MINNESOTA DEPARTMENT OF TRANSPORTATION

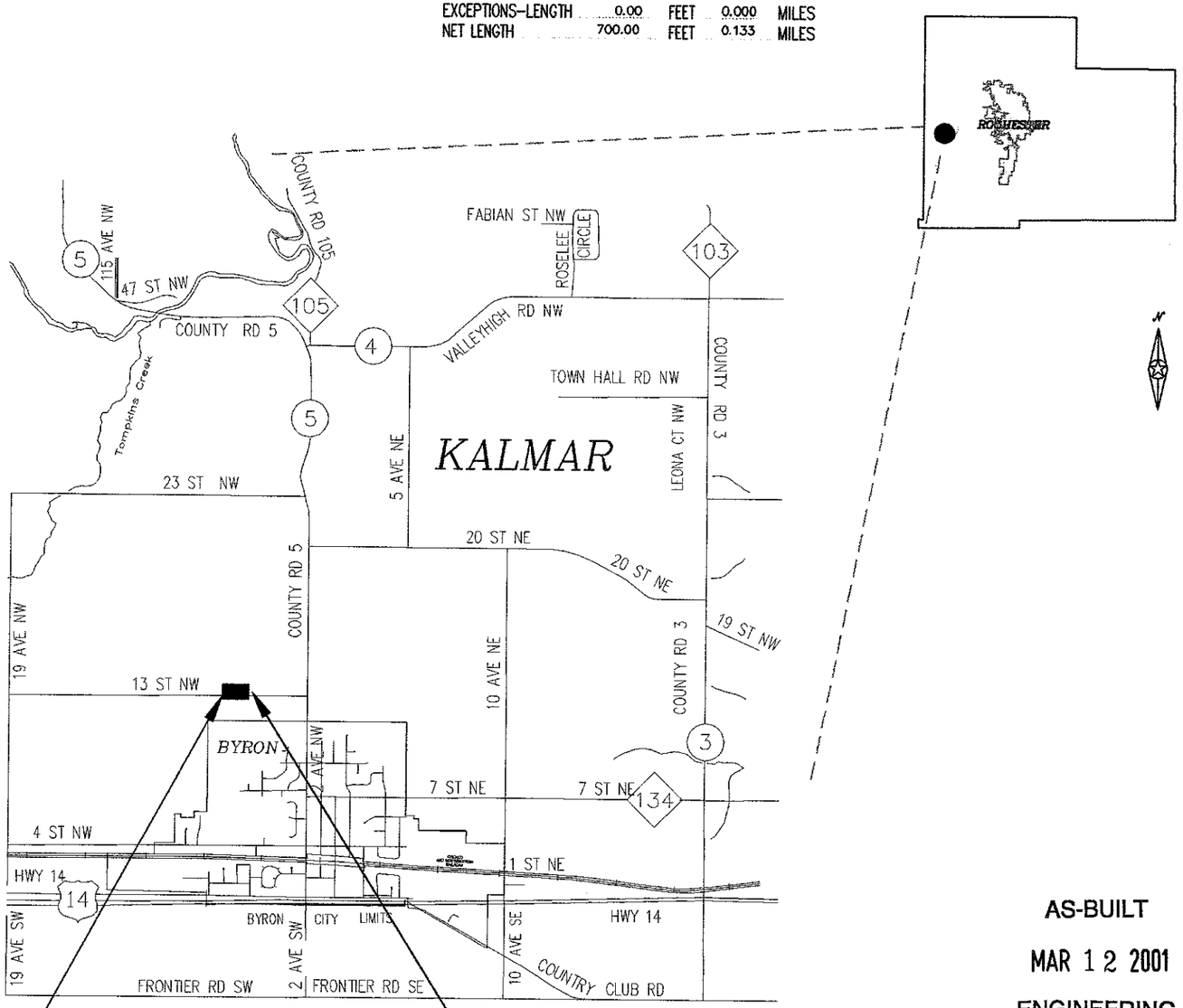
THE COUNTY OF OLMSTED

CONSTRUCTION PLAN FOR GRADING & PRECAST CONC. BOX (BRIDGE NO. 55J25)

LOCATED ON 13 ST. N.W. BETWEEN C.S.A.H. 5 AND COUNTY LINE (GEOGRAPHIC DESCRIPTION)

FROM APPROX. 0.05 MILES EAST of 1/4 COR. 29 & 30 T 107 N – R 15 W TO APPROX. 0.15 MILES EAST of 1/4 COR. 29 & 30 T 107 N – R 15 W (LEGAL DESCRIPTION)

S.A.P. NO. 55–599–73				
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



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

AS-BUILT

MAR 1 2 2001

ENGINEERING

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. 55–599–73

R IN18(20)
ADT (Current Year) = 170 (1999) Design Speed 55 MPH
ADT (Future Year) = 272 (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 4 FT.
SOIL FACTOR = 130%

TOWNSHIP APPROVAL:

Dale Brooks 11-15-99
APPROVED: TOWNSHIP CHAIRPERSON DATE

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 11/9/99 REGISTRATION NUMBER 19917

Kaye M Prieneke
APPROVED: COUNTY DESIGN ENGINEER

DESIGN SQUAD: Cummings/Holmes

DATE 11/15/99 REGISTRATION NUMBER 10397

Michael Sheehan
APPROVED: OLMSTED COUNTY ENGINEER

STATE AID APPROVALS:

Asst. DATE: 11-29-99
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY

TB DATE: 2/9/00
APPROVED FOR STATE AID FUNDING:
STATE AID ENGINEER
Rar

ESTIMATED QUANTITIES

	SPECIFICATION NO.	ITEM	UNIT	NON PARTICIPATING	PARTICIPATING	TOTAL ESTIMATED QUANTITIES
	2101.502	CLEARING	TREE	2		2
	2101.507	GRUBBING	TREE	2		2
②	2105.511	COMMON CHANNEL EXCAVATION	CU. YDS.	75		(P) 75
①②	2105.515	UNCLASSIFIED EXCAVATION	CU. YDS.	575		(P) 575
	2105.523	COMMON BORROW (CV)	CU. YDS.	2325		(P) 2325
	2412.511	12' x 6' PRECAST CONCRETE BOX CULVERT	LIN. FT.		63	63
③	2412.512	12' x 6' PRECAST CONC. BOX CULVERT END SECTION	EACH		2	2
	2442.501	REMOVE OLD BRIDGE	LUMP SUM	1		1
	2451.507	GRANULAR BEDDING (CV)	CU. YDS.		~~50~~ 44	(P) ~~50~~ 44
④	2511.501	RANDOM RIPRAP CL. III	CU. YDS.		106	106

QUANTITY NOTES:

① UNCLASSIFIED EXCAVATION INCLUDES SUBGRADE TREATMENT AS SHOWN IN TYPICAL SECTION AND CROSS SECTIONS.

