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

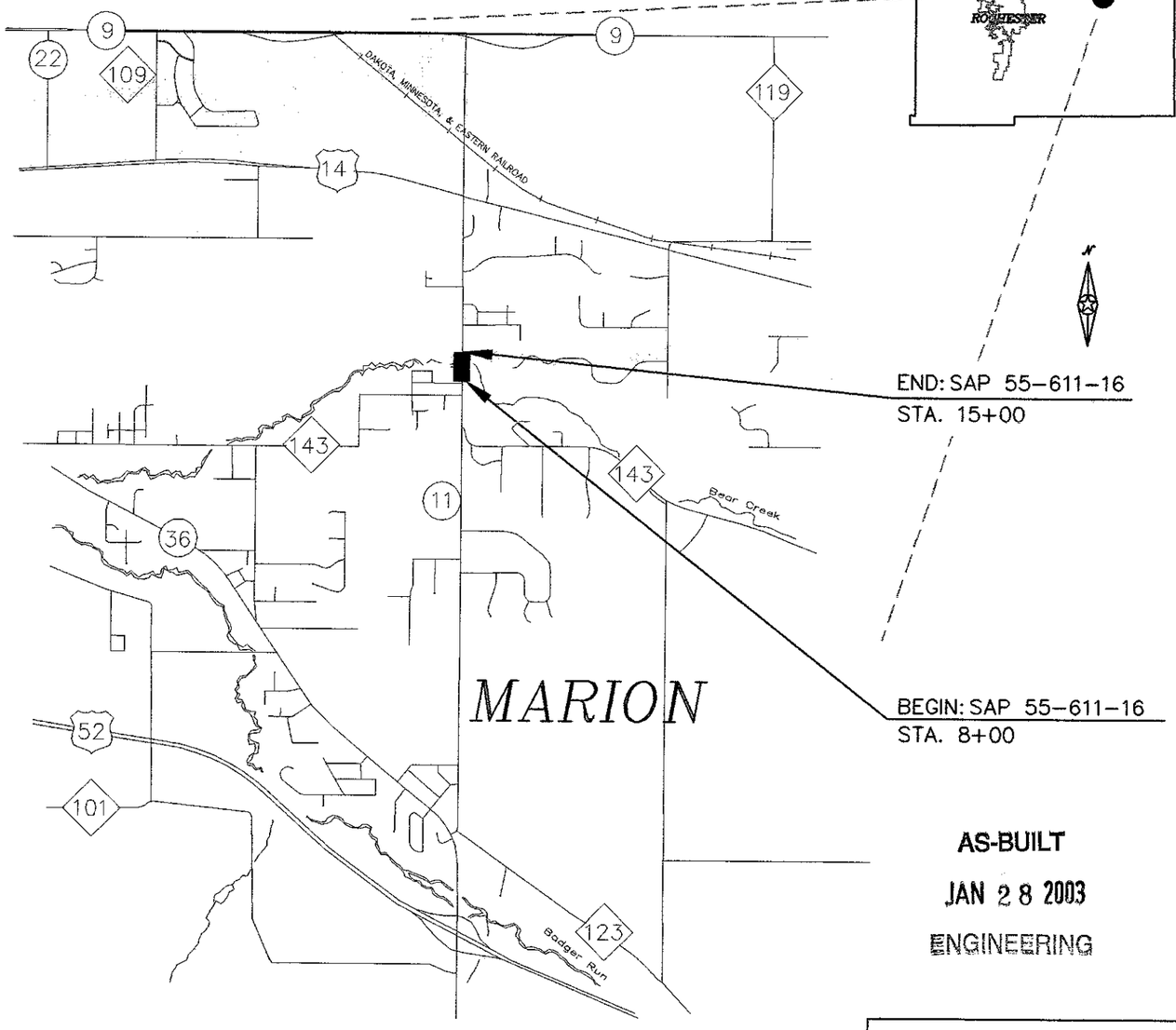
THE COUNTY OF OLMSTED

CONSTRUCTION PLAN FOR GRADING & PRECAST CONC. BOX (BRIDGE NO. 55J27)

LOCATED ON CSAH 11 BETWEEN CR 143 AND T.H. 14 (GEOGRAPHIC DESCRIPTION)

FROM APPROX. 830' SOUTH OF 1/4 COR. 9 & 10 T 106 N – R 13 W TO APPROX. 130' SOUTH OF 1/4 COR. 9 & 10 T 106 N – R 13 W (LEGAL DESCRIPTION)

S.A.P. NO.	55–611–16			
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



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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. 55–611–16

R 70 ΣN18(20) 1,752,000
ADT (Current Year) = 3,755 (1999) Design Speed 55 MPH
ADT (Future Year) = 5,630 (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. TO STA. mph
SUBGRADE = STA. TO STA. mph
LANE WIDTH 12 FT.
SHOULDER WIDTH 6 FT.
SOIL FACTOR = 130%
10 TON DESIGN

FUNCTIONAL CLASSIFICATION: MAJOR 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 12/21/99 REGISTRATION NUMBER 19917
Kaye M Brenneke
APPROVED: COUNTY DESIGN ENGINEER

DESIGN SQUAD: Cummings/Holmes

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

STATE AID APPROVALS:

DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE-AID RULES/POLICY DATE: 12-22-99

APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER DATE: 1/31/00

for

ESTIMATED QUANTITIES

	SPECIFICATION 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.	620		620
	2104.503	REMOVE BITUMINOUS PAVEMENT	SQ. FT.	1,867		1,867
③	2105.515	UNCLASSIFIED EXCAVATION	CU. YDS.	2,709		(P) 2,709
④	2211.501	AGGREGATE BASE CLASS 5	TON	1,730		1,730
	2221.501	AGGREGATE SHOULDERING CLASS 2	TON	416		416
⑤	2340.508	TYPE 41 WEARING COURSE MIXTURE	TON	308		308
⑥	2340.514	TYPE 41 BASE COURSE MIXTURE	TON	411		411
	2412.511	12' x 5' PRECAST CONCRETE BOX CULVERT	LIN. FT.		328	328
⑦	2412.512	12' x 5' PRECAST CONC. BOX CULVERT END SECTION	EACH		8	8
	2442.501	REMOVE OLD BRIDGE	LUMP SUM	1		1
	2451.507	GRANULAR BEDDING (CV)	CU. YDS.		275	(P) 275
	2501.511	15" C.S. PIPE CULVERT	LIN. FT.	32		32
	2501.515	15" G.S. PIPE APRON	EACH	2		2
⑧	2511.501	RANDOM RIPRAP CL. III	CU. YDS.		90	90
	2563.601	TRAFFIC CONTROL	LUMP SUM	1		1
	2575.501	SEEDING	ACRE	1.2		(P) 1.2
	2575.511	MULCH MATERIAL TYPE 1	TON	2.4		2.4
	2575.519	DISK ANCHORING	ACRE	1.2		(P) 1.2
	2575.532	COMMERCIAL FERTILIZER ANALYSIS 12-12-12	POUND	250		250
	2575.608	SEED MIXTURE 50A	POUND	60		60
	2575.608	SEED MIXTURE 110A	POUND	120		120

QUANTITY NOTES:

① APPROXIMATELY 0.27 ACRE

② 620' OF BARBED WIRE FENCE LT. STA 9+00 TO STA 15+00.

③ 298 CU. YDS. OF TOPSOIL TO BE SALVAGED FROM UNCLASSIFIED EXCAVATION

④ 1,700 TON FOR MAINLINE AND 30 TON FOR DRIVEWAY

⑤ WEARING COURSE SHALL BE APPLIED IN TWO 1 1/2" LIFTS.

⑥ BASE COURSE SHALL BE APPLIED IN A MINIMUM OF TWO LIFTS

⑦ END SECTION WITH DROP WALLS.

⑧ 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 CLASS 5 = 140 LBS. / CU. FT COMPACTED
AGGREGATE SHOULDER CLASS 2 = 140 LBS. / CU FT COMPACTED
BITUMINOUS MIXTURE = 110 LBS. / SQUARE YARD / 1 INCH DEPTH
SEED MIXTURE 50A = 50 LBS. / ACRE
SEED MIXTURE 110A = 100 LBS. / ACRE
MULCH MATERIAL = 2 TONS / ACRE
DISK ANCHOR = AL SEEDED AREA'S EXCEPT 1:2 SLOPES
COMMERCIAL FERTILIZER = 200 LBS. / ACRE

