

Appendix M

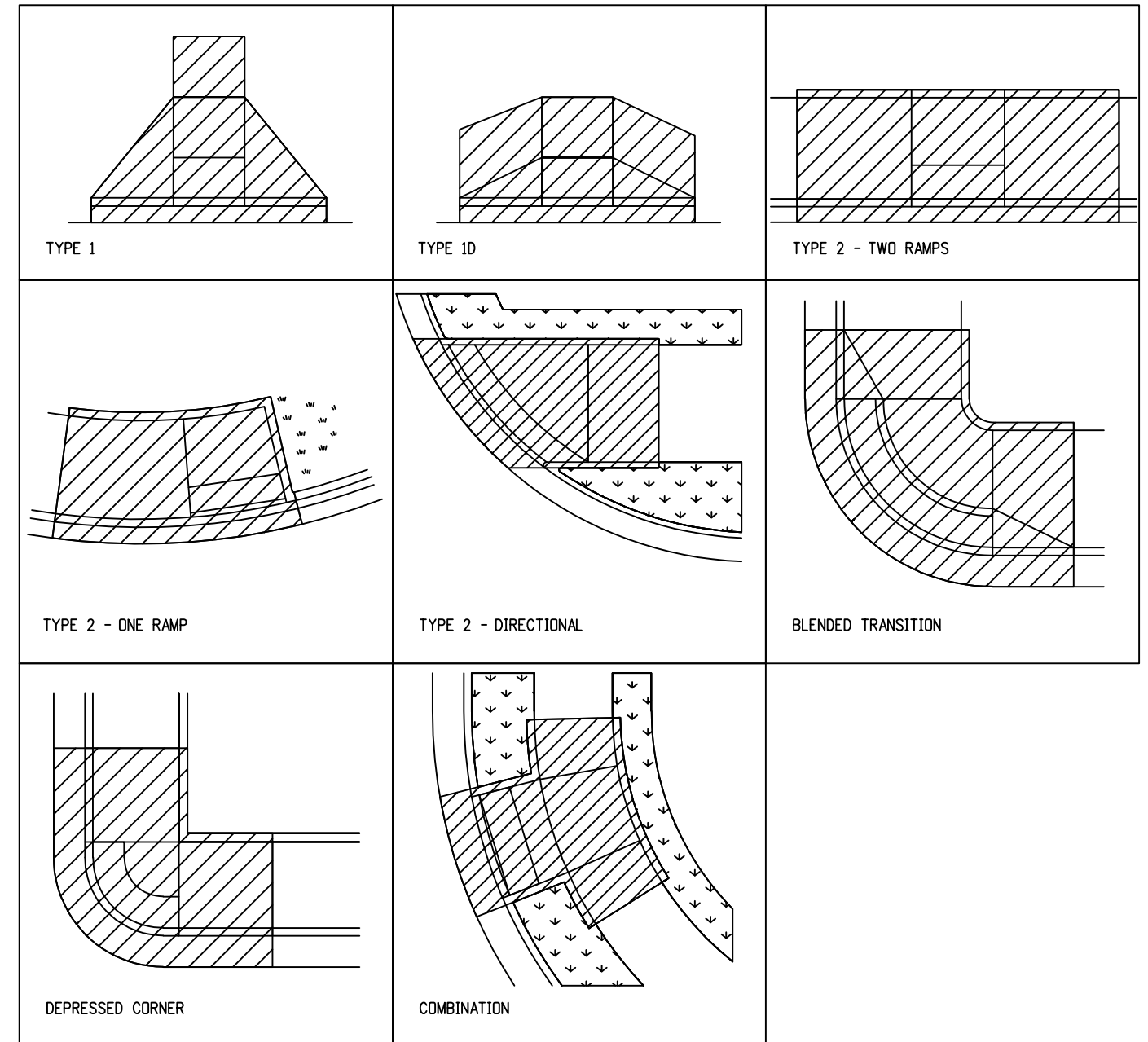
**NOTE: Appendix Information is for Reference Only.
Contact Local Entity Engineer for
Current Information.**

Appendix M shall be used as a reference for curb ramps within the City Limits of Loveland.

CURB RAMP GENERAL NOTES

- ① IN NEW DEVELOPMENT CONSTRUCTION, PROVIDE A SEPARATE CURB RAMP FOR EACH MARKED OR UNMARKED PEDESTRIAN STREET CROSSING. CURB RAMPS SHALL BE CONTAINED WHOLLY WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING OR CROSSWALK THEY SERVE, OR AS SHOWN ON THE APPROVED PLANS.
- ② A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP OR TURNING SPACE, WITHOUT RAISED OBSTACLES.
- ③ ALTERATIONS ARE DEFINED AS CHANGES TO AN EXISTING ROADWAY THAT AFFECT PEDESTRIAN ACCESS, CIRCULATION, OR USE. ALTERATIONS INCLUDE, BUT ARE NOT LIMITED TO, RESURFACING, REHABILITATION, RECONSTRUCTION, CURB RAMP RETROFITS, HISTORIC RESTORATION, OR CHANGES OR REARRANGEMENT TO STRUCTURAL PARTS OR ELEMENTS OF A PEDESTRIAN FACILITY.
- ④ IN ALTERATIONS, WHERE AN EXISTING PHYSICAL CONSTRAINT PREVENTS PROVIDING A SEPARATE CURB RAMP FOR EACH PEDESTRIAN STREET CROSSING, A SINGLE RAMP (ON THE APEX) SHALL BE PERMITTED TO SERVE BOTH PEDESTRIAN STREET CROSSINGS. THE USE OF A SINGLE RAMP SHALL BE APPROVED BY THE LOCAL ENTITY ENGINEER PRIOR TO CONSTRUCTION. SINGLE RAMPS ON THE APEX ARE NOT ACCEPTABLE IN NEW DEVELOPMENT CONSTRUCTION.
- ⑤ DESIGN AND CONSTRUCT CURB RAMPS, TURNING SPACES, AND FLARE SLOPES WITH THE FLATTEST SLOPE POSSIBLE. THE SLOPES INDICATED IN THESE DETAILS SHOW THE MAXIMUM SLOPES ALLOWABLE. PREFERRED VALUES TO BE USED DURING DESIGN, LAYOUT, AND CONSTRUCTION ARE:
 - RAMP RUNNING SLOPE 7.5%
 - RAMP CROSS SLOPE 1.5%
 - TURNING SPACE RUNNING SLOPE 1.5%
 - TURNING SPACE CROSS SLOPE 1.5%
 - FLARE SLOPE 8.0% - 9.0%
- ⑥ THE CONTRACTOR SHALL VERIFY REMOVAL LIMITS ARE SUFFICIENT TO PROVIDE POSITIVE DRAINAGE, MAINTAIN EXISTING DRAINAGE PATTERNS, AND AVOID PONDING IN THE FINAL CONFIGURATION.
- ⑦ DETECTABLE WARNING SURFACES ARE INTENDED TO INDICATE THE BOUNDARY BETWEEN A PEDESTRIAN ROUTE AND VEHICULAR ROUTE WHERE THERE IS A FLUSH RATHER THAN CURBED CONNECTION. DETECTABLE WARNING SURFACES ARE NOT INTENDED TO PROVIDE WAYFINDING. DETECTABLE WARNING SURFACES SHALL BE PROVIDED AT THE FOLLOWING LOCATIONS:
 - 1) CURB RAMPS, BLENDED TRANSITIONS, AND DEPRESSED CORNERS AT PEDESTRIAN STREET CROSSINGS
 - 2) PEDESTRIAN REFUGE ISLANDS (6 FEET IN WIDTH OR GREATER)
 - 3) BOARDING PLATFORMS AT TRANSIT STOPS WHERE THE EDGE OF THE PLATFORM IS NOT PROTECTED TO PEDESTRIAN CROSS TRAFFIC
 - 4) BOARDING AREAS AT SIDEWALK OR STREET LEVEL TRANSIT STOPS WHERE THE AREA IS NOT PROTECTED TO PEDESTRIAN CROSS TRAFFIC
- ⑧ DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH THE ADJACENT GUTTER, ROADWAY, OR PEDESTRIAN ACCESS ROUTE SURFACE, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT.
- ⑨ ALL SLOPES ARE MEASURED WITH RESPECT TO A LEVEL PLANE.
- ⑩ FLARED SIDE SLOPES MAY EXCEED 10.0% ONLY WHERE THEY ABUT AN NON-WALKABLE SURFACE, OR WHERE THE ADJACENT RAMP SURFACE IS BLOCKED TO PEDESTRIAN TRAFFIC.
- ⑪ IN ALTERATIONS, TO AVOID CHASING GRADE INDEFINITELY ON STEEP ROADWAYS, A CURB RAMPS LENGTH IS NOT REQUIRED TO EXCEED 15 FEET, REGARDLESS OF THE RESULTING RAMP RUNNING SLOPE.
- ⑫ IN ALTERATIONS, WHERE A RAMP OR TURNING SPACE MUST TIE INTO AN EXISTING GRADE THAT CANNOT BE ALTERED, THE RAMP OR TURNING SPACE MAY BE WARPED TO TRANSITION TO THE REQUIRED CROSS SLOPE. THE TRANSITION TO THE REQUIRED CROSS SLOPE SHALL BE SPREAD EVENLY OVER THE LENGTH OF THE RAMP OR TURNING SPACE TO MINIMIZE THE DEGREE OF WARPING. THE RATE OF CHANGE ON A RAMP OR TURNING SPACE SHALL NOT EXCEED 3% PER LINEAR FOOT.
- ⑬ IN NEW DEVELOPMENT CONSTRUCTION, PULL BOXES, METER BOXES, MAINTENANCE HOLE COVERS, VAULT LIDS, OR SIMILAR, SHALL NOT BE CONSTRUCTED WITHIN ANY PART OF THE CURB RAMP OR TURNING SPACE. IN ALTERATIONS, WHERE THESE ITEMS CANNOT BE RELOCATED OUTSIDE OF THE CURB RAMP OR TURNING SPACE, THEY SHALL NOT CREATE A VERTICAL DISCONTINUITY GREATER THAN 1/2 INCH. ANY VERTICAL DISCONTINUITY BETWEEN 1/4 INCH AND 1/2 INCH SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1V:2H. THE BEVEL SHALL BE APPLIED ACROSS THE ENTIRE SURFACE DISCONTINUITY.
- ⑭ DRAINAGE STRUCTURES, TRAFFIC SIGNAL EQUIPMENT, OR OTHER OBSTRUCTIONS SHALL NOT BE INSTALLED ON THE CURB RAMP OR TURNING SPACE AREAS.
- ⑮ ALL CURB RAMP JOINTS AND GRADE BREAKS SHALL BE FLUSH (0" - 1/8"). THE JOINT BETWEEN THE ROADWAY SURFACE AND THE GUTTER PAN SHALL BE FLUSH.
- ⑯ THE CHANGE IN GRADE AT THE BOTTOM OF THE CURB RAMP SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 13.33%. THE COUNTER SLOPE OF THE GUTTER AT THE FOOT OF THE RAMP, TURNING SPACE, OR BLENDED TRANSITION SHALL NOT EXCEED 5.0%.
- ⑰ GRADE BREAKS AT THE TOP AND BOTTOM OF RAMP RUNS SHALL BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN. GRADE BREAKS SHALL NOT BE PERMITTED ON THE SURFACE OF THE RAMP OR TURNING SPACE. SURFACE SLOPES THE MEET AT GRADE BREAKS SHALL BE FLUSH.
- ⑱ A BROOM FINISH, WITH SWEEPS PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAFFIC, SHALL BE APPLIED TO ALL RAMP AND TURNING SPACE SURFACES.
- ⑲ PROVIDE TIE BAR REINFORCING BETWEEN INDEPENDENTLY PLACED CONCRETE CURB RAMPS OR TURNING SPACES AND CURB AND GUTTER. DRILL AND GROUT NO. 4 12 INCH LONG REINFORCEMENT BARS (EPOXY COATED) AT 18 INCHES ON CENTER MINIMUM.
- ⑳ THE USE OF CURB RAMPS TYPE 2, WHILE COMPLIANT WITH THE AMERICANS WITH DISABILITIES ACT (ADA), IS DISCOURAGED BY THE CITY OF LOVELAND DUE TO POTENTIAL ISSUES WITH PONDING WATER, DEBRIS COLLECTION AND ICE. TYPE 2 SERIES RAMPS WILL ONLY BE ALLOWED WHEN NO OTHER ADA COMPLIANT RAMP IS FEASIBLE.

