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

MINNESOTA DEPARTMENT OF TRANSPORTATION

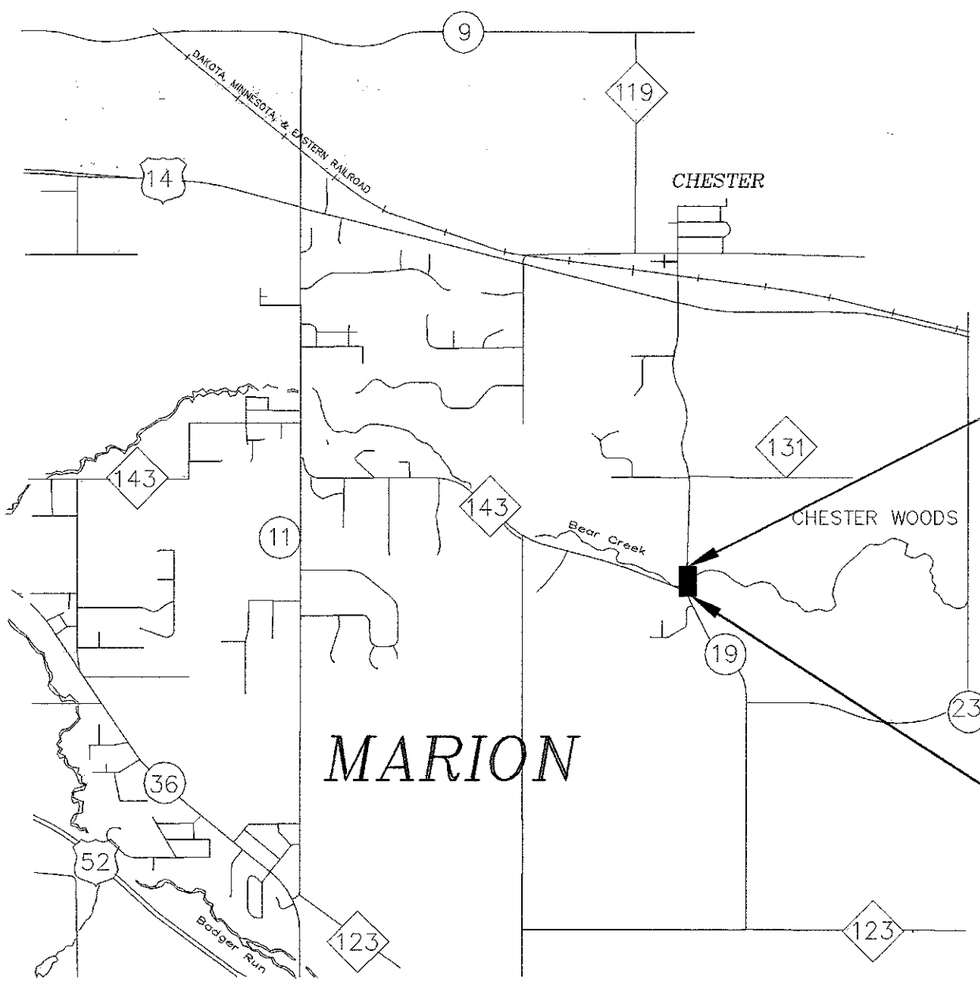
THE COUNTY OF OLMSTED

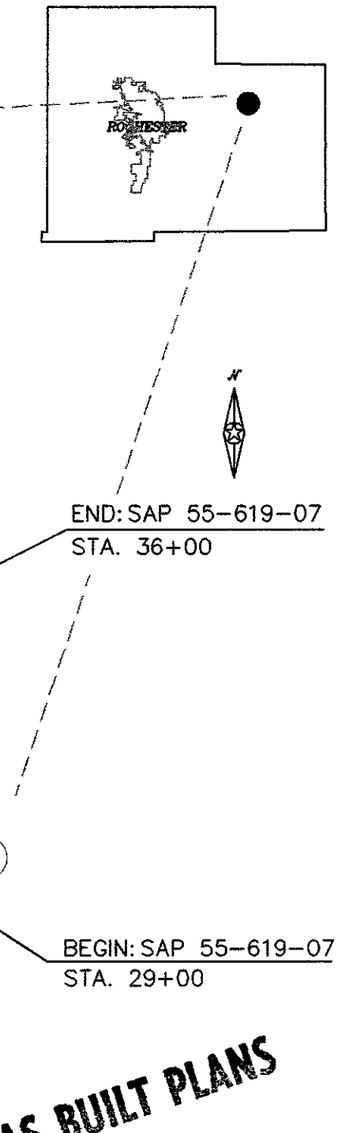
CONSTRUCTION PLAN FOR GRADING & PRECAST CONC. BOX (BRIDGE NO. 55J28)

LOCATED ON CSAH 19 BETWEEN CR 143 AND T.H. 14 (GEOGRAPHIC DESCRIPTION)

FROM APPROX. 1380' W. & 60' S. OF 1/4 COR. 13 & 14 T 106 N – R 13 W TO APPROX. 1380' W. & 640' N. OF 1/4 COR. 13 & 14 T 106 N – R 13 W (LEGAL DESCRIPTION)

S.A.P. NO.	55-619-07			
GROSS LENGTH	700.00	FEET	0.133	MILES
BRIDGE-LENGTH	0.00	FEET	0.000	MILES
EXCEPTIONS-LENGTH	0.00	FEET	0.000	MILES
NET LENGTH	700.00	FEET	0.133	MILES





AS BUILT PLANS

MINN. PROJ. NO.

GOVERNING SPECIFICATIONS

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AS AMENDED BY THE MAY 2, 1994, SUPPLEMENT SPECIFICATION SHALL GOVERN.

INDEX

SHEET NO. 1	TITLE SHEET
SHEET NO. 2	TYPICAL SECTION & ESTIMATE OF QUANTITIES
SHEET NO. 3 – 4	BRIDGE SHEETS
SHEET NO. 5 – 6	CROSS SECTIONS
SHEET NO. 7	TRAFFIC CONTROL
SHEET NO. 8 – 9	BARREL DETAILS
SHEET NO. 10 – 11	PRECAST CONC. END SECTION DETAILS

THIS PLAN CONTAINS 11 SHEETS.

DESIGN DESIGNATION: S.A.P. 55-619-07

R 20 ZN18(20) 489,100
ADT (Current Year) = 1,020 (1999) Design Speed 55 MPH
ADT (Future Year) = 1,605 (2019) 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. 28+51.77 TO STA. 31+34.77 mph 50 MPH
SUBGRADE = STA. TO STA. mph
LANE WIDTH 12 FT.
SHOULDER WIDTH 8 FT.
SOIL FACTOR = 130%
10 TON DESIGN
FUNCTIONAL CLASSIFICATION: MINOR COLLECTOR

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 12/20/99 REGISTRATION NUMBER 19917
Kaye M Bremicker
APPROVED: COUNTY DESIGN ENGINEER

DESIGN SQUAD: Cummings/Holmes

DATE 12/21/99 REGISTRATION NUMBER 10397
Michael Sheehan
APPROVED: OLMSTED COUNTY ENGINEER

STATE AID APPROVALS:
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE-AID RULES/POLICY DATE: 12-22-99
TB
APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER DATE: 2/2/00

