

# CITY OF CORCORAN

# STANDARD DETAIL PLATES

NOTES:

1. STANDARD DETAILS PLATES ARE UPDATE ANNUALLY. LATEST VERSION WILL BE ENFORCED.
2. REFERENCE ON CITY PLATES ARE TO MNDOT 2020 EDITION SPECIFICATIONS.



CORCORAN, MINNESOTA



**Stantec**

COVER

LAST REVISION:

JUL 2023

PLATE NO.

**COVER-01**

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GEN-1A

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PLATE NO.  
GEN-1B

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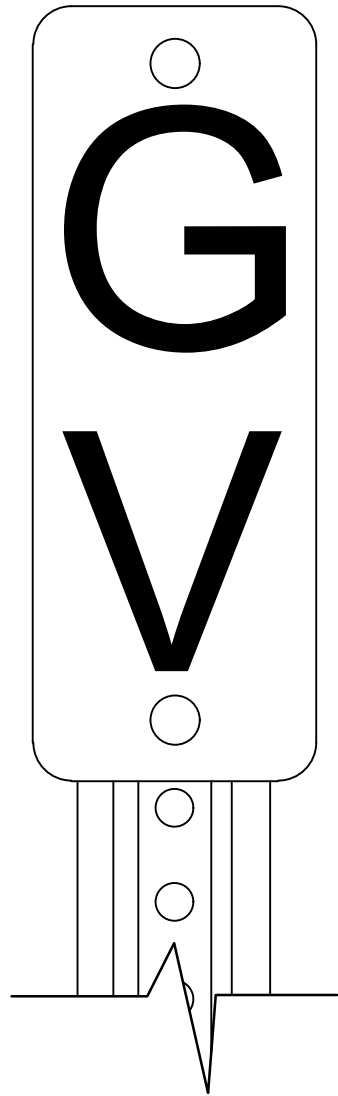
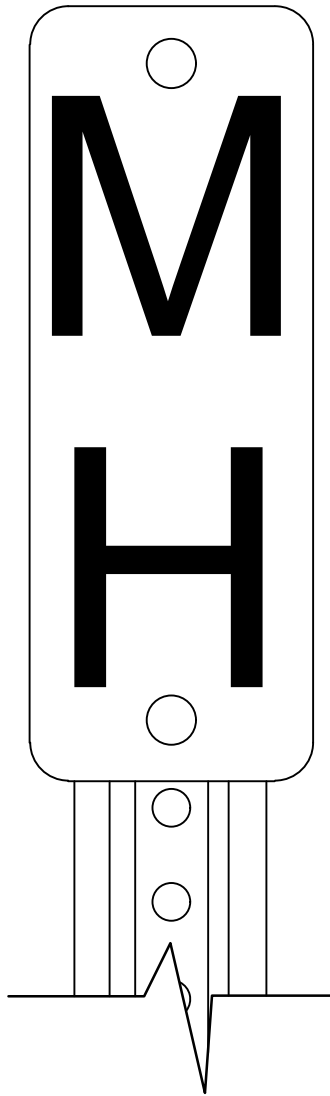
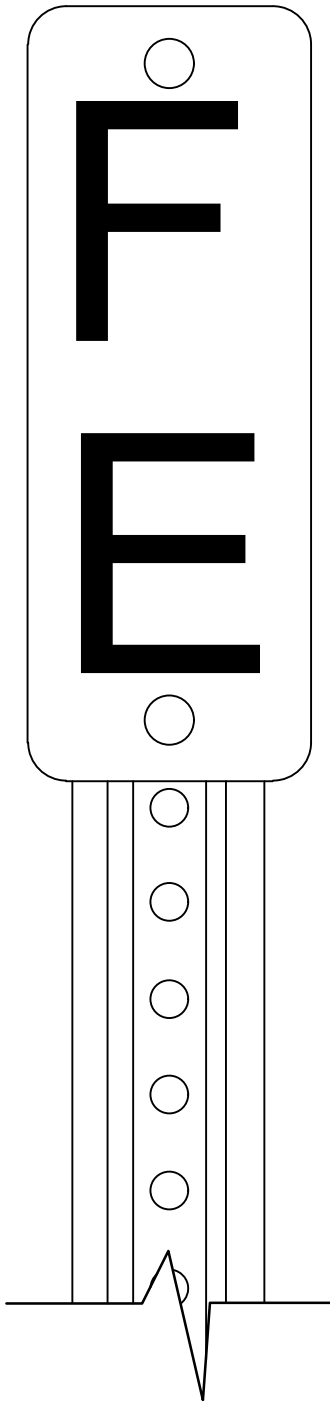
STANDARD DETAILS INDEX

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PLATE NO.

GEN-1C



NOTES:

0.063" THICK ALUMINUM SIGN.  
BLACK LETTERS ON WHITE HIGH INTENSITY  
REFLECTORIZED BACKGROUND.

U-CHANNEL POST MINIMUM 3LB/FT  
6-6" LONG, PAINTED GREEN.

PLACED AS DIRECTED BY CITY ENGINEER.



CORCORAN, MINNESOTA



STRUCTURE MARKER SIGNS

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PLATE NO.

GEN-2

# Larch Ln

SINGLE-FACED STREET SIGN PANELS WITH SPACING  
 INSTALL SIGNS ON SAME POST AS STOP WHERE APPLICABLE

2" X 2" X 12 GAUGE SQUARE TELESPAR GALVANIZED SIGN POST (2.4 lbs/ft)

SURFACE MOUNTED ANCHOR BASE  
 $\frac{1}{2}$ " X 4" CONCRETE ANCHOR BOLTS  
 KLEEN BREAK MODEL 425 OR APPROVED EQUAL

FINISHED GRADE

6" CONCRETE WALK

6" C U/C & L/C HIGH INTENSITY PRISMATIC WHITE COPY AND  $\frac{3}{8}$ " BORDER ON HIGH INTENSITY PRISMATIC GREEN BACKGROUND

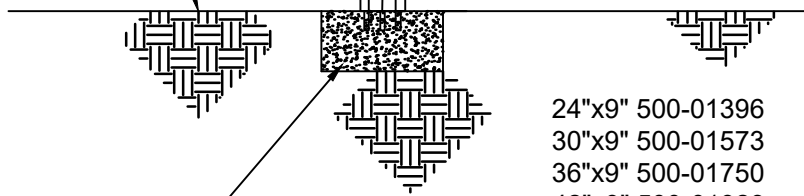
1-1/2" RADIUS CORNERS

2 EACH  $\frac{3}{8}$ " HOLES ON 7" CENTERS

$\frac{3}{8}$ " HOLE EACH END IN 1" FROM EDGE TO CENTER OF HOLE

SINGLE FACED

MAXIMUM LENGTH OF 42"



- 24"x9" 500-01396
- 30"x9" 500-01573
- 36"x9" 500-01750
- 42"x9" 500-01923

**NOTE:**

1. INSTALLATION SHALL BE IN COMPLIANCE WITH THE LATEST VERSION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. FOR STREETS WITH SPEED LIMIT GREATER THAN 30 MPH, A 0.75' SIGN WITH 0.5' LETTERS IS REQUIRED.
3. TYPICALLY INSTALLED AT SOUTHWEST CORNER OF INTERSECTION. ALL EQUALS MUST BE APPROVED BY CITY ENGINEER BEFORE INSTALLATION.
4. SIGN SHALL BE CONSTRUCTED OF ALUMINUM PER MNDOT 3352.2A1.



STREET SIGN DETAIL-CONCRETE

LAST REVISION:  
 JUL 2023

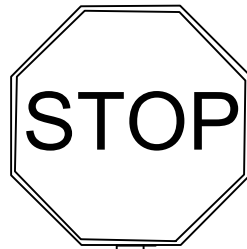
PLATE NO.  
 GEN-3



SIGN NAME	DESIGNATION	SIZE
STOP	R1-1	30"X30"
YIELD	R1-2	36"X36"X36"
SPEED	R2-1	24"X30"
LIMIT NO	N/A	12"X18"
PARKING		

NOTES:

- DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE CITY ENGINEER.
- SIGN SHALL BE REFLECTORIZED AS PER MNDOT 3352.2A2B, STANDARD NO. 2
- SIGN SHALL BE CONSTRUCTED OF ALUMINUM PER MNDOT 3352.2A1



INSTALLATION SHALL BE IN COMPLIANCE WITH THE LATEST REVISION OF THE MMUTCD

2" X 2" X 12 GAUGE SQUARE TELES PAR GALVANIZED SIGN POST (2.4 lbs/ft)

FINISHED GRADE

1" TO 2"

6" TO 8"

2 1/2" X 2 1/2" X 18" X 12 GAUGE OMNI DIRECTIONAL SLEEVE WITH 4 BLADES

2 1/4" X 2 1/4" X 12 GAUGE SQUARE TELES PAR 4' LONG SIGN ANCHOR

NOTE:

- INSTALLATION SHALL BE IN COMPLIANCE WITH THE LATEST VERSION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- FOR STREETS WITH SPEED LIMIT GREATER THAN 30 MPH, A 0.75' SIGN WITH 0.5' LETTERS IS REQUIRED.
- TYPICALLY INSTALLED AT SOUTHWEST CORNER OF INTERSECTION. ALL EQUALS MUST BE APPROVED BY CITY ENGINEER BEFORE INSTALLATION.
- SIGN SHALL BE CONSTRUCTED OF ALUMINUM PER MNDOT 3352.2A1.
- WHEN INSTALLED IN CONCRETE USE SURFACE MOUNTED ANCHOR BASE 1/2"x4" CONCRETE ANCHOR BOLTS KLEEN BREAK MODEL 425 OR APPROVED EQUAL. (SEE DETAIL GEN-3)



CORCORAN, MINNESOTA



REGULATORY SIGN

LAST REVISION:

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PLATE NO.

GEN-5



PRIVATE DRIVE

(2) - SINGLE-FACED STREET SIGN PANELS WITH SPACERS

SIGNS TO BE BLUE

10001  
10002  
10003  
MAIN ST

OR  
RANGE  
WHEN >10

10001 →  
10012  
MAIN ST

2" X 2" X 12 GAUGE SQUARE TELES PAR GALVANIZED SIGN POST (2.4 lbs/ft)

1" TO 2"

FINISHED GRADE

6" TO 8"

2 1/4" X 2 1/4" X 12 GAUGE SQUARE TELES PAR 4' LONG SIGN ANCHOR

OPTIONAL: 2 1/2" X 2 1/2" X 18" X 12 GAUGE OMNI DIRECTIONAL SLEEVE WITH 4 BLADES

**NOTE:**

- 1. INSTALLATION SHALL BE IN COMPLIANCE WITH THE LATEST VERSION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- 2. FOR STREETS WITH SPEED LIMIT GREATER THAN 30 MPH, A 0.75' SIGN WITH 0.5' LETTERS IS REQUIRED.
- 3. SIGNS SHALL BE CONSTRUCTED OF ALUMINUM PER MNDOT 3352.2A1.



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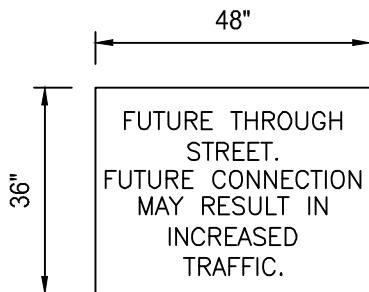
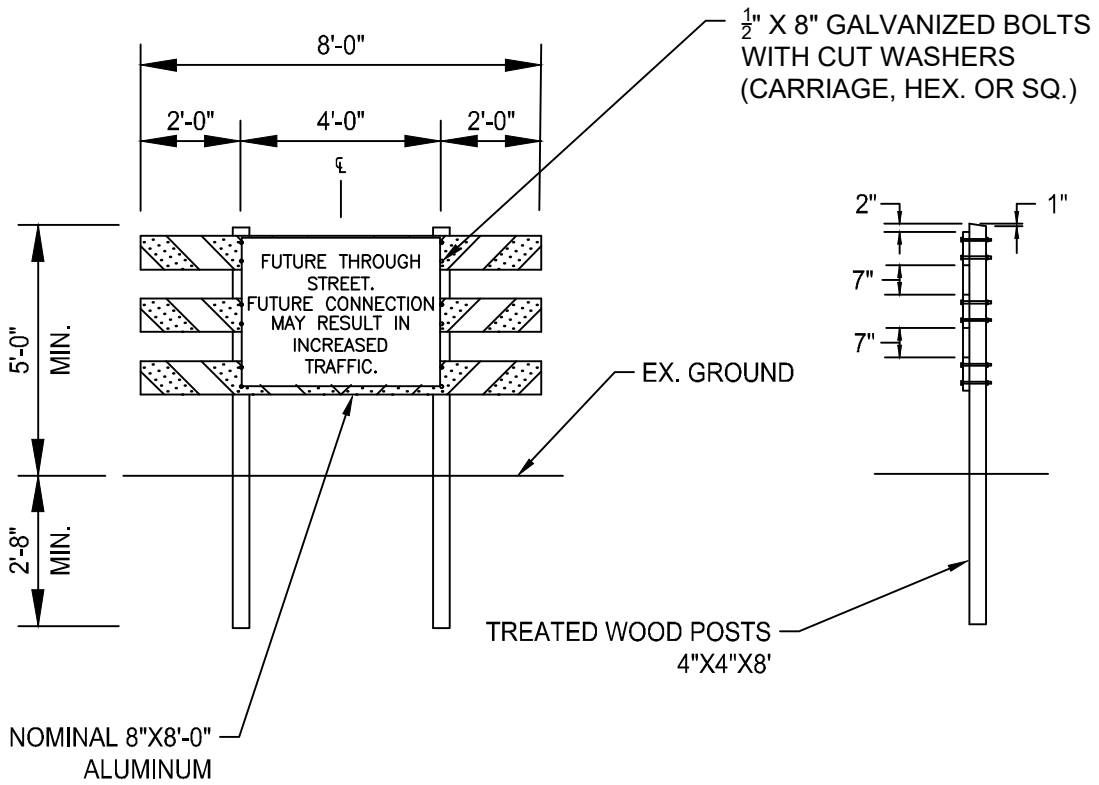
PRIVATE DRIVE SIGN

LAST REVISION:  
JUL 2023

PLATE NO.  
GEN-6



NOTE: BARRICADE AS PER CORCORAN  
STANDARD DETAIL PLATE GEN-6



NOTES:

1. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE CITY ENGINEER.
2. SIGN SHALL BE REFLECTORIZED AS PER MNDOT 3352.2A2A
3. SIGN SHALL BE CONSTRUCTED OF ALUMINUM PER MNDOT 352.2A1A, BLACK ON WHITE WITH 4" LETTERS.



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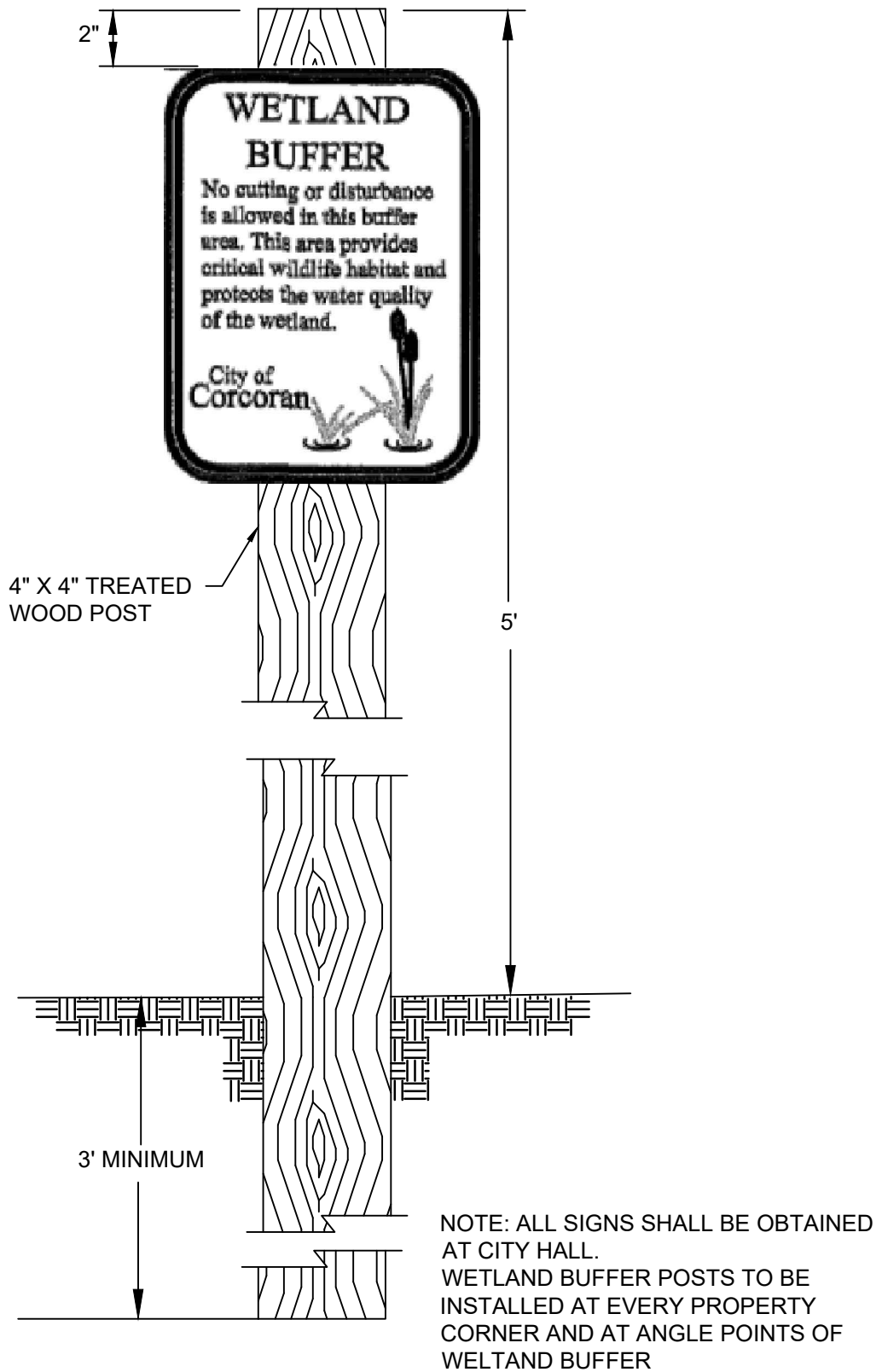
FUTURE THROUGH STREET SIGN

LAST REVISION:

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PLATE NO.

GEN-8



CORCORAN, MINNESOTA



WETLAND BUFFER SIGN

LAST REVISION:

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PLATE NO.

GEN-9

## MANDREL SIZE

SDR 35 (DEPTH<16')				
PIPE SIZE (IN)	DEFLECTION TEST		AIR TEST	
	BASE I.D. (IN)	5% DEFLECTION (IN)	PRESSURE* (PSIG)	TIME (MIN)
4	3.874	3.68	4	2
6	5.742	5.45	4	3
8	7.665	7.28	4	4
10	9.563	9.08	4	5
12	11.361	10.79	4	6
15	13.898	13.2	4	7.5

PS 46 (DEPTH<16')				
PIPE SIZE (IN)	DEFLECTION TEST		AIR TEST	
	BASE I.D. (IN)	5% DEFLECTION (IN)	PRESSURE* (PSIG)	TIME (MIN)
18	16.976	16.13	4	9
21	20.004	19	4	10.5
24	22.48	21.36	4	12
27	25.327	24.06	4	13.5

SDR 26 (16'<DEPTH<25')				
PIPE SIZE (IN)	DEFLECTION TEST		AIR TEST	
	BASE I.D. (IN)	5% DEFLECTION (IN)	PRESSURE* (PSIG)	TIME (MIN)
6	5.612	5.33	4	3
8	7.488	7.12	4	4
10	9.342	8.87	4	5
12	11.102	10.54	4	6
15	13.575	12.9	4	7.5

PS 115 (DEPTH<16')				
PIPE SIZE (IN)	DEFLECTION TEST		AIR TEST	
	BASE I.D. (IN)	5% DEFLECTION (IN)	PRESSURE* (PSIG)	TIME (MIN)
18	16.586	15.76	4	9
21	19.545	18.57	4	10.5
24	21.964	20.87	4	12
27	24.744	23.51	4	13.5
30	28.763	27.32	4	15

C-900 DR 18 (25'<DEPTH)				
PIPE SIZE (IN)	DEFLECTION TEST		AIR TEST	
	BASE I.D. (IN)	5% DEFLECTION (IN)	PRESSURE* (PSIG)	TIME (MIN)
6	5.934	5.49	4	3
8	7.754	7.37	4	4
10	9.487	9.01	4	5
12	11.265	10.7	4	6
14	13.05	12.4	4	7
16	14.831	14.09	4	8
18	16.609	15.78	4	9
20	18.386	17.47	4	10
24	21.94	20.84	4	12

### FORCEMAIN TESTING NOTES:

1. FORCEMAIN HYDROSTATIC TEST PROCEDURE AS FOLLOWS:
  - 1.1 PUMP SYSTEM TO MINIMUM 75 PSI
  - 1.2 THE FORCEMAIN SYSTEM WILL BE ACCEPTED AS PASSING IF THE PRESSURE HAS NO DROP IN PRESSURE IN 2 HOURS.
1. GAUGE TO BE USED WILL BE ASHCROFT, MODEL 1082, 4 1/2" DIAMETER IN ONE PSI INCREMENTS OR APPROVED EQUAL.

### GENERAL TESTING NOTES:

1. PIPE MATERIAL AND TESTING REQUIREMENTS MAY CHANGE DEPENDING ON SOIL CONDITIONS AND OTHER FACTORS.
2. ALL TESTING TO OCCUR BEFORE BUILDING PERMITS ARE ISSUED OR CONSTRUCTION OF WEAR COURSE PAVEMENT.
3. CITY TO BE NOTIFIED MINIMUM 48 HOURS BEFORE ANY UTILITY TESTING.

### SANITARY SEWER TESTING NOTES:

1. A MINIMUM WAITING TIME PERIOD OF 30 DAYS AFTER INSTALLATION IS REQUIRED BEFORE DEFLECTION TEST MAY BE PERFORMED.
2. TRACER WIRE TEST TO BE PERFORMED ON ALL SANITARY SEWER AND SANITARY SEWER SERVICES BY METROTECH OR APPROVED EQUAL.
3. AIR TEST WILL BE PERFORMED AT A PRESSURE OF 4.0 PSIG GREATER THAN THE AVERAGE BACKPRESSURE OF ANY GROUND WATER PRESENT.
4. \*IF GROUNDWATER IS PRESENT, FOR EVERY FOOT OF GROUND WATER ABOVE THE PIPE SPRING LINE, INCREASE THE GAGE TEST PRESSURE BY 0.43 PSI (TO COMPENSATE FOR WATER BACK PRESSURE).
5. THE SEWER LINE WHICH IS BEING TESTED WILL BE ACCEPTED AS PASSING THE AIR TEST IF THE PRESSURE DOES NOT DROP MORE THAN 0.0 PSI IN LESS TIME THAN 30 SECONDS PER INCH IN DIAMETER OF THE PIPE BEING TESTED.
6. TELEVISION SHALL BE PERFORMED ON ALL NEWLY INSTALLED GRAVITY SEWER FOLLOWING ALL OTHER SUCCESSFUL TESTING. TELEVISION VIDEO AND REPORT TO BE SUBMIT TO THE ENGINEER VIA EMAIL AND HARD COPY.
7. SANITARY SEWER TO BE JETTED PRIOR TO TELEVISION.

### WATERMAIN TESTING NOTES:

1. WATERMAIN TESTING TO INCLUDE ALL CURB STOPS AND HYDRANT LEADS.
2. HYDROSTATIC PRESSURE TEST PROCEDURE AS FOLLOWS:
  - 2.1. PUMP SYSTEM TO MINIMUM 150 PSI.
  - 2.2. THE WATERMAIN SYSTEM WILL BE ACCEPTED AS PASSING IF THE PRESSURE HAS NO DROP IN PRESSURE IN 2 HOURS.
  - 2.3. ALL BUTTERFLY VALVES TO BE INDIVIDUALLY HYDROSTATICALLY TESTED AGAINST BOTH SIDES OF THE VALVE FOR A MINIMUM OF 30 MINUTES WITH NO DROP IN PRESSURE.
3. BACTERIA TEST (MINIMUM 2 SETS)
  - 3.1. 1 SET 24 HOUR MINIMUM AFTER 1ST FLUSH, THEN 1 SET FOR EVERY 1200 LF.
  - 3.2. 2ND TEST TO BE PERFORMED 24 HOURS AFTER 1ST TEST HAS DETERMINED TO BE PASSING.
4. TRACER WIRE TEST TO BE PERFORMED BY A METROTECH OR APPROVED EQUAL. TRACER ENTIRE LINE/ALL SERVICES TO CURB STOPS.
5. WATERMAIN TESTING TO MEET MINNESOTA DEPARTMENT OF HEALTH STANDARDS

### STORM SEWER TESTING NOTES:

1. TELEVISION SHALL BE PERFORMED ON ALL DRAINTILE AFTER WEAR COURSE.
2. TELEVISION SHALL BE PERFORMED ON ALL REAR YARD DRAINTILE AFTER RESTORATION IS COMPLETE.
3. TELEVISION DRAINTILE IN THE PRESENCE OF CITY AFTER PRIVATE UTILITIES ARE INSTALLED.
4. TELEVISION SHALL BE PERFORMED ON ALL NEWLY INSTALLED STORM SEWER PER ENGINEERS REQUEST



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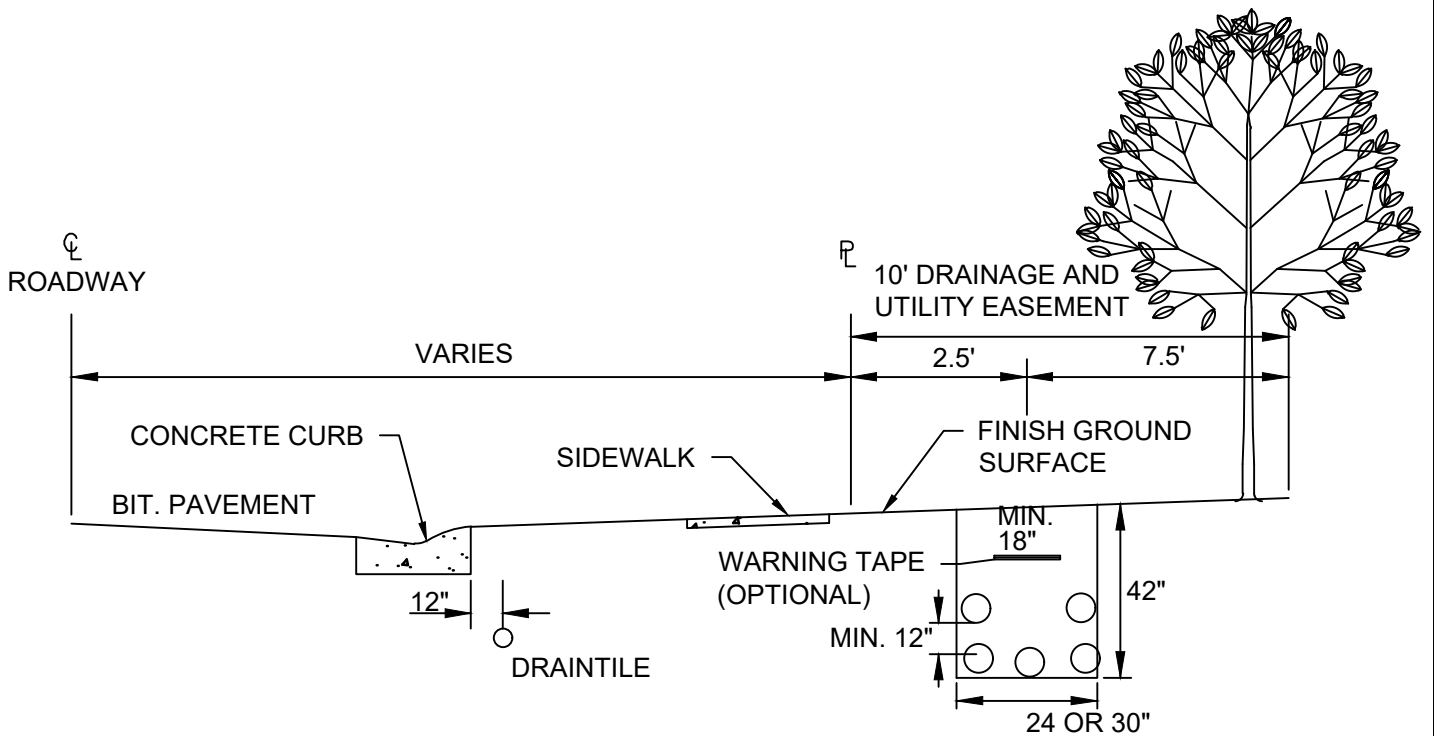
## PIPE MATERIAL AND TESTING REQUIREMENTS

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PLATE NO.

GEN-10



CROSS SECTION  
NOT TO SCALE

UTILITIES INCLUDED IN JOINT TRENCH:

- STREET LIGHTING
- ELECTRIC
- CABLE TV
- TELEPHONE
- GAS

NOTE:

1. ALL CONDUIT CROSSINGS UNDER ROADWAYS SHALL BE THE CONTRACTORS RESPONSIBILITY TO INSTALL THE CORRECT SIZE AND NUMBER FOR ALL UTILITIES. THE CONTRACTOR SHALL ALSO INSTALL ONE ADDITIONAL CONDUIT CROSSING FOR FUTURE USE.
2. THE CITY REQUIRES JOINT TRENCHING FOR INSTALLATION OF UTILITIES WITHIN CITY UTILITY EASEMENTS. ALL TRENCHES SHALL BE COMPACTED.
3. ALL CURB STOPS AND BOXES WILL BE LOCATED 9' FROM THE PROPERTY LINE WITHIN THE DRAINAGE AND UTILITY EASEMENT.
4. STREET LIGHTS SHALL BE PLACED AS CLOSE TO 300' INTERVALS AS POSSIBLE IN RESIDENTIAL AREAS AND LOCATED ON PROPERTY CORNERS. ALL STREET LIGHT ELECTRICAL LINES SHALL BE RUGGEDIZED TYPE WIRING OR ENCASED IN CONDUIT AND PLACED WITHIN THE JOINT TRENCH.
5. ALL UTILITY BOXES SHALL BE PLACED ON COMMON PROPERTY CORNERS ON BACK SIDE OF DRAINAGE AND UTILITY EASEMENT.



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UTILITY LAYOUT

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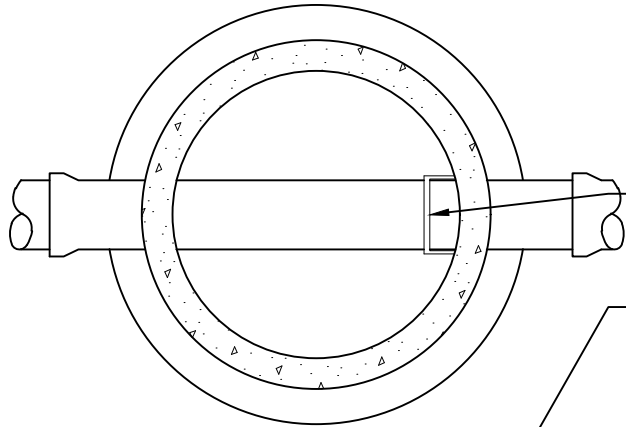
JUL 2023

PLATE NO.

GEN-11

GROUT BOTTOM OF MANHOLE TO 1/2 DIAMETER AT PIPE AND SLOPE GROUT 2" TOWARD INVERT.

CASTING	A	B
R1642	27"	7"
R1755G (WT REQ.)	27"	7"
Ess.Bro.309	27"	7"



**PLAN**

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

NEENAH FRAME AND COVER PER TABLE OR EQUAL, LETTERED "SANITARY SEWER" WITH 2 CONCEALED PICK HOLES AND SELF SEALING LID. SEE SPECIFICATION FOR CASTING NUMBERS

MINIMUM OF 2, MAX. OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR= 0.2' INSTALL INTERIOR I&I BARRIER EULL'S OR APPROVED EQUAL

MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM 387.

ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.

MANHOLE STEPS, COPOLYMER POLYPROPYLENE PLASTIC, WITH 1/2" GRADE 60 STEEL REINFORCEMENT OR EQUAL, 16" O.C.

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

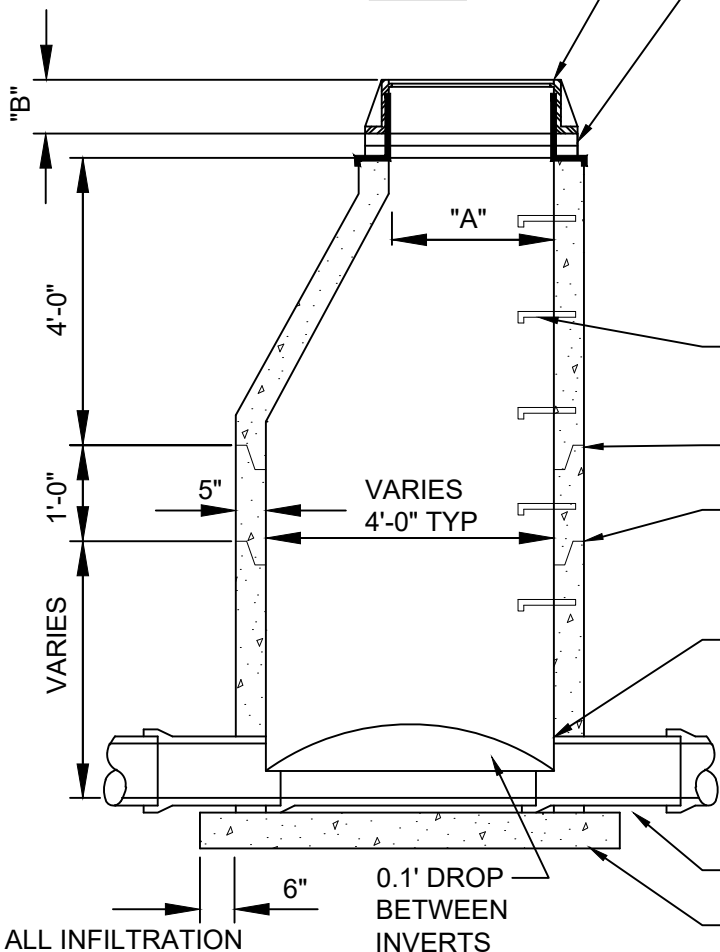
GATOR WRAP REQUIRED ON BOTTOM JOINT. ALL OTHER JOINTS TO BE WRAPPED AS DIRECTED BY ENGINEER

PIPE SHALL NOT BE CUT 2" FROM INSIDE FACE OF WALL

NOTE: KOR-N-SEAL MANHOLE OR APPROVED EQUAL CONSIDERED ACCEPTABLE ALTERNATE. ALL DOG HOUSES SHALL BE GROUTED ON INSIDE. AN A-LOCK GASKET SHALL BE USED AND NO EXTERNAL DOGHOUSE IS REQUIRED

COMPACT TO TOP OF PIPE, TO FIRST JOINT

MINIMUM THICKNESS OF PRECAST BASE IS 6" FOR STRUCTURES 14" DEEP OR LESS, AND INCREASES 1" IN THICKNESS FOR EVERY 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6" X 6" 10/10 MESH



**SECTION**

ALL INFILTRATION AREAS SHALL BE REPAIRED UNTIL MANHOLE IS WATER TIGHT.



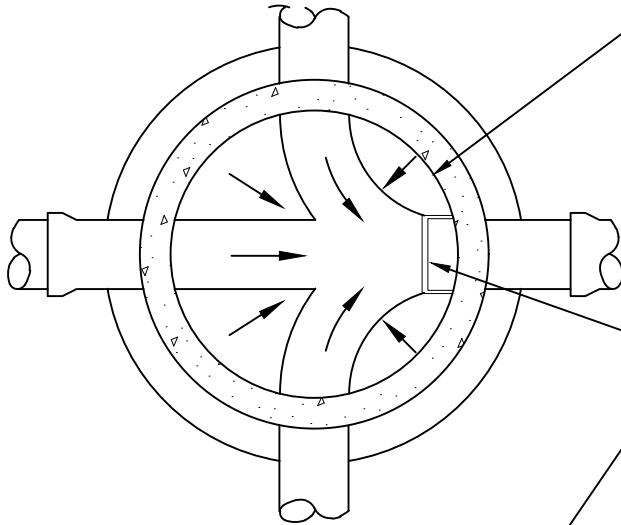
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**SANITARY SEWER MANHOLE**

LAST REVISION:  
JUL 2023

PLATE NO.  
SAN-1



**PLAN**

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

	A	B
R1642	27"	7"
R1755G (WT REQ.)	27"	7"
Ess. Bro. 309	27"	7"

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

NEENAH FRAME AND COVER OR EQUAL LETTERED "SANITARY SEWER" WITH 2 CONCEALED PICK HOLES AND SELF SEALING LID.

MINIMUM OF 2 AND MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL INTERIOR I&I BARRIER EULL'S OR APPROVED EQUAL.

MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM 387.

ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.

MANHOLE STEPS, COPOLYMER POLYPROPYLENE PLASTIC, WITH  $\frac{1}{2}$ " GRADE 60 STEEL REINFORCEMENT OR EQUAL, 16" ON CENTER.

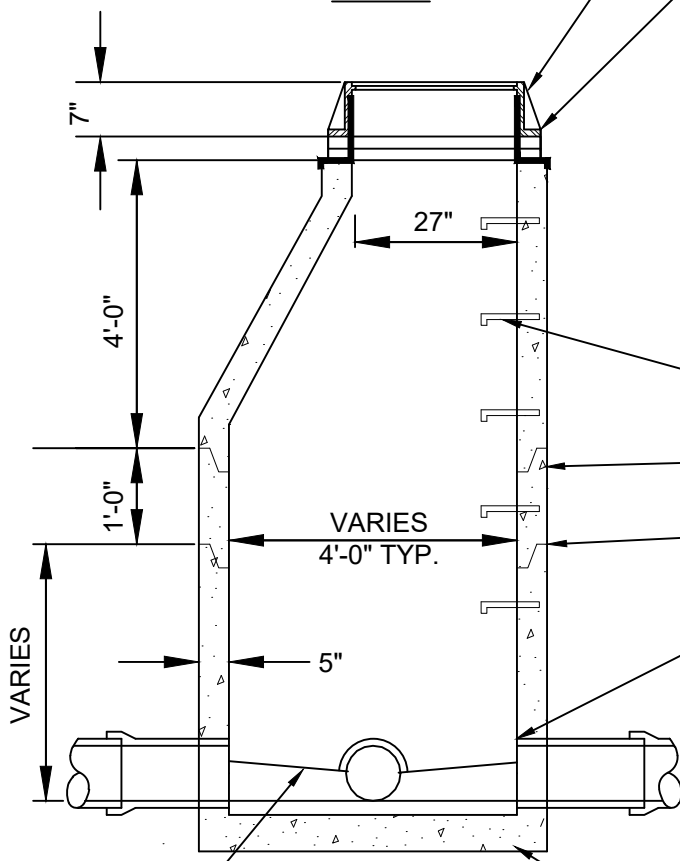
ALL JOINTS IN MANHOLE TO HAVE "O" RING RUBBER GASKETS.

GATOR WRAP REQUIRED ON BOTTOM JOINT. ALL OTHER JOINTS TO BE WRAPPED AS DIRECTED BY ENGINEER

PIPE SHALL BE CUT 2" FROM INSIDE FACE OF WALL.

NOTE: KOR-N-SEAL MANHOLE OR APPROVED EQUAL CONSIDERED ACCEPTABLE ALTERNATE. ALL DOG HOUSES SHALL BE GROUTED ON INSIDE. AN A-LOCK GASKET SHALL BE USED AND NO EXTERNAL DOGHOUSE IS REQUIRED

MINIMUM THICKNESS OF PRECAST BASE IS 6" FOR STRUCTURES 14' DEEP OR LESS, AND INCREASES 1" IN THICKNESS FOR EVERY 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.



**SECTION**

VARIES

0.1' DROP BETWEEN INVERTS

ALL INFILTRATION AREAS SHALL BE REPAIRED UNTIL MANHOLE IS WATER TIGHT.



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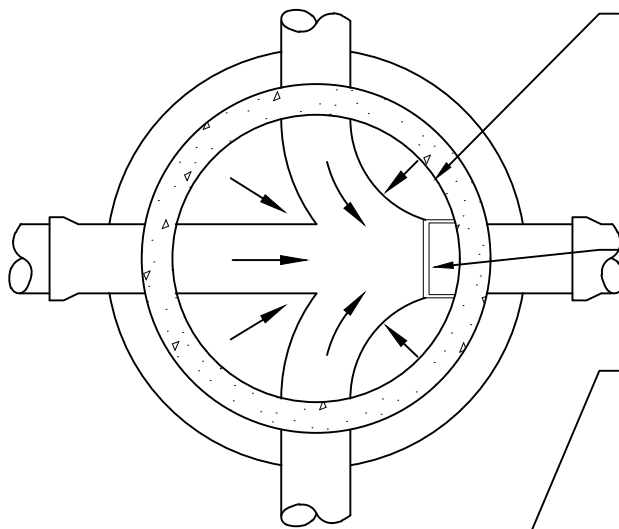


**SANITARY SEWER JUNCTION  
MANHOLE**

LAST REVISION:  
JUL 2023

PLATE NO.  
**SAN-2**





**PLAN**

GROUT BOTTOM OF MANHOLE TO 1/2 DIAMETER AT PIPE AND SLOPE GROUT 2" TOWARD INVERT.

CASTING	A	B
R1642	27"	7"
R1755G	27"	7"
Ess.Bro.309	27"	7"

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

NEENAH FRAME AND COVER PER TABLE OR EQUAL, LETTERED "SANITARY SEWER", WITH 2 CONCEALED PICK HOLES AND SELF SEALING LID.

MINIMUM OF 2 MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL INTERIOR I&I BARRIER EULL'S OR APPROVED EQUAL.

MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM 387.

ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.

GATOR WRAP REQUIRED ON BOTTOM JOINT. ALL OTHER JOINTS TO BE WRAPPED AS DIRECTED BY ENGINEER

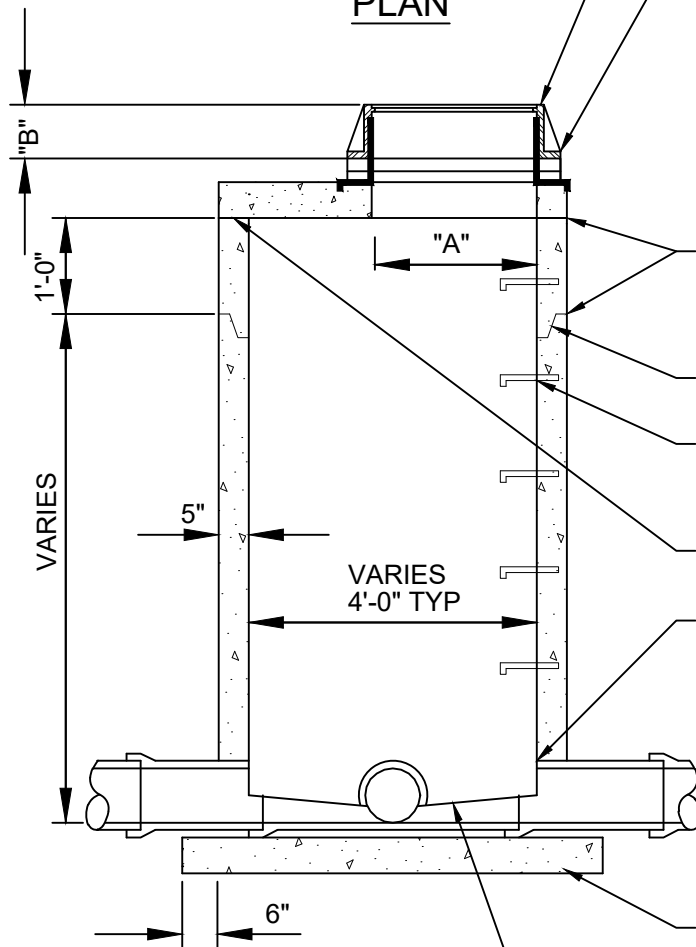
ALL JOINTS IN MANHOLE TO HAVE "O" RING RUBBER GASKETS.

MANHOLE STEPS, COPOLYMER POLYPROPYLENE PLASTIC, WITH 1/2" GRADE 60 STEEL REINFORCEMENT OR EQUAL, 16" ON CENTER.

TOP BAREL TO BE SECURED WITH 2 LAYERS OF RAMNEK OR APPROVED EQUAL.

PIPE SHALL BE CUT 2" FROM INSIDE FACE OF WALL. NOTE: KOR-N-SEAL MANHOLE OR APPROVED EQUAL CONSIDERED ACCEPTABLE ALTERNATE. ALL DOG HOUSES SHALL BE GROUTED ON INSIDE. AN A-LOCK GASKET SHALL BE USED AND NO EXTERNAL DOGHOUSE IS REQUIRED

MINIMUM THICKNESS OF PRECAST BASE IS 6" FOR STRUCTURES 14' DEEP OR LESS, AND INCREASES 1" IN THICKNESS FOR EVERY 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.



**SECTION**

0.1' DROP BETWEEN INVERTS



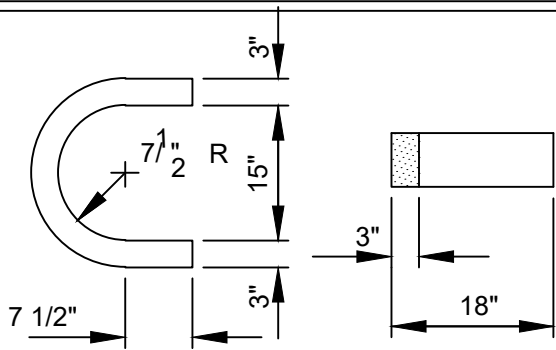
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**SANITARY SEWER JUNCTION  
MANHOLE WITH REINFORCED SLAB**

LAST REVISION:  
JUL 2023

PLATE NO.  
**SAN-3**



CASTING	A	B
R1642	27"	7"
R1755G	27"	7"
Ess.Bro.309	27"	7"

GROUT BOTTOM OF MANHOLE TO 1/2 DIAMETER OF PIPE AND SLOPE GROUT 2" TOWARD INVERT

PLAN SECTION  
**HORSESHOE DETAILS**

MANHOLE TO BE LINED WITH GSE STUDLINER, AGRU SUREGRIP THERMOPLASTIC, T-LOCK PROTECTIVE LINER OR APPROVED EQUAL.

ALL INFILTRATION AREAS SHALL BE REPAIRED UNTIL MANHOLE IS WATER TIGHT.

NEENAH FRAME AND COVER PER TABLE OR EQUAL, LETTERED "SANITARY SEWER", WITH 2 CONCEALED PICK HOLES AND SELF SEALING LID.

MINIMUM OF 2 MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL INTERIOR 1&1 BARRIER EULL'S OR APPROVED EQUAL. ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.

MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM 387.

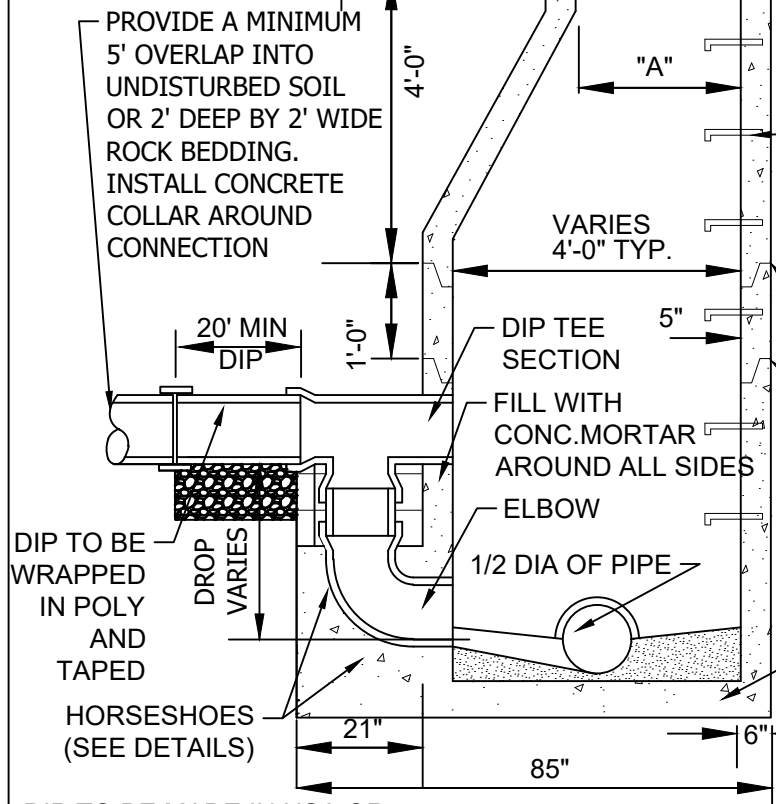
MANHOLE STEPS, COPOLYMER POLYPROPYLENE PLASTIC, WITH 1/2" GRADE 60 STEEL REINFORCEMENT OR EQUAL 16" ON CENTER.

MANHOLE STEPS SHALL BE PLACED SO THAT OFFSET VERTICAL PORTION OF CONE IS FACING DOWNSTREAM. ALL JOINTS IN MANHOLE TO HAVE "O" RING RUBBER GASKETS.

GATOR WRAP REQUIRED ON BOTTOM JOINT. ALL OTHER JOINTS TO BE WRAPPED AS DIRECTED BY ENGINEER

PIPE SHALL BE CUT 2" FROM INSIDE FACE OF WALL.

MINIMUM THICKNESS OF PRECAST BASE IS 6" FOR STRUCTURES 14' DEEP OR LESS, AND INCREASES 1" IN THICKNESS FOR EVERY 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH. NOTE: KOR-N-SEAL MANHOLE OR APPROVED EQUAL CONSIDERED ACCEPTABLE ALTERNATE. ALL DOG HOUSES SHALL BE GROUTED ON INSIDE. AN A-LOCK GASKET SHALL BE USED AND NO EXTERNAL DOGHOUSE IS REQUIRED



PROVIDE A MINIMUM 5' OVERLAP INTO UNDISTURBED SOIL OR 2' DEEP BY 2' WIDE ROCK BEDDING. INSTALL CONCRETE COLLAR AROUND CONNECTION

DIP TO BE WRAPPED IN POLY AND TAPED

HORSESHOES (SEE DETAILS)

DIP TO BE MADE IN USA OR CANADA, FITTINGS TO BE EPOXY BONDED, DIP TO BE LINED WITH PROTECTO 4001 LINER OR APPROVED EQUAL

**SECTION**



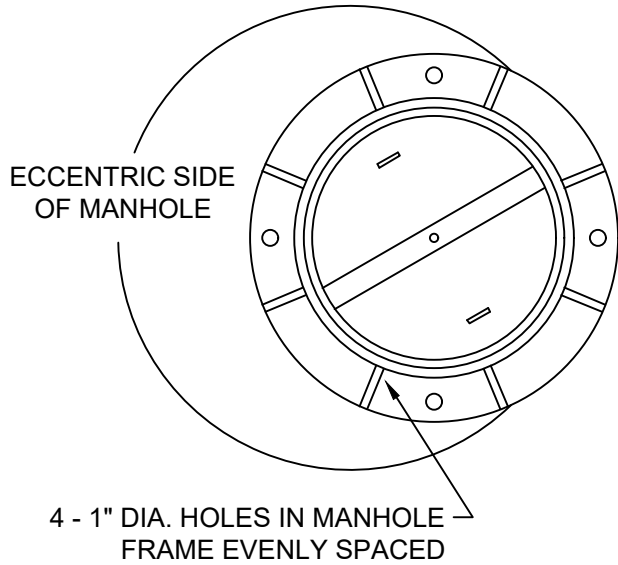
CORCORAN, MINNESOTA



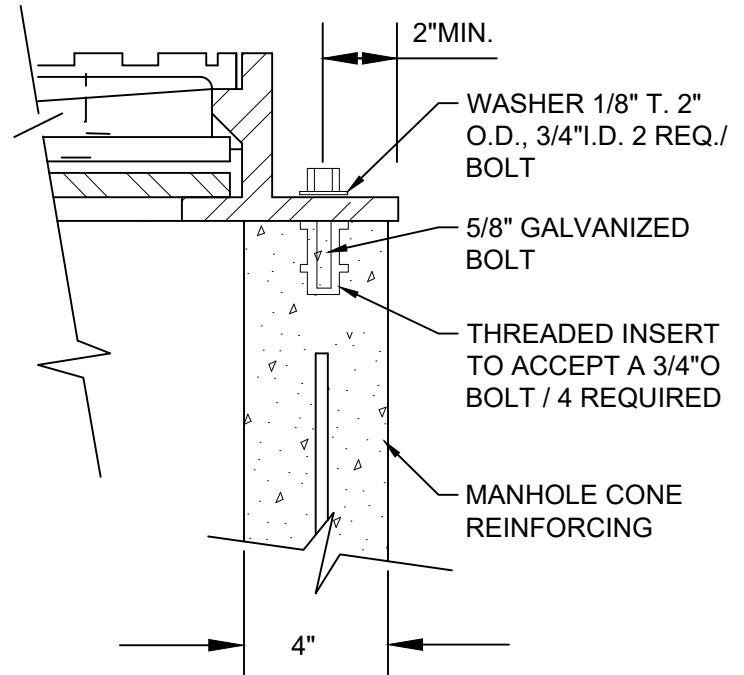
**DROP INLET MANHOLE**

LAST REVISION:  
JUL 2023

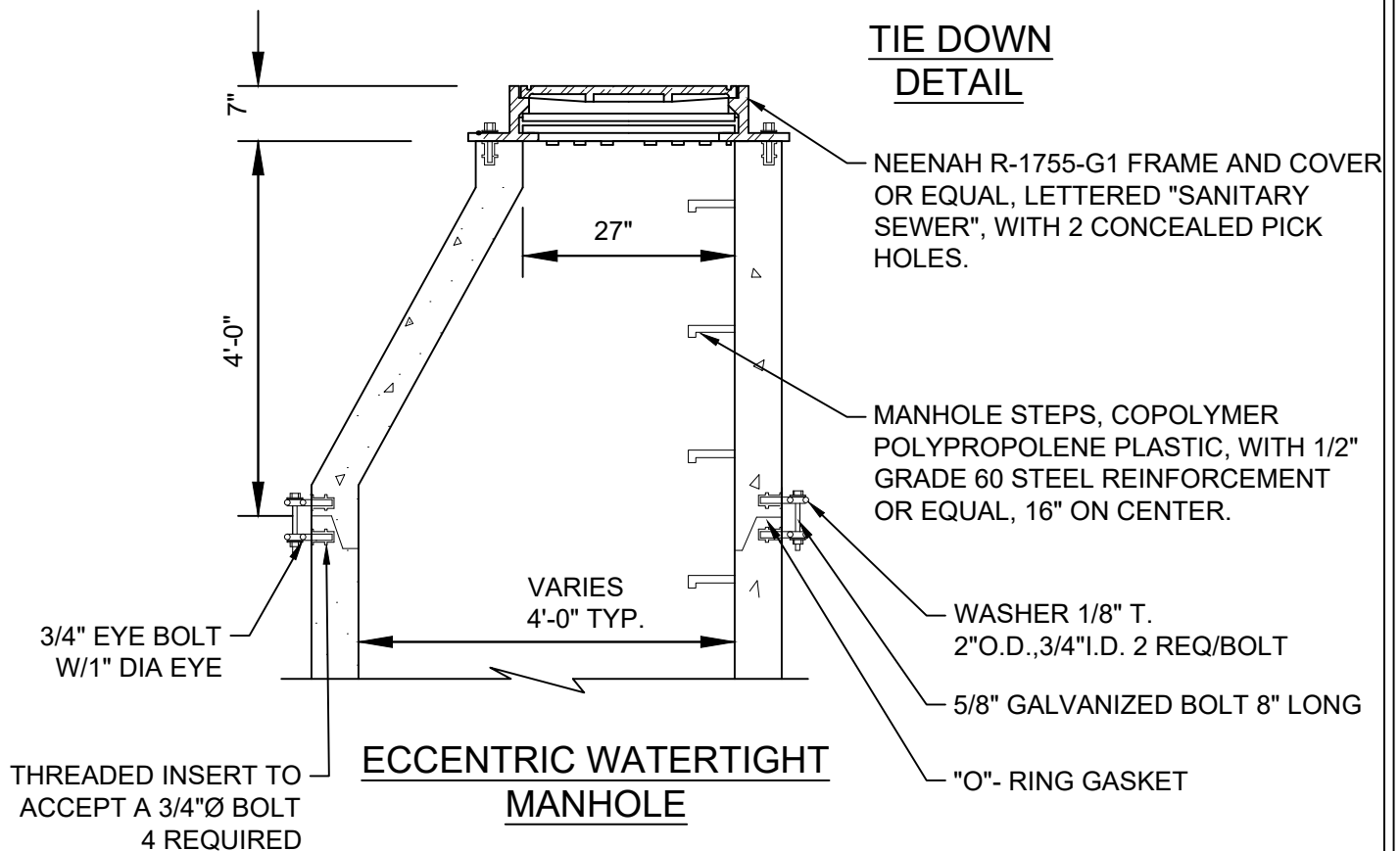
PLATE NO.  
**SAN-4**



**PLAN VIEW TOP COVER REMOVED**



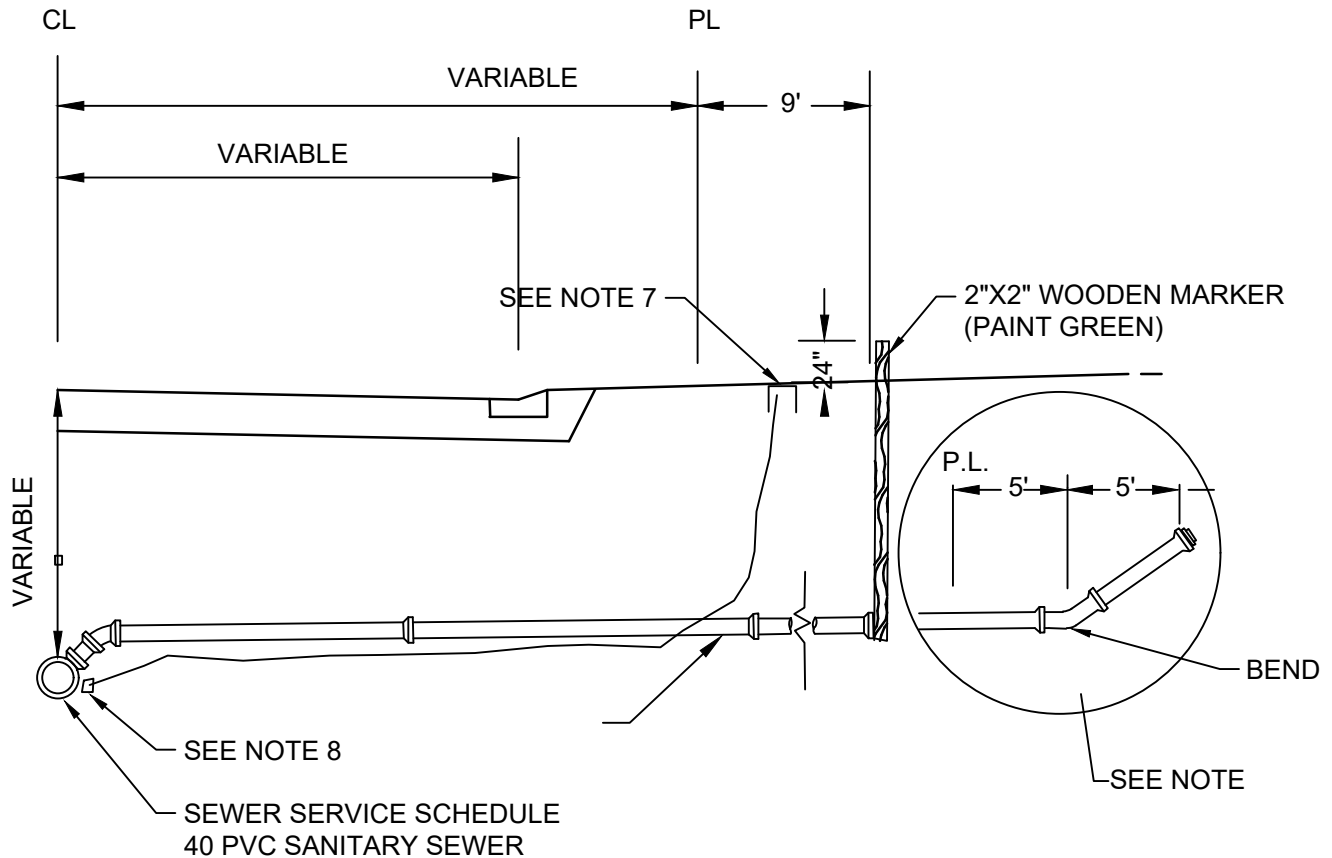
**TIE DOWN DETAIL**



**WATER TIGHT CASTING FOR  
SANITARY SEWER MANHOLE**

LAST REVISION:  
JUL 2023

PLATE NO.  
**SAN-5**



**NOTES:**

1. SEWER SERVICES. 4" (UNLESS OTHERWISE SPECIFIED ON PLANS) SCHEDULE 40 PVC SEWER PIPE
2. PIPE JOINTS SHALL BE NON GASKETED, SOLVENT WELD TYPE.
3. SLOPE  $\frac{1}{4}$ " PER FOOT MINIMUM.
4. ALL PIPE SHALL BE BEDDED IN GRANULAR BORROW 3149.2B1 EXCEPT THE LAST TEN FEET WHERE COARSE FILTER AGGREGATE (3149.2H) WILL BE REQUIRED.
5. BENDS OF 45 OR LESS SHALL BE USED WITHIN THE LAST 5' OF THE SERVICE IF THE DEPTH OF THE SERVICE SHOULD EXCEED 8'.
6. INSTALL SANITARY RISER TO MATCH CURB STOP ELEVATION.
7. TRACER WIRE SHALL BE BROUGHT UP ALONG WATERMAIN CURB STOP. INSTALL VALVCO, SNAKEPIT, OR APPROVE EQUAL TRAFFIC RATED TRACER WIRE ACCESS BOX WITH 2 LUGS.
8. MIN OF 1 LB. DRIVE IN ANODES WITH MIN 20' WIRE LEAD ARE TO BE INSTALLED AT EVERY SANITARY SERVICE WYE.
9. TRACER WIRE SHALL BE 12 AWG COPPER CLAD STEEL ORE WIRE WITH MIN BREAK LOAD OF 450 LB FOR OPEN CUT INSTALLATION RATED FOR 30 VOLTS. MIN 45 MIL HMWPE JACKET
10. TRACER WIRE CONNECTOR SHALL BE DRY CONN DIRECT BURY LUG AQUA, PRO-TRACE DB OR APPROVED EQUAL.



