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

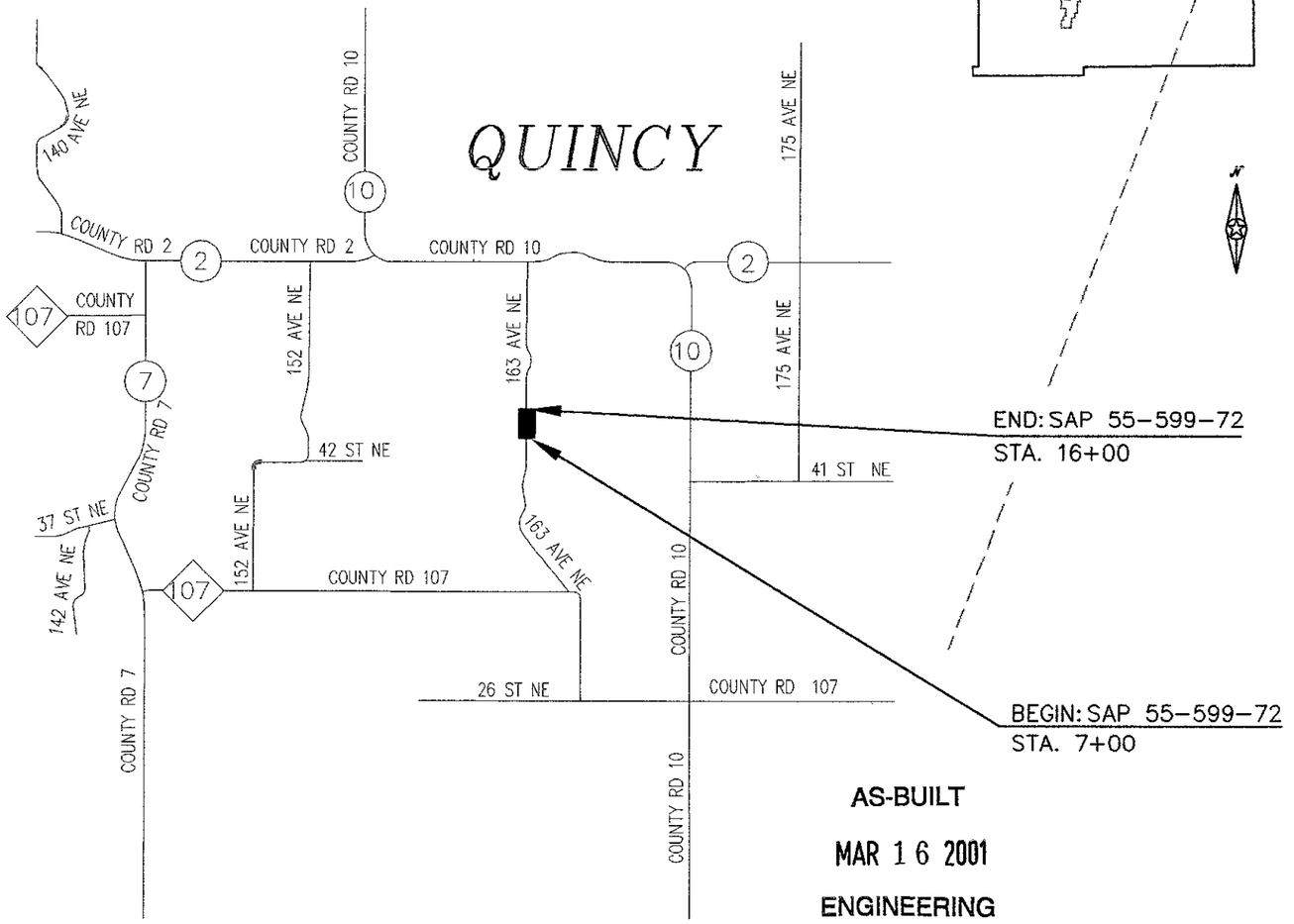
THE COUNTY OF OLMSTED

CONSTRUCTION PLAN FOR GRADING & PRECAST CONC. BOX (BRIDGE NO. 55J24)

LOCATED ON 163 AVE. N.E. BETWEEN CR. 107 AND C.S.A.H. 10 (GEOGRAPHIC DESCRIPTION)

FROM 16, 17, 20 & 21 T 107 N – R 11 W (APPROX. 0.3 MILES NE of SEC. COR.) TO COR. 16 & 17 T 107 N – R 11 W (APPROX. 0.4 MILES SE of 1/4) (LEGAL DESCRIPTION)

S.A.P. NO.	55-599-72			
GROSS LENGTH	900.00	FEET	0.170	MILES
BRIDGE-LENGTH	0.00	FEET	0.000	MILES
EXCEPTIONS-LENGTH	0.00	FEET	0.000	MILES
NET LENGTH	900.00	FEET	0.170	MILES



AS-BUILT

MAR 1 6 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	BARREL DETAILS (SPECIAL DESIGN)
SHEET NO. 9-12	PRECAST CONC. END SECTION DETAILS & END TREATMENT

THIS PLAN CONTAINS 11 SHEETS.

DESIGN DESIGNATION: S.A.P. 55-599-72

R = ΣN18(20)
ADT (Current Year) = <50 (1999) Design Speed 55 MPH
ADT (Future Year) = <50 (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 11 FT.
SHOULDER WIDTH 1 FT.
SOIL FACTOR = 130%

TOWNSHIP APPROVAL:

John Muelle 11-17-99
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 Bierneck
APPROVED: COUNTY DESIGN ENGINEER

DESIGN SQUAD: Cummings/Holmes

DATE 11/15/99 REGISTRATION NUMBER 10397

Michael Sheehan
APPROVED: OLMSTED COUNTY ENGINEER

STATE AID APPROVALS:

Cindy Schmidt DATE: 12-9-99
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE-AID RULES/POLICY

TB DATE: 2/14/00
APPROVED FOR STATE AID FUNDING:
STATE AID ENGINEER

S.A.P. NO. 55-599-72 QUINCY TWP. SHEET NO. 1 OF 12 SHEETS

ESTIMATED QUANTITIES

	SPECIFICATION NO.	ITEM	UNIT	NON PARTICIPATING	PARTICIPATING	TOTAL ESTIMATED QUANTITIES
	2101.502	CLEARING	TREE	5		5
	2101.507	GRUBBING	TREE	5		5
①	2105.515	UNCLASSIFIED EXCAVATION	CU. YDS.	413		(P) 413
	2105.523	COMMON BORROW (CV)	CU. YDS.	1700		(P) 1700
②	2123.509	DOZER	HOUR	4		4
	2412.511	14' x 5' PRECAST CONCRETE BOX CULVERT	LIN. FT.		38	38
③	2412.512	14' x 5' 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.		44	(P) 44
④	2511.501	RANDOM RIPRAP CL. III	CU. YDS.		55	55

QUANTITY NOTES:

① UNCLASSIFIED EXCAVATION INCLUDES SUBGRADE TREATMENT AS SHOWN IN TYPICAL SECTION AND CROSS SECTIONS. 296 CU YDS. OF EXCAVATION TO BE USED AS SALVAGED TOPSOIL.

② DOZER HOURS ARE FOR SHAPING CHANNEL AREA AROUND INLET TO MATCH INPLACE WATERWAY.

