<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>W-BEAM</td>
</tr>
<tr>
<td>2</td>
<td>W6 X 9 STEEL POST</td>
</tr>
<tr>
<td>3A</td>
<td>3A - 6&quot; x 12&quot; x 14&quot; OFFSET BLOCK</td>
</tr>
<tr>
<td>3B</td>
<td>3B - 6&quot; x 8&quot; x 14&quot; OFFSET BLOCK</td>
</tr>
<tr>
<td>4</td>
<td>SPICE - REQUIRES EIGHT(8) ¾&quot; GUARDRAIL BOLTS (L=1 ¼&quot;) WITH RECESS NUTS</td>
</tr>
<tr>
<td>5</td>
<td>W-BEAM TERMINAL CONNECTOR</td>
</tr>
<tr>
<td>6</td>
<td>¾&quot; GUARDRAIL BOLT (L=1 ¼&quot;) AND RECESS NUT</td>
</tr>
<tr>
<td>7A</td>
<td>7A - ¾&quot; GUARDRAIL BOLT (L=14&quot;) AND RECESS NUT</td>
</tr>
<tr>
<td>7B</td>
<td>7B - ¾&quot; GUARDRAIL BOLT (L=10&quot;) AND RECESS NUT</td>
</tr>
<tr>
<td>8</td>
<td>¾&quot; GUARDRAIL BOLT (L=10&quot;), STEEL WASHER, AND RECESS NUT</td>
</tr>
<tr>
<td>9</td>
<td>¾&quot; HIGH STRENGTH STRUCTURAL HEX BOLT (L=VARIES) AND HEX NUT</td>
</tr>
<tr>
<td>10</td>
<td>½&quot; HGR BOLT (L=VARIES), STEEL WASHER, AND HEX NUT</td>
</tr>
<tr>
<td>11</td>
<td>BEARING PLATE</td>
</tr>
</tbody>
</table>

**BARRIER LEGEND**

DelDOT

**RECOMMENDED**

**STANDARD NO.** B-L (2021)

**OF** 1

**APPROVED**

12/20/2021

12/1/2021
EDGE OF SHOULDER OR TRAVEL LANE

NO FIXED OBJECTS OR OBSTRUCTIONS

POST SPACING (SEE TABLE BELOW)

1-31 & 2-31 GUARDRAIL SECTION
SHOULDER APPLICATION

<table>
<thead>
<tr>
<th>TYPE</th>
<th>POST SPACING</th>
<th>CLEAR AREA BEHIND POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6'-3&quot;</td>
<td>4'-0&quot; MIN</td>
</tr>
<tr>
<td>2</td>
<td>3'-11&quot;</td>
<td>2'-4&quot; MIN</td>
</tr>
</tbody>
</table>

NOTES:
1. SEE STANDARD SPECIFICATION FOR OFFSET BLOCK MATERIALS.
4. H IS DEFINED AS THE MAXIMUM CURB HEIGHT FOR THE CURB/GUARDRAIL APPLICATION.
5. GUARDRAIL HEIGHT MEASURED FROM TOP OF CURB SHALL BE 31"-32". GUARDRAIL HEIGHT MEASURED FROM GROUND SURFACE DIRECTLY ADJACENT TO FACE OF RAIL SHALL BE NO MORE THAN 34".
6. GUARDRAIL BEHIND CURB IS BASED ON MASH CRASH TEST REPORT TRP-03-237-10.

POSTED SPEED | D | H
<45 MPH | 4'-0" MIN | 1'-0" [SEE NOTE 4] | 6" MAX
4'-0" MIN | 12'-0" MAX | 6" MAX

1-31 & 2-31 GUARDRAIL SECTION
BEHIND CURB APPLICATION

10'-1 OR FLATTER

CURB SHALL BE USED ONLY WHEN INDICATED ON THE PLANS (SEE NOTE 2)

DEPUTY DIRECTOR - DESIGN
12/08/2021
REVIEWED
12/08/2021
APPROVED
12/20/2021

CURB JOINTS TO BE LOCATED EVERY 5'.
ONLY WHEN INDICATED ON PLANS.
6" X 6" CONCRETE CURB TO BE USED.

TYPES 1-31, 2-31, AND 3-31 GUARDRAIL APPLICATIONS

B-1 (2021)
5.) Guardrail reflectors shall not be placed within the limits of the guardrail end treatment and throughout the length of the taper grading.

4.) If curb is present, depress the curb to a maximum height of 2" within the limits of the end treatment and throughout the length of the taper grading.

3.) The guardrail end treatment shall be installed as per the manufacturer's requirements.

2.) This detail was solely created to show the grading required for this type of guardrail end treatment and is applicable in the absence of specific grading requirements from the guardrail end treatment manufacturer.

1.) Flare the end treatment at 25:1 beginning 50'-0" from the end of the impact head, unless the construction plans or specifications specify a smaller flare.

NOTES:

15:1 taper grading

10:1 or flatter grading at hinge point

4:1 desirable slope

3:1 max slope

2'-0" (see note 1)

5'-0" (see note 1)

12/20/2021

Depress curb (max 2" height)

10:1 or flatter

Edge of pavement

50'-0" min

50'-0" limit of payment

75'-0"

Direction of traffic

Offset to barrier

(see note 1)

Offset to pavement

EDGE OF MAINTENANCE
Pavement

EDGE OF PAVEMENT

10:1 or flatter

MAX. SLOPE

SHOULDER

BEGINNING POST

IMPACT HEAD

TAPER MAINTENANCE
Pavement 10:1

TAPE GRADING 15:1

5'-0" min

TAPER WIDTH

5'-0" min

1'-0"

50'-0" limit of payment

= NO OBSTRUCTIONS IN SHaded AREA

+ NO OBSTRUCTIONS IN SHADeD AREA

12/08/2021

12/08/2021

12/08/2021

12/08/2021

12/08/2021

12/08/2021

12/08/2021

12/20/2021

12/20/2021

12/20/2021

12/20/2021

12/20/2021
50'-0' LIMIT OF PAYMENT

DEPRESSED CURB (MAX 2' HEIGHT)

NORMAL W BEAM GUARDRAIL

5:1 OR FLATTER

DIMENSION PER MANUFACTURER'S SPECIFICATIONS

105'-0"

DEPARTMENT HEAD

DEPUTY DIRECTOR - DESIGN

DATE

RATING

PLAN VIEW

SECTION A-A

NOTES:
1) FLARE SHALL BE BASED ON MANUFACTURER REQUIREMENTS. FLARE MAY BE PARABOLIC OR STRAIGHT BASED ON MANUFACTURER'S SPECIFICATIONS.
2) THIS DETAIL WAS SOLELY CREATED TO SHOW THE GRADING REQUIRED FOR THIS TYPE OF GUARDRAIL END TREATMENT AND IS APPLICABLE IN THE ABSENCE OF SPECIFIC GRADING REQUIREMENTS FROM THE GUARDRAIL END TREATMENT MANUFACTURER.
3) THE GUARDRAIL END TREATMENT SHALL BE INSTALLED AS PER THE MANUFACTURER'S REQUIREMENTS.
4) IF CURB IS PRESENT, DEPRESS THE CURB TO A MAXIMUM HEIGHT OF 2" WITHIN THE LIMITS OF THE END TREATMENT AND THROUGHOUT THE LENGTH OF THE TAPER GRADING.
5) GUARDRAIL REFLECTORS SHALL NOT BE PLACED WITHIN THE LIMITS OF THE GUARDRAIL END TREATMENT.
NOTES:

