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SECTION 6 - PIPE BEDDING

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PVC PIPE BEDDING
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PIPE BEDDING IN ROCK



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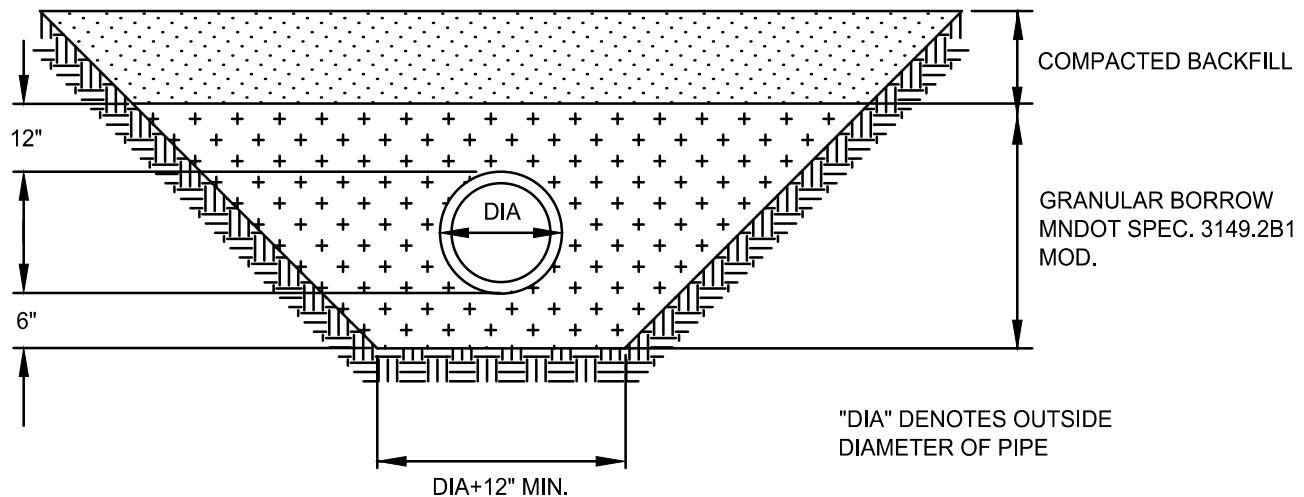
STANDARD DETAILS

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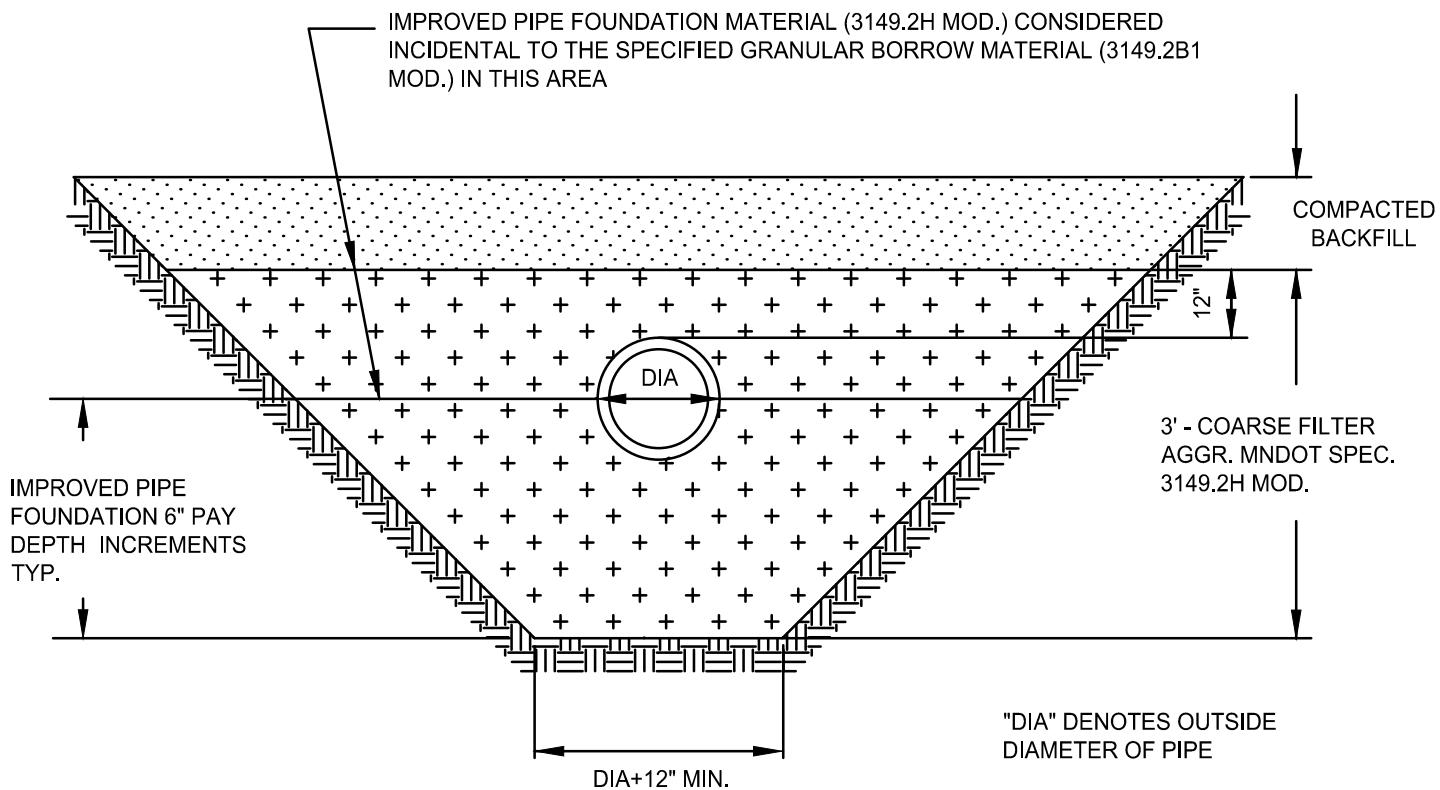
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Revised:

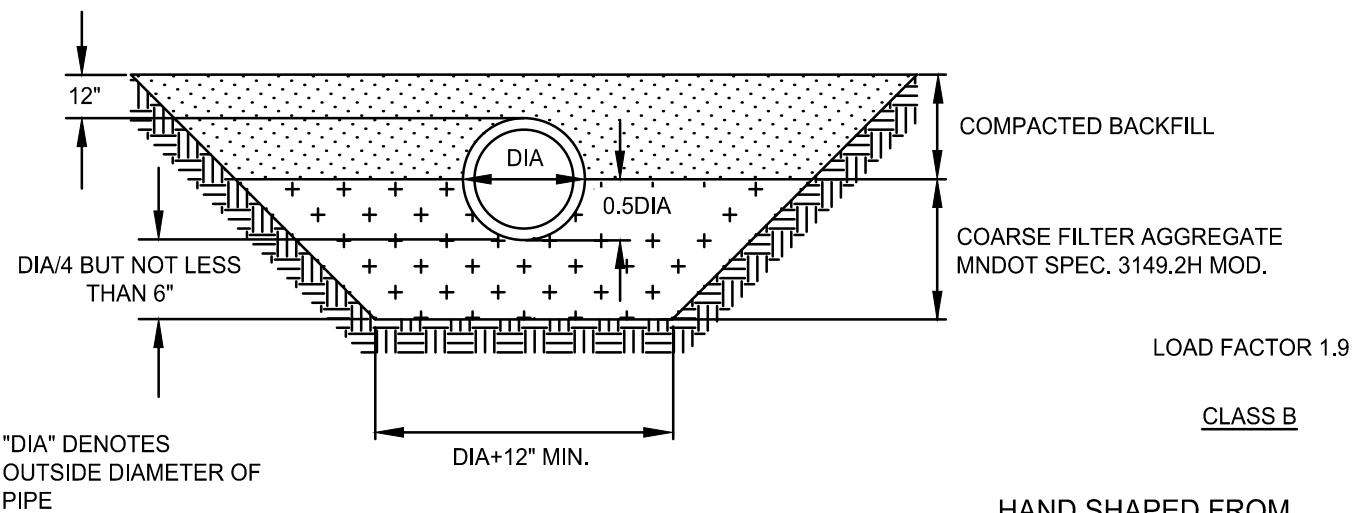
BED-00



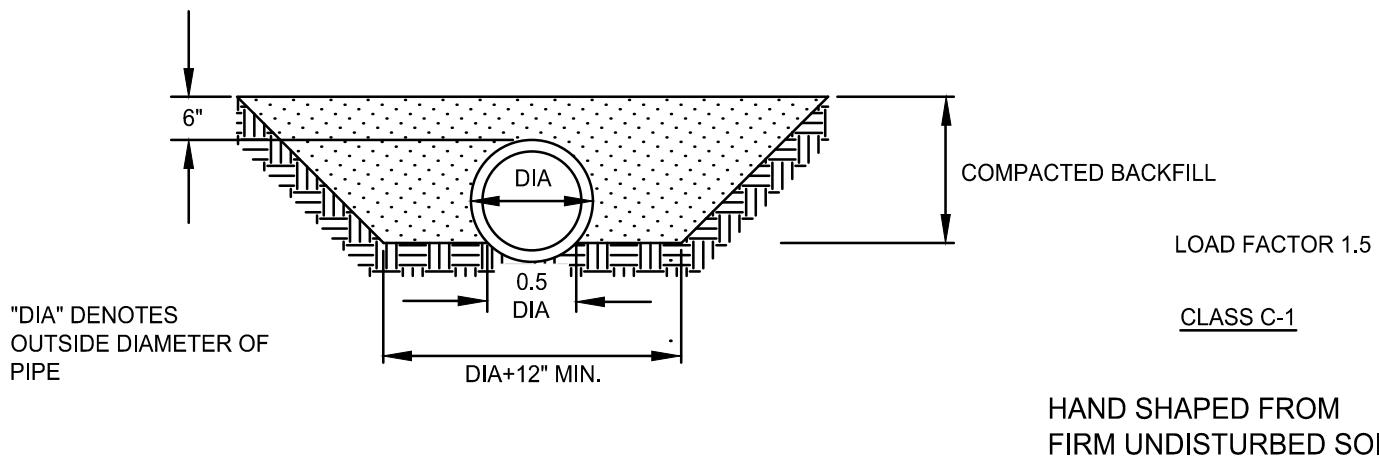
PIPE FOUNDATION & BEDDING GOOD SOILS



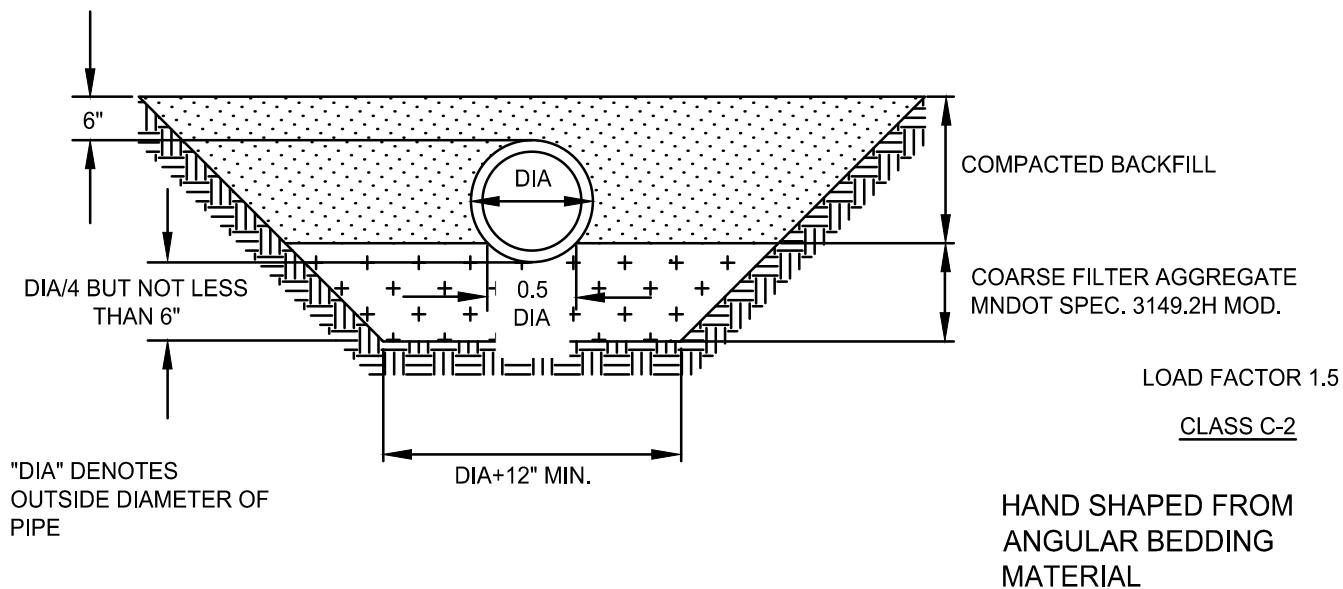
IMPROVED PIPE FOUNDATION MATERIAL POOR SOILS



HAND SHAPED FROM ANGULAR BEDDING MATERIAL



HAND SHAPED FROM FIRM UNDISTURBED SOIL



HAND SHAPED FROM ANGULAR BEDDING MATERIAL



RCP AND DIP PIPE BEDDING

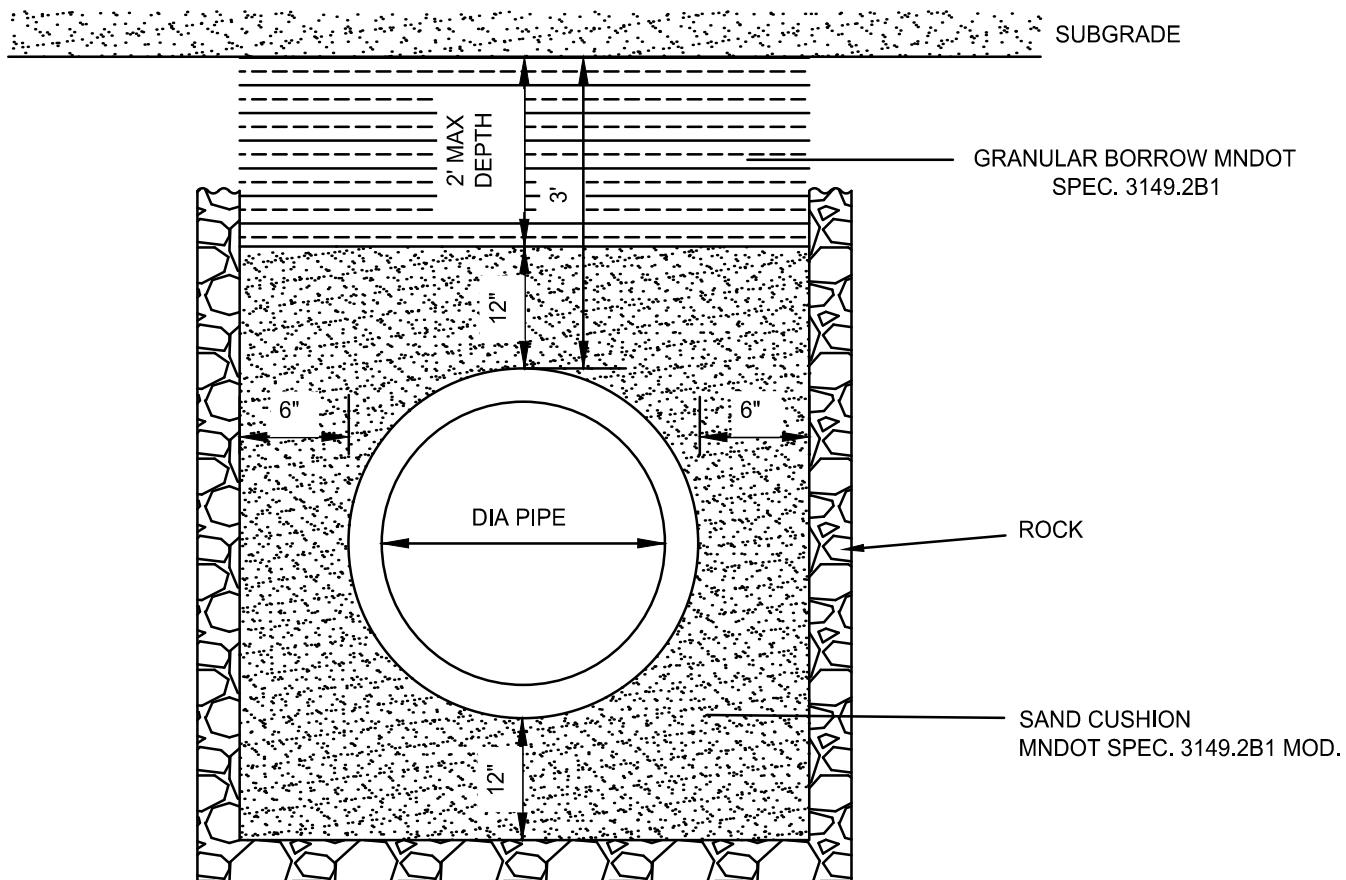
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NOTE:

USE GRANULAR BORROW WHEN TOP OF PIPE IS WITHIN 3 FEET OF SUBGRADE. IF GREATER THAN 3 FEET, USE SUITABLE EXISTING ONSITE BACKFILL.



PIPE BEDDING IN ROCK

STANDARD DETAILS

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SECTION 7 - EROSION AND SEDIMENT CONTROL

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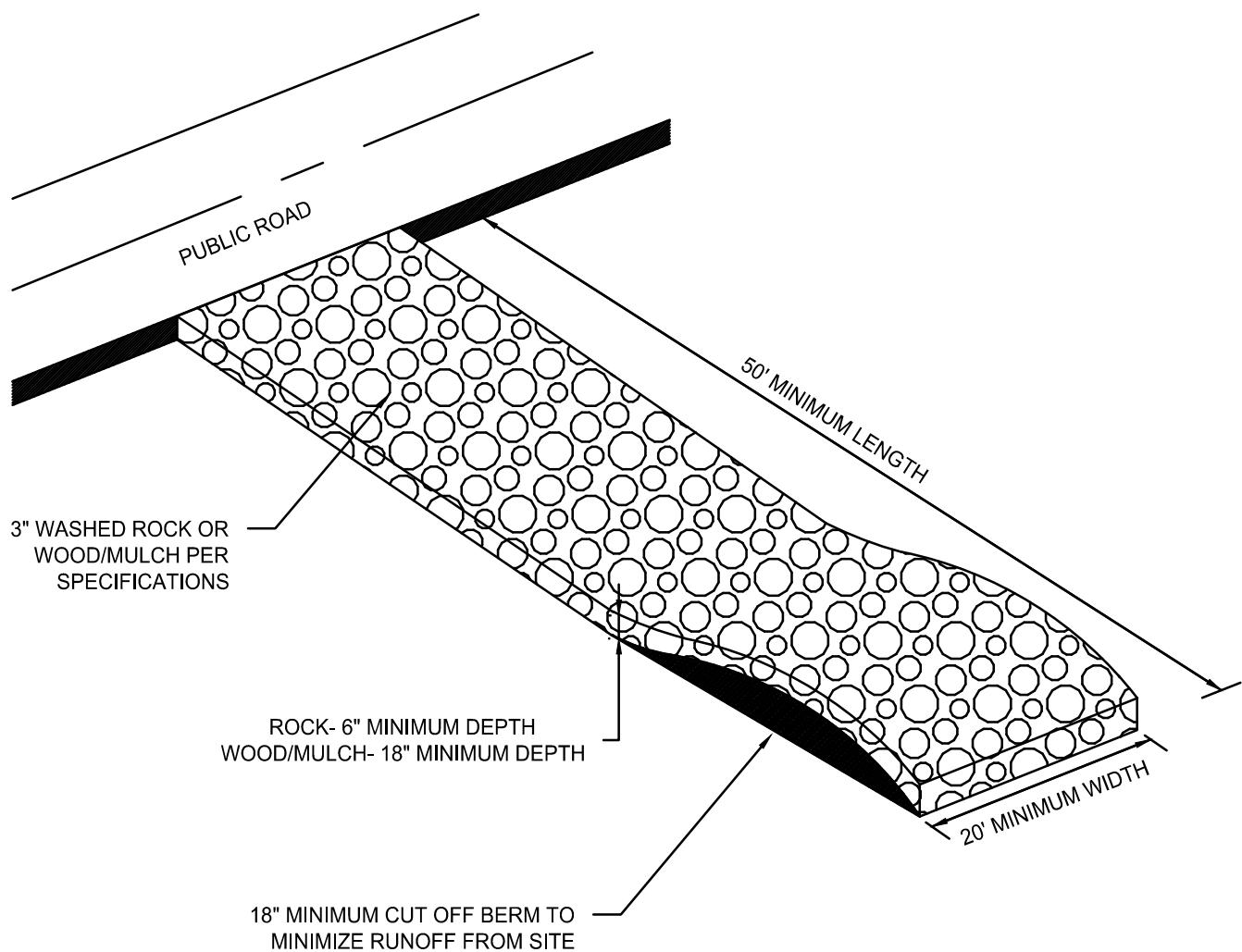
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NOTES:

1. FILTER FABRIC SHALL BE PLACED UNDER ROCK OR MULCH TO STOP MUD MIGRATION THROUGH MATERIAL.
2. ENTRANCE MUST BE MAINTAINED REGULARLY TO PREVENT SEDIMENTATION ON PUBLIC ROADWAYS. FUGITIVE ROCK OR MULCH WILL BE REMOVED FROM ADJACENT ROADWAYS DAILY OR MORE FREQUENTLY AS NECESSARY.



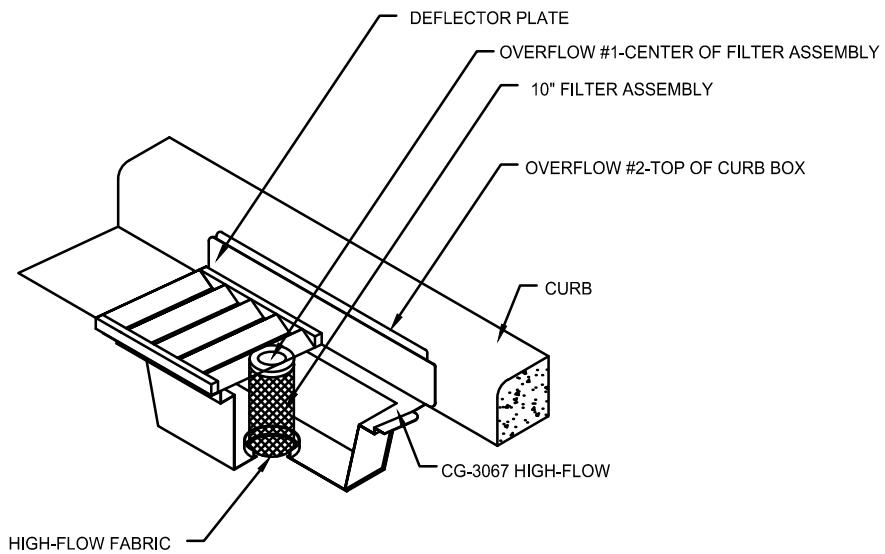
STABILIZED
CONSTRUCTION EXIT

STANDARD DETAILS

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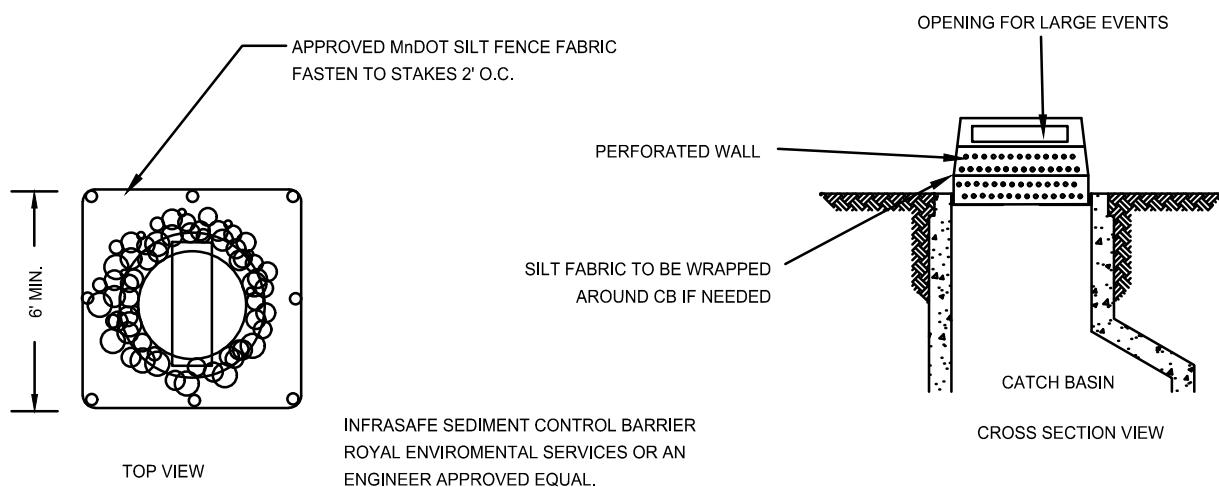
Revised:

ESC-01



WIMCO MODEL # CG-3067 HIGH-FLOW
INLET PROTECTION OR APPROVED EQUAL

CURB AND GUTTER INLET PROTECTION
NO SCALE



INFRASAFE SEDIMENT CONTROL BARRIER
ROYAL ENVIRONMENTAL SERVICES OR AN
ENGINEER APPROVED EQUAL.

CROSS SECTION VIEW

REAR YARD INLET PROTECTION

NO SCALE



**STORM DRAIN INLET
PROTECTION**

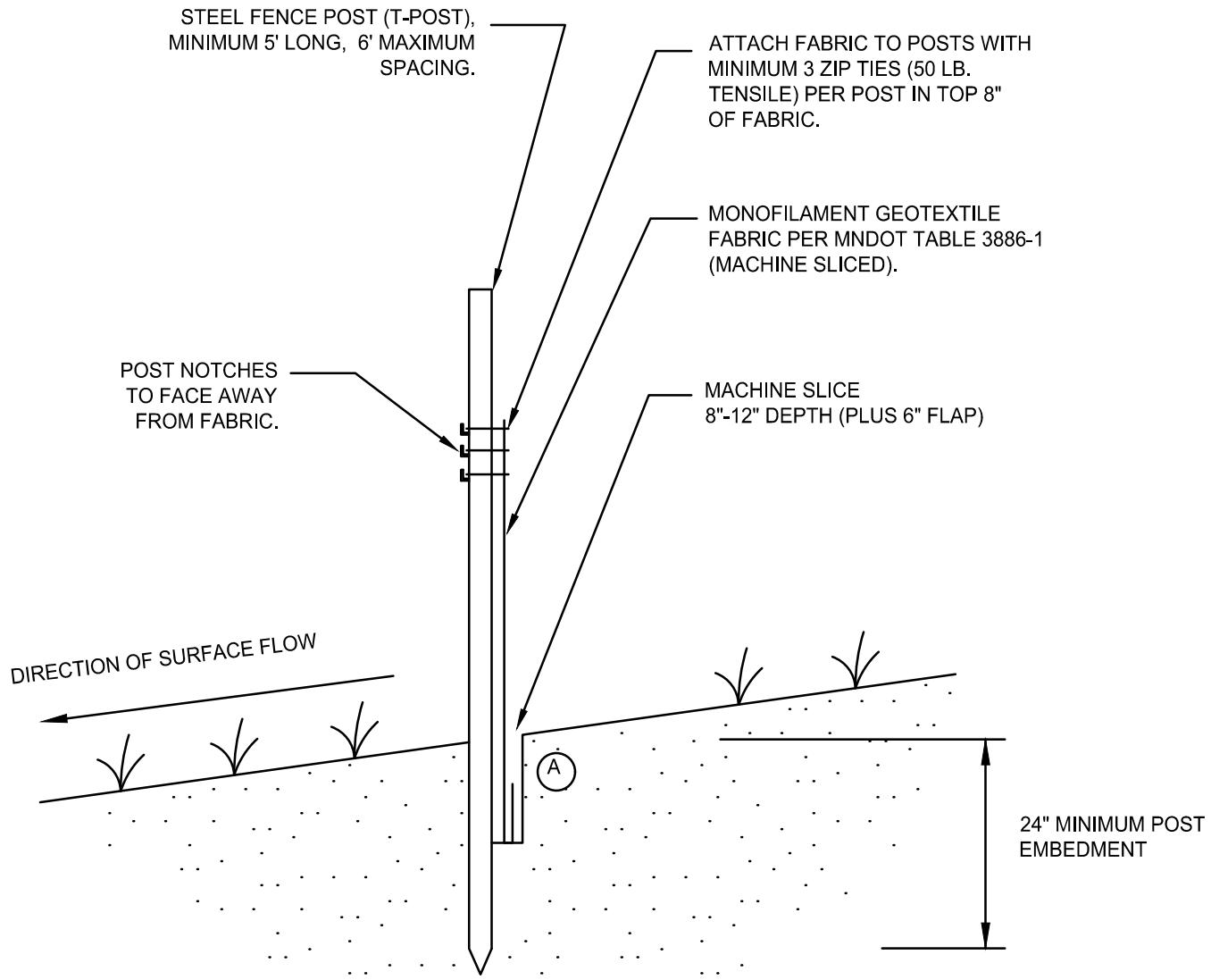
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NOTE:

THE MACHINE SLICED METHOD (THIS DETAIL) IS THE STANDARD SILT FENCE
INSTALLATION METHOD. HAND INSTALLED (ESC-04) OR SUPER DUTY (ESC-05) SILT
FENCE INSTALLATION METHODS SHOULD ONLY BE USED WHEN APPROVED OR
DIRECTED BY THE CITY.

(A) COMPACTION:

AFTER "SLICING" IN THE FABRIC AND *BEFORE* INSTALLATION
OF STEEL POSTS, DRIVE INSTALLATION EQUIPMENT OVER THE
"SLICE" WHILE FABRIC IS LAYING ON THE GROUND. *THEN*
INSTALL STEEL POSTS AND PULL UP FABRIC TO ATTACH AT
A UNIFORM HEIGHT.



**SILT FENCE
TYPE MACHINE SLICED**

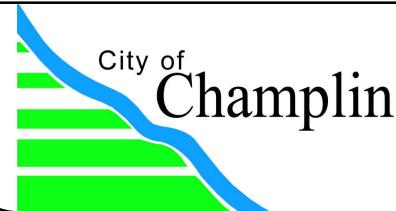
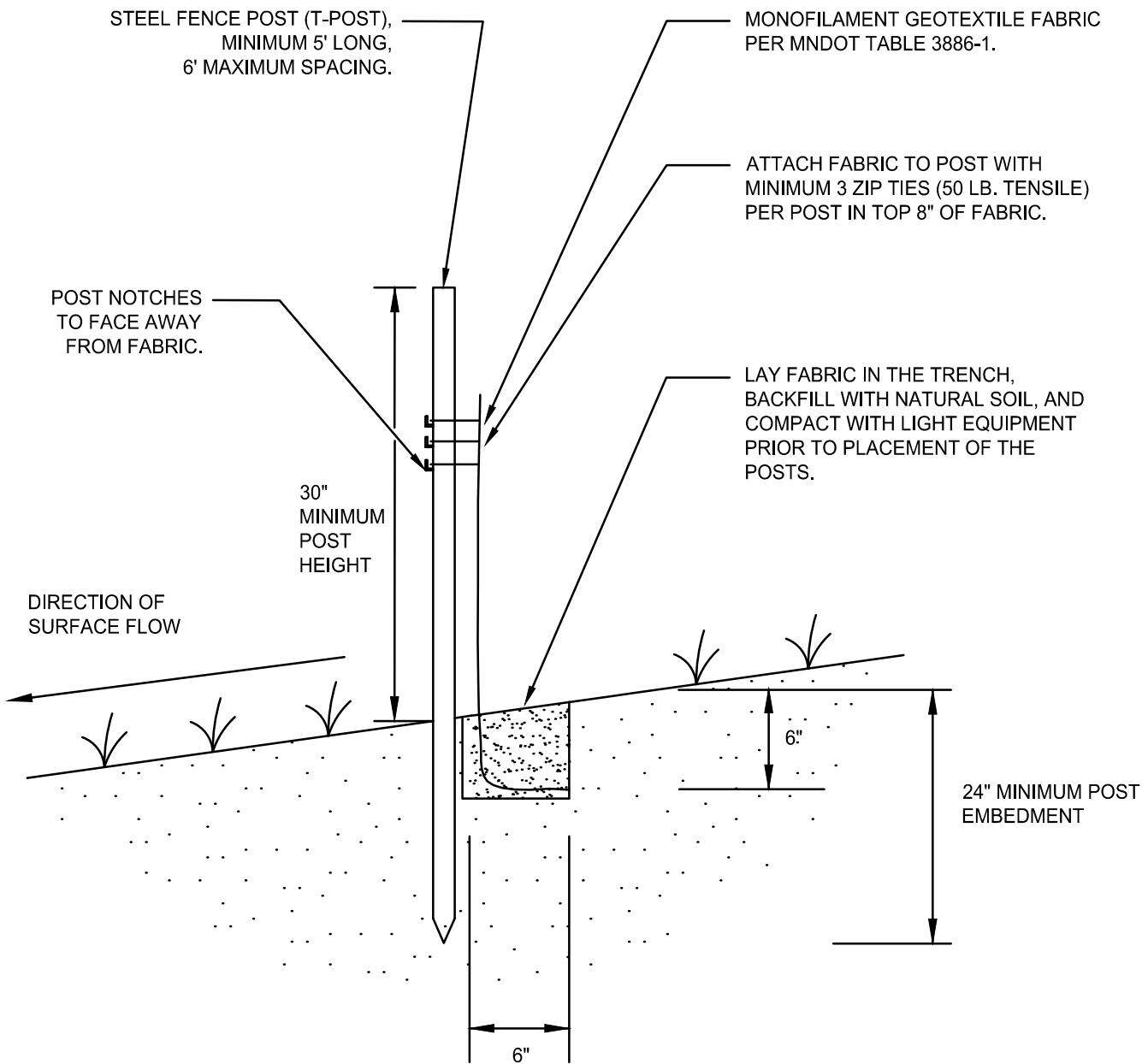
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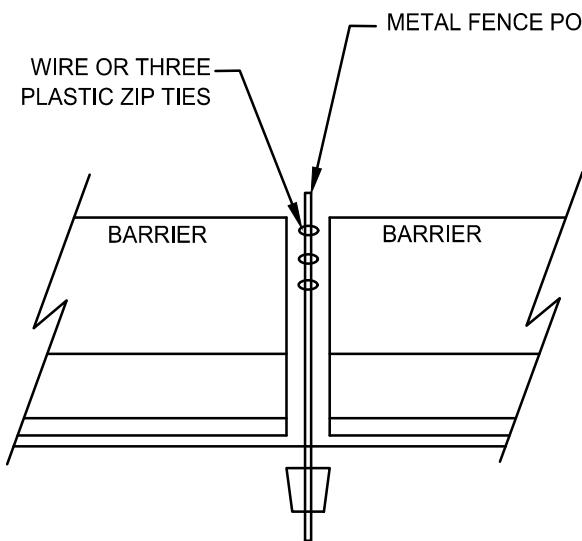
**SILT FENCE
TYPE HAND INSTALLED**

STANDARD DETAILS

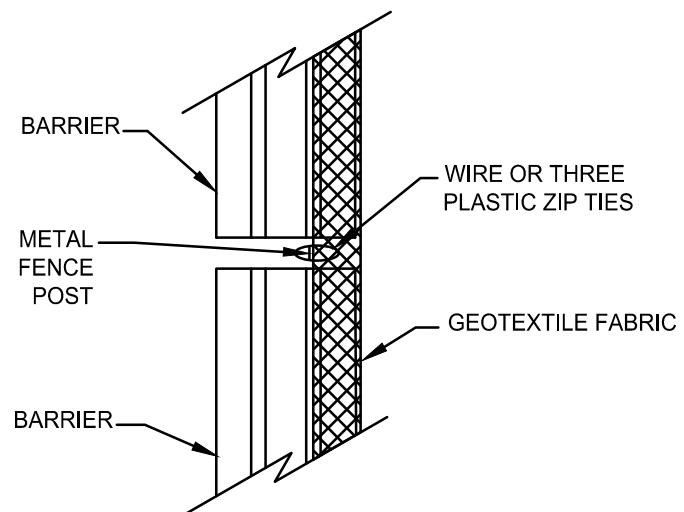
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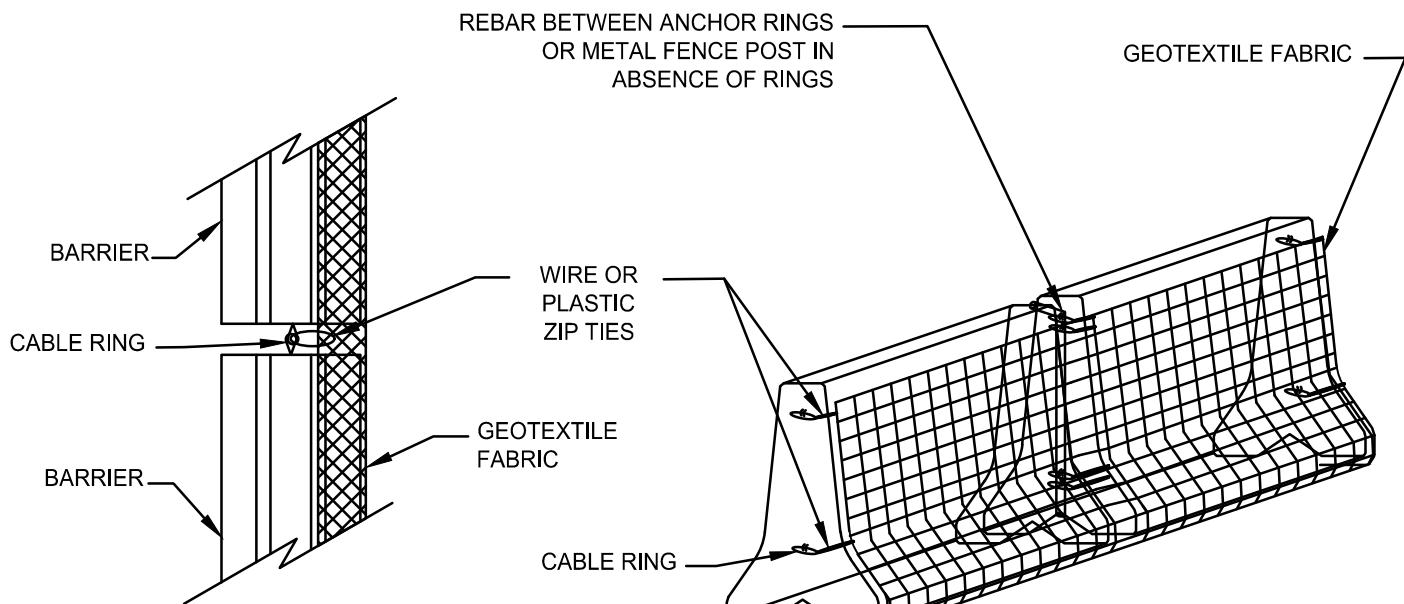


SIDE VIEW



TOP VIEW

BARRIER WITHOUT CABLE RINGS



TOP VIEW

3D VIEW

BARRIER WITH CABLE RINGS SILT FENCE, SUPER DUTY



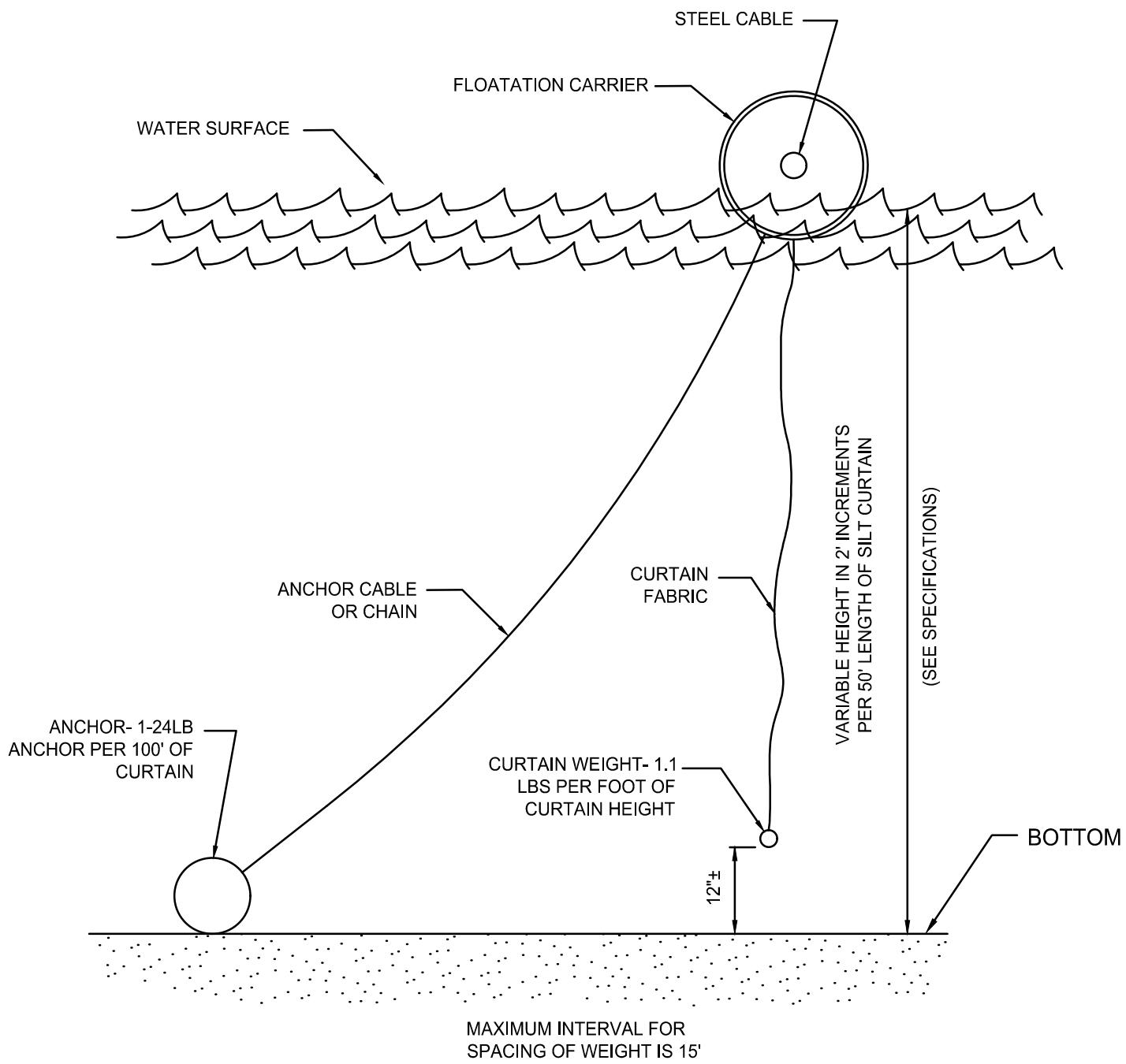
SILT FENCE
TYPE SUPER DUTY

STANDARD DETAILS

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05/01/2020

Revised:

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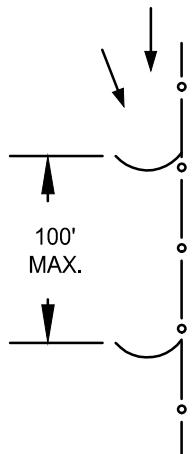
NOTES:

- DOUBLE SILT CURTAINS SHOULD BE SPACED 10' APART.
- CURTAIN LENGTH TO MATCH BOTTOM PROFILE AS CLOSELY AS POSSIBLE.