② 220 CU. YDS. OF EXCAVATION TO BE USED AS SALVAGED TOPSOIL.

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.

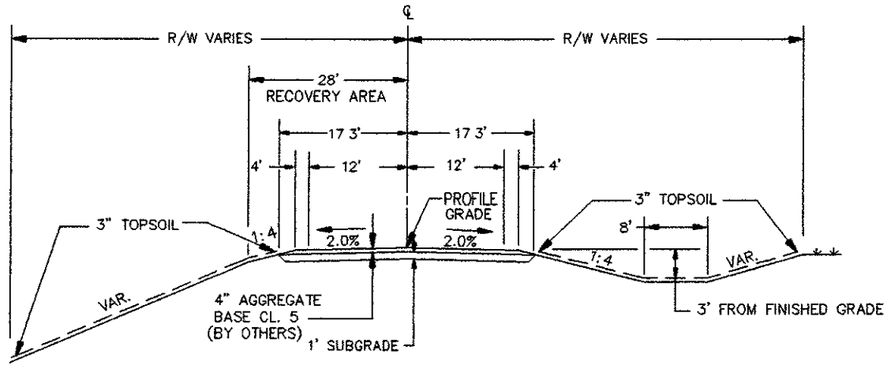
STANDARD PLATES

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

PLATE NO.	DESCRIPTION
	NUMERICAL INDEX OF STANDARD PLATES
3007 B	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3145 E	CONCRETE PIPE TIES
8000 I	STANDARD BARRICADES
9000 C	APPROACHES AND ENTRANCES

TYPICAL SECTION

STA. 13+00 TO 20+00

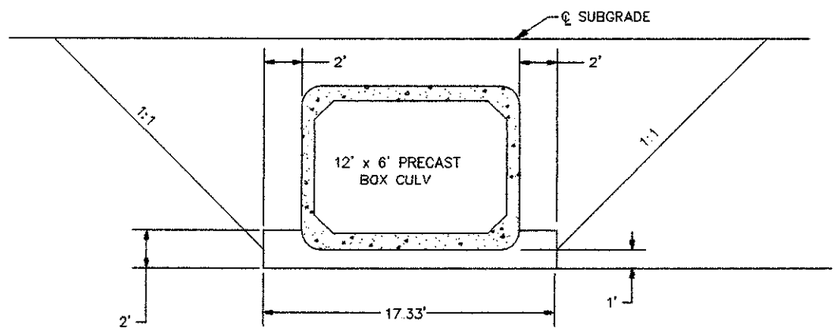


NOTES: ALL UTILITY POLES AND UNYIELDING OBJECTS WILL BE LOCATED OUTSIDE THE 28' RECOVERY AREA BY OTHERS.

TURF ESTABLISHMENT BY OTHERS.

BEDDING DETAIL

STA. 16+20.50



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.

