



CONSTRUCTION DETAILS

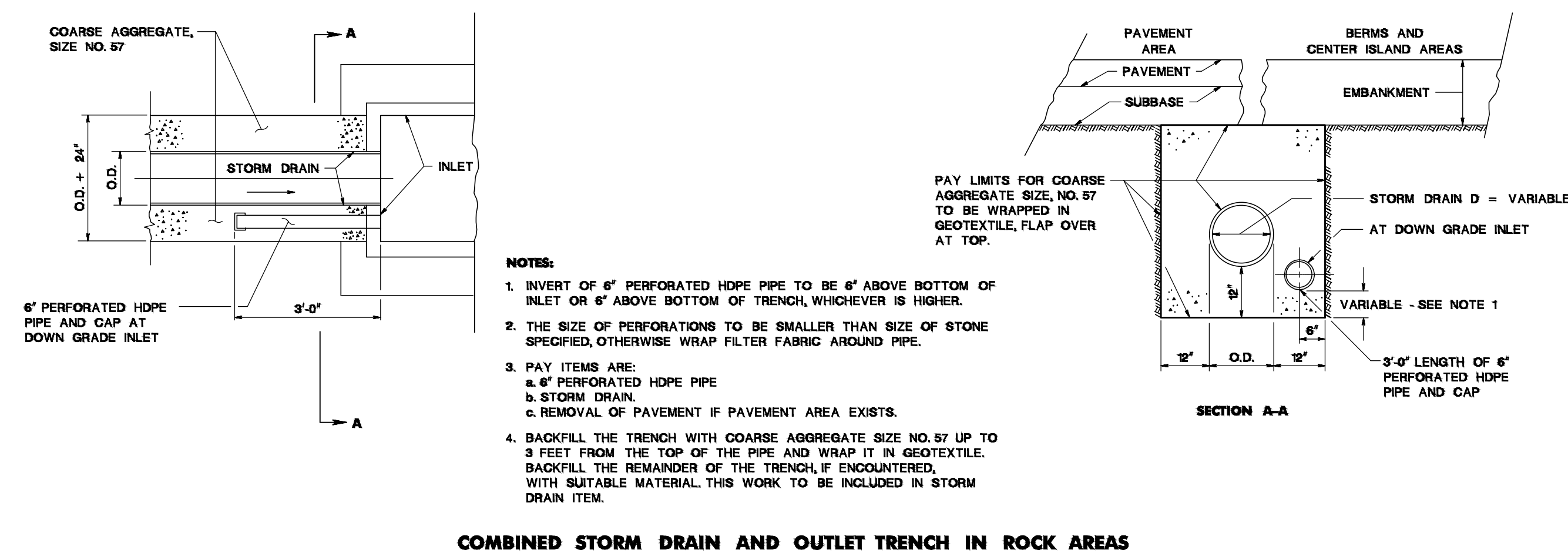
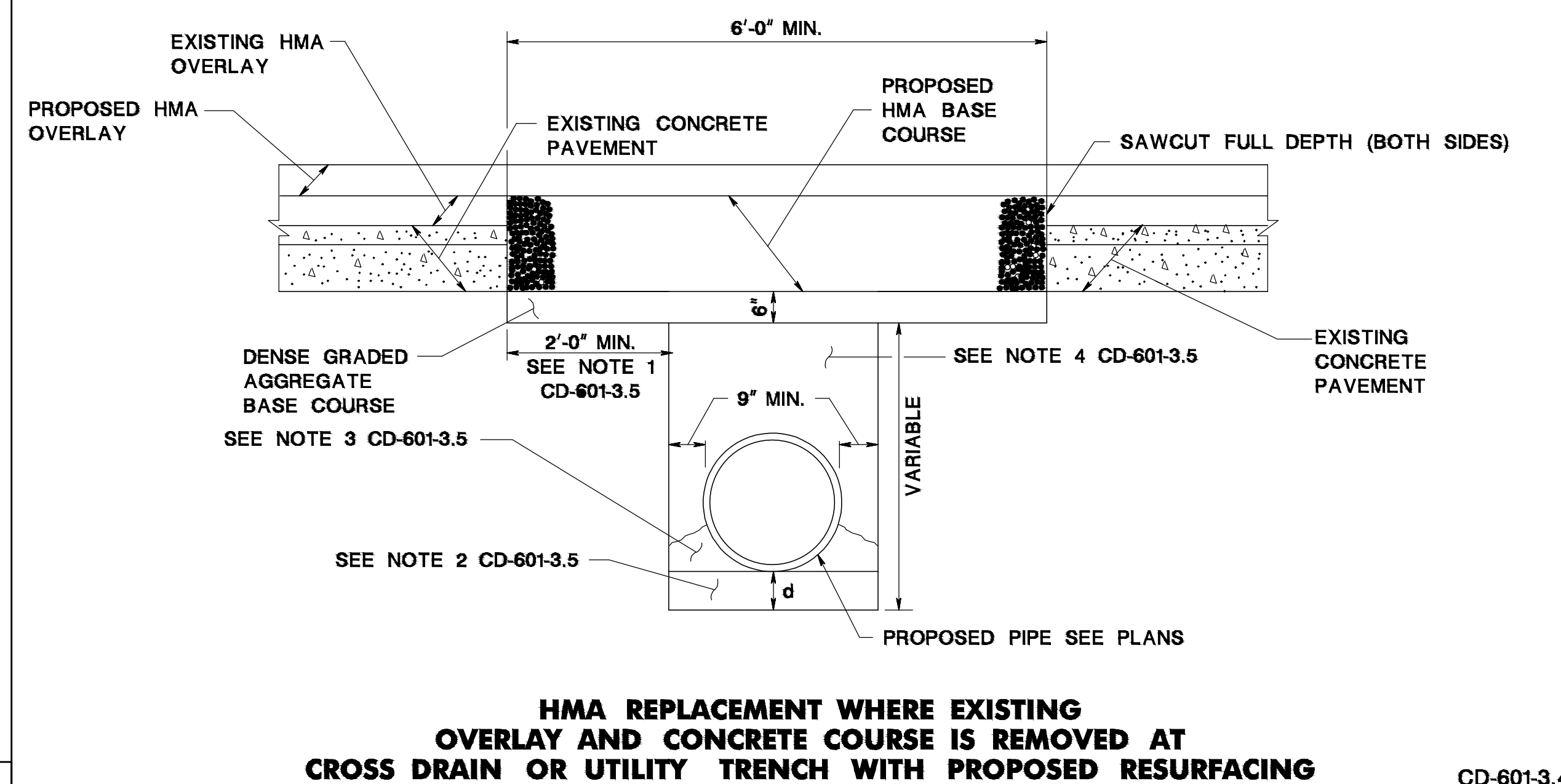
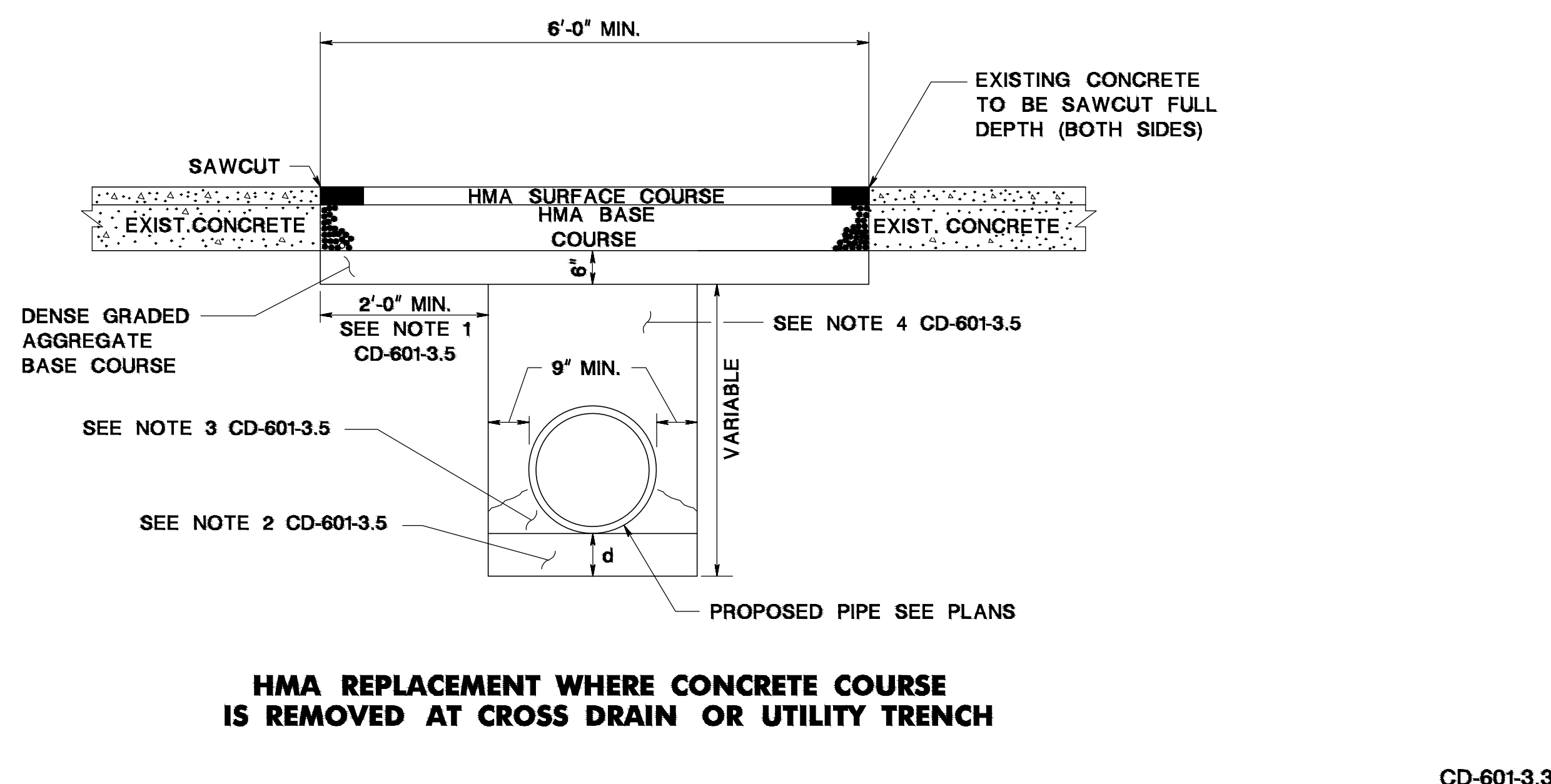
