

MINNESOTA DEPARTMENT OF TRANSPORTATION ANOKA COUNTY

FED. PROJ. NO. STPX 0206-(133), STATE FUNDS

GOVERNING SPECIFICATIONS

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MNMUTCD) AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".

CONSTRUCTION PLAN FOR GRADING, AGG. BASE, BIT. SURFACING, BIT. PATH, CONCRETE WALK, CONCRETE CURB & GUTTER, DRAINAGE, SIGNAL SYSTEMS, **BOX CULVERT 02J31**

INDEX

SHEET NO.	SHEET DESCRIPTION
1	TITLE SHEET
2	GENERAL LAYOUT
3-6	STATEMENT OF ESTIMATED QUANTITIES
7	CONSTRUCTION/SOILS NOTES
8	STANDARD PLATES & INDEX OF TABULATIONS
9-14	EARTHWORK SUMMARY, BALANCE, TABULATIONS
15-25	TABULATIONS
26-32	UTILITIES TABULATION
33-41	TYPICAL SECTIONS
42-51	STANDARD PLAN SHEETS/MISCELLANEOUS DETAILS
52-53	DETOUR PLAN
54-82	TRAFFIC CONTROL AND STAGING PLANS
83-87	ALIGNMENT PLANS AND TABULATIONS
88-97	TOPOGRAPHY AND UTILITY PLANS
98-107	REMOVAL PLANS
108-117	CONSTRUCTION PLANS
118-130	INTERSECTION DETAILS
131-145	PROFILES
146-147	WATERMAIN PLAN AND PROFILE
148-151	BOX CULVERT PLANS AND DETAILS
152-153	BOX CULVERT LIGHTING PLANS AND DETAILS
154-156	MODULAR BLOCK RETAINING WALL DETAILS
157-159	MODULAR BLOCK RETAINING WALL PLAN AND PROFILE
160-169	STORM SEWER AND SUPERELEVATION PLANS
170-198	STORM SEWER TABULATIONS, PROFILES AND DETAILS
199-200	STORM WATER POLLUTION PREVENTION PLAN
201-211	EROSION CONTROL AND TURF ESTABLISHMENT PLANS
212-217	GRADING PLANS
218-221	SIGNING AND STRIPING TABULATIONS AND DETAILS
222-231	EXISTING SIGNING AND STRIPING PLANS
232-241	SIGNING AND STRIPING PLAN AND DETAILS
242-279	TRAFFIC SIGNAL PLANS AND DETAILS
280-400	CROSS SECTIONS

THIS PLAN CONTAINS 400 SHEETS

SRE CONSULTING GROUP, INC.

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.

SIGNATURE: *Chris M. Trbojevich*
DATE: 10/06 LIC. NO. 41635 PRINT NAME: CHRIS M. TRBOJEVICH

APPROVED: *David D. Bunker* 10/25 2006 ANOKA COUNTY ENGINEER

APPROVED: *David D. Bunker* 10/31 2006 CITY ENGINEER, CITY OF ANDOVER

APPROVED: *Douglas J. Vento* 11/1 2006 CITY ENGINEER, CITY OF COON RAPIDS

RECOMMENDED FOR APPROVAL: *Mark J. ...* 12-28 2006 METRO DISTRICT TRANSPORTATION ENGINEER

RECOMMENDED FOR APPROVAL: *David ...* 1/2 2007 METRO DISTRICT MATERIALS ENGINEER

RECOMMENDED FOR APPROVAL: *Maria A. ...* 12/14 2006 METRO DISTRICT WATER RESOURCES ENGINEER

RECOMMENDED FOR APPROVAL: *Ann ...* 12/28 2006 METRO DISTRICT TRAFFIC ENGINEER

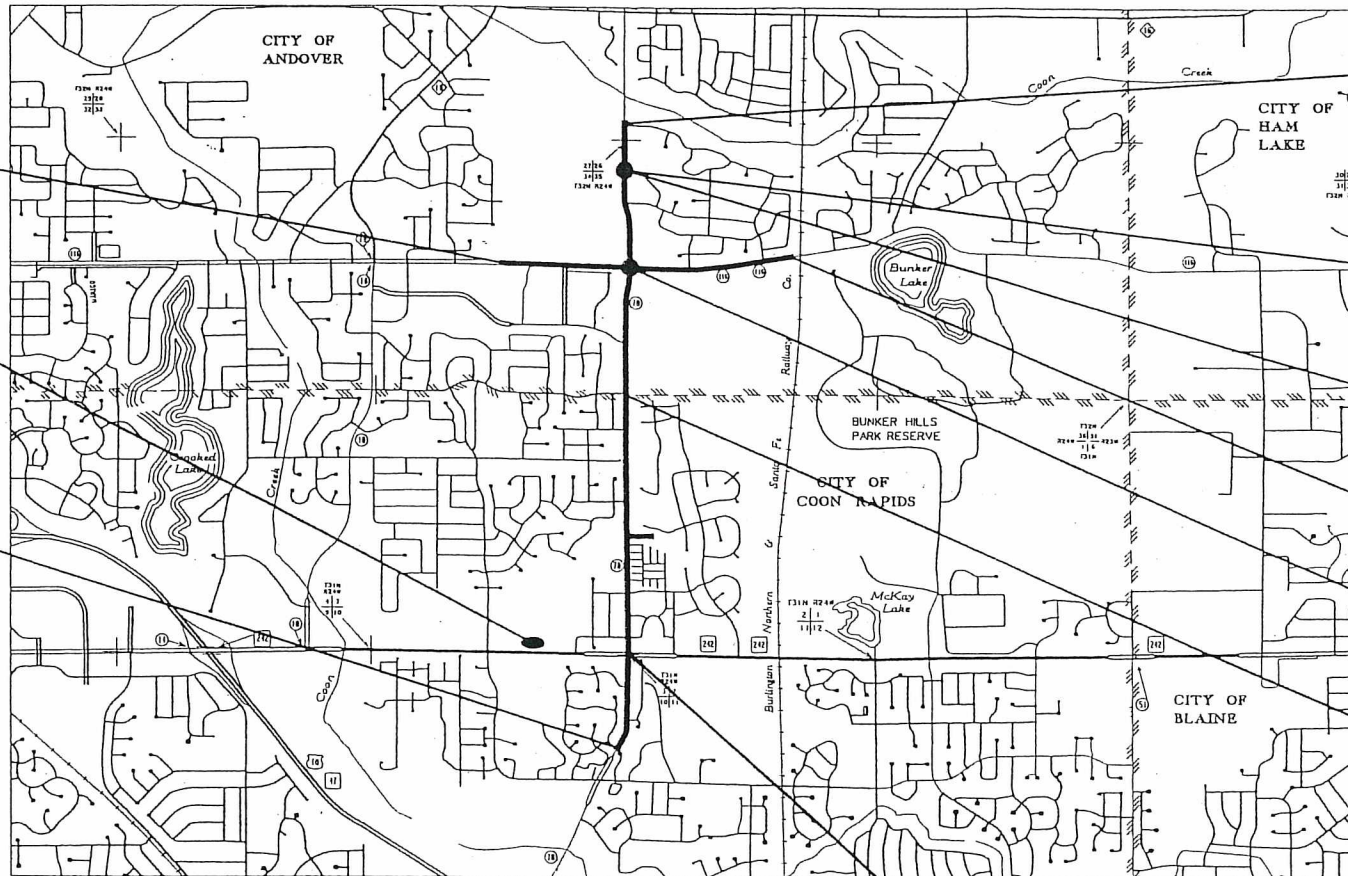
RECOMMENDED FOR APPROVAL: *T. R. Swann* 1/19 2007 STATE PRE-LETTING ENGINEER

OFFICE OF LAND MANAGEMENT APPROVAL: *Bill ...* 3/9 2007 DIRECTOR, LAND MANAGEMENT

APPROVED: *M. Galun* Mar 12 2007 STATE DESIGN ENGINEER

APPROVED: *Mark ...* 1-10 2007 DISTRICT STATE AID ENGINEER REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

