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 10' VERT.
CROSS SECTIONS 0 10' HORIZ. 0 10' VERT.
INDEX MAP NOT TO SCALE

MINNESOTA DEPARTMENT OF TRANSPORTATION

THE COUNTY OF OLMSTED

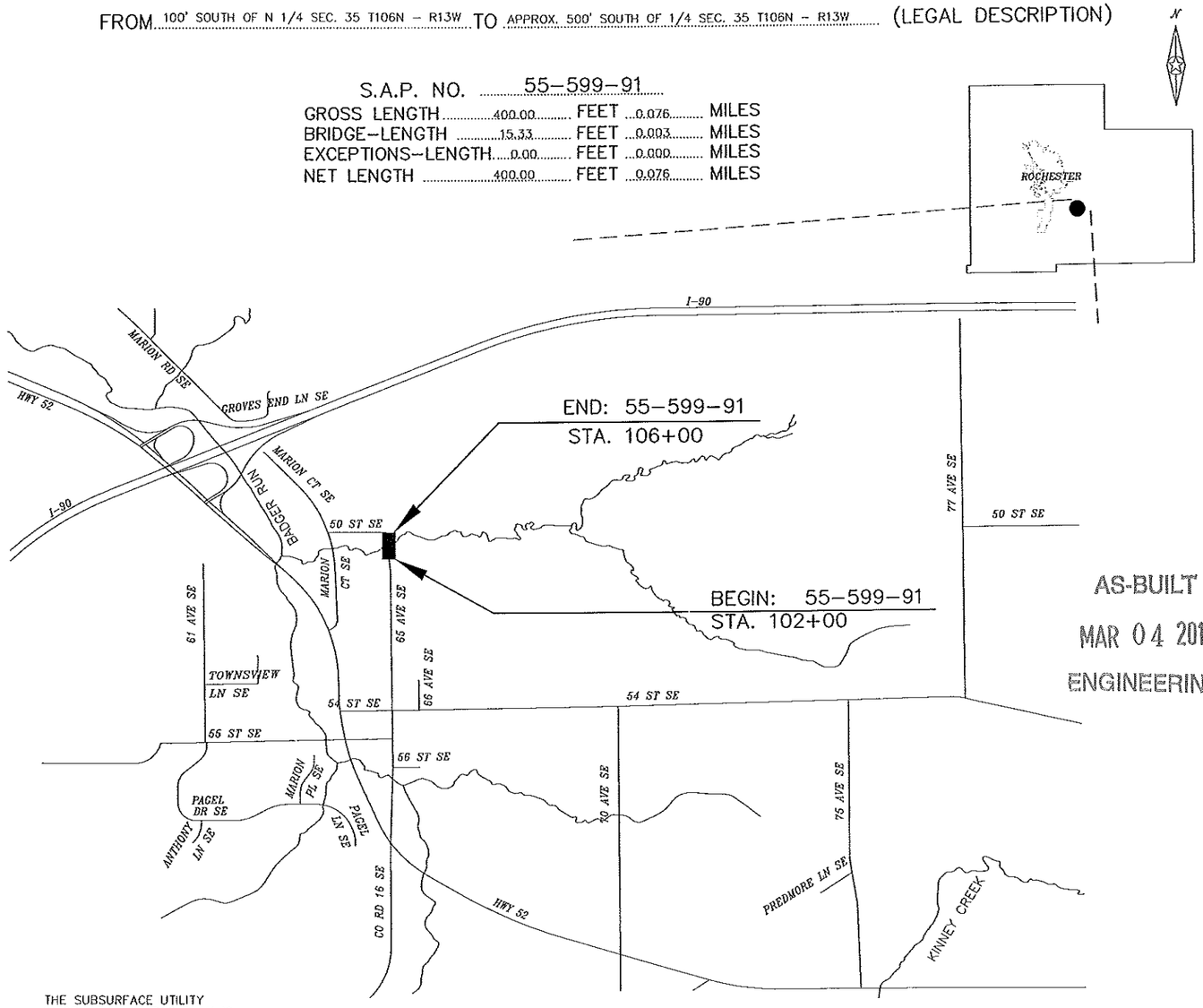
CONSTRUCTION PLAN FOR CONSTRUCT NEW BR. NO. 55J73 (OLD STRUCTURE < 10 FT.) & APPROACH GRADING

LOCATED ON MARION TWP. RD. T-140 65th Ave. S.E. BETWEEN 50th St. S.E. AND 54th St. S.E. (GEOGRAPHIC DESCRIPTION)

FROM 100' SOUTH OF N 1/4 SEC. 35 T106N - R13W TO APPROX. 500' SOUTH OF 1/4 SEC. 35 T106N - R13W (LEGAL DESCRIPTION)

S.A.P. NO. 55-599-91

GROSS LENGTH	400.00	FEET	0.076	MILES
BRIDGE-LENGTH	15.33	FEET	0.003	MILES
EXCEPTIONS-LENGTH	0.00	FEET	0.000	MILES
NET LENGTH	400.00	FEET	0.076	MILES



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THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA.

MINN. PROJ. NO.