ESTIMATED QUANTITIES

	SPECIFICATION NO.	ITEM	UNIT	NON PARTICIPATING	PARTICIPATING	TOTAL ESTIMATED QUANTITIES
①	2101.511	CLEARING AND GRUBBING	LUMP SUM	1		1
②	2105.515	UNCLASSIFIED EXCAVATION	CU. YDS.	1703		(P) 1703
	2105.523	COMMON BORROW (CV)	CU. YDS.	2380		(P) 2380
	2211.501	AGGREGATE BASE CLASS 5	TON	1569		1569
	2412.511	12' x 6' PRECAST CONCRETE BOX CULVERT	LIN. FT.		246	246
③	2412.512	12' x 6' PRECAST CONC. BOX CULVERT END SECTION	EACH		6	6
	2442.501	REMOVE OLD BRIDGE	LUMP SUM	1		1
	2451.507	GRANULAR BEDDING (CV)	CU. YDS.		189	(P) 189
	2501.511	18" CS PIPE CULVERT	LIN. FT.	48		48
	2501.515	18" GS PIPE APRON	EACH	2		2
④	2511.501	RANDOM RIPRAP CL. III	CU. YDS.		103	103
	2563.601	TRAFFIC CONTROL	LUMP SUM	1		1
	2575.501	SEEDING	ACRE	1.5		(P) 1.5
	2575.511	MULCH MATERIAL TYPE 1	TON	3		3
	2575.519	DISK ANCHORING	ACRE	1.5		(P) 1.5
	2575.532	COMMERCIAL FERTILIZER ANALYSIS 12-12-12	POUND	300		300
	2575.608	SEED MIXTURE 50A	POUND	75		75
	2575.608	SEED MIXTURE 110A	POUND	150		150

QUANTITY NOTES:

① APPROXIMATELY 0.38 ACRE

② 282 CU. YDS. OF TOPSOIL TO BE SALVAGED FROM UNCLASSIFIED EXCAVATION.

③ END SECTION WITH DROP WALLS.

④ PLACE RIPRAP ON GRANULAR FILTER OR GEOTEXTILE MATERIAL WHICH SHALL BE CONSIDERED INCIDENTAL AND NO DIRECT COMPENSATION WILL BE MADE THEREFOR.

BASIS OF PLANNED QUANTITIES

AGGREGATE BASE CL. 5 = 140LBS./CU FT. COMPACTED
MULCH MATERIAL = 2 TONS/ACRE
DISK ANCHORING = ALL SEEDED AREA'S EXCEPT 1:2 SLOPES
COMMERCIAL FERTILIZER = 200 LBS./ACRE
SEED MIXTURE 50A = 50 LBS./ACRE
SEED MIXTURE 110A = 100 LBS./ACRE

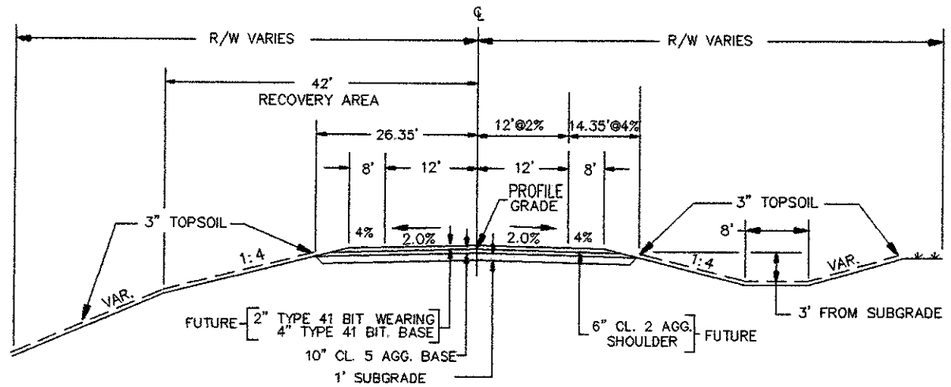
STANDARD PLATES

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

PLATE NO.	DESCRIPTION
	NUMERICAL INDEX OF STANDARD PLATES
3007 C	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3041 D	CORRUGATED METAL PIPE
3123 J	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 C	APPROACHES AND ENTRANCES

TYPICAL SECTION

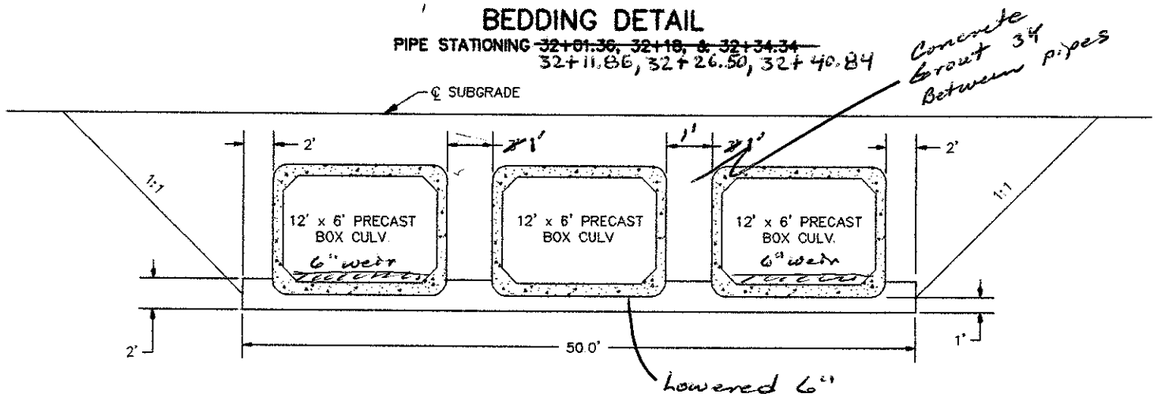
STA. 29+00 TO 36+00



NOTES: ALL UTILITY POLES AND UNYIELDING OBJECTS WILL BE LOCATED OUTSIDE THE 42' RECOVERY AREA BY OTHERS.

BEDDING DETAIL

PIPE STATIONING ~~32+01.36, 32+18, & 32+34.34~~ 32+11.86, 32+26.50, 32+40.84



NOTES:

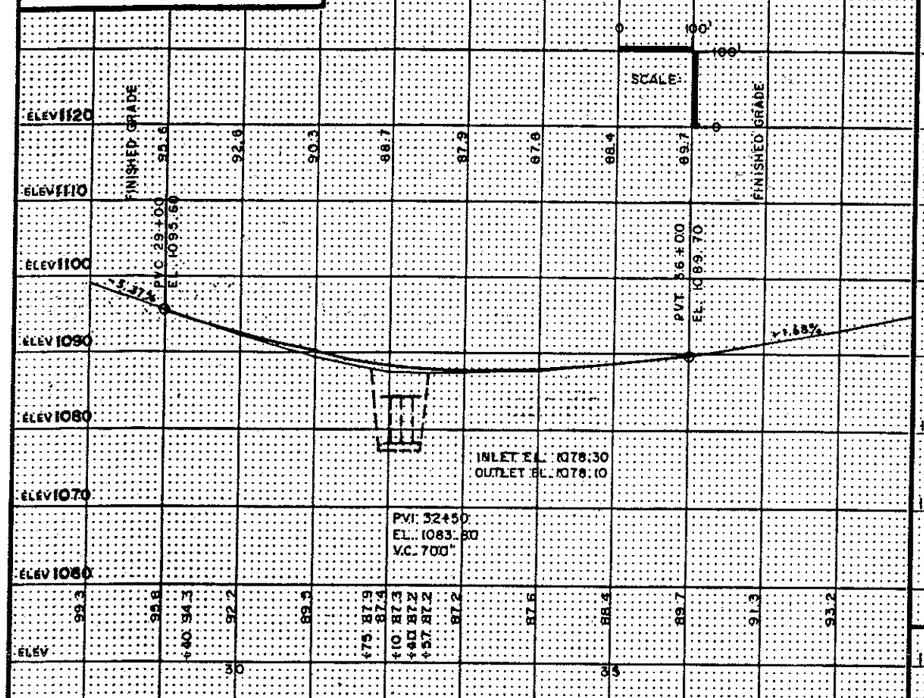
1. CULVERT EXCAVATION WILL BE CONSIDERED INCIDENTAL AND WILL BE INCLUDED FOR PAYMENT UNDER UNIT PRICE FOR ITEM NO. 2412.511 AND ITEM NO. 2412.512.
2. CULVERT TO BE BACKFILLED WITH EXCAVATION MATERIAL AND WILL BE CONSIDERED INCIDENTAL TO UNCLASSIFIED EXCAVATION AND NO DIRECT COMPENSATION WILL BE MADE.
3. ALL DIMENSIONS AND SLOPES SHOWN ON TYPICAL SECTION ARE APPROXIMATE.
4. GRANULAR BEDDING TO BE PLACED UNDER BARREL SECTIONS ONLY.
5. 6" weir installed on inlet of two outside pipes.
6. Concrete grout 3' placed between pipes

