

**TOWNSHIP OF STANFORD
STANDARD DETAIL PLATES**

APPENDIX A
Township of Stanford Standard Detail Plates

SERIES 1 STREET

- 100 Local Residential Rural Street Section – 9 Ton
- 101 Local Residential Urban Street Section – 9 Ton
- 102 Residential Cul-De-Sac Rural Section
- 102A Residential Off-Set Cul-De-Sac Rural Section
- 103 Residential Cul-De-Sac Urban Section
- 103A Residential Off-set Cul-De Sac Section
- 104 Driveway Detail: Rural
- 105 Driveway Detail: Urban
- 106 Mailbox Pullout Rural Section
- 107 Mailbox Location Urban Section
- 108 Mailbox Support

SERIES 2 WATER SYSTEM AND APPURTENANCES

- 200 Water Service Detail (2" and Less)
- 201 Thrust Block Detail
- 202 Typical Resilient Wedge Valve & Box Installation – 10" & under
- 203 Curb Stop Cover for Paved Driveway Installation

SERIES 3 SANITARY SEWER & APPURTENANCES

- 300 Sanitary Sewer Standard Manhole
- 301 Shallow Sanitary Main Service Connection
- 302 Deep Sanitary Main Service Connection
- 303 Insulation for Water & Sanitary Sewer Pipe & Services
- 304 Standard Drop Manhole
- 305 Pipe Jacking Detail
- 306 Manhole Lid
- 307 Forcemain Effluent Sewer Service Connection

SERIES 4 STORM SEWER APPURTENANCES

- 400 Skimmer Structure
- 401 Skimmer Structure with Weir
- 402 Skimmer Structures Screen Cover
- 403 Typical Treatment Pond
- 404 Perforated Drintile Location Detail
- 405 Storm Sewer Standard Manhole
- 406 Slab-Top Manhole
- 407 Standard Storm Catch Basin/Manhole
- 408 48" Diameter Shallow Depth Catch Basin
- 409 Standard Storm Manhole – Yard Inlet
- 410 27" Precast Catch Basin Yard Inlet
- 411 Standard Catch Basin 27"
- 412 Structure Casting (Mn/DOT 4110)
- 413 Storm Cover (Mn/DOT 4110)
- 414 Manhole Step (Mn/DOT 4180)

SERIES 5 EROSION CONTROL & LAND APPURTENANCES

500 Articulate Concrete Block
501 Silt Fence
502 Wood Fiber Blanket Installation
503 Rock Construction Entrance
Mn/DOT 9102D Turf Establishment Areas (Culvert Ends)

SERIES 7 CURB & GUTTER

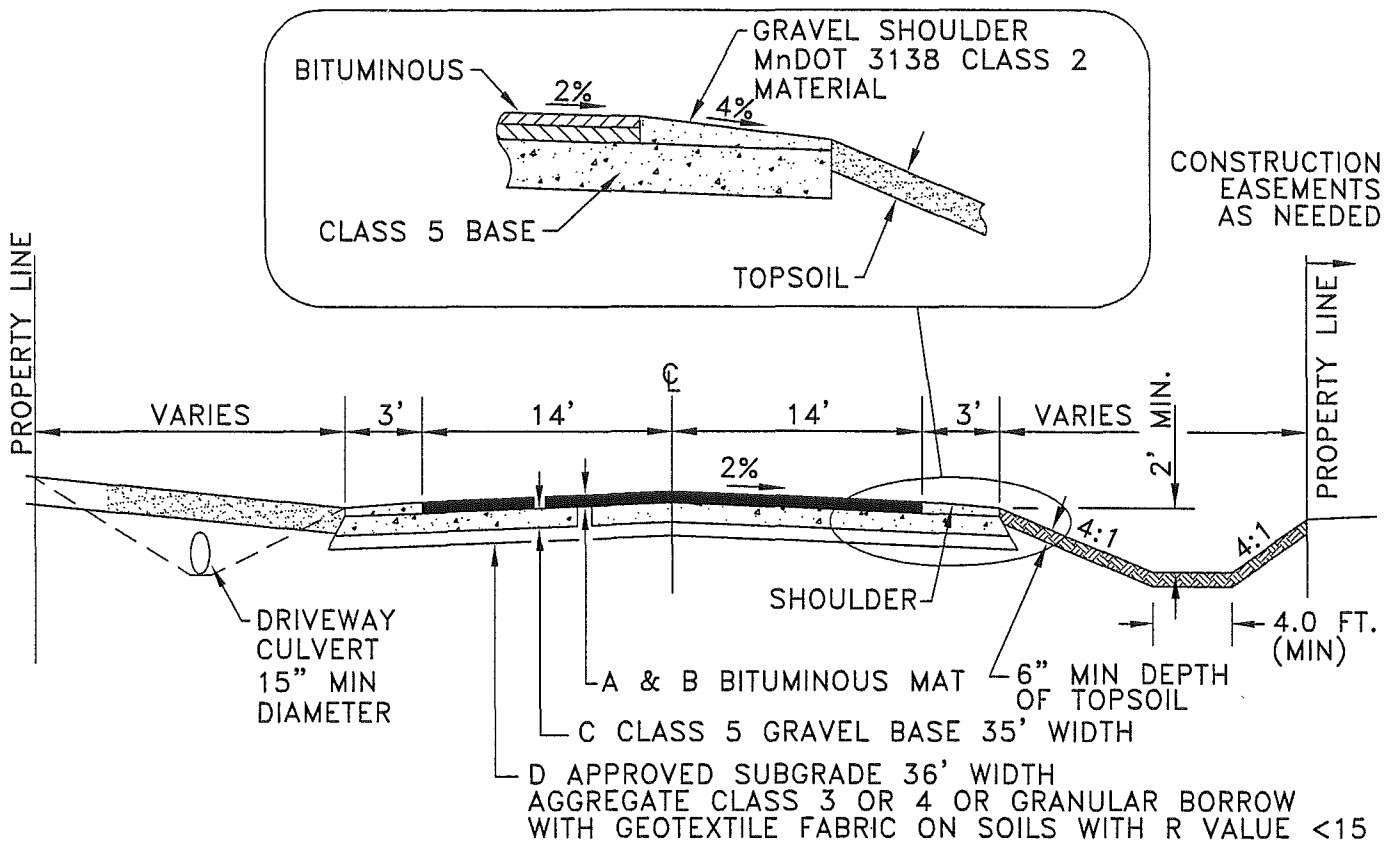
700 Surmountable Concrete Curb & Gutter
701 Curb Transition at Catch Basin
702 Inlet Casting
Mn/DOT 7100 Concrete Curb & Gutter (B618)

SERIES 8 BARRICADES, SIGNS, MARKERS, ETC.

800 Street Sign Installation
Mn/DOT 8002 Permanent Barricade

SERIES 9 UTILITIES

900 Location of Utilities



LEGEND				
	BITUMINOUS SURFACE		AGGREGATE BASE	SUBGRADE
SOIL R VALUE	WEAR 2350 LVWE45030C A*	NON-WEAR 2350 LVNW35030B B*	CLASS 5, OR 6 3138 C*	CLASS 3, OR 4 3138 D*
R-70	** 1 1/2"	** 2"	** 6"	-
R-30	1 1/2"	2"	6"	4"
R-20	1 1/2"	2"	6"	4"
R-15	1 1/2"	2"	6"	8"
R-10	1 1/2"	2"	6"	12"
R-5	1 1/2"	2"	6"	18"

* TO BE REVIEWED AND APPROVED BY QUALIFIED SOILS ENGINEER

** MINIMUM ALLOWABLE DESIGN THICKNESS, 100% CRUSHED

NOTES: R VALUE IS A MEASURE OF EMBANKMENT SOIL RESISTANCE STRENGTH AS DETERMINED BY THE HVEEM STABILOMETER METHOD

CUMULATIVE DESIGN LANE 18 KIP ESAL'S IS THE CUMULATIVE DAMAGE EFFECT OF VEHICLES DURING THE DESIGN LIFE OF A FLEXIBLE PAVEMENT.

LOCAL RESIDENTIAL RURAL STREET SECTION - 9 TON

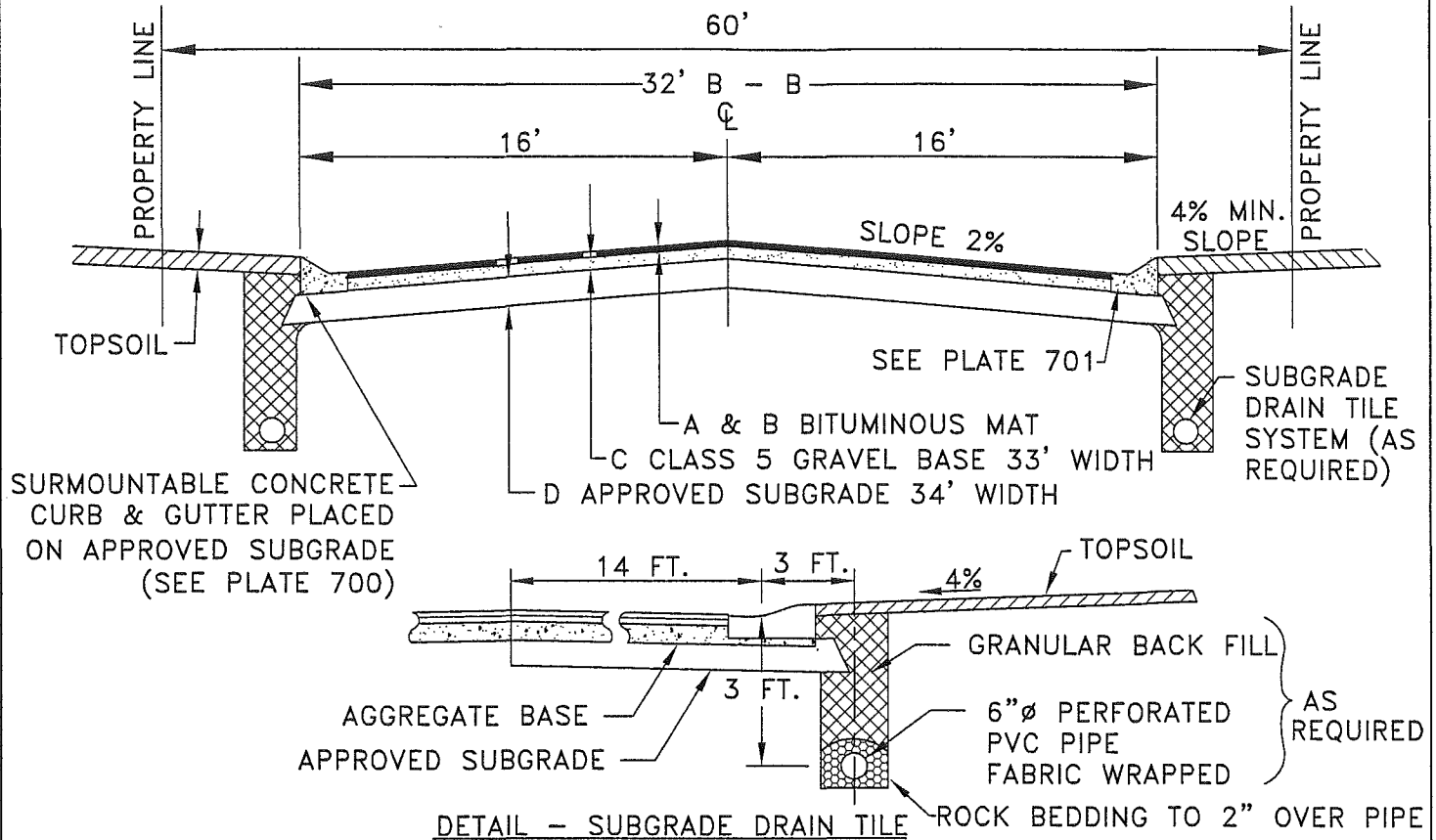
NO SCALE

APPROVED - JDP
08/2009

REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
STR-100



LEGEND				
	BITUMINOUS SURFACE		AGGREGATE BASE	SUBGRADE
SOIL R VALUE	WEAR 2350 LVWE45030C A	NON-WEAR 2350 LVNW35030B B	CLASS 5, OR 6 3138 C*	CLASS 3, OR 4 3138 D*
R-70	** 1 1/2"	** 2"	** 6"	-
R-30	1 1/2"	2"	6"	4"
R-20	1 1/2"	2"	6"	4"
R-15	1 1/2"	2"	6"	6"
R-10	1 1/2"	2"	6"	12"
R-5	1 1/2"	2"	6"	18"

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CUMULATIVE DESIGN LANE 18 KIP ESAL'S IS THE CUMULATIVE DAMAGE EFFECT OF VEHICLES DURING THE DESIGN LIFE OF A FLEXIBLE PAVEMENT.

LOCAL RESIDENTIAL URBAN STREET SECTION - 9 TON

NO SCALE

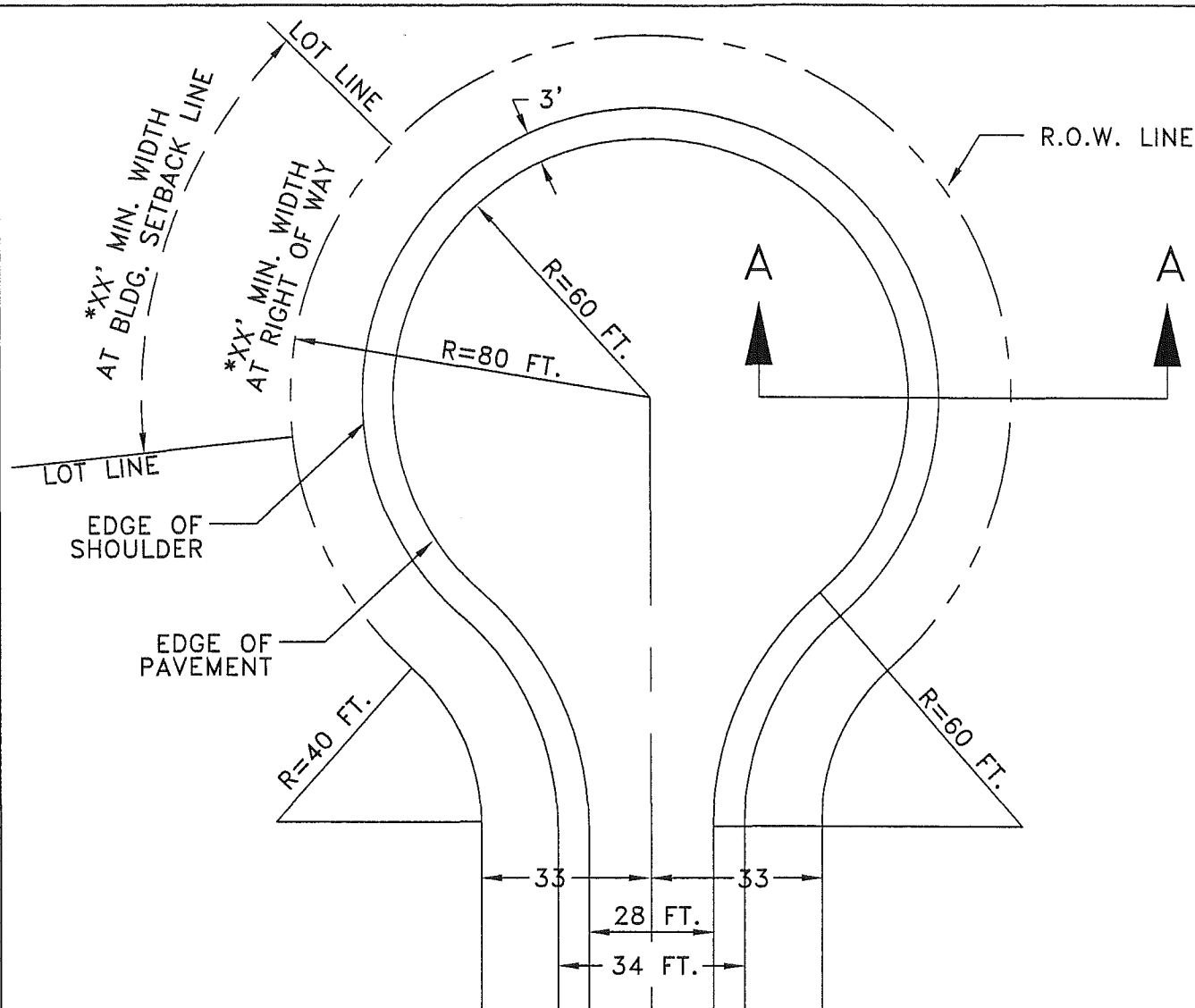
APPROVED - JDP

08/2009

REVISED

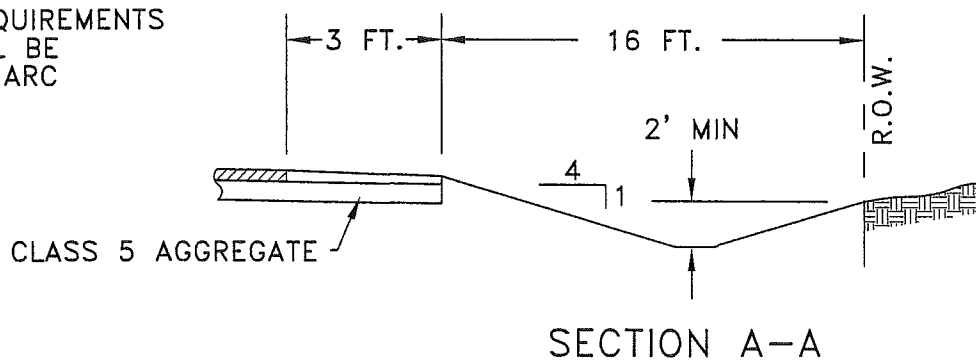
STANFORD TOWNSHIP

STANDARD PLATE NO.
STR-101



NOTE:

* MINIMUM LOT WIDTH REQUIREMENTS ON CUL-DE-SAC SHALL BE MEASURED ALONG THE ARC AS SHOWN.



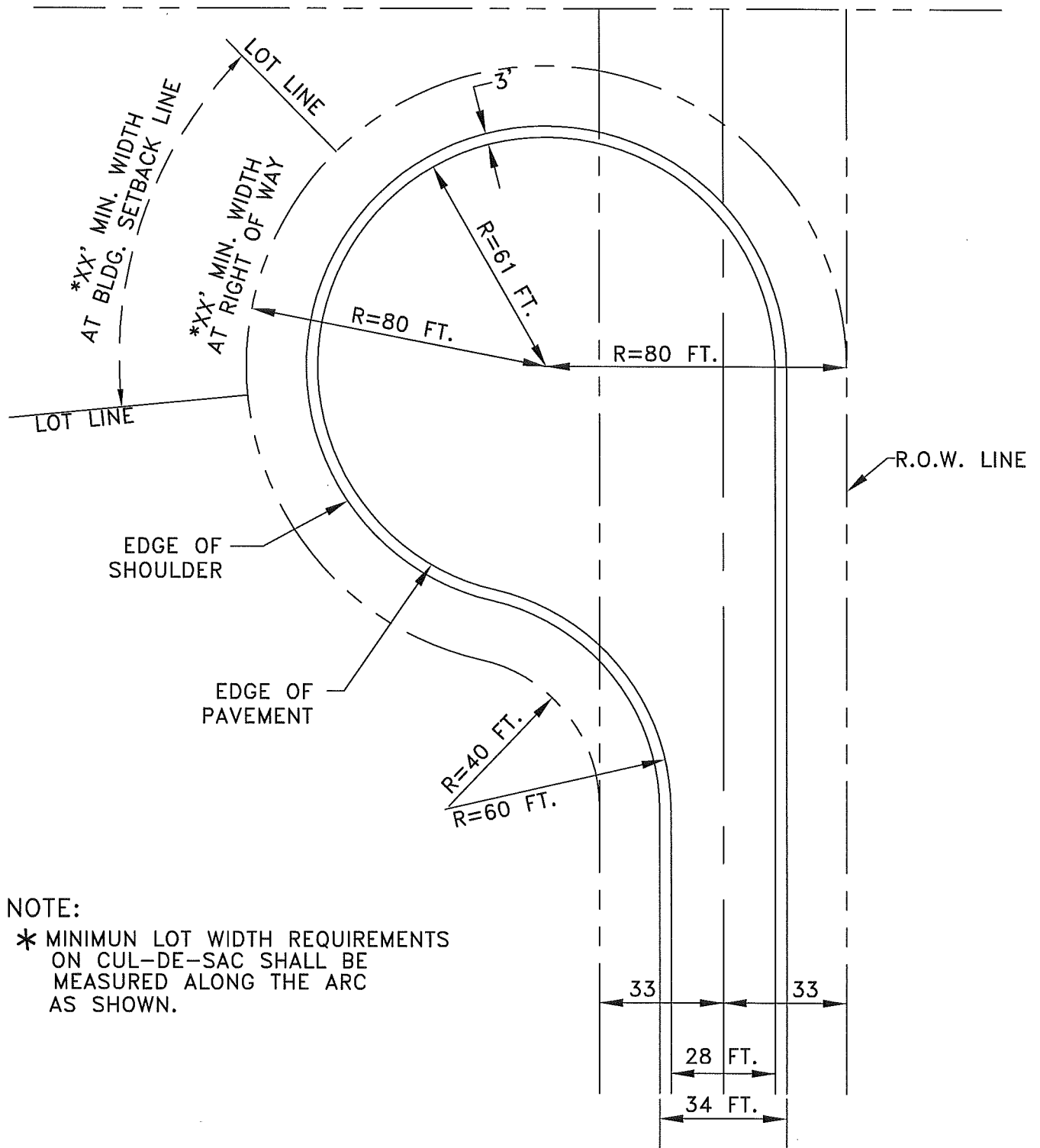
RESIDENTIAL CUL DE SAC RURAL SECTION

NO SCALE

APPROVED - JDP
08/2009
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STANFORD TOWNSHIP

STANDARD PLATE NO.
STR-102



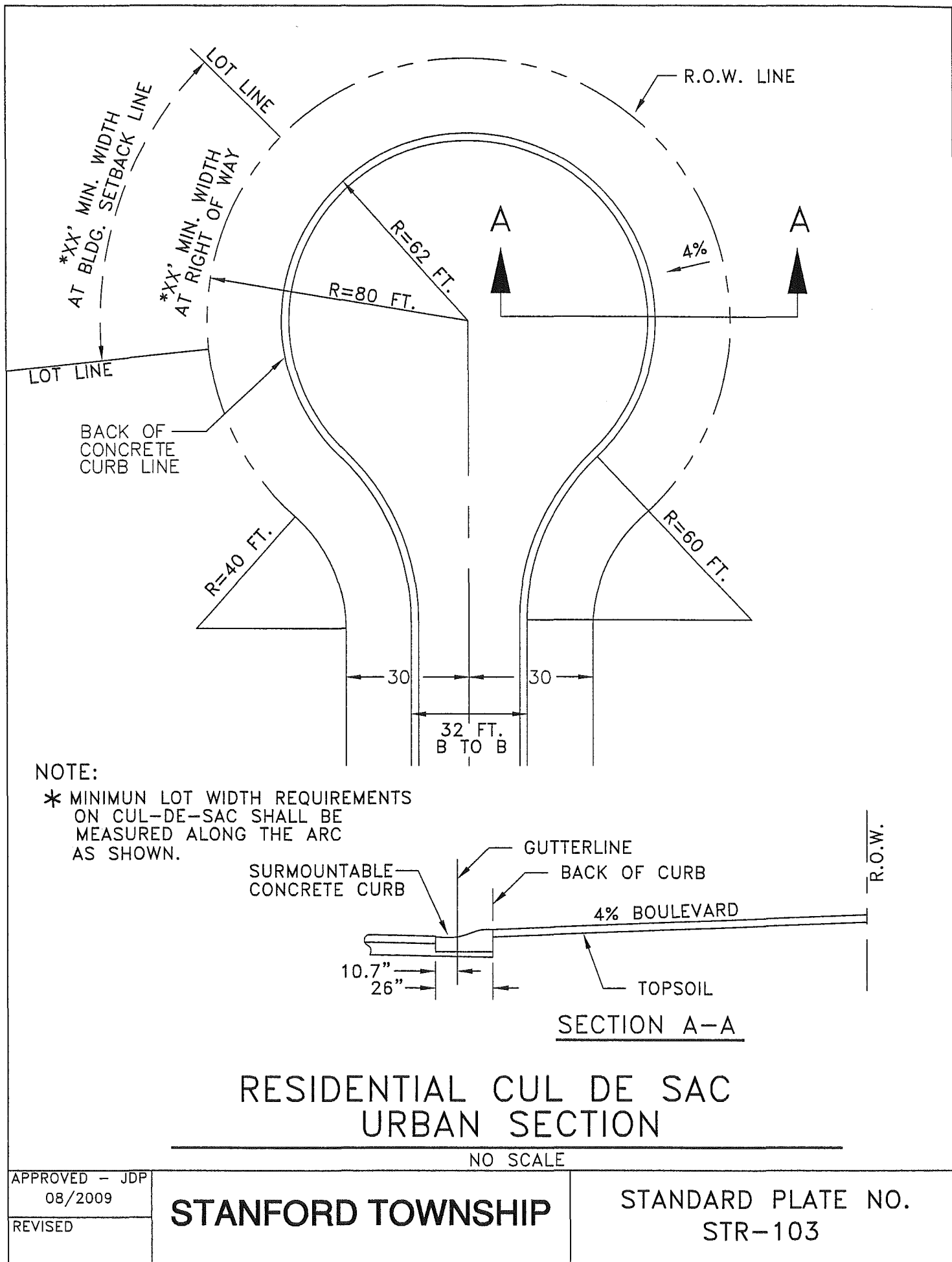
RESIDENTIAL CUL DE SAC RURAL SECTION

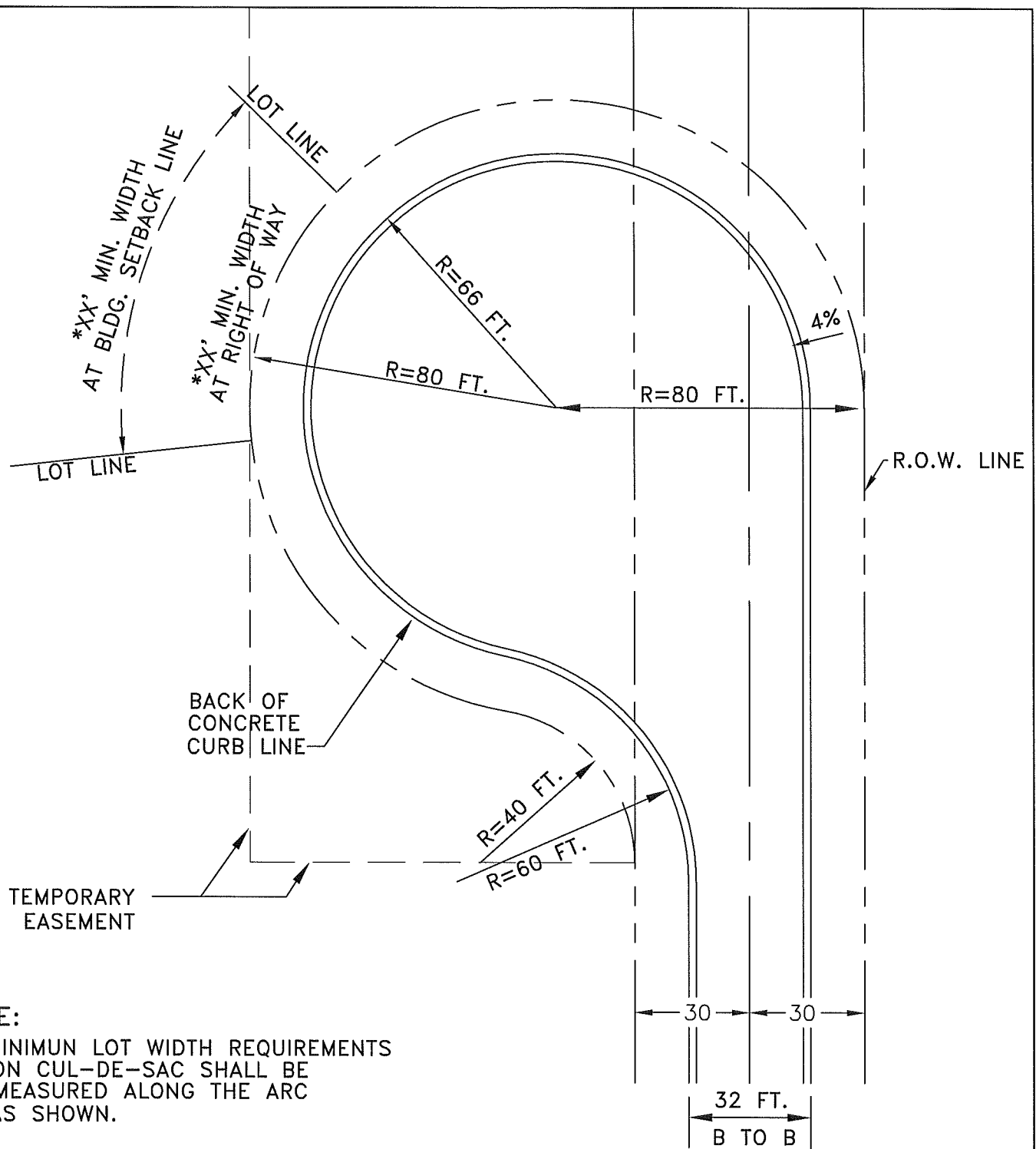
NO SCALE

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08/2009
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STANFORD TOWNSHIP

STANDARD PLATE NO.
STR-102A





NOTE:

- * MINIMUM LOT WIDTH REQUIREMENTS ON CUL-DE-SAC SHALL BE MEASURED ALONG THE ARC AS SHOWN.