GOVERNING SPECIFICATIONS

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

INDEX

SHEET NO. 1	TITLE SHEET
SHEET NO. 2	ESTIMATE OF QUANTITIES & TYPICAL SECTION
SHEET NO. 3	PLAN AND PROFILE
SHEET NO. 4	CROSS-SECTIONS
SHEET NO. 5 - 8	BRIDGE SURVEY AND DETAILS
SHEET NO. 9 - 121	EROSION CONTROL
SHEET NO. 13	TRAFFIC CONTROL PLAN

THIS PLAN CONTAINS 13 SHEETS.

DESIGN DESIGNATION: S.A.P. 55-599-91

R ΣN18(20)
ADT (Current Year) = ≤50(2008) Design Speed 30 MPH
ADT (Future Year) = ≤50(2028) Bosed on STOPPING Sight Distance
DHV (Design Hr. Vol.) = Height of eye 3.5 FT. Height of object 2.0 FT.
D (Directional Distr.) = Design Speed not achieved at:
T (Heavy Commercial) = STA. TO STA. MPH
SUBGRADE = K=150 STA. TO STA. MPH
SOIL FACTOR = 130%
SHOULDER WIDTH 1 FT.

TOWNSHIP APPROVALS:

APPROVED: TWP. CHAIRPERSON DATE 12-21-07

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

DATE 12/11/07 REG. NO. 19917

PRINTED NAME: KAYE M. BIENIEK

SIGNED NAME: Kaye M Bieniek
COUNTY DESIGN ENGINEER

DATE 12/20/07 REG. NO. 10397

APPROVED: OLMSTED COUNTY ENGINEER

STATE AID APPROVALS:

DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/ POLICY DATE: 4-28-08

APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER DATE: 4-28-08

S.A.P. NO. 55-599-91 MARION TWP. | SHEET 1 OF 13 SHEETS

ESTIMATED QUANTITIES

	SPECIFICATIONS NO.	ITEM	UNIT	NON PARTICIPATING	PARTICIPATING	TOTAL ESTIMATED QUANTITIES
①	2101.511	CLEARING AND GRUBBING	LUMP SUM	1		1
②	2104.501	REMOVE FENCE	LIN. FT.	364		364
	2105.511	COMMON CHANNEL EXCAVATION	CU. YD.	21		21(P)
	2105.515	UNCLASSIFIED EXCAVATION	CU. YD.	404		404(P)
	2105.523	COMMON BORROW (CV)	CU. YD.	228		228(P)
	2211.501	AGGREGATE BASE CL.2	TON	364		364
	2412.511	14'x 4' PRECAST CONC. BOX CULV.	LIN. FT.		36	36
	2412.512	14'x 4' PRECAST CONC. BOX CULVERT END SECTION	EACH		2	2
	2442.501	REMOVE OLD BRIDGE	LUMP SUM	1		1
	2451.507	GRANULAR BEDDING (CV)	CU. YD.		32	32(P)
③	2511.501	RANDOM RIPRAP CL. III	CU. YD.		49	49
④	2573.502	SILT FENCE TYPE MACHINE SLICED	LIN. FT.	40		40
⑤	2575.555	TURF ESTABLISHMENT	LUMP SUM	1		1

(P) PLAN

QUANTITY NOTES:

① APPROX. 9 TREE AND 0.05 ACRES WOODS.

② SPEC. NO. 1903 DOES NOT APPLY TO ITEM NO. 2104.501 REMOVE FENCE.

③ PLACE RIPRAP ON 9" GRANULAR FILTER OR GEOTEXTILE MATERIAL WHICH SHALL BE CONSIDERED INCIDENTAL AND NO DIRECT COMPENSATION WILL BE MADE THEREFOR.

④ PLACE 10' OF SLIT FENCE IN ALL FOUR DITCH BOTTOMS THAT OUTLET INTO CHANNEL, AS NEEDED, DIRECTED BY ENGINEER IN THE FIELD. SPEC. NO. 1903 DOES NOT APPLY TO ITEM NO. 2573.502 SILT FENCE.

⑤ APPROX. 0.5 ACRES.

BASIS OF PLANNED QUANTITIES

AGGREGATE BASE CLASS 2 – 140 LBS / CU. FT. COMPACTED.