APPROVED: *Mark ...* 1-10 2007 APPROVED FOR STATE AND/OR FEDERAL AID FUNDING: STATE AID ENGINEER



LOCATED ON	FROM	TO
HANSON BLVD. C.S.A.H. 78 - S.P. 02-678-16, S.P. 198-020-25, S.P. 114-020-29	121ST AVE. N.W. C.S.A.H. 116 - S.P. 02-716-10, S.P. 198-020-25	139TH AVE. N.W. C.S.A.H. 78 - S.A.P. 198-020-27
GROSS LENGTH 11,663.77 FEET 2.209 MILES	GROSS LENGTH 3,727.56 FEET 0.706 MILES	GROSS LENGTH 983.99 FEET 0.186 MILES
BRIDGES-LENGTH 0.0 FEET 0.0 MILES	BRIDGES-LENGTH 0.0 FEET 0.0 MILES	BRIDGES-LENGTH 0.0 FEET 0.0 MILES
EXCEPTIONS-LENGTH 0.0 FEET 0.0 MILES	EXCEPTIONS-LENGTH 205.64 FEET 0.039 MILES	EXCEPTIONS-LENGTH 0.0 FEET 0.0 MILES
NET LENGTH 11,663.77 FEET 2.209 MILES	NET LENGTH 3521.92 FEET 0.667 MILES	NET LENGTH 983.99 FEET 0.186 MILES
REF. POINT TO REF. POINT	REF. POINT TO REF. POINT	REF. POINT TO REF. POINT
LENGTH AND DESCRIPTION BASED UPON (N.B. C.S.A.H. 78)	LENGTH AND DESCRIPTION BASED UPON (E.B. C.S.A.H. 116)	LENGTH AND DESCRIPTION BASED UPON (N.B. C.S.A.H. 78)

BEGIN S.P. 02-716-10
S.P. 198-020-25
E.B. STA. 10+13.37

S.P. 02-678-16
T.H. 242 POND

BEGIN S.P. 02-678-16
S.P. 114-020-29
N.B. STA. 54+75.00

STATION EQUATION
S.B. C.S.A.H. 78 STA. 138+02.24 BACK-
STA. 138+02.11 AHEAD

DESIGN DESIGNATION FOR:	C.S.A.H. 78	C.S.A.H. 116	T.H. 242	TRAILS
R-VALUE	62	62	62	N/A
ADT (Current Year) 2006 =	17,370	12,170	21,954	N/A
ADT (Future Year) 2026 =	26,230 (2026)	18,030 (2026)	26,492 (2026)	N/A
PAVEMENT DESIGN	10 TON	10 TON	10 TON	N/A
FUNCTIONAL CLASSIFICATION	'A' MINOR ARTERIAL	'A' MINOR ARTERIAL	'A' MINOR ARTERIAL	N/A
NO. OF TRAFFIC LANES	4	4	2	N/A
NO. OF PARKING LANES	0	0	0	N/A
ESALS (20)	2,350,000	1,610,000	2,580,000	N/A
Design Speed (Sta 54+75.00-Sta 89+00.00)	45 MPH	55 MPH	55 MPH	20 MPH
(Sta 89+00.00-Sta 181+22.76)	55 MPH			
Based on Sight Distance	STOPPING	STOPPING	STOPPING	STOPPING
Height of eye / Height of Object	3.5' / 2.0'	3.5' / 2.0'	3.5' / 2.0'	4.5' / 0.0'
Design Speed not achieved at:	N/A	N/A	N/A	N/A

S.P. 02-678-16
S.P. 0212-48
S.P. 114-020-29
SIGNAL SYSTEM

DESIGN EXCEPTION AT:
N.B. C.S.A.H. 78 STA. 95+00.00 PEDESTRIAN CROSSING
DESIGN EXCEPTION FROM BIKEWAY STANDARDS
FOR HORIZONTAL AND VERTICAL CLEARANCE
(LOCAL FUNDING).

SCALES

INDEX MAP	1000'
GENERAL LAYOUT	500'
PLAN	50'
PROFILE	50' HORIZ. / 5' VERT.
X-SECTION	10' HORIZ. / 10' VERT.

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

AGREEMENT NO. 89684
ANOKA COUNTY
S.P. 0212-48 (TH242-242)
STATE FUNDS
METRO DISTRICT

I HEREBY CERTIFY THAT THE FINAL FIELD CHANGES, IF ANY, OF THIS PLAN WERE MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE _____
DATE _____ LIC. NO. _____ PRINT NAME _____

THIS PLAN AND/OR SPECIFICATION WAS PREPARED SPECIFICALLY FOR THIS PROJECT, AND ANY RE-USE OF DETAILS OR SPECIFICATIONS ON OTHER PROJECTS IS NOT INTENDED OR AUTHORIZED BY THE DESIGNER. LIABILITY FOR ANY RE-USE ON OTHER PROJECTS IS THE RESPONSIBILITY OF THE PERSON, AGENCY, OR CORPORATION USING PLAN OR SPECIFICATION DATA FROM THIS PROJECT.

S.P. 198-020-25, S.A.P. 198-020-27, S.P. 114-020-29, S.P. 02-678-16
S.P. 02-716-10, S.P. 0212-48 (TH242-242) SHEET NO. 1 OF 400 SHEETS

12:07:23 PM 10/10/2006 P:\proj\0206\133\mxd\plan\02j31.dwg

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.

1/2" 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".

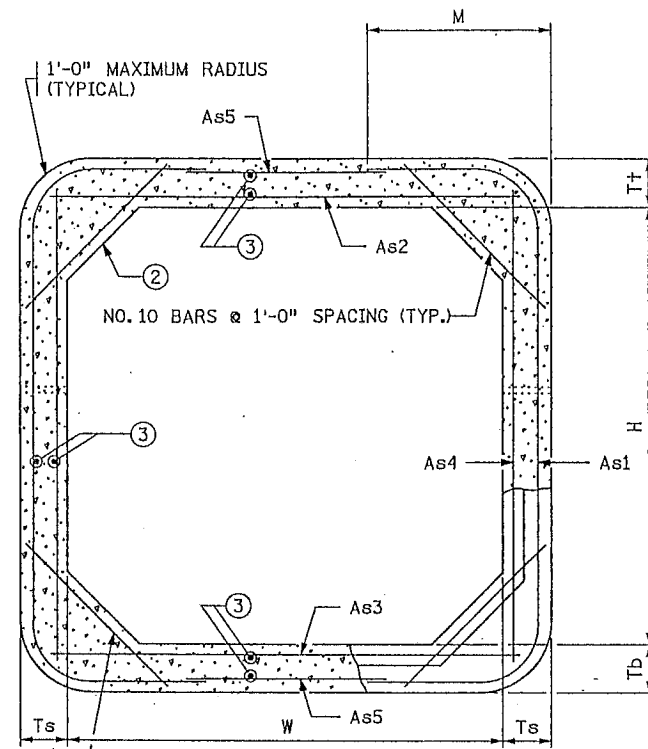
WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS OR STEEL FABRIC, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE FABRIC IS ACCEPTABLE.

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.

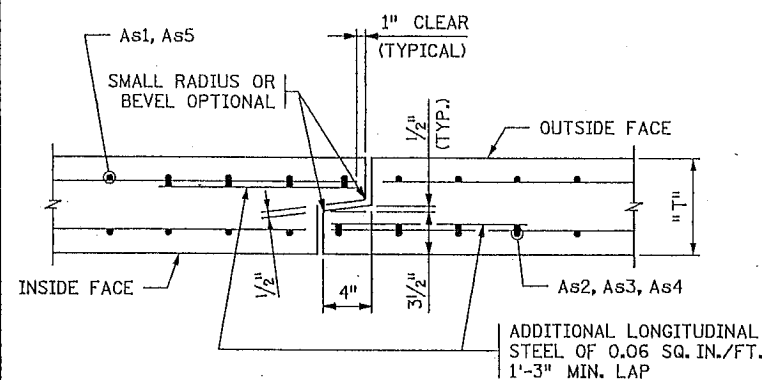
SHOP DRAWING APPROVAL PER Mn/DOT SPEC. 3238.2A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

- 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.

