

<u>DRAWING NO.</u>	<u>TITLE</u>
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STM2	FLARED END SECTION OUTLET
STM3	INLET PROTECTION
STM4	SILT FENCE EROSION BARRIER
STM5	(RESERVED FOR FUTURE USE)
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STM15A	TRASH GUARD FOR CONDUIT (1 OF 3)
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STM15C	TRASH GUARD FOR CONDUIT (3 OF 3)
STM16A	SIDEWALK CHASE DETAIL (1 OF 2)
STM16B	SIDEWALK CHASE DETAIL (2 OF 2)

INDEX OF STORM SEWER DETAILS



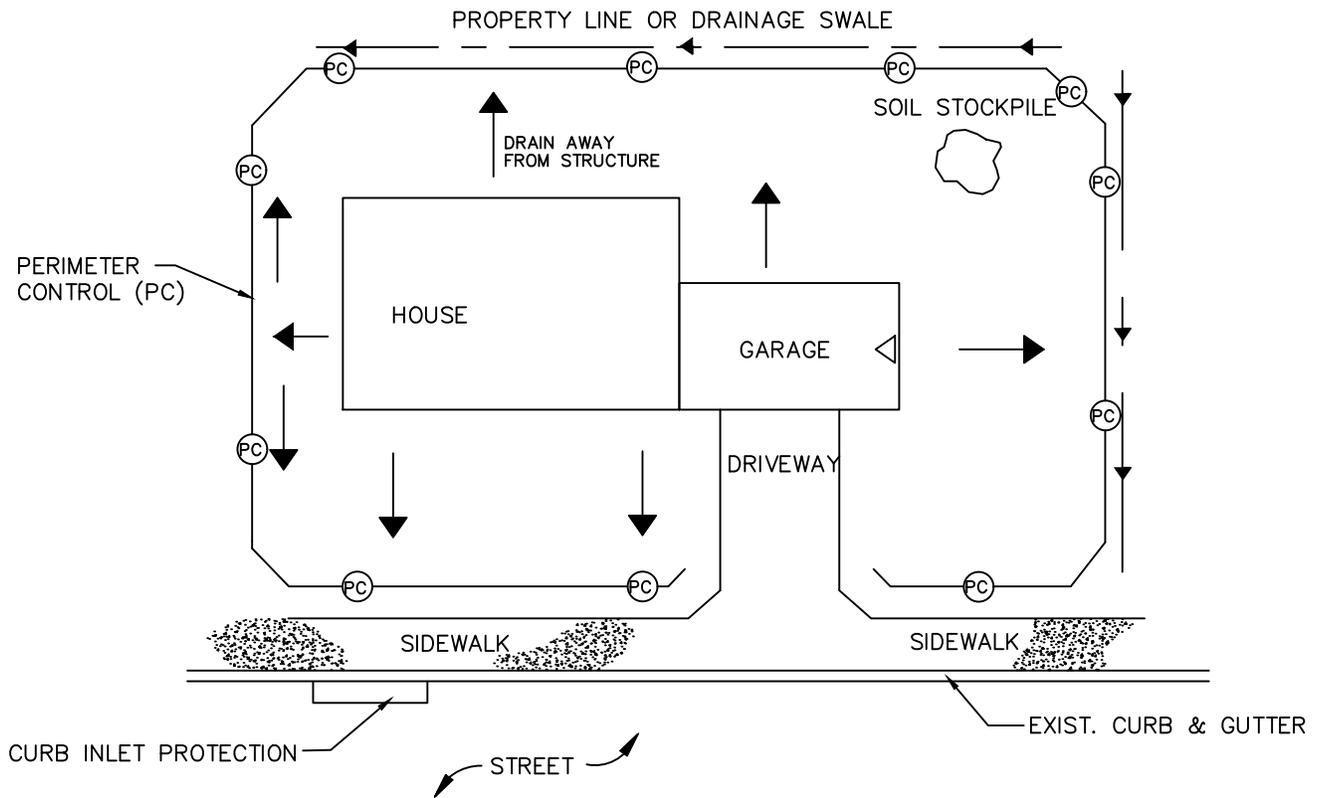
**STORM SEWER
CONSTRUCTION DRAWINGS**

BY: NLH

SCALE: NTS

DATE: 07/2025

DRAWING:



EVERY BUILDING SITE IS UNIQUE AND POSES ITS OWN POTENTIAL EROSION HAZARDS. IN MANY INSTANCES, ADDITIONAL OR ALTERNATIVE CONTROL METHODS ARE NECESSARY IF THE LOT IS ADJACENT TO A CREEK, LAKE, OR WETLAND; SLOPES ARE GREATER THAN 6%; RECEIVES RUNOFF FROM ADJACENT AREAS; AND/OR MORE THAN ONE ACRE OF GROUND IS DISTURBED.

NOTES:

1. IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER AND CONTRACTOR TO COMPLY WITH STATE LAWS AND LOCAL AND COUNTY ORDINANCES REGARDING CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL. IT IS THEIR RESPONSIBILITY TO APPLY FOR ALL APPROPRIATE PERMITS.
2. THIS PLAN IS ONLY A SAMPLE PLAN AND IS NOT INTENDED TO BE ALL INCLUSIVE OR ADDRESS EVERY SITUATION, ADDITIONAL OR MODIFIED PRACTICES MAY BE REQUIRED ON SOME SITES. THIS SHALL ONLY BE USED ON SMALL CONSTRUCTION PROJECTS THAT DO NOT NEED A STORMWATER QUALITY PERMIT.
3. EROSION OR SEDIMENT CONTROL MEASURES MUST BE FUNCTIONAL AND MAINTAINED THROUGHOUT CONSTRUCTION.
4. MAINTAIN POSITIVE DRAINAGE AWAY FROM THE STRUCTURE(S).
5. TRASH SHALL BE PROPERLY DISPOSED OF AND CONTAINED AT ALL TIMES.
6. PLEASE REPORT ANY ILLICIT DISCHARGE BY CALLING (303) 833-3291 OR EMAILING STORMWATER@FIRESTONECO.GOV.

PERIMETER CONTROL (PC)

1. INSTALL PC PARALLEL TO THE CONTOUR OF THE LAND.
2. ENSURE PC ARE INSTALLED PER DETAIL SPECIFICATION.
3. INSPECT AT LEAST WEEKLY AND AFTER EACH STORM EVENT, REPAIRING AS NEEDED AND REMOVING SEDIMENT DEPOSITS WHEN THEY REACH ONE-HALF THE PC HEIGHT.

CONSTRUCTION TRAFFIC ENTRANCES

PROVIDE A SINGLE CONSTRUCTION TRAFFIC ENTRANCE THAT IS MAINTAINED IN A STABLE MANNER TO MINIMIZE SEDIMENT TRACKING TO TOWN STREETS.

SMALL CONSTRUCTION PROJECT EROSION CONTROL

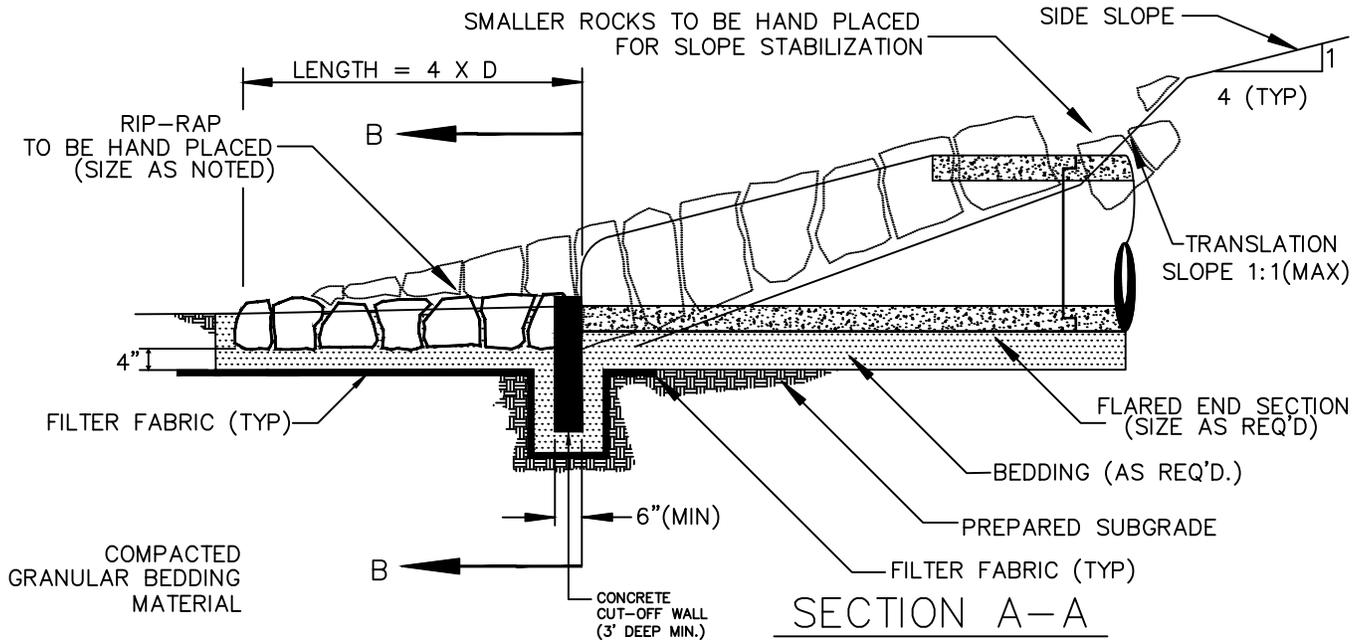


**STORM SEWER
CONSTRUCTION DRAWINGS**

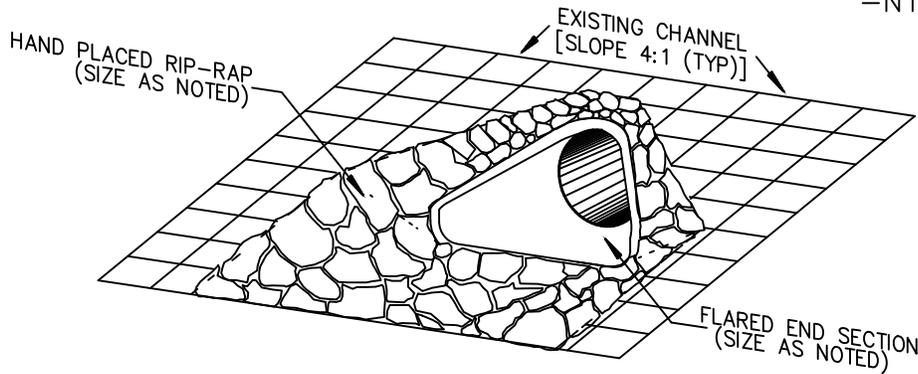
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SCALE: NTS
DATE: 1/2020

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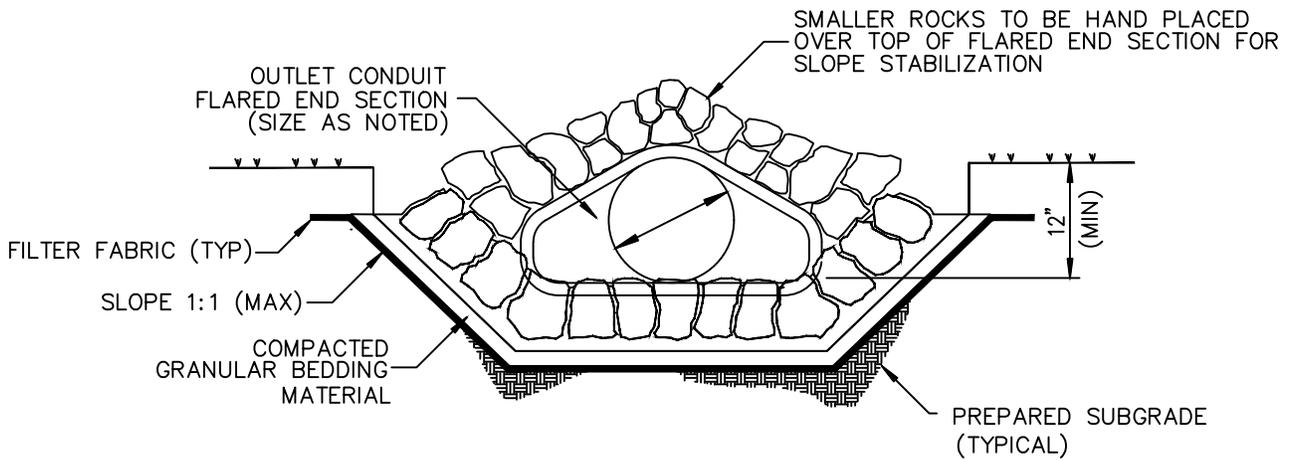
STM1



