

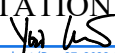
City of Alexandria, Virginia

MEMORANDUM

MEMORANDUM TO INDUSTRY NO. 23-01

DATE: DECEMBER 22, 2022

TO: CONTRACTORS, DEVELOPERS, AND DESIGN PROFESSIONALS

FROM: YON LAMBERT, DIRECTOR, TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES) 
Yon Lambert (Dec 27, 2022 11:28 EST)

SUBJECT: 2022 DESIGN & CONSTRUCTION STANDARDS

The 2022 Design & Construction Standards updates the Curb & Gutter, Sidewalk and Street details in the 1989 Design & Construction Standards and consolidates them with the 2020 Drainage and Sanitary Sewer Design & Construction Standards. The recent updates to the City Design Details assist design consultants, contractors and City staff in the design, review, and construction of City infrastructure and development projects.

The standards have been updated and supersede any Curb & Gutter, Sidewalk and Street details, Storm and Sanitary details in Memos to Industry: 22-03: Drainage and Sanitary Sewer Design & Construction Standards Update; 02-09: Design Guidelines for Site Plan Preparation; 19-03: Brick and Concrete Hybrid Sidewalk; 19-02: Securing Outdoor Enclosure to Brick, Concrete and Concrete Brick-Hybrid Sidewalk; 01-13: Standard Detail for Brick Sidewalk at Subsurface Structure (CSSW-2); 05-08: Standards for Brick Sidewalks in New Developments and 03-07: Accessible Curb Ramps.

The changes include:

- Aligned the details with the Alexandria Complete Street Design Guidelines
- Updated the type of brick on the brick sidewalk and brick hybrid sidewalk details.
- Added the VDOT CG-12 curb ramp details from Memo to Industry 03-07 Accessible Curb Ramps.
- Added the Hybrid Sidewalk detail from Memo to Industry 19-03 Brick and Concrete Hybrid Sidewalk
- Added the Securing furniture detail from Memo to Industry 19-02 Securing Outdoor Enclosure to Brick, Concrete and Concrete Brick-Hybrid Sidewalk
- Added the standard brick sidewalk detail from Memo to Industry 01-13 Standard Detail for Brick Sidewalk at Subsurface Structure (CSSW-2)
- Added the standard brick sidewalk detail from Memo to Industry 05-08 Standards for Brick Sidewalks in New Developments
- Updates and corrections to the existing construction details and notes.

- Updated the sanitary sewer lateral connection details.

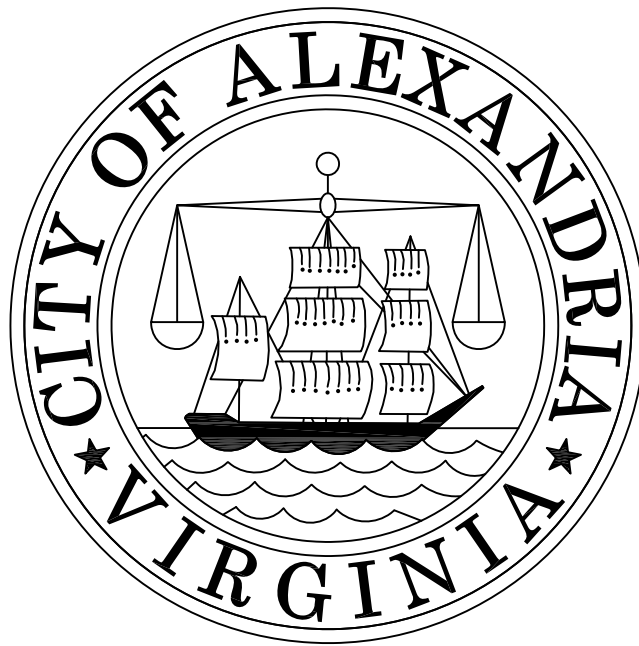
Capital Improvement plans and Preliminary (#1) development plans submitted after April 1, 2023, shall comply with the updated design standards. If you have any questions, please contact Lisa Jaatinen, Special Projects Manager at 703-746-4053 or lisa.jaatinen@alexandriava.gov.

Attachment:

- 1) 2022 Design and Construction Standards

cc: Lalit Sharma, Deputy Director, T&ES, DROW
Hillary Orr, Deputy Director, T&ES, Transportation
Phil Pugh, Deputy Director, T&ES/PWS
William Skrabak, Deputy Director, T&ES/OEQ
Erin Bevis-Carver, Division Chief, T&ES/Sanitary
Jesse Maines, Division Chief, T&ES/Stormwater
Bob Garbacz, Division Chief, T&ES/Traffic Operations
Ryan Knight, Division Chief, T&S/Transportation Engineering
Chris Ziemann, Division Chief, T&ES/Transportation Planning
Katie North, Division Chief, T&ES/Mobility Services
Emilio Pundavela, Division Chief, T&ES/C&I
Brian Dofflemyer, Division Chief, T&ES/Development
Terry Suehr, Director, DPI

**DEPARTMENT OF TRANSPORTATION
& ENVIRONMENTAL SERVICES**



**DESIGN AND CONSTRUCTION
STANDARDS**

2022

STANDARD NUMBER

TITLE

PAGE

SECTION 1 DRAINAGE

CSDI-1 & CSD1-1A	Curb Drop Inlet	1 – 4
CSDI-2 & CSDI-2A	Standard Drop Inlet	5 – 7
CSYI-1	Yard Inlet	8 – 9
CSMH-1 & CSMH-2	Precast Manhole	10 – 12
CSJB-1	Storm Sewer Junction Box	13
CSIS-1	Shaping Manhole and Inlet Inverts	14
CSFC-1	Yard & Curb Drop Inlet Frame & Cover	15
CSFC-2	Manhole Frame & Cover	16
CSJT-1	Bedding for Pipe & Trench Sections	17

TABLE OF CONTENTS

01/16/2021

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

(1)

STANDARD NUMBER

TITLE

PAGE

SECTION 2 SANITARY SEWERS AND WATER

CSFH-1	Fire Hydrant Installation	18
CSFH-1A	Fire Hydrant Installation Notes	19
CSAB-1	Concrete Anchor Block	20
SCHB-1	Hydrant Bollards	21
CSLC-1A & CSLC-1B	Sanitary Sewer Lateral Connection	22 & 23
CSLC-1C	Sanitary Sewer Lateral Connection Notes	24
CSCO-1	Sanitary Sewer Cleanout	25
CSSE-1	Sewer Pipe Encasement and High Cradle	26
CSMH-3	Precast Manhole	27
CSMH-4 & CSMH-4A	Manhole (Drop) & Manhole (Drop) Notes	28 & 29
CSMH-5	Doghouse Manhole	30
CSFC-3	Manhole Frame & Cover	31
CSFC-4	Manhole Frame & Cover (Bolted-Watertight)	32
CSMA-1	Manhole (Grade Rim Adjustment)	33
CSMA-1A	Modified Manhole Adjustments	34
CSTB-1 & CSTB-1A	Trench Bedding & Backfill Details & Notes for PVC	35 & 36
CSTB-2 - CSTB-2B	Trench Bedding & Backfill Details & Notes for DIP	37 - 39
CSIS-2	Manhole Shaping	40
CSMA-1	Manhole Abandonment	41
CSPA-1	Pipe Abandonment	42

TABLE OF CONTENTS

06/21/2021

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

(2)

STANDARD NUMBER

TITLE

PAGE

SECTION 3 CURB & GUTTER, SIDEWALK AND STREETS

CSCG-1	Curb & Gutter and Coping Curb	43
CSCG-2	Curb & Gutter, Reverse Flow	44
CSCG-3	Mountable Curb & Gutter	45
CSSW-1	Standard Concrete Sidewalk	46
CSSW-2	Brick Sidewalk at Subsurface Structure	47
CSSW-3 & CSSW-3A	Brick & Concrete Hybrid Sidewalk	48 & 49
CSSW-4	Brick Pavers for Sidewalk Application	50
CSSO-1	Securing Outdoor Furniture	51
CSPC-1 –CSPC-1B	Paver Crosswalk	52-54
CSCE-1	Commercial Entrance	55
CSRE-1	Residential Entrance	56
CSER-1A	Residential Driveway Minimum Standards	57
CSPS-1	Private Street and Alley Minimum Standards	58
CSPS-2	Residential Street Minimum Standards	59
CSSU-1	Standard Location of Sewers & Utilities	60
CSCP-1	Concrete Paving of Alleys and Streets	61
CSAP-1	Asphalt Paving of Alleys and Streets	62
CSAP-1A	Asphalt Paving of EVE	63
CSMT-1	Monument and Monument Box	64
CSCR-1	Accessible Curb Ramp	65

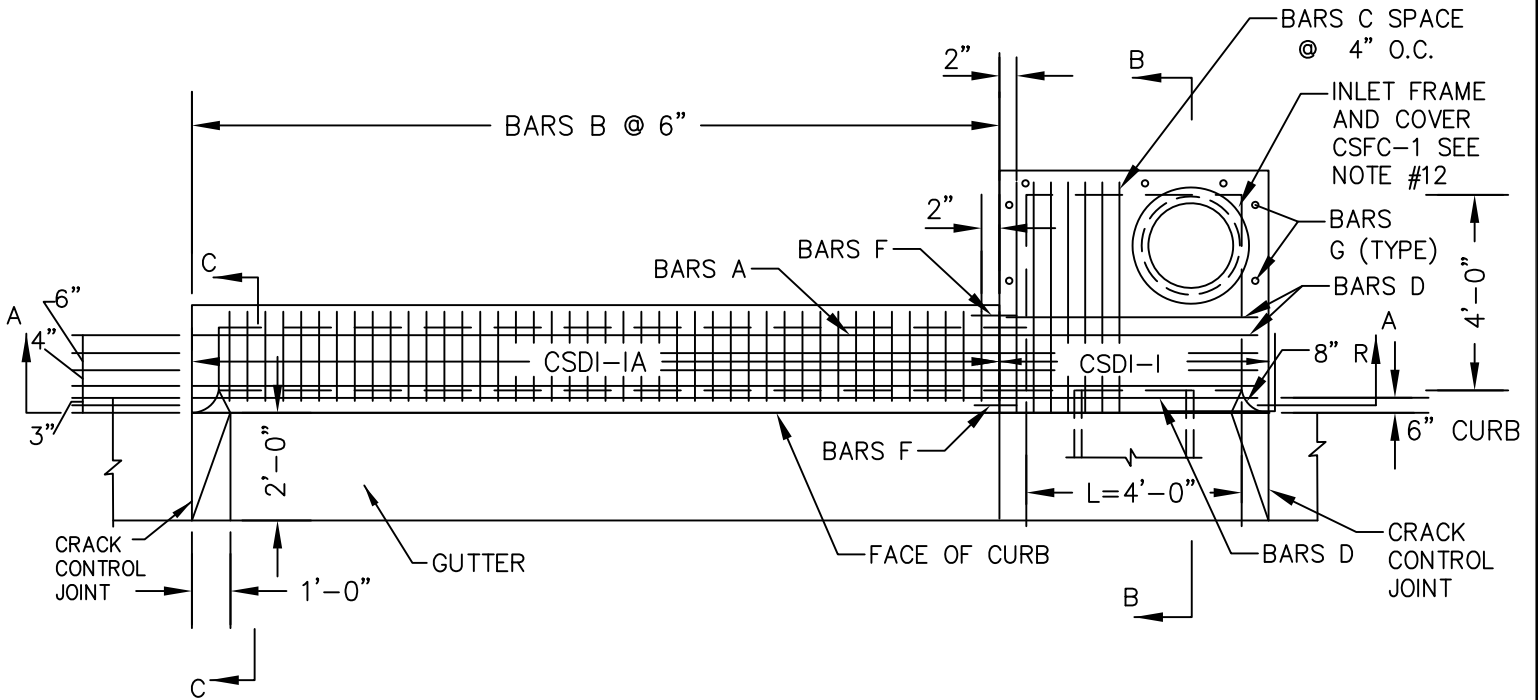
TABLE OF CONTENTS

06/03/2022

REVISION DATE

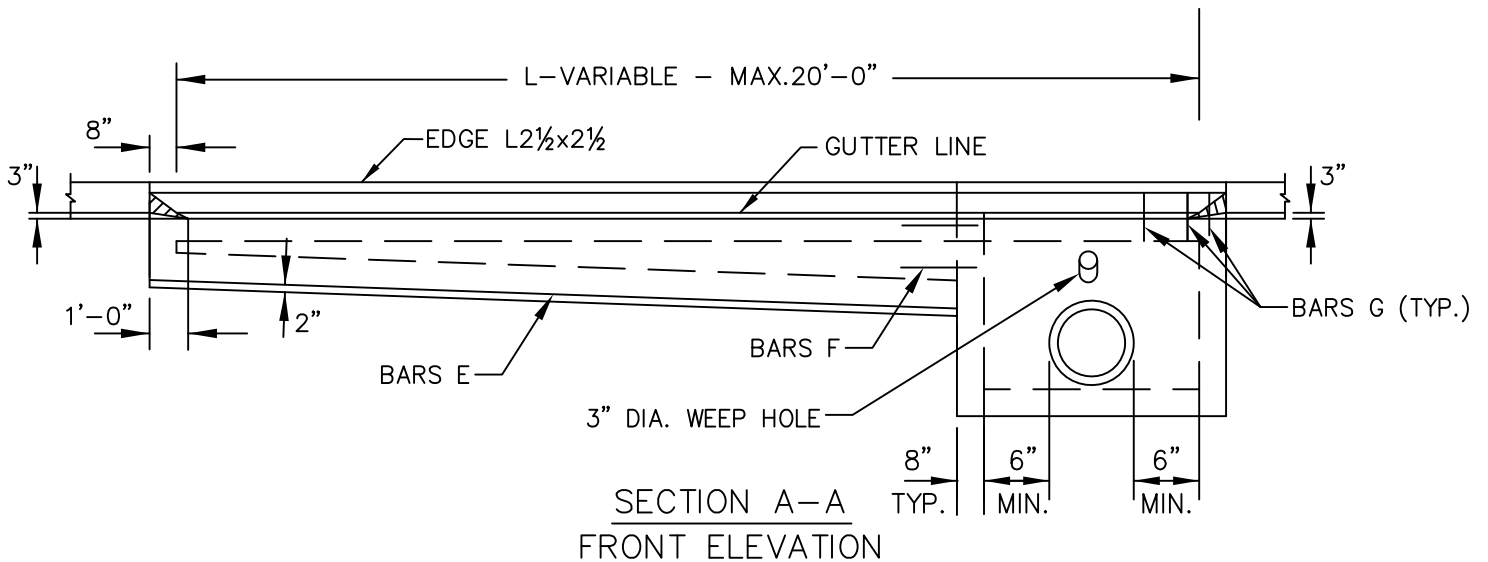
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

(3)



PLAN

NOTE:
SEE PAGE 2 FOR SECTIONS B-B
AND C-C AND PAGE 3 FOR
GENERAL NOTES.



SECTION A-A
FRONT ELEVATION

CURB DROP INLET

WITH VARIABLE LENGTH INLET

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

01/16/2021

REVISION DATE

CSDI-I & CSDI-IA

PAGE 1

GENERAL NOTES:

1. DEPTH OF INLET (H) SHALL BE SHOWN ON PLANS. MINIMUM DEPTH (H)=4'-0"
MAXIMUM DEPTH (H)=8'-0".
2. THE "H" DIMENSION SHOWN ON THE STANDARDS AND SPECIFIED ON THE PLANS WILL BE MEASURED FROM THE INVERT OF OUTFALL PIPE TO THE TOP OF THE STRUCTURE. PLAN "H" DIMENSIONS ARE APPROXIMATE ONLY FOR ESTIMATING PURPOSES AND THE ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD CONDITIONS.
3. THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR IN ACCORDANCE WITH CSIS-1 TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE.
4. THIS ITEM MAY BE PRECAST OR CAST-IN-PLACE.
5. ALL REINFORCING BARS TO BE #5 OR AS SHOWN ON PLANS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2" OR AS SHOWN ON PLANS.
7. CAST-IN PLACE CONCRETE IS TO BE CLASS A3 (3000PSI). PRECAST CONCRETE IS TO BE 4000PSI.
8. ALL REINFORCING STEEL TO BE CUT CLEAR OF ALL OPENINGS BY 2".
9. 3" DIAMETER WEEP HOLE TO BE LOCATED TO DRAIN SUBBASE MATERIAL. WEEP HOLE WITH 12"X12" PLASTIC HARDWARE CLOTH ¼" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03", NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
10. LENGTH OF ANGLE IRON AS SHOWN ON PAGE 1 IS TO BE L+16".
11. INLET FRAME AND COVER SHALL MEET REQUIREMENTS FOR HS20 LOADING. (REFER TO FRAME AND COVER DETAIL (CSFC-1.)
12. JOINTS BETWEEN CONCRETE COVER AND GUTTERS (WHEN REQUIRED) ARE TO BE DOWELED, KEYED OR OTHER CITY APPROVED METHODS.
13. FOR RETROFIT PROJECTS:
 - A. CHECK WITH CITY INSPECTOR TO CONNECT NEXT CONCRETE C&G SECTION TO REQUIRED SAW CUT, PROPER JOINT MATERIAL ETC.
 - B. CURB OPENING SHALL NOT ENCROACH UPON CROSSWALK AREA.
 - C. PROVIDE NOTES FOR THE THICKNESS OF BEDDING AND TYPE ON SUBGRADE PRIOR TO INSTALLATION.
14. FOR BACKFILL DETAIL SEE BEDDING DETAIL (CSJT-1).
15. FOR CURB DROP INLET REINFORCEMENT SEE PAGE 4.

CURB DROP INLET

GENERAL NOTES

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA VIRGINIA

01/16/2021

REVISION DATE

CSDI-1 & CSDI-1A

PAGE 3

CURB DROP INLET REINFORCEMENT SCHEDULE

L	AREA OF SLOT		BARS A		BARS B		BARS C		BARS D		BARS E		BARS F		BARS G		WEIGHT
	Ft.	Sq. Ft.	NO. of Bar	Lin. Ft.*	NO. of Bar	Lin. Ft.*	NO. of Bar	Lin. Ft.*	NO. of Bar	Lin. Ft.*	NO. of Bar	Lin. Ft.*	NO. of Bar	Lin. Ft.*	NO. of Bar	Lin. Ft.*	Lbs.
4'	1.83	5	1'-6"	2	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	1'-6"	3	1'-6"	4	1'-0"	64	
6'	2.75	5	3'-6"	6	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	3'-6"	3	1'-6"	4	1'-0"	111	
8'	3.67	5	5'-6"	10	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	5'-6"	3	1'-6"	4	1'-0"	158	
10'	4.58	5	7'-6"	14	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	7'-6"	3	1'-6"	4	1'-0"	204	
12'	5.50	5	9'-6"	18	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	9'-6"	3	1'-6"	4	1'-0"	251	
14'	6.42	5	11'-6"	22	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	11'-6"	3	1'-6"	4	1'-0"	298	
16'	7.33	5	13'-6"	26	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	13'-6"	3	1'-6"	4	1'-0"	345	
18'	8.25	5	15'-6"	30	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	15'-6"	3	1'-6"	4	1'-0"	391	
20'	9.17	5	17'-6"	34	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	17'-6"	3	1'-6"	4	1'-0"	438	

* DENOTES LENGTH OF ONE (1) BAR.

CURB DROP INLET

REINFORCEMENT SCHEDULE

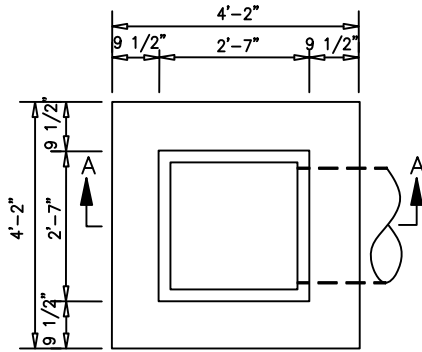
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

01/16/2021

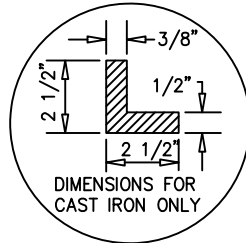
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CSDI-I & CSDI-IA

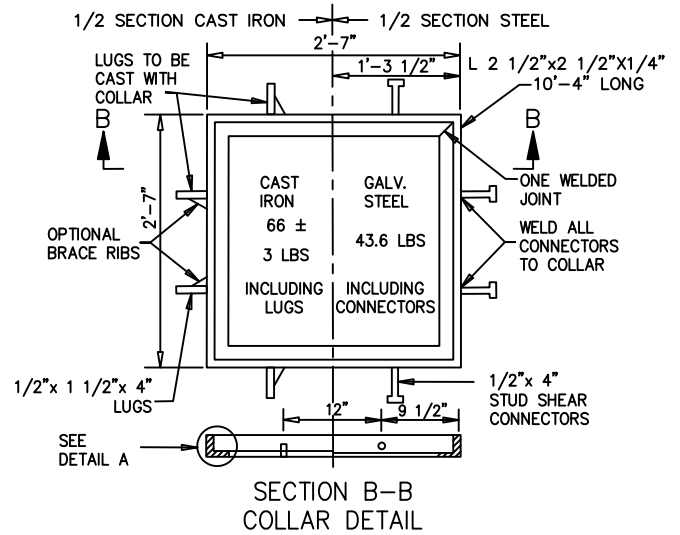
PAGE 4



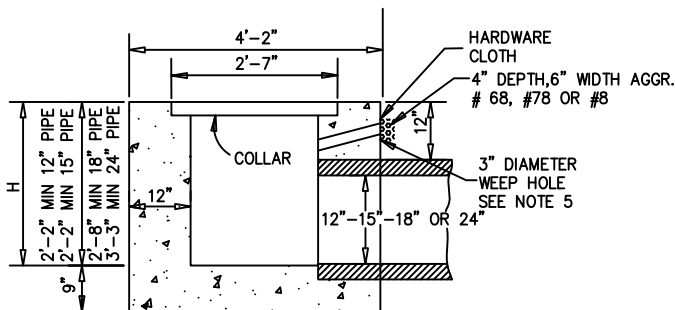
PLAN
(GRATE REMOVED)



DETAIL A



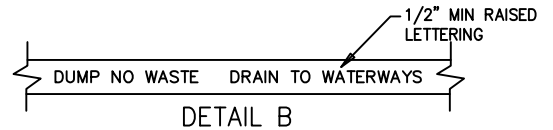
SECTION B-B
COLLAR DETAIL



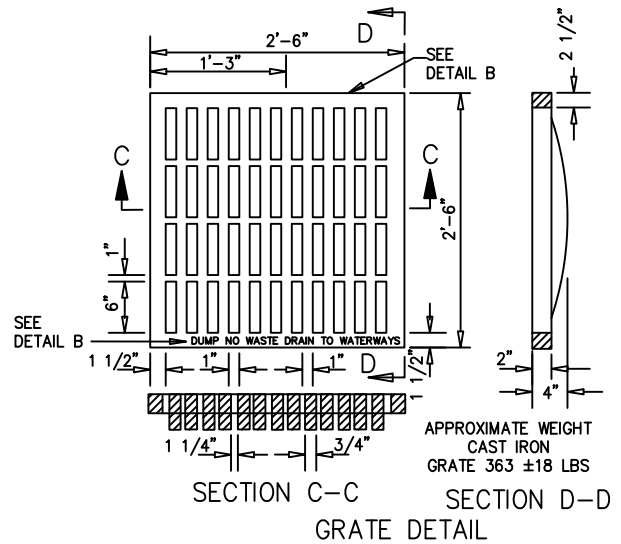
SECTION A-A

CONCRETE QUANTITIES FOR MIN. DEPTH

- 12" CONCRETE PIPE - 1.440 CU.YD. CONCRETE
 - 15" CONCRETE PIPE - 1.528 CU.YD. CONCRETE
 - 18" CONCRETE PIPE - 1.620 CU.YD. CONCRETE
 - 24" CONCRETE PIPE - 1.817 CU.YD. CONCRETE
- ADD 0.469 CU. YD. PER
ADDITIONAL FOOT DEPTH.



DETAIL B



SECTION C-C
GRATE DETAIL

APPROXIMATE WEIGHT
CAST IRON
GRATE 363 ± 18 LBS

SECTION D-D
GRATE DETAIL

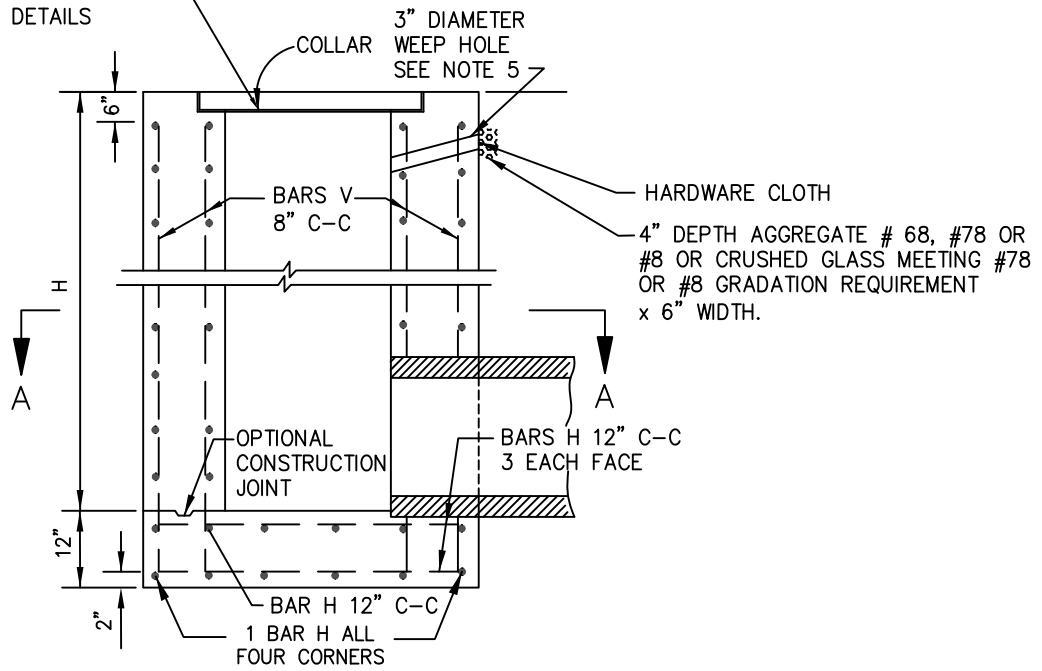
STANDARD DROP INLET

12" - 24" PIPE: MAXIMUM DEPTH (H) = 10'

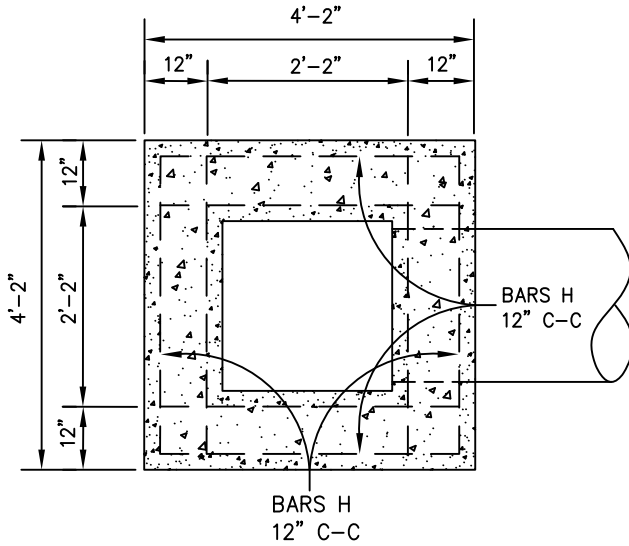
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA VIRGINIA

	01/16/2021
REVISION	DATE
CSDI-2	
	PAGE 5

SEE CSDI-2 FOR COLLAR AND GRATE DETAILS



SECTION THROUGH ELEVATION



SECTION A-A

REINFORCING STEEL SCHEDULE			
MARK	SIZE	NO REQ'D	LENGTH
BARS H	#5	$8 \times (H + 2)$	3'-10"
BARS V	#4	40	$H + 4$ "

APPROXIMATE QUANTITIES FOR MINIMUM (10') DEPTH		
CONCRETE PIPE DIAMETER	CONCRETE	REINF. STEEL
	CU. YDS.	LBS.
12"	5.218	655
15"	5.193	651
18"	5.163	647
24"	5.089	639

INCREMENTS TO BE ADDED FOR EACH ADDITIONAL FOOT OF DEPTH (H):
 0.465 CU. YDS. OF CONCRETE
 58.7 LBS. OF REINFORCING STEEL.

STANDARD DROP INLET

12" - 24" PIPE: DEPTH (H) 10' TO 20'

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
 ALEXANDRIA VIRGINIA

01/16/2021	REVISION	DATE
CSDI-2A		
PAGE 6		

GENERAL NOTES:

1. DEPTH OF INLET (H) TO BE SHOWN ON PLANS. FOR DEPTH GREATER THAN 10' USE STANDARD CSDI-2A
2. THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR IN ACCORDANCE WITH CSIS-1 TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE.
3. THIS ITEM MAY BE PRECAST OR CAST- IN-PLACE.
4. # 4x8" SMOOTH DOWELS AT APPROXIMATELY 12" C-C TO BE PLACED IN ALL AREAS ADJACENT TO ABUTTING CONCRETE DESIGN.
5. 3" DIAMETER WEEP HOLE WITH 12"x12" PLASTIC HARDWARE CLOTH ¼" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03" NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
6. CAST IN PLACE CONCRETE IS TO BE CLASS A3 (3000PSI). PRECAST CONCRETE IS TO BE 4000PSI. REINFORCING STEEL TO HAVE A MINIMUM 2" COVER.
7. ANY ALTERNATE METHODS OF ANCHORAGE MEETING THE APPROVAL OF THE ENGINEER MAY BE SUBSTITUTED FOR THE CAST IRON LUGS AS SHOWN HEREON.
8. "DUMP NO WASTE DRAINS TO WATERWAY" LETTERING IS REQUIRED ON ALL CSDI-2 GRATES. LOCATION OF LETTERING MAY VARY BY MANUFACTURER.
9. IF DROP INLET IS TO BE INSTALLED ALONG A BIKE PATH THE GRATE OPENINGS SHALL BE ALIGNED PERPENDICULAR TO THE DIRECTION OF TRAVEL.
10. CONCRETE COVER AND GRATE ARE TO BE FURNISHED AS A SINGLE UNIT.
11. FOR DETAILS AND DIMENSIONS, ETC. OF GRATE AND STEEL OR CAST IRON COLLAR SEE STANDARD CSDI-2.
12. FOR RETROFIT PROJECTS:
 - A. PROVIDE CONCRETE BENCH (FOR TERMINAL USE BRICKS WITH SLOPE TOWARD OUTLET) UP TO CROWN OF PIPE INVERT. (IF REQUIRED)
 - B. GRADE AND SLOPE ADJUSTMENT SHALL BE PROVIDED IN THE FIELD BY CONTRACTOR PER APPROVED PLANS REQUIREMENTS. IF THE STRUCTURE IS NOT PRECAST OR HAS ANGLE BETWEEN THE RCP PIPE AND STRUCTURE'S
 - C. PROVIDE ARCH BRICK ADJUSTMENT AROUND RCP PIPE
 - D. PROVIDE RAILS (IF REQUIRED)

STANDARD DROP INLET

GENERAL NOTES

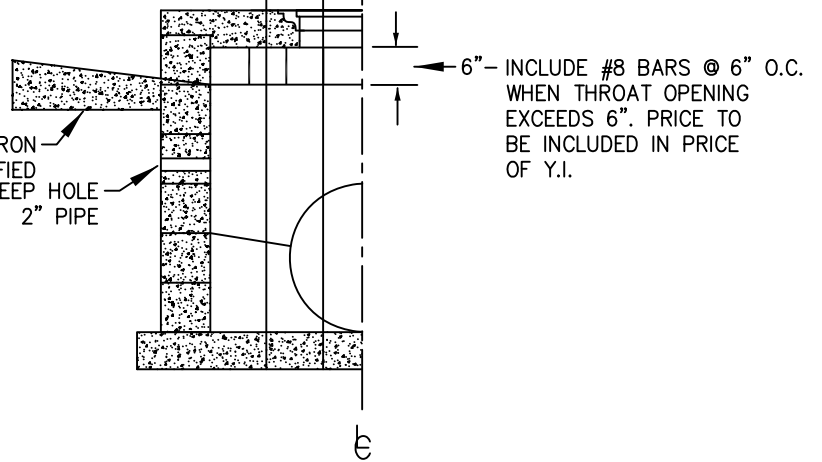
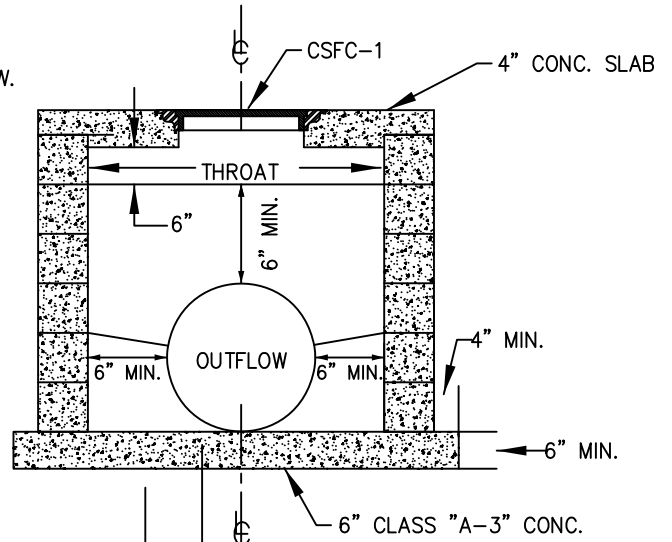
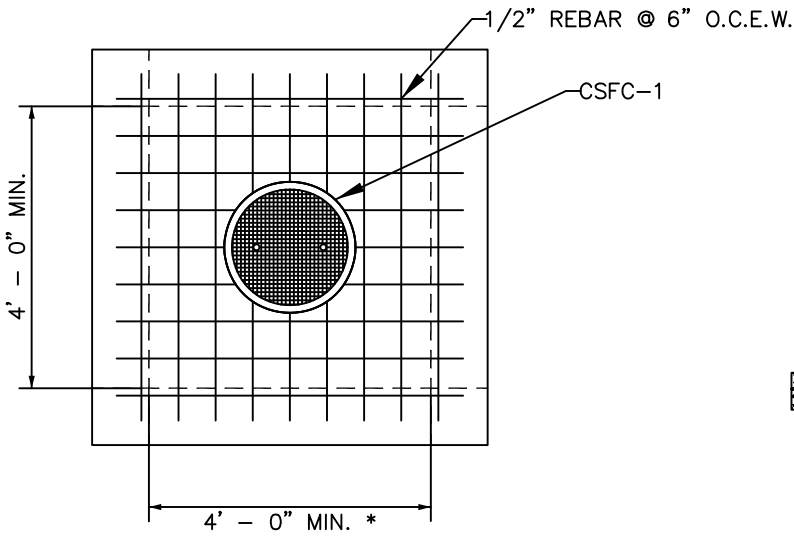
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA VIRGINIA

01/16/2021

REVISION	DATE
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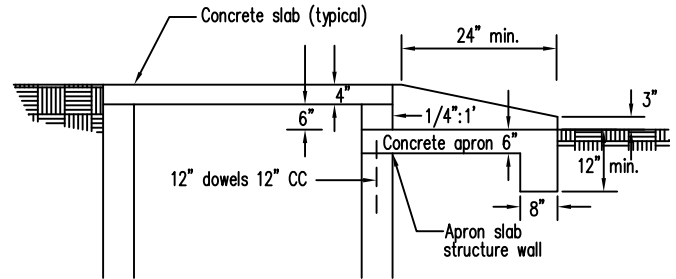
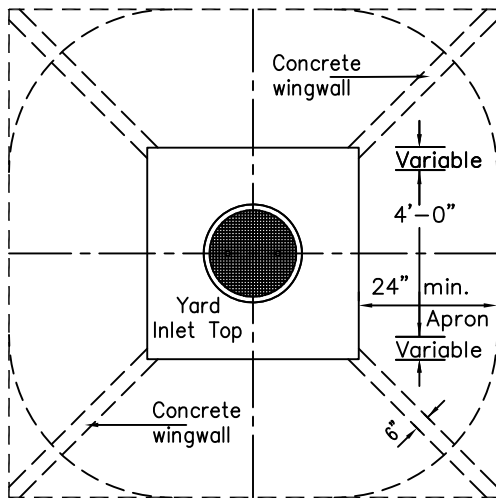
CSDI-2 & CSDI-2A

PAGE 7



* ON DEAD-END LINES AND STRUCTURES LESS THAN 5' DEEP, THE CONCRETE SLAB MIN. CAN BE REDUCED TO 3'.

