



ROADWAY DESIGN STANDARDS



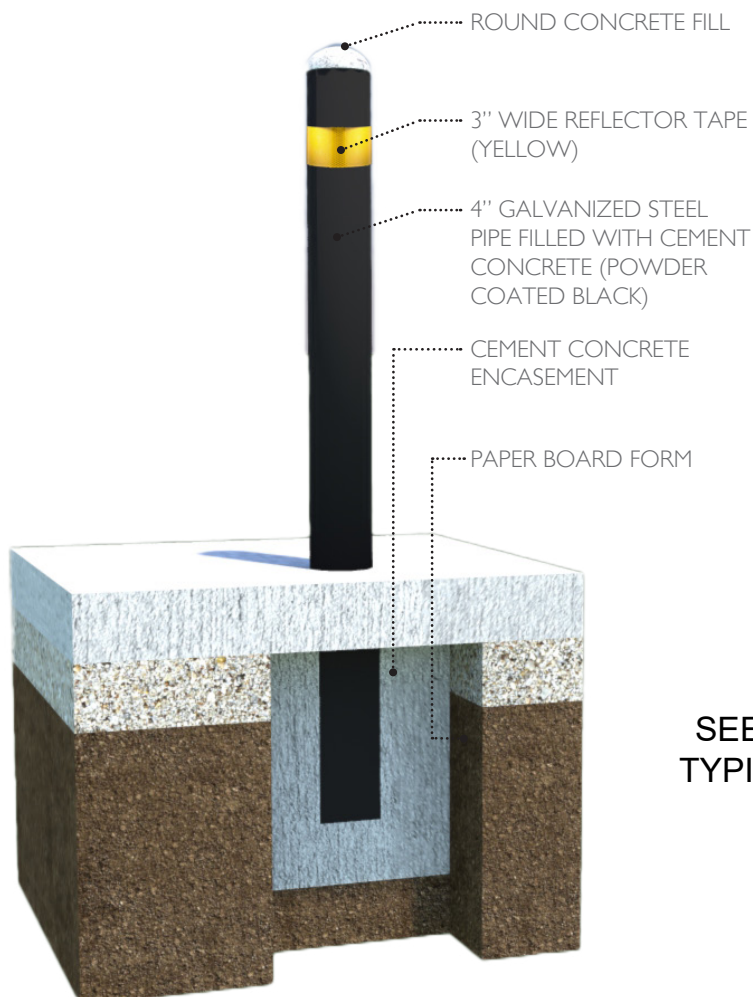
ROADWAY DESIGN STANDARDS

TABLE OF CONTENTS

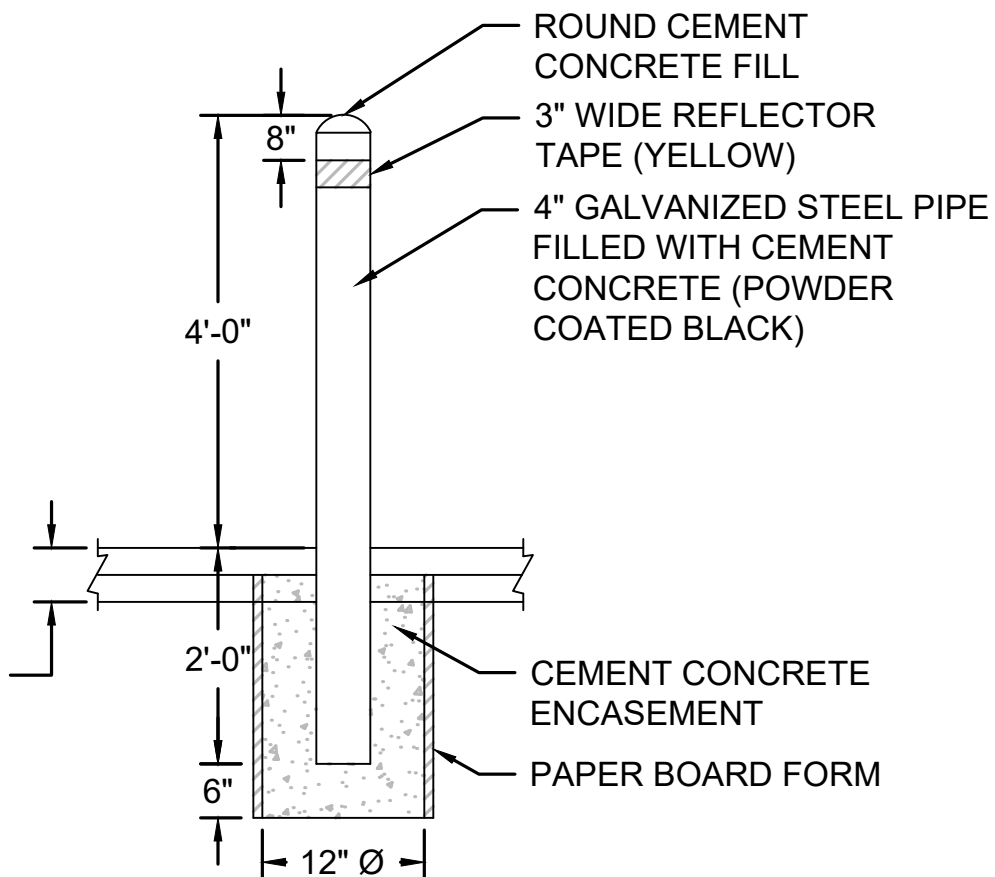
DETAIL	TITLE	PAGE NUMBER
A.1	BOLLARD - STEEL.....	<u>2</u>
C.1	CURB - GRANITE RESET.....	<u>3</u>
C.2	CURB - GRANITE SLOPED.....	<u>4</u>
C.3	CURB - MOUNTABLE.....	<u>5</u>
C.4	CURB - GRANITE CURB AT BACK OF SIDEWALK.....	<u>6</u>
C.5	CURB - GRANITE BLOCK HIP GUTTER.....	<u>7</u>
D.1	DRIVEWAY - RESIDENTIAL.....	<u>8</u>
D.2	DRIVEWAY - COMMERCIAL.....	<u>9</u>
D.3	DRIVEWAY - SIDEWALK WIDTH LESS THAN 7'.....	<u>10</u>
P.1	PAVEMENT SECTION - ARTERIAL ROADWAY.....	<u>11</u>
P.2	PAVEMENT SECTION - RESIDENTIAL ROADWAY.....	<u>12</u>
P.3	PAVEMENT SECTION - SCORED CEMENT CONCRETE.....	<u>13</u>
R.1	PEDESTRIAN RAMP - GENERAL INFORMATION.....	<u>14</u>
R.2	PEDESTRIAN RAMP - SIDEWALK WIDTH 6.5' AND GREATER.....	<u>15</u>
R.3	PEDESTRIAN RAMP - SIDEWALK WIDTH LESS THAN 6.5'.....	<u>16</u>
R.4	PEDESTRIAN RAMP - SIDEWALK WITH NON-WALKING AREA.....	<u>17</u>
R.5	PEDESTRIAN RAMP - DETECTABLE WARNING PANEL.....	<u>18</u>
S.1	SIDEWALK - CONCRETE.....	<u>19</u>
S.2	SIDEWALK - BRICK.....	<u>20</u>
S.3	SIDEWALK + DRIVEWAY - HMA	<u>21</u>
S.4	SIDEWALK - PERMEABLE PAVER.....	<u>22</u>
S.5	SIDEWALK - TREE PIT (4'X6').....	<u>23</u>
S.6	SIDEWALK - TREE PIT (3'X8').....	<u>24</u>
U.1	UTILITY - CONCRETE ENCASED CONDUIT.....	<u>25</u>
U.2	UTILITY - SHADOW CONDUIT.....	<u>26</u>
U.3	UTILITY - FIRE ALARM BASE.....	<u>27</u>

ROADWAY DESIGN STANDARDS

A.I BOLLARD - STEEL



SEE APPLICABLE
TYPICAL SECTION

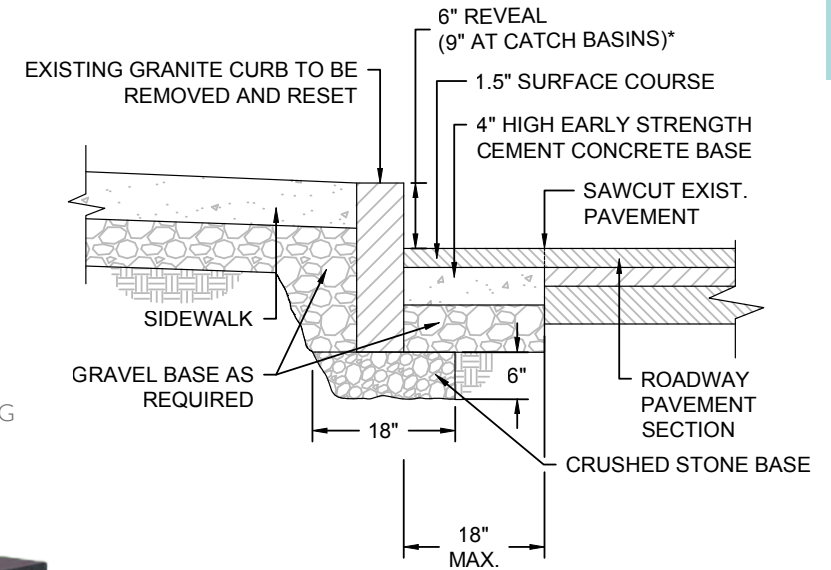
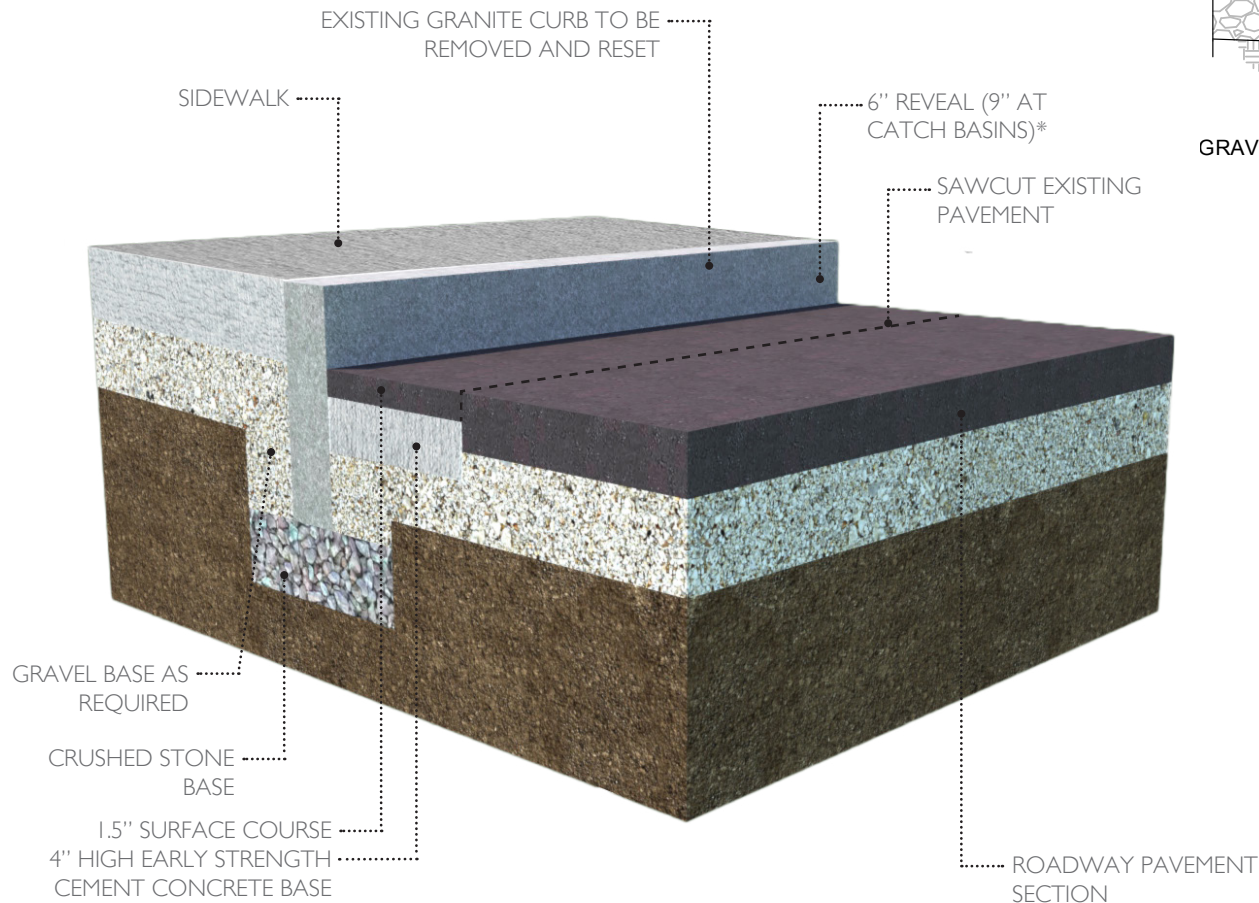


DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

C.I CURB - GRANITE RESET

NOTE: 6" REVEAL TYPICAL. REVEAL MAY VARY FROM 3" - 9" WITH PWD APPROVAL.