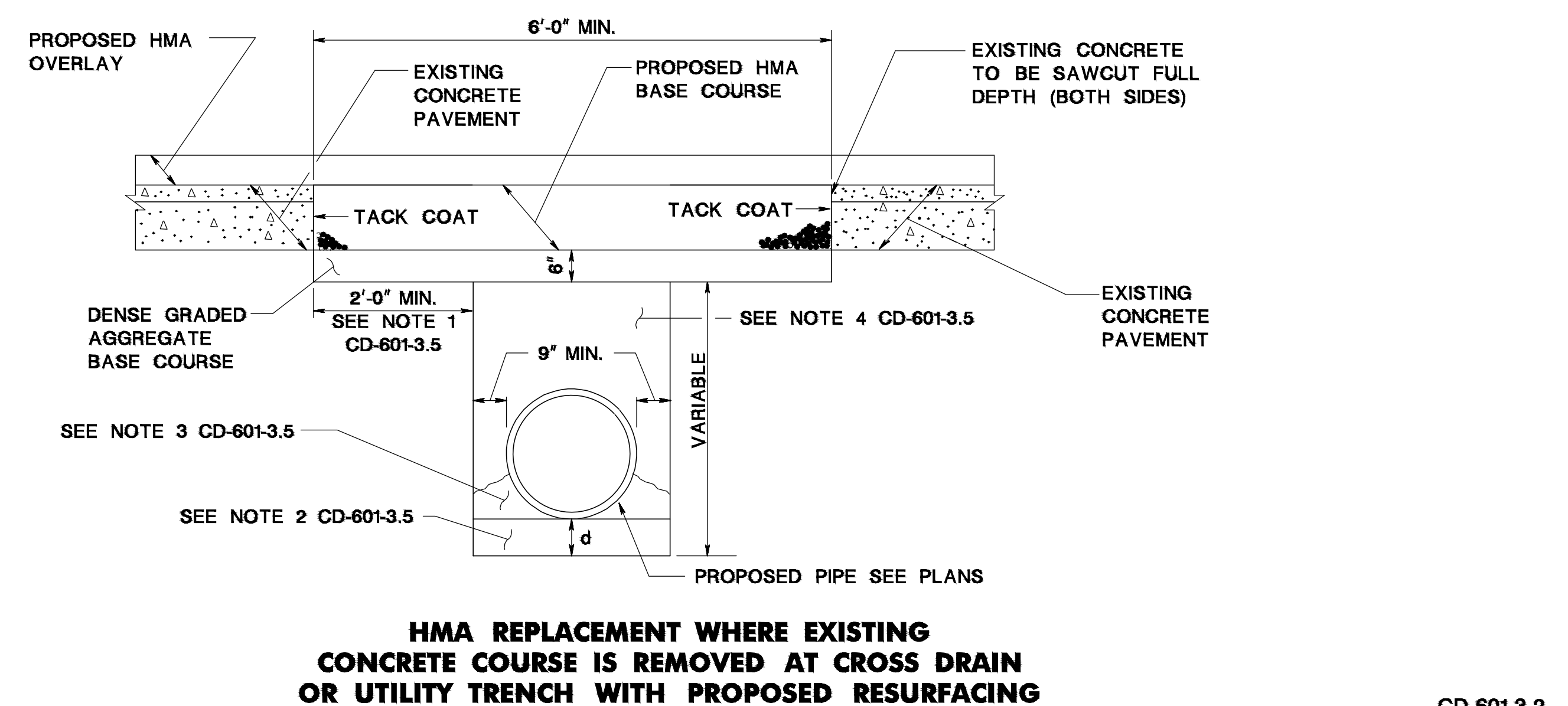
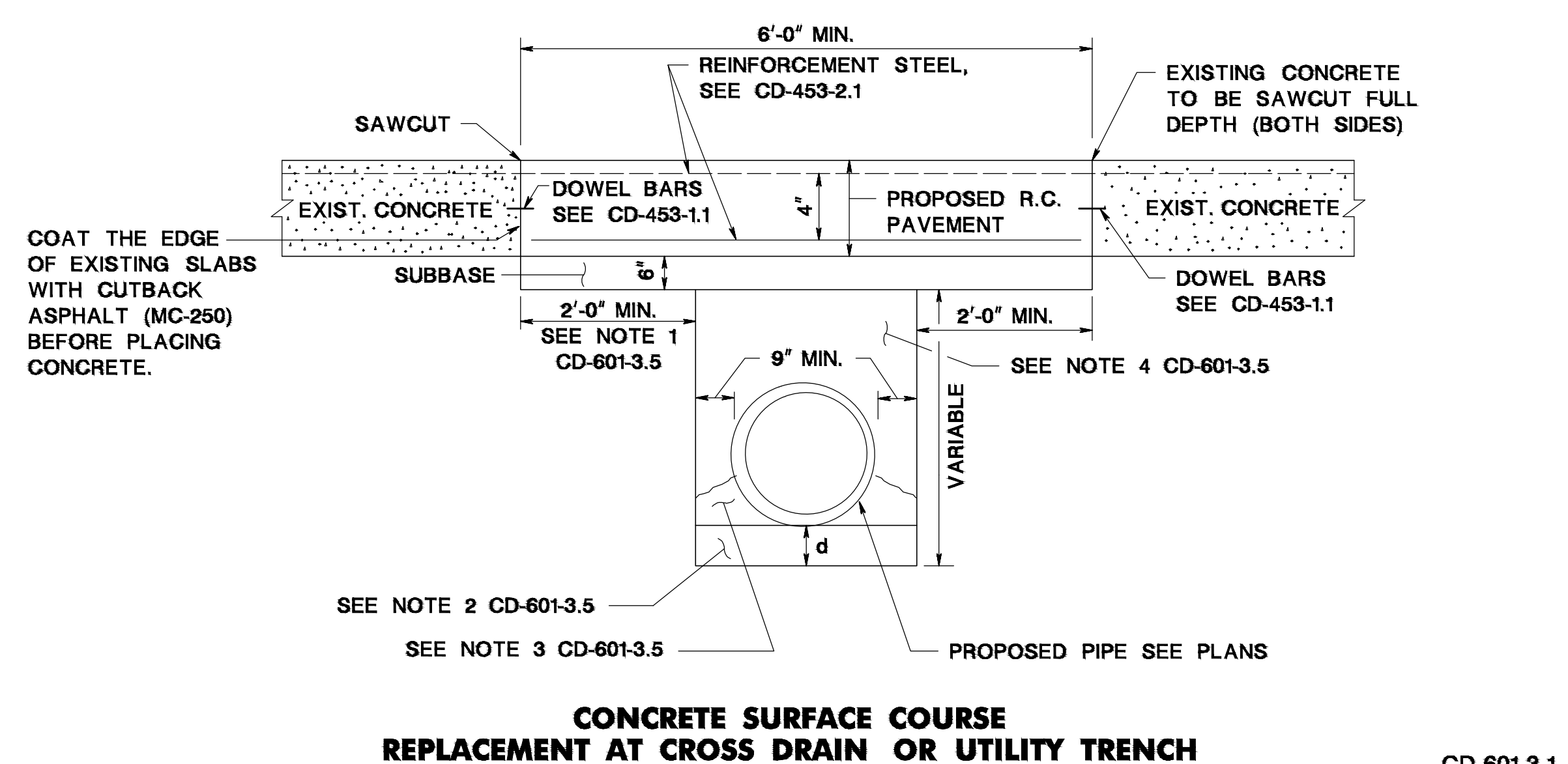
ESSEX COUNTY
DEPARTMENT OF
PUBLIC WORKS
900 BLOOMFIELD AVENUE,
VERONA, NJ 07044