PLAN VIEW

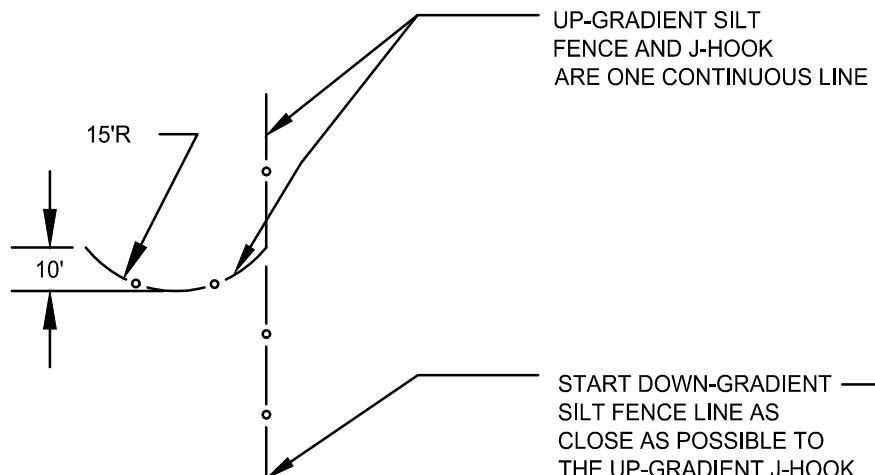
I. SPACING REQUIREMENTS

DIRECTION OF SURFACE FLOW



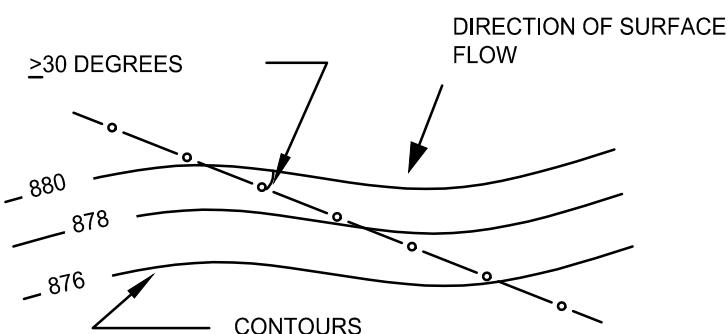
NOTE: SPACING DISTANCES WILL VARY, BUT ARE NOT TO EXCEED 100 FEET.

II. SIZING REQUIREMENTS: J15, J25

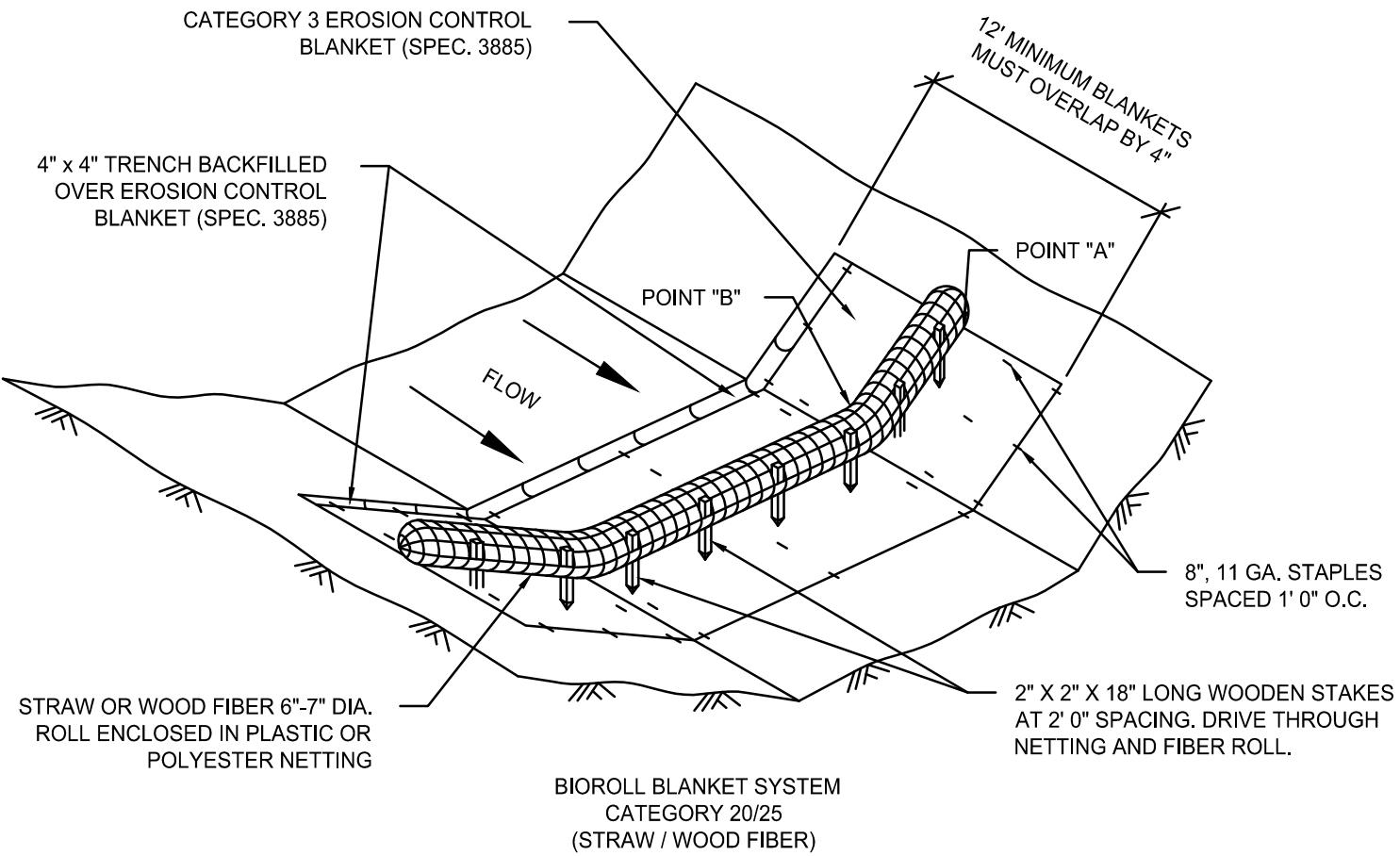


J15 - FOR CATCHMENT AREA <0.25 ACRES

J25 - FOR CATCHMENT AREA ≥0.25 ACRES



NOTE:
J-HOOKS SHALL BE USED WHEN THE SILT FENCE IS INSTALLED AT AN ANGLE OF 30 DEGREES OR GREATER FROM PARALLEL TO THE CONTOURS.

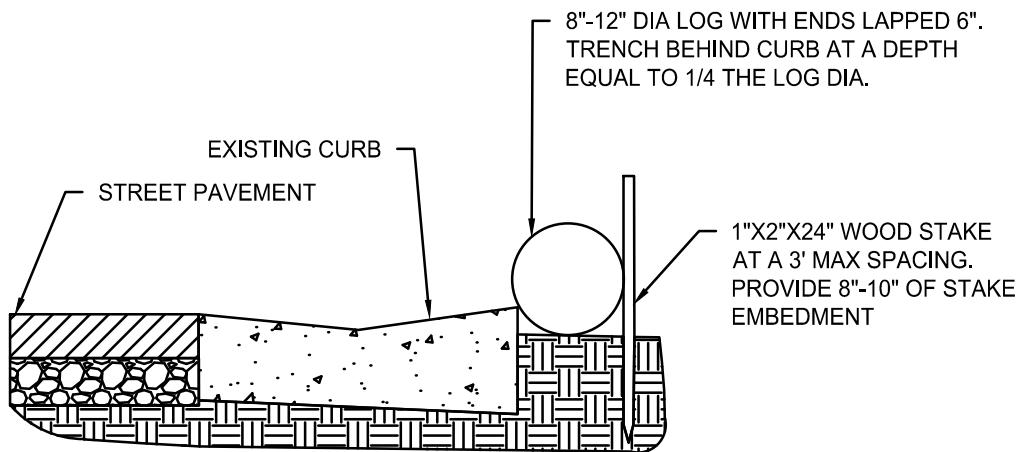


MAINTENANCE

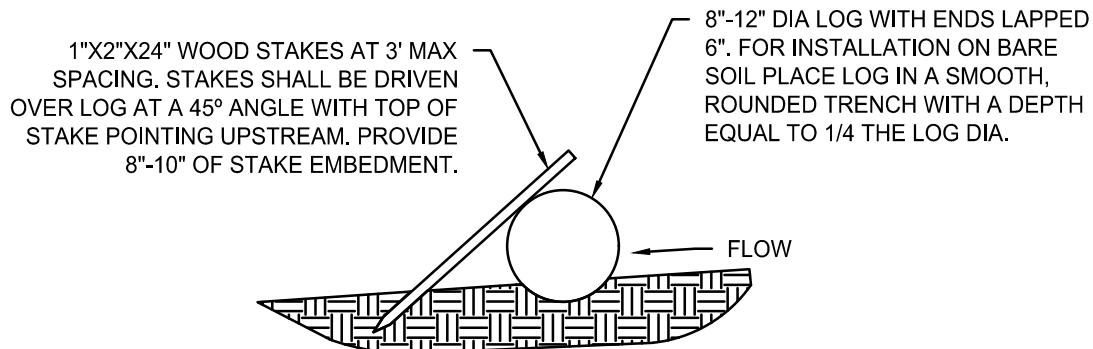
1. FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
2. SHOULD THE BIOROLL DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USEABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE BIOROLL SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS MUST BE REMOVED WHEN

DEPOSITS REACH APPROXIMATELY 1/3 HEIGHT OF THE BARRIER, OR AS DIRECTED BY THE ENGINEER.

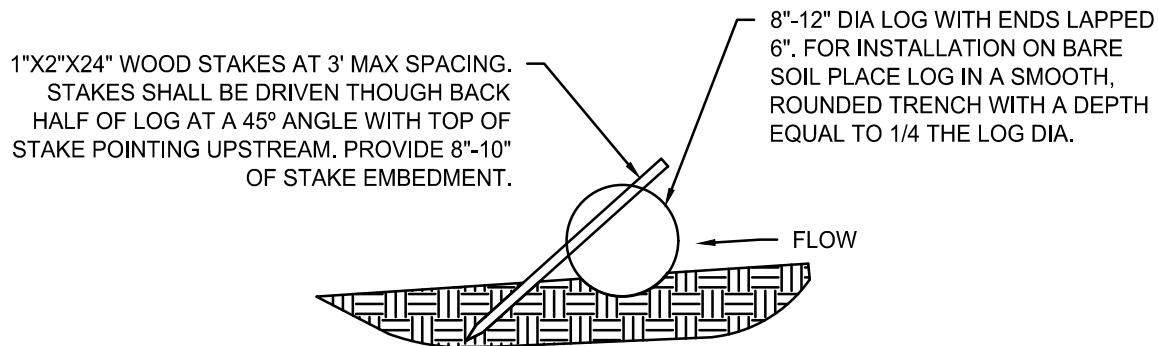
4. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED, SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEDED.
5. ALL MATERIAL & INSTALLATION MUST CONFORM TO THE REQUIREMENTS OF THE CURRENT EDITION OF THE MNDOT CONSTRUCTION SPECIFICATIONS SECTION 3897.



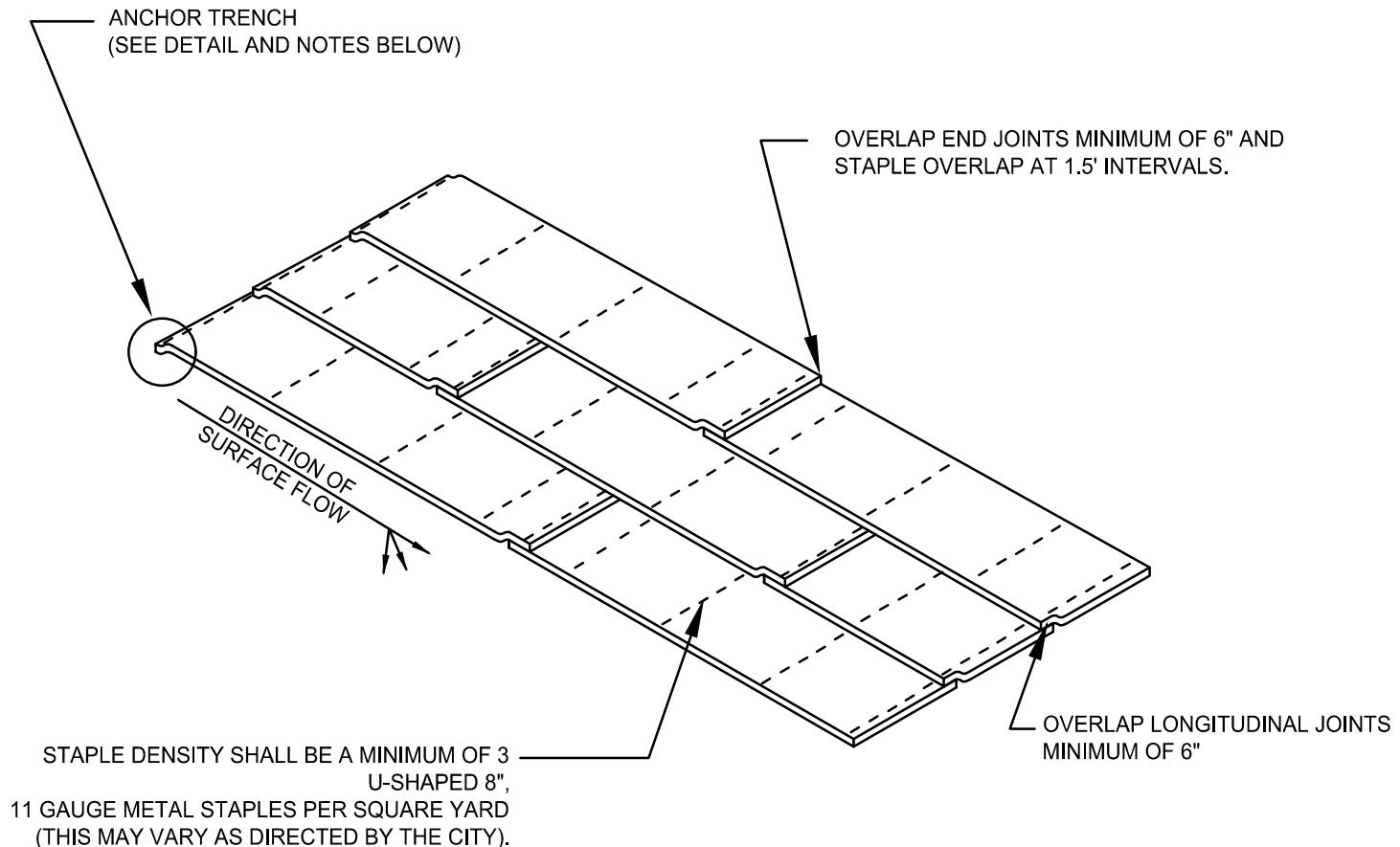
CURB INSTALLATION



FIELD INSTALLATION USING MULCH OR COMPOST

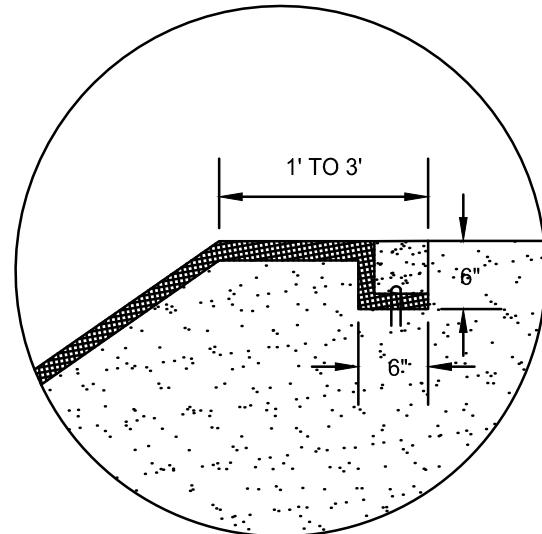


FIELD INSTALLATION USING STRAW OR WOOD FIBER



ANCHOR TRENCH

1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT
5. BLANKET LENGTH SHALL NOT EXCEED 100' WITHOUT AN ANCHOR TRENCH



EROSION CONTROL BLANKET

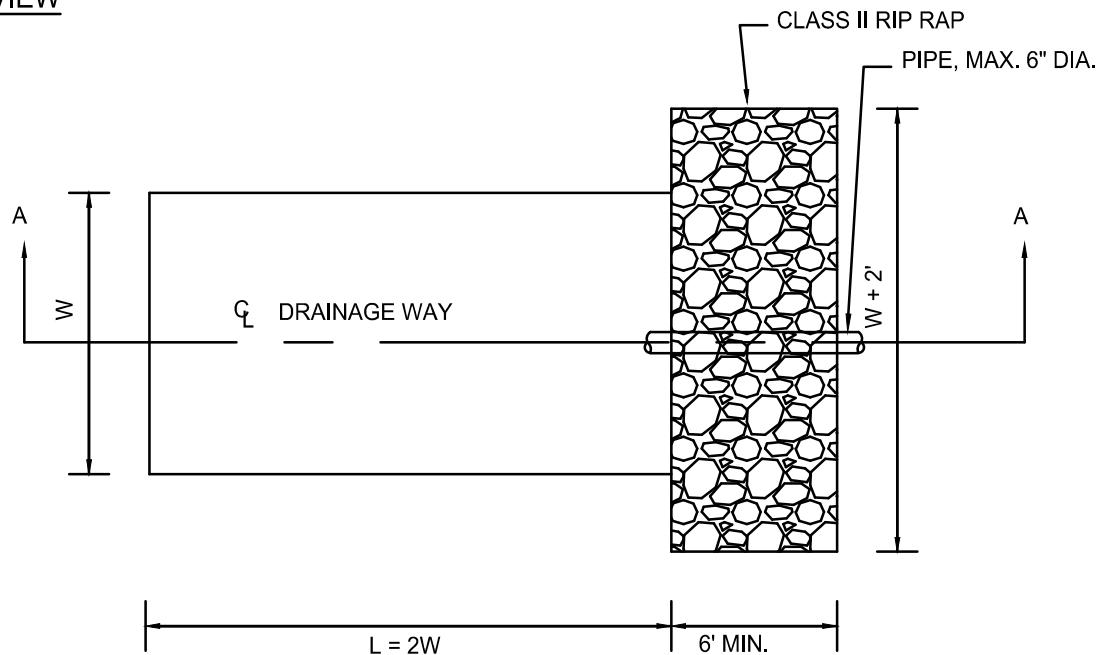
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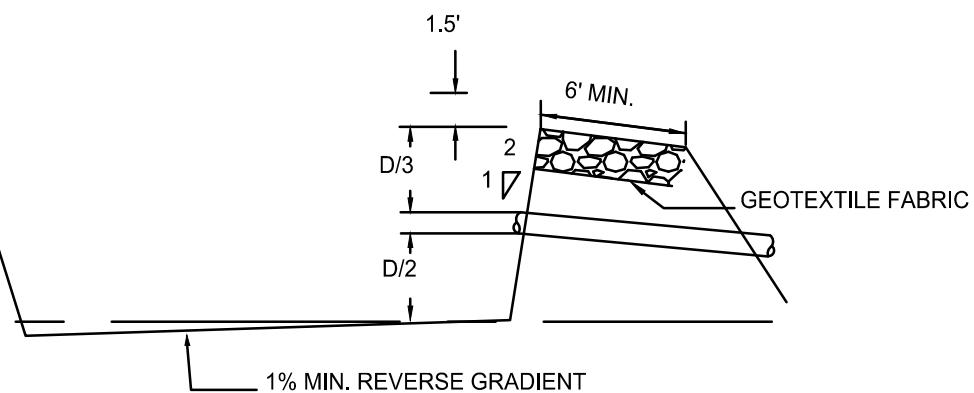
I. PLAN VIEW



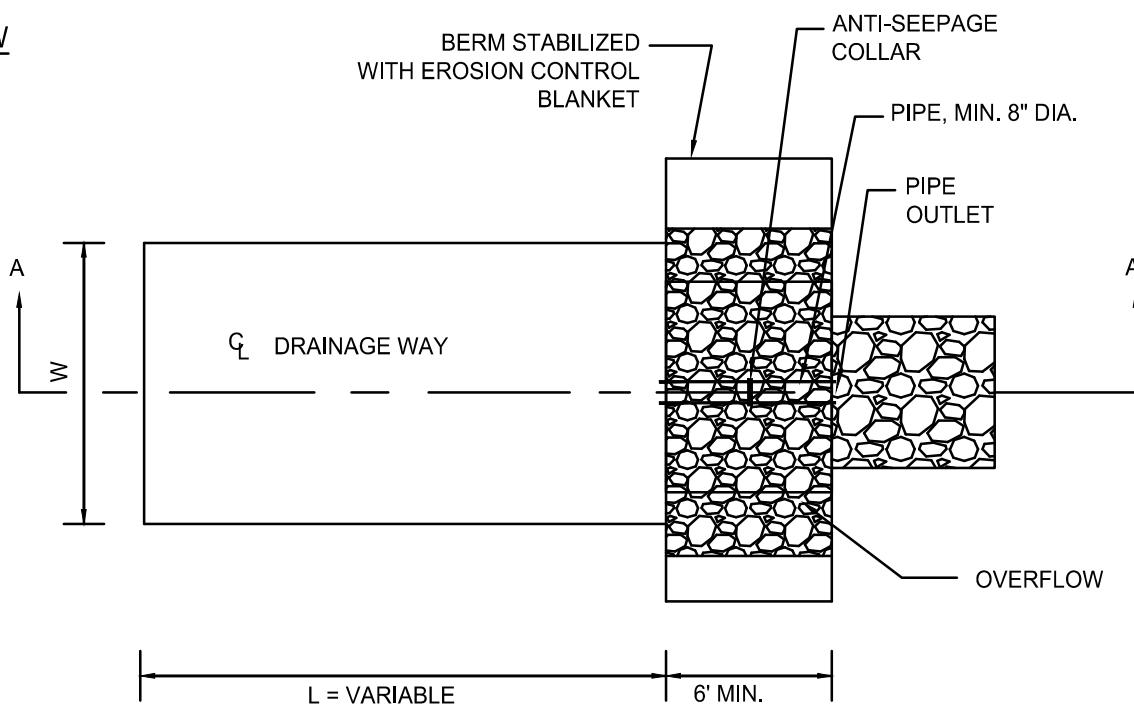
II. SECTION A-A

DIRECTION OF SURFACE FLOW

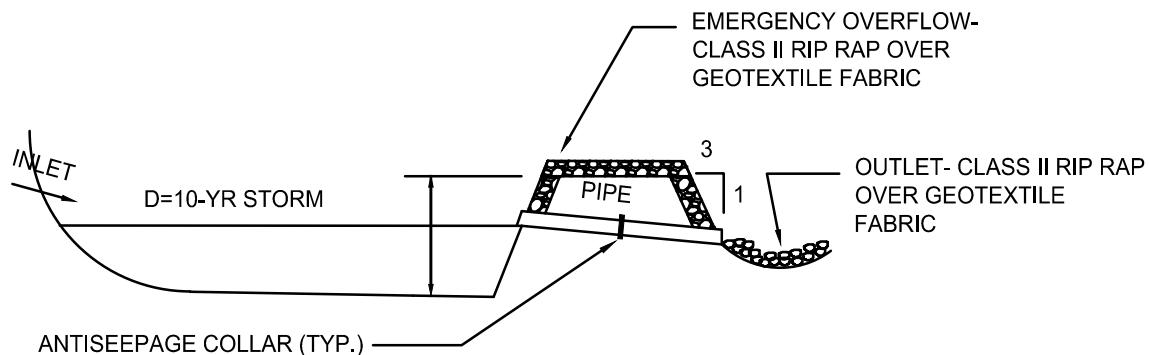
NOTE:
 $D=3'$ MIN, 5' MAX
 $W=10'$ MIN, 25' MAX $W(\text{FT.})= 10 \times$
 DRAINAGE AREA (AC.)



I. PLAN VIEW



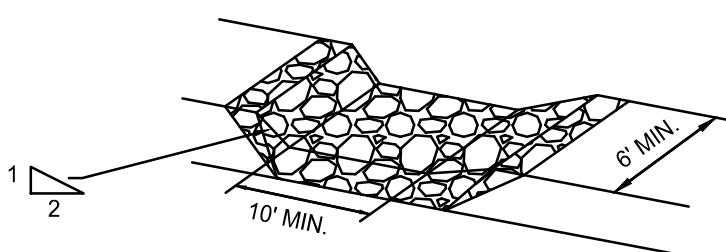
II. SECTION A-A



NOTES:

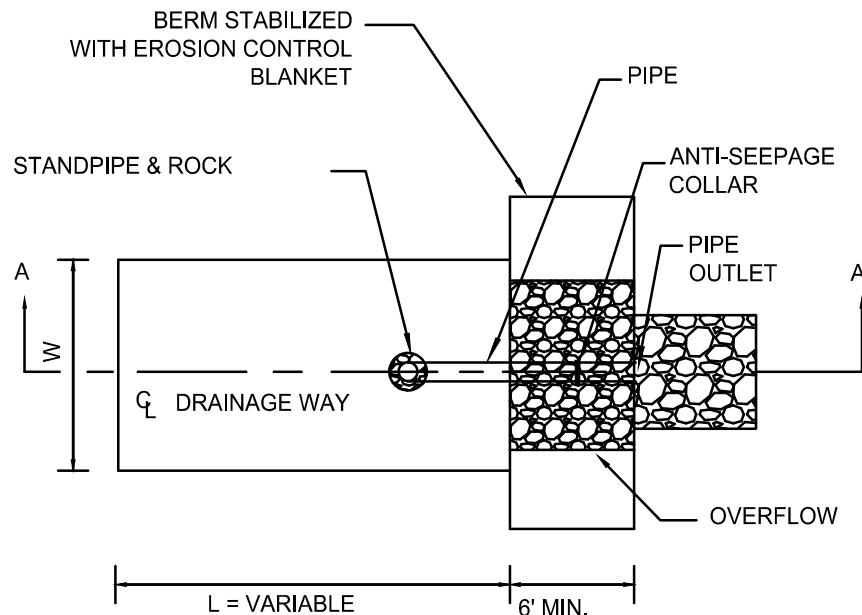
BASIN USED FOR 10 ACRES
DRAINAGE AREA OR MORE.
DESIGN RUNOFF VOLUME IS FROM
A 2-YR, 24-HR STORM PER ACRE
DRAINED TO THE BASIN. BASIN
VOLUME MUST BE A MIN. OF 1800
CUBIC FEET/ACRE.
SEE PLANS/SPECIFICATIONS FOR
BASIN DIMENSIONS AND PIPE SIZE
AND SLOPE.

III. BASIN EMERGENCY OVERFLOW

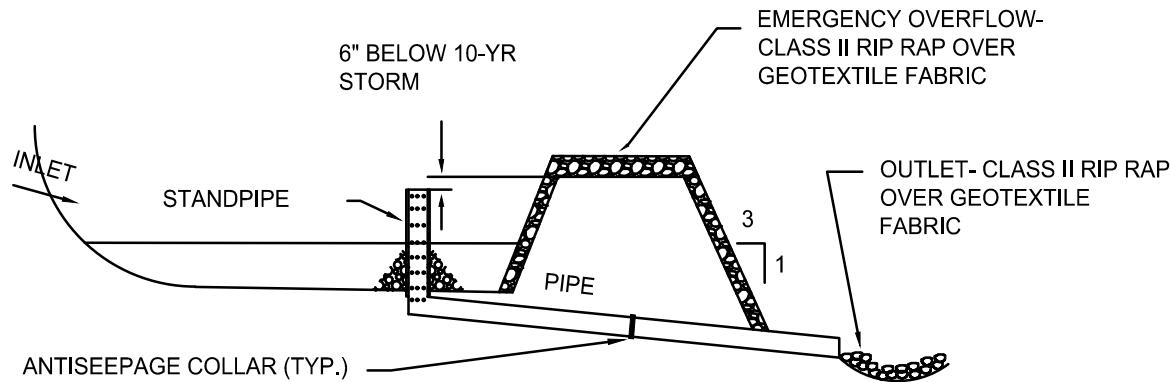


I. PLAN VIEW

NOTES:
BASIN USED FOR 10 ACRES
DRAINAGE AREA OR MORE.
DESIGN RUNOFF VOLUME IS FROM
A 2-YR, 24-HR STORM PER ACRE
DRAINED TO THE BASIN. BASIN
VOLUME MUST BE A MIN. OF 1800
CUBIC FEET/ACRE.
SEE PLANS/SPECIFICATIONS FOR
BASIN DIMENSIONS AND PIPE SIZE
AND SLOPE.



II. SECTION A-A

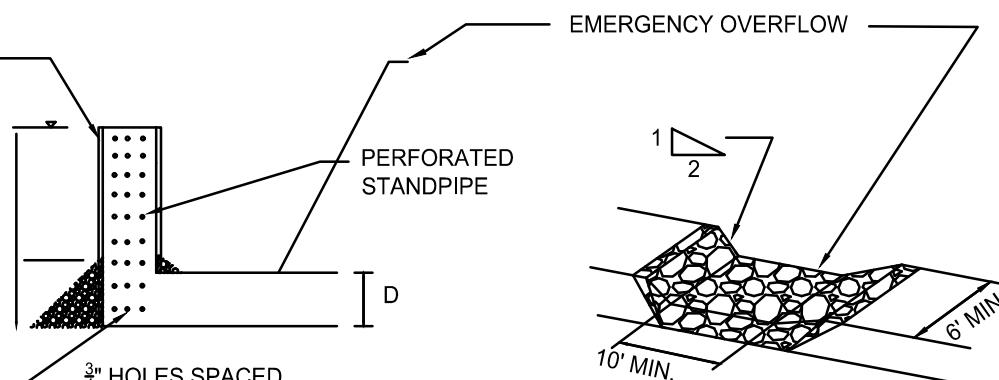


III. BASIN STANDPIPE AND EMERGENCY OVERFLOW

MONOFILAMENT GEOTEXTILE
FABRIC PER MNDOT TABLE
3886-1
(MACHINE SLICED)

1"-2" DIAM. ROCK, CONE
EQUAL TO $\frac{1}{3} Z$

NOTE:
PIPE MATERIAL SHOULD
BE RIGID



D = DIAMETER OF STANDPIPE EQUAL
TO DIAMETER OF PIPE



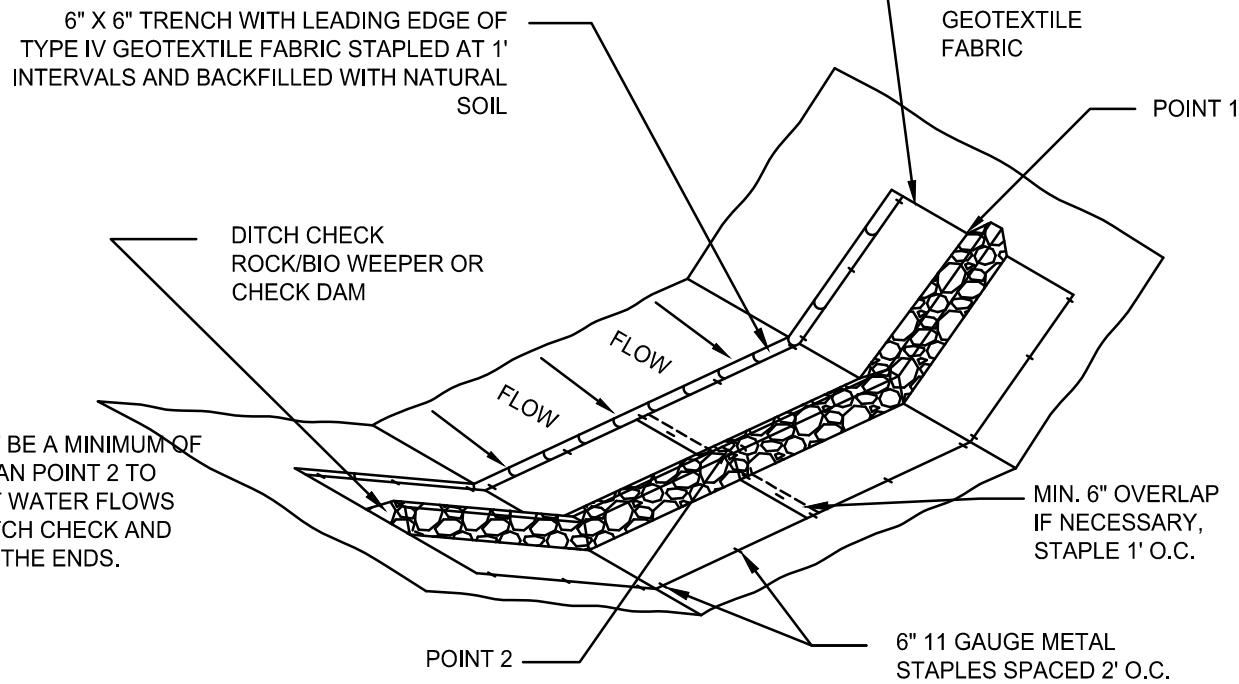
TEMPORARY SEDIMENTATION BASIN WITH STANDPIPE OUTLET

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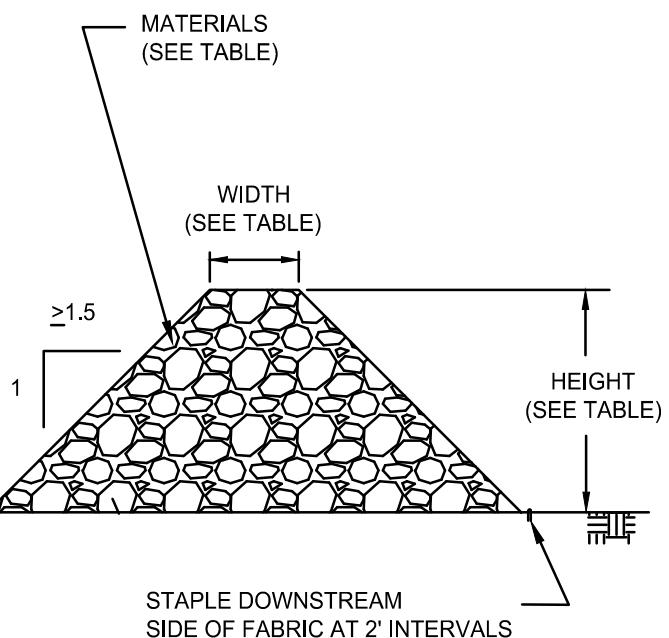
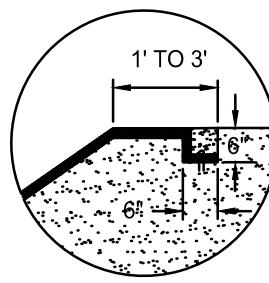
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	HEIGHT (INCHES)	WIDTH (INCHES)	MATERIAL
SMALL CHECK	24	12 - 18	MnDOT 3601 CLASS II RIP RAP
LARGE CHECK	36	24 - 30	MnDOT 3601 CLASS III RIP RAP
ROCK WEEPER	18	6 - 12	MnDOT 3882 TYPE 9 MULCH (1 1/2" WASHED ROCK)

ANCHOR TRENCH

1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT



TYPE IV GEOTEXTILE FABRIC ANCHORED IN 6" X 6" TRENCH WITH 6", 11 GAUGE METAL STAPLES AT 1' INTERVALS

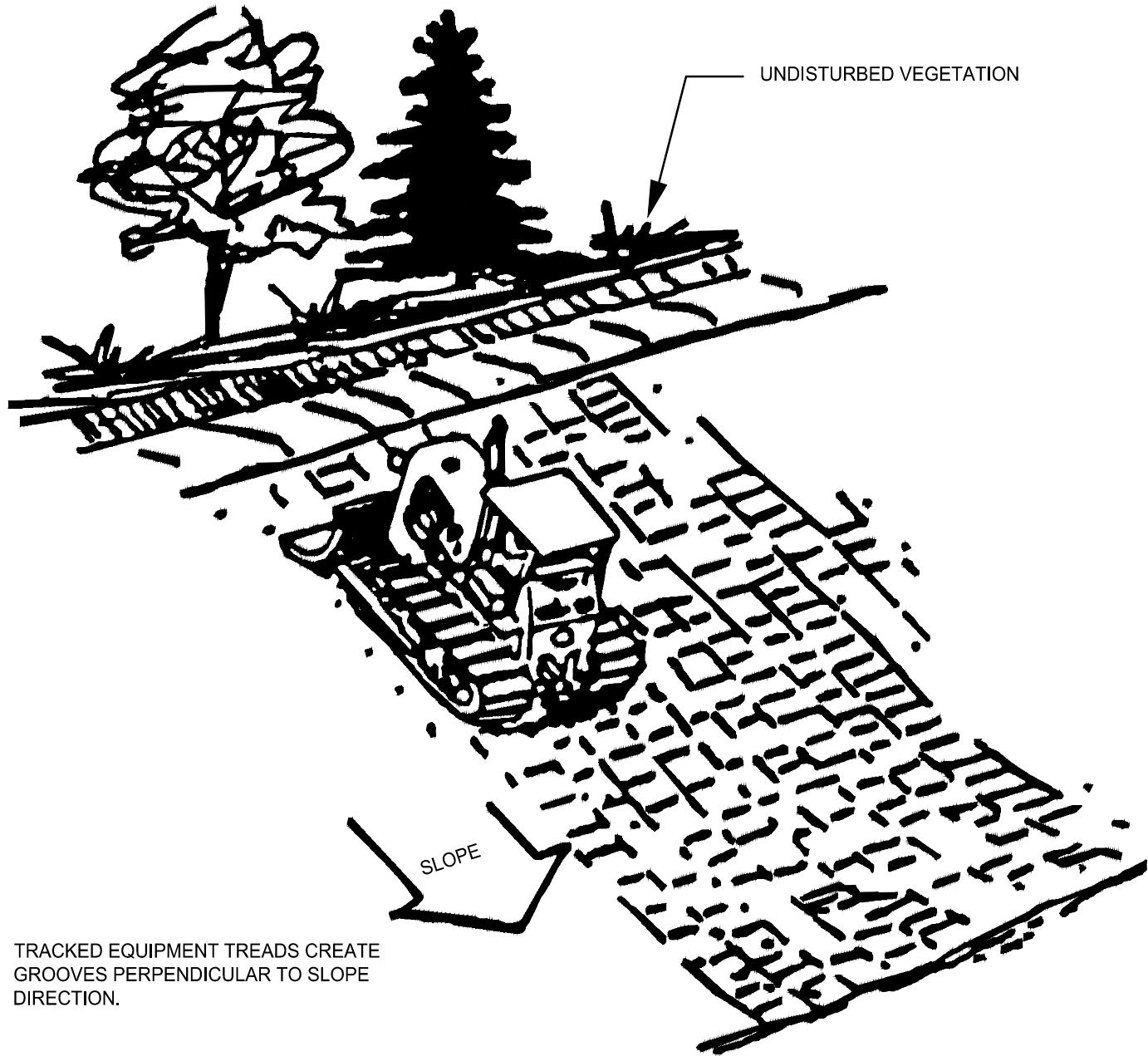
ROCK DITCH CHECK

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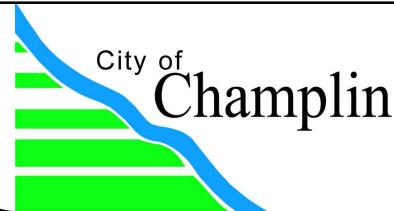
Revised:

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NOTE:

ALL SLOPES WITH A GRADE EQUAL TO OR STEEPER THAN 3:1 REQUIRE SLOPE TRACKING. SLOPES WITH A GRADE MORE GRADUAL THAN 3:1 REQUIRE SLOPE TRACKING IF THE STABILIZATION METHOD IS EROSION CONTROL BLANKET OR HYDROMULCH.