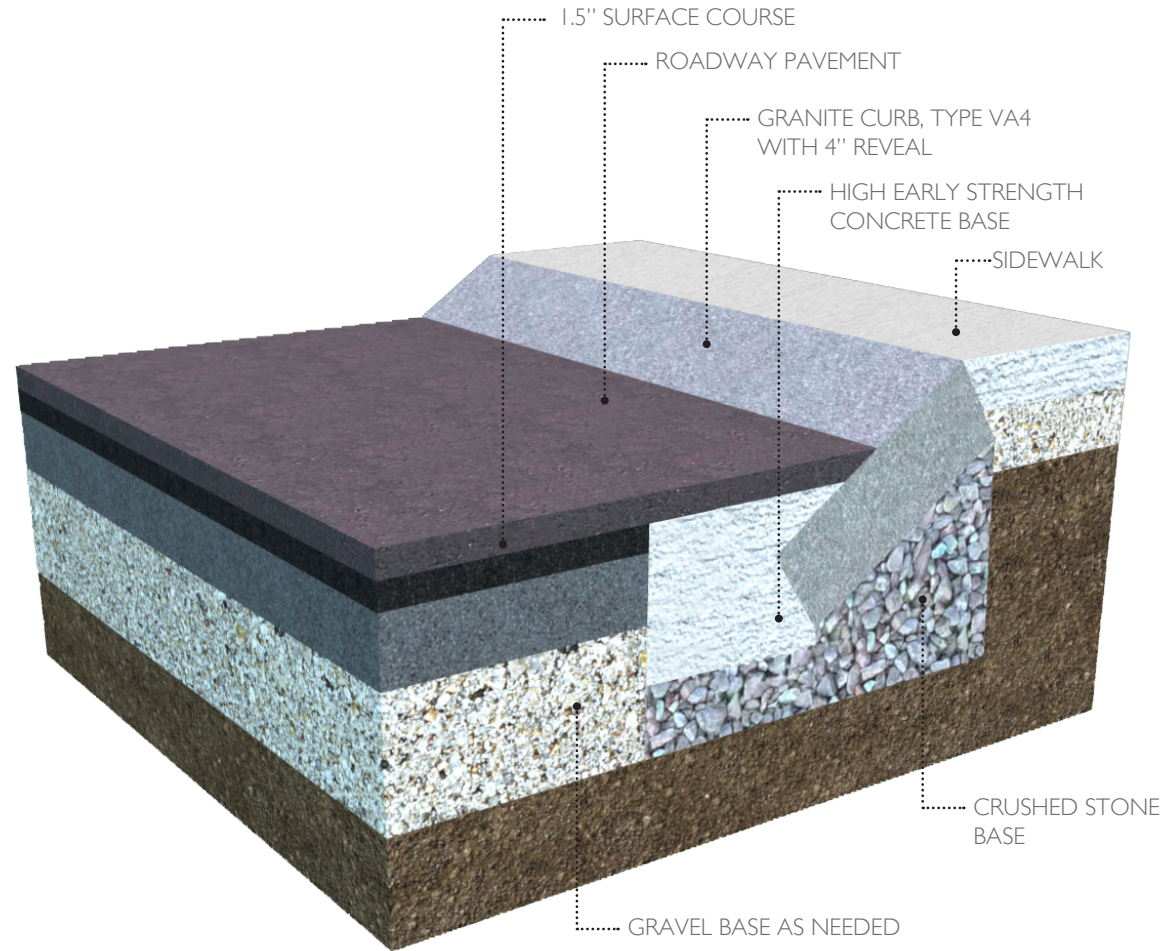
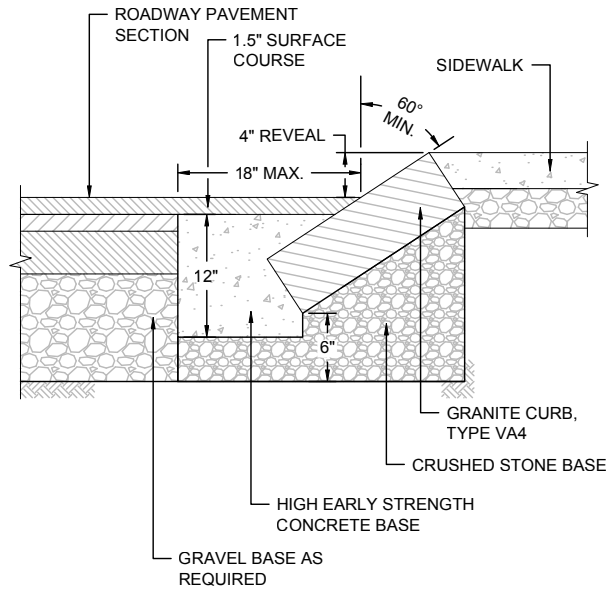


DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

C.2 CURB - GRANITE SLOPED

C.2

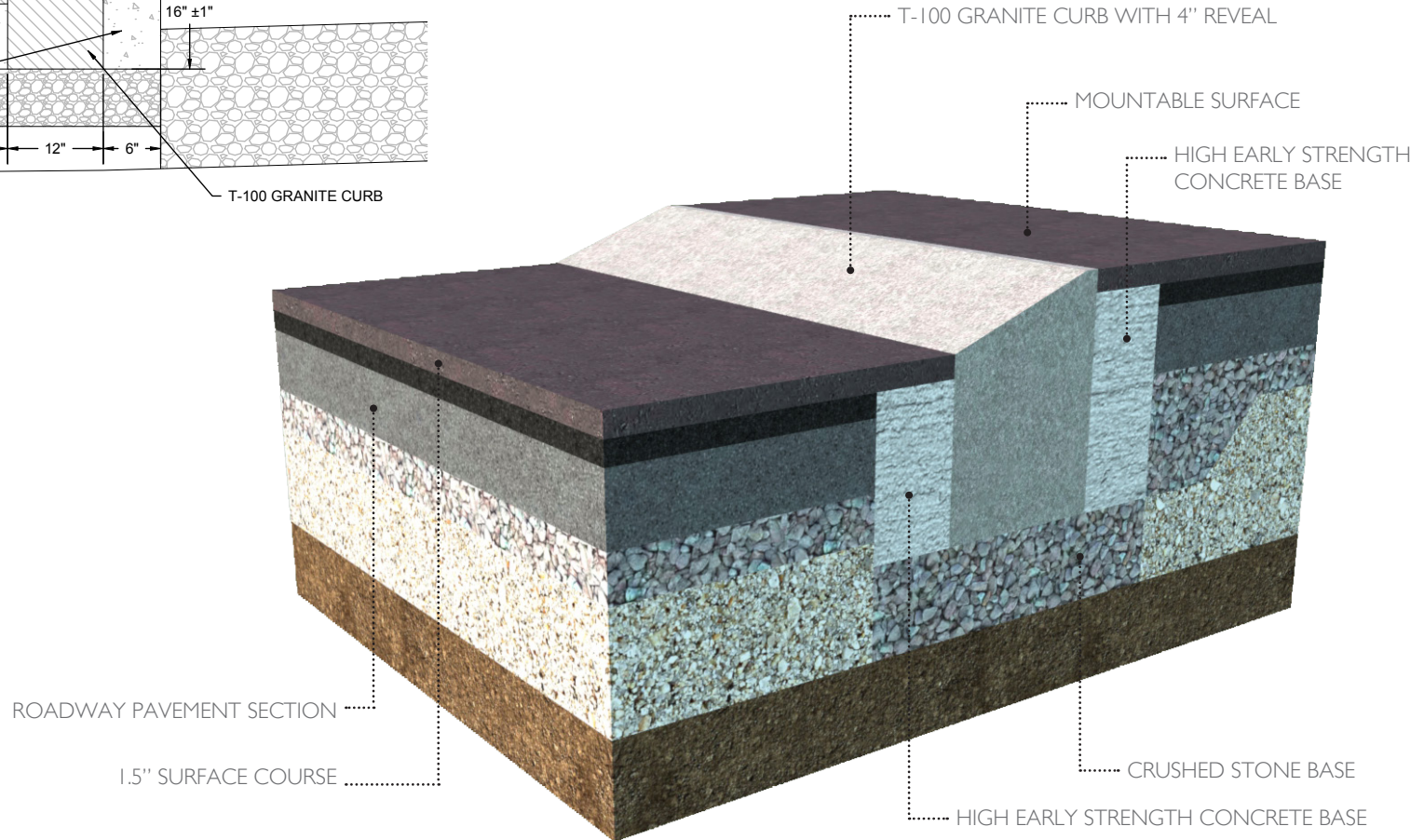
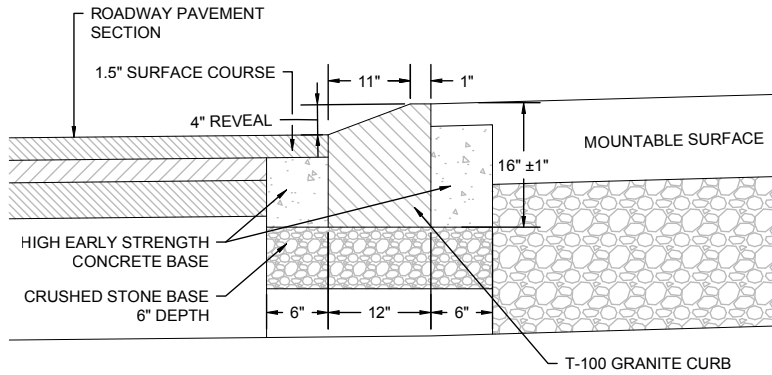


DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

C.3 CURB - MOUNTABLE

C.3

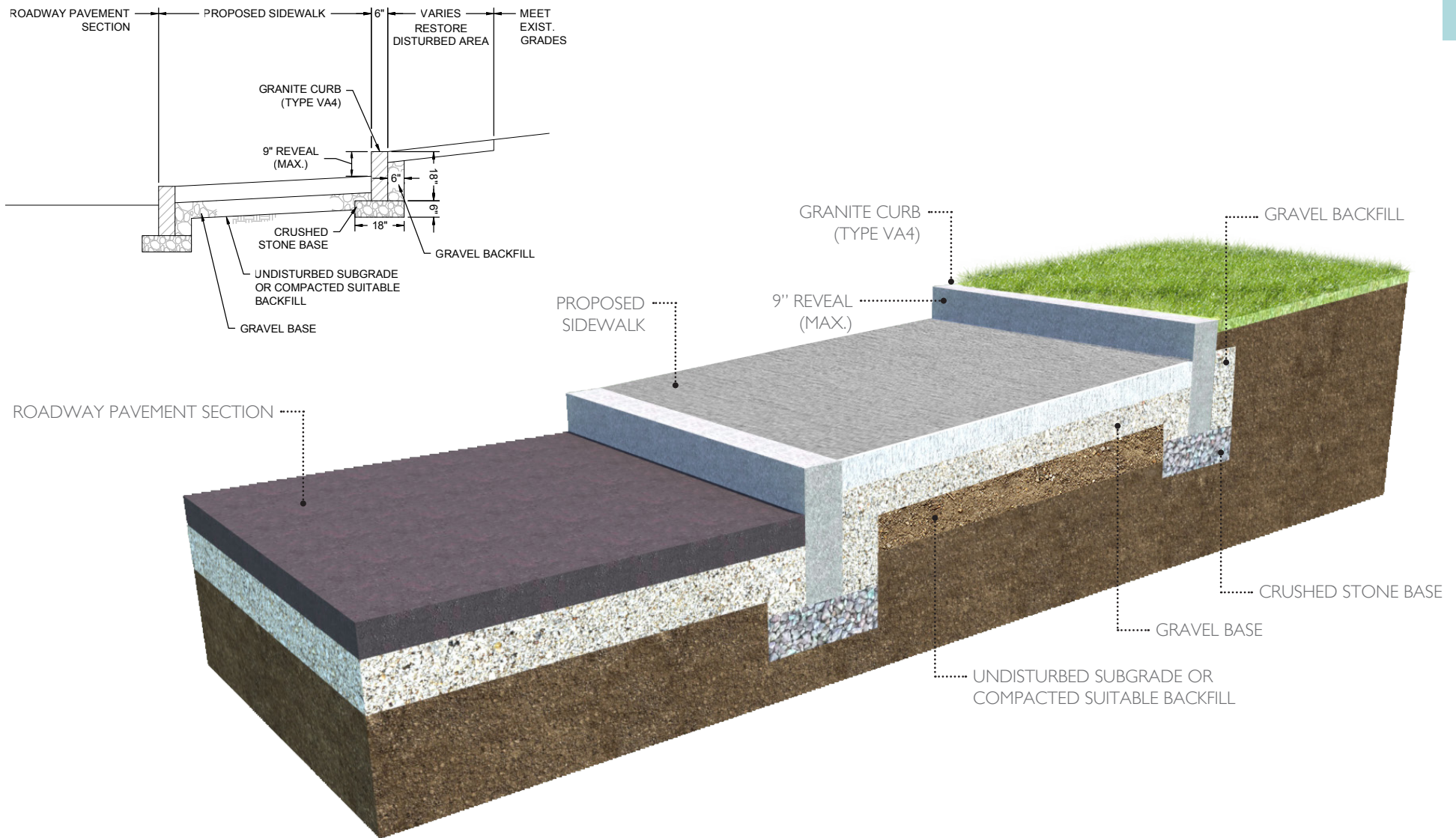


DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

C.4 CURB - GRANITE CURB AT BACK OF SIDEWALK

C.4

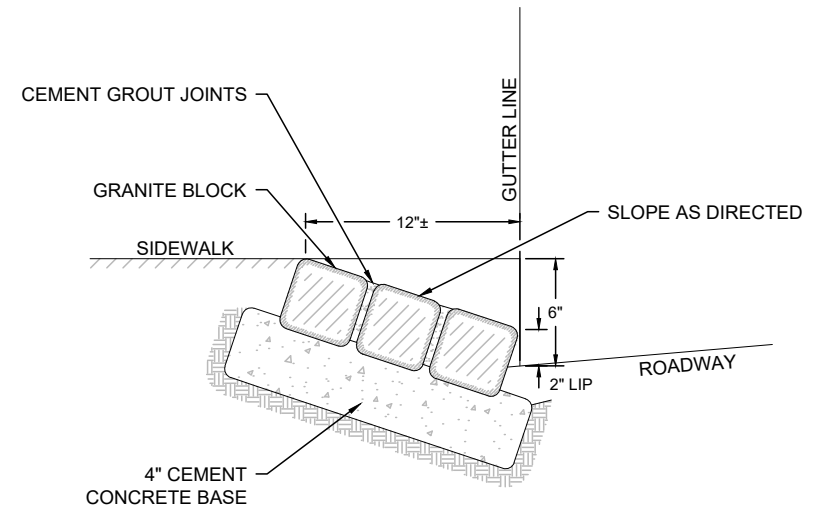
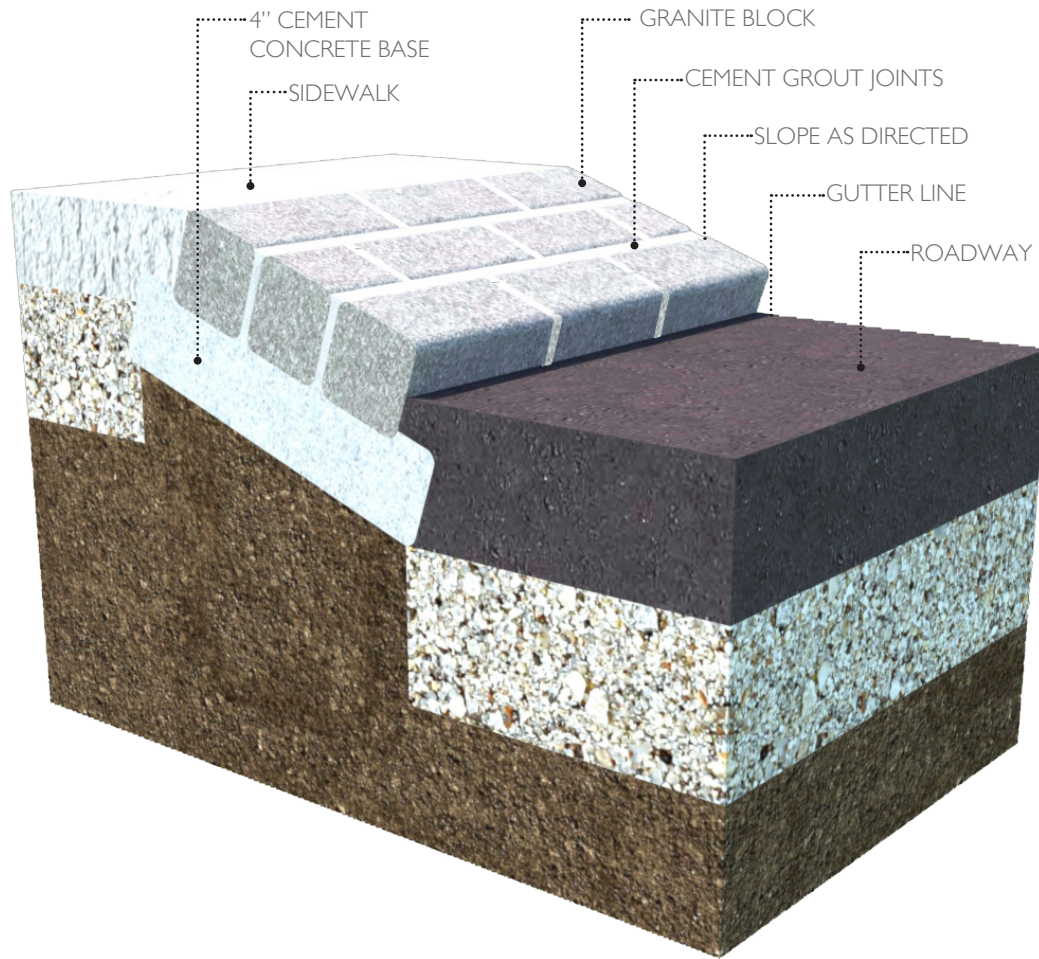


DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

C.5 CURB - GRANITE BLOCK HIP GUTTER

C.5



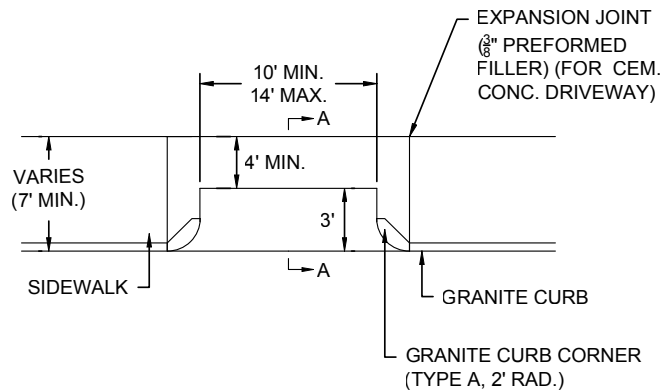
DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

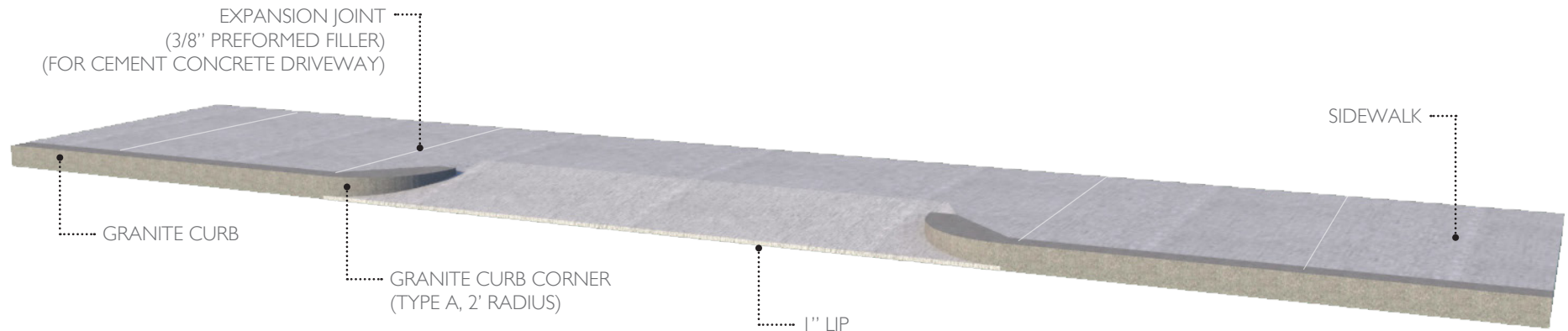
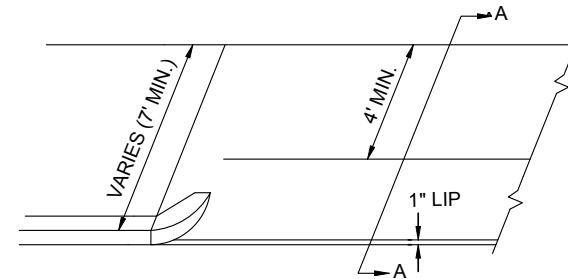
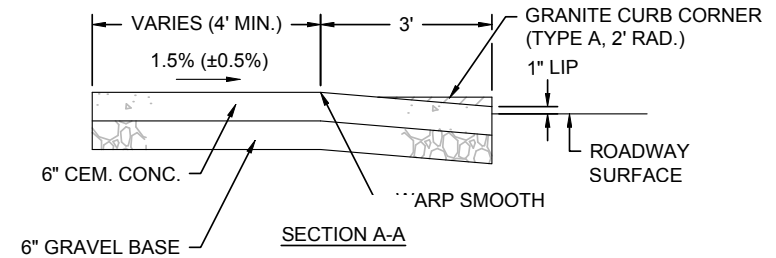
D.1 DRIVEWAY - RESIDENTIAL

NOTE: FOR USE ON SIDEWALK WIDTHS OF 7' OR GREATER. FOR SIDEWALK WIDTHS LESS THAN 7' USE DETAIL D.3.

PLAN



SECTION A-A

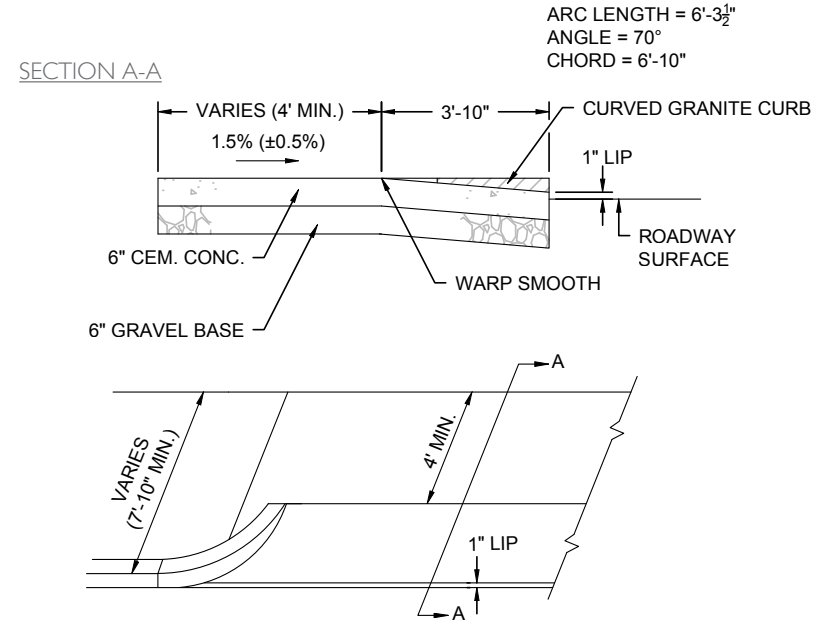
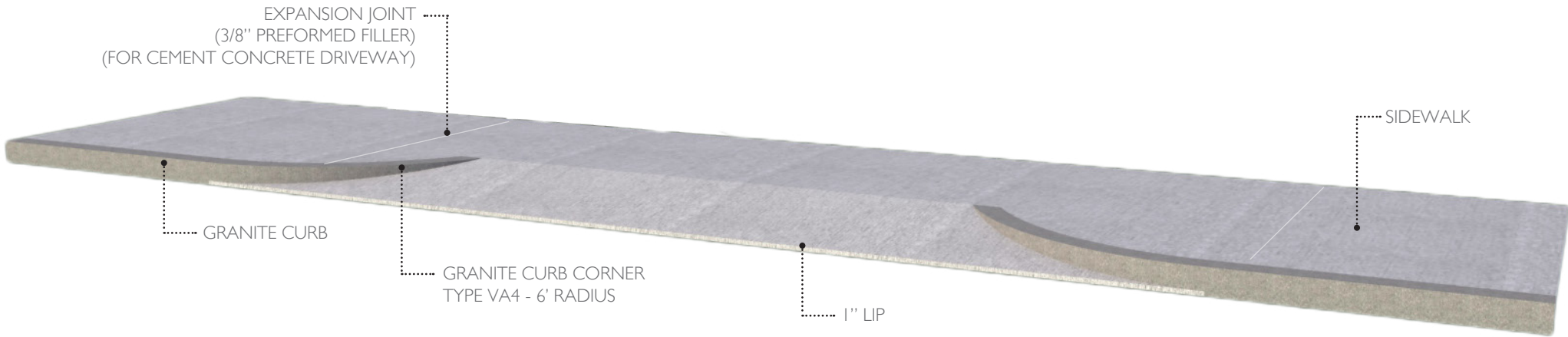
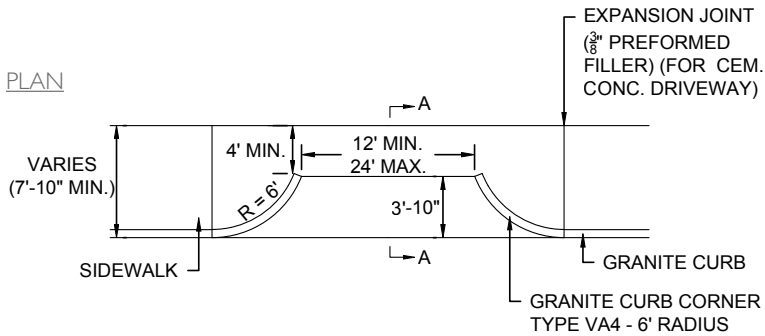


DATE OF ISSUE: MAY 2019

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.

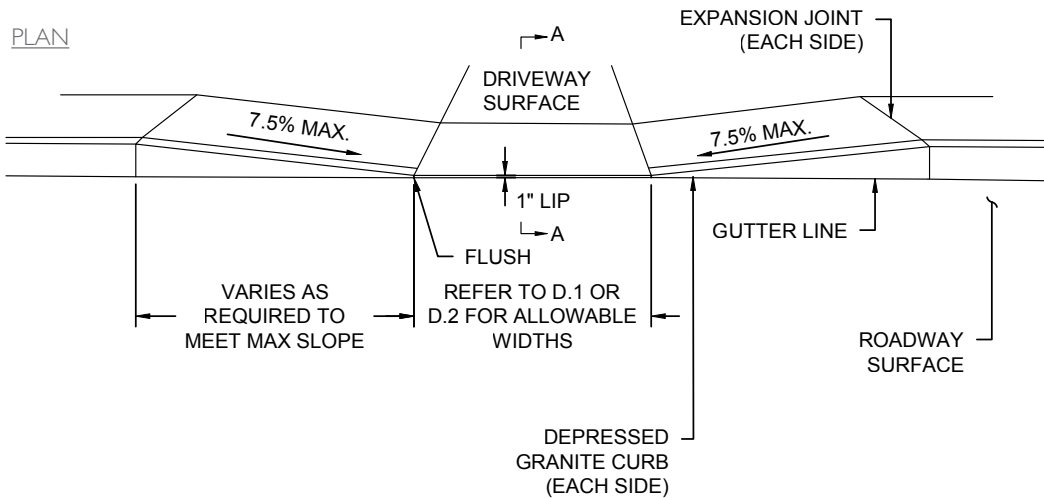


D.2

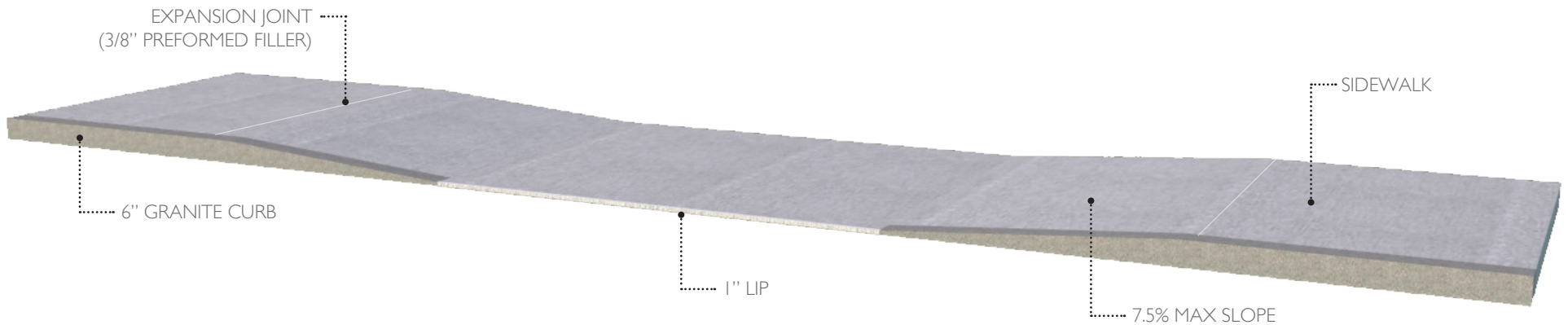
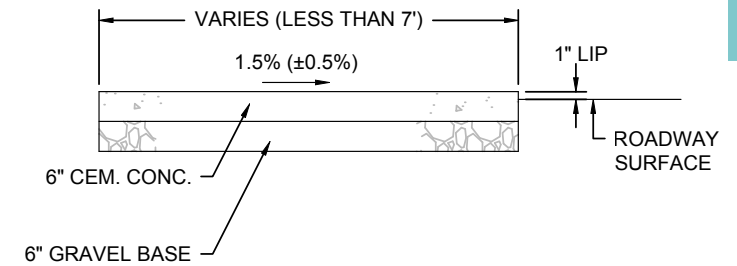
DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