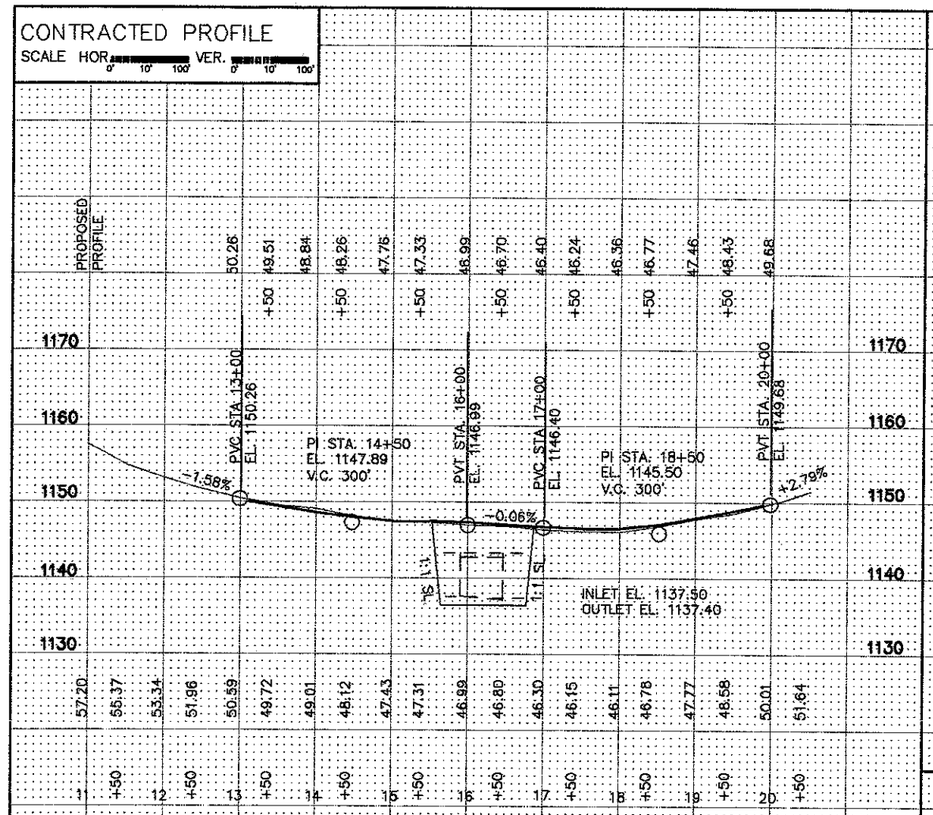
AS-BUILT

MAR 12 2001

ENGINEERING

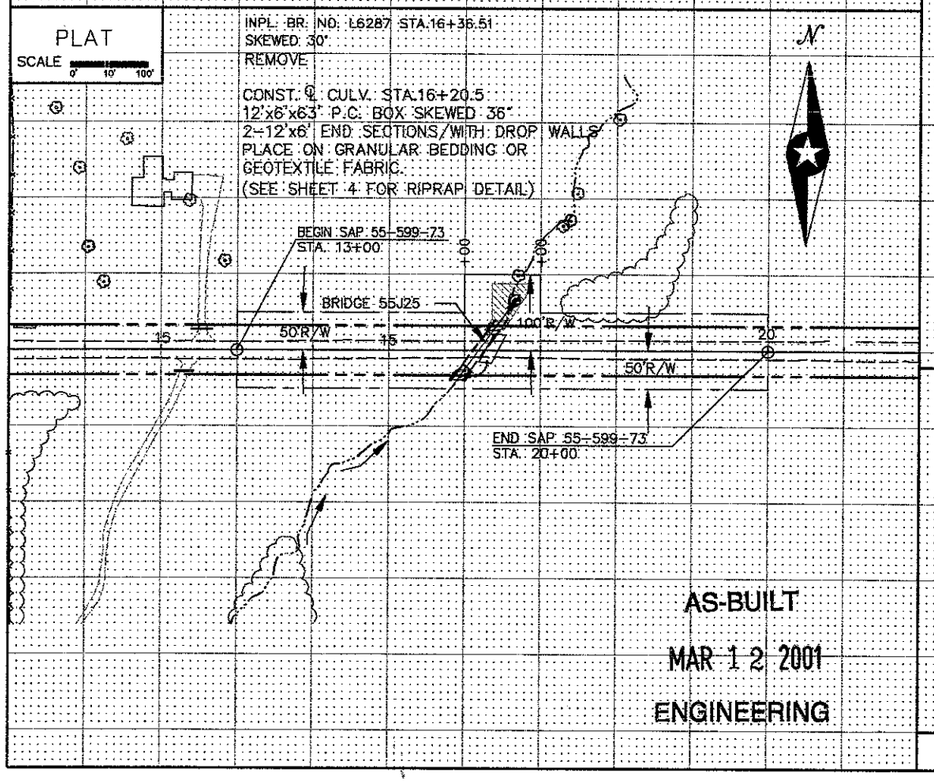
CONTRACTED PROFILE

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



PLAT

SCALE 0' 10' 100'



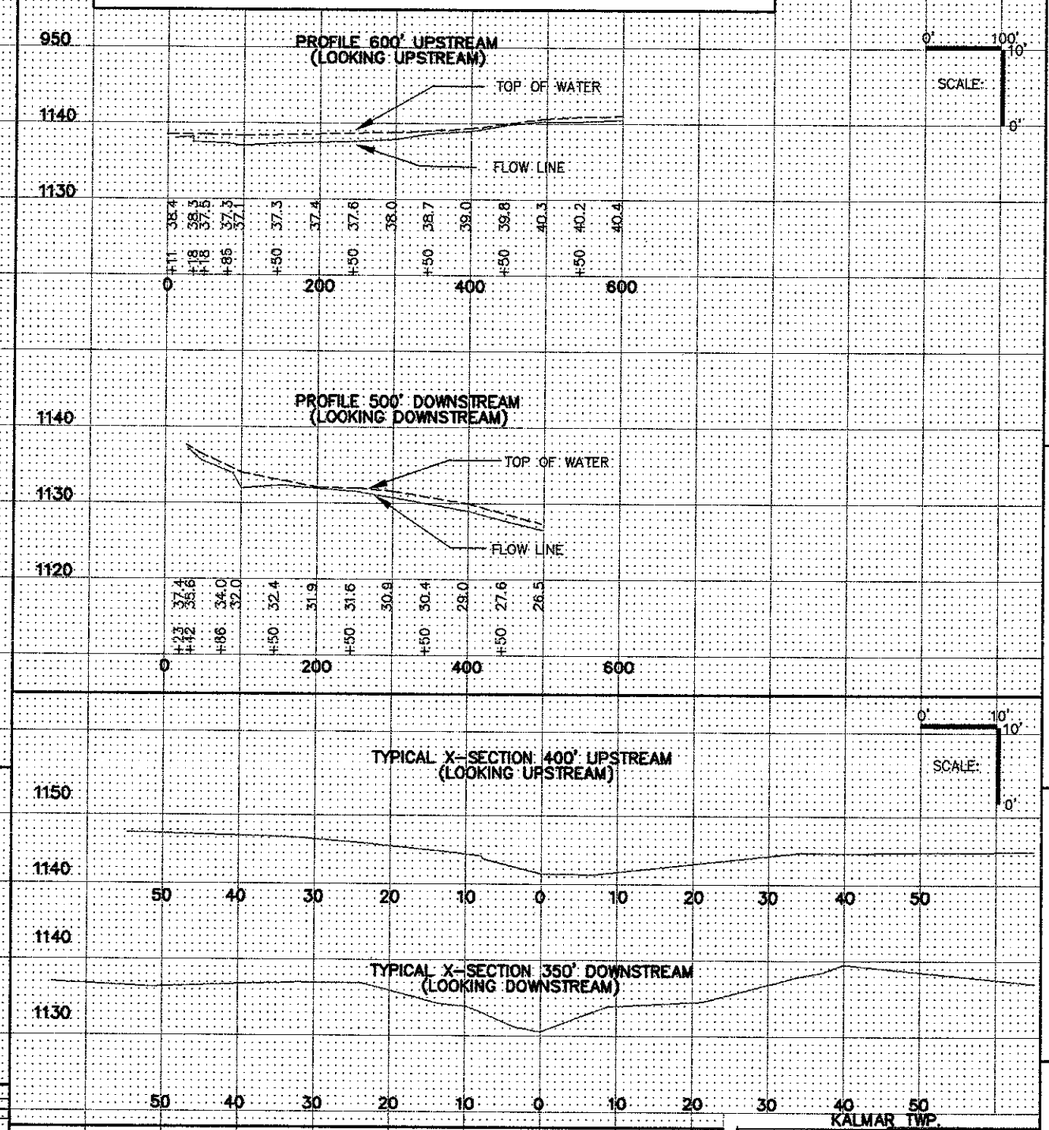
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MAR 12 2001

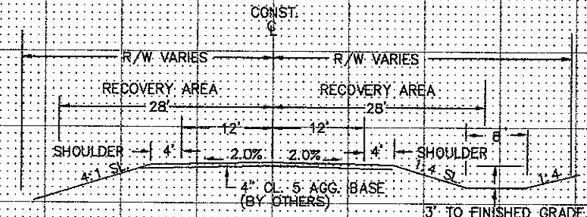
ENGINEERING

TYPICAL SECTIONS & PERTINENT DATA

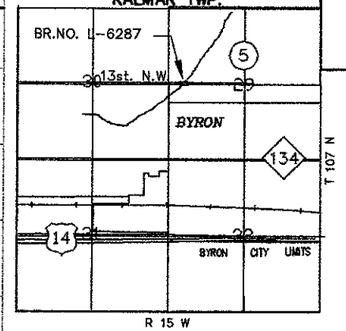
SCALE AS SHOWN



STA. 13+00 TO STA. 20+00



KALMAR TWP.



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 9-9-99

Stream or ditch designation UNNAMED

Drainage area 0.7 SQ. MI.

Max. flood on record UNK. Design flood (100 yr. freq.) 660 C.F.S.

Max. observed highwater elevation UNK. Design highwater elevation .....

Design mean velocity through structure 12.2 F.P.S.

Low superstructure at or above elevation .....