AS BUILT PLANS

CERTIFIED BY Kay M Bierneh PROFESSIONAL ENGINEER REG. NO 19917 11/23 1999

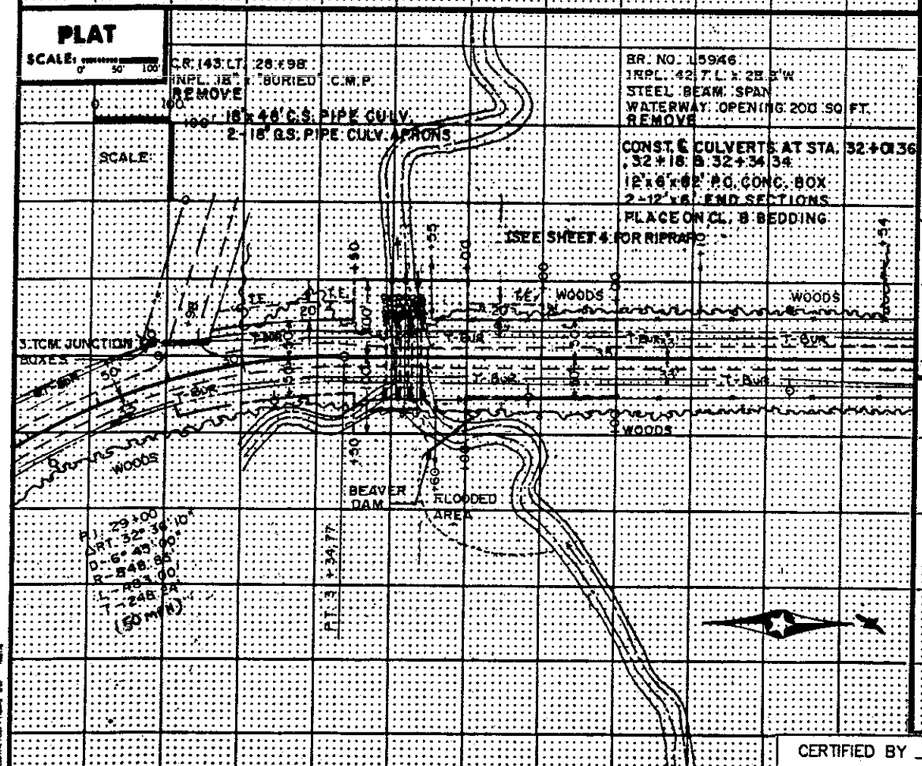
CONTRACTED PROFILE

SCALE: HOR. 0' 50' 100' VER. 0' 5' 10'



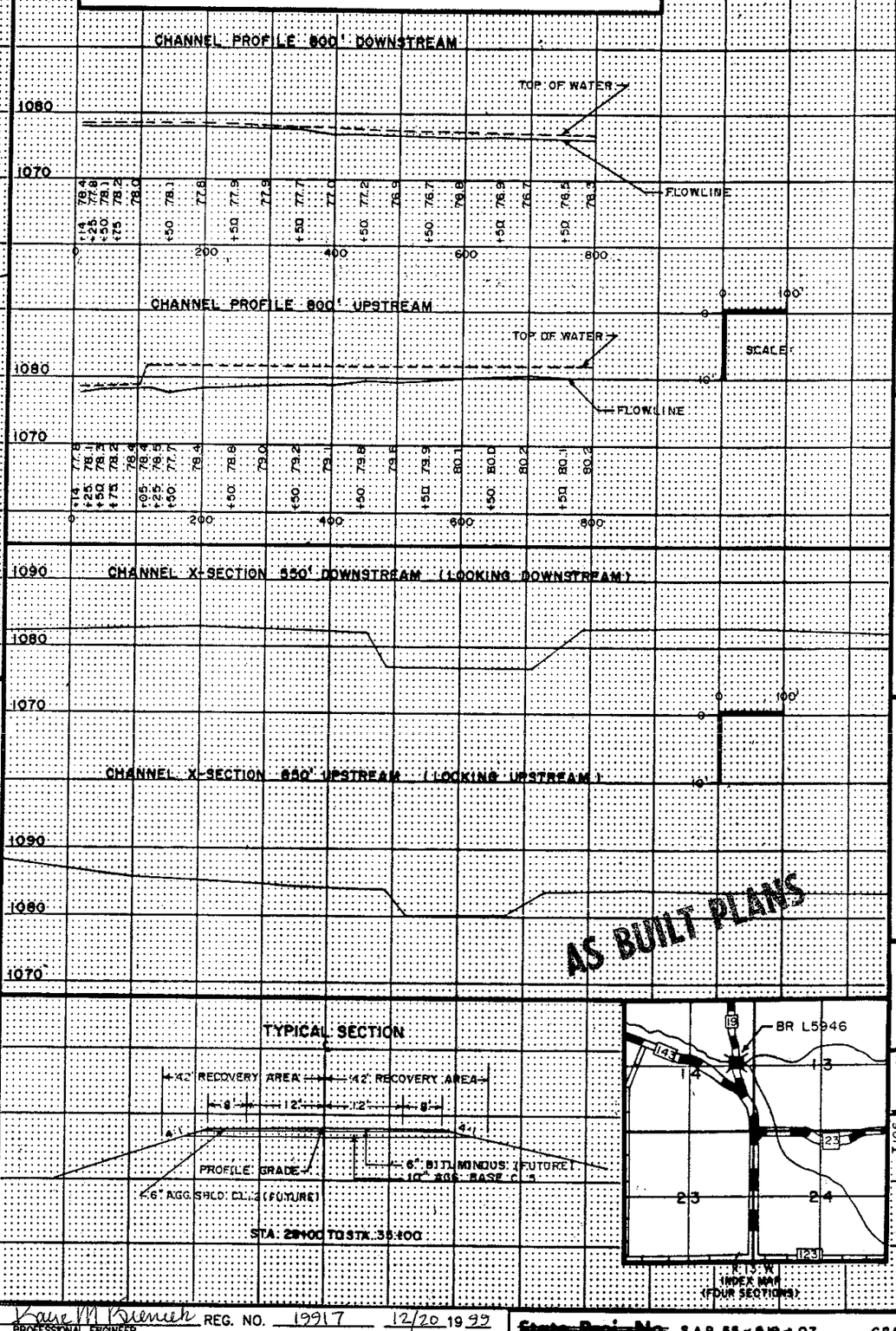
PLAT

SCALE: 0' 50' 100'



TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN



AS BUILT PLANS

Fed. Proj. No.