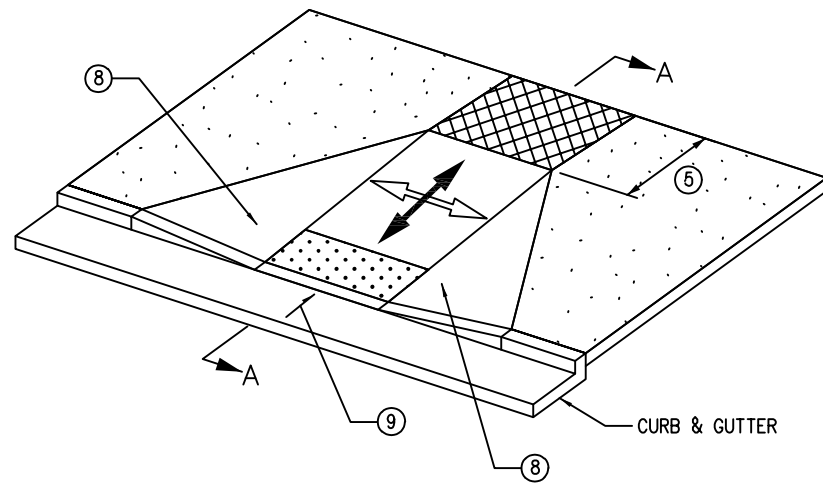
CURB RAMP PAY AREAS FOR CITY OF LOVELAND PROJECTS ONLY



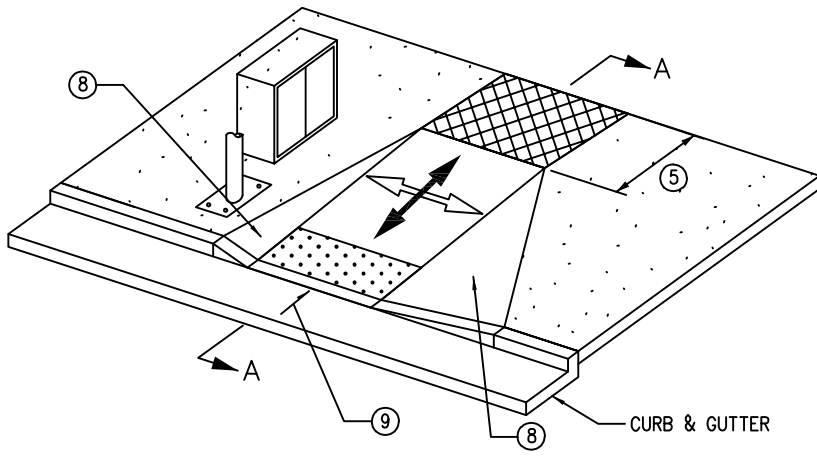
PERCENT SLOPE	1.0%	2.0%	5.0%	7.1%	8.3%	10.0%
EQUIVALENT RUN/RISE	100:1	50:1	20:1	14:1	12:1	10:1

SLOPE TABLE

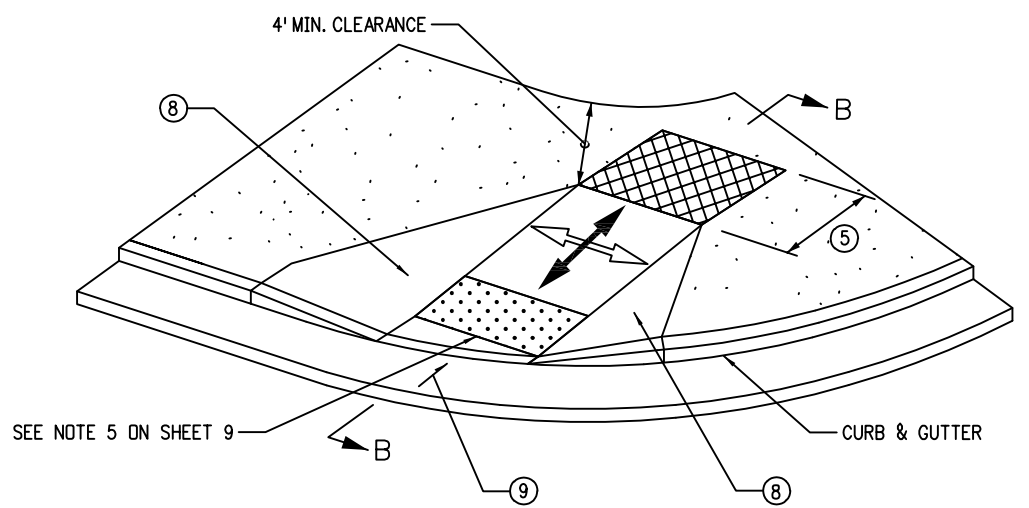
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	EFFECTIVE	08/01/2021				
	Modified by: B Reiter					



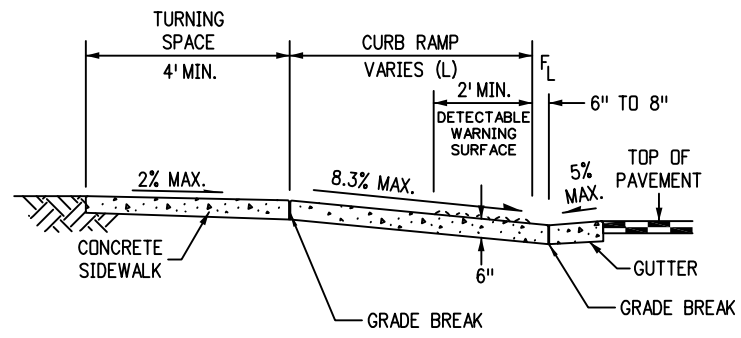
CURB RAMP TYPE 1A



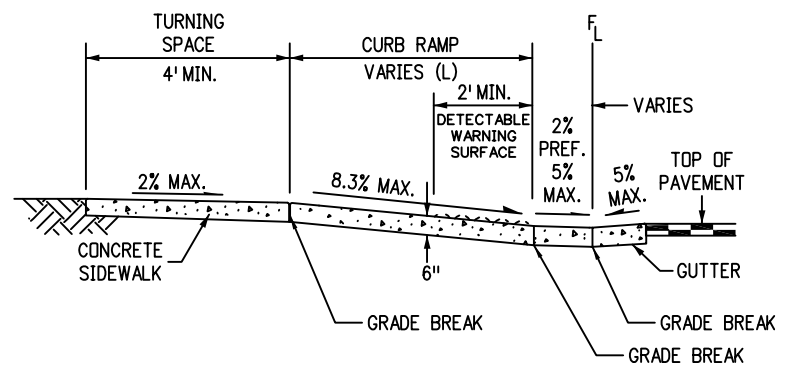
CURB RAMP TYPE 1B



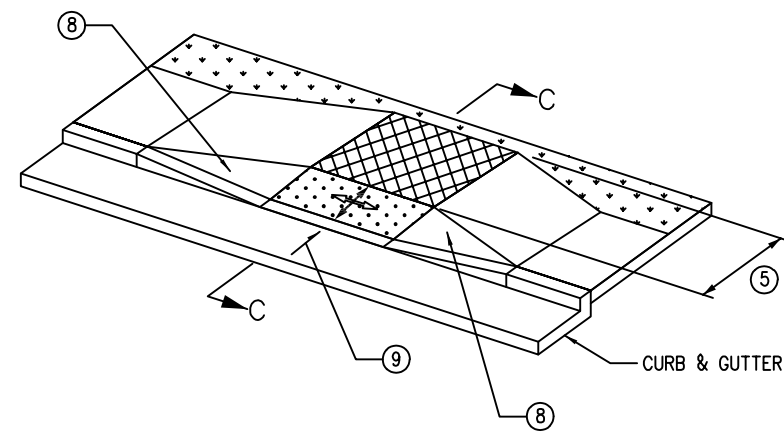
CURB RAMP TYPE 1C



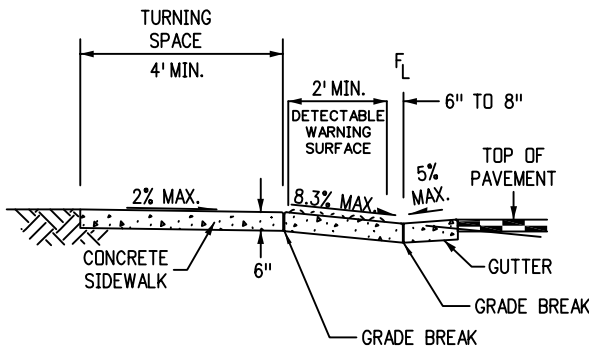
SECTION A-A



SECTION B-B



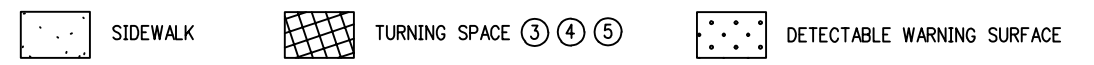
CURB RAMP TYPE 1D



SECTION C-C

NOTES

- ① RAMP WIDTH – PROVIDE 5 FT. OR GREATER WHERE POSSIBLE. IF SITE CONSTRAINTS DO NOT PERMIT, PROVIDE 4 FT. MINIMUM. RAMPS SERVICING SHARED USE PATHS SHALL MATCH THE WIDTH OF THE PATH.
- ② RAMP RUNNING SLOPE – 8.3% MAXIMUM
- ③ RAMP CROSS SLOPE – 2.0% MAXIMUM
- ④ TURNING SPACE CROSS AND RUNNING SLOPE – 2.0% MAXIMUM
- ⑤ TURNING SPACE DIMENSIONS – PROVIDE A SPACE AT THE TOP OF TYPE 1 RAMPS WITH A WIDTH EQUAL TO THE WIDTH OF THE CURB RAMP. TURNING SPACE LENGTH MUST BE 4 FT. MINIMUM, MEASURED IN THE DIRECTION OF THE RAMP RUN. WHEN A TURNING SPACE IS CONSTRAINED AT THE BACK OF SIDEWALK, INCREASE LENGTH TO 5 FT. MINIMUM IN THE DIRECTION OF THE RAMP RUN.
- ⑥ RAMP ALIGNMENT – RAMPS SHALL BE ALIGNED TO BE FULLY WITHIN THE CROSSWALK OR STREET CROSSING THEY SERVE. PROVIDE ONE RAMP FOR EACH STREET CROSSING DIRECTION. IN ALTERATIONS, WHERE EXISTING PHYSICAL CONSTRAINTS PREVENT PROVIDING ONE CURB RAMP FOR EACH CROSSING DIRECTION, A SINGLE RAMP (PLACED ON THE APEX OF A CORNER) SHALL BE PERMITTED TO SERVE BOTH STREET CROSSINGS. IF A SINGLE RAMP ON THE APEX IS USED, A CLEAR SPACE 4 FT. X 4 FT. MINIMUM MUST BE PROVIDED AT THE BASE OF THE RAMP. THE CLEAR SPACE MUST BE WITHIN BOTH CROSSINGS AND WHOLLY OUTSIDE OF ANY ADJACENT VEHICULAR TRAVEL LANES. A SINGLE RAMP ON THE APEX IS NOT ACCEPTABLE IN NEW DEVELOPMENT CONSTRUCTION.
- ⑦ RAMP LENGTH – TYPE 1 CURB RAMP LENGTH IS DEPENDENT UPON THE RAMP SLOPE, HEIGHT OF THE CURB, AND ADJACENT SIDEWALK CROSS-SLOPE. WHERE TERRAIN IS SLOPING, A RAMP IS NOT REQUIRED TO CHASE GRADE MORE THAN 15 FT., REGARDLESS OF THE RESULTING RAMP SLOPE.
- ⑧ RAMP FLARES – WHERE A RAMP EDGE ABUTS A WALKABLE SURFACE, A FLARED SIDE SHALL BE PROVIDED. RAMP FLARE SLOPES SHALL NOT EXCEED 10.0% EXCEPT WHERE THEY ABUT A NON-WALKABLE SURFACE, OR WHERE THE ADJACENT RAMP SURFACE IS BLOCKED TO PEDESTRIAN TRAFFIC.
- ⑨ GUTTER SLOPE – 5.0% MAXIMUM



ADAPTED/MODIFIED FROM COLORADO DEPARTMENT OF TRANSPORTATION STANDARD PLAN NUMBER M-608-1 SHEET NUMBER 2 OF 10 (LAST MODIFICATION DATE: 7/31/19 BY LTA)

Modified by: B Reiter

DESCRIPTION	DATE:
EFFECTIVE	08/01/2021

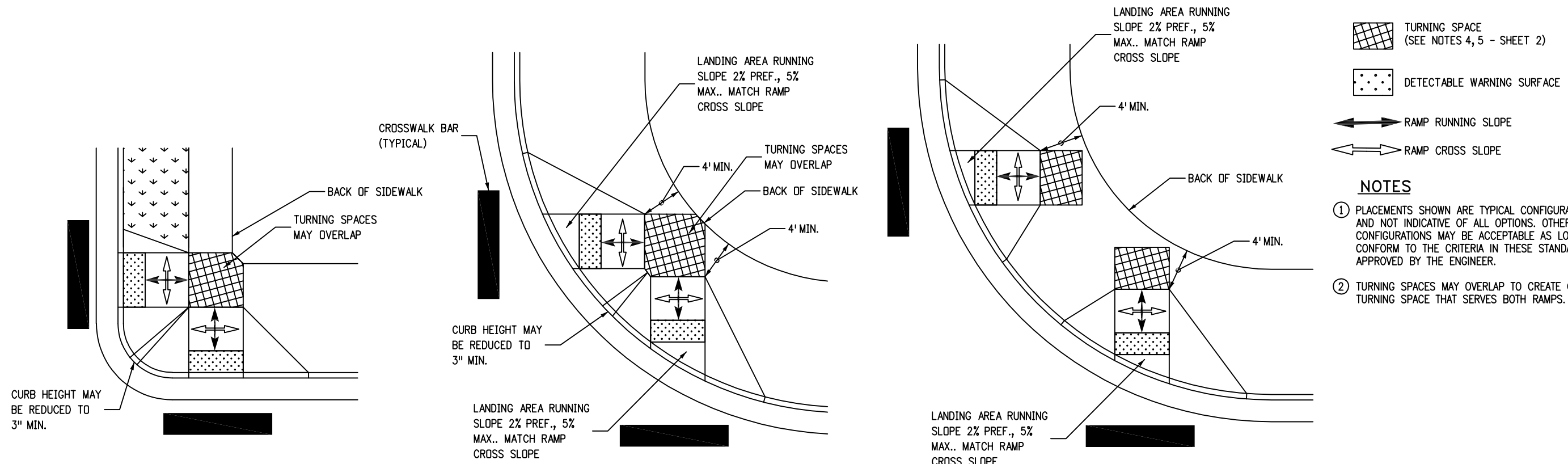


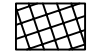
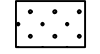


