STANDARD DUAL UNI-DIRECTIONAL CURB RAMPS

CASE A
(SEE NOTE 9)

CASE B
(SEE NOTE 9)

CASE C
(SEE NOTE 9)

(USE WHEN STREET FLOW HIGH POINT EXISTS AT MCR OR UPSTREAM STORM DRAIN EXISTS ADJACENT TO CURB RETURN)

NOTES
a. INDIVIDUAL CURB RAMPS SHOWN IN CASES A, B AND C MAY BE CONSIDERED AND USED IN COMBINATION (SEE SHEET 3 FOR ADDITIONAL DETAILS).
b. THE 4'-0" MINIMUM SET BACK (DENOTED HEREON WITH AN *) FROM THE CURB RAMP FLARE TO AN EXISTING PARKWAY MAY BE REDUCED TO 2'-0" IN RESIDENTIAL ZONES.

BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

CURB RAMPS

STANDARD PLAN
S-442-6

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03/27/2020

SUPERSEDES
S-4761
S-410
S-420
S-444
S-601

REFERENCES

VAULT INDEX NUMBER: B-4786

SHEET 1 OF 9 SHEETS
CURB RAMPS TRANSITIONS ALIGNMENT LIMITS
FOR CASES A THRU G

NOTE:
TO THE MAXIMUM EXTENT POSSIBLE, CURB RAMPS SHALL RUN PARALLEL TO CROSSWALK MARKINGS, CENTERED WITHIN THE CROSSWALK, AND ALIGNED WITH CURB RAMPS AT OPPOSITE SIDES. IN SO DOING, CURB RETURNS PLACED ON EITHER ONE OR BOTH SIDES OF CURB RAMPS SHALL BE CONSIDERED.

MID-BLOCK UNI-DIRECTIONAL CURB RAMPS
(UNLESS NOTED HEREIN, SEE APPLICABLE DETAILS ON SHEET 3)

CASE D
USE DETAILS 1, 3 OR 4
ON SHEET 3 AS APPLICABLE (SEE NOTE 9)

CASE E
(SEE NOTES 2, 9 & 17)

SPECIAL UNI-DIRECTIONAL CURB RAMP
CASE F
(SEE NOTE 9)

CASE G
FOR USE AT FREEWAY RAMPS OR WHERE CASE A, B & C ARE NON-APPLICABLE (SEE NOTES 9 & 17)

NOTE:
CURB RAMPS TRANSITIONS ALIGNMENT LIMITS FOR CASES A THRU G

MID-BLOCK UNI-DIRECTIONAL CURB RAMPS
(UNLESS NOTED HEREIN, SEE APPLICABLE DETAILS ON SHEET 3)

CASE D
USE DETAILS 1, 3 OR 4
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CASE E
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SPECIAL UNI-DIRECTIONAL CURB RAMP
CASE F
(SEE NOTE 9)

CASE G
FOR USE AT FREEWAY RAMPS OR WHERE CASE A, B & C ARE NON-APPLICABLE (SEE NOTES 9 & 17)
CURB RAMPS DETAILS

DETAIL 1

DETAIL 2

DETAIL 3

DETAIL 4

DETAIL 5

CURB DETAILS

DETAIL 6

DETAIL 7

(SEE NOTES BELOW)

NOTES:

a. "H"=2.5 INCHES MINIMUM. FOR "H" EXCEEDING 9 INCHES, DESIGN CURB AS AN ISOLATED REINFORCED CONCRETE RETAINING CURB.

b. TEMPORARY CONSTRUCTION EASEMENT OR RIGHT OF ENTRY SHALL BE OBTAINED FROM AFFECTED PROPERTY OWNERS PRIOR TO PLACING FORMWORK FOR BACK OF SIDEWALK OR RETAINING CURB/WALL ALONG PROPERTY LINES.
SPECIAL CURB RAMPS FOR NARROW SIDEWALKS
6-0" TO 7'-6" IN WIDTH
(SEE NOTES 2, 9 & 17)