-NTS-



STORM SEWER OUTLET
ISOMETRIC VIEW



SECTION B-B
-NTS-

FLARED END SECTION OUTLET



STORM SEWER
CONSTRUCTION DRAWINGS

BY: JME
SCALE: NTS
DATE: 1/2020

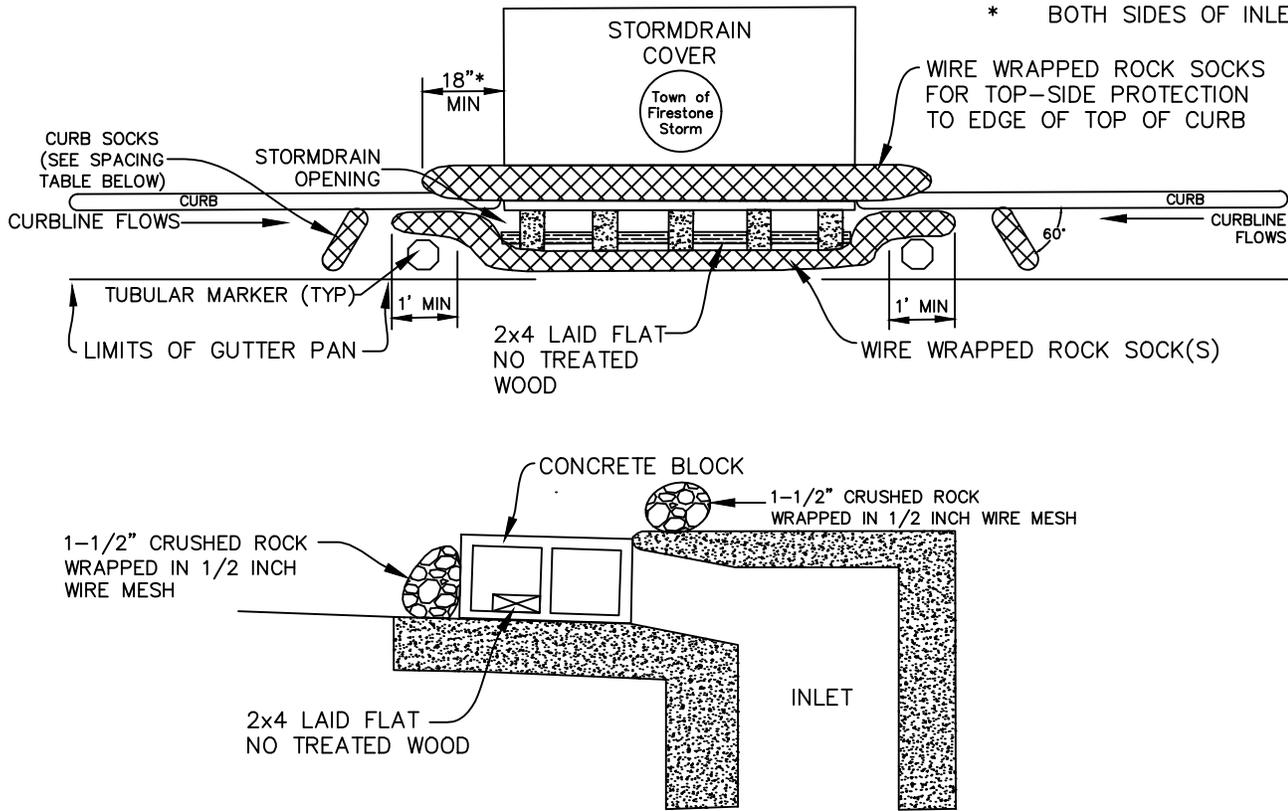
DRAWING:

STM2

NOTES:

- ROCK SOCK SHALL BE 1 1/2" CRUSHED ROCK FILL (RECYCLED CONCRETE NOT ACCEPTABLE)

* BOTH SIDES OF INLET



NOTES:

- INTERIM CONFIGURATION OF INLET PROTECTION IN STREETS SHALL BE INSTALLED WITHIN 72-HOURS OF POURING INLET.
- CRUSHED ROCK SHALL BE FRACTURED FACE (ALL SIDES) AND SHALL BE 1 1/2" CRUSHED ROCK.
- WIRE MESH SHALL BE FABRICATED OF MINIMUM 16-20 GAUGE WIRE TWISTED INTO A MESH WITH A MAXIMUM OPENING OF 1/2 INCH. ROLL WIDTH SHALL BE 48". 16-20 GAUGE CHICKEN WIRE MAY BE USED IF DOUBLE WRAPPED WITH NO MORE THAN 1/2" OPENING.
- WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF ROCK SOCKS.
- ROCK SOCK SHALL BE CONSTRUCTED IN ONE PIECE OR SHALL BE CONSTRUCTED USING ROCK SOCK JOINT DETAIL.
- TUBULAR MARKERS SHALL MEET REQUIREMENTS OF MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AS AMENDED.
- THE TOP OF THE REINFORCED ROCK SOCK SHALL BE 1/2" - 1" BELOW TOP OF CURB.
- SEDIMENT ACCUMULATED UPSTREAM OF THE INLET PROTECTION SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF ROCK SOCK IS WITHIN 5" OF THE CREST.
- INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED.
- THE LATEST EDITION OF THE MHFD CRITERIA MANUAL FOR INLET PROTECTION AND CURB SOCK DETAILS MAY BE USED.
- SEE STM10 FOR INLET AND INLET COVER DETAIL.

STREET SLOPE	CURB SOCK SPACING (ft)
0.5%	100
1.0%	100
2.0%	75
3.0%	50
4.0%	50
5.0%	50
6.0%	25
7.0%	25
8.0%	25

INLET PROTECTION



**STORM SEWER
CONSTRUCTION DRAWINGS**

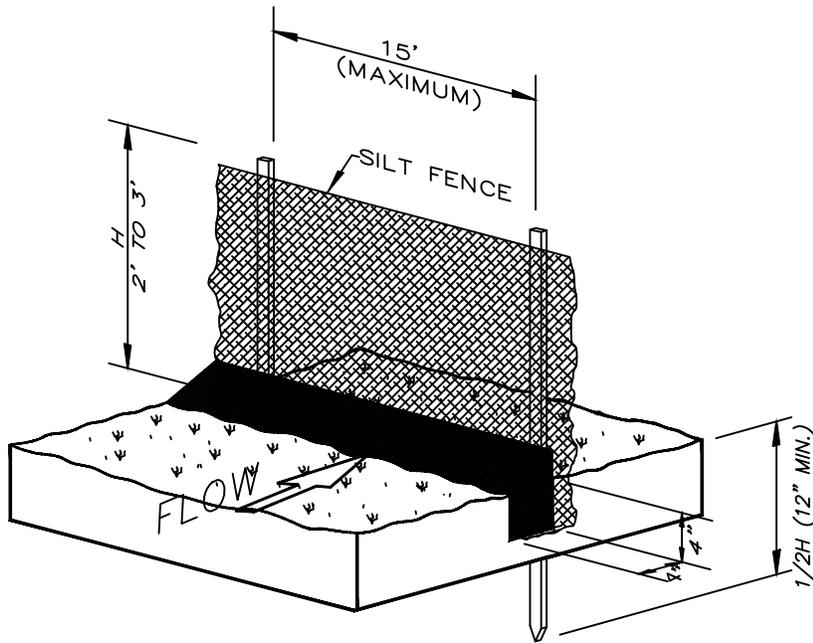
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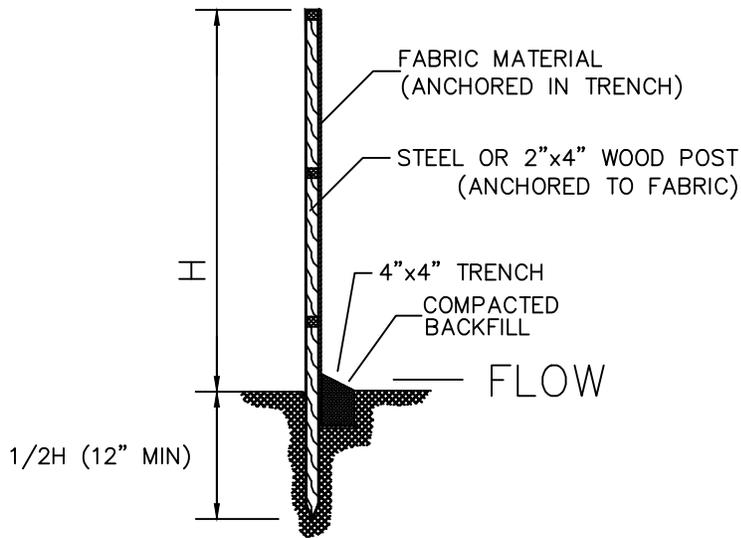
DRAWING:

STM3



SILT FENCE INSTALLATION

-NTS-



SECTION

-NTS-

FOR SINGLE LOT EROSION CONTROL
SEE SHEET STM8

NOTES:

1. INSTALL SILT FENCE PARALLEL TO THE CONTOUR OF THE LAND.
2. EXTEND ENDS UPSLOPE TO ALLOW WATER TO POND BEHIND FENCE.
3. EXCAVATE A TRENCH 4 INCHES WIDE AND 4 INCHES DEEP.
4. INSTALL FENCE WITH POSTS ON THE DOWNSLOPE SIDE.
5. PLACE 8 INCHES OF FABRIC IN THE TRENCH, EXTENDING THE BOTTOM 4 INCHES TOWARD THE UPSLOPE SIDE.
6. JOIN SILT FENCE SECTIONS BY USING A WRAP JOINT.
7. BACKFILL TRENCH WITH SOIL MATERIALS AND COMPACT.
8. INSPECT AT LEAST WEEKLY AND AFTER EACH STORM EVENT, REPAIRING AS NEEDED AND REMOVING SEDIMENT DEPOSITS WHEN THEY REACH ONE-HALF THE FENCE HEIGHT.

SILT FENCE EROSION BARRIER



STORM SEWER
CONSTRUCTION DRAWINGS

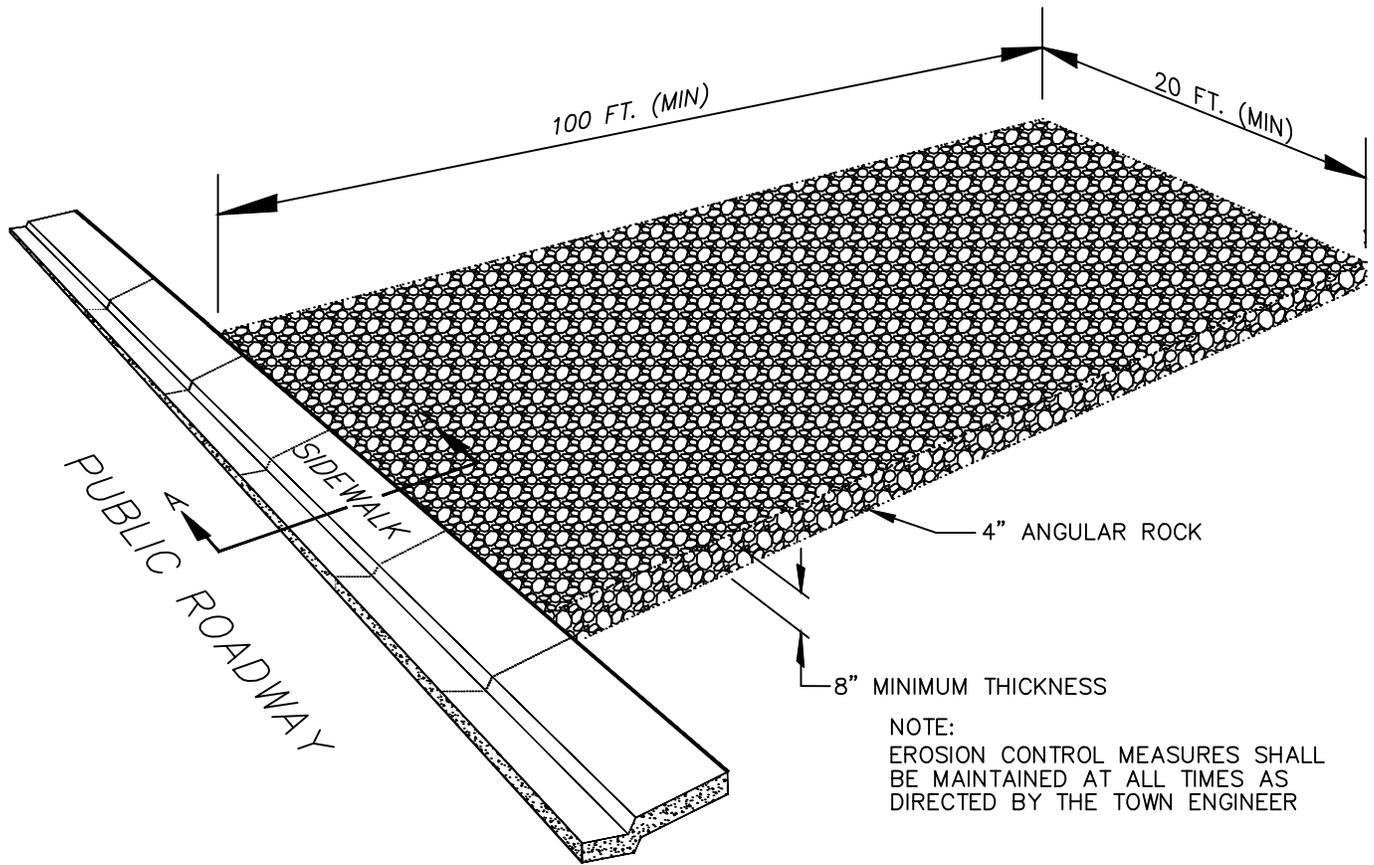
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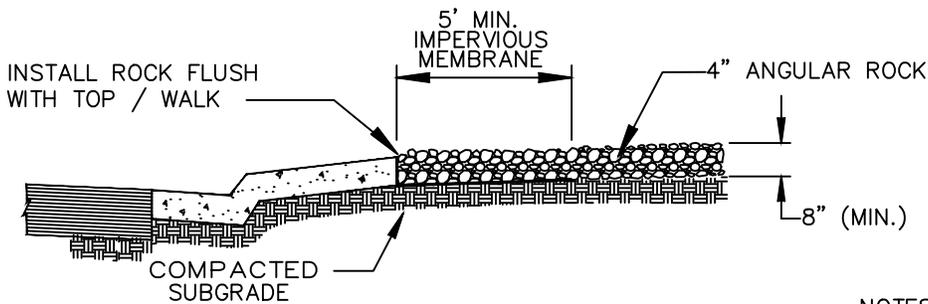
DATE: 1/2020

