MINNESOTA DEPARTMENT OF TRANSPORTATION

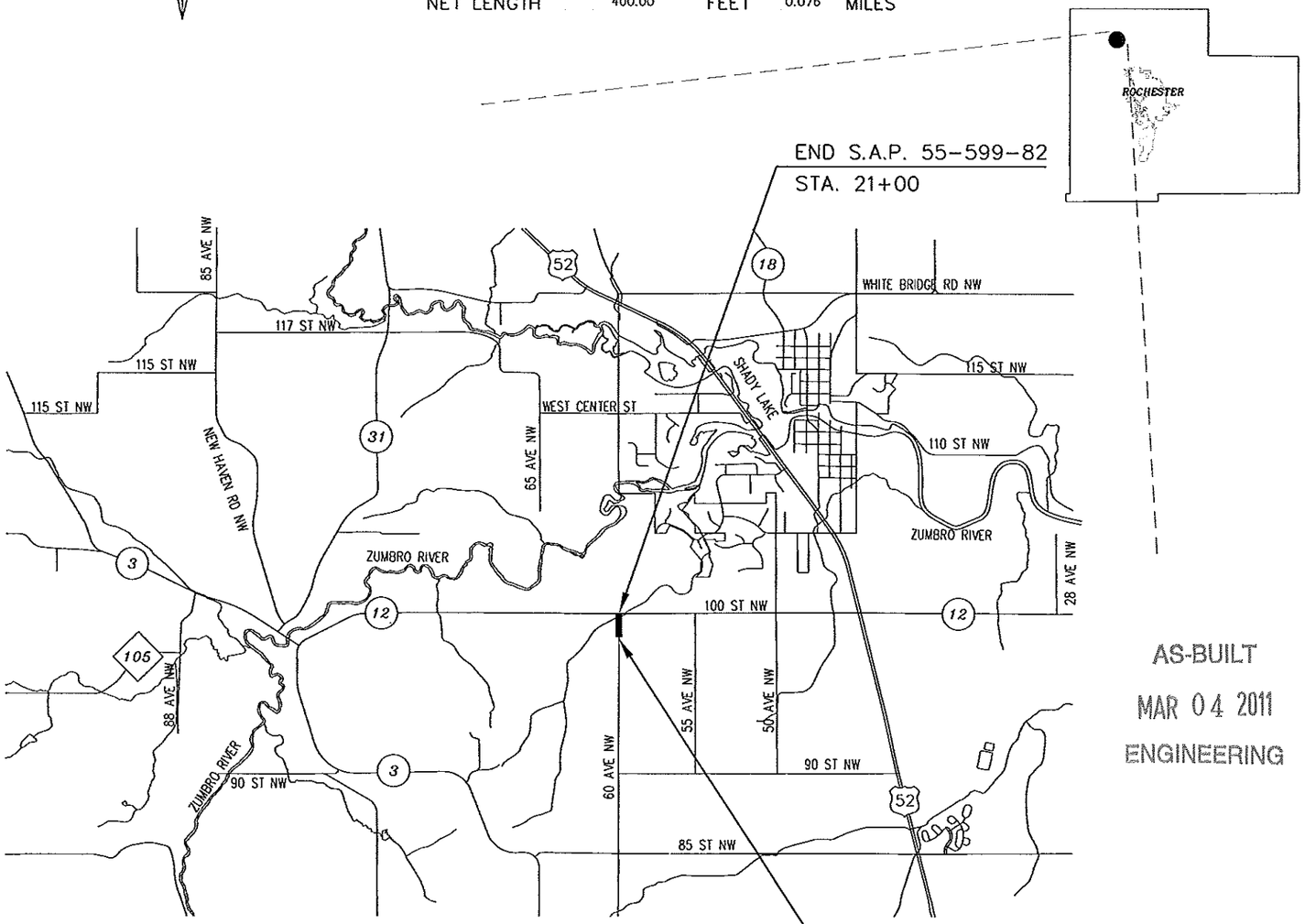
THE COUNTY OF OLMSTED

CONSTRUCTION PLAN FOR GRADING & PRECAST CONC. BOX CULVERT (BRIDGE NO. 55J47)

LOCATED ON 60TH AVE. BETWEEN C.S.A.H. 12 AND 90TH ST N.W. (GEOGRAPHIC DESCRIPTION)

FROM 0.5 MILES E. OF CENTER SECTION 24 T108N--R15W TO 0.48 MILES N. OF N.E. CORNER SECTON 25 T108N--R15W (LEGAL DESCRIPTION)

S.A.P. NO.	55-599-82			
GROSS LENGTH	400.00	FEET	0.076	MILES
BRIDGE-LENGTH	34.67	FEET	0.007	MILES
EXCEPTIONS-LENGTH	0.000	FEET	0.000	MILES
NET LENGTH	400.00	FEET	0.076	MILES



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ENGINEERING

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

SCALES

PLAN 0 100'
PROFILE 0 100' HORIZ. 0 50' VERT.
CROSS SECTIONS 0 10'
INDEX MAP 0 2640'

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

MINN. PROJ. NO.

GOVERNING SPECIFICATIONS

THE 2000 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

INDEX

SHEET NO. 1	TITLE SHEET
SHEET NO. 2	ESTIMATE OF QUANTITIES & TYPICAL SECTION
SHEET NO. 3	PLAN AND PROFILE
SHEET NO. 4	CROSS-SECTIONS
SHEET NO. 5 - 10	EROSION CONTROL
SHEET NO. 11	BRIDGE SURVEY SHEET
SHEET NO. 12	BARREL DETAILS
SHEET NO. 13	PRECAST CONC. END SECTION DETAILS
SHEET NO. 14	TRAFFIC CONTROL PLANS

THIS PLAN CONTAINS 14 SHEETS.

