MINNESOTA DEPARTMENT OF TRANSPORTATION

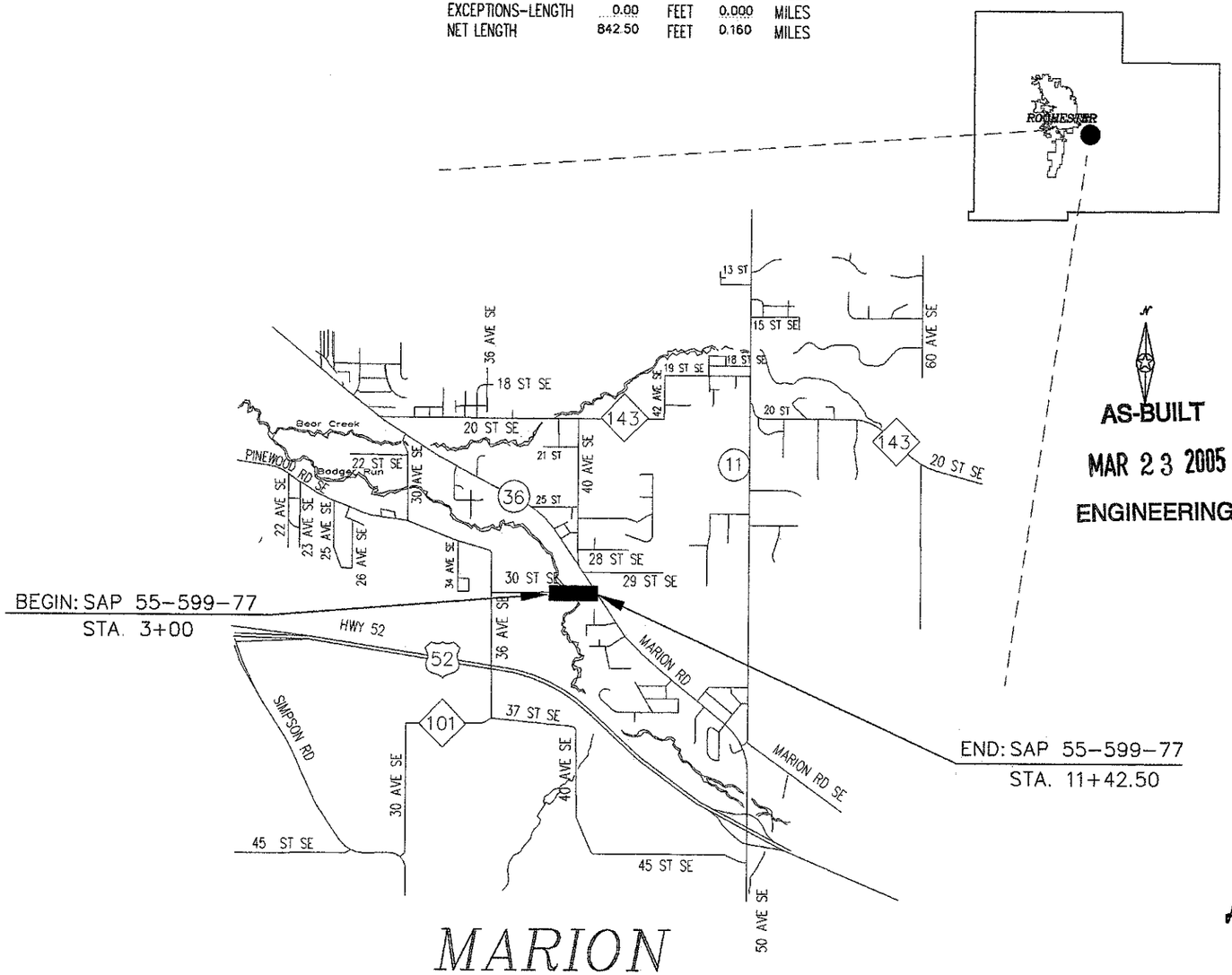
THE COUNTY OF OLMSTED

CONSTRUCTION PLAN FOR BRIDGE REPLACEMENT (NO. L6234 OLD) (55J38 NEW)

LOCATED ON 30TH ST SE (MARION TWP RD #169) BETWEEN 1/4 MILE EAST OF JCT. 30TH ST SE & PINEWOOD RD AND JCT. OF 30TH ST SE & CSAH 36 (GEOGRAPHIC DESCRIPTION)

FROM 326 FEET WEST of the SEC. COR 16,17,20-21 T 106 N - R 13 W TO 517 FEET EAST of the SECTION COR. 16,17,20-21 T 106 N - R 13 W (LEGAL DESCRIPTION)

S.A.P. NO.	55-599-77			
GROSS LENGTH	842.50	FEET	0.160	MILES
BRIDGE-LENGTH	0.00	FEET	0.000	MILES
EXCEPTIONS-LENGTH	0.00	FEET	0.000	MILES
NET LENGTH	842.50	FEET	0.160	MILES



AS-BUILT

MAR 23 2005

ENGINEERING

PLAN SYMBOLS

STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT-OF-WAY LINE
PRESENT RIGHT-OF-WAY LINE
CONTROL OF ACCESS LINE
PROPERTY LINE (Except Land Lines)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
RETAINING WALL
RAILROAD
RAILROAD RIGHT-OF-WAY
RIVER OR CREEK
DRY RUN
DRAINAGE DITCH
DRAIN TILE
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
RAILROAD SNOW FENCE
STONE WALL OR FENCE
HEDGE
RAILROAD CROSSING SIGN
RAILROAD CROSSING BELL
ELECTRIC WARNING SIGN
CROSSING GATE
MEANDER CORNER
SPRINGS
MARSH
TIMBER
ORCHARD
BRUSH
NURSERY
CATCH BASIN
FIRE HYDRANT
CATTLE GUARD
OVERPASS (HIGHWAY OVER)
UNDERPASS (HIGHWAY UNDER)
BRIDGE
BUILDING (ONE STORY FRAME)
F - FRAME C - CONCRETE
S - STONE T - TILE
B - BRICK ST - STUCCO
IRON PIPE OR ROD
MONUMENT (STONE, CONCRETE, OR METAL)
WOODEN HUB
GRAVEL PIT
SAND PIT
BORROW PIT
ROCK QUARRY
SLOPE EASEMENT

UTILITIES SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE AND POWER ON POWER POLE
ON TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDESTAL (TELEPHONE CABLE TERMINAL)
GAS MAIN
WATER MAIN
CONDUIT
TELEPHONE CABLE IN CONDUIT
ELECTRICAL CABLE IN CONDUIT
TELEPHONE MANHOLE
ELECTRICAL MANHOLE
BURIED TELEPHONE CABLE
BURIED ELECTRICAL CABLE
AERIAL TELEPHONE CABLE
SEWER (SANITARY OR SEWER)
SEWER MANHOLE

EROSION CONTROL SYMBOLS

TEMPORARY SILT FENCE
RIP RAP DITCH CHECKS

SCALES

PLAN 0 — 50'
PROFILE 0 — 50' HORIZ. 0 — 5' VERT.
CROSS SECTIONS 0 — 10'
INDEX MAP 0 — 2640'

MINN. PROJ. NO.

GOVERNING SPECIFICATIONS

THE 2000 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

INDEX FOR GRADING & BRIDGE (55J38)

SHEET NO. 1	TITLE SHEET
SHEET NO. 2	TYPICAL SECTION & ESTIMATE OF QUANTITIES
SHEET NO. 3-4	BRIDGE SHEETS
SHEET NO. 5-6	CROSS SECTION SHEETS
SHEET NO. 7-12	EROSION CONTROL SHEETS
SHEET NO. 13	TRAFFIC CONTROL SHEET
SHEET NO. 14	BARREL DETAILS
SHEET NO. 15	PRECAST CONC. END SECTION DETAILS

THIS PLAN CONTAINS 15 SHEETS.

DESIGN DESIGNATION: S.A.P. 55-599-77

R 2N18(20)
ADT (Current Year) = 1055(2002) Design Speed 45 MPH
ADT (Future Year) = 1688(2022) Based on STOPPING Sight Distance
DHV (Design Hr. Vol.) = Height of eye 3.5 FT Height of object 0.5 FT
D (Directional Distr.) = Design Speed not achieved at:
T (Heavy Commercial) = STA. 9+59.05 TO STA. 11+34.63 mph 30*
SUBGRADE = STA. TO STA. mph
LANE WIDTH 12 FT
SHOULDER WIDTH 4 FT
SOIL FACTOR = 130%

*STOP CONDITION

TOWNSHIP APPROVAL:
Gerald L. Campbell DATE 5-14-02
APPROVED: TOWNSHIP CHAIRPERSON

DESIGN ENGINEER: I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 4/26/02 LICENSE NUMBER 19917
PRINTED NAME: KAYE M. BIENIEK
SIGNED NAME: Kaye M. Bieniek
APPROVED: COUNTY DESIGN ENGINEER

DESIGNED BY: Holmes

DATE 5/3/02 LICENSE NUMBER 10397
Michael Sheehan
APPROVED: OLMSTED COUNTY ENGINEER

STATE AID APPROVALS:
DATE: 5-24-02
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY
ASST
DATE 5-30-02
APPROVED FOR STATE AID FUNDING:
STATE AID ENGINEER

ESTIMATED QUANTITIES

	SPECIFICATION NO.	ITEM	UNIT	NON PARTICIPATING	PARTICIPATING	TOTAL ESTIMATED QUANTITIES
①	2101.502	CLEARING	TREE	24		24
①	2101.507	GRUBBING	TREE	25		25
	2104.501	REMOVE PIPE CULVERTS	LIN. FT.	148		148
②	2105.515	UNCLASSIFIED EXCAVATION	CU. YDS.	1740		(P) 1740
	2105.523	COMMON BORROW (CV)	CU. YDS.	693		(P) 693
③	2211.501	AGGREGATE BASE CLASS 5	TON	1038		1038
	2221.501	AGGREGATE SHOULDERING CLASS 2	TON	271		271
	2350.501	TYPE MV4 WEARING COURSE MIXTURE (MVWE45035C)	TON	245		245
	2350.502	TYPE MV4 NON-WEARING COURSE MIXTURE (MVNW45035C)	TON	494		494
	2412.511	12' x 7' PRECAST CONCRETE BOX CULVERT	LIN. FT.		216	216
④	2412.512	12' x 7' PRECAST CONC. BOX CULVERT END SECTIONS	EACH		6	6
	2442.501	REMOVE OLD BRIDGE	EACH	1		1
	2451.507	GRANULAR BEDDING (CV)	CU. YDS.		160	(P) 160
	2501.511	18" C.S. PIPE CULVERT	LIN. FT.	114		114
	2501.511	30" R.C. PIPE CULVERT	LIN. FT.	56		56
	2501.515	18" G.S. PIPE APRON	EACH	6		6
	2501.515	30" R.C. PIPE APRON	EACH	2		2
⑤	2511.501	RANDOM RIPRAP CL. III	CU. YDS.		235	235
⑥	2573.502	SILT FENCE, TYPE MACHINE SLICED	LIN FT	400		400
	2575.501	SEEDING	ACRE	1		(P) 1
	2575.502	SEED MIXTURE 50B	POUND	50		50
	2575.502	SEED MIXTURE 110B	POUND	80		80
	2575.511	MULCH MATERIAL TYPE 1	TON	2		2
	2575.519	DISC ANCHORING	ACRE	1		(P) 1
	2575.532	COMMERCIAL FERTILIZER ANALYSIS 12-12-12	POUND	200		200

QUANTITY NOTES:

① TREES FOR REMOVAL SHALL BE DESIGNATED BY THE ENGINEER.

② UNCLASSIFIED EXCAVATION INCLUDES SUBGRADE TREATMENT AS SHOWN IN TYPICAL SECTION AND CROSS SECTIONS. 276 CU. YDS. OF EXCAVATION TO BE USED AS SALVAGED TOPSOIL.

③ 978 TONS ON MAINLINE AND 60 TONS ON ENTRANCES.

④ END SECTIONS WITH DROP WALLS.

⑤ PLACE RIPRAP ON GRANULAR FILTER OR GEOTEXTILE MATERIAL WHICH SHALL BE CONSIDERED INCIDENTAL AND NO DIRECT COMPENSATION WILL BE MADE THEREFOR.

⑥ SPECIFICATION 1903 SHALL NOT APPLY FOR THIS ITEM.

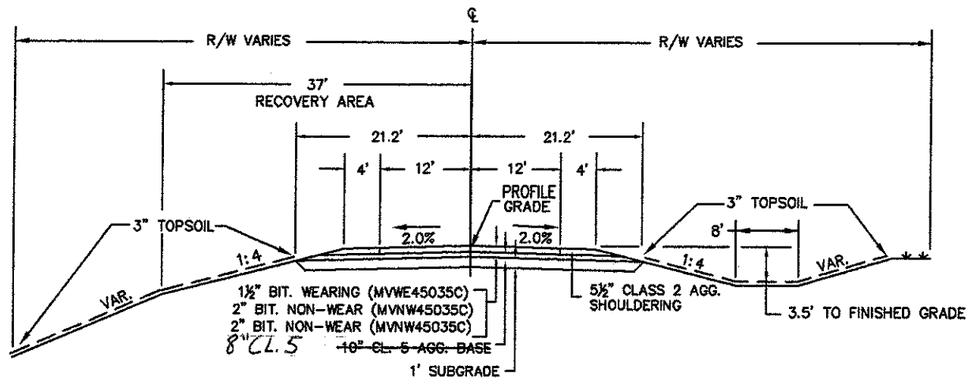
STANDARD PLATES

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION SHALL APPLY ON THIS PROJECT.

PLATE NO.	DESCRIPTION
	NUMERICAL INDEX OF STANDARD PLATES
3007 B	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3040 F	CORRUGATED METAL PIPE CULVERT
3123 K	METAL APRON FOR C.S. PIPE
3124 B	METAL APRON CONNECTION
3145 E	CONCRETE PIPE TIES
3221 C	CORRUGATED STEEL PIPE COUPLING BAND
8000 I	STANDARD BARRICADES
9000 D	APPROACHES AND ENTRANCES

TYPICAL SECTION

STA. 3+00 TO 11+42.50



NOTES: ALL UTILITY POLES AND UNYIELDING OBJECTS WILL BE LOCATED OUTSIDE THE 37' RECOVERY AREA BY OTHERS.