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

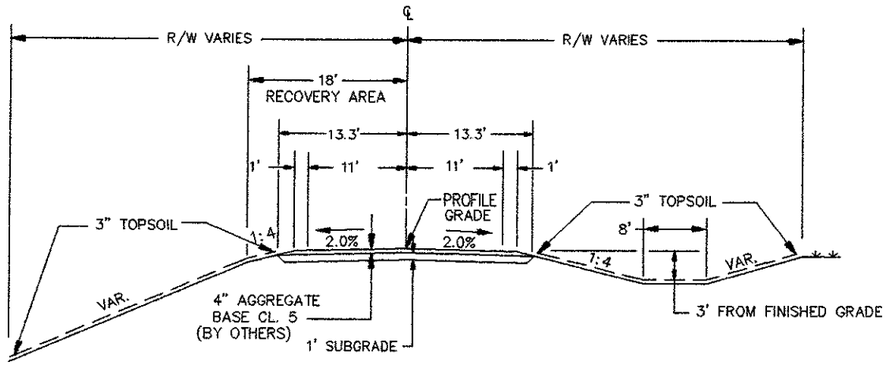
STANDARD PLATES

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

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

TYPICAL SECTION

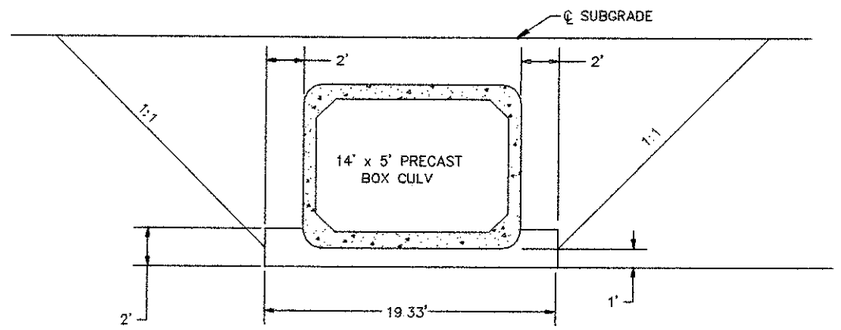
STA. 7+00 TO 16+00



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

BEDDING DETAIL

STA. 11+80



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 16 2001

ENGINEERING

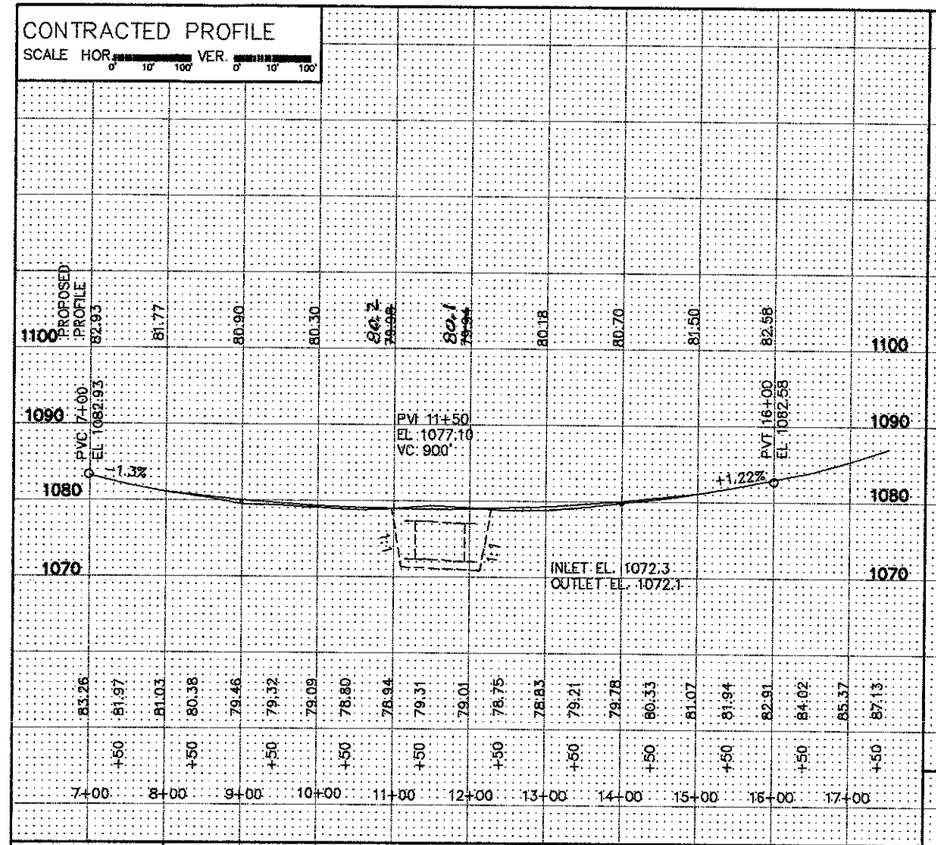
CERTIFIED BY Kevin M Bremer PROFESSIONAL ENGINEER REG. NO 19917 12/8 1999

S.A.P. 55-599-72 QUINCY TWP.

SHEET 2 OF 12 SHEETS

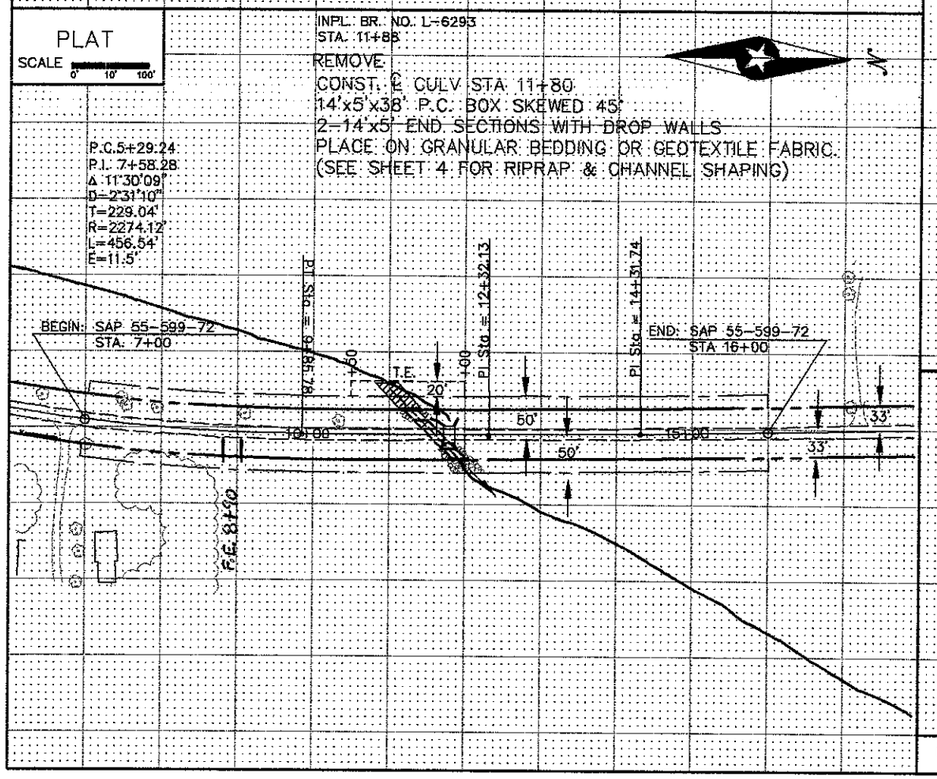
CONTRACTED PROFILE

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



PLAT

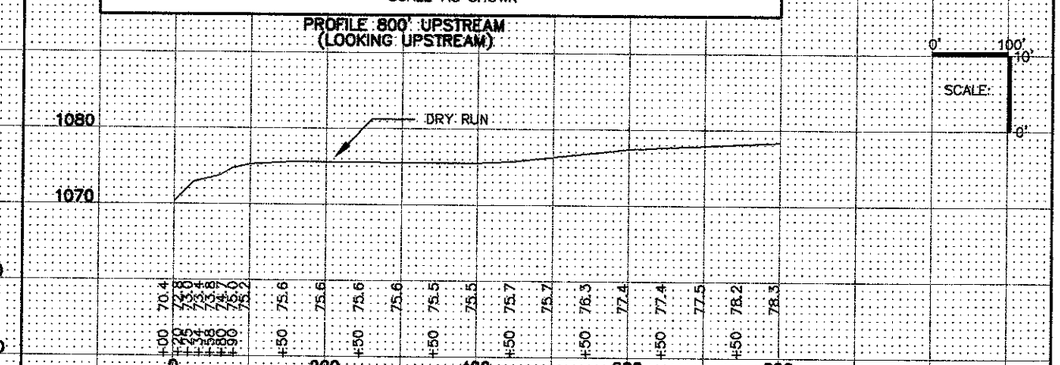
SCALE 0' 10' 100'