SANJEEV VARGHESE
COUNTY ENGINEER
N.J. P.E. Lic. No. 40597

CROSS DRAIN OR
UTILITY TRENCH
CONSTRUCTION

PROJECT _____
DRAWN _____
DESIGNED _____
CHECKED _____
APPROVED _____
DATE 09/24/2024

SCALE NTS
SHEET 1 OF 1

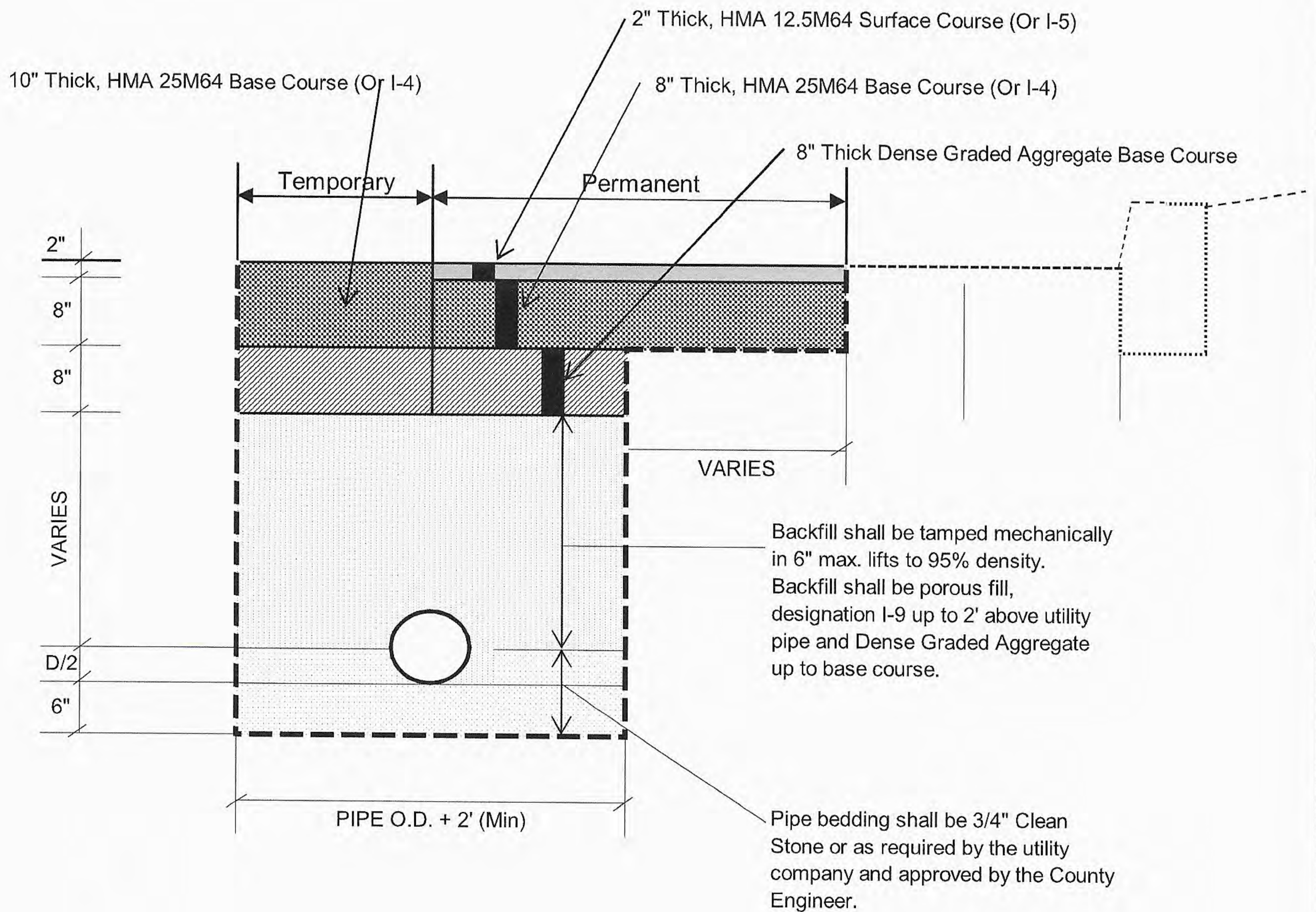


- NOTES:**
- SAWCUT THE EXISTING PAVEMENT A MINIMUM OF 2'-0" FROM THE SIDES OF THE PROPOSED CROSS DRAIN OR UTILITY TRENCH EXCAVATION ON BOTH SIDES.
 - ADDITIONAL EXCAVATION REQUIRED WHEN PIPE BEDDING IS DESIGNATED, OR WHEN ROCK OR OTHER HARD MATERIAL IS ENCOUNTERED.
 - BACKFILL TO BE PLACED SO AS TO ENSURE SUFFICIENT COMPACTION UNDER PIPE HAUNCHES.
 - THE PIPE OR UTILITY TRENCH TO BE BACKFILLED IN ACCORDANCE WITH THE SPECIFICATIONS FOR BACKFILLING OR WITH AGGREGATE, DESIGNATION 1-1, 1-2, 1-3 OR 1-3. ENSURE THE WIDTH IS 36" MINIMUM OR THE OUTSIDE DIAMETER OF THE PIPE PLUS 18".

UNDERLYING SOIL	d MIN.	
	CONC. PIPE	ALUMINUM PIPE OR HDPE PIPE
ROCK OR HARD MATERIAL	6'	12'
OTHER MATERIAL	6'	6'

NOTE: REINFORCEMENT STEEL IS IN METRIC UNITS.
HMA = HOT MIX ASPHALT
ASPHALT PAVEMENT TO MEET EXISTING CONCRETE SIDEWALK PAVEMENT AT BOTH ENDS

CD-601-3.5
CD-601-3



NOTES:

1. 2007 New Jersey D.O.T. Standard Specifications for Roads and Bridge Construction with amendments shall govern.
2. When the edge of trench is within 4' or less from the existing curb, full depth pavement shall be constructed.
3. All excavated unsuitable material shall be removed and disposed of at the utility and/or contractor's expense.
4. Temporary pavement replacement shall be 10 inches of HMA 25M64 Surface Course or I-4, compacted in five inches lifts.
5. After three (3) months or as directed by the County Engineer or his duly authorized representative, the trench shall be milled 2 inches deep, as per limits determined on Details A thru F, then the trench must be resurfaced with 2" of HMA 12.5M64 Surface Course. (See Details A thru F)
6. Trenches shall be sawcut as indicated in this drawing. Butt joints are not allowed.
7. Traffic stripes and traffic markings are to be replaced with Traffic Stripes, long life and Traffic Markings, thermoplastic.

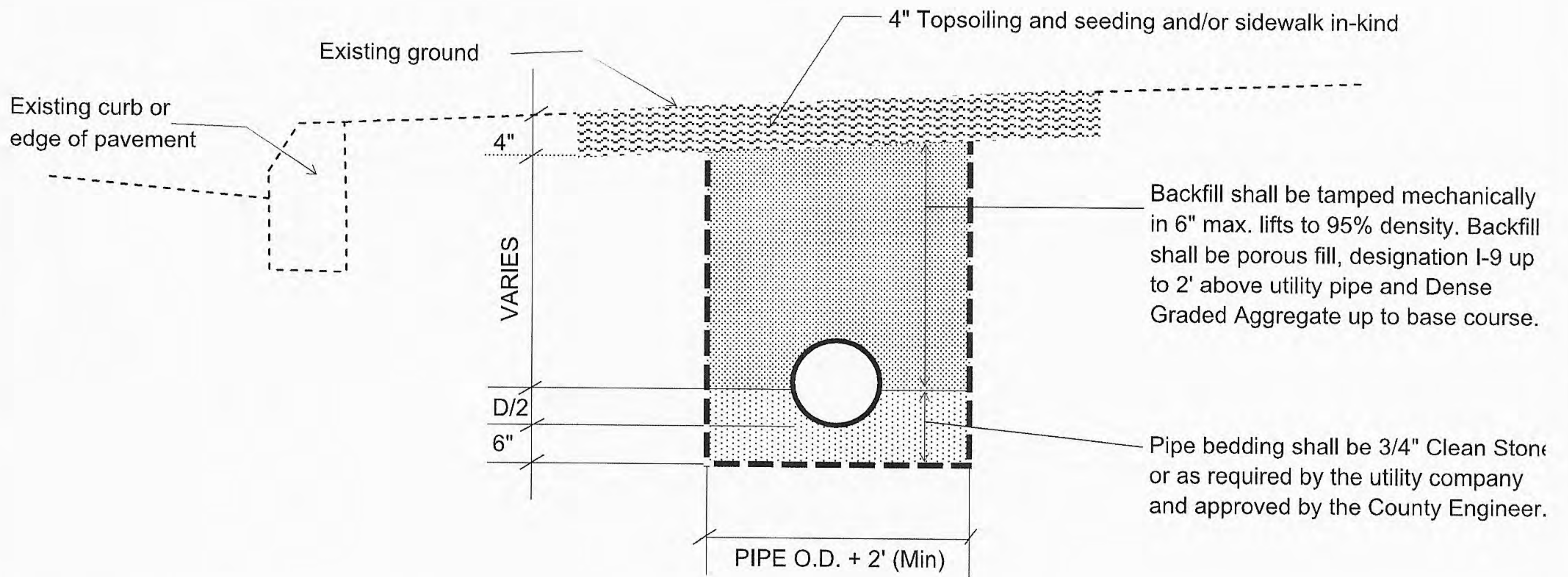
UTILITY TRENCH RESTORATION

Drawn by: LER Date: 05/03/17
 Scale: NTS Drawing No. 1 of 3

ESSEX COUNTY DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING

ON FILE

Sanjeev Varghese, P.E., P.P.