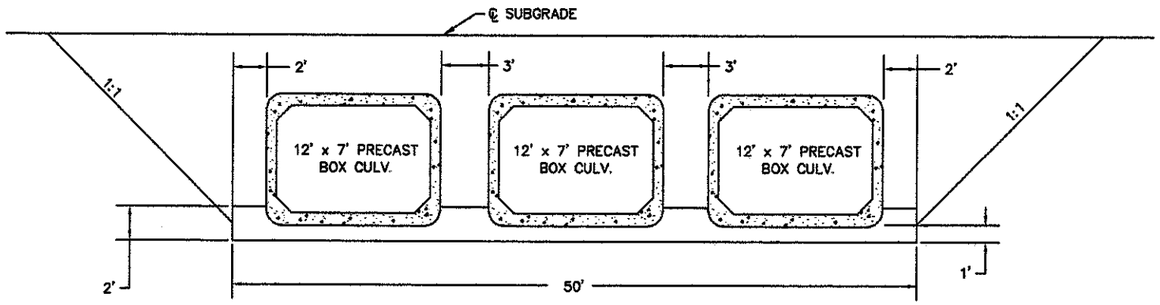
AS-BUILT

MAR 23 2005

ENGINEERING

BEDDING DETAIL

5+83.67, 6+00, 6+16.33



QUANTITY NOTES:

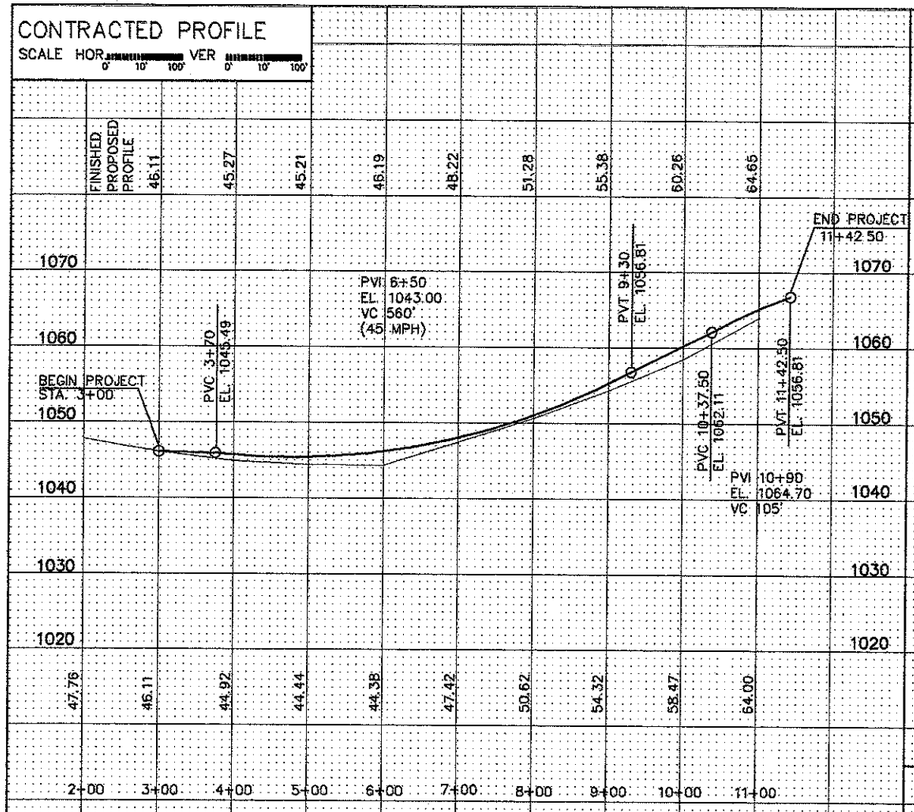
AGGREGATE BASE CLASS 5 – 140LBS./CU.FT. COMPACTED
AGGREGATE SHOULDER CLASS 2 – 140LBS./CU.FT. COMPACTED
2350 BITUMINOUS MIXTURE – 110 LBS./SQ. YD./INCH OF DEPTH
SEED MIXTURE 50B – 50 LBS/ACRE
SEED MIXTURE 110B – 80 LBS/ACRE
MULCH MATERIAL – 2 TONS/ACRE
DISK ANCHORING – ALL SEEDING AREAS EXCEPT 1:2 SLOPES
COMMERCIAL FERTILIZER – 200 LBS/ACRE

NOTES:
1. CULVERT EXCAVATION WILL BE CONSIDERED INCIDENTAL AND WILL BE INCLUDED FOR PAYMENT UNDER UNIT PRICE FOR ITEM NO. 2412.511 AND ITEM NO. 2412.512.
2. CULVERT TO BE BACKFILLED WITH EXCAVATION MATERIAL OR COMMON BORROW AND WILL BE CONSIDERED INCIDENTAL TO UNCLASSIFIED EXCAVATION AND NO DIRECT COMPENSATION WILL BE MADE.
3. ALL DIMENSIONS AND SLOPES SHOWN ON TYPICAL SECTION ARE APPROXIMATE.
4. GRANULAR BEDDING TO BE PLACED UNDER BARREL SECTIONS ONLY.

Fed. Proj. No.

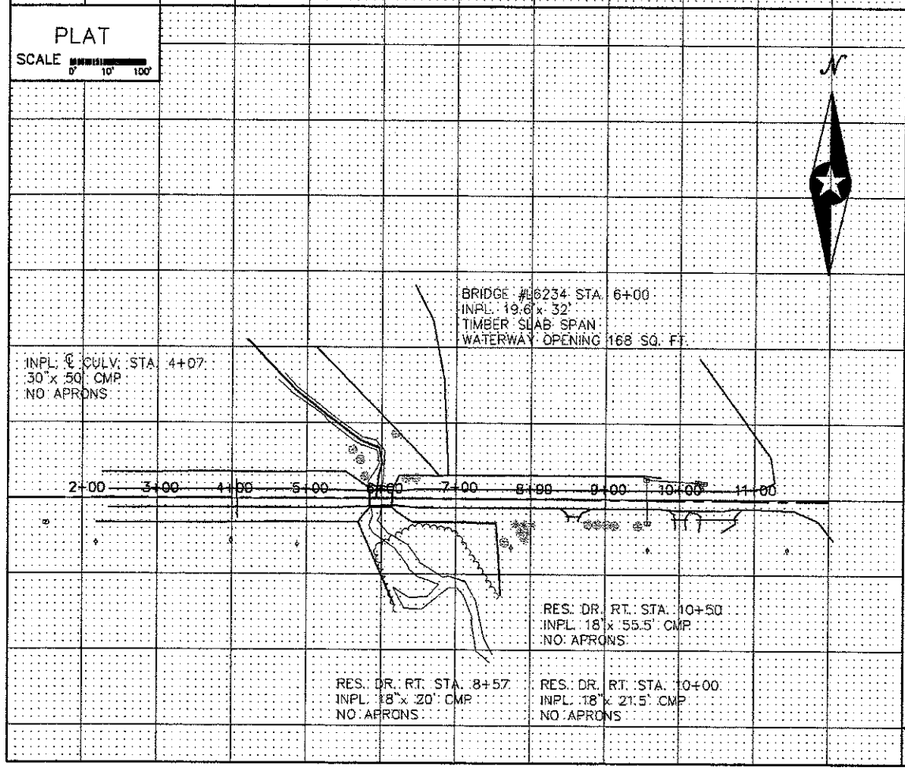
CONTRACTED PROFILE

SCALE HOR 0' 10' 100' VER 0' 10' 100'



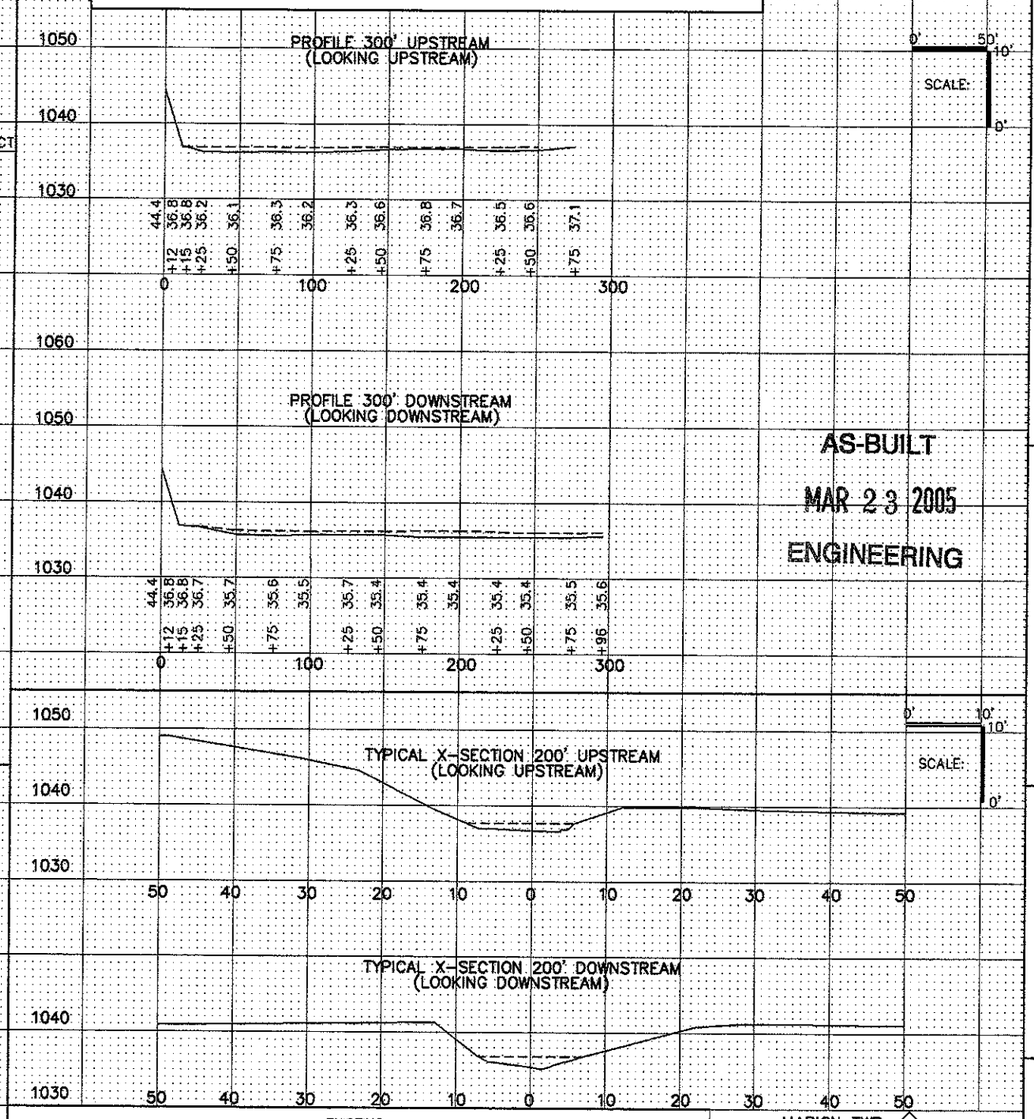
PLAT

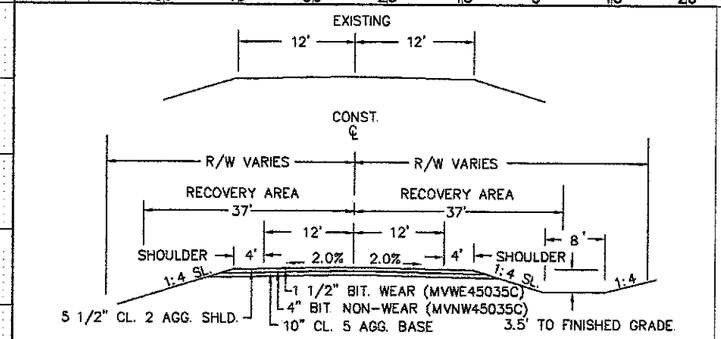
SCALE 0' 10' 100'



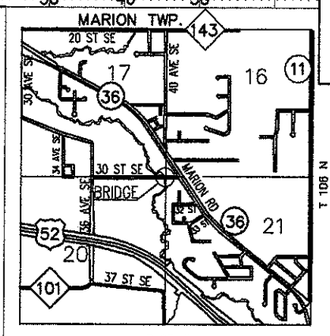
TYPICAL SECTIONS & PERTINENT DATA

SCALE AS SHOWN





STA. 3+00 TO STA. 11+42.50



R 13 W
INDEX MAP
(FOUR SECTIONS)

AS-BUILT

MAR 23 2005

ENGINEERING

1. Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, recreational boating.

2. Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway) Given location, type, length, height above high water, cross-sectional area etc.

3. Apparent highwater elevation ..... Obtained from .....

4. Other data: Approx. velocity of water at time of survey .....

HYDRAULIC ENGINEERS RECOMMENDATION

DATE 7/26/01

Stream or ditch designation BADGER RUN

Drainage area 13.5 SQ. MILES

Max. flood on record UNK Design flood (50 yr. freq.) 1840 C.F.S.

Max. observed highwater elevation UNK Design highwater elevation 1044.8

Design mean velocity through structure 7.6 F.P.S.

Low superstructure at or above elevation .....

Flowline 1036.3 Skew angle .....

Waterway area req'd. below elevation ..... = ... Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr freq.) is 2300 C.F.S. at stage 1045.8 and mean velocity of 9.1 F.P.S. with 1.9 Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of National Resources.

FOUNDATION ENGINEERS RECOMMENDATION

DATE .....

Bridge survey sheets made from: SURVEY CONDUCTED BY OLMSTED COUNTY.

Bench mark elevation .....(M.S.L. 1929 Adj.)

Location: .....

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 0.1 MI. W. OF C.S.A.H. 36 on 30th St. SE (T.H., C.S.A.H., C.R. etc.)

