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SER-2 SERVICE RISER
SER-3 RESIDENTIAL LOW PRESSURE SEWER CONNECTION
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STREETS

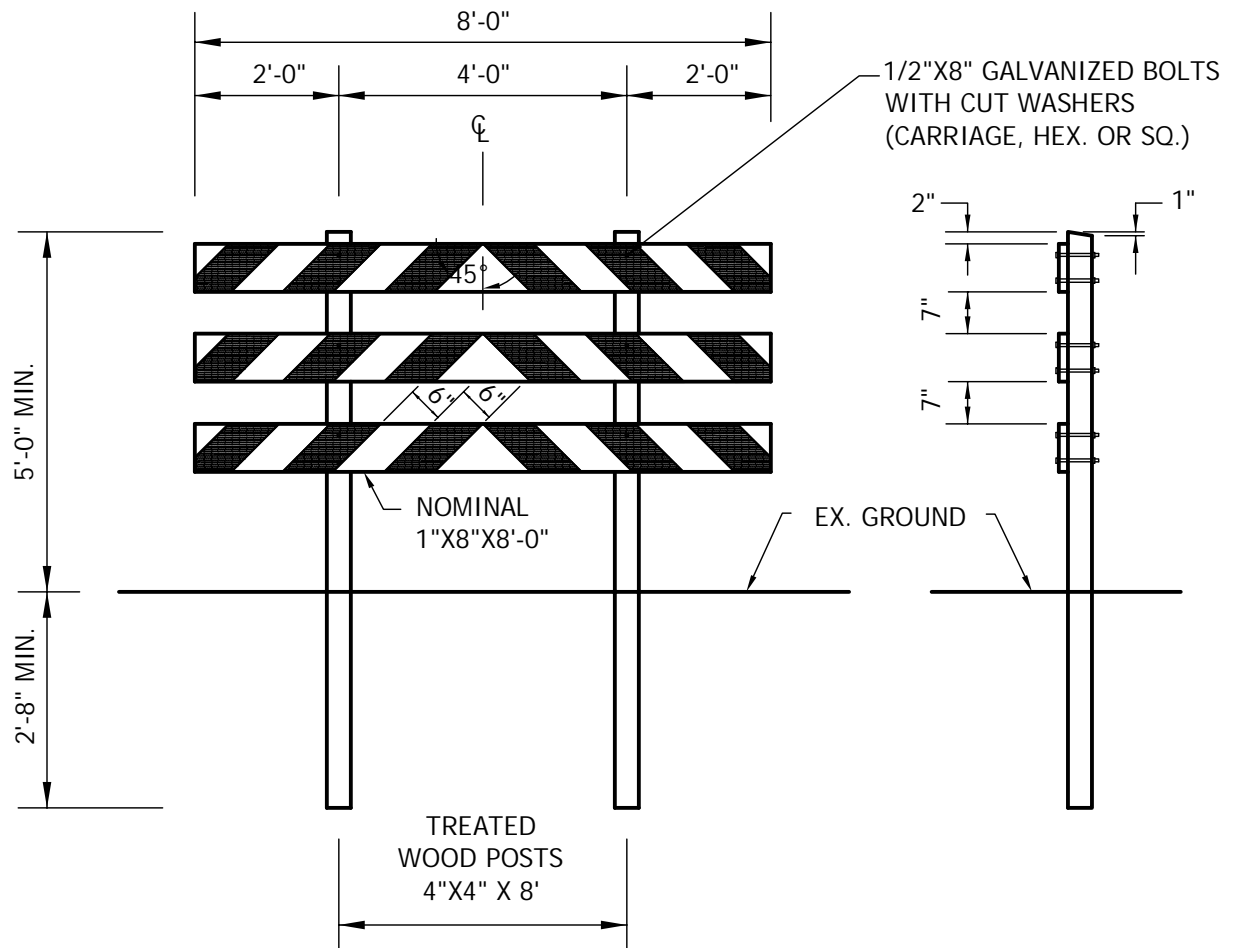
STR-1 CURB AND GUTTER
STR-2 B618 CURB AND GUTTER CONSTRUCTION AT CATCHBASIN
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PLATE NO.
GEN-1C



NOTE

THE BARRICADE BOARD FACE SURFACES SHALL BE FULLY REFLECTORIZED IN ALTERNATE SILVER-WHITE AND RED STRIPING, USING A REFLECTIVE SHEETING CONFORMING TO THE REQUIREMENTS OF SPEC. 335.2A2A, STANDARD NO. 1.

PRIOR TO INSTALLING THE REFLECTIVE SHEETING, THE BARRICADE BOARDS SHALL BE GIVEN A COMPLETE COATING OF WHITE WOOD PRIMER PAINT CONFORMING TO SPEC. 3513, FOLLOWED BY A SECOND COAT OF WHITE GUARD RAIL PAINT CONFORMING TO SPEC. 3533 APPLIED ONLY TO THE SURFACES NOT COVERED WITH REFLECTIVE SHEETING.

THE BARRICADE BOARDS SHALL BE COMPLETELY PAINTED AND REFLECTORIZED SHEETING APPLIED BEFORE BEING INSTALLED ON THE POSTS.

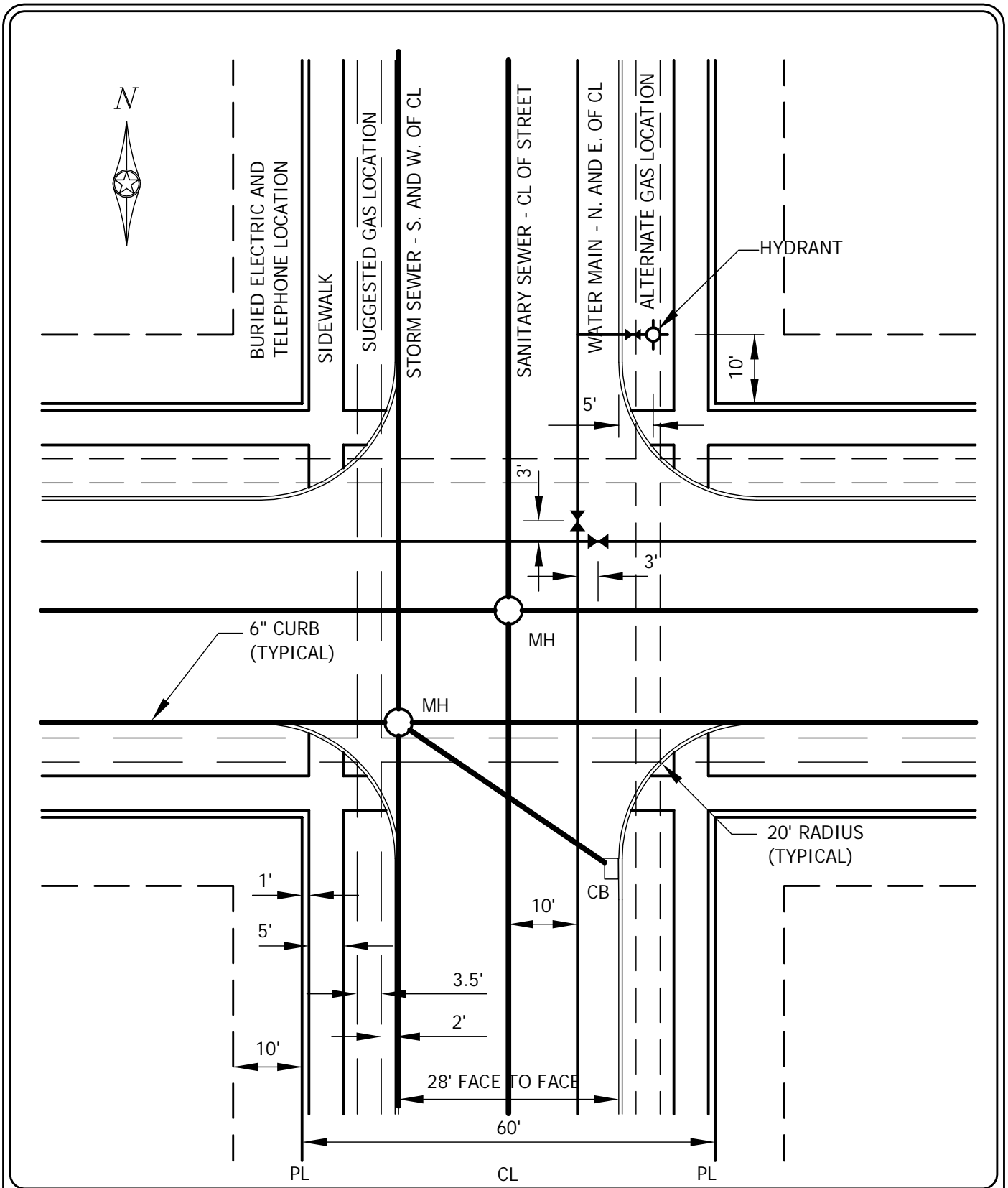
THE PLACEMENT OF THE BARRICADE SHALL BE 10'-0" FROM THE END OF THE BITUMINOUS ROAD WITH THE BARRICADE CENTERED ON THE ROADWAY FACING THE FLOW OF TRAFFIC.



**PERMANENT
BARRICADE**

LAST REVISION:
JAN 2006

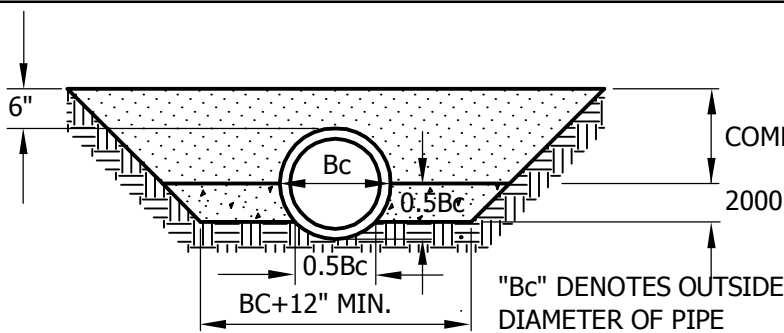
PLATE NO.
GEN-2



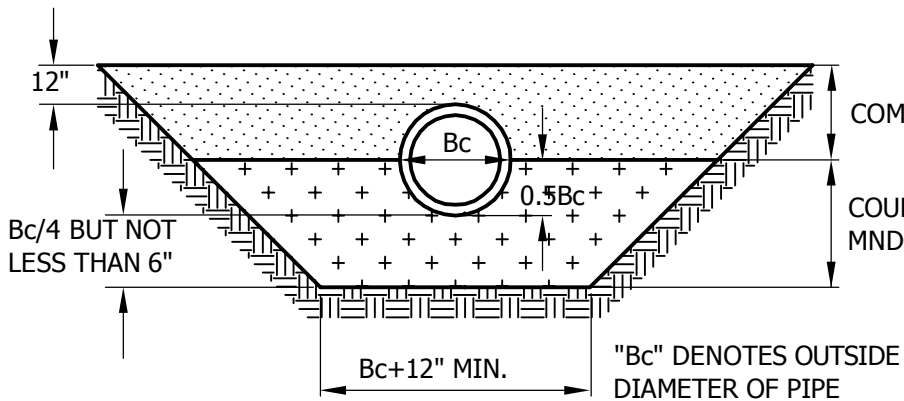
TYPICAL UTILITY LOCATIONS
(PUBLIC AND PRIVATE)

LAST REVISION:
JAN 2006

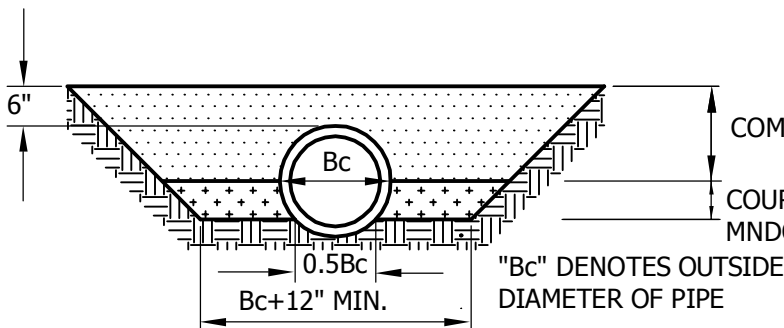
PLATE NO.
GEN-3



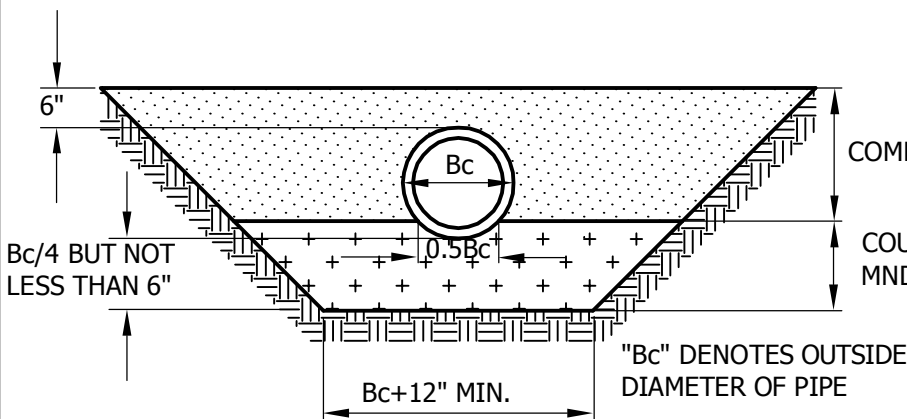
COMPACTED BACKFILL
 2000# CONCRETE
 LOAD FACTOR 2.3
 CLASS A
 CONCRETE BACKFILL TO 0.5
 OF OUTSIDE DIAMETER WITH
 SHAPED BEDDING.



COMPACTED BACKFILL
 COURSE FILTER AGGREGATE
 MNDOT SPEC. 3149H MOD.
 LOAD FACTOR 1.9
 CLASS B
 HAND SHAPED FROM ANGULAR
 BEDDING MATERIAL



COMPACTED BACKFILL
 COURSE FILTER AGGREGATE
 MNDOT SPEC. 3149H MOD.
 LOAD FACTOR 1.5
 CLASS C-1
 HAND SHAPED FROM FIRM
 UNDISTURBED SOIL



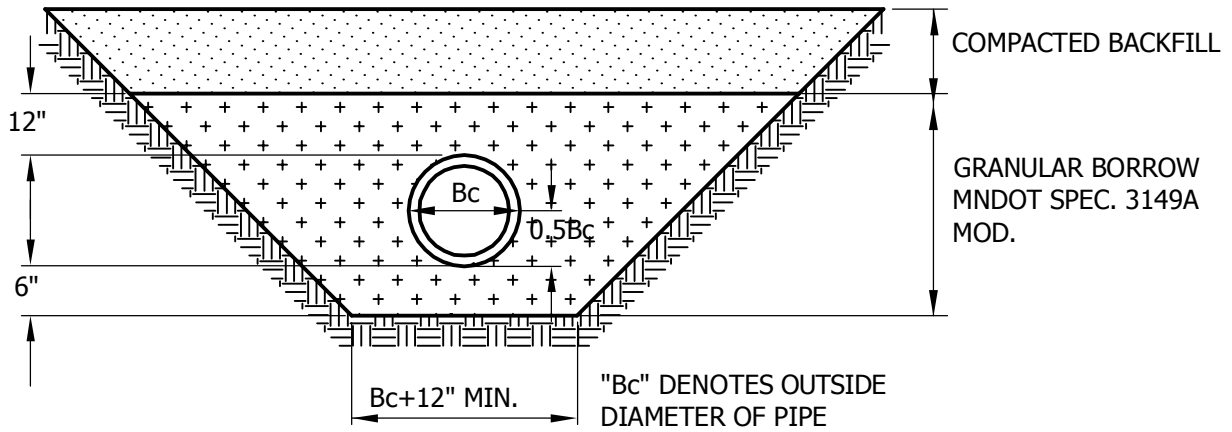
COMPACTED BACKFILL
 COURSE FILTER AGGREGATE
 MNDOT SPEC. 3149H MOD.
 LOAD FACTOR 1.5
 CLASS C-2
 HAND SHAPED FROM ANGULAR
 BEDDING MATERIAL



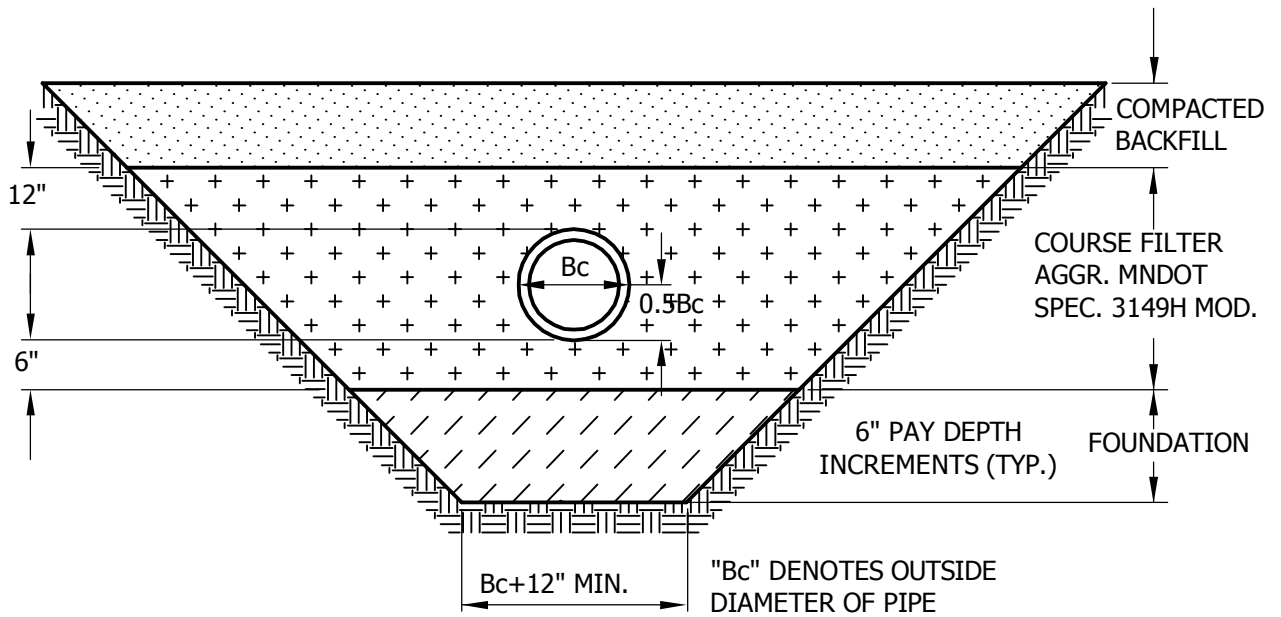
BEDDING METHODS FOR RCP

LAST REVISION:
 JAN 2006

PLATE NO.
 GEN-4



PIPE FOUNDATION & BEDDING IN GOOD SOILS



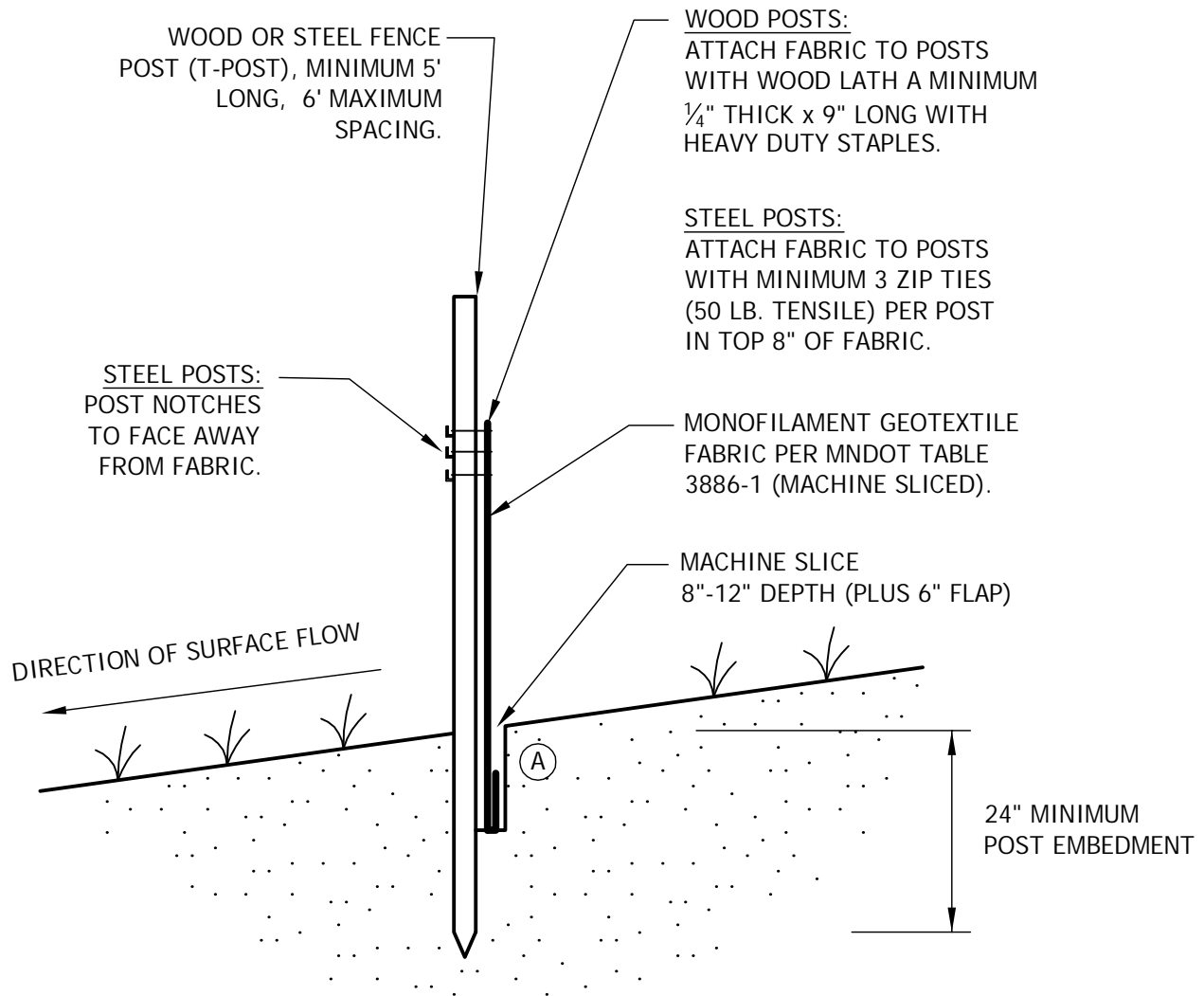
PIPE FOUNDATION & BEDDING IN POOR SOILS



BEDDING METHODS
FOR VCP, PVC, DIP OR HDPE

LAST REVISION:
JAN 2006

PLATE NO.
GEN-5



NOTE:
 THE MACHINE SLICED METHOD (THIS DETAIL) IS THE STANDARD SILT FENCE INSTALLATION METHOD. WIRE BACKED (ERO-1B) OR HEAVY DUTY (ERO-1C) SILT FENCE INSTALLATION METHODS SHOULD ONLY BE USED WHEN APPROVED OR DIRECTED BY THE CITY.

NOTE:
 FOR CRITICAL AREAS ADJACENT TO WETLANDS OR BELOW LONG AND/OR STEEP SLOPES, STEEL POSTS ARE NECESSARY AS INDICATED ON THE PLANS.

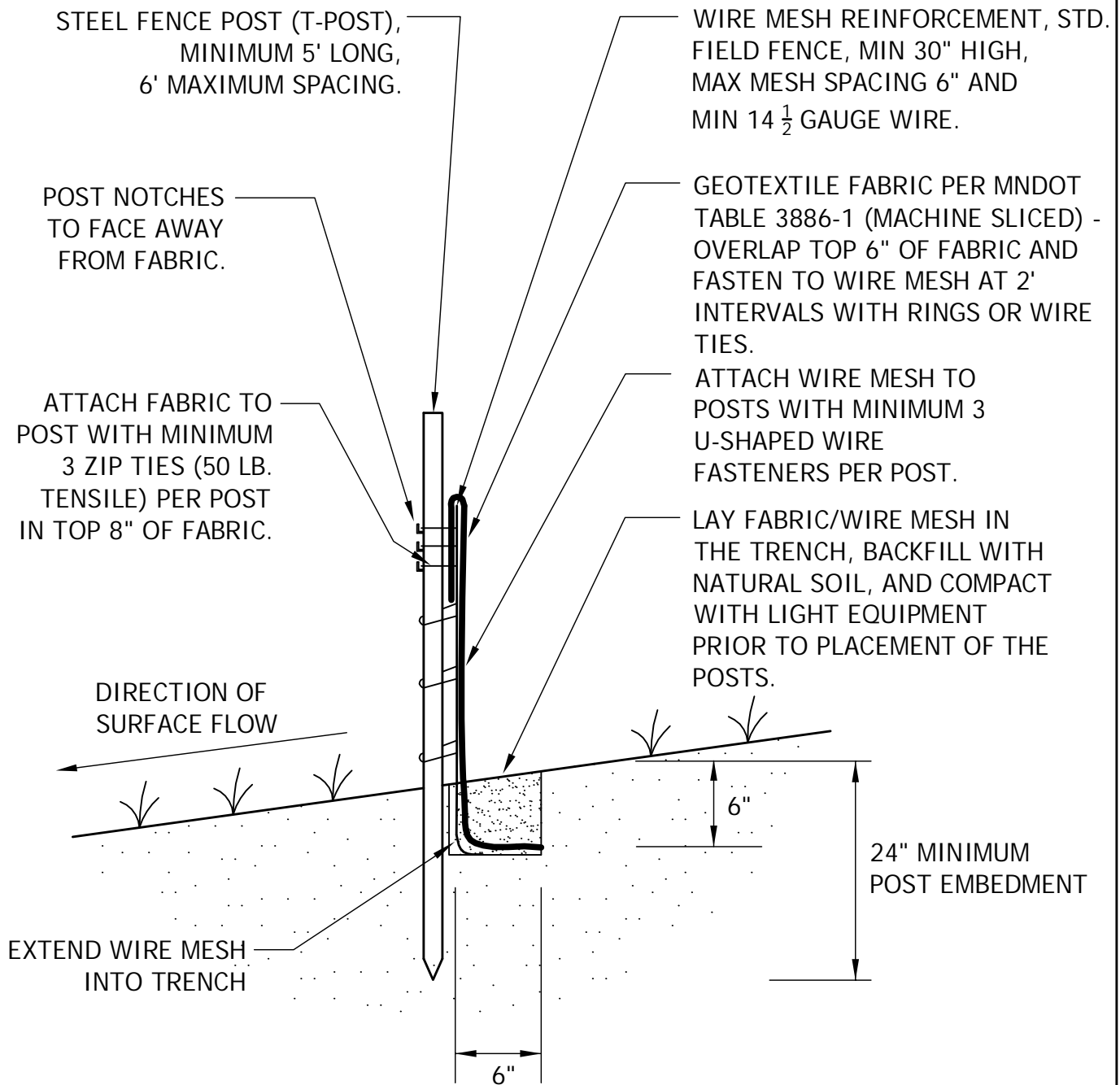
(A) COMPACTION:
 AFTER "SLICING" IN THE FABRIC AND *BEFORE* INSTALLATION OF STEEL OR WOOD POSTS, DRIVE INSTALLATION EQUIPMENT OVER THE "SLICE" WHILE FABRIC IS LAYING ON THE GROUND. *THEN* INSTALL THE POSTS AND PULL UP FABRIC TO ATTACH AT A UNIFORM HEIGHT.



SILT FENCE MACHINE SLICED

LAST REVISION:
 April 2008

PLATE NO.
 ERO-1A



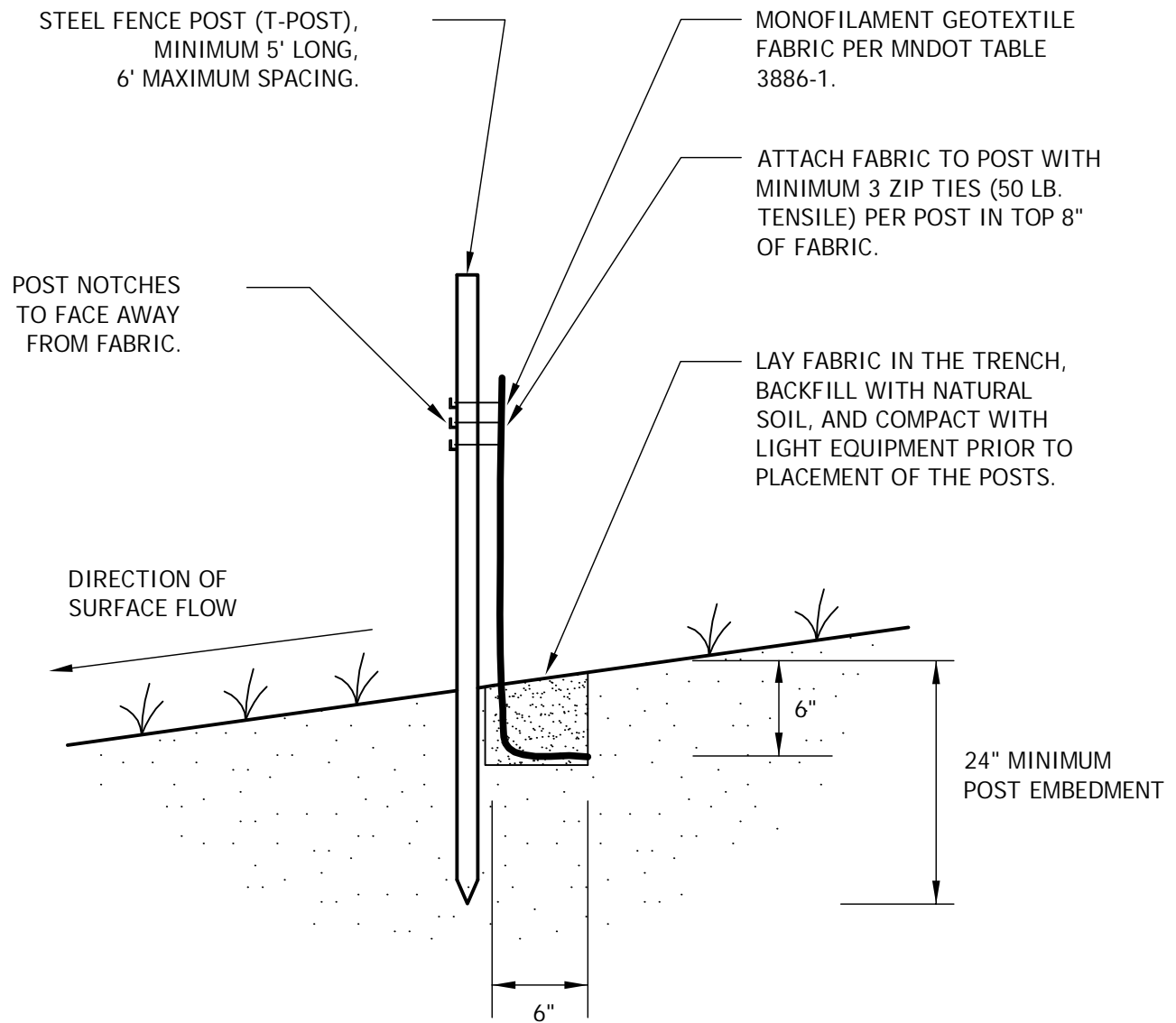
NOTE:
SPLICING WILL BE MADE AT OPPOSING SILT FENCE POSTS BY PLACING
POSTS AND SILT FENCE NEXT TO EACH OTHER AND ROTATING 360°.



SILT FENCE
WIRE BACKED

LAST REVISION:
April 2008

PLATE NO.
ERO-1B



NOTES:

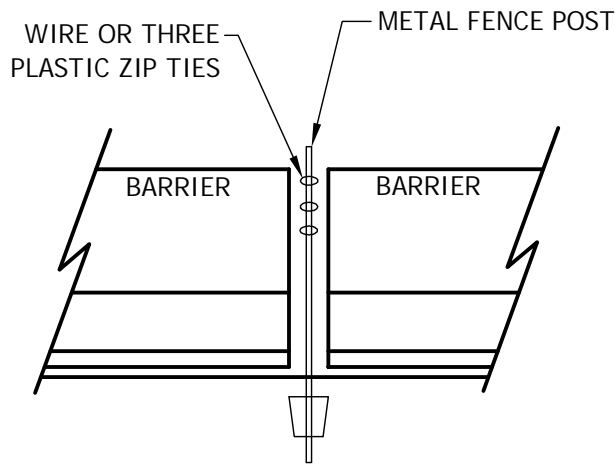
1. SPLICING WILL BE MADE AT OPPOSING SILT FENCE POSTS BY PLACING POSTS AND SILT FENCE NEXT TO EACH OTHER AND ROTATING 360°.
2. HEAVY DUTY SILT FENCE IS MACHINE SLICED TYPE SILT FENCE THAT IS HAND INSTALLED IN AREAS INACCESSIBLE TO EQUIPMENT DUE TO SPACE LIMITATIONS, WET SOILS, STEEP SLOPES, ETC.



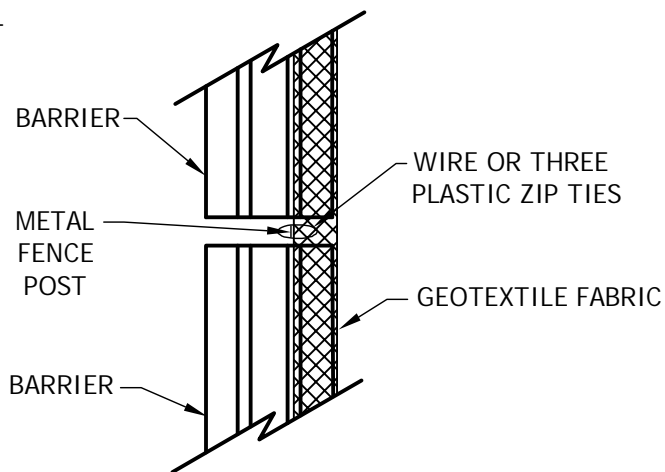
**SILT FENCE
HEAVY DUTY**

LAST REVISION:
April 2008

PLATE NO.
ERO-1C

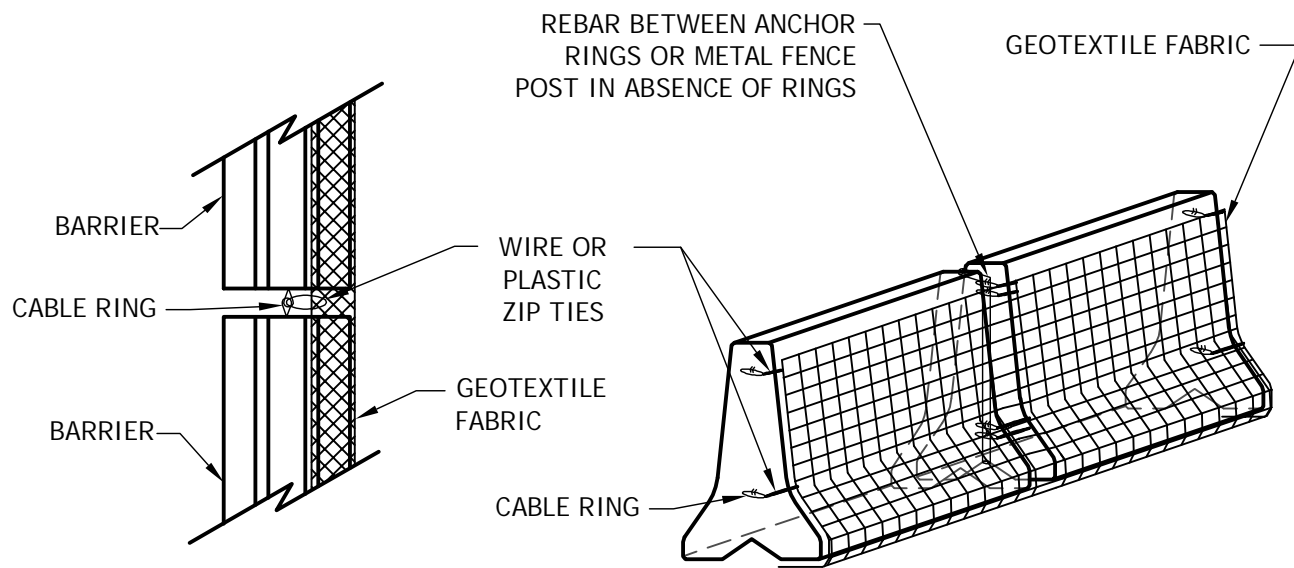


SIDE VIEW



TOP VIEW

BARRIER WITHOUT CABLE RINGS



TOP VIEW

3D VIEW

BARRIER WITH CABLE RINGS
SILT FENCE, SUPER DUTY



SUPER DUTY PERIMETER CONTROL
SILT FENCE / CONCRETE BARRIER
SYSTEM

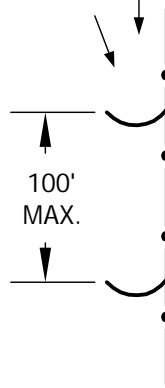
LAST REVISION:
April 2008

PLATE NO.
ERO-1D

PLAN VIEW

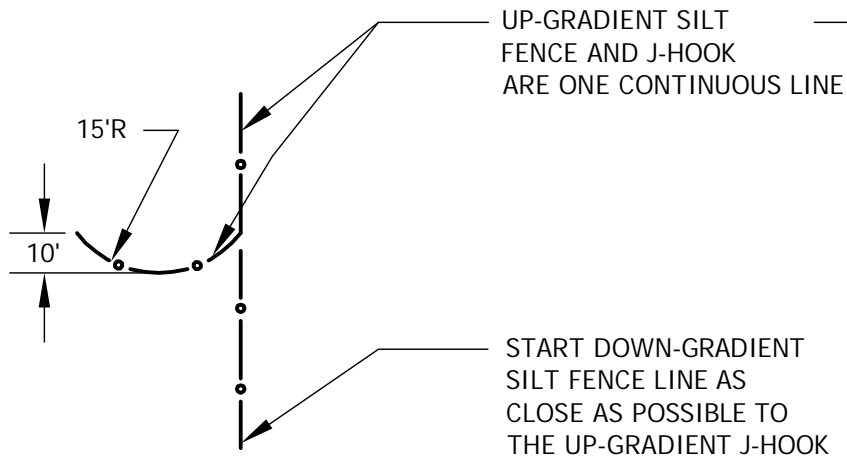
I. SPACING REQUIREMENTS

DIRECTION OF SURFACE FLOW

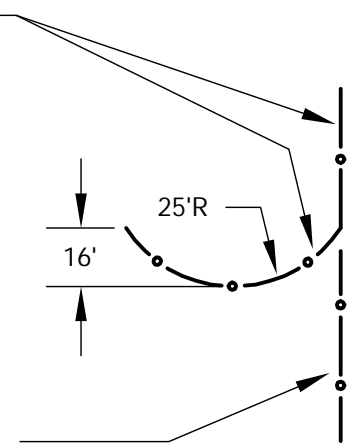


NOTE: SPACING DISTANCES WILL VARY, BUT ARE NOT TO EXCEED 100 FEET.

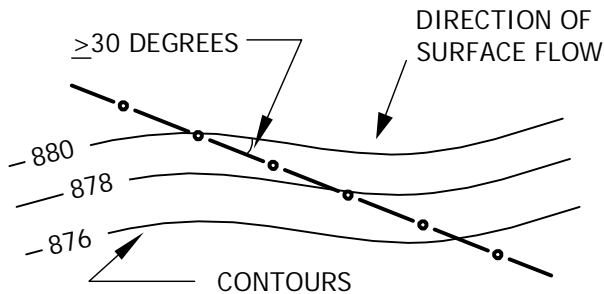
II. SIZING REQUIREMENTS: J15, J25



J15 - FOR CATCHMENT AREA < 0.25 ACRES



J25 - FOR CATCHMENT AREA ≥ 0.25 ACRES



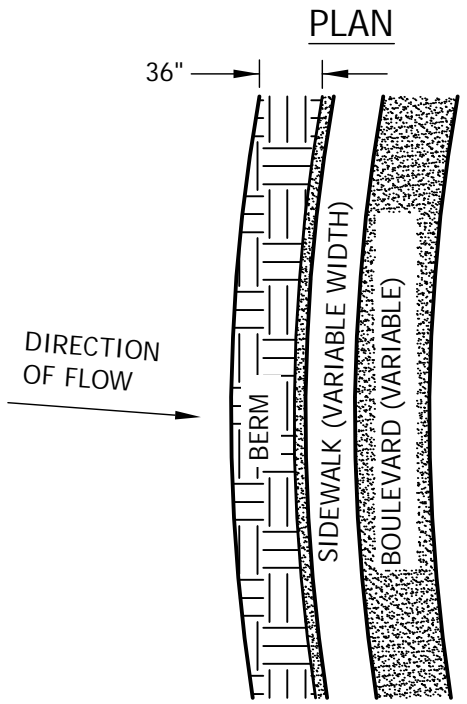
NOTE: J-HOOKS SHALL BE USED WHEN THE SILT FENCE IS INSTALLED AT AN ANGLE OF 30 DEGREES OR GREATER FROM PARALLEL TO THE CONTOURS.



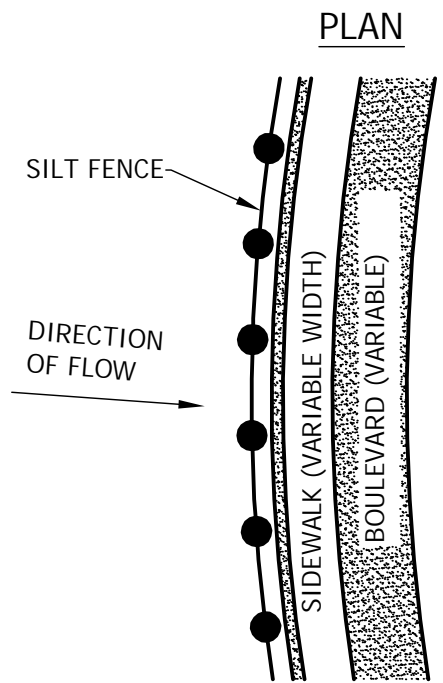
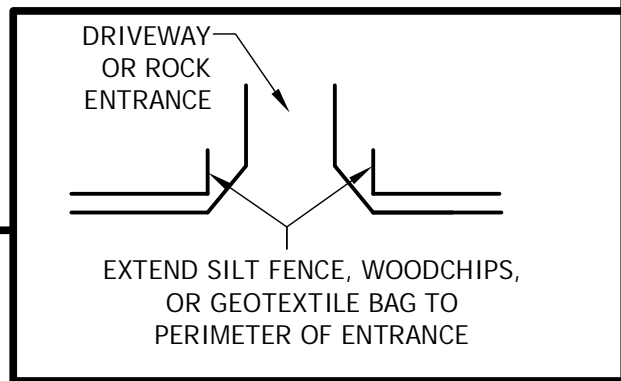
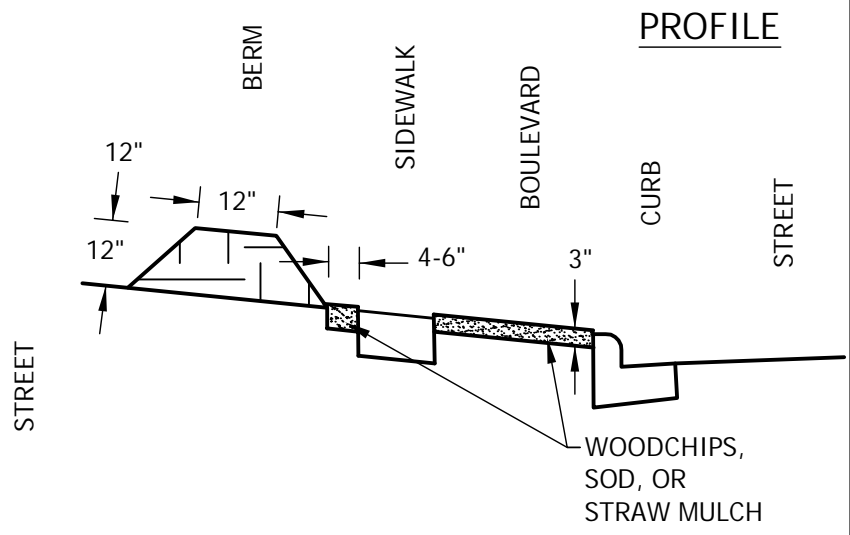
SILT FENCE
J-HOOK

LAST REVISION:
April 2008

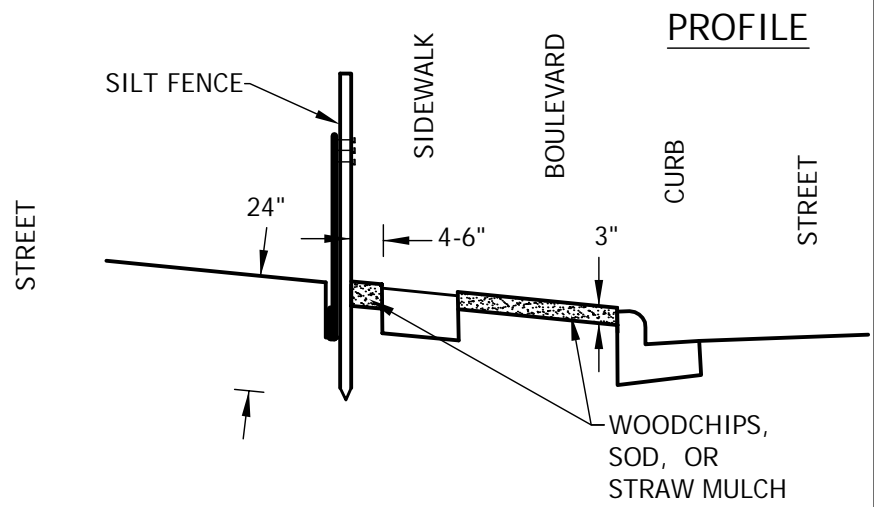
PLATE NO.
ERO-1E



BERM OR APPROVED EQUAL



NOTE: INSTALL SILT FENCE USING MACHINE SLICED METHOD



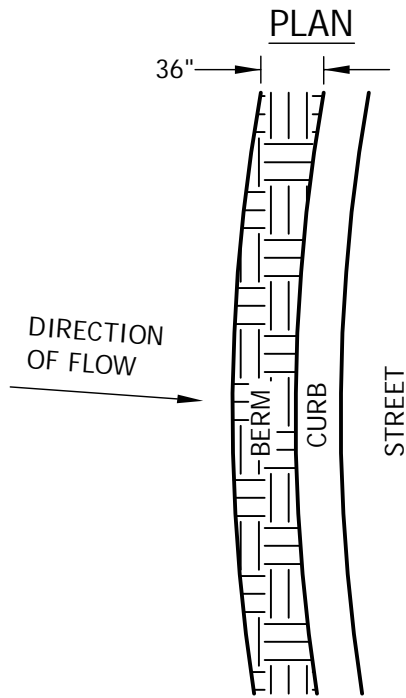
SILT FENCE



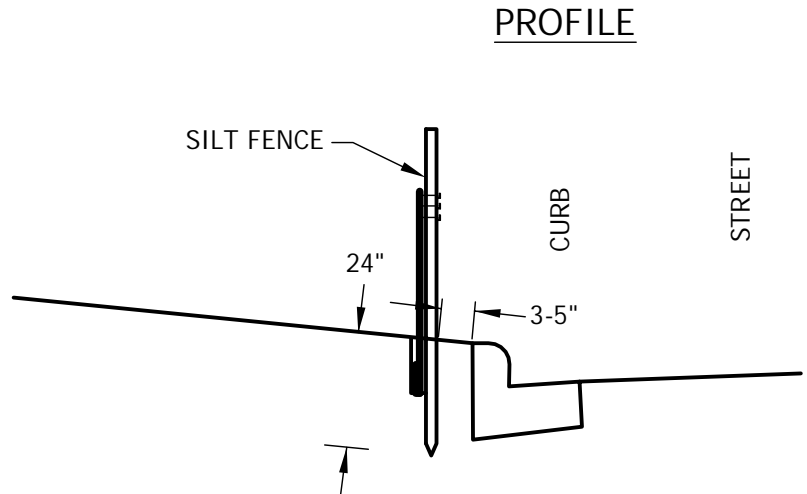
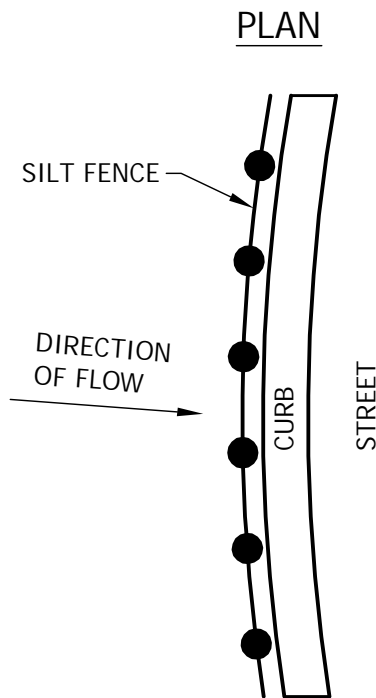
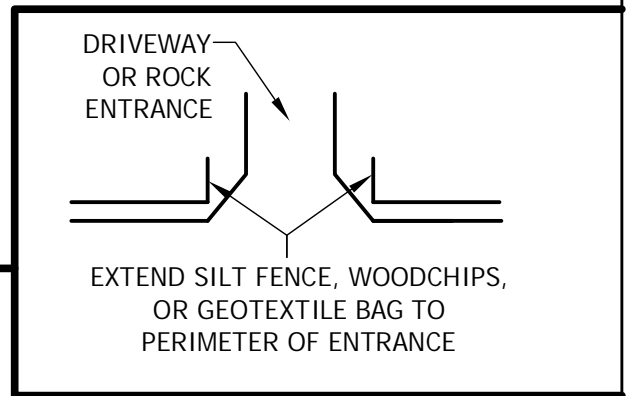
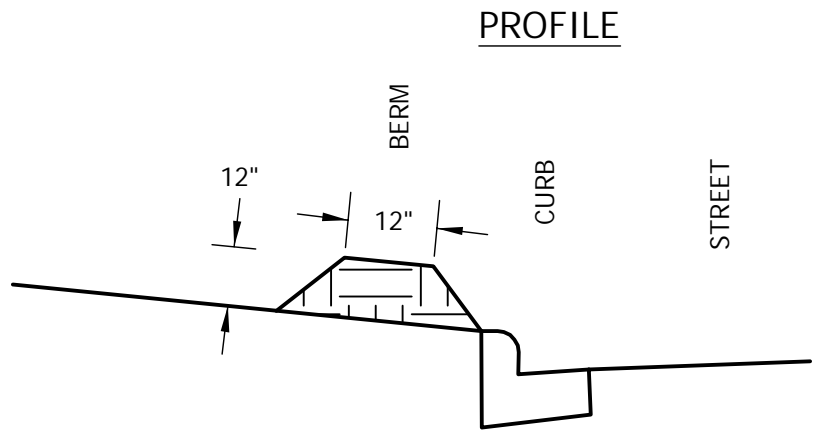
BACK OF CURB PERIMETER CONTROL WITH SIDEWALK

LAST REVISION:
April 2008

PLATE NO.
ERO-1F



BERM OR APPROVED EQUAL



SILT FENCE

NOTE: INSTALL SILT FENCE USING MACHINE SLICED METHOD.