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**SANITARY SEWER SERVICE  
CONNECTION**

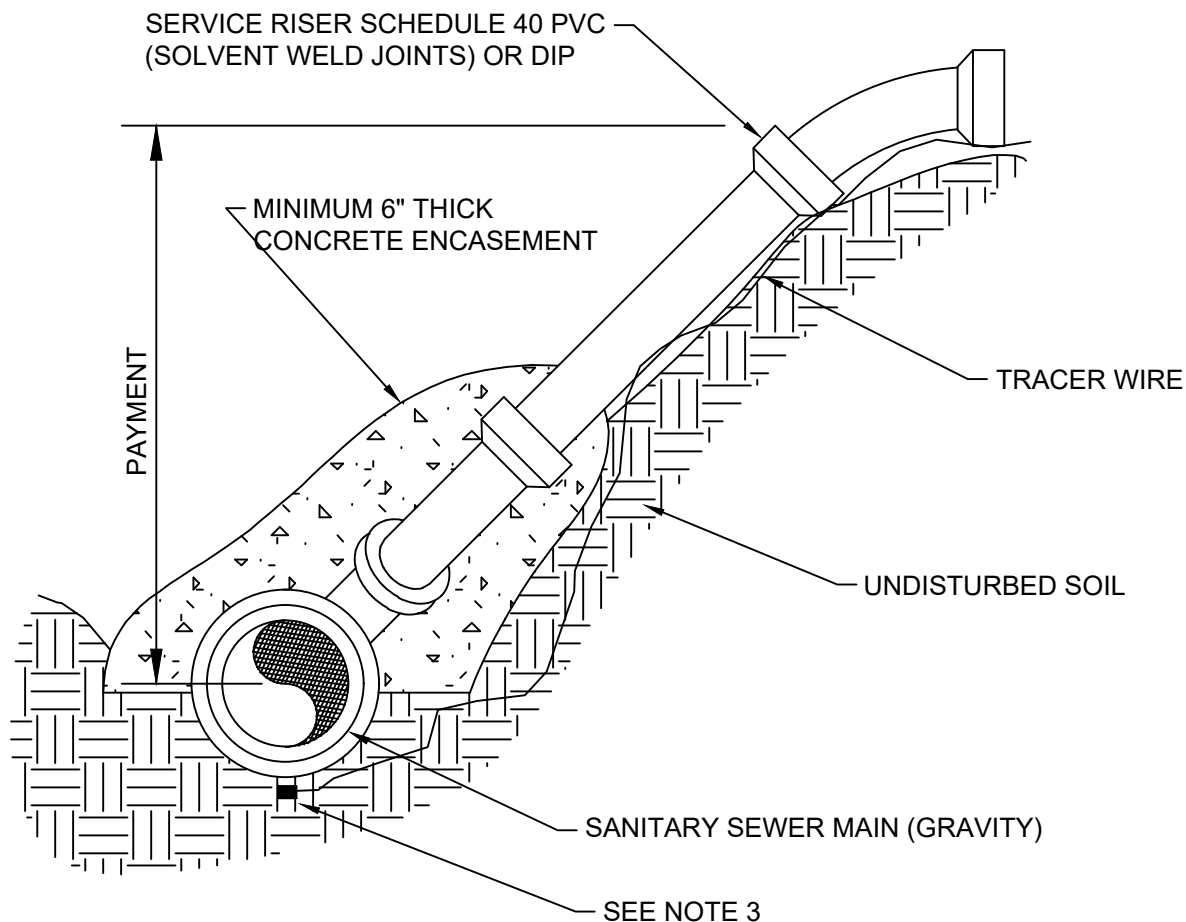
LAST REVISION:

JUL 2023

PLATE NO.

**SAN-6**

PVC PIPE BED AND ENCASE IN SELECT GRANULAR, TYPICAL PVC APPLICATION.



NOTE:

1. TRACER WIRE CONNECTOR SHALL BE DRY CONN DIRECT BURY LUG AQUA, PRO-TRACE DB OR APPROVED EQUAL
2. TRACER WIRE SHALL BE 12 AWG COPPER CLAD STEEL ORE WIRE WITH MIN BREAK LOAD OF 450 LB FOR OPEN CUT INSTALLATION RATED FOR 30 VOLTS. MIN 45 MIL HMWPE JACKET
3. MIN OF 1 LB. DRIVE IN ANODES WITH MIN 20' WIRE LEAD ARE TO BE INSTALLED AT EVERY SANITARY SERVICE WYE.
4. SEWER DEPTHS OVER 25' AND ALL TRUNK SEWER LINES SHALL USE DUCTILE IRON TEES AND RISERS IN PLACE OF PVC WYES UNLESS OTHERWISE APPROVED BY ENGINEER.
5. WHERE DUCTILE IRON TEE IS USED IN PLACE OF PVC WYE, RISERS TO BE DIP, DIP TO PVC TRANSITION FITTING TO BE USED AT TOP OF RISER.
6. ALL DUCTILE IRON FITTINGS TO BE EPOXY BONDED. ALL SEWER DUCTILE IRON PIPES AND FITTINGS TO HAVE PROTECTO 401 LINER. ALL MATERIALS TO BE AMERICAN MADE.
7. ALL DUCTILE IRON PIPES AND FITTINGS TO BE WRAPPED IN POLY AND TAPED.



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## SANITARY SEWER SERVICE RISER

LAST REVISION:

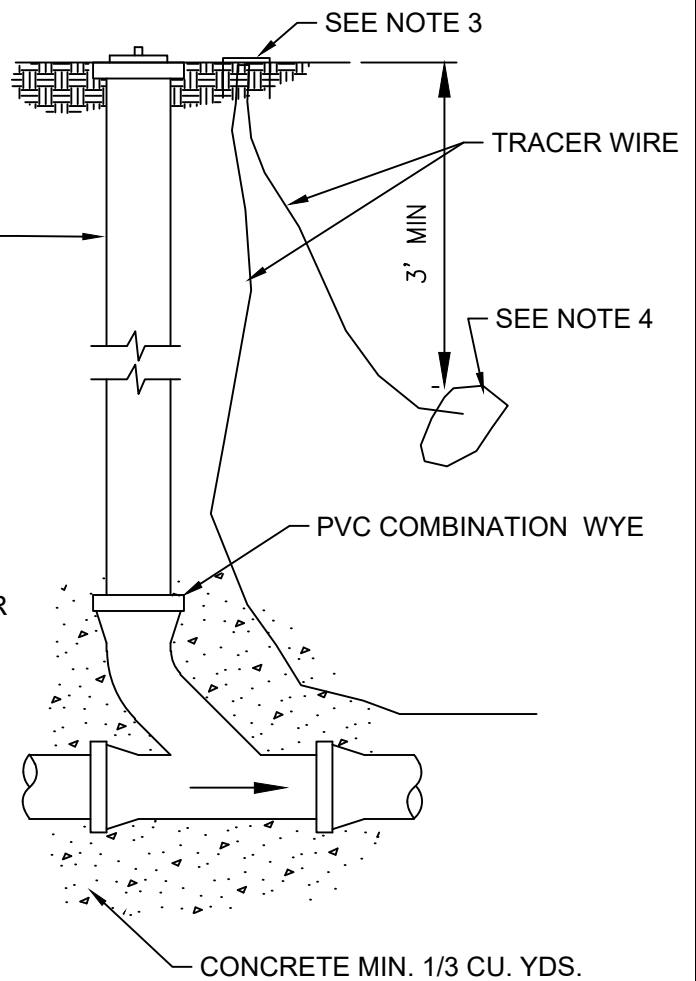
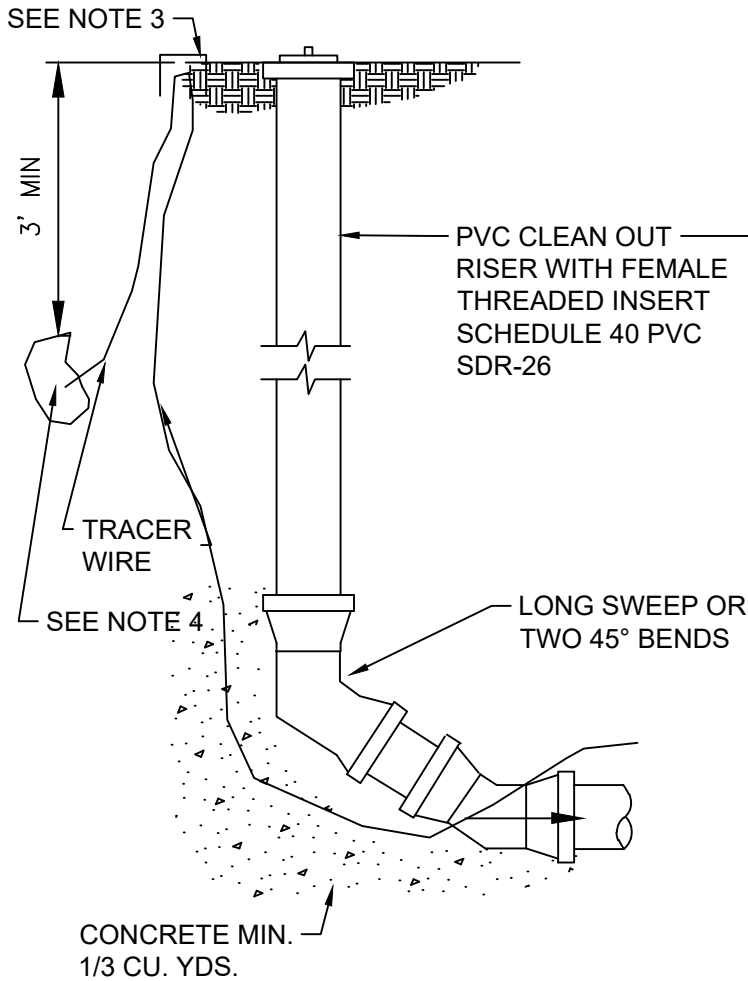
JUL 2023

PLATE NO.

SAN-7

NOTE:  
CLEANOUT CAP SHALL BE  
THREADED MALLEABLE IRON  
(GALVANIZED)

NOTE:  
ENCLOSE LONG SWEEP BEND  
OR COMBINATION WYE IN  
CONCRETE AS SHOWN.



END OF LINE CLEANOUT

IN LINE CLEANOUT

NOTE:  
CLEANOUT IS REQUIRED FOR EVERY 100 FEET OF  
SERVICE LENGTH, OR AT BENDS IN SERVICE.

NOTE:

1. IF CLEANOUT IS IN DRIVEWAY, CONTRACTOR MUST INSTALL FORD A-1 CASTING, MARKED WITH "SEWER ON LID.
2. IF CLEANOUT IS IN ROADWAY, CONTRACTOR MUST INSTALL TOP SECTION OF A VALVE BOX WITH LID MARKED "SEWER".
3. TRACER WIRE SHALL BE BROUGHT UP ALONG CLEANOUT. INSTALL VALVCO, SNAKEPIT, OR APPROVE EQUAL TRAFFIC RATED TRACER WIRE ACCESS BOX.
4. MIN OF 1 LB. DRIVE IN ANODES WITH MIN 20' WIRE LEAD ARE TO BE INSTALLED AT EVERY TRACE WIRE ACCESS BOX.
5. TRACER WIRE SHALL BE 12 AWG COPPER CLAD STEEL ORE WIRE WITH MIN BREAK LOAD OF 450 LB FOR OPEN CUT INSTALLATION RATED FOR 30 VOLTS. MIN 45 MIL HMWPE JACKET



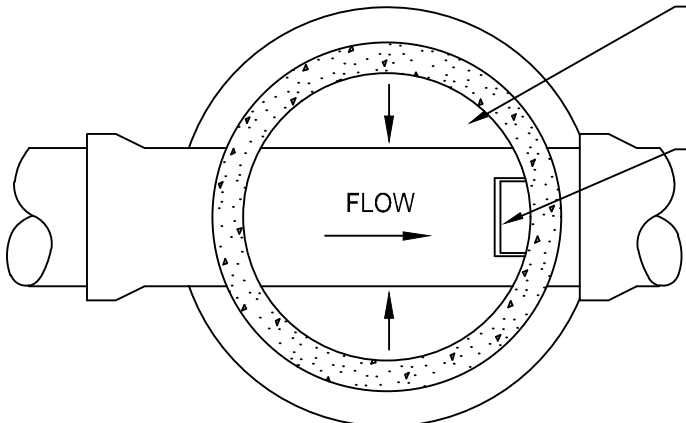
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SANITARY SEWER PVC SEWER LINE  
CLEANOUTS

LAST REVISION:  
JUL 2023

PLATE NO.  
SAN-8

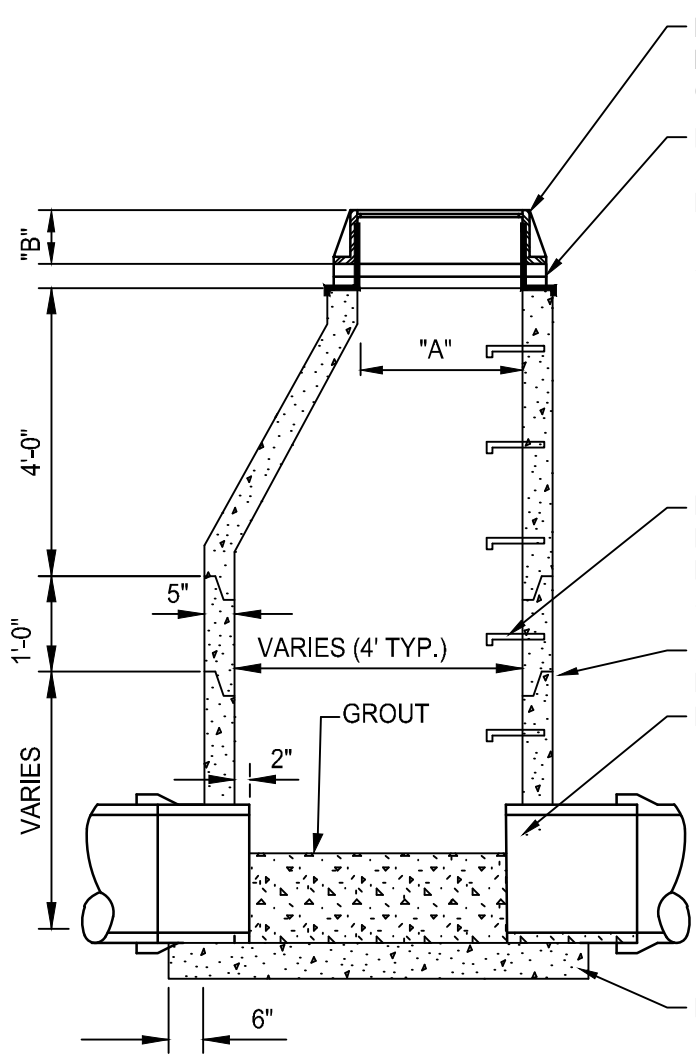


GROUT BOTTOM OF MANHOLE TO A MINIMUM OF 1/2 DIAMETER AT PIPE AND SLOPE GROUT 2" TOWARD INVERT.

MANHOLE STEPS SHALL BE PLACED SO THAT OFFSET VERTICAL PORTION OF CONE IS FACING DOWNSTREAM FOR ALL PIPES UP TO 24". PLACE STEPS ON RIGHT HAND SIDE WHEN FACING DOWN STREAM FOR ALL PIPES 24" AND OVER

APPROVED CASTINGS

CASTING	A	B
NEENAH R1642	27"	7"



NEENAH FRAME AND COVER OR EQUAL LETTERED, "STORM SEWER", WITH 2 CONCEALED PICK HOLES

MINIMUM OF 2 MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL INTERNAL I&I BARRIER EULL'S FOR IN STREET STRUCTURES. INFISHIELD SHALL BE INSTALLED IN BACKYARD STRUCTURES ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.

MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM C387.

MANHOLE STEPS, COPOLYMER POLYPROPYLENE PLASTIC, WITH 1/2" GRADE 60 STEEL REINFORCEMENT OR EQUAL, 16" ON CENTER. (NO STEPS ALLOWED IN UPPER 27" BARREL.)

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

PIPE SHALL BE CUT OUT 2" FROM INSIDE FACE OF WALL. \*\*DOG HOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE OF STRUCTURE.

SUMP MANHOLE REQUIRED WHEN THERE IS A 1.5' OR GREATER DROP BETWEEN INVERTS, AND THE FIRST STRUCTURE UPSTREAM FROM PIPE OUTLET. SEE STO-4.

MINIMUM SLAB THICKNESS 6" FOR STRUCTURES 14' IN DEPTH OR LESS. INCREASE THICKNESS 1" FOR EACH 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.



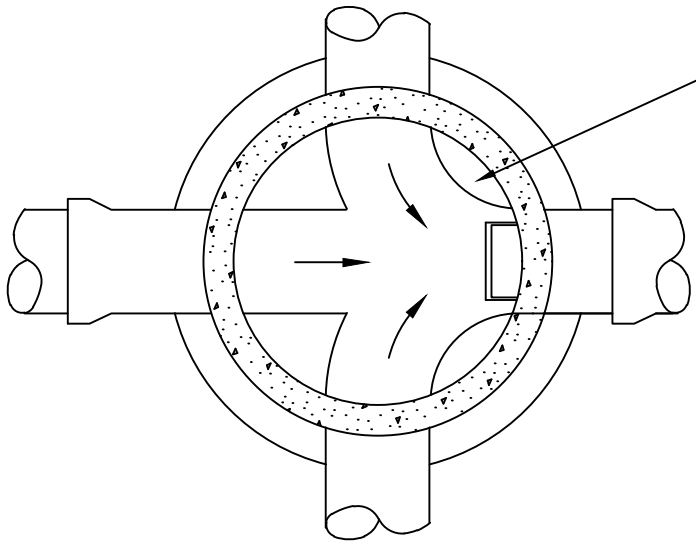
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STORM SEWER MANHOLE

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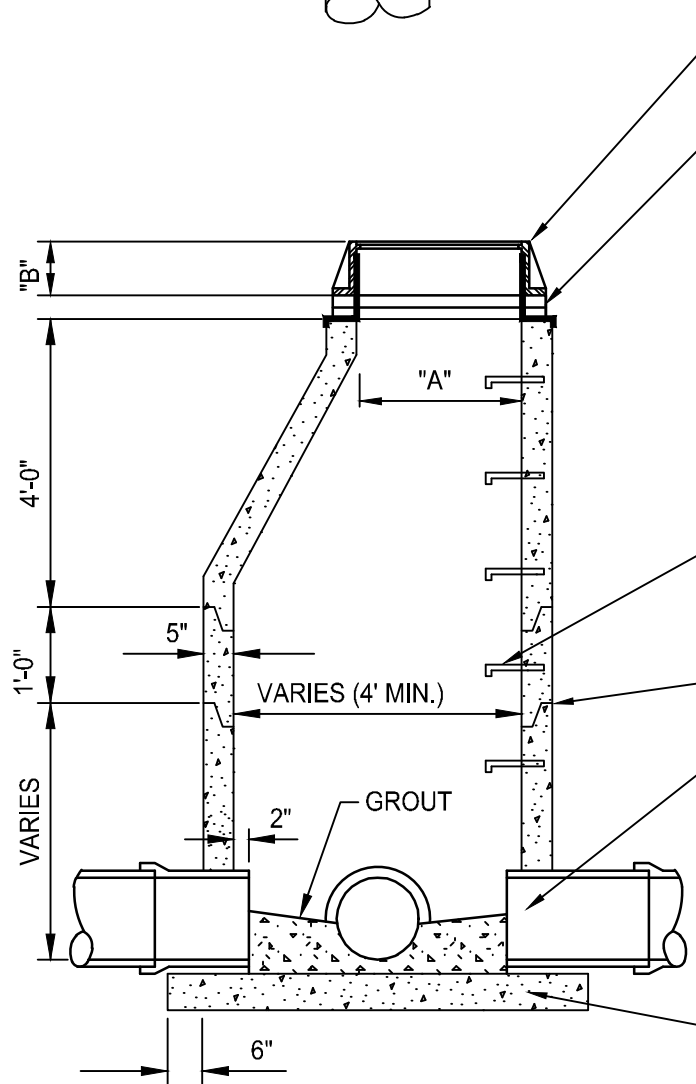
PLATE NO.  
STO-1



GROUT BOTTOM OF MANHOLE TO A MINIMUM OF 1/2 DIAMETER AT PIPE AND SLOPE GROUT 2" TOWARD INVERT.

APPROVED CASTINGS

CASTING	A	B
NEENAH R1642	27"	7"



NEENAH FRAME AND COVER OR EQUAL LETTERED, "STORM SEWER", WITH 2 CONCEALED PICK HOLES

MINIMUM OF 2 MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL INTERNAL I&I BARRIER EULL'S FOR IN STREET STRUCTURES. INFISHIELD SHALL BE INSTALLED IN BACKYARD STRUCTURES

ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.

MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM C387.

MANHOLE STEPS, COPOLYMER POLYPROPYLENE PLASTIC, WITH 1/2" GRADE 60 STEEL REINFORCEMENT OR EQUAL, 16" ON CENTER. (NO STEPS ALLOWED IN UPPER 27" BARREL.)

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

PIPE SHALL BE CUT OUT 2" FROM INSIDE FACE OF WALL.

\*\*DOG HOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE OF STRUCTURE.

SUMP MANHOLE REQUIRED WHEN THERE IS A 1.5' OR GREATER DROP BETWEEN INVERTS, AND THE FIRST STRUCTURE UPSTREAM FROM PIPE OUTLET. SEE STO-4.

MINIMUM SLAB THICKNESS 6" FOR STRUCTURES 14' IN DEPTH OR LESS. INCREASE THICKNESS 1" FOR EACH 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.

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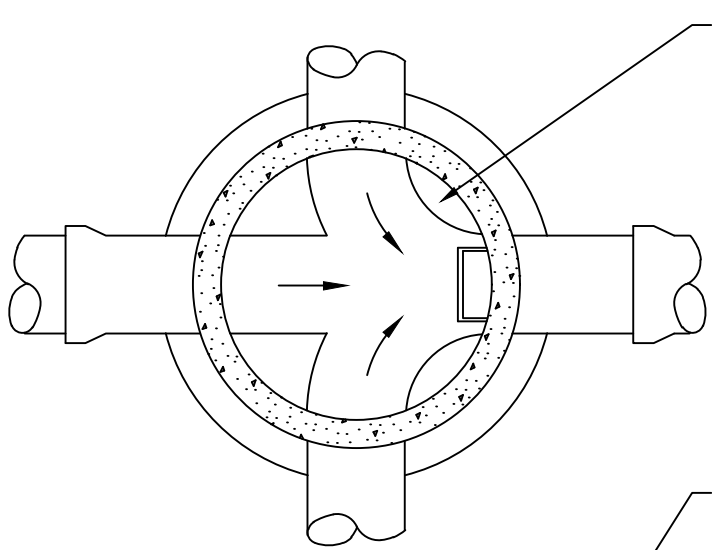
Stantec

STORM SEWER JUNCTION  
MANHOLE

LAST REVISION:  
JUL 2023

PLATE NO.  
STO-2





GROUT BOTTOM OF MANHOLE TO A MINIMUM OF 1/2 DIAMETER AT PIPE AND SLOPE GROUT 2" TOWARD INVERT.

APPROVED CASTINGS

CASTING	A	B
NEENAH R1642	27"	7"

NEENAH FRAME AND COVER OR EQUAL LETTERED, "STORM SEWER", WITH 2 CONCEALED PICK HOLES

MINIMUM OF 2 MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL INTERNAL I&I BARRIER EULL'S FOR IN STREET STRUCTURES. INFISHIELD SHALL BE INSTALLED IN BACKYARD STRUCTURES

ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.

MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM C387.

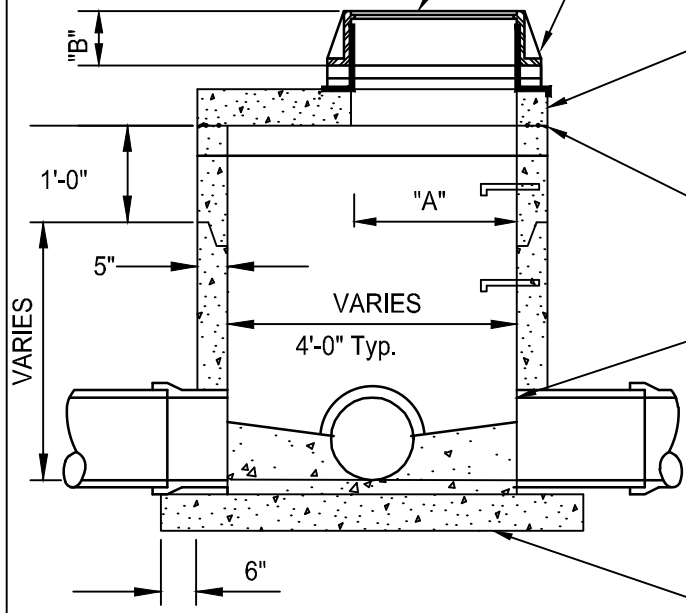
6" PRECAST REINFORCED CONCRETE MANHOLE SLAB WITH #4 BARS AT 5" O.C. EACH WAY AND 2-#4 BARS AT ALL SIDES OF OPENING.

TOP BARREL OF SECTION BELOW TOP SLAB TO HAVE FLAT TOP EDGE SEALED WITH 2 BEADS OF RAMNEK OR APPROVED EQUAL. EXTERNAL WRAP (GATOR WRAP OR APPROVED EQUAL) REQUIRED

PIPE SHALL BE CUT OUT 2" FROM INSIDE FACE OF WALL. \*\*DOG HOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE OF STRUCTURE.

SUMP MANHOLE REQUIRED WHEN THERE IS A 1.5' OR GREATER DROP BETWEEN INVERTS, AND THE FIRST STRUCTURE UPSTREAM FROM PIPE OUTLET. SEE STO-4.

MINIMUM SLAB THICKNESS 6" FOR STRUCTURES 14' IN DEPTH OR LESS. INCREASE THICKNESS 1" FOR EACH 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.



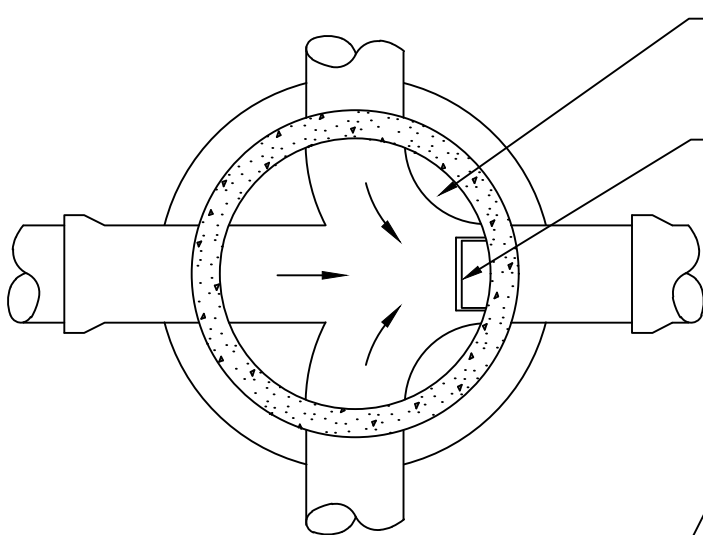
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STORM SEWER JUNCTION  
MANHOLE WITH REINFORCED  
SLAD

LAST REVISION:  
JUL 2023

PLATE NO.  
STO-3



GROUT BOTTOM OF MANHOLE TO A MINIMUM OF 1/2 DIAMETER AT PIPE AND SLOPE GROUT 2" TOWARD INVERT.

MANHOLE STEPS SHALL BE PLACED SO THAT OFFSET VERTICAL PORTION OF CONE IS FACING DOWNSTREAM FOR ALL PIPES UP TO 24". PLACE STEPS ON RIGHT HAND SIDE WHEN FACING DOWN STREAM FOR ALL PIPES 24" AND OVER

APPROVED CASTINGS

CASTING	A	B
NEENAH R1642	27"	7"

ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED. MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM C387.

NEENAH FRAME AND COVER OR EQUAL LETTERED, "STORM SEWER", WITH 2 CONCEALED PICK HOLES

MINIMUM OF 2 MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL INTERNAL I&I BARRIER EULL'S FOR IN STREET STRUCTURES. INFISHIELD SHALL BE INSTALLED IN BACKYARD STRUCTURES

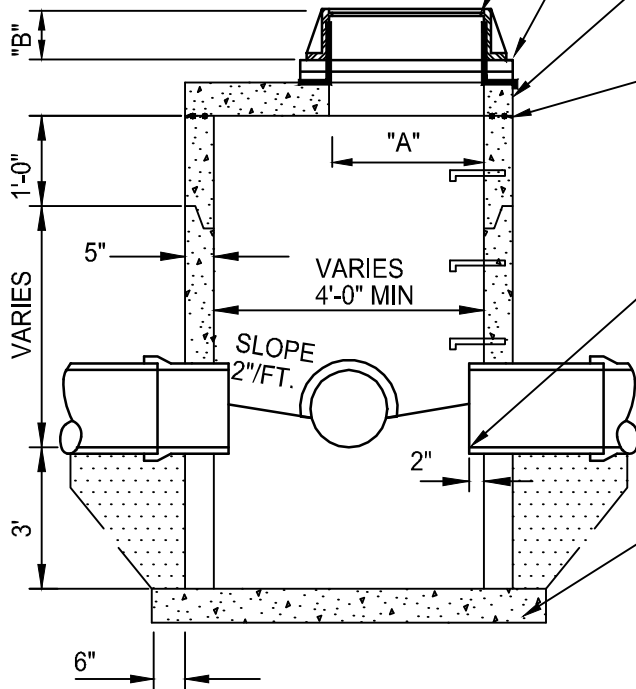
6" PRECAST REINFORCED CONCRETE MANHOLE SLAB WITH #4 BARS AT 5" O.C. EACH WAY AND 2-#4 BARS AT ALL SIDES OF OPENING.

TOP BARREL OF SECTION BELOW TOP SLAB TO HAVE FLAT TOP EDGE SEALED WITH 2 BEADS OF RAMNEK OR APPROVED EQUAL. EXTERNAL WRAP (GATOR WRAP OR APPROVED EQUAL) REQUIRED

PIPE SHALL BE CUT OUT 2" FROM INSIDE FACE OF WALL.

SUMP MANHOLE REQUIRED WHEN THERE IS A 1.5' OR GREATER DROP BETWEEN INVERTS, AND THE FIRST STRUCTURE UPSTREAM FROM PIPE OUTLET. SEE STO-4.

MINIMUM SLAB THICKNESS 6" FOR STRUCTURES 14' IN DEPTH OR LESS. INCREASE THICKNESS 1" FOR EACH 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.



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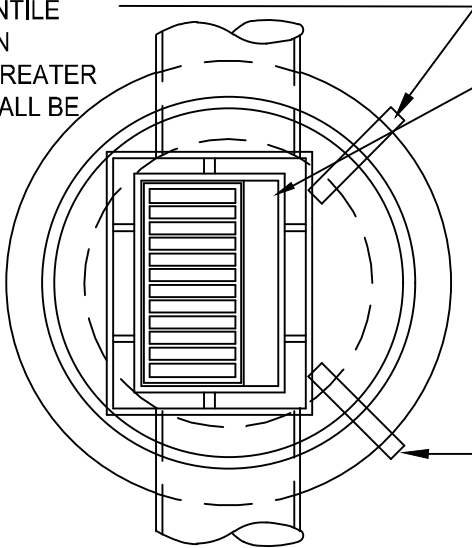


STORM SEWER JUNCTION  
MANHOLE WITH REINFORCED  
SLAB AND SUMP

LAST REVISION:  
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PLATE NO.  
STO-4

4" PVC DRAINTILE CONNECTION  
NO BENDS GREATER THAN 45° SHALL BE ALLOWED



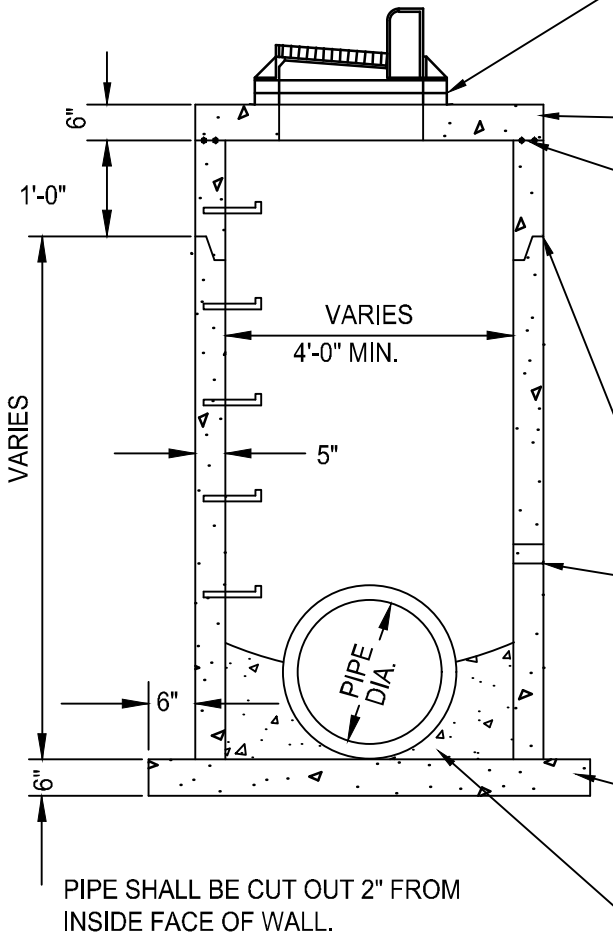
24"X36" SLAB OPENING FOR NEENAH R3067V. INSTALL R3290-A FOR DRIVEWAYS AND VALLEY GUTTERS. (VANE GRATE SHOWN). INSTALL NEENAH 3067VB TWO WAY GRATE AT ALL LOW POINTS.

DIMENSION FROM BACK OF CURB TO CENTER OF PIPE.

- 4' DIA. MH - 9" IN FROM BACK OF CURB
- 5' DIA. MH - 3" IN FROM BACK OF CURB
- 6' DIA. MH - 3" BEHIND BACK OF CURB
- 7' DIA. MH - 9" BEHIND BACK OF CURB
- 8' DIA. MH - 15" BEHIND BACK OF CURB

NO BLOCK STRUCTURES ALLOWED.

MINIMUM OF 2 MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL EXTERIOR INFI-SHIELD OR APPROVED EQUAL.



6" PRECAST REINFORCED CONCRETE SLAB.

TOP OF BARREL SECTION UNDER TOP SLAB TO HAVE FLAT TOP EDGE SEALED WITH 2 BEADS OF RAMNEK OR APPROVED EQUAL. EXTERNAL WRAP (GATOR WRAP OR APPROVED EQUAL) REQUIRED

ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.

MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM C387.

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

4" PVC DRAINTILE CONNECTION.

SUMP MANHOLE REQUIRED WHEN THERE IS A 1.5' OR GREATER DROP BETWEEN INVERTS, AND THE FIRST STRUCTURE UPSTREAM FROM PIPE OUTLET. SEE STO-6.

MINIMUM SLAB THICKNESS 6" FOR STRUCTURES 14' IN DEPTH OR LESS. INCREASE THICKNESS 1" FOR EACH 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.

PIPE SHALL BE CUT OUT 2" FROM INSIDE FACE OF WALL.

\*\*DOG HOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE OF STRUCTURE.

GROUT BOTTOM



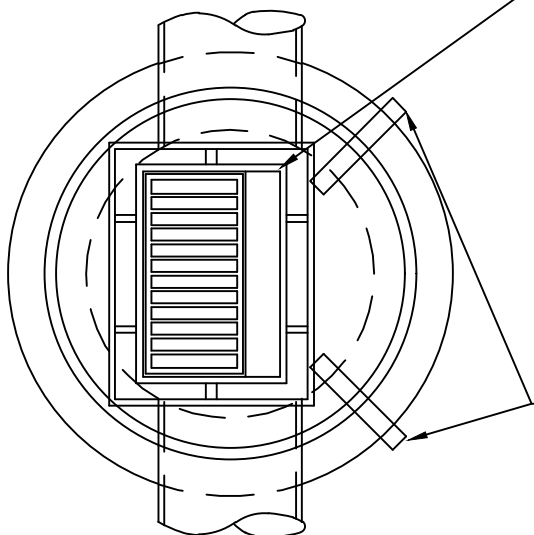
CORCORAN, MINNESOTA



## CATCH BASIN MANHOLE

LAST REVISION:  
JUL 2023

PLATE NO.  
STO-5



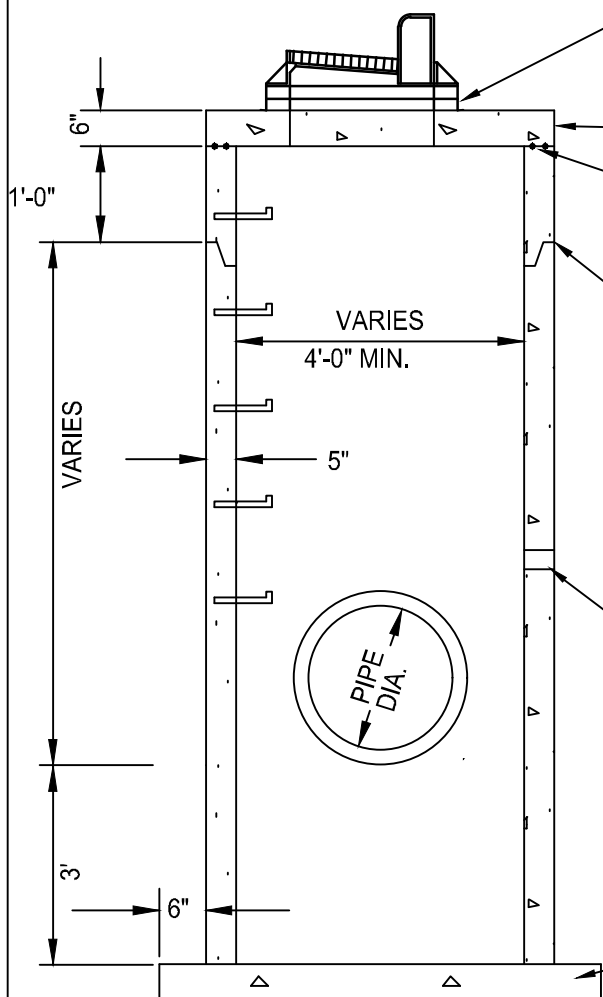
24"X36" SLAB OPENING FOR NEENAH R3067V. INSTALL R3290-A FOR DRIVEWAYS AND VALLEY GUTTERS. (VANE GRATE SHOWN). INSTALL NEENAH 3067VB TWO WAY GRATE AT ALL LOW POINTS.

DIMENSION FROM BACK OF CURB TO CENTER OF PIPE.

- 4' DIA. MH - 9" IN FROM BACK OF CURB
- 5' DIA. MH - 3" IN FROM BACK OF CURB
- 6' DIA. MH - 3" BEHIND BACK OF CURB
- 7' DIA. MH - 9" BEHIND BACK OF CURB
- 8' DIA. MH - 15" BEHIND BACK OF CURB

NO BLOCK STRUCTURES ALLOWED.

4" PVC DRAINTILE CONNECTION  
NO BENDS GREATER THAN 45° SHALL BE ALLOWED



MINIMUM OF 2 MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL EXTERIOR INFI-SHIELD OR APPROVED EQUAL.

6" PRECAST REINFORCED CONCRETE SLAB.

TOP OF BARREL SECTION UNDER TOP SLAB TO HAVE FLAT TOP EDGE SEALED WITH 2 BEADS OF RAMNEK OR APPROVED EQUAL. EXTERNAL WRAP (GATOR WRAP OR APPROVED EQUAL) REQUIRED

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

\*\*DOG HOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE OF STRUCTURE.

ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.

MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM C387.

4" PVC DRAINTILE CONNECTION.

PIPE SHALL BE CUT OUT 2" FROM INSIDE FACE OF WALL.

SUMP MANHOLE REQUIRED WHEN THERE IS A 1.5' OR GREATER DROP BETWEEN INVERTS, AND THE FIRST STRUCTURE UPSTREAM FROM PIPE OUTLET. SEE STO-6.

MINIMUM SLAB THICKNESS 6" FOR STRUCTURES 14' IN DEPTH OR LESS. INCREASE THICKNESS 1" FOR EACH 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.



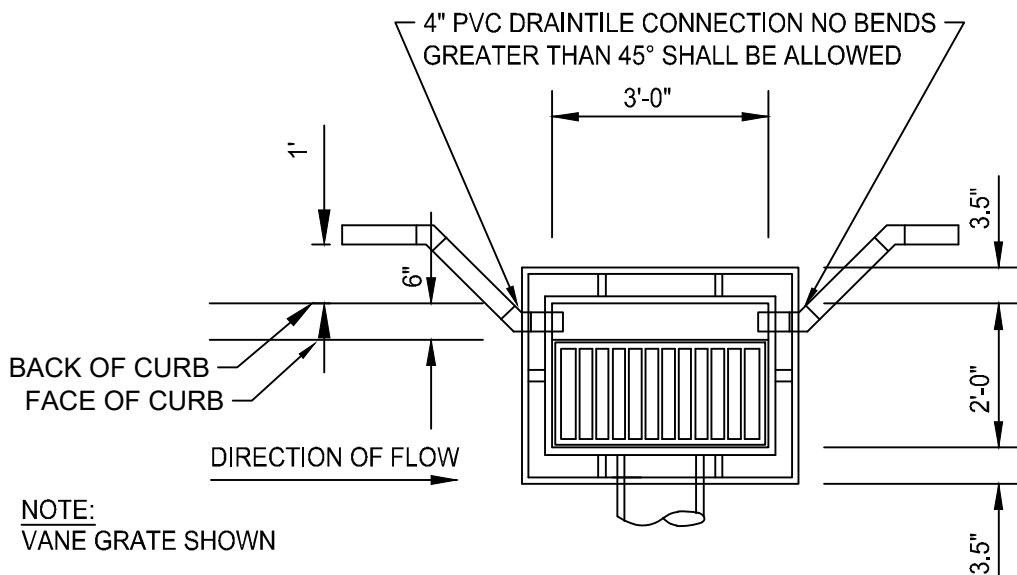
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## CATCH BASIN MANHOLE WITH SUMP

LAST REVISION:  
JUL 2023

PLATE NO.  
STO-6



**PLAN**

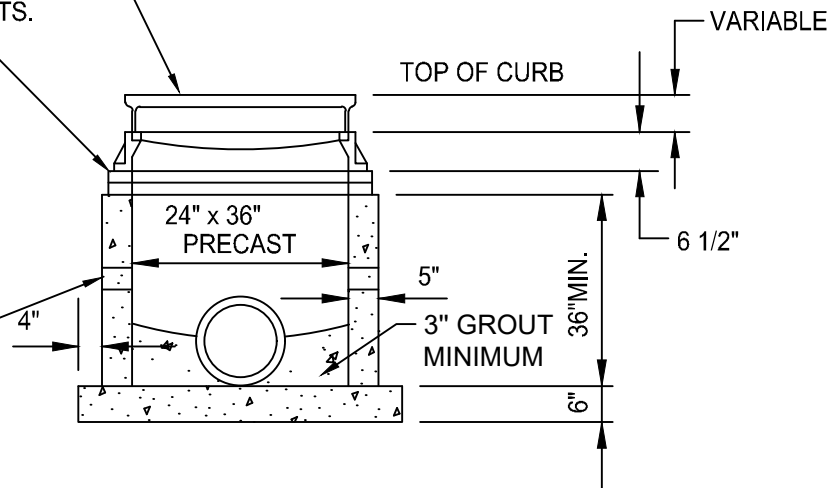
CATCHBASIN CASTING NEENAH R3067V OR EQUAL WITH VANE GRATE, 3" RADIUS CURB BOX. INSTALL R3290-A CASTING IN DRIVEWAYS AND VALLEY GUTTERS. INSTALL NEENAH 3067VB TWO WAY GRATE AT ALL LOW POINTS.

NO BLOCK STRUCTURES ALLOWED.

MINIMUM OF 2 MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL EXTERIOR INFI-SHIELD OR APPROVED EQUAL.

4" PVC DRAINTILE CONNECTION

DOGHOUSES SHALL BE GROUTED ON BOTH THE OUTSIDE AND THE INSIDE.



**SECTION**

ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.  
MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM C387.



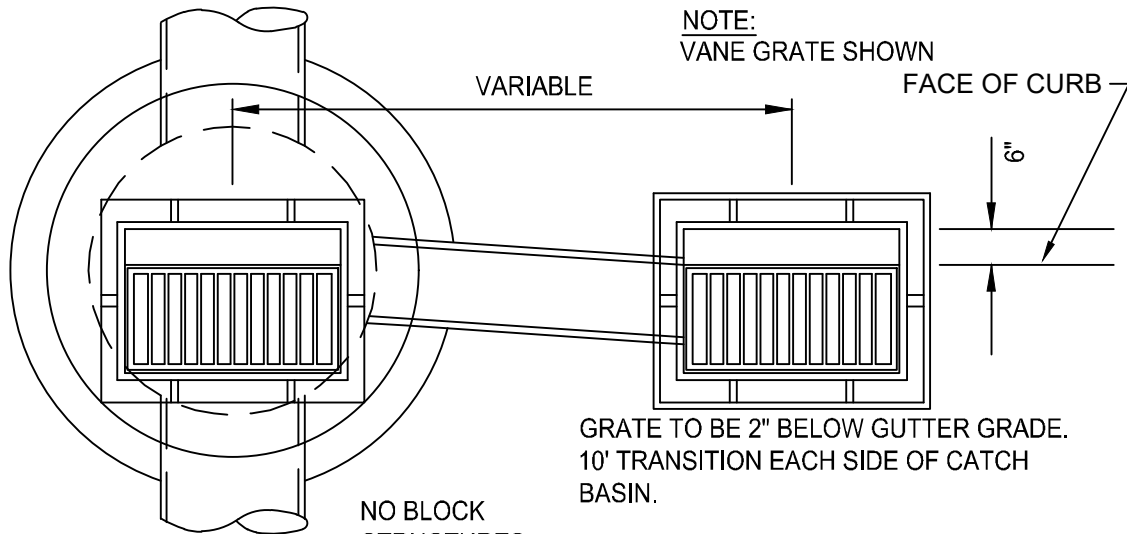
CORCORAN, MINNESOTA



2'X3' CATCHBASIN

LAST REVISION:  
JUL 2023

PLATE NO.  
STO-7



**PLAN**

NOTE:  
VANE GRATE SHOWN  
FACE OF CURB

NO BLOCK  
STRUCTURES  
ALLOWED.

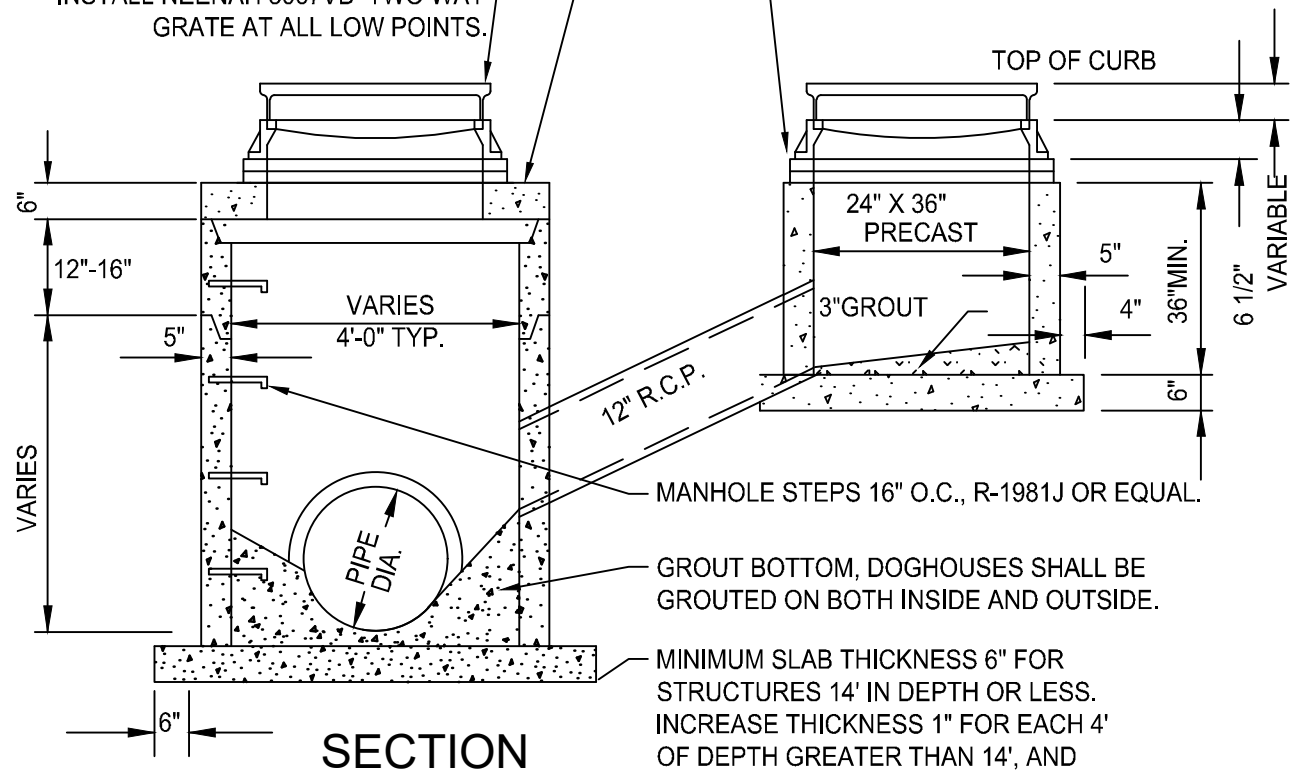
GRATE TO BE 2" BELOW GUTTER GRADE.  
10' TRANSITION EACH SIDE OF CATCH  
BASIN.

6" PRECAST REINFORCED CONCRETE SLAB

CATCHBASIN CASTING NEENAH R3067V  
OR EQUAL WITH VANE GRATE. 3" RADIUS  
CURB BOX. INSTALL R3290L CASTING FOR  
DRIVEWAYS AND VALLEY GUTTERS.  
INSTALL NEENAH 3067VB TWO WAY  
GRATE AT ALL LOW POINTS.

MIN. OF 2 MAX. OF 5 CONCRETE  
ADJUSTMENT RINGS WITH FULL BED OF  
GROUT BETWEEN EACH RING. 1 RING  
WITH MORTAR = 0.2'. INSTALL EXTERIOR  
INFI-SHIELD OR APPROVED EQUAL.

MORTAR SHALL BE AIR ENTRAINED UNDERGROUND  
UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM  
C270 AND ASTM C387.



**SECTION**

MANHOLE STEPS 16" O.C., R-1981J OR EQUAL.

GROUT BOTTOM, DOGHOUSES SHALL BE  
GROUTED ON BOTH INSIDE AND OUTSIDE.

MINIMUM SLAB THICKNESS 6" FOR  
STRUCTURES 14' IN DEPTH OR LESS.  
INCREASE THICKNESS 1" FOR EACH 4'  
OF DEPTH GREATER THAN 14', AND  
REINFORCE WITH 6" X 6" 10/10 MESH.



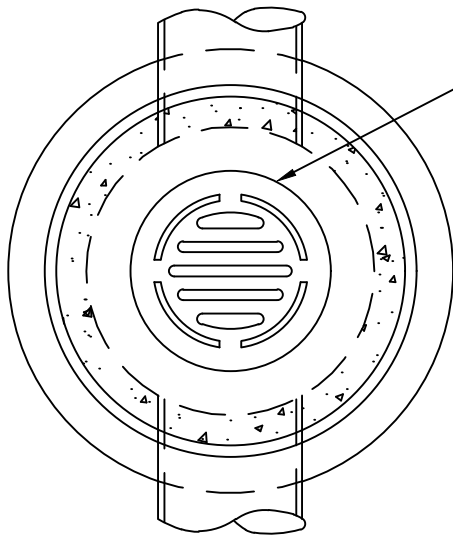
CORCORAN, MINNESOTA



DOUBLE CATCHBASIN –  
CATCHBASIN MANHOLE WITH  
2'X3' CATCHBASIN

LAST REVISION:  
JUL 2023

PLATE NO.  
STO-8

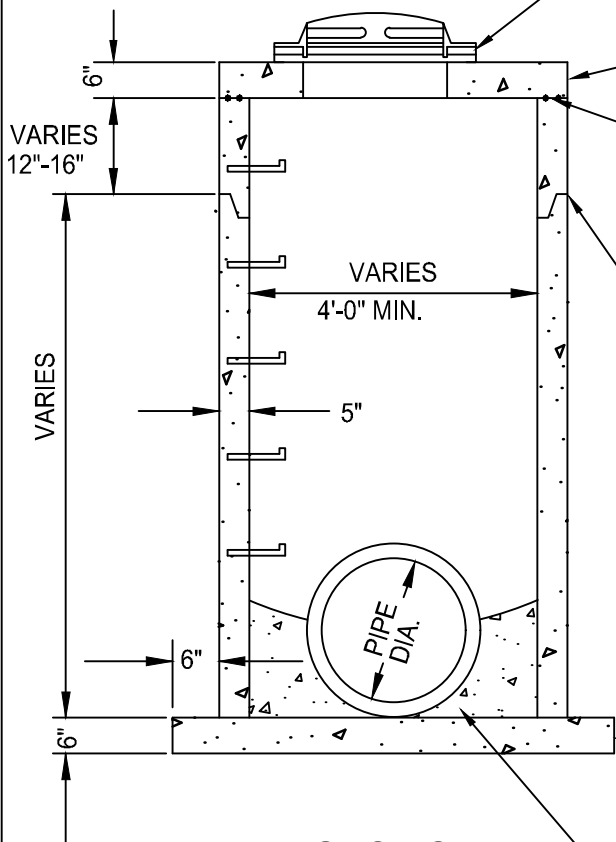


**PLAN**

NEENAH R-4342 CASTING OR EQUAL.

ONLY PLASTIC SHIMS SHALL BE ALLOWED IF NEEDED.  
MORTAR SHALL BE AIR ENTRAINED UNDERGROUND UTILITY MORTAR WHICH MEETS OR EXCEEDS ASTM C270 AND ASTM C387.

NO BLOCK STRUCTURES ALLOWED.



**SECTION**

MINIMUM OF 2 MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH FULL BED OF MORTAR BETWEEN EACH RING. 1 RING WITH MORTAR = 0.2'. INSTALL INTERIOR I&I BARRIER EULL'S OR APPROVED EQUAL.

6" PRECAST REINFORCED CONCRETE SLAB.

TOP OF BARREL SECTION UNDER TOP SLAB TO HAVE FLAT TOP EDGE SEALED WITH 2 BEADS OF RAMNEK OR APPROVED EQUAL. EXTERNAL WRAP (GATOR WRAP OR APPROVED EQUAL) REQUIRED

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

\*\*DOG HOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE OF STRUCTURE.

PIPE SHALL BE CUT OUT 2" FROM INSIDE FACE OF WALL.

MINIMUM SLAB THICKNESS 6" FOR STRUCTURES 14' IN DEPTH OR LESS. INCREASE THICKNESS 1" FOR EACH 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.

GROUT BOTTOM



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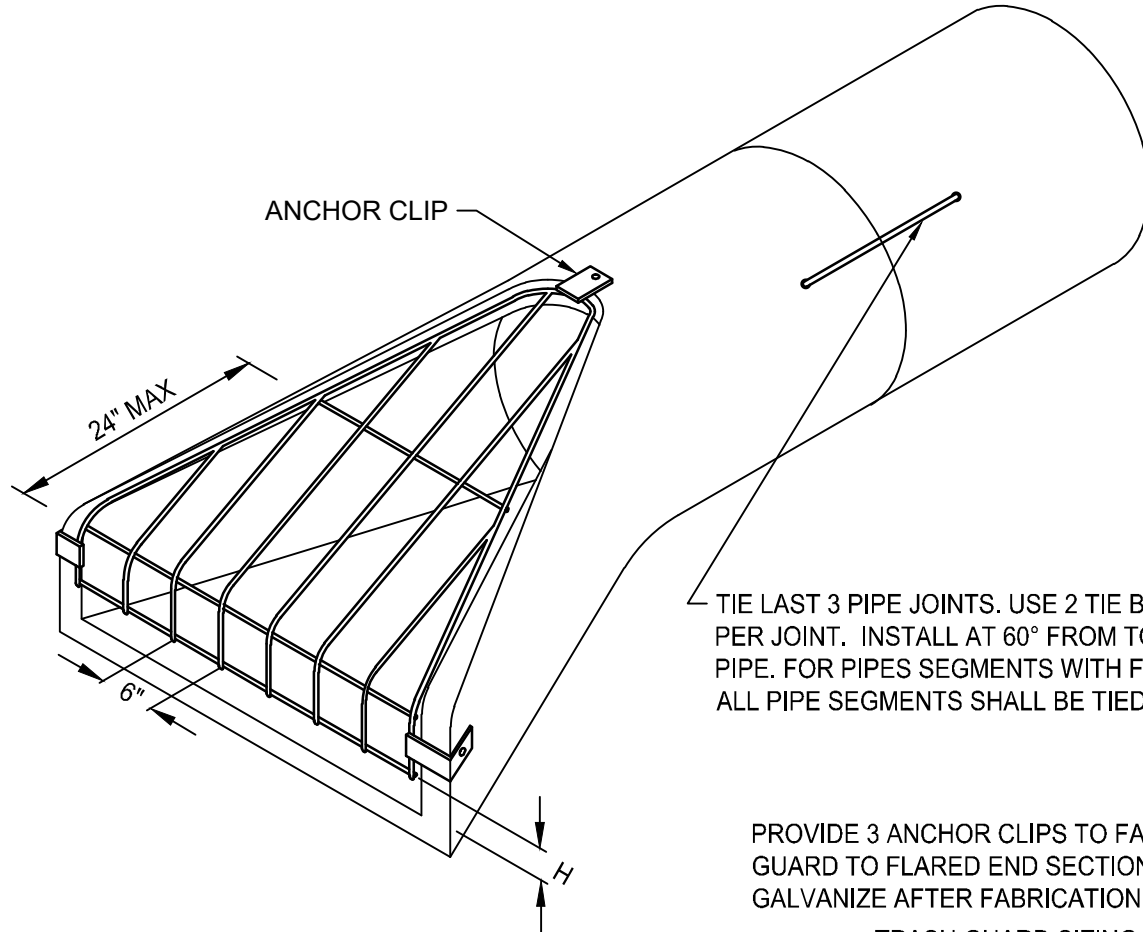


CATCHBASIN MANHOLE IN GREENSPACE

LAST REVISION:  
JUL 2023

PLATE NO.  
STO-9

SEE CITY PLATE NO. STO-11 FOR RIPRAP PLACEMENT.



TIE LAST 3 PIPE JOINTS. USE 2 TIE BOLT FASTENERS PER JOINT. INSTALL AT 60° FROM TOP OR BOTTOM OF PIPE. FOR PIPES SEGMENTS WITH FES ON BOTH ENDS, ALL PIPE SEGMENTS SHALL BE TIED

PROVIDE 3 ANCHOR CLIPS TO FASTEN TRASH GUARD TO FLARED END SECTION. HOT DIP GALVANIZE AFTER FABRICATION.