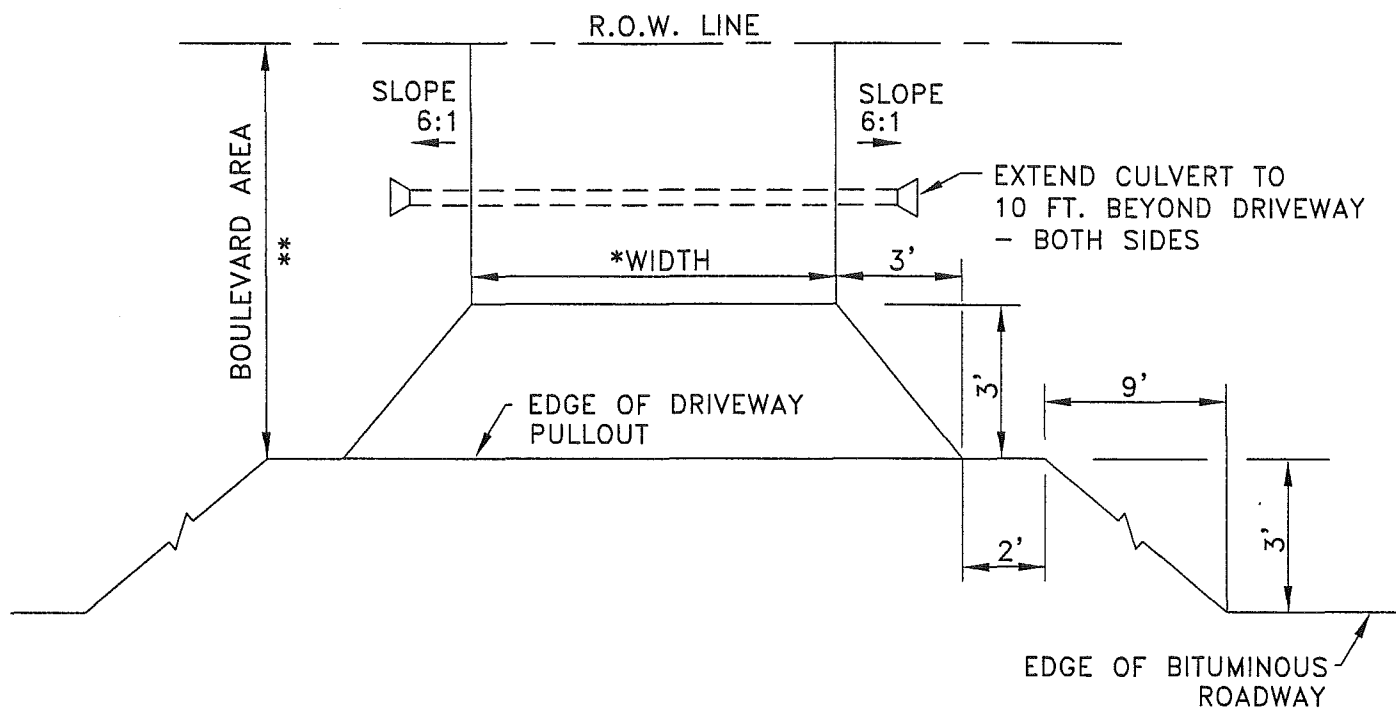
RESIDENTIAL CUL DE SAC URBAN SECTION

NO SCALE

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08/2009
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STANFORD TOWNSHIP

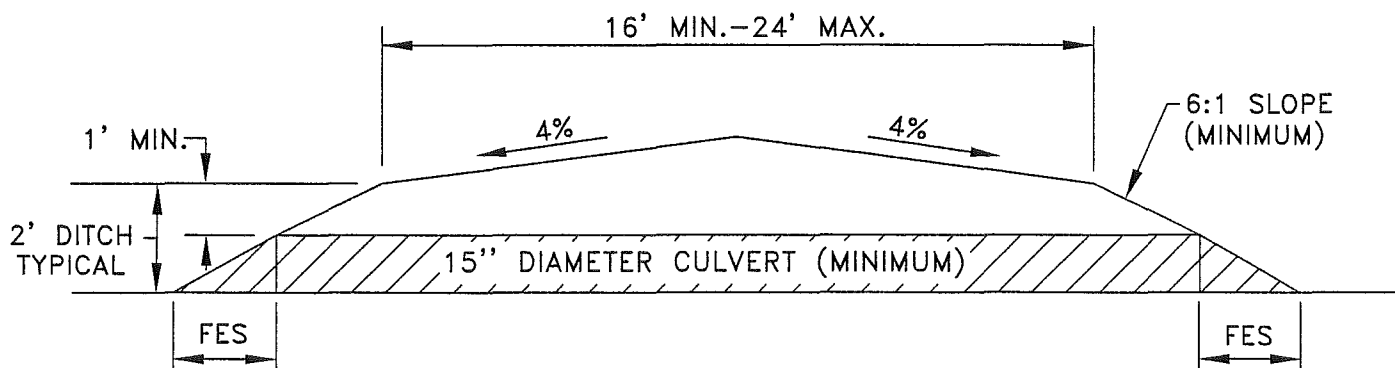
STANDARD PLATE NO.
STR-103A



* STANDARD WIDTH - 16 FT.
MAXIMUM WIDTH - 24 FT.

** DRIVEWAYS PAVED TO R/W OR HOUSE FRONT

PLAN VIEW



CROSS SECTION VIEW

RURAL DRIVEWAY SECTION

NO SCALE

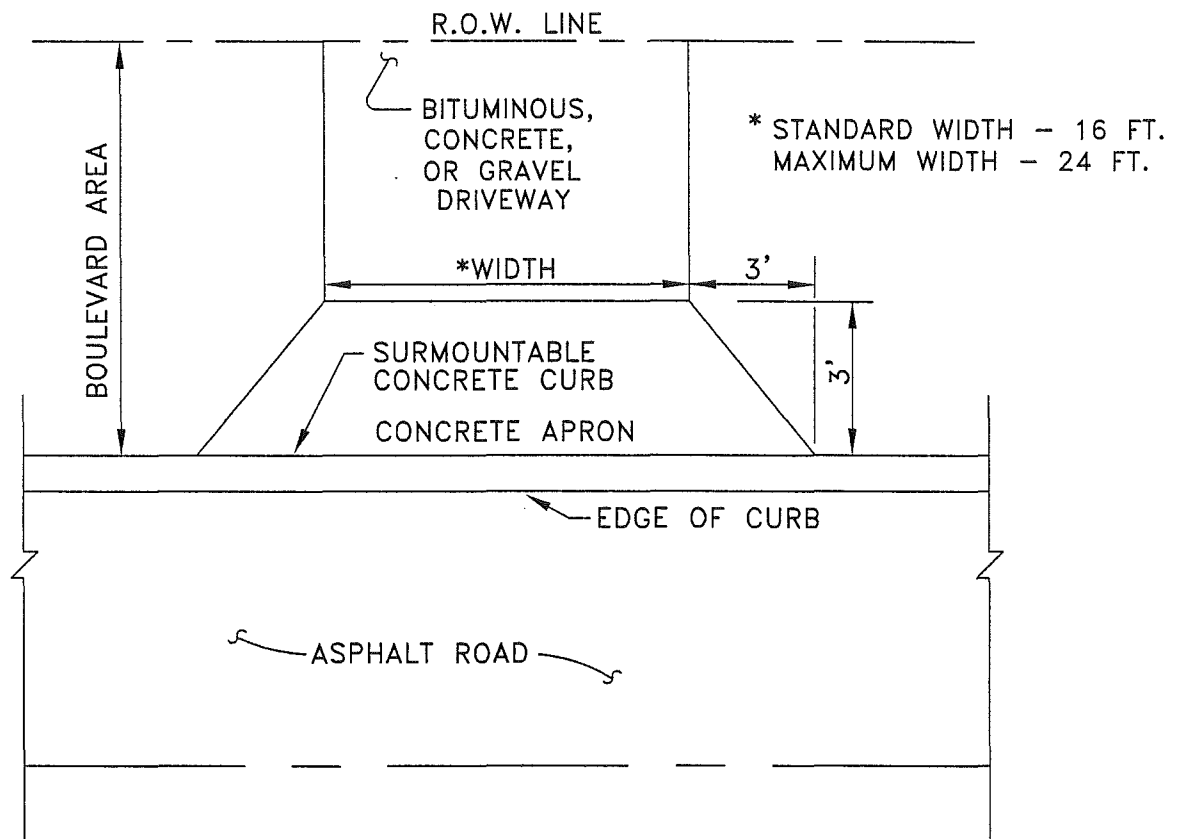
APPROVED - JDP

08/2009

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STANFORD TOWNSHIP

STANDARD PLATE NO.
STR-104



URBAN DRIVEWAY SECTION

NO SCALE

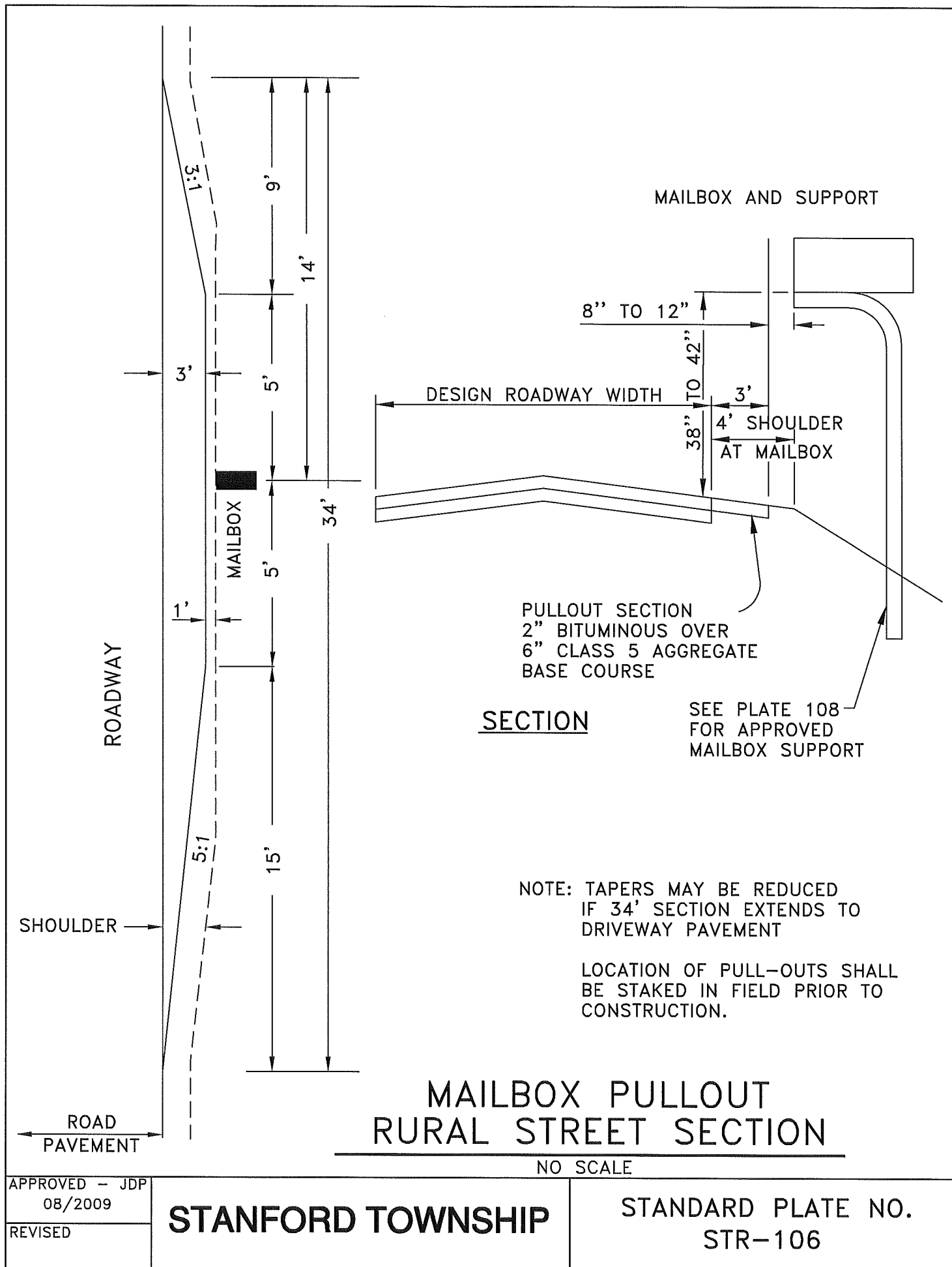
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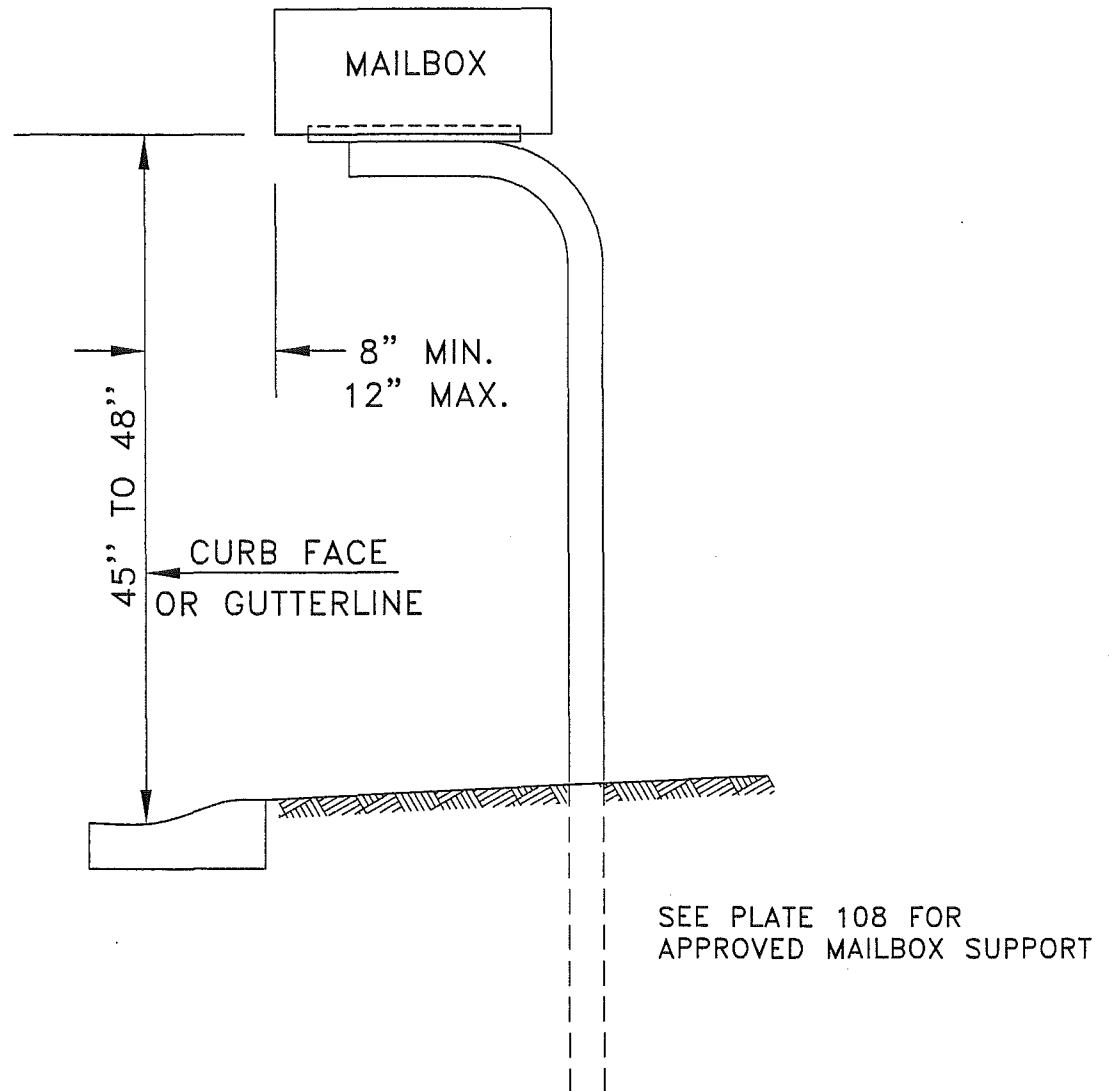
08/2009

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STANFORD TOWNSHIP

STANDARD PLATE NO.
STR-105





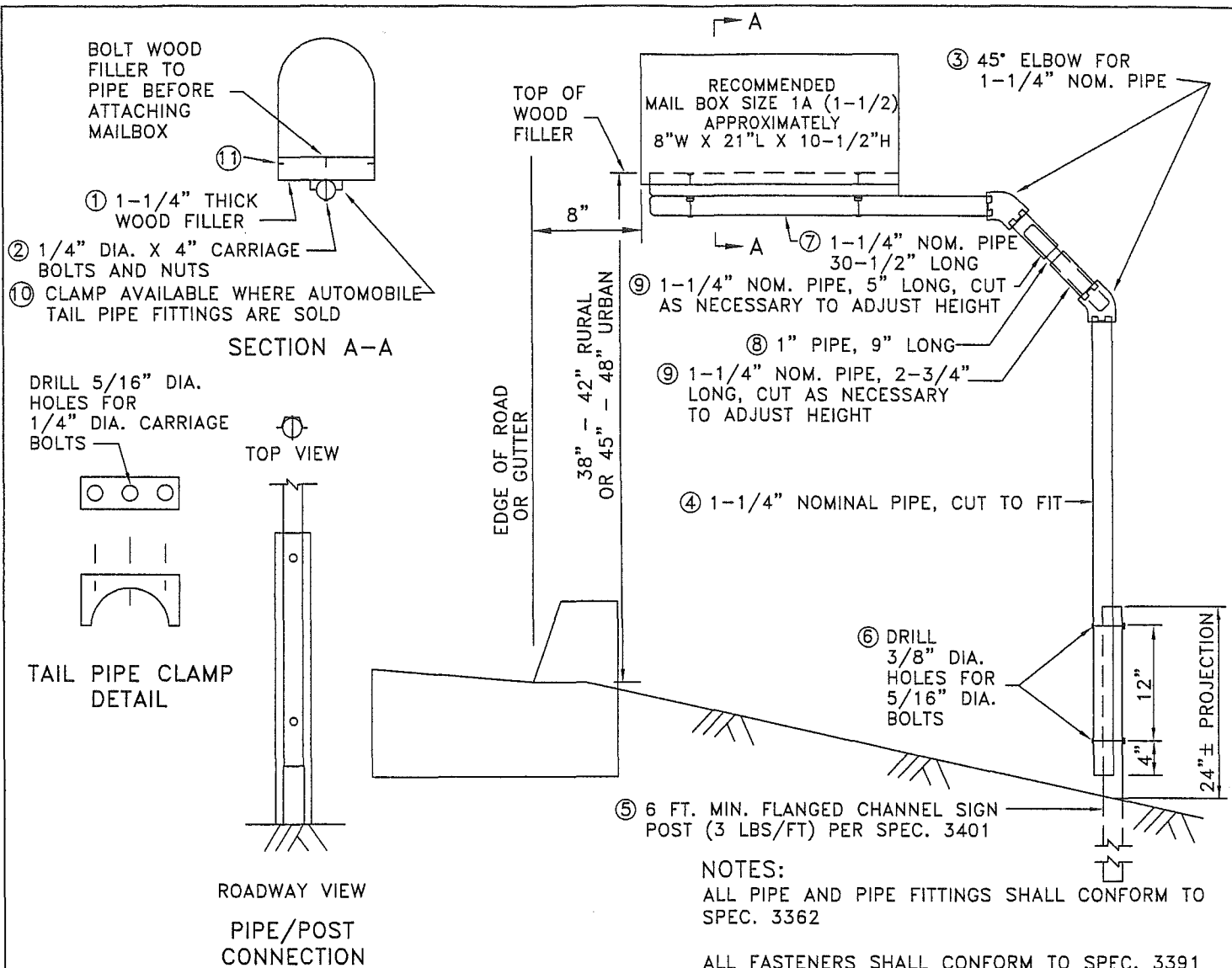
MAILBOX LOCATION URBAN STREET SECTION

NO SCALE

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08/2009
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STANFORD TOWNSHIP

STANDARD PLATE NO.
STR-107



ITEM NO.	NUMBER REQUIRED	DESCRIPTION
1	1	1-1/2" THICK WOOD FILLER CUT TO FIT SNUG UNDER MAILBOX
2	2	1/4" DIA. X 4" LONG CARRIAGE BOLTS AND NUTS
3	2	45° ELBOW FOR 1-1/4" NOMINAL PIPE
4	1	1-1/4" NOMINAL PIPE, CUT TO FIT
5	1	6 FT. MIN. SIGN POST (3LBS /FT.)
6	2	5/16" DIA. BOLT, NUT & LOCKWASHER
7	1	1-1/4" NOMINAL PIPE, 30-1/2" LONG
8	1	1" PIPE, 9" LONG
9	1	1-1/4" NOMINAL PIPE, 5" LONG 1-1/4" NOMINAL PIPE, 2-3/4" LONG
10	2	1-1/2" TAIL PIPE CLAMP
11	9	NO. 10 X 1" SHEET METAL SCREWS