Flowline ..... Skew angle 36°

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 700 C.F.S. at stage 3.35 and mean velocity of 12.4 F.P.S. with 1146.20 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 9-9-99

1-12'x6' P.C. BOX

Bridge survey sheets made from: SURVEY CONDUCTED BY OLMSTED COUNTY

Bench mark elevation 944.37 (N.S.L. 1929 Adj.)

Location: SPK. IN GUARD RAIL POST SW. COR. BR.

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 0.4 W. OF CSAH 5 ON TWP.RD. 248 (T.H., C.S.A.H., C.R. etc.)

PROPOSED BRIDGE LOCATED 0.4 MILES WEST OF JCT. CSAH 5

SEC. 29 TWP. 107 N R 15 W

TOWNSHIP KALMAR COUNTY OLMSTED

BRIDGE NO. 55J25

CERTIFIED BY Kayel M Kuenick PROFESSIONAL ENGINEER REG. NO. 19917 11/9 1999

State Aid Proj. No. 55-599-73 Sheet No. 3 of 11 Sheets

℄ CULV. STA. 16+20.5
12'x6'x63' PC BOX SKEWED 36°

RIPRAP @ OUTLET
102 CU. YDS.

78'
~~55'~~

RIPRAP CL III

~~48'~~ 42'

100'

50'

33'

15

16

16+20.5

17

33'

50'

36° SKEW

RIPRAP @ INLET
4 CU. YDS.

N

0' 10' 10'
SCALE:
0'

SUBGRADE

1160
1150
1140
1130

47.76
47.33
47.31
47.43

+50 47.31

15 16 16+50 17

SUBGRADE PROFILE

PVT 16+00
ELEV. 46.99

0.06%

2:1 SLOPE

46.99
46.80
46.70

PVC 17+00
ELEV. 46.40

INLET EL. ~~1137.50~~ 1137.00
OUTLET EL. ~~1137.40~~ 1136.90
SKEWED 36°

46.30
46.24
46.15

+50

17

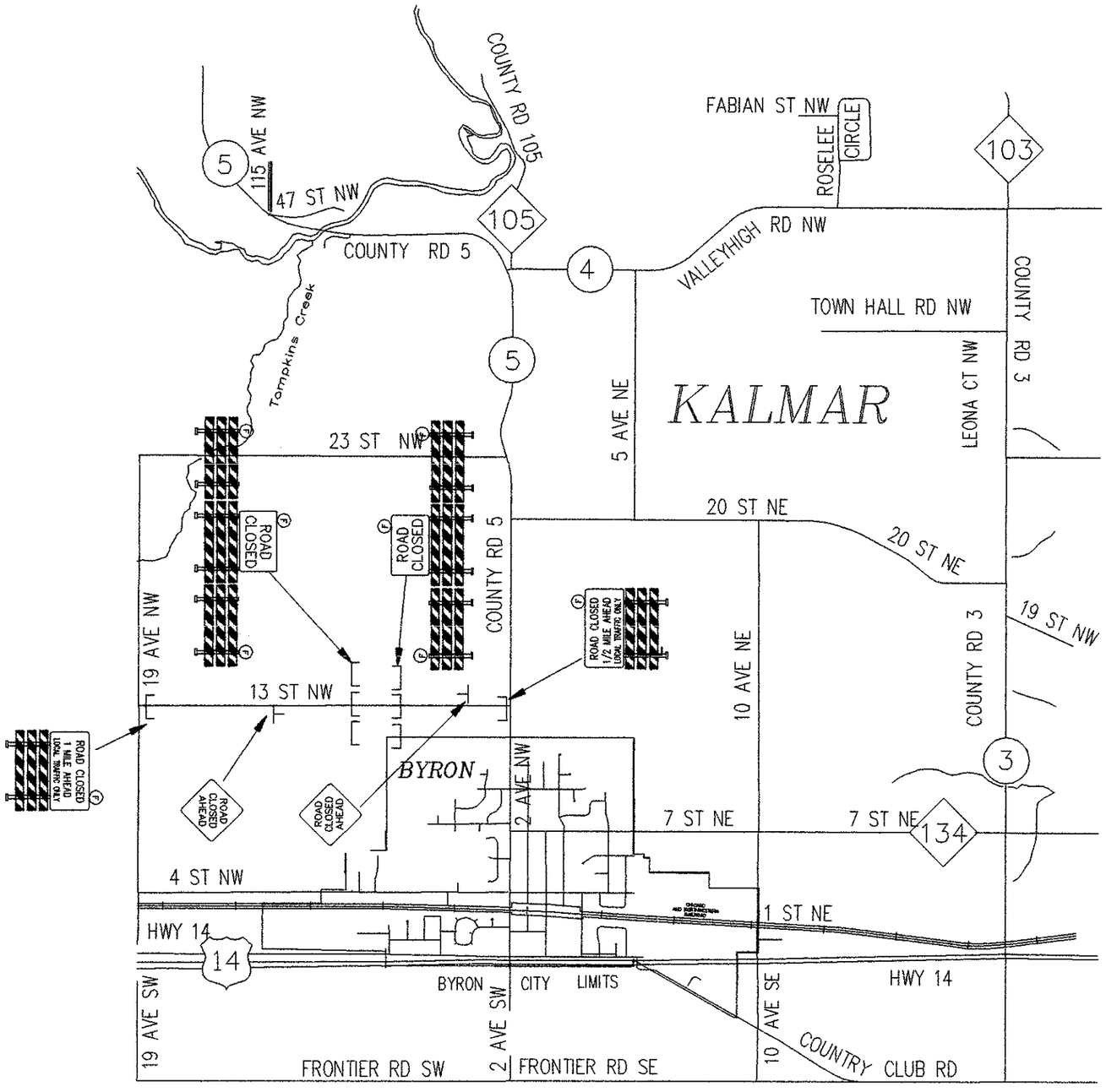
AS-BUILT

MAR 12 2001

ENGINEERING

CERTIFIED BY Karl M Brenner PROFESSIONAL ENGINEER REG. NO. 19917 11/9 1999

S.A.P. 55-599-73 Kalmar TWP



ESTIMATE OF TRAFFIC CONTROL DEVICES

DEVICE	NUMBER	SIZE	COLOR	QUANTITY	DEVICE	NUMBER	SIZE	COLOR	QUANTITY
ROAD CLOSED	R11-2	48 x 30	BLK/WH	2		TYPE III	MIN. 6'	OR & WHT	8
ROAD CLOSED 1/2 MILE AHEAD LOCAL TRAFFIC ONLY	R11-3	60 x 30	BLK/WH	2	(F)	TYPE A	FLASHING LAMP	AMBER	8
ROAD CLOSED AHEAD	W20-3	48 x 48	BLK/OR	2					