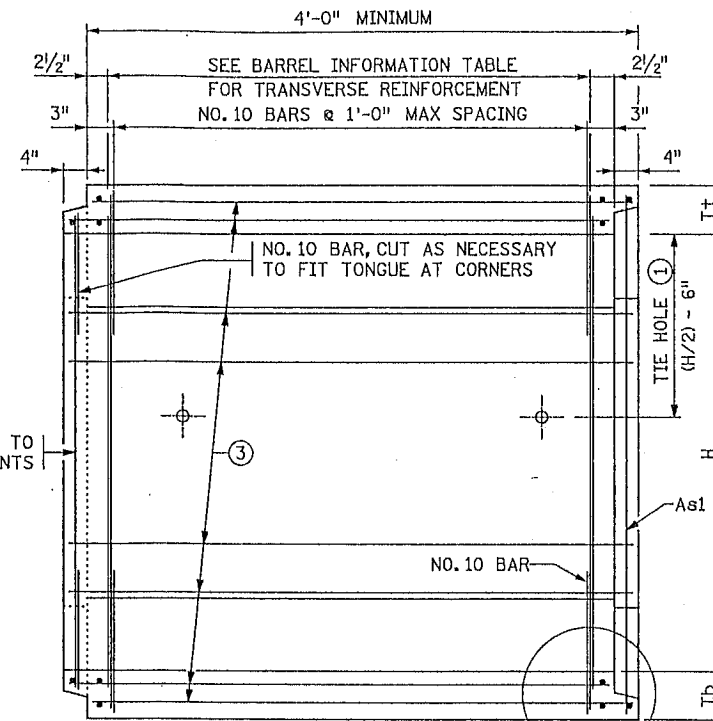


TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN



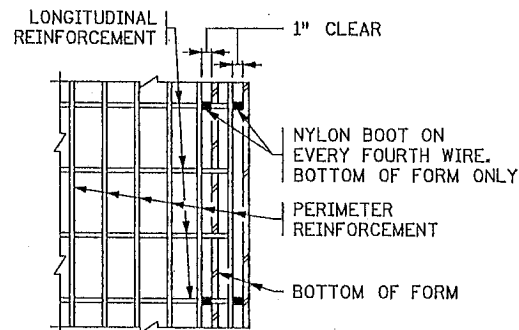
TONGUE AND GROOVE JOINT DETAIL



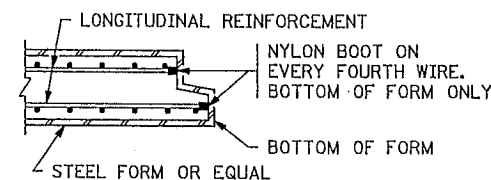
LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

As4, CUT AS NECESSARY TO ACHIEVE COVER REQUIREMENTS

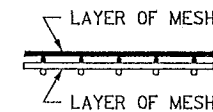


PLAN



SECTION FORMING DETAIL

SEE FORMING DETAIL



FABRIC LAYER DETAIL

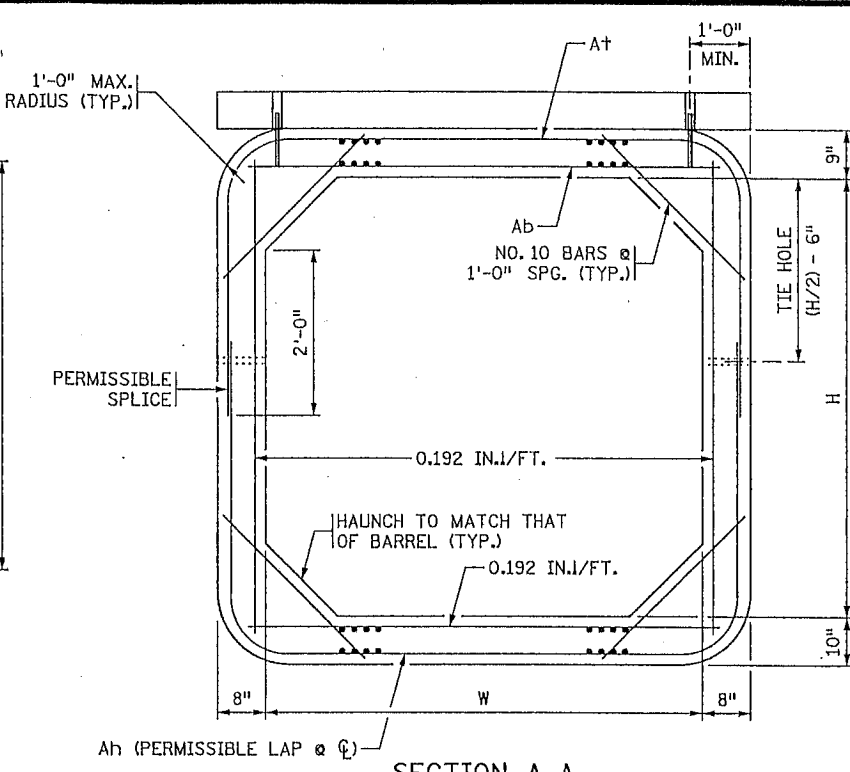
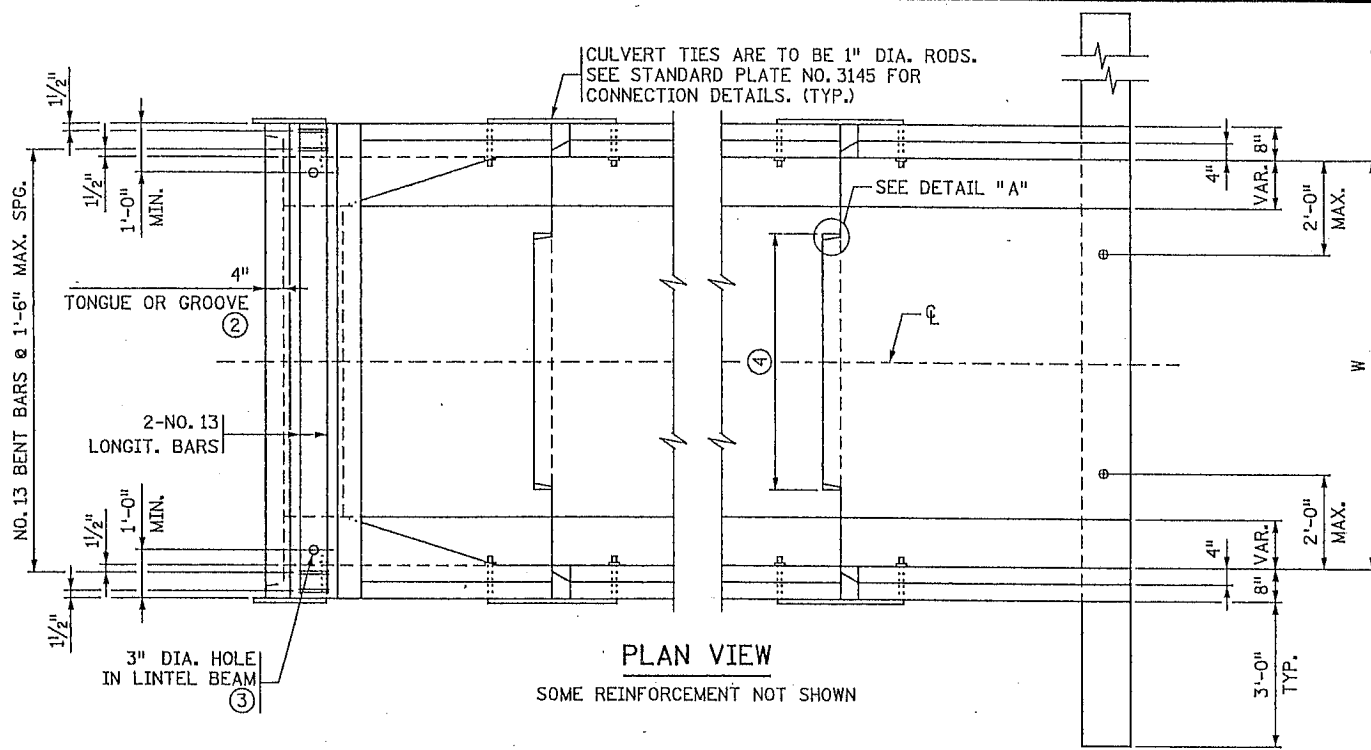
WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN

BARREL INFORMATION

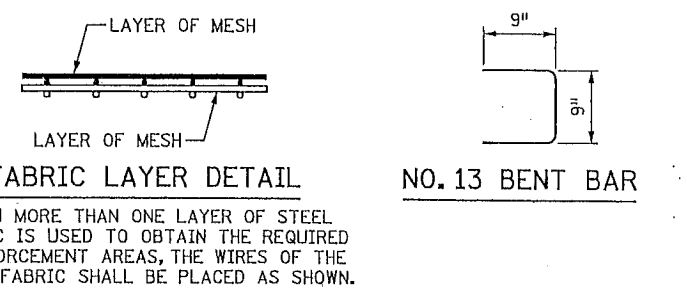
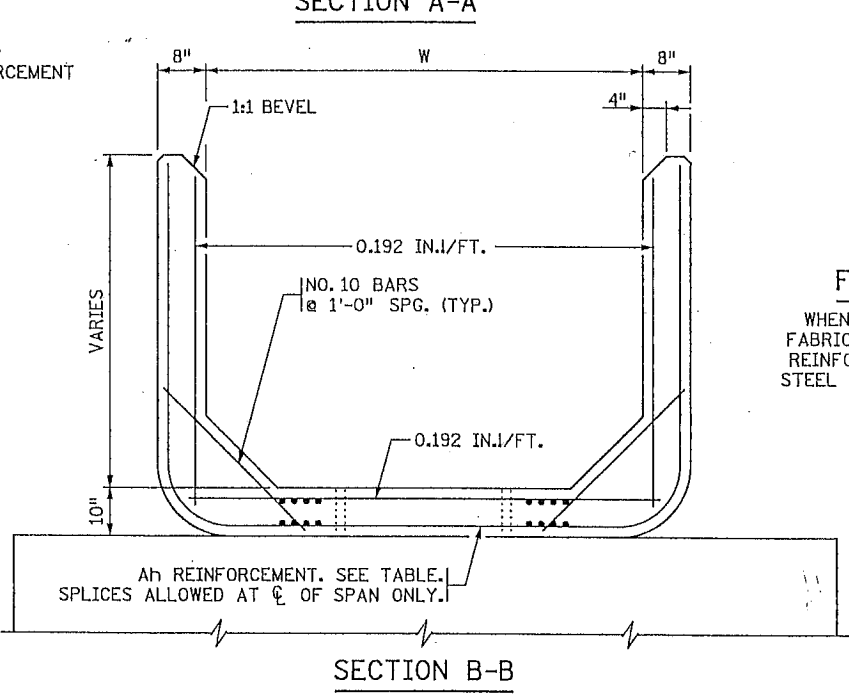
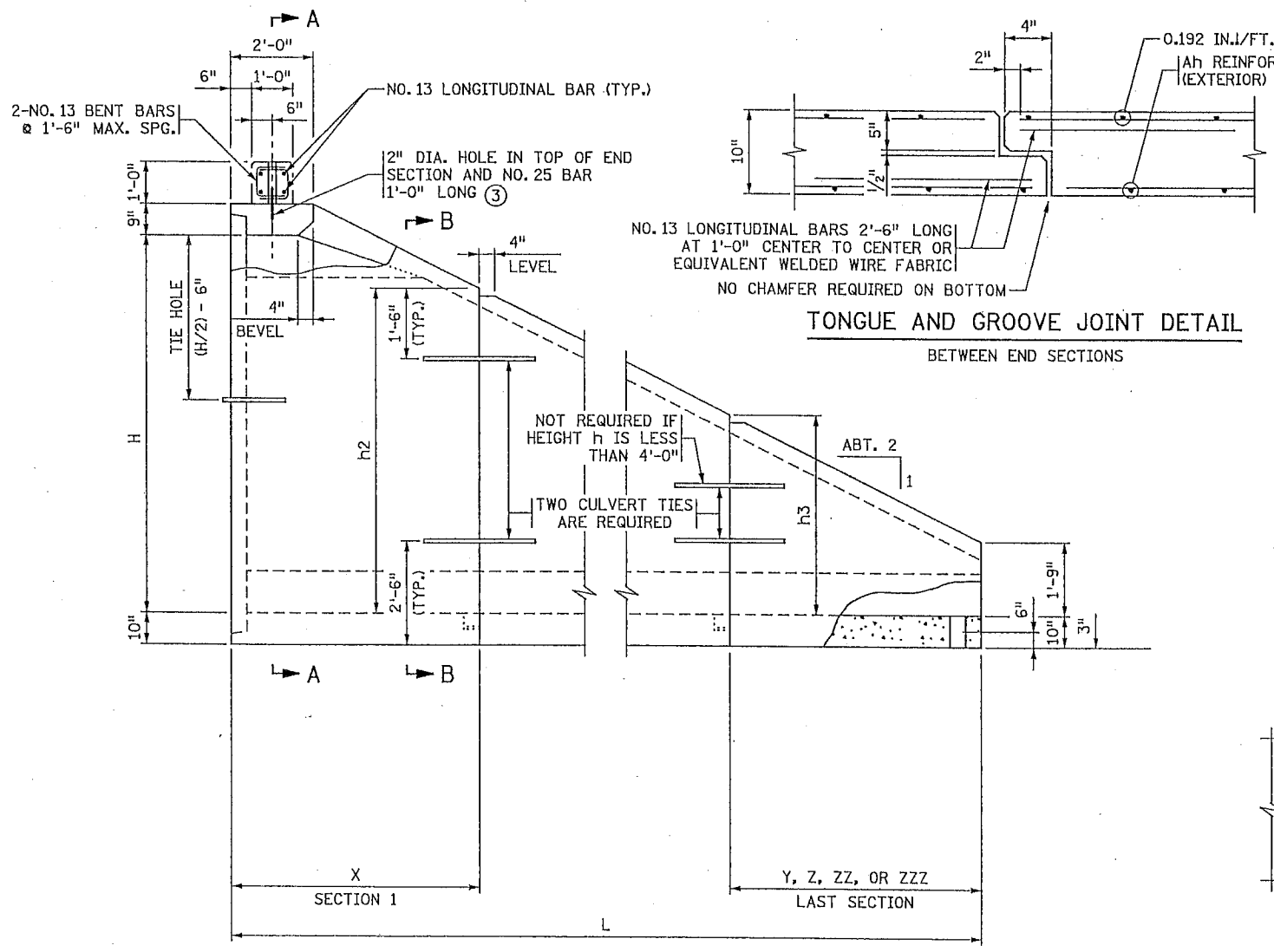
LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DIMENSIONS					WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT										
					W (FT.)	H (FT.)	T+ (IN.)	Tb (IN.)	Ts (IN.)		As1		As2		As3		As4		As5		
											AREA (IN.I./FT.)	LENGTH (FT.)	M (FT.)	AREA (IN.I./FT.)	LENGTH (FT.)	AREA (IN.I./FT.)	LENGTH (FT.)	AREA (IN.I./FT.)	LENGTH (FT.)	AREA (IN.I./FT.)	LENGTH (FT.)
N.B. CSAH 78 95+04.36	10'x8'	2	5000	2'-8"	10'	8'	9"	10"	8"	4510	0.48	13'-9"	2'-9"	0.90	10'-6"	0.74	10'-6"	0.20	8'-6"	0.06	7'-9"

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

STATE PROJ. NO 02-678-16 ET. AL.
 CERTIFIED BY *Chris Woyarski* 10/10/06 DATE
 LICENSED PROFESSIONAL ENGINEER
 NAME: LIC. NO.
 FIG. 5-395.101(A)
 BRIDGE NO. 02J31
 SHEET NO149 OF 400 SHEETS
 BARREL DETAILS



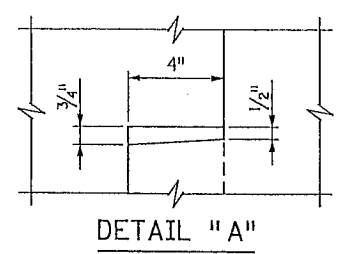
- ### CONSTRUCTION NOTES
- SEE FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.
- ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.
- ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.
- LONGITUDINAL REINFORCEMENT PARALLEL TO THE AXIS OF THE 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.
- CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.
 - 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".
 - 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 ϕ OF EACH APRON JOINT.