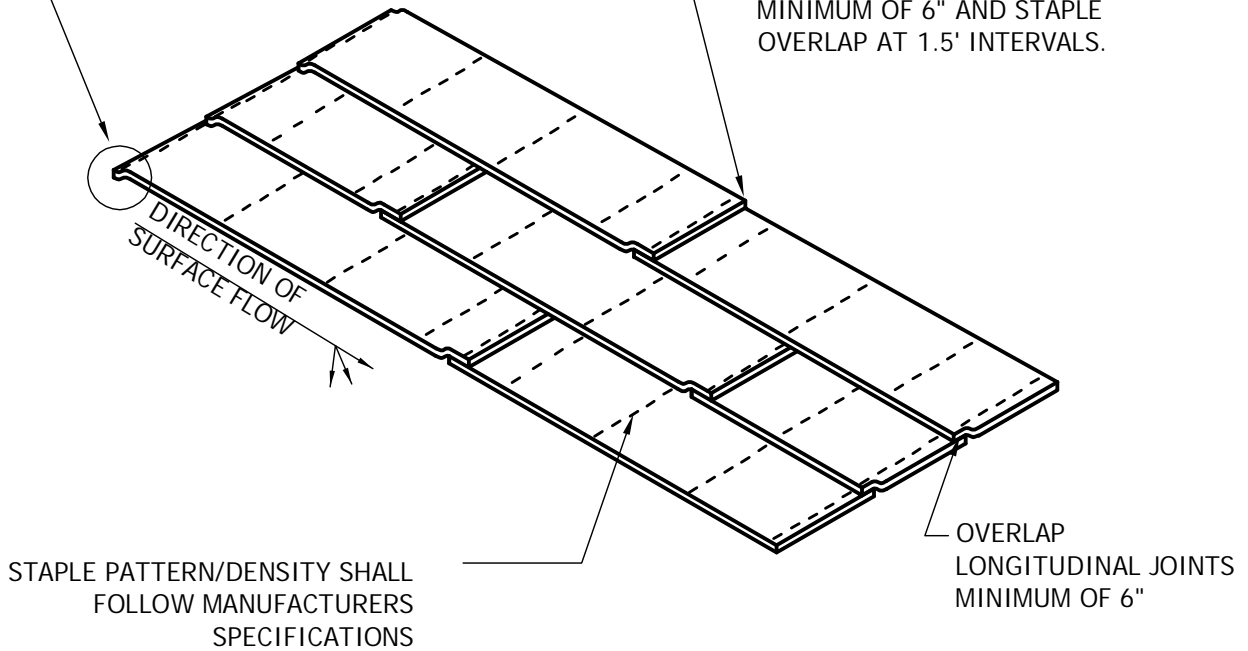
BACK OF CURB PERIMETER CONTROL
NO SIDEWALK

LAST REVISION:
April 2008

PLATE NO.
ERO-1G

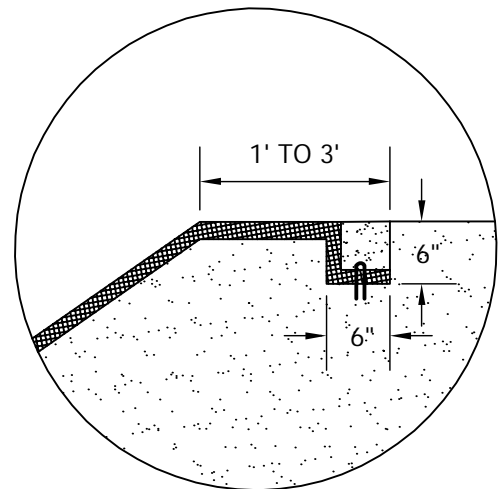
ANCHOR TRENCH
(SEE DETAIL AND NOTES BELOW)

OVERLAP END JOINTS
MINIMUM OF 6" AND STAPLE
OVERLAP AT 1.5' INTERVALS.



ANCHOR TRENCH

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



NOTE:

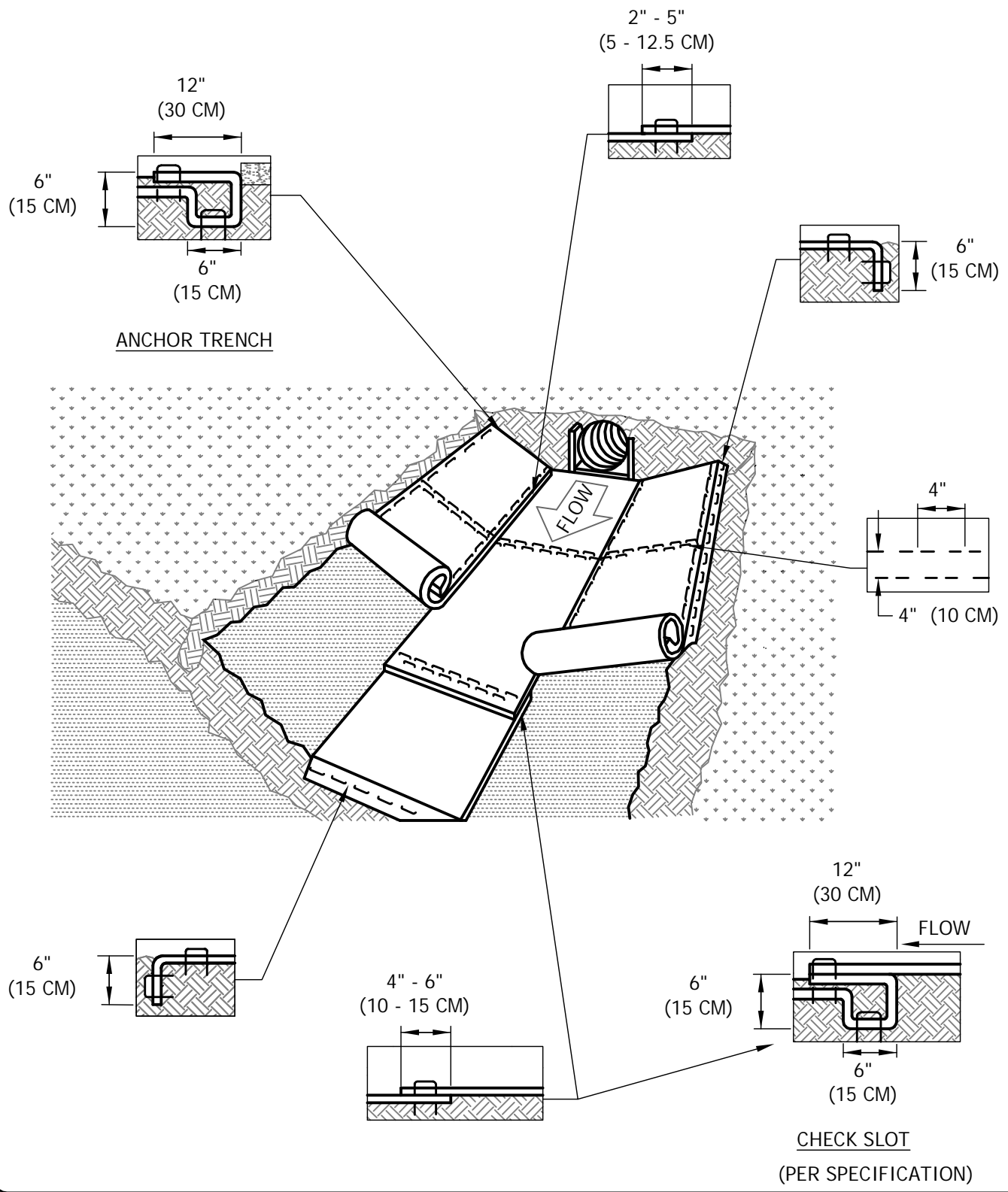
SLOPE SURFACE SHALL BE FREE OF ROCKS, SOIL CLUMPS,
STICKS, VEHICLE IMPRINTS, AND GRASS. BLANKETS SHALL
HAVE GOOD SOIL CONTACT.



EROSION CONTROL BLANKET
INSTALLATION

LAST REVISION:
April 2008

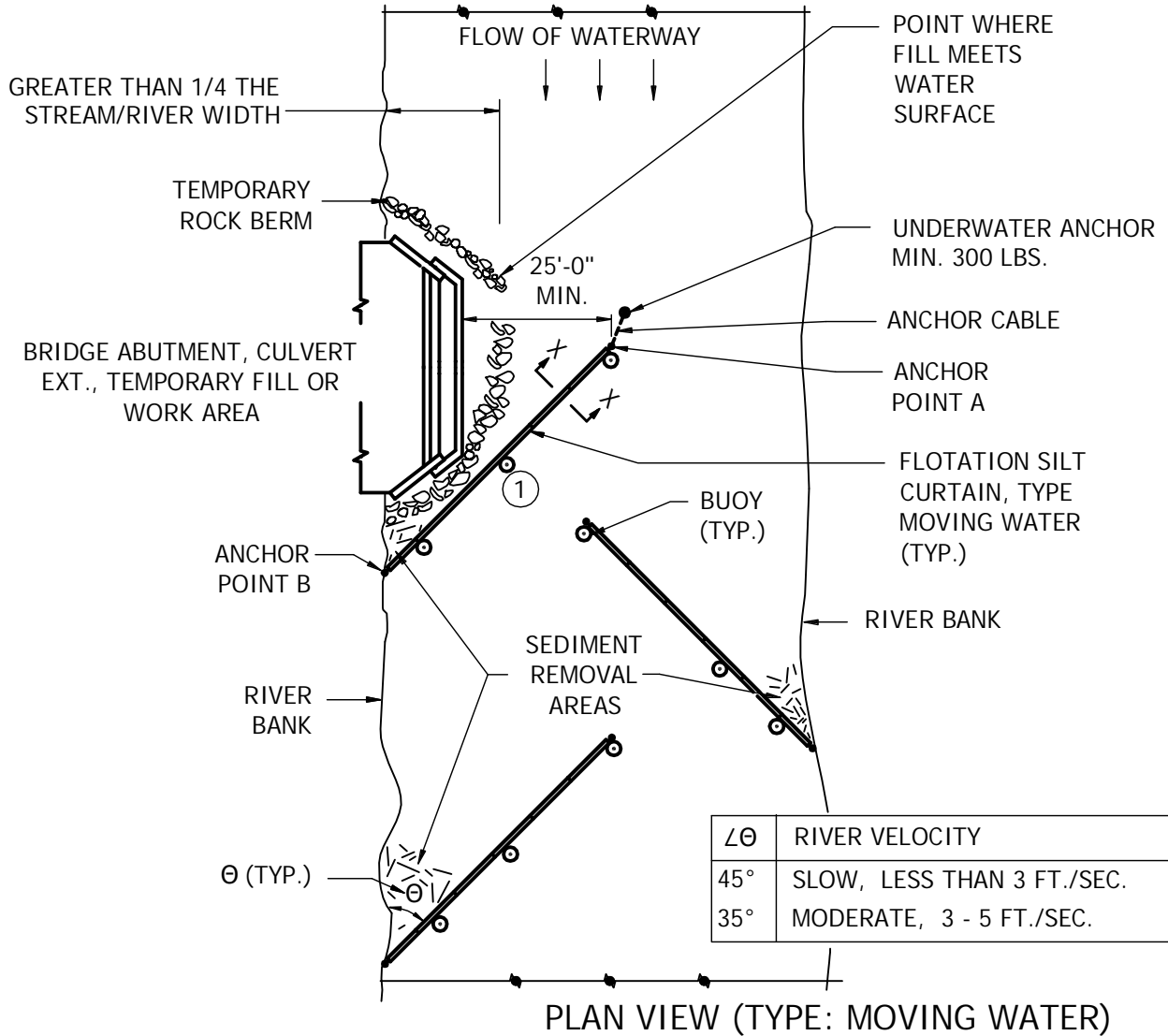
PLATE NO.
ERO-2A



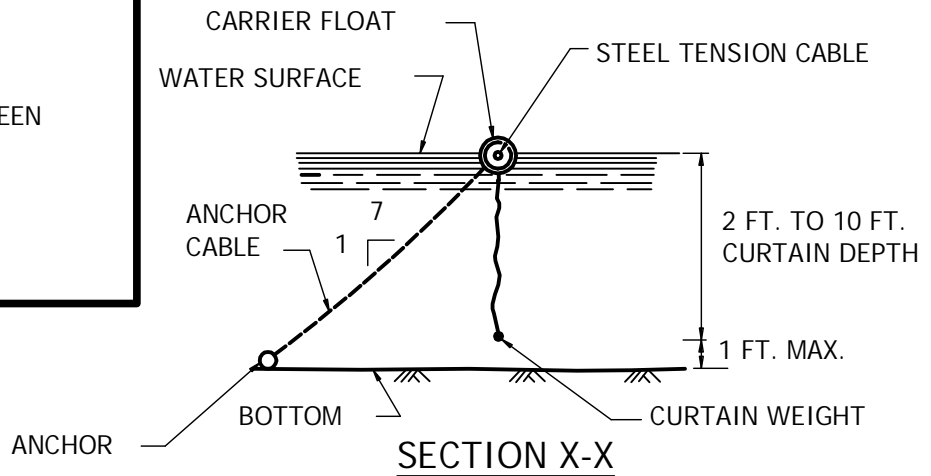
EROSION CONTROL BLANKET
CHANNEL INSTALLATION

LAST REVISION:
April 2008

PLATE NO.
ERO-2B



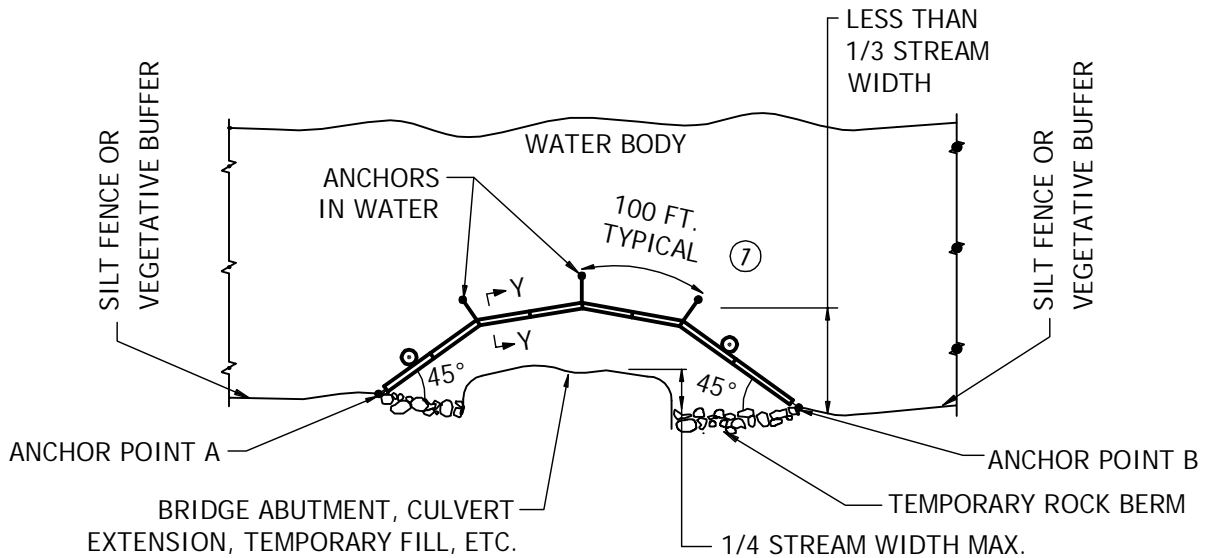
NOTE:
 ① 100 FT. MAX. SPACING BETWEEN ANCHORS. ANCHORS WEIGH MIN. 40 LBS.



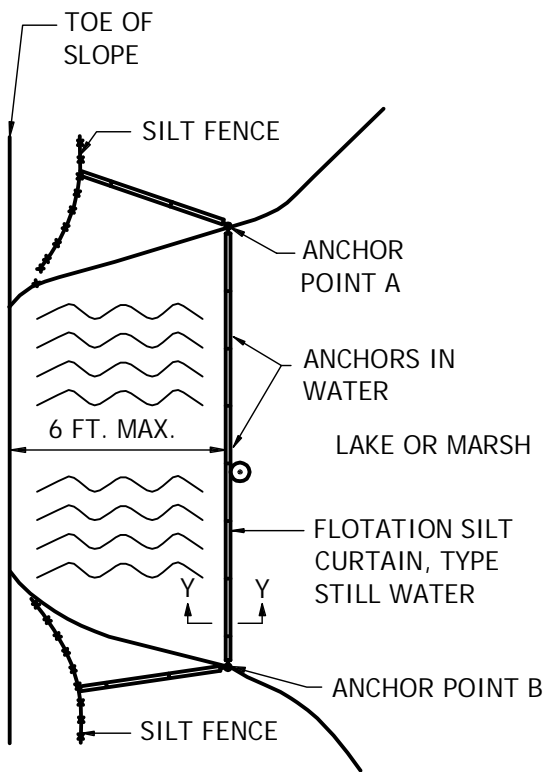
FLOATING SILT CURTAIN
 MOVING WATER

LAST REVISION:
 April 2008

PLATE NO.
 ERO-3A



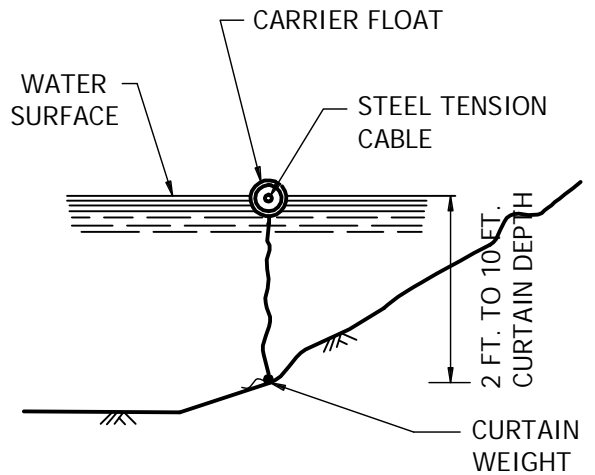
PLAN VIEW (TYPE: WORK AREA)



PLAN VIEW (TYPE: STILL WATER)

NOTES:

- ① 100 FT. MAX. SPACING BETWEEN ANCHORS. ANCHORS WEIGH MIN. 40 LBS.



SECTION Y-Y



FLOATING SILT CURTAIN
STILL WATER

LAST REVISION:
April 2008

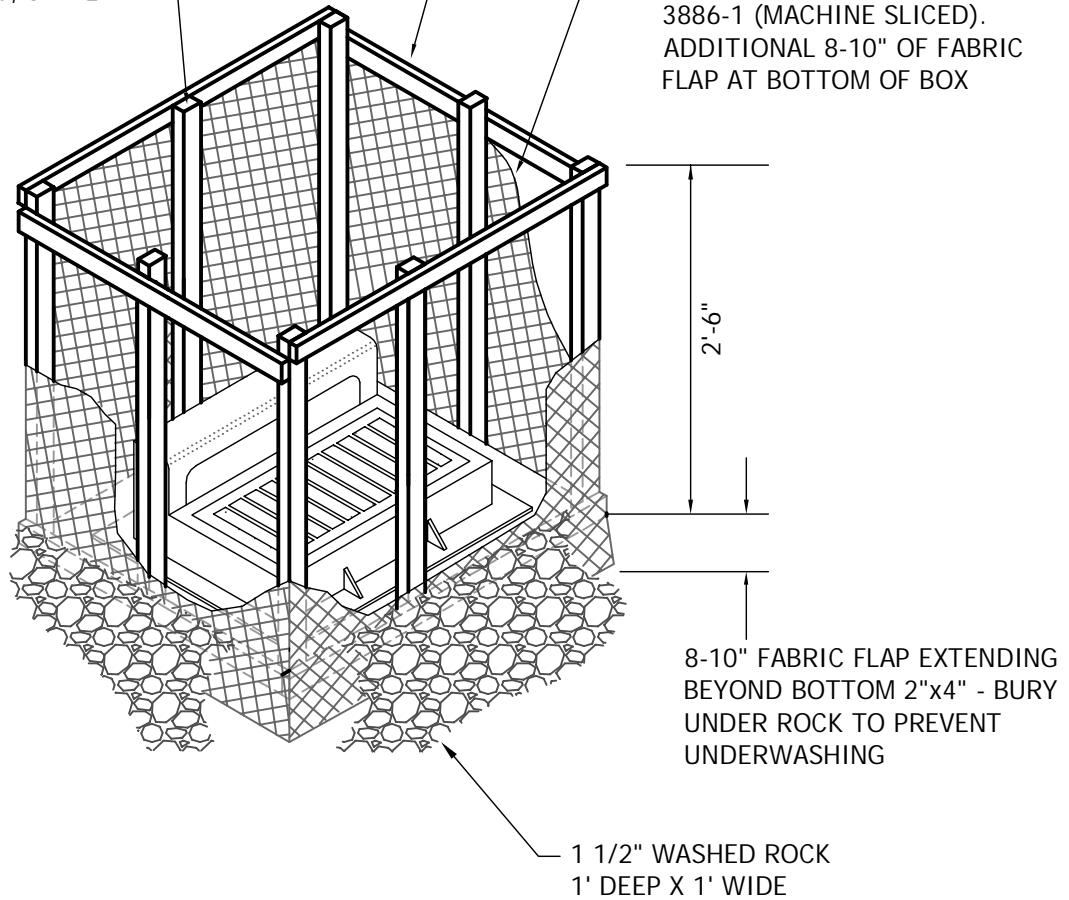
PLATE NO.
ERO-3B

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

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

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

MONOFILAMENT GEOTEXTILE FABRIC AS PER MNDOT TABLE 3886-1 (MACHINE SLICED). ADDITIONAL 8-10" OF FABRIC FLAP AT BOTTOM OF BOX



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.

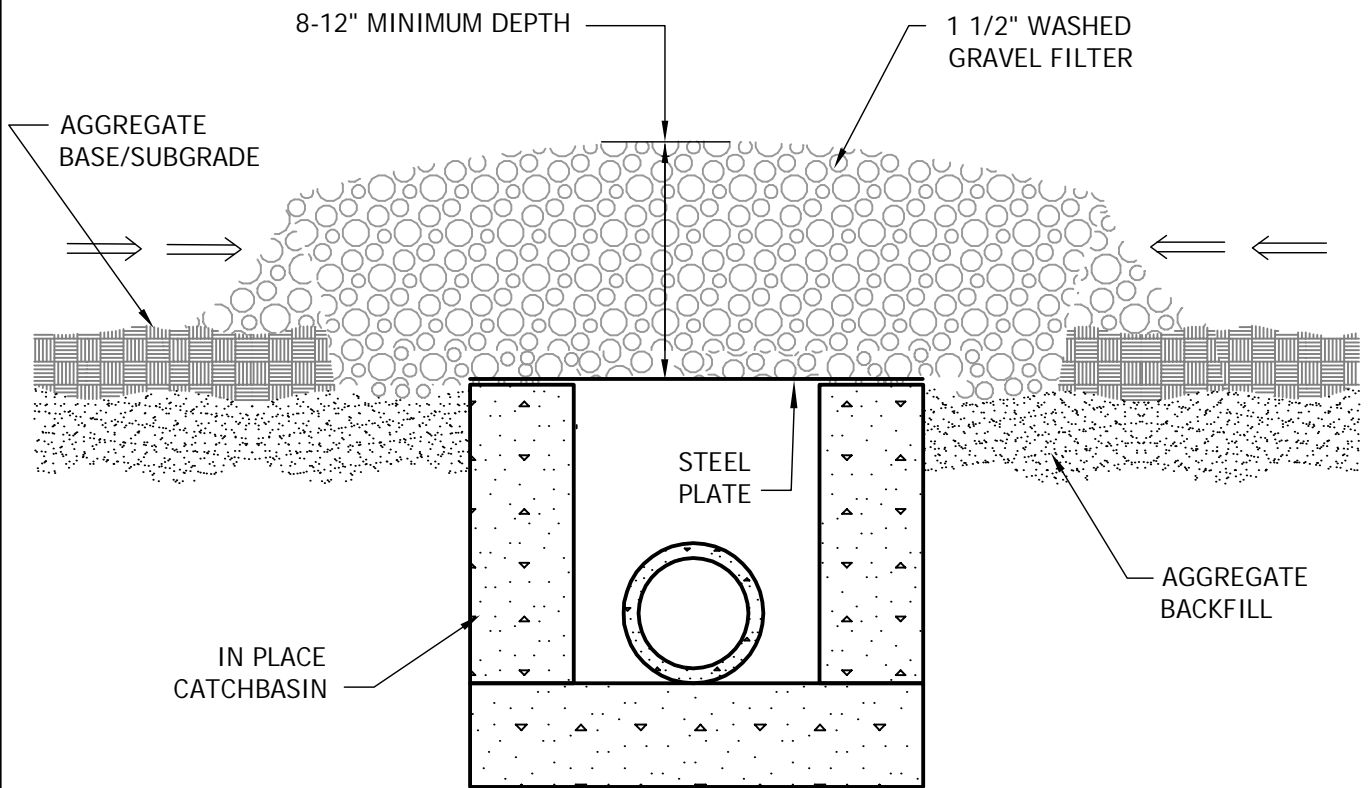


INLET PROTECTION, TYPE A
SILT BOX FOR CATCH BASIN
BEFORE ROAD CONSTRUCTION

LAST REVISION:
April 2008

PLATE NO.
ERO-4A

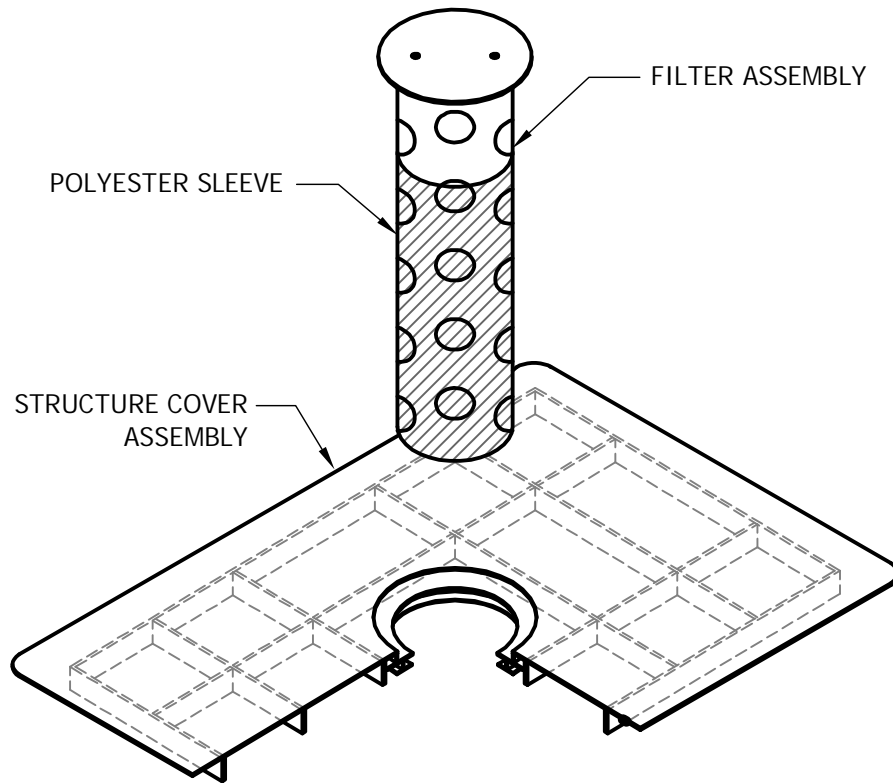
← ← = DIRECTION OF SURFACE FLOW



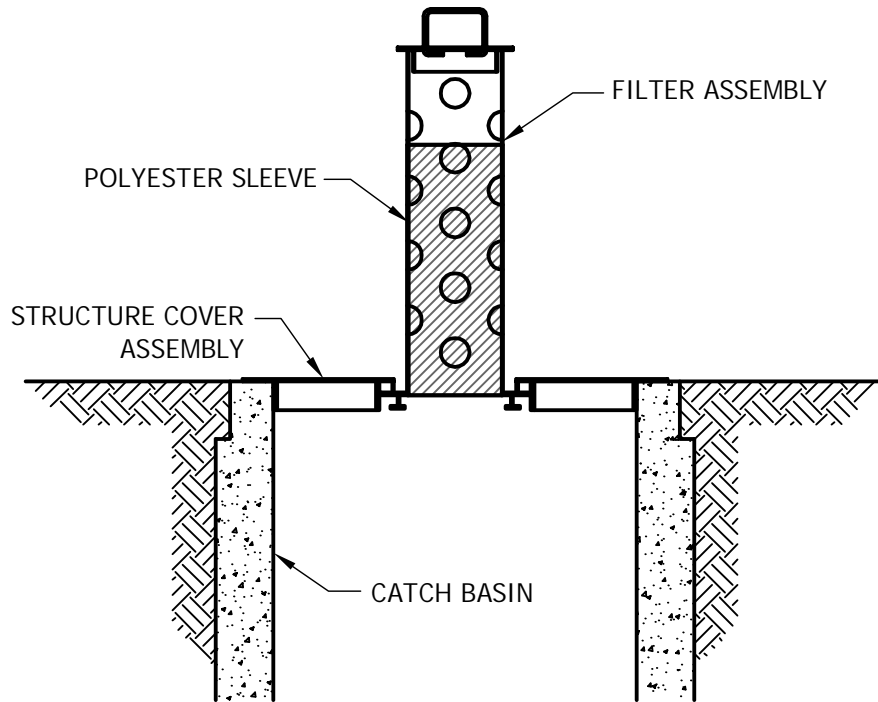
INLET PROTECTION, TYPE A
ROCK FILTER FOR CATCH BASIN
DURING ROAD CONSTRUCTION

LAST REVISION:
April 2008

PLATE NO.
ERO-4B



ISOMETRIC VIEW



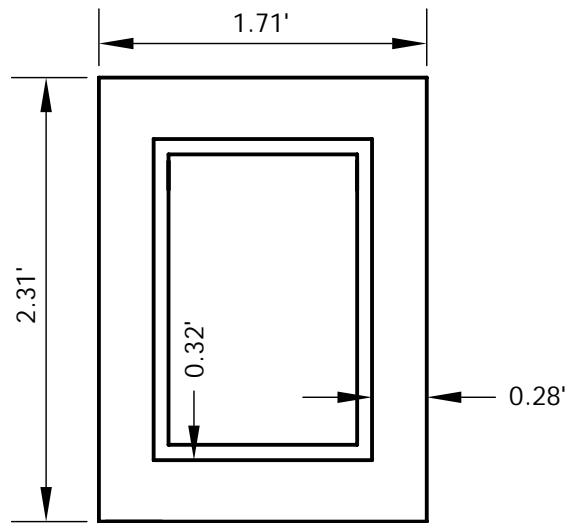
IN-PLACE ELEVATION VIEW



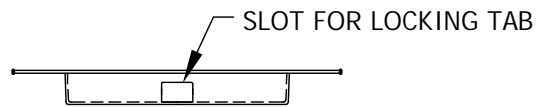
INLET PROTECTION, TYPE A
ROAD DRAIN 2x3 TOP SLAB MODEL

LAST REVISION:
April 2008

PLATE NO.
ERO-4C

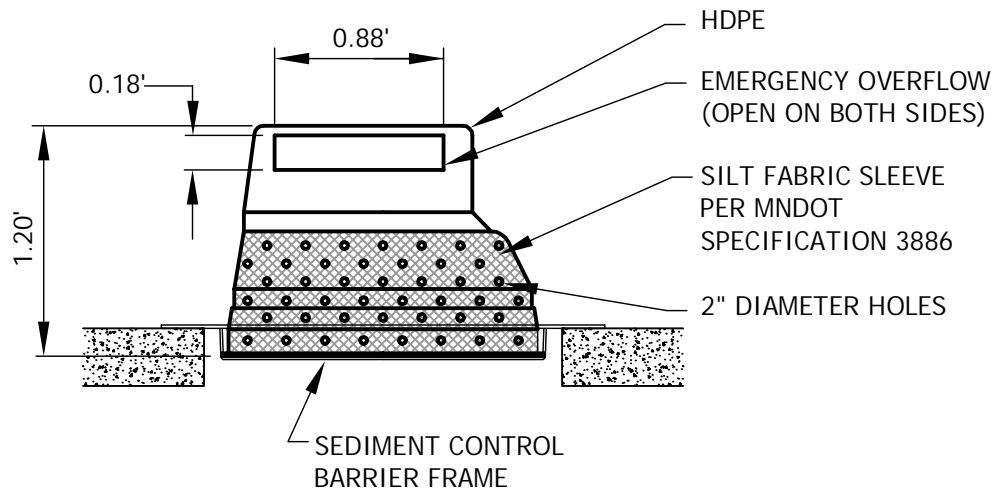


TOP VIEW



SIDE VIEW

SEDIMENT CONTROL BARRIER FRAME



SECTION



INLET PROTECTION, TYPE A
 INFRASAFE 2x3 TOP SLAB MODEL

LAST REVISION:
 April 2008

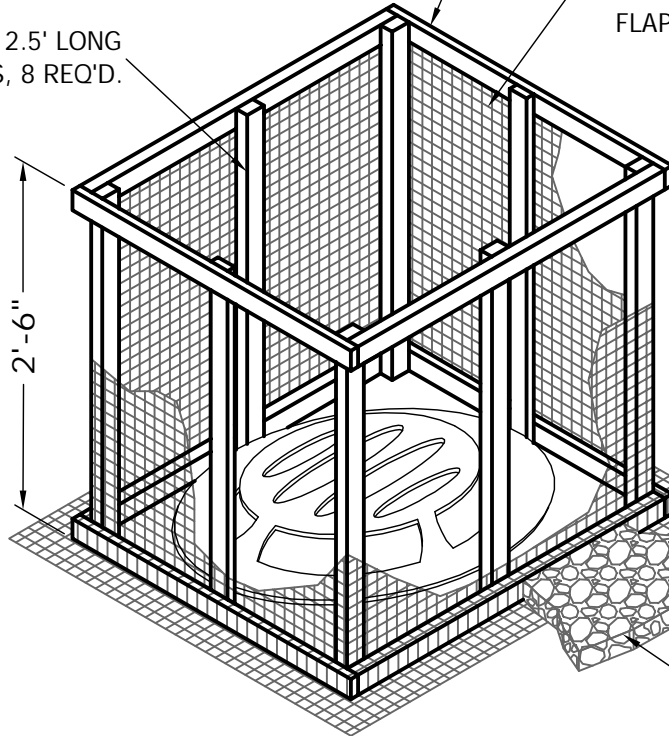
PLATE NO.
 ERO-4D

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

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

MONOFILAMENT GEOTEXTILE FABRIC AS PER MNDOT TABLE 3886-1 (MACHINE SLICED). ADDITIONAL 8-10" OF FABRIC FLAP AT BOTTOM OF BOX

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



8-10" FABRIC FLAP EXTENDING BEYOND BOTTOM 2"x 4" - BURY UNDER ROCK TO PREVENT UNDERWASHING.

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

NOTES:

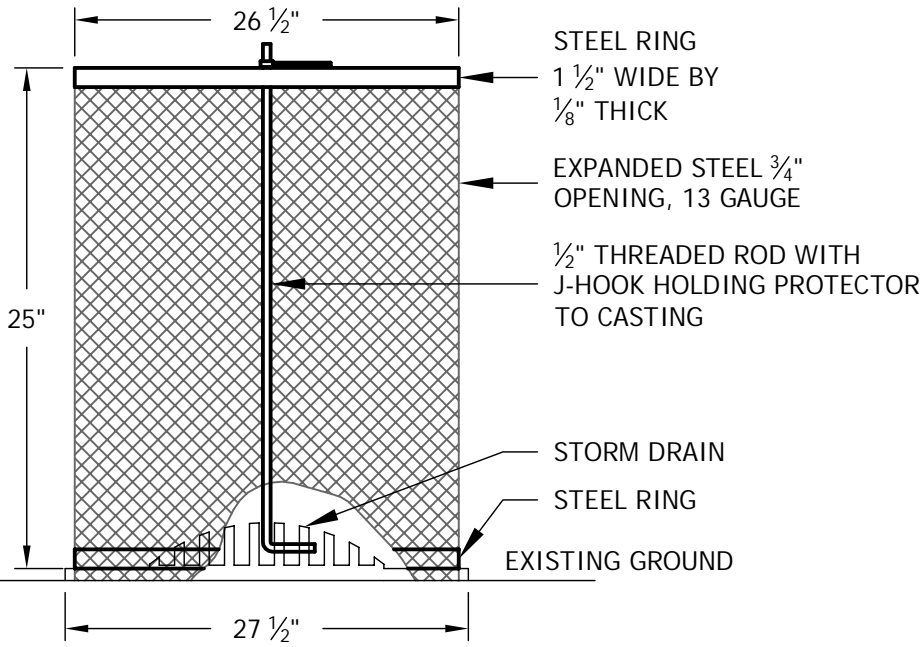
CONTRACTOR SHALL CONSTRUCT SILT BOX TO FIT AROUND THE INLET STRUCTURE WITH 6" MINIMUM CLEARANCE TO EDGES OF STRUCTURE. SILT BOX TO BE PLACED ON AN EVEN SURFACE 6" BELOW STRUCTURE OPENING. TOP OF SILT BOX TO EXTEND 18" MINIMUM ABOVE EXISTING GRADE.



INLET PROTECTION, TYPE B
SILT BOX - YARD

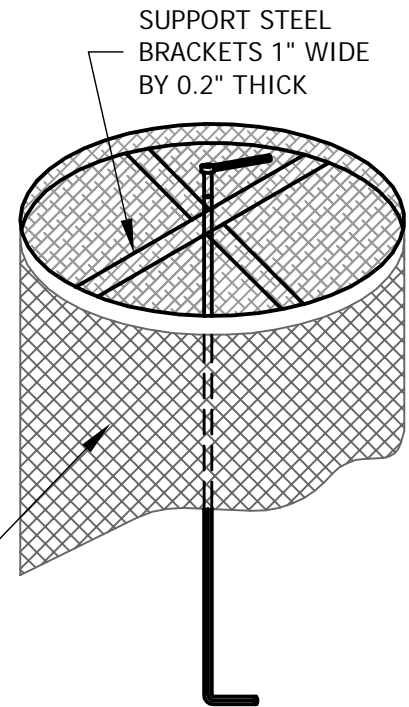
LAST REVISION:
April 2008

PLATE NO.
ERO-4E



ELEVATION

STEEL PROTECTOR WRAPPED WITH
WOVEN MONOFILAMENT GEOTEXTILE
TUCK EXCESS MATERIAL UNDER
LOWER RING TO FORM GASKET



ISOMETRIC VIEW

- PRE-MANUFACTURED UNIT
BY CIRCLE "H" ENTERPRISES



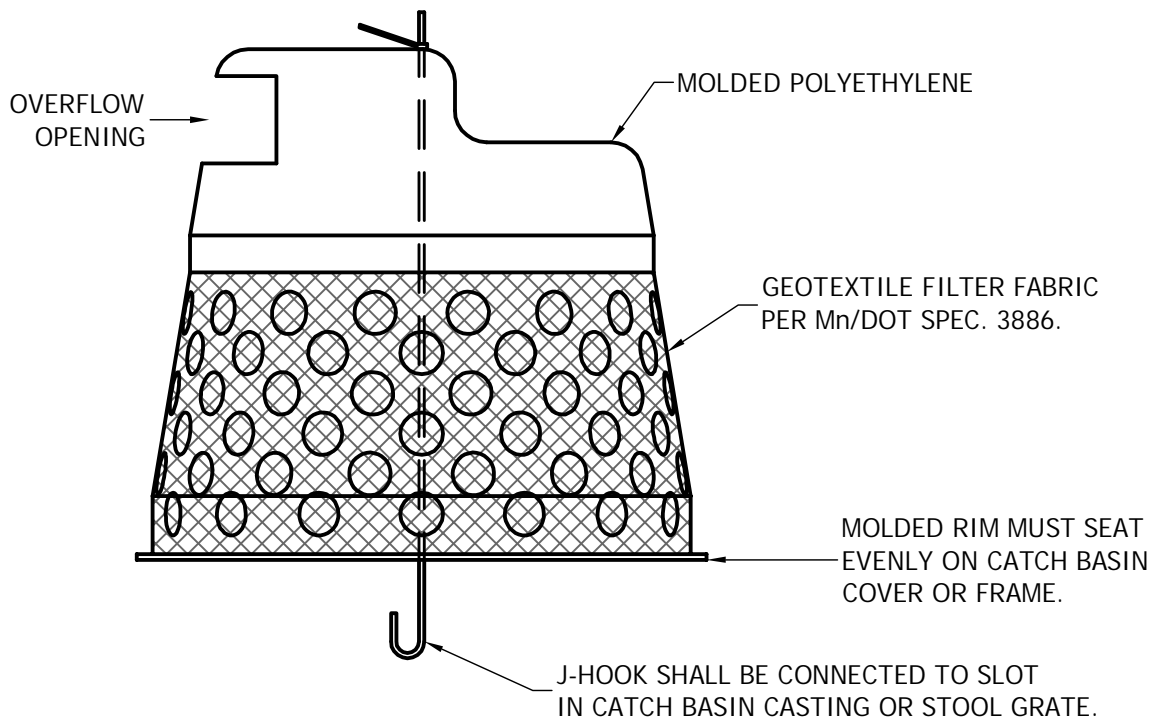
INLET PROTECTION, TYPE B
CIRCLE "H"

LAST REVISION:
April 2008

PLATE NO.
ERO-4F

DEVICES TO BE INSTALLED
IMMEDIATELY UPON INSTALLATION OF
CONCRETE STRUCTURE CONE OR TOP
SLAB. CASTING ASSEMBLY MUST ALSO
BE AT LEAST TEMPORARILY IN PLACE.

DEVICES SHOWN ARE AS
MANUFACTURED BY ROYAL
ENTERPRISES. MODEL NO. 27"
INFRASAFE SEDIMENT CONTROL
BARRIER-DG.



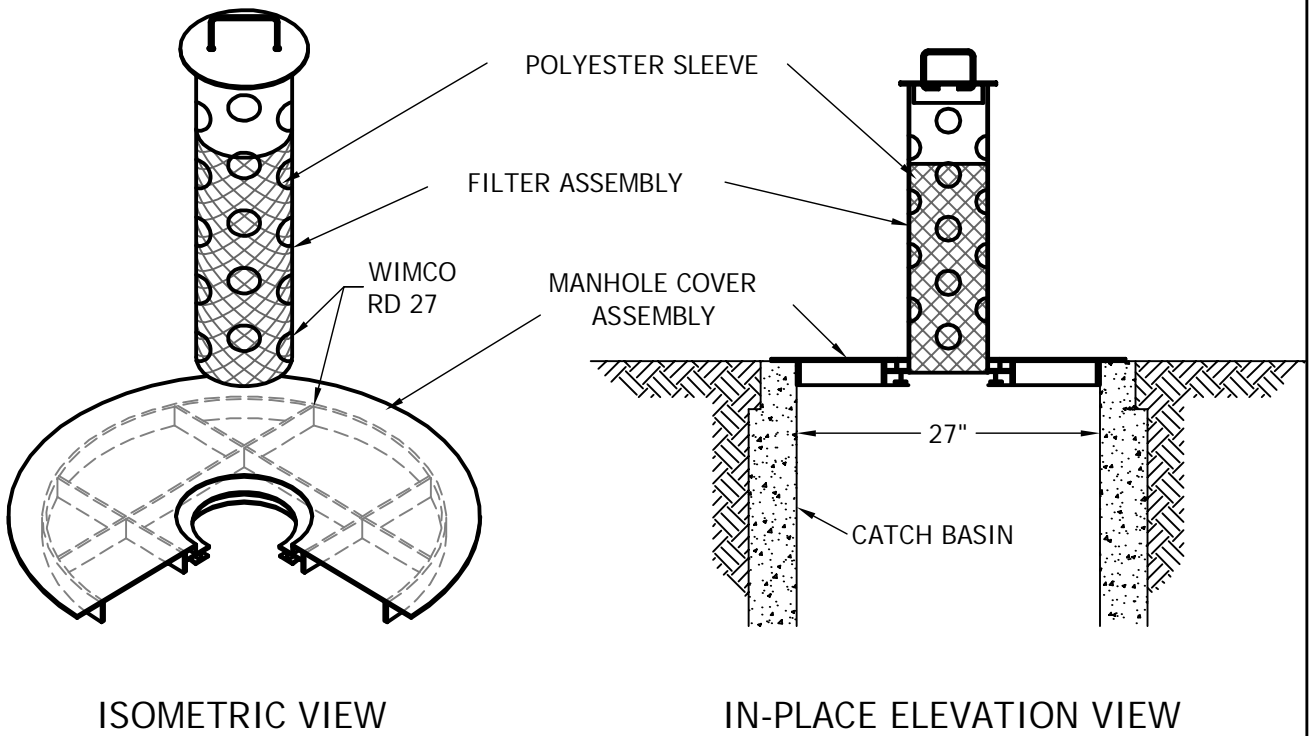
INLET PROTECTION, TYPE B
INFRASAFE SEDIMENT CONTROL BARRIER

LAST REVISION:
April 2008

PLATE NO.
ERO-4G

DEVICES TO BE INSTALLED
IMMEDIATELY UPON INSTALLATION OF
CONCRETE STRUCTURE CONE OR TOP
SLAB.

DEVICES SHOWN ARE AS
MANUFACTURED BY WIMCO. MODEL
NO. OF UNIT SHOWN: RD 27.



ISOMETRIC VIEW

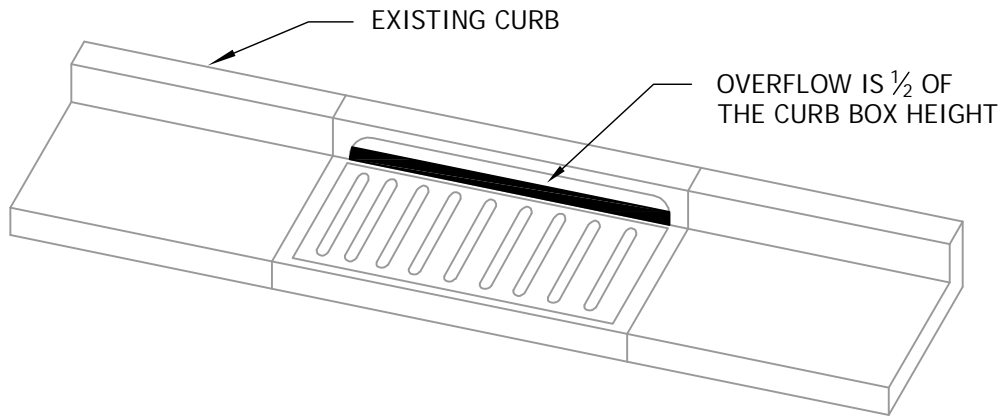
IN-PLACE ELEVATION VIEW



INLET PROTECTION, TYPE B

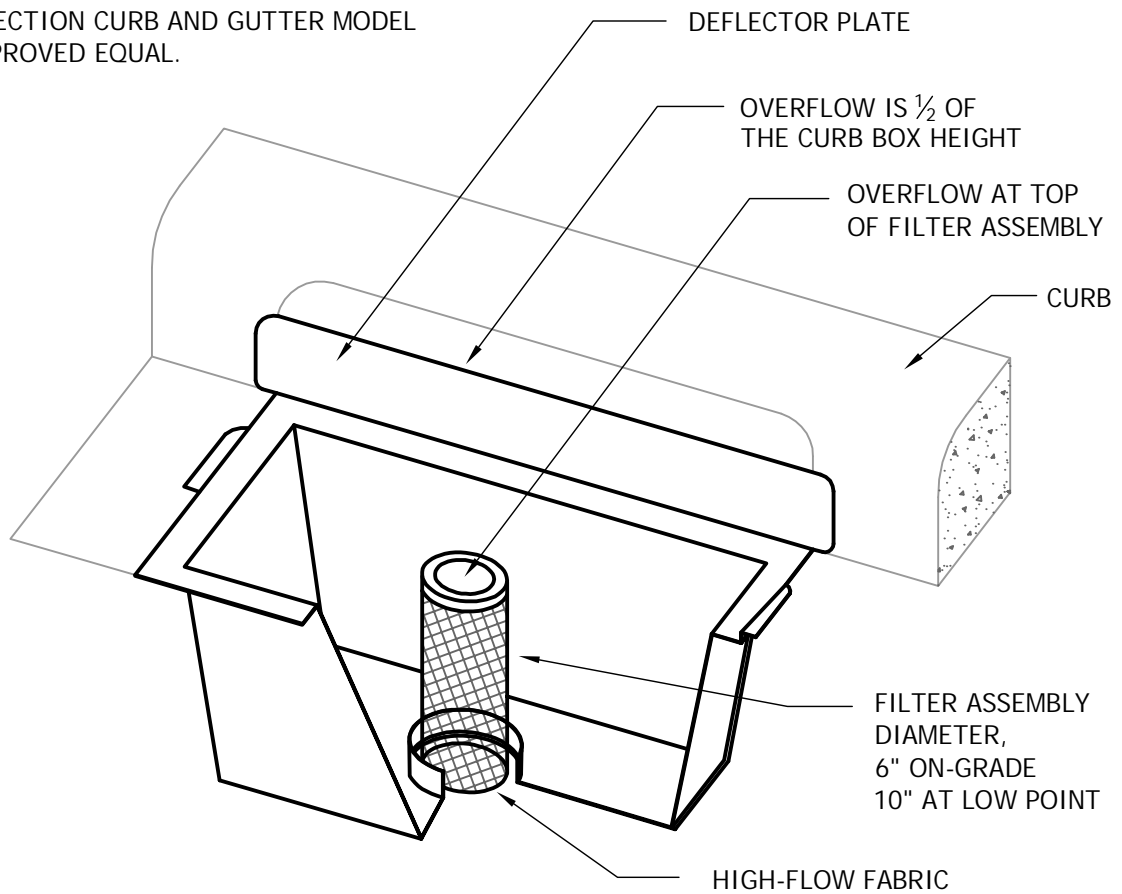
LAST REVISION:
April 2008

PLATE NO.
ERO-4H



PLAN

WIMCO ROAD DRAIN CG-23* HIGH FLOW
INLET PROTECTION CURB AND GUTTER MODEL
OR CITY APPROVED EQUAL.



* FOR THE NEW R-3290-VB STANDARD CASTING,
INSTALL WIMCO ROAD DRAIN
CG-3290 OR CITY APPROVED EQUAL.