ISOMETRIC

TRASH GUARD SIZING			
PIPE SIZE	BAR	'H'	BOLTS
12"	3/4"Ø	2 1/2"	5/8"
15"	3/4"Ø	3"	5/8"
18"	3/4"Ø	4"	5/8"
21"-24"	1"Ø	4"	3/4"
27"-36"	1"Ø	5"	3/4"
42"	1"Ø	6"	3/4"
48"-54"	1 1/4"Ø	6"	1"
60"-72"	1 1/4"Ø	7"	1"
78"-90"	1 1/4"Ø	8"	1"



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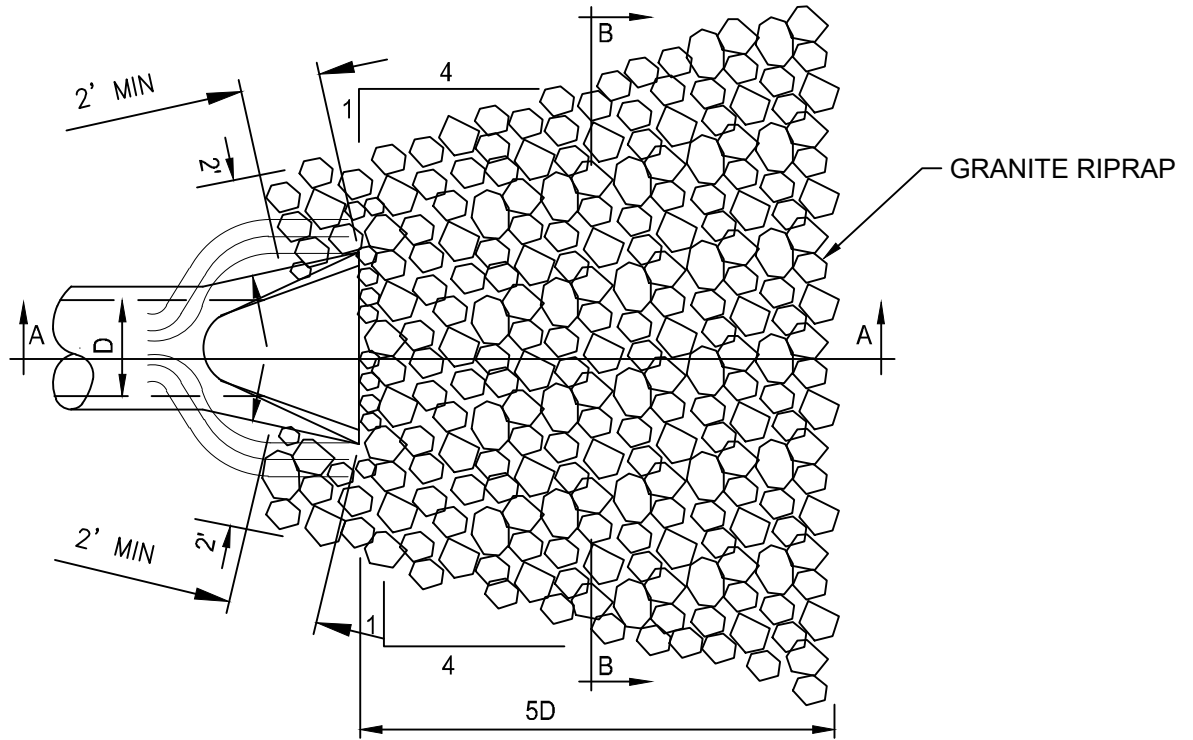


## FLARED END SECTION AND TRASHGUARD

LAST REVISION:  
JUL 2023

PLATE NO.  
STO-10



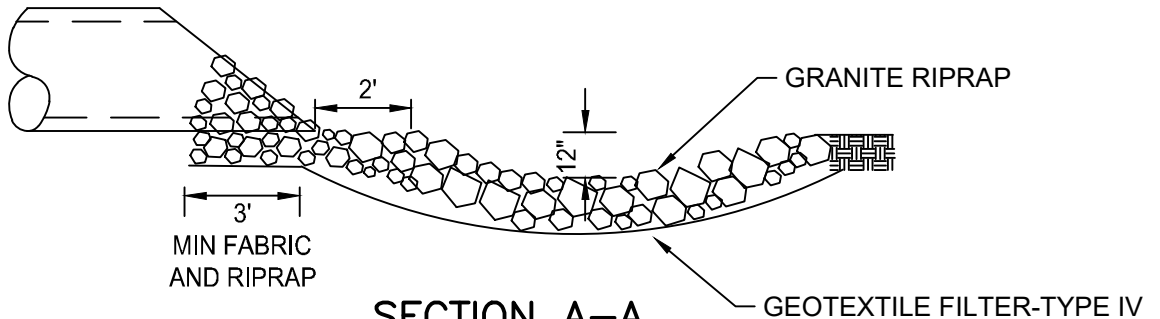


**RIPRAP REQUIREMENTS**

12" TO 18"	8-10 CUBIC YARDS CL.3
21" TO 27"	12-14 CUBIC YARDS CL.3
30" TO 36"	16-24 CUBIC YARDS CL.3
42" TO 48"	30-38 CUBIC YARDS CL.3
54" AND UP	62&UP CUBIC YARDS CL.4

**PLAN**

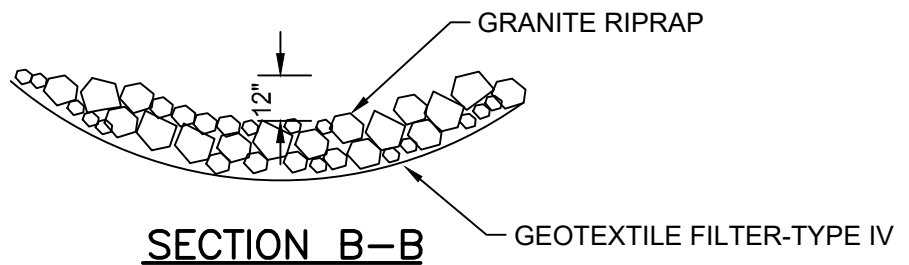
(ONE CUBIC YARD IS APPROXIMATELY 2,800 LBS.)



**SECTION A-A**

**NOTES:**

1. FILTER BLANKET REQUIRED UNDER RIPRAP OR 2 LAYERS OF 500X MIRAFI FABRIC OR EQUAL.
2. ONLY GRANITE RIPRAP TO BE USED AT OUTLETS.
3. GRADE A SWALE ADJACENT TO BOTH SIDES OF PIPE TO DIRECT WATER AWAY FROM FES.



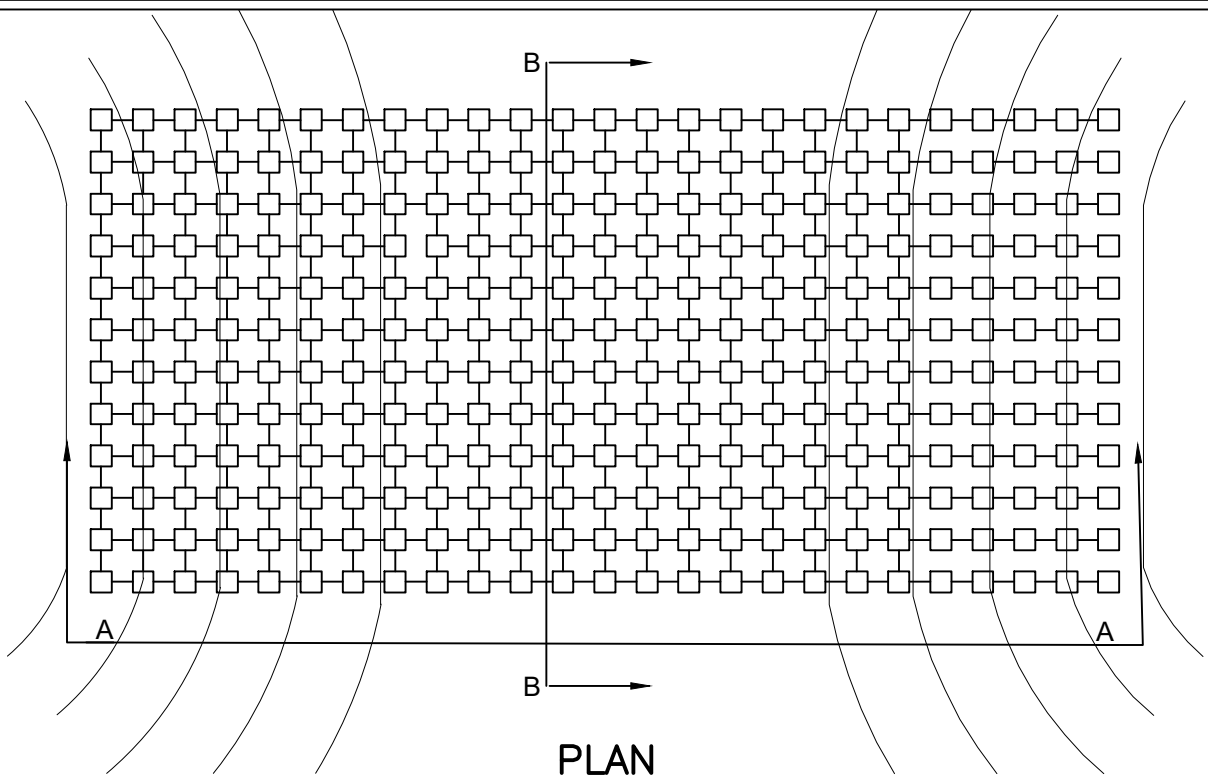
**SECTION B-B**



**RIPRAP AT OUTLETS**

LAST REVISION:  
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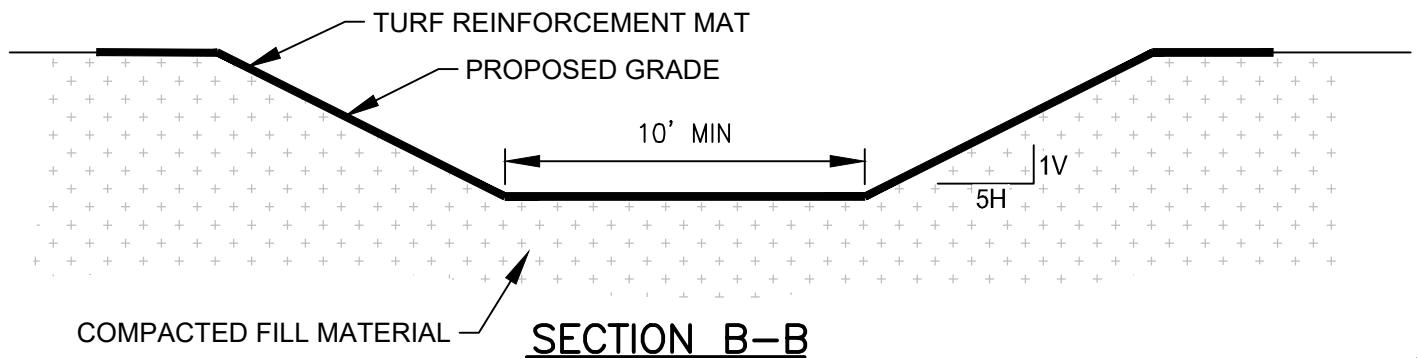
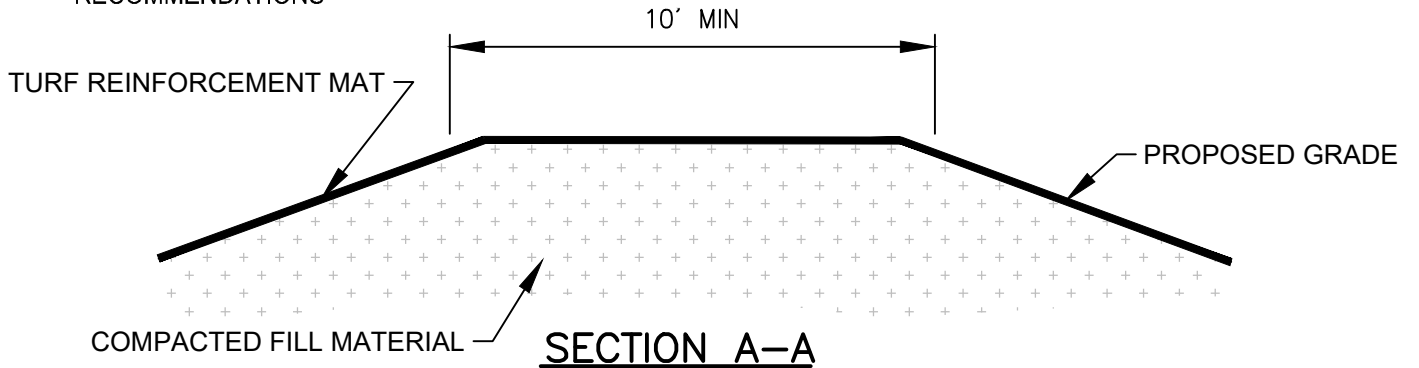
PLATE NO.  
STO-11



**PLAN**

**NOTES:**

1. TURF REINFORCEMENT MAT TO BE INSTALLED TO WATER LEVEL ON INLET SIDE AND DISCHARGE ELEVATION ON OUTLET SIDE.
2. TURF REINFORCEMENT MAT SHALL BE MNDOT ROLLED EROSION PREVENTION PRODUCT - CATEGORY 76, SLOPETAME3 BY INVISIBLE, OR CITY APPROVED EQUAL AND INSTALLED PER MANUFACTURES RECOMMENDATIONS



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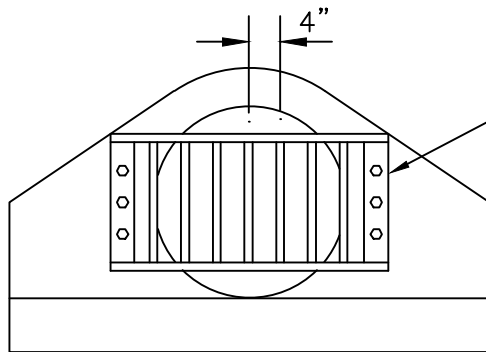
TYPICAL POND EOF

LAST REVISION:

JUL 2023

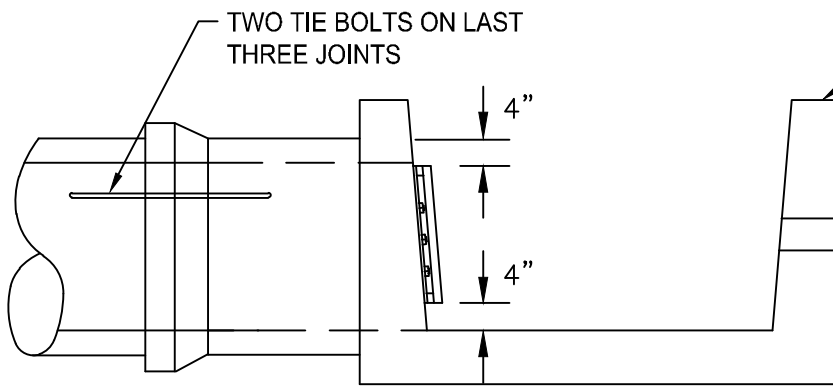
PLATE NO.

STO-12



STEEL PLATE - BOLT TO CONCRETE WITH STAINLESS STEEL BOLTS. HOT DIP GALVANIZE AFTER FABRICATION.

**FRONT VIEW**



ENERGY DISSIPATOR: SEE MNDOT STANDARD PLATE NO. 5200B

**SIDE VIEW**

SIZE OF PIPE	SIZE OF PLATE	BARS	BOLTS
12" TO 18"	1/4"X2"	3/4"Ø	2-5/8"Ø
21" TO 48"	1/4"X3"	1"Ø	3-3/4"Ø

**NOTE:**

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



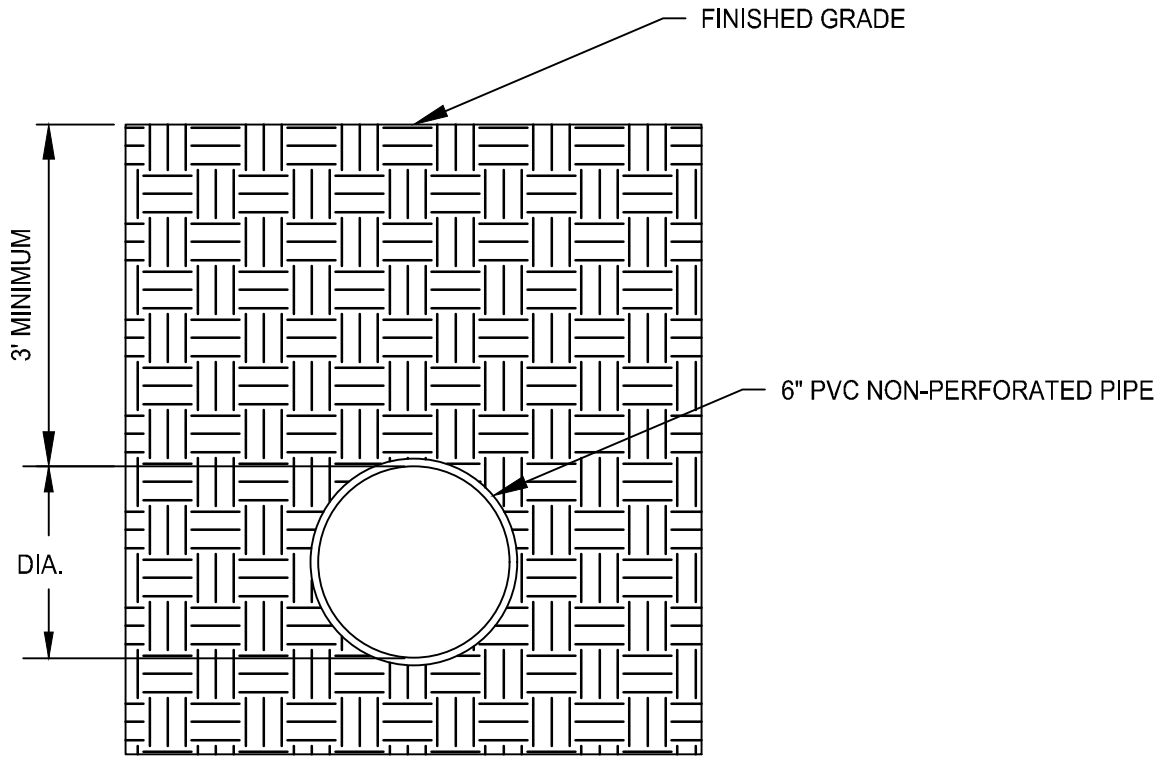
CORCORAN, MINNESOTA



ENERGY DISSIPATOR AND TRASH GUARDS

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PLATE NO.  
STO-13



**TRENCH DETAIL**

**NOTES:**

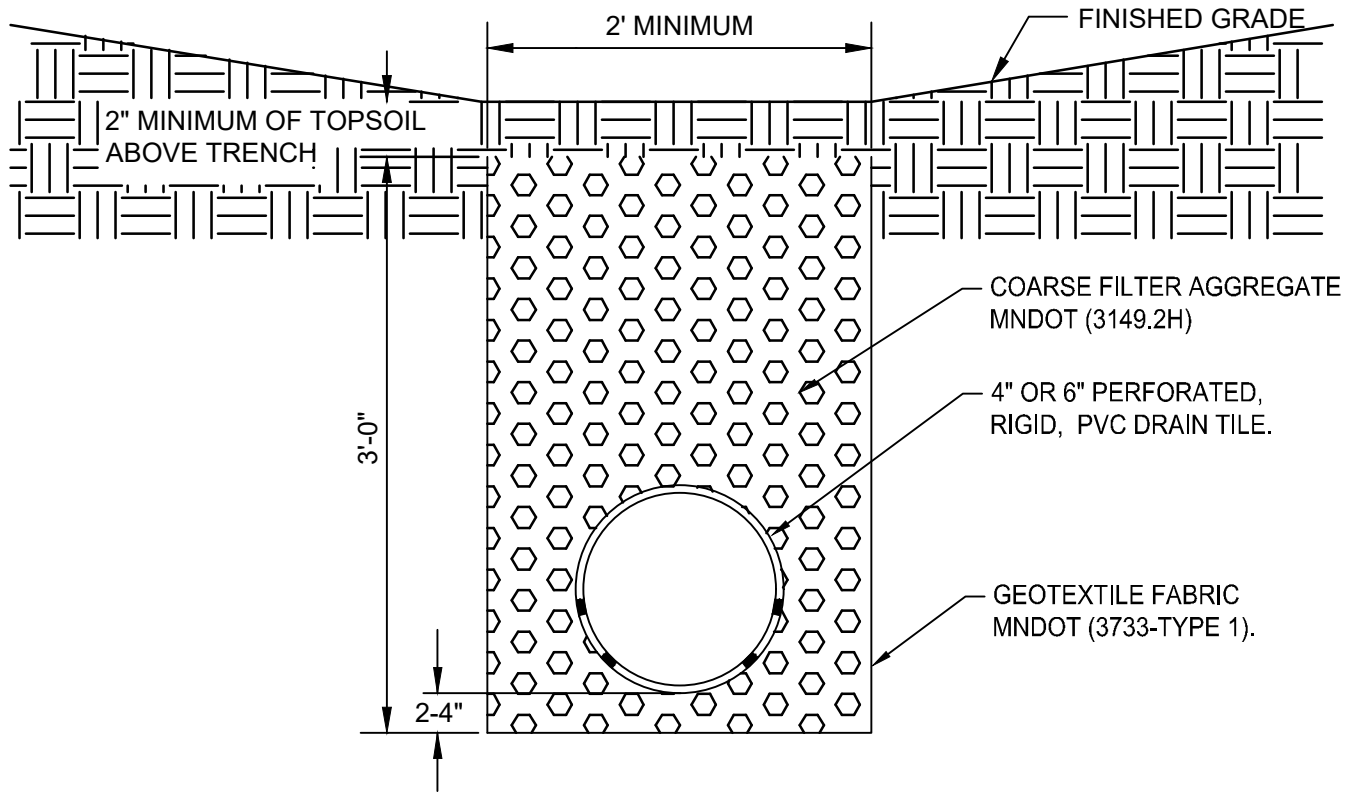
1. MIN COVER OF 3' TO TOP OF DRAINTILE FROM FINISH GRADE
2. DRAINAGE SWALES THAT HAVE LESS THAN 2% SLOPE SHALL USE DETAIL STO-14A



**BACKYARD DRAINAGE SUMP  
CONNECTION**

LAST REVISION:  
JUL 2023

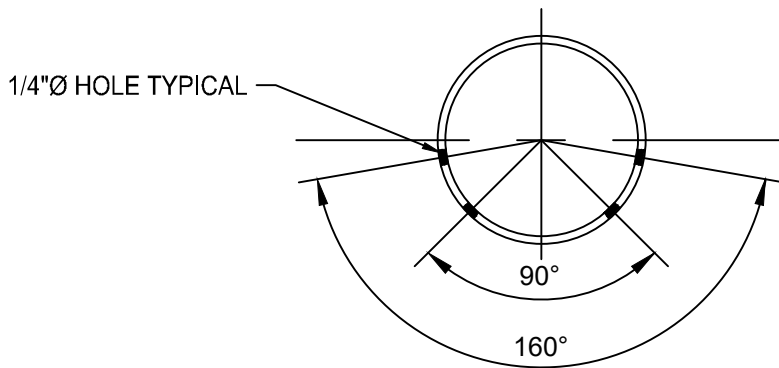
PLATE NO.  
STO-14



TRENCH DETAIL

**NOTE:**

1. FABRIC TO BE WRAPPED ON THE SIDES AND UNDER THE FILTER AGGREGATE. DO NOT WRAP FABRIC.
2. PLACE HOLES UP WHEN SUMP PUMP LATERALS ARE PRESENT.



PIPE DETAIL



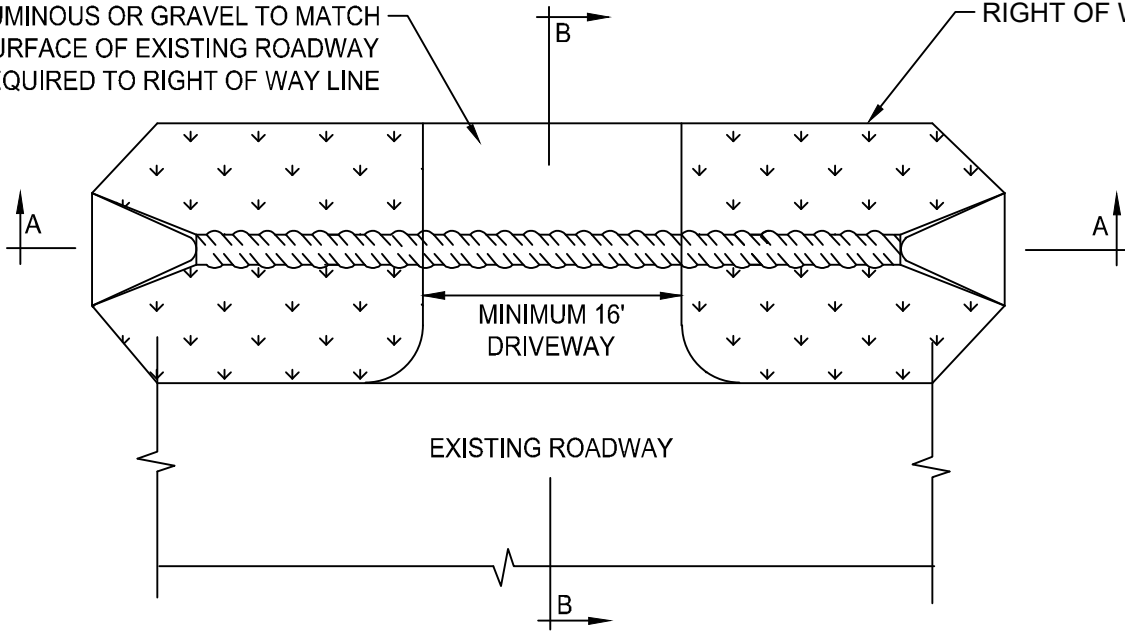
PERFORATED DRAINTILE SWALE  
INSTALLATION

LAST REVISION:  
JUL 2023

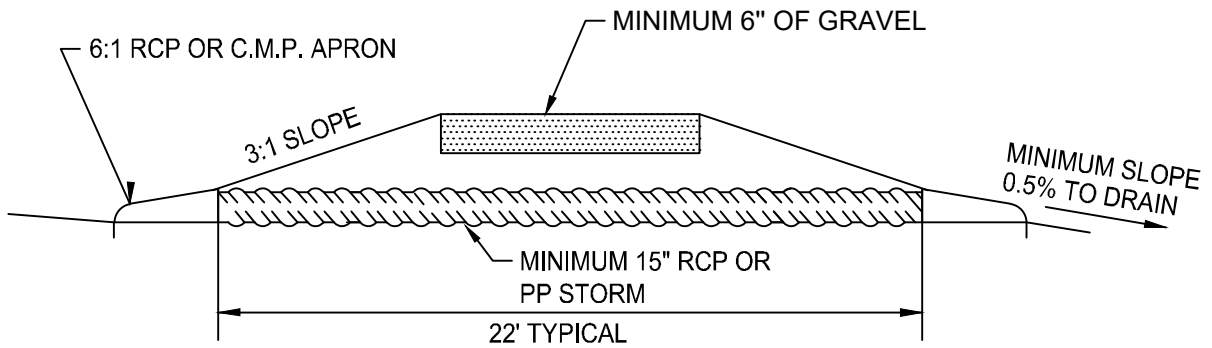
PLATE NO.  
STO-14A

BITUMINOUS OR GRAVEL TO MATCH SURFACE OF EXISTING ROADWAY REQUIRED TO RIGHT OF WAY LINE

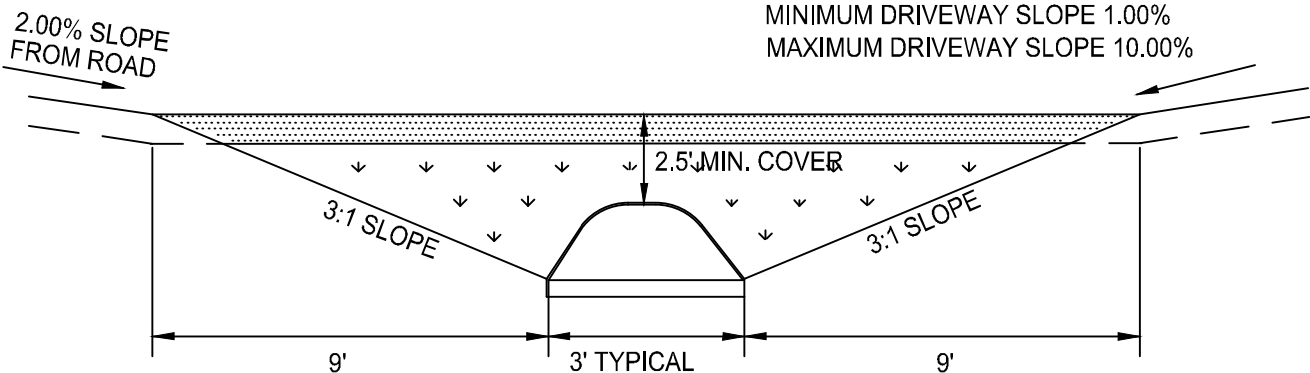
RIGHT OF WAY LINE



**PLAN**



**SECTION A-A**



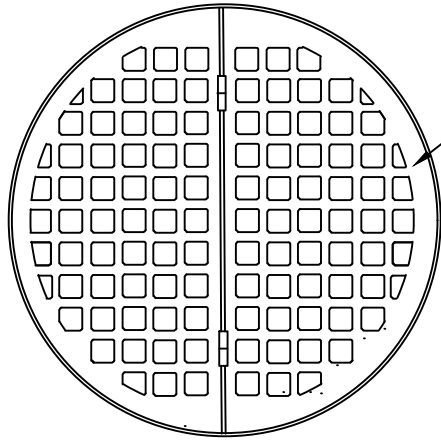
**SECTION B-B**



RURAL RESIDENTIAL DRIVEWAY  
CULVERT

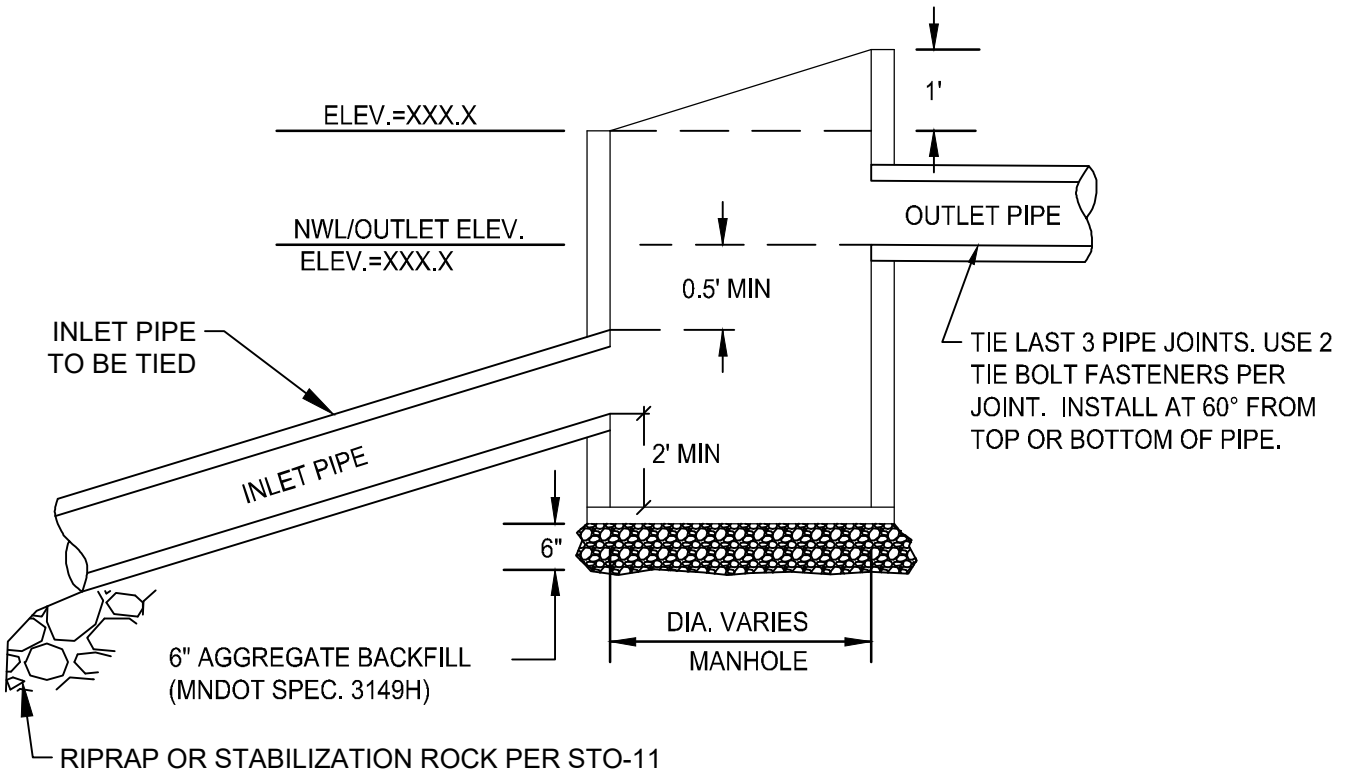
LAST REVISION:  
JUL 2023

PLATE NO.  
STO-15



GRATE DETAIL

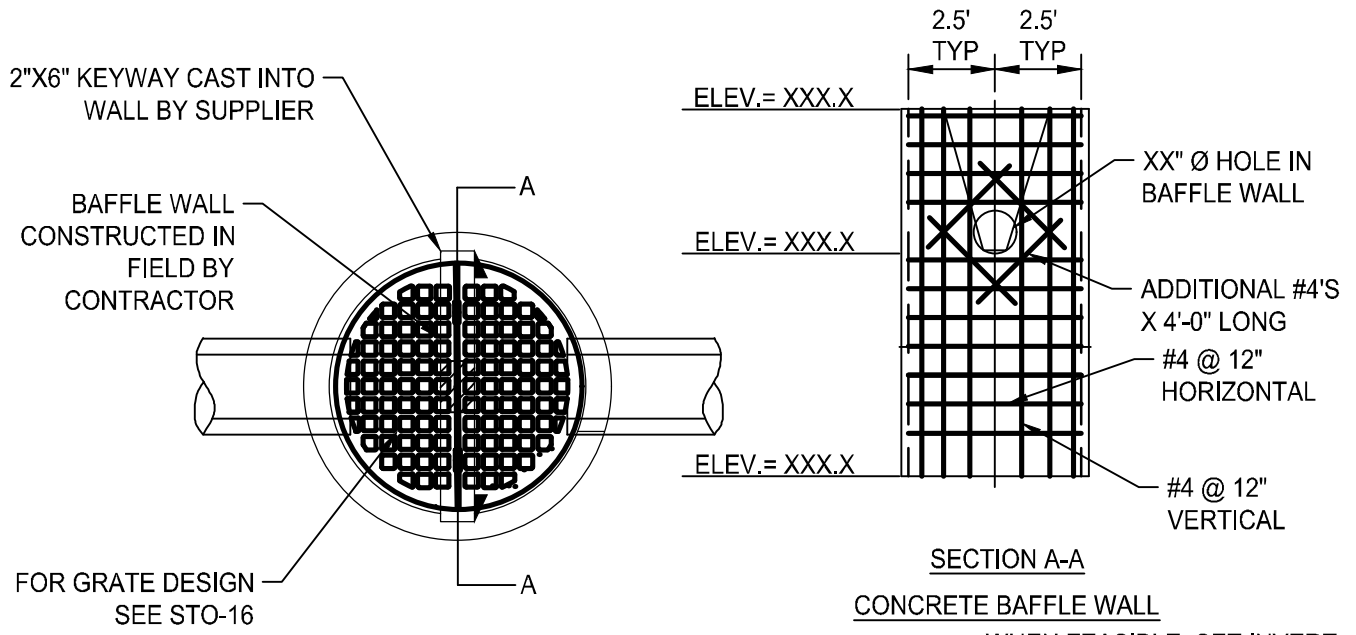
HAALA POND SKIMMER PLATE  
STYLE OR APPROVED EQUAL



STORM SEWER SKIMMER  
STRUCTURE

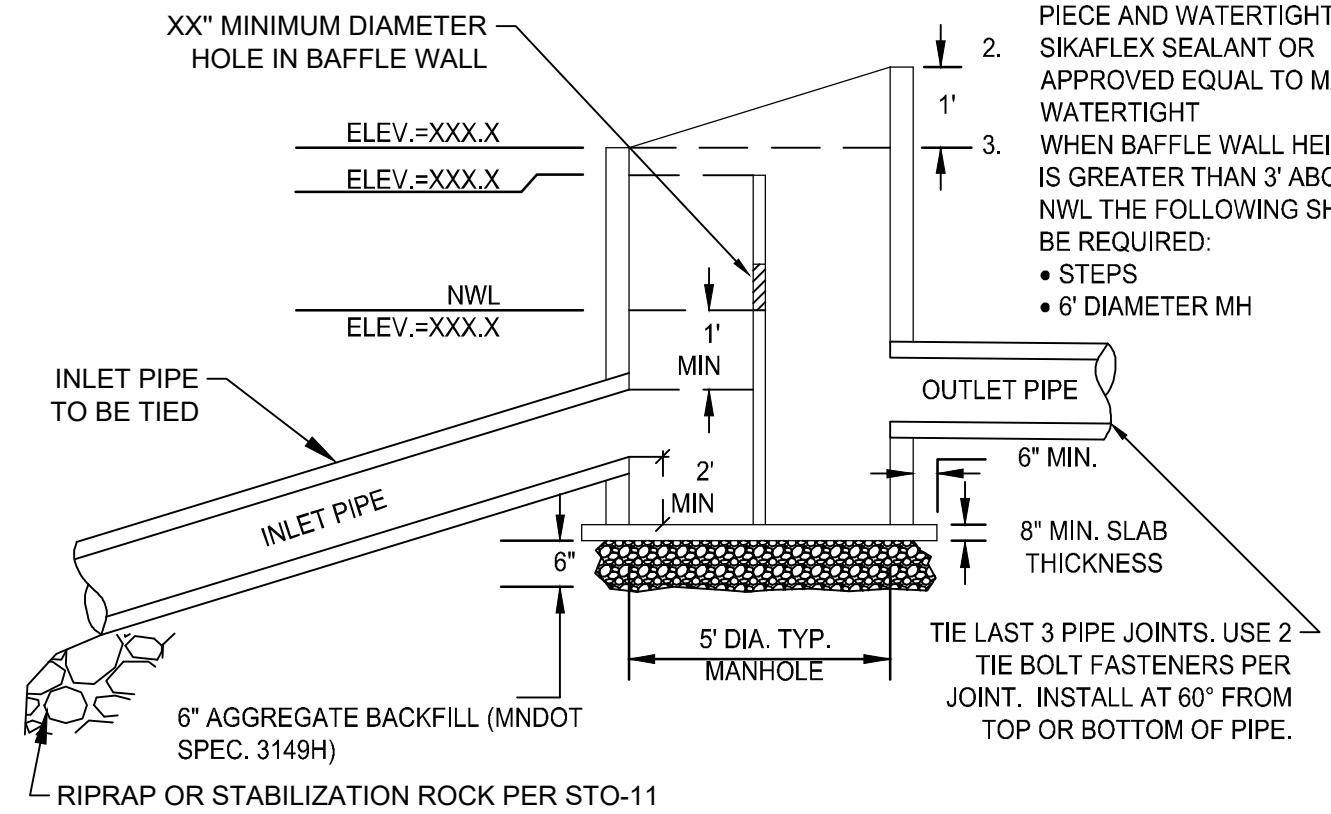
LAST REVISION:  
JUL 2023

PLATE NO.  
STO-16



WHEN FEASIBLE, SET INVERT FOR OUTLET PIPE BELOW NWL TO IMPROVE PIPE COVER AND MINIMIZE SLOPE AROUND SKIMMER

- NOTE:**
1. BAFFLE WALL TO BE SINGLE PIECE AND WATERTIGHT.
  2. SIKAFLEX SEALANT OR APPROVED EQUAL TO MAKE WATERTIGHT
  3. WHEN BAFFLE WALL HEIGHT IS GREATER THAN 3' ABOVE NWL THE FOLLOWING SHALL BE REQUIRED:
    - STEPS
    - 6' DIAMETER MH

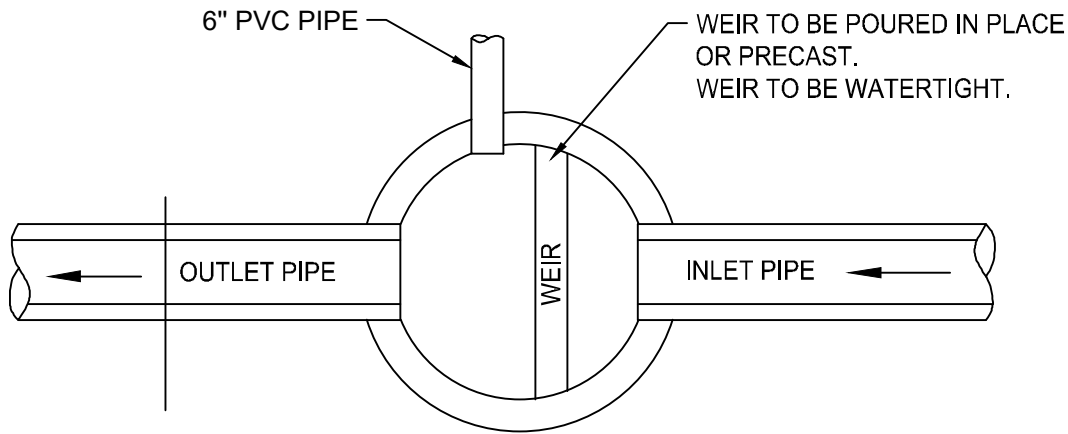


SKIMMER STRUCTURE WITH CONCRETE BAFFLE WALL

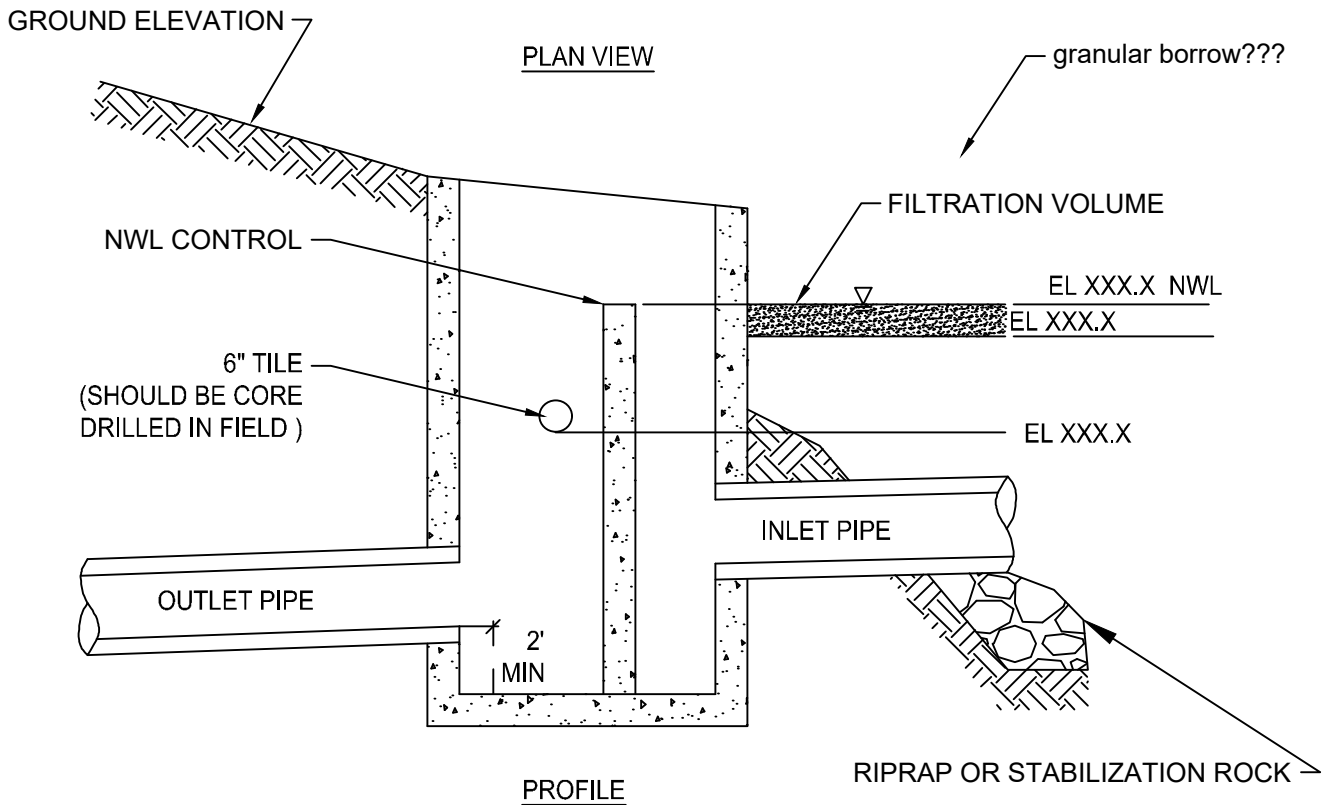
LAST REVISION:  
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PLATE NO.  
STO-17





PLAN VIEW



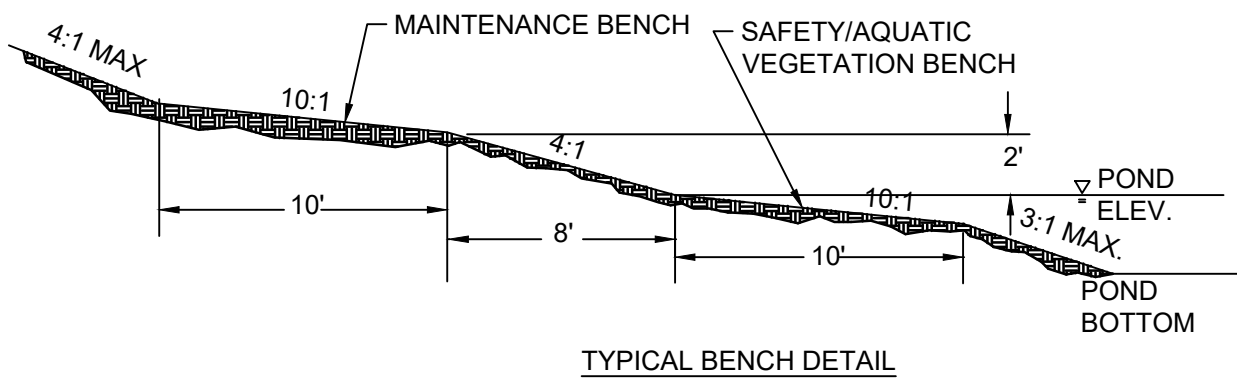
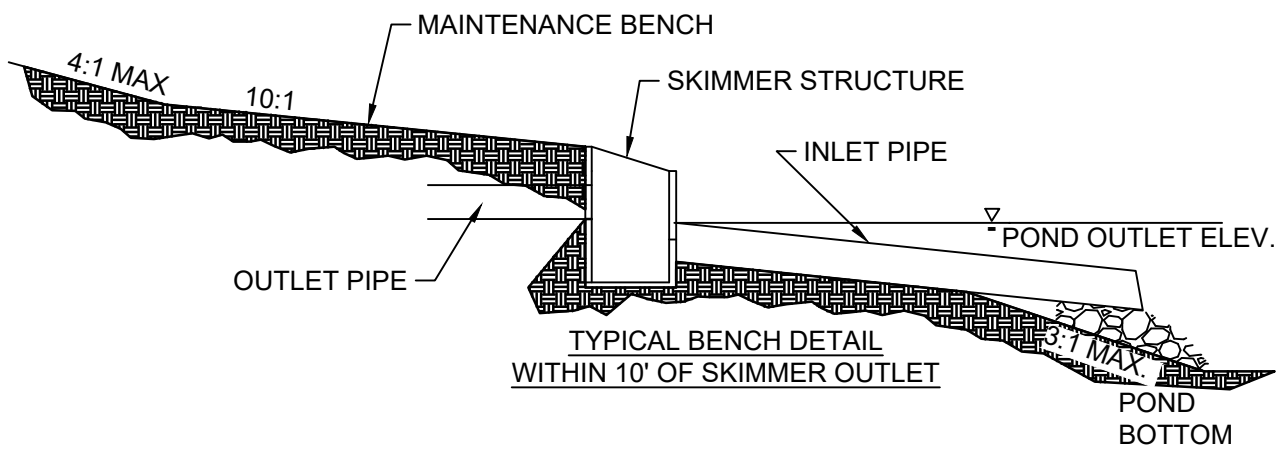
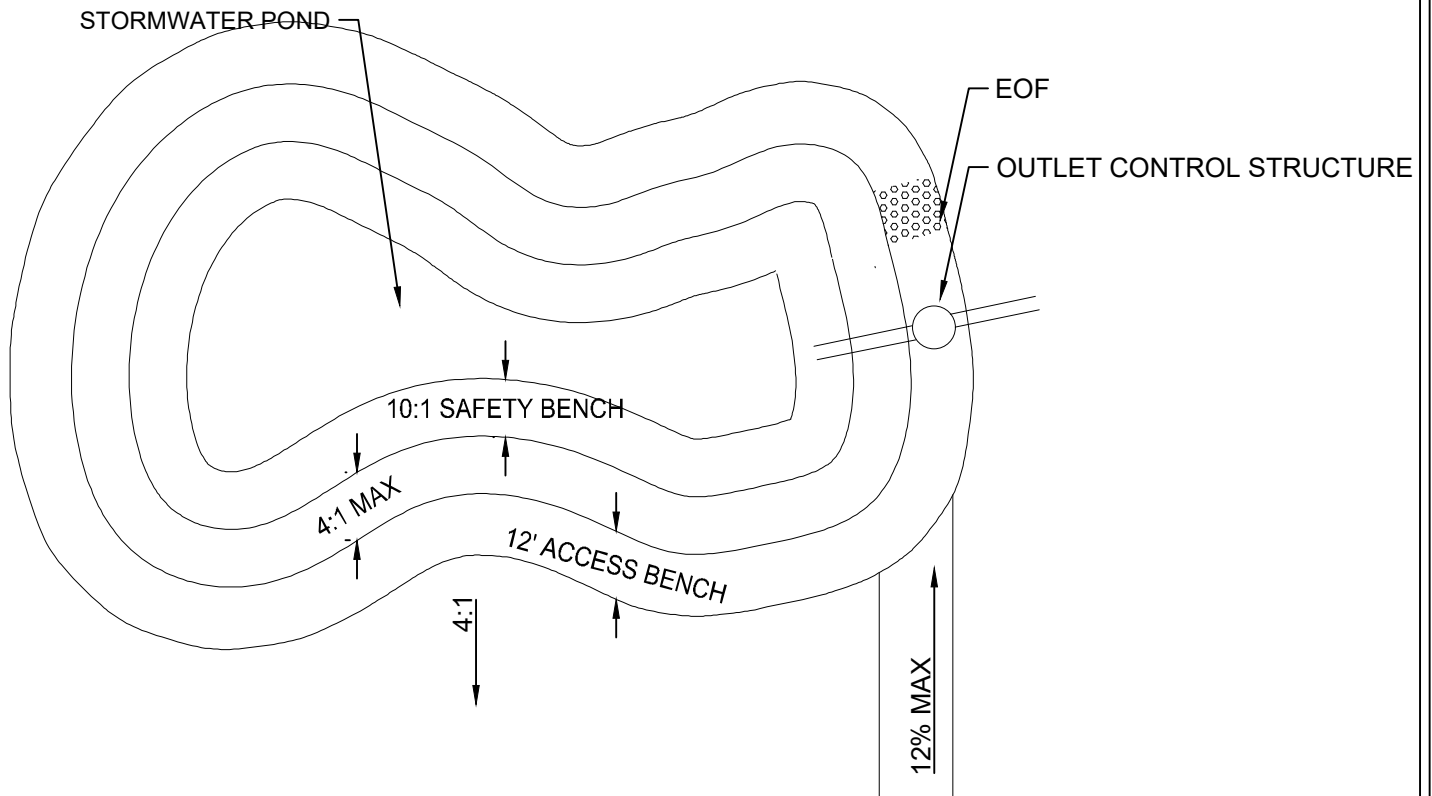
NOTE:  
 TILE CAN DAYLIGHT SEPARATELY FROM OUTLET STRUCTURE.  
 TILE MUST BE ABOVE THE TOP OF OUTLET PIPE AND APPROXIMATELY 1 FOOT BELOW ELEVATION OF TILE IN THE TRENCH.  
 INLET PIPE SHALL BE TIED AT ALL JOINTS AND ATTACHED TO THE STRUCTURE.



OUTLET CONTROL STRUCTURE

LAST REVISION:  
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PLATE NO.  
 STO-18

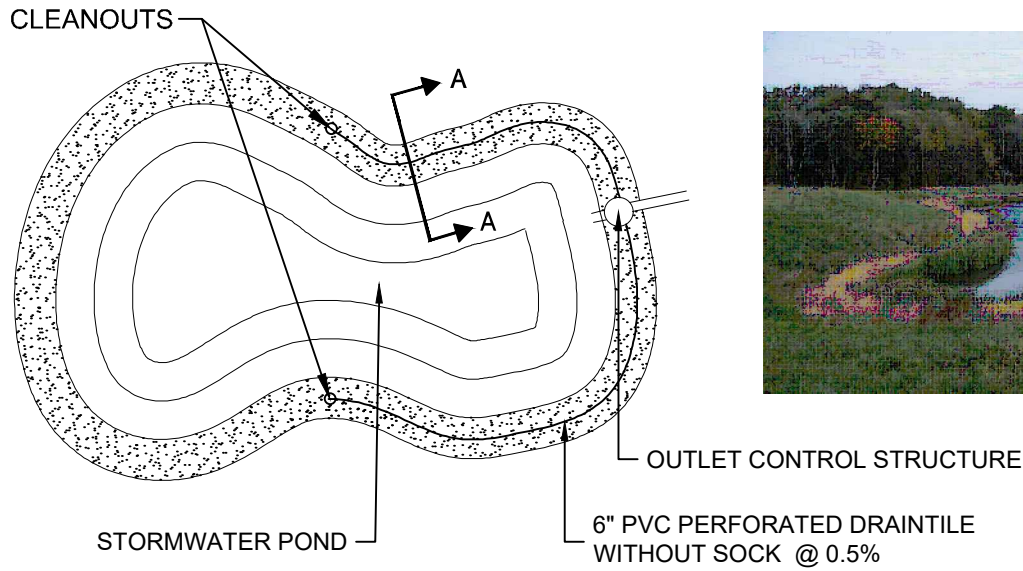


## TYPICAL MAINTENANCE ACCESS BENCH

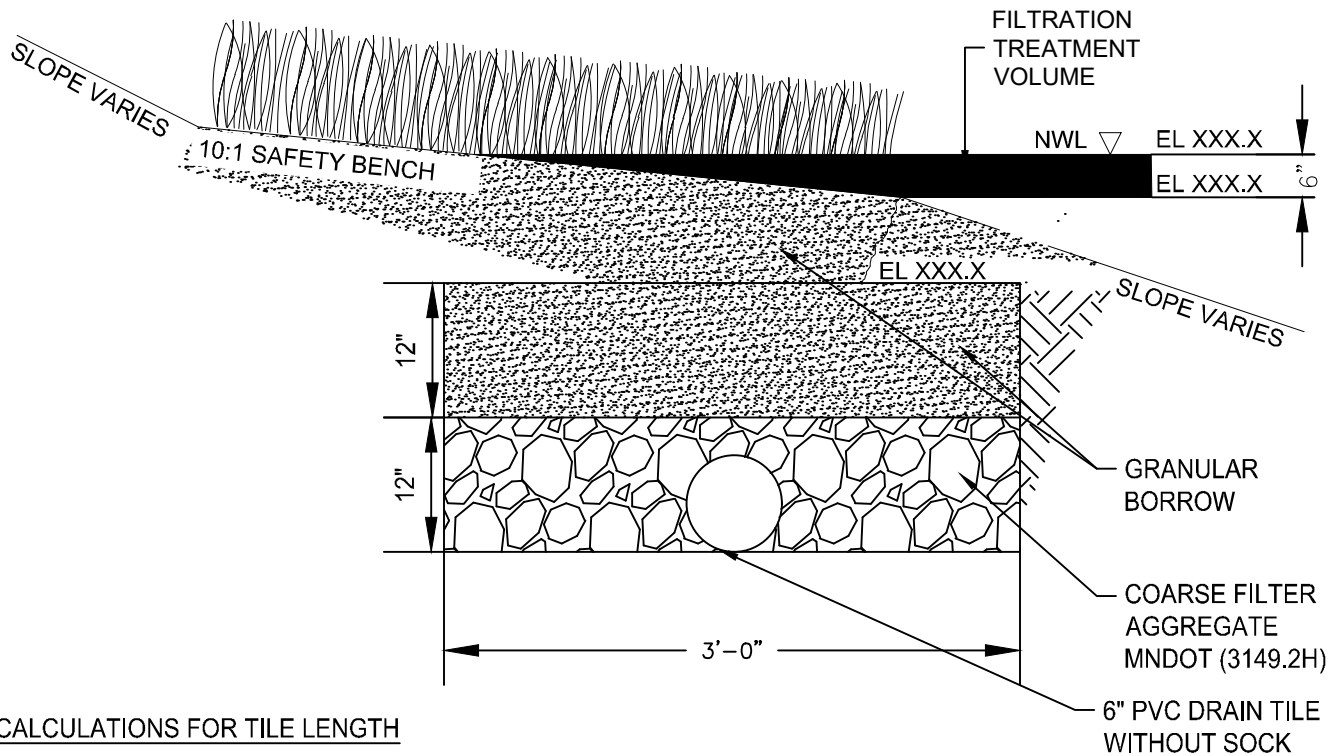
LAST REVISION:  
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PLATE NO.  
STO-18A

PLAN VIEW



SECTION A - A



CALCULATIONS FOR TILE LENGTH

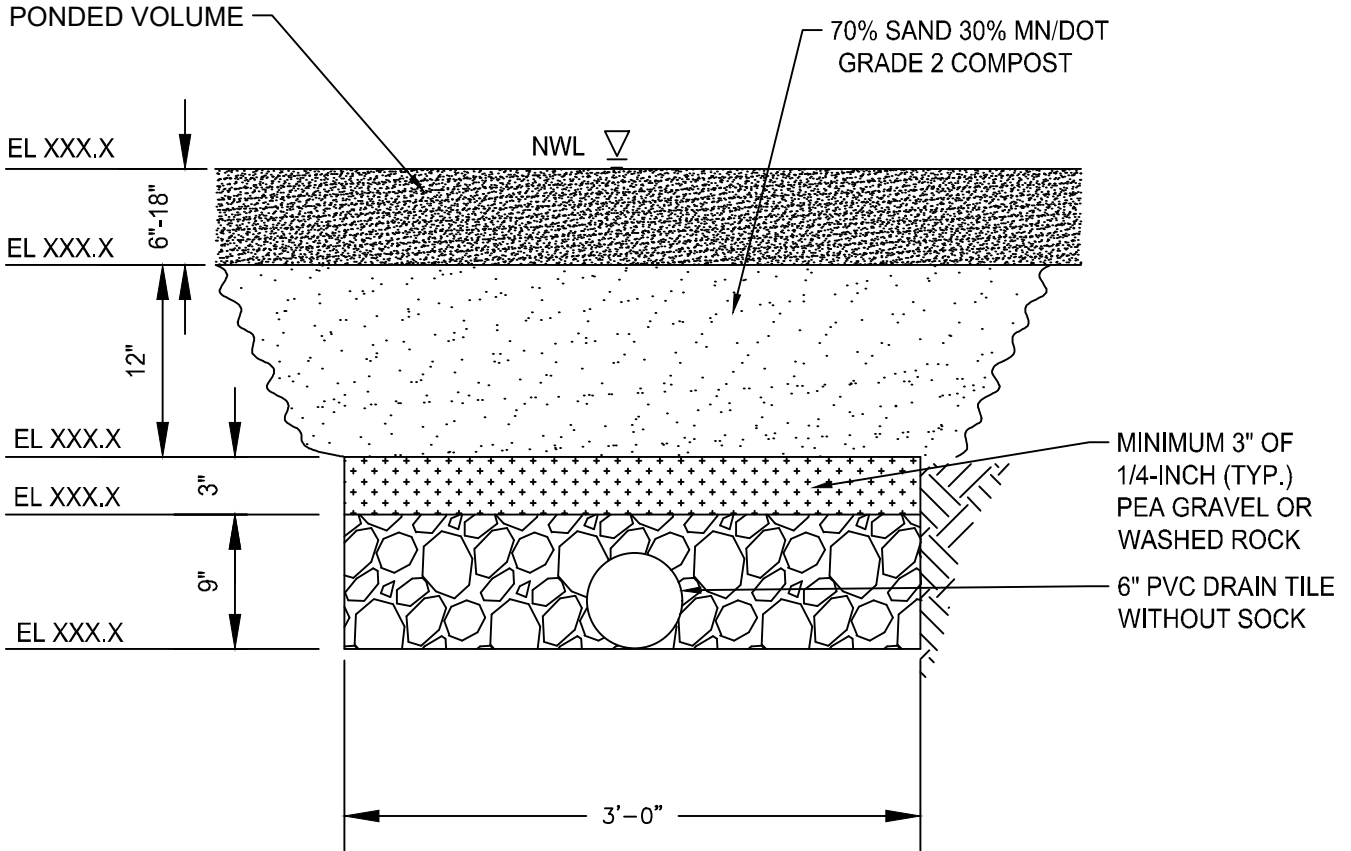
TO DETERMINE THE AREA(SF) OF TRENCH NEEDED, DIVIDE THE PONDED VOLUME (CF) BY 17 CF/SF. (5,000 CF / 17 CF/SF = 294 SF TRENCH / 3 FT = 98 LF OF TRENCH)



TYPICAL FILTRATION BENCH

LAST REVISION:  
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PLATE NO.  
STO-19

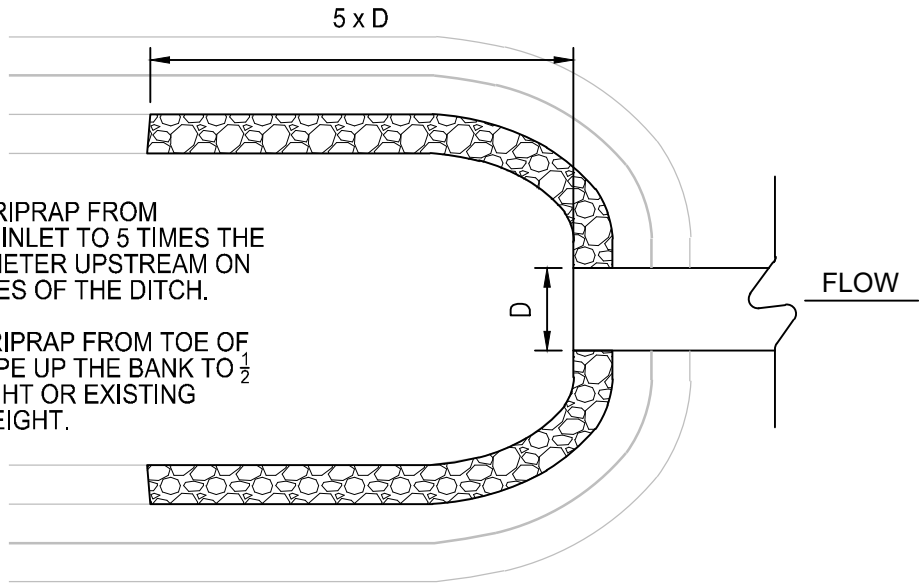


TYPICAL FILTRATION TRENCH

LAST REVISION:  
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PLATE NO.  
STO-20



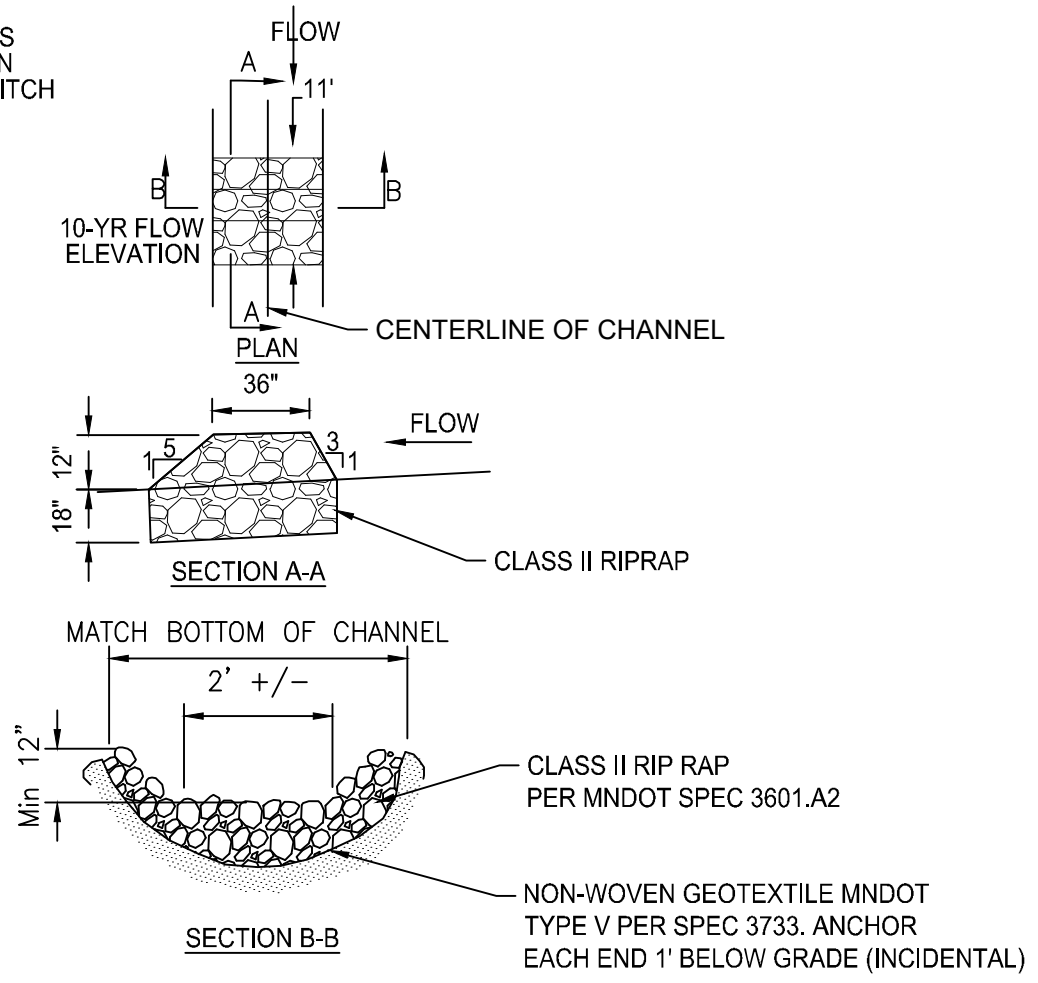


NOTES:

1. CLASS X RIPRAP FROM CULVERT INLET TO 5 TIMES THE PIPE DIAMETER UPSTREAM ON BOTH SIDES OF THE DITCH.
2. EXTEND RIPRAP FROM TOE OF SIDE SLOPE UP THE BANK TO  $\frac{1}{2}$  PIPE HEIGHT OR EXISTING BENCH HEIGHT.