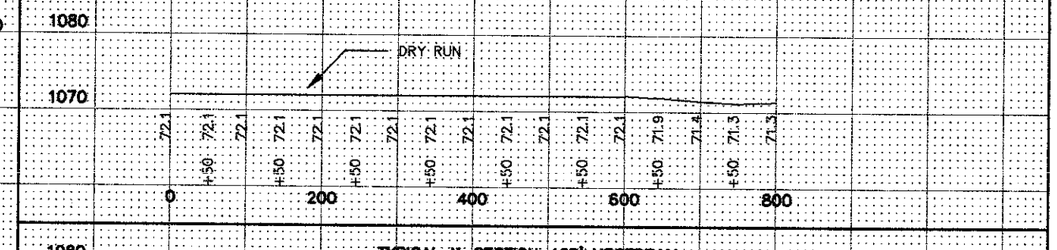
TYPICAL SECTIONS & PERTINENT DATA

SCALE AS SHOWN

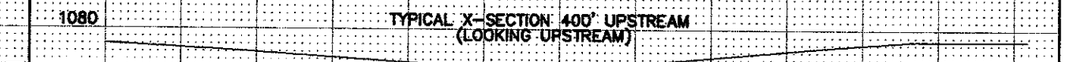
PROFILE 800' UPSTREAM (LOOKING UPSTREAM)



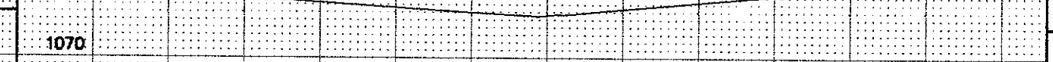
PROFILE 500' DOWNSTREAM (LOOKING DOWNSTREAM)

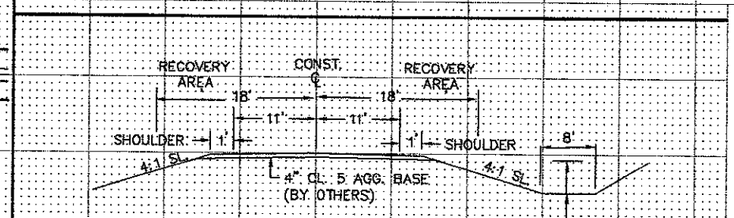


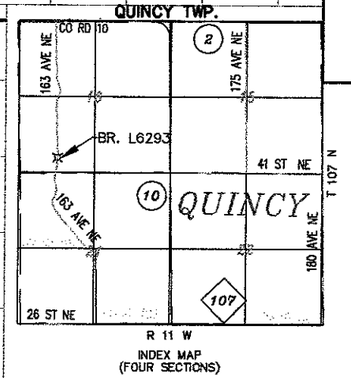
TYPICAL X-SECTION 400' UPSTREAM (LOOKING UPSTREAM)



TYPICAL X-SECTION 300' DOWNSTREAM (LOOKING DOWNSTREAM)









CERTIFIED BY Kayer M Brenth PROFESSIONAL ENGINEER REG NO 19917 12/2 1999

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 .....

Stream or ditch designation DRY RUN

Drainage area 2.1 SQ.MI.

Max. flood on record UNK. Design flood (50± yr. freq.) 555 C.F.S.

Max. observed highwater elevation UNK. Design highwater elevation 1078.87

Design mean velocity through structure 8.2 F.P.S.

Low superstructure at or above elevation .....

Flowline ..... 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 595 C.F.S. at stage 1.6 and mean velocity of 8.4 F.P.S. with 1079.3 Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of National Resources.

FOUNDATION ENGINEERS RECOMMENDATION

DATE .....

AS-BUILT

MAR 16 2001

ENGINEERING

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

Bench mark elevation 1077.63 (M.S.L. 1929 Adj.)

Location: SQ.PIPE W/CAP 10' E. & 163rd AVE. & 79' S. OF CENTER BRIDGE L-6293

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 0.8 S. OF CSAH 10 ON TWP.RD. 271 (T.H., C.S.A.H., C.R. etc.)

PROPOSED BRIDGE LOCATED 0.8 MILES SOUTH OF JCT. CSAH 10

SEC. 16 TWP. 107 N R 11 W

TOWNSHIP QUINCY COUNTY OLMSTED

BRIDGE NO. L6293

SAP 55-599-72 QUINCY TWP

T.E.

T.E.

T.E.

+50

SHAPING WATERWAY AT INLET
(DOZER HRS.)

20' T.E.

14'x5'BOX CULV. AT STA.11+80
SKEWED 45°

T.E.

+00

N

0' 10'
10'
SCALE:
0'

RIPRAP AT INLET
5 CU. YDS.

3'

3'

50' R/W

11+00

11+80

12+00

13+00

45°

3'

RIPRAP AT OUTLET
50 CU. YDS.

50' R/W

RIPRAP

SHAPING

3'

44'

44'

22'

PROPOSED PROFILE

79.98

79.94

80.18

PROPOSED PROFILE

1080

1070

1060

1050

4:1 SLOPE

INLET EL. ~~1072.3~~ 1072.8
GRANULAR BEDDING

4:1 SLOPE

OUTLET EL. ~~1072.1~~ 1072.6

AS-BUILT

MAR 16 2001

ENGINEERING

0' 10'
10'
SCALE:
0'

