ROADWAY DESIGN STANDARDS
# ROADWAY DESIGN STANDARDS
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ROADWAY DESIGN STANDARDS

A.1 BOLLARD - STEEL

SEE APPLICABLE TYPICAL SECTION

ROUND CONCRETE FILL

3" WIDE REFLECTOR TAPE (YELLOW)

4" GALVANIZED STEEL PIPE FILLED WITH CEMENT CONCRETE (POWDER COATED BLACK)

CEMENT CONCRETE ENCASEMENT

PAPER BOARD FORM

DATE OF ISSUE: MAY 2019
NOTE: 6” REVEAL TYPICAL. REVEAL MAY VARY FROM 3” - 9” WITH PWD APPROVAL.
ROADWAY DESIGN STANDARDS

C.3 CURB - MOUNTABLE

ROADWAY PAVEMENT SECTION

1.5" SURFACE COURSE

CRUSHED STONE BASE
6" DEPTH

HIGH EARLY STRENGTH CONCRETE BASE

MOUNTABLE SURFACE

T-100 GRANITE CURB

4" REVEAL

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ROADWAY DESIGN STANDARDS
C.4 CURB - GRANITE CURB AT BACK OF SIDEWALK

ROADWAY PAVEMENT SECTION

PROPOSED SIDEWALK

GRANITE CURB (TYPE VA4)

9" REVEAL (MAX.)

9" REVEAL (MAX.)

GRAVEL BACKFILL

CRUSHED STONE BASE

UNDISTURBED SUBGRADE OR COMPACTED SUITABLE BACKFILL

GRAVEL BASE

PROPOSED SIDEWALK

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ROADWAY DESIGN STANDARDS
C.5 CURB - GRANITE BLOCK HIP GUTTER

4" CEMENT CONCRETE BASE
SIDEWALK

GRANITE BLOCK
CEMENT GROUT JOINTS
SLOPE AS DIRECTED
GUTTER LINE
ROADWAY

CEMENT GROUT JOINTS
GRANITE BLOCK
12"
6"
2" LIP
ROADWAY

SCALE: N.T.S.
DETAIL NO. C.5
DATE OF ISSUE: SEPTEMBER 2018

DATE OF ISSUE: MAY 2019
NOTE: FOR USE ON SIDEWALK WIDTHS OF 7’ OR GREATER. FOR SIDEWALK WIDTHS LESS THAN 7’ USE DETAIL D.3.
ROADWAY DESIGN STANDARDS
D.2 DRIVEWAY - COMMERCIAL

NOTE: THE COMMERCIAL DRIVEWAY DETAIL WITH 6' RADIUS CURB IS ONLY FOR SIDEWALK WIDTHS GREATER THAN OR EQUAL TO 7'-10", OTHERWISE 2' CORNERS ARE TO BE USED. FOR SIDEWALK WIDTHS LESS THAN 7', USE DETAIL D.3.

PLAN

SIDEWALK

GRANITE CURB

GRANITE CURB CORNER

TYPE VA4 - 6' RADIUS

SECTION A-A

ARC LENGTH = 6'-3"

ANGLE = 70°

CHORD = 6'-10"

1" LIP

WARP SMOOTH

EXPANSION JOINT

(3/8" PREFORMED FILLER)

(For Cement Concrete Driveway)

6" CEM. CONC.

ROADWAY SURFACE

6" GRAVEL BASE

DATE OF ISSUE: MAY 2019
ROADWAY DESIGN STANDARDS

D.3 DRIVeway - SIDEWALK WIDTHS LESS THAN 7’

PLAN

SECTION A-A

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NOTE: DEPTHS MAY VARY BASED ON PROJECT SPECIFIC LOADING CONDITIONS (ADT, % HEAVY VEHICLES, ETC.)

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DATE OF ISSUE: MAY 2019
*THE DEPTH OF THE GRAVEL IS TO BE SUCH THAT ITS BOTTOM LINE MEETS THE BOTTOM OF THE GRAVEL LINE OF CONTIGUOUS PAVEMENT.