** NUMBER OF APRONS CAN VARY FROM 1 TO 4 AS SPECIFIED ON PLANS AND/ OR BY THE ENGINEER IN THE FIELD.



TYPICAL CONCRETE APRON

YARD INLET

01/16/2021

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

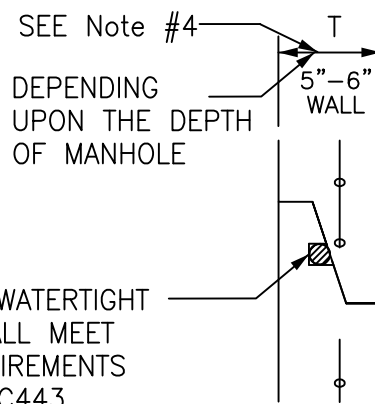
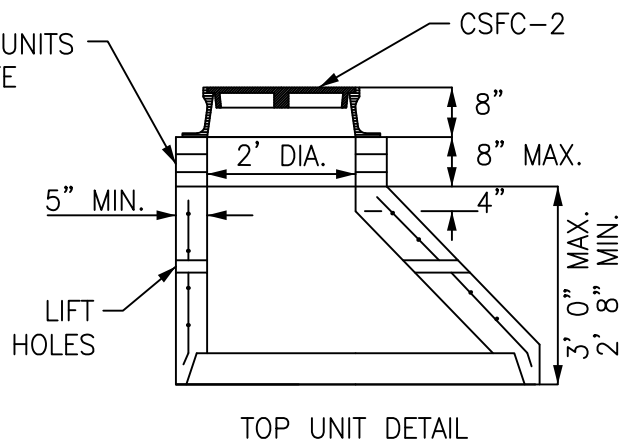
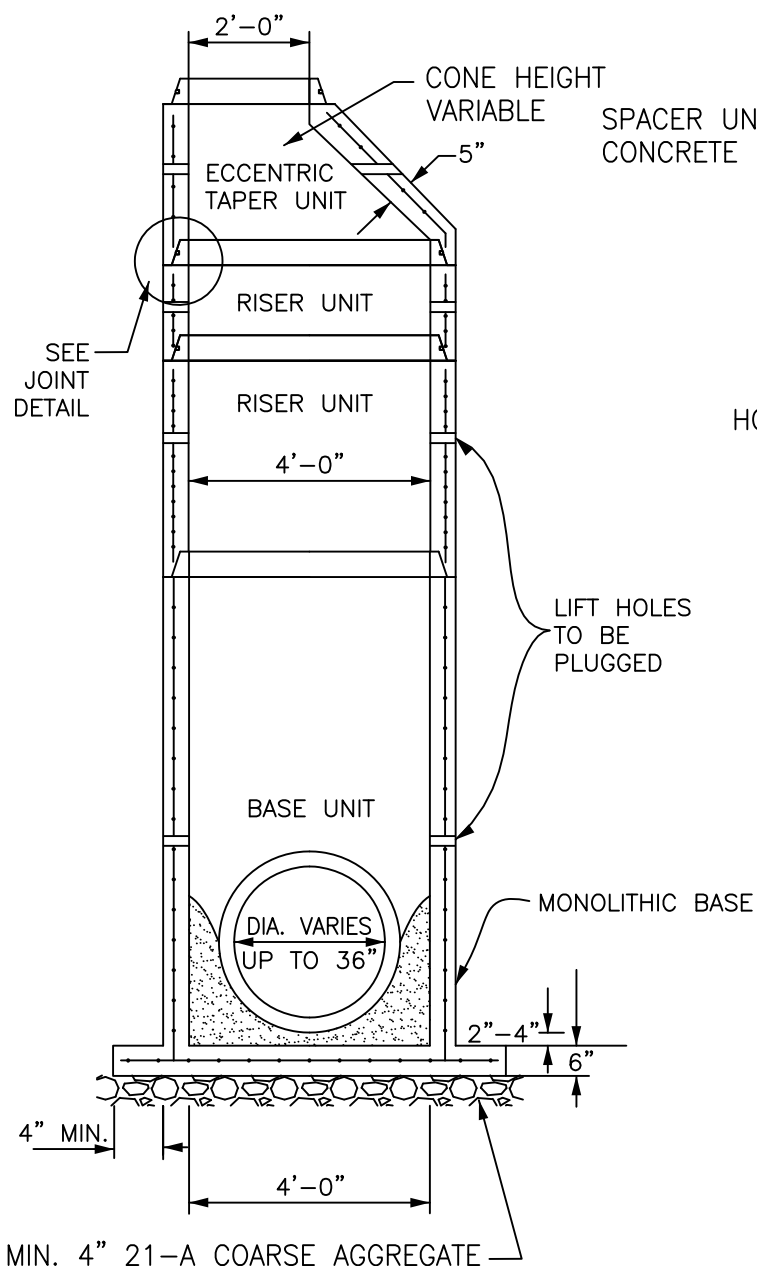
CSYI-1

PAGE 8

NOTES:

1. WHEN SPECIFIED, CONCRETE APRONS (1/4" PER FEET MIN) TO BE INCLUDED IN PRICE OF YARD INLET.
 2. CONCRETE APRON MAY BE CAST IN PLACE OR PRECAST.
REINFORCING MUST BE 6"x6" NO 6 WIRE MESH. ALL CONCRETE MUST BE CLASS A3.
 3. AN 6" THICK CONC. APRON 2' WIDE (MIN.) WILL BE INSTALLED IN FRONT OF EACH THROAT. THEY WILL BE SHAPED TO MEET CONDITIONS AS DIRECTED IN THE FIELD BY CITY INSPECTOR.
 4. CLASS "A3" CONC. USED THROUGHOUT.
WALLS OF POURED OR BLOCK CONC. OR BRICK IN MORTAR WILL BE PARGED 1/4" INSIDE (AND OUTSIDE ABOVE FINISHED GRADE).
 5. WALLS OF POURED OR SOLID BLOCK CONCRETE WILL BE 8" THICK.
 6. SPECIAL DESIGN WILL BE REQUIRED FOR PIPE SIZES GREATER THEN 36".
 7. FOR RETROFIT PROJECTS:
 - A. PROVIDE CONCRETE BENCH (FOR TERMINAL USE BRICKS WITH SLOPE TOWARD OUTLET) UP TO CROWN OF PIPE INVERT. (IF REQUIRED)
 - B. GRADE AND SLOPE ADJUSTMENT SHALL BE PROVIDED IN THE FIELD BY CONTRACTOR PER APPROVED PLANS REQUIREMENTS.
- IF THE STRUCTURE IS NOT PRECAST OR HAS ANGLE BETWEEN THE RCP PIPE AND STRUCTURE'S
- A. PROVIDE ARCH BRICK ADJUSTMENT AROUND RCP PIPE
 - B. PROVIDE RAILS (IF REQUIRED)

<h2 style="margin: 0;">YARD INLET</h2> <p style="margin: 0;">GENERAL NOTES</p>	01/16/2021
	REVISION DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES ALEXANDRIA, VIRGINIA	CSYI-1
	PAGE 9



N.T.S.

NOTE:
FOR REINFORCEMENT SCHEDULE SEE CSMH-2, PAGE 11.

PRECAST MANHOLE

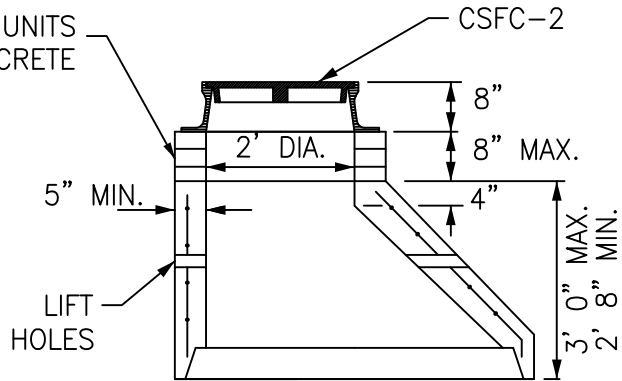
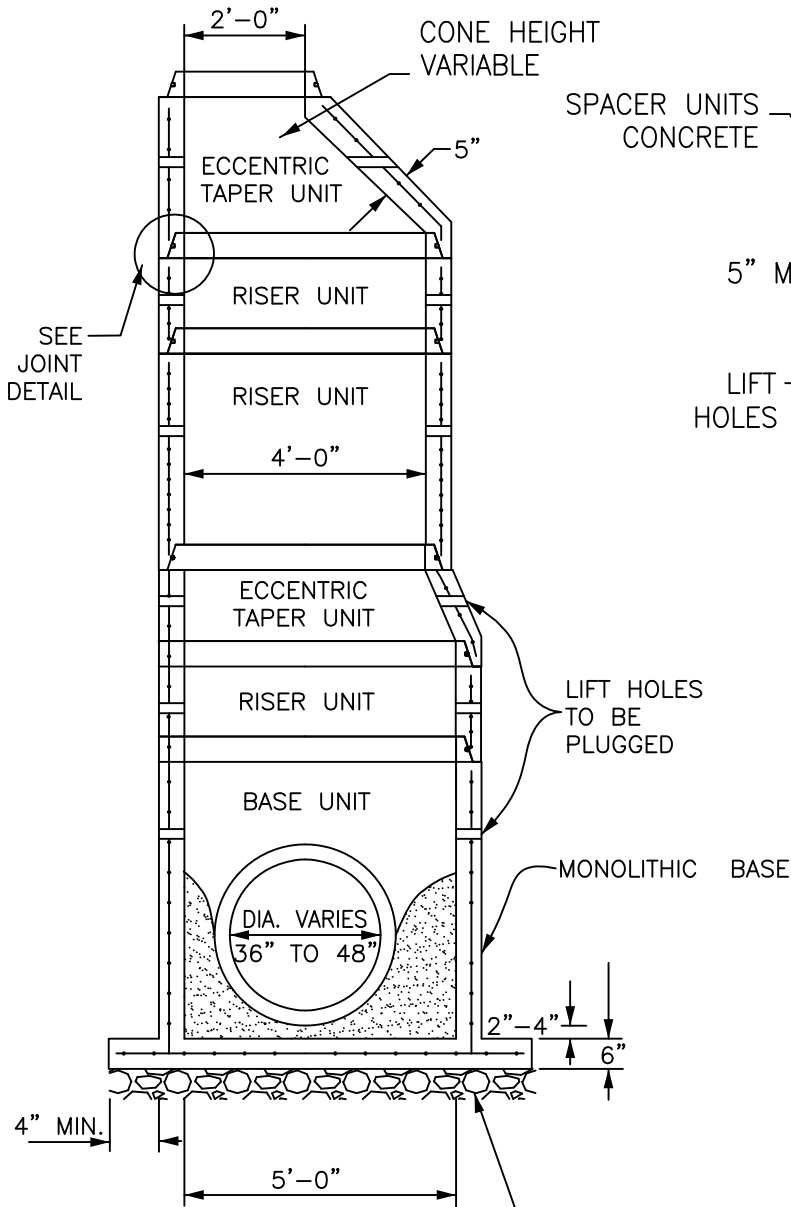
4' INSIDE DIAMETER; FOR PIPES UP TO 36" IN DIAMETER

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ALEXANDRIA, VIRGINIA

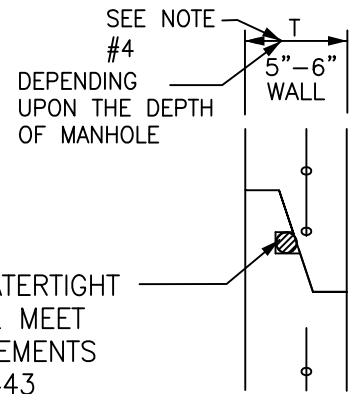
01/16/2021
REVISION DATE

CSMH-1

PAGE 10



TOP UNIT DETAIL



FLEXIBLE WATERTIGHT JOINT SHALL MEET THE REQUIREMENTS OF ASTM C443

MIN. 4" 21-A COARSE AGGREGATE
N.T.S.

REINFORCEMENT SCHEDULE FOR 4' AND 5' INSIDE DIAMETER MANHOLES

Depth	Wall Thickness	Wall Reinforcement	Base Slab Thickness	Base Slab Reinforcement
<12'	5"	#4 @ 8" EW	6"	#4 @ 8" EW
>12'	6"	#4 @ 8" EW	6"	#4 @ 8" EW

PRECAST MANHOLE

5' INSIDE DIAMETER; FOR PIPES 36" TO 48" IN DIAMETER

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

01/16/2021	REVISION	DATE
CSMH-2		
PAGE 11		

NOTES:

1. THE MANHOLE SHALL BE DESIGNED TO MEET HS-20 LOADING CAPACITY.
2. JOINTS BETWEEN UNITS SHALL BE TONGUE & GROOVE.
3. PIPE MUST BE FLUSH WITH INSIDE WALL OF MANHOLE.
4. WALLS TO DEPTH OF 12' TO BE 5" THICK. WALLS DEEPER THAN 12' TO BE 6".
5. LOSS FOR STRAIGHT RUN MANHOLE SHALL BE 0.05 FEET. IN NO CASE SHALL LOSS LESS THAN 0.05 FEET BE ALLOWED.
6. FOR RETROFIT PROJECTS:
 - A. PROVIDE CONCRETE BENCH (FOR TERMINAL USE BRICKS WITH SLOPE TOWARD OUTLET) UP TO CROWN OF PIPE INVERT. (IF REQUIRED)
 - B. GRADE AND SLOPE ADJUSTMENT SHALL BE PROVIDED IN THE FIELD BY CONTRACTOR PER APPROVED PLANS REQUIREMENTS.

IF THE STRUCTURE IS NOT PRECAST OR HAS ANGLE BETWEEN THE RCP PIPE AND STRUCTURE'S
 - C. PROVIDE ARCH BRICK ADJUSTMENT AROUND RCP PIPE
 - D. PROVIDE RAILS (IF REQUIRED)
7. THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR IN ACCORDANCE WITH CSIS-1 TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE.

PRECAST MANHOLE

GENERAL NOTES

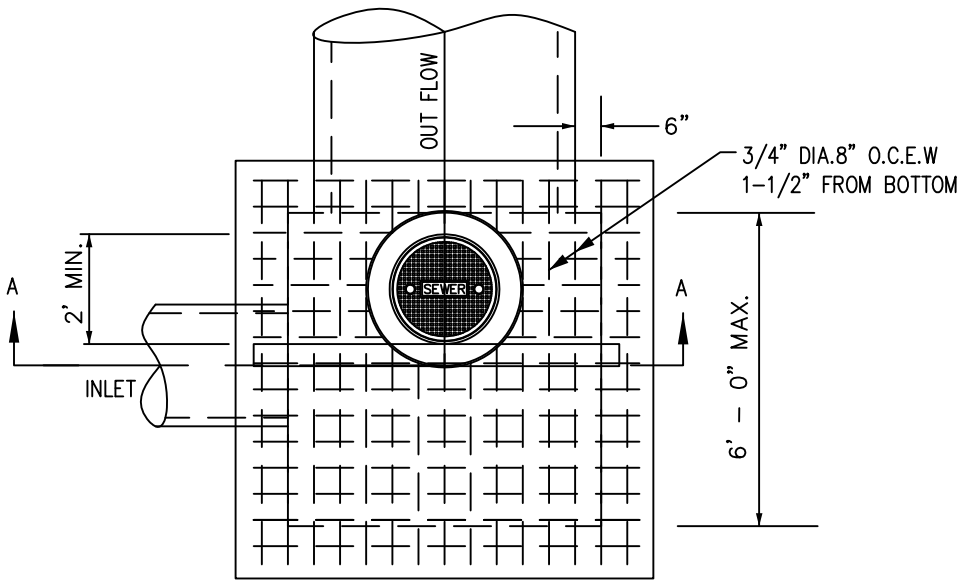
01/16/2021

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSMH-1 & CSMH-2

PAGE 12

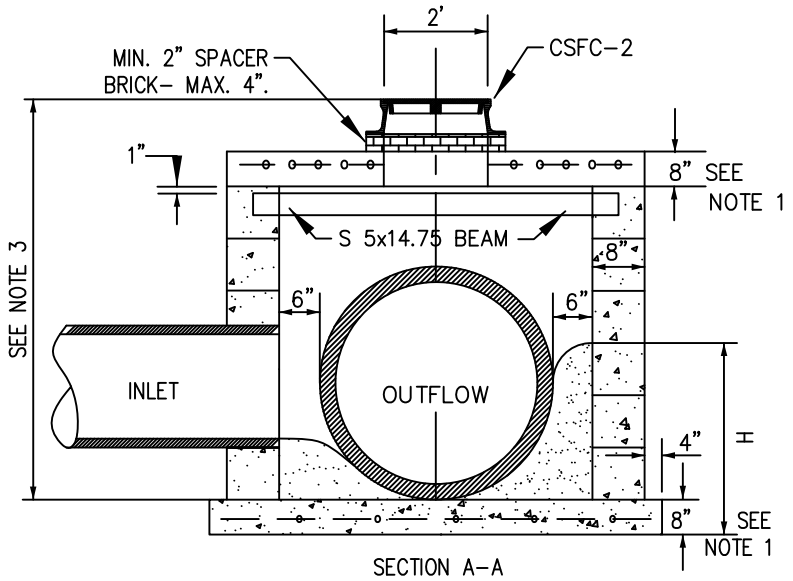


6' - 0" MAX.
WITHOUT SPECIAL DESIGN
(O.D. + 1' (MIN. 4'))

PLAN

REINFORCEMENT SCHEDULE

	SLAB	THICKNESS	REINFORCEMENT
IN STREET	TOP	8"	#6 @ 8" EW
	BOTTOM	8"	#6 @ 10" EW
NOT IN STREET	TOP	6"	#4 @ 8" EW
	BOTTOM	6"	#4 @ 8" EW



SECTION A-A

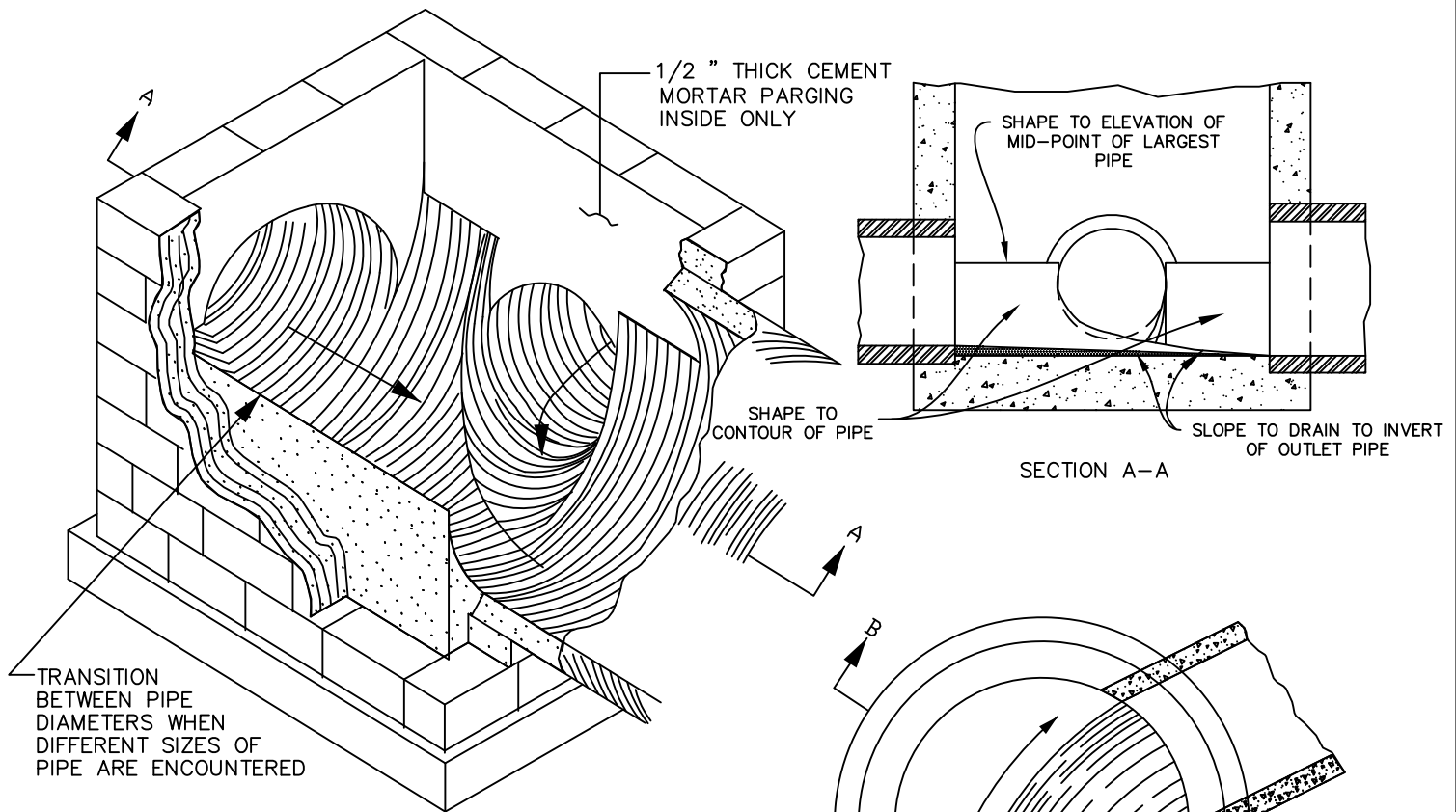
NOTES:

1. TOP AND BOTTOM SLABS MAY BE 6" MIN. WHEN NOT CONSTRUCTED IN A STREET.
2. CONSTRUCTION OF CLASS "A3" CONC., CONC. BLOCK, OR BRICK IN MORTAR, PARGED INSIDE (AND OUTSIDE ABOVE FINISHED GRADE) 1/4" MIN.
3. CSJB-1 TO BE USED WHEN THE DISTANCE FROM THE TOP OF CASTING IS LESS THAN 3'-8" OR WHEN THE SIZE OF THE PIPE REQUIRES ITS USE.
4. HEIGHT OF BENCH H TO BE AS SPECIFIED ON THE APPROVED PLAN.
5. MANHOLE COVER AND FRAME ARE TO BE LOCATED ABOVE THE CENTERLINE OF THE OUTFLOW PIPE.
6. THE TOPS OF SMALLER INFLOW WILL BE AT LEAST AS HIGH AS THE TOP OF THE LARGEST INFLOW PIPE.

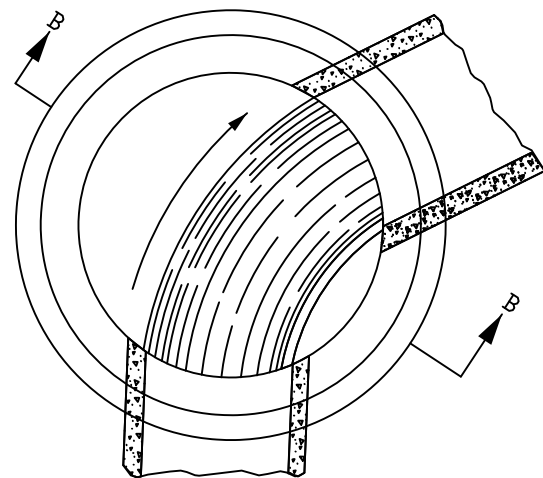
STORM SEWER JUNCTION BOX

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ALEXANDRIA, VIRGINIA

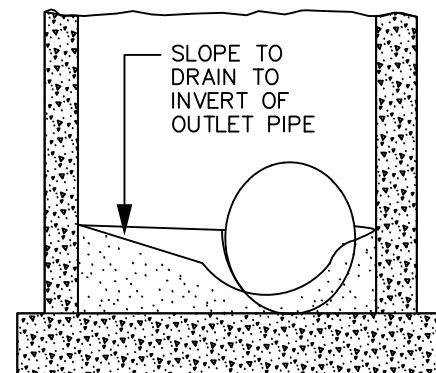
	01/16/2021
REVISION	DATE
	CSJB-1
	PAGE 13



METHOD FOR SHAPING OF DROP INLETS AND STANDARD MANHOLE INTERIORS



TREATMENT IN PRECAST MANHOLES



SECTION B-B

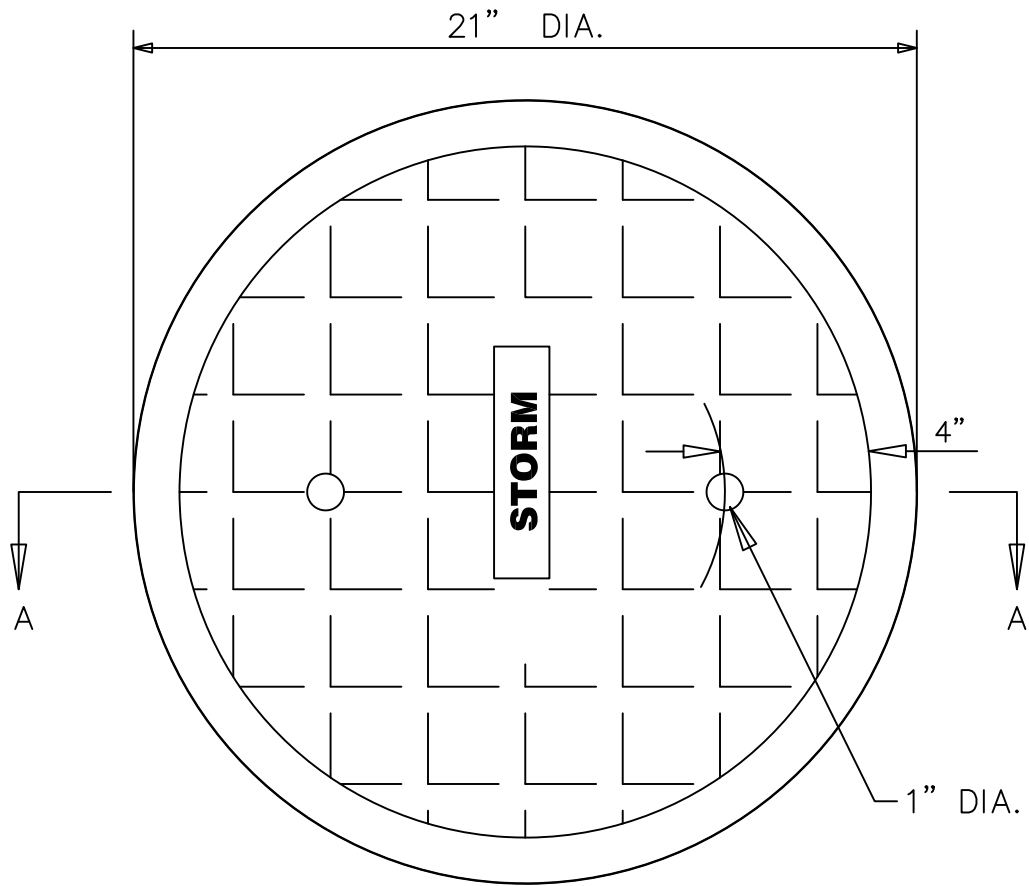
NOTES:

1. SHAPING OF MANHOLE AND INLET INVERTS IN ACCORDANCE WITH THIS DRAWING IS TO APPLY TO THOSE STRUCTURES SPECIFIED ON PLANS. THE COST OF FURNISHING AND PLACING ALL MATERIALS IS TO BE INCLUDED IN THE PRICE BID FOR THE PARTICULAR CATCH BASIN OR MANHOLE COMPLETE.
2. MANHOLE OR CATCH BASIN IS TO BE FORMED AND CONSTRUCTED IN ACCORDANCE WITH APPLICABLE STANDARD OR SPECIAL DRAWING. THE INVERT SHAPING AS DE-TAILED HEREON IS TO CONSIST OF A PORTLAND CEMENT CONCRETE MIX CONFORMING TO CLASS A3. THE SURFACE SHALL BE LEFT SMOOTH BY MEANS OF HAND TROWELLING. NONE OF THE COARSE AGGREGATE SHALL REMAIN EXPOSED
3. INVERT TO BE PAVED TO THE SHAPE OF THE PIPE AND TO THE SPRING LINE EXCEPT WHERE INLET AND OUTLET PIPE MAKE AN ANGLE WITH EACH OTHER IN WHICH CASE PAVING SHALL BE TO THE CROWN OF THE OUTLET PIPE. THEN FROM THE SPRING LINE OR THE CROWN, WHICHEVER IS THE CASE, THE PAVING IS TO BE EXTENDED UPWARD AT A 45° ANGLE TO MEET THE STRUCTURE WALL.
4. DETAILS OF INVERT SHAPING AS SHOWN HEREON ARE FOR EXAMPLE PURPOSES ONLY. EACH MANHOLE OR CATCH BASIN IS TO BE SHAPED INDIVIDUALLY TO BEST FIT THE PARTICULAR INLET AND OUTLET CONFIGURATION AND FLOW LINES.

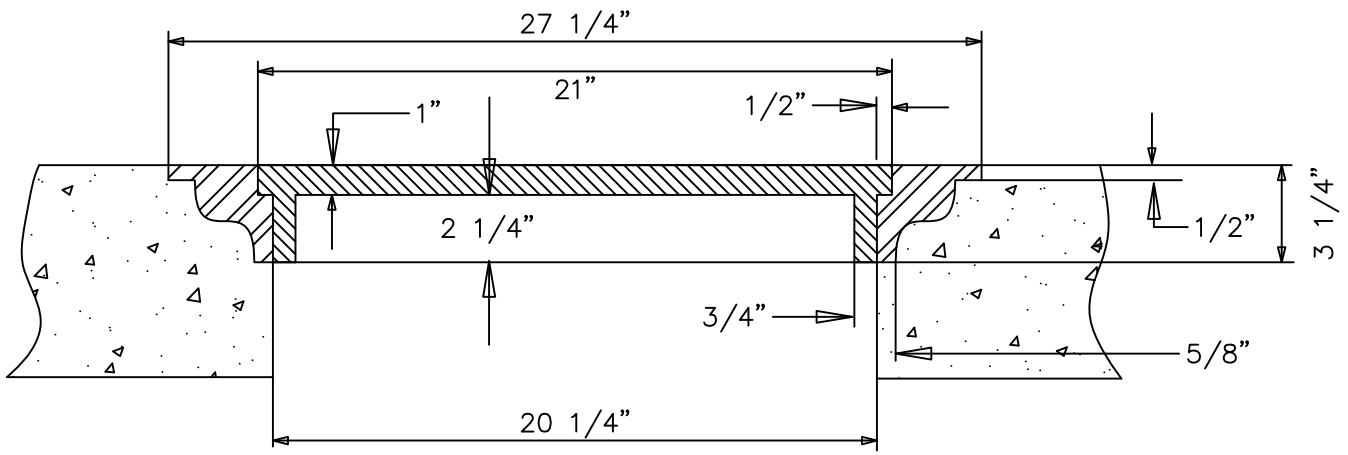
SHAPING MANHOLE AND INLET INVERTS

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ALEXANDRA, VIRGINIA

01/16/2021	REVISION	DATE
CSIS-1		
PAGE 14		



TOP VIEW

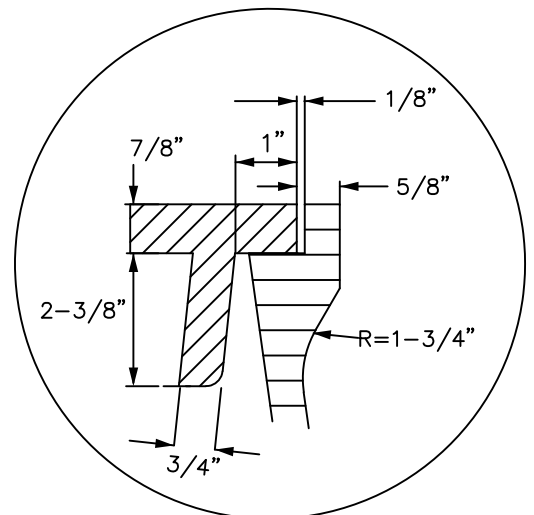
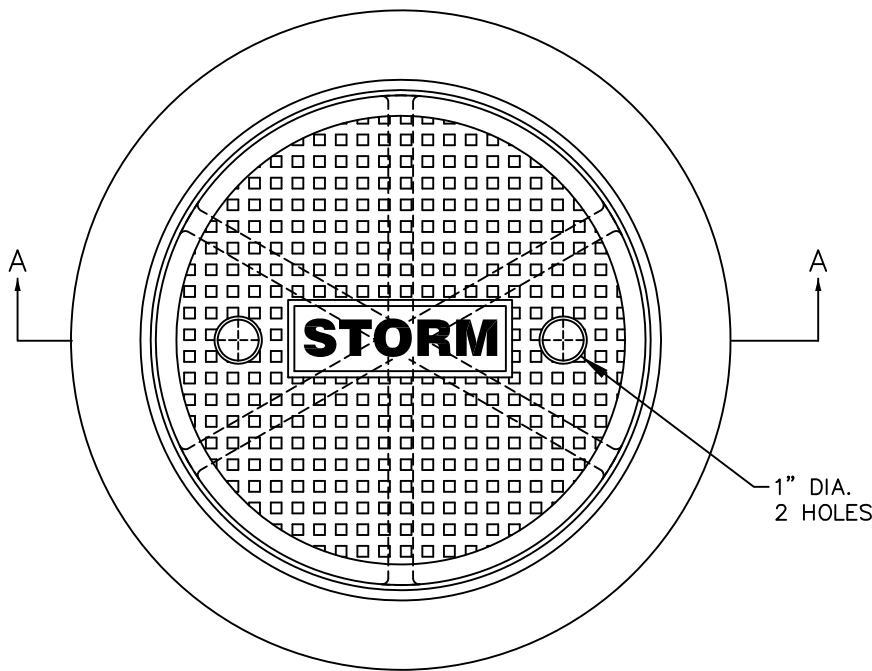


SECTION A - A

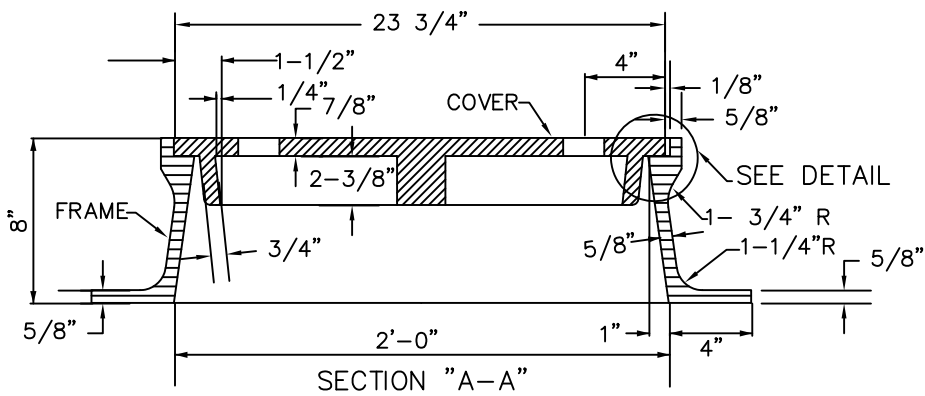
YARD & CURB DROP INLET FRAME & COVER

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

01/16/2021	REVISION DATE
CSFC-1	
PAGE 15	



DETAIL NOT TO SCALE



NOTE :

TOP AND CASTING TO BE
MACHINED.
FRAME WEIGHT 200 LBS.
COVER WEIGHT 125 LBS.
TOTAL WEIGHT 325 LBS.

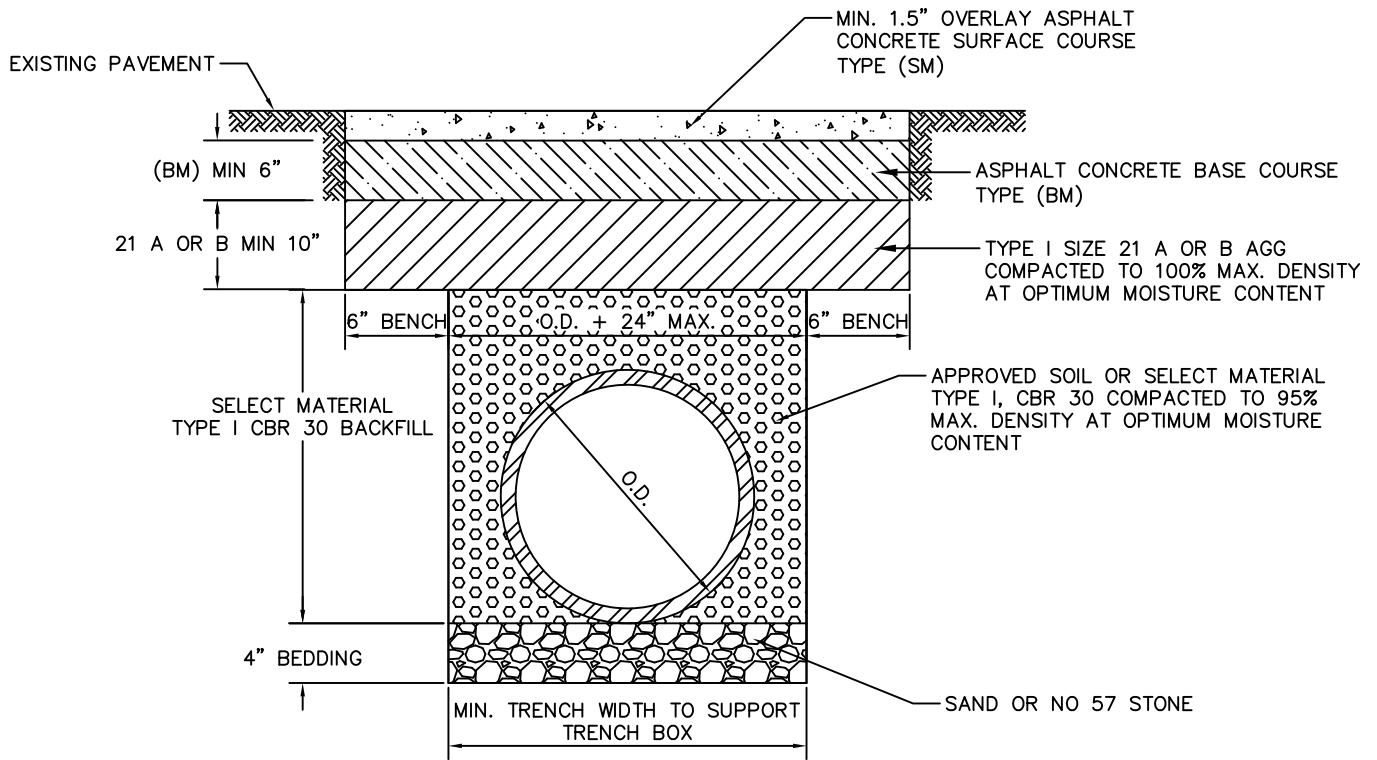
MANHOLE FRAME & COVER

01/16/2021
REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSFC-2

PAGE 16



DETAIL NOT TO SCALE

NOTES:

1. BACKFILL MATERIAL SHALL BE COMPACTED AT A MAXIMUM DEPTH OF EVERY SIX INCHES (6") THROUGH THE USE OF MECHANICAL TAMPING THROUGHOUT THE TRENCH TO ENSURE THAT ADEQUATE SUPPORT IS PROVIDED.
2. PAVEMENT RESTORATION IS 12 INCHES MINIMUM BEYOND THE EDGE OF THE TRENCH ON LONGITUDINAL OPEN CUTS, OR 25 FEET MINIMUM BEYOND THE TRENCH CENTERLINE ON PERPENDICULAR OPEN CUTS, OR AS DETERMINED BY THE T&ES DIRECTOR.
3. PAVEMENT RESTORATION ALSO INCLUDES THE REPLACEMENT OF ANY TRAFFIC CONTROL DEVICES AND/OR MARKINGS.
4. PAVEMENT THAT HAS BEEN RESURFACED WITHIN THE LAST FIVE (5) YEARS; PAVEMENT RESTORATION SHALL BE AT A MINIMUM WIDTH FROM CURB TO CURB AND LONGITUDINALLY PER NOTE #2. ADDITIONAL PAVING AND RESTORATION MAY BE REQUIRED, AS DETERMINED BY THE T&ES DIRECTOR.