1080

1070

1060

1050

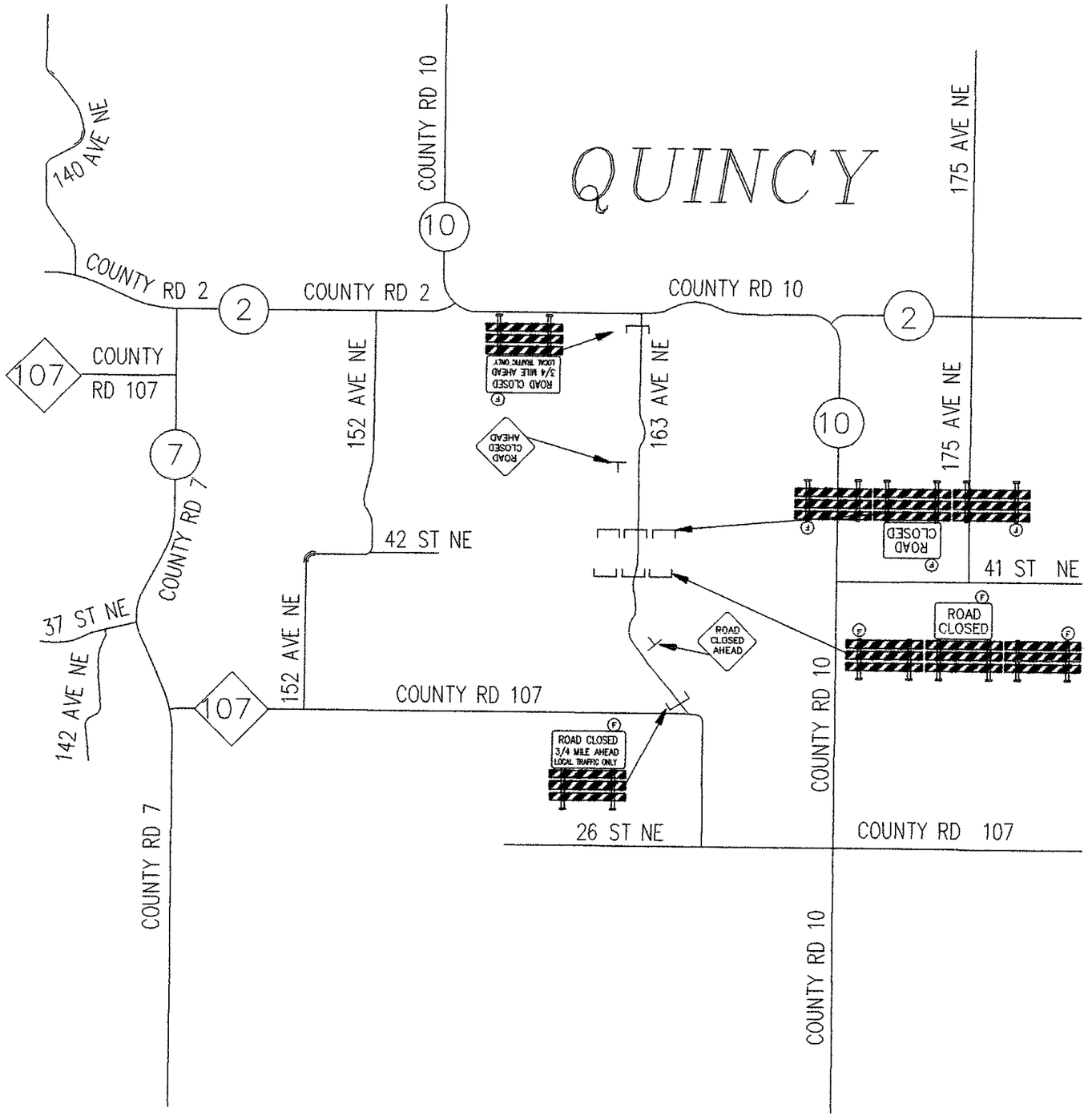
11+00

12+00

13+00

CERTIFIED BY Kaye M Brenneke PROFESSIONAL ENGINEER REG. NO. 19917 11/3 1999

SAP 55-599-72 QUINCY TWP Sheet 4 of 12 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		TYPE III	MIN. 6'	OR & WHT	8
ROAD CLOSED 3/4 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

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

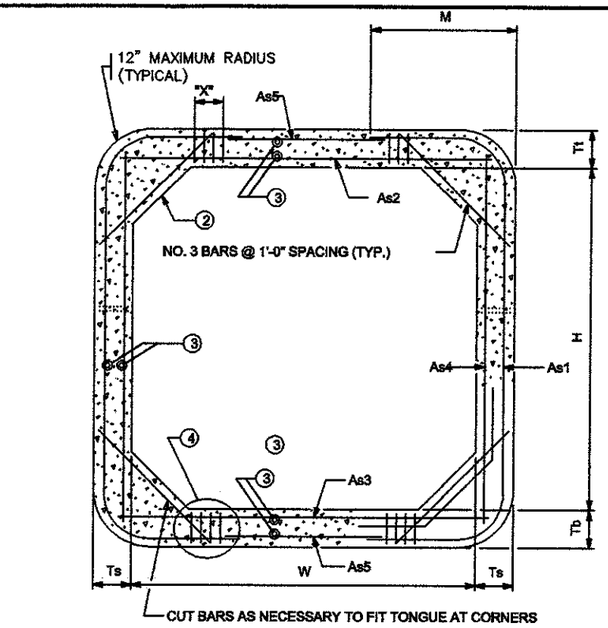
MAR 16 2001

ENGINEERING

CERTIFIED BY Kaye M Bruneck PROFESSIONAL ENGINEER REG. NO. 19917 11/2 1999

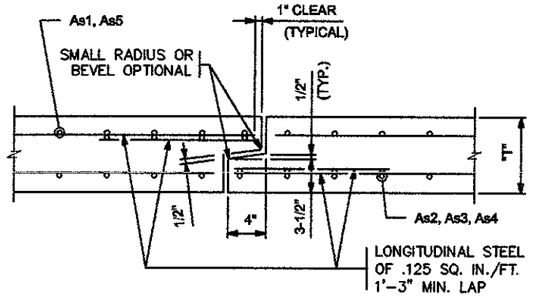
S.A.P. 55-599-72 QUINCY TWP.

SHEET 7 OF 12 SHEETS

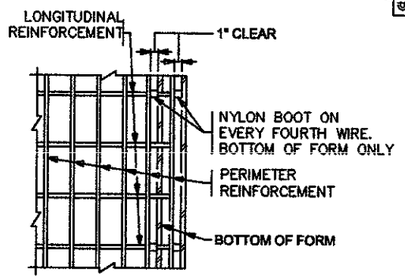


TRANSVERSE BARREL SECTION

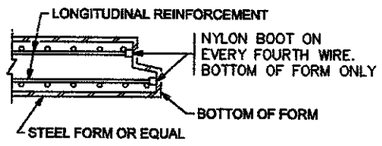
(BAR REINFORCEMENT OPTION SHOWN)



TONGUE AND GROOVE JOINT DETAIL

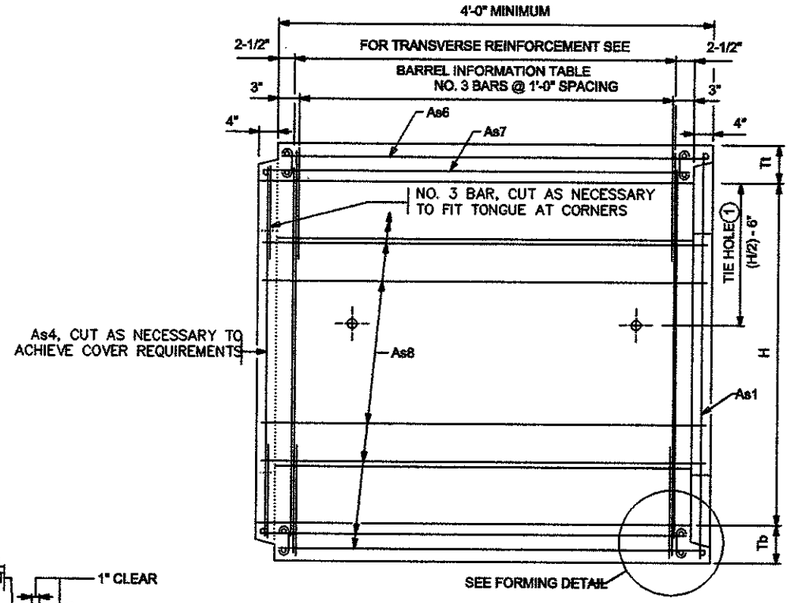


PLAN



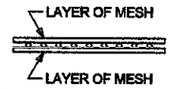
SECTION

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 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.

NOTE: SHOP DRAWING APPROVAL IS REQUIRED.

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.)
11+80	14x5	5000	2 – 3	14	5	10	10	8	5100	0.81	13'–3"	4'–0"	1.17	14'–8"	0.74	14'–8"	0.20	5'–8"	0.06	9'–6"						

AS-BUILT
MAR 16 2001
ENGINEERING

APPROVED: AUGUST 10, 1995
STATE BRIDGE ENGINEER

CERTIFIED BY Kayle M Bierwirth PROFESSIONAL ENGINEER
REG. NO. 19917 11/2 1999

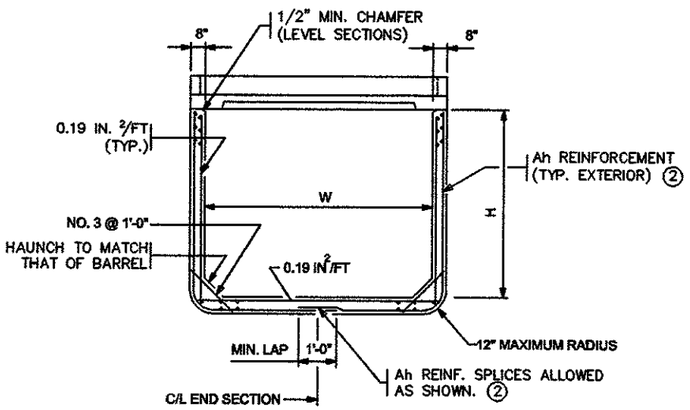
S.A.P. 55-599-72 | FIG. 5-395.101 (2 OF 2)

TITLE: BARREL DETAILS (SPECIAL DESIGNS)