NOTES:

1. INSTALL ROCK GRADE CONTROL STRUCTURES EVERY 1' OF ELEVATION CHANGE ALONG THE DITCH PROFILE CENTER LINE. ROCK SIZE TO BE DETERMINED BY THE ENGINEER.



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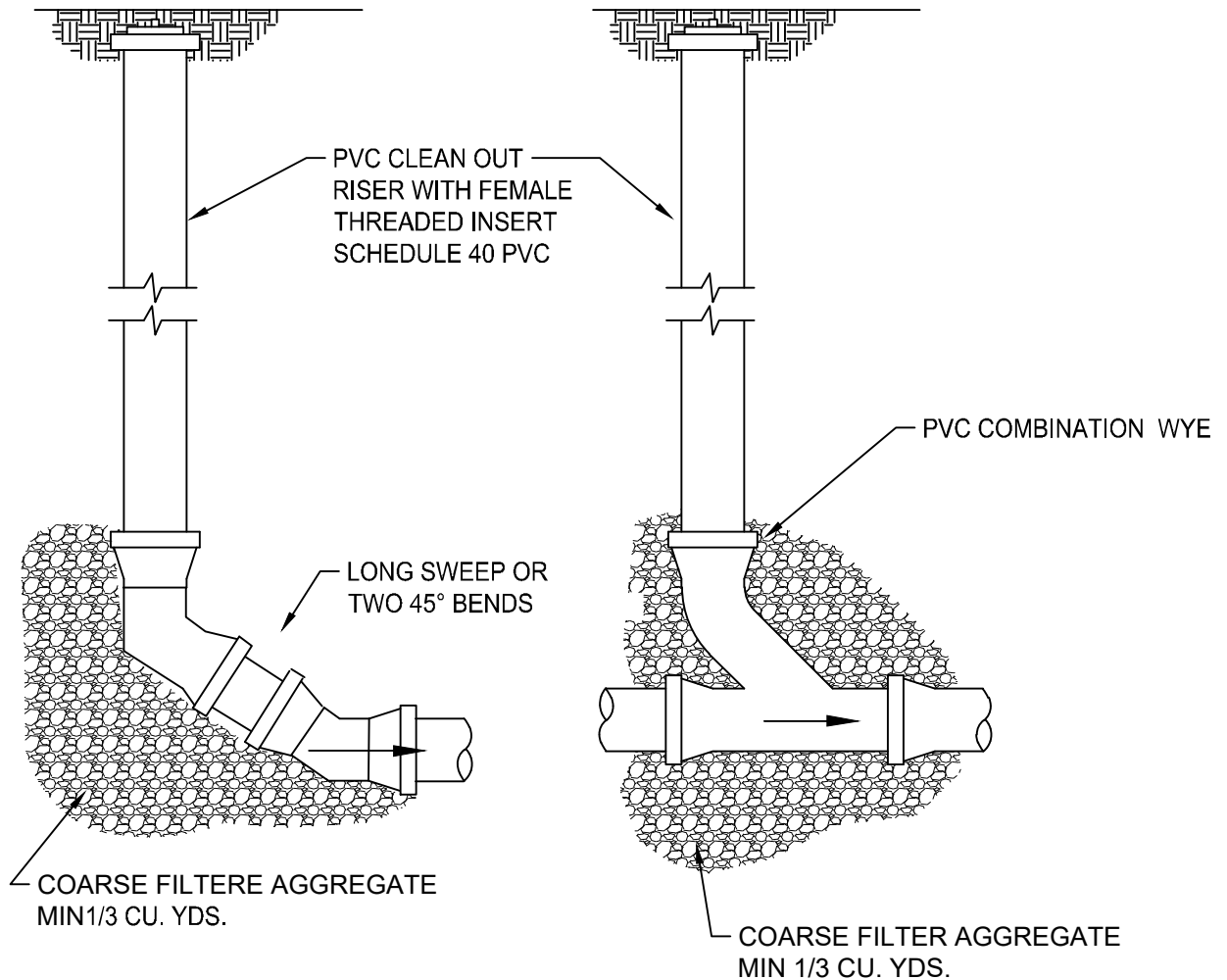
RIPRAP AND GRADE CONTROL

LAST REVISION:  
JUL 2023

PLATE NO.  
STO-22

NOTE:  
CLEANOUT CAP SHALL BE  
THREADED MALLEABLE IRON  
(GALVANIZED)

NOTE:  
ENCLOSE LONG SWEEP BEND  
OR COMBINATION WYE IN  
CONCRETE AS SHOWN.



END OF LINE CLEANOUT

IN LINE CLEANOUT

NOTE:

1. CLEANOUTS ARE REQUIRED AT A MAXIMUM 200 FOOT INTERVALS, AT BENDS, AND AT THE END OF THE RUN. IF CLEANOUT IS LOCATED WITHIN 50' OF CATCHBASIN TIE DRAINTILE INTO CATCHBASIN.
2. CLEANOUTS TO BE INSTALLED AT PROPERTY CORNERS.
3. ADDITIONAL CLEANOUTS TO BE INSTALLED AS DIRECTED BY ENGINEER



CORCORAN, MINNESOTA



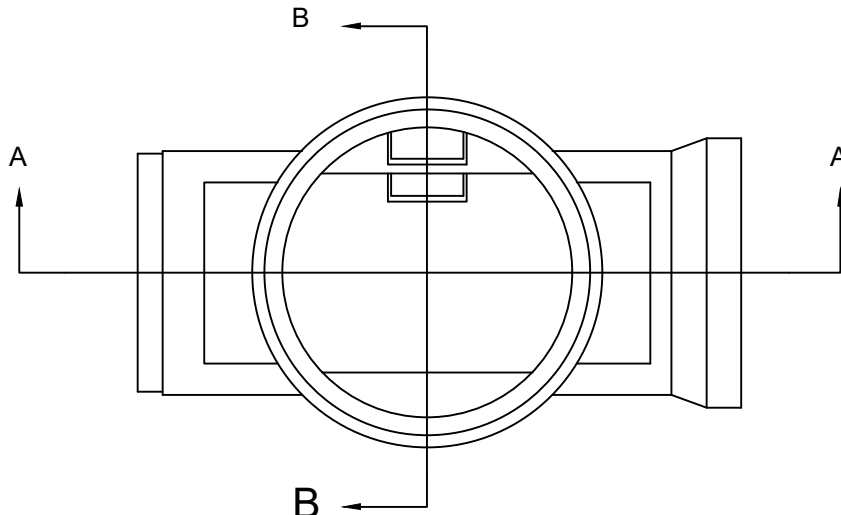
PVC DRAINTILE CLEANOUTS

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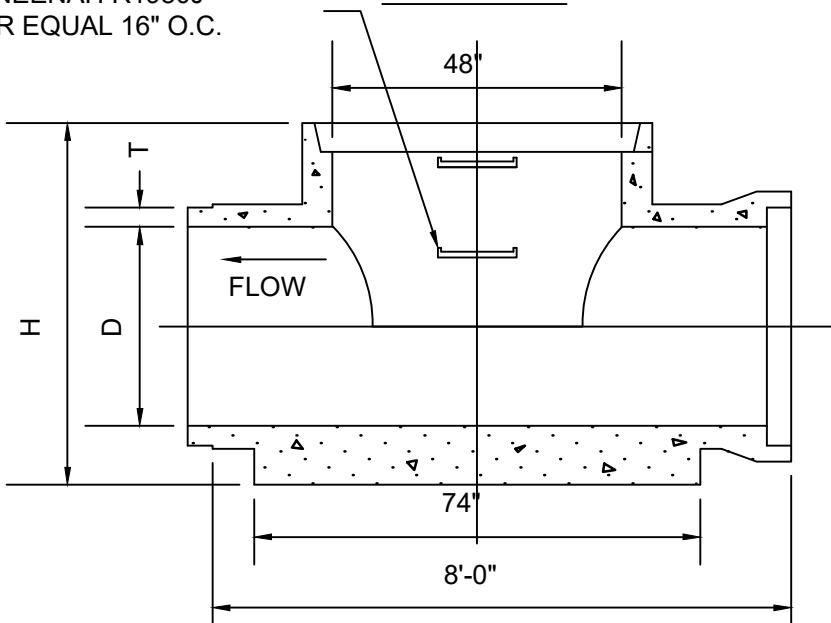
PLATE NO.

STO-23

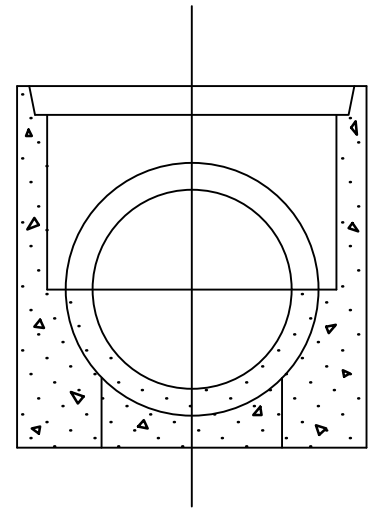


MANHOLE STEPS  
NEENAH R1980J  
OR EQUAL 16" O.C.

TOP VIEW



SIDE VIEW



END VIEW

PIPE DIAMETER "D"	"B" WALL THICKNESS "T"	"C" WALL THICKNESS "T"	"B" WALL HEIGHT "H"
12"	2"	2 3/4"	36"
15"	2 3/4"	3"	36"
18"	2 1/2"	3 1/4"	48"
21"	2 3/4"	3 1/2"	48"
24"	3"	3 3/4"	48"
27"	3 1/4"	4"	60"
30"	3 1/2"	4 1/4"	60"
33"	3 3/4"	4 1/2"	60"
36"	4"	4 3/4"	60"

NOTE:

1. ALL PIPES SHALL HAVE R-4 RUBBER GASKET JOINT.
2. HORIZONTAL PIPE MAY BE "B" WALL OR "C" WALL.



CORCORAN, MINNESOTA



MINI-TEE MANHOLE

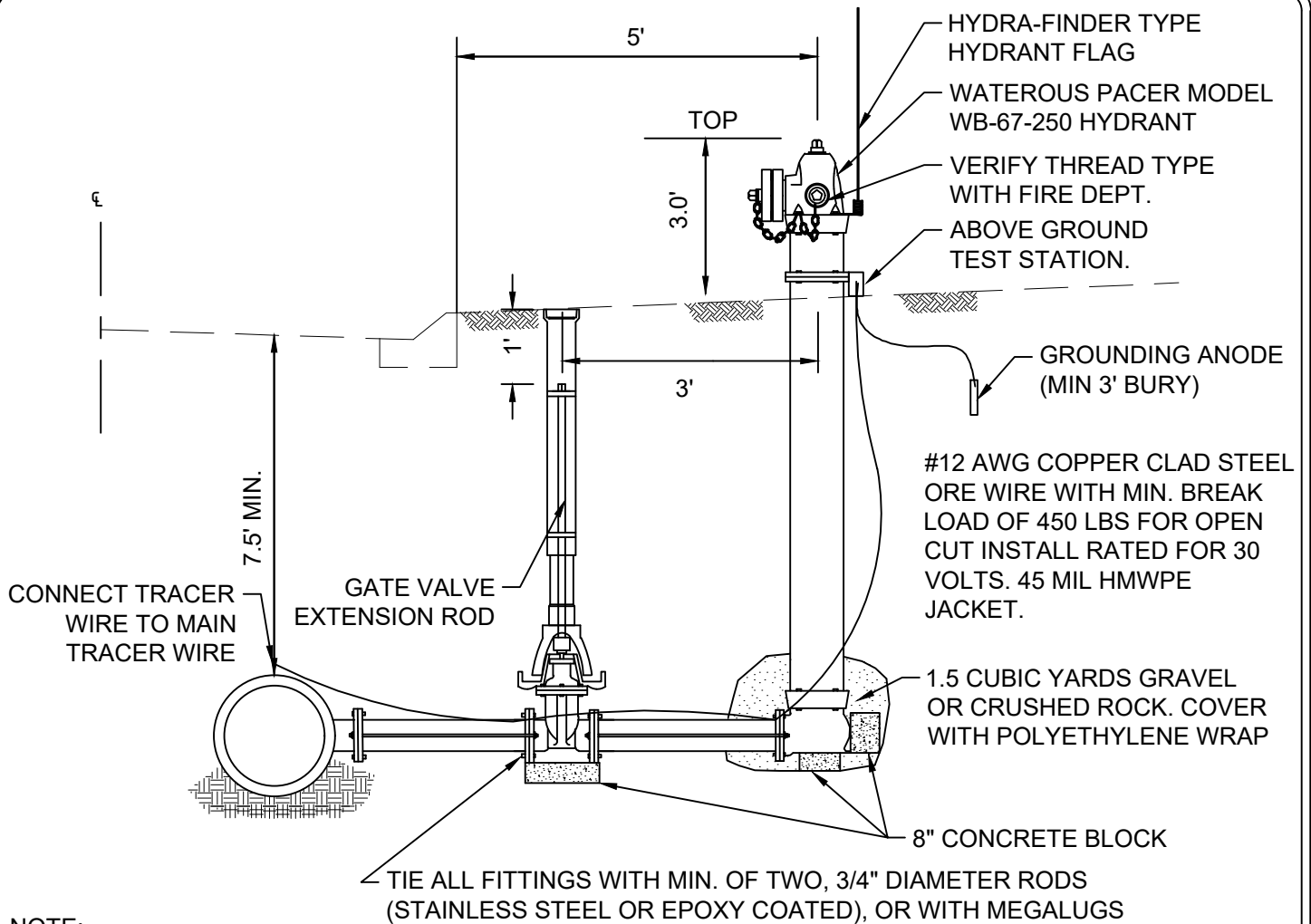
LAST REVISION:

JUL 2023

PLATE NO.

STO-24





**NOTE:**

1. FACTORY INSTALLED PLUGS REQUIRED WHENEVER HYDRANTS ARE INSTALLED IN AREAS WITH HIGH GROUNDWATER LEVEL, AS DETERMINED BY DEWATERING REQUIREMENTS AND THE CITY ENGINEER. THE MAIN NOZZLE SHALL BE PAINTED BLUE FOR ALL HYDRANTS WITH PLUGGED DRAIN HOLES.
2. ALL DUCTILE IRON WATERMAIN FITTINGS SHALL BE FUSION BONDED EPOXY COATED.
3. HYDRANTS SHALL BE MARKED WITH STAINLESS STEEL TAG FROM FACTORY.
4. CONTRACTOR SHALL SUPPLY TWO HYDRANT FLAGS, ONE TO BE INSTALLED ON THE HYDRANT AND THE SECOND DELIVERED TO CORCORAN PUBLIC WORKS.
5. ALL HYDRANT LEADS ARE TO BE CONSTRUCTED WITH POLYWRAPPED DIP, CLASS 52.
6. PROVIDE TAPED POLYWRAP UP THE HYDRANT BARREL TO THE BREAK OFF FLANGE.
7. ALL WATERMAIN BOLTS SHALL BE COR-BLUE OR APPROVED EQUAL.
8. HYDRANTS SHALL BE PAINTED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE: FLOW RATE OF 1,000 GPM OR MORE - GREEN; FLOW RATE BETWEEN 500 GPM AND 1,000 GPM - YELLOW; FLOW RATE OF 500 GPM OR LESS - RED.
9. ABOVE GROUND TEST STATION SHALL BE COBRA T3 (T2-R75) OR APPROVED EQUAL. OUTDOOR RATED PVC CONDUIT SHALL BE INSTALLED FROM BOTTOM OF TEST STATION TO 2' BELOW FINISH GRADE. SEE DETAIL WAT-11 FOR CONNECTION DETAILS.
10. MIN 1 LB. DRIVE IN ANODE WITH MIN. 20' WIRE LEAD.
11. CONNECTORS SHALL BE DRY CONN DIRECT BURY LUG AQUA, PRO-TRACE DB OR APPROVED EQUAL
12. CONTRACTOR SHALL SUPPLY 1 HYDRANT WRENCH FOR EVERY PHASE OR EVERY 5 HYDRANTS INSTALLED, WHICHEVER IS GREATER.

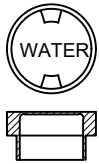


WATER HYDRANT

LAST REVISION:  
JUL 2023

PLATE NO.  
WAT-1

7.5' MINIMUM COVER REQUIRED OVER TOP OF WATER MAIN.

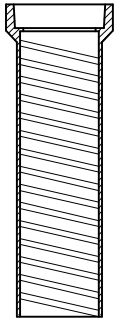


DROP LID  
TYLER No. 6860 No.  
MUELLER H-10361 No.  
BIBBY-STE-CROIX B-5160

EXTENSIONS REQUIRED ON ALL GATE VALVES

ADJUST TOP TO 1/2" BELOW GRADE. BOX TO BE SET TO PROVIDE 12" OF ADJUSTMENT.

EXTENSION SHALL BE WITHIN 1-2' OF FINISHED GRADE



TOP TYLER No. 6860 No. 26"  
MUELLER H-10361 No. 26"  
BIBBY-STE-CROIX VB502 27"

GRADE

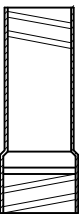
TYLER NO. 6860 MUELLER NO. H-10357 BIBBY-STE-CROIX B-5001 GATE VALVE BOX, SCREW TYPE, 3 PIECE, 5 1/4" SHAFT, SIZE G BOX, 7'-6" EXTENDED, #6 ROUND BASE

ALL GATE VALVES SHALL BE MANUFACTURED IN THE U.S. OR CANADA.

EXTENSION TYLER

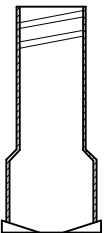
No. 58	14"
No. 59	18"
No. 60	24"
MUELLER No. 58	14"
No. 59	20"

ALL VALVE BOX COMPONENTS SHALL BE MANUFACTURED IN THE U.S. OR CANADA, OR AS APPROVED BY THE CITY ENGINEER.



BIBBY-STE-CROIX VB520 No. 57 9"  
VB521 No. 58 14"  
VB522 No. 59 20"  
VB523 No. 60 26"

RESILIENT WEDGE VALVE CONFORMING AWWA C-509-80 STANDARDS INSTALLED WITH A VALVE BOX ADAPTER TYPE II.



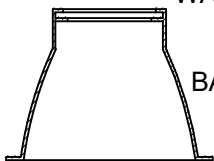
BOTTOM TYLER No. 6860 No. 65"  
MUELLER H-10361 No. 65"  
BIBBY-STE-CROIX VB516 60"

ADAPTOR REQUIRED ON ALL GATE VALVES

GATE VALVE ADAPTOR 1/4" STEEL WITH PROTECTIVE COATING

COPPER TRACER WIRE INSTALLED ON ALL PVC WATER MAIN

1/2" RUBBER GASKET INSTALLED BETWEEN THE GATE VALVE AND GATE VALVE ADAPTOR



BASE

8" CONCRETE BLOCK

MEGALUGS (TYP)

NOTE: ALL WATERMAIN BOLTS ARE TO BE COR-BLUE OR AN APPROVED EQUAL



CORCORAN, MINNESOTA



## GATE VALVE AND BOX INSTALLATION

LAST REVISION:  
JUL 2023

PLATE NO.  
WAT-2

NOTE: ALL BUTTERFLY VALVES SHALL BE INDIVIDUALLY HYDROSTATICALLY TESTED AGAINST BOTH SIDES OF VALVE

COR-BLUE OR STAINLESS STEEL BOLTS REQUIRED FOR ALL MECHANICAL FITTINGS.

PROVIDE POLYWRAP AND TAPE AROUND ALL DIP WATERMAIN

7.5' MINIMUM COVER REQUIRED OVER TOP OF WATER MAIN.

RESTRAIN TEE AND VALVE WITH MEGALUG (OR EQUAL) THRUST RESTRAINTS.

- DROP LID  
TYLER NO. 6850 OR 6860
- MUELLER NO. H-10361
- BIBBY-STE-CROIX NO. B-5160

- TOP  
TYLER NO. 6850 26"
- MUELLER NO. H-10361 26"
- BIBBY-STE-CROIX NO. VB502 27"

- EXTENSION  
TYLER NO. 58 14"
- NO. 59 18"
- NO. 60 24"
- MUELLER NO. 58 14"
- NO. 59 20"
- BIBBY-STE-CROIX  
VB520 NO. 57 9"
- VB521 NO. 58 14"
- VB522 NO. 59 20"
- VB523 NO. 60 26"

- BOTTOM  
TYLER NO. 6850 65"
- MUELLER NO. H-10361 65"
- BIBBY-STE-CROIX NO. VB516 60"

ALL VALVES AND VALVE BOXES SHALL BE AMERICAN MADE. EXTENSION SHALL BE WITHIN 1-2' OF FINISHED GRADE

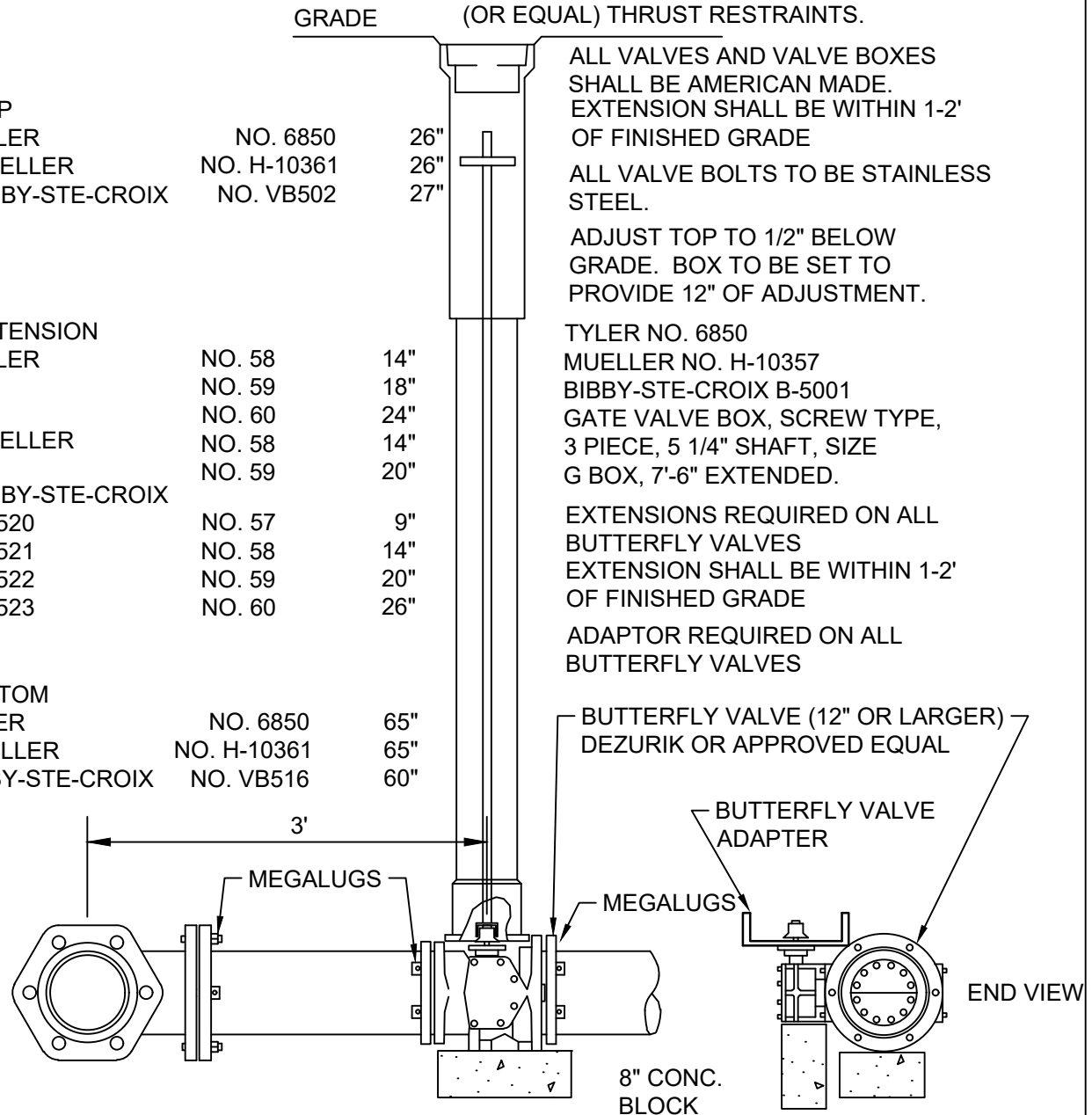
ALL VALVE BOLTS TO BE STAINLESS STEEL.

ADJUST TOP TO 1/2" BELOW GRADE. BOX TO BE SET TO PROVIDE 12" OF ADJUSTMENT.

TYLER NO. 6850  
MUELLER NO. H-10357  
BIBBY-STE-CROIX B-5001  
GATE VALVE BOX, SCREW TYPE, 3 PIECE, 5 1/4" SHAFT, SIZE G BOX, 7'-6" EXTENDED.

EXTENSIONS REQUIRED ON ALL BUTTERFLY VALVES  
EXTENSION SHALL BE WITHIN 1-2' OF FINISHED GRADE

ADAPTOR REQUIRED ON ALL BUTTERFLY VALVES

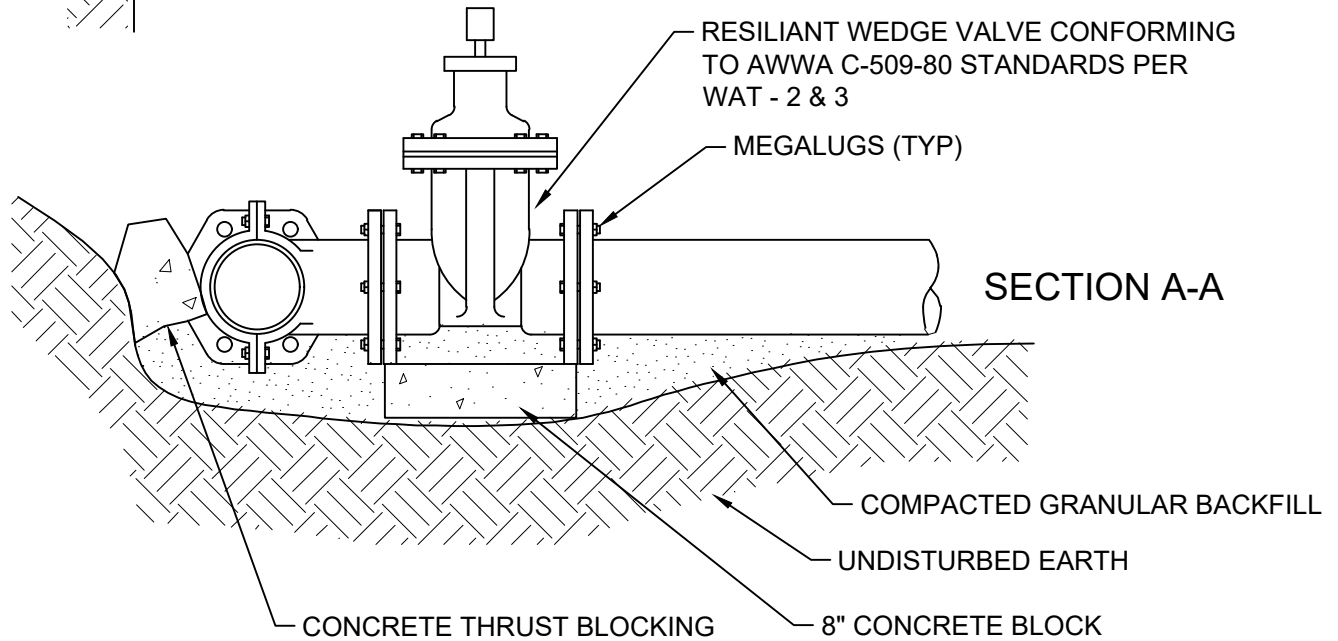
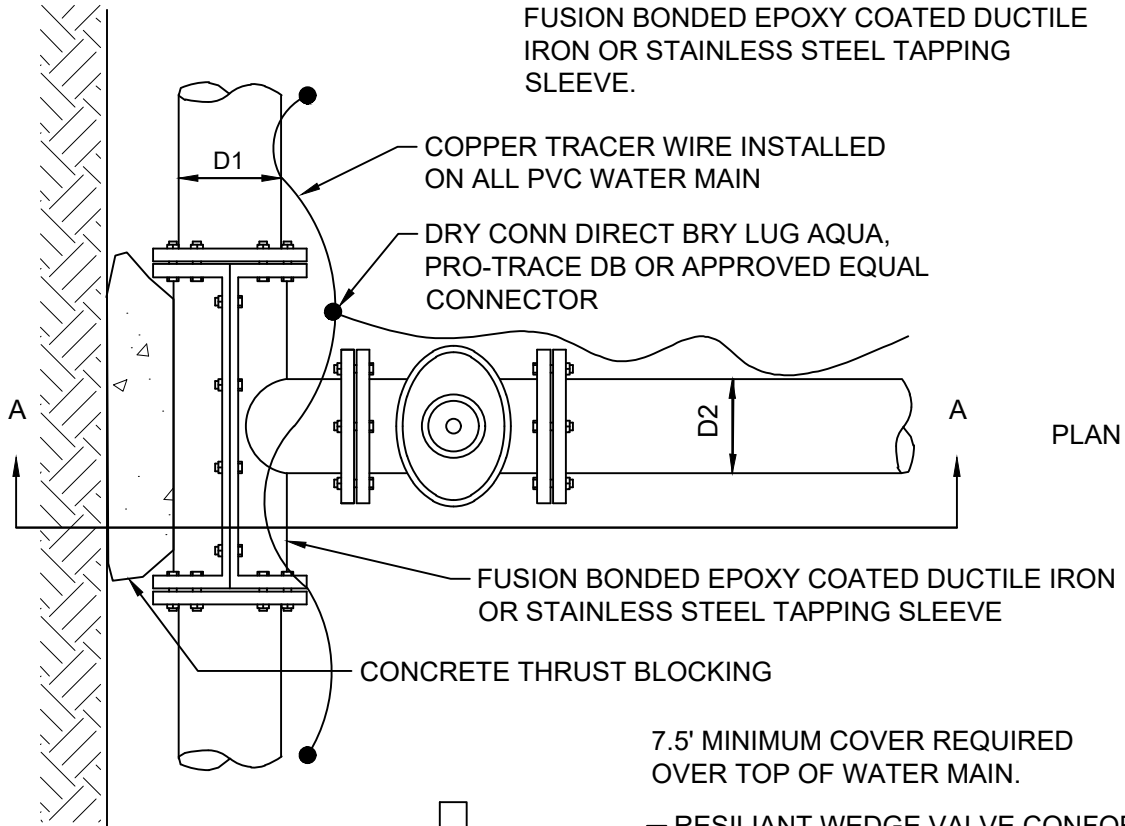


## BUTTERFLY VALVE AND BOX INSTALLATION

LAST REVISION:  
JUL 2023

PLATE NO.  
WAT-3

POWERSEAL, ROMAC, OR APPROVED EQUAL FUSION BONDED EPOXY COATED DUCTILE IRON OR STAINLESS STEEL TAPPING SLEEVE.



NOTE: ALL WATERMAIN BOLTS SHALL BE COR-BLUE OR AN APPROVED EQUAL



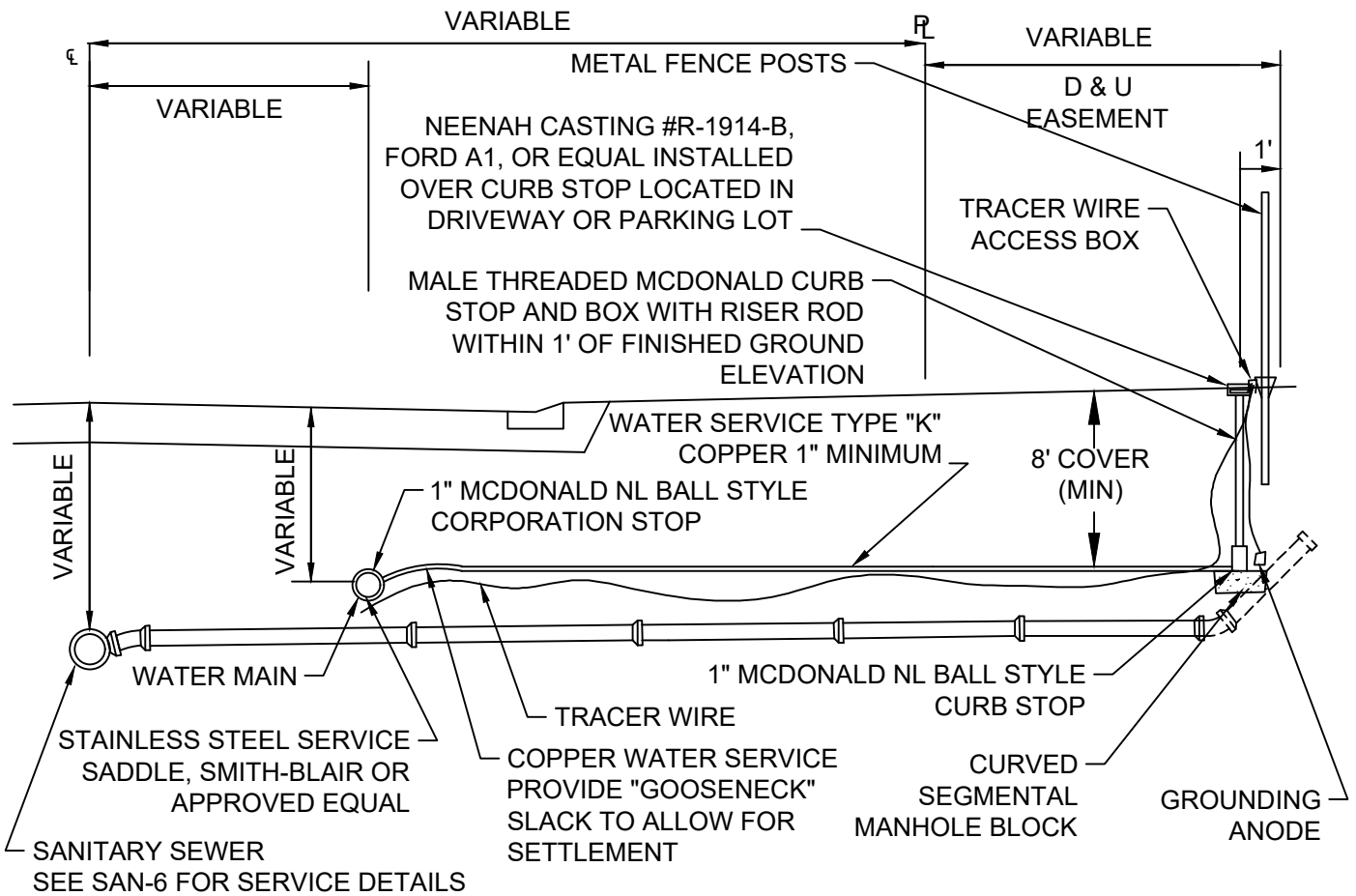
## WATERMAIN WET TAP

LAST REVISION:  
JUL 2023

PLATE NO.  
WAT-4

NOTES:

1. ALL NEW CURB BOXES MUST HAVE RISER RODS ADJUSTABLE UP AND DOWN FOR 8' OF COVER. WHEN AN EXISTING CURB BOX IS ON A CONSTRUCTION OR RECONSTRUCTION PROJECT, RISER RODS SHALL BE INSTALLED TO ALL CURB BOXES ON THAT PROJECT.
2. PLACEMENT OF CURB STOP AND BOX ON PRIVATE STREETS SHALL BE 9' BEHIND THE PROPERTY LINE WITH NO COPPER STUBBED PAST THE CURB STOP AND BOX.
3. COPPER IS TO BE ONE PIECE, NO JOINTS, COUPLINGS, ETC., ALLOWED FROM MAIN TO CURB STOP.
4. WATER SERVICE AND SANITARY SEWER SERVICE SHALL HAVE A 3' HORIZONTAL SEPARATION.
5. CURB BOXES LOCATED IN DRIVEWAYS OR PARKING LOTS SHALL BE COVERED WITH A FORD A-1 METER BOX COVER.
6. A "W" STAMP PER CITY PLATE #STR-24 MUST BE PLACED ON THE FACE OF CURB WHEREVER CURB AND GUTTER CROSSES A WATER SERVICE.
7. METAL FENCE POST AT END OF WATER AND SANITARY SERVICE, 4' ABOVE GRADE WATER FENCE POST TO BE PAINTED BLUE. SANITARY FENCE POST TO BE PAINTED GREEN.
8. ALL PIPE SHALL BE BEDDED IN GRANULAR BORROW 3149.2B1.
9. TRACER WIRE SHALL BE BROUGHT UP ALONG WATERMAIN CURB STOP. INSTALL VALVCO, SNAKEPIT, OR APPROVE EQUAL TRAFFIC RATED TRACER WIRE ACCESS BOX WITH TWO LUGS.
10. MIN OF 1LB. DRIVE IN ANODES WITH MIN 20' WIRE LEAD ARE TO BE INSTALLED AT EVERY TRACE WIRE ACCESS BOX
11. TRACER WIRE SHALL BE 12AWG COPPER CLAD STEEL ORE WITH MIN BREAK LOAD OF 450 LB FOR OPEN CUT INSTALLATION RATED FOR 30 VOLTS. MIN 45 MIL HMWPE JACKET
12. TRACER WIRE CONNECTOR SHALL BE DRY CONN DIRECT BURY LUG AQUA, PRO-TRACE DB OR APPROVED EQUAL



WATER SERVICE CONNECTION

LAST REVISION:  
JUL 2023

PLATE NO.  
WAT-5

**NOTES:**

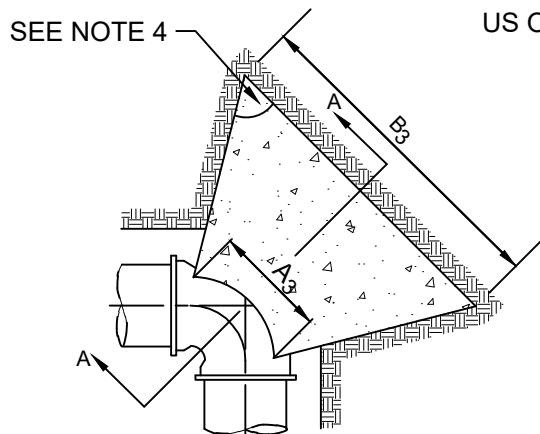
1. SHAPE OF BACK OF BUTTRESS MAY VARY AS LONG AS POURED AGAINST FIRM UNDISTURBED EARTH.
2. DIMENSION C1,C2,C3 SHOULD BE LARGE ENOUGH TO MAKE ANGLE  $\emptyset$  EQUAL TO OR LARGER THAN  $90^\circ$ .
3. DIMENSION A1,A2,A3 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH MJ BOLTS.
4. ANGLE SHALL BE  $90^\circ$  MINIMUM.
5. PLACE POLYETHYLENE BETWEEN CONCRETE & PIPE.
6. MEGALUGS SHALL BE INSTALLED ON ALL BENDS.

BUTTRESS DIMENSIONS						
PIPE SIZE	22 1/2° BEND		45° BEND		90° BEND	
	B <sub>1</sub>	D <sub>1</sub>	B <sub>2</sub>	D <sub>2</sub>	B <sub>3</sub>	D <sub>3</sub>
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"
30"	-	-	9'-3"	6'-0"	17'-0"	6'-0"

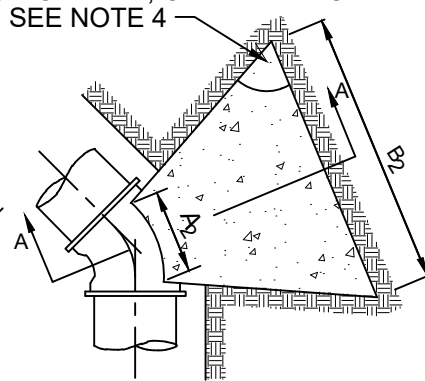
ALL DUCTILE IRON FITTINGS TO BE FUSION BONDED EPOXY COATED.

ALL DUCTILE IRON PIPE AND FITTINGS TO BE WRAPPED IN POLY AND TAPED.

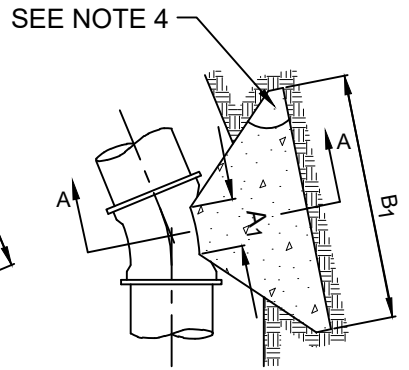
ALL DUCTILE IRON PIPES AND FITTINGS TO BE MANUFACTURED IN US OR CANADA, OR AS APPROVED BY THE CITY ENGINEER.



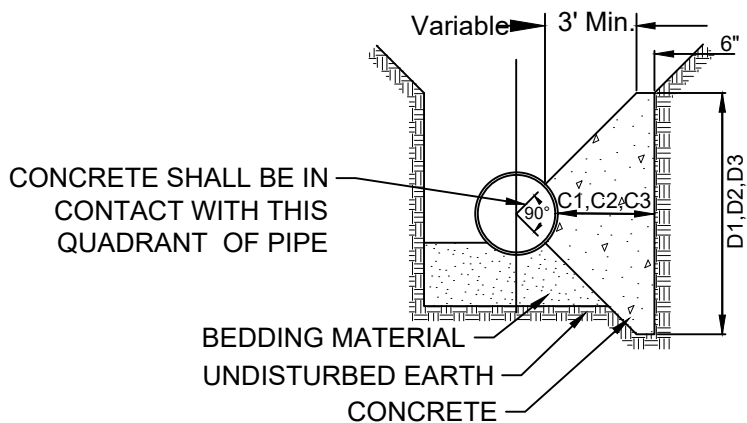
PLAN 90° BENDS



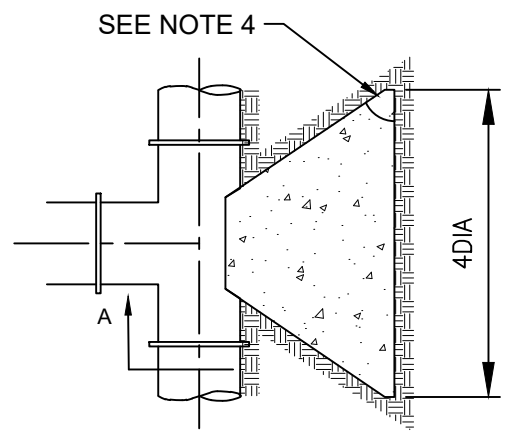
PLAN 45° BENDS



PLAN 22 1/2° BENDS



SECTION A-A



PLAN 3 WAY TEES

NOTE: ALL WATERMAIN BOLTS SHALL BE COR-BLUE OR APPROVED EQUAL



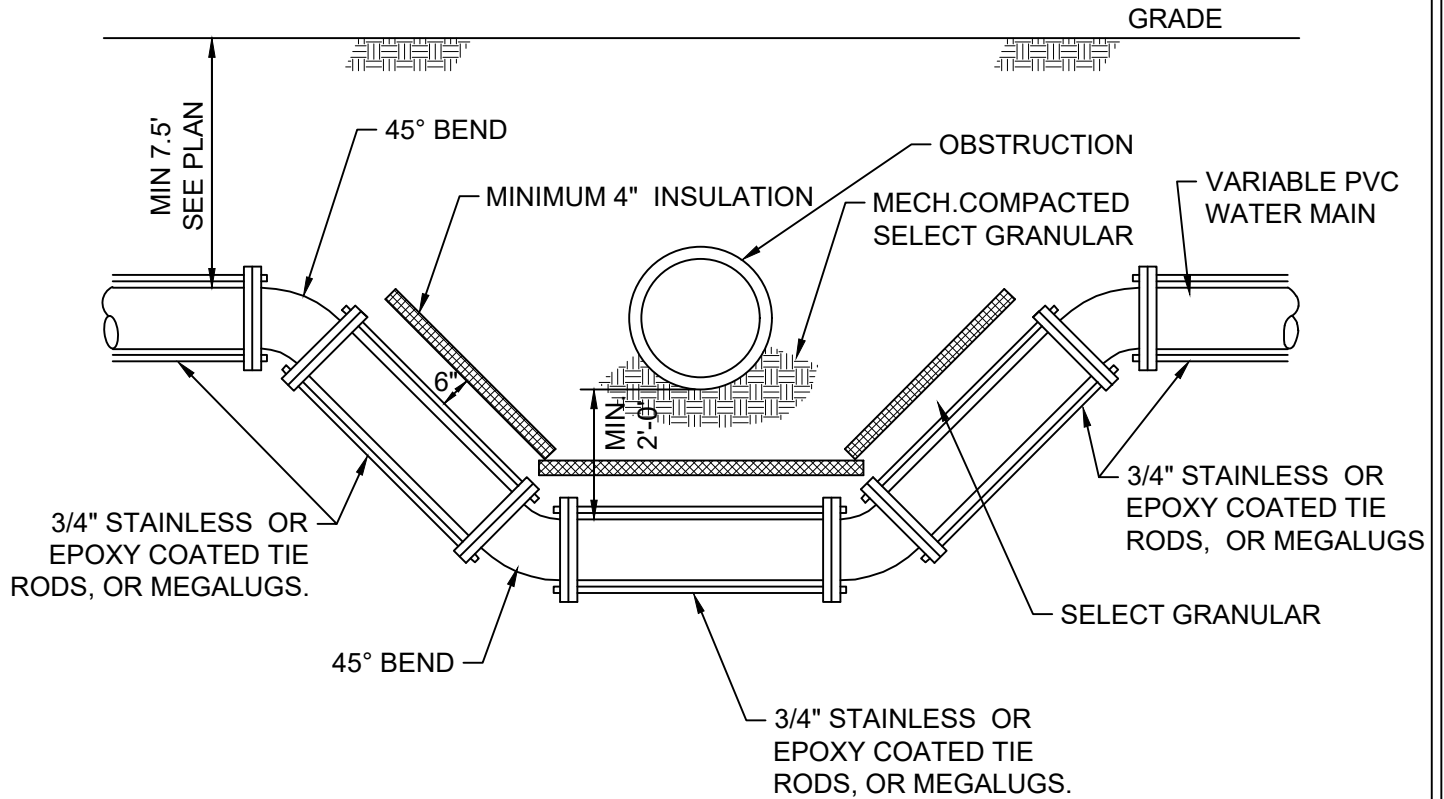
CORCORAN, MINNESOTA



CONCRETE THRUST BLOCKING

LAST REVISION:  
JUL 2023

PLATE NO.  
WAT-6



**NOTE:**

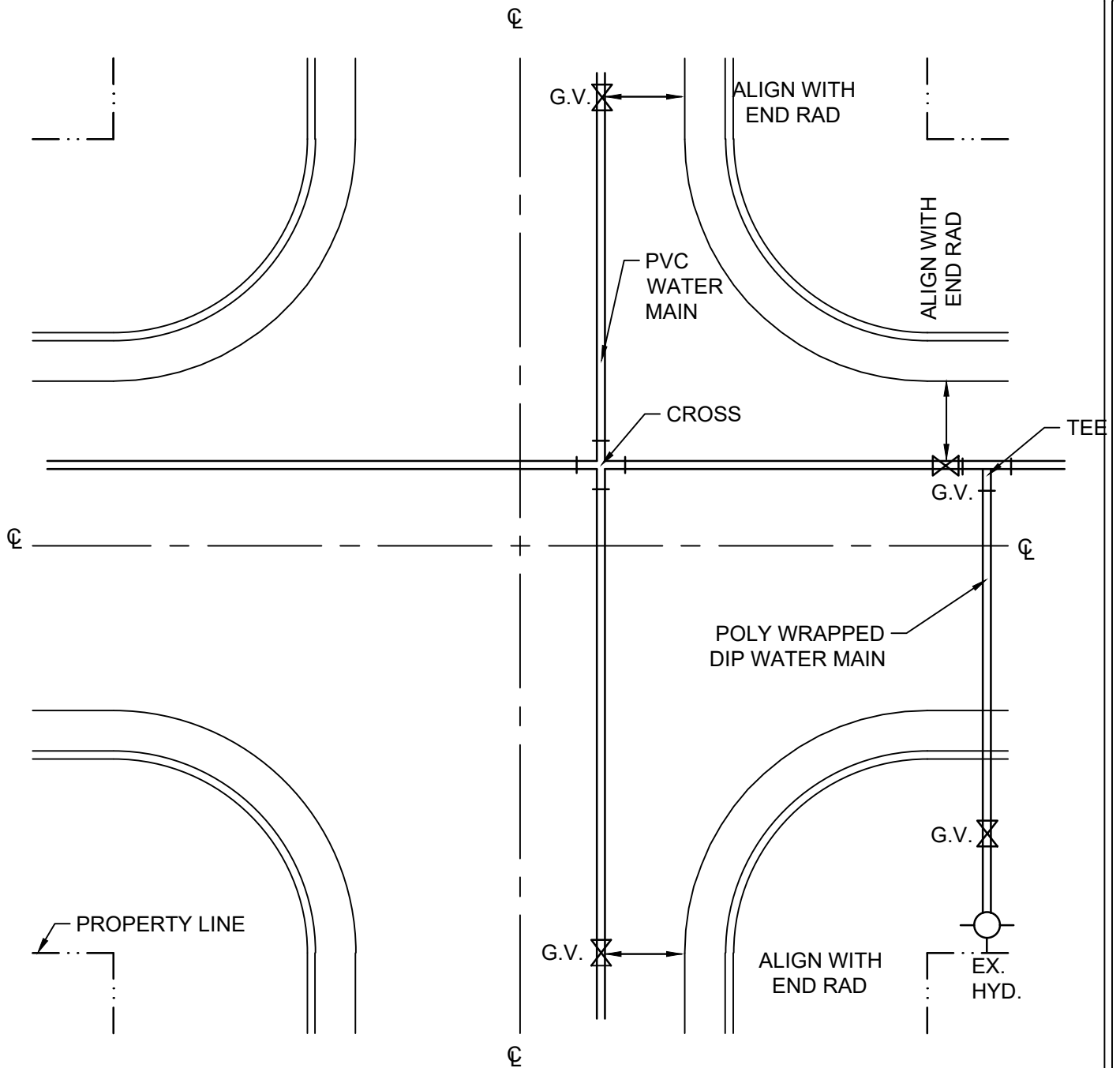
1. ALL FITTINGS SHALL BE FUSION BONDED EPOXY COATED DUCTILE IRON TO MEET OR EXCEED ANSI/AWWA C550 AND C116/A21.116 REQUIREMENTS.
2. MEGALUGS, IF USED SHALL BE SNUG FIT ON CIP WATER MAIN AND BOLTS SHALL NOT BE "SNAPPED" TIGHT.
3. SELECT GRANULAR WILL BE REQUIRED BETWEEN INSULATION, WATER MAIN, AND OBSTRUCTION.
4. ALL BENDS SHALL HAVE MEGALUGS OR TIE RODS WITH BLOCKING IN ACCORDANCE WITH STANDARD PLATE WAT-5.
5. COPPER TRACER WIRE SHALL BE USED ON PVC WATERMAIN.
6. ALL WATERMAIN BOLTS SHALL BE COR-BLUE OR APPROVED EQUAL.



**WATERMAIN OFFSETS**

LAST REVISION:  
JUL 2023

PLATE NO.  
WAT-7



**NOTE:**

1. SEE DETAIL PLATE WAT-1 FOR TYPICAL HYDRANT AND GATE VALVE LAYOUT.
2. SEE DETAIL PLATE WAT-5 FOR TYPICAL WATER SERVICE CONNECTION.
3. ALL WATERMAIN SHALL BE PLACED NORTH AND EAST OF THE CENTER LINE OF ROAD.
4. ALL DUCTILE IRON WATERMAIN FITTINGS SHALL BE FUSION BONDED EPOXY COATED.
5. ALL PVC WATERMAIN SHALL HAVE A COPPER TRACER WIRE.
6. ALL VALVES TO BE PLACED 3' FROM TEES, CROSSES, OR HYDRANTS.
7. CITY MAY ADD ADDITIONAL VALVES IN LOCATIONS WHERE EXISTING VALVES ARE SPACED TOO FAR APART.



CORCORAN, MINNESOTA

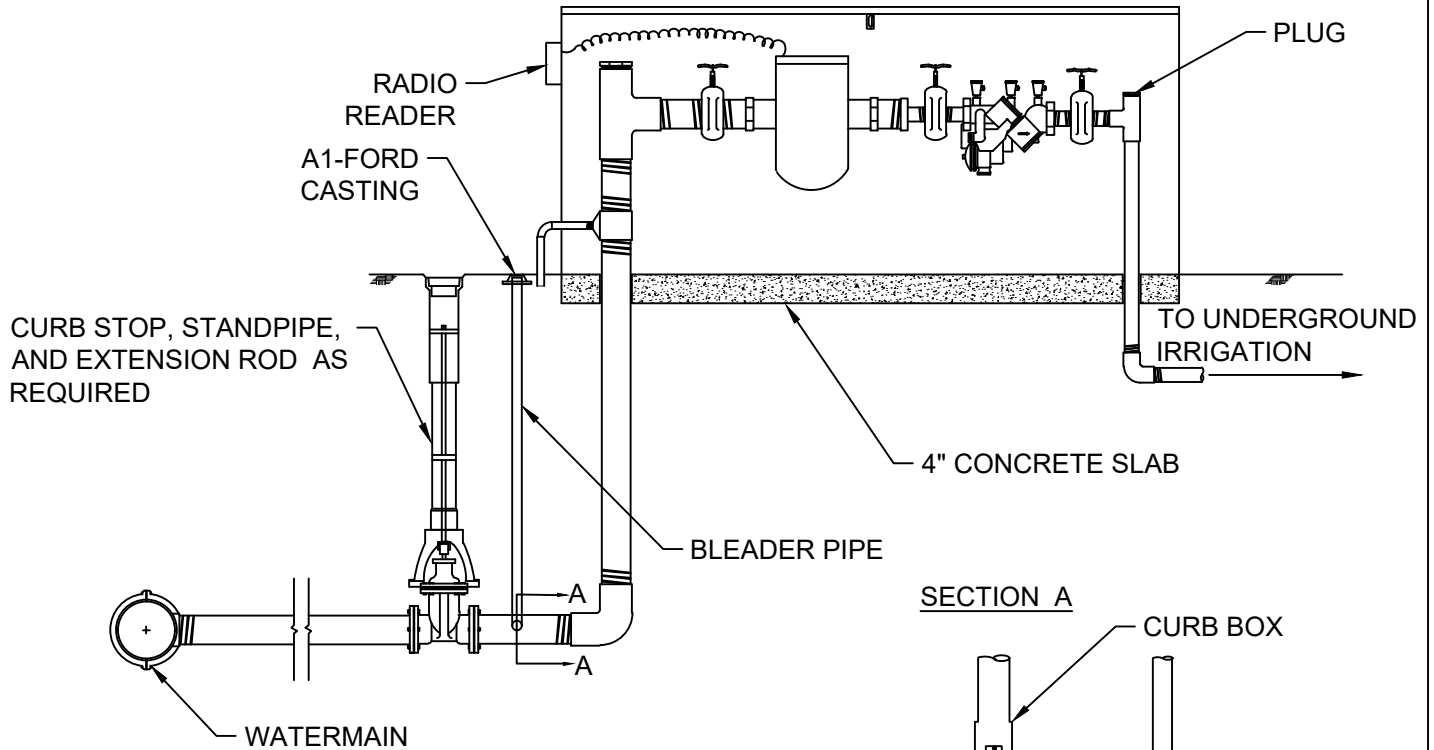


## TYPICAL GATE VALVE LAYOUT

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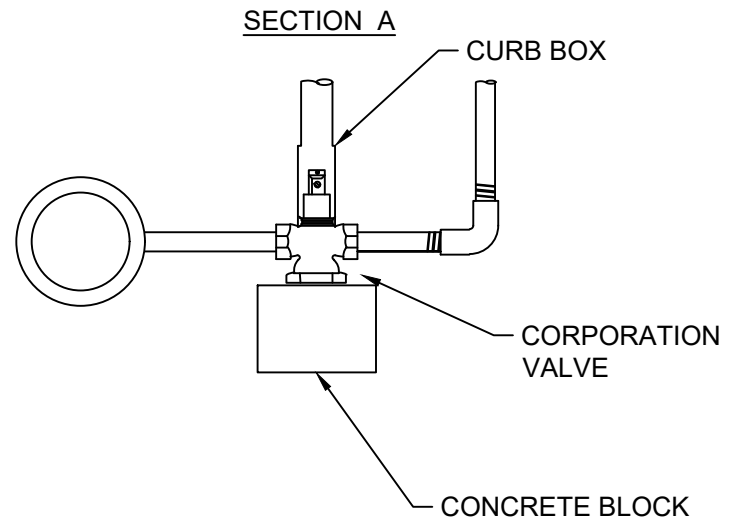
PLATE NO.  
WAT-8





**NOTE:**

1. TO WINTERIZE, REMOVE AND DRAIN METER, SIPHON WATER FROM FEED LINE, BLOW OUT IRRIGATION LINES AND REINSTALL METER.
2. SECURITY BOX MUST BE MAINTENANCE FREE VANDELPROOF ENCLOSURE, WITH HINGED TOP.



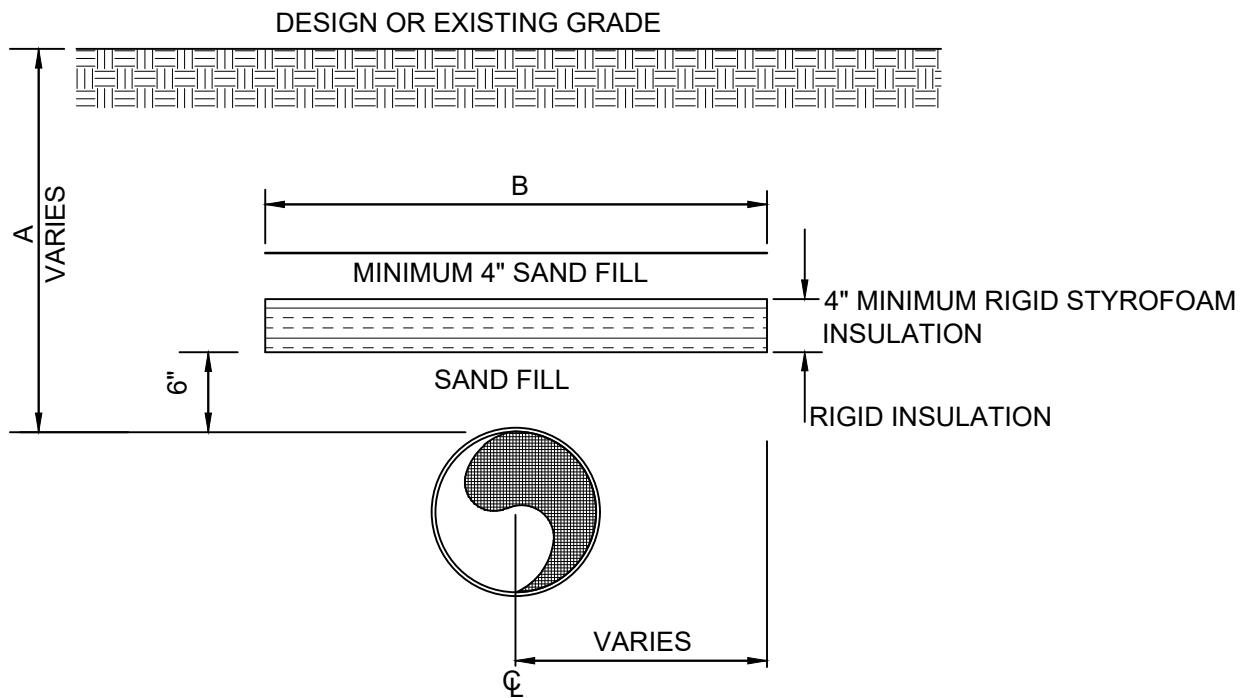
CORCORAN, MINNESOTA



IRRIGATION SYSTEM TEP,  
METER, AND BACKFLOW  
PREVENTOR ASSEMBLY

LAST REVISION:  
JUL 2023

PLATE NO.  
WAT-9



NOTE: PIPE SHALL BE CENTERED UNDER INSULATION UNLESS OTHERWISE SPECIFIED.