DESIGN DESIGNATION: S.A.P. 55-599-82

R ΣN18(20)
ADT (Current Year) = < 50 (2006) Design Speed 50 MPH
ADT (Future Year) = < 50 (2026) Bosed on STOPPING Sight Distance
DHV (Design Hr. Vol.) = Height of eye 3.5 FT Height of object 2.0 FT
D (Directional Distr.) = Design Speed not achieved at:
T (Heavy Commercial) = STA. TO STA. MPH
SUBGRADE = K=150 STA. TO STA. MPH
SOIL FACTOR = 130%
SHOULDER WIDTH 1 FT.

TOWNSHIP APPROVALS:

David O'Brien 5-8-06

APPROVED: TWP. CHAIRPERSON DATE

LOCAL APPROVALS:

DESIGN ENGINEER: I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENCED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 5-8-06 REG NUMBER 19917

PRINTED NAME: KAYE M. BIENIEK

SIGNATURE: Kaye M Bieniek

APPROVED: COUNTY DESIGN ENGINEER

DATE 5-8-06 REG NUMBER 10397

Michael J. Nielsen

APPROVED: OLMSTED COUNTY ENGINEER

DESIGNED BY:

STATE AID APPROVALS:

Andy Schmidt DATE: 6-14-06

DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE-- AID RULES/POLICY

for Andy Schmidt DATE: 6-14-06

APPROVED FOR STATE AID FUNDING:
STATE AID ENGINEER

S.A.P. NO. 55-599-82 NEW HAVEN TWP. SHEET NO. 1 OF 14 SHEETS

ESTIMATED QUANTITIES

	SPECIFICATION NO.	ITEM	UNIT	NON PARTICIPATING	PARTICIPATING	TOTAL ESTIMATED QUANTITIES
(1)	2104.501	REMOVE PIPE CULVERTS	LIN. FT.	52		52
(2)	2104.503	REMOVE BITUMINOUS PAVEMENT	SQ. FT.	400		400
	2104.513	SAWING BITUMINOUS PAVEMENT	LIN. FT.	28		28
(3)	2105.515	UNCLASSIFIED EXCAVATION	CU. YD.	634		634 (P)
	2105.523	COMMON BORROW (CV)	CU. YD.	160		160 (P)
	2211.501	AGGREGATE BASE CL.5	TON	357		357
	2412.511	14' x 4' PRECAST CONC. BOX CULV. CL. II	LIN. FT.		72	72
	2412.512	14' x 4' PRECAST CONC. BOX CULVERT END SECTION	EACH		4	4
	2451.507	GRANULAR BEDDING (CV)	CU. YD.		60	~~60 (P)~~ 53 (P)
(4)	2511.501	RIPRAP CL. III	CU. YD.		88	88
(5)	2573.502	SILT FENCE TYPE MACHINE SLICED	LIN. FT.	400		400
	2575.501	SEEDING	ACRE	0.5		0.5 (P)
	2575.502	SEED MIXTURE 50B	POUND	25		25
	2575.502	SEED MIXTURE 110B	POUND	50		50
	2575.511	MULCH MATERIAL TYPE 1	TON	1		1
	2575.519	DISK ANCHOR	ACRE	0.5		0.5 (P)
	2575.532	COMMERCIAL FERTILIZER ANALYSIS 10-10-10	POUND	100		100
		Lean Mix Backfill	Cu. Yd			4.2 (P)

QUANTITY NOTES:

(1) REMOVAL OF CONCRETE HEADWALL ON INLET AND OUTLET SIDES OF PIPES SHALL BE CONSIDERED INCIDENTAL.

(2) REMOVE BITUMINOUS PAVEMENT FROM STA. 20+85.55 TO 21+00.

(3) 340 CU. YDS. OF EXCAVATION TO BE USED AS SALVAGED TOPSOIL.

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

(5) RT. STA 17+00 – 21+00 PLACED AS DIRECTED BY THE ENGINEER. SPEC. NO. 1903 DOES NOT APPLY TO ITEM NO. 2573.

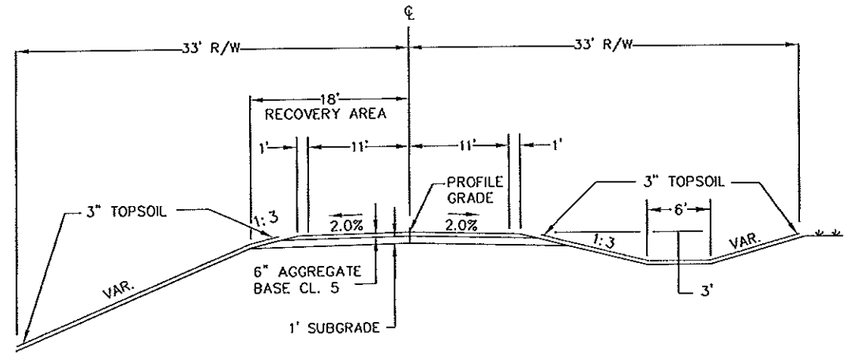
STANDARD PLATES

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

PLATE NO.	DESCRIPTION
	NUMERICAL INDEX OF STANDARD PLATES
3133C	RIPRAP AT RCP OUTLETS
3145F	CONCRETE PIPE TIES
8000I	STANDARD BARRICADES