NOTES:
1. CONTRACTION JOINTS ARE TO BE SPACED AT A MAXIMUM OF 20’ APART.
2. THE JOINTS ARE TO BE SAWED AND LOCATED IN THE DEPRESSIONS OF THE CORRUGATIONS. SEE CORRUGATION DETAIL.
3. END OF CORRUGATED RIDGES TO BE BEVELED.
4. SCORED CEMENT CONCRETE TO BE: 5000 PSI - 3/4” - 705 LB/CY.
6. TROUGH FLUSH WITH OR ABOVE ADJACENT PAVEMENT FOR DRAINAGE.
PERPENDICULAR PEDESTRIAN RAMP DESIGN IS THE SAFEST AND THE PREFERRED TREATMENT.

Perpendicular pedestrian ramp designs focus on pedestrian safety, especially considering Boston’s long winters, and high traffic volumes, both pedestrian and vehicular. Additionally, below are a list of reasons to design perpendicular ramps and a list of reasons for regulations that prohibit use of apex ramps.

PERPENDICULAR PEDESTRIAN RAMPS

• Are aligned perpendicular to vehicular traffic;
• Provide a straight path of travel on tight radius corners;
• Are aligned with the crossing direction on tight radius corners;
• Are usually positioned within crosswalk; and
• Are at the expected crossing location for all pedestrians.

DIAGONAL (APEX) PEDESTRIAN RAMPS

• Put pedestrians into a potential area of conflict with motorists who are traveling straight and turning;
• Require turning at the top and bottom of the ramp;
• Provide no alignment with the proper crossing direction, which is difficult for most people with disabilities;
• Make the essential level maneuvering area difficult to achieve at the bottom of the curb ramp; and
• Can cause a person with vision impairment to mistake a diagonal curb ramp for a perpendicular curb ramp and unintentionally travel into the middle of the intersection due to the lack of, or ambiguous, audible cues from the surge of traffic.

Sources:
1. The State regulations (521CMR 21.2.21) prohibit the installation of “apex” ramps except when there is a significant site constraint (521CMR 21.2.1.1).

FREQUENTLY USED BUILDING CODE LINKS:

521 CMR 4.00: APPEAL AND VARIANCE
521 CMR 20.00: ACCESSIBLE ROUTE
521 CMR 21.00: CURB CUTS (PEDESTRIAN RAMPS)
521 CMR 22.00: WALKWAYS
521 CMR 24.00: RAMPS
521 CMR 35.00: TABLES AND SEATING
ROADWAY DESIGN STANDARDS
R.2 PEDESTRIAN RAMP - SIDEWALK WIDTH 6.5' AND GREATER

REFERENCES LINKS:
ADA GUIDELINES
AAB GUIDELINES
521 CMR 21

DATE OF ISSUE: MAY 2019
ROADWAY DESIGN STANDARDS
R.3 PEDESTRIAN RAMP - SIDEWALK WIDTH LESS THAN 6.5’

REFERENCES LINKS:
ADA GUIDELINES
AAB GUIDELINES
521 CMR 21

DATE OF ISSUE: MAY 2019
ROADWAY DESIGN STANDARDS
R.4 PEDESTRIAN RAMP - SIDEWALK WITH NON-WALKING AREA

REFERENCES LINKS:
ADA GUIDELINES
AAB GUIDELINES
521 CMR 21

DATE OF ISSUE: MAY 2019
NOTES:

1. DETECTABLE WARNING PANELS SHALL BE PERMANENTLY APPLIED TO THE CURB RAMP.
2. DETECTABLE WARNING PANELS SHALL BE PALE YELLOW IN COLOR, CONFORMING TO FEDERAL NO. 23594, UNLESS OTHERWISE SPECIFIED BY PWD.
3. DETECTABLE WARNING PANELS SHALL BE COMPOSITE.
4. DETECTABLE WARNING PANELS SHALL BE INSTALLED PER THE MANUFACTURER’S RECOMMENDATIONS.
ROADWAY DESIGN STANDARDS
S.1 SIDEWALK - CONCRETE

*NOTE: DETAIL DEPICTS SIDEWALK CONDITION ALTHOUGH THE SAME CROSS SECTION SHALL BE USED FOR CURB RAMPS OR DRIVEWAYS.

DATE OF ISSUE: MAY 2019
ROADWAY DESIGN STANDARDS
S.3 SIDEWALK + DRIVEWAY - HMA

TYPICAL SIDEWALK SECTION

- 1.5" SURFACE COURSE
- 1.5" INTERMEDIATE COURSE
- GRANITE CURB
- ROADWAY SURFACE
- 6" COMPACTED GRAVEL BASE (MIN.)