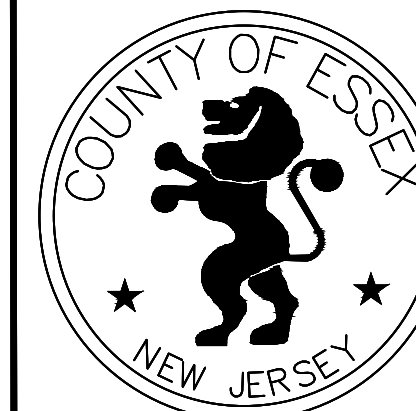


**LONGITUDINAL / TRANSVERSE UTILITY TRENCH
BEHIND CURB OR EDGE OF PAVEMENT**

NOTES:

1. New Jersey D.O.T. Standard Specifications for Roads and Bridge Construction with amendments shall govern.
2. When the edge of trench is within 4' or less from the existing curb, full depth pavement shall be constructed.
3. All excavated unsuitable material shall be removed and disposed of at the utility and/or contractor's expense.
4. Temporary pavement replacement shall be 10 inches of Bituminous Stabilized Base Course, Mix I-2, compacted in five inches lifts.
5. After four months or as directed by the County Engineer or his duly authorized representative, the trench shall be milled 2 inches deep extending 12 inches wider, each side, than the trench and resurfaced with 2" of Bituminous Concrete Surface Course, Mix I-5.
6. Trenches shall be sawcut as indicated in this drawing. Butt joints are not allowed.
7. Traffic stripes and traffic markings are to be replaced with Traffic Stripes, long life and Traffic Markings, thermoplastic.

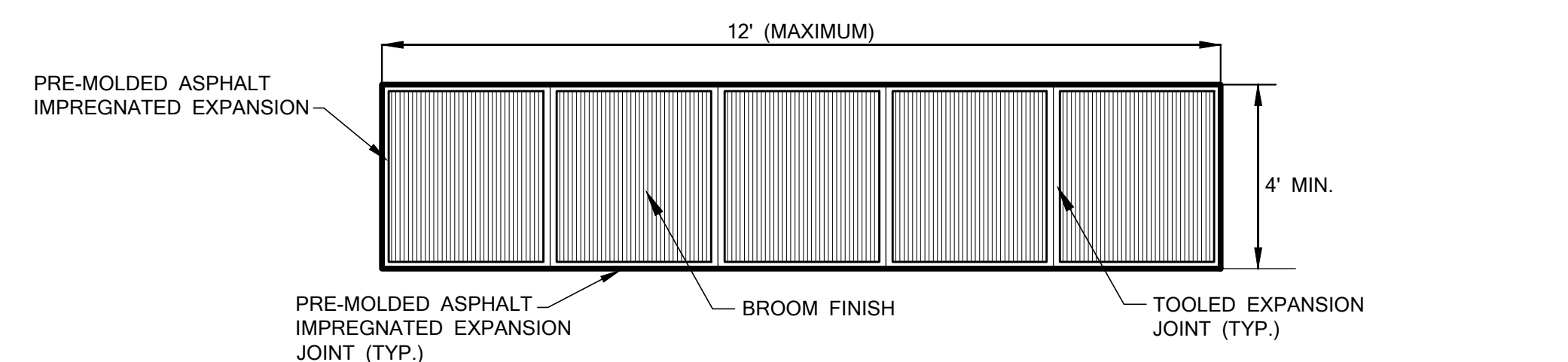
UTILITY TRENCH RESTORATION	
Drawn by: <u>LER</u>	Date: <u>10/11/2006</u>
Scale: <u>NTS</u>	Drawing No. <u>2</u> of <u>4</u>
ESSEX COUNTY DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING	
ON FILE	
Sanjeev Varghese, P.E., P.P.	



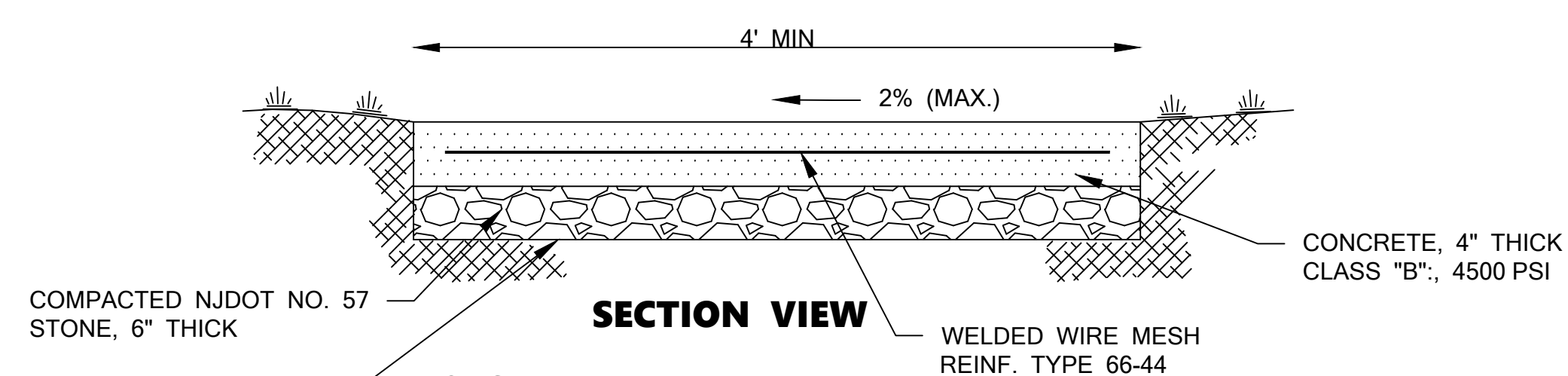
**CONSTRUCTION
DETAILS**

ESSEX COUNTY
DEPARTMENT OF
PUBLIC WORKS
900 BLOOMFIELD AVENUE,
VERONA, NJ 07044

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COUNTY ENGINEER
N.J. P.E. Lic. No. 40597



PLAN VIEW OF CONCRETE SIDEWALK

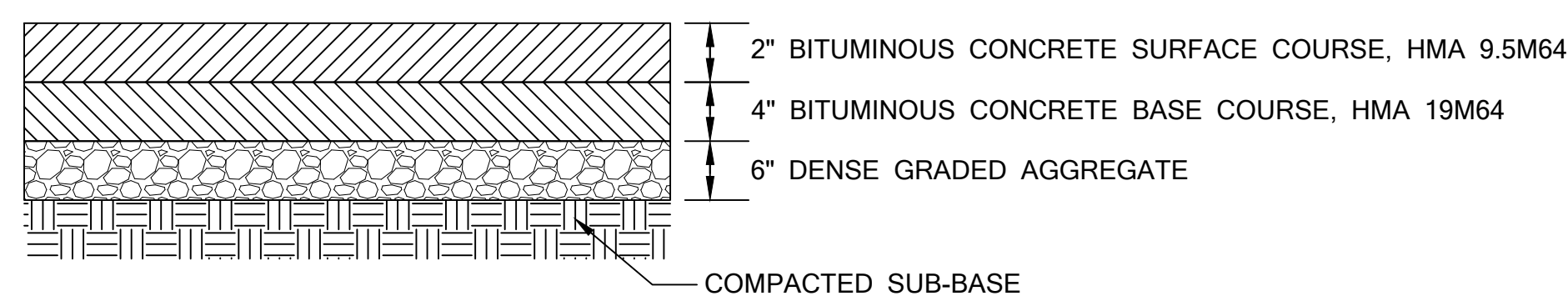


SECTION VIEW

NOTES:

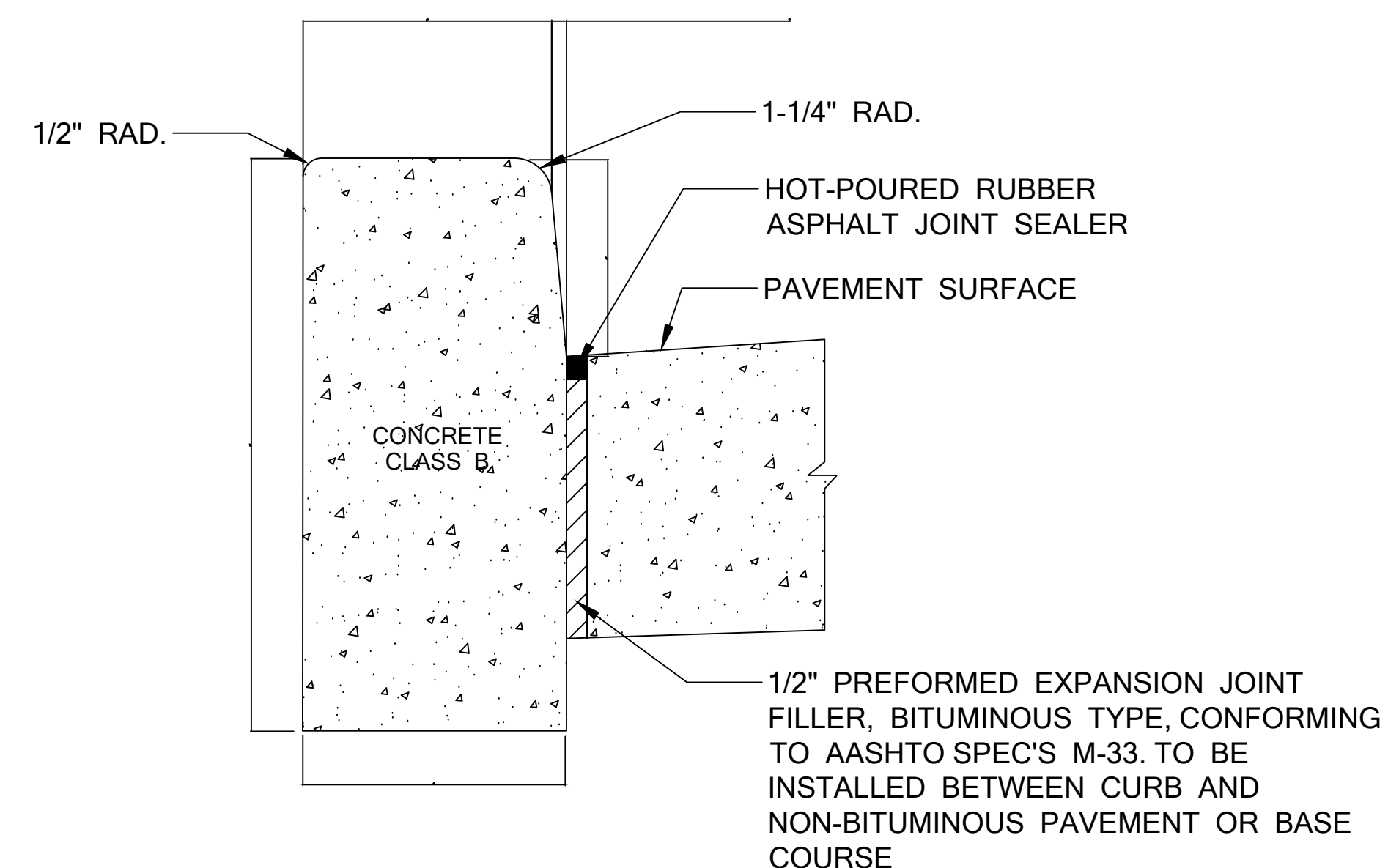
1. PREFORMED BITUMINOUS CELLULAR JOINT FILLERS 1/2" THICK, SHALL BE PLACED AT INTERVALS NOT EXCEEDING TWENTY (20) FEET. DUMMY (FORMED) JOINTS SHALL BE CUT INTO THE CONCRETE SIDEWALK BETWEEN THE EXPANSION JOINTS AT EQUAL INTERVALS NOT EXCEEDING THE WIDTH OF THE SIDEWALK.
2. THE SIDEWALK SUBGRADE SHALL BE NJDOT NO. 57 STONE, 6" THICK OR MATERIAL APPROVED BY THE TOWNSHIP ENGINEER, AND COMPACTED PRIOR TO THE PLACEMENT OF ANY SIDEWALK.
3. THE SIDEWALK SECTION SHALL BE 6" THICK WITH WELDED WIRE FABRIC AT DRIVEWAYS.

CONCRETE SIDEWALK, 4" THICK

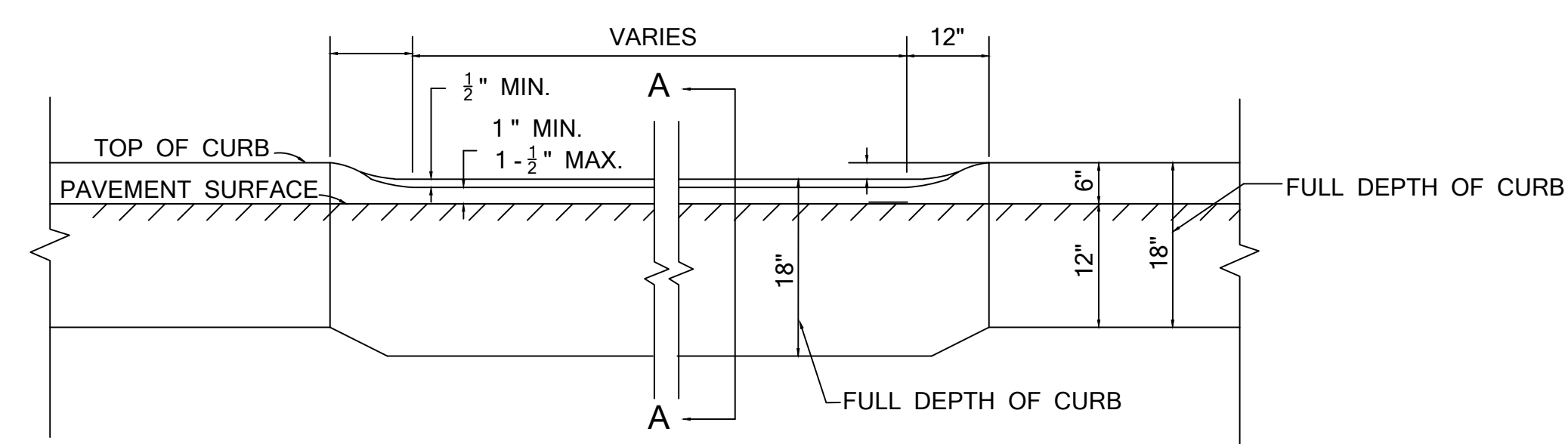


NOTE: SUITABILITY SUB-BASE COMPACTION TO BE VERIFIED BY GEOTECHNICAL ENGINEER.

FULL DEPTH BITUMINOUS CONCRETE SURFACE DETAIL



VERTICAL CONCRETE CURB DETAIL



ELEVATION

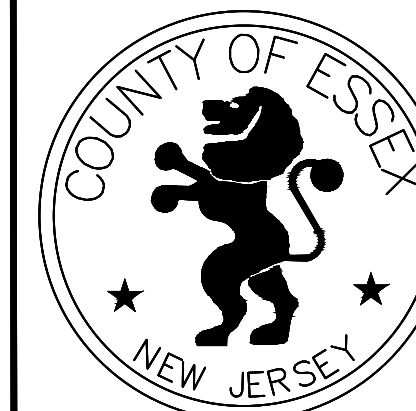
METHOD OF DEPRESSING CURB AT DRIVEWAY

CONCRETE SIDEWALK
AND CURB DETAIL
(GENERAL)

PROJECT _____
DRAWN JD
DESIGNED _____
CHECKED GB
APPROVED _____
DATE 09/24/2024

SCALE NTS

SHEET 1 OF 7



CONSTRUCTION DETAILS

ESSEX COUNTY DEPARTMENT OF PUBLIC WORKS 900 BLOOMFIELD AVENUE, VERONA, NJ 07044

SANJEEV VARGHESE COUNTY ENGINEER N.J. P.E. Lic. No. 40597

Revision table with columns for No., Date, and Description.

CONCRETE SIDEWALK (PUBLIC SIDEWALK CURB RAMP TABLES)

PROJECT, DRAWN, DESIGNED, CHECKED, APPROVED, DATE 09/24/2024

SCALE NTS SHEET 4 OF 7

CURB RAMP TYPE 1

0.0 % GUTTER LINE PROFILE table for Curb Ramp Type 1

1.0 % GUTTER LINE PROFILE table for Curb Ramp Type 1

2.0 % GUTTER LINE PROFILE table for Curb Ramp Type 1

3.0 % GUTTER LINE PROFILE table for Curb Ramp Type 1

4.0 % GUTTER LINE PROFILE table for Curb Ramp Type 1

5.0 % GUTTER LINE PROFILE table for Curb Ramp Type 1

6.0 % GUTTER LINE PROFILE table for Curb Ramp Type 1

7.0 % GUTTER LINE PROFILE table for Curb Ramp Type 1

CURB RAMP TYPE 3

0.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

3.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

3.5 % GUTTER LINE PROFILE table for Curb Ramp Type 3

4.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

4.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

5.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

6.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

7.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

CURB RAMP TYPE 2

0-8 % GUTTER LINE PROFILE table for Curb Ramp Type 2

1.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

3.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

3.5 % GUTTER LINE PROFILE table for Curb Ramp Type 3

4.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

5.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

6.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

6.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

7.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

2.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

3.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

3.5 % GUTTER LINE PROFILE table for Curb Ramp Type 3

4.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

6.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

6.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

6.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

7.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

3.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

3.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

3.5 % GUTTER LINE PROFILE table for Curb Ramp Type 3

4.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

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7.0 % GUTTER LINE PROFILE table for Curb Ramp Type 3

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NOTES:

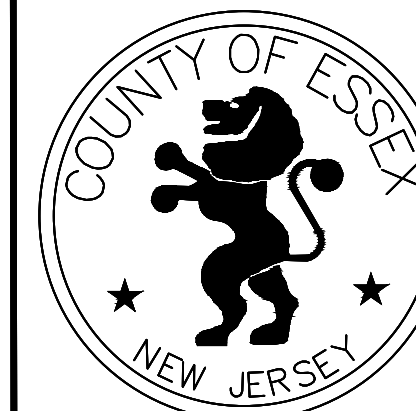
- 1. FOR CURB RAMP TYPES, SEE CD-606-1. 2. THE ABOVE TABLES ARE BASED ON THE SPECIFIC GUTTER PROFILE REFERENCED... 3. THE 12H:1V MAX SLOPE IS THE RUNNING SLOPE FOR CURB RAMPs... 4. DIMENSIONS SHOWN IN TABLES ARE FOR 3 INCH TO 9 INCH CURB HEIGHTS...