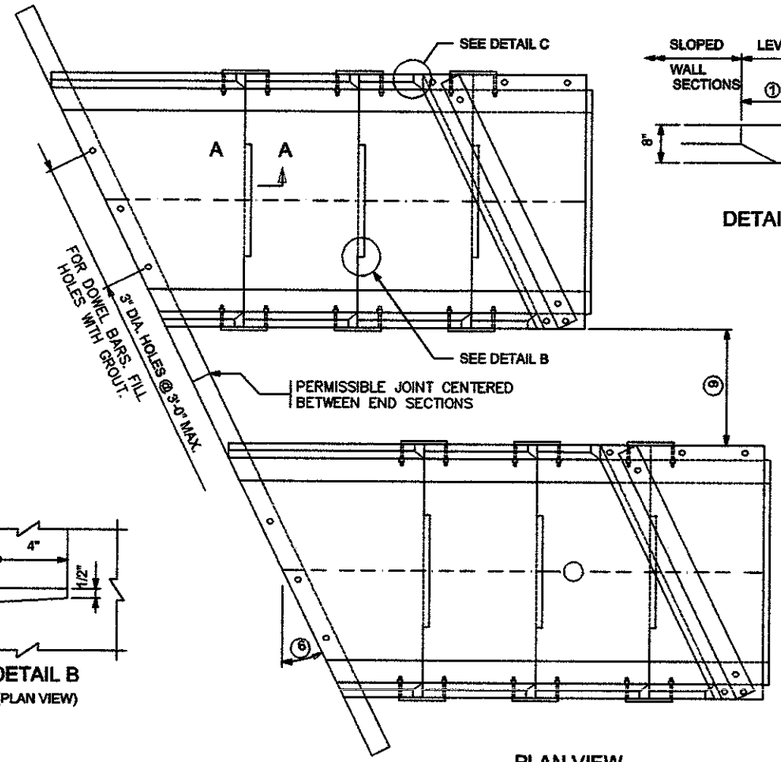
DES:	DR:	APPROVED:
CHK:	CHK:	

SHEET NO. 8 OF 16 SHEETS

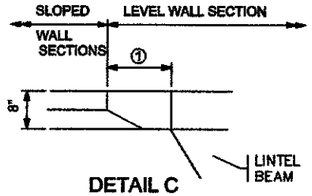
BRIDGE NO. 55J24



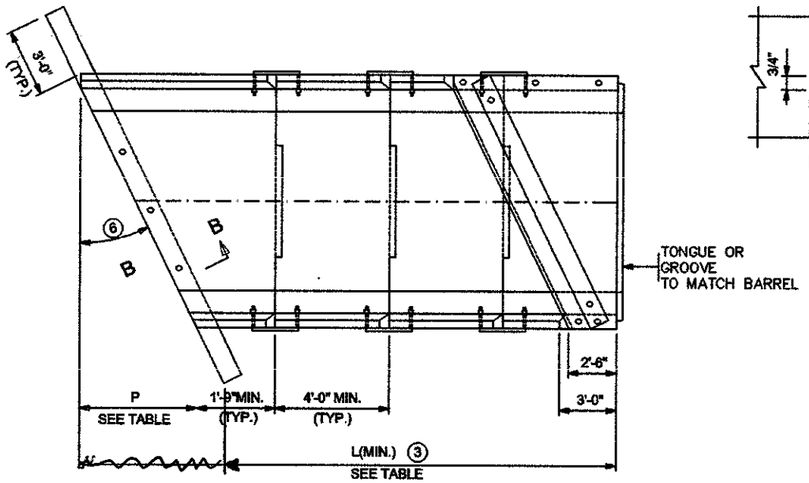
END VIEW



PLAN VIEW
MULTI-BARREL OPTION



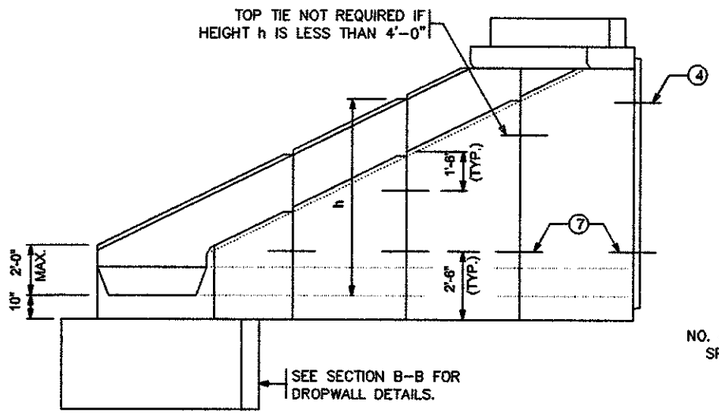
DETAIL C



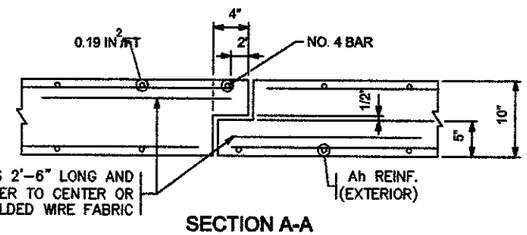
PLAN VIEW
SINGLE BARREL OPTION

DETAIL B
(PLAN VIEW)

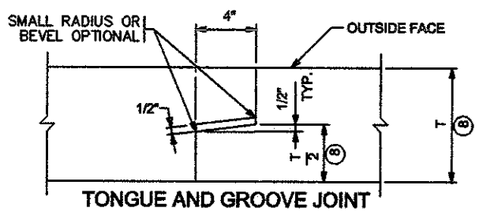
SECTION B-B



ELEVATION



SECTION A-A



TONGUE AND GROOVE JOINT

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



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"
* 14			14'-8"

AS-BUILT
MAR 16 2001
ENGINEERING

*(MODIFIED)

APPROVED: AUGUST 10, 1995
STATE BRIDGE ENGINEER

CERTIFIED BY Kaye M Barenek
PROFESSIONAL ENGINEER
REG. NO. 19917 11/9 19 99

S.A.P. 55-599-72 CL. STA. 11+80

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. 9 OF 11 SHEETS

BRIDGE NO. 55J24

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"
* 14'	NO. 5 @ 6"	NO. 5 @ 4"

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"
* 14			17'-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.

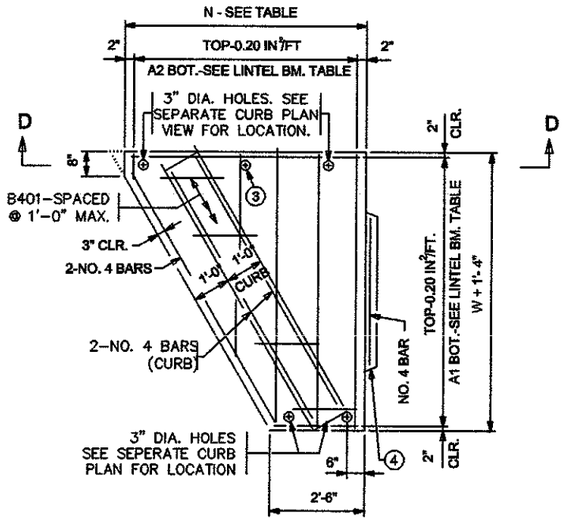
(1) NO. 8 DOWEL, 1'-0" LONG, 2" DIA. HOLE IN THE TOP OF THE WALL SECTION AND 3" DIA. HOLE IN THE LINTEL BEAM. FILL HOLE WITH GROUT.

(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.

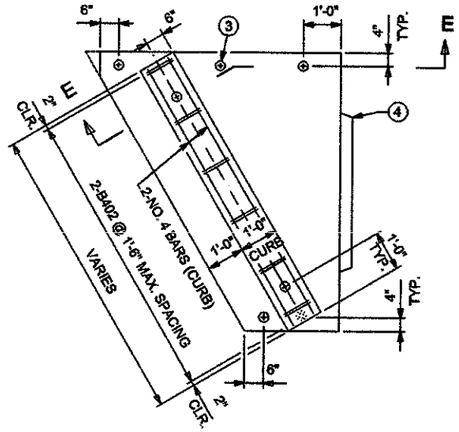
(3) CAST AN ADDITIONAL 3" HOLE AT MIDPOINT OF BEAM WHEN SIDE OF LINTEL BEAM IS OVER 6 FT.

(4) CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT CULVERT RADIUS.