DRAWING:

STM4



NOTE:
 EROSION CONTROL MEASURES SHALL
 BE MAINTAINED AT ALL TIMES AS
 DIRECTED BY THE TOWN ENGINEER



SECTION A-A
 -NTS-

- NOTES:
1. ALL ROCK TO BE REMOVED UPON COMPLETION OF CONSTRUCTION
 2. PUBLIC ROADWAY TO BE KEPT CLEAN AND FREE OF MUD, DIRT AND DEBRIS AT ALL TIMES

TRACKING CONTROL PAD - CRUSHED ROCK



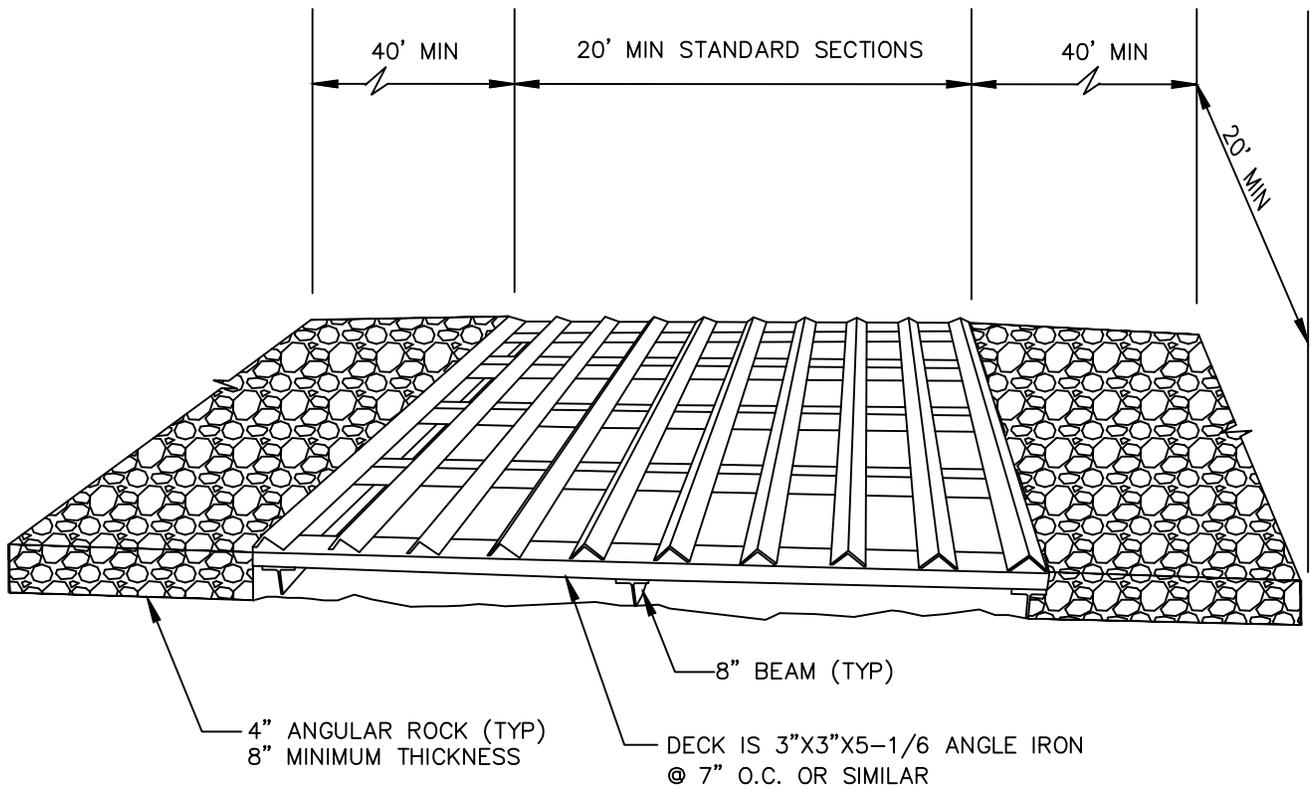
STORM SEWER
 CONSTRUCTION DRAWINGS

BY: JME
 SCALE: NTS
 DATE: 1/2020

DRAWING:
STM6A

NOTES:

1. ALL ROCK TO BE REMOVED UPON COMPLETION OF CONSTRUCTION
2. PUBLIC ROADWAY TO BE KEPT CLEAN AND FREE OF MUD, DIRT AND DEBRIS AT ALL TIMES



TRACKING CONTROL PAD - CATTLE GUARD



**STORM SEWER
CONSTRUCTION DRAWINGS**

BY: JME

SCALE: NTS

DATE: 1/2020

DRAWING:

STM6B

CONSTRUCTION SEQUENCE FOR EROSION & SEDIMENT CONTROL PRACTICES FOR SMALL CONSTRUCTION PROJECTS

1. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS

IDENTIFY THE AREAS WHERE SEDIMENT LADEN RUNOFF COULD LEAVE THE CONSTRUCTION SITE, AND INSTALL PERIMETER CONTROLS TO MINIMIZE THE POTENTIAL FOR OFF-SITE SEDIMENTATION. IT'S IMPORTANT THAT PERIMETER CONTROLS ARE IN PLACE BEFORE ANY LOT EXCAVATION ACTIVITIES BEGIN.

PREFERRED METHODS

- PROTECT DOWN-SLOPE AREAS WITH VEGETATIVE FILTER STRIPS
- PROTECT DOWN-SLOPE AREAS WITH SILT FENCES AND OTHER APPROPRIATE PRACTICES
- INSTALL STABLE CONSTRUCTION TRAFFIC ENTRANCE

2. PREPARE THE SITE FOR CONSTRUCTION

PREPARE THE SITE FOR CONSTRUCTION AND FOR INSTALLATION OF UTILITIES. NOTIFY ALL CONTRACTORS (ESPECIALLY THE EXCAVATION CONTRACTOR) OF AREAS TO BE PROTECTED.

PREFERRED METHOD

- SALVAGE AND STOCKPILE TOPSOIL OR SUBSOIL

3. BUILD STRUCTURE(S) AND CONNECT UTILITIES

CONSTRUCT THE STRUCTURE AND CONNECT THE UTILITIES.

4. MAINTAIN CONTROL PRACTICES

MAINTAIN ALL EROSION AND SEDIMENT CONTROL PRACTICES UNTIL CONSTRUCTION IS COMPLETED AND THE LOT IS STABILIZED.

5. RE-VEGETATE BUILDING SITE

IMMEDIATELY AFTER ALL OUTSIDE CONSTRUCTION ACTIVITIES ARE COMPLETED, STABILIZE THE LOT WITH LANDSCAPING, SEED AND/OR MULCH.

METHODS

- REDISTRIBUTE THE STOCKPILED SUBSOIL AND TOPSOIL
- SEED OR LANDSCAPE BARE AREAS
- MULCH NEWLY SEEDED AREAS

6. REMOVE REMAINING TEMPORARY CONTROL MEASURES

ONCE THE SOD AND/OR VEGETATION IS WELL ESTABLISHED, REMOVE ANY REMAINING TEMPORARY EROSION AND SEDIMENT CONTROL PRACTICES.

EROSION CONTROL SEQUENCE FOR SMALL CONSTRUCTION PROJECTS



STORM SEWER
CONSTRUCTION DRAWINGS

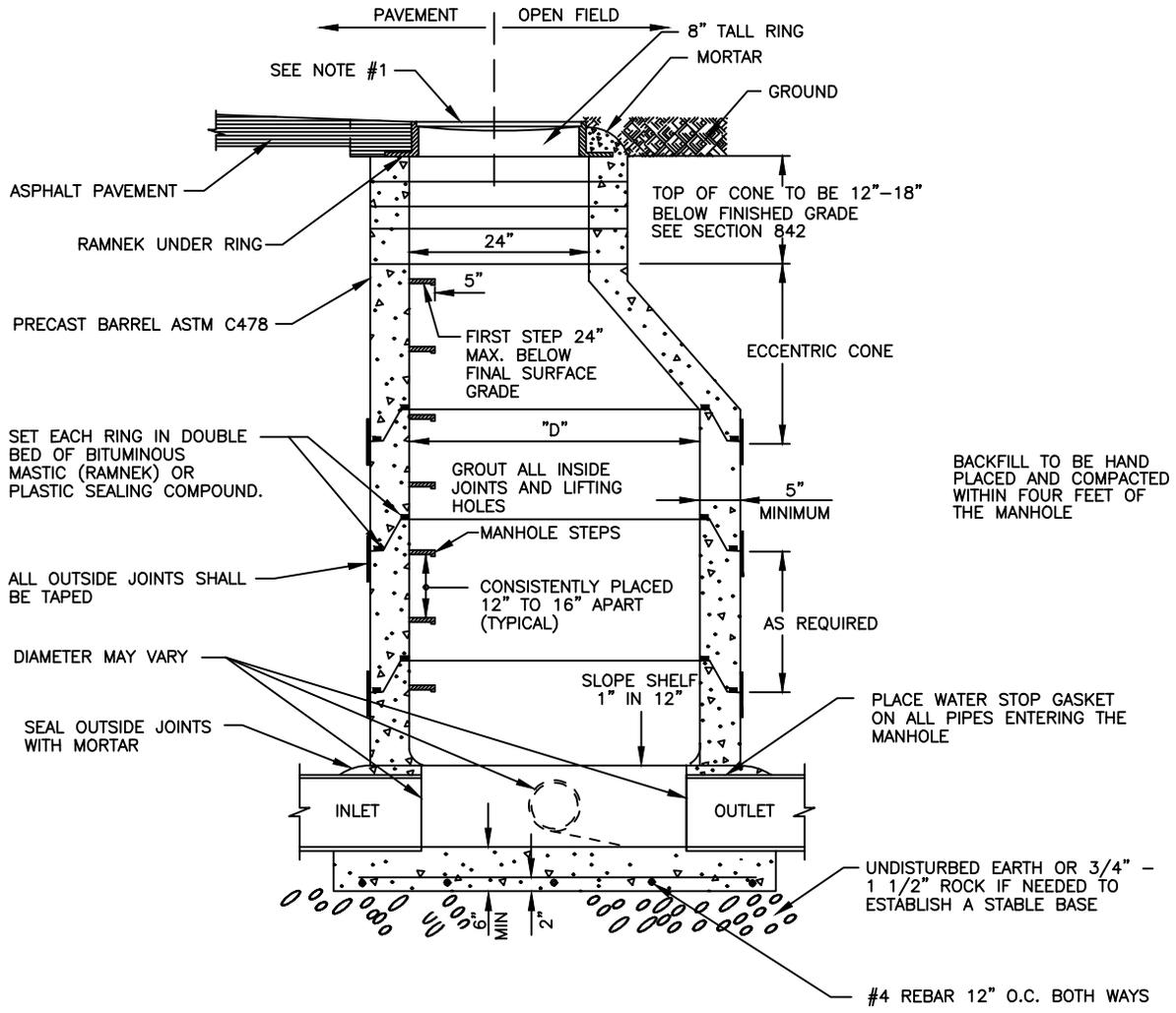
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SCALE: NTS

DATE: 1/2020

DRAWING:

STM7



SECTION

NOTES:

1. FINAL GRADE OF MANHOLE COVERS SHALL BE 1/4" LOWER THAN FINAL STREET.
2. NO STEPS ALLOWED IN THE ADJUSTING RING AREA.
3. PRECAST CONCRETE SECTIONS SHALL CONFORM TO ASTM C-478.
4. BLOCK-OUTS, WHEN APPROVED, SHALL EXTEND A MAX. OF 6" PAST MANHOLE O.D. AND BE SATISFACTORILY PLUGGED AND SEALED.
5. MANHOLES NOT IN ASPHALT OR CONCRETE SHALL BE RAISED 6" ABOVE FINAL GRADE AND A CONCRETE COLLAR INSTALLED WITH A GREEN CARSONITE POST