PROPOSED BRIDGE LOCATED 0.1 MILES WEST OF C.S.A.H. 36

SEC. 17 TWP. 106 N R 13 W

TOWNSHIP MARION COUNTY OLMSTED

BRIDGE NO. L6234

CERTIFIED BY Kaye M Poenisch LICENSED PROFESSIONAL ENGINEER LIC. NO. 19917 4/26 2002

State Aid Proj. No. 55-599-77 Sheet No. 3 of 15 Sheets

BRIDGE #L6234 STA. 6+00
INPL. 19.6' x 32' TIMBER SLAB SPAN
WATERWAY OPENING 168 SQ. FT
REMOVE OLD BRIDGE

NEW BRIDGE NO. 55J38
CONST. C/L CULVERTS @ STA. 5+83.67, 6+00, AND 6+16.33
3– 12' x 7' x 72' PRECAST CONCRETE BOX CULVERTS
6– 12' x 7' PRECAST CONCRETE BOX CULV END SECTIONS

PLACE CULVERTS ON 160 CU YDS (CV) GRANULAR BEDDING
47 CU YDS CLASS III RIPRAP AT INLET
188 CU YDS CLASS III RIPRAP AT OUTLET

CONSTRUCT FIELD ENT. LT. STA. 8+00
NO CULVERT REQUIRED

AS-BUILT
MAR 23 2005
ENGINEERING

℄ CULVERT STA. 4+07
INPLACE 30" x 50' CMP
REMOVE 50 LIN. FT.
~~30" x 56' R.C. PIPE CULVERT~~
30" x 52' R.C. Pipe Culvert
2– 30" R.C. PIPE APRONS

BEGIN PROJ:
STA. 3+00

END PROJ:
STA. 11+42.50

C.S.A.H. 36 (MARION ROAD)

Pl Sta = 10+50.00
Δ = 36°51'02"L
Da = 20°59'15"
T = 90.95
R = 273.00
L = 175.58

Pl Sta = 6+25.63
Δ = 00°17'35"R

GAS PIPELINE

17' T.E.

100' R/W
33' R/W
33' R/W
60' R/W
50' R/W
33' R/W

T-BUR
G

RES. DRIVE RT STA. 8+57
INPLACE 18" x 20' CMP
REMOVE 20 LIN FT
18" x 42' C.S. PIPE CULVERT
2– 18" G.S. PIPE APRONS

RES. DRIVE RT. STA. 9+97
INPLACE 18" x 22' CMP
REMOVE 22 LIN. FT
18" x 36' C.S. PIPE CULVERT
2– 18" G.S. PIPE APRONS

RES. DRIVE RT STA. 10+31
INPLACE 18" x 56' CMP
REMOVE 56 LIN. FT.
18" x 36' C.S. PIPE CULVERT
2– 18" G.S. PIPE APRONS

PT 9+58.05
PT 11+34.63

DESIGN FINISH ELEV
ORIG. ELEV

BM ELEV. 1048.26
SPIKE IN EAST SIDE
PP #18306 W. OF INT.
30TH ST & 36TH AVE

C/L PROFILE
PROFILE 50' LT
PROFILE 50' RT

PVC 3+70.00
ELEV. 1045.49

Inlet El. 1040.00
Outlet El. 1040.00

PVI 6+50.00
ELEV. 1043.00
560.00 V.C.

PVT 9+30.00
ELEV 1056.81

PVC 10+37.50
ELEV. 1062.11

PVI 10+90.00
ELEV. 1064.70
105.00 V.C.

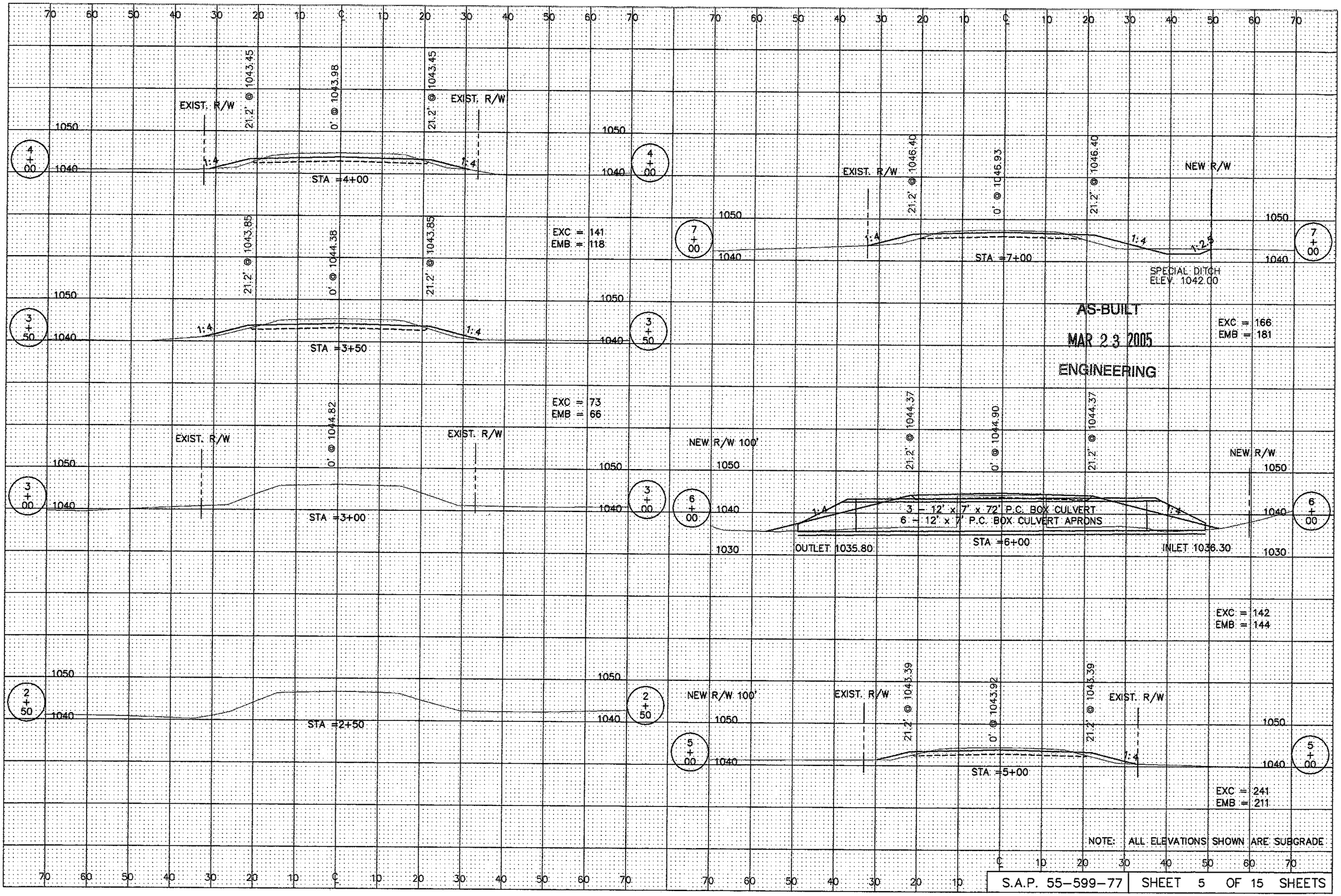
PVT 11+42.50
ELEV 1056.81

-0.89%
4.93%
2.02%

CERTIFIED BY Kyle M Reinitzer LICENSED PROFESSIONAL ENGINEER LIC. NO. 19917 4/26 2002

S.A.P. 55–599–77

SHEET NO. 4 OF 15 SHEETS


EXIST. R/W
21.2' @ 1043.45
0' @ 1043.98
21.2' @ 1043.45
EXIST. R/W
1050
1040
4 + 00
1:4
1:4
STA =4+00
EXC = 141
EMB = 118
21.2' @ 1043.85
0' @ 1044.38
21.2' @ 1043.85
3 + 50
STA =3+50
EXC = 73
EMB = 66
EXIST. R/W
EXIST. R/W
0' @ 1044.82
3 + 00
STA =3+00
NEW R/W 100'
21.2' @ 1044.37
0' @ 1044.90
21.2' @ 1044.37
NEW R/W
6 + 00
3 - 12' x 7' x 72' P.C. BOX CULVERT
6 - 12' x 7' P.C. BOX CULVERT APRONS
OUTLET 1035.80
STA =6+00
INLET 1036.30
1030
EXC = 142
EMB = 144
2 + 50
STA =2+50
NEW R/W 100'
EXIST. R/W
21.2' @ 1045.39
0' @ 1043.92
21.2' @ 1045.39
EXIST. R/W
5 + 00
STA =5+00
EXC = 241
EMB = 211
EXIST. R/W
21.2' @ 1046.40
0' @ 1046.93
21.2' @ 1046.40
NEW R/W
7 + 00
STA =7+00
1:2.5
SPECIAL DITCH
ELEV. 1042.00
EXC = 166
EMB = 181
AS-BUILT
MAR 23 2005
ENGINEERING
NOTE: ALL ELEVATIONS SHOWN ARE SUBGRADE

UNCLASSIFIED EXCAVATION	1740 CU YDS
EMBANKMENT	2000 CU YDS
CULVERT EXCAVATION MATERIAL	235 CU YDS
COMMON BORROW	693 CU YDS

AS-BUILT

MAR 23 2005

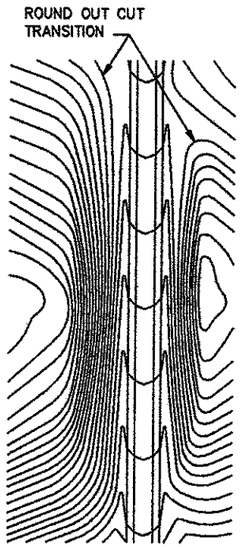
ENGINEERING

NEW R/W
EXIST. R/W
21.2' @ 1058.44
0' @ 1058.97
21.2' @ 1058.44
EXIST. R/W
NEW R/W
1:4
STA =10+00
EXC = 116
EMB = 289
STA =11+50
STA =11+34.63
EXC = 140
EMB = 94

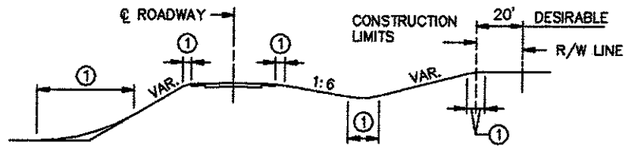
21.2' @ 1053.56
0' @ 1054.09
21.2' @ 1053.56
21.2' @ 1062.83
0' @ 1063.56
21.2' @ 1062.83
STA =9+00
SPECIAL DITCH
ELEV. 1051.00
OBLITERATE OLD ROAD
STA =11+00
EXC = 205
EMB = 242
EXC = 209
EMB = 222

EXIST. R/W
21.2' @ 1049.46
0' @ 1049.99
21.2' @ 1049.46
EXIST. R/W
NEW R/W
NEW R/W
EXIST. R/W
21.2' @ 1060.89
0' @ 1061.42
21.2' @ 1060.89
EXIST. R/W
NEW R/W
STA =8+00
STA =10+50
EXC = 247
EMB = 243
EXC = 60
EMB = 190

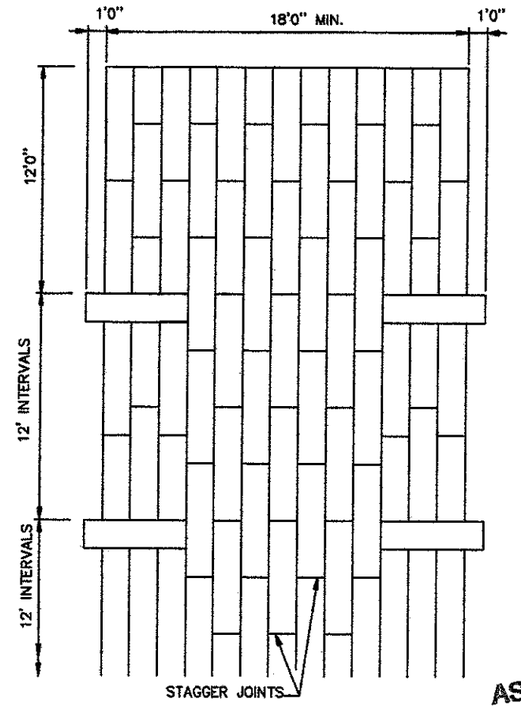
NOTE: ALL ELEVATIONS SHOWN ARE SUBGRADE.