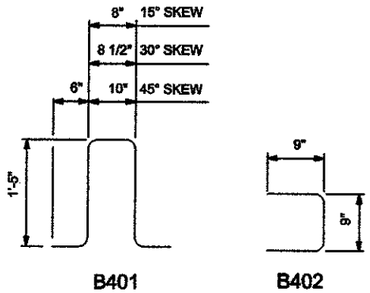
(5) FOR SKEW LENGTH UNDER 10' USE NO. 8 BARS. FOR SKEW LENGTH OF 10' TO 14' USE NO. 9 BARS. FOR SKEW LENGTH OVER 14' TO 18' USE NO. 10 BARS. FOR SKEW LENGTH OVER 18' TO 20' USE NO. 11 BARS, OR EQUAL. SKEW LENGTH IS DISTANCE ALONG LINTEL BEAM.

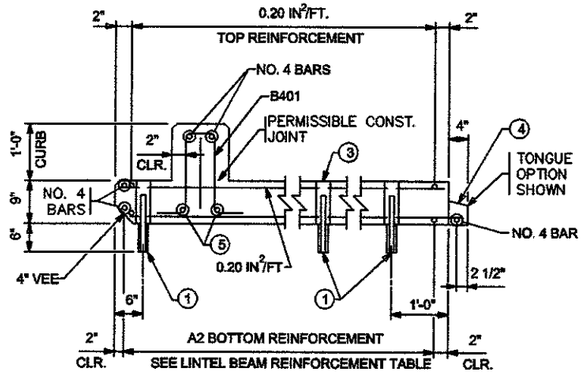


PLAN VIEW
(LINTEL BEAM WITH INTEGRAL CURB)

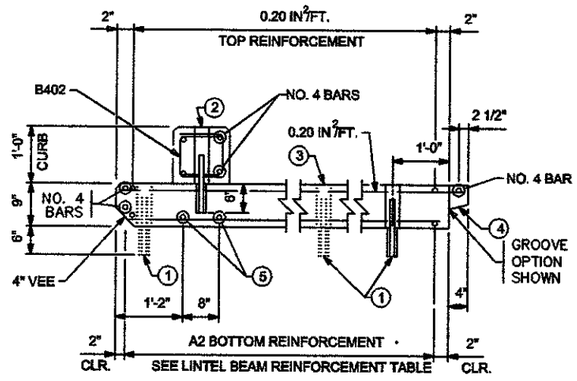


PLAN VIEW
(LINTEL BEAM WITH SEPARATE CURB)
SOME REINFORCEMENT NOT SHOWN

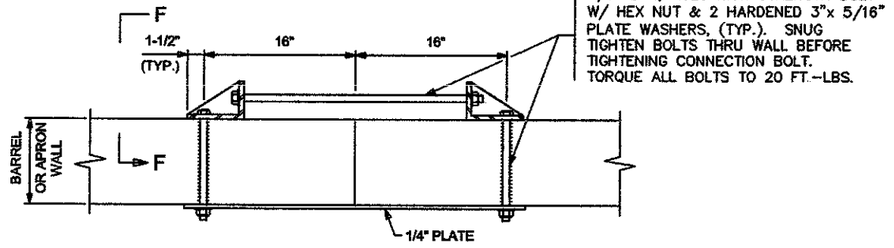




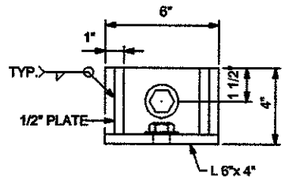
SECTION D-D



SECTION E-E



PLAN VIEW



SECTION F-F

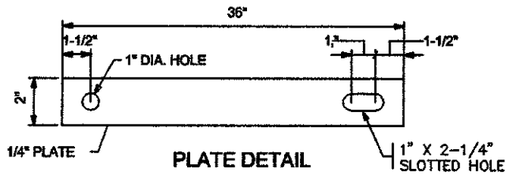


PLATE DETAIL

EXTRA STRONG CONNECTION DETAILS

*(MODIFIED)

AS-BUILT

MAR 16 2001

ENGINEERING

APPROVED: AUGUST 10, 1995
STATE BRIDGE ENGINEER

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

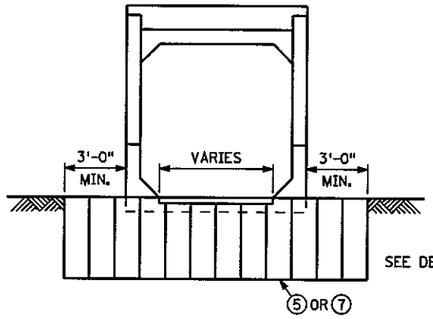
S.A.P. 55-599-72 CL. STA. 11+80 | FIG. 5-395.110 (2 OF 2)

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

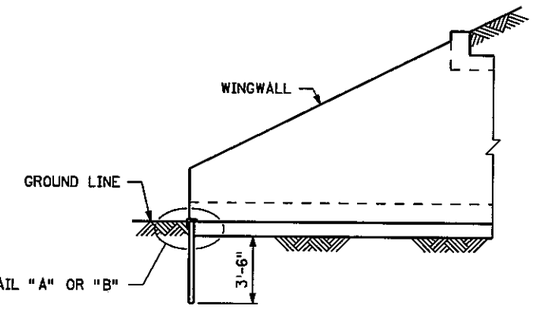
DES:	DR:	APPROVED:
CHK:	CHK:	

SHEET NO. 10 OF 14 SHEETS

BRIDGE NO. 55J24

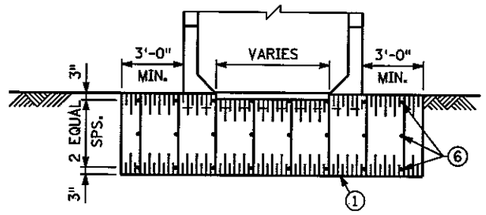


END VIEW

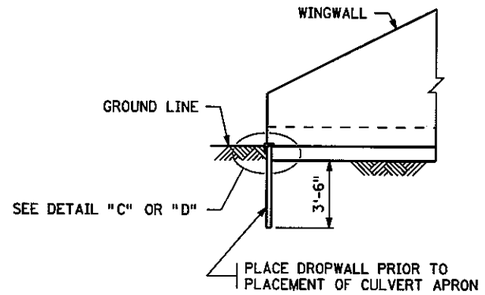


ELEVATION

ALTERNATES 1 & 2 (STEEL SHEET PILING)

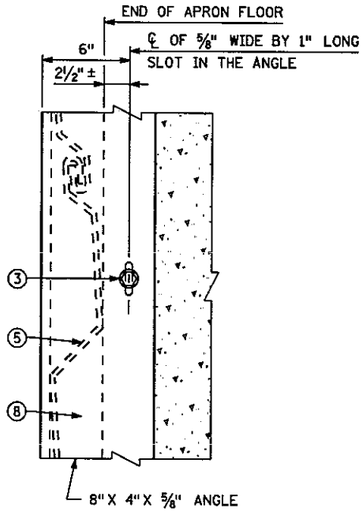


END VIEW

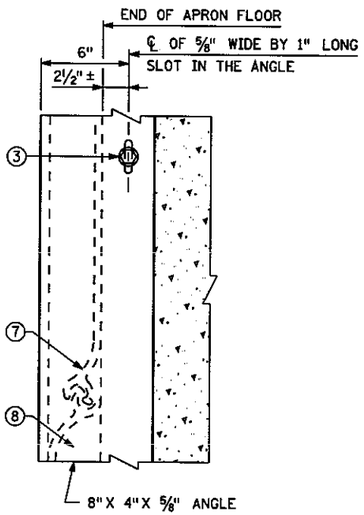


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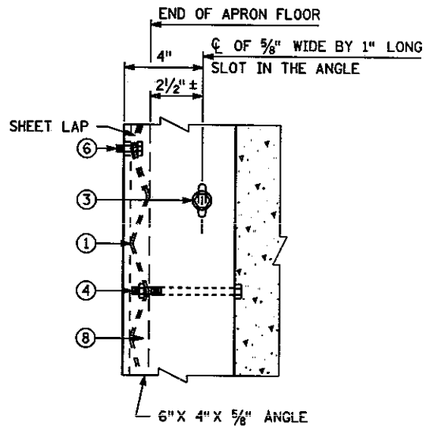
ALTERNATES 3 & 4 (GALVANIZED STEEL SHEETS)