STANDARD MANHOLE

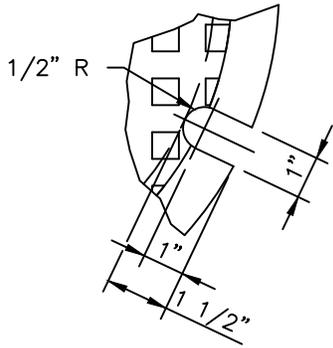
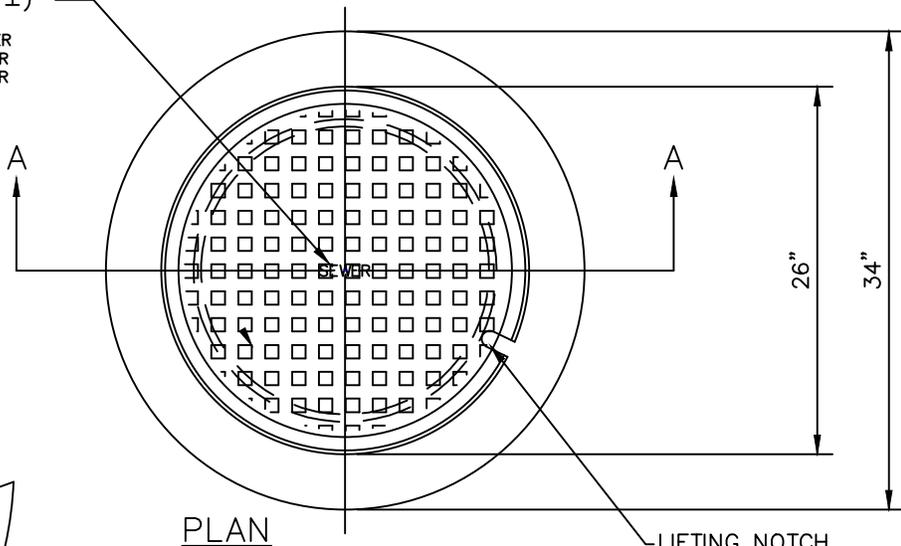
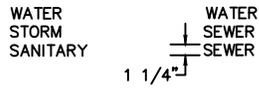


**STORM SEWER
CONSTRUCTION DRAWINGS**

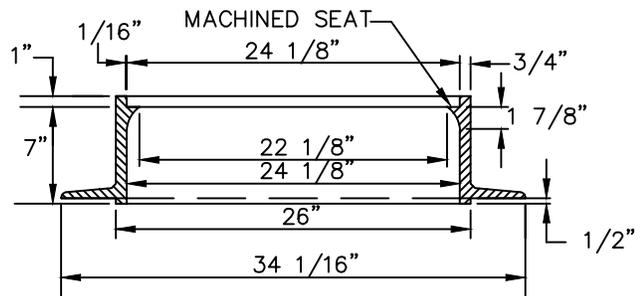
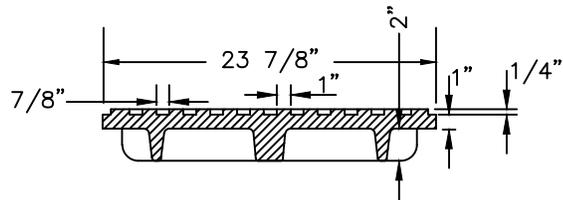
BY: NLH
SCALE: NTS
DATE: 07/2025

DRAWING:
STM8A

RAISED LETTERS ($1/8" \pm$)



LIFTING NOTCH



SECTION A-A

1. CASTING SPECIFICATIONS: ASTM A-48 WITH A MINIMUM TENSILE STRENGTH OF 25 KSI (CLASS 25)
2. ALL CASTINGS TO BE DIPPED IN ASPHALT BASE PAINT (OR APPROVED EQUAL)
3. CASTINGS SHALL BE AS SPECIFIED BELOW OR APPROVED EQUAL:

MANUFACTURERS	CAT. #
NEENAH	R-1706
CASTINGS, INC.	MH-400-24 C.I.
HUTCHINSON FDRY. & STL. INC.	MH-400
EAST JORDAN	FRAME-2420Z

5. SEE STM10 FOR MANHOLE RING AND COVER FOR INLETS.

24" MANHOLE RING AND COVER

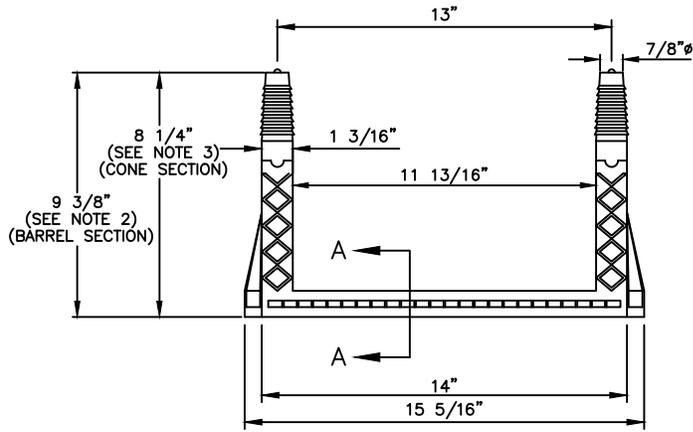


STORM SEWER
CONSTRUCTION DRAWINGS

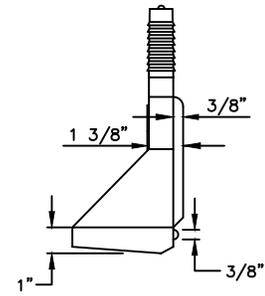
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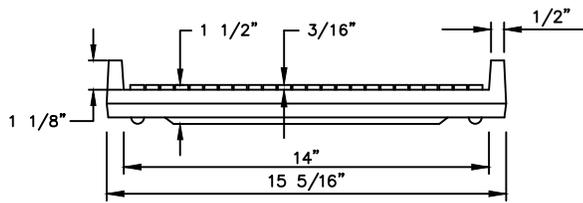
STM8B



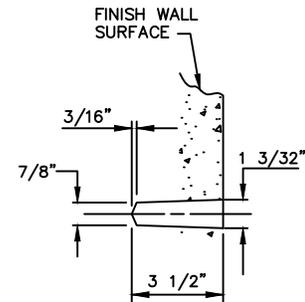
PLAN



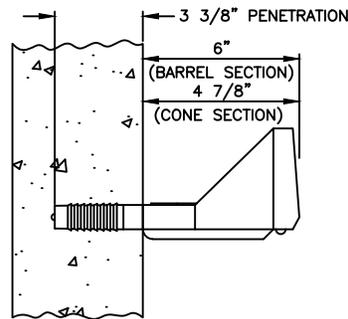
END VIEW



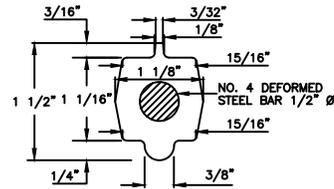
ELEVATION



DETAIL
PIN BLOCK OUT



DETAIL



SECTION A-A

POLYPROPYLENE REINFORCED PLASTIC STEP

NOTES:

1. ASTM SPECIFICATIONS:
 - A. ASTM C-478
 - B. ASTM A-615 GRADE 60 (STEEL REBAR).
 - C. ASTM 2146-69, TYPE III, GRADE 16906 (POLYPROPYLENE).
2. STEPS INSTALLED IN MANHOLE BARREL SECTIONS OR VERTICAL WALLS OF STRUCTURES SHALL HAVE A 9 3/8 INCH LEG AND SHALL PROJECT FROM THE WALL 6 INCHES.
3. STEPS INSTALLED IN MANHOLE CONE SECTIONS SHALL HAVE AN 8 1/4 INCH LEG AND SHALL PROJECT FROM THE WALL 4 7/8 INCHES.
4. ALL STEPS SHALL HAVE A PENETRATION DEPTH INTO THE WALL OF 3 3/8 INCHES.
5. STEPS SHALL BE INSTALLED BY THE "PRESS-FIT" METHOD UTILIZING A SPECIALLY TAPERED PIN TO FORM THE INSERT HOLE AS SHOWN, FOLLOWING MANUFACTURER'S RECOMMENDED PROCEDURE AND SHALL NOT BE GROUTED IN PLACE.
6. INSTALLED STEPS SHALL BE CAPABLE OF WITHSTANDING A PULL OUT FORCE OF 2500 LB. PER LEG FOR A MINIMUM PERIOD OF TWO MINUTES.
7. PINS MUST BE SMOOTH AND CONTINUOUSLY TAPERED. DIMENSIONS OF THE PIN AND THE INSERTED PORTION OF THE MANHOLE STEP ARE TYPICAL ONLY. W.M.D. INSTALLATIONS REQUIRE A MATCHED COMBINATION OF A TAPERED INSERT PIN AND MANHOLE STEP, AS RECOMMENDED OR REQUIRED BY SPECIFIC MANUFACTURER OF THE STEP TO BE USED.
8. THIS STEP CAN ALSO BE USED IN TOE POCKET INSTALLATIONS PROVIDED 5" TOE CLEARANCE IS ALLOWED.

MANHOLE STEPS



**STORM SEWER
CONSTRUCTION DRAWINGS**

BY: JME

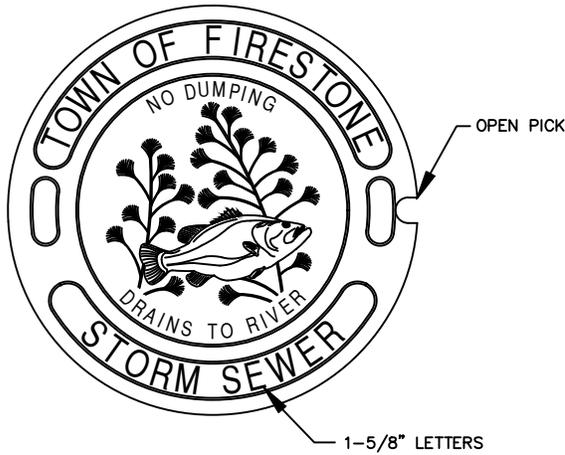
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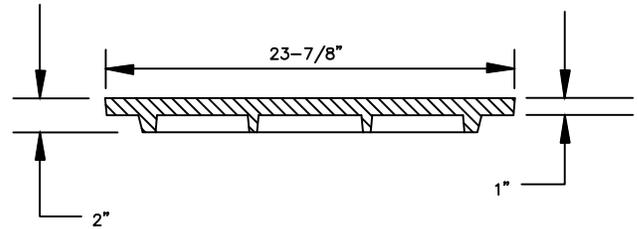
DRAWING:

STM9

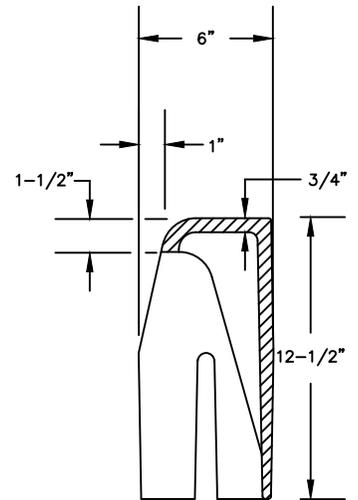
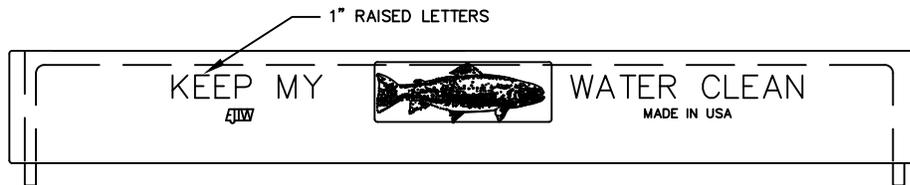
TYPE R INLET COVER



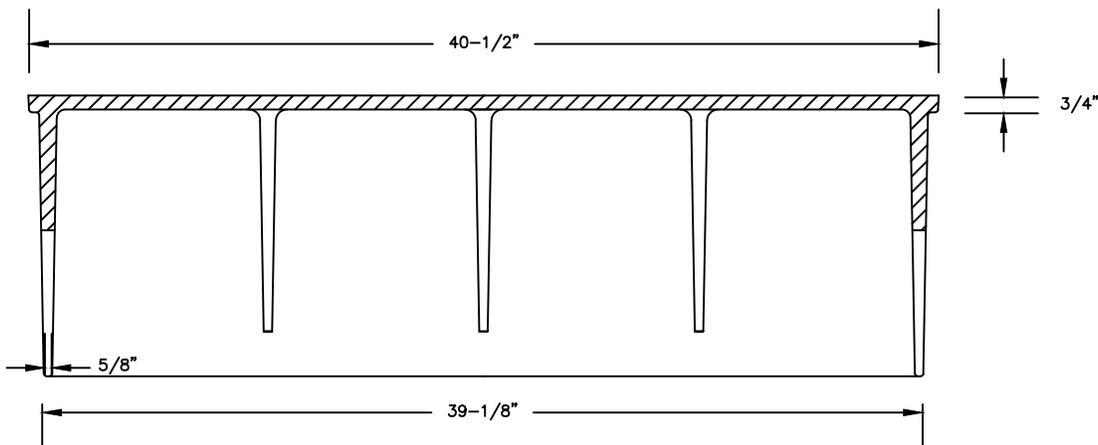
NOTE:
MATERIAL TO BE CAST GRAY IRON
ASTM A-48 CLASS 35B, NO PAINT



