MINNESOTA DEPARTMENT OF TRANSPORTATION

THE COUNTY OF OLMSTED

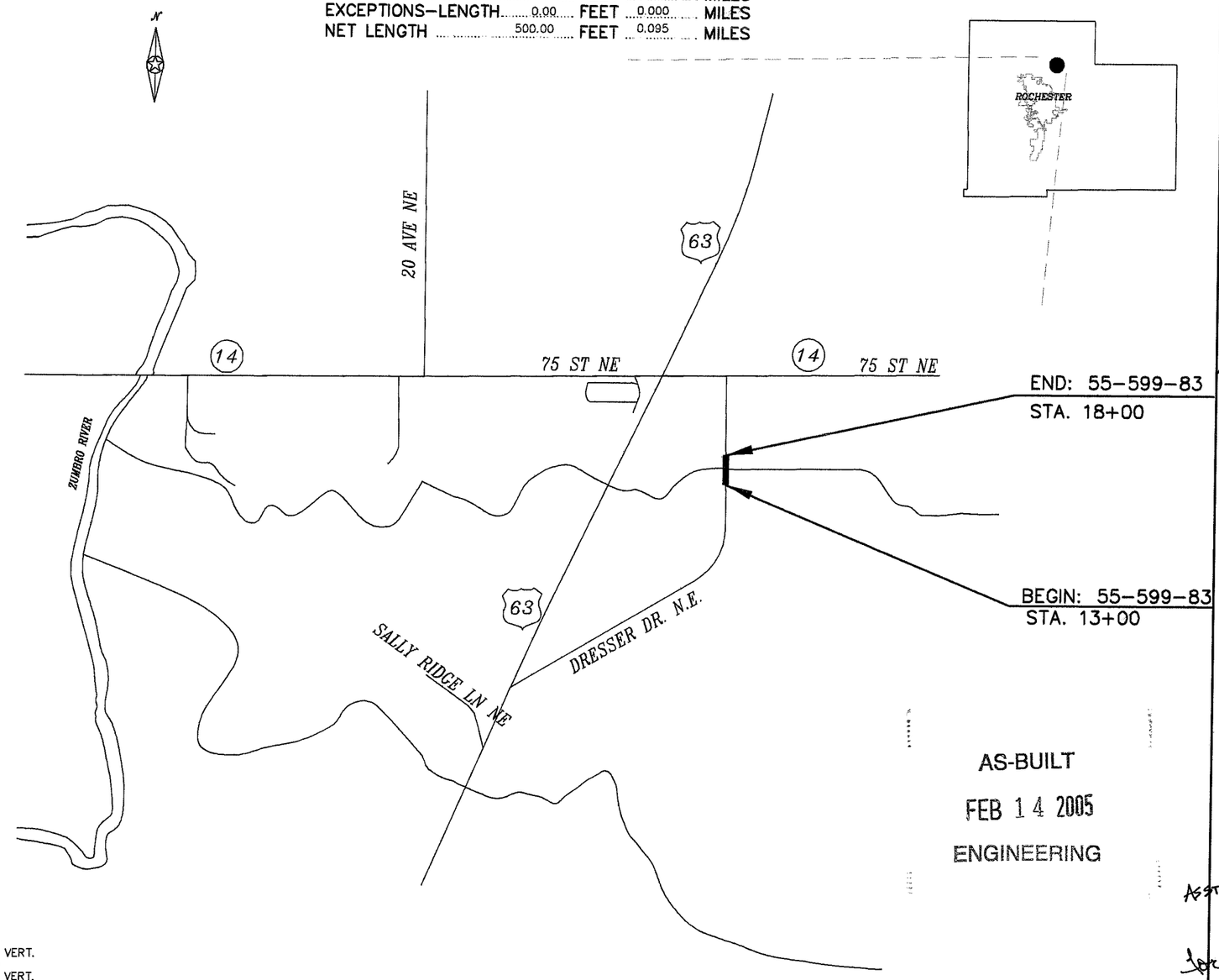
CONSTRUCTION PLAN FOR REPLACE BR. 1571 (NEW BRIDGE 55J48) AND APPROACH GRADING

LOCATED ON DRESSER DR. N.E. BETWEEN C.S.A.H. 14 AND HWY 63 (GEOGRAPHIC DESCRIPTION)

FROM APPROX. 1,625 FT. N. OF CENTER SEC. 6 T107N-R13W TO APPROX. 515 FT. S. SECTION 6 T107N-R13W & SECT 31 T108N-R13W (LEGAL DESCRIPTION)

S.A.P. NO. 55-599-83

GROSS LENGTH	500.00	FEET	0.095	MILES
BRIDGE-LENGTH	0.00	FEET	0.000	MILES
EXCEPTIONS-LENGTH	0.00	FEET	0.000	MILES
NET LENGTH	500.00	FEET	0.095	MILES



AS-BUILT

FEB 14 2005

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 50'
PROFILE 0 50' HORIZ. 0 10' VERT.
CROSS SECTIONS 0 10' HORIZ. 0 5' VERT.
INDEX MAP NOT TO SCALE

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 - 9	EROSION CONTROL
SHEET NO. 10	BRIDGE SURVEY SHEET
SHEET NO. 11 - 12	BARREL DETAILS
SHEET NO. 13 - 14	PRECAST CONC. END SECTION
SHEET NO. 15	TRAFFIC CONTROL PLANS

THIS PLAN CONTAINS 15 SHEETS.