CITY OF LOVELAND, CO
CONSTRUCTION DRAWINGS

CURB RAMP
TYPE 1
DETAILS AND NOTES

NOT TO SCALE

SHEET 2



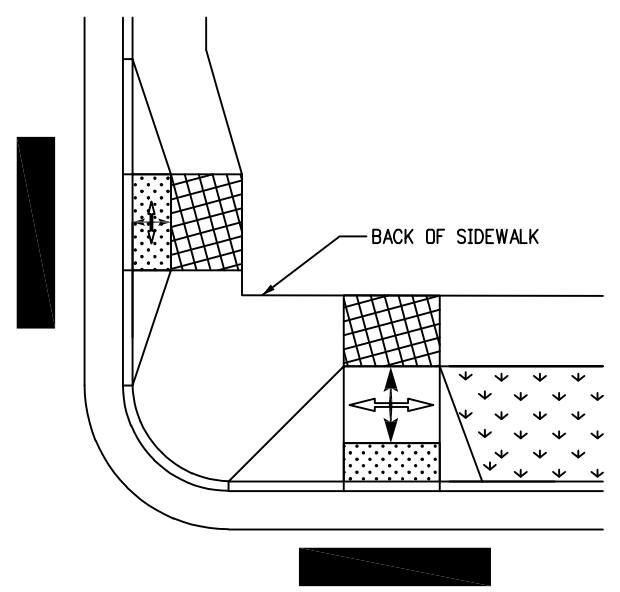
 TURNING SPACE (SEE NOTES 4, 5 - SHEET 2)
 DETECTABLE WARNING SURFACE
 RAMP RUNNING SLOPE
 RAMP CROSS SLOPE

- NOTES**
- PLACEMENTS SHOWN ARE TYPICAL CONFIGURATIONS ONLY AND NOT INDICATIVE OF ALL OPTIONS. OTHER RAMP CONFIGURATIONS MAY BE ACCEPTABLE AS LONG AS THEY CONFORM TO THE CRITERIA IN THESE STANDARDS, AND ARE APPROVED BY THE ENGINEER.
 - TURNING SPACES MAY OVERLAP TO CREATE ONE LARGER TURNING SPACE THAT SERVES BOTH RAMPS.

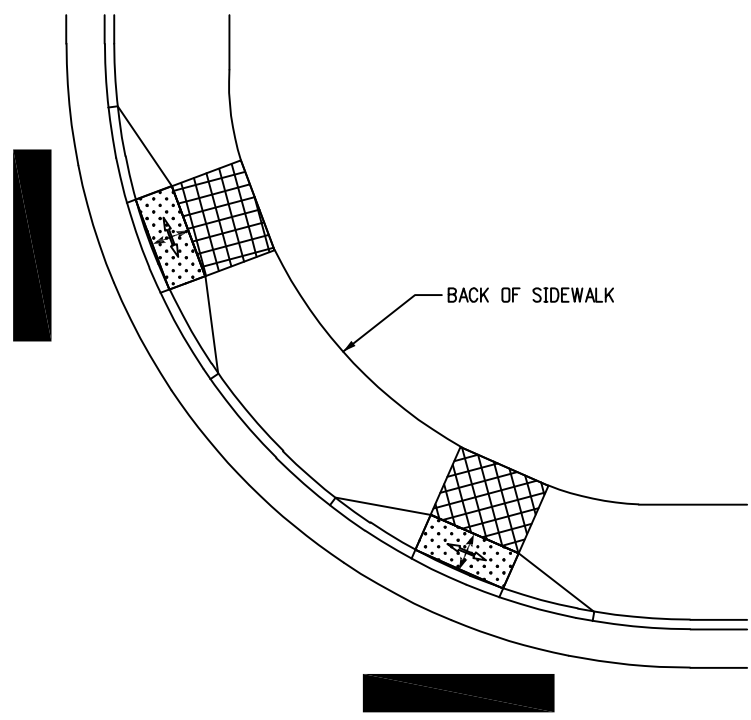
TYPE 1A AND 1B COMBINATION

TYPE 1C COMBINATION

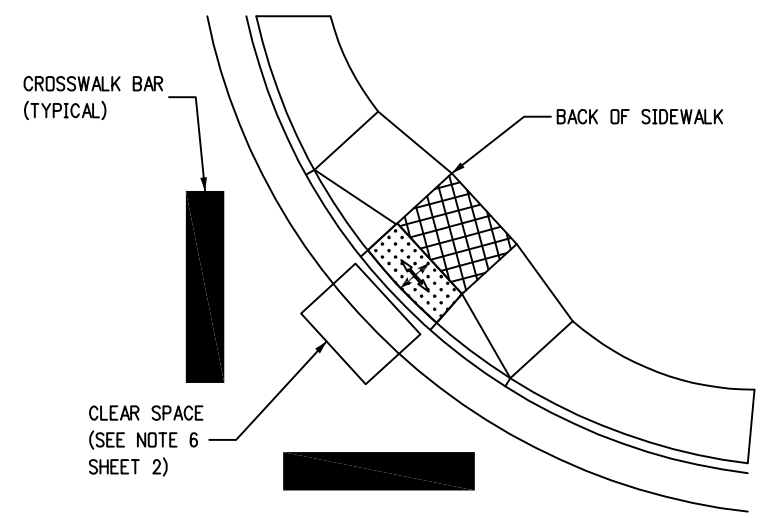
TYPE 1C COMBINATION ON LARGE RADIUS



TYPE 1B AND 1D COMBINATION

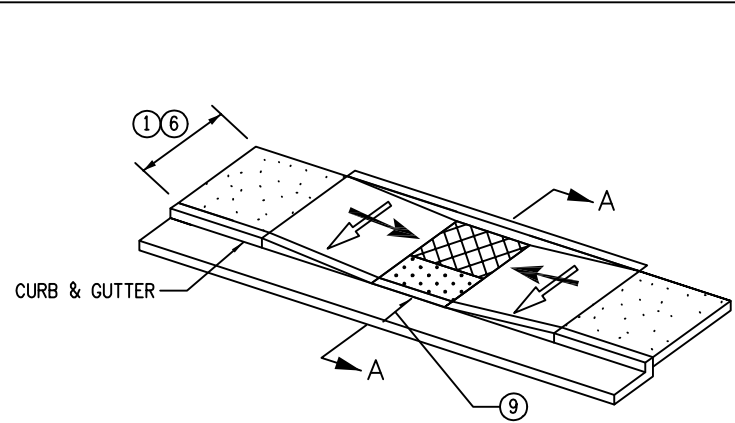


TYPE 1D COMBINATION

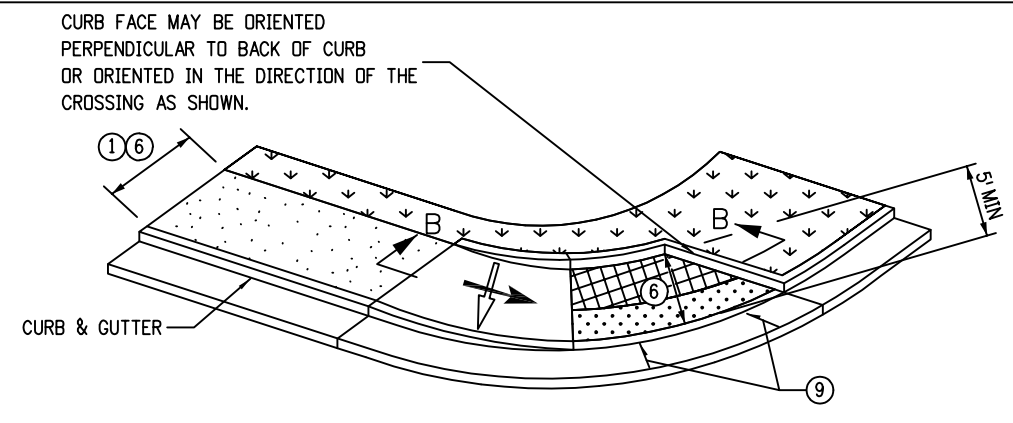


TYPE 1D ON THE APEX
SEE NOTE 6 ON SHEET 2

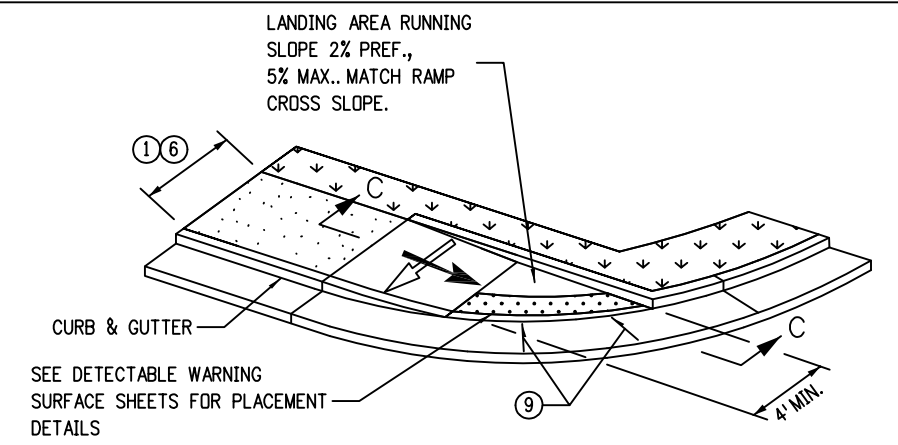
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	EFFECTIVE	08/01/2021				SHEET 3
Modified by: B Reiter						



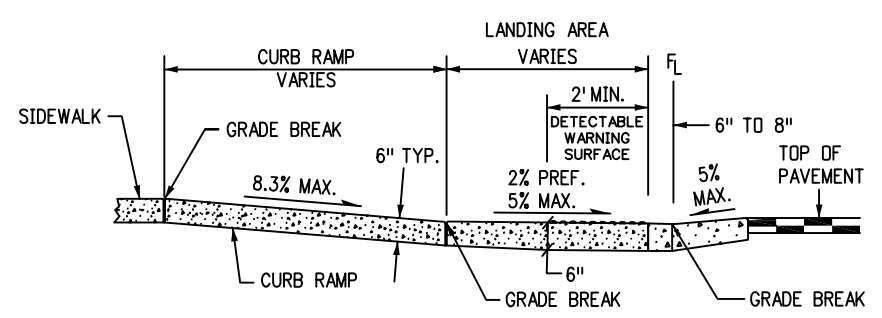
CURB RAMP TYPE 2A
(TYPICAL)



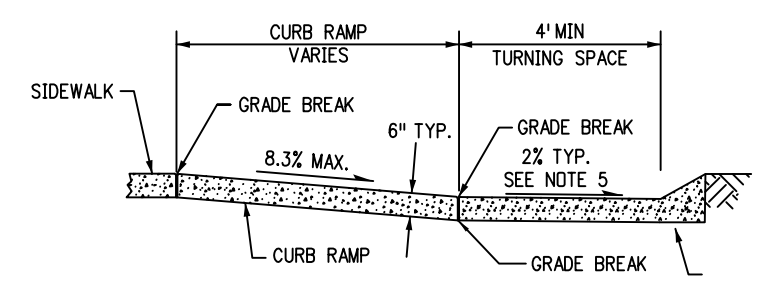
CURB RAMP TYPE 2B
(SIDEWALK ENDS)



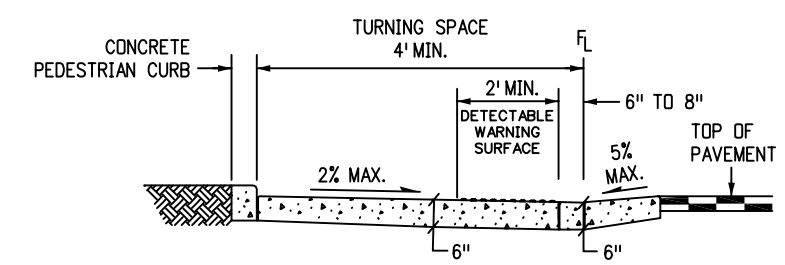
CURB RAMP TYPE 2C
(DIRECTIONAL - CROSSING IN ONE DIRECTION ONLY)