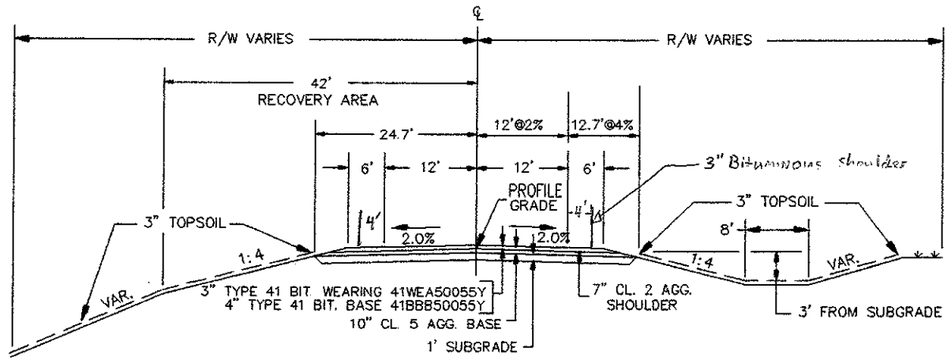
STANDARD PLATES

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

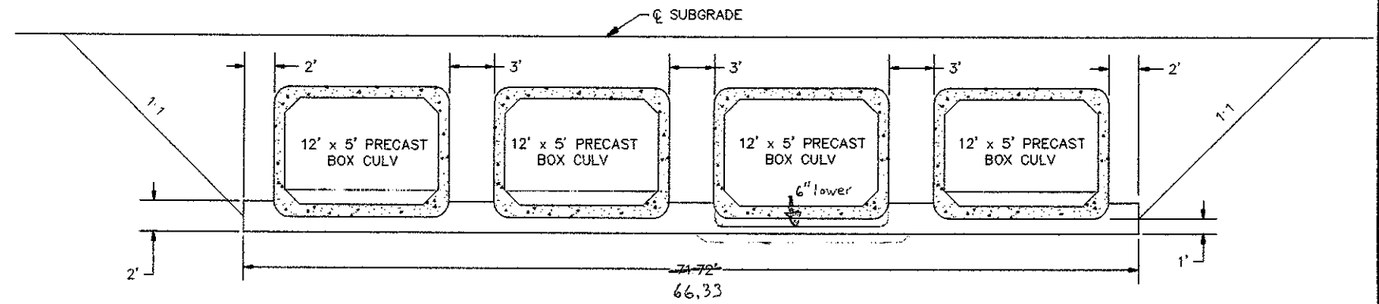
STA. 8+00 TO 15+00



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

BEDDING DETAIL

PIPE STATIONING 11+71.49, 11+87.83, 12+04.17 & 12+20.51



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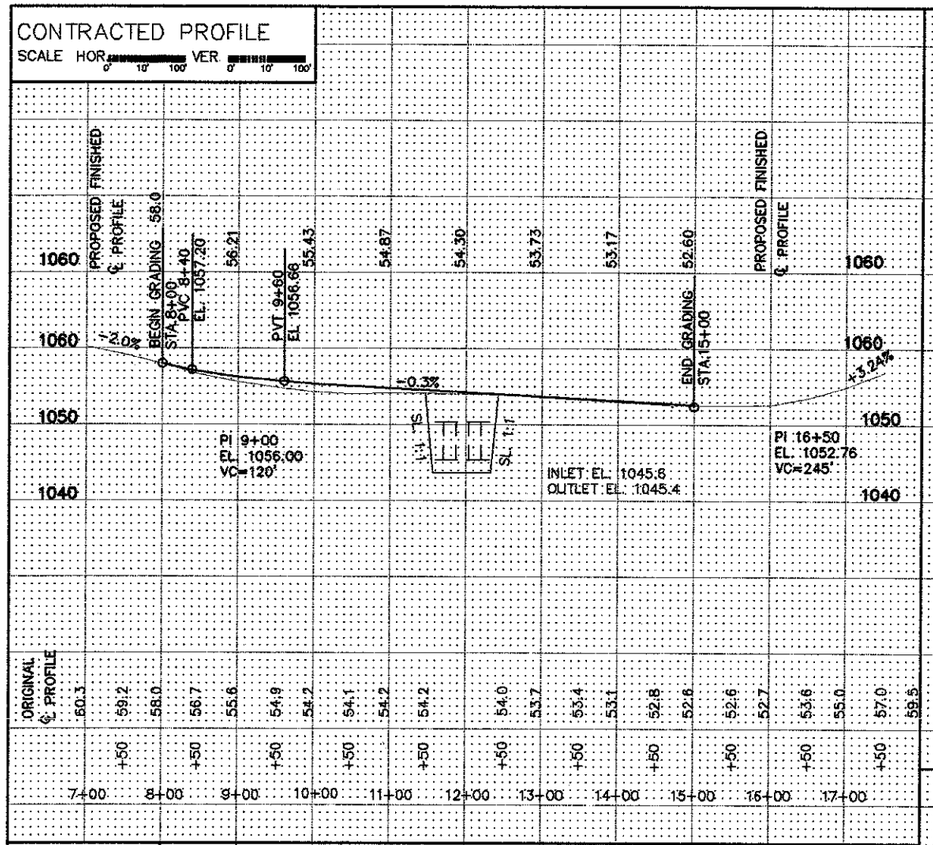
ENGINEERING

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. lowered third Culvert from South 6" and installed 1" Wiers on the other Culverts as per Minor Extra Work order 1.

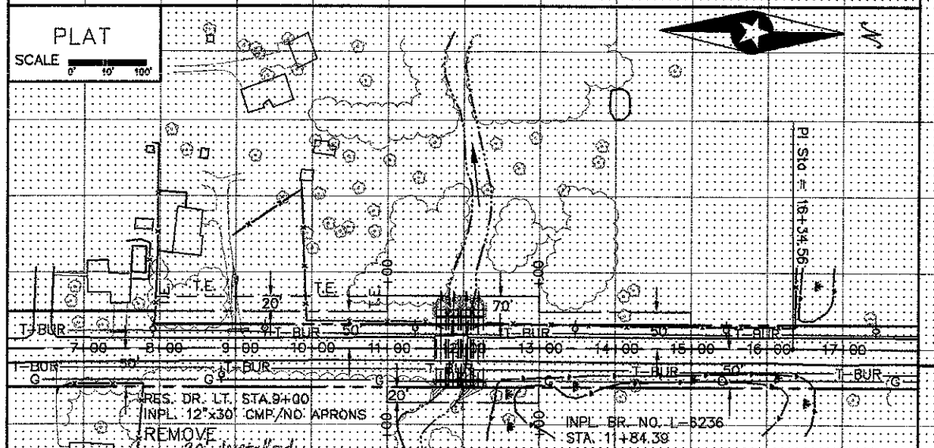
CONTRACTED PROFILE

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



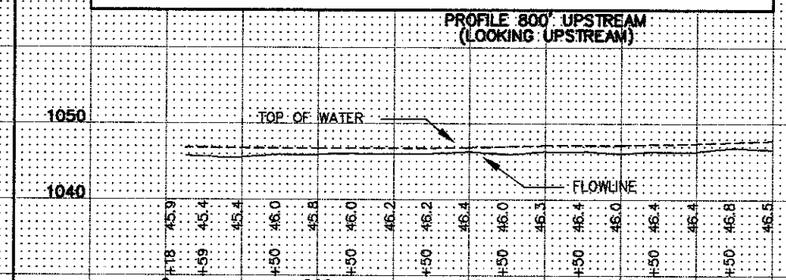
PLAT

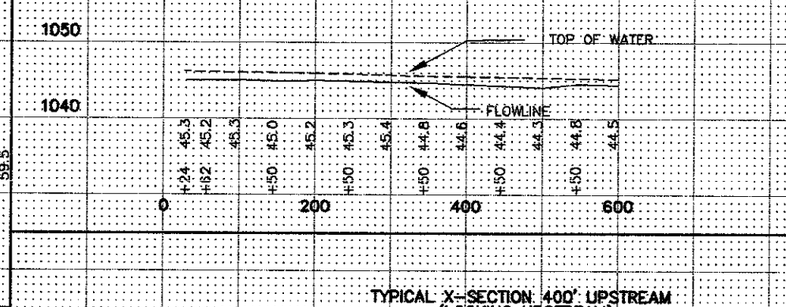
SCALE 0' 10' 100'

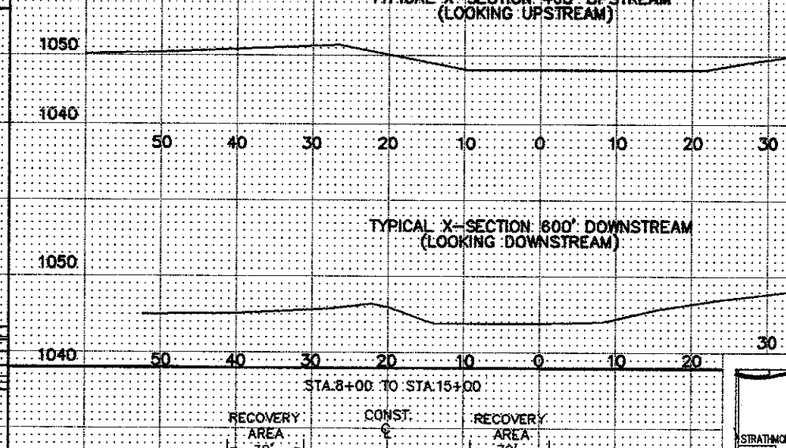


TYPICAL SECTIONS & PERTINENT DATA

SCALE AS SHOWN







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 10-7-99

Stream or ditch designation BEAR CREEK
Drainage area 21.6 SQ. MI.
Max. flood on record UNK. Design flood (100 yr. freq.) 2250 C.F.S.
Max. observed highwater elevation 1051.23 Design highwater elevation 1053.0
Design mean velocity through structure 10.0 F.P.S.
Low superstructure at or above elevation .....
Flowline 1045.4 Skew angle .....
Waterway area req'd. below elevation ..... = ... Sq. Ft. at Rt. angles to channel