TYPICAL SECTION

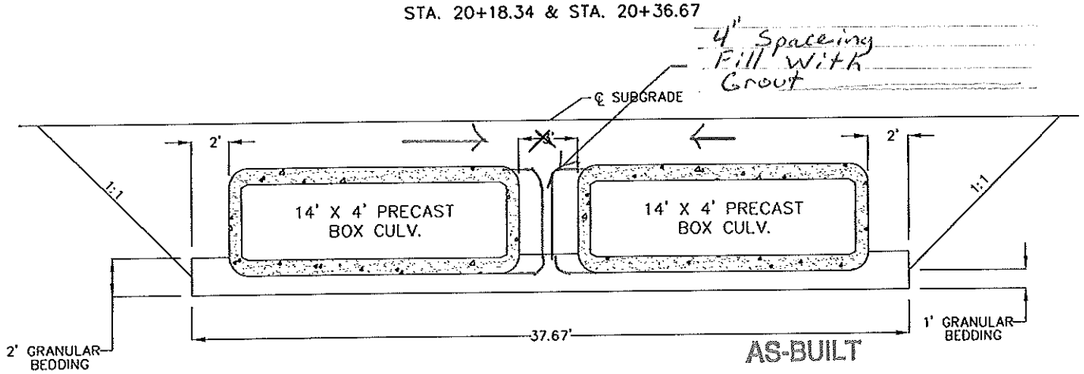
STA. 17+00 TO STA. 21+00



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

BEDDING DETAIL

STA. 20+18.34 & STA. 20+36.67



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BASIS OF PLANNED QUANTITIES

AGGREGATE BASE CLASS 5 –	140 LBS / CU. FT. COMPACTED
SEED MIXTURE 50B –	50 LBS / ACRE
SEED MIXTURE 110B–	100 LBS / ACRE
MULCH MATERIAL –	2 TONS / ACRE
DISC ANCHOR –	ALL SEEDING AREA'S, EXCLUDING 1:2 SLOPES
COMMERCIAL FERTILIZER –	200 LBS / ACRE

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.

BEGIN PROJECT:
STA. 17+00

33' R/W

11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00

33' R/W

50' R/W

RES. DR.
INPL 18" X 32' C.M.P.
INPL 2-18" APRONS
NO CHANGE

50' R/W

F.E.
INPL 18" X 30' C.M.P.
NO APRONS
NO CHANGE

END PROJECT:
STA. 21+00

60' R/W

60' R/W

75' R/W

60' R/W

BRIDGE NO 55J20
228' RT. STA. 21+35
INPL 3-88" X 76' R.C. PIPE-ARCH
INPL 6-88" R.C. PIPE-ARCH SAFETY APRON
NO CHANGE

RIPRAP OUTLET AREA

2'
1
4
28'4
1
38'

60TH AVE. N.W.
STA. 20+26, 20+33
INPL 2-42" X 26' C.M.P.
W/CONC. BLOCK HEADWALLS
REMOVE EXIST. BRIDGE

NEW BRIDGE NO. 55J47 20+34.70
STA. 20+18.34 & STA. 20+36.67
2-14' X 4' X 36' P.C. BOX CULVERTS
4 -- 14' X 4' P.C. BOX CULV. END SECTIONS

PLACE ON 60 CU. YDS GRANULAR BEDDING
5 CU. YDS. CLASS III RIPRAP AT INLET
83 CU. YDS. CLASS III RIPRAP AT OUTLET

AS-BUILT
MAR 04 2011
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DESIGN FINISHED ℄ 1013.82 1013.56 1013.43 1013.59 1013.83 1013.73

P.V.C. STA. 17+00.00 EL. 1013.82

P.V.T. STA. 18+50.00 EL. 1013.47

-0.76% 0.24% -0.21%

BM EL. 1011.58
1" SQUARE PIPE W/CAP
75' S. ℄ C.R. 12
11' E. ℄ 60TH AVE

INLET ELEV. 1007.00
OUTLET ELEV. 1006.80

P.I. STA. 17+75.00
EL. 1013.29
V.C. 150.00
E = 0.19

P.I. STA. 20+25.00
EL. 1013.89
V.C. 0.00

BOP STA = 17+00.00 EL. 1013.82

EOP STA = 21+00.00 EL. 1013.73

ORIG. ℄ 1013.82 1013.39 1012.96 1011.74 1011.56 1013.73 1014.82

1050 1040 1030 1020 1010 1000 990 980 970 960

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00

CERTIFIED BY Dave M Pierick LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 6/8/2006

S.A.P. 55-599-82 NEW HAVEN TWP.

SHEET NO. 3 OF 14 SHEETS

UNCLASSIFIED EXCAVATION 634 CU. YDS.
EMBANKMENT 678 CU. YDS.
CULVERT EXCAVATION: MATERIAL 405 CU. YDS.
COMMON BORROW 160 CU. YDS. (CV)

EX ROW
1012.82 @ 13.5'
1013.09
1:3
1:2
SPECIAL DITCH
ELEV. 1007.80
19 + 00
EXC. = 56
EMB. = 214

EX ROW
1012.66 @ 13.5'
1012.93
SPECIAL DITCH
ELEV. 1008.30
18 + 00
EXC. = 106
EMB. = 136

EX ROW
1013.82
MATCH EXIST
17 + 00

EX ROW
16 + 50

1013.73
MATCH EXIST
21 + 00
EXC. = 56
EMB. = 118

AS-BUILT
MAR 04 2011
ENGINEERING

EX ROW
1013.25 @ 13.5'
1013.52
INLET EL. 1007.00
OUTLET EL. 1006.80
2 - 14' X 4' X 36' PRECAST CONC. BOX CULVERTS
4 - 14' X 4' PRECAST CONC. BOX CULVERT END SECTIONS
20 + 50
EXC. = 89
EMB. = 24

