



# ROADWAY DESIGN STANDARDS



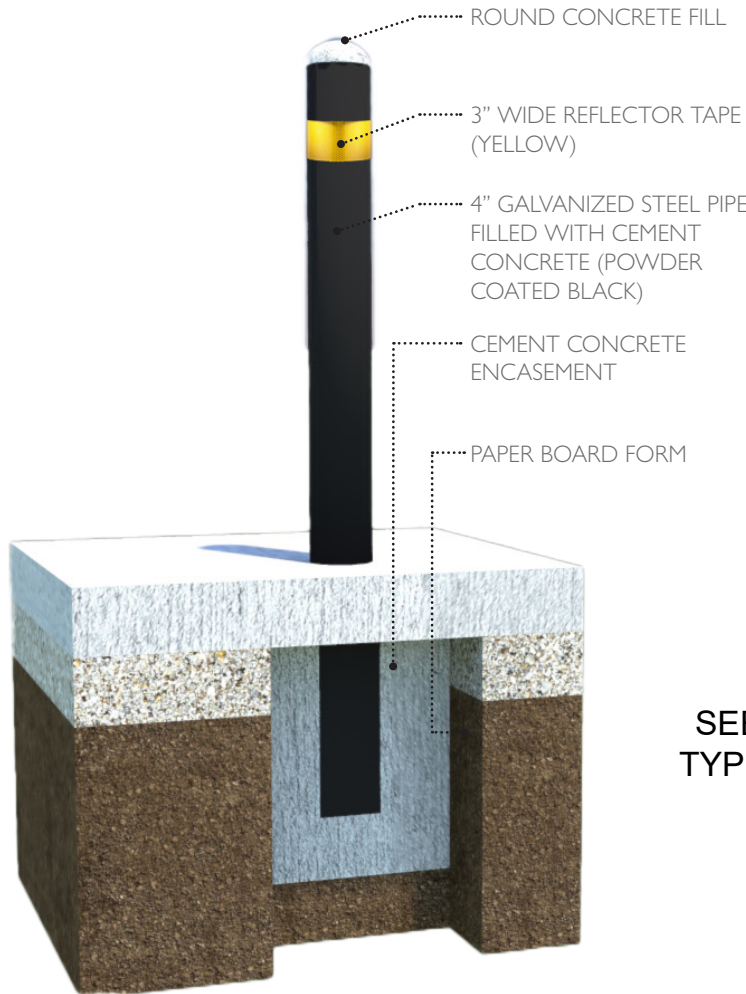
# ROADWAY DESIGN STANDARDS

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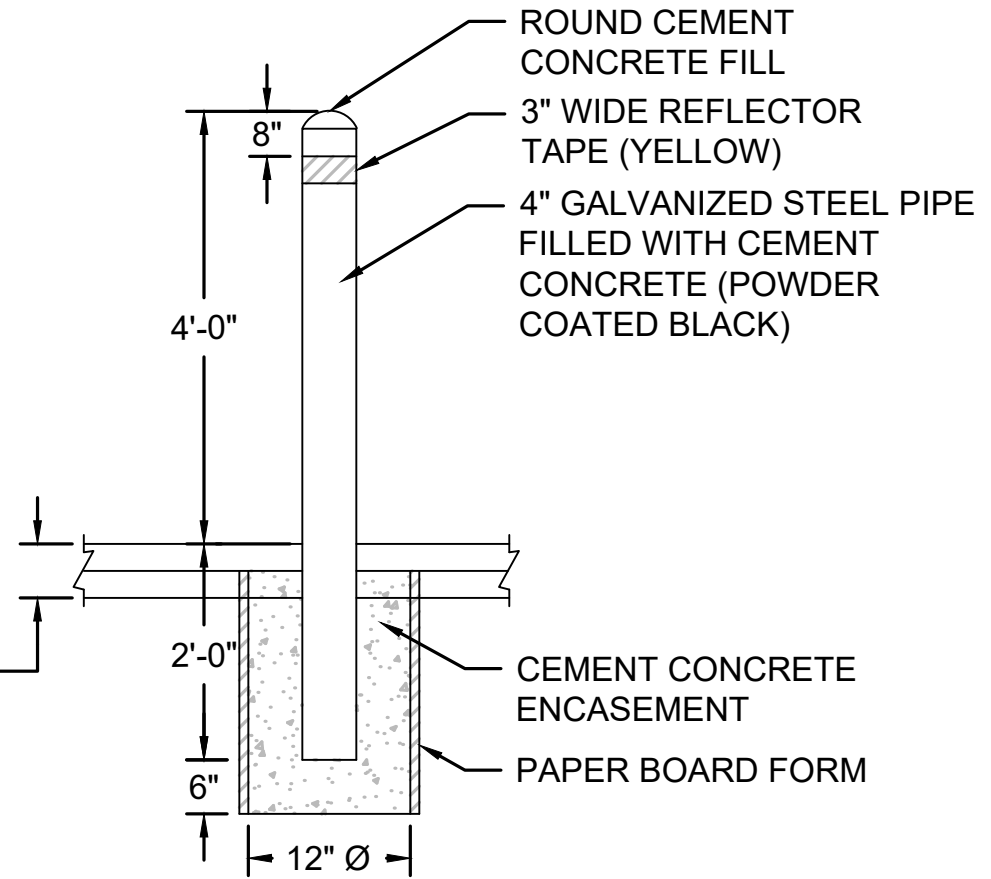
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# ROADWAY DESIGN STANDARDS

## A.1 BOLLARD - STEEL



SEE APPLICABLE TYPICAL SECTION

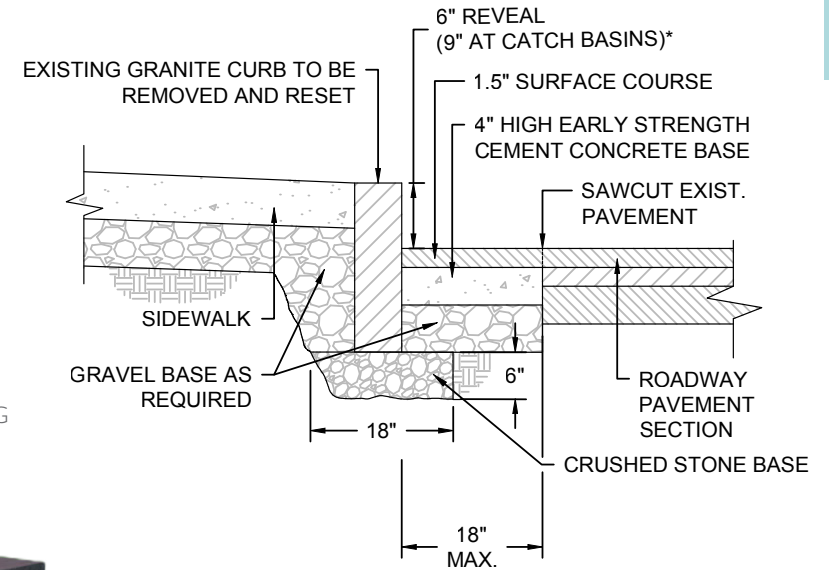
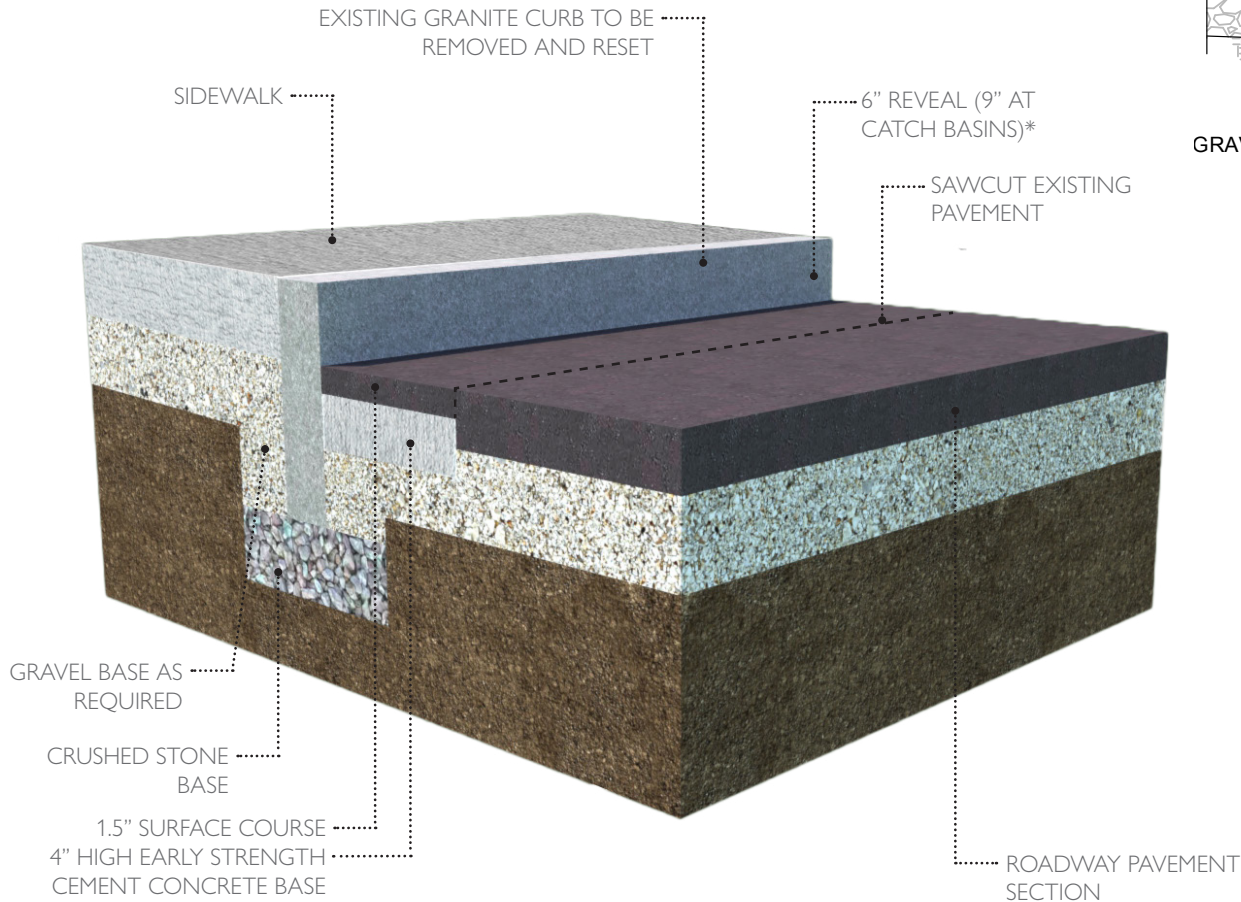