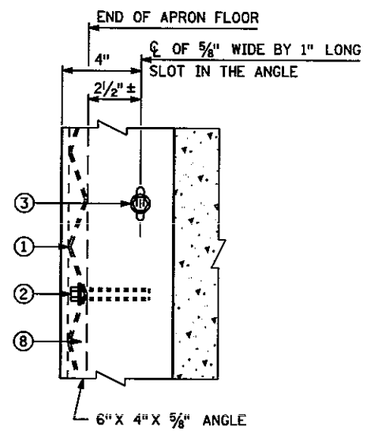
PLAN



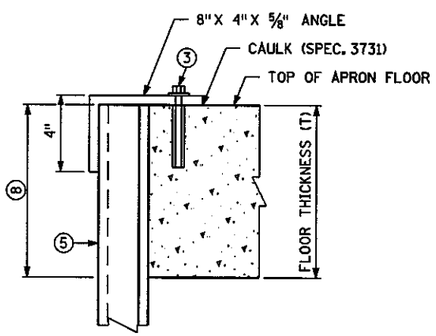
PLAN



PLAN

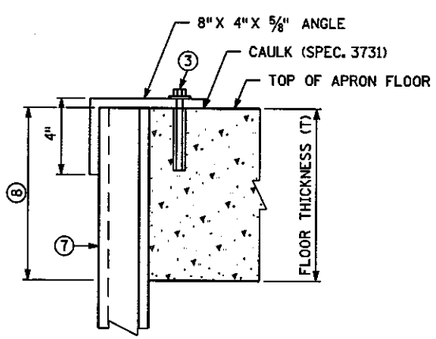


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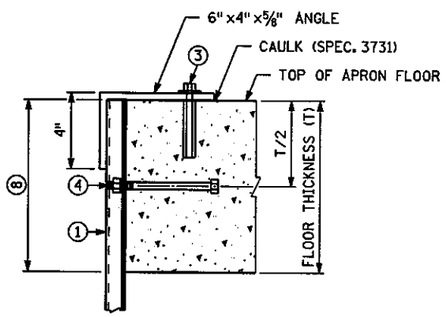
ELEVATION

DETAIL "A"
(STEEL SHEET PILING SHOWN)
ALTERNATE 1



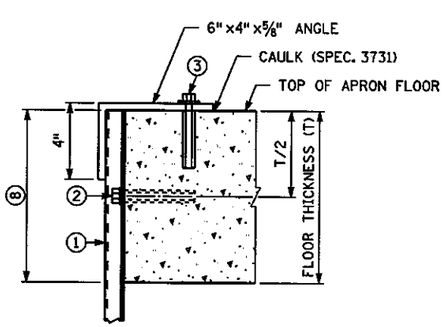
ELEVATION

DETAIL "B"
(STEEL SHEET PILING SHOWN)
ALTERNATE 2



ELEVATION

DETAIL "C"
ALTERNATE 3
(ON NEW CONSTRUCTION ONLY)



ELEVATION

DETAIL "D"
ALTERNATE 4
(ON NEW OR OLD CONSTRUCTION)

NOTES:

① 2½" x ½" OR 2⅔" x ½" CORRUGATED (12 GAGE) OR HEAVIER GALVANIZED STEEL SHEETS.

② FASTEN THE STEEL SHEETS TO THE FRONT EDGE OF THE APRON WITH ⅜" DIAMETER BY 4" LONG BOLTS AND APPROVED ANCHORAGES. (10" ± CENTER TO CENTER, TO THE NEAREST VALLEY)

③ FASTEN THE 8" x 4" x ⅝" OR 6" x 4" x ⅝" ANGLE WITH ⅜" DIAMETER 4" LONG BOLTS, 1" O.D. WASHER AND AN APPROVED ANCHORAGE. (2'-0" SPACING)

④ FASTEN THE STEEL SHEETS TO THE FRONT EDGE OF THE APRON WITH ⅜" DIAMETER 5" LONG BOLTS, NUT AND LOCK WASHER. (10" ± CENTER TO CENTER, TO THE NEAREST VALLEY)

⑤ (12 GAGE) GALVANIZED CORRUGATED STEEL SHEET PILING, INTERLOCKING TYPE A.

⑥ ⅜" DIA. x 1" LONG BOLT WITH NUT, TO LAP STEEL SHEETS.

⑦ STEEL SHEET PILING, SECTION NO. MP-112 OR EQUAL.

⑧ FILL THE VOIDS AS SHOWN, WITH CONCRETE OR CONCRETE GROUT, AS APPROVED BY THE ENGINEER.

GALVANIZE ALL FASTENERS AS PER SPEC. 3392.

THE DISTRICT SOIL ENGINEER, BEFORE CULVERT PLANS ARE PREPARED, SHALL TAKE SAMPLES FROM THE DRAINAGE AREA FOR PH DETERMINATION. THE SOIL AND WATER SHOULD HAVE A PH OF 6.5 OR MORE IF SHEET STEEL IS USED.

AS-BUILT

MAR 16 2001

ENGINEERING

APPROVED: AUGUST 10, 1995

Donald J. Flemming

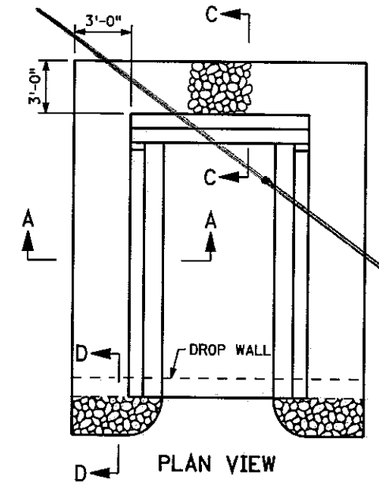
STATE BRIDGE ENGINEER

CERTIFIED BY _____ PROFESSIONAL ENGINEER

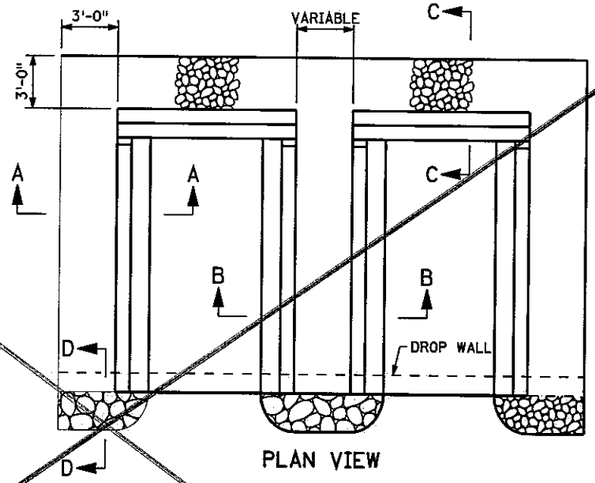
REG. NO. _____ _____ 19 __

S.A.P. 55-599-72

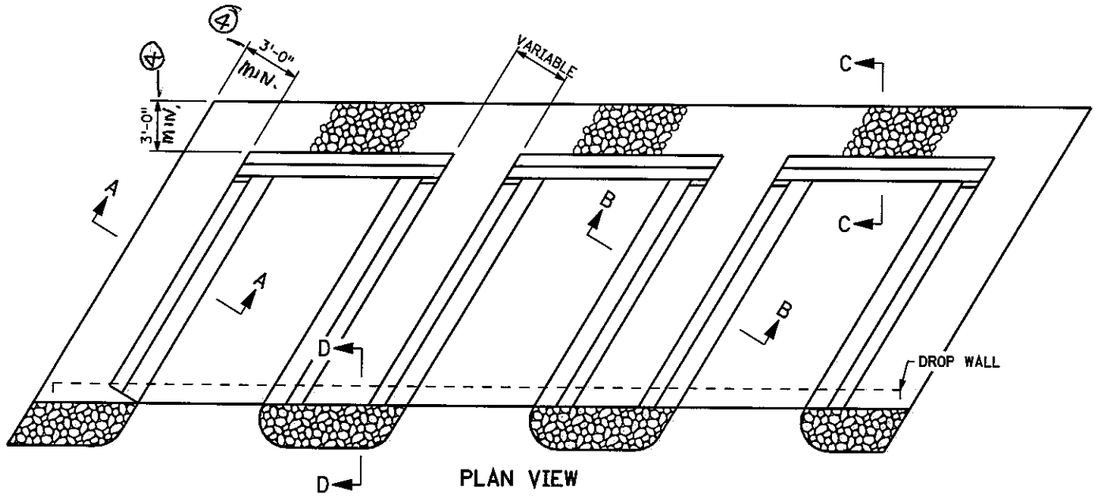
STATE PROJ. NO. = (T.H.) STA. +			FIG. 5-395.111
TITLE: ALTERNATE DROPWALLS FOR BOX CULVERTS	DES: / CHK:	DR: / CHK:	APPROVED:
SHEET NO. 11 OF 12 SHEETS			BRIDGE NO. 55J24