LEGEND

- U = UPPER SIDE OF GUTTER LINE PROFILE L = LOWER SIDE OF GUTTER LINE PROFILE * TYPE 3 RAMP IS NOT APPLICABLE, USE TYPE 1 ** TYPE 4 RAMP IS NOT APPLICABLE, USE TYPE 2

CD-606-3.1

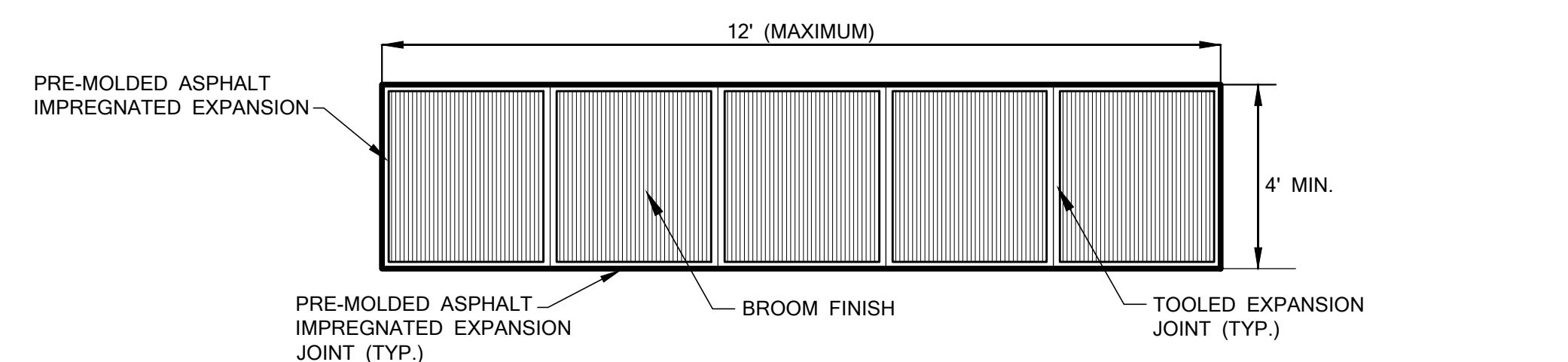
CD-606-3



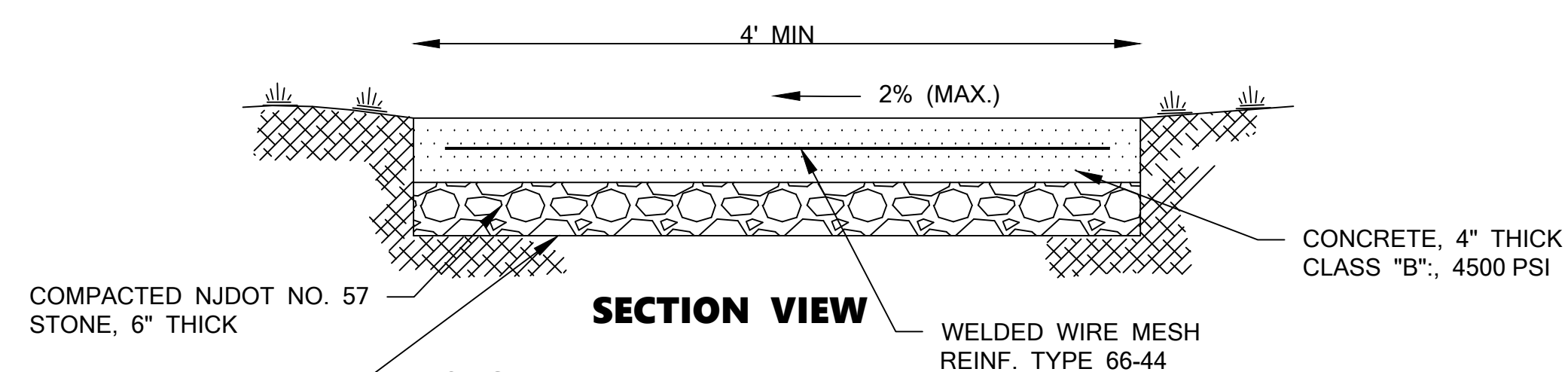
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PLAN VIEW OF CONCRETE SIDEWALK

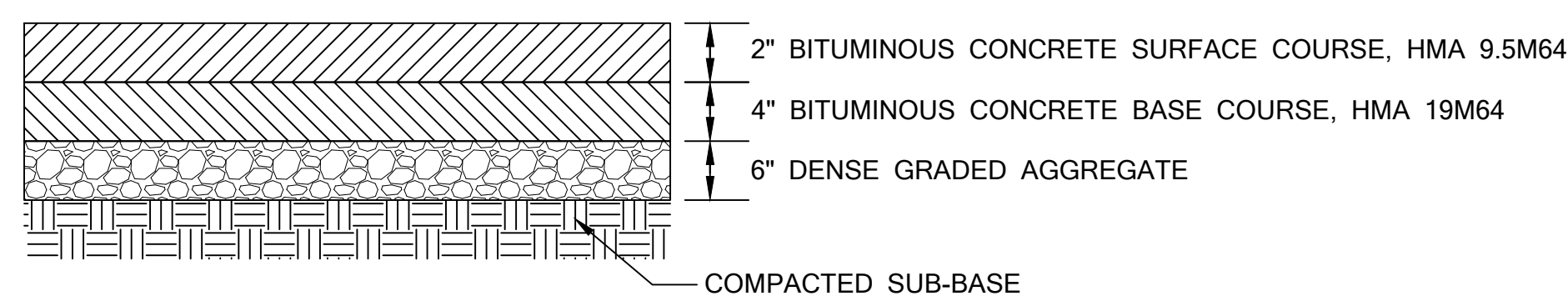


SECTION VIEW

NOTES:

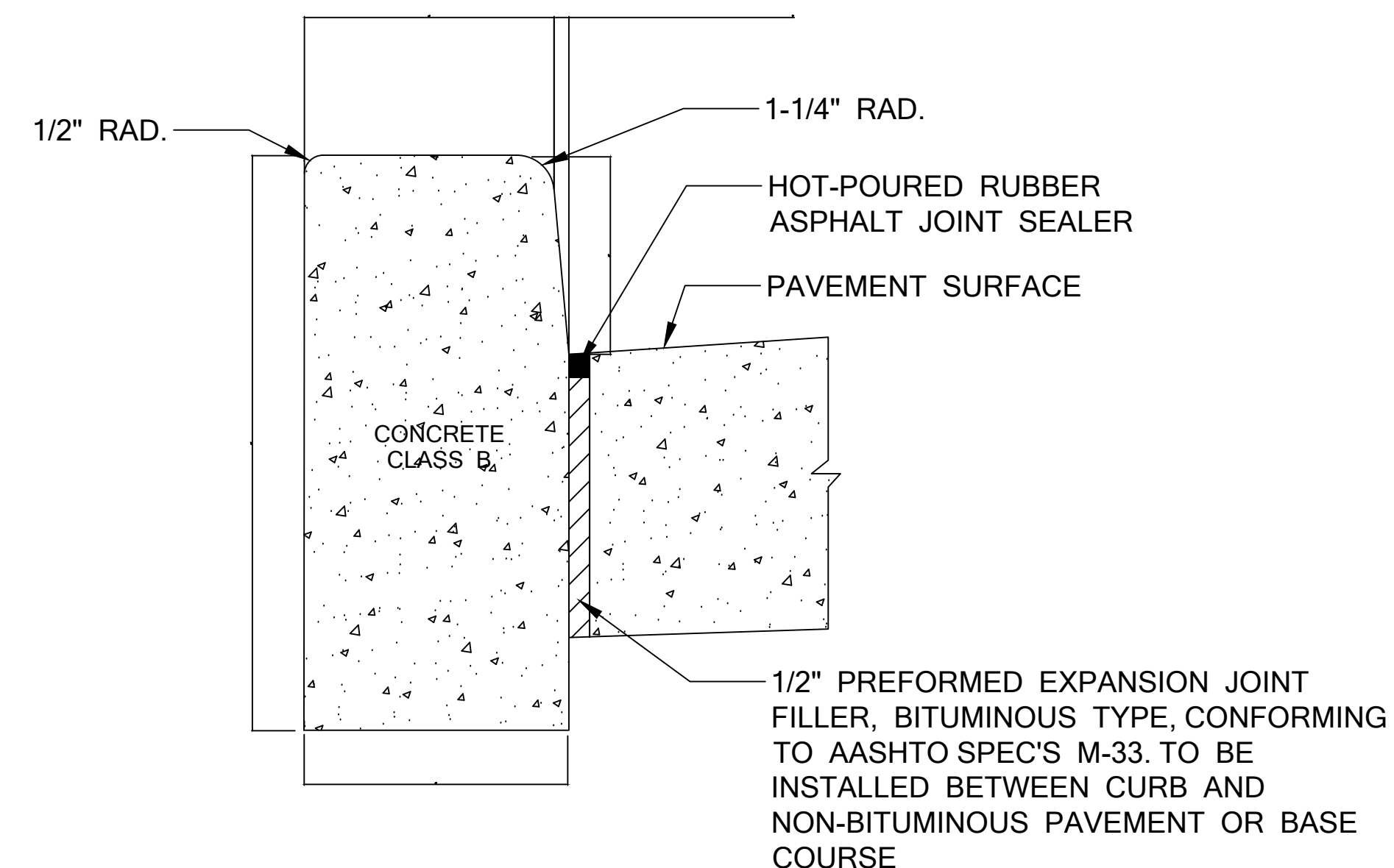
1. PREFORMED BITUMINOUS CELLULAR JOINT FILLERS 1/2" THICK, SHALL BE PLACED AT INTERVALS NOT EXCEEDING TWENTY (20) FEET. DUMMY (FORMED) JOINTS SHALL BE CUT INTO THE CONCRETE SIDEWALK BETWEEN THE EXPANSION JOINTS AT EQUAL INTERVALS NOT EXCEEDING THE WIDTH OF THE SIDEWALK.
2. THE SIDEWALK SUBGRADE SHALL BE NJDOT NO. 57 STONE, 6" THICK OR MATERIAL APPROVED BY THE TOWNSHIP ENGINEER, AND COMPACTED PRIOR TO THE PLACEMENT OF ANY SIDEWALK.
3. THE SIDEWALK SECTION SHALL BE 6" THICK WITH WELDED WIRE FABRIC AT DRIVEWAYS.