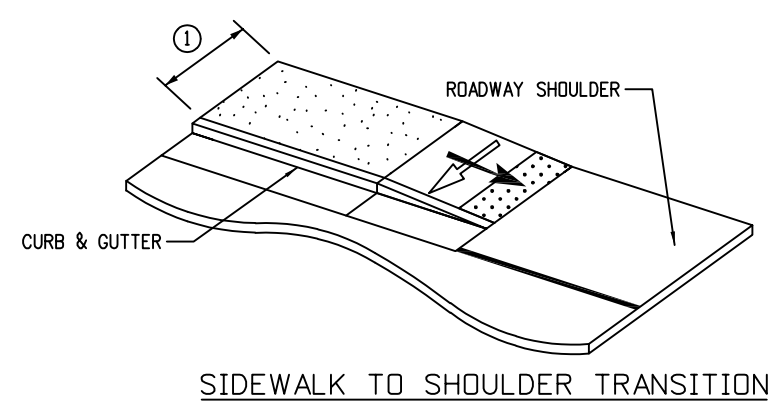
SECTION C-C



SECTION B-B



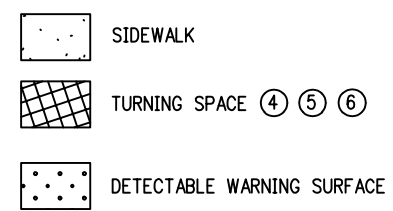
SECTION A-A



SIDEWALK TO SHOULDER TRANSITION

NOTES

- ① RAMP WIDTH - PROVIDE A RAMP WIDTH EQUAL TO THE ADJOINING SIDEWALK. PROVIDE 4 FT. MINIMUM. RAMPS SERVICING SHARED USE PATHS SHALL MATCH THE WIDTH OF THE PATH.
- ② RAMP RUNNING SLOPE - 8.3% MAXIMUM
- ③ RAMP CROSS SLOPE - 2.0% MAXIMUM
- ④ TURNING SPACE RUNNING SLOPE - 2.0% MAXIMUM. MEASURED PERPENDICULAR TO BACK OF CURB.
- ⑤ TURNING SPACE CROSS SLOPE - 2.0% MAXIMUM
- ⑥ TURNING SPACE DIMENSIONS - PROVIDE A TURNING SPACE AT THE BOTTOM OF TYPE 2 RAMPS WITH A WIDTH EQUAL TO THE WIDTH OF THE CURB RAMP. TURNING SPACE LENGTH MUST BE 4 FT. MINIMUM, MEASURED IN THE DIRECTION OF THE RAMP RUN. WHEN A TURNING SPACE IS CONSTRAINED AT THE BACK OF SIDEWALK, INCREASE LENGTH TO 5 FT. MINIMUM IN THE DIRECTION OF THE STREET CROSSING. THE TURNING SPACE MAY CONTAIN THE DETECTABLE WARNING SURFACE.
- ⑦ RAMP ALIGNMENT - RAMPS SHALL BE ALIGNED TO BE FULLY CONTAINED WITHIN THE CROSSWALK OR STREET CROSSING THEY SERVE. PROVIDE ONE RAMP FOR EACH STREET CROSSING DIRECTION. IN ALTERATIONS, WHERE EXISTING PHYSICAL CONSTRAINTS PREVENT PROVIDING ONE CURB RAMP FOR EACH CROSSING DIRECTION, A SINGLE RAMP (PLACED ON THE APEX OF A CORNER) SHALL BE PERMITTED TO SERVE BOTH STREET CROSSINGS. IF A SINGLE RAMP ON THE APEX IS USED, A CLEAR SPACE 4 FT. X 4 FT. MINIMUM MUST BE PROVIDED AT THE BASE OF THE RAMP. THE CLEAR SPACE MUST BE WITHIN BOTH CROSSINGS AND WHOLLY OUTSIDE OF ANY ADJACENT VEHICULAR TRAVEL LANES. A SINGLE RAMP ON THE APEX IS NOT ACCEPTABLE IN NEW CONSTRUCTION.
- ⑧ RAMP LENGTH - TYPE 2 CURB RAMP LENGTH IS DEPENDENT UPON THE RAMP SLOPE, HEIGHT OF THE CURB, AND ADJACENT SIDEWALK CROSS-SLOPE. WHERE TERRAIN IS SLOPING, A RAMP IS NOT REQUIRED TO CHASE GRADE MORE THAN 15 FT., REGARDLESS OF THE RESULTING RAMP SLOPE.
- ⑨ GUTTER SLOPE - 5.0% MAXIMUM
- ⑩ THE USE OF CURB RAMPS TYPE 2B & 2C, WHILE COMPLIANT WITH THE AMERICANS WITH DISABILITIES ACT (ADA), IS DISCOURAGED BY THE CITY OF LOVELAND DUE TO POTENTIAL ISSUES WITH PONDING WATER, DEBRIS COLLECTION AND ICE. TYPE 2B & 2C SERIES RAMPS WILL ONLY BE ALLOWED WHEN NO OTHER ADA COMPLIANT RAMP IS FEASIBLE. A CITY OF LOVELAND CURB RAMP VARIANCE FORM MUST BE SUBMITTED TO, AND APPROVED BY THE LOCAL ENTITY ENGINEER IN CHARGE OF THE RESPECTIVE PROJECT IN ORDER TO CONSTRUCT A TYPE 2B or 2C SERIES RAMP.



ADAPTED/MODIFIED FROM COLORADO DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NUMBER M-608-1 SHEET NUMBER 4 OF 10 (LAST
MODIFICATION DATE: 7/31/19 BY LTA)

Modified by: B Reiter

DESCRIPTION	DATE:
EFFECTIVE	08/01/2021

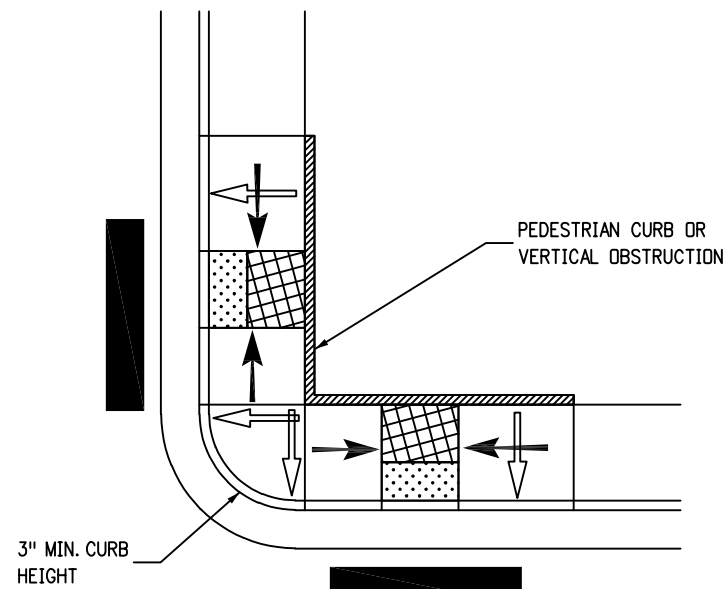


CITY OF LOVELAND, CO
DESIGN AND CONSTRUCTION
STANDARDS

CURB RAMP
TYPE 2
DETAILS AND NOTES

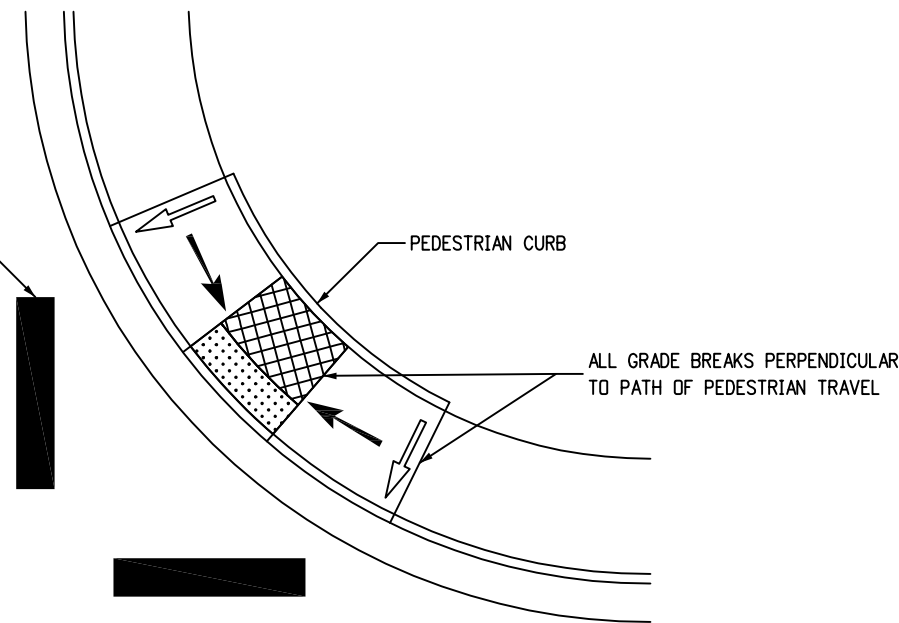
NOT TO SCALE

SHEET 4



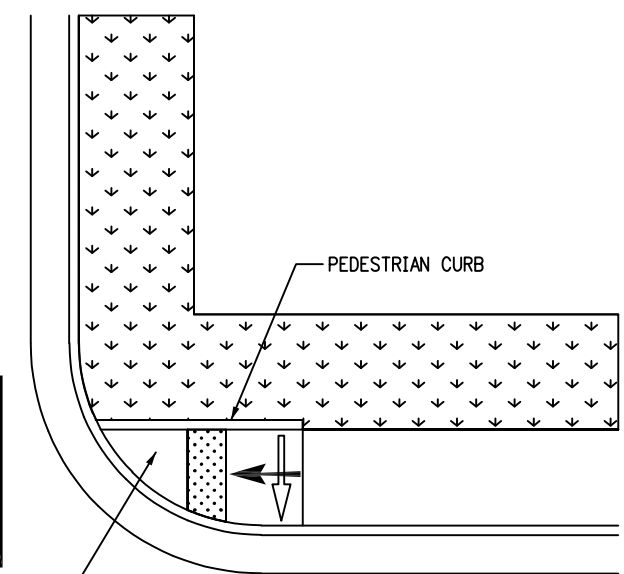
TYPE 2A COMBINATION
(3" REDUCED CURB)

CROSSWALK BAR
(TYPICAL)



TYPE 2A ON APEX OF RADIUS
NOT ALLOWABLE IN NEW CONSTRUCTION
SEE NOTE GENERAL NOTE 4

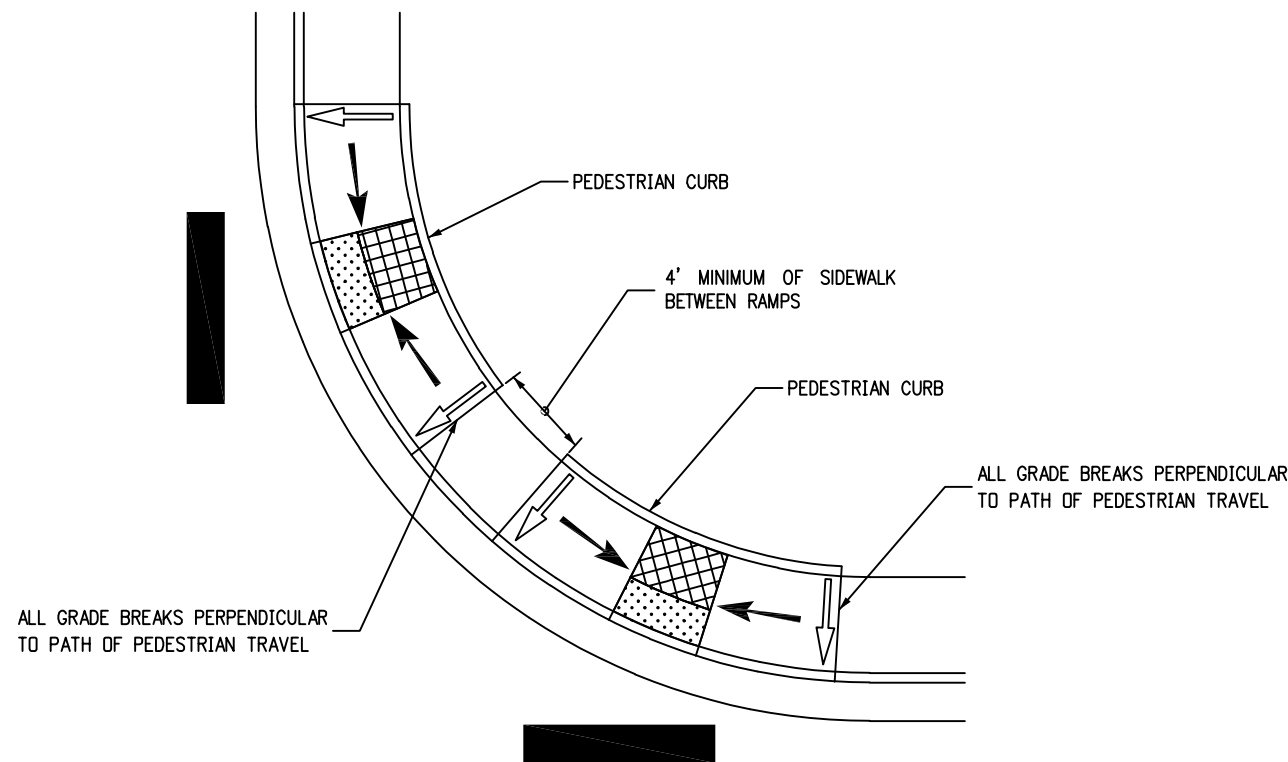
LANDING AREA RUNNING
SLOPE 2% PREF., 5% MAX..
MATCH RAMP CROSS SLOPE.