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

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 10-7-99

Stream or ditch designation BEAR CREEK

Drainage area 19.3 SQ. MI.

Max. flood on record U.N.K. Design flood (50 yr. freq.) 1,620 C.F.S.

Max. observed highwater elevation 1088.2 Design highwater elevation 1087.2

Design mean velocity through structure 7.5 F.P.S.

Low superstructure at or above elevation .....

Flowline elevation 1078.1 Skew angle .....

Waterway area req'd. below elevation 1088.05 140 Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr freq.) is 2060 C.F.S. at stage 1088.05 and mean velocity of 10.0 F.P.S. with ..... Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Natural Resources.

FOUNDATION ENGINEERS RECOMMENDATION

DATE .....

Bridge survey sheets made from: SURVEY CONDUCTED BY OLMSTED COUNTY

Bench mark elevation 1087.61 (M.S.L. 1929 Adj.)

Location: CHISELED "X" SE. COR. BR. L5946 ABUTMENT

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 13.05 ON CSAH 19 (T.H., C.S.A.H., C.R. etc.)

PROPOSED BRIDGE LOCATED 0.1 MILES N OF JCT. C.R. 143

SEC. 14 TWP 106 R 13W

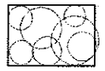
TOWNSHIP MARION COUNTY OLMSTED

BRIDGE NO. 55J28

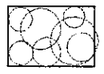
CERTIFIED BY Kaye M Bruesch PROFESSIONAL ENGINEER REG. NO. 19917 12/20 1999

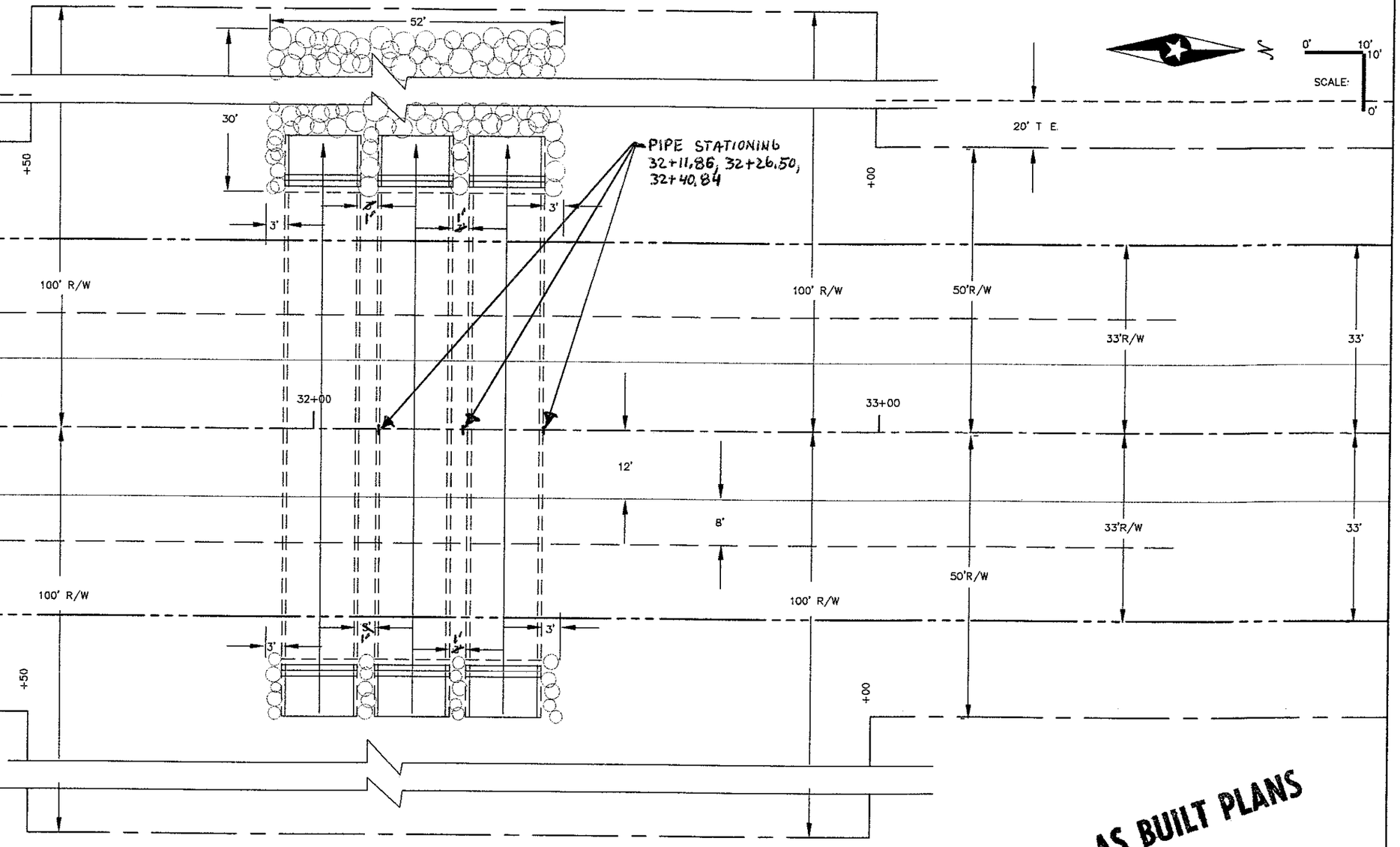
~~State Proj. No.~~ SAP 55-619-07 CSAH 19 **Sheet No. 3 of 11 Sheets**

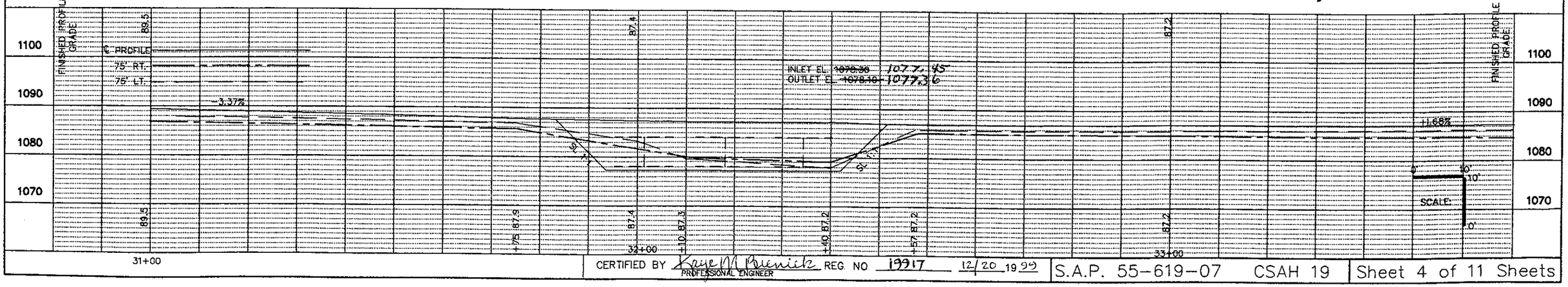
RIPRAP FOR OUTLET
95 CU.YDS.



RIPRAP FOR INLET
8 CU.YDS.