MAILBOX SUPPORT

STEEL PIPE WITH FITTINGS AND STEEL FENCE POST
(SINGLE SUPPORT)
NO SCALE

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08/2009

REVISED

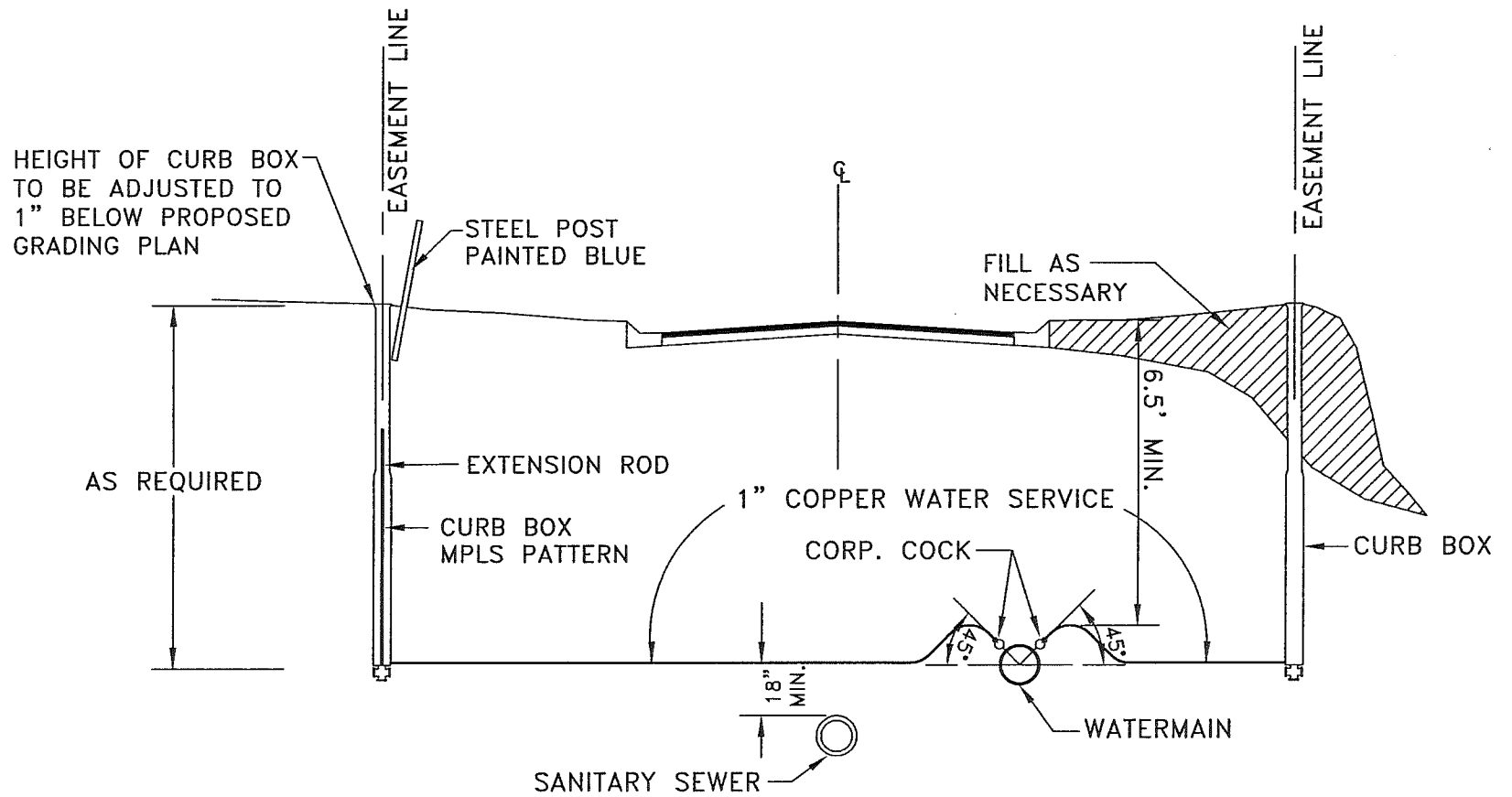
STANFORD TOWNSHIP

STANDARD PLATE NO.
STR-108

APPROVED - JDP
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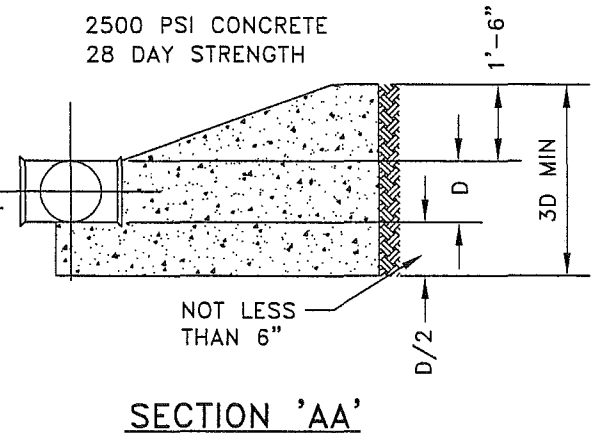
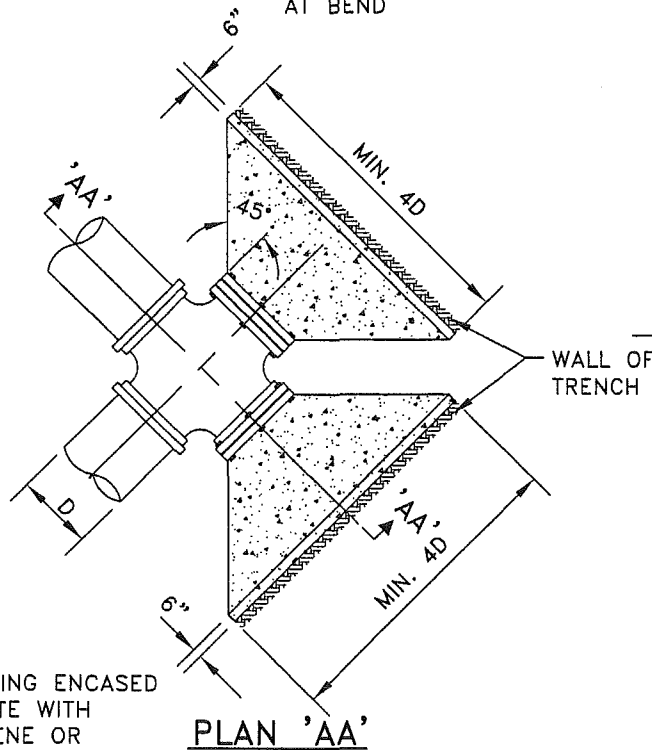
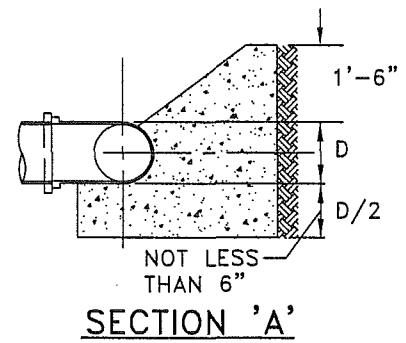
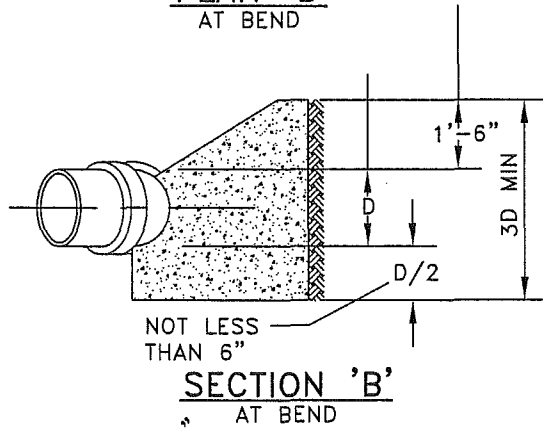
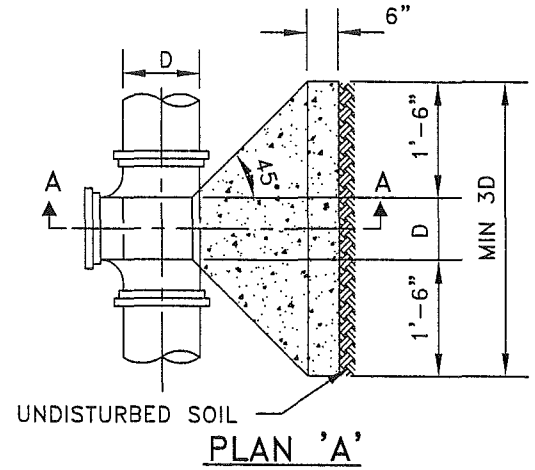
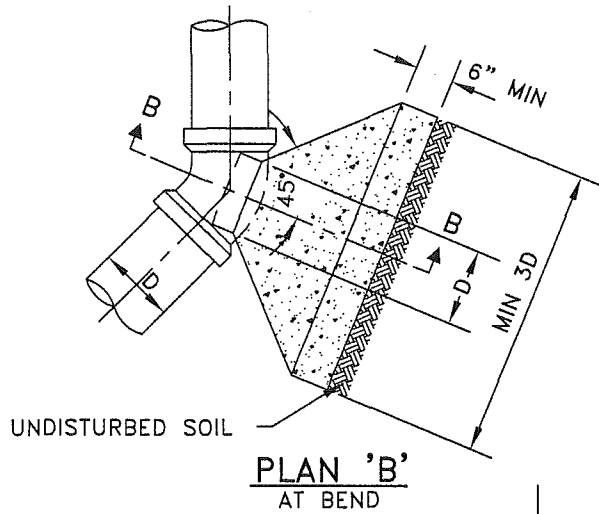
STANFORD TOWNSHIP

STANDARD PLATE NO.
WAT-200



WATER SERVICE DETAIL

NO SCALE



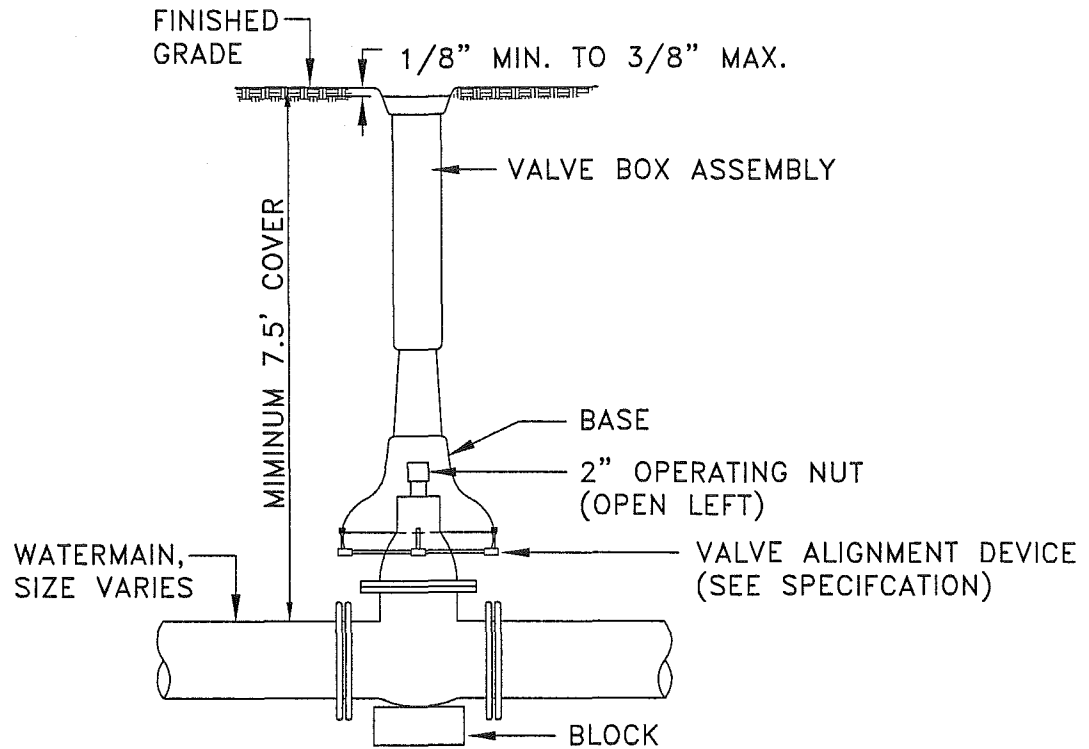
CONCRETE THRUST BLOCKING

NO SCALE

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08/2009
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
WAT-201



NOTES:

CONTRACTOR SHALL USE A VALVE STEM ALIGNMENT TUBE TOOL TO MAINTAIN VERTICAL ALIGNMENT WHEN BACKFILLING THE VALVE BONNET AND VALVE BOX ASSEMBLY. THE ALIGNMENT TUBE SHALL CONSIST OF METAL PIPE WITH A SQUARE NUT RECEIVER SECURELY FASTENED TO THE END FOR PLACEMENT ON THE VALVE OPERATING NUT.

ALL VALVES SHALL BE FITTED WITH EXTENSION RODS.

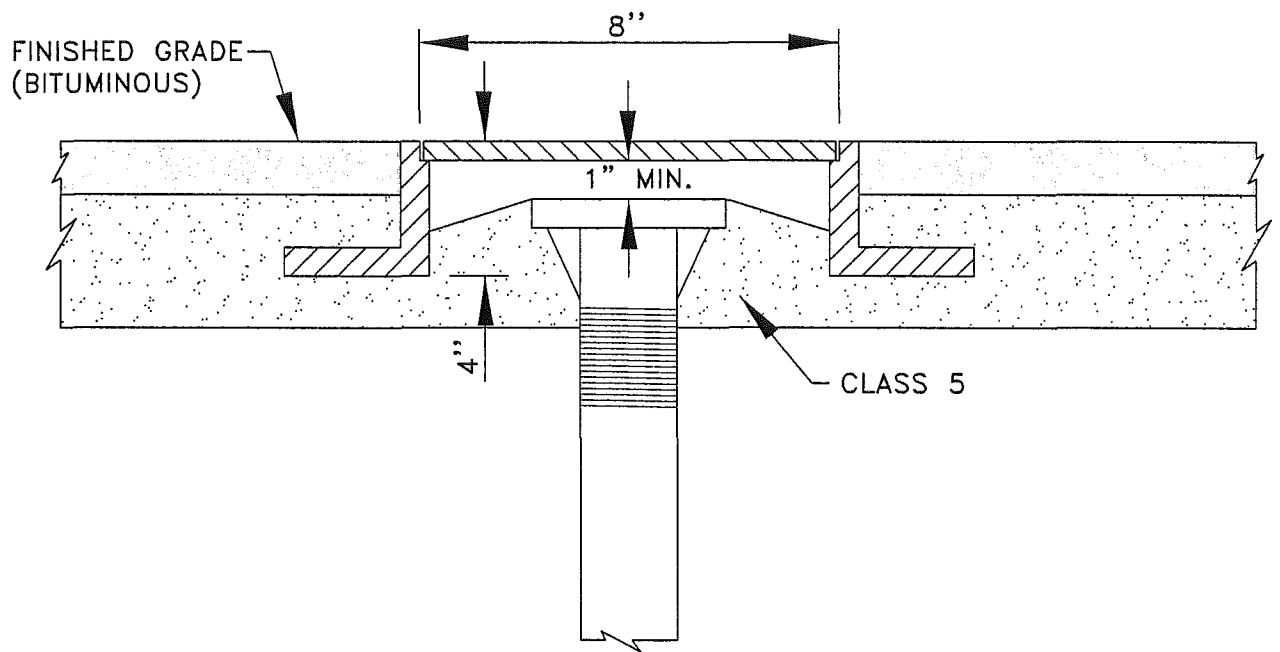
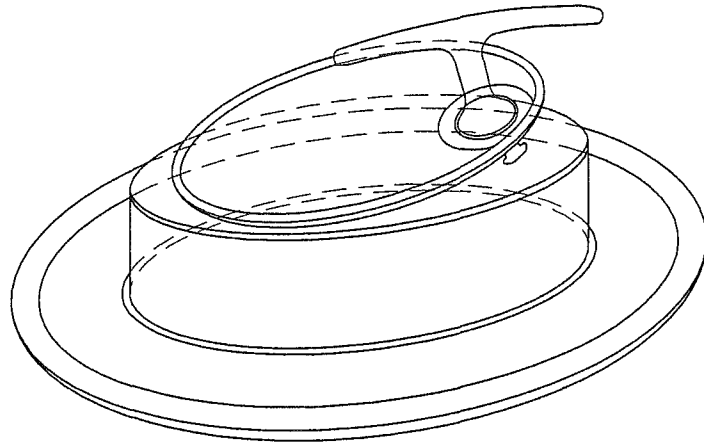
TYPICAL RESILIENT WEDGE VALVE AND BOX INSTALLATION 10" AND UNDER WATER MAIN

NO SCALE

APPROVED - JDP 08/2009
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
WAT-202



CURB STOP COVER FOR DRIVEWAY INSTALLATION

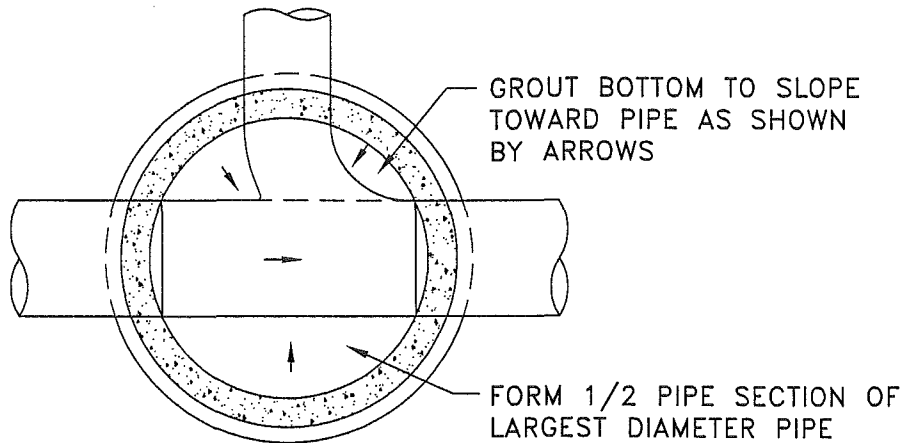
NO SCALE

APPROVED - JDP
08/2009

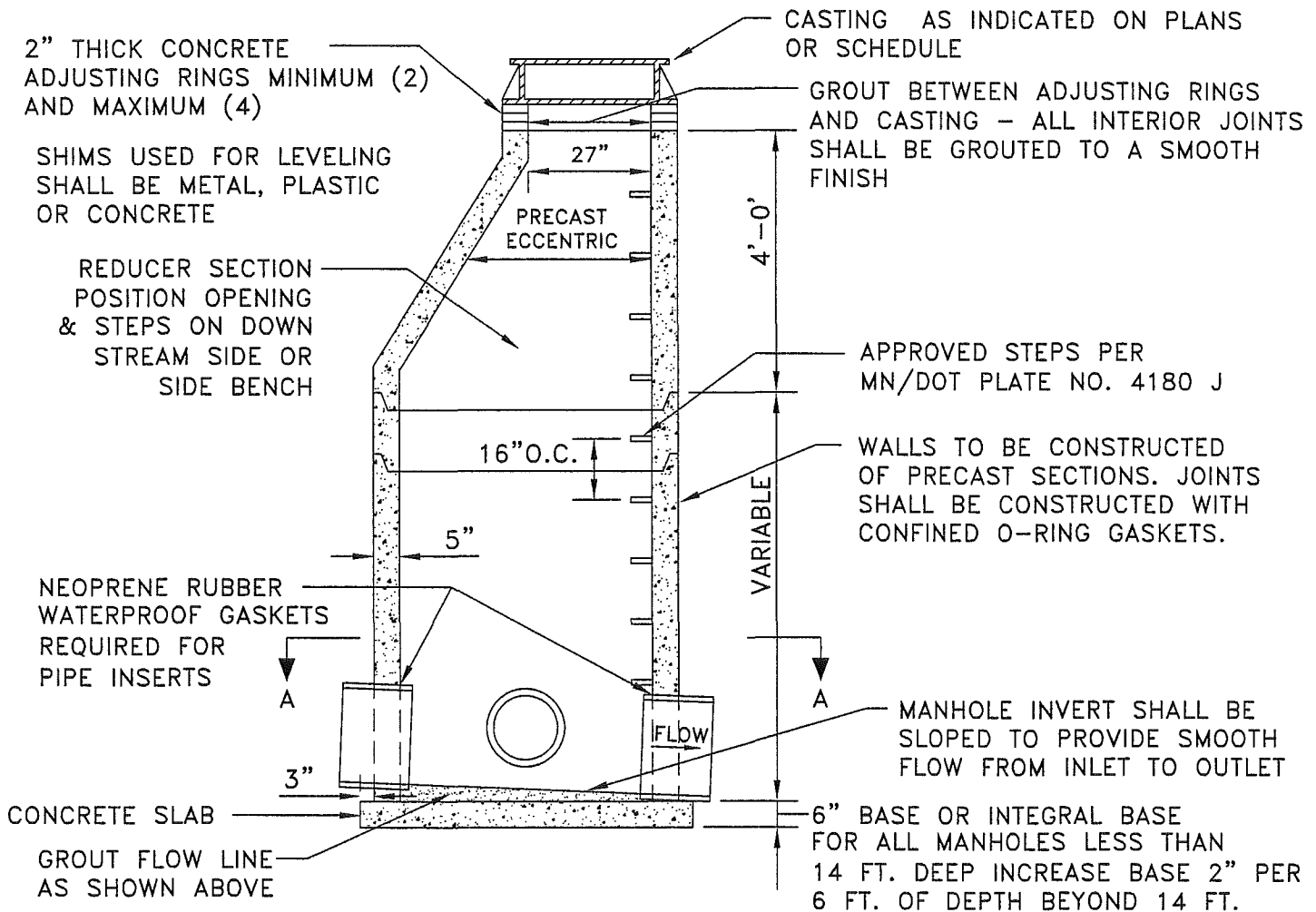
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
WAT-203



SECTION A-A



SANITARY SEWER STANDARD MANHOLE 48" DIAMETER, ECCENTRIC CONE

NO SCALE

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STANFORD TOWNSHIP

STANDARD PLATE NO.
SAN-300

SDR 26 PVC SERVICE
PIPE SIZE AS SHOWN
ON PLANS

SDR 26 45° BEND
WITH WYE ONLY

TEE OR WYE BRANCH
ON SANITARY SEWER MAIN

CONCRETE ENCASEMENT
6" MINIMUM THICKNESS

MAIN LINE
VARIES

PLAN

STEEL POST
MIN 4' ABOVE GROUND
MARK WITH GREEN
PAINT

EASEMENT LINE

COMPACTED BACKFILL

SDR 26 PVC PIPE
SIZE AND SCHEDULE
AS SHOWN ON PLANS

SDR 26 PVC
PIPE SIZE AS SHOWN
ON PLANS *

SDR 26 45° BEND
AT PROPERTY LINE

1/4" / FT MIN.

INVERT 10' FROM
FINISHED GROUND
ELEVATION AT PROPERTY LINE

TEE OR WYE
SERVICE CONNECTION
AT 10 OR 2 O'CLOCK POSITION
ENCASE IN CONCRETE
MINIMUM 6" THICK

SANITARY MAIN
SIZE VARIES

* MINIMUM 6LF
PLUG SHALL EXTEND 2 FEET
ABOVE LOCAL WATER TABLE

SHALLOW SANITARY MAIN SERVICE CONNECTION

NO SCALE

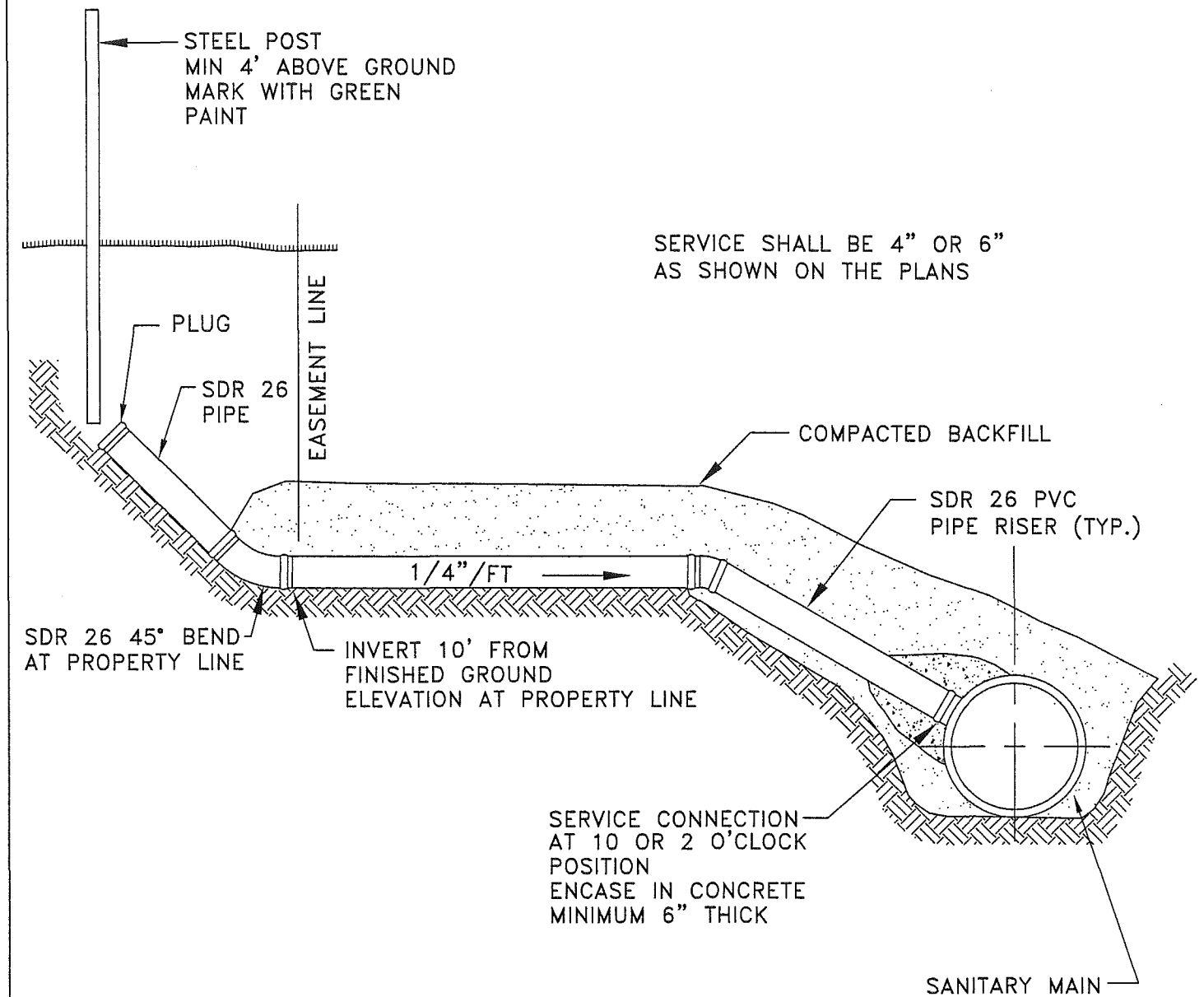
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08/2009

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STANFORD TOWNSHIP

STANDARD PLATE NO.
SAN-301



DEEP SANITARY MAIN SERVICE CONNECTION

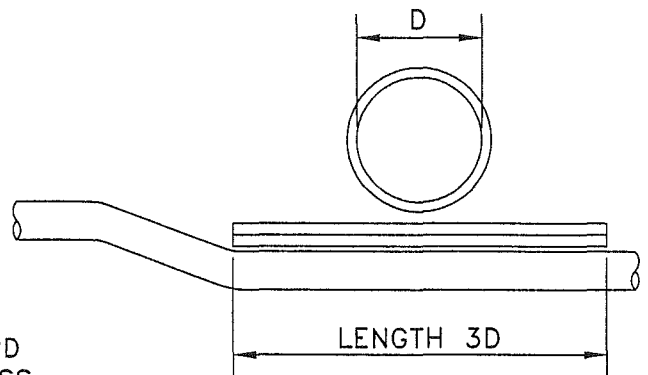
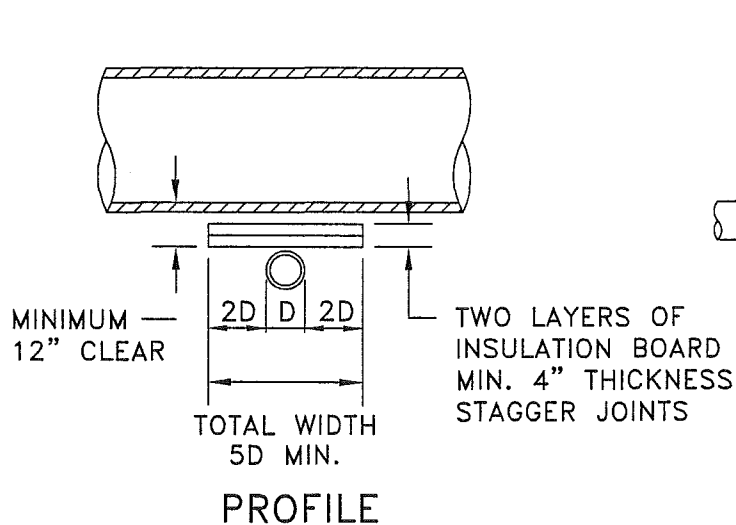
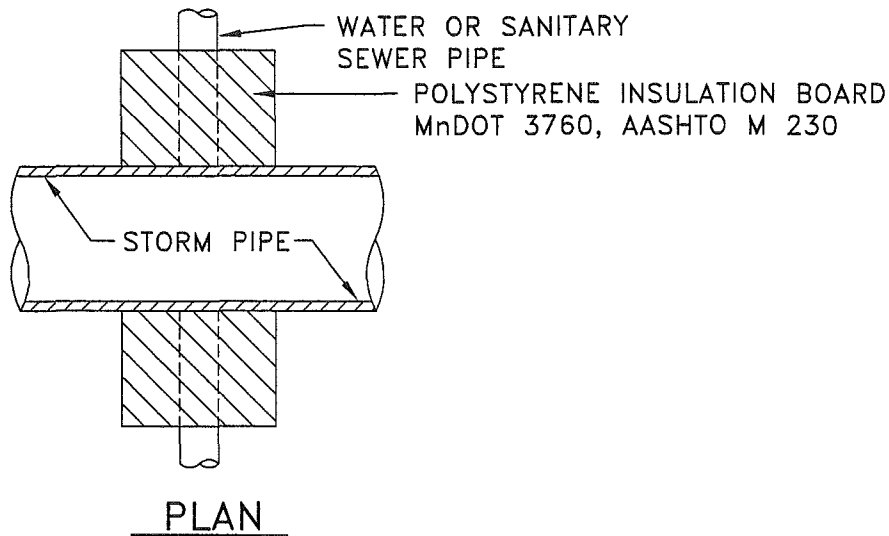
NO SCALE

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08/2009
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STANFORD TOWNSHIP