BEDDING FOR PIPE & TRENCH SECTIONS

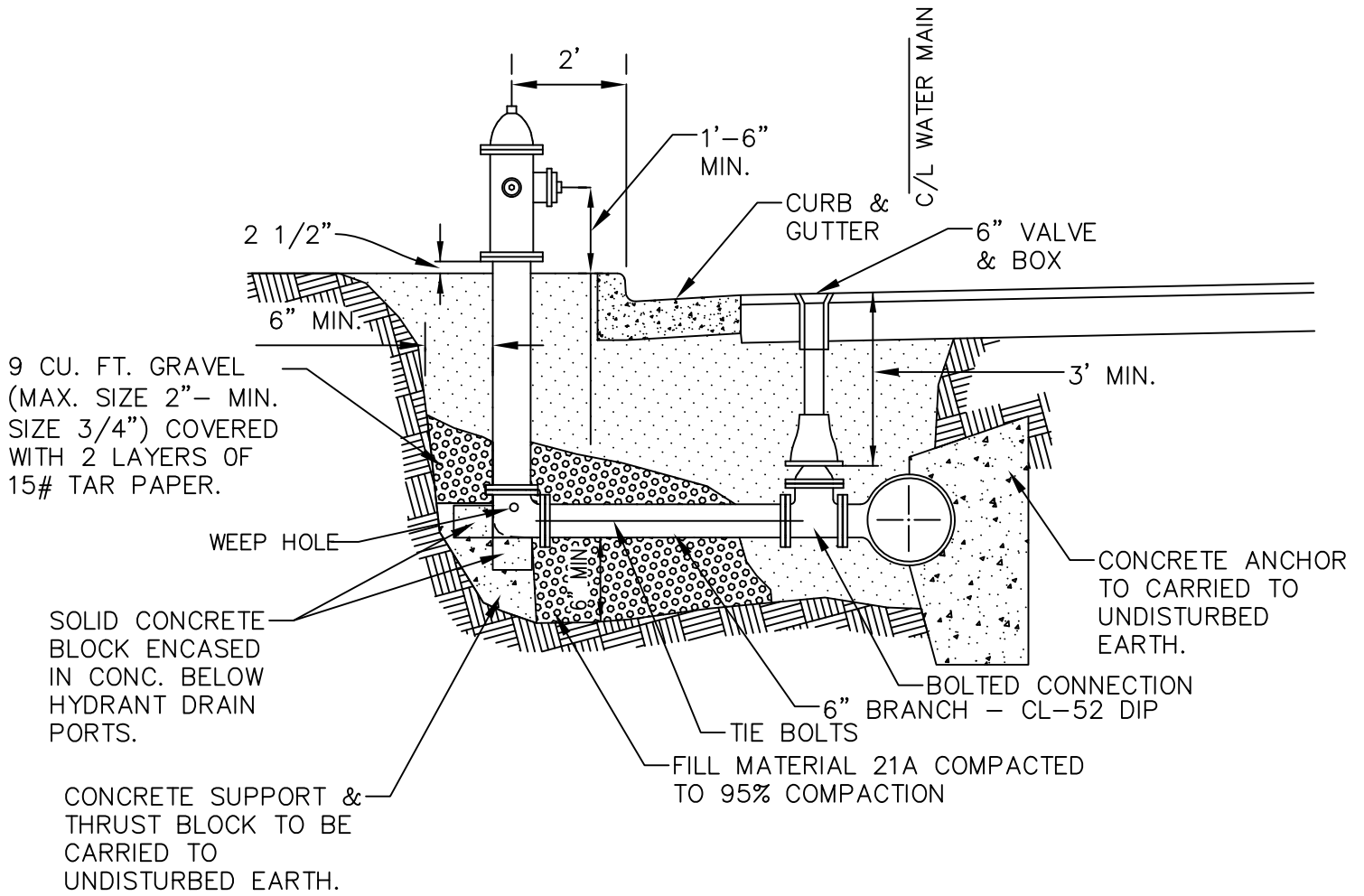
01/16/2021

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSJT-1

PAGE 17



FIRE HYDRANT INSTALLATION

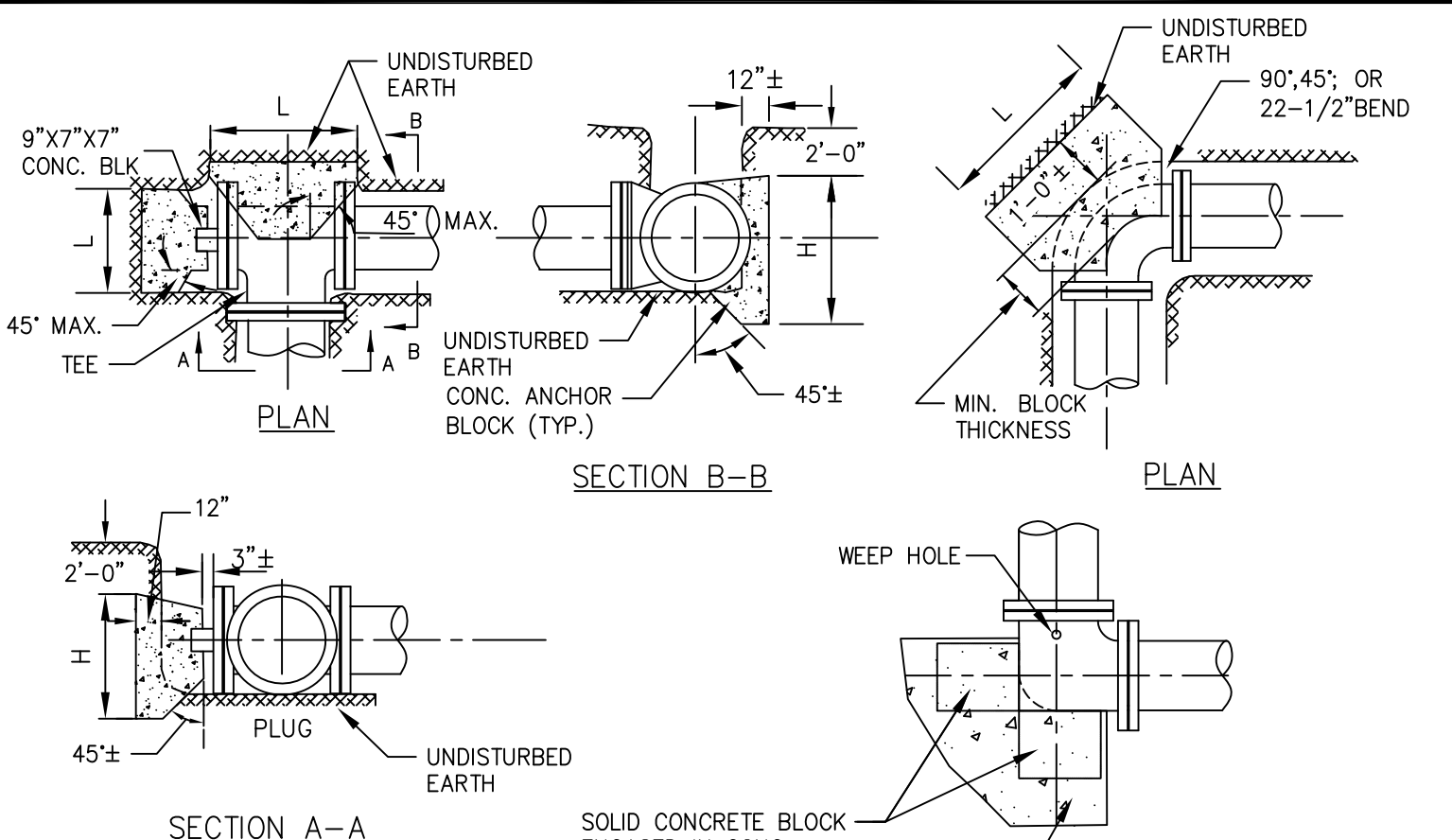
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

	06/21/2021
REVISION	DATE
	CSFH-1
	PAGE 18

NOTES:

1. FIRE HYDRANT: MUELLER CENTURION – CATALOG # A423 WITH 1 1/2 INCH PENTAGON OPERATING NUT; LEFT TURN TO OPEN TWO 2 1/2” HOSE NOZZLES AND ONE 4” HOSE NOZZLE.
2. VALVE: MUELLER GATE VALVE – CATALOG # A2380-20, WITH 6 INCH MECHANICAL JOINTS. 2 INCH SQUARE NUT, LEFT TURN TO OPEN. VALVES AND FITTINGS SHALL BE WRAPPED IN 10MIL. OR THICKER POLYETHYLENE.
3. ALL FITTINGS SHALL BE DUCTILE IRON. ALL FITTINGS TO BE RESTRAINED.
4. LOCATIONS TO BE AS SHOWN ON PLANS. VARIANCE OF THE 2’ MIN. FROM THE FACE OF THE CURB SHALL BE REVIEWED ON AN INDIVIDUAL BASIS BY THE TRANSPORTATION AND ENVIRONMENTAL SERVICES ENGINEER.
5. FIRE HYDRANTS TO BE INSTALLED AND TESTED IN ACCORDANCE WITH CURRENT VERSION OF AWWA M17 MANUAL.
6. VALVES AND SERVICE LINES ARE TO BE INSTALLED AND TESTED IN ACCORDANCE WITH THE CURRENT VERSION OF AWWA G200-09 DISTRIBUTION SYSTEMS AND M44 DISTRIBUTION VALVES; SELECTION, INSTALLATION, FIELD TESTING, AND MAINTENANCE, 3RD ED.
7. PRIOR TO ACCEPTANCE BY THE CITY OF ALEXANDRIA, FIELD TESTING AND PRESSURE READINGS SHALL BE PROVIDED BY THE CONTRACTOR.
8. FIRE HYDRANTS SHALL BE LOCATED AT EACH STREET INTERSECTION. THERE SHALL BE AT LEAST ONE FIRE HYDRANT LOCATED AT EACH INTERSECTION. THE MAXIMUM DISTANCE BETWEEN FIRE HYDRANTS IN BUSINESS DISTRICTS, MEASURING ALONG STREET CENTERLINES, SHALL BE 300 FEET. ALL PARTS OF EACH BUILDING SHALL BE WITHIN 500 FEET OF HOSE RUN FROM A FIRE HYDRANT. THE MAXIMUM DISTANCE BETWEEN FIRE HYDRANTS IN RESIDENTIAL DISTRICTS, MEASURED ALONG STREET CENTERLINES, SHALL NOT EXCEED 500 FEET.
9. PRIOR TO INSTALLATION OF PRIVATE HYDRANTS, AMERICAN WATER IS TO SIGN OFF ON THE HYDRANT LOCATION.
10. HYDRANTS SHALL NOT BE USED AS TEMPORARY BLOW-OFFS DURING CONSTRUCTION.
11. NO VERTICAL OBSTRUCTIONS SHALL BE WITHIN 10’ OF EITHER SIDE OR REAR OF HYDRANT.
12. SPECIFY BOLLARDS WHERE HYDRANTS ARE UNPROTECTED BY CURB AND GUTTER, PLACED IN OPEN SPACE OR AT THE REAR OF COMMERCIAL BUILDINGS.
13. FIRE HYDRANTS SHALL BE PLACED AT SIGNIFICANT HIGH POINTS OF MAINS TO RELEASE AIR.
14. TO ENABLE THE DRAINING AND FLUSHING OF ALL MAINS, SPECIFY FIRE HYDRANTS AT SIGNIFICANT LOW POINTS.
15. LANDSCAPING, TREES, BMP’S, SIGNS, SIGNALS, LIGHT POLES, AND/OR OTHER UTILITIES ARE NOT PERMITTED TO BE WITHIN 5 FEET OF A HYDRANT.
16. WHEN INSTALLED IN PARKING AREA, FIRE HYDRANT SHALL BE PROTECTED BY BARRIERS THAT WILL PREVENT PHYSICAL DAMAGE BY VEHICLES.
17. IN THE CITY OF ALEXANDRIA, PUBLIC AND PRIVATE FIRE HYDRANTS ARE LOCATED AND MAINTAINED TO ASSURE THE APPROPRIATE SUPPLY OF WATER IS AVAILABLE FOR FIREFIGHTING PURPOSES. ALL PUBLIC FIRE HYDRANTS ARE THE PROPERTY OF THE CITY OF ALEXANDRIA. ALL FIRE HYDRANTS LOCATED ON PRIVATE PROPERTY ARE THE OWNERSHIP AND MAINTENANCE RESPONSIBILITY OF THE PROPERTY OWNER. IN ORDER TO PROVIDE FOR FIREFIGHTING PURPOSES, IT IS NECESSARY THAT ALL FIRE HYDRANTS BE EASILY RECOGNIZABLE TO AVOID BEING BLOCKED OR OBSTRUCTED. TO AID IN MAINTAINING THE IDENTIFIABLE APPEARANCE AND BY ORDER OF THE FIRE CHIEF, ALL FIRE HYDRANTS SHALL BE PAINTED AS DIRECTED;
 - A. ALL PUBLIC AND PRIVATE HYDRANT BARRELS AND EXTENSIONS SHALL BE PAINTED WITH THE APPROVED: SHERWIN WILLIAMS “SAFETY YELLOW” #B54YZ437
 - B. ALL PUBLIC HYDRANT BONNETS AND CAPS SHALL BE PAINTED WITH AN APPROVED REFLECTIVE WHITE: SHERWIN WILLIAMS “PURE WHITE” # B54WZ401
 - C. ALL PRIVATE HYDRANT BONNETS SHALL BE PAINTED WITH THE APPROVED: SHERWIN WILLIAMS “SAFETY YELLOW” #B54YZ437
 - D. ALL PRIVATE HYDRANT CAPS SHALL BE PAINTED WITH THE APPROVED: SHERWIN WILLIAMS “PURE WHITE” #B54WZ401
 - E. HYDRANT BARRELS AND EXTENSIONS MAY BE PAINTED WITH AN APPROVED FLAT BLACK IN THE HISTORIC AND OLD TOWN AREAS OF THE CITY WHEN SPECIFICALLY APPROVED IN WRITING BY THE FIRE CHIEF.

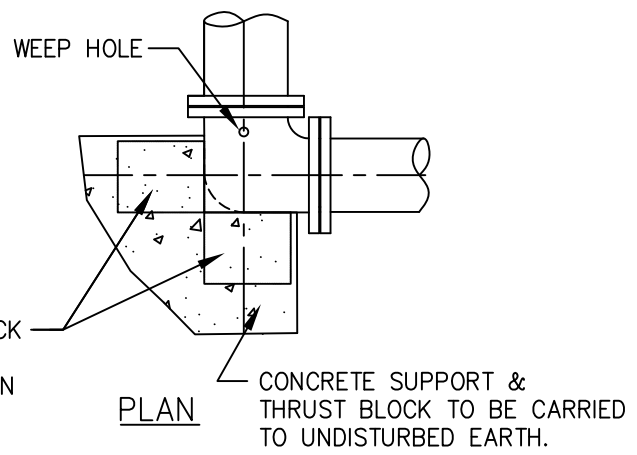
<h1>FIRE HYDRANT INSTALLATION NOTES</h1>	06/21/2021
	REVISION DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES ALEXANDRIA, VIRGINIA	CSFH-1A
	PAGE 19



NOTES:

1. ALL MATERIAL SHALL BE REMOVED FROM THE VALVE BODY AND STEAM AREA PRIOR TO ACCEPTANCE.
2. THE VALVE MUST HOLD IN THE CLOSED POSITION.
3. WRAP FITTING WITH POLYETHYLENE SHEETING.
4. CONCRETE TO BE CLASS B2 (2200 PSI) OR BETTER.
5. BLOCKING MUST NOT OBSTRUCT ACCESS TO MECHANICAL JOINT ASSEMBLY.
6. AT TEE USE DIMENSIONS DEAD END OF SAME DIAMETER AS BRANCH OF TEE.
7. TABLE IS BASED ON $R=2PAsin(\theta/2)$, A SOIL BEARING OF 3000 PSF, A TEST PRESSURE OF 150 PSI, AND A SAFETY FACTOR OF 1.5. INCREASE BLOCKING DIMENSIONS AS REQUIRED IN SOILS WITH LOWER BEARING VALUES.
8. FOR FITTINGS LARGER THAN 24", BLOCKING SHALL BE DESIGNED ON PROJECT SPECIFIC BASIS.
9. APPROXIMATE VOLUME OF CONCRETE REQUIRED FOR VARIOUS SIZE BENDS AT 100psi WORKING PRESSURE & MINIMUM BLOCK THICKNESS OF 1'-9" FOR 6", 8", 12" & 16" PIPE, 1'-6" FOR 20" PIPE & 1'-4" FOR 24" PIPE.

SOLID CONCRETE BLOCK ENCASED IN CONC. BELOW HYDRANT DRAIN PORTS.

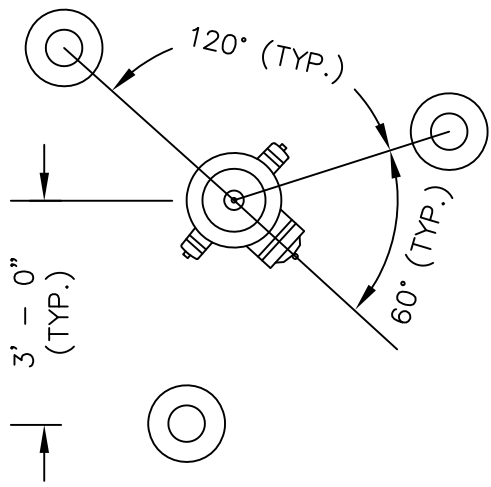


PIPE SIZE INCHES	DEGREE OF BEND	MINIMUM CONCRETE ANCHOR BLOCK DIMENSIONS - FEET										VOLUME OF CONCRETE CU. YD.(1)
		WORKING PRESSURE										
		75 PSI		100 PSI		125 PSI		150 PSI		175 PSI		
		L	H	L	H	L	H	L	H	L	H	
6	90	2.5	1.0	2.5	1.5	2.0	2.0	2.5	2.0	3.0	2.0	0.24
	45	1.5	1.0	2.0	1.0	2.0	1.0	2.5	1.0	2.0	1.5	0.13
	11-1/4/22-1/2	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.5	1.0	0.06
8	90	2.0	2.0	2.5	2.5	3.0	2.5	4.0	2.0	4.0	2.5	0.40
	45	2.5	1.0	2.0	1.5	2.0	2.0	2.5	2.0	2.5	2.0	0.19
	11-1/4/22-1/2	1.5	1.0	1.5	1.0	2.0	1.0	2.5	1.0	2.0	1.5	0.10
12	90	3.0	3.0	4.0	3.0	5.0	3.0	5.0	4.0	5.5	4.0	0.78
	45	2.5	2.0	3.5	2.0	4.0	2.5	4.0	2.5	4.0	3.0	0.45
	11-1/4/22-1/2	2.5	1.0	2.5	1.5	2.5	2.0	2.5	2.0	3.0	2.0	0.24
16	90	5.0	3.5	5.5	4.0	6.0	4.5	7.5	4.5	7.5	5.0	1.43
	45	4.0	2.5	4.0	3.0	5.0	3.0	5.0	3.5	5.0	4.5	0.78
	11-1/4/22-1/2	2.5	2.0	3.0	2.0	3.0	2.5	3.0	3.0	4.0	3.0	0.39
20	90	5.5	4.5	6.5	5.5	7.5	5.5	8.5	6.0	9.5	6.0	1.99
	45	4.0	3.5	5.0	4.0	5.5	4.0	6.0	4.5	7.0	4.5	1.11
	11-1/4/22-1/2	3.0	2.5	3.5	3.0	4.0	3.0	4.5	3.0	5.5	3.0	0.58
24	90	6.5	5.5	8.0	6.0	9.5	6.5	11.0	6.5	13.0	6.5	2.37
	45	5.0	4.0	5.5	5.0	7.5	4.5	7.0	5.5	9.0	5.0	1.36
	11-1/4/22-1/2	3.5	3.0	4.0	3.4	5.0	3.5	5.0	4.0	6.0	4.0	0.69

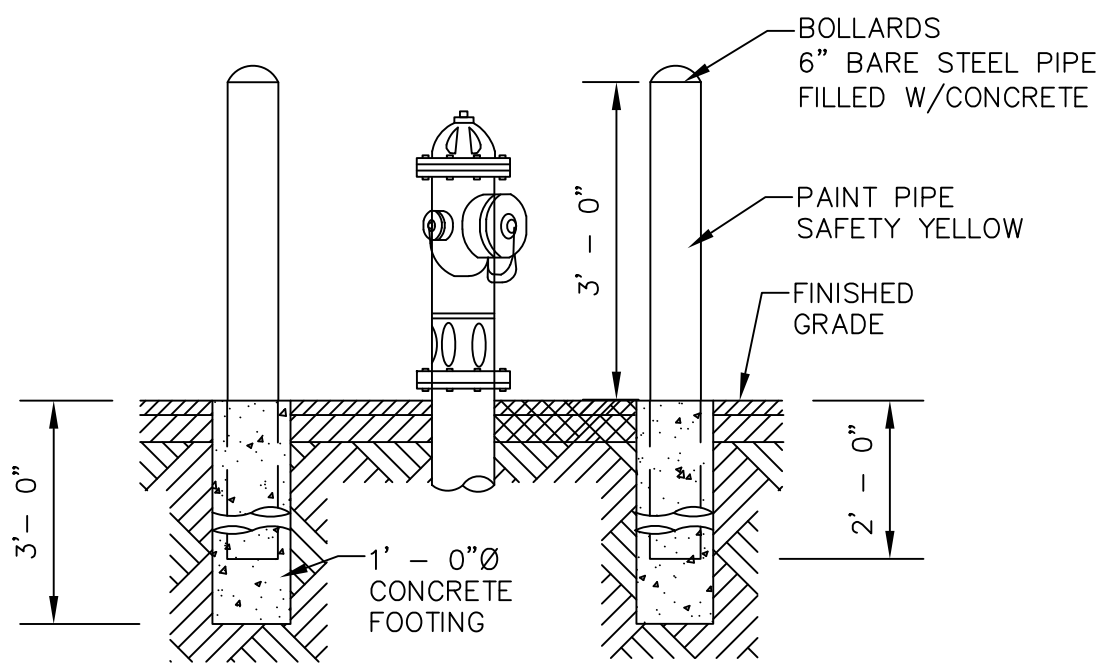
CONCRETE ANCHOR BLOCK

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

06/21/2021
REVISION DATE
CSAB-1
PAGE 20



TYPICAL 3 BOLLARD PLACEMENT - PLAN



ELEVATION

NOTES:

1. BOLLARDS SHALL BE THREE(3) FEET MINIMUM FROM THE FACE OF FIRE HYDRANT. ALL ORIFICES SHALL BE UNOBSTRUCTED.
2. QUANTITY & PLACEMENT OF BOLLARDS TO BE DETERMINED BY PLANS OR FIELD INSPECTION AS WARRANTED.
3. CONCRETE TO BE VDOT CLASS A3.

HYDRANT BOLLARDS

06/21/2021

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ALEXANDRIA, VIRGINIA

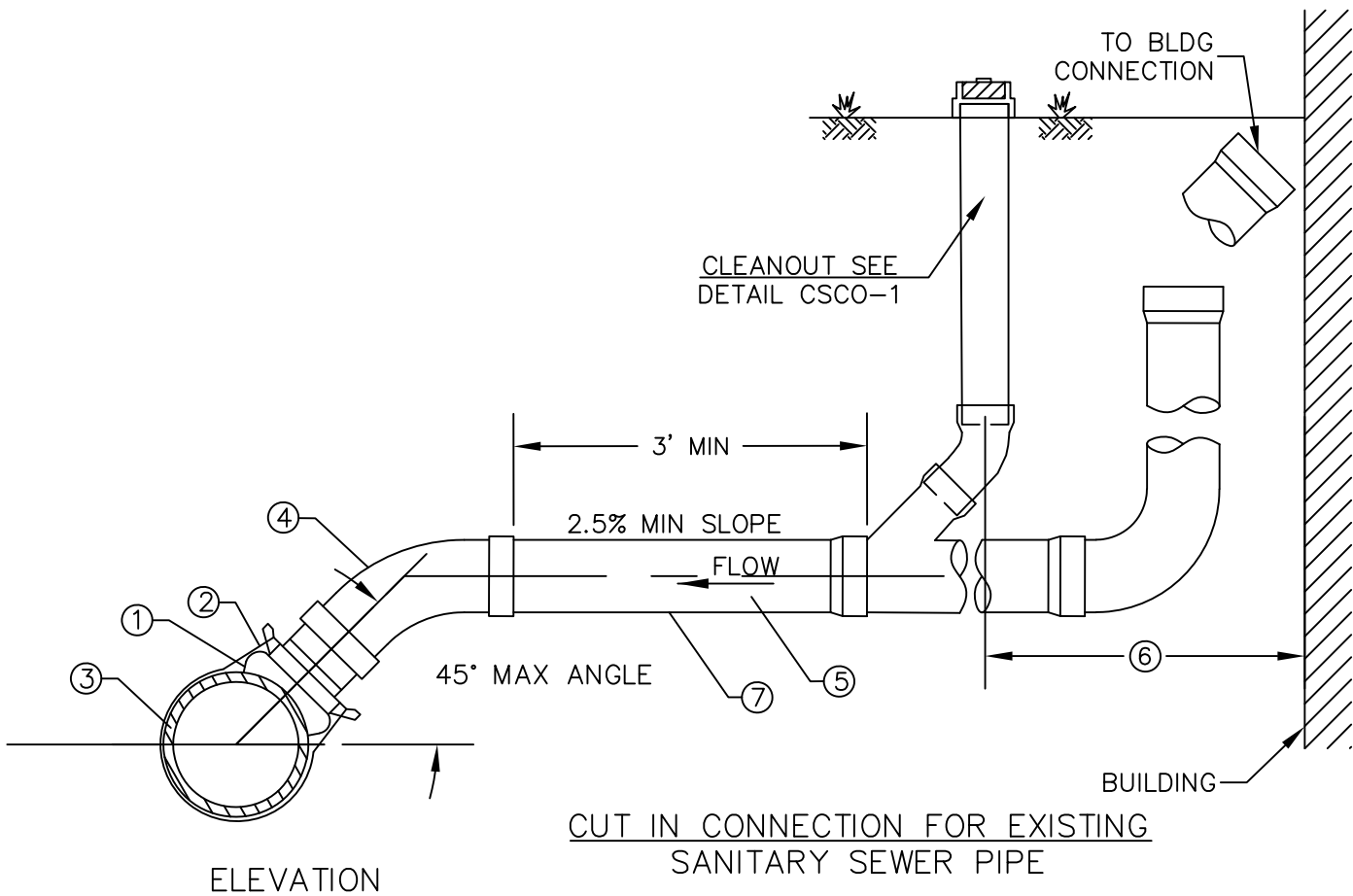
CSHB-1

PAGE 21

Pipe Type	Pipe Cutting Method	Connection Type	Applicable Detail
PVC (SDR-26) or Schedule 40	Tapping Machine	Romac CB Sewer Saddle or approved equal	CSLC-1A
Concrete	Coring	Romac CB Sewer Saddle or approved equal	CSLC-1A
Cast Iron/Ductile Iron	Tapping Machine	Romac CB Sewer Saddle or approved equal	CSLC-1A
Vitrified Clay Pipe (VCP)	Saw Cut	Manufactured Y or T connection	CSLC-1B
Brick	Special design		
Non-circular pipe			
Other Material			

NOTE:

1. ROMAC CB SEWER SADDLE OR CITY APPROVED EQUAL
2. ROMAC CB STRAPS 304 STAINLESS STEEL
3. EXISTING SEWER MAIN
4. 45° ELBOW/ BEND
5. PVC LATERAL SDR 26 OR SCHEDULE 40.
6. MINIMUM AND MAXIMUM SLOPE IN ACCORDANCE WITH THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE.
7. INVERT OF HOUSE CONNECTION MUST BE AT CROWN OF SEWER OR HIGHER.



SANITARY SEWER LATERAL CONNECTION

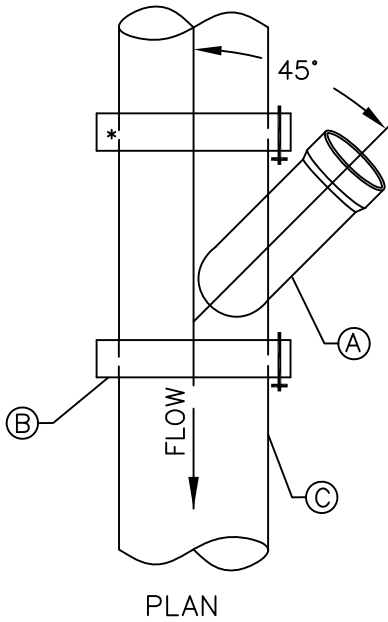
8/30/2022

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSLC-1A

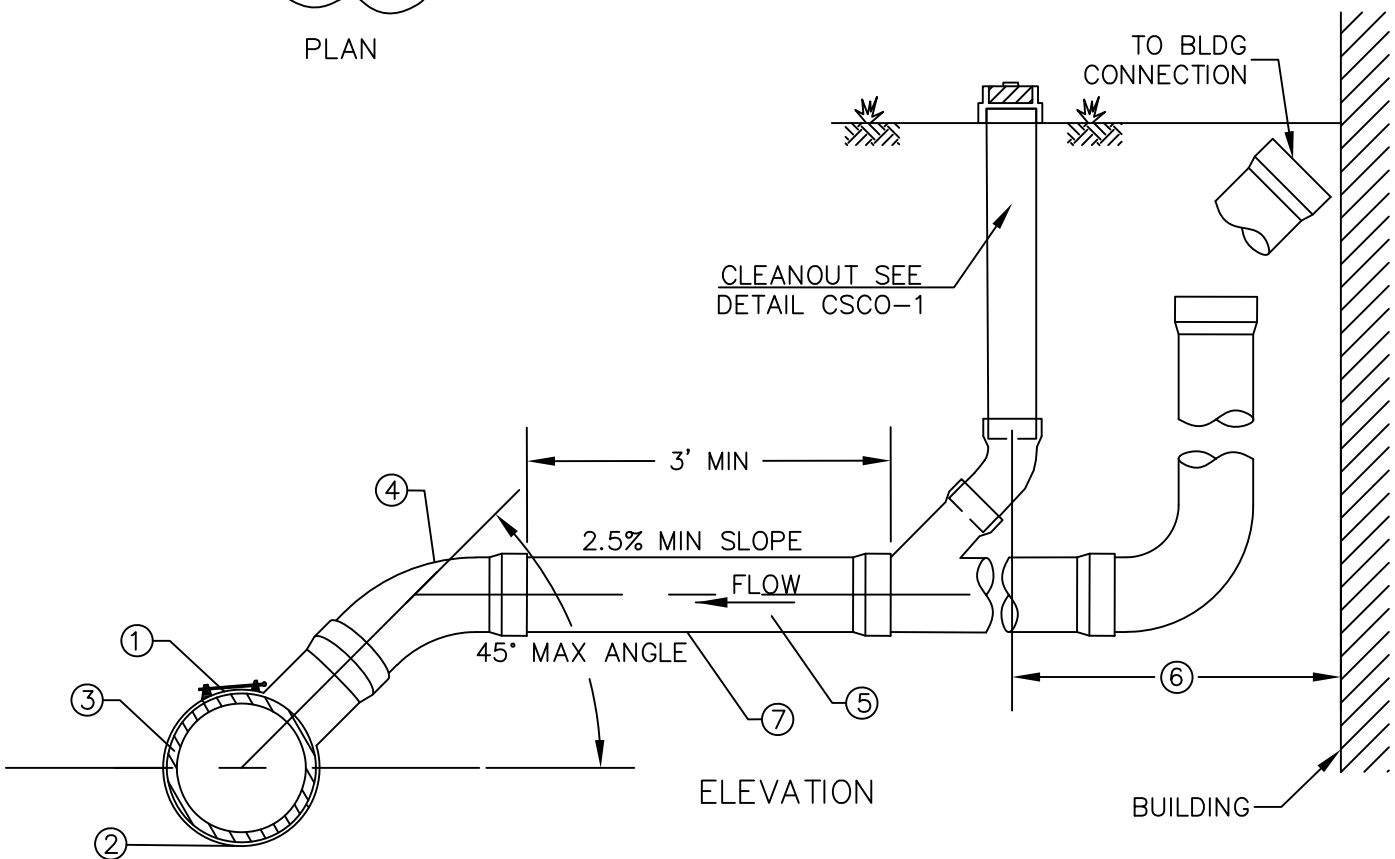
PAGE 22



NOTE:

1. STANDARD MANUFACTURED WYE OR TEE SECTION
2. HYMAX COUPLER OR FLANGED ADAPTERS OR CITY APPROVED EQUAL
3. EXISTING SANITARY SEWER
4. 45° ELBOW/ BEND
5. PVC LATERAL SDR 26 OR SCHEDULE 40.
6. MINIMUM AND MAXIMUM SLOPE IN ACCORDANCE WITH THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE.
7. INVERT OF HOUSE CONNECTION MUST BE AT CROWN OF SEWER OR HIGHER.

* EACH JOINT SPACE/ BETWEEN THE EXISTING PIPE AND THE INSERTED SECTION SHALL NOT EXCEED ONE (1) INCH.



MANUFACTURED WYE OR TEE CONNECTION FOR EXISTING VITRIFIED CLAY PIPE (VCP) OR REPLACING ENTIRE SECTION OF OTHER MATERIALS PIPES

SANITARY SEWER LATERAL CONNECTION

8/30/2022

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

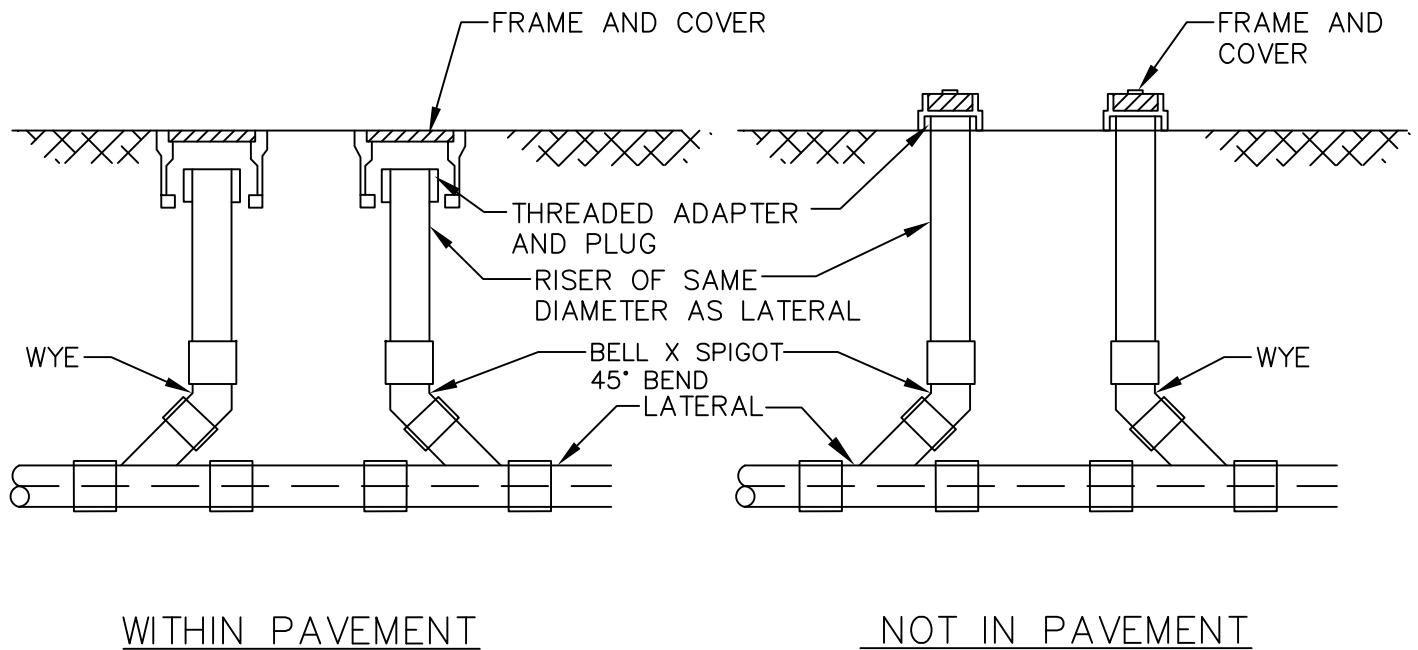
CSLC-1B

PAGE 23

NOTES:

- A. CONNECTION TO A PUBLIC SANITARY SEWER SHALL REQUIRE A SEWER LATERAL CONNECTION PERMIT FROM THE DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES). IF THE SANITARY SEWER IS LOCATED WITHIN THE PUBLIC RIGHT OF WAY AN EXCAVATION PERMIT SHALL ALSO BE REQUIRED.
- B. THE CONNECTION SHALL BE MADE PER THE RECOMMENDATIONS OF THE MANUFACTURER, AND IN THE PRESENCE OR WITH THE APPROVAL OF THE T&ES, CONSTRUCTION AND INSPECTION (C&I) INSPECTOR.
- C. THE SADDLE SHALL PROPERLY MATCH THE SANITARY SEWER MAIN PIPE.
- D. THE CUT ON THE EXISTING PIPE MUST BE NO LARGER THAN NECESSARY TO INSTALL SADDLE.
- E. ROUGH EDGES LEFT BY SAW CUT OR CORING SHALL BE SMOOTHED WITH A FILE OR SAND PAPER DEPENDING UPON THE MATERIAL OF THE SANITARY SEWER PIPE.
- F. OVER CUTTING THE HOLE OR DAMAGING THE SEWER MAIN WILL WARRANT REPLACEMENT OF THE DAMAGED MAIN LINE SEGMENT AND INSTALLATION OF A FACTORY MANUFACTURED WYE OR TEE CONNECTION PER DETAIL CSLC-1B.
- G. THE SADDLE CONNECTION MAY BE REPLACED WITH COMPRESSION SLEEVE CONNECTION WITH APPROVAL OF T&ES ENGINEER.
- H. THE TAP MUST BE OFFSET MINIMUM 2' FROM THE JOINTS.
- I. THE MANUFACTURED WYE OR TEE CONNECTION SHALL BE INSTALLED BY CUTTING OUT A SECTION OF VCP SEWER MAIN, MAINTAINING SQUARE ENDS, AND INSERTING THE MANUFACTURED WYE OR TEE SECTION. THE JOINTS ON BOTH SIDES SHALL BE SEALED USING HYMAX COUPLERS OR HYMAX FLANGED ADAPTERS OR CITY APPROVED EQUAL.
- J. T&ES INSPECTOR MUST INSPECT THE TAP PRIOR TO BACKFILL.
- K. ALL NEW INSTALLATIONS AND/OR REINSTALLATIONS OF SANITARY LINES AND SEWER LATERALS BOTH ON PRIVATE PROPERTY AND IN THE PUBLIC RIGHT OF WAY IN THE CITY OF ALEXANDRIA SHALL BE PROVIDED WITH 3" AND 6" WIDE 5 ML OVERALL THICKNESS DETECTABLE UNDERGROUND WARNING TAPES (DUWT).THE 3" DUWT SHALL BE INSTALLED AT DEPTHS OF 12" TO 18" AND 6" WIDE AT A DEPTH OF 24" SO AS TO MAKE UNDERGROUND INSTALLATIONS EASY TO FIND USING A NON-FERROUS LOCATOR. THE DUWT SHALL BE WITH ALUMINUM BACKING OR SOLID ALUMINUM CORE LAMINATED WITH A PROTECTIVE CLEAR FILM ON BOTH SIDES SEALING AND PROTECTING THE GRAPHICS FROM UNDERGROUND MOISTURE ACIDS, ALKALIS, AND OTHER SOIL SUBSTANCES. ALL DUWT TAPES SHALL BE PRINTED IN BLACK INK ON AMERICAN PUBLIC WORKS ASSOCIATION (APWA) APPROVED COLORS TO MEET OR EXCEED INDUSTRY STANDARDS. THE APPROVED COLOR FOR SANITARY SEWER LINES AND LATERALS IS GREEN.
- L. BEDDING SHOULD BE AS PER (CSTB-1).
- M. SEE CSCO-1 FOR CLEANOUT DETAIL.
- N. FOR PIPE MATERIAL TABLE SEE DETAIL CSLC-1A.