A+, Ab REINFORCEMENT		
WIDTH (FT.)	A+ (IN./FT.)	Ab (IN./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		SECTION 2		SECTION 3		SECTION 4		SECTION 5		SECTION 6					
		X	Ah	h2	Y	Ah	h3	Z	Ah	h4	ZZ	Ah	h5	ZZZ	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 (IN./FT.)



REVISION: 06-30-2003

APPROVED: DECEMBER 11, 2000

STATE BRIDGE ENGINEER

I hereby certify that this plan, specification, or report 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.

Print Name: *Chris J. ...*

Date: 10/10/2006 License: 24635

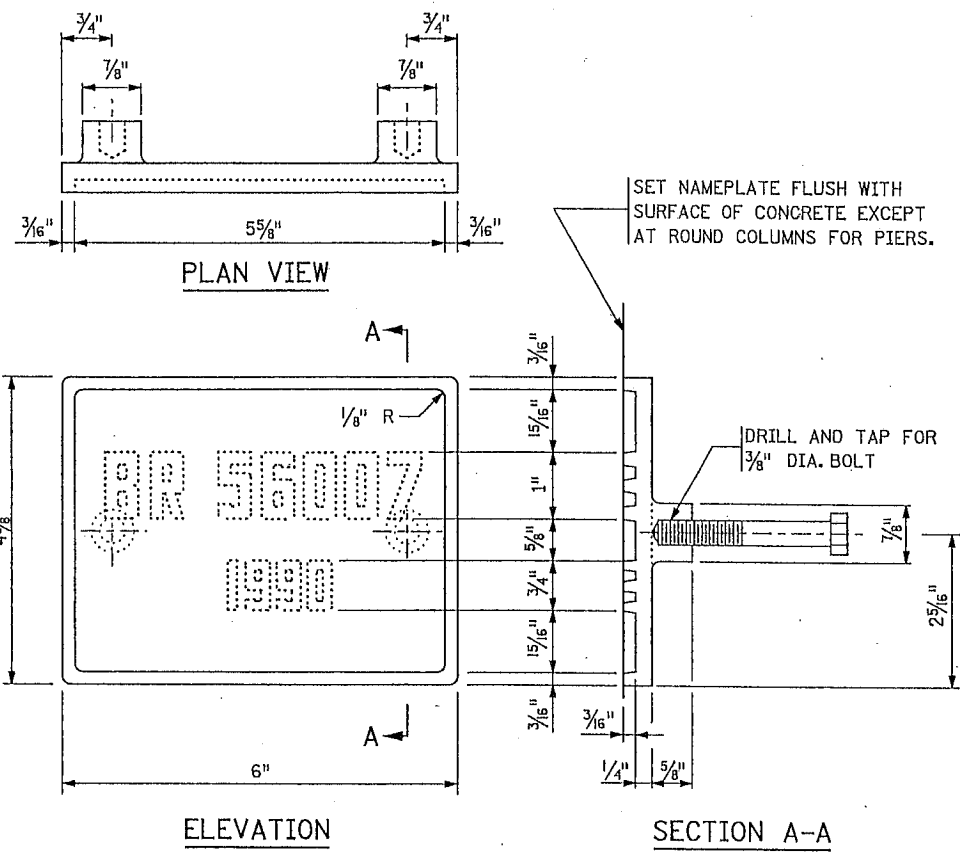
STATE PROJ. NO 02-678-16 ET. AL.

FIG. 5-395.102

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

DES: DR: APPROVED: BRIDGE NO. 02J31

CHK: CHK: SHEET NO150 OF 400 SHEETS



SET NAMEPLATE FLUSH WITH SURFACE OF CONCRETE EXCEPT AT ROUND COLUMNS FOR PIERS.

DRILL AND TAP FOR 3/8" DIA. BOLT

THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION. DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

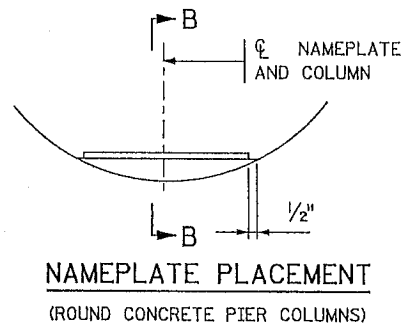
BRIDGE 02J31
YEAR 2007

1234567890

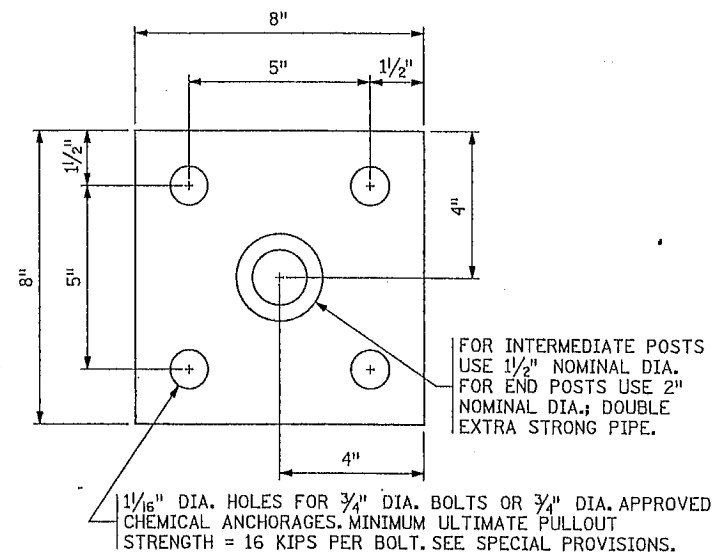
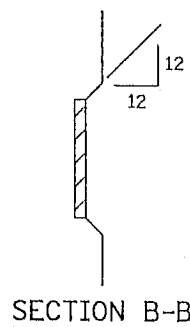
NUMBERS FOR NAMEPLATE

NOTES:

- NO SHOP DRAWING REQUIRED.
- MATERIAL SHALL COMPLY WITH Mn/DOT SPEC. 3327.
- LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.
- DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".
- HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.
- TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.
- FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.
- ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

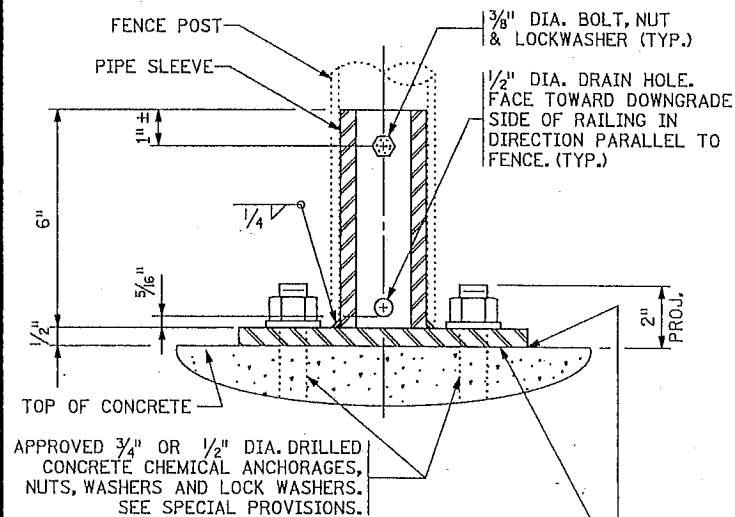


NAMEPLATE PLACEMENT
(ROUND CONCRETE PIER COLUMNS)



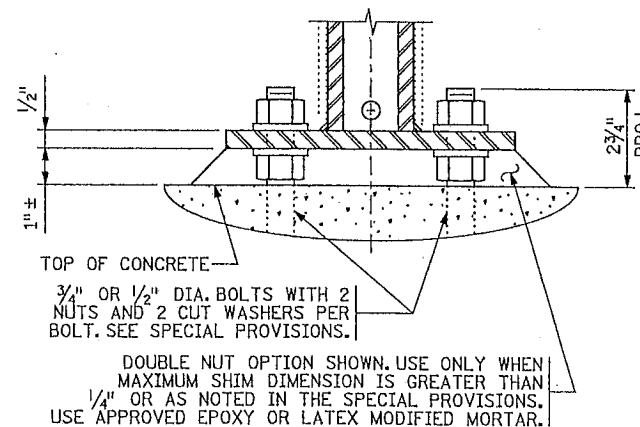
PLAN VIEW - TYPE A

ESTIMATED WEIGHT = 12 OR 14 LBS.