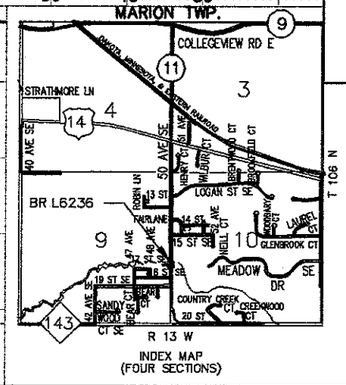
In the interest of flood plain zoning the regional flood (100+yr. freq.) is 2275 C.F.S. at stage 1053.1 and mean velocity of 10.1 F.P.S. with ..... Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of National Resources.

FOUNDATION ENGINEERS RECOMMENDATION

DATE .....

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

Bench mark elevation 1054.57 (M.S.L. 1929 Adj.)
Location: L ON S.E. COR. BRIDGE L6236 TIRE CURB



MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 2.280 ON CSAH 11 (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 0.8 MILES SOUTH OF JCT. TH 14
SEC. 10 TWP. 106 N R 13 W
TOWNSHIP MARION COUNTY OLMSTED
BRIDGE NO. 55J27

CERTIFIED BY Kaye M. Bierwirth PROFESSIONAL ENGINEER REG. NO 19917 12/21/1999

S.A.P. 55-611-16 C.S.A.H. 11

20' T.E.

70'

50'

33'

6'

12'

12'

6'

50'

50'

70'

+00

11+00

74'

18'

18'

3'

3'

3'

3'

3'

3'

3'

3'

11+71.49

11+87.83

12+00

12+04.17

12+20.51

RIPRAP AT OUTLET
82 CU. YDS.

RIPRAP AT INLET
8 CU YDS.

+00

13+00

50'

33'

50'

+00

0' 10' 10' 0'

SCALE:

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JAN 2 8 2003

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FINISHED GRADE PROFILE

1070

1060

1050

1040

54.1

54.2

54.2

54.1

53.8

53.7

53.4

+50

11+00

12+00

13+00

0.3%

INLET INLET 1046.6 1046.6 1045.1 1046.6

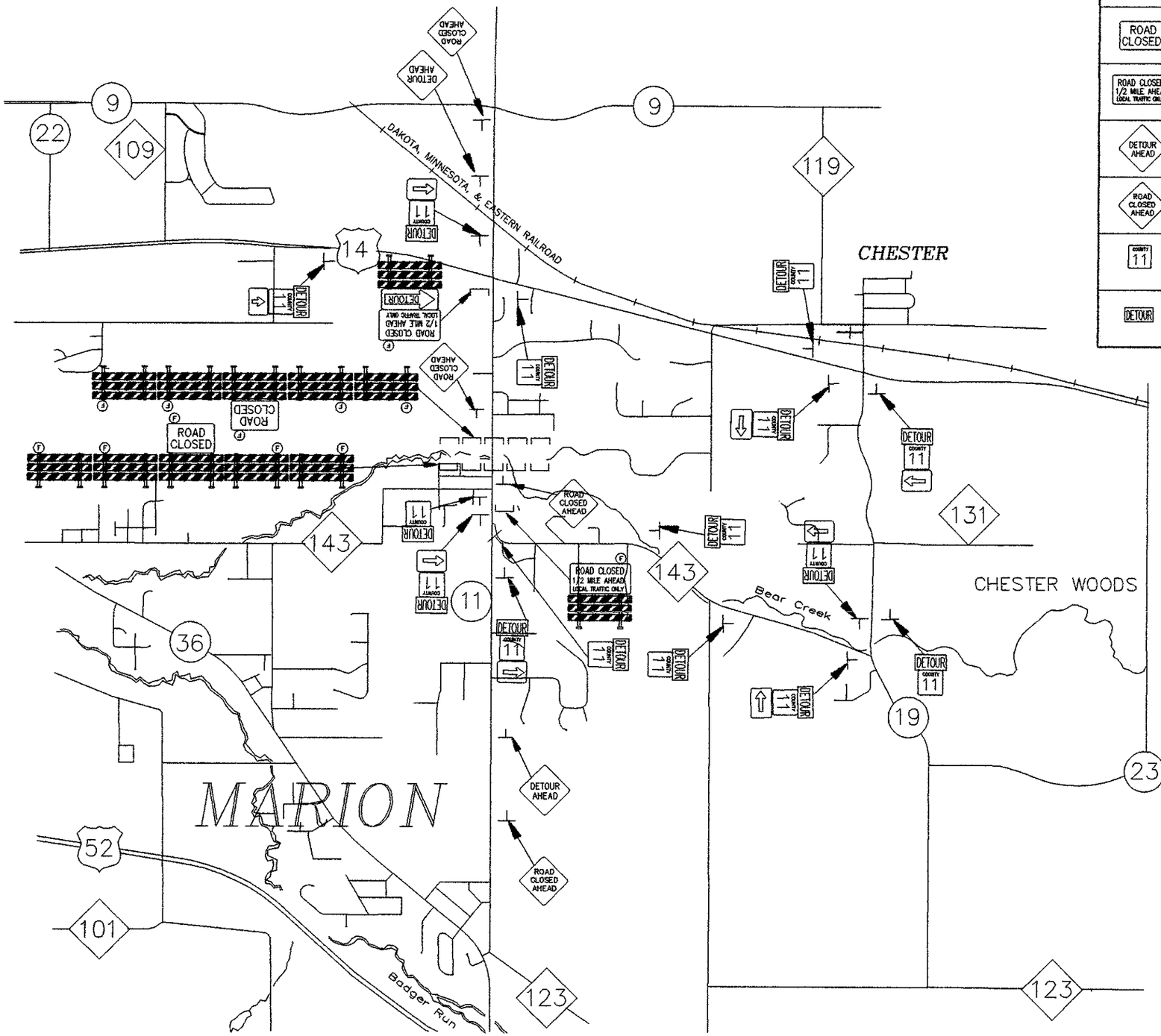
OUTLET 1044.3

INLET EL. 1045.6

OUTLET EL. 1045.4

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

S.A.P. 55-611-16 C.S.A.H.11



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	DETOUR	M4-10L	48"x 18"	BLK/OR	1
ROAD CLOSED 1/2 MILE AHEAD LOCAL TRAFFIC ONLY	R11-3	60 x 30	BLK/WH	2		M6-1	21"x 15"	BLK/OR	7
DETOUR AHEAD	W20-2	48"x 48"	BLK/OR	2		M6-3	21"x 15"	BLK/OR	1
ROAD CLOSED AHEAD	W20-3	48"x 48"	BLK/OR	4		TYPE III	MIN 6'	OR & WHT	12
COUNTY 11	M1-X4	24"x 24"	BLK/WH	15	(F)	TYPE A	FLASHING LAMP	AMBER	12
DETOUR	M4-8	24"x 12"	BLK/OR	15					

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TRAFFIC CONTROL LEGEND

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

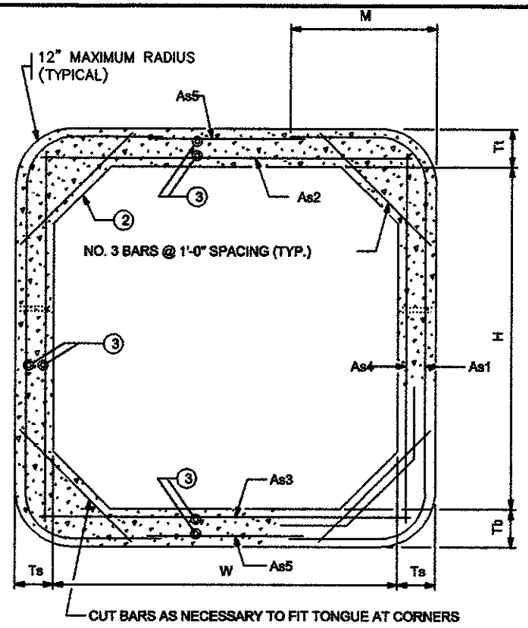
TRAFFIC CONTROL NOTES

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 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.

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

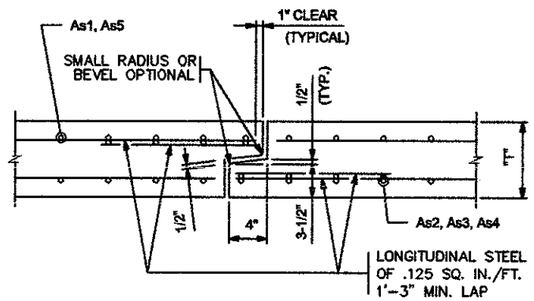
S.A.P. 55-611-16 CSAH 11

SHEET 7 OF 11 SHEETS

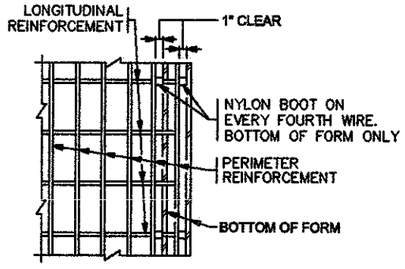


TRANSVERSE BARREL SECTION

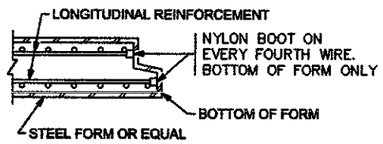
(BAR REINFORCEMENT OPTION SHOWN)



TONGUE AND GROOVE JOINT DETAIL

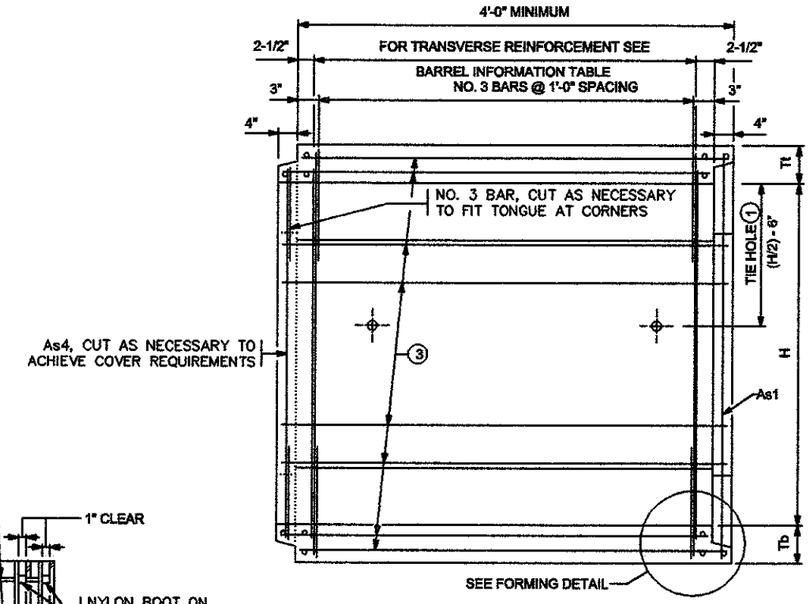


PLAN



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 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.