DESIGN DESIGNATION: S.A.P. 55-599-83

R ΣN18(20)
ADT (Current Year) = 60(2004) Design Speed 45 MPH
ADT (Future Year) = 96(2024) 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 = K=150 STA. TO STA. MPH
SOIL FACTOR = .130%
SHOULDER WIDTH 3 FT.

TOWNSHIP APPROVALS:

Karl Juscel Flores Dec 1 03

APPROVED: TWP. 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 LICENCED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 12/9/03 REG. NO. 19317

PRINTED NAME: KAYE M. BIENIEK

SIGNED NAME: Kaye M Bieniek
COUNTY DESIGN ENGINEER

DESIGNED BY: K ROSS

DATE 12/11/03 REG. NO. 10397

Michael Sheehan
APPROVED: OLMSTED COUNTY ENGINEER

STATE AID APPROVALS:

Cindy Schmidt DATE: 1-8-04
Asst DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE-AID RULES/ POLICY

Cindy Schmidt DATE: 1-8-04
for APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER

S.A.P. NO. 55-599-83 HAVERHILL TWP. SHEET NO. 1 OF 15 SHEETS

ESTIMATED QUANTITIES

	SPECIFICATION NO.	ITEM	UNIT	NON PARTICIPATING	PARTICIPATING	TOTAL ~~ESTIMATED~~ QUANTITIES
①	2101.511	CLEARING AND GRUBBING	LUMP SUM	1		1
②	2105.511	COMMON CHANNEL EXCAVATION	CU. YD.	28		28(P)
	2105.515	UNCLASSIFIED EXCAVATION	CU. YD.	395		395 (P)
	2105.523	COMMON BORROW (CV)	CU. YD.	183		183 (P)
③	2211.501	AGGREGATE BASE CL.2	TON	~~525~~		~~525~~ 522
	2412.511	10'x 5' PRECAST CONC. BOX CULV. CL. II	LIN. FT.		80	80
	2412.512	10'x 5' PRECAST CONC. BOX CULVERT END SECTION	EACH		4	4
	2442.501	REMOVE OLD BRIDGE	LUMP SUM	1		1
	2451.507	GRANULAR BEDDING (CV)	CU. YD.		55	55(P)
④	2511.501	RANDOM RIPRAP CL. III	CU. YD.		~~92~~	~~92~~ 74
⑤	2573.502	SILT FENCE TYPE MACHINE SLICED	LIN. FT.	~~400~~		~~400~~ 0
⑤	2575.523	EROSION CONTROL BLANKET CATEGORY 3	SQ. YD.	~~73~~		~~73~~ 0
⑥	2575.555	TURF ESTABLISHMENT	LUMP SUM	1		1

(P) PLAN

QUANTITY NOTES:

① APPROX. 1 TREE AND 0.1 ACRES WOODS.

② CHANNEL EXC. TO BE PLACED ON SHOULDERS AS DIRECTED BY THE ENGINEER.

③ AGGREGATE BASE CLASS 2 – 140 LBS / CU. FT. COMPACTED

④ PLACE RIPRAP ON 9" GRANULAR FILTER OR GEOTEXTILE MATERIAL WHICH SHALL BE CONSIDERED INCIDENTAL AND NO DIRECT COMPENSATION WILL BE MADE THEREFOR.

⑤ LT. & RT. STA. 15+00 TO STA. 16+00 PLACED AS DIRECTED BY THE ENGINEER AND SPEC. NO. 1903 DOES NOT APPLY.

⑥ APPROX. 0.2 ACRES.