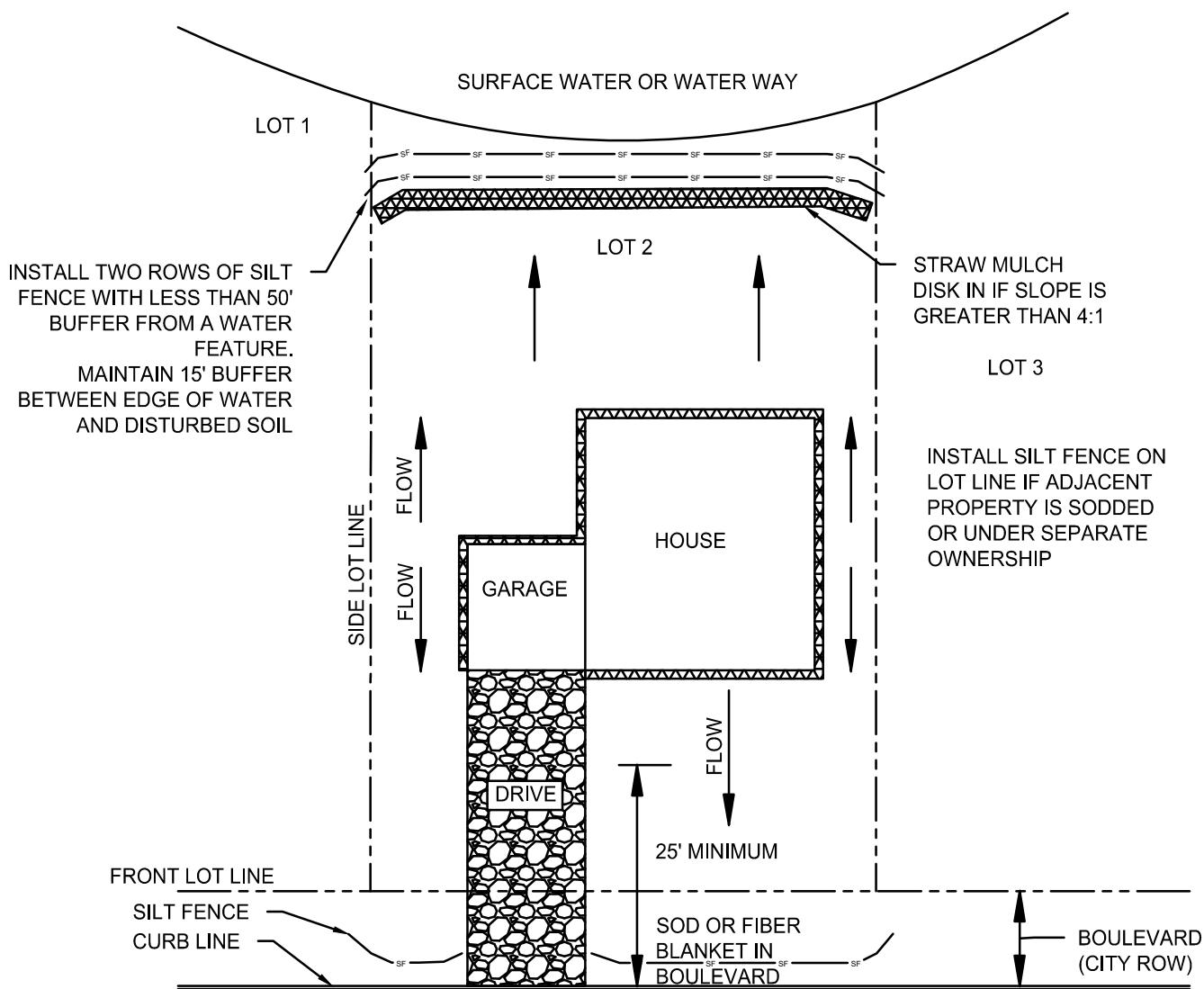
SLOPE TRACKING

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SEDIMENT CONTROL NOTES:

1. PERIMETER SEDIMENT CONTROLS ARE NECESSARY AT DOWN SLOPING PROPERTY AND STREET EDGES. SEDIMENT CONTROLS MUST PROVIDE CONTAINMENT BY TURNING PERIMETER CONTROLS UPSLOPE INTO PROPERTY.
2. PERIMETER CONTROLS CAN INCLUDE MULCH SOCKS, MULCH BERMS AND/OR SILT FENCE PROPERTY TRENCHED IN AND STAKED OR STABILIZED.

EROSION CONTROL NOTES:

1. SITE HAS A MINIMUM OF 4" TOPSOIL FOR FINAL STABILIZATION.
2. CONSTRUCTION ENTRANCE SHALL BE 3" CLEAN ROCK OR WOOD/MULCH PER SPECIFICATIONS AT A MINIMUM DEPTH OF 6" FOR ROCK AND 18" FOR WOOD/MULCH PER DETAIL ESC-01.
3. SLOPES GREATER THAN 4:1 NEED FIBER BLANKETS AND TEMPORARY OR PERMANENT SEEDING.
4. SWALES NEED CHECK DAMS OR BLANKETS.



EROSION CONTROL FOR
RESIDENTIAL LOTS WITH
WATERS

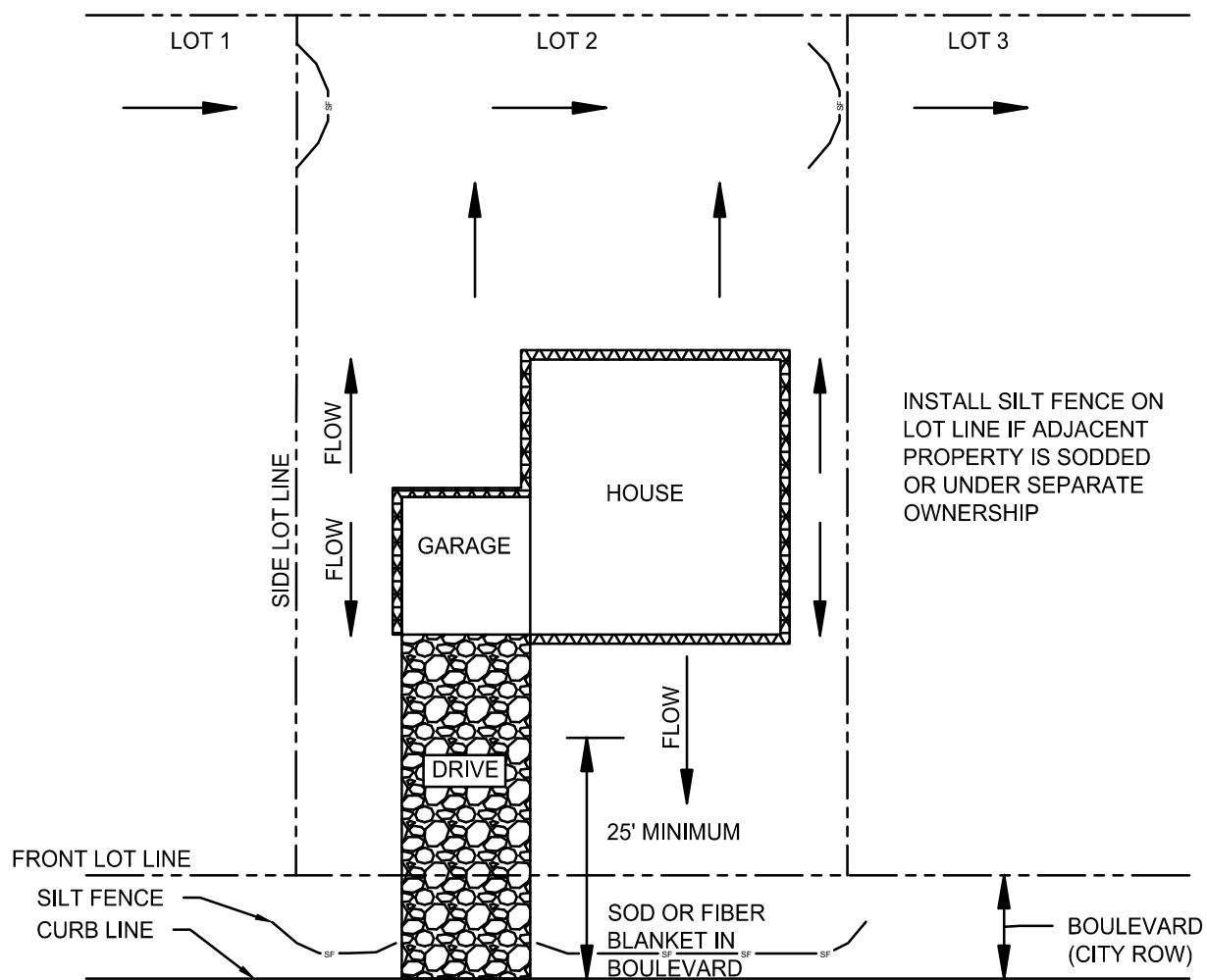
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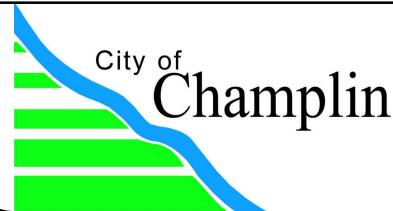


SEDIMENT CONTROL NOTES:

1. PERIMETER SEDIMENT CONTROLS ARE NECESSARY AT DOWN SLOPING PROPERTY AND STREET EDGES. SEDIMENT CONTROLS MUST PROVIDE CONTAINMENT BY TURNING PERIMETER CONTROLS UPSLOPE INTO PROPERTY.
2. PERIMETER CONTROLS CAN INCLUDE MULCH SOCKS, MULCH BERMS AND/OR SILT FENCE PROPERTY TRENCHED IN AND STAKED OR STABILIZED.

EROSION CONTROL NOTES:

1. SITE HAS A MINIMUM OF 4" TOPSOIL FOR FINAL STABILIZATION.
2. CONSTRUCTION ENTRANCE SHALL BE 3" CLEAN ROCK OR WOOD/MULCH PER SPECIFICATIONS AT A MINIMUM DEPTH OF 6" FOR ROCK AND 18" FOR WOOD/MULCH PER DETAIL ESC-01.
3. SLOPES GREATER THAN 4:1 NEED FIBER BLANKETS AND TEMPORARY OR PERMANENT SEEDING.
4. SWALES NEED CHECK DAMS OR BLANKETS.



**EROSION CONTROL FOR
RESIDENTIAL LOTS**

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SECTION 8 - MISCELLANEOUS

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STREET LIGHT - TYPE 1 (30' SHOEBOX)

STREET LIGHT - TYPE 2 (ARLINGTON LANTERN)

MAILBOX TYPE SPECIAL

SINGLE MAILBOX

CLUSTER MAILBOX



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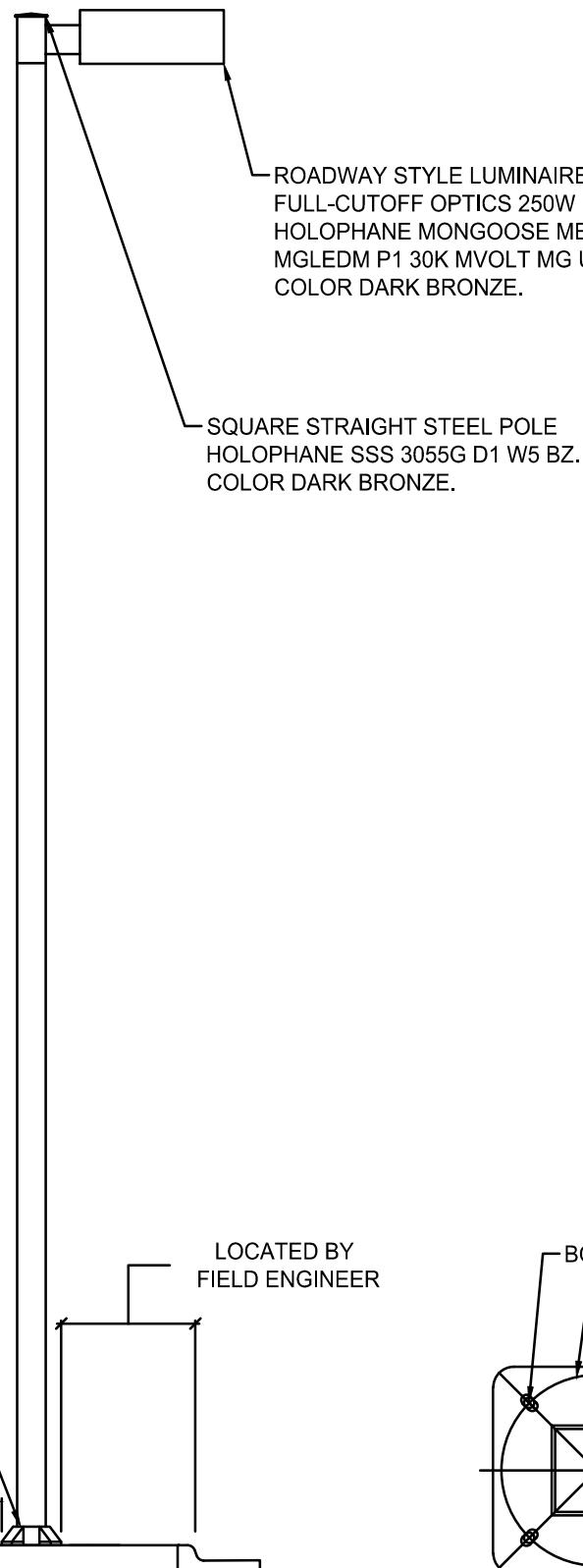
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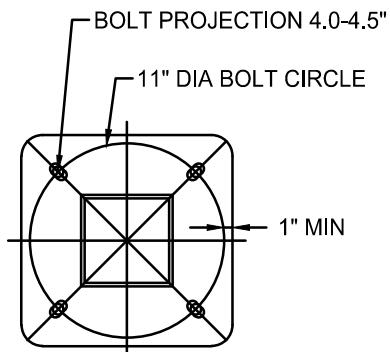
NOTES:

- 1) CONTRACTOR SHALL VISIT SITE & BECOME FAMILIAR WITH EXISTING CONDITIONS PRIOR TO BIDDING.
- 2) CONDUCTOR INSULATION SHALL BE RED, BLACK, WHITE, OR GREEN AS SHOWN. THE USE OF TAPE SLEEVES OR OTHER TYPES OF COLOR IDENTIFICATION IS NOT PERMITTED.
- 3) ALL RACEWAYS SHALL HAVE MINIMUM BURIAL DEPTH OF 24" & SHALL HAVE YELLOW WARNING TAPE INSTALLED 6" ABOVE RACEWAY.
- 4) 2" SCHEDULE 80 PVC TO BE PLACED UNDER DRIVEWAYS, TRAILS, BOULEVARDS, SIDEWALKS, AND ROADWAYS.
- 5) ALL LIGHT FOUNDATIONS AND CABINETS MUST BE PLACED A MINIMUM OF 2 FEET CLEAR OF ALL TRAILS/WALKS.
- 6) COORDINATE CONDUIT CROSSING INSTALLATION WITH ROADWAY CONSTRUCTION



LIGHTING UNIT TYPE SPECIAL 1
(1X-30 SHOE BOX)

LIGHTING FOUNDATION BOLT CIRCLE



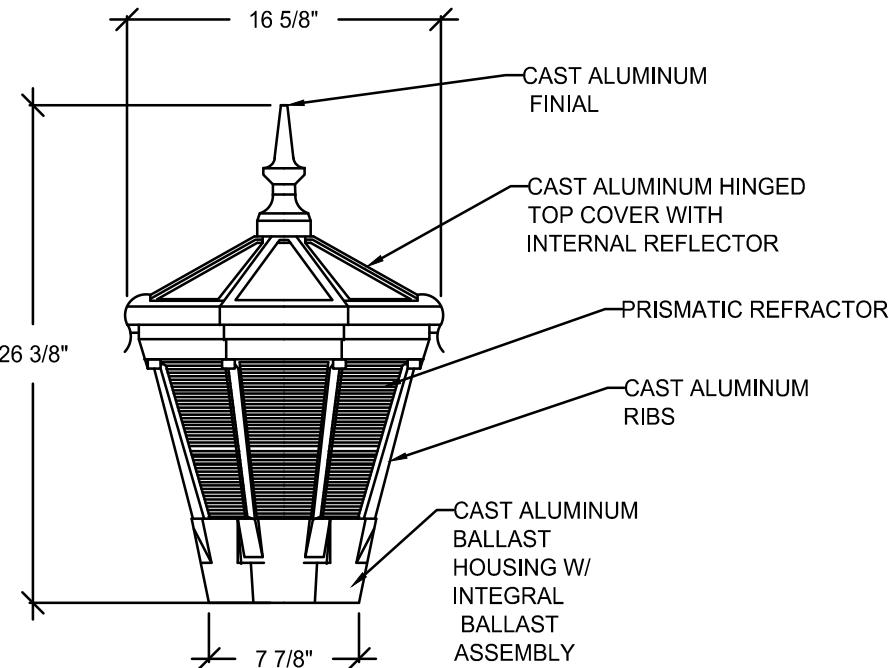
STREET LIGHT - TYPE 1
(30' SHOEBOX)

STANDARD DETAILS

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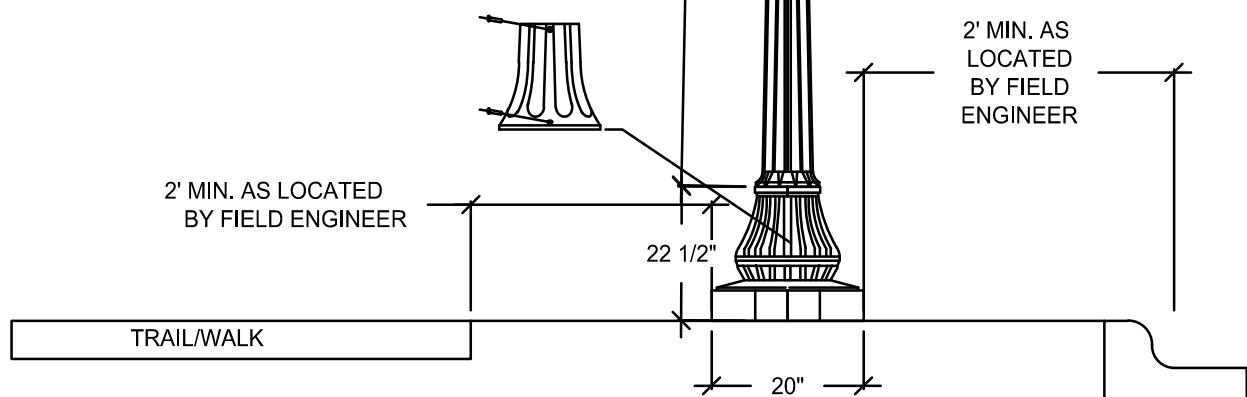
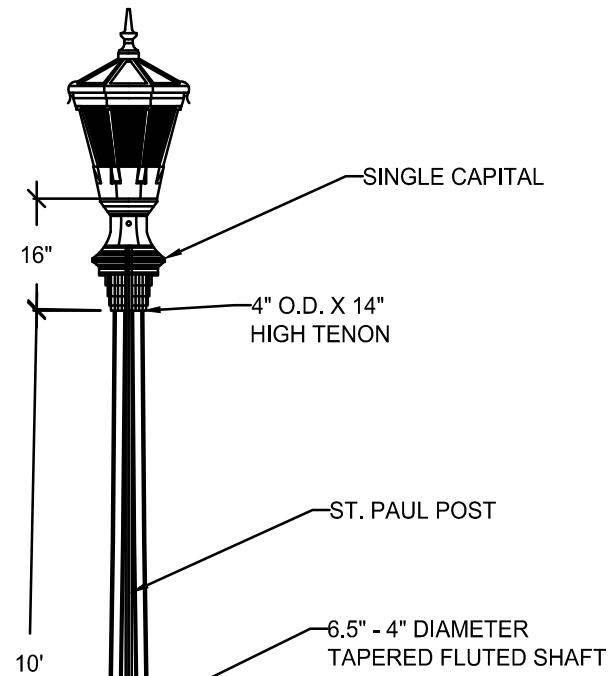
Revised:

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ARLINGTON STYLE LUMINAIRE: HOLOPHANE UTILITY
 ST. PAUL SERIES POSTOP LUMINAIRE
 OCTAGONAL STYLE CASTING
 ARE2P2030KASGL2BKS
 COLOR BLACK
 3000K
 55 WATTS

LATERN DETAIL



NOTES:

1. ENGINEER TO DETERMINE LOCATION IN FIELD
2. MOUNT TO: LIGHT FOUNDATION DESIGN E MODIFIED
3. CAST ALUMINUM POST TYPE HOLOPHANE: ST. PAUL STYLE -DARK BRONZE - SUPPLIED BY THE CITY

LIGHTING UNIT TYPE SPECIAL 2



STREET LIGHT - TYPE 2
 (ARLINGTON LANTERN)

STANDARD DETAILS

Date:

01/12/2023

Revised:

MSC-02



NOTES:

1. MAIL BOXES SHALL BE SALVAGED AND TEMPORARILY RELOCATED AT A LOCATION DESIGNATED BY THE POST OFFICE FOR USE DURING CONSTRUCTION.
2. AT COMPLETION OF CONSTRUCTION REINSTALL MAIL BOX AS DIRECTED BY THE ENGINEER.
3. INSTALL MAIL BOX WITH 4' FOOTING USING AN 18" SAND TUBE OR MATCH EXISTING FOOTING.



MAILBOX TYPE SPECIAL

STANDARD DETAILS

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01/12/2023

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MSC-03

19" L x 6 1/2" W x 8 3/4" H BLACK GALVANIZED
RUST-RESISTANT STEEL MAILBOX, FULLY
ASSEMBLED WITH FLAG AND DOOR CLIPS

WHITE VINYL
ADDRESS LABEL

12956

BLACK PLASTIC
NEWSPAPER HOLDER

BLACK PLASTIC
NEWSPAPER HOLDER

(2) 4" x 4" XGUARD BROWN
PRESSURE TREATED WOOD

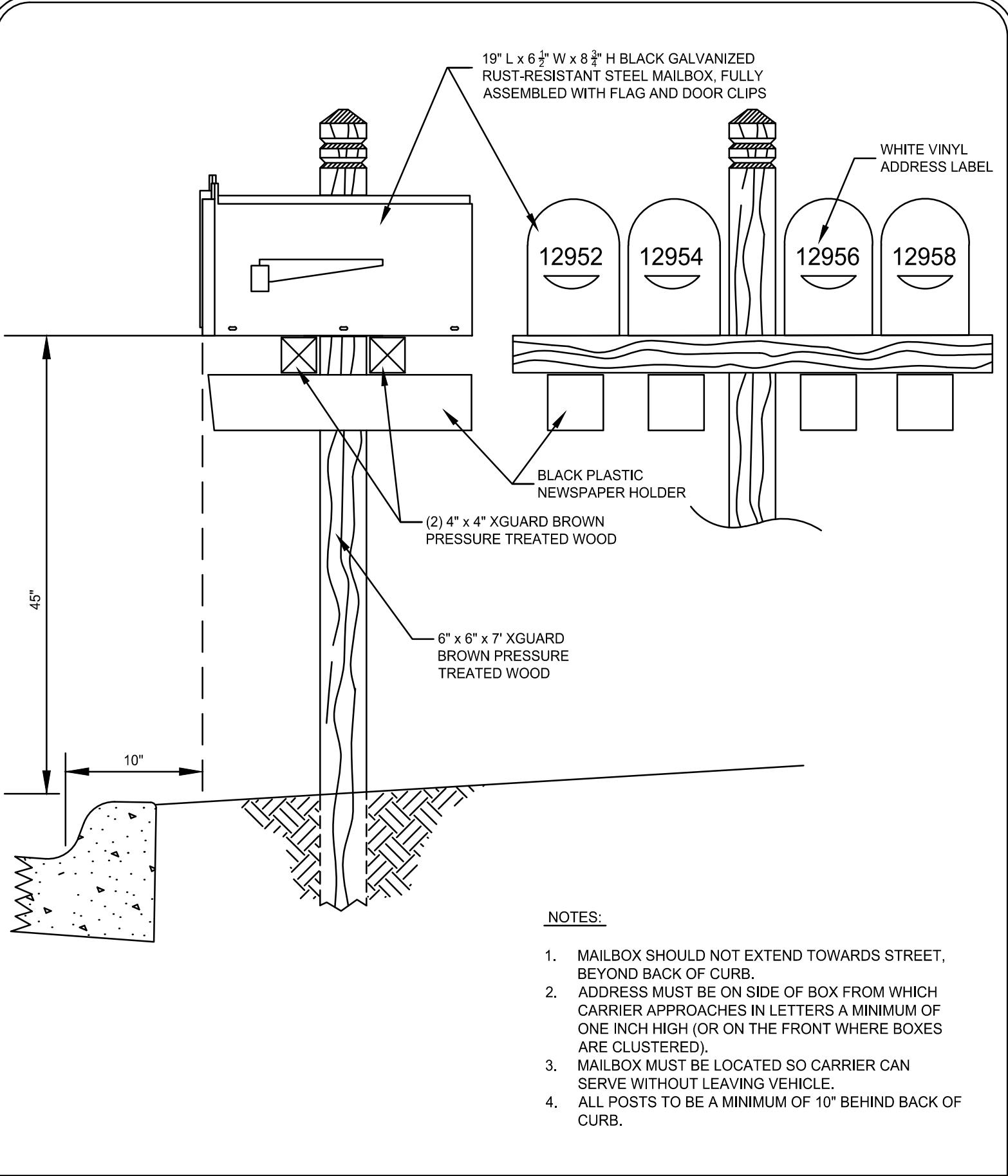
6" x 6" x 7' XGUARD
BROWN PRESSURE
TREATED WOOD

45"

10"

NOTES:

1. MAILBOX SHOULD NOT EXTEND TOWARDS STREET, BEYOND BACK OF CURB.
2. ADDRESS MUST BE ON SIDE OF BOX FROM WHICH CARRIER APPROACHES IN LETTERS A MINIMUM OF ONE INCH HIGH (OR ON THE FRONT WHERE BOXES ARE CLUSTERED).
3. MAILBOX MUST BE LOCATED SO CARRIER CAN SERVE WITHOUT LEAVING VEHICLE.
4. ALL POSTS TO BE A MINIMUM OF 10" BEHIND BACK OF CURB.



City of Champlin	CLUSTER MAILBOX	STANDARD DETAILS	
		Date: 01/12/2023	MSC-05
		Revised:	

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SECTION 2 - SANITARY SEWER

INDEX
SANITARY SEWER MANHOLE - STANDARD
MANHOLE TOP SLAB
SANITARY SEWER MANHOLE - DROP INLET
WATERTIGHT CASTING
SANITARY SEWER SERVICE



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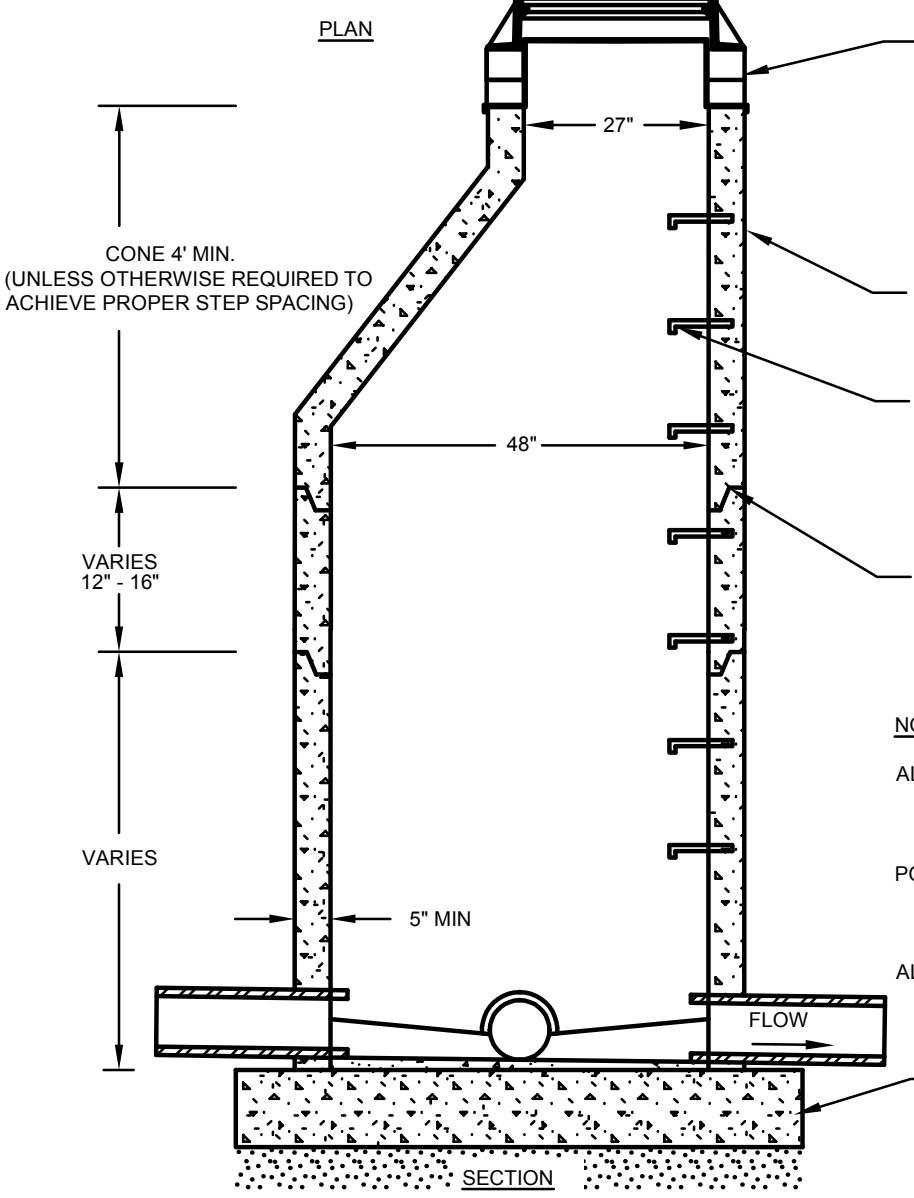
PRECAST INVERT MUST BE $\frac{1}{2}$ DIAMETER OF PIPE AND BRANCHES SHOULD BE SLOPED 2" TOWARD INVERT.

MANHOLE STEPS SHALL BE PLACED SO THAT OFFSET VERTICAL PORTION OF CONE IS FACING DOWNSTREAM

RUBBER EXTERNAL SEAL SHALL BE INSTALLED IN CONJUNCTION WITH ADJUSTING RINGS AND CASTING ASSEMBLY PLATE STM-18

NEENAH MANHOLE FRAME AND CASTING R-1733, SELF SEALING B LID, WITH SOLID COVER AND TWO CONCEALED PICK HOLES OR APPROVED EQUAL. LID SHALL BE LABELED "SANITARY SEWER" WITH 2" RAISED LETTERS

CONCRETE ADJUSTING RINGS ARE REQUIRED. CONCRETE ADJUSTMENT RINGS SHALL BE SEALED TO THE CASTING, AND ONE ANOTHER BY USING A PREPACKAGED MOTOR MIX. CONTRACTOR WILL INSTALL MINIMUM NUMBER OF CONCRETE RINGS BY THE USE OF 2", 6" OR 1' ADJUSTING RINGS. THE MAXIMUM HEIGHT OF RINGS IS 2' AND MINIMUM HEIGHT IS 4".



PRECAST ECCENTRIC CONE SECTION & RISER SECTIONS AS CONFORMING TO ASTM C478

MANHOLE STEPS, NEENAH R-1981-N OR APPROVED EQUAL, 16" ON CENTER. COPOLYMER POLYPROPYLENE PLASTIC (PSI-PF) AND ALUMINUM STEPS APPROVED.

JOINTS BETWEEN PRECAST SECTIONS SHALL USE PRELUBRICATED PROFILE GASKETS CONFORMING TO ASTM C443. WRAP EXTERIOR BARREL JOINT WITH 6" RUBBER MASTIC SEALER (GATOR WRAP OR APPROVED EQUAL)

NOTES:

ALL WATER TIGHT PIPE CONNECTIONS SHALL CONFORM TO ASTM C923 FOR CONNECTIONS BETWEEN MAINTENANCE HOLE STRUCTURES AND PIPES.

POSITIVE MECHANICAL SEALS SHALL BE KOR-N-SEAL FOR PIPES 24" AND SMALLER. GREATER THAN 24" SHALL BE A-LOK X-CEL.

ALL DOG HOUSES SHALL BE GROUTED ON BOTH INSIDE AND OUTSIDE



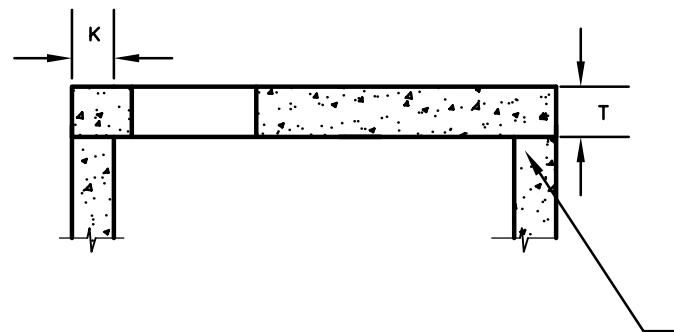
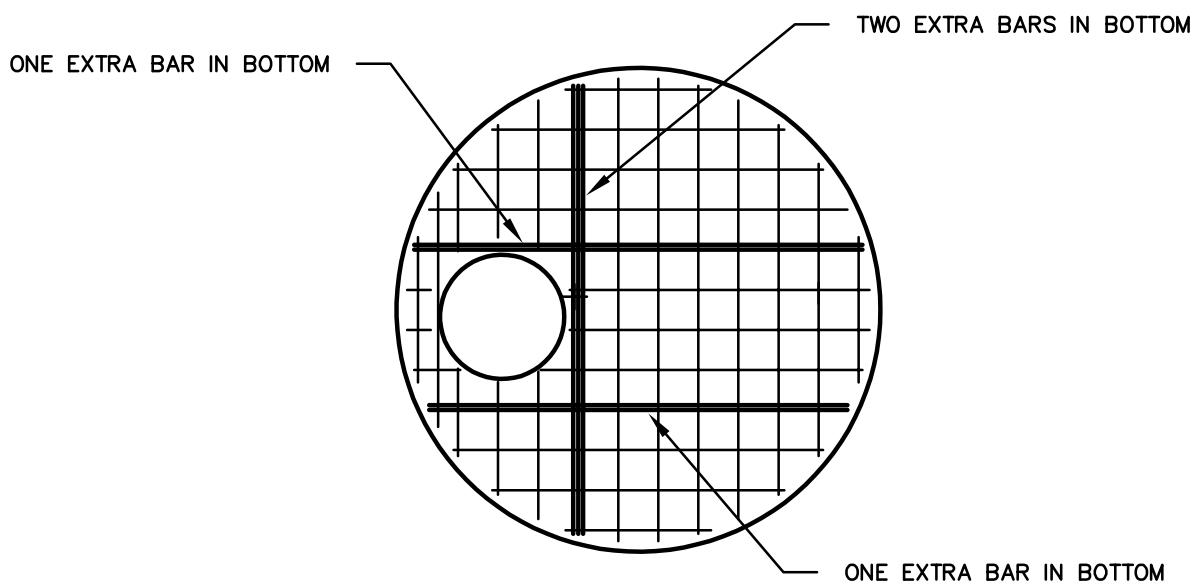
SANITARY SEWER
MANHOLE - STANDARD

STANDARD DETAILS

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01/12/2023

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JOINTS BETWEEN PRECAST
SECTIONS SHALL USE
PRELUBRICATED PROFILE
RUBBER GASKETS
CONFORMING TO ASTM C443.

COVER REQUIREMENTS				
COVER DIAMETER	T	K	BOTTOM BARS	TOP BARS
56"	6"	6"	NO. 5 - 6"	X
65"	8"	6"	NO. 5 - 6"	X
72"	8"	7"	NO. 5 - 4"	NO. 3 - 6"
79"	8"	7"	NO. 5 - 4"	NO. 3 - 6"
85"	8"	8"	NO. 5 - 4"	NO. 3 - 6"
93"	8"	8"	NO. 5 - 4"	NO. 5 - 4"
100"	8"	9"	NO. 5 - 4"	NO. 5 - 4"
106"	8"	9"	NO. 5 - 4"	NO. 5 - 4"
113"	8"	9"	NO. 5 - 4"	NO. 5 - 4"
119"	8"	9"	NO. 5 - 4"	NO. 5 - 4"

1" MINIMUM COVER ON REBAR



MANHOLE TOP SLAB

STANDARD DETAILS

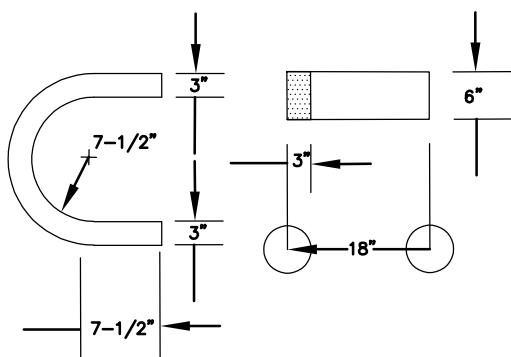
Date:
01/12/2023

Revised:

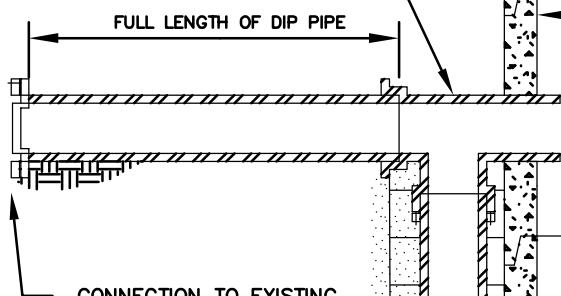
SAN-02

NEENAH MANHOLE FRAME AND CASTING R-1733, SELF SEALING B LID, WITH SOLID COVER AND TWO CONCEALED PICK HOLES OR APPROVED EQUAL. LID SHALL BE LABELED "SANITARY SEWER" WITH 2" RAISED LETTERS

HORSESHOE DETAILS



TEE AND 90 DEGREE BEND SHALL BE DIP.



CONNECTION TO EXISTING PIPE TO BEAR ON UNDISTURBED SOIL.

DIP PIPE AND FITTINGS TO BE USED FOR DROP SECTION. DROP SECTION PIPE SIZE TO BE EQUIVALENT TO INLET PIPE SIZE.

INSTALL HORSESHOES AROUND DROP AND FILL WITH MIXED CONCRETE MORTAR OR DRY MIX AROUND ALL SIDES.

NOTES:

ALL WATER TIGHT PIPE CONNECTIONS SHALL CONFORM TO ASTM C923 FOR CONNECTIONS BETWEEN MAINTENANCE HOLE STRUCTURES AND PIPES.

POSITIVE MECHANICAL SEALS SHALL BE KOR-N-SEAL FOR PIPES 24" AND SMALLER. GREATER THAN 24" SHALL BE A-LOK X-CEL.

PRECAST INVERT SHOULD BE $\frac{1}{2}$ Ø OF PIPE SLOPED 2" TOWARD INVERT

ALL DOG HOUSES SHALL BE GROUTED ON THE INSIDE AND THE OUTSIDE

RUBBER EXTERNAL SEAL SHALL BE INSTALLED IN CONJUNCTION WITH ADJUSTING RINGS AND CASTING ASSEMBLY PLATE STM-18

CONCRETE ADJUSTING RINGS ARE REQUIRED. CONCRETE ADJUSTMENT RINGS SHALL BE SEALED TO THE CASTING, AND ONE ANOTHER BY USING A PREPACKAGED MOTOR MIX. CONTRACTOR WILL INSTALL MINIMUM NUMBER OF CONCRETE RINGS BY THE USE OF 2", 6" OR 1' ADJUSTING RINGS. THE MAXIMUM HEIGHT OF RINGS IS 2' AND MINIMUM HEIGHT IS 4".

PRECAST REINFORCED ECCENTRIC CONE & RISER SECTIONS AS CONFORMING TO ASTM C478.

JOINTS BETWEEN PRECAST SECTIONS SHALL USE PRELUBRICATED PROFILE GASKETS CONFORMING TO ASTM C443. WRAP EXTERIOR BARREL JOINT WITH 6" RUBBER MASTIC SEALER (GATOR WRAP OR APPROVED EQUAL)

MANHOLE STEPS, NEENAH R-1981-N OR APPROVED EQUAL, 16" ON CENTER. COPOLYMER POLYPROPYLENE PLASTIC (PSI-PF) AND ALUMINUM STEPS APPROVED.

POSITIVE MECHANICAL SEAL STAINLESS STEEL EXTERNAL CLAMP WITH DRAW NUTS AND BOLTS

MINIMUM SLAB THICKNESS IS 6" FOR 14' DEPTH. INCREASE THICKNESS 1" FOR EVERY 4' OF DEPTH GREATER THAN 14'. REINFORCE AS PER MN/DOT STD PLATE 4011.