N

TRAFFIC CONTROL LEGEND

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

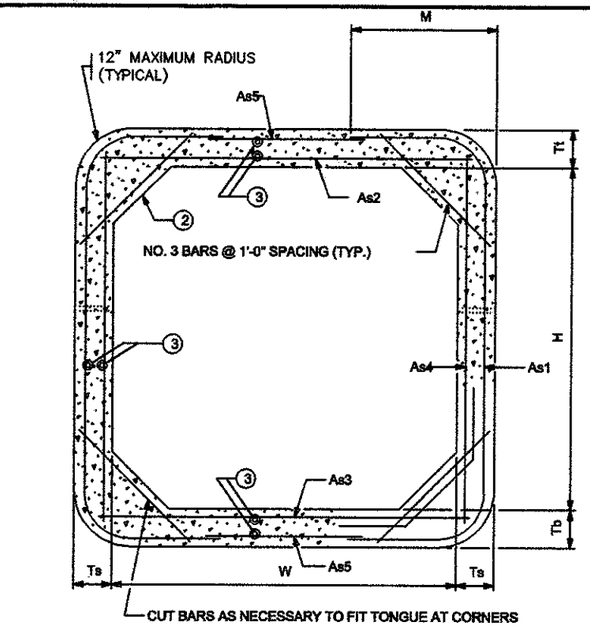
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ENGINEERING

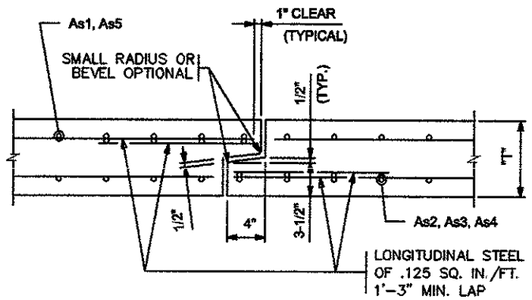
TRAFFIC CONTROL NOTES

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.

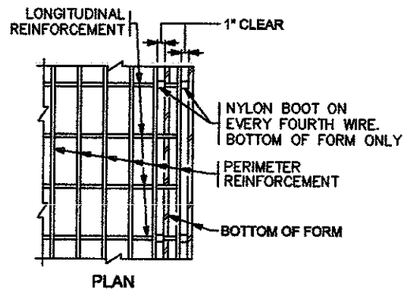


TRANSVERSE BARREL SECTION

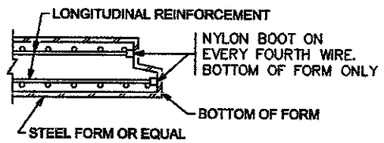
(BAR REINFORCEMENT OPTION SHOWN)



TONGUE AND GROOVE JOINT DETAIL

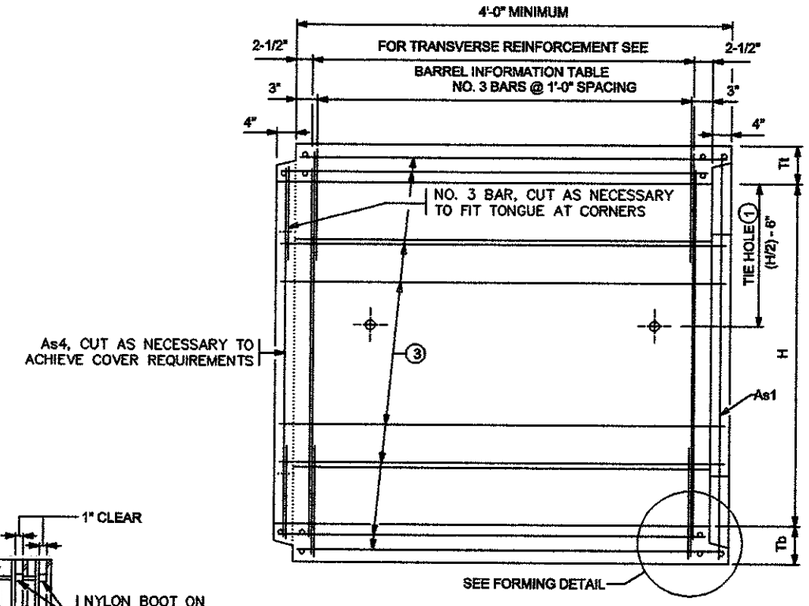


PLAN



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.

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.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		As1			As2		As3		As4		As5	
											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.)
16+20.50	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"
																				AS-BUILT	

MAR 1 2 2001

BY CREST PRECAST INC.

ENGINEERING

APPROVED: AUGUST 10, 1995
Donald J. Flemming
STATE BRIDGE ENGINEER

CERTIFIED BY Kaye M Bierwirth PROFESSIONAL ENGINEER
REG. NO. 19917 11/9 1999

S.A.P. 55-599-73 CL. STA. 16+20.50

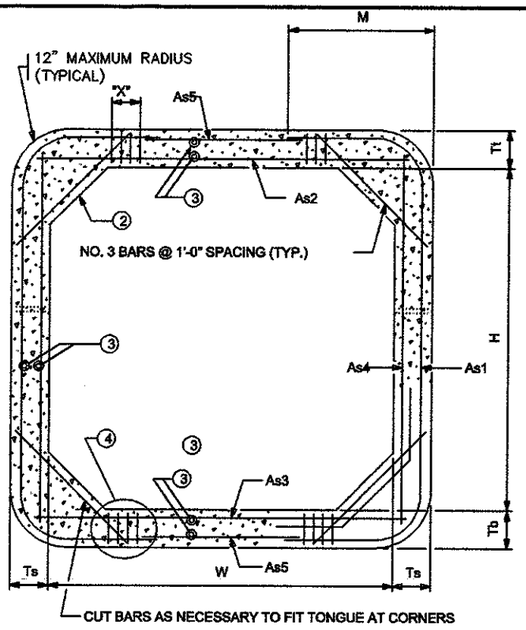
FIG. 5-395.101 (1 OF 2)

TITLE: BARREL DETAILS

DES: DR: APPROVED:
CHK: CHK:

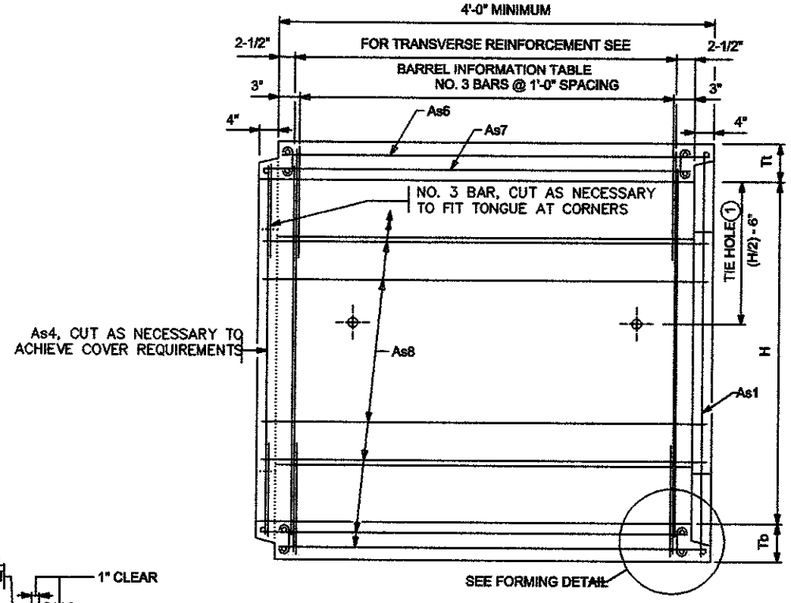
SHEET NO. 8 OF 11 SHEETS

BRIDGE NO. 55J25



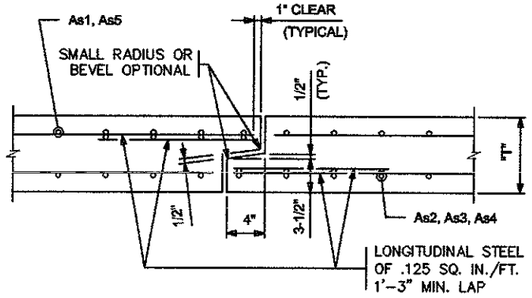
TRANSVERSE BARREL SECTION

(BAR REINFORCEMENT OPTION SHOWN)

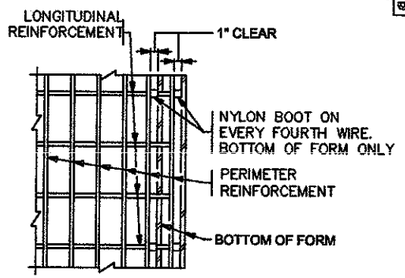


LONGITUDINAL BARREL SECTION

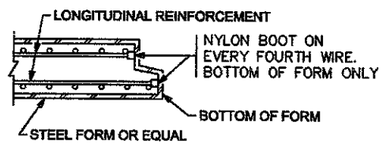
(BAR REINFORCEMENT OPTION SHOWN)



TONGUE AND GROOVE JOINT DETAIL

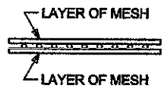


PLAN



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 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.)
																								AS-BUILT		

MAR 12 2001

ENGINEERING

APPROVED: AUGUST 10, 1995

Darrell L. Manning

STATE BRIDGE ENGINEER

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REG. NO. 19917 11/9 1999

S.A.P. 55-599-73 CL. STA. 16+20.50

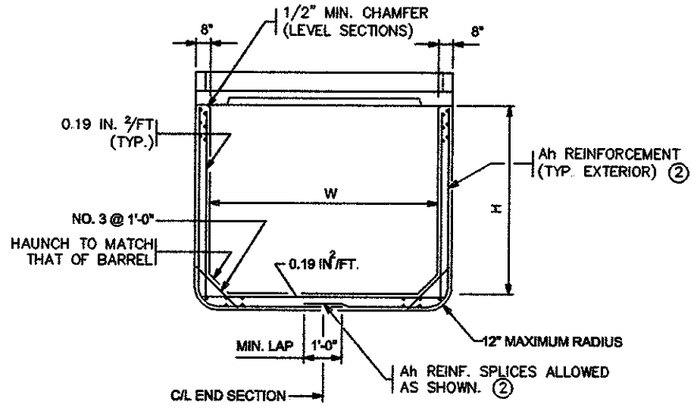
FIG. 5-395.101 (2 OF 2)

TITLE: BARREL DETAILS (SPECIAL DESIGNS)

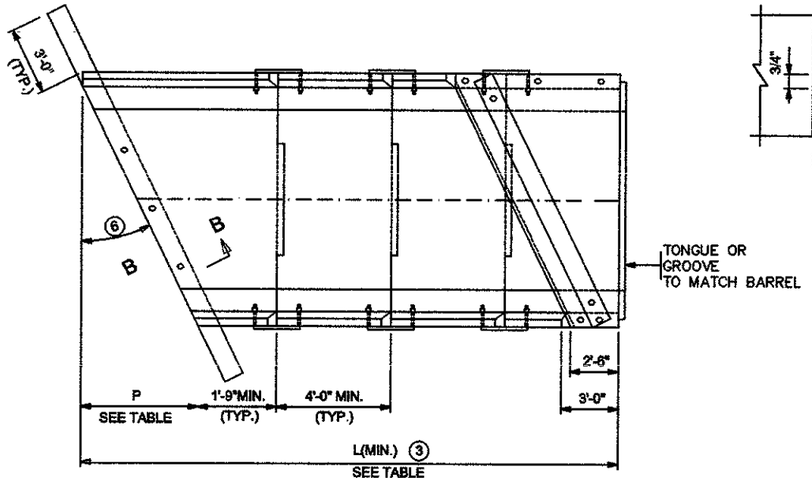
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CHK:	CHK:	

SHEET NO. 9 OF 11 SHEETS

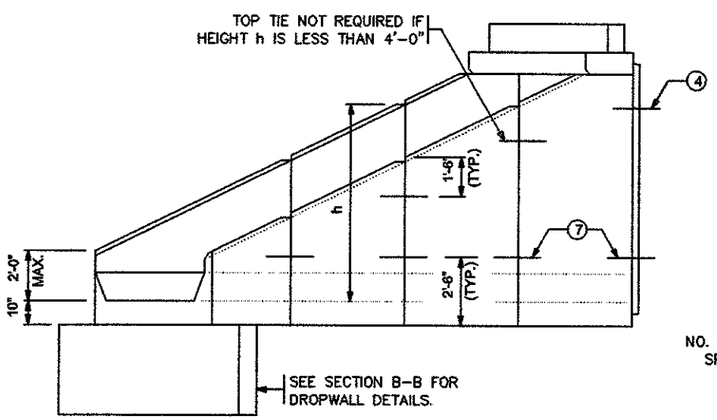
BRIDGE NO. 55J25



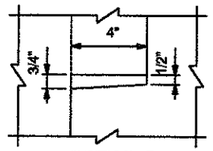
END VIEW



PLAN VIEW
SINGLE BARREL OPTION



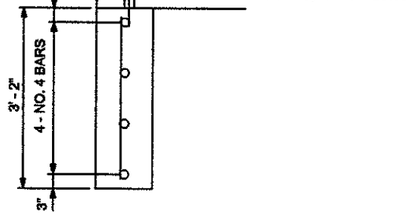
ELEVATION



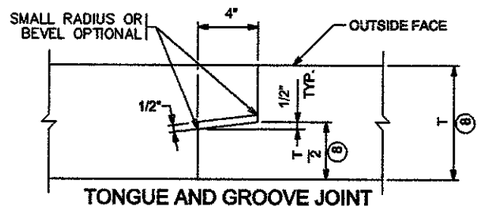
DETAIL B
(PLAN VIEW)