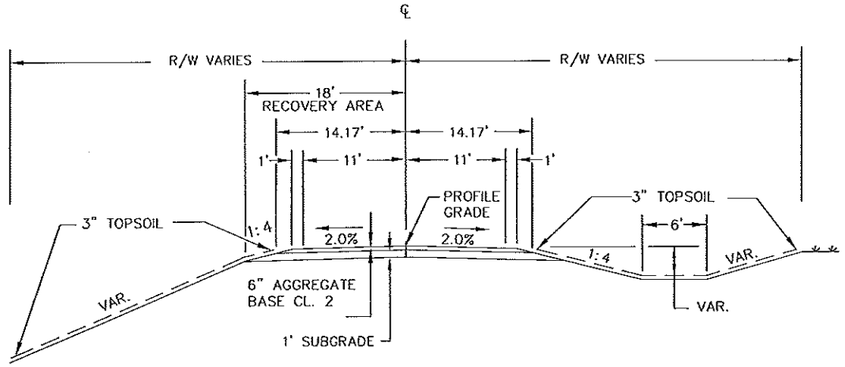
STANDARD PLATES

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

PLATE NO.	DESCRIPTION
	NUMERICAL INDEX OF STANDARD PLATES
3145F	CONCRETE PIPE TIES
8000I	STANDARD BARRICADES

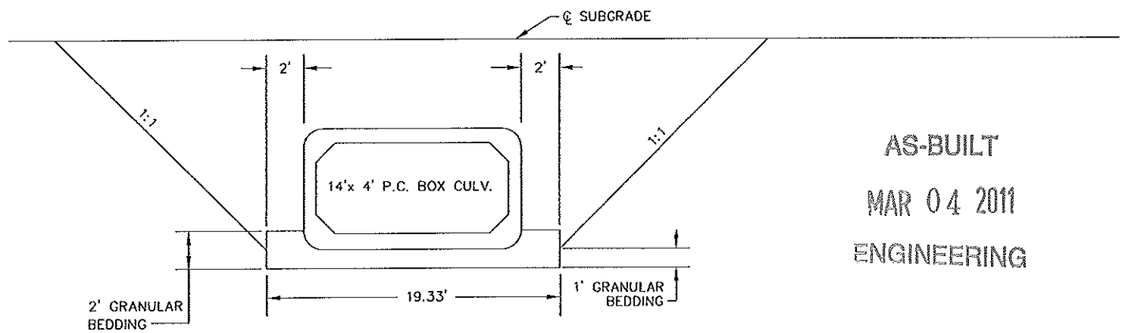
TYPICAL SECTION

STA. 102+00 TO STA. 106+00



NOTES: ALL UTILITY POLES AND UNYIELDING OBJECTS WILL BE LOCATED OUTSIDE THE 18 FT. RECOVERY AREA BY OTHERS.

BEDDING DETAIL



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 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.

AS-BUILT
MAR 04 2011
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CERTIFIED BY Kaye M Brienick REG. NO. 19917 12/11 2007
LICENSED PROFESSIONAL ENGINEER

S.A.P. NO. 55-599-91

℄ CULV STA. 104+10
6'x5'x18' CONC. BOX CULV.
WITH CONC. WINGWALLS

NEW BR. NO. 55J73 STA. 104+08
14'x4'x36' PRECAST CONC. BOX CULV.
2 – 14'x4' PRECAST CONC. END SECTIONS
SEE SHEET 4 & 8 FOR RIPRAP

P.I. STA. 104+35.64
Dc = 00°52'41"
T = 90.01
R = 6525.11
L = 180.00

BEGIN S.A.P. 55-599-91 STA. 102+00
P.C. STA. 103+45.63
P.T. STA. 105+25.63
END S.A.P. 55-599-91 STA. 106+00
50' R/W
+75
20' T.E.
+50
CONST. LIMITS
+00
+45.63
+25.63
65th Ave. S.E.
30th St. S.E.
STREAM
T-BUR

AS-BUILT
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COMMON CHANNEL EXCAVATION

SCALES: HOR. 0 50' 100'
VER. 0 10' 20'

DESIGN FINISHED GRADE
1120.60 1119.75 1119.64 1120.16 1120.78 1121.64 1122.99

BEGIN STA. 102+00 EL. 1122.09
P.V.C. STA. 102+25 EL. 1121.30
3.16%
P.V.T. STA. 103+75 EL. 1119.85
1.23%
P.V.C. STA. 104+50 EL. 1120.78
P.V.T. STA. 105+50 EL. 1122.99
3.19%
END STA. 106+00 EL. 1124.58

INLET EL. 1113.30
OUTLET EL. 1113.20

P.I. STA. 103+00
EL. 1118.93
V.C. 150
E = 0.82

P.I. STA. 105+00
EL. 1121.39
V.C. 100
E = 0.25

1126.77 1126.35 1125.95 1125.75 1126.26 1125.56 1122.09 1119.98 1119.59 1118.27 1118.56 1118.98 1119.95 1122.05 1124.58 1127.47 1128.30 1128.26

95+00 96+00 97+00 98+00 99+00 100+00 101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00 109+00 110+00

1160 1150 1140 1130 1120 1110 1100 1090 1080 1070

CERTIFIED BY Kaye N. Brienick LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 3/5 2008