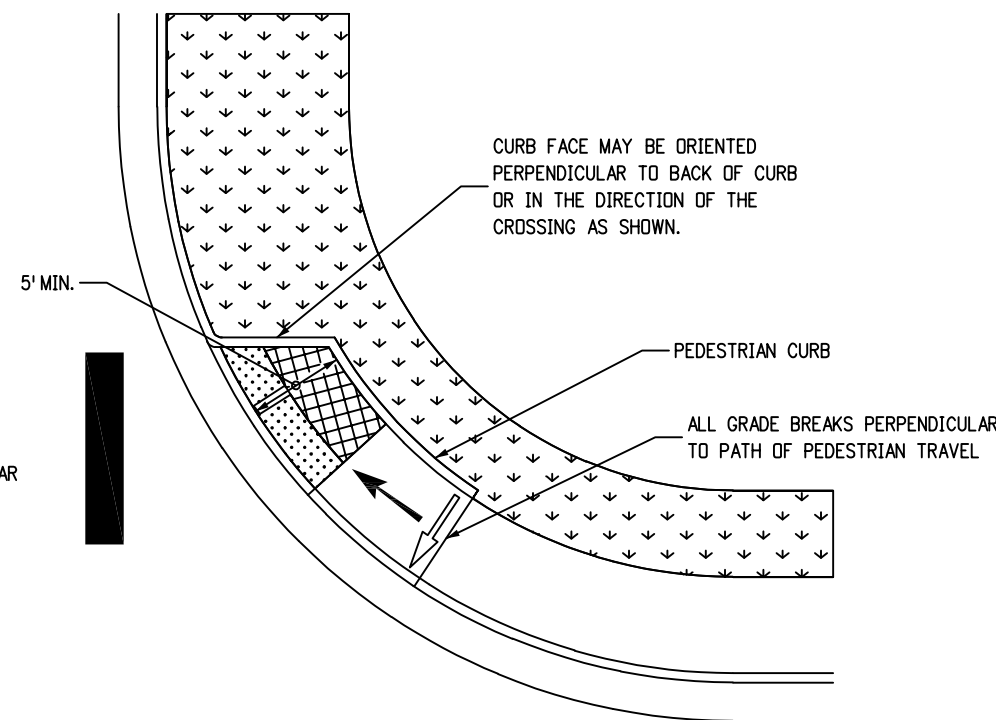
TYPE 2C
(CROSSING IN ONE DIRECTION)

NOTES

PLACEMENTS SHOWN ARE TYPICAL CONFIGURATIONS ONLY AND NOT INDICATIVE OF ALL OPTIONS. OTHER RAMP CONFIGURATIONS MAY BE ACCEPTABLE AS LONG AS THEY CONFORM TO THE CRITERIA IN THESE STANDARDS, AND ARE APPROVED BY THE ENGINEER.



TYPE 2A COMBINATION ON LARGE RADIUS



TYPE 2B ON LARGE RADIUS
(CROSSING IN ONE DIRECTION)

- TURNING SPACE
(SEE NOTE 4, 5, 6 - SHEET 4)
- DETECTABLE WARNING SURFACE
- RAMP RUNNING SLOPE
- RAMP CROSS SLOPE

ADAPTED/MODIFIED FROM COLORADO DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NUMBER M-608-1 SHEET NUMBER 5 OF 10 (LAST
MODIFICATION DATE: 7/31/19 BY LTA)

Modified by: B Reiter

DESCRIPTION	DATE:
EFFECTIVE	08/01/2021

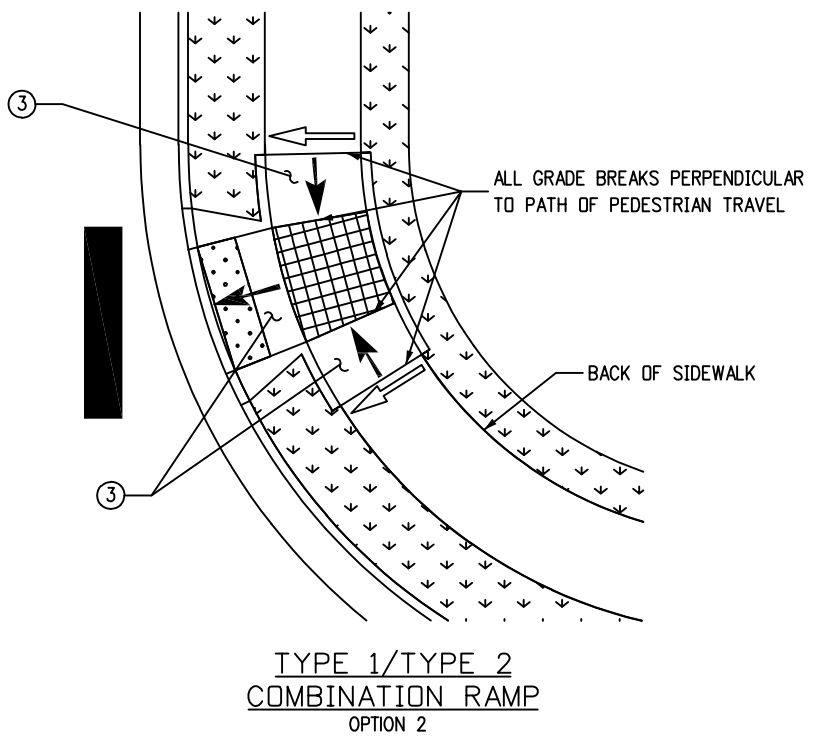
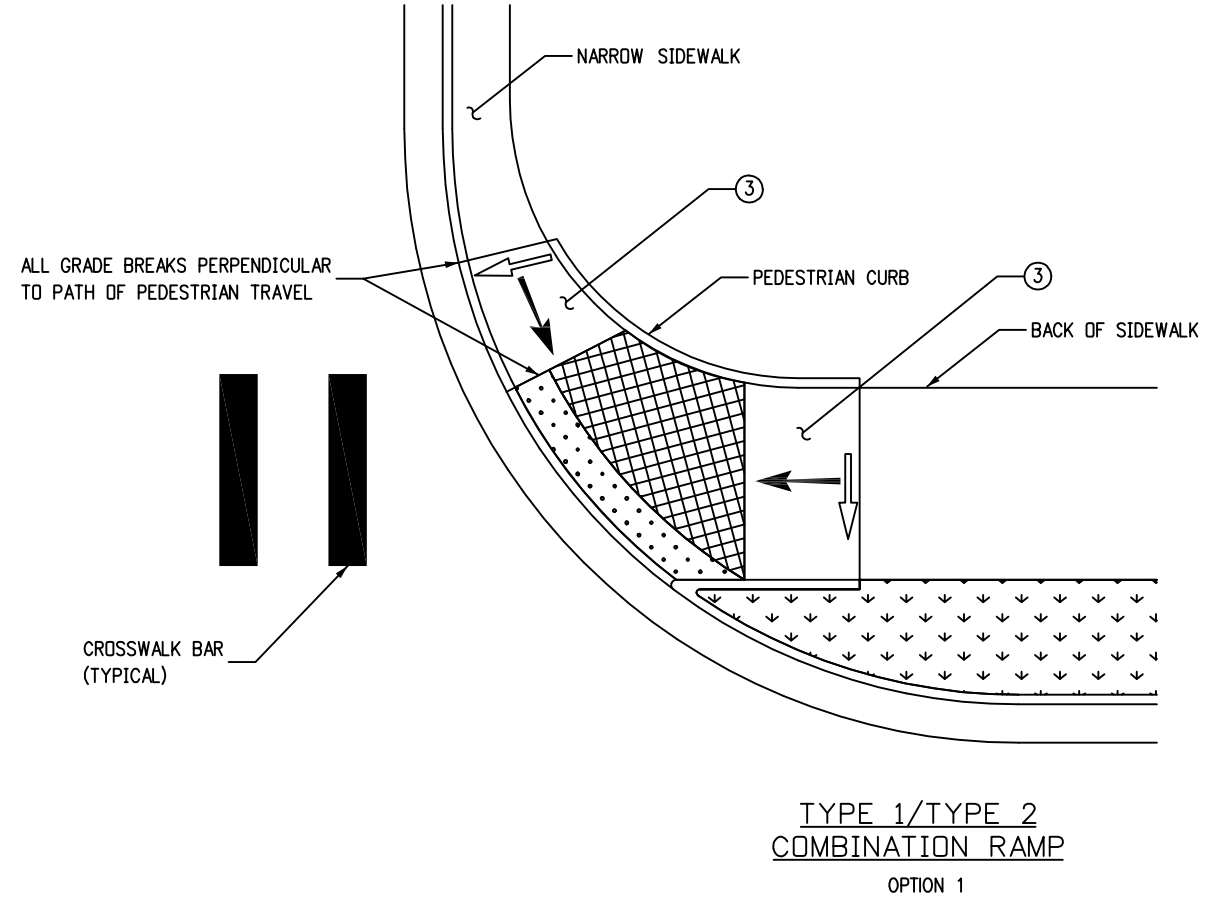
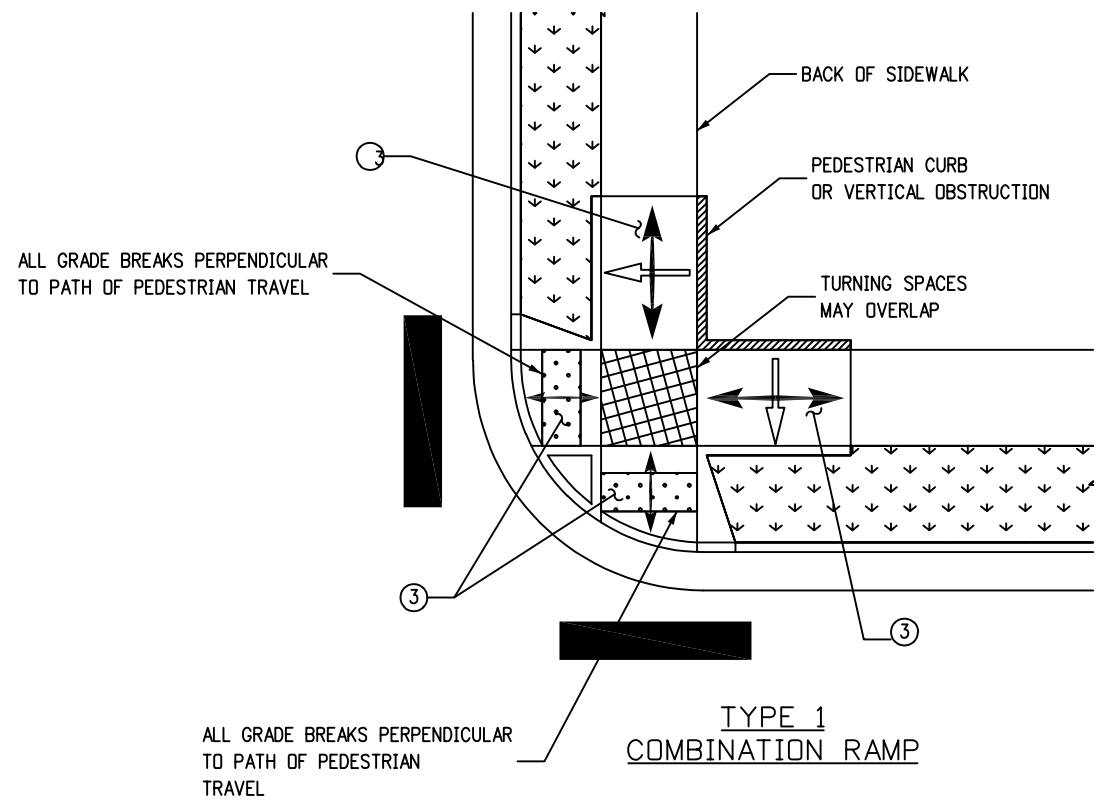


CITY OF LOVELAND, CO
DESIGN AND CONSTRUCTION
STANDARDS

CURB RAMP
TYPE 2 TYPICAL
CONFIGURATIONS

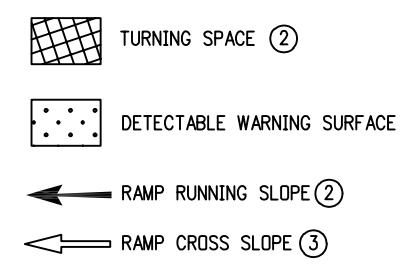
NOT TO SCALE

SHEET 5



NOTES

- ① THE CURB RAMP PLACEMENTS SHOWN ARE TYPICAL CONFIGURATION ONLY AND NOT INDICATIVE OF ALL OPTIONS. OTHER CURB RAMP CONFIGURATIONS MAY BE ACCEPTABLE AS LONG AS THEY CONFORM TO THE CRITERIA IN THESE STANDARDS, AND ARE APPROVED BY THE ENGINEER.
- ② RAMP AND TURNING SPACE CROSS SLOPE - 2.0% MAXIMUM
- ③ RAMP RUNNING SLOPE - 8.3% MAXIMUM



ADAPTED/MODIFIED FROM COLORADO DEPARTMENT OF TRANSPORTATION STANDARD PLAN NUMBER M-608-1 SHEET NUMBER 6 OF 10 (LAST MODIFICATION DATE: 7/31/19 BY LTA)	DESCRIPTION	DATE:
	EFFECTIVE	08/01/2021
Modified by: B Reiter		