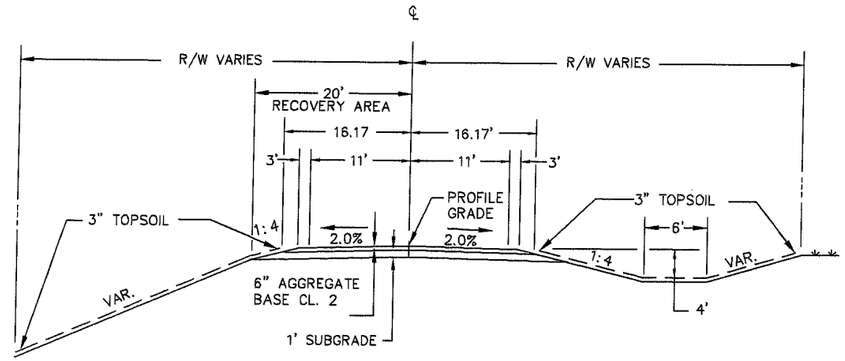
STANDARD PLATES

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

PLATE NO.	DESCRIPTION
	NUMERICAL INDEX OF STANDARD PLATES
3145E	CONCRETE PIPE TIES
8000I	STANDARD BARRICADES

TYPICAL SECTION

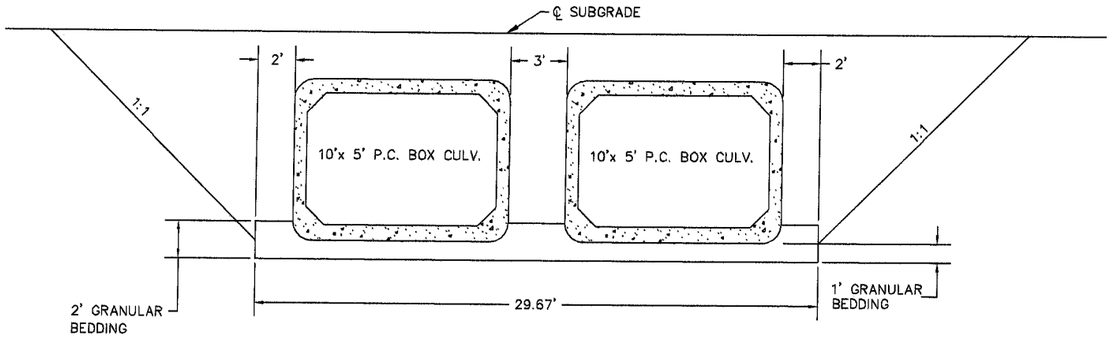
STA. 13+00 TO STA. 18+00



NOTES: ALL UTILITY POLES AND UNYIELDING OBJECTS WILL BE LOCATED OUTSIDE THE 20 FT. RECOVERY AREA BY OTHERS.

BEDDING DETAIL

STA. 15+42.83 & STA. 15+57.17



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

FEB 14 2005

ENGINEERING

CERTIFIED BY Kayo M Bierwirth LICENSED PROFESSIONAL ENGINEER REG. NO. 19917 1/5 2004

S.A.P. NO. 55-599-83 HAVERHILL TWP.

RES. LT. STA. 11+95
15"x 18' C.M.P. CULV.
NO APRONS

NO CHANGE

FARM. LT. STA. 12+48
15"x 34' C.M.P. CULV.
NO APRONS

NO CHANGE

STONE WALL

33' R/W

95

48

BEGIN: STA. 13+00

40' RIPRAP

+00

SILT FENCE

28' RIPRAP

80' R/W

+00

SILT FENCE

PI STA. 17+00
LT. 0° 47' 21"

END: STA. 18+00

33' R/W

C.S.A.H. 14

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

+35

33' R/W

+00

+00

50' R/W

SILT FENCE

33' R/W

CHANNEL EXCAVATION

SCHOOL ENT. RT. STA. 11+35
18"x 28' C.M.P. CULV.
NO APRONS

NO CHANGE

℄ CULV STA. 15+50
15' x 24' CONC. SPAN BR.
WITH CONC WINGWALLS

REMOVE BRIDGE

SEE BRIDGE SHEET NO. 10

SCALES: 0 50' HORIZ. 0 10' VERT.

DESIGN SUBGRADE

1009.16 1007.87 1006.79 1005.98 1005.42 1005.13 1005.09 1005.32 1005.81 1006.56 1007.55

P.V.C. STA. 13+30
EL. 1008.37

P.V.T. STA. 17+80
EL. 1007.14

2.62%

2.07%

INLET EL. 997.90
OUTLET EL. 997.50

BEGIN STA. 13+00
EL. 1009.16

P.I. STA. 15+55
EL. 1002.47
V.C. 450.00
E = 2.62
(45 MPH)

END STA. 18+00
EL. 1007.55

1040 1030 1020 1010 1000 990 980 970 960 950

1013.15 1013.07 1012.27 1009.66 1007.18 1004.87 1004.96 1005.99 1008.05 1010.94 1014.39 1017.97 1021.19 1025.20

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

AS-BUILT
FEB 14 2005
ENGINEERING

UNCLASSIFIED EXCAVATION: 395 CU YDS.
EMBANKMENT: 606 CU. YDS.
COMMON CHANNEL EXCAVATION: 28 CU.YDS.
COMMON BORROW: 183 CU YDS. (CV)

CERTIFIED BY Kaye M Bruemmer REG. NO. 19917 12/9 2003
LICENSED PROFESSIONAL ENGINEER

S.A.P. 55-599-83 HAVERHILL TWP.