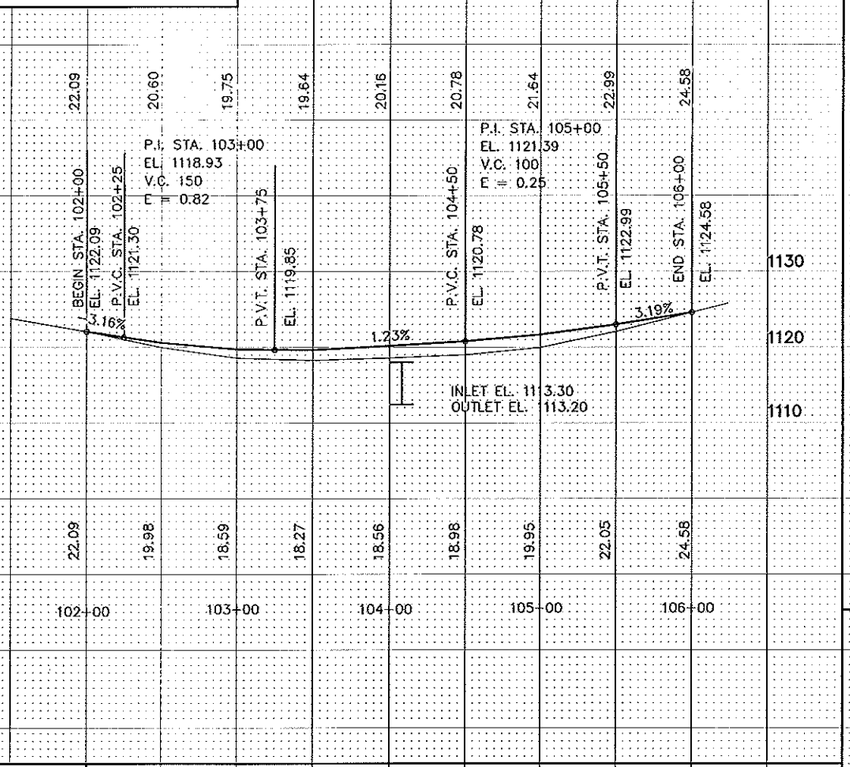
S.A.P. 55-599-91

SHEET 3 OF 13 SHEETS

EXIST. R/W
EXIST. COMMON EXCAVATION 404 CU. YDS.
EMBANKMENT 653 CU. YDS.
COMMON CHANNEL EXCAVATION 21 CU. YDS.
MATCH EXISTING
CUT 18
FILL 30
CUT 40
FILL 90
CUT 48
FILL 128
CUT 62
FILL 58
CUT 76
FILL 100
CUT 65
FILL 97
CUT 60
FILL 99
CUT 35
FILL 51
NEW R/W
20' T.E.
5'
4'
1.5'
24' RIPRAP
OUTLET END APRON
INLET END APRON
END BARREL
1:4
1:3
1:3.6
1:2
14'x4'x36' PRECAST CONCRETE BOX CULVERT
2-14'x4' PRECAST CONCRETE END SECTIONS
NOTE: RIPRAP WIDTH VARIES TO MATCH CHANNEL.
AS-BUILT
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S.A.P. 55-599-91
SHEET 4 OF 13 SHEETS

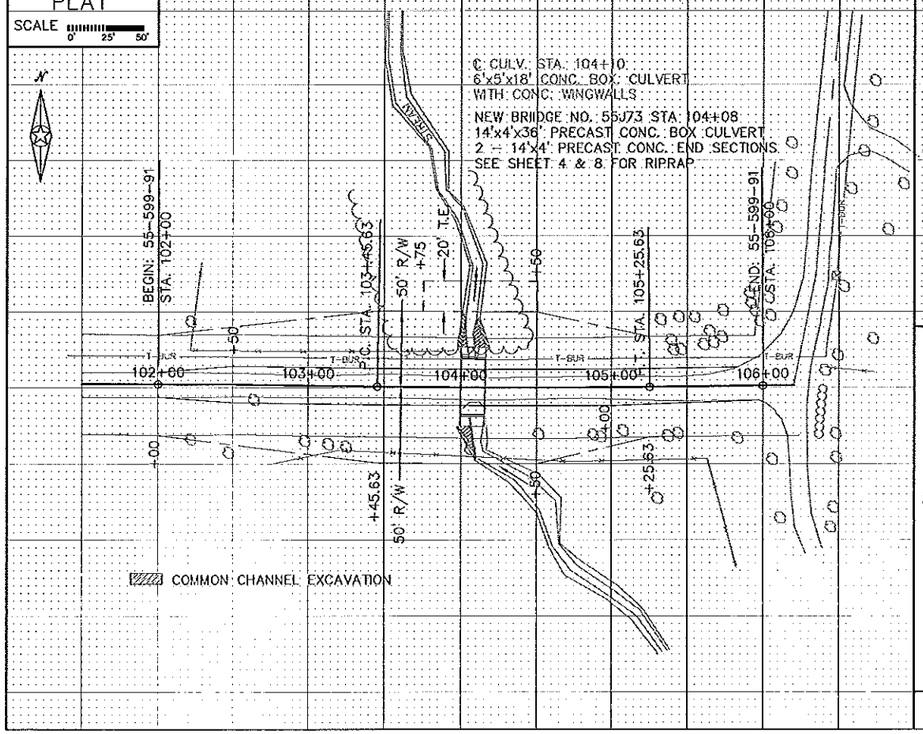
CONTRACTED PROFILE

SCALE HOR 0' 25' 50' VER. 0' 5' 10'