STANDARD PLATE NO.
SAN-302

NOTE: INSULATE ALL WATER OR SANITARY SEWER PIPE
CROSSINGS WITHIN 2' OF STORM SEWER PIPE



INSULATION FOR WATER & SANITARY SEWER PIPE & SERVICES

NO SCALE

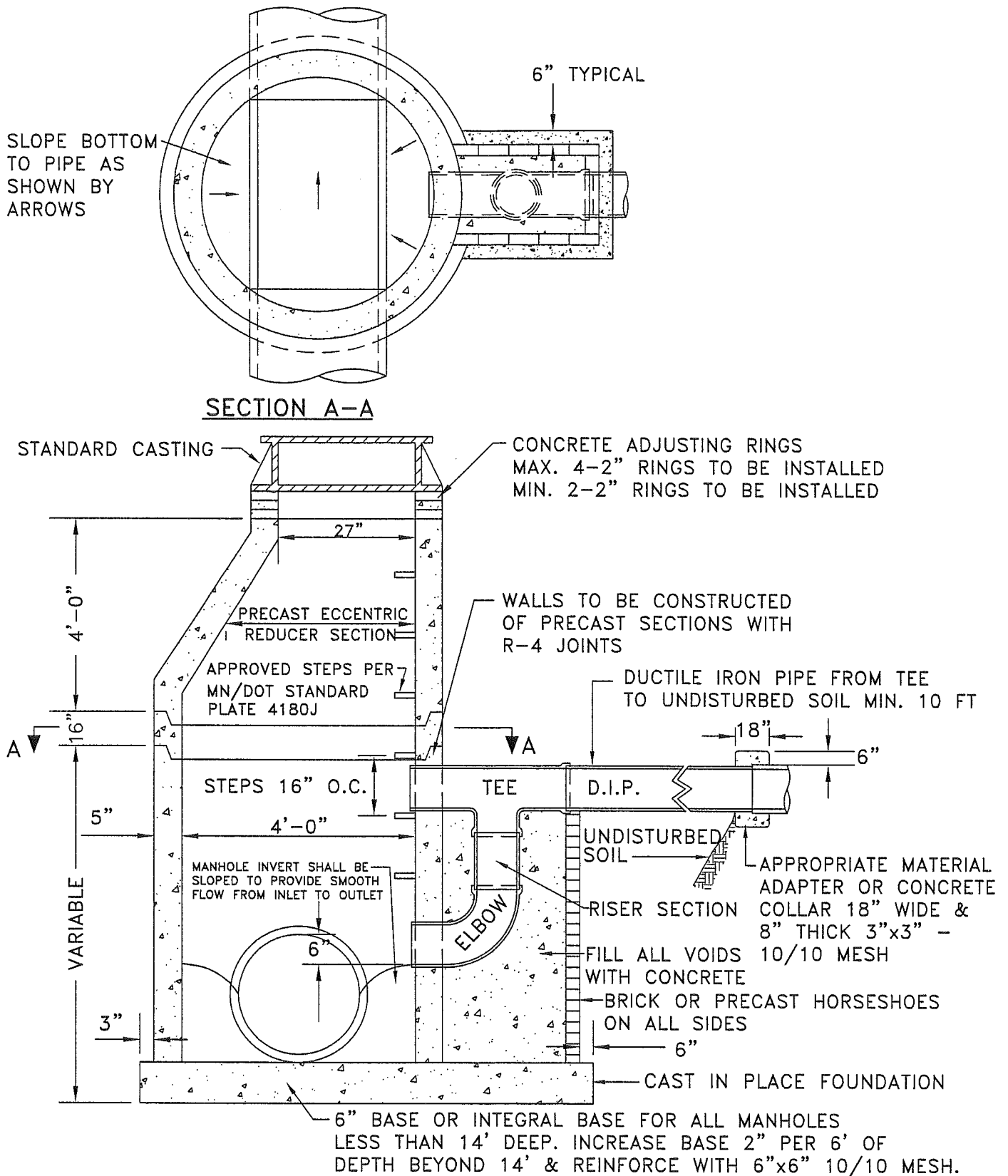
APPROVED - JDP

08/2009

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STANFORD TOWNSHIP

STANDARD PLATE NO.
SAN-303



NOTE: DIP SHALL BE MIN. CLASS 50

STANDARD DROP MANHOLE

NO SCALE

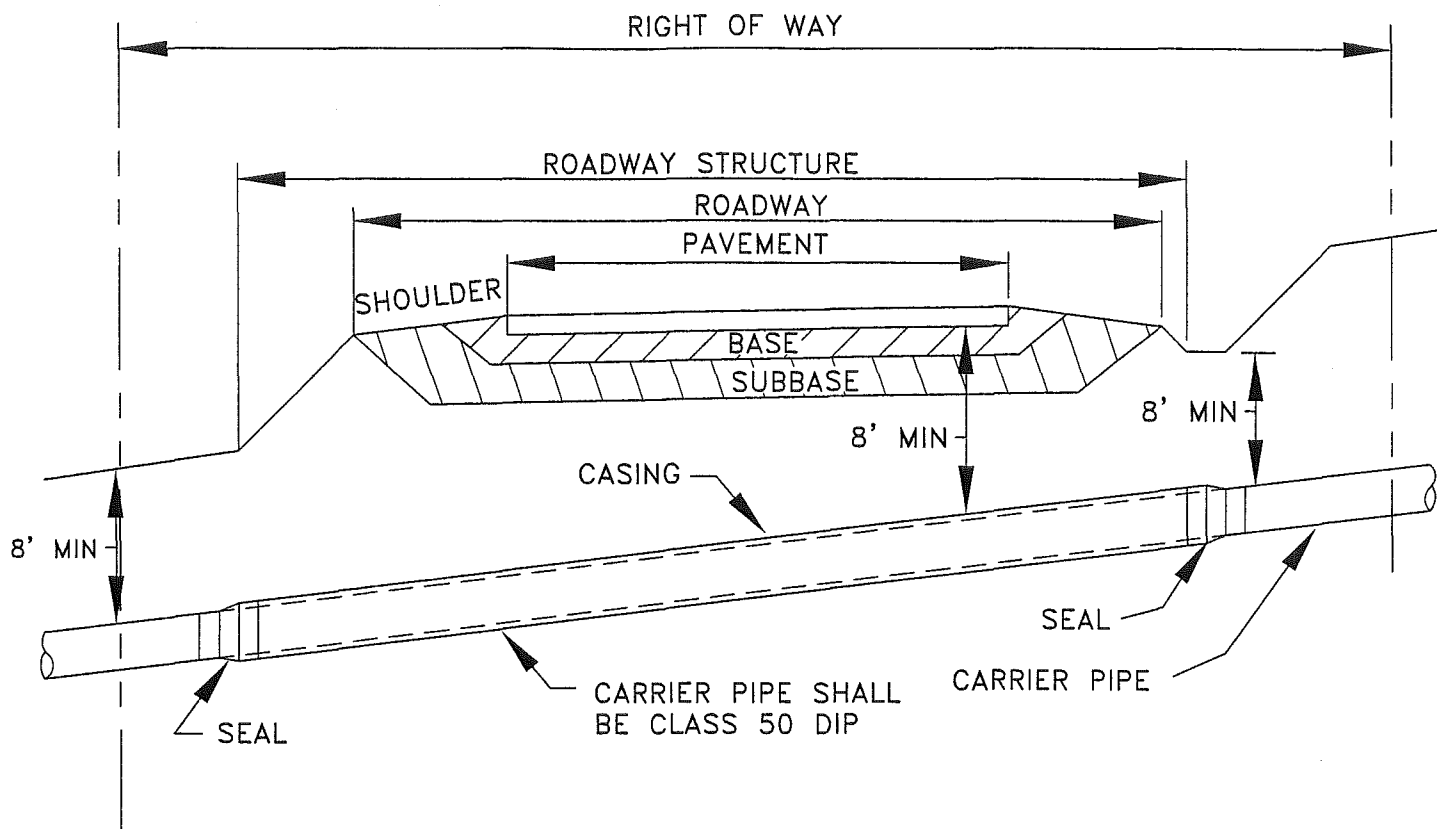
APPROVED - JDP

08/2009

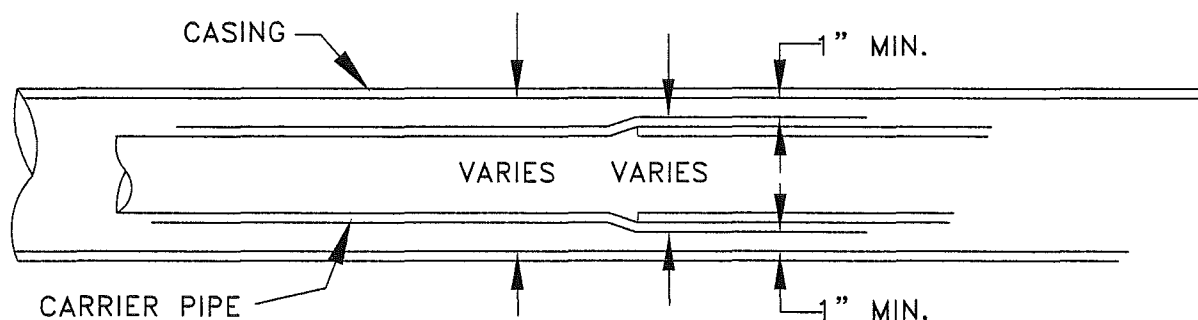
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
SAN-304



CASING PIPE SHALL BE WELDED STEEL PIPE, NEW MATERAIL, WITH A MINIMUM YIELD STRENGTH OF 35,000 PSIG (POUNDS PER SQUARE INCH GAUGE) AND A MINIMUM WALL THICKNESS OF 0.375 (3/8) INCHES



INSIDE DIAMETER OF CASING MIN 2" GREATER THAN OUTSIDE DIAMETER OF CARRIER.

PIPE JACKING DETAIL

NO SCALE

APPROVED - JDP

08/2009

REVISED

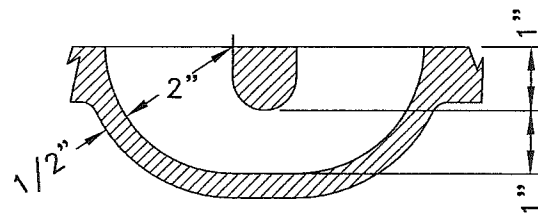
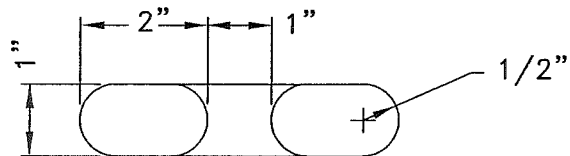
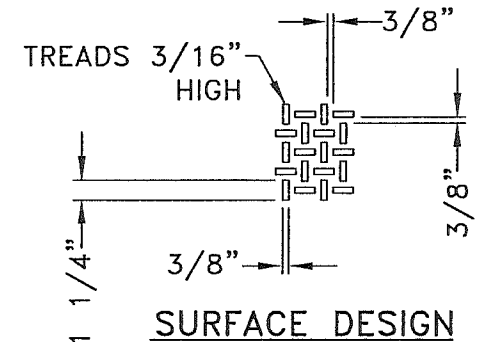
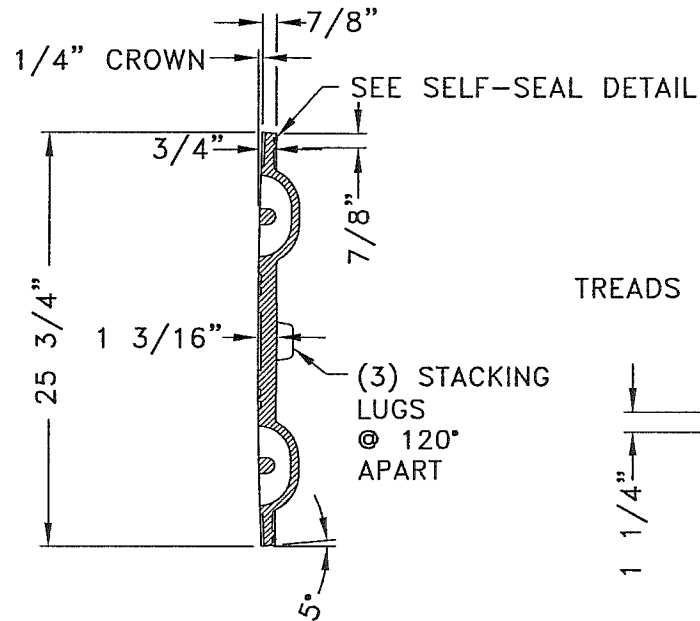
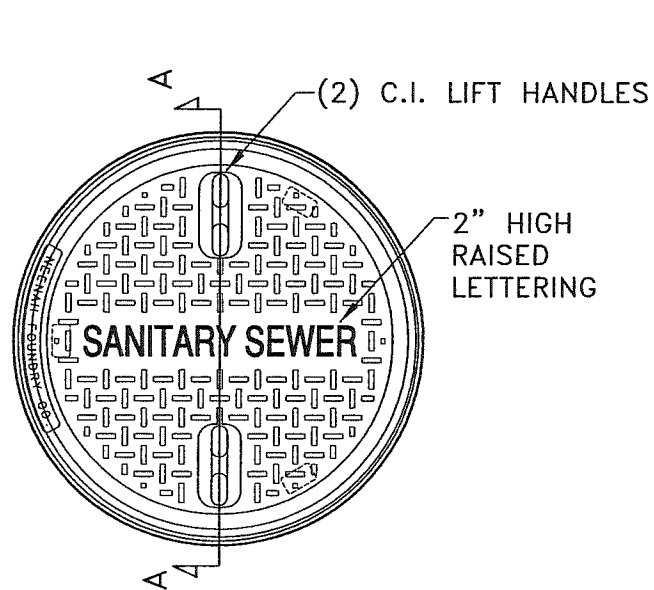
STANFORD TOWNSHIP

STANDARD PLATE NO.
SAN-305

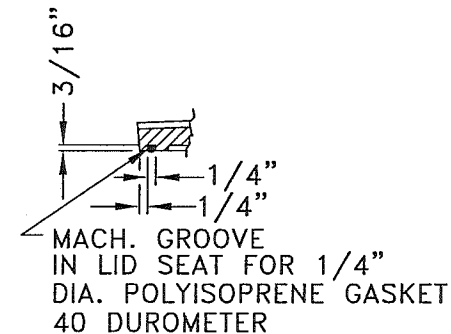
APPROVED - JDP
08/2009
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
SAN-306



SECTION B-B
HALF SCALE



SELF-SEAL DETAIL
QUARTER SCALE

NOTE: SOLID SEALING COVER NEENAH R1733 OR APPROVED EQUAL
ALL DIMENSIONS SHOWN ARE IN ENGLISH
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NO PAINT
WEIGHT: 122#

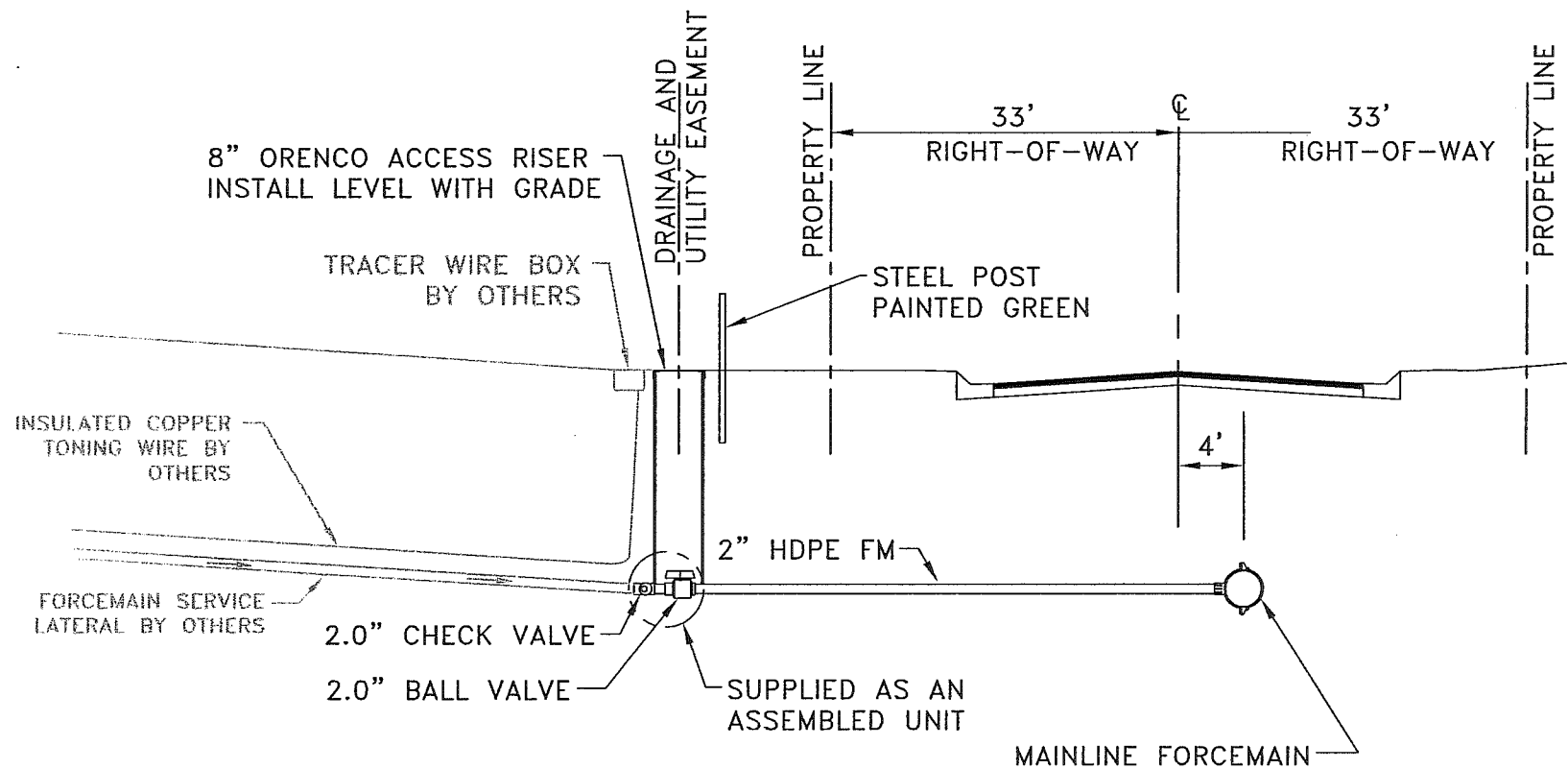
MANHOLE LID DETAIL

NO SCALE

APPROVED - JDP
08/2009
REVISED

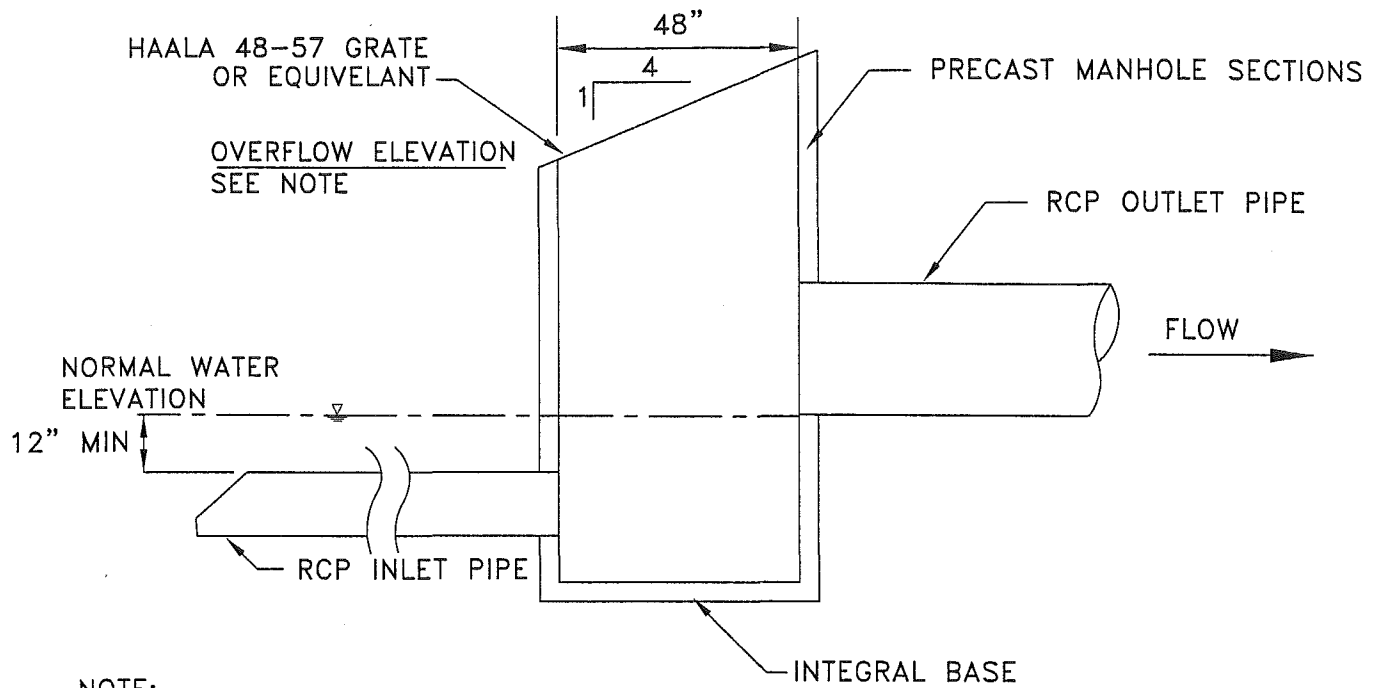
STANFORD TOWNSHIP

STANDARD PLATE NO.
SAN-307



EFFLUENT SEWER SERVICE CONNECTION

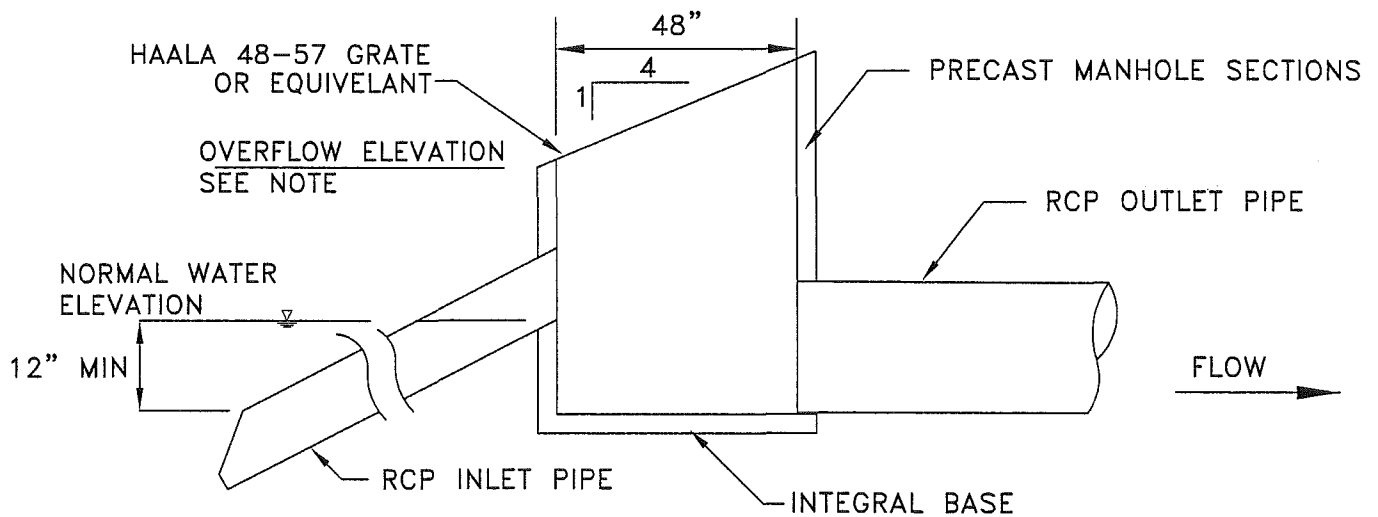
NO SCALE



NOTE:
THE OVERFLOW ELEVATION SHALL BE AT OR
ABOVE THE PEAK 2-YEAR STORM EVENT ELEVATION

SKIMMER STRUCTURE

NO SCALE



NOTE:
THE OVERFLOW ELEVATION SHALL BE AT OR
ABOVE THE PEAK 2-YEAR STORM EVENT ELEVATION

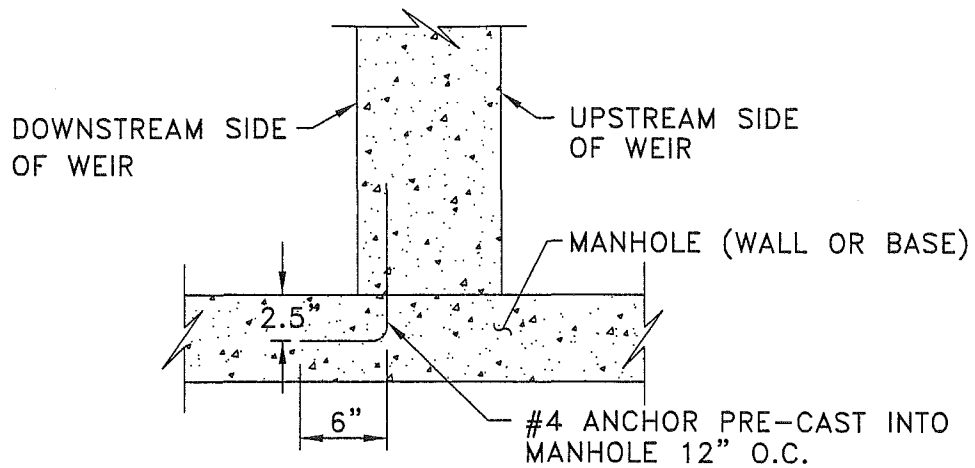
SKIMMER STRUCTURE

NO SCALE

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08/2009
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STANFORD TOWNSHIP

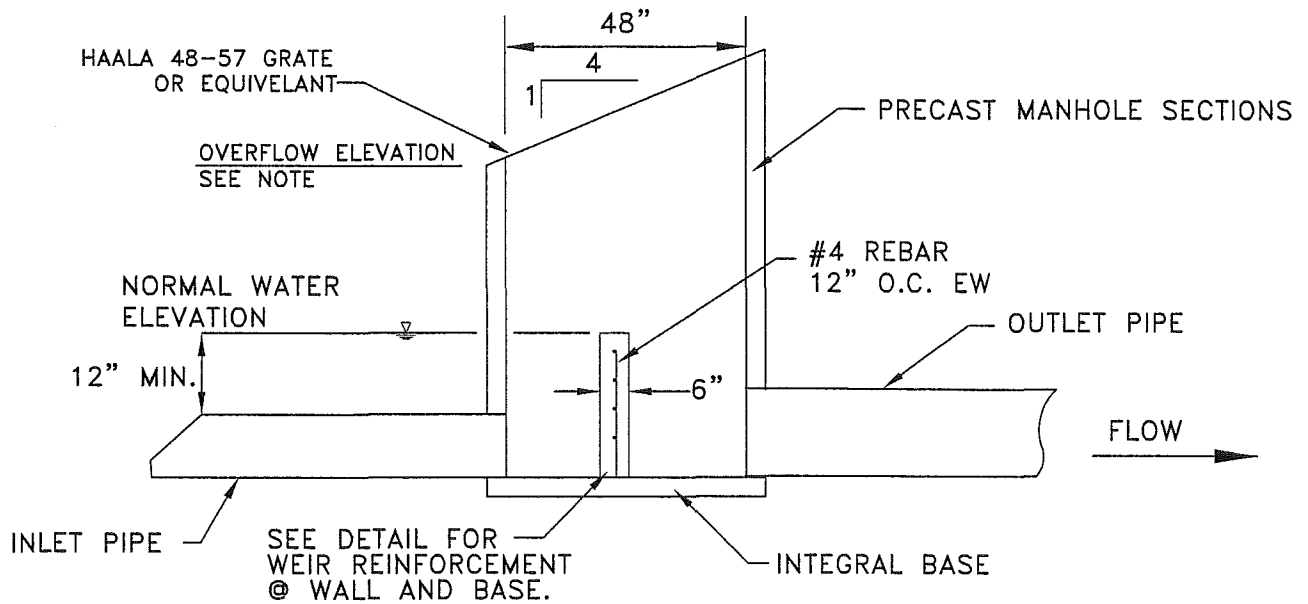
STANDARD PLATE NO.
STM-400



NOTE:

1. THE FOLLOWING MAY BE USED AS AN ALTERNATIVE TO THE PRE-CAST ANCHORS: HVA ADHESIVE ANCHOR SYSTEM, WITH HVA ADHESIVE CAPSULES AND #5 REBAR, AS MANUFACTURED BY HILTI CORP OR APPROVED EQUAL.
2. REINFORCEMENT BARS IN WEIR NOT SHOWN.

