

- ① NOT LESS THEN 2 ROLLS OF SOD TO BE PLACED BEHIND CURB.
- ② THE USE AND THICKNESS OF GEOTEXTILE FABRIC AND SELECT GRANULAR BORROW IS BASED ON EXISTING SOIL CONDITIONS AS DETERMINED BY THE CITY ENGINEER.
- ③ STREET WIDTH TO BE DETERMINED BY THE CITY ENGINEER. STREETS MUST BE PAVED IN NO MORE THAN TWO PASSES.
- ④ 4" PERFORATED PIPE. INSTALL WHERE CLAY SOILS ARE ENCOUNTERED IN THE ROADWAY SUBGRADE AS DIRECTED BY THE ENGINEER.
- ⑤ B618 CONCRETE CURB AND GUTTER IS REQUIRED AT ALL CURB RADII AND CATCH BASINS.

NOTE:

THE PAVEMENT SECTION SHOWN IS A MINIMUM. TYPE OF BITUMINOUS MIXTURE AND THE SECTION MAY BE INCREASED BY THE CITY ENGINEER BASED ON A SOILS REPORT AND PROJECTED TRAFFIC VOLUMES.



TYPICAL STREET SECTION
RESIDENTIAL

APPROVED:

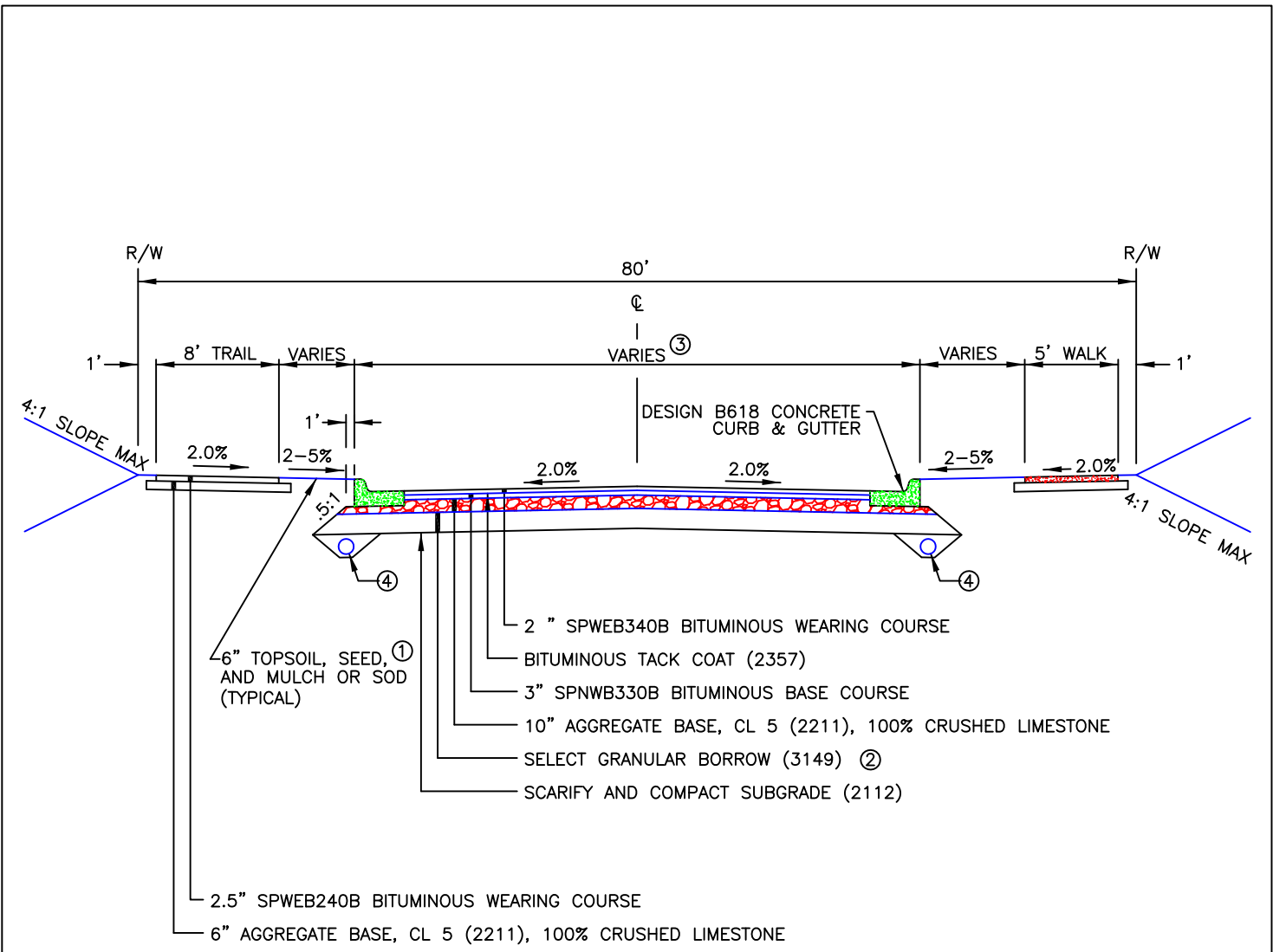
REVISION DATE:

MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

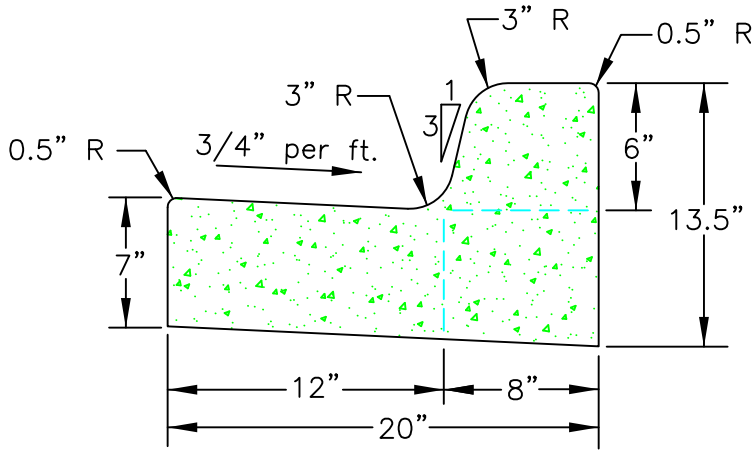
DETAIL NO:

1001

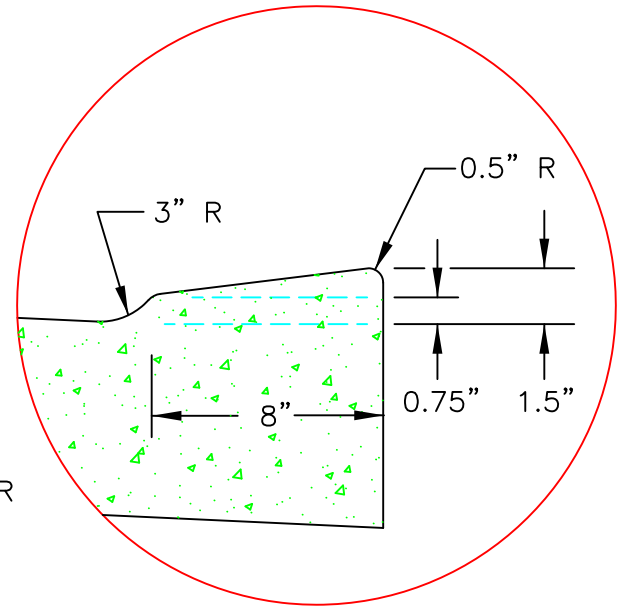


- ① SOD TO BE PLACED BETWEEN CURB AND SIDEWALK/TRAIL. ONE ROLL OF SOD SHALL ALSO BE PLACED ON THE NON-BOULEVARD SIDE OF THE SIDEWALK/TRAIL AS DIRECTED BY THE ENGINEER.
- ② THE USE AND THICKNESS OF GEOTEXTILE FABRIC AND SELECT GRANULAR BORROW IS BASED ON EXISTING SOIL CONDITIONS AS DETERMINED BY THE CITY ENGINEER.
- ③ STREET WIDTH TO BE DETERMINED BY THE CITY ENGINEER.
- ④ 4" PERFORATED PIPE WITH PROTECTIVE WRAP. INSTALL WHERE CLAY SOILS ARE ENCOUNTERED IN THE ROADWAY SUBGRADE AS DIRECTED BY THE ENGINEER.
- ⑤ B618 CONCRETE CURB AND GUTTER IS REQUIRED AT ALL CURB RADII.

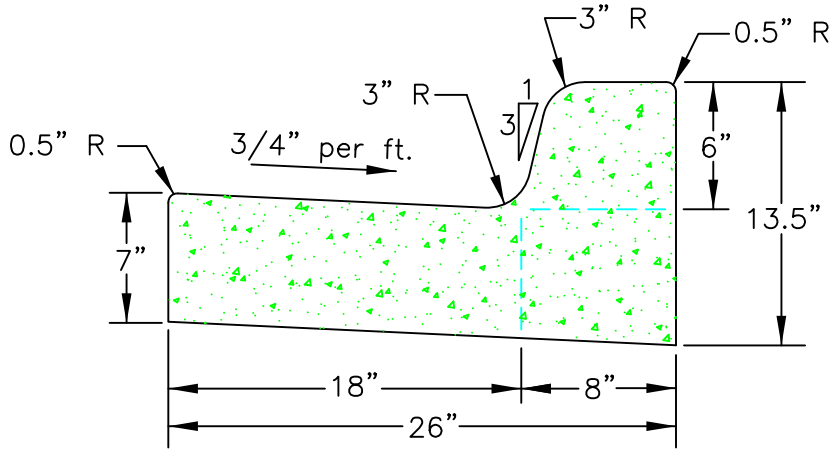
NOTE:
 THE PAVEMENT SECTION SHOWN IS A MINIMUM. TYPE OF BITUMINOUS MIXTURE AND THE SECTION MAY BE INCREASED BY THE CITY ENGINEER BASED ON A SOILS REPORT AND PROJECTED TRAFFIC VOLUMES.



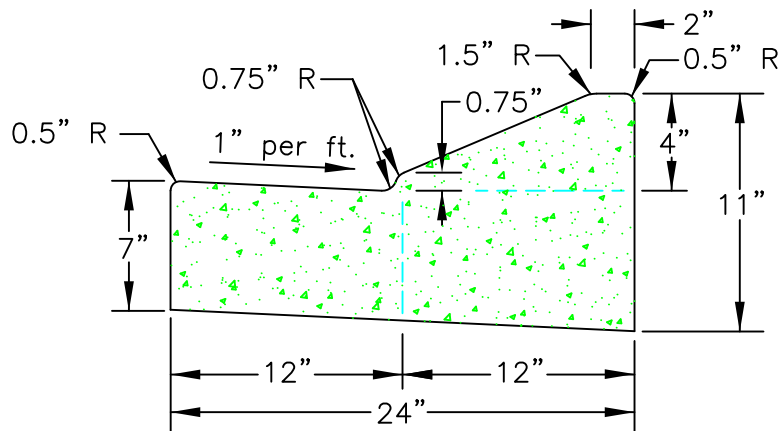
B-612



DETAIL OF TOP OF CURB AT DRIVEWAY OPENINGS.



B-618



SHAKOPEE
STANDARD SURMOUNTABLE



CONCRETE CURB AND
GUTTER FOR STREETS

APPROVED:

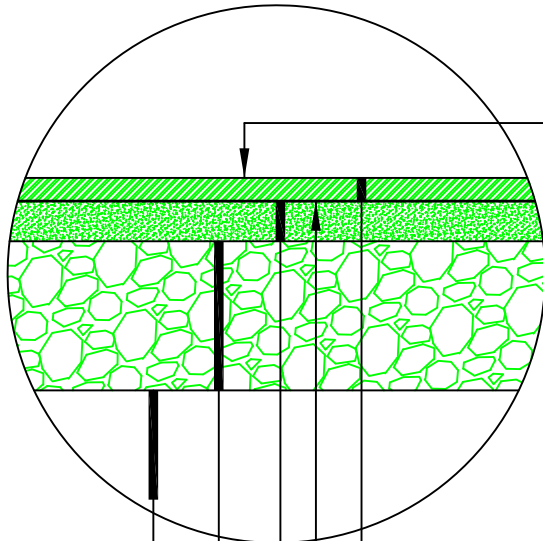
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

1003



FINISHED GRADE

1.5" SPWEB240B BITUMINOUS WEARING COURSE

BITUMINOUS TACK COAT (2357)

2.5" SPNWB230B BITUMINOUS BASE COURSE

8" AGGREGATE BASE, CLASS 5,
100% CRUSHED LIMESTONE (2211)

SUBGRADE PREPARATION (2112)



STANDARD DETAIL
BITUMINOUS PATCH

APPROVED:

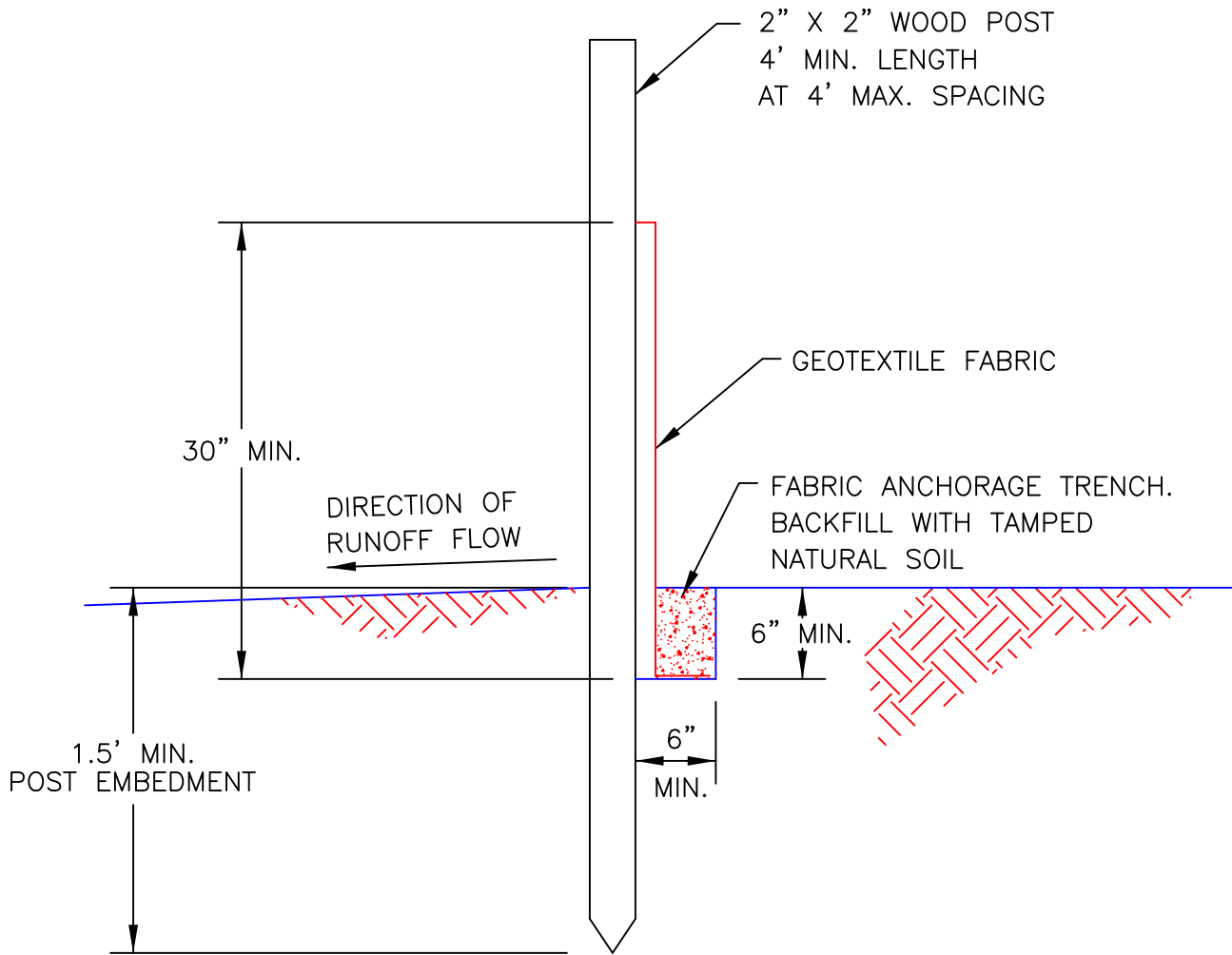
REVISION DATE:

MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

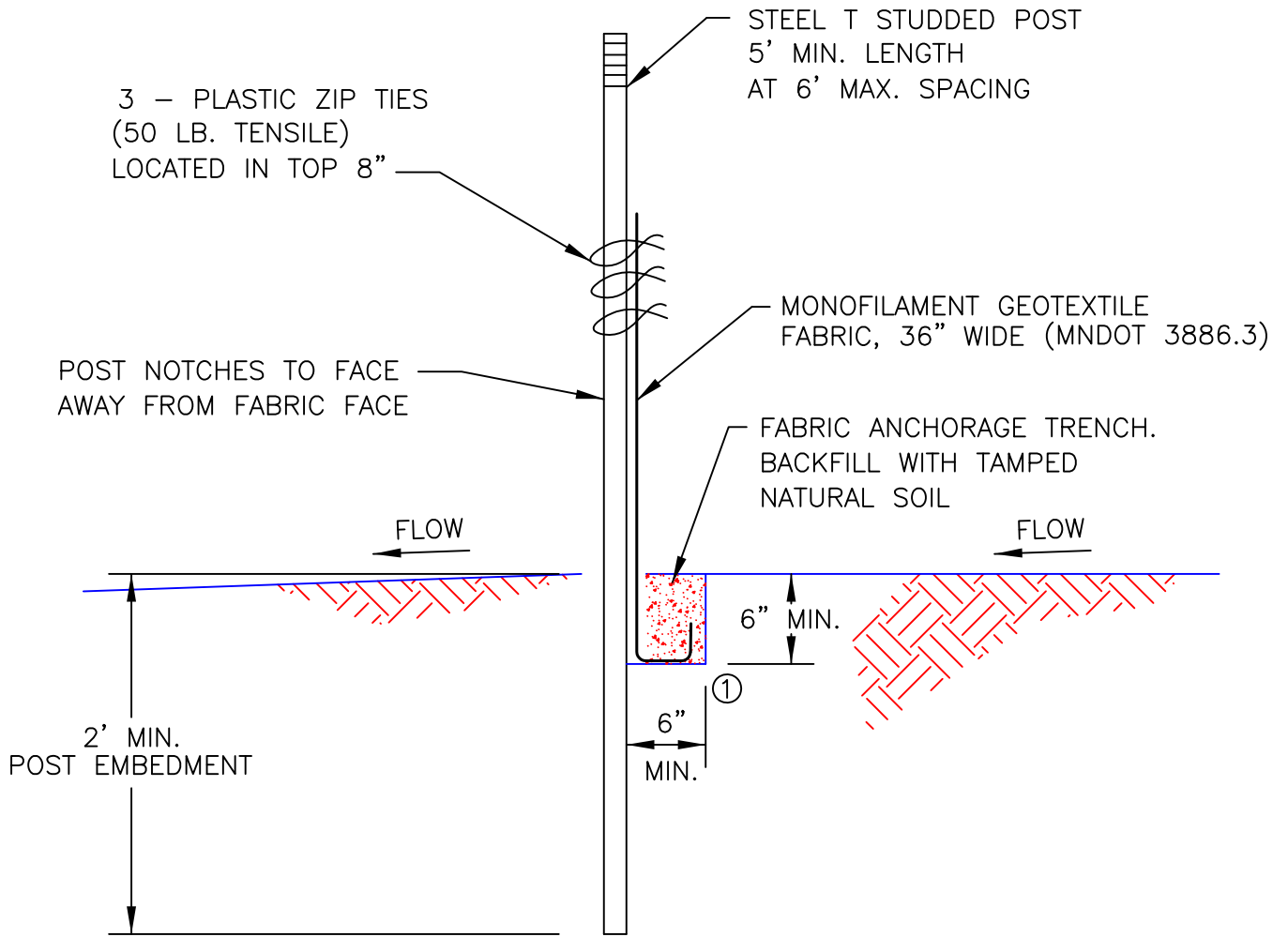
1004



SILT FENCE

APPROVED:	
REVISION DATE:	JANUARY 2007
SHAKOPEE ENGINEERING DEPARTMENT	

DETAIL NO:
2001



NOTE:

HEAVY DUTY SILT FENCE SHALL BE HAND INSTALLED.