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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.)
11+71.49	12 x 5	2	5000	2 – 8'	12	5	9	10	8	4330	0.74	11'–11"	3'–4"	0.93	12'–8"	0.93	12'–8"	0.20	5'–8"	0.06	8'–7"
11+87.83	12 x 5	2	5000	2 – 8'	12	5	9	10	8	4330	0.74	11'–11"	3'–4"	0.93	12'–8"	0.93	12'–8"	0.20	5'–8"	0.06	8'–7"
12+04.17	12 x 5	2	5000	2 – 8'	12	5	9	10	8	4330	0.74	11'–11"	3'–4"	0.93	12'–8"	0.93	12'–8"	0.20	5'–8"	0.06	8'–7"
12+20.51	12 x 5	2	5000	2 – 8'	12	5	9	10	8	4330	0.74	11'–11"	3'–4"	0.93	12'–8"	0.93	12'–8"	0.20	5'–8"	0.06	8'–7"

APPROVED: AUGUST 10, 1995

Donald D. Fleming
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S.A.P. 55-611-16 CL. STA. 11+71.49 , 11+87.83, 12+04.17, & 12+20.51

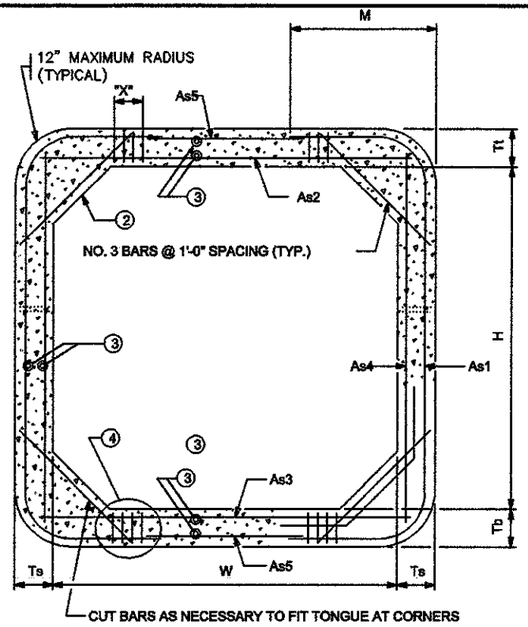
FIG. 5-395.101 (1 OF 2)

TITLE: BARREL DETAILS

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

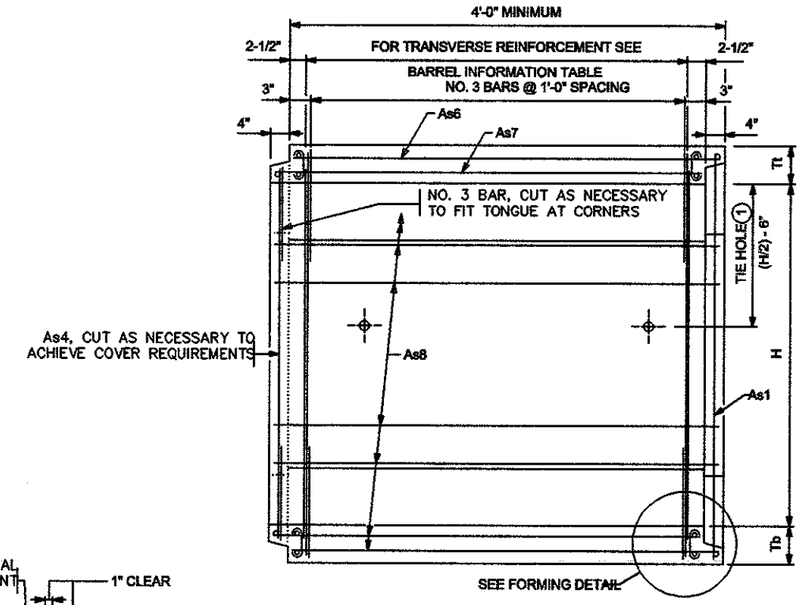
SHEET NO. 8 OF 11 SHEETS

BRIDGE NO. 55J27



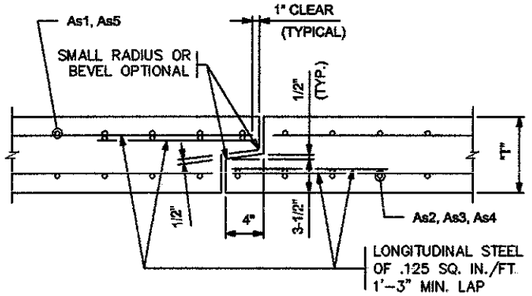
TRANSVERSE BARREL SECTION

(BAR REINFORCEMENT OPTION SHOWN)

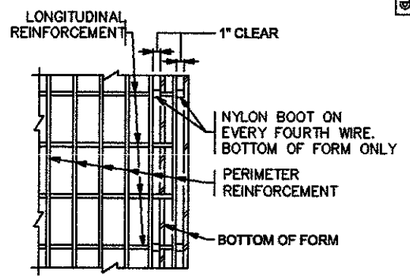


LONGITUDINAL BARREL SECTION

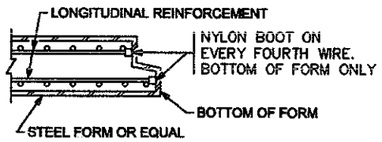
(BAR REINFORCEMENT OPTION SHOWN)



TONGUE AND GROOVE JOINT DETAIL

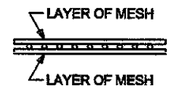


PLAN



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.