**WEIR REINFORCEMENT
@ WALL AND BASE**



NOTE:

THE OVERFLOW ELEVATION SHALL BE AT OR ABOVE THE PEAK 2-YEAR STORM EVENT ELEVATION

SKIMMER STRUCTURE WITH WEIR

NO SCALE

APPROVED - JDP

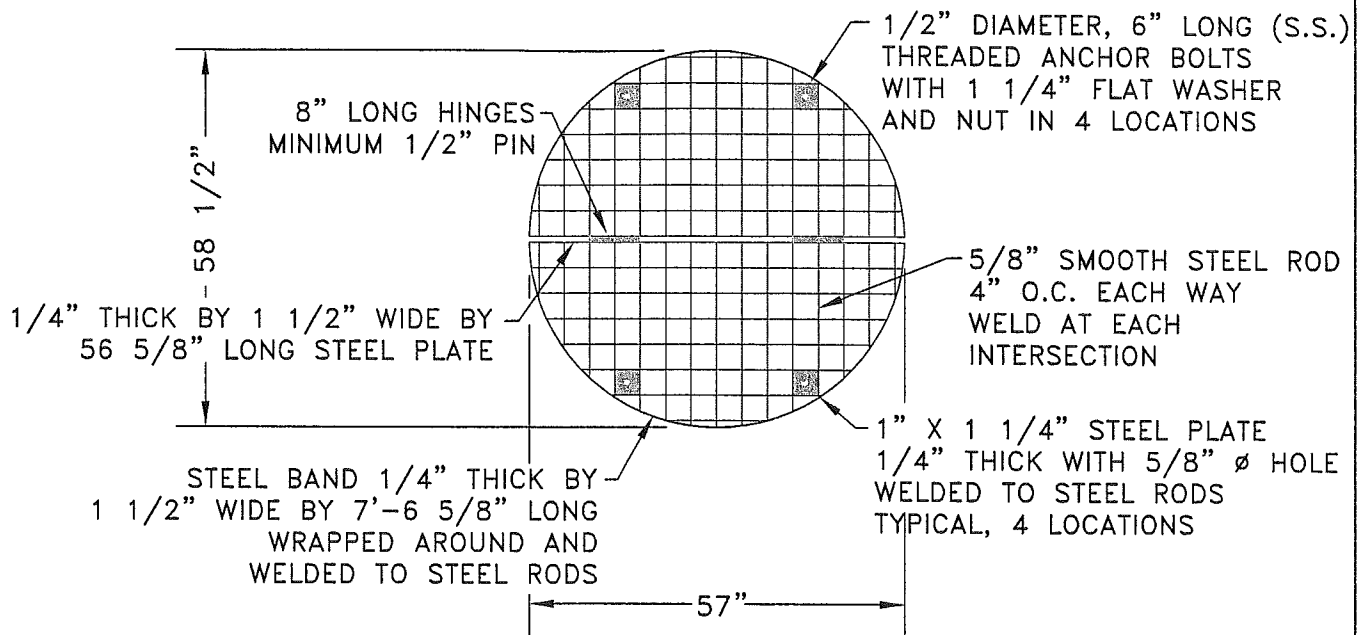
08/2009

REVISED

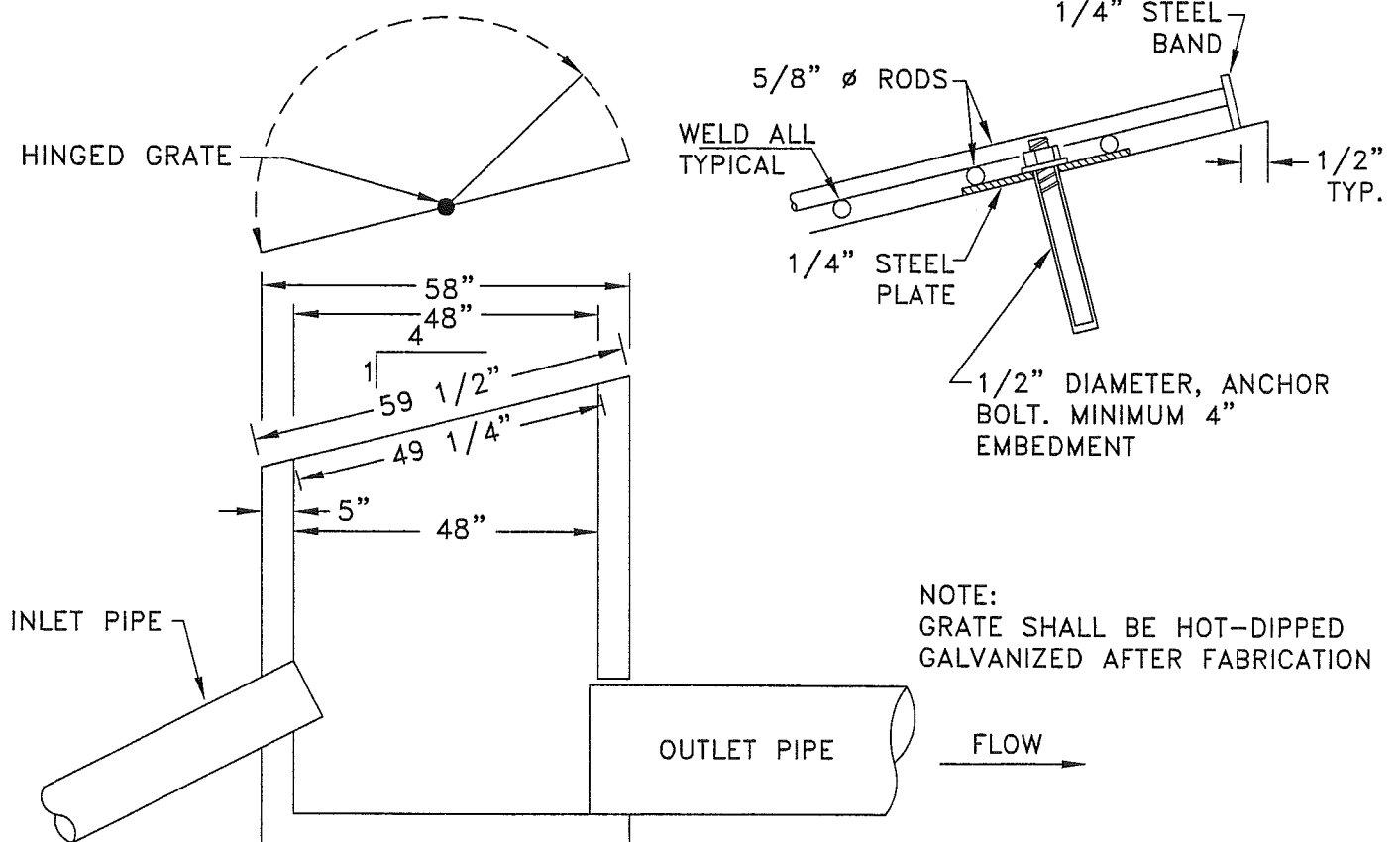
STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-401

GRATE GALVANIZED



TOP VIEW



SCREEN COVER FOR 48" DIA. OUTLET STRUCTURE

NO SCALE

APPROVED - JDP

08/2009

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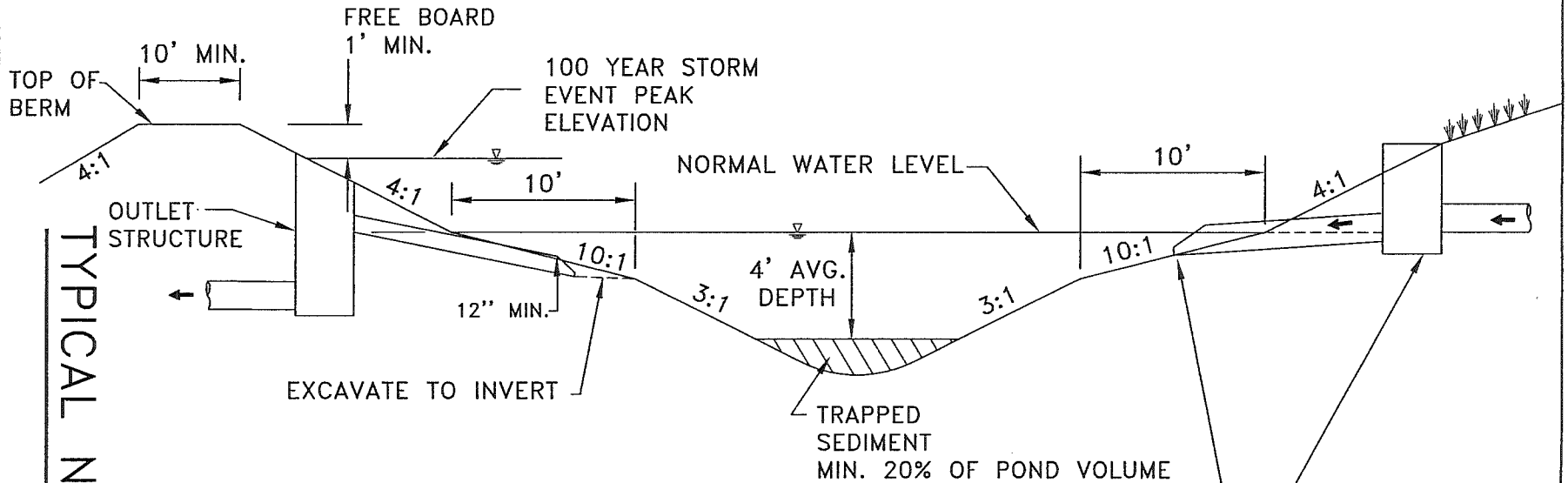
STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-402

APPROVED - JDP
08/2009
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-403



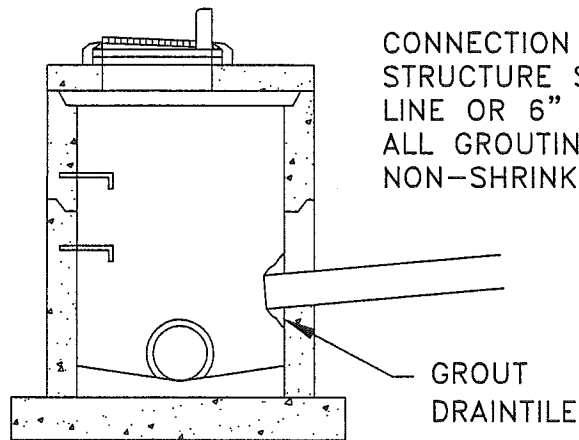
NO SCALE

TYPICAL N.U.R.P. TREATMENT BASIN

OUTLETS TO DETENTION PONDS MAY BE SUBMERGED BY UP TO 1/3 OF THE DIAMETER BELOW NWL, HOWEVER, TAILWATER SHALL NOT EXTEND UPSTREAM TO THE FIRST STRUCTURE.

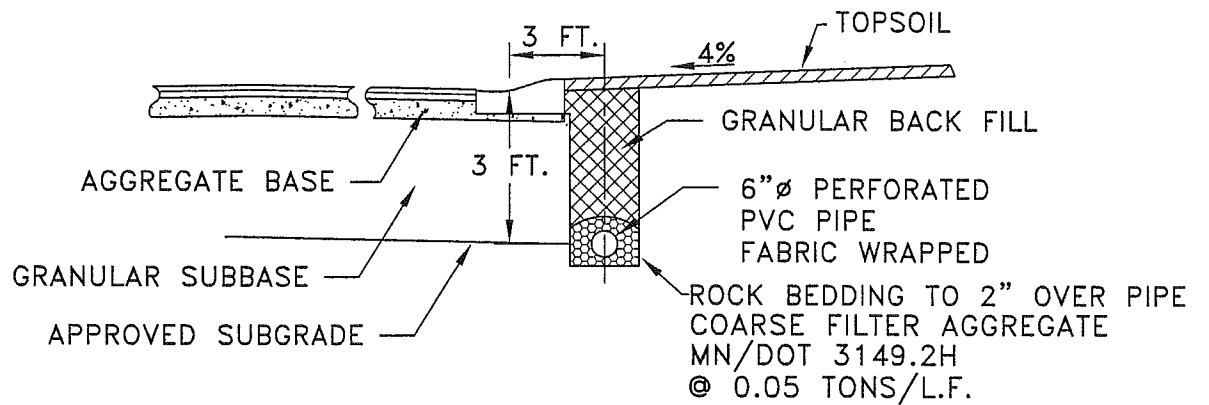
NOTE:

1. SLOPES SHALL BE NO STEEPER THAN THOSE SHOWN.
2. AN EMERGENCY RIPRAP OVERFLOW SHALL BE PROVIDED.
3. 10' WIDE ACCESS ROUTE TO BE PROVIDED TO SKIMMER STRUCTURE/RIPRAP OVERFLOW
4. TOPSOIL SHALL BE PLACED ON POND SLOPES FOUR INCHES THICK TO A DEPTH OF FOUR FEET BELOW NORMAL WATER LEVEL.



CONNECTION TO STORM SEWER
STRUCTURE SHALL BE AT SPRING
LINE OR 6" MIN. ABOVE OUTLET
ALL GROUTING MUST BE AN APPROVED
NON-SHRINKABLE GROUT.

CONNECTION TO STORM SEWER



FILTER FABRIC WRAP SHALL BE
MIRAF1 NONWOVEN (140 NL)
EXXON NONWOVEN (GTF-130EX),
AMOCO NONWOVEN (4545), OR
APPROVED EQUAL.

PERFORATED DRAINTILE PIPE

NO SCALE

APPROVED - JDP

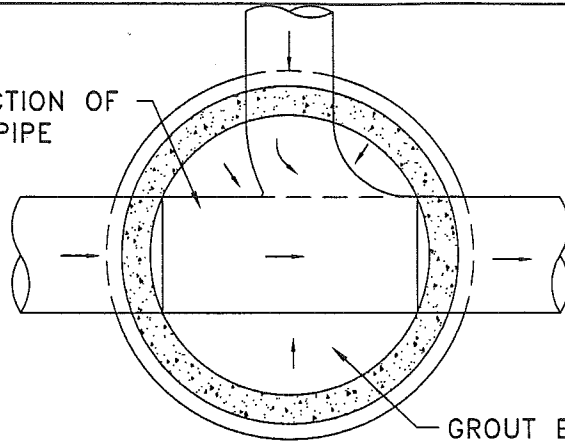
08/2009

REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-404

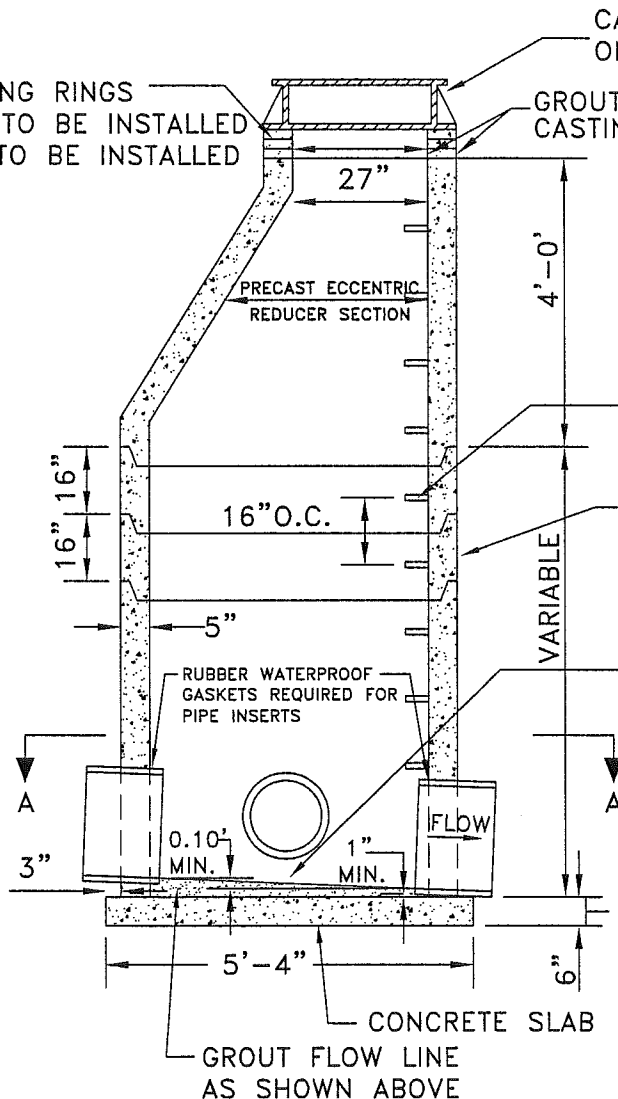
FORM 1/2 PIPE SECTION OF
LARGEST DIAMETER PIPE



GROUT BOTTOM TO SLOPE
TOWARD PIPE AS SHOWN
BY ARROWS

SECTION A-A

CONCRETE ADJUSTING RINGS
MAX. 4-2" RINGS TO BE INSTALLED
MIN. 2-2" RINGS TO BE INSTALLED



CASTING AS INDICATED
ON PLANS OR SCHEDULE

GROUT INSIDE AND OUTSIDE OF
CASTING & ADJUSTING RINGS

SHIMS USED FOR LEVELING
SHALL BE METAL OR CONCRETE

STEPS AS PER MN/DOT
STANDARD PLATE 4180J

WALLS TO BE CONSTRUCTED
OF PRECAST SECTIONS. JOINTS
SHALL BE CONSTRUCTED WITH
CONFINED O-RING GASKETS.

MANHOLE INVERT SHALL BE
SLOPED TO PROVIDE SMOOTH
FLOW FROM INLET TO OUTLET
SEE SECTION A-A

6" BASE FOR ALL MANHOLES LESS
THAN 14 FT. DEEP INCREASE BASE
2" PER 6 FT. OF DEPTH BEYOND
14 FT. 5" PRECAST BASE MAY BE
USED FOR MANHOLES LESS THAN
14 FT. DEEP.

STORM SEWER STANDARD MANHOLE

NO SCALE

APPROVED - JDP

08/2009

REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-405

MANHOLE COVER SHALL BE
TYPE II WITH 27" ECCENTRIC
OPENING

FRAME & CASTING
(SEE MH & CB SCHEDULE)

GROUT INSIDE AND OUTSIDE OF
CASTING & ADJUSTING RINGS

CONCRETE ADJUSTING RINGS
2 MIN. - 4 MAX.

APPROVED STEPS PER
MN/DOT STANDARD
PLATE 4180J

MANHOLE TO BE CONSTRUCTED
OF PRECAST CONCRETE SECTIONS
MIN. CLASS III REINFORCEMENT

VARIES

PRECAST OR
CAST IN PLACE
LOWER SECTION

GROUT LINE SHALL BE
UNIFORM SLOPE BETWEEN
PIPE INVERTS

FLOW
→

VARIES

POURED OR PRECAST CONCRETE
MANHOLE BASE

BASE 6" - 12 ft DEEP
8" - 12 ft TO 20 ft DEEP
10" - OVER 20 ft DEEP

SLAB TOP MANHOLE

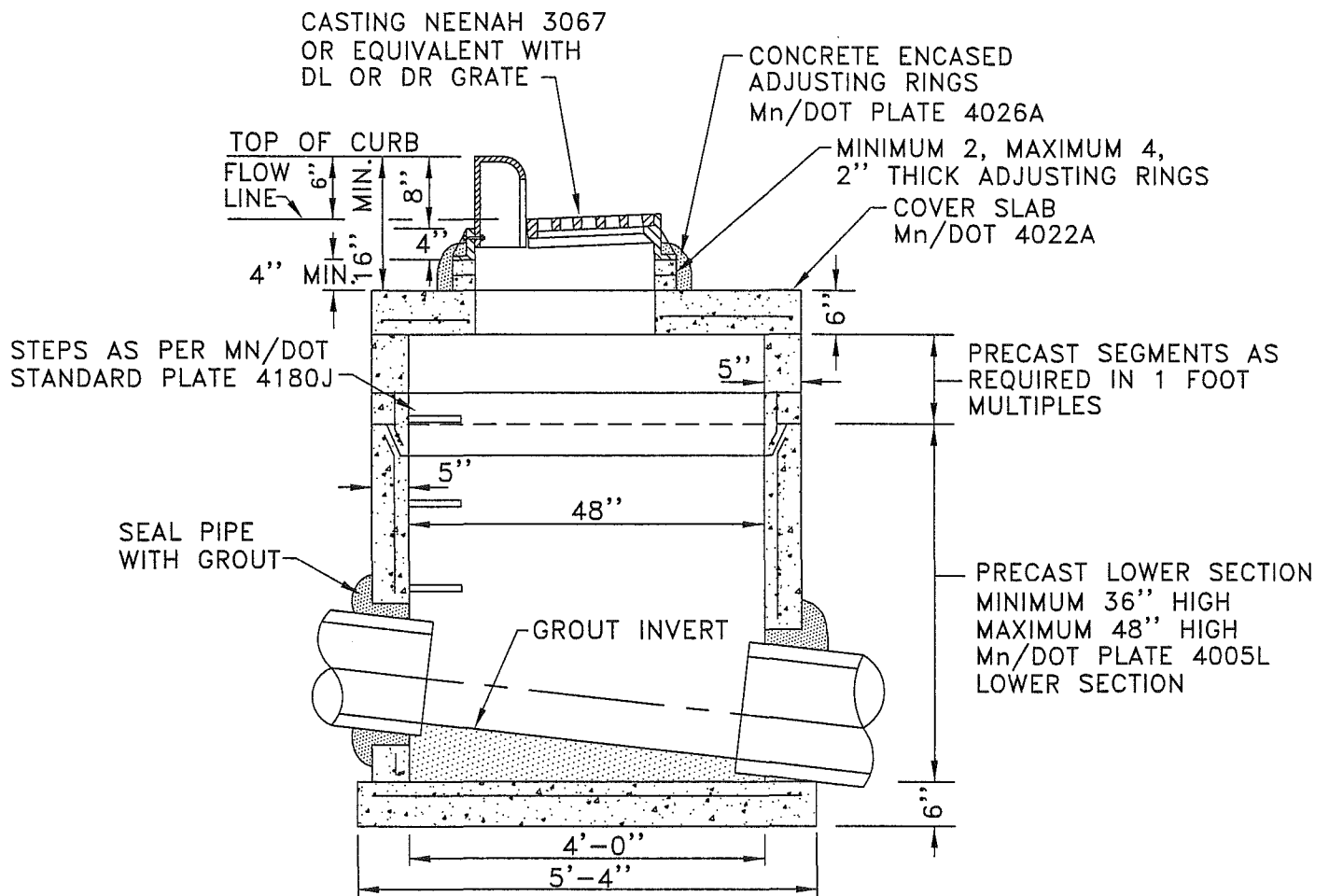
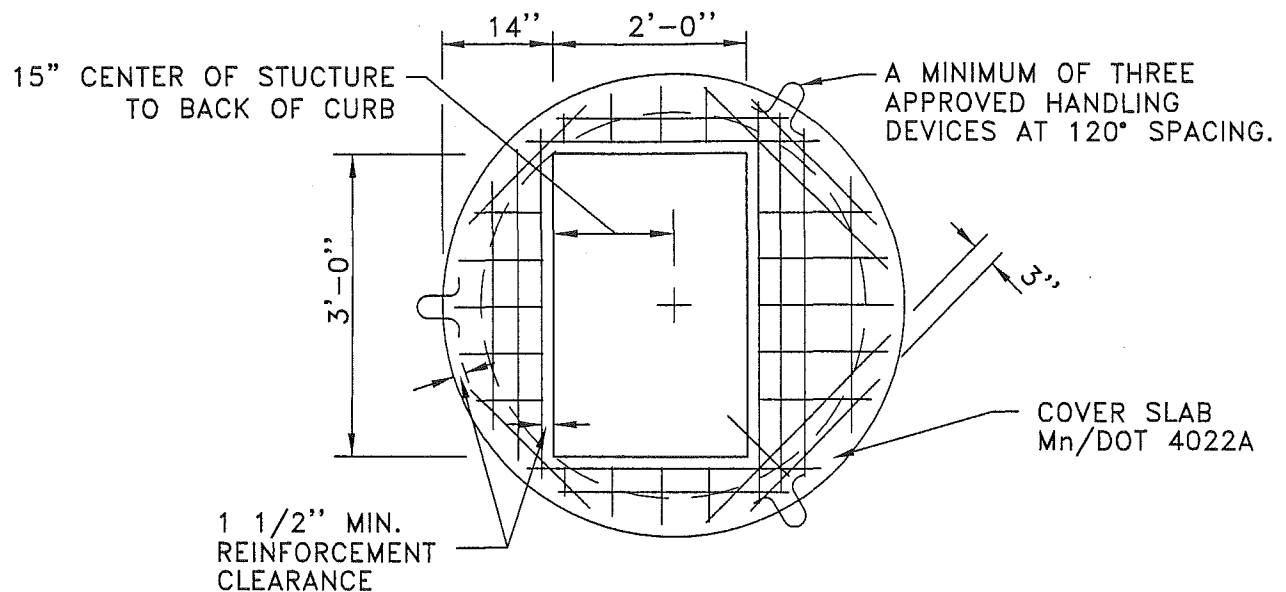
(STORM SEWER)
NO SCALE

APPROVED - JDP
08/2009

REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-406



STANDARD STORM MANHOLE

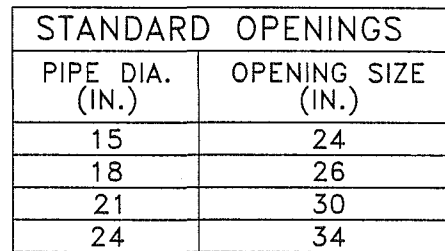
MINIMUM COVER FLOW LINE - TO TOP OF PIPE = 2 FEET

NO SCALE

APPROVED - JDP
08/2009
REVISED

STANFORD TOWNSHIP

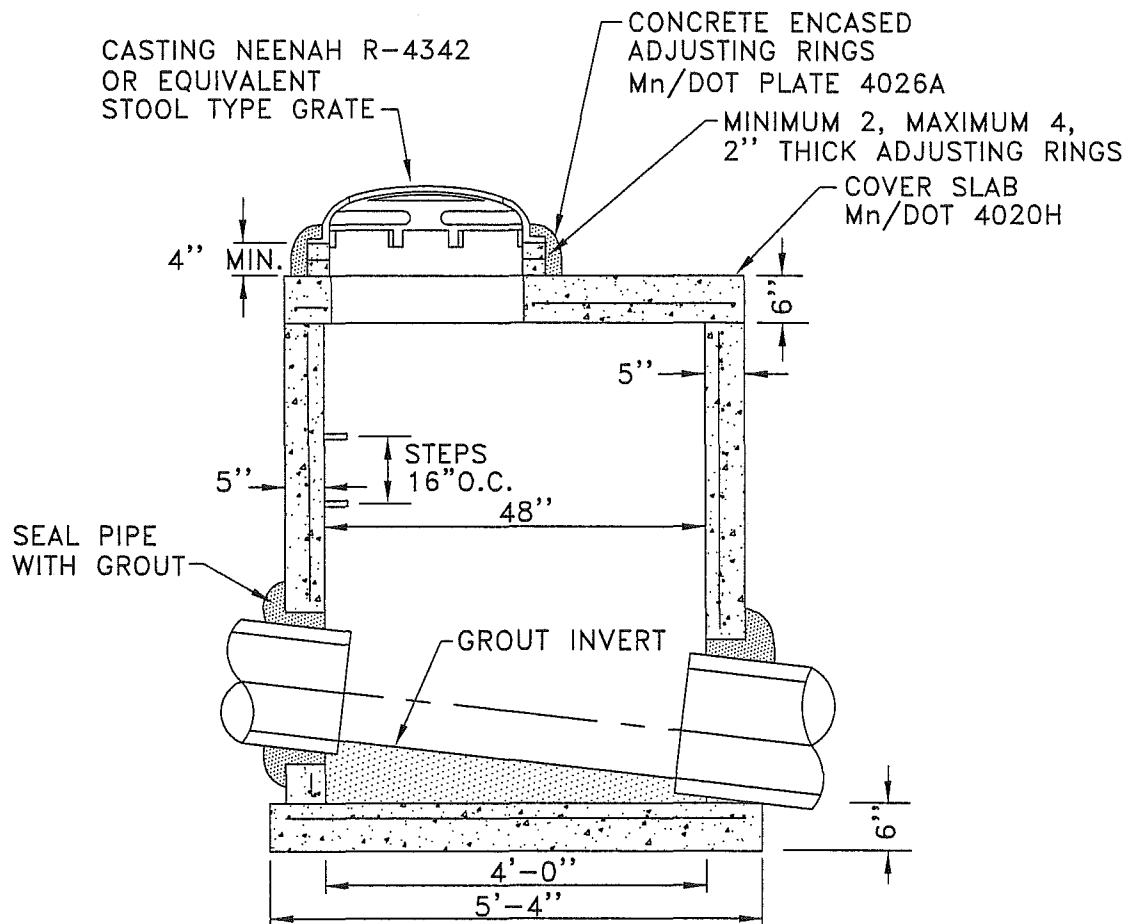
STANDARD PLATE NO.
STM-407



MINIMUM C.B. DEPTH — FLOW LINE TO INVERT		
PIPE DIA.	MIN. DEPTH	MINIMUM DEPTH WITH 2 RINGS
15	41 IN.	41 IN.
18	45 IN.	45 IN.
21	48 IN.	48 IN.
24	51 IN.	51 IN.