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# ROADWAY DESIGN STANDARDS

## C.1 CURB - GRANITE RESET

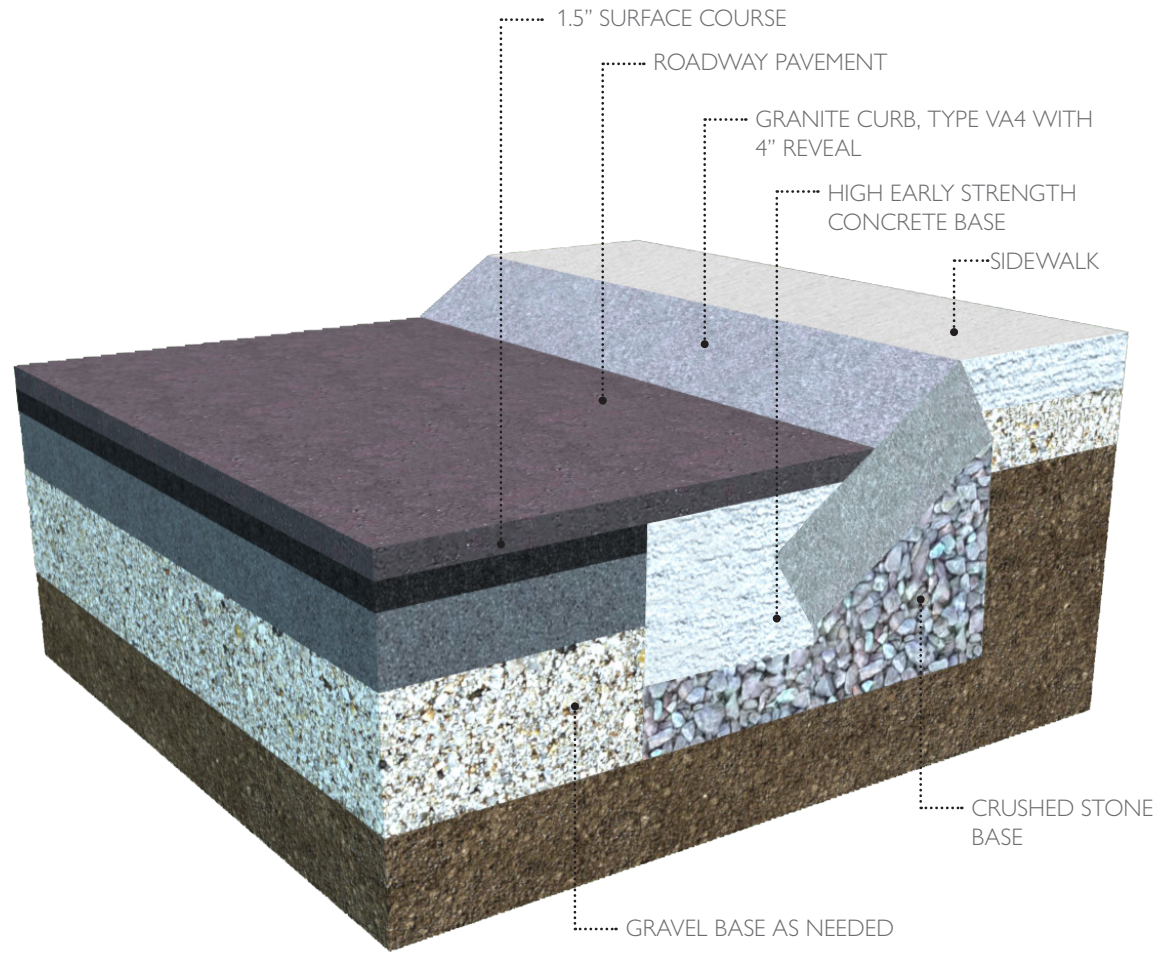
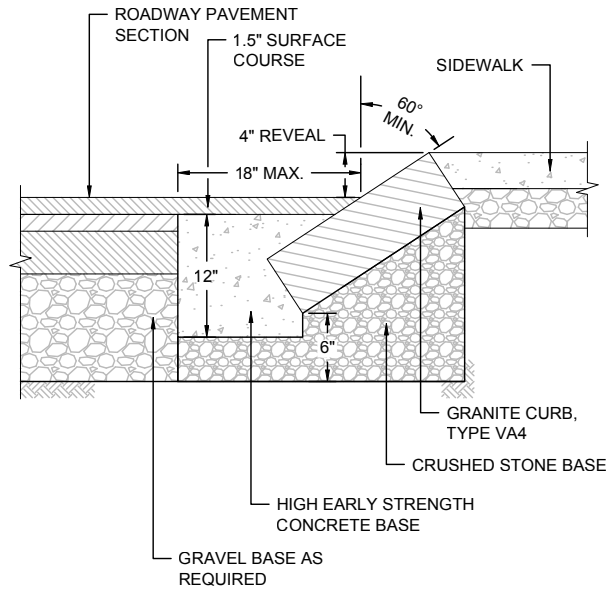
**NOTE: 6" REVEAL TYPICAL. REVEAL MAY VARY FROM 3" - 9" WITH PWD APPROVAL.**



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## C.2 CURB - GRANITE SLOPED

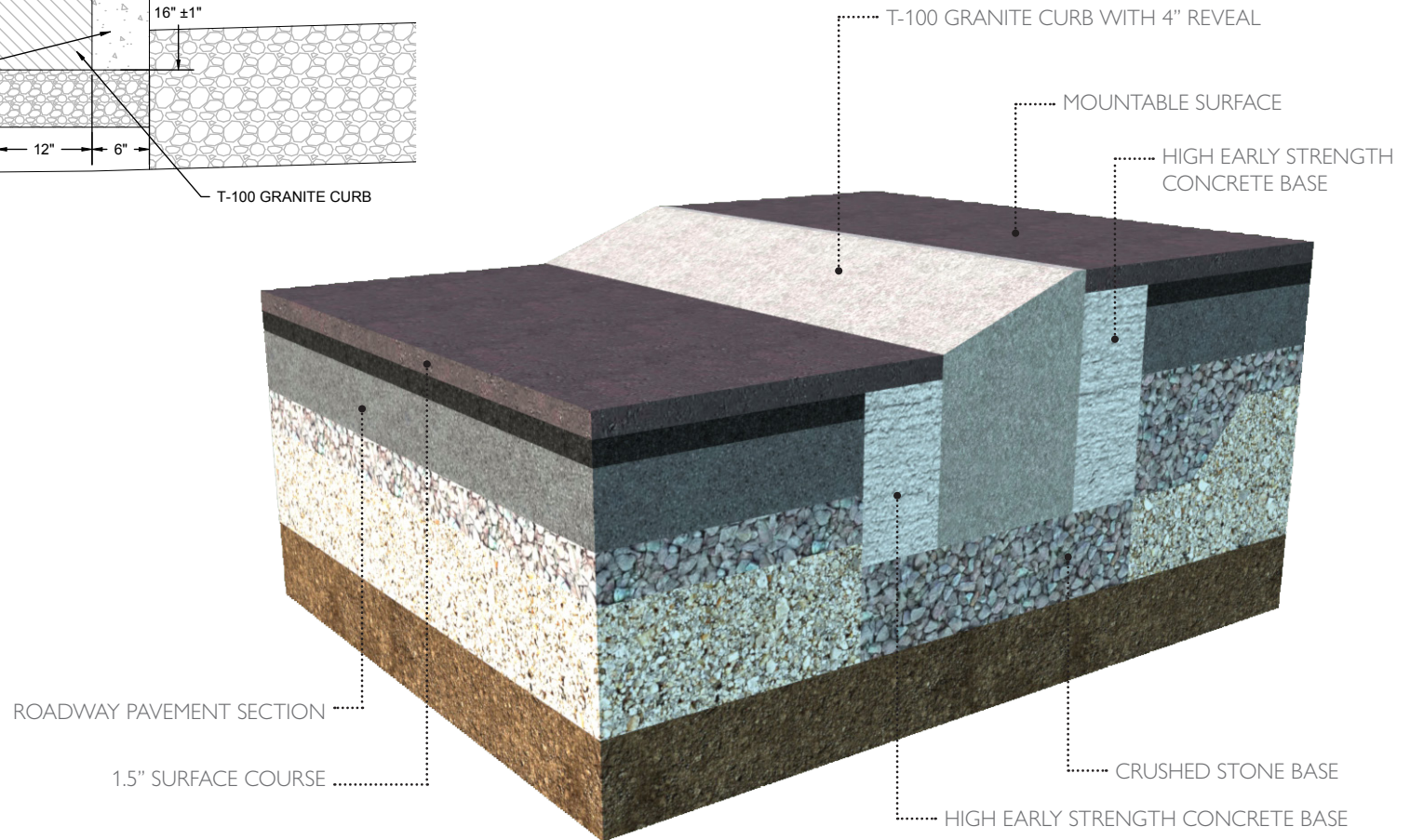
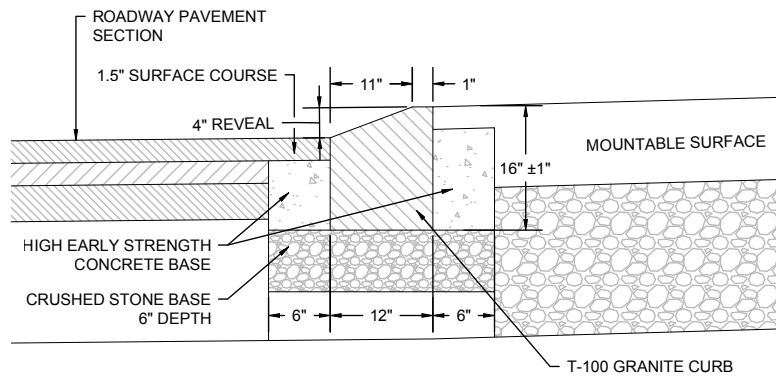


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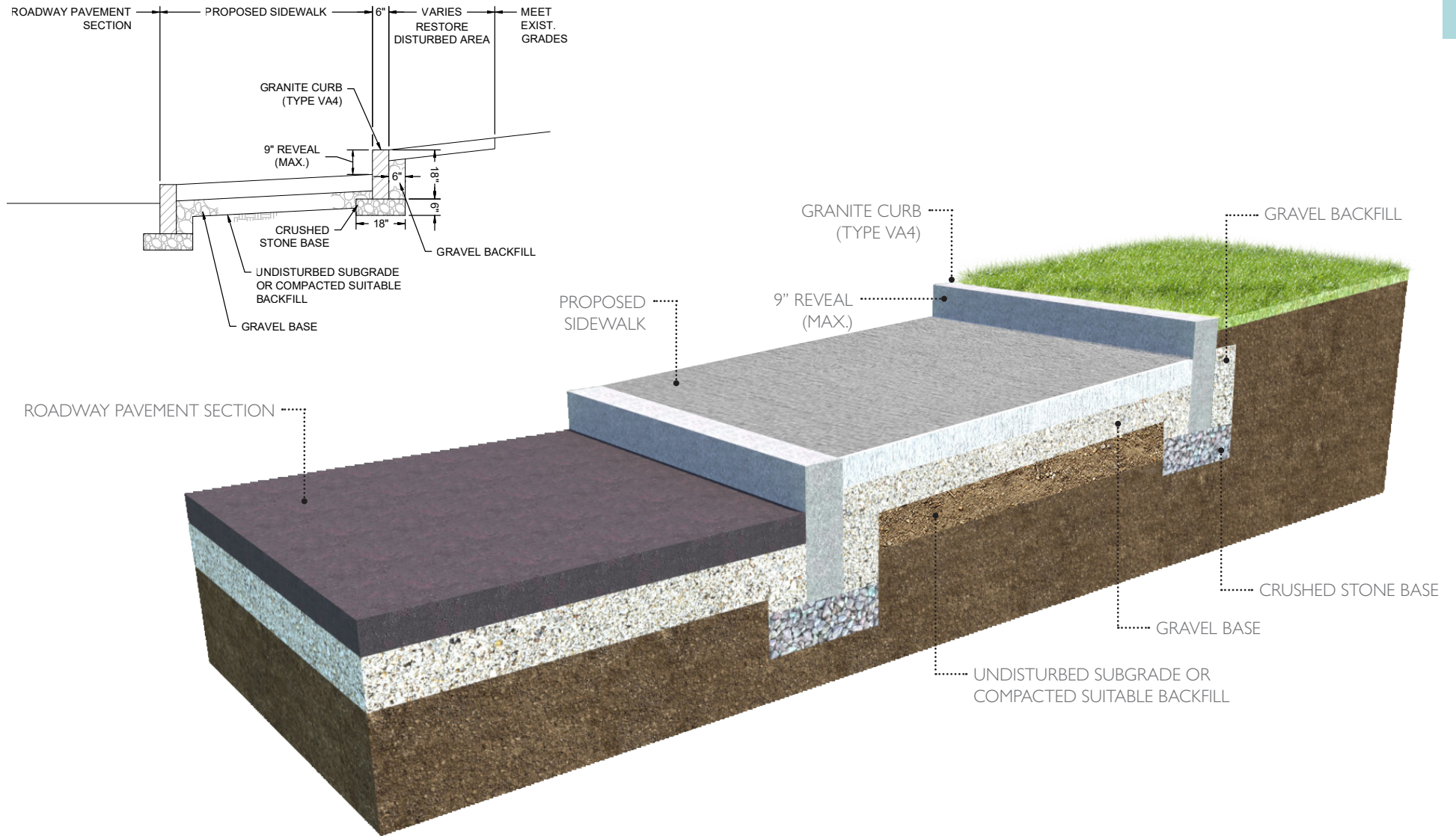
## C.3 CURB - MOUNTABLE