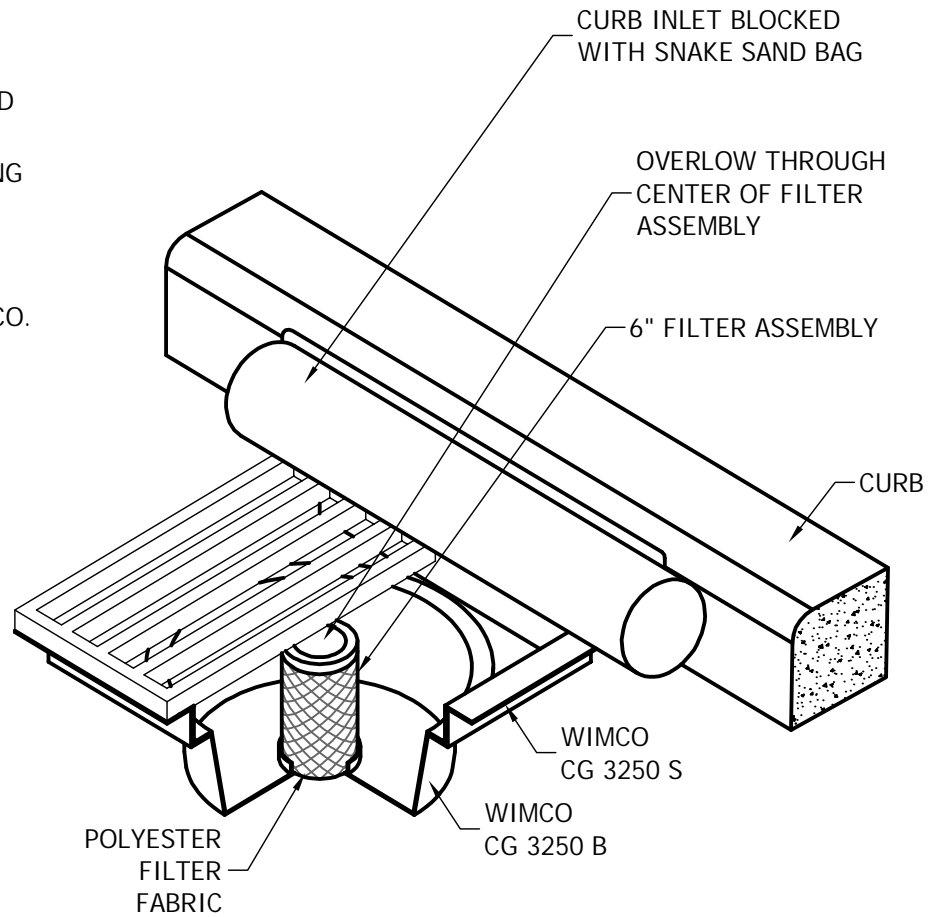
INLET PROTECTION, TYPE C
CATCH BASIN INSERT
AFTER PAVING

LAST REVISION:
April 2008

PLATE NO.
ERO-41

DEVICES TO BE INSTALLED IMMEDIATELY UPON INSTALLATION OF CASTING ASSEMBLY.

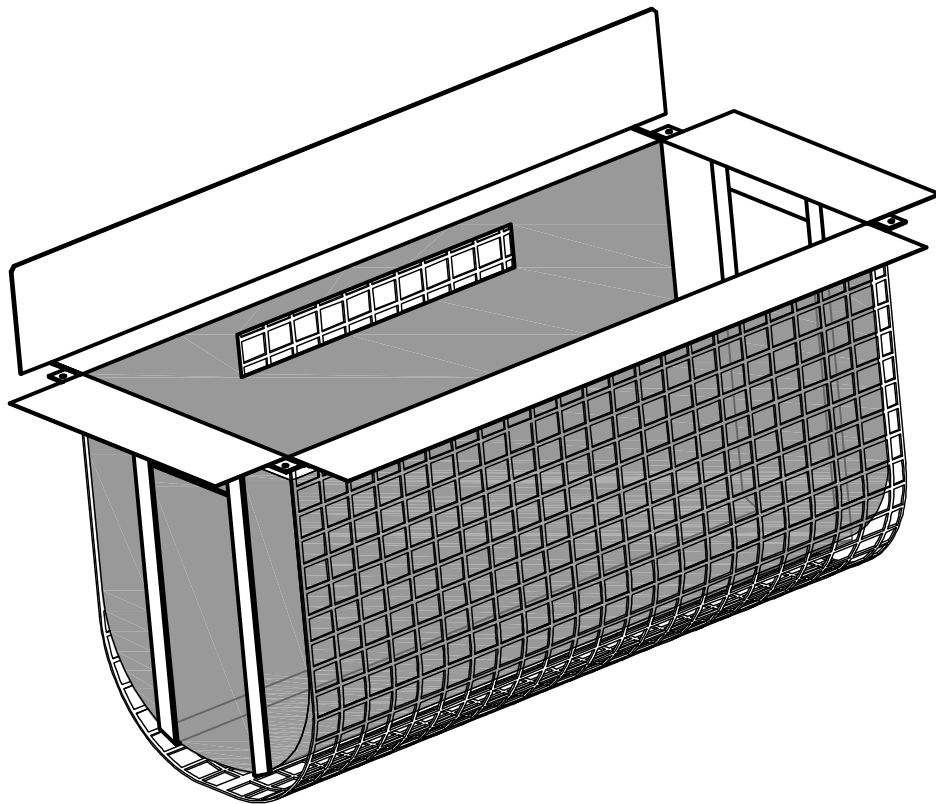
DEVICES SHOWN ARE AS MANUFACTURED BY WIMCO.



INLET PROTECTION, TYPE C
WIMCO

LAST REVISION:
April 2008

PLATE NO.
ERO-4J



DEVICE SHOWN IS MANUFACTURED BY STORM WATER SOLUTIONS



INLET PROTECTION, TYPE C
SILT TRAPPER

LAST REVISION:
April 2008

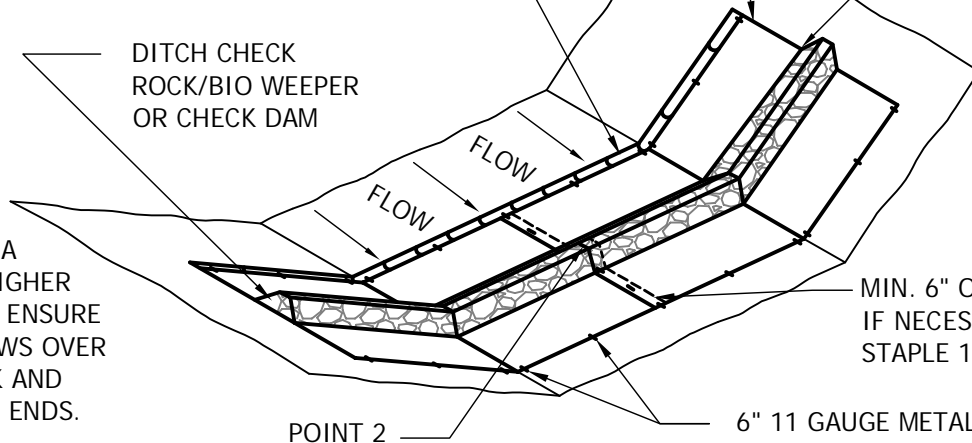
PLATE NO.
ERO-4K

6" X 6" TRENCH WITH LEADING EDGE OF TYPE IV GEOTEXTILE FABRIC STAPLED AT 1' INTERVALS AND BACKFILLED WITH NATURAL SOIL

MnDOT 3733 GEOTEXTILE FABRIC

POINT 1

DITCH CHECK
ROCK/BIO WEEPER
OR CHECK DAM



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

POINT 2

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

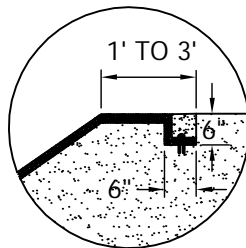
NOTE:

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.

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

ANCHOR TRENCH

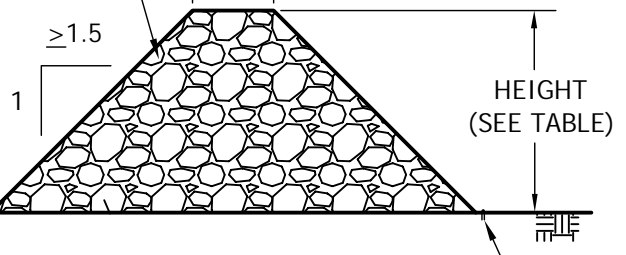
1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT



MATERIALS (SEE TABLE)

WIDTH (SEE TABLE)

DIRECTION OF SURFACE FLOW



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

STAPLE DOWNSTREAM SIDE OF FABRIC AT 2' INTERVALS



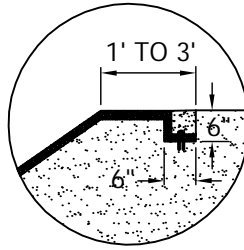
**ROCK DITCH CHECK / WEEPER
SIZING & MATERIALS**

LAST REVISION:
April 2008

PLATE NO.
ERO-5A

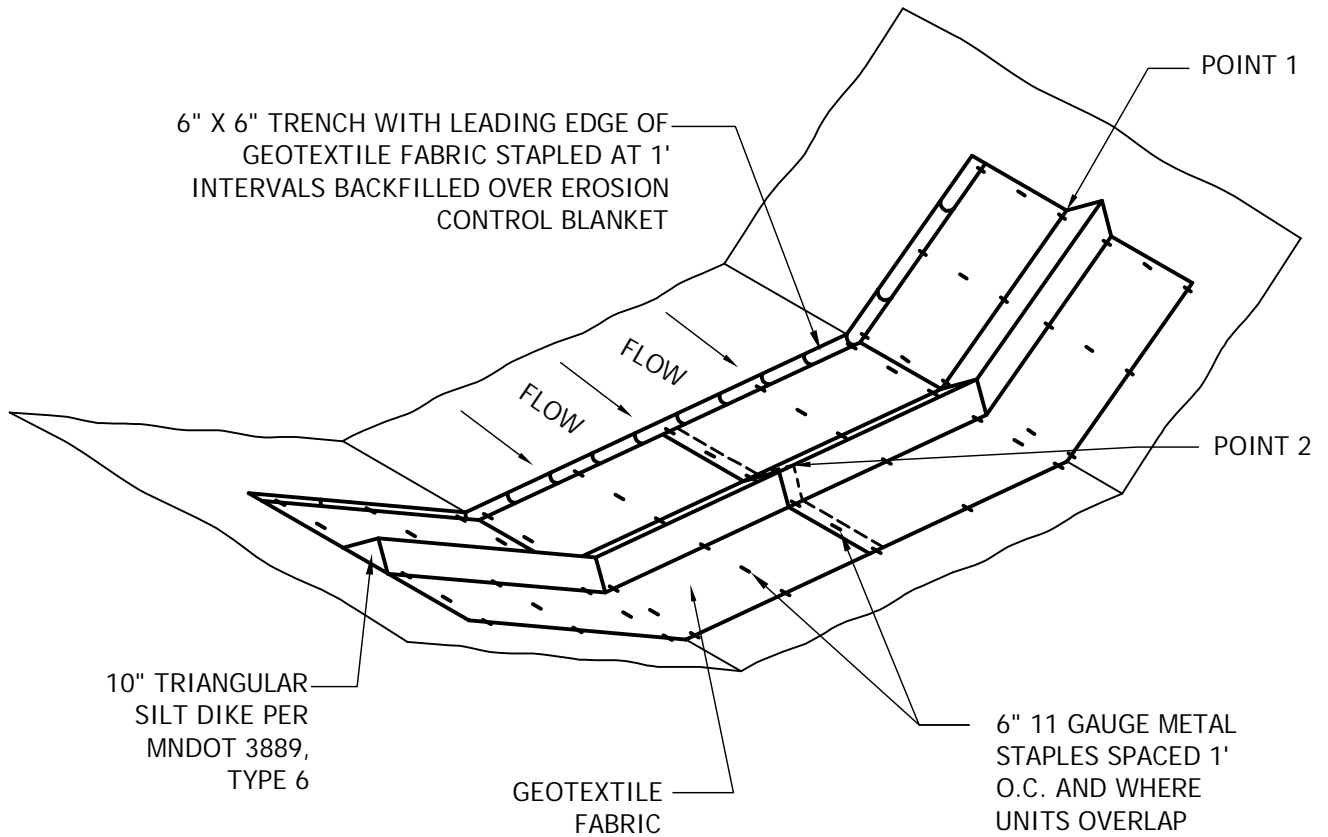
ANCHOR TRENCH

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



NOTE:
STAPLE DENSITY SHALL CONFORM TO MANUFACTURERS SPECIFICATIONS.

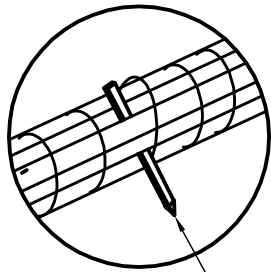
NOTE:
POINT 1 MUST BE A MINIMUM OF 6" HIGHER THAN POINT 2 TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.



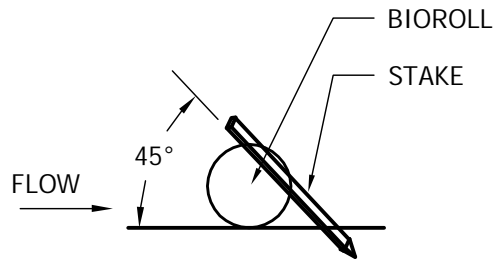
**DITCH CHECK
TRIANGULAR SILT DIKE**

LAST REVISION:
April 2008

PLATE NO.
ERO-5B

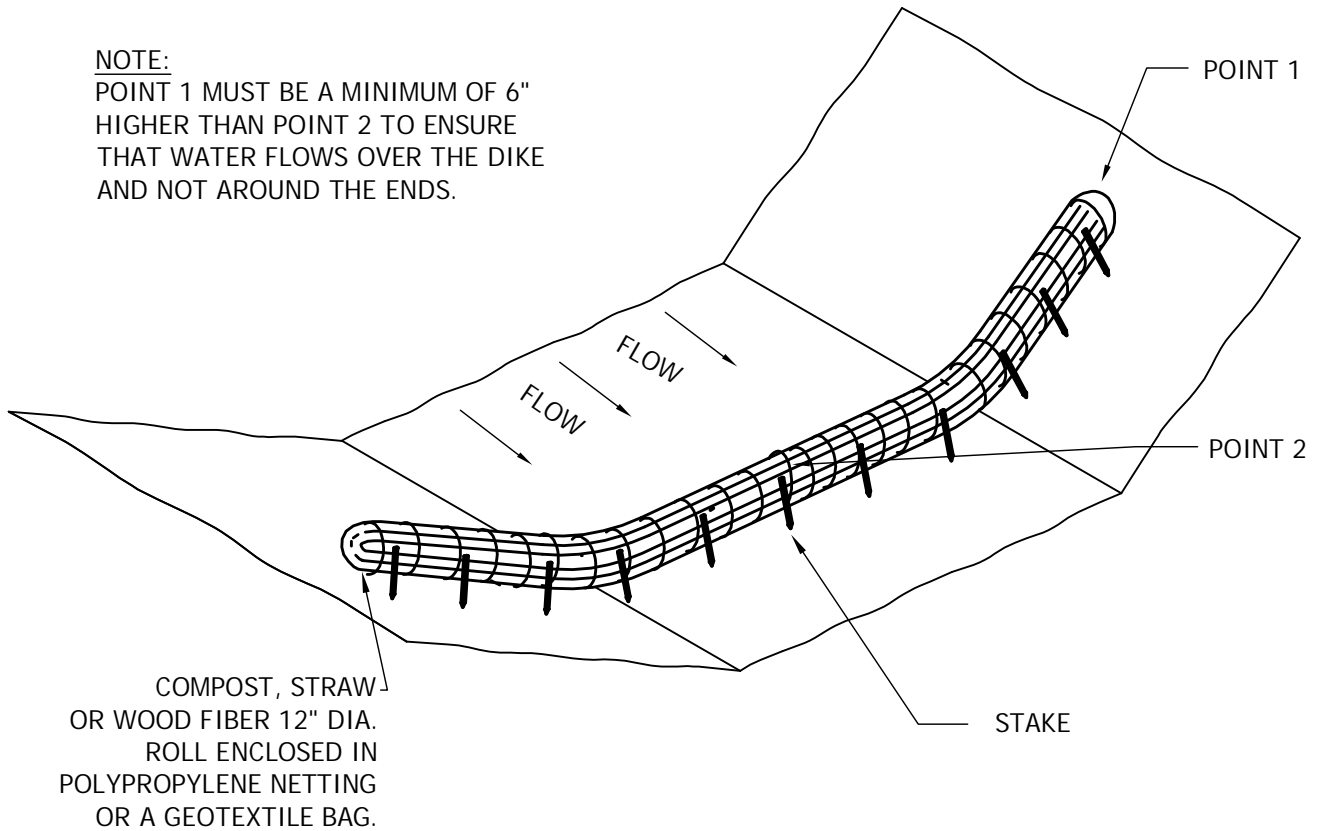


STAKE



2" x 2" x 16" LONG WOODEN STAKES AT 1'-0" SPACING. STAKES SHALL BE DRIVEN THROUGH THE BACK HALF OF THE FILTER LOG AT AN ANGLE OF 45° WITH THE TOP OF THE STAKE POINTING UPSTREAM.

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



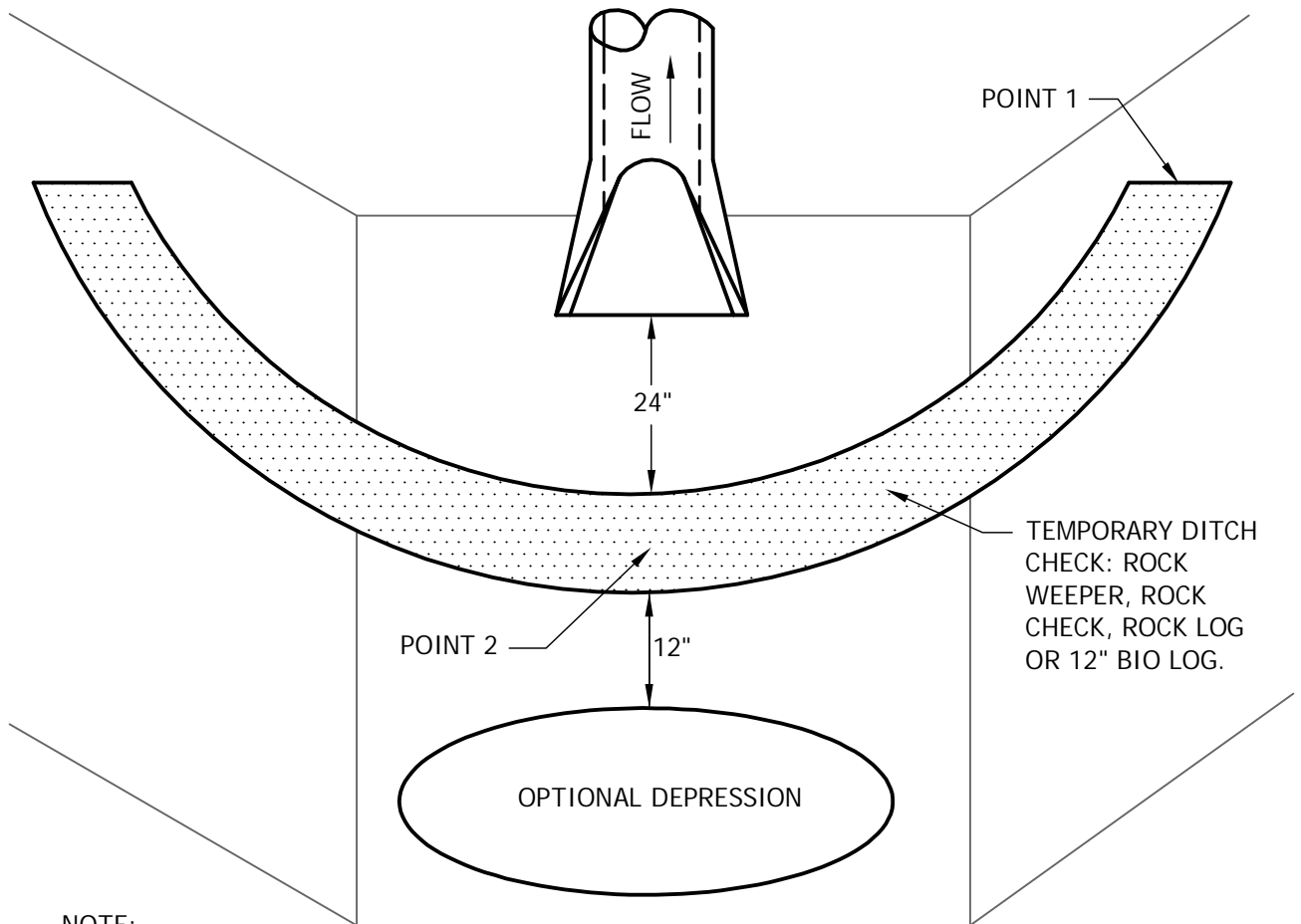
COMPOST, STRAW OR WOOD FIBER 12" DIA. ROLL ENCLOSED IN POLYPROPYLENE NETTING OR A GEOTEXTILE BAG.



FILTER LOG DITCH CHECK

LAST REVISION:
April 2008

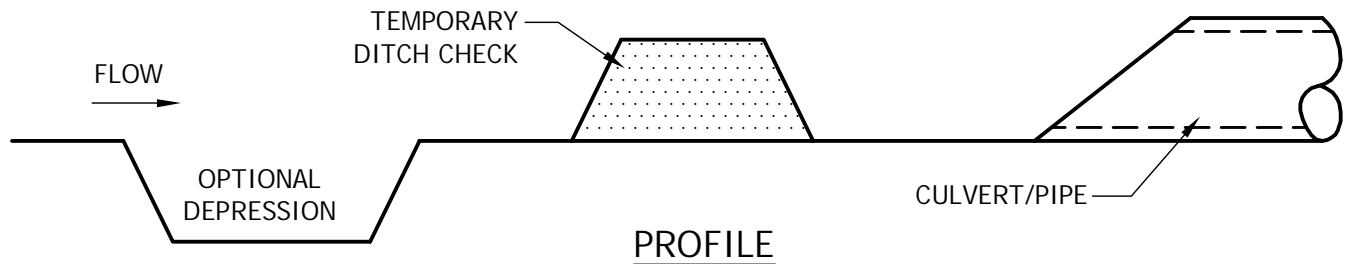
PLATE NO.
ERO-5C



NOTE:
 POINT 1 MUST BE MINIMUM OF 6" HIGHER THAN POINT 2, TO ENSURE WATER FLOWS THROUGH AND OVER THE CHECK AND NOT AROUND THE ENDS

PLAN VIEW

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



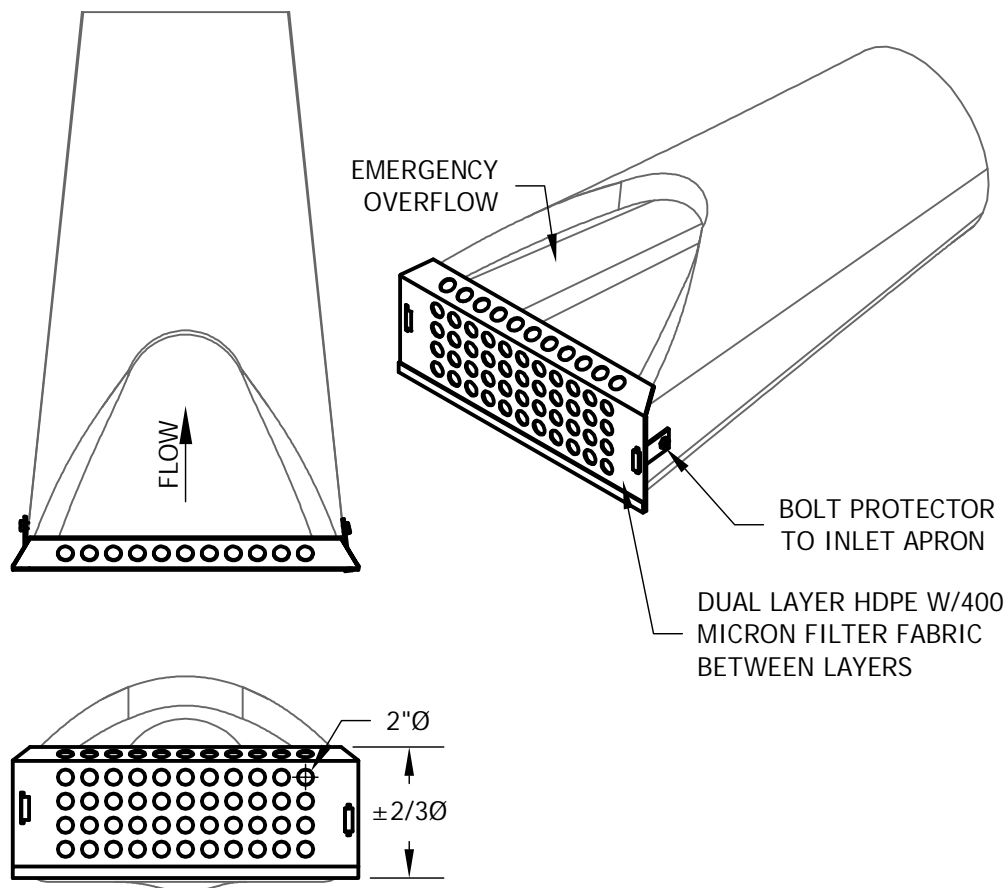
PROFILE



CULVERT/PIPE PROTECTION

LAST REVISION:
 April 2008

PLATE NO.
 ERO-6A



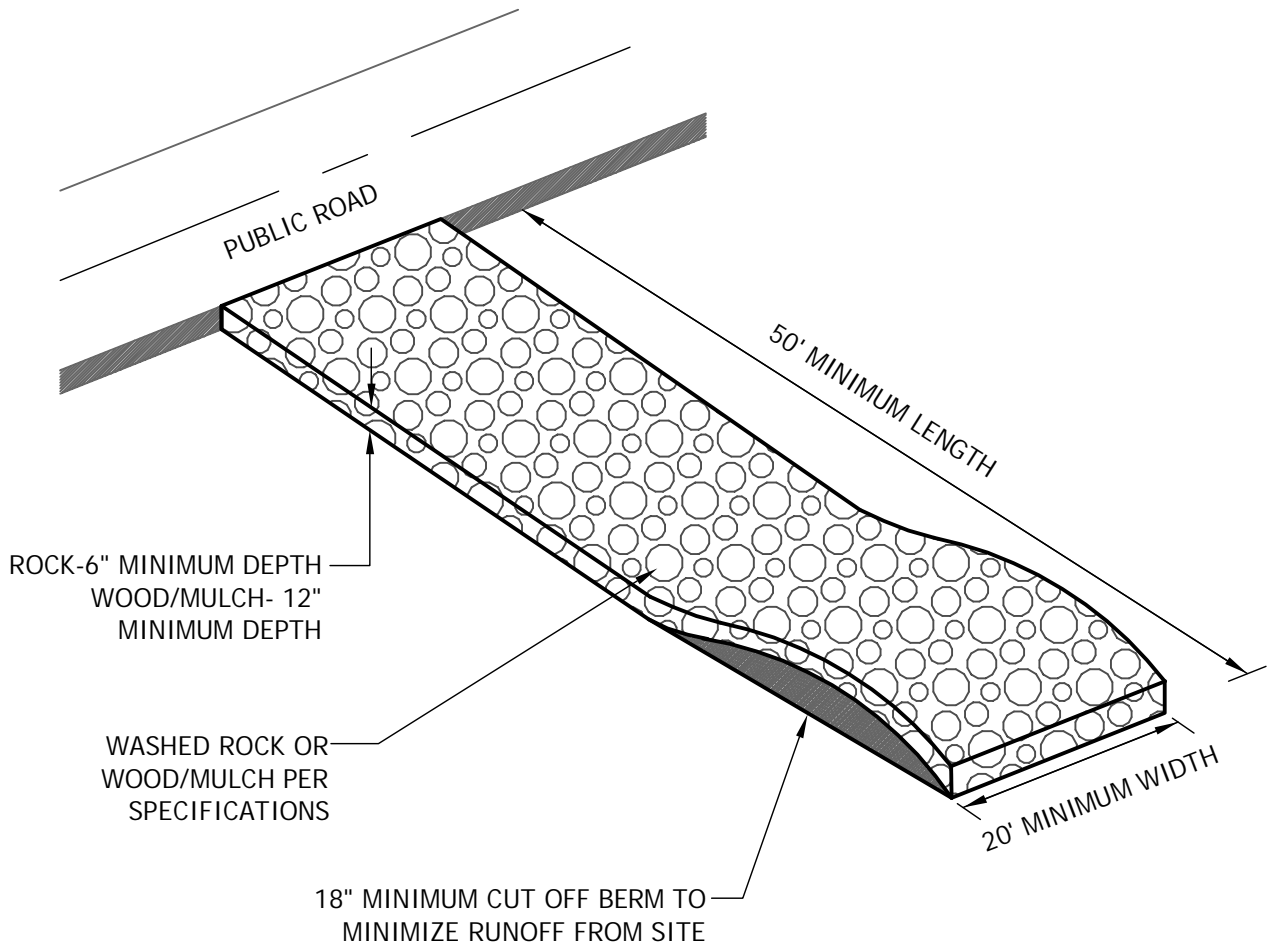
- FILTER FABRIC MAY BE REPLACED AS REQUIRED BY REMOVING BOLTS OR RIVETS CONNECTING HDPE LAYERS AND BOLTING OR RIVETING BACK TOGETHER.
- DEVICES SHOWN ARE AS MANUFACTURED BY ROYAL ENVIRONMENTAL SYSTEMS. INFRASAFE - CULVERT INLET PROTECTOR.



CULVERT INLET PROTECTOR

LAST REVISION:
April 2008

PLATE NO.
ERO-6B



NOTES:

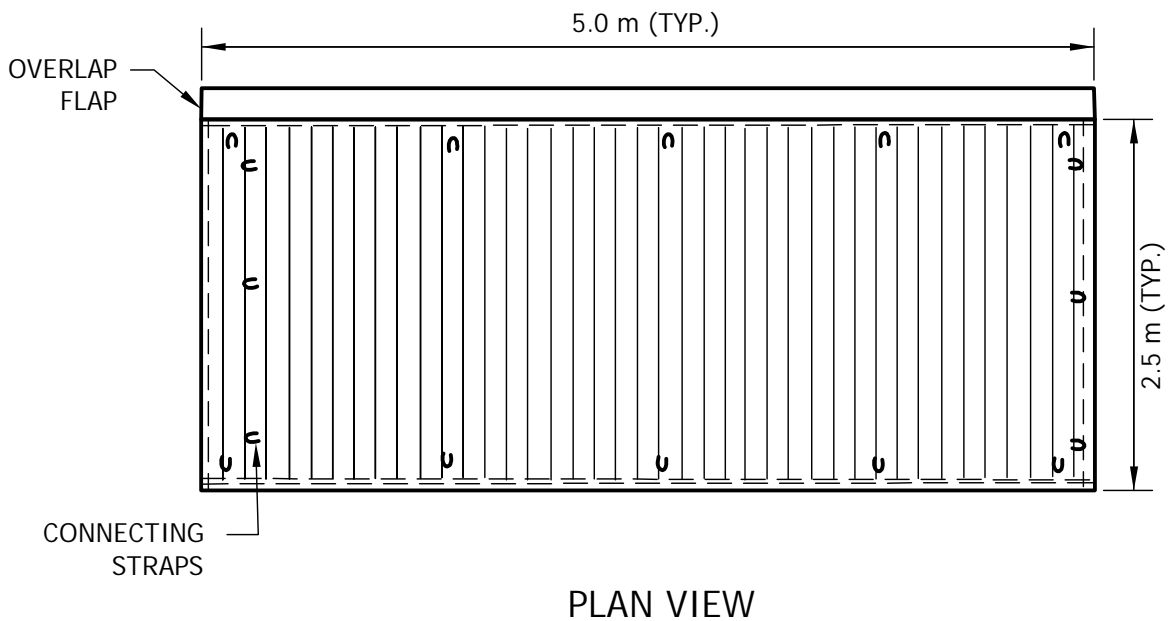
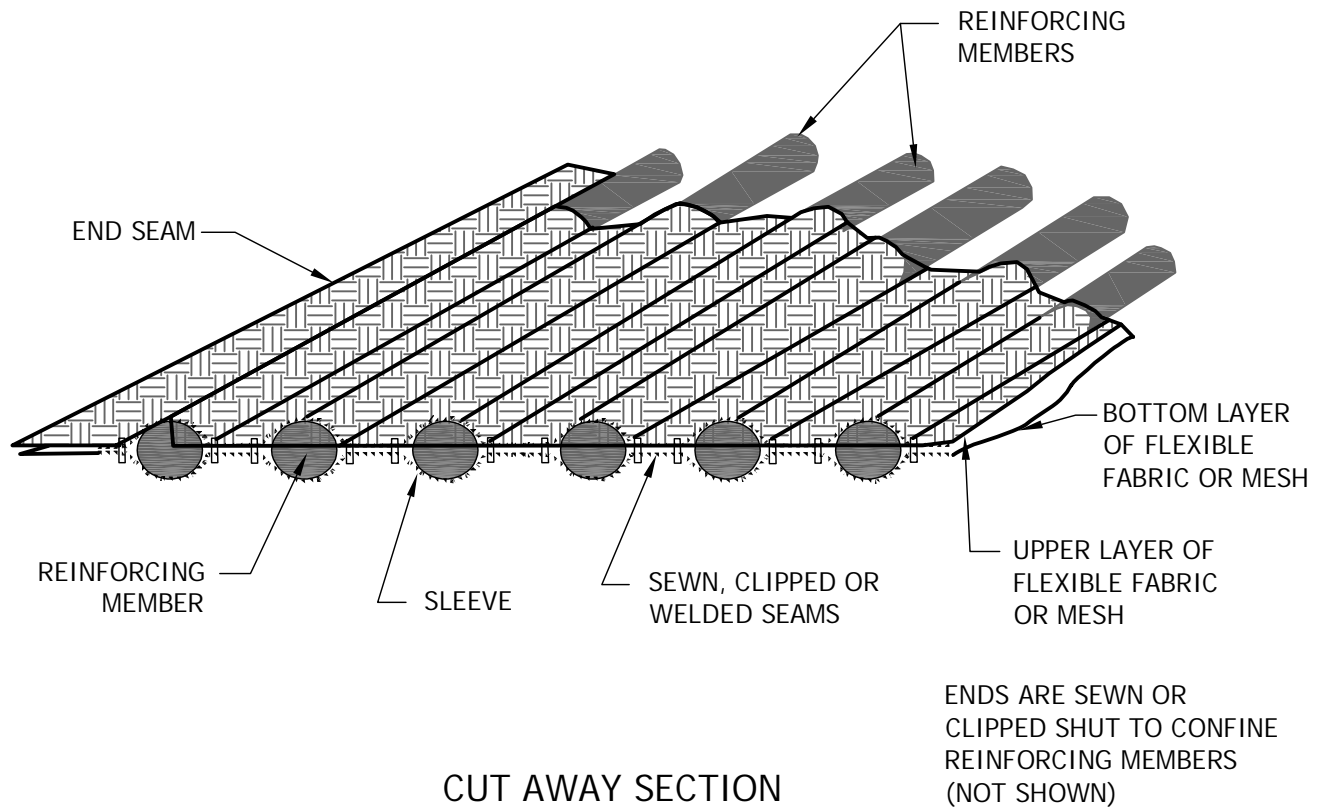
1. MnDOT 3733 TYPE 4 FILTER FABRIC SHALL BE PLACED UNDER ROCK OR MULCH TO STOP MUD MIGRATION THROUGH MATERIAL.
2. FUGITIVE ROCK OR MULCH WILL BE REMOVED FROM ADJACENT ROADWAYS DAILY OR MORE FREQUENTLY AS NECESSARY.
3. CONSTRUCTION ENTRANCE MUST BE CONSTRUCTED PRIOR TO THE COMMENCEMENT OF GRADING OPERATIONS ON THE SITE.
4. THE ENTRANCE MUST BE MAINTAINED IN PROPER CONDITION TO PREVENT TRACKING OF MUD OFF THE SITE. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL ROCK, WOOD/MULCH, OR REMOVAL AND REINSTALLATION OF THE PAD.
5. THIS ENTRANCE WILL BE USED BY ALL VEHICLES ENTERING OR LEAVING THE PROJECT.
6. THE CONSTRUCTION ENTRANCE WILL BE REMOVED PRIOR TO THE PLACEMENT OF BITUMINOUS SURFACING.



CONSTRUCTION ENTRANCE
ROCK
WOOD / MULCH

LAST REVISION:
April 2008

PLATE NO.
ERO-7A

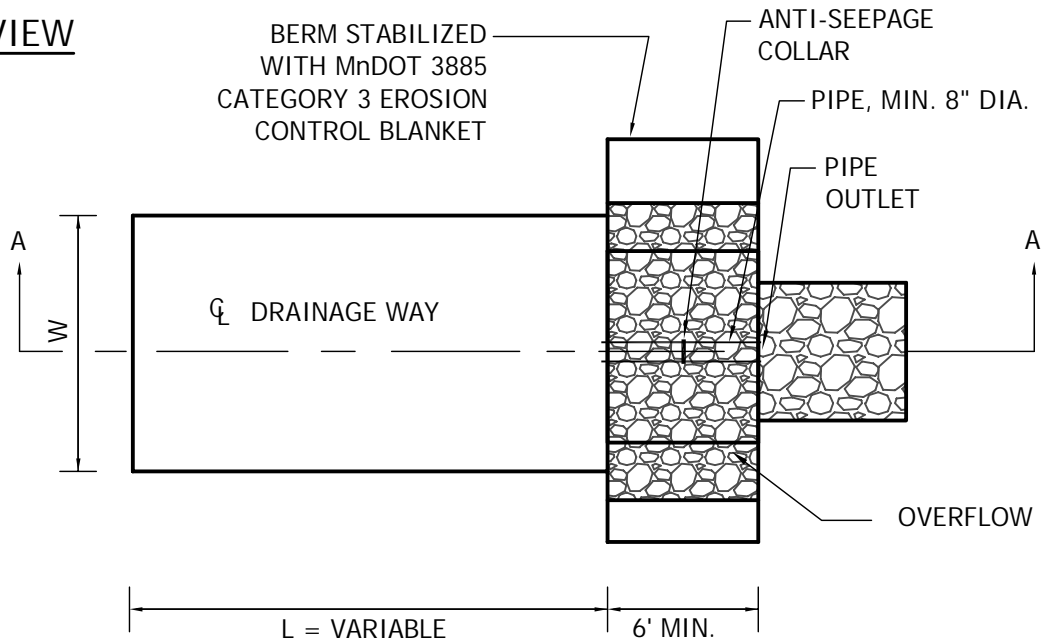


**CONSTRUCTION ENTRANCE
AGES MUD MAT**

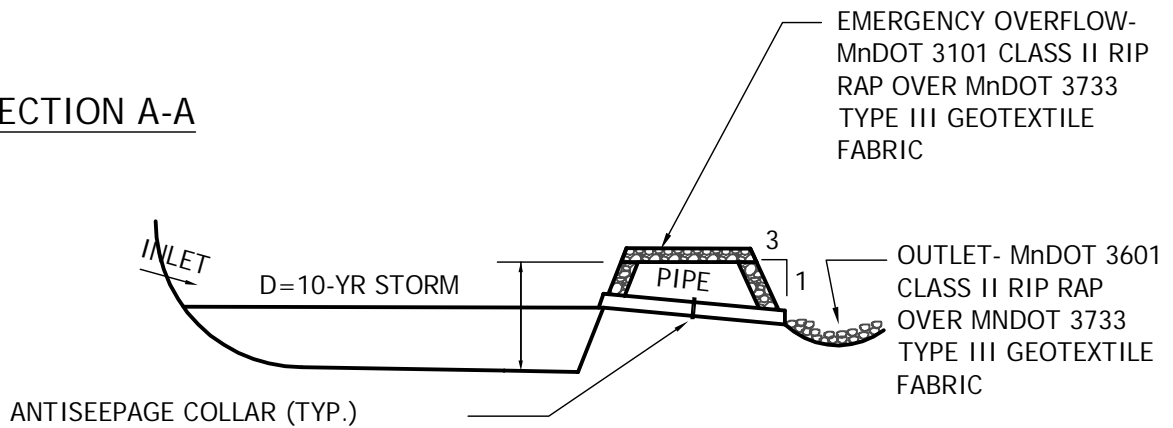
LAST REVISION:
April 2008

PLATE NO.
ERO-7B

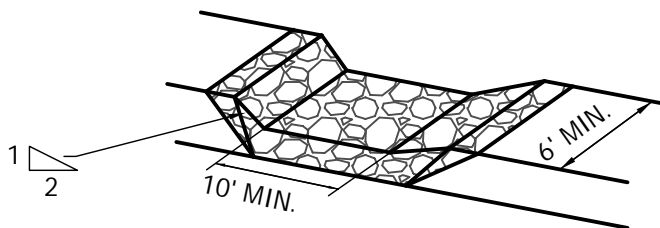
I. PLAN VIEW



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.



TEMPORARY SEDIMENTATION BASIN PIPE OUTLET

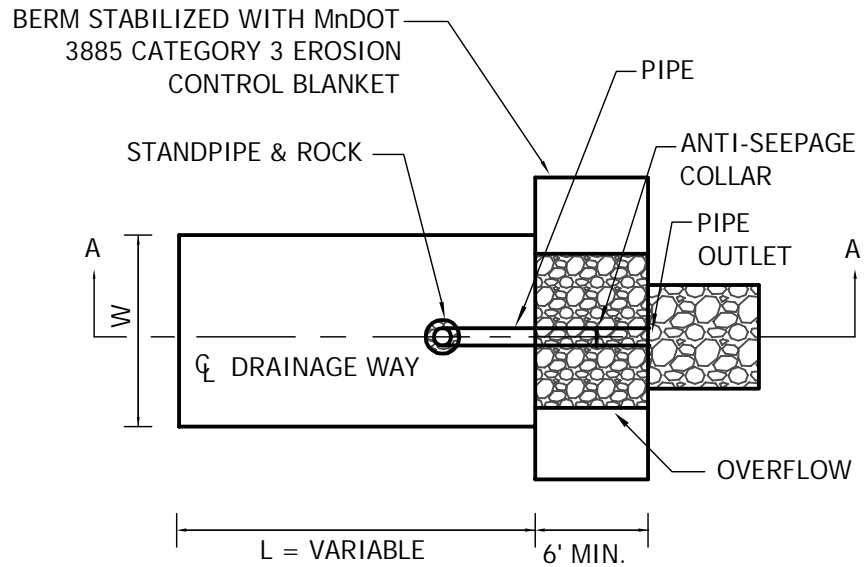
LAST REVISION:
April 2008

PLATE NO.
ERO-8A

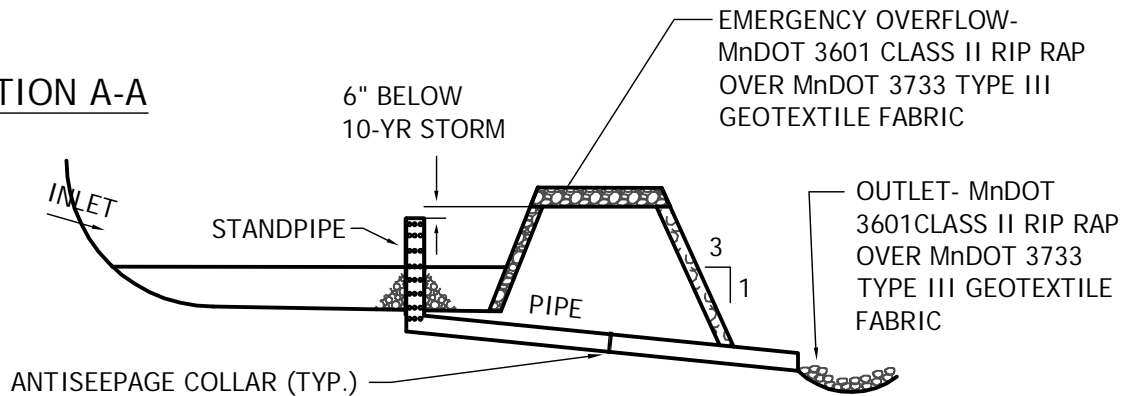
I. PLAN VIEW

NOTES:

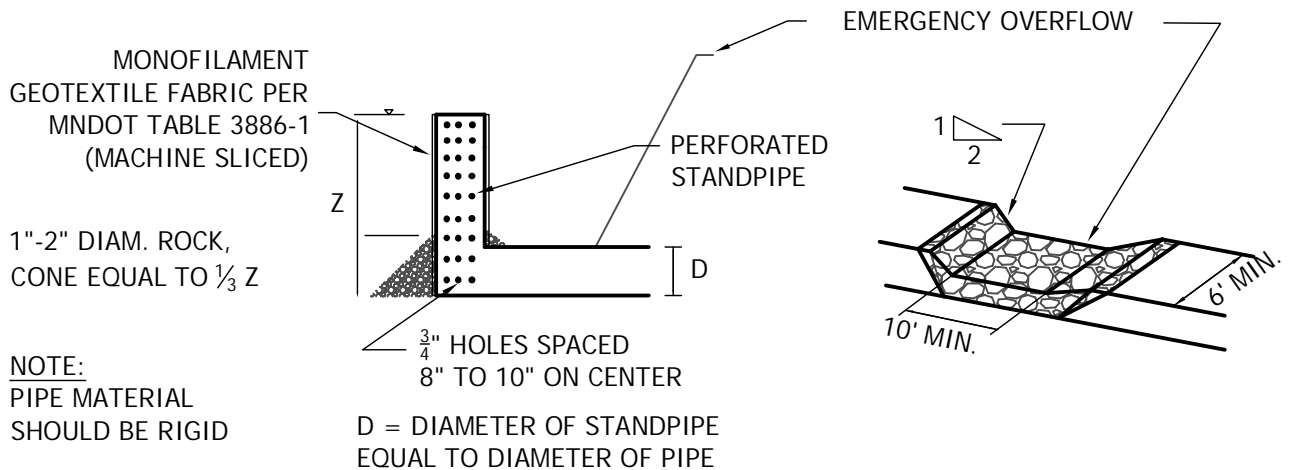
BASIN USED FOR 10 ACRES DRAINAGE AREA OR MORE. DESIGN RUNOFF VOLUME IS FROM A 2-YR, 24-HR STORM PER ACRE DRAINED TO THE BASIN. BASIN VOLUME MUST BE A MIN. OF 1800 CUBIC FEET/ACRE. SEE PLANS/SPECIFICATIONS FOR BASIN DIMENSIONS AND PIPE SIZE AND SLOPE.