1. ALL W-BEAMS ARE 13'-0" IN LENGTH.
2. PLACE GUARDRAIL DELINEATORS IN ACCORDANCE WITH DETAIL B-13, SHEET 9.
3. POSTS 1 THROUGH 6 ARE TO BE TYPE 31 LONG, WOOD BREAKAWAY POSTS. POST 7 IS TO BE A W6x9, 6'-0" STEEL POST.
4. THE RAIL SHALL BE ATTACHED AT POSTS 1 THROUGH 6 WITH A 1/2" x 22" GUARDRAIL BOLT, STEEL WASHER, AND RECESS NUT.
5. CULVERT HEADWALL SHALL NOT EXTEND MORE THAN 2" ABOVE GRADE.
6. THERE SHALL BE A MINIMUM OF 12" FROM THE BACK OF POST TO THE CULVERT WINGWALLS.
7. IF CURB IS USED, IT SHALL BE A MAX 2" HEIGHT WITHIN THE LIMIT OF PAYMENT OF THE GUARDRAIL OVER CULVERT.
8. MASH COMPLIANT SYSTEM - FHWA ELIGIBILITY LETTER B-189
NOTES:
1). ADDITIONAL HOLES FOR ANCHOR PLATE SHALL BE DRILLED PRIOR TO GALVANIZING. (SEE STANDARD HARDWARE SHEET FOR HOLE SPACING INFORMATION).
2). PLACE A ½" WIDE GALVANIZED RETAINING TIE STRAP AROUND THE SHORT TIMBER BREAKAWAY POST AND TIMBER BEARING PLATE TO ENSURE THE PROPER ORIENTATION OF THE TIMBER BEARING PLATE.
3). IF CURB IS USED, EXTEND DEPRESSED CURB (MAX 2" HEIGHT) 50'-0" DOWNSTREAM OF END SECTION.
4). REFER TO DETAIL B-13, SHEET B OF 10 FOR PROPER TIMBER BEARING PLATE ORIENTATION.
5). MASH COMPLIANT SYSTEM - FHWA ELIGIBILITY LETTER B-256
6). THIS SYSTEM SHALL NOT BE USED WHERE END ON IMPACTS ARE EXPECTED. IT IS SOLELY DESIGNED TO ACT AS A DOWNSTREAM END ANCHOR.
1. Use this rail adjacent to a pedestrian access route.
2. Shop to fabricate all components of the rail including cutting and drilling.
3. Burr all exposed threaded hardware to ensure nuts cannot be removed.
4. Prior to galvanizing, shop to drill guardrail posts that rail brackets will be attached to.
5. Place rails spaced at rail support brackets using the same bolt to attach the rail to the bracket to secure the splice tube.
6. Only install rails to standard W-beam sections and at least one post away from the payment limits of the end treatment.
7. For Type 2-31 guardrail, bolt railing to every other post or at a spacing of 6'-3".
1. WHEN PCC CURB OR INTEGRAL PCC CURB AND GUTTER IS PLACED ADJACENT TO PORTLAND CEMENT CONCRETE PAVEMENT, CONSTRUCT THE JOINT AS PER THE LONGITUDINAL JOINT SEALANT DETAIL ON DETAIL P-2, SHEET 3. USE APPROVED JOINT FILLER TO SEAL. WORK TO BE PAID UNDER RESPECTIVE CURB AND GUTTER ITEM.
2. THE DEPRESSED CURB DIMENSIONS INCLUDING 1" LIP ON THIS SHEET ARE FOR USE AT ENTRANCES ONLY. FOR CURB DEPRESSIONS AT PEDESTRIAN CONNECTIONS, SEE NOTE 3.
3. AT PEDESTRIAN CONNECTIONS, DEPRESS CURB FLUSH WITH THE PAVEMENT (WITH NO LIP). SLOPE THE TOP OF THE CURB TO MATCH THE RUNNING SLOPE OF THE ADJACENT PEDESTRIAN CONNECTION.
4. DEPRESS CURB FLUSH WITH PAVEMENT OR ADJACENT AREA TO ALL CORNER RADIUS OF TRIANGULAR ISLANDS, TAPERING BACK TO FULL HEIGHT AT A RATE OF 4:1.
5. TAPER END OF CURB RUNS NOT PART OF AN ISLAND OR MEDIAN FLUSH WITH PAVEMENT OR ADJACENT AREA AT A RATE OF 12:1.
6. INSTALL TYPE IV POLYURETHANE-BONDED RECYCLED RUBBER EXPANSION MATERIAL BETWEEN THE FACE OF CURB AND EDGE OF PCC PAVEMENT.
INTEGRAL PCC CURB AND GUTTER
TYPE 3-2
INTEGRAL PCC CURB AND GUTTER
TYPE 3-4
INTEGRAL PCC CURB AND GUTTER
TYPE 3-8
INTEGRAL PCC CURB AND GUTTER
TYPE 3-6
NOTE:
1. When PCC curb or integral PCC curb and gutter is placed adjacent to Portland cement concrete pavement, construct the joint as per the longitudinal joint sealant detail on detail P-2, sheet 3 of 5. Use approved joint filler to seal. Work to be paid under respective curb and gutter item.
2. The depressed curb dimensions (including 1” lip) on this sheet are for use at entrances only. For curb dimensions at pedestrian connection, see note 3.
3. See detail C-1, sheet 3 for depressing at pedestrian connection.
4. Depress curb flush with pavement or adjacent area at leading edge of triangular islands, tapering back to full height at a slope of 4:1. See C-1, sheet 1 of 4 for typical section of taper at nose of median island.
5. Depress end of curb runs not part of an island or median flush with pavement or adjacent area at a slope of 12:1.
6. Install type IV polystyrene-bonded recycled rubber expansion material between the face of curb and edge of PCC pavement.

TYPICAL PCC CURB AND GUTTER SECTION
THIS DETAIL IS TO BE USED ONLY FOR THE SECTIONS OF CURB & GUTTER THAT ARE DIRECTLY IN FRONT OF THE PEDESTRIAN CONNECTIONS. REFER TO DETAIL C-1, SHEET 2 FOR TYPICAL CURB DIMENSIONS AND FOR DEPRESSING CURB AT ENTRANCES.

INTEGRAL PCC CURB AND GUTTER

TYPES 1-2 THRU 1-8

TYPES 3-2 THRU 3-8

NOTES:

1. WHEN PCC CURB OR INTEGRAL PCC CURB AND GUTTER IS PLACED ADJACENT TO PORTLAND CEMENT CONCRETE PAVEMENT, CONSTRUCT THE JOINT AS PER THE LONGITUDINAL JOINT SEALANT DETAIL ON DETAIL P-2, SHEET 3. USE APPROVED JOINT FILLER TO SEAL. WORK TO BE PAID UNDER RESPECTIVE CURB AND GUTTER ITEM.

2. DEPRESS CURB FLUSH WITH PAVEMENT WITH NO LIP. SLOPE THE TOP OF THE CURB TO MATCH THE RUNNING SLOPE OF THE ADJACENT PEDESTRIAN CONNECTION.

3. SEE TYPICAL CURB AND GUTTER SECTION DETAIL ON DETAIL C-1, SHEET 2 FOR PLACEMENT OF GAGE UNDER CURB AND GUTTER.

4. TRANSITION FROM STANDARD GUTTER SLOPE TO SLOPE SHOWN ON THIS DETAIL OVER A DISTANCE OF 5'-0".
PERPENDICULAR CURB RAMP
SEE SHEET 2 AND 3 FOR LAYOUT ALTERNATIVES

SECTION A-A

PARALLEL CURB RAMP
SEE SHEET 4 FOR LAYOUT ALTERNATIVES

SECTION B-B

*SEE NOTE 3

REQUIRED ELEMENT DIMENSIONS AND CRITERIA (APPLIES TO ALL SHEETS OF STANDARD C-2)

<table>
<thead>
<tr>
<th>PEDESTRIAN CONNECTION ELEMENT</th>
<th>CRITERIA</th>
<th>LIMITS FOR DESIGN AND LAYOUT</th>
<th>LIMITS FOR WORK ACCEPTANCE</th>
<th>RELATED NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAMP</td>
<td>WIDTH</td>
<td>5'-0&quot; MIN.</td>
<td>5'-0&quot; MIN.</td>
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</tr>
<tr>
<td></td>
<td>RUNNING SLOPE</td>
<td>7.5%</td>
<td>8.3% MAX.</td>
<td>SEE NOTE 1</td>
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<tr>
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<td>CROSS SLOPE</td>
<td>1.5%</td>
<td>2.0% MAX.</td>
<td>SEE NOTE 2</td>
</tr>
<tr>
<td></td>
<td>DIMENSION</td>
<td>5'-0&quot; X 5'-0&quot; MIN.</td>
<td>5'-0&quot; X 5'-0&quot; MIN.</td>
<td>SEE NOTE 6</td>
</tr>
<tr>
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<td>RUNNING SLOPE</td>
<td>1.5%</td>
<td>2.0% MAX.</td>
<td>SEE NOTE 3</td>
</tr>
<tr>
<td></td>
<td>RUNNING SLOPE</td>
<td>1.5%</td>
<td>5.0 MAX.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CROSS SLOPE</td>
<td>1.5%</td>
<td>2.0% MAX.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CROSS SLOPE</td>
<td>1.5%</td>
<td>5.0 MAX.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CLEART SPACE</td>
<td>1.5%</td>
<td>2.0% MAX.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CLEART SPACE</td>
<td>4'-0&quot; X 4'-0&quot;</td>
<td>4'-0&quot; X 4'-0&quot;</td>
<td>SEE NOTE 12</td>
</tr>
</tbody>
</table>

* CROSS SLOPE IS MEASURED PERPENDICULAR TO THE PRIMARY DIRECTION OF PEDESTRIAN TRAVEL.
** RUNNING SLOPE IS MEASURED PARALLEL TO THE PRIMARY DIRECTION OF PEDESTRIAN TRAVEL.
*** ALL SLOPES ARE MEASURED WITH RESPECT TO A LEVEL PLANE.