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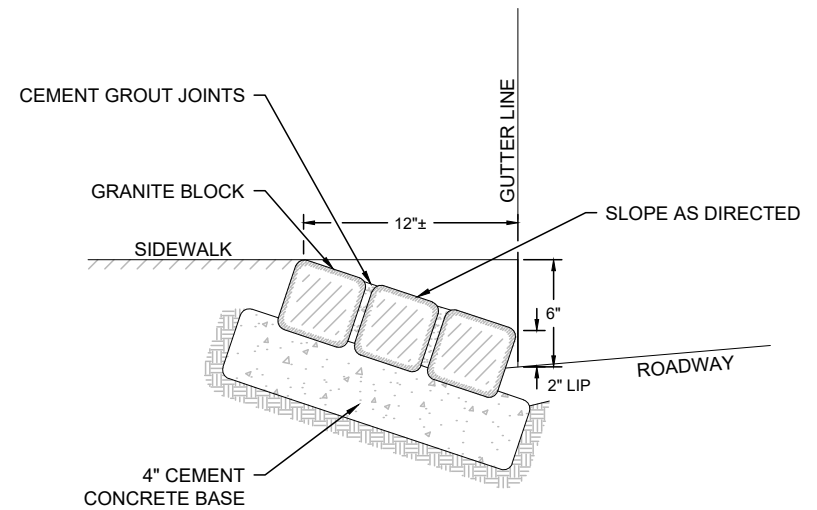
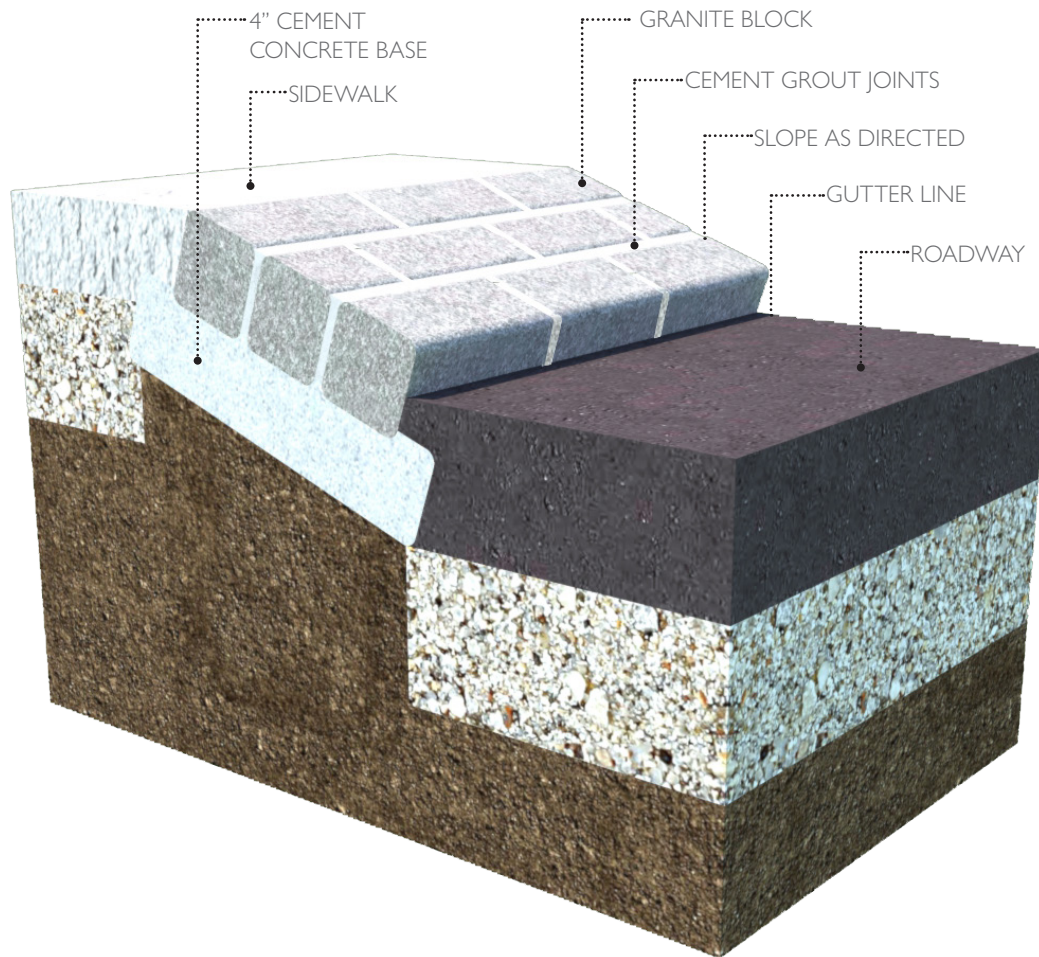
## C.4 CURB - GRANITE CURB AT BACK OF SIDEWALK



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## C.5 CURB - GRANITE BLOCK HIP GUTTER



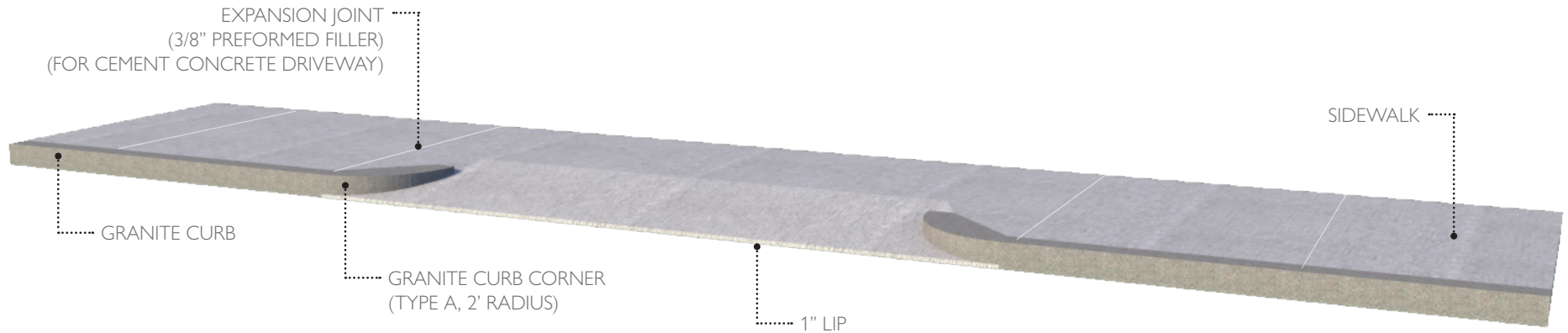
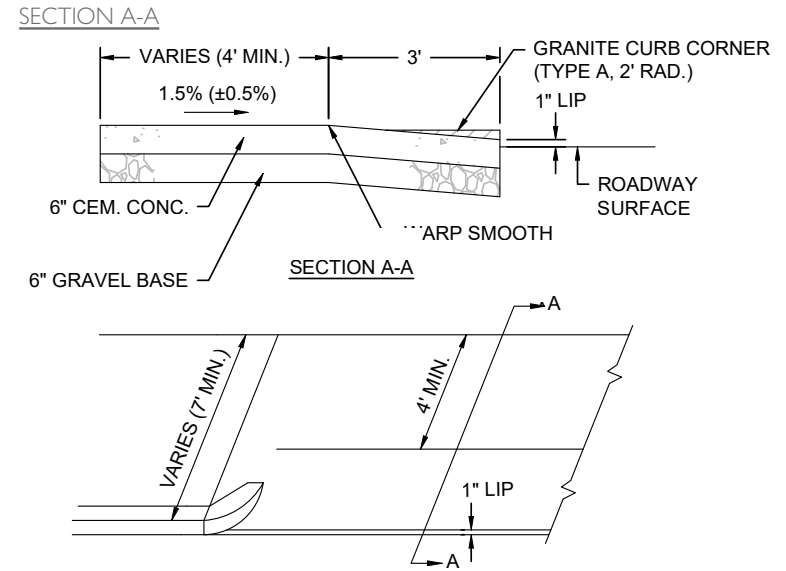
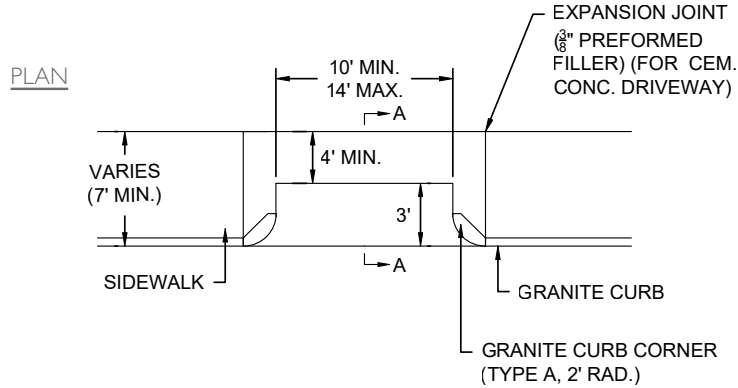
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# ROADWAY DESIGN STANDARDS