II. SECTION A-A



III. BASIN STANDPIPE AND EMERGENCY OVERFLOW



NOTE:
PIPE MATERIAL SHOULD BE RIGID

D = DIAMETER OF STANDPIPE EQUAL TO DIAMETER OF PIPE

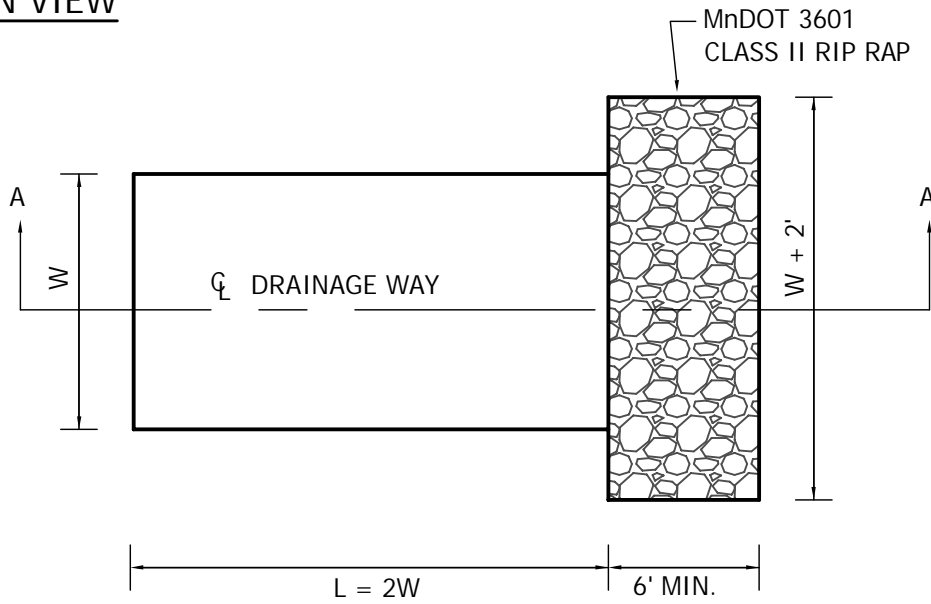


TEMPORARY SEDIMENTATION BASIN
STANDPIPE OUTLET

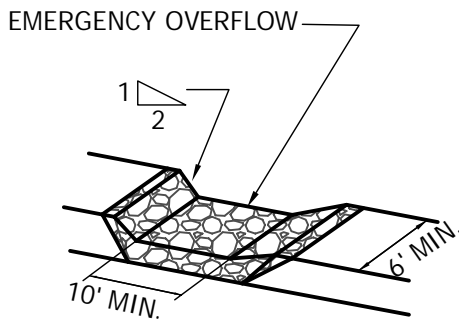
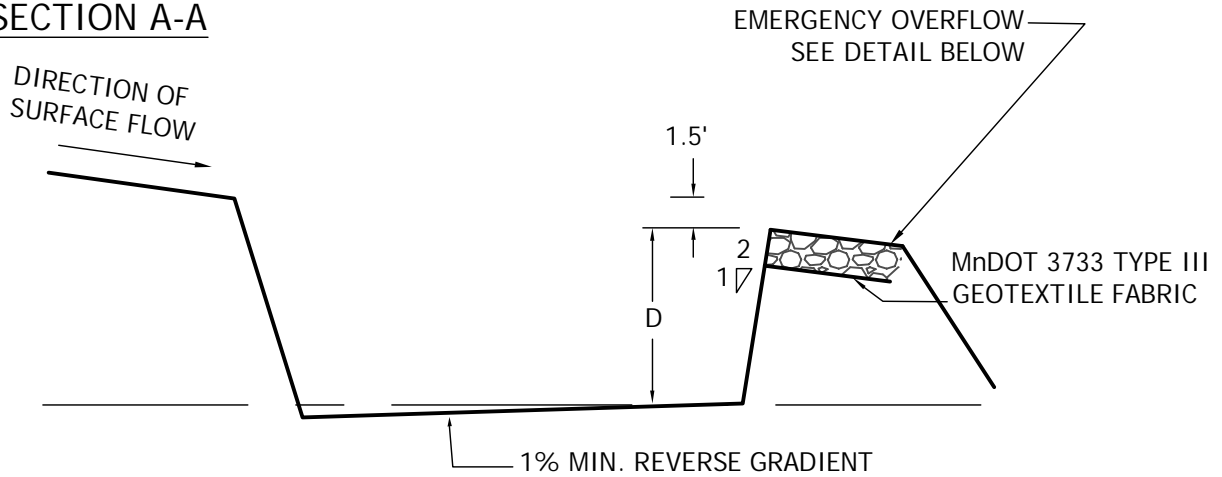
LAST REVISION:
April 2008

PLATE NO.
ERO-8B

I. PLAN VIEW



II. SECTION A-A



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

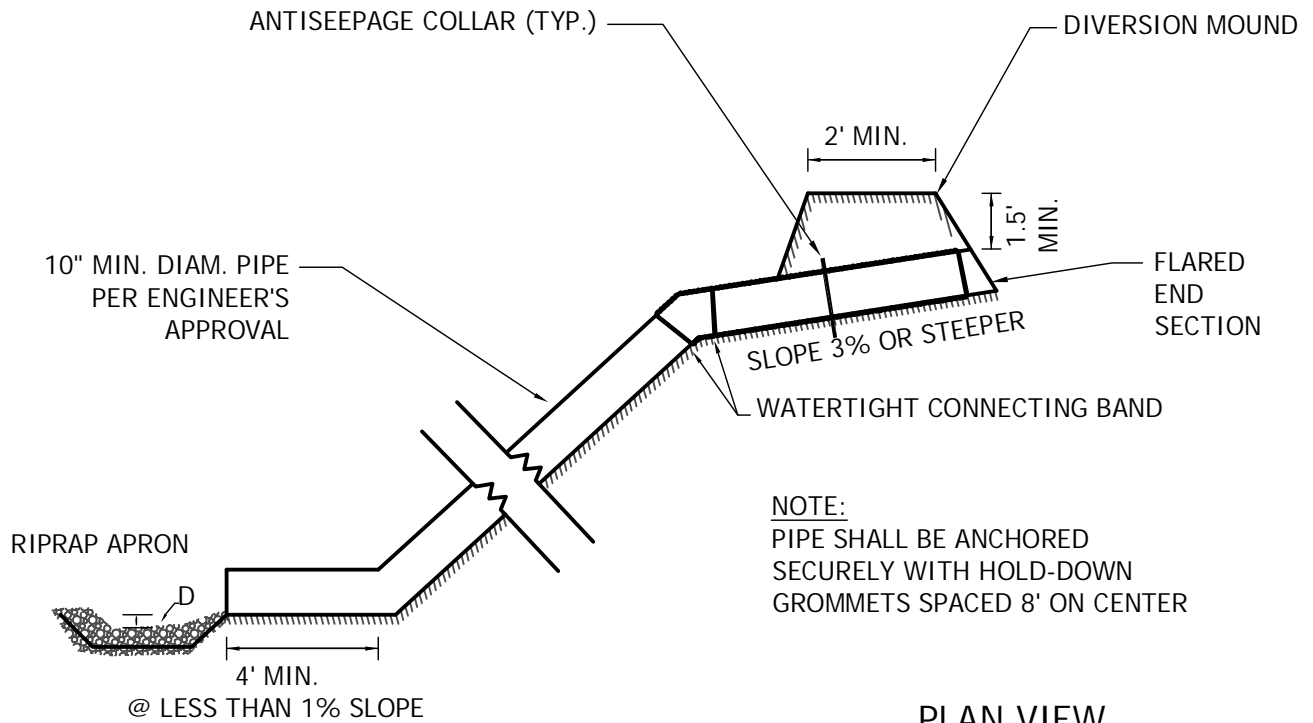


TEMPORARY SEDIMENT TRAP

LAST REVISION:
 April 2008

PLATE NO.
 ERO-9

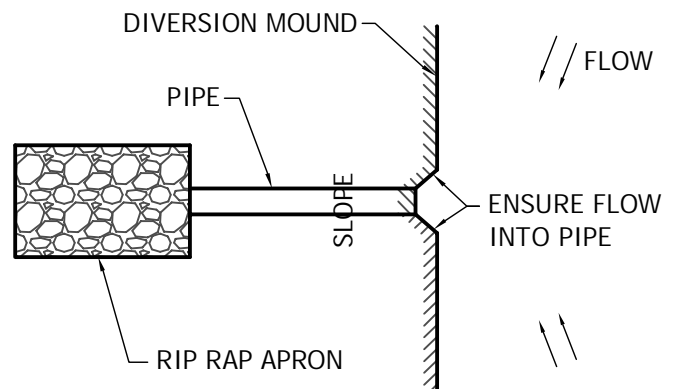
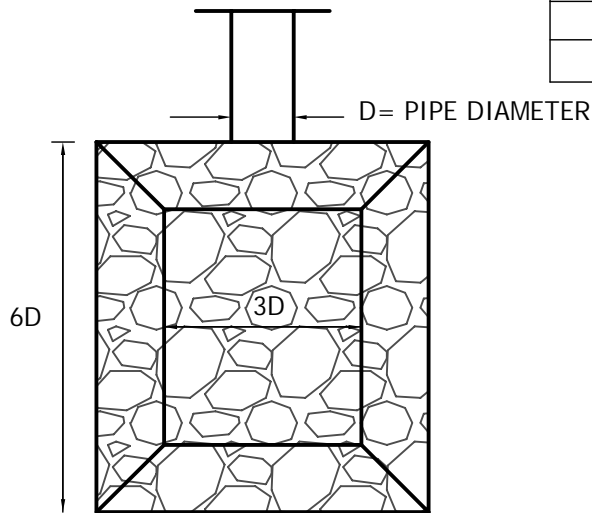
PROFILE VIEW



PLAN VIEW

DRAIN AREA (ACRES)	PIPING DIAMETER (INCHES)
0.5	12
0.75	15
1.5	18
2.5	21
3.5	24
5	30

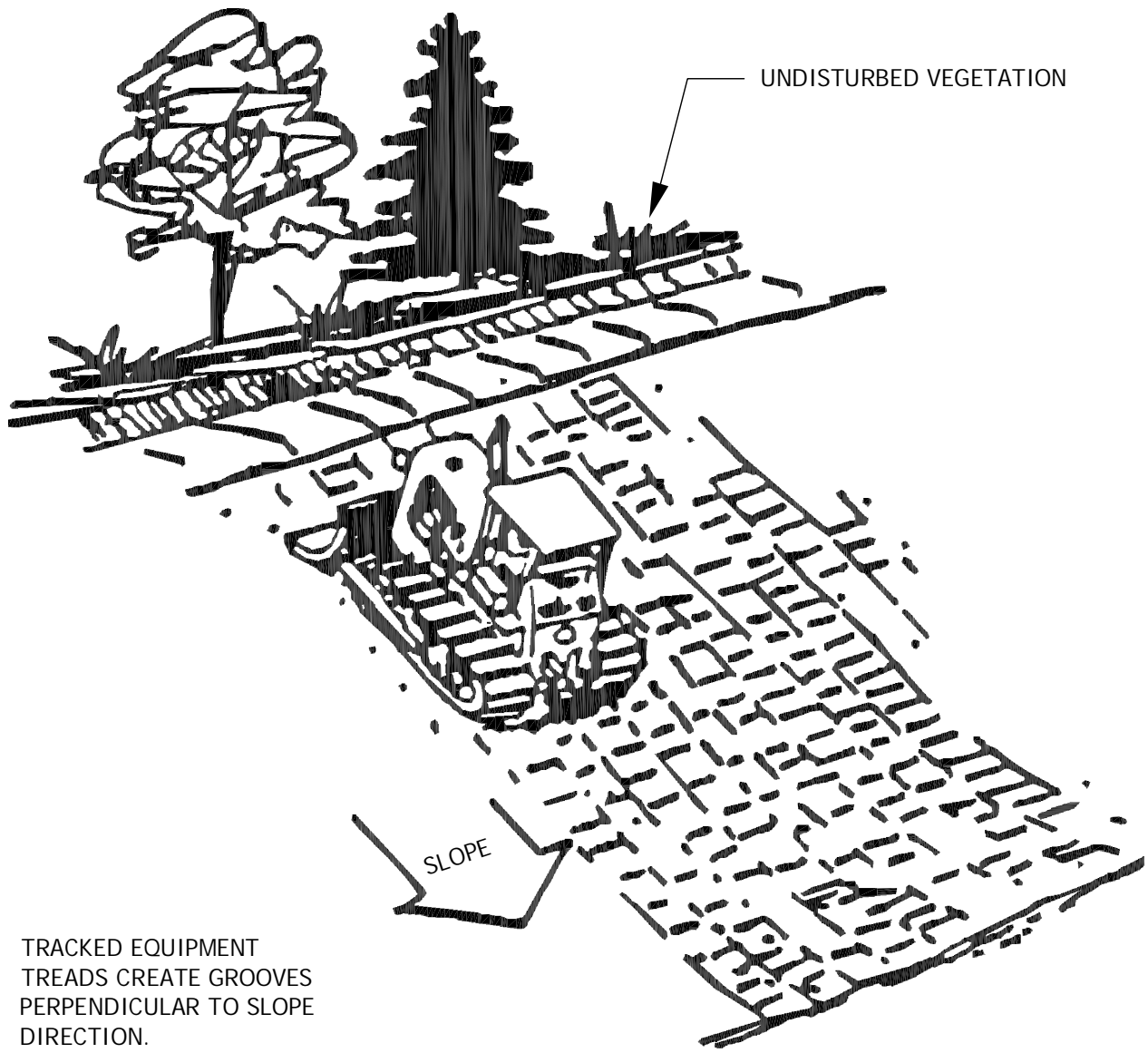
MnDOT 3601 CLASS III RIPRAP APRON PLAN



DIVERSION MOUND AND TEMPORARY PIPE DOWNDRAIN

LAST REVISION:
April 2008

PLATE NO.
ERO-10



TRACKED EQUIPMENT
TREADS CREATE GROOVES
PERPENDICULAR TO SLOPE
DIRECTION.

NOTE:

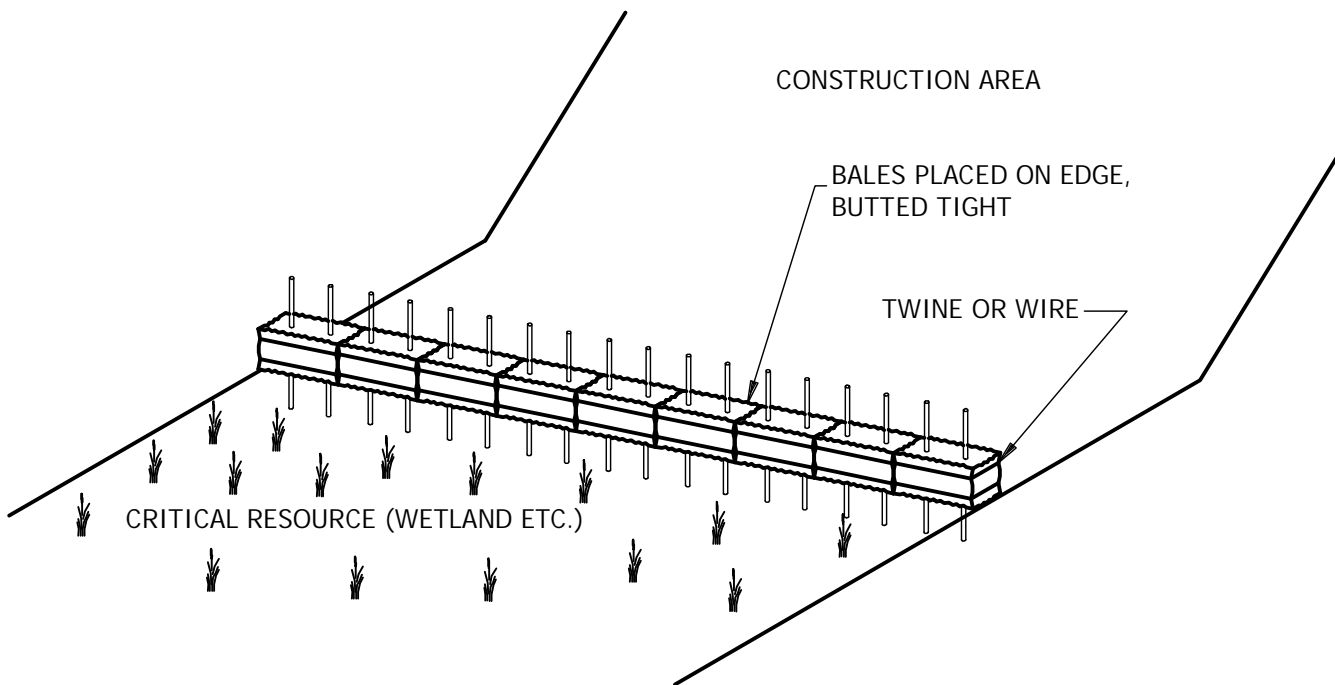
ALL SLOPES WITH A GRADE EQUAL TO OR STEEPER THAN 3:1
REQUIRE SLOPE TRACKING. SLOPES WITH A GRADE MORE GRADUAL
THAN 3:1 REQUIRE SLOPE TRACKING IF THE STABILIZATION METHOD
IS EROSION CONTROL BLANKET OR HYDROMULCH.



SLOPE TRACKING

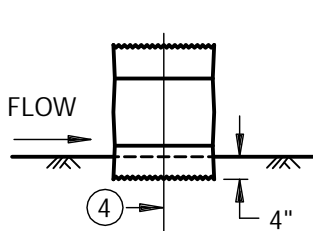
LAST REVISION:
April 2008

PLATE NO.
ERO-11

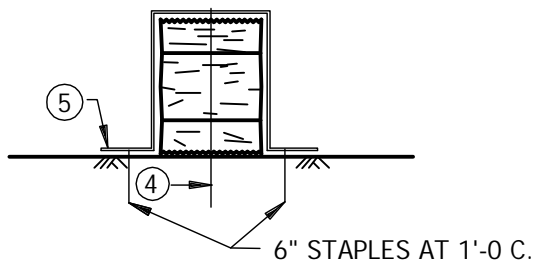


BALE BARRIERS

TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS



EMBEDMENT METHOD



BLANKET METHOD

BALE BARRIER DETAIL

APPROX. BALE SIZE: 14" X 18" X 36" LONG

NOTES:

- ④ TWO 2 IN. x 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE EMBEDDED 10 INCHES MINIMUM IN THE GROUND
- ⑤ PLACE A CATEGORY 3 EROSION CONTROL BLANKET. 6 FT. WIDE MINIMUM, OVER THE BALE INSTEAD OF TRENCHING.

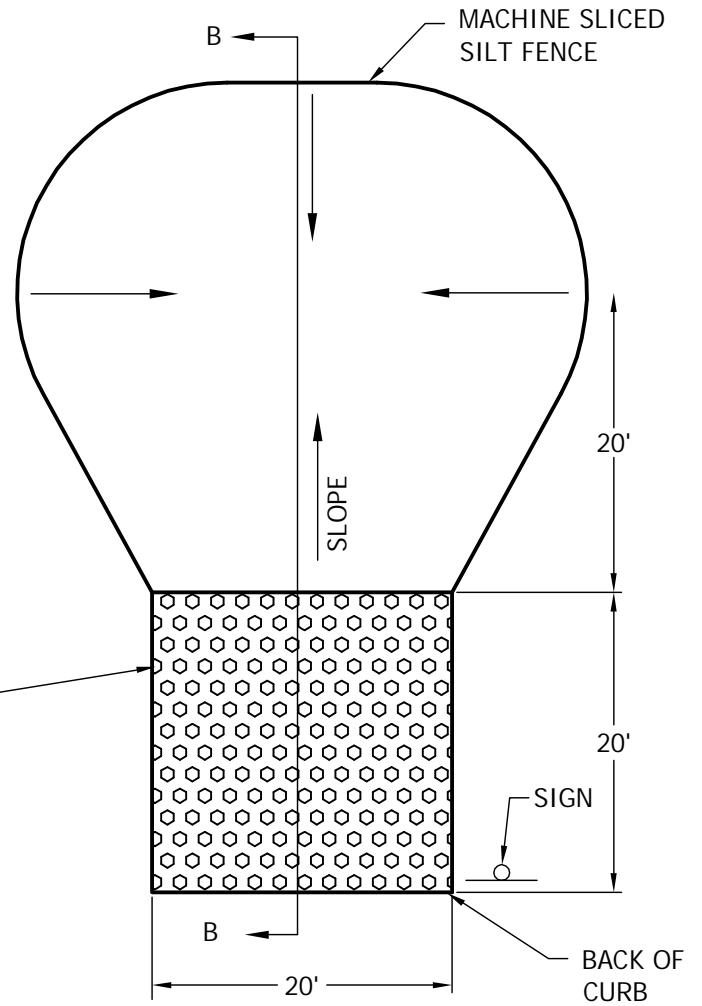


**PERIMETER CONTROL
BALES**

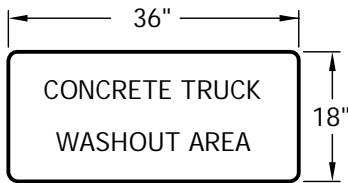
LAST REVISION:
April 2008

PLATE NO.
ERO-12A

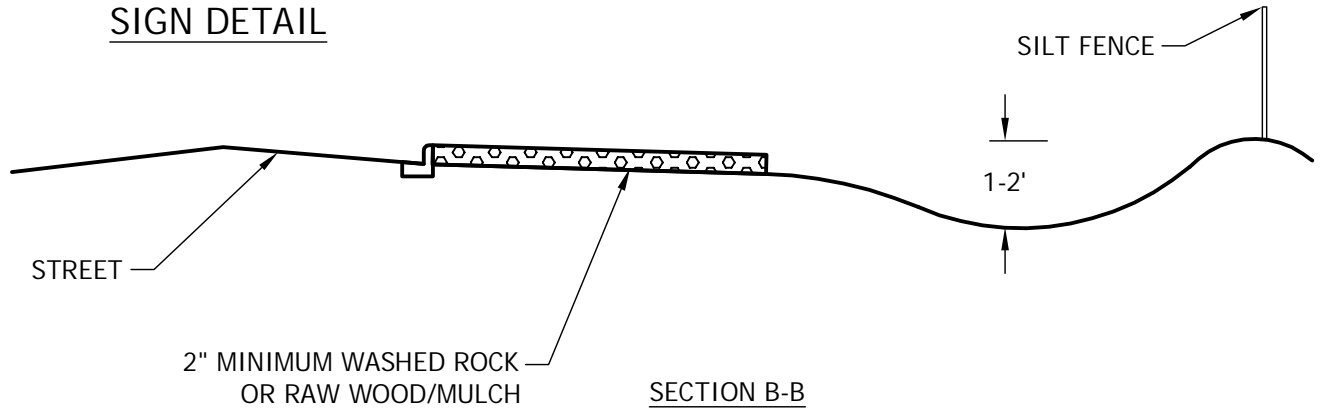
- 1) ALL WASHING OF CONCRETE TRUCKS WILL BE CONDUCTED AT THIS SITE.
- 2) ALL DIMENSIONS ARE APPROXIMATE AND MAY BE ADJUSTED BASED ON SITE CONSTRAINTS.
- 3) WHEN WASHOUT PIT IS NO LONGER NEEDED, SOLIDIFIED CONCRETE AND THE ROCK PAD WILL BE DISPOSED OF OFF-SITE AND THE AREA LEVELED OUT TO MATCH THE SURROUNDING GRADE.



2" MINIMUM
WASHED ROCK OR
RAW WOOD/MULCH



SIGN DETAIL

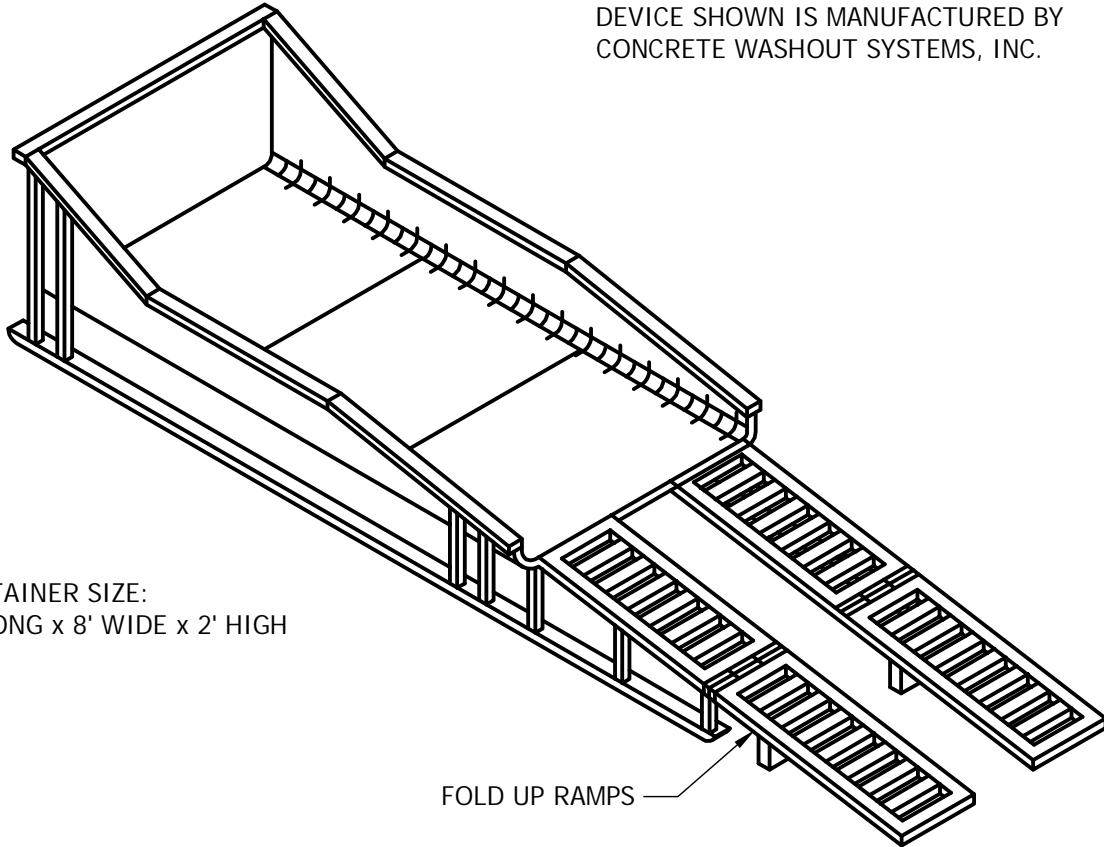


CONCRETE WASHOUT PIT

LAST REVISION:
April 2008

PLATE NO.
ERO-13A

NOTE:
DEVICE SHOWN IS MANUFACTURED BY
CONCRETE WASHOUT SYSTEMS, INC.



CONTAINER SIZE:
12' LONG x 8' WIDE x 2' HIGH

FOLD UP RAMPS

NOTES:

1. CONTAINER IS TO BE PORTABLE, TEMPORARY, SELF-CONTAINED, AND WATERTIGHT TO CAPTURE AND CONTAIN CAUSTIC CONCRETE WASTEWATER AND WASHOUT MATERIAL TO A CAPACITY OF APPROXIMATELY 350 YARDS OF POURED CONCRETE.
2. THE CONTAINER SHALL BE EQUIPPED WITH RAMPS. A RAMPLESS CONTAINER MAY BE USED IN CONJUNCTION WITH A RAMPED CONTAINER OR BY ITSELF IF A CONCRETE PUMP IS NOT NEEDED.
3. THE WASHOUT MUST BE DISPOSED OF OR TREATED AND RECYCLED IN AN ENVIRONMENTALLY SAFE MANNER AND IN ACCORDANCE WITH FEDERAL, STATE, OR LOCAL REGULATIONS.
4. INSPECT AND CLEAN OUT WHEN $\frac{3}{4}$ FULL, NOT ALLOWING THE CONTAINER TO OVERFLOW.
5. INSPECT WASTEWATER LEVEL AND REQUEST A VACUUM IF NEEDED.
6. INSPECT SUBCONTRACTORS TO ENSURE THAT PROPER HOUSEKEEPING MEASURES ARE EMPLOYED WHEN WASHING OUT EQUIPMENT.

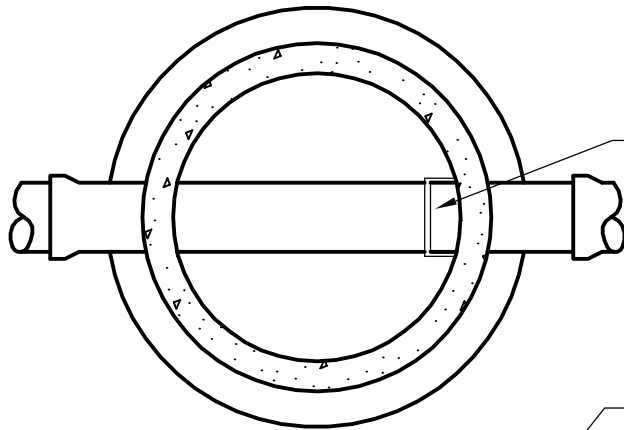


PORTABLE CONCRETE
WASHOUT CONTAINER

LAST REVISION:
April 2008

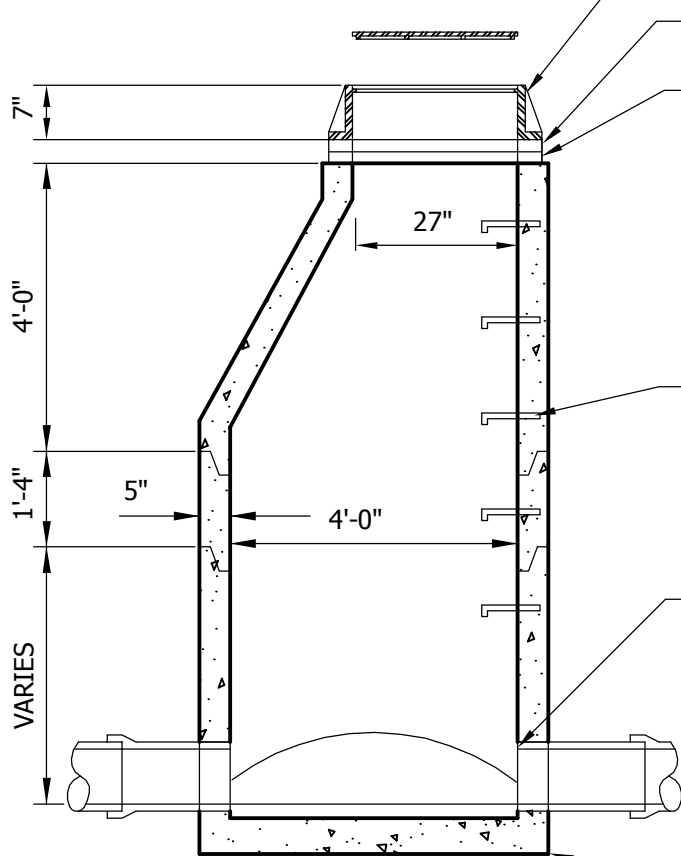
PLATE NO.
ERO-13B

GROUT BOTTOM OF MANHOLE TO 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.

PLAN



NEENAH R1642B FRAME AND COVER OR EQUAL WITH 2 CONCEALED PICK HOLES.

INFI-SHIELD EXTERNAL SEALING SLEEVE

MINIMUM OF 2 MAXIMUM OF 6 CONCRETE ADJUSTMENT RINGS WITH 2 RINGS OF RAM-NEK BETWEEN EACH. USE HDPE SLOPE RINGS TO ACHIEVE SLOPE. 2 RINGS OF RAM-NEK AT CONNECTION TO CONCRETE AND USE SEALANT AS SPECIFIED BY MANUAL FOR PLASTIC TO PLASTIC.

MANHOLE STEPS, NEENAH R1981J OR EQUAL, 16" ON CENTER. ALUMINUM STEPS APPROVED.

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

PIPE SHALL BE CUT OUT FLUSH WITH INSIDE FACE OF WALL.

NOTE: KOR-N-SEAL MANHOLE OR EQUAL CONSIDERED ACCEPTABLE ALTERNATE.

MINIMUM SLAB THICKNESS OF PRE CAST BASE IS 6" FOR 14' DEEP OR LESS, AND INCREASE 1" IN THICKNESS FOR EVERY 4' OF DEPTH GREATER THAN 14'

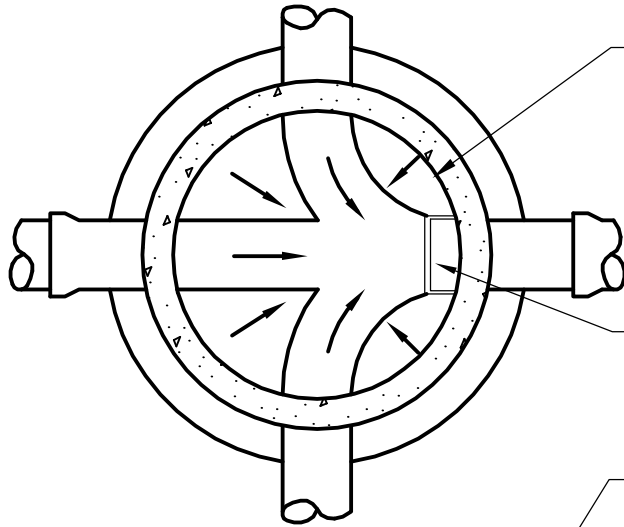
SECTION



SANITARY SEWER MANHOLE

LAST REVISION:
JAN 2011

PLATE NO.
SAN-1



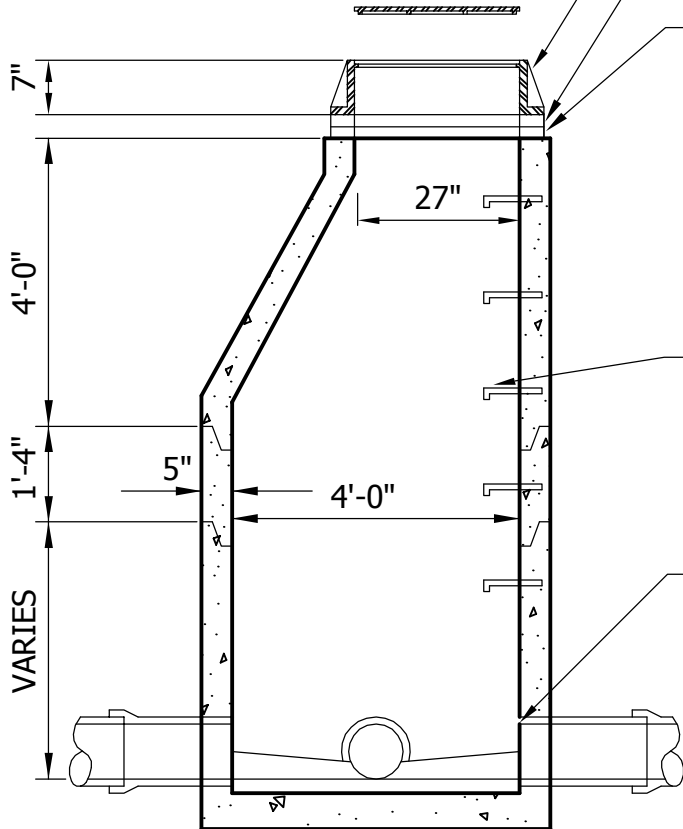
GROUT BOTTOM OF MANHOLE TO 1/2 DIAMETER AT PIPE AND SLOPE GROUT 2" TOWARD INVERT.

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

NEENAH R1642B FRAME AND COVER OR EQUAL WITH 2 CONCEALED PICK HOLES.

INFI-SHIELD EXTERNAL SEALING SLEEVE

PLAN



MINIMUM OF 2 MAXIMUM OF 6 CONCRETE ADJUSTMENT RINGS WITH 2 RINGS OF RAM-NEK BETWEEN EACH. USE HDPE SLOPE RINGS TO ACHIEVE SLOPE. 2 RINGS OF RAM-NEK AT CONNECTION TO CONCRETE AND USE SEALANT AS SPECIFIED BY MANUAL FOR PLASTIC TO PLASTIC.

MANHOLE STEPS, NEENAH R1981J OR EQUAL, 16" ON CENTER. ALUMINUM STEPS APPROVED.

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

PIPE SHALL BE CUT OUT FLUSH WITH INSIDE FACE OF WALL.

NOTE: KOR-N-SEAL MANHOLE OR EQUAL CONSIDERED ACCEPTABLE ALTERNATE.

MINIMUM SLAB THICKNESS OF PRE CAST BASE IS 6" FOR 14' DEEP OR LESS, AND INCREASE 1" IN THICKNESS FOR EVERY 4' OF DEPTH GREATER THAN 14'

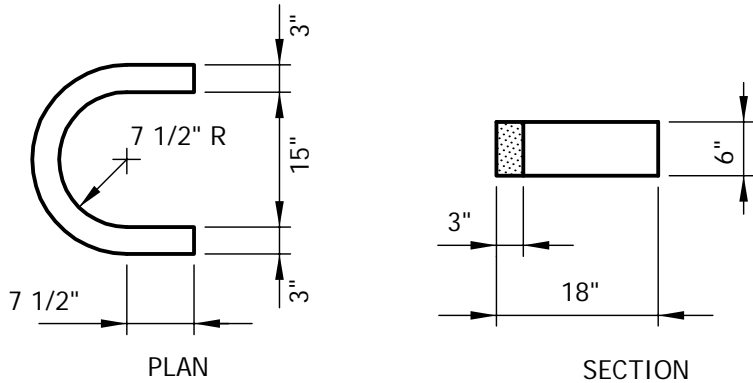
SECTION



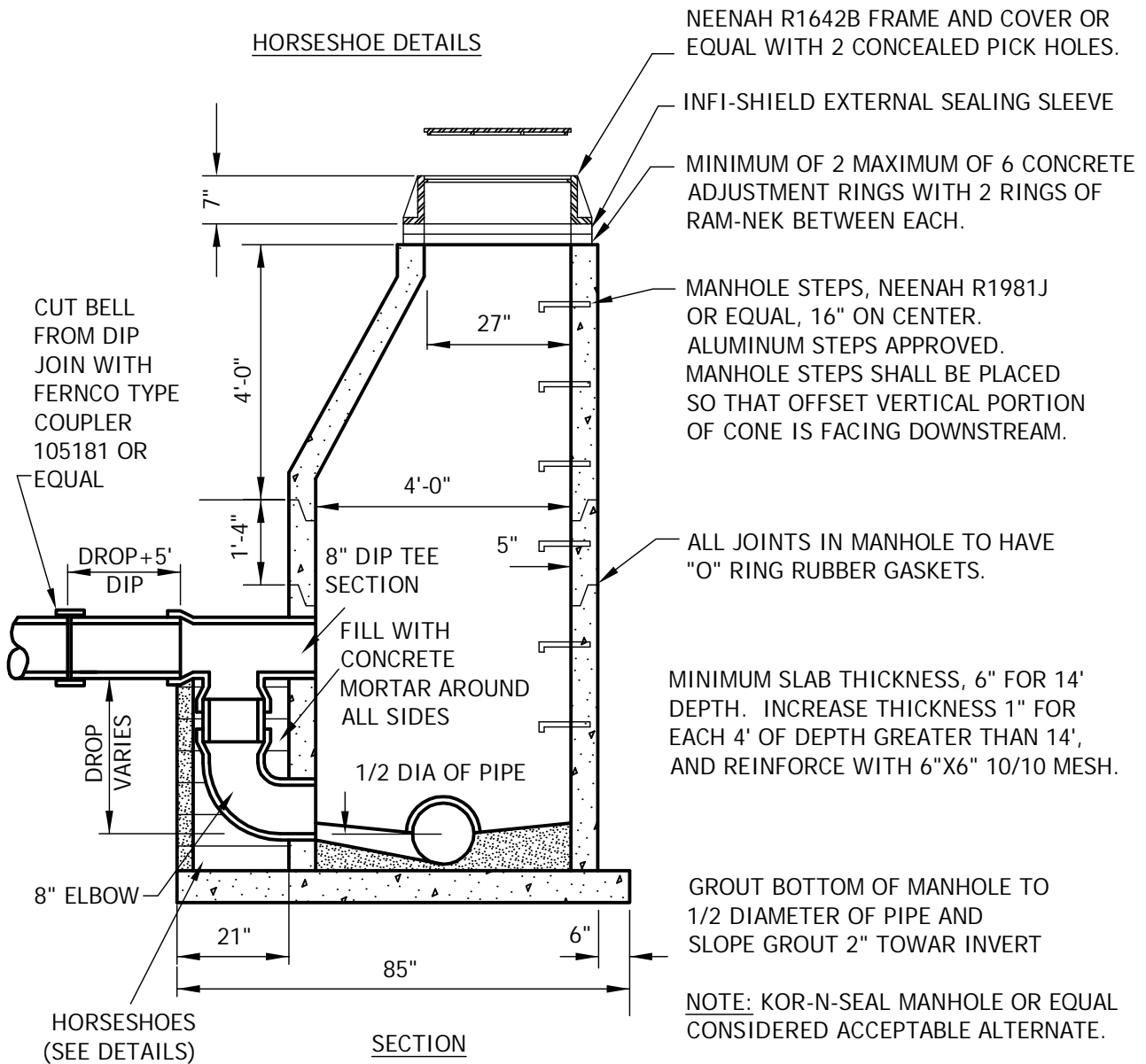
SANITARY SEWER JUNCTION MANHOLE

LAST REVISION:
JAN 2011

PLATE NO.
SAN-2



HORSESHOE DETAILS



NEENAH R1642B FRAME AND COVER OR EQUAL WITH 2 CONCEALED PICK HOLES.

INFI-SHIELD EXTERNAL SEALING SLEEVE

MINIMUM OF 2 MAXIMUM OF 6 CONCRETE ADJUSTMENT RINGS WITH 2 RINGS OF RAM-NEK BETWEEN EACH.

MANHOLE STEPS, NEENAH R1981J OR EQUAL, 16" ON CENTER. ALUMINUM STEPS APPROVED. 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.

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

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

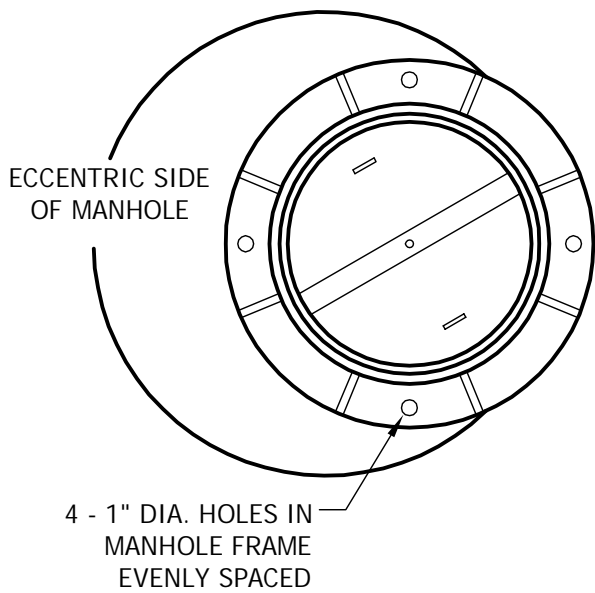
NOTE: KOR-N-SEAL MANHOLE OR EQUAL CONSIDERED ACCEPTABLE ALTERNATE.



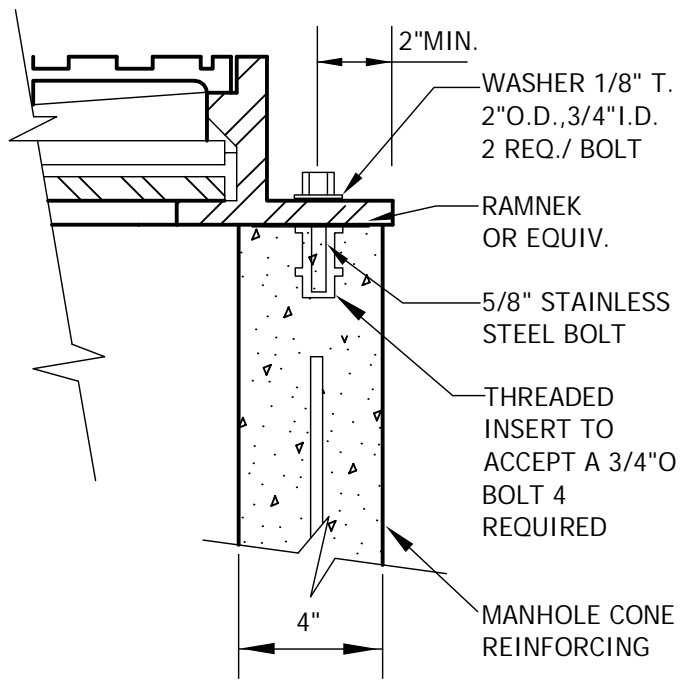
SANITERY SEWER DROP INLET MANHOLE

LAST REVISION:
JAN 2006

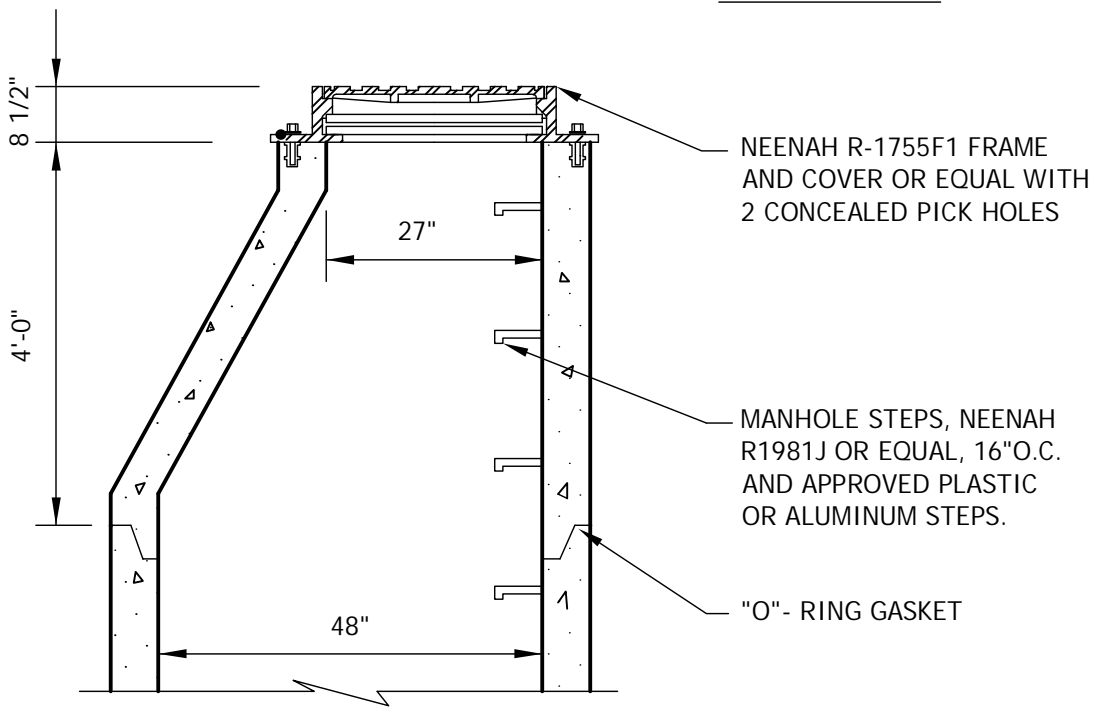
PLATE NO.
SAN-3



PLAN VIEW TOP COVER REMOVED



TIE DOWN DETAIL



ECCENTRIC WATERTIGHT MANHOLE



WATERTIGHT MANHOLE

LAST REVISION:
JAN 2006

PLATE NO.
SAN-4



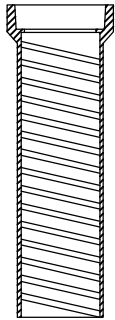
DROP LID
 TYLER NO. 6860
 MUELLER NO. H-10361
 BIPPY-STE-CROIX NO. B-5160



NOTES: ALL DIP WATERMAIN SHALL BE WRAPPED WITH 8 MIL POLY INCLUDING ALL MECHANICAL JOINTS

7.5' MINIMUM COVER REQUIRED OVER TOP OF WATER MAIN.

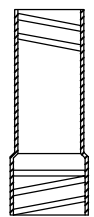
MEGALUGS OR 2 - 3/4" TIE RODS REQUIRED FROM VALVE TO TEE.



TOP
 TYLER NO. 6860 26"
 MUELLER NO. H-10361 26"
 BIPPY-STE-CROIX NO. VB502 27"

GRADE

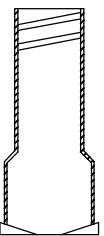
ADJUST TOP TO 1/2" BELOW GRADE. BOX TO BE SET TO PROVIDE 12" OF ADJUSTMENT.



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

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

NUT EXTENSION INSTALLED ONLY WHEN REQUIRED



BOTTOM
 TYLER NO. 6860 65"
 MUELLER NO. H-10361 65"
 BIPPY-STE-CROIX NO. VB516 60"

STAINLESS STEEL BOLTS

RESILIENT WEDGE VALVE CONFORMING TO AWWA C-509-80 STANDARDS

GATE VALVE ADAPTER

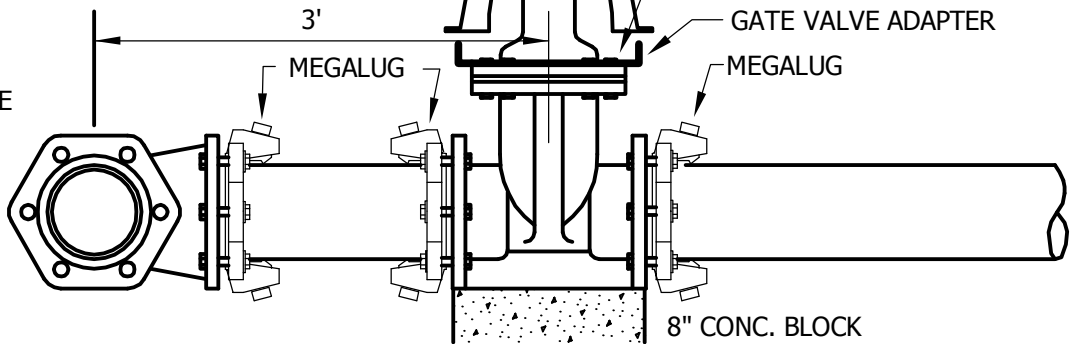
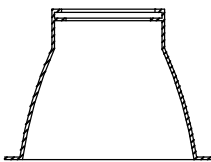
MEGALUG

BASE

3'

MEGALUG

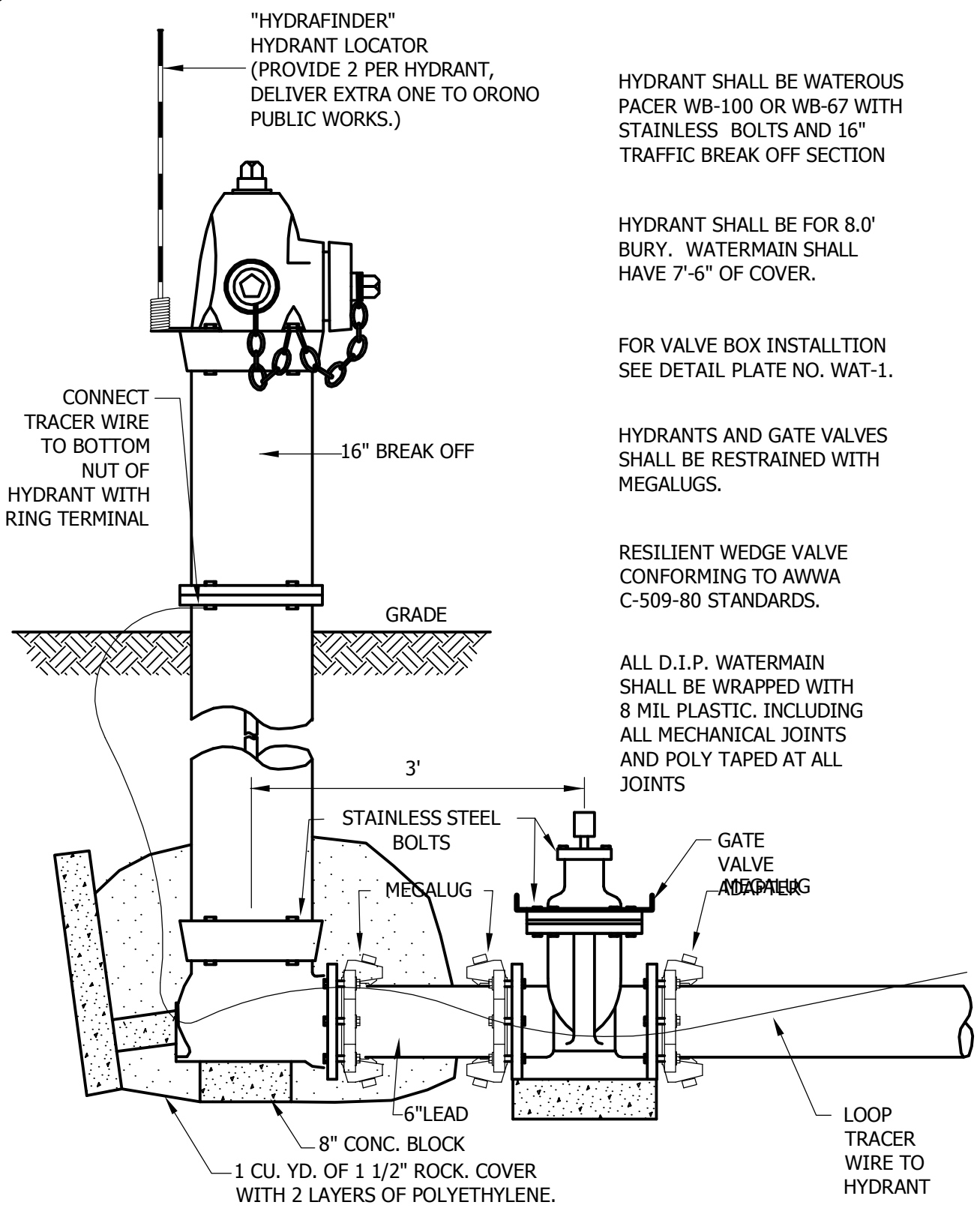
8" CONC. BLOCK



GATE VALVE AND BOX
 INSTALLATION

LAST REVISION:
 JAN 2011

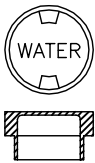
PLATE NO.
 WAT-1



VALVE AND HYDRANT INSTALLATION

LAST REVISION:
JAN 2011

PLATE NO.
WAT-2

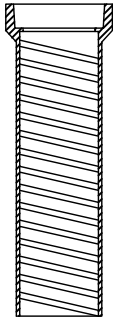


DROP LID
 TYLER NO. 6850 OR 6860
 MUELLER NO. H-10361
 BIPPY-STE-CROIX NO. B-5160

NOTES: ALL DIP WATERMAIN SHALL BE WRAPPED WITH 8 MIL POLY INCLUDING ALL MECHANICAL JOINTS

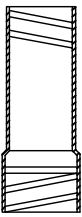
7.5' MINIMUM COVER REQUIRED OVER TOP OF WATER MAIN.

2 - 3/4" TIE RODS REQUIRED FROM VALVE TO TEE.