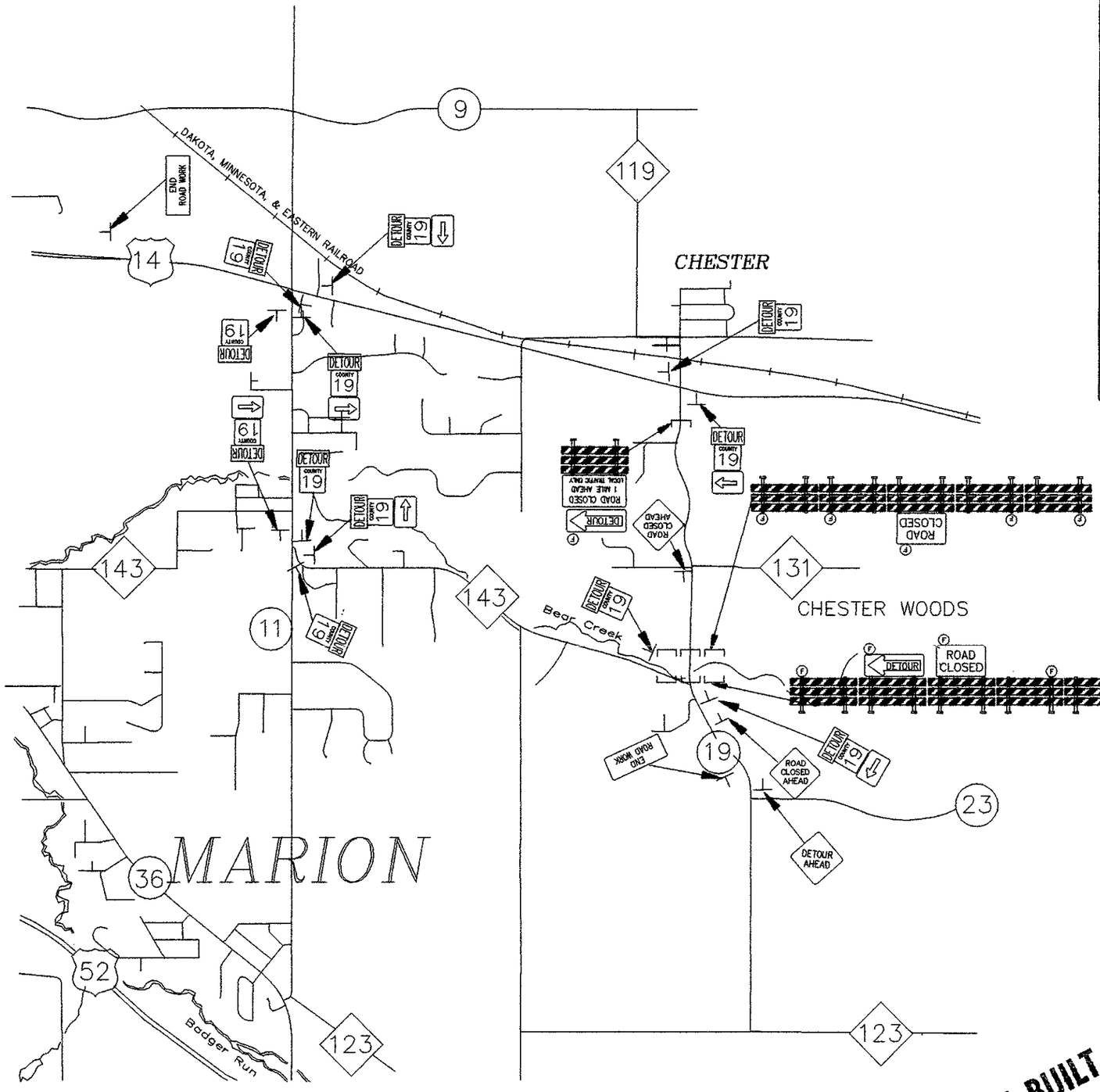


AS BUILT PLANS

CERTIFIED BY Kaye M. Bruinik PROFESSIONAL ENGINEER REG. NO 19917 12/20 1999

S.A.P. 55-619-07 CSAH 19

Sheet 4 of 11 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	⇨	M6–1	21"x 15"	BLK/OR	6
ROAD CLOSED 1 MILE AHEAD LOCAL TRAFFIC ONLY	R11–3	60 x 30	BLK/WH	1	END ROAD WORK	G20–2A	48"x 24"	BLK/OR	2
DETOUR AHEAD	W20–2	48"x 48"	BLK/OR	1		TYPE III	MIN. 6'	OR & WHT	11
ROAD CLOSED AHEAD	W20–3	48"x 48"	BLK/OR	2	Ⓕ	TYPE A	FLASHING LAMP	AMBER	11
COUNTY 19	M1–X4	24"x 24"	BLK/WH	12	⇦ DETOUR	M4–10L	48"x 18"	BLK/OR	1
DETOUR	M4–8	24"x 12"	BLK/OR	12	DETOUR ⇨	M4–10R	48"x 18"	BLK/OR	1

TRAFFIC CONTROL LEGEND

⊥ POST OR STAND MOUNTED SIGN

⌊⌋ TYPE III BARRICADE

Ⓕ TYPE "A" AMBER FLASHING LAMP

N

TRAFFIC CONTROL NOTES

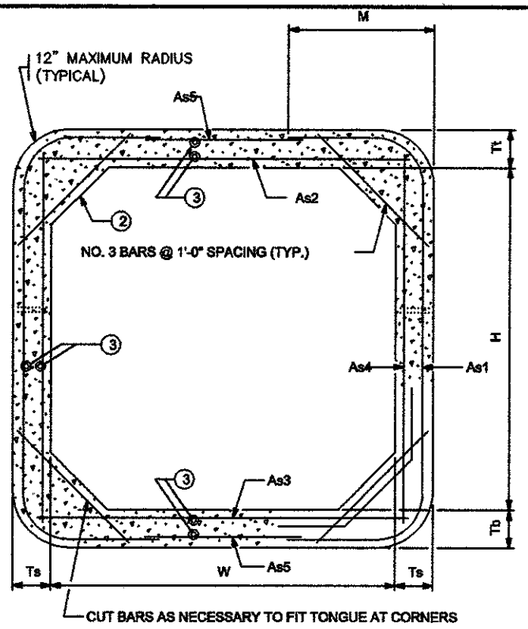
1. THE LOCATION OF SIGNS AND DEVICES WILL BE STAKED BY THE ENGINEER IN THE FIELD.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL ON THIS PROJECT.
3. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES INCLUDING THE TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL DATED JANUARY 1998.
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.