- ① 12" BURY FOR MACHINE SLICED SILT FENCE
SEE MNDOT 2573 FOR MACHINE SLICED SILT FENCE REQUIREMENTS



HEAVY DUTY SILT FENCE

APPROVED:

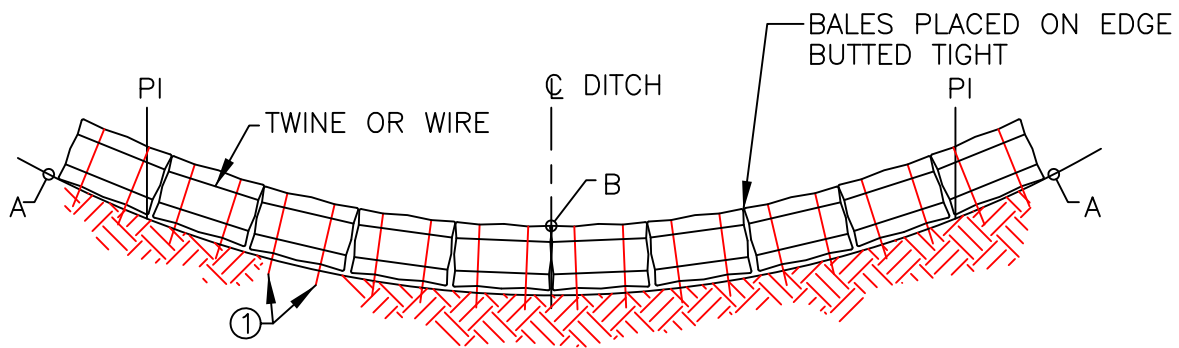
REVISION DATE:

MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

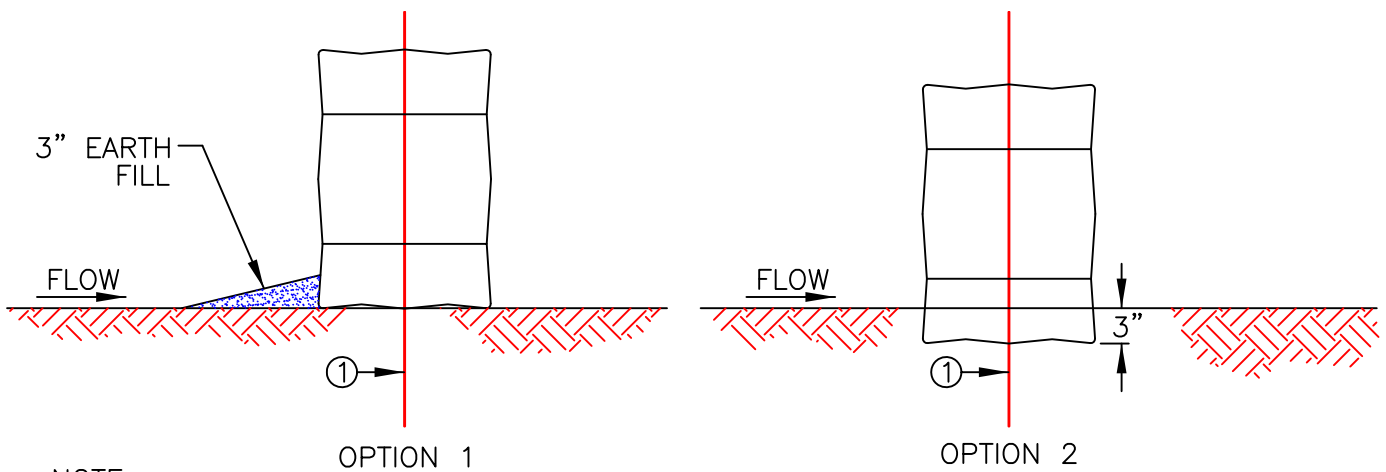
2002



BALE DITCH CHECK

NOTE: POINT A MUST BE A MINIMUM OF 12" HIGHER, THAN POINT B

BALE DITCH CHECKS ARE ONLY PERMITTED WHEN THE GROUND IS FROZEN, OTHERWISE SILT FENCE, BIOROLL OR ROCK DITCH CHECKS SHALL BE USED.



NOTE:

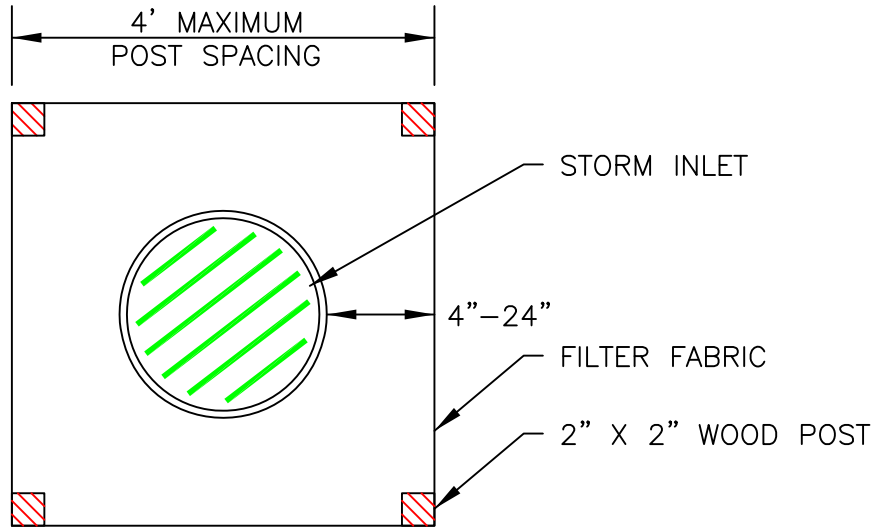
- ① TWO 2"x 2" WOOD STAKES OR STEEL REINFORCING BARS IN EACH BALE AND EMBEDDED IN THE GROUND 10" MINIMUM.



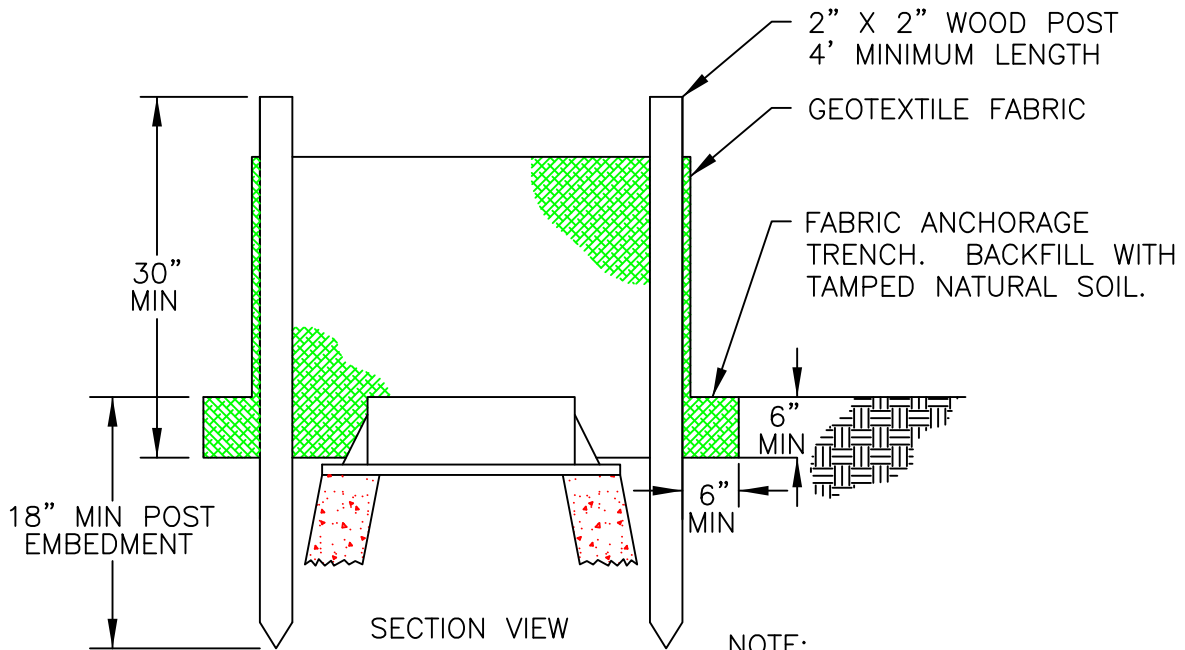
BALE CHECKS

APPROVED:	
REVISION DATE:	JANUARY 2007
SHAKOPEE ENGINEERING DEPARTMENT	

DETAIL NO:
2003



PLAN VIEW



SECTION VIEW

NOTE:
SILT FENCE SHALL CONFORM TO
THE REQUIREMENTS OF
(MN/DOT 3886)



**INLET PROTECTION
PREASSEMBLED**

APPROVED:

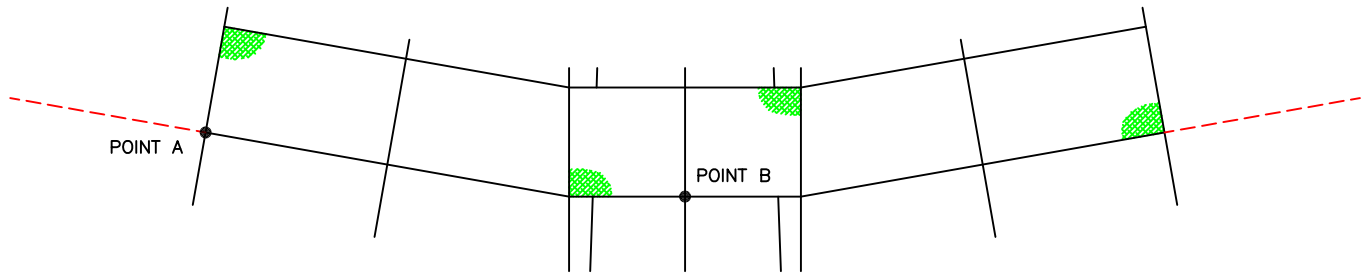
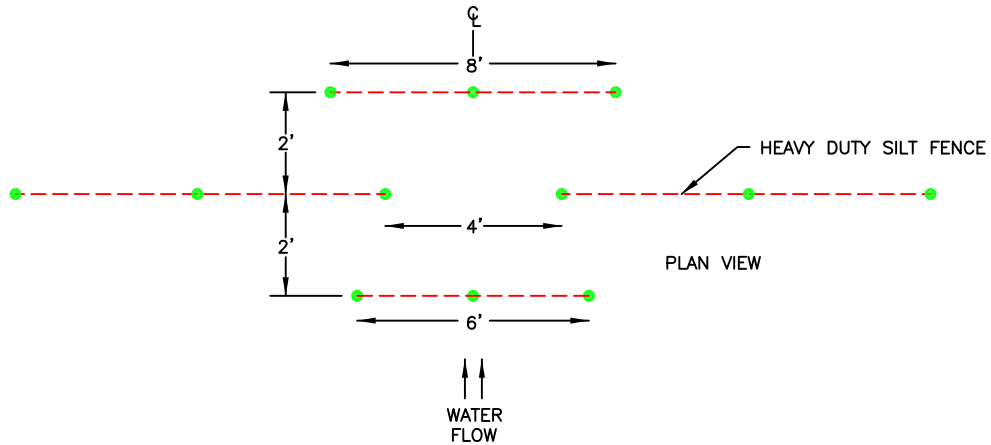
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO.:

2004



NOTES:

1. POINT A MUST BE A MINIMUM OF 12 INCHES HIGHER THAN POINT B.
2. HEAVY DUTY SILT FENCE SHALL CONFORM TO THE REQUIREMENTS OF (3886)
3. DIMENSIONS SHOWN ARE FOR TYPICAL 8' DITCH BOTTOM. MODIFICATIONS MAY BE NECESSARY FOR VARYING SLOPES AND DITCH WIDTHS.
4. REFER TO PLAN OR MN/DOT EROSION CONTROL MANUAL FOR SPACING INTERVALS OF CHECKS.



DITCH CHECK

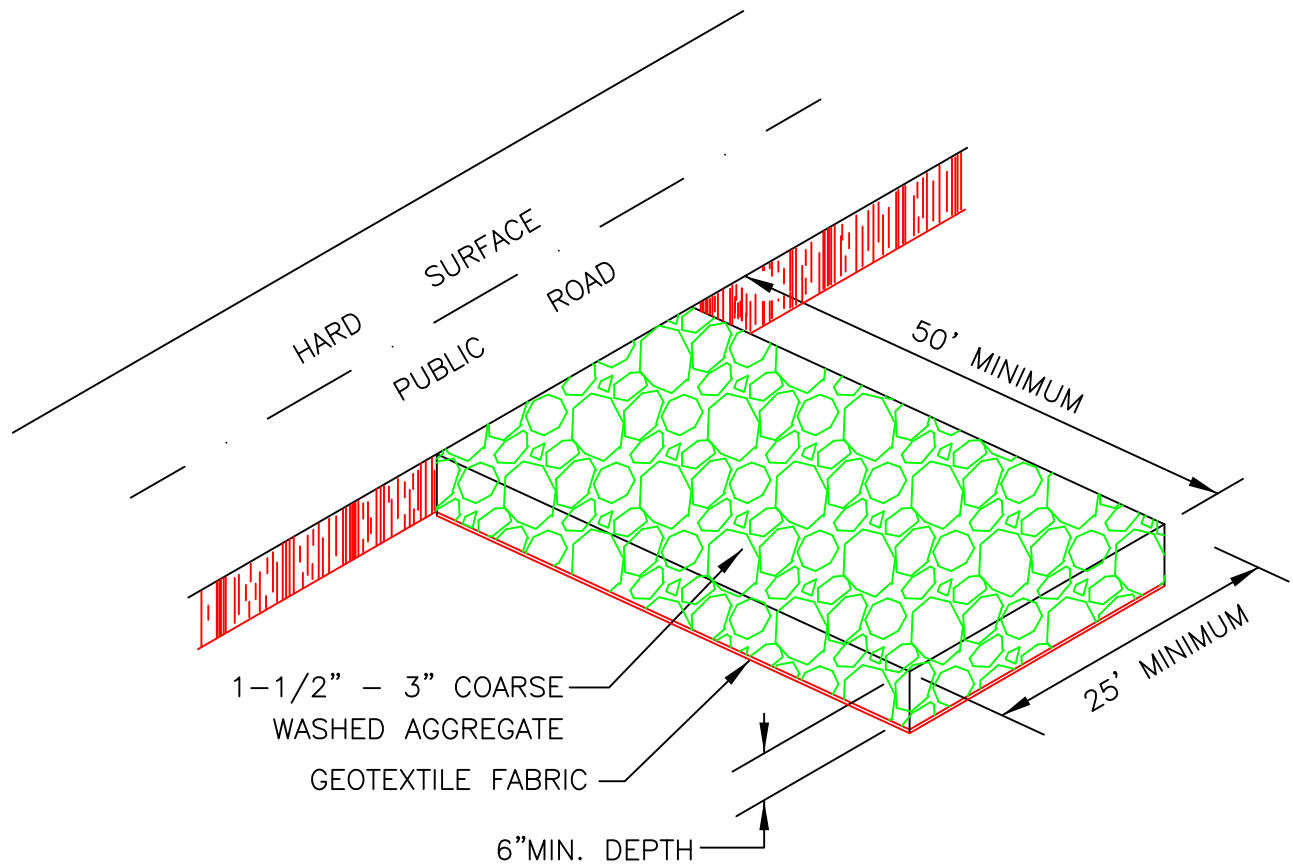
APPROVED:

REVISION DATE: JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

2005



ROCK CONSTRUCTION
 ENTRANCE

APPROVED:

REVISION DATE:

MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

2006

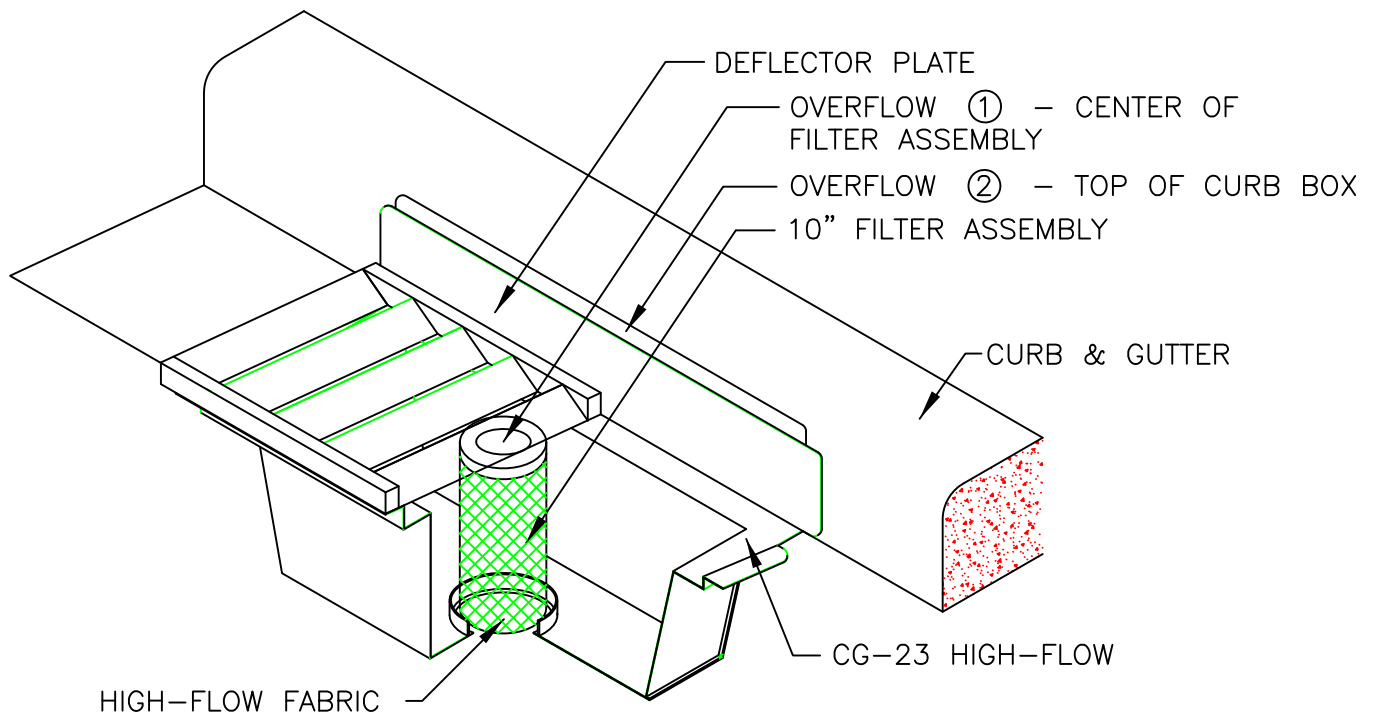
ROAD DRAIN – CURB & GUTTER MODEL #CG 3067V
 AS MANUFACTURED BY:
 WIMCO LLC., SHAKOPEE, MN.,
 ESS BROS., LORETTO, MN., OR APPROVED EQUAL

SPECIFICATIONS AND STANDARDS

- AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION.
- AWS STRUCTURAL WELDING CODE – STEEL, D1.1–94.
- 29 CFR 1926 – OSHA SAFETY AND HEALTH STANDARDS

DESIGN LOADS

WATER FLOW RATE (THROUGH TYPE FF FILTER) 0.707 cfs @ 3” head
 MAXIMUM OVERFLOW RATE 5.94 cfs @ 15” head



NOTE:

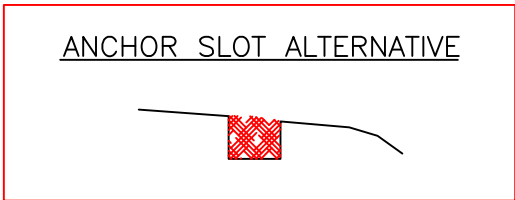
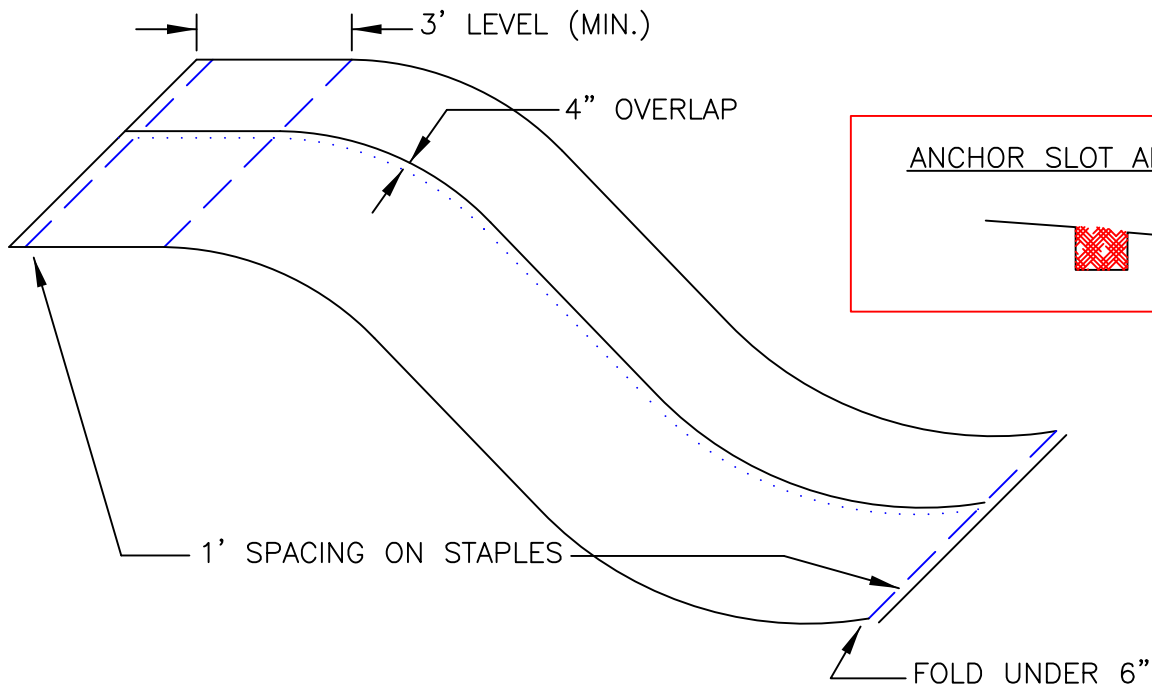
Clean filter media after each rain event and replace if filter is clogged with sediment.
 Remove debris/sediment from receptacle after each rain event.