SHEET 3 OF 15 SHEETS

UNCLASSIFIED EXCAVATION: 395 CU YDS.
EMBANKMENT: 606 CU. YDS.
COMMON CHANNEL EXCAVATION: 28 CU.YDS.
COMMON BORROW: 183 CU YDS. (CV)

997.50 @ 32.54
END APRON 997.50 @ 30.00
END BARREL 997.56 @ 20.00
1003.85 @ 20.00
1004.80 @ 16.17
1005.13
1004.80 @ 16.17
1003.85 @ 20.00
END BARREL 997.84 @ 20
END APRON 997.90 @ 30.00
997.96 @ 31.78

80' NEW R/W
OUTLET EL. 997.50
INLET EL. 997.90
NEW R/W
2 - 10'x 5'x 40' PRECAST CONC. BOX CULVERT
4 - 10'x 5' PRECAST CONC BOX CULVERT END SECTIONS

MATCH EXISTING
EXIST R/W
1008.05
EXIST R/W

1000.40 @ 31.24
1004.14 @ 20.00
1005.09 @ 16.17
1005.42
1005.09 @ 16.17
1004.14 @ 20.00
1001.50 @ 27.94
NEW R/W

CUT 67
FILL 92

1001.30 @ 32.92
EXIST R/W
1005.49 @ 16.17
1005.81
1005.49 @ 16.17
SPECIAL DITCH 1003.53 @ 24.00
1004.27 @ 32.95
EXIST R/W

80' NEW R/W

AS-BUILT
FEB 14 2005
ENGINEERING

CUT 88
FILL 192

1005.17 @ 21.35
1006.47 @ 16.17
1006.79
1006.47 @ 16.17
1005.99 @ 18.27
EXIST R/W
EXIST R/W

CUT 121
FILL 211

999.97 @ 31.53
1003.81 @ 20.00
1004.77 @ 16.17
1005.09
1004.77 @ 16.17
1003.81 @ 20.00
1001.31 @ 27.50
1002.07 @ 36.52
NEW R/W

80' NEW R/W

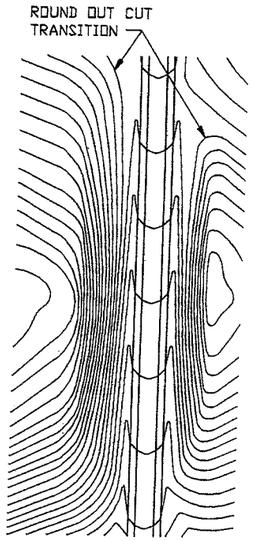
CUT 72
FILL 68

EXIST R/W
EXIST R/W

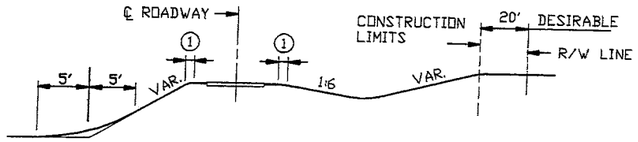
MATCH EXISTING
1009.66

CUT 47
FILL 43

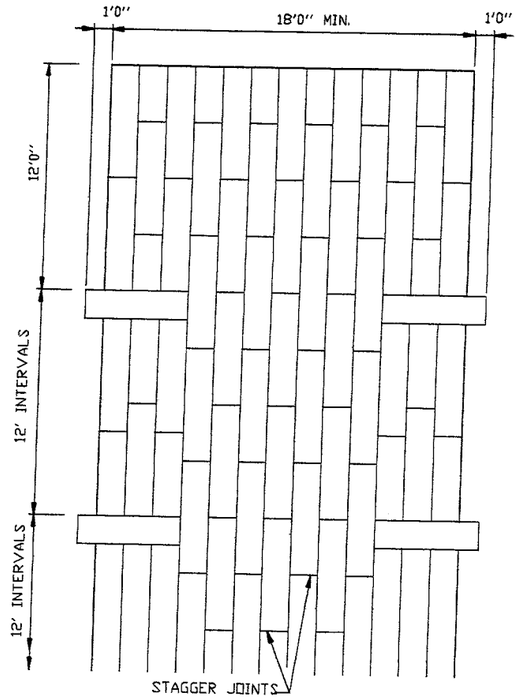
S.A.P. 55-599-83 HAVERHILL TWP. SHEET 4 OF 15 SHEETS