## D.1 DRIVEWAY - RESIDENTIAL

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

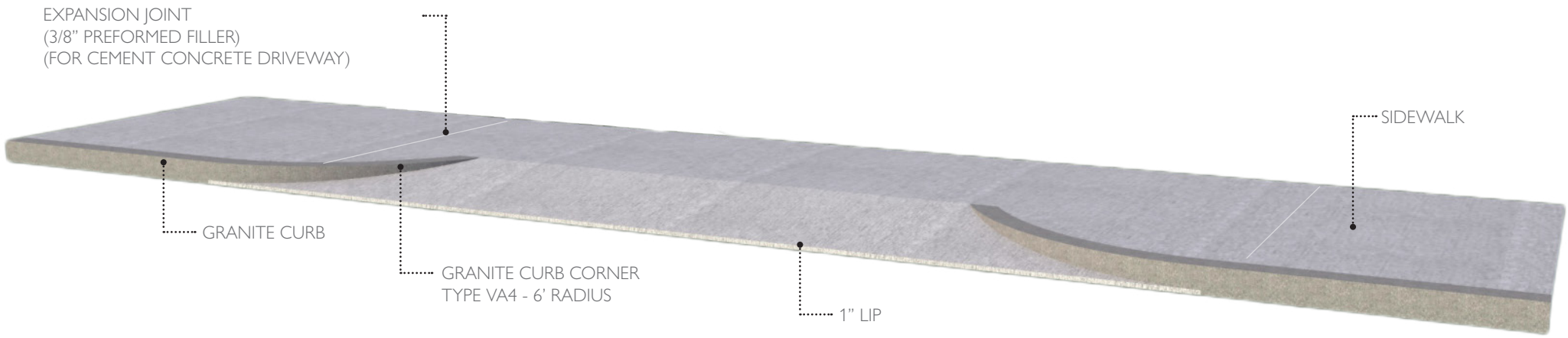
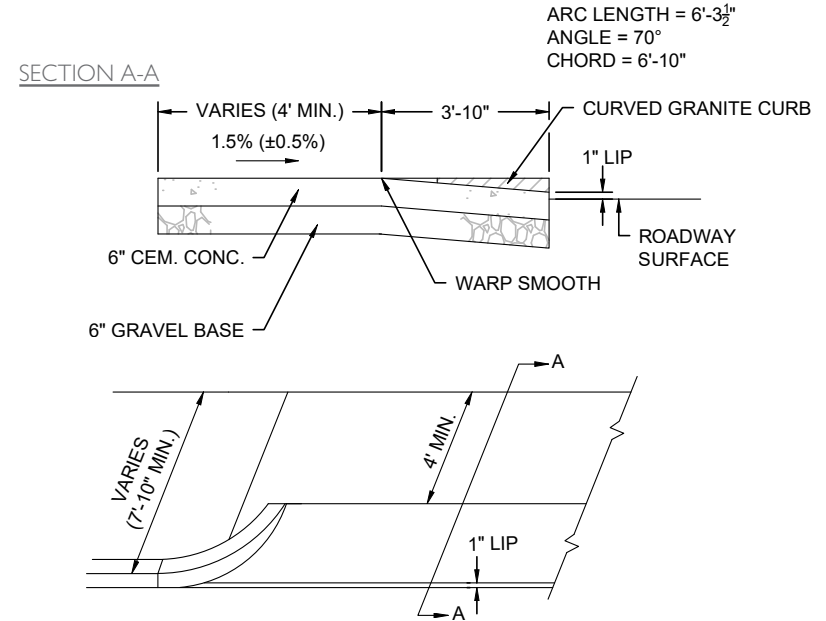
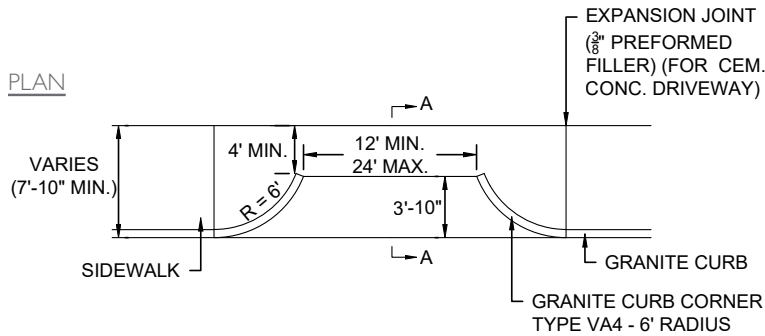


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# ROADWAY DESIGN STANDARDS

## D.2 DRIVEWAY - COMMERCIAL

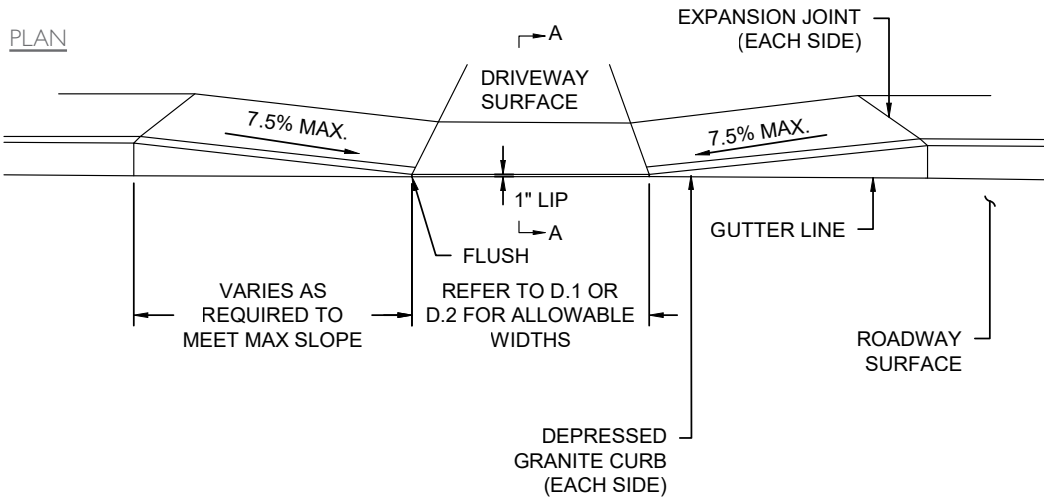
**NOTE: THE COMMERCIAL DRIVEWAY DETAIL WITH 6' RADIUS CURB IS ONLY FOR SIDEWALK WIDTHS GREATER THAN OR EQUAL TO 7'-10", OTHERWISE 2' CORNERS ARE TO BE USED. FOR SIDEWALK WIDTHS LESS THAN 7', USE DETAIL D.3.**



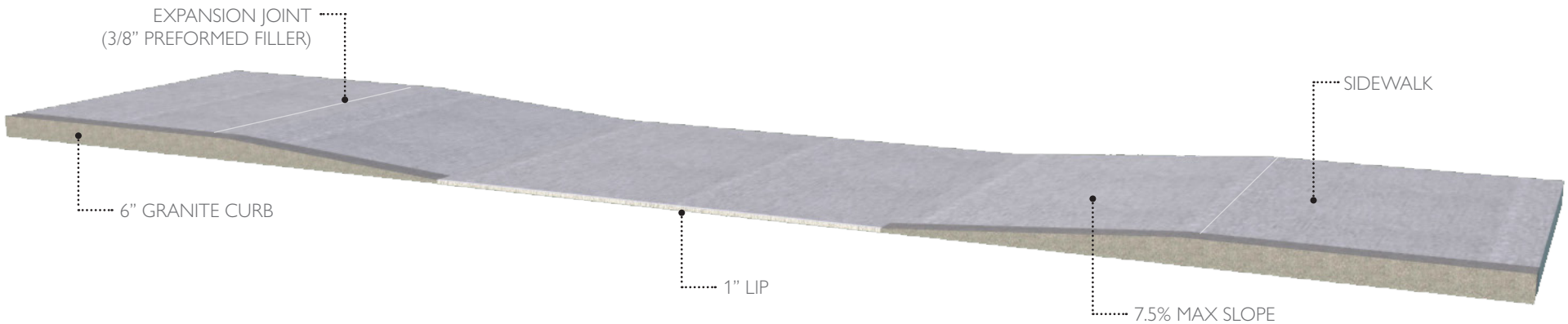
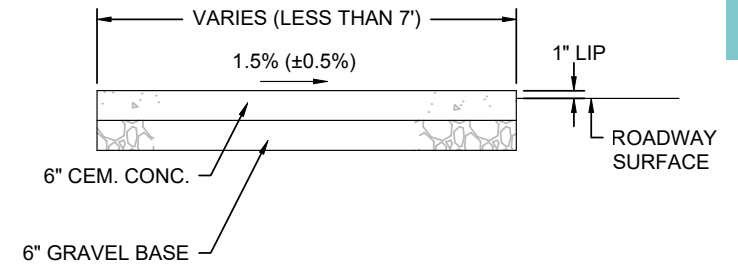
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# ROADWAY DESIGN STANDARDS

## D.3 DRIVEWAY - SIDEWALK WIDTHS LESS THAN 7'



SECTION A-A

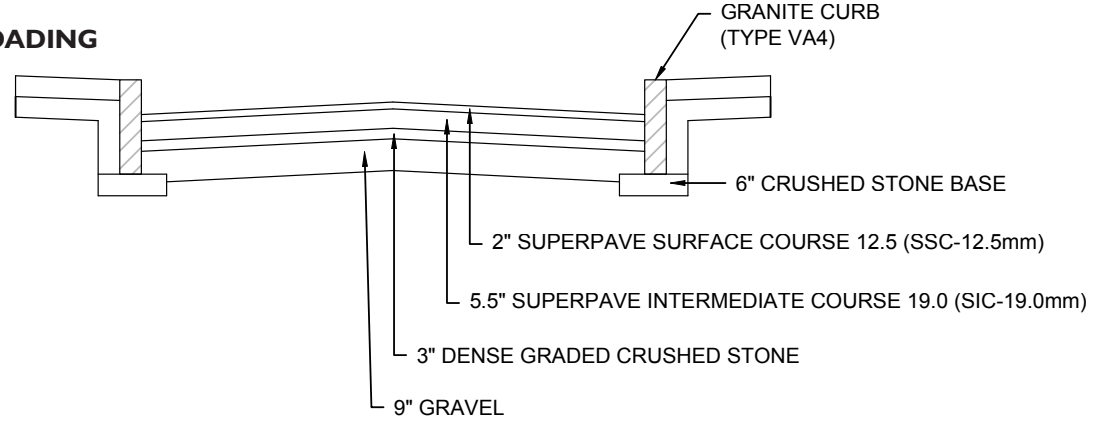


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# ROADWAY DESIGN STANDARDS

## P.1 PAVEMENT SECTION - ARTERIAL ROADWAY

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



2" SUPERPAVE SURFACE COURSE  
12.5 (SSC-12.5mm)