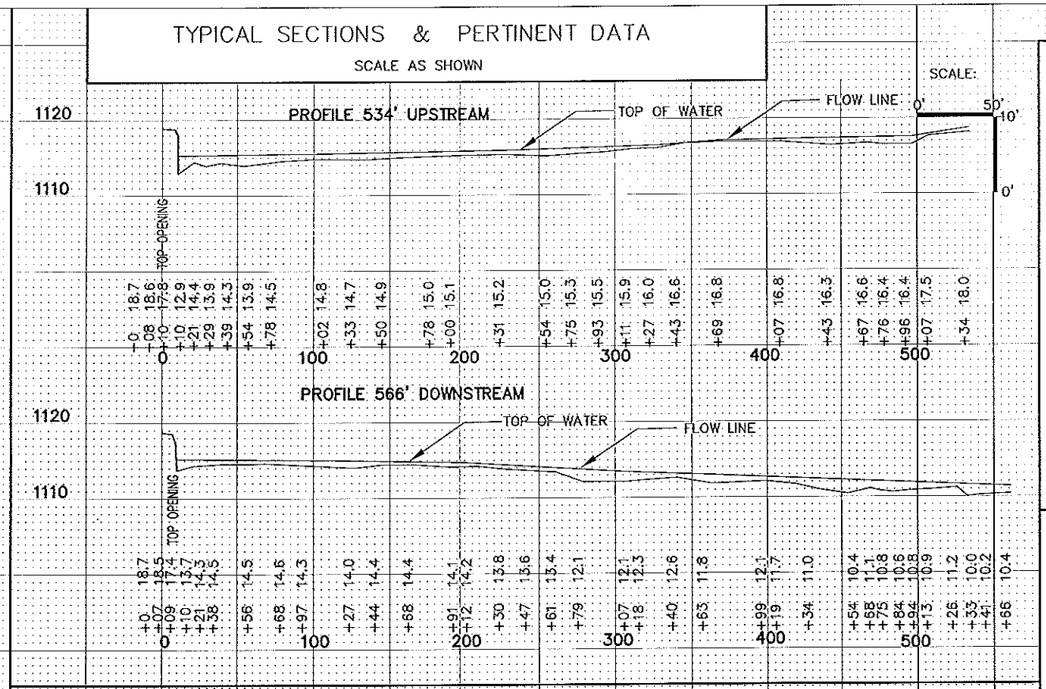
PLAT

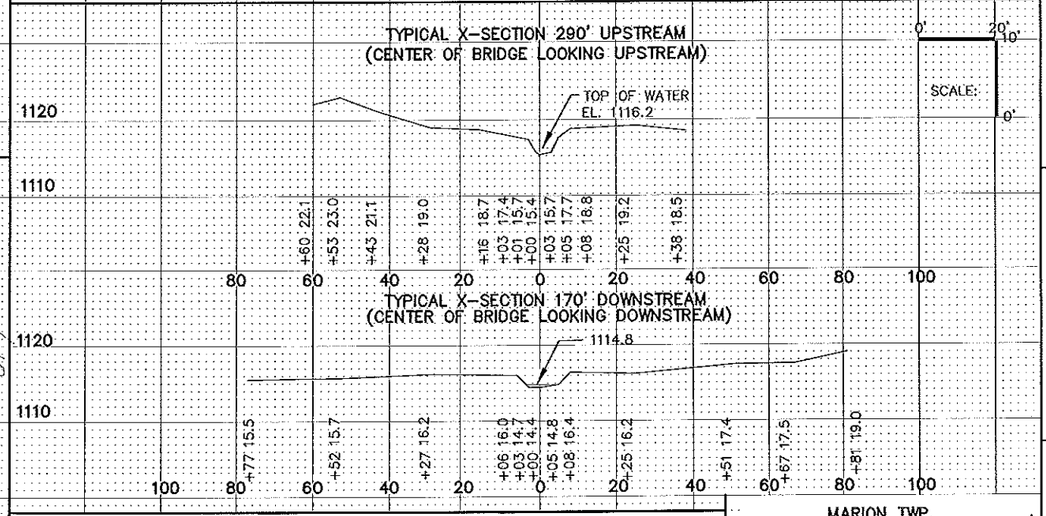
SCALE 0' 25' 50'

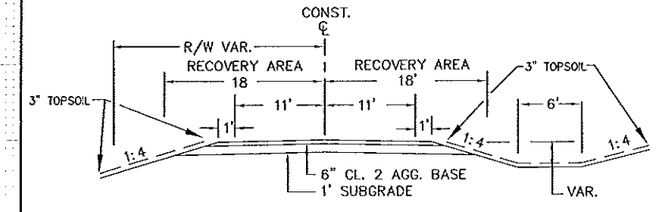


TYPICAL SECTIONS & PERTINENT DATA

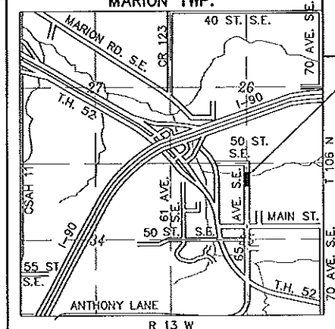
SCALE AS SHOWN







MARION TWP.



CERTIFIED BY Kaye M Poeniek REG. NO. 19917 3/5 2008
LICENSED PROFESSIONAL ENGINEER

S.A.P. 55-599-91

SHEET 5 OF 13 SHEETS

Fed. Proj. No.