TYPE 13 INLET



SECTION



SECTION

INLET AND INLET COVER

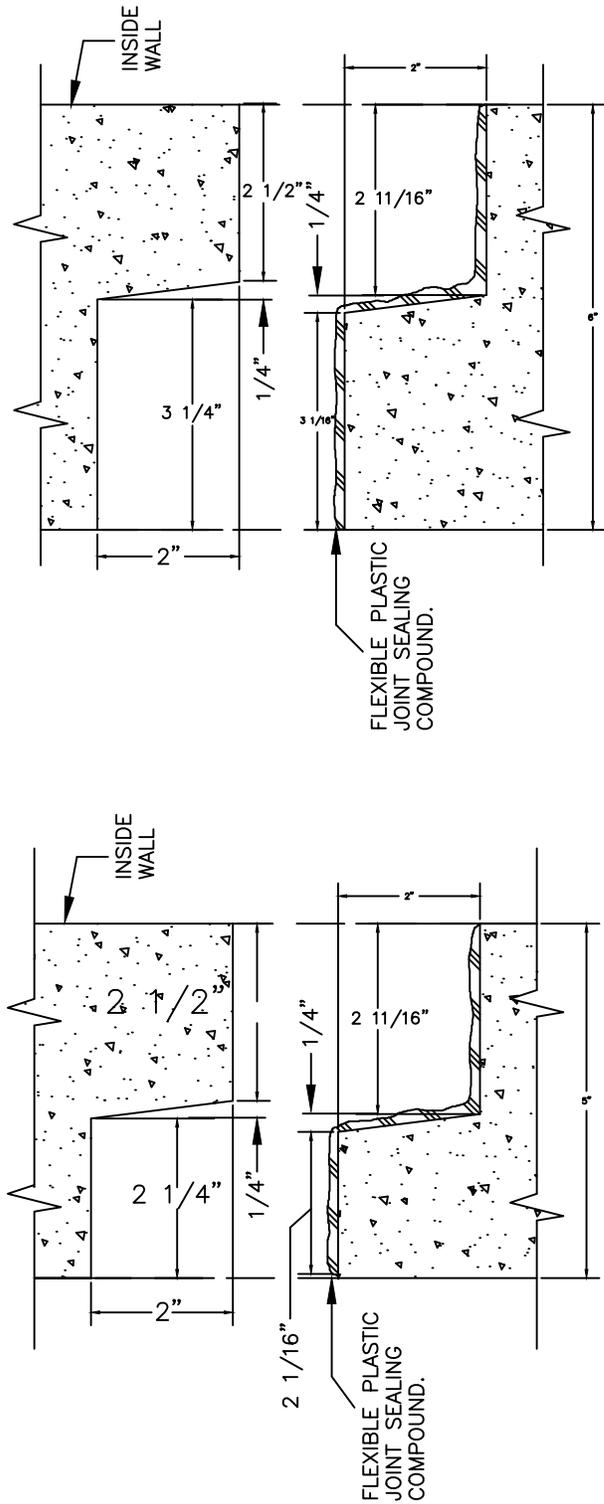


STORM SEWER
CONSTRUCTION DRAWINGS

BY: JME
SCALE: NTS
DATE: 1/2020

DRAWING:

STM10



5" WALL
SHIPLAP JOINTS FOR
REINFORCED CONCRETE M.H. SECTIONS
NO SCALE

- NOTES:**
1. T= WALL THICKNESS OF PIPE FURNISHED.
 2. THE CONTRACTOR SHALL SUBMIT ALL TOLERANCES AND DIMENSIONS, REQUIRED BY THE SPECIFIC PIPE JOINT DETAILS SHOWN, TO THE ENGINEER PRIOR TO FABRICATION.
 3. ALL DIMENSIONS SHALL BE GIVEN IN INCHES, UNLESS OTHERWISE NOTED, AND ARE FOR BELL AND SPIGOT IN CONCENTRIC POSITION. DEFLECTED PIPE JOINT TOLERANCES & DIMENSIONS SHALL ALSO BE FURNISHED.
 4. JOINT CLEARANCE DIMENSION K IS AT CLOSEST POINT WITHIN DISTANCE A.
 5. THESE JOINT CONFIGURATIONS ARE IN ACCORDANCE WITH BUREAU OF RECLAMATION'S "TYPE R" JOINT DETAILS.
 6. RUBBER "O" RING GASKET SHALL BE IN CONFORMANCE W/ASTM C-443 OR C-361.
 7. APPLICABLE CONCRETE PIPE JOINT SPECIFICATIONS:
 - A. ASTM C-76
 - B. ASTM C-361
 8. STEEL REINFORCEMENT SHALL BE IN ACCORDANCE WITH THE APPROPRIATE ASTM SPECIFICATION FOR THE PIPE SIZE AND STRENGTH CLASS AS SPECIFIED ON PLAN/PROFILE DRAWINGS.

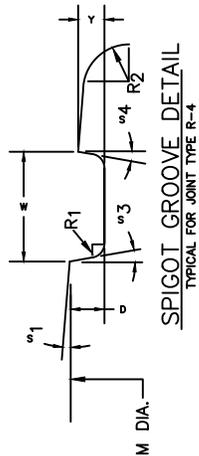
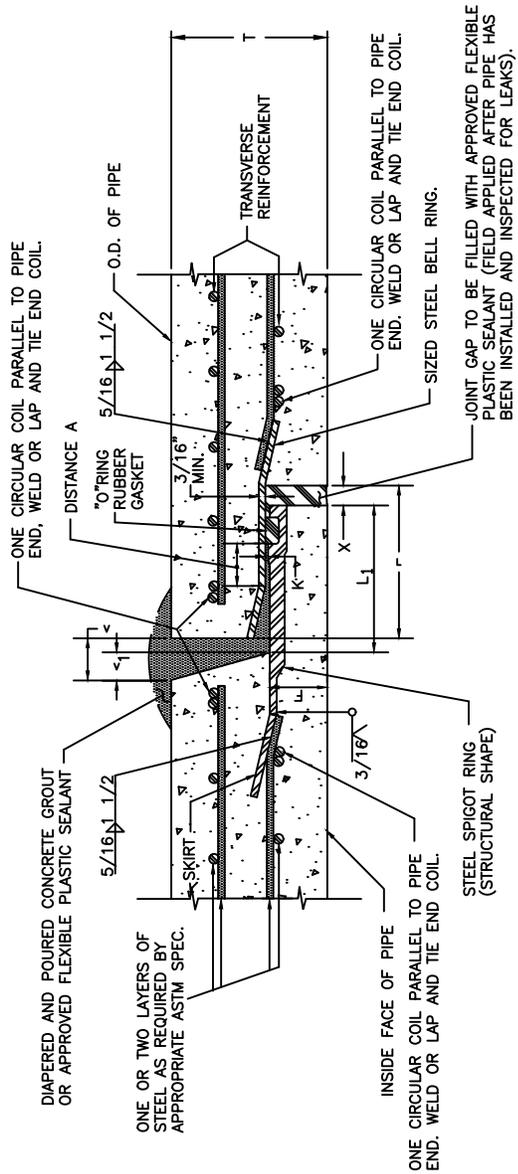
CONCRETE PIPE JOINTS - SHIPLAP



**STORM SEWER
CONSTRUCTION DRAWINGS**

BY: JME
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DRAWING:
STM11A

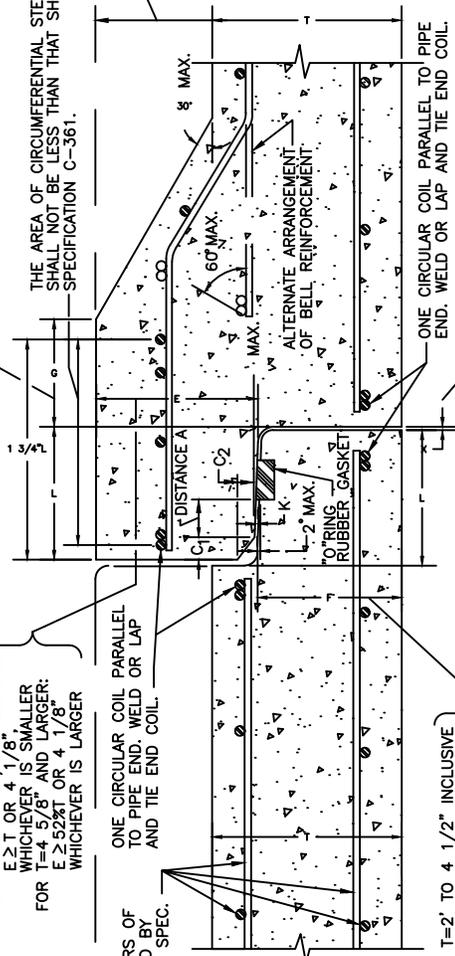


JOINT TYPE R-2

FOR T=2' TO 4 1/2" INCLUSIVE:
 G=NOT LESS THAN $\sqrt{1.44T^2-E^2}$
 FOR T=4 5/8" AND LARGER:
 G=2 1/2" MIN.

FOR T=2' TO 4 1/2" INCLUSIVE:
 E ≥ T OR 4 1/8"
 WHICHEVER IS SMALLER
 FOR T=4 5/8" AND LARGER:
 E ≥ 5/2T OR 4 1/8"
 WHICHEVER IS LARGER

THE AREA OF CIRCUMFERENTIAL STEEL IN THE BELL SHALL NOT BE LESS THAN THAT SHOWN IN ASTM SPECIFICATION C-361.



FOR T=2' TO 4 1/2" INCLUSIVE:
 F ≥ 75%T
 FOR T=4 5/8" AND LARGER:
 F ≥ 75%T OR 3 5/8"
 WHICHEVER IS SMALLER

JOINT TYPE R-4, O-RING

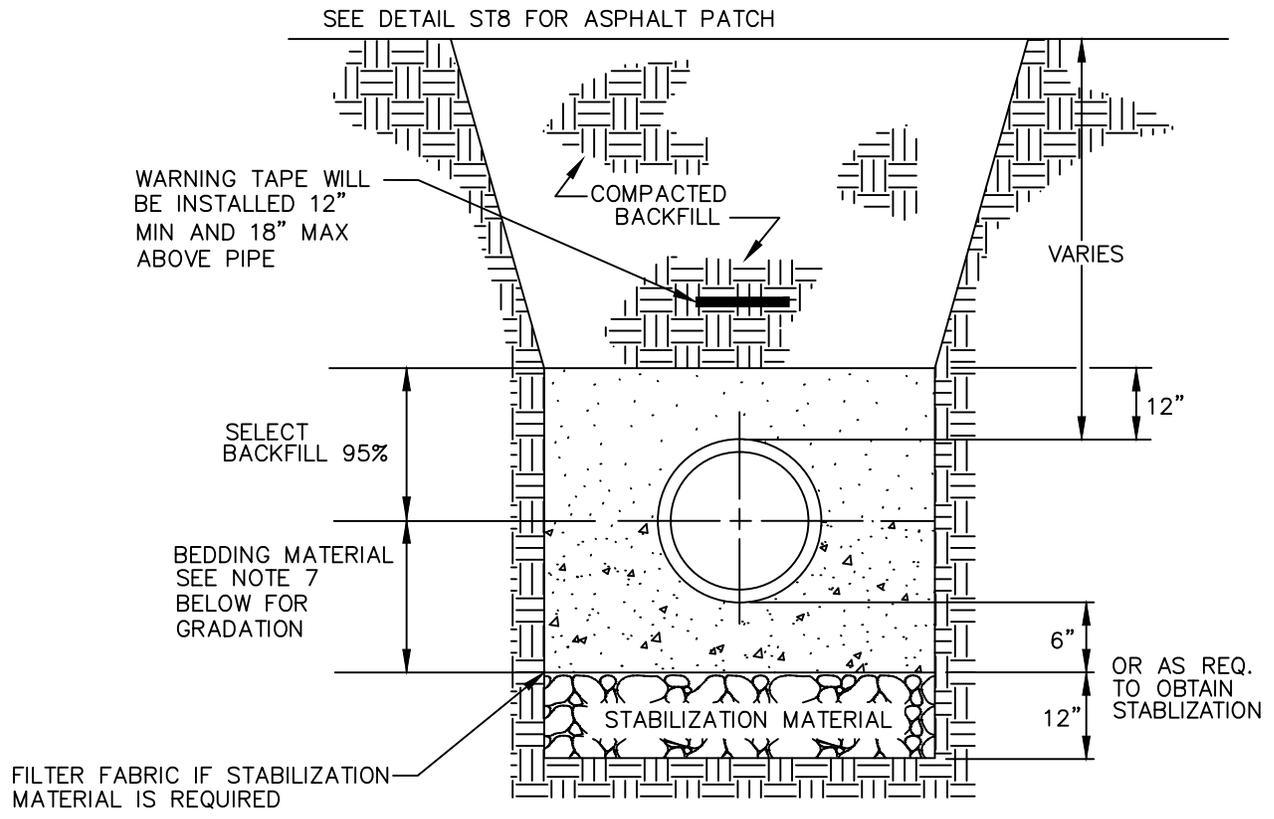
CONCRETE PIPE JOINTS - TYPE 'R'