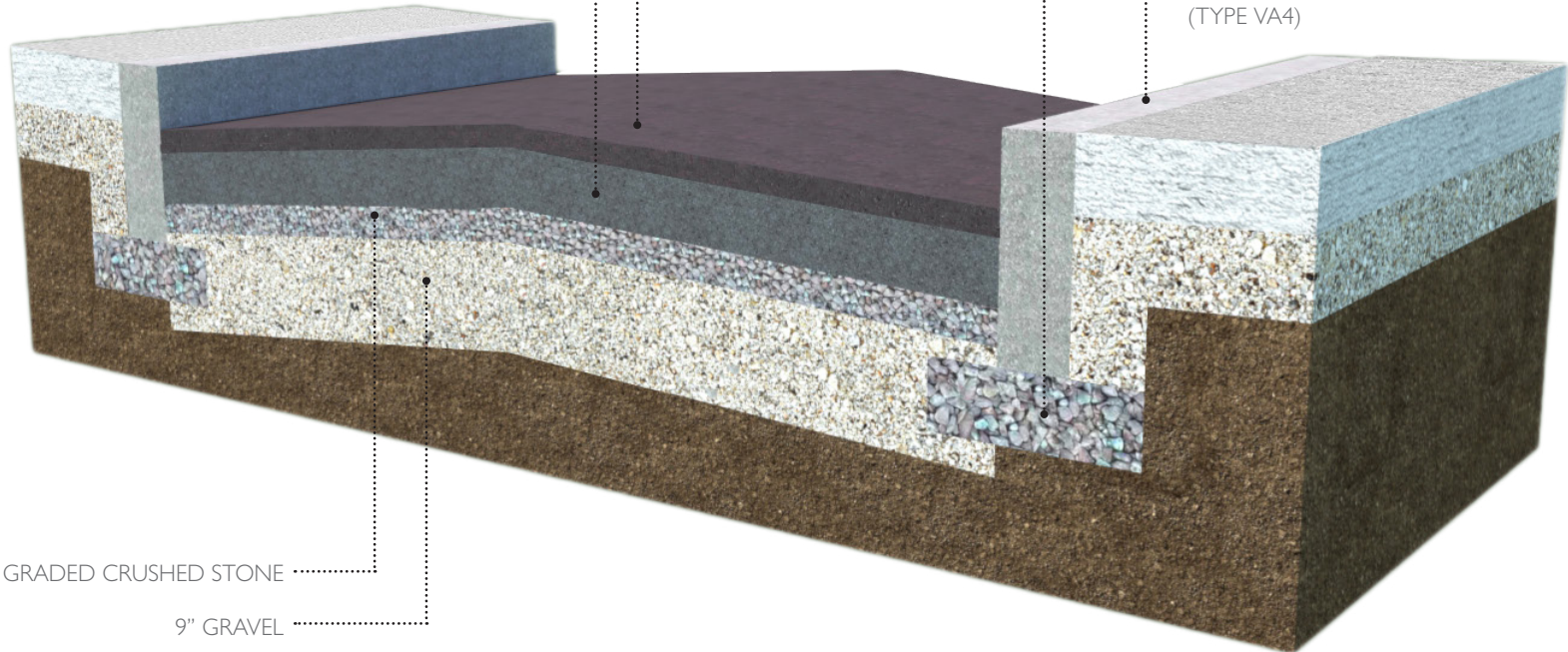
5.5" SUPERPAVE INTERMEDIATE COURSE  
19.0 (SIC-19.0mm)

6" CRUSHED STONE  
BASE

GRANITE CURB  
(TYPE VA4)

3" DENSE GRADED CRUSHED STONE

9" GRAVEL



P.1

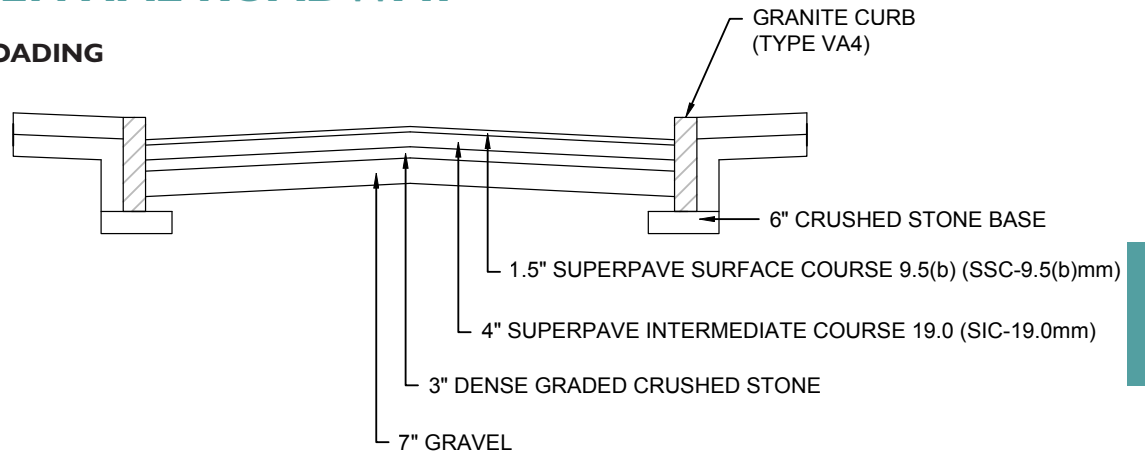
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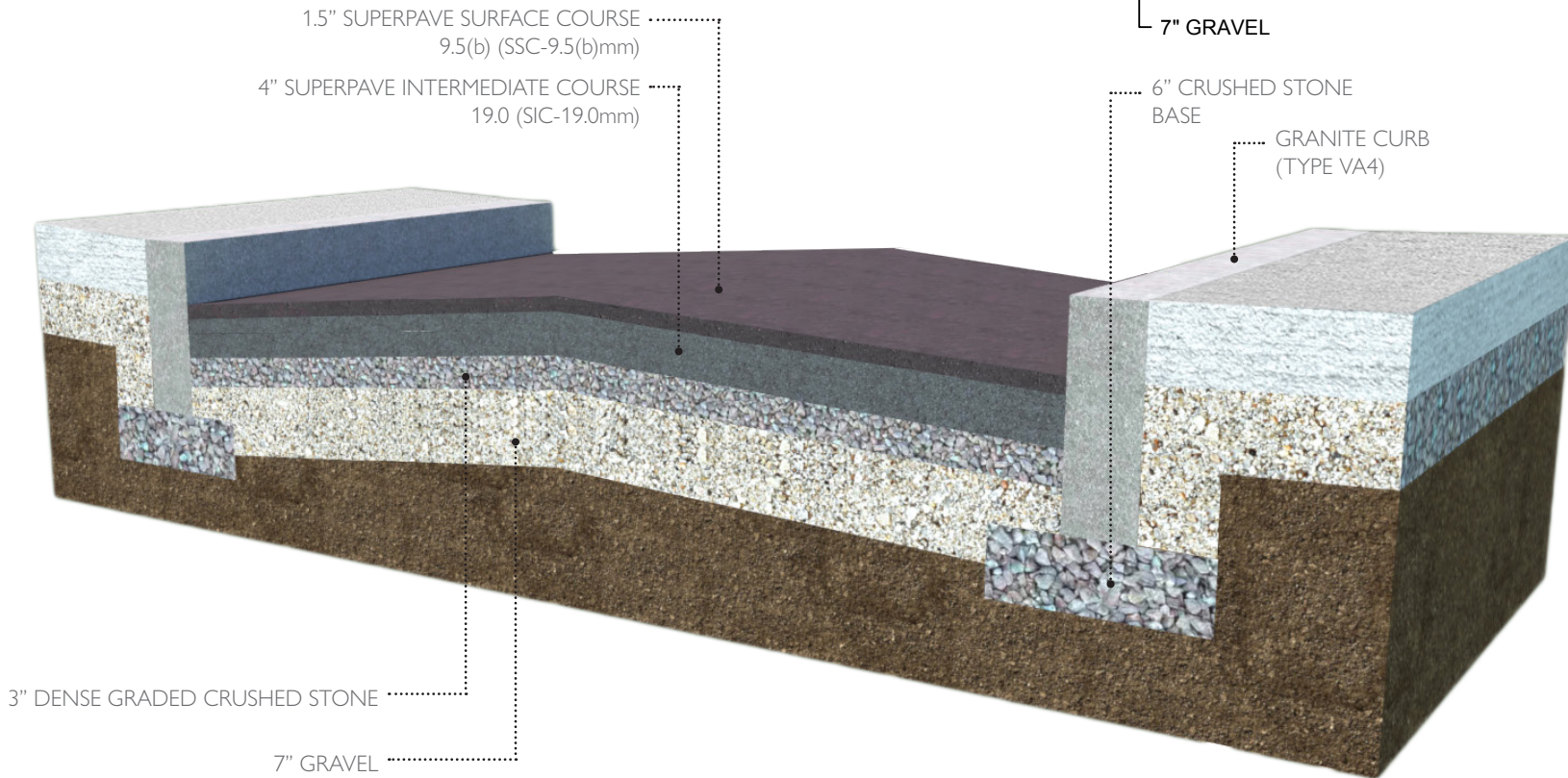
# ROADWAY DESIGN STANDARDS

## P.2 PAVEMENT SECTION - RESIDENTIAL ROADWAY

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



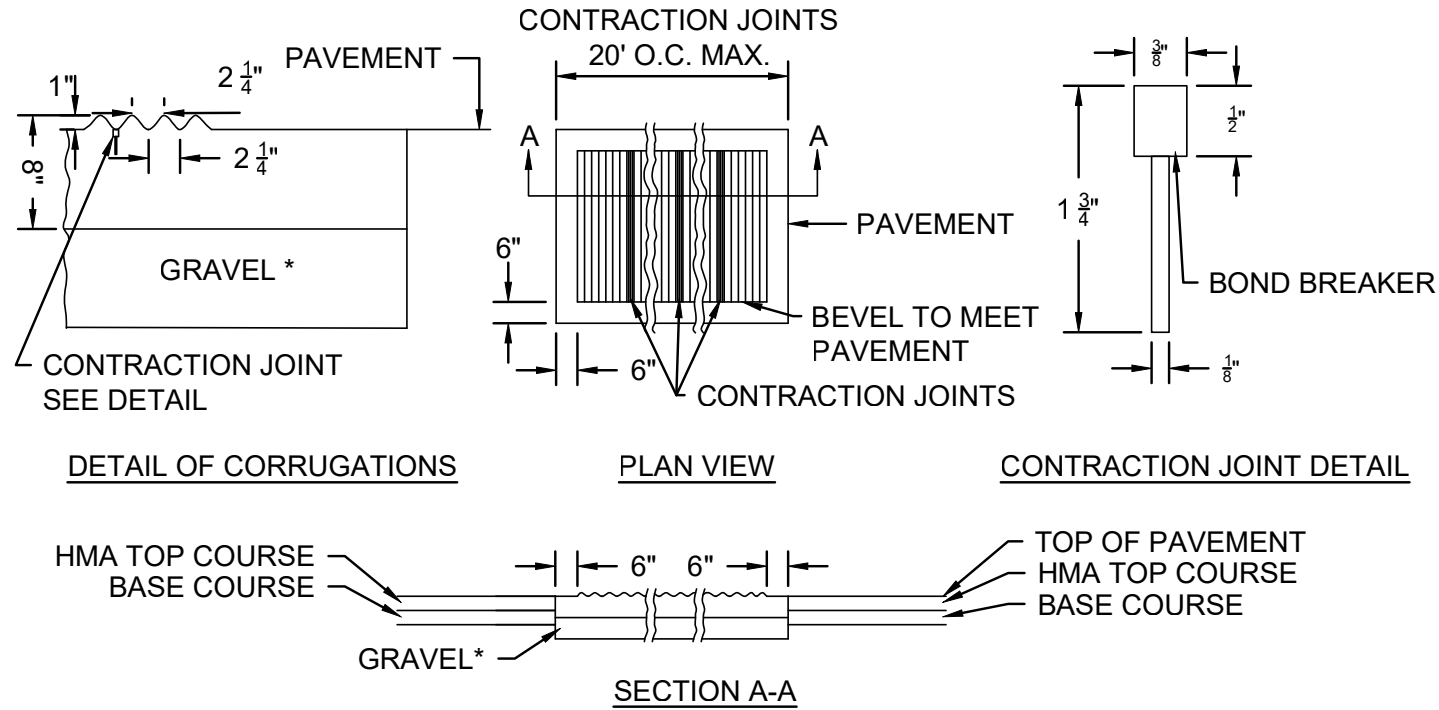
P.2



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# 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.