EX ROW
1013.06 @ 13.5'
1013.33
SPECIAL DITCH
ELEV. 1007.30
20 + 00
EXC. = 327
EMB. = 186

NEW R/W

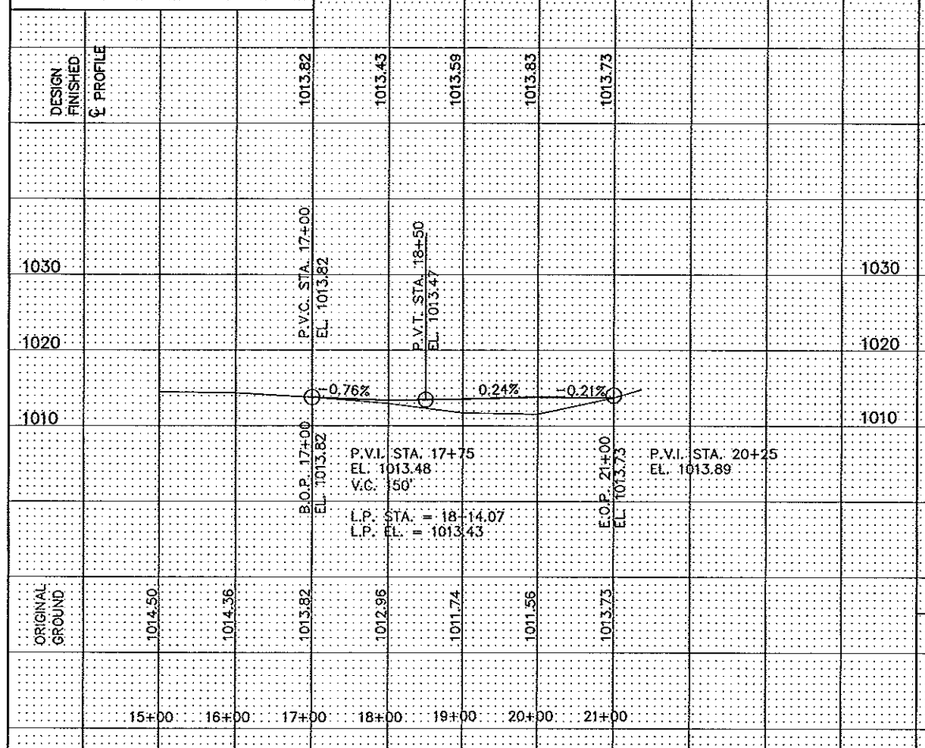
NOTE: ALL ELEVATION ARE SUBGRADE

S.A.P. 55-599-82 NEW HAVEN TWP.