PLAN VIEW
MULTI-BARREL OPTION

DETAIL C

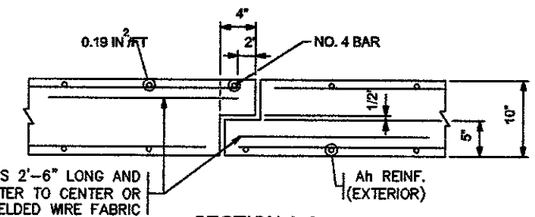


SECTION B-B

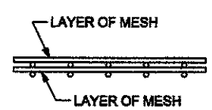


TONGUE AND GROOVE JOINT

MAKE DIMENSION OF TONGUE OR GROOVE
ON ADJACENT PRECAST BARREL SECTIONS
SO INSIDE WALLS ARE FLUSH.



SECTION A-A



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

NOTES:

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

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

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

DROPWALL CONCRETE SHALL BE MIX 1A43 OR 3Y43. LIMITS FOR DROPWALL EXCAVATION TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS.

LONGITUDINAL REINFORCEMENT SHALL BE A MINIMUM OF 0.06 SQ. IN. PER FT. ON BOTH FACES.

NO TONGUE OR GROOVE REQUIRED IN WALLS BETWEEN END SECTIONS.

SEE FIG. 5-395.115 FOR EMBANKMENT PROTECTION.

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 8-1/8" @ 15°: 10-5/8" @ 30°: 1' 2" @ 45°

② SEE FIG.5-395.101 (2 OF 2) FOR REINFORCEMENT TABLES.

③ NUMBER OF SECTIONS VARIES WITH "H" DIMENSION.

④ EXCEPT AS NOTED, CULVERT TIES ARE TO BE 1" DIA RODS. SEE STANDARD PLATE NO. 3145 FOR DETAILS.

⑤ 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 & GROOVE ON C/L OF EACH APRON JOINT.

⑥ FOR SKEW ANGLES OVER 7-1/2° UP TO 22-1/2° ,USE A 15° SKEW END SECTION. FOR SKEW ANGLES OVER 22-1/2° UP TO 37-1/2° ,USE A 30° SKEW END SECTION. FOR SKEW ANGLES OVER 37-1/2° UP TO 45°, USE A 45° SKEW END SECTION.

⑦ PROVIDE EXTRA STRONG TIE @ BOTTOM CONNECTION BETWEEN BARREL & 1st APRON SEGMENT, AND 1st & 2nd APRON SEGMENTS; ONLY REQUIRED ON HIGH FILL SIDE FOR 45° SKEW END SECTIONS OVER 6'-0" HIGH. SEE FIG. 5-395.110 (2 OF 2) FOR DETAILS.

⑧ DIMENSION T IS EQUAL TO Tt, Tb OR Ts.

⑨ PROVIDE 2'-0" MIN. BETWEEN SEGMENTS.

LENGTH L			
HEIGHT H (FT.)	15° SKEW	30° SKEW	45° SKEW
4	7'-6"	8'-6"	9'-0"
5	10'-0"	11'-0"	12'-0"
6	12'-0"	13'-6"	14'-6"
7	14'-0"	16'-0"	17'-6"
8	16'-0"	18'-0"	20'-6"
9	18'-6"	20'-6"	23'-6"
10	20'-6"	23'-0"	26'-0"
11	22'-6"	25'-6"	29'-0"
12	25'-0"	28'-0"	31'-6"

LENGTH P			
WIDTH W (FT.)	15° SKEW	30° SKEW	45° SKEW
6	1'-9 3/8"	3'-10 1/4"	6'-8"
8	2'-3 7/8"	5'-0"	8'-8"
10	2'-10 1/4"	6'-1 7/8"	10'-8"
12	3'-4 3/4"	7'-3 3/4"	12'-8"

AS-BUILT

MAR 12 2001

ENGINEERING

APPROVED: AUGUST 10, 1995

STATE BRIDGE ENGINEER

CERTIFIED BY Kayle M Bieniek PROFESSIONAL ENGINEER

REG. NO. 19917 11/9 19 99

S.A.P. 55-599-73 CL. STA. 16+20.50 | FIG. 5-395.110 (1 OF 2)

TITLE: PRECAST CONCRETE END SECTION TYPE III – SINGLE OR MULTI-BARREL FOR SKEWS 7 1/2°TO 45°

DES: | DR: | APPROVED:

CHK: | CHK:

SHEET NO. 10 OF 11 SHEETS

BRIDGE NO. 55J25

Ah REINFORCEMENT TABLE		
HEIGHT h (FT.)	Ah (IN^2/FT.)	
	15° & 30° SKEW	45° SKEW
7 OR LESS	0.192	0.192
8	0.20	0.24
9	0.29	0.36
10	0.42	0.53
11	0.60	0.75
12	0.78	0.98

NOTE: h IS THE LARGEST VERTICAL DIMENSION OF THE SEGMENT.

LINTEL BEAM REINFORCEMENT TABLE		
WIDTH W	BOTTOM REINFORCEMENT	
	A1	A2
6'	NO. 4 @ 1'-6"	NO. 4 @ 1'-4"
8'	NO. 4 @ 1'-1"	NO. 4 @ 9"
10'	NO. 4 @ 9"	NO. 4 @ 6"
12'	NO. 5 @ 9"	NO. 5 @ 6"

LENGTH N			
WIDTH W (FT.)	15° SKEW	30° SKEW	45° SKEW
6	4'-3 3/8"	6'-4 1/4"	9'-2"
8	4'-9 7/8"	7'-6"	11'-2"
10	5'-4 1/4"	8'-7 7/8"	13'-2"
12	5'-10 3/4"	9'-9 3/4"	15'-2"

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"

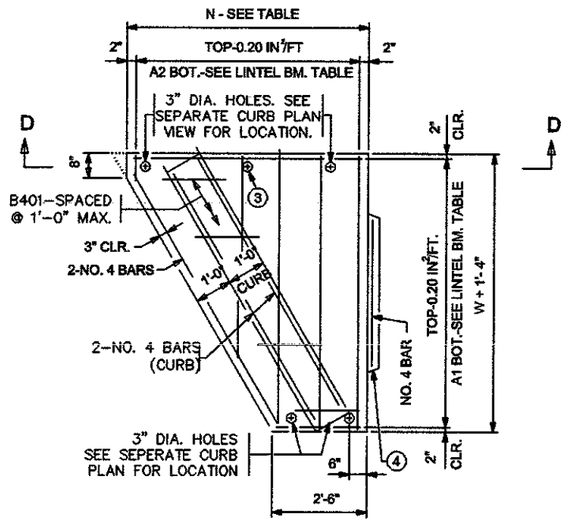
STRUCTURAL STEEL PER SPEC. 3306.