MAXIMUM 24 INCH DIAMETER PIPE SIZE

STANDARD PLATE NO.
STM-408



STANDARD STORM MANHOLE-YARD INLET

NO SCALE

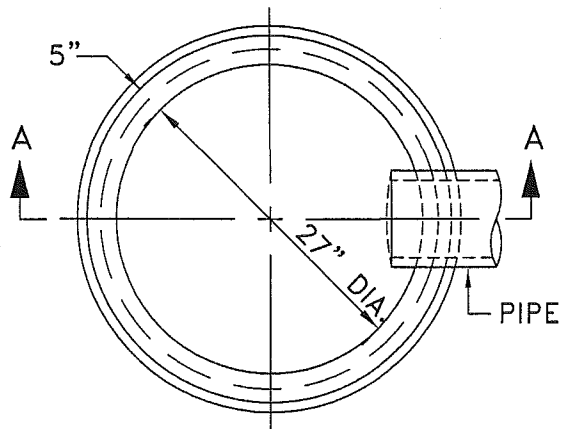
APPROVED - JDP

08/2009

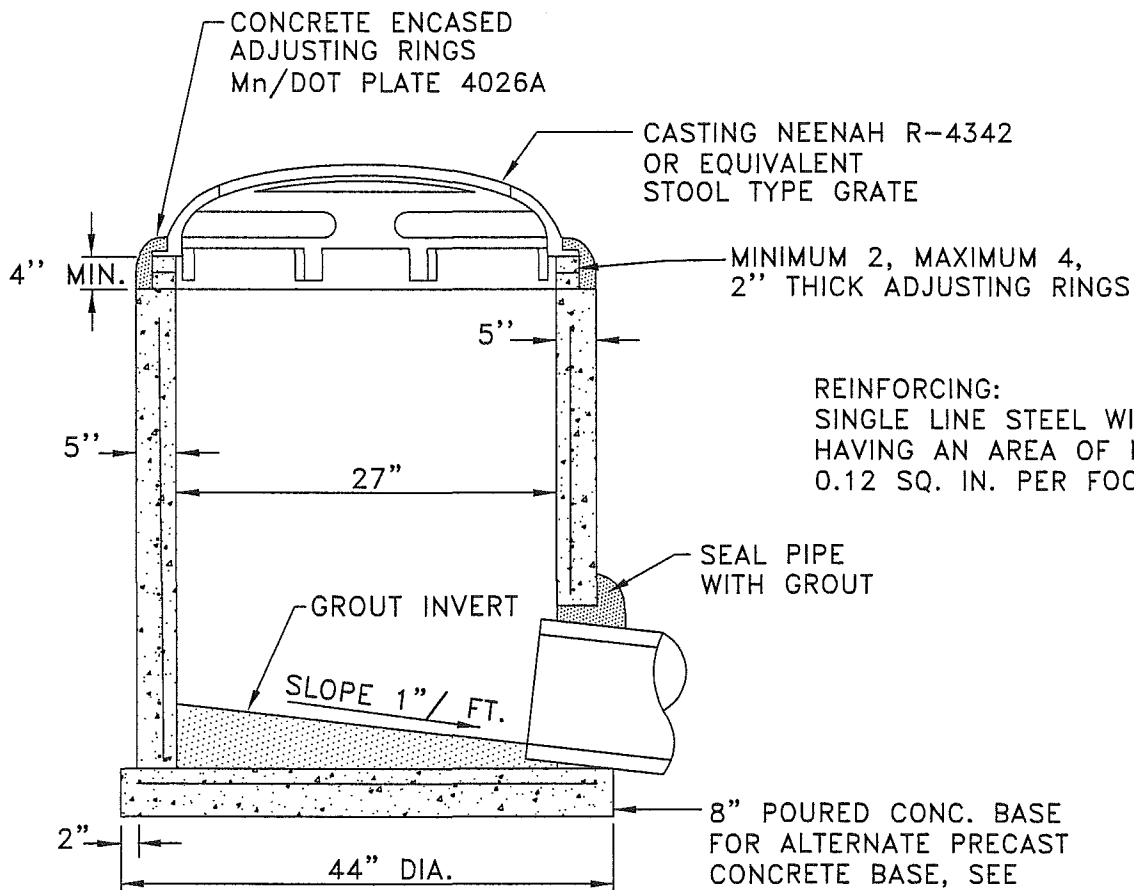
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-409



TOP VIEW



REINFORCING:
SINGLE LINE STEEL WIRE FABRIC
HAVING AN AREA OF NOT LESS THAN
0.12 SQ. IN. PER FOOT OF HEIGHT.

SEAL PIPE
WITH GROUT

8" POURED CONC. BASE
FOR ALTERNATE PRECAST
CONCRETE BASE, SEE
STANDARD PLATES INDEX.
BASE REINFORCEMENT:
0.12 SQ. IN. PER FOOT
IN EACH DIRECTION.

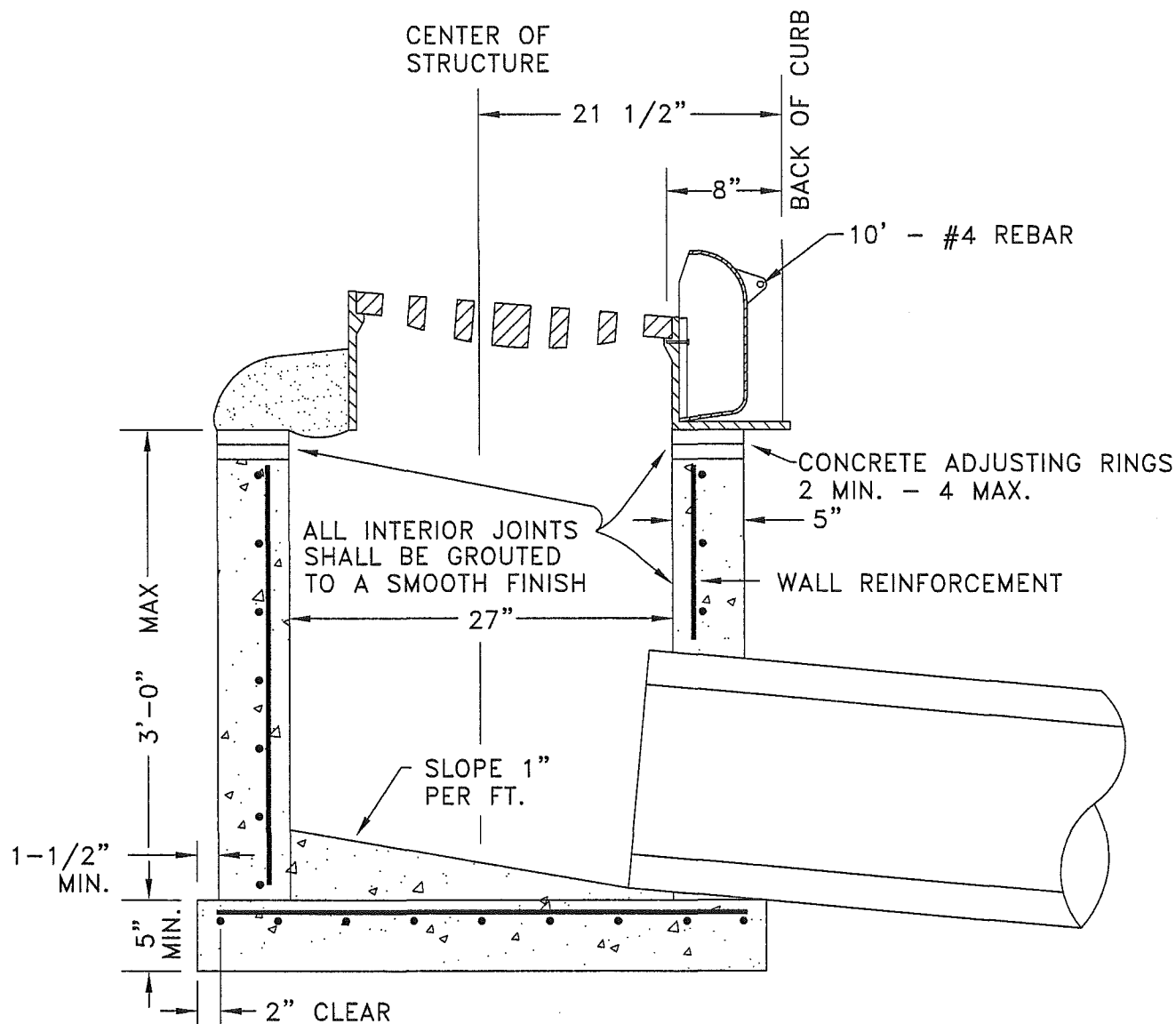
27" PRECAST CATCH BASIN YARD INLET

NO SCALE

APPROVED - JDP
08/2009
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-410



STANDARD CATCH BASIN

NO SCALE

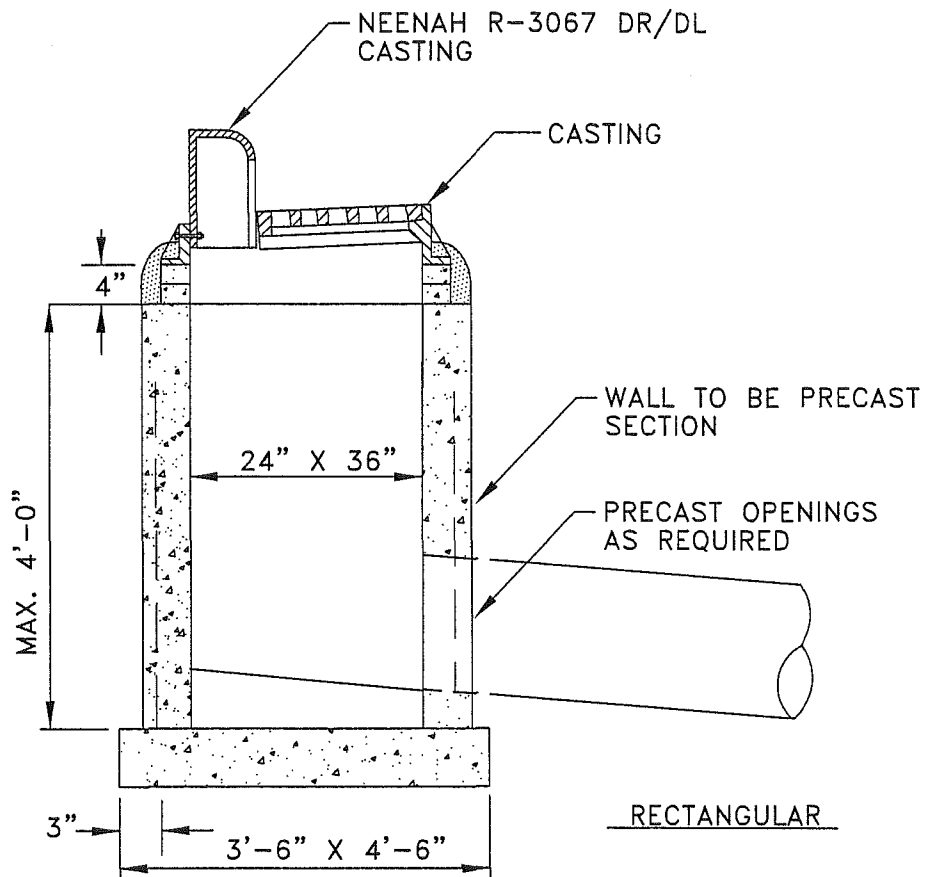
APPROVED - JDP

08/2009

REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-411



NOTE:

1. CONCRETE ADJUSTING RINGS MIN. 2-2" RINGS
MAX 4-2" RINGS
2. CONCRETE BASE SHALL 6" POURED IN
PLACE OR 5" PRECAST SLAB.

2' X 3' CATCH BASIN

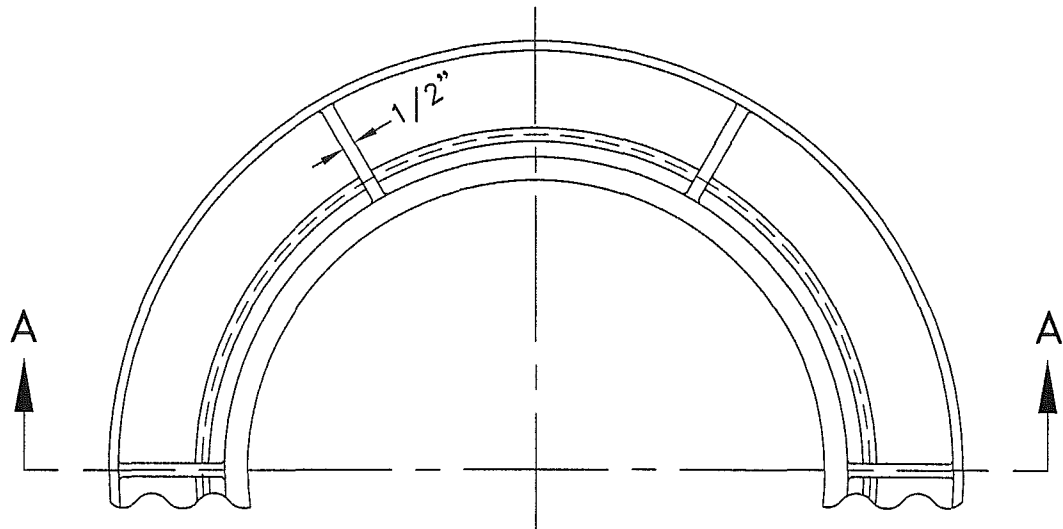
NO SCALE

APPROVED - JDP
08/2009

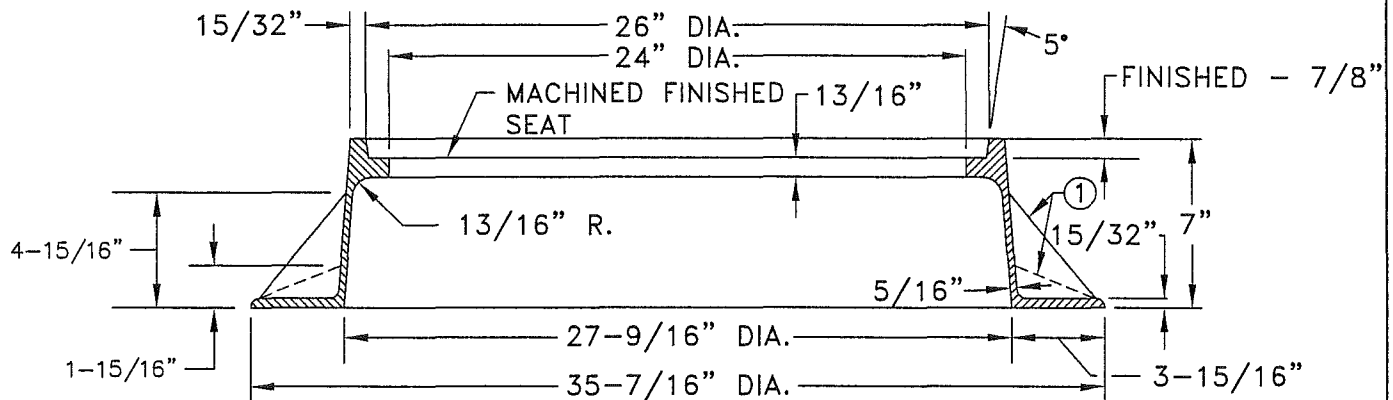
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-411B



HALF TOP VIEW



SECTION A-A
NO. 700-7

7" CASTING NO. 700-7 (118 LBS.)

NOTES:

THIS RING CASTING TO BE USED IN CONJUNCTION WITH
MANHOLE COVER NO. 716

① ALTERNATING GUSSETS (3 EACH).

STURCTURE CASTING (MnDOT 4110)

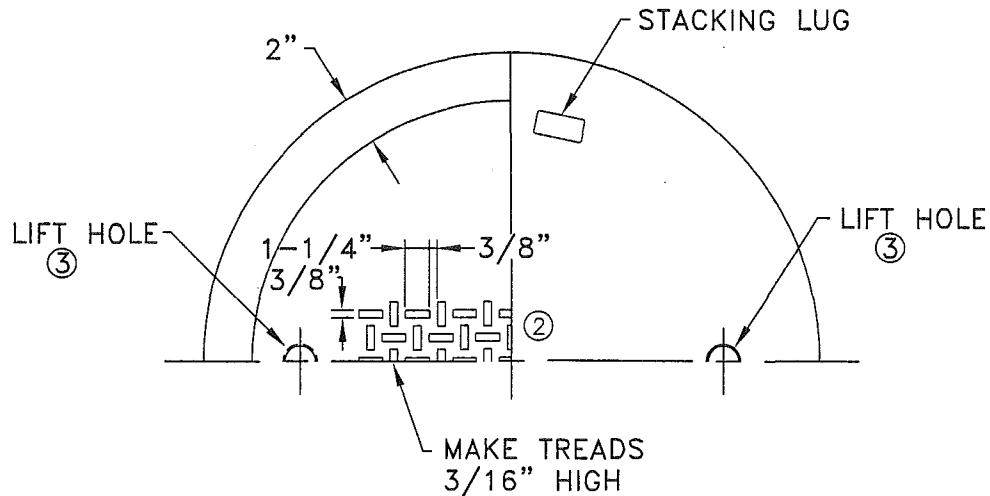
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08/2009

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STANFORD TOWNSHIP

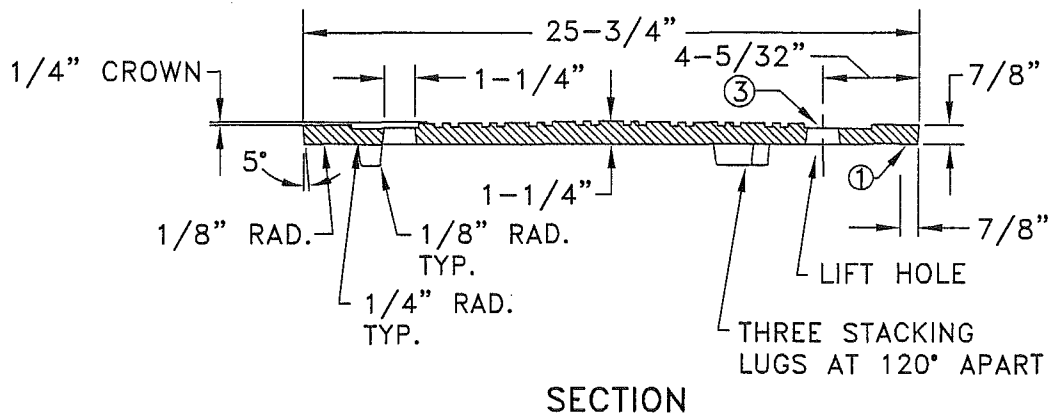
STANDARD PLATE NO.
STM-412



TOP VIEW

BOTTOM VIEW

CASTING NO. 716



NOTES:

THESE COVERS TO BE USED WITH RING CASTING NO. 700-7.

① MACHINE FINISHED THICKNESS TO BE 13/16".

② COVER SHALL BE MADE OF GRAY IRON. CLASS 35B.

③ LIFT HOLE 1-1/4" DIA. AT THE TOP, 1-1/2" AT THE BOTTOM.

STORM COVER (MnDOT 4110)

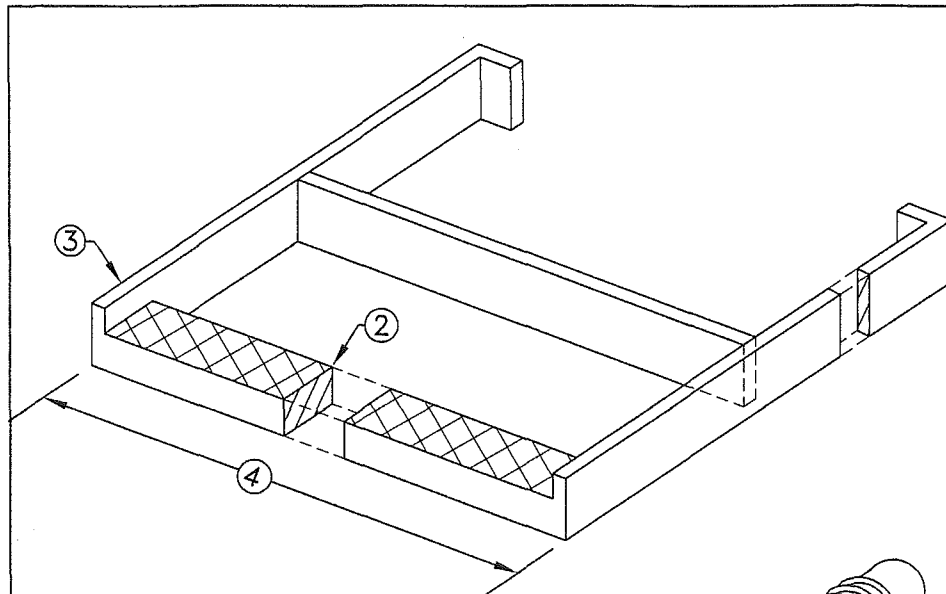
NO SCALE

APPROVED - JDP
08/2009

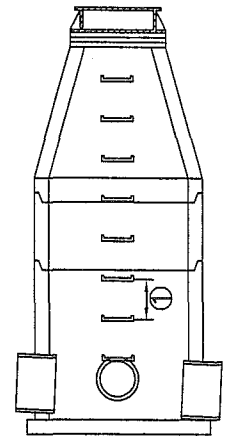
REVISED

STANFORD TOWNSHIP

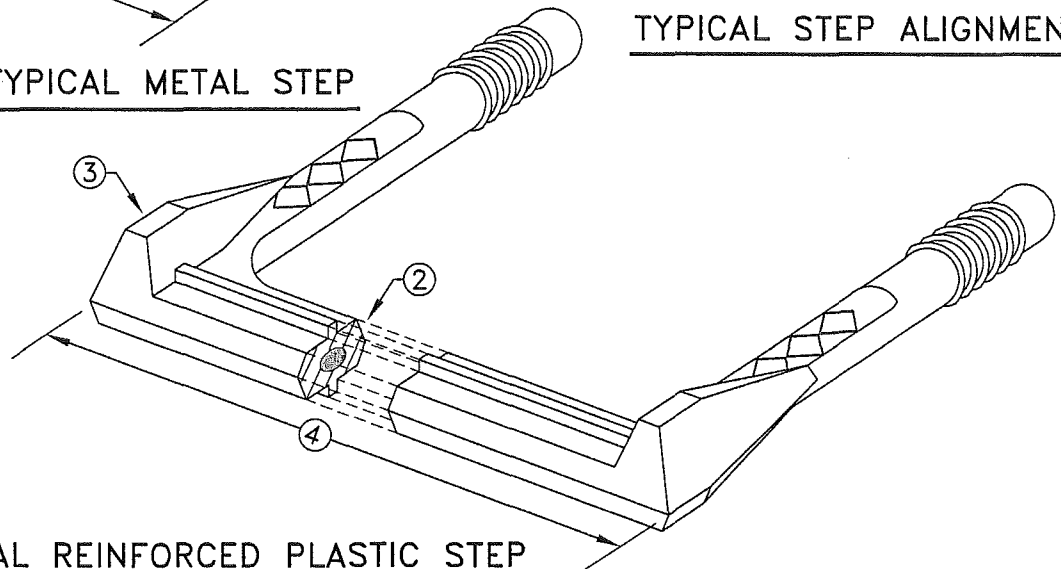
STANDARD PLATE NO.
STM-413



TYPICAL METAL STEP



TYPICAL STEP ALIGNMENT



TYPICAL REINFORCED PLASTIC STEP

NOTES:

STEPS SHOWN ARE BASIC DESIGN ONLY. FINAL CONFIGURATIONS MAY VARY FROM THESE DRAWINGS.

VARIATIONS IN THE ABOVE DESIGNS WHICH WILL NOT DECREASE STRENGTH WILL BE PERMITTED.

THE OFFICE OF MATERIALS, RESEARCH AND ENGINEERING WILL MAINTAIN A LISTING OF APPROVED MANHOLE STEPS. CURRENTLY APPROVED STEPS ARE ALUMINUM, CAST IRON AND STEEL REINFORCED PLASTIC. SELECTION OF APPROVED STEP DESIGN IS THE OPTION OF THE CONTRACTOR OR SUPPLIER.

ALUMINUM STEPS SHALL CONFORM TO ASTM 826-64A, ALLOY AA 514.0. EMBEDDED LEG SECTIONS SHALL BE GIVEN A NEOPRENE PROTECTIVE COATING OR EQUIVALENT FOR CORROSION PROTECTION. COATINGS SHALL BE APPROVED BY MATERIALS ENGINEERING.

EXCEPT AS OTHERWISE NOTED ON THIS PLATE, STEPS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C478.

STEPS SHALL BE EMBEDDED IN THE RISER OR CONICAL TOP SECTION WALL A MINIMUM DISTANCE OF 3 IN.

THE RUNG OR CLEAT SHALL PROJECT A MINIMUM CLEAR DISTANCE OF 4 IN. FROM THE WALL OF THE RISER OR CONE SECTION MEASURED FROM THE POINT OF EMBEDMENT.

THE MIN CLEAR DISTANCE BETWEEN THE RUNG OR CLEAT AND THE OPPOSITE WALL OF THE MANHOLE RISER OR CONE SHALL BE 18 IN. MEASURED AT THE CENTER FACE OF THE STEP.