SANITARY SEWER LATERAL CONNECTION NOTES	06/21/2021
	REVISION DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES ALEXANDRIA, VIRGINIA	CSLC-1C
	PAGE 24



NOTE:

1. TERMINATE TRACER WIRE WITH CLEANOUT THAT IS WITHIN 5" OF BUILDING'S EXTERIOR. TERMINATE TRACER WIRE ABOVE GRADE IN AN ACCESSIBLE LOCATION. WHERE PROJECTED FROM DAMAGE. IF NOT USING IRON FRAME AND COVER.
2. TRACER WIRE TO BE #12 AWG SOLID COPPER WITH 45 MIL POLYETHYLENE INSULATION. AT TEMPORARY TERMINATION OF LATERAL BY UTILITY CONTRACTOR, MAKE SPLICE WITH BUTT CONNECTOR AND SHRINK SLEEVE. NO OTHER SPLICES PERMITTED.
3. EXPOSED CONCRETE TO HAVE CHAMFERED EDGES.

SANITARY SEWER CLEANOUT

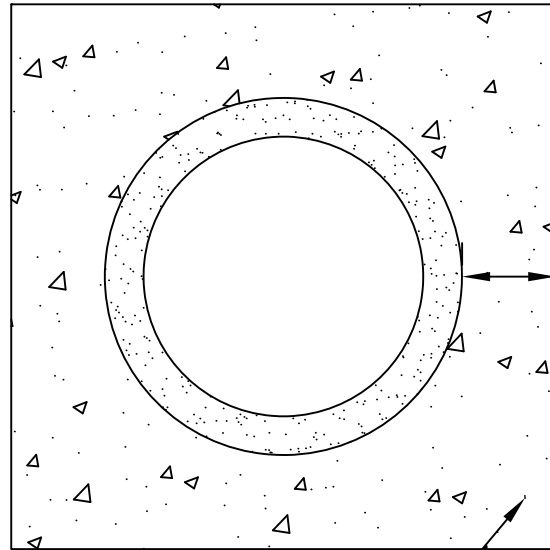
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

06/21/2021
REVISION DATE

CSCO-1

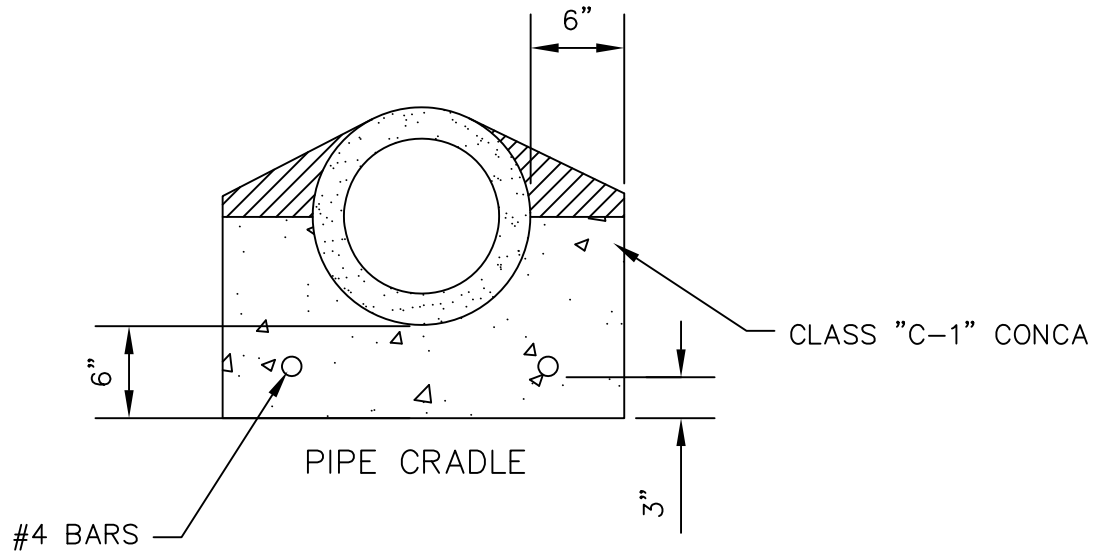
PAGE 25

PIPE ENCASEMENT



6" MIN.
ALL SIDES

CLASS "C-1" CONCRETE
ENCASEMENT
(WHEN REQUIRED)



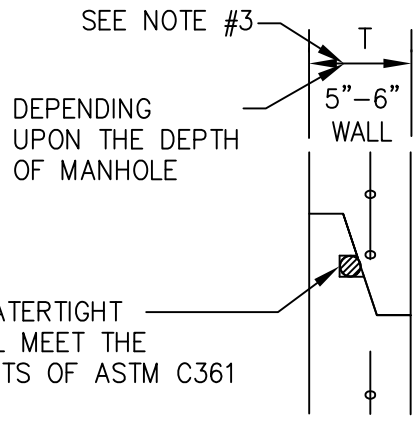
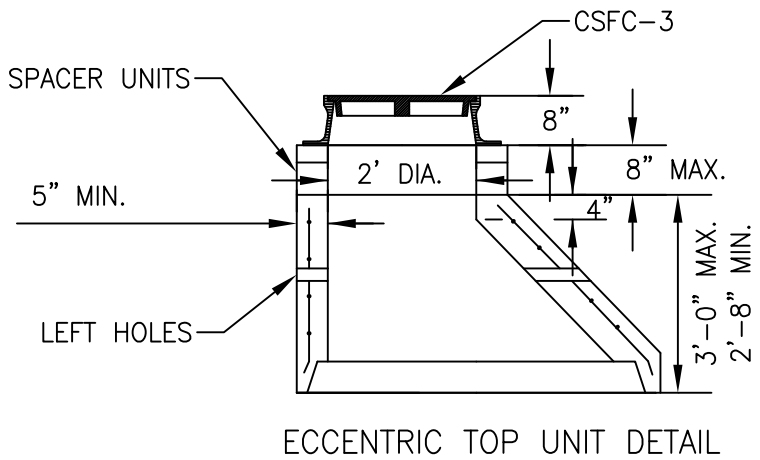
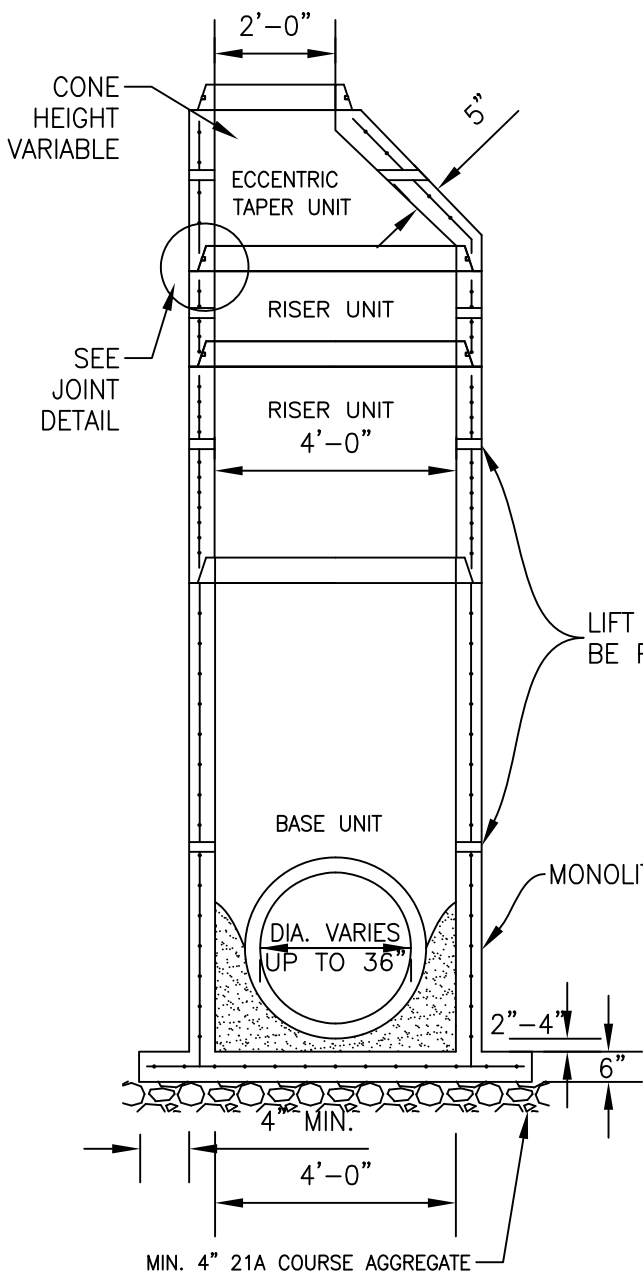
NOTE:

1. MINIMUM REQUIRED FOR UNCONTROLLED FILL AND UNACCEPTABLE NATIVE SOILS. GEOTECHNICAL ANALYSIS REQUIRED FOR OTHER CONDITIONS.
2. ENCASEMENT TO BE ONLY FOR SHALLOW COVER \leq 2 FEET.

SEWER PIPE ENCASEMENT AND HIGH CRADLE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

06/21/2021	REVISION	DATE
CSSE-1		
PAGE 26		

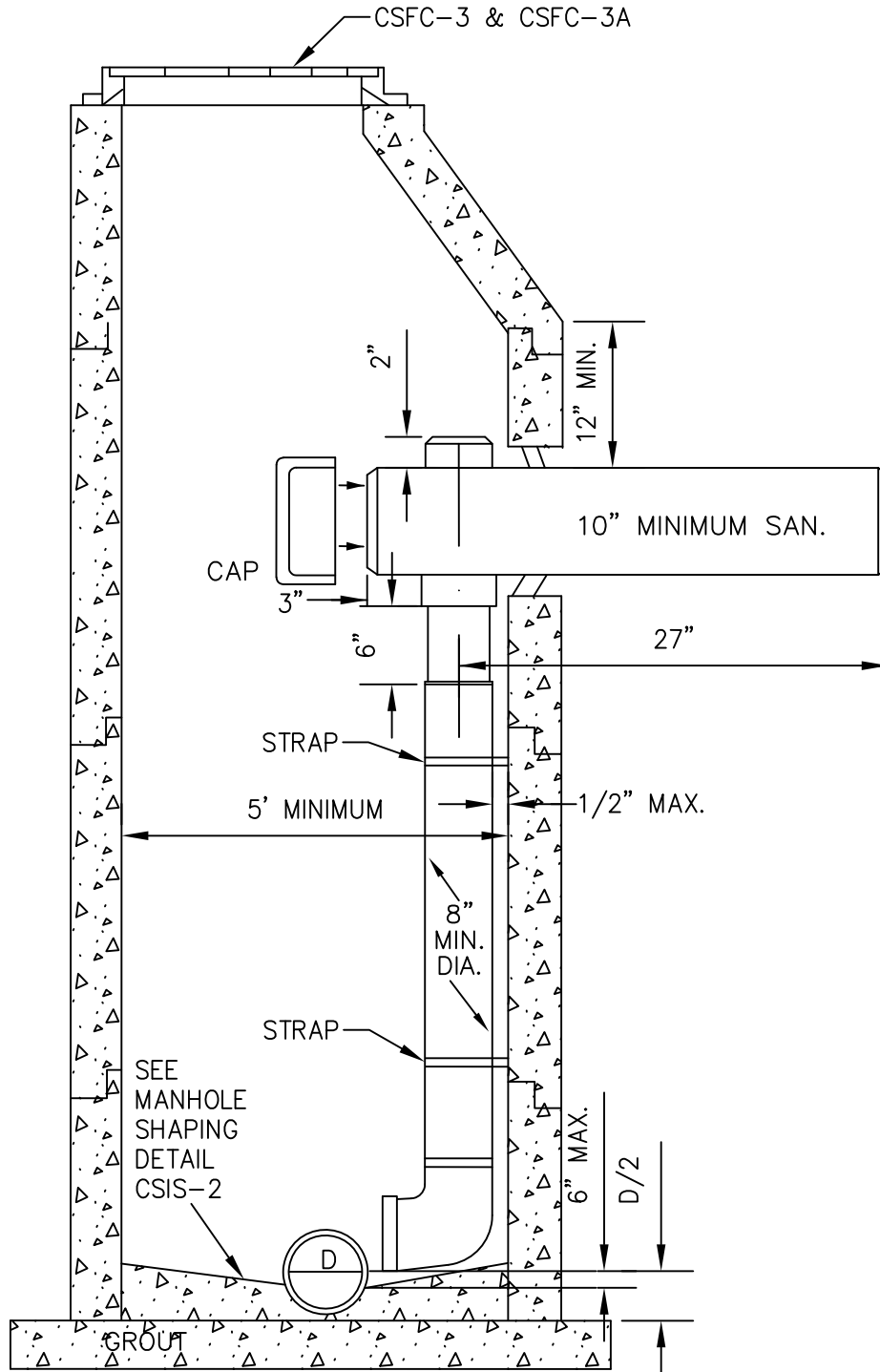


4. THE MINIMUM DIFFERENCE BETWEEN THE UPSTREAM AND DOWNSTREAM INVERTS SHOULD BE 0.1 FEET.
5. PROVIDE TONGUE AND GROOVE JOINTS IN MANHOLE SECTIONS WITH A PREFORMED GROOVE IN THE TONGUE FOR PLACEMENT OF AN O-RING TYPE ROUND, RUBBER GASKET, OR FOR PLACEMENT OF A PRESS SEAL TYPE 4-G MANHOLE GASKET IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM C361.
 - a. GASKET SHALL COMPLY WITH REQUIREMENTS OF ASTM C361.
 - b. GASKET SHALL PROVIDE THE SOLE ELEMENT IN SEALING THE JOINT FROM EITHER INTERNAL OR EXTERNAL HYDROSTATIC PRESSURE.
6. MANHOLE SHALL BE TESTED FOR NEGATIVE AIR PRESSURE (VACUUM) TEST IN ACCORDANCE WITH ASTM C1244 FOR THE FINAL ACCEPTANCE.
7. WHEN A WATERTIGHT FRAME AND COVER IS REQUIRED BY THE CITY, A CSFC-4 SHALL BE USED.
8. FOR MANHOLES OVER 60" IN DIAMETER, A SPECIAL DESIGN WILL BE SUBMITTED TO CITY FOR APPROVAL.
9. FOR REINFORCEMENT SCHEDULE SEE CSMH-2, PAGE 11.

- NOTE:
1. THE MANHOLE SHALL BE DESIGNED TO MEET HS-20 LOADING CAPACITY.
 2. PIPE MUST BE FLUSH WITH INSIDE WALL OF MANHOLE.
 3. WALLS TO DEPTH OF 12' TO BE 5" THICK. WALLS DEEPER THAN 12' TO BE 6".

N.T.S.

<p>PRECAST MANHOLE 4' INSIDE DIAMETER; FOR PIPES UP TO 36" IN DIAMETER</p>	<p>06/21/2021 REVISION DATE</p>
<p>DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES ALEXANDRIA, VIRGINIA</p>	<p>CSMH-3 PAGE 27</p>



MANHOLE (Drop)

06/21/2021	REVISION	DATE
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DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSMH-4

PAGE 28

NOTES:

1. WHEN IT IS NECESSARY TO DROP THE ELEVATION OF THE SEWER AT A MANHOLE DUE TO UNUSUAL CIRCUMSTANCES SUCH AS BAD SOIL, ROCK, HIGH WATER TABLE, UTILITY CONFLICTS OR EXCESSIVE DEPTHS, DROP CONNECTION IS REQUIRED. ANY DROP CONNECTION FOR A SEWER LINE DIAMETER OF 15" OR GREATER SHALL REQUIRE A SPECIAL DESIGN TO BE APPROVED BY T&ES. THE MAXIMUM DIFFERENCE IN ELEVATION PERMITTED BETWEEN THE INFLUENT AND EFFLUENT LINES IN A STANDARD MANHOLE WILL BE 2'-0".
2. ALL THROUGH PIPE SHALL BE FILLED WITH AN SDR 35 PVC SOLVENT WELD CAP THAT SHALL BE HELD IN PLACE BY THE INTERFACE FIT BETWEEN THE PIPE AND CAP.
3. ALL CAPS SHALL BE SECURED TO THE DROP FITTING WITH 2' OF GALVANIZED CHAIN SECURED WITH 2 STEEL MACHINE SCREWS, NUTS AND WASHERS.
4. CHAMFER ON ALL PIPE SIZES TO BE AT A 45° ANGLE.
5. VERTICAL STACK TO BE SDR 35 PVC PIPE CONNECTED TO DROP FITTING WITH STANDARD COUPLING AND SOLVENT WELD.
6. VERTICAL STACK WILL BE STRAPPED TO MANHOLE AT THE JOINT WHEN MORE THAN 1 SECTION OF PIPE IS USED. STRAP TO BE MADE OF MATERIAL NONCORROSIVE TO SEWER GASES.
7. ELBOW AT BOTTOM OF THE STACK WILL BE EITHER A 45° OR 90° TURN MADE OF SDR 35 PVC PIPE PLACED IN THE DIRECTION OF THE FLOW IN MANHOLE, WITH BENCH CONSTRUCTED TO CONFORM TO MANHOLE BENCH.
8. WHEN PIPE MATERIAL IS OTHER THAN PVC, A FULL CIRCLE CLAMP COUPLING WILL BE USED AT THE INTERSECTION OF THE INCOMING MAIN TO THE PVC INSIDE DROP FITTING. THE LENGTH OF THIS COUPLING SHALL NOT BE LESS THAN THE SIZE OF THE NOMINAL PIPE DIAMETER ON WHICH IT IS BEING USED.
9. ADDITIONAL DROPS WILL REQUIRE A LARGER DIAMETER MANHOLE.
10. STAINLESS STEEL STRAPPING SHALL BE 1" WIDE BY 1/8" THICK AND ATTACHED TO THE MANHOLE WALL WITH MASONRY ANCHORS.
11. THE MANHOLE SHALL BE DESIGNED TO MEET HS-20 LOADING CAPACITY.
12. EXTERNAL DROPS ARE NOT ALLOWED.

MANHOLE (Drop) NOTES

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

06/21/2021

REVISION	DATE
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CSMH-4A

PAGE 29

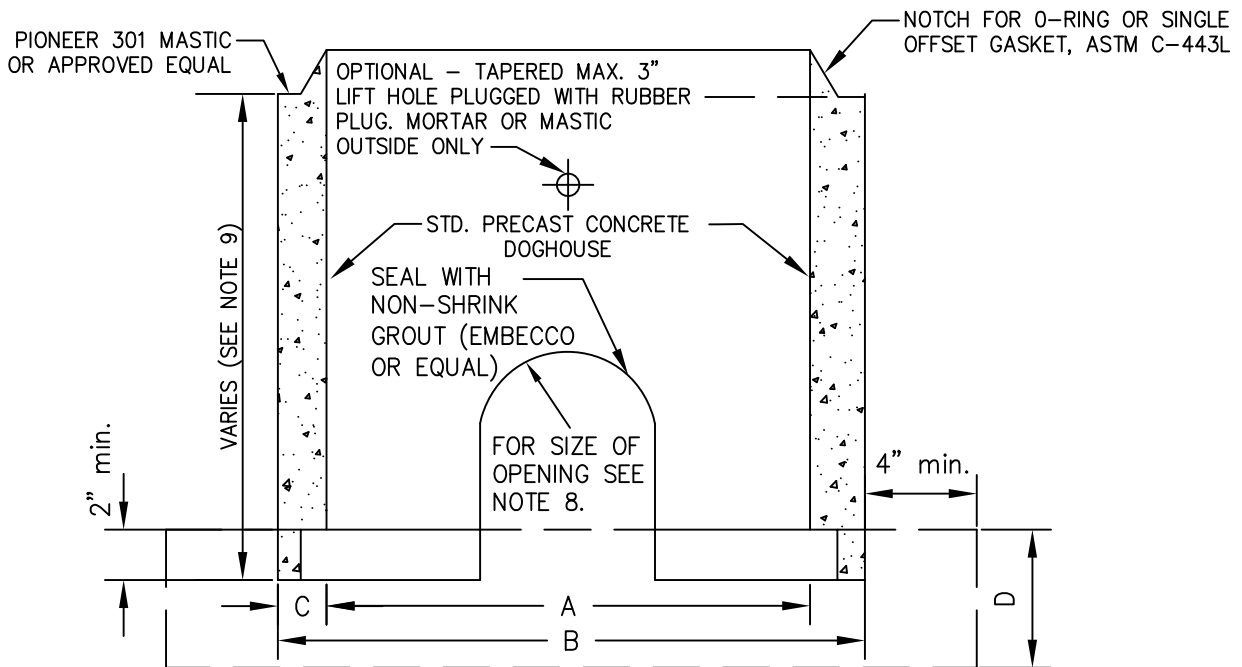
NOTE:

1. CONCRETE TO BE VDOT CLASS A-4.
2. ALL REINFORCING STEEL TO MEET THE CURRENT REQUIREMENTS OF ASTM SPEC. A-615.
3. MANHOLE SECTIONS TO MEET THE CURRENT REQUIREMENTS OF ASTM SPEC. C-478.
4. TAPERED JOINT WITH O-RING GASKET, OR SINGLE OFFSET JOINT WITH RUBBER GASKET TO MEET CURRENT REQUIREMENTS OF ASTM SPEC. C-443.
5. DOGHOUSE OPENING MAY ONLY BE USED WHEN PLACING A NEW MH OVER AN EXISTING LINE; OTHERWISE, THE OPENING MUST BE CAST. SIZE, LOCATION & ANGLE OF ENTRY MUST BE AS REQUIRED BY THE PLANS.
6. MH SECTION TO BE CAST IN THE BASE A MIN. OF 2".
7. JOINT CONFIGURATION MAY BE CAST BELL-UP OR SPIGOT-UP.
8. HOLES IN PRECAST UNITS ARE TO BE 4" MIN. 8" MAX. LARGER THAN THE OUTSIDE DIA. OR THE PROPOSED PIPE.
9. BASE SECTION TO PROVIDE MIN. 6" CLEARANCE BETWEEN TOP OF PIPE OPENING AND BOTTOM OF BELL AND SPIGOT JOINT.
10. THE MANHOLE SHALL BE DESIGNED TO MEET HS-20 LOADING CAPACITY.

CHART "A"

MIN. DIMENSIONS (in.)			
MH	4' - 0"	5' - 0"	6' - 0"
A	48"	60"	72"
B	58"	72"	86"
C	5"	6"	7"
D	6"	8"	10"

DIMENSIONS OF D MUST BE TAKEN FROM BOTTOM OF KEY (SEE DRAWING BELOW)



DOGHOUSE MANHOLE

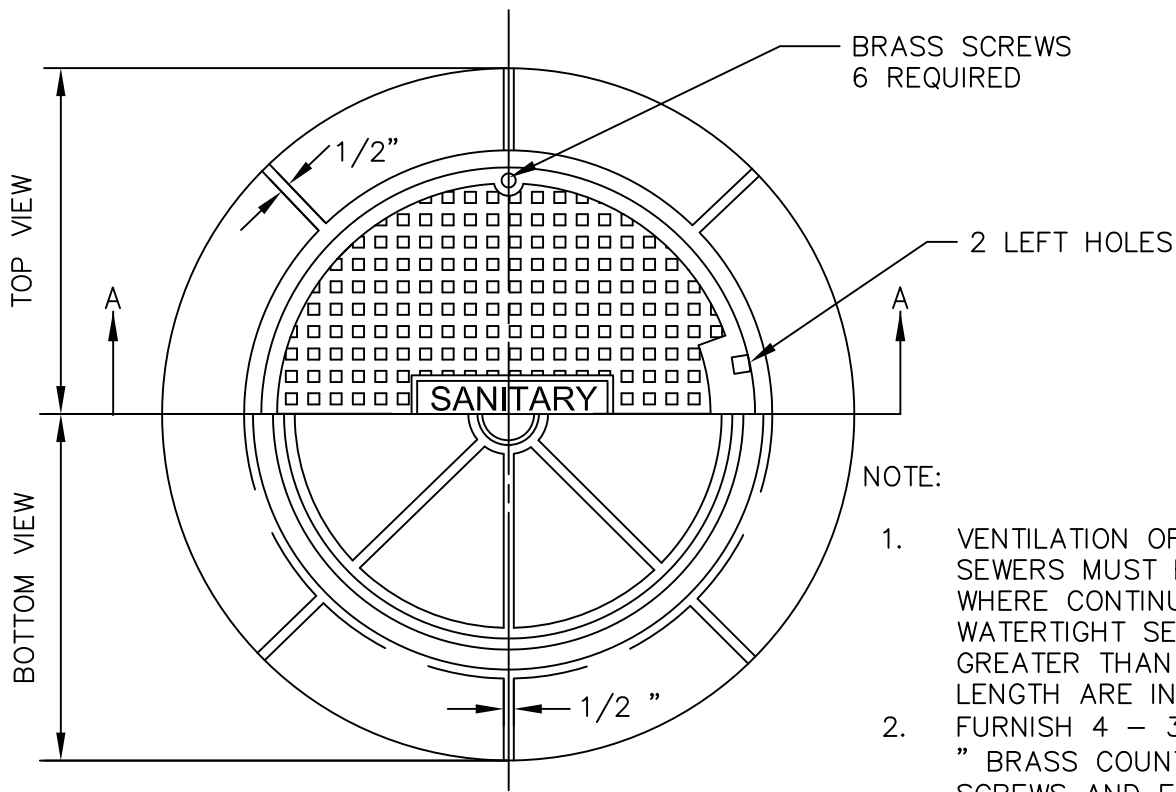
06/21/2021

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

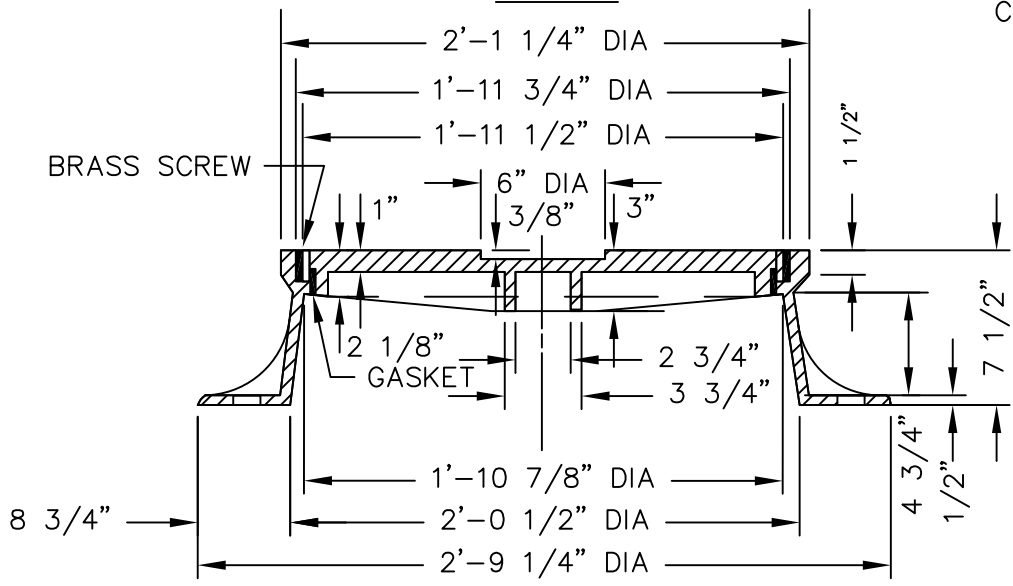
CSMH-5

PAGE 30



- NOTE:
1. VENTILATION OF GRAVITY SEWERS MUST BE PROVIDED WHERE CONTINUOUS WATERTIGHT SECTIONS GREATER THAN 1000 FEET IN LENGTH ARE INCURRED.
 2. FURNISH 4 - 3/8 " x 2 1/2 " BRASS COUNTERSUNK CAP SCREWS AND FLEXIBLE PLASTIC GASKET BETWEEN COVER AND FRAME SET.

PLAN



SECTION A-A
NOT TO SCALE

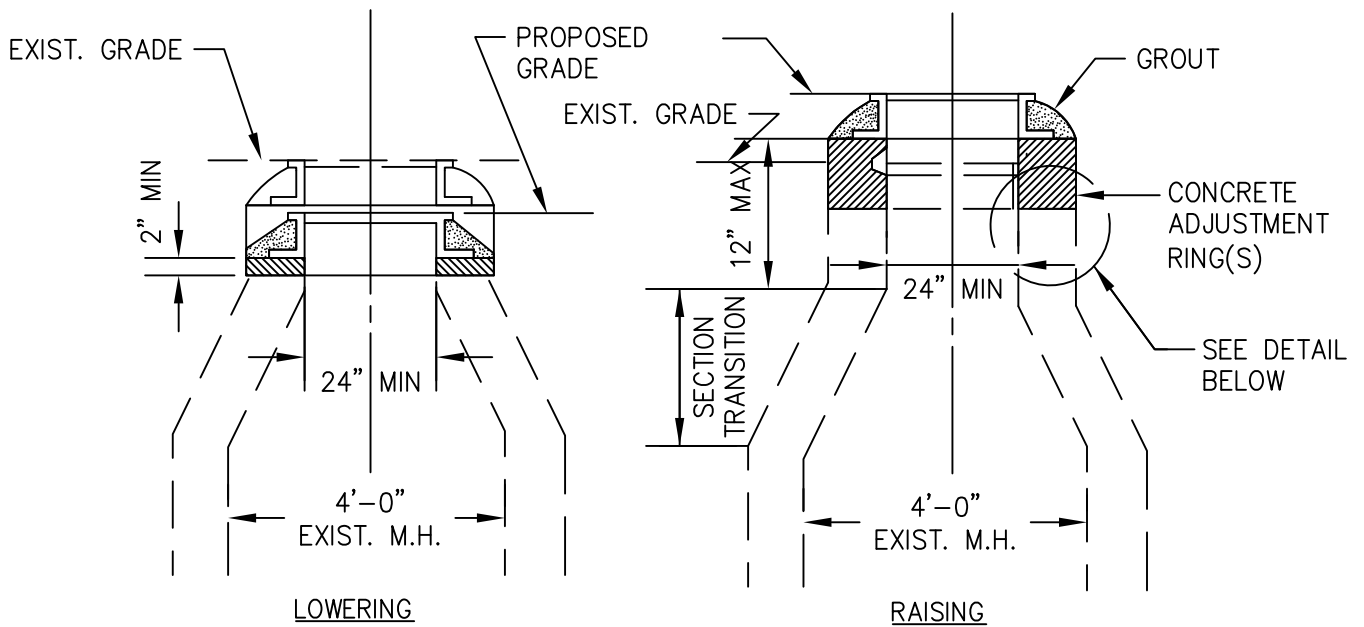
MINIMUM AVG. WEIGHTS	
FRAME	190 LBS
COVER	120 LBS
TOTAL	310 LBS

NOTE: THE MANHOLE FRAME AND COVER SHALL BE DESIGNED TO MEET HS-20 LOADING CAPACITY.

MANHOLE FRAME & COVER (Bolted - Watertight)

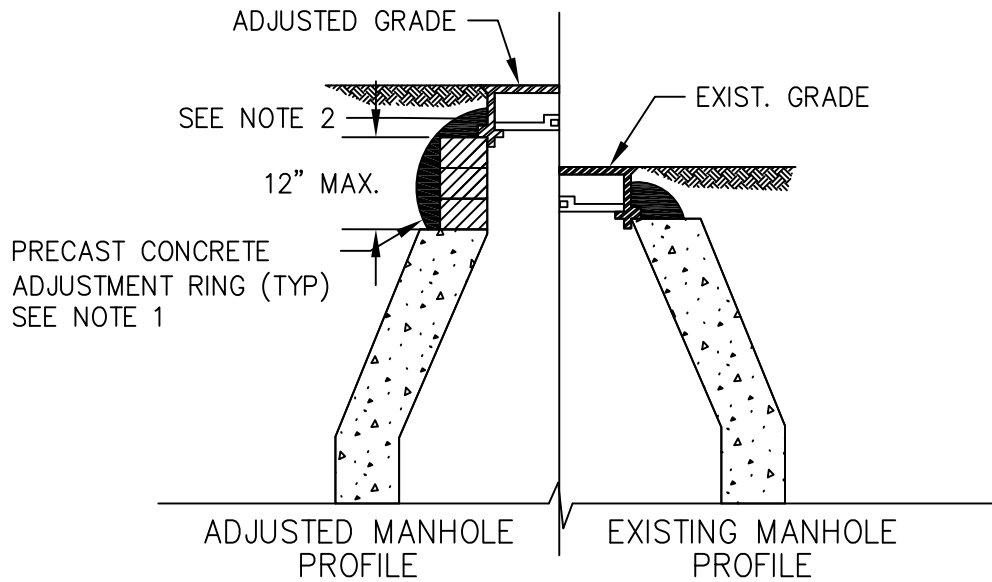
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

06/21/2021	
REVISION	DATE
CSFC-4	
PAGE 32	



ADJUSTMENT (FRAME & COVER ONLY)

RAISE OR LOWER FRAME AND COVER SUCH THAT HEIGHT OF 24" NECK SECTION, INCLUDING FRAME AND COVER, DOES NOT EXCEED 12" MAXIMUM OR 2" MINIMUM. IF RANGE IS EXCEEDED, USE MODIFIED MANHOLE ADJUSTMENT.

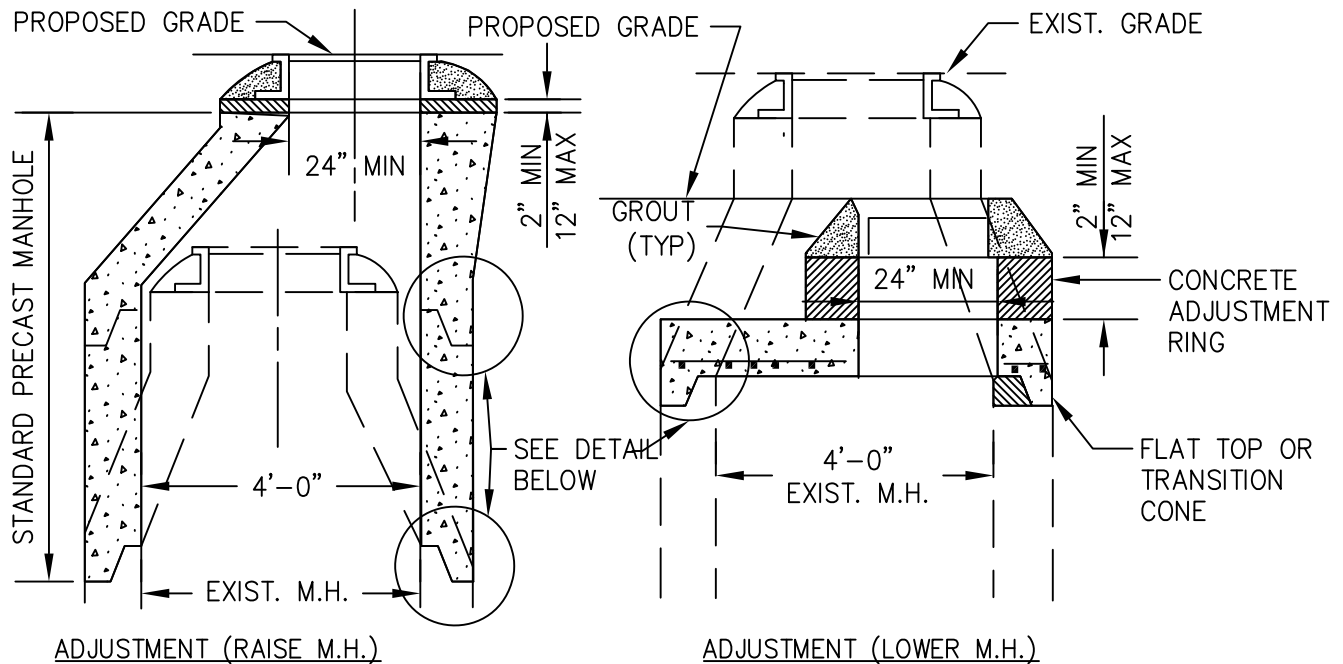


SEE NOTES ON MODIFIED MANHOLE ADJUSTMENT DETAIL, CSMA-1A.