COVER OVER PIPE - A

5'  
6'

WIDTH OF INSULATING BOARD - B

8'  
4'



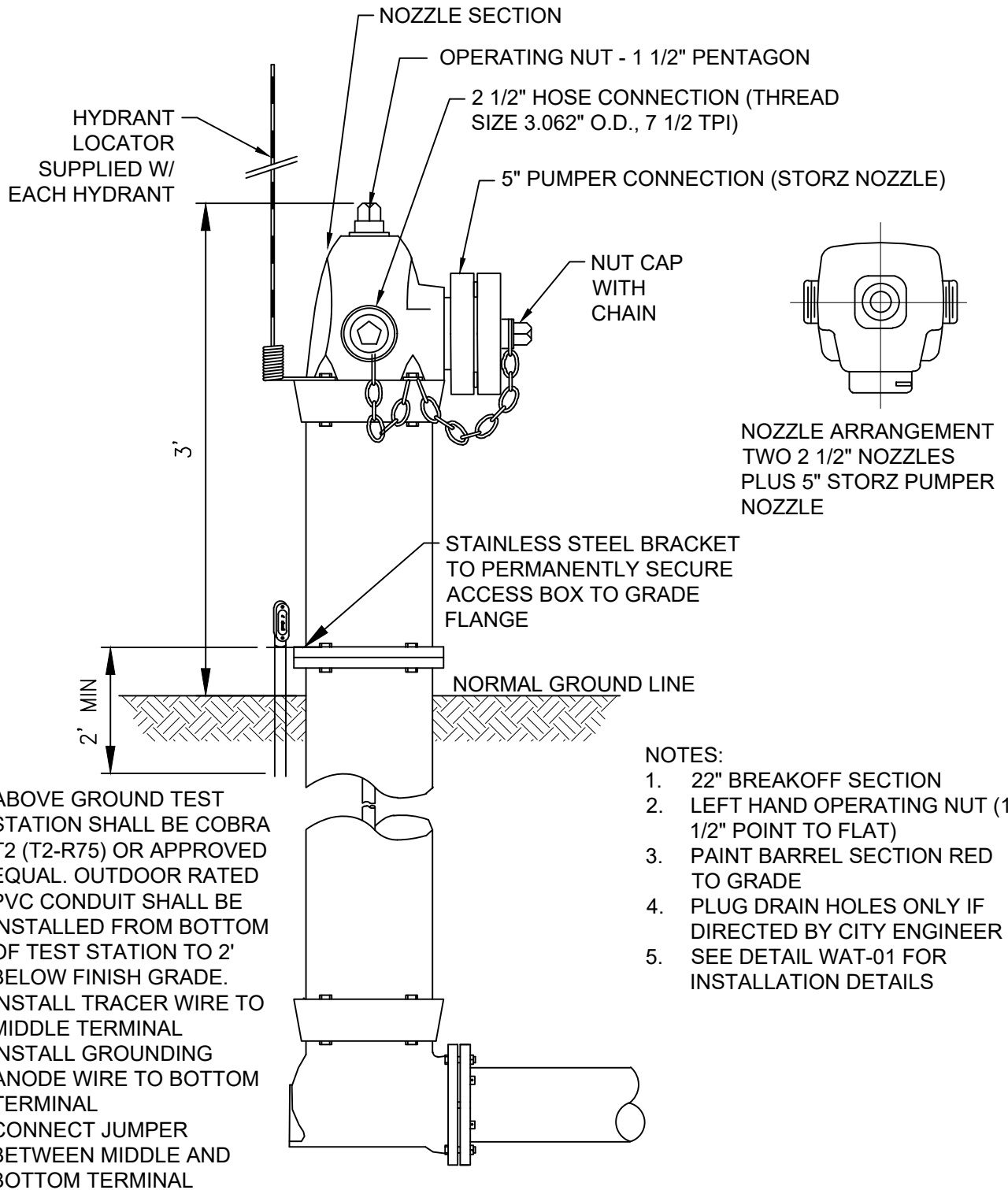
CORCORAN, MINNESOTA



## WATER MAIN INSULATION

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PLATE NO.  
WAT-10



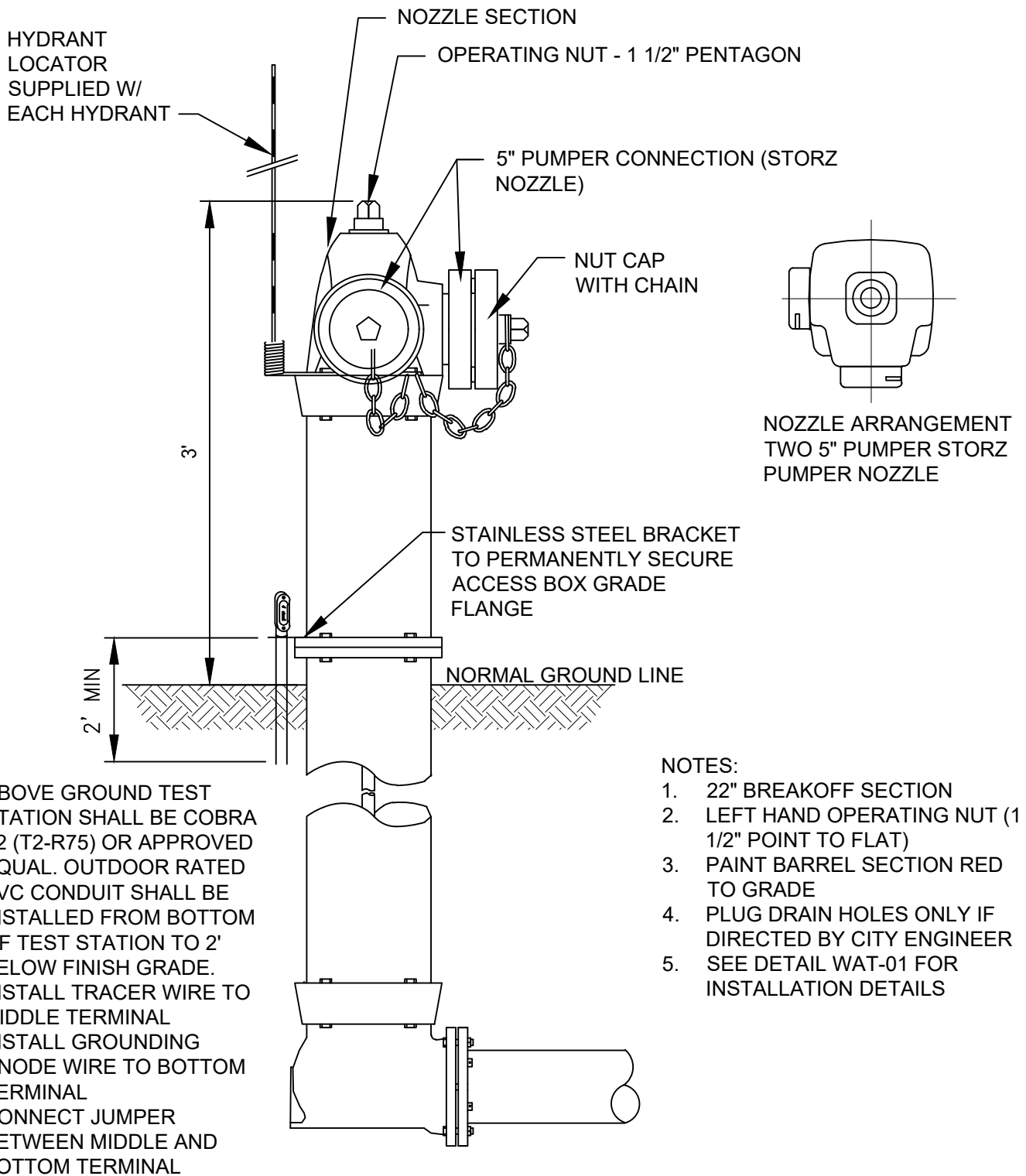
NOTE: HYDRANT SHALL BE PACER MODEL WB67-250



PACER HYDRANT DETAIL

LAST REVISION:  
JUL 2023

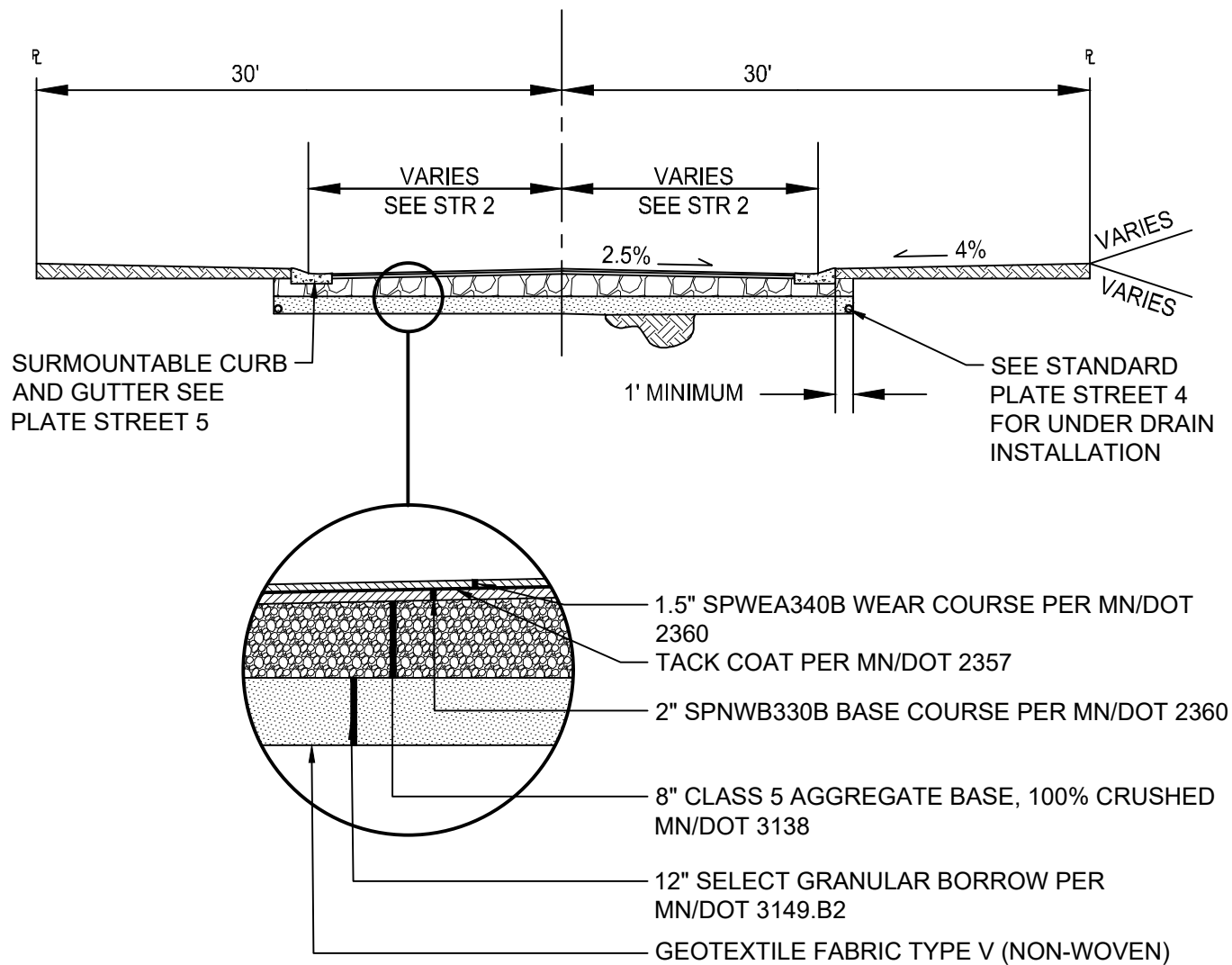
PLATE NO.  
WAT-11



## DOUBLE PUMPER HYDRANT DETAIL

LAST REVISION:  
JUL 2023

PLATE NO.  
WAT-12



NOTES:

1. TYPICAL SECTION SHOWN IS THE MINIMUM RESIDENTIAL STREET REQUIREMENT. SEE SPECIFICATIONS FOR PROJECT SPECIFIC DETAILS.
2. DRAINTILE SHALL BE INSTALLED BEHIND CURB. DRAINTILE TO BE INSTALLED AS REQUIRED TO ADEQUATELY DRAIN ALL SELECT GRANULAR FILL AREAS.
3. STREET SHALL BE DESIGNED WITH MINIMUM 0.60% AND MAXIMUM 6.00% GRADE.
4. THE CITY RESERVES THE RIGHT TO INCREASE THE STREET SECTION BASED ON SOIL CONDITIONS.
5. TACK COAT PER MN/DOT 2357 TO BE USED ON CURB PRIOR TO PLACEMENT OF BITUMINOUS
6. REFER TO THE HENNEPIN COUNTY BICYCLE TRANSPORTATION PLAN FOR TRAIL DETAILS.
7. RECYCLED MATERIAL SHALL NOT BE ALLOWED IN BITUMINOUS WEAR COURSE.



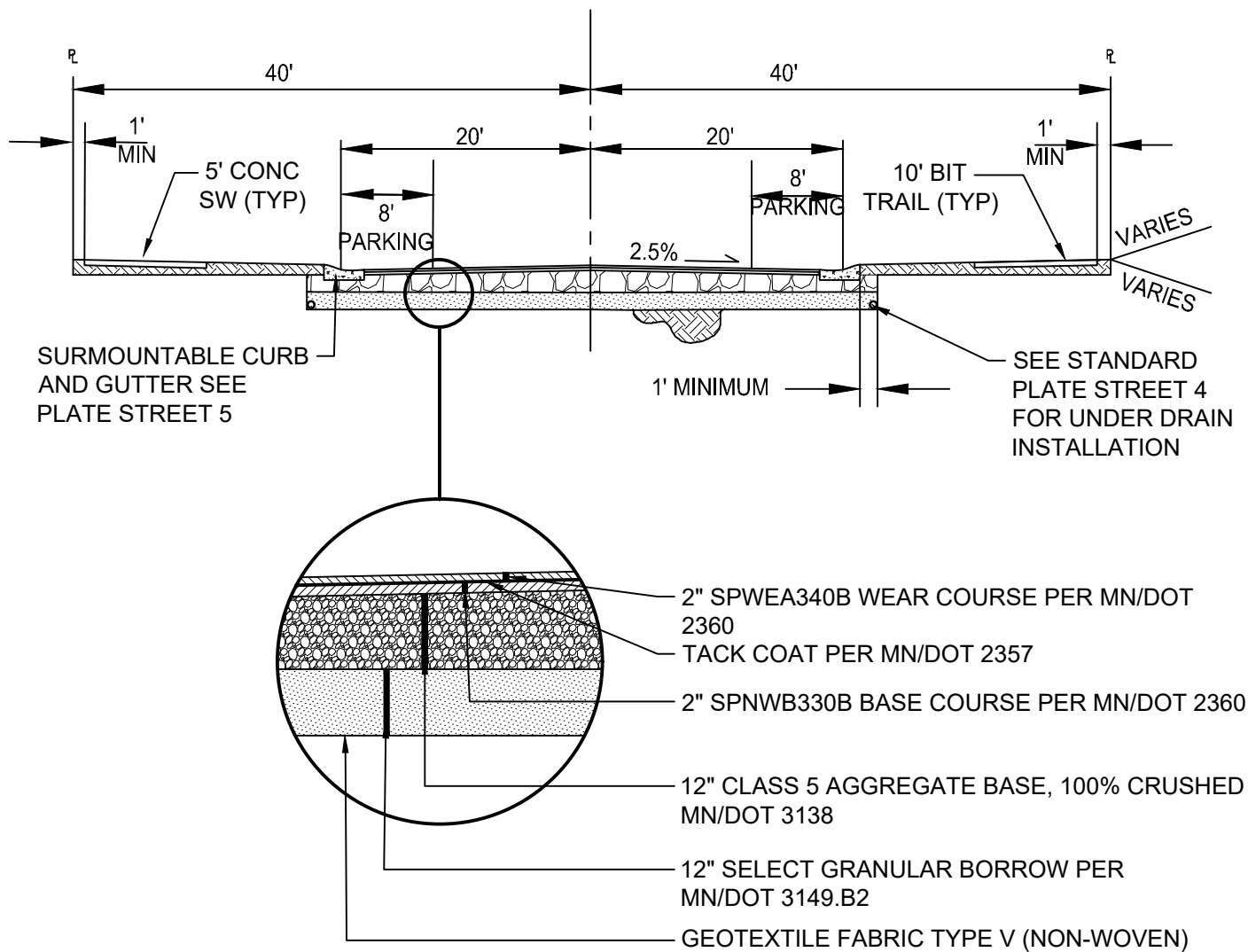
CORCORAN, MINNESOTA



RESIDENTIAL STREET SECTION

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-1A



NOTES:

1. TYPICAL SECTION SHOWN IS THE MINIMUM RESIDENTIAL COLLECTOR STREET REQUIREMENT. SEE SPECIFICATIONS FOR PROJECT SPECIFIC DETAILS.
2. DRAINTILE SHALL BE INSTALLED BEHIND CURB. DRAINTILE TO BE INSTALLED AS REQUIRED TO ADEQUATELY DRAIN ALL SELECT GRANULAR FILL AREAS.
3. STREET SHALL BE DESIGNED WITH MINIMUM 0.60% AND MAXIMUM 6.00% GRADE.
4. THE CITY RESERVES THE RIGHT TO INCREASE THE STREET SECTION BASED ON SOIL CONDITIONS.
5. TACK COAT PER MN/DOT 2357 TO BE USED ON CURB PRIOR TO PLACEMENT OF BITUMINOUS
6. REFER TO THE HENNEPIN COUNTY BICYCLE TRANSPORTATION PLAN FOR TRAIL DETAILS.
7. RECYCLED MATERIAL SHALL NOT BE ALLOWED IN BITUMINOUS WEAR COURSE.



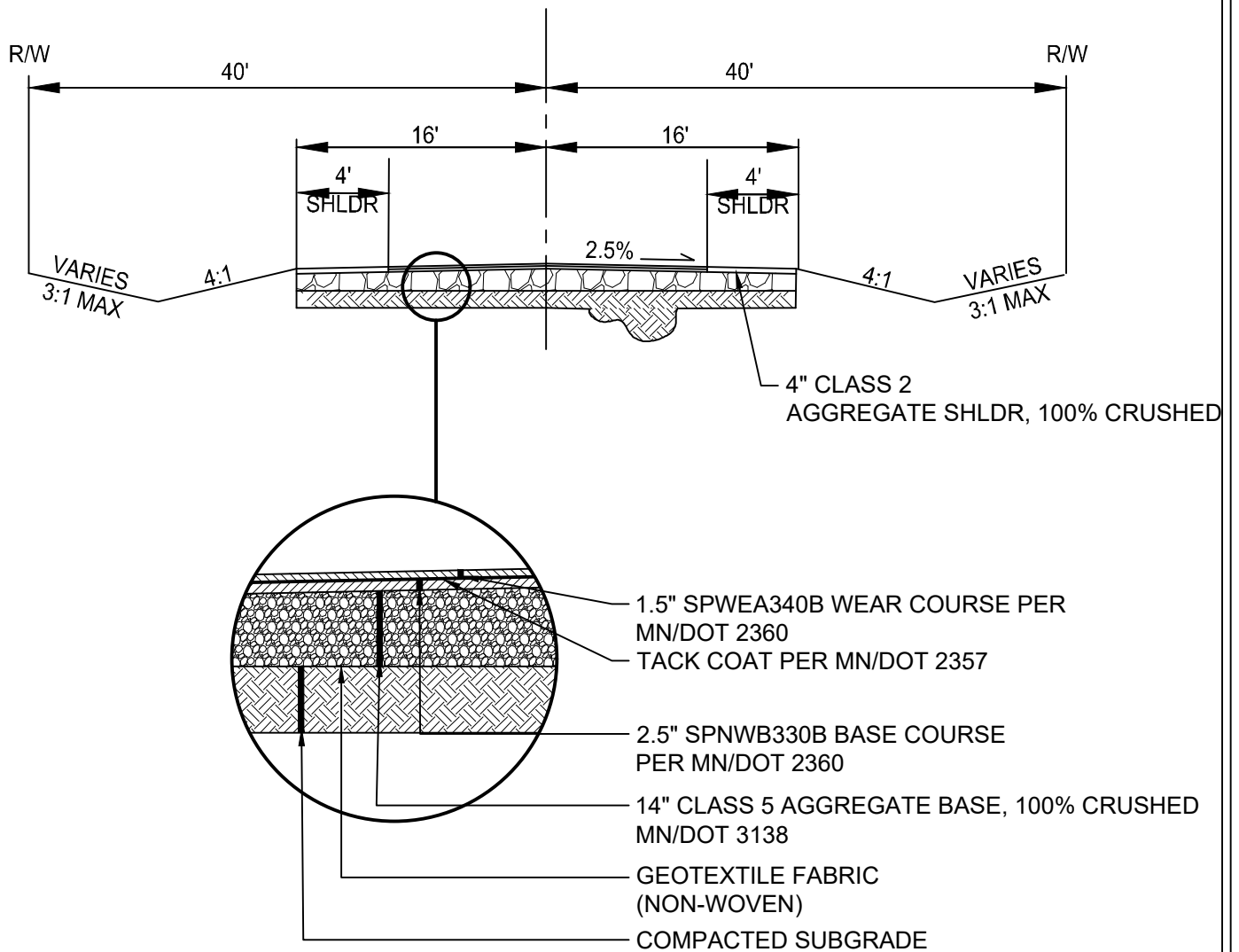
CORCORAN, MINNESOTA



RESIDENTIAL COLLECTOR  
STREET SECTION

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-1B



NOTES:

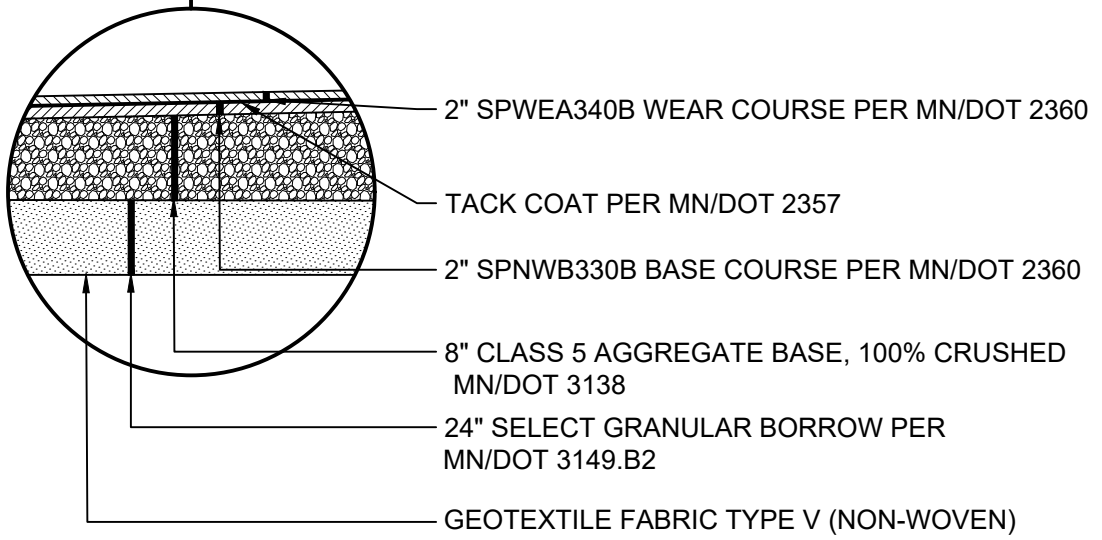
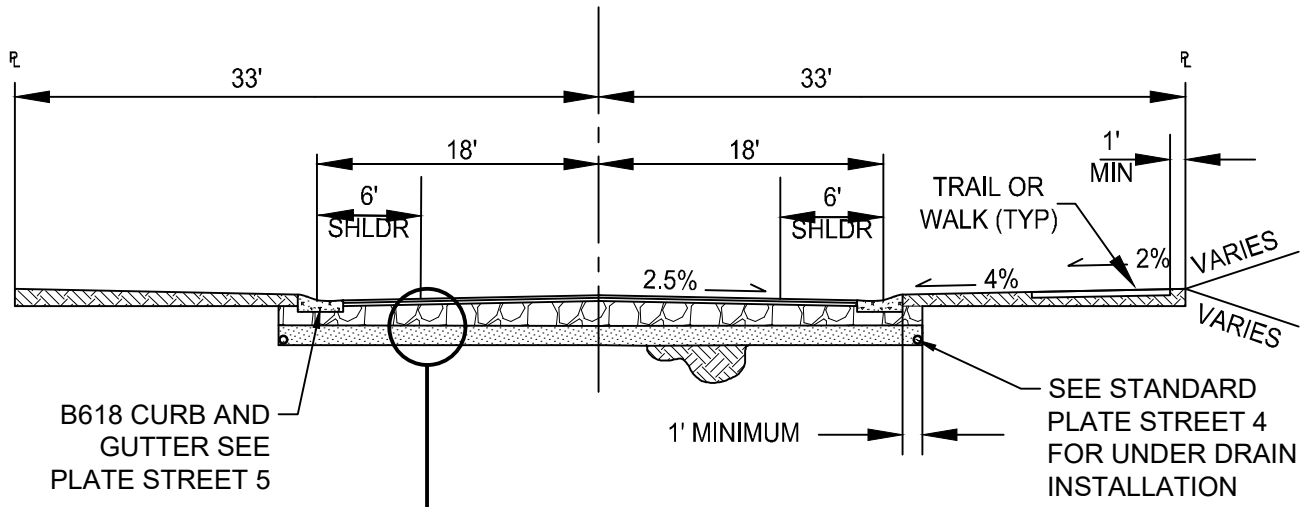
1. THE CITY RESERVES THE RIGHT TO INCREASE THE STREET SECTION BASED ON SOIL CONDITIONS.
2. SAW & SEAL ACCORDING TO MN/DOT 3725, AS DIRECTED BY THE CITY ENGINEER.
3. REFER TO THE HENNEPIN COUNTY BICYCLE TRANSPORTATION PLAN FOR TRAIL DETAILS.
4. RECYCLED MATERIAL SHALL NOT BE ALLOWED IN BITUMINOUS WEAR COURSE.



RURAL COLLECTOR STREET SECTION

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-1C



**NOTES:**

1. TYPICAL SECTION SHOWN IS THE MINIMUM COMMERCIAL STREET REQUIREMENT. SEE SPECIFICATIONS FOR PROJECT SPECIFIC DETAILS.
2. DRAINTILE SHALL BE INSTALLED BEHIND CURB. DRAINTILE TO BE INSTALLED AS REQUIRED TO ADEQUATELY DRAIN ALL SELECT GRANULAR FILL AREAS.
3. STREET SHALL BE DESIGNED WITH MINIMUM 0.60% AND MAXIMUM 6.00% GRADE.
4. THE CITY RESERVES THE RIGHT TO INCREASE THE STREET SECTION BASED ON SOIL CONDITIONS.
5. TACK COAT PER MN/DOT 2357 TO BE USED ON CURB PRIOR TO PLACEMENT OF BITUMINOUS
6. REFER TO THE HENNEPIN COUNTY BICYCLE TRANSPORTATION PLAN FOR TRAIL DETAILS.
7. RIGHT-OF-WAY WIDTH WILL INCREASE WHERE TURN LANES ARE REQUIRED. MAINTAIN A MINIMUM OF 15' BLVD BETWEEN CURB AND RIGHT-OF-WAY.
8. RECYCLED MATERIAL SHALL NOT BE ALLOWED IN BITUMINOUS WEAR COURSE.



CORCORAN, MINNESOTA

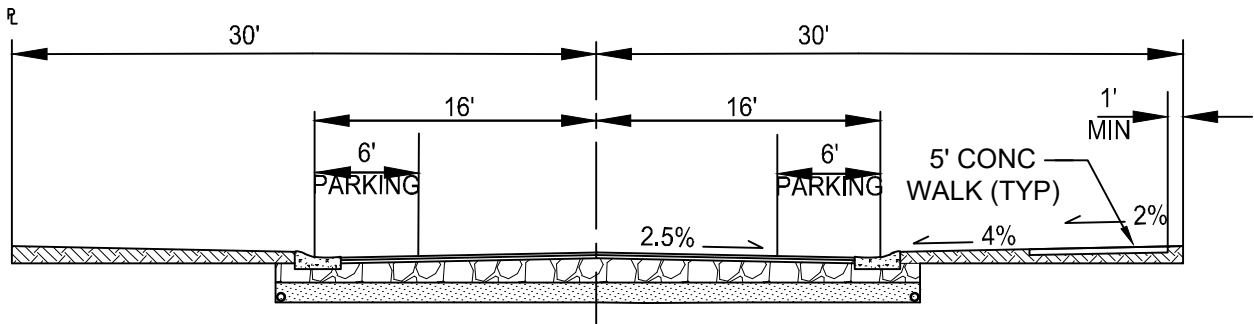


COMMERCIAL STREET SECTION

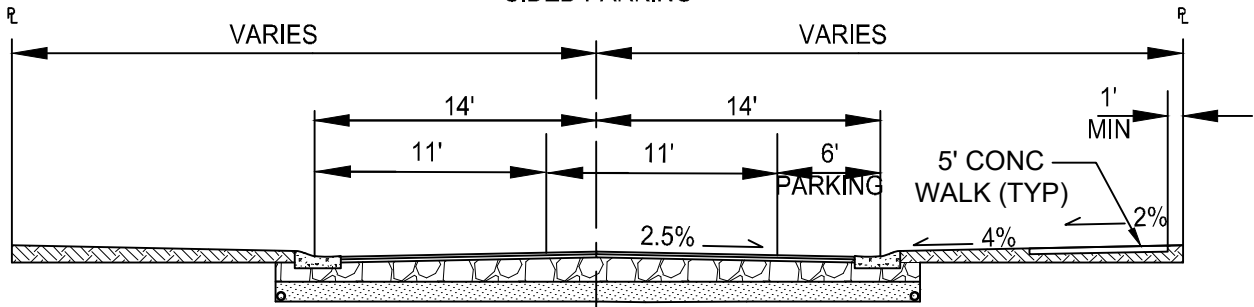
LAST REVISION:  
JUL 2023

PLATE NO.  
STR-1D

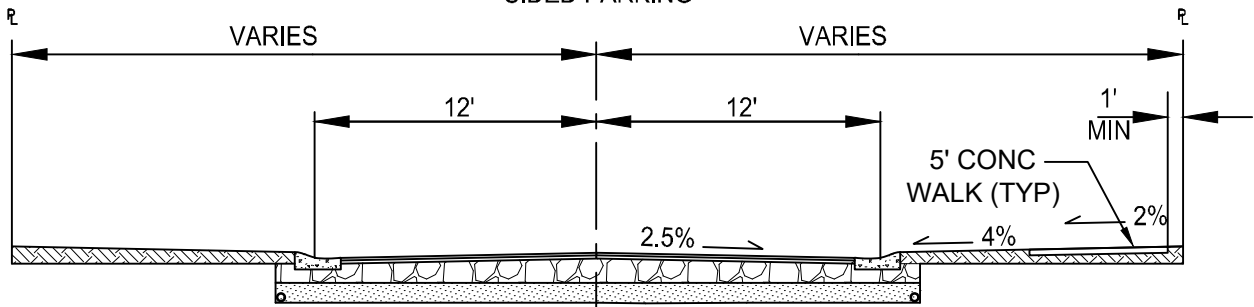




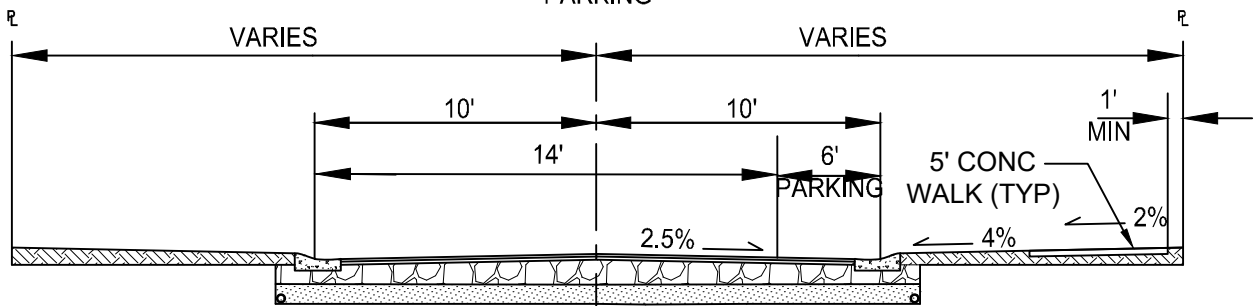
32 FOOT RESIDENTIAL STREET TWO SIDED PARKING



28 FOOT RESIDENTIAL STREET ONE SIDED PARKING



24 FOOT RESIDENTIAL STREET NO PARKING



20 FOOT RESIDENTIAL STREET ONEWAY - ONE SIDED PARKING



CORCORAN, MINNESOTA



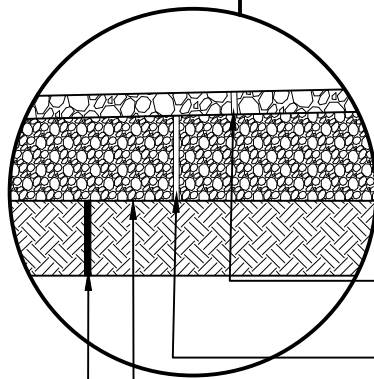
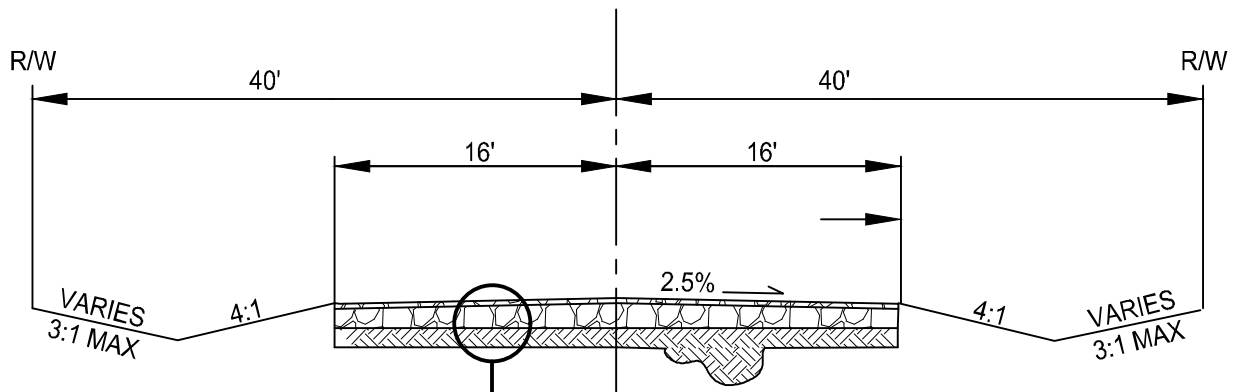
## RESIDENTIAL STREET DIMENSIONS

LAST REVISION:

JUL 2023

PLATE NO.

STR-2



- 6" CLASS 5 AGGREGATE SURFACING, 100% CRUSHED, VIRGIN AGGREGATE
- 12" CLASS 5 AGGREGATE BASE, 100% CRUSHED, RECYCLED MN/DOT 3138
- GEOTEXTILE FABRIC (NON-WOVEN)
- COMPACTED SUBGRADE

NOTES:

1. THE CITY RESERVES THE RIGHT TO INCREASE THE STREET SECTION BASED ON SOIL CONDITIONS.
2. REFER TO THE HENNEPIN COUNTY BICYCLE TRANSPORTATION PLAN FOR TRAIL DETAILS.



CORCORAN, MINNESOTA



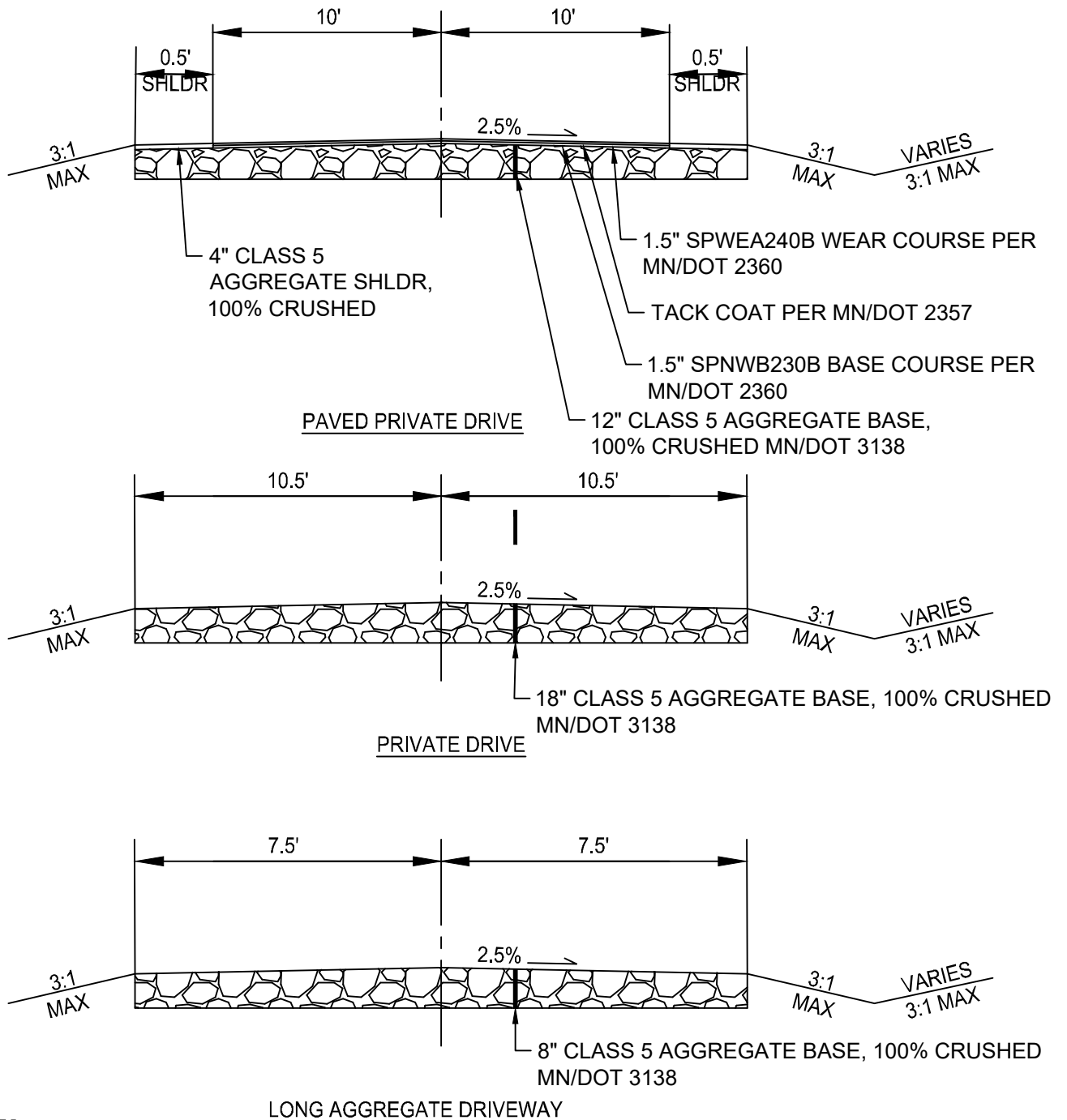
GRAVEL ROAD

LAST REVISION:

JUL 2023

PLATE NO.

STR-3



**NOTES:**

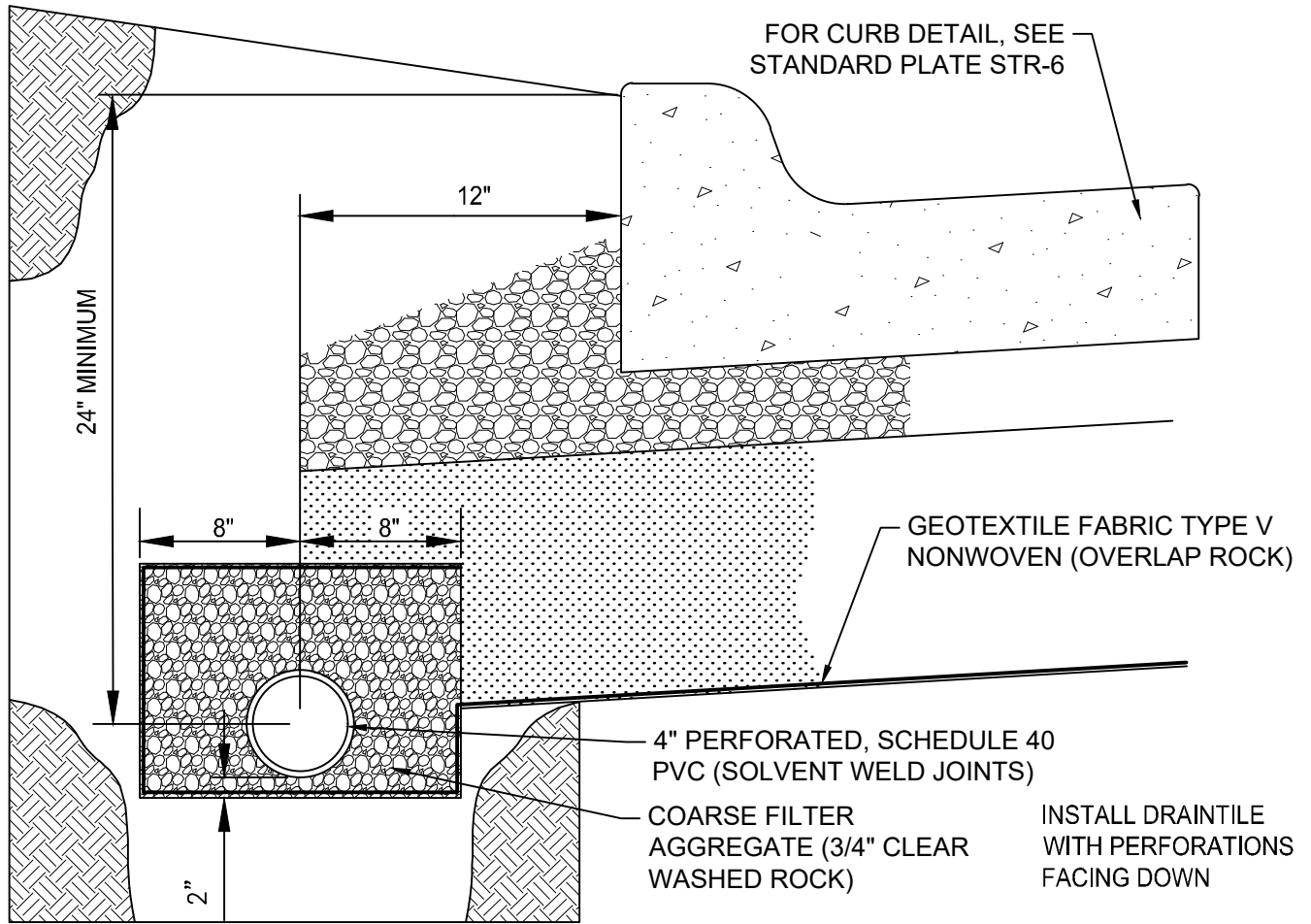
1. THE CITY RESERVES THE RIGHT TO INCREASE THE DRIVEWAY SECTION BASED ON SOIL CONDITIONS FOR A 10-TON SECTION.
2. MINIMUM SLOPE = 0.5%
3. MAXIMUM SLOPE = 10%.
4. A SINGLE DRIVEWAY IS RECOMMENDED TO FOLLOW THIS DETAIL, BUT MAY NOT BE REQUIRED.
5. ROLL TEST TO BE CONDUCTED
6. PAVED APRON REQUIRED WHEN PRIVATE DRIVE COMES OFF PAVED PUBLIC ROAD



**PRIVATE DRIVE & LONG DRIVEWAY**

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-4



TRENCH  
DETAIL

NOTES:

1. PLACE SUB-DRAIN BEHIND ALL CURB & GUTTER 250 LF IN EACH DIRECTION FROM CATCH BASINS LOCATED AT LOCALIZED LOW POINTS AND 150 LF UPSTREAM FROM CATCH BASINS LOCATED IN THE MID SLOPE.
2. CONNECT SUB-DRAIN TO NEAREST CATCHBASIN. CONNECTION TO BE CORE-DRILLED. DOGHOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE OF STRUCTURE.
3. SLOPE SUB-DRAIN TO CATCH BASIN.
4. SUBDRAIN MAY BE DAYLIGHTED TO DITCH AS APPROVED BY CITY ENGINEER.
5. CLEANOUTS ARE REQUIRED AT A MAXIMUM OF 200 FOOT INTERVALS, AT BENDS, AND AT THE END OF THE RUN. SEE DETAIL STO-23 FOR CLEANOUT DETAIL.
6. CLEANOUTS TO BE LOCATED ON PROPERTY CORNERS.
7. IF CLEANOUT IS TO BE LOCATED WITHIN 50' OF CATCH BASIN. REMOVE CLEAN OUT AND TIE DRAIN TILE INTO THE CATCH BASIN
8. CONTRACTOR TO TELEWISE DRAINTILE PRIOR TO ACCEPTANCE OF STREET. DRAINTILE TO BE TELEVISED IN THE PRESENCE OF CITY AFTER PRIVATE UTILITIES ARE INSTALLED.



CORCORAN, MINNESOTA



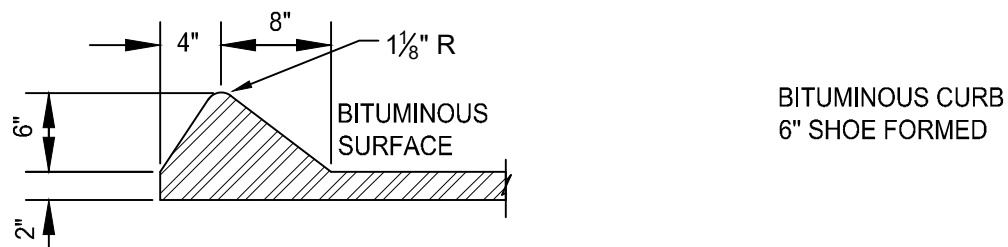
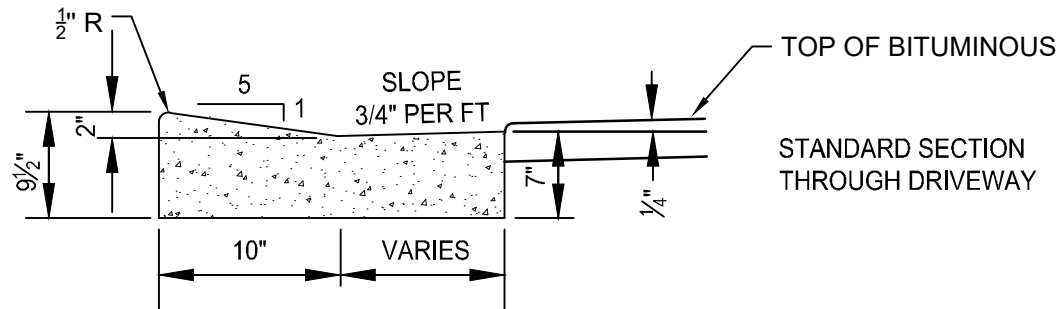
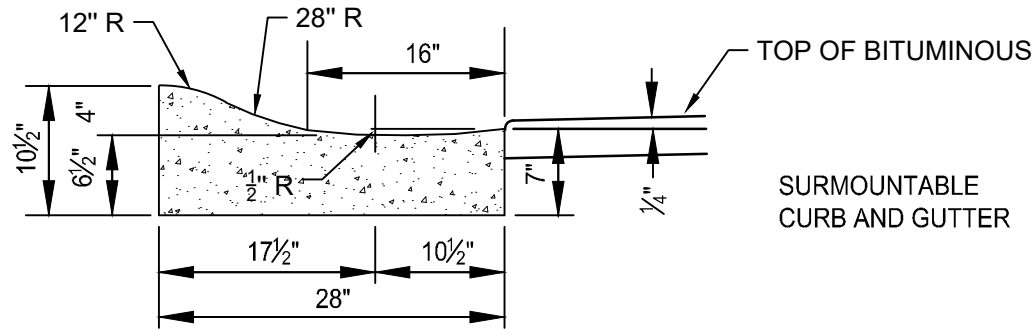
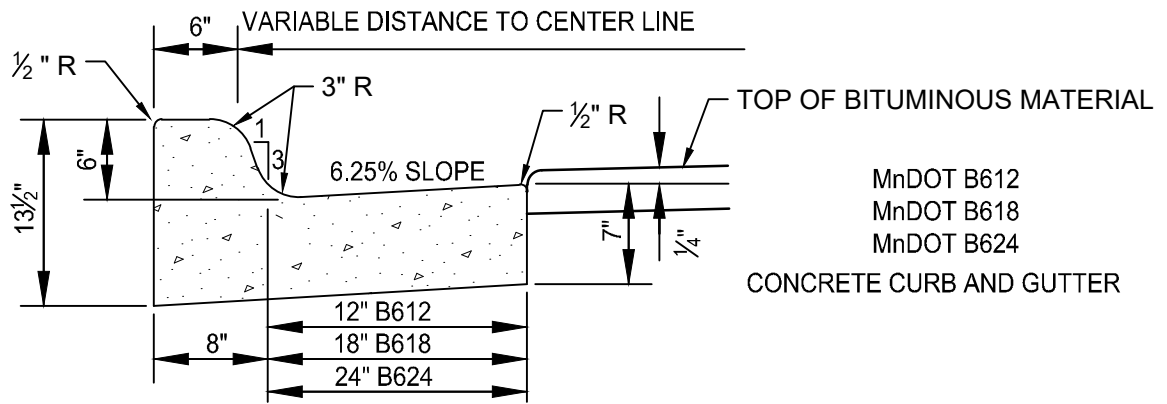
ROAD SUB DRAIN

LAST REVISION:

JUL 2023

PLATE NO.

STR-5



NOTES:

1. ONCE CURB AND GUTTER ARE INSTALLED, ENSURE EROSION CONTROL MEASURES ARE PROPERLY ESTABLISHED.
2. USE SUITABLE MATERIAL TO BACKFILL AREA BEHIND CURB.



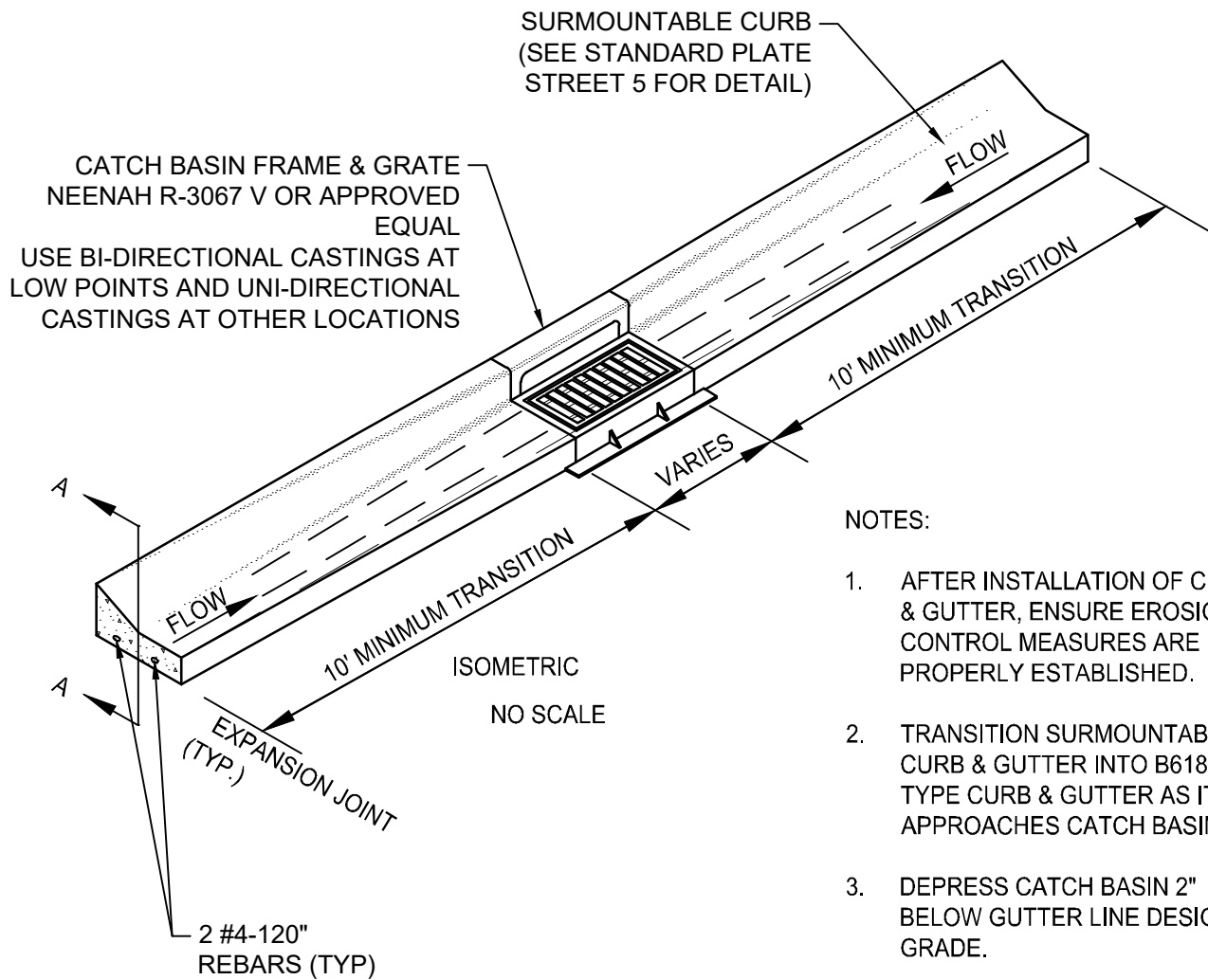
CORCORAN, MINNESOTA



CURB AND GUTTER

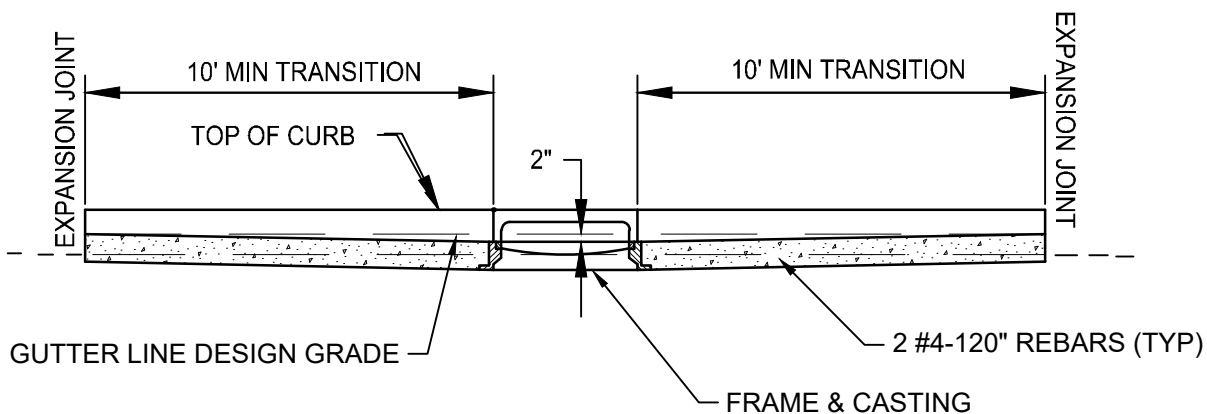
LAST REVISION:  
JUL 2023

PLATE NO.  
STR-6



NOTES:

1. AFTER INSTALLATION OF CURB & GUTTER, ENSURE EROSION CONTROL MEASURES ARE PROPERLY ESTABLISHED.
2. TRANSITION SURMOUNTABLE CURB & GUTTER INTO B618 TYPE CURB & GUTTER AS IT APPROACHES CATCH BASIN.
3. DEPRESS CATCH BASIN 2" BELOW GUTTER LINE DESIGN GRADE.



SECTION A-A

NO SCALE



CORCORAN, MINNESOTA



SURMOUNTABLE CURB  
TRANSITION AT CATCH BASIN

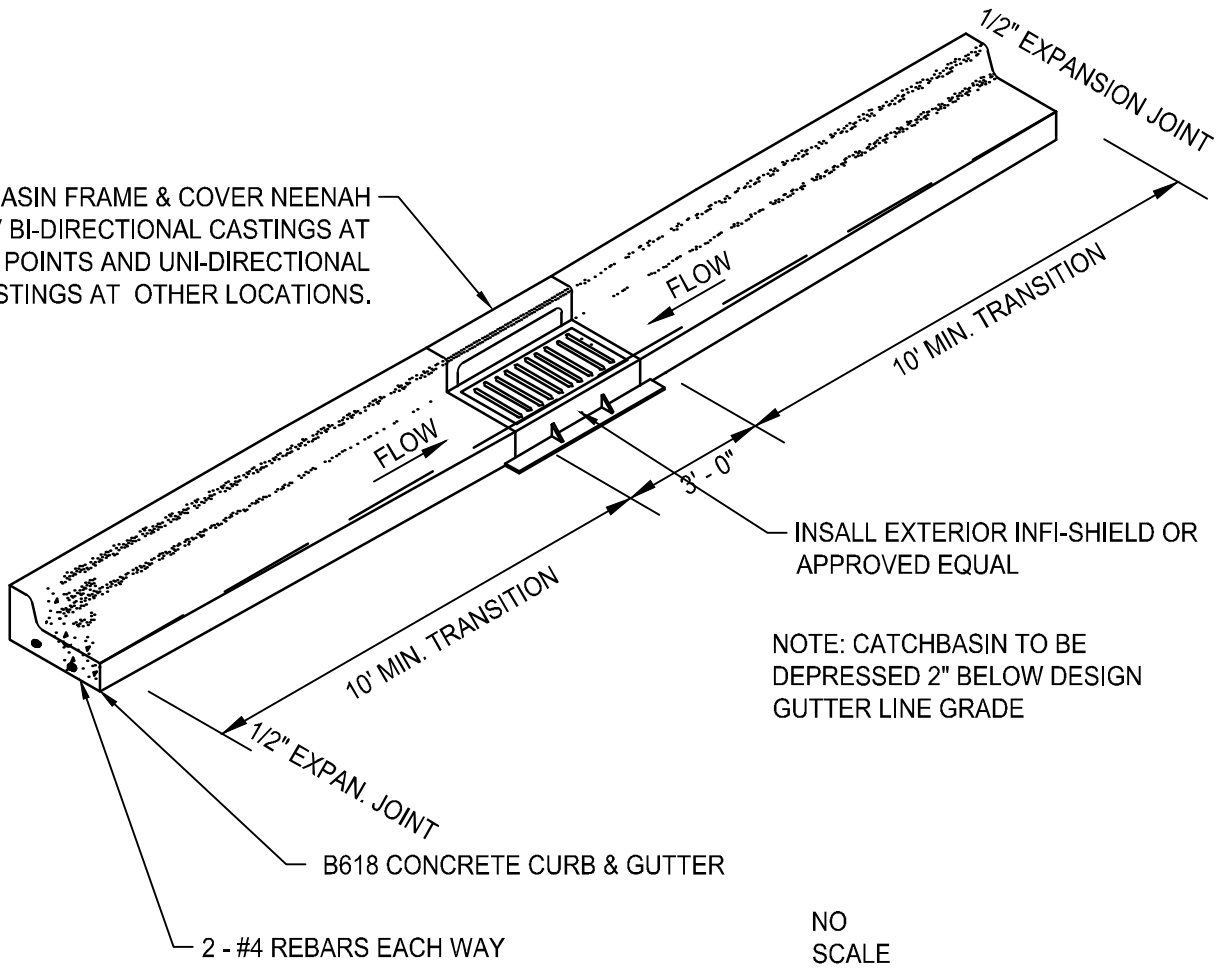
LAST REVISION:

JUL 2023

PLATE NO.

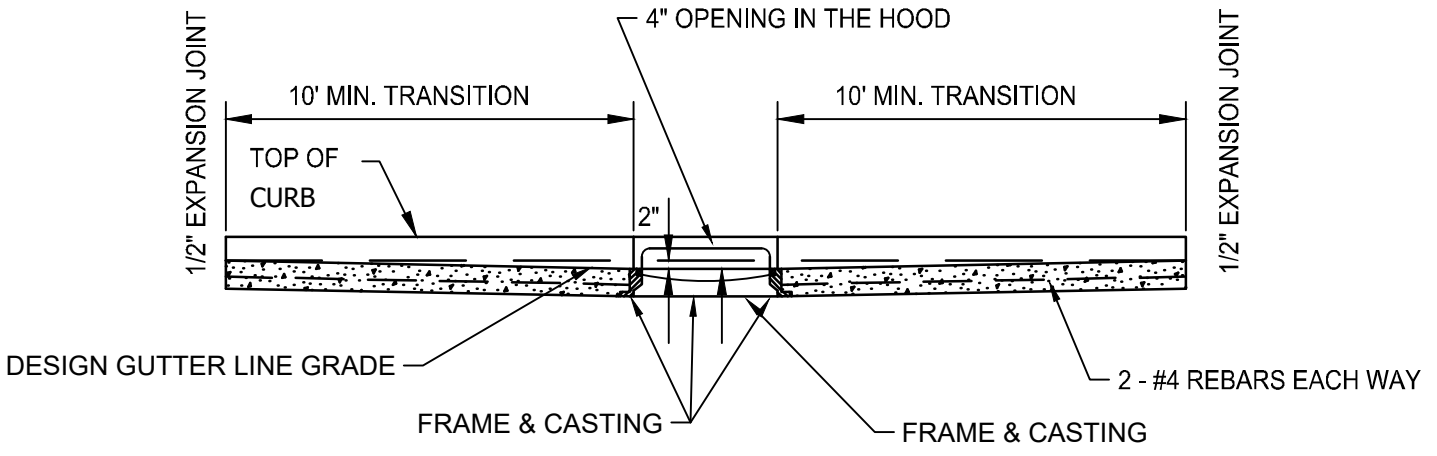
STR-7

CATCHBASIN FRAME & COVER NEENAH R-3067V BI-DIRECTIONAL CASTINGS AT LOW POINTS AND UNI-DIRECTIONAL CASTINGS AT OTHER LOCATIONS.