INLET PROTECTION SYSTEM

APPROVED:	
REVISION DATE:	MAY 2010
SHAKOPEE ENGINEERING DEPARTMENT	

DETAIL NO:
2007



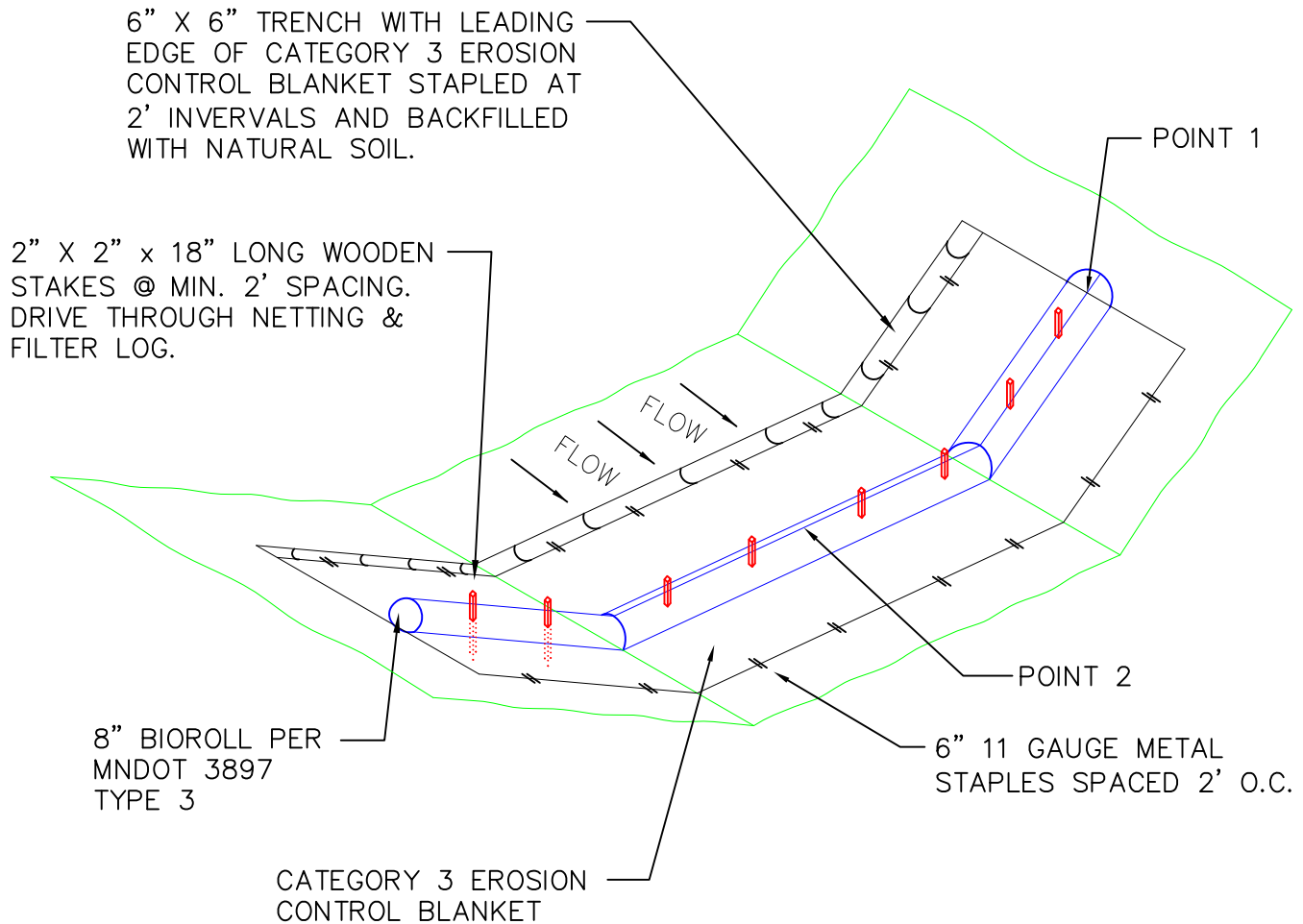
**EROSION CONTROL
BLANKET**

APPROVED:
 REVISION DATE: JANUARY 2007
 SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:
2008

NOTE:

POINT 1 MUST BE A MINIMUM OF 12" HIGHER THAN POINT 2 TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.



FILTER LOG

APPROVED:

REVISION DATE:

JANUARY 2007

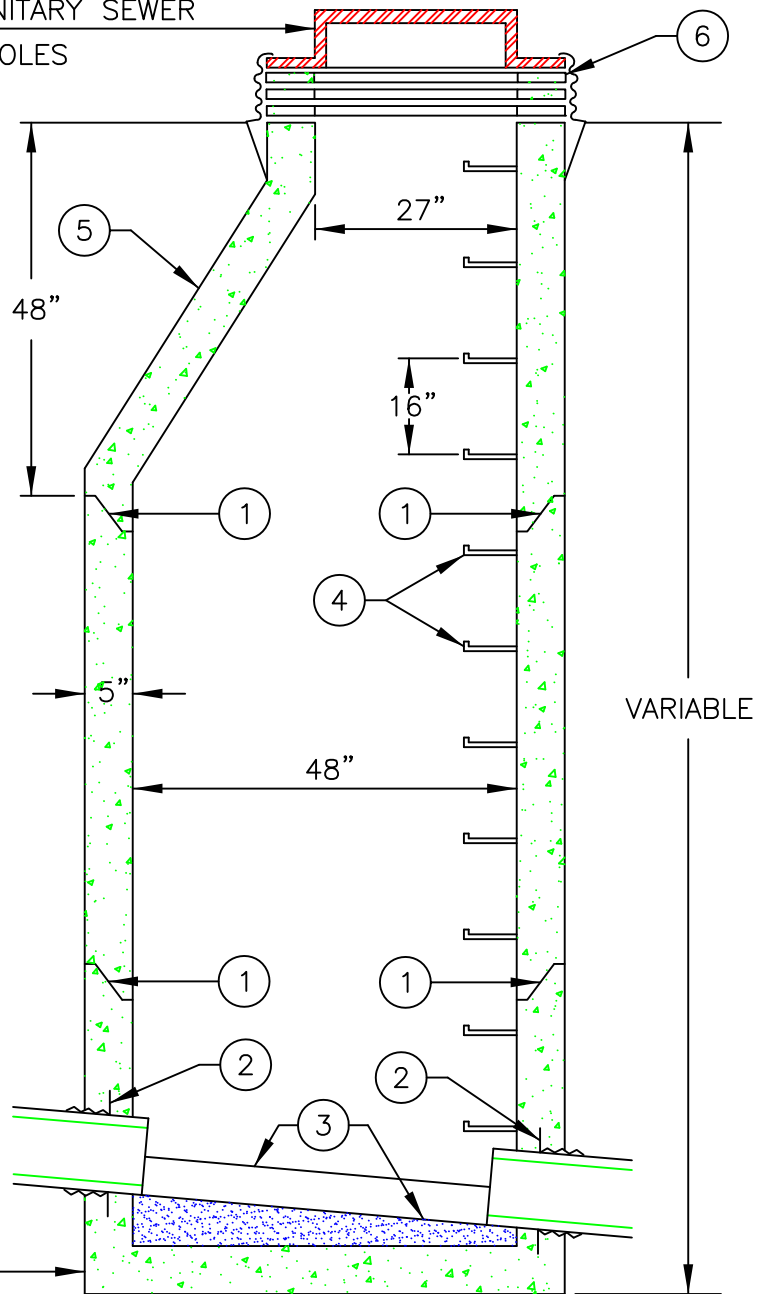
SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

2009

NEENAH R-1642 (OR EQUAL)
 LETTERING TO READ SANITARY SEWER
 WITH CONCEALED PICKHOLES

- ① RUBBER GASKET.
- ② FLEXIBLE WATERTIGHT SEAL TO BE APPROVED BY ENGINEER.
- ③ SHAPE, DEPTH AND SLOPE OF INVERT TO BE APPROVED BY ENGINEER.
- ④ STEEL REINFORCED PLASTIC STEPS SHALL BE A POLYPROPYLENE PLASTIC REINFORCED WITH A NO. 2 DEFORMED STEEL ROD GRADE 60.
- ⑤ MN/DOT TYPE "B" ECCENTRIC PRECAST CONCRETE CONE SECTION TYPICAL FOR ALL MANHOLES.
- ⑥ CONCRETE ADJUSTING RINGS MINIMUM 2 RINGS (4 INCHES) MAXIMUM 18" INCLUDING CASTING.



6" MIN. INTEGRAL
 PRECAST CONCRETE BASE

REFER TO PLANS
 FOR PIPE REQUIRED



STANDARD SANITARY
 MANHOLE

APPROVED:

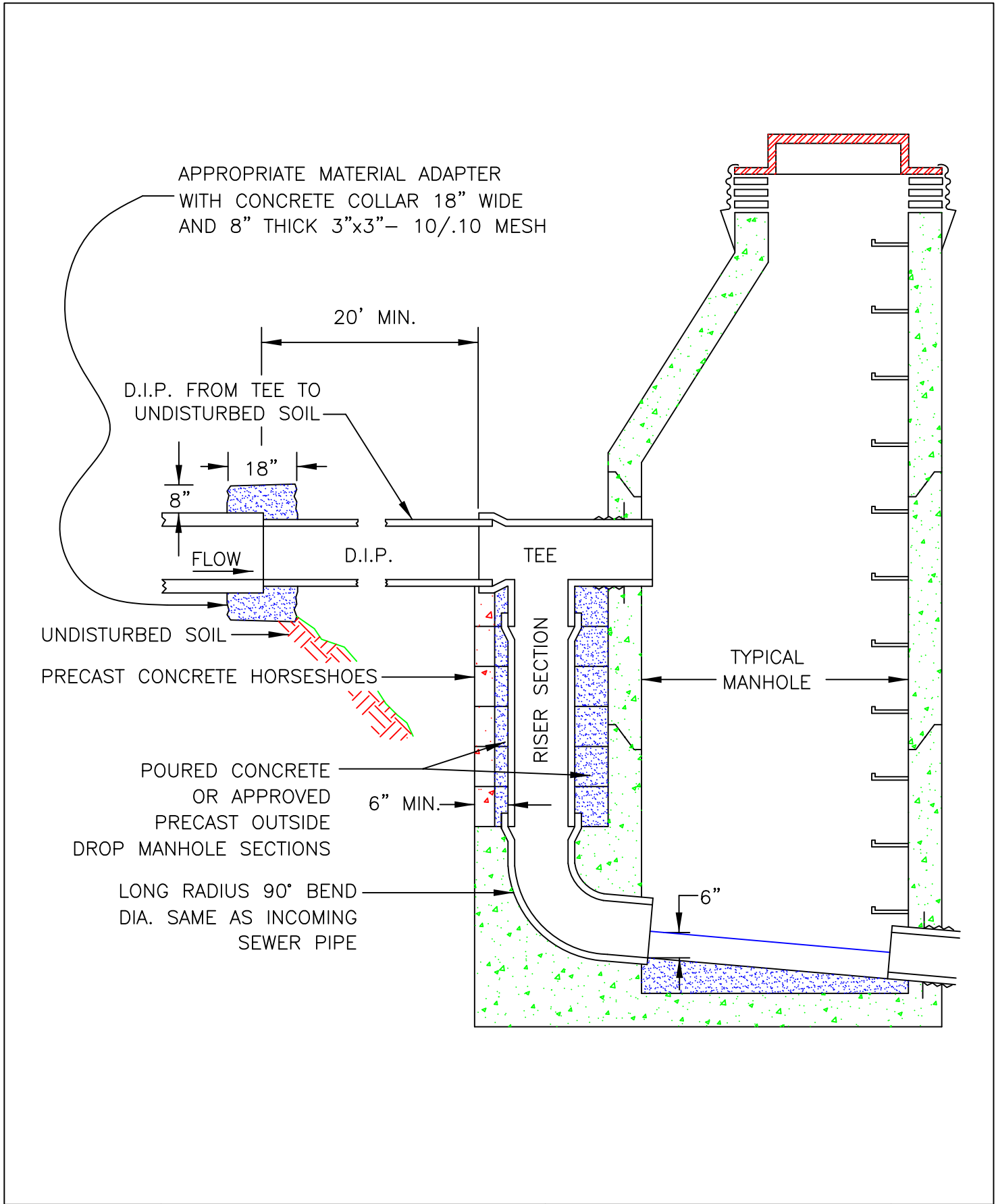
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

3001



APPROPRIATE MATERIAL ADAPTER
WITH CONCRETE COLLAR 18" WIDE
AND 8" THICK 3"x3"- 10/.10 MESH

20' MIN.

D.I.P. FROM TEE TO
UNDISTURBED SOIL

18"

8"

FLOW

D.I.P.

TEE

UNDISTURBED SOIL

PRECAST CONCRETE HORSESHOES

TYPICAL
MANHOLE

POURED CONCRETE
OR APPROVED
PRECAST OUTSIDE
DROP MANHOLE SECTIONS

6" MIN.

RISER SECTION

LONG RADIUS 90° BEND
DIA. SAME AS INCOMING
SEWER PIPE

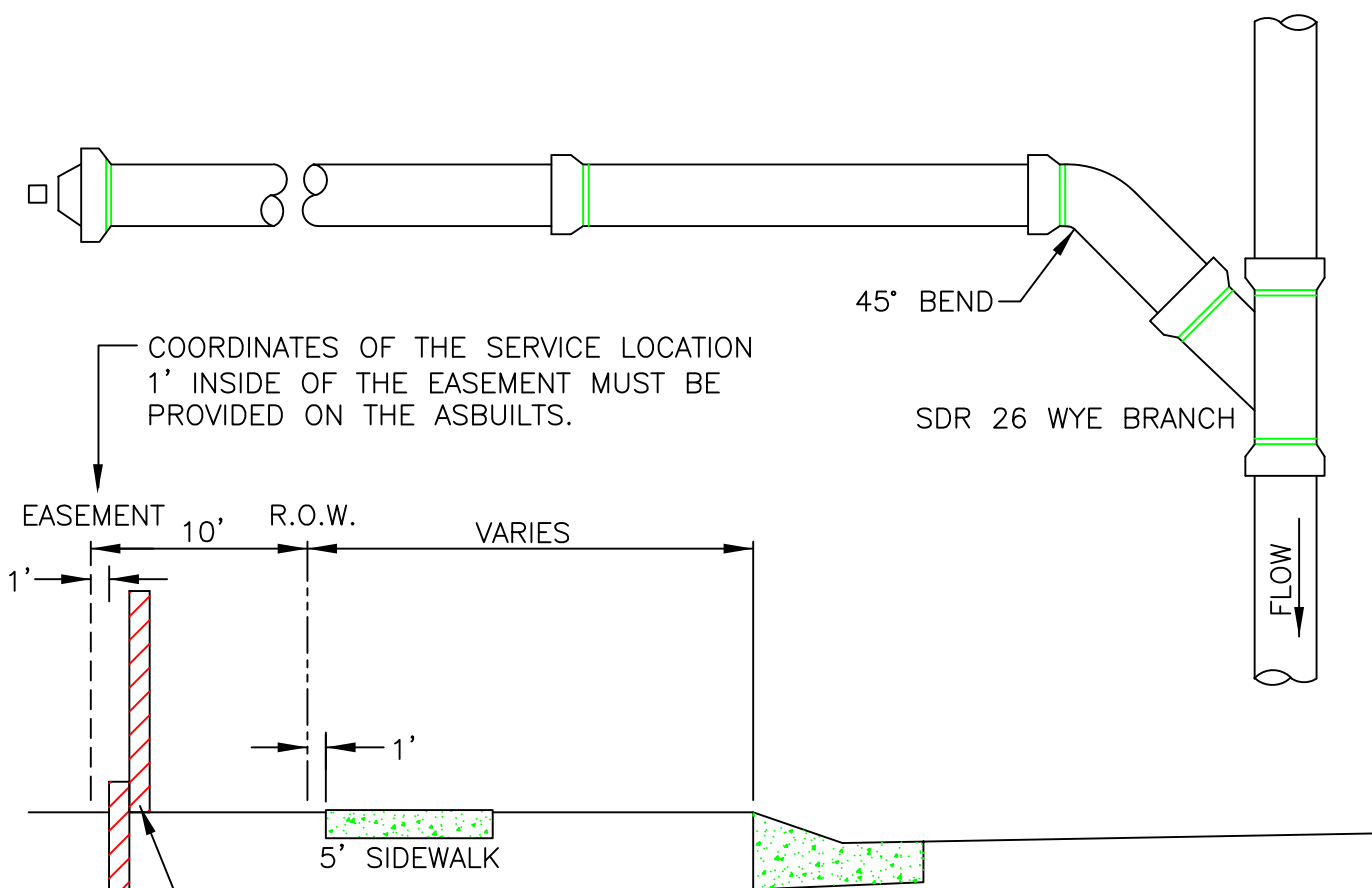
6"



**OUTSIDE DROP
SANITARY MANHOLE**

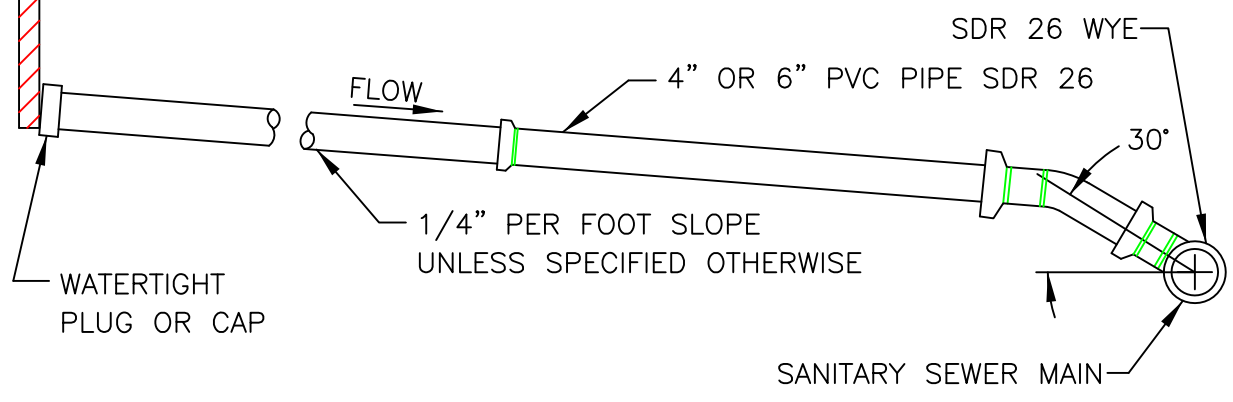
APPROVED:
REVISION DATE: JANUARY 2007
SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:
3002



2" x 2" MINIMUM SIZE MARKER INSTALLED VERTICALLY AT END OF SERVICE AND MUST EXTEND 4' ABOVE FINISH GROUND.