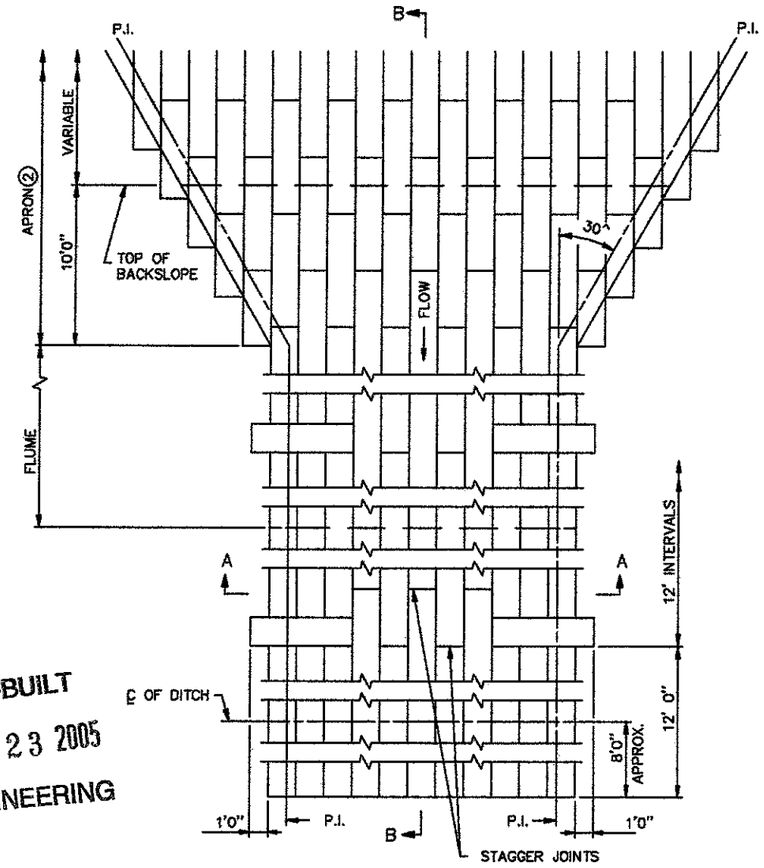
CONTOURING ROAD CUTS



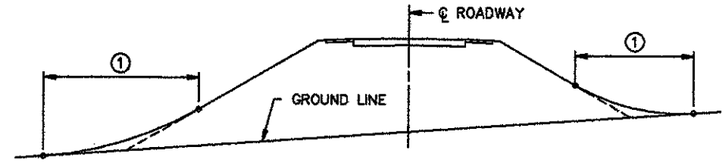
ROUNDING SHOULDERS AND BACKSLOPES



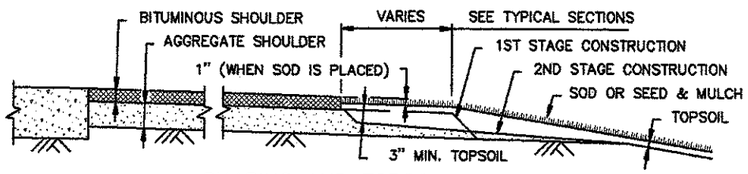
PLAN VIEW



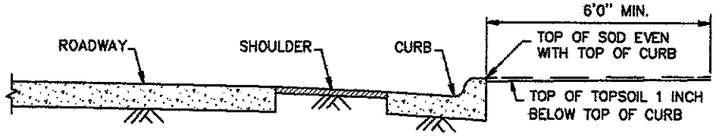
PLAN VIEW



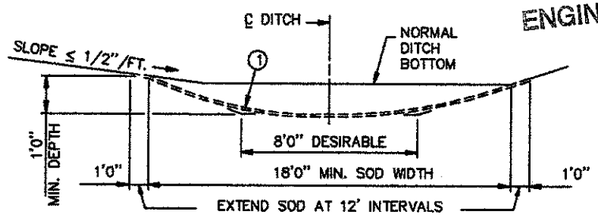
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



SHAPING AND TOPSOILING INSLOPES

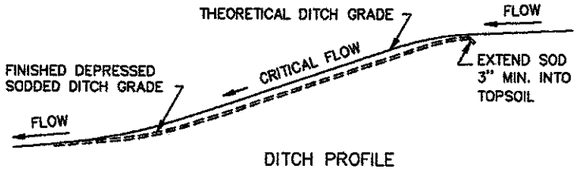


SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



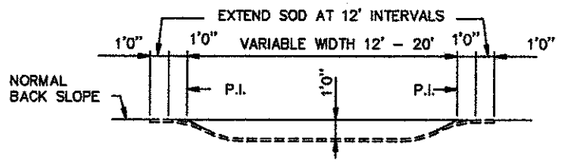
SODDED DITCH CROSS SECTION

WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.

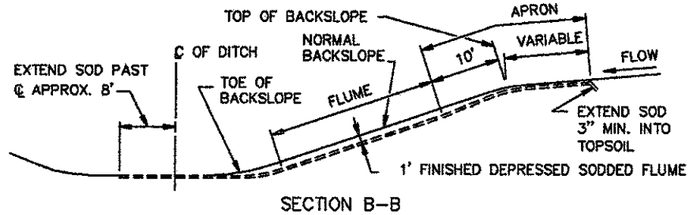


DITCH PROFILE

SODDED DITCH DETAILS



SECTION A–A



SECTION B–B

SODDED FLUME DETAILS

AS-BUILT

MAR 23 2005

ENGINEERING

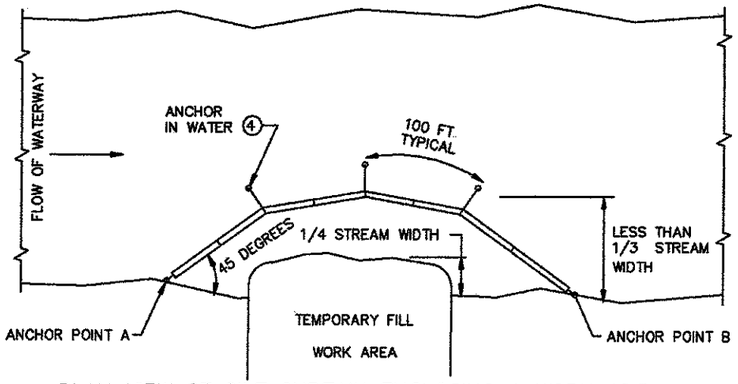
NOTES:

SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

① FOR ROUNDING, SEE ROAD DESIGN MANUAL.

② CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

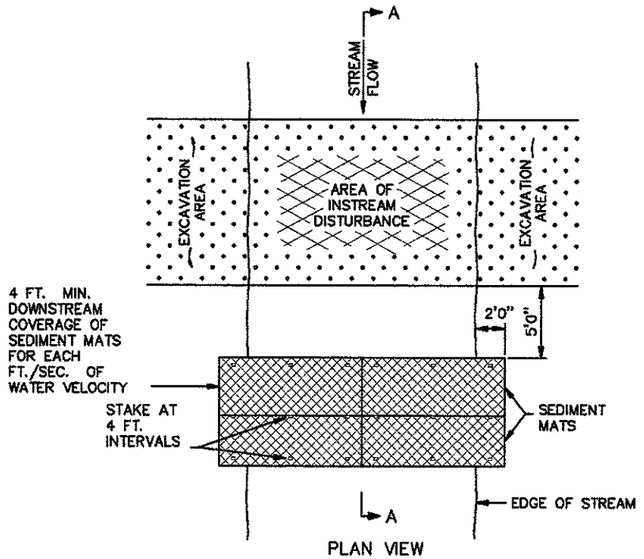
STANDARD SHEET NO. 5–297.404	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
STANDARD APPROVED: DECEMBER 19, 1990	
REVISION DATE 10–26–2000	~~STATE PROJ. NO.~~ SAP 55–599–77 SHEET NO. 7 OF 15 SHEETS



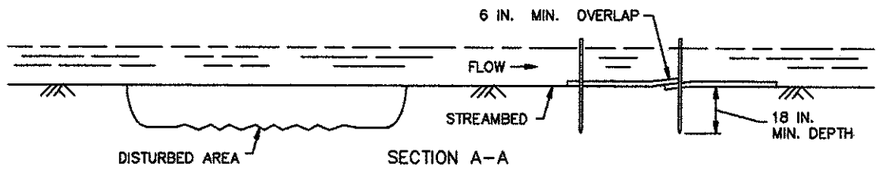
PLAN VIEW OF SILT CURTAIN ENCLOSING A WORK AREA

FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS

DESIGN GUIDELINES:
WHEN TEMPORARY FILL ENCROACHES LESS THAN 1/4 OF THE WIDTH OF STREAM.
MAXIMUM FLOW VELOCITY: 5 FT./SEC.
MAXIMUM FLOW DEPTH: 4 FT.



PLAN VIEW

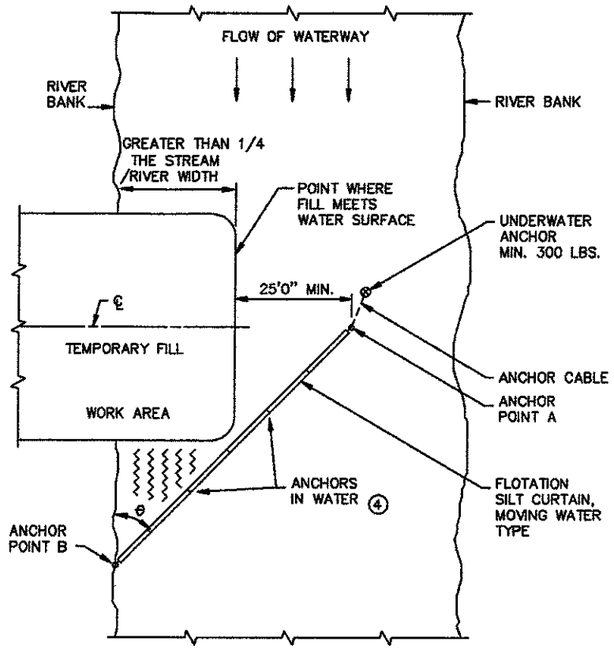


SECTION A–A

SEDIMENT MAT

TYPICAL STREAMBED INSTALLATION

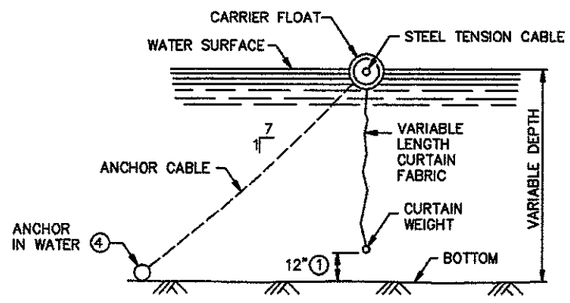
DESIGN GUIDELINES:
MAXIMUM FLOW VELOCITY: 5 FT./SEC.
MAXIMUM FLOW DEPTH: 2 FT.



∠ θ	RIVER VELOCITY
45°	SLOW, LESS THAN 5 FT./SEC.
35°	MODERATE, 5 – 7 FT./SEC.

PLAN VIEW OF SILT CURTAIN – MOVING WATER

DESIGN GUIDELINES:
WHEN TEMPORARY FILL ENCROACHES MORE THAN 1/4 BUT LESS THAN 1/3 WIDTH OF THE STREAM.
MAXIMUM WATER DEPTH: 12 FT.
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 7 FT./SEC.



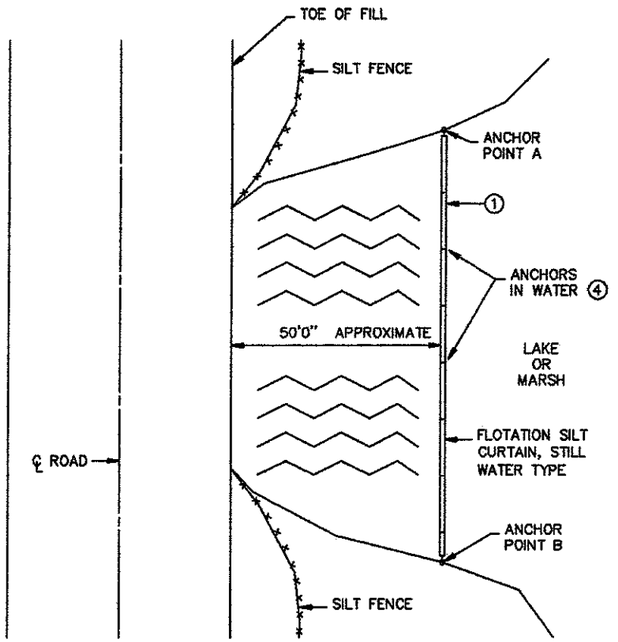
FLOTATION SILT CURTAIN DETAIL

(SEE SPEC. 3887)

AS-BUILT

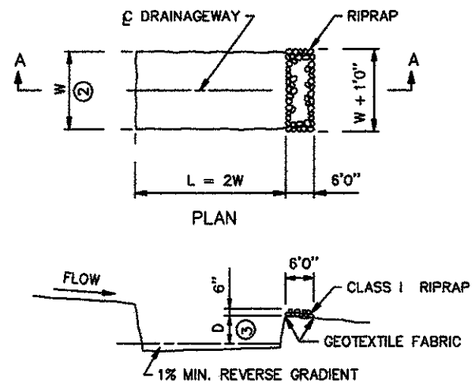
MAR 23 2005

ENGINEERING



PLAN VIEW OF SILT CURTAIN – STILL WATER

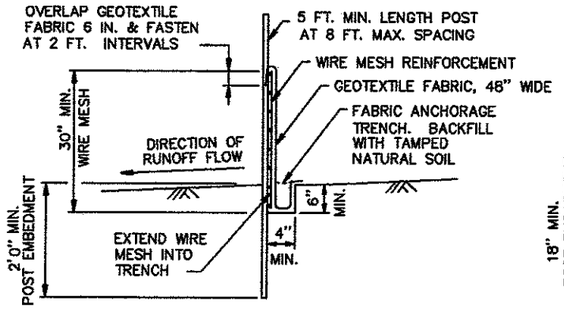
DESIGN GUIDELINES:
MAXIMUM WATER DEPTH: 12 FT.
MINIMUM WATER DEPTH: 3 FT.



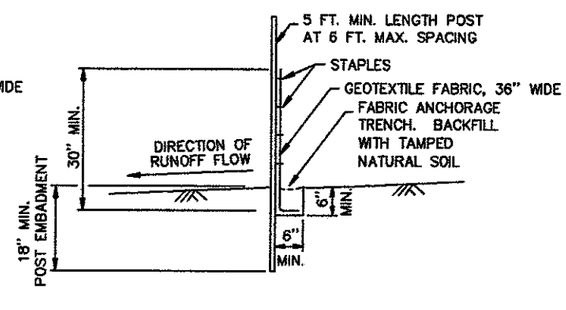
TEMPORARY SEDIMENT TRAP DETAIL

NOTES:
SEE SPECS. 2573, 3887 & 3894.
(1) CURTAIN 1 FT. FROM BOTTOM
(2) W = 10 FT. MIN., 20 FT. MAX.
(3) D = 2 FT.
(4) 100 FT. MAXIMUM SPACING BETWEEN ANCHORS, MINIMUM 40 LBS.