**MANHOLE
(Grade Rim Adjustments)**

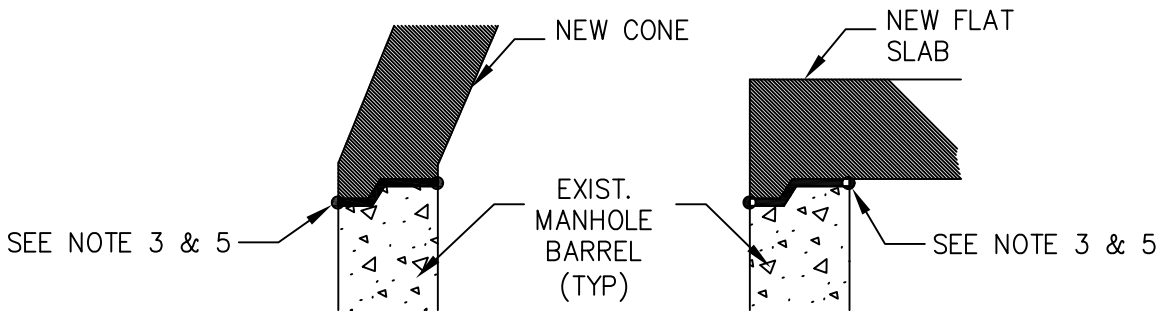
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

06/21/2021	REVISION	DATE
CSMA-1		
PAGE 33		



REMOVE EXISTING TRANSITION SECTION AND CONSTRUCT NEW MANHOLE AS REQUIRED

REMOVE EXISTING TRANSITION SECTION AND MANHOLE TO 2' MIN. BELOW PROPOSED GRADE AND CONSTRUCT NEW MANHOLE AS REQUIRED.



NOTES:

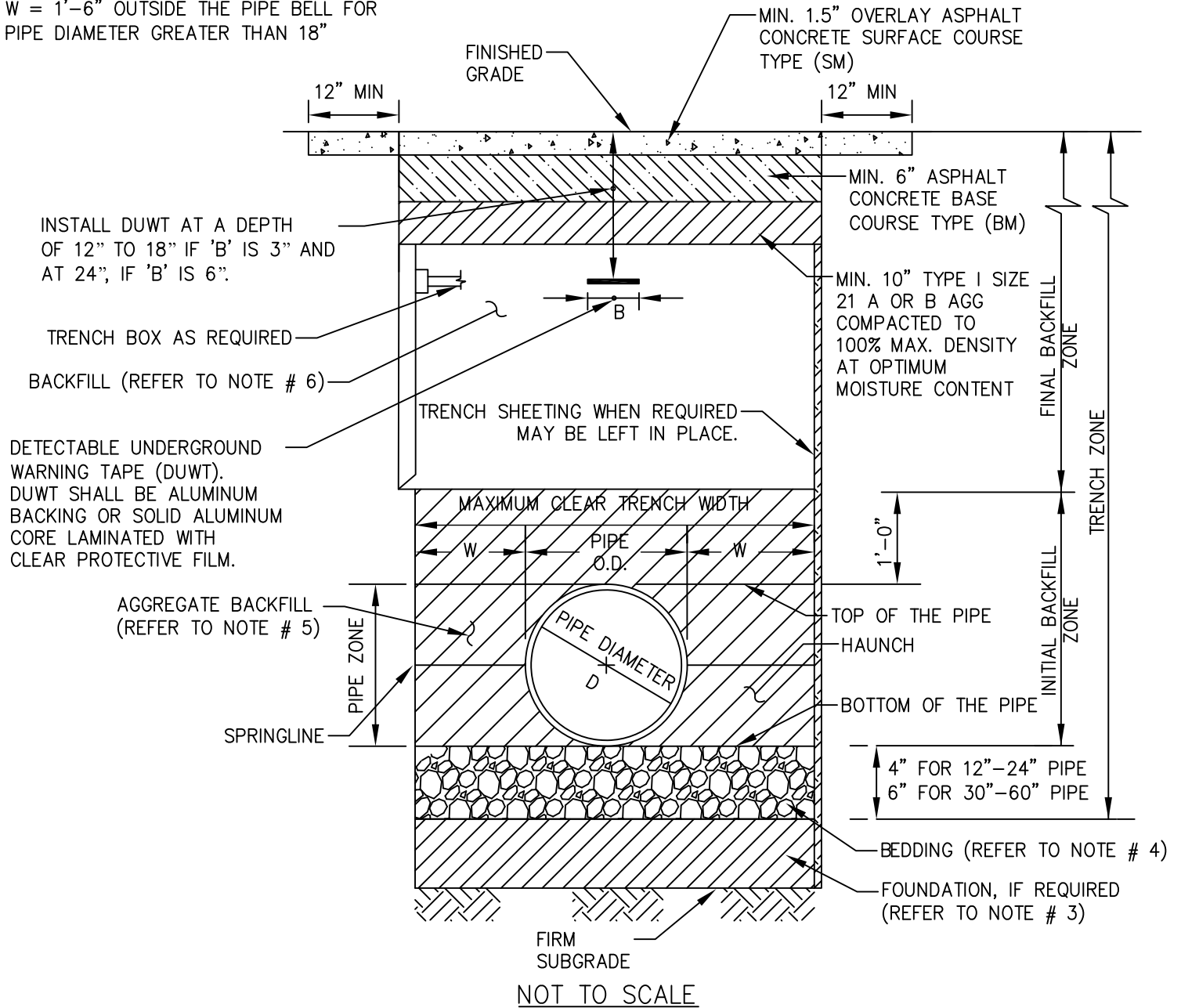
1. RINGS TO BE COATED ON ALL INTERIOR SURFACES, 3/8" THICK (MIN) WITH HYDRAULIC CEMENT HIGH STRENGTH GROUT.
2. MH CASTING (FRAME) AND PRECAST CONCRETE ADJUSTMENT RINGS TO BE SET AND EMBEDDED IN BUTYL JOINT MATERIAL ("RAM-NEK" OR EQUAL) AND CAPPED WITH HIGH STRENGTH HYDRAULIC CEMENT GROUT OVER FRAME FLANGE, ADJUSTMENT RINGS AND CONE OR BARREL SECTION.
3. BUTYL JOINT MATERIAL TO BE PLACED OVER ENTIRE SURFACE OF JOINT AND SQUEEZED OUT WHEN JOINT IS MADE. STRIKE EXCESS FLUSH WITH JOINT BEFORE APPLYING GROUT.
4. NEW MH SECTION TO BE SET AND EMBEDDED IN BUTYL JOINT MATERIAL ("RAM-NEK" OR EQUAL).
5. CLEAN AND PATCH EXISTING BARREL SURFACE, PLACE BUTYL JOINT MATERIAL OVER ENTIRE SURFACE (TOP SHOULDER, SLOPE AND SEAT) AND SQUEEZE OUT WHEN JOINT IS MADE.
6. THE CONTRACTOR SHALL RE-GROUT THE ENTIRE MANHOLE WHEN STRUCTURE IS RAISED OR LOWERED.

MODIFIED MANHOLE ADJUSTMENTS

06/21/2021	REVISION DATE
CSMA-1A	
PAGE 34	

W = 1'-0" OUTSIDE THE PIPE BELL FOR
PIPE DIAMETER LESS THAN 18"

W = 1'-6" OUTSIDE THE PIPE BELL FOR
PIPE DIAMETER GREATER THAN 18"



NOTE:

- THE TRENCH WIDTH SHOULD NOT EXCEED THE PIPE OUTSIDE DIAMETER PLUS W.
- PAVEMENT RESTORATION IS 12 INCHES MINIMUM BEYOND THE EDGE OF THE TRENCH ON LONGITUDINAL OPEN CUTS, OR 25 FEET MINIMUM BEYOND THE TRENCH CENTERLINE ON PERPENDICULAR OPEN CUT, OR AS MENTIONED ON COA APPROVED PLANS.

TRENCH BEDDING & BACKFILL DETAIL
FLEXIBLE / PVC PIPE

06/21/2021
REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSTB-1
PAGE 35

NOTE:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT ASTM D2321 STANDARD, AS MODIFIED IN THIS DETAIL.
2. MINIMUM COVER FOR ALL H-25 LOADING APPLICATIONS SHALL BE 3'-6". MINIMUM COVER IS MEASURED FROM THE TOP OF PIPE TO THE TOP OF A RIGID PAVEMENT OR BOTTOM OF FLEXIBLE/ASPHALT PAVEMENT SECTIONS.
3. UNSTABLE TRENCH BOTTOM MATERIAL AND/OR ROCK SHALL BE EXCAVATED TO A DEPTH SPECIFIED BY THE ENGINEER AND SHALL BE REPLACED WITH CLASS I MATERIAL PER CURRENT ASTM D2321 STANDARD OR 21-A COMPACTED TO 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY OR 90% OF THE MAXIMUM MODIFIED PROCTOR DENSITY. WHEN STANDING WATER IS IN PIPE FOUNDATION AREA, #57 STONE CAN BE USED AS A BACKFILL IN THE SUBFOUNDATION WITH THE CONDITION THAT #57 STONE SHALL BE CAPPED WITH A MINIMUM 4" CRUSHER RUN OR 21-A PRIOR TO PLACEMENT OF A PIPE (COMPACTION TESTING ON #57 STONE IS NOT REQUIRED; SEAT STONE IN TRENCH). FOR SEVERE CONDITIONS, THE ENGINEER MAY REQUIRE A SPECIAL FOUNDATION SUCH AS PILES OR SHEETING CAPPED WITH CONCRETE MAT. CONTROL OF QUICK AND UNSTABLE TRENCH BOTTOM CONDITIONS MAY BE ACCOMPLISHED WITH THE USE OF APPROPRIATE GEOFABRICS.
4. BEDDING MATERIAL SHALL BE CLASS I MATERIAL #26 AND #27 PER CURRENT ASTM D2321 STANDARD OR VDOT AGGREGATE #8 OR CRUSHER RUN AGGREGATE #25 OR #26 CONFORMING TO THE REQUIREMENTS OF SECTION 205 AND 302 OF VDOT ROAD AND BRIDGE SPECIFICATIONS. WORK MATERIAL UNDER PIPE TO PROVIDE HAUNCH SUPPORT.
5. INITIAL BACKFILL MATERIAL SHALL BE CLASS I MATERIAL PER CURRENT ASTM D2321 STANDARD OR VDOT AGGREGATE #8, #68, OR #78, OR CRUSHER RUN AGGREGATE #25 OR #26 CONFORMING TO THE REQUIREMENTS OF SECTION 205 OF VDOT ROAD AND BRIDGE SPECIFICATIONS; OR AGGREGATE BASE MATERIAL SIZE 21 A OR FLOWABLE FILL. THE BACKFILL SHALL BE INSTALLED IN LIFTS AND COMPACTED PER ASTM D2321, AS APPLICABLE. BACKFILL SHALL EXTEND TO NOT LESS THAN 1'-0" ABOVE THE TOP OF THE PIPE.
6. EXCAVATED MATERIAL BACKFILLED IN 6" LAYERS TO 95% COMPACTION. SELECT MATERIAL, WHERE CALLED FOR, MAY BE USED.
7. BACKFILL UNDER PAVED ROAD TO BE SELECT MATERIAL VDOT 21A.
8. SHEETING LEFT IN PLACE SHALL BE EITHER STEEL OF PRESSURE TREATED WOOD.

**TRENCH BEDDING & BACKFILL DETAIL
NOTES FOR PVC**

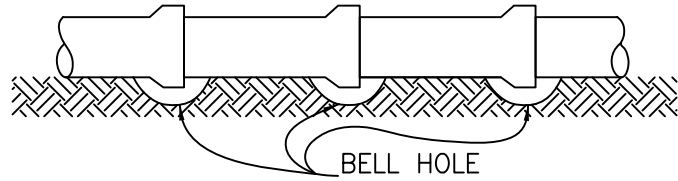
06/21/2021
REVISION DATE

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ALEXANDRIA, VIRGINIA

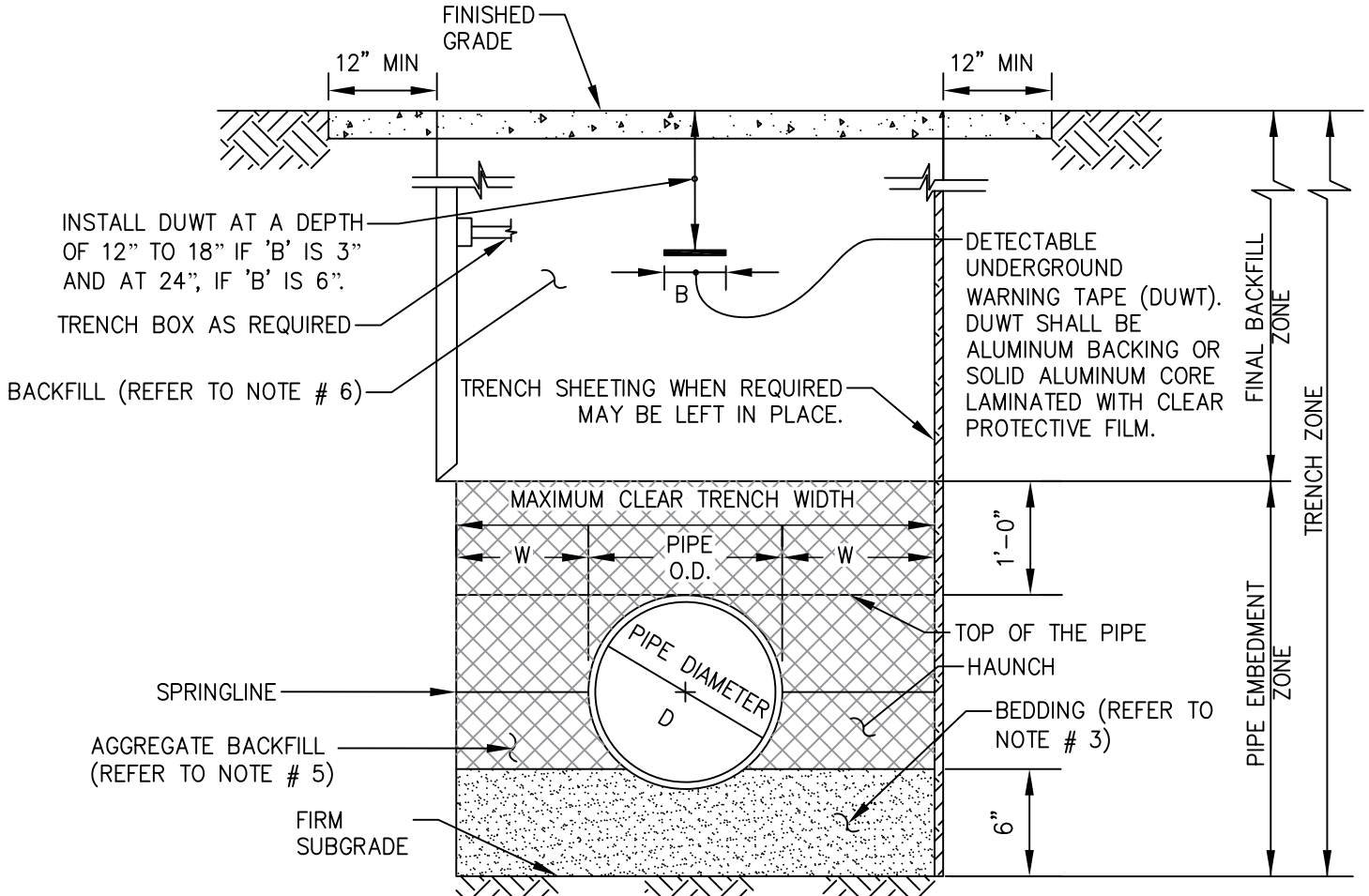
CSTB-1A
PAGE 36

W = 1'-0" OUTSIDE THE PIPE BELL FOR
PIPE DIAMETER LESS THAN 18"

W = 1'-6" OUTSIDE THE PIPE BELL FOR
PIPE DIAMETER GREATER THAN 18"



BELL HOLES SHALL BE EXCAVATED SO THAT THE PIPE IS
SUPPORTED BY THE BARREL AND NOT BY THE BELLS.



NOT TO SCALE

NOTE:

- THE TRENCH WIDTH SHOULD NOT EXCEED THE PIPE OUTSIDE DIAMETER PLUS W.
- PAVEMENT RESTORATION IS 12 INCHES MINIMUM BEYOND THE EDGE OF THE TRENCH ON LONGITUDINAL OPEN CUTS, OR 25 FEET MINIMUM BEYOND THE TRENCH CENTERLINE ON PERPENDICULAR OPEN CUT, OR AS MENTIONED ON COA APPROVED PLANS.

TRENCH BEDDING & BACKFILL DETAIL
DUCTILE IRON PIPE (DIP) - TYPE 4

06/21/2021
REVISION DATE

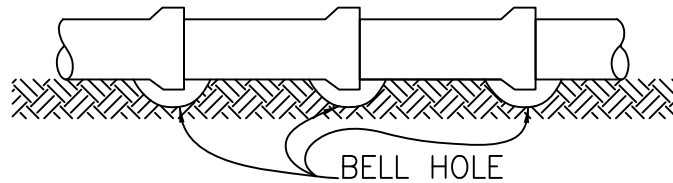
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

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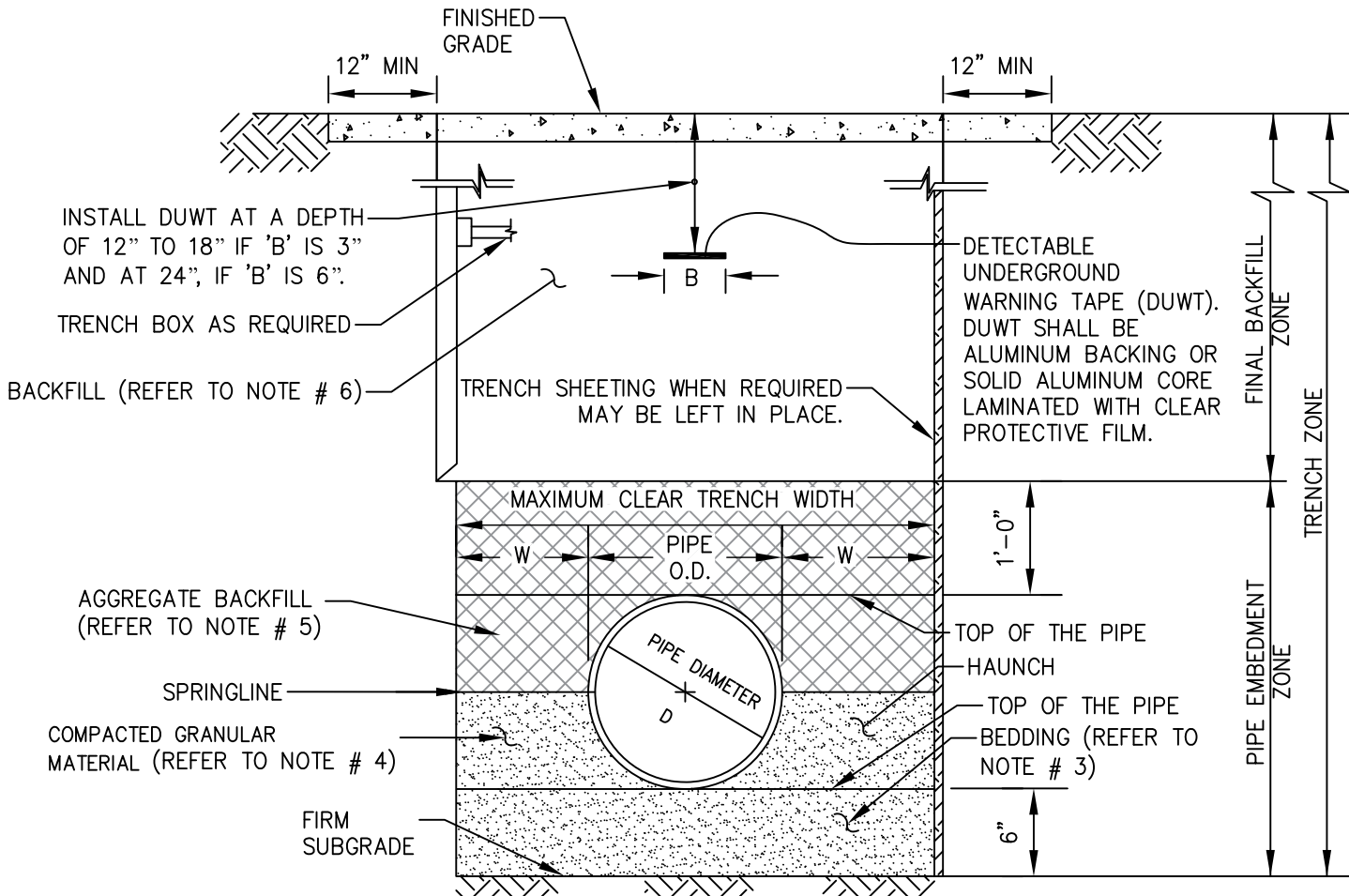
PAGE 37

W = 1'-0" OUTSIDE THE PIPE BELL
FOR PIPE DIAMETER LESS THAN 18"

W = 1'-6" OUTSIDE THE PIPE BELL
FOR PIPE DIAMETER GREATER THAN 18"



BELL HOLES SHALL BE EXCAVATED SO THAT THE PIPE IS SUPPORTED BY THE BARREL AND NOT BY THE BELLS.



NOT TO SCALE

NOTE:

- THE TRENCH WIDTH SHOULD NOT EXCEED THE PIPE OUTSIDE DIAMETER PLUS W.
- PAVEMENT RESTORATION IS 12 INCHES MINIMUM BEYOND THE EDGE OF THE TRENCH ON LONGITUDINAL OPEN CUTS, OR 25 FEET MINIMUM BEYOND THE TRENCH CENTERLINE ON PERPENDICULAR OPEN CUT, OR AS MENTIONED ON COA APPROVED PLANS.

TRENCH BEDDING & BACKFILL DETAIL
TYPE 5 DUCTILE IRON PIPE (DIP)

06/21/2021
REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSTB-2A
PAGE 38

NOTE:

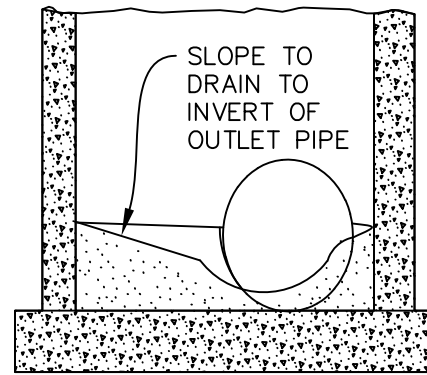
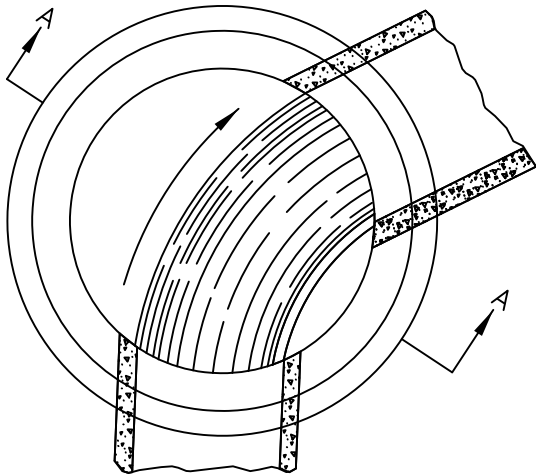
1. DUCTILE IRON PIPE (DIP) SHALL BE INSTALLED PER THE REQUIREMENTS OF ANSI/AWWA C150/A21.50 AND ANSI/AWWA C600, AS MODIFIED IN THIS DETAIL.
2. MINIMUM COVER FOR ALL H-25 LOADING APPLICATIONS SHALL BE 3'-6". MINIMUM COVER IS MEASURED FROM THE TOP OF PIPE TO THE TOP OF A RIGID PAVEMENT OR BOTTOM OF FLEXIBLE/ASPHALT PAVEMENT SECTIONS.
3. BEDDING MATERIAL SHALL BE SAND, GRAVEL, OR CRUSHED STONE CONFORMING TO THE REQUIREMENTS OF ANSI/AWWA C150/A21.50 AND ANSI/AWWA C600 OR VDOT AGGREGATE #8 OR CRUSHER RUN AGGREGATE #25 OR #26 CONFORMING TO THE REQUIREMENTS OF SECTION 205 OF VDOT ROAD AND BRIDGE SPECIFICATIONS TO A DEPTH OF 1/8 PIPE DIAMETER, D, OR 6" MINIMUM. WORK MATERIAL UNDER PIPE TO PROVIDE HAUNCH SUPPORT. WHEN STANDING WATER IS IN PIPE FOUNDATION AREA, #57 STONE CAN BE USED AS A BACKFILL IN THE SUBFOUNDATION WITH THE CONDITION THAT #57 STONE SHALL BE CAPPED WITH A MINIMUM 4" CRUSHER RUN PRIOR TO PLACEMENT OF A PIPE (COMPACTION TESTING ON #57 STONE IS NOT REQUIRED; SEAT STONE IN TRENCH).
4. PIPE BEDDED TO ITS CENTERLINE IN COMPACTED GRANULAR MATERIAL CONFORMING TO THE REQUIREMENTS OF ANSI/AWWA C150/A21.50 AND ANSI/AWWA C600 WITH 6" MINIMUM UNDER PIPE OR VDOT AGGREGATE #8 OR CRUSHER RUN AGGREGATE #26 AND #27 CONFORMING TO THE REQUIREMENTS OF SECTION 205 OF VDOT ROAD AND BRIDGE SPECIFICATIONS. WORK MATERIAL UNDER PIPE TO PROVIDE HAUNCH SUPPORT. WHEN STANDING WATER IS IN PIPE FOUNDATION AREA, #57 STONE CAN BE USED AS A BACKFILL IN THE SUBFOUNDATION WITH THE CONDITION THAT #57 STONE SHALL BE CAPPED WITH A MINIMUM 4" CRUSHER RUN PRIOR TO PLACEMENT OF A PIPE (COMPACTION TESTING ON #57 STONE IS NOT REQUIRED; SEAT STONE IN TRENCH).
5. AGGREGATE BACKFILL MATERIAL SHALL BE SAND, GRAVEL, OR CRUSHED STONE CONFORMING TO THE REQUIREMENTS OF ANSI/AWWA C150/A21.50 AND ANSI/AWWA C600 COMPACTED TO 1 FOOT ABOVE TOP OF PIPE (APPROXIMATELY 80% STANDARD PROCTOR, AASHTO T-99) OR VDOT CLASS I BACKFILL MATERIAL SHALL BE CRUSHER RUN #26 AND #27, AGGREGATE BASE 21-A, OR 21-B WITH DRAINAGE, FLOWABLE FILL, OR CRUSHED GLASS CONFORMING TO THE SIZE REQUIREMENTS FOR CRUSHER RUN AGGREGATE SIZE #26 AND #27 - FROM BEDDING TO 1 FOOT ABOVE TOP OF PIPE. THE BACKFILL SHALL BE INSTALLED IN LIFTS AND COMPACTED PER ANSI/AWWA C150/A21.50 AND ANSI/AWWA C600.
6. EXCAVATED MATERIAL BACKFILLED IN 6" LAYERS TO 95% COMPACTION. SELECT MATERIAL, WHERE CALLED FOR, MAY BE USED.
7. BACKFILL UNDER PAVED ROAD TO BE SELECT MATERIAL VDOT 21A.
8. SHEETING LEFT IN PLACE SHALL BE EITHER STEEL OF PRESSURE TREATED WOOD.

**TRENCH BEDDING & BACKFILL DETAIL
NOTES FOR DUCTILE IRON PIPE**

06/21/2021
REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSTB-2B
PAGE 39



SECTION A - A

TREATMENT IN PRECAST MANHOLES

NOTES:

1. SHAPING OF MANHOLE IN ACCORDANCE WITH THIS DRAWING IS TO APPLY TO THOSE STRUCTURES SPECIFIED ON PLANS.
2. MANHOLE IS TO BE FORMED AND CONSTRUCTED IN ACCORDANCE WITH APPLICABLE STANDARD OR SPECIAL DRAWING. THE INVERT SHAPING AS DETAILED HEREON IS TO CONSIST OF A PORTLAND CEMENT CONCRETE MIX CONFORMING TO VDOT CLASS A3. THE SURFACE SHALL BE LEFT SMOOTH BY MEANS OF HAND TROWELLING. NONE OF THE COARSE AGGREGATE SHALL REMAIN EXPOSED
3. INVERT TO BE PAVED TO THE SHAPE OF THE PIPE AND TO THE SPRING LINE EXCEPT WHERE INLET AND OUTLET PIPE MAKE AN ANGLE WITH EACH OTHER IN WHICH CASE PAVING SHALL BE TO THE CROWN OF THE OUTLET PIPE. THEN FROM THE SPRING LINE OR THE CROWN, WHICHEVER IS THE CASE, THE PAVING IS TO BE EXTENDED UPWARD AT A 45° ANGLE TO MEET THE STRUCTURE WALL.
4. DETAILS OF INVERT SHAPING AS SHOWN HEREON ARE FOR EXAMPLE PURPOSES ONLY. EACH MANHOLE IS TO BE SHAPED INDIVIDUALLY TO BEST FIT THE PARTICULAR INLET AND OUTLET CONFIGURATION AND FLOW LINES.

MANHOLE SHAPING

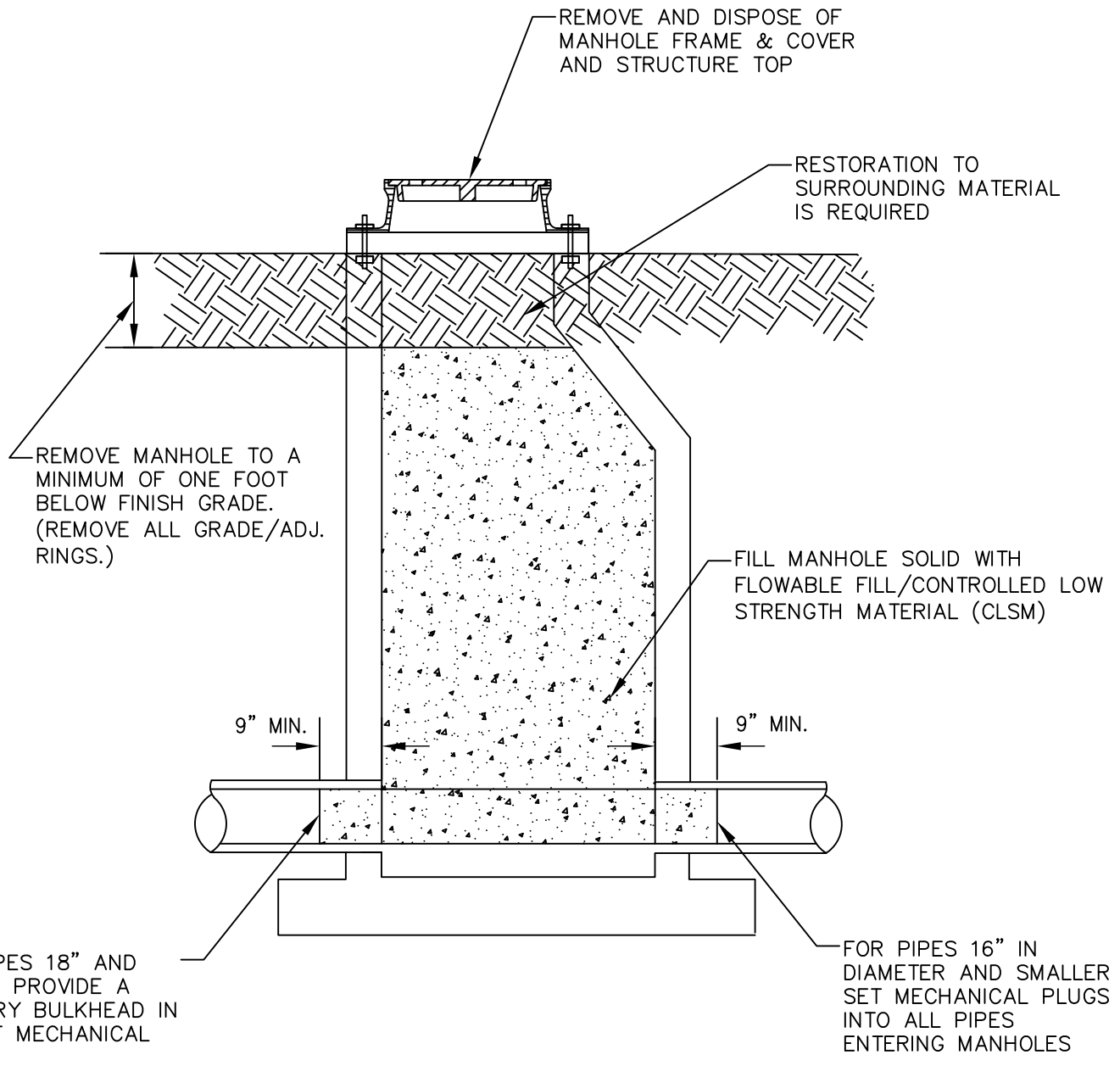
06/21/2021

REVISION DATE

CSIS-2

PAGE 40

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA



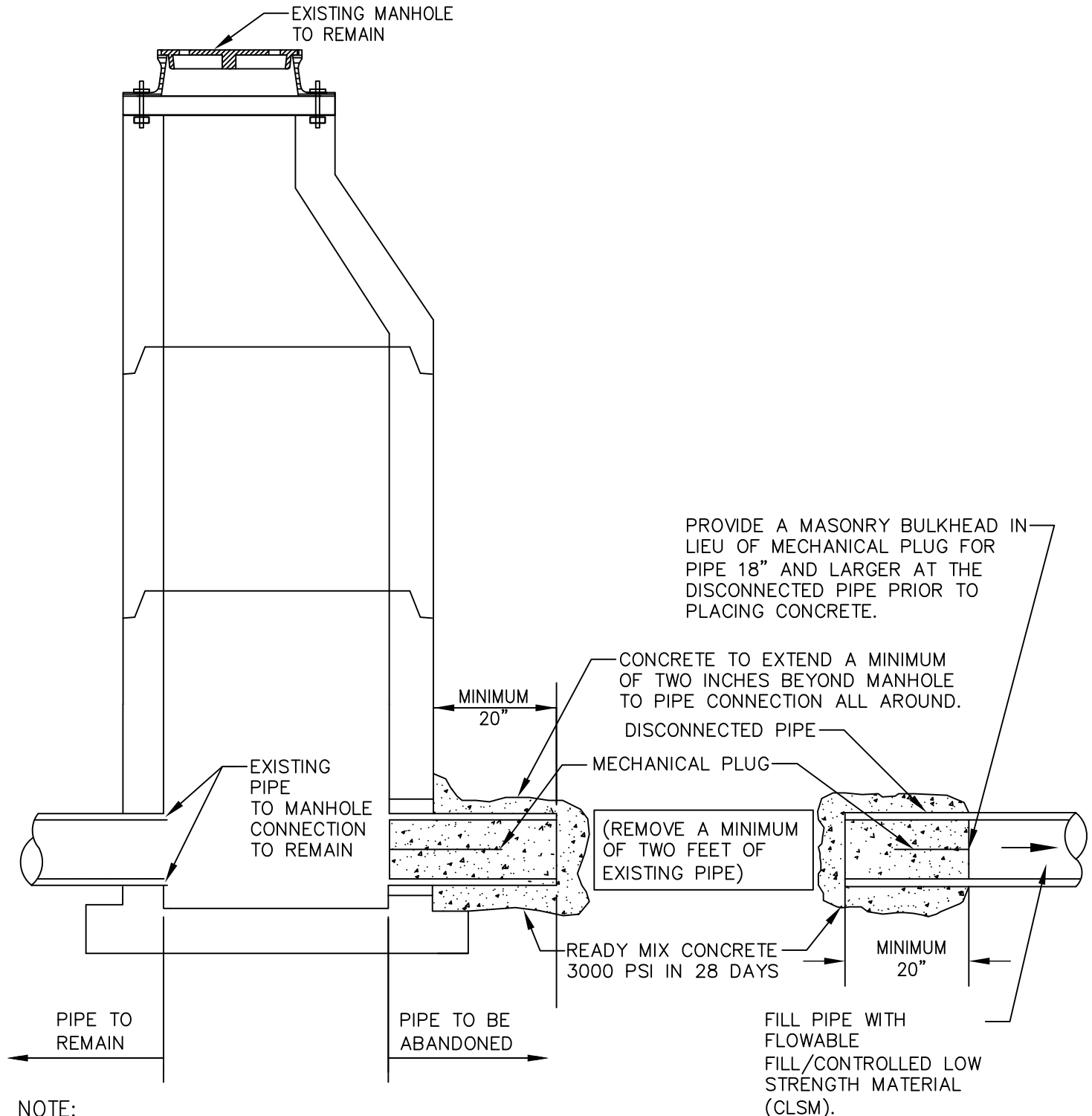
NOTE:
VDOT A3 CONCRETE SHALL BE USED FOR THE CONCRETE MATERIAL.