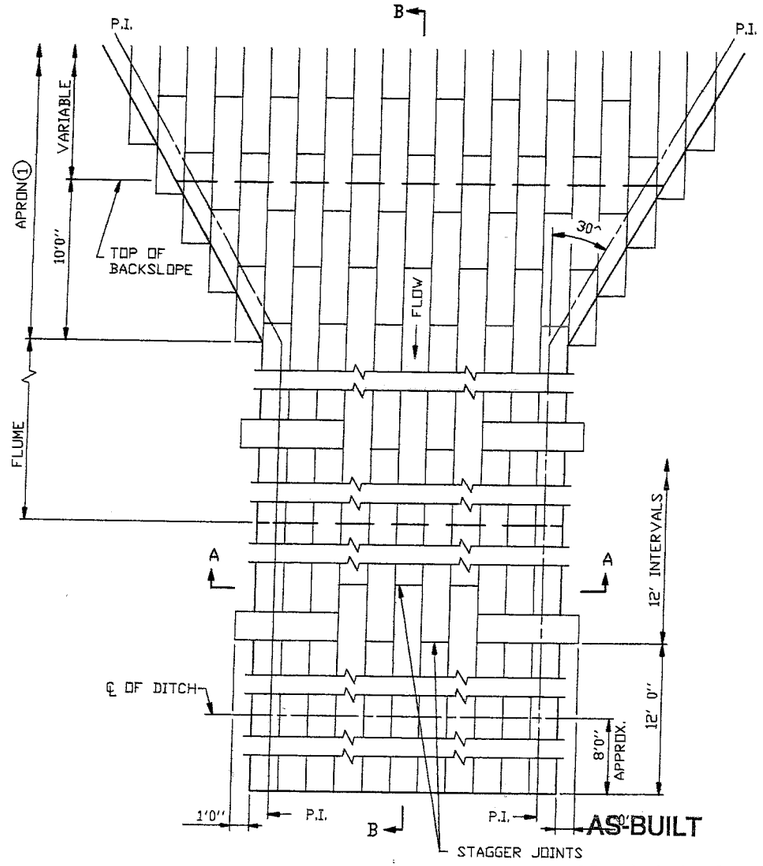
CONTOURING ROAD CUTS



ROUNDING SHOULDERS AND BACKSLOPES



PLAN VIEW

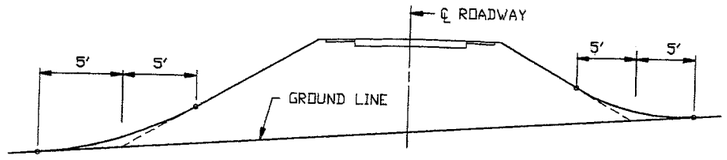


PLAN VIEW

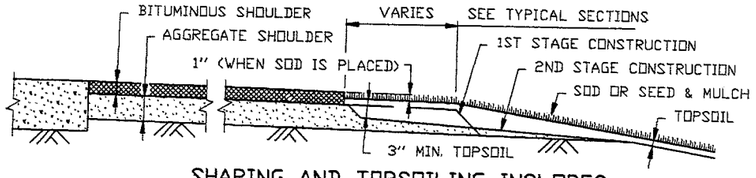
AS-BUILT

FEB 14 2005

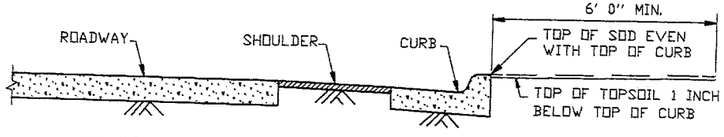
ENGINEERING



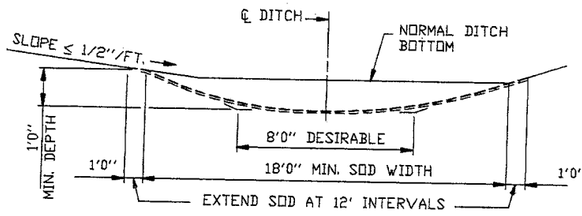
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



SHAPING AND TOPSOILING INSLOPES

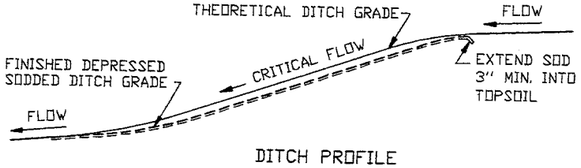


SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



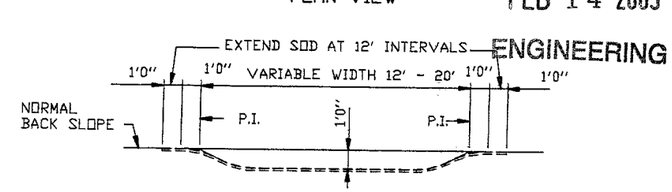
SODDED DITCH CROSS SECTION

WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.