NOTE: CATCHBASIN TO BE DEPRESSED 2" BELOW DESIGN GUTTER LINE GRADE

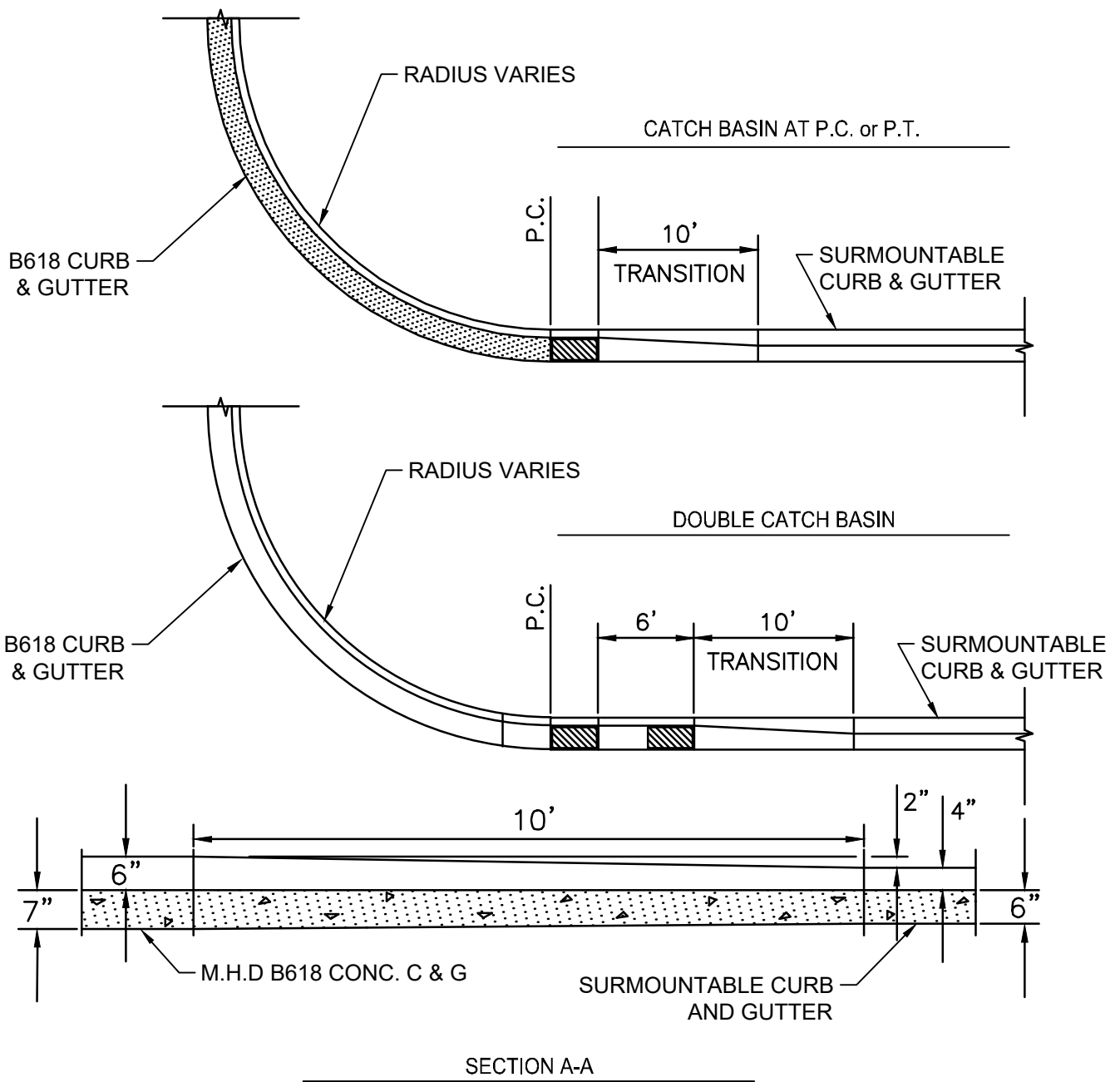
NO SCALE



## B618 CURB TRANSITION AT CATCH BASIN

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-8



**NOTES:**

1. ALL RADII ARE MEASURED TO FACE OF CURB.
2. NO CATCH BASINS WILL BE CONSTRUCTED IN THE INTERSECTION RADII.
3. 30' RADII WILL BE REQUIRED AT INTERSECTIONS OF ALL COLLECTOR TO RESIDENTIAL STREETS.
4. 25' RADII WILL BE REQUIRED AT INTERSECTIONS OF ALL RESIDENTIAL TO RESIDENTIAL STREETS.

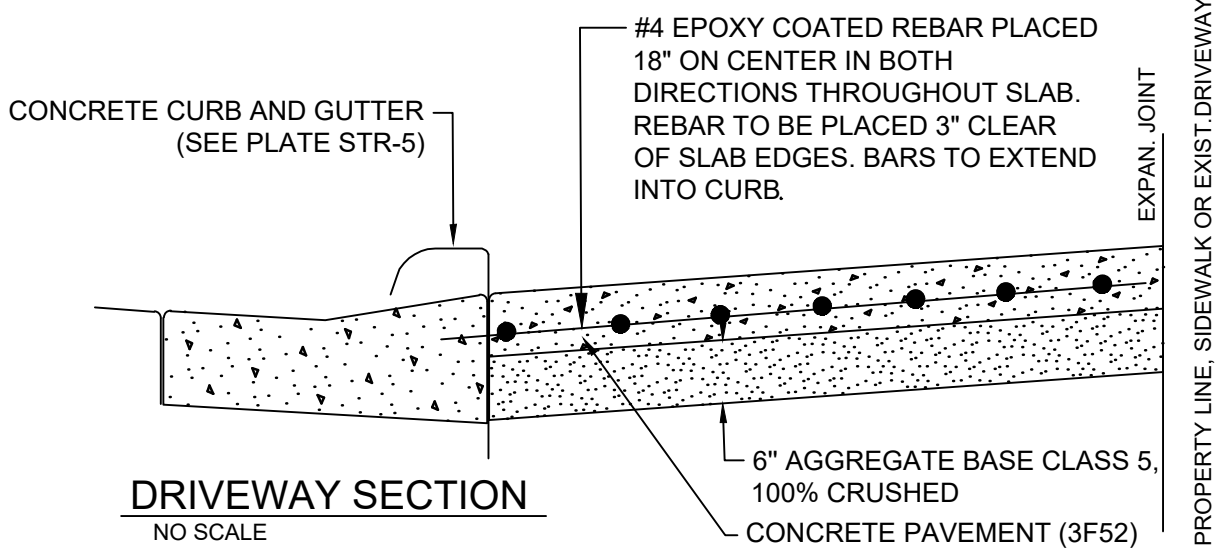


## CURB AND GUTTER TRANSITIONS

LAST REVISION:  
JUL 2023

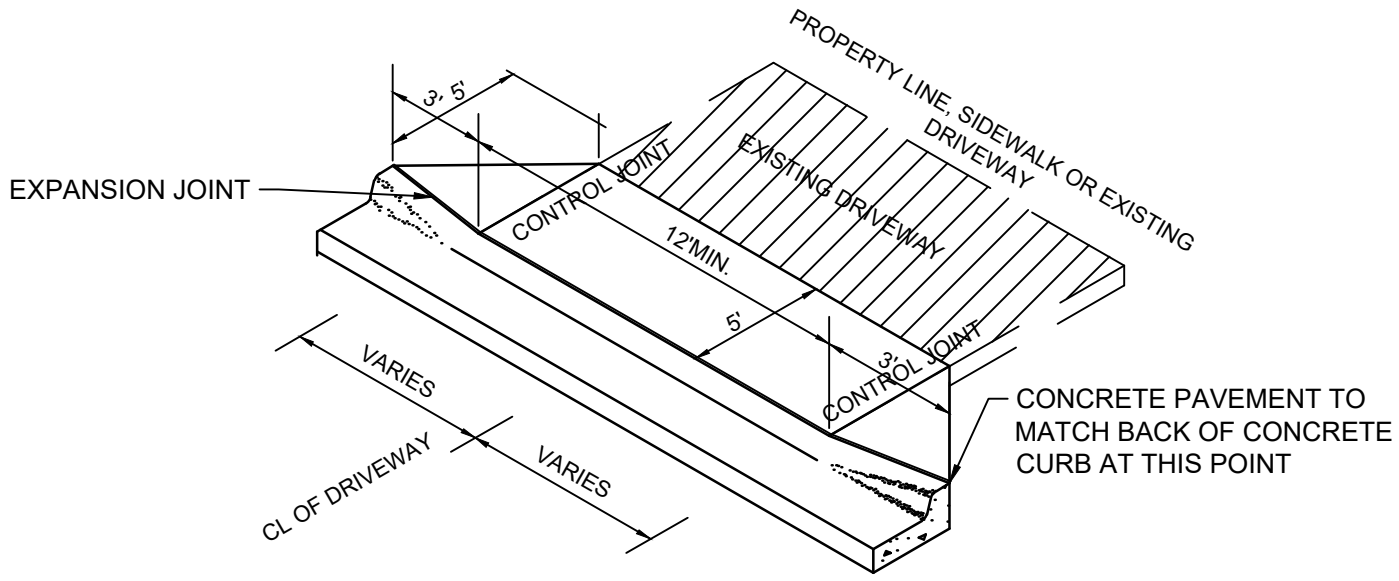
PLATE NO.  
STR-9





**DRIVEWAY SECTION**  
NO SCALE

1. PANEL WIDTH SHALL NOT EXCEED 10 FEET WITHOUT A CONTRACTION JOINT.
2. DRIVEWAY TO BE ONE COURSE CONCRETE PAVEMENT.
3. 6" THICK FOR RESIDENTIAL DRIVE, 8" THICK FOR COMMERCIAL DRIVE AND ALLEY OR SPECIFIED.
4. MAXIMUM DRIVEWAY WIDTH = 24'.
5. MINIMUM DISTANCE FROM LOT LINE = 5' AS MEASURED 5 FEET FROM THE BACK OF CURB.
6. CAPS REQUIRED ON CURBSTOPS LOCATED IN DRIVEWAYS.
7. ALL DRIVEWAYS MUST BE AT LEAST 60' FROM INTERSECTIONS MEASURED FROM C-C TO CENTER OF DRIVEWAY.



**DRIVEWAY ISOMETRIC**  
NO SCALE

NOTE: CONTROL JOINTS IN CONCRETE CURB NOT TO EXCEED 10' SPACING THROUGH DRIVEWAY SECTION.



CORCORAN, MINNESOTA



RESIDENTIAL DRIVEWAY APRON

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-10

#4 EPOXY COATED REBAR PLACED 18" ON CENTER IN BOTH DIRECTIONS THROUGHOUT SLAB. REBAR TO BE PLACED 3" CLEAR OF SLAB EDGES. BARS TO EXTEND INTO CURB.

EXPANSION JOINT MATERIAL TO CONFORM TO MNDOT 3702

MOUNTABLE TYPE CONCRETE CURB AND GUTTER STR-01

1/2" THICK - 6" HIGH EXPANSION JOINT MATERIAL

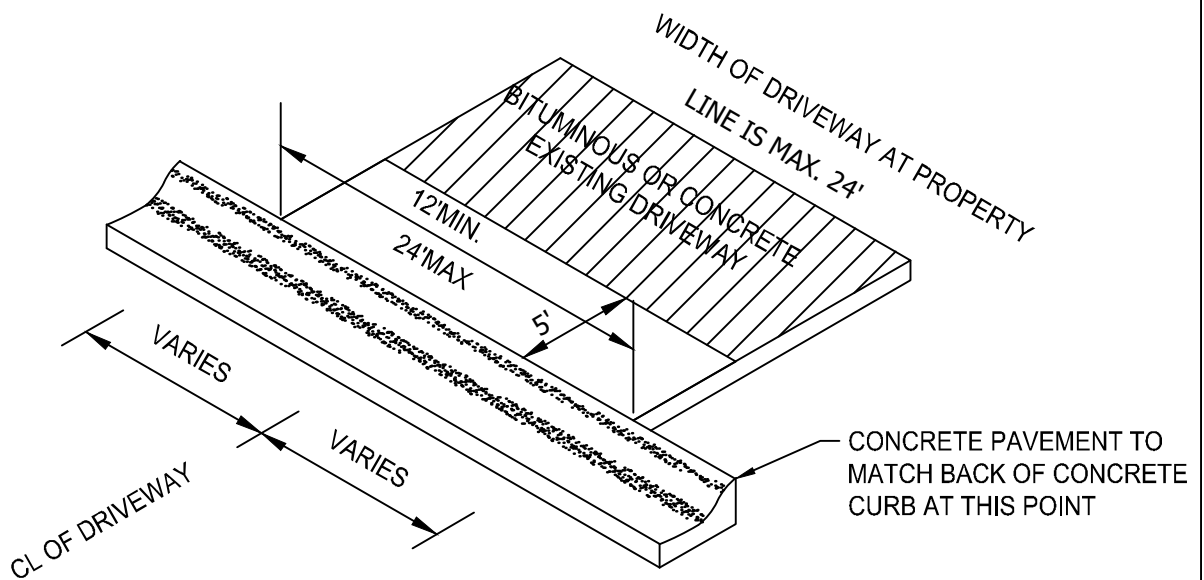
5'

MIN .50%  
MAX 10.0%

EXISTING OR PROPOSED DRIVEWAY

SECTION  
NO  
SCALE

6" CONCRETE PAVEMENT (3F52)  
4" CLASS 5 AGGREGATE BASE OR RECYCLED EQUAL, 100% CRUSHED. INCIDENTAL TO CONCRETE APRON(MNDOT 3138)



ISOMETRIC  
NO SCALE

NOTE:

1. CONTROL JOINTS IN CONCRETE CURB NOT TO EXCEED 10' SPACING THROUGH DRIVEWAY SECTION.
2. THE MAXIMUM DRIVEWAY WIDTH AT THE CURB IS 24'. MAXIMUM WIDTH OF DRIVEWAY AT THE PROPERTY LINE IS ALSO 24'.
3. APRON NOT REQUIRED IN NEW DRIVEWAY CONSTRUCTION.



RESIDENTIAL DRIVEWAY APRON  
(MOUNTABLE CURB)

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-11

#4 EPOXY COATED REBAR PLACED 18" ON CENTER IN BOTH DIRECTIONS THROUGHOUT SLAB. REBAR TO BE PLACED 3" CLEAR OF SLAB EDGES. BARS TO EXTEND INTO CURB.

B6 TYPE CONCRETE CURB AND GUTTER STR-01

1/2" THICK - 6" HIGH EXPANSION JOINT MATERIAL

CONCRETE SIDEWALK SLOPE IS 2.0%

MIN .50%  
MAX 10.0%

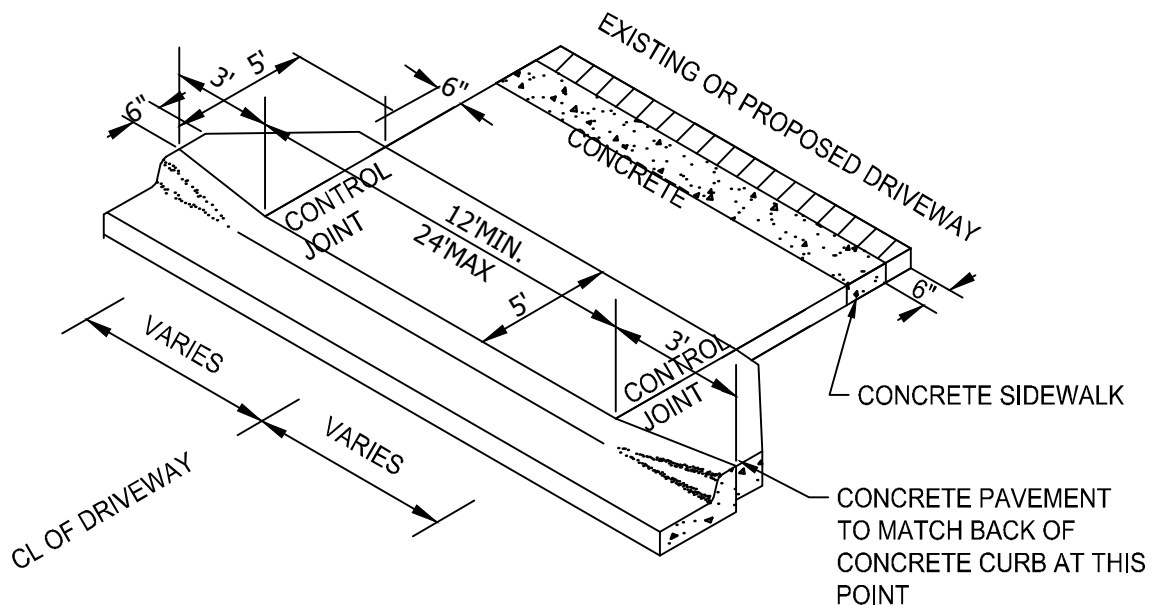
PROPERTY LINE AND EXISTING OR PROPOSED DRIVEWAY

SECTION  
NO  
SCALE

VARIABLE

6" CONCRETE PAVEMENT (3F52)  
4" CLASS 5 AGGREGATE BASE OR RECYCLED EQUAL, 100% CRUSHED. INCIDENTAL TO CONCRETE APRON(MNDOT 3138)

ISOMETRIC  
NO  
SCALE



NOTE:

1. CONTROL JOINTS IN CONCRETE CURB NOT TO EXCEED 10' SPACING THROUGH DRIVEWAY SECTION.
2. CONCRETE MUST BE CONSTRUCTED BETWEEN SIDEWALK AND DRIVEWAY APRON.
3. CONCRETE SIDEWALK THROUGH DRIVEWAY IS 6" THICK.
4. DRIVEWAY WINGS ARE REQUIRED WITH THE B6 STYLE CURBING. THE MAXIMUM DRIVEWAY WIDTH AT THE CURB IS 24' PLUS THE WIDTH OF THE WINGS. MAXIMUM WIDTH OF DRIVEWAY AT THE PROPERTY LINE IS ALSO 24'.



## RESIDENTIAL DRIVEWAY APRON WITH S.W. (B6 CURB)

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-12

#4 EPOXY COATED REBAR PLACED 18" ON CENTER IN BOTH DIRECTIONS THROUGHOUT SLAB. REBAR TO BE PLACED 3" CLEAR OF SLAB EDGES. BARS TO EXTEND INTO CURB.

1/2" THICK - 6" HIGH EXPANSION JOINT MATERIAL

CONCRETE SIDEWALK SLOPE IS 2.0%

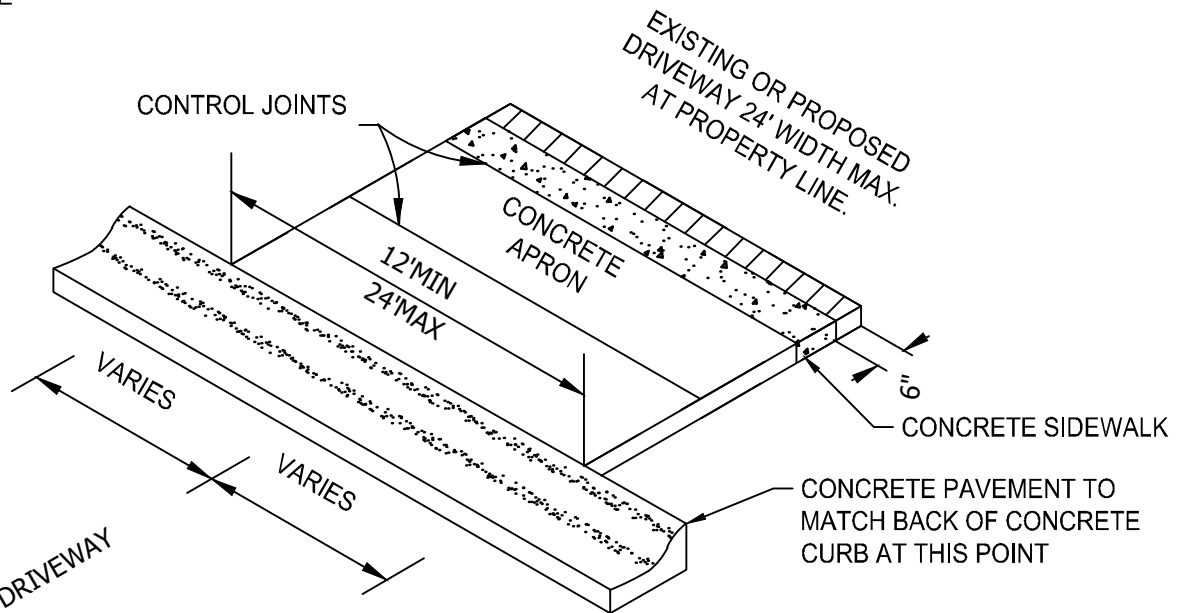
MOUNTABLE TYPE CONCRETE CURB AND GUTTER STR-01

MIN .50%  
MAX 10.0%

PROPERTY LINE AND EXISTING OR PROPOSED DRIVEWAY

SECTION  
NO  
SCALE

6" CONCRETE PAVEMENT (3F52)  
4" CLASS 5 AGGREGATE BASE OR RECYCLED EQUAL, 100% CRUSHED. INCIDENTAL TO CONCRETE APRON(MNDOT 3138)



ISOMETRIC  
NO  
SCALE

- NOTE:
1. CONTROL JOINTS IN CONCRETE CURB NOT TO EXCEED 10' SPACING THROUGH DRIVEWAY SECTION.
  2. CONCRETE MUST BE CONSTRUCTED BETWEEN SIDEWALK AND DRIVEWAY APRON.
  3. CONCRETE SIDEWALK THROUGH DRIVEWAY IS 6" THICK.
  4. THE MAXIMUM DRIVEWAY WIDTH AT THE CURB IS 24'. MAXIMUM WIDTH OF DRIVEWAY AT THE PROPERTY LINE IS ALSO 24'.

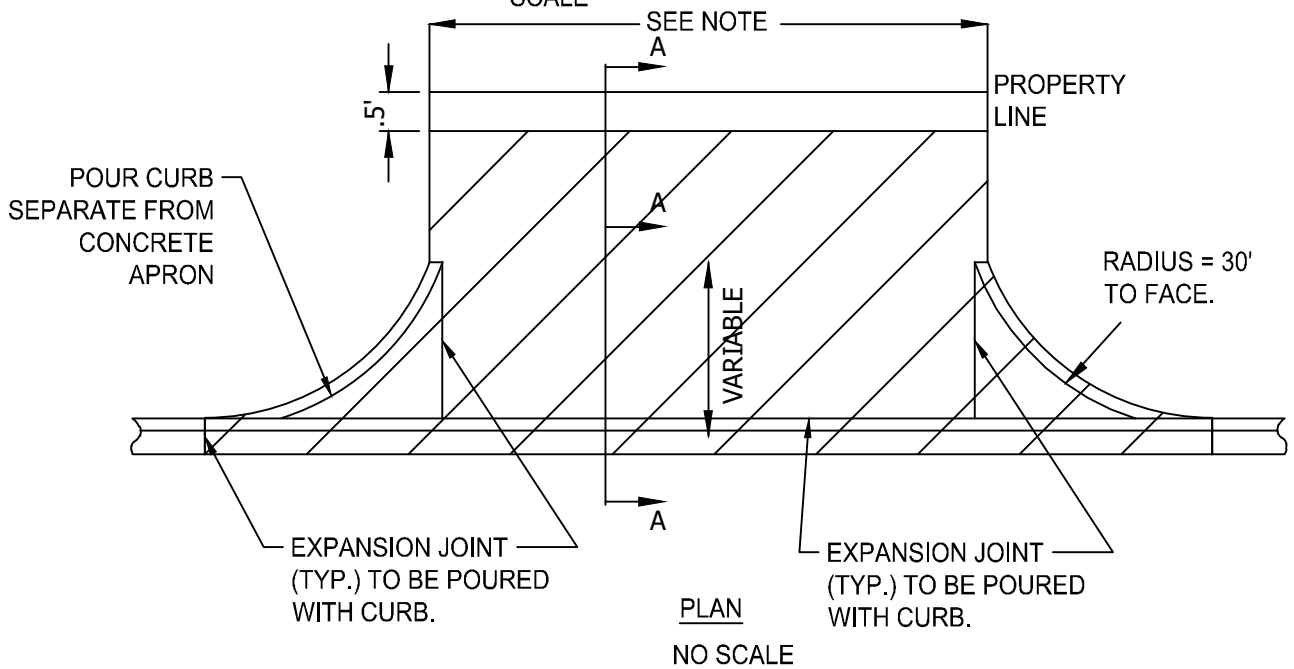
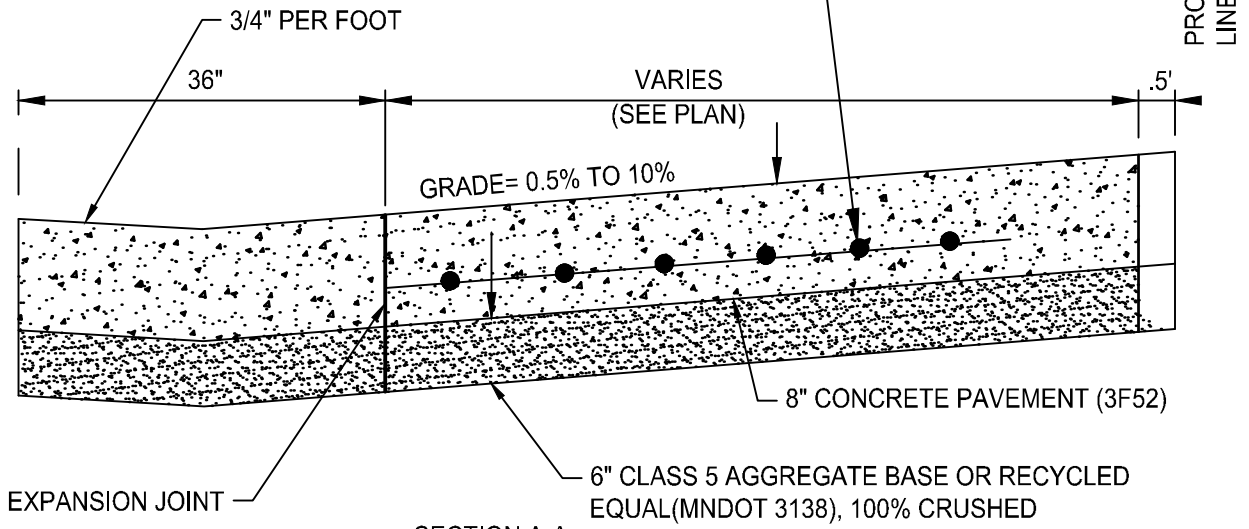


RESIDENTIAL DRIVEWAY APRON  
WITH S.W. (MOUNTABLE CURB)

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-13

#4 EPOXY COATED REBAR PLACED 10" ON CENTER IN BOTH DIRECTIONS THROUGHOUT SLAB. REBAR TO BE PLACED 3" CLEAR OF SLAB EDGES.



NOTE:  
MAX COMMERCIAL DRIVEWAY WIDTH TO BE 32' AT RIGHT-OF-WAY.

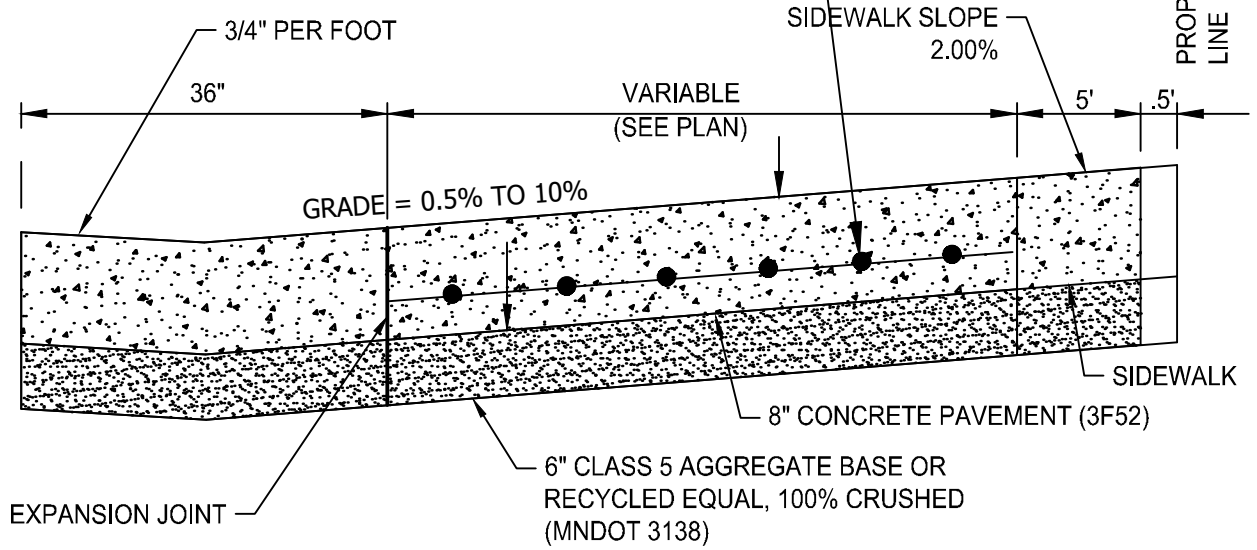


COMMERCIAL CONCRETE  
DRIVEWAY APRON

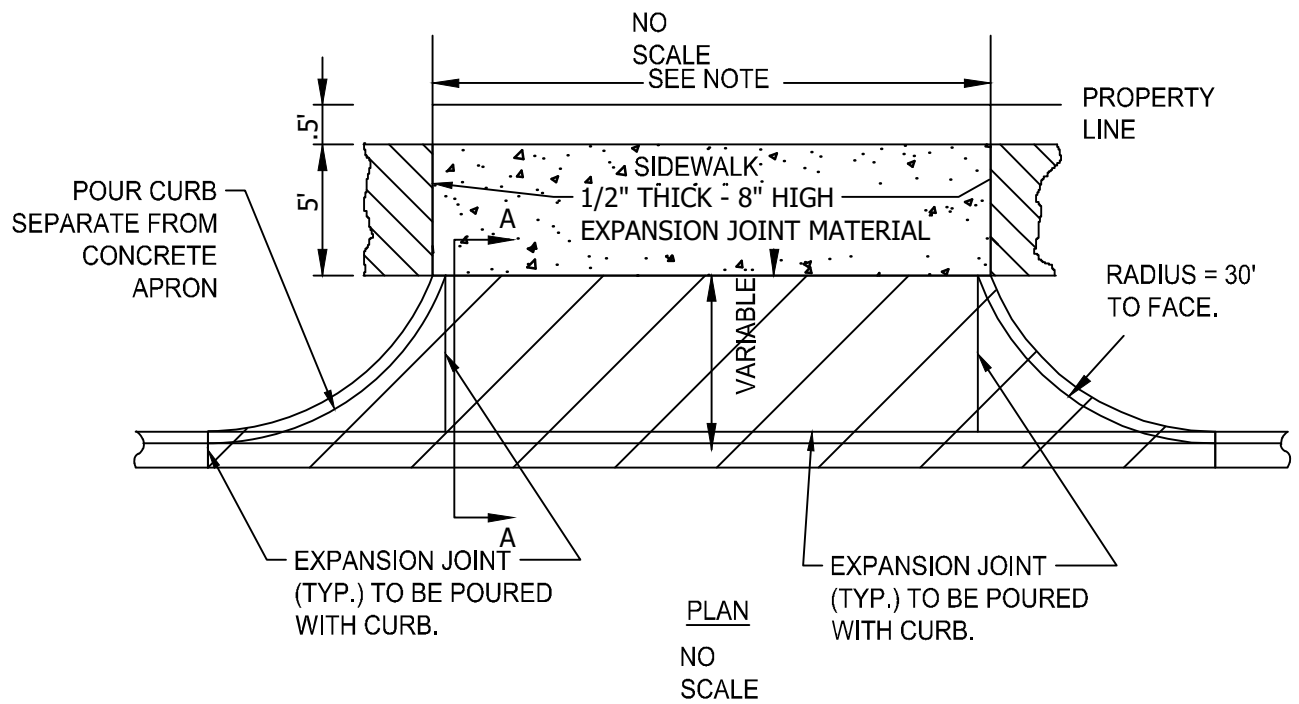
LAST REVISION:  
JUL 2023

PLATE NO.  
STR-14

#4 EPOXY COATED REBAR PLACED 10" ON CENTER IN BOTH DIRECTIONS THROUGHOUT SLAB. REBAR TO BE PLACED 3" CLEAR OF SLAB EDGES.



SECTION A-A



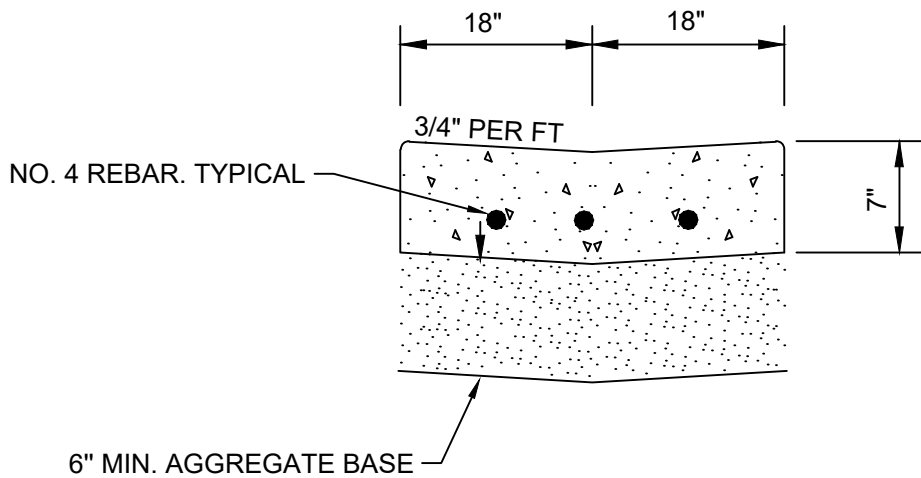
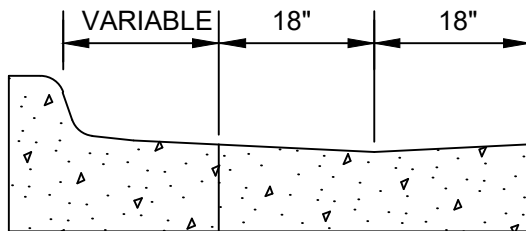
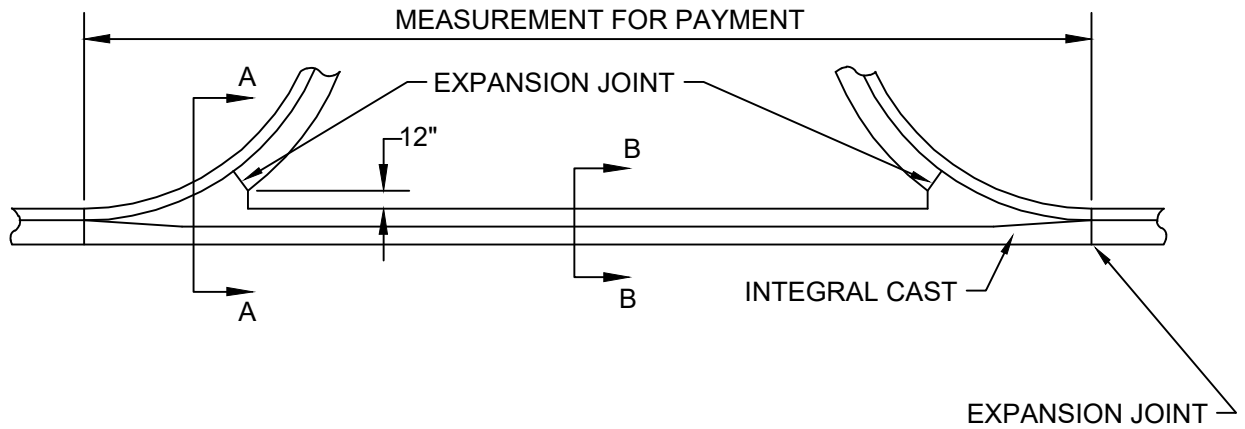
NOTE:  
MAX COMMERCIAL DRIVEWAY WIDTH TO BE 32' AT RIGHT-OF-WAY.



COMMERCIAL CONCRETE DRIVEWAY APRON WITH S.W.

LAST REVISION:  
JUL 2023

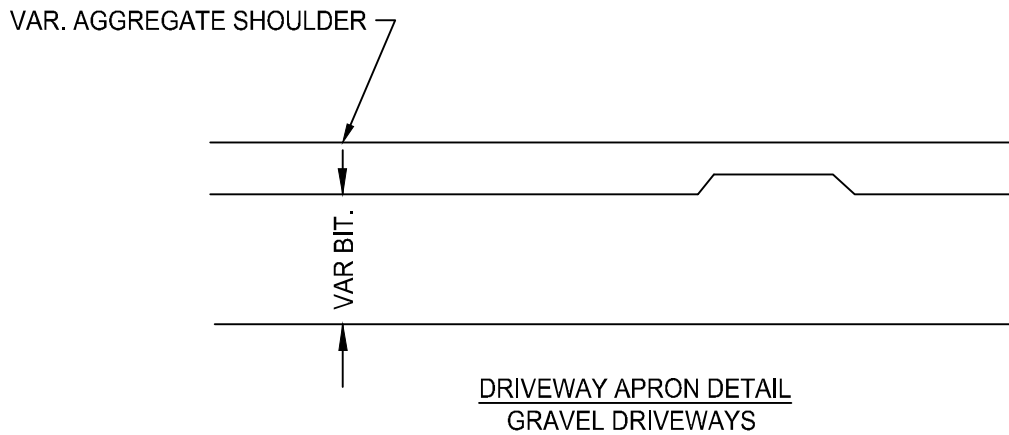
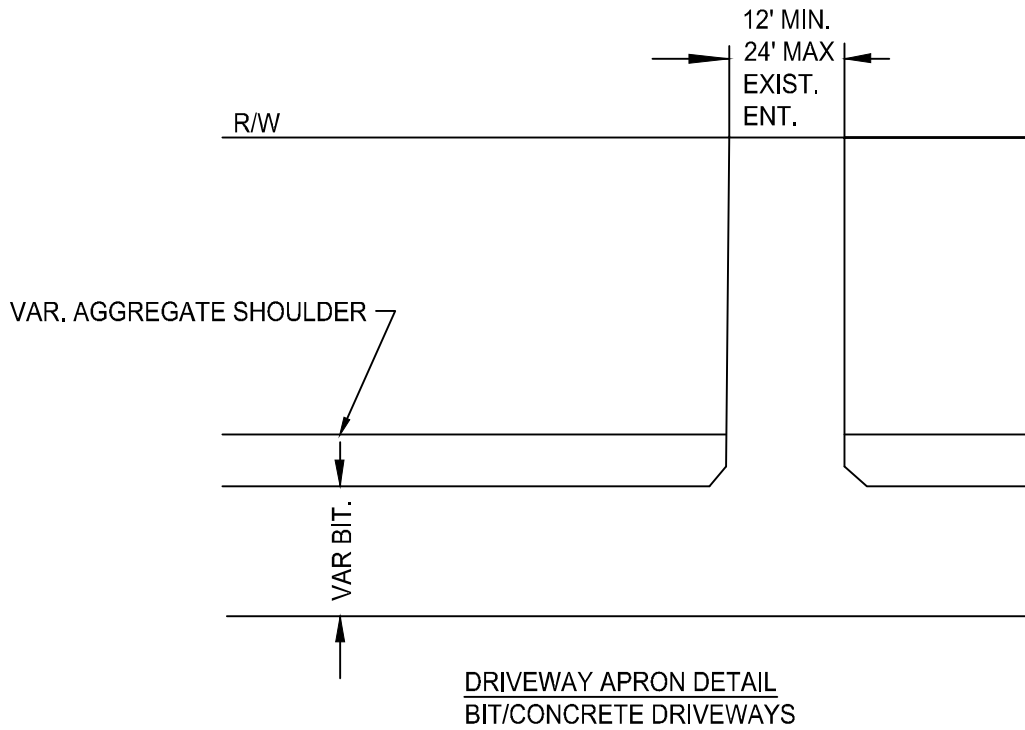
PLATE NO.  
STR-15



CONCRETE VALLEY GUTTER

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-16



NOTES:

1. FIELD ENTRANCES TO BE TREATED AS GRAVEL DRIVEWAYS
2. MINIMUM DRIVEWAY SLOPE = 0.50%
3. MAXIMUM DRIVEWAY SLOPE = 10.0%

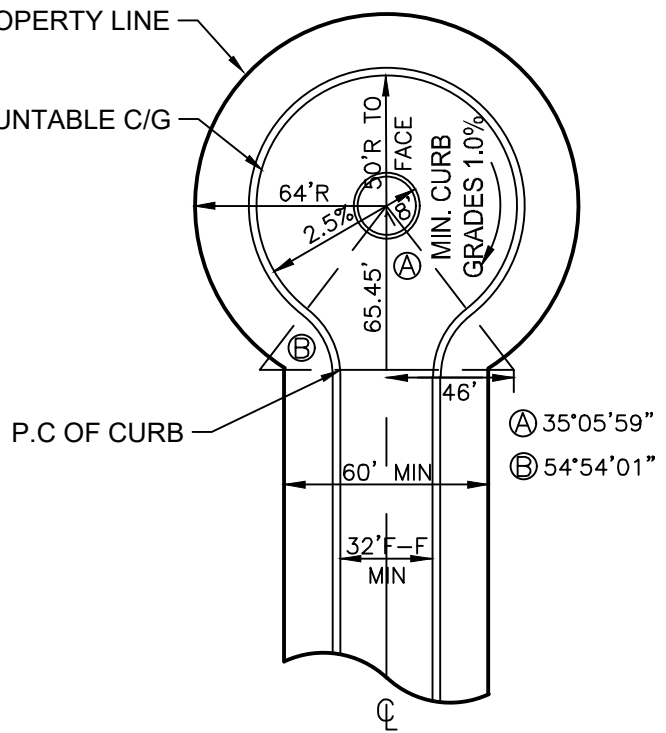
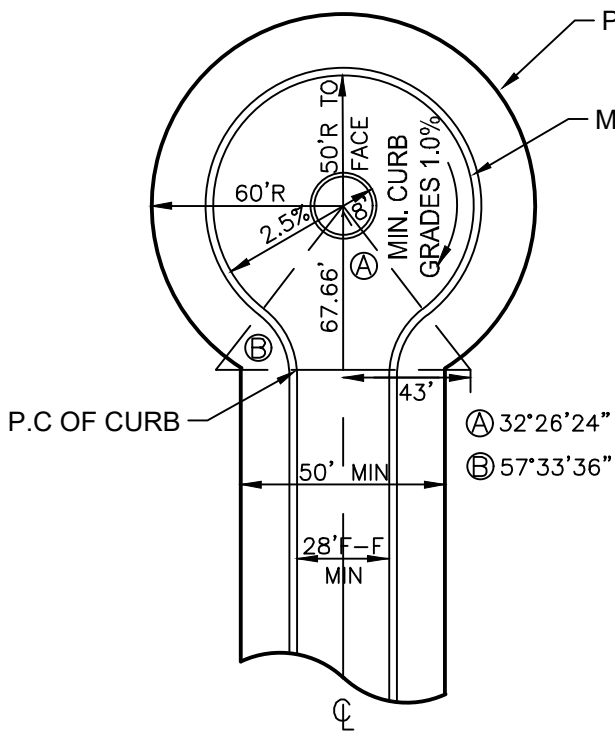
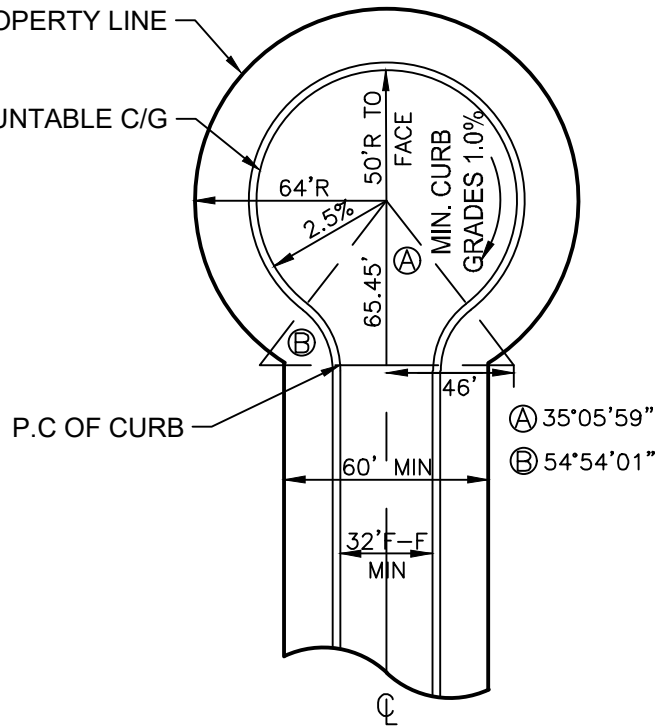
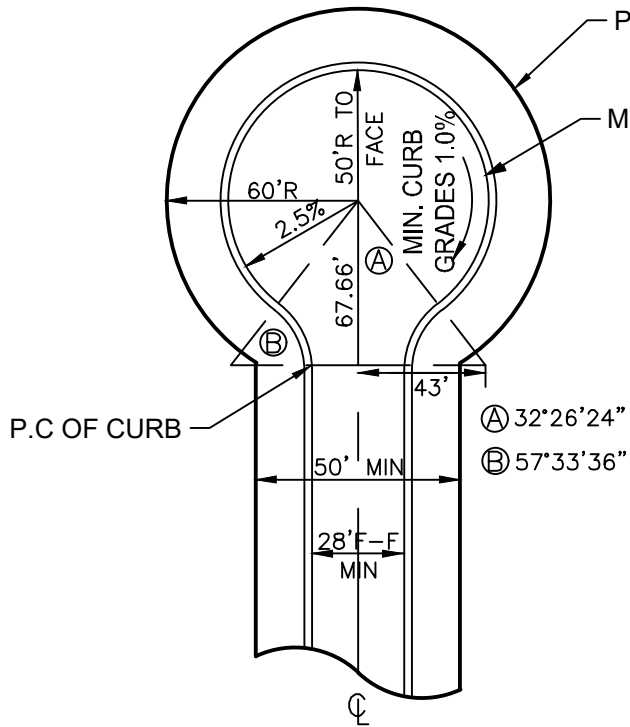


RESIDENTIAL DRIVEWAY APRON  
RURAL ROAD SECTION

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-17





NOTES:

1. ALL RADIUS MEASUREMENTS TAKEN FROM FACE OF CURB.
2. ALL CENTER ISLAND SURFACES MUST BE APPROVED BY CITY AND PRIVATELY MAINTAINED.



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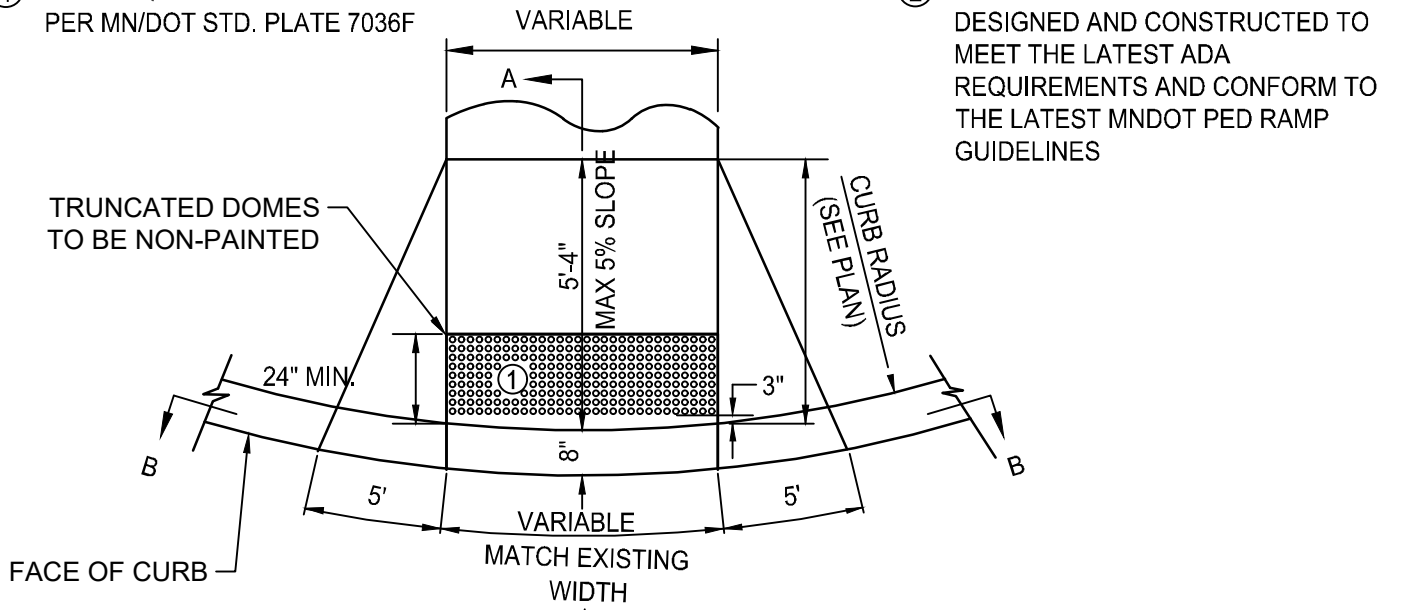
TYPICAL CUL-DE-SACS

LAST REVISION:  
JUL 2023

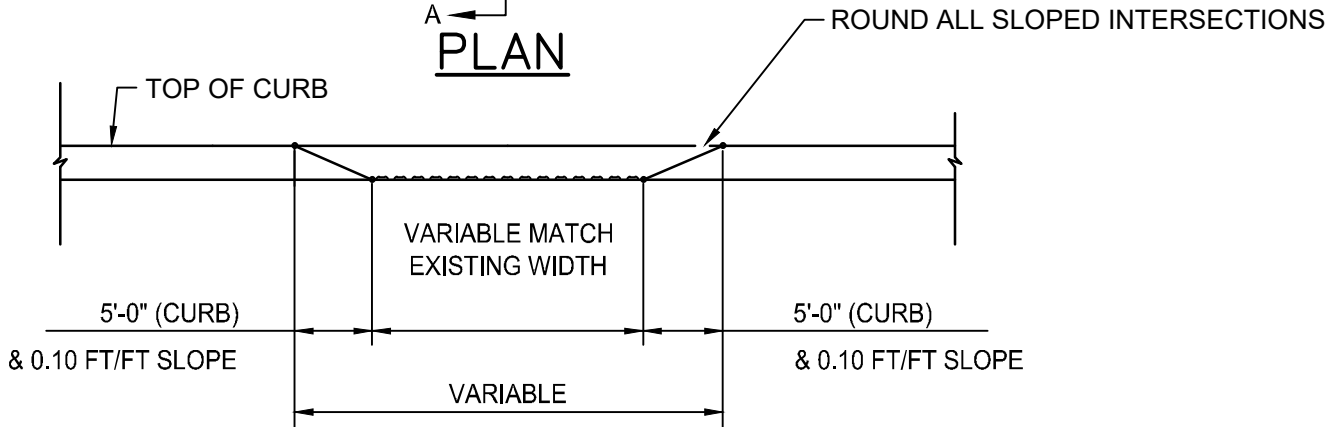
PLATE NO.  
STR-18

① ADA REQUIRED TRUNCATED DOME PER MN/DOT STD. PLATE 7036F

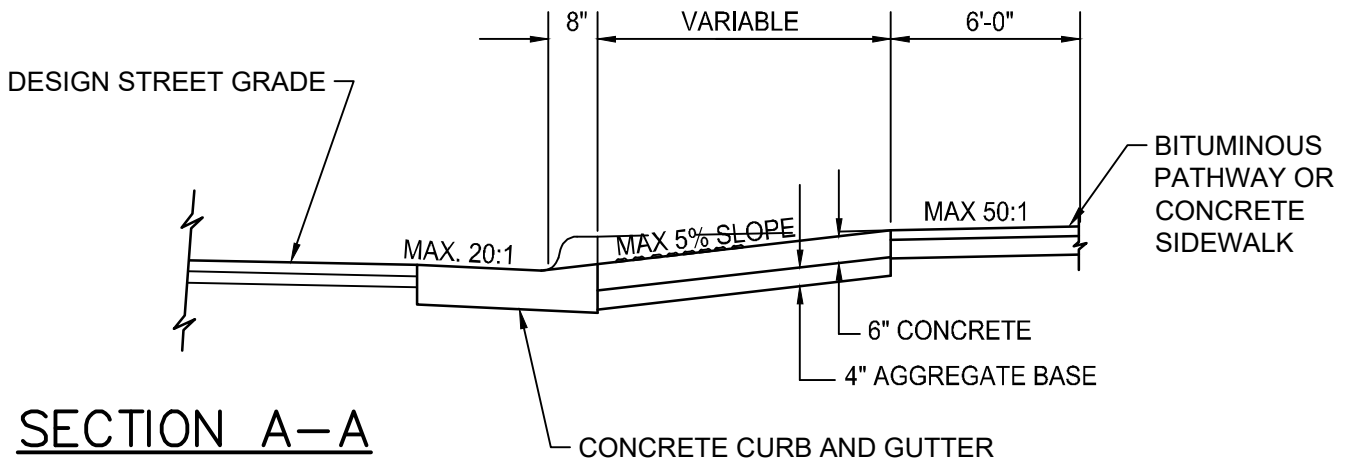
② ALL PEDESTRIAN RAMPS SHALL BE DESIGNED AND CONSTRUCTED TO MEET THE LATEST ADA REQUIREMENTS AND CONFORM TO THE LATEST MNDOT PED RAMP GUIDELINES



**PLAN**



**SECTION B-B**



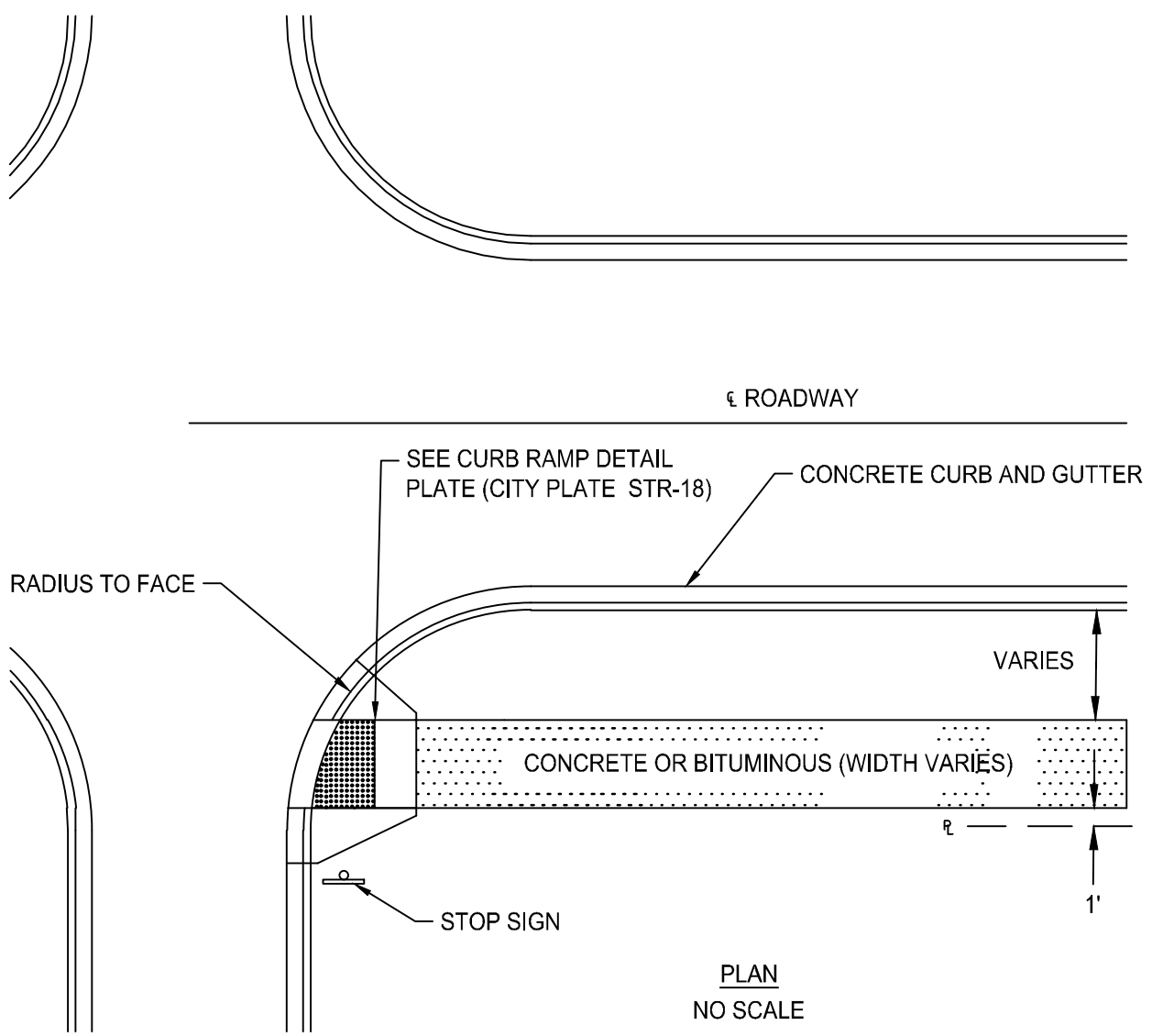
**SECTION A-A**



SIDEWALK CURB RAMP

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-19



NOTE: DIMENSIONS DEPEND ON TYPE OF PATHWAY OR SIDEWALK.



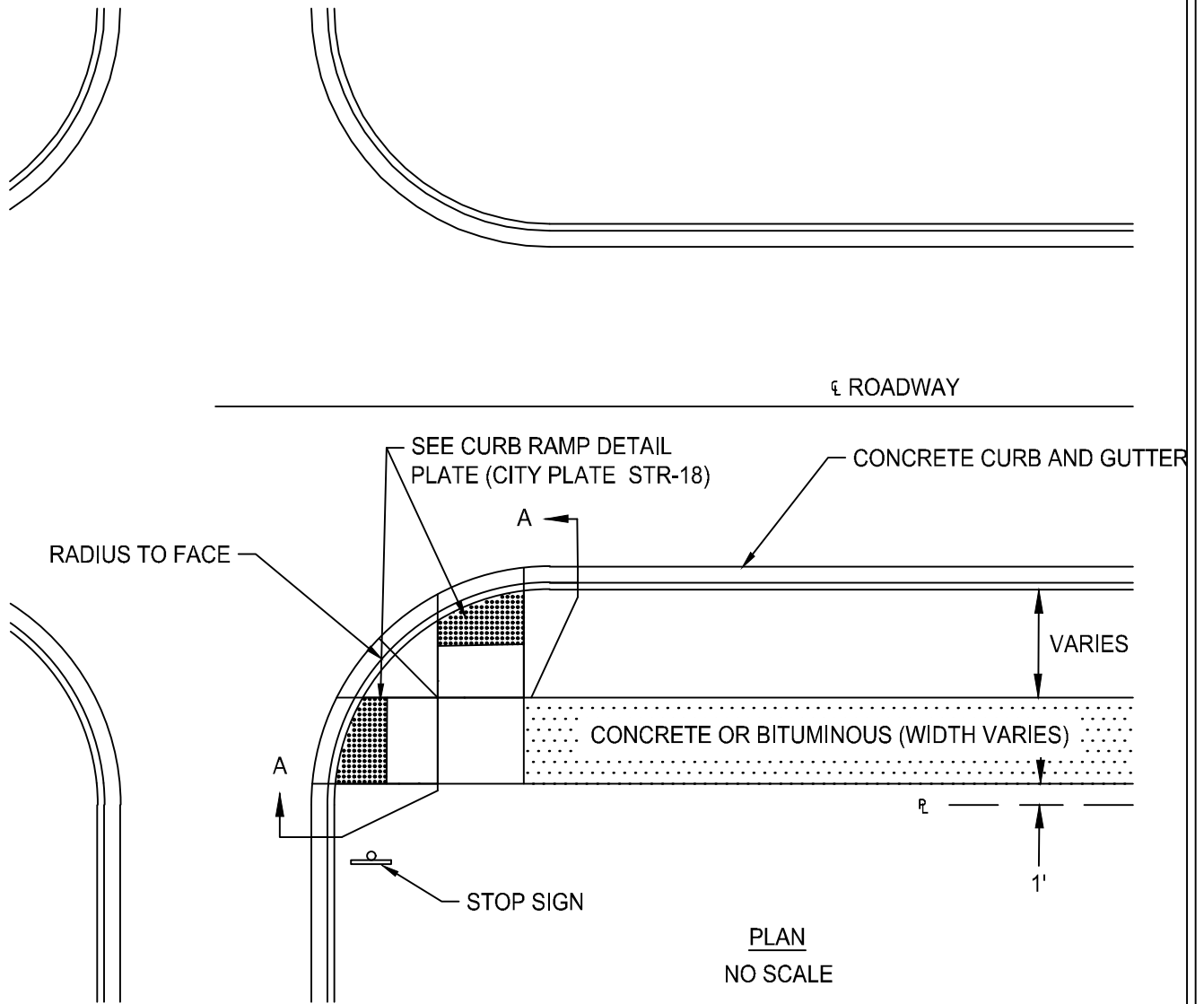
CORCORAN, MINNESOTA



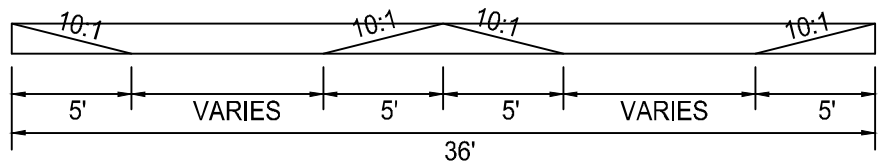
## SIDEWALK & BIKE PATH CURB RAMP GENERAL LOCATION

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-20



CITY ENGINEER MAY DETERMINE THAT RADIAL DOMES ARE NECESSARY IF TRANSITION DISTANCE BETWEEN TWO LANDING AREAS IS NOT SUFFICIENT OR IF DETERMINED NECESSARY BY ENGINEER.