CONCRETE SIDEWALK, 4" THICK

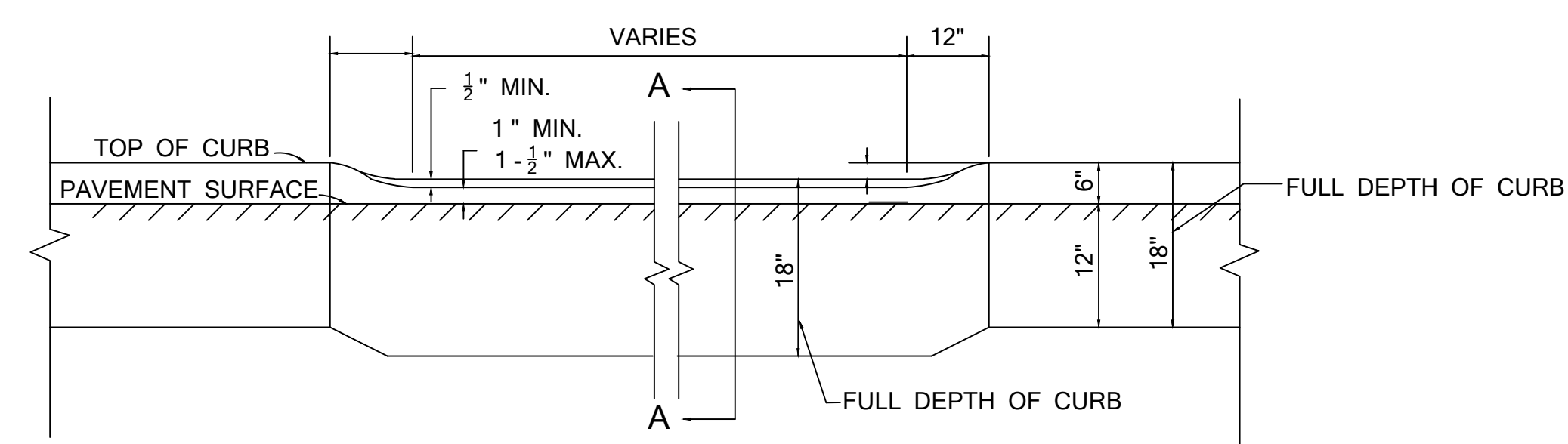


NOTE: SUITABILITY SUB-BASE COMPACTION TO BE VERIFIED BY GEOTECHNICAL ENGINEER.

FULL DEPTH BITUMINOUS CONCRETE SURFACE DETAIL



VERTICAL CONCRETE CURB DETAIL



ELEVATION

METHOD OF DEPRESSING CURB AT DRIVEWAY

CONCRETE SIDEWALK
AND CURB DETAIL
(GENERAL)

PROJECT _____
DRAWN JD
DESIGNED _____
CHECKED GB
APPROVED _____
DATE 09/24/2024

SCALE NTS

SHEET 1 OF 4



CONSTRUCTION
DETAILS

ESSEX COUNTY
DEPARTMENT OF
PUBLIC WORKS

900 BLOOMFIELD AVENUE,
VERONA, NJ 07044

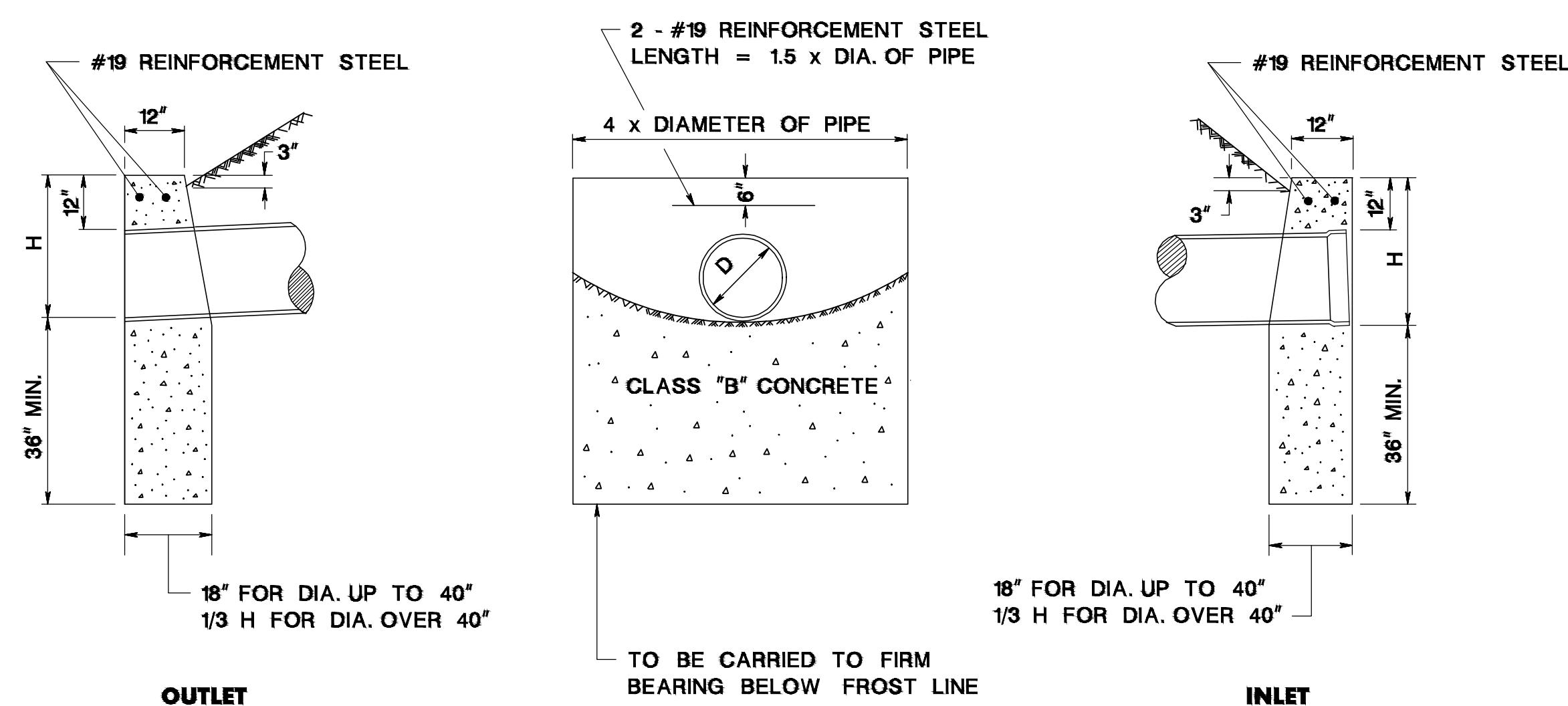
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HEADWALL QUANTITY IN CUBIC YARDS

PIPE DIA.	CORR. STEEL PIPE	REINF. CONC. PIPE
12"	1.0	1.1
15"	1.3	1.4
18"	1.7	1.7
21"	2.0	2.1
24"	2.3	2.5
27"	2.7	2.8
30"	3.1	3.3
36"	3.9	4.2
42"	4.8	5.8
48"	6.3	7.6
54"	8.1	9.7
60"	10.1	12.1
66"	12.3	14.9
72"	14.5	18.0