TYPICAL DRIVEWAY SECTION

- 1" LIP
- 3'
- VARIES (4' MIN.)
- 1.5% (±0.5%)
- 2" SURFACE COURSE
- 6" GRAVEL BASE
- 2" INTERMEDIATE COURSE
- ROADWAY SURFACE
- WARP SMOOTH 6" GRAVEL BASE
PERMEABLE PAVERS SHALL BE INSTALLED WITH A MINIMUM WIDTH OF 18" FOR SIDEWALKS UP TO 7'. FOR SIDEWALKS OVER 7', PERMEABLE PAVER WIDTH SHALL BE 1' PER 5' OF SIDEWALK.

NOTE:

DEPENDING ON SOIL CONDITIONS AND GROUNDWATER, IT MAY BE APPROPRIATE TO PROVIDE AN UNDERDRAIN BEHIND THE CURB AND WITHIN THE CRUSHED STONE BASE. UNDERDRAIN MAY BE REQUIRED IN SOILS WITH LOW INFILTRATION RATES. IF USED, THEY MUST BE INSTALLED ABOVE THE GROUNDWATER ELEVATION.

ALL PERMEABLE SYSTEMS SHALL BE MAINTAINED AS PER MANUFACTURER RECOMMENDATIONS.
NOTE: 4’x6’ TREE PITS ARE THE PREFERRED STANDARD. FOR SIDEWALK WIDTHS BETWEEN 9.5’ AND 7.5’ USE 3’X8’ TREE PIT AS SHOWN ON S.6

NOTE:
1. TREE PIT TO BE A MINIMUM OF 24 SQUARE FEET.
2. PROVIDE 10’ LONG X 3” SQ WOODEN STAKES EQUALLY SPACED, 3 PER TREE, 7’ EXPOSED. DRIVE STAKES AT AN ANGLE AND DRAW VERTICAL WITH NYLON TREE TIE.
3. CONTRACTOR SHALL PERFORM PERCOLATION TEST ON SUB-GRADE PRIOR TO PLANTING. IF TEST IS NOT PASSING, CONTRACTOR SHALL ADJUST SUB-GRADE ACCORDINGLY.
ROADWAY DESIGN STANDARDS

S.6 SIDEWALK - TREE PIT (3’x8’)

NOTE: 3’x8’ TREE PITS ARE FOR SIDEWALK WIDTHS BETWEEN 9.5’ AND 7.5’, 4’x6’ ARE THE PREFERRED STANDARD AS SHOWN ON DETAIL S.5.

1. TREE PIT TO BE A MINIMUM OF 24 SQUARE FEET.
2. PROVIDE 10’ LONG X 3” SQ WOODEN STAKES EQUALLY SPACED, 3 PER TREE, 7’ EXPOSED. DRIVE STAKES AT AN ANGLE AND DRAW VERTICAL WITH NYLON TREE TIE.
3. CONTRACTOR SHALL PERFORM PERCOLATION TEST ON SUB-GRADE PRIOR TO PLANTING. IF TEST IS NOT PASSING, CONTRACTOR SHALL ADJUST SUB-GRADE ACCORDINGLY.
NOTE: PVC CONDUIT SHALL BE ENCASED IN 12 INCHES OF CEMENT CONCRETE BASE COURSE. SAND WILL NOT BE REQUIRED AT THESE LOCATIONS. CONCRETE WILL BE PAID FOR UNDER ITEM 431.1, HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE.
SECTION

TEMPORARY PAVEMENT RESTORATION

PERMANENT PAVEMENT RESTORATION

PROP. 3" HMA (2) 1-1/2" LAYERS

ROADWAY PAVEMENT SECTION

EXISTING ROADWAY SURFACE

EXCAVATION AND STONES LARGER THAN 8" SHALL BE DISPOSED OF AND REPLACED WITH APPROVED EXCAVATED MATERIAL OR GRAVEL

BELOW GRADE EXCAVATION OF UNSUITABLE MATERIAL

O.D. OF PIPE +24"

24" (MIN.)

GRANULAR BACKFILL PLACED 8" (MAX.) LIFTS

PROPOSED 1 - 4" CITY SHADOW QUAD DUCT

PIPE BEDDING (6" MIN.) OF GRAVEL

NOTE: CITY SHADOW CONDUIT TO BE ROPED AND TAGGED.