AS-BUILT

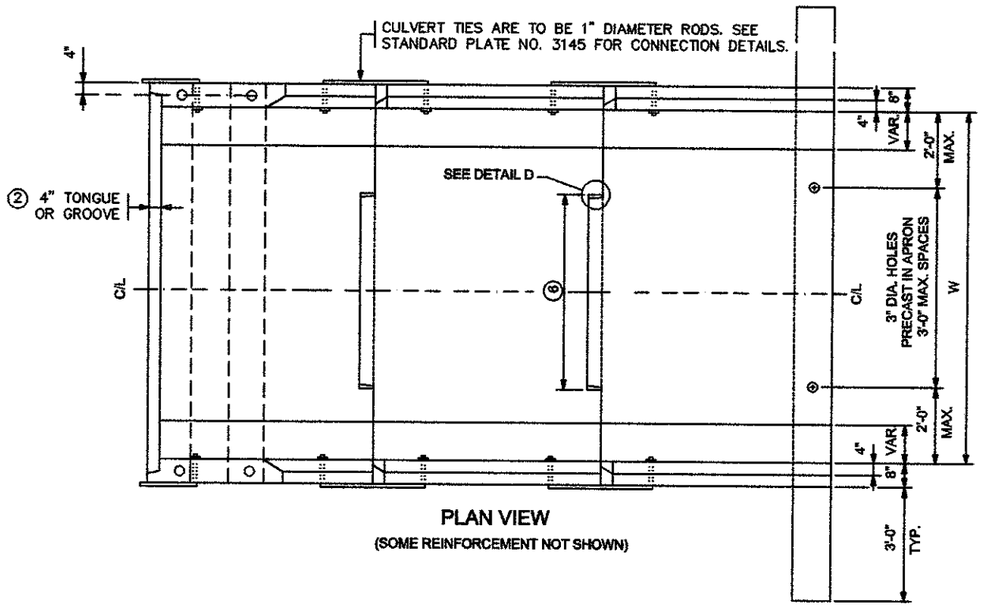
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BARREL INFORMATION

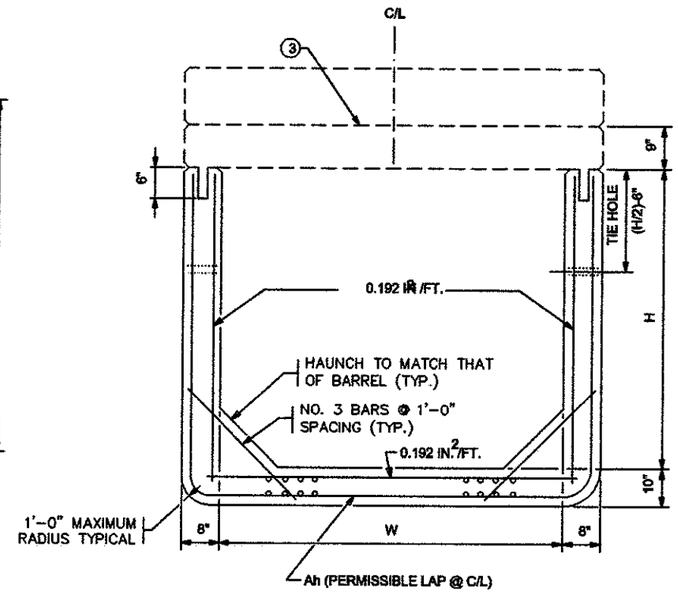
LOCATION	SIZE	f'c (P.S.I.)	OVERFILL LIMITS (FT.)	DIMENSIONS W (FT.)	H (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)	WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT As1 AREA (IN²/FT.)	As1 LENGTH (FT.)	As1 M (FT.)	As2 AREA (IN²/FT.)	As2 LENGTH (FT.)	As3 AREA (IN²/FT.)	As3 LENGTH (FT.)	As4 AREA (IN²/FT.)	As4 LENGTH (FT.)	As5 AREA (IN²/FT.)	As5 LENGTH (FT.)	As6 AREA (IN²/FT.)	As7 AREA (IN²/FT.)	As8 AREA (IN²/FT.)	(4)SHEAR REINFORCEMENT TOP AND BOTTOM OF BARREL AREA (IN²/FT.)	MAX. SPG.(IN.)	X (IN.)

APPROVED: AUGUST 10, 1995	S.A.P. 55-611-16 CL. STA. 11+71.49 , 11+87.83, 12+04.17, & 12+20.51	FIG. 5-395.101 (2 OF 2)
STATE BRIDGE ENGINEER	CERTIFIED BY Kaye M Borowiak PROFESSIONAL ENGINEER REG. NO. 19917 11/23 19 99	TITLE: BARREL DETAILS (SPECIAL DESIGNS) DES: DR: APPROVED: CHK: CHK: SHEET NO. 9 OF 11 SHEETS
		BRIDGE NO. 55J27



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.

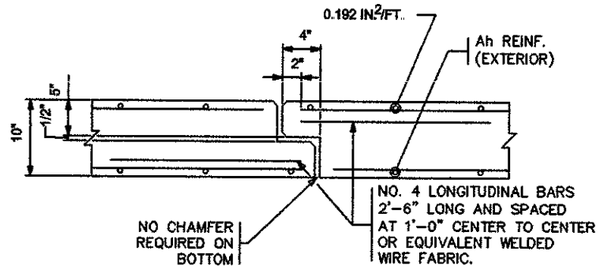
(2) CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.

(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".

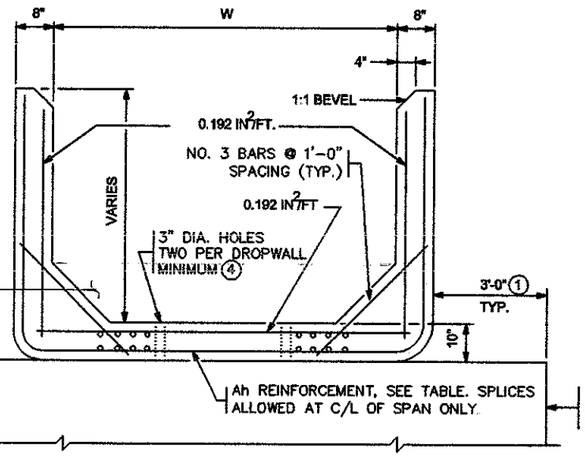
(5) 2" DIAMETER HOLE, 6" DEEP IN TOP OF THE SECTION WALL.

(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.