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 5/3/07

Stream or ditch designation UNNAMED STREAM
Drainage area 1.2 SQ. MI.
Max. flood on record UNKNOWN Design flood (20 yr. freq.) 480 C.F.S.
Max. observed highwater elevation UNKNOWN Design highwater elevation .....
Design mean velocity through structure 8.6 F.P.S. OUTLET
Low superstructure at or above elevation N/A
Flowline 1113.3-1113.2 Skew angle N/A
Waterway area req'd. below elevation N/A = N/A Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr. freq.) is 840 C.F.S. at stage 1118.4 and mean velocity of 9.5 F.P.S. with 2.3 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 .....

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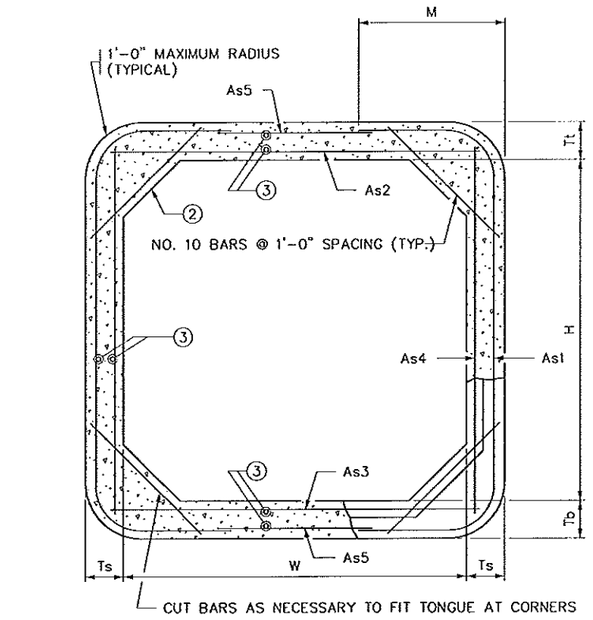
Bridge survey sheets made from: SURVEY CONDUCTED BY OLMSTED COUNTY.

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

MINNESOTA
DEPARTMENT OF TRANSPORTATION

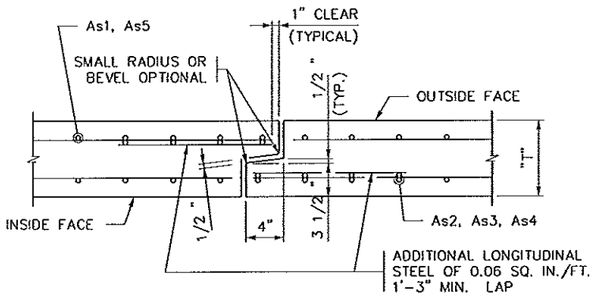
BRIDGE SURVEY

AT MILE POINT 0.6 MILES N. OF JCT T.H. 52 ON 65th AVE. S.E. (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 0.6 MILES N. OF T.H. 52
SEC. 35 TWP. 106 N R 13 W
TOWNSHIP MARION COUNTY OLMSTED
BRIDGE NO. 55J73

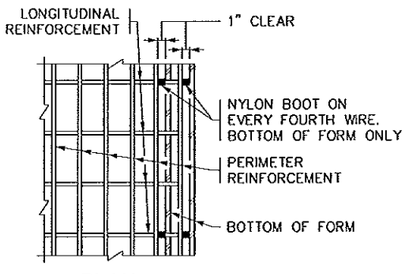


TRANSVERSE BARREL SECTION

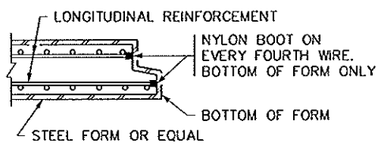
BAR REINFORCEMENT OPTION SHOWN



TONGUE AND GROOVE JOINT DETAIL

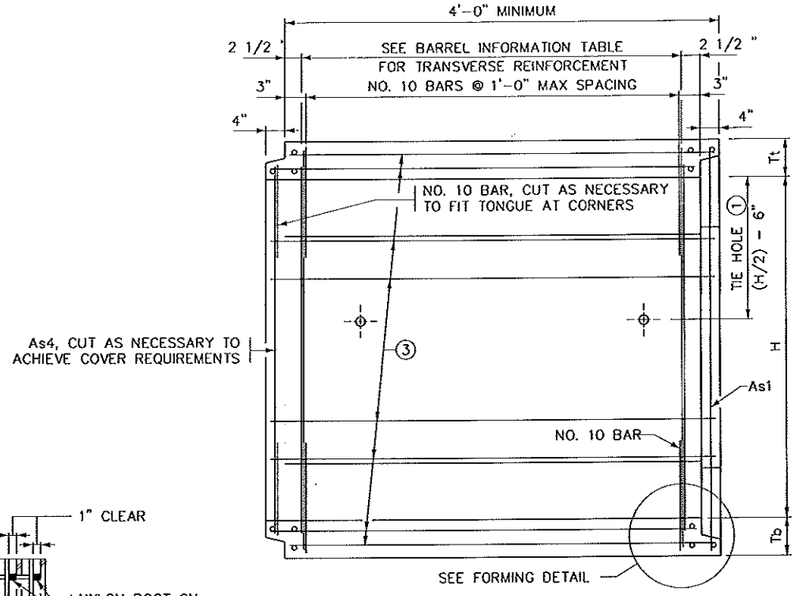


PLAN



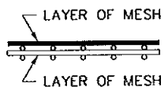
SECTION

FORMING DETAIL



LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN



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

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.