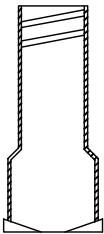
TOP
 TYLER NO. 6850 26"
 MUELLER NO. H-10361 26"
 BIPPY-STE-CROIX NO. VB502 27"

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



EXTENSION
 TYLER NO. 58 14"
 NO. 59 1 8"
 NO. 60 24"
 MUELLER NO. 58 14"
 NO. 59 20"
 BIPPY-STE-CROIX
 VB520 NO. 57 9"
 VB521 NO. 58 14"
 VB522 NO. 59 20"
 VB523 NO. 60 26"

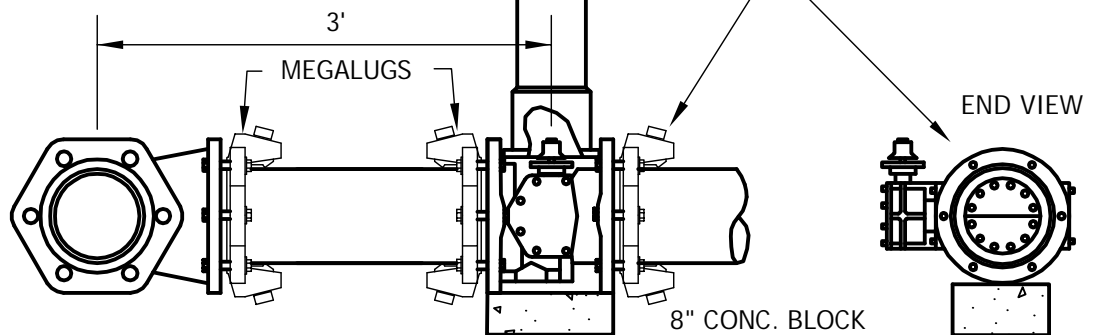
TYLER NO. 6850
 MUELLER NO. H-10357
 BIPPY-STE-CROIX B-5001
 GATE VALVE BOX, SCREW TYPE, 3 PIECE, 5 1/4" SHAFT, SIZE G BOX, 7'-6" EXTENDED.



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

NUT EXTENSION INSTALLED ONLY WHEN REQUIRED

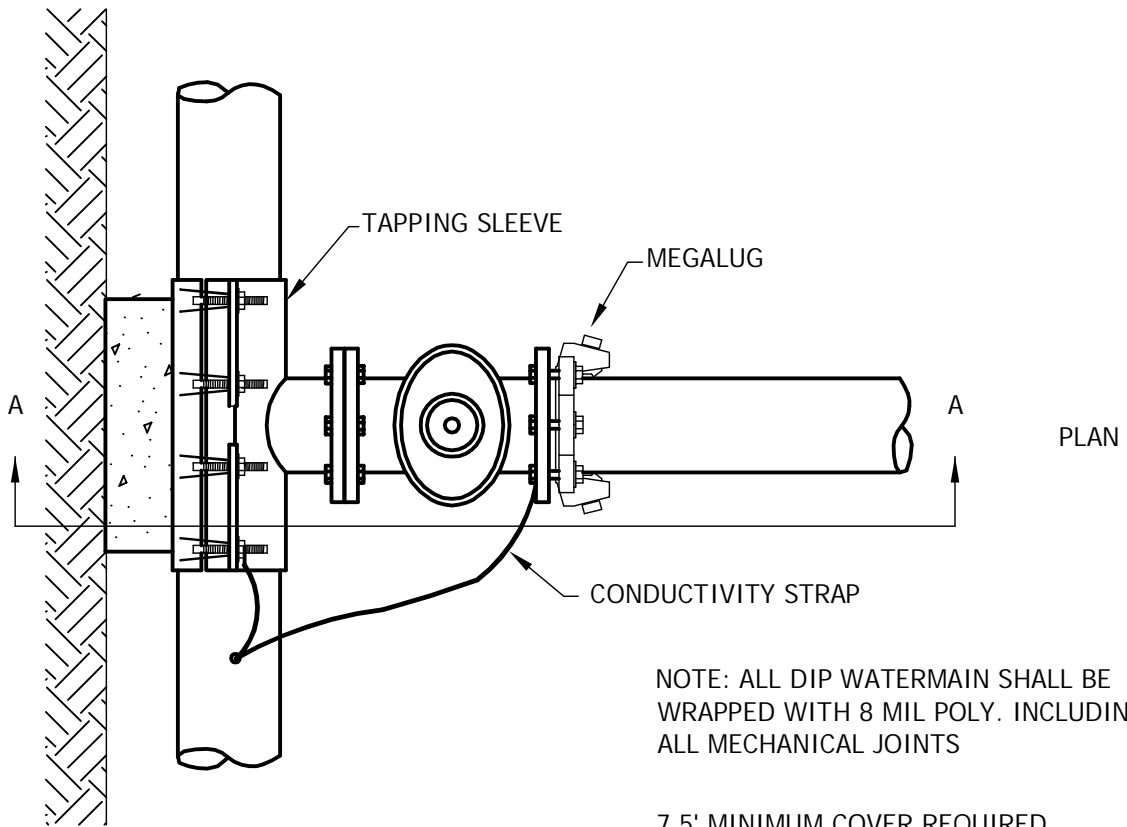
BUTTERFLY VALVE (12" OR LARGER) DRESSER 450, PRATT GROUNDHOG, KENNEDY, OR EQUAL.



BUTTERFLY VALVE AND BOX
 INSTALLATION

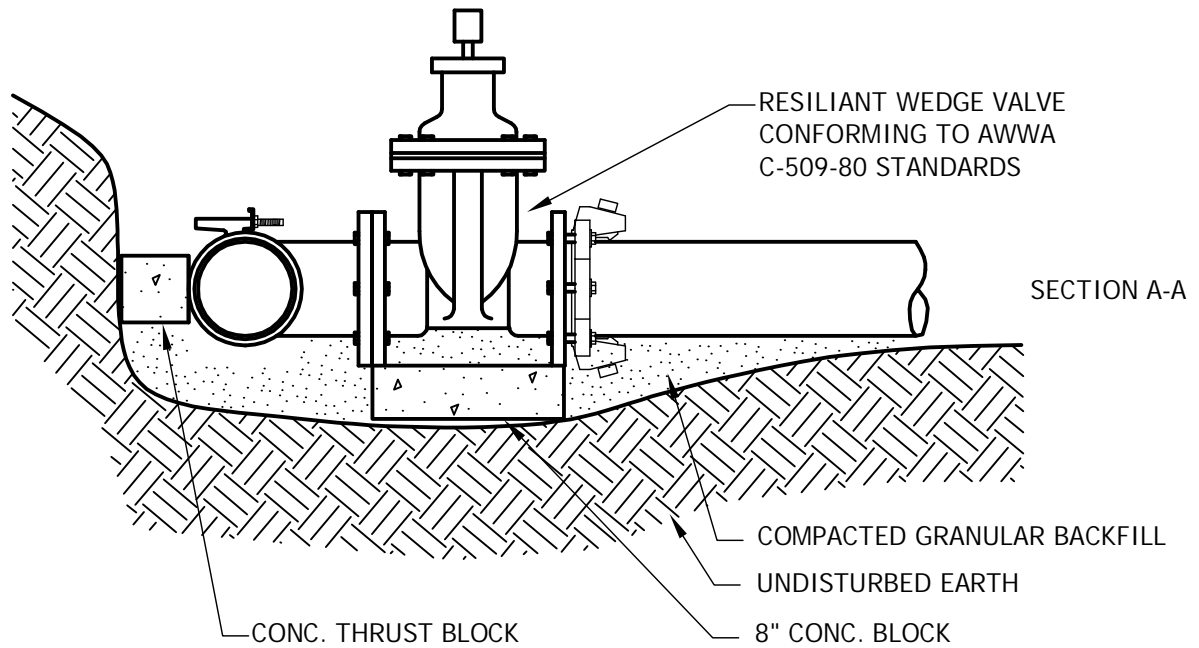
LAST REVISION:
 JAN 2006

PLATE NO.
 WAT-3



NOTE: ALL DIP WATERMAIN SHALL BE WRAPPED WITH 8 MIL POLY. INCLUDING ALL MECHANICAL JOINTS

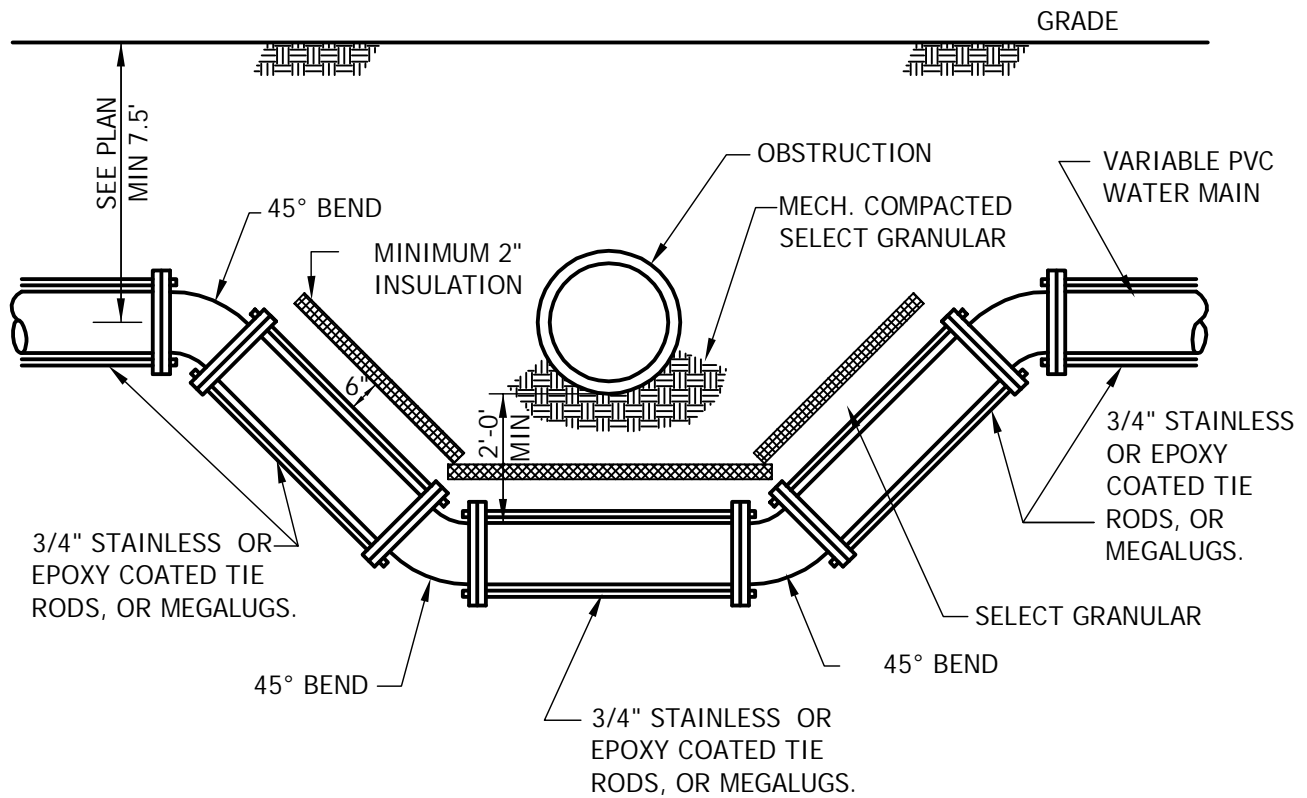
7.5' MINIMUM COVER REQUIRED OVER TOP OF WATER MAIN.



WATER MAIN WET TAP

LAST REVISION:
JAN 2006

PLATE NO.
WAT-4



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 WILL NOT BE ALLOWED ON ANY CIP WATER MAIN.
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-05.
5. COPPER TRACER WIRE SHALL BE USED ON PVC WATERMAIN 6. ALL WATERMAIN BOLTS SHALL BE CORE-BLUE OR APPROVED EQUAL.



WATER MAIN OFFSET

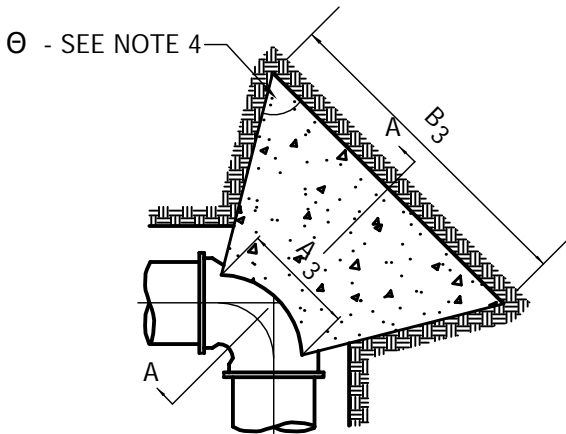
LAST REVISION:
MARCH 2008

PLATE NO.
WAT-5

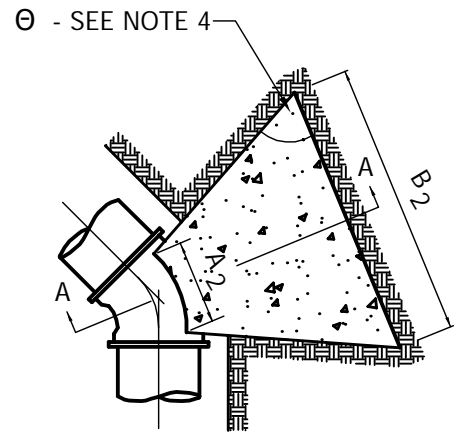
NOTES:

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 θ EQUAL TO OR LARGER THAN 45°.
3. DIMENSION A1,A2,A3 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH MJ BOLTS.
4. $\theta = 45^\circ$ MINIMUM.
5. PLACE POLYETHYLENE BETWEEN CONCRETE & PIPE.

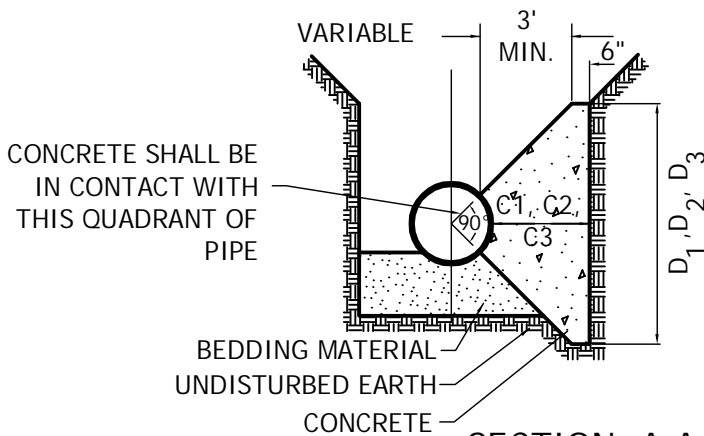
BUTTRESS DIMENSIONS						
PIPE SIZE	22 1/2° BEND		45° BEND		90° BEND	
	B ₁	D ₁	B ₂	D ₂	B ₃	D ₃
6"	1'-5"	1'-5"	1'-5"	1'-5"	2'-1"	1'-6"
8"	1'-5"	1'-5"	2'-1"	1'-6"	2'-8"	2'-0"
12"	1'-10"	1'-10"	3'-4"	2'-0"	4'-9"	2'-6"
16"	3'-0"	2'-0"	3'-10"	3'-0"	6'-2"	3'-6"
20"	3'-6"	2'-8"	5'-6"	3'-4"	8'-4"	4'-0"
24"	4'-4"	3'-0"	6'-10"	3'-10"	9'-8"	5'-0"
30"	-	-	9'-3"	6'-0"	17'-0"	6'-0"



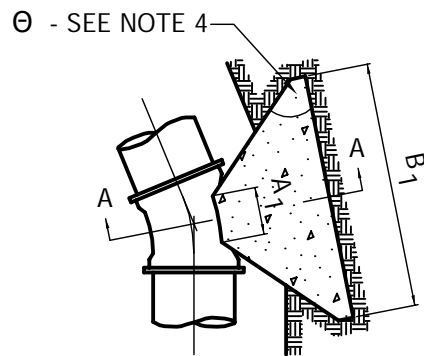
PLAN 90° BENDS



PLAN 45° BENDS



SECTION A-A



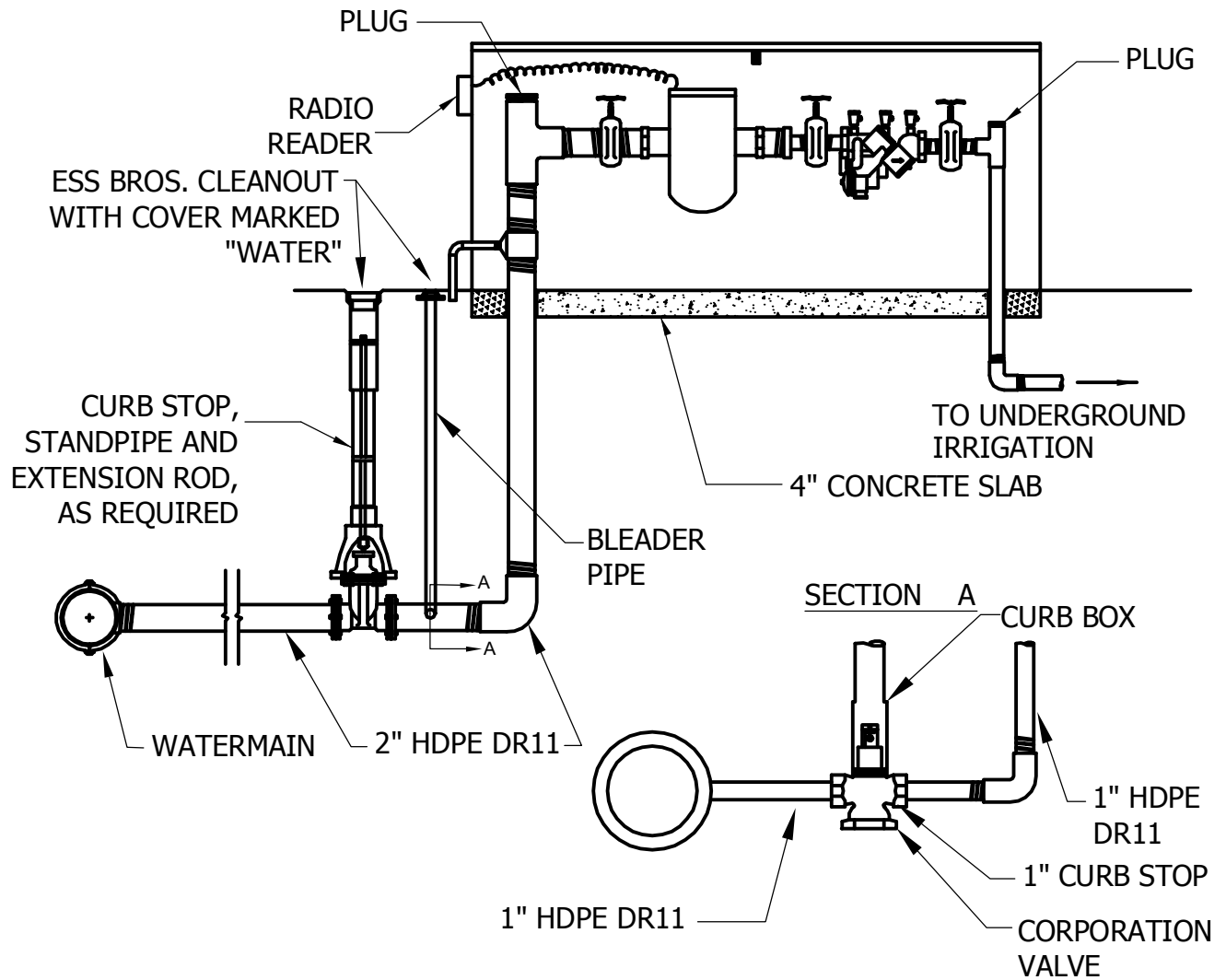
PLAN 22 1/2° BENDS



CONCRETE THRUST BLOCKING

LAST REVISION:
MARCH 2008

PLATE NO.
WAT-6



NOTE:

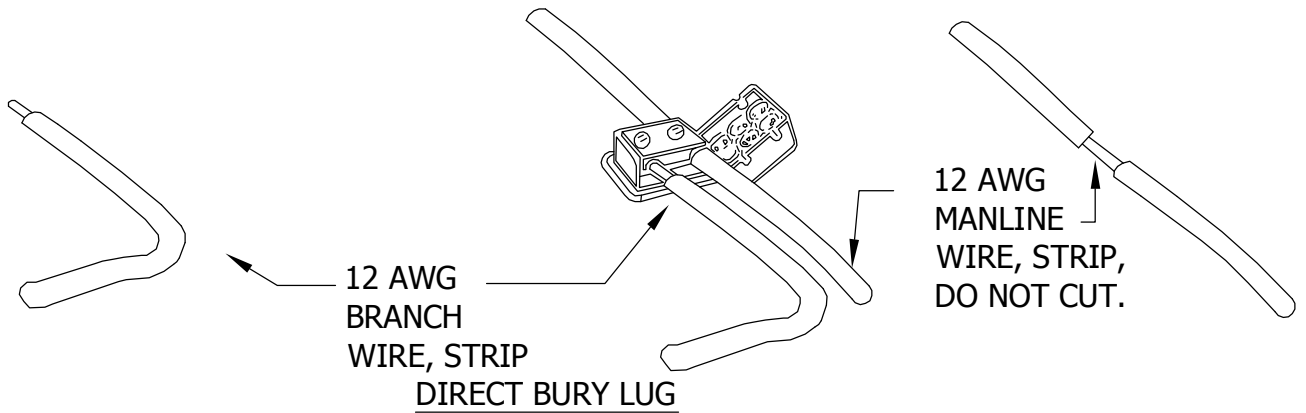
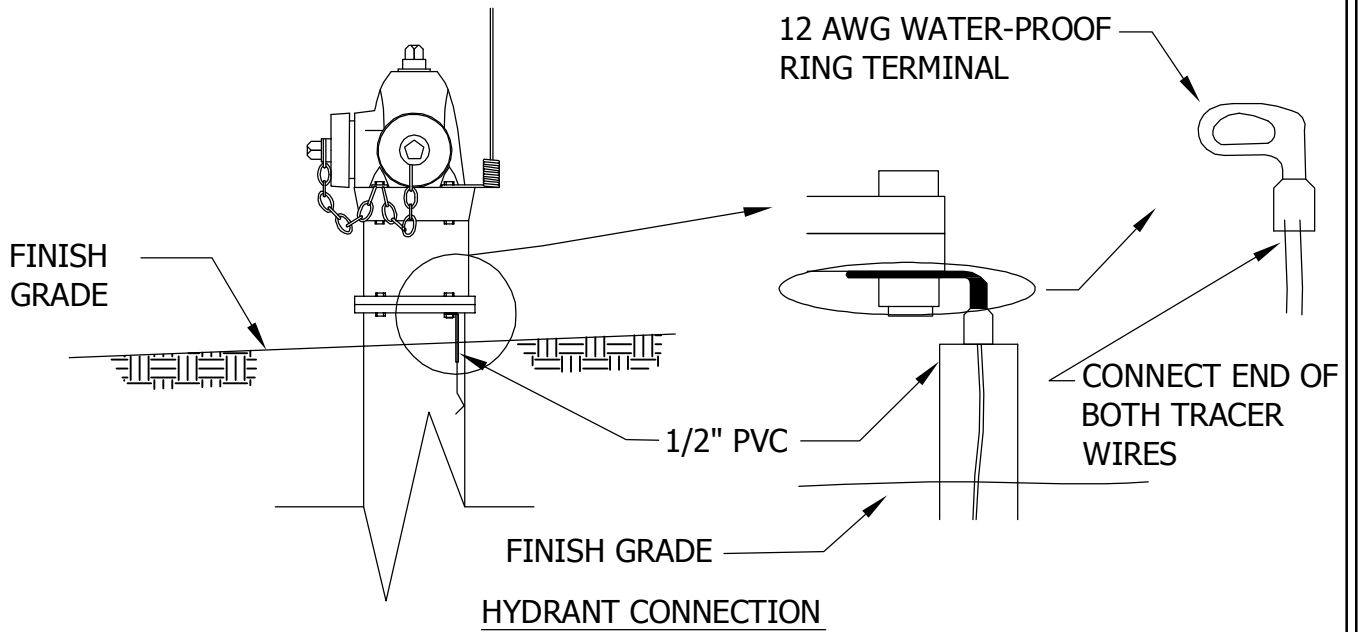
1. TO WINTERIZE, REMOVE AND DRAIN METER SIPHON WATER. FROM FEED LINE, BLOWOUT IRRIGATION LINES AND REINSTALL METER.
2. ENCLOSURE, METER, AND VALVES PER PROJECT SPECIFICATIONS.
3. SERVICE PIPE AND CURB STOP SIZES AND TYPES PER PROJECT SPECIFICATIONS.



**IRRIGATION SYSTEM TAP, METER AND
BACKFLOW PREVENTOR ASSEMBLY DETAIL**

LAST REVISION:
MARCH 2011

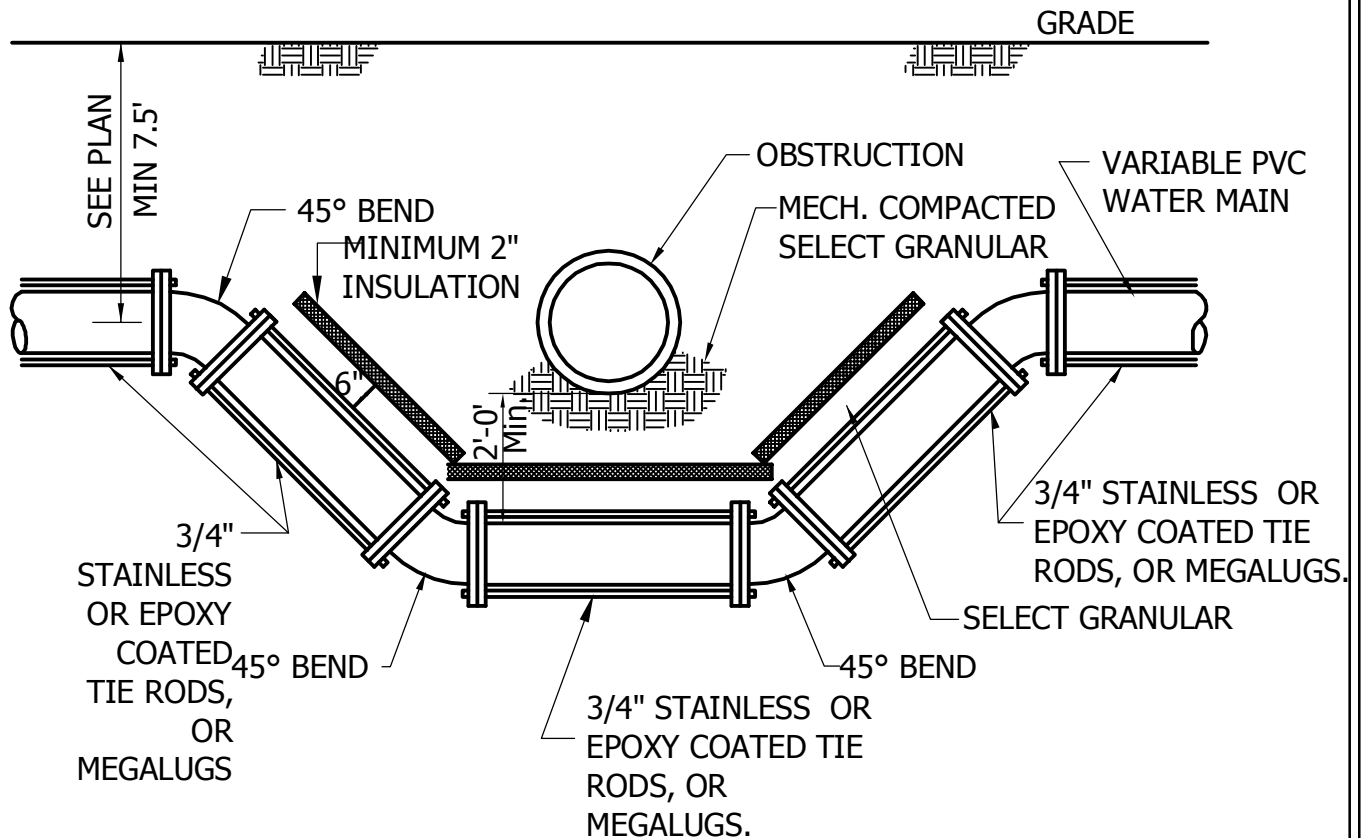
PLATE NO.
WAT-7



TRACER WIRE CONNECTIONS

LAST REVISION:
MARCH 2011

PLATE NO.
WAT-8



NOTE:

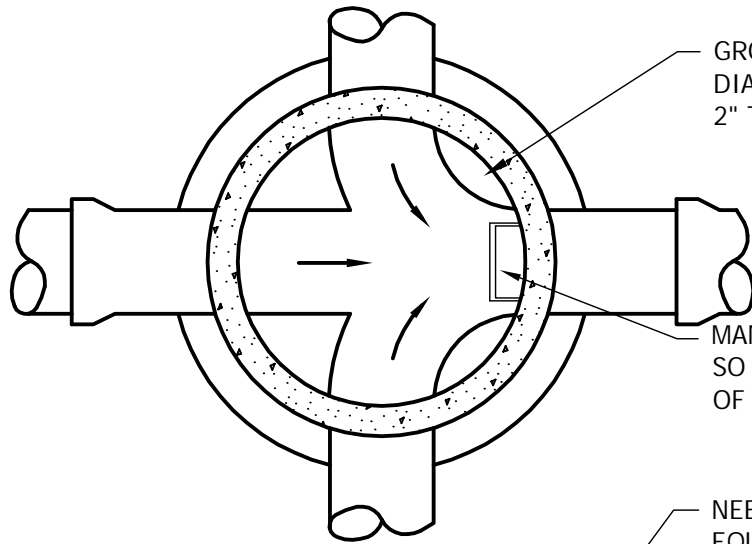
1. FOR FORCE MAIN OFFSET, FUSE 45° BENDS TOGETHER OR FLANGE MECHANICAL CONNECTIONS
2. ALL FITTINGS SHALL BE FUSION BONDED EPOXY COATED DUCTILE IRON TO MEET OR EXCEED ANSI/AWWA C550 AND C116/A21.116 REQUIREMENTS.
3. MEGALUGS WILL NOT BE ALLOWED ON ANY CIP WATER MAIN.
4. SELECT GRANULAR WILL BE REQUIRED BETWEEN INSULATION, WATER MAIN, AND OBSTRUCTION.
5. ALL BENDS SHALL HAVE MEGALUGS OR TIE RODS WITH BLOCKING IN ACCORDANCE WITH STANDARD PLATE WAT-05.
6. COPPER TRACER WIRE SHALL BE USED WITH PVC WATERMAIN.
7. ALL WATERMAIN BOLTS SHALL BE CORE-BLUE OR APPROVED EQUAL.



WATER MAIN / FORCE MAIN OFFSET

LAST REVISION:
MARCH 2011

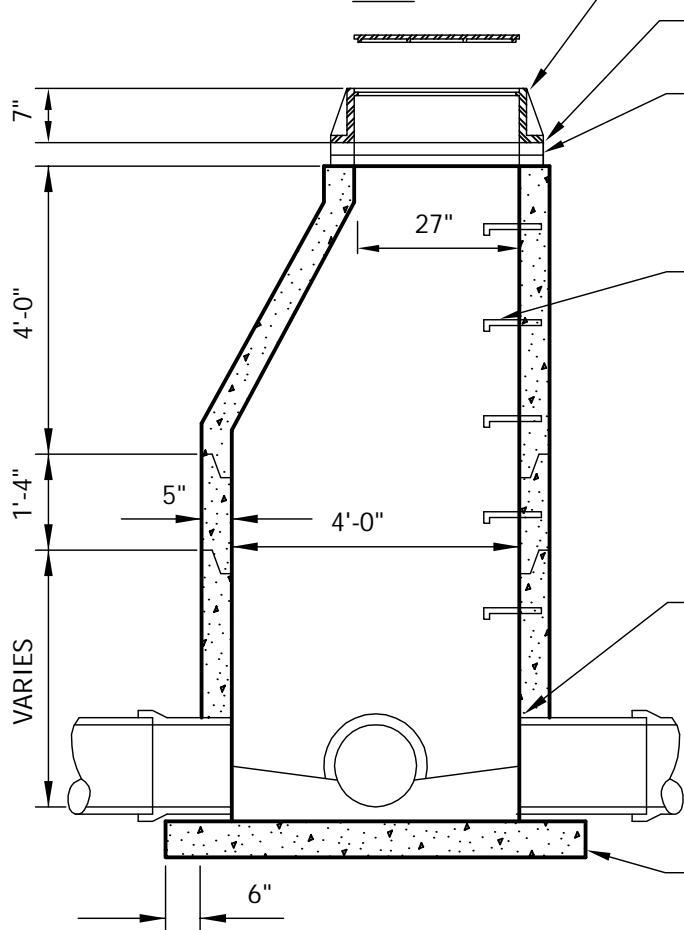
PLATE NO.
WAT-9



GROUT BOTTOM OF MANHOLE TO 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.

PLAN



NEENAH R1642B FRAME AND COVER OR EQUAL WITH 2 CONCEALED PICK HOLES.

INFI-SHIELD EXTERNAL SEALING SLEEVE

MINIMUM OF 2 MAXIMUM OF 6 CONCRETE ADJUSTMENT RINGS WITH 2 RINGS OF RAM-NEK BETWEEN EACH.

MANHOLE STEPS, NEENAH R1981J OR EQUAL, 16" ON CENTER. ALUMINUM STEPS APPROVED.

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

PIPE SHALL BE CUT OUT FLUSH WITH INSIDE FACE OF WALL.

NOTE: KOR-N-SEAL MANHOLE OR EQUAL CONSIDERED ACCEPTABLE ALTERNATE.

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

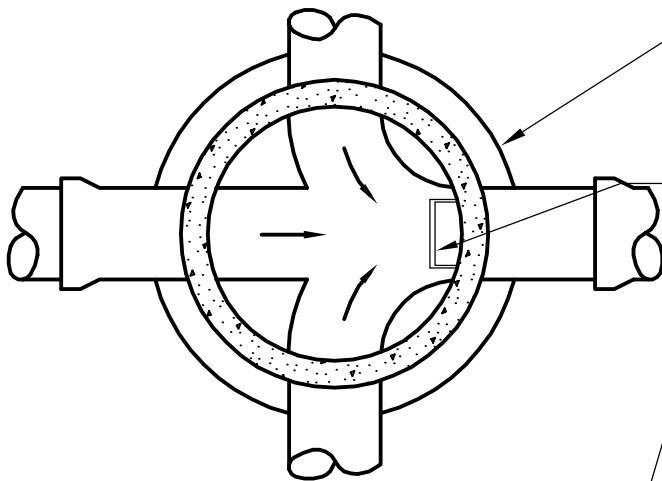
SECTION



STORM SEWER JUNCTION MANHOLE

LAST REVISION:
JAN 2006

PLATE NO.
STO-1



PLAN

FOR 6' DIAM. MANHOLE AN 8" PRECAST SLAB IS REQUIRED. MORTAR SHALL BE PURE PORTLAND SPEC MIX OR APPROVED EQUAL.

GROUT BOTTOM OF MANHOLE TO 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.

NEENAH R1642B FRAME AND COVER OR EQUAL WITH 2 CONCEALED PICK HOLES.

MINIMUM OF 2 MAXIMUM OF 6 CONCRETE ADJUSTMENT RINGS WITH 2 BEADS OF RAM-NEK BETWEEN BOTH BOTTOM RING AND STRUCTURE AND TOP RING AND CASTING. FULL BED OF MORTAR BETWEEN MIDDLE RINGS.

INFI-SHIELD EXTERNAL SEALING SLEEVE (MIN. 2" OVERLAT.)

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

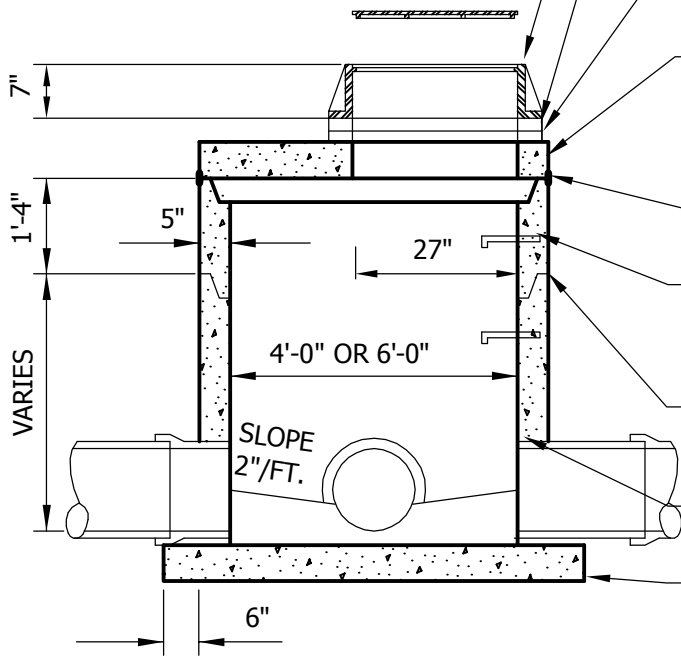
INSTALL INFI-SHIELD GATOR WRAP OR APPROVED EQUAL.

MANHOLE STEPS, NEENAH R1981J OR EQUAL, 16" ON CENTER. ALUMINUM STEPS APPROVED.

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

PIPE SHALL BE CUT OUT FLUSH WITH INSIDE FACE OF WALL.

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



SECTION

7"

1'-4"

VARIES

5"

27"

4'-0" OR 6'-0"

SLOPE 2"/FT.

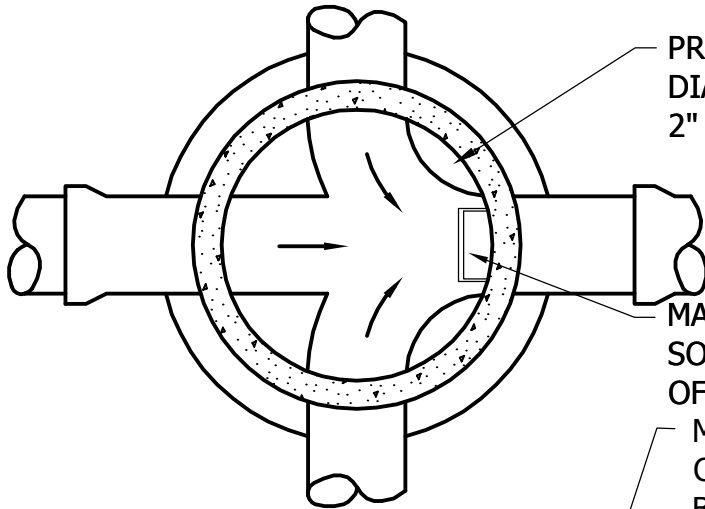
6"



JUNCTION MANHOLE WITH SLAB TOP
STORM SEWER

LAST REVISION:
JAN 2011

PLATE NO.
STO-2



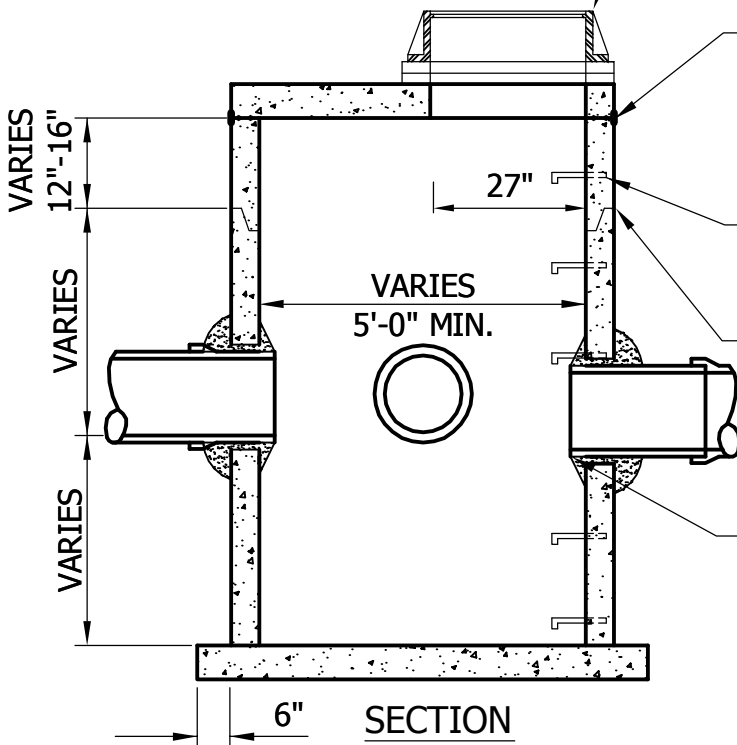
PLAN

PRECAST INVERT SHOULD BE 1/2 DIAMETER OF PIPE AND BENCHES SLOPED 2" TOWARD INVERT.

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

MINIMUM OF 2 AND MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH 2 BEADS OF RAM-NEK BETWEEN BOTH BOTTOM RING AND STRUCTURE, TOP RING AND CASTING. FULL BED OF MORTAR BETWEEN MIDDLE RINGS. INFI-SHIELD EXTERNAL SEALING SLEEVE AROUND ALL ADJUSTING RINGS (MIN. 2" OVERLAP.) 1 RING W/RAM-NEK=0.23'; MAX. HORIZONTAL OFFSET=0.25'(3").

MORTAL SHALL BE PURE PORTLAND SPEC MIX OR APPROVED EQUAL.



SECTION

TOP OF BARREL SECTION BELOW TOP SLAB TO HAVE FLAT TOP EDGE SEALED WITH 2 BEADS OF RAMNEK OR EQUAL. INSTALL INFI-SHIELD GATOR WRAP OR APPROVED EQUAL.

MANHOLE STEPS, NEENAH R1981J OR EQUAL, 15" O.C., ALUMINUM STEPS APPROVED.

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

NO BLOCK STRUCTURES ARE ALLOWED.

PIPE SHALL BE CUT TO BE 2" INSIDE MANHOLE AT THE PIPE'S MIDPOINT

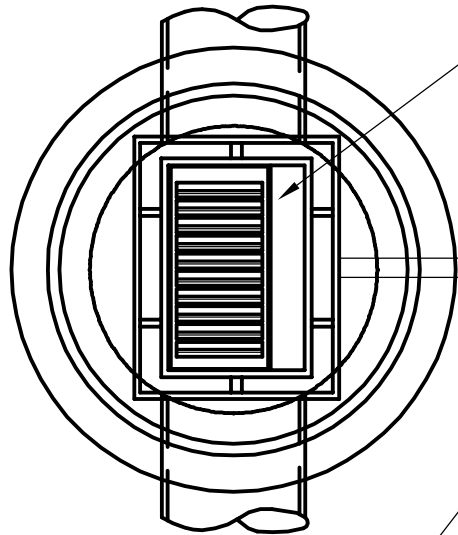
DOGHOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE.



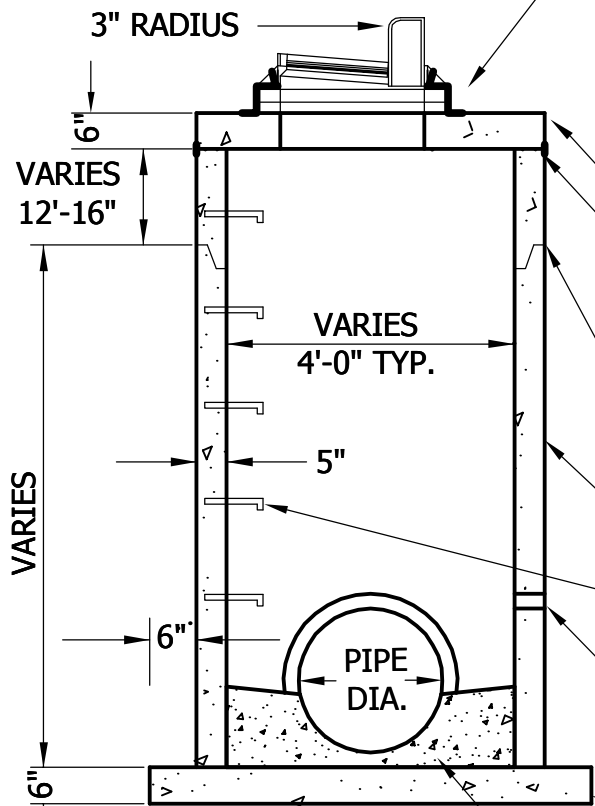
JUNCTION MANHOLE WITH REINFORCED TOP SLAB & SUMP

LAST REVISION:
JAN 2011

PLATE NO.
STO-2A



PLAN



SECTION

MORTAL SHALL BE PURE PORTLAND SPEC MIX OR APPROVED EQUAL.

24"X36" SLAB OPENING FOR NEENAH R3067V OR EQUAL (VANE GRATE SHOWN) GRATE SHALL HAVE "DUMP NO WASTE, DRAINS TO FRESH WATER ON CASTING. 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
 MINIMUM OF 2 AND MAXIMUM OF 5

CONCRETE ADJUSTMENT RINGS WITH 2 BEADS OF RAM-NEK BETWEEN BOTH BOTTOM RING AND STRUCTURE, TOP RING AND CASTING. FULL BED OF MORTAR BETWEEN MIDDLE RINGS. INFI-SHIELD EXTERNAL SEALING SLEEVE AROUND ALL ADJUSTING RINGS (MIN. 2" OVERLAP.) 1 RING W/RAM-NEK=0.23'; MAX. HORIZONTAL OFFSET=0.25'(3").

6" PRECAST REINFORCED CONCRETE SLAB. TOP OF BARREL SECTION UNDER TOP SLAB TO HAVE FLAT TOP EDGE SEALED WITH 2 BEADS OF RAMNEK OR EQUAL. WRAP EXTERIOR JOINT WITH INFI-SHIELD GATOR WRAP OR APPROVED EQUAL. ALL JOINTS IN MANHOLE TO HAVE "O" RING RUBBER GASKETS.

PRECAST CONCRETE SECTION

MANHOLE STEPS, NEENAH R1981J OR EQUAL, 15" O.C., ALUMINUM STEPS APPROVED.

4" PVC TEE FOR DRAINTILE CONNECTION.

NO BLOCK STRUCTURES ARE ALLOWED. MINIMUM SLAB THICKNESS, 6" FOR STRUCTURES 14' IN DEPTH. INCREASE THICKNESS 1" FOR EACH 4' OF DEPTH GREATER THAN 14', AND REINFORCE WITH 6"X6" 10/10 MESH.

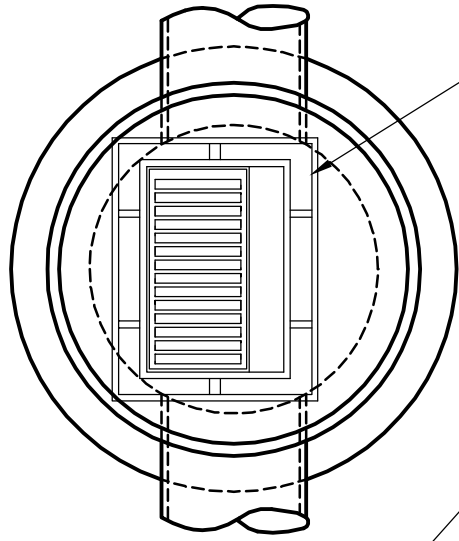
GROUT BOTTOM



CATCHBASIN MANHOLE
 TYPE II

LAST REVISION:
 JAN 2011

PLATE NO.
 STO-3



PLAN

24"X36" SLAB OPENING FOR CASTING AS SPECIFIED.

DIMENSION FROM BACK OF CURB TO CENTER OF STRUCTURE.

4' DIA. MH - 9" IN FROM BACK OF CURB

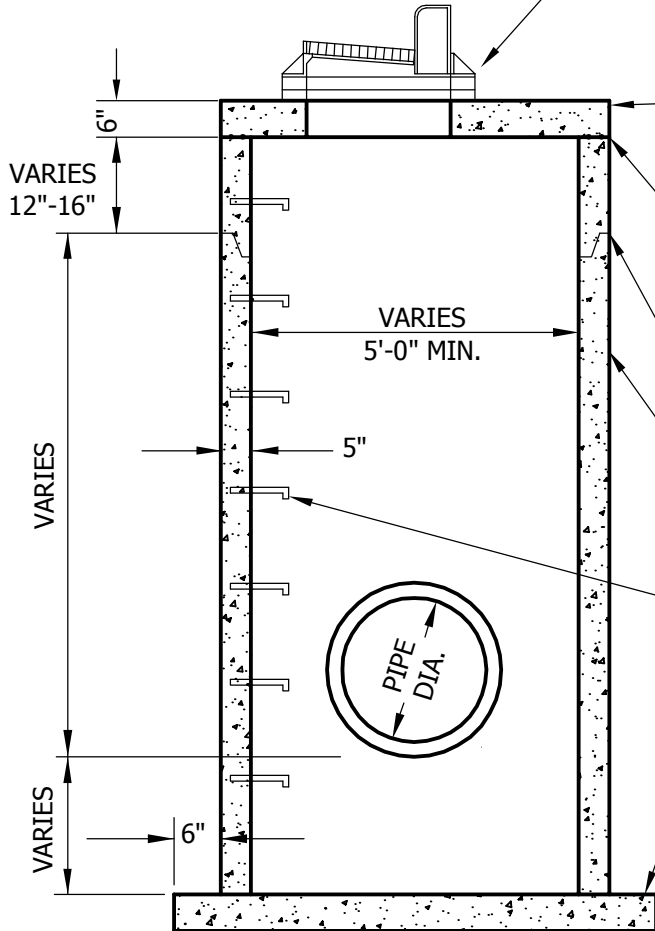
5' DIA. MH - 3" IN FROM BACK OF CURB

6' DIA. MH - 3" BEHIND BACK OF CURB

7' DIA. MH - 9" BEHIND BACK OF CURB

8' DIA. MH - 15" BEHIND BACK OF CURB

MINIMUM OF 2 AND MAXIMUM OF 5 CONCRETE ADJUSTMENT RINGS WITH 2 BEADS OF RAM-NEK BETWEEN EACH. FULL BED OF MORTAR BETWEEN MIDDLE RINGS. INFI-SHIELD EXTERNAL SEALING SLEEVE AROUND ALL ADJUSTING RINGS (MIN. 2" OVERLAP.) 1 RING W/RAM-NEK=0.23'; MAX. HORIZONTAL OFFSET=0.25'(3").



SECTION

6" PRECAST REINFORCED CONCRETE SLAB.

TOP OF BARREL SECTION UNDER TOP SLAB TO HAVE FLAT TOP EDGE SEALED WITH 2 BEADS OF RAMNEK OR EQUAL. INSTALL INFI-SHIELD GATOR WRAP AROUND EXTERIOR OF JOINT.

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

PRECAST CONCRETE SECTION

DOGHOUSES SHALL BE GROUTED ON BOTH THE OUTSIDE AND INSIDE.

MANHOLE STEPS, NEENAH R1981J OR EQUAL, 15" O.C., ALUMINUM STEPS APPROVED

NO BLOCK STRUCTURES ARE ALLOWED.