SHEET 4 OF 14 SHEETS

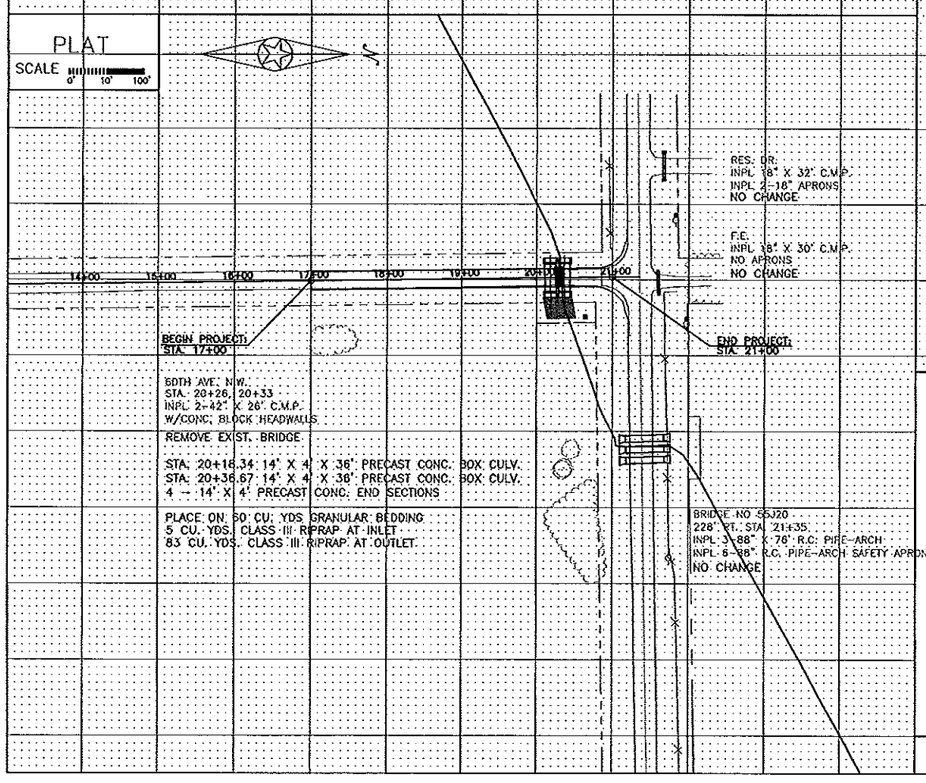
CONTRACTED PROFILE

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



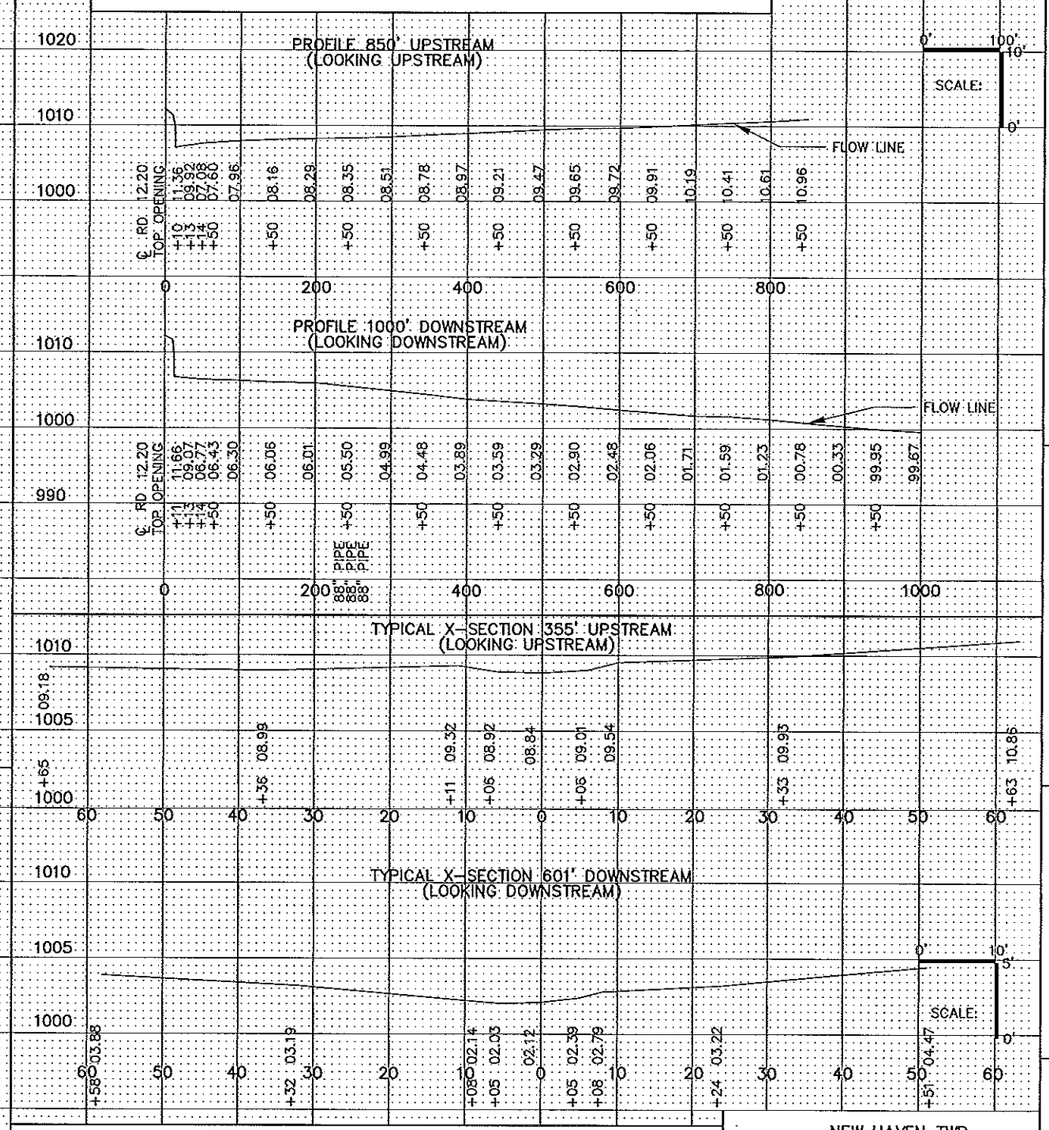
PLAT

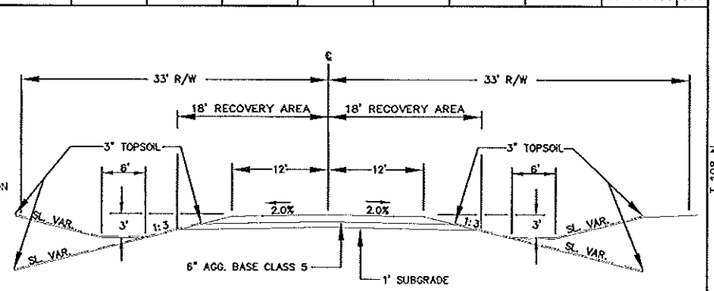
SCALE 0' 10' 100'



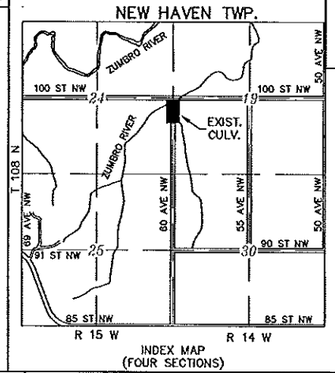
TYPICAL SECTIONS & PERTINENT DATA

SCALE AS SHOWN





STA. 17+00 TO STA. 21+00



CERTIFIED BY Kaye M Prierish LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 5/8 2006

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, UNNAMED
Drainage area 1.5 SQ. MI.
Max. flood on record UNK. Design flood (100 yr. freq.) 960 C.F.S.
Max. observed highwater elevation 1012.0 Design highwater elevation 1013.0
Design mean velocity through structure 11.4 F.P.S.
Low superstructure at or above elevation.....
Flowline 1007.0 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 ..... C.F.S. at stage ..... and mean velocity of ..... F.P.S. with ..... Ft. swelihead. 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 .....

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

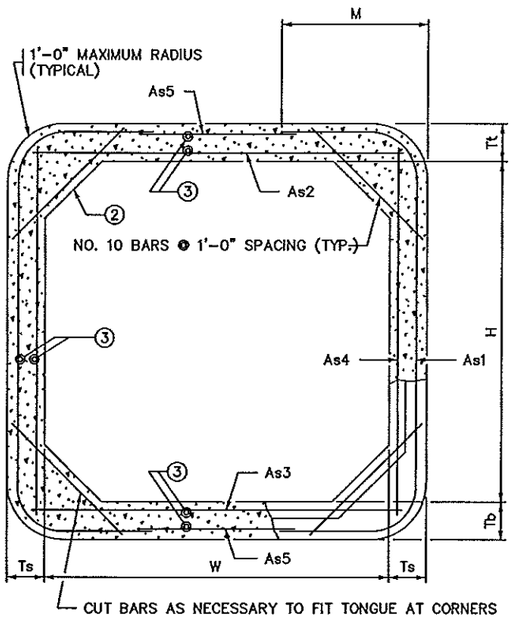
Bench mark elevation 1011.58 (M.S.L. 1929 Adj.)
Location: 1" SQUARE PIPE W/CAP 75' S. ℄ 12 & 11' E. ℄ 60TH AVE.