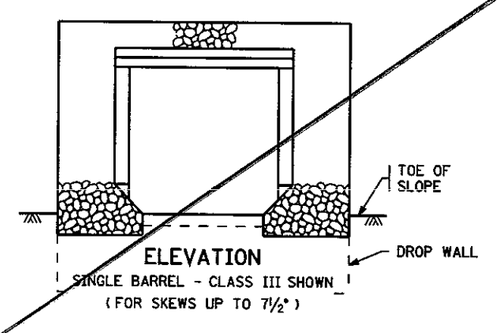
PLAN VIEW



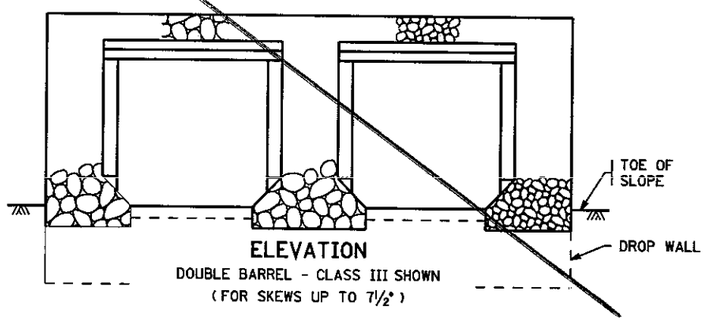
PLAN VIEW



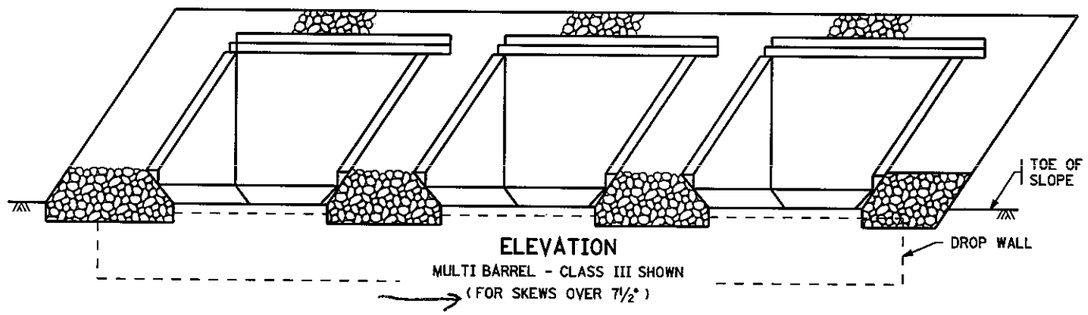
PLAN VIEW



ELEVATION
SINGLE BARREL - CLASS III SHOWN
(FOR SKEWS UP TO 7½°)

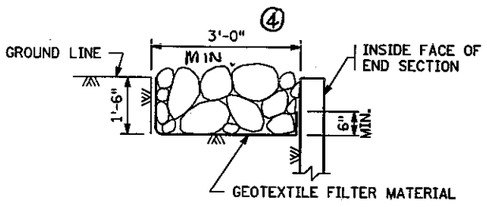


ELEVATION
DOUBLE BARREL - CLASS III SHOWN
(FOR SKEWS UP TO 7½°)

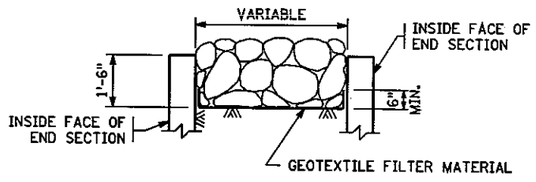


ELEVATION
MULTI BARREL - CLASS III SHOWN
(FOR SKEWS OVER 7½°)

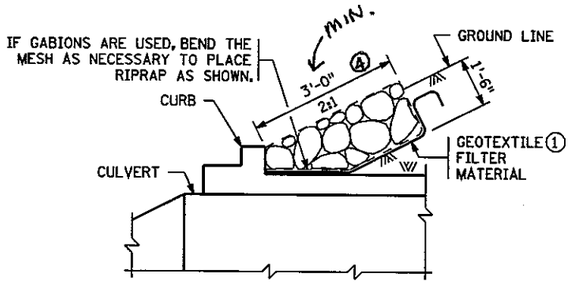
④



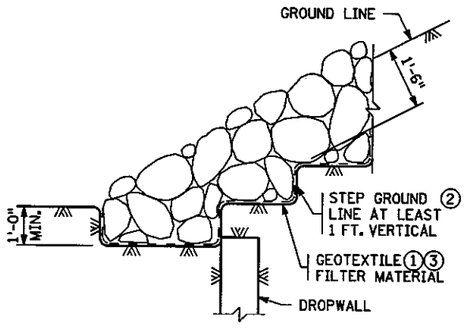
SECTION A-A



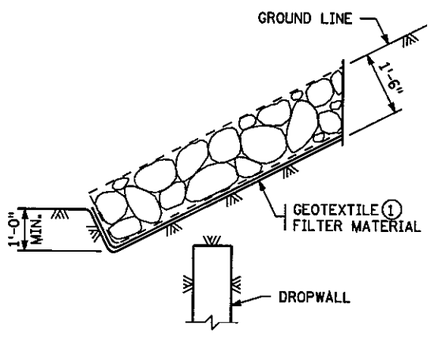
SECTION B-B



SECTION C-C



CLASS III RIPRAP OPTION



CLASS II RIPRAP IN GABIONS OPTION

SECTION D-D

NOTES:

RIPRAP SHALL COMPLY WITH SPECS. 2511 AND 3601. THE CONTRACTOR MAY USE EITHER CLASS III, WITH GEOTEXTILE FILTER MATERIAL, OR CLASS II ENCLOSED IN GABIONS, WITH GEOTEXTILE FILTER MATERIAL. 4" TO 8" DIA. ROCK MAY BE USED IN GABIONS, IF THE MESH OPENINGS ARE 4" OR LESS. GABIONS SHALL BE RIVER TYPE, CODE "D", 3 FT. WIDE X 1.5 FT. DEEP.

① FOR TYPE OF GEOTEXTILE FILTER MATERIAL REQUIRED, SEE SPEC. 3733. GEOTEXTILE STRIPS SHOULD BE CONTINUOUS WITHOUT OVERLAPS, EXCEPT FOR THE TOP STRIP, WHICH SHOULD SHINGLE VERTICAL STRIPS. THE TOP EDGE SHOULD BE BURIED TO PREVENT UNDERMINING (SPEC. 2511.3B).

② SLOPES 2:1 TO 3:1 MUST BE STEPPED TO MINIMIZE SLIDING POTENTIAL.

③ IF SLOPES ARE NOT STEPPED, GRANULAR FILTER SHOULD BE USED.

④ SEE SHEET 4 FOR LIMITS OF RIPRAP.

AS-BUILT

MAR 16 2001

ENGINEERING

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

SAP 55-599-72

STATE PROJ. NO. = (T.H.) STA. +

FIG. 5-395.115 MOD.

CERTIFIED BY _____ PROFESSIONAL ENGINEER
REG. NO. _____ _____ 19 __

TITLE: EMBANKMENT PROTECTION FOR BOX CULVERTS

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

SHEET NO. 12 OF 12 SHEETS

BRIDGE NO. 55524