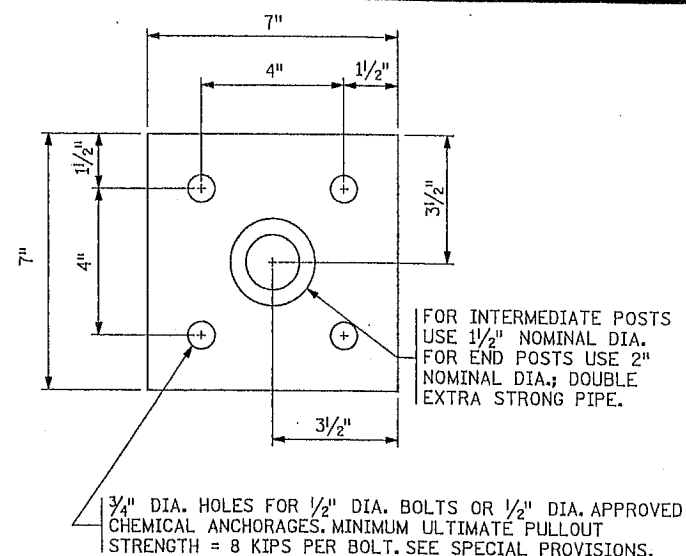


TYPICAL SECTION

CAULK FULL BOTTOM SURFACE AND EDGES OF BASE PLATE. SHIM AS REQUIRED TO LEVEL BASE PLATE, MAXIMUM 1/4".

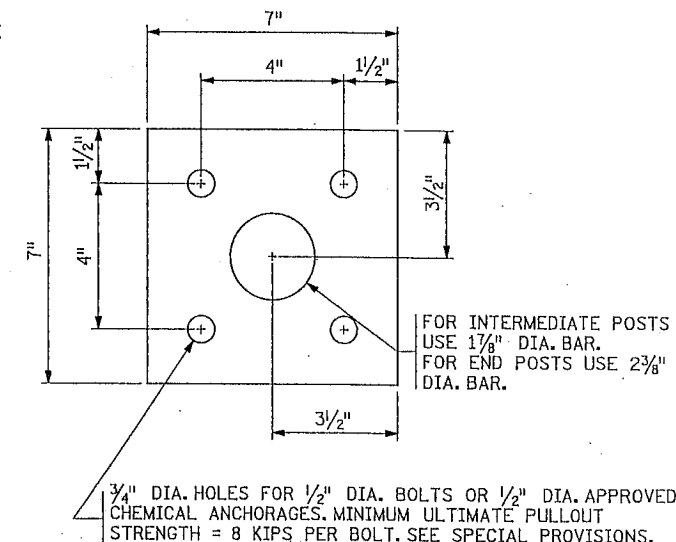


GROUT ALTERNATE



PLAN VIEW - TYPE B

ESTIMATED WEIGHT = 10 OR 12 LBS.



PLAN VIEW - TYPE C

ESTIMATED WEIGHT = 12 OR 15 LBS.

NOTES:

- STRUCTURAL STEEL PER Mn/DOT SPEC. 3306
- STRUCTURAL PIPE PER Mn/DOT SPEC. 3362
- GALVANIZE THE FENCE POST ANCHORAGE AFTER FABRICATION PER Mn/DOT SPEC. 3394. GALVANIZE THE FASTENERS PER Mn/DOT SPEC. 3392.
- DOUBLE EXTRA STRONG PIPE WEIGHTS:
1 1/2" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.

APPROVED: NOVEMBER 22, 2002

Daniel J. Woyan
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NAMEPLATE
(FOR NEW BRIDGES)

REVISION

DETAIL NO.

B101

APPROVED: NOVEMBER 22, 2002

Daniel J. Woyan
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

FENCE POST ANCHORAGE

REVISION

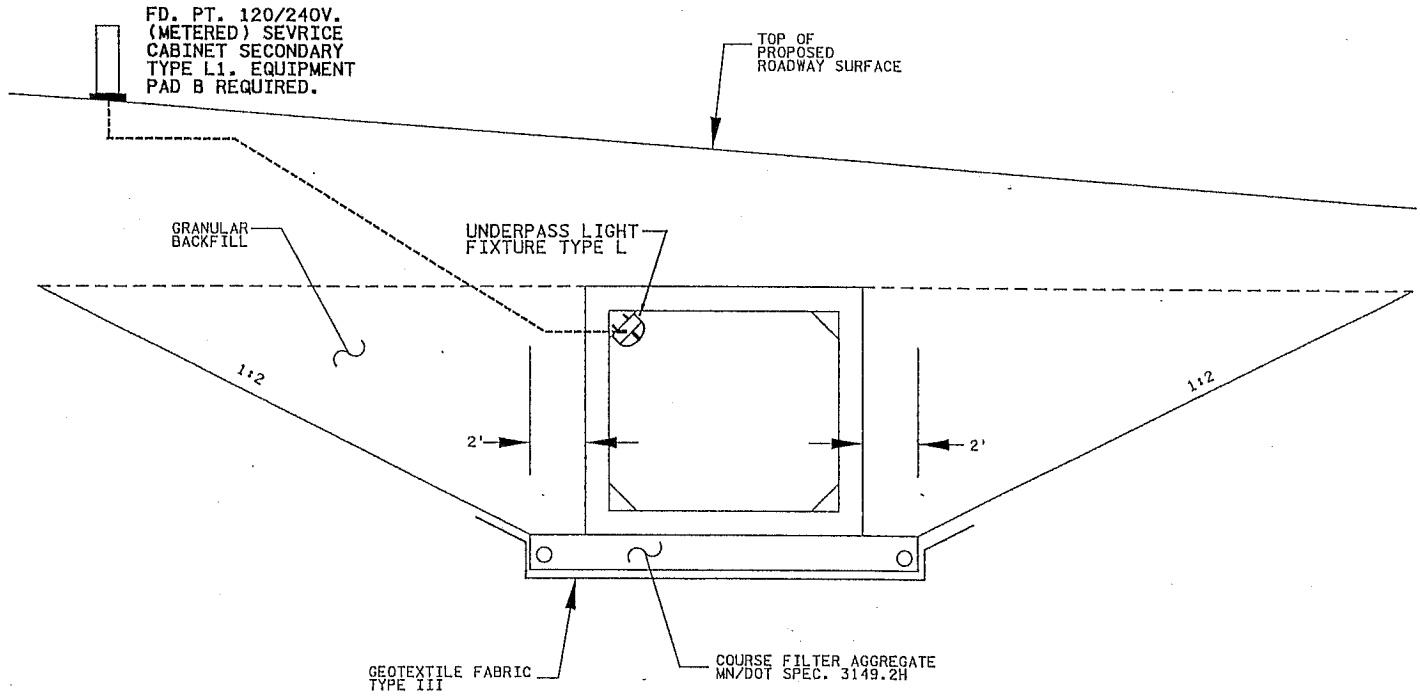
DETAIL NO.