- ① STEPS SHALL BE SPACED AT A MAXIMUM DESIGN DISTANCE OF 16" APART.
- ② STEPS SHALL HAVE A MINIMUM CROSS SECTION DIMENSION OF 1 IN.
- ③ MINIMUM VERTICAL SIDE DIMENSION TO PREVENT FOOT FROM SLIPPING OFF IS 1/2"
- ④ THE MINIMUM WIDTH OF RUNGS OR CLEATS SHALL BE 10 IN.

MANHOLE STEP (MnDOT 4180J)

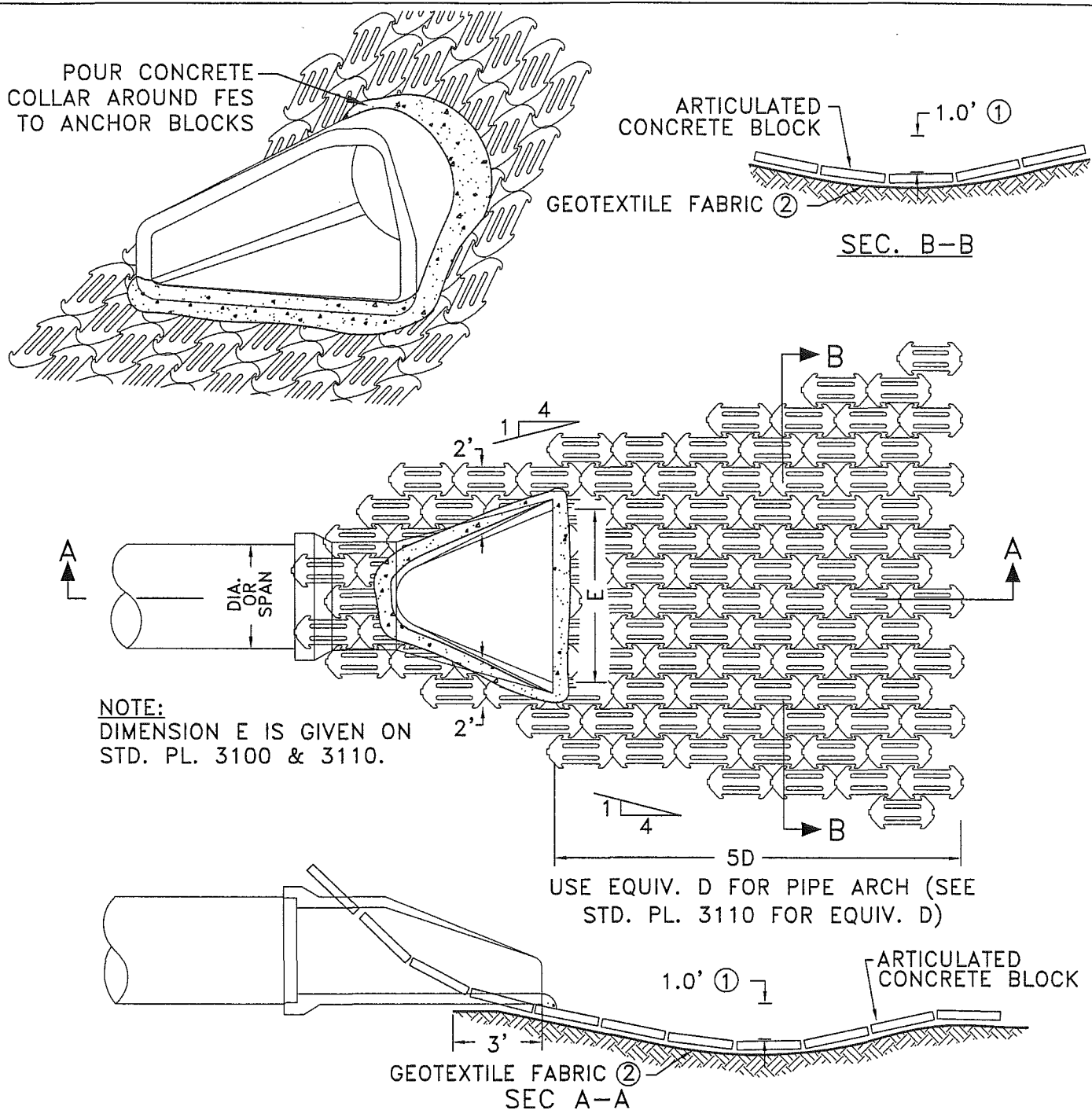
APPROVED - JDP

08/2009

REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
STM-414



ARTICULATED CONCRETE BLOCK SHALL BE A HANDPLACED INTERLOCKING CONCRETE BLOCK SYSTEM OR CABLE CONNECED CONCRETE BLOCK MAT.

- ① FOR PIPES GREATER THAN OR EQUAL TO 48", USE 2.0'
- ② GEOTEXTILE FABRIC PER Mn/DOT SPEC. 3733. FABRIC SHALL COVER THE AREA OF THE ARTICULATED BLOCK MAT AND EXTEND UNDER THE CULVERT APRON 3 FEET.
- ③ IF A CABLE CONCRETE SYSTEM IS USED, MULTIPLE MATS MUST BE TIED TOGETHER PER MANUFACTURERS SPEC. AND ALL CABLES PROTRUDING BEYOND THE FINISHED EDGES SHALL BE CUT FLUSH TO THE BLOCK.

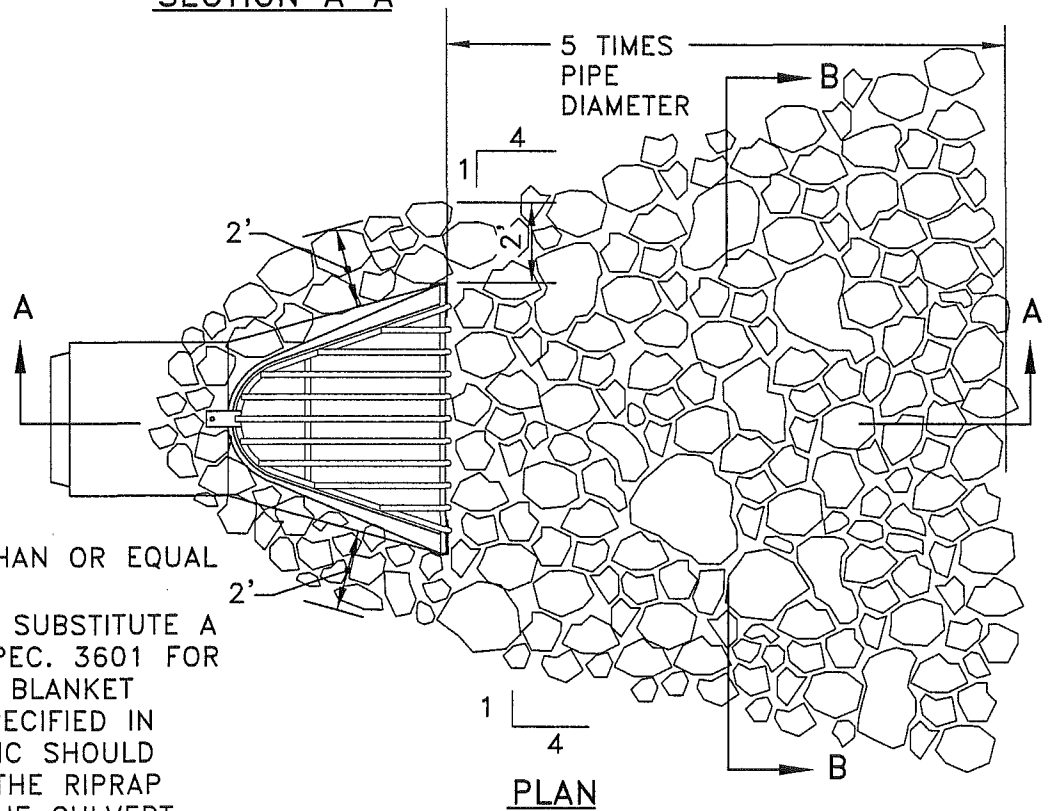
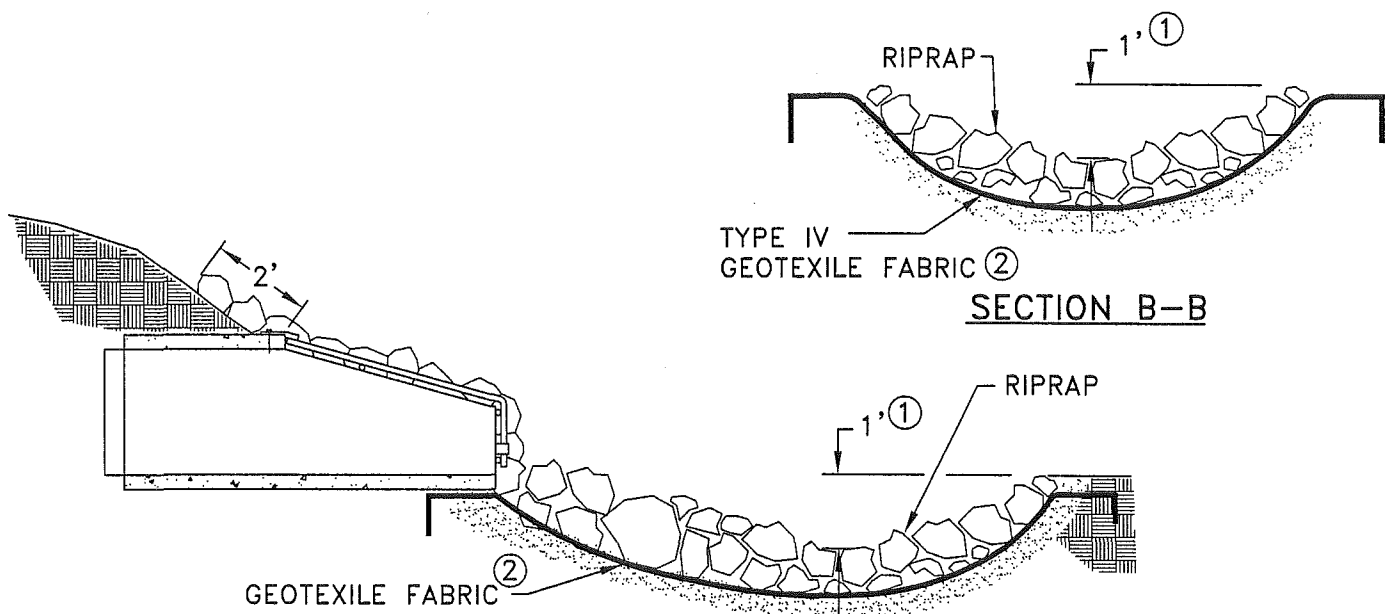
ARTICULATED CONCRETE BLOCK AT R.C.P. OUTLET

NO SCALE

APPROVED - JDP
08/2009
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
EROS-500



- ① FOR PIPES GREATER THAN OR EQUAL TO 48" USE 2.0'
- ② THE CONTRACTOR MAY SUBSTITUTE A GEOTEXTILE FABRIC, SPEC. 3601 FOR THE GRANULAR FILTER BLANKET UNLESS OTHERWISE SPECIFIED IN THE PLANS. THE FABRIC SHOULD COVER THE AREA OF THE RIPRAP AND EXTEND UNDER THE CULVERT APRON 3 FEET.
- ③ TRASH GUARD REQUIRED FOR 18" PIPE OR LARGER.
- ④ QUANTITIES AS PER MnDOT STANDARD PLATE UNLESS OTHERWISE SPECIFIED IN THE PLANS.

RIPRAP PLACEMENT

NO SCALE

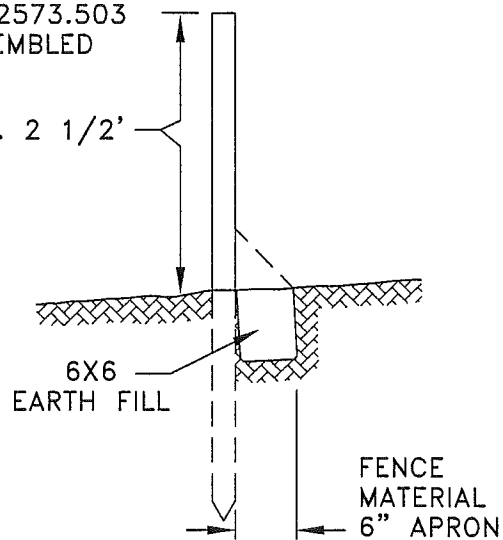
APPROVED - JDP
07/2009
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
EROS-500A

MnDOT 2573.503
PREASSEMBLED

MIN. 2 1/2'



5' POSTS - 8' MAX. ON CENTER
MINIMUM 2' PENETRATION

REF. MnDOT 3886

SILT FENCE

NO SCALE

APPROVED - JDP

08/2009

REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
EROS-501

WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE

NO SCALE

WOOD FIBER
BLANKET MULCH

ADJACENT
PROPERTY

END OF UPPER BLANKET
TO OVERLAP BOTTOM

END OF BLANKET
BURIED IN 6" DEEP
VERTICAL TRENCH

10"
MIN

NOTE:

WOOD FIBER BLANKET SHALL BE PLACED AND STAPLED ACCORDING TO Mn/DOT SPECIFICATION 2575.3K2 WITH THE FOLLOWING EXCEPTIONS. ADJACENT STRIP EDGES SHALL BE OVERLAPPED A MINIMUM OF 6".

BIODEGRADABLE STAPLE STAKES (PLASTIC OR WOOD) SHALL BE USED IN PLACE OF METAL WIRE STAPLES.

ECOSTAKES AND BIOSTAKES ARE ACCEPTABLE PRODUCTS FOR USE TO FASTEN WOOD FIBER BLANKET.

APPROVED - JDP

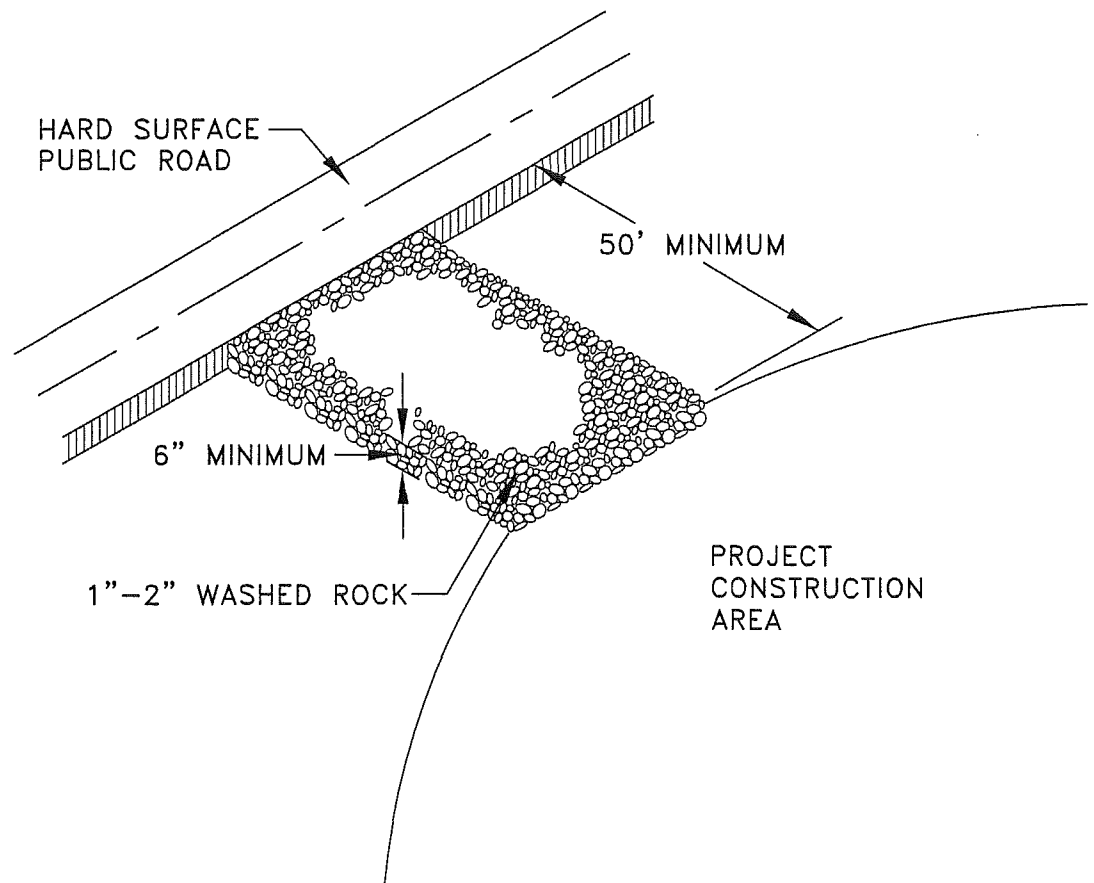
08/2009

REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
EROS-502

SEDIMENT TRACK OUT CONTROL



* ALTERNATE DEVICES AND METHODS REQUIRE TOWNSHIP ENGINEER APPROVED PLANS.

ROCK CONSTRUCTION ENTRANCE

NO SCALE

APPROVED - JDP
08/2009

REVISED

STANFORD TOWNSHIP

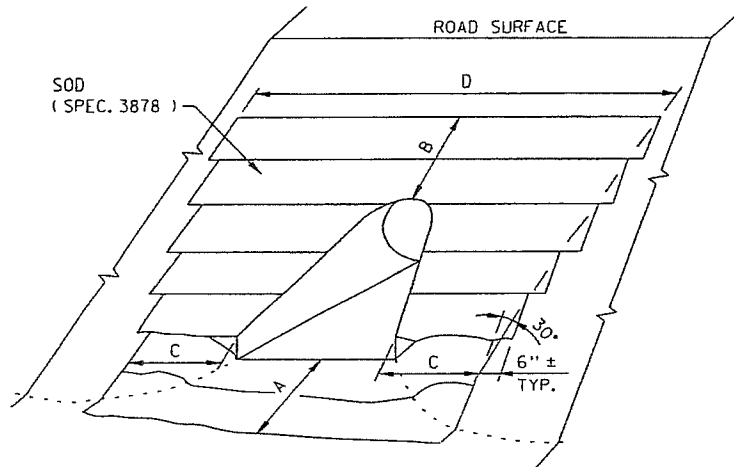
STANDARD PLATE NO.
EROS-503

APPROVED Dec. 12, 1990
[Signature]
 DIRECTOR
 OFFICE OF TECHNICAL SUPPORT

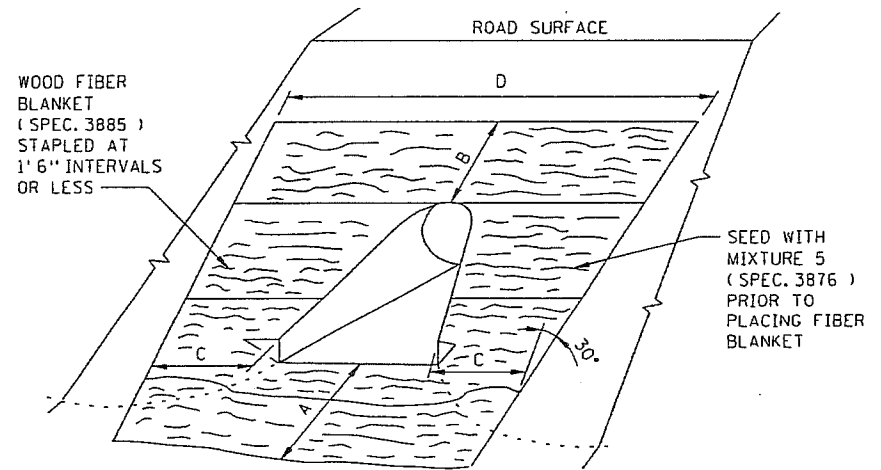
STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION
 TURF ESTABLISHMENT AREAS
 (AT PIPE CULVERT ENDS)

SPECIFICATION
 REFERENCE
 2575

STANDARD
 PLATE
 NO.
 9102D



SODDING DETAIL



MULCHING & SEED DETAIL

QUANTITIES (SQ. YDS.) AROUND CULVERT APRONS ①

CULVERT DIAMETER	SOD OR MULCH AREA (SQ. YDS.)		"A"	"B"	"C"	"D"
	METAL APRON	CONCRETE APRON				
15" & SMALLER	7	8	3'	1.5'	3'	13'
18"	11	10	3'	3'	3'	16'
24"	13	13	3'	3'	3'	18'
30"	19	19	3'	4.5'	3'	22'
36"	28	29	4.5'	4.5'	4.5'	27'
42"	36	34	4.5'	6'	4.5'	30'
48"	45	42	4.5'	7.5'	4.5'	34'
54"	54	47	4.5'	9'	4.5'	37'
60"	57	46	4.5'	9'	4.5'	39'
66"	58	50	4.5'	9'	4.5'	39'
72"	65	59	4.5'	10.5'	4.5'	41'
78"	78	75	6'	10.5'	6'	45'
84"	79	76	6'	10.5'	6'	45'
90"	—	77	6'	10.5'	6'	45'

CULVERT DIAMETER	SOD OR MULCH AREA (SQ. YDS.)		"A"	"B"	"C"	"D"
	METAL APRON	CONCRETE APRON				
15" & SMALLER	9	9	4.5'	1.5'	3'	13'
18"	11	11	6'	1.5'	3'	14'
24"	15	15	7.5'	1.5'	3'	16'
30"	19	20	9'	1.5'	3'	18'
36"	30	30	10.5'	1.5'	4.5'	23'
42"	36	34	12'	1.5'	4.5'	25'
48"	41	39	13.5'	1.5'	4.5'	27'
54"	47	41	15'	1.5'	4.5'	29'
60"	62	52	16.5'	1.5'	6'	33'
66"	63	56	16.5'	1.5'	6'	33'
72"	64	58	16.5'	1.5'	6'	34'
78"	65	62	16.5'	1.5'	6'	34'
84"	66	63	16.5'	1.5'	6'	35'
90"	—	65	16.5'	1.5'	6'	35'

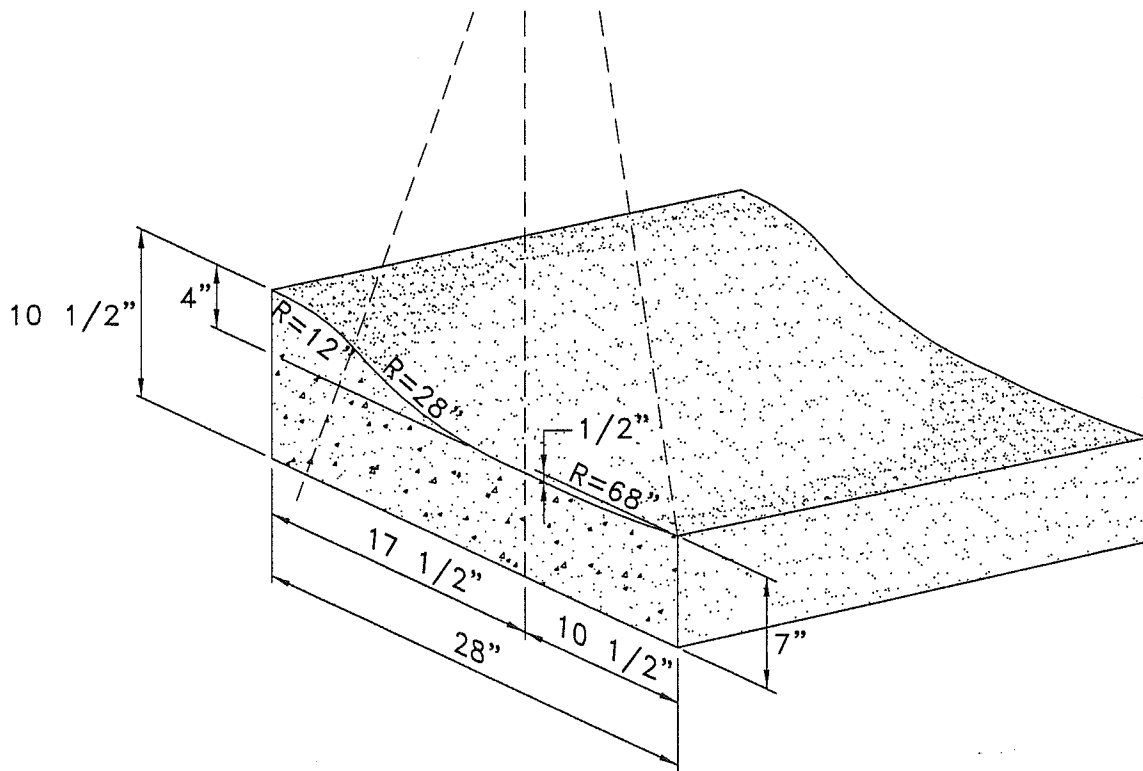
NOTES:

AREA SHOWN IN SQUARE YARDS IS FOR ONE CULVERT END. FOR PIPE ARCHES USE AREA OF EQUIVALENT DIAMETER PIPE.

AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE BASED ON CULVERT SLOPES. BUT NO STEEPER THAN 2:1.

DETAILS ARE SHOWN FOR METAL APRON, THE SAME DIMENSIONS, EXCEPT DIMENSION "D". APPLY WHEN A CONCRETE APRON IS USED. DIMENSION "D" MAY VARY SLIGHTLY DUE TO DIFFERENT WIDTHS OF APRON FROM METAL AND CONCRETE. DIMENSION "D" SHOWN FOR 90" DIA. APRON IS FOR CONCRETE APRON.

① ADDITIONAL QUANTITIES MAY BE SHOWN IN THE PLAN OR REQUIRED BY THE ENGINEER.