DWS NOTES:

a. WHERE INSTALLED IN A RADIAL PATTERN, TRUNCATED DOMES SHALL HAVE A CENTER TO CENTER SPACING OF 2.3 INCHES MINIMUM TO 2.4 INCHES Maximum AND A BASE TO BASE SPACING OF 0.65 INCHES MINIMUM.


c. FOR ADDITIONAL DWS REQUIREMENTS SEE S-601 AND THE APPROVED DWS MANUFACTURER REQUIREMENTS.

GROOVED BORDER DETAIL
FOR ALL CASES (SEE NOTE 4)
ALTERNATE BI-DIRECTIONAL CURB RAMPS
SEE TURNING SPACE DETAILS (SHEET 7 OF 9)

CASE I
USE DETAILS ON SHEET 3 AS APPLICABLE
(SEE NOTES 1, 9 & 17)

CASE J
(SEE NOTES 2, 9 & 17)

SECTION G
CASE I
(RETAINING CURB SHOWN)

SECTION H
CASE J

NOT TO SCALE
NOTE TO DESIGNER: (SEE NOTE 17)

DRAINAGE CONTROL SHALL BE ASSUMED TO BE IMPACTED WHEN THE PROPOSED CURB HEIGHT FOR A CURB RAMP IS LESS THAN THE EXISTING STREET CURB HEIGHT AT THE CORRESPONDING JOIN LINE. UNDER SUCH CASES, A HYDRAULIC CALCULATION SHALL BE MADE THAT SHOWS THE ANTICIPATED FLOW DEPTH IN THE STREET GUTTER WILL NOT CREST THE PROPOSED CURB HEIGHT WHEN EVALUATING THE PROPOSED CURB RAMP FOR A 10 YEAR STORM EVENT OR A 50 YEAR STORM EVENT IN A SUMP LOCATION. THE DEPTH OF FLOW CALCULATIONS SHALL BE SUBMITTED FOR REVIEW FOR APPROVAL BY THE CITY ENGINEER IN WRITING AND DOCUMENT RECORDED. A WRITTEN EVALUATION SHALL ALSO BE PROVIDED TO THE CITY ENGINEER DOCUMENTING ESTABLISHED STREET FLOW PATTERNS AND AVAILABLE STORM DRAIN FACILITIES IN AND NEAR THE CURB RAMP SITE TO MITIGATE POTENTIAL FLOODING.

TYPICAL JOINTS

(CURB RAMPS EXAMPLES)
NOTES

ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SSWPC) ADOPTED BY THE BOARD OF PUBLIC WORKS AS AMENDED BY THE LATEST CORRESPONDING CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS BROWN BOOK.

1. PROVIDE "STANDARD DUAL UNI-DIRECTIONAL CURB RAMPS" CASES A, B OR C WITH THE INTENT OF PROVIDING IN-LINE STREET CROSSING FOR PEDESTRIANS, TO THE MAXIMUM EXTENT POSSIBLE, INDIVIDUAL CURB RAMPS IN CASES A, B AND C SHALL BE ALIGNED WITH THE CROSSWALK MARKINGS, CENTERED WITHIN THE CROSSWALK AND SHALL BE ALIGNED WITH THE CURB RAMPS AT THE OPPOSITE SIDES. OTHER ALIGNING DUAL CONFIGURATIONS IN GENERAL CONFORMANCE TO THIS STANDARD PLAN MAY BE PROPOSED FOR APPROVAL PER NOTE 14. "ALTERNATE BI-DIRECTIONAL CURB RAMP" CASE I MAY BE USED AS APPROVED PER NOTE 14, WHEN EXISTING CONDITIONS OR CONSTRAINTS DO NOT ALLOW FOR "STANDARD DUAL CURB RAMPS" CONSTRUCTION.