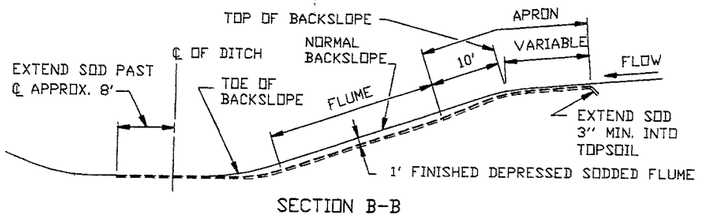


DITCH PROFILE

SODDED DITCH DETAILS



SECTION A-A



SECTION B-B

SODDED FLUME DETAILS

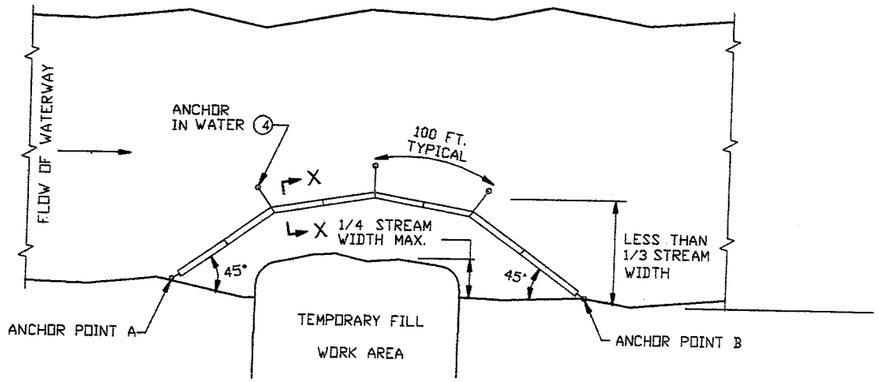
NOTES:

SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

(1) CONSTRUCT TAPER AS DIRECTED BY ENGINEER.

STANDARD SHEET NO. 5-297.404	TITLE: PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
STANDARD APPROVED: NOVEMBER 20, 2002	

S.A.P. 55-599-83 HAVERHILL TWP. SHEET NO 5 OF 15 SHEETS



PLAN VIEW

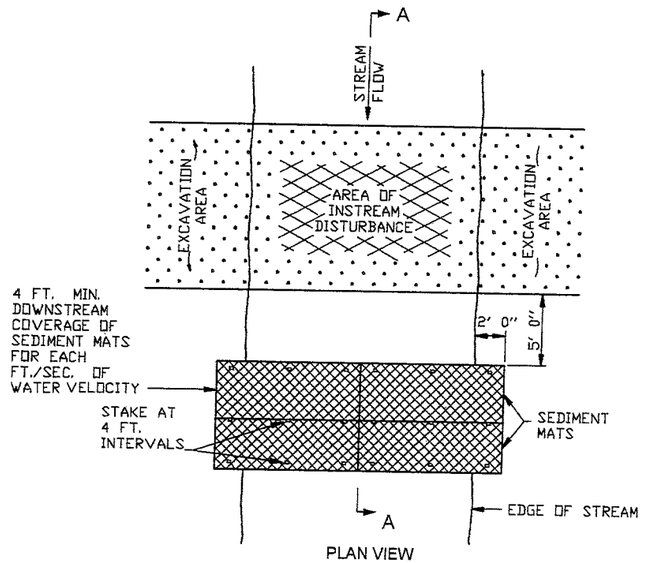
FLOTATION SILT CURTAIN - TYPE WORK AREA

(SPEC. 3887)

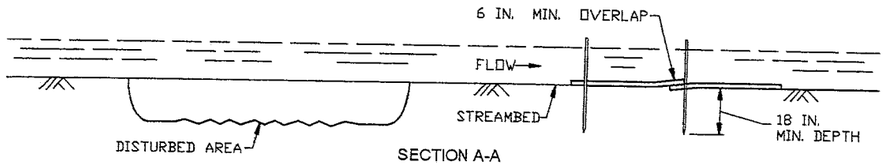
FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS

DESIGN GUIDELINES:

WHEN TEMPORARY FILL ENCROACHES LESS THAN 1/4 OF THE WIDTH OF STREAM.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
MAXIMUM WATER DEPTH: 11 FT.