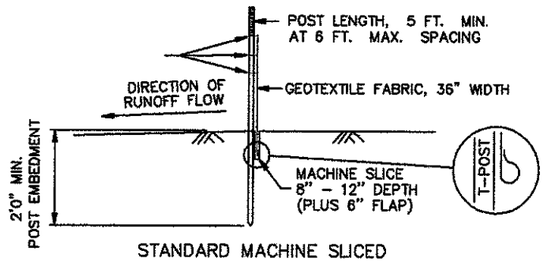
STANDARD SHEET NO. 5-297.405 (1 OF 4)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: SEPTEMBER 19, 2000	
~~STATE PROJ. NO.~~ SAP 55-599-77	SHEET NO. 8 OF 15 SHEETS



HEAVY DUTY



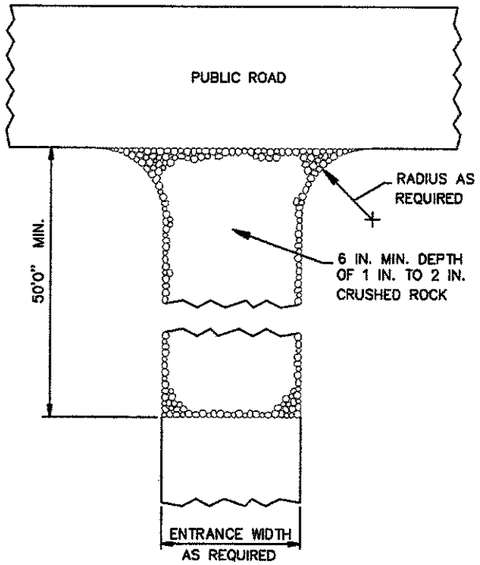
PREASSEMBLED



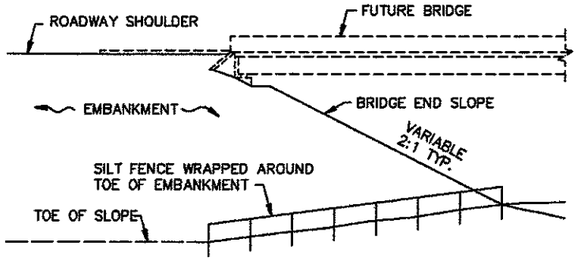
STANDARD MACHINE SLICED

SILT FENCE DETAILS
TO PROTECT AREAS FROM SHEET FLOW
(SEE SPEC. 3886)

DESIGN GUIDELINES:
MAXIMUM CONTRIBUTING AREA: 3 ACRES



ROCK CONSTRUCTION ENTRANCE ①



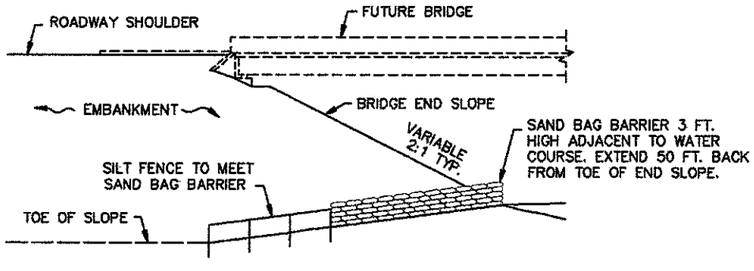
BRIDGE FILL

DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: STAGNANT
CONTRIBUTING SLOPE AREA: 1/2 ACRE

AS-BUILT

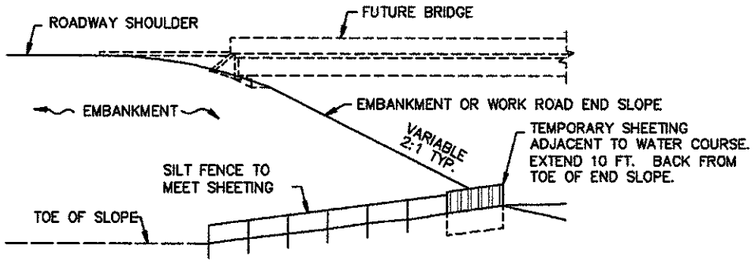
MAR 23 2005

ENGINEERING



BRIDGE FILL

DESIGN GUIDELINES:
MAX. WATER COURSE FLOW VELOCITY: 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1 ACRE



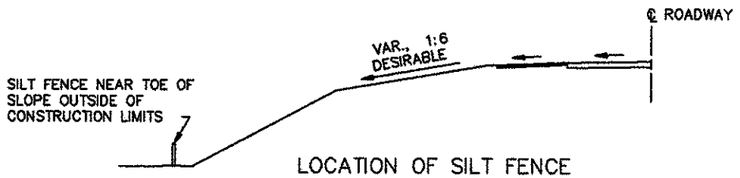
EMBANKMENT OR WORK ROAD FILL

DESIGN GUIDELINES:
MAX. WATER COURSE FLOW VELOCITY: 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES

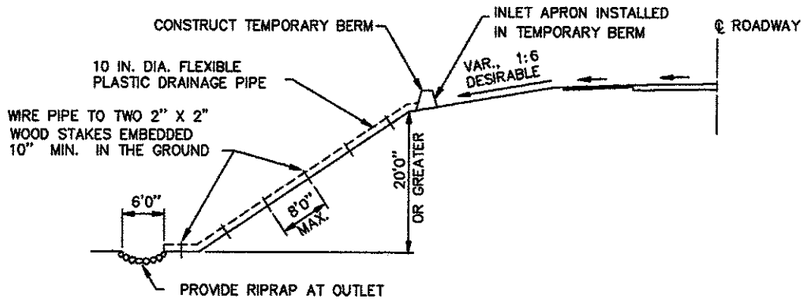
SILT FENCE AT BRIDGE EMBANKMENT

NOTES:
SEE SPECS. 2573 & 3886.

①ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE DRIVING ON MAIN ROAD. THIS WILL PREVENT AUTO DAMAGE. WE NEED TO KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS.

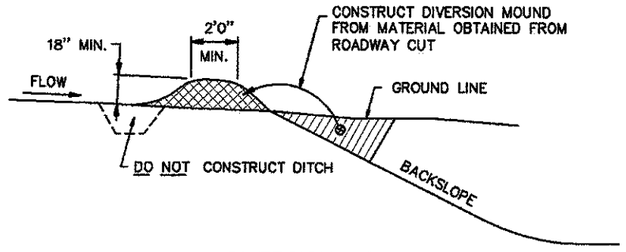


LOCATION OF SILT FENCE AT TOE OF ROADWAY EMBANKMENT



TEMPORARY DRAIN ON FILL SLOPE

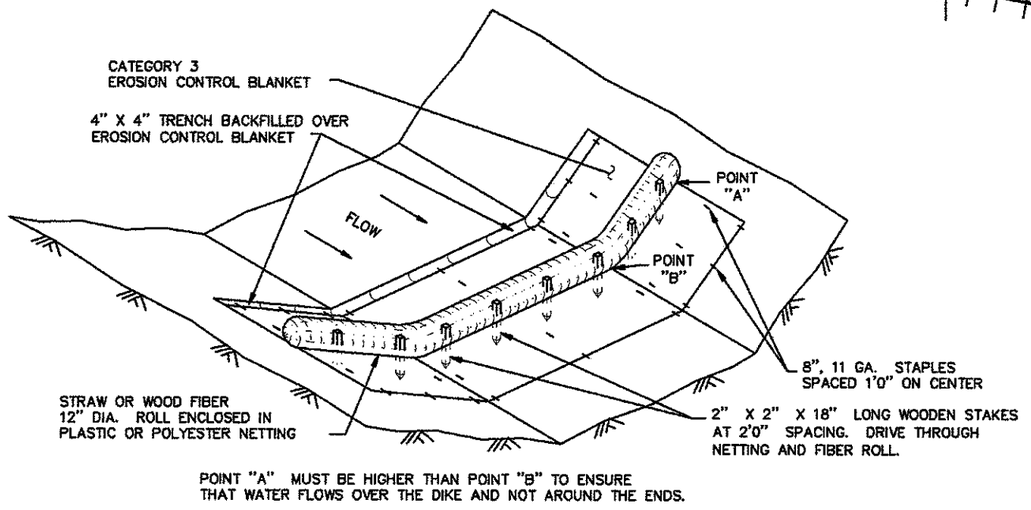
DESIGN GUIDELINES:
STORM FREQUENCY: 2 YEAR – 24 HOUR
MAXIMUM DRAINAGE AREA: 3 ACRES



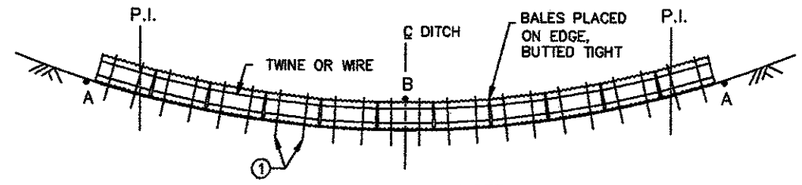
DIVERSION MOUND

DESIGN GUIDELINES:
STORM FREQUENCY: 10 YEAR – 24 HOUR
MAXIMUM DRAINAGE AREA: 5 ACRES
MAXIMUM DIVERSION: GRADE 5%

STANDARD SHEET NO. 5-297.405 (2 OF4)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: SEPTEMBER 19, 2000	
~~STATE PROJ. NO.~~ SAP 55-599-77	SHEET NO. 9 OF 15 SHEETS

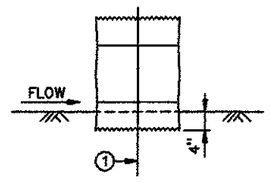


BIOROLL BLANKET SYSTEM DITCH CHECK

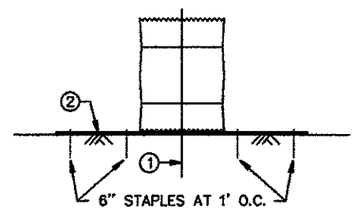


NOTE:
POINT A MUST BE HIGHER THAN POINT B

BALE DITCH SEDIMENT CHECK



EMBEDMENT METHOD

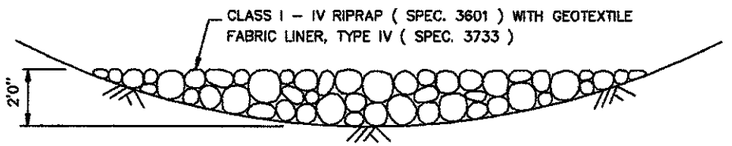


BLANKET METHOD

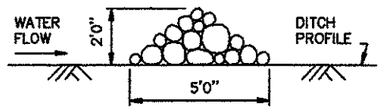
BALE CHECK DETAIL

DESIGN GUIDELINES:

	BALE	ROCK
STORM FREQUENCY:	2 YR. – 24 HR.	10 YR. – 24 HR.
MAX. FLOW VELOCITY:	5 FT./SEC.	12 FT./SEC.
MAX. DITCH GRADE:	5%	—
MAX. DRAINAGE AREA:	2 ACRES	5 ACRES



CROSS SECTION



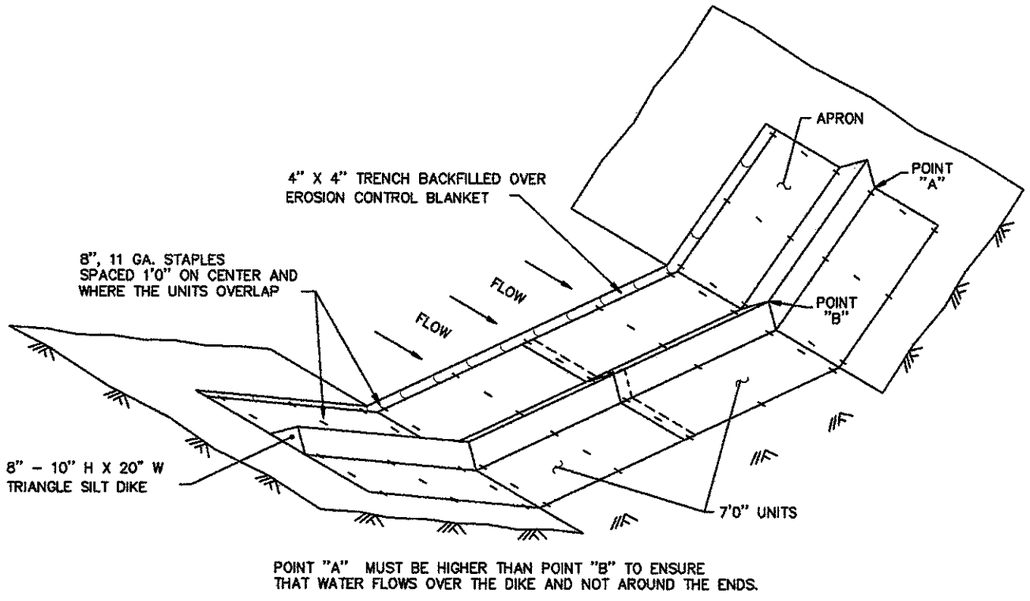
PROFILE VIEW

ROCK DITCH CHECK

AS-BUILT

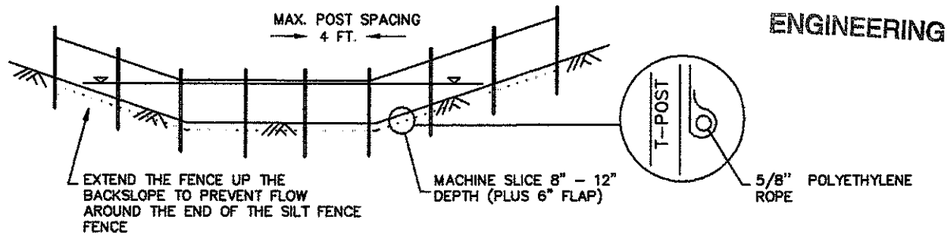
MAR 23 2005

ENGINEERING



POINT "A" MUST BE HIGHER THAN POINT "B" TO ENSURE
THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

GEOTEXTILE TRIANGULAR DIKE DITCH CHECK



SPACING DISTANCE = SILT FENCE HEIGHT / % CHANNEL SLOPE

DESIGN GUIDELINES	
STORM FREQUENCY	2 YR.– 24 HR.
MAX. DITCH GRADE	5%
MAX. DRAINAGE AREA	1 ACRE

NOTE:
WHEN SEDIMENT BUILD UP REACHES 1.5 FT., THE SILT SHOULD BE REMOVED OR A SECOND SILT FENCE BUILT UPSTREAM FROM THE EXISTING ONE AT A SUITABLE DISTANCE.

SILT FENCE DITCH CHECK, TYPE MACHINE SLICED

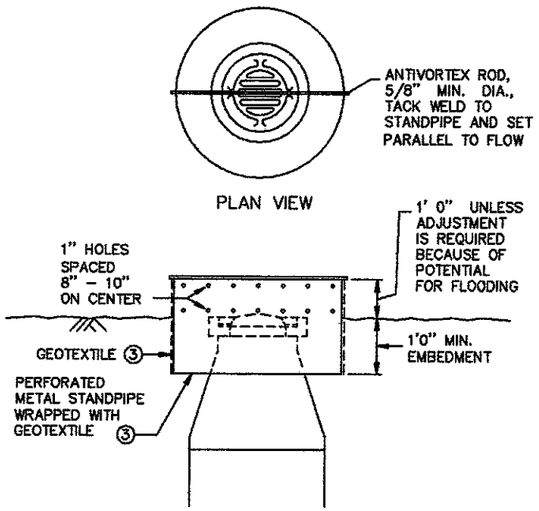
NOTES:
SEE SPECS. 2573, 3885, 3886 & 3889.