GENERAL PEDESTRIAN CONNECTION NOTES:
1) TO AVOID CHASING GRADE INDEFINITELY ON STEEP ROADWAYS, RAMP LENGTH IS NOT REQUIRED TO EXCEED 15'-0" REGARDLESS OF THE RESULTING RAMP RUNNING SLOPE.
2) ALL JOINTS AND GRADE BREAKS ARE TO BE CONSTRUCTED FLUSH.
3) TO CREATE A FLUSH TRANSITION TO THE STREET, THE CROSS SLOPE OF THE INDICATED ELEMENTS MAY EXCEED THE REQUIRED 2.0% MAXIMUM CROSS SLOPE. THE ELEMENT PERMITTED TO EXCEED THIS LIMITATION VARIES BY PEDESTRIAN CONNECTION TYPE. SEE THE CURRENT PEDESTRIAN ACCESSIBILITY STANDARDS MANUAL FOR ADDITIONAL INFORMATION ABOUT WHICH ELEMENTS MAY BE PERMITTED TO EXCEED THE 2.0% MAXIMUM. IN ALL CASES, THE CROSS SLOPE OF THE ELEMENT PERMITTED TO EXCEED THE 2.0% MAXIMUM IS NOT TO EXCEED THE SLOPE OF THE ADJACENT ROADWAY.
4) GRADE BREAKS AT THE TOP AND BOTTOM OF A RAMP, BLENDED TRANSITION, AND TURNING SPACE SHALL BE PERPENDICULAR TO THE RUNNING SPACE. GRADE BREAKS SHALL NOT BE LOCATED WITHIN THE RAMP, BLENDED TRANSITION, TURNING SPACE, OR DETECTABLE WARNING SURFACE.
5) WHEN ADJACENT TO GRASS, A 6'-0" RAMP IS REQUIRED FOR A MINIMUM OF 2'-0" ADJACENT TO THE PEDESTRIAN CONNECTION IN ACCORDANCE WITH M-3, SHEET 1. ALTERNATIVELY, A CURB AT THE BACK OF THE PEDESTRIAN PATH MAY BE INSTALLED AT DEPRESSED TURNING SPACES OR RAMP SEGMENTS IN LIEU OF PROVIDING A 6'-0" RAMP.
6) SEE PLANS FOR WIDTH. PEDESTRIAN CONNECTIONS THAT SERVE SHARED USE PATHS ARE TO PROVIDE A RAMP WIDTH AND TURNING SPACE WIDTH AS WIDE AS THE APPROACH SHARED USE PATH.
7) PROVIDE A TURNING SPACE AT LOCATIONS WHERE THE PRIMARY DIRECTION OF TRAVEL IS REQUIRED TO CHANGE IN ORDER TO ACCESS THE PEDESTRIAN CONNECTION IN ACCORDANCE WITH THESE SHEETS.
8) IN ALTERNATIONS, WHERE THE PEDESTRIAN CONNECTION WILL BE INTO AN EXISTING CROSS SLOPE THAT EXCEEDS 2.0%, PLACE A MINIMUM 5'-0" LONG TRANSITION SLAB IN THE DIRECTION OF PEDESTRIAN TRAVEL TO CONNECT THE NEW PEDESTRIAN CONNECTION TO THE EXISTING PEDESTRIAN PATH. THE TRANSITION SLAB SHALL NOT OVERLAP ANY OTHER REQUIRED PEDESTRIAN CONNECTION ELEMENT. THE CROSS SLOPE TRANSITION SHALL BE SPREAD EVENLY OVER THE SLAB TO MINIMIZE THE DEGREE OF WARPING. THE RATE OF CROSS SLOPE CHANGE IN THE TRANSITION AREA SHALL NOT EXCEED 3% PER LINEAR FOOT.
9) REFER TO THE DE MUTCD FOR DETAILS REGARDING THE LOCATION OF PEDESTRIAN PUSH BUTTONS.
10) PROVIDE FLARED SIDES ON PERPENDICULAR CURB RAMPS AND BLENDED TRANSITIONS WHERE THE RAMP OR BLENDED TRANSITION EDGE ADJACENT TO A NON-WALKABLE SURFACE. UNLESS APPROVED OTHERWISE BY THE ENGINEER, PROVIDE JOINTS BETWEEN THE FLARED SIDE AND THE ADJACENT WALKABLE SURFACE AND RAMPED SEGMENT. FLARED SIDES MAY BE SUBSTITUTED WITH APPROVAL OF THE ENGINEER WITH VERTICAL RETURNED CURBS OR A 4:1 CURB TAPER WITH ASSOCIATED GRADING ALONG THE RAMP WHERE THE RAMP ADJACENT TO A NON-WALKABLE SURFACE, OR WHERE THE ADJACENT RAMP SURFACE IS BLOCKED TO PEDESTRIAN TRAFFIC, THE RETURNED CURB MUST NOT AFFECT THE CLEAR WIDTH OF THE PEDESTRIAN ACCESS ROUTE AND SHALL BE FLUSH WITH THE PEDESTRIAN PATH AT TERMINATION.
11) LAYOUT JOINTS AND EXPANSION MATERIAL IN ACCORDANCE WITH M-3, SHEET 1 OF 1.
12) ALIGN THE PEDESTRIAN CONNECTION AND THE CROSSWALK SO THAT A 4'-0" X 4'-0" CLEAR SPACE AREA LOCATED BELOW THE BOTTOM GRADE BREAK OF CURB RAMPS AND BLENDED TRANSITIONS IS CONTAINED WHOLLY WITHIN THE CROSSWALK. ONLY DIAGONAL CURB RAMPS REQUIRE THAT THE CLEAR SPACE BE LOCATED OUTSIDE OF THE PARALLEL VEHICLE TRAVEL LANE AND THAT A SEGMENT OF CURB 2'-0" LONG MINIMUM IS LOCATED ON EACH SIDE OF THE DIAGONAL CURB RAMPS' FLARED SIDES AND BE WITHIN THE MARKED CROSSING.
13) WHERE PEDESTRIAN CONNECTIONS ARE LOCATED ON A RADIUS, THE REQUIRED DIMENSIONS ARE MEASURED PERPENDICULAR TO THE PEDESTRIAN CONNECTION ELEMENT AND NOT ALONG THE CURVE. SEE THE CURRENT DELDOT PAS MANUAL FOR ADDITIONAL INFORMATION.
PEDESTRIAN CONNECTION, TYPE 1: PERPENDICULAR CURB RAMPS

1. SEE C-2, SHEET 1 FOR GENERAL PEDESTRIAN CONNECTION NOTES AND ELEMENT REQUIREMENTS.
2. PERPENDICULAR CURB RAMPS HAVE A RAMPED SECTION THAT CUTS THROUGH THE CURB AT AN ANGLE. SEE THE CURRENT DELDOT PAS MANUAL FOR ADDITIONAL INFORMATION.
3. A SINGLE PERPENDICULAR CURB RAMP LOCATED ON THE APEX OF A CURB RETURN AND WHICH SERVES TWO SEPARATE CROSSWALKS IS CONSIDERED A DIAGONAL CURB RAMP. INSTALLATION OF A DIAGONAL CURB RAMP REQUIRES APPROVAL FROM THE DEPARTMENT’S OFFICE OF CIVIL RIGHTS.
4. LOCATE THE BACK OF PEDESTRIAN PATH IN A MANNER THAT ALLOWS FOR THE INSTALLATION OF A TURNING SPACE AT THE TOP OF THE PERPENDICULAR CURB RAMPS.
SINGLE AND DUAL APPROACH LAYOUT ALTERNATIVES

PEDESTRIAN CONNECTION, TYPE 2: PARALLEL CURB RAMPS

NOTES:
1. SEE C-2, SHEET 1 FOR GENERAL PEDESTRIAN CONNECTION NOTES AND ELEMENT REQUIREMENTS.
2. PARALLEL CURB RAMPS HAVE A RUNNING SLOPE THAT IS IN-LINE WITH THE DIRECTION OF SIDEWALK TRAVEL AND LOWERS THE SIDEWALK TO A TURNING SPACE WHERE A TURN IS MADE TO ENTER THE CROSSWALK. SEE THE CURRENT DELDOT PAS MANUAL FOR ADDITIONAL INFORMATION.
3. A SINGLE PARALLEL CURB RAMP THAT SERVES TWO SEPARATE CROSSWALKS REQUIRES APPROVAL FROM THE DEPARTMENT'S OFFICE OF CIVIL RIGHTS.
4. APPLICATIONS SHOWN AS DUAL APPROACHES CAN ALSO SUPPORT A SINGLE PEDESTRIAN PATH APPROACH AS WELL.

DUAL APPROACHES TO SINGLE STREET CROSSING

PEDESTRIAN CONNECTION, TYPE 2: PARALLEL CURB RAMPS

SINGLE AND DUAL APPROACH LAYOUT ALTERNATIVES

LEGEND

TURNING SPACE
TS
CROSSWALK STRIPING

FLARED SIDE

LIMIT OF 6" MIN. SIDEWALK
OVER 6" GABC

DETECTABLE WARNING SURFACE

TRIANGULAR AREA

BLENDED TRANSITION

NON-WALKABLE SURFACE

CURB (TYPE VARIES, SEE CONSTRUCTION PLAN SHEETS)

SIDEWALK (SEE M-3)

NOTE 5 (TYP.)
SEE C-2 SHEET 1, NOTE 5 (TYP.)