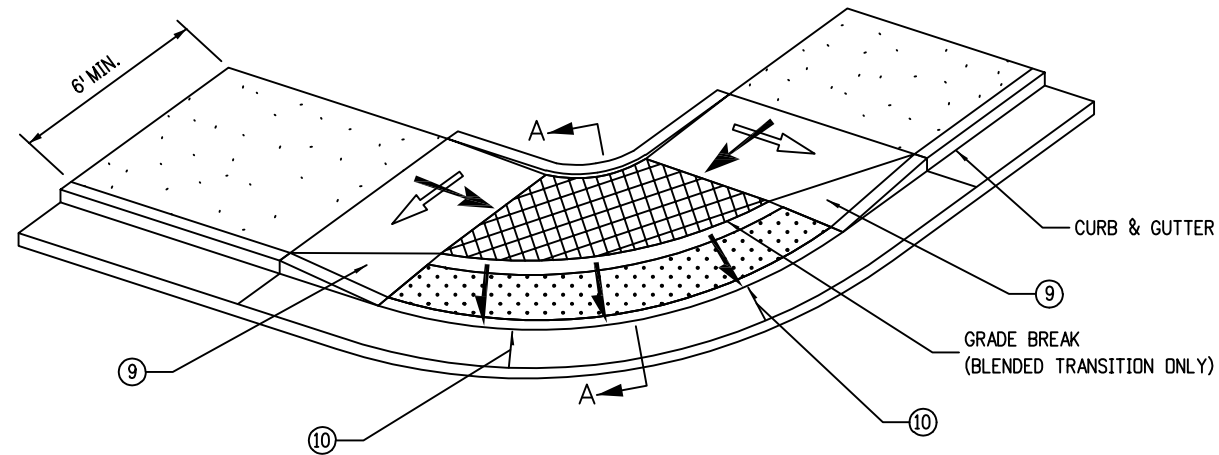


CITY OF LOVELAND, CO
DESIGN AND CONSTRUCTION
STANDARDS

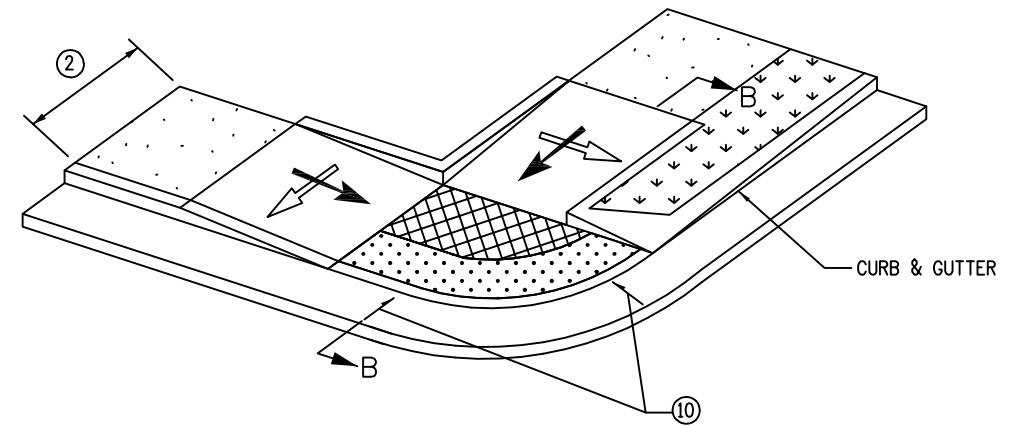
CURB RAMP
TYPICAL COMBINATION
CONFIGURATIONS

NOT TO SCALE

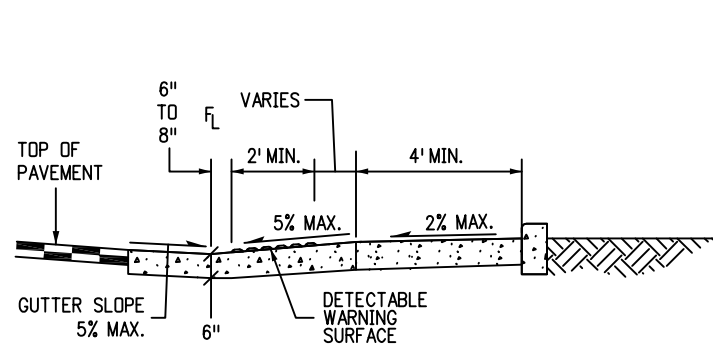
SHEET 6



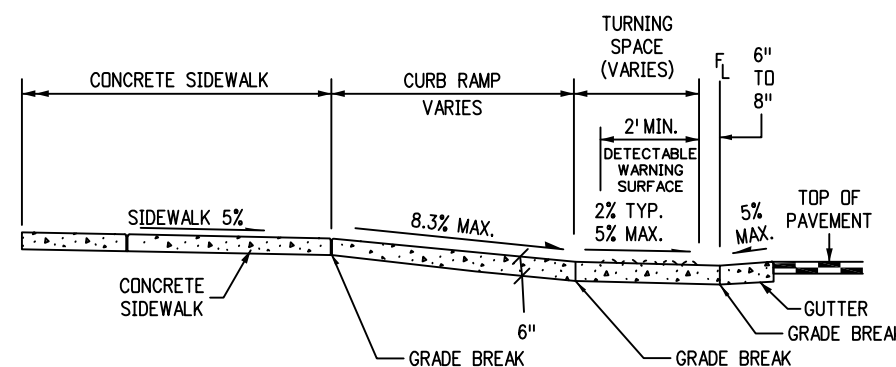
BLENDED TRANSITION



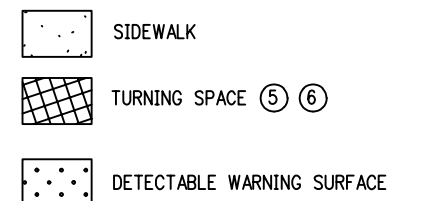
DEPRESSED CORNER



SECTION A-A

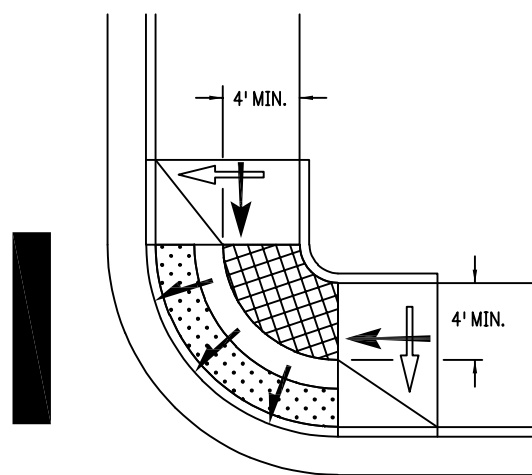


SECTION B-B

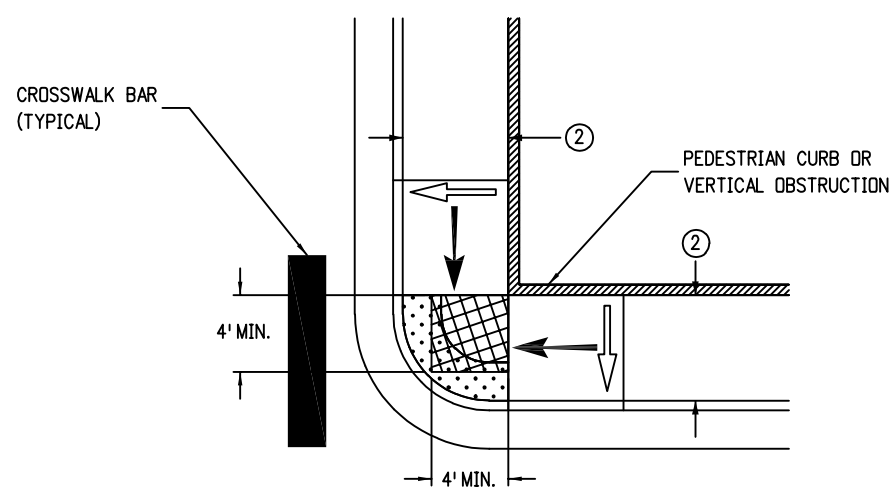


NOTES

- ① TYPE 1 AND TYPE 2 RAMP CONFIGURATIONS ARE PREFERRED. BLENDED TRANSITIONS AND DEPRESSED CORNERS SHOULD ONLY BE USED WHERE TYPE 1 AND TYPE 2 RAMPS CANNOT BE INSTALLED DUE TO PHYSICAL SITE CONSTRAINTS.
- ② RAMP WIDTH - PROVIDE 5 FT. OR GREATER WHERE POSSIBLE. IF SITE CONSTRAINTS DO NOT PERMIT, PROVIDE 4 FT. WIDTH MINIMUM. RAMPS SERVICING SHARED USE PATHS SHALL MATCH THE WIDTH OF THE PATH.
- ③ RAMP RUNNING SLOPE - 8.3% MAXIMUM
- ④ BLENDED TRANSITION RUNNING SLOPE - 5.0% MAXIMUM
- ⑤ RAMP AND TURNING SPACE CROSS SLOPE - 2.0% MAXIMUM
- ⑥ TURNING SPACE DIMENSIONS - PROVIDE A 4 FT. X 4 FT. MINIMUM TURNING SPACE AT THE BOTTOM OF THE RAMP RUNS. THE TURNING SPACE MAY CONTAIN THE DETECTABLE WARNING SURFACE.
- ⑦ RAMP ALIGNMENT - TURNING SPACE SHALL BE ALIGNED TO BE FULLY WITHIN THE CROSSWALK OR STREET CROSSINGS THEY SERVE.
- ⑧ RAMP LENGTH - TYPE 1 CURB RAMP LENGTH IS DEPENDENT UPON THE RAMP SLOPE, HEIGHT OF THE CURB, AND ADJACENT SIDEWALK CROSS-SLOPE. WHERE TERRAIN IS SLOPING, A RAMP IS NOT REQUIRED TO CHASE GRADE MORE THAN 15 FT., REGARDLESS OF THE RESULTING RAMP SLOPE.
- ⑨ RAMP FLARES - WHERE A RAMP EDGE ABUTS A WALKABLE SURFACE, A FLARED SIDE SHALL BE PROVIDED. RAMP FLARE SLOPES SHALL NOT EXCEED 10.0% EXCEPT WHERE THEY ABUT A NON-WALKABLE SURFACE, OR WHERE THE ADJACENT RAMP SURFACE IS BLOCKED TO PEDESTRIAN TRAFFIC.
- ⑩ GUTTER SLOPE - 5.0% MAXIMUM
- ⑪ DETECTABLE WARNING SURFACE PLACEMENT - DETECTABLE WARNING SURFACE SHALL BE PLACED AROUND THE RADIUS AND LOCATED AT THE BACK OF CURB ON BLENDED TRANSITION AND DEPRESSED CORNER RAMPS.



BLENDED TRANSITION



DEPRESSED CORNER

ADAPTED/MODIFIED FROM COLORADO DEPARTMENT OF TRANSPORTATION STANDARD PLAN NUMBER M-608-1 SHEET NUMBER 7 OF 10 (LAST MODIFICATION DATE: 7/31/19 BY LTA)

Modified by: B Reiter

DESCRIPTION	DATE:
EFFECTIVE	08/01/2021

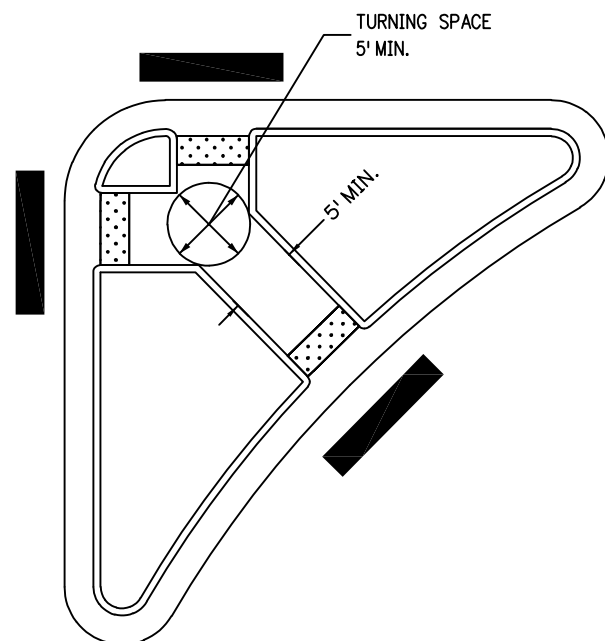
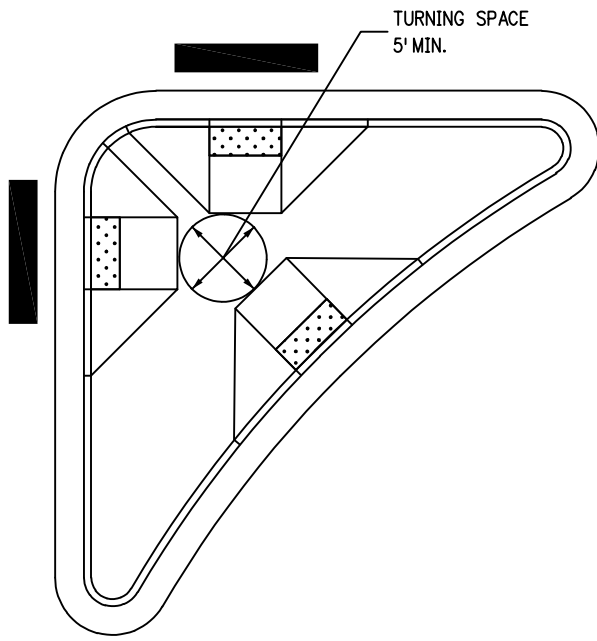