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

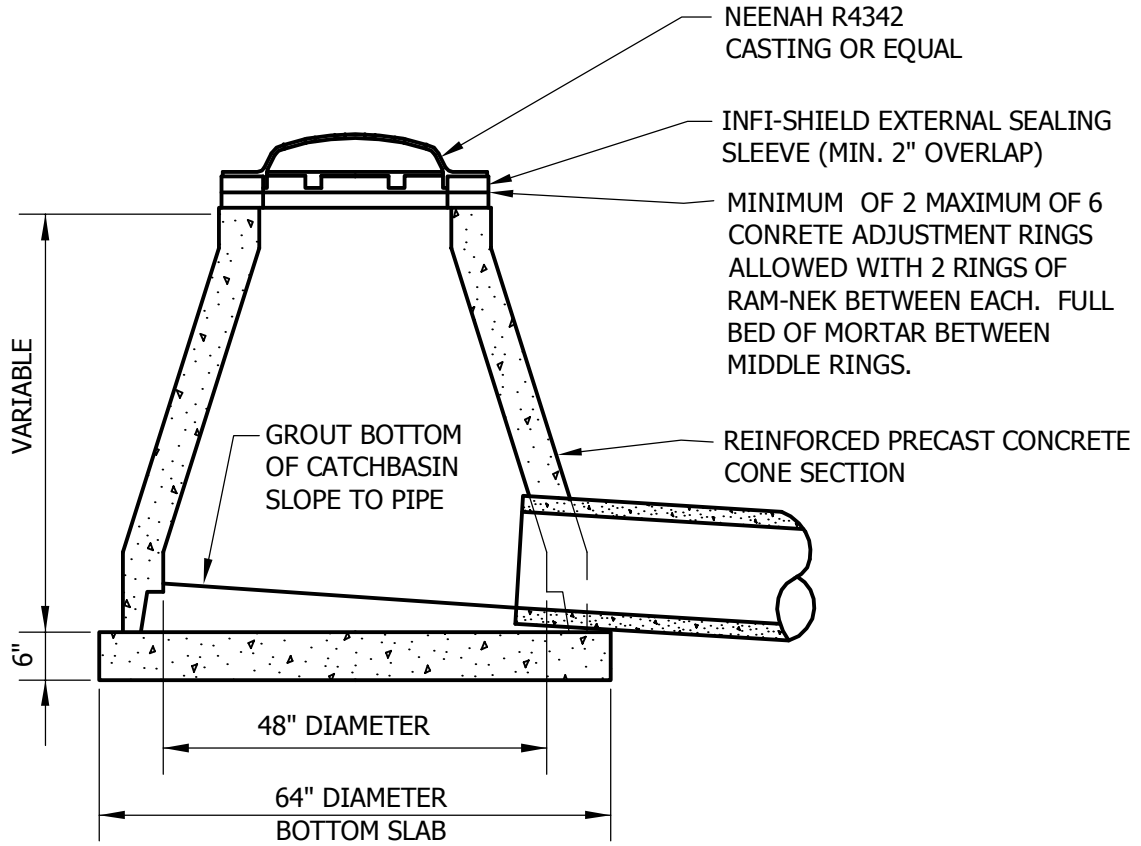
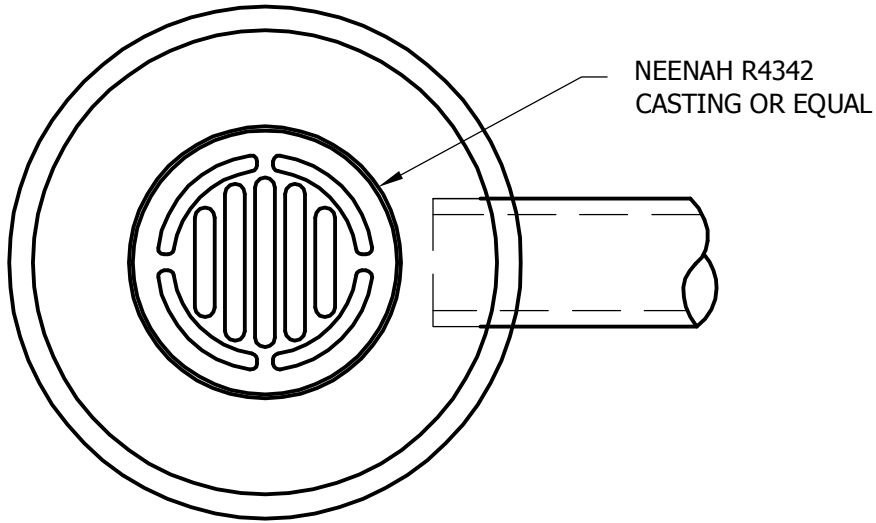
NO DRAIN HOLES



CATCHBASIN MANHOLE WITH SUMP

LAST REVISION:
JAN 2011

PLATE NO.
STO-3A

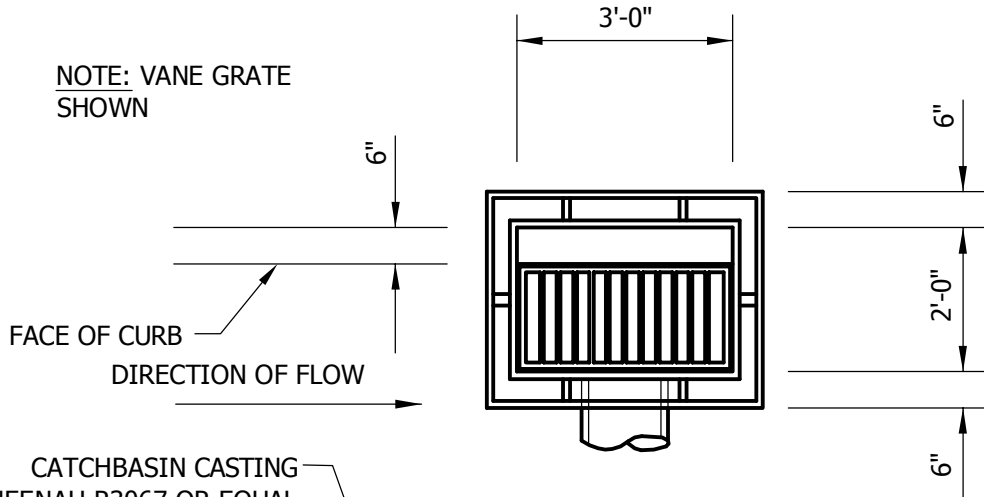


TYPE I
CATCHBASIN

LAST REVISION:
JAN 2011

PLATE NO.
STO-4

NOTE: VANE GRATE SHOWN



PLAN

CATCHBASIN CASTING NEENAH R3067 OR EQUAL WITH VANE GRATE 2" RADIUS CURB BOX. GRATE SHALL HAVE "DUMP NO WASTE, DRAINS TO FRESH WATER ON CASTING.

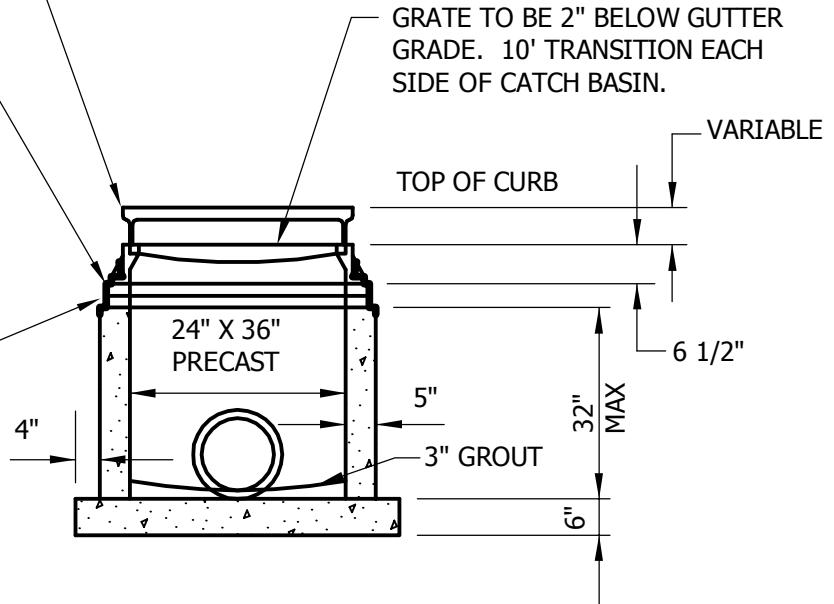
FULL BED OF MORTAR BETWEEN MIDDLE RINGS. MAX HORIZONTAL OFFSET = 0.25'.

MIN. OF 2 MAX. OF 6 CONCRETE ADJUSTMENT RINGS WITH 2 RINGS OF RAM-NEK BETWEEN BOTH BOTTOM RING AND STRUCTURE, TOP RING AND CASTING. FULL BED OF MORTAR BETWEEN MIDDLE RINGS.

INFI-SHIELD SEALING SLEEVE OR APPROVED EQUAL (MIN. 2" OVERLAP.)

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

MORTAL SHALL BE PURE PORTLAND SPECMIX OR APPROVED EQUAL.



SECTION

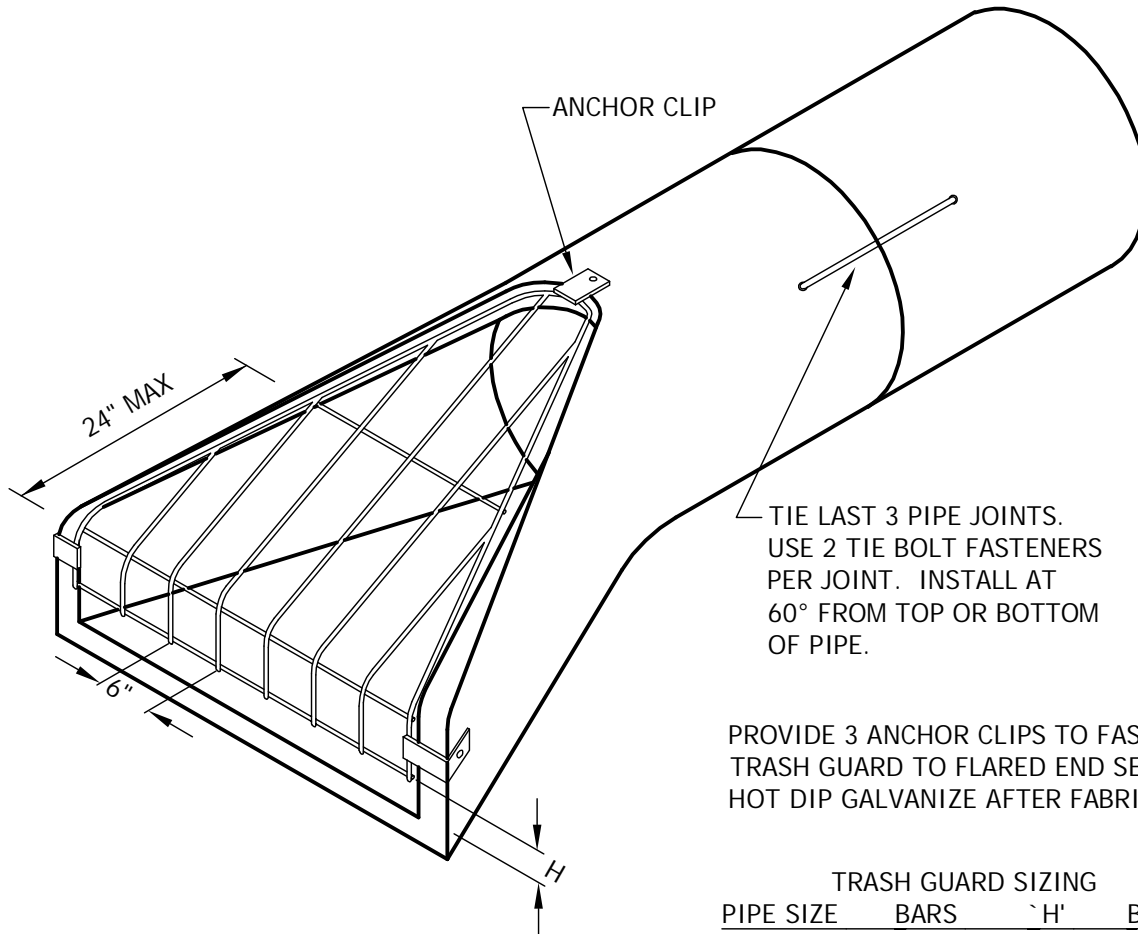


TYPE II CATCHBASIN

LAST REVISION: JAN 2011

PLATE NO. STO-5

SEE CITY PLATE NO. STO-7 FOR RIPRAP PLACEMENT.



ISOMETRIC

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

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

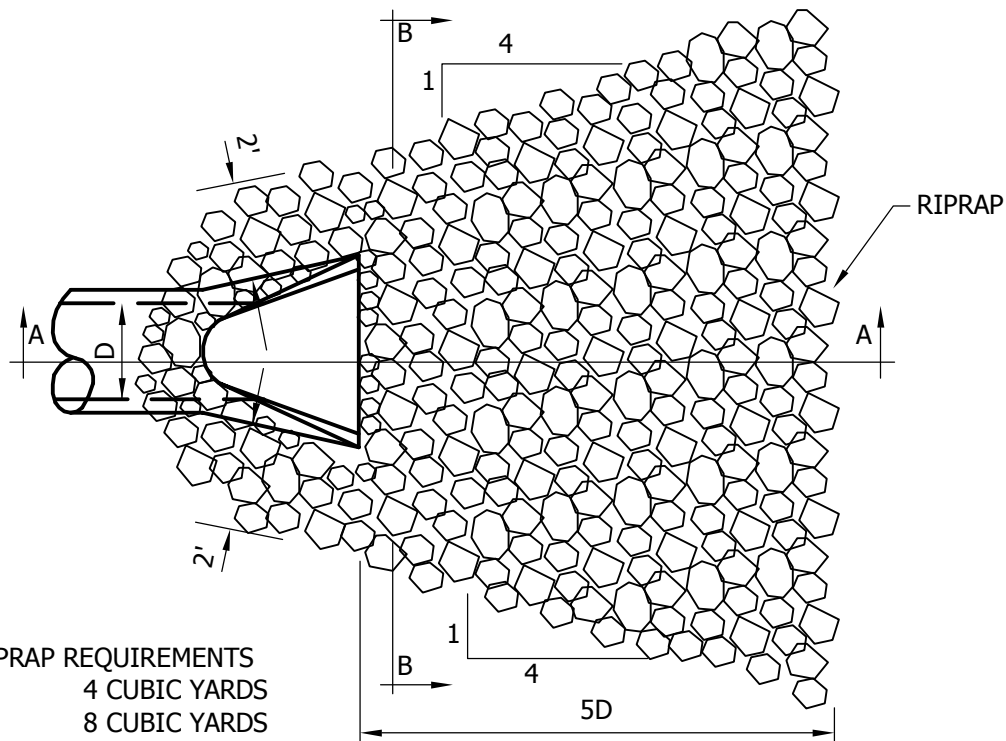
TRASH GUARD SIZING			
PIPE SIZE	BARS	H	BOLTS
12"	3/4"Ø	2 1/2"	5/8"
15"	3/4"Ø	3"	5/8"
18"	3/4"Ø	4"	5/8"
21"-24"	1"Ø	4"	3/4"
27"-36"	1"Ø	5"	3/4"
42"	1"Ø	6"	3/4"
48"-54"	1 1/4"Ø	6"	1"
60"-72"	1 1/4"Ø	7"	1"
78"-90"	1 1/4"Ø	8"	1"



FLARED END SECTION
AND TRASH GUARD

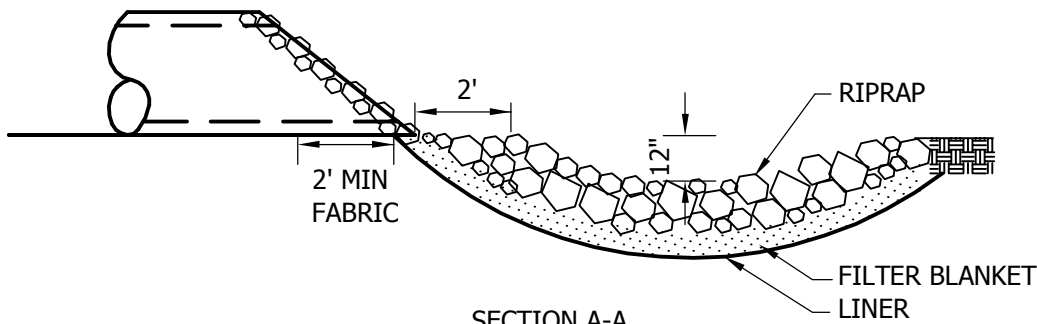
LAST REVISION:
JAN 2006

PLATE NO.
STO-6



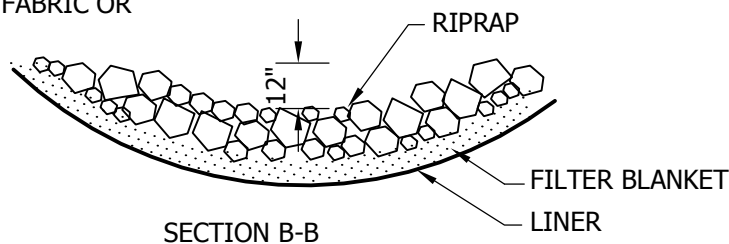
CLASS 2 RIPRAP REQUIREMENTS
 12" TO 24" 4 CUBIC YARDS
 27" TO 33" 8 CUBIC YARDS
 36" TO 48" 12 CUBIC YARDS
 54" AND UP 16 CUBIC YARDS
 (ONE CUBIC YARD IS APPROXIMATELY 2,800 LBS.)

PLAN



SECTION A-A

NOTE
 FILTER BLANKET REQUIRED UNDER RIPRAP
 OR 2 LAYERS OF 500X MIRAFI FABRIC OR
 EQUAL



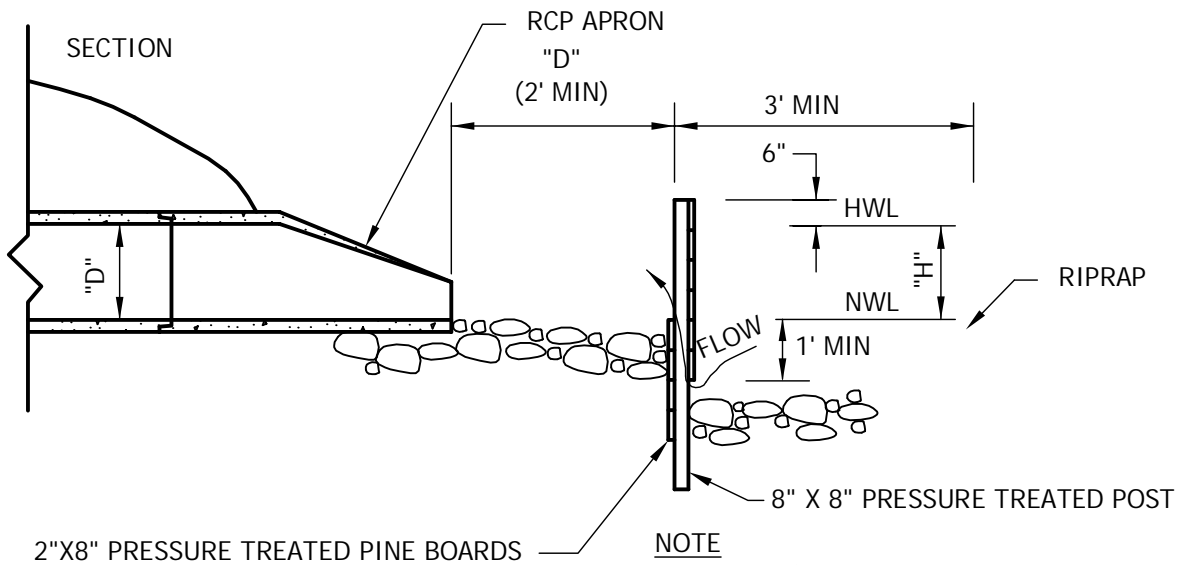
SECTION B-B



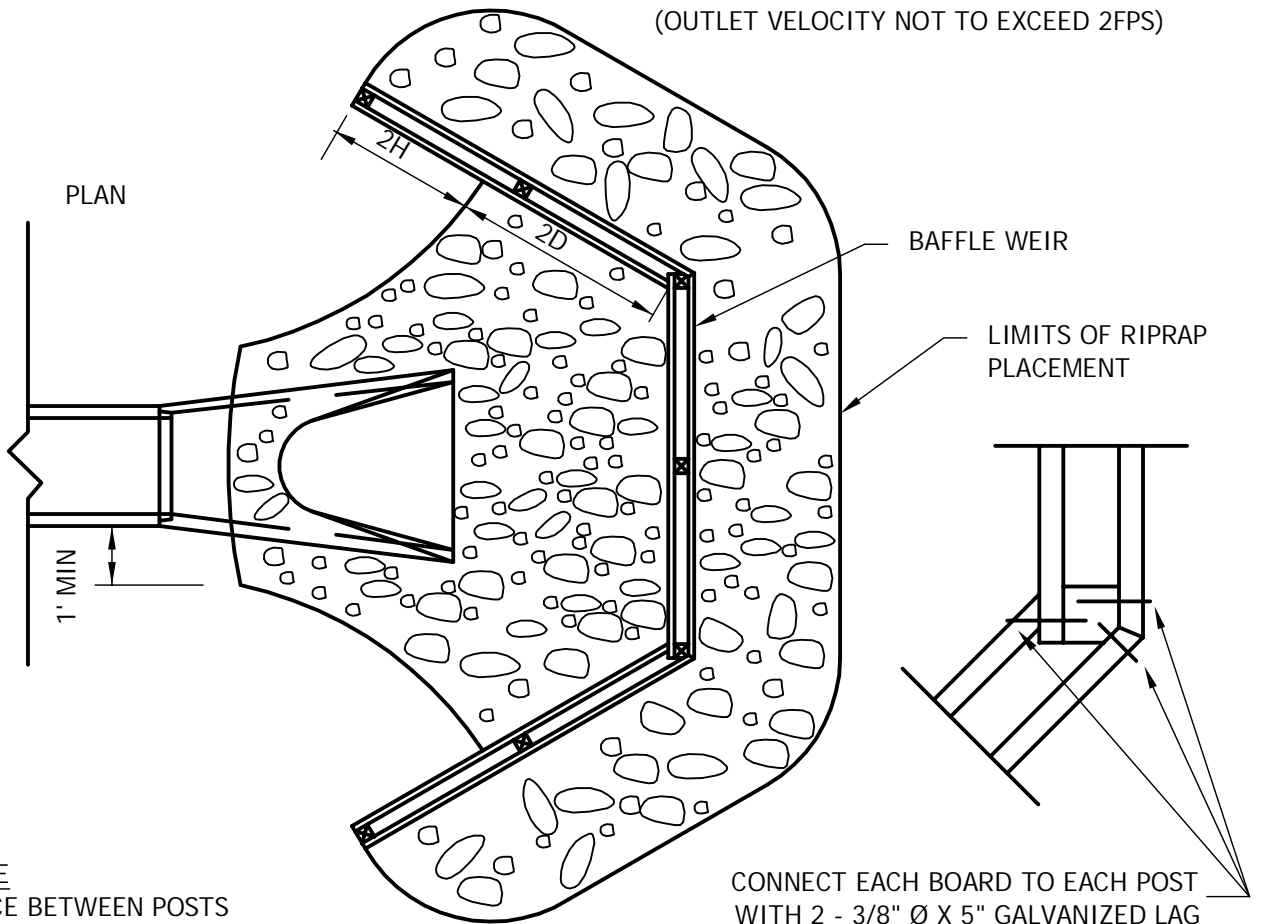
RIPRAP AT OUTLETS

LAST REVISION:
 JAN 2011

PLATE NO.
 STO-7



NOTE
TOTAL LENGTH OF WEIR TO BE
DETERMINED BY OUTLET DISCHARGE
(OUTLET VELOCITY NOT TO EXCEED 2FPS)



NOTE
SPACE BETWEEN POSTS
NOT TO EXCEED 4'

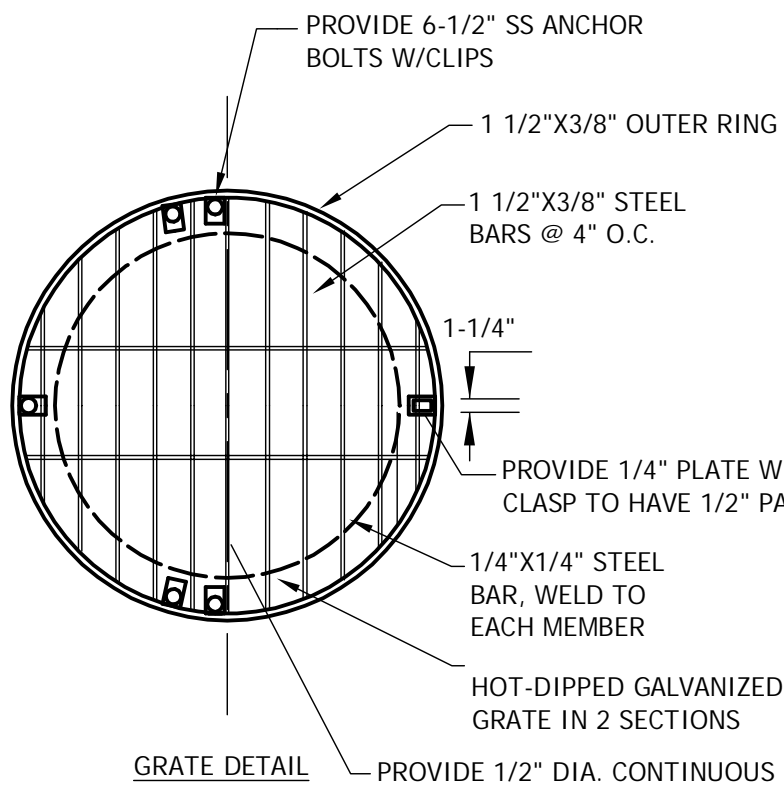
CONNECT EACH BOARD TO EACH POST
WITH 2 - 3/8" Ø X 5" GALVANIZED LAG
SCREWS



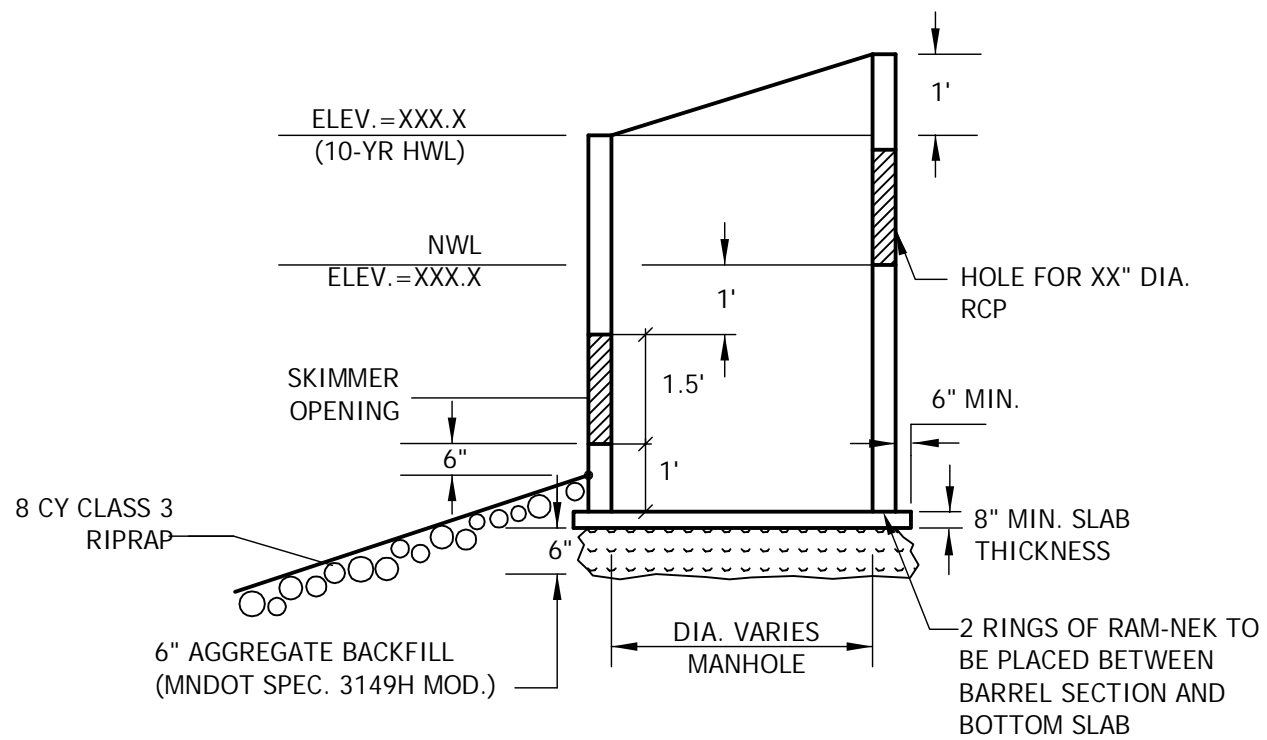
BAFFLE WEIR

LAST REVISION:
JAN 2006

PLATE NO.
STO-8



MH DIAMETER	SKIMMER OPENING
4'	3'X1.5'
5'	5'X1.5'
6'	6'X1.5'



STANDARD SKIMMER STRUCTURE

LAST REVISION:
AUG 2006

PLATE NO.
STO-8A

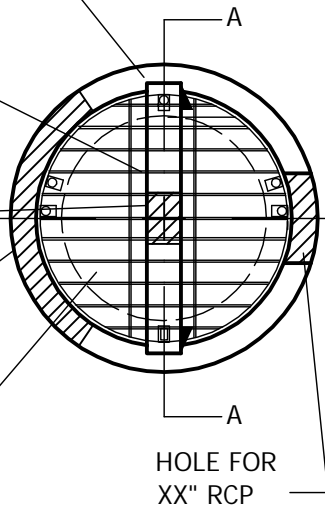
2"X8" KEYWAY
CAST INTO WALL
BY SUPPLIER

BAFFLE WALL
MUST BE
POURED IN
PLACE

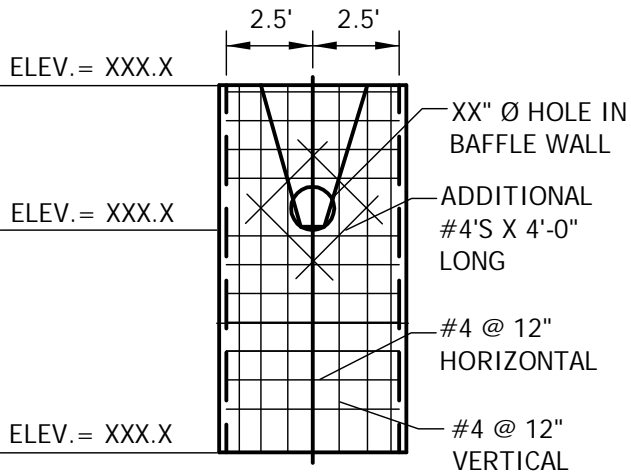
BAFFLE WALL

SKIMMER
OPENING
SEE STO-8A

FOR GRATE
DESIGN SEE
STO-8A



SKIMMER GRATE



SECTION A-A
CONCRETE BAFFLE WALL

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

8" MINIMUM DIAMETER
HOLE IN BAFFLE WALL
ELEV.=XXX.X (10-YR HWL)

ELEV.=XXX.X

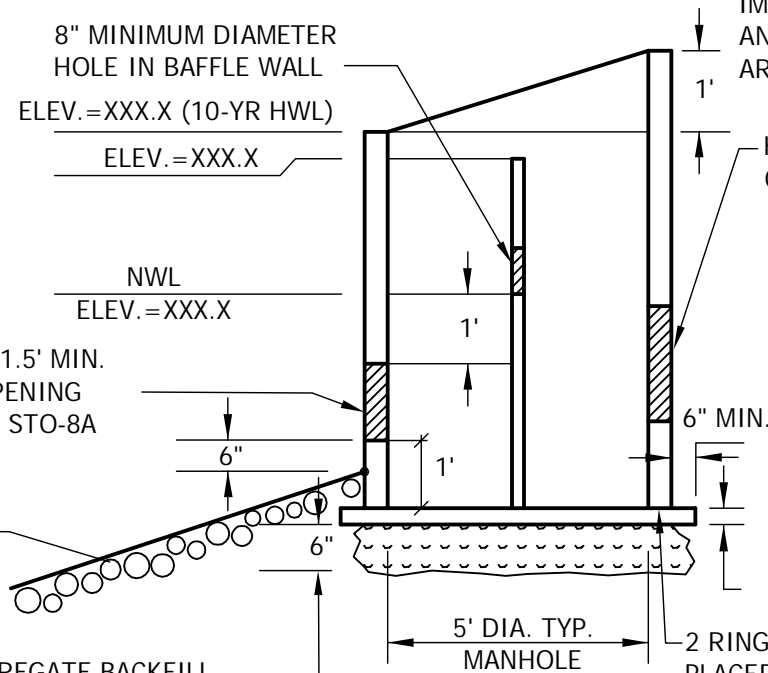
NWL

ELEV.=XXX.X

5' X 1.5' MIN.
OPENING
SEE STO-8A

8 CY CLASS
3 RIPRAP

6" AGGREGATE BACKFILL
(MNDOT SPEC. 3149H MOD.)



HOLE FOR XX" DIA.
OUTLET PIPE

NOTE:

WHEN BAFFLE WALL
HEIGHT
IS GREATER THAN 3'
ABOVE NWL THE
FOLLOWING SHALL BE
REQUIRED:

1. STEPS
2. 6' DIAMETER MH

8" MIN. SLAB THICKNESS

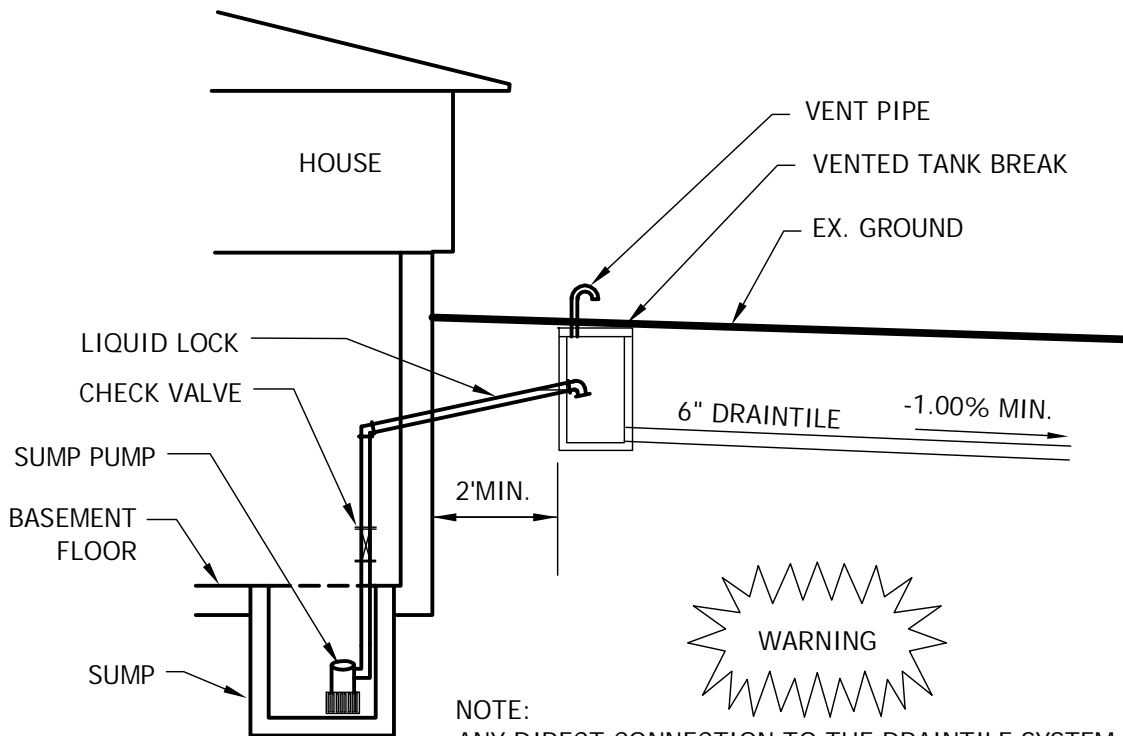
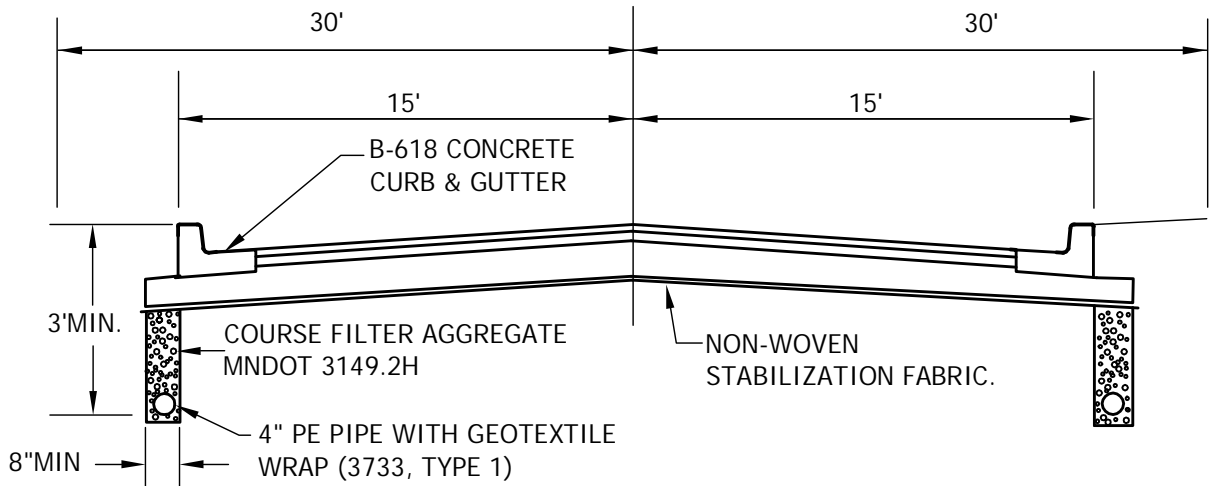
2 RINGS OF RAM-NEK TO BE
PLACED BETWEEN BARREL
SECTION AND BOTTOM SLAB



SKIMMER STRUCTURE WITH
CONCRETE BAFFLE WALL

LAST REVISION:
AUG 2006

PLATE NO.
STO-8B



NOTE:
 ANY DIRECT CONNECTION TO THE DRAINTILE SYSTEM
 SHOULD NOT BE ALLOWED, DUE TO THE POSSIBILITY
 OF A NATURAL GAS LEAK.

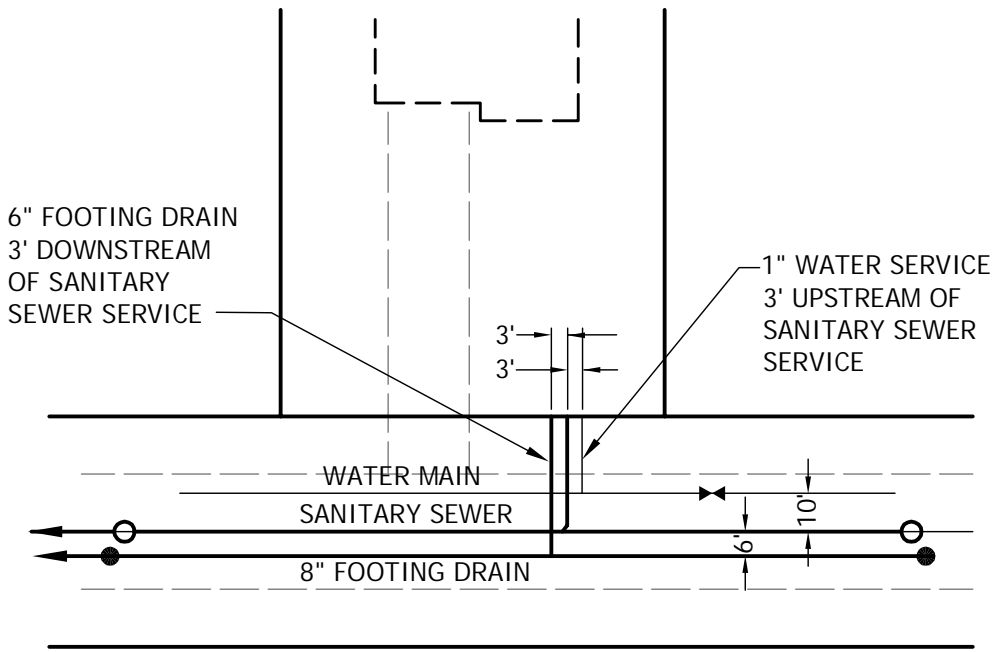
NO SCALE



INDIRECT CONNECTION
 TO DRAINTILE SYSTEM

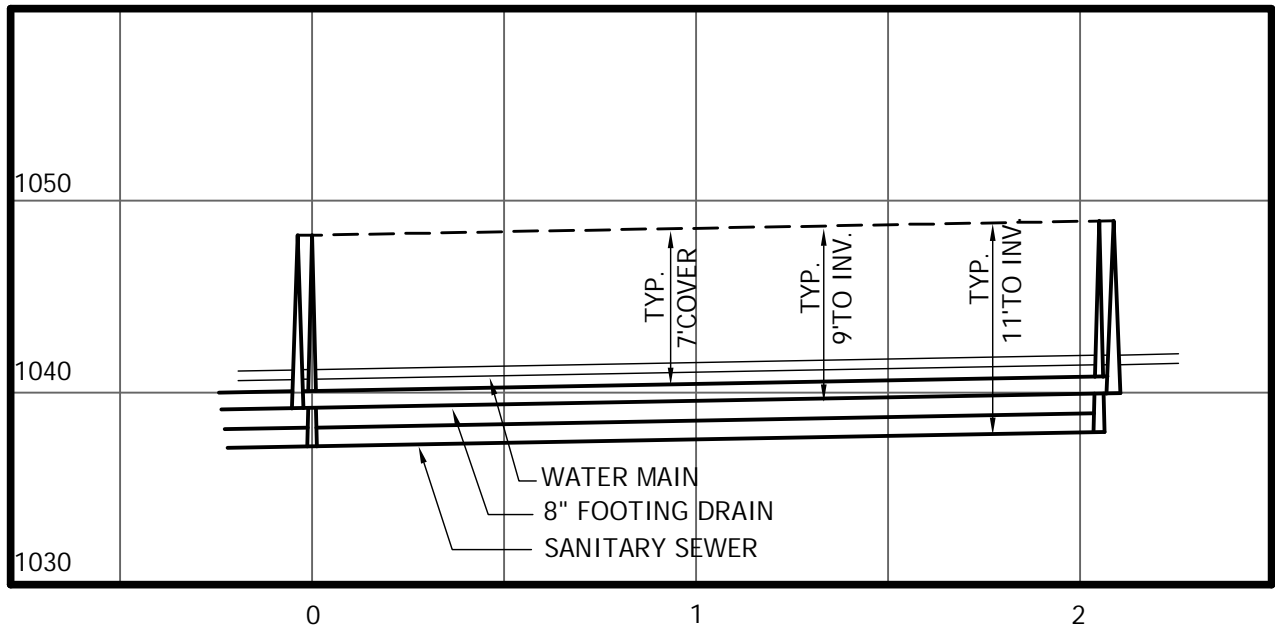
LAST REVISION:
 JAN 2006

PLATE NO.
 STO-9



NOTE
THIS SYSTEM TO BE USED WHERE THERE IS NO POSSIBILITY OF FLOODING.

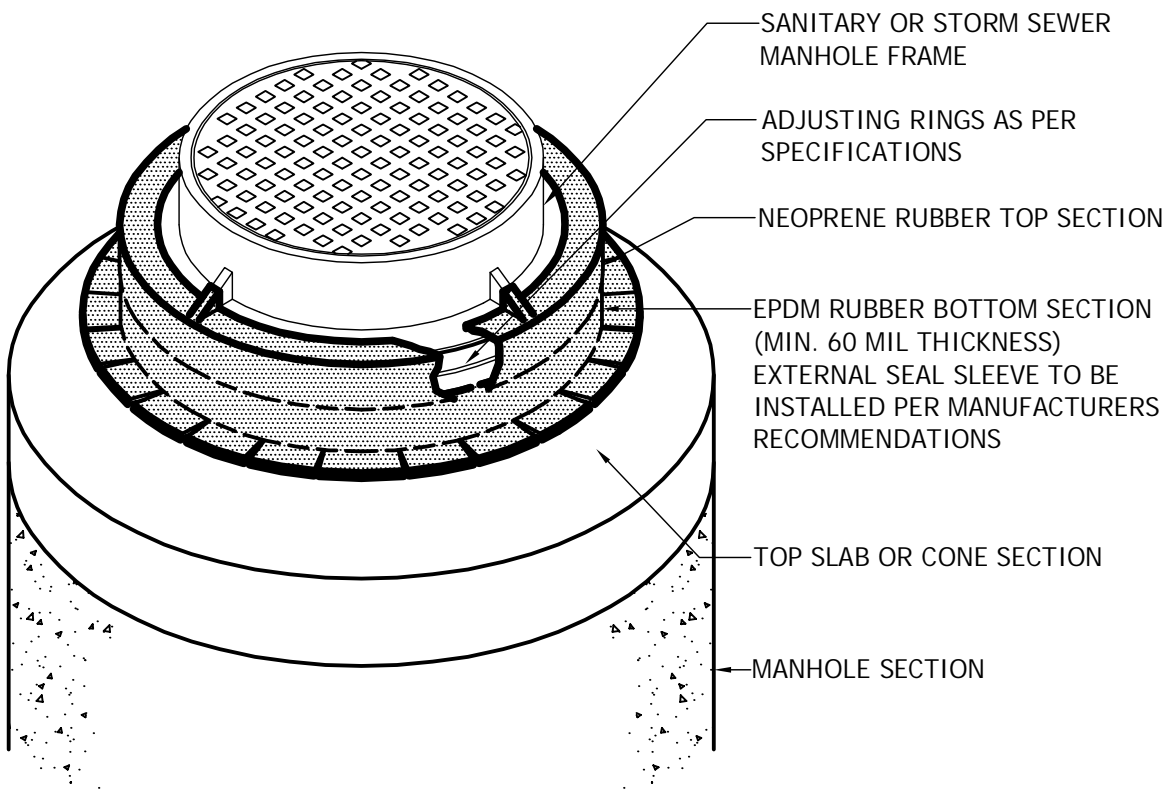
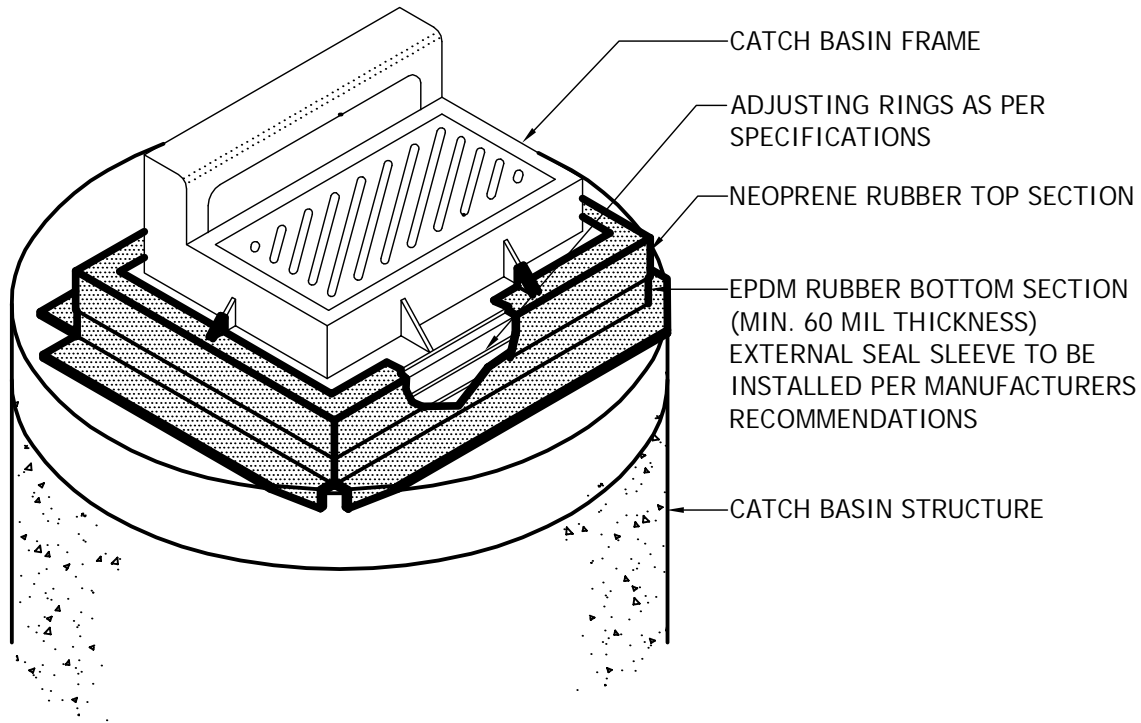
NOTE
THIS SYSTEM CANNOT BE CONNECTED TO THE STORM SEWER SYSTEM.