SIDEWALK (SEE M-3)

NOTE 5 (TYP.)
SEE C-2 SHEET 1, NOTE 5 (TYP.)

SIDEWALK (SEE M-3)

DUAL APPROACHES ON CURVED SECTION

DUAL APPROACHES ON TANGENT SECTION

SINGLE APPROACH PARALLEL CURB RAMP

PEDESTRIAN CONNECTION, TYPE 2: PARALLEL CURB RAMPS

SINGLE AND DUAL APPROACH LAYOUT ALTERNATIVES

DelDOT

RECOMMENDED

STANDARD NO. C-2 (2021)
SHT. 4 OF 7

APPROVED

03/07/2022
03/20/2022
06/20/2020
DUAL STREET CROSSINGS WITH SHARED TURNING SPACE

NOTES:
1. SEE C-2, SHEET 1 FOR GENERAL PEDESTRIAN CONNECTION NOTES AND ELEMENT REQUIREMENTS.
2. COMBINATION PEDESTRIAN CONNECTIONS UTILIZE A PARALLEL CURB RAMP TO LOWER THE PEDESTRIAN PATH TO A MID TURNING SPACE AND THEN A SHORT PERPENDICULAR CURB RAMP TO CONNECT THE TURNING SPACE TO THE CROSSWALK. SEE THE CURRENT DELDOT PAS MANUAL FOR ADDITIONAL INFORMATION.
3. A SINGLE COMBINATION CURB RAMP LOCATED ON THE APEX OF A CURB RETURN WHICH SERVES TWO SEPARATE CROSSWALKS IS CONSIDERED A DIAGONAL CURB RAMP. INSTALLATION OF A DIAGONAL CURB RAMP REQUIRES APPROVAL FROM THE DEPARTMENT'S OFFICE OF CIVIL RIGHTS.
4. APPLICATIONS SHOWN AS DUAL APPROACHES CAN ALSO SUPPORT A SINGLE PEDESTRIAN PATH APPROACH AS WELL.

COMBINATION CURB RAMP ON CURVE

COMBINATION CURB RAMP ON TANGENT
DUAL STREET CROSSINGS WITH SHARED TURNING SPACE

NOTES:

1. SEE C-2, SHEET 1 FOR GENERAL PEDESTRIAN CONNECTION NOTES AND ELEMENT REQUIREMENTS.

2. COMBINATION PEDESTRIAN CONNECTIONS UTILIZE A PARALLEL CURB RAMP TO LOWER THE PEDESTRIAN PATH TO A MID TURNING SPACE AND THEN A SHORT PERPENDICULAR CURB RAMP TO CONNECT THE TURNING SPACE TO THE CROSSWALK. SEE THE CURRENT DELDOT PAS MANUAL FOR ADDITIONAL INFORMATION.

3. A SINGLE COMBINATION CURB RAMP LOCATED ON THE APEX OF A CURB RETURN WHICH SERVES TWO SEPARATE CROSSWALKS IS CONSIDERED A DIAGONAL CURB RAMP. INSTALLATION OF A DIAGONAL CURB RAMP REQUIRES APPROVAL FROM THE DEPARTMENT'S OFFICE OF CIVIL RIGHTS.

4. APPLICATIONS SHOWN AS DUAL APPROACHES CAN ALSO SUPPORT A SINGLE PEDESTRIAN PATH APPROACH AS WELL.

PEDESTRIAN CONNECTION, TYPE 2: COMBINATION CURB RAMPS

SINGLE AND DUAL APPROACH LAYOUT ALTERNATIVES
NOTES:
1. SEE C-2, SHEET 1 FOR GENERAL PEDESTRIAN CONNECTION NOTES AND ELEMENT REQUIREMENTS.
2. PERPENDICULAR AND PARALLEL RAMP CONFIGURATIONS ARE PREFERRED TO DEPRESSED CORNERS. DEPRESSED CORNERS SHOULD ONLY BE USED WHERE SITE CONDITIONS MAKE THEM A MORE APPROPRIATE OPTION, OR WHERE PERPENDICULAR OR PARALLEL RAMPS CANNOT BE INSTALLED DUE TO A PHYSICAL SITE CONSTRAINT. SEE THE CURRENT DELDOT PAS MANUAL FOR ADDITIONAL INFORMATION.
3. A TURNING SPACE IS NOT REQUIRED AT THE TOP OF THE RAMP WHEN NO TURNING MOVEMENT IS REQUIRED TO ENTER OR EXIT THE RAMP.

PEDESTRIAN CONNECTION, TYPE 4: DEPRESSED CORNERS

SINGLE APPROACH DEPRESSED CORNER

DelDOT
03/07/2022
RECOMMENDED

03/20/2022
APPROVED

STANDARD NO. C-2 (2021) SHT. 6 OF 7

03/07/2022
03/20/2022
06/20/2020
PEDESTRIAN CONNECTION, TYPE 5

PEDESTRIAN CONNECTION TYPE 5 NOTES:

1. SEE C-2, SHEET 1 FOR GENERAL PEDESTRIAN CONNECTION NOTES AND ELEMENT REQUIREMENTS.
2. A CUT-THROUGH LEVEL WITH THE STREET IS THE PREFERRED TREATMENT FOR ISLANDS. RAMPS OR BLENDED TRANSITIONS CAN BE USED WHERE THE ISLAND IS OF SUFICIENT SIZE TO ACCOMMODATE THEM. PROVIDE POSITIVE DRAINAGE FOR EITHER TREATMENT.
3. A TURNING SPACE IS REQUIRED TO BE PLACED BETWEEN THE TOP OF RAMPS AND PEDESTRIAN PATH WIDTH THROUGH THE MEDIAN SHOULD MATCH THE WIDTH OF THE PEDESTRIAN ACCESS ROUTE WHICH IT CONNECTS. EXPAND THE ENTIRE PEDESTRIAN PATH WIDTH THROUGH THE MEDIAN BY 2'-0" UP TO A WIDTH OF 10'-0" AT LOCATIONS WHERE A PEDESTRIAN PUSHBUTTON IS TO BE PLACED.
4. THE CROSS SLOPE IS PERMITTED TO MATCH THAT OF THE ADJACENT STREET. LOCATIONS THAT REQUIRE A CROSS SLOPE TRANSITION SHALL TRANSITION THE CROSS SLOPE UNIFORMLY AT A RATE NOT TO EXCEED 3.0% PER LINEAR FOOT.
5. THE DETECTABLE WARNING SURFACE SHALL EXTEND A MINIMUM OF 2'-0" IN THE DIRECTION OF PEDESTRIAN TRAVEL AND EXTEND THE FULL WIDTH OF THE DEPRESSED CURB.
6. THE DETECTABLE WARNING SURFACE SHALL NOT BE PLACED ACROSS A GRADE BREAK.
7. WHERE THERE IS NO DEPRESSED CURB AT A MEDIAN CUT-THROUGH OF PEDESTRIAN CONNECTION, INSTALL THE DETECTABLE WARNING SURFACE A MINIMUM OF 8" FROM THE PAVEMENT EDGE.
8. THE DETECTABLE WARNING SURFACE MAY BE OMITTED WITH APPROVAL OF THE ENGINEER AT CUT-THROUGH LOCATIONS WHERE THE DETECTABLE WARNING SURFACE WILL BE SEPARATED BY 2'-0" OR LESS.

DETECTABLE WARNING SURFACE PLACEMENT FOR PERPENDICULAR CURB RAMPS

DETECTABLE WARNING SURFACE NOTES:

1. THE DETECTABLE WARNING SURFACE SHALL EXTEND A MINIMUM OF 2'-0" IN THE DIRECTION OF PEDESTRIAN TRAVEL AND EXTEND THE FULL WIDTH OF THE DEPRESSED CURB.
2. THE DETECTABLE WARNING SURFACE SHALL NOT BE PLACED ACROSS A GRADE BREAK.
3. WHERE THERE IS NO DEPRESSED CURB AT A MEDIAN CUT-THROUGH OF PEDESTRIAN CONNECTION, INSTALL THE DETECTABLE WARNING SURFACE A MINIMUM OF 8" FROM THE PAVEMENT EDGE.
4. THE DETECTABLE WARNING SURFACE MAY BE OMITTED WITH APPROVAL OF THE ENGINEER AT CUT-THROUGH LOCATIONS WHERE THE DETECTABLE WARNING SURFACE WILL BE SEPARATED BY 2'-0" OR LESS.
5. PLACE DETECTABLE WARNING SURFACES AS FOLLOWS:
   A) PERPENDICULAR CURB RAMPS - SEE ABOVE FIGURES FOR PERPENDICULAR CURB RAMP APPLICATIONS WHERE D IS LESS THAN OR EQUAL TO 5'-0", PLACE THE DETECTABLE WARNING SURFACE PERPENDICULAR TO THE RAMP AT THE BOTTOM GRADE BREAK, WHERE D IS GREATER THAN 5'-0", PLACE THE BACK OF CURB.
   B) PARALLEL CURB RAMPS - PLACE AT THE BACK OF CURB ALONG THE ENTIRE LENGTH OF THE DEPRESSED CURB.
   C) DEPRESSED CORNERS - PLACE AT THE BACK OF CURB ALONG THE ENTIRE LENGTH OF THE DEPRESSED CURB.
ENTRANCES