SURMOUNTABLE CURB AND GUTTER

NO SCALE

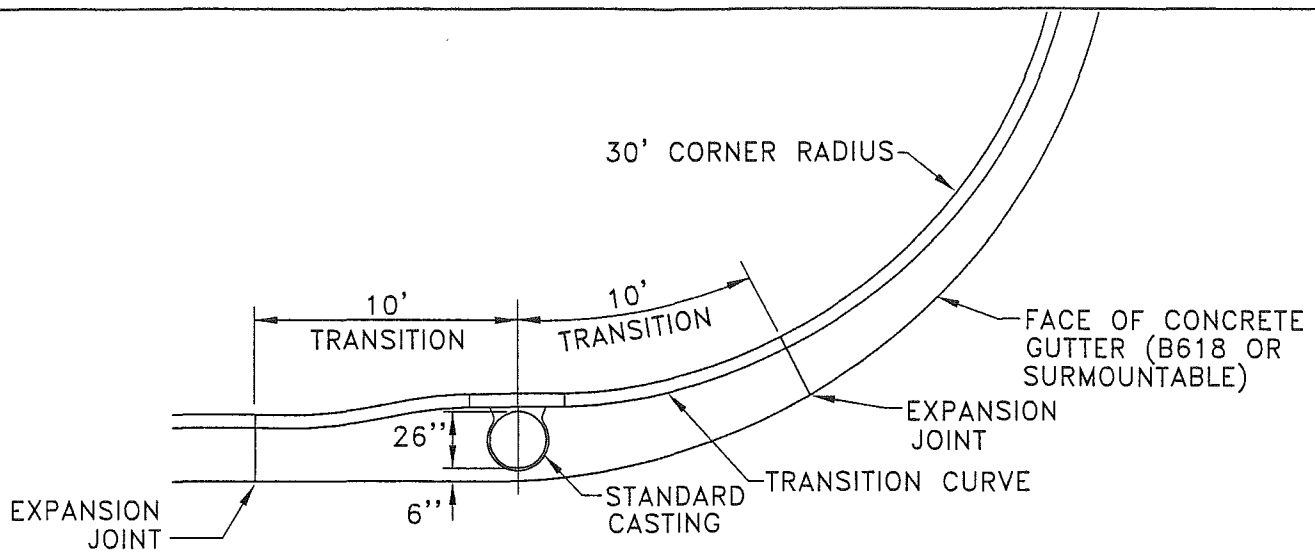
APPROVED - JDP

08/2009

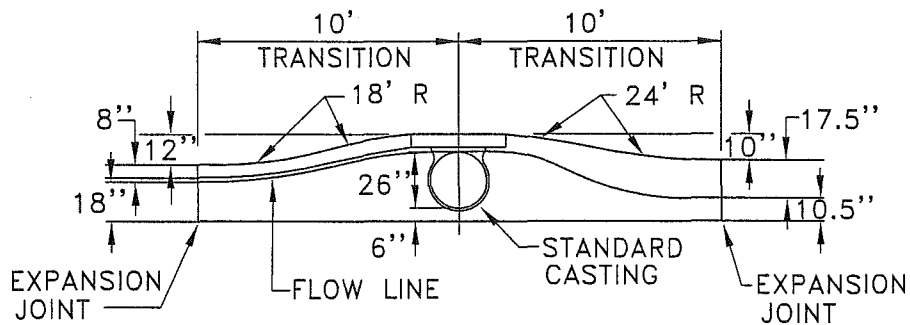
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
CURB 700



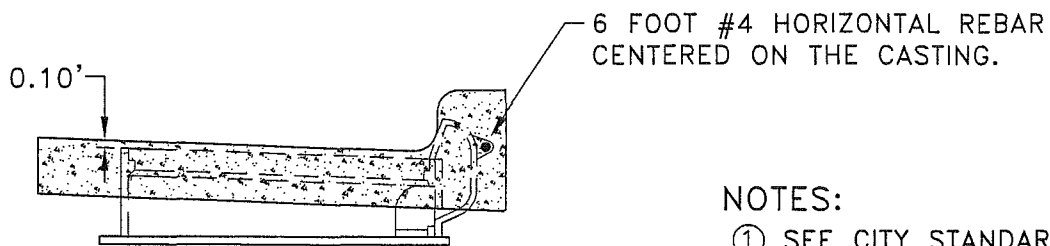
**PLAN
(RADIUS CURB)**



**B618
CURB AND GUTTER**

**SURMOUNTABLE
CURB AND GUTTER**

**PLAN
(STRAIGHT CURB)**



**CURB REINFORCING
(DESIGN B CURB)**

NOTES:

- ① SEE CITY STANDARD PLATE NO. 702 FOR INLET CASTING.
- ② PERIMETER GROUT NOT SHOWN. SEE CITY STANDARD PLATE NO. 407 AND 408.

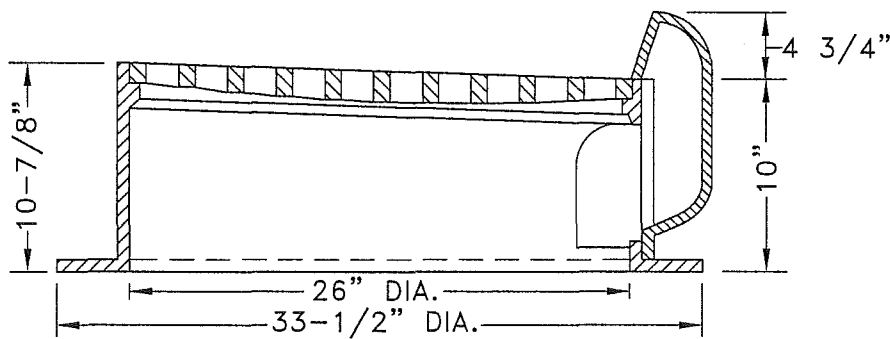
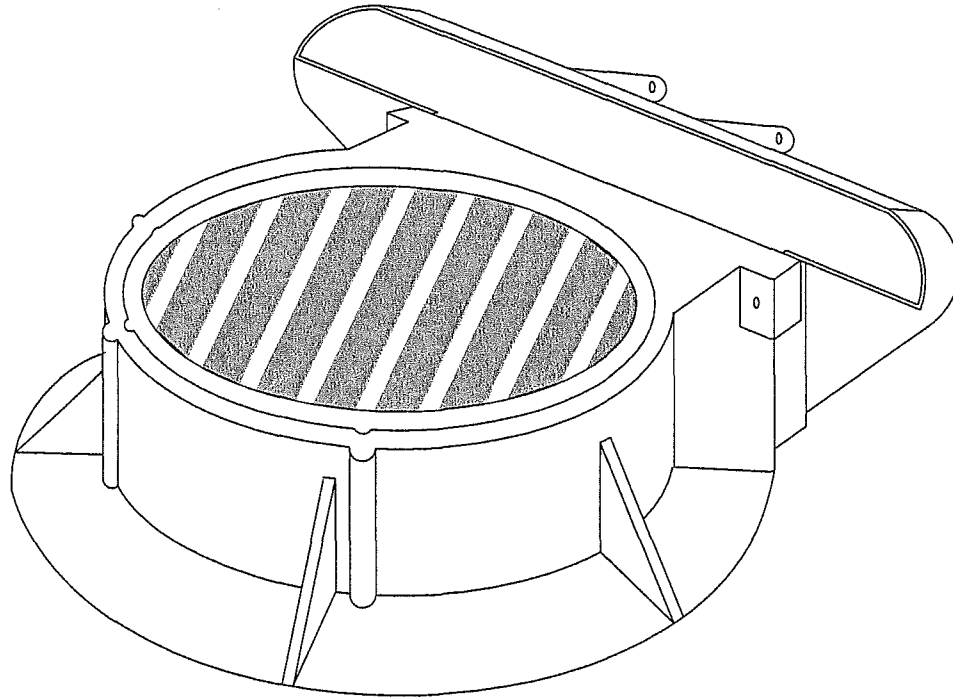
CURB TRANSITION AT CATCH BASIN

NO SCALE

APPROVED - JDP
08/2009
REVISED

STANFORD TOWNSHIP

**STANDARD PLATE NO.
CURB 701**

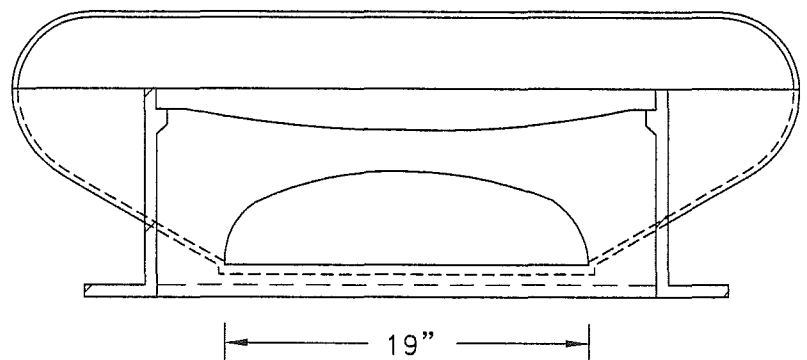


INLET ASSEMBLY

NEENAH FOUNDRY NO. R-3250-1K
OR APPROVED EQUAL.

SEE CITY STANDARD PLATE 701 FOR
CURB & GUTTER CONSTRUCTION
AT CATCH BASIN.

ESS BROTHERS CASTING 801M
MODIFIED IS AN APPROVED EQUAL.



CURB TRANSITION AT CATCH BASIN

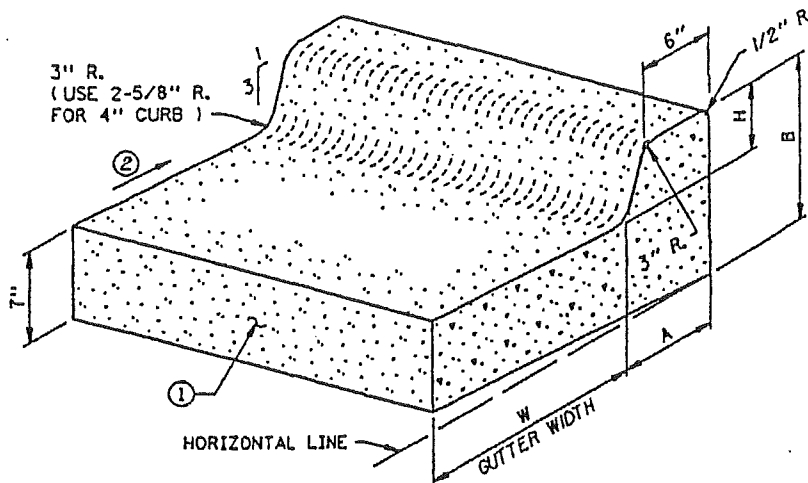
NO SCALE

APPROVED - JDP
07/2009

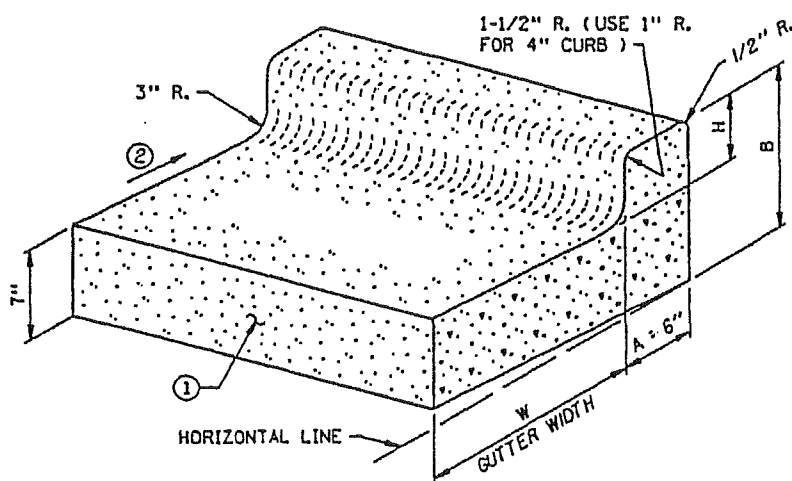
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STANFORD TOWNSHIP

STANDARD PLATE NO.
CURB 702



DESIGN B



DESIGN V

NOTES:

- ① LONGITUDINAL JOINT WHEN ADJACENT TO RIGID PAVEMENT OR BASE.
SEE STANDARD PLANS MANUAL FOR JOINT INFORMATION.
- ② SLOPE 3/4" PER FOOT NORMAL, UNLESS OTHERWISE SPECIFIED. IF A DIFFERENT GUTTER SLOPE IS PERMITTED, THE FORM MAY BE TILTED.

DESIGN B			W = 12''			W = 18''			W = 24''			W = 30''			W = 36''			
			DESIGN NO.	CONCRETE			DESIGN NO.	CONCRETE			DESIGN NO.	CONCRETE			DESIGN NO.	CONCRETE		
				CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.			CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.			CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.			CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.	
DIMENSIONS																		
H	A	B																
4	7-3/8"	11-1/2"	B412	0.0421	23.8	B418	0.0529	18.9	B424	0.0637	15.7	B430	0.0745	13.4	B436	0.0853	11.7	
6	8"	13-1/2"	B612	0.0474	21.1	B618	0.0582	17.2	B624	0.0690	14.5	B630	0.0798	12.5	B636	0.0906	11.0	
8	8-5/8"	15-1/2"	B812	0.0529	18.9	B818	0.0637	15.7	B824	0.0745	13.4	B830	0.0853	11.7	B836	0.0962	10.4	
9	9"	16-5/8"	B912	0.0559	17.9	B918	0.0667	15.0	B924	0.0775	12.9	B930	0.0883	11.3	B936	0.0991	10.1	
10	9-3/8"	17-5/8"	B1012	0.0589	17.0	B1018	0.0697	14.4	B1024	0.0805	12.4	B1030	0.0913	11.0	B1036	0.1021	9.8	

DESIGN V			W = 12''				W = 18''				W = 24''				W = 30''				W = 36''			
			DESIGN NO.	CONCRETE			DESIGN NO.	CONCRETE			DESIGN NO.	CONCRETE			DESIGN NO.	CONCRETE			DESIGN NO.	CONCRETE		
				CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.			CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.			CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.			CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.			CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.	
DIMENSIONS																						
H	A	B																				
4	6"	11-3/8"	V412	0.0396	25.3	V418	0.0504	19.9	V424	0.0612	16.4	V430	0.0720	13.9	V436	0.0828	12.1					
6	6"	13-3/8"	V612	0.0426	23.5	V618	0.0534	18.7	V624	0.0642	15.6	V630	0.0750	13.4	V636	0.0858	11.7					
8	6"	15-3/8"	V812	0.0457	21.9	V818	0.0565	17.7	V824	0.0673	14.9	V830	0.0781	12.8	V836	0.0889	11.3					
9	6"	16-3/8"	V912	0.0472	21.2	V918	0.0580	17.2	V924	0.0688	14.5	V930	0.0796	12.6	V936	0.0904	11.1					
10	6"	17-3/8"	V1012	0.0487	20.5	V1018	0.0595	16.8	V1024	0.0703	14.2	V1030	0.0811	12.4	V1036	0.0919	10.9					

APPROVED MARCH 11, 1994

R.H. Carver

ACTING STATE DESIGN ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CONCRETE CURB AND GUTTER
DESIGN B AND DESIGN V

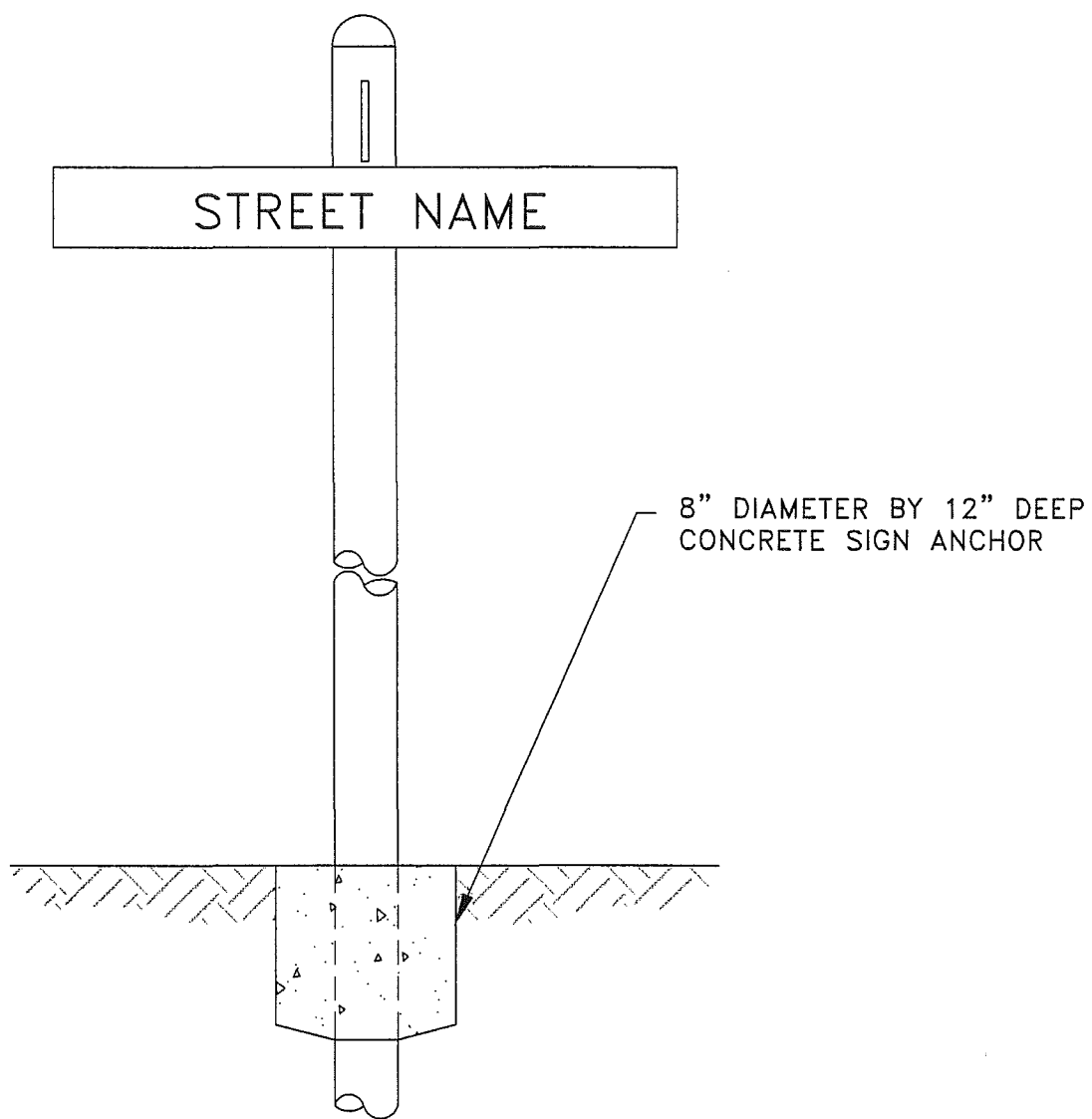
SPECIFICATION
REFERENCE

2531

REVISED
6-1-99 A.K.J.

STANDARD
PLATE
NO.

7100G



STREET SIGN INSTALLATION

NO SCALE

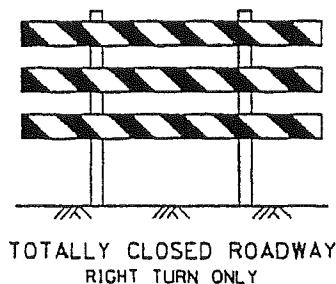
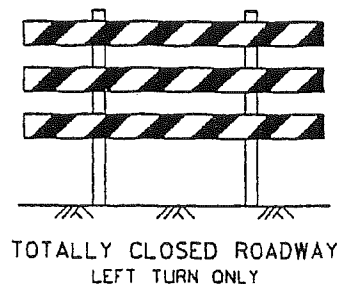
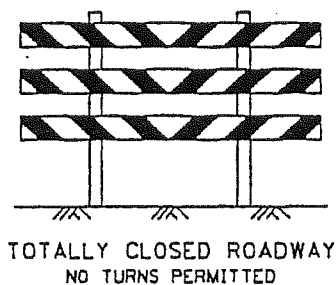
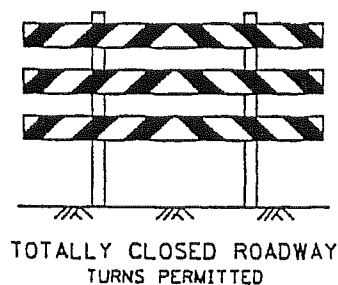
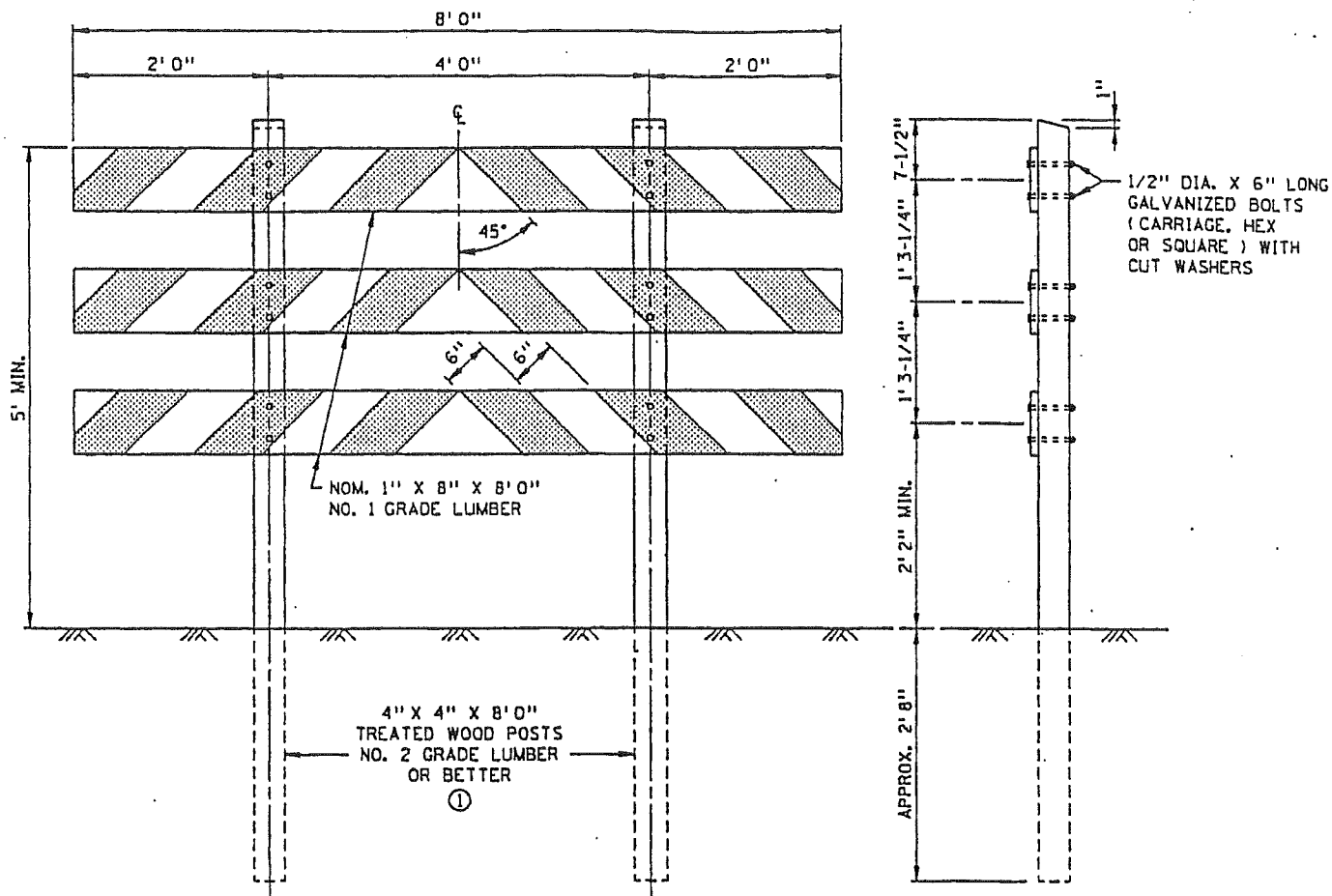
APPROVED - JDP

08/2009

REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
TRAF 800



NOTES:

THE BARRICADE BOARD FACE SURFACES SHALL BE FULLY REFLECTORIZED IN ALTERNATE SILVER-WHITE AND RED STRIPING, USING REFLECTIVE SHEETING CONFORMING TO THE REQUIREMENTS OF SPEC. 3352.2A2b, STANDARD NO. 2.

PRIOR TO INSTALLING THE REFLECTIVE SHEETING, THE BARRICADE BOARDS SHALL BE GIVEN A COMPLETE COATING 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 REFLECTORIZED SHEETING APPLIED BEFORE BEING INSTALLED ON THE POSTS.

① ALTERNATE MATERIALS FOR POSTS MAY BE USED WHEN APPROVED BY THE OFFICE OF TRAFFIC ENGINEERING.

APPROVED AUGUST 8, 1995

Donald J. Rasmussen
STATE DESIGN ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

PERMANENT BARRICADE

SPECIFICATION
REFERENCE

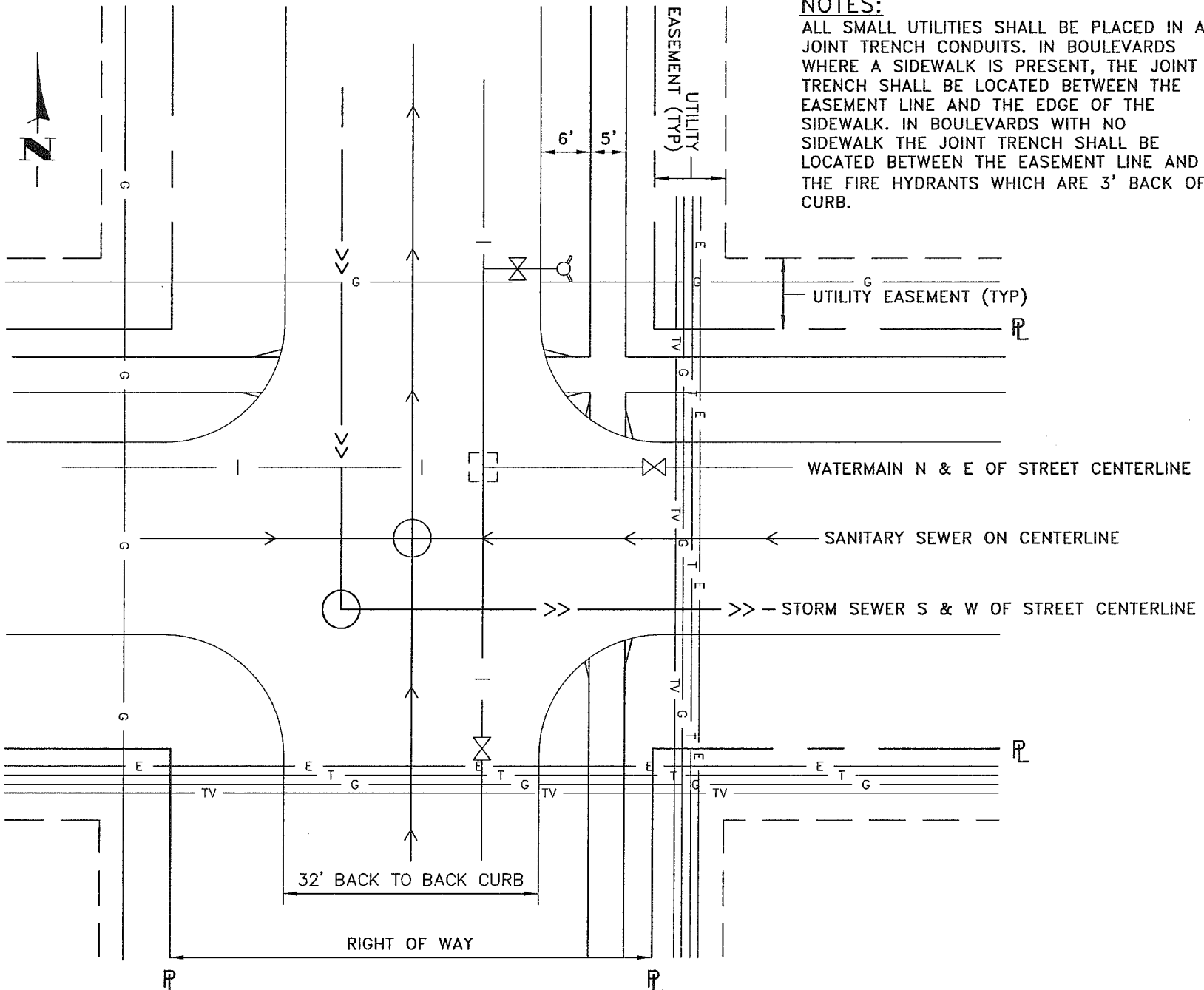
2554

STANDARD
PLATE
NO.

8002G

NOTES:

ALL SMALL UTILITIES SHALL BE PLACED IN A JOINT TRENCH CONDUITS. IN BOULEVARDS WHERE A SIDEWALK IS PRESENT, THE JOINT TRENCH SHALL BE LOCATED BETWEEN THE EASEMENT LINE AND THE EDGE OF THE SIDEWALK. IN BOULEVARDS WITH NO SIDEWALK THE JOINT TRENCH SHALL BE LOCATED BETWEEN THE EASEMENT LINE AND THE FIRE HYDRANTS WHICH ARE 3' BACK OF CURB.



LOCATIONS OF PUBLIC UTILITIES

NO SCALE

APPROVED - JDP
08/2009
REVISED

STANFORD TOWNSHIP

STANDARD PLATE NO.
MISC 900