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

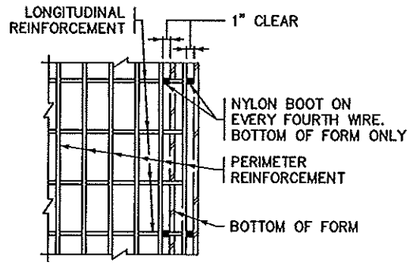
AT MILE POINT 110 FT. S. OF JCT C.S.A.H. 12 ON 60TH AVE. (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 110 FEET SOUTH OF C.S.A.H. 12
SEC. 24 TWP. 108 R 15
TOWNSHIP NEW HAVEN COUNTY OLMSTED
BRIDGE NO. 55J47

State Aid Proj. 55599-82 NEW HAVEN TWP. SHEET NO. 11 OF 14 SHEETS

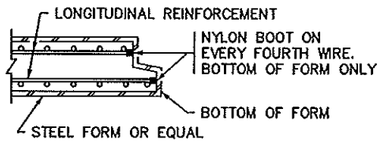


TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

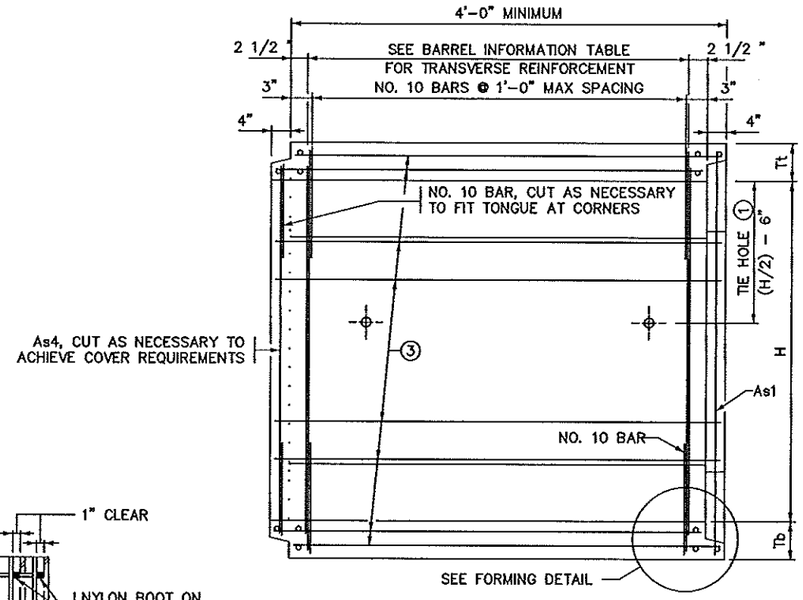


PLAN



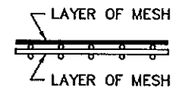
SECTION

FORMING DETAIL



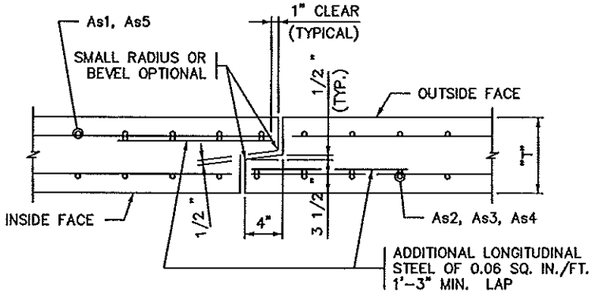
LONGITUDINAL BARREL SECTION

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



TONGUE AND GROOVE JOINT DETAIL

CONSTRUCTION NOTES

CULVERTS TO BE CONSTRUCTED AS PER Mn/DOT SPEC. 2412 EXCEPT AS NOTED.

FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB. SEE FIG. 5-395.100(A) AND FIG. 5-395.100(B) FOR ADDITIONAL INFORMATION.

IF THE DISTANCE BETWEEN DOUBLE BARRELS IS LESS THAN 2'-0" USE EITHER PEA ROCK OR LEAN MIX BACKFILL(Mn/DOT SPEC. 2520) BETWEEN THE CULVERTS AS APPROVED BY THE ENGINEER. (ALSO, PROVIDE APPROVED GROUT SEEPAGE CORE, MINIMUM 12" THICK, BETWEEN THE CULVERT'S TWO ENDS.) MINIMUM DISTANCE REQUIRED IS 6".

THE STEEL FABRIC, SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO APPLICABLE REQUIREMENTS OF AASHTO M259.

1 1/2 " MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:
(a) 1 OR 2 LAYERS OF MESH OR
(b) 1 LAYER OF MESH AND 1 LAYER OF REINFORCEMENT BARS OR
(c) 1 LAYER OF REINFORCEMENT BARS.
THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WIRE MESH, THE AREAS OF REINFORCEMENT SHALL BE INCREASED BY 8%.

THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE NO. 19. THE MAXIMUM MESH SIZE SHALL BE 1/2 " DIA. PER LAYER (MAXIMUM OF 2 LAYERS).

THE SPACING CENTER TO CENTER OF THE TRANSVERSE WIRES SHALL NOT BE LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8".

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

WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.

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

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

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

(2) HAUNCH SIZE AS FOLLOWS:
6'-0" AND 8'-0" WIDTHS - 6" TO 12"
10'-0" WIDTH - 10" TO 12"
12'-0" AND 14'-0" WIDTHS - 12"

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

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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.)
20+18.34	14' X 4'	2	5000	2-6	14	4	9	10	8	4185	0.74	11'-1"	3'-5"	0.88	12'-6"	0.83	12'-6"	0.20	4'-6"	0.06	8'-6"
20+34.67	14' X 4'	2	5000	2-6	14	4	9	10	8	4185	0.74	11'-1"	3'-5"	0.88	12'-6"	0.83	12'-6"	0.20	4'-6"	0.06	8'-6"

REVISION:

APPROVED: DECEMBER 11, 2000
Darrell J. Klemming
STATE BRIDGE ENGINEER

~~STATE PROJ. NO.~~ S.A.P. 55-599-82 NEW HAVEN TWP.