1. ENTRANCE WITHOUT SIDEWALK
2. ENTRANCE WITH SIDEWALK AND GRASS STRIP
3. ENTRANCE WITH SIDEWALK AND NO GRASS STRIP

ENTRANCE WITHOUT SIDEWALK
- PCC SIDEWALK
- PCC 6"

ENTRANCE WITH SIDEWALK AND GRASS STRIP
- JOINT
- EXPANSION MATERIAL

ENTRANCE WITH SIDEWALK AND NO GRASS STRIP
- JOINT
- EXPANSION MATERIAL

NOTES:
1. A MAXIMUM SIDEWALK RUNNING SLOPE OF 4.5% IS PREFERRED WITH ALLOWANCE TO FOLLOW THE ADJACENT ROAD GRADES.
2. PROVIDE A SIDEWALK RUNNING SLOPE OF 4.5% LEADING TO THE DRIVEWAY APRON. THE LENGTH OF THE SLOPED SEGMENT LEADING TO THE DRIVEWAY APRON MAY BE LIMITED TO 15'-0" WHEN A 4.5% RUNNING SLOPE CREATES A GRADE CHASING SCENARIO.

SCALE: NTS

DATE: 12/03/2021

RECOMMENDED
STANDARD NO. C-3 (2021)
SHT. 1 OF 1
APPROVED

DelDOT

ENGINEERING SUPPORT

DATE: 12/03/2021

REVIEWED

DATE: 12/03/2021

CHIEF ENGINEER
DEPUTY DIRECTOR - DESIGN

DATE: 12/07/2021

DATE: 12/07/2021

DATE: 12/07/2021
1. WHEN A GRASS STRIP IS PRESENT BETWEEN THE BACK OF CURB AND SIDEWALK, THE SIDEWALK PORTION OF THIS STRUCTURE MAY BE PRECAST. HOWEVER, WHEN THE SIDEWALK IS DIRECTLY BEHIND THE CURB, USE CAST-IN-PLACE CONSTRUCTION.
2. SIDEWALK WIDTHS LESS THAN SHOWN ON THIS SHEET REQUIRE DEPARTMENT APPROVAL. SEE PEDESTRIAN ACCESSIBILITY STANDARDS FOR MORE GUIDANCE.
3. OVER THE CONCRETE SPILLWAY, USE A SLAB WIDTH 12' WIDER THAN THE SIDEWALK WIDTH AND USE A 2'-0" CONCRETE APRON APPROACH. WHEN NOT ADJACENT TO CURB, EXTEND THE PATH AN ADDITIONAL 1'-0" IN WIDTH TOWARD THE BACK OF THE CURB USING SAME FLARE RATES AND DIMENSIONS AS SHOWN AT THE BACK OF SIDEWALK.
Curb Retaining Wall Section

For H greater than 2'-6" but less than or equal to 2'-6".

Portland Cement Concrete (4000 PSI Min)

2" Minimum (Typ. RW02E & RW03E)

2'-0" Min Sidewalk

See Note 15

MATCH EXISTING SLOPE UP TO A MAX OF 16.7%

FOR M BETWEEN 2'-6" AND 3'-0"

Reinforcement Details

When H is greater than 2'-6", cast the curb retaining walls in place. When H is greater than 12" and less than 2'-6", the walls can be either precast or cast-in-place.

3. Chamfer edges 1/2" at the top of wall. Place a 1/2" round edge at the front of sidewalk.

4. The retaining wall has been designed to resist earth pressure. Additional reinforcement may be required if any surcharge is applied behind the retaining wall within a distance equal to 2 times H and would require an approved shop drawing.

5. Minimum bar cover is 2" unless otherwise specified on this sheet.

6. Bend the RW02E and RW03E bars into one continuous U-shaped bar.

7. Bend the RW02E bars into one continuous U-shaped bar.

8. See detail M-3 for sidewalk details and notes, including construction joints and expansion material.

9. Do not place RW02E and RW03E bars through expansion joints. Stop reinforcement and maintain minimum bar cover as specified in previous notes.

10. The toewall can optionally be placed at midpoint of the sidewalk.

11. All reinforcing steel must be epoxy coated.

12. If a curb is constructed adjacent to the structure, coat the front face of the sidewalk/toewall with an approved bond breaker agent prior to the placement of concrete for the curb.

13. For curb retaining walls where H is 12" or less, a modified P.C.C. curb type B can be used.

14. Curb has been omitted from these details for clarity purposes. For installations where the toewall is placed at the edge of the sidewalk, the toewall is not a replacement for curb.

15. The minimum sidewalk width when a buffer strip is provided between the edge of pavement and the sidewalk is 5'. The minimum sidewalk width when a buffer strip is not provided is 6'. Applications narrower than 5'-0" must be approved by the DelDOT Bridge Section. Refer to the current pedestrian accessibility standards manual on additional guidance on sidewalk widths.

16. Applications narrower than 5'-0" must be approved by the DelDOT Bridge Section. Refer to the current pedestrian accessibility standards manual on additional guidance on sidewalk widths.

17. The toewall retaining wall details are for quick field changes with approval of the engineer. Modular block walls or any other small retaining walls are the preferred choice during plan development.

18. The toewall has been designed to resist earth pressure. Additional reinforcement may be required if any surcharge is applied behind the retaining wall within a distance equal to 2 times H and would require an approved shop drawing.

19. Minimum bar cover is 2" unless otherwise specified on this sheet.

20. Bend the RW02E and RW03E bars into one continuous U-shaped bar.

21. Bend the RW02E bars into one continuous U-shaped bar.

22. See detail M-3 for sidewalk details and notes, including construction joints and expansion material.

23. Do not place RW02E and RW03E bars through expansion joints. Stop reinforcement and maintain minimum bar cover as specified in previous notes.

24. The toewall can optionally be placed at midpoint of the sidewalk.

25. All reinforcing steel must be epoxy coated.

26. If a curb is constructed adjacent to the structure, coat the front face of the sidewalk/toewall with an approved bond breaker agent prior to the placement of concrete for the curb.

27. For curb retaining walls where H is 12" or less, a modified P.C.C. curb type B can be used.

28. Curb has been omitted from these details for clarity purposes. For installations where the toewall is placed at the edge of the sidewalk, the toewall is not a replacement for curb.

29. The minimum sidewalk width when a buffer strip is provided between the edge of pavement and the sidewalk is 5'. The minimum sidewalk width when a buffer strip is not provided is 6'. Applications narrower than 5'-0" must be approved by the DelDOT Bridge Section. Refer to the current pedestrian accessibility standards manual on additional guidance on sidewalk widths.

Curb Retaining Wall Section

For H greater than 2'-6" but less than or equal to 2'-6".

Portland Cement Concrete (4000 PSI Min)

2" Minimum (Typ. RW02E & RW03E)

2'-0" Min Sidewalk

See Note 15

MATCH EXISTING SLOPE UP TO A MAX OF 16.7%

For M between 2'-6" and 3'-0"

Reinforcement Details

When H is greater than 2'-6", cast the curb retaining walls in place. When H is greater than 12" and less than 2'-6", the walls can be either precast or cast-in-place.

3. Chamfer edges 1/2" at the top of wall. Place a 1/2" round edge at the front of sidewalk.

4. The retaining wall has been designed to resist earth pressure. Additional reinforcement may be required if any surcharge is applied behind the retaining wall within a distance equal to 2 times H and would require an approved shop drawing.

5. Minimum bar cover is 2" unless otherwise specified on this sheet.

6. Bend the RW02E and RW03E bars into one continuous U-shaped bar.

7. Bend the RW02E bars into one continuous U-shaped bar.

8. See detail M-3 for sidewalk details and notes, including construction joints and expansion material.

9. Do not place RW02E and RW03E bars through expansion joints. Stop reinforcement and maintain minimum bar cover as specified in previous notes.

10. The toewall can optionally be placed at midpoint of the sidewalk.

11. All reinforcing steel must be epoxy coated.

12. If a curb is constructed adjacent to the structure, coat the front face of the sidewalk/toewall with an approved bond breaker agent prior to the placement of concrete for the curb.

13. For curb retaining walls where H is 12" or less, a modified P.C.C. curb type B can be used.

14. Curb has been omitted from these details for clarity purposes. For installations where the toewall is placed at the edge of the sidewalk, the toewall is not a replacement for curb.