D.3 DRIVEWAY - SIDEWALK WIDTHS LESS THAN 7'



SECTION A-A

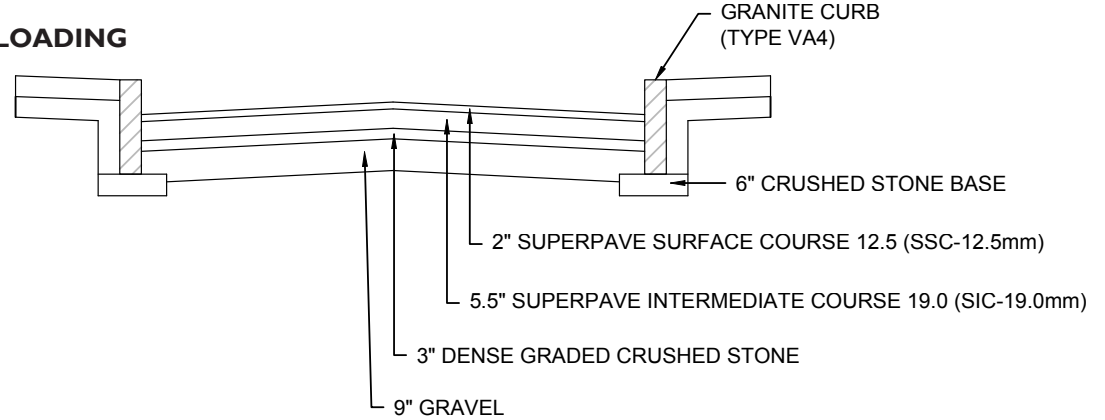


DATE OF ISSUE: MAY 2019

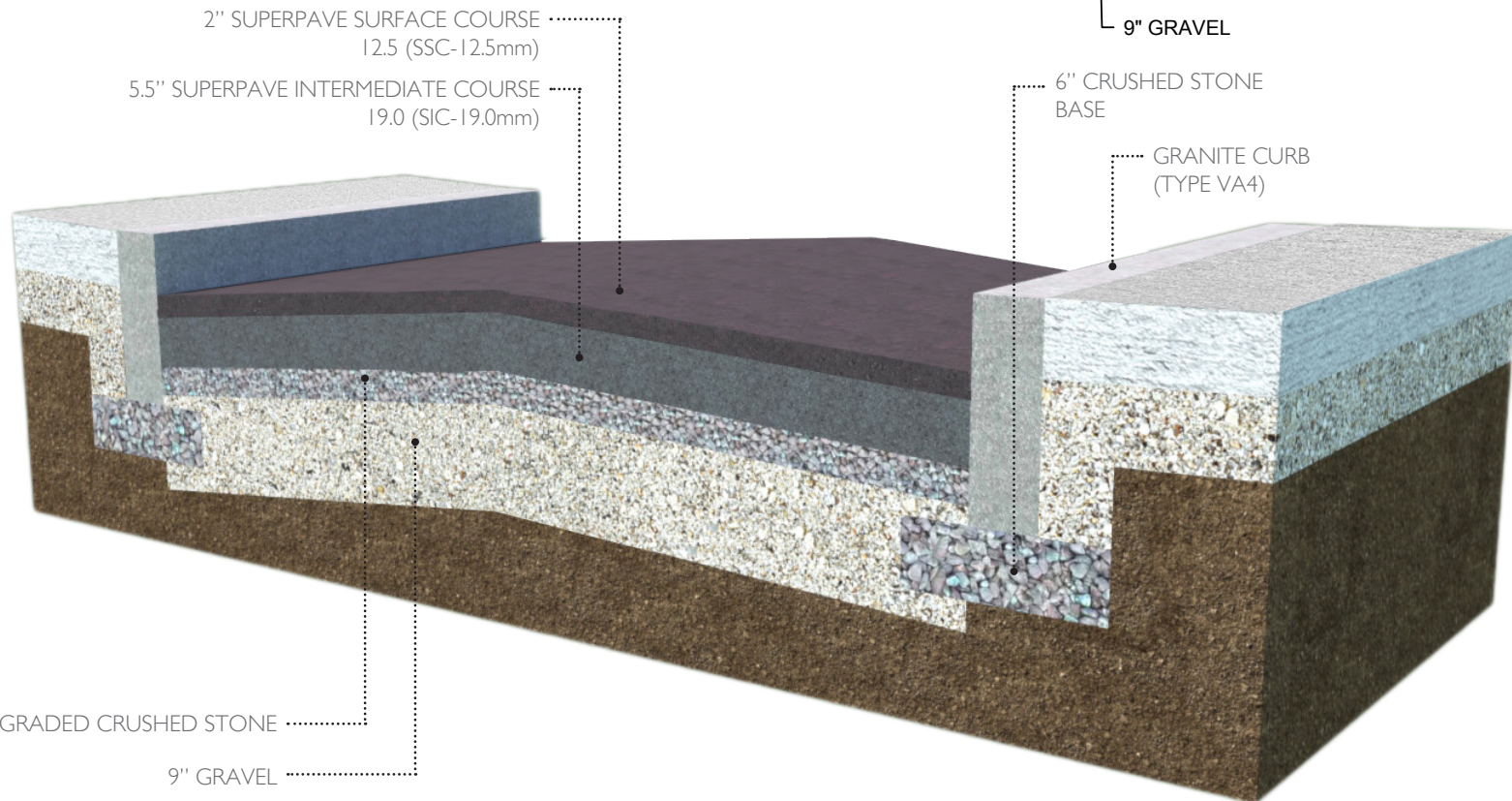
ROADWAY DESIGN STANDARDS

P.1 PAVEMENT SECTION - ARTERIAL ROADWAY

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



P.1

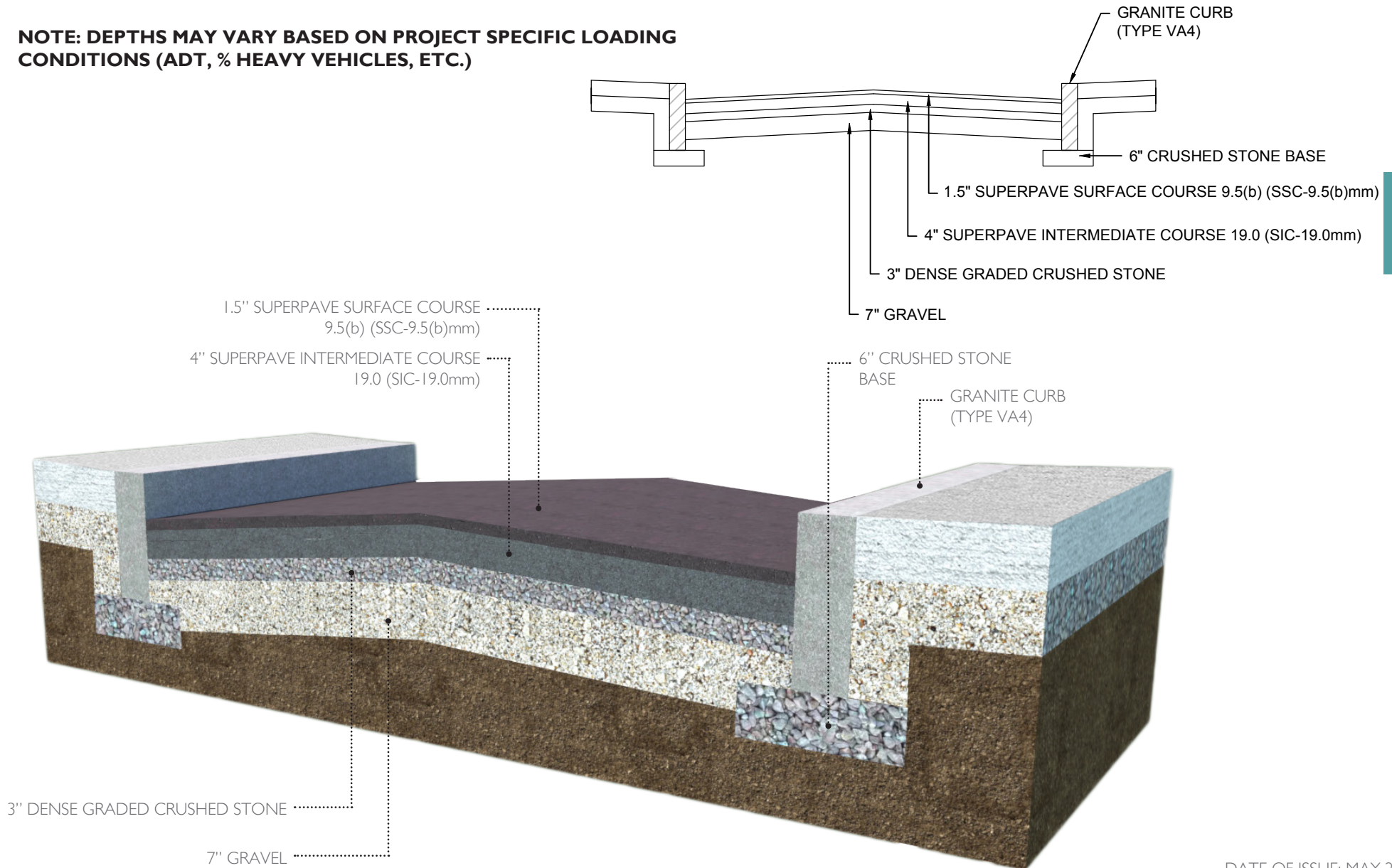


DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

P.2 PAVEMENT SECTION - RESIDENTIAL ROADWAY

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

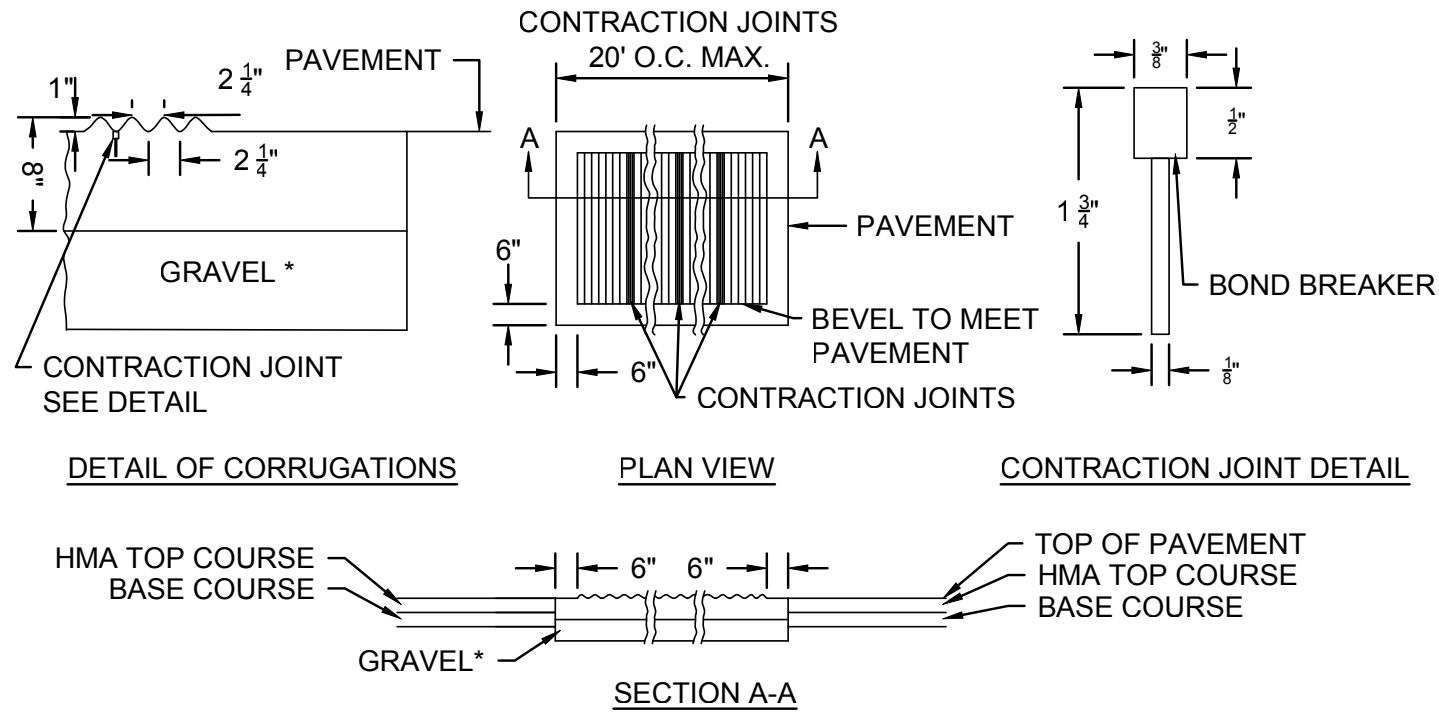


P.2

DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

P.3 PAVEMENT SECTION - SCORED CEMENT CONCRETE



*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.

DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

R.1 PEDESTRIAN RAMP - GENERAL INFORMATION

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 (521 CMR 21.2.21) prohibit the installation of "apex" ramps except when there is a significant site constraint (521 CMR 21.2.1.1).
2. (https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks207.cfm)

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](#)

DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

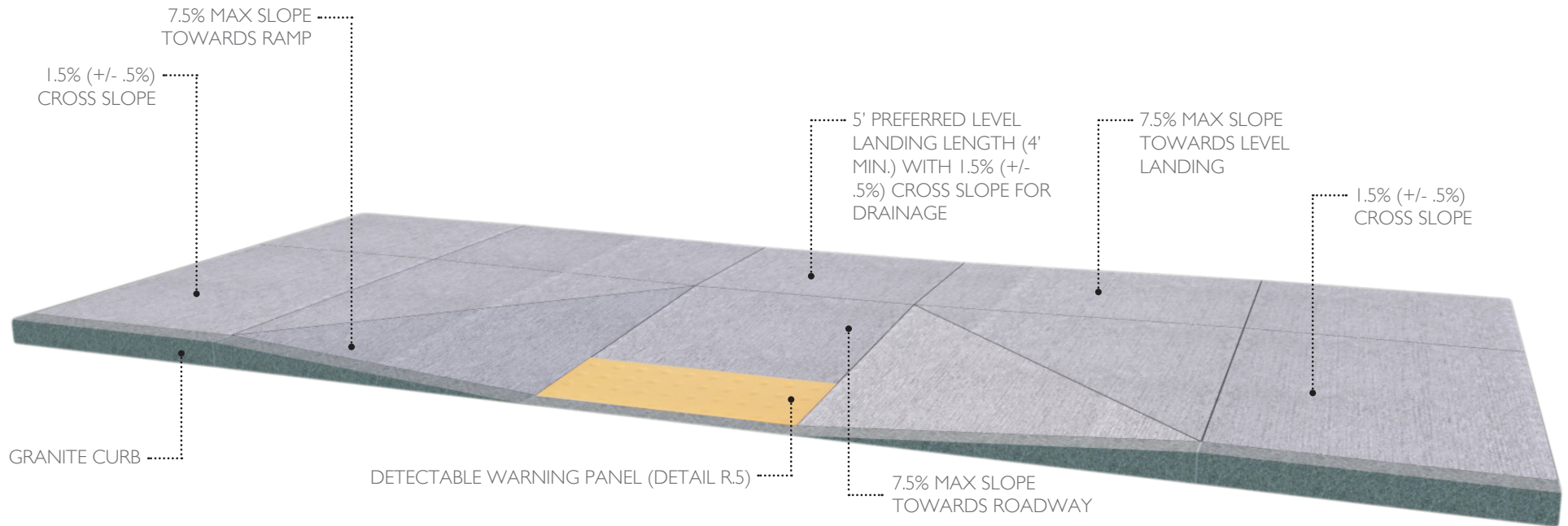
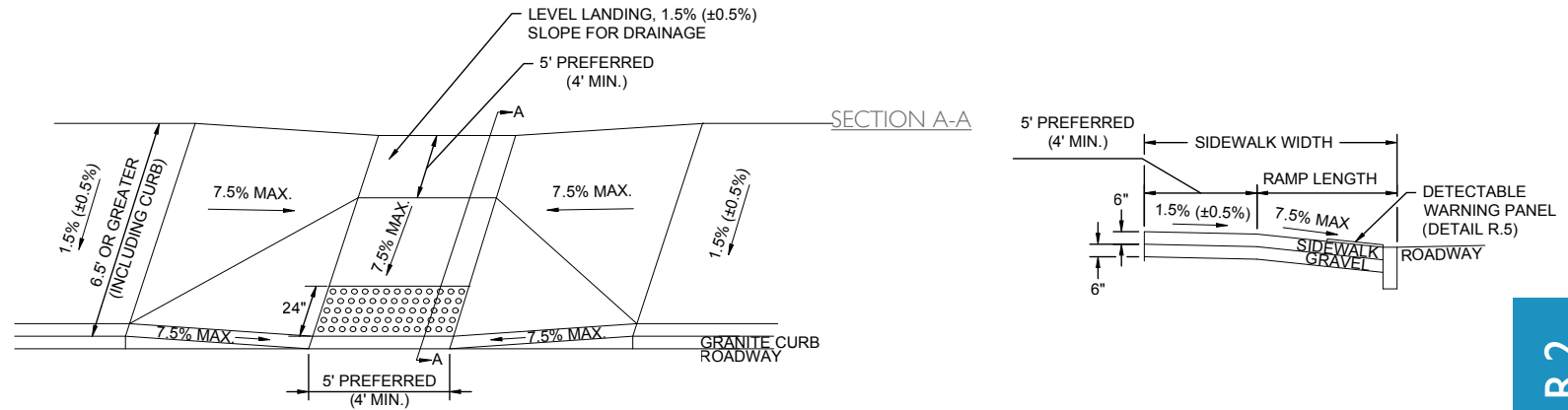
R.2 PEDESTRIAN RAMP - SIDEWALK WIDTH 6.5' AND GREATER

REFERENCES LINKS:

[ADA GUIDELINES](#)

[AAB GUIDELINES](#)

[521 CMR 21](#)



DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

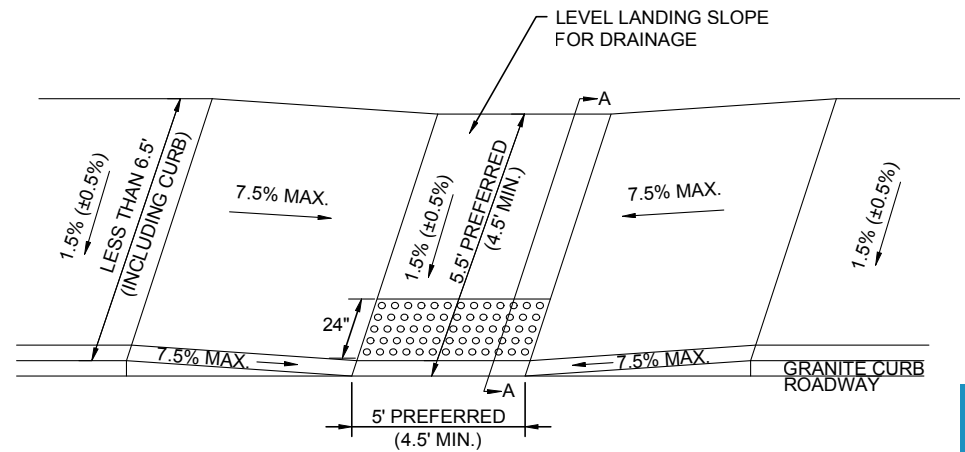
R.3 PEDESTRIAN RAMP - SIDEWALK WIDTH LESS THAN 6.5'

REFERENCES LINKS:

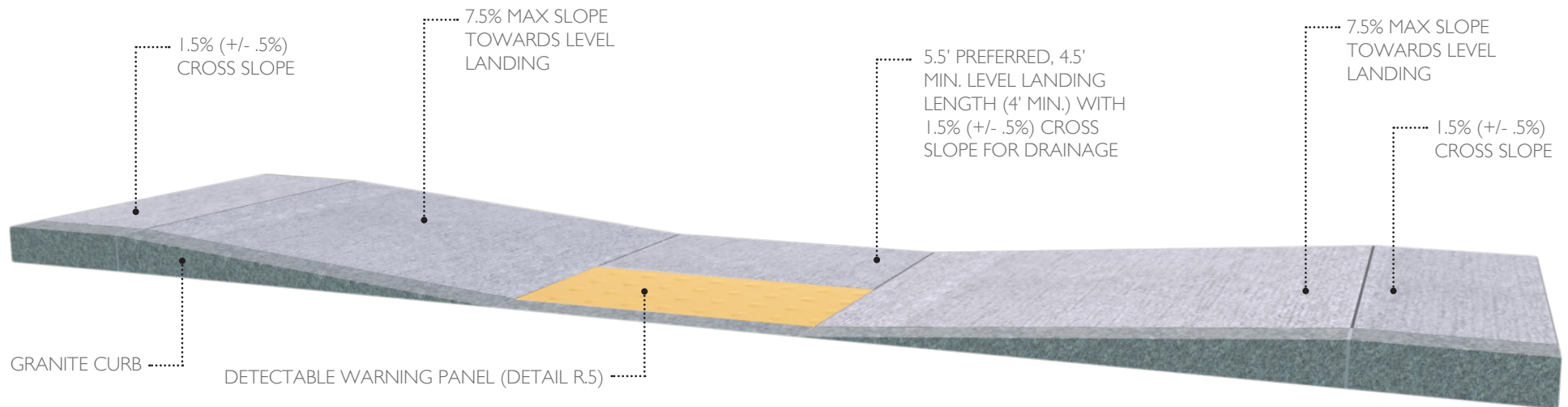
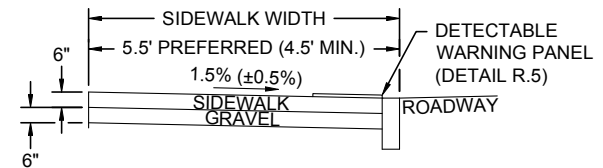
[ADA GUIDELINES](#)

[AAB GUIDELINES](#)

[521 CMR 21](#)



SECTION A-A



DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

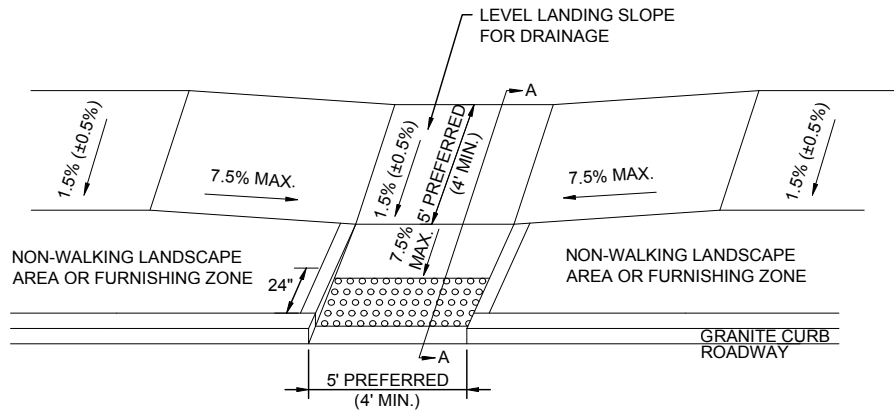
R.4 PEDESTRIAN RAMP - SIDEWALK WITH NON-WALKING AREA

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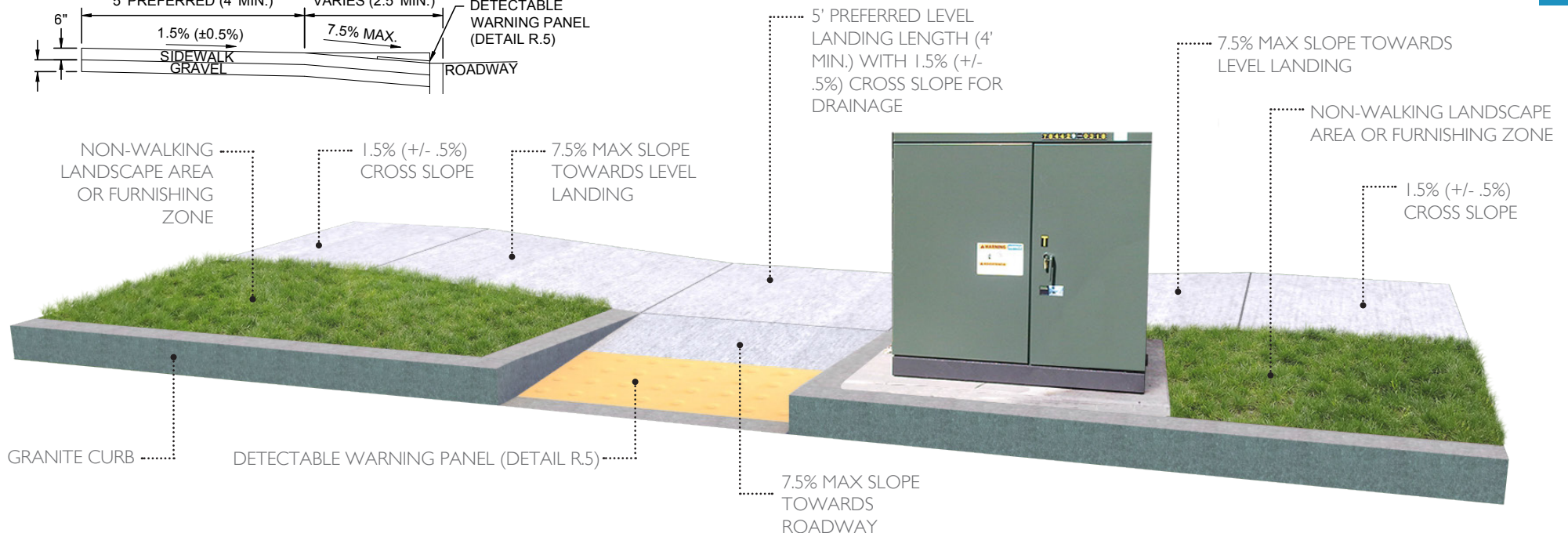
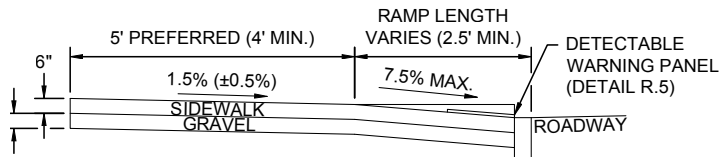
[ADA GUIDELINES](#)

[AAB GUIDELINES](#)

[521 CMR 21](#)



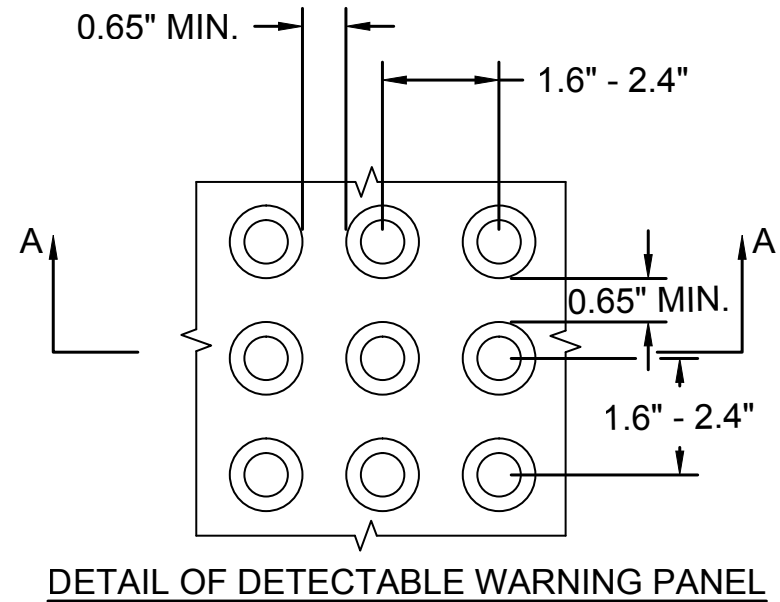
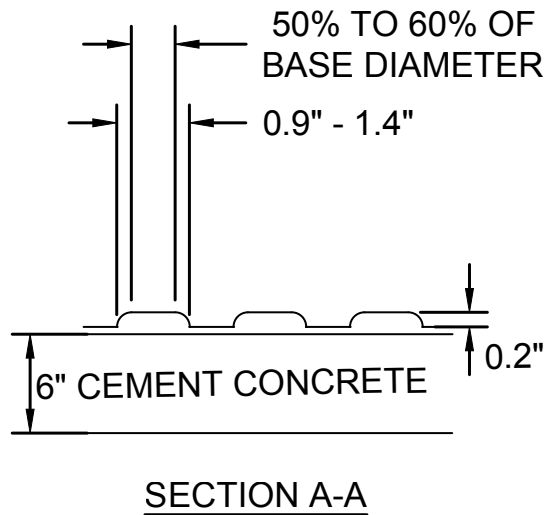
SECTION A-A



DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

R.5 PEDESTRIAN RAMP - DETECTABLE WARNING PANEL



NOTES:

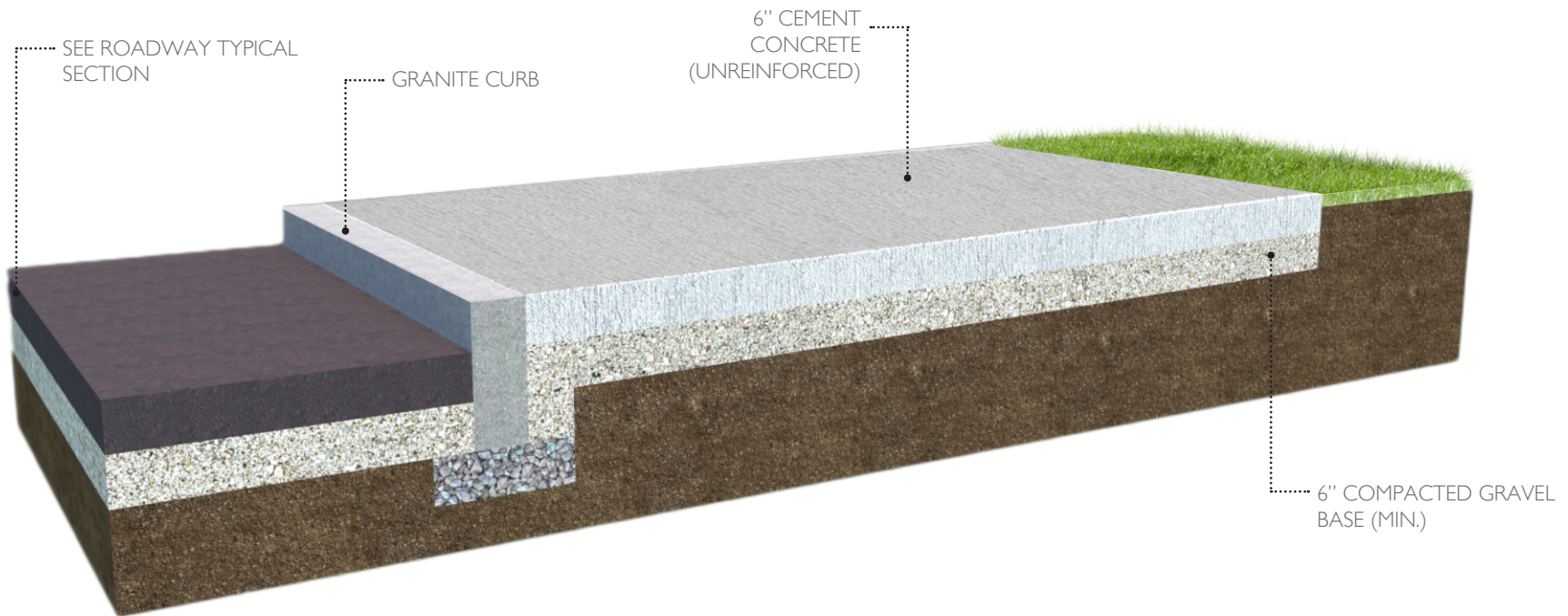
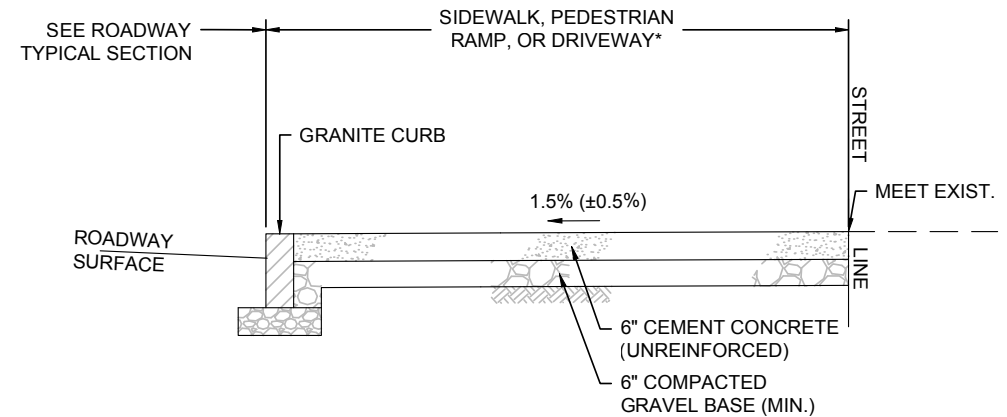
1. DETECTABLE WARNING PANELS SHALL BE PERMANENTLY APPLIED TO THE CURB RAMP.
2. DETECTABLE WARNING PANELS SHALL BE PALE YELLOW IN COLOR, CONFORMING TO FEDERAL NO. 23594, UNLESS OTHERWISE SPECIFIED BY PWD.
3. DETECTABLE WARNING PANELS SHALL BE COMPOSITE.
4. DETECTABLE WARNING PANELS SHALL BE INSTALLED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

DATE OF ISSUE: MAY 2019

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.**

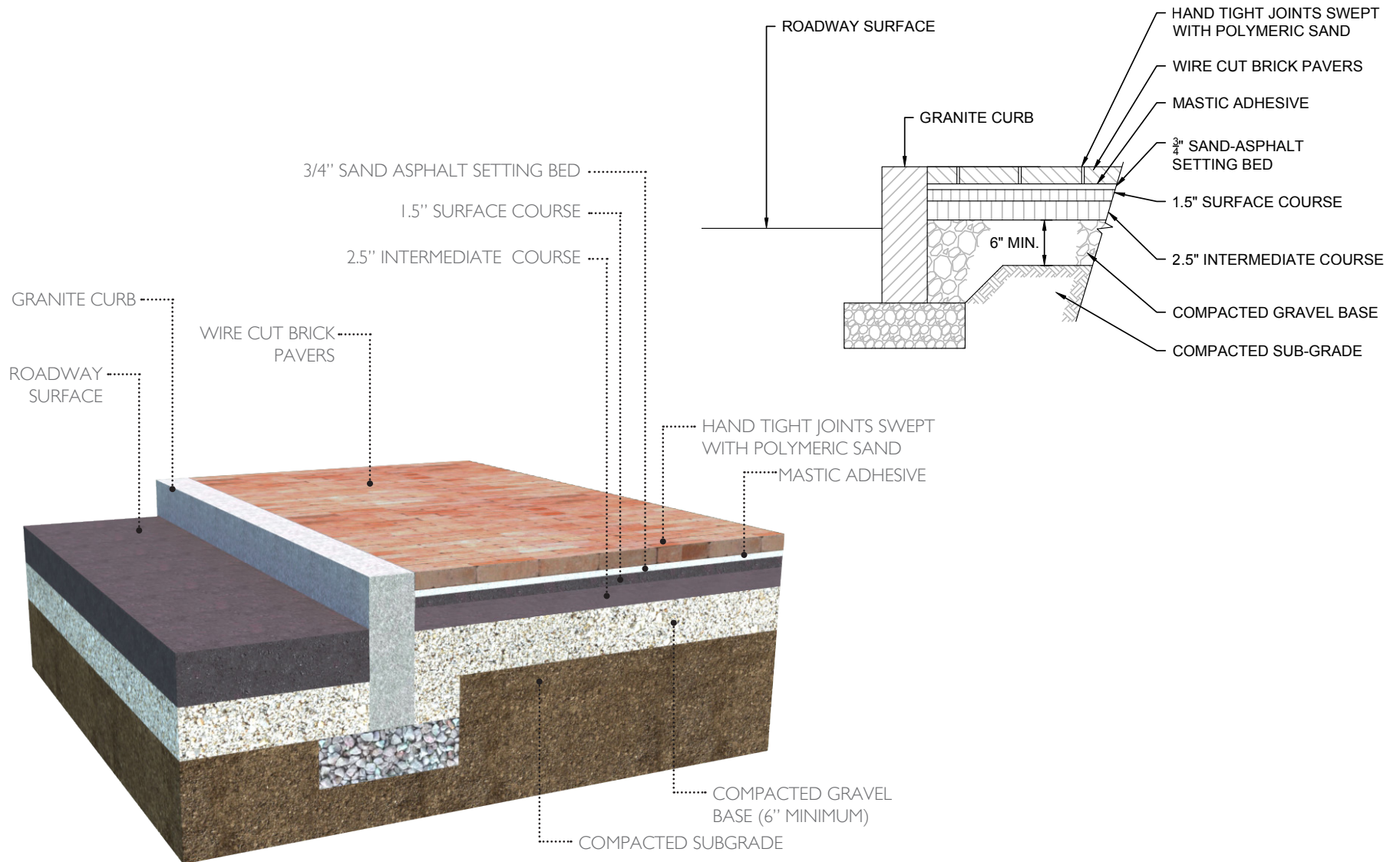


S.1

DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

S.2 SIDEWALK - BRICK

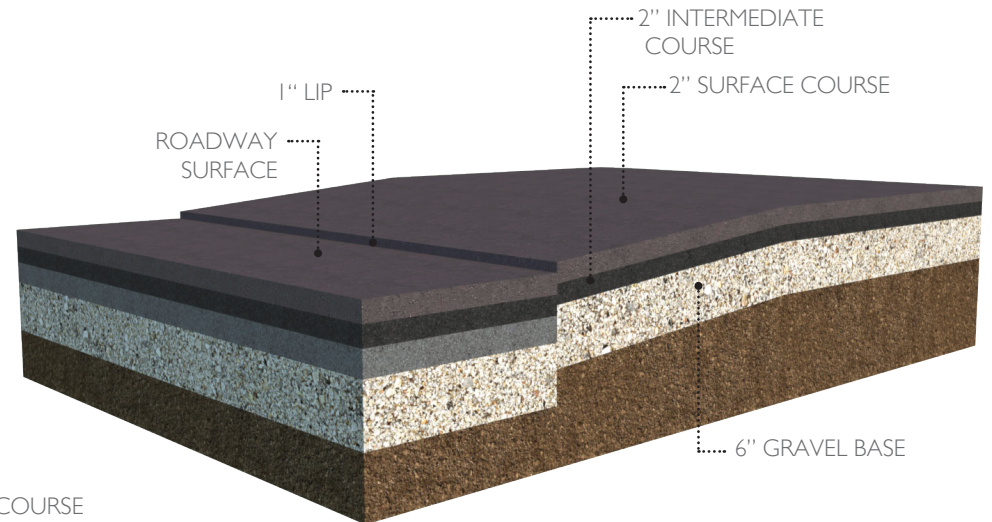
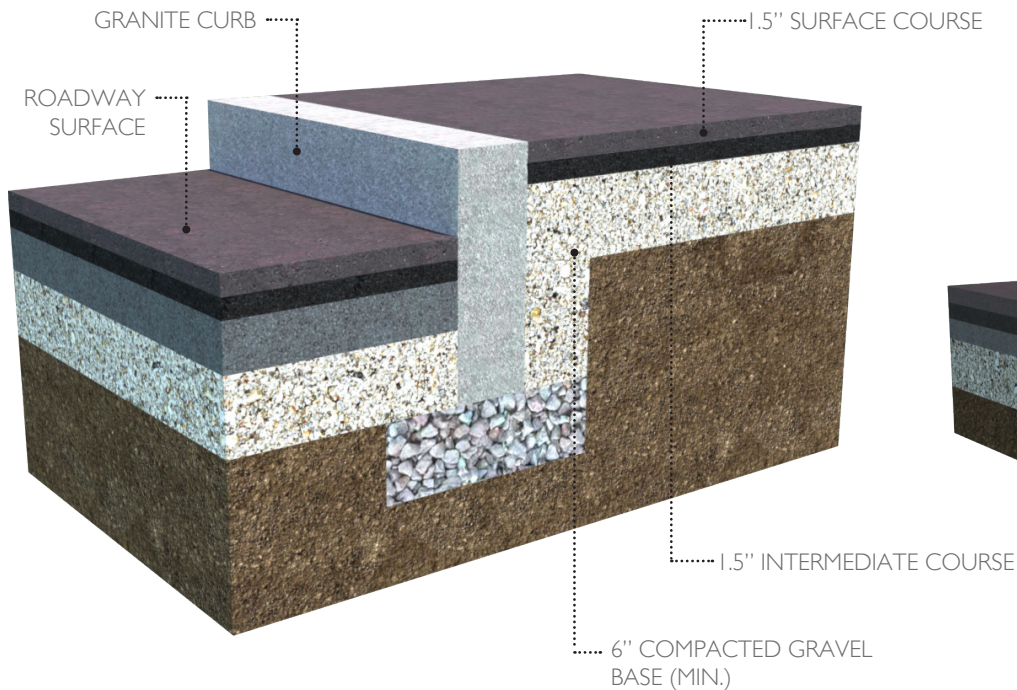
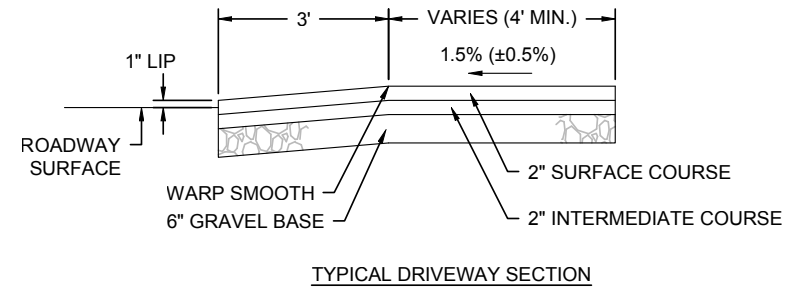
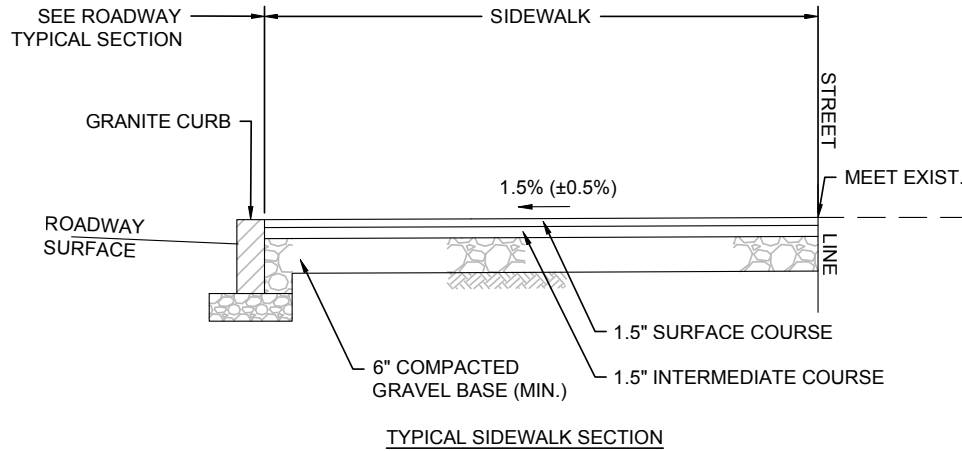