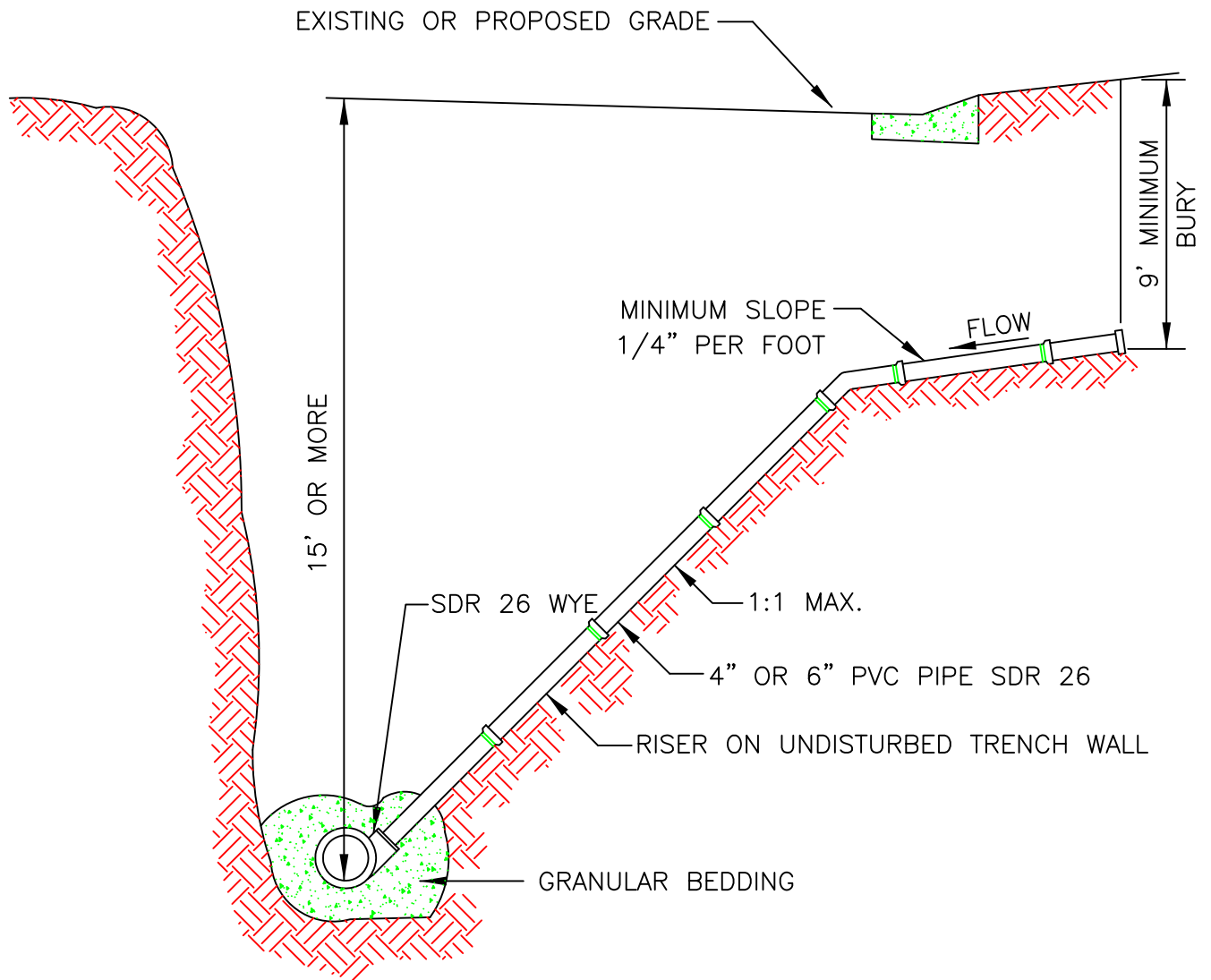
9' MINIMUM FROM PROPOSED GRADE TO INVERT.



SANITARY SEWER SERVICE

APPROVED:
 REVISION DATE: MAY 2010
 SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:
3003



SANITARY SEWER RISER

APPROVED:

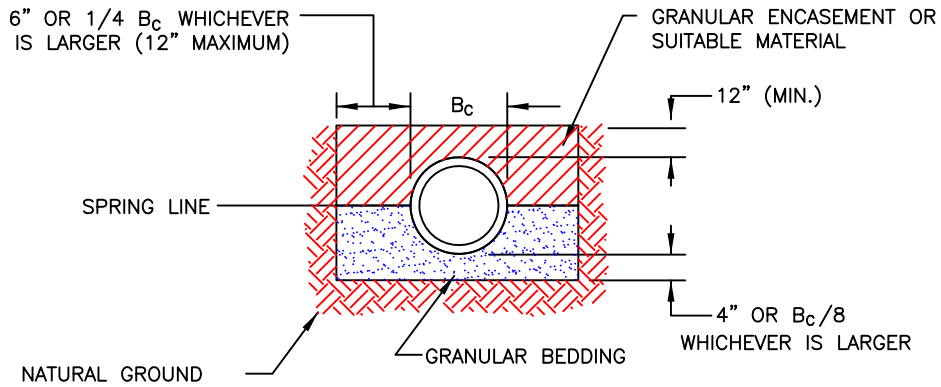
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

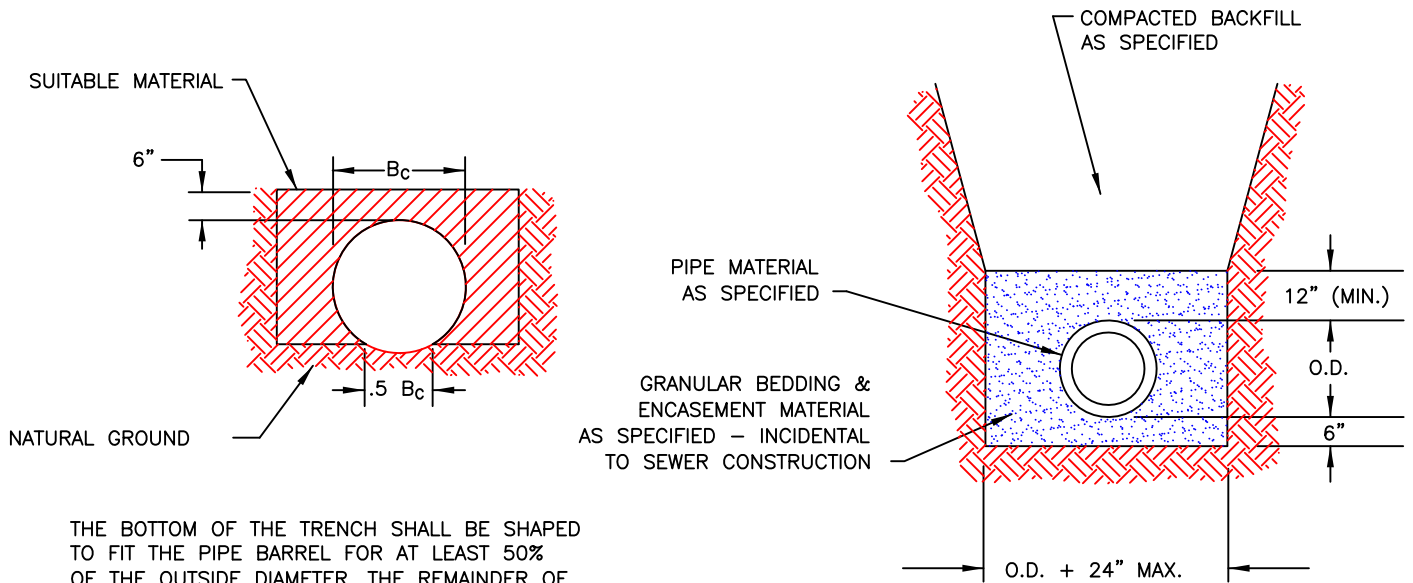
DETAIL NO:

3004



NOTE: ALL COSTS OF EXCAVATION BELOW GRADE AND PLACEMENT OF GRANULAR BEDDING SHALL BE INCLUDED IN THE BID PRICES FOR PIPE ITEMS, UNLESS SPECIFIC BID QUANTITIES ARE LISTED FOR GRANULAR BEDDING FOR WATERMAIN.

CLASS "B" PIPE BEDDING



THE BOTTOM OF THE TRENCH SHALL BE SHAPED TO FIT THE PIPE BARREL FOR AT LEAST 50% OF THE OUTSIDE DIAMETER. THE REMAINDER OF THE PIPE IS SURROUNDED TO HEIGHT OF AT LEAST 6" ABOVE IT'S TOP BY SELECT FILL MATERIALS, PLACED BY HAND TOOLS AND COMPACTED TO COMPLETELY FILL ALL SPACES UNDER AND ADJACENT TO THE PIPE.

NOTE: ALL COSTS OF EXCAVATION BELOW GRADE AND PLACEMENT OF GRANULAR BEDDING SHALL BE INCLUDED IN THE BID PRICES FOR PIPE ITEMS.

CLASS "C" PIPE BEDDING

PVC SANITARY SEWER



PIPE BEDDING

APPROVED:

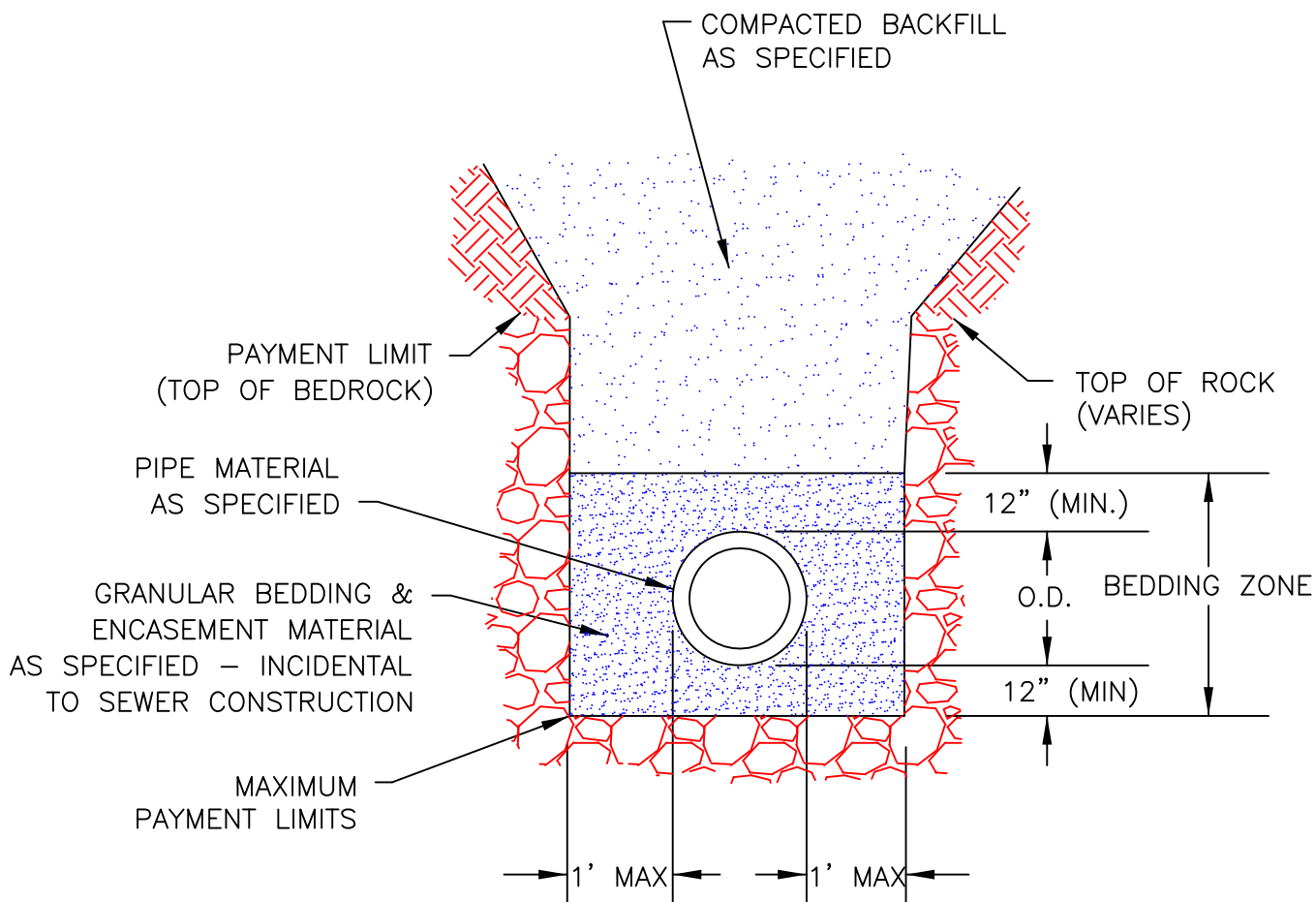
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

3005



ROCK EXCAVATION

APPROVED:

REVISION DATE:

JANUARY 2007

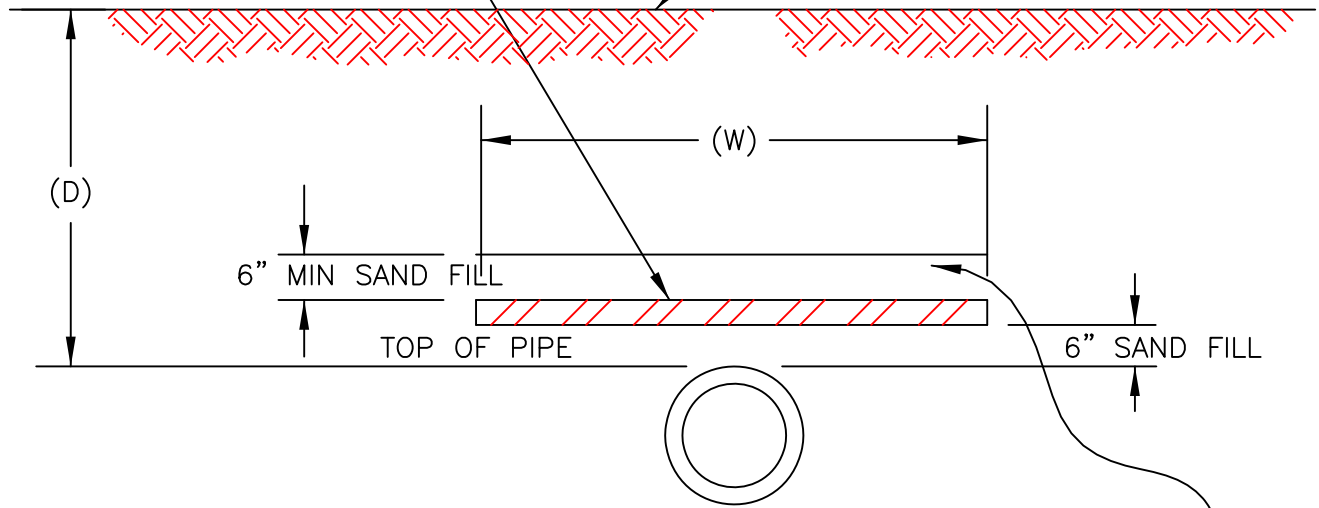
SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

3006

4" RIGID POLYSTYRENE FOAM
SEE SPECS.

DESIGN GRADE OR
EXISTING GRADE



COMPACT AREA ABOVE PIPE TO
95% STANDARD PROCTOR DENSITY
USE GRANULAR BEDDING MATERIAL
FOR BACKFILL MATERIAL BELOW &
6" ABOVE INSULATION MATERIAL

(D) DEPTH OF PIPE	(W) WIDTH OF INSULATION
2'	12'
3'	10'
4'	8'
5'	6'
6'	4'
7'	4'

NOTE: ALL INSULATION SHALL HAVE A MINIMUM
COMPRESSION STRENGTH OF 35 PSI.



INSULATION

APPROVED:

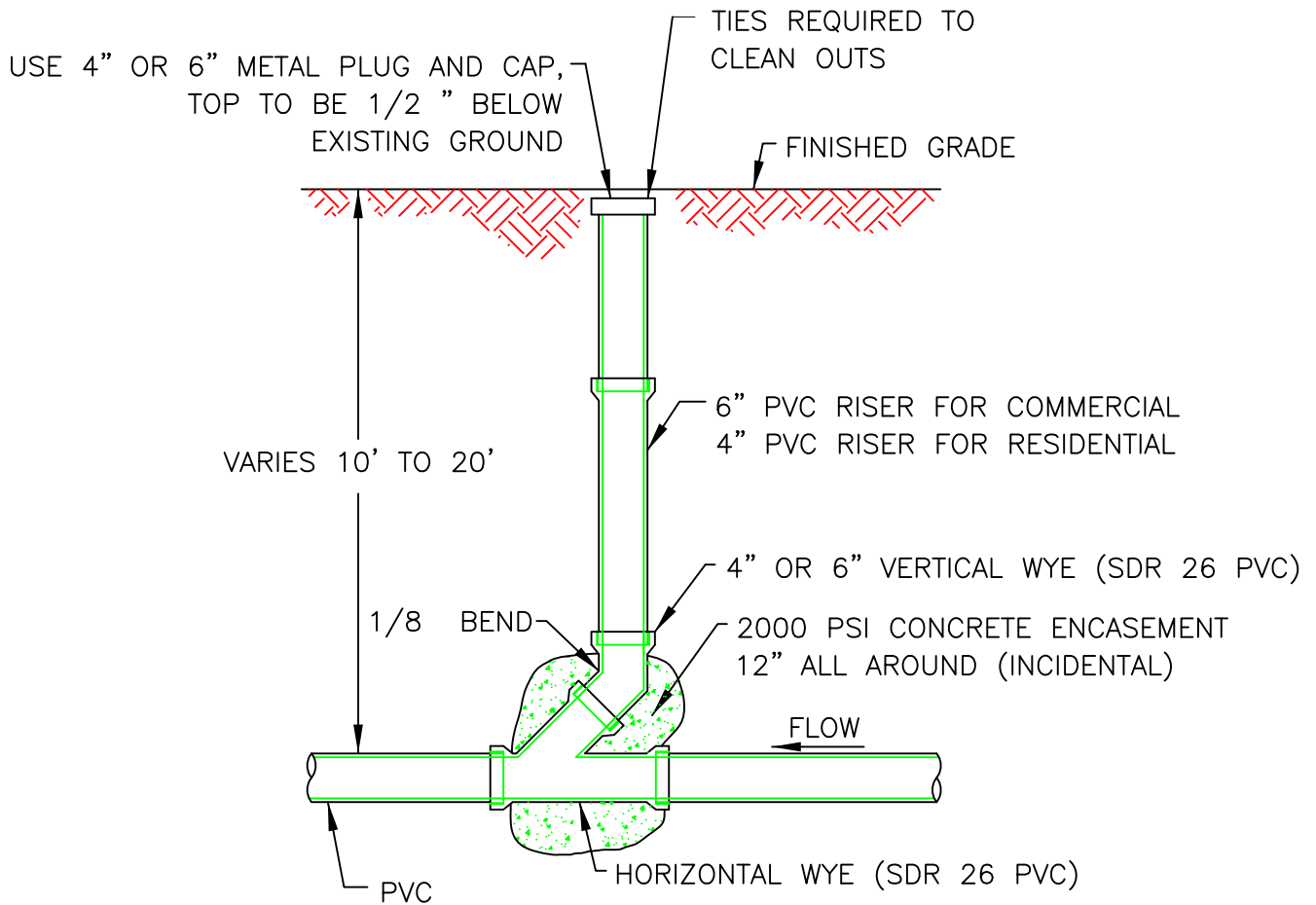
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

3007



CLEAN-OUTS REQUIRED AT 70' INTERVALS FROM MAIN SEWER LINE.



SANITARY CLEAN OUT

APPROVED:

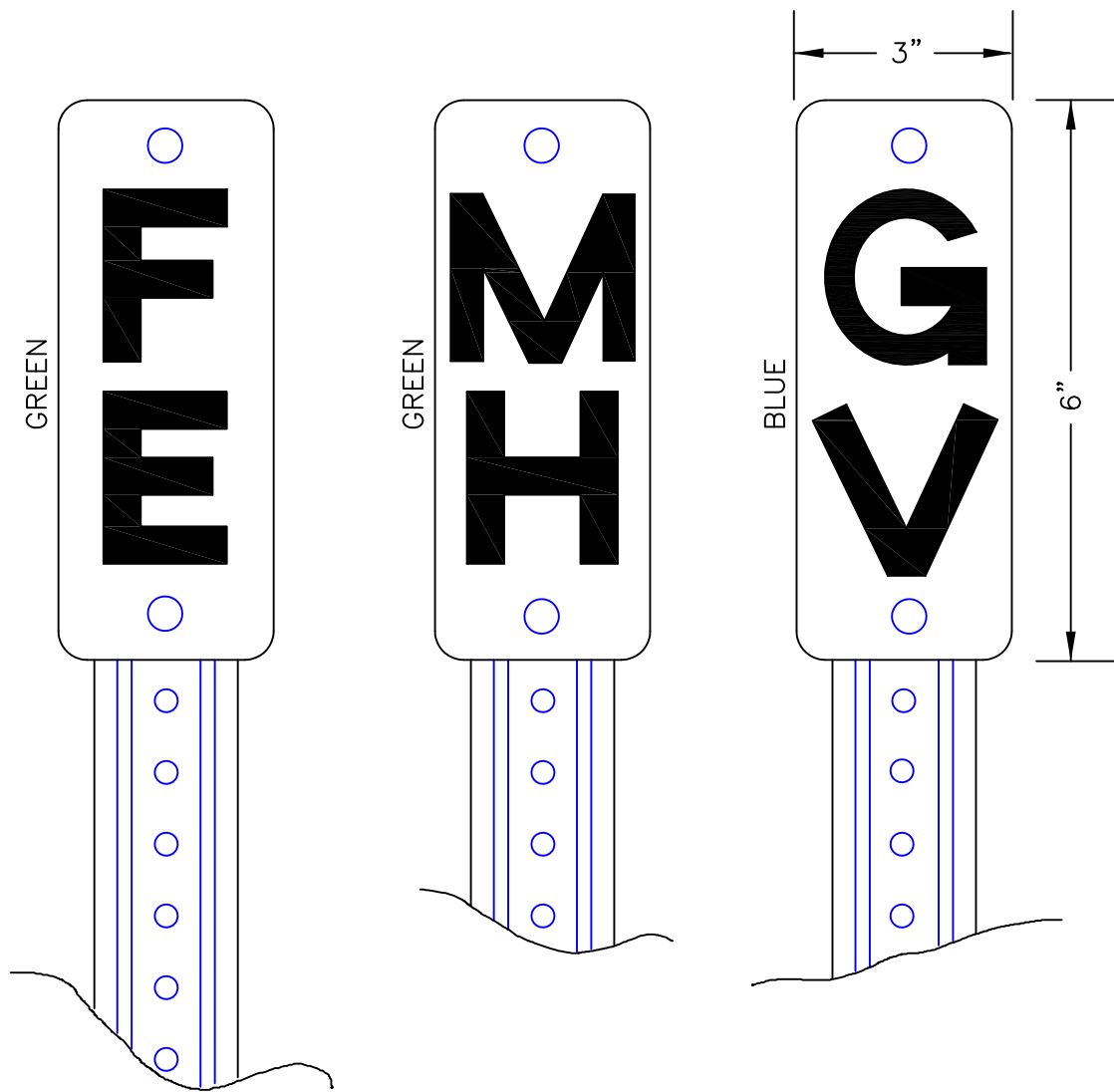
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

3008



NOTE:

3" x 6" STRUCTURE MARKER SIGNS SHALL BE FURNISHED AND INSTALLED FOR ALL STRUCTURES LOCATED OUTSIDE OF THE STREET RIGHT OF WAY AND SHALL BE CONSIDERED INCIDENTAL.