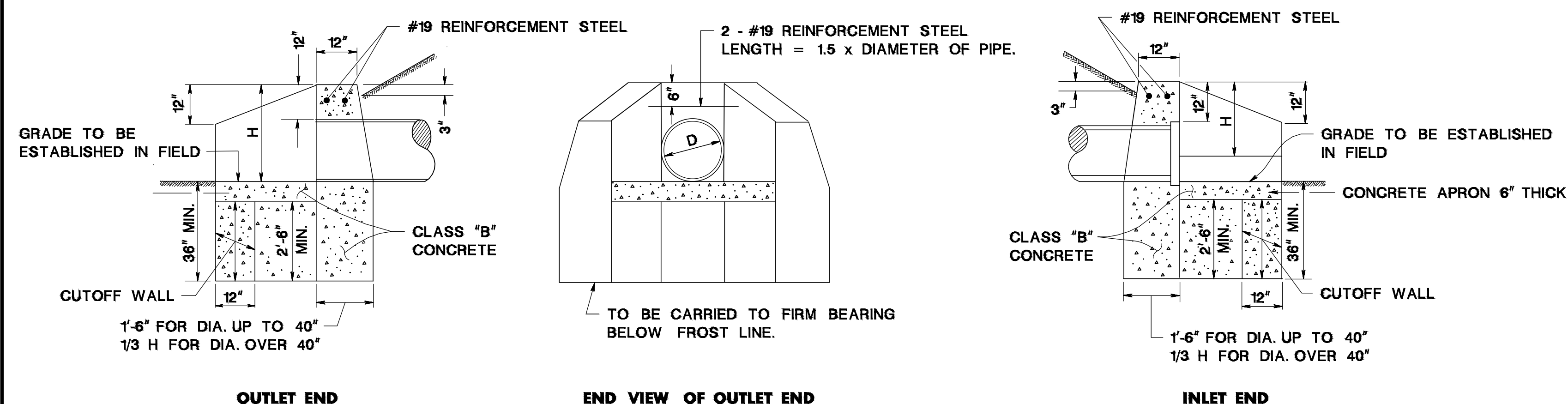
GENERAL NOTES:

1. THE FINISHING OF CONCRETE HEADWALLS WILL NOT BE REQUIRED FOR HEADWALLS AT THE BOTTOM OF EMBANKMENTS IN RURAL AREAS.
2. ALL EDGES TO BE CHAMFERED 1 INCH.
3. FOR ARCH PIPE USE LENGTH OF HEADWALL AS 3H + SPAN.
4. FOR MORE THAN ONE PIPE, SET THE PIPE A MINIMUM OF ONE FOOT APART (OUTSIDE BARREL TO OUTSIDE BARREL); THE ENDS OF THE HEADWALL TO BE SET 2 x DIAMETER OFF THE CENTERLINE OF THE CONTROLLING PIPE.



CONCRETE HEADWALL

CD-602-10.1



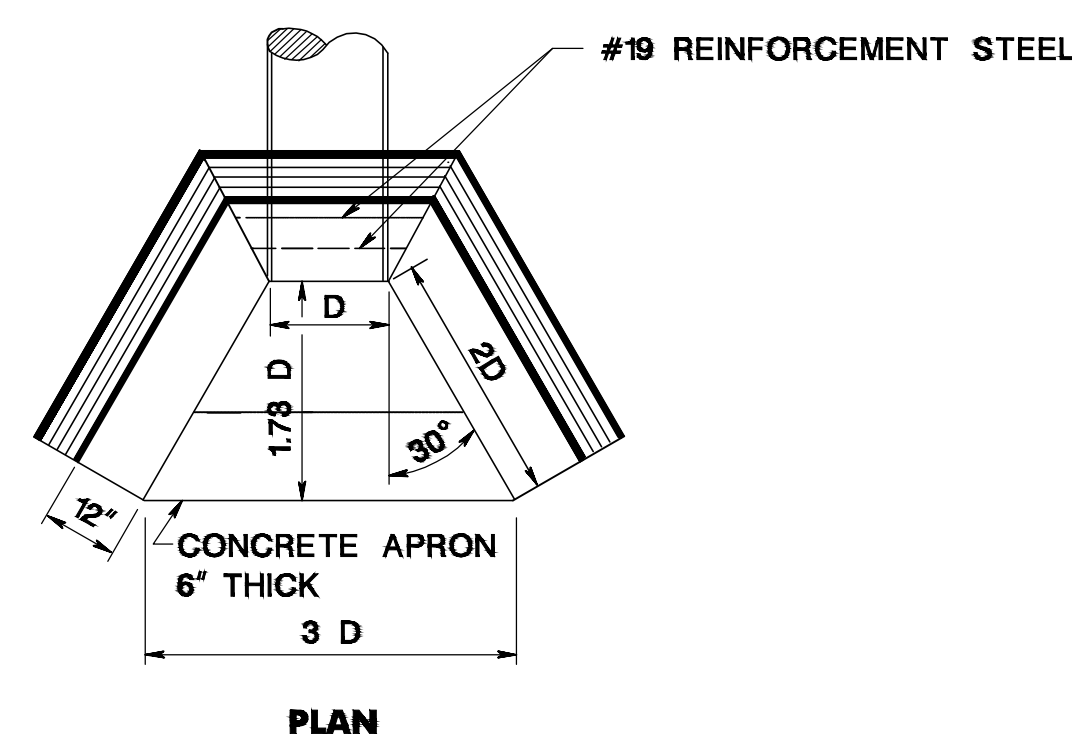
GENERAL NOTES:

1. ALL EDGES TO BE CHAMFERED 1 INCH.
2. THE FINISHING OF CONCRETE HEADWALLS WILL NOT BE REQUIRED FOR HEADWALLS AT THE BOTTOM OF EMBANKMENTS IN RURAL AREAS.
3. FOR MORE THAN ONE PIPE, SET THE PIPES A MINIMUM OF ONE FOOT APART (OUTSIDE BARREL TO OUTSIDE BARREL); THERE IS TO BE 12 INCHES ABOVE THE TOP OF A PIPE IN A WINGWALL; THE TERMINUS OF THE WINGWALL TO BE 2 X DIAMETER FROM THE CENTERLINE OF THE PIPE IN A WINGWALL.
4. SET THE TERMINUS FOR OUTLET AND INLET APRONS BY EXTENDING THE PIPE GRADE AHEAD AND BACK, RESPECTIVELY.
5. FOR ARCH PIPE, THE SPAN TO BE SUBSTITUTED FOR D.

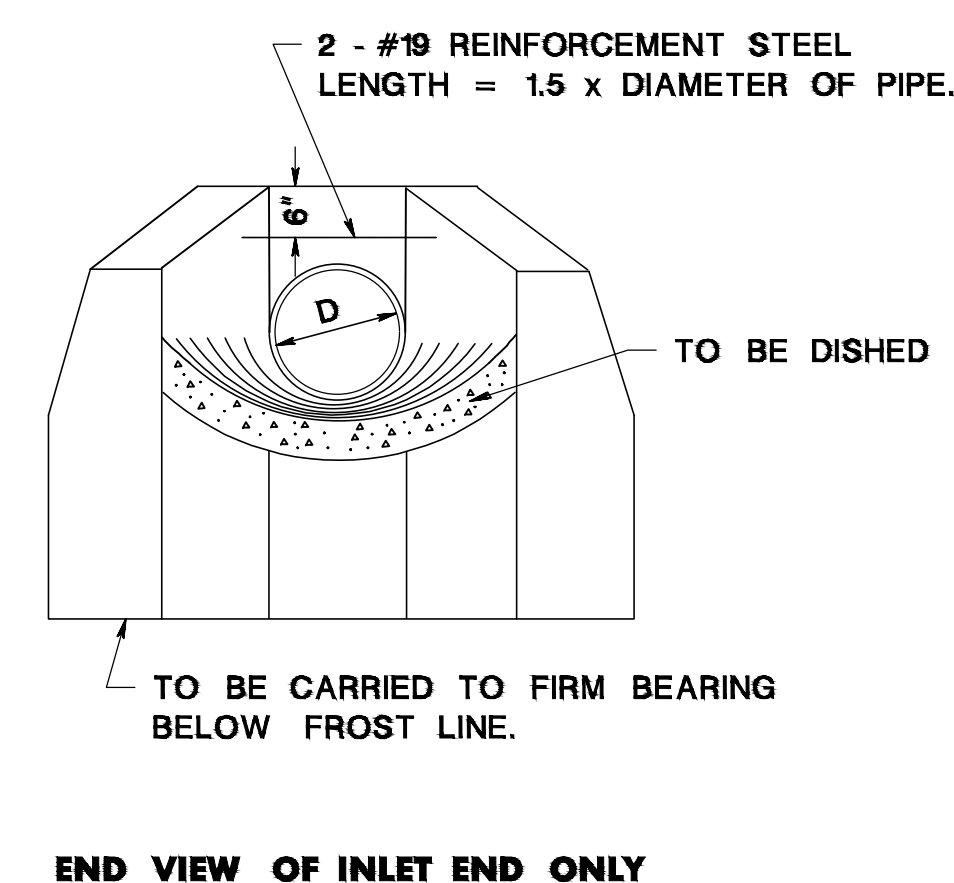
CD-602-10.2

VOLUME OF CONCRETE IN HEADWALLS AND APRONS IN CUBIC YARDS

PIPE DIA.	CORR. STEEL PIPE	REIN. CONC. PIPE	APRONS
12"	1.6	1.7	0.4
15"	2.0	2.1	0.5
18"	2.4	2.5	0.6
21"	2.8	3.0	0.8
24"	3.3	3.4	0.9
27"	3.7	4.0	1.1
30"	4.2	4.5	1.2
36"	5.3	5.6	1.5
42"	7.2	7.9	1.9
48"	9.4	10.4	2.3
54"	12.0	13.3	2.7
60"	15.0	16.6	3.2
66"	18.5	20.5	3.7
72"	22.4	24.8	4.2



CONCRETE HEADWALL WITH APRON



NOTE:

REINFORCEMENT STEEL IS IN METRIC UNITS.

CD-602-10

PROJECT	_____
DRAWN	JD
DESIGNED	_____
CHECKED	GB
APPROVED	_____
DATE	09/24/2024
SCALE	NTS
SHEET	1 OF 1