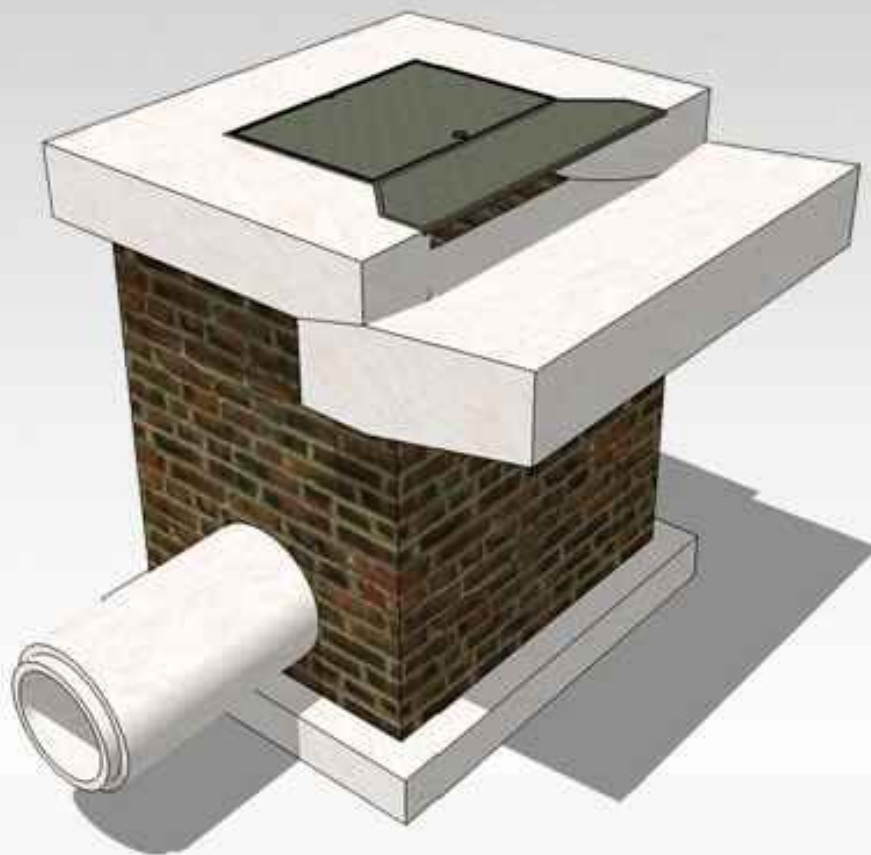


NCDS2021.12



NORFOLK CITY DESIGN STANDARDS

<http://www.norfolk.gov/index.aspx?NID=819>

DESIGN STANDARDS README FILE

City of Norfolk, Department of Public Works

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DESIGN STANDARDS INDEX

City of Norfolk Department of Public Works

(Sheet 1 of 2)

NORFOLK DESIGN STANDARDS (NCDS 2021.12)

Designation	Description
HS-101	NOT USED
HS-102	NOT USED
HS-103	STANDARD GRATE INLET
HS-104	STANDARD MANHOLE
HS-105	NOT USED
HS-106	FABRIC JOINT WRAP
HS-107	NOT USED
HS-201	NOT USED
HS-202	NOT USED
HS-203	METHOD OF SETTING GRANITE CURB
HS-204	NOT USED
HS-205	STANDARD VALLEY GUTTER
HS-206	STANDARD SIDEWALK DETAIL
HS-207	STANDARD RESIDENTIAL DRIVEWAY APRON
HS-208	ADA VARIATION OF DRIVEWAY APRON
HS-209	STANDARD RESIDENTIAL DRIVEWAY W/O CURB AND GUTTER
HS-210	COMMERCIAL BRICK DRIVEWAY
HS-211	NOT USED
HS-212	STANDARD COMMERCIAL DRIVEWAY APRON
HS-213	TYPICAL RESIDENTIAL DRIVEWAY PAVERS
HS-214	TYPICAL COMMERCIAL/PEDESTRIAN/PUBLIC SIDEWALK PAVERS
HS-215	TREE WELL (PAGE 1 AND 2)
HS-301	STANDARD PAVEMENT REPLACEMENT - ASPHALT OVER STONE
HS-302	STANDARD PAVEMENT REPLACEMENT - ASPHALT OVER CONCRETE
HS-303	STANDARD PAVEMENT REPLACEMENT CONCRETE
HS-304	CONCRETE PAVEMENT JOINT DETAIL
HS-601	STANDARD GRASS PLANTING DETAIL
HS-602	STANDARD TREE PROTECTION DETAIL
HS-603	RECYCLED RUBBER WHEEL STOP



DESIGN STANDARDS INDEX

City of Norfolk Department of Public Works

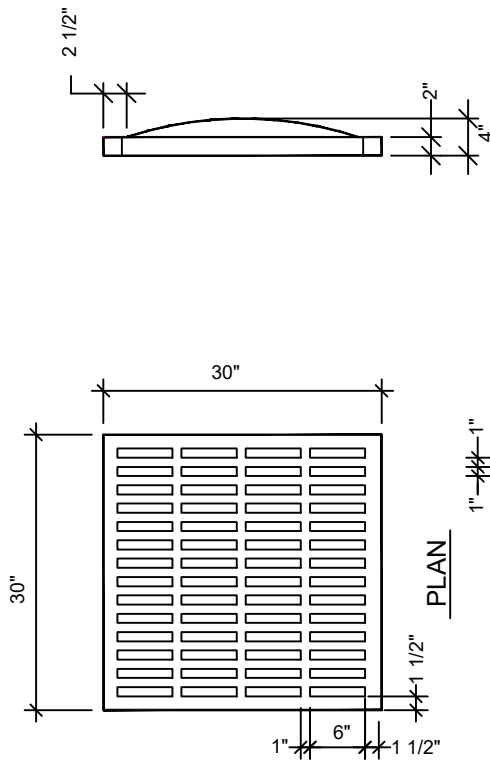
(Sheet 2 of 2)

NORFOLK DESIGN STANDARDS (NCDS 2021.12)

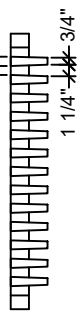
Designation	Description
HS-604	NOT USED
HS-605	NOT USED
HS-606	STANDARD CITY CONSTRUCTION - LARGE
HS-607	CONSTRUCTION SIGN INSTALLATION - LARGE

HRPDC REGIONAL CONSTRUCTION STANDARDS

CI_01	24" CURB & GUTTER
CI_02	30" CURB & GUTTER
CI_03	STANDARD MEDIAN CURB
CI_04	MOUNTABLE CURB
CI_10	ROLL TOP CURB AND GUTTER
DS_01	STORM DRAIN CASTING & COVER (30")
DS_03	CURB INLET/CATCH BASIN FRAME AND COVER
DS_04	CURB INLET/CATCH BASIN
EW_02_1	PAYMENT LIMITS TRENCH EXCAVATION AND BACKFILL
EW_02_2	PAYMENT LIMITS TRENCH EXCAVATION AND BACKFILL
PB-1	VDOT ROAD AND BRIDGES SECTION 100 PIPE BEDDING

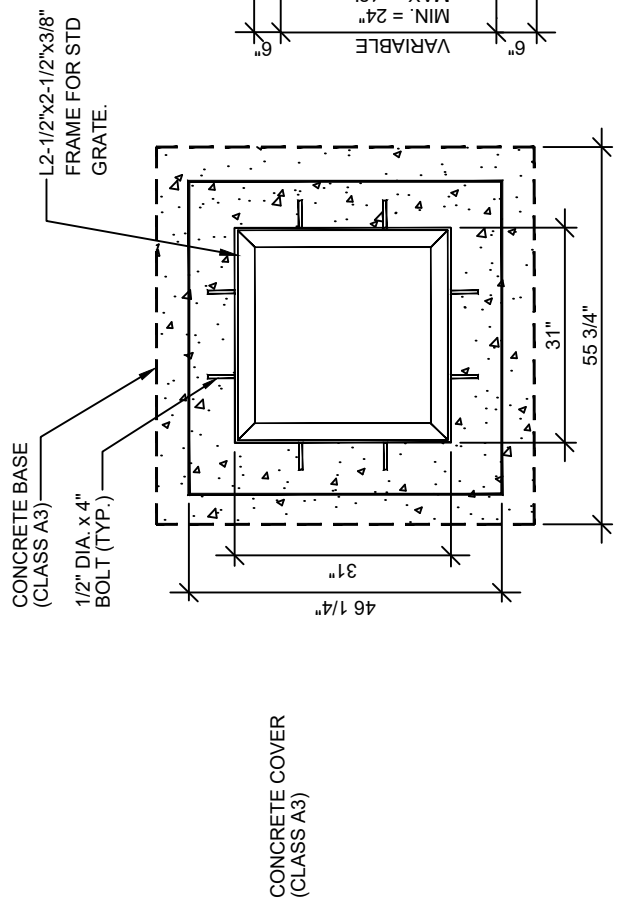


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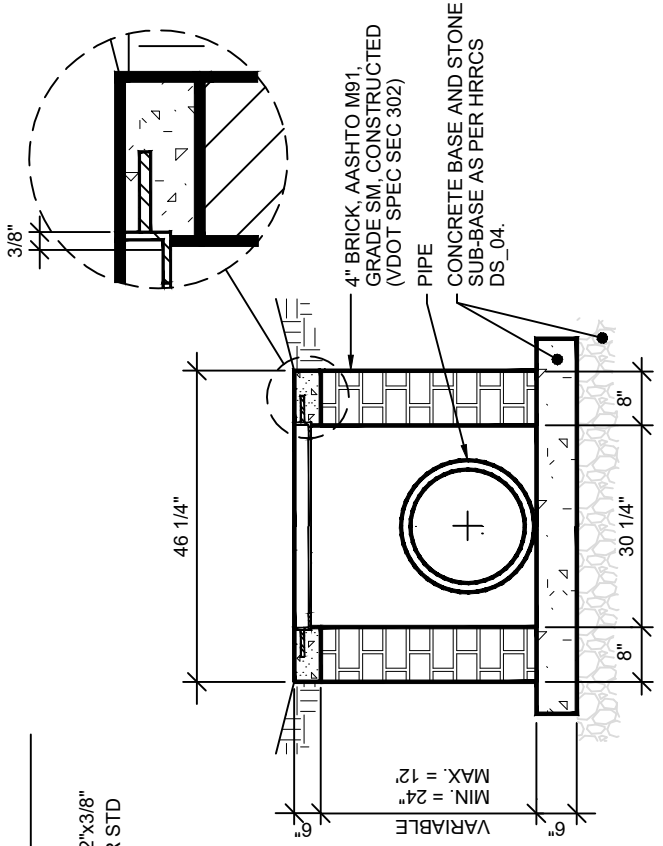


SECTION

CAST IRON GRATE



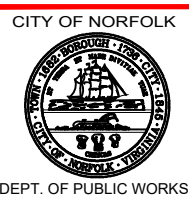
PLAN



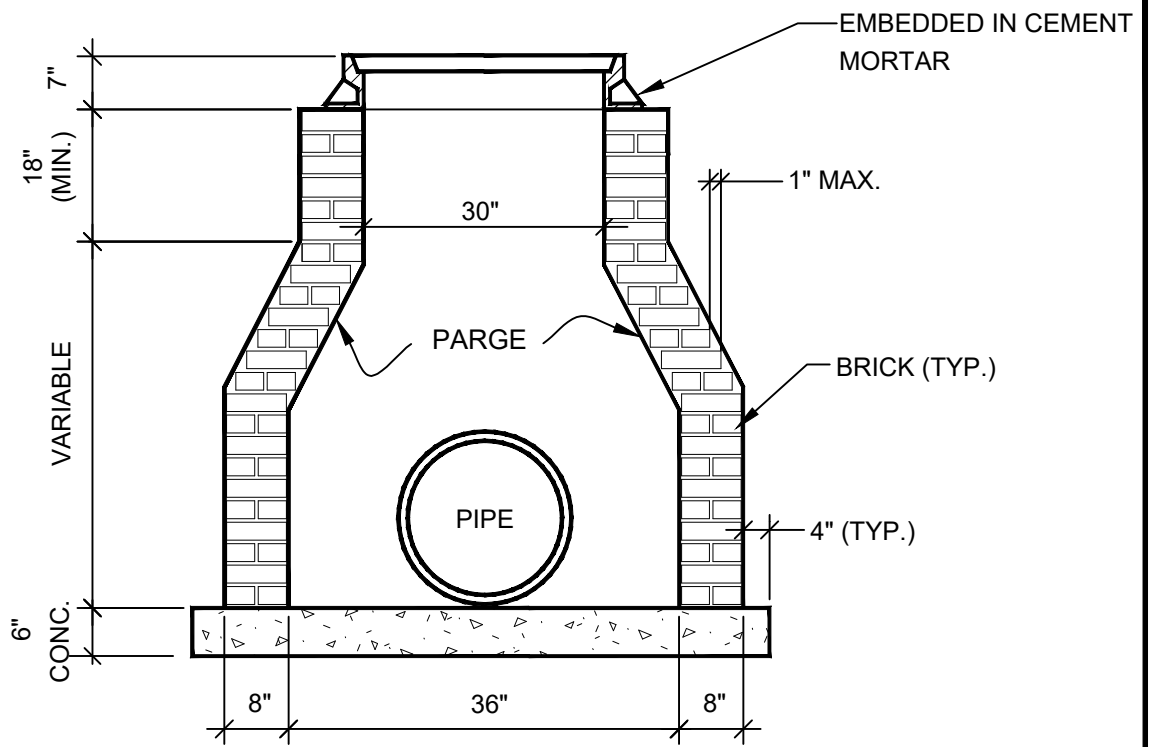
SECTION

NOTES:

1. MORTAR PARGE BRICK INSIDE AND OUT (MIN. 1/2" THICK). (ASTM C270, TYPE N)
2. WRAP CONNECTION BETWEEN PIPE AND STRUCTURE WITH GEOTEXTILE FABRIC, AS PER HS-106.
3. INVERT OF STRUCTURE TO BE SHAPED IN ACCORDANCE WITH VDOT STANDARD IS-1.
4. CONCRETE COVER AND GRATE ARE TO BE FURNISHED AS A SINGLE UNIT.
5. GRATE BARS SHALL BE INSTALLED PARALLEL TO DITCH FLOW.
6. PRECAST STRUCTURE MAY BE USED UPON APPROVAL OF THE ENGINEER.
7. THE INTERIOR DIMENSIONS OF THE CATCH BASIN AS SHOWN IS FOR PIPE SIZES 12" THRU 18". WHERE THE PIPE SIZE IS 21" THRU 60", THE INTERIOR DIMENSIONS EQUAL 3' OR GREATER OR THE O.D. OF THE PIPE, WHICHEVER IS GREATER, WHEN DEPTH DOES NOT EXCEED 4'. IF DEPTH IS GREATER THAN 4' THE INTERIOR DIMENSIONS SHALL BE 4' OR O.D. OF THE PIPE, WHICHEVER IS GREATER.



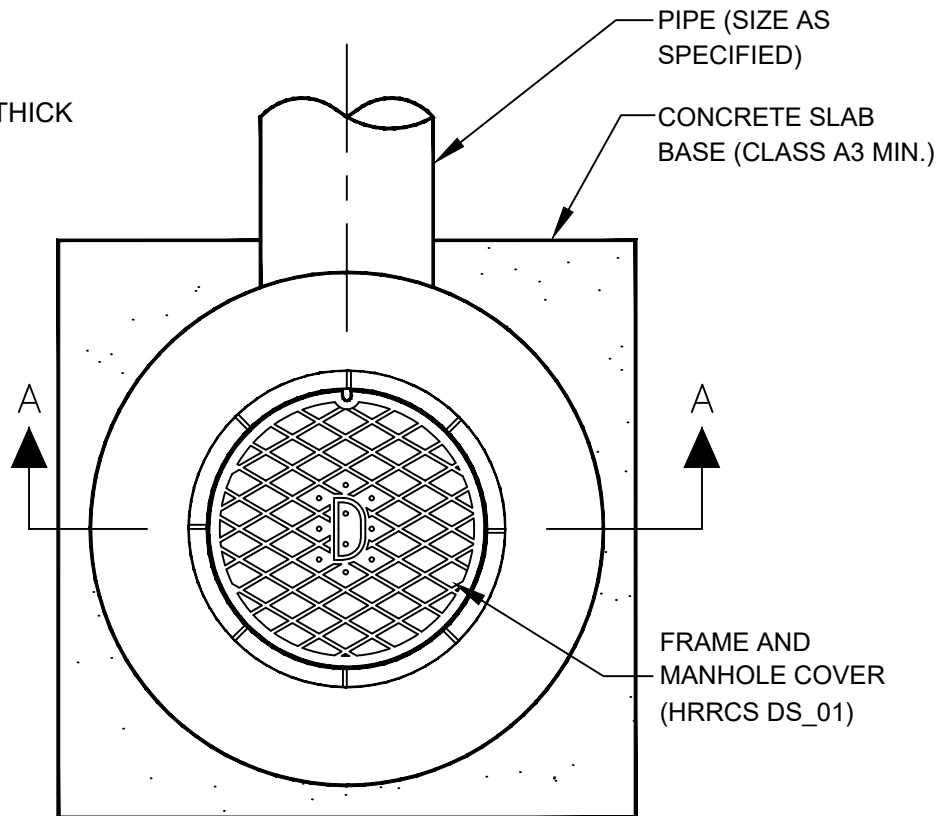
DESCRIPTION			DESIGNATION
STANDARD GRATE INLET			HS-103
SCALE	EDITION	REVISED	
NOT TO SCALE	NCDS2021.12	NOV. 2018	



SECTION A - A

NOTES:

1. 4" BRICK, AASHTO M91, GRADE SM, SHALL BE LAID IN CEMENT MORTAR WITH SHOVED JOINTS NOT TO EXCEED 3/8" THICK. INTERIOR FACE SHALL BE PLASTERED WITH MIN. 1/2" THICK CEMENT MORTAR, TYPE N.
2. INVERT SHALL BE SHAPED IN ACCORDANCE WITH VDOT STANDARD IS-1
3. PRECAST STRUCTURE MAY BE USED UPON APPROVAL OF THE ENGINEER
4. THE INTERIOR DIMENSION OF THE MANHOLE AS SHOWN IS FOR PIPE SIZES 12" THRU 18". FOR LARGER PIPES, MANHOLE SHALL BE SIZED AND CONSTRUCTED PER CURRENT VDOT REQUIREMENTS



PLAN

CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

STANDARD MANHOLE

DESIGNATION

HS-104

SCALE

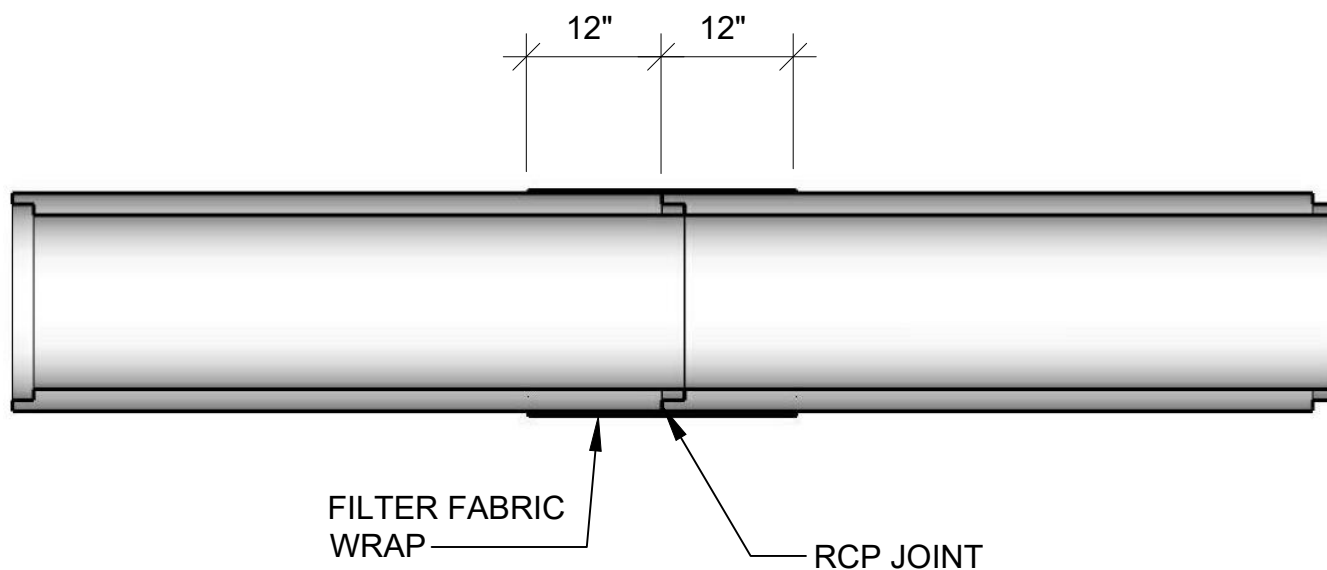
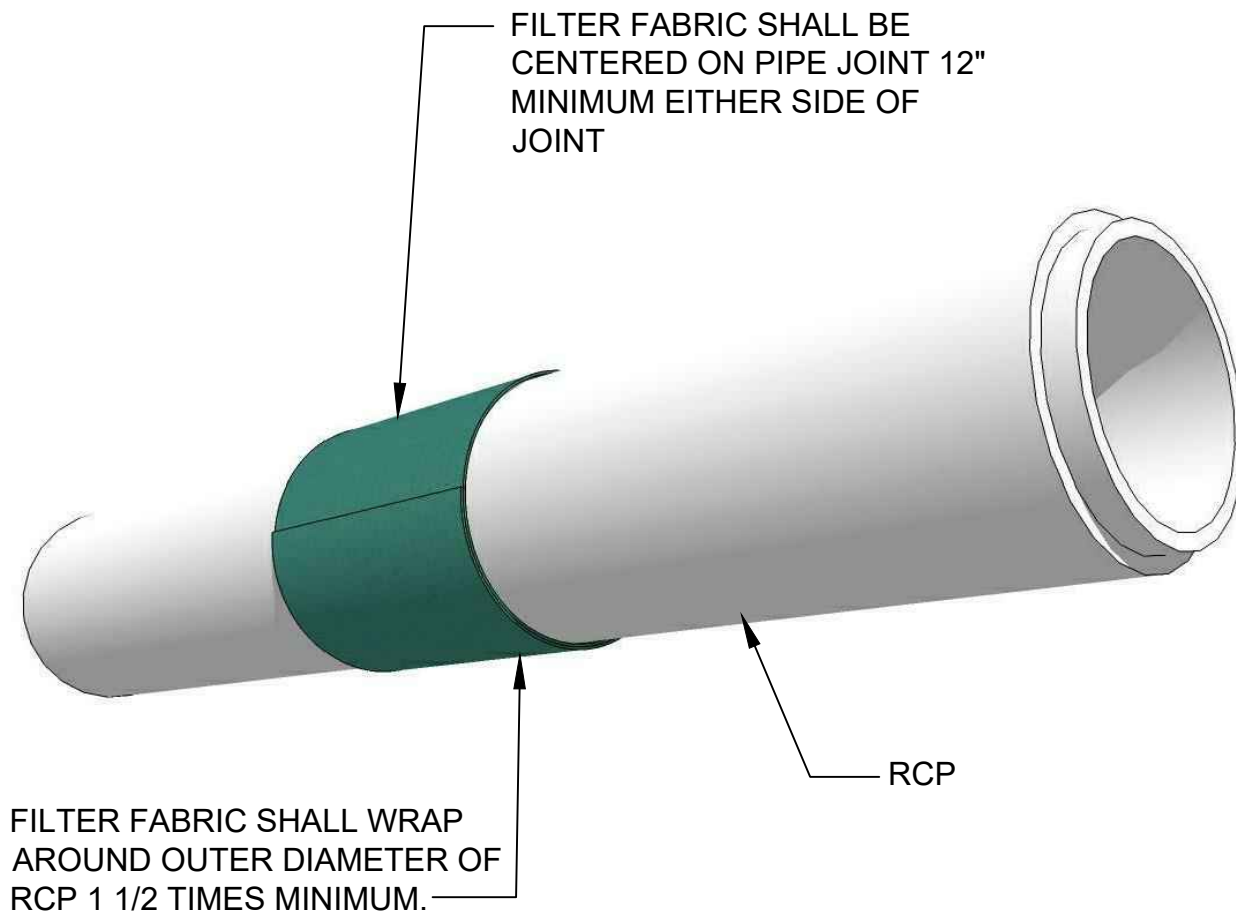
NOT TO SCALE