B905

CERTIFIED BY *Chris M. Trbojevich* 10/10/06
LICENSED PROFESSIONAL ENGINEER DATE
NAME: CHRIS M. TRBOJEVICH LIC. NO. 41635

DETAILS

DES: CHK: APPROVED: BRIDGE NO. 02J31
SHEET NO. 151 OF 400 SHEETS

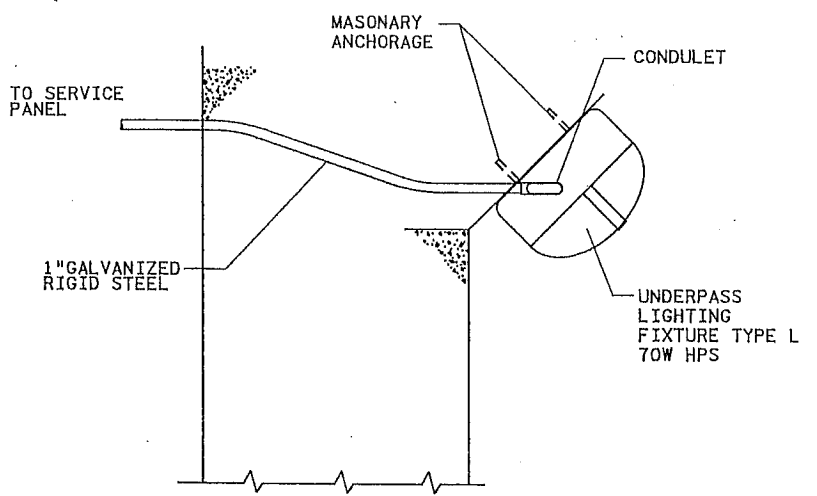


CROSS SECTION OF BOX CULVERT AT OPENING
10'x8' BOX CULVERT

NOTES	ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
	2545.514	UNDERPASS LIGHTING FIXTURE TYPE L	EACH	3
	2545.521	1" RIGID STEEL CONDUIT	LIN FT	194
	2545.521	2" RIGID STEEL CONDUIT	LIN FT	22
	2545.531	UNDERGROUND WIRE 1 COND NO 2	LIN FT	67
	2545.531	UNDERGROUND WIRE 1 COND NO 8	LIN FT	724
	2545.541	SERVICE CABINET SECONDARY TYPE L1	EACH	1
	2545.545	EQUIPMENT PAD B	EACH	1

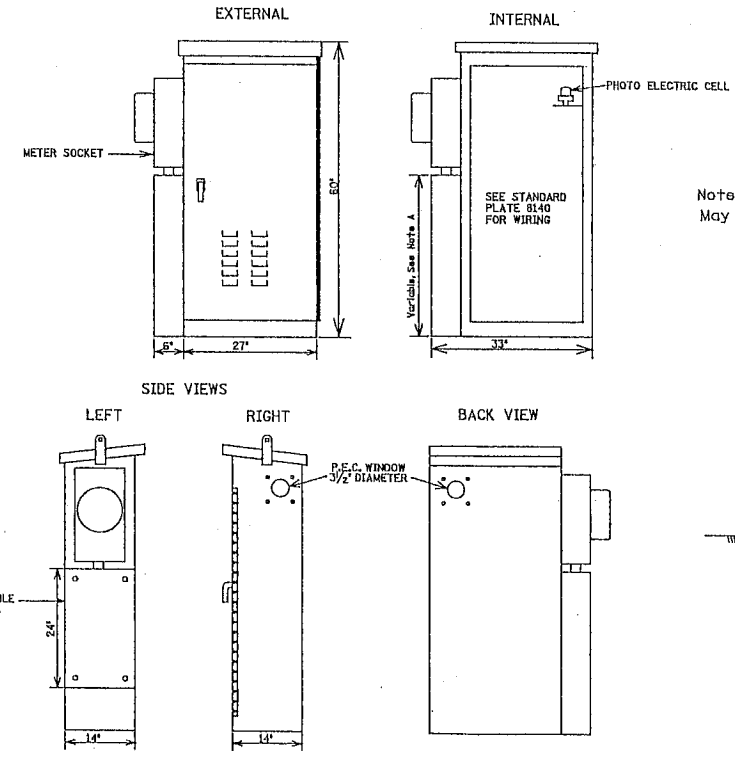
LEGEND

- SERVICE CABINET
- UNDERPASS LIGHTING FIXTURE TYPE L
- NEW CONDUIT

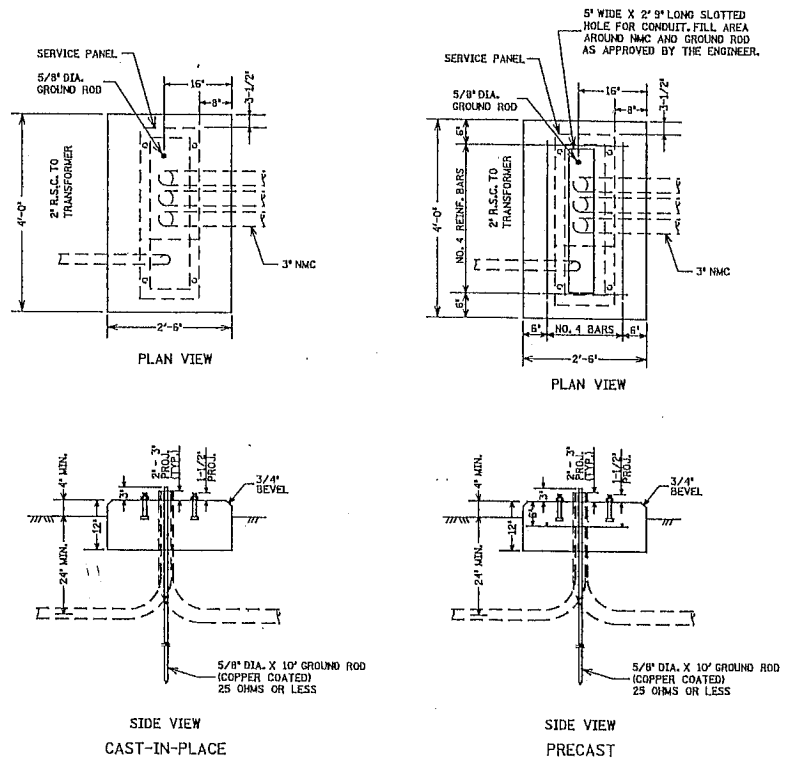
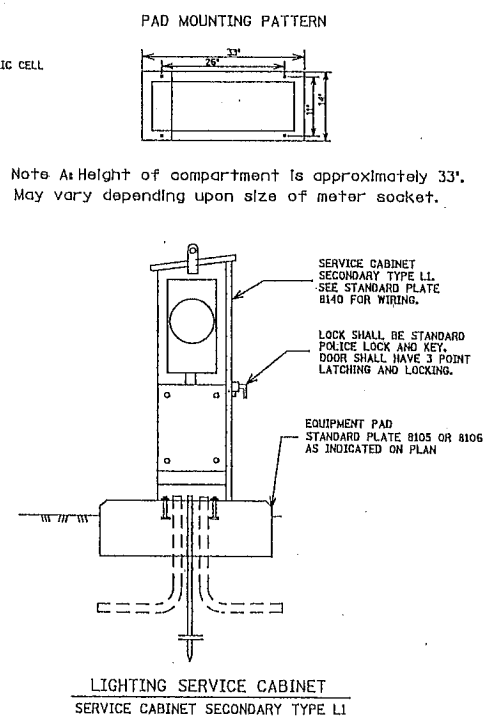


DETAIL FOR CONDUIT TO ENTER BOX CULVERT

- FASTEN GALVANIZED RIGID STEEL CONDUIT WITH SUPPORT CLAMPS. MINIMUM SPACING AS REQUIRED BY N.E.C.
- FASTEN CLAMPS AND JUNCTION BOXES TO CONCRETE WITH MASONRY ANCHORAGES OR POWER ACTIVATED STUDS.
- CONDUIT PENETRATION SHALL BE SEALED WITH SHRINK RESISTANT GROUT. BOTH SIDES OF PENETRATION.



Note A: Height of compartment is approximately 33". May vary depending upon size of meter socket.



NOTES:
PRECAST OR CAST-IN-PLACE EQUIPMENT PAD SHALL BE CONTRACTORS CHOICE. CONCRETE SHALL BE MIX 3032. TOP OF PAD SHALL HAVE A WOOD FLOAT FINISH. U.S. BOLTS, NUTS AND WASHERS PER SPEC. 3391 AND GALV. HARDWARE PER SPEC. 3392. INSTALL 3-3" NMC CONDUIT ELBOWS FOR SERVICE PANELS. U.S. BOLTS CAN BE CAST-IN-PLACE WITH A 4-1/2 IN. MIN. EMBEDMENT OR PLACED AFTER PAD IS CAST, IN A MANNER ACCEPTABLE TO THE ENGINEER. A 5/8 IN. DIA. X 10 FT. GROUND ROD SHALL BE INSTALLED ON THE EQUIPMENT PAD AND PROJECT 3 IN. ABOVE THE CONCRETE. NO. 4 REINFORCEMENT BARS FOR PRECAST OPTION ONLY.