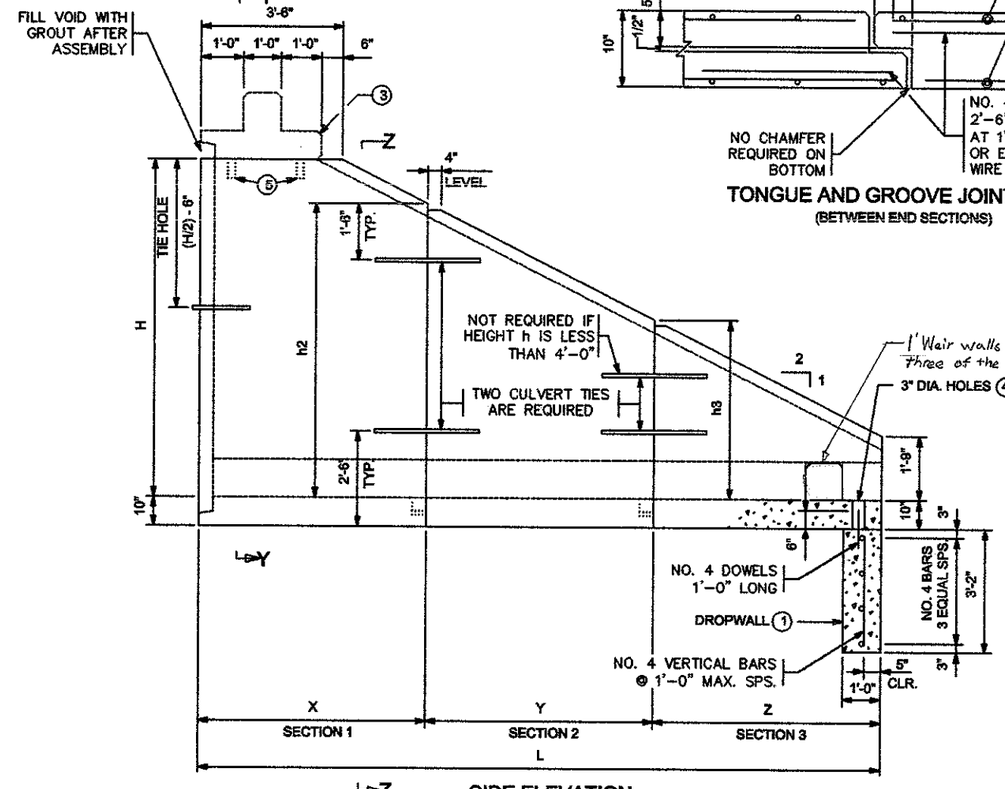


TONGUE AND GROOVE JOINT DETAIL

(BETWEEN END SECTIONS)



SECTION Z-Z



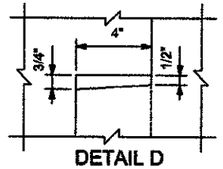
SIDE ELEVATION

AS-BUILT

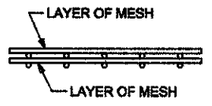
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1' Weir walls place on Three of the Inlets



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

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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	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"

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

APPROVED: AUGUST 10, 1995

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REG. NO. 19917 11/23 1999

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FIG. 5-395.104 (1 OF 2)

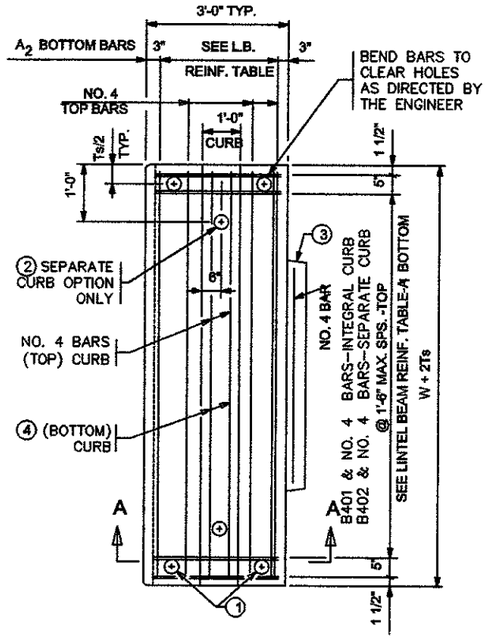
TITLE: PRECAST CONCRETE END SECTION TYPE III – SINGLE OR MULTI-BARREL FOR SKEWS UP TO 7 1/2°

DES: DR: APPROVED:

CHK: CHK:

SHEET NO. 10 OF 11 SHEETS

BRIDGE NO. 55J27

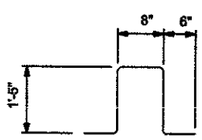


PLAN OF SQUARE LINTEL BEAM

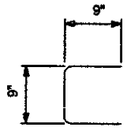
(TONGUE OPTION SHOWN)

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:

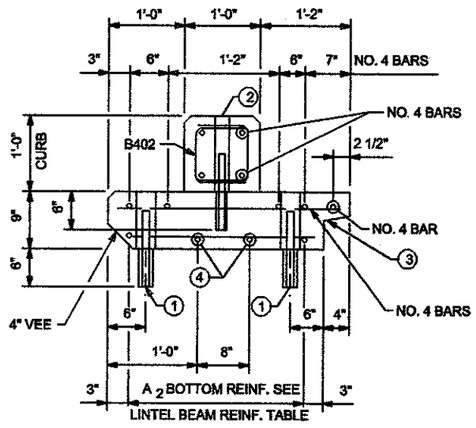
GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".

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.

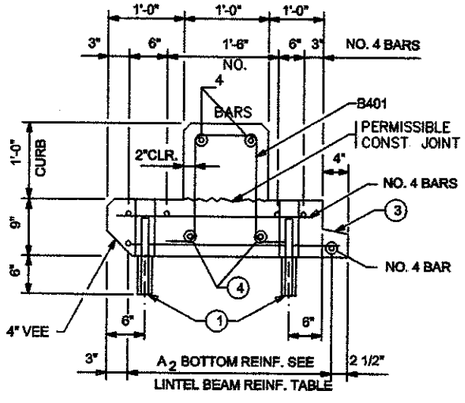
③ CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT HAUNCH.

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)

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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. 55J27