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# 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 (521CMR 21.2.21) prohibit the installation of "apex" ramps except when there is a significant site constraint (521CMR 21.2.1.1).
2. [https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalk2/sidewalks207.cfm](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 21.00: [CURB CUTS \(PEDESTRIAN RAMPS\)](#)

521 CMR 24.00: [RAMPS](#)

521 CMR 20.00: [ACCESSIBLE ROUTE](#)

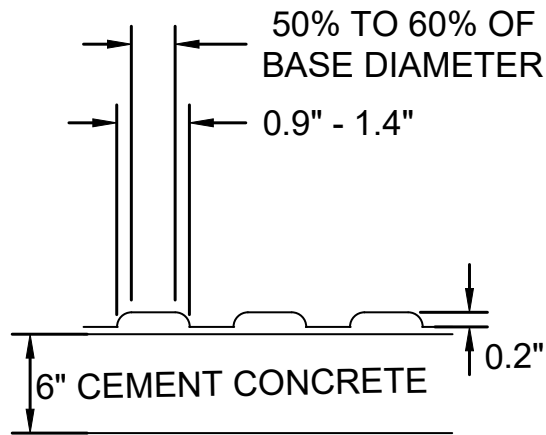
521 CMR 22.00: [WALKWAYS](#)

521 CMR 35.00: [TABLES AND SEATING](#)

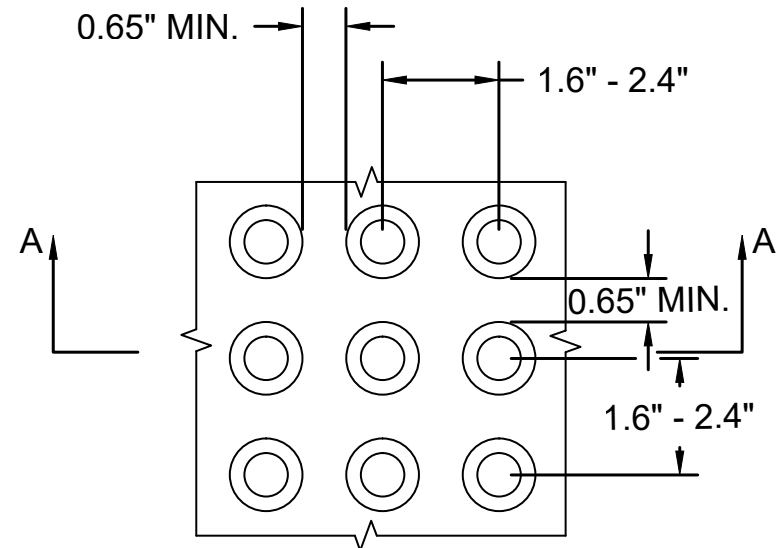
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# ROADWAY DESIGN STANDARDS

## R.5 PEDESTRIAN RAMP - DETECTABLE WARNING PANEL



SECTION A-A



DETAIL OF DETECTABLE WARNING PANEL

### NOTES:

1. DETECTABLE WARNING PANELS SHALL BE PERMANENTLY APPLIED TO THE PEDESTRIAN RAMP.
2. DETECTABLE WARNING PANELS SHALL MATCH THE WIDTH OF THE PEDESTRIAN RAMP.
3. DETECTABLE WARNING PANELS SHALL BE CAST IRON.
4. DETECTABLE WARNING PANELS SHALL BE FEDERAL YELLOW, CONFORMING TO THE REQUIREMENTS OF FEDERAL NO. 33538, UNLESS OTHERWISE SPECIFIED BY PWD. IF BRICK RED COLOR IS REQUESTED BY PWD, IT SHALL CONFORM WITH RAL 2001.
5. DETECTABLE WARNING PANELS SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

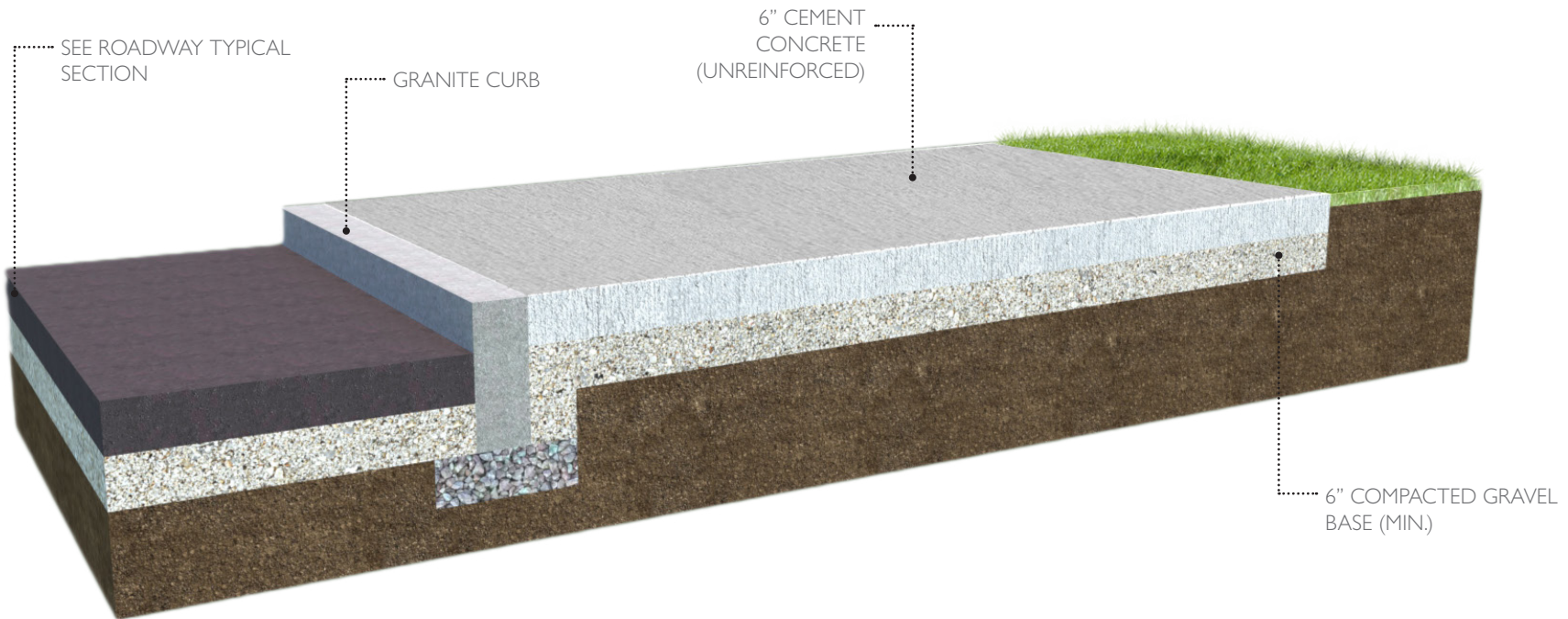
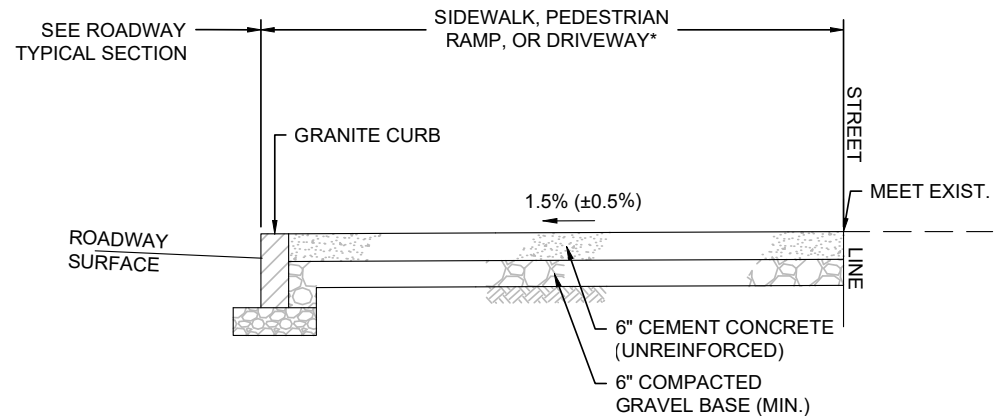
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# ROADWAY DESIGN STANDARDS