S.2

DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

S.3 SIDEWALK + DRIVEWAY - HMA

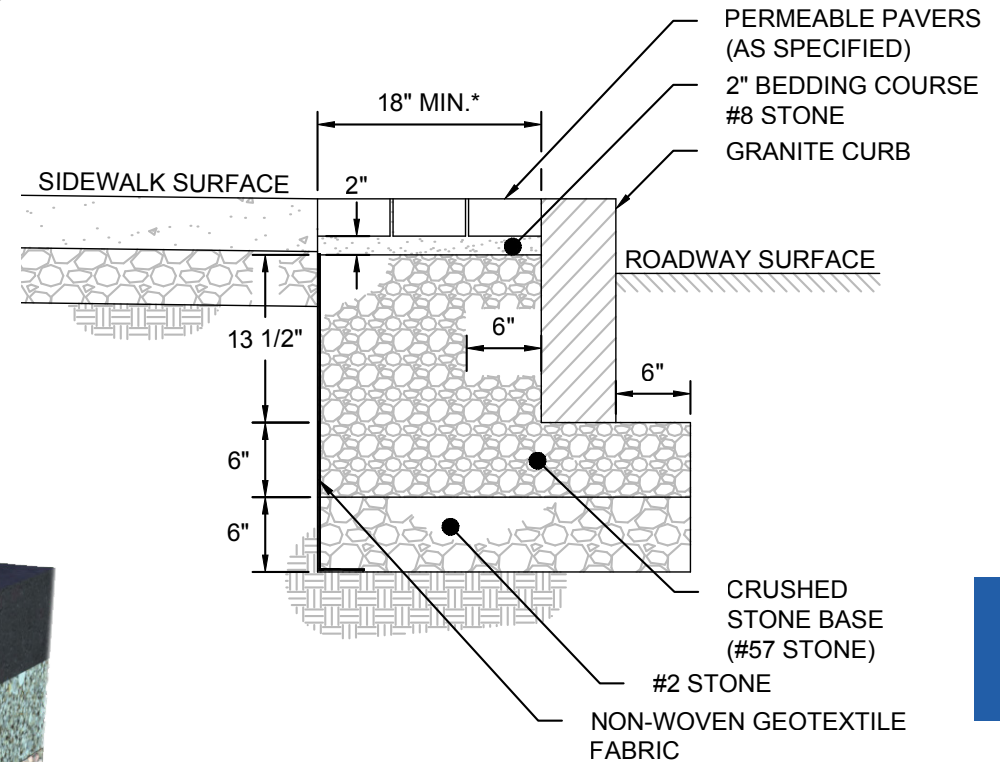
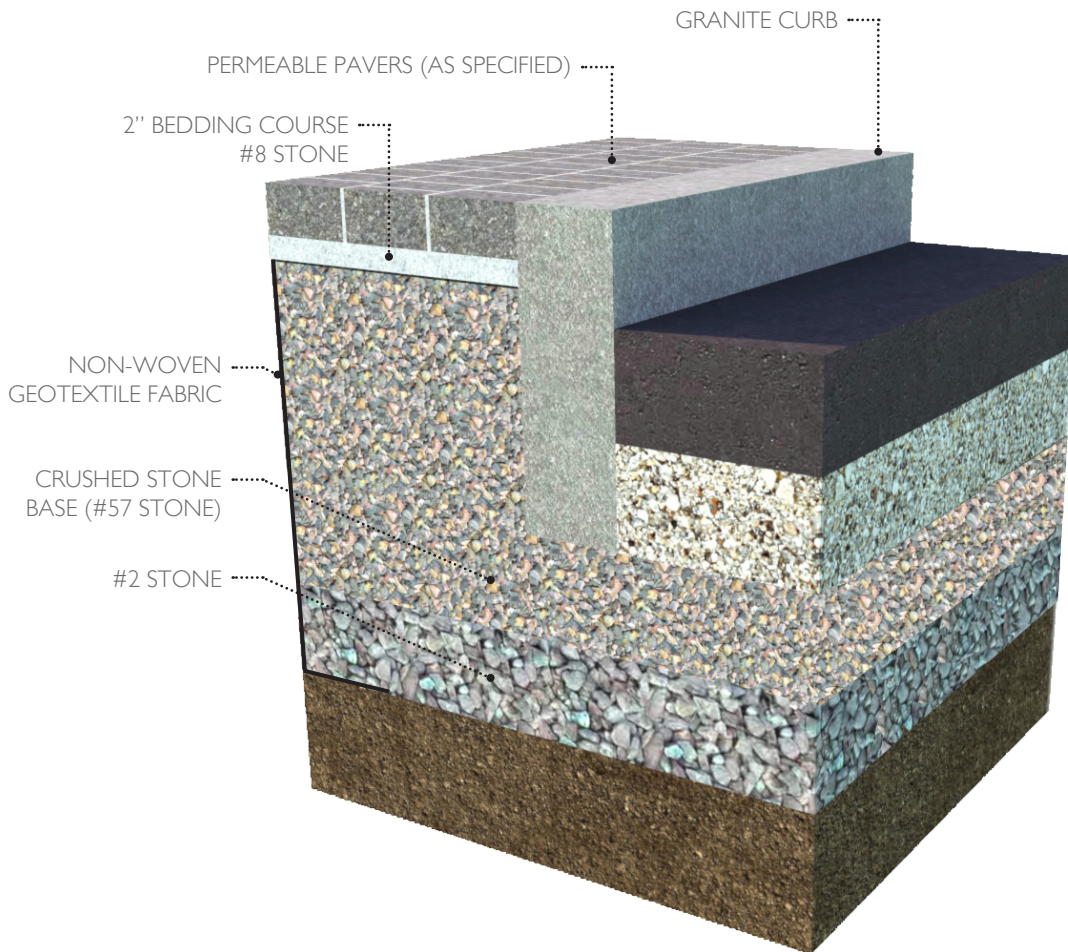


S.3

DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

S.4 SIDEWALK - PERMEABLE PAVER



*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.

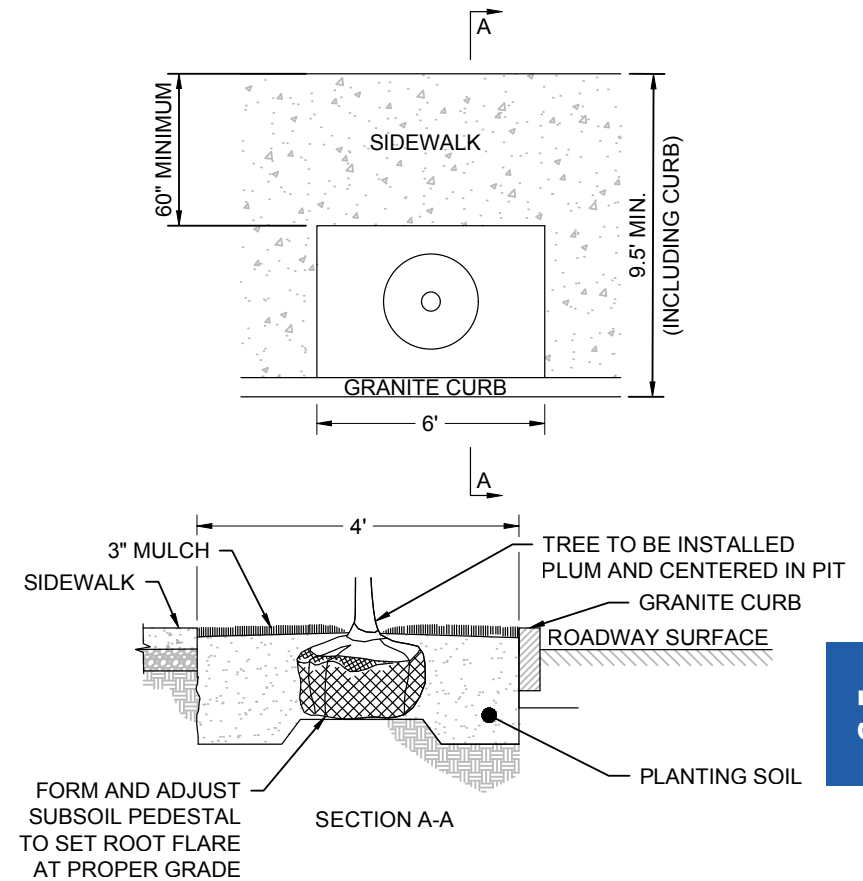
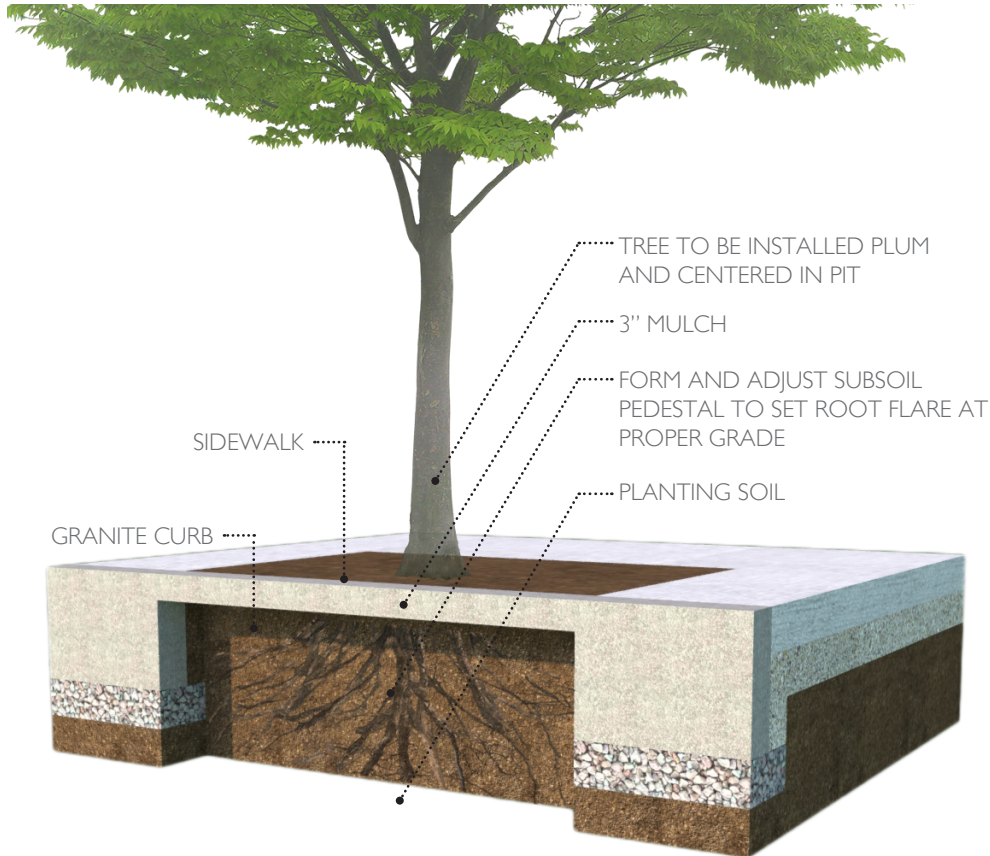
ALL PERMEABLE SYSTEMS SHALL BE MAINTAINED AS PER MANUFACTURER RECOMMENDATIONS.

DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

S.5 SIDEWALK - TREE PIT (4'x6')

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:

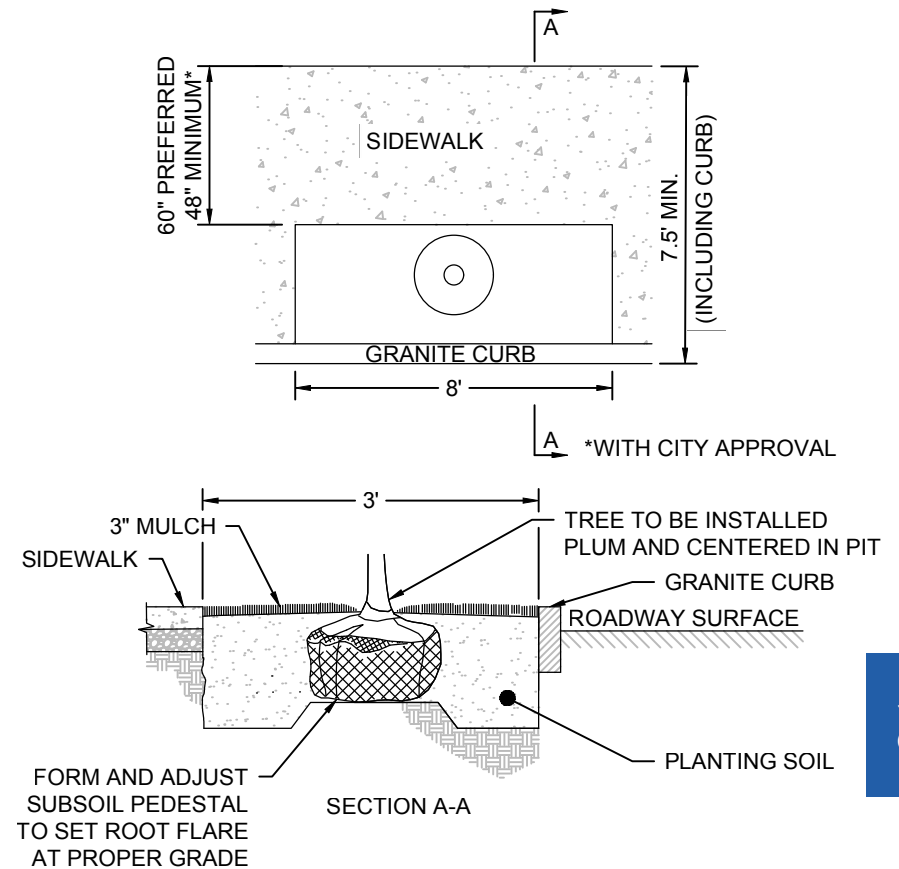
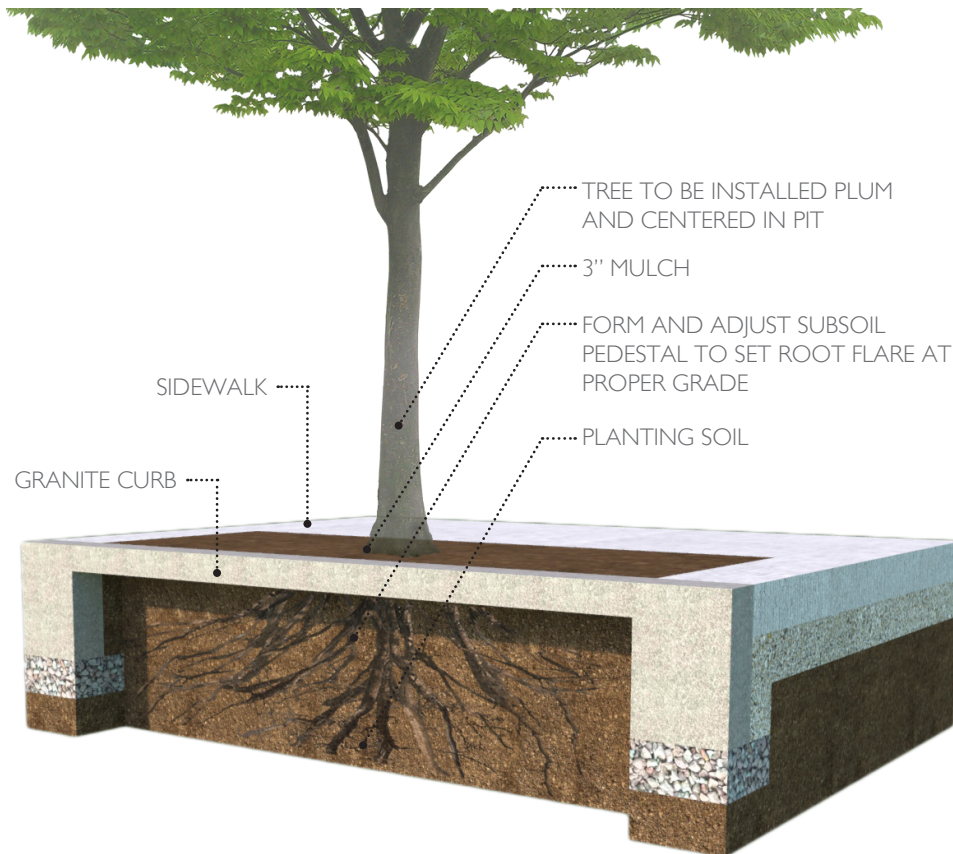
1. TREE PIT TO BE A MINIMUM OF 24 SQUARE FEET.
2. PROVIDE 10' LONG X 3" SQ WOODEN STAKES EQUALLY SPACED, 3 PER TREE, 7' EXPOSED. DRIVE STAKES AT AN ANGLE AND DRAW VERTICAL WITH NYLON TREE TIE.
3. CONTRACTOR SHALL PERFORM PERCOLATION TEST ON SUB-GRADE PRIOR TO PLANTING. IF TEST IS NOT PASSING, CONTRACTOR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

DATE OF ISSUE: MAY 2019

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.



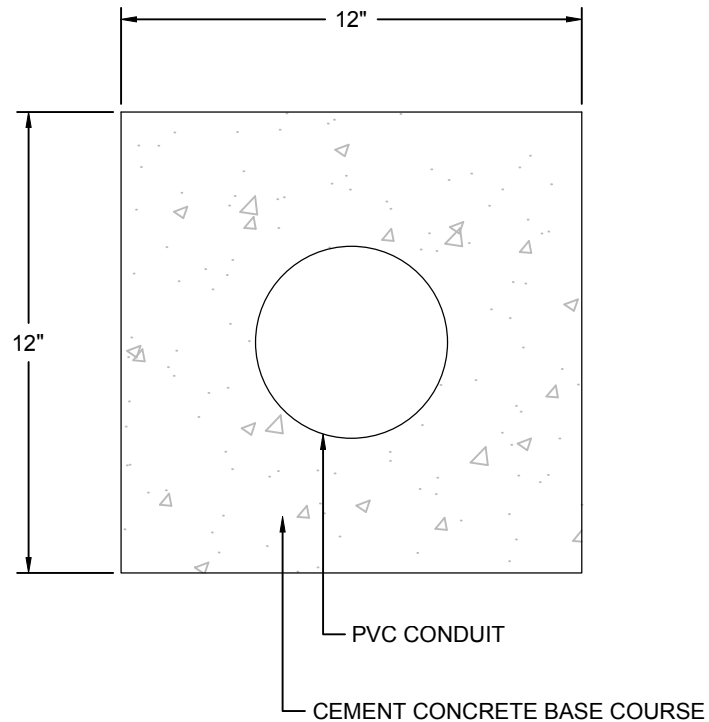
NOTE:

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.

DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

U.1 UTILITY - CONCRETE ENCASED CONDUIT

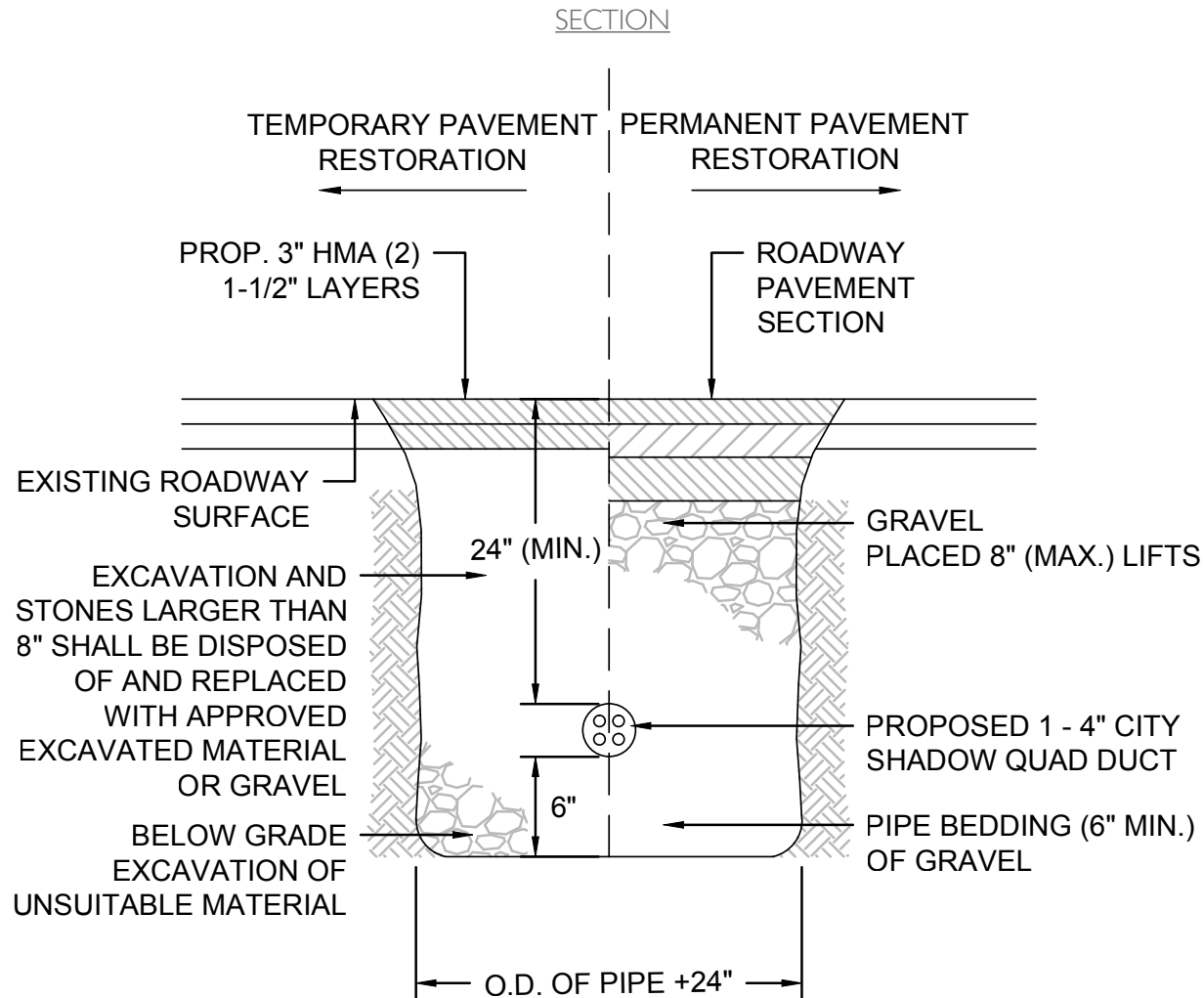


NOTE: PVC CONDUIT SHALL BE ENCASED IN 12 INCHES OF CEMENT CONCRETE BASE COURSE. SAND WILL NOT BE REQUIRED AT THESE LOCATIONS. CONCRETE WILL BE PAID FOR UNDER ITEM 431.1, HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE.

DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

U.2 UTILITY - SHADOW CONDUIT

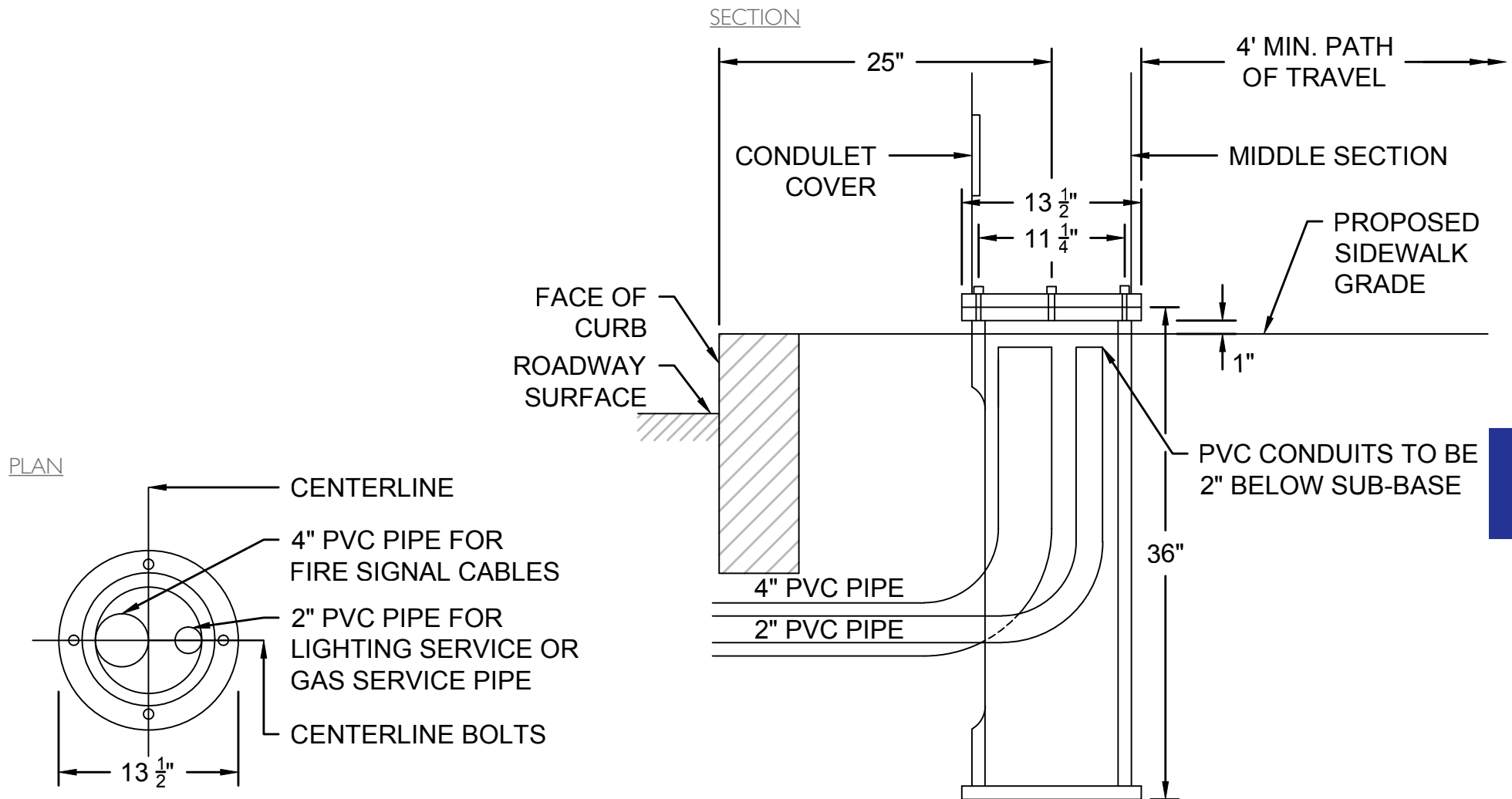


NOTE: CITY SHADOW CONDUIT TO BE ROPED AND TAGGED.

DATE OF ISSUE: MAY 2019

ROADWAY DESIGN STANDARDS

U.3 UTILITY - FIRE ALARM BASE



U.3

DATE OF ISSUE: MAY 2019