**SANITARY SEWER
MANHOLE - DROP INLET**

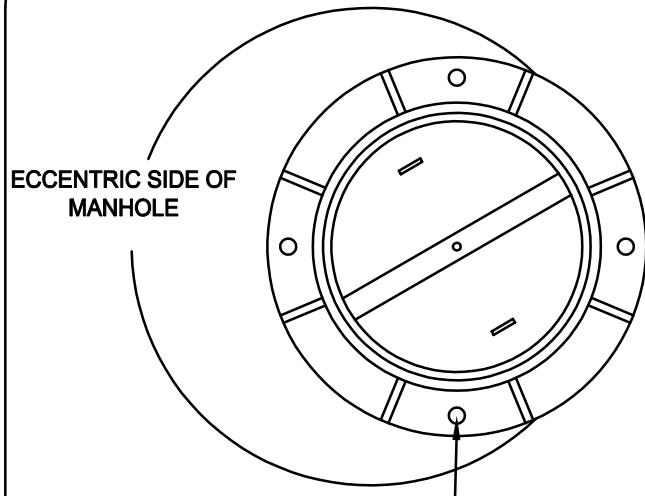


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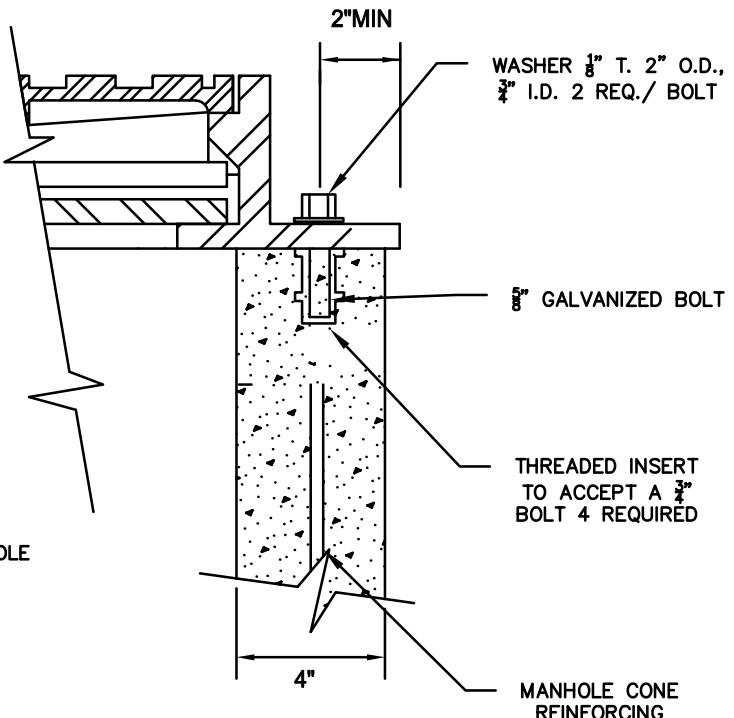
SAN-03



ECCENTRIC SIDE OF
MANHOLE

4-1" DIA. HOLES IN MANHOLE
FRAME EVENLY SPACED

PLAN VIEW TOP COVER REMOVED



2" MIN

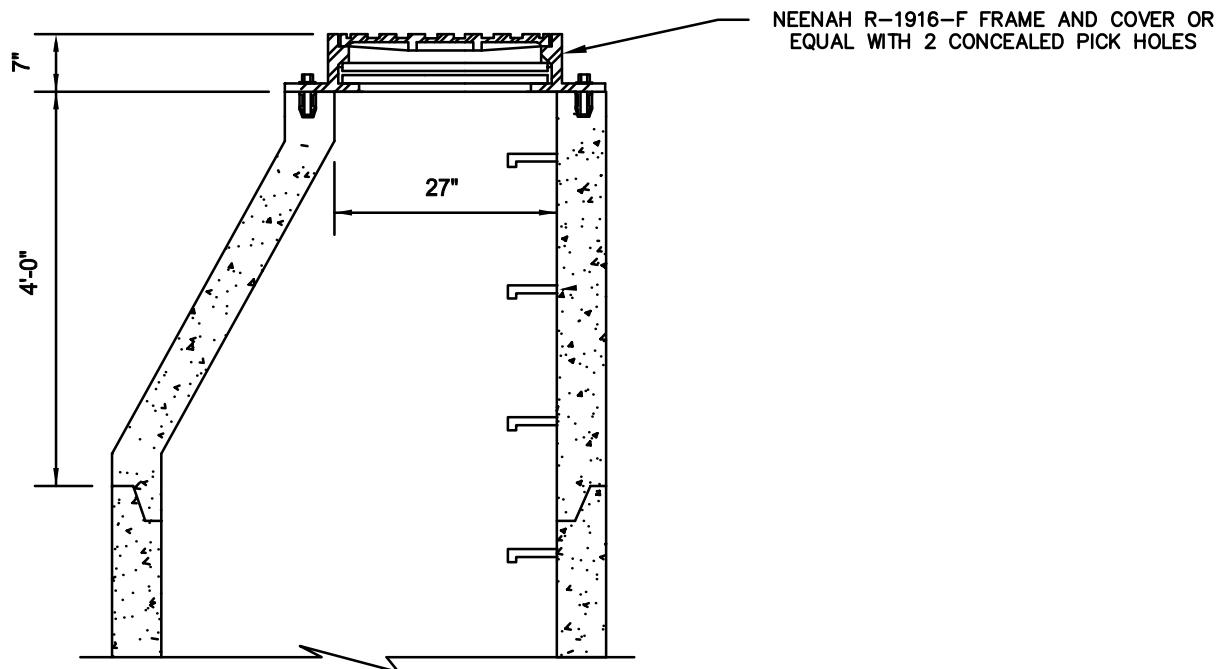
WASHER $\frac{1}{8}$ " T. 2" O.D.,
 $\frac{3}{4}$ " I.D. 2 REQ./ BOLT

5/8" GALVANIZED BOLT

THREADED INSERT
TO ACCEPT A $\frac{3}{4}$ "
BOLT 4 REQUIRED

MANHOLE CONE
REINFORCING

TIE DOWN DETAIL



ECCENTRIC WATERTIGHT MANHOLE



City of
Champlin

WATERTIGHT CASTING

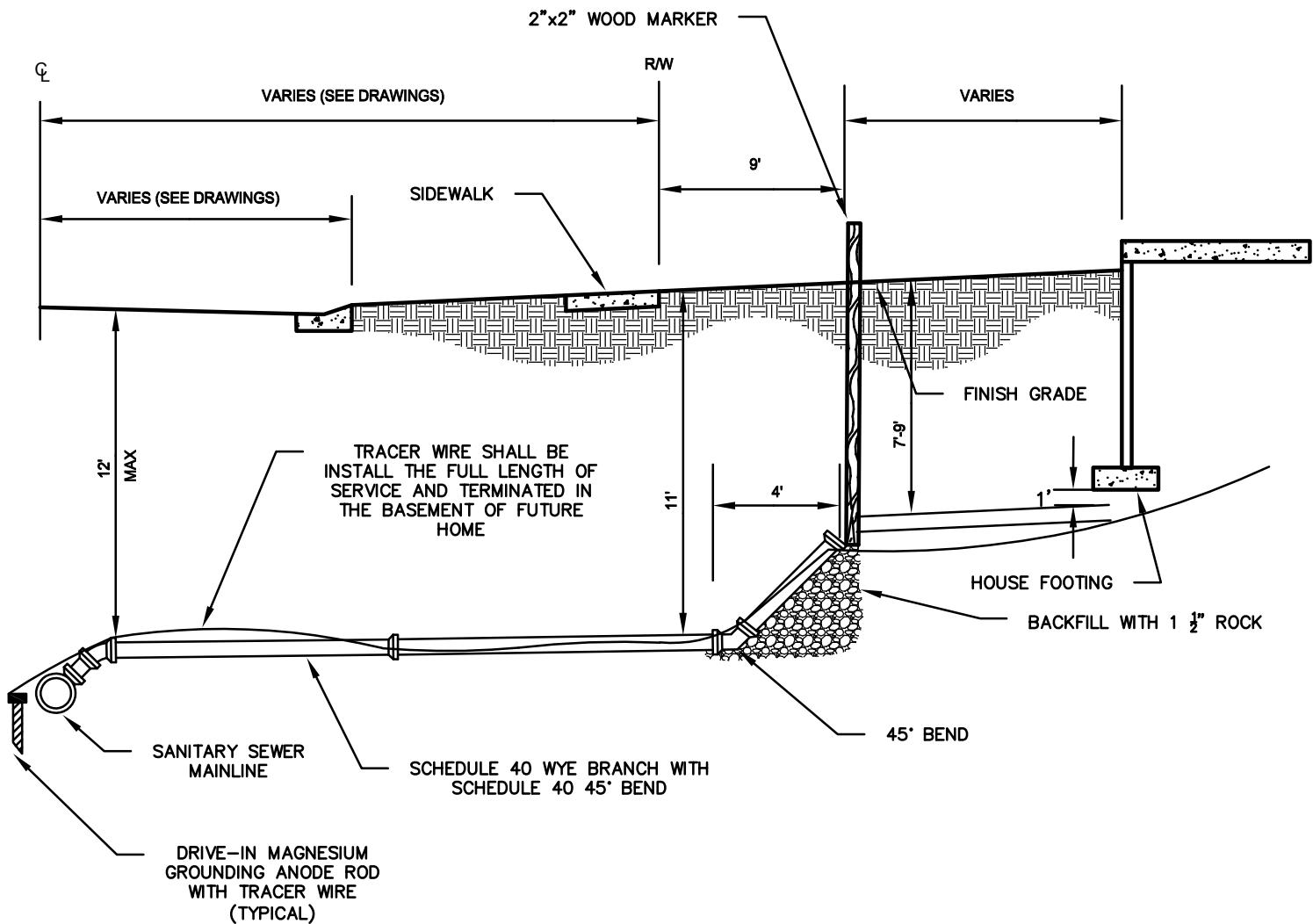
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NOTES:

SANITARY AND WATER SERVICES LINES SHALL BE INSTALLED IN THE SAME TRENCH WITH MAXIMUM OF 3' OF SEPARATION. THE SANITARY SHALL BE DOWNSTREAM OF THE WATER.

SEWER SERVICE, PVC SCHEDULE 40 4" OR 6" AS SPECIFIED

2% MINIMUM SLOPE OR 12% MAXIMUM SLOPE, $\frac{1}{12}$ " PER FOOT

ALL PIPE SHALL BEDDED IN GRANULAR BORROW 3149 B.1 OR COURSE FILTER AGGREGATE 3149H

END OF SERVICE SHALL BE 7' TO 9' DEEP AT END OF SERVICE OR GIVEN IN THE PLANS BY THE ENGINEER. THE END SHALL BE A FACTORY JOINT WITH PLUG, USING A FACTORY MANUFACTURED ADAPTOR WHERE NECESSARY

TRACER WIRE SHALL BE COILED UP AT RIGHT OF WAY FOR FUTURE USE. WHEN CONTRACTOR CONNECTS TO SERVICE FOR FUTURE HOME THEY SHALL RUN A NEW GREEN WIRE INTO THE BASEMENT AND TERMINATE AT CITY WATER METER. ALL SPLICES SHALL BE WATER TIGHT



SANITARY SEWER SERVICE

STANDARD DETAILS

Date:

1/12/2023

Revised:

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SECTION 5 - STORM SEWER

INDEX
FLARED END SECTION
PIPE APRON - SHEET PILING (HEADWALL)
SUBSURFACE DRAIN
SUBSURFACE DRAIN EXISTING CURB AND GUTTER
DRAIN TILE - STUB FOR RESIDENTIAL SERVICE
SUMP DISCHARGE TO STORM SEWER
CATCH BASIN - 2X3
CATCH BASIN - MANHOLE
STORM SEWER MANHOLE
MANHOLE - WITH SUMP
ADJUST FRAME & RING CASTING



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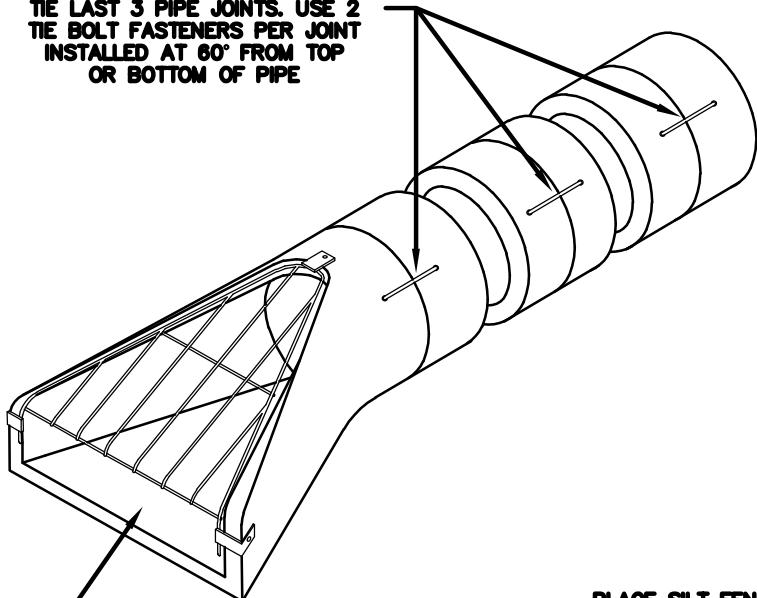
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05/01/2020

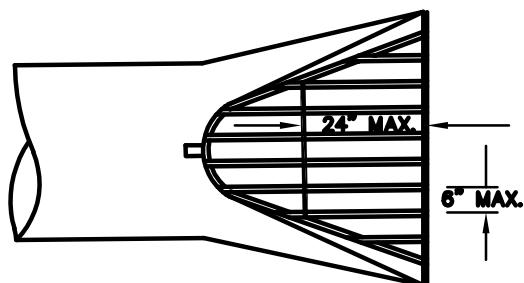
Revised:

STM-00

TIE LAST 3 PIPE JOINTS. USE 2 TIE BOLT FASTENERS PER JOINT INSTALLED AT 60° FROM TOP OR BOTTOM OF PIPE



CONTRACTOR WILL NEED TO REMOVE THE VERTICAL BARS FROM THE TRASH GUARD ON ALL OUTLET FES. LEAVE THE TRASH GUARD AS NORMAL ON ALL INLET FES



PIPE SIZE	RIP RAP
12" TO 18"	4 CUBIC YARDS CL. 3
21" TO 27"	8 CUBIC YARDS CL. 3
30" TO 36"	12 CUBIC YARDS CL. 3
42" TO 48"	16 CUBIC YARDS CL. 3
54" AND UP	20 CUBIC YARDS CL. 4

PIPE SIZE	BAR SIZE	"H"	BOLT SIZE
12" TO 18"	3/4"	6"	5/8"
21" TO 42"	1"	6"	3/4"
48" TO 72"	1 1/4"	12"	1"



NOTES:

RIP RAP AS SPECIFIED IN MNDOT STANDARD SPECS. 2511.3 AND 3601.2.

RIP RAP QUANTITY SHALL BE IN ACCORDANCE WITH MNDOT STANDARD PLATE 3133.

PROVIDE 3 CLIPS TO FASTEN TRASH GUARD TO FLARED END.

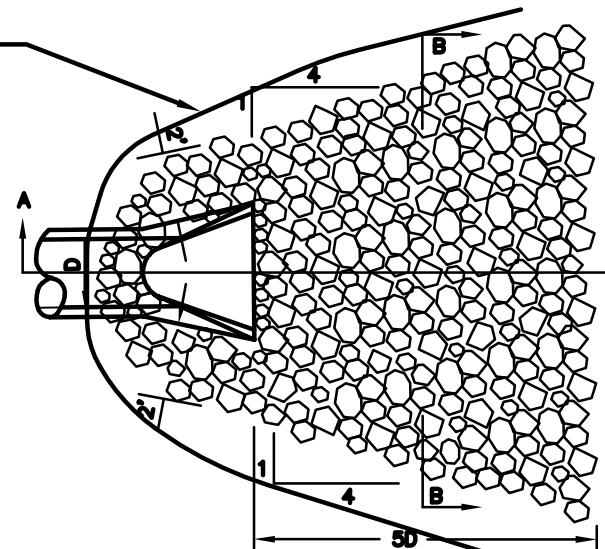
TRASH GUARD TO BE HOT DIP GALVANIZED AFTER FABRICATION.

SIZED OUTLETS AT THE DISCRETION OF THE ENGINEER.

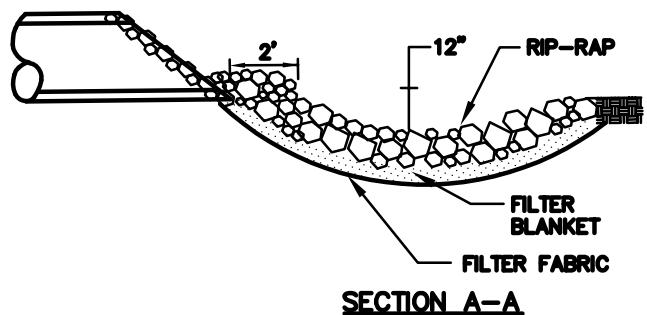
IF THE PLANS CALL FOR A HDPE FLARED END SECTION THE CONTRACTOR SHALL SUPPLY A STAINLESS STEEL THREADED ROD, WASHERS AND WING NUTS INSTEAD OF THE PLASTIC ONES THAT COME WITH THE FES.

TRASH GUARDS TO BE INSTALLED ON 18" OR LARGER SIZE INLETS AND OUTLETS. IF ON OUTLETS CONTRACTOR SHALL REMOVE VERTICAL BARS TO ALLOW LARGER OPENING

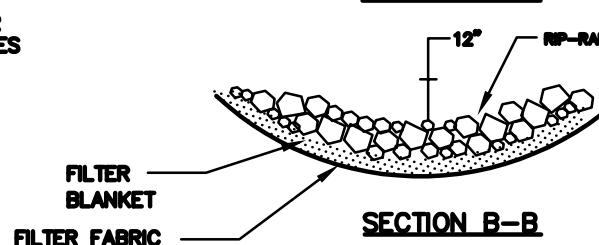
PLACE SILT FENCE



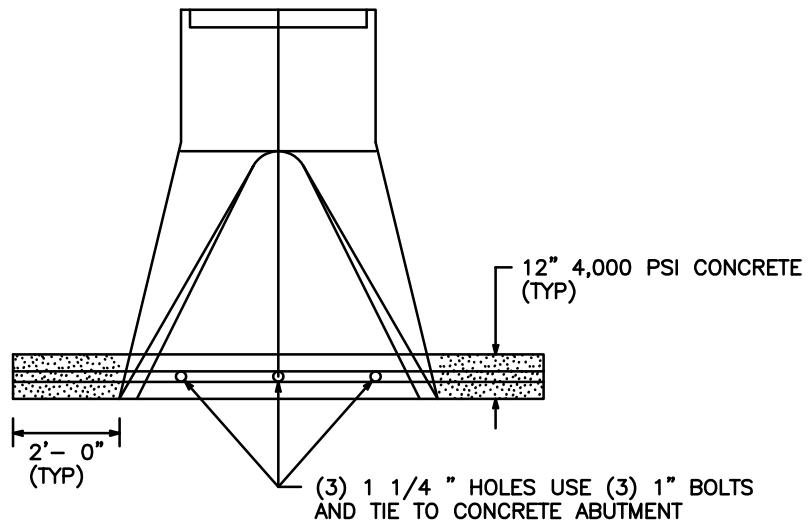
PLAN VIEW



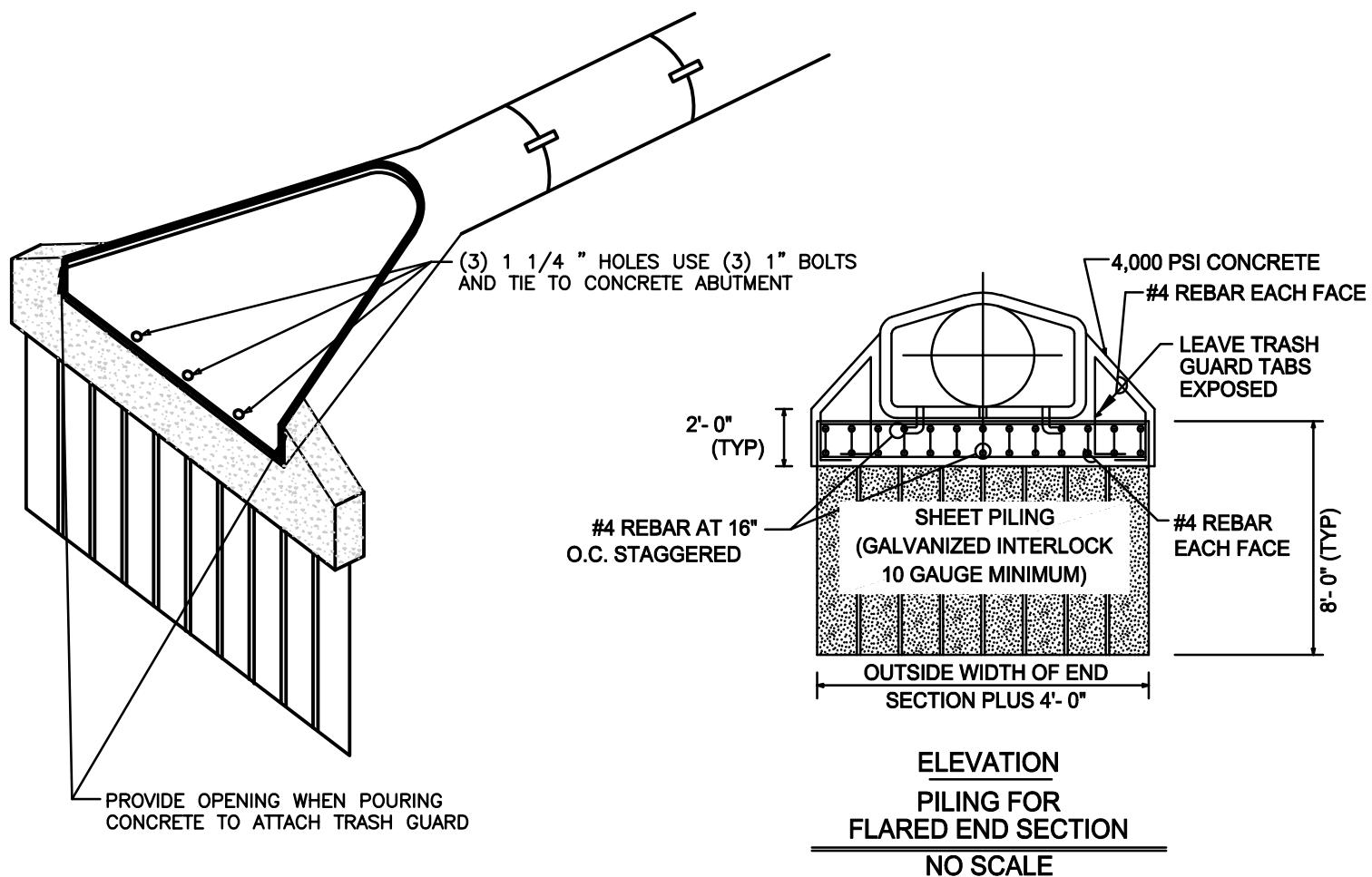
SECTION A-A



SECTION B-B



PLAN



ELEVATION
PILENG FOR
FLARED END SECTION
NO SCALE



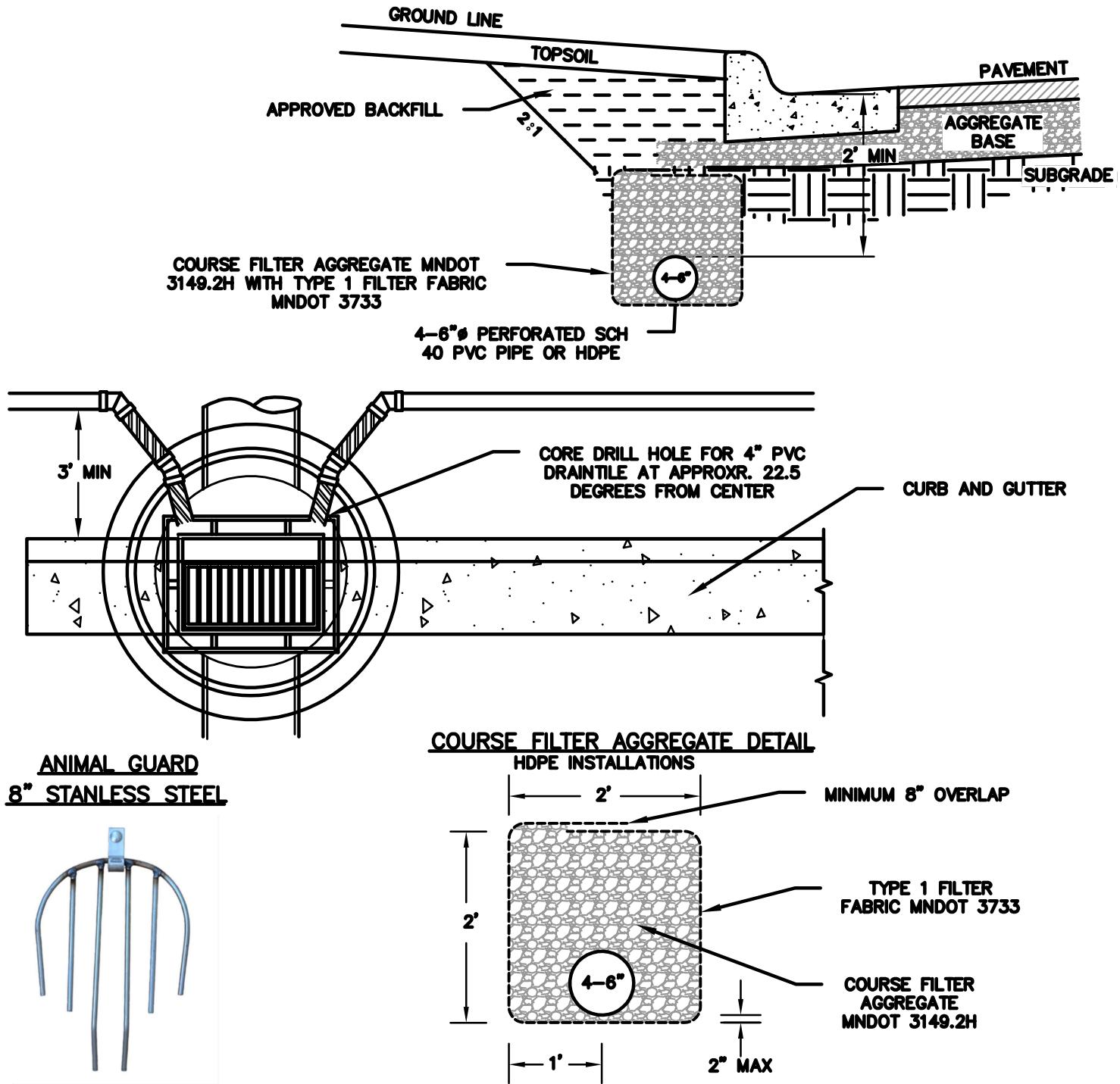
**PIPE APRON - SHEET
PILENG (HEADWALL)**

STANDARD DETAILS

Date:
1/23/2023

Revised:

STM-02



NOTES:

2" MAX. DEPTH OF FINE (OR COURSE) FILTER AGGREGATE AT ALL POINTS BELOW PIPE.

THE PIPE FOR BOTH INSTALLATIONS MUST BE A 4" OR 6" PERFORATED PIPE (SCH 40 PVC OR HDPE).

WHEN USING THE COURSE FILTER AGGREGATE BASE THE TRENCH MUST BE LINED WITH TYPE 1 FILTER FABRIC MEETING MN/DOT SPEC. 3733

CONTRACTOR SHALL INSTALL ANIMAL GUARDS AT ALL CONNECTIONS TO THE STORM SEWER SYSTEM



SUBSURFACE DRAINS

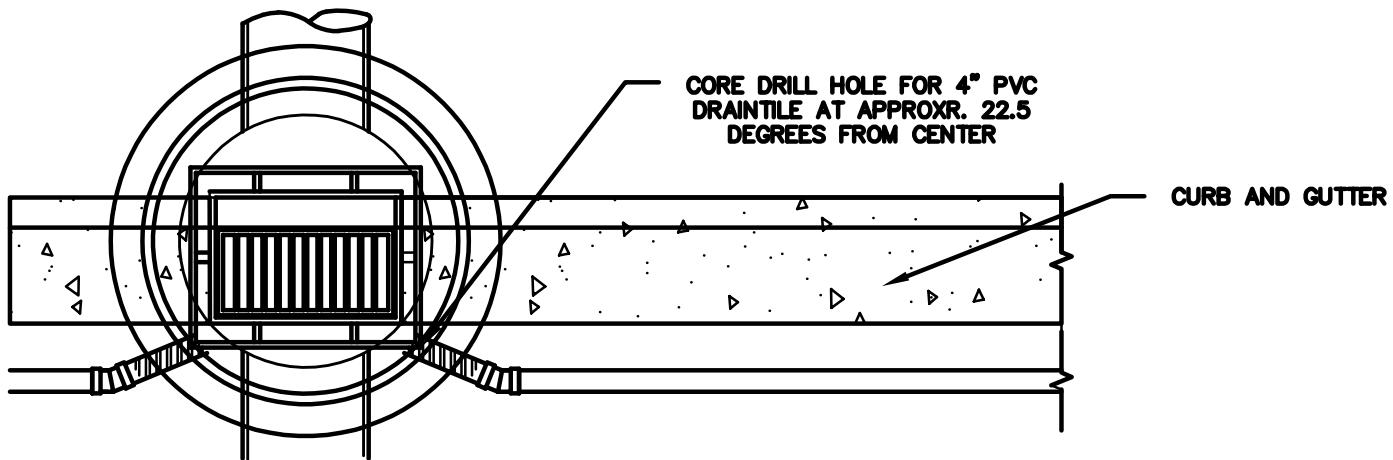
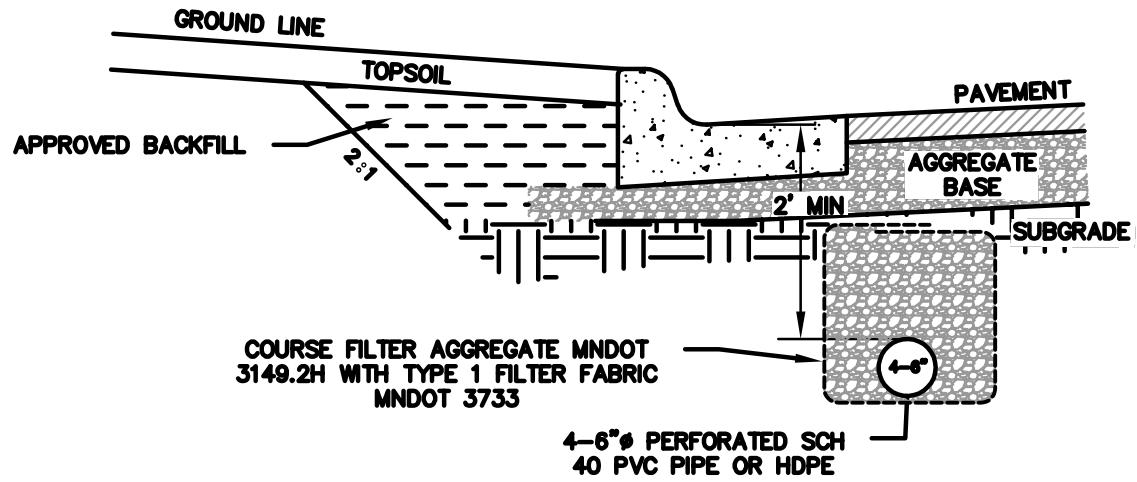
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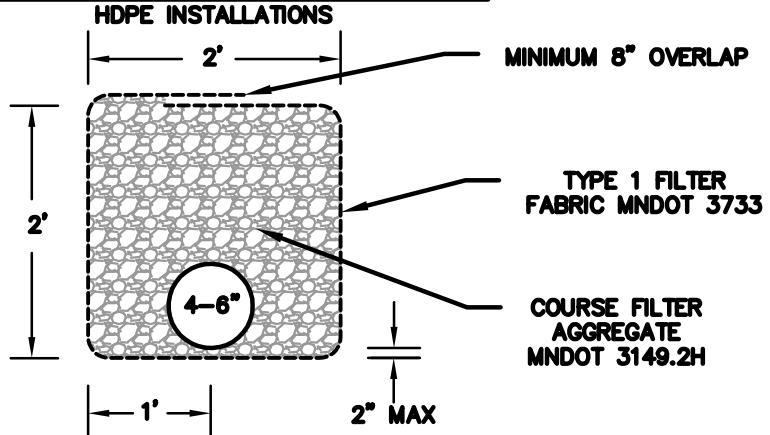
STM-03



ANIMAL GUARD
8" STAINLESS STEEL



COURSE FILTER AGGREGATE DETAIL



NOTES:

2" MAX. DEPTH OF FINE (OR COURSE) FILTER AGGREGATE AT ALL POINTS BELOW PIPE.

THE PIPE FOR BOTH INSTALLATIONS MUST BE A 4" OR 6" PERFORATED PIPE (SCH 40 PVC OR HDPE).

WHEN USING THE COURSE FILTER AGGREGATE BASE THE TRENCH MUST BE LINED WITH TYPE I FILTER FABRIC MEETING MN/DOT SPEC. 3733

CONTRACTOR SHALL INSTALL ANIMAL GUARDS AT ALL CONNECTIONS TO THE STORM SEWER SYSTEM



SUBSURFACE DRAINS
(EXISTING CURB IN PLACE)

STANDARD DETAILS

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STM-04

NOTES:

INSTALL CLEANOUTS AT 300 FOOT INTERVALS AND AT DEAD ENDS.
CLEAN OUT SERVICE TIES SHALL BE RECORDED WITH CITY PROPERTY RECORDS AND UTILITY AS BUILT RECORDS.

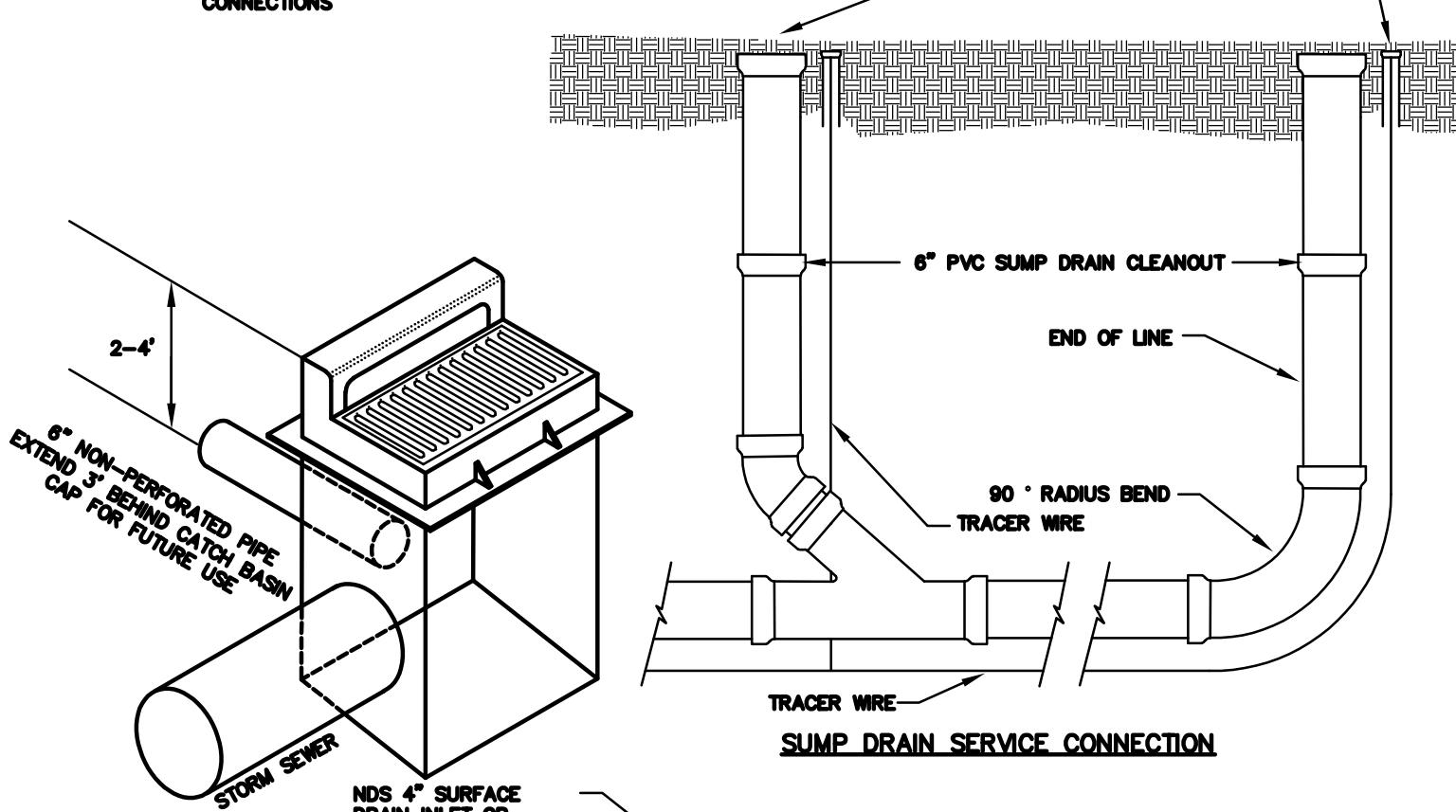
SCH 40 PVC SHALL BE USED FOR SUMP DRAIN, WYES/TEES.

A FLEXIBLE SADDLE TEE/WYE SHALL BE A FERNCO BRAND OR APPROVED EQUAL WHEN HDPE PIPE IS USED FOR SUMP DRAIN. WHEN A FERNCO IS INSTALLED THE CONTRACTOR SHALL INSTALL A CONCRETE COLLAR AROUND THE ENTIRE FERNCO AT NO ADDITIONAL COST TO THE CITY.

CONTRACTOR SHALL INSTALL ANIMAL GUARDS AT ALL CATCH BASIN CONNECTIONS

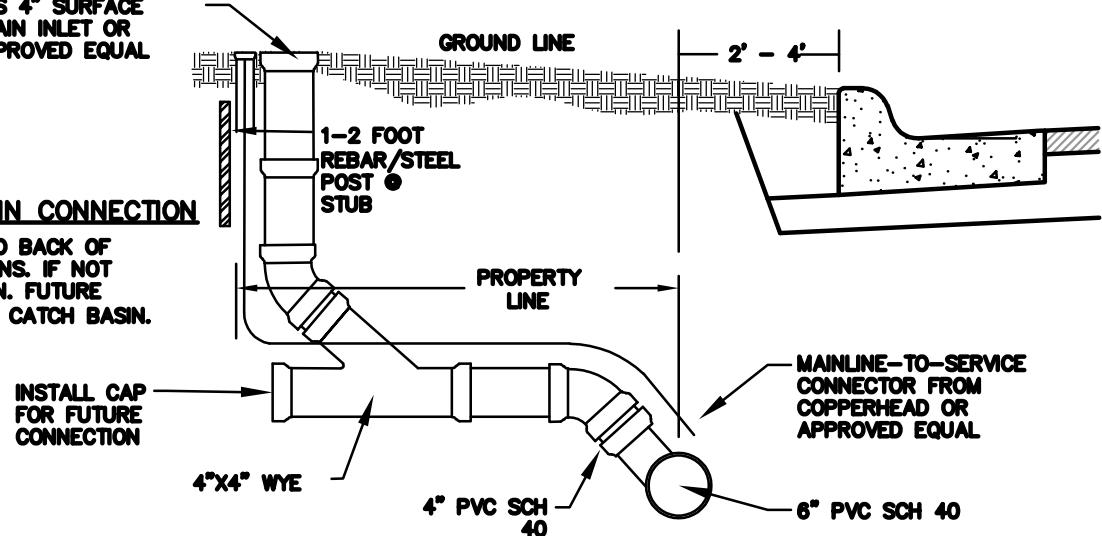
TRACER WIRE SHALL RUN THE FULL LENGTH OF CLEANOUT AND BE INSTALLED IN A TRACER WIRE ACCESS BOX CONFORMING TO MAPLE GROVE STANDARD PLATE STS-B. (TYP.)

ALL PVC CLEANOUTS SHALL BE 3 INCHES BELOW FINISHED GRADE AND HAVE A FITTING CLEANOUT - WITH THREADED PLUG (SCHEDULE 40). (TYP.)



TYPICAL SUMP TO CATCH BASIN CONNECTION

WHERE NOTED, INSTALL 6" PIPE INTO BACK OF CATCH BASIN FOR SUMP CONNECTIONS. IF NOT USED, CAP FOR FUTURE CONNECTION. FUTURE CONNECTIONS TO EXTEND 3' BEHIND CATCH BASIN.