STORM SEWER
 CONSTRUCTION DRAWINGS

BY: JME
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DRAWING:
STM11B

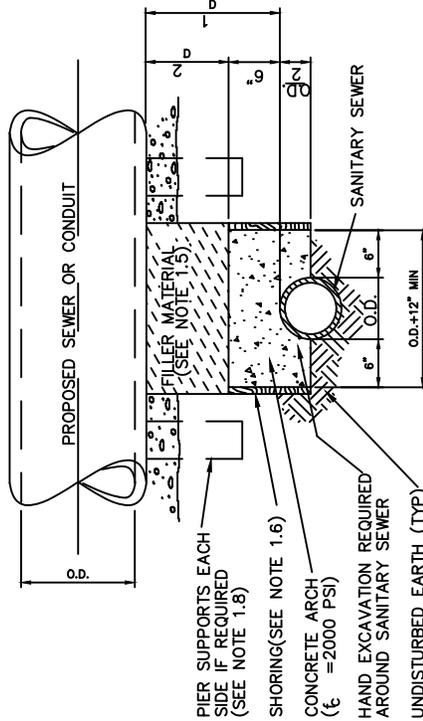


NOTES:

1. FULL TRENCH SECTION IN ROADWAY OR STREET R.O.W. LIMITS WILL REQUIRE 95% S.P.D. TRENCH ZONE ABOVE BEDDING MATERIALS, OUTSIDE OF STREET R.O.W. WILL REQUIRE 90% S.P.D.
2. FILTER FABRIC IS REQUIRED IF STABILIZATION MATERIAL IS USED. THE FABRIC SHALL BE INSTALLED AS SHOWN IN THE DETAIL.
3. TRENCH TO BE BRACED OR SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKMEN AND PROTECTION OF OTHER UTILITIES IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL SAFETY REGULATIONS.
4. PIPE SHALL BE BEDDED FROM 6" BELOW THE BOTTOM OF THE PIPE TO THE HORIZONTAL CENTERLINE OF THE PIPE. SEE NOTE 7 FOR BEDDING MATERIAL GRADATION.
5. TRENCH WIDTH SHALL NOT BE MORE THAN 24" NOR LESS THAN 12" WIDER THAN THE LARGEST OUTSIDE DIAMETER OF THE PIPE.
6. SHOULD THE TRENCH BE EXCAVATED WIDER THAN ALLOWED, A CONCRETE CRADLE SHALL BE PLACED WITH 2500 P.S.I. CONCRETE FROM TRENCH BOTTOM TO PIPE SPRINGLINE.
7. BEDDING MATERIAL SHALL MEET THE GRADATION OF CDOT "NO.67 COARSE AGGREGATE" AS SPECIFIED IN SECTION 703.02 IN THE LATEST EDITION OF THE CDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION".

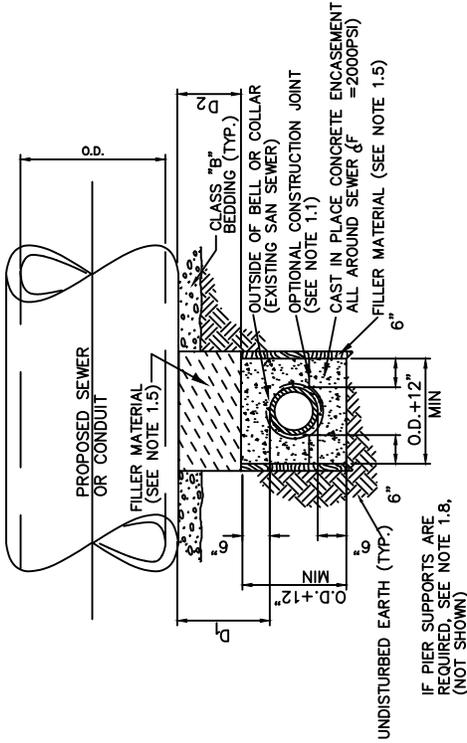
STORM SEWER TRENCH DETAIL

	STORM SEWER CONSTRUCTION DRAWINGS	BY: JME	DRAWING:
		SCALE: NTS	STM12
		DATE: 1/2020	



TYPE I

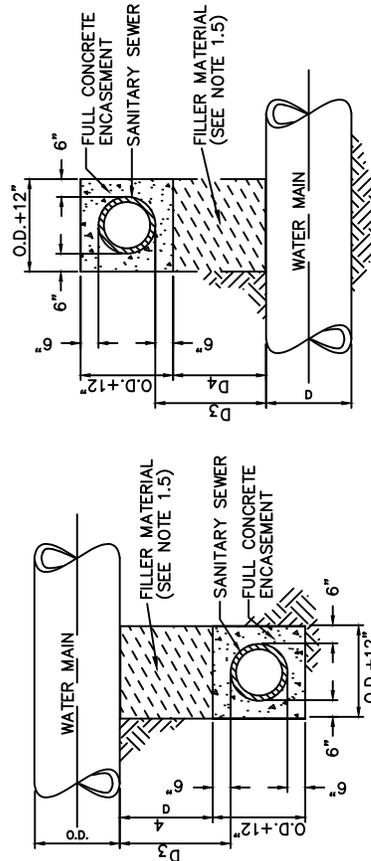
CONCRETE ENCASMENT FOR SANITARY SEWERS
(CONCRETE ARCH) NO SCALE (RIGID CONDUITS ONLY)



TYPE III

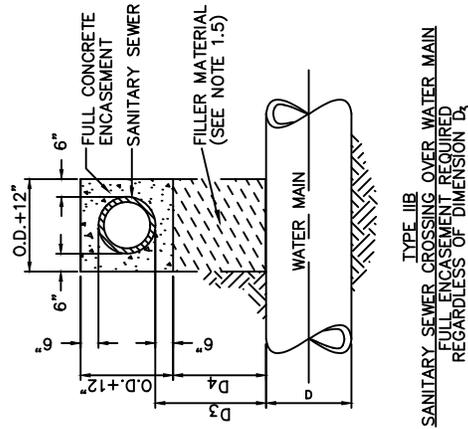
CONCRETE ENCASMENT FOR SANITARY SEWERS
(FULL ENCASMENT) NO SCALE (RIGID CONDUITS ONLY)

IF PIER SUPPORTS ARE REQUIRED, SEE NOTE 1.8, (NOT SHOWN)



TYPE IIA

SANITARY SEWER CROSSING UNDER WATER MAIN
IF D > 2FT, ENCASMENT NOT REQUIRED



TYPE IIB

SANITARY SEWER CROSSING OVER WATER MAIN
FULL ENCASMENT REQUIRED REGARDLESS OF DIMENSION D₂

CONCRETE ENCASMENT OF RIGID CONDUITS (1 OF 2)

- GENERAL NOTES FOR TYPE I, II & III ENCASMENT
- CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING. IF OPTIONAL CONSTRUCTION JOINT IS USED & BOTTOM HALF OF ENCASMENT IS POURED SEPARATELY, A ONE INCH LAYER OF SAND OR MORTAR SHALL BE PLACED BETWEEN BOTTOM OF SANITARY SEWER AND TOP OF CONCRETE.
 - LENGTH OF ENCASMENT FOR :
 - TYPE I & III ENCASMENT SHALL EXTEND FULL TRENCH WIDTH EXCAVATED FOR PROPOSED SEWER OR CONDUIT.
 - TYPE II ENCASMENT SHALL EXTEND AT LEAST 10 FEET EACH SIDE OF WATER MAIN.
 - UNLESS OTHERWISE NOTED ON PLAN/PROFILE DRAWINGS, TYPE I, II & III ENCASMENTS NEED NOT BE REINFORCED. REINFORCEMENT, IF REQUIRED, TO BE SPECIFIED AND DETAILED SEPARATELY ON PLAN & PROFILE DRAWINGS.
 - TYPE I, II OR III ENCASMENT REQUIRED UNDER FOLLOWING CONDITIONS :
 - TYPE I OR TYPE III IF D₁ ≤ 18" (D₂ ≤ 24") EXCEPT FOR SANITARY SEWERS CROSSING OVER OR UNDER WATER MAINS.
 - TYPE IIA REQUIRED FOR SANITARY SEWERS CROSSING UNDER WATER MAINS AND D₂ ≤ 24" (D₄ ≤ 18").
 - TYPE IIB REQUIRED FOR SANITARY SEWERS CROSSING OVER TOP OF WATER MAINS, REGARDLESS OF DIMENSION D₂.
 - EXCEPT FOR UNUSUAL CIRCUMSTANCES, WATER MAIN CROSSINGS, OR WHERE UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, TYPE I ENCASMENT WILL NORMALLY BE SATISFACTORY.
 - IF THE SANITARY SEWER IS REPLACED OR CONSTRUCTED OF CAST IRON PIPE (AWWA C-106 OR C-108) OR DUCTILE IRON PIPE (AWWA C-150 OR C-151), CONCRETE ENCASMENT MAY NOT BE REQUIRED.
 - FILLER MATERIAL BETWEEN CONDUITS TO BE :
 - APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC., IF D₂ & D₄ ≤ 6".
 - COMPACTED CLASS 'B' BEDDING IF D₂ & D₄ > 6", (IF D₂ > 6" FOR TYPE IIB ENCASMENT FOUR CONDUITS ON UNDISTURBED SOIL).
 - SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASMENT.
 - THESE ENCASMENT DETAILS MAY ALSO BE APPLICABLE FOR CONDUITS OTHER THAN STORM OR SANITARY SEWER INSTALLATIONS.
 - IN CERTAIN SITUATIONS WHERE CONDUIT DIAMETER "D" IS EXTREMELY LARGE, PIER SUPPORTS EACH SIDE OF SANITARY SEWER MAY ALSO BE REQUIRED. IF REQUIRED, SUPPORTS TO BE SPECIFIED AND DETAILED SEPARATELY ON PLAN AND PROFILE DRAWINGS. NO PIPE JOINTS OVER TOP OF WATER MAIN.
 - DETAILS SHOWN CONSIDER RIGID CONDUITS ONLY. FLEXIBLE CONDUITS REQUIRE SPECIAL CONSIDERATION.



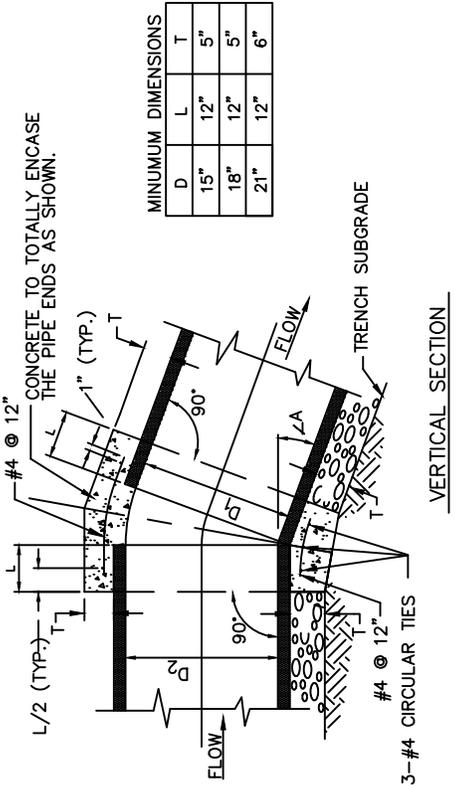
STORM SEWER
CONSTRUCTION DRAWINGS

BY: JME
SCALE: NTS
DATE: 1/2020

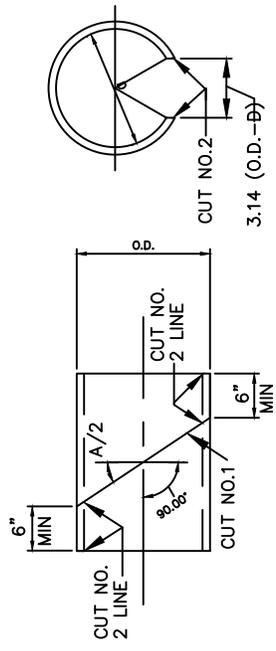
DRAWING:
STM13A

STORM CONNECTOR PIPE CLOSURE DETAIL

TO BE USED ONLY WHERE NECESSARY AND AS AUTHORIZED BY THE TOWN ENGINEER



MINIMUM DIMENSIONS			
D	L	T	
15"	12"	5"	
18"	12"	5"	
21"	12"	6"	



CUT NO.1: SAW THE TUBE AT AN ANGLE OF A/2 WITH THE TRANSVERSE PLANE. REVERSE ONE SECTION AND TAPE BOTH SECTIONS TOGETHER FORMING THE DEFLECTION ANGLE A.

CUT NO.2: SAW THE TUBE LONGITUDINALLY REMOVING A STRIP 3.14 (D_o-D) INCHES WIDE ON THE SIDE OPPOSITE THE OPEN JOINT. BEND THE ENDS OF THE CUT TOGETHER AND INSERT THE TUBE IN THE PIPE.

NOTES: FOR STORM LINE CONNECTORS ONLY, NOT TO BE USED ON MAINLINE SEWERS.