0.063" THICK ALUMINUM SIGN.

BLACK LETTERS ON GREEN OR BLUE HIGH INTENSITY REFLECTORIZED BACKGROUND.

U-CHANNEL POST,

MINIMUM 1.2 LB./FT. 6'- 6" LONG, PAINTED GREEN.

FLARED END SECTION POST SHALL NOT BE POSITIONED IN A WAY THAT WILL BLOCK FLOW.



STRUCTURE MARKER SIGN

APPROVED:

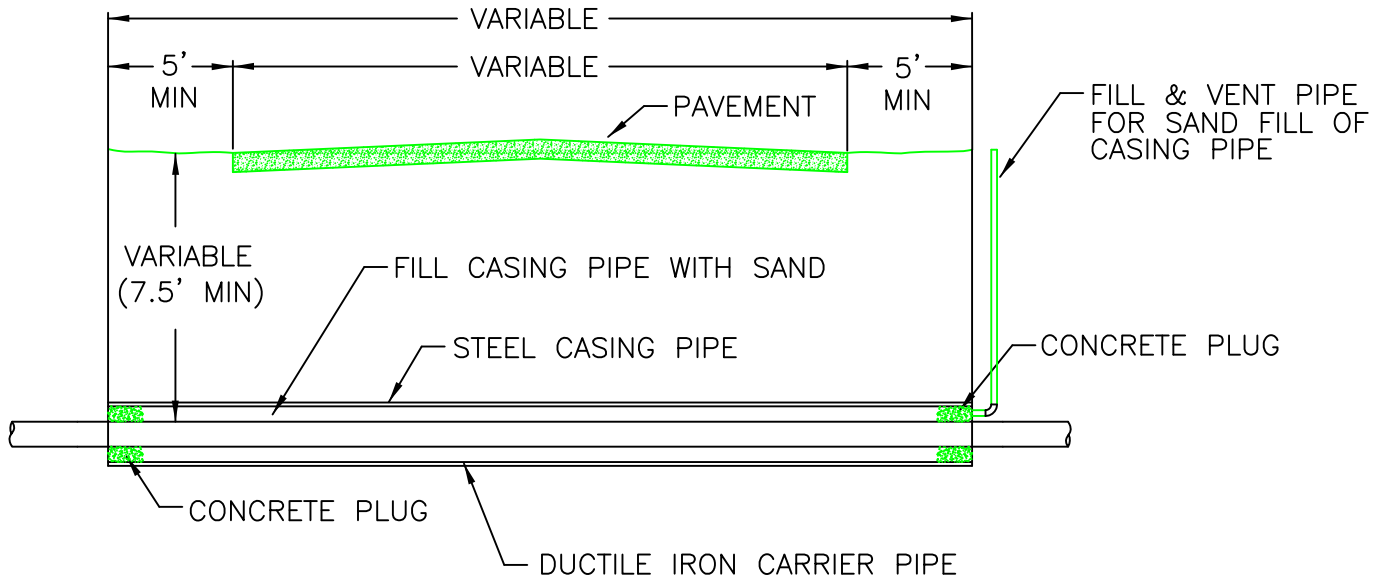
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

3009



PIPE SIZE CHART

CARRIER PIPE	CASING DIAMETER	CASING THICKNESS
6"	18"	0.250
8"	22"	0.250
10"	22"	0.250
12"	26"	0.250
16"	30"	0.250
18"	30"	0.250



STEEL CASING

APPROVED:

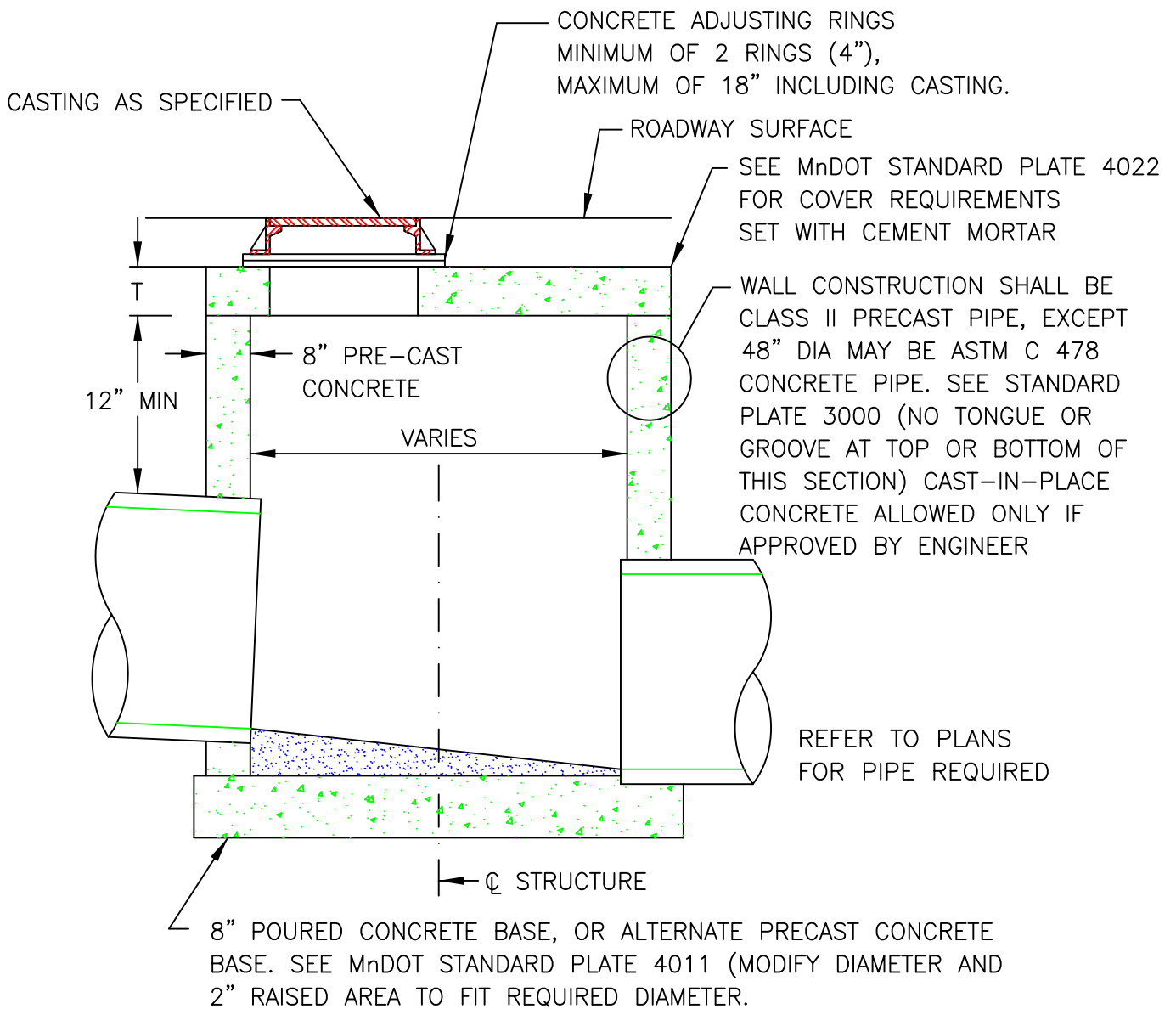
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

3010



- ① REFER TO STANDARD PLANS FOR HEIGHT AND DIAMETER REQUIRED.
- ② MANHOLE STEPS SHALL BE POLYPROPYLENE PLASTIC REINFORCED WITH A NO. 2 DEFORMED STEEL ROD GRADE 60 AND SPACED 16" OC.
- ③ REINFORCEMENT AS PER SPEC 3301, GRADE 60.



**STANDARD MANHOLE FOR
STORM SEWER**

APPROVED:

REVISION DATE:

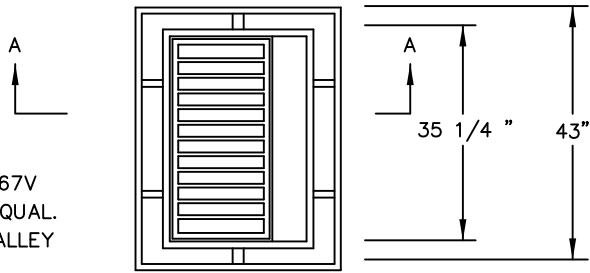
MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

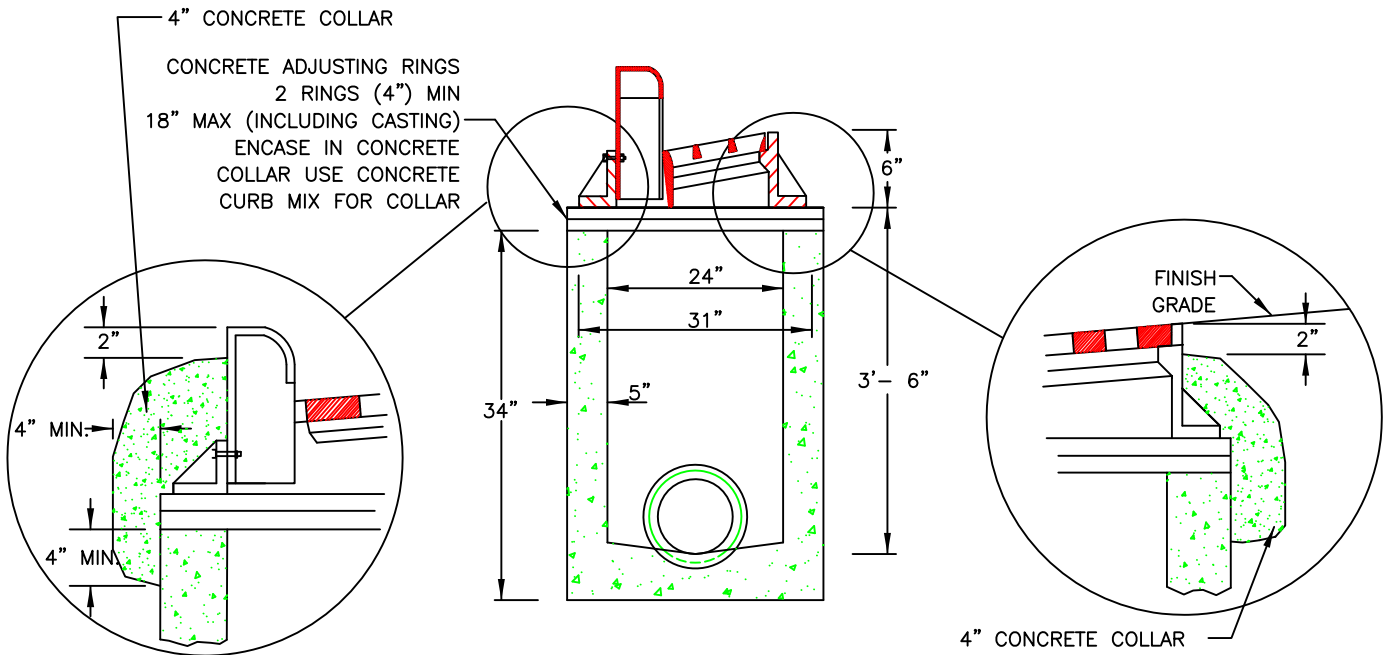
DETAIL NO:

4001

CURB INLET FRAME AND CURB BOX
 24"x36" SLAB OPENING FOR NEENAH R3067V
 OR ESS. BROS. 330 HIGH CAPACITY OR EQUAL.
 INSTALL R3290L FOR DRIVEWAYS AND VALLEY
 GUTTERS. VANE GRATE SHOWN



PLAN



SECTION A-A

NOTES:

MINIMUM REINFORCING SHALL BE WIRE FABRIC
 HAVING AN AREA OF NOT LESS THAN 0.12 SQ IN
 PER FOOT IN BOTH DIRECTIONS

POUR A 3" TO 4" CONCRETE COLLAR
 AROUND RINGS EXTENDING FROM THE
 CASTING TO THE PRECAST SECTION

REFER TO PLANS
 FOR PIPE REQUIRED



2' x 3' CATCH BASIN

APPROVED:

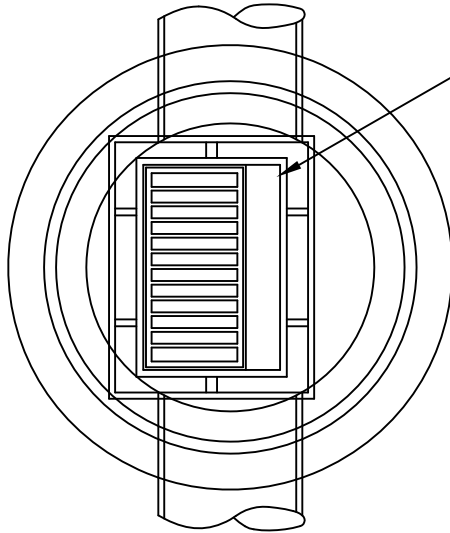
REVISION DATE:

MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

4002



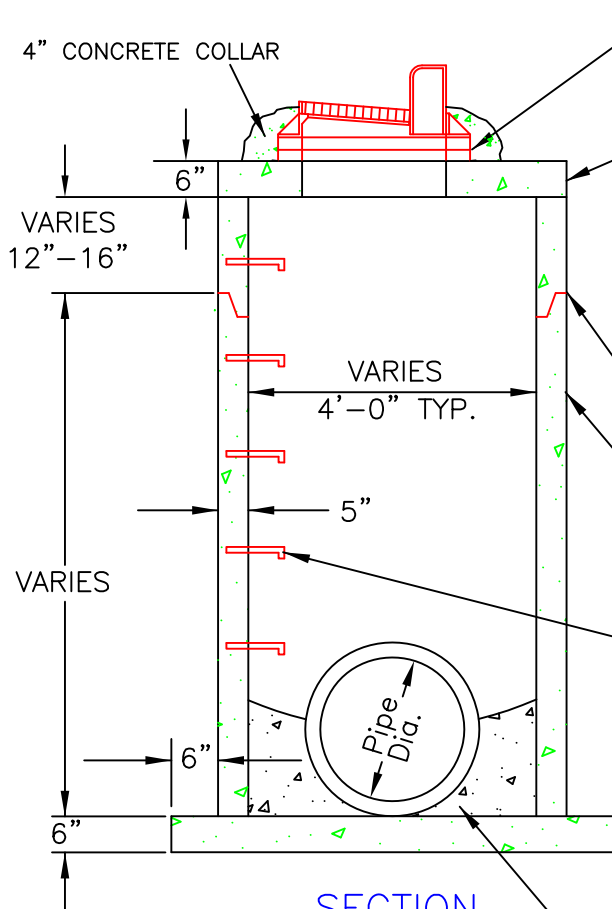
PLAN

24"x36" SLAB OPENING FOR NEENAH R3067V OR ESS. BROS. 330 HIGH CAPACITY OR EQUAL. INSTALL R3290L FOR DRIVEWAYS AND VALLEY GUTTERS. VANE GRATE SHOWN

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

ALL STORM SEWER CASTING ELEVATIONS SHOWN ON THE PLANS HAVE BEEN DEPRESSED 0.15' BELOW GUTTER ELEVATION.



SECTION

CONCRETE ADJUSTING RINGS MINIMUM OF 2 RINGS (4") MAXIMUM OF 18" INCLUDING THE CASTING.

6" PRECAST REINFORCED CONCRETE SLAB WITH 2' X 3' OPENING, SET WITH CEMENT MORTAR. FOR 6' DIA. MANHOLE, AN 8" PRECAST SLAB IS REQUIRED.

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 SHALL BE PLACED BELOW THE DOWNSTREAM CORNER OF THE OPENING NEAREST THE STREET.

CONCRETE CATCH BASIN MANHOLE AND BASE TO BE CRETEX TYPE 433B OR APPROVED EQUAL. 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.

NOTES:

BASE TO BE GROUTED TO FORM A SMOOTH INVERT TO OUTLET. PIPE CUT-OUTS TO BE LOCATED WHERE REQUIRED.



CATCH BASIN MANHOLE

APPROVED:

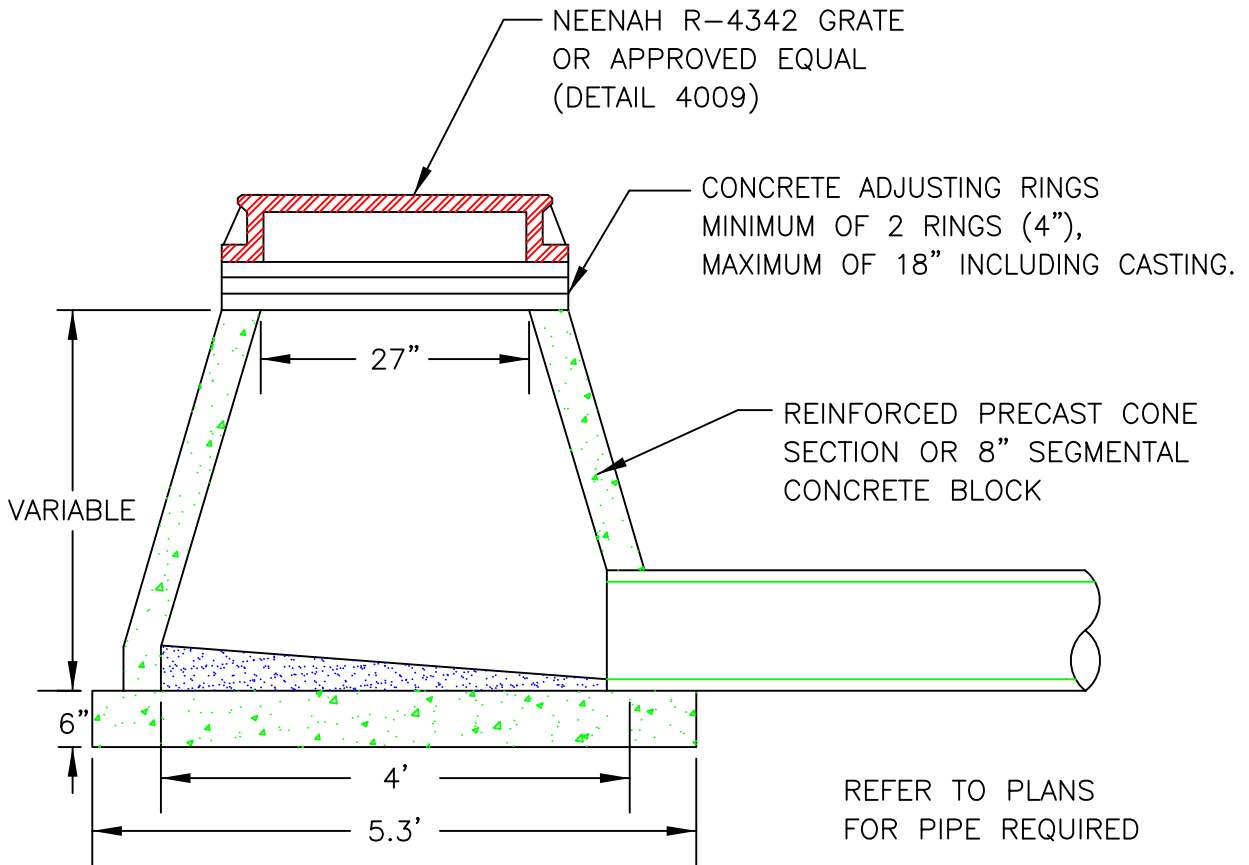
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

4003



27" CATCH BASIN

APPROVED:

REVISION DATE:

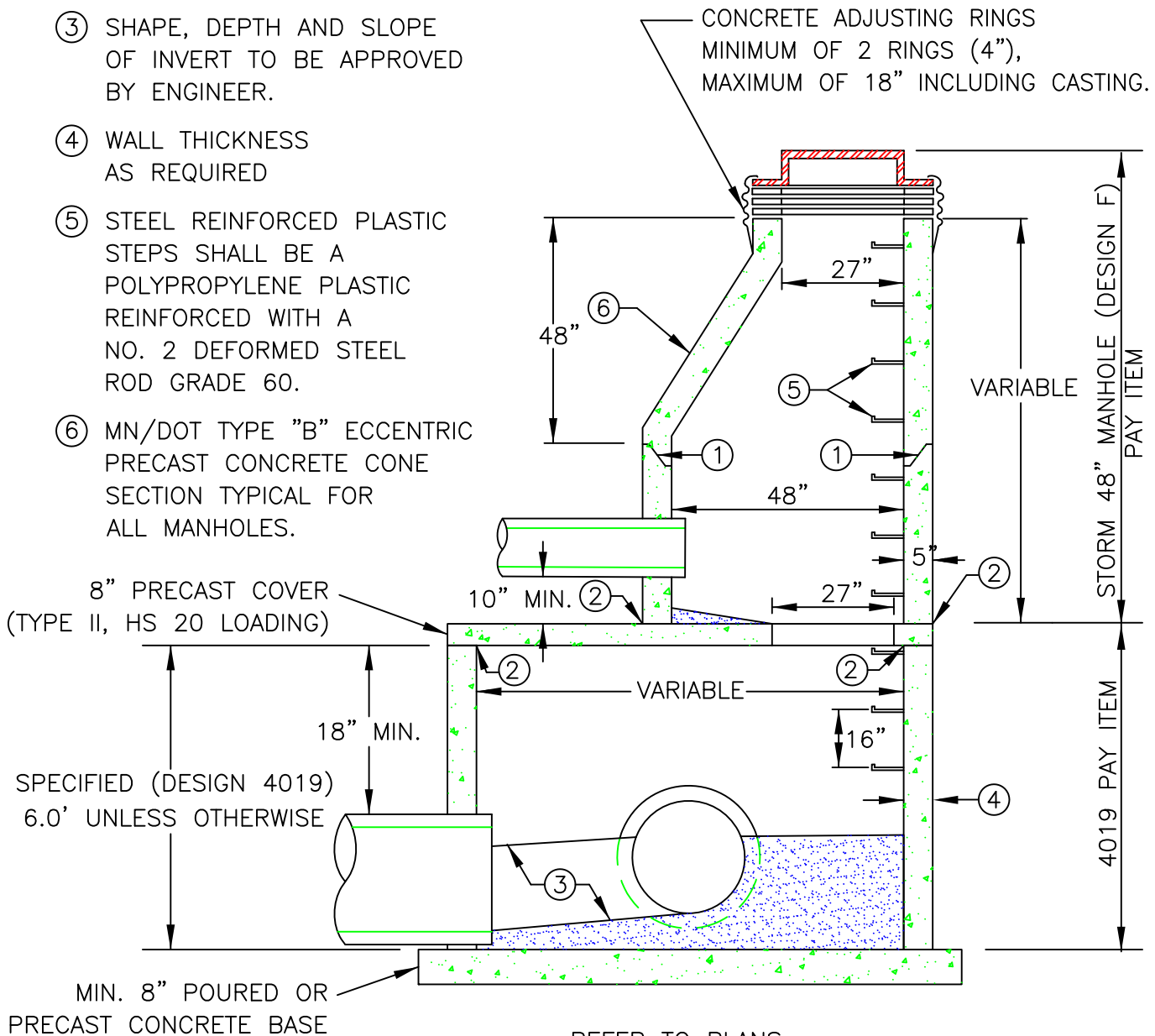
JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

4004

- ① RUBBER GASKET
- ② PLACE CEMENT MORTAR BETWEEN SECTIONS
- ③ SHAPE, DEPTH AND SLOPE OF INVERT TO BE APPROVED BY ENGINEER.
- ④ WALL THICKNESS AS REQUIRED
- ⑤ STEEL REINFORCED PLASTIC STEPS SHALL BE A POLYPROPYLENE PLASTIC REINFORCED WITH A NO. 2 DEFORMED STEEL ROD GRADE 60.
- ⑥ MN/DOT TYPE "B" ECCENTRIC PRECAST CONCRETE CONE SECTION TYPICAL FOR ALL MANHOLES.



REFER TO PLANS FOR PIPE REQUIRED



**MANHOLE
DESIGN 4019/F**

APPROVED:

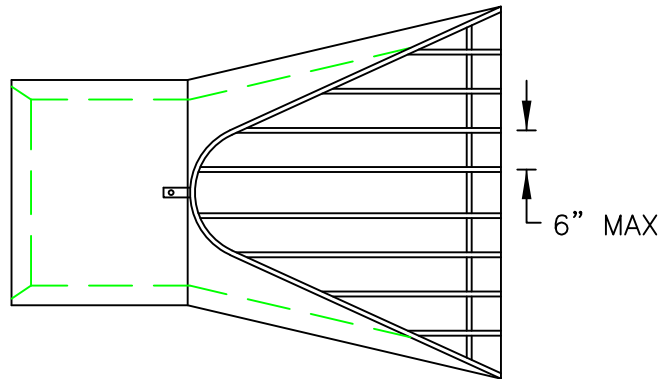
REVISION DATE:

JANUARY 2007

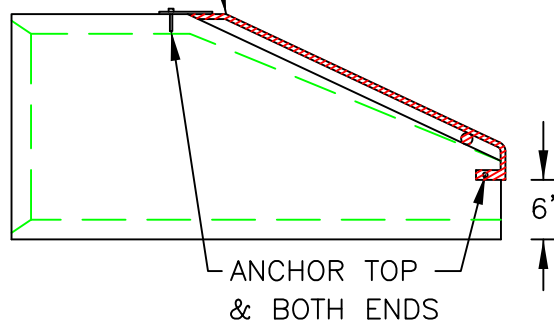
SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

4005



TRANSVERSE & LONGITUDINAL BARS
 1" FOR 21" TO 42" APRONS
 1 1/4" FOR 42" & LARGER APRONS.



NOTE:

ALL TRASH GUARDS SHALL BE GALVANIZED AFTER FABRICATION PER MNDOT SPEC. 3392 & 3394.

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



TRASH GUARD FOR
 END SECTION

APPROVED:

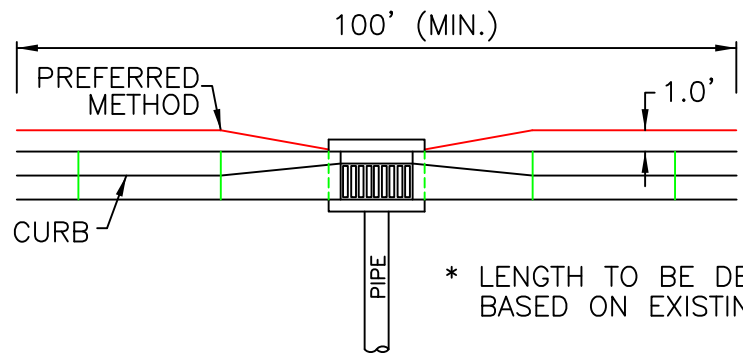
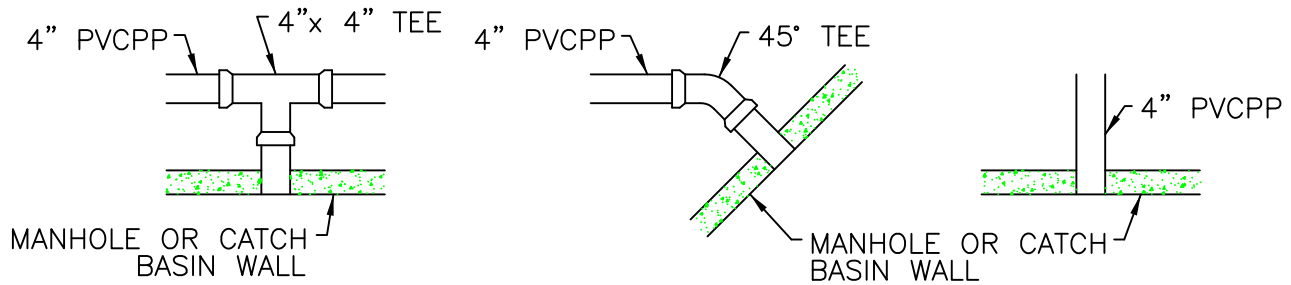
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JANUARY 2007

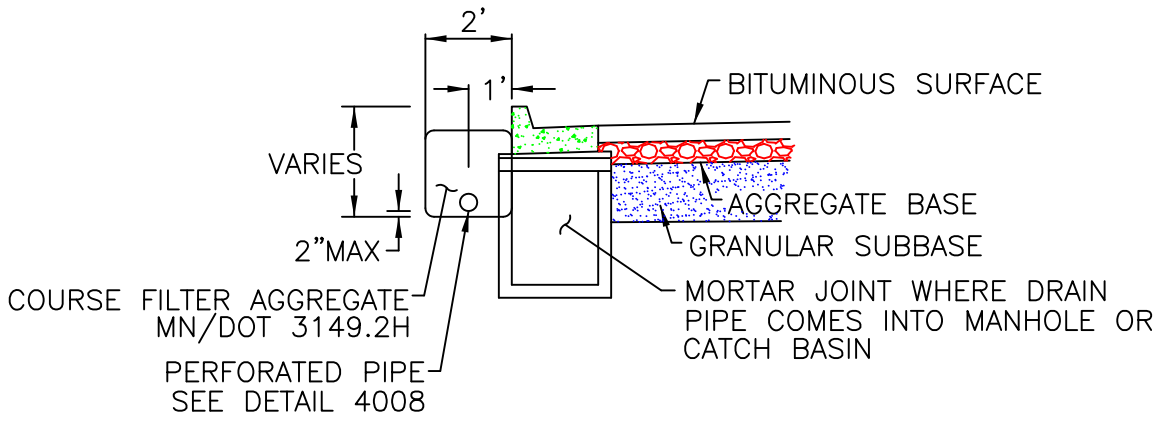
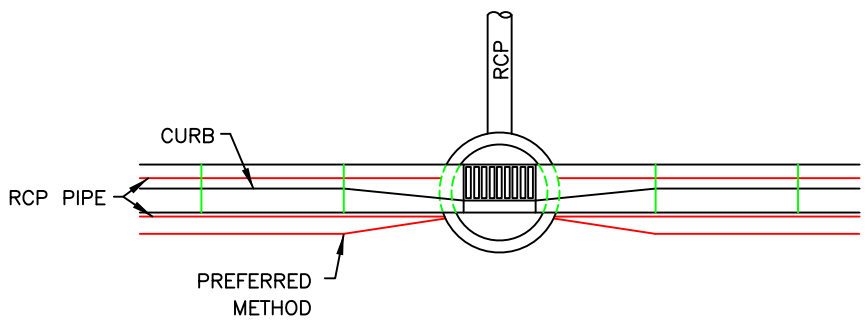
SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

4006



* LENGTH TO BE DETERMINED
BASED ON EXISTING SOIL CONDITIONS



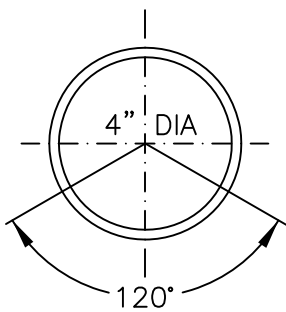
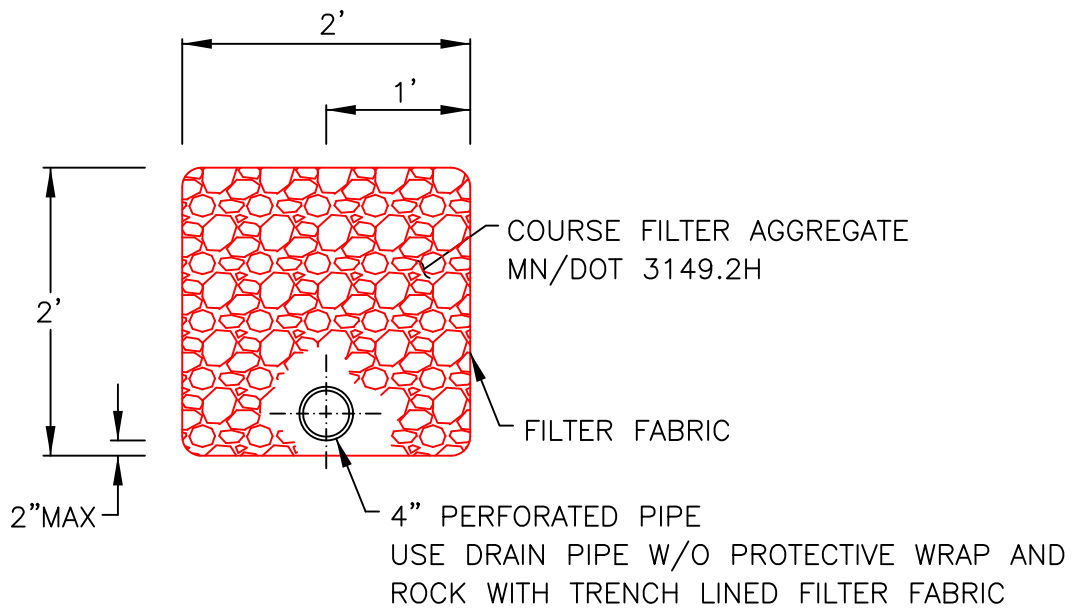
PERFORATED DRAINTILE

APPROVED:

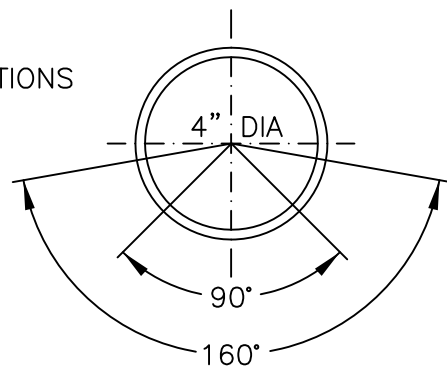
REVISION DATE: MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:
4007



TYPICAL HOLE LOCATIONS



CORRUGATED POLYETHYLENE PIPE WITH
OR WITHOUT PROTECTIVE WRAP

PVCPP WITH OR WITHOUT PROTECTIVE WRAP



PERFORATED DRAINTILE

APPROVED:

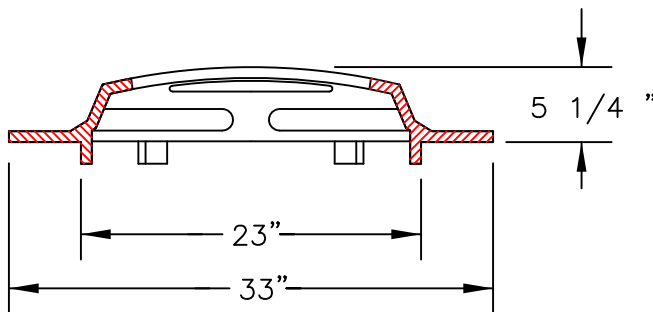
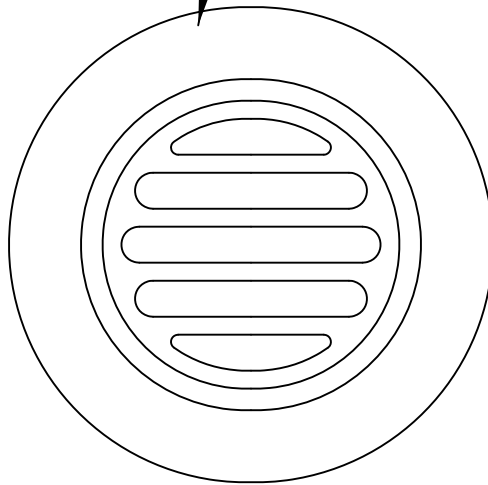
REVISION DATE: JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

4008

NEENAH R-4342 DITCH GRATE,
STOOL TYPE (OR EQUAL)



BEEHIVE MANHOLE GRATE

APPROVED:

REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

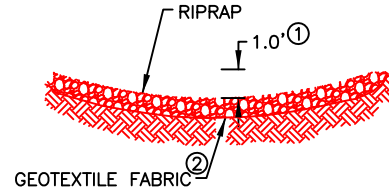
4009

TABLE OF QUANTITIES

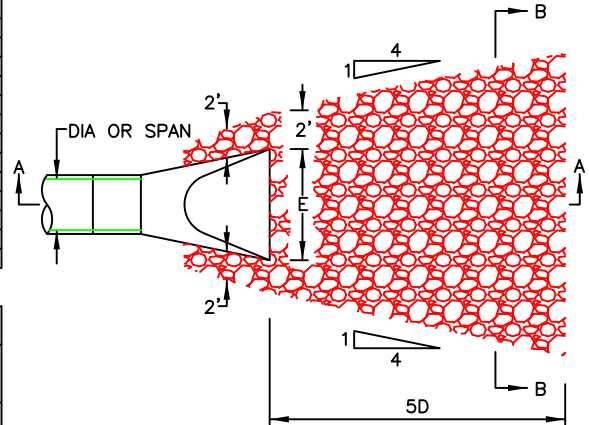
RIPRAP AT RCP OUTLETS						
DIA ROUND PIPE	CLASS III D 50 = 9"		CLASS IV D 50 = 12"		CLASS V D 50 = 15"	
	15" DEPTH RIPRAP	7.5" DEPTH GRANULAR FILTER	18" DEPTH RIPRAP	9" DEPTH GRANULAR FILTER	24" DEPTH RIPRAP	12" DEPTH GRANULAR FILTER
(IN)	(CU YD)	(CU YD)	(CU YD)	(CU YD)	(CU YD)	(CU YD)
12	2.1	1.1	2.6	1.3	3.4	1.7
15	2.9	1.4	3.5	1.7	4.6	2.3
18	3.6	1.8	4.4	2.2	5.8	2.9
21	4.6	2.3	5.6	2.8	7.4	3.7
24	5.8	2.9	6.9	3.5	9.2	4.6
27	6.9	3.4	8.3	4.1	11.0	5.5
30	8.3	4.1	9.9	5.0	13.2	6.6
36	11.0	5.5	13.2	6.6	17.6	8.8
42	13.6	6.8	16.4	8.2	21.8	10.9
48	16.8	8.4	20.1	10.1	26.8	13.4
54	19.8	9.9	23.7	11.9	31.6	15.8
60	23.0	11.5	27.6	13.8	36.8	18.4
66	27.0	13.5	32.4	16.2	43.2	21.6
72	31.1	15.6	37.4	18.7	49.8	24.9
84	40.0	20.0	48.0	24.0	64.0	32.0
90	45.5	22.8	54.6	27.3	72.8	36.4

RIPRAP AT RCP-A OR BOXES OF EQUIVALENT SPAN WIDTH						
SPAN ROUND PIPE	CLASS III D 50 = 9"		CLASS IV D 50 = 12"		CLASS V D 50 = 15"	
	15" DEPTH RIPRAP	7.5" DEPTH GRANULAR FILTER	18" DEPTH RIPRAP	9" DEPTH GRANULAR FILTER	24" DEPTH RIPRAP	12" DEPTH GRANULAR FILTER
(IN)	(CU YD)	(CU YD)	(CU YD)	(CU YD)	(CU YD)	(CU YD)
22	3.6	1.8	4.4	2.2	5.8	2.9
28	5.8	2.9	6.9	3.5	9.2	4.6
36	8.1	4.1	9.8	4.9	13.0	6.5
43	11.0	5.5	13.2	6.6	17.6	8.8
51	13.6	6.8	16.4	8.2	21.8	10.9
58	16.5	8.3	19.8	9.9	26.4	13.2
65	19.8	9.9	23.7	11.9	31.6	15.8
73	23.3	11.6	27.9	14.0	31.2	18.6
88	32.4	16.2	38.9	19.4	51.8	25.9
102	43.5	21.8	52.2	26.1	69.6	34.8
115	44.0	22.0	52.8	26.4	70.4	35.2
122	49.3	24.6	59.1	29.6	78.8	39.4
138	61.3	30.6	73.5	36.8	98.0	49.0
154	74.4	37.2	89.3	44.6	119.0	59.5

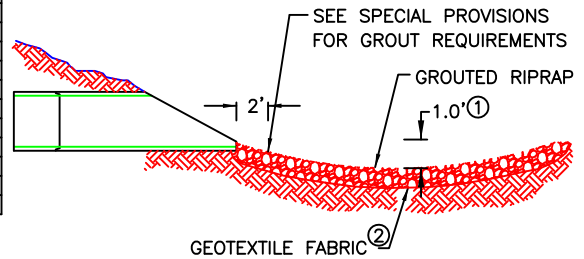
NOTE:
REQUIREMENTS FOR RIPRAP SIZE, THICKNESS,
WILL BE DESIGNATED IN PLANS.



SECTION B-B



PLAN



SECTION A-A

- ① FOR PIPES GREATER THAN OR EQUAL TO 48", USE 2.0'
- ② THE FABRIC SHOULD COVER THE AREA OF THE RIPRAP AND EXTEND UNDER THE CULVERT APRON 3 FEET.

TIE LAST 3 PIPE JOINTS. USE 2 TIE BOLT FASTENERS PER JOINT.