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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.)
104+08	14' X 4'	2	5000	2-6	14	4	10	10	8	4800	0.83	12'-9"	4'-2"	1.03	14'-6"	0.93	14'-6"	0.20	4'-6"	0.06	9'-0"

REVISION:

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

S.A.P. 55-599-91 MARION TWP.

CERTIFIED BY Kaye M Prevenick
LICENSED PROFESSIONAL ENGINEER
REG. NO. 19917 3/5 2008

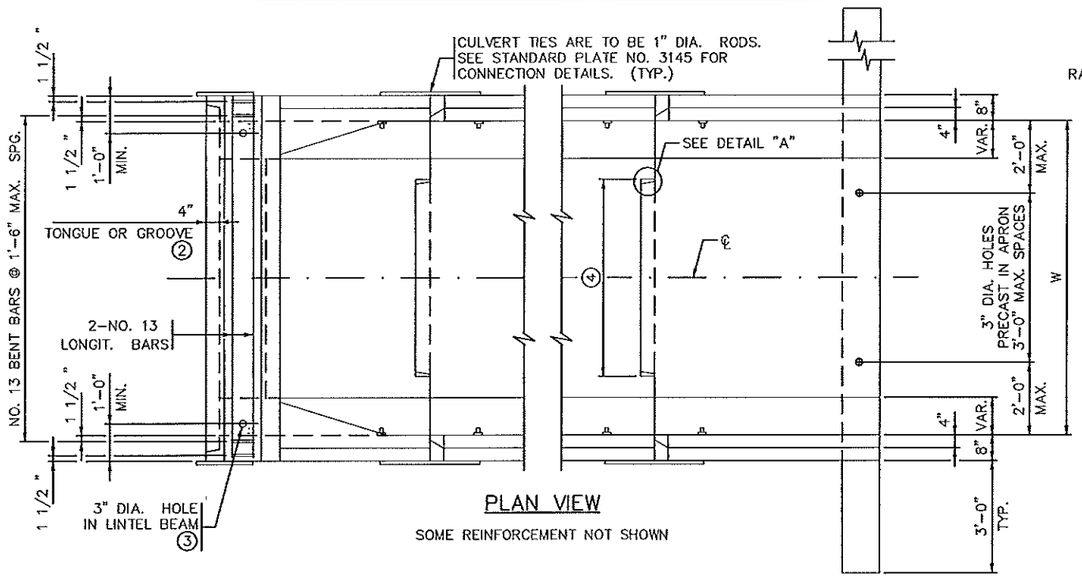
TITLE: BARREL DETAILS

DES: DR: APPROVED:
CHK: CHK:

SHEET NO. 6 OF 13 SHEETS

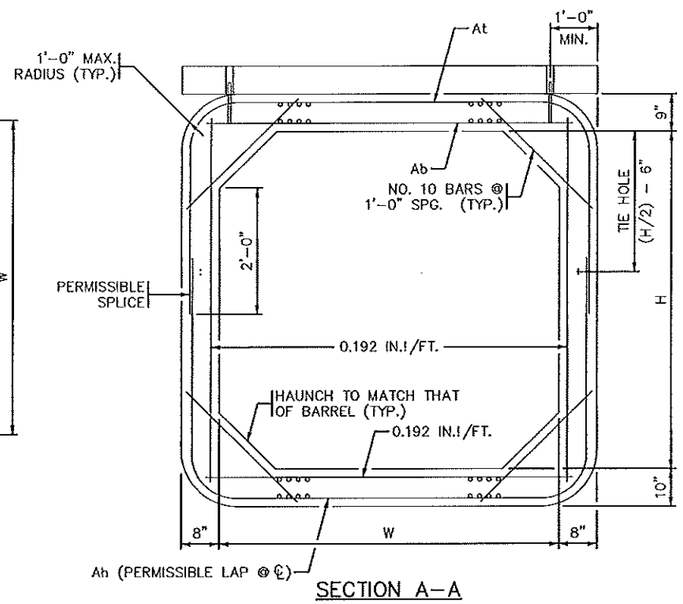
FIG. 5-395.101(A)

BRIDGE NO. 55J73



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.

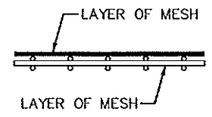
(1) WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. SEE FIG. 5-395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL TO BE CONCRETE MIX NO. 1A43 OR MIX NO. 3Y43. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED 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".

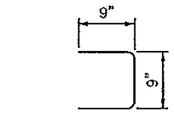
(4) 3'-6" TONGUE AND 3'-7" GROOVE FOR 6'-0" WIDE CULVERTS. 5'-0" TONGUE AND 5'-1" GROOVE FOR CULVERTS OVER 6'-0" WIDE. CENTER TONGUE AND GROOVE ON ℄ OF EACH APRON JOINT.