TYPICAL
GRAVITY FOOTING DRAIN SYSTEM

LAST REVISION:
JAN 2006

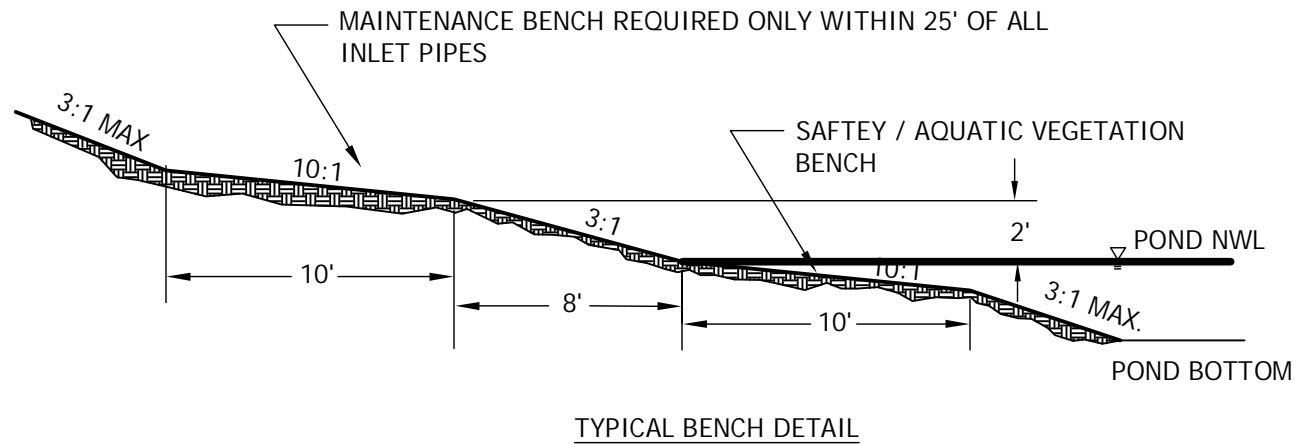
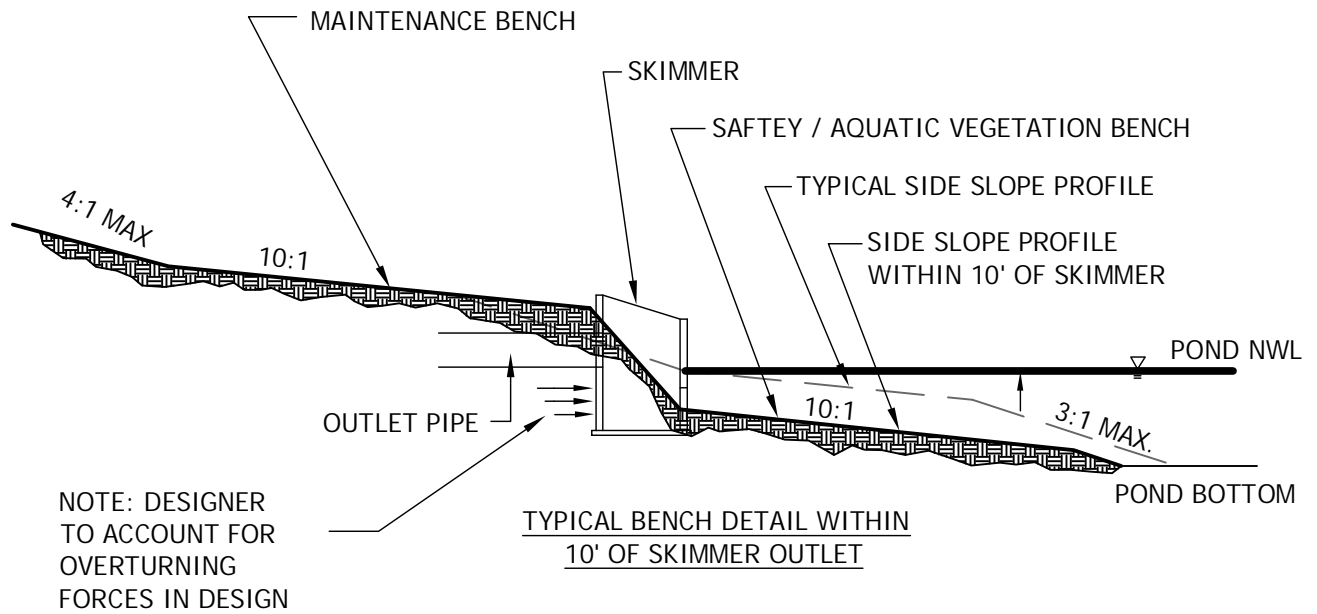
PLATE NO.
STO-10



CATCHBASIN AND MANHOLE
EXTERNAL SEAL

LAST REVISION:
JAN 2006

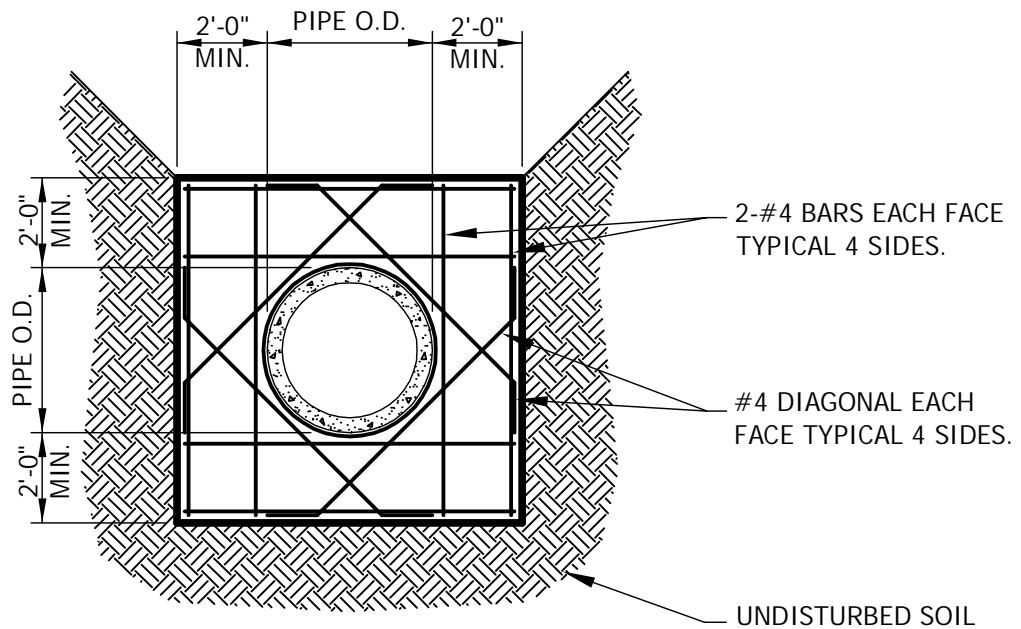
PLATE NO.
STO-11



TYPICAL WATER QUALITY POND

LAST REVISION:
AUG 2006

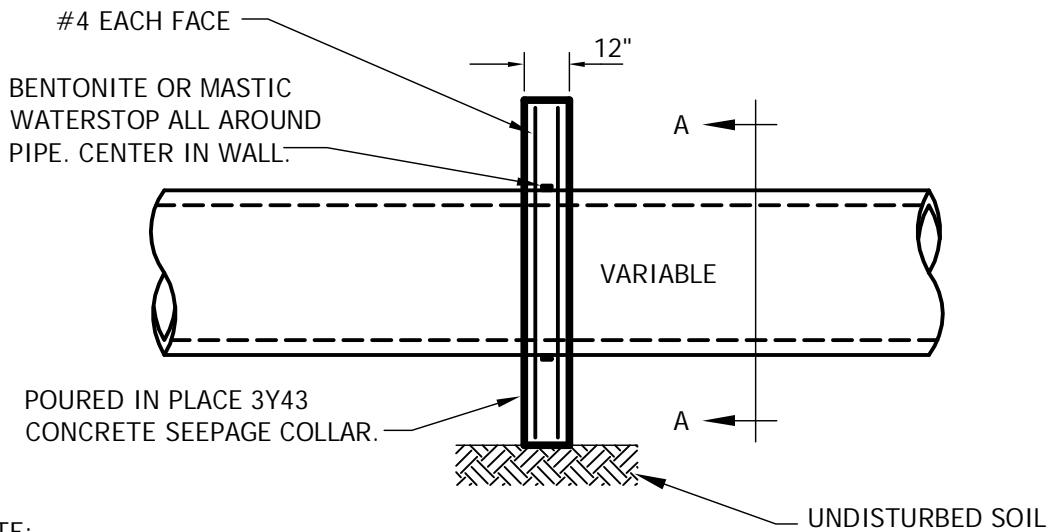
PLATE NO.
STO-12



SECTION AA

NOTE:
NO BLOCK OR OTHER FILLER ALLOWED

NOTE:
NOTCH ALL SIDES INTO UNDISTURBED SOIL



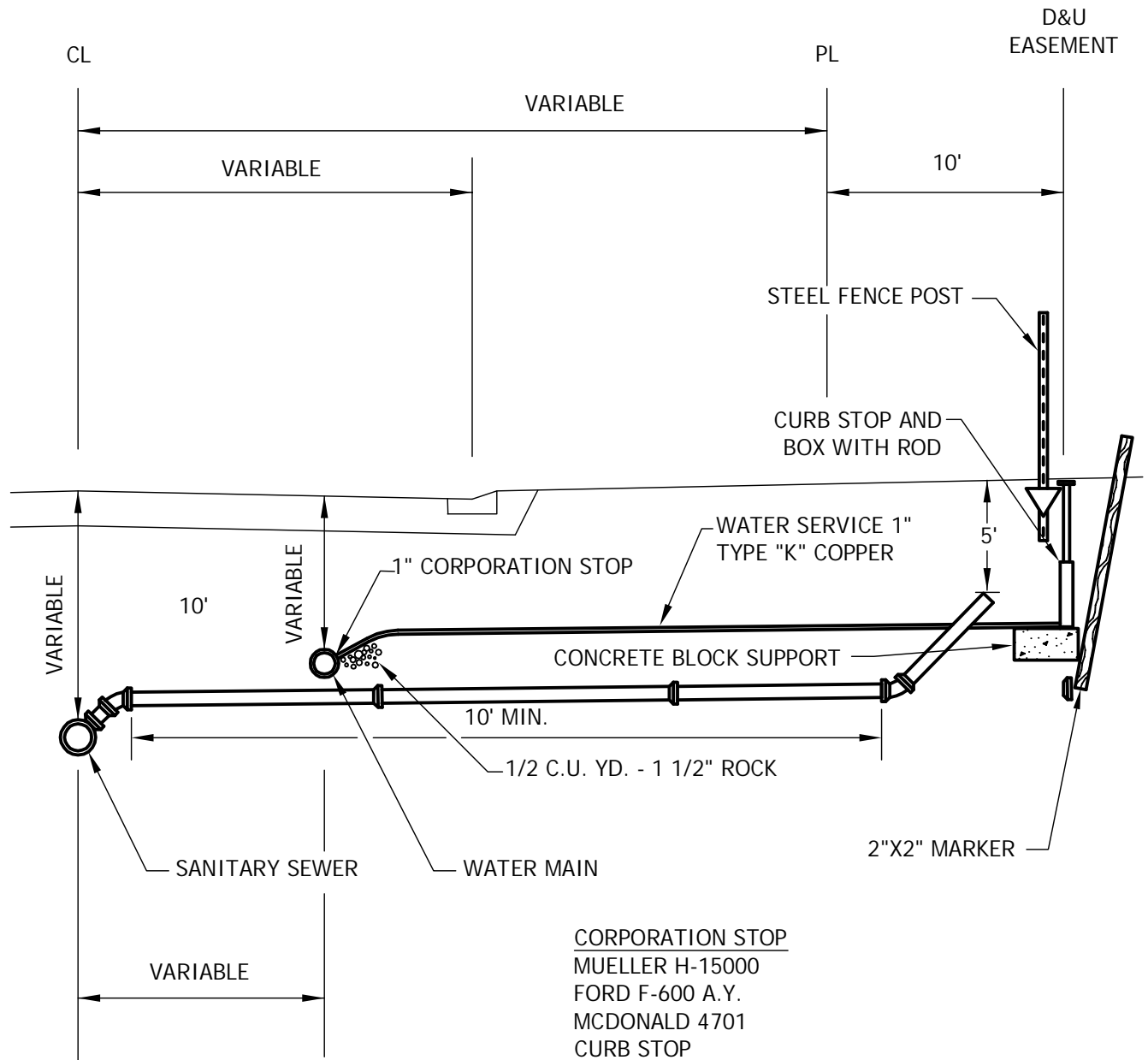
NOTE:
COLLAR MUST BE ADEQUATELY FRAMED USING WOOD OR OTHER ACCEPLABLE MATERIAL



SEEPAGE COLLAR

LAST REVISION:
MARCH 2008

PLATE NO.
STO-13



NOTE:
 CURB STOPS SHALL NOT BE LOCATED
 IN DRIVEWAYS UNLESS APPROVED BY
 ENGINEER. CURB STOPS IN
 DRIVEWAYS MUST BE ENCLOSED IN
 ESS BROTHERS SEWER CLEANOUT,
 WITH COVER MARKED "WATER".

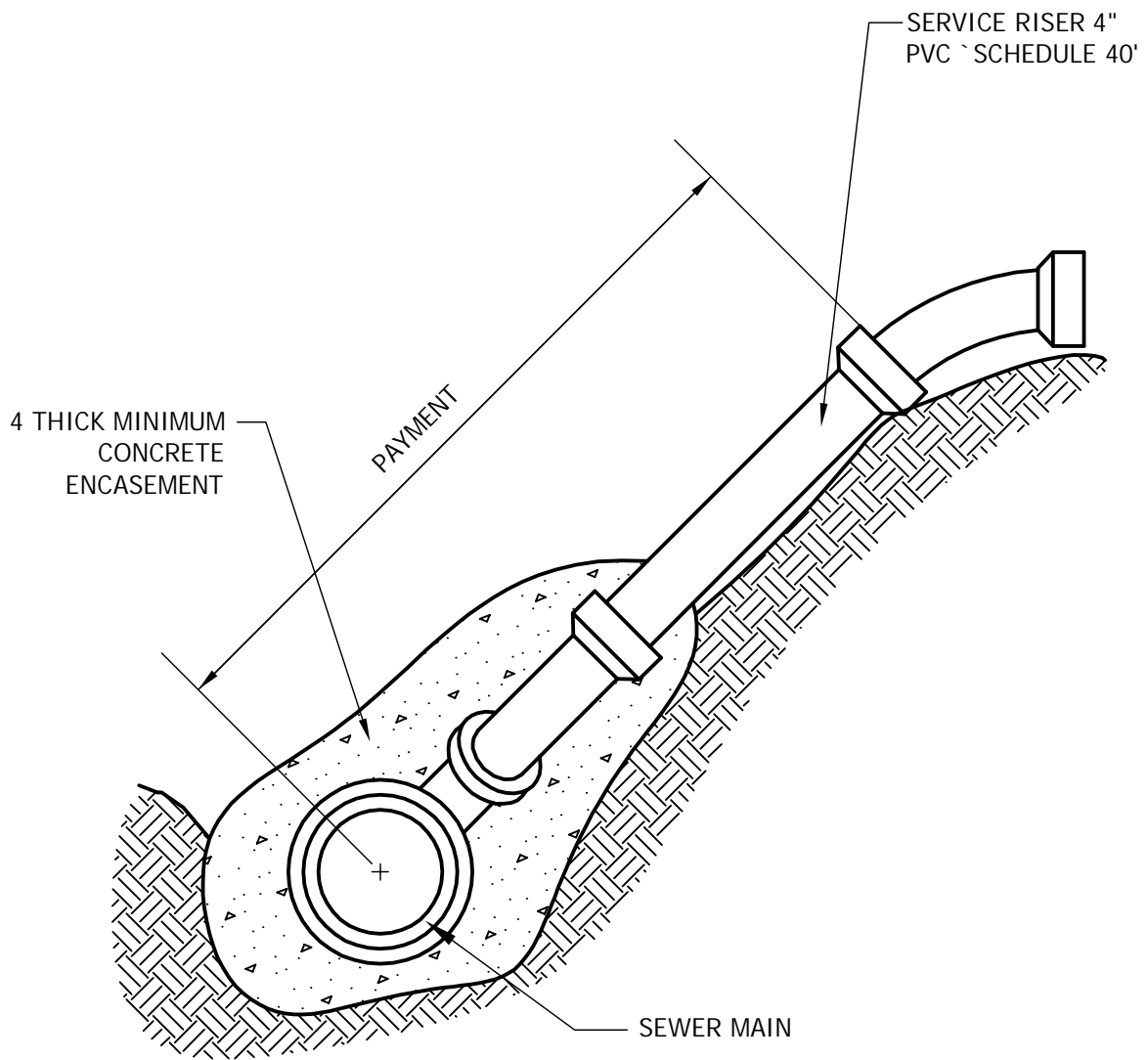
- CORPORATION STOP
 MUELLER H-15000
 FORD F-600 A.Y.
 MCDONALD 4701
CURB STOP
 MUELLER H-15154
 FORD B22-333M OR B22-444M A.Y.
 MCDONALD 4717
CURB BOX
 MUELLER H-10300 OR H-10304
 FORD EM 2-75-56
 A.Y. MCDONALD 5615 WITH ROD NO. 5669



SEWER AND WATER SERVICE CONNECTIONS

LAST REVISION:
 MARCH 2008

PLATE NO.
 SER-1

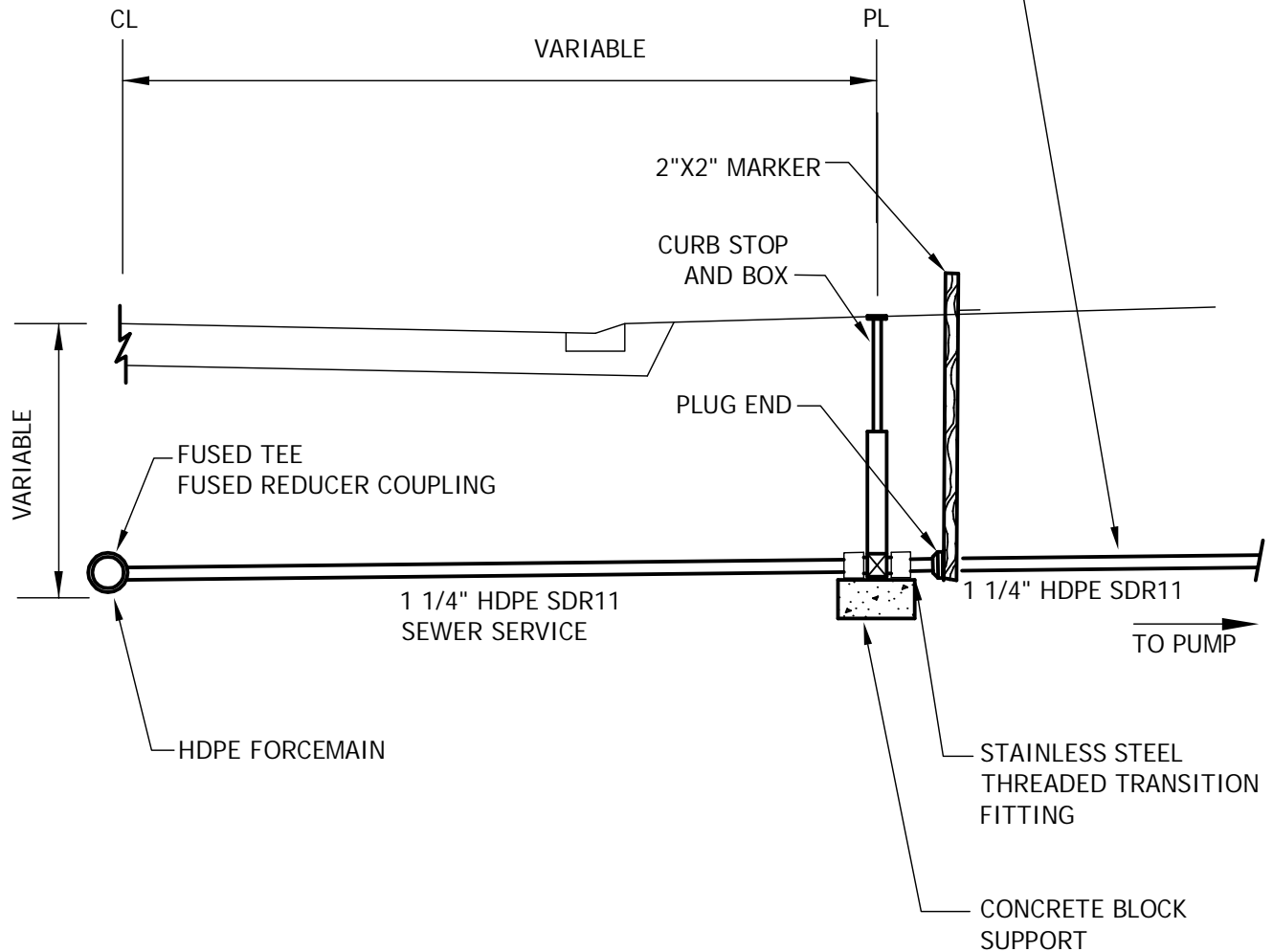


SERVICE RISER

LAST REVISION:
JAN 2006

PLATE NO.
SER-2

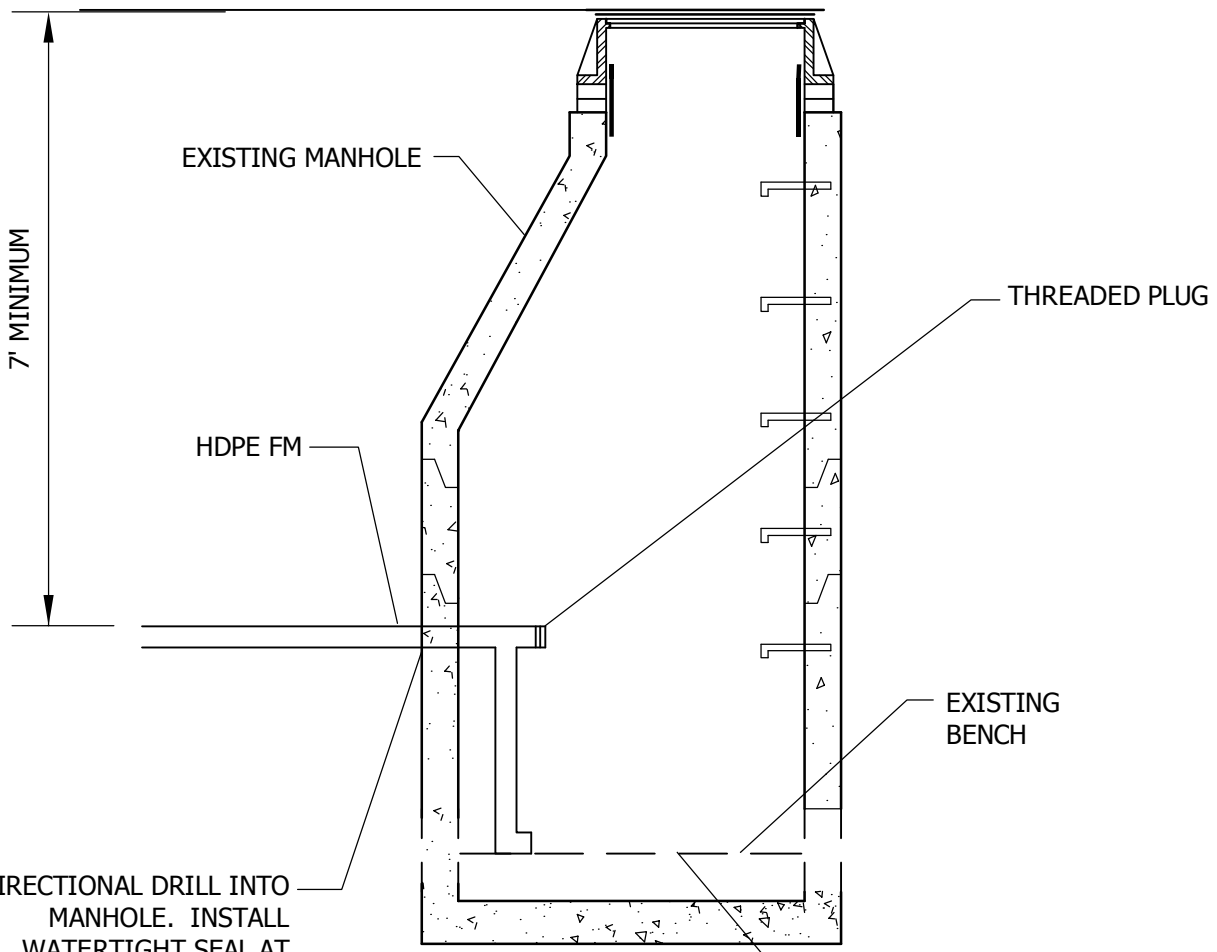
CONNECTION TO PUMP:
REMOVE PLUGGED END AND
INSTALL 1 1/4" HDPE SDR11
FROM CURB STOP TO PUMP.



RESIDENTIAL LOW PRESSURE
SEWER CONNECTIONS

LAST REVISION:
MAY 2006

PLATE NO.
SER-3



DIRECTIONAL DRILL INTO
MANHOLE. INSTALL
WATERTIGHT SEAL AT
MANHOLE CONNECTION.

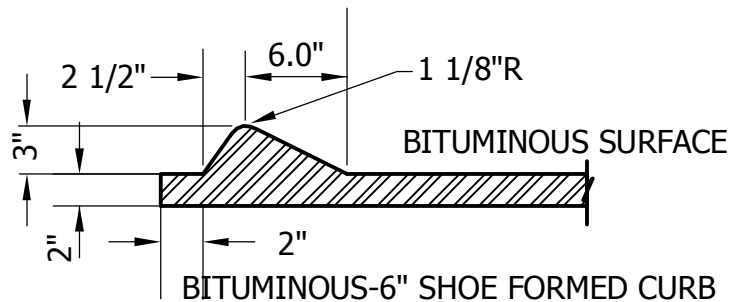
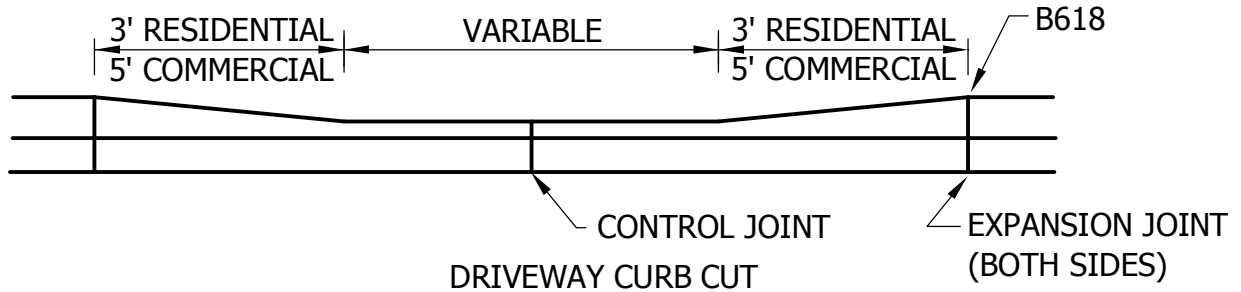
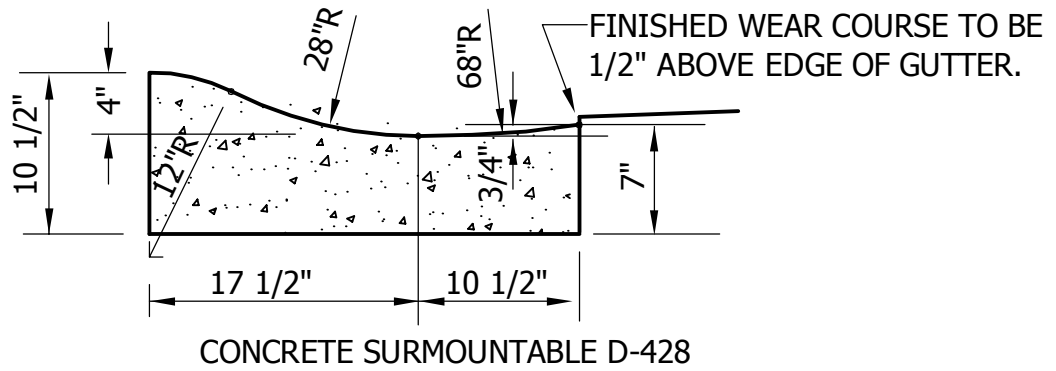
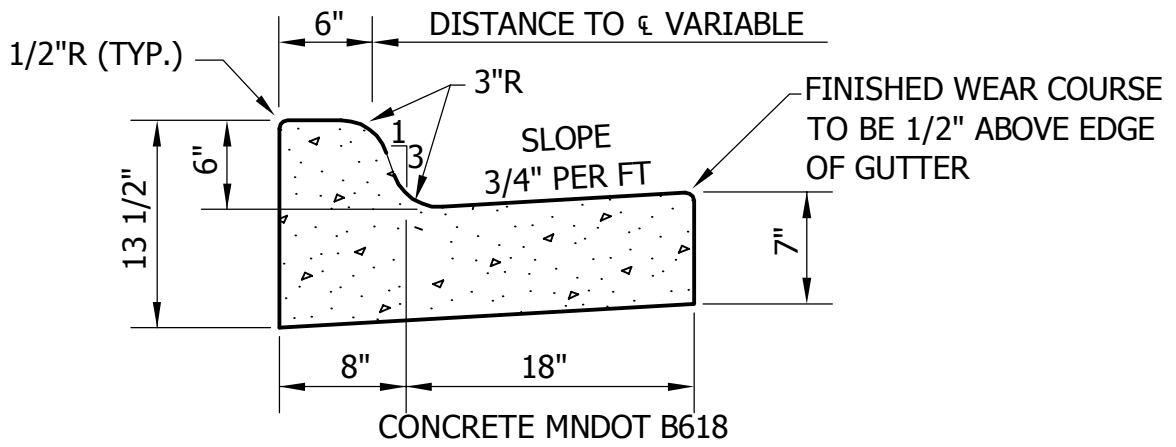
ALIGN HDPE TO
DISCHARGE DOWNSTREAM
WITHOUT OBSTRUCTING
GRAVITY FLOWS. ANCHOR
HDPE TO MANHOLE
WITH STAINLESS STEEL
FITTINGS AS NECESSARY.
(INCIDENTAL TO
CONNECTING TO MANHOLE.)



**FORCEMAIN SERVICE CONNECTION TO
EXISTING MANHOLE**

LAST REVISION:
JAN 2011

PLATE NO.
SER-4

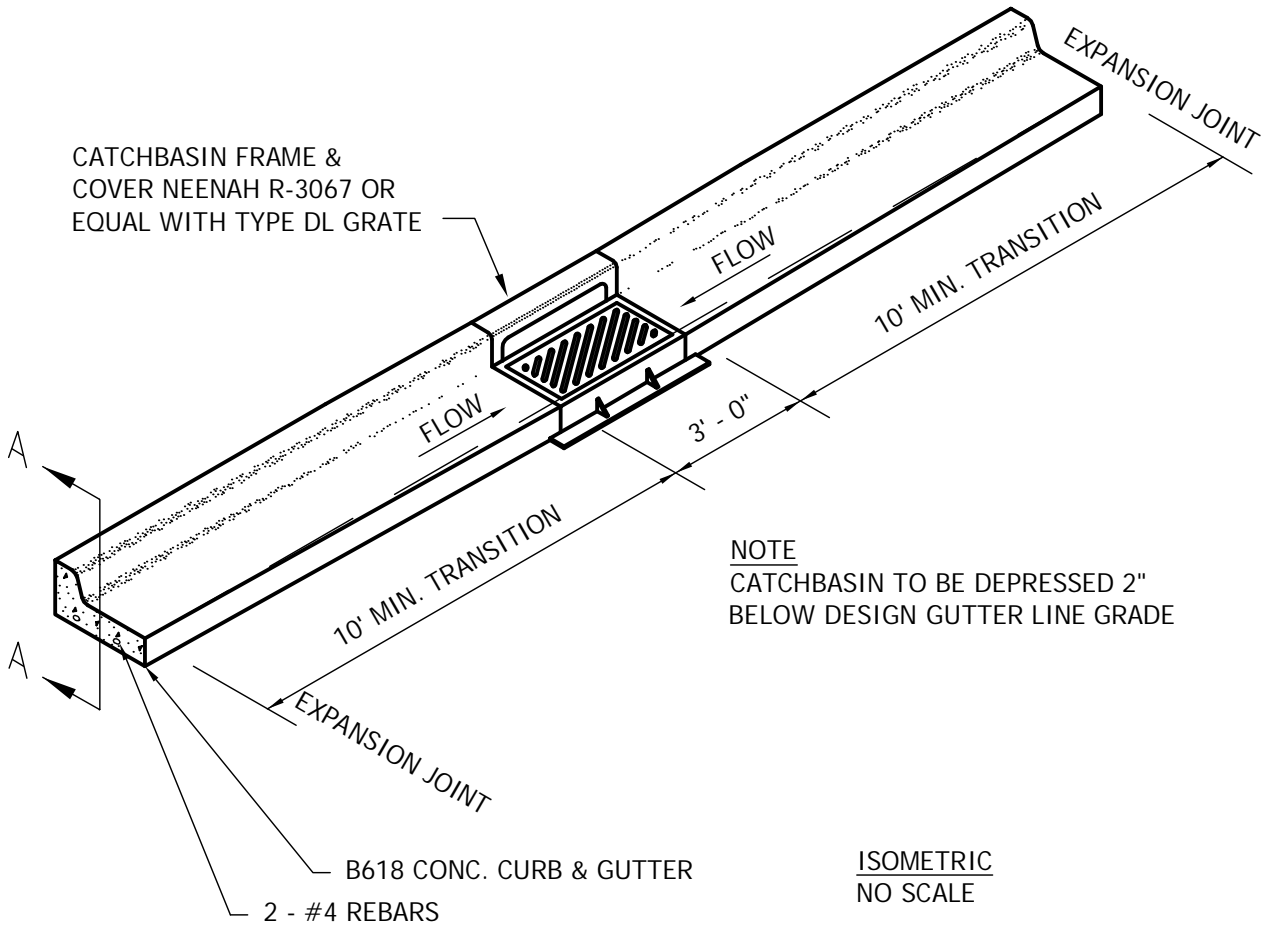


CURB AND GUTTER

LAST REVISION:
JAN 2008

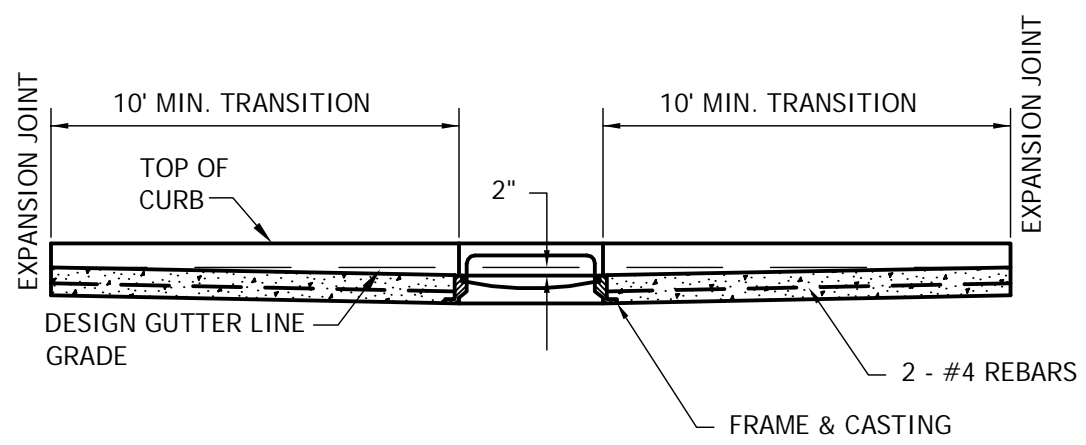
PLATE NO.
STR-1

CATCHBASIN FRAME &
COVER NEENAH R-3067 OR
EQUAL WITH TYPE DL GRATE



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

ISOMETRIC
NO SCALE



SECTION A-A
NO SCALE

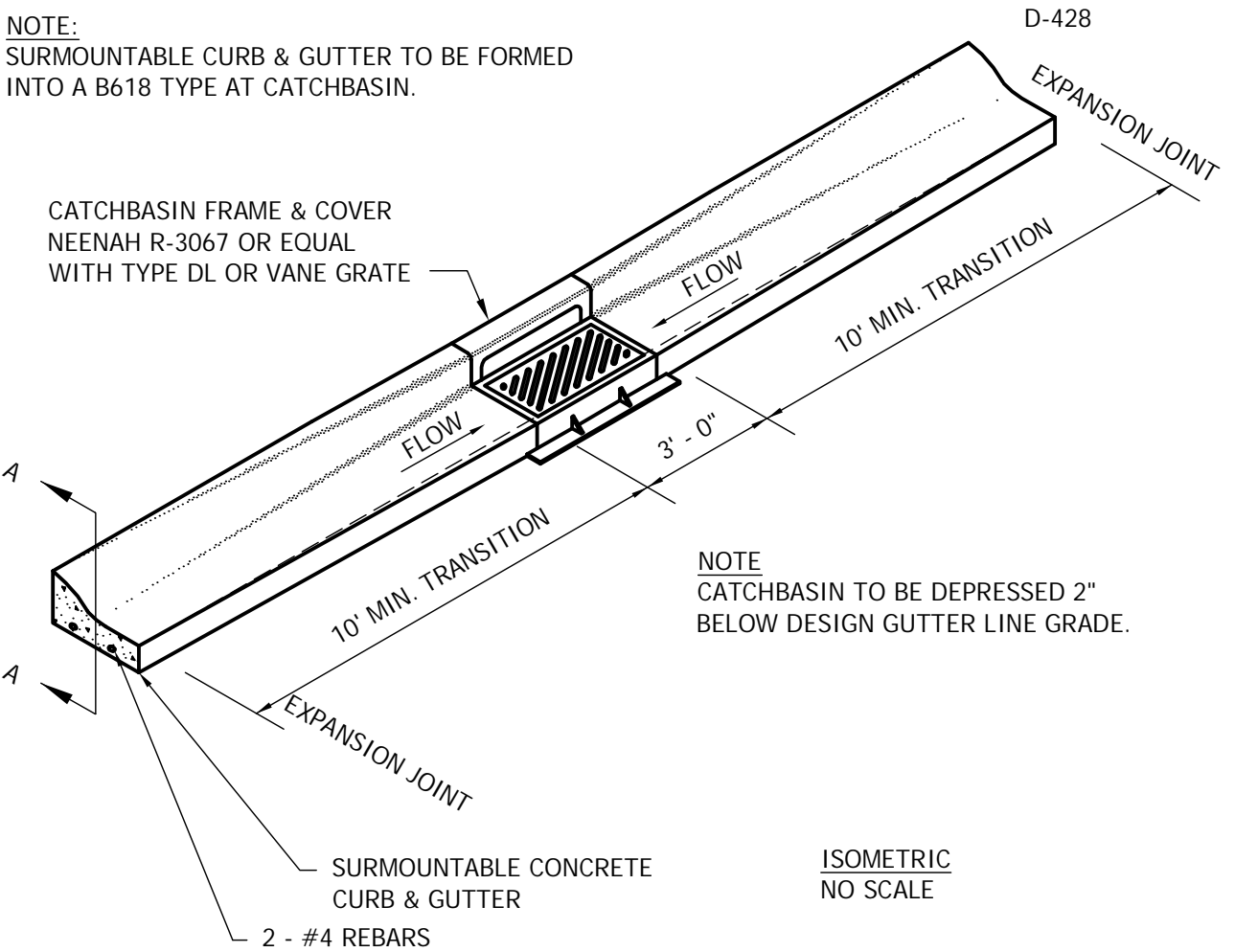


B618 CURB & GUTTER
CONSTRUCTION AT CATCH BASIN

LAST REVISION:
JAN 2006

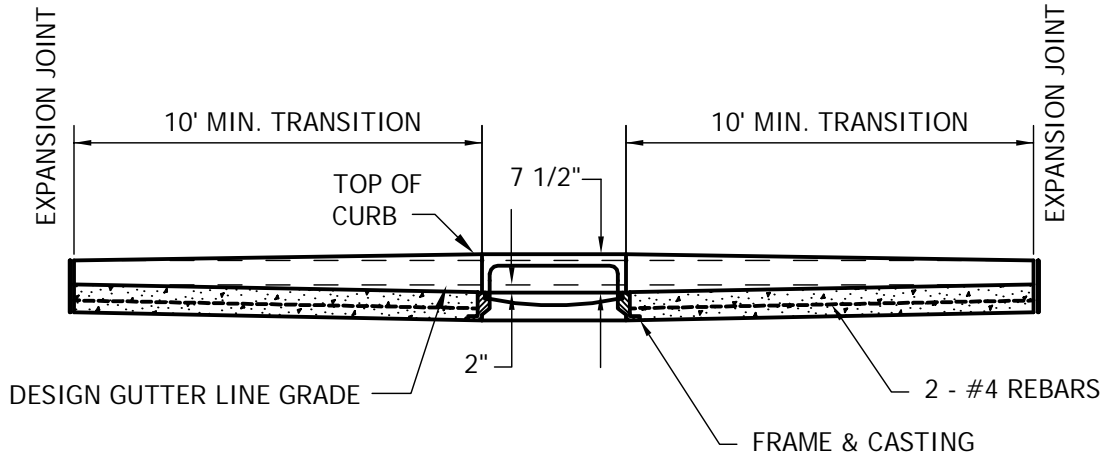
PLATE NO.
STR-2

NOTE:
 SURMOUNTABLE CURB & GUTTER TO BE FORMED
 INTO A B618 TYPE AT CATCHBASIN.



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

ISOMETRIC
 NO SCALE



SECTION A-A
 NO SCALE



SURMOUNTABLE CURB & GUTTER
 CONSTRUCTION AT CATCHBASIN

LAST REVISION:
 JAN 2006

PLATE NO.
 STR-3

CONCRETE CURB
AND GUTTER (SEE
PLATE STR-1)

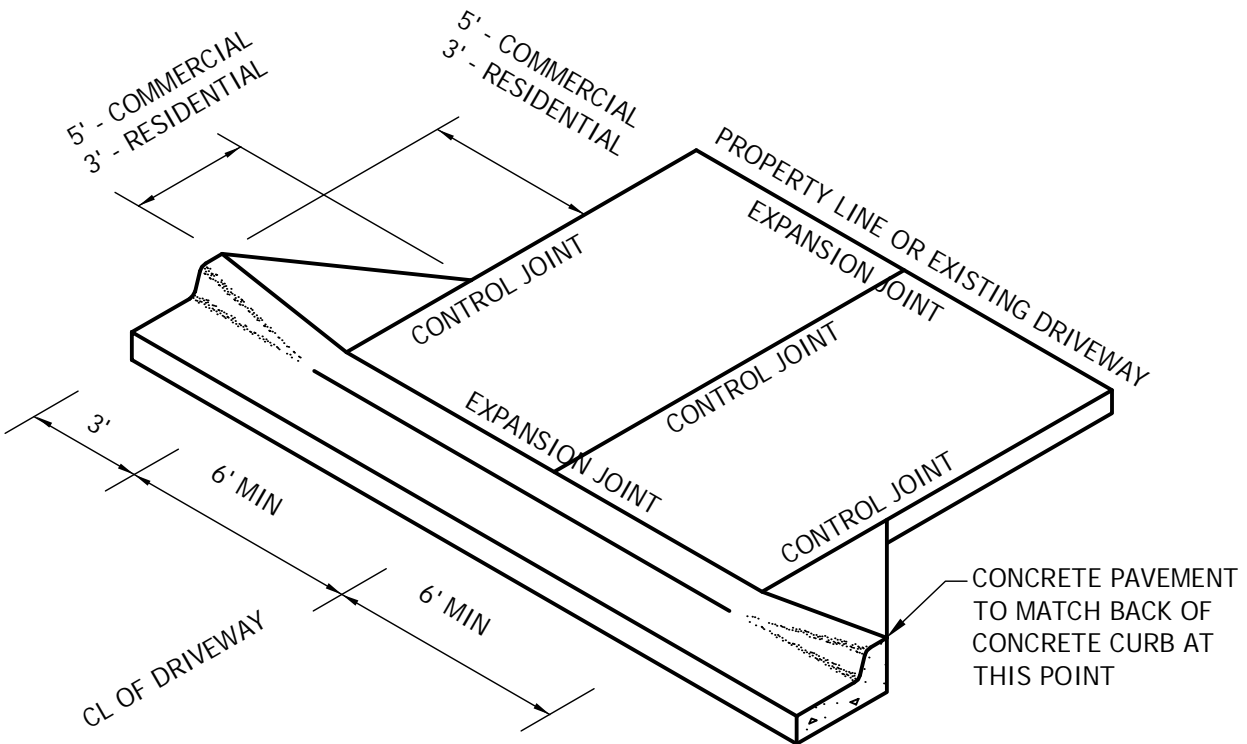
EXPANSION JOINT

CONCRETE SLAB 5" MINIMUM THICKNESS FOR
RESIDENTIAL AND 6" MINIMUM THICKNESS
FOR COMMERCIAL DRIVEWAYS. BOTH
RESIDENTIAL AND COMMERCIAL DRIVEWAYS
TO BE REINFORCED WITH 6X6-10/10 WIRE
MESH AND HAVE 6" OF CLASS 5 AGGREGATE
BASE. (SEE SPECIFICATIONS)

EXPANSION JOINT

PROPERTY LINE OR EXISTING DRIVEWAY

SECTION
NO SCALE



ISOMETRIC
NO SCALE

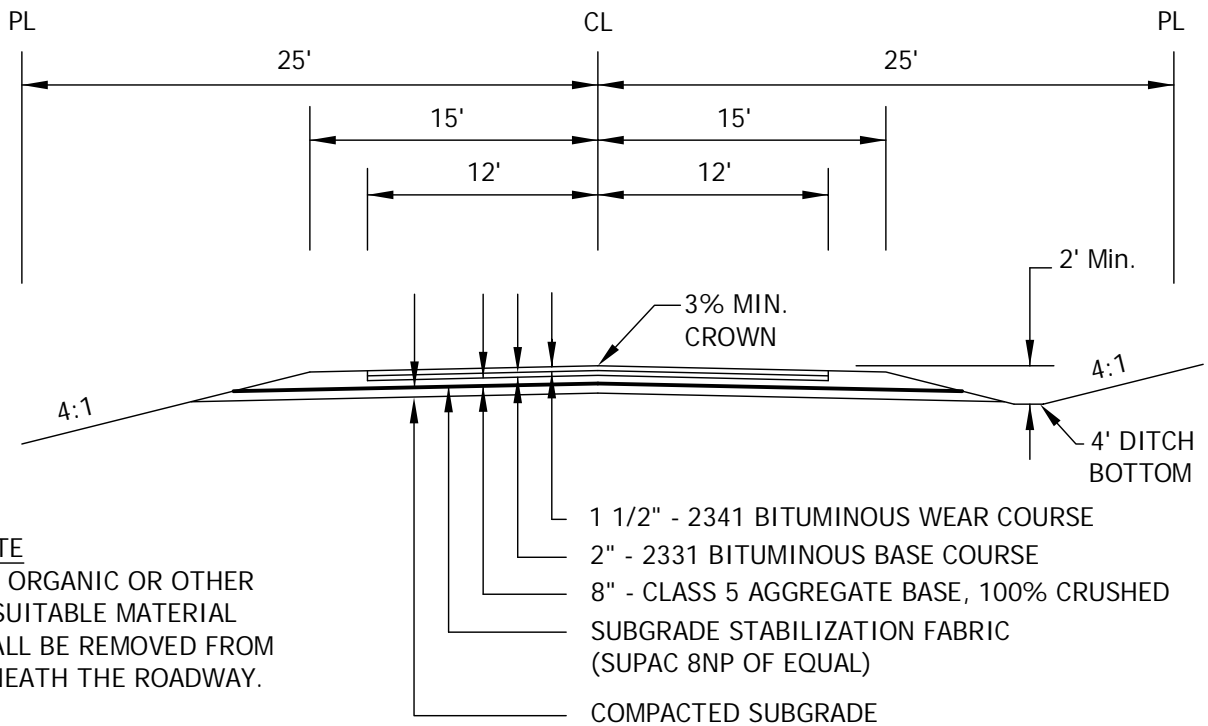
NOTE:
CONTROL JOINTS IN CONCRETE CURB
NOT TO EXCEED 10' SPACING
THROUGH DRIVEWAY SECTION.



DRIVEWAY SECTION

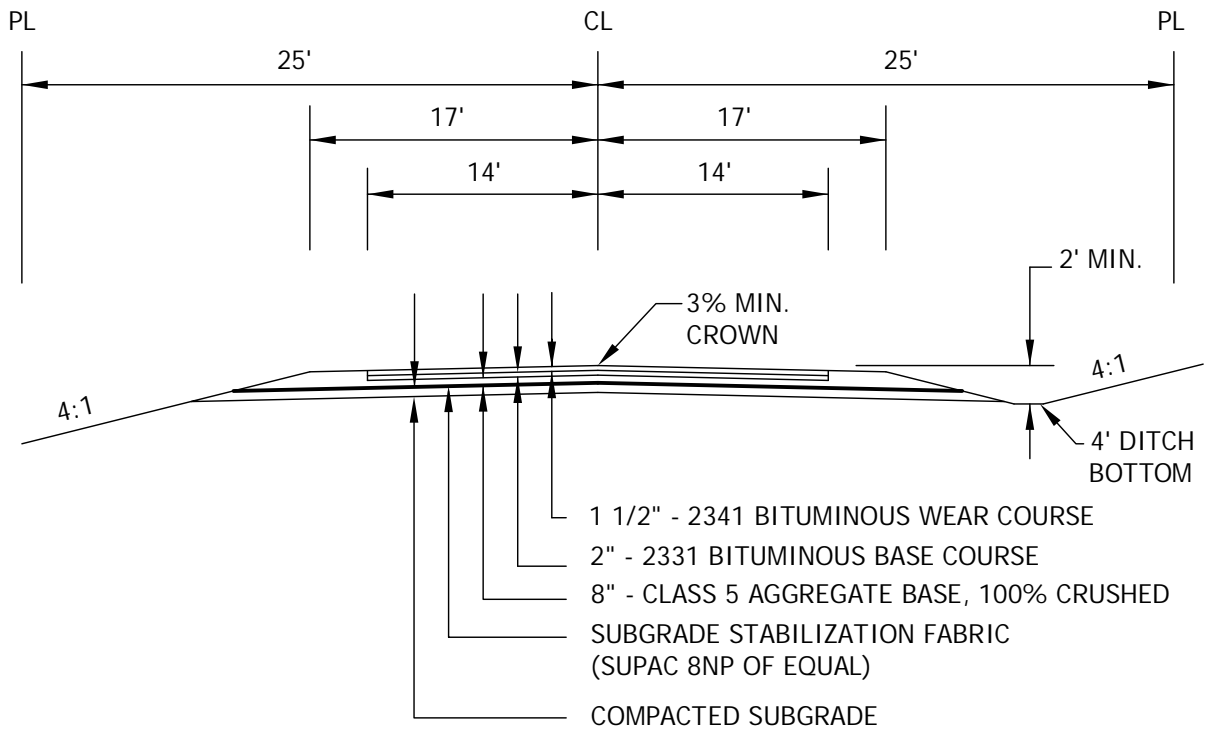
LAST REVISION:
JAN 2006

PLATE NO.
STR-4



NOTE
ALL ORGANIC OR OTHER UNSUITABLE MATERIAL SHALL BE REMOVED FROM BENEATH THE ROADWAY.