2. "SPECIAL CURB RAMPS FOR NARROW SIDEWALKS" CASE H AND "MID-BLOCK UNI-DIRECTIONAL CURB RAMP" CASE E MAY ONLY BE USED FOR NARROW SIDEWALKS 6.0 TO 7.5 FEET IN WIDTH (SIDEWALK WIDTH SHOWN EXCLUDES THE STREET CURB WIDTH). AS APPROVED PER NOTE 14, "ALTERNATE BI-DIRECTIONAL CURB RAMP" CASE J MAY ONLY BE USED WHEN EXISTING FIELD CONDITIONS OR CONSTRAINTS DO NOT ALLOW FOR "SPECIAL CURB RAMPS FOR NARROW SIDEWALKS" CASE H CONSTRUCTION.

3. ALL NOTED SLOPES AND GRADES SHALL BE MEASURED RELATIVE TO THE HORIZONTAL PLANE AND SHALL INCLUDE ALL ALLOWABLE CONSTRUCTION TOLERANCES.

4. PROVIDE A 12 INCH WIDE BORDER IN THE PLANE OF THE SIDEWALK AT CURB RAMPS AS SHOWN WITH 1/4 INCH GROOVES APPROXIMATELY 3/4 INCH ON CENTER. SEE GROOVED BORDER DETAIL ON SHEET 4. THE SURFACE OF THE GROOVED BORDER SHALL HAVE A FINE HAIR BROomed FINISH.

5. UNLESS OTHERWISE APPROVED PER NOTE 14, CONCRETE CURB RAMPS SHALL BE CONSTRUCTED WITH CLASS 520-C-2500.

6. THE DETECTABLE WARNING SURFACE (DWS) COLOR SHALL CONFORM TO FEDERAL STANDARD 595C COLOR NUMBER FS 33538 (YELLOW) AND SHALL BE INTEGRAL WITH THE DWS. SURFACE COATINGS SUCH AS PAINT SHALL NOT BE ALLOWED TO BE APPLIED ON THE DWS. THE TRUNCATED DOMES OF THE DWS SHALL HAVE IN-LINE PATTER AND SHALL BE PART OF A PREFABRICATED SURFACE PANEL.

7. CURB RAMPS FINAL SURFACE FINISH WITHIN THE GROOVED BORDERS SHALL BE DONE BY HAND WITH A WOOD FLOAT AND SHALL BE GIVEN A ROTARY SURFACE TEXTURE.

8. STANDARD DIMENSIONS AND DEFINITIONS:

BCR = BEGINNING OF CURB RETURN.
CH = CURB HEIGHT (ALONG THE STREET).
ECR = END OF CURB RETURN.
PL = PROPERTY LINE (PUBLIC RIGHT-OF-WAY LINE).
Q = THE PEDESTRIAN ACCESS ROUTE "Q" SHALL HAVE A MINIMUM CONTINUOUS CLEAR AND UNOBSCECTED WIDTH OF 5 FT.
T = THICKNESS OF CONCRETE PAVEMENT, FOR "T" & ASSOCIATED SUBGRADE REQUIREMENTS SEE S-444.
U = TURNING SPACE LENGTH "U" SHALL BE 4 FT MINIMUM. WHERE THE TURNING SPACE IS CONSTRAINED AT THE BACK OF SIDEWALK, LENGTH "U" SHALL BE 5 FT MINIMUM. FOR TURNING SPACE SURFACE SLOPES AND GRADES SEE NOTE 15.
W = UNLESS OTHERWISE SPECIFIED ON THIS STANDARD PLAN, THE WIDTH OF CURB RAMP "W" SHALL BE 4 FT MINIMUM AT 2% MAXIMUM CROSS SLOPE MEASURED PERPENDICULAR TO THE DIRECTION OF CURB RAMP TRAVEL (SEE NOTE 16).
X = THE "X" LENGTH IS THE FLARED CURB TRANSITION TANGENT OR ARC LENGTH MEASURED ALONG THE BOTTOM FACE OF THE STREET CURB. THE GRADE WITHIN THE FLARED TRANSITION AREAS OF CURB RAMPS SHALL NOT EXCEED 10%. THE X LENGTH SHALL BE WITHIN THE RANGE OF VALUES PER TABLE BELOW, INTERMEDIATE VALUES MAY BE INTERPOLATED.