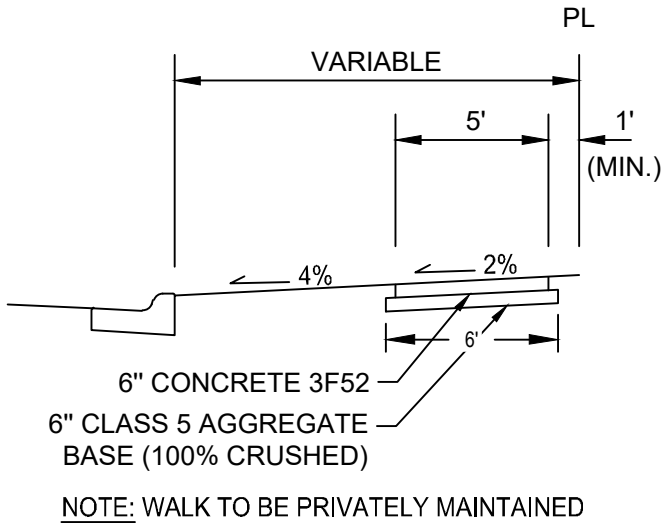
SECTION A-A  
PROFILE  
NO SCALE



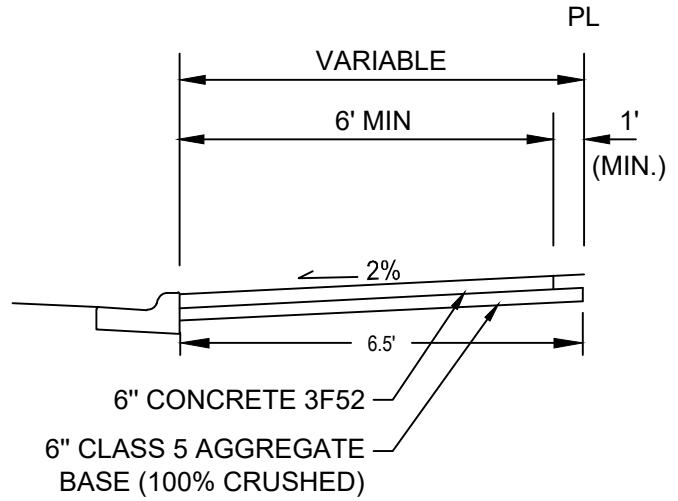
DOUBLE SIDEWALK & BIKE  
PATH CURB RAMP

LAST REVISION:  
JUL 2023

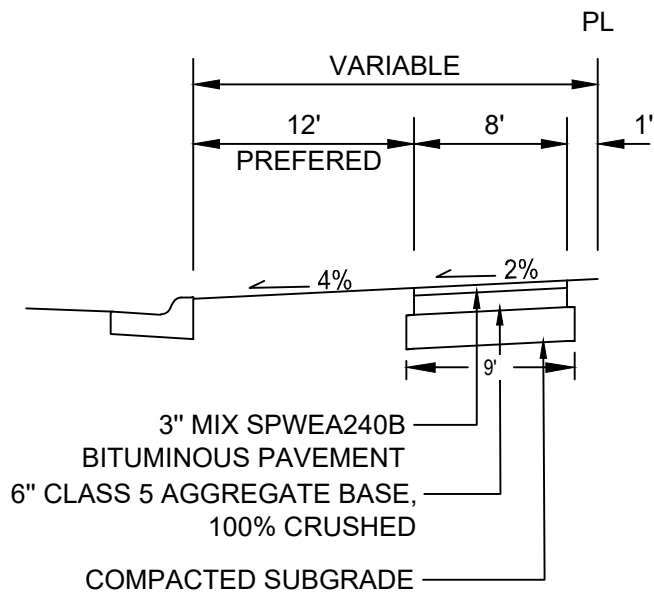
PLATE NO.  
STR-21



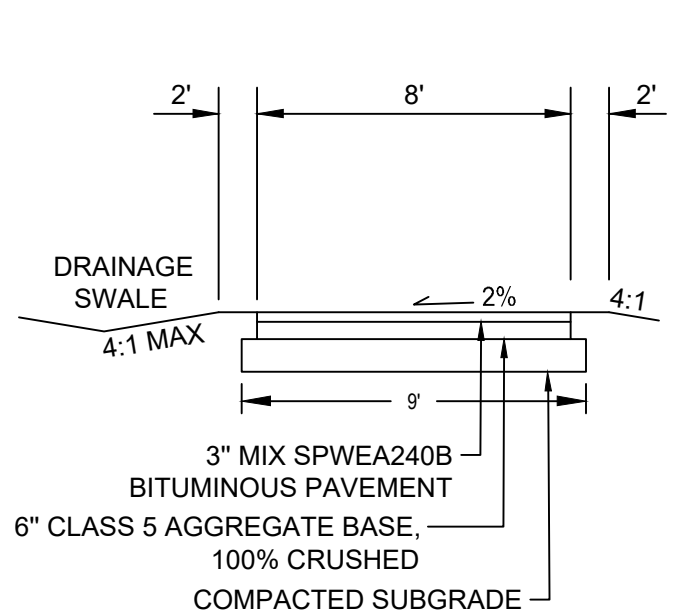
**NEIGHBORHOOD SIDEWALK**  
W/BOULEVARD



**NEIGHBORHOOD SIDEWALK**  
ADJACENT TO BACK OF CURB



**COMMUNITY ROADWAY TRAIL**  
URBAN SECTION



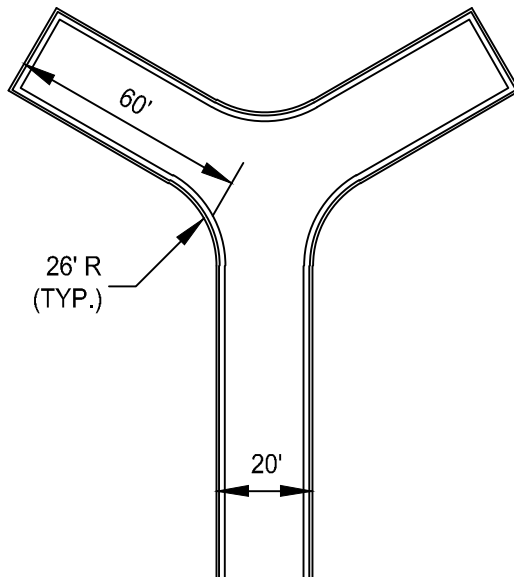
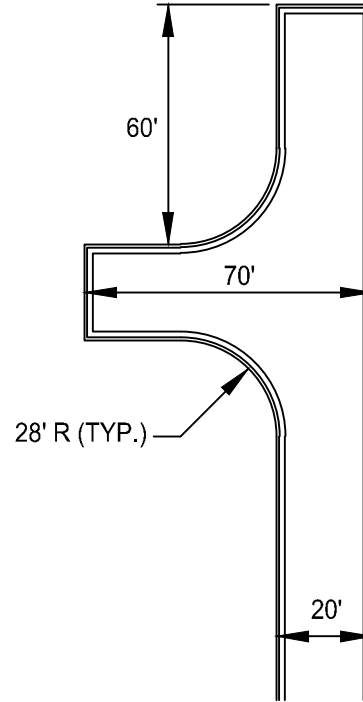
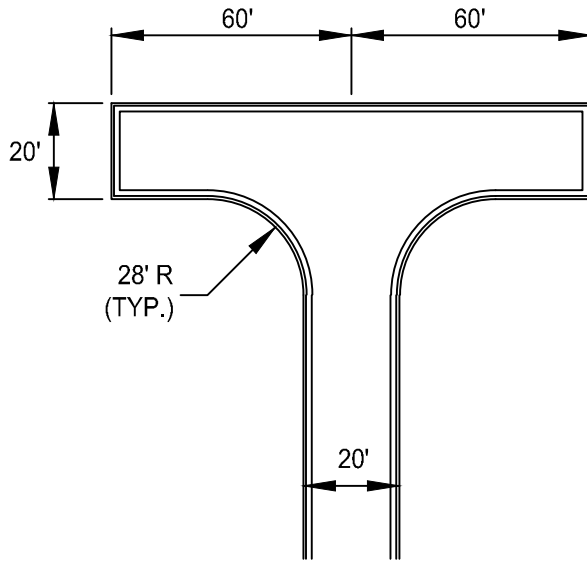
**COMMUNITY GREENWAY TRAIL**



CONCRETE WALKS AND  
BITUMINOUS TRAILS

LAST REVISION:  
JUL 2023

PLATE NO.  
STR-22



NOTES:

1. FIRE DEPARTMENT REQUIREMENTS FOR APPROVED ALTERNATE TURNAROUNDS ON FIRE DEPARTMENT ACCESS ROADS, AS REQUIRED BY MINNESOTA STATE FIRE CODE, 2015 EDITION
2. TURNAROUNDS MAY BE SUBSTITUTED FOR CUL-DE-SACS IN PRIVATE DEVELOPMENTS WITH THE CITY ENGINEER'S APPROVAL.
3. CUL-DE-SAC TO BE CONSTRUCTED WITH A 45' RADIUS (MINIMUM).



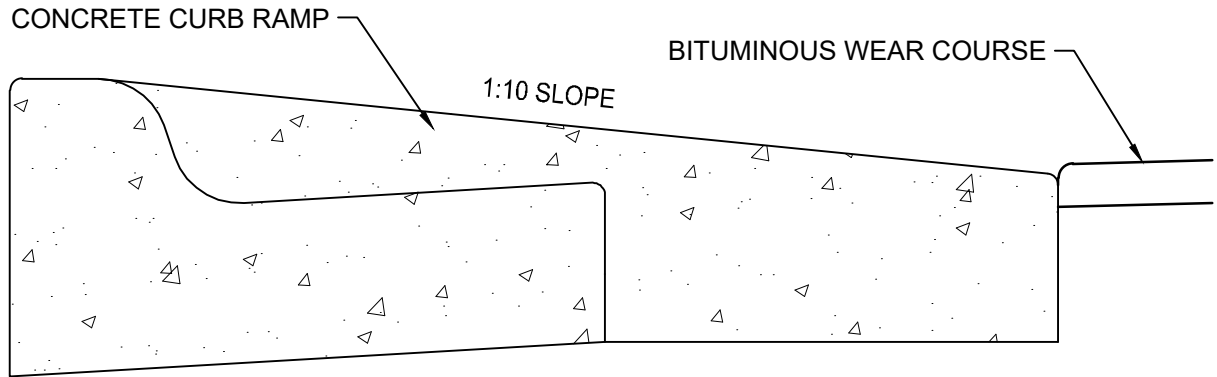
CORCORAN, MINNESOTA



PRIVATE DEVELOPMENT  
TURNAROUND

LAST REVISION:  
JUL 2023

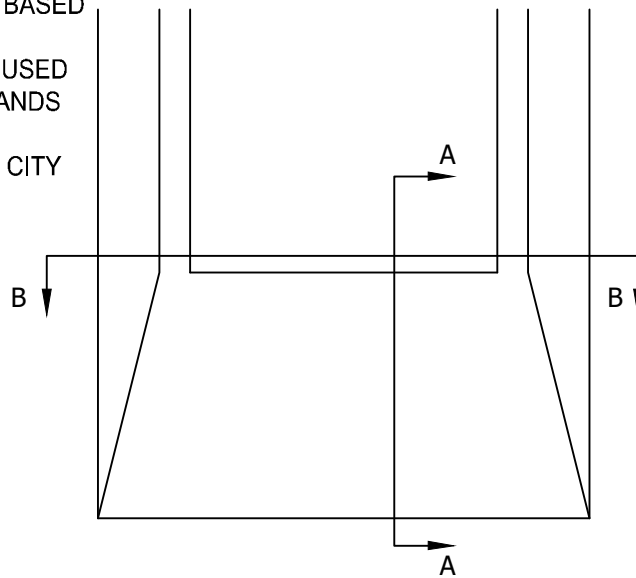
PLATE NO.  
STR-23



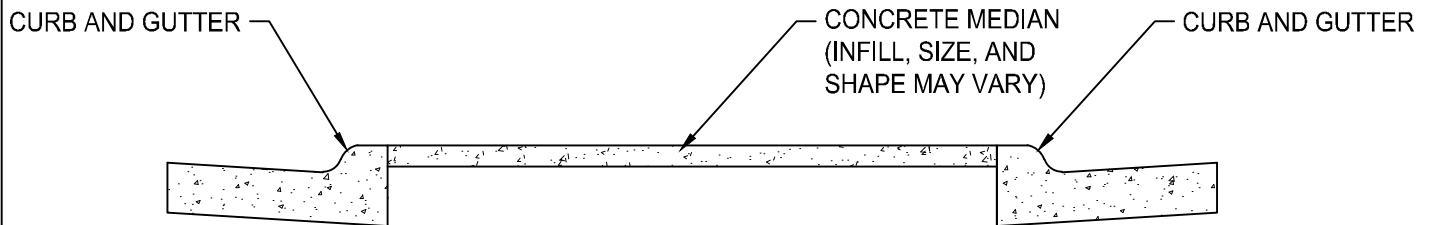
SECTION A-A

NOTES:

1. RADIUS WILL VARY BASED ON ISLAND SIZE.
2. CURB RAMP TO BE USED WHEN CENTER ISLANDS ARE PRESENT. COORDINATE WITH CITY ENGINEER.



PLAN



SECTION B-B



CORCORAN, MINNESOTA



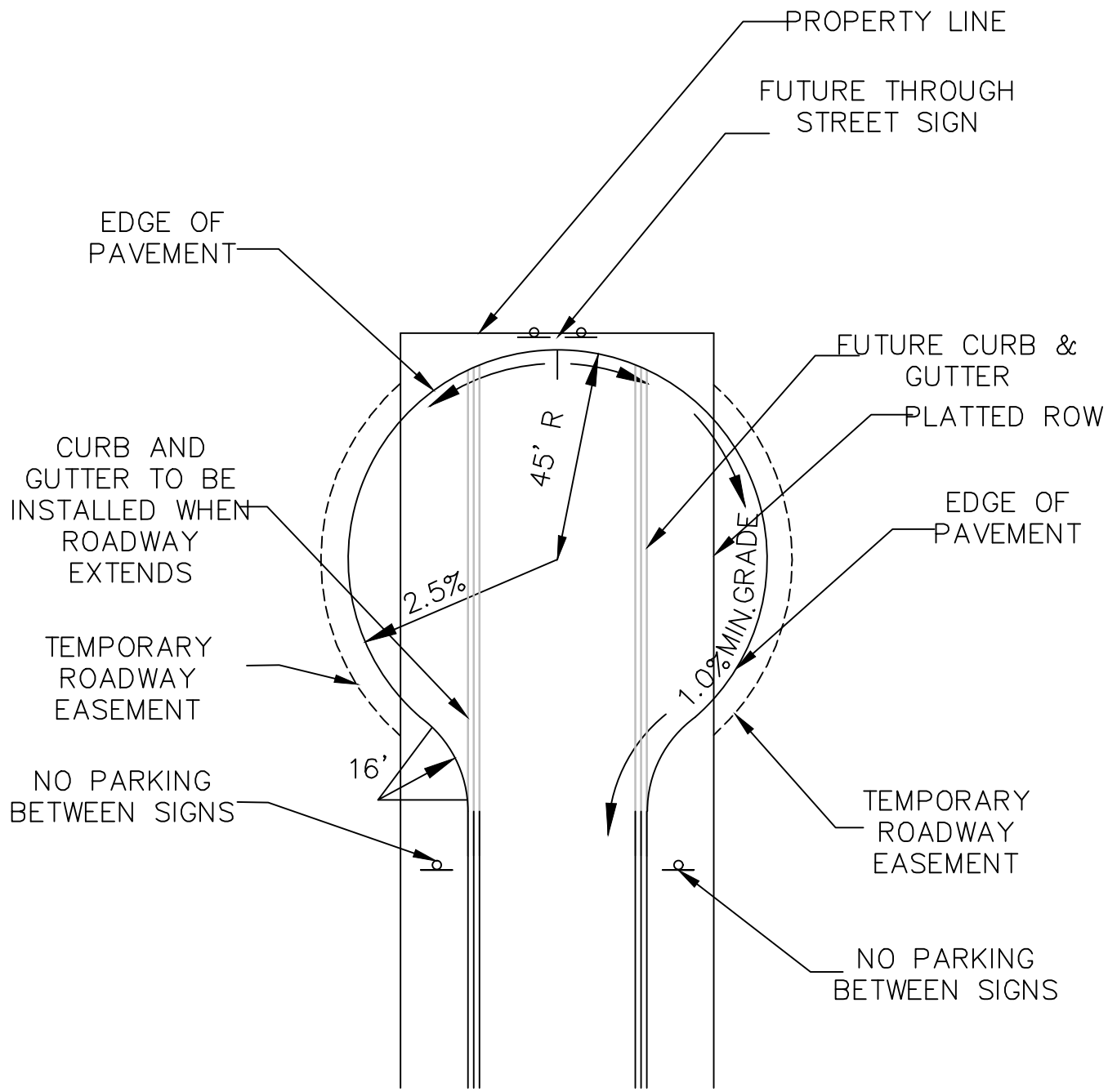
CENTER ISLAND CURB RAMP

LAST REVISION:

JUL 2023

PLATE NO.

STR-24



NOTE:

1. ALL RADIUS MEASUREMENTS TAKEN FROM FACE OF CURB.
2. NO BUILDING PERMIT WILL BE ALLOWED UNTIL TEMPORARY TURNAROUND IS INSTALLE

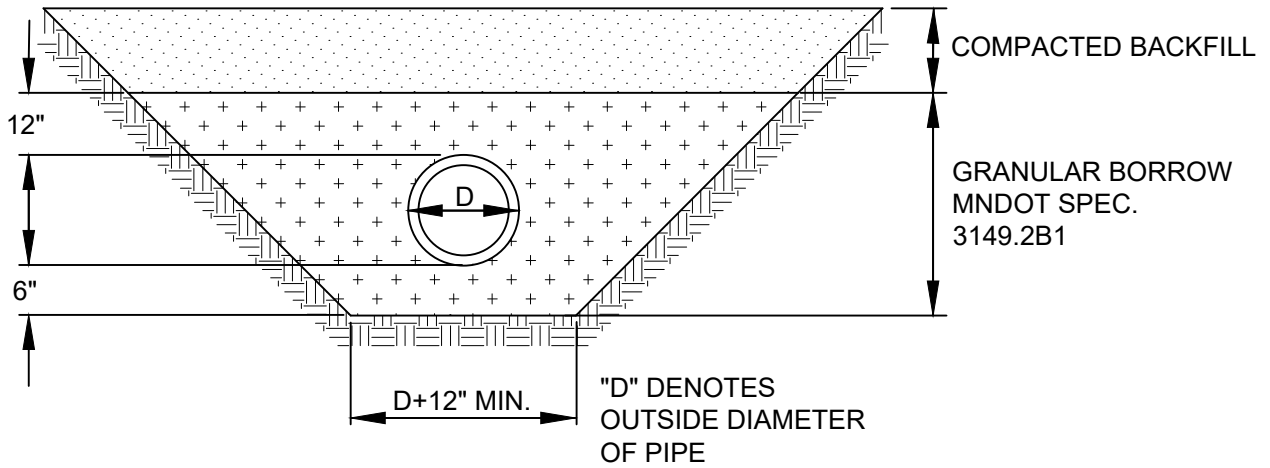


TEMPORARY CUL-DE-SAC

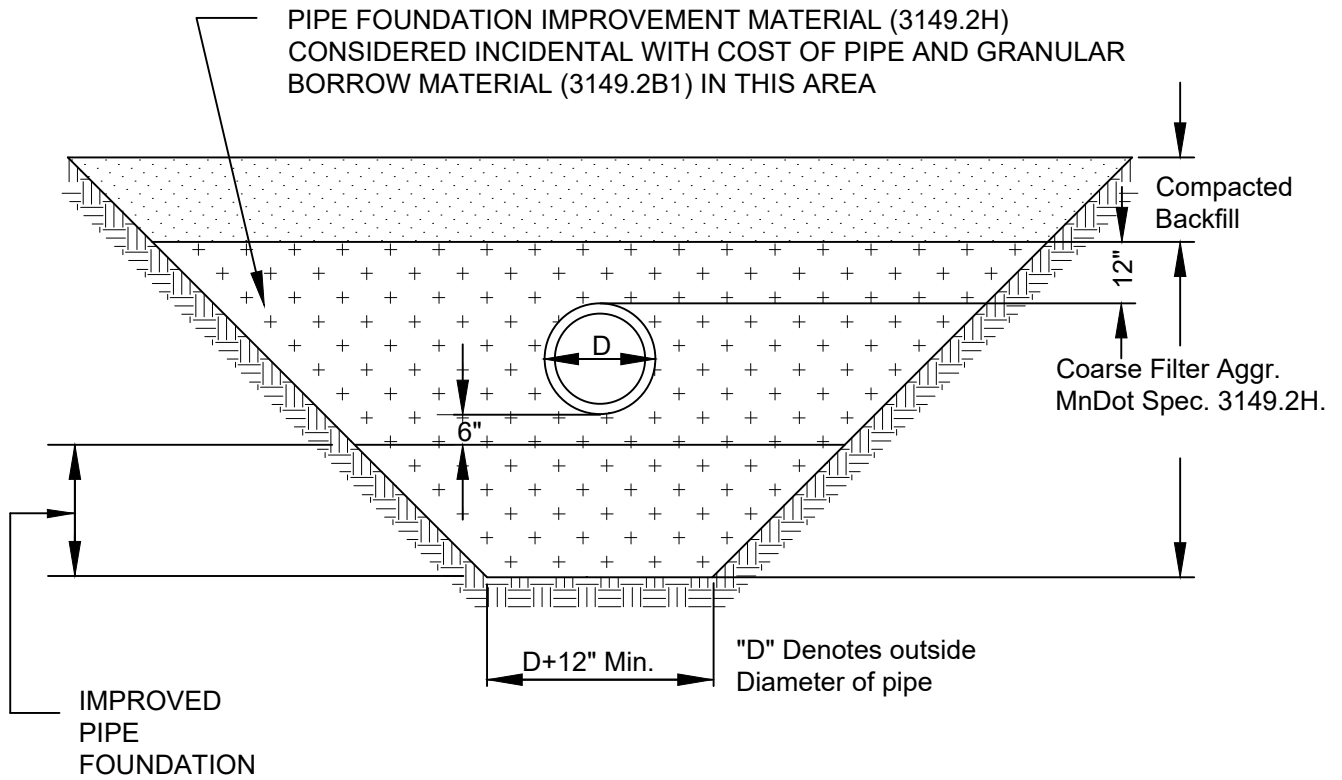
LAST REVISION:  
JUL 2023

PLATE NO.  
STR-25





PIPE FOUNDATION & BEDDING IN GOOD SOILS



PIPE FOUNDATION & BEDDING IN POOR SOILS

NOTE:

1. ALL SDR-35 PVC SHALL BE USED TO A DEPTH NOT TO EXCEED 16'. SDR-26 PVC SHALL BE USED FOR DEPTHS GREATER THAN 16'. C-900 PVC SHALL BE USED FOR DEPTHS GREATER THAN 25'.



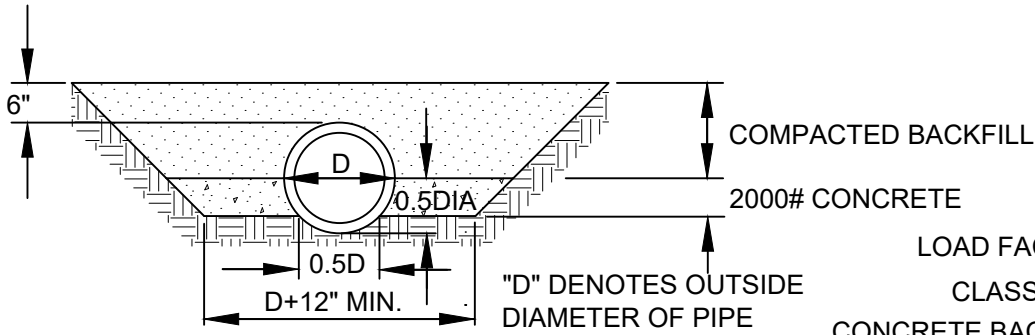
CORCORAN, MINNESOTA



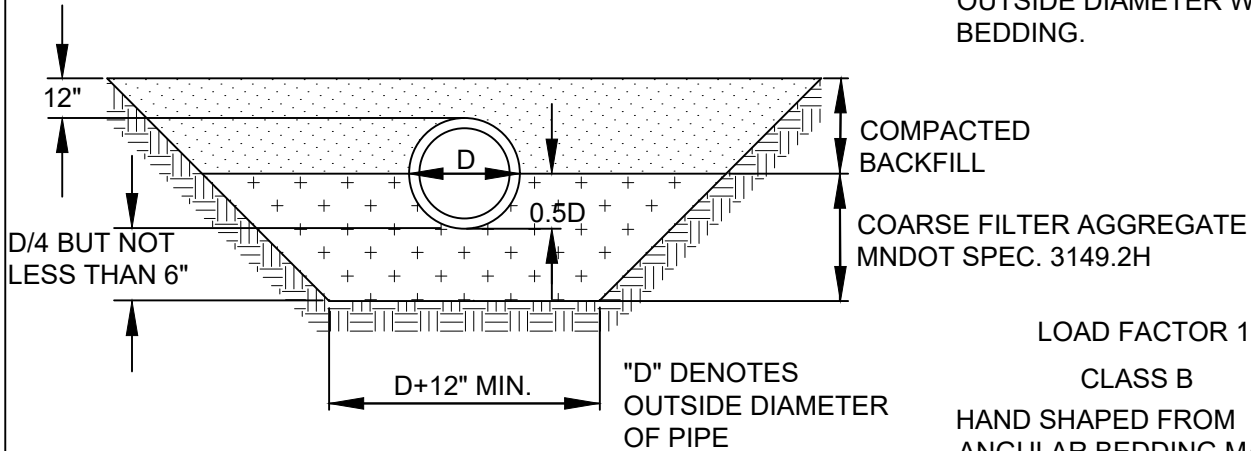
BEDDING METHODS FOR PVC

LAST REVISION:  
JUL 2023

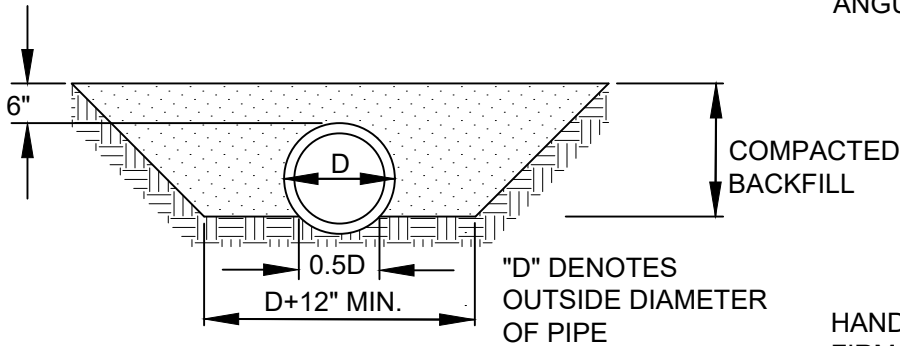
PLATE NO.  
BED-1



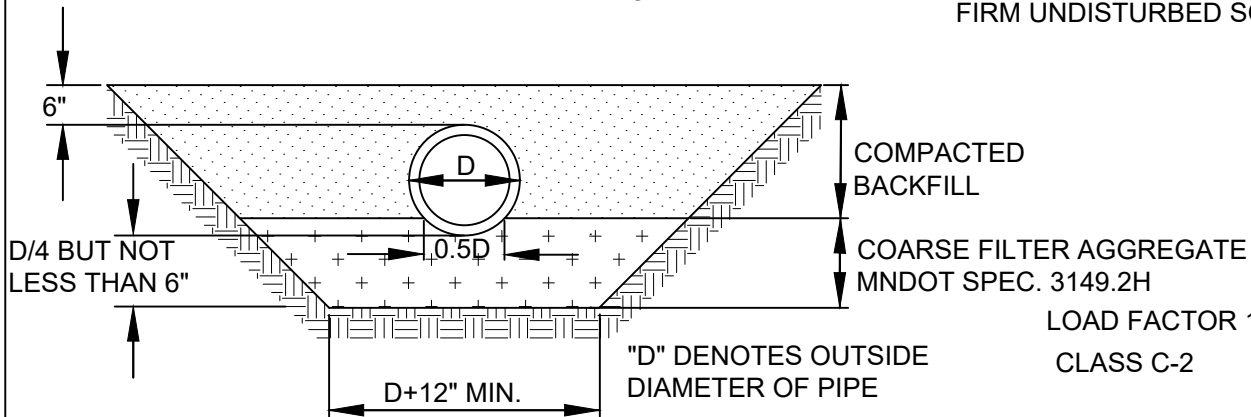
LOAD FACTOR 2.3  
 CLASS A  
 CONCRETE BACKFILL TO 0.5 OF  
 OUTSIDE DIAMETER WITH SHAPED  
 BEDDING.



LOAD FACTOR 1.9  
 CLASS B  
 HAND SHAPED FROM  
 ANGULAR BEDDING MATERIAL



LOAD FACTOR 1.5  
 CLASS C-1  
 HAND SHAPED FROM  
 FIRM UNDISTURBED SOIL



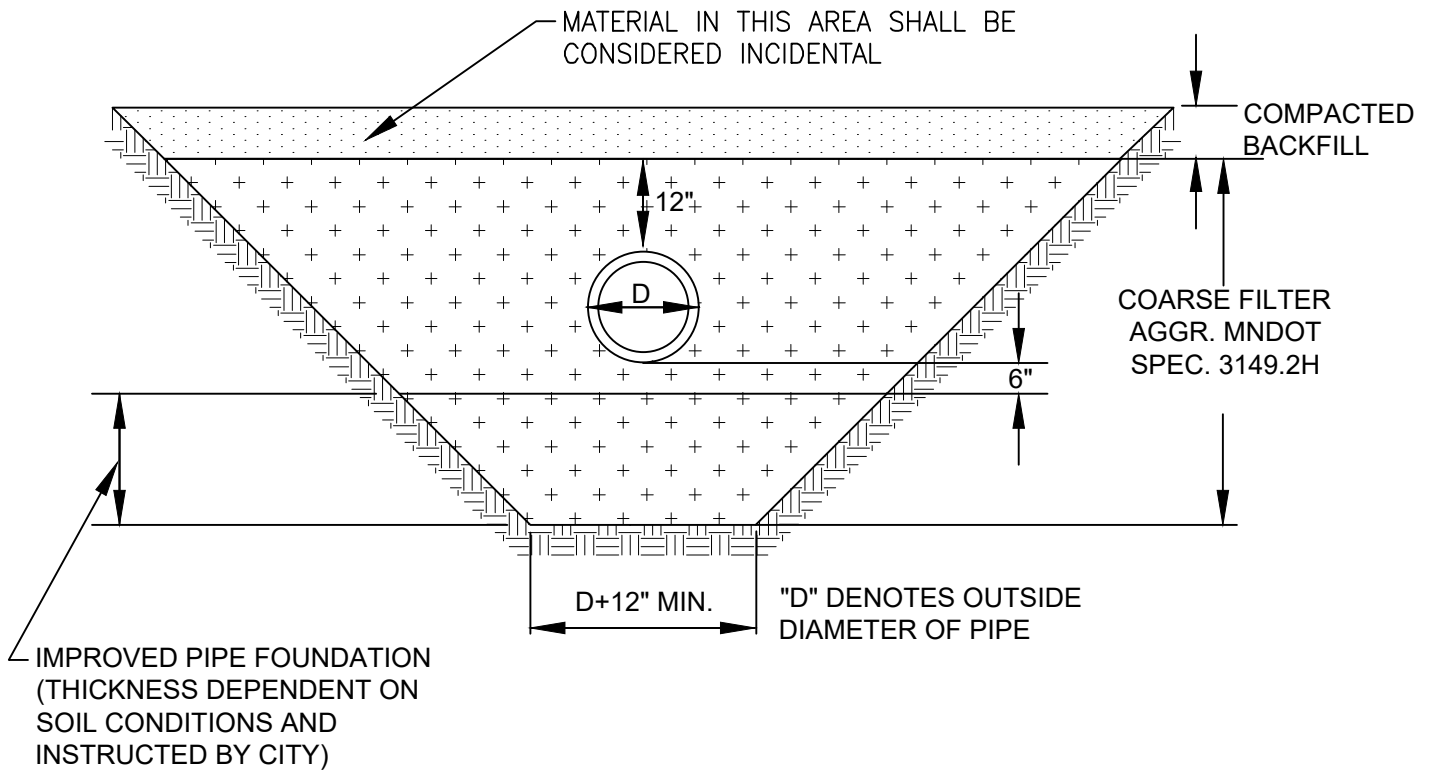
LOAD FACTOR 1.5  
 CLASS C-2  
 HAND SHAPED FROM  
 ANGULAR BEDDING  
 MATERIAL



## BEDDING METHODS FOR RCP AND DIP

LAST REVISION:  
 JUL 2023

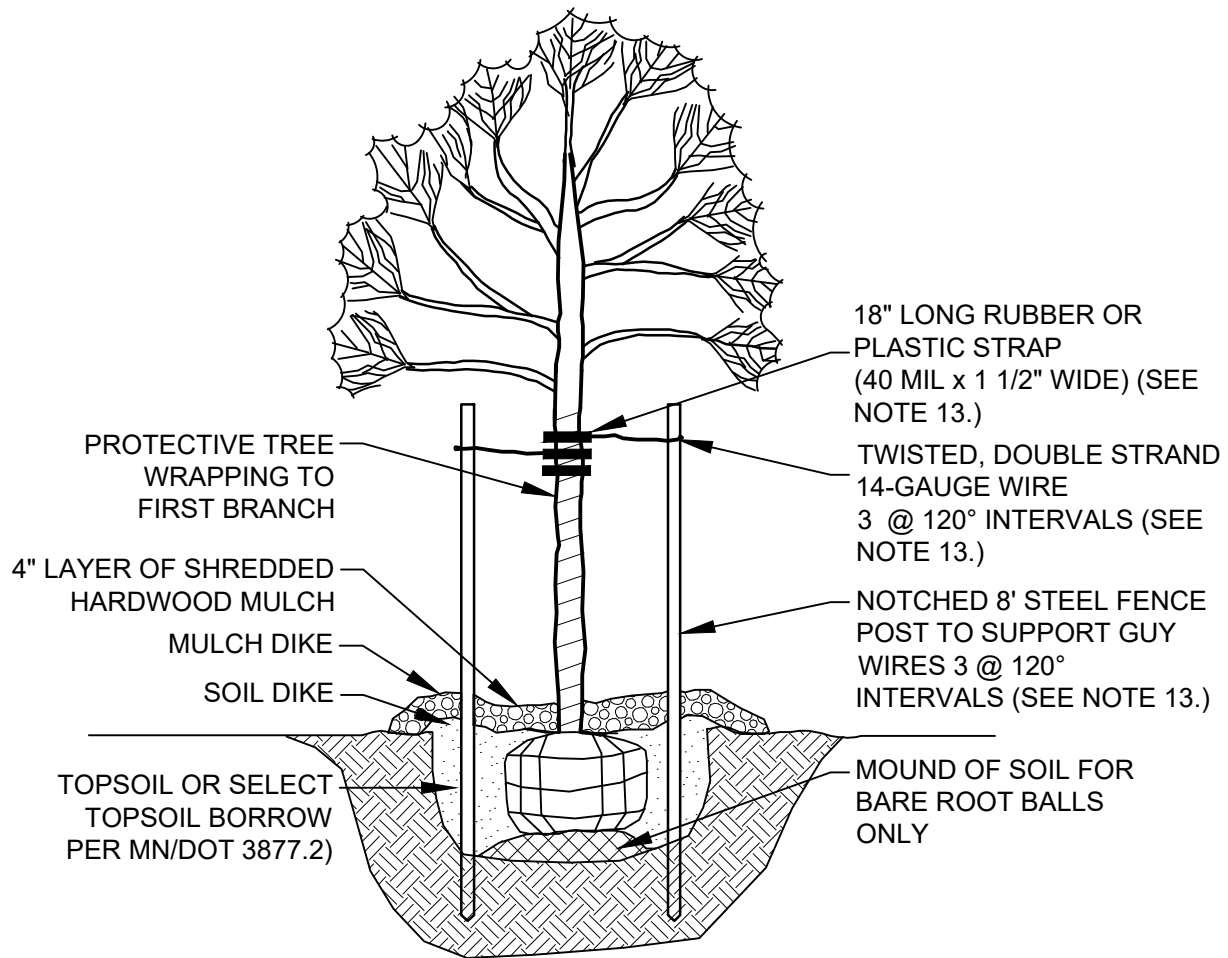
PLATE NO.  
 BED-2



IMPROVED PIPE FOUNDATION  
FOR RCP AND DIP

LAST REVISION:  
JUL 2023

PLATE NO.  
BED-3



**NOTES:**

1. PLANTS TO BE INSTALLED PER THE AMERICAN ASSOCIATION OF NURSEYMEN (AAN) STANDARD PLANTING PRACTICES.
2. PROVIDE & INSTALL PLANT MATERIALS THAT ARE THE SIZE, TYPE, AND SPECIES INDICATED IN PLANS.
3. BEFORE PLANTING, REMOVE DEAD OR DAMAGED BRANCHES.
4. DIG HOLE 12" LARGER THAN ROOT BALL ON ALL SIDES.
5. SCARIFY BOTTOM OF HOLE.
6. LOOSEN BURLAP COVERING ON ROOT BALL. REMOVE TOP OF BURLAP ON BALLED & BURLAPPED MATERIALS.
7. IF BARE ROOTED, SET BARE ROOT CROWN ON MOUND & SPREAD ROOTS OVER & DOWN SIDES OF MOUND.
8. PLANT TREE SO TOP OF ROOT BALL IS FLUSH WITH TOP OF SOIL.
9. FILL HOLE  $\frac{2}{3}$  FULL OF SOIL & TAMP.
10. FILL REMAINING SPACE WITH WATER AND WAIT FOR IT TO SETTLE.
11. FINISH FILLING HOLE WITH SOIL AND MAKE A SOIL DIKE AROUND ROOT BALL.
12. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UTILITIES PRIOR TO DIGGING AND PLANT INSTALLATION.
13. TREE STAKING IS ILLUSTRATED AND SHALL BE UTILIZED ONLY IF NECESSARY. MAINTAIN TREES IN A PLUMB POSITION THROUGHOUT THE GUARANTEE PERIOD.



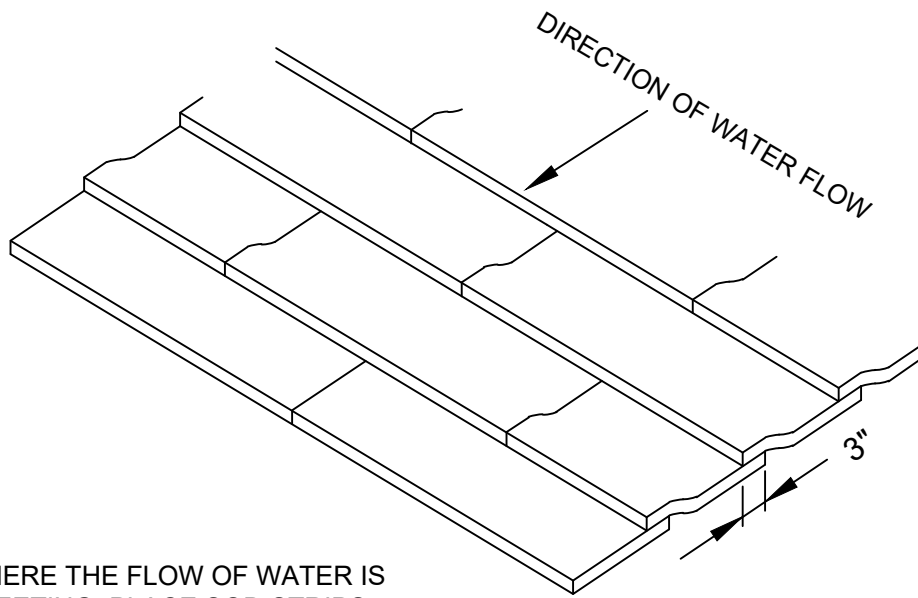
CORCORAN, MINNESOTA



## DECIDUOUS TREE PLANTING

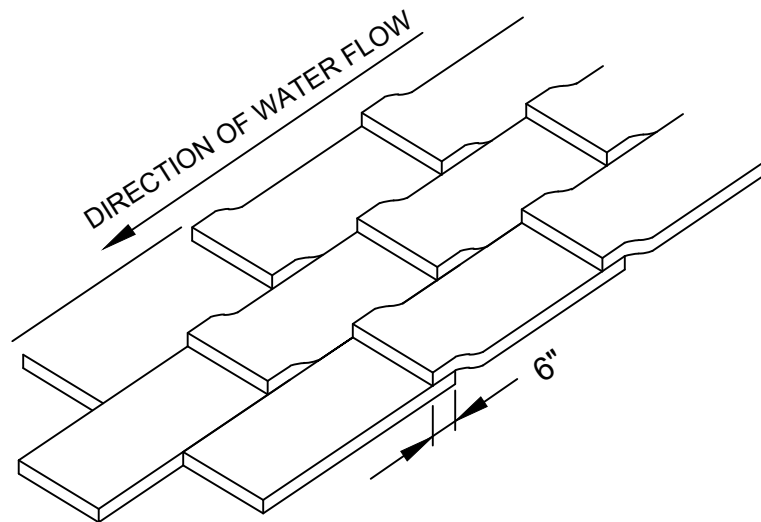
LAST REVISION:  
JUL 2023

PLATE NO.  
LAN-1



WHERE THE FLOW OF WATER IS SHEETING, PLACE SOD STRIPS PERPENDICULAR TO THE DIRECTION OF WATER FLOW

SHINGLING SOD



OVERLAPPING SOD

WHERE THE FLOW OF WATER IS CONCENTRATED, PLACE SOD STRIPS PARALLEL TO THE DIRECTION OF WATER FLOW

NOTES:

1. BEFORE LAYING SOD, RAKE SOIL TO BREAK CLODS & REMOVE DEBRIS.
2. INSURE CONTACT BETWEEN SOD AND NATIVE SOIL.



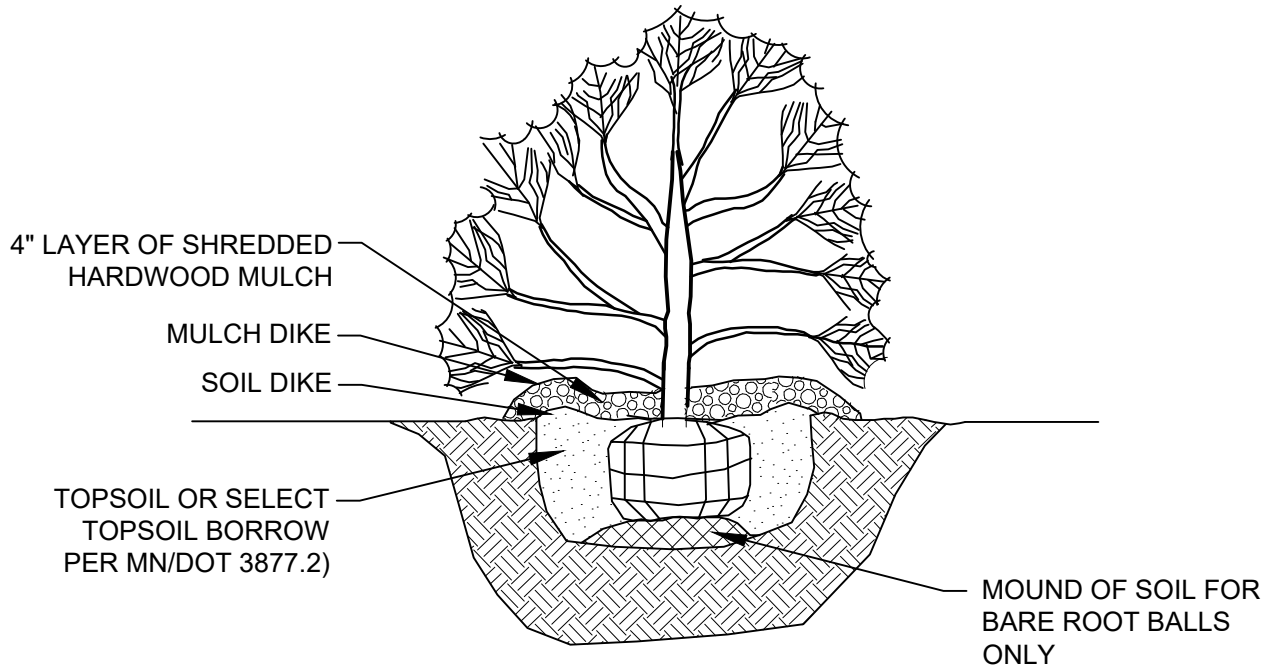
CORCORAN, MINNESOTA



CONIFEROUS TREE PLANTING

LAST REVISION:  
JUL 2023

PLATE NO.  
LAN-2



NOTES:

1. PLANTS TO BE INSTALLED AS PER THE AMERICAN ASSOCIATION OF NURSEYMAN (AAN) STANDARD PLANTING PRACTICES.
2. PROVIDE & INSTALL PLANT MATERIALS THAT ARE THE SIZE, TYPE, AND SPECIES INDICATED IN PLANS.
3. BEFORE PLANTING, REMOVE DEAD OR DAMAGED BRANCHES.
4. DIG HOLE TWO TIMES ROOT BALL WIDTH AND 6" DEEPER THAN BALL HEIGHT.
5. SCARIFY BOTTOM OF HOLE.
6. LOOSEN BURLAP COVERING ON ROOT BALL. REMOVE TOP OF BURLAP ON BALLED & BURLAPPED MATERIALS.
7. IF BARE ROOTED, SET BARE ROOT CROWN ON MOUND & SPREAD ROOTS OVER & DOWN SIDES OF MOUND.
8. PLANT TREE SO TOP OF ROOT BALL IS FLUSH WITH TOP OF SOIL.
9. FILL HOLE  $\frac{2}{3}$  FULL OF SOIL & TAMP.
10. FILL REMAINING SPACE WITH WATER AND WAIT FOR IT TO SETTLE.
11. FINISH FILLING HOLE WITH SOIL AND MAKE A SOIL DIKE AROUND ROOT BALL.
12. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO DIGGING AND PLANT INSTALLATION.



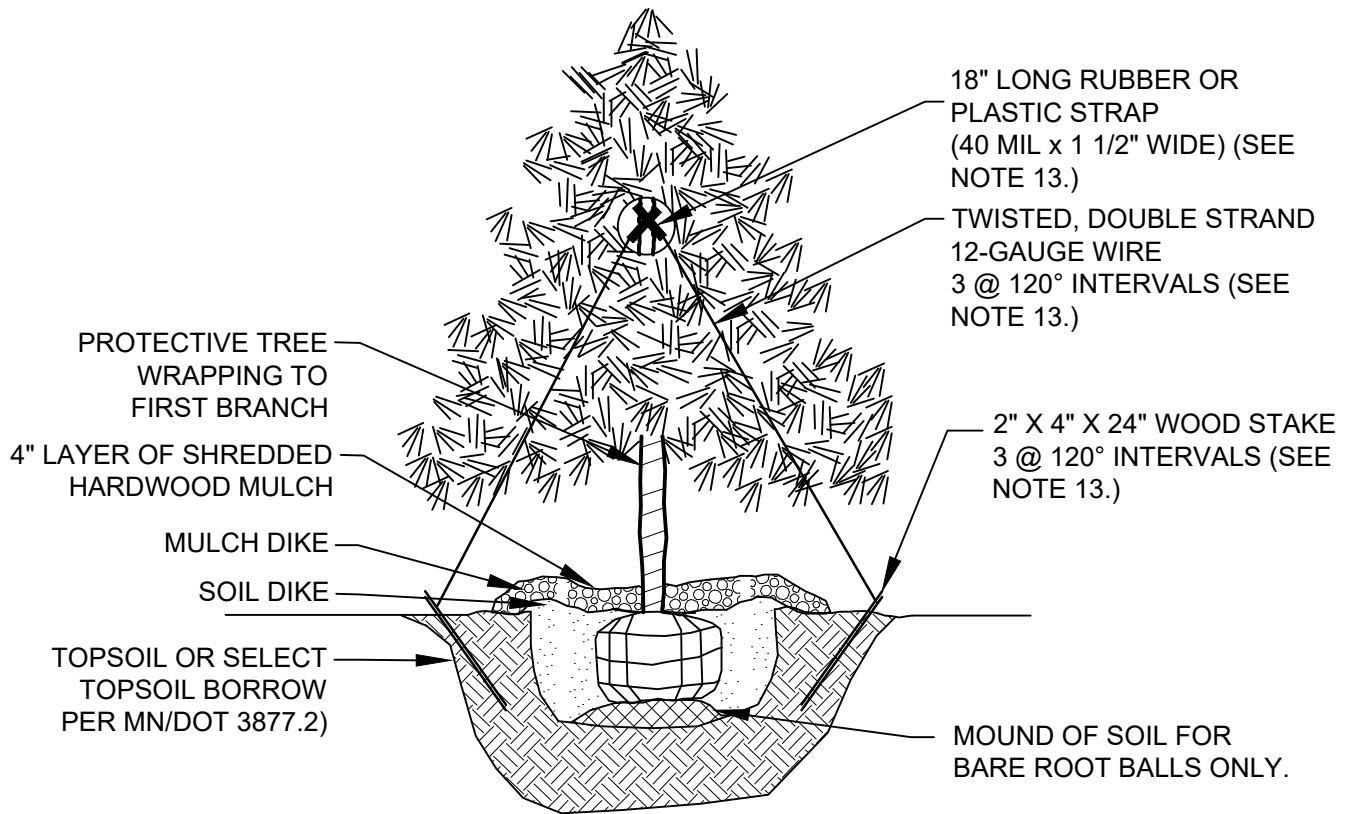
CORCORAN, MINNESOTA



## DECIDUOUS SHRUB PLANTING

LAST REVISION:  
JUL 2023

PLATE NO.  
LAN-3



NOTES:

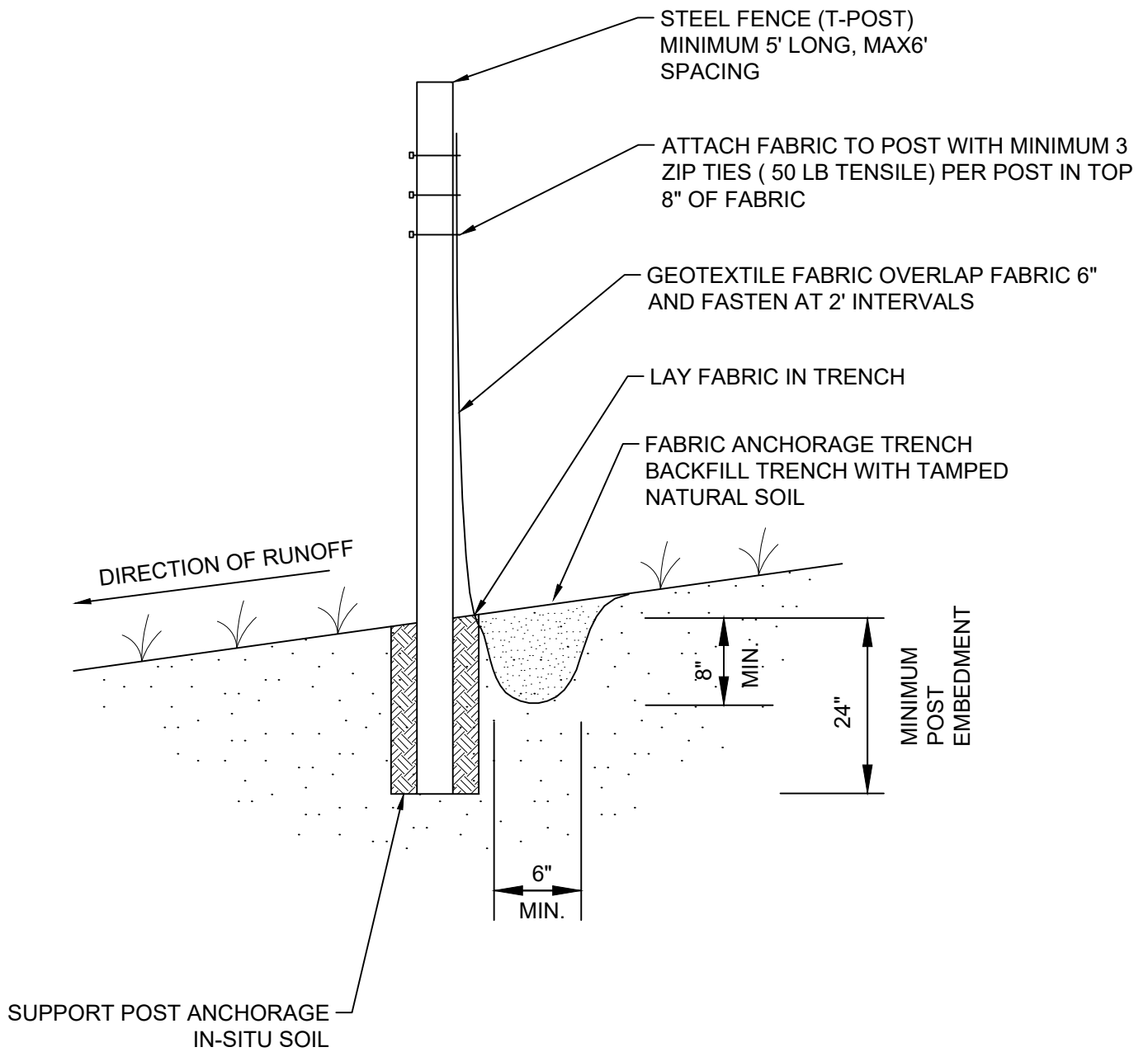
1. PLANTS TO BE INSTALLED PER THE AMERICAN ASSOCIATION OF NURSEYMEN (AAN) STANDARD PLANTING PRACTICES.
2. PROVIDE & INSTALL PLANT MATERIALS THAT ARE THE SIZE, TYPE, AND SPECIES INDICATED IN PLANS.
3. BEFORE PLANTING, REMOVE DEAD OR DAMAGED BRANCHES.
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12. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UTILITIES PRIOR TO DIGGING AND PLANT INSTALLATION.
13. TREE STAKING IS ILLUSTRATED AND SHALL BE UTILIZED ONLY IF NECESSARY. MAINTAIN TREES IN A PLUMB POSITION THROUGHOUT THE GUARANTEE PERIOD.



SODDING

LAST REVISION:  
JUL 2023

PLATE NO.  
LAN-4

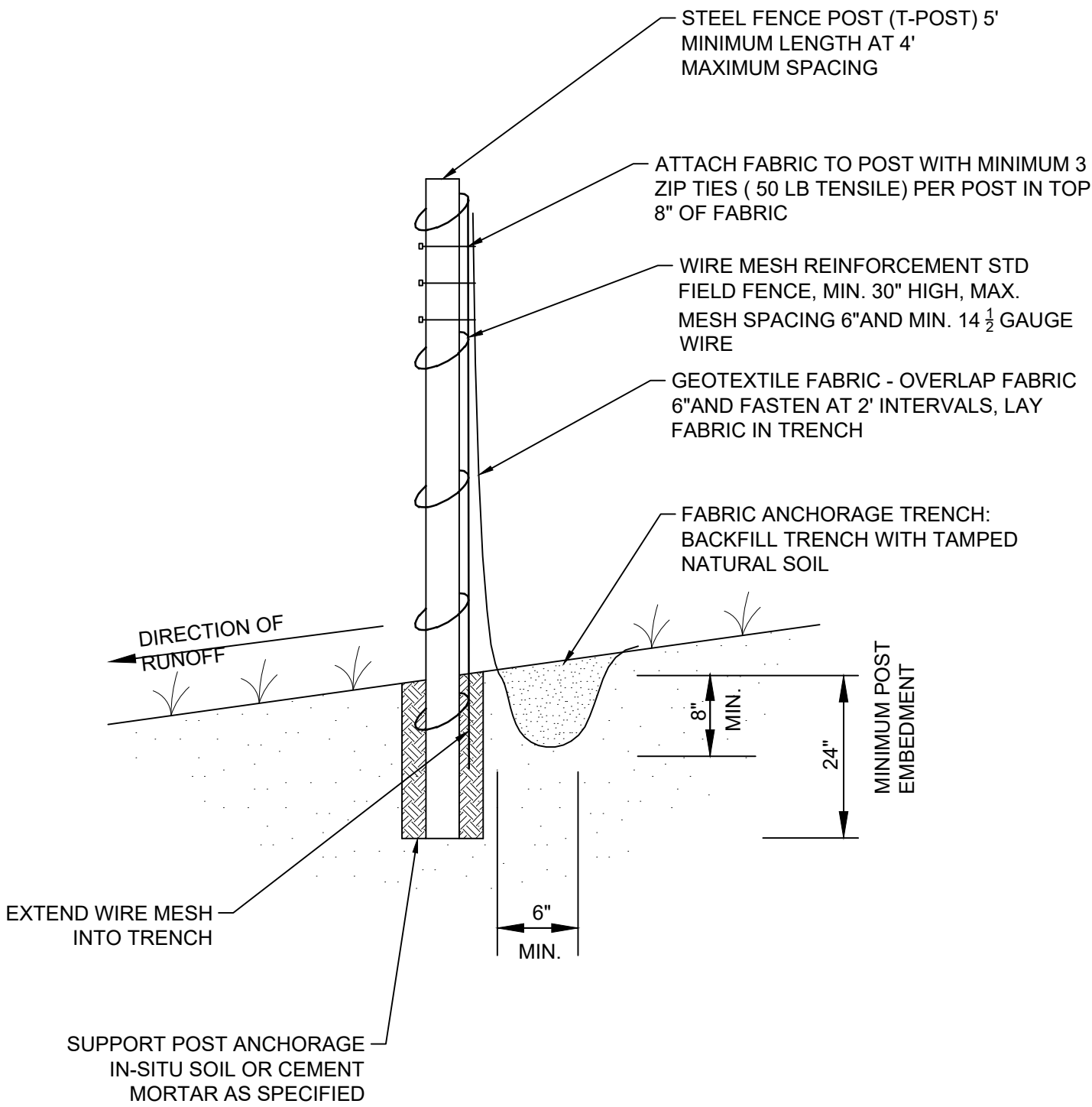


SILT FENCE MACHINE SLICED

LAST REVISION:  
JUL 2023

PLATE NO.  
ERO-1A

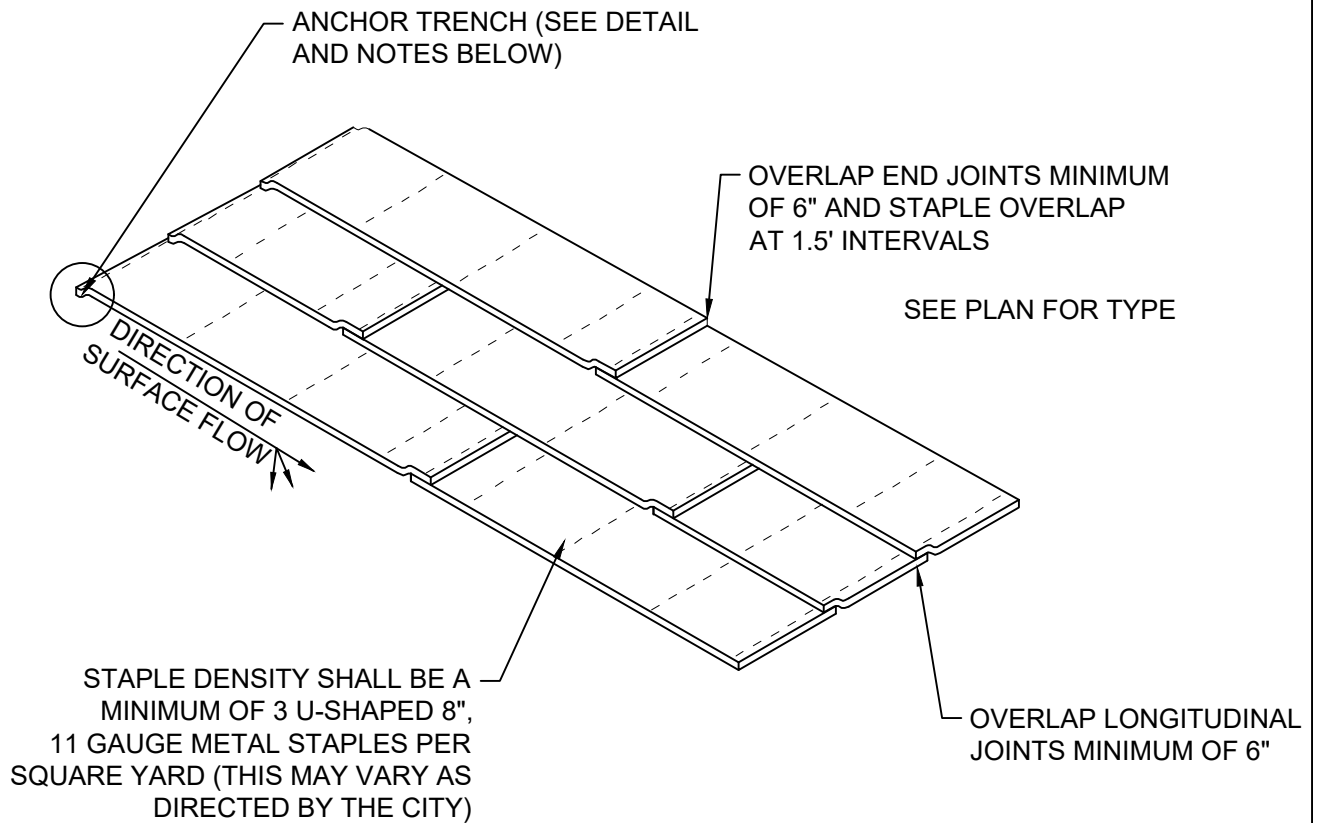




SILT FENCE HEAVY DUTY

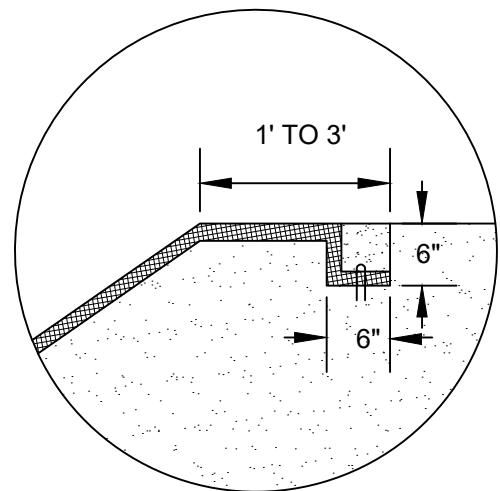
LAST REVISION:  
JUL 2023

PLATE NO.  
ERO-1B



**ANCHOR TRENCH**

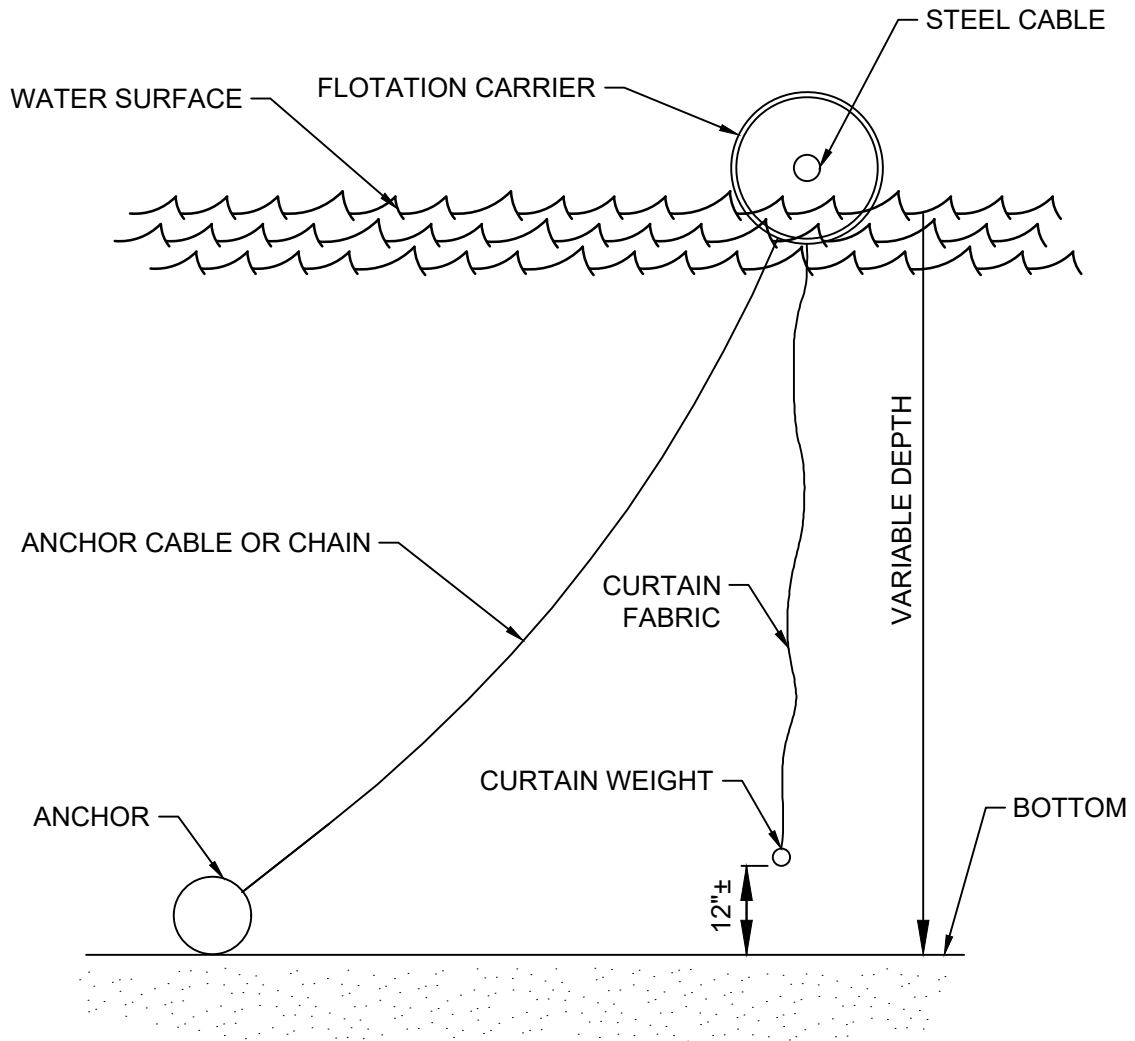
1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT



EROSION CONTROL BLANKET  
INSTALLATION

LAST REVISION:  
JUL 2023

PLATE NO.  
ERO-2



NOTE:  
 DOUBLE SILT FENCES SHOULD BE SPACED 10' APART.  
 CURTAIN LENGTH TO MATCH BOTTOM PROFILE AS CLOSELY AS POSSIBLE.  
 MAXIMUM INTERVAL FOR SPACING OF WEIGHT IS 15'.