AN INTERIOR FORM OF UNSEALED SONO-TUBE OR EQUAL SHALL BE USED TO PROVIDE A SMOOTH INTERIOR JOINT. (SEE DETAIL A)

DETAIL "A"
SONO-TUBE OR EQUAL INTERIOR FORM

GENERAL NOTES

1. A CONCRETE COLLAR IS REQUIRED WHERE THE CHANGE IN GRADE EXCEEDS 0.10 OF A FOOT PER FOOT.
2. GAP LIMITS

PIPE DIAMETER	COLUMN "A" (SEE A BELOW)	COLUMN "B" (SEE B BELOW)
21" OR LESS	1/2"	1"
3. IF THE "EXTREME OUTER ENDS" OF THE PIPE LEAVE A GAP THAT EXCEEDS VALUES IN COLUMN "A" OR COLUMN "B", A CONCRETE COLLAR IS REQUIRED.
4. IF THE GAP EXCEEDS 6 INCHES, A MANHOLE STRUCTURE IS REQUIRED.
5. CONCRETE COLLAR SHALL NOT BE USED FOR A SIZE CHANGE ON THE MAIN LINE.
6. FOR PIPE SIZE NOT LISTED USE NEXT SIZE LARGER.
7. WHERE REINFORCING IS REQUIRED THE DIAMETER OF THE CIRCULAR TIES SHALL BE D+(2X WALL THICKNESS)+T.
8. REINFORCING SHALL BE USED WHERE THE SPACES BETWEEN THE EXTREME OUTER ENDS IS 2 1/2" OR LARGER.

CIRCULAR TIES:	PIPE DIAMETER	SPACE BETWEEN EXTREME OUTER ENDS	NO. OF CIRCULAR TIES
	21" OR LESS	2 1/2"	3

WHERE THE SPACE BETWEEN PIPE LONGITUDINAL ENDS EXCEEDS 2 1/2", THE NUMBER OF CIRCULAR TIES SHALL BE INCREASED TO MAINTAIN AN APPROXIMATE SPACING OF 6" OC.

9. AN INTERIOR FORM OF UNSEALED SONO-TUBE OR EQUAL SHALL BE USED TO PROVIDE A SMOOTH INTERIOR JOINT. THE PAPER FORM MAY BE LEFT IN PLACE (SEE DETAIL A).
10. THIS DETAIL APPLIES "ONLY" TO PIPE 21" DIAMETER OR LESS.

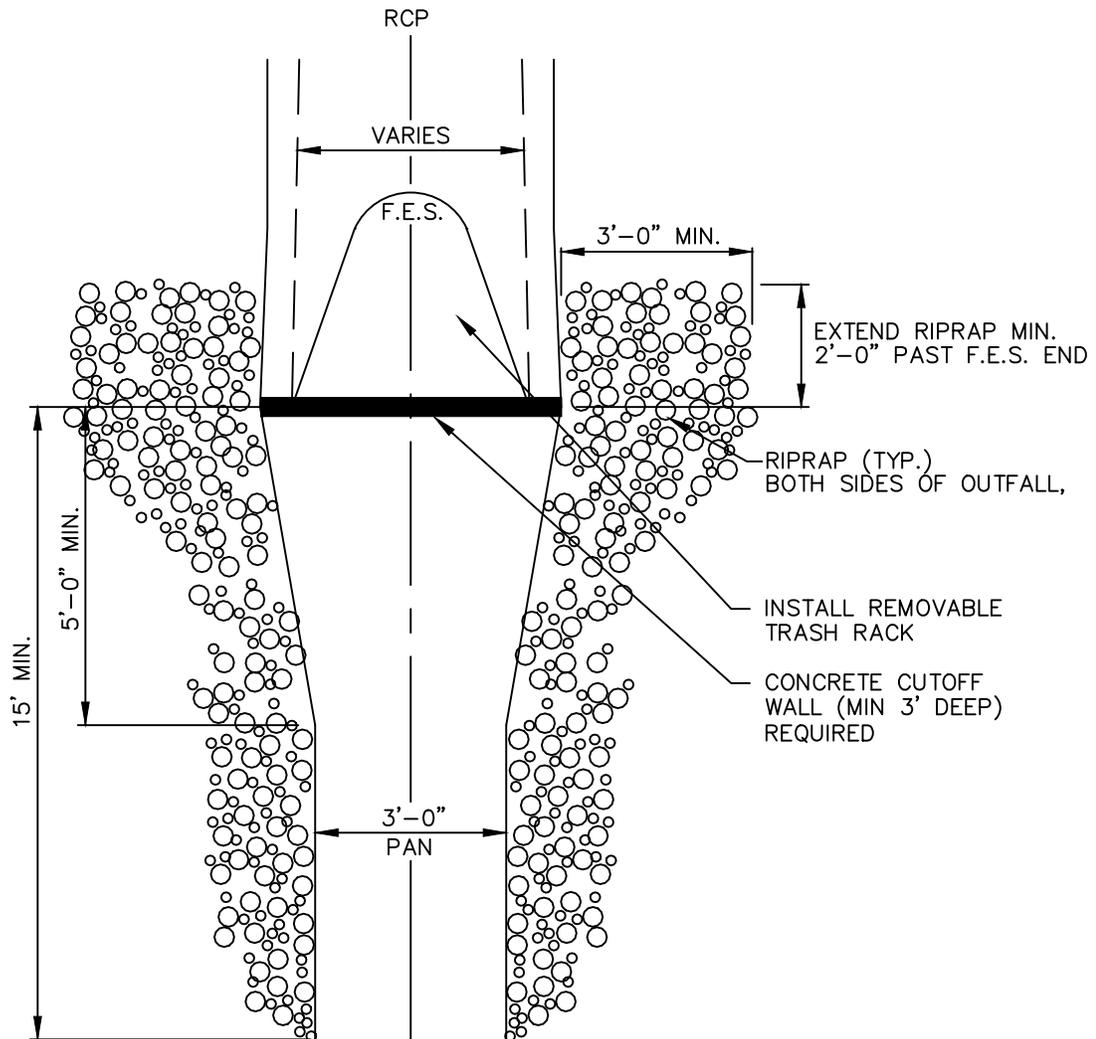
CONCRETE ENCASEMENT OF RIGID CONDUITS (2 OF 2)



STORM SEWER
CONSTRUCTION DRAWINGS

BY: JME
SCALE: NTS
DATE: 1/2020

DRAWING:
STM13B



FLARED END SECTION WITH TRICKLE CHANNEL



**STORM SEWER
CONSTRUCTION DRAWINGS**

BY: JME

SCALE: NTS

DATE: 1/2020

DRAWING:

STM14

TRASH GUARD INSTALLED

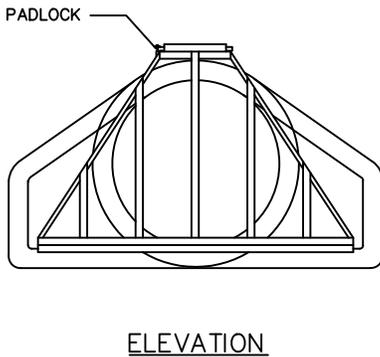
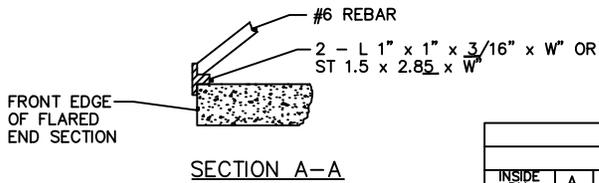
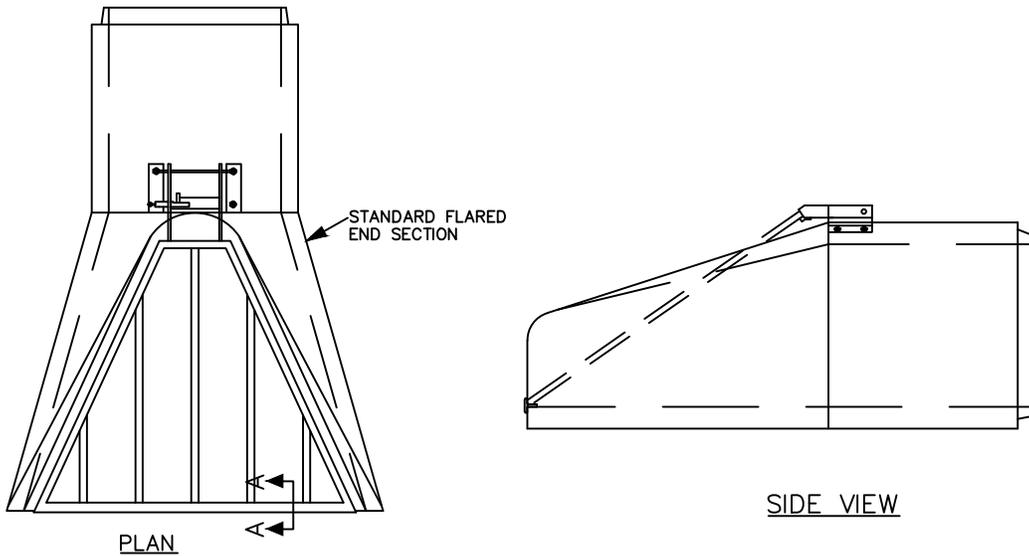


TABLE OF DIMENSIONS													
INSIDE DIA	TRASH GUARD							MOUNTING					
	A	B	D	G	L	W	C	H	J	R	S	T	
	(INCHES)							(EA)	(DEGREE)	(INCHES)			
18	10	6-1/2	8	3	31	28	3	45	45	11-1/2	5	5	
24	12	9-1/2	8	3	47-1/2	40	5	35	55	15	6-1/2	5-1/2	
30	15	12-1/2	9	3	59-3/4	52	5	35	55	18-1/2	8	6	
36	15	15-1/2	8-1/2	4	71-1/4	58	7	35	55	22	9-1/2	6-1/2	
42	21	18-1/2	9	4	75	64	7	40	50	25-1/2	11	7	
48	24	21-1/2	8	4	82-3/4	70	9	40	50	29	12-3/4	7-1/2	

NOTE: AN INDEPENDENT DESIGN AND DETAIL WILL BE REQUIRED FOR PIPE DIAMETERS GREATER THAN 48"

GENERAL NOTES

1. TRASH GUARDS SHALL BE INSTALLED AT LOCATIONS SHOWN IN THE PLANS OR SPECIFIED BY THE ENGINEER
2. PADLOCKS FOR LOCKING BAR WILL BE FURNISHED AND INSTALLED BY THE CONTRACTOR AND KEYS SUBMITTED TO THE PUBLIC WORKS DEPT.
3. THE TRASH GUARDS ARE NOT DESIGNED TO CARRY WHEEL LOADINGS AND SUCH ARE NOT TO BE USED AS SAFETY GRATES
4. IF THE FLARED END DIMENSIONS VARY FROM THOSE SHOWN IN THE STANDARD PLANS, NECESSARY ADJUSTMENTS SHALL BE MADE TO THE TRASH GUARD DIMENSIONS

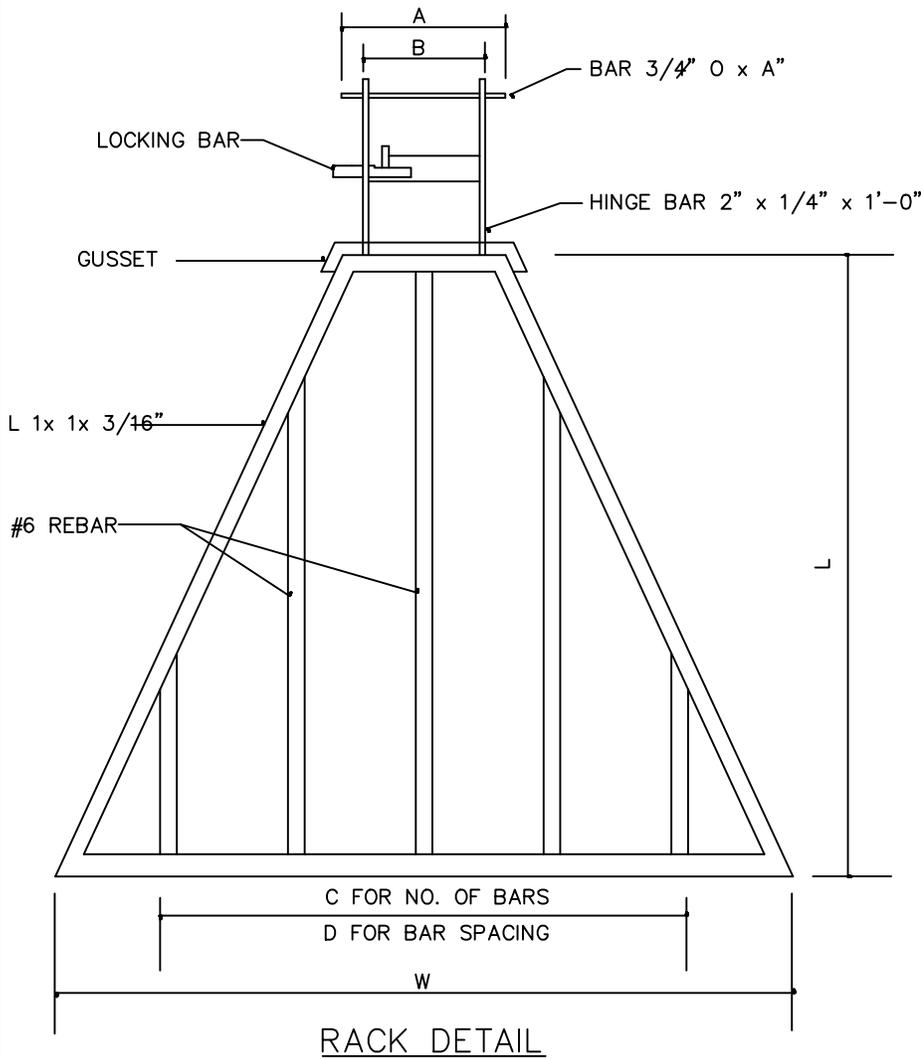
TRASH GUARD FOR CONDUIT (1 OF 3)