EDITION

NCDS2021.12

REVISED

NOV. 2018

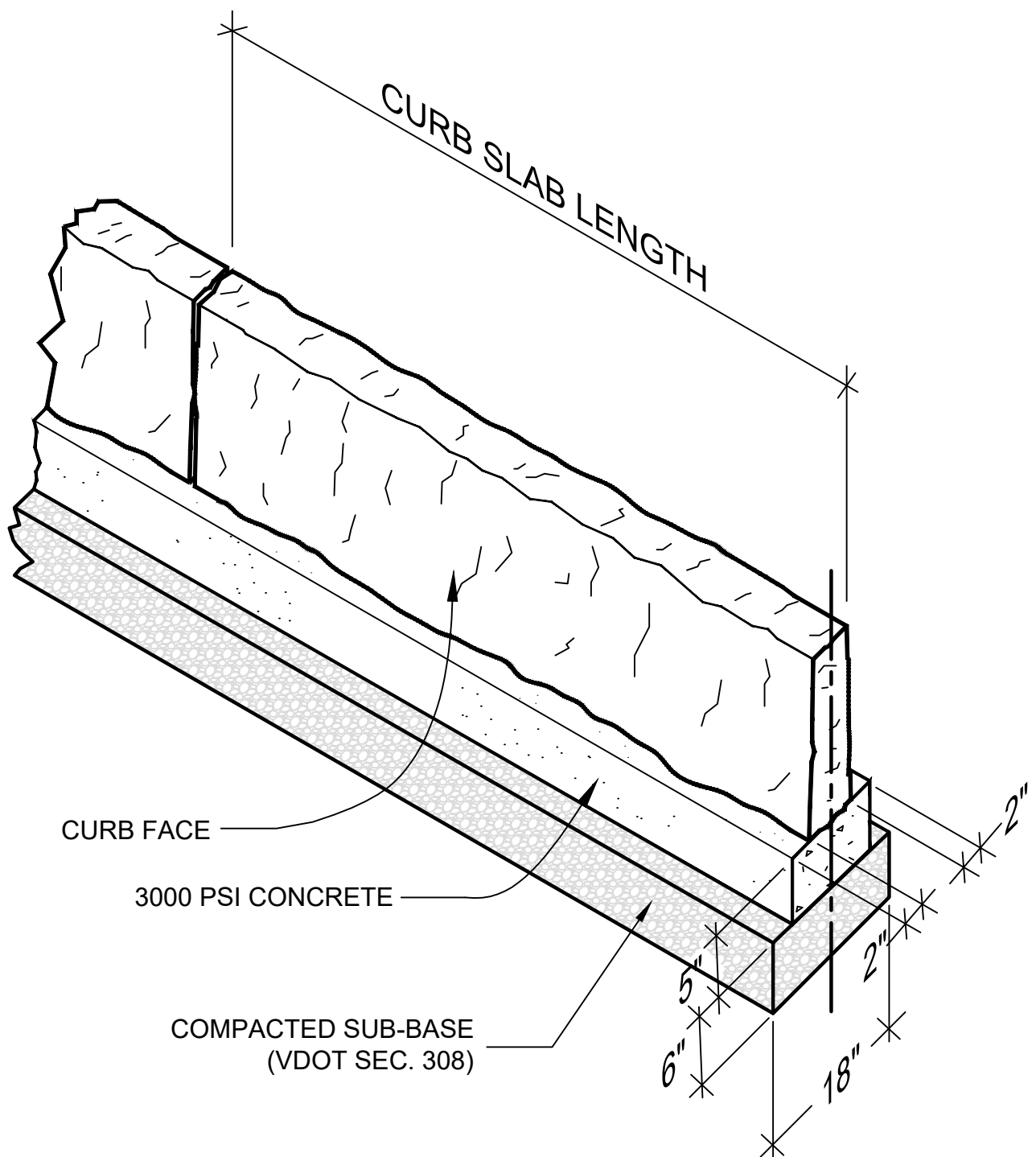


SECTION

NOTE

FILTER FABRIC SHALL BE NONWOVEN GEOTEXTILE CONSTRUCTION FABRIC (ACF ENVIRONMENTAL N035 OR APPROVED EQUAL)

CITY OF NORFOLK  DEPT. OF PUBLIC WORKS	DESCRIPTION FABRIC JOINT WRAP <table border="1"> <tr> <td>SCALE</td><td>EDITION</td><td>REVISED</td></tr> <tr> <td>NOT TO SCALE</td><td>NCDS2021.12</td><td>NOV. 2018</td></tr> </table>	SCALE	EDITION	REVISED	NOT TO SCALE	NCDS2021.12	NOV. 2018	DESIGNATION HS-106
SCALE	EDITION	REVISED						
NOT TO SCALE	NCDS2021.12	NOV. 2018						



CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

METHOD OF SETTING GRANITE CURB

SCALE

NOT TO SCALE

EDITION

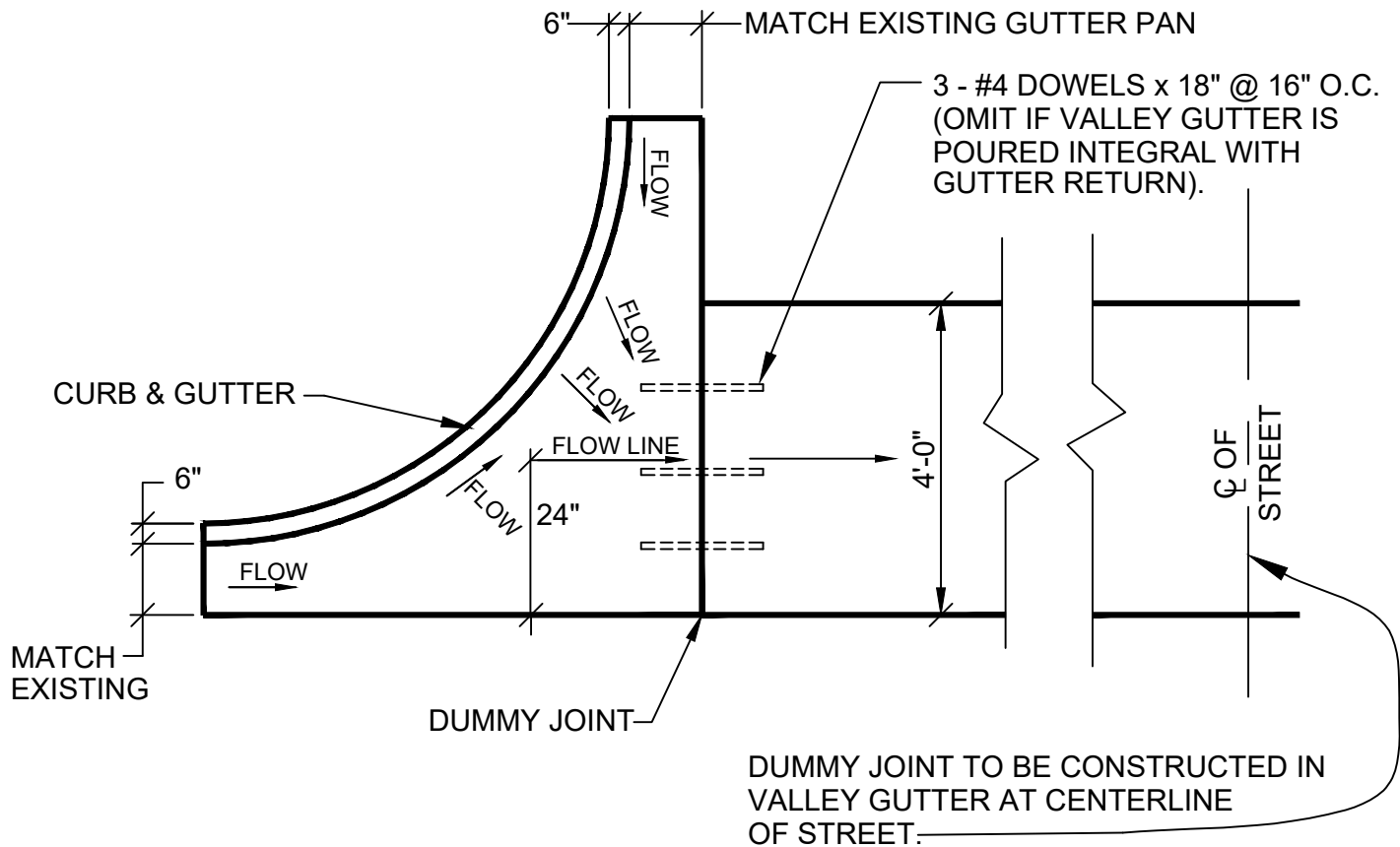
NCDS2021.12

REVISED

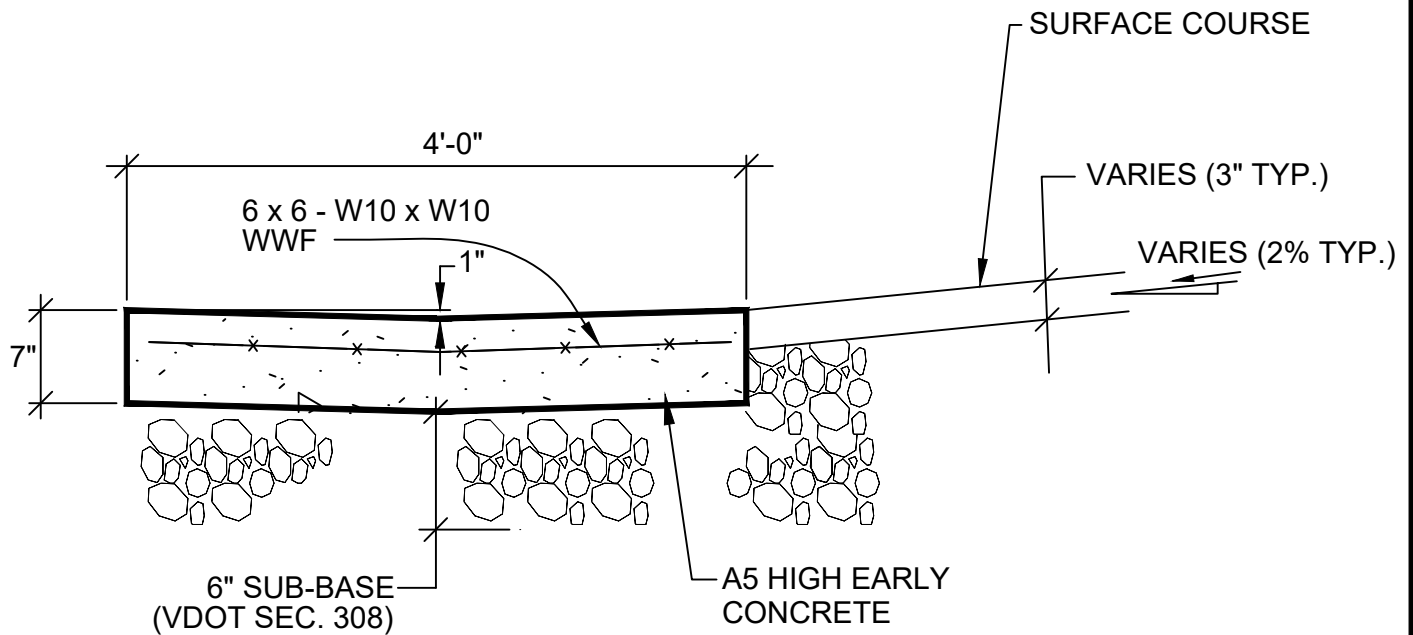
JUNE 2014

DESIGNATION

HS-203



PLAN VIEW



SECTION AT Q-Q

CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

STANDARD VALLEY GUTTER

DESIGNATION

HS-205

SCALE

NOT TO SCALE

EDITION

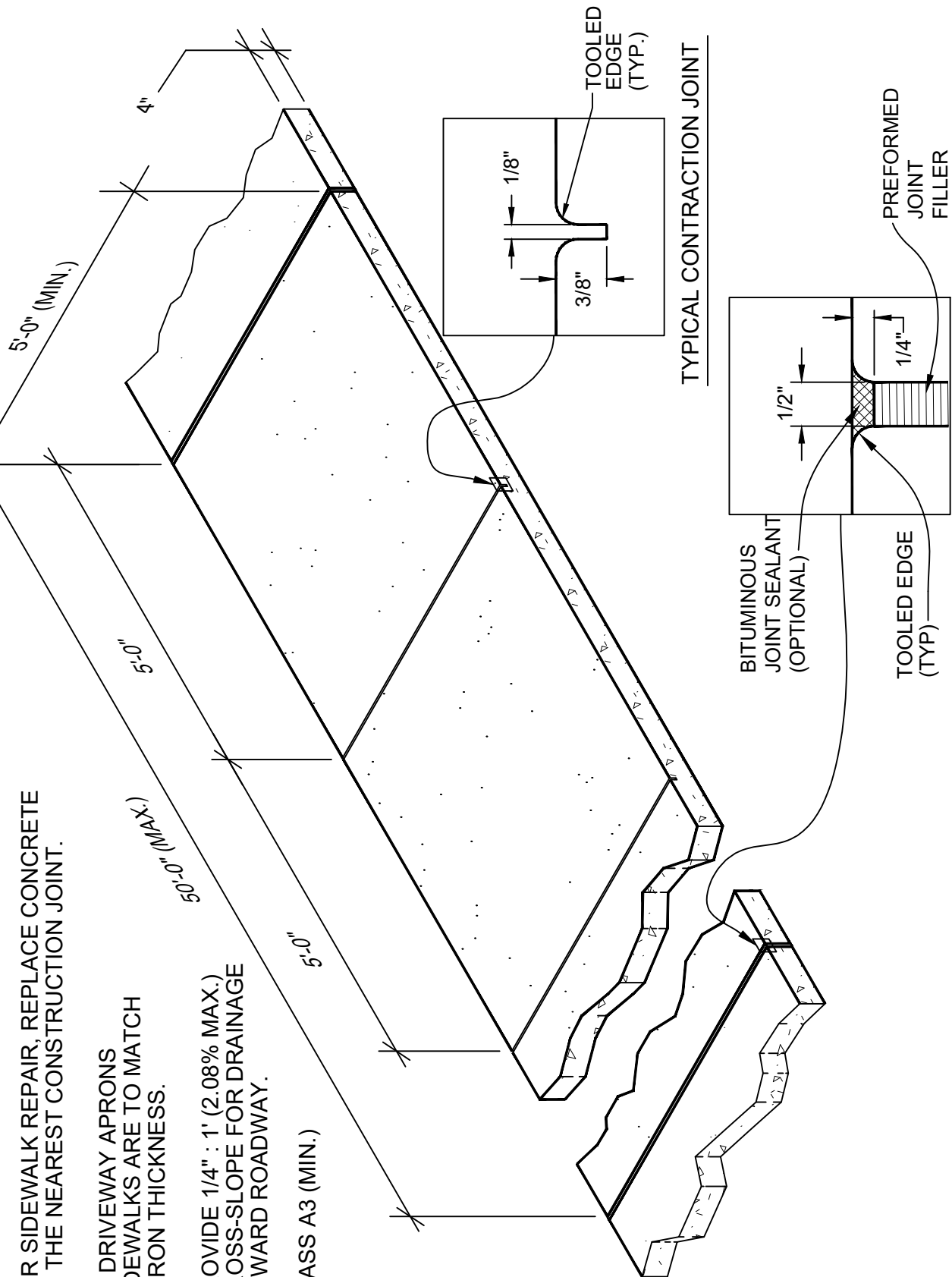
NCDS2021.12

REVISED

DEC. 2021

NOTES:

1. FOR SIDEWALK REPAIR, REPLACE CONCRETE TO THE NEAREST CONSTRUCTION JOINT.
2. AT DRIVEWAY APRONS SIDEWALKS ARE TO MATCH APRON THICKNESS.
3. PROVIDE 1/4" : 1' (2.08% MAX.) CROSS-SLOPE FOR DRAINAGE TOWARD ROADWAY.
4. CLASS A3 (MIN.)



CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

STANDARD SIDEWALK DETAIL

DESIGNATION

HS-206

SCALE

NOT TO SCALE

EDITION

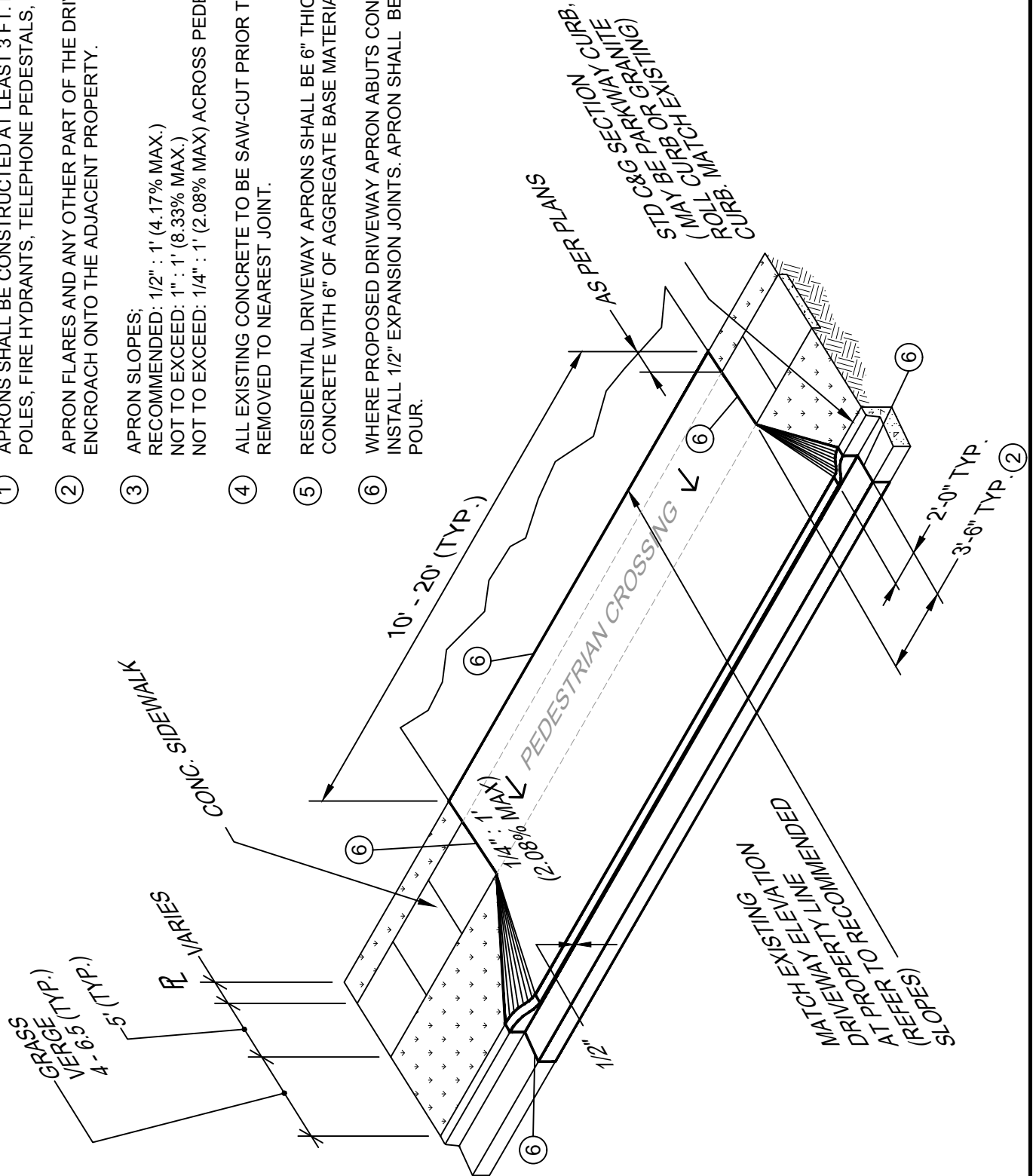
NCDS2021.12

REVISED

DEC. 2021

NOTES

- ① APRONS SHALL BE CONSTRUCTED AT LEAST 3 FT. FROM ALL UTILITY POLES, FIRE HYDRANTS, TELEPHONE PEDESTALS, ETC.
- ② APRON FLARES AND ANY OTHER PART OF THE DRIVEWAY SHALL NOT ENCROACH ONTO THE ADJACENT PROPERTY.
- ③ APRON SLOPES;
RECOMMENDED: 1/2" : 1' (4.17% MAX.)
NOT TO EXCEED: 1" : 1' (8.33% MAX.)
NOT TO EXCEED: 1/4" : 1' (2.08% MAX) ACROSS PEDESTRIAN CROSSING
- ④ ALL EXISTING CONCRETE TO BE SAW-CUT PRIOR TO DEMOLITION OR REMOVED TO NEAREST JOINT.
- ⑤ RESIDENTIAL DRIVEWAY APRONS SHALL BE 6" THICK OF CLASS A3 CONCRETE WITH 6" OF AGGREGATE BASE MATERIAL.
- ⑥ WHERE PROPOSED DRIVEWAY APRON ABUTS CONCRETE PAVEMENT, INSTALL 1/2" EXPANSION JOINTS. APRON SHALL BE MONOLITHIC POUR.



CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

STANDARD RESIDENTIAL DRIVEWAY APRON

SCALE
NOT TO SCALE

EDITION
NCDS2021.12

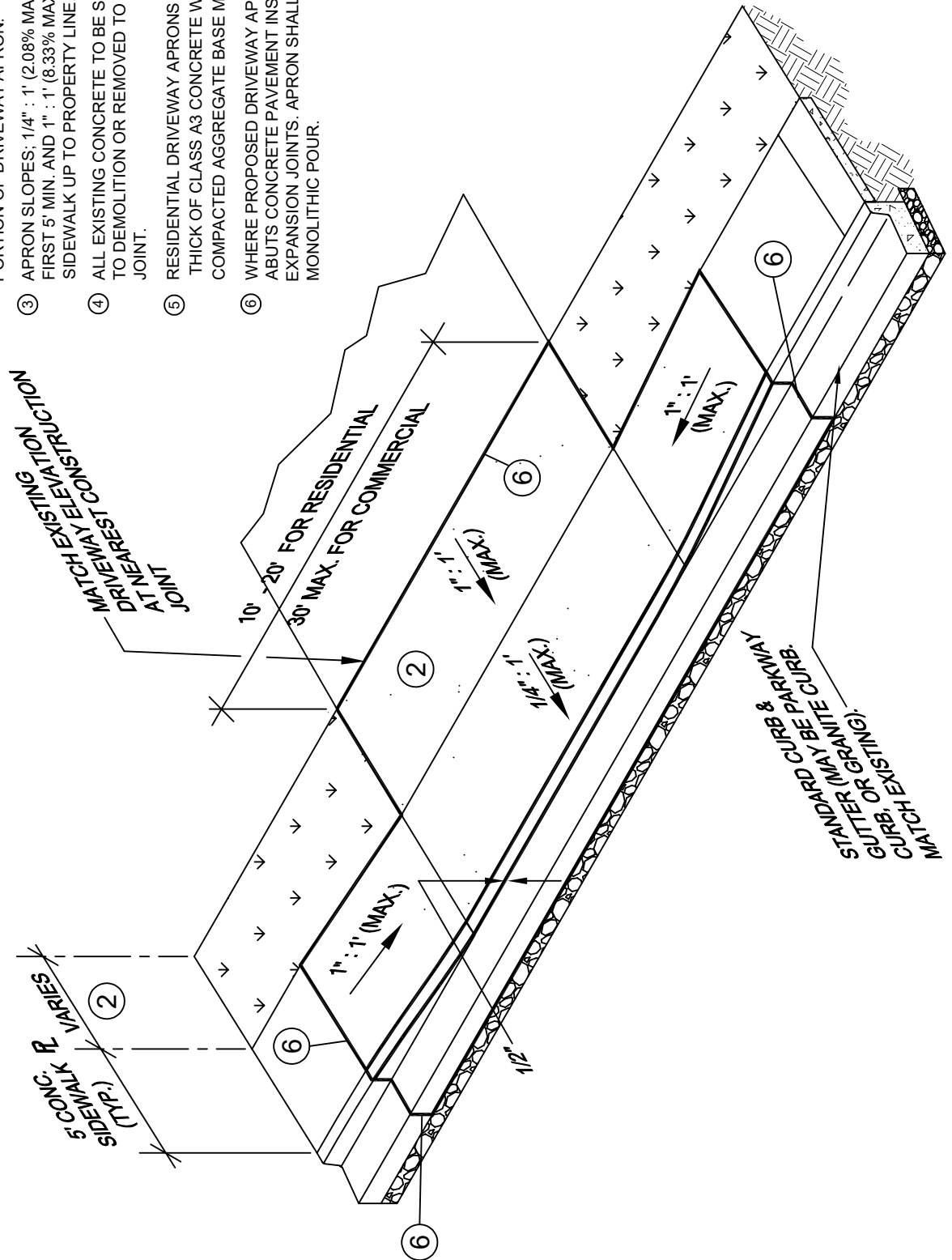
REVISED
DEC. 2021

DESIGNATION

HS-207

NOTES

- ① APRONS SHALL BE CONSTRUCTED AT LEAST 3 FT. FROM ALL UTILITY POLES, FIRE HYDRANTS, TELEPHONE PEDESTALS, ETC.
- ② PERMISSION FROM PROPERTY OWNER SHALL BE ACQUIRED BEFORE CONSTRUCTING THIS PORTION OF DRIVEWAY APRON.
- ③ APRON SLOPES: 1/4" : 1' (2.08% MAX) THROUGH FIRST 5' MIN. AND 1" : 1' (8.33% MAX.) BEYOND SIDEWALK UP TO PROPERTY LINE.
- ④ ALL EXISTING CONCRETE TO BE SAW-CUT PRIOR TO DEMOLITION OR REMOVED TO NEAREST JOINT.
- ⑤ RESIDENTIAL DRIVEWAY APRONS SHALL BE 6" THICK OF CLASS A3 CONCRETE WITH 6" OF COMPACTED AGGREGATE BASE MATERIAL.
- ⑥ WHERE PROPOSED DRIVEWAY APRON ABUTS CONCRETE PAVEMENT INSTALL 1/2" EXPANSION JOINTS. APRON SHALL BE A MONOLITHIC POUR.



CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

ADA VARIATION OF DRIVEWAY APRON

DESIGNATION

HS-208

SCALE

NOT TO SCALE

EDITION

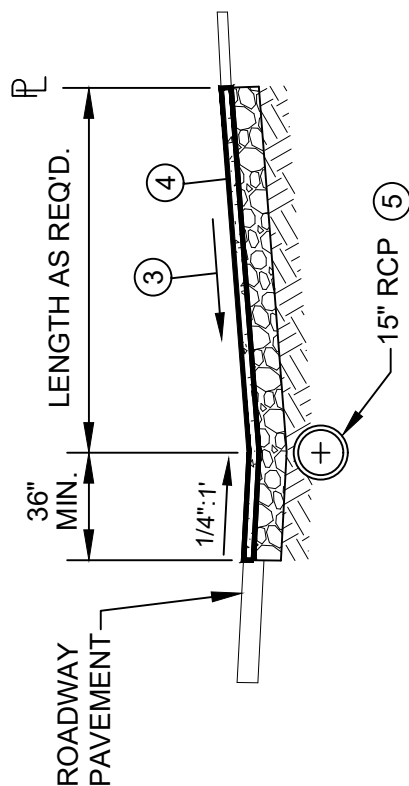
NCDS2021.12

REVISED

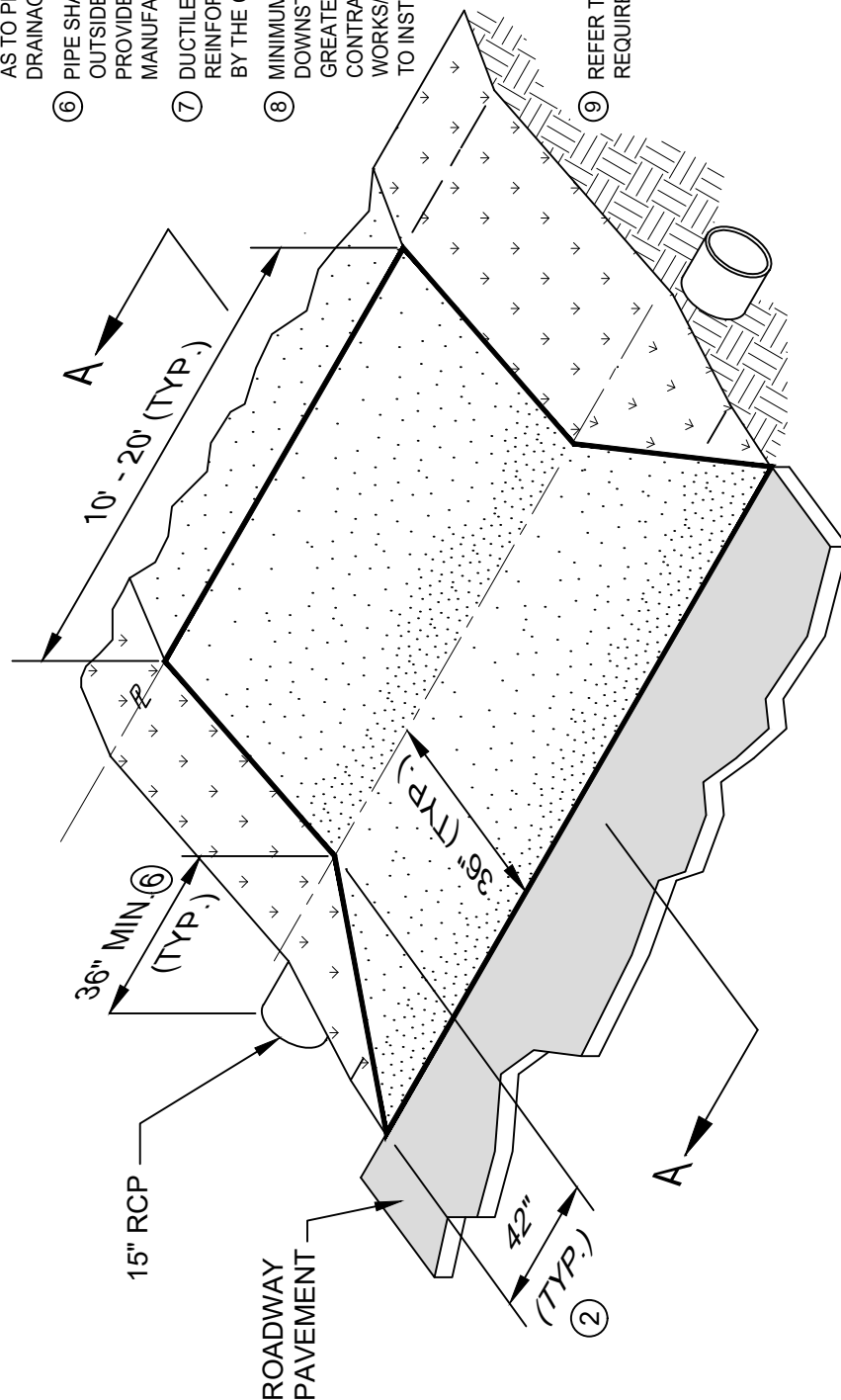
DEC. 2021

NOTES

- ① APRONS SHALL BE CONSTRUCTED AT LEAST 3 FT. FROM ALL UTILITY POLES, FIRE HYDRANTS, TELEPHONE PEDESTALS, ETC.
- ② APRON FLARES OR ANY OTHER PART OF THE DRIVEWAY APRON SHALL NOT ENCRoACH ONTO THE ADJACENT PROPERTY.
- ③ APRON SLOPES:
RECOMMENDED: 1/2" : 1' (4.17% MAX.)
NOT TO EXCEED: 1" : 1' (8.33% MAX.)
NOT TO EXCEED: 1/4" : 1' (2.08% MAX.) ACROSS PEDESTRIAN CROSSING (WHERE APPLICABLE)
- ④ RESIDENTIAL DRIVEWAY APRONS SHALL BE 2" BITUMINOUS CONCRETE SURFACE MIX OVER 8" COMPACTED AGGREGATE BASE OR 6" OF CLASS A3 CONCRETE, MONOLITHICALLY POURED.
- ⑤ PIPE LOCATION MAY VARY WITHIN THE R.O.W. AS NECESSARY. THE PIPE SHALL BE INSTALLED SO AS TO PROVIDE AND MAINTAIN POSITIVE DRAINAGE.
- ⑥ PIPE SHALL EXTEND 3' (MIN.) BEYOND FARTHEST OUTSIDE EDGE OF ENTRANCE AT CROSSING. PROVIDE COVER AS SPECIFIED BY MANUFACTURER.
- ⑦ DUCTILE IRON PIPE MAY BE USED INSTEAD OF REINFORCED CONCRETE PIPE IF APPROVED BY THE CITY.
- ⑧ MINIMUM PIPE SIZE SHALL BE 15" OR DOWNSTREAM PIPE DIAMETER, WHICHEVER IS GREATER. IF EXISTING PIPE IS 12" OR LESS, CONTRACTOR WILL NEED TO CONTACT PUBLIC WORKS/STORMWATER TO OBTAIN PERMISSION TO INSTALL 12" PIPE VERSUS 15" PIPE.



SECTION A - A



DEPT. OF PUBLIC WORKS

DESCRIPTION

STANDARD RESIDENTIAL DRIVEWAY APRON WITHOUT CURB AND GUTTER

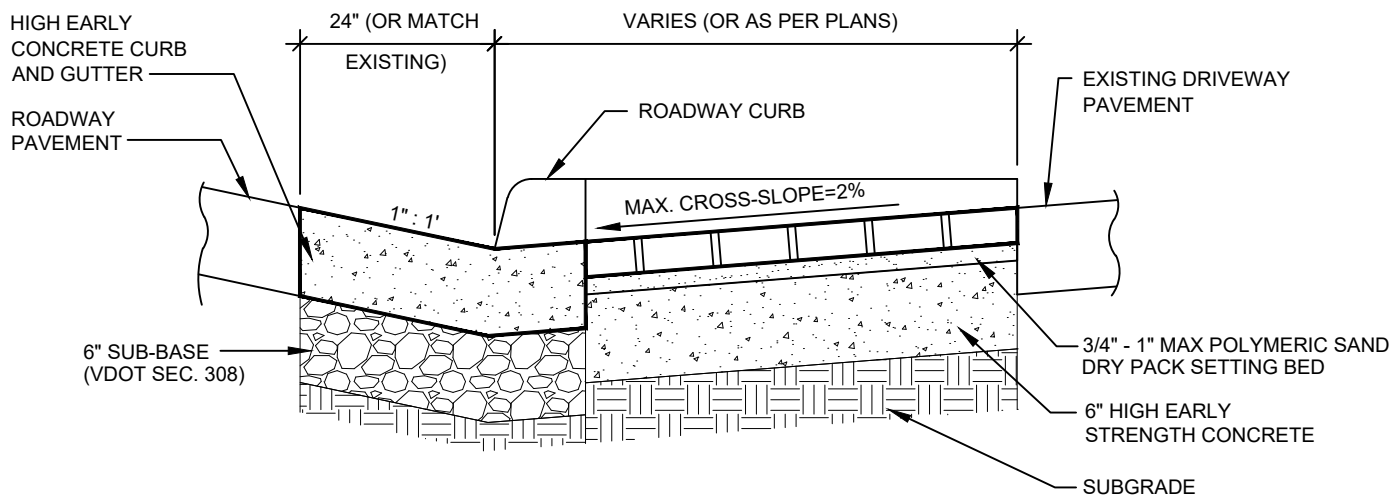
SCALE
NOT TO SCALE

EDITION
NCDS2021.12

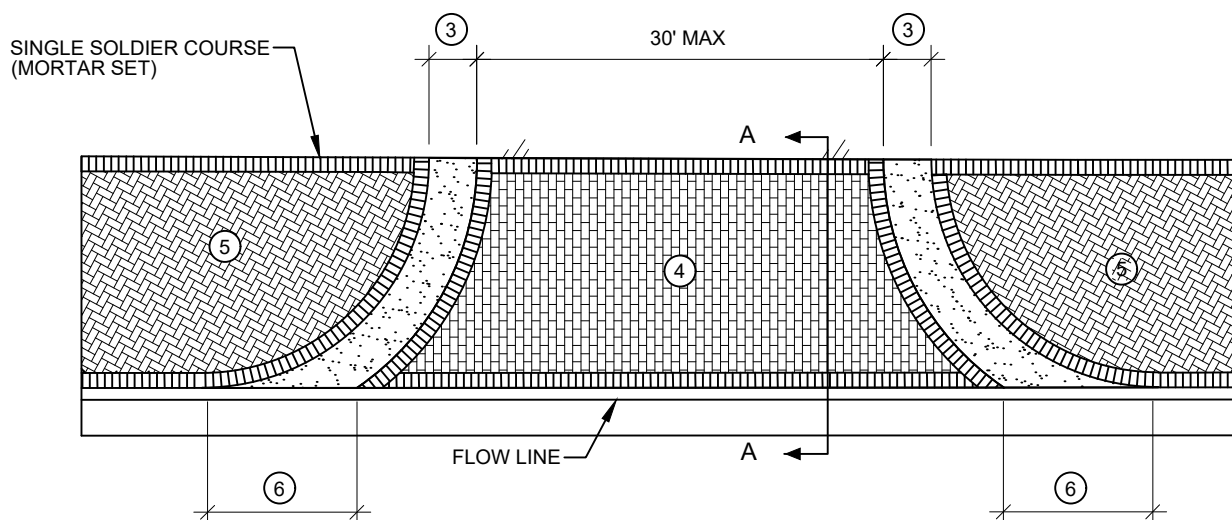
REvised
DEC. 2021

DESIGNATION

HS-209



SECTION A - A



NOTES

- ① APRONS SHALL BE CONSTRUCTED AT LEAST 3 FEET FROM ALL UTILITY POLES, FIRE HYDRANTS, TELEPHONE PEDESTALS, ETC.
- ② APRON FLARES AND ANY OTHER PART OF THE DRIVEWAY, SHALL NOT ENCROACH ONTO ADJACENT PROPERTY.
- ③ 24" WIDE CONCRETE TRANSITION STRIP; RADIUS AS PER PLANS.
- ④ HEAVY VEHICULAR PAVERS
SIZE: 4" X 8' X 2 3/4", TYPE F
COLOR: ENGLISH EDGE DARK ACCENT
PATTERN: RUNNING BOND
MANUFACTURED BY: PINE HALL BRICK COMPANY, WINSTON SALEM, NC OR APPROVED EQUAL
- ⑤ SIDEWALK BRICK PAVER
SIZE: 4" X 8' X 2 1/4"
COLOR: PATHWAY FULL RANGE (FR)
PATTERN: 45° HERRINGBONE
MANUFACTURED BY: PINE HALL BRICK COMPANY, WINSTON SALEM, NC OR APPROVED EQUAL
- ⑥ WIPE DOWN CURB ALONG CONCRETE STRIP

CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

COMMERCIAL BRICK DRIVEWAY APRON

DESIGNATION

HS-210

SCALE

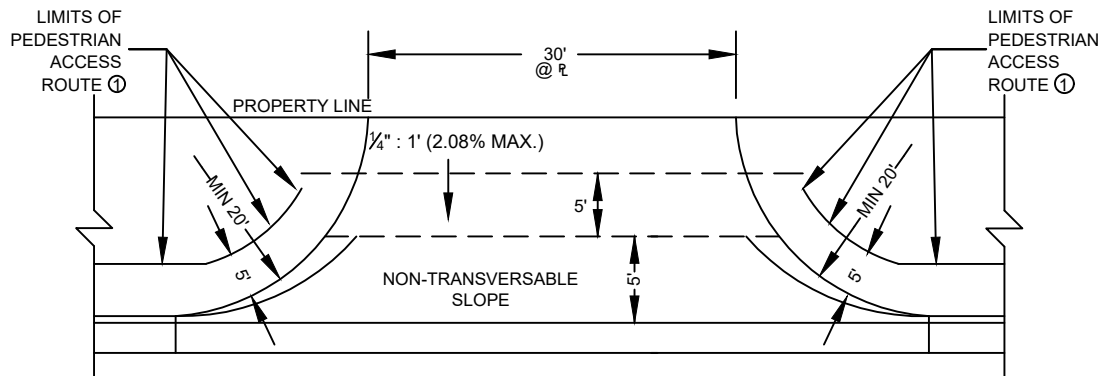
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EDITION

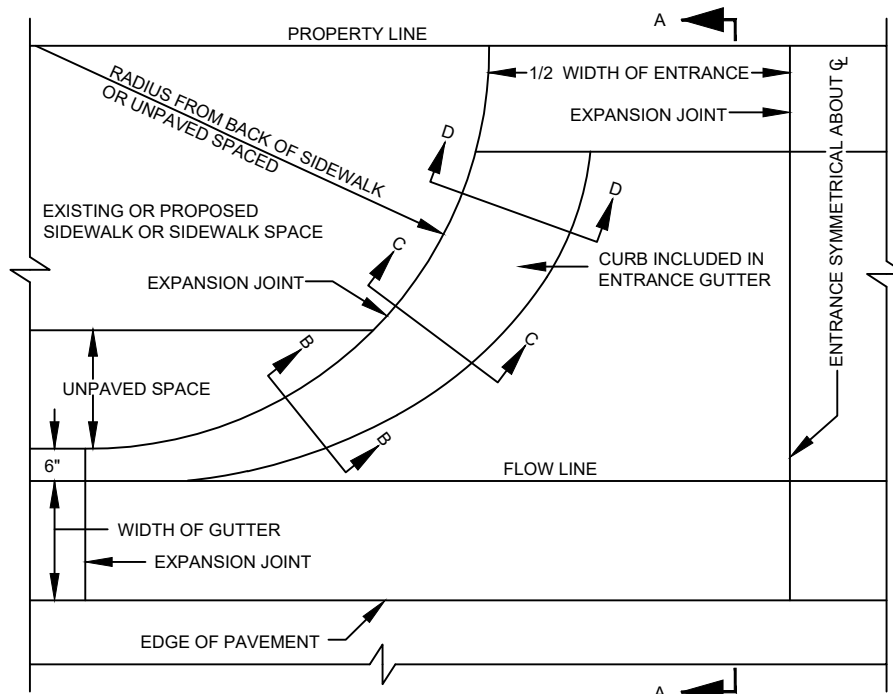
NCDS2021.12

REVISED

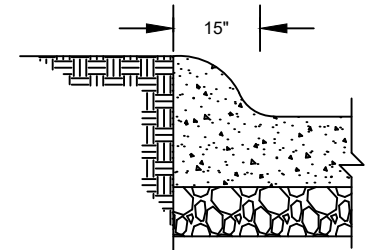
DEC. 2021



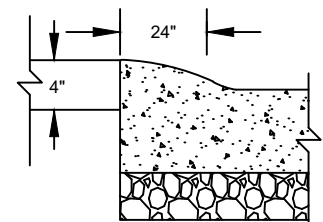
PEDESTRIAN ACCESS ROUTE DETAIL



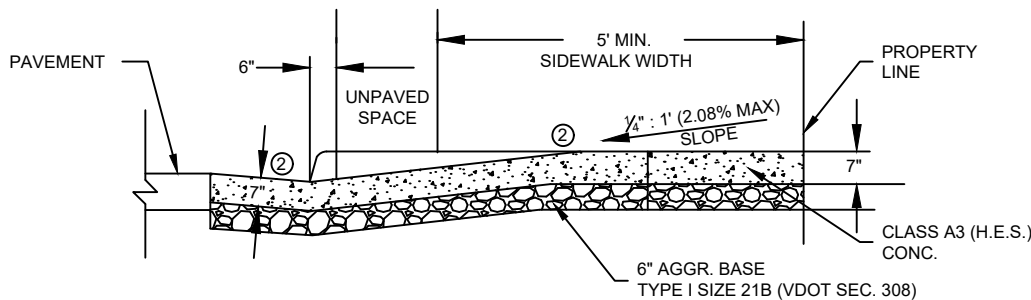
HALF PLAN



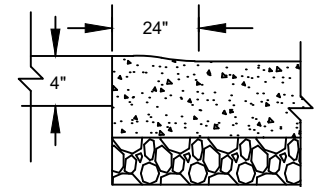
SECTION B-B



SECTION C-C



SECTION A - A



SECTION D-D

NOTES:

- ① ADDITIONAL RIGHT -OF-WAY IS REQUIRED IF THE LIMITS OF PEDESTRIAN ACCESS ROUTE EXTENDS BEYOND EXISTING OR PROPOSED RIGHT-OF-WAY.
- ② POINT OF GRADE CHANGE.

CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

STANDARD COMMERCIAL DRIVEWAY APRON

SCALE

NOT TO SCALE

EDITION

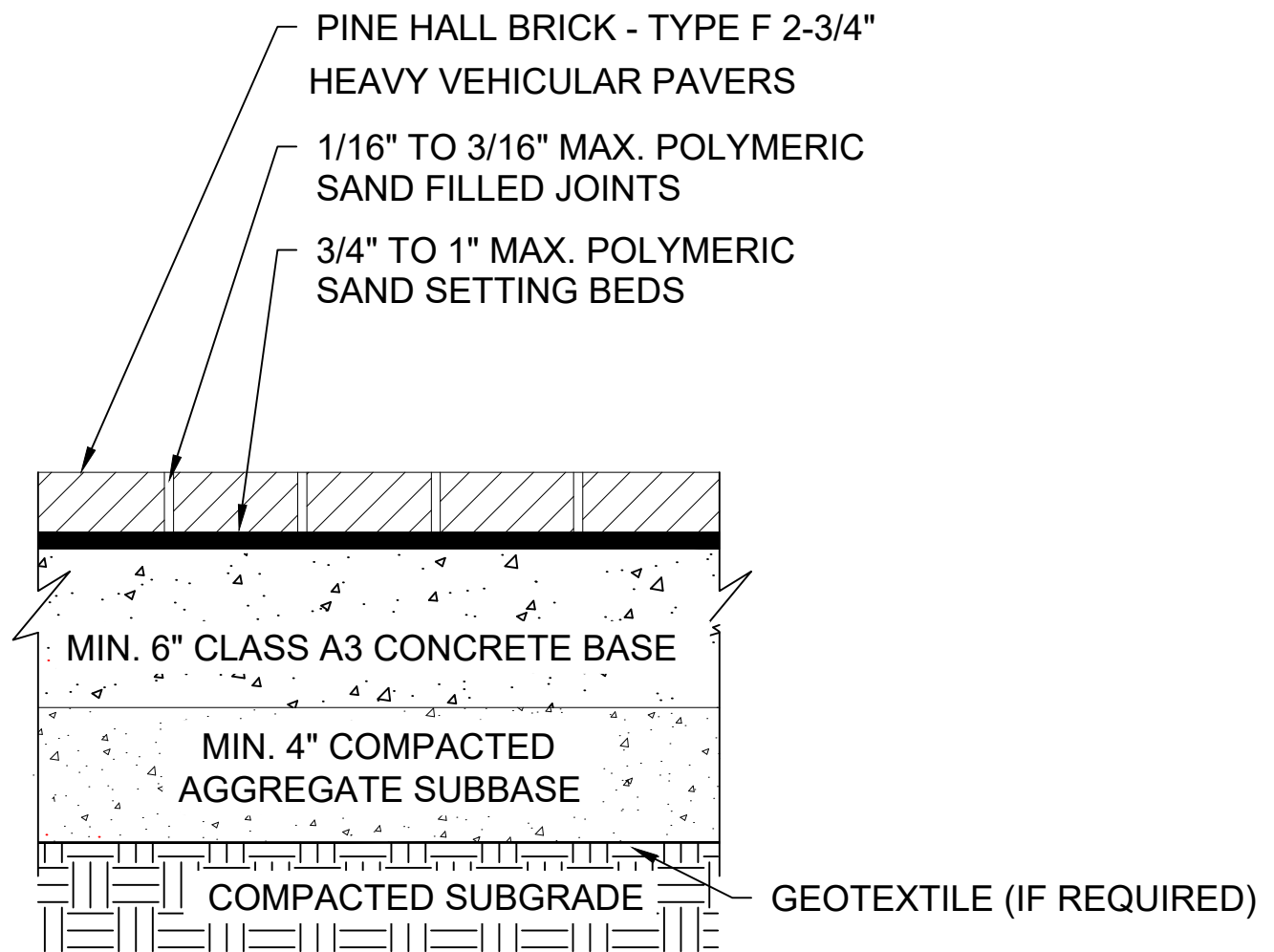
NCDS2021.12

REVISED

DEC. 2021

DESIGNATION

HS-212



CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

TYPICAL RESIDENTIAL DRIVEWAY PAVERS

SCALE

NOT TO SCALE

EDITION

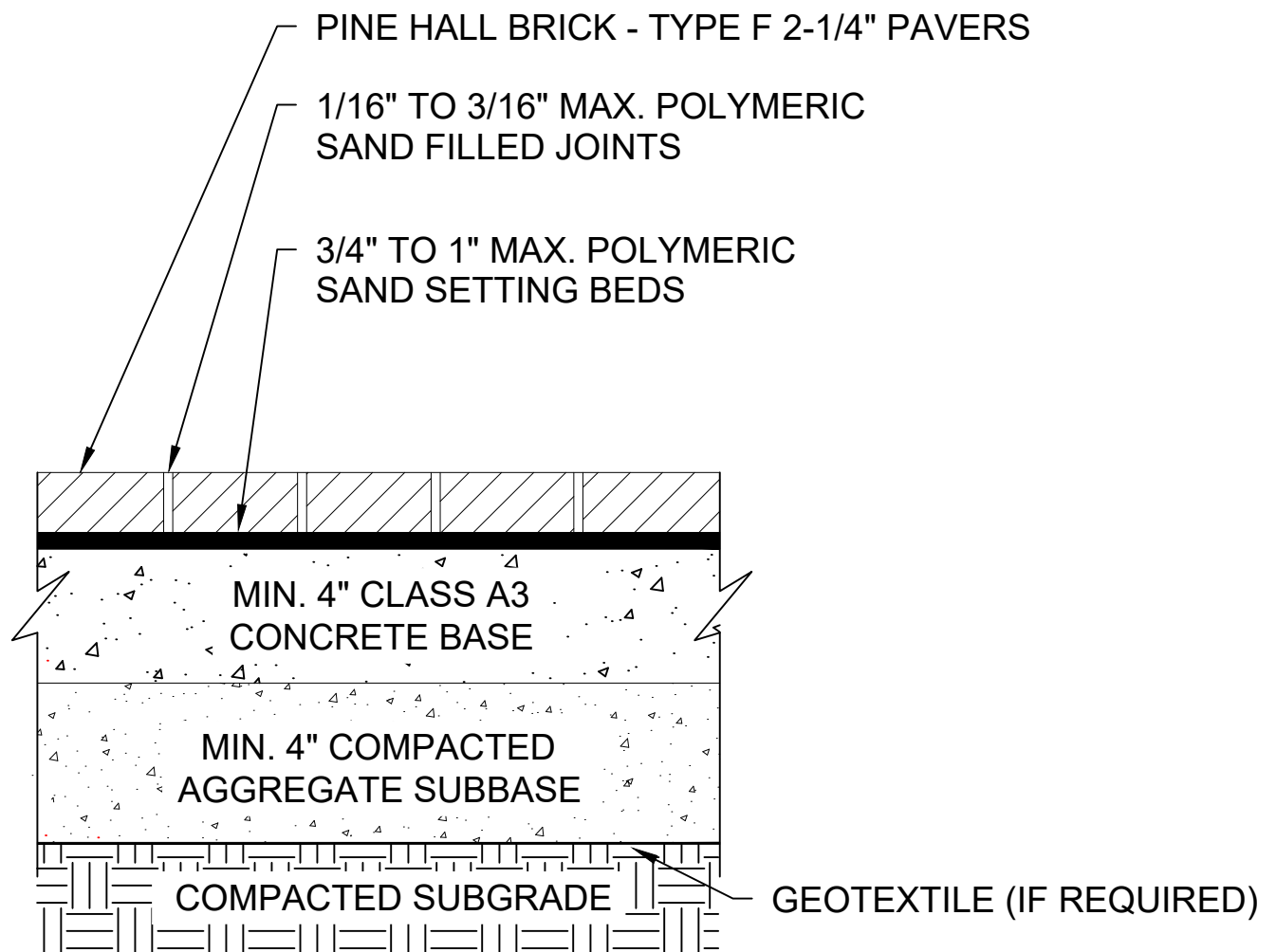
NCDS2021.12

REVISED

DEC. 2021

DESIGNATION

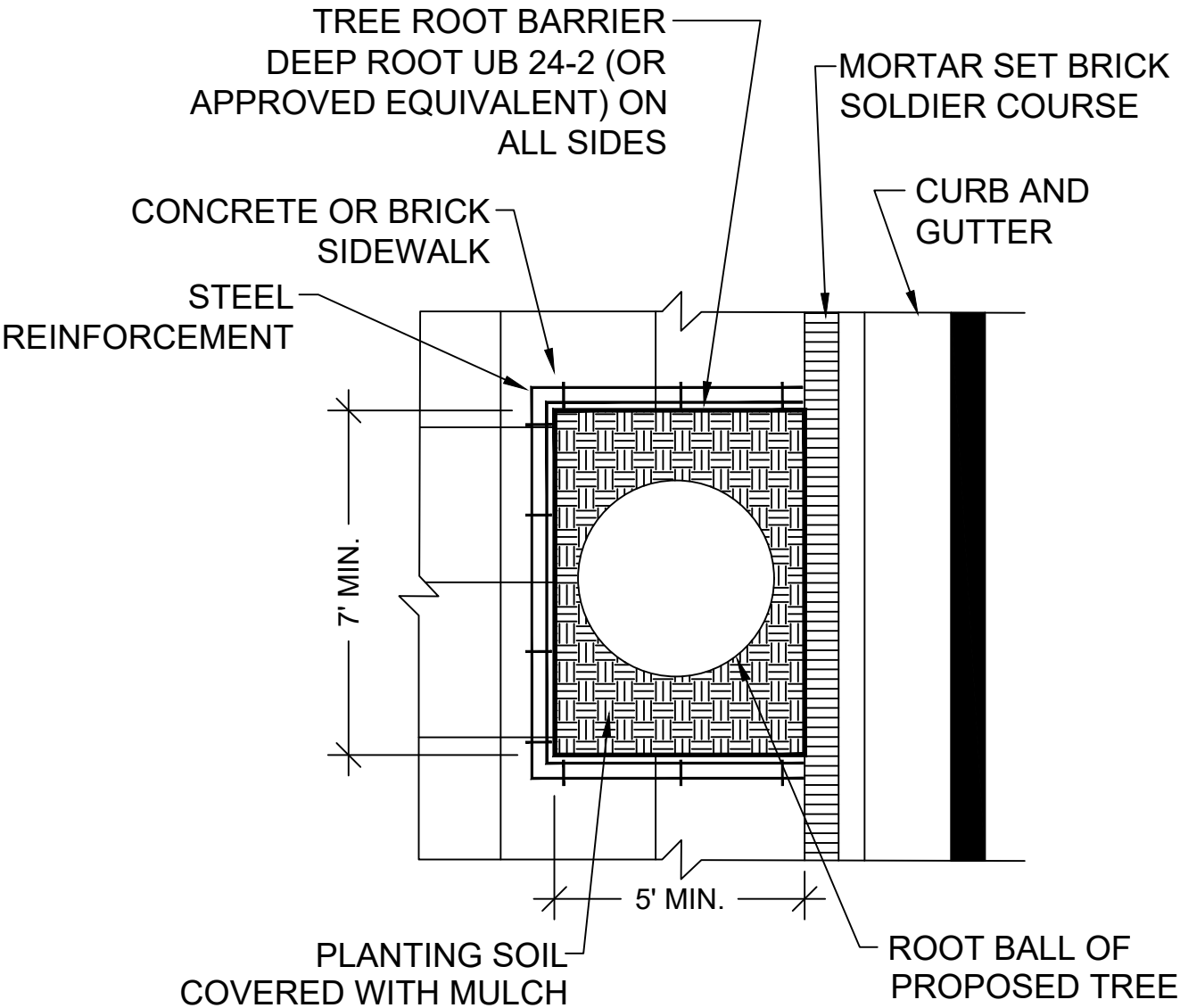
HS-213



CITY OF NORFOLK  DEPT. OF PUBLIC WORKS	DESCRIPTION TYPICAL COMMERCIAL / PEDESTRIAN PUBLIC SIDEWALK PAVERS <table> <tr> <td data-bbox="305 2005 625 2070">SCALE NOT TO SCALE</td><td data-bbox="625 2005 945 2070">EDITION NCDS2021.12</td><td data-bbox="945 2005 1274 2070">REVISED DEC. 2021</td></tr> </table>	SCALE NOT TO SCALE	EDITION NCDS2021.12	REVISED DEC. 2021	DESIGNATION HS-214
SCALE NOT TO SCALE	EDITION NCDS2021.12	REVISED DEC. 2021			

NOTES:

- 1. REFER TO PLANS FOR LOCATIONS HAVING BRICK SOLDIER COURSE INSTALLED.
- 2. SOLDIER COURSE SHALL BE MORTAR SET, WHERE INSTALLED.
- 3. IF NO SOLDIER COURSE IS TO BE INSTALLED, TREE WELL SHALL BE PLACED AT BACK OF CURB.
- 4. STEEL REINFORCEMENT AROUND TREE WELL SHALL BE (2) #4 LONGITUDINAL BARS AT 12" ON CENTER, WITH #4 STIRRUPS AT 18" ON CENTER ALONG ALL SIDES NOT ADJACENT TO CURB.



TREE WELL PLAN VIEW

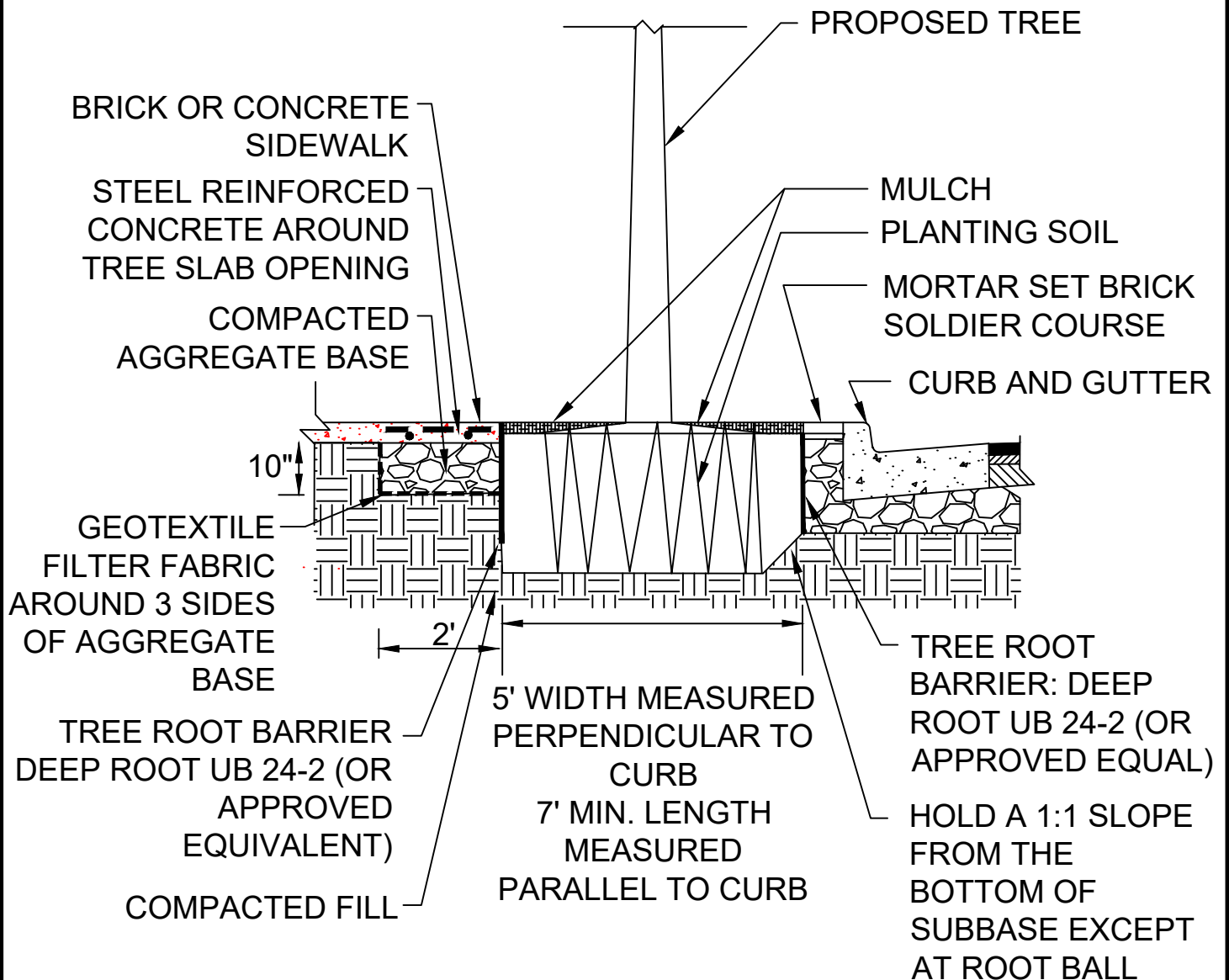
NOT TO SCALE

REFER TO HS-215 2 OF 2 FOR TREE WELL SECTION

CITY OF NORFOLK  DEPT. OF PUBLIC WORKS	DESCRIPTION			DESIGNATION	
	TREE WELL PLAN VIEW			HS-215	
	SCALE NOT TO SCALE	EDITION NCDS2021.12	REVISED DEC. 2021	1 OF 2	

NOTES:

1. REFER TO PLANS FOR LOCATIONS HAVING BRICK SOLDIER COURSE INSTALLED.
2. SOLDIER COURSE SHALL BE MORTAR SET, WHERE INSTALLED.
3. IF NO SOLDIER COURSE IS TO BE INSTALLED, TREE WELL SHALL BE PLACED AT BACK OF CURB.
4. STEEL REINFORCEMENT AROUND TREE WELL SHALL BE (2) #4 LONGITUDINAL BARS AT 12" ON CENTER, WITH #4 STIRRUPS AT 18" ON CENTER ALONG ALL SIDES NOT ADJACENT TO CURB.



TREE WELL SECTION

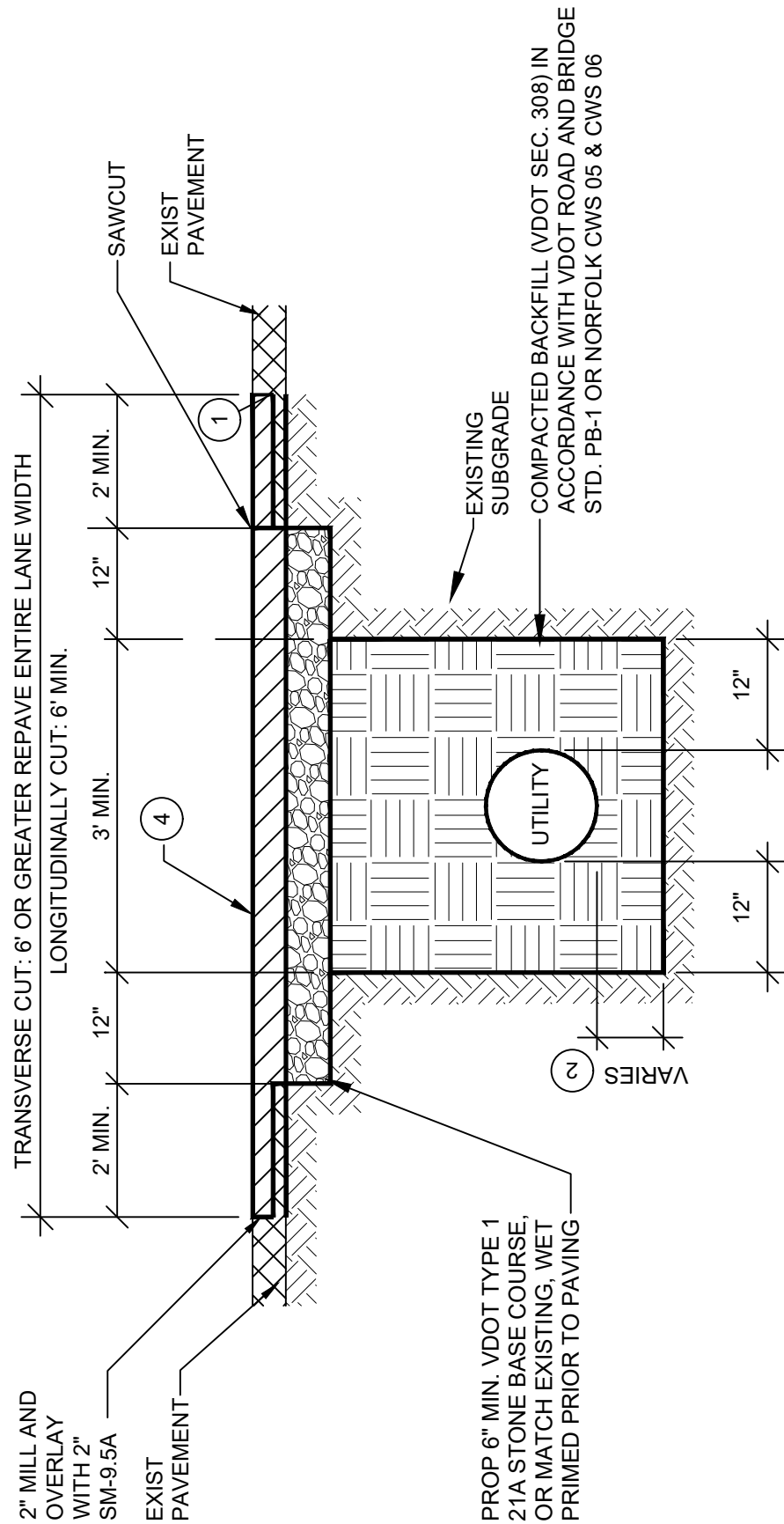
NOT TO SCALE

REFER TO HS-215 1 OF 2 FOR TREE WELL PLAN VIEW

CITY OF NORFOLK  DEPT. OF PUBLIC WORKS	DESCRIPTION TREE WELL SECTION <table> <tr> <td>SCALE</td><td>EDITION</td><td>REVISED</td></tr> <tr> <td>NOT TO SCALE</td><td>NCDS2021.12</td><td>DEC. 2021</td></tr> </table>	SCALE	EDITION	REVISED	NOT TO SCALE	NCDS2021.12	DEC. 2021	DESIGNATION HS-215 2 OF 2
SCALE	EDITION	REVISED						
NOT TO SCALE	NCDS2021.12	DEC. 2021						

NOTES

- ① TACK COAT: CRS-1 OR RC-250 @ 0.10 GAL. PER SQUARE YARD ALL VERTICAL SURFACES.
- ② REFER TO UTILITY PIPE BEDDING SPECIFICATIONS.
- ③ TRENCH WIDTH IN ACCORDANCE WITH VDOT ROAD AND BRIDGE STD. PB-1 OR NORFOLK CWS 05 & CWS 06
- ④ TEMPORARY PATCH IS 4" BM-25.0 OR 8" BM-25.0 FOR ARTERIAL ROADS. MILL AND OVERLAY WITH 2" SM-9.5A.
- ⑤ SLOPING BANKS OR WIDENED EXCAVATION TO BE AT CONTRACTOR'S EXPENSE.



TYPE I
(BITUMINOUS ASPHALT OVER STONE)

CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

STANDARD PAVEMENT REPLACEMENT
ASPHALT OVER STONE

SCALE

NOT TO SCALE

EDITION

NCDS2021.12

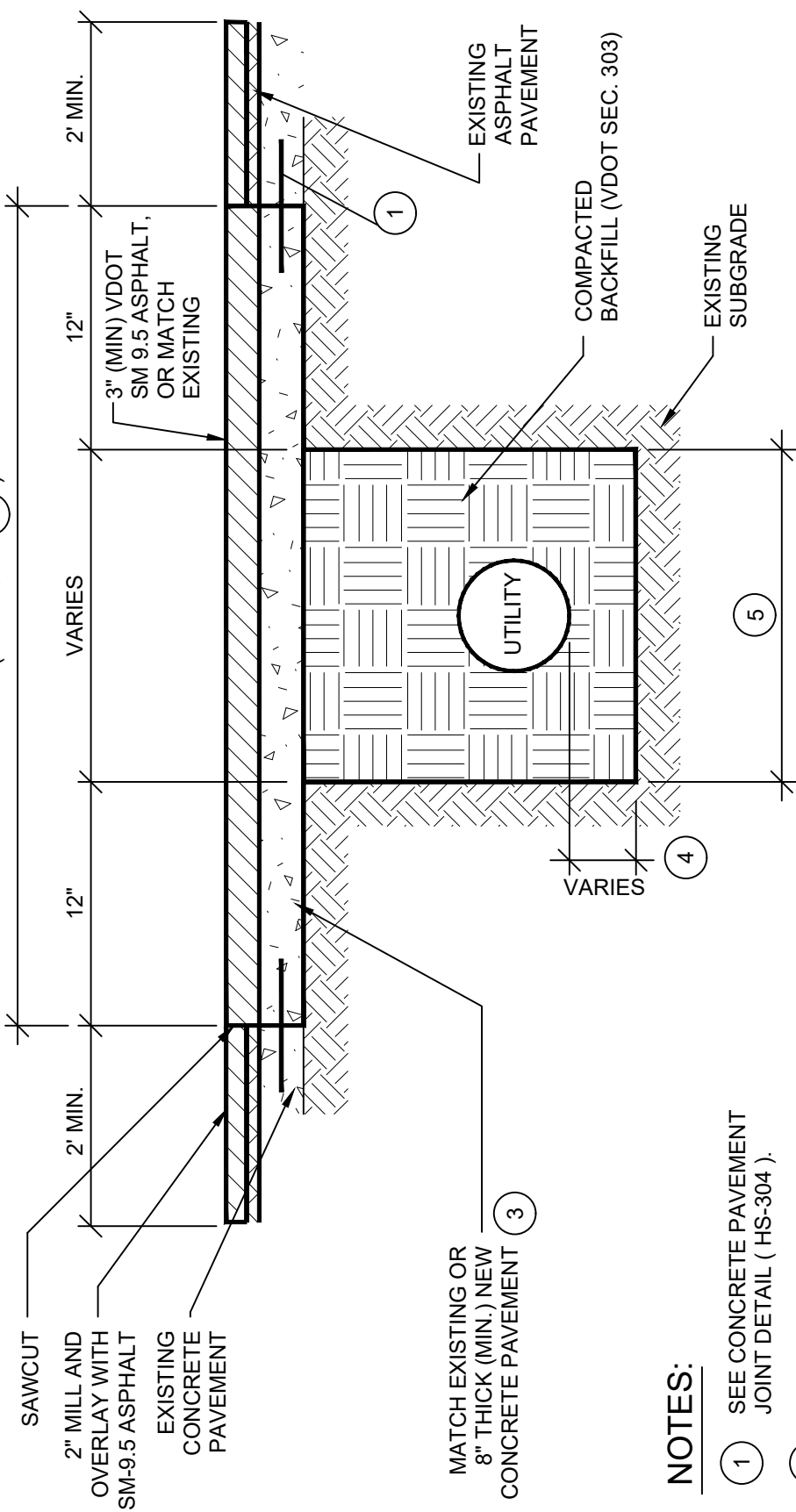
REVISED

DEC. 2021

DESIGNATION

HS-301

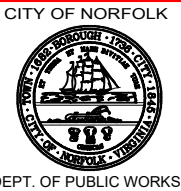
VARIES (SEE NOTE 2)



NOTES:

- 1 SEE CONCRETE PAVEMENT JOINT DETAIL (HS-304).
- 2 LIMITS OF RESTORATION ARE DEFINED IN THE RIGHT-OF WAY EXCAVATION AND RESTORATION MANUAL.
- 3 CONCRETE SHALL BE CLASS A3 OR CLASS A5 EARLY STRENGTH CONCRETE.
- 4 REFER TO UTILITY PIPE BEDDING SPECIFICATIONS.
- 5 TRENCH WIDTH IN ACCORDANCE w/ VDOT ROAD & BRIDGE STD. PB-1 OR NORFOLK CWS 05 & CWS 06
- 6 SLOPING BANKS OR WIDENED EXCAVATION TO BE AT CONTRACTOR'S EXPENSE

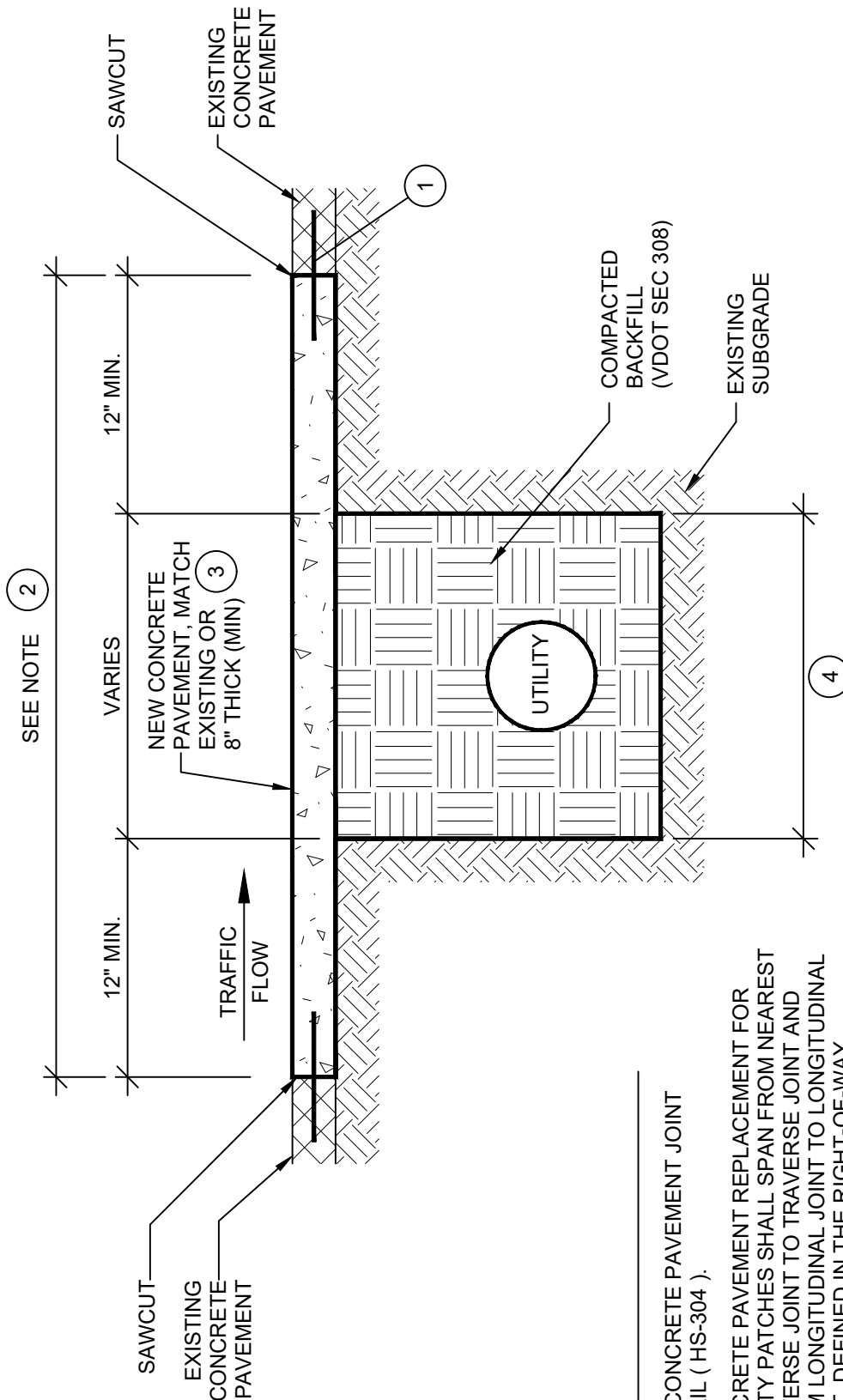
TYPE II
(BITUMINOUS ASPHALT OVER CONCRETE)



STANDARD PAVEMENT REPLACEMENT
ASPHALT OVER CONCRETE

SCALE NOT TO SCALE	EDITION NCDS2021.12	REVISED DEC. 2021
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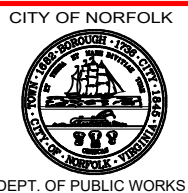
DESIGNATION
HS-302



NOTES

- 1 SEE CONCRETE PAVEMENT JOINT DETAIL (HS-304).
- 2 CONCRETE PAVEMENT REPLACEMENT FOR UTILITY PATCHES SHALL SPAN FROM NEAREST TRAVERSE JOINT TO TRAVERSE JOINT AND FROM LONGITUDINAL JOINT TO LONGITUDINAL JOINT, DEFINED IN THE RIGHT-OF-WAY EXCAVATION AND RESTORATION MANUAL.
- 3 CONCRETE SHALL BE CLASS A3 OR CLASS A5 EARLY STRENGTH CONCRETE.
- 4 TRENCH WIDTH IN ACCORDANCE W/ VDOT ROAD & BRIDGE STD. PB-1 OR NORFOLK CWS 05 & CWS 06
- 5 SLOPING BANKS OR WIDENED EXCAVATION TO BE AT CONTRACTOR'S EXPENSE

TYPE III
(CONCRETE)



DESCRIPTION STANDARD PAVEMENT REPLACEMENT CONCRETE

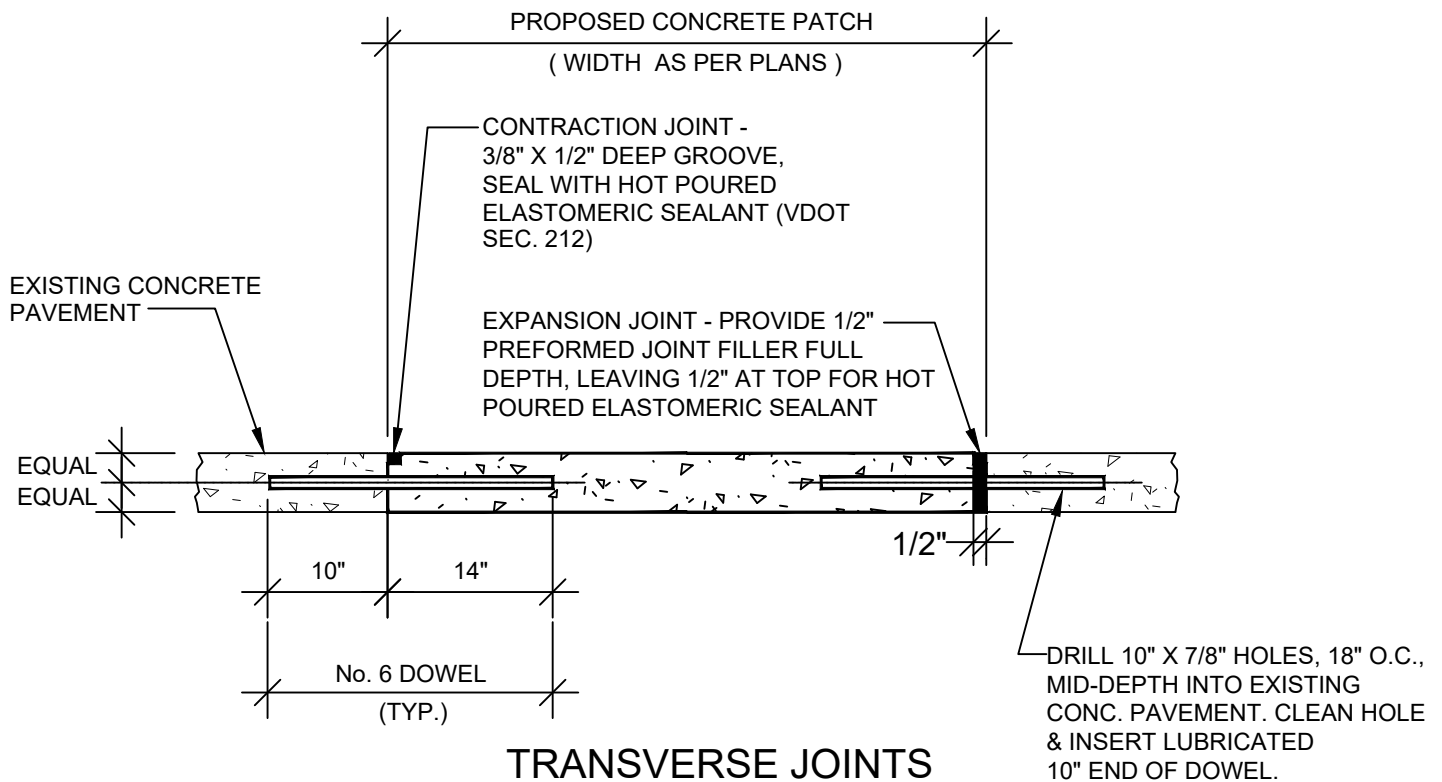
DESIGNATION

HS-303

SCALE
NOT TO SCALE

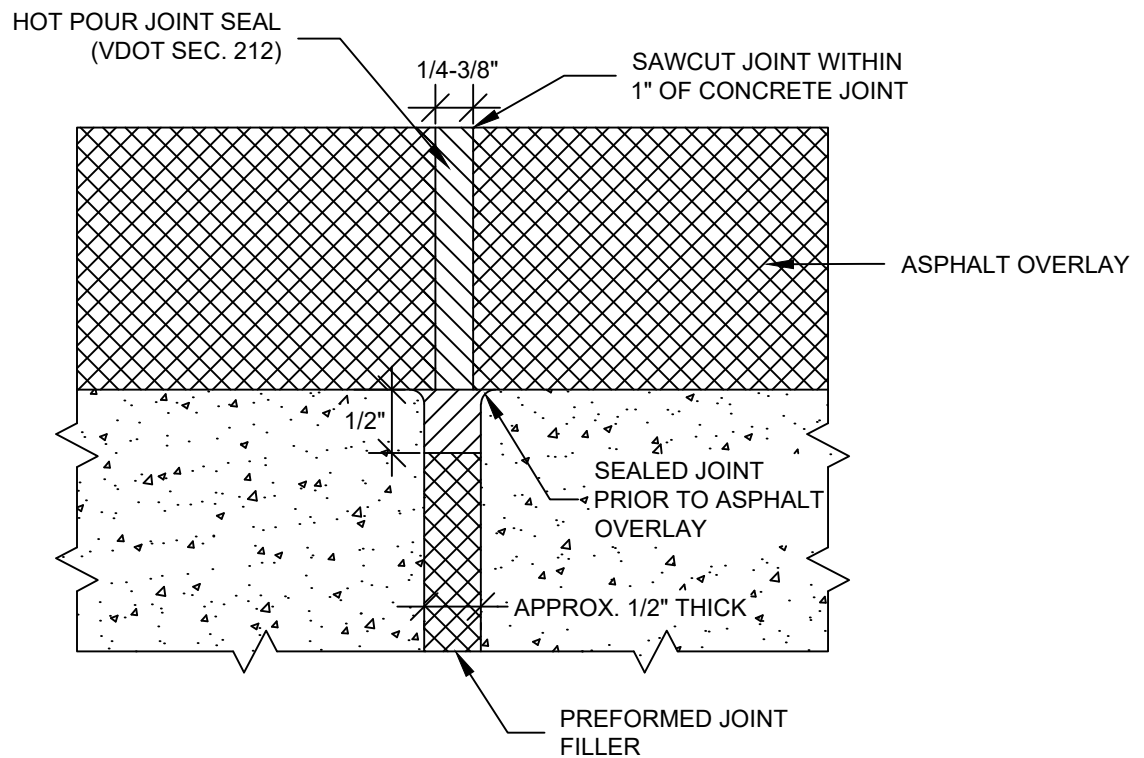
EDITION
NCDS2021.12

REVISED
NOV. 2018



TRANSVERSE JOINTS

AT LONGITUDINAL JOINTS, PROVIDE
DOWELS AT MAXIMUM 30" O.C. WITH
MINIMUM DISTANCE OF 18" FROM
TRANSVERSE JOINT.



EXPANSION JOINT SEAL IN ASPHALT OVERLAY

CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

CONCRETE PAVEMENT JOINT DETAIL

DESIGNATION

HS-304

SCALE

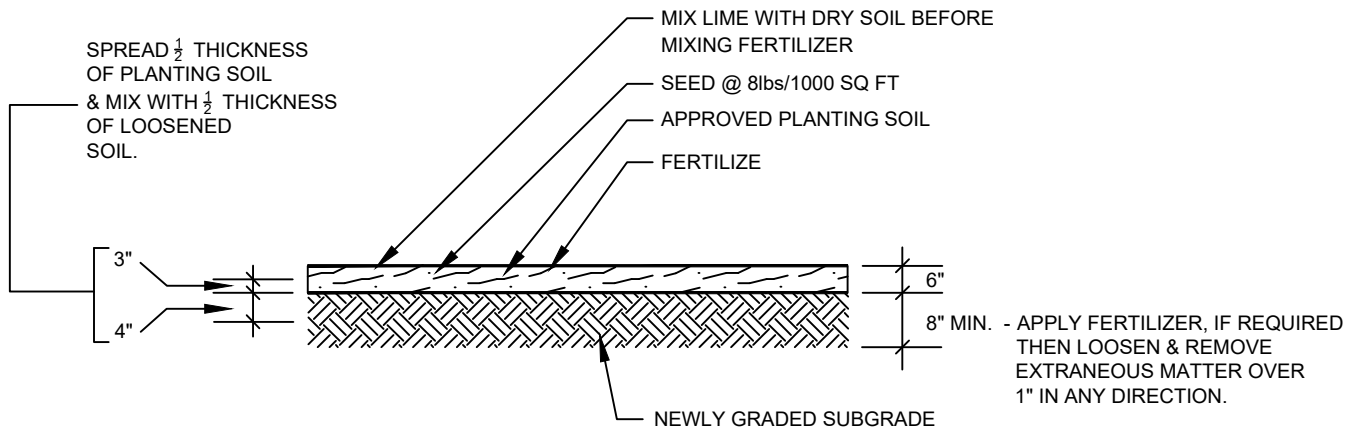
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EDITION

NCDS2021.12

REVISED

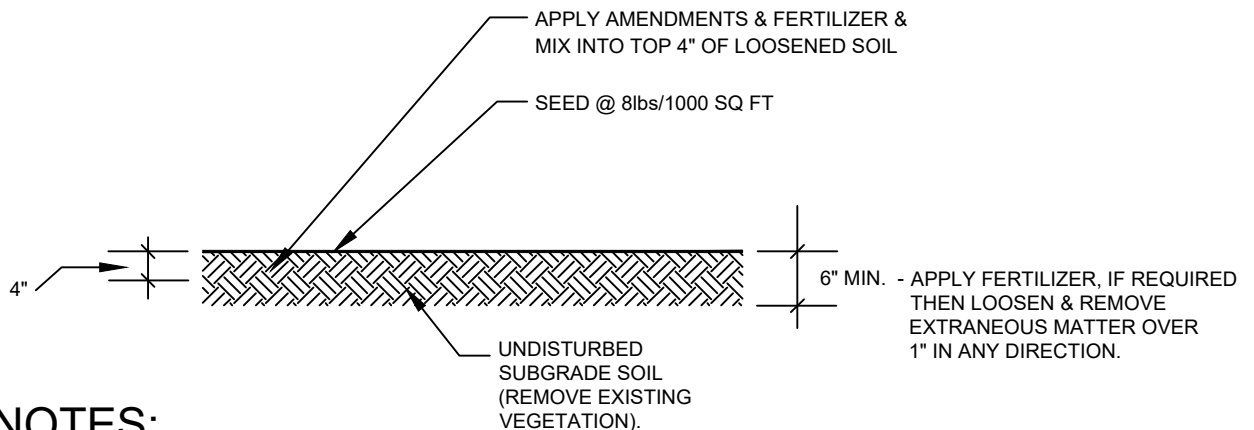
DEC. 2021



NOTES:

NEWLY GRADED AREAS

1. SEE "TURF AND GRASS" SPECIFICATIONS FOR SEED TYPE, PLANTING SEASONS, HYDRO-SEEDING, SODDING AND OTHER REQUIREMENTS.
2. TEST SOIL AND APPLY AMENDMENTS AND FERTILIZER TO COMPLY WITH ASTM D5268.
3. AFTER SEEDING, THE AREA SHALL BE RAKED, ROLLED, WATERED AND MULCHED IN AN APPROVED MANNER.
4. THE CONTRACTOR SHALL MAINTAIN ALL GRASSED AREAS TO PROVIDE FOR A SMOOTH UNIFORM TURF UPON COMPLETION OF THE CONTRACT.



NOTES:

EXISTING AREAS

1. SEE "TURF AND GRASS" SPECIFICATIONS FOR SEED TYPE, PLANTING SEASONS, HYDRO-SEEDING, SODDING AND OTHER REQUIREMENTS.
2. TEST SOIL AND APPLY AMENDMENTS AND FERTILIZER TO COMPLY WITH ASTM D5268.
3. AFTER SEEDING, THE AREA SHALL BE RAKED, ROLLED, WATERED AND MULCHED IN AN APPROVED MANNER.

CITY OF NORFOLK  DEPT. OF PUBLIC WORKS	DESCRIPTION STANDARD GRASS PLANTING DETAIL <table border="1"> <tr> <td data-bbox="289 2005 605 2070">SCALE NOT TO SCALE</td><td data-bbox="605 2005 930 2070">EDITION NCDS2021.12</td><td data-bbox="930 2005 1255 2070">REVISED DEC. 2021</td></tr> </table>	SCALE NOT TO SCALE	EDITION NCDS2021.12	REVISED DEC. 2021	DESIGNATION HS-601
SCALE NOT TO SCALE	EDITION NCDS2021.12	REVISED DEC. 2021			

CRITICAL ROOT ZONE
 DRIP LINE OF TREE OR 1'-0" RADIUS PER
 1" OF TREE CALIPER, WHICHEVER IS GREATER

NOTE

- ① THIS AREA SHALL NOT BE USED FOR STORAGE
- ② REFER TO PLANS FOR TREE PROTECTION FENCE TYPE.

6' T-BAR OR
 U-BAR, MIN. 18"
 EMBEDMENT

EXISTING
 GRADE

18" MIN.

CALIPER

4'-0" MIN.

BLAZE ORANGE PLASTIC
 TREE PROTECTION FENCE,
 OR CHAIN LINK FENCE,
 MAINTAIN THROUGHOUT
 CONSTRUCTION

CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

STANDARD TREE PROTECTION DETAIL

DESIGNATION

HS-602

SCALE

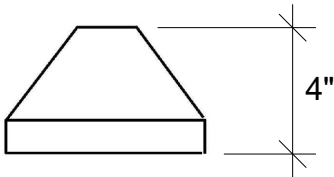
NOT TO SCALE

EDITION

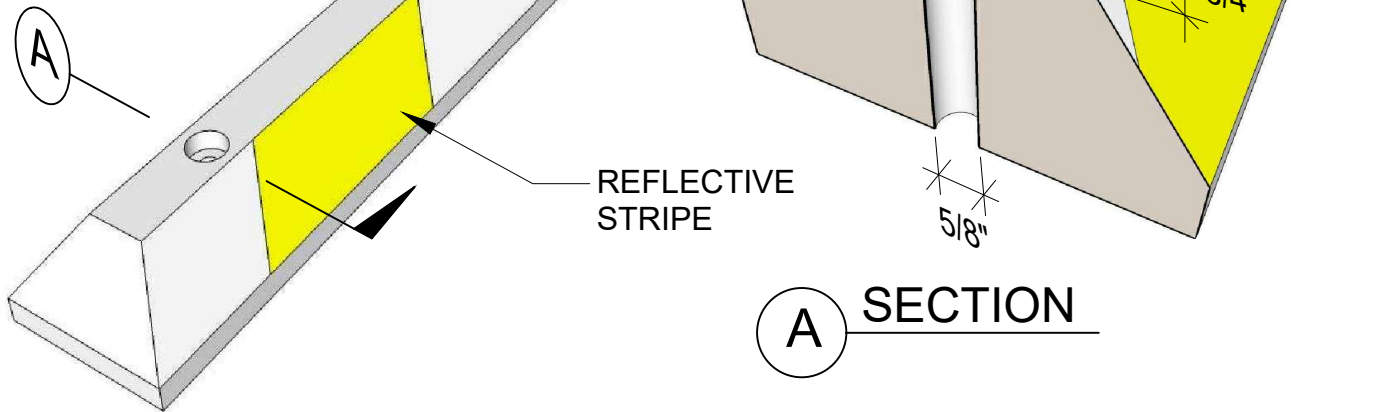
NCDS2021.12

REVISED

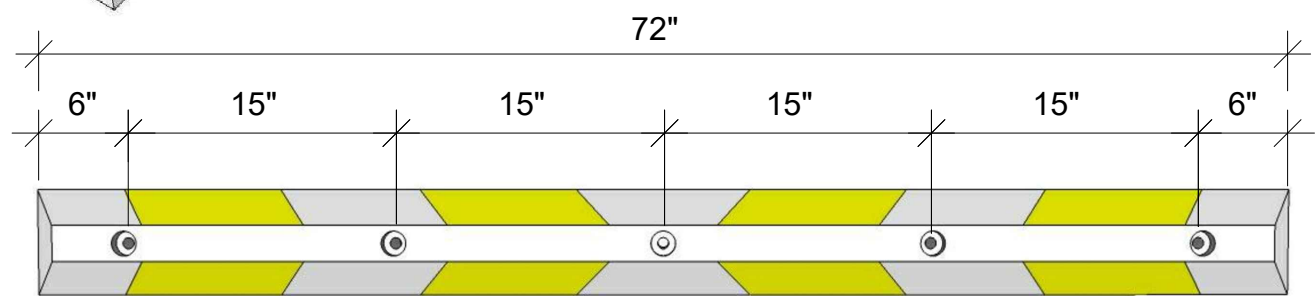
DEC. 2021



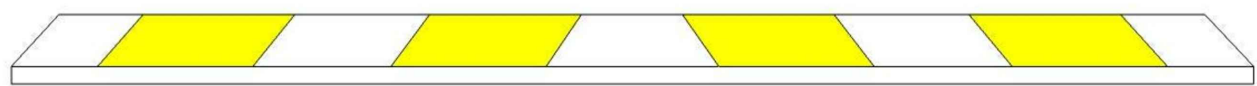
SIDE ELEVATION



A SECTION



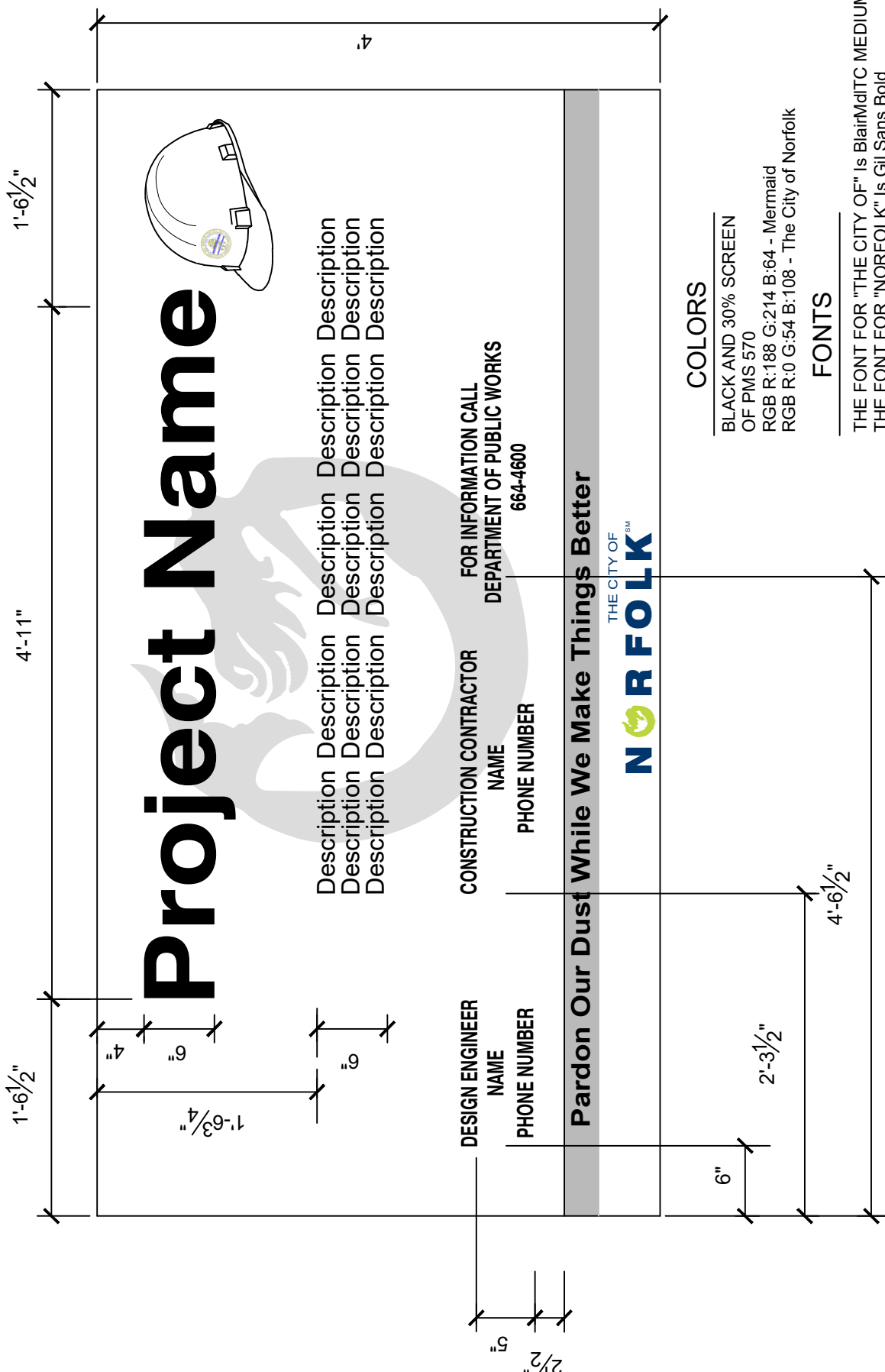
PLAN VIEW



FRONT ELEVATION

1. MATERIAL SHALL BE 100% RECYCLED RUBBER.
2. REFLECTIVE STRIPES SHALL BE YELLOW EXCEPT AT HANDICAP STALLS; THEN THE COLOR SHALL BE BLUE
3. ANCHORS SHALL BE 1/2" X 8" LAG BOLTS WITH METAL SHIELDS (APPLICABLE TO ASPHALT AND CONCRETE PAVEMENT). 1/2" X 14" REBAR SPIKES MAY BE USED WITH ASPHALT PAVEMENT ONLY.

CITY OF NORFOLK  DEPT. OF PUBLIC WORKS	DESCRIPTION RECYCLED RUBBER WHEEL STOP (BUMPER LOG)			DESIGNATION HS-603
	SCALE NOT TO SCALE	EDITION NCDS2021.12	REVISED MARCH 2013	



COLORS

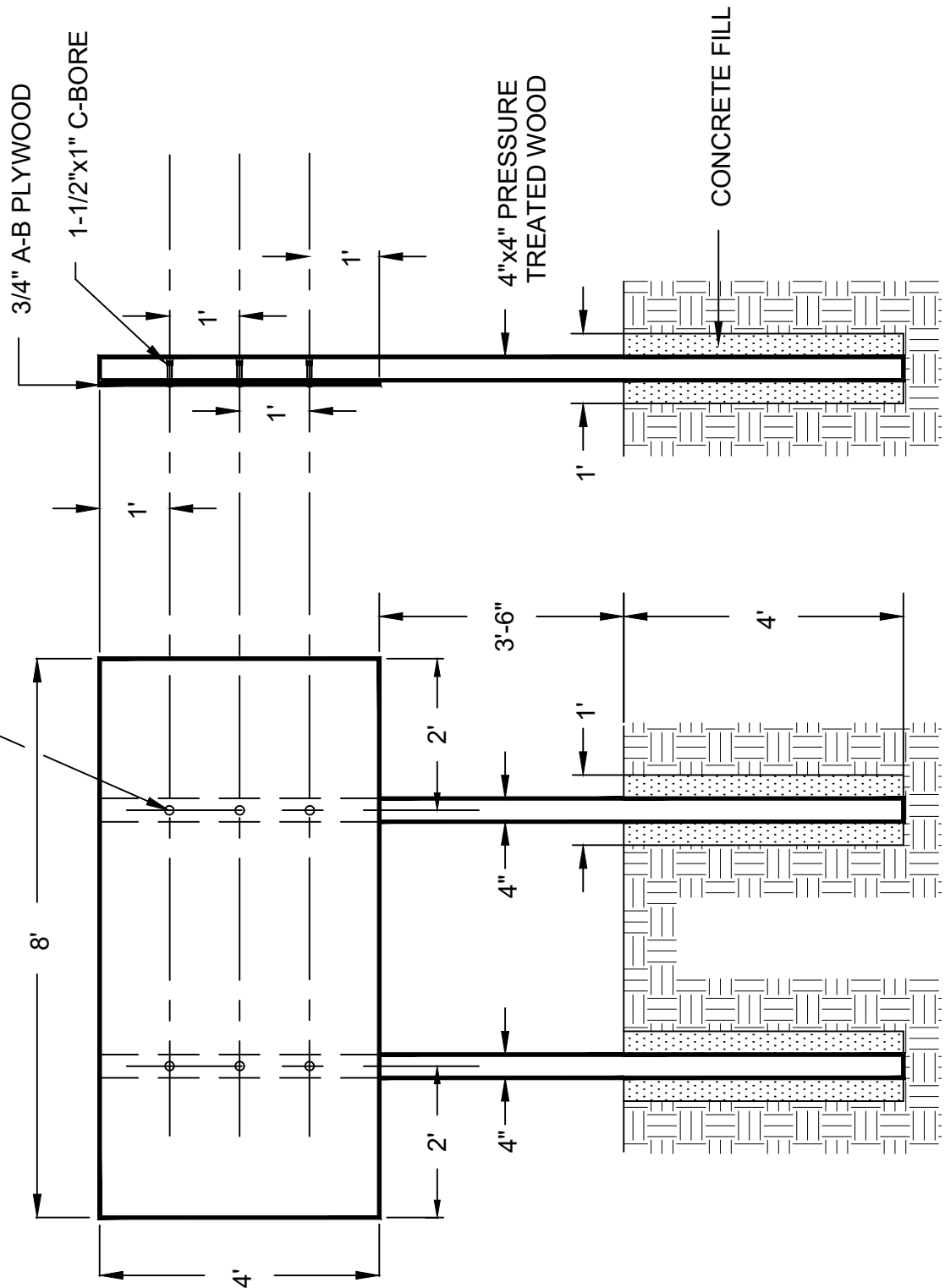
BLACK AND 30% SCREEN
OF PMS 570
RGB R:188 G:214 B:64 - Mermaid
RGB R:0 G:54 B:108 - The City of Norfolk

FONTS

THE FONT FOR "THE CITY OF" Is BlairMdITC MEDIUM
THE FONT FOR "NORFOLK" Is Gil Sans Bold

CITY OF NORFOLK  DEPT. OF PUBLIC WORKS	DESCRIPTION			DESIGNATION
	STANDARD CITY CONSTRUCTION SIGN (LARGE)			HS-606
SCALE NOT TO SCALE	EDITION NCDS2021.12	REVISED SEPT. 2016		

(6) 3/4"x4" GALVANIZED CARRIAGE BOLTS w/ WASHERS



SIDE VIEW

FRONT VIEW

CITY OF NORFOLK



DEPT. OF PUBLIC WORKS

DESCRIPTION

CONSTRUCTION SIGN INSTALLATION (LARGE)

SCALE

NOT TO SCALE

EDITION

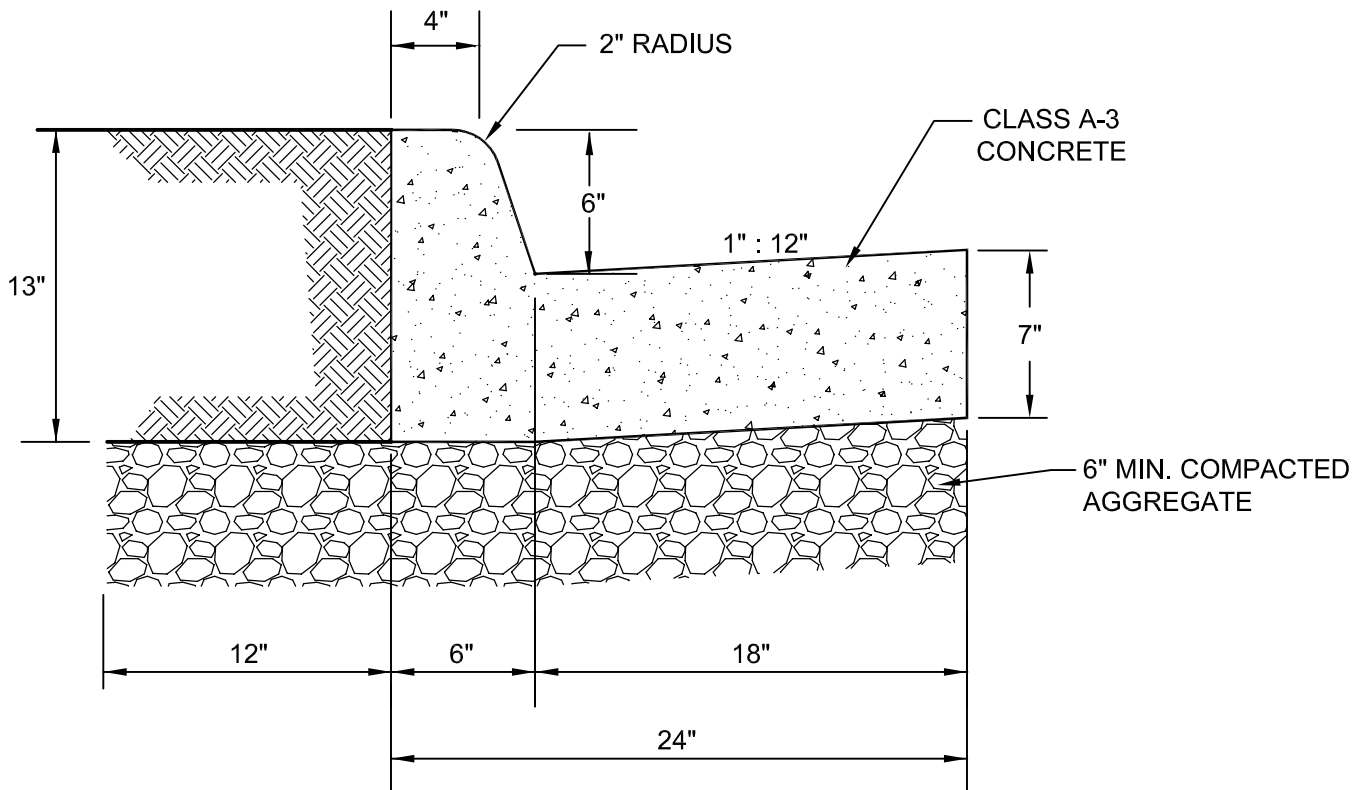
NCDS2021.12

REVISED

NOV. 2018

DESIGNATION

HS-607



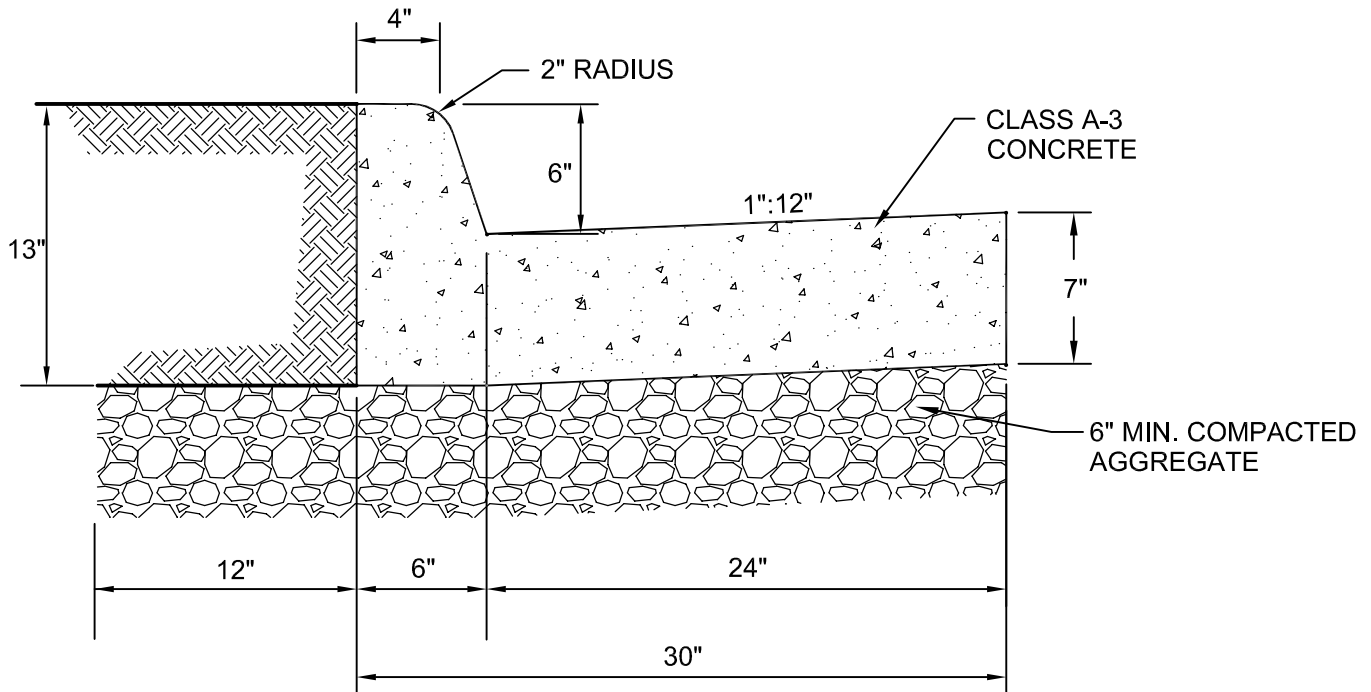
NOTES:

1. CRACK CONTROL JOINTS TO BE PROVIDED AT 10 FT. INTERVALS BY SAWING, SCORING, "LEAVE-IN" INSERTS, OR CUTTER PLATES TO 1-1/2 INCH DEPTH.
2. EXPANSION JOINTS TO BE INSTALLED PER SPECIFICATIONS SECTION 502.
3. AS SOON AS CONCRETE WILL NOT SLUMP, FACE FORMS ARE TO BE REMOVED, IRREGULARITIES REMOVED, A LIGHT BROOM FINISH GIVEN, AND LIQUID MEMBRANE SEAL OR OTHER APPROVED CURING MEDIUM APPLIED.
4. THE CONTRACTOR SHALL PREVENT THE TEMPERATURE AT THE SURFACE OF THE CONCRETE FROM FALLING BELOW 40°F DURING THE FIRST 72 HOURS IMMEDIATELY FOLLOWING CONCRETE PLACEMENT. PROTECTIVE MATERIAL SHALL BE LEFT IN PLACE FOR AN ADDITIONAL 48 HOURS IF FREEZING AIR TEMPERATURES ARE EXPECTED TO CONTINUE.

24" CURB & GUTTER

NOT TO SCALE

REFERENCE 200,502	CATEGORY CONCRETE ITEMS	DATE 6/16	SHEET No. 1 OF 1	DETAIL No. CI_01
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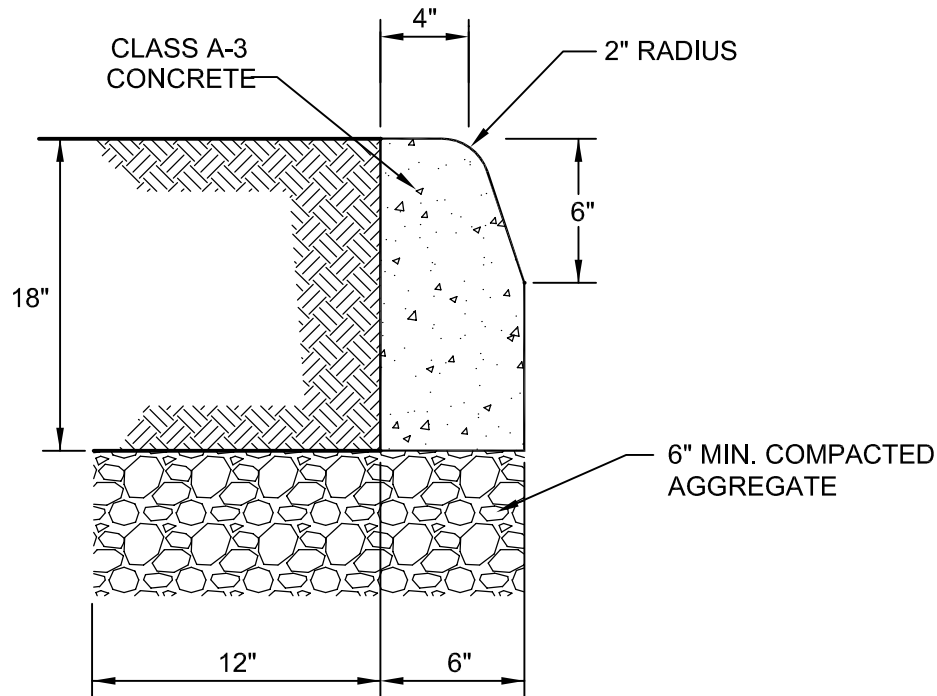
NOTES:

1. CRACK CONTROL JOINTS TO BE PROVIDED AT 10 FT. INTERVALS BY SAWING, SCORING, "LEAVE-IN" INSERTS, OR CUTTER PLATES TO 1-1/2 INCH DEPTH.
2. EXPANSION JOINTS TO BE INSTALLED PER SPECIFICATIONS SECTION 502.
3. AS SOON AS CONCRETE WILL NOT SLUMP, FACE FORMS ARE TO BE REMOVED, IRREGULARITIES REMOVED, A LIGHT BROOM FINISH GIVEN, AND LIQUID MEMBRANE SEAL OR OTHER APPROVED CURING MEDIUM APPLIED.
4. THE CONTRACTOR SHALL PREVENT THE TEMPERATURE AT THE SURFACE OF THE CONCRETE FROM FALLING BELOW 40°F DURING THE FIRST 72 HOURS IMMEDIATELY FOLLOWING CONCRETE PLACEMENT. PROTECTIVE MATERIAL SHALL BE LEFT IN PLACE FOR AN ADDITIONAL 48 HOURS IF FREEZING AIR TEMPERATURES ARE EXPECTED TO CONTINUE.

30" CURB & GUTTER

NOT TO SCALE

REFERENCE 200,502	CATEGORY CONCRETE ITEMS	DATE 6/16	SHEET No. 1 OF 1	DETAIL No. CI_02
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NOTES:

1. CRACK CONTROL JOINTS TO BE PROVIDED AT 10 FT. INTERVALS BY SAWING, SCORING, "LEAVE-IN" INSERTS, OR CUTTER PLATES TO 1-1/2 INCH DEPTH.
2. EXPANSION JOINTS TO BE INSTALLED PER SPECIFICATIONS SECTION 502.
3. AS SOON AS CONCRETE WILL NOT SLUMP, FACE FORMS ARE TO BE REMOVED, IRREGULARITIES REMOVED, A LIGHT BROOM FINISH GIVEN, AND LIQUID MEMBRANE SEAL OR OTHER APPROVED CURING MEDIUM APPLIED.
4. THE CONTRACTOR SHALL PREVENT THE TEMPERATURE AT THE SURFACE OF THE CONCRETE FROM FALLING BELOW 40°F DURING THE FIRST 72 HOURS IMMEDIATELY FOLLOWING CONCRETE PLACEMENT. PROTECTIVE MATERIAL SHALL BE LEFT IN PLACE FOR AN ADDITIONAL 48 HOURS IF FREEZING AIR TEMPERATURES ARE EXPECTED TO CONTINUE.
5. THE DEPTH OF THE CURB MAY BE REDUCED AS MUCH AS 3" (15" DEPTH) OR INCREASED AS MUCH AS 3" (21" DEPTH) IN ORDER THAT THE BOTTOM OF CURB WILL COINCIDE WITH THE TOP OF A COURSE OF THE PAVEMENT SUBSTRUCTURE. OTHERWISE, THE DEPTH IS TO BE 18" AS SHOWN. NO ADJUSTMENT IN THE PRICE BID IS TO BE MADE FOR A DECREASE OR AN INCREASE IN DEPTH.

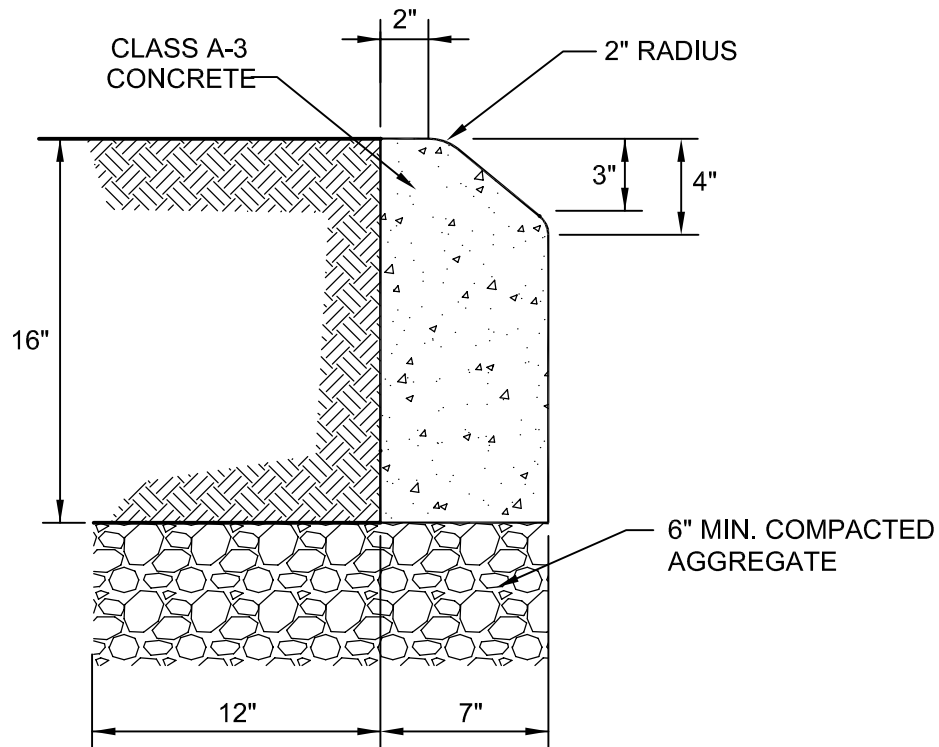


STANDARD MEDIAN CURB

NOT TO SCALE

△ REVISED 12/11/17

REFERENCE 200,502	CATEGORY CONCRETE ITEMS	DATE 12/10	SHEET No. 1 OF 1	DETAIL No. CI_03
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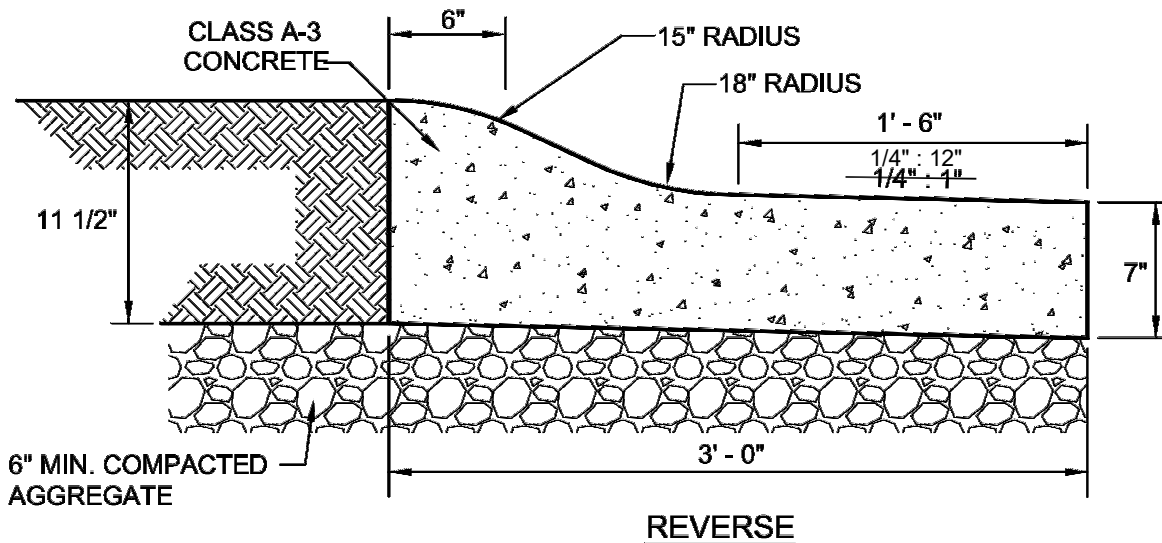
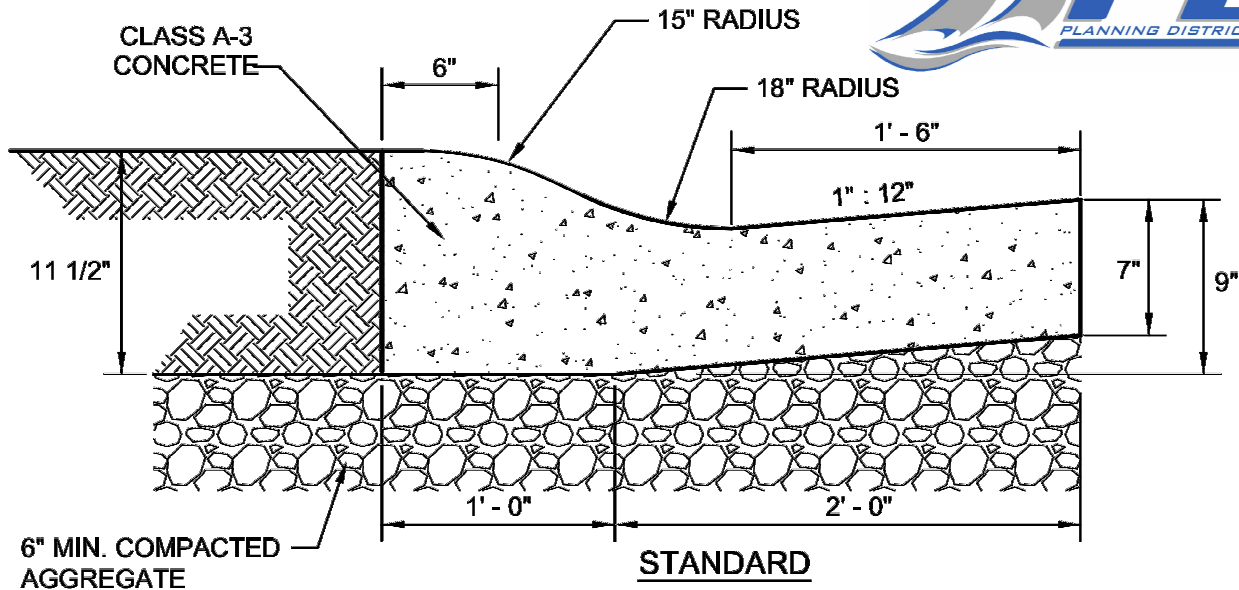
NOTES:

1. CRACK CONTROL JOINTS TO BE PROVIDED AT 10 FT. INTERVALS BY SAWING, SCORING, "LEAVE-IN" INSERTS, OR CUTTER PLATES TO 1-1/2 INCH DEPTH.
2. EXPANSION JOINTS TO BE INSTALLED PER SPECIFICATIONS SECTION 502.
3. AS SOON AS CONCRETE WILL NOT SLUMP, FACE FORMS ARE TO BE REMOVED, IRREGULARITIES REMOVED, A LIGHT BROOM FINISH GIVEN, AND LIQUID MEMBRANE SEAL OR OTHER APPROVED CURING MEDIUM APPLIED.
4. THE CONTRACTOR SHALL PREVENT THE TEMPERATURE AT THE SURFACE OF THE CONCRETE FROM FALLING BELOW 40°F DURING THE FIRST 72 HOURS IMMEDIATELY FOLLOWING CONCRETE PLACEMENT. PROTECTIVE MATERIAL SHALL BE LEFT IN PLACE FOR AN ADDITIONAL 48 HOURS IF FREEZING AIR TEMPERATURES ARE EXPECTED TO CONTINUE.

MOUNTABLE CURB

NOT TO SCALE

REFERENCE 200,502	CATEGORY CONCRETE ITEMS	DATE 6/16	SHEET No. 1 OF 1	DETAIL No. CI_04
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NOTES:

1. CRACK CONTROL JOINTS TO BE PROVIDED AT 10 FT. INTERVALS BY SAWING, SCORING, "LEAVE-IN" INSERTS, OR CUTTER PLATES TO 1-1/2 INCH DEPTH.
2. EXPANSION JOINTS TO BE INSTALLED PER SPECIFICATIONS SECTION 502.
3. AS SOON AS CONCRETE WILL NOT SLUMP, FACE FORMS ARE TO BE REMOVED, IRREGULARITIES REMOVED, A LIGHT BROOM FINISH GIVEN, AND LIQUID MEMBRANE SEAL OR OTHER APPROVED CURING MEDIUM APPLIED.
4. THE CONTRACTOR SHALL PREVENT THE TEMPERATURE AT THE SURFACE OF THE CONCRETE FROM FALLING BELOW 40°F DURING THE FIRST 72 HOURS IMMEDIATELY FOLLOWING CONCRETE PLACEMENT. PROTECTIVE MATERIAL SHALL BE LEFT IN PLACE FOR AN ADDITIONAL 48 HOURS IF FREEZING AIR TEMPERATURES ARE EXPECTED TO CONTINUE.

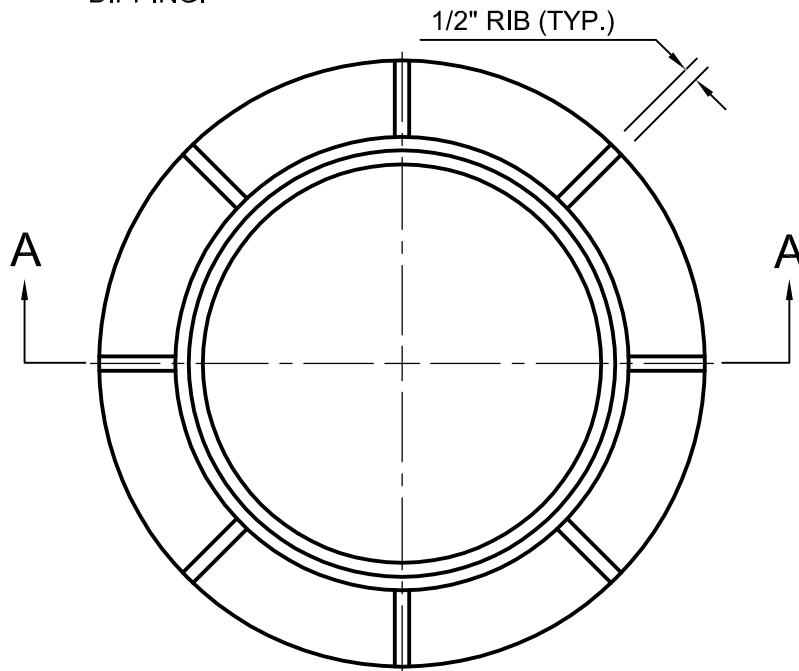
ROLL TOP CURB AND GUTTER

NOT TO SCALE CITY OF NORFOLK MODIFICATION DEC. 2021

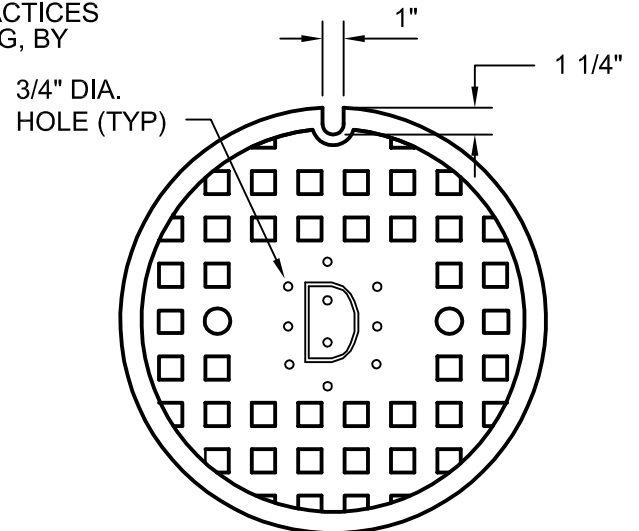
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NOTES:

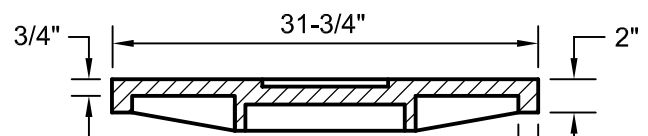
1. CASTING AND COVER TO BE SUPPLIED BY CAPITAL FOUNDRY OF VIRGINIA, INC. OR APPROVED EQUAL.
2. ALL GRAY IRON CASTINGS SHALL CONFORM TO LATEST EDITION OF ASTM A-48, CLASS 30 AND SHALL BE OF UNIFORM QUALITY.
3. ALL CASTING DIMENSIONS SHALL HAVE A TOLERANCE OF $1/8"$ ±.
4. ALL CASTINGS SHALL BE CLEANED BY SHOT BLASTING AND HAND CHIPPING UTILIZING STANDARD INDUSTRY PRACTICES PRIOR TO SHOP APPLICATION OF ASPHALTIC COATING, BY DIPPING.



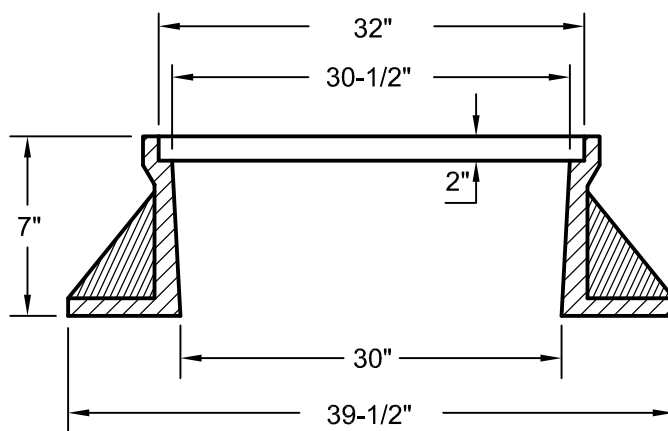
PLAN: CASTING



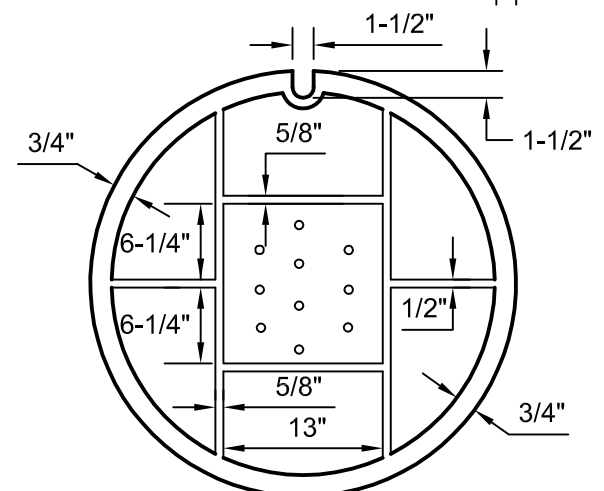
TOP VIEW: COVER



SECTION



SECTION A-A



BOTTOM VIEW: COVER

STORM DRAIN CASTING & COVER (30")

NOT TO SCALE

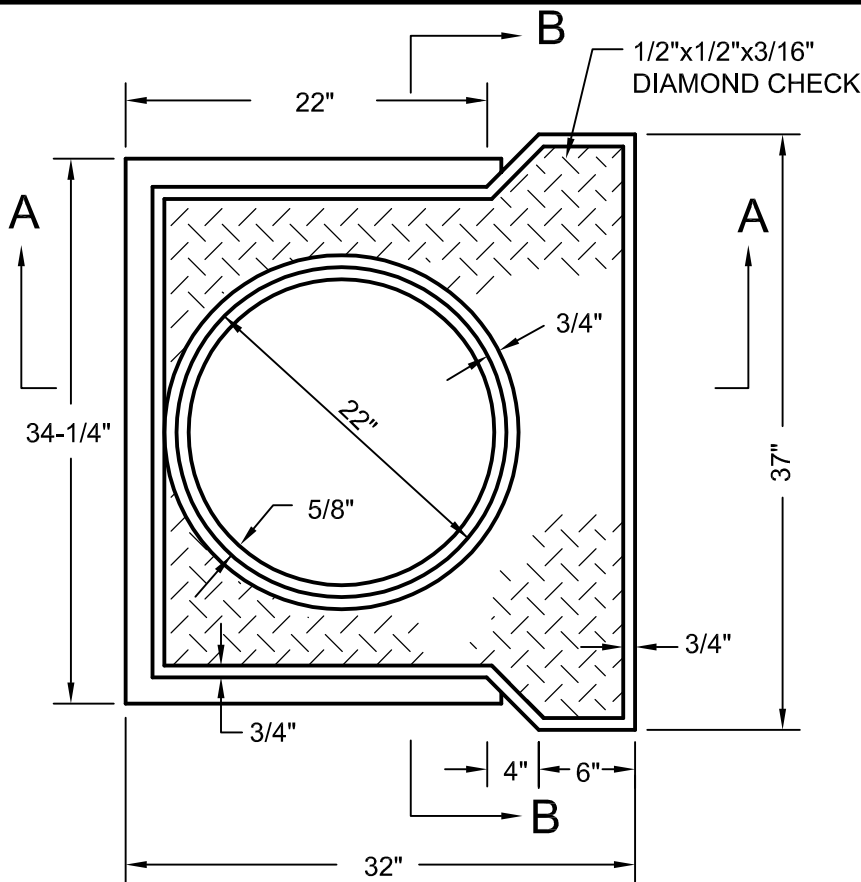
REFERENCE
200,302

CATEGORY
DRAINAGE STRUCTURES

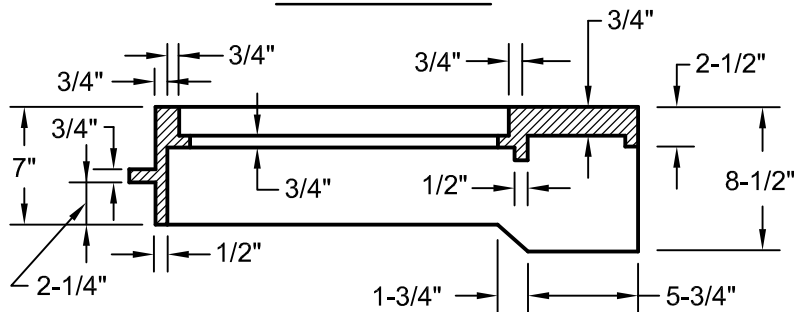
DATE
6/16

SHEET No.
1 OF 1

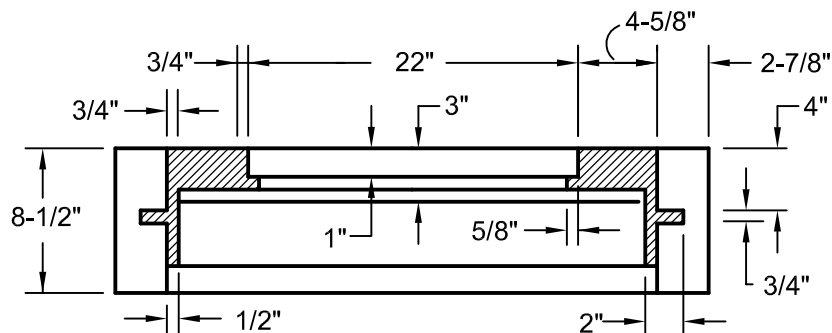
DETAIL No.
DS_01



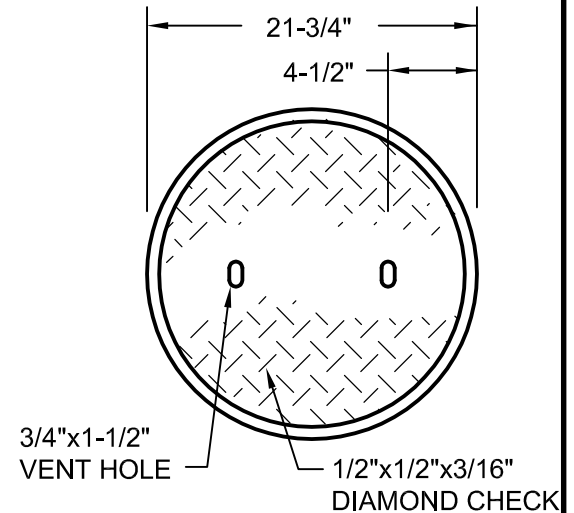
PLAN: FRAME



SECTION A-A



SECTION B-B



PLAN: COVER

NOTES:

1. FRAME & COVER TO BE SUPPLIED BY CAPITAL FOUNDRY OF VIRGINIA, INC., OR APPROVED EQUAL.
2. ALL GRAY IRON CASTINGS SHALL CONFORM TO LATEST EDITION OF ASTM A-48, CLASS 30 AND SHALL BE OF UNIFORM QUALITY.
3. ALL CASTING DIMENSIONS SHALL HAVE A TOLERANCE OF $1/8"$ ±.
4. ALL CASTINGS SHALL BE CLEANED BY SHOT BLASTING AND HAND CHIPPING UTILIZING STANDARD INDUSTRY PRACTICES PRIOR TO SHOP APPLICATION OF ASPHALTIC COATING, BY DIPPING.

CURB INLET/CATCH BASIN FRAME AND COVER

NOT TO SCALE

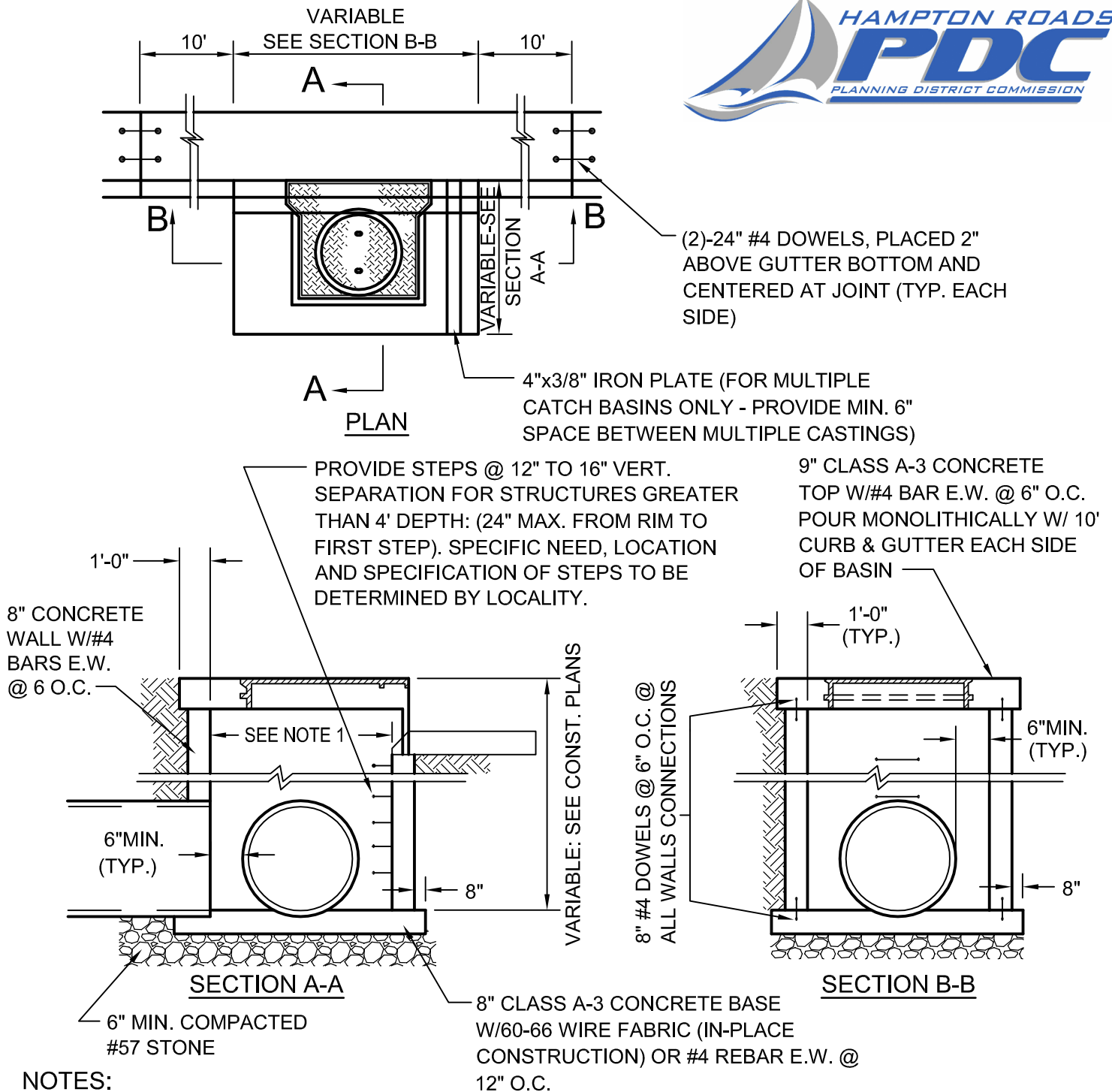
REFERENCE
200,302

CATEGORY
DRAINAGE STRUCTURES

DATE
6/16

SHEET No.
1 OF 1

DETAIL No.
DS_03



NOTES:

1. THE INTERIOR DIMENSIONS OF THE CATCH BASIN EQUAL 2'-6" FOR PIPE SIZES 12" THRU 18". WHERE THE PIPE SIZE IS 21" THRU 60", THE INTERIOR DIMENSIONS EQUAL 3'-0" OR THE O.D. OF THE PIPE, WHICHEVER IS GREATER, WHEN THE DEPTH DOES NOT EXCEED 4 FEET. IF THE DEPTH IS GREATER THAN 4 FEET, THE INTERIOR DIMENSIONS SHALL BE 4'-0" OR THE O.D. OF THE PIPE, WHICHEVER IS GREATER.
2. REFER TO THE VDOT ROAD AND BRIDGE STANDARDS, LATEST EDITION, - MANHOLE AND INLET SHAPING DETAIL.
3. FOR ALTERNATE PRECAST CONSTRUCTION, REFER TO SECTIONS 200 AND 302.

CURB INLET/CATCH BASIN

NOT TO SCALE

REFERENCE
200,302

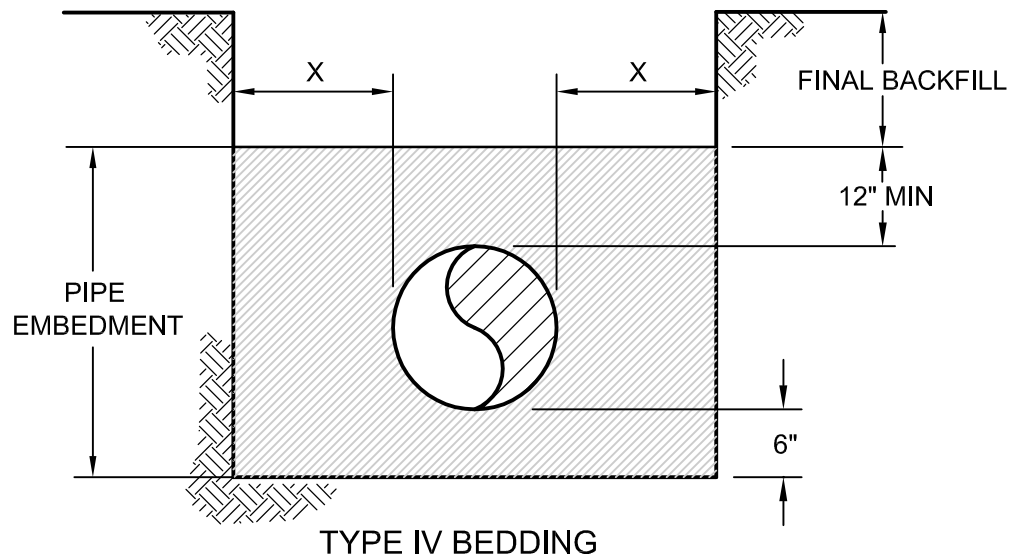
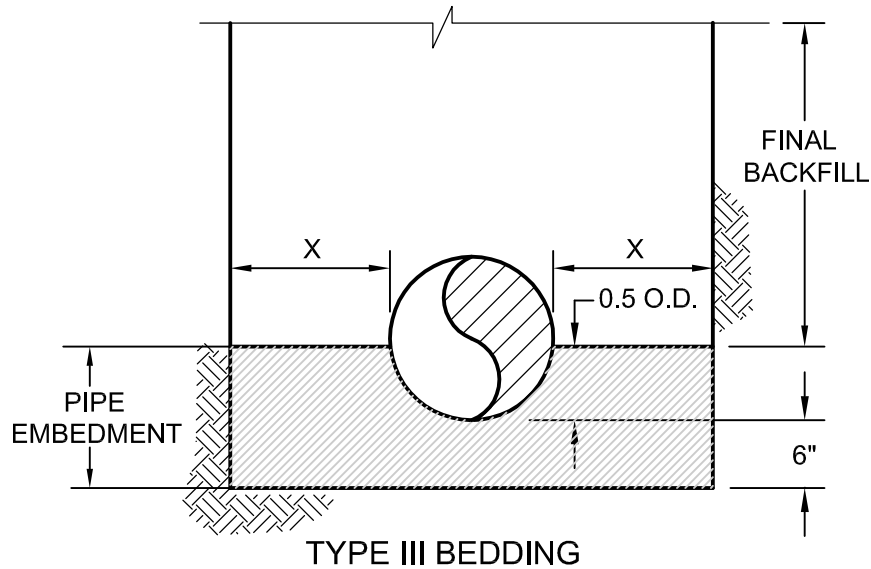
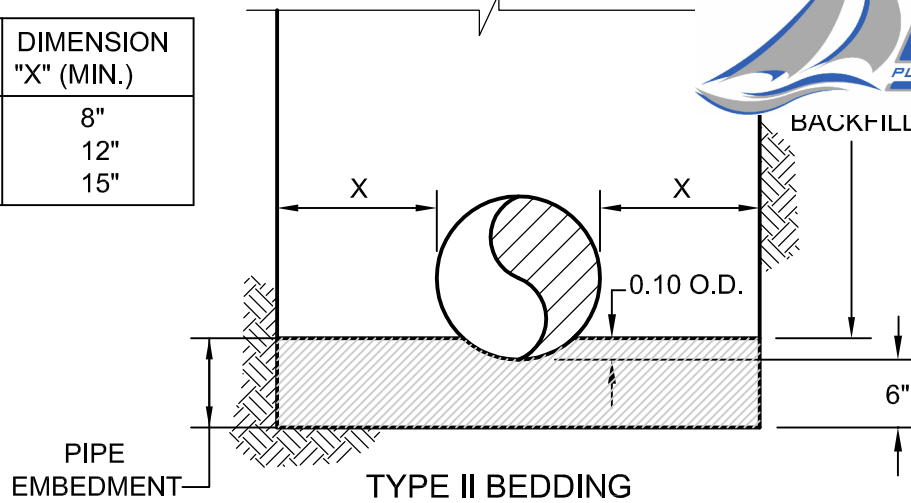
CATEGORY
DRAINAGE STRUCTURES

DATE
6/16

SHEET No.
1 OF 1

DETAIL No.
DS_04

PIPE SIZE	DIMENSION "X" (MIN.)
0"-24"	8"
27"-36"	12"
42"-72"	15"



PIPE BEDDING DETAILS

NOT TO SCALE

REFERENCE
200,303

CATEGORY
EARTHWORK

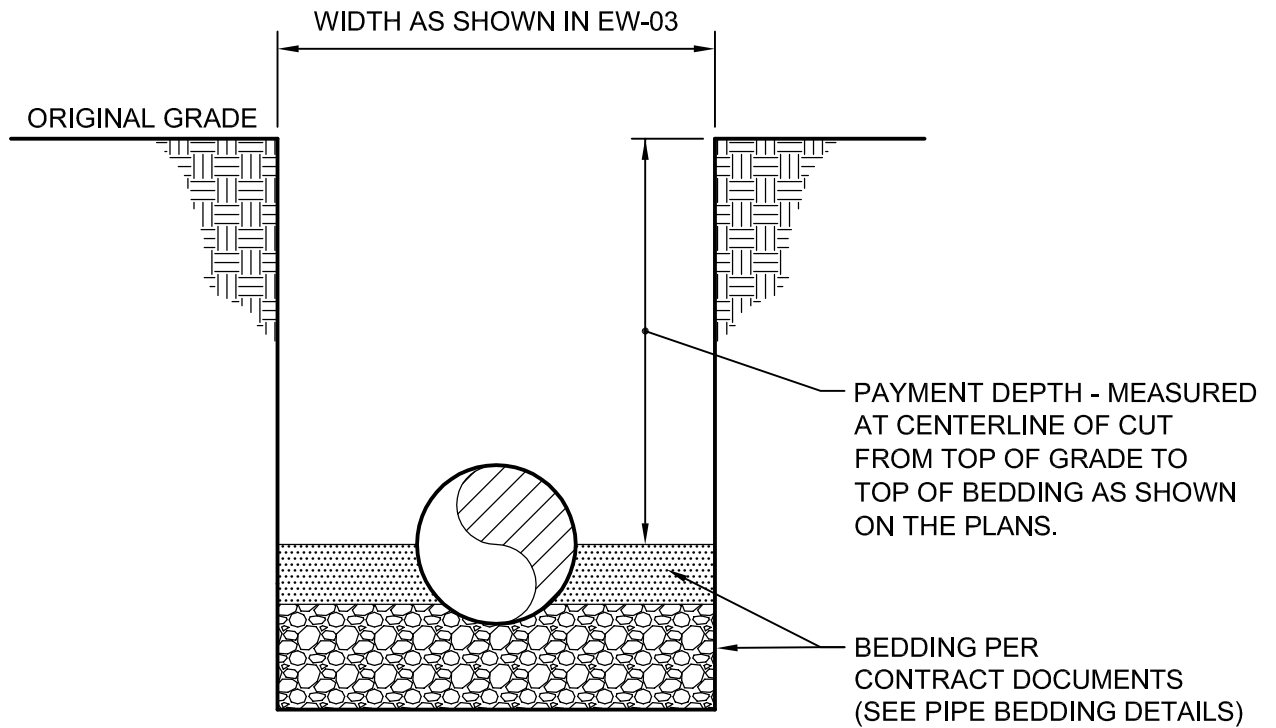
DATE
6/16

SHEET No.
1 OF 2

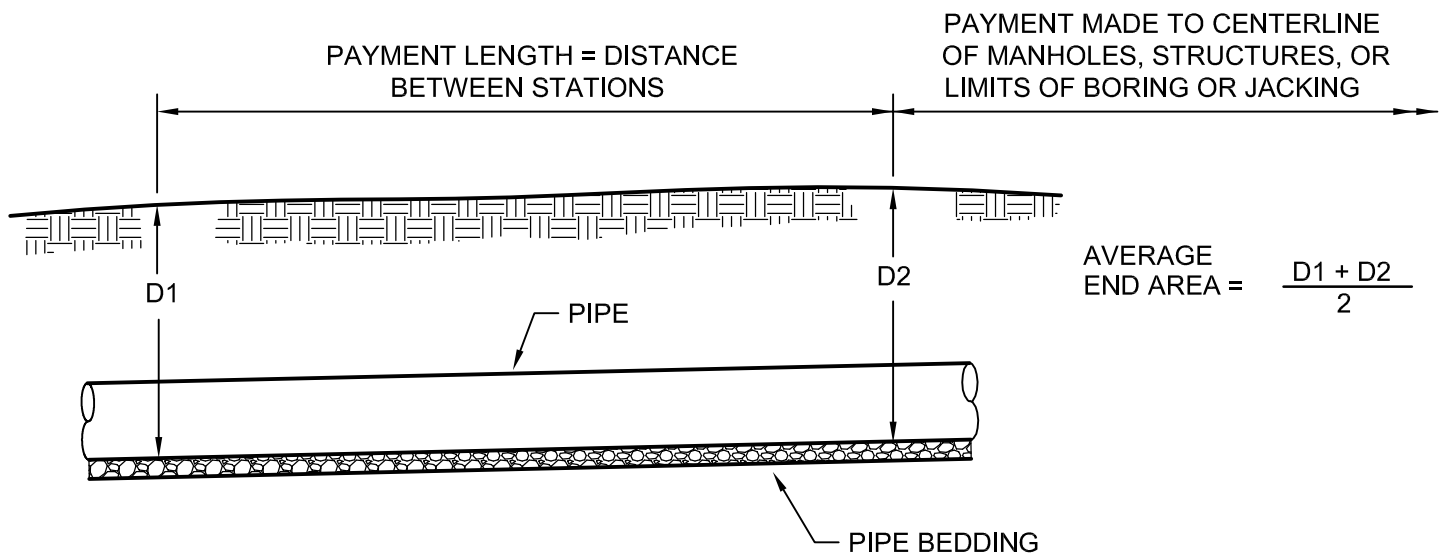
DETAIL No.
EW_01

NOTES:

1. THESE BEDDING DETAILS ARE NOT INTENDED FOR THERMOPLASTIC STORM DRAINAGE PIPE
2. BEDDING MATERIAL TO BE APPROVED BY LOCALITY BEFORE USE.
3. TRENCH BOTTOM TO BE FREE OF WATER BEFORE PLACING BEDDING.
4. SHAPE RECESSES FOR BELL OF PIPE BY HAND.
5. BACKFILL ABOVE BEDDING WITH SPECIFIED BACKFILL MATERIAL. SEE SPECIFICATIONS SECTION 303.
6. REFER TO CONTRACT DOCUMENTS FOR TYPE OF BEDDING.
7. MINIMUM TRENCH WIDTH SHALL CONFORM TO PIPE MANUFACTURER'S RECOMMENDATIONS IF MORE STRINGENT.
8. TRENCH BOX OR OTHER SHORING METHODS SHALL NOT DISTURB PIPE EMBEDMENT AND BEDDING MATERIAL AFTER COMPACTION.
9. BEDDING SHALL BE INCLUDED IN THE PRICE OF THE PIPE UNLESS OTHERWISE INDICATED.



SECTION



PROFILE

SEE EW_02, SHEET 2 OF 2 FOR NOTES.

PAYMENT LIMITS TRENCH EXCAVATION AND BACKFILL

NOT TO SCALE

NOTES:

1. PAYMENTS SHALL BE MADE USING THE AVERAGE END AREA METHOD AT THE UNIT COST PER FOOT, AT AVERAGE DEPTHS, AT 25' STATIONS BASED ON PLAN GRADES.

EXAMPLE: D1 = 10.5 FT., D2 = 7.3 FT.

$$\frac{D1 + D2}{2} = \frac{10.5 + 7.3}{2} = \frac{17.8}{2} = 8.9 \text{ FT.}$$

PAYMENTS WOULD BE MADE AT THE UNIT PRICE BID FOR 8' TO 10' DEPTH FOR THIS 25 FOOT SECTION OF TRENCH EXCAVATION AND BACKFILL.

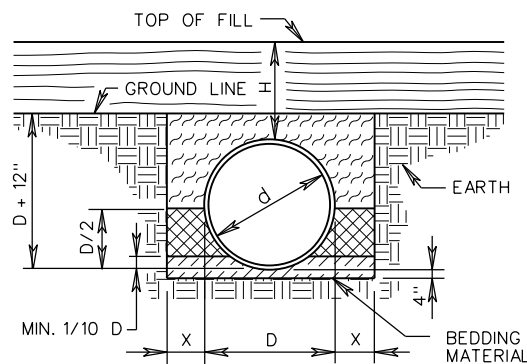
2. IN THE EVENT THE PAYMENT DEPTH SHALL EQUAL THE UPPER LIMIT OF PAYMENT CLASSIFICATION, PAYMENT WILL BE MADE AT THE LOWEST DEPTH UNIT PRICE (e.g. PAYMENT DEPTH = 10 FT.: PAYMENT WILL BE MADE AT THE UNIT PRICE FOR 8' TO 10' DEPTH, NOT AT THE UNIT PRICE FOR 10' TO 12' DEPTH).
3. FOR PIPE DIAMETERS 36-INCHES AND GREATER, DEDUCT THE DISPLACEMENT VOLUME OF THE PIPE FROM THE CALCULATED TRENCH VOLUME OF SELECT MATERIAL BACKFILL TO BE PLACED.

PAYMENT LIMITS

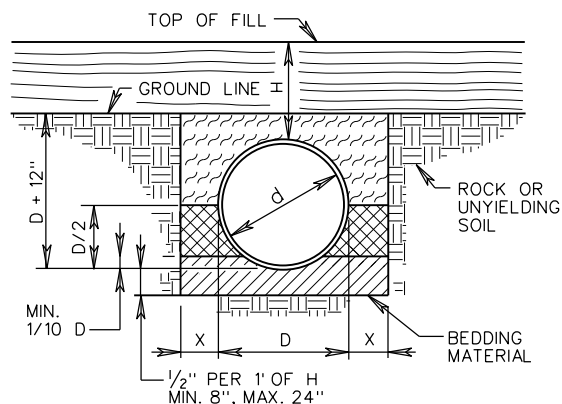
TRENCH EXCAVATION AND BACKFILL

NOT TO SCALE

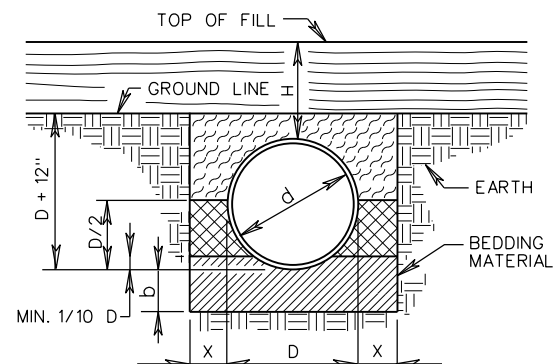
NO PROJECTION OF PIPE ABOVE GROUND LINE



NORMAL EARTH FOUNDATION

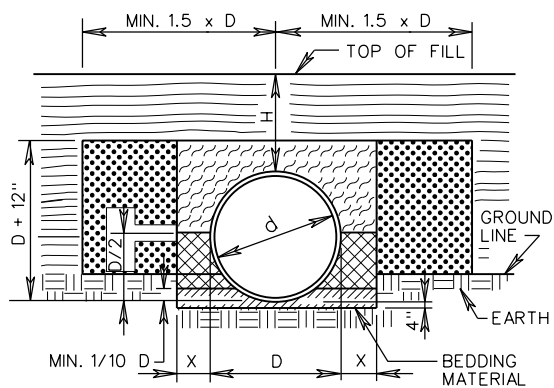


ROCK FOUNDATION

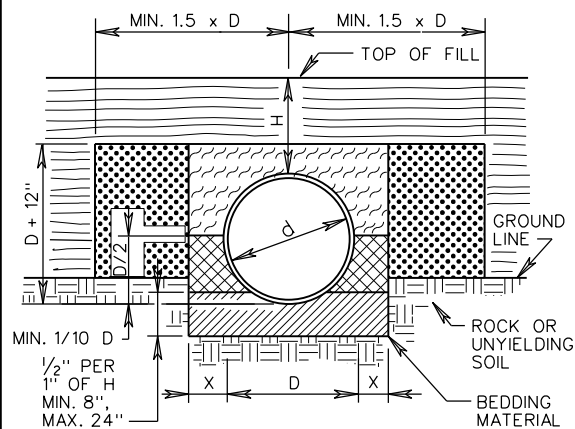


FOUNDATION SOFT, YIELDING, OR OTHERWISE UNSUITABLE MATERIAL

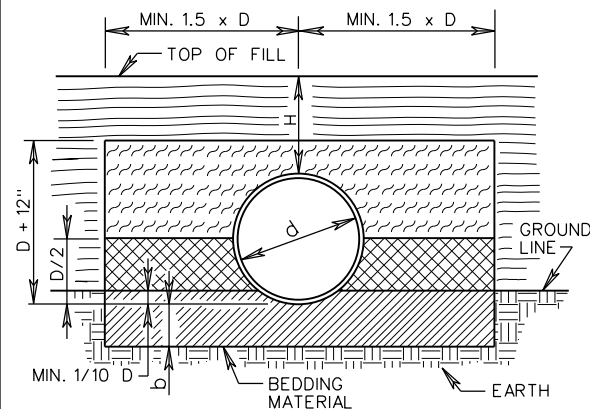
PIPE PROJECTION ABOVE GROUND LINE



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



FOUNDATION SOFT, YIELDING, OR OTHERWISE UNSUITABLE MATERIAL

 BEDDING MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

 CLASS I BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

 FOR PLASTIC PIPE CLASS I BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

 FOR ALL OTHER PIPE REGULAR BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

 EMBANKMENT

 REGULAR BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

NOTES:

FOR GENERAL NOTES ON PIPE BEDDING, SEE INSTALLATION OF PIPE CULVERTS AND STORM SEWERS GENERAL NOTES ON SHEET 107.00.

CRUSHED GLASS CONFORMING TO THE SIZE REQUIREMENTS FOR CRUSHER RUN AGGREGATE SIZE 25 AND 26 MAY BE USED IN PLACE OF CLASS I BACKFILL.

VDOT

ROAD AND BRIDGE STANDARDS

SHEET 1 OF 4

REVISION DATE

107.01

07/12

INSTALL. OF PIPE CULVERTS AND STORM SEWERS
CIRC. PIPE BEDDING AND BACKFILL - METHOD "A"

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION
REFERENCE302
303