15. The minimum sidewalk width when a buffer strip is provided between the edge of pavement and the sidewalk is 5'. The minimum sidewalk width when a buffer strip is not provided is 6'. Applications narrower than 5'-0" must be approved by the DelDOT Bridge Section. Refer to the current pedestrian accessibility standards manual on additional guidance on sidewalk widths.

16. Applications narrower than 5'-0" must be approved by the DelDOT Bridge Section. Refer to the current pedestrian accessibility standards manual on additional guidance on sidewalk widths.

17. The toewall retaining wall details are for quick field changes with approval of the engineer. Modular block walls or any other small retaining walls are the preferred choice during plan development.

18. The toewall has been designed to resist earth pressure. Additional reinforcement may be required if any surcharge is applied behind the retaining wall within a distance equal to 2 times H and would require an approved shop drawing.

19. Minimum bar cover is 2" unless otherwise specified on this sheet.

20. Bend the RW02E and RW03E bars into one continuous U-shaped bar.

21. Bend the RW02E bars into one continuous U-shaped bar.

22. See detail M-3 for sidewalk details and notes, including construction joints and expansion material.

23. Do not place RW02E and RW03E bars through expansion joints. Stop reinforcement and maintain minimum bar cover as specified in previous notes.

24. The toewall can optionally be placed at midpoint of the sidewalk.

25. All reinforcing steel must be epoxy coated.

26. If a curb is constructed adjacent to the structure, coat the front face of the sidewalk/toewall with an approved bond breaker agent prior to the placement of concrete for the curb.

27. For curb retaining walls where H is 12" or less, a modified P.C.C. curb type B can be used.

28. Curb has been omitted from these details for clarity purposes. For installations where the toewall is placed at the edge of the sidewalk, the toewall is not a replacement for curb.

29. The minimum sidewalk width when a buffer strip is provided between the edge of pavement and the sidewalk is 5'. The minimum sidewalk width when a buffer strip is not provided is 6'. Applications narrower than 5'-0" must be approved by the DelDOT Bridge Section. Refer to the current pedestrian accessibility standards manual on additional guidance on sidewalk widths.
NORMAL GUTTER SLOPE
MIN. 14"

NORMAL ROADWAY CROSS SLOPE
MIN. 4"

OUTSIDE OF DRAINAGE INLET BOX +3'-0"
44" (TYP.)

STANDARD INLET BOX, SEE D-4, 1 OF 1

COVERSLLAB WIDTH
S501
8"

NOTE:
1. MINIMUM BOX SIZE TO BE 34" x 24".
2. FOR PIPE OPENINGS IN THE FRONT WALL, SHIFT THE PIPE HORIZONTALLY TO AVOID INTERFERENCE WITH THE STEPS. IT MAY BE NECESSARY TO USE A LARGER BOX TO AVOID CONFLICT BETWEEN STEPS AND PIPE OPENING.
3. SEE D-5, SHEET 3 OF 5, FOR S501 BAR DIAGRAM.
4. THE REBAR IN THE HEAD IS PREFERRED TO BE ONE CONTINUOUS PIECE, HOWEVER, IF MULTIPLE PIECES ARE TO BE USED, PROVIDE A 12" MINIMUM LAP AND THE TOTAL LENGTH OF REBAR AS NOTED ON THIS DETAIL.
NOTES:

1. USE CLASS C BEDDING UNLESS OTHERWISE INDICATED.
2. FOR CLASS A BEDDING, IMBED PIPE IN CONCRETE 6" FOR PIPES SMALLER THAN 24" I.D., 10" FOR PIPES 24" TO 60", AND FOR PIPES LARGER THAN 60" SEE PROJECT DETAILS.
3. USE IN SITU MATERIAL AS APPROVED BY THE ENGINEER OR AS PER MANUFACTURER REQUIREMENTS.
4. USE CLASS B CONCRETE FOR CONCRETE CUTOFF WALLS, PRECAST AS DIRECTED BY THE ENGINEER.

CLASS A PIPE BEDDING

CLASS C PIPE BEDDING

PIPE BEDDING

END SECTIONS FOR CONCRETE PIPE
### GAGE GALV. WIRE TIES

**FASTEN WITH** 5 CLAMPS OR
H - 2.27 LBS./LIN. FT.,
INTERMEDIATE OR LINE POST:
12" DIA. (3.65 LBS./LIN. FT.)

**TERMINAL POST:** 2½" O.D.
(3.65 LBS./LIN. FT.)

**ALTERNATE METHODS OF SECURING VERTICAL**
STAY WIRES TO THE HORIZONTAL WIRES OF THE FABRIC.

**STRETCH FENCE TO TERMINAL POST**
(3.65 LBS./LIN. FT.)

**CONCRETE FOOTER**

**ANCHOR PLATE**

**DIAGONAL BRACE:** 1½" O.D.
(2.27 LBS./LIN. FT.)
LENGTH 7'-6".

**SEE DETAIL 'A'**
1. The minimum sidewalk width when a buffer strip is provided between the edge of pavement and the sidewalk is 5'-0". The minimum sidewalk width when a buffer strip is not provided is 6'-0".

2. A 6:1 grade is required for a minimum of 2'-0" immediately adjacent to the shared use path or sidewalk.

3. For sidewalks, place construction joints every 5'-0" in accordance with Section 705.3.

4. For concrete shared-use paths, place construction joints every 10'-0".

5. Place expansion material in accordance with Section 701.3.

6. When existing obstructions (fire hydrant, utility pole, etc.) are located in the sidewalk, maintain a minimum width of 32" and maximum length constriction of 24".

7. Not to exceed 4.5% or adjacent road grade.

NOTE: 1. Place expansion material in accordance with Section 701.3.

2. Place expansion material in accordance with Section 701.3.

3. For concrete shared-use paths, place construction joints every 10'-0" in accordance with Section 705.3.

4. Place expansion material in accordance with Section 701.3.

5. When existing obstructions (fire hydrant, utility pole, etc.) are located in the sidewalk, maintain a minimum width of 32" and maximum length constriction of 24".