PLAN VIEW



SECTION A-A

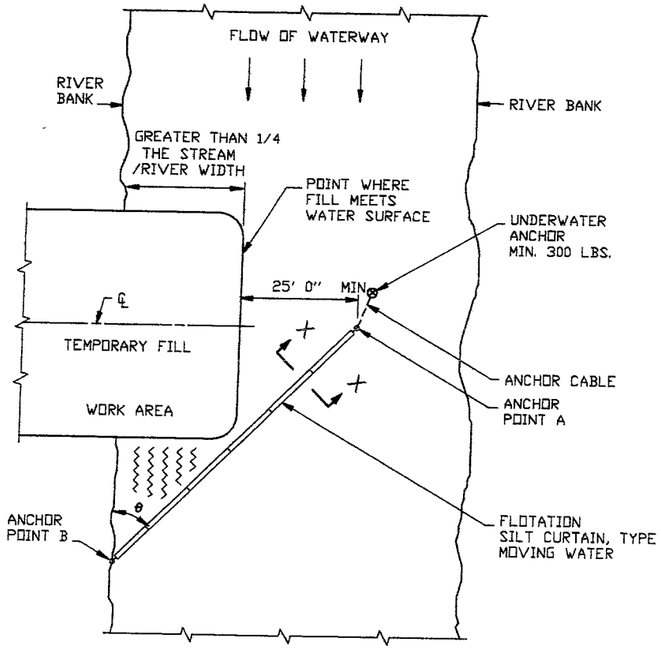
SEDIMENT MAT

(SPEC. 3894)

TYPICAL STREAMBED INSTALLATION

DESIGN GUIDELINES:

MAXIMUM FLOW VELOCITY: 5 FT./SEC.
MAXIMUM FLOW DEPTH: 2 FT.



∠ θ	RIVER VELOCITY
45°	SLOW, LESS THAN 3 FT./SEC.
35°	MODERATE, 3 - 5 FT./SEC.

PLAN VIEW

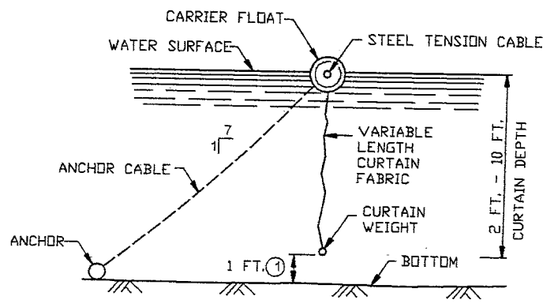
FLOTATION SILT CURTAIN - TYPE MOVING WATER

(SPEC. 3887)

DESIGN GUIDELINES:

WHEN TEMPORARY FILL ENCROACHES MORE THAN 1/4 BUT LESS THAN 1/3 WIDTH OF THE STREAM.

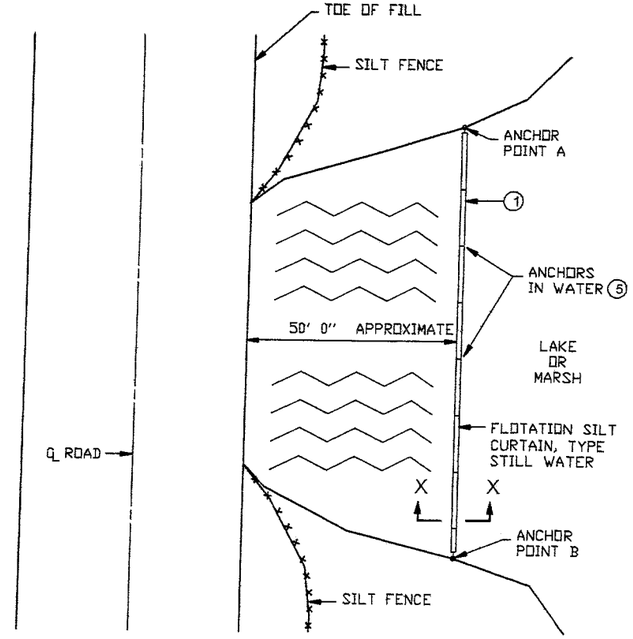
MAXIMUM WATER DEPTH: 11 FT. (1)
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.



SECTION X-X

FLOATATION SILT CUTAIN

(SPEC. 3887)



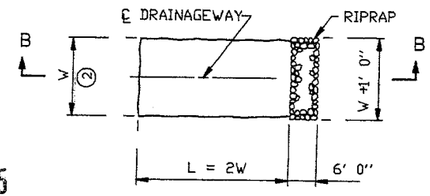
PLAN VIEW

FLOTATION SILT CURTAIN - TYPE STILL WATER

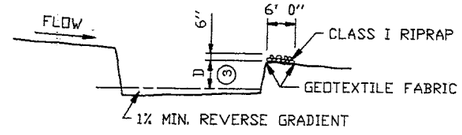
(SPEC. 3887)

DESIGN GUIDELINES:

MAXIMUM WATER DEPTH: 11 FT. (1)
MINIMUM WATER DEPTH: 3 FT.



PLAN



SECTION B-B

SEDIMENT TRAP DETAIL

(SPEC 2573)

AS-BUILT

FEB 14 2005

ENGINEERING

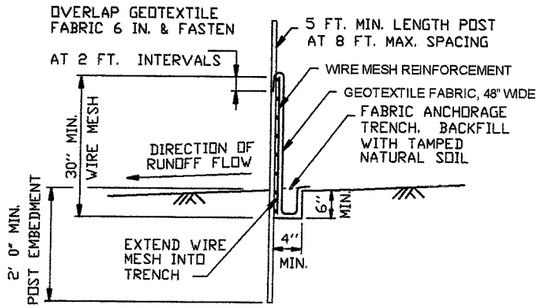
NOTES:

SEE SPECS. 2573, 3887 & 3894.