FIG. 5-395.101(A)

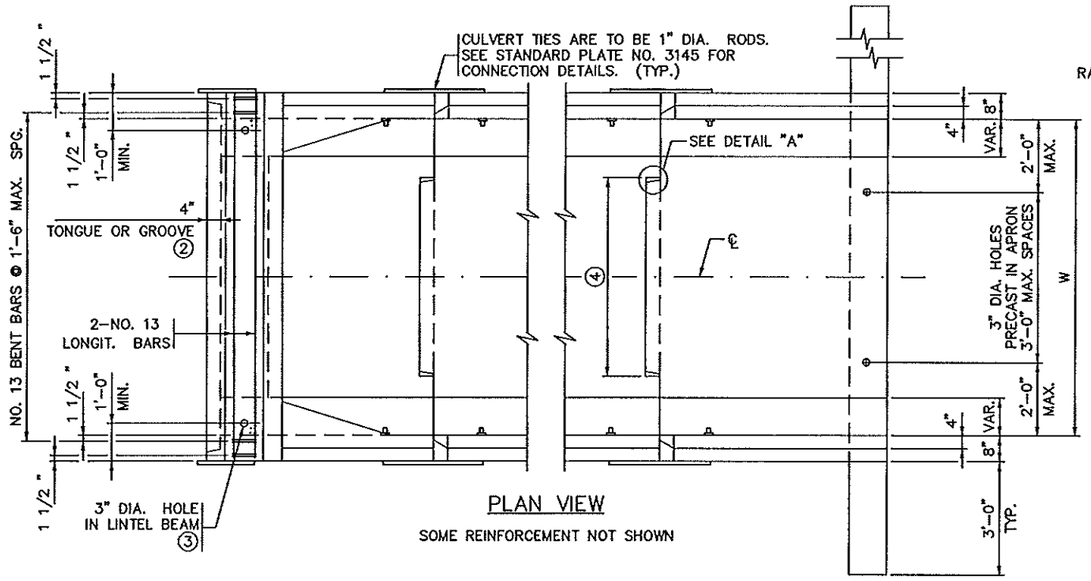
CERTIFIED BY Kaye M Biernick
LICENSED PROFESSIONAL ENGINEER
REG. NO. 19917 5/8 2006

TITLE: BARREL DETAILS

DES: DR: APPROVED:
CHK: CHK:

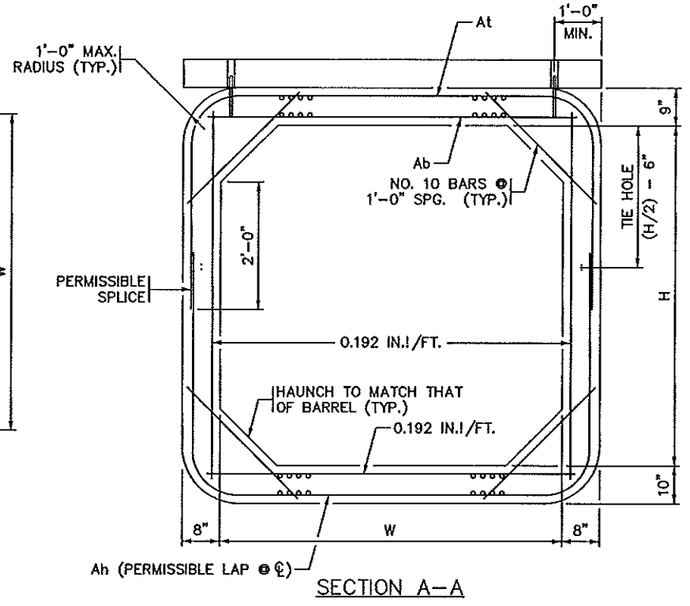
SHEET NO. 12 OF 14 SHEETS

BRIDGE NO. 55J47



PLAN VIEW

SOME REINFORCEMENT NOT SHOWN



SECTION A–A

CONSTRUCTION NOTES

SEE FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.

LONGITUDINAL REINFORCEMENT PARALLEL TO THE AXIS OF THE CULVERT SHALL HAVE A MINIMUM OF 0.06 SQUARE INCHES PER PERIPHERAL FOOT ON ALL FACES OF THE BARREL, EXCEPT IN THE TONGUE AND GROOVE AREA.

SEE FIG. 5-395.115 FOR EMBANKMENT PROTECTION.

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

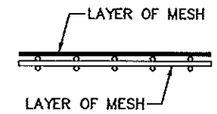
(1) WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. SEE FIG. 5-395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL TO BE CONCRETE MIX NO. 1A43 OR MIX NO. 3Y43. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED 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) 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".

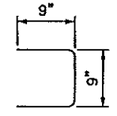
(4) 3'-6" TONGUE AND 3'-7" GROOVE FOR 6'-0" WIDE CULVERTS. 5'-0" TONGUE AND 5'-1" GROOVE FOR CULVERTS OVER 6'-0" WIDE. CENTER TONGUE AND GROOVE ON ℄ OF EACH APRON JOINT.

(5) AS AN ALTERNATE TO THE ONE LAYER MESH, PROVIDE TWO LAYERS OF REBAR OR WIRE MESH WITH THE STEEL AREA EQUAL TO HALF OF THE TEMPERATURE STEEL PER CODE REQUIREMENTS IN EACH FACE OF THE DROPWALL.



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.