AS BUILT PLANS

CERTIFIED BY Kay M Reinisch PROFESSIONAL ENGINEER REG. NO. 19917 11/23 19 99

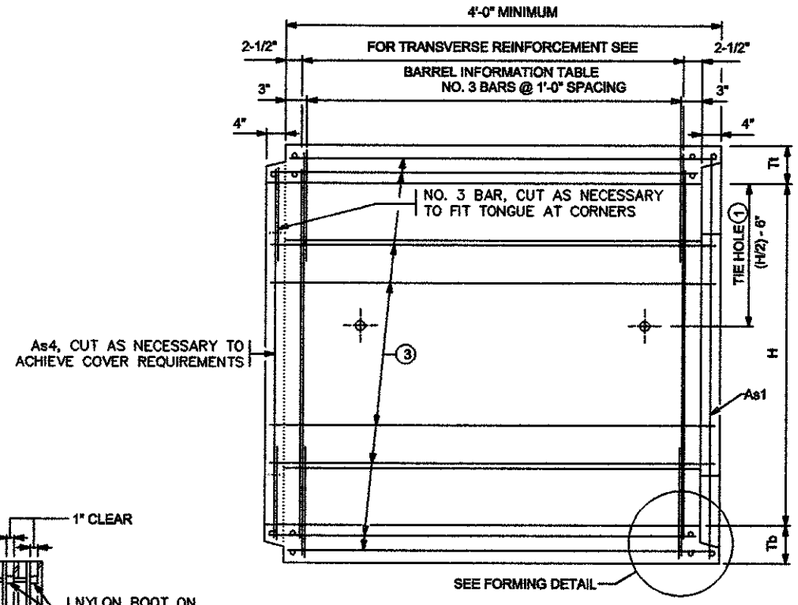
S.A.P. 55–619–07 CSAH 19

SHEET 7 OF 11 SHEETS



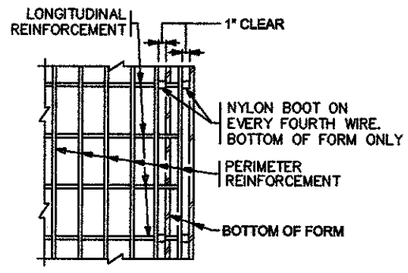
TRANSVERSE BARREL SECTION

(BAR REINFORCEMENT OPTION SHOWN)

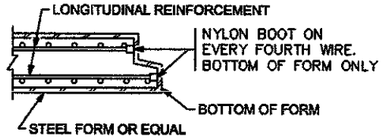


LONGITUDINAL BARREL SECTION

(BAR REINFORCEMENT OPTION SHOWN)



PLAN



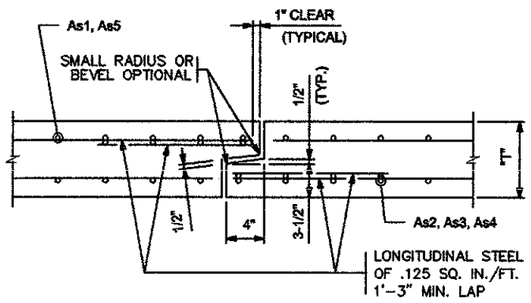
SECTION

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 SPEC. 2412 EXCEPT AS NOTED.

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. 6. 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 INCHES NOR MORE THAN 4 INCHES. THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8 INCHES.

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.

BARREL SECTIONS WHICH ARE CAST WITH A DRAFT IN THE FORMS SHALL BE LAID WITH THE NARROWEST PART OF THE SECTION DOWNSTREAM.

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

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

(2) HAUNCH SIZE AS FOLLOWS:
- 6 AND 8 FT. WIDTHS – 6 TO 12 INCHES
- 10 FT WIDTH – 10 TO 12 INCHES
- 12 FT WIDTH – 12 INCHES

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

AS BUILT PLANS

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.)
32+01.36	12 x 6	2	5000	2 – 8	12	6	9	10	8	4530	0.68	12'–9"	3'–3"	0.96	12'–8"	0.93	12'–8"	0.20	6'–8"	0.06	8'–9"
32+18	12 x 6	2	5000	2 – 8	12	6	9	10	8	4530	0.68	12'–9"	3'–3"	0.96	12'–8"	0.93	12'–8"	0.20	6'–8"	0.06	8'–9"
32+34.34	12 x 6	2	5000	2 – 8	12	6	9	10	8	4530	0.68	12'–9"	3'–3"	0.96	12'–8"	0.93	12'–8"	0.20	6'–8"	0.06	8'–9"

APPROVED: AUGUST 10, 1995
STATE BRIDGE ENGINEER

CERTIFIED BY Kaye M Brenneke PROFESSIONAL ENGINEER
REG. NO. 19917 11/23 1999

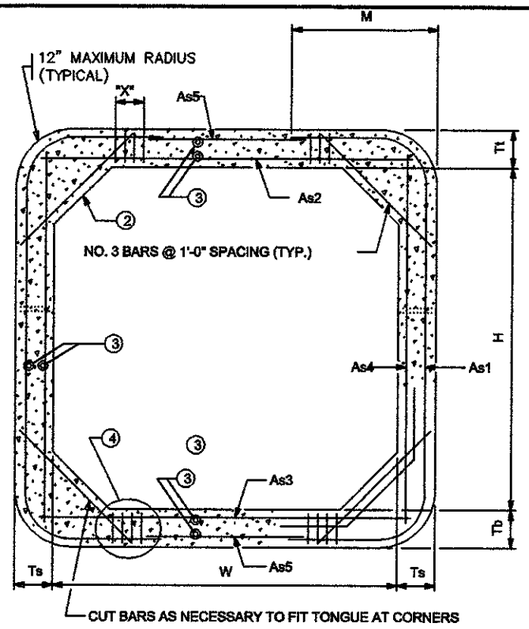
S.A.P. 55-619-07 CL. STA. 32+01.36,32+18, & 32+34.34 | FIG. 5-395.101 (1 OF 2)

TITLE: BARREL DETAILS

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

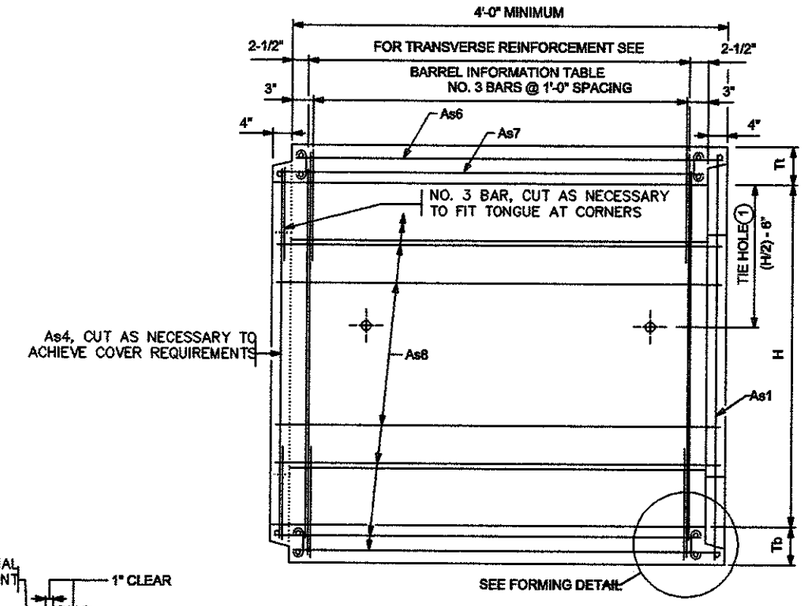
SHEET NO. 8 OF 11 SHEETS

BRIDGE NO. 55J28



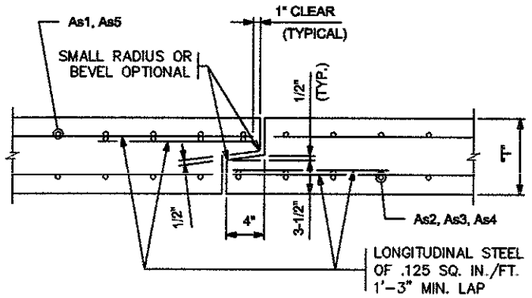
TRANSVERSE BARREL SECTION

(BAR REINFORCEMENT OPTION SHOWN)

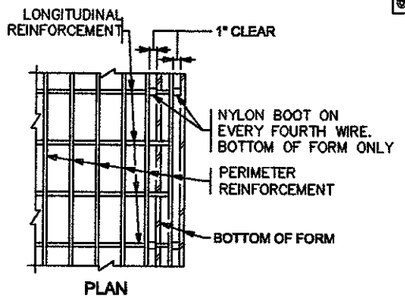


LONGITUDINAL BARREL SECTION

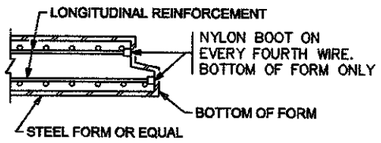
(BAR REINFORCEMENT OPTION SHOWN)



TONGUE AND GROOVE JOINT DETAIL

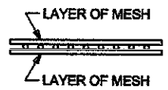


PLAN



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

CONSTRUCTION NOTES:

CULVERTS TO BE CONSTRUCTED AS PER SPEC. 2412 EXCEPT AS NOTED.