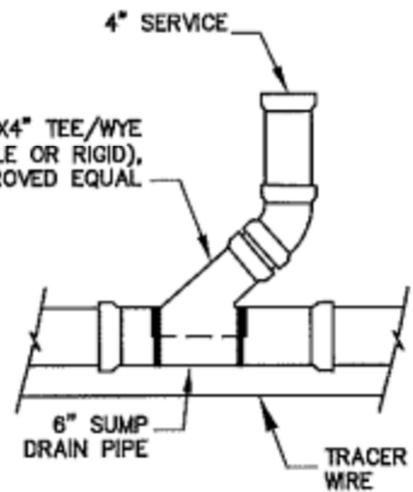
DRAINTILE - STUB FOR RESIDENTIAL SERVICE

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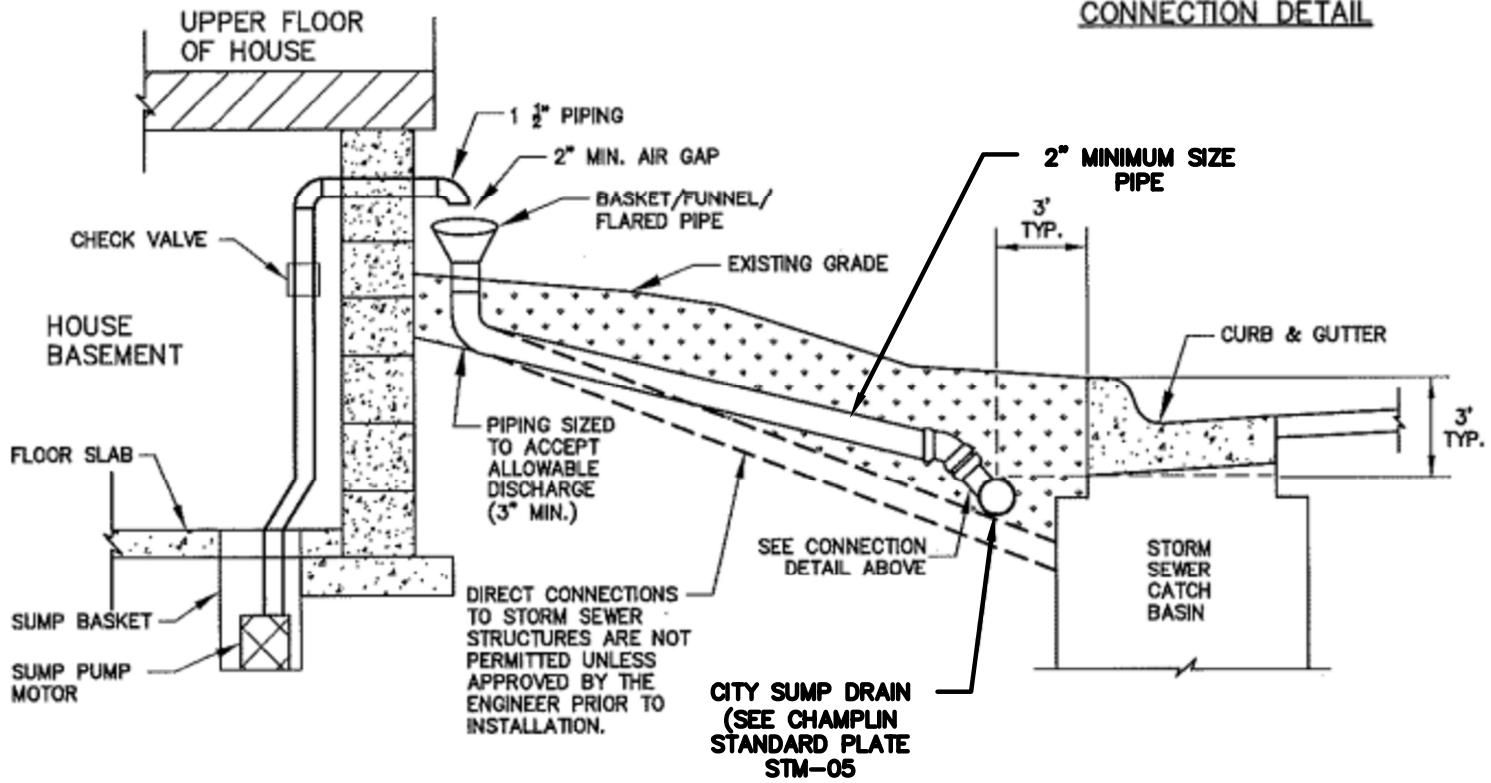
Date:
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CONNECTION DETAIL



NOTES:

STORM SEWER CONNECTION PERMIT REQUIRED PRIOR TO EXCAVATION

CONNECTION SHALL BE INSPECTED AND APPROVED BY CITY STAFF PRIOR TO BACKFILLING



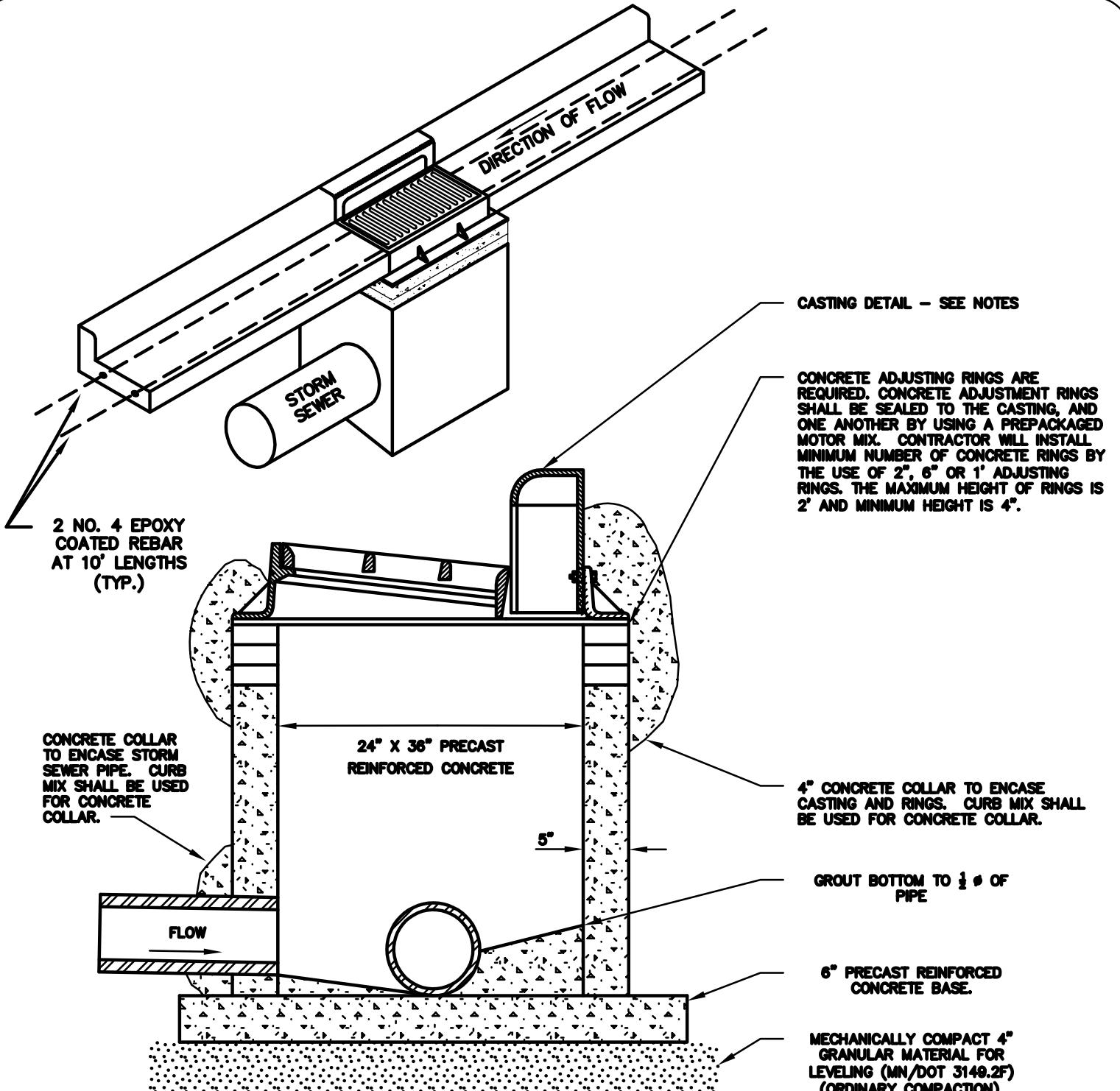
RESIDENTIAL SUMP DRAIN
SERVICE CONNECTION

STANDARD DETAILS

Date:
1/23/2023

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STM-06



NOTES:

FRAME AND GRATE FOR BULKHEAD STYLE CURB SHALL BE A NEENAH R-3067-V OR NEENAH R-3067-VB

FRAME AND GRATE FOR SURMOUNTABLE STYLE CURB OR DRIVEWAYS SHALL BE A NEENAH R-3501-TR OR R-3501-TL. LOW POINTS SHALL BE R-3501-TB

FRAME AND GRATE FOR OFF ROAD LOCATION (DITCH GRATE, STOOL TYPE) R-4342

FRAME AND GRATE FOR BIKE LANE FACILITY SHALL BE R-3295-2-(L OR R)

DOG HOUSES SHALL BE GROUTED ON BOTH THE OUTSIDE AND INSIDE OF THE STRUCTURE



CATCH BASIN - 2X3

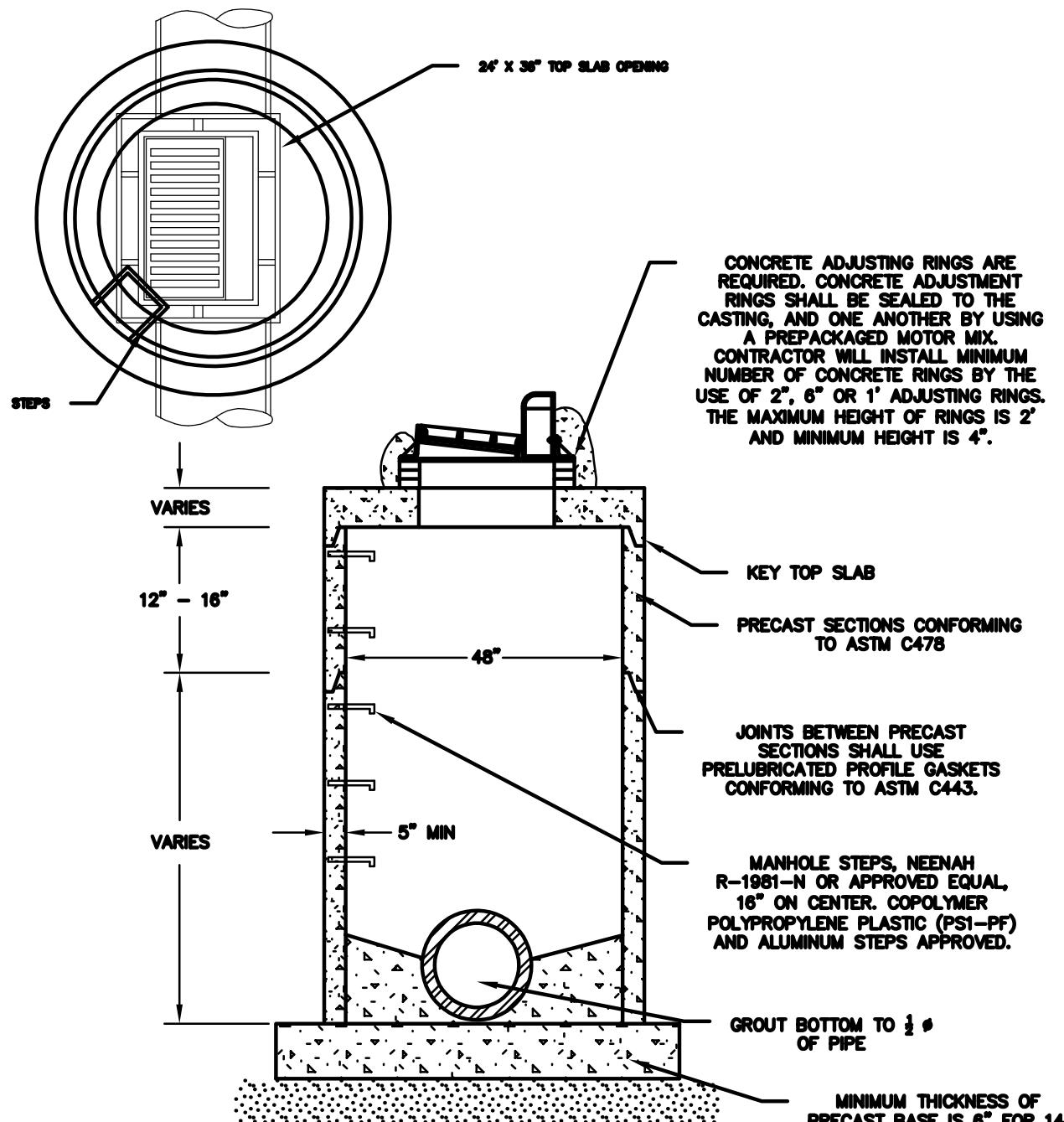
STANDARD DETAILS

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1/23/2023

Revised:

STM-07



NOTES:

FRAME AND GRATE FOR BULKHEAD STYLE CURB SHALL BE A NEENAH R-3067-V OR NEENAH R-3067-VB

FRAME AND GRATE FOR SURMOUNTABLE STYLE CURB OR DRIVEWAYS SHALL BE A NEENAH R-3501-TR OR R-3501-TL LOW POINTS 3501-TB

FRAME AND GRATE FOR OFF ROAD LOCATION (DITCH GRATE, STOOL TYPE) R-4342

ALL MANHOLES WITH FRAME AND LID IN A PAVED AREA SHALL USE A NEENAH R-1733 WITH SOLID B LID WITH 2 CONCEALED PICK HOLES OR APPROVED EQUAL. LID SHALL BE LETTERED "STORM SEWER" WITH 2" RAISED LETTERS

FRAME AND GRATE FOR BIKE LANE FACILITY SHALL BE R-3295-2-(L OR R)

DOG HOUSES SHALL BE GROUTED ON BOTH THE OUTSIDE AND INSIDE OF THE STRUCTURE



CATCH BASIN - MANHOLE

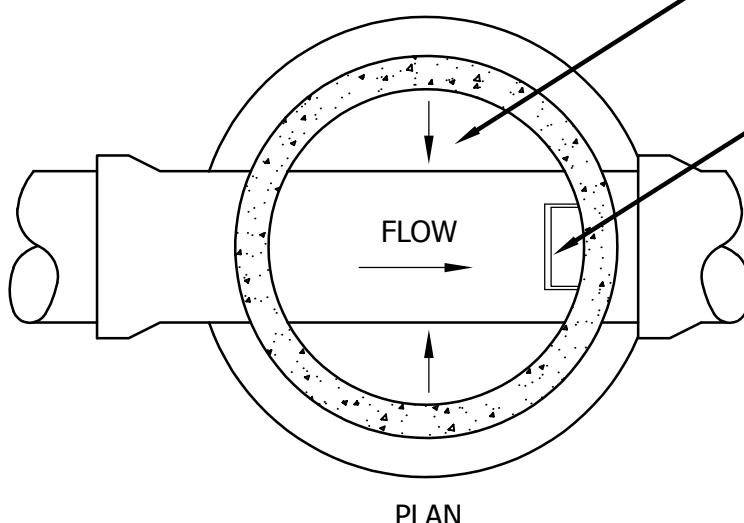
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1/23/2023

Revised:

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MORTAR SHALL BE PURE PORTLAND
SPECMIX OR APPROVED EQUAL.

GROUT BOTTOM OF MANHOLE TO $\frac{1}{2}$ DIAMETER
AT PIPE AND SLOP GROUT 2" TOWARD INVERT

MANHOLE STEPS SHALL BE PLACED SO THAT
OFFSET VERTICAL PORTION OF CONE IS FACING
DOWNSTREAM

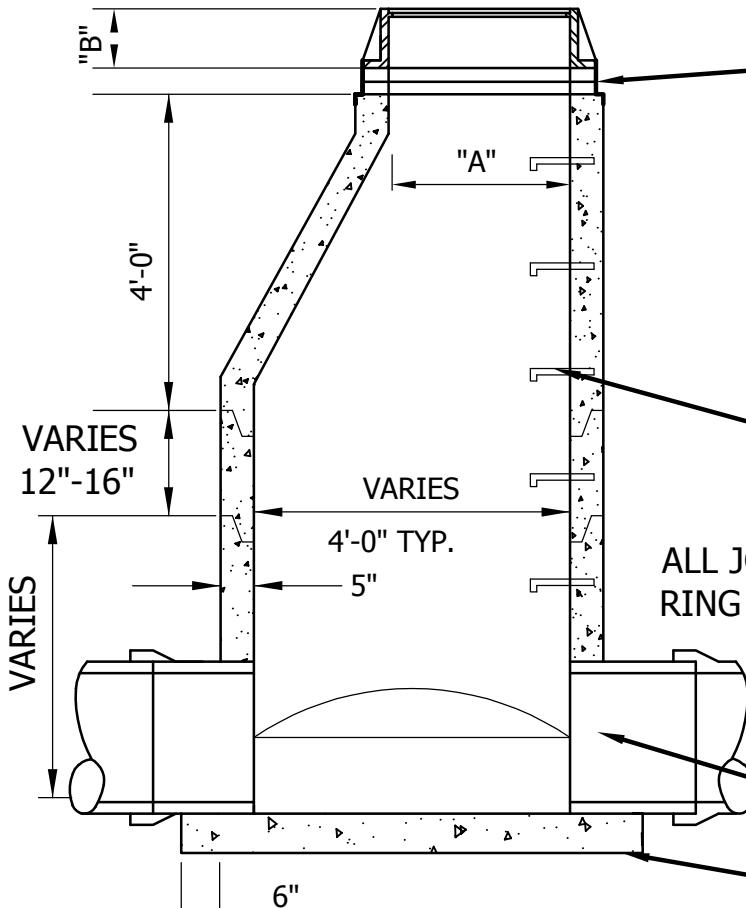
NOTES:

FRAME AND GRATE FOR OFF ROAD LOCATION (DITCH GRATE,
STOOL TYPE) R-4342

ALL MANHOLES WITH FRAME AND LID SHALL USE A NEENAH
R-1733 WITH SOLID B LID WITH 2 CONCEALED PICK
HOLES OR APPROVED EQUAL. LID SHALL BE LETTERED
"STORM SEWER" WITH 2" RAISED LETTERS

DOG HOUSES SHALL BE GROUTED ON BOTH THE OUTSIDE
AND INSIDE OF THE STRUCTURE

ALL CASTINGS INSTALLED IN PAVED SURFACES SHALL BE
INSTALLED $\frac{1}{2}$ " BELOW FINISHED PAVED SURFACE



CONCRETE ADJUSTING RINGS ARE REQUIRED.
CONCRETE ADJUSTMENT RINGS SHALL BE
SEALED TO THE CASTING, AND ONE ANOTHER
BY USING A PREPACKAGED MOTOR MIX.
CONTRACTOR WILL INSTALL MINIMUM NUMBER
OF CONCRETE RINGS BY THE USE OF 2", 6"
OR 1' ADJUSTING RINGS. THE MAXIMUM HEIGHT
OF RINGS IS 2' AND MINIMUM HEIGHT IS 4".

MANHOLE STEPS, NEENAH R-1981-N OR
APPROVED EQUAL, 16" ON CENTER. COPOLYMER
POLYPROPYLENE PLASTIC (PS1-PF) AND
ALUMINUM STEPS APPROVED.

ALL JOINTS IN MANHOLE TO HAVE "O"
RING RUBBER GASKETS.

PIPE SHALL BE CUT OFF FLUSH WITH INSIDE
FACE OF WALL

MINIMUM THICKNESS OF PRECAST BASE IS 6"
FOR 14' DEEP OR LESS, AND INCREASES 1" IN
THICKNESS FOR EVERY 4' OF DEPTH GREATER
THAN 14', AND REINFORCE AS PER MN/DOT
STD PLATE 4011



STORM SEWER MANHOLE

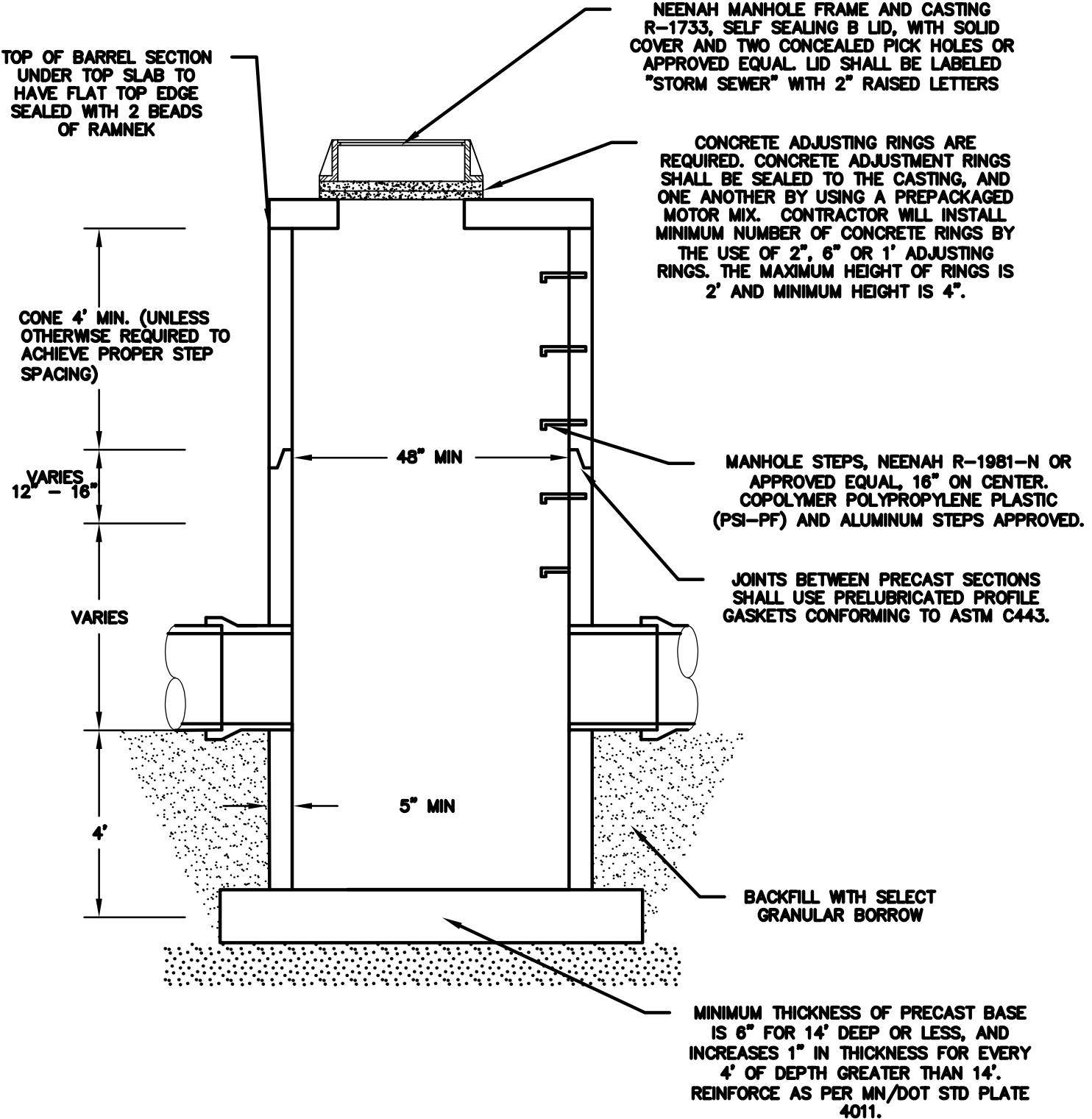
STANDARD DETAILS

Date:

1/25/2023

Revised:

STM-09



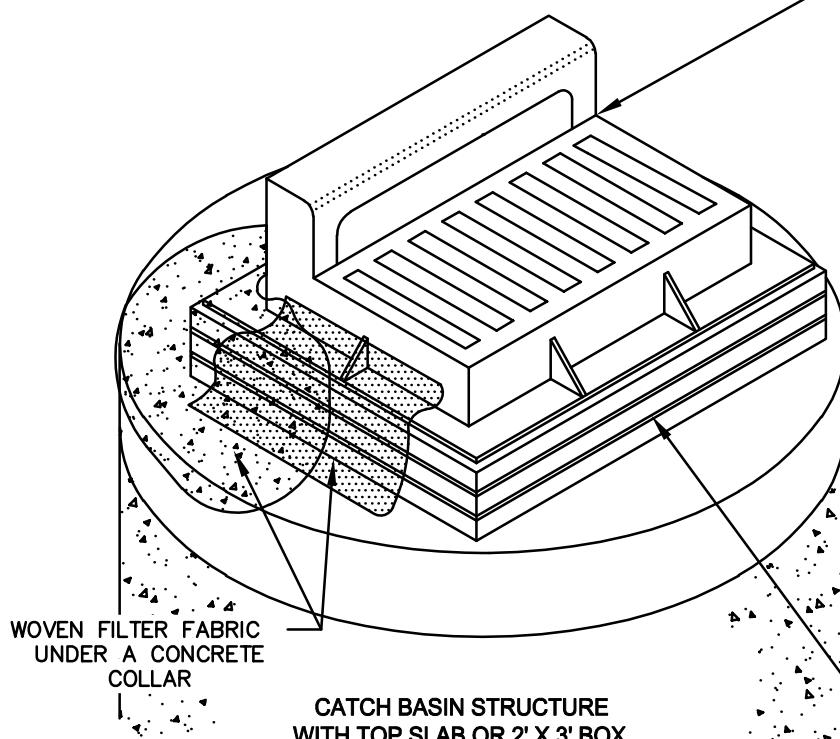
MANHOLE - WITH SUMP

STANDARD DETAILS

Date:
1/25/2023

Revised:

STM-10



FRAME AND GRATE FOR BULKHEAD STYLE CURB SHALL BE A NEENAH R-3067-V OR NEENAH R-3067-VB

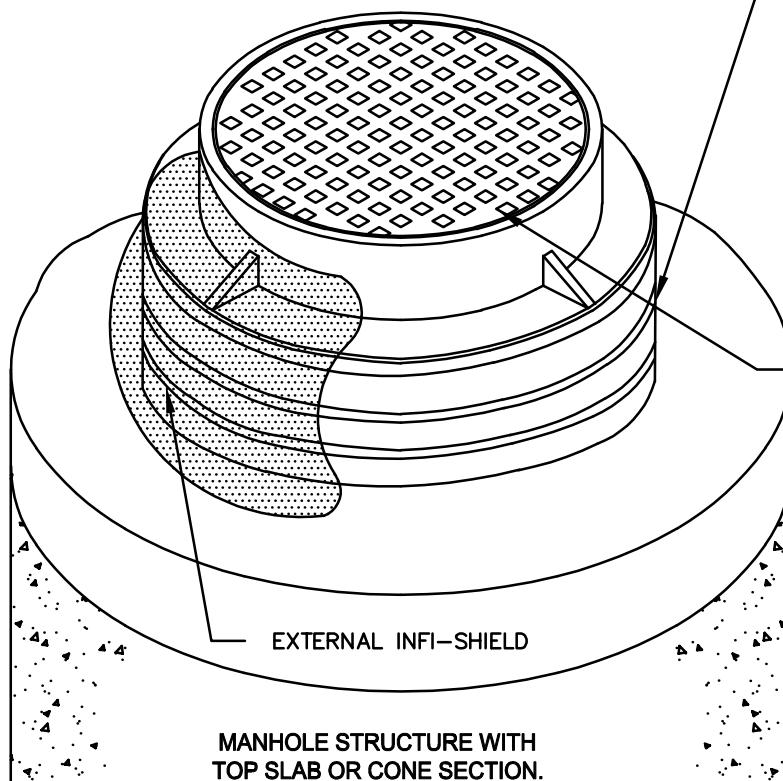
FRAME AND GRATE FOR SURMOUNTABLE STYLE CURB OR DRIVEWAYS SHALL BE A NEENAH R-3501-TR OR R-3501-TL LOW POINTS 3501-TB

FRAME AND GRATE FOR OFF ROAD LOCATION (DITCH GRATE, STOOL TYPE) R-4342

FRAME AND GRATE FOR BIKE LANE FACILITY SHALL BE R-3295-2-(L OR R)

2 - #4 REBAR EMBEDDED IN THE CONCRETE COLLAR AND THE CURB EXTENDED 10' BEYOND EACH SIDE OF THE CASTING

CONCRETE ADJUSTING RINGS ARE REQUIRED. CONCRETE ADJUSTMENT RINGS SHALL BE SEALED TO THE CASTING, AND ONE ANOTHER BY USING A PREPACKAGED MOTOR MIX. CONTRACTOR WILL INSTALL MINIMUM NUMBER OF CONCRETE RINGS BY THE USE OF 2", 6" OR 1' ADJUSTING RINGS. THE MAXIMUM HEIGHT OF RINGS IS 2' AND MINIMUM HEIGHT IS 4".



SANITARY SEWER
NEENAH MANHOLE FRAME AND CASTING R-1733, SELF SEALING B LID, WITH SOLID COVER AND TWO CONCEALED PICK HOLES OR APPROVED EQUAL. LID SHALL BE LABELED "SANITARY SEWER" WITH 2" RAISED LETTERS

STORM SEWER
ALL MANHOLES WITH FRAME AND LID IN A PAVED AREA SHALL USE A NEENAH R-1733 WITH SOLID B LID WITH 2 CONCEALED PICK HOLES OR APPROVED EQUAL. LID SHALL BE LETTERED "STORM SEWER" WITH 2" RAISED LETTERS

ALL CASTINGS SET IN PAVED SURFACES SHALL BE INSTALL $\frac{1}{4}$ " BELOW FINISHED PAVED SURFACE



ADJUST FRAME & RING CASTING

STANDARD DETAILS

Date:

1/25/2023

Revised:

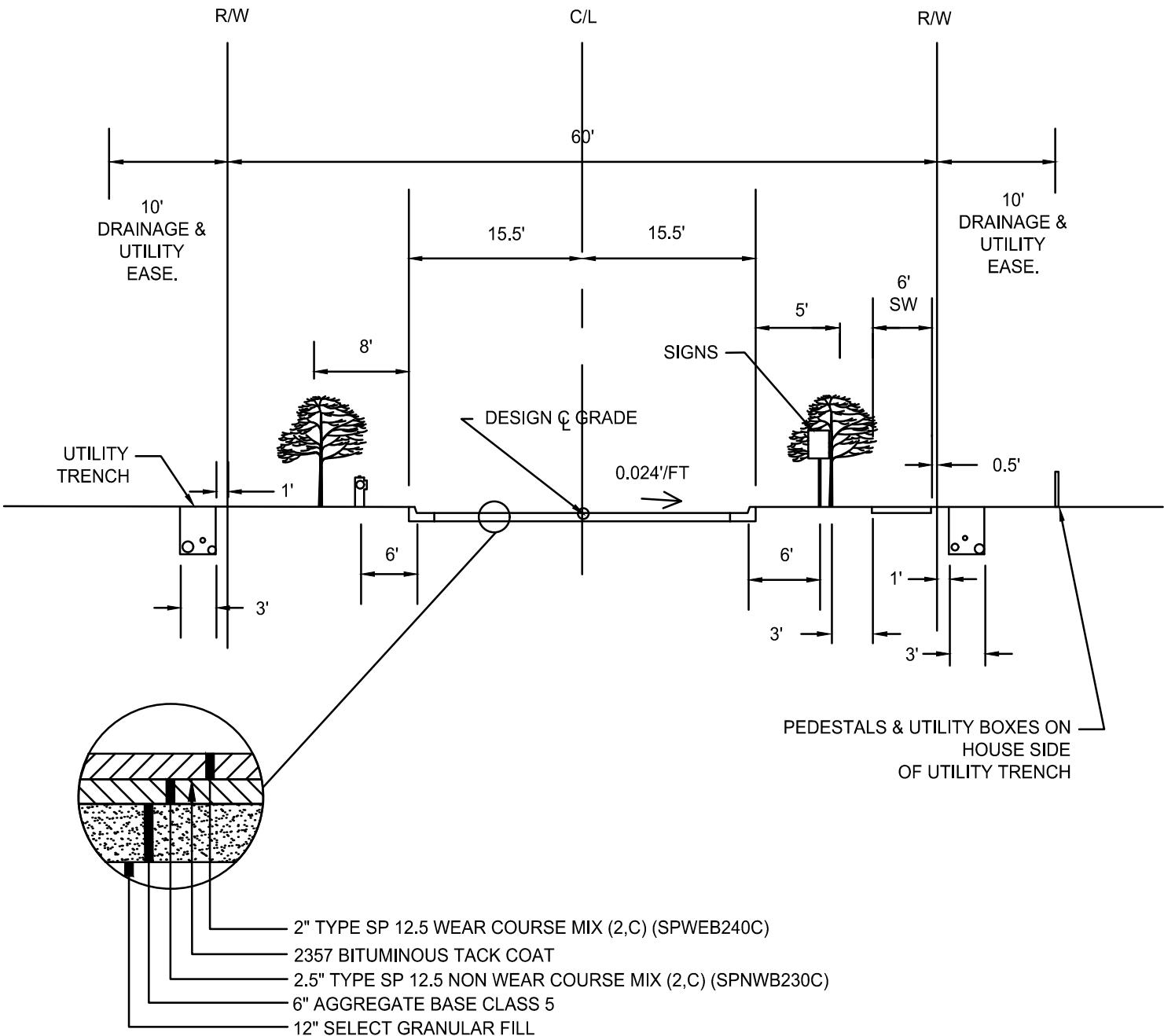
STM-11

INDEX

CITY
PLATE
NO.

SECTION 4 - STREET

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STR-02	STREET LAYOUT - URBAN RESIDENTIAL, SIDEWALK BOTH SIDES
STR-03	STREET LAYOUT - RURAL RESIDENTIAL
STR-04	CUL-DE-SAC LAYOUT - WITH ISLAND, NO SIDEWALK
STR-05	CUL-DE-SAC LAYOUT - NO ISLAND, WITH SIDEWALK
STR-06	CURB AND GUTTER
STR-07	CURB AND GUTTER TRANSITION
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STR-09	RESIDENTIAL DRIVEWAY PLACEMENT
STR-10	CURB AND GUTTER REPLACEMENT - AT BITUMINOUS DRIVEWAY
STR-11	CURB AND GUTTER REPLACEMENT - AT CONCRETE DRIVEWAY
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STR-18	TRAFFIC SIGN INSTALLATION
STR-19	SQUARE TUBULAR SIGN POST BREAKAWAY
STR-20	BARRICADE



NOTES:

1. WHERE PATHWAYS ARE PROVIDED, INSTEAD OF SIDEWALKS, ADDITIONAL WIDTH MUST BE ADDED TO ACCOMODATE THE PATH AND ALLOW 5' TO THE R/W FOR SNOW STORAGE.
2. 2% BOULEVARD CROSS-SLOPE WITHOUT SIDEWALK 5% BOULEVARD CROSS-SLOPE WITH SIDEWALK.
3. SIGNS, HYDRANTS, AND STREET LIGHTS AT 6' BEHIND FACE OF CURB.
4. ALL DIMENSIONS ARE FROM FACE OF CURB.



STREET LAYOUT -
URBAN RESIDENTIAL,
SIDEWALK ONE SIDE

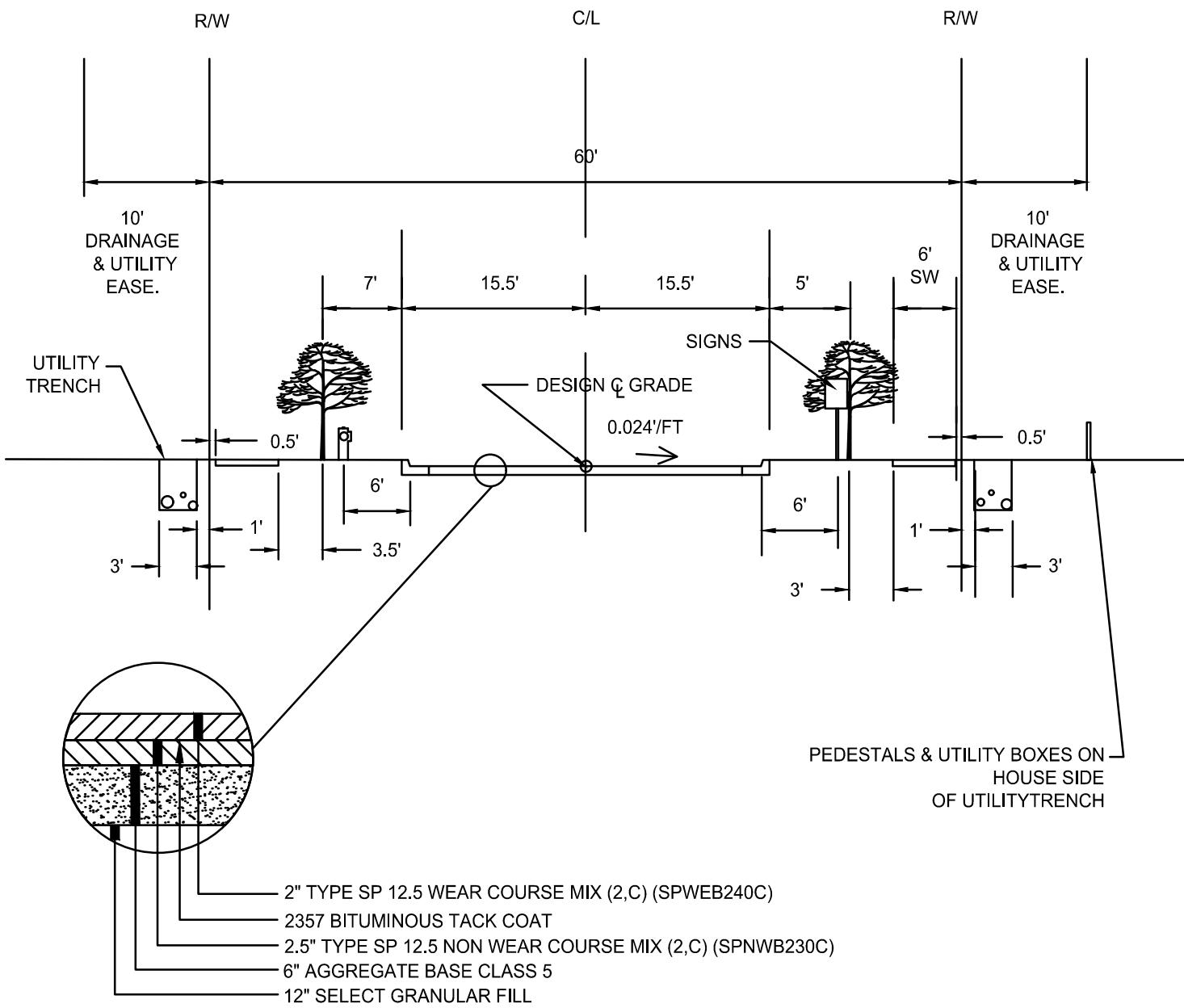
STANDARD DETAILS

Date:

12/01/2020

Revised:

STR-01



NOTES:

1. WHERE PATHWAYS ARE PROVIDED, INSTEAD OF SIDEWALKS, ADDITIONAL WIDTH MUST BE ADDED TO ACCOMODATE THE PATH AND ALLOW 5' TO THE ROW FOR SNOW STORAGE.
2. 2% BOULEVARD CROSS-SLOPE WITHOUT SIDEWALK 5% BOULEVARD CROSS-SLOPE WITH SIDEWALK.
3. SIGNS, HYDRANTS, AND STREET LIGHTS AT 6' BEHIND FACE OF CURB.
4. ALL DIMENSIONS ARE FROM FACE OF CURB.



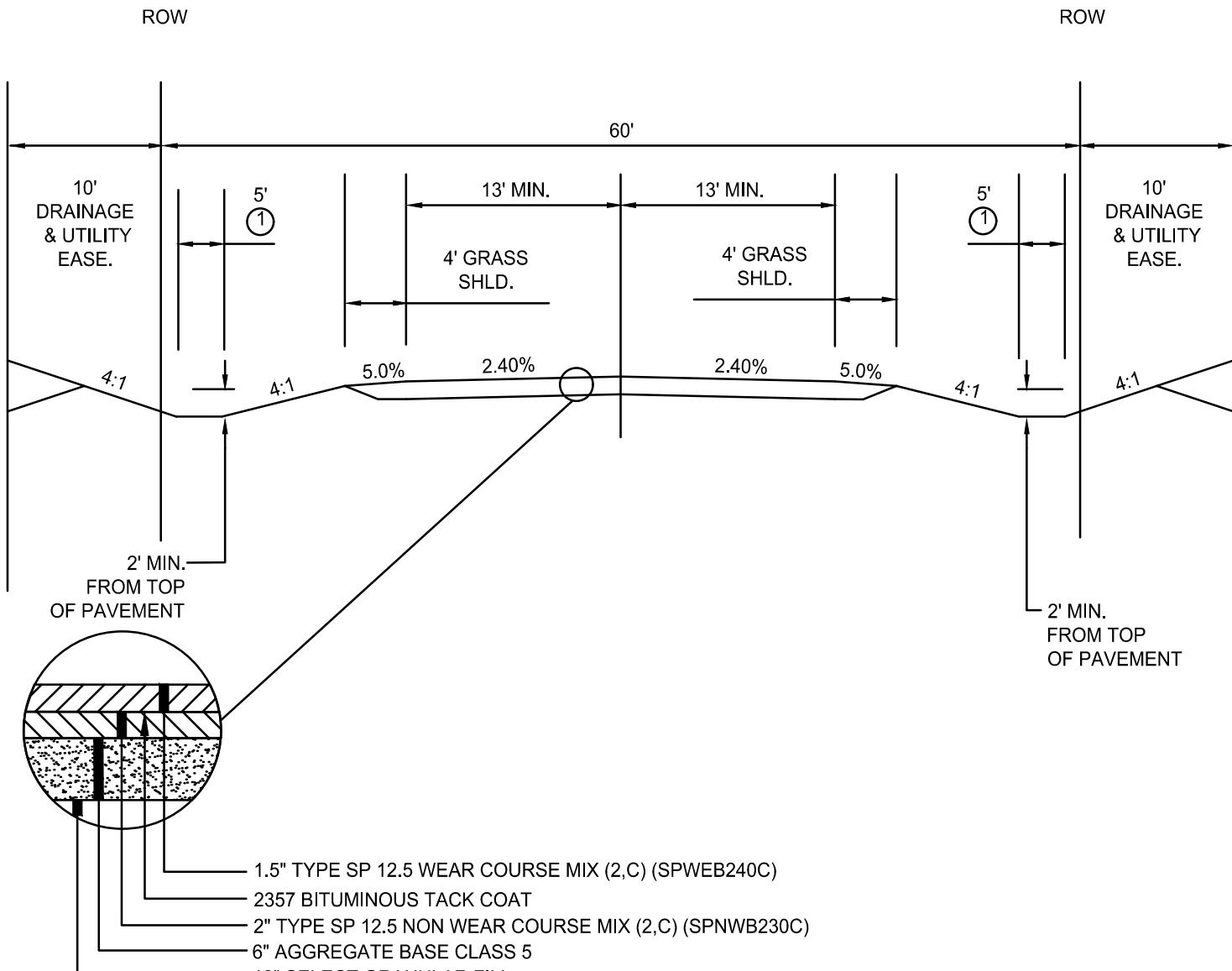
STREET LAYOUT -
URBAN RESIDENTIAL,
SIDEWALK BOTH SIDES

STANDARD DETAILS

Date:
12/01/2020

Revised:

STR-02



① DITCH

NOTES/RECOMMENDATIONS

1. 7 TON ROAD DESIGN
2. DRIVEWAY CULVERTS SHALL BE MINIMUM 18" CMP, 30' LENGTH WITH APRONS (HOMEOWNER RESPONSIBLE FOR CULVERT MAINT, UNLESS PART OF CITY'S DRAINAGE SYSTEM).