MANHOLE ABANDONMENT

06/21/2021
REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSMA-1
PAGE 41



PROVIDE A MASONRY BULKHEAD IN LIEU OF MECHANICAL PLUG FOR PIPE 18" AND LARGER AT THE DISCONNECTED PIPE PRIOR TO PLACING CONCRETE.

CONCRETE TO EXTEND A MINIMUM OF TWO INCHES BEYOND MANHOLE TO PIPE CONNECTION ALL AROUND.
DISCONNECTED PIPE

MECHANICAL PLUG
(REMOVE A MINIMUM OF TWO FEET OF EXISTING PIPE)

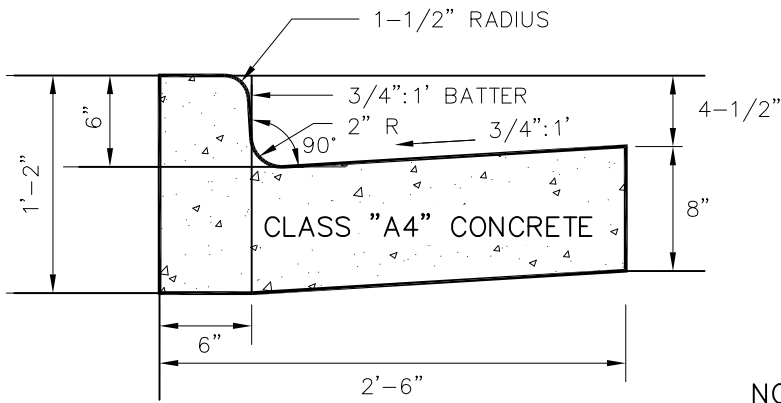
READY MIX CONCRETE 3000 PSI IN 28 DAYS

FILL PIPE WITH FLOWABLE FILL/CONTROLLED LOW STRENGTH MATERIAL (CLSM).

NOTE:

1. VDOT A3 CONCRETE SHALL BE USED FOR THE CONCRETE MATERIAL.
2. WHEN THE PIPE IS TO BE ABANDONED FROM THE STRUCTURE, THE WALL SHALL BE FLUSH WITH CONCRETE.
3. CONTROLLED LOW STRENGTH MATERIAL (CLSM) IS A SELF-COMPACTED, CEMENTITIOUS MATERIAL USED TO FILL ABANDONED SEWERS. (ASTM D-5971, ASTM D-6103, ASTM D-6023, ASTM D-4832)

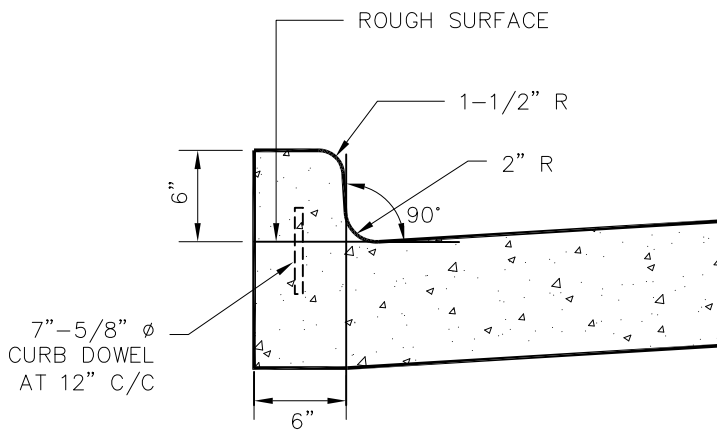
PIPE ABANDONMENT	06/21/2021
	REVISION DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES ALEXANDRIA, VIRGINIA	CSPA-1
	PAGE 42



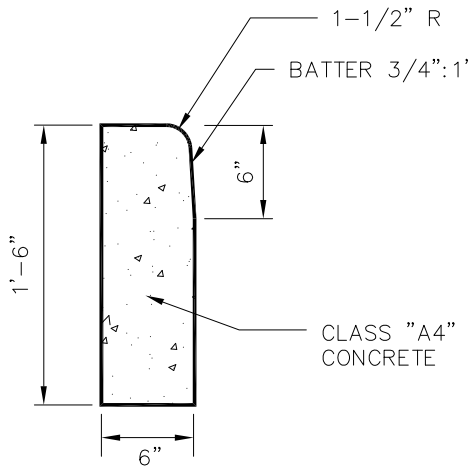
COMBINATION CURB AND GUTTER

NOTES:

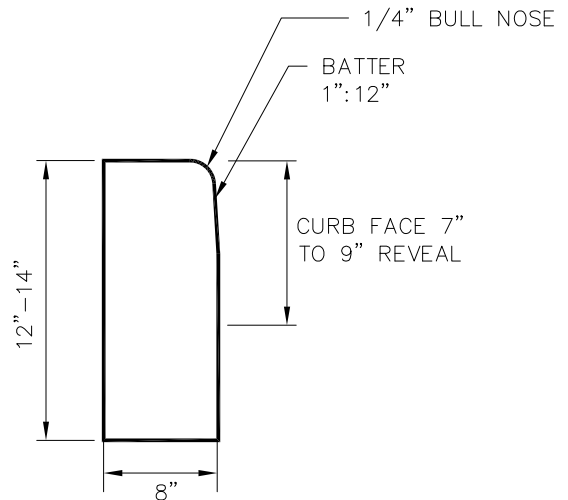
1. MATERIAL, FINISH AND TOLERANCE WILL BE IN ACCORDANCE WITH SECTION 404 – HYDRAULIC CEMENT CONCRETE OPERATIONS OF THE LATEST VDOT ROAD & BRIDGE SPECIFICATIONS.
2. ALL CURB AND GUTTER SHALL HAVE MIN. 6" THICK 21A AGGREGATE BASE AND MUST BE COMPACTED TO 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY OR 90% OF THE MAXIMUM MODIFIED PROCTOR DENSITY.



INTEGRAL CURB



COPING CURB



GRANITE CURB

**CURB AND GUTTER, COPING CURB
AND GRANITE CURB**

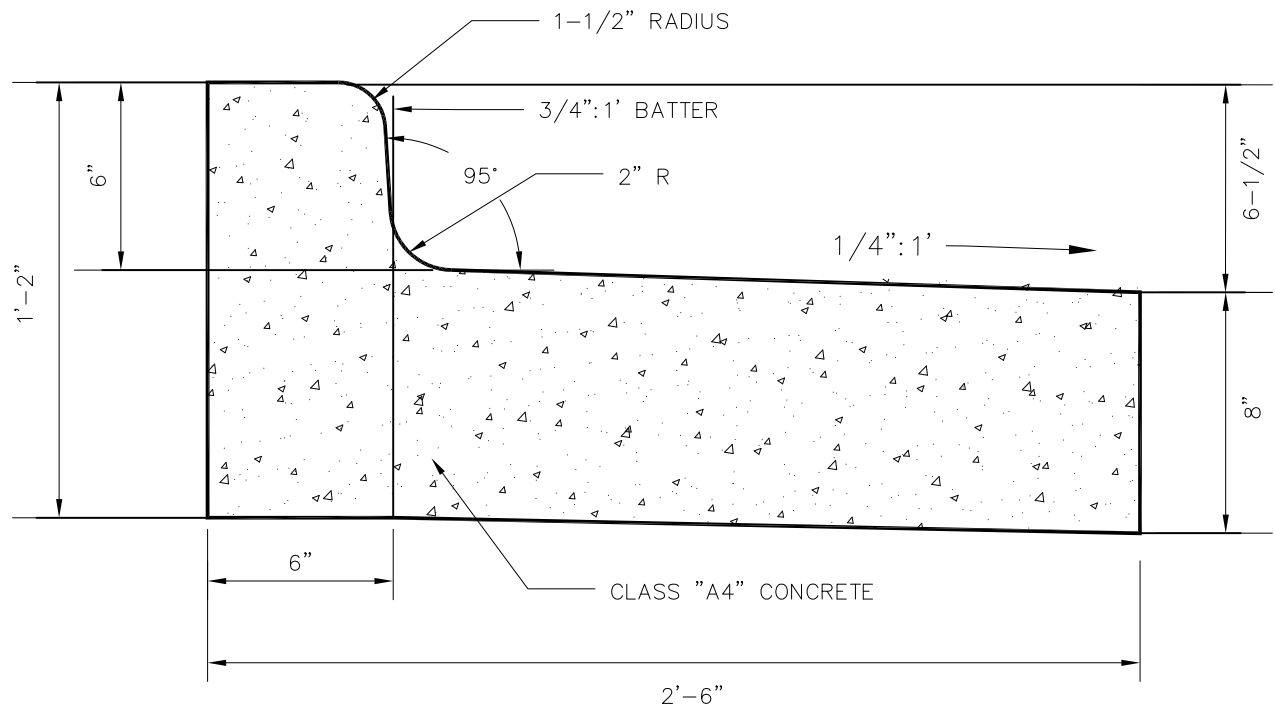
06/03/2022

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSCG-1

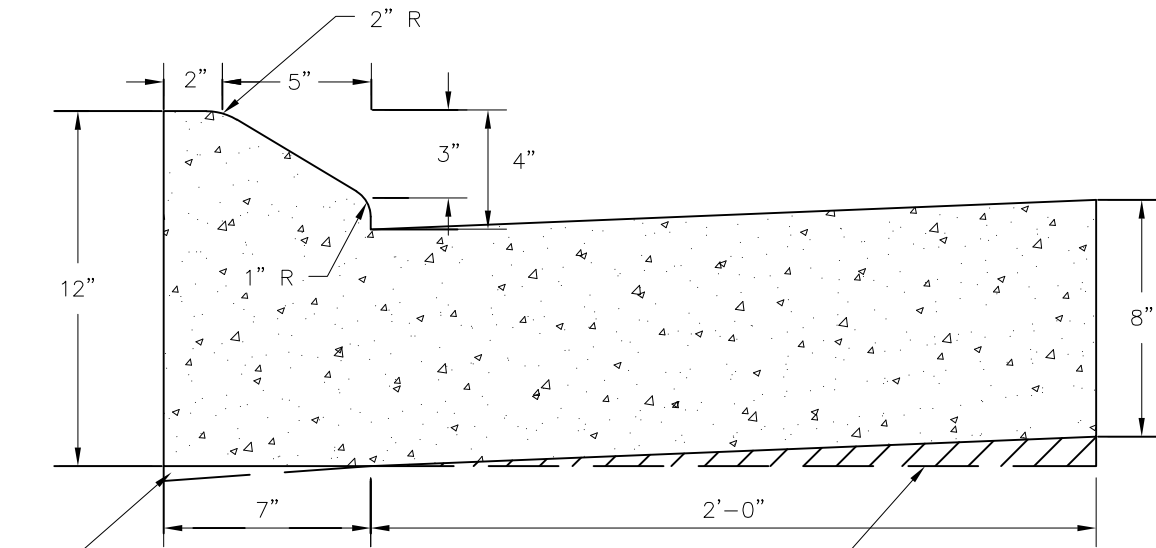
PAGE 43



NOTES:

1. MATERIAL, FINISH AND TOLERANCE WILL BE IN ACCORDANCE WITH SECTION 404 – HYDRAULIC CEMENT CONCRETE OPERATIONS OF THE LATEST VDOT ROAD & BRIDGE SPECIFICATIONS.
2. ALL CURB AND GUTTER SHALL HAVE MIN. 6" THICK 21A AGGREGATE BASE AND MUST BE COMPACTED TO 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY OR 90% OF THE MAXIMUM MODIFIED PROCTOR DENSITY.

CURB AND GUTTER REVERSE FLOW	06/03/2022
	REVISION DATE
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES ALEXANDRIA, VIRGINIA	CSCG-2
	PAGE 44



THIS AREA MAY BE CONCRETE AT THE OPTION OF THE CONTRACTOR

THE BOTTOM OF THE CURB AND GUTTER MAY BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES PROVIDED A MIN. DEPTH OF 8" IS MAINTAINED.

NOTE:

1. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
2. CONCRETE TO BE CLASS A4 IF CAST IN PLACE, 4000 PSI IF PRECAST.
3. MATERIAL, FINISH AND TOLERANCE WILL BE IN ACCORDANCE WITH SECTION 404 – HYDRAULIC CEMENT CONCRETE OPERATIONS OF THE LATEST VDOT ROAD & BRIDGE SPECIFICATIONS.
4. ALL CURB AND GUTTER SHALL HAVE MIN. 6" THICK 21 A AGGREGATE BASE AND MUST BE COMPACTED TO 95% OF THE MAXIMUM STANDARD PROCTOR DENSITY OR 90% OF THE MAXIMUM MODIFIED PROCTOR DENSITY.

MOUNTABLE CURB & GUTTER

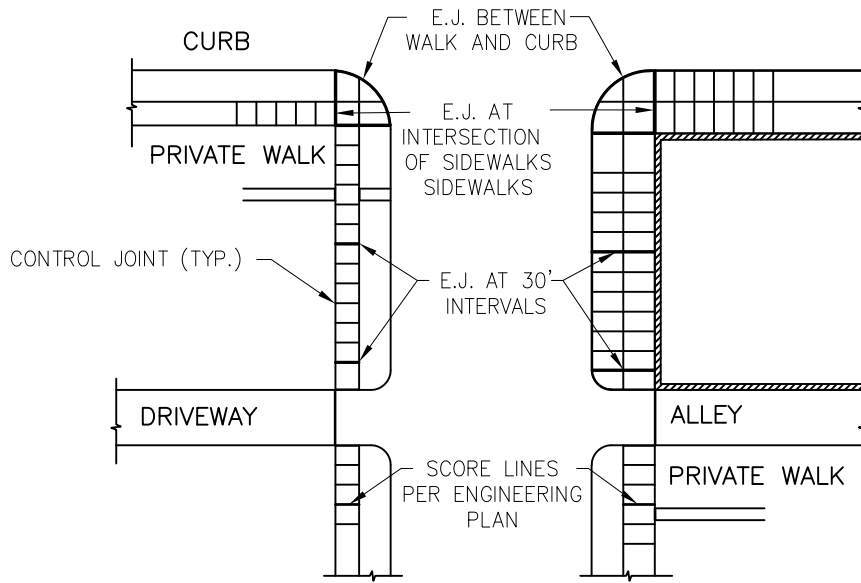
06/03/2022

REVISION DATE

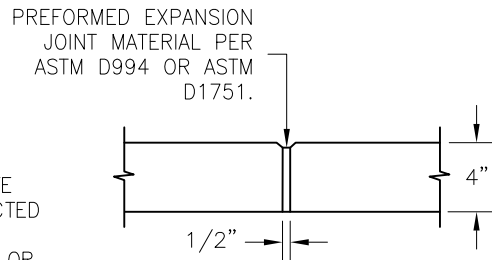
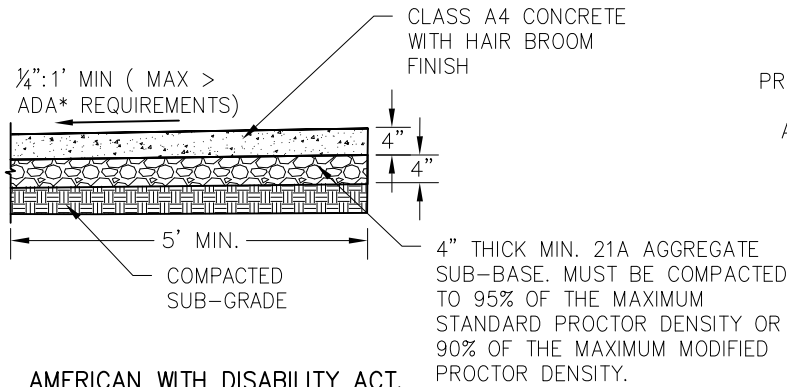
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSCG-3

PAGE 45



EXPANSION JOINT PLACEMENT



*ADA: AMERICAN WITH DISABILITY ACT.

SIDEWALK SECTION

EXPANSION JOINT

NOTES:

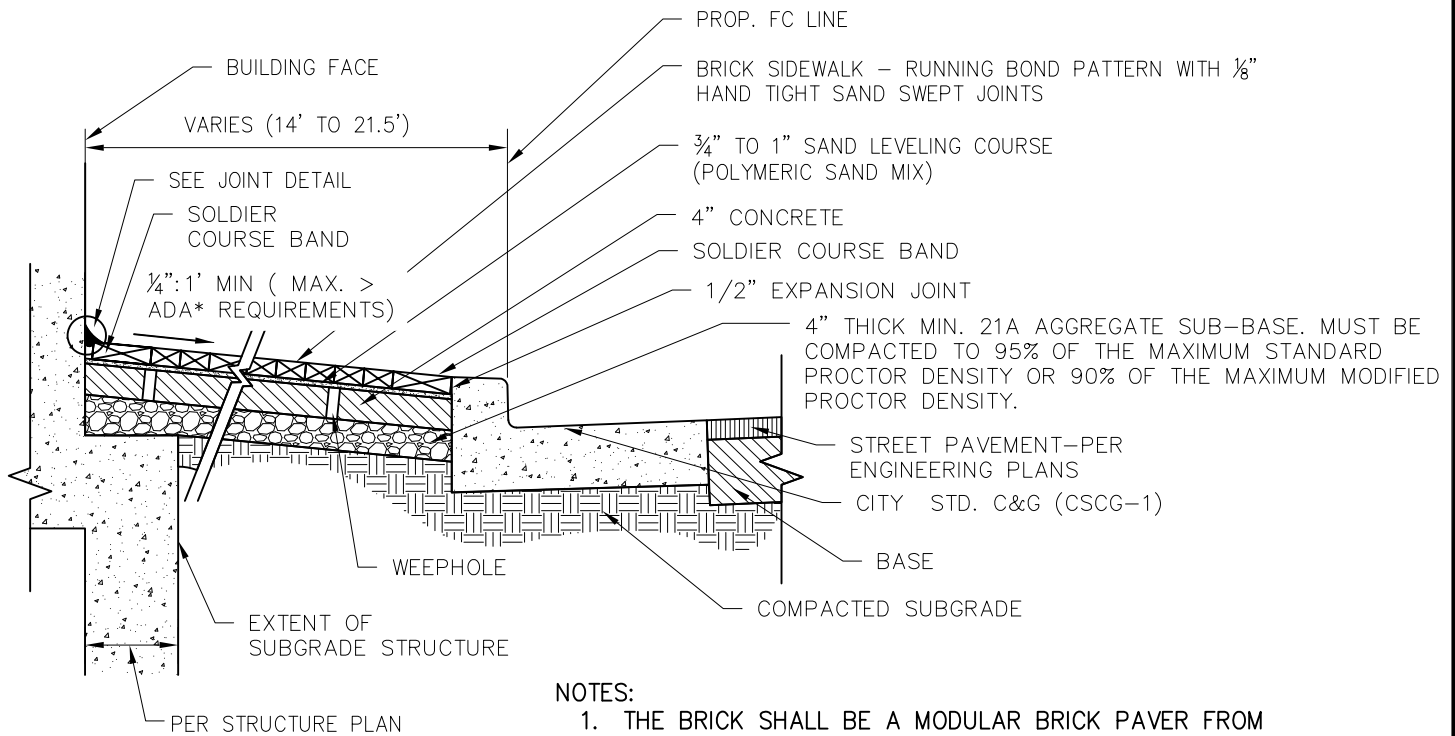
1. SCORING OF CONCRETE SLAB SHALL BE SAW CUT NOT MORE THAN 3/16" IN WIDTH AND NOT MORE THAN 1/4" DEEP.
2. THE EXPANSION JOINTS SHALL BE 1/2" WIDE, FULL DEPTH, AND SHALL BE OF PRE-FORMED EXPANSION JOINT MATERIAL CONFORMING TO THE REQUIREMENTS OF ASTM D994 ASPHALT OR ASTM D1751 FIBRE. EXPANSION MATERIAL SHALL BE SECURED IN A MANNER THAT WILL PREVENT MOVEMENT OR DISPLACEMENT OF CONCRETE DURING PLACEMENT.
3. THE EXPANSION JOINTS SHALL BE PLACED PERPENDICULAR TO CONCRETE CURB AT A DISTANCE OF 30' OR COINCIDING WITH THE SCORING.
4. DOWELS SHALL BE PLACED AT THE END OF A SIDEWALK PLACEMENT, AT INTERRUPTIONS FOR A DRIVEWAY, OR IF SIDEWALK SLABS ARE POURED AT DIFFERENT TIMES.
5. SAWING OF JOINTS SHALL BE CONDUCTED AS SOON AS THE CONDITION OF THE CONCRETE PERMITS AND BEFORE ANY RANDOM CRACKING APPEARS.
6. ALL STRUCTURAL ITEMS TO CONFORM TO THE LATEST EDITION OF UNIFORM STATEWIDE BUILDING CODE (USBC) REQUIREMENTS.
7. PRIOR TO CONSTRUCTION, ALL STRUCTURAL CROSS SECTIONS SHALL BE REVIEWED BY A QUALIFIED STRUCTURAL AND/OR GEOTECHNICAL ENGINEER, AND MODIFIED AS NECESSARY BASED ON THE SITE SPECIFIC GEOTECHNICAL REPORT.

STANDARD CONCRETE SIDEWALK

06/03/2022
REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

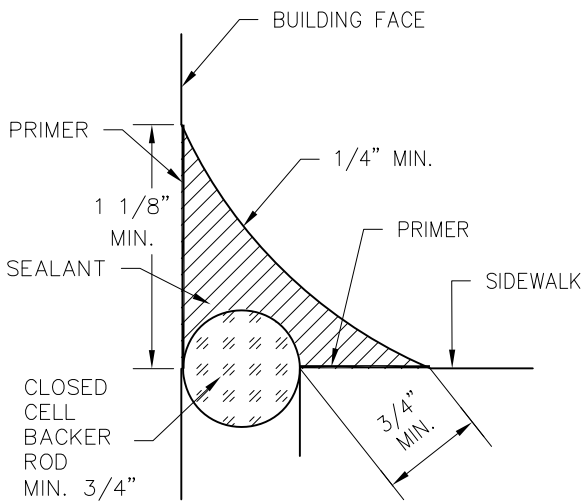
CSSW- 1
PAGE 46



*ADA: AMERICAN WITH DISABILITY ACT.

NOTES:

1. THE BRICK SHALL BE A MODULAR BRICK PAVER FROM WATSONTOWN BRICK COMPANY (7 1/2" X 4 1/2" X 2 1/4" THICK), BEECHWOOD OR AVERTIN COLORS CONFORMING TO THE REQUIREMENTS OF ASTM C902 CLASS SX, TYPE I OR APPROVED EQUAL. THE BRICK SUBJECTED TO HEAVY VEHICULAR TRAFFIC SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1272 OR APPROVED EQUAL.
2. THE EXPANSION JOINTS SHALL BE 1/2" WIDE AND SHALL BE THE FULL THICKNESS OF THE BRICK LAYER, AND SHALL BE OF PRE-FORMED EXPANSION JOINT MATERIAL CONFORMING TO THE REQUIREMENTS OF ASTM D994 ASPHALT OR ASTM D1751 FIBRE. EXPANSION MATERIAL SHALL BE SECURED IN A MANNER THAT WILL PREVENT MOVEMENT OR DISPLACEMENT OF BRICK DURING PLACEMENT.
3. THE EXPANSION JOINTS SHALL BE PLACED PARALLEL TO THE CONCRETE CURB.
4. ALL STRUCTURAL ITEMS TO CONFORM TO THE LATEST EDITION OF UNIFORM STATEWIDE BUILDING CODE (USBC) REQUIREMENTS.
5. PRIOR TO CONSTRUCTION, ALL STRUCTURAL CROSS SECTIONS SHALL BE REVIEWED BY A QUALIFIED STRUCTURAL AND/OR GEOTECHNICAL ENGINEER, AND MODIFIED AS NECESSARY BASED ON THE SITE SPECIFIC GEOTECHNICAL REPORT.



JOINT DETAIL
(REF.: GDBEC)
(N.T.S.)

NOTES:

1. SEALANT SHALL BE ASTM C920 (CURRENT STANDARD), TYPE M, GRADE NS, CLASS 100%, USE T1.
2. CONTRACTOR SHALL CLEAN THE SUBSTRATES FREE OF OIL AND WATER WITH COMPRESSED AIR, OR BRUSHING, SAND BLASTING, GRINDING, OR SAWING AND APPLY PRIMER PER THE RECOMMENDATIONS OF THE SEALANT'S MANUFACTURER.
3. SEALANT MUST BE INSTALLED PER ASTM C1193, AS MODIFIED.
4. THE CITY IS NOT RESPONSIBLE FOR LEAKAGE AT THE FOUNDATION.

BRICK SIDEWALK AT SUBSURFACE STRUCTURE

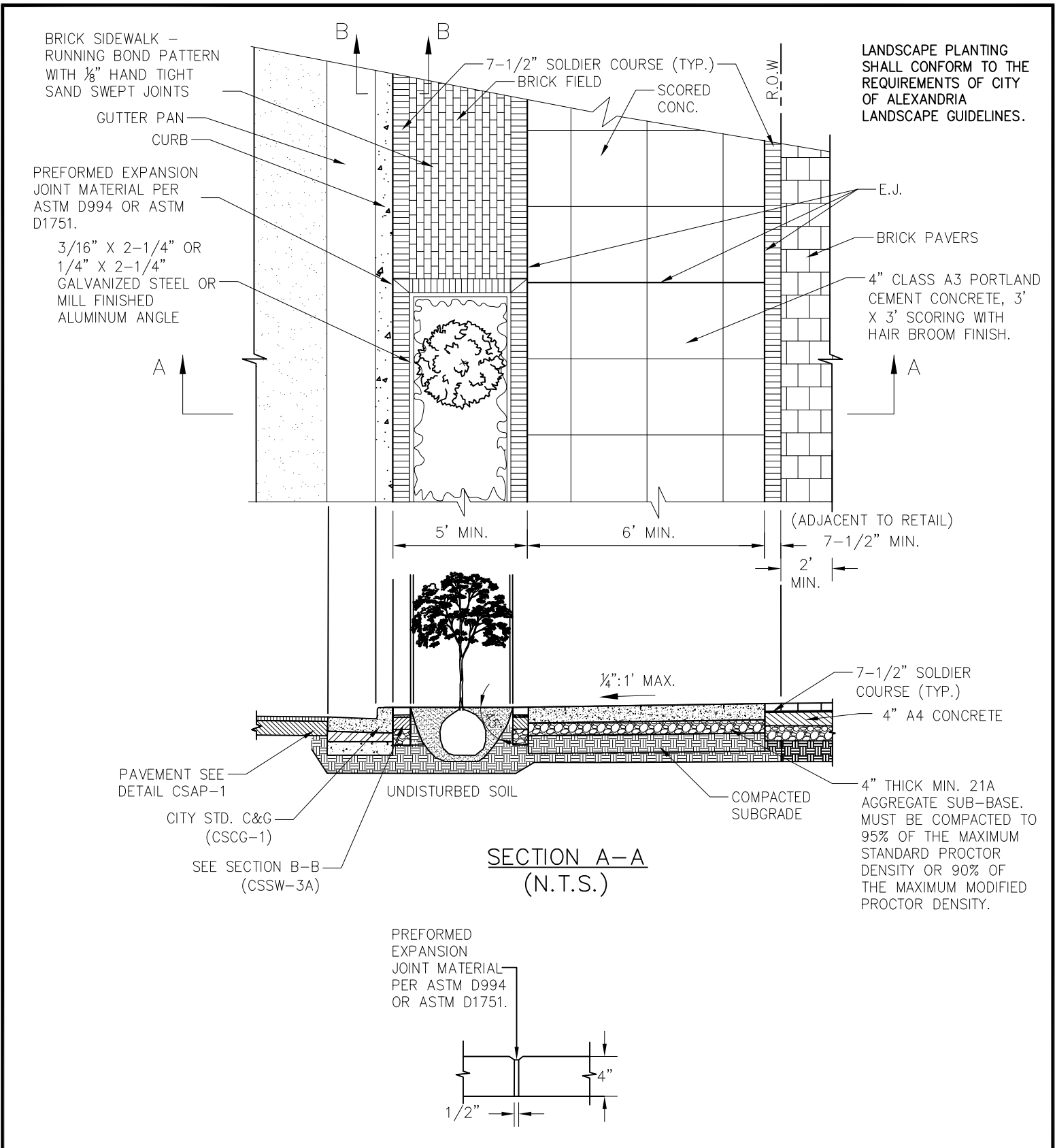
06/03/2022

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSSW-2

PAGE 47



BRICK AND CONCRETE HYBRID SIDEWALK

06/03/2022

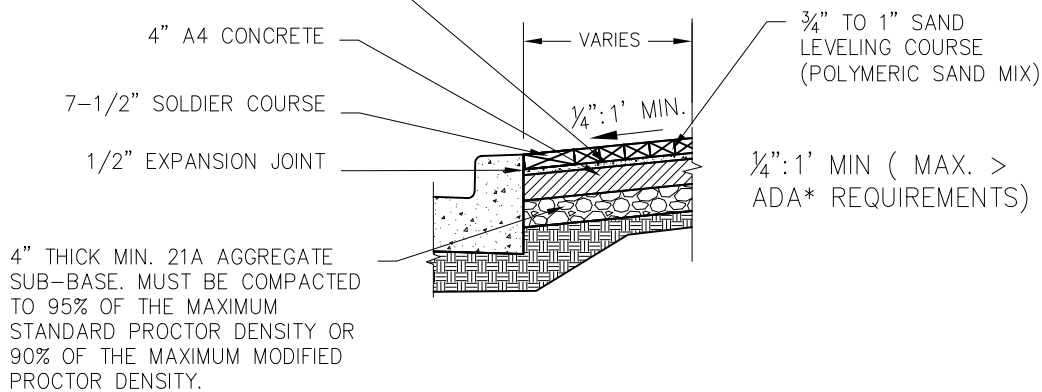
REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
 ALEXANDRIA, VIRGINIA

CSSW- 3

PAGE 48

BRICK SIDEWALK – RUNNING BOND PATTERN WITH 1/8" HAND TIGHT SAND SWEEPED JOINTS.



SECTION B-B
N.T.S.

NOTES:

1. THE BRICK SHALL BE A MODULAR BRICK PAVER FROM WATSONTOWN BRICK COMPANY (7 1/2 " X 4 1/2 " X 2 1/4 " THICK), BEECHWOOD OR AVERTIN COLORS CONFORMING TO THE REQUIREMENTS OF ASTM C902 CLASS SX, TYPE I OR APPROVED EQUAL. THE BRICK SUBJECTED TO HEAVY VEHICULAR TRAFFIC SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1272 OR APPROVED EQUAL.
2. THE EXPANSION JOINTS SHALL BE 1/2" WIDE, FULL DEPTH, AND SHALL BE OF PRE-FORMED EXPANSION JOINT MATERIAL CONFORMING TO THE REQUIREMENTS OF ASTM D994 ASPHALT OR ASTM D1751 FIBRE. EXPANSION MATERIAL SHALL BE SECURED IN A MANNER THAT WILL PREVENT MOVEMENT OR DISPLACEMENT OF BRICK DURING PLACEMENT.
3. THE EXPANSION JOINTS SHALL BE PLACED AT A DISTANCE OF 30' OR COINCIDING WITH THE SCORING.
4. DOWELS SHALL BE PLACED AT THE END OF A SIDEWALK PLACEMENT, AT INTERRUPTIONS FOR A DRIVEWAY, OR IF SIDEWALK SLABS ARE POURED AT DIFFERENT TIMES.
5. SAWING OF JOINTS SHALL BE CONDUCTED AS SOON AS THE CONDITION OF THE CONCRETE PERMITS AND BEFORE ANY RANDOM CRACKING APPEARS.
6. SCORING OF CONCRETE SLAB SHALL BE SAW CUT NOT MORE THAN 3/16" IN WIDTH AND NOT MORE THAN 1/2" DEEP.
7. ALL STRUCTURAL ITEMS TO CONFORM TO THE LATEST EDITION OF UNIFORM STATEWIDE BUILDING CODE (USBC) REQUIREMENTS.
8. PRIOR TO CONSTRUCTION, ALL STRUCTURAL CROSS SECTIONS SHALL BE REVIEWED BY A QUALIFIED STRUCTURAL AND/OR GEOTECHNICAL ENGINEER, AND MODIFIED AS NECESSARY BASED ON THE SITE SPECIFIC GEOTECHNICAL REPORT.
9. BRICK AND BRICK/CONCRETE HYBRID SIDEWALK LOCATIONS CAN BE FOUND ON SIDEWALK MATERIALS MAP.
<https://www.alexandriava.gov/uploadedFiles/localmotion/info/gettingaround/Sidewalk%20Materials%20Staff%20Guidance%20Packet%209.5.14.pdf>
10. STREET TREES SHALL BE APPROVED BY THE CITY ARBORIST.
11. THE BRICK HYBRID SIDEWALK SHALL NOT BE USED FOR SHARED USE PATHS THAT INTEND TO HAVE BICYCLE OR OTHER MICROMOBILITY USAGE.

BRICK AND CONCRETE HYBRID SIDEWALK

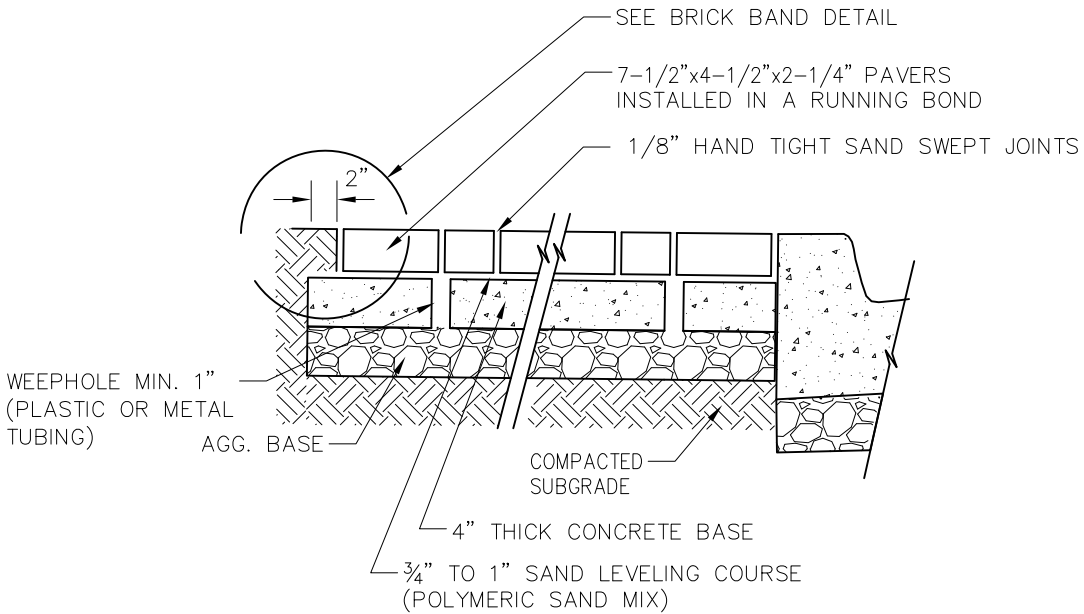
06/03/2022

REVISION DATE

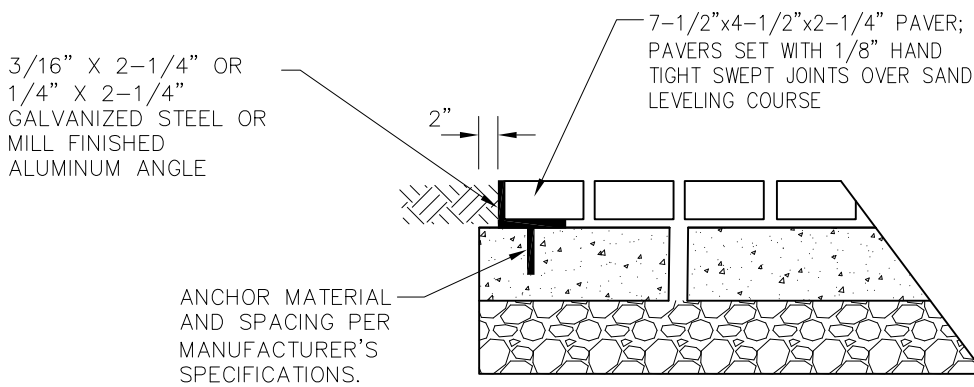
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSSW – 3A

PAGE 49



STANDARD BRICK PAVER
N.T.S.



BRICK BAND DETAIL
N.T.S.