## S.1 SIDEWALK - CONCRETE

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

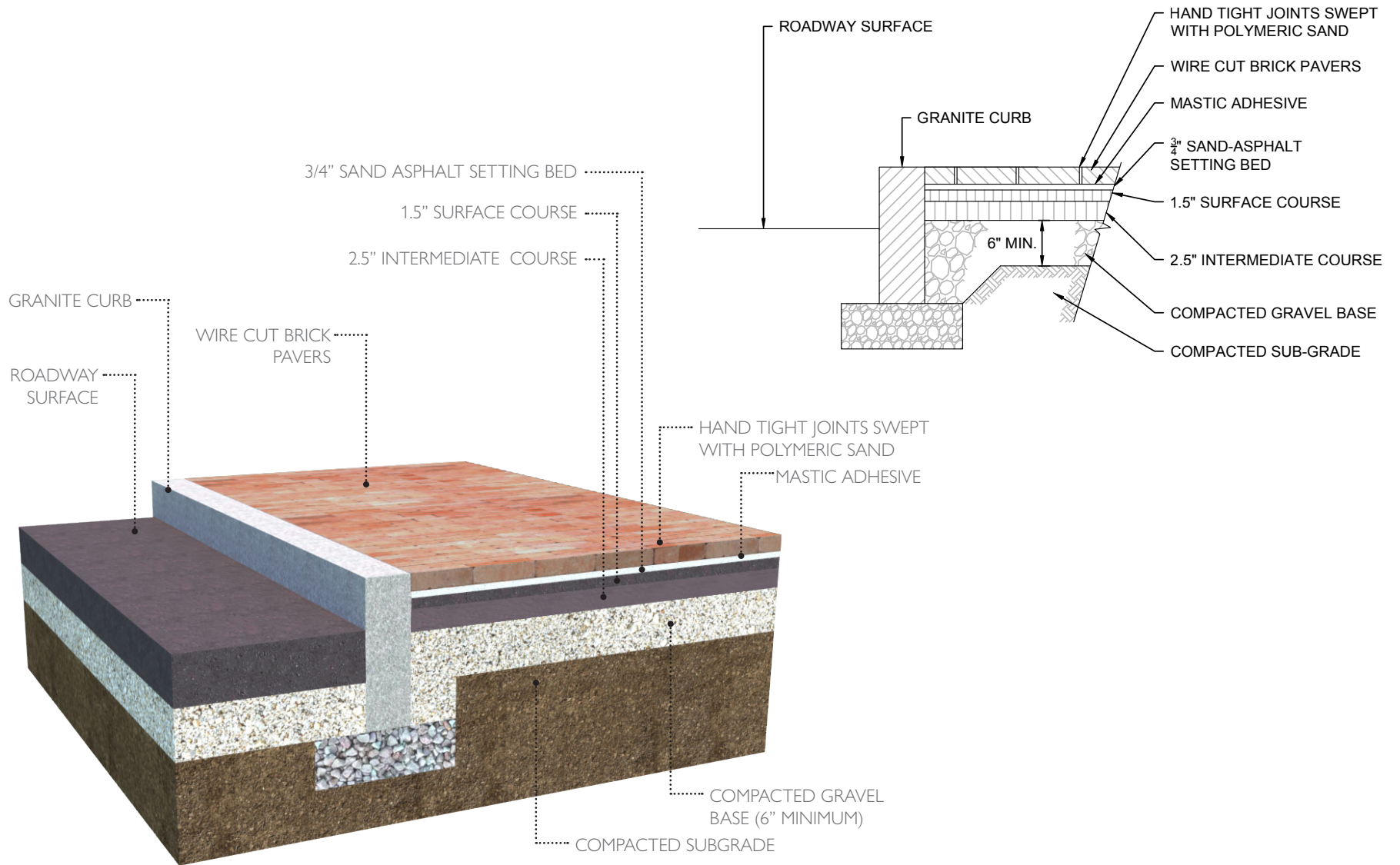


S.1

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# ROADWAY DESIGN STANDARDS

## S.2 SIDEWALK - BRICK

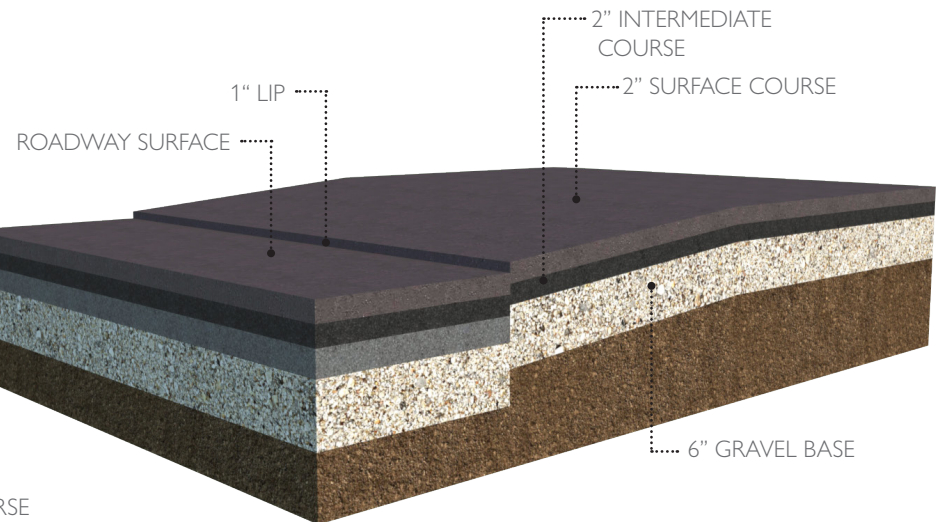
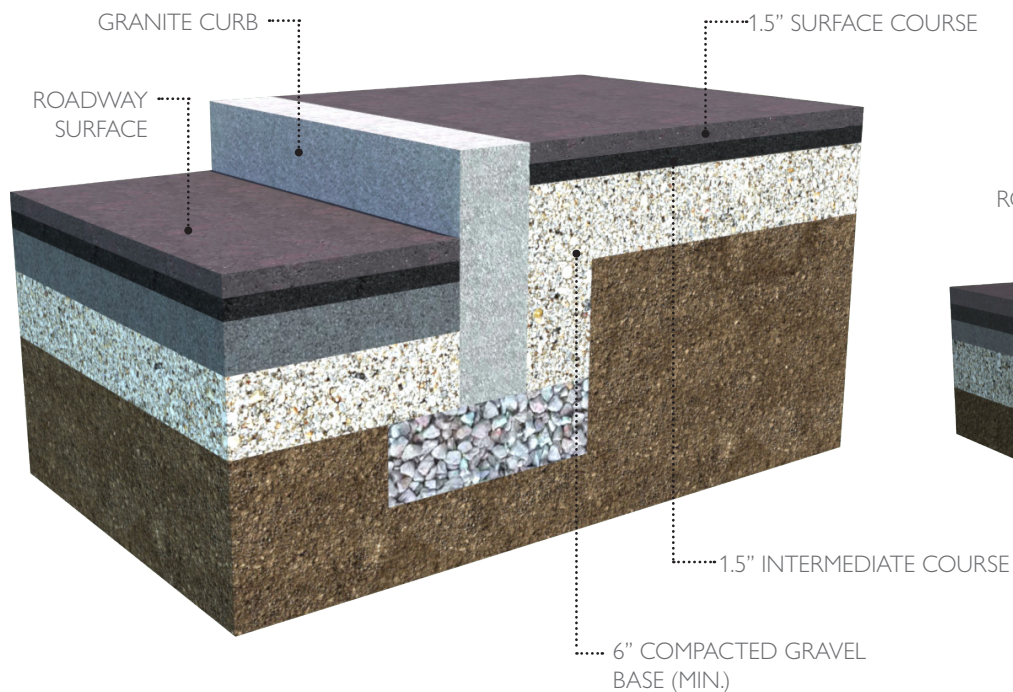
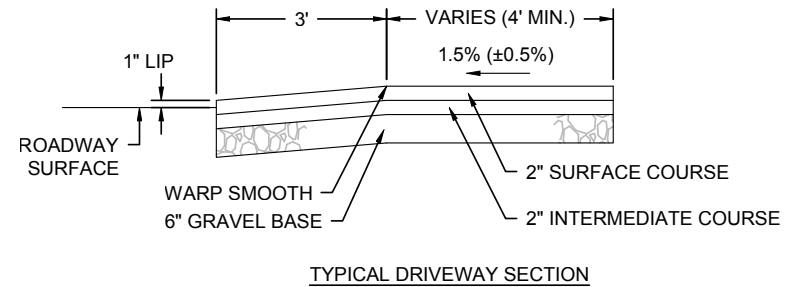
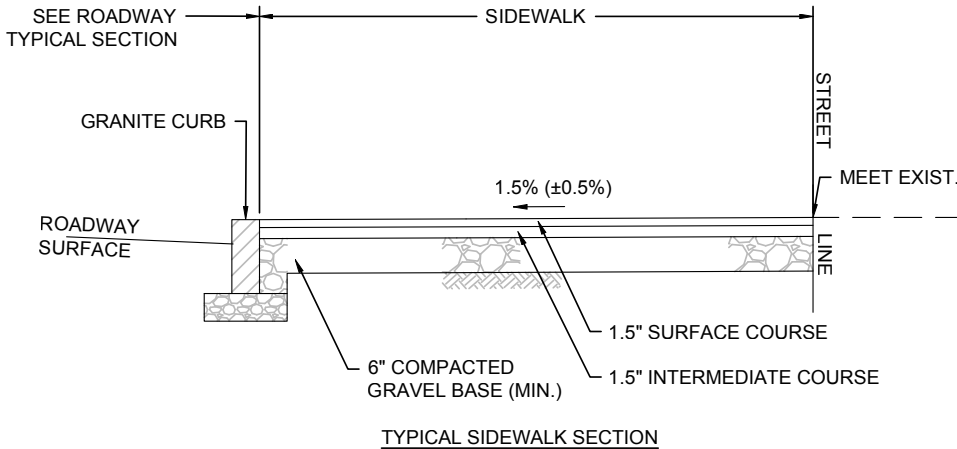


S.2

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# ROADWAY DESIGN STANDARDS

## S.3 SIDEWALK + DRIVEWAY - HMA



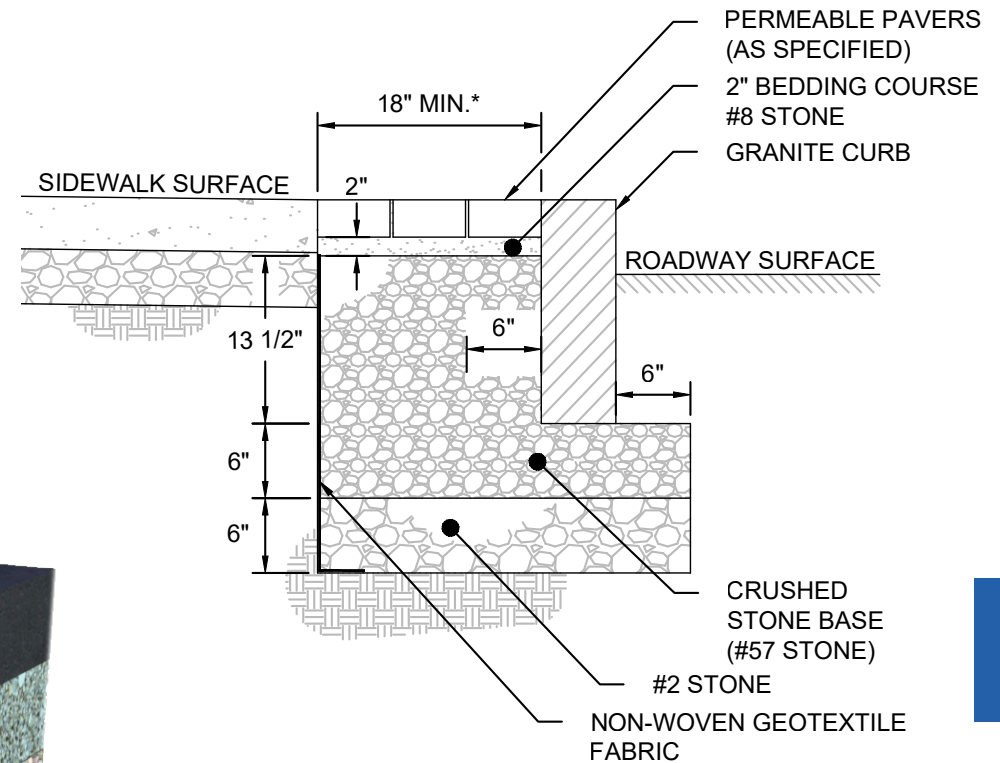
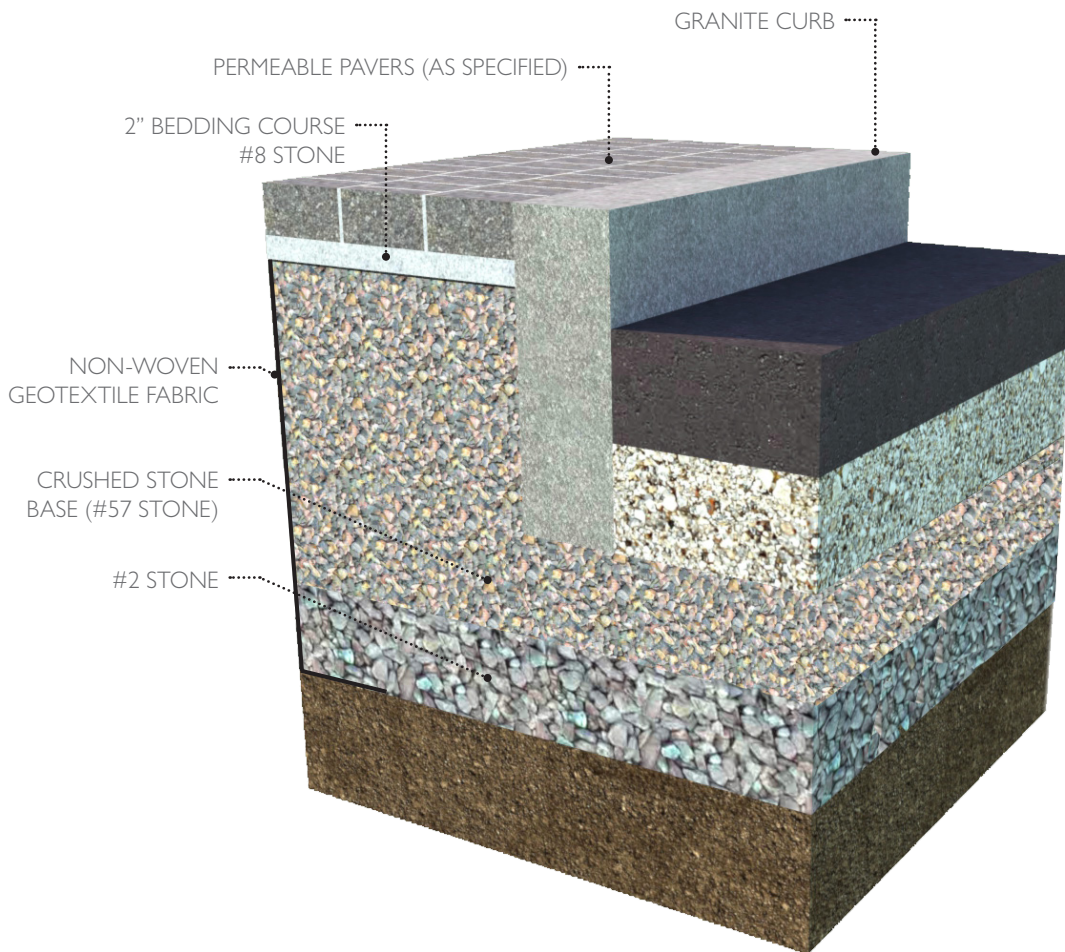
S.3

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# 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.