3-6 UNITS



7 OR MORE UNITS

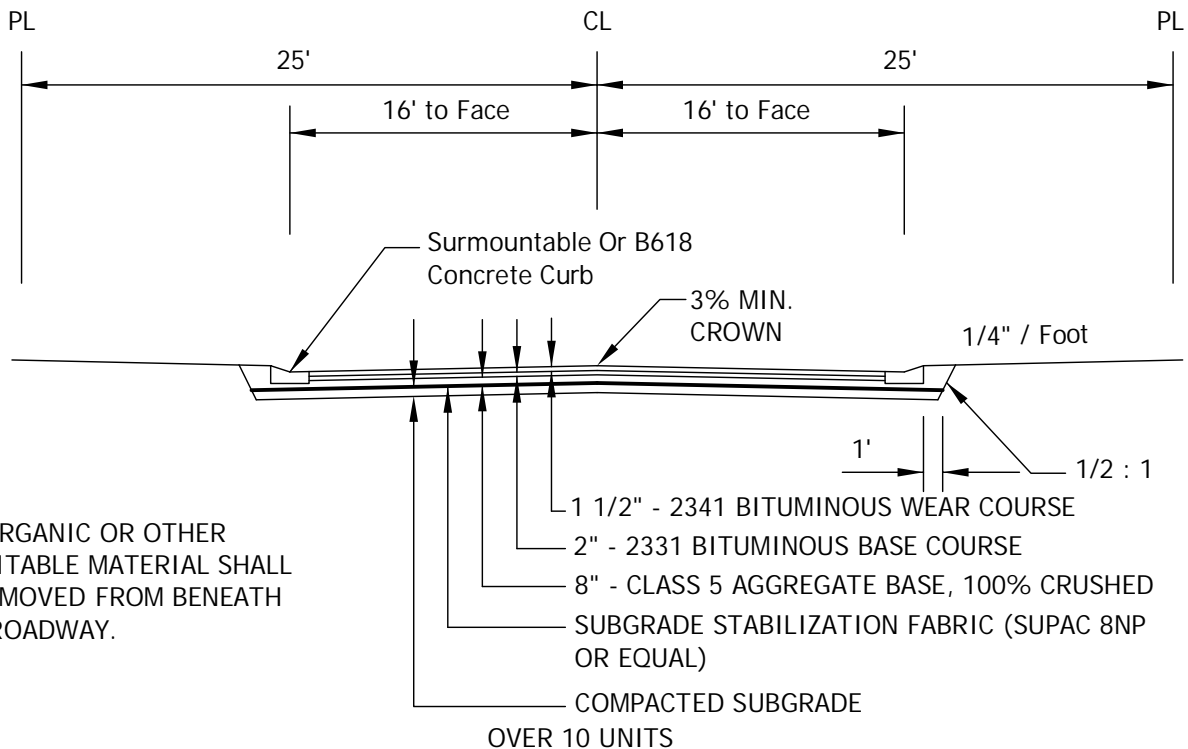
BITUMINOUS STREETS PRIVATE



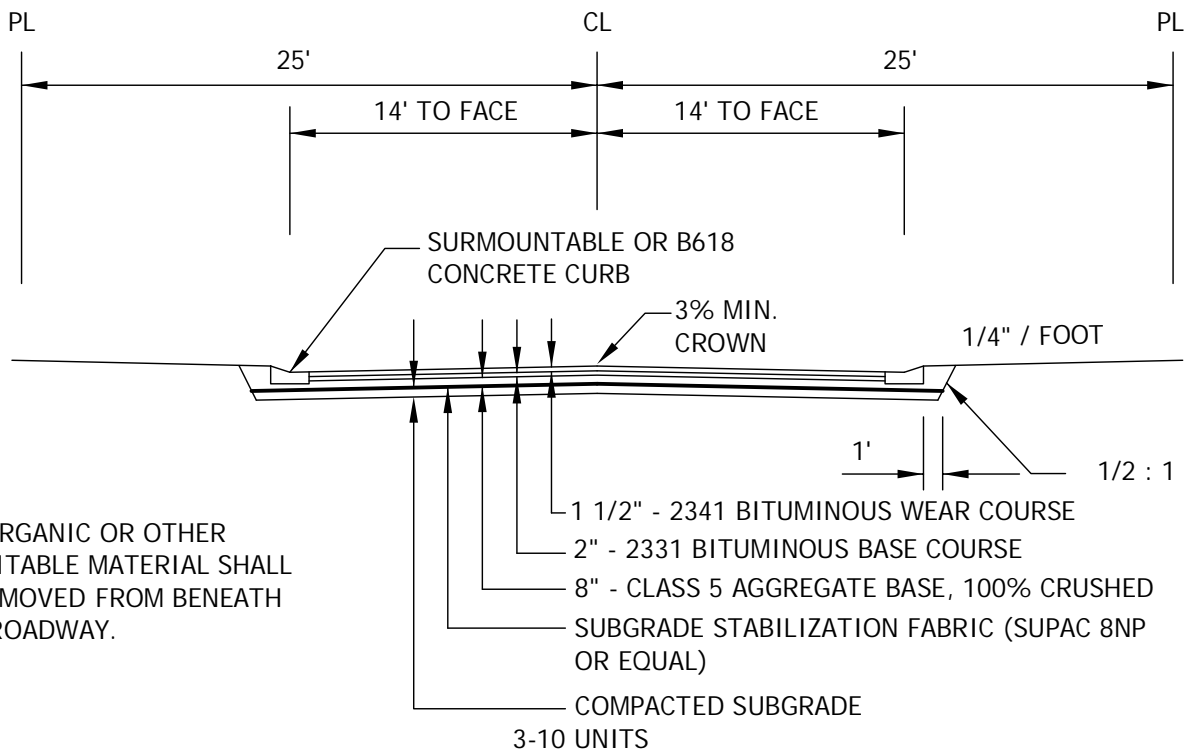
TYPICAL SECTIONS FOR PRIVATE STREETS
7 TON RURAL SECTION

LAST REVISION:
JAN 2006

PLATE NO.
STR-5



BITUMINOUS STREET WITH CONCRETE CURB AND GUTTER



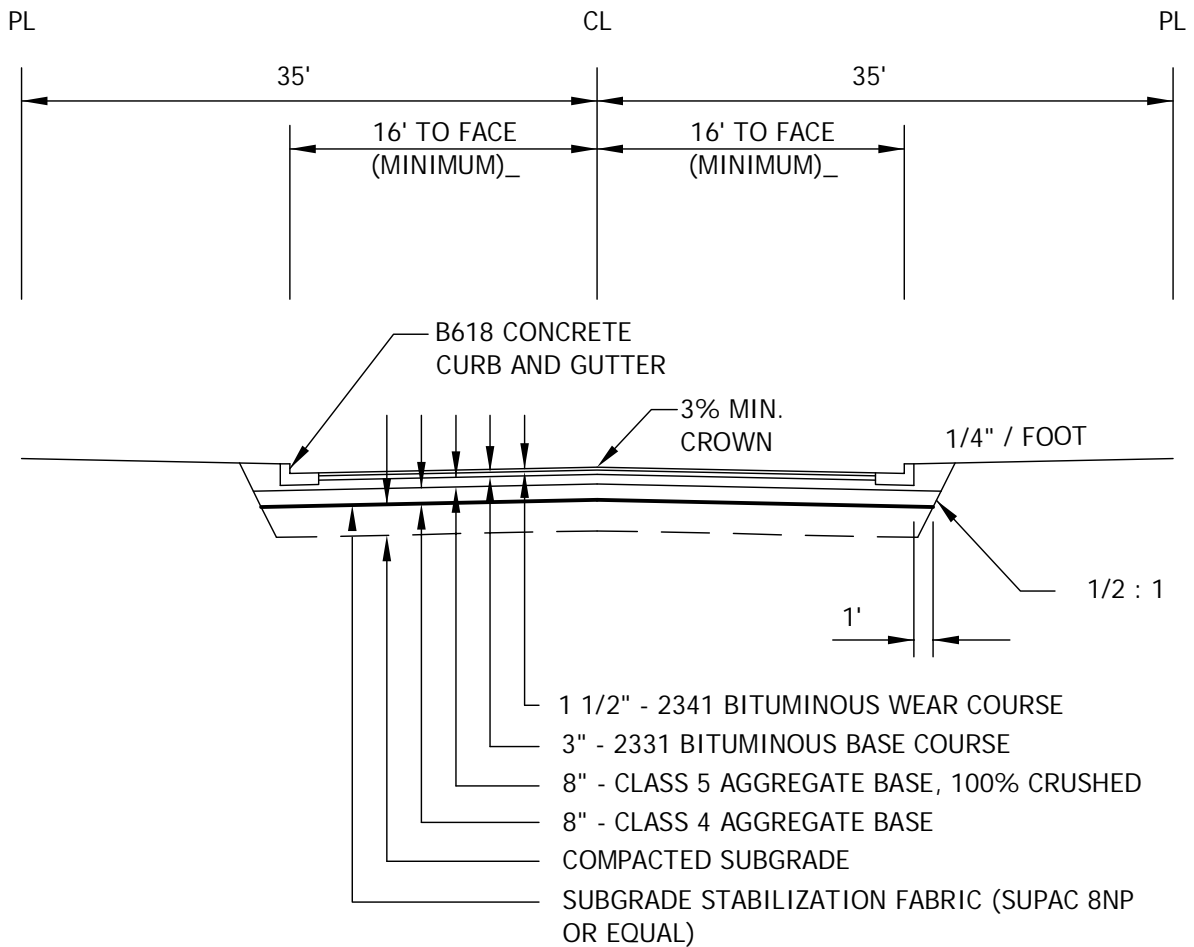
BITUMINOUS STREET WITH CONCRETE CURB AND GUTTER



**TYPICAL SECTIONS FOR
PUBLIC RESIDENTIAL STREETS
URBAN SECTION**

LAST REVISION:
JAN 2006

PLATE NO.
STR-6



NOTES

ALL ORGANIC OR OTHER UNSUITABLE MATERIAL SHALL BE REMOVED FROM BENEATH THE ROADWAY.

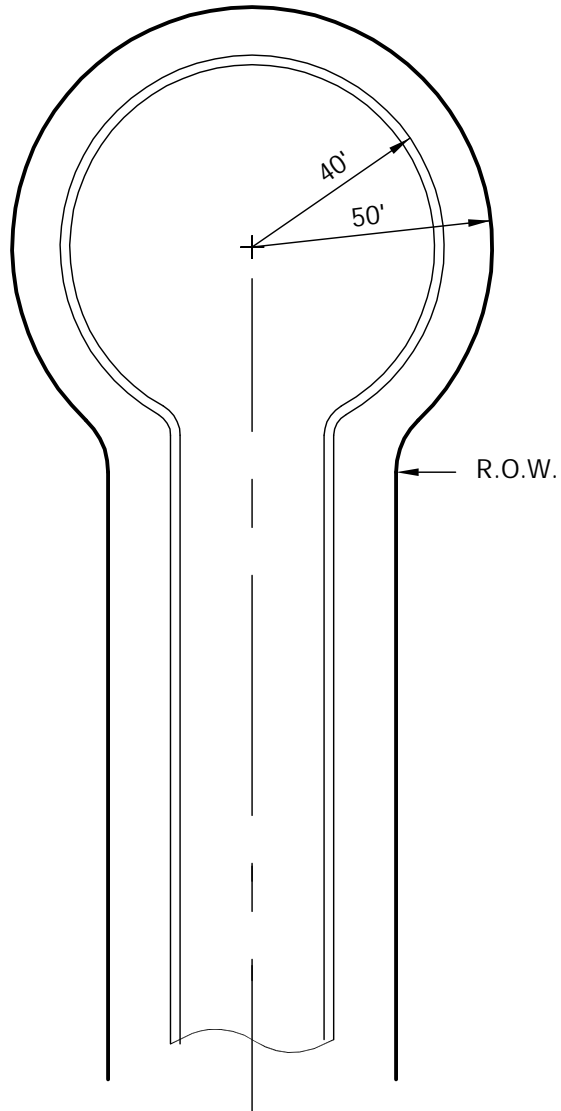
STREET WIDTH TO BE DETERMINED BY PROJECTED TRAFFIC VOLUMES.



TYPICAL SECTION
COMMERCIAL/INDUSTRIAL

LAST REVISION:
JAN 2006

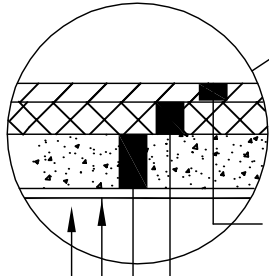
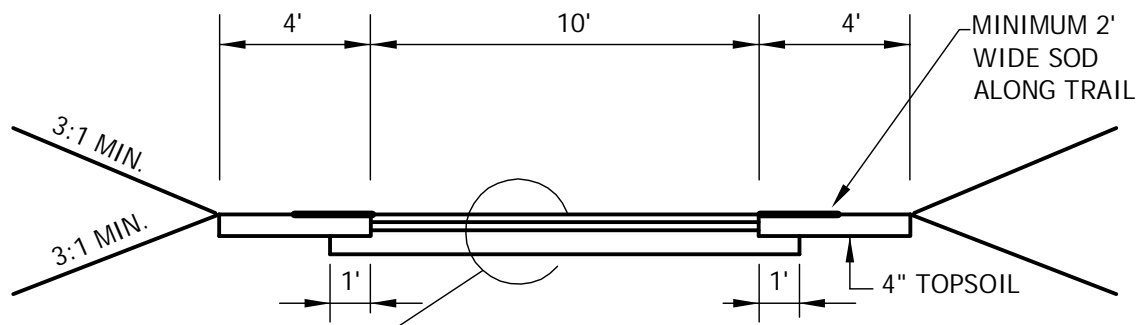
PLATE NO.
STR-7



CUL-DE-SAC

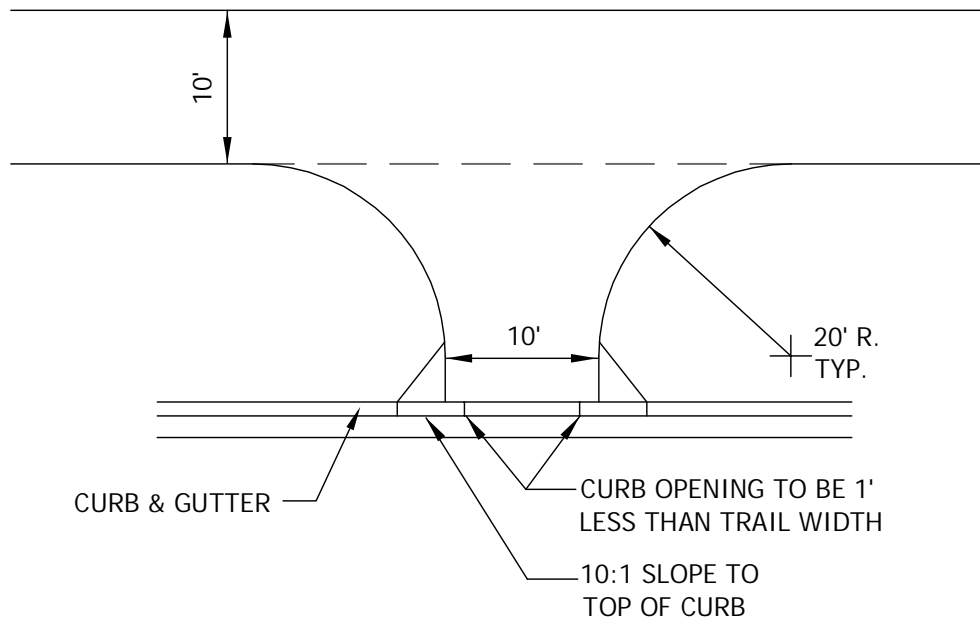
LAST REVISION:
JAN 2006

PLATE NO.
STR-8



- 1 1/2" TYPE 41-41WEA50055 BITUMINOUS WEAR (TO BE INSTALLED AFTER THE RESTORATION HAS BEEN COMPLETED.)
- 2" BITUMINOUS BINDER MN/DOT SPEC. 2340
- 8" CLASS 5 (100% CRUSHED LIMEROCK)
- SUBGRADE STABILIZATION FABRIC (SUPAC 8NP OR EQUAL)
- APPROVED SUBGRADE

TYPICAL TRAIL



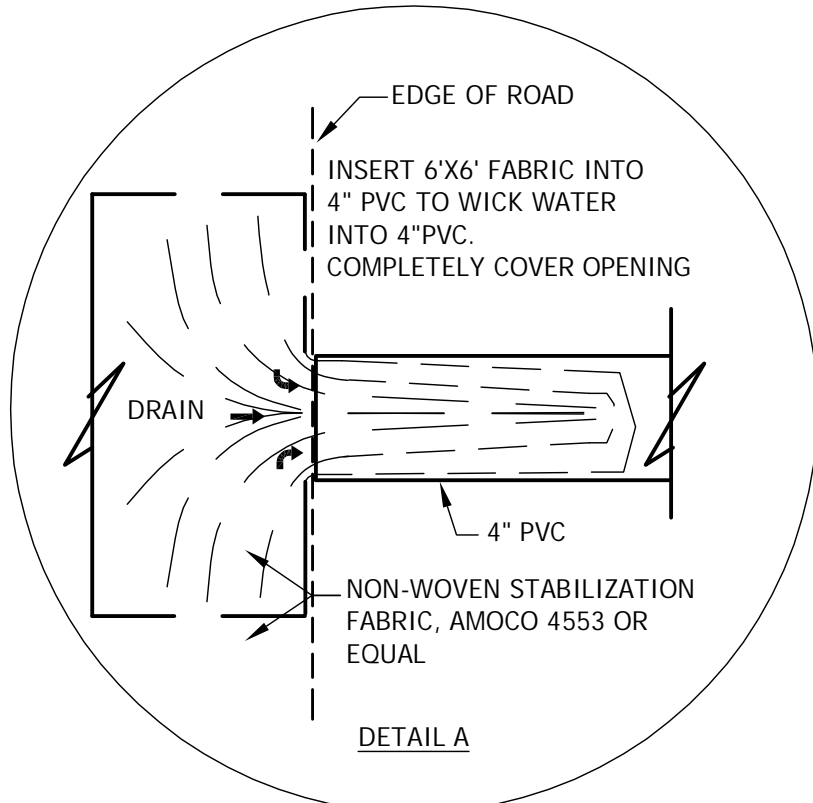
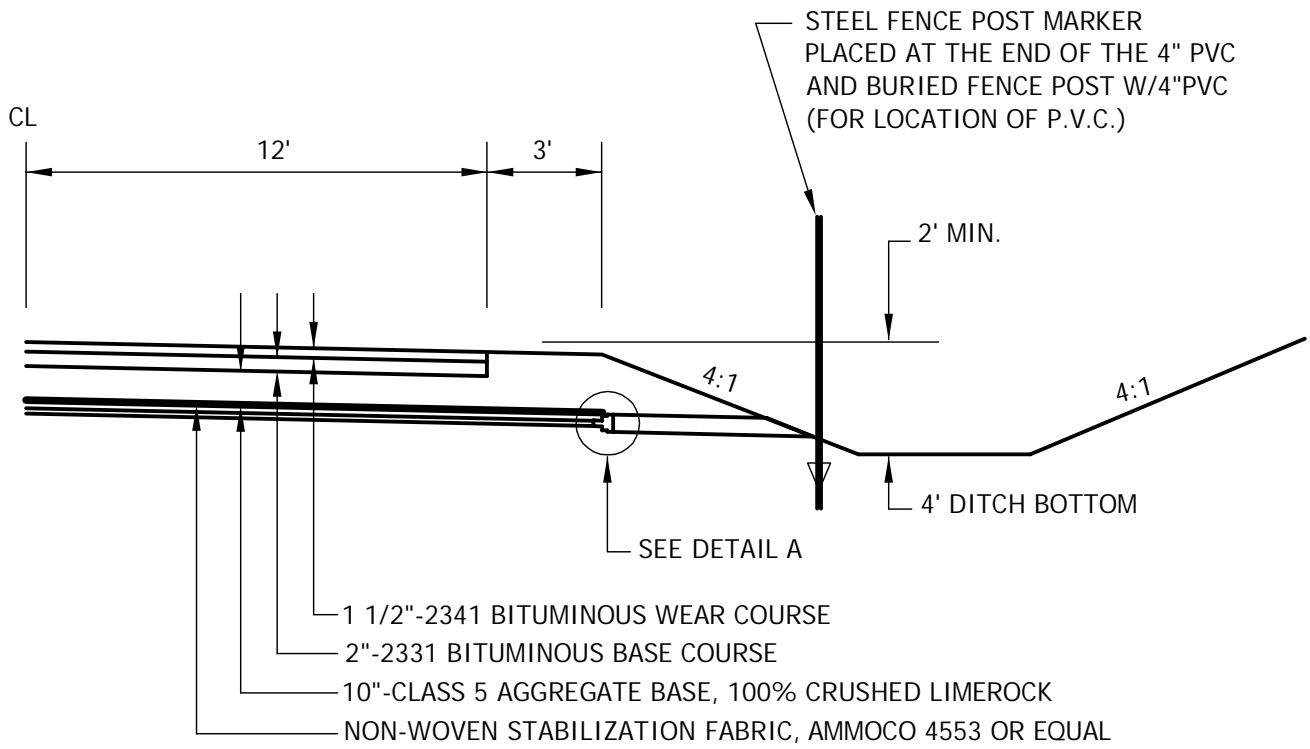
TYPICAL TRAIL INTERSECTION



TYPICAL TRAIL

LAST REVISION:
JAN 2006

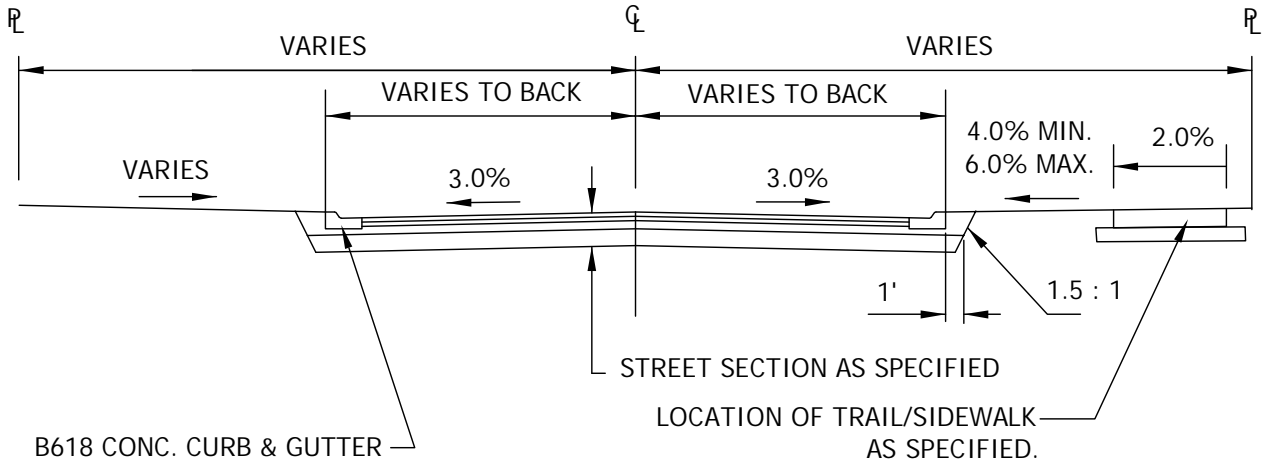
PLATE NO.
STR-9



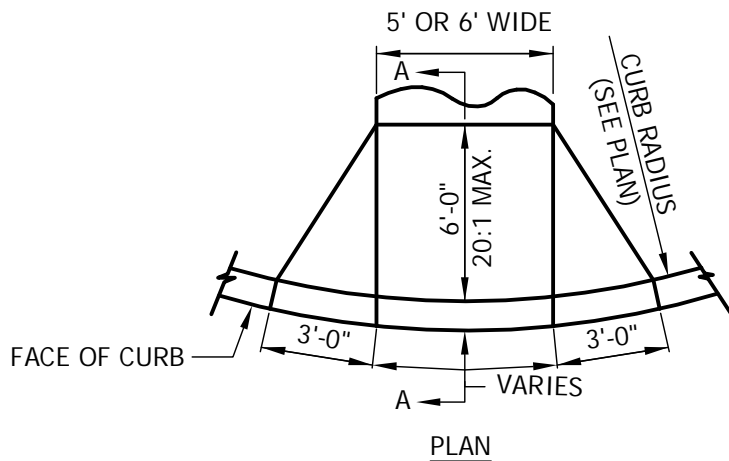
LOW POINT COLLECTOR
DRAIN SYSTEM

LAST REVISION:
JAN 2006

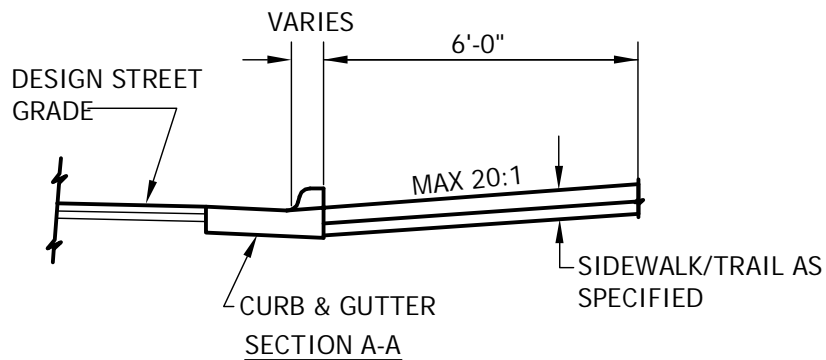
PLATE NO.
STR-10



NOTE: SEE DETAIL PLATE NO.
GEN 5 FOR LOCATION



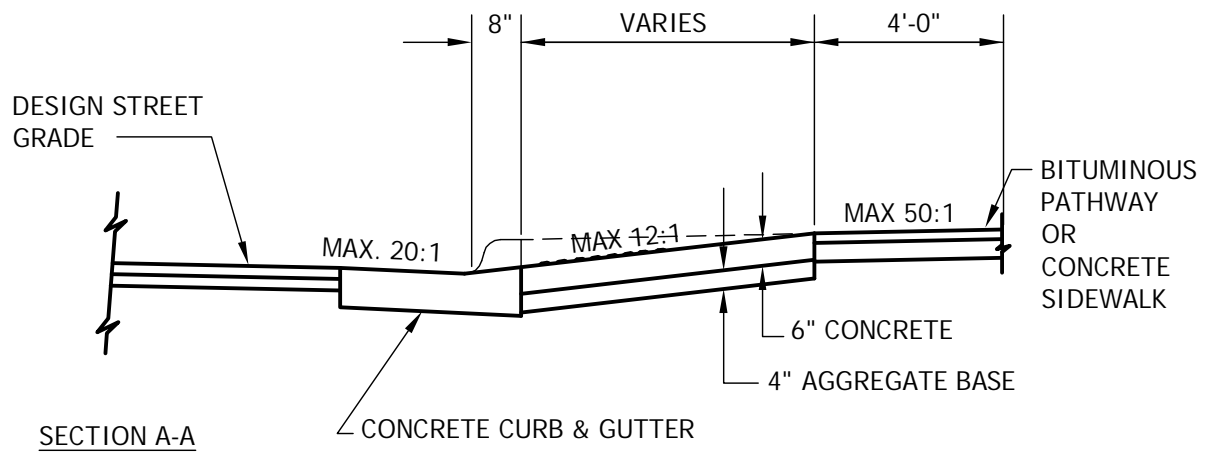
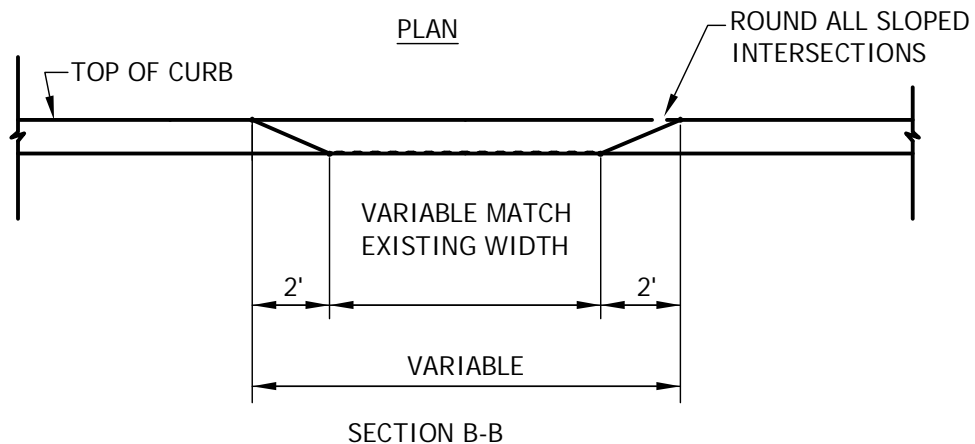
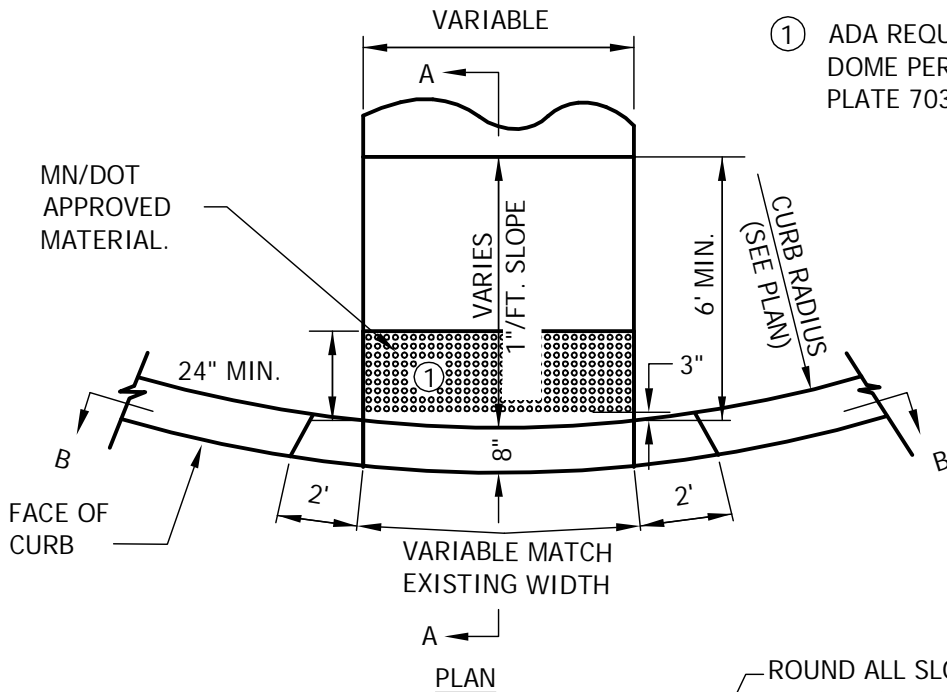
CONCRETE SIDEWALKS
5' WIDE IN RESIDENTIAL AREAS
6' WIDE ALONG COLLECTOR STREETS
4" CONCRETE WITH 4" MIN. CLASS 5.
LIMEROCK
*UNLES DIRECTED OTHERWISE BY
ENGINEER



TYPICAL CONCRETE SIDEWALK DETAIL

LAST REVISION:
JAN 2006

PLATE NO.
STR-11



PEDESTRIAN CURB RAMP
PATHWAY/SIDEWALK

LAST REVISION:
JAN 2006

PLATE NO.
STR-11A

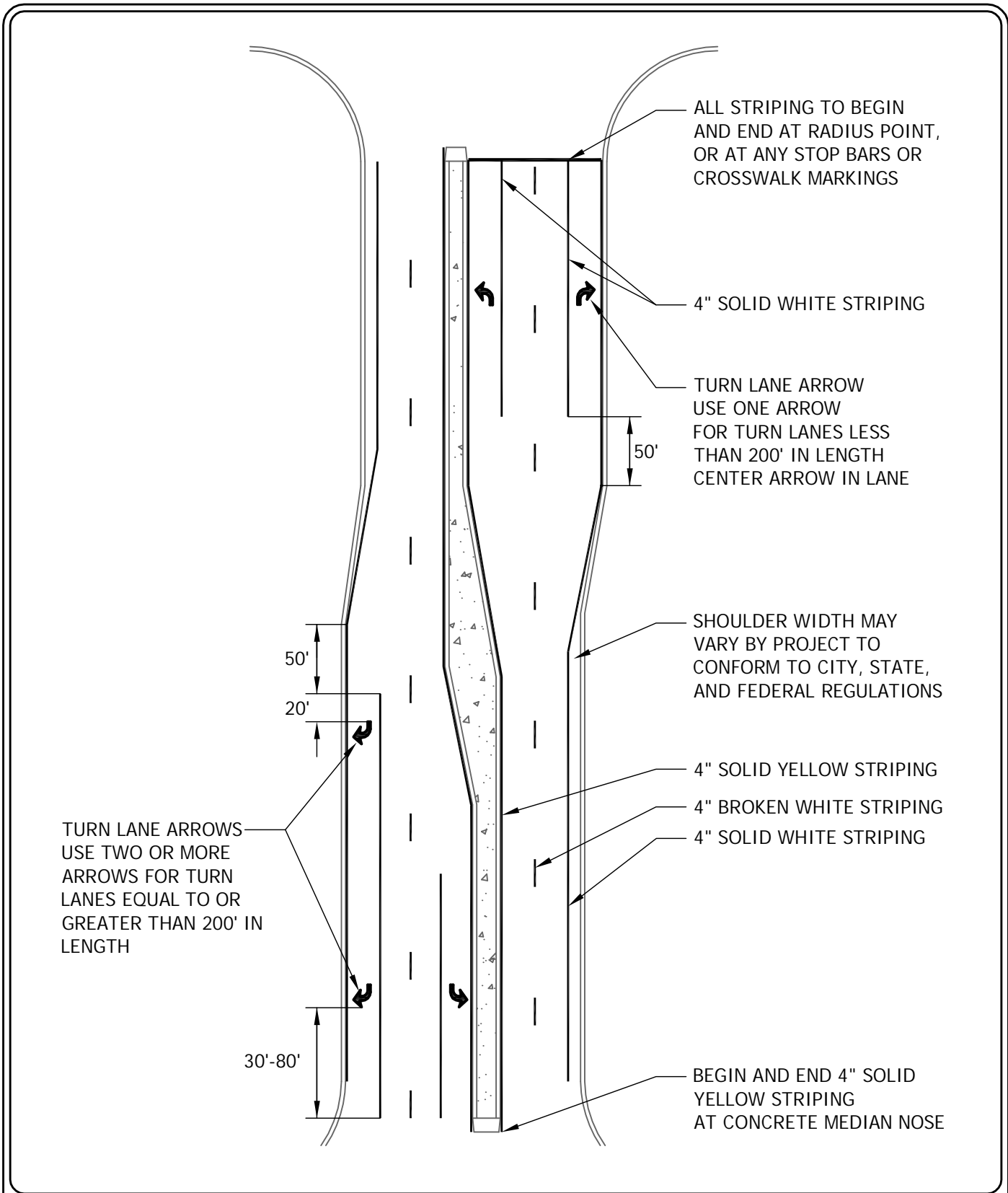
FUNCTIONAL CLASS	DESIGN SPEED	MAXIMUM GRADE	MINIMUM CURVE RADIUS
PRIVATE RESIDENTIAL STREET	30 MPH	12%	275'
PUBLIC RESIDENTIAL STREET	30 MPH	12%	275'
PUBLIC COMMERCIAL OR INDUSTRIAL	40 MPH	8%	400'



MINIMUM DESIGN STANDARDS
FOR STREETS

LAST REVISION:
JAN 2006

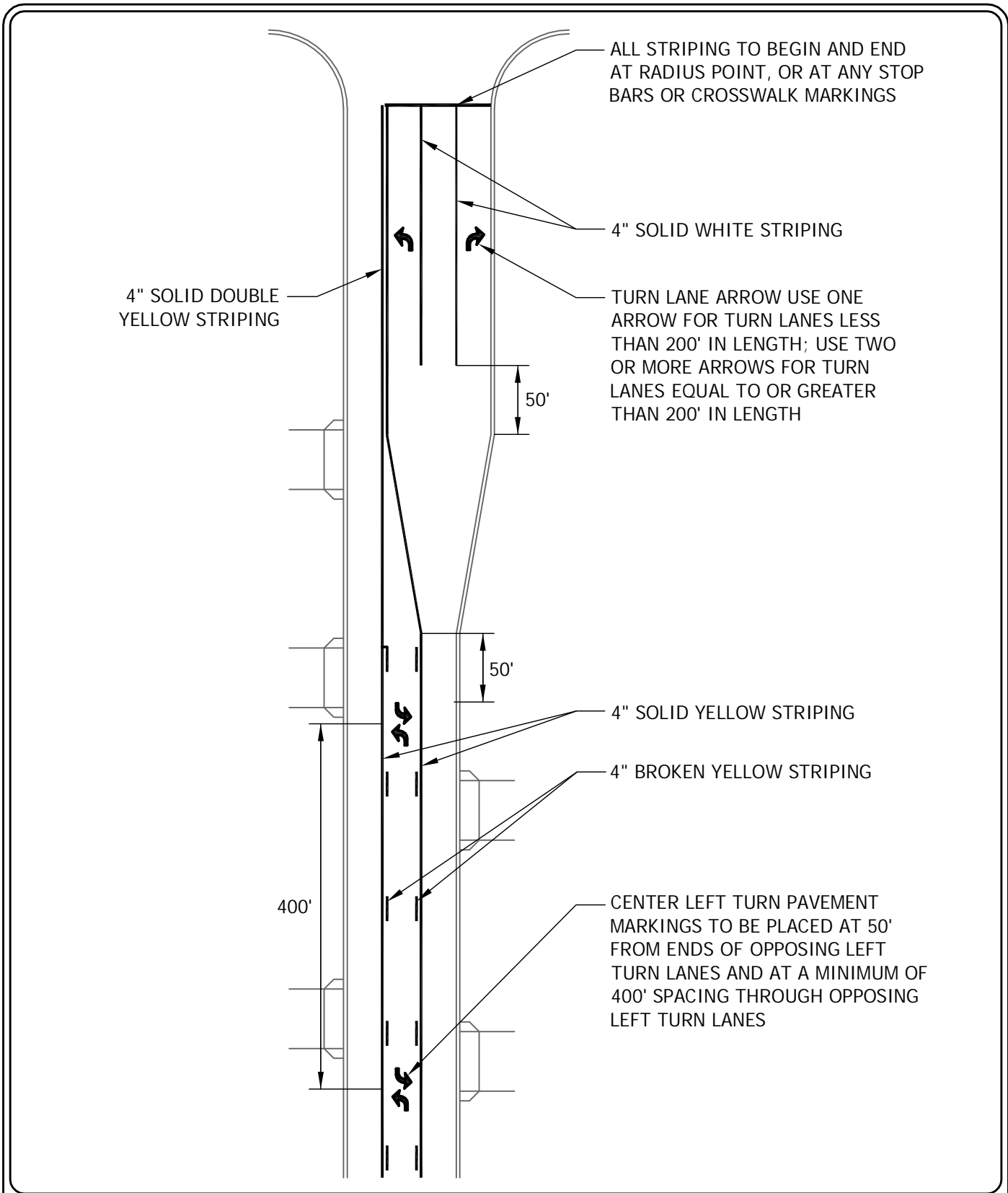
PLATE NO.
STR-12



STRIPING DETAIL WITH
CONCRETE MEDIAN

LAST REVISION:
MARCH 2008

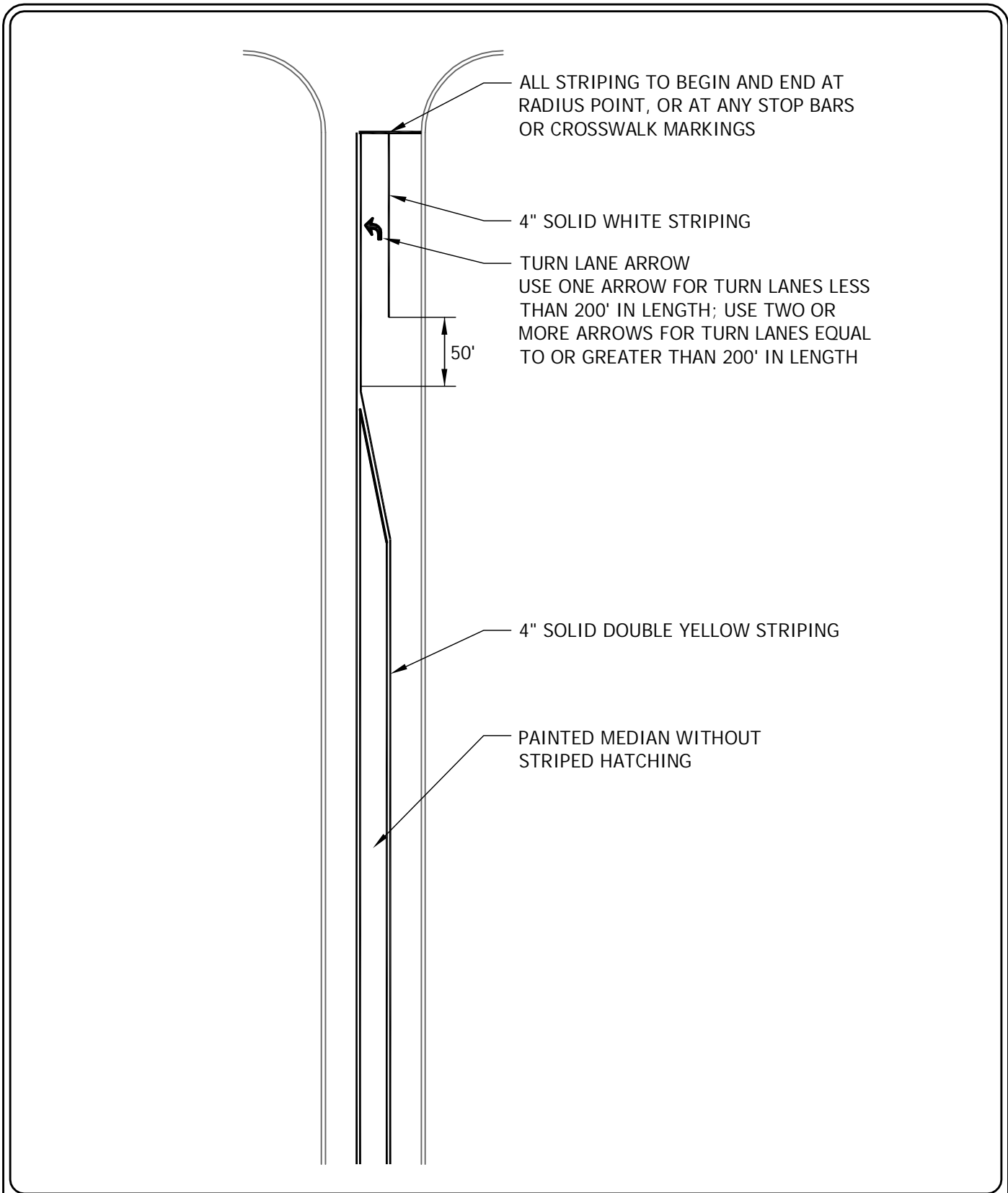
PLATE NO.
STR-13



STRIPING DETAIL WITH
OPPOSING LEFT TURN LANES
NO MEDIAN

LAST REVISION:
MARCH 2008

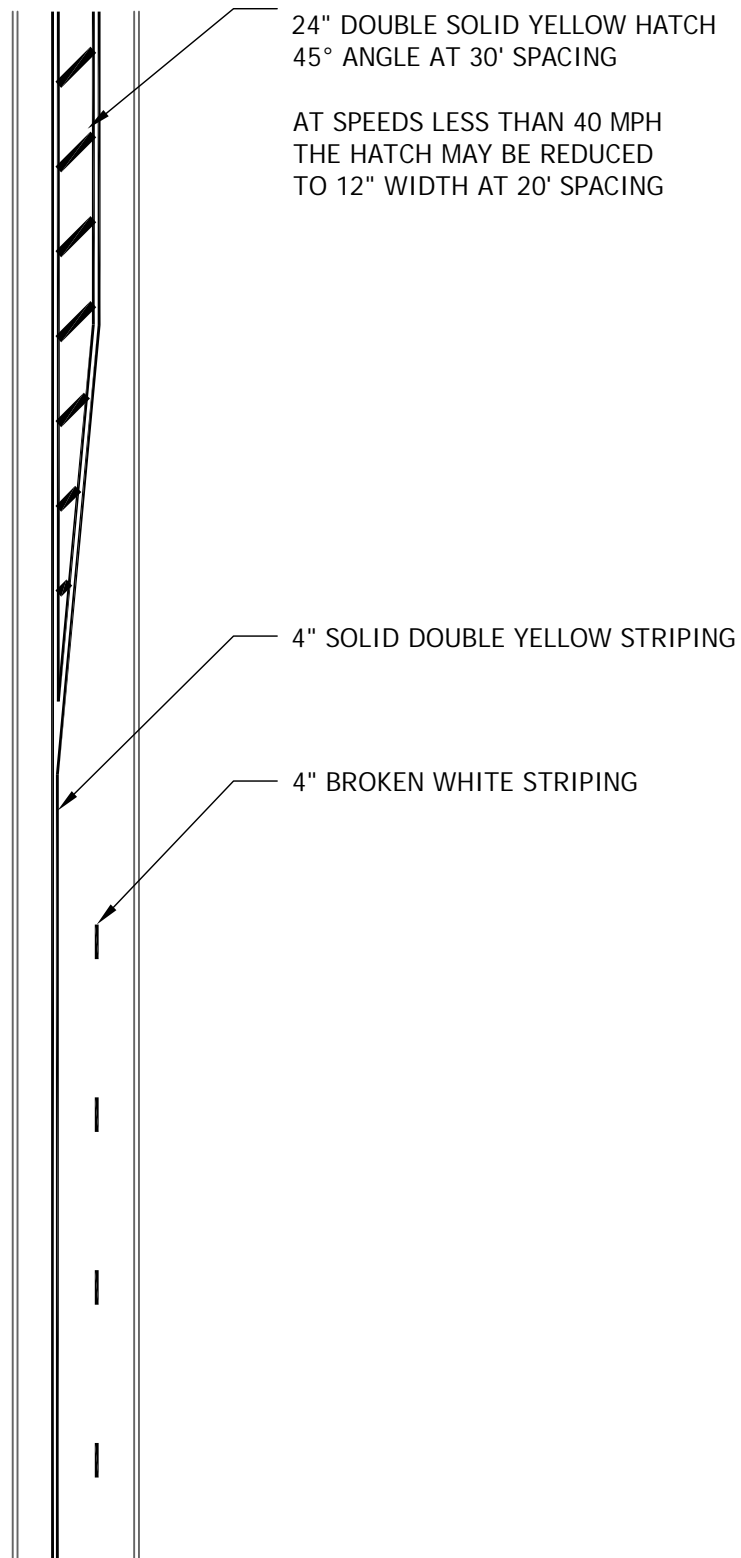
PLATE NO.
STR-14



STRIPING DETAIL WITH
STRIPED MEDIAN
NO HATCH

LAST REVISION:
MARCH 2008

PLATE NO.
STR-15



STRIPING DETAIL WITH
STRIPED MEDIAN
LANE DROP

LAST REVISION:
MARCH 2008

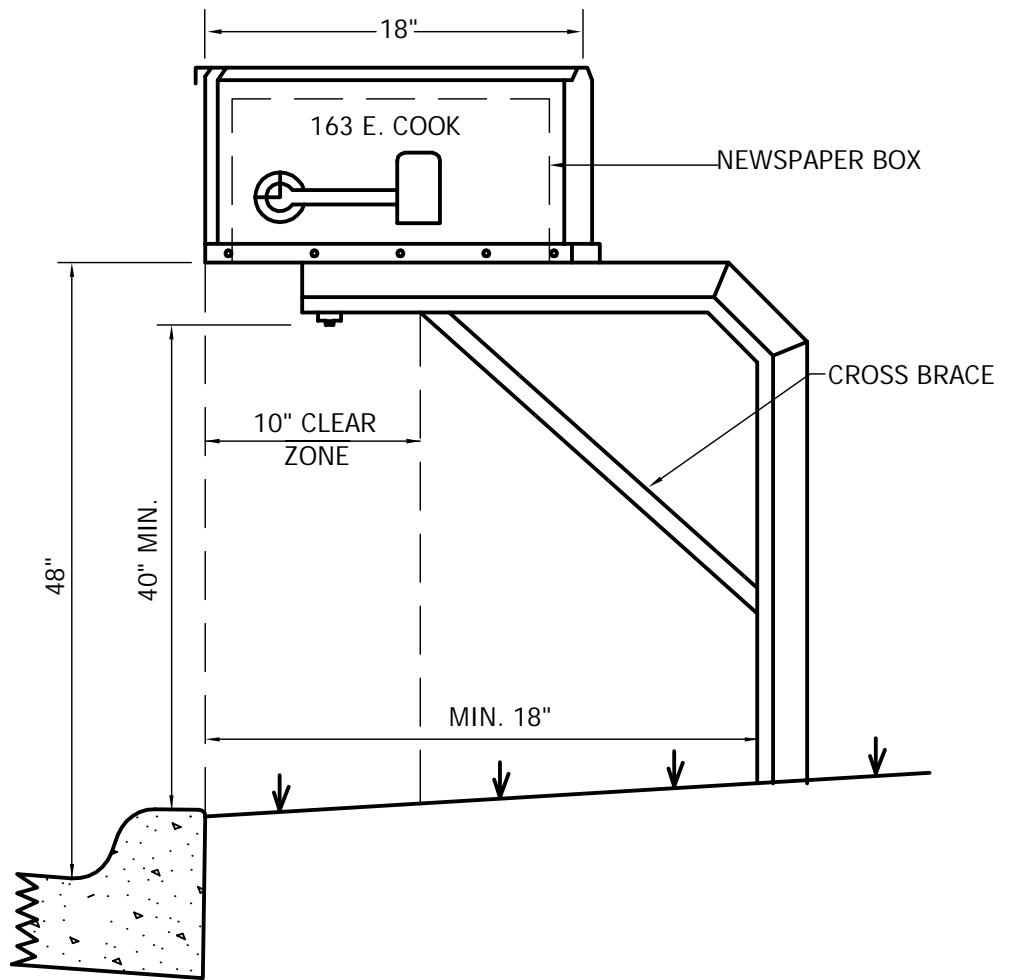
PLATE NO.
STR-16

HEIGHT - 48 INCHES
ABOVE STREET LEVEL

HAVE BOX EXTEND AS
FAR IN FRONT OF
SUPPORT POST AS
POSSIBLE. (THIS
PREVENTS POSSIBLE
SNOW PLOW DAMAGE).

ADDRESS MUST BE ON
SIDE OF BOX FROM
WHICH CARRIER
APPROACHES IN
LETTERS ABOUT ONE
INCH HIGH. (OR ON
FRONT WHERE BOXES
ARE GROUPED).

BOX MUST BE
LOCATED SO CARRIER
CAN SERVE WITHOUT
LEAVING VEHICLE.



SIDE VIEW

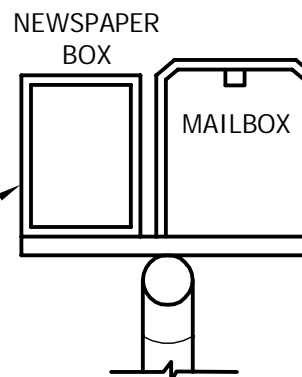
NOTES:

MAILBOX SHOULD NOT
EXTEND BEYOND BACK OF
CURB.

ALL POSTS TO BE A
MINIMUM OF 18" BEHIND
BACK OF CURB.

DIMENSIONS AS PER U.S.
POSTAL SERVICE

MOUNT AT SAME HIEGHT
AS MAILBOX.



FRONT VIEW



MAILBOX INSTALLATION

LAST REVISION:
FEB 2008

PLATE NO.
STR-17