SPACING OF DITCH CHECKS IS DEPENDENT ON DRAINAGE AREA AND GRADES. SEE DISTRICT HYDRAULICS ENGINEER FOR RECOMMENDATIONS.

① TWO 2 IN. X 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE. AND EMBEDDED IN THE GROUND 10 IN. MINIMUM.

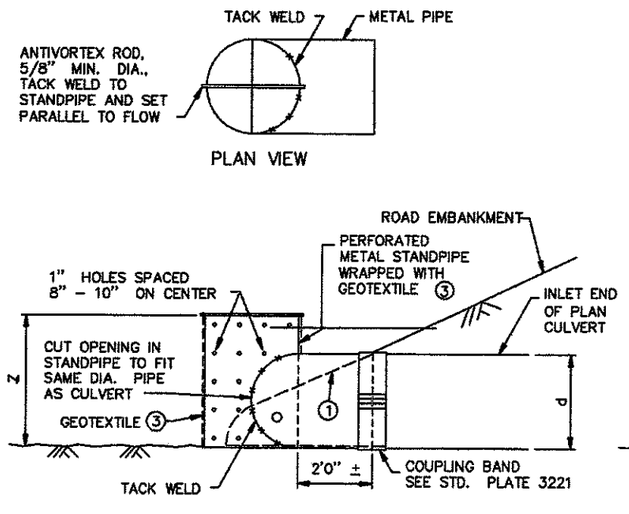
② PLACE A CATEGORY 3 EROSION CONTROL BLANKET, 6 FT. WIDE MINIMUM, UNDER THE BALE DITCH CHECK INSTEAD OF TRENCHING.

STANDARD SHEET NO. 5-297.405 (3 OF 4)	TITLE: TEMPORARY EROSION CONTROL DITCH CHECKS
STANDARD APPROVED: SEPTEMBER 19, 2000	
~~STATE PROJ. NO.~~ SAP 55-599-77	SHEET NO. 10 OF 15 SHEETS



TEMPORARY STANDPIPE
TO PROTECT DROP INLET
TYPE A SPEC. 3891

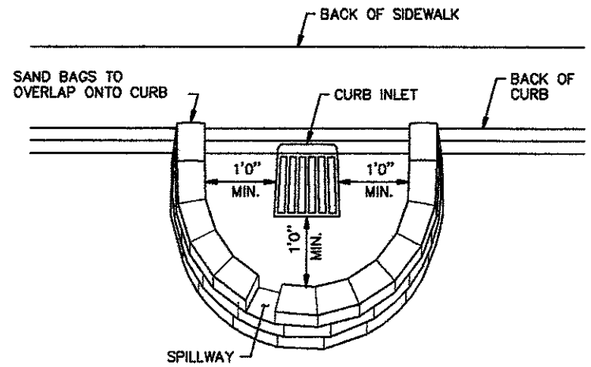
DESIGN GUIDELINES:
STORM FREQUENCY: 10 YEAR. - 24 HOUR.



TEMPORARY STANDPIPE
FOR SEDIMENT CONTROL ON CULVERT INLET
TYPE D SPEC. 3891

d = DIA. OF STANDPIPE EQUAL TO DIA. OF PLAN CULVERT
Z = LENGTH OF PERFORATED STANDPIPE (d + 12")

DESIGN GUIDELINES:
CULVERT SIZE: 12" - 36"
STORM FREQUENCY: 10 YR. - 24 HR.

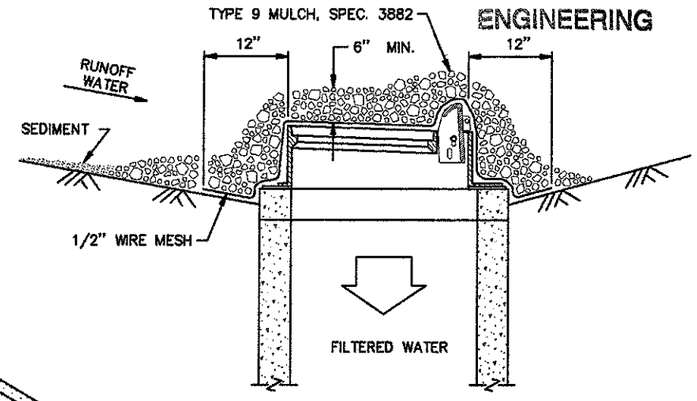


CURB INLET SAND BAG BARRIER
THIS INLET PROTECTION IS USED BEFORE THE ROAD IS PAVED
TYPE B OR C SPEC. 3891

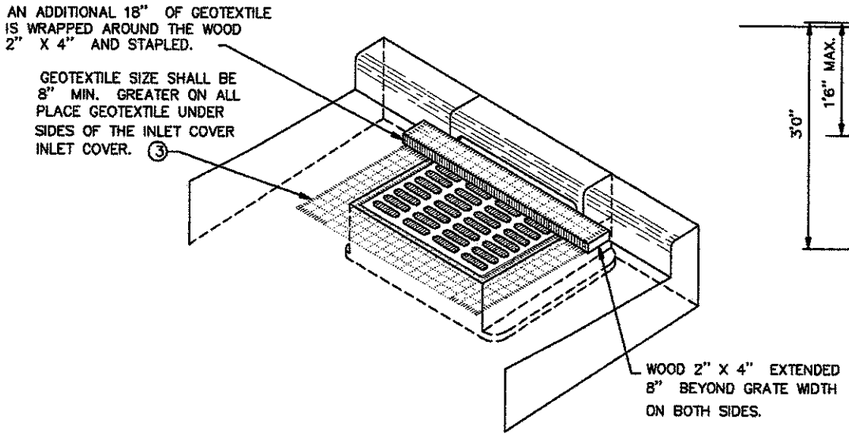
AS-BUILT

MAR 23 2005

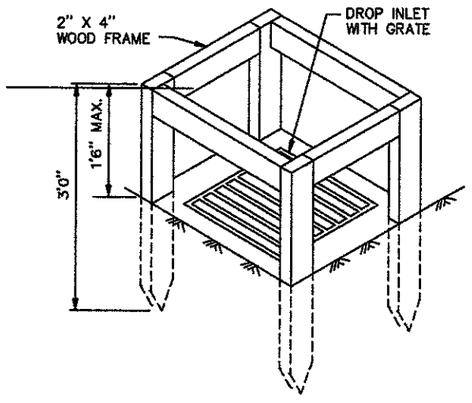
ENGINEERING

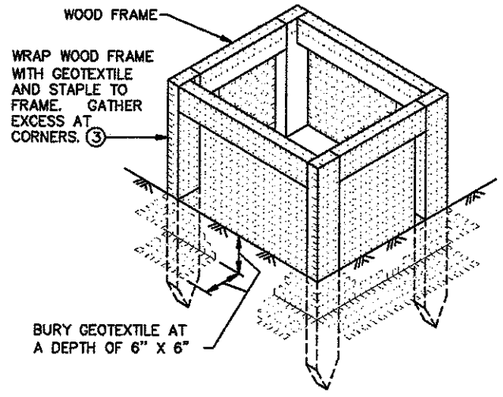


AGGREGATE FILTER AT CURB INLET
TYPE B OR C SPEC. 3891



SILT FENCE BOX TO PROTECT DROP INLETS
TYPE A SPEC. 3891





SILT FENCE BOX TO PROTECT DROP INLETS
USE WHERE INLET DRAINS AN AREA WITH SLOPES AT 1:3 or LESS
TYPE A SPEC. 3891

NOTES:
SEE SPECS. 2573, 3891 & 3893.

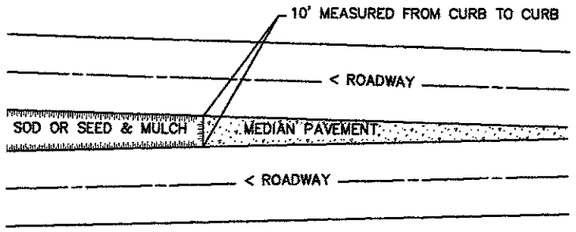
MANUFACTURED ALTERNATIVES LISTED ON Mn/DOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.

(1) FOR CMP, REMOVE TEMPORARY STANDPIPE AND INSTALL. CULVERT APRON AFTER VEGETATION IS ESTABLISHED.

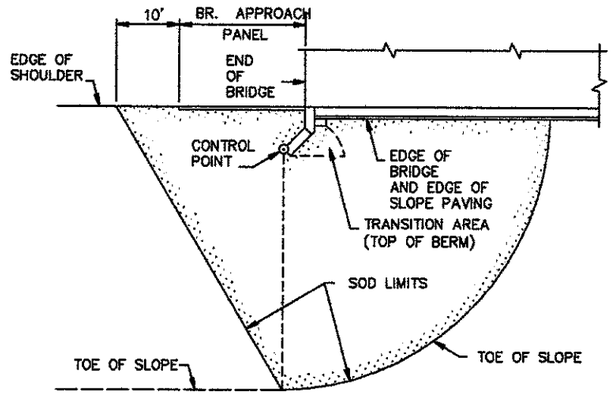
(2) FOR RCP, INSTALL CULVERT APRON AND SLIDE ESTABLISHED, TEMPORARY STANDPIPE INTO RCP. AFTER VEGETATION IS ESTABLISHED REMOVE TEMPORARY STANDPIPE.

(3) ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONO/MONO, MEETING SPEC. 3886 FOR MACHINE SLICED.

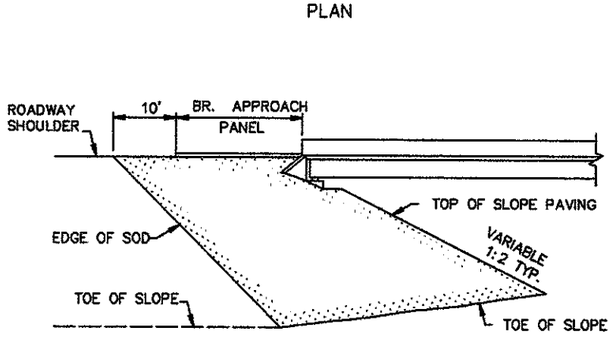
STANDARD SHEET NO. 5-297.405 (4 OF 4)	TITLE: TEMPORARY EROSION CONTROL TEMPORARY INLET PROTECTION
STANDARD APPROVED: SEPTEMBER 19, 2000	
~~STATE PROJ. NO.~~	SAP 55-599-77



SODDING LIMITS AT GORE AREA

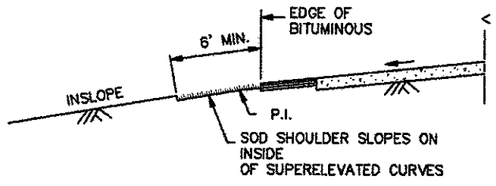


PLAN

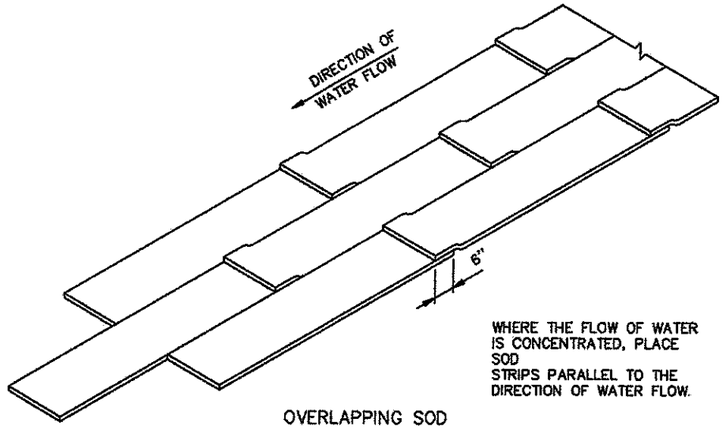


ELEVATION

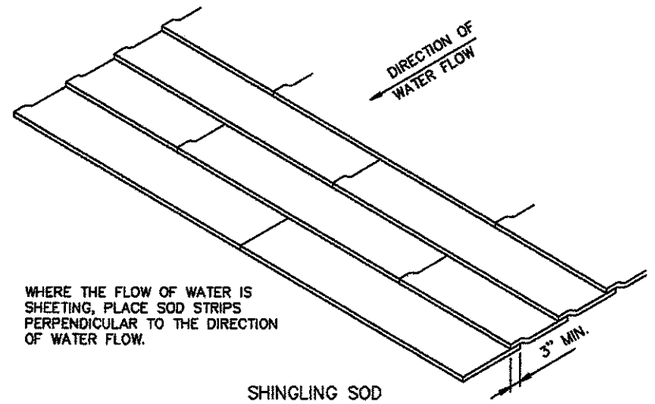
SODDING LIMITS AT BRIDGE APPROACH FILLS



SODDING INSLOPES OF SUPERELEVATED CURVES

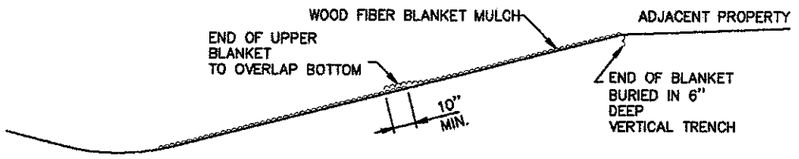


OVERLAPPING SOD

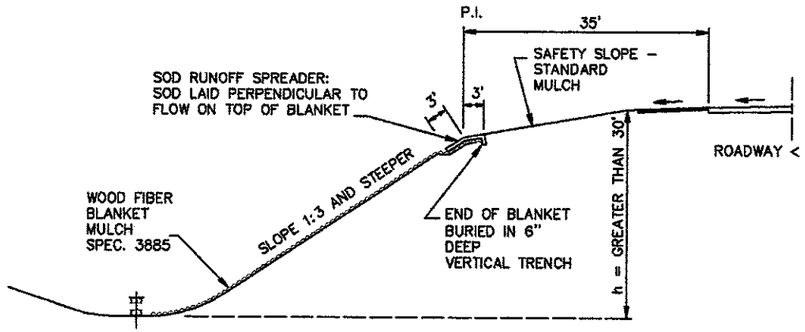


SHINGLING SOD

SPECIAL SOD PLACEMENT TECHNIQUES

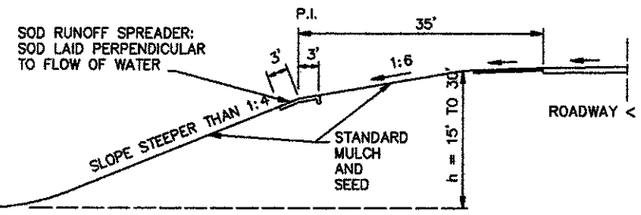


WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE

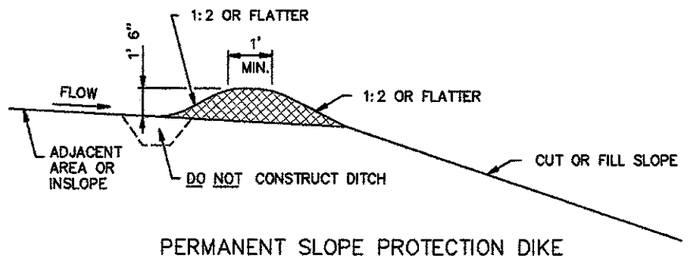


WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE
(WHEN REQUIRED)