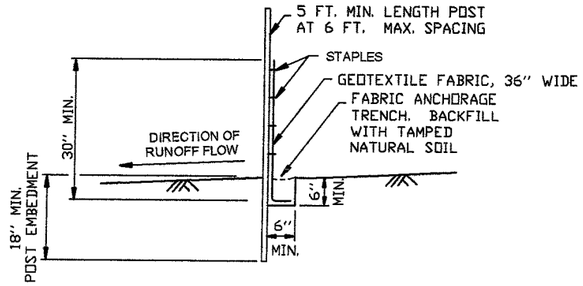
(1) CURTAIN 1 FT. FROM BOTTOM
(2) W = 10 FT. MIN., 20 FT. MAX.
(3) D = 2 FT.
(4) 100 FT. MAX. SPACING BETWEEN ANCHORS, MIN. 40 LBS.
(5) USE ENOUGH ANCHORS TO HOLD SILT CURTAIN IN PLACE.

STANDARD SHEET NO.	TITLE:
5-297.405 (1 OF 4)	TEMPORARY EROSION CONTROL
STANDARD APPROVED: July 30, 2001	

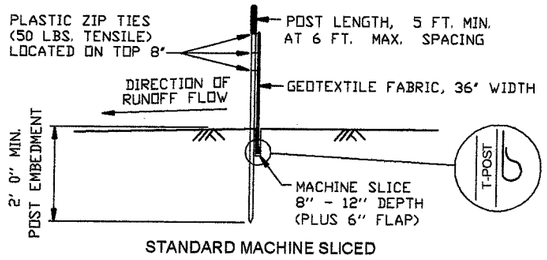
S.A.P. 55-599-83 HAVERHILL TWP. SHEET NO 6 OF 15 SHEETS



HEAVY DUTY



PREASSEMBLED

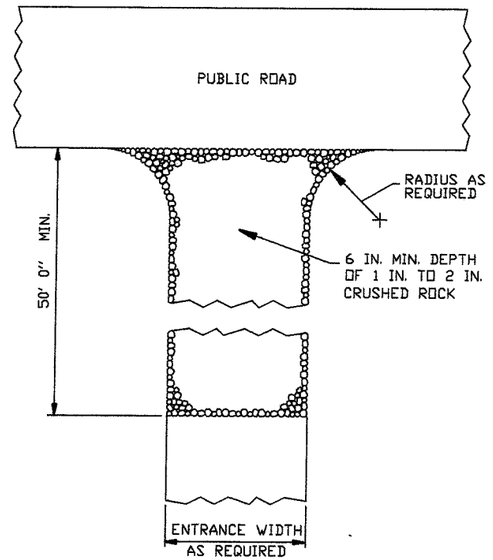


STANDARD MACHINE SLICED

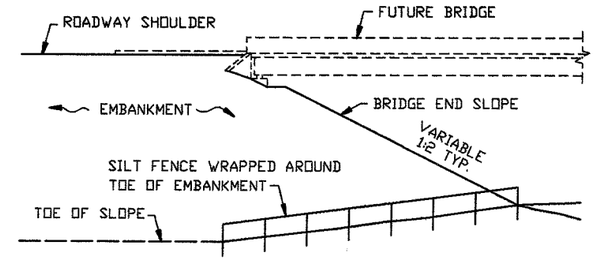
DESIGN GUIDELINES:
MAXIMUM CONTRIBUTING AREA: 3 ACRES

SILT FENCE DETAILS

TO PROTECT AREAS FROM SHEET FLOW
(SEE SPEC. 3886)

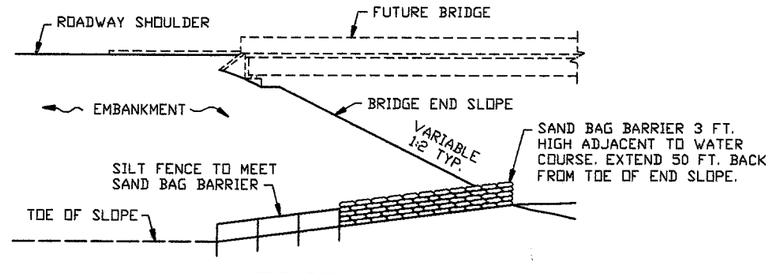


ROCK CONSTRUCTION ENTRANCE ①



BRIDGE FILL

DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: STAGNANT
CONTRIBUTING SLOPE AREA: 1/2 ACRE