6. Not to exceed 4.5% or adjacent road grade.
BUS STOP PAD, TYPE 1

* - TO BE USED WHEN THE PAD IS PLACED BEHIND CURB AND INCLUDES A SIDEWALK WITHOUT A GRASS STRIP

BUS STOP PAD, TYPE 2

* - TO BE USED WHEN THE PAD IS PLACED BEHIND CURB AND INCLUDES A SIDEWALK WITH A GRASS STRIP

BUS STOP PAD, TYPE 3

* - TO BE USED WHEN THE PAD IS PLACED Flush WITH THE TRAVELWAY AND NO CURB OR SIDEWALK IS INCLUDED

NOTES:
1. BUS STOP PAD LOCATIONS TO BE APPROVED BY BOTH DART AND DELDOT PRIOR TO ANY CONSTRUCTION.
2. REFER TO THE MUTCD FOR GENERAL INFORMATION ON PLACEMENT OF SIGNS.
3. SEE CONSTRUCTION PLAN SIGNING AND STRIPING SHEETS FOR SPECIFIC SIGN AND SIGN LOCATION DETAILS.
4. TYPICAL BUS STOP PADS MAY BE USED IN CONJUNCTION WITH BUS STOP SHELTER LOCATIONS IN THE EVENT OF LAND CONSTRAINTS AT THE SHELTER LOCATIONS. AN INTERCONNECTING PEDESTRIAN ACCESS PATH MUST EXIST THAT IS ACCESSIBLE TO BUS STOP ALIGHTING AREAS, SHELTERS, PEDESTRIAN CONNECTIONS, CROSSWALKS, AND SIDEWAYS.
5. A 4% GRADE IS REQUIRED FOR A MINIMUM OF 2'-0" IMMEDIATELY ADJACENT TO THE BUS STOP PAD OR APPROACHING SIDEWALK.
6. SEE PLANS FOR CURB TYPE. DO NOT DEPRESS CURB.
7. SEE DETAIL M-3, SHEET 1 OF 1 FOR ADDITIONAL SIDEWALK DETAILS AND REQUIREMENTS.
NOTES:
1. BUS STOP SHELTER PAD LOCATIONS TO BE APPROVED BY DART AND DELDOT PRIOR TO ANY CONSTRUCTION.
2. REFERENCE THE MUTCD FOR GENERAL INFORMATION ON PLACEMENT OF SIGNS.
3. SEE CONSTRUCTION PLANS SIGNING AND STRIPING SHEETS FOR SPECIFIC SIGN AND SIGN LOCATION DETAILS.
4. A 6:1 GRADE IS REQUIRED FOR A MINIMUM OF 2'-0" IMMEDIATELY ADJACENT TO THE BUS STOP PAD OR APPROACHING SIDEWALK.
5. SEE PLANS FOR CURB TYPE. DO NOT DEPRESS CURB.
6. SEE DETAILS M-3, SHEET 1 OF 2 FOR ADDITIONAL SIDEWALK DETAILS AND REQUIREMENTS.
7. BUS STOP CONFIGURATIONS MAY VARY DUE TO TOPOGRAPHIC OBSTRUCTIONS OR GRADES. CONSULT DART OR DELDOT FOR OPTIONAL PAD DETAILS.
8. TRASH RECEPTACLE PAD CAN BE PLACED ON EITHER SIDE OF THE SHELTER PAD, AT THE DIRECTION OF THE ENGINEER IN THE FIELD.
1. Use of steel plates to be approved by the department and is not permitted between November 1st and March 31st.
2. Steel plate bridging on freeways and expressways is strictly prohibited.
3. Provide steel plates and dowels conforming to ASTM A36 standards.
4. Adequately shore the trench in accordance with the standard specifications to support the bridging and traffic loads.
5. Secure bridging against displacement by using adjustable cleats, shims, or other devices.
6. Use of steel plate bridging is not to exceed four (4) consecutive working days in any given week and not left in place over the weekend, unless directed by the engineer in the field.
7. The contractor is responsible for maintenance of steel plates, shoring, asphalt concrete ramps, and ensuring they meet all minimum specifications. Deformations of any kind are not acceptable on steel plates. Examples of deformations could be, but not limited to, any of the following: free from any clips, chains, attachments, weldments, surface irregularities, etc.
8. A structure design is required for trench widths greater than 6'-0". Submit design to the department for approval.
9. Install steel plate bridging and shoring using either of the methods below:
   - Method 1: For speeds greater than 45 MPH, mill the pavement to a depth equal to the thickness of the plate and to a width and length equal to the dimension of the plate. Butt subsequent plates to each other. Attach the plate to the roadway by a minimum of two dowels pre-drilled into each corner of the plate and drilled 2" into the pavement as shown on this detail.
   - Method 2: For speeds 45 MPH or less, attach the plate to the roadway by a minimum of two dowels pre-drilled into each corner of the plate and drilled 2" into the pavement as shown on this detail. Use compacted asphaltic concrete or asphaltic concrete mix to form a ramped wedge with a maximum slope of 5% and a minimum taper length of 20" to cover all edges of steel plates.
10. For both methods, when the steel plates are removed, backfill the dowel holes in the pavement with either graded fines of asphalt concrete mix, concrete slurry, or equivalent slurry to the satisfaction of the engineer.
11. Provide steel plates with a surface that is manufactured with a minimum nominal coefficient of friction of 0.35 at the time of placement.
1. Use of steel plates must be approved by the department and is not permitted between November 1st and March 31st (except in emergency situations).
2. Steel plates will conform to ASTM A709, Grade 50.
3. Use of steel plate bridging is not to exceed four (4) consecutive working days in any given week and not left in place over the weekend, unless directed by the engineer in the field.
4. A structural design is required for opening widths greater than 7'-6". Design will be approved by the department prior to use.
5. Steel plates must have an anti-skid surface that is manufactured with a minimum nominal coefficient of friction of 0.35 at the time of placement. Submit methods for achieving anti-skid surface.
6. Steel plates can be placed across skewed joints. Maintain min. 6" spacing from all connections to the edge of concrete removal.
7. Do not use steel plates at expansion bearings of curved girder bridges.
8. Steel plates - bridge deck must be connected to a concrete bridge deck or approach slab. Do not connect to a hot mix surface.
9. Install a W-3 or W-8 warning sign in advance to steel plate location.
10. The contractor is responsible for maintenance of steel plates, connections, anti-skid surface, and ensuring they meet all minimum specifications.
11. When the steel plates are removed, repair all bolt holes with epoxy grout.

**PLATE LENGTH**

- 4'-0" Min. to 5'-0" Max.

**JOINT WIDTH**

- 9"
- 3"

**MAXIMUM OPENING**

- 6" (Typ.)
- 6" Min. to 1'-4" (Typ.)
- 11'-4" Min.

**NOTES:**

- Limits of concrete removal
- Connection at expansion bearings (see detail)
- Where through-bolts conflict with girders, adjust bolt spacing (maintain 4" min. from any flange) or use alternate connection
- Maintain 3" min. from bevel
- Use beveled edge where a parallel-to-traffice edge is adjacent to traffic
- Use beveled edge at 6:1 with 1/4" max. edge
- Direction of traffic
- Connection at fixed bearings (see detail)

**TYPICAL CROSS SECTIONS:**

- Plate length
- Joint width
- Maximum opening

**PLATE LENGTH:**

- 4'-0" Min. to 5'-0" Max.
- 6" Min. from end of plating

**PLATE LENGTH**

- Use beveled edge where traffic edge is adjacent to traffic
- Limits of concrete removal
- Connection at expansion bearings (see detail)
- Where through-bolts conflict with girders, adjust bolt spacing (maintain 4" min. from any flange) or use alternate connection
- Maintain 3" min. from bevel
- Use beveled edge at 6:1 with 1/4" max. edge
- Direction of traffic
- Connection at fixed bearings (see detail)

**MAXIMUM OPENING**

- 6" (Typ.)
- 1'-4" (Typ.)
- 11'-4" Min.

**MIN. PLATE THICKNESS**

- 1" (Typ.)
- 1/2" (Typ.)

**BASED ON HL-93 TRUCK LOAD**
TEMPORARY PEDESTRIAN PATHWAY

NOTES:
1. PROVIDE 4'-0" WIDE TEMPORARY PATHWAY, SUPPLY PCC, BITUMINOUS PAVEMENT, TEMPORARY ROADWAY MATERIAL (TRM), OR COMPACTED MILLINGS TO A MINIMUM DEPTH OF 4", FLUSH WITH EXISTING GRADE.

2. MAINTAIN A UNIFORM MATERIAL THAT IS FIRM, STABLE, AND SLIP RESISTANT.

3. IN THE EVENT THAT THE WALKING SURFACE OF THE TEMPORARY SIDEWALK IS LOCATED MORE THAN 30" FROM GRADE AT ANY POINT ALONG THE PROPOSED PATH, PROVIDE TYPE 2 TEMPORARY SIDEWALK.

4. MAXIMUM ALLOWABLE RUNNING SLOPE NOT TO EXCEED 5%. MAXIMUM ALLOWABLE CROSS SLOPE NOT TO EXCEED 2% AND VERTICAL SURFACE DISCONTINUITIES NOT TO EXCEED 1/4". FURTHER GUIDANCE IN ACCORDANCE WITH THE LATEST VERSION OF THE PEDESTRIAN ACCESSIBILITY STANDARDS FOR FACILITIES IN THE PUBLIC RIGHT-OF-WAY.

5. ANY REQUIRED EXCAVATION TO CONSTRUCT THE PATHWAY IS INCIDENTAL TO ITEM B(L3).

6. COST FOR SEEDING REQUIRED TO RESTORE THE AREA IS PAYABLE BY THE DEPARTMENT.
1. Use this detail in the absence of manufacturer specific details for transitioning from pinned to unpinned barrier.
WHERE LANE WIDTH <11' OR SHOULDER WIDTH <5'

PROPOSED LANE, OR, SHOULDER EDGE

FINAL WEARING COURSE

30° SEE NOTE 2

TOPSOIL

COMPACTED FILL

OR IN-SITU MATERIAL

PAVEMENT BASE

THICKNESS

WHERE LANE WIDTH >11' OR SHOULDER WIDTH >5'

PROPOSED LANE, OR, SHOULDER EDGE

FINAL WEARING COURSE

30° SEE NOTE 2

TOPSOIL

COMPACTED FILL

OR IN-SITU MATERIAL

PAVEMENT BASE

THICKNESS

THICKNESS OF SAFETY EDGE

<table>
<thead>
<tr>
<th>CONCRETE PAVEMENT</th>
<th>3''</th>
</tr>
</thead>
<tbody>
<tr>
<td>BITUMINOUS CONCRETE PAVEMENT FINAL WEARING COURSE</td>
<td>&gt; 1½''</td>
</tr>
</tbody>
</table>