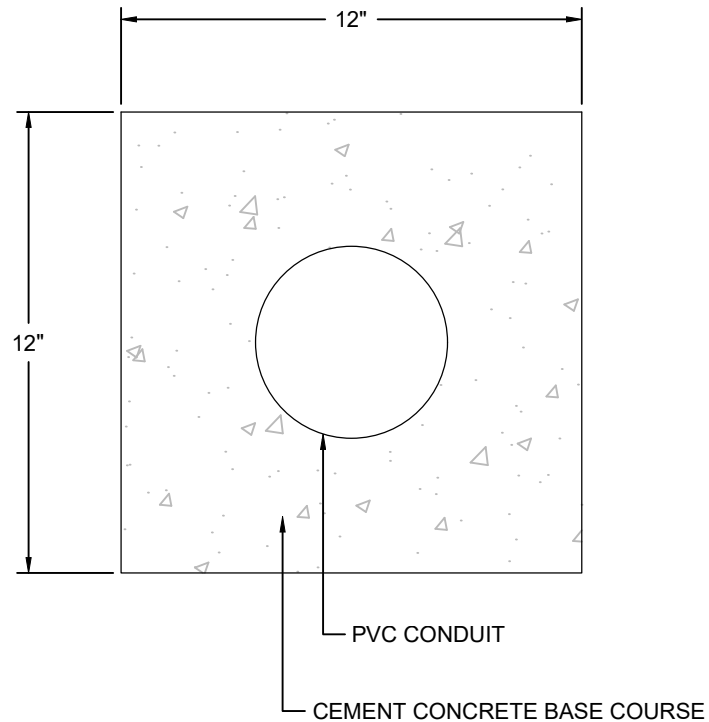
ALL PERMEABLE SYSTEMS SHALL BE MAINTAINED AS PER MANUFACTURER RECOMMENDATIONS.

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# ROADWAY DESIGN STANDARDS

## U.1 UTILITY - CONCRETE ENCASED CONDUIT

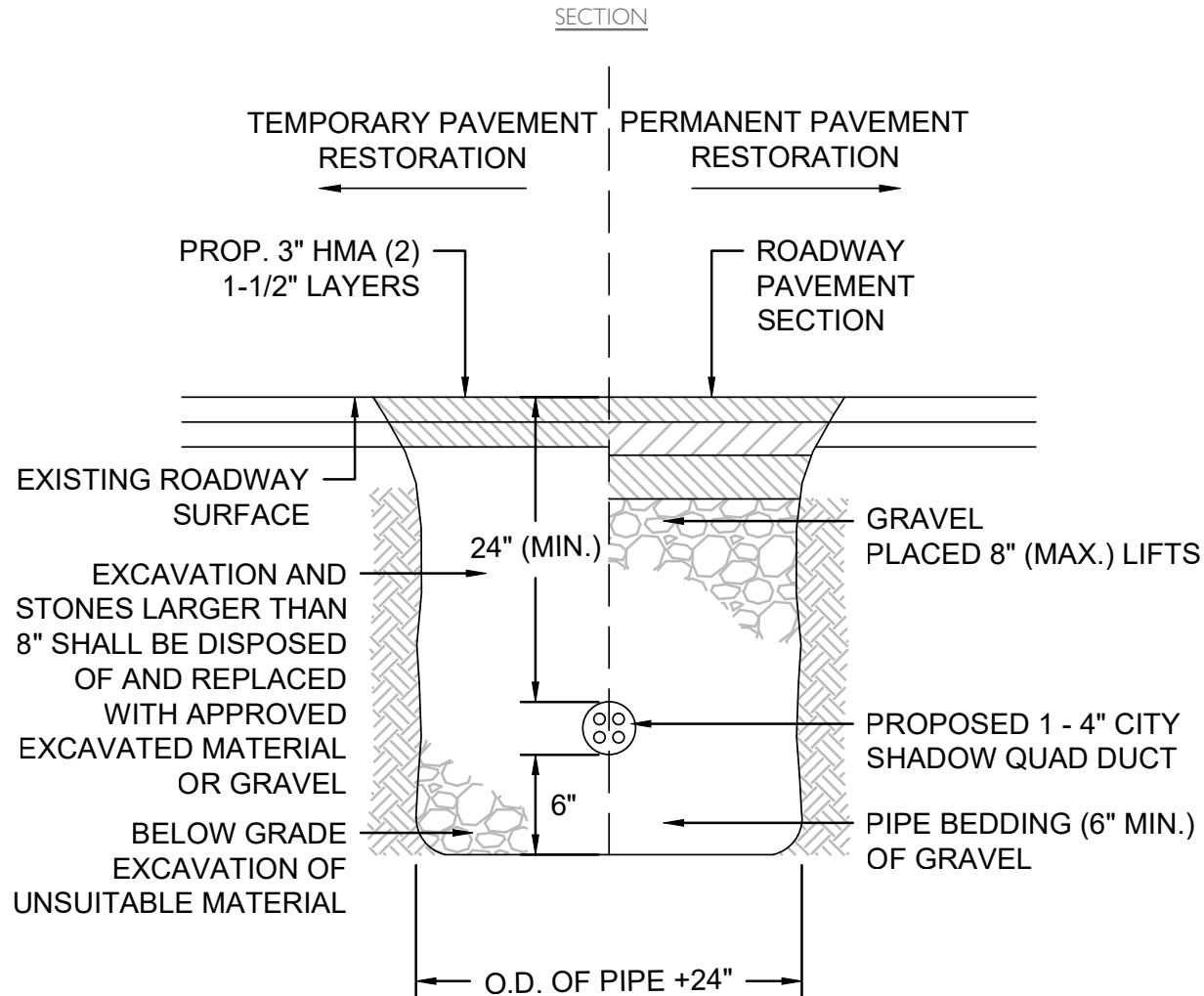


NOTE: PVC CONDUIT SHALL BE ENCASED IN 12 INCHES OF CEMENT CONCRETE BASE COURSE. SAND WILL NOT BE REQUIRED AT THESE LOCATIONS. CONCRETE WILL BE PAID FOR UNDER ITEM 431.1, HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE.

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# ROADWAY DESIGN STANDARDS

## U.2 UTILITY - SHADOW CONDUIT

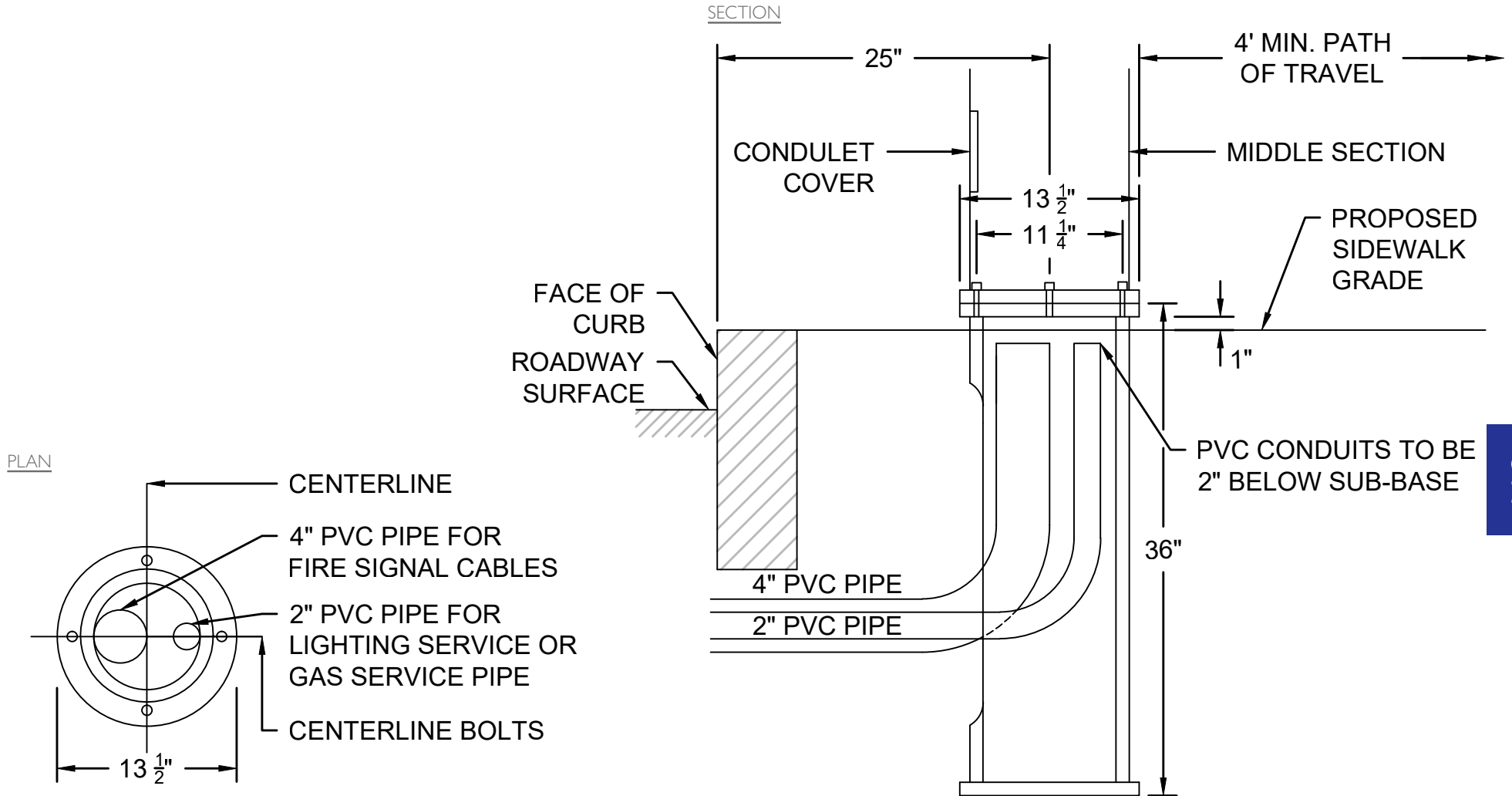


NOTE: CITY SHADOW CONDUIT TO BE ROPED AND TAGGED.

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## U.3 UTILITY - FIRE ALARM BASE



U.3

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