RIPRAP DETAIL

APPROVED:

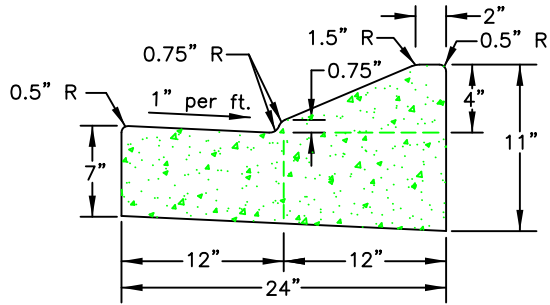
REVISION DATE:

JANUARY 2007

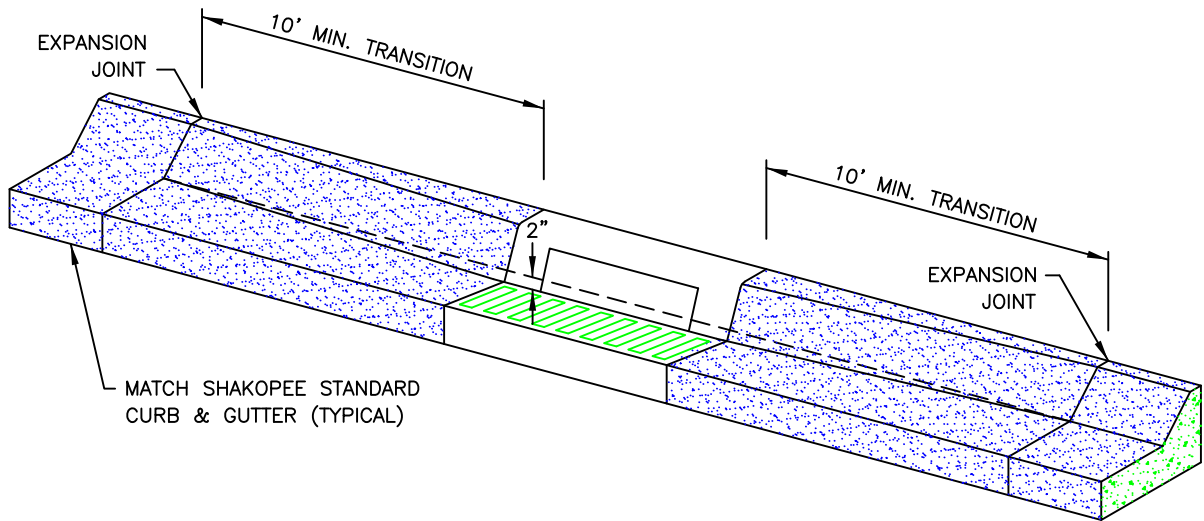
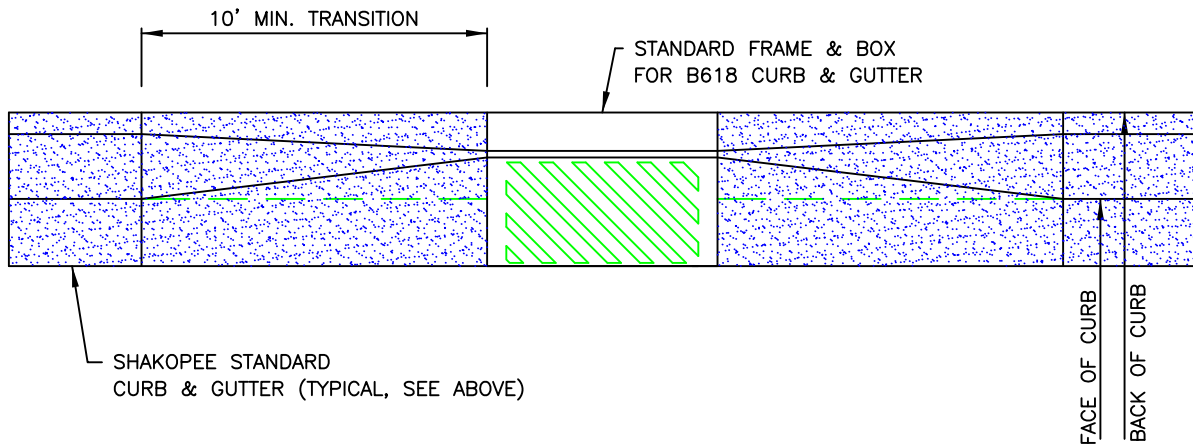
SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO.:

4010



SHAKOPEE STANDARD



NOTE:

STORM SEWER TOP OF CASTING ELEVATION SHOWN ON THE PLANS INCLUDES A 0.15' DEPRESSION FROM THE PROPOSED GUTTER GRADE. THE CONCRETE CURB SHOULD BE TRANSITIONED FROM THE PROPOSED GUTTER GRADE TO THE CASTING ELEVATION 10 FEET ON EACH SIDE OF THE CASTING.



TRANSITION TO B618 CURB
AT CATCH BASIN

APPROVED:

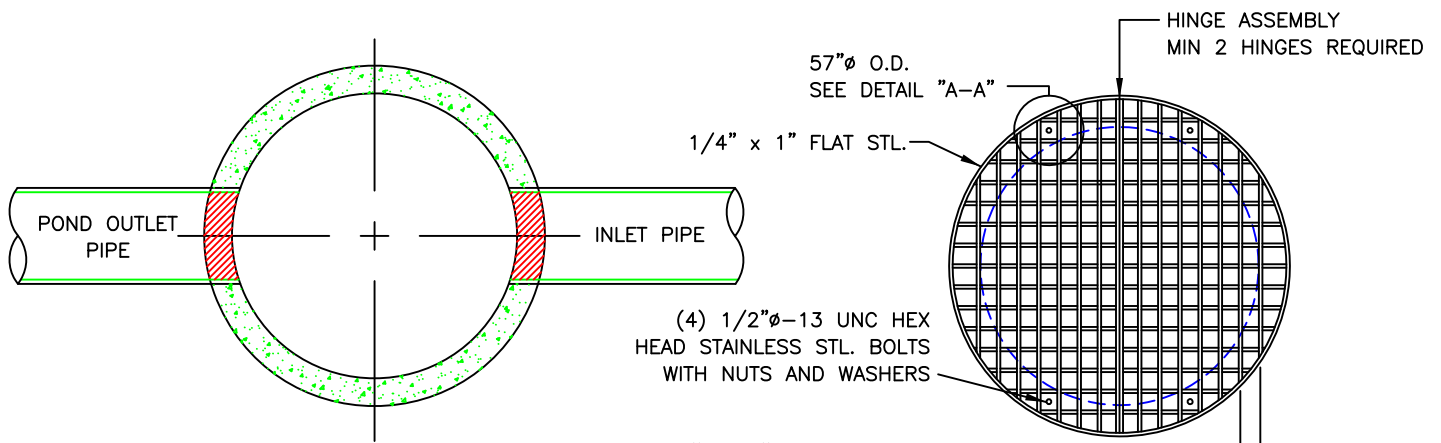
REVISION DATE:

MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

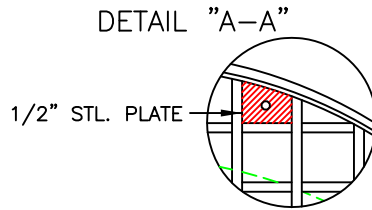
DETAIL NO:

4011

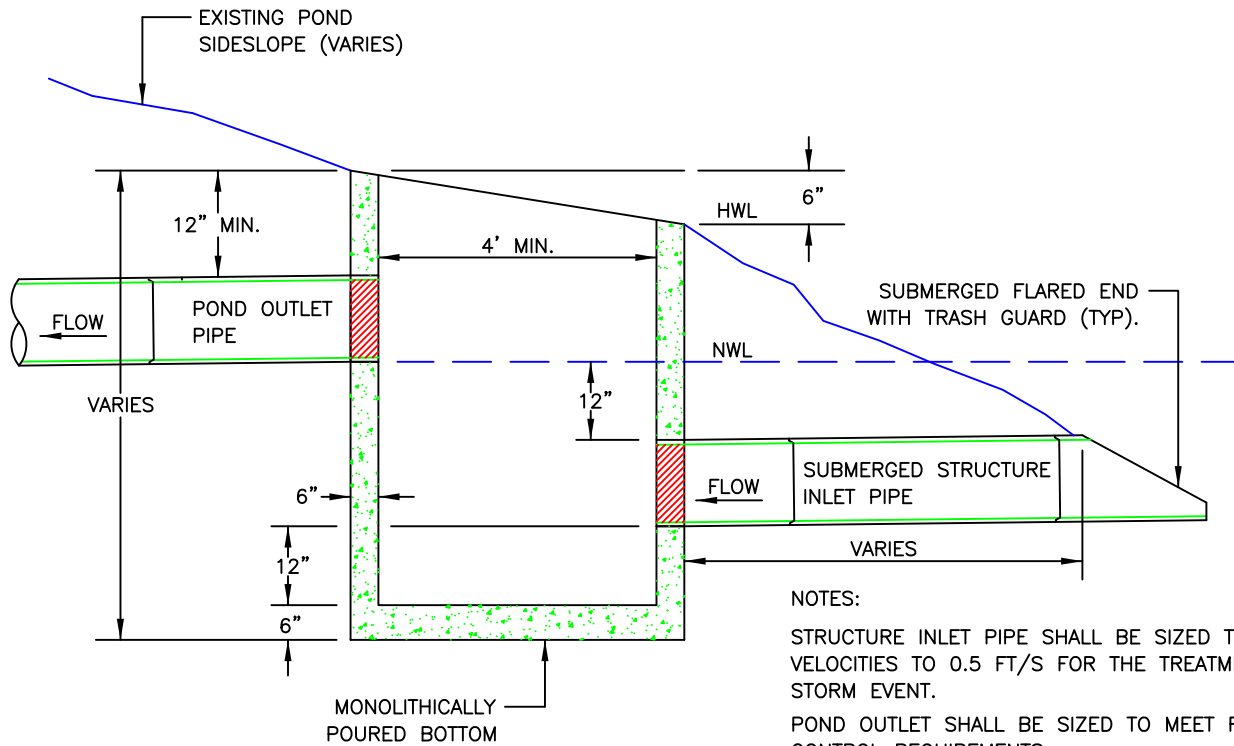


NOTE:

1. GRATE TO BE MADE IN (2) PIECES.
2. ALL METAL SHALL BE HOT-DIPPED GALVANIZED.
3. SEE PLAN FOR ALL ELEVATIONS.



TOP VIEW



NOTES:

- STRUCTURE INLET PIPE SHALL BE SIZED TO LIMIT VELOCITIES TO 0.5 FT/S FOR THE TREATMENT STORM EVENT.
- POND OUTLET SHALL BE SIZED TO MEET RATE CONTROL REQUIREMENTS.
- TIE LAST 3 PIPE JOINTS. USE 2 TIE BOLT FASTENERS PER JOINT.

SECTION VIEW



**POND SKIMMER
STRUCTURE**

APPROVED:

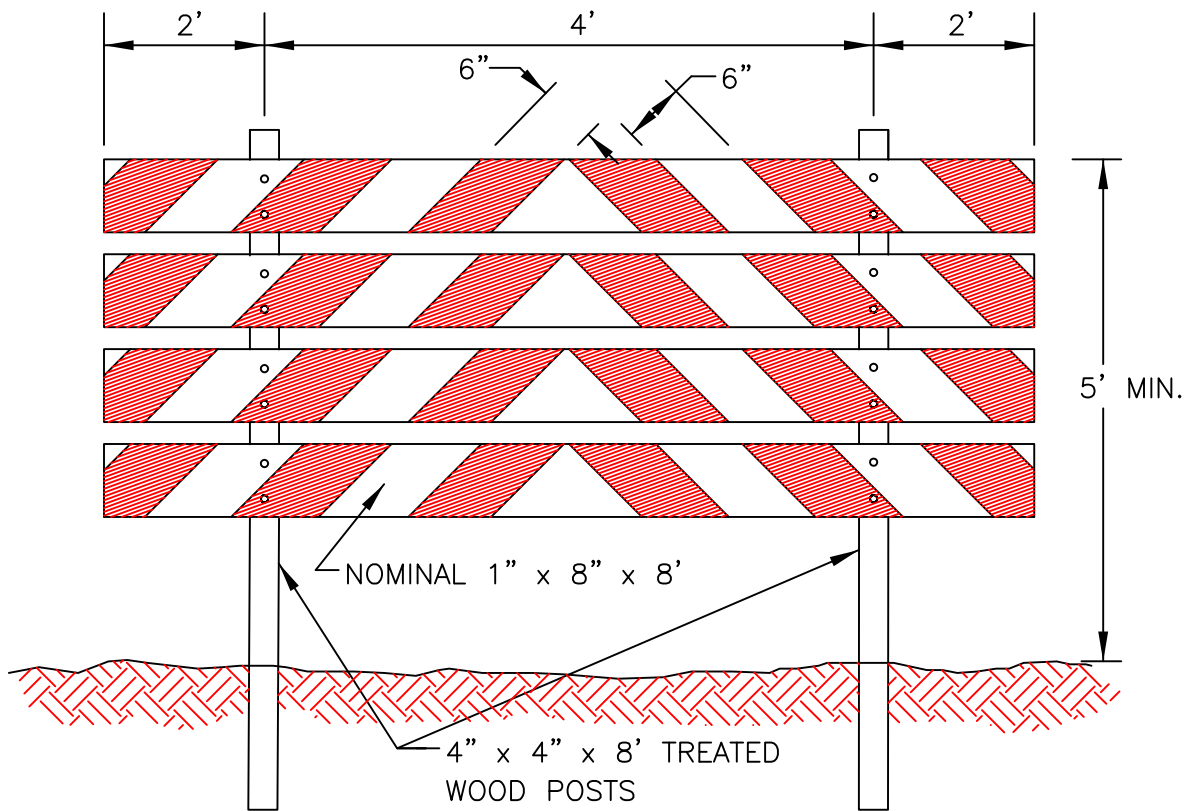
REVISION DATE:

JANUARY 2007

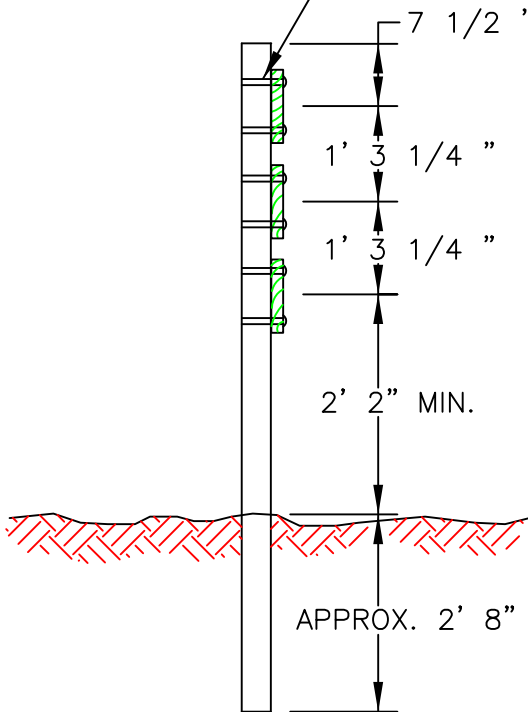
SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

4012



1/2 " x 8" GALV. BOLTS
w/ CUT WASHER



NOTES:

THE BARRICADE BOARD FACE SURFACE SHALL BE RETROREFLECTIVITY IN ALTERNATE SILVER WHITE AND RED STRIPING, USING REFLECTIVE SHEETING CONFORMING TO THE REQUIREMENTS OF SPEC. 3352.2A2a STANDARD NO. 1.

PRIOR TO INSTALLING THE REFLECTIVE SHEETING, THE BARRICADE BOARDS SHALL BE GIVEN A COMPLETE COAT OF WHITE WOOD PRIMER PAINT FOLLOWED BY A SECOND COAT OF WHITE EXTERIOR PAINT APPLIED ONLY TO THE SURFACES NOT COVERED WITH REFLECTIVE SHEETING.

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



TYPICAL BARRICADE

APPROVED:

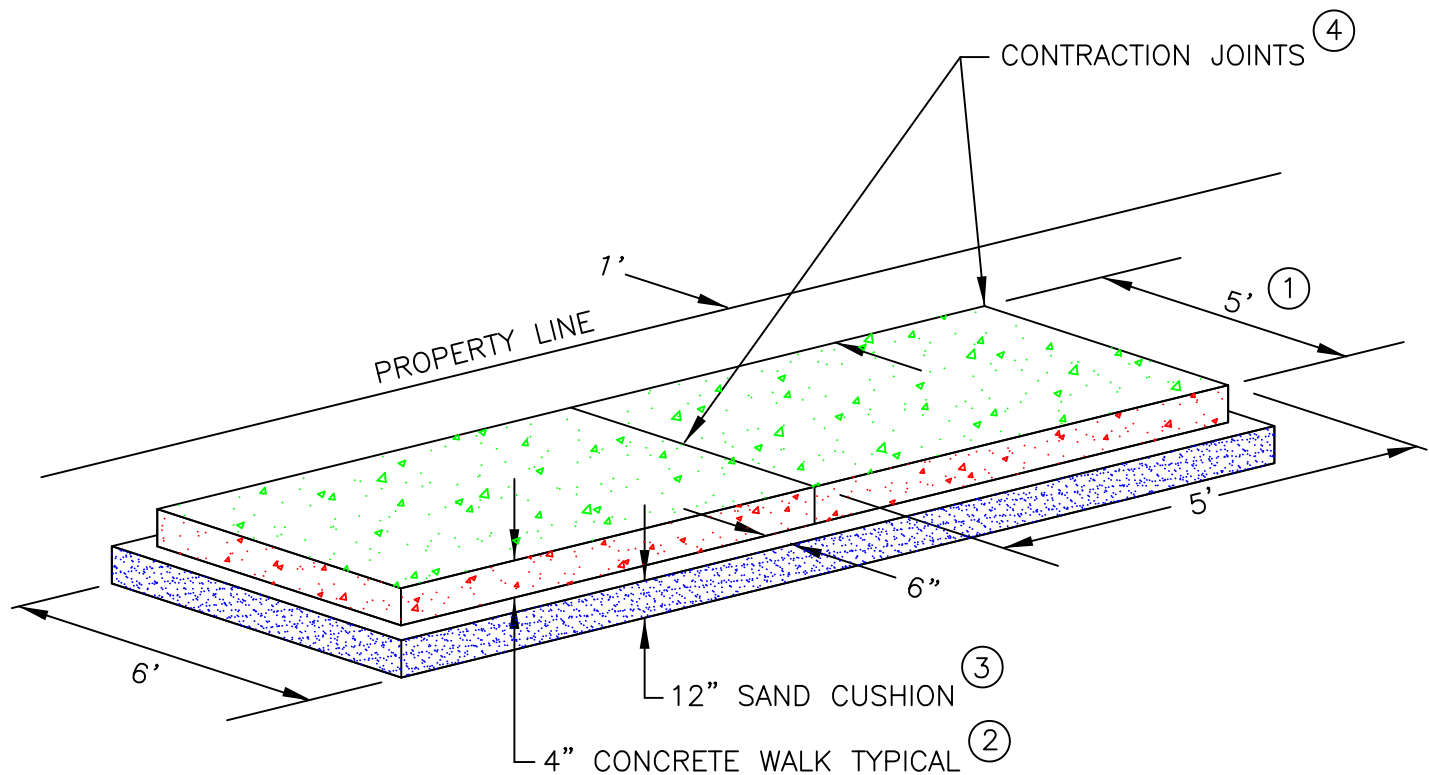
REVISION DATE:

MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

5001



BOULEVARD WIDTH VARIES

SIDEWALK DIMENSIONS

- ① WIDTH - 5'
- ② DEPTH - 4" TYPICAL, 6" AT RESIDENTIAL DRIVEWAYS
6" IN NEW DEVELOPMENTS ADJACENT TO
SHAKOPEE STANDARD SURMOUNTABLE CURB.
- ③ BASE DEPTH - 12" GRANULAR BORROW OR 4" OF
CLASS 5 AGGREGATE (100% CRUSHED LIMESTONE)
- ④ CONTRACTION JOINTS - 5' INTERVALS (APPROX)
- ⑤ EXPANSION JOINTS - 100' INTERVALS (MAX.)



TYPICAL SIDEWALK

APPROVED:

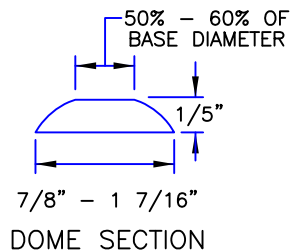
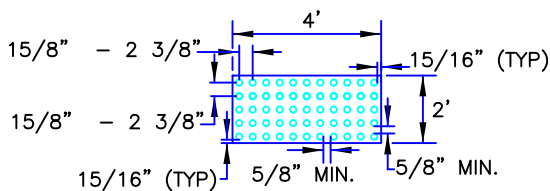
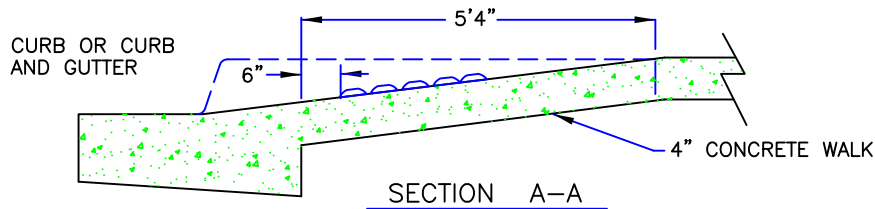
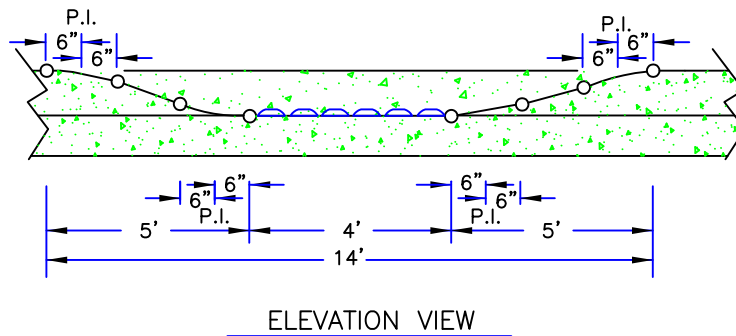
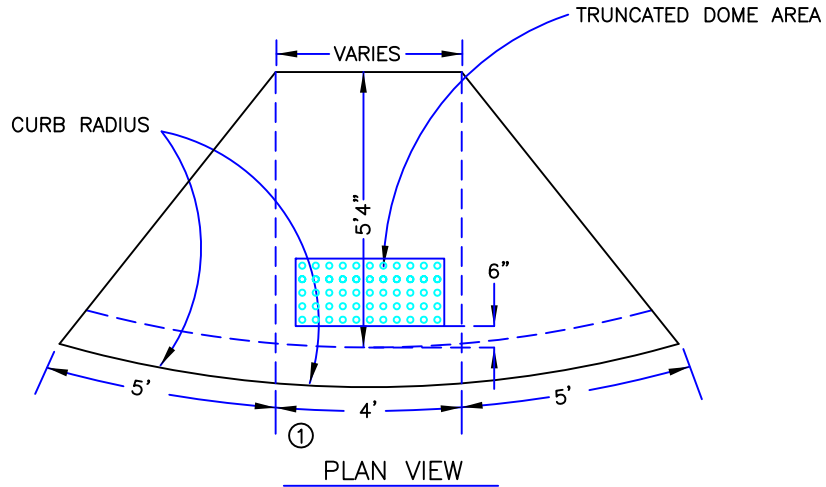
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

5002



① DIMENSIONS MAY BE CHANGED BY THE ENGINEER.