AS-BUILT
MAR 23 2005
ENGINEERING



BROKEN-BACK SAFETY FILL SLOPE



PERMANENT SLOPE PROTECTION DIKE

STANDARD SHEET NO. 5-297.406	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS
STANDARD APPROVED: JANUARY 31, 1985	
REVISION DATE 10-26-2000	~~STATE PROJ. NO.~~ SAP 55-599-77 SHEET NO. 12 OF 15 SHEETS

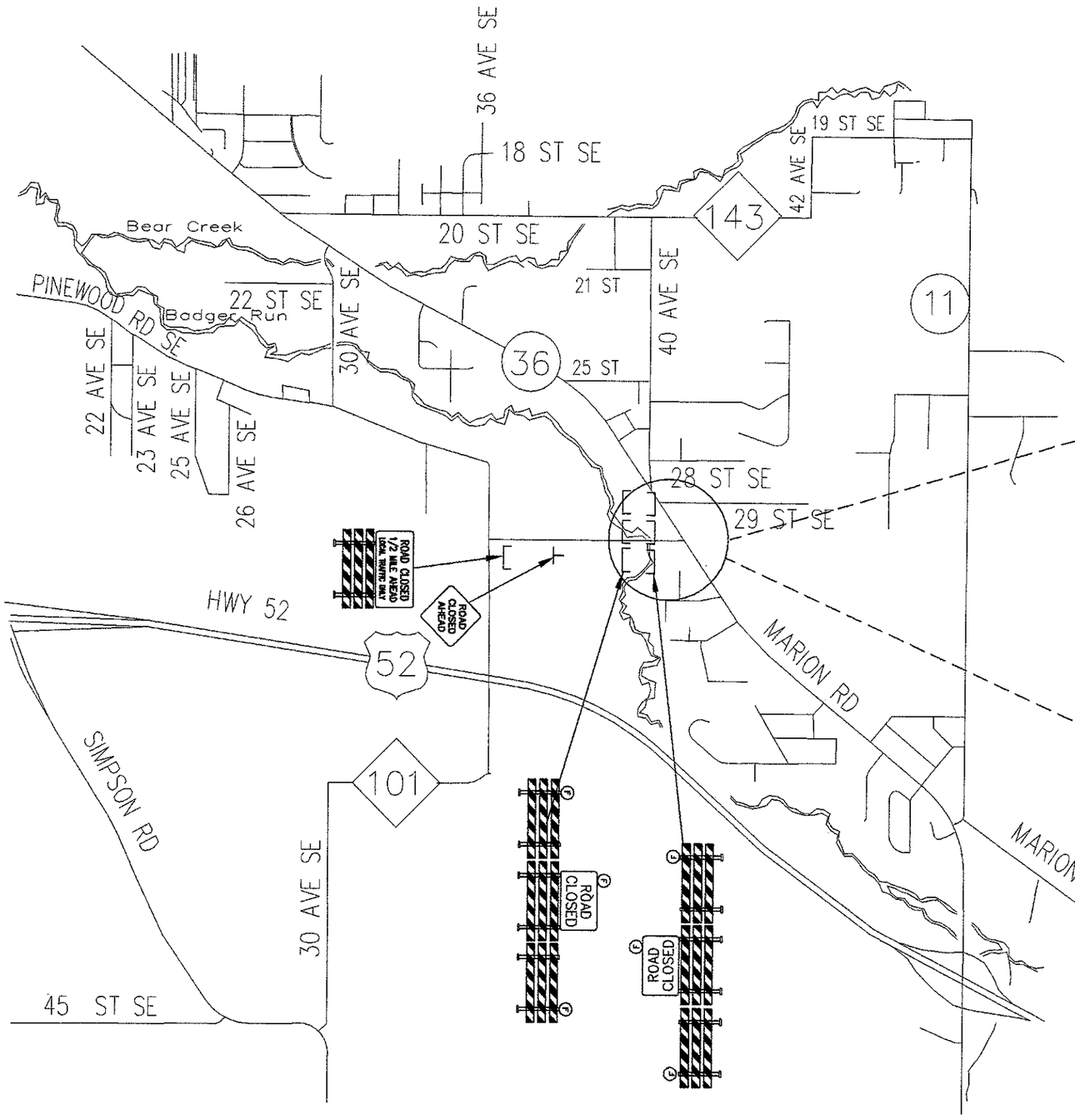
ESTIMATE OF TRAFFIC CONTROL DEVICES									
DEVICE	NUMBER	SIZE	COLOR	QUANTITY	DEVICE	NUMBER	SIZE	COLOR	QUANTITY
ROAD CLOSED	R11-2	48 x 30	BLK/WH	2		TYPE III	MIN. 6'	OR & WHT	8
ROAD CLOSED MILE AHEAD LOCAL TRAFFIC ONLY	R11-3	60 x 30	BLK/WH	2	(F)	TYPE A	FLASHING LAMP	AMBER	6
ROAD CLOSED AHEAD	W20-3	48 x 48	BLK/OR	2					

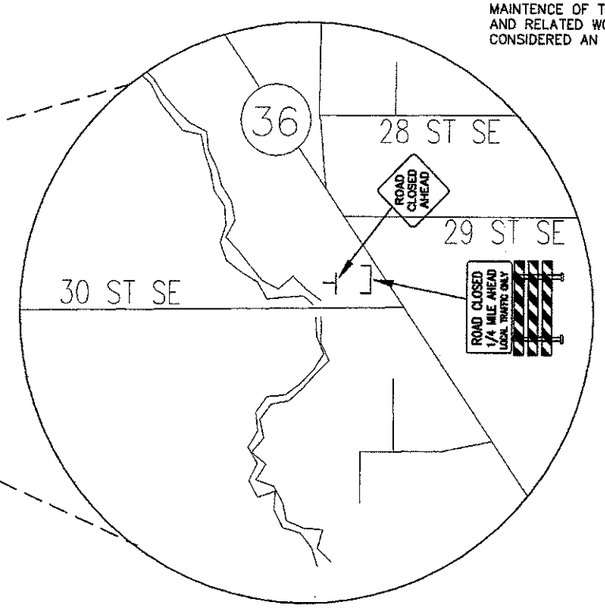
ALL COSTS INCURRED FOR MATERIALS, INSTALLATION, AND MAINTENCE OF TRAFFIC CONTROL AS SHOWN ON THIS SHEET, AND RELATED WORK DURING CONSTRUCTION SHALL BE CONSIDERED AN INCIDENTAL EXPENSE.

AS-BUILT

MAR 23 2005

ENGINEERING





N

TRAFFIC CONTROL LEGEND

- ⊥ POST OR STAND MOUNTED SIGN
- ⌊⌋ TYPE III BARRICADE
- (F) TYPE "A" AMBER FLASHING LAMP

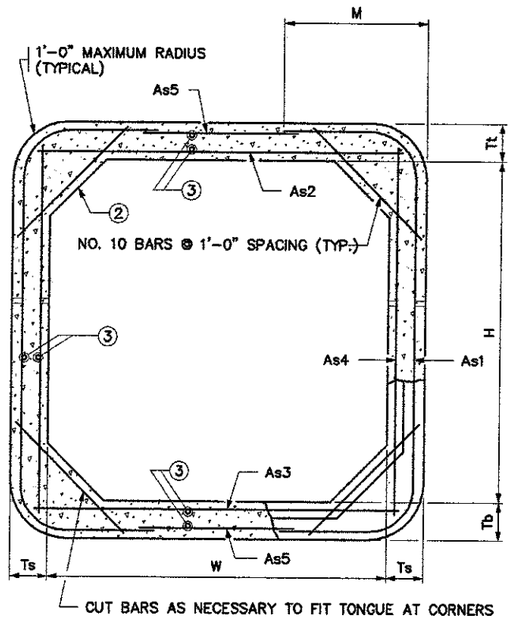
TRAFFIC CONTROL NOTES

1. THE LOCATION OF SIGNS AND DEVICES WILL BE STAKED BY THE ENGINEER IN THE FIELD.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL ON THIS PROJECT.
3. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES INCLUDING THE TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL DATED JANUARY 2001
4. CONSTRUCTION ZONE SIGNING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL INCLUDE, BUT NOT BE LIMITED TO SIGNS FOR LANE CLOSURE, MACHINERY AHEAD, BUMP, DIP, LOOSE GRAVEL, ETC.. THE NUMBER AND LOCATION WILL BE DETERMINED BY THE CONTRACTORS OPERATION.
5. ALL BARRICADES ON THIS PROJECT SHALL BE REFLECTORIZED ON BOTH SIDES.

CERTIFIED BY Kaye M Poienick LIC NO. 19917 4/26 2002
LICENSED PROFESSIONAL ENGINEER

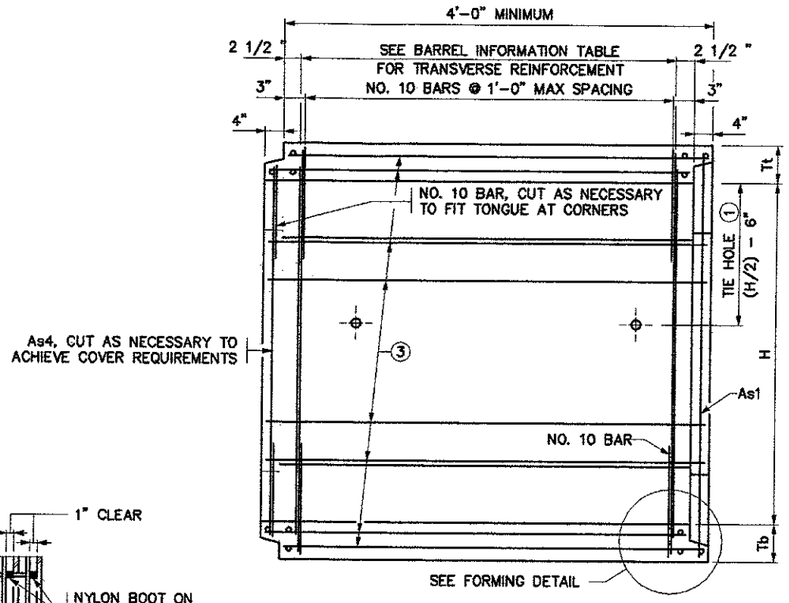
S.A.P. 55-599-77 MARION TWP.

SHEET 13 OF 15 SHEETS



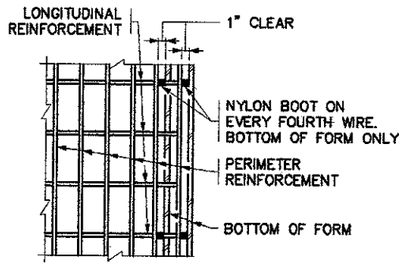
TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

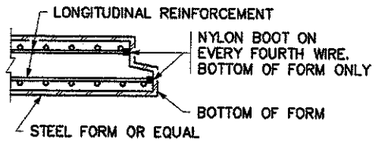


LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

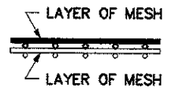


PLAN



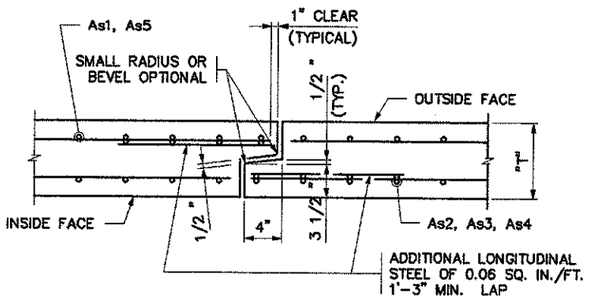
SECTION

FORMING DETAIL



FABRIC LAYER DETAIL

WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN



TONGUE AND GROOVE JOINT DETAIL

CONSTRUCTION NOTES

CULVERTS TO BE CONSTRUCTED AS PER Mn/DOT SPEC. 2412 EXCEPT AS NOTED.

FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB. SEE FIG. 5-395.100(A) AND FIG. 5-395.100(B) FOR ADDITIONAL INFORMATION.

IF THE DISTANCE BETWEEN DOUBLE BARRELS IS LESS THAN 2'-0" USE EITHER PEA ROCK OR LEAN MIX BACKFILL(Mn/DOT SPEC. 2520) BETWEEN THE CULVERTS AS APPROVED BY THE ENGINEER. (ALSO, PROVIDE APPROVED GROUT SEEPAGE CORE, MINIMUM 12" THICK, BETWEEN THE CULVERT'S TWO ENDS.) MINIMUM DISTANCE REQUIRED IS 6".

THE STEEL FABRIC, SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO APPLICABLE REQUIREMENTS OF AASHTO M259.