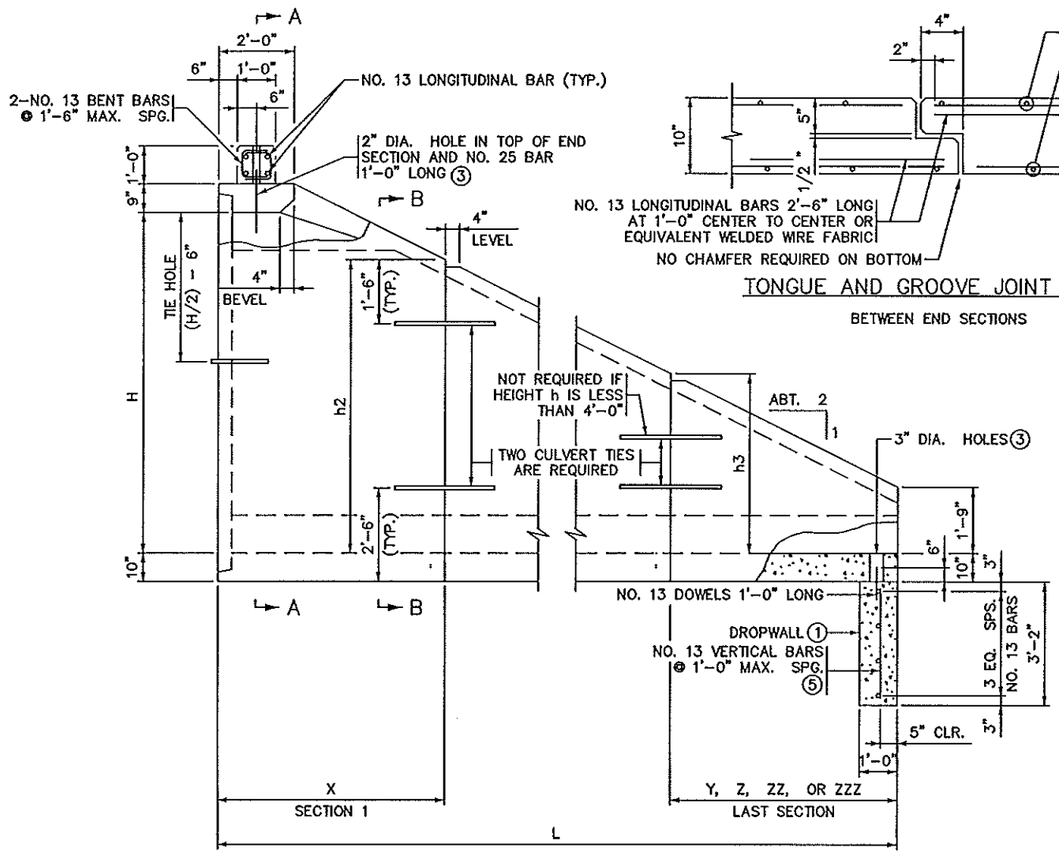


NO. 13 BENT BAR

AS-BUILT

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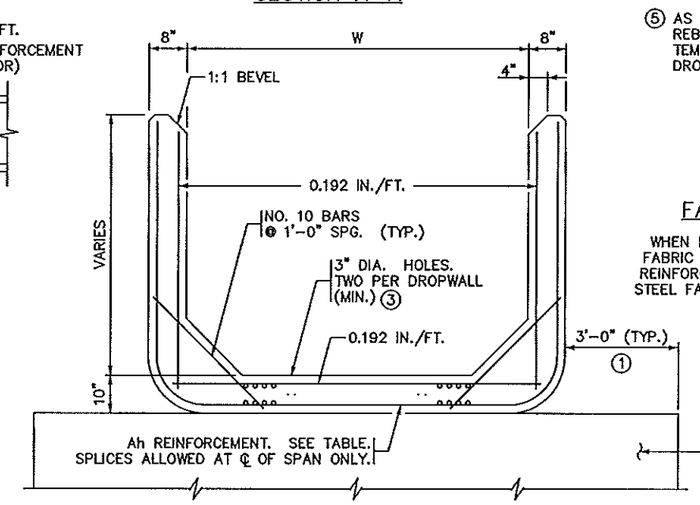
ENGINEER



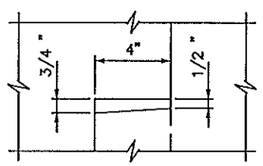
SIDE ELEVATION

TONGUE AND GROOVE JOINT DETAIL

BETWEEN END SECTIONS



SECTION B–B



DETAIL "A"

At, Ab REINFORCEMENT		
WIDTH (FT.)	At (IN²/FT.)	Ab (IN²/FT.)
6	.27	.44
8	.47	.60
10	.62	.74
12	.88	1.06
14	1.20	1.58

APRON DIMENSIONS & Ah REINFORCEMENT

H	L	SECTION 1		h2	SECTION 2		h3	SECTION 3		h4	SECTION 4		h5	SECTION 5		h6
FT.	FT.	X	Ah		Y	Ah		Z	Ah		ZZ	Ah		ZZZ	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"			
13	26	6'	1.03	11'-9"	6'	0.78	8'-9"	6'	0.28	5'-9"	8'	0.192	1'-9"			
14	28	6'	1.38	12'-9"	6'	1.03	9'-9"	6'	0.40	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"

NOTE: Ah IS AREA OF REINFORCEMENT PER FOOT OF LENGTH (IN²/FT.)

REVISION: 06-30-2003

APPROVED: DECEMBER 11, 2000

Donald J. Hemming

STATE BRIDGE ENGINEER

~~STATE PROJ. NO.~~ S.A.P. 55-599-82 NEW HAVEN TWP.

FIG. 5-395.102

CERTIFIED BY Kyle M Brunick

LICENSED PROFESSIONAL ENGINEER

REG. NO. 19917 6/8 2006

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

DES: DR: APPROVED:

CHK: CHK:

SHEET NO. 13 OF 14 SHEETS

BRIDGE NO. 55J47