CITY OF LOVELAND, CO
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STANDARDS

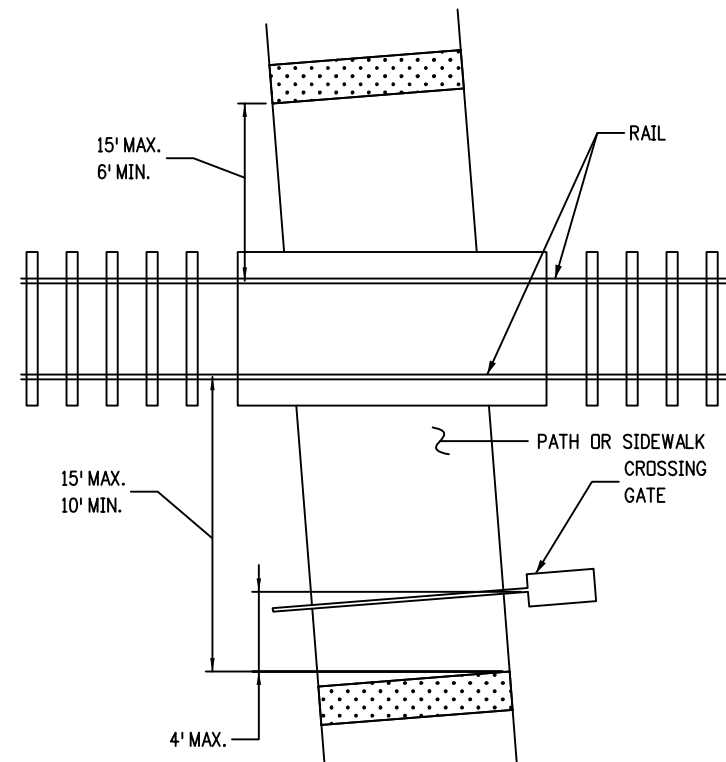
BLENDED TRANSITION
AND DEPRESSED CORNER
DETAILS AND NOTES

NOT TO SCALE

SHEET 7



INTERSECTION ISLANDS

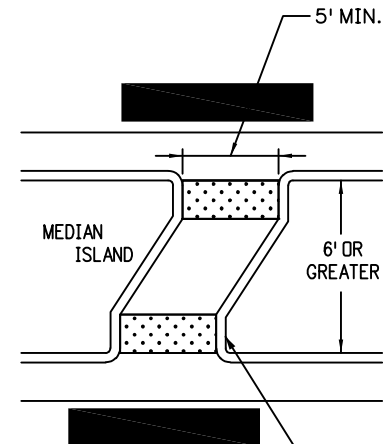
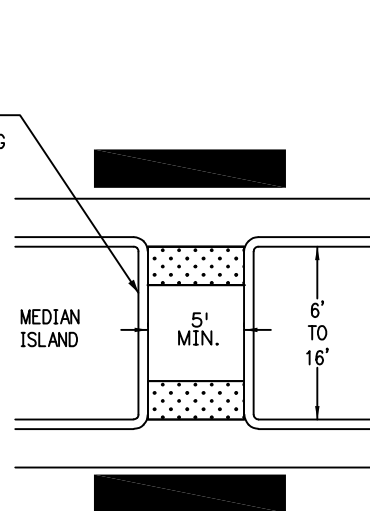


AT-GRADE RAIL CROSSING

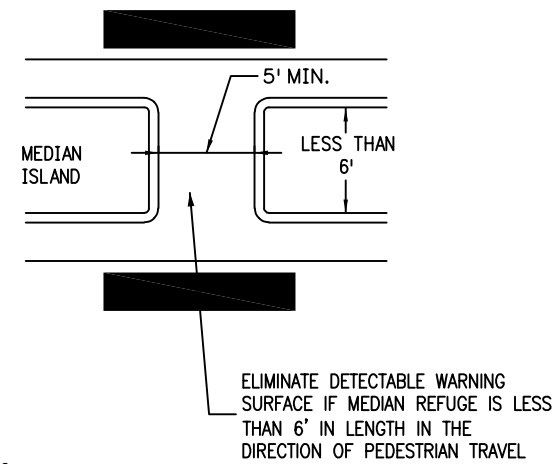
NOTES

- ① DETECTABLE WARNING SURFACES SHALL BE PLACED IN ALIGNMENT WITH THE BACK OF CURB.
- ② FLARED SIDES ARE PREFERRED ON RAISE INTERSECTION ISLANDS AND SHOULD BE PROVIDED ON ISLANDS WHICH SERVE SHARED USE PATHS, OR AT LOCATIONS WHERE BICYCLE USE IS EXPECTED.
- ③ FOR CUT-THROUGH MEDIAN ISLANDS, DETECTABLE WARNING SURFACES SHALL BE PLACED IN ALIGNMENT WITH THE BACK-OF-CURB IF THE DISTANCE BETWEEN BACK-OF-CURB TO BACK-OF-CURB IS 6 FEET OR GREATER. IF THE BACK-OF-CURB TO BACK-OF-CURB IS LESS THAN 6 FEET, THEN NO DETECTABLE WARNING SURFACE SHALL BE INSTALLED.
- ④ CURB RAMP AND CUT-THROUGH WIDTHS SHOULD BE THE SAME WIDTH AS ANY SIDEWALK OR SHARED USE PATH WHICH THEY SERVE.

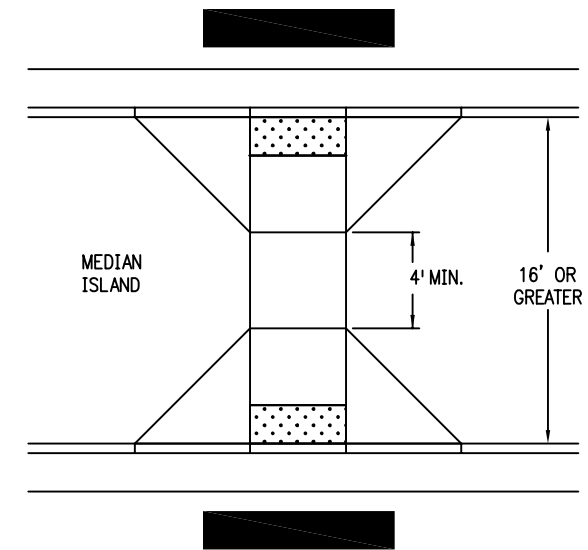
SQUARE CURB TO ORIENT PEDESTRIANS IN THE DIRECTION OF THE CROSSING



SQUARE CURB TO ORIENT PEDESTRIANS IN THE DIRECTION OF THE CROSSING



MEDIAN ISLANDS



 DETECTABLE WARNING SURFACE

 TURNING SPACE

ADAPTED/MODIFIED FROM COLORADO DEPARTMENT OF TRANSPORTATION STANDARD PLAN NUMBER M-608-1 SHEET NUMBER 8 OF 10 (LAST MODIFICATION DATE: 7/31/19 BY LTA)

Modified by: B Reiter

DESCRIPTION	DATE:
EFFECTIVE	08/01/2021

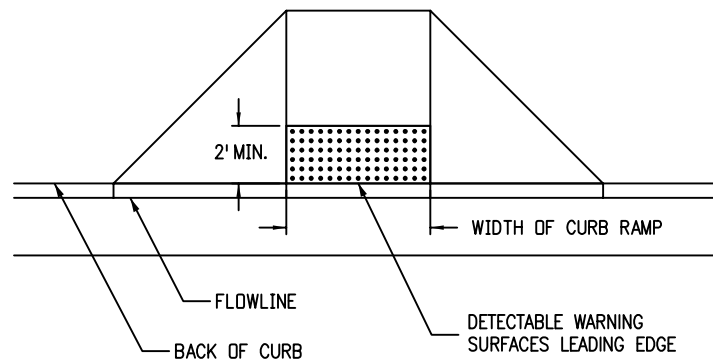


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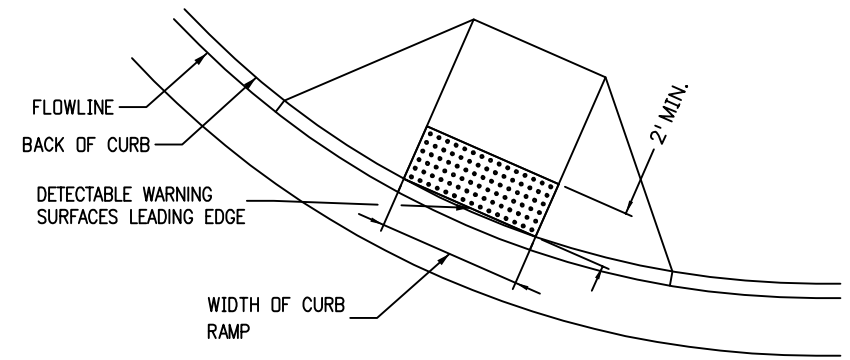
RAILROAD CROSSINGS,
MEDIANS AND ISLANDS
DETAILS AND NOTES

NOT TO SCALE

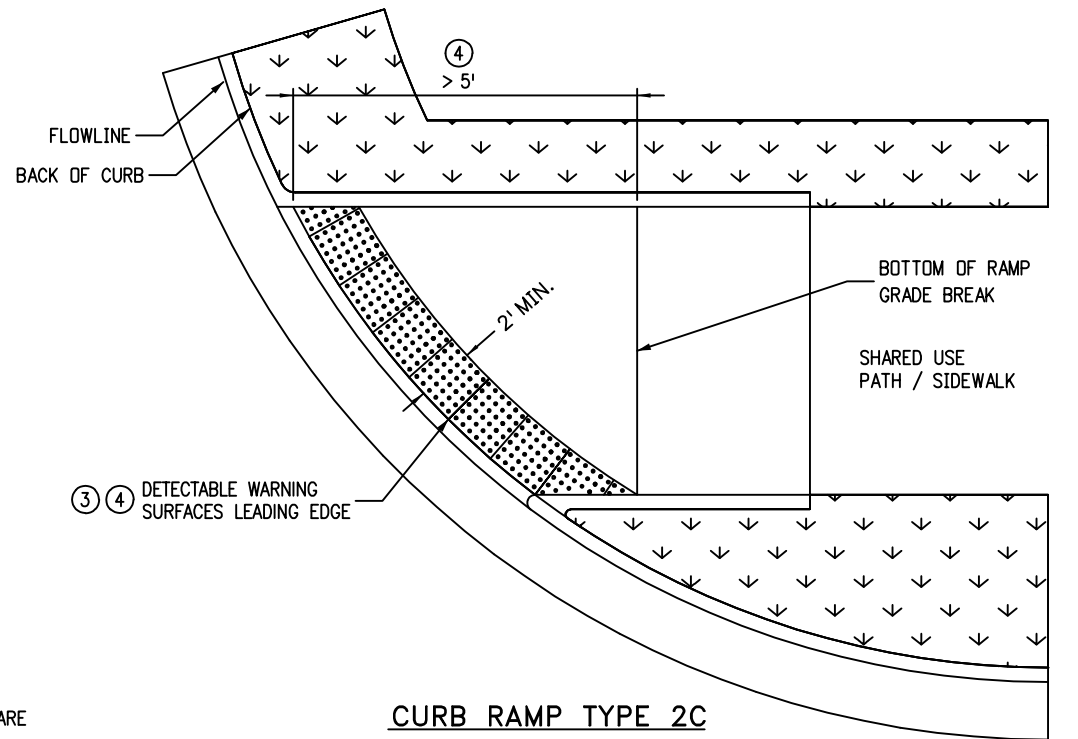
SHEET 8



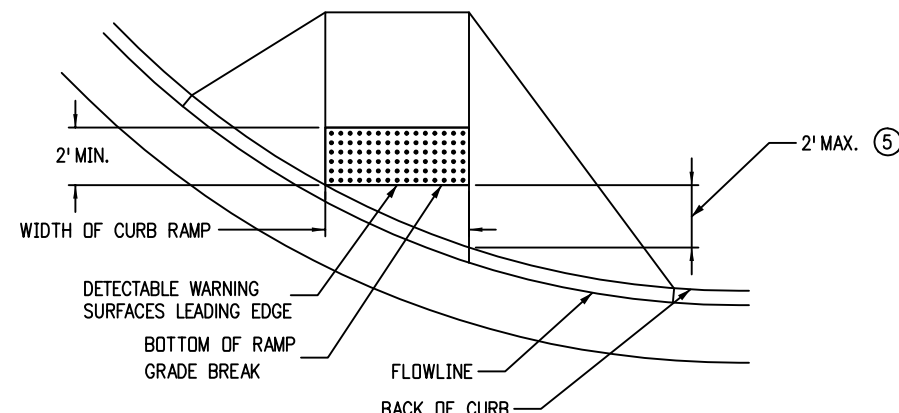
CURB RAMP TYPE 1
(PERPENDICULAR ON TANGENT)