NOTE:
1. LEVEL COMPACTED FILL OR IN-SITU MATERIAL WITH THE PAVEMENT BASE PRIOR TO FINAL BITUMINOUS CONCRETE PAVING LIFT.
2. ANGLE ALLOWANCE OF 26° MINIMUM TO 40° MAXIMUM.
ANCHOR BOLTS
INSTALLATION IN SOIL
ROUNDED CORNERS FOR WRAP AREA WITH RODENT SCREEN
FINISHED GRADE
HEX NUT
ANCHOR BOLT
COVER
AS DIRECTED BY THE ENGINEER.
PLUMB OR CANT POLE
SQUARE NUT USED TO CONDUIT
GRADE (SOIL)
FINISHED
3"
5"
24"
1"
2"
238x456
3" CONDUIT SWEEP
BAR (TYP.)
#5 REINFORCING BAR (TYP.)
#8 REINFORCING BAR (TYP.)
EINBED 8'-0" INTO UNDISTURBED SOIL
EXPANSION MATERIAL
(2021)
4
3"
3"
3" CONDUIT SWEEP
GROUND ROD (1" X 24")
EMBED 6'-0" INTO UNDISTURBED SOIL
TYPICAL SECTION (BASES 1, 2, 2A, 2B, 3, 3A, AND 3B)
NOTE:
1. SEE POLE BASE DATA CHART ON DETAIL T-5, SHEET 3 OF 4, FOR POLE BASE DIMENSIONS.
2. STRAIN POLES AND MAST ARMS UP TO 60' SHALL USE 2½" ANCHOR BOLTS, SUPPLIED BY THE DEPARTMENT.
3. MAST ARMS FROM 70-90' SHALL USE 2½" ANCHOR BOLTS, SUPPLIED BY THE DEPARTMENT.
4. ALL OTHER POLE BASES NOT LISTED SHALL ADHERE TO MANUFACTURER AND DEPARTMENT STANDARDS.
5. PER MANUFACTURER SPECIFICATIONS AND DETAILS, THE CONTRACTOR SHALL ENSURE THAT THE FOLLOWING LENGTH OF THREADS ARE EXPOSED PER EACH POLE TYPE:
   - STRAIN: 10½"
   - B (MAST): 9½"
   - C (MAST): 13½"
   - CAMERA: 7"
   - LIGHTING: 4½"
6. MAXIMUM EXPOSED FOUNDATION DEPTH OF 4" AT FINISHED GRADE IN ANY ORIENTATION AROUND POLE BASE.
POLE BASE DATA CHART

<table>
<thead>
<tr>
<th>POLE BASE TYPE #</th>
<th>DIAMETER</th>
<th>DEPTH</th>
<th>#5 HORIZONTAL REINFORCING BARS</th>
<th>#8 VERTICAL REINFORCING BARS</th>
<th>CONDUITS</th>
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<td>2-3&quot;</td>
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<tr>
<td>2</td>
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<td>10'-0&quot;</td>
<td>6</td>
<td>8</td>
<td>2-3&quot;</td>
</tr>
<tr>
<td>2A</td>
<td>48&quot;</td>
<td>8'-0&quot;</td>
<td>5</td>
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<td>2-3&quot;</td>
</tr>
<tr>
<td>2B</td>
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<td>8</td>
<td>2-3&quot;</td>
</tr>
<tr>
<td>3</td>
<td>48&quot;</td>
<td>10'-0&quot;</td>
<td>14</td>
<td>17</td>
<td>2-3&quot;</td>
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<tr>
<td>3A</td>
<td>48&quot;</td>
<td>12'-0&quot;</td>
<td>17</td>
<td>17</td>
<td>2-3&quot;</td>
</tr>
<tr>
<td>3B</td>
<td>48&quot;</td>
<td>15'-0&quot;</td>
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</tr>
<tr>
<td>3C</td>
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<td>20'-0&quot;</td>
<td>27</td>
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<td>2-3&quot;</td>
</tr>
<tr>
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<td>2'-4&quot;</td>
<td>NONE</td>
<td>NONE</td>
<td>2-2.5&quot;</td>
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<tr>
<td>6</td>
<td>24&quot;</td>
<td>6'-0&quot;</td>
<td>4</td>
<td>8</td>
<td>2-3&quot;</td>
</tr>
</tbody>
</table>

NOTE:

1. ANCHOR BOLTS AND BOLT PATTERN FOR TYPE 6 POLE BASES TO BE PROVIDED BY THE MANUFACTURER.
2. STRAIN POLES AND MAST ARMS UP TO 60' SHALL USE 2 1/2" ANCHOR BOLTS, SUPPLIED BY THE DEPARTMENT.
3. MAST ARMS FROM 70-90' SHALL USE 3" ANCHOR BOLTS, SUPPLIED BY THE DEPARTMENT.
4. ALL OTHER POLE BASES NOT LISTED SHALL ADHERE TO MANUFACTURER AND DEPARTMENT STANDARDS.
5. PER MANUFACTURER SPECIFICATIONS AND DETAILS, THE CONTRACTOR SHALL ENSURE THAT THE FOLLOWING LENGTH OF THREADS ARE EXPOSED PER EACH POLE TYPE:
   - STRAIN: 10 1/2"
   - B (MAST): 9 1/2"
   - C (MAST): 11 1/2"
   - CAMERA: 7"
   - LIGHTING: 4"
6. MAXIMUM EXPOSED FOUNDATION DEPTH OF 4" AT FINISHED GRADE IN ANY ORIENTATION AROUND POLE BASE.

TYPICAL INSTALLATION (BASE 6)

- ANCHOR BOLTS AND BOLT PATTERN FOR TYPE 6 POLE BASES TO BE PROVIDED BY THE MANUFACTURER.
- STRAIN POLES AND MAST ARMS UP TO 60' SHALL USE 2 1/2" ANCHOR BOLTS, SUPPLIED BY THE DEPARTMENT.
- MAST ARMS FROM 70-90' SHALL USE 3" ANCHOR BOLTS, SUPPLIED BY THE DEPARTMENT.
- ALL OTHER POLE BASES NOT LISTED SHALL ADHERE TO MANUFACTURER AND DEPARTMENT STANDARDS.
- PER MANUFACTURER SPECIFICATIONS AND DETAILS, THE CONTRACTOR SHALL ENSURE THAT THE FOLLOWING LENGTH OF THREADS ARE EXPOSED PER EACH POLE TYPE:
  - STRAIN: 10 1/2"
  - B (MAST): 9 1/2"
  - C (MAST): 11 1/2"
  - CAMERA: 7"
  - LIGHTING: 4"
- MAXIMUM EXPOSED FOUNDATION DEPTH OF 4" AT FINISHED GRADE IN ANY ORIENTATION AROUND POLE BASE.
TYPICAL SECTION (BASE 4A)

- 24" DIAMETER
- EXPANSION MATERIAL
- 1/2" DROP-IN ANCHOR
- 2'-0" MIN
- 4'-0" MAX

TYPICAL SECTION (BASE 4B)

- 24" DIAMETER
- EXPANSION MATERIAL
- 2'-0" MIN
- 4'-0" MAX

NOTE:
- BOLT PATTERN TO BE PROVIDED BY DELDOT'S SIGNAL CONSTRUCTION INSPECTOR.
NOTES:
1. ALL SAWCUTS SHALL BE A DEPTH OF 3½" ON ALL SURFACES.
2. CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
3. ALL SAWCUTS SHALL BE PATCHED WITH NON-SHRINK CONCRETE CAULK.
4. CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3½".
5. CONTRACTOR SHALL INSTALL DETECTABLE WARNING TAPE IN TRENCH FOR LEAD-IN CONDUIT.
**WIRING COLOR CODE FOR #14/16 SIGNAL CABLE FOR SIGNAL HEADS**

**SIGNAL INDICATION**

- **SOLID RED**
- **SOLID ORANGE**
- **SOLID GREEN**
- **SOLID WHITE**
- **YELLOW**
- **RED**
- **GREEN**
- **GROUND**

**WIRING COLOR CODE FOR #14/9 TCC**

**SIGNAL INDICATION**

- **RED**
- **YELLOW**
- **GREEN**
- **GROUND**

**LEGEND**

- **2" REFLECTIVE YELLOW STRIP**
- **2" REFLECTIVE YELLOW STRIP**
- **HINGE**
- **HINGE**

**NOTES**

1. HEAD CABLE SHALL BE MARKED WITH THE COLOR DESIGNATED FOR EACH DIRECTION OF TRAVEL: RED/NORTH, YELLOW/SOUTH, GREEN/EAST, BLUE/WEST.
2. SIDE STREET SIGNAL HEADS SHALL BE SPliced INTO THE BLACK TRACER WIRES INSTEAD OF SOLID COLOR WIRES.
3. ALL SIGNAL HEADS INSTALLED ON MAST ARMS SHALL HAVE BLACK TRACER WIRES INSTEAD OF SOLID COLOR WIRES.
4. ALL BOLTS SHALL BE STAINLESS STEEL.
5. ALL BACKPLATES SHALL BE POWDER-COATED ALUMINUM.
6. ALL BACKPLATES SHALL BE OUTLINED WITH A 2" REFLECTIVE YELLOW STRIP.
1. Pushbutton assembly shall be secured to wood poles with 2" lag bolts.

2. When cutting is required, contractor shall confirm proper height of pedestal is maintained prior to cutting pole.

3. Extend the pedestrian path to the vertical projection limit of the pedestrian pushbutton when the pushbutton is only accessible from a forward approach. The vertical projection limit of the pedestrian pushbutton may be offset from the pedestrian path a maximum of 0'-10" for all other applications.

NOTES:

1. Pushbutton assembly shall be secured to wood poles with 2" lag bolts.

2. Refer to pole mounting for pedestrian signal heads standard plates for details.

3. Extend the pedestrian path to the vertical projection limit of the pedestrian pushbutton when the pushbutton is only accessible from a forward approach. The vertical projection limit of the pedestrian pushbutton may be offset from the pedestrian path a maximum of 0'-10" for all other applications.