1 1/2 " MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:
(a) 1 OR 2 LAYERS OF MESH OR
(b) 1 LAYER OF MESH AND 1 LAYER OF REINFORCEMENT BARS OR
(c) 1 LAYER OF REINFORCEMENT BARS.
THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WIRE MESH, THE AREAS OF REINFORCEMENT SHALL BE INCREASED BY 8%.

THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE NO. 19. THE MAXIMUM MESH SIZE SHALL BE 1/2 " DIA. PER LAYER (MAXIMUM OF 2 LAYERS).

THE SPACING CENTER TO CENTER OF THE TRANSVERSE WIRES SHALL NOT BE LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8".

WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS OR STEEL FABRIC, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE FABRIC IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.

CONCRETE SHALL BE MIX NO. 3W36 WITH NO CALCIUM CHLORIDE ALLOWED.

SHOP DRAWING APPROVAL PER Mn/DOT SPEC. 3238.2A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

(1) CULVERT TIES ARE TO BE 1" DIAMETER RODS. SEE STANDARD PLATE NO. 3145 FOR CONNECTION DETAILS.

(2) HAUNCH SIZE AS FOLLOWS:
6'-0" AND 8'-0" WIDTHS - 6" TO 12"
10'-0" WIDTH - 10" TO 12"
12'-0" AND 14'-0" WIDTHS - 12"

(3) MINIMUM LONGITUDINAL STEEL SHALL BE 0.06 SQ. IN. /FT.

AS-BUILT

MAR 23 2005

ENGINEERING

BARREL INFORMATION

LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DIMENSIONS					WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT									
											As1			As2		As3		As4		As5	
					W (FT.)	H (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		AREA (IN.²/FT.)	LENGTH (FT.)	M (FT.)	AREA (IN.²/FT.)	LENGTH (FT.)	AREA (IN.²/FT.)	LENGTH (FT.)	AREA (IN.²/FT.)	LENGTH (FT.)	AREA (IN.²/FT.)	LENGTH (FT.)
5+83.67	12' x 7'	2	5000	2-8	12	7	9	10	8	4785	0.74	13'-9"	3'-3"	1.03	12'-6"	1.06	12'-6"	0.20	7'-6"	0.06	8'-9"
6+00	12' x 7'	2	5000	2-8	12	7	9	10	8	4785	0.74	13'-9"	3'-3"	1.03	12'-6"	1.06	12'-6"	0.20	7'-6"	0.06	8'-9"
6+16.33	12' x 7'	2	5000	2-8	12	7	9	10	8	4785	0.74	13'-9"	3'-3"	1.03	12'-6"	1.06	12'-6"	0.20	7'-6"	0.06	8'-9"

REVISION:

APPROVED: DECEMBER 11, 2000

Donald J. Flemming

STATE BRIDGE ENGINEER

~~STATE PROJ. NO.~~ S.A.P. 55-599-77 MARION TWP.

FIG. 5-395.101(A)

CERTIFIED BY Kaye M Brevick

LICENSED PROFESSIONAL ENGINEER

LIC. NO. 19917 4/26 2002

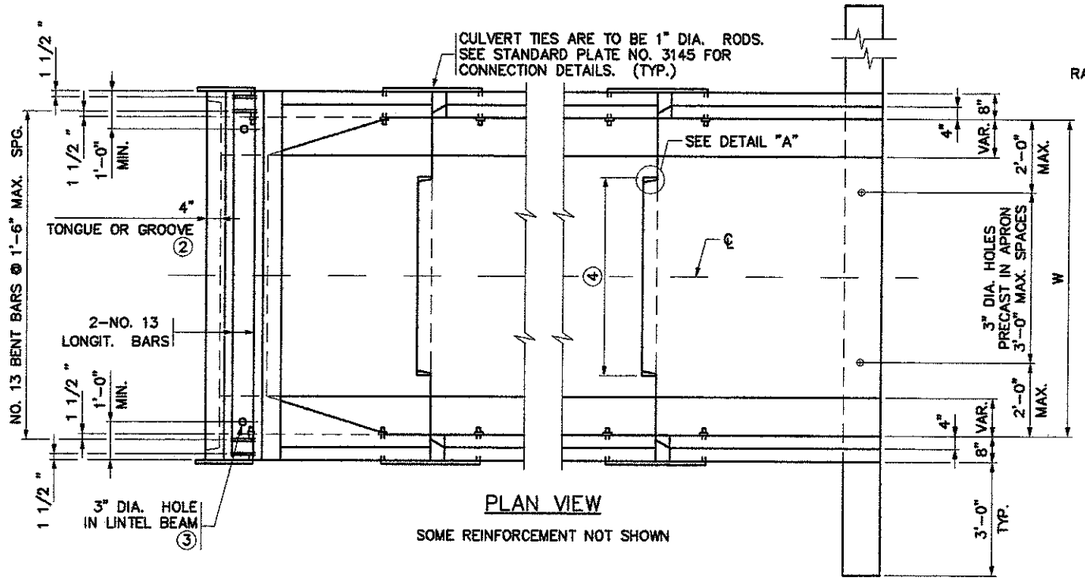
TITLE: BARREL DETAILS

DES: DR: APPROVED:

CHK: CHK:

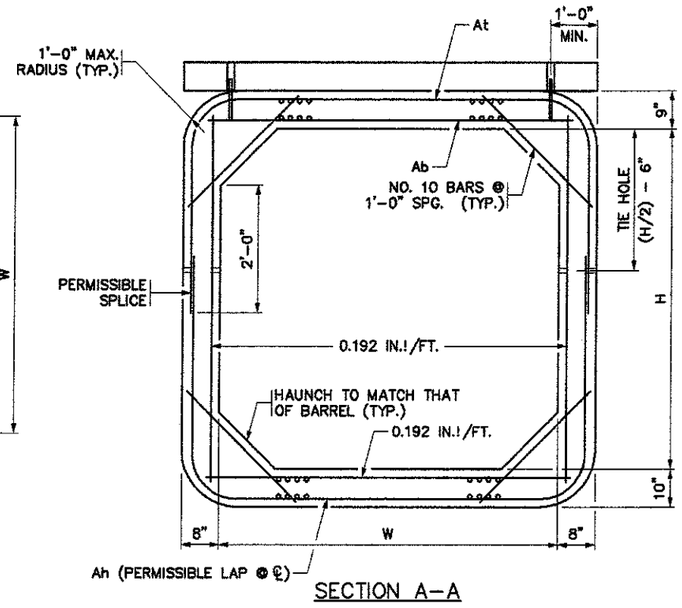
SHEET NO. 14 OF 15 SHEETS

BRIDGE NO. 55J38



PLAN VIEW

SOME REINFORCEMENT NOT SHOWN



SECTION A-A

CONSTRUCTION NOTES

SEE FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.

LONGITUDINAL REINFORCEMENT PARALLEL TO THE AXIS OF THE CULVERT SHALL HAVE A MINIMUM OF 0.06 SQUARE INCHES PER PERIPHERAL FOOT ON ALL FACES OF THE BARREL, EXCEPT IN THE TONGUE AND GROOVE AREA.

SEE FIG. 5-395.115 FOR EMBANKMENT PROTECTION.

FINISH ALL EXPOSED EDGES OF CONCRETE WITH 1/2" OR 3/4" CHAMFER OR RADIUS UNLESS OTHERWISE NOTED.

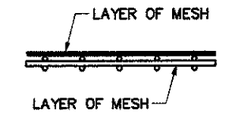
① WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. SEE FIG. 5-395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL TO BE CONCRETE MIX NO. 1A43 OR MIX NO. 3Y43. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS. DROPWALL NOT REQUIRED FOR NON-WATERWAY USE.

② CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.

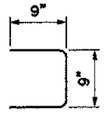
③ FILL HOLE WITH GROUT. GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".

④ 3'-6" TONGUE AND 3'-7" GROOVE FOR 6'-0" WIDE CULVERTS. 5'-0" TONGUE AND 5'-1" GROOVE FOR CULVERTS OVER 6'-0" WIDE. CENTER TONGUE AND GROOVE ON ℄ OF EACH APRON JOINT.

⑤ AS AN ALTERNATE TO THE ONE LAYER MESH, PROVIDE TWO LAYERS OF REBAR OR WIRE MESH WITH THE STEEL AREA EQUAL TO HALF OF THE TEMPERATURE STEEL PER CODE REQUIREMENTS IN EACH FACE OF THE DROPWALL.

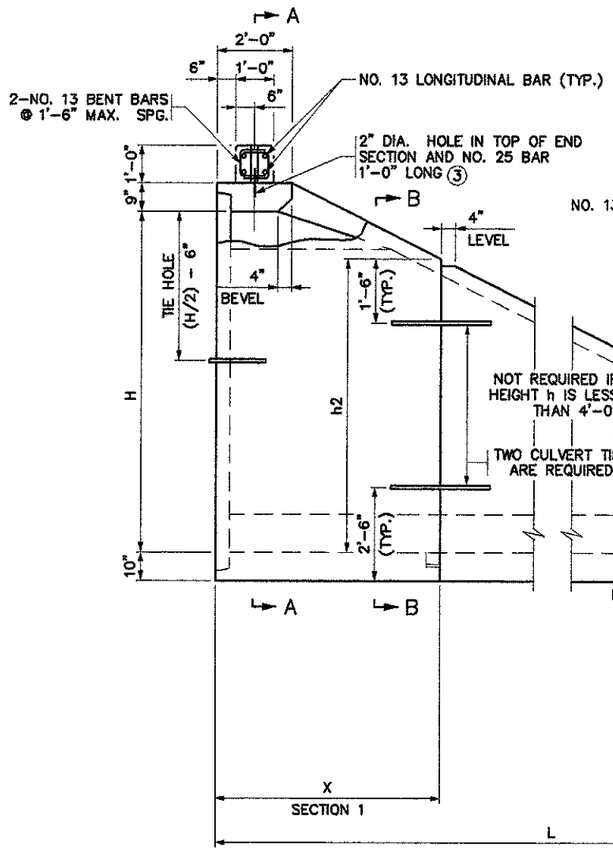


FABRIC LAYER DETAIL

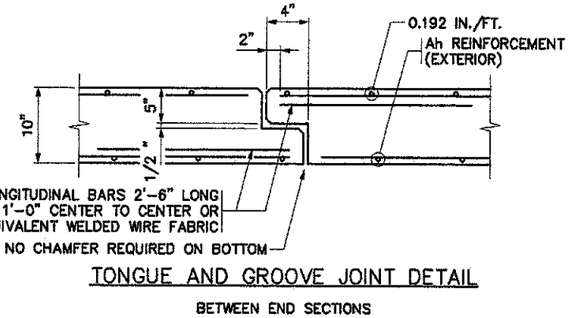


NO. 13 BENT BAR

WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN.

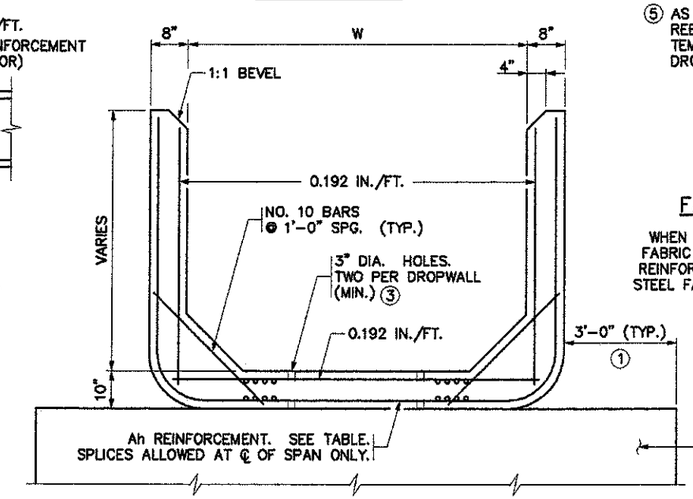


SIDE ELEVATION

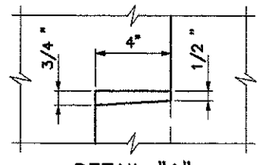


TONGUE AND GROOVE JOINT DETAIL

BETWEEN END SECTIONS



SECTION B-B



DETAIL "A"

At, Ab REINFORCEMENT		
WIDTH (FT.)	At (IN²/FT.)	Ab (IN²/FT.)
6	.27	.44
8	.47	.60
10	.62	.74
12	.88	1.06
14	1.20	1.58

APRON DIMENSIONS & Ah REINFORCEMENT

H	L	SECTION 1		h2	SECTION 2		h3	SECTION 3		h4	SECTION 4		h5	SECTION 5		h6
FT.	FT.	X	Ah		Y	Ah		Z	Ah		ZZ	Ah		ZZZ	Ah	
4	8	8'	0.192	1'-9"												
5	10	6'	0.192	3'-9"	4'	0.192	1'-9"									
6	12	6'	0.192	4'-9"	6'	0.192	1'-9"									
7	14	6'	0.192	5'-9"	8'	0.192	1'-9"									
8	16	6'	0.20	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"						
9	18	6'	0.29	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"						
10	20	6'	0.42	8'-9"	6'	0.29	5'-9"	8'	0.192	1'-9"						
11	22	6'	0.60	9'-9"	6'	0.42	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"			
12	24	6'	0.78	10'-9"	6'	0.60	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"			
13	26	6'	1.03	11'-9"	6'	0.78	8'-9"	6'	0.28	5'-9"	8'	0.192	1'-9"			
14	28	6'	1.38	12'-9"	6'	1.03	9'-9"	6'	0.40	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"

NOTE: Ah IS AREA OF REINFORCEMENT PER FOOT OF LENGTH (IN²/FT.)

AS-BUILT

MAR 23 2005

ENGINEERING

REVISION:
APPROVED: DECEMBER 11, 2000
Donald J. Hemming STATE BRIDGE ENGINEER

STATE PROJ. NO.	S.A.P. 55-599-77	MARION TWP.	FIG. 5-395.102
CERTIFIED BY Kaye M Boenicke LICENSED PROFESSIONAL ENGINEER	TITLE: PRECAST CONCRETE END SECTION TYPE I - SINGLE OR DOUBLE BARREL FOR SKEWS UP TO 7 1/2°	DES: DR: APPROVED:	BRIDGE NO. 55J38
LIC. NO. 19917 4/26 2002		CHK: CHK:	SHEET NO. 15 OF 15 SHEETS