NOTE:

TRUNCATED DOMES SHALL BE NEENAH R-4984 DETECTABLE WARNING PLATE OR APPROVED EQUAL FROM MN/DOT'S APPROVED PRODUCTS LIST. SURFACE APPLIED TRUNCATED DOMES AND STAMPED CONCRETE ARE NOT PERMITTED. TRUNCATED DOME PANEL SHALL BE POWDER-COATED FINISH IN THE COLOR OF BRICK RED.



PEDESTRIAN
CURB RAMP

APPROVED:

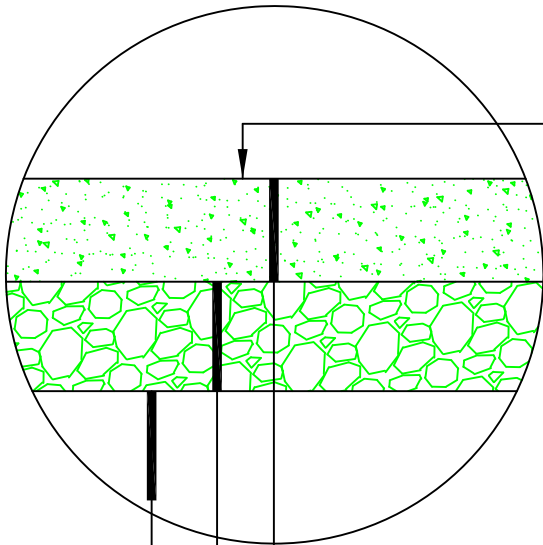
REVISION DATE:

MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

5003



FINISHED GRADE

6" MIN. FOR RESIDENTIAL CONC. DWY/APRON,
10" MIN. FOR COMMERCIAL CONC. DWY/APRON,

8" AGGREGATE BASE, CLASS 5,
100% CRUSHED LIMESTONE (2211)

SUBGRADE PREPARATION (2112)



CONCRETE DRIVEWAY
PAVEMENT

APPROVED:

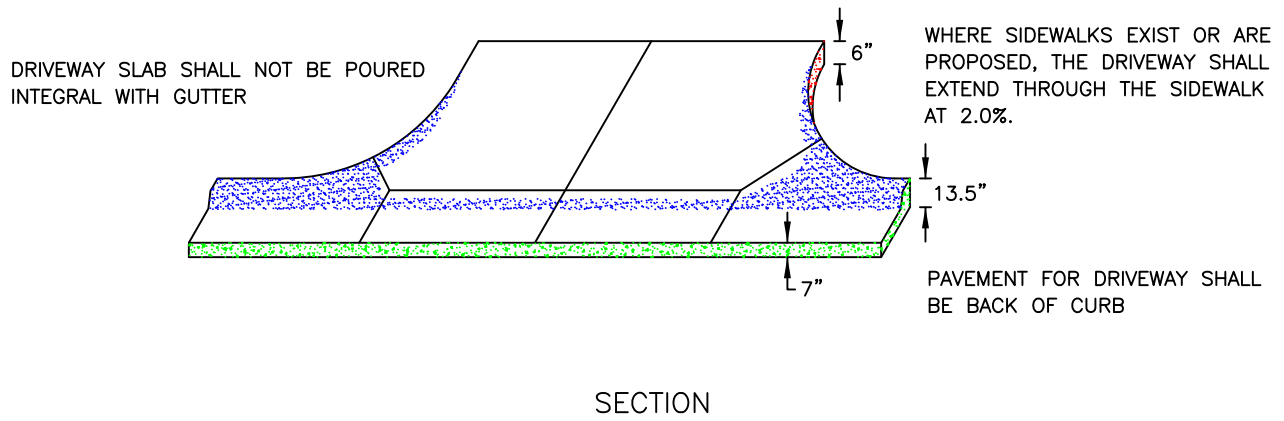
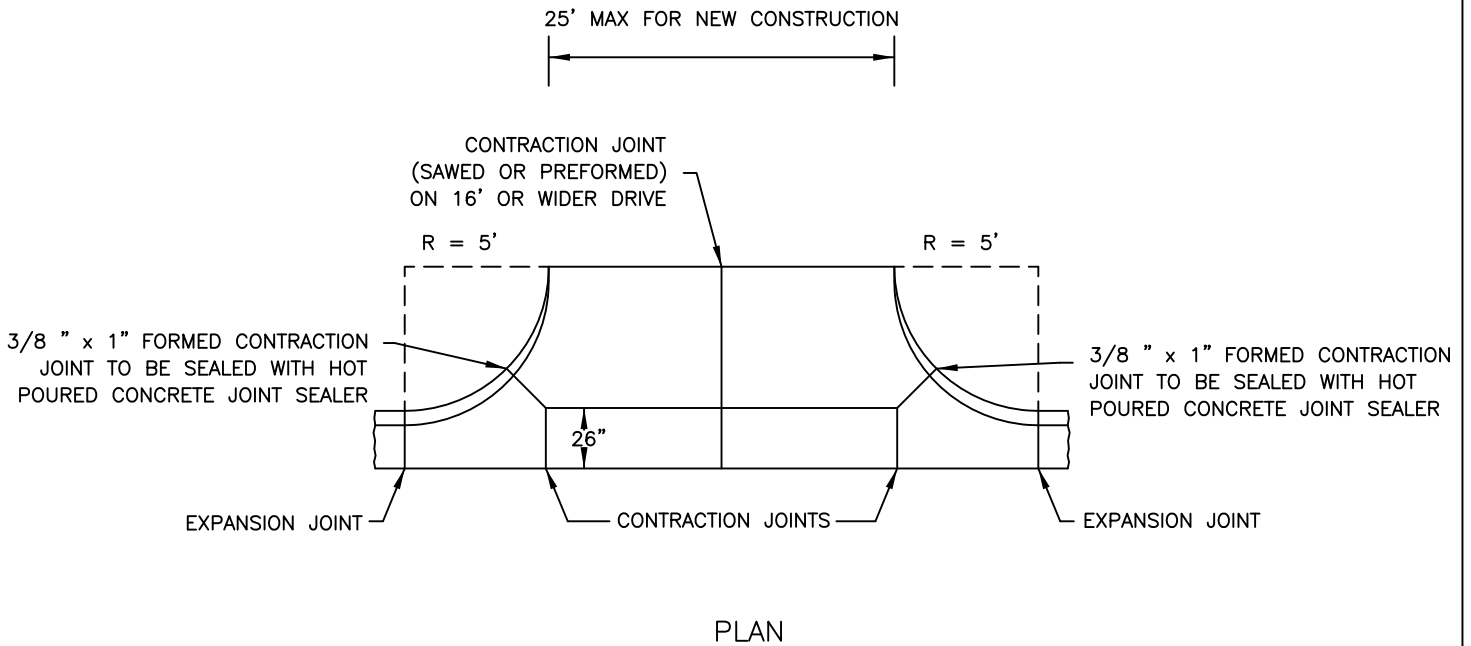
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

5004



RESIDENTIAL DRIVEWAY
ENTRANCE

APPROVED:

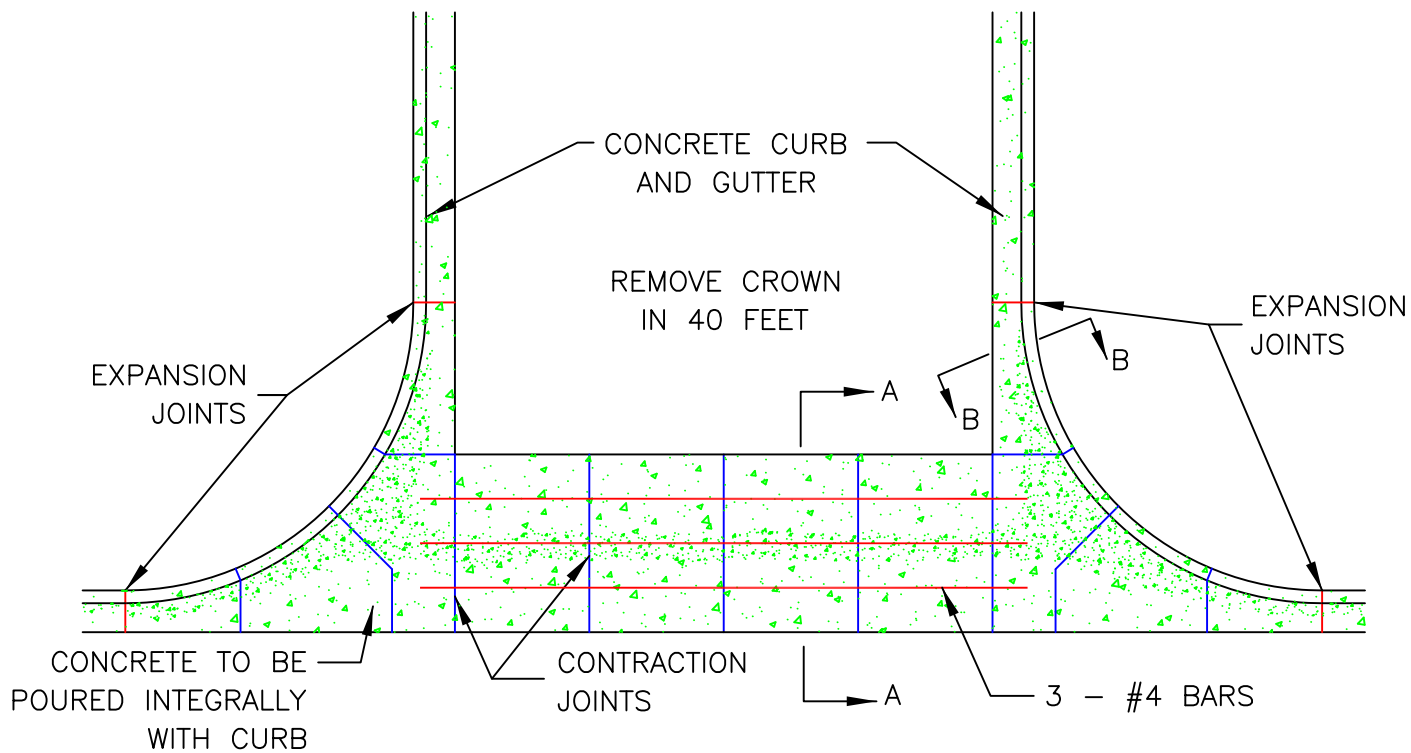
REVISION DATE:

JANUARY 2007

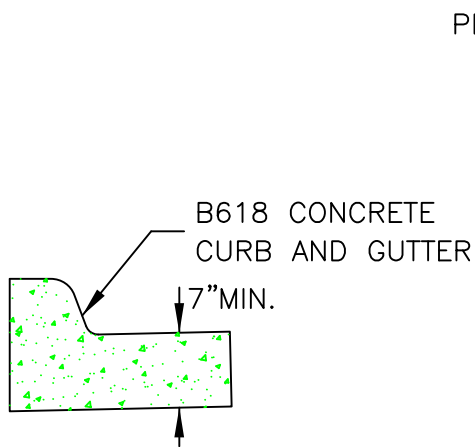
SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

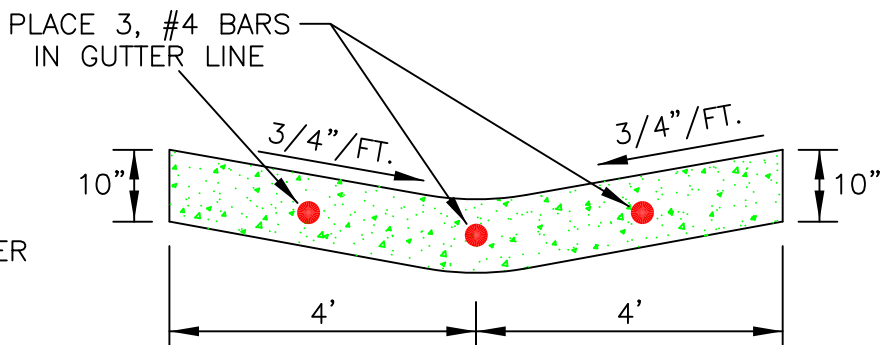
5005



PLAN



SECTION B-B



WHERE STREET GRADE IS 2% OR LESS, INVERT SHALL BE AT NORMAL GUTTER LINE.

SECTION A-A



COMMERCIAL DRIVEWAY AND CROSS PAN

APPROVED:

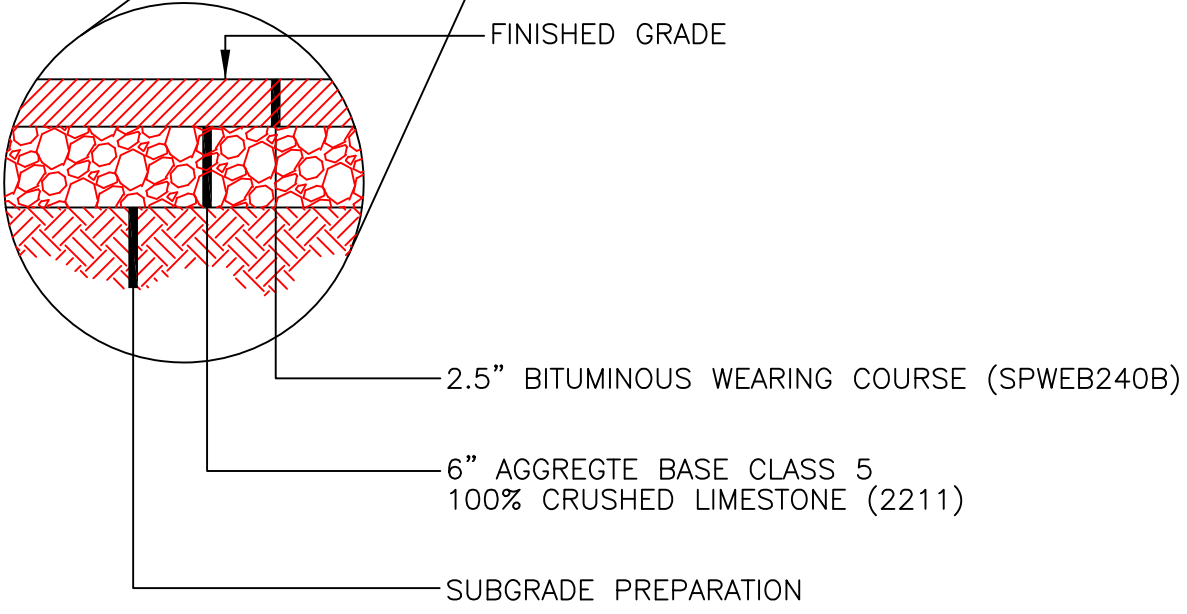
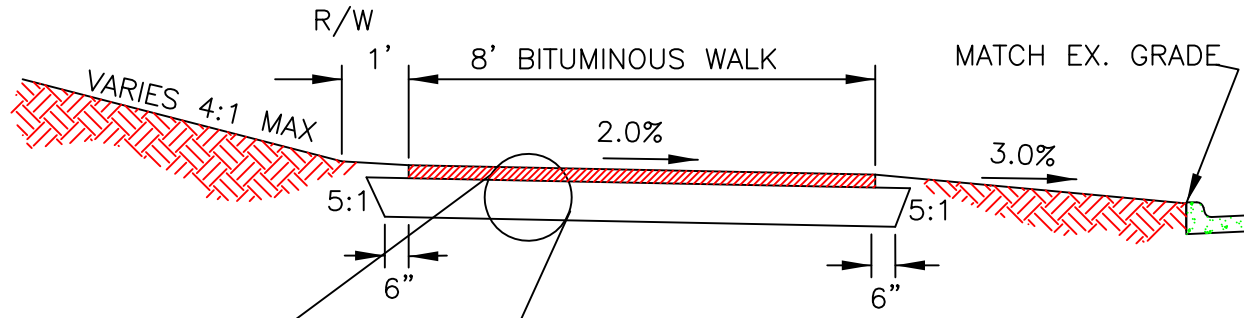
REVISION DATE:

JANUARY 2007

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

5006



BITUMINOUS TRAIL

APPROVED:	
REVISION DATE:	MAY 2010
SHAKOPEE ENGINEERING DEPARTMENT	

DETAIL NO:
5007

TRAFFIC SIGN SPECIFICATIONS

MATERIAL:

ALUMINUM SHALL BE 5052-H38 OR 6061-T6 ALLOY.
GAUGE SHALL BE: 0.080 ON THE LONGEST SIDE UP TO 30"
0.100 ON THE LONGEST SIDE OVER 30"

REFLECTING SHEETING SHALL BE HIGH PERFORMANCE (DG3).

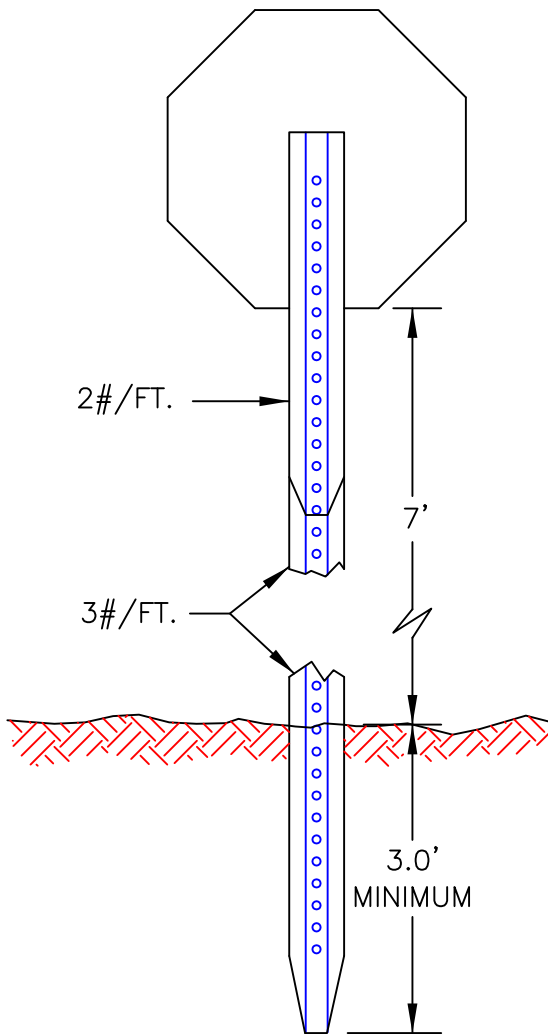
ALL SIGNS CONFORM TO SECTION 3352, SIGNS AND MARKERS STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

CHANNEL POST SPECIFICATIONS

STEEL CHANNEL POSTS SHALL WEIGH 2LB./FT. OR 3LB./FT. AS REQUIRED. POSTS SHALL BE PUNCHED ON 1" CC AND PAINTED GREEN. POSTS SHALL BE OF THE 4-RIB DESIGN. POSTS ARE TO BE 7 FEET IN LENGTH. POSTS MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

BOLTS, NUTS, AND WASHERS

HARDWARE SHALL BE GRADE 5 STEEL BOLTS W/ LOCKING NUTS MINIMUM AND BE GALVANIZED OR CADMIUM PLATED.



NOTE:

TYPICAL SIGN INSTALLATION WHEN STREET NAME SIGNS ARE NOT INSTALLED

ALL SIGNS LOCATED IN CONCRETE MEDIANS SHALL HAVE AN ADDITIONAL BREAKAWAY SYSTEM APPROVED BY THE CITY OF SHAKOPEE PUBLIC WORKS DEPARTMENT PRIOR TO CONSTRUCTION.



TRAFFIC SIGN
INSTALLATION

APPROVED:

REVISION DATE:

MAY 2010

SHAKOPEE ENGINEERING DEPARTMENT

DETAIL NO:

5008