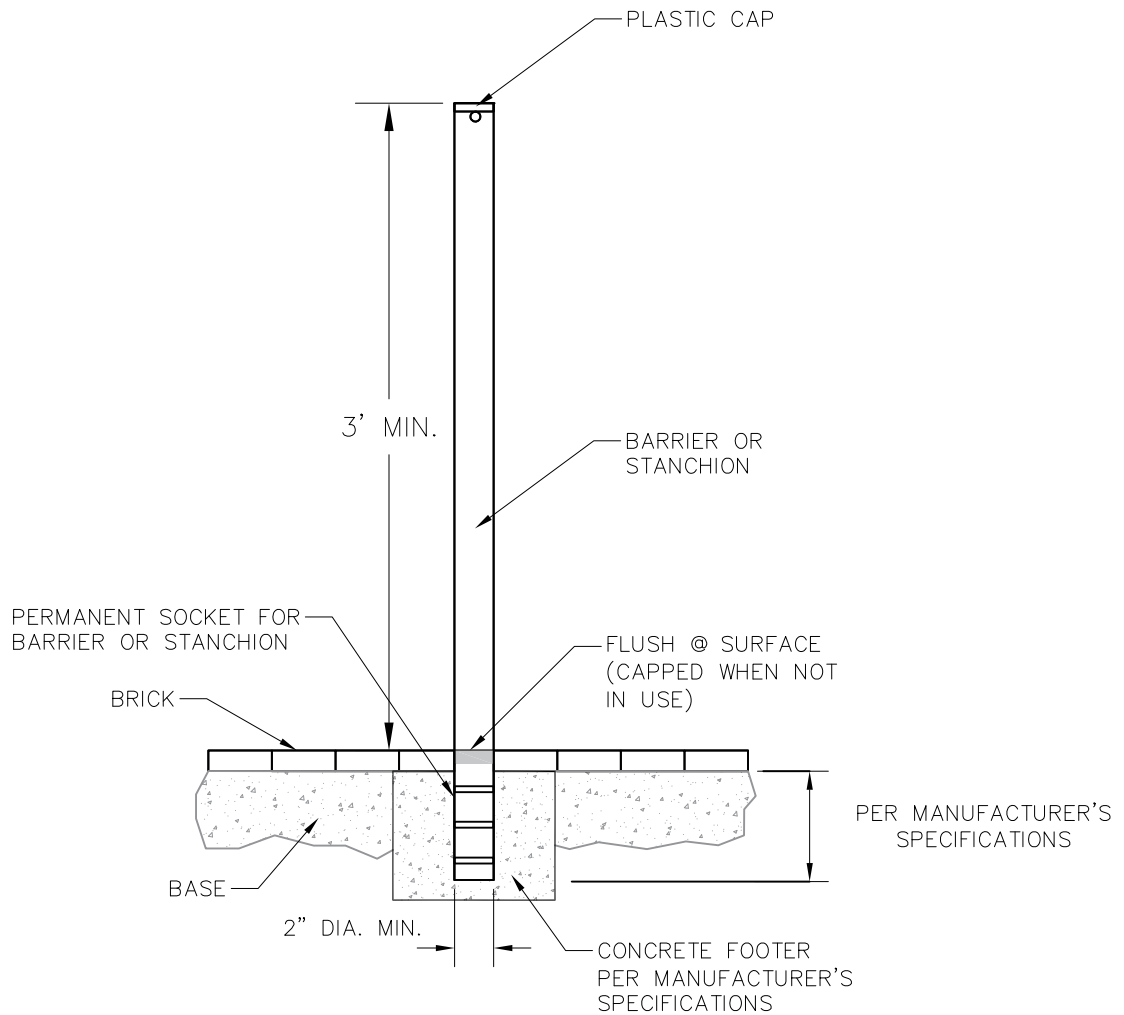
NOTES:

1. THE BRICK SHALL BE A MODULAR BRICK PAVER FROM WATSONTOWN BRICK COMPANY (7 1/2" X 4 1/2" X 2 1/4" THICK), BEECHWOOD OR AVERTIN COLORS CONFORMING TO THE REQUIREMENTS OF ASTM C902 CLASS SX, TYPE I OR APPROVED EQUAL. THE BRICK SUBJECTED TO HEAVY VEHICULAR TRAFFIC SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1272 OR APPROVED EQUAL.
2. PROVIDE 6" MINIMUM AGGREGATE BASE HAVING A MINIMUM CBR-30 UNDER DRIVEWAY ENTRANCE.
3. A 3/4" MINIMUM DEPTH SCORED JOINT SHALL BE PLACED ON CENTERLINE OF DRIVEWAY ENTRANCE OR EVERY 10' WHEN WIDTH OF DRIVEWAY (W) EXCEEDS 24'.
4. IF PLACED IN SECTIONS, NO EXPANSION MATERIAL WILL BE PLACED AT CONSTRUCTION JOINT.
5. CONTRACTOR TO CHECK SITE AND INSTALL WEEPHOLES AT LOW POINTS AND PROVIDE OUTLETS THROUGH THE AGGREGATE BASE AT INLETS.
6. WEEPHOLES SHOULD BE FILLED WITH AN OPEN-GRADED AGGREGATE TO PREVENT THEIR FILLING WITH SETTING BED MATERIAL.

**BRICK PAVERS
FOR SIDEWALK APPLICATION**

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

06/03/2022	
REVISION	DATE
CSSW-4	
PAGE 50	



(N.T.S.)

NOTE:

THE INFORMATION SHOWN HEREIN THIS DOCUMENT IS FOR GENERAL GUIDANCE ONLY AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES. ITS USE SHALL NOT RELIEVE THE DESIGN PROFESSIONAL OR CONTRACTOR OF ANY LEGAL RESPONSIBILITY.

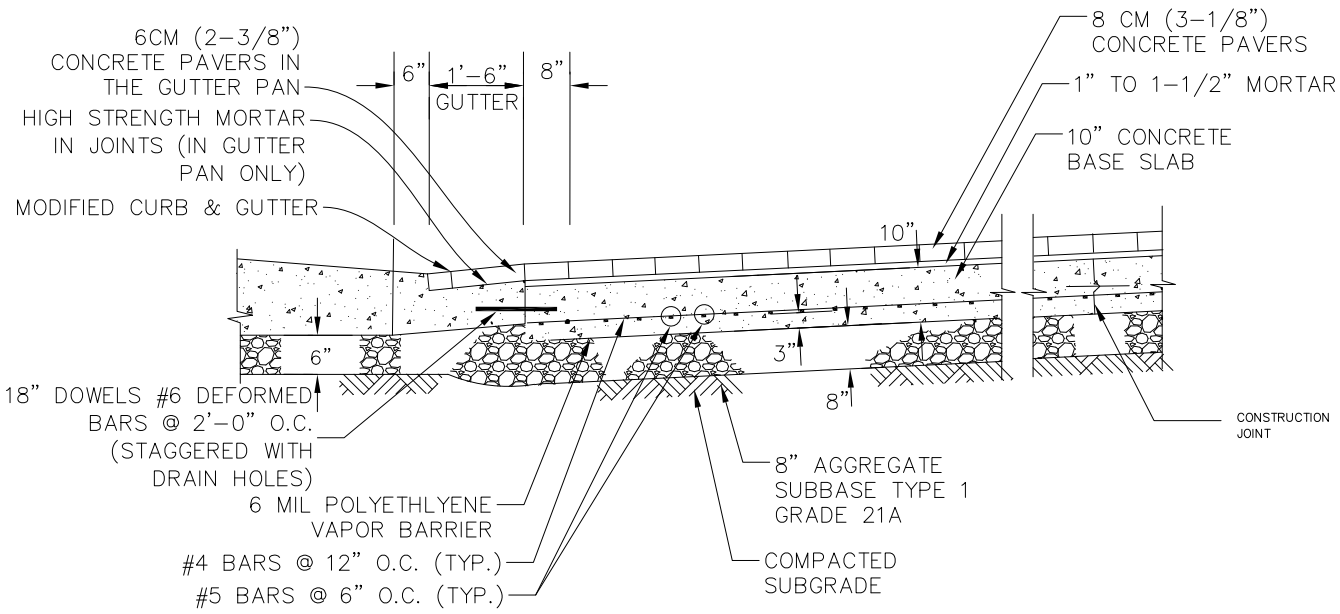
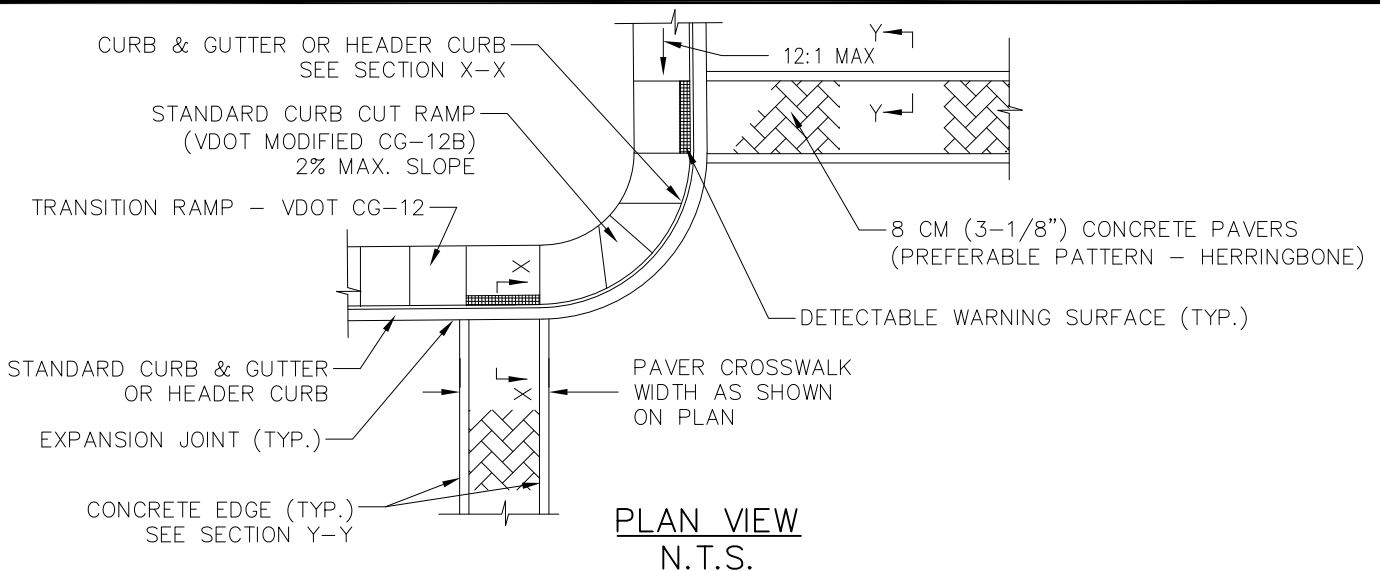
IF STANCHION IS INSTALLED IN A PUBLIC SPACE, THE PAINT SHOULD BE LUMINARY.

SECURING OUTDOOR FURNITURE TO BRICK, CONCRETE, AND CONCRETE/BRICK HYBRID SIDEWALK

06/03/2022	
REVISION	DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

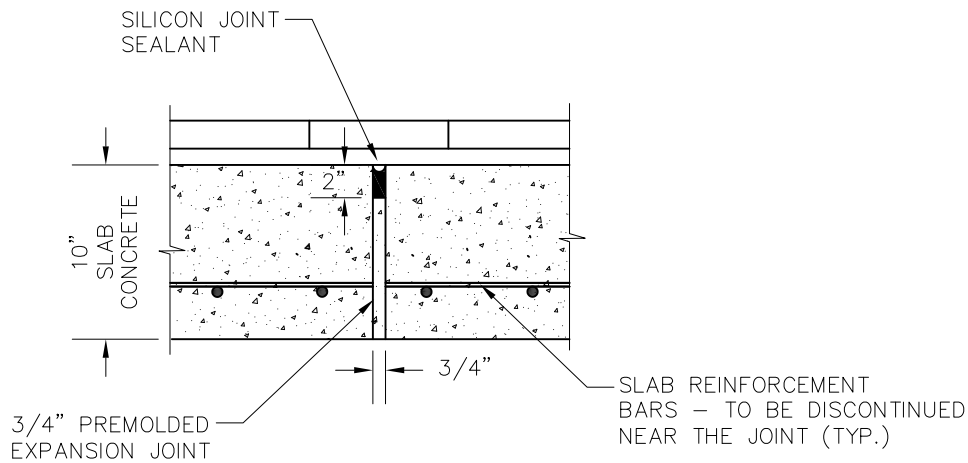
CSSO – 1
PAGE 51



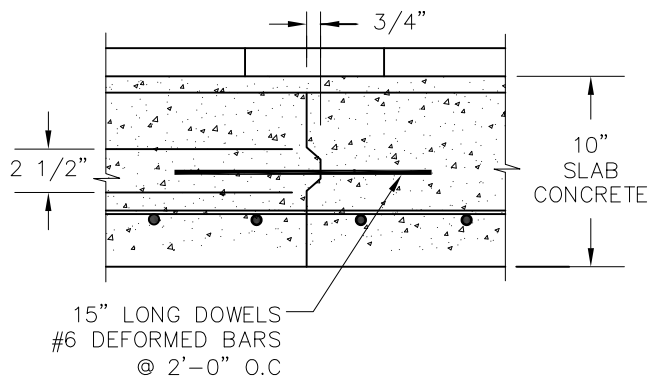
NOTES:

1. FOR CROSSWALKS 30 FEET AND LONGER, PROVIDE ONE EXPANSION JOINT LOCATED ALONG THE TRAFFIC LANE EDGE CLOSEST AND PARALLEL TO THE STREET CENTERLINE.
2. THE BOTTOM AND THE TOP OF THE 10" CONCRETE BASE SLAB SHALL FOLLOW THE SAME LONGITUDINAL AND CROSS SLOPES AS REQUIRED FOR THE PAVEMENT SURFACE ON THE TOP.
3. THE TOP OF THE 10" CONCRETE BASE SLAB SHALL BE FINISHED SMOOTH WITH STREET ELEVATION CONTROL TO ACHIEVE A UNIFORM THICKNESS OF THE SAND BED UNDER THE PROPOSED CONCRETE PAVERS AND ALSO FOR THE PROPER SUB-SURFACE FLOW THROUGH THE SAND BED TOWARD THE 4" DIA. DRAIN HOLES.
4. TO PROVIDE A SMOOTH RIDE, MILL AND PAVE STREET 20+/- FEET FROM THE CONCRETE EDGE OF THE CROSSWALK, IN ADDITION, AT AN INTERSECTION WHERE PAVER CROSSWALKS ARE PROVIDED ACROSS ALL APPROACHES, MILL AND PAVE THE ENTIRE ENCLOSED AREA IN BETWEEN THESE CROSSWALKS.
5. TO BE USED ONLY AS APPROVED BY T&ES AND P&Z.
6. FOR EXPANSION AND CONSTRUCTION JOINT DETAILS SEE DETAIL CSPC-1A.
7. FOR SECTION X-X, SEE DETAIL CSPC-1A.
8. FOR SECTION Y-Y, SEE DETAIL CSPC-1B.

<p>PAVER CROSSWALK PRIVATE MAINTENANCE ONLY 1 OF 3</p>	<p>06/03/2022</p>
<p>DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES ALEXANDRIA, VIRGINIA</p>	<p>REVISION DATE</p> <p>CSPC-1</p>
<p>PAGE 52</p>	



EXPANSION JOINT DETAIL
(TYP.)



CONSTRUCTION JOINT DETAIL
(TYP.)

NOTE:

1. FOR ALL OTHER DETAILS, SEE SECTION X-X, SEE DETAIL CSPC-1
2. JOINTS SHALL NOT BE CONTINUED THROUGH PAVERS.

PAVER CROSSWALK
PRIVATE MAINTENANCE ONLY
2 OF 3

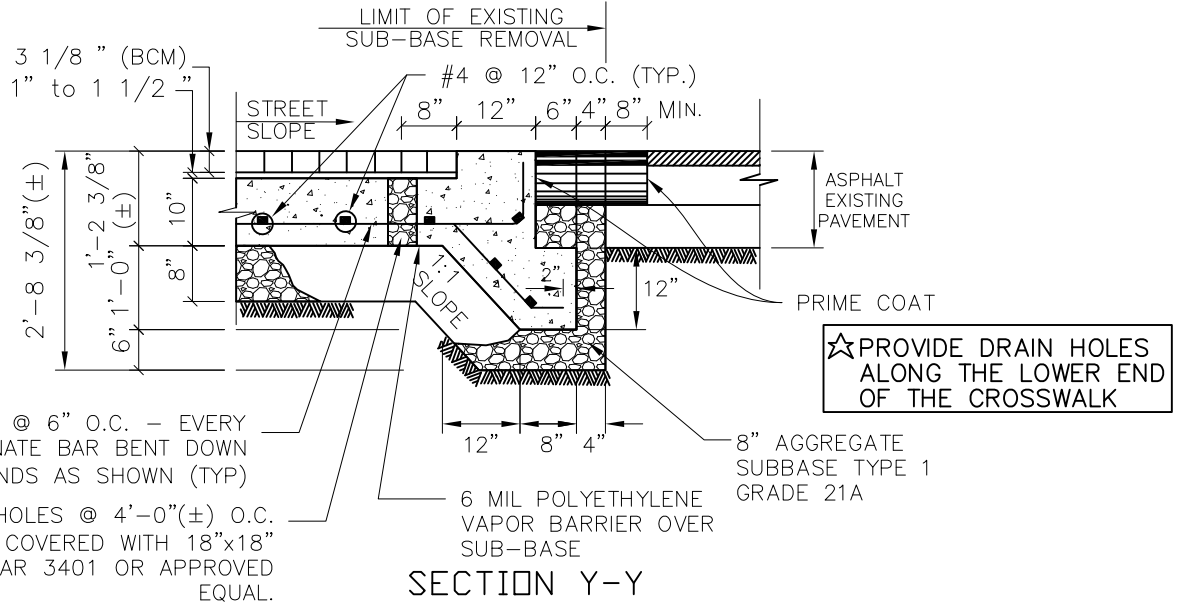
06/03/2022

REVISION DATE

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

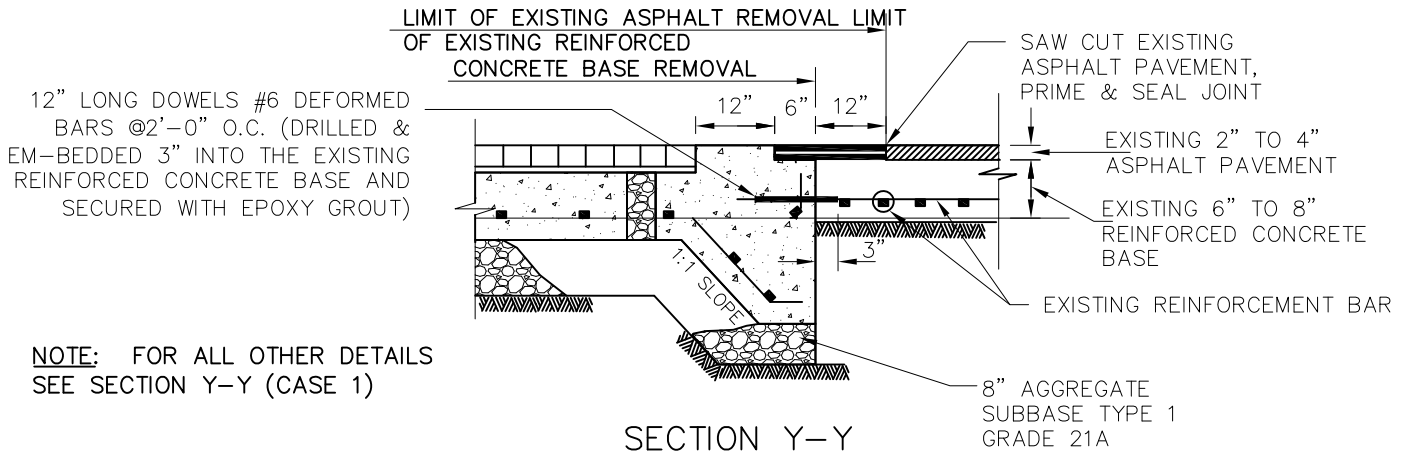
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PAGE 53



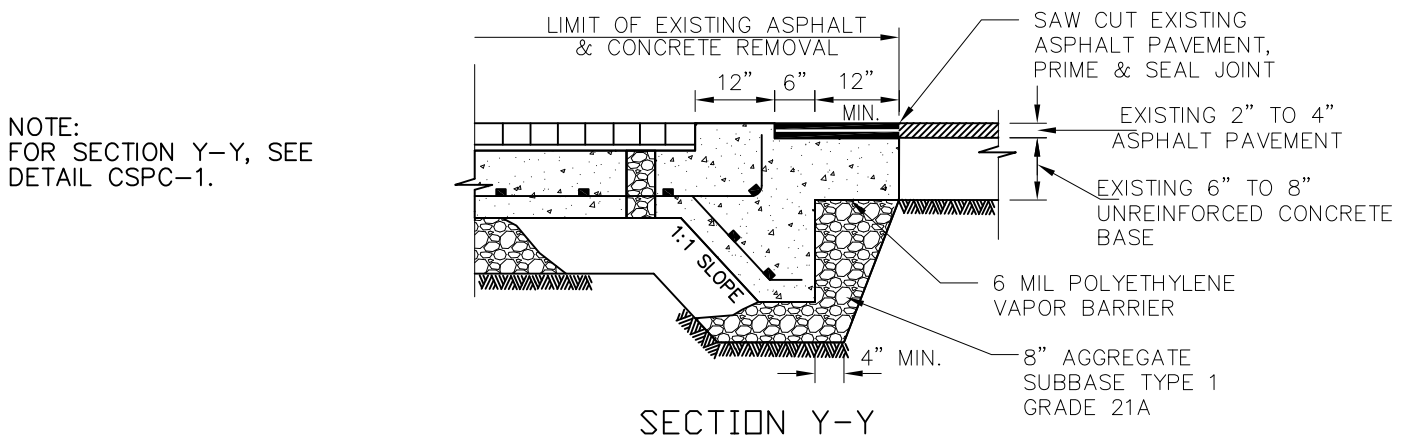
SECTION Y-Y

(CASE 1 - EXISTING ASPHALT PAVEMENT WITH AGGREGATE SUB-BASE)



SECTION Y-Y

(CASE 2 - EXISTING ASPHALT PAVEMENT OVER REINFORCED CONCRETE BASE)



SECTION Y-Y

(CASE 3 - EXISTING ASPHALT PAVEMENT OVER UNREINFORCED CONCRETE BASE)

PAVER CROSSWALK

PRIVATE MAINTENANCE ONLY
3 OF 3

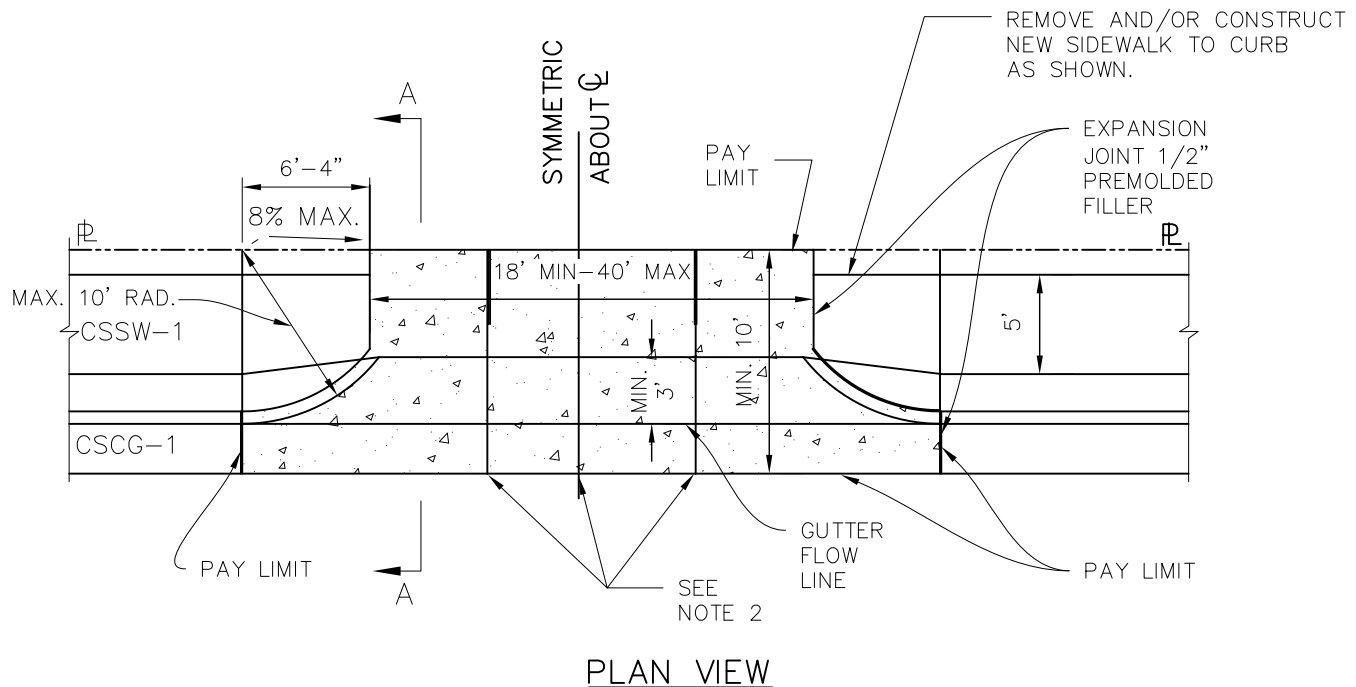
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DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSPC-1B

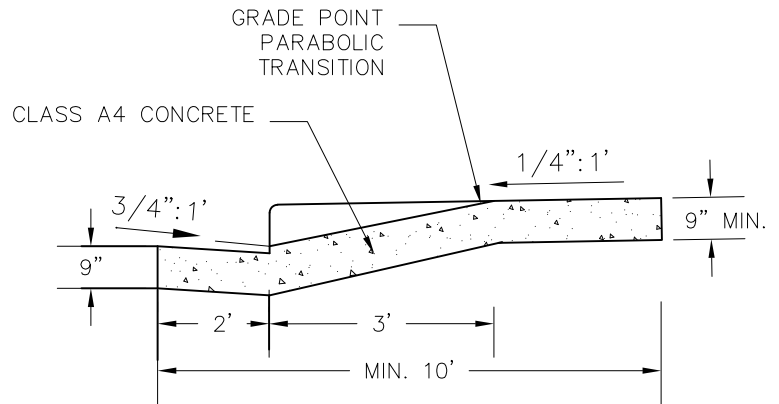
PAGE 54



PLAN VIEW

NOTES:

1. ENTRANCE IS POURED MONO-LITHIC WITH RADIAL CURB AND FINISHED INTO SMOOTH TRANSITION.
2. THE MINIMUM WIDTH OF THE ENTRANCE IS 18' AND THE MAXIMUM WIDTH IS 40'. THE ENTRANCE SHOULD BE NO MORE THAN 40' UNLESS APPROVED BY THE DIRECTOR OF TES.
3. NEW CURB AND SIDEWALK GRADE IS TO CONTINUE THROUGH GRADE POINT AT 1/4":1' MAX.
4. SLOPE OF GRASS AREAS WILL BE 1/2" PER FOOT MAX.
5. THE MAXIMUM DIFFERENCE BETWEEN THE APPROACH GRADE AND THE ENTRANCE CROSS SLOPE SHALL NOT EXCEED 8%.
6. MAINTAIN A SEPARATION OF 150 FEET BETWEEN THE BEGINNING OF STREET CORNER RADIUS AND ANY DRIVEWAY APRON RADIUS ON ARTERIAL AND COLLECTOR ROADWAYS, WITH A MINIMUM OF 100 FEET PERMITTED, SUBJECT TO THE APPROVAL OF THE DIRECTOR OF T&ES.
7. DEPRESS SLAB 1 1/2" AT CENTERLINE AND BLEND INTO FLOW LINE.



SECTION A-A

COMMERCIAL ENTRANCE

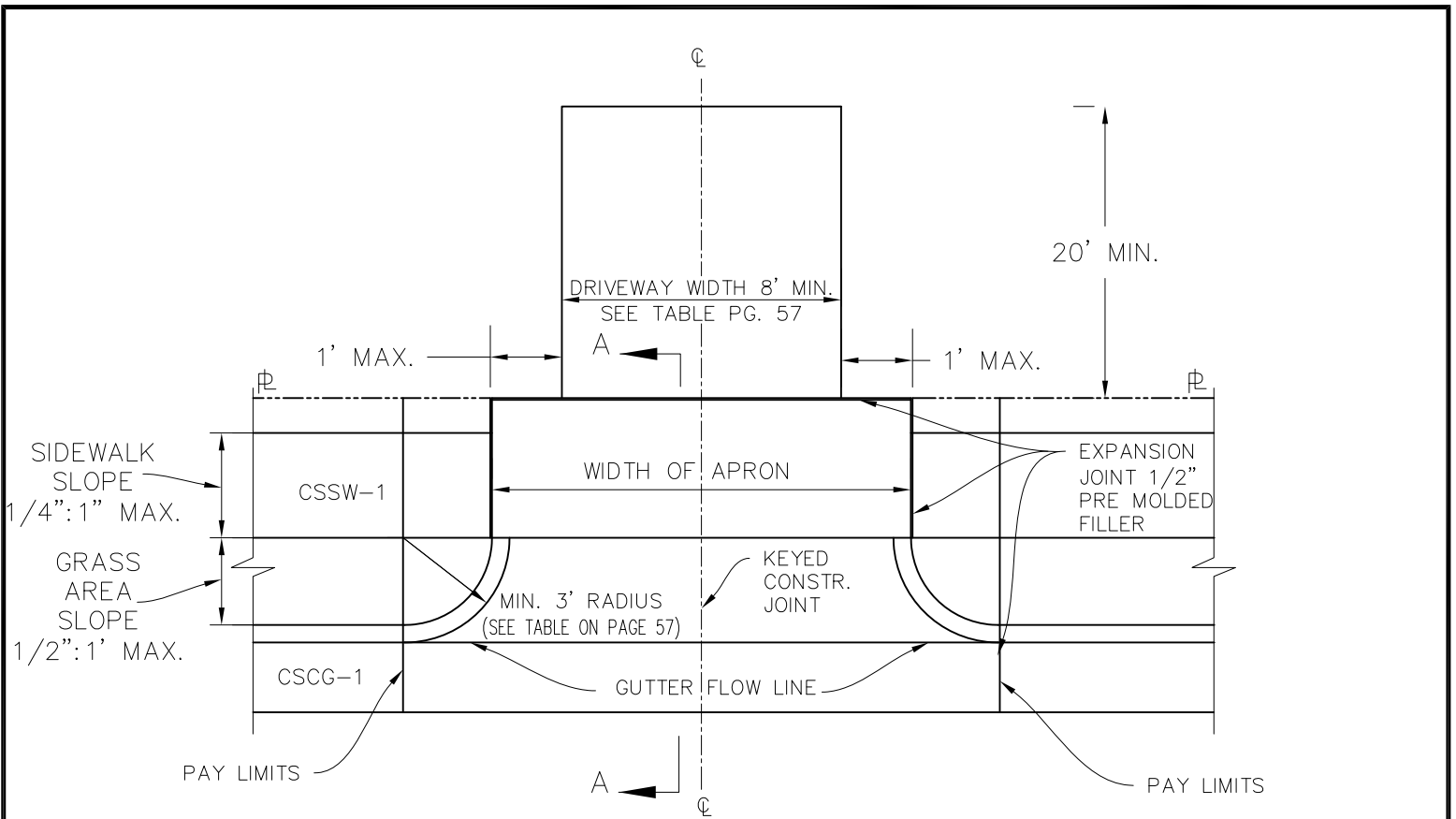
06/03/2022

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CSCE-1

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ALEXANDRIA, VIRGINIA

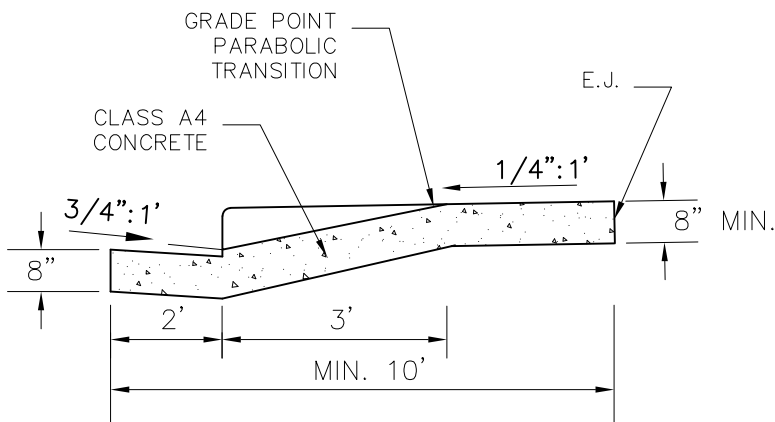
PAGE 55



PLAN VIEW

NOTES:

1. DEPRESS SLAB 1 1/2" AT CENTERLINE AND BLEND INTO FLOW LINE.
2. PAY QUANTITIES SQ. YD. COMPLETE.
3. CLASS "A4" CONCRETE.
4. THE MAXIMUM DIFFERENCE BETWEEN THE APPROACH GRADE AND THE ENTRANCE CROSS SLOPE SHALL NOT EXCEED 8%.
5. MAINTAIN A MINIMUM SEPARATION OF 30 FEET ON RESIDENTIAL STREETS BETWEEN THE BEGINNING OF THE STREET CORNER RADIUS AND ANY DRIVEWAY APRON RADIUS.



SECTION A-A

RESIDENTIAL ENTRANCE

06/03/2022

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ALEXANDRIA, VIRGINIA

CSRE-1

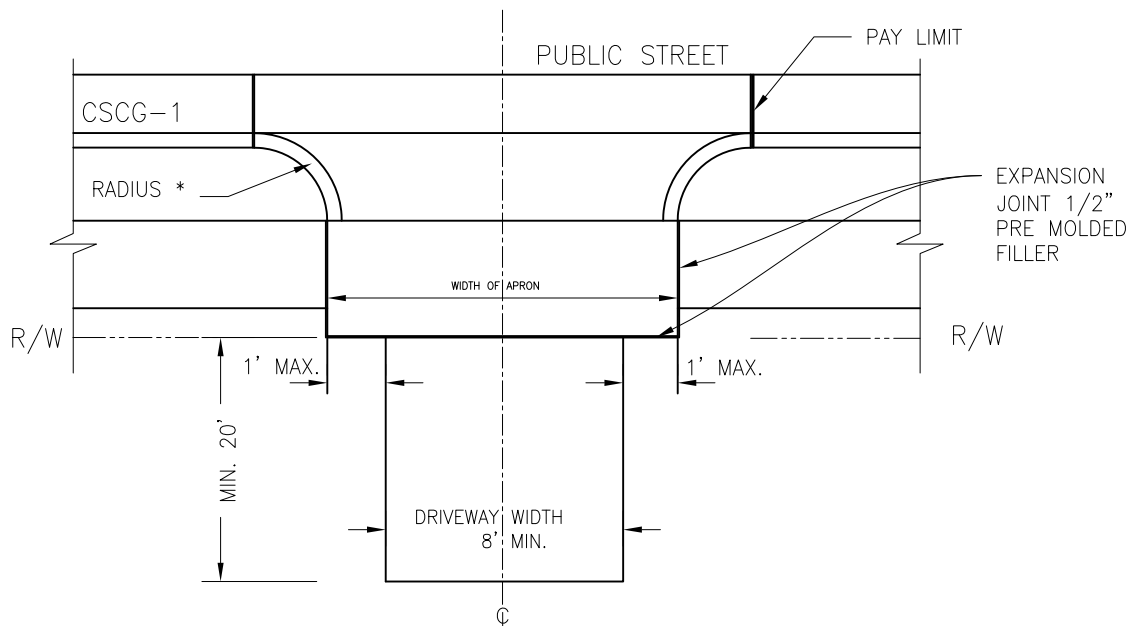
PAGE 56

CLASS OF STREET	LOCAL				COLLECTOR				ARTERIAL	
	MINOR		MAJOR		RESIDENTIAL		PRIMARY		W/CURB PARK LANE	W/O CURB PARK LANE
TYPE OF LANE AGAINST CURB	W/CURB PARK LANE	W/O CURB PARK LANE	W/CURB PARK LANE	W/O CURB PARK LANE	W/CURB PARK LANE	W/O CURB PARK LANE	W/CURB PARK LANE	W/O CURB PARK LANE		
MIN. WIDTH FT. **	8	9	10	12	9	10	10	12	12	16
MIN. RADIUS FT. *	3	5	5	7	5	7	5	7	7	10

* RADII SHALL BE IN FRONT OF THE PROPERTY SERVED BY THE DRIVEWAY WHENEVER POSSIBLE. JOINT DRIVEWAY MAY BE APPROVED, BUT MINIMUM WIDTH OF APRON IS REQUIRED ON EACH SIDE OF LOT LINE.

** WIDTH OF DRIVEWAY ON PROPERTY AT END OF APRON MAY NOT BE LESS THAN 8', OR 2' LESS THAN THE ABOVE WIDTH WHICHEVER IS GREATER. WHERE EVEN FURTHER REDUCTION IN WIDTH OF DRIVEWAY IS DESIRED ON LONG DRIVEWAYS A 10 TO 1 MIN. TRANSITION IN WIDTH MUST BE USED TO REACH SAID REDUCED WIDTH.

NOTE: UPON WRITTEN REQUEST TO THE DIRECTOR OF T&ES, VARIANCES FROM THE MINIMUM DRIVEWAY STANDARDS MAY BE GRANTED PROVIDED THAT STRICT APPLICATION OF THE REQUIREMENTS WILL EFFECTIVELY PROHIBIT OR UNREASONABLY RESTRICT THE USE OF THE PROPERTY; AND, PROVIDED THAT SUCH VARIANCE WILL NOT BE OF SUBSTANTIAL DETRIMENT TO ADJACENT PROPERTY. APPLICANT TO NOTIFY ADJACENT PROPERTY OWNERS OF DRIVEWAY REQUEST FOR ALL CURB CUTS AT LEAST 14 DAYS IN ADVANCE OF APPROVAL BY T&ES. APPEALS OF DECISIONS OF THE DIRECTOR OF T&ES MAY BE MADE IN WRITING TO THE TRAFFIC & PARKING BOARD BY THE APPLICANT OR AN ADJACENT PROPERTY OWNER OF THE PROPOSED DRIVEWAY.