EQUIPMENT PAD B
CAST-IN-PLACE OR PRECAST

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NO	DATE	BY	CKD	APPR	REVISION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Electrical Engineer under the laws of the State of Minnesota.

Print Name: **Brian D. Holt**

Date: **10/10/06** License #: **21428**

STATE AID PROJECT NO. 02-678-16

STATE PROJECT NO. X

COUNTY PROJECT NO. X

CITY PROJECT NO. X

DRAWN BY J. STRENK

DESIGNED BY J. STRENK

CHECKED BY B. HOLT

COMM. NO. 0055404

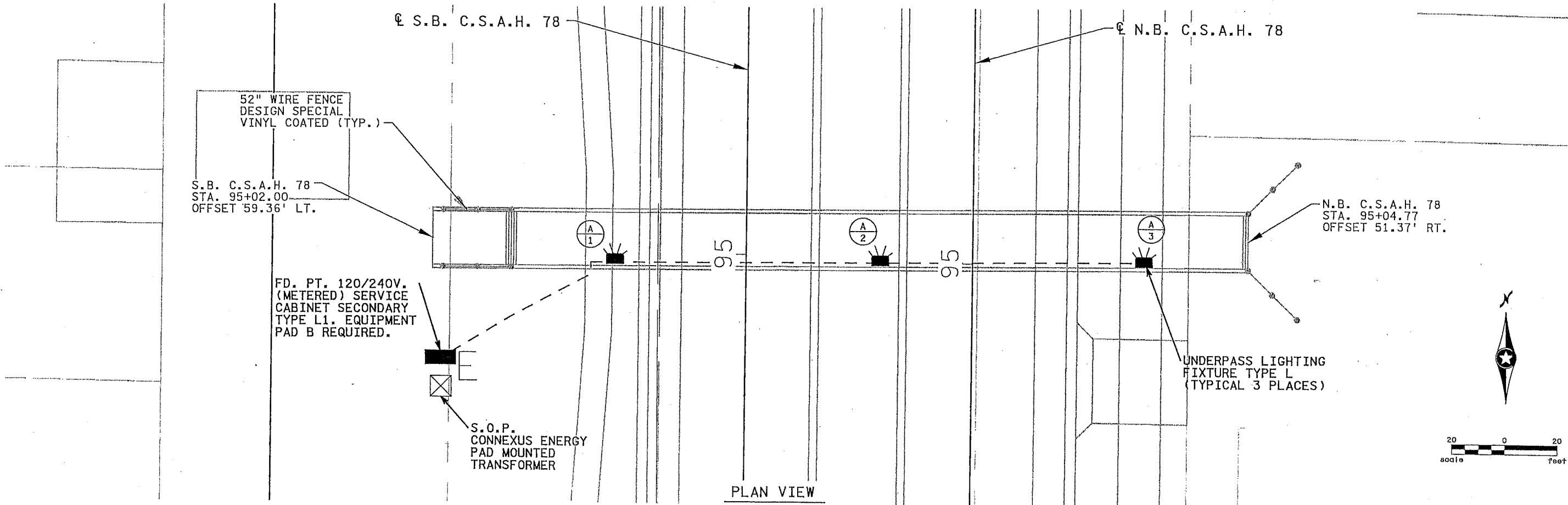


ANOKA COUNTY

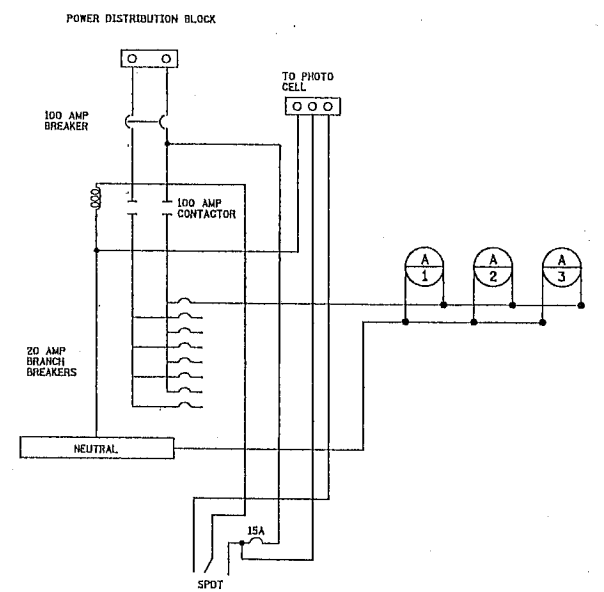
BOX CULVERT LIGHTING PLAN

C.S.A.H. 78

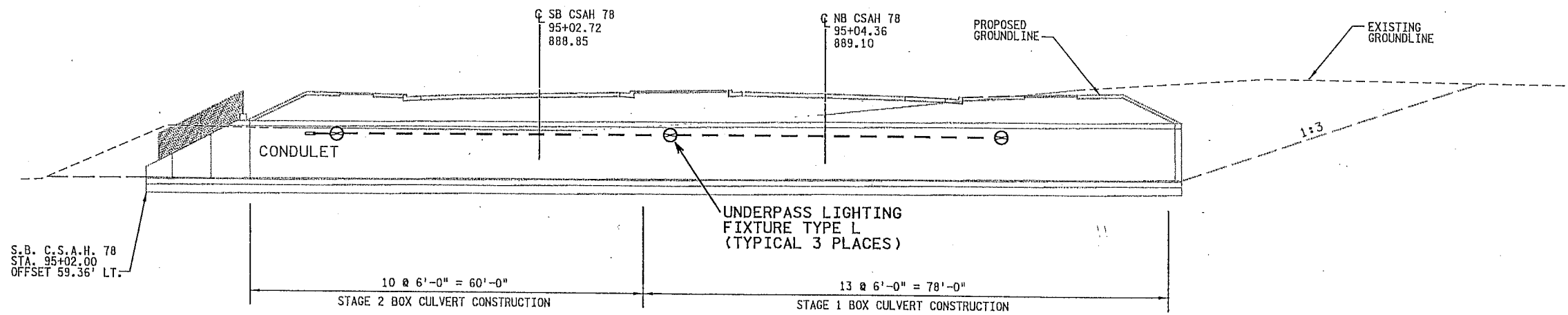
SHEET 152 OF 400



PLAN VIEW



WIRING DIAGRAM



ELEVATION

NOTES:

- 1 LIGHTING CIRCUITS SHALL CONSIST OF 2-1/C#8 WITH 1-1/C#8GND UNLESS NOTED OTHERWISE.
- 2 ALL LIGHTING UNITS SHALL BE 70W HPS VANDAL PROOF UNDERPASS LIGHTING UNITS MOUNTED TO THE SIDE OF THE BOX CULVERT. SEE DETAILS SHEET 152.
- 3 ANCHORS FOR BOX CULVERT LIGHTING UNITS SHALL BE EPOXY GROUTED TO THE WALL OF THE BOX CULVERT.
- 4 ALL CONDUIT FOR THE LIGHTING CIRCUIT SHALL BE 1" RSC
- 5 BOX CULVERT LIGHTING FIXTURE SHALL BE LOCATED 20 FEET, EACH, FROM ENDS OF THE BOX CULVERT. AN ADDITIONAL LIGHT FIXTURE SHALL THEN BE CENTERED BETWEEN THE UNITS ON EITHER END.
- 6 CONTRACTOR TO DRILL THROUGH BOX CULVERT AND FURNISH AND INSTALL CONDUIT AND CABLE AS REQUIRED AND SHOWN BY THE PLAN.

LEGEND

- SERVICE CABINET
- UNDERPASS LIGHTING FIXTURE TYPE L
- NEW CONDUIT

4/29/12 PM 9/26/2006 PL\PROJECTS\5404\1-MUPLAN\5404.LTB

NO	DATE	BY	CHKD	APPR	REVISION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Electrical Engineer under the laws of the State of Minnesota.

Print Name: **BRIAN D. HOLT**

Brian D. Holt

Date: **10/10/06** License # **21428**

STATE AID PROJECT NO. 02-678-16

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ANOKA COUNTY

BOX CULVERT LIGHTING PLANS & ELEVATION

C.S.A.H. 78

SHEET 153 OF 400