STREET LAYOUT -
RURAL RESIDENTIAL

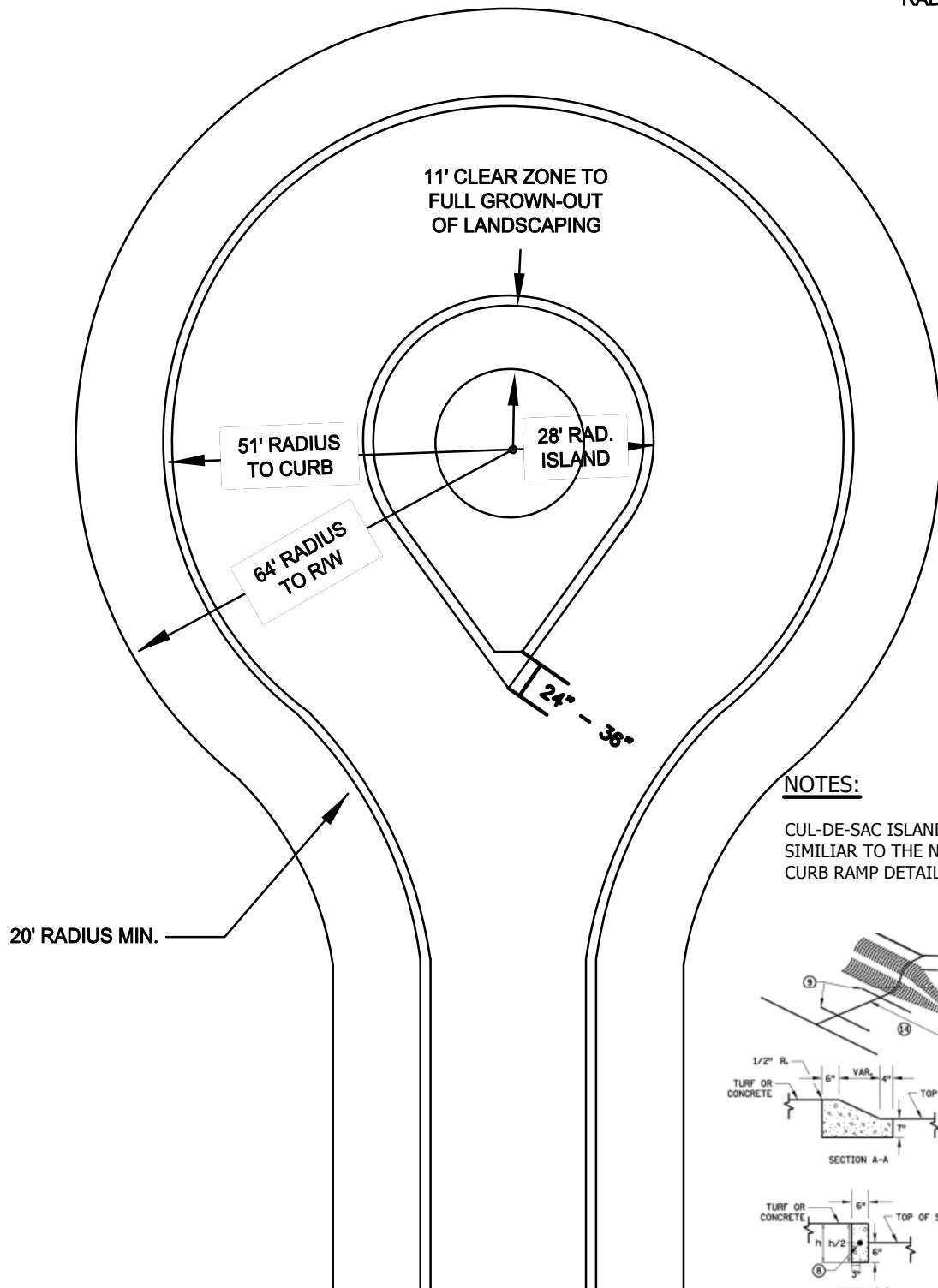
STANDARD DETAILS

Date:	05/01/2020
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Revised:

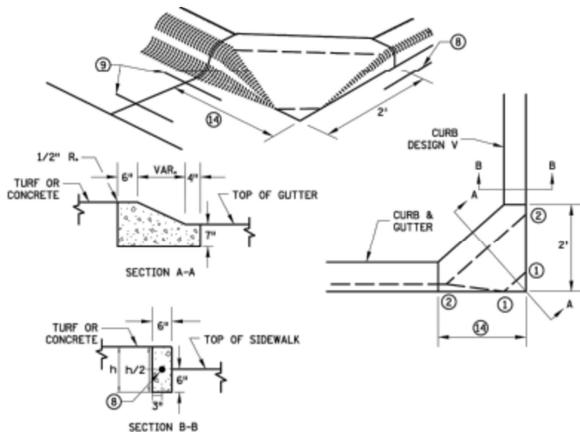
STR-03

NO CENTER ISLAND
46' RADIUS TO FACE OF CURB (60'
RADIUS TO R/W)



NOTES:

CUL-DE-SAC ISLAND NOSE WILL BE CONSTRUCTED SIMILAR TO THE NOSE DETAIL IN MN/DOTS PEDESTRIAN CURB RAMP DETAILS ON SHEET 4 OF 6. SEE BELOW



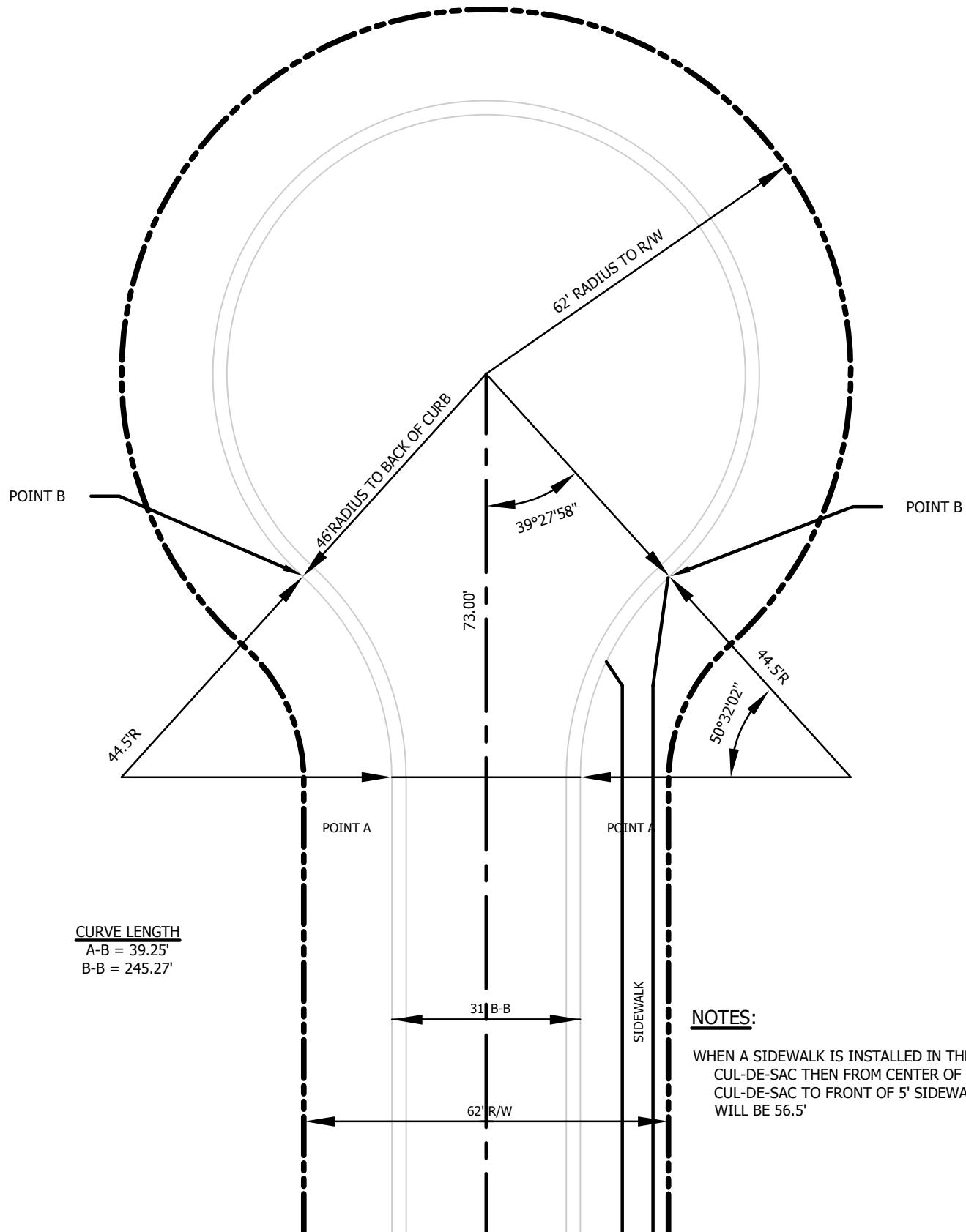
**CUL-DE-SAC LAYOUT -
WITH ISLAND, NO
SIDEWALK**

STANDARD DETAILS

Date:
1/13/2023

Revised:

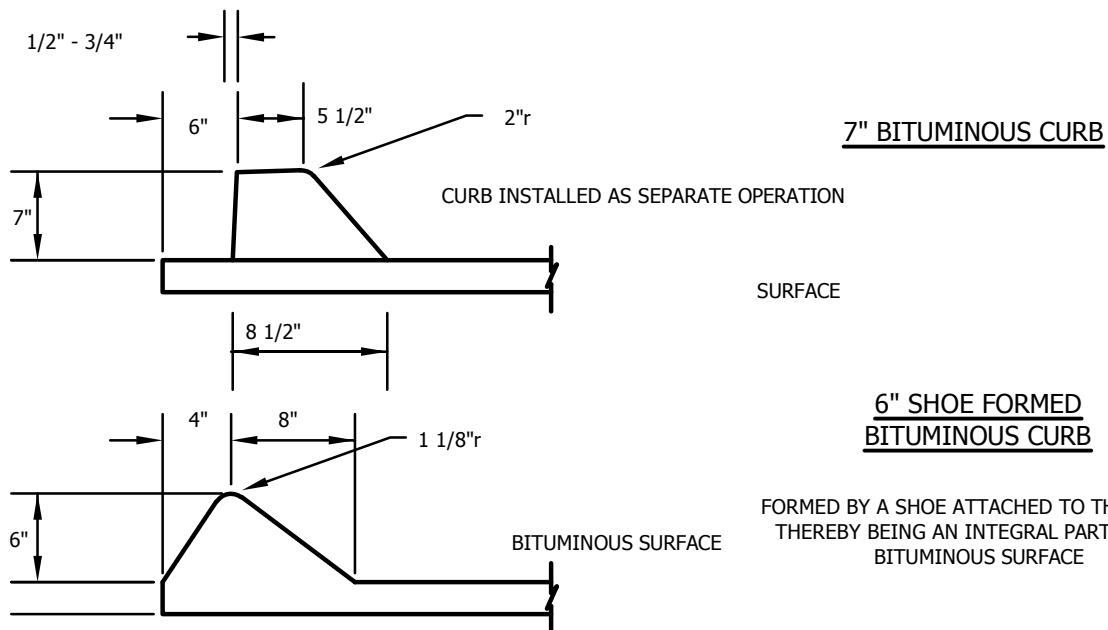
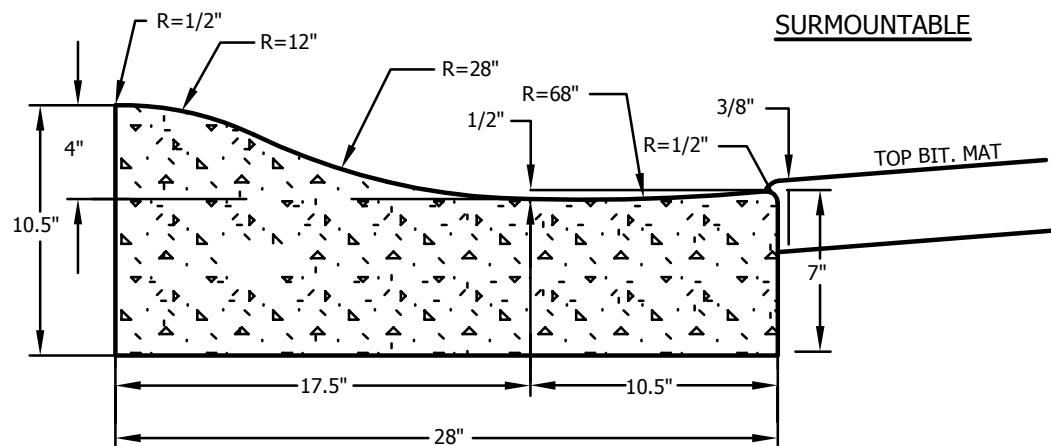
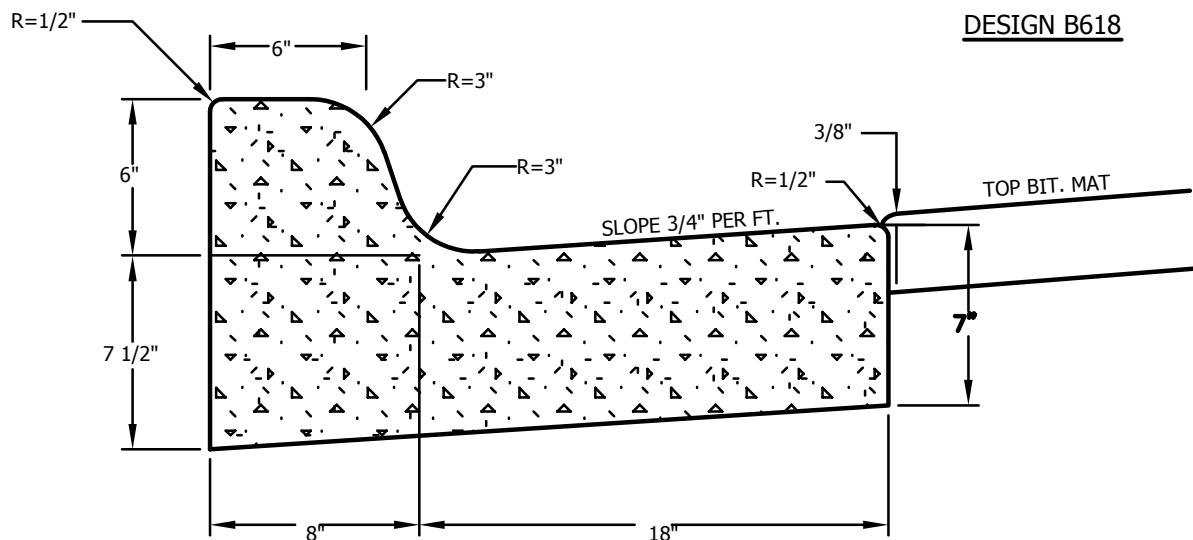
STR-04



**CUL-DE-SAC LAYOUT -
NO ISLAND, WITH
SIDEWALK**

STANDARD DETAILS

Date:	1/13/2023
Revised:	STR-05



B618 CURB & GUTTER (TYP.)

15' RADIUS RESIDENTIAL
25' RADIUS COLLECTOR (TYP.)

CATCH BASIN AT P.C.

2 NO. 4 EPOXY
COATED SMOOTH
REBARS AT 6' LENGTH

P.C. 5' 8' TRANSITION

EXPANSION JOINT

2 NO 4 EPOXY COATED
SMOOTH REBARS AT
10' LENGTH

SURMOUNTABLE
CURB & GUTTER
(TYP.)

DOUBLE CATCH BASIN

2 NO. 4 EPOXY
COATED SMOOTH
REBARS AT 6' LENGTH

P.C. 5' 6' 8' TRANSITION

EXPANSION JOINT

2 NO 4 EPOXY COATED
SMOOTH REBARS AT
10' LENGTH

2 NO. 4 EPOXY
COATED REBAR AT
10' LENGTHS (TYP.)

8 MIN. TRANSITION

Flow

5' NORMAL
VERTES

2" Depression

PC
B618
CURB & GUTTER

SURMOUNTABLE
CURB & GUTTER

8' MIN. TRANSITION
MOUNTABLE CURB & GUTTER
OR NO CURB & GUTTER

8' MIN. TRANSITION
B STYLE CURB & GUTTER

DESIGN GUTTER
LINE GRADE

NEENAH FRAME & COVER R-3067V
OR APPROVED EQUAL.

2 NO.4 EPOXY COATED
SMOOTH REBAR AT 10'
LENGTHS TYP.

NOTES:

SECTION A-A

EXPANSION JOINT MATERIAL SHALL BE CLOSED CELL POLYETHYLENE

THE CONCRETE ADJUSTMENT RINGS SHALL BE SEALED TO THE CONE, CASTING AND ONE ANOTHER BY USING A PREPACKAGED MORTAR
MIX IN ACCORDANCE WITH PROPORTIONS OF MNDOT SPECIFICATION 2506.2B AND ASTM C 270. THIS WILL ALSO BE USED FOR ALL
"MUD WORK" INSIDE OF CONCRETE STRUCTURES



CURB AND GUTTER TRANSITION

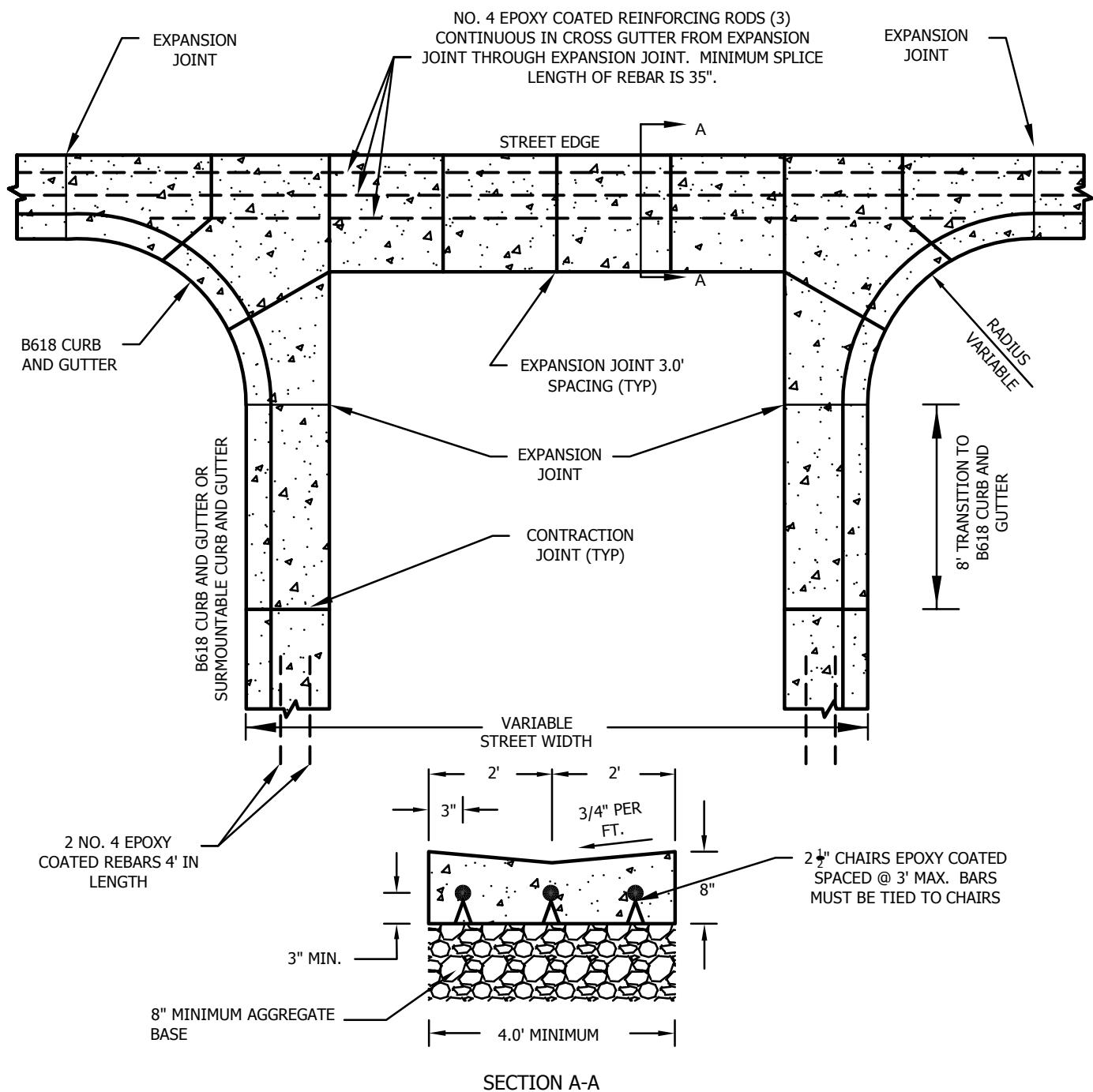
STANDARD DETAILS

Date:

1/16/2023

Revised:

STR-07



NOTES:

WHEN INSTALLING A VALLEY GUTTER NEXT TO EXISTING BITUMINOUS ROADWAY, THE CONTRACTOR MUST SAW/CUT AND REPLACE A MINIMUM 18" STRIP OF STREET SECTION WITH THE SAME PAVEMENT TYPE TO MATCH EXISTING STREET SECTION

VALLEY GUTTER TO BE PAID BY THE SQUARE YARD FROM RADII TO RADII OF B618 CURB AND GUTTER

WHEN INSTALLING A VALLEY GUTTER OVER A CATCH BASIN USING NEENAH FRAME AND CASTING R-3290-A

EXPANSION JOINT MATERIAL SHALL BE CLOSED CELL POLYETHYLENE



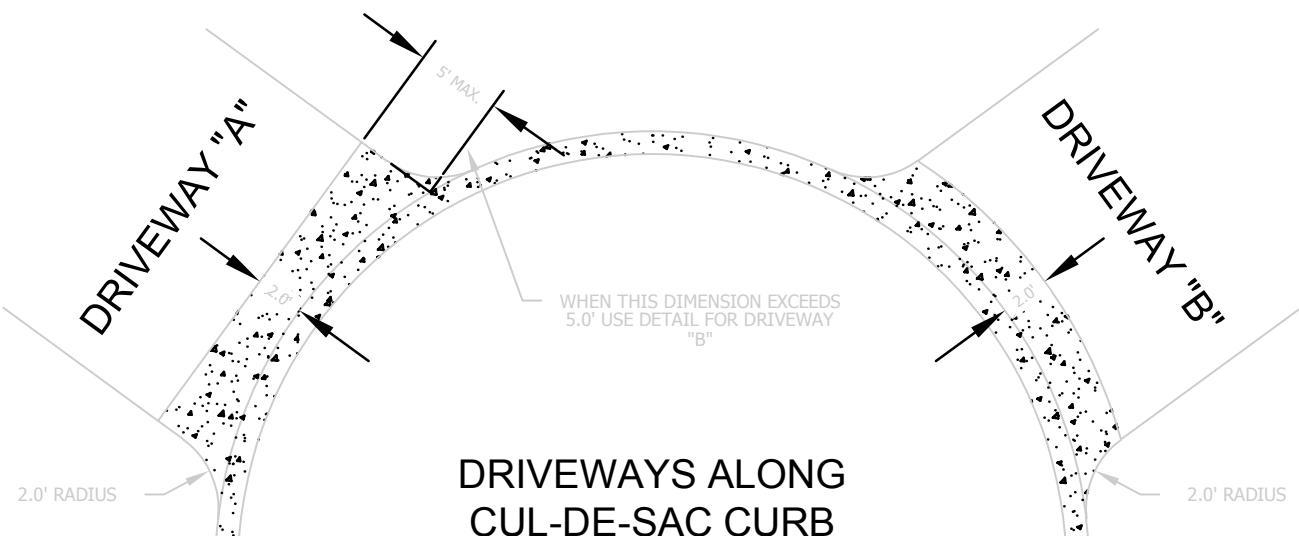
CONCRETE VALLEY GUTTER

STANDARD DETAILS

Date: 1/20/2023

Revised:

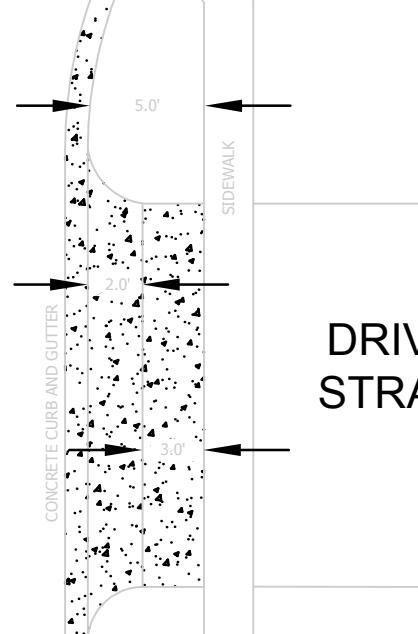
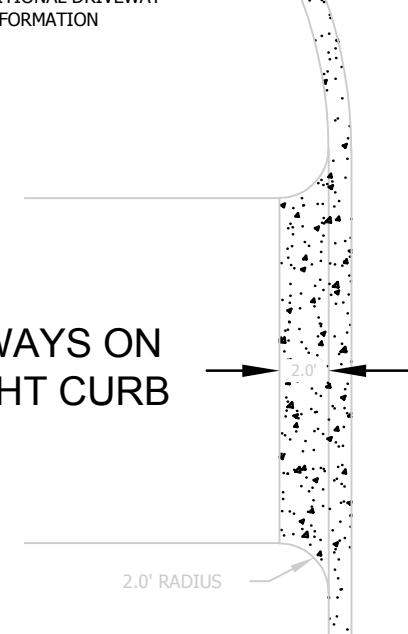
STR-08



NOTES:

SEE CITY OF CHAMPLIN STANDARD PLATE # STR-15 FOR ADDITIONAL DRIVEWAY CONSTRUCTION INFORMATION

DRIVEWAYS ON STRAIGHT CURB



DRIVEWAYS ON STRAIGHT CURB



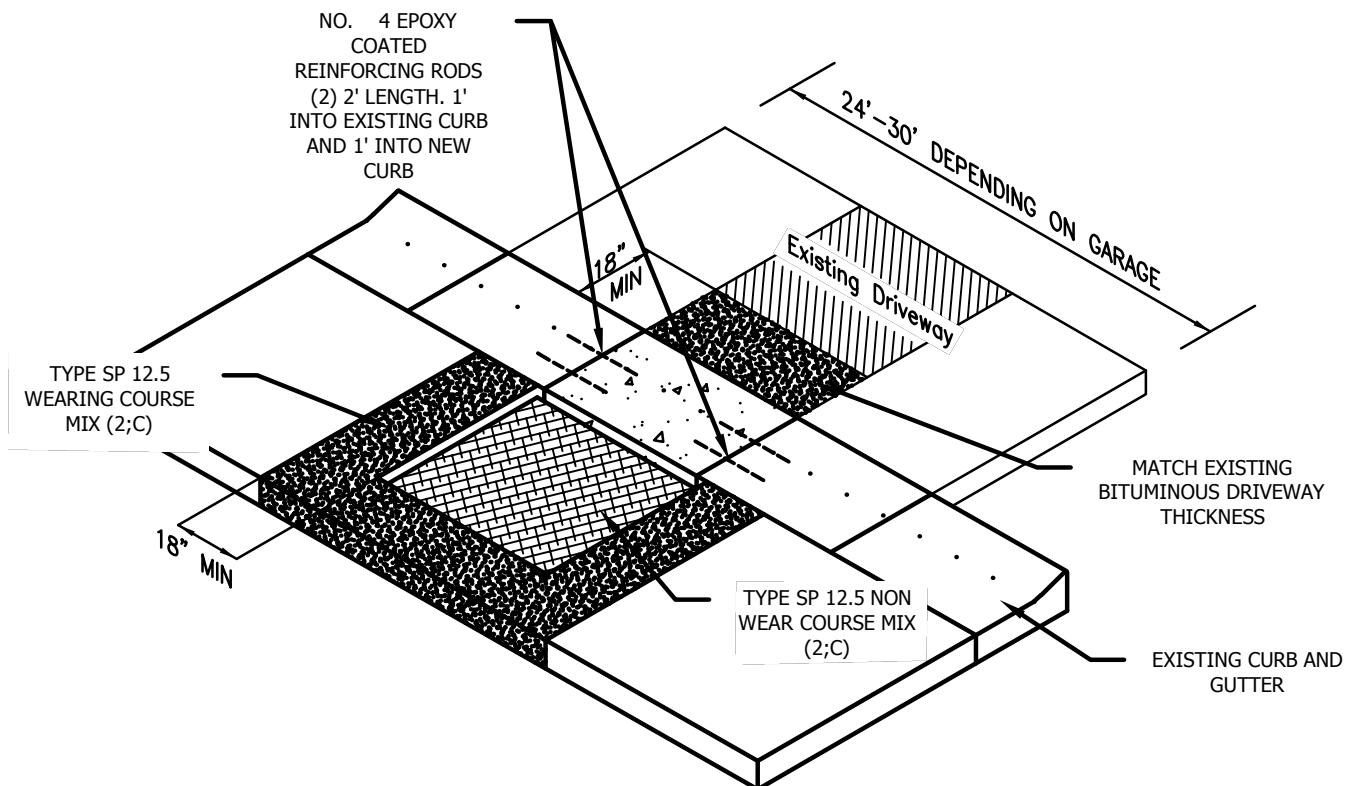
RESIDENTIAL DRIVEWAY
PLACEMENTS ON CITY
STREETS AND
CUL-DE-SACS

STANDARD DETAILS

Date:	1/13/2023
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Revised:

STR-09

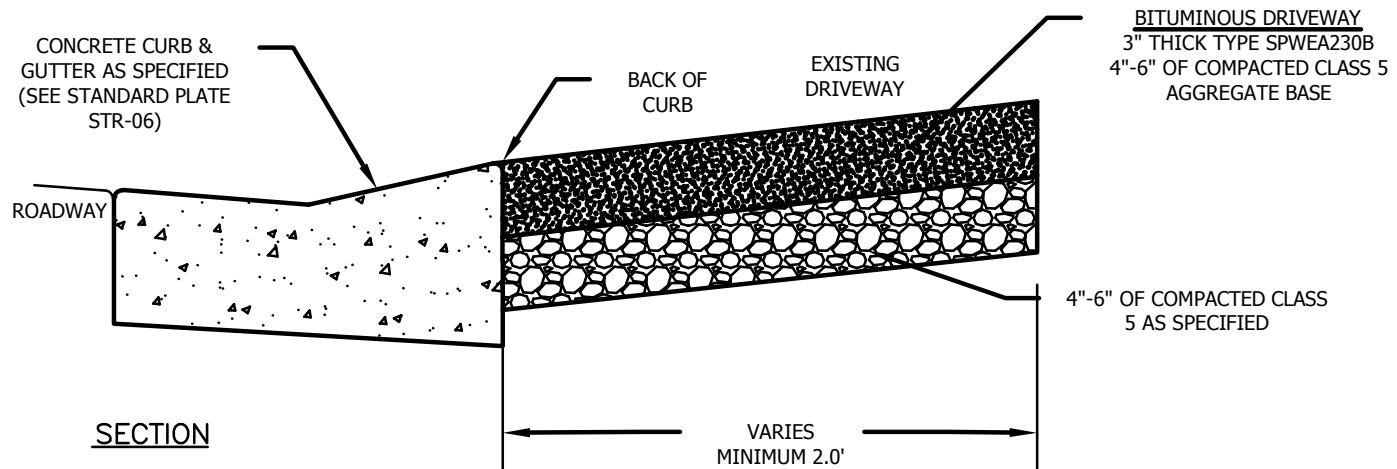


NOTES:

CONTRACTOR WILL REMOVE 18" MINIMUM OF BITUMINOUS PAVEMENT FROM EXISTING DRIVEWAY TO TIE CURB AND GUTTER IN. THIS WILL BE INSTALLED TO MATCH EXISTING PAVEMENT THICKNESS

CONTRACTOR WILL REMOVE AS MUCH PAVEMENT AS NECESSARY TO COMPLETE THE TASK.

CONTRACTOR WILL MILL 2" OFF EXISTING WEAR COURSE AT A MINIMUM OF 18" WIDE AROUND ALL SIDE OF EXCAVATION AND PATCH WITH WEAR COARSE



**CURB AND GUTTER
REPLACEMENT - AT
BITUMINOUS DRIVEWAY**

STANDARD DETAILS

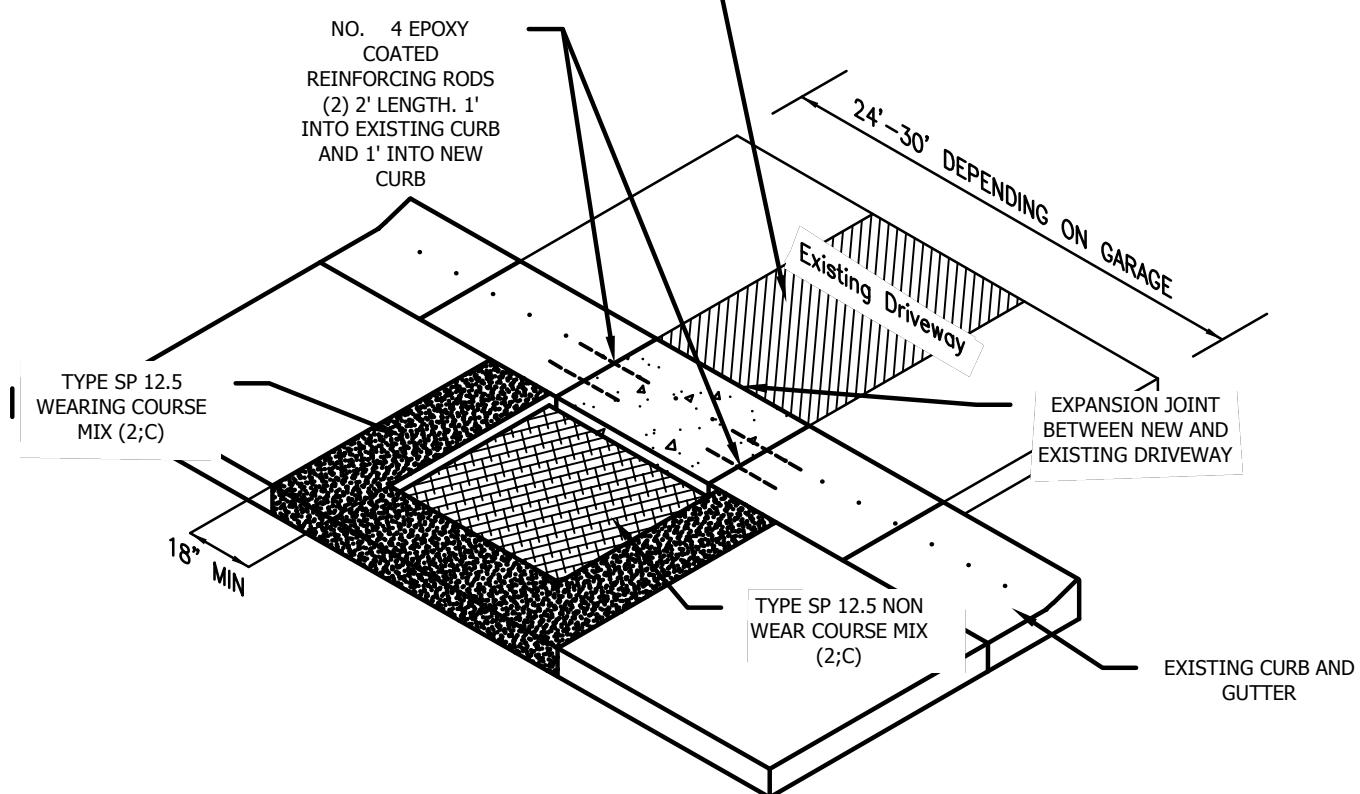
Date:

1/20/2023

Revised:

STR-10

REPLACE EXISTING CONCRETE DRIVEWAY
FROM JOINT TO JOINT AND MATCH
EXISTING THICKNESS.



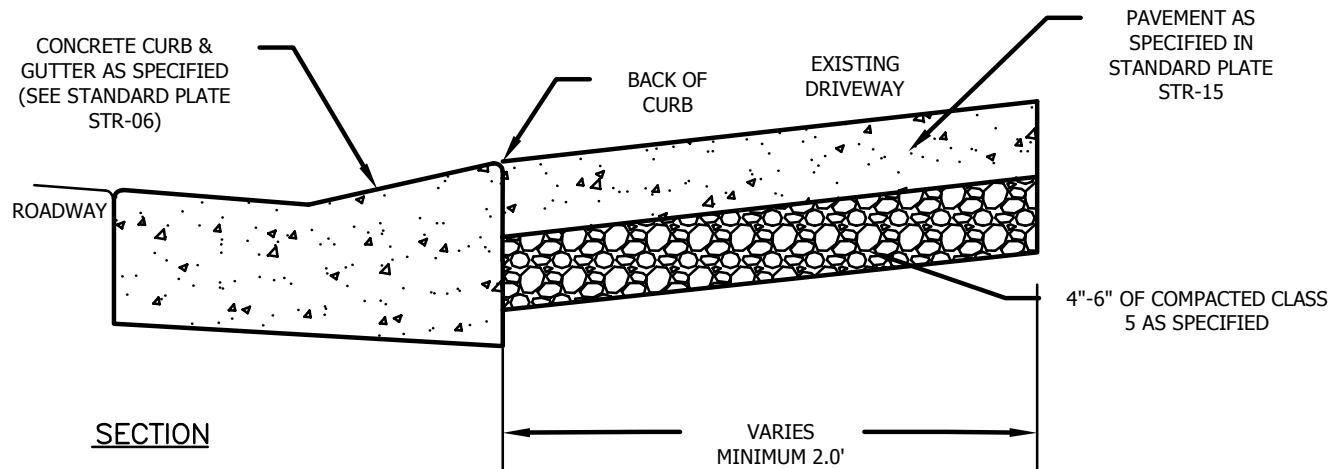
NOTES:

EXPANSION JOINT MATERIAL SHALL BE CLOSED CELL POLYETHYLENE

IF EXISTING CONCRETE DRIVEWAY IS 4" THICK THEN CONTRACTOR WILL TIE NEW PANEL INTO EXISTING PANEL WITH #4 REBAR

CONTRACTOR WILL REMOVE AS MUCH PAVEMENT AS NECESSARY TO COMPLETE THE TASK.

CONTRACTOR WILL MILL 2" OFF EXISTING WEAR COURSE AT A MINIMUM OF 18" WIDE AROUND ALL SIDE OF EXCAVATION AND PATCH WITH WEAR COARSE



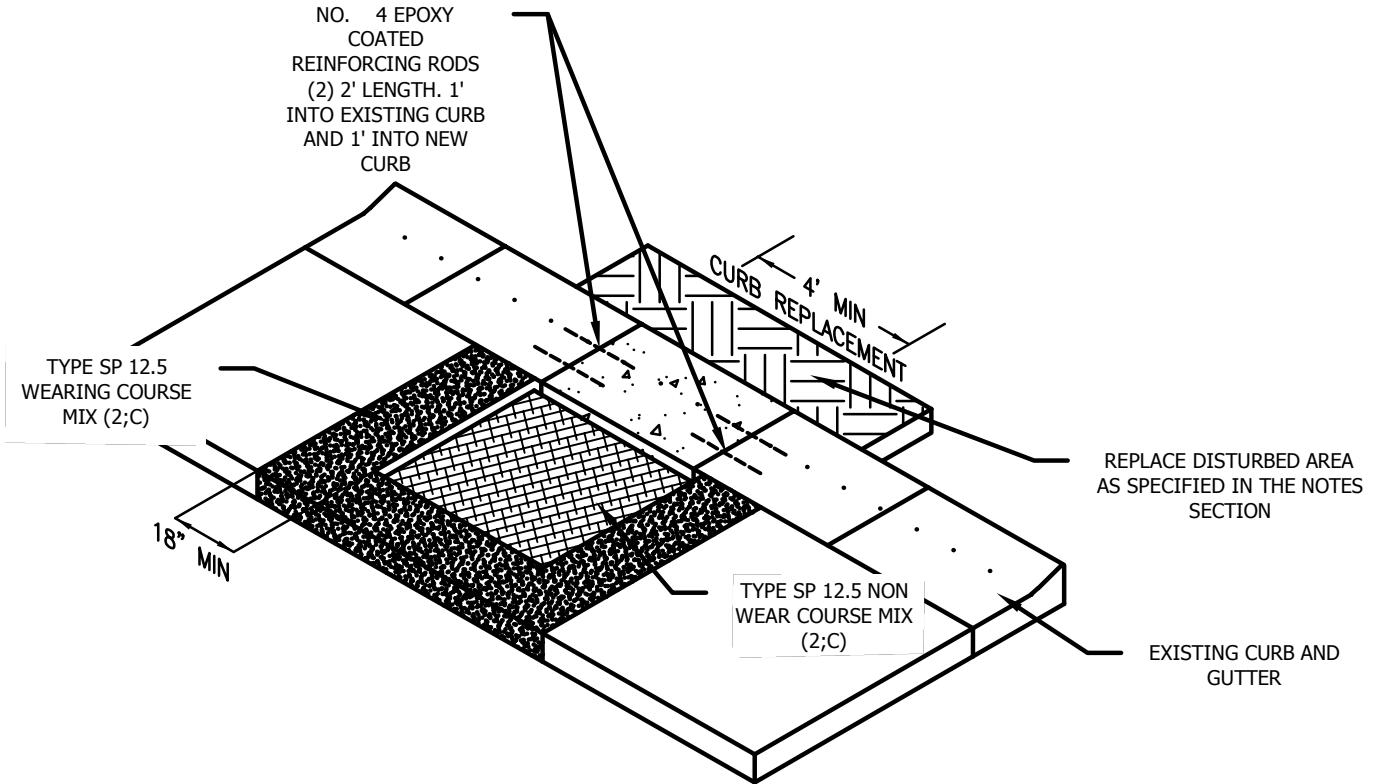
CURB AND GUTTER
REPLACEMENT - AT
CONCRETE DRIVEWAY

STANDARD DETAILS

Date: 1/20/2023

Revised:

STR-11



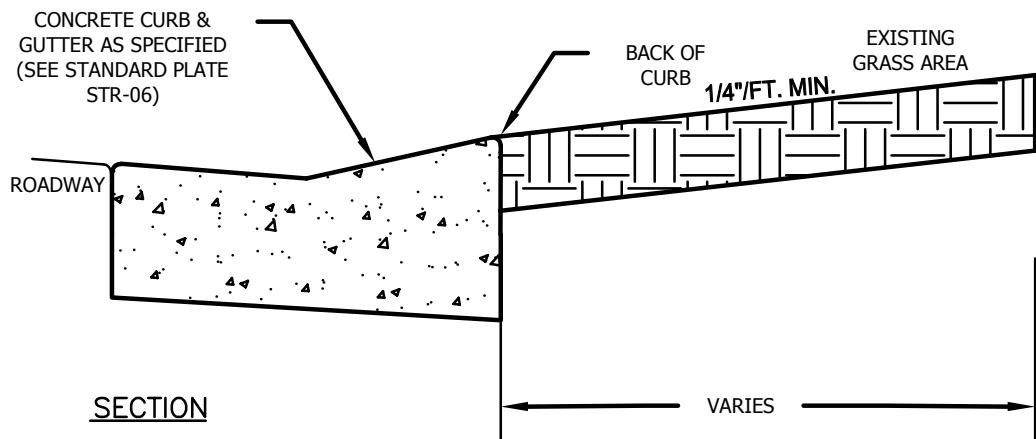
NOTES:

IF DISTURBED AREA IS LESS THAN 2'X2' THEN THE CONTRACTOR SHALL REPLACE WITH A SEED MIX THAT MATCHES EXISTING. IF AREA IF LARGER THEN A 2'X2' THEN CONTRACTOR SHALL REPLACE WITH KENTUCKY BLUEGRASS SOD.

DISTURBED AREA WILL BE REPLACED WITH 4" OF PULVERIZED BLACK DIRT

CONTRACTOR WILL REMOVE AS MUCH PAVEMENT AS NECESSARY TO COMPLETE THE TASK.