WELDING PER SPEC. 2471

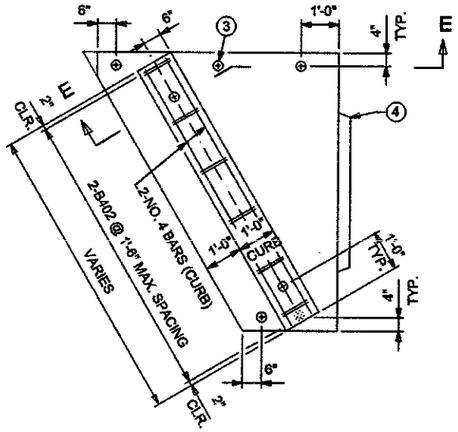
GALVANIZE STRUCTURAL STEEL PER SPEC. 3394.

GALVANIZE BOLTS, NUTS AND WASHERS PER SPEC. 3392.

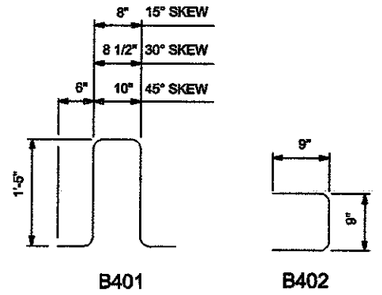
1. NO. 8 DOWEL, 1'-0" LONG, 2" DIA. HOLE IN THE TOP OF THE WALL SECTION AND 3" DIA. HOLE IN THE LINTEL BEAM. FILL HOLE WITH GROUT.
2. NO. 8 DOWEL, 1'-0" LONG, 2" DIA. HOLE IN THE TOP OF THE LINTEL BEAM AND 3" DIA. HOLE IN THE CURB. FILL HOLE WITH GROUT.
3. CAST AN ADDITIONAL 3" HOLE AT MIDPOINT OF BEAM WHEN SIDE OF LINTEL BEAM IS OVER 6 FT.
4. CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT CULVERT RADIUS.
5. FOR SKEW LENGTH UNDER 10' USE NO. 8 BARS. FOR SKEW LENGTH OF 10' TO 14' USE NO. 9 BARS. FOR SKEW LENGTH OVER 14' TO 18' USE NO. 10 BARS. FOR SKEW LENGTH OVER 18' TO 20' USE NO. 11 BARS, OR EQUAL. SKEW LENGTH IS DISTANCE ALONG LINTEL BEAM.

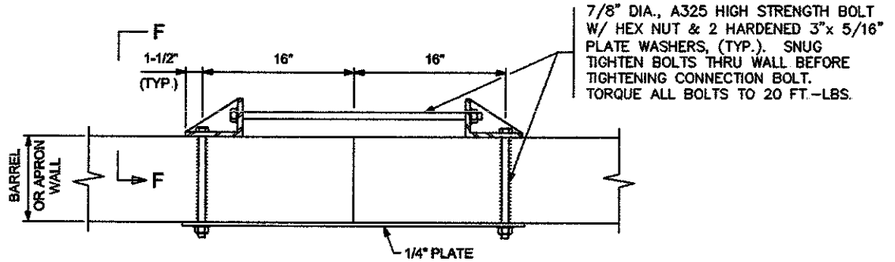


PLAN VIEW
(LINTEL BEAM WITH INTEGRAL CURB)

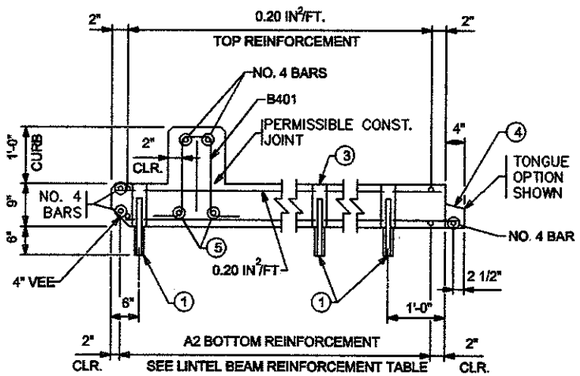


PLAN VIEW
(LINTEL BEAM WITH SEPARATE CURB)
SOME REINFORCEMENT NOT SHOWN

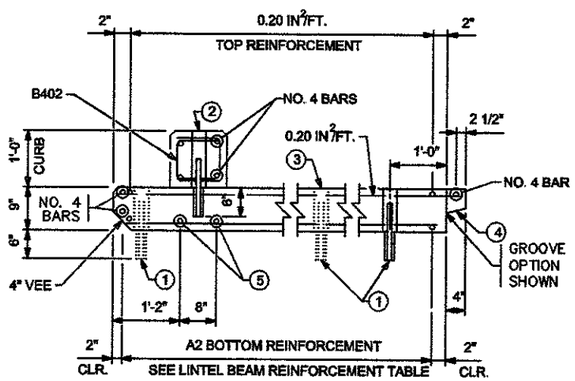




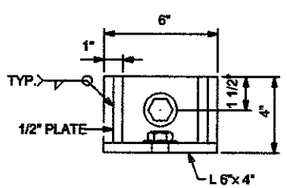
PLAN VIEW



SECTION D-D



SECTION E-E



SECTION F-F

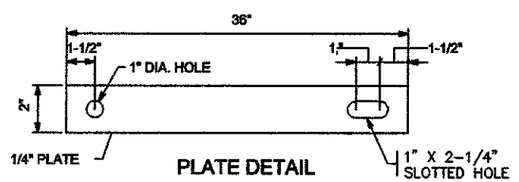


PLATE DETAIL

AS-BUILT

MAR 12 2001

ENGINEERING

EXTRA STRONG CONNECTION DETAILS

APPROVED: AUGUST 10, 1995
STATE BRIDGE ENGINEER

CERTIFIED BY Kaye M Briesick PROFESSIONAL ENGINEER
REG. NO. 19917 11/9 1999

S.A.P. 55-599-73 CL. STA. 16+20.50 | FIG. 5-395.110 (2 OF 2)

TITLE: PRECAST CONCRETE END SECTION TYPE III – SINGLE OR MULTI-BARREL FOR SKEWS 7 1/2° TO 45°

DES:	DR:	APPROVED:
CHK:	CHK:	

SHEET NO. 11 OF 11 SHEETS

BRIDGE NO. 55J25