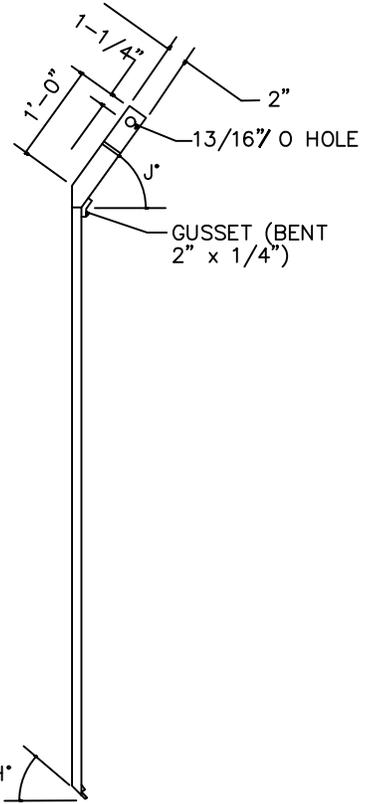
STORM SEWER
CONSTRUCTION DRAWINGS

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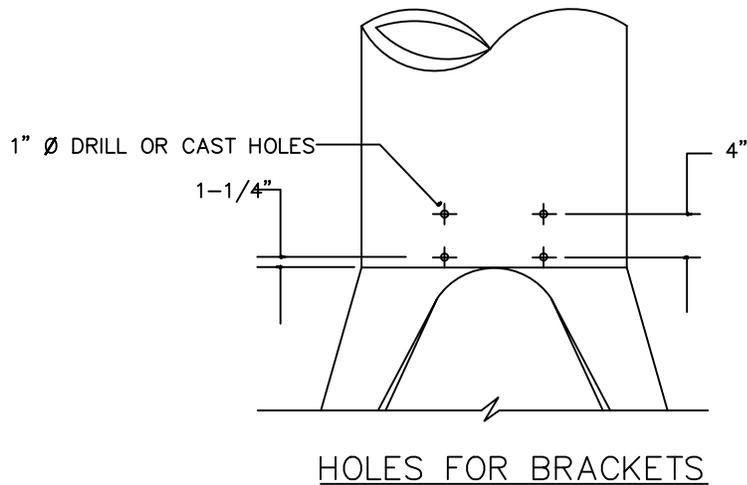
DRAWING:
STM15A



PLAN



RACK DETAIL



HOLES FOR BRACKETS

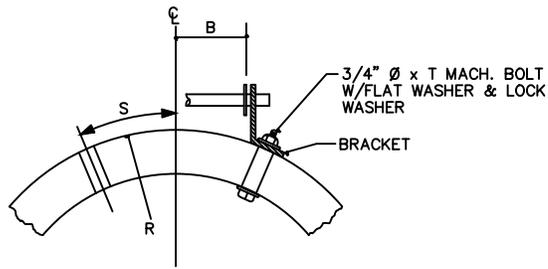
TRASH GUARD FOR CONDUIT (2 OF 3)



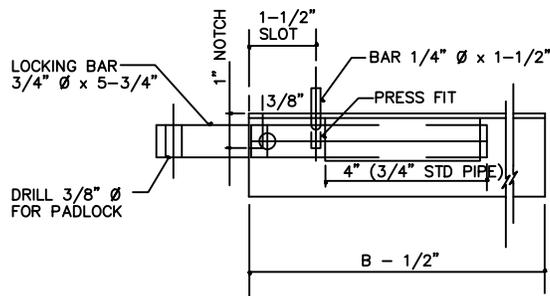
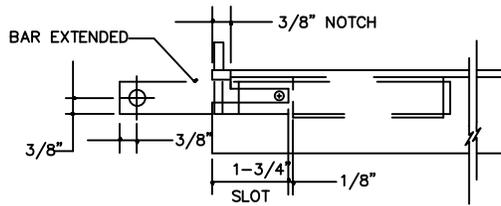
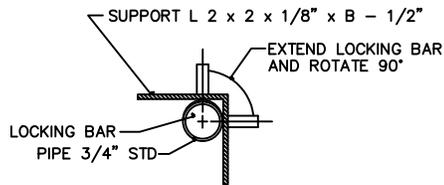
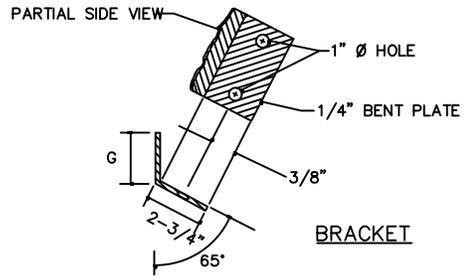
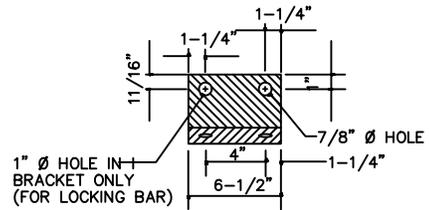
STORM SEWER
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DRAWING:
STM15B



BRACKET & HINGE
DETAIL



LOCKING BAR &
SUPPORT

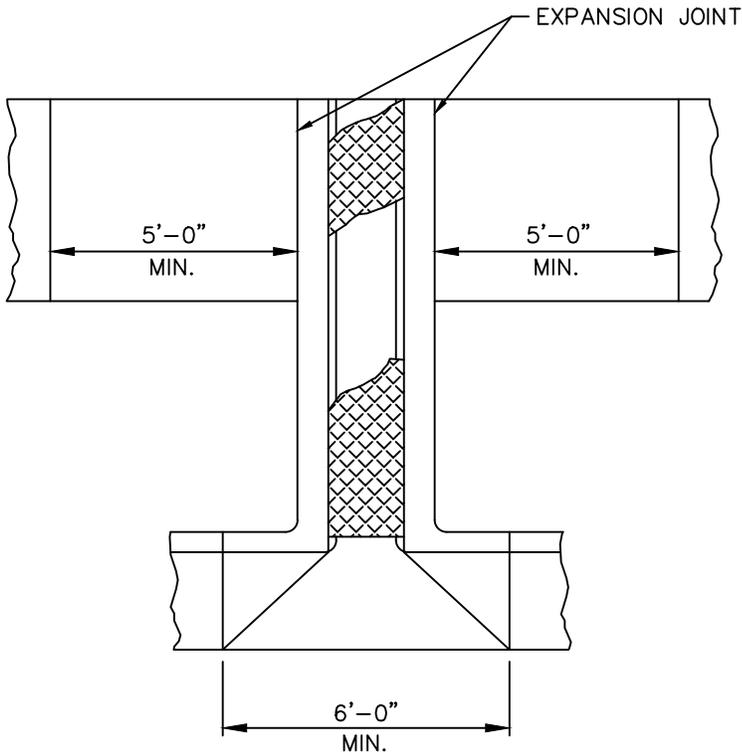
TRASH GUARD FOR CONDUIT (3 OF 3)



**STORM SEWER
CONSTRUCTION DRAWINGS**

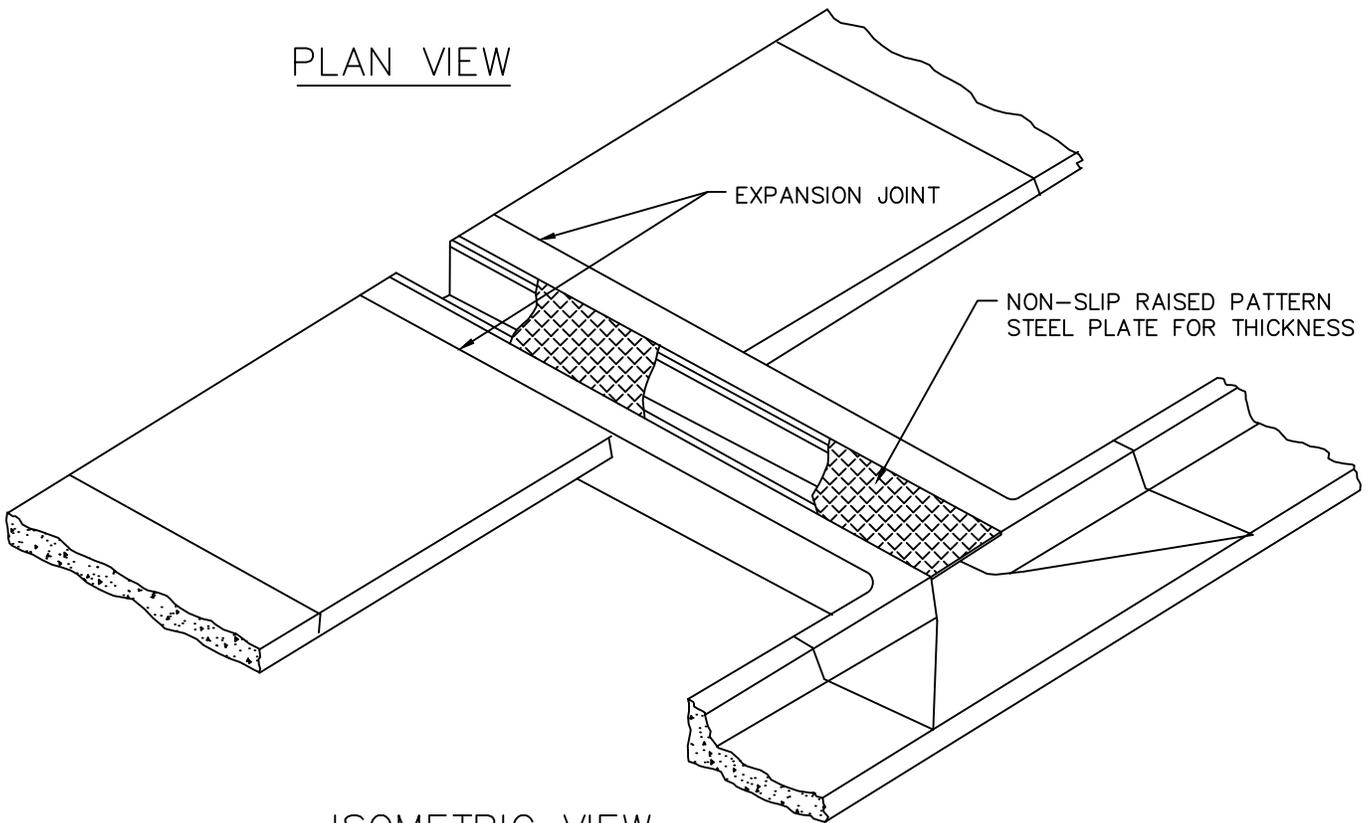
BY: JME
SCALE: NTS
DATE: 1/2020

**DRAWING:
STM15C**



PLAN VIEW

TYPE OF WALK	LENGTH OF PLATE
L ATTACHED	L + 3"
L DETACHED	VARIABLE



ISOMETRIC VIEW

SIDEWALK CHASE DETAIL (1 OF 2)



**STORM SEWER
CONSTRUCTION DRAWINGS**

BY: JME
SCALE: NTS
DATE: 1/2020

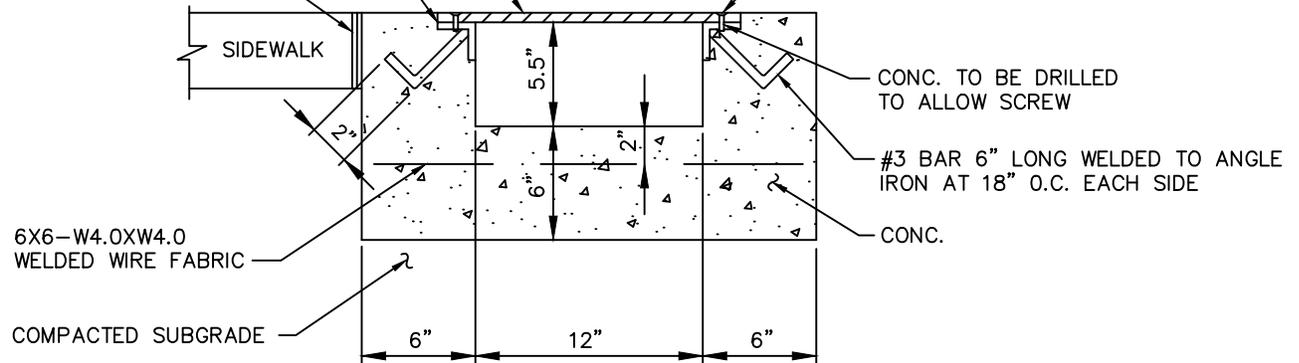
DRAWING:
STM16A

1/2" NON-SLIP RAISED
PATTERN STEEL TREAD PLATE

2" X 2" X 1/4" ANGLE
IRON TO BE DRILLED AND
THREADED TO ALLOW SCREW

EXPANSION JOINT

1/2" X 1" FLATHEAD MACH. SCREW
BRASS OR ELECTRO-GALVANIZED
FINISH, 2' O.C.



SIDEWALK CHASE DETAIL

SIDEWALK CHASE DETAIL (2 OF 2)



**STORM SEWER
CONSTRUCTION DRAWINGS**

BY: JME

SCALE: NTS

DATE: 1/2020

DRAWING:

STM16B