<table>
<thead>
<tr>
<th>CH (IN)</th>
<th>&quot;X&quot; MIN (FT-IN)</th>
<th>&quot;X&quot; MAX (FT-IN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>5'-0&quot;</td>
<td>5'-10 1/2</td>
</tr>
<tr>
<td>6.5</td>
<td>5'-5&quot;</td>
<td>6'-4 1/2</td>
</tr>
<tr>
<td>7</td>
<td>5'-10&quot;</td>
<td>6'-10 3/4</td>
</tr>
<tr>
<td>7.5</td>
<td>6'-3&quot;</td>
<td>7'-4 3/4</td>
</tr>
<tr>
<td>8</td>
<td>6'-8&quot;</td>
<td>7'-10&quot;</td>
</tr>
</tbody>
</table>

* CURB HEIGHT LESS THAN 6 INCHES OR MORE THAN 8 INCHES SHALL BE APPROVED PER NOTE 14.

Y = THE MINIMUM "Y" LENGTH IS 3.5 FEET AND THE MAXIMUM "Y" LENGTH IS 15 FEET. THE "Y" GRADE SHALL BE GREATER THAN 5% AND SHALL NOT EXCEED 8.33% UNLESS OTHERWISE APPROVED PER NOTE 14.

10. FOR EACH CURB RAMP, THE FOLLOWING DESIGN INFORMATION SHALL BE PROVIDED BUT NOT LIMITED TO: CURB RAMP CASE LETTER DESIGNATION, CURB RAMP ALIGNMENT AND CENTERLINE LOCATION REFERENCE, SECTIONS, DETAILS, AND PROFILE, DIMENSION X AS APPLICABLE, DIMENSIONS, CROSS SLOPES AND GRADES FOR Y AND W AS APPLICABLE, CURB HEIGHT, AND ELEVATIONS AT BOTTOM AND TOP OF CURB RAMP AND AT TOP OF FLARE, BCR AND ECR AS APPLICABLE.

11. PULL BOXES, METER BOXES, MAINTENANCE HOLE COVERS, VAULT LIDS, POWER POLES, ETC. ARE NOT PERMITTED WITHIN ANY PART OF CURB RAMPS, INCLUDING FLARED TRANSITIONS AND TURNING SPACES AT THE TOP AND BOTTOM OF CURB RAMPS. WHERE AN EXISTING CURB RAMP IS BEING UPGRADED OR, WHERE AN EXISTING BI-DIRECTIONAL CURB RAMP IS BEING CONVERTED TO STANDARD DUAL UNI-DIRECTIONAL CURB RAMPS, EXISTING BOXES, COVERS, AND LIDS THAT END UP WITHIN THE CURB RAMP FLARED TRANSITION AREAS MAY BE PERMITTED TO REMAIN IN-PLACE, PER NOTE 14. HOWEVER, THEY SHALL BE PRE-APPROVED AND INSTALLED FLUSH ALL AROUND WITH THE ADJACENT SURFACE, AND THEIR SURFACE SHALL HAVE A MINIMUM STATIC COEFFICIENT OF FRICTION OF 0.80 WHEN TESTED PER ASTM C1028. THE USE OF CURB RETURNS IN LIEU OF FLARES SHALL ALSO BE CONSIDERED BY THE APPLICANT.