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## FLOATING SILT CURTAIN

LAST REVISION:  
 JUL 2023

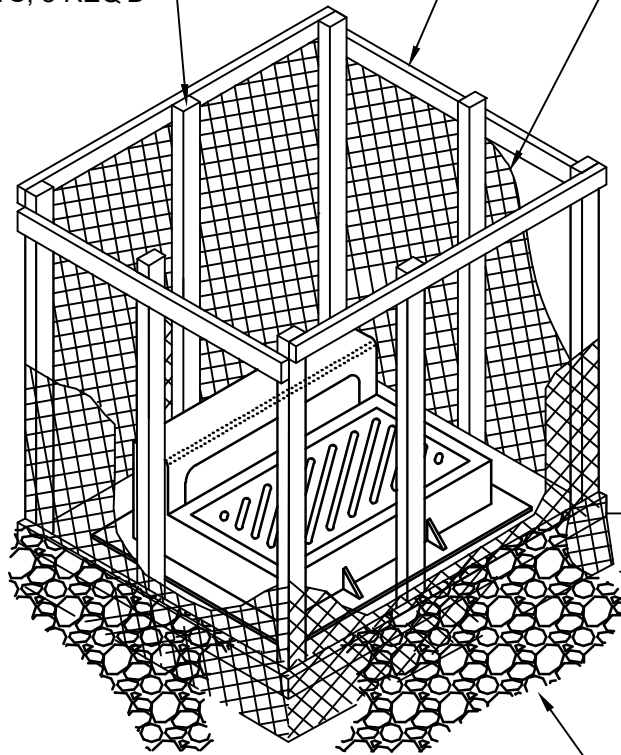
PLATE NO.  
 ERO-3

WOODEN LATH SHALL BE NAILED SECURELY TO THE POST MEMBER TO SECURE FILTER FABRIC.

2" x 4" x 2.5" LONG WOOD POSTS, 8 REQ'D

2" X 4" HORIZONTAL MEMBERS CONTINUOUS AROUND TOP AND BOTTOM FASTENED TO EACH POST USING 2 - 20D COMMON NAILS

MONOFILAMENT GEOTEXTILE (SILT FENCE) FABRIC AS SPECIFIED ADDITIONAL 8 - 10" OF FABRIC FLAP AT BOTTOM OF BOX



8-10" FABRIC FLAP EXTENDING BEYOND BOTTOM 2"X4" - BURY UNDER ROCK TO PREVENT UNDERWASHING

1 1/2" WASHED ROCK 1'DEEP X 1' WIDE

**NOTES:**

CONTRACTOR SHALL CONSTRUCT SILT BOX TO FIT AROUND THE INLET STRUCTURE WITH 6" MINIMUM CLEARANCE TO EDGES OF STRUCTURE. SILT BOX TO BE PLACED ON AN EVEN SURFACE 6" BELOW STRUCTURE OPENING. TOP OF SILT BOX TO EXTEND 18" MINIMUM ABOVE EXISTING GRADE.



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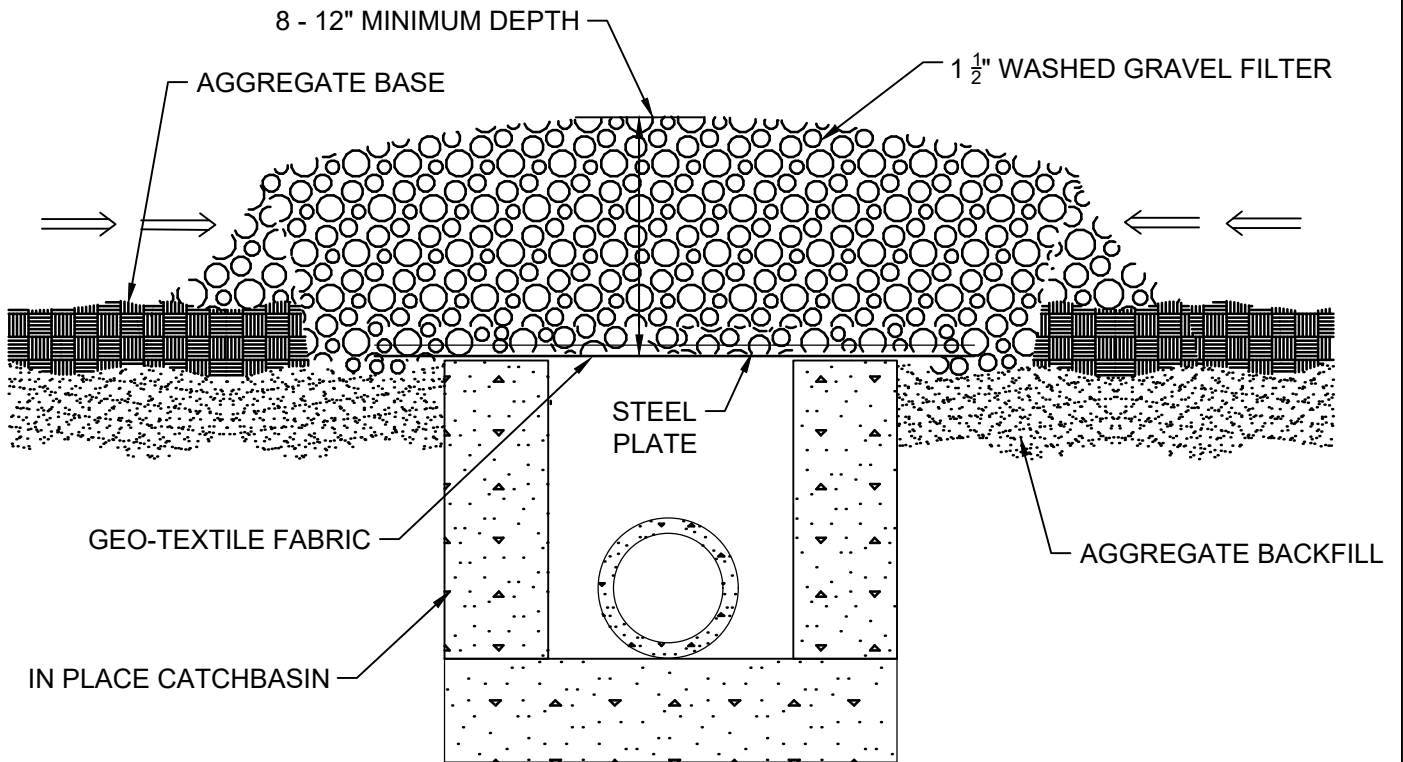
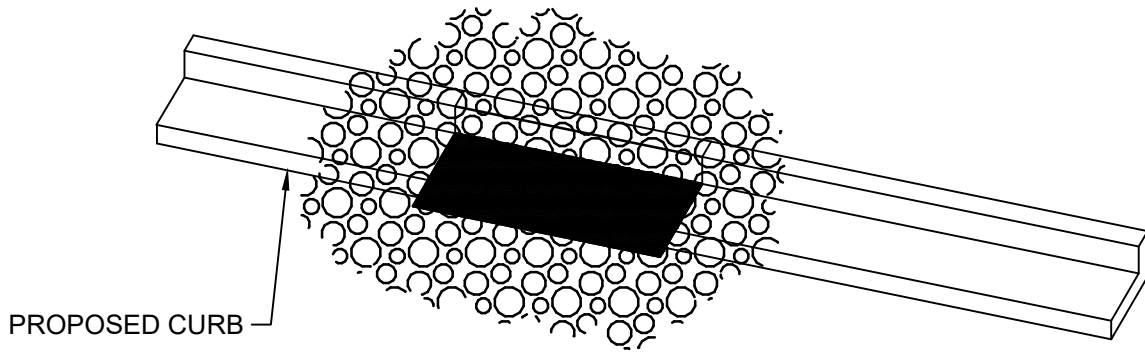


# INLET PROTECTION SILT BOX FOR CATCH BASIN

LAST REVISION:  
JUL 2023

PLATE NO.  
ERO-4A

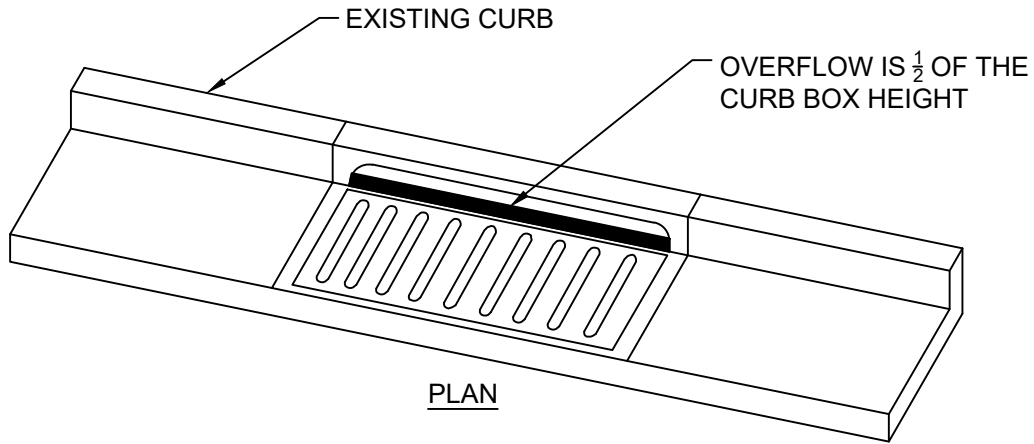
PLAN



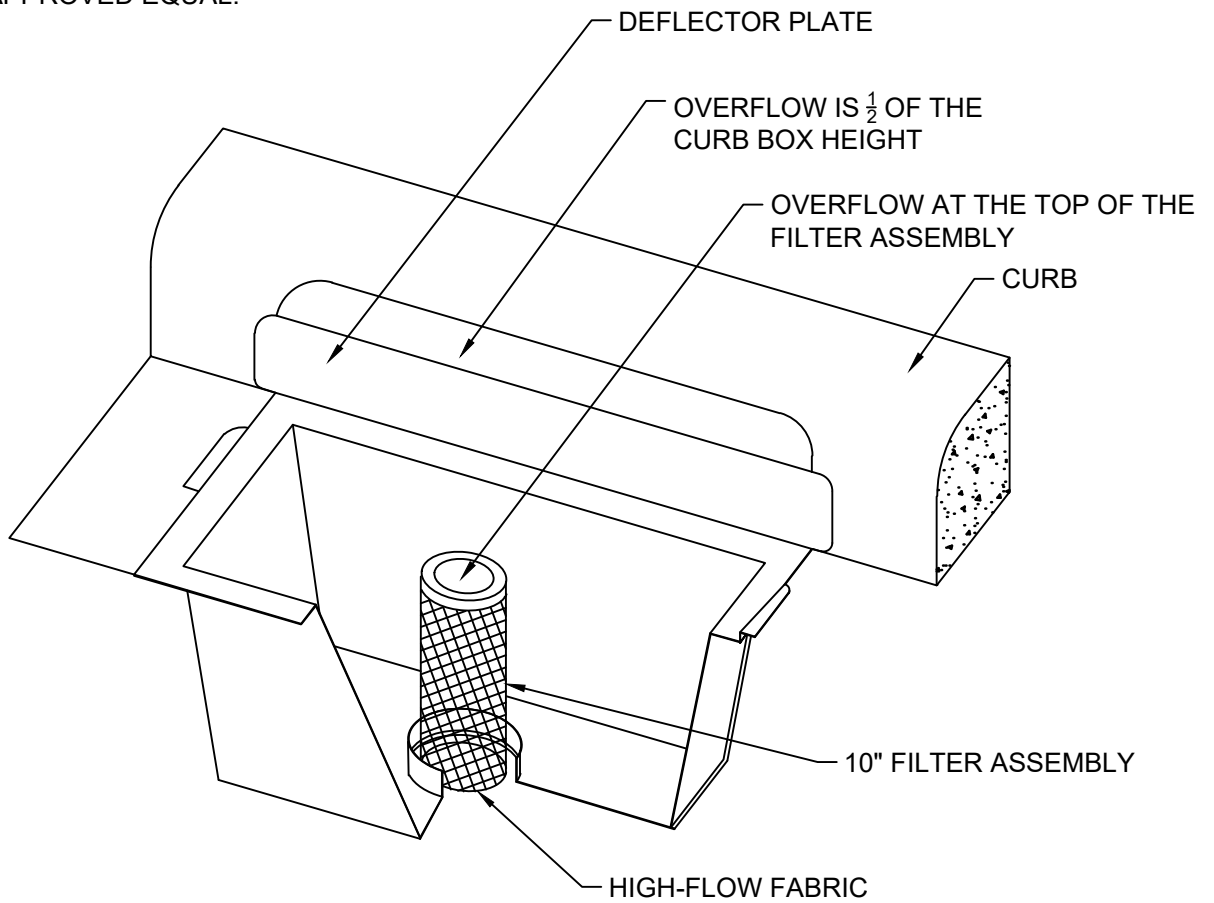
INLET PROTECTION CATCH  
BASIN ROCK FILTER

LAST REVISION:  
JUL 2023

PLATE NO.  
ERO-4B



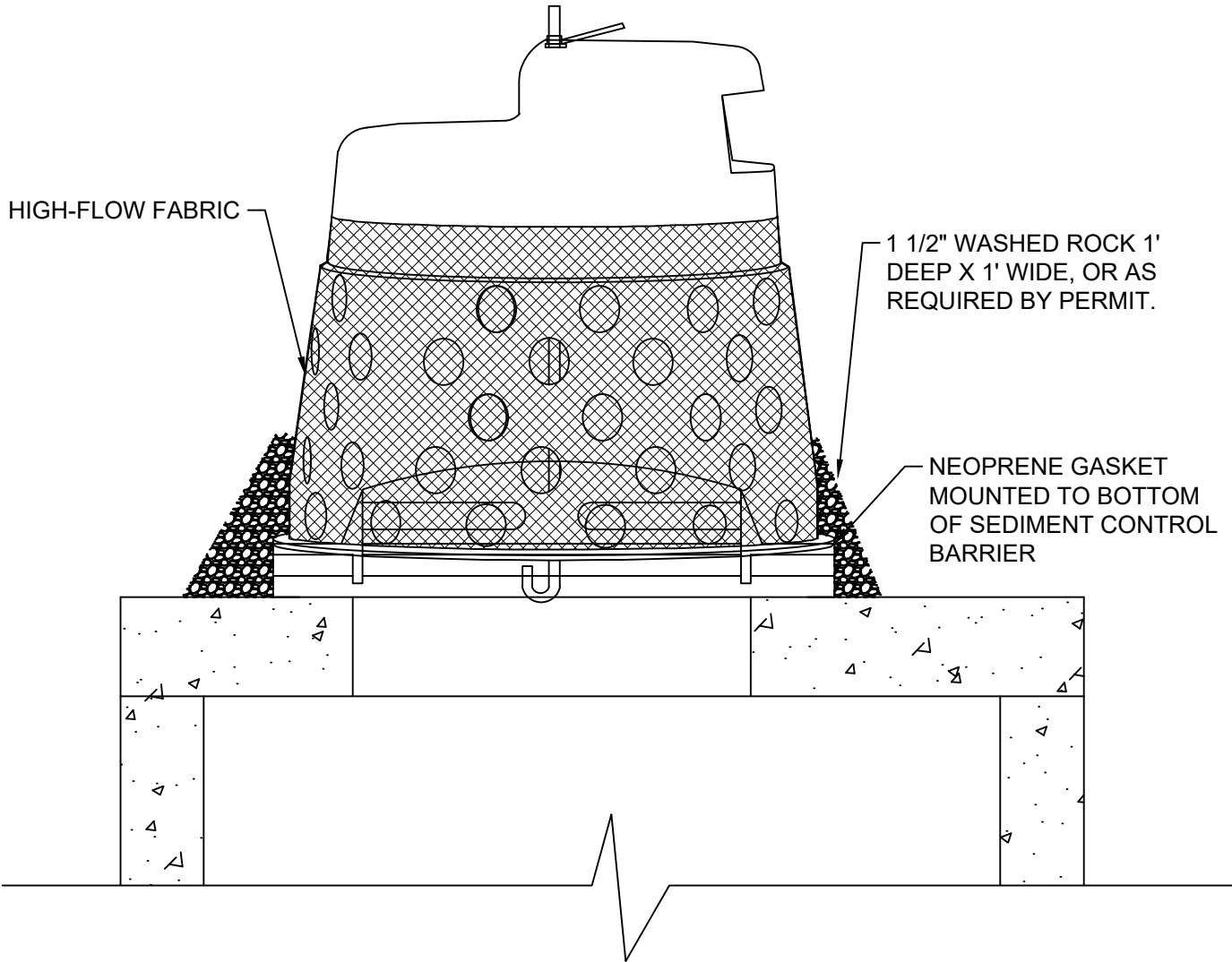
WIMCO ROAD DRAIN CG-3067 HIGH FLOW  
 INLET PROTECTION CURB AND GUTTER MODEL OR  
 CITY APPROVED EQUAL.



INLET PROTECTION CATCH  
 BASIN INSERT

LAST REVISION:  
 JUL 2023

PLATE NO.  
 ERO-4C



NOTES:  
 INFRASAFE SEDIMENT CONTROL BARRIER OR CITY  
 APPROVED EQUAL



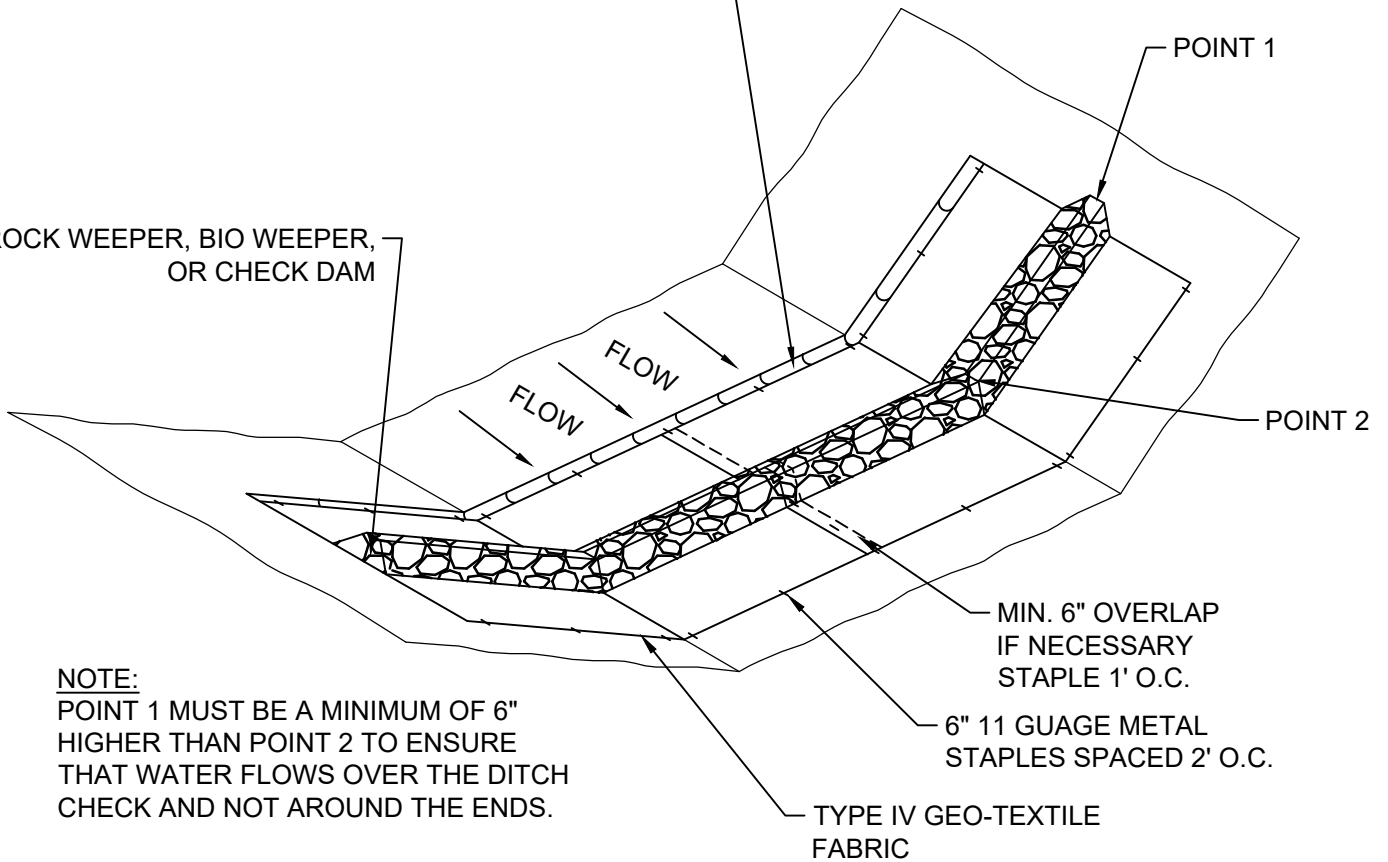
INLET PROTECTION BEEHIVE  
 CASTING SILT BOX

LAST REVISION:  
 JUL 2023

PLATE NO.  
 ERO-4D

6" X 6" TRENCH WITH LEADING EDGE OF TYPE IV  
GEO-TEXTILE FABRIC STAPLED AT 4'  
INTERVALS AND BACKFILLED WITH NATURAL SOIL

ROCK WEEPER, BIO WEEPER,  
OR CHECK DAM



**NOTE:**  
POINT 1 MUST BE A MINIMUM OF 6"  
HIGHER THAN POINT 2 TO ENSURE  
THAT WATER FLOWS OVER THE DITCH  
CHECK AND NOT AROUND THE ENDS.

MIN. 6" OVERLAP  
IF NECESSARY  
STAPLE 1' O.C.

6" 11 GAUGE METAL  
STAPLES SPACED 2' O.C.

TYPE IV GEO-TEXTILE  
FABRIC

DITCH CHECK SPACING  
(USE FOR 5B AND 5C)

DITCH GRADE	INTERVAL
(%)	(FT)
2	100
4	75
6	50
8	40
10	25
10+	25



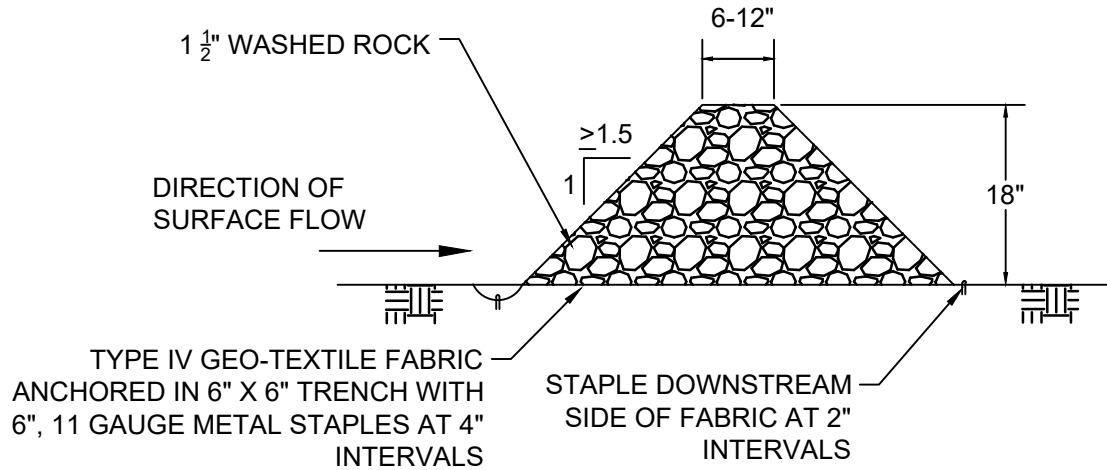
DITCH CHECK – 3D VIEW FOR  
5B, 5C, AND SPACING

LAST REVISION:  
JUL 2023

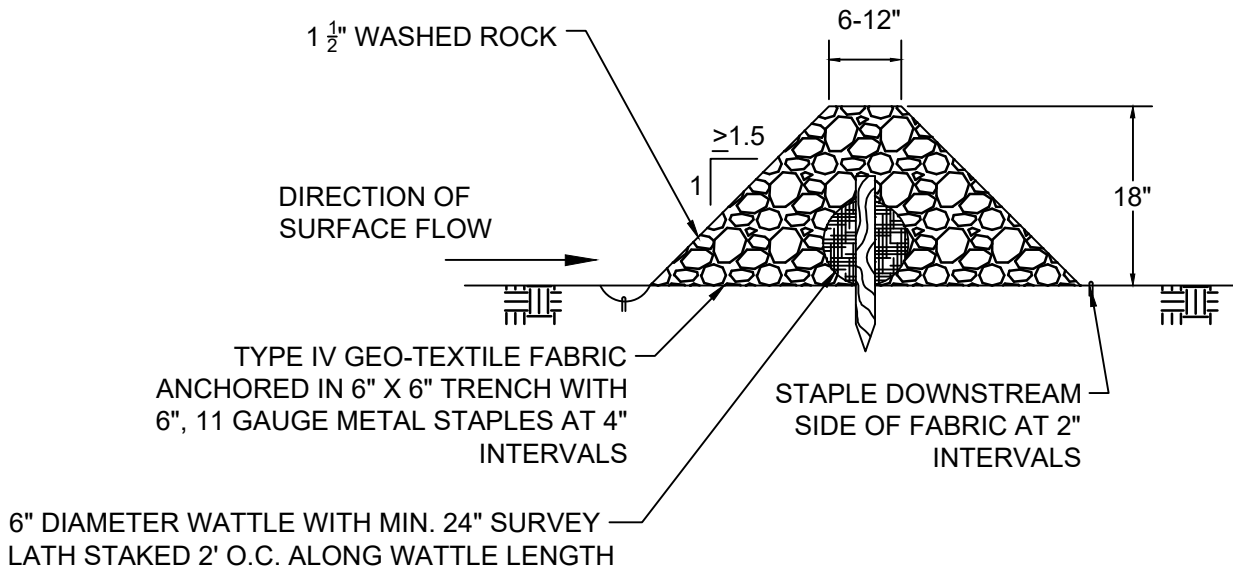
PLATE NO.  
ERO-5A



I. ROCK WEEPER



II. BIO WEEPER



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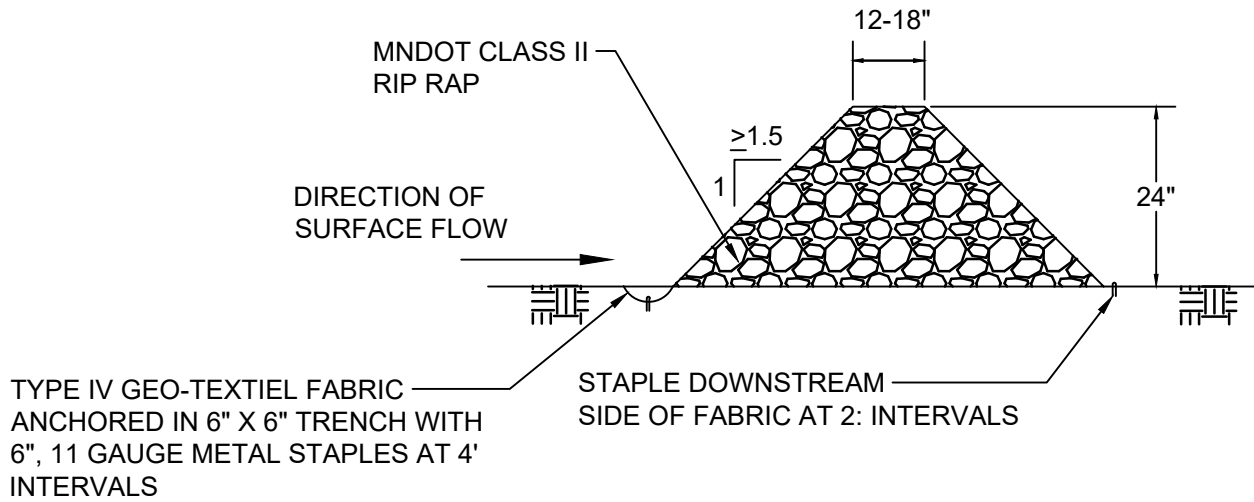


DITCH CHECKS — ROCK AND  
BIO WEEPER

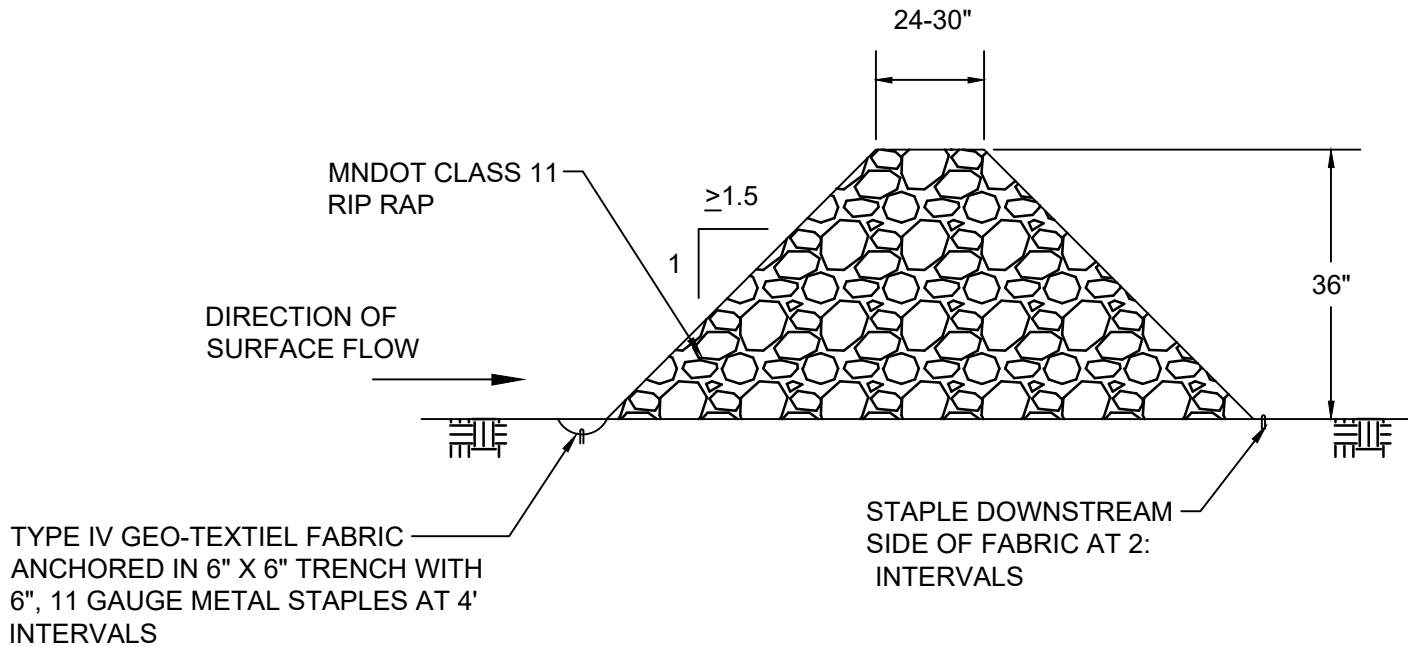
LAST REVISION:  
JUL 2023

PLATE NO.  
ERO-5B

I. SMALL CHECK DAM



II. LARGE CHECK DAM



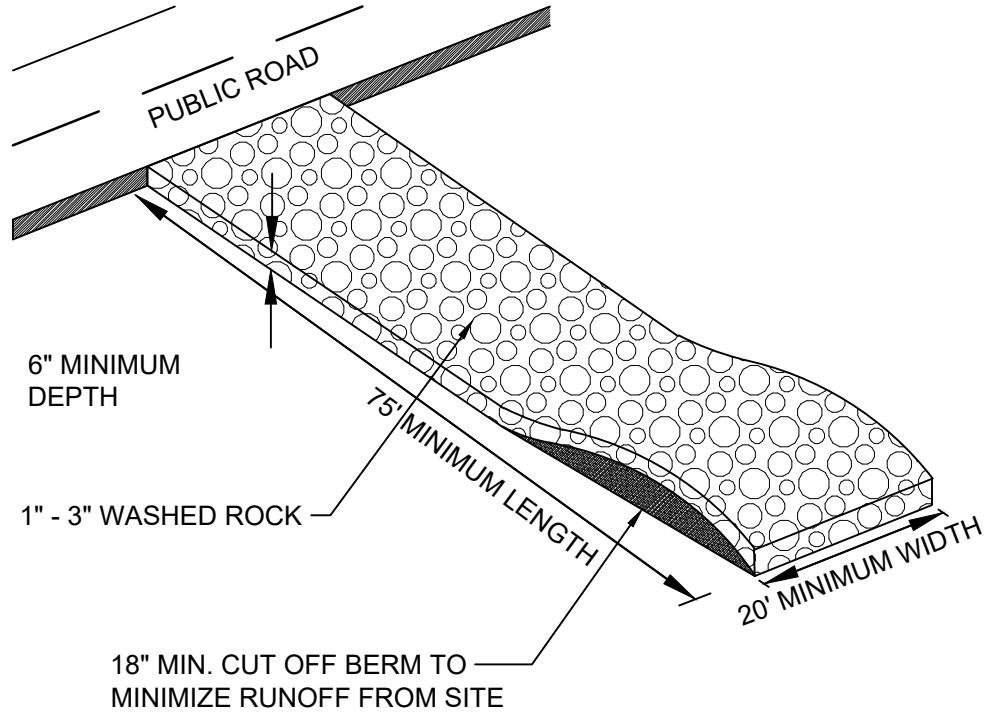
CORCORAN, MINNESOTA



DITCH CHECKS – SMALL AND  
LARGE CHECK DAM

LAST REVISION:  
JUL 2023

PLATE NO.  
ERO-5C



**NOTE:**  
 FILTER FABRIC SHALL BE PLACED UNDER ROCK TO STOP MUD MIGRATION THROUGH ROCK.  
 ENTRANCE MUST BE MAINTAINED TO PREVENT SEDIMENTATION ON PUBLIC ROADWAYS. FUGITIVE ROCKS WILL BE REMOVED FROM ADJACENT ROADWAYS DAILY OR MORE FREQUENTLY AS NECESSARY.

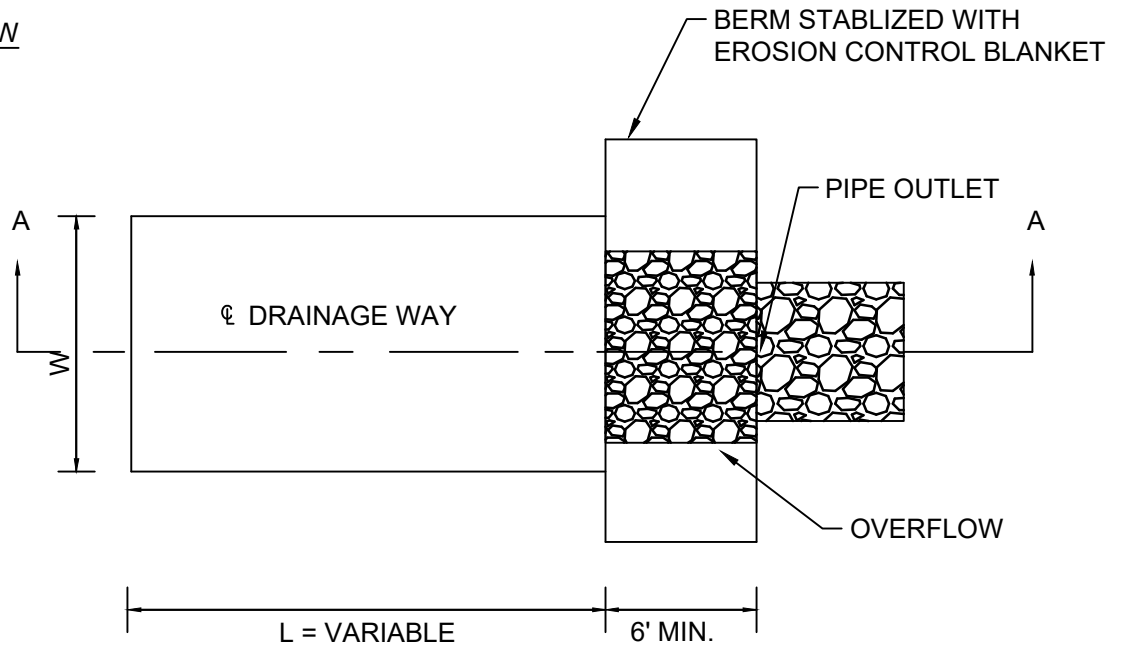


CONSTRUCTION ENTRANCE  
 (ROCK)

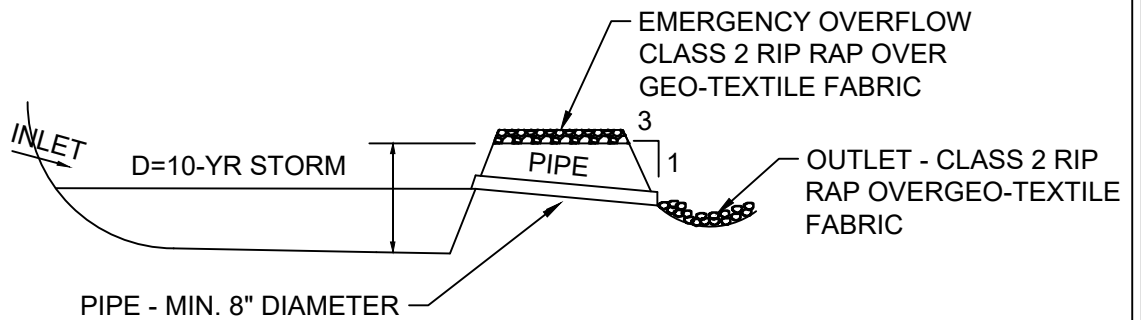
LAST REVISION:  
 JUL 2023

PLATE NO.  
 ERO-6

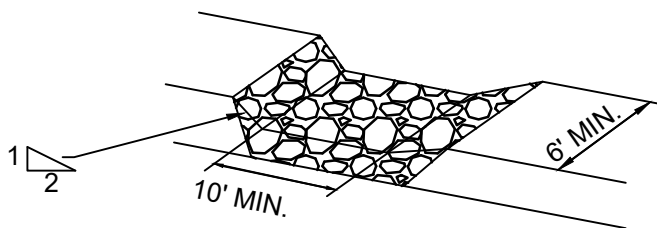
I. PLAN VIEW



II. SECTION A-A



III. BASIN EMERGENCY OVERFLOW



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.



CORCORAN, MINNESOTA



TEMPORARY SEDIMENTATION  
BASIN – PIPE OUTLET

LAST REVISION:  
JUL 2023

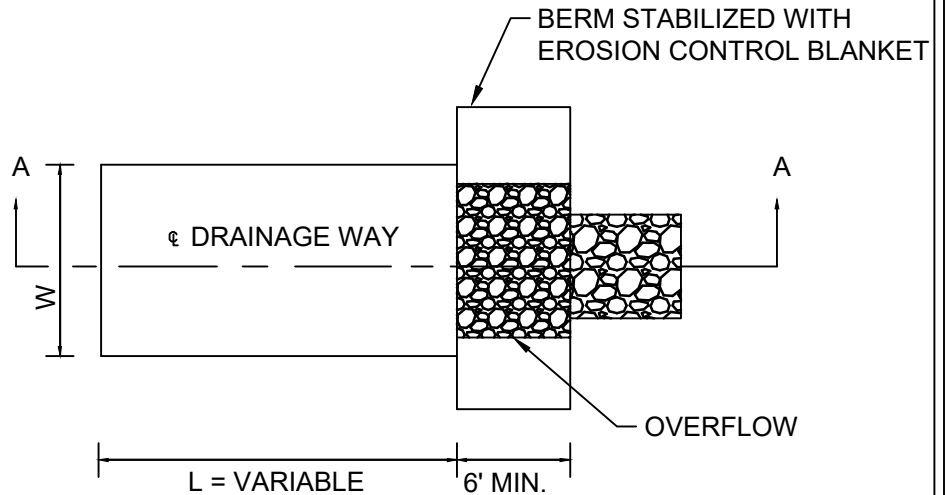
PLATE NO.  
ERO-7A

I. PLAN VIEW

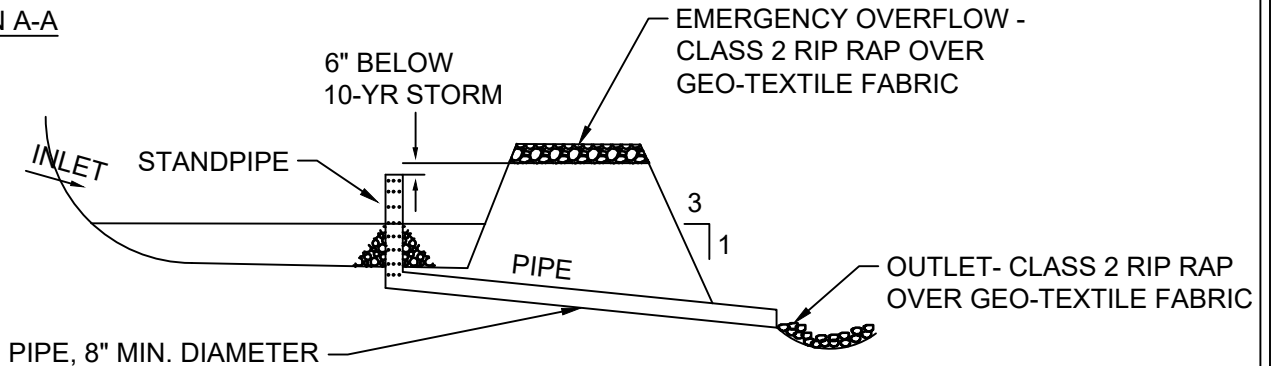
NOTES:

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.

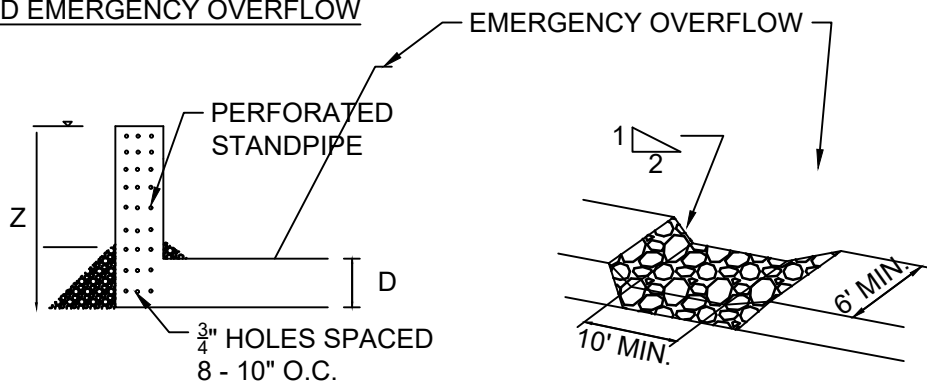


II. SECTION A-A



III. BASIN STANDPIPE AND EMERGENCY OVERFLOW

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

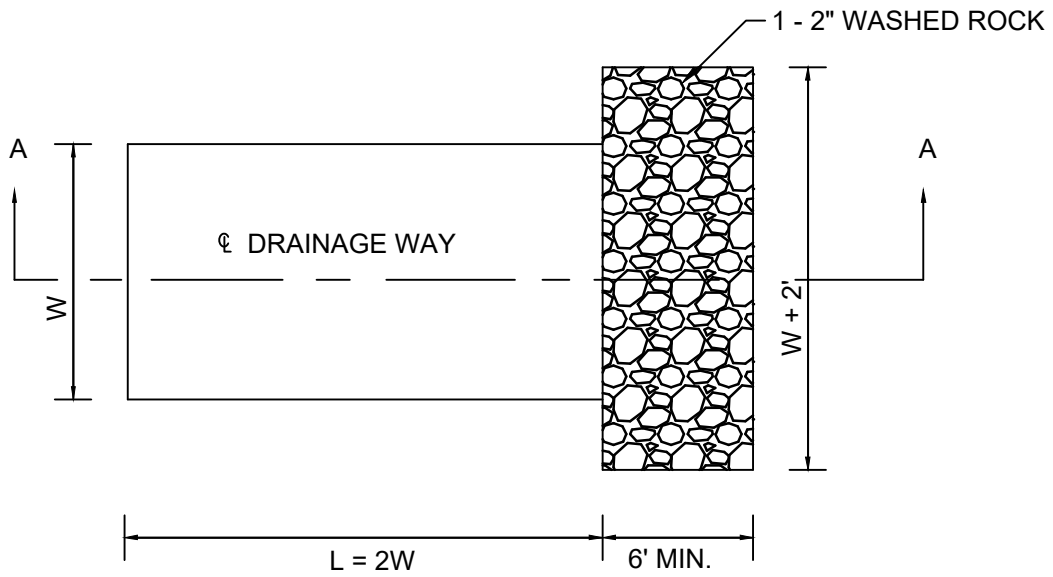


TEMPORARY SEDIMENTATION BASIN – STANDPIPE OUTLET

LAST REVISION:  
JUL 2023

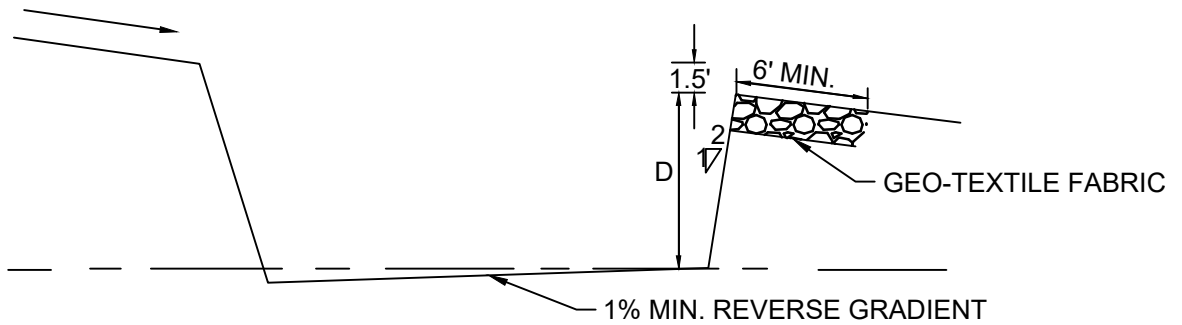
PLATE NO.  
ERO-7B

**I. PLAN VIEW**



**II. SECTION A-A**

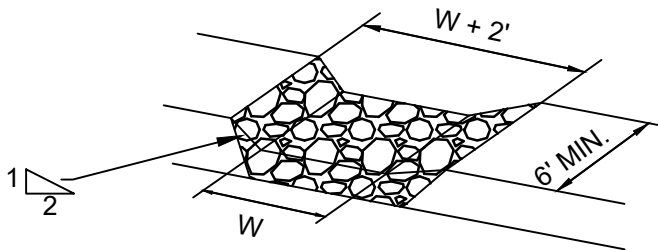
DIRECTION OF SURFACE FLOW



**NOTE:**

D=3' MIN, 5' MAX  
 W=10' MIN, 25' MAX W(FT.)=  
 10 X DRAINAGE AREA (AC.)

**III. TRAP OUTLET**



**NOTES:**

TRAP USED FOR 2.5 ACRES  
 DRAINAGE AREA OR LESS.  
 DESIGN VOLUME IS A MINIMUM  
 OF 1800 CUBIC FEET PER ACRE  
 OF CONTRIBUTING DRAINAGE  
 AREA.



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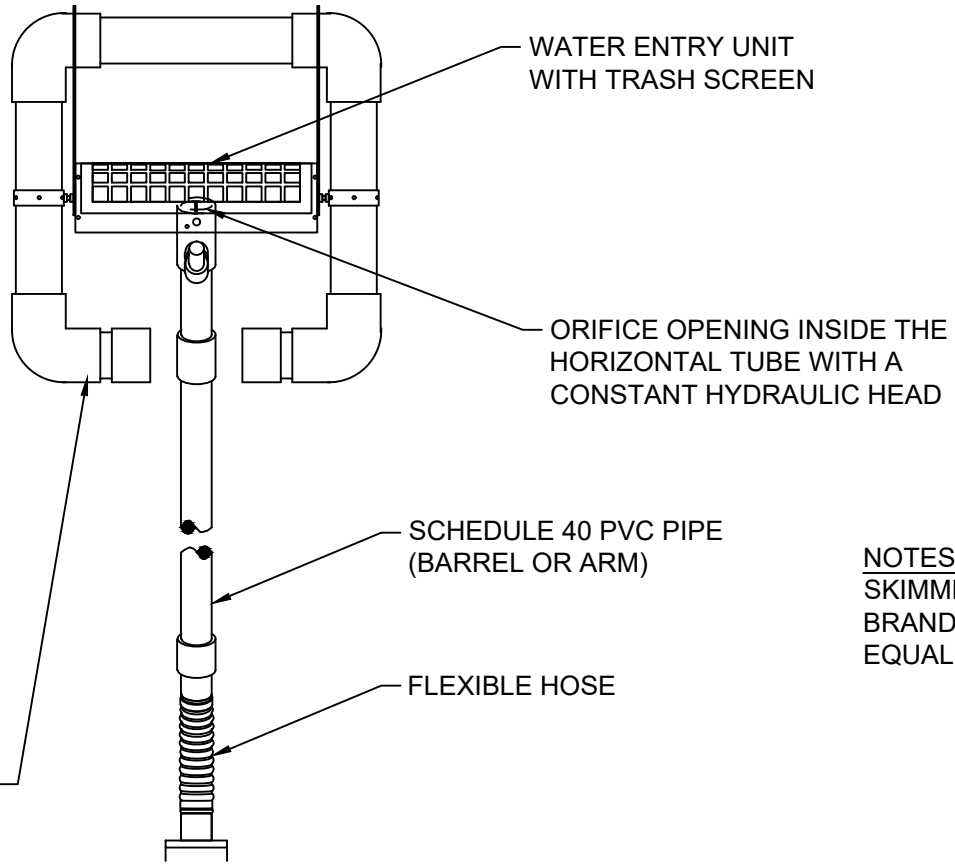
TEMPORARY SEDIMENT TRAP

LAST REVISION:

JUL 2023

PLATE NO.

ERO-8



WATER ENTRY UNIT WITH TRASH SCREEN

ORIFICE OPENING INSIDE THE HORIZONTAL TUBE WITH A CONSTANT HYDRAULIC HEAD

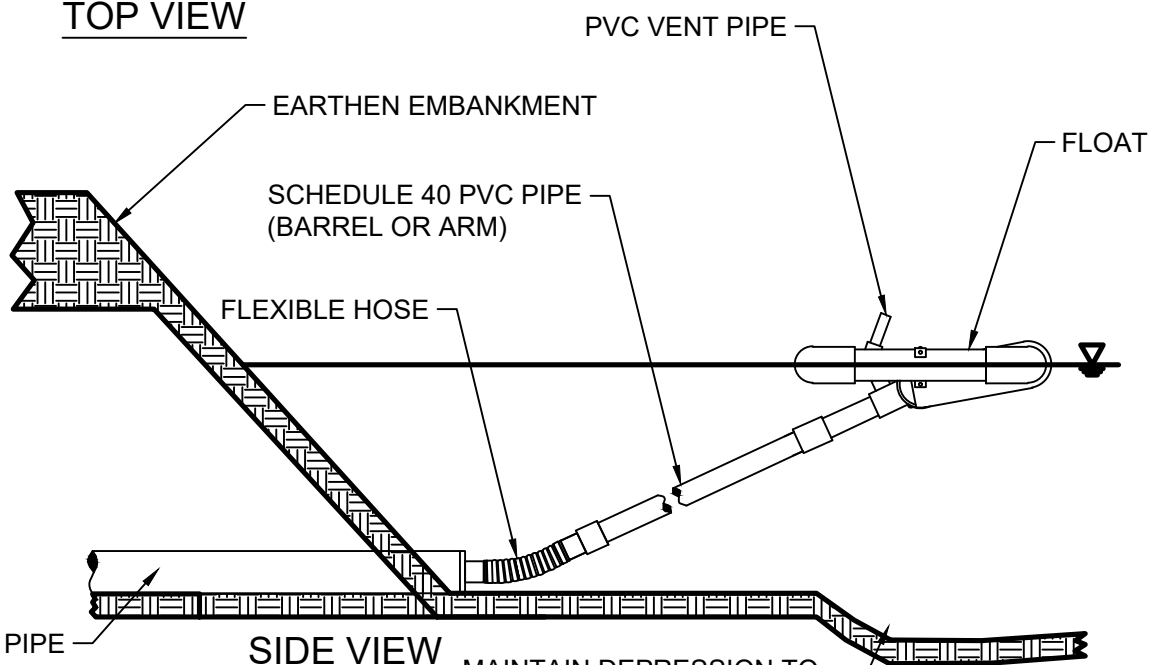
SCHEDULE 40 PVC PIPE (BARREL OR ARM)

FLEXIBLE HOSE

FLOAT

NOTES:  
SKIMMER TO BE FAIRCLOTH BRAND OR CITY APPROVED EQUAL

TOP VIEW



PVC VENT PIPE

EARTHEN EMBANKMENT

SCHEDULE 40 PVC PIPE (BARREL OR ARM)

FLEXIBLE HOSE

FLOAT

DISCHARGE PIPE SCHEDULE 40

SIDE VIEW (NO SCALE)

MAINTAIN DEPRESSION TO MINIMIZE CHANCE OF SKIMMER BECOMING STUCK



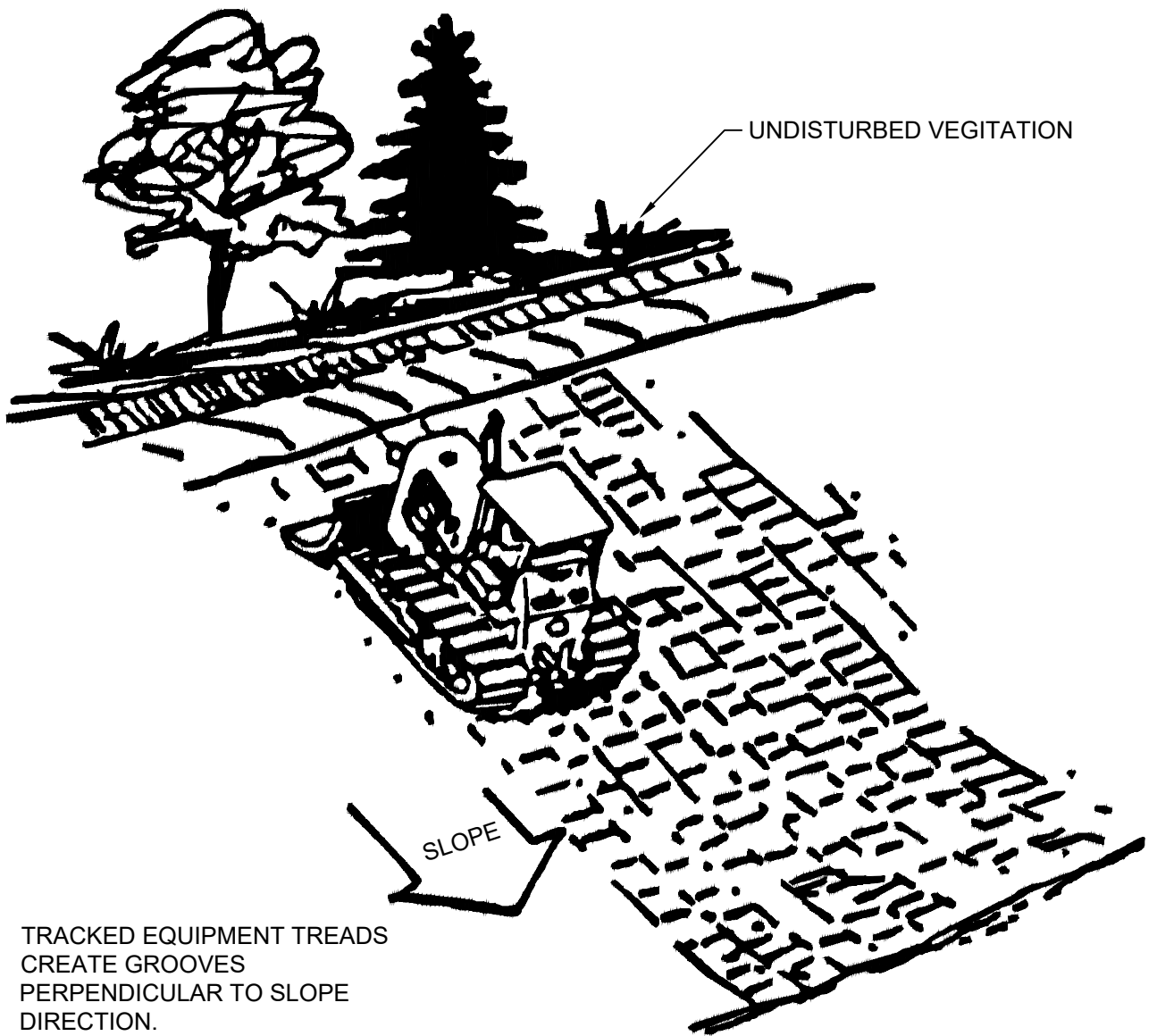
CORCORAN, MINNESOTA



TEMPORARY SEDIMENT BASIN SKIMMER

LAST REVISION:  
JUL 2023

PLATE NO.  
ERO-9



TRACKED EQUIPMENT TREADS  
CREATE GROOVES  
PERPENDICULAR TO SLOPE  
DIRECTION.

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.



CORCORAN, MINNESOTA



## SLOPE TRACKING

LAST REVISION:  
JUL 2023

PLATE NO.  
ERO-10