CONTRACTOR WILL MILL 2" OFF EXISTING WEAR COURSE AT A MINIMUM OF 18" WIDE AROUND ALL SIDE OF EXCAVATION AND PATCH WITH WEAR COARSE



**CURB AND GUTTER
REPLACEMENT - AT
NON - DRIVEWAY**

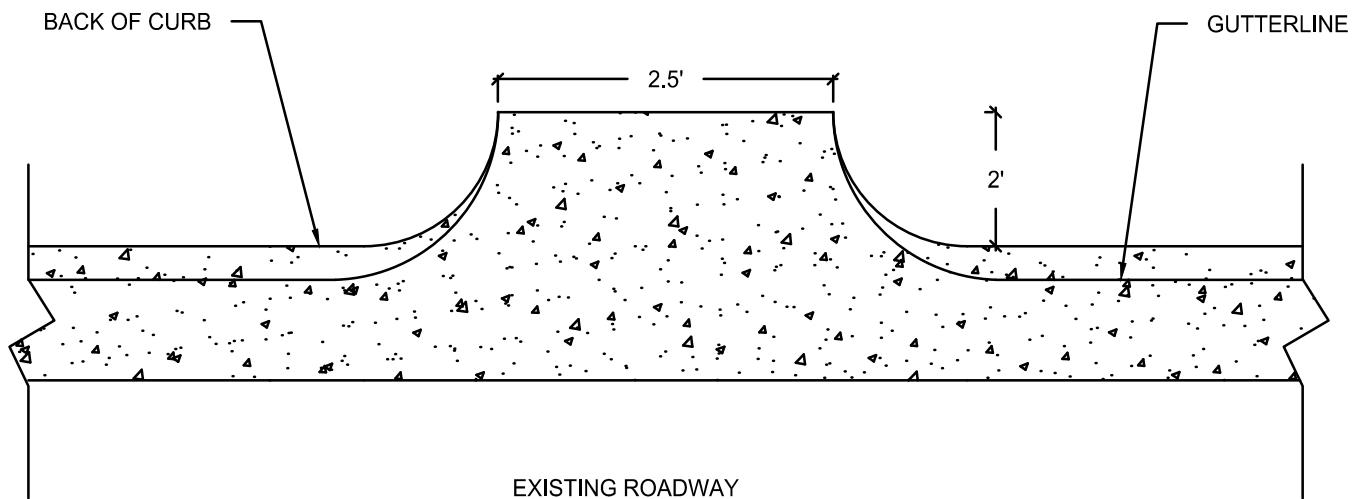
STANDARD DETAILS

Date: 1/20/2023

Revised:

STR-12

DRAIN TO PERVIOUS SURFACE (RAIN GARDEN, YARD, ETC).
SEE PLANS FOR MORE INFORMATION



CURB CUT

STANDARD DETAILS

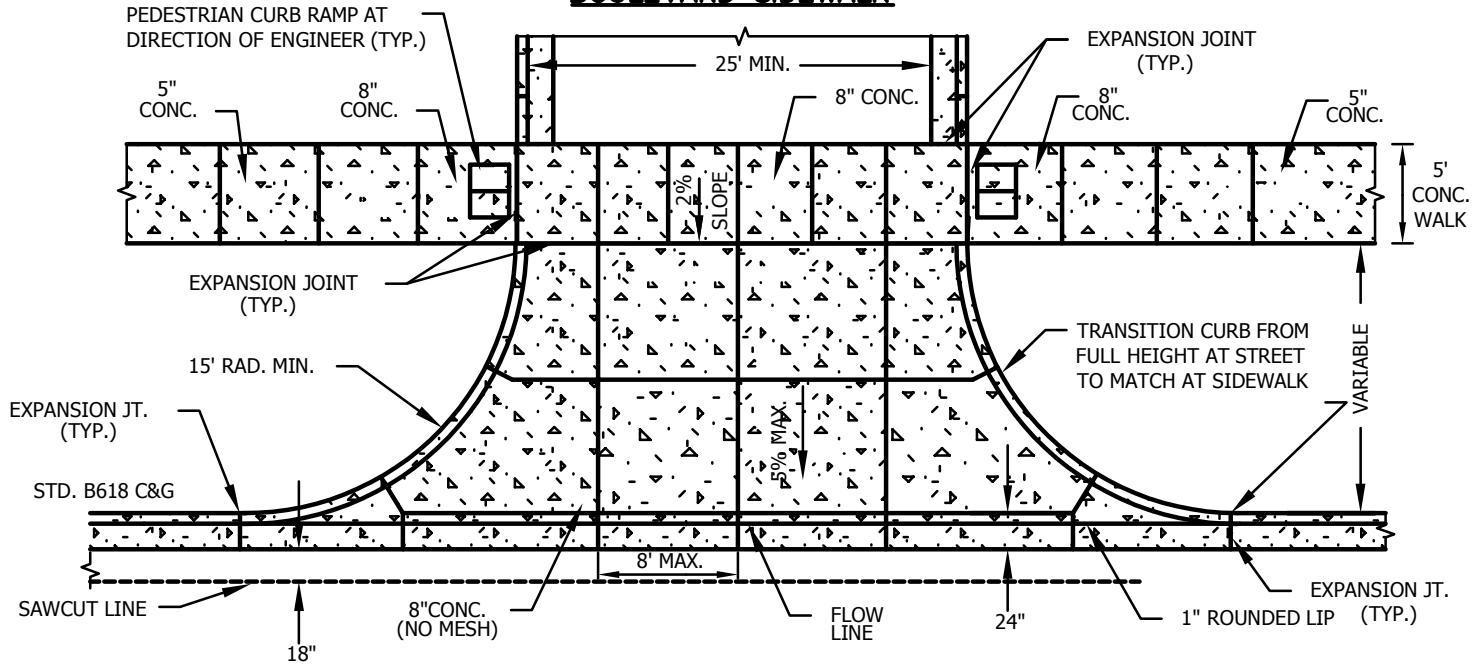
Date:

12/14/2020

Revised:

STR-13

COMMERCIAL DRIVEWAY WITH BOULEVARD SIDEWALK



NOTES:

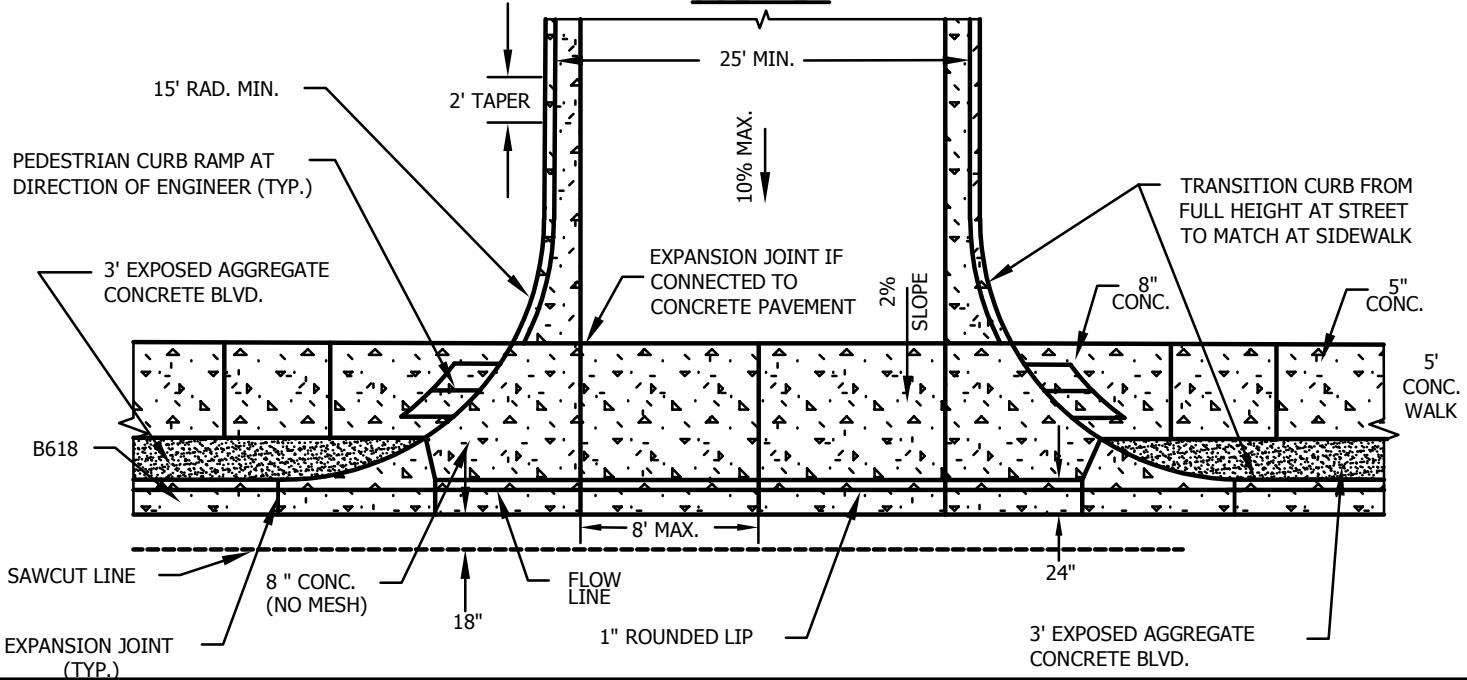
FORM CONTRACTION JOINT AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANELS (MAX. AREA OF 64 S.F.)

8" CLASS 5 BASE UNDER ALL CONCRETE

4" BIT PAVEMENT IN 2 - 2" LIFTS OR MATCH EXISTING THICKNESS ON CITY STREET OF PROPERTY

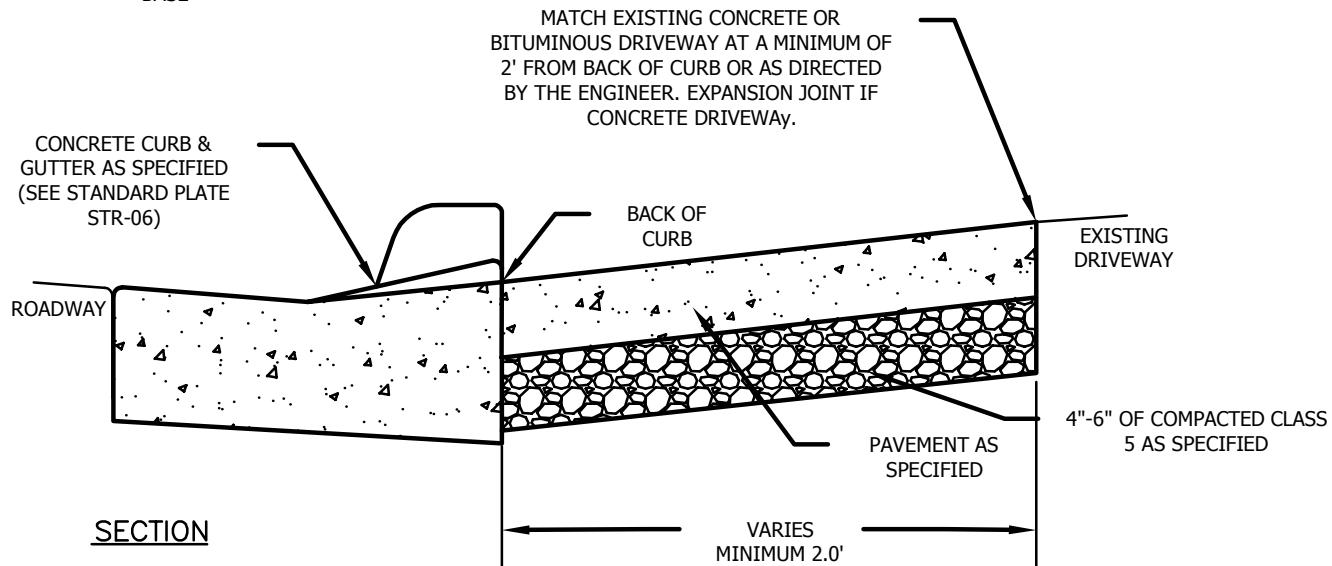
EXPANSION JOINT MATERIAL SHALL BE CLOSED CELL POLYETHYLENE

COMMERCIAL DRIVEWAY WITH SIDEWALK



CONCRETE
6" THICK (RESIDENTIAL) OR
8" THICK (COMMERCIAL)
6" OF COMPACTED CLASS 5 AGGREGATE
BASE

BITUMINOUS DRIVEWAY
3" THICK TYPE SPWEA230B
4"-6" OF COMPACTED CLASS 5
AGGREGATE BASE



SECTION

NOTES:

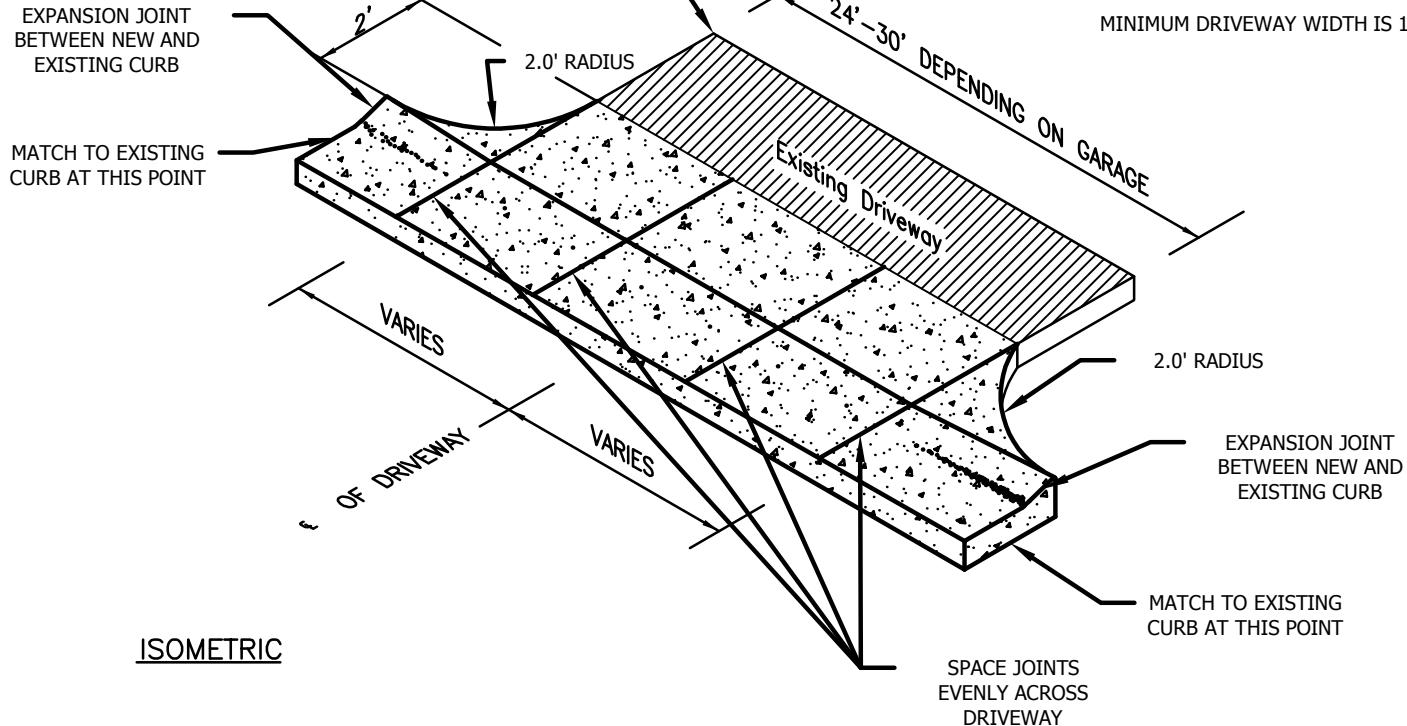
MATCH EXISTING CONCRETE OR
BITUMINOUS DRIVEWAY A MINIMUM OF 2'
FROM BACK OF CURB OR AS DIRECTED BY
ENGINEER. EXPANSION JOINT IF
CONCRETE DRIVEWAY OR AS DIRECTED BY
ENGINEER.

EXPANSION JOINT MATERIAL SHALL BE
CLOSED CELL POLYETHYLENE

MAXIMUM DRIVEWAY WIDTH SHALL NOT
EXCEED;

- 24' FOR 2 STALL GARAGE
- 30' FOR 3 OR MORE STALL GARAGE

MINIMUM DRIVEWAY WIDTH IS 12'



ISOMETRIC



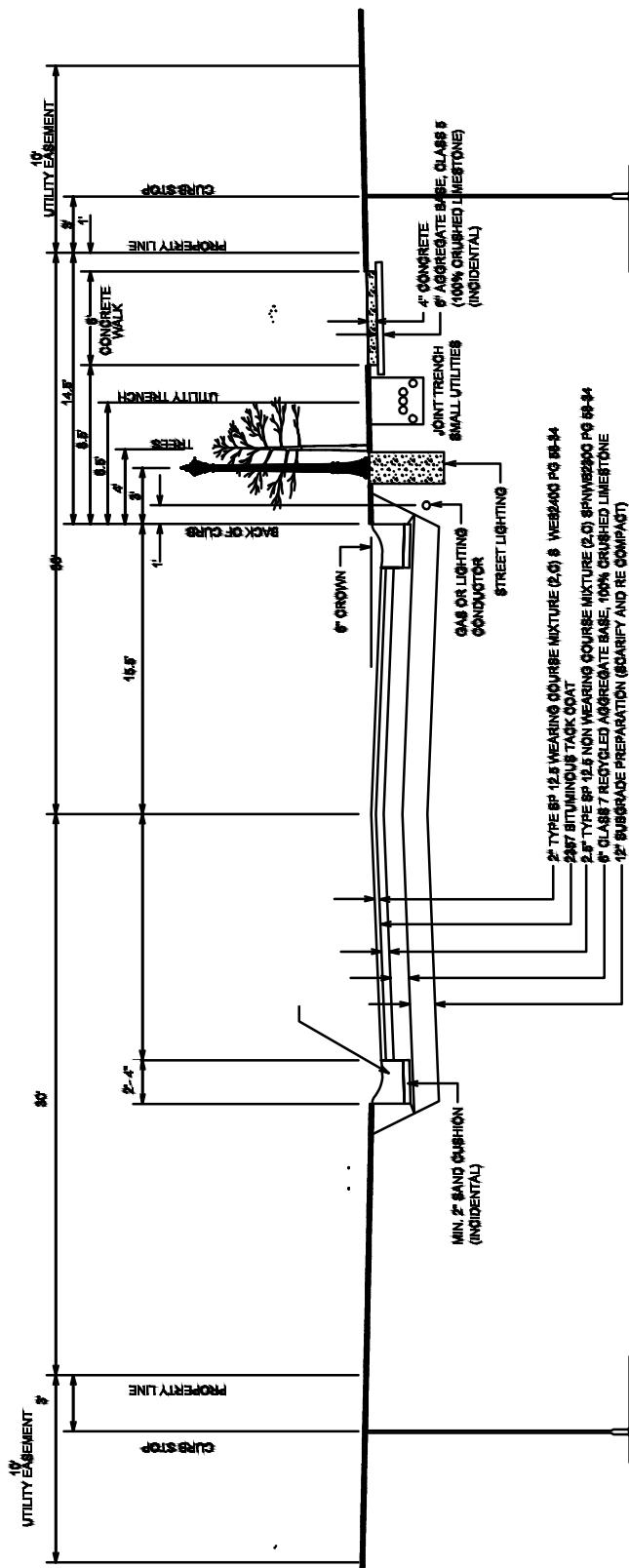
**CONCRETE DRIVEWAY
APRON - RESIDENTIAL**

STANDARD DETAILS

Date:	02/01/2022
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Revised:

STR-15



NOTES:

1. WHERE PATHWAYS ARE PROVIDED, INSTEAD OF SIDEWALKS, ADDITIONAL WIDTH MUST BE ADDED TO ACCOMMODATE THE PATH AND ALLOW 5' TO THE R/W FOR SNOW STORAGE.
2. 2% BOULEVARD CROSS-SLOPE WITHOUT SIDEWALK 5% BOULEVARD CROSS-SLOPE WITH SIDEWALK.
3. SIGNS, HYDRANTS, AND STREET LIGHTS AT 6' BEHIND FACE OF CURB.
4. ALL DIMENSIONS ARE FROM FACE OF CURB.



STREET LAYOUT -
NEW URBAN RESIDENTIAL,
SIDEWALK ONE SIDE

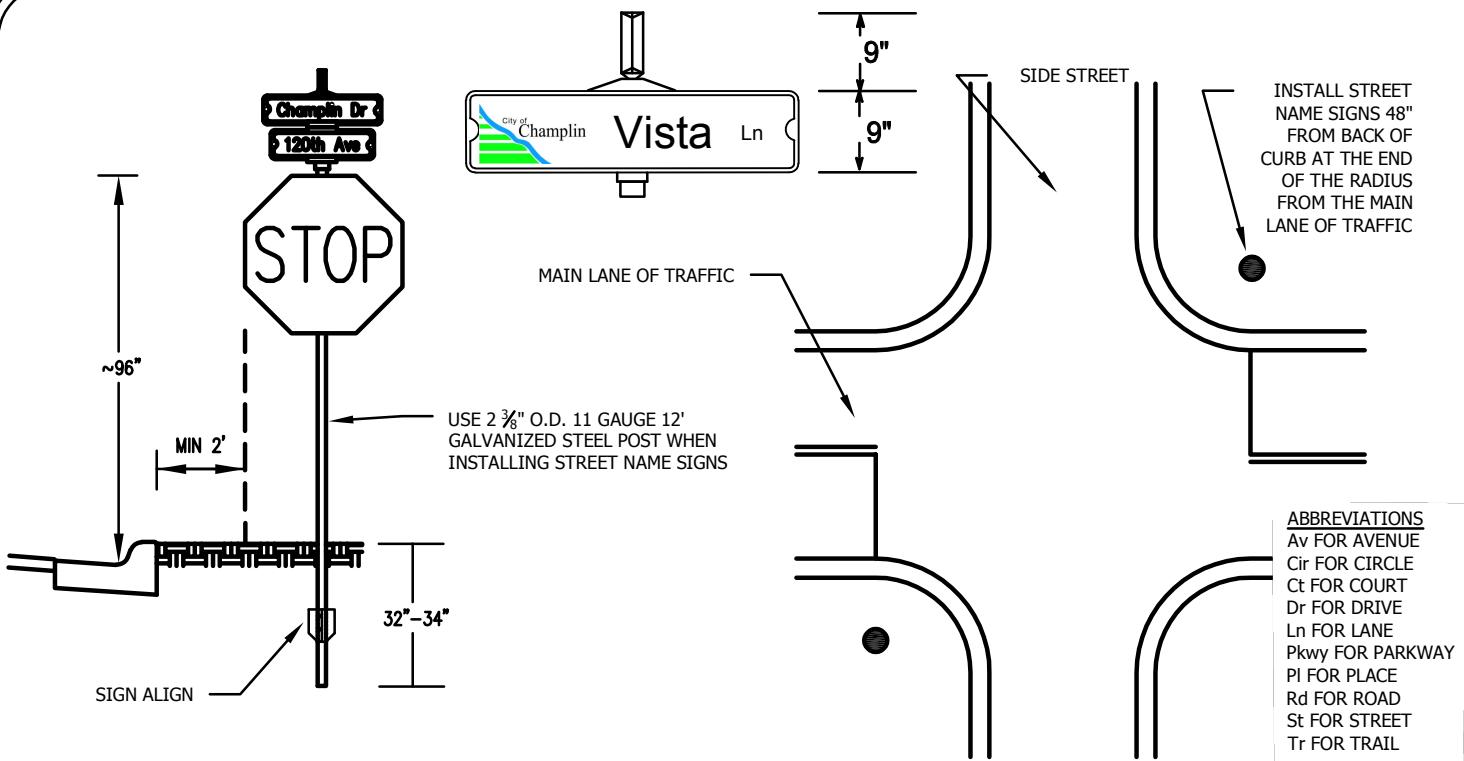
STANDARD DETAILS

Date:

12/01/2020

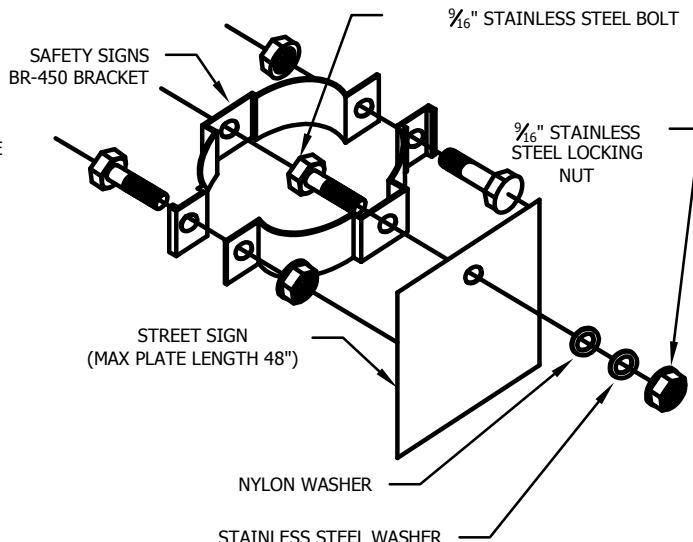
Revised:

STR-16



ABBREVIATIONS

Av FOR AVENUE
Cir FOR CIRCLE
Ct FOR COURT
Dr FOR DRIVE
Ln FOR LANE
Pkwy FOR PARKWAY
Pl FOR PLACE
Rd FOR ROAD
St FOR STREET
Tr FOR TRAIL



BLADE SPECIFICATION -

- ALUMINUM BLANKS SHALL BE CONSTRUCTED OF 052-H38 ALLOY
- HAVE A GAUGE OF .080
- BE NOTCHED FOR USE WITH E-450 BRACKETS
- HAVE HOLES PUNCHED AT EACH END FOR BOLTING TOGETHER AND BE 9" AS REQUIRED
- BLANKS SHALL HAVE 1 1/2" ROUND CORNERS.
- LETTERING
 - SERIES C
 - SIZE - 6" UPPER CASE, 4" LOWER CASE, 3" FOR ABBREVIATIONS
- 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING
- WHITE ON MNDOT GREEN BACKGROUND WITH WHITE TRIM FOR PUBLIC STREETS
- WHITE ON MNDOT BROWN BACKGROUND WITH WHITE TRIM FOR PRIVATE STREETS
- FIRST LETTER OF EACH WORD TO BE "CAPITAL" LETTERS; REMAINING LETTERS OF EACH WORD TO BE LOWER CASE
- MAXIMUM OF 2 STREET NAME BLADES PER POLE, IF MORE STREET NAME BLADES ARE REQUIRED, CONTRACTOR WILL NEED TO INSTALL ANOTHER POLE ON OPPOSITE CORNER
- ALWAYS INSTALL THE CROSS STREET NAME BLADE ON THE BOTTOM

NOTES:

ALL REGULATORY AND STREET SIGNS MUST BE MAINTAINED THROUGHOUT CONSTRUCTION. TEMPORARY SIGNAGE MAY BE REQUIRED AND IS CONSIDERED INCIDENTAL.

ALL IN-PLACE SIGNS NOT SHOWN IN PLANS SHALL BE MAINTAINED IN-PLACE THROUGHOUT CONSTRUCTION, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

LOCATION OF ALL PROPOSED SIGNS ARE APPROXIMATE AND SHALL BE LOCATED BY THE ENGINEER IN THE FIELD PRIOR TO INSTALLATION.

SIGN PANELS-REFLECTIVE SHEETING WILL BE DG3 MATERIAL.

ALL TYPE C SIGN PANELS SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE THE SIGN, SIGN POST, MOUNTING HARDWARE, SIGN AND LABOR FOR THE INSTALLATION OF ALL TYPE C SIGNS.

WHEN CONTRACTOR IS INSTALLING TYPE C SIGNS THEY MUST USE A E-450 BRACKET

A SIGN PLAN SHOWING SIGN COLORS, SIZES AND LETTERING MUST BE SUBMITTED TO THE CITY OF CHAMPLIN ENGINEERING DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO SIGN INSTALLATION.



**STREET NAME BLADE INSTALLATION
WITH TRAFFIC SIGN**

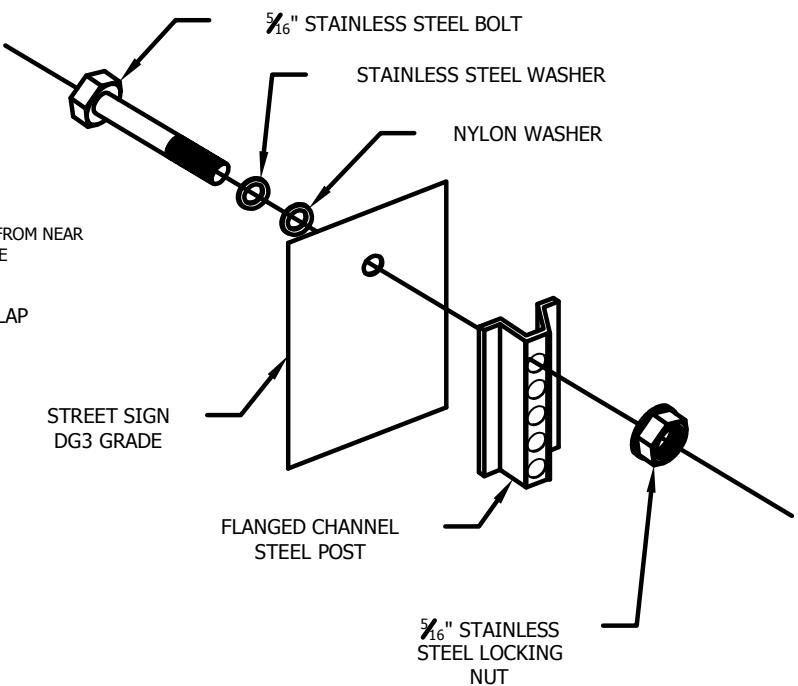
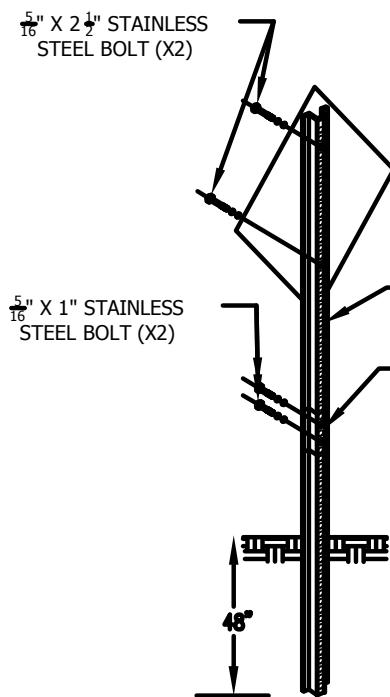
STANDARD DETAILS

Date:

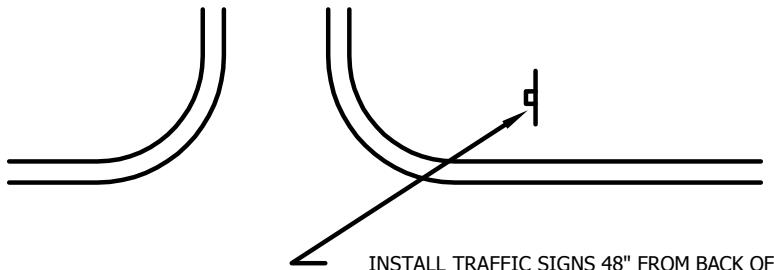
1/20/2023

Revised:

STR-17



- 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING
- UPPER SIGN POST SHALL BE A 7' 2 LBS/FT GALVANIZED WHEN THE SIGN BEING INSTALLED IS 30" STOP SIGN OR SMALLER TRAFFIC SIGN
- UPPER SIGN POST SHALL BE A 8' 2 LBS/FT GALVANIZED WHEN THE SIGN BEING INSTALLED IS 30" W-SERIES DIAMOND OR LARGER TRAFFIC SIGN
- SIGN INSTALLED IN CONCRETE SHALL BE INSTALLED PER THE CITY OF CHAMPLIN DETAILED PLATE STR-XXX
- WHEN TRAFFIC SIGNS ARE INSTALLED BETWEEN A SIDEWALK AND THE BACK OF CURB SPLIT THE DISTANCE.
- KEEP ALL TRAFFIC SIGNS 4' AWAY IN ALL DIRECTIONS FROM PEDESTRIAN RAMPS



48" FROM BACK OF CURB TO CENTER OF POST OR 33" FROM BACK OF CURB TO NEAR EDGE OF SIGN WHICHEVER IS GREATER. THIS DISTANCE CAN BE LESS IN THE CASE OF A SIDEWALK RUNNING PARALLEL TO THE ROAD. IN THIS CASE THE SIGN POST SHOULD BE INSTALLED MIDWAY BETWEEN SIDEWALK EDGE AND BACK OF CURB.

NOTES:

ALL REGULATORY AND STREET SIGNS MUST BE MAINTAINED THROUGHOUT CONSTRUCTION. TEMPORARY SIGNAGE MAY BE REQUIRED AND IS CONSIDERED INCIDENTAL.

ALL IN-PLACE SIGNS NOT SHOWN IN PLANS SHALL BE MAINTAINED IN-PLACE THROUGHOUT CONSTRUCTION, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

LOCATION OF ALL PROPOSED SIGNS ARE APPROXIMATE AND SHALL BE LOCATED BY THE ENGINEER IN THE FIELD PRIOR TO INSTALLATION.

SIGN PANELS-REFLECTIVE SHEETING WILL BE DG3 MATERIAL.

ALL TYPE C SIGN PANELS SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE THE SIGN, SIGN POST, MOUNTING HARDWARE, SIGN AND LABOR FOR THE INSTALLATION OF ALL TYPE C SIGNS.

A SIGN PLAN SHOWING SIGN COLORS, SIZES AND LETTERING MUST BE SUBMITTED TO THE CITY OF CHAMPLIN ENGINEERING DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO SIGN INSTALLATION.



TRAFFIC SIGN INSTALLATION

STANDARD DETAILS

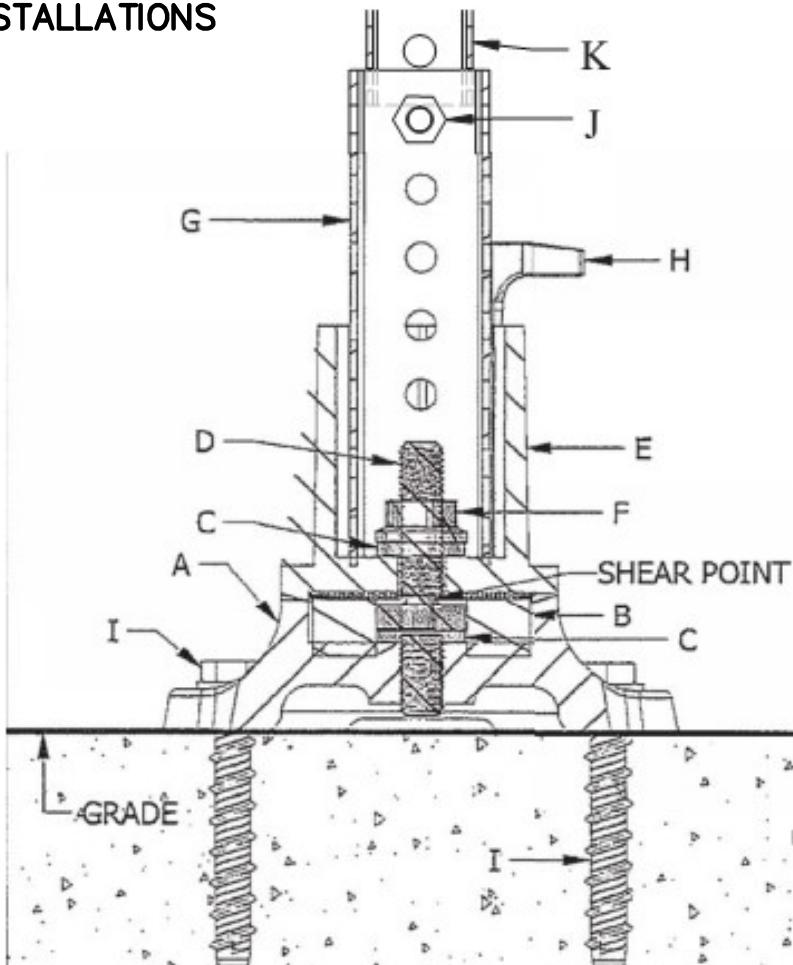
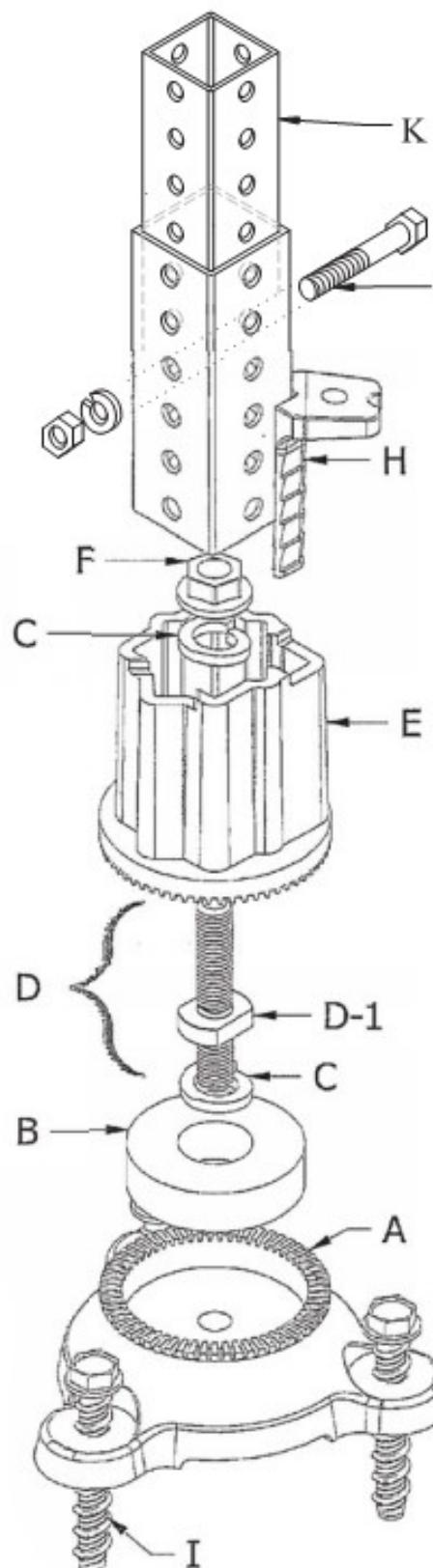
Date:

1/20/2023

Revised:

STR-18

**KLEEN BREAK MODEL 425
FOR SURFACE MOUNT CONCRETE
INSTALLATIONS**



INSET A

PARTS LIST

A. SURFACE MOUNT ANCHOR BASE	PART NUMBERS
B. RUBBER BUSHING	A. SMK83-G
C. LOCK WASHERS	B. RB30-EPDM
D. 5/8"-11 x 4" SHEAR BOLT	C. SBH5848-Z
D-1 SHOULDER	D. SBH5848-Z
E. TOP HALF COUPLER	D-1 SBH5848-Z
F. 5/8"-11 SERRATED FLANGE NUT	E. TX175-200-G
G. SIGN SUPPORT (12 GAUGE SQUARE POST 2" X 2")	H. LWX35-G
H. SIGN SUPPORT LOCKING WEDGE	
I. CONCRETE MOUNTING FASTENER (NOT INCLUDED)	
J. 1/4" X 2-1/2" GALVANIZED BOLT, LOCK WASHER & NUT. (LOCATED TWO BOLT HOLES ABOVE TOP OF LOCKING WEDGE)	
k. 3' PIECE OF 1-3/4" X 1-3/4" SQUARE SIGN SUPPORT INSIDE 2" SUPPORT.	

NOTES

1. BREAKAWAY ANCHORS WILL BE INSTALLED ON ALL SIGNS THAT ARE PLACED IN CONCRETE.
2. PROVIDE EXTRA SHEAR BOLTS & LOCK WASHERS TO THE CITY OF CHAMPLIN
3. REFER TO SIGN PLAN SHEETS FOR SIGN SIZE AND INSTALLATION LOCATIONS.
4. SEE MnDOT 2564 FOR FURTHER INFORMATION



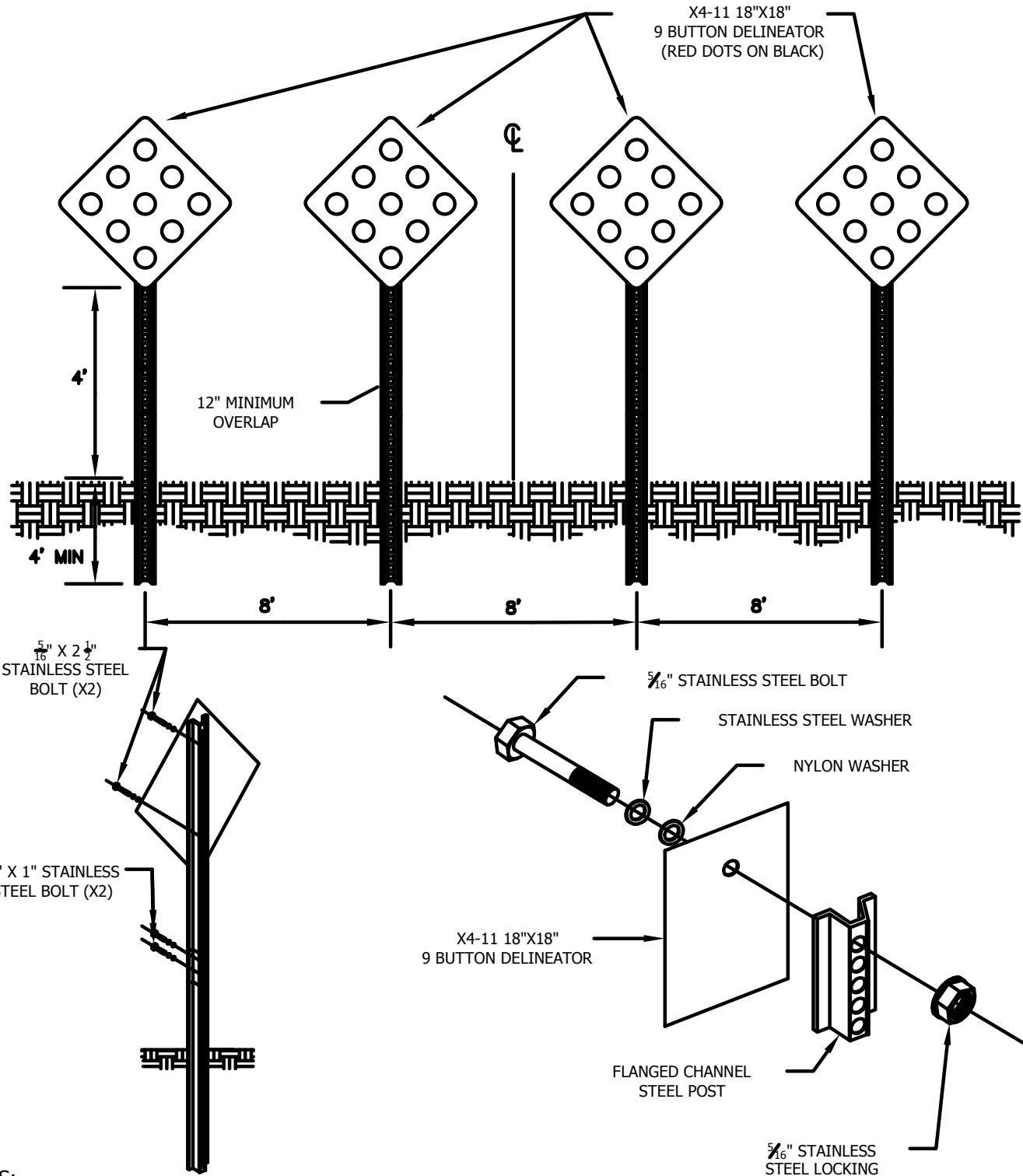
**SQUARE TUBULAR SIGN
POST BREAKAWAY**

STANDARD DETAILS

Date:	1/20/2023
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Revised:

STR-19



NOTES:

THE PLACEMENT OF THE BARRICADES SHALL BE 10' FROM THE EDGE OF THE BITUMINOUS ROADWAY WITH THE BARRICADE CENTERED ON THE ROADWAY FACING THE FLOW OF TRAFFIC

SIGN SHALL BE MADE OF 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING

UPPER SIGN POST SHALL BE A 4' 2 LBS/FT GALVANIZED POST

LOWER SIGN POST SHALL BE A 8' 2 LBS/FT GALVANIZED POST



BARRICADE

STANDARD DETAILS

Date:	1/20/2023
Revised:	

STR-20

INDEX

CITY
PLATE
NO.