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 AREA OF REINFORCEMENT SHALL BE INCREASED BY 8%.

THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE NO. 6. 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 INCHES NOR MORE THAN 4 INCHES. THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8 INCHES.

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.

BARREL SECTIONS WHICH ARE CAST WITH A DRAFT IN THE FORMS SHALL BE LAID WITH THE NARROWEST PART OF THE SECTION DOWNSTREAM.

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

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

(2) HAUNCH SIZE AS FOLLOWS:
- 6 AND 8 FT. WIDTHS – 6 TO 12 INCHES
- 10 FT. WIDTH – 10 TO 12 INCHES
- 12 FT. WIDTH – 12 INCHES

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

(4) SEE STANDARD PLATE 3007 FOR SHEAR REINFORCEMENT OPTIONS. THE MAXIMUM SHEAR REINFORCEMENT SPACING IN THE LONGITUDINAL DIRECTION SHALL BE 6 INCHES.

BARREL INFORMATION

LOCATION	SIZE	f'c (P.S.I.)	OVERFILL LIMITS (FT.)	DIMENSIONS					WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT														(4)SHEAR REINFORCEMENT TOP AND BOTTOM OF BARREL		
				W (FT.)	H (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		As1			As2		As3		As4		As5		As6	As7	As8			
										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.)	AREA (IN^2/FT.)	AREA (IN^2/FT.)	AREA (IN^2/FT.)	AREA (IN^2/FT.)	MAX. SPG.(IN.)	X (IN.)

AS BUILT PLANS

APPROVED: AUGUST 10, 1995
Darrell L. Heaning
STATE BRIDGE ENGINEER

CERTIFIED BY Kaye M Barnieke PROFESSIONAL ENGINEER
REG. NO. 19917 11/23 1999

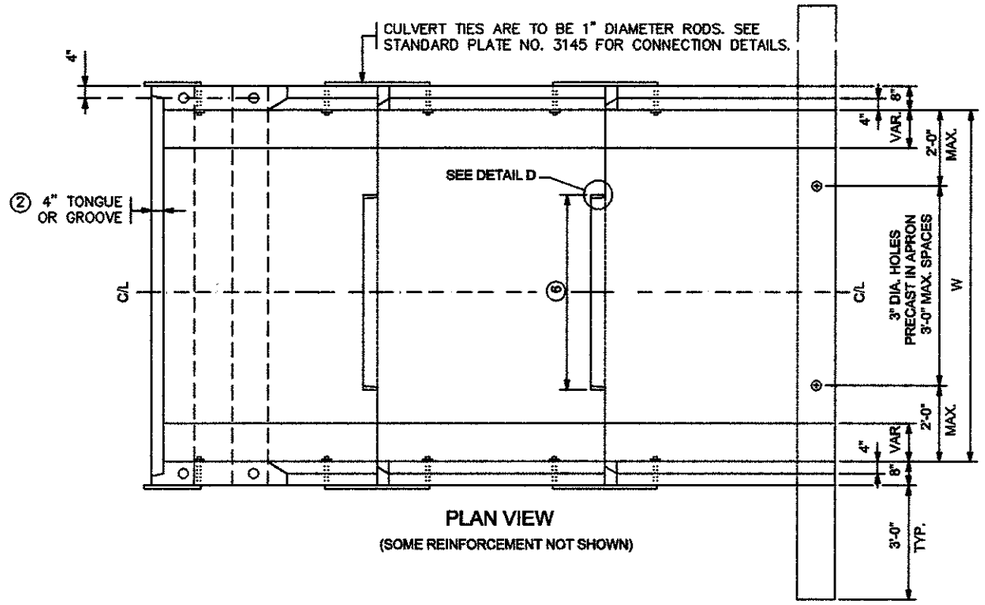
S.A.P. 55-619-07 CL. STA. 32+01.36,32+18, & 32+34.34 | FIG. 5-395.101 (2 OF 2)

TITLE: BARREL DETAILS (SPECIAL DESIGNS)

DES:	DR:	APPROVED:
CHK:	CHK:	

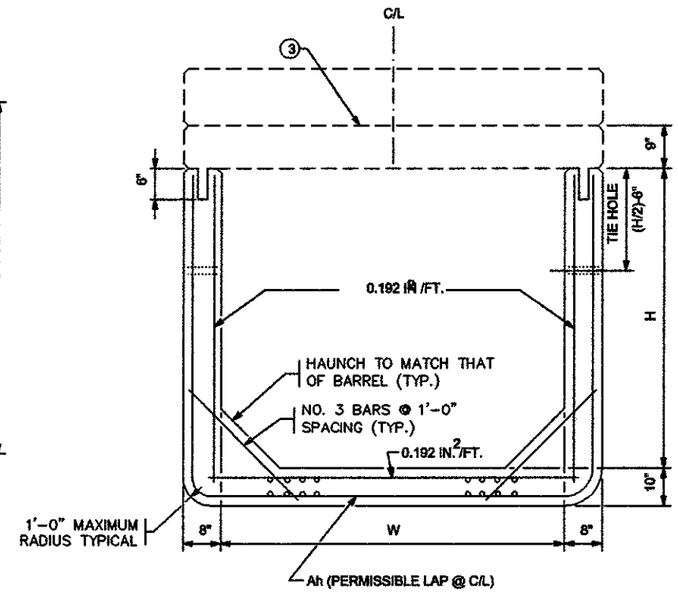
SHEET NO. 9 OF 11 SHEETS

BRIDGE NO. 55J28



PLAN VIEW

(SOME REINFORCEMENT NOT SHOWN)



SECTION Y-Y

NOTES:

SEE FIG. 5-395.101, FOR DIMENSIONS AND CONSTRUCTION NOTES, EXCEPT AS NOTED.

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

① WITH MULTIPLE 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 3Y43. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS. DROPWALL NOT REQUIRED FOR NON-WATERWAY USE.

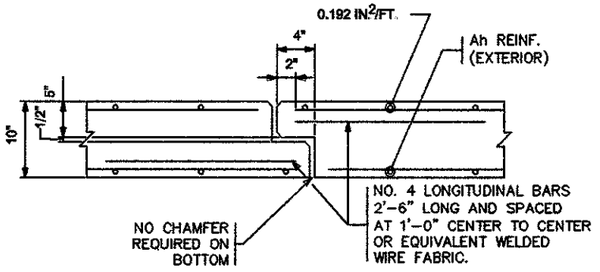
② CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.

③ SEE FIG. 5-395.104 (SHEET 2 OF 2) FOR LINTEL BEAM DETAILS.

④ 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".