CURB RAMP TYPE 1
(PERPENDICULAR ON RADIUS)



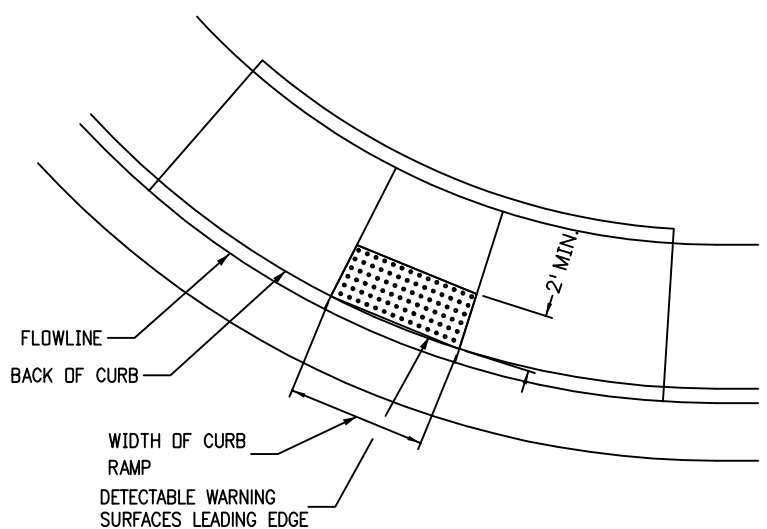
CURB RAMP TYPE 2C
(SHARED USE PATH)



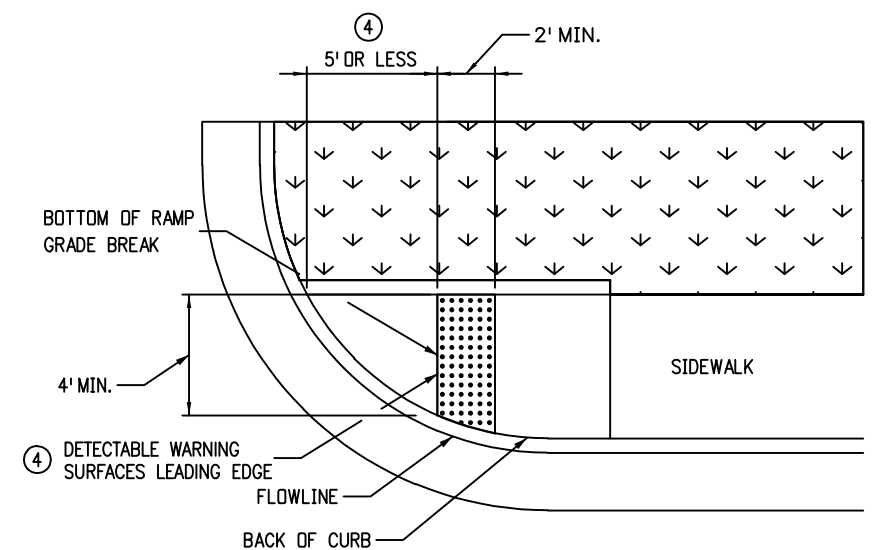
CURB RAMP TYPE 1C
(DIRECTIONAL ON RADIUS)

NOTES

- ① DETECTABLE WARNING SURFACES SHALL CONSIST OF TRUNCATED DOMES IN A SQUARE GRID OR RADIAL PATTERN.
- ② DETECTABLE WARNING SURFACES SHALL BE INSTALLED AT SIDEWALK, OR SHARED USE PATH, TO STREET CROSSING TRANSITIONS.
- ③ THE DETECTABLE WARNING SURFACE SHALL SPAN THE FULL WIDTH OF THE CURB RAMP, SHARED USE PATH, OR OTHER ROADWAY ENTRANCE AS APPLICABLE. A GAP OF 2 INCHES FROM THE EDGE OF THE DETECTABLE WARNING SURFACE TO THE EDGE OF THE CURB RAMP OR SHAVED USED PATH IS PERMITTED.
- ④ WHEN DETECTABLE WARNING SURFACES ARE PLACED ON A SLOPE GREATER THAN 5.0%, TRUNCATED DOMES PATTERN SHOULD BE ALIGNED IN THE DIRECTION OF THE RAMP RUN; OTHERWISE DOMES ARE NOT REQUIRED TO BE ALIGNED.
- ⑤ LOCATE ONE CORNER OF THE DETECTABLE WARNING SURFACE LEADING EDGE AT THE BACK OF CURB. NO POINT ON THE LEADING EDGE OF THE DETECTABLE WARNING SURFACE MAY BE MORE THAN 5 FT. FROM THE BACK OF CURB. WHEN ANY POINT OF THE LEADING EDGE OF THE DETECTABLE WARNING SURFACE WILL BE GREATER THAN 5 FT. FROM THE BACK OF CURB, PLACE THE DETECTABLE WARNING SURFACE RADially AT THE BACK OF CURB.
- ⑥ FOR CURB RAMP TYPE 1C, WHERE THE RAMP ABUTS A WALKABLE SURFACE, THE LEADING EDGE OF THE DETECTABLE WARNING SURFACE SHALL NOT BE PLACED FURTHER THAN 2 FEET FROM THE BACK OF CURB. IF THE RADIUS OF A CORNER MAKES THIS IMPOSSIBLE, ORIENT THE CURB RAMP PERPENDICULAR TO THE CURB AND GUTTER
- ⑦ DETECTABLE WARNING SURFACE PLATES SHALL BE EMBEDDED IN THE CONCRETE CURB RAMP WHILE THE CONCRETE IS STILL PLASTIC.
- ⑧ DETECTABLE WARNING SURFACES SHALL NOT BE PLACED OVER GRADE BREAKS.



CURB RAMP TYPE 2A



CURB RAMP TYPE 2C
(DIRECTIONAL ON RADIUS)

ADAPTED/MODIFIED FROM COLORADO DEPARTMENT OF TRANSPORTATION
STANDARD PLAN NUMBER M-608-1 SHEET NUMBER 9 OF 10 (LAST
MODIFICATION DATE: 7/31/19 BY LTA)

Modified by: B Reiter

DESCRIPTION	DATE:
EFFECTIVE	08/01/2021

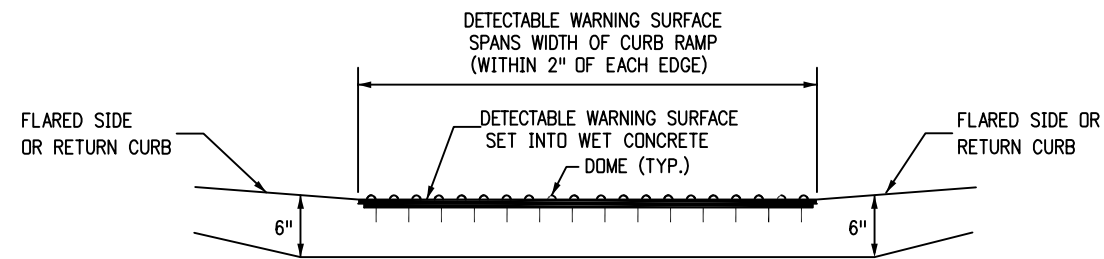


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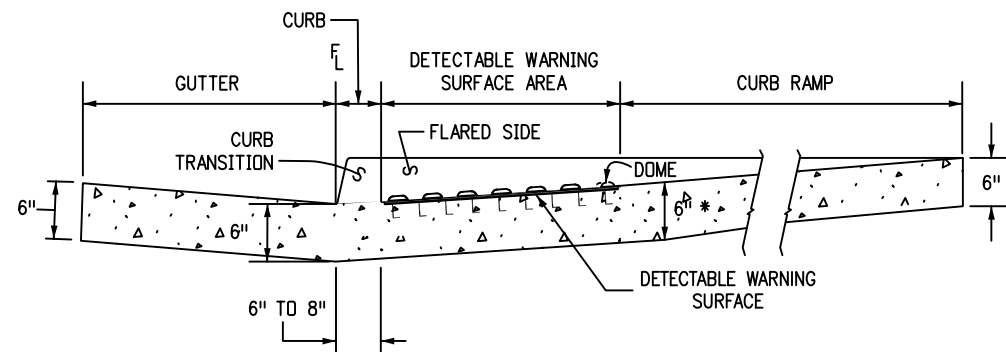
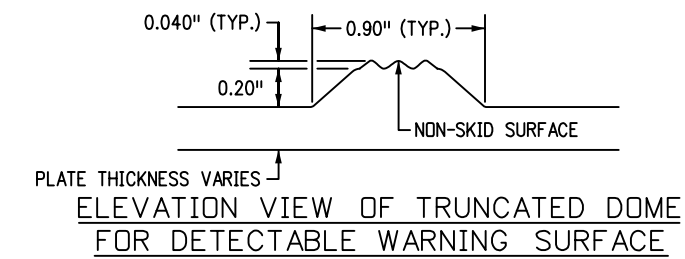
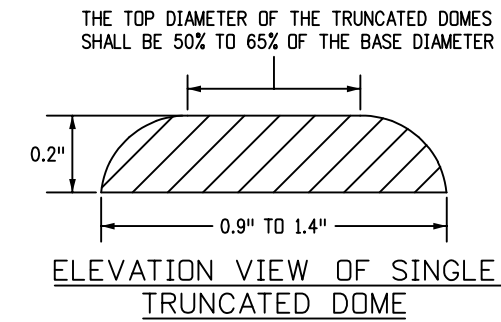
DETECTABLE
WARNING SURFACE
PLACEMENT

NOT TO SCALE

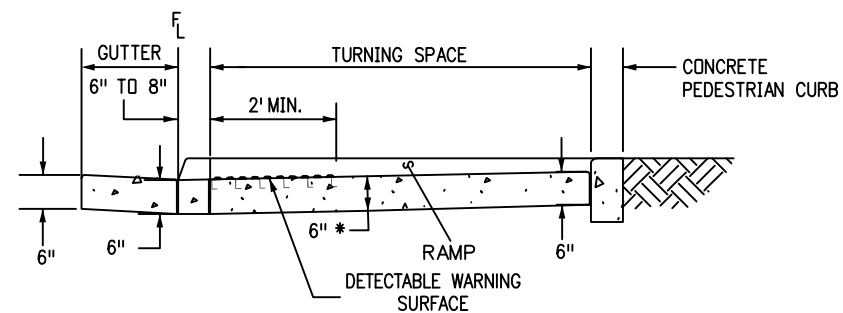
SHEET 9



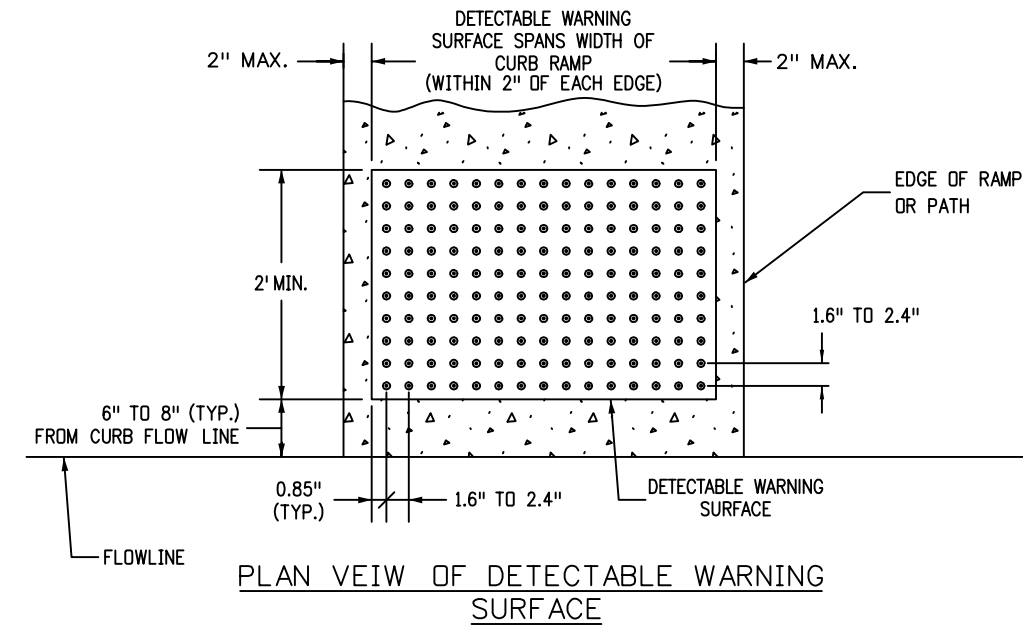
SECTION VIEW OF DETECTABLE WARNING SURFACE
(LOOKING AT PERPENDICULAR RAMP RUN FROM STREET)



SECTION VIEW FOR TYPE 1 CURB RAMPS
(LOOKING PERPENDICULAR TO RAMP RUN)



SECTION VIEW FOR TYPE 2 CURB RAMPS
(LOOKING PERPENDICULAR TO TURNING SPACE)



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STANDARD PLAN NUMBER M-608-1 SHEET NUMBER 10 OF 10 (LAST
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CITY OF LOVELAND, CO
DESIGN AND CONSTRUCTION
STANDARDS

DETECTABLE
WARNING SURFACE
DETAILS

NOT TO SCALE

SHEET 10