(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.

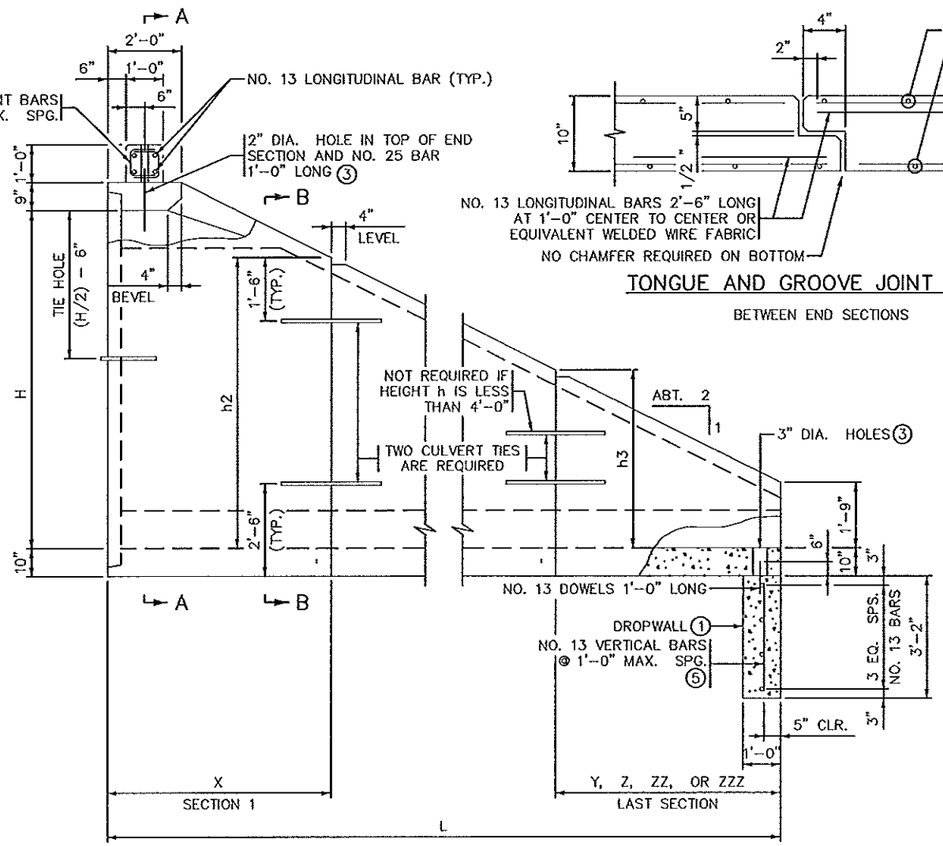


FABRIC LAYER DETAIL

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.



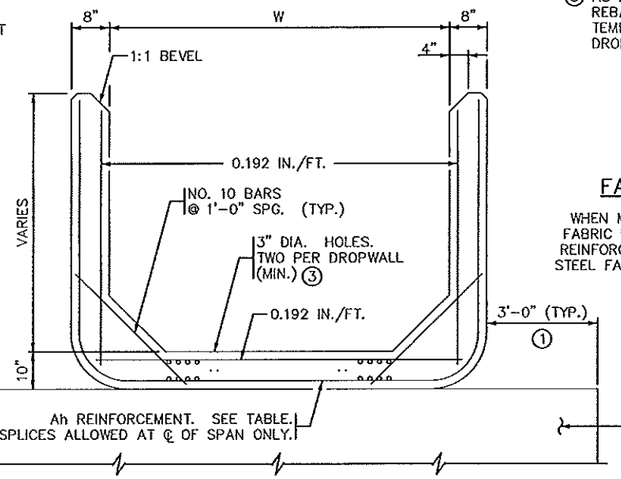
NO. 13 BENT BAR



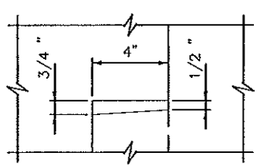
SIDE ELEVATION

TONGUE AND GROOVE JOINT DETAIL

BETWEEN END SECTIONS



SECTION B-B



DETAIL "A"

AS BUILT

MAR 04 2011

ENGINEERING

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 FT.	L FT.	SECTION 1 X	SECTION 1 Ah	h2	SECTION 2 Y	SECTION 2 Ah	h3	SECTION 3 Z	SECTION 3 Ah	h4	SECTION 4 ZZ	SECTION 4 Ah	h5	SECTION 5 ZZZ	SECTION 5 Ah	h6
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.)

REVISION: 06-30-2003

APPROVED: DECEMBER 11, 2000

Harold L. Cunning
STATE BRIDGE ENGINEER

S.A.P. 55-599-91 MARION TWP.

FIG. 5-395.102

CERTIFIED BY Kaye M Brenneke
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 19917 12/11 2007

TITLE: PRECAST CONCRETE END SECTION TYPE I - SINGLE OR DOUBLE BARREL FOR SKEWS UP TO 7 1/2°

DES: | DR: | APPROVED:
CHK: | CHK:

SHEET NO. 7 OF 13 SHEETS

BRIDGE NO. 55J73