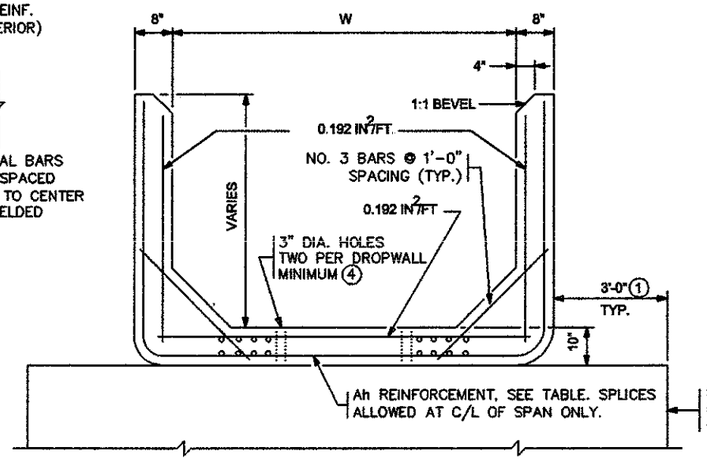
⑤ 2" DIAMETER HOLE, 6" DEEP IN TOP OF THE SECTION WALL.

⑥ 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 C/L OF EACH APRON JOINT.



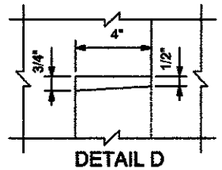
TONGUE AND GROOVE JOINT DETAIL

(BETWEEN END SECTIONS)



SECTION Z-Z

SIDE ELEVATION



DETAIL D



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.

AS BUILT PLANS

APRON DIMENSIONS & Ah REINFORCEMENT

H	L	SECTION 1		h2	SECTION 2		h3	SECTION 3		h4	SECTION 4		h5
FT.	FT.	X	Ah		Y	Ah		Z	Ah		ZZ	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	8'	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"	8'	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"

NOTE: Ah IS AREA OF REINFORCEMENT PER FOOT OF LENGTH (IN ²/FT.).

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FIG. 5-395.104 (1 OF 2)

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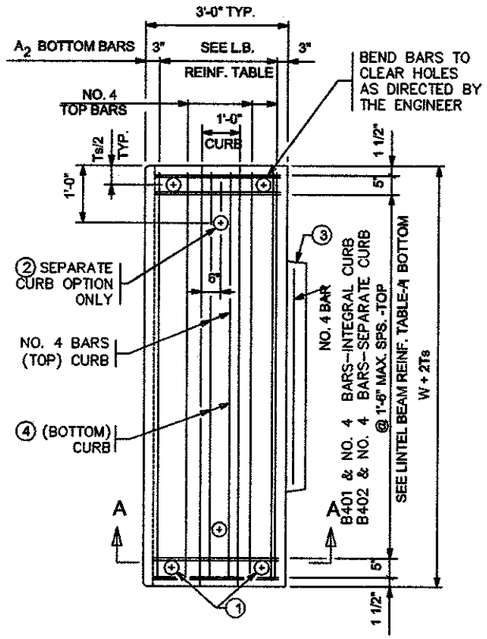
TITLE: PRECAST CONCRETE END SECTION TYPE III – SINGLE OR MULTI-BARREL FOR SKEWS UP TO 7 1/2°

DES: DR: APPROVED:

CHK: CHK:

SHEET NO. 10 OF 11 SHEETS

BRIDGE NO. 55J28

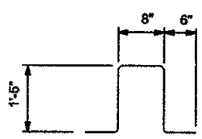


PLAN OF SQUARE LINTEL BEAM

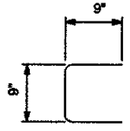
(TONGUE OPTION SHOWN)

LINTEL BEAM REINFORCEMENT TABLE				
WIDTH W (FT.)	4 FT. DESIGN FILL HEIGHT		2 FT. DESIGN FILL HEIGHT	
	BOTTOM REINFORCEMENT		BOTTOM REINFORCEMENT	
	A_1	A_2	A_1	A_2
6	NO. 4 @ 1'-2"	NO. 4 @ 9 1/2"	NO. 4 @ 1'-6"	NO. 4 @ 1'-4"
8	NO. 4 @ 8"	NO. 5 @ 8"	NO. 4 @ 1'-1"	NO. 4 @ 9"
10	NO. 5 @ 8"	NO. 6 @ 7 1/2"	NO. 4 @ 9"	NO. 4 @ 6"
12	NO. 5 @ 6"	NO. 6 @ 6"	NO. 5 @ 9"	NO. 5 @ 6"

NOTE: MAXIMUM BAR SPACING GIVEN, REDUCE AS NECESSARY



B401



B402

NOTES:

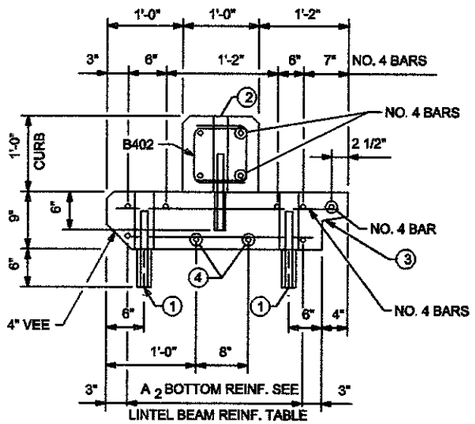
GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".

(1) 3" DIA. HOLE THROUGH LINTEL BEAM AND 2" DIA. HOLE IN TOP OF WALL SECTION. PLACE NO.8 DOWEL, 1'-0" LONG, IN HOLE AND FILL HOLE WITH GROUT.

(2) 3" DIA. HOLE THROUGH CURB AND 2" DIA. HOLE IN LINTEL BEAM. PLACE NO. 8 DOWEL, 1'-0" LONG, IN HOLE AND FILL HOLE WITH GROUT.

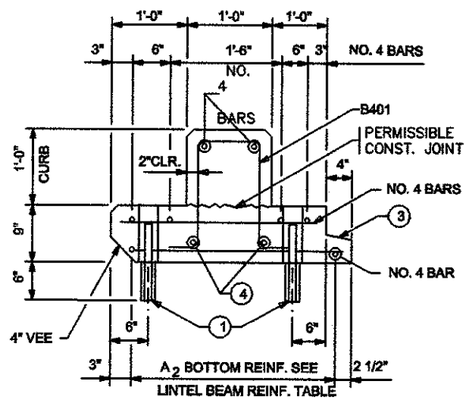
(3) CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT HAUNCH.

(4) FOR SPANS UNDER 10' USE NO. 8 BARS. FOR SPANS OF 10' TO 12' USE NO. 9 BARS.



SECTION A-A

(SEPARATE CURB OPTION WITH GROOVE)
(ADDITIONAL REINF. IN GROOVE, NOT SHOWN)



SECTION A-A

(INTERGRAL CURB OPTION WITH TONGUE)
(ADDITIONAL REINF. IN TONGUE, NOT SHOWN)

AS BUILT PLANS

APPROVED: AUGUST 10, 1995

STATE BRIDGE ENGINEER

CERTIFIED BY Kaye M Bremek PROFESSIONAL ENGINEER

REG. NO. 19917 11/23 19 99

S.A.P. 55-619-07 CL. STA. 32+01.36, 32+18, & 32+34.34 | FIG. 5-395.104 (2 OF 2)

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

DES: | DR: | APPROVED:

CHK: | CHK:

SHEET NO. 11 OF 11 SHEETS

BRIDGE NO. 55J28