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SECTION 3 - WATERMAIN

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HYDRANT AND GATE VALVE INSTALLATION
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BUTTERFLY VALVE & BOX
1" WATER SERVICE WITH PVC WATERMAIN
POLYSTYRENE INSULATION
WATERMAIN OFFSET
WATERMAIN WET TAP
CONCRETE THRUST BLOCKING
IRRIGATION SYSTEM



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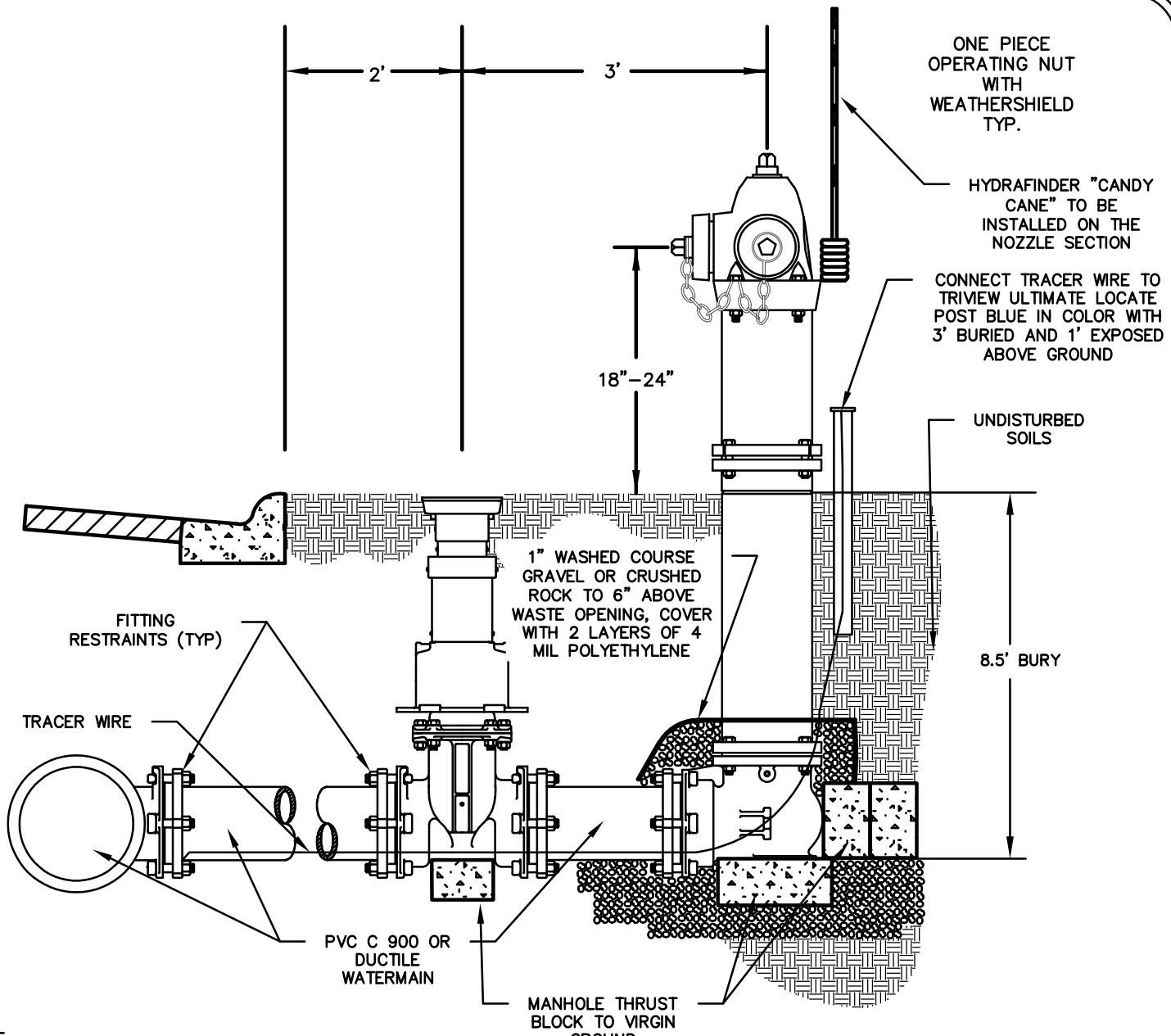
STANDARD DETAILS

Date:

1/12/2023

Revised:

WAT-00



NOTES:

HYDRANT SHALL BE WATEROUS PACER MODEL WB67-250.

HYDRANT SHOULD HAVE TWO (2)-2 $\frac{1}{2}$ INCH AND ONE-HALF (4 $\frac{1}{2}$) PUMPER CONNECTIONS WITH NATIONAL STANDARD THREADS AND A 16" BREAK OFF TRAFFIC FLANGE.

ALL HYDRANTS AND GATE VALVES SHALL HAVE MECHANICAL JOINT CONNECTIONS.

ALL VALVES TO OPEN COUNTER-CLOCKWISE.

ALL BACKFILL SHALL BE PROPERLY COMPACTED.

FIRE HYDRANTS SHALL BE PAINTED RED AT THE FACTORY.

WEEP HOLES LOCATED ABOVE NORMAL WATER TABLE TO BE LEFT OPEN, DRAIN HOLES BELOW WATER TABLE SHALL BE PLUGGED AT THE DISCRETION OF THE ENGINEER AND NOZZLES PAINTED YELLOW.

ALL RODS AND RETAINERS TO BE COATED WITH BITUMASTIC

ALL HYDRANT LEADS SHALL BE TIED WITH $\frac{3}{4}$ " TIE RODS. TIE ROD SHALL EXTEND FROM TEE TO VALVE AND VALVE TO HYDRANT. MEGA LUGS OR ALPHA CLAMPS MAY BE USED IN LIEU OF TIE RODS.



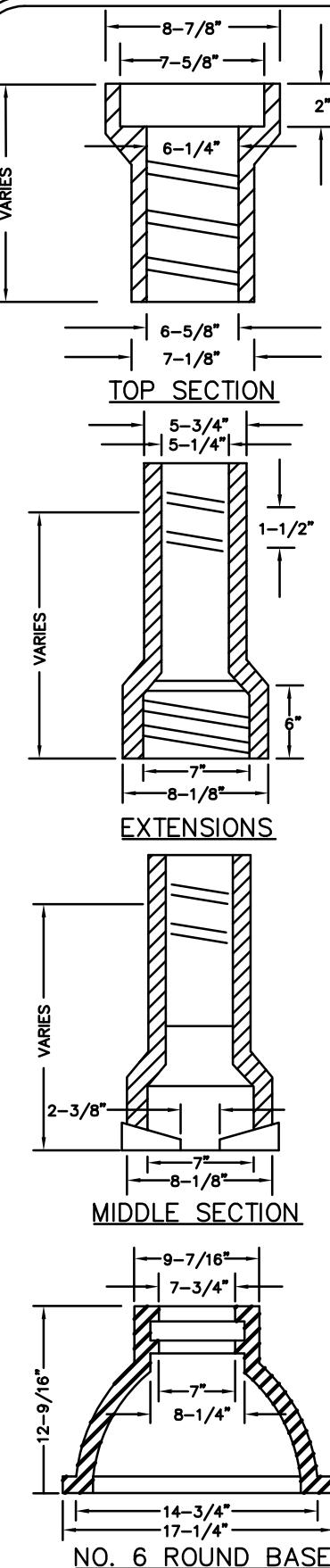
**HYDRANT AND GATE VALVE
INSTALLATION**

STANDARD DETAILS

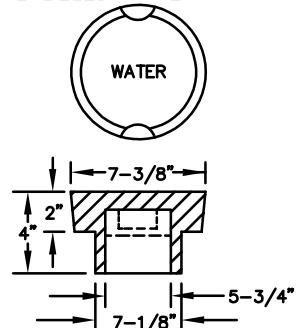
Date: 1/12/2023

Revised:

WAT-01



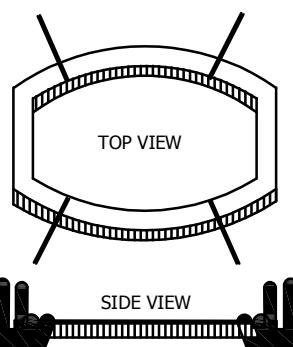
TYLER DROP LID NO. 6865 OR
MUELLER COVER NO.
H-10361 OR APPROVED EQUAL
LABLED WATER



GATE VALVE ADAPTOR:

$\frac{1}{4}$ " STEEL WITH
PROTECTIVE COATING
 $\frac{1}{2}$ " RUBBER GASKET
INSTALLED BETWEEN
GATE VALVE AND
ADAPTOR

FINISHED GRADE



TYLER (NO. 58, 59 & 60)
MUELLER (NO. 58 & 59)
OR APPROVED EQUAL

NOTES:

ALL BOLTS INCLUDING T-BOLTS
SHALL BE 316 STAINLESS STEEL.

OPERATING ROD EXTENSION SHALL
BE INSTALLED ON ALL GATE
VALVES DEEPER THAN 10'.

GATE VALVE AND BOX SHALL BE
STRAIGHT, ALLOWING A 4" PVC
PIPE TO SLIDE DOWN THE BOX
AND OVER THE GATE OPERATING
NUT

ALL GATE VALVES SHALL BE
DUCTILE IRON

MEGALUG OR ALPHA CLAMPS ARE
ACCEPTABLE

ADJUST TOP TO $1/4$ " BELOW
BLACKTOP GRADE OR $3/4$ " BELOW
FINISHED BOULEVARD GRADE AND
SHALL BE SET SO AS TO PROVIDE
12" OF UPWARD ADJUSTMENT.

GATE VALVE BOX, SCREW TYPE,
THREE PIECE, 5 $1/4$ " SHAFT, SIZE G
BOX 7'-6" EXTENDED NO. 6 ROUND
BASE

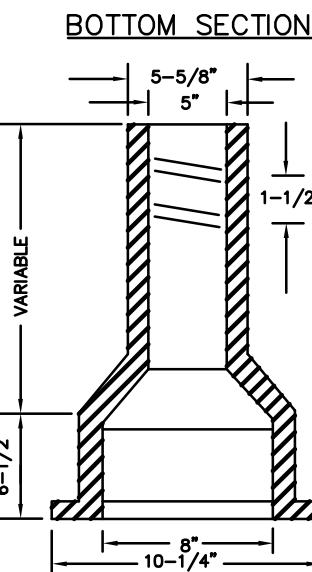
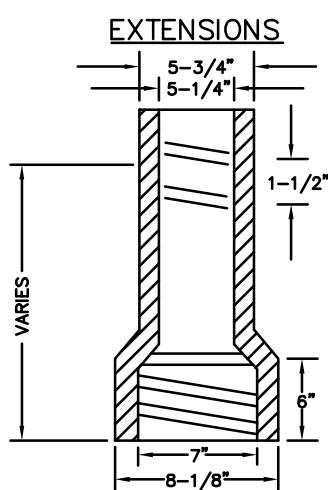
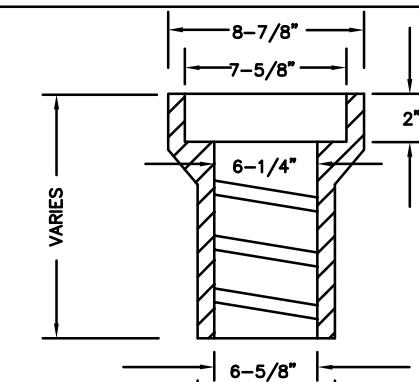
GATE VALVE AND BOXES SHALL BE:
TYLER SERIES NO. 6860
MUELLER NO. H-10357 OR
APPROVED EQUAL.

G.V. ADAPTOR AS
MANUFACTURED BY
ADAPTOR INC. OR
APPROVED EQUAL
SEE ABOVE DETAILS

ALL GATE VALVES SHALL BE OF
RESILIENT WEDGE TYPE CONFORMING
TO AWWA C515 STANDARDS.

PROTECTO CAP

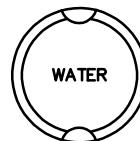
8" CONCRETE BLOCK



7.5' MINIMUM COVER REQUIRED OVER
TOP OF WATER MAIN

FINISH GRADE

DROP LID

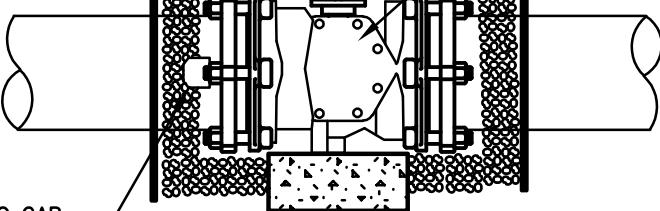


ADJUST TOP TO $\frac{1}{2}$ " BELOW
BLACKTOP GRADE OR $\frac{3}{4}$ "
BELOW FINISHED BOULEVARD
GRADE. BOX TO BE SET TO
PROVIDE 12" OF UPWARD
ADJUSTMENT

1 CUBIC YARD CRUSHED
ROCK COVER WITH 2
LAYERS OF 4 MIL
POLYETHYLENE LEAVING THE
NUT EXPOSED

RESTRAINT
FITTING
(TYP.)

BUTTERFLY
VALVE



END VIEW

NOTES:

ALL SECTIONS SHALL BE TYLER 6860 G OR SIGMA VB261 OR VB268 WITH $\frac{1}{4}$ " WALL
THICKNESS

ALL BOLTS INCLUDING T-BOLTS SHALL BE STAINLESS STEEL 316 GRADE

DROP LID SHALL EITHER BE A TYLER NO. 6865 OR SIGMA LABELED WATER

NO SCREW IN TOP SECTIONS OR ADJUSTING RINGS ARE ALLOWED

INSTALL NUT EXTENDER TO 7' DEPTH ON ALL VALVES WITH OVERDEPTH BURY

BUTTERFLY VALVE AND BOX SHALL BE STRAIGHT, ALLOWING A 4" PVC PIPE TO SLIDE
DOWN THE BOX AND OVER THE GATE VALVE OPERATING NUT.

MEGALUG OR ALPHA CLAMPS ARE ACCEPTABLE



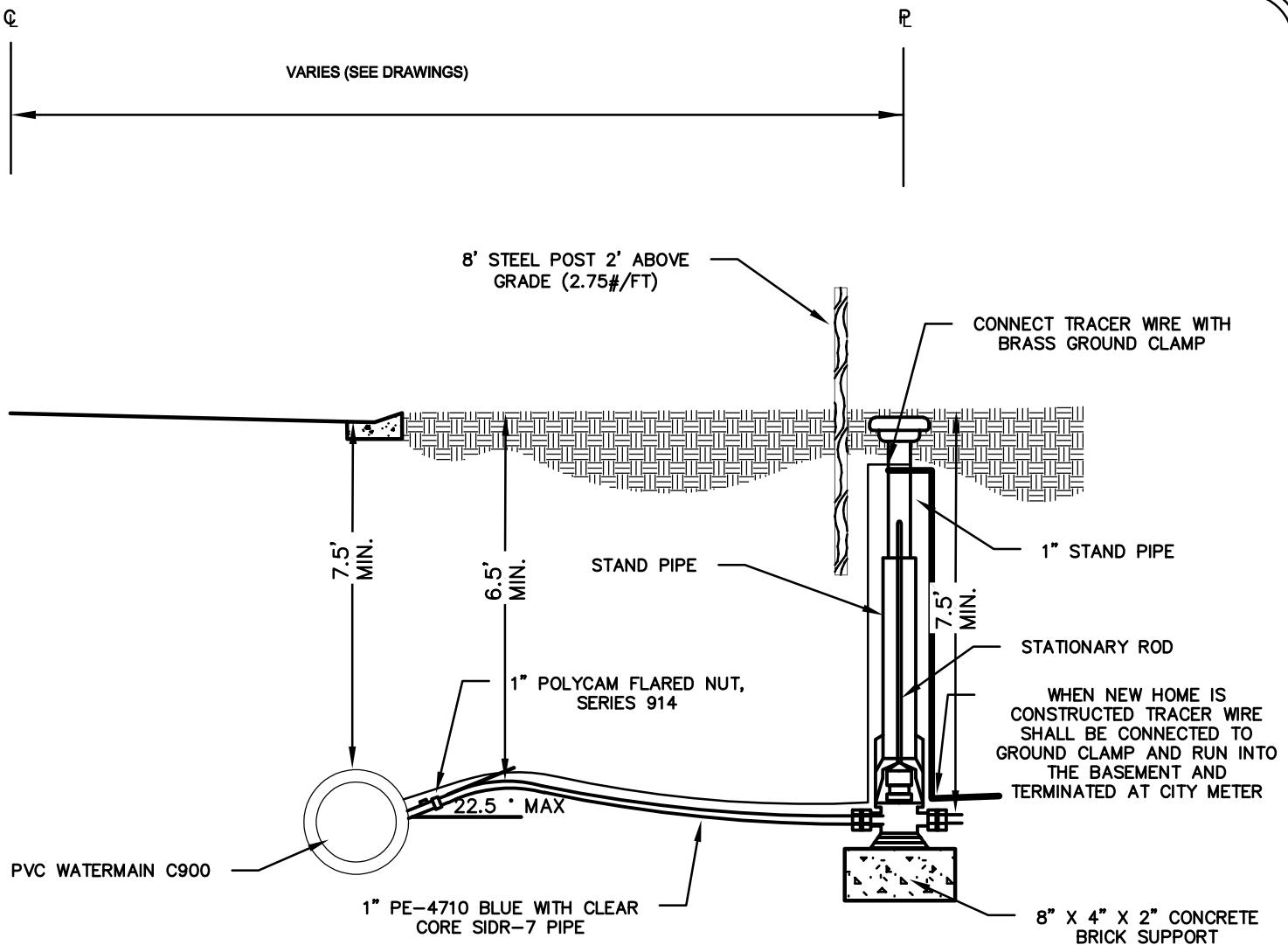
**BUTTERFLY VALVE & BOX
(12" OR LARGER ONLY)**

STANDARD DETAILS

Date:
1/12/2023

Revised:

WAT-03



NOTES:

ANY CURB STOP LOCATED IN BLACKTOP OR CONCRETE DRIVEWAY OR SIDEWALK SHALL BE COVERED WITH A FORD A-1 METER BOX WITH "WATER" INSCRIBED ON IT.

ALL WATER SERVICES SHALL BE 1" PE-4710 BLUE WITH CLEAR CORE SDR-7 PIPE.

TRACER WIRE INSTALLATION SHALL MEET MN RURAL WATER SPECIFICATION.

ALL NEW WATER SERVICES INSTALLED SHALL USE A SMITH-BLAIR 372 STAINLESS STEEL SADDLE.

CORPORATION SHALL BE A 1" FORD FB 1001-4-NL, MCDONALD 74701-B-33, OR OWNER APPROVED ALTERNATE.

CURB STOP AND BOX SHALL BE 1" FORD B22-444-M-NL WITH C06-44-NL PACK JOINT COUPLING, MCDONALD 76104 WITH 74755-33 NL SERVICE FITTING, OR OWNER APPROVED ALTERNATE WITH A STATIONARY ROD AND BE ABLE TO ADJUST FROM 84" TO 96".

STIFFENERS REQUIRED ON ALL FLEXIBLE PLASTIC CONNECTIONS.

WATER SERVICE MUST BE CONTINUOUS WITH NO JOINTS.

SANITARY AND WATER SERVICE LINES SHALL BE INSTALLED IN THE SAME TRENCH WITH 3 FEET OF SEPARATION, WATER SERVICE ON UPSTREAM SIDE OF SANITARY SERVICE.

WHEN HOME IS BEING CONSTRUCTED THE CONTRACTOR SHALL CONNECT A NEW WIRE TO THE GROUND CLAMP AND RUN A TRACER WIRE INTO THE BASEMENT AND TERMINATE THE WIRE AT THE CITY WATER METER.



**1" WATER SERVICE WITH
PVC WATERMAIN**

STANDARD DETAILS

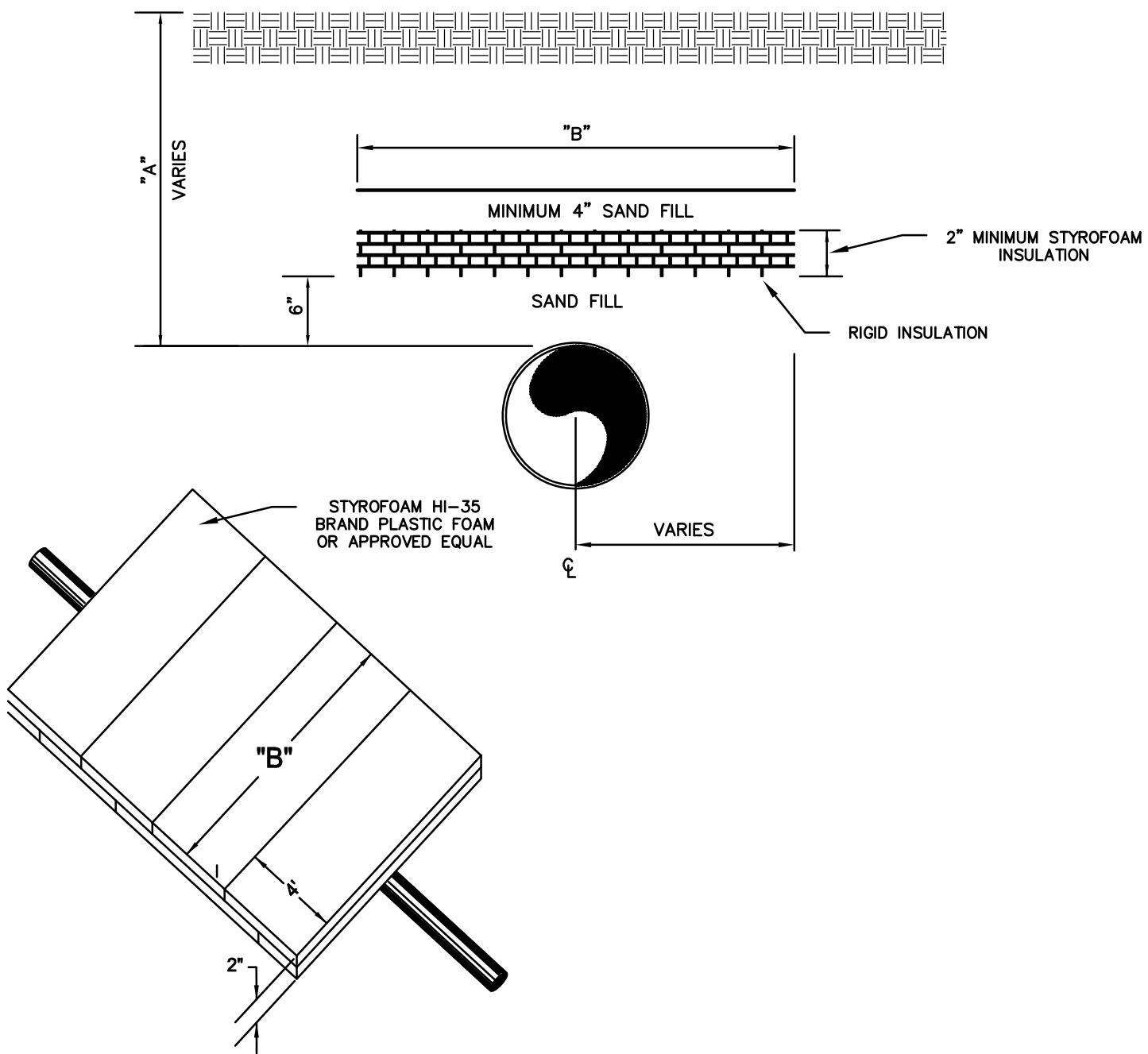
Date:

2/1/2023

Revised:

WAT-04

DESIGN OR EXISTING GRADE



NOTES:

PIPE SHALL BE CENTERED UNDER INSULATION UNLESS OTHERWISE SPECIFIED

COVER OVER PIPE - "A"

2'	12'
3'	10'
4'	8'
5'	6'
6'	4'

WIDTH OF INSULATION BOARD - "B"

2" OF INSULATION = 2' OF COVER



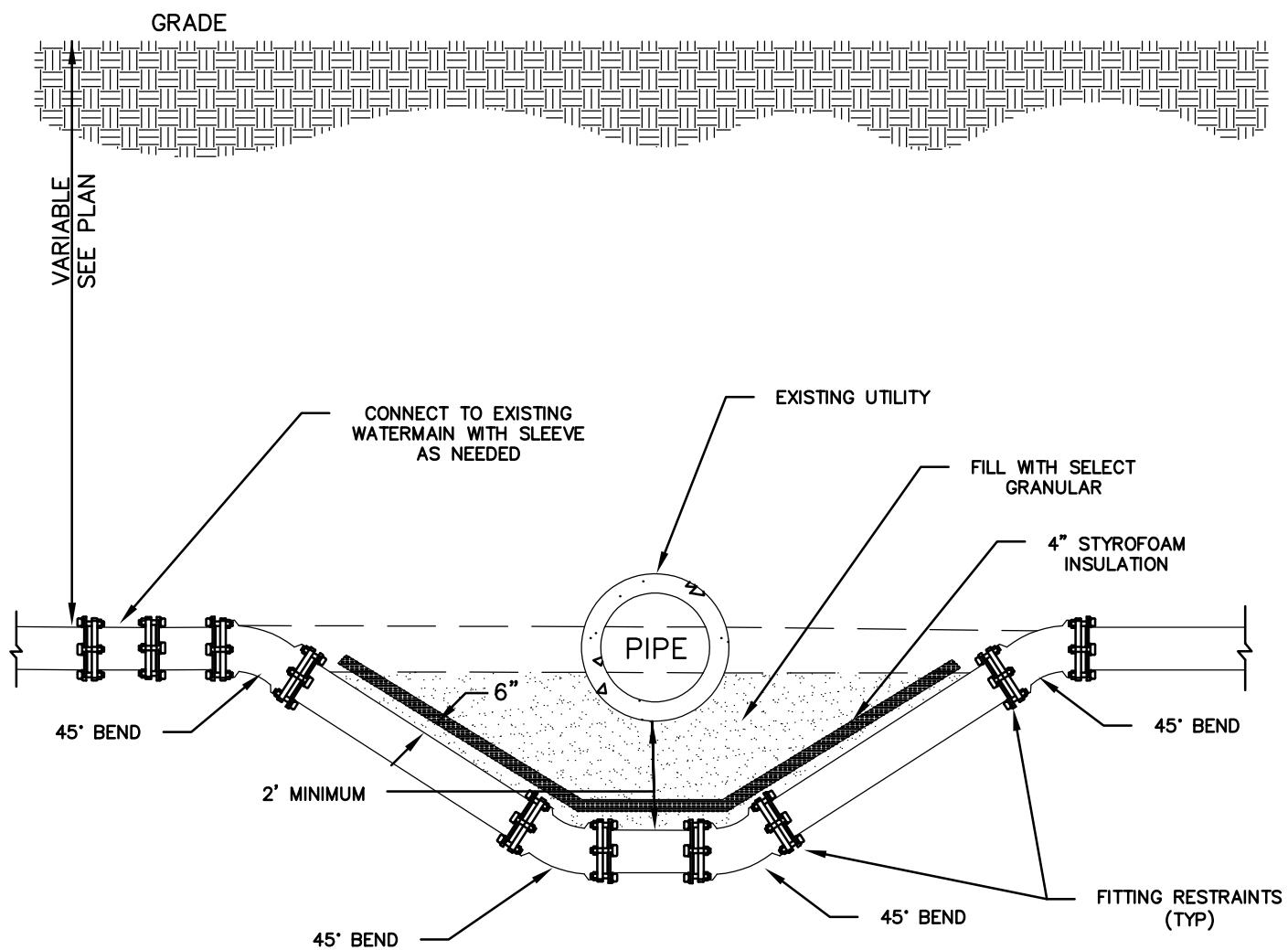
POLYSTYRENE INSULATION

STANDARD DETAILS

Date:
1/12/2023

Revised:

WAT-05



NOTES:

- PREFERRED METHOD OF OFFSET WATERMAIN IS OVER DEPTH EXCAVATION.
- PLACE 6" COMPACTED SAND BELOW INSULATION
- ALL NUTS AND BOLTS TO BE 316 STAINLESS STEEL
- MAINTAIN A 2.0' MINIMUM CLEAR ZONE SEPARATION BETWEEN CONFLICTING UTILITIES
- ON NEW WATERMAIN DIVE WATERMAIN UNDER CONFLICTING PIPE
- CONTRACTOR SHALL INSTALL CONDUCTIVITY STRAPS AT ALL FITTING LOCATIONS.
- TIE ALL JOINTS WITH MEGALUG OR ALPHA CLAMPS



WATERMAIN OFFSET

STANDARD DETAILS

Date:

2/1/2023

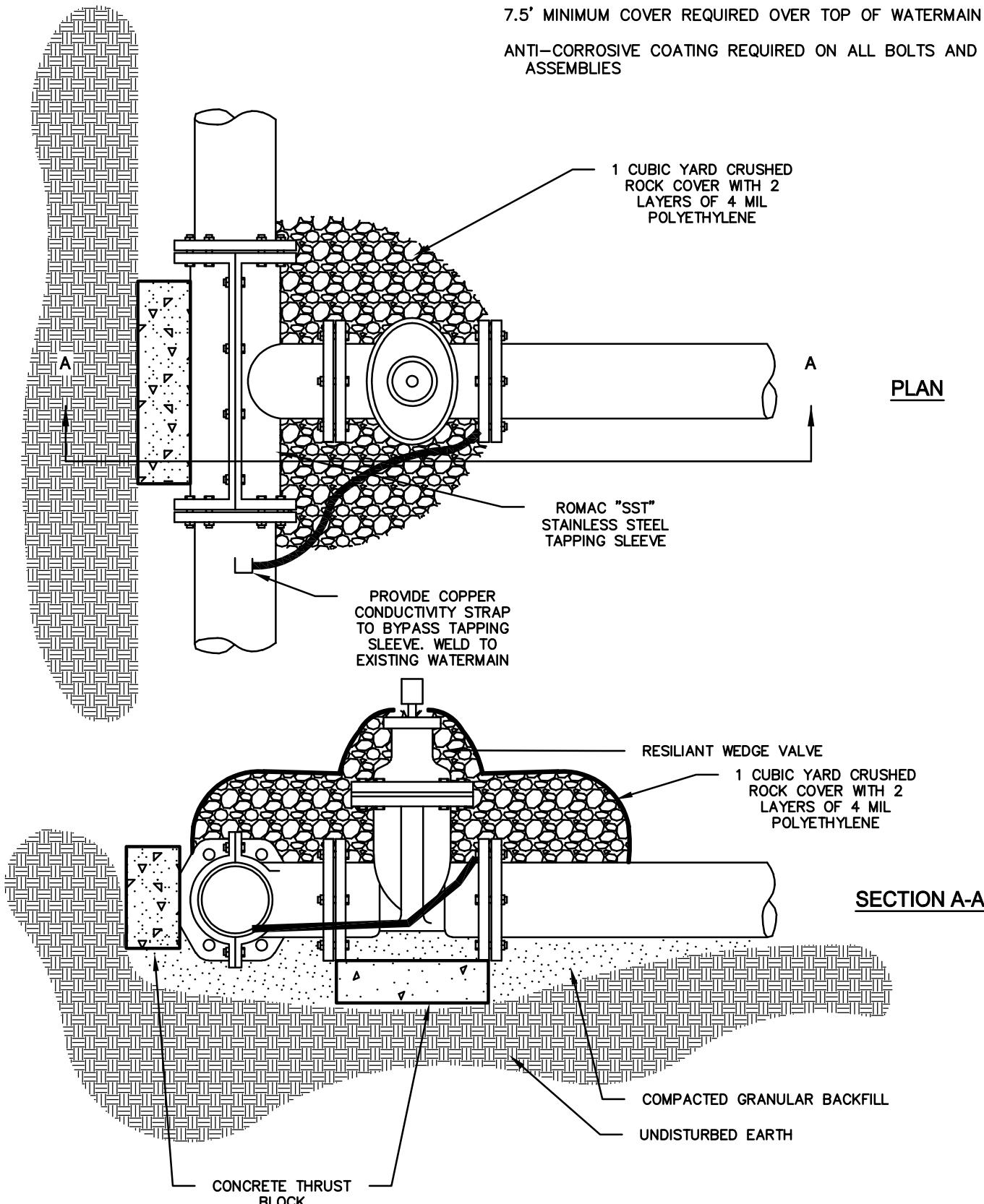
Revised:

WAT-06

NOTES:

7.5' MINIMUM COVER REQUIRED OVER TOP OF WATERMAIN

ANTI-CORROSION COATING REQUIRED ON ALL BOLTS AND RESTRAINT ASSEMBLIES



WATERMAIN WET TAP

STANDARD DETAILS

Date:

1/12/2023

Revised:

WAT-07

NOTES:

DIMENSIONS IN TABLE ARE BASED ON A WATER PRESSURE OF 150 PSI AND AN EARTH RESISTANCE OF 1 TON PER SQ. FT.

DIMENSIONS C1, C2 AND C3 SHOULD BE AS LARGE ENOUGH TO MAKE ANGLE $\geq 45^\circ$.

DIMENSION A1, A2 AND A3 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH M.J. BOLTS.

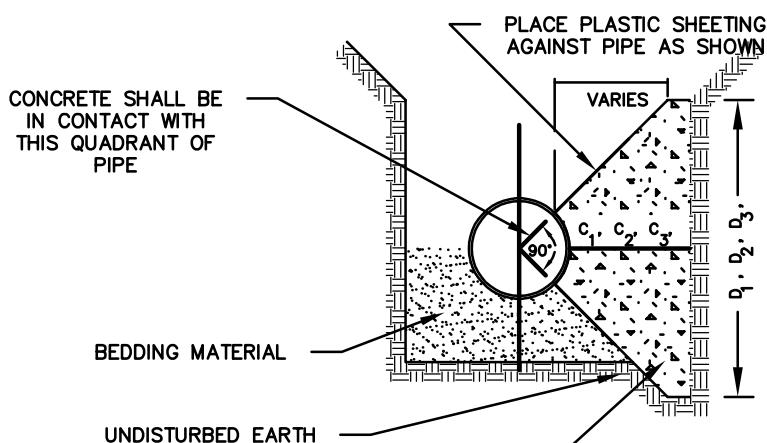
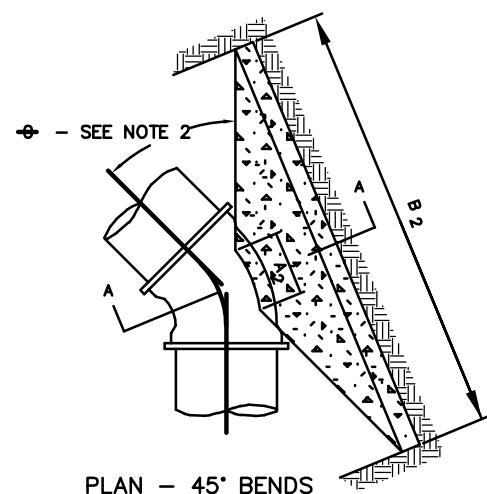
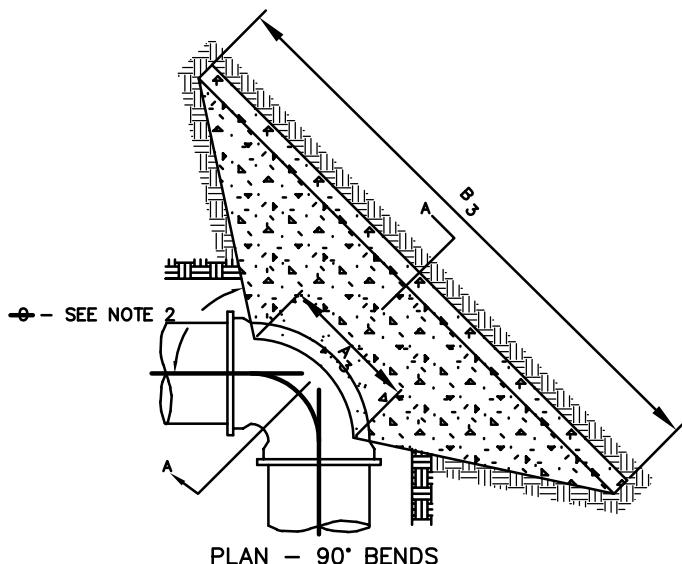
SHAPE OF BACK OF BUTTRESS MAY VARY AS LONG AS POUR IS AGAINST FIRM UNDISTURBED EARTH.

MEGA LUGS OR ALPHA CLAMPS MAY BE USED IN CONJUNCTION WITH MIXED CONCRETE THRUST BLOCKING

READY MIX CONCRETE ONLY MAYBE USED (MnDOT SPEC. 2461, GRADE "B")

SECTION A-A

PIPE SIZE	BUTTRESS DIMENSIONS					
	22 1/2° BEND	45° BEND	TEES/90° BEND			
B 1	D 1	B 2	D 2	B 3	D 3	
6"	1'-5"	1'-5"	1'-5"	1'-5"	2'-1"	1'-6"
8"	1'-5"	1'-5"	2'-1"	1'-6"	2'-8"	2'-0"
12"	1'-10"	1'-10"	3'-4"	2'-0"	4'-9"	2'-6"
16"	3'-0"	2'-0"	3'-10"	3'-0"	6'-2"	3'-6"
20"	3'-6"	2'-8"	5'-6"	3'-4"	8'-4"	4'-0"
24"	4'-4"	3'-0"	6'-10"	3'-10"	9'-8"	5'-0"



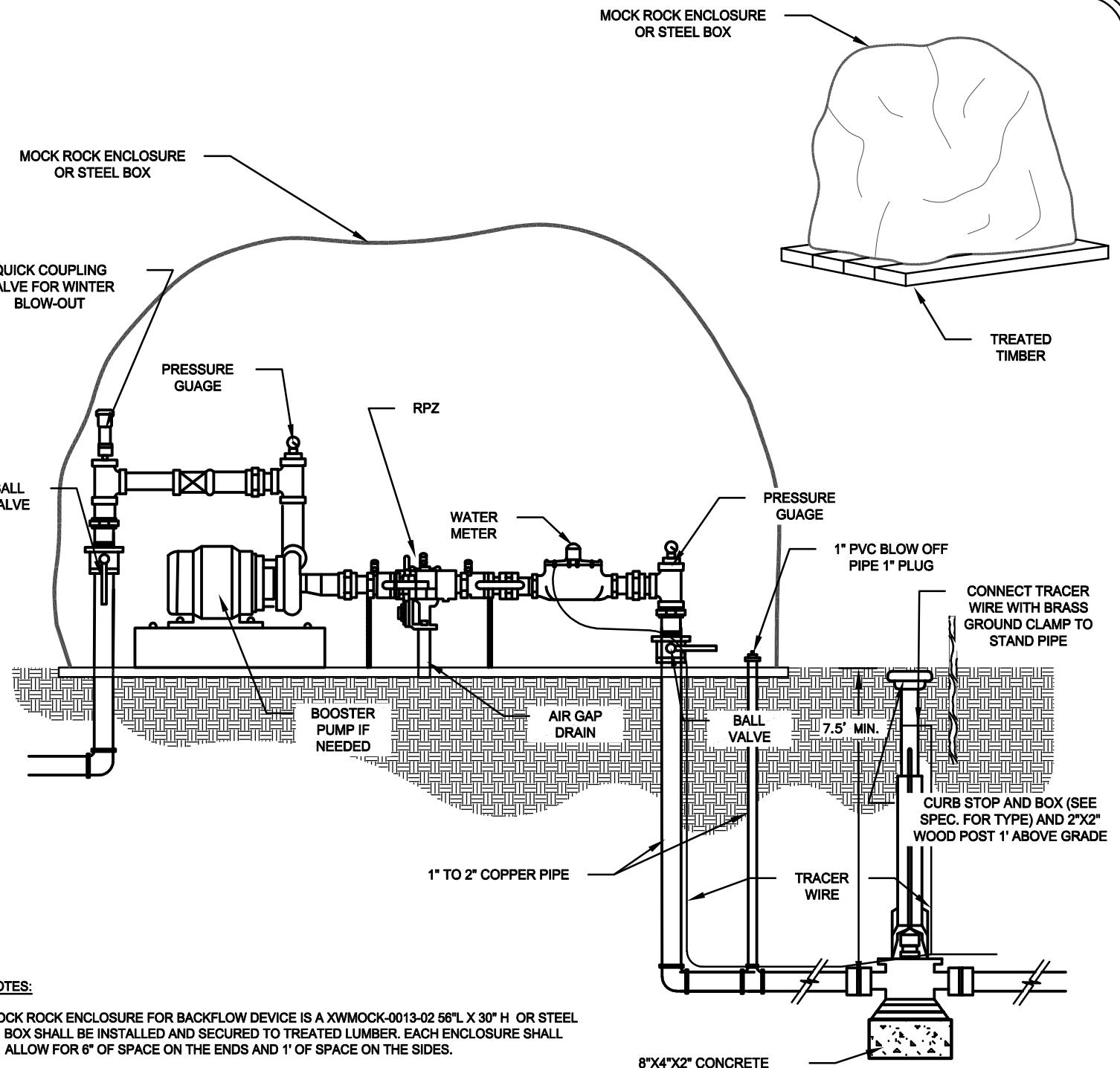
APPROXIMATE 1:1 SLOPE WHERE DEPTH BELOW PIPE EXCEEDS 6".



CONCRETE THRUST BLOCKING

STANDARD DETAILS

Date:	1/12/2023
Revised:	WAT-08



IRRIGATION SYSTEM

STANDARD DETAILS

Date:

1/31/2023

Revised:

WAT-09