12. A NON-WALKABLE SURFACE OR BARRIER SHALL BE PROVIDED WHERE EXISTING CATCH BASINS, MAINTENANCE HOLE COVERS, OR ANY OTHER FIXED STRUCTURES DO NOT PERMIT CONSTRUCTING A FLARED CURB TRANSITION FOR A CURB RAMP, THE NON-WALKABLE SURFACE OR BARRIER SHALL BE CONSTRUCTED TO PREVENT PEDESTRIAN TRAVEL ACROSS A RADIAL CURB TRANSITION FOR A CURB RAMP. ALL NON-WALKABLE SURFACES OR BARRIERS INCLUDING BUT NOT LIMITED TO: COBBLES EMBEDDED IN CONCRETE, AN AREA ENCLOSED BY A 6 INCH HIGH MINIMUM CURB HEIGHT, LANDSCAPING, OR ANY OTHER NON-WALKABLE SURFACES OR BARRIERS, SHALL BE APPROVED PER NOTE 14.

13. FOR DISCRETIONARY PROJECTS THAT ENCOMPASS CURB RETURNS REQUIRING PUBLIC WORKS IMPROVEMENTS FROM THE DEPARTMENT OF CITY PLANNING OR COUNCIL OFFICE, PERMITTEE SHALL PROVIDE ADEQUATE DEDICATION OR EASEMENT FOR DESIGNING CURB RAMP CASES A, B, C, D, OR G USING SECTIONS A, C, OR E ONLY. CURB RAMP DESIGNS USING SECTIONS B, D, F, G AND H OR USE OF EXCEPTIONS ALLOWED ON BUREAU OF ENGINEERING SPECIAL ORDERS, ARE NOT PERMITTED.

14. CURB RAMP DESIGN EXCEPTIONS IDENTIFIED IN NOTES 1, 2, 5, 8, 9, 11 AND 12 SHALL BE APPROVED BY THE CITY ENGINEER AND DOCUMENTATIONSRecorded IN WRITING IN THE CONSTRUCTION DRAWINGS.

15. EXCEPT WHERE NOTE 16 (HEREON BELOW) APPLIES, THE TURNING SPACE SHALL BE A PLANAR SURFACE WITH 2% MAXIMUM SLOPES AND GRADES IN ALL DIRECTIONS.

16. AT MIDBLOCK PEDESTRIAN STREET CROSSINGS, CROSS SLOPES OF UNI-DIRECTIONAL CURB RAMPS, AND ASSOCIATED TURNING SPACES SLOPES AND GRADES THAT ARE PARALLEL TO THE STREET GRADE MAY BE EQUAL TO THE PREVAILING STREET GRADE. AT ALL OTHER PEDESTRIAN STREET CROSSINGS, THAT HAVE NO YIELD OR STOP CONTROLS OR WHERE THERE IS A TRAFFIC SIGNAL THAT IS DESIGNED FOR THE GREEN PHASE (WHERE VEHICLES CAN PROCEED THROUGH THE CROSSING WITHOUT SLOWING OR STOPPING), THE CROSS SLOPES OF UNI-DIRECTIONAL CURB RAMPS, AND ASSOCIATED TURNING SPACES SLOPES AND GRADES THAT ARE PARALLEL TO THE STREET GRADE MAY BE EQUAL TO THE PREVAILING STREET GRADE BUT NOT TO EXCEED 5%. THIS NOTE IS NOT APPLICABLE TO CROSS SLOPES OF BI-DIRECTIONAL CURB RAMPS AND THEIR ASSOCIATED BOTTOM TURNING SPACE SLOPES AND GRADES.

17. FOR CASES E, G, H, I AND J, DRAINAGE CONTROL AND FLOODING SHALL BE ASSUMED TO BE IMPACTED, CONFORM TO REQUIREMENTS LISTED IN "NOTE TO DESIGNER" ON SHEET 7 OF 9.

18. FOR WORK FALLING WITHIN ADJOINING JURISDICTIONS SUCH AS THE CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS), THE MOST STRINGENT CURB RAMPS STANDARDS REQUIREMENTS SHALL GOVERN.