAY NOT BE PRESENT ON EXISTING BARRIERS.
6. REMOVE THRIE BEAM ANCHORAGE AS SHOWN.

CONNECTION OF EXISTING SINGLE SLOPE CONCRETE BARRIER TO NEW SINGLE SLOPE CONCRETE BARRIER

ELEVATION VIEW OF CONCRETE BARRIER EXTENSION NEAR END ANCHORAGE

ELEVATION VIEW OF CONCRETE BARRIER EXTENSION NEAR THRIE BEAM TERMINAL

REMOVAL AREA OF 32" CONCRETE THRIE BEAM ANCHORAGE

REMOVAL AREA OF CONCRETE THRIE BEAM ANCHORAGE WITH HEIGHT GREATER THAN 32"

SAW CUT
PORTION OF THRIE BEAM ANCHORAGE TO BE REMOVED
FOOTING BELOW GROUND MAY REMAIN IN PLACE

CONCRETE BARRIER SINGLE SLOPE THRIE BEAM ANCHOR

EXISTING SINGLE SLOPE CONCRETE BARRIER WITH END ANCHORAGE
NEW SINGLE SLOPE CONCRETE BARRIER

SEE CONNECTION DETAIL

EXISTING SINGLE SLOPE CONCRETE BARRIER AND THRIE BEAM ANCHORAGE
NEW SINGLE SLOPE CONCRETE BARRIER

AREA REMOVED (SEE OTHER DETAILS IN STANDARD DETAIL DRAWING)

SAW CUT
PORTION OF THRIE BEAM ANCHORAGE TO BE REMOVED
FOOTING BELOW GROUND MAY REMAIN IN PLACE

EXISTING SINGLE SLOPE BARRIER TO REMAIN IN PLACE
EXISTING SINGLE SLOPE BARRIER TO BE REMOVED

SEE PLAN (MINIMUM OF 15"
SEE CONNECTION DETAILS

CONSTRUCTION JOINT AT SAW CUT

NO. 5 CONTINUOUS BARS

1' - 3" MIN. DRILL HOLE DEPTH

2' - 0" BAR OVERLAP

NO. 5 CONTINUOUS BARS

EXISTING SLOPE BARRIER
NEW SLOPE BARRIER

SEE CONNECTION DETAILS

EXISTING REBAR IN BARRIER

EXISTING REBAR IN BARRIER

FOOTING BELOW GROUND MAY REMAIN IN PLACE
PORTION OF THRIE BEAM ANCHORAGE TO BE REMOVED

SAW CUT
PORTION OF THRIE BEAM ANCHORAGE TO BE REMOVED
FOOTING BELOW GROUND MAY REMAIN IN PLACE

EXISTING SINGLE SLOPE CONCRETE BARRIER
NEW SINGLE SLOPE CONCRETE BARRIER

AREA REMOVED (SEE OTHER DETAILS IN STANDARD DETAIL DRAWING)

SAW CUT
PORTION OF THRIE BEAM ANCHORAGE TO BE REMOVED
FOOTING BELOW GROUND MAY REMAIN IN PLACE

EXISTING SINGLE SLOPE CONCRETE BARRIER
NEW SINGLE SLOPE CONCRETE BARRIER

AREA REMOVED (SEE OTHER DETAILS IN STANDARD DETAIL DRAWING)

RETROFIT OR REPAIR SINGLE SLOPE CONCRETE BARRIER

SAW CUT
PORTION OF THRIE BEAM ANCHORAGE TO BE REMOVED
FOOTING BELOW GROUND MAY REMAIN IN PLACE

EXISTING SINGLE SLOPE CONCRETE BARRIER
NEW SINGLE SLOPE CONCRETE BARRIER

AREA REMOVED (SEE OTHER DETAILS IN STANDARD DETAIL DRAWING)
END ANCHOR SINGLE SLOPE CONCRETE BARRIER

<table>
<thead>
<tr>
<th>BARRIER HEIGHT</th>
<th>B INCHES</th>
<th>NUMBER OF NO. 5 BARS EACH</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>36</td>
<td>15.5</td>
<td>5</td>
</tr>
<tr>
<td>42</td>
<td>17.5</td>
<td>10</td>
</tr>
<tr>
<td>56</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

STIRRUP BAR BENDING DETAIL

V1 BAR BENDING DETAIL

SECTION A - A

STIRUP BAR BENDING DETAIL
Concrete Barrier Single Slope (CBSS)

References:
- Standard Spec. 633
- FDM 11-45-30
- FHWA/CA/ESC-98/02 Vehicular Crash Tests of Slip-formed, Single Slope, Concrete Median Barrier
- FHWA Geometric and Safety Design Group Acceptance Letter BB-45
- 2006 CALTRANS Standard Plan Drawings A76A-F

Bid items associated with this drawing:
Bid items for single slope barrier and associated transitions are encoded as follows:

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>204.0157</td>
<td>Removing Concrete Barrier</td>
<td>LF</td>
</tr>
<tr>
<td>603.1100 - 1199</td>
<td>Concrete Barrier Type S (height)</td>
<td>LF</td>
</tr>
<tr>
<td>603.1200 - 1299</td>
<td>Concrete Barrier Type S (height) A</td>
<td>LF</td>
</tr>
<tr>
<td>603.2100 - 2199</td>
<td>Concrete Barrier Fixed Object Protection Type S (height)</td>
<td>LF</td>
</tr>
<tr>
<td>614.0200</td>
<td>Steel Thrie Beam Structure Approach</td>
<td>LF</td>
</tr>
<tr>
<td>614.0700</td>
<td>Sand Barrel Array</td>
<td>EACH</td>
</tr>
<tr>
<td>614.0800</td>
<td>Crash Cushions Permanent</td>
<td>EACH</td>
</tr>
<tr>
<td>614.0805</td>
<td>Crash Cushions Permanent Low Maintenance</td>
<td>EACH</td>
</tr>
<tr>
<td>614.0905</td>
<td>Crash Cushion Temporary</td>
<td>EACH</td>
</tr>
<tr>
<td>633.0500</td>
<td>Delineator Reflectors</td>
<td>EACH</td>
</tr>
<tr>
<td>633.1000</td>
<td>Delineator Barrier Wall</td>
<td>EACH</td>
</tr>
<tr>
<td>690.0150</td>
<td>Sawing Asphalt</td>
<td>LF</td>
</tr>
<tr>
<td>690.0250</td>
<td>Sawing Concrete</td>
<td>LF</td>
</tr>
</tbody>
</table>

Standardized Special Provisions associated with this drawing:

<table>
<thead>
<tr>
<th>STSP NUMBER</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td></td>
</tr>
</tbody>
</table>

Other SDDs associated with this drawing:
- SDD 8D2    Concrete Surface Drains Flume at Structures
- SDD 8D3    Concrete Surface Drains Drop Inlet Type at Structures
- SDD 13A3   Concrete Pavement Shoulder
- SDD 13C18  Concrete Pavement Joint Types
- SDD 14B20  Steel Thrie Beam Structure Approach
- SDD 14B33  Concrete Barrier Single Slope Thrie Beam Anchorages
**Design Notes:**

Sheets “a” through “d” and “f” are required to install new single slope concrete barrier. Sheet “e” is used when design requires the removal of single slope barrier and installing new single slope barrier for the situations shown. If the design requires removal not shown in Sheet “e” provide a construction detail drawing.

**Contact Person:**

Erik Emerson (608) 266-2842