RESIDENTIAL DRIVEWAY MINIMUM STANDARDS

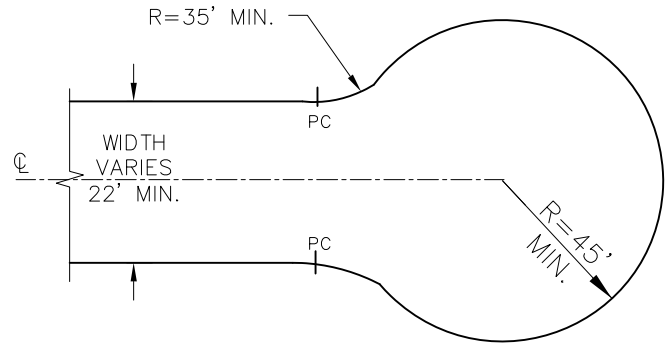
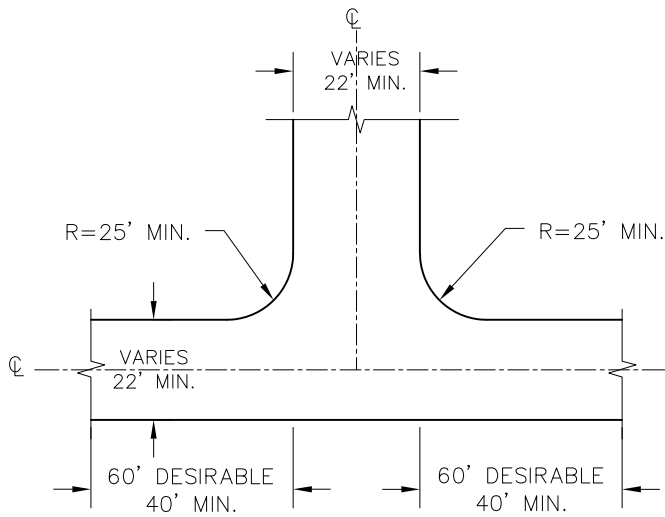
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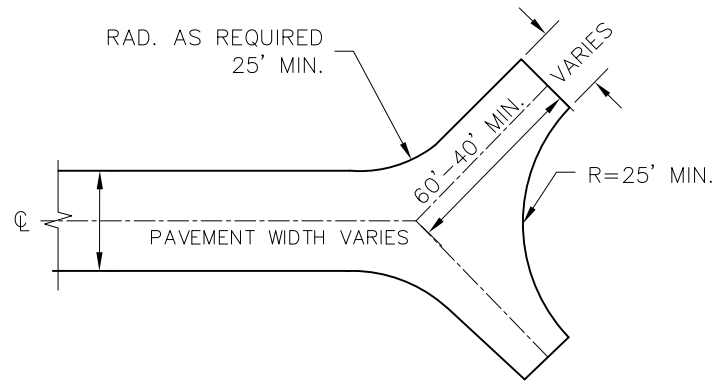
CSRE-1A

PAGE 57

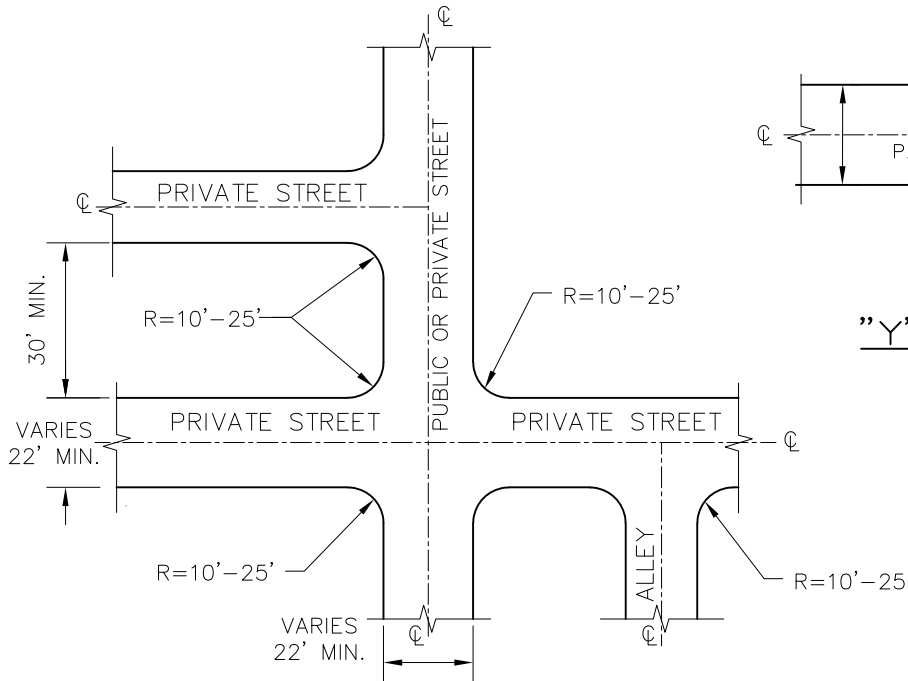


CUL-DE-SAC PRIVATE STREET TURNAROUND

HAMMERHEAD PRIVATE STREET TURNAROUND



"Y" TYPE PRIVATE STREET TURNAROUND



INTERSECTION LAYOUT

NOTES:

1. ALL TRAVELWAYS TO CARRY EMERGENCY VEHICLES OR PUBLIC TRASH SERVICE MUST BE BUILT TO MINIMUM STREET STANDARDS AND HAVE TURNAROUNDS.
2. ALL EMERGENCY VEHICLE EASEMENTS MUST CONFORM TO CSAP-1A OR BETTER.
3. FOR SIDEWALK AND STREET WIDTHS SEE ALEXANDRIA COMPLETE STREETS DESIGN GUIDELINES.

* DIMENSION VARIES TO FIT
INDIVIDUAL PLAN - 60' DESIRABLE

PRIVATE STREET AND ALLEY MINIMUM STANDARDS

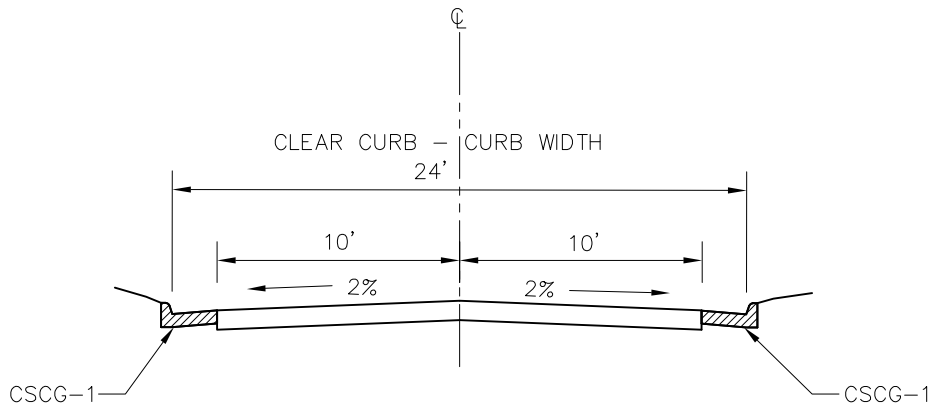
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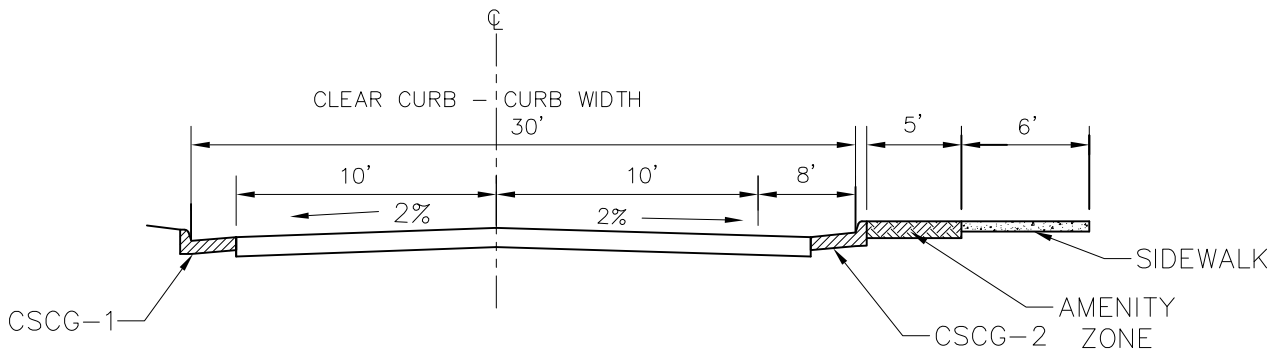
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ALEXANDRIA, VIRGINIA

CSPS-1

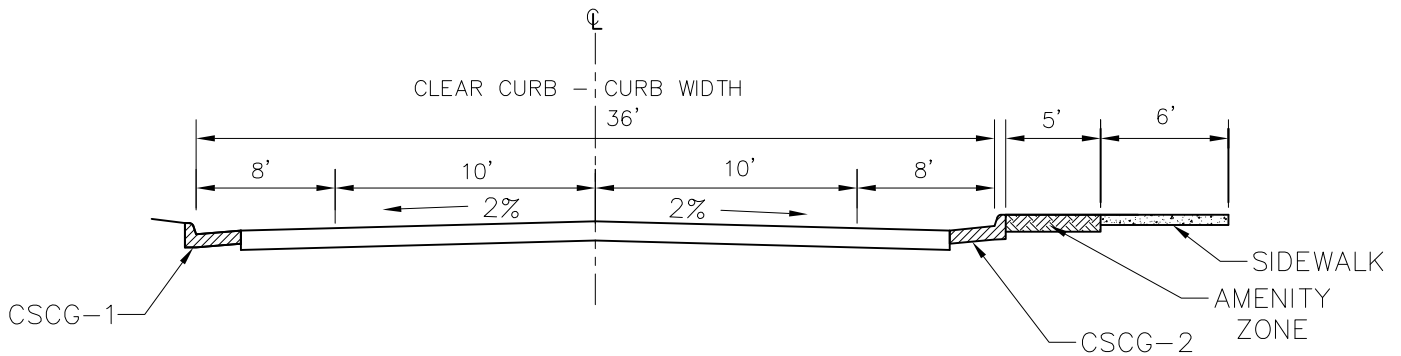
PAGE 58



NO ABUTTING SIDEWALKS, NO PARKING



ABUTTING SIDEWALK ONE SIDE, PARKING ONE SIDE



ABUTTING SIDEWALK ONE SIDE, PARKING BOTH SIDES

NOTES:

1. FOR SIDEWALK AND STREET WIDTHS SEE ALEXANDRIA COMPLETE STREETS DESIGN GUIDELINES.
2. PRIVATE STREETS SHOULD BE LABELED ON DEVELOPMENT PLANS.

RESIDENTIAL STREET MINIMUM STANDARDS

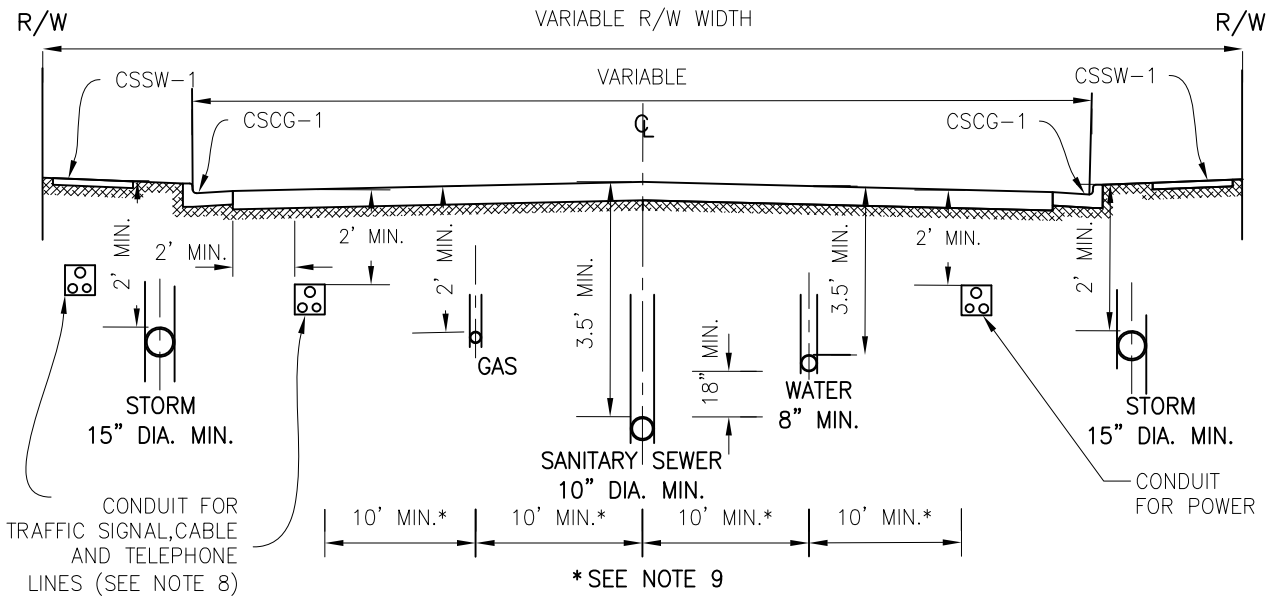
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ALEXANDRIA, VIRGINIA

CSPS-2

PAGE 59



SECTION OF TYPICAL STREET
N.T.S.

NOTES:

1. IF THE LATERAL/HORIZONTAL SEPARATION CANNOT BE PROVIDED AS SHOWN THEN THE SANITARY/STORM SEWERS AND WATER MAIN SHALL BE INSTALLED IN SEPARATE TRENCHES AND VERTICAL SEPARATION PROVIDED AS SHOWN IN CSSU-2.
2. ANY VARIATION IN MINIMUM SEPARATIONS WILL BE APPROVED BY THE DIRECTOR OF T&ES.
3. MINIMUM COVER WILL BE MEASURED FROM FINISHED GRADE TO TOP OF UNDERGROUND UTILITY LINES.
4. SIDEWALKS SHALL BE DESIGNED AND CONSTRUCTED PER APPROVED PLAN IN ACCORDANCE WITH CSSW-1 THROUGH CSSW-4.
5. CURB & GUTTER SHALL BE CONSTRUCTED PER CITY STANDARD CSCG-1.
6. STREET PAVEMENT SHALL BE CONSTRUCTED PER CITY STANDARD CSAP-1 AND CSAP-1A.
7. CONDUIT CANNOT BE INSTALLED ABOVE PARALLEL EXISTING UTILITIES.
8. CONDUIT FOR TRAFFIC SIGNAL, CABLE AND TELEPHONE LINES CAN BE LOCATED UNDER THE STREET OR SIDEWALK.
9. PROVIDE A HORIZONTAL SEPARATION OF 10- FEET (EDGE TO EDGE) BETWEEN A STORM OR SANITARY SEWER AND A WATER LINE. HOWEVER, IF THIS HORIZONTAL SEPARATION CANNOT BE ACHIEVED, THEN INSTALL THE SEWER AND WATER MAIN IN SEPARATE TRENCHES AND SET THE BOTTOM OF THE WATER MAIN AT LEAST 18-INCHES ABOVE OF THE TOP OF THE SEWER.
10. PROVIDE AT LEAST 18-INCHES OF VERTICAL SEPARATION FOR SANITARY SEWER AND 12-INCHES FOR STORM SEWER WHEN A WATER MAIN OVER CROSSES OR UNDER CROSSES A SANITARY/STORM SEWER.
11. MAINTAIN A MINIMUM 12-INCHES OF SEPARATION OR CLEARANCE FROM WATER MAIN, SANITARY, OR STORM SEWERS WHEN CROSSING UNDERGROUND TELEPHONE, CABLE T.V., GAS, AND ELECTRICAL DUCT BANKS.

**STANDARD LOCATION OF SEWERS & UTILITIES
FOR NEW ROADS**

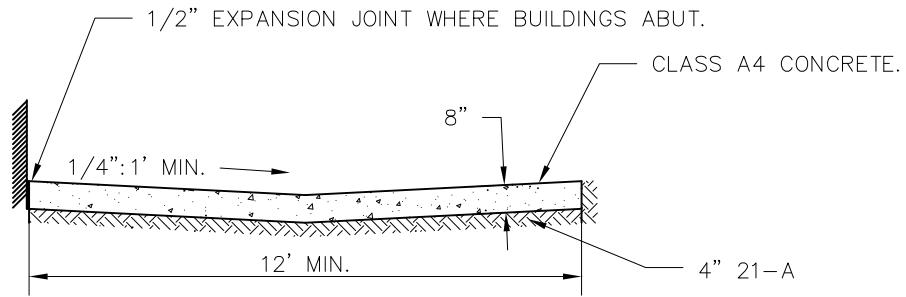
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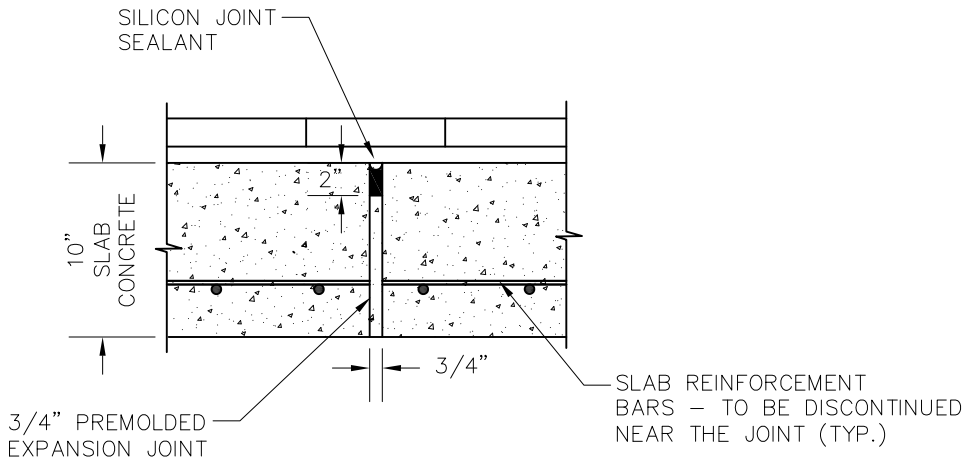
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ALEXANDRIA, VIRGINIA

CSSU-1

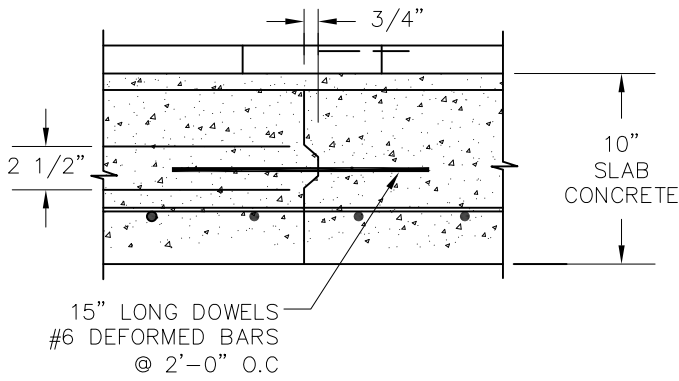
PAGE 60



TYPICAL ALLEY PAVING



EXPANSION JOINT DETAIL
(TYP.)



CONSTRUCTION JOINT DETAIL
(TYP.)

NOTES:

1. PAVING THICKNESS AND ANY REINFORCING TO BE SPECIFIED FOR EACH JOB ON THE APPROVED PLANS.
2. LONGITUDINAL JOINTS AT MAX. 18' UNLESS SLAB IS REINFORCED.
3. SAWED JOINTS TO BE MIN. 1/4 THICKNESS OF SLAB.
4. ALL CONCRETE STREETS SHALL BE DESIGNED USING VDOT STANDARDS.
5. PROVIDE EXPANSION JOINT AT 30' O.C.
6. SCORE CONCRETE PAVEMENT.
7. FOR ALLEYS WITH HEAVY TRUCK TRAFFIC, CONCRETE PAVEMENT SECTION WILL BE DESIGNED.

CONCRETE PAVING OF ALLEYS & STREETS

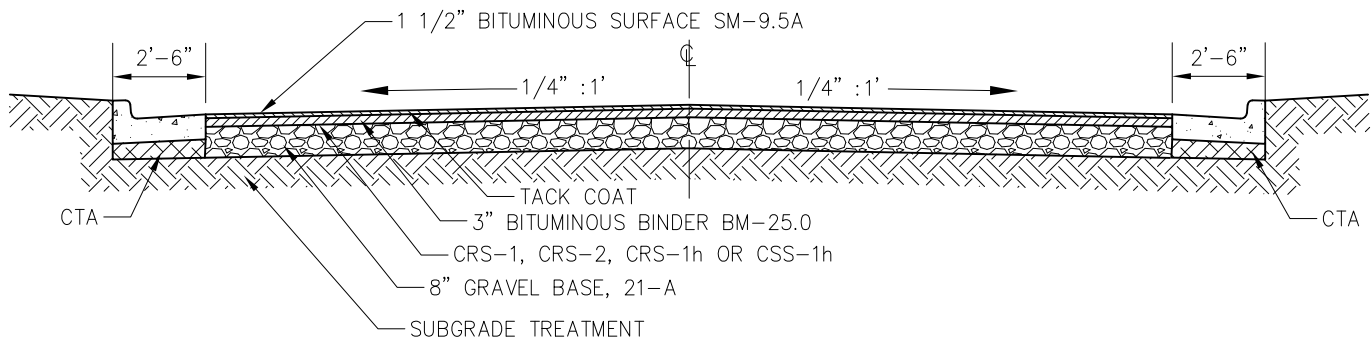
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DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSCP-1

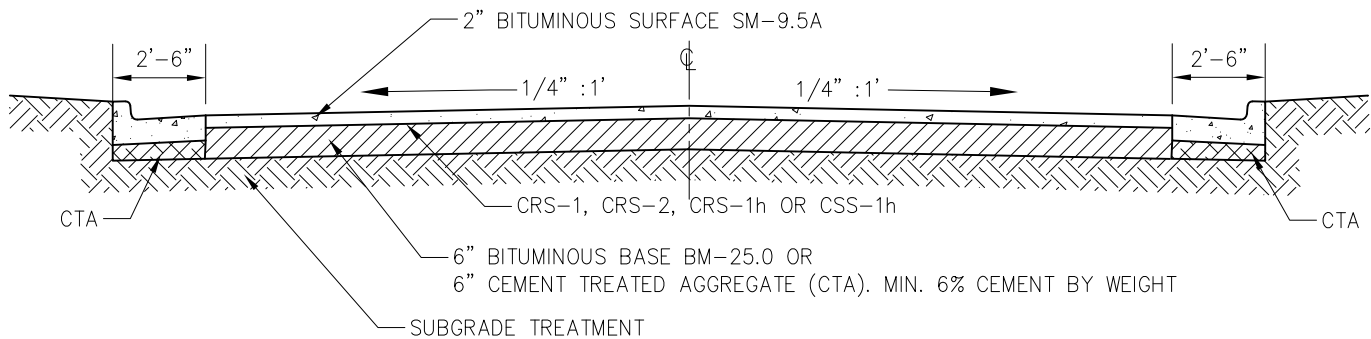
PAGE 61



*CTA - CEMENT TREATED AGGREGATE

TYPICAL SECTION - FLEXIBLE BASE (ASPHALT CONCRETE)

N.T.S.



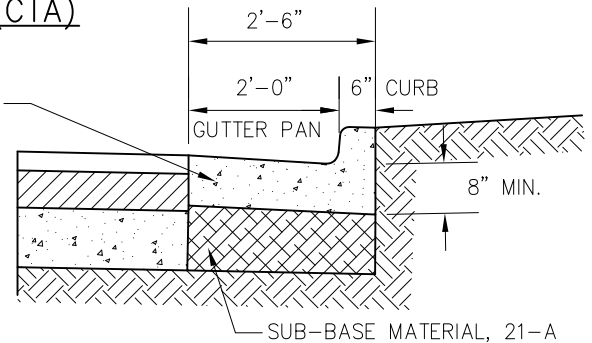
TYPICAL SECTION - RIGID BASE (CTA)

N.T.S.

NOTES:

1. 12 1/2" MIN. FROM BASE OF SUBGRADE TREATMENT TO SURFACE.
2. PAVEMENT DESIGN MUST BE PREPARED FOR NEW ROADS BASED ON CBR-10.
3. ADD TACK COAT BETWEEN ASPHALT LAYERS.

MIN. A4 CONCRETE



CALIFORNIA BEARING RATIO (CBR) NOTE:

1. THE CALIFORNIA BEARING RATIO (CBR) VALUES OF IN-SITU MATERIALS SHALL BE DETERMINED BY FIELD AND/OR LABORATORY TESTS FOR ACTUAL DETERMINATION OF REQUIRED THICKNESSES OF SURFACE, BASE, SUB-BASE, AND SUBGRADE MATERIALS. THE PAVEMENT SECTION SHALL BE DESIGNED BY A GEOTECHNICAL/LICENSED PROFESSIONAL ENGINEER TO SATISFACTION OF DIRECTOR, TRANSPORTATION AND ENVIRONMENTAL SERVICES FOR ALL PAVEMENTS INCLUDING EMERGENCY VEHICLE EASEMENT (EVE) TO SUPPORT H-20 LOADING. IN THE CASE OF PAVEMENT PATCHES, PAVEMENT SECTION MUST MEET OR EXCEED EXISTING SECTION.
2. THE THICKNESSES OF SUB-BASE, BASE, AND WEARING COURSE SHALL BE DESIGNED USING 'CALIFORNIA METHOD' AS SET FORTH ON PAGE 3-76 OF THE SECOND EDITION OF A BOOK ENTITLED, 'DATA BOOK FOR CIVIL ENGINEERS, VOLUME ONE, DESIGN' WRITTEN BY ELWYN E. SEELYE. AN ALTERNATE PAVEMENT SECTION DESIGNED TO THE SATISFACTION OF DIRECTOR, TRANSPORTATION AND ENVIRONMENTAL SERVICES FOR ALL PAVEMENT INCLUDING EMERGENCY VEHICLE EASEMENT (EVE) TO SUPPORT H-20 LOADING BASED ON ACTUAL CBR VALUE AND USING VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) METHOD (VASWANI METHOD) AND STANDARD MATERIAL SPECIFICATION SHALL BE ACCEPTABLE.

ASPHALT PAVING OF ALLEYS AND STREETS

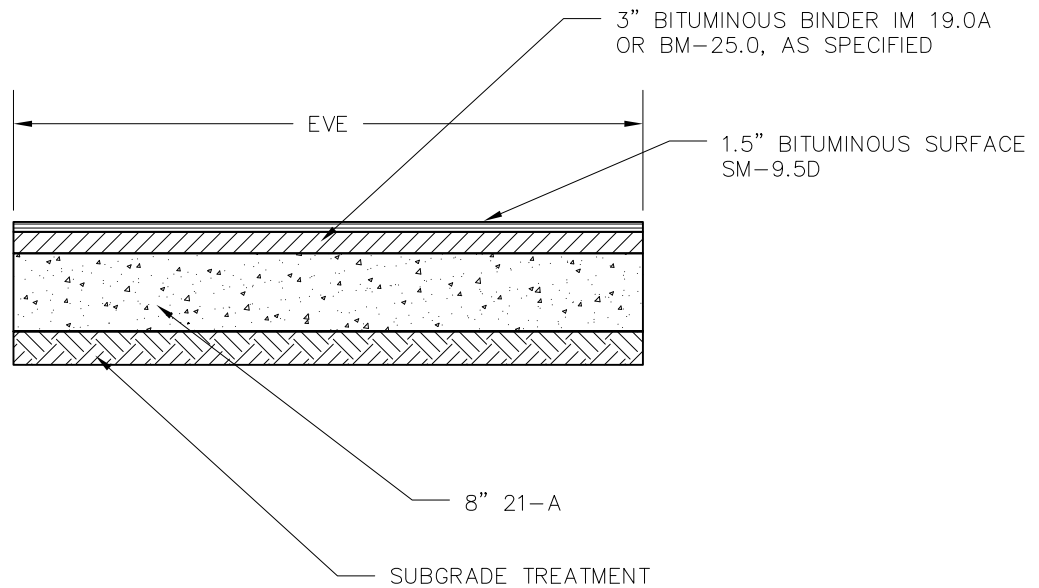
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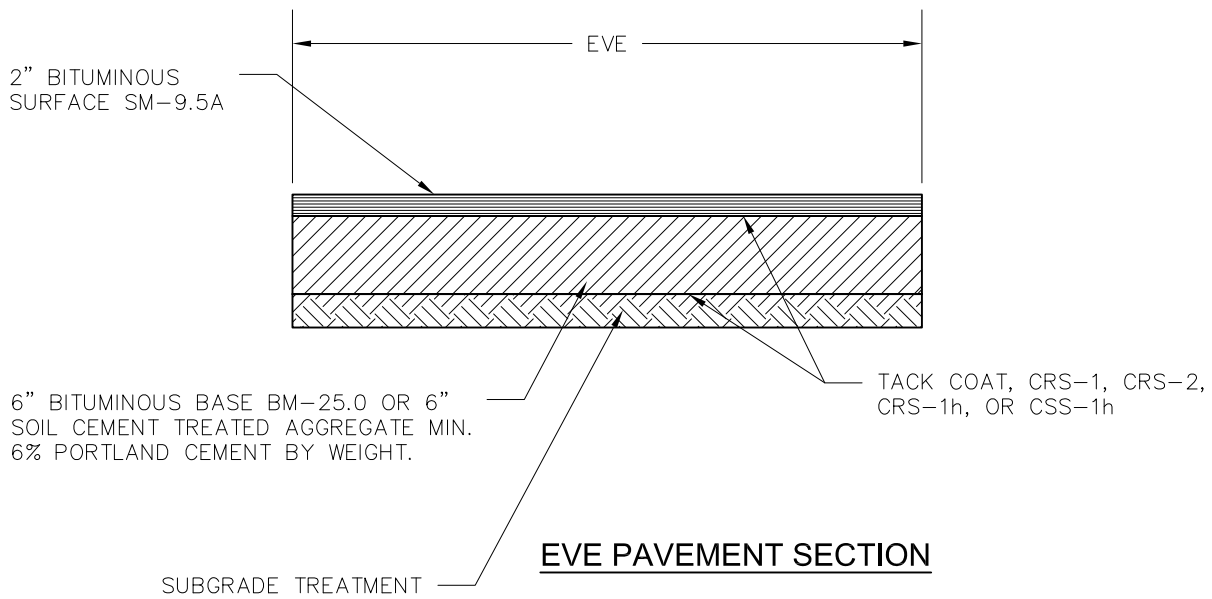
CSAP-1

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

PAGE 62



EVE PAVEMENT SECTION



EVE PAVEMENT SECTION

NOTE:

1. PAVEMENT DESIGN MUST BE PREPARED FOR EVE BASED ON CBR 10.
2. THE GRAVEL BASE, 21-B AS AN ALTERNATE TO 21-A, CAN BE PROVIDED WITH UNDER DRAIN.

**ASPHALT PAVING FOR
EMERGENCY VEHICLE EASEMENT (EVE) PRIVATE ROADS**

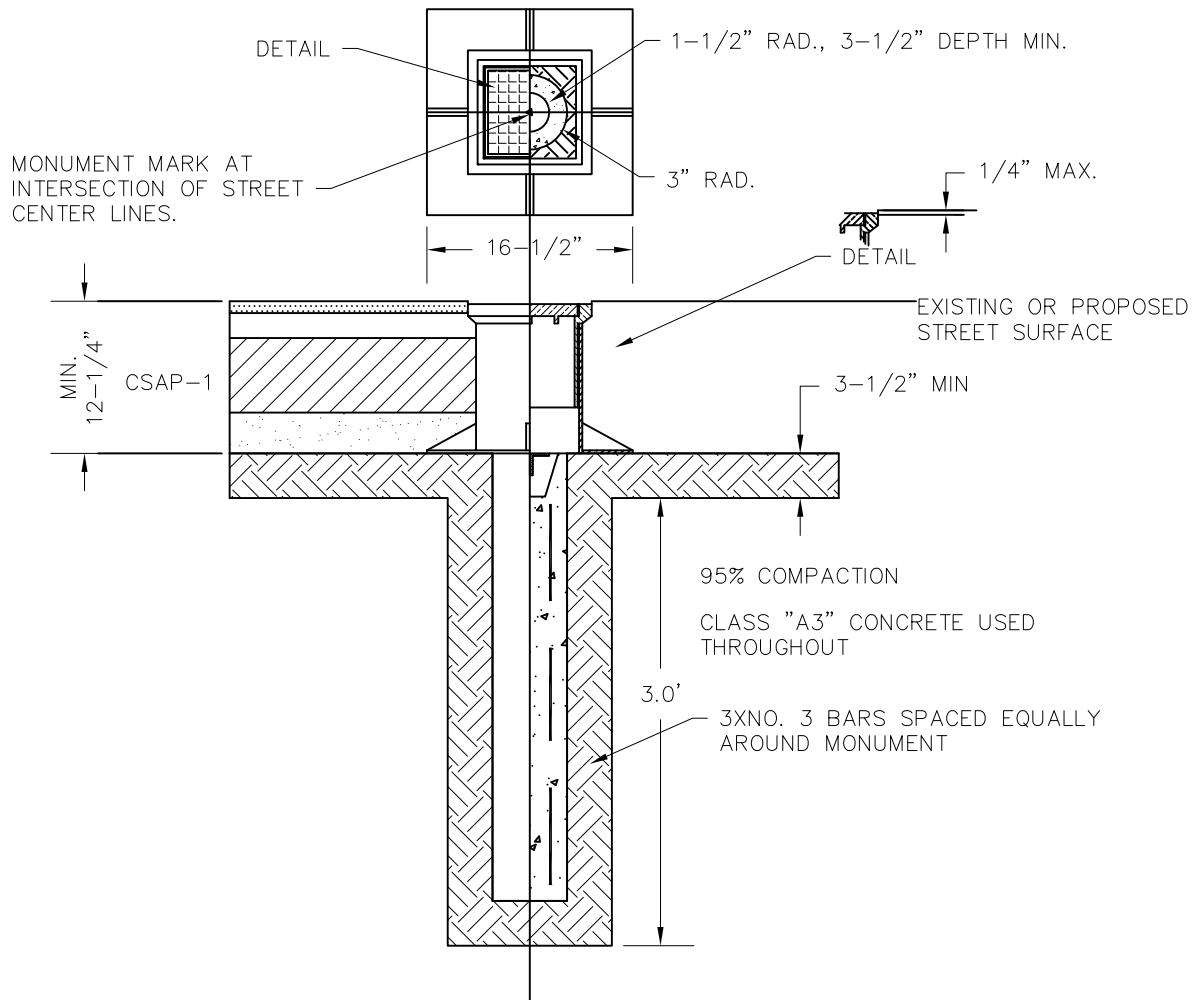
DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

06/03/2022

REVISION DATE

CSAP-1A

PAGE 63



NOTES:

1. SIX INCH MONUMENT HOLE TO BE DRILLED OR HAND DUG AFTER SUB-GRADE IS IN PLACE AND/OR EXISTING GROUND IS COMPACTED.
2. COST OF CONCRETE MONUMENT IN PLACE TO BE INCLUDED IN COST OF BOX.
3. MONUMENT BOX " NEENAH " R-1968 TYPE 36-B OR APPROVED EQUAL.
4. ALL VOIDS IN MONUMENT HOLE TO BE FILLED WITH CLASS "A3- CONCRETE".
5. MONUMENT BOX MUST NOT BEAR ON CONCRETE MONUMENT.

MONUMENT (And Monument Box)

06/03/2022

REVISION DATE

CSMT-1

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

PAGE 64

NOTE:

1. CURB RAMPS SHALL COMPLY WITH APPLICABLE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD & BRIDGE STANDARDS. THE CURB RAMP DETAILS CAN BE FOUND IN THE LATEST ADDITION OF THE VDOT ROAD & BRIDGE STANDARDS: CG-12; PAGE 204.01 – 204.05.
2. PER CITY AND VDOT COMPLETE STREET GUIDELINES, CURB RAMPS SHALL BE PROVIDED FOR EACH DIRECTION OF CROSSING AT INTERSECTIONS THAT INCORPORATE PEDESTRIAN ACCESS ROUTES, AND ON BOTH SIDES OF A MIDBLOCK LOCATION TO ESTABLISH A PEDESTRIAN ACCESS ROUTE. CURB RAMPS SHALL BE IN LINE WITH THE DIRECTION OF PEDESTRIAN TRAVEL.
3. WHERE THERE IS INSUFFICIENT ROOM TO DEVELOP A MEANINGFUL CURB HEIGHT BETWEEN SEPARATE RAMPS ON A CORNER OR WHERE DOING SO WOULD CREATE AN OBSTACLE, A DESIGN KNOWN AS A "FAN" RAMP MAY BE ACCEPTABLE WHERE A MAXIMUM 8.3% RAMP GRADE IS WRAPPED AROUND A SHARED LANDING WITH DETECTABLE WARNING SURFACES RINGING THE RADIUS. FAN RAMPS CLOSELY MIMIC THE GRADE RISE OF A DIAGONAL RAMP BUT OPEN UP COMPLETELY TO BOTH DIRECTIONS OF TRAVEL. FAN TYPE RAMPS ARE USEFUL WHEN VERTICAL GRADES CANNOT BE MET BY ANY OTHER RAMP TYPE BECAUSE THEY RISE VERTICALLY FROM THE FLOW LINE TO A COMMON LANDING. THIS TYPE OF RAMP SHOULD BE USED ONLY WHEN SEPARATE CURB RAMPS ARE NOT FEASIBLE.

https://www.virginiadot.org/business/resources/LocDes/VDOT2016_Road_and_Bridge_Standards/April_2019_Revision/204_01.pdf

https://www.virginiadot.org/business/resources/LocDes/VDOT2016_Road_and_Bridge_Standards/April_2019_Revision/204_02.pdf

https://www.virginiadot.org/business/resources/LocDes/VDOT2016_Road_and_Bridge_Standards/April_2019_Revision/204_03.pdf

https://www.virginiadot.org/business/resources/LocDes/VDOT2016_Road_and_Bridge_Standards/April_2019_Revision/204_04.pdf

https://www.virginiadot.org/business/resources/LocDes/VDOT2016_Road_and_Bridge_Standards/April_2019_Revision/204_05.pdf

GENERAL NOTES:

FOR DETAILS NOT SHOWN IN THE CITY OF ALEXANDRIA CONSTRUCTION STANDARDS, REFER TO THE VDOT ROAD AND BRIDGE STANDARDS, VOLUME I AND VOLUME II.

https://www.virginiadot.org/business/resources/LocDes/VDOT2016_Road_and_Bridge_Standards/Volume1.pdf

https://www.virginiadot.org/business/resources/LocDes/VDOT2016_Road_and_Bridge_Standards/Volume2.pdf

ACCESSIBLE CURB RAMP

06/03/2022

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DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES
ALEXANDRIA, VIRGINIA

CSCR-1

PAGE 65

Design and Construction Packet

Final Audit Report

2022-12-27

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By:	Sherry Clarke (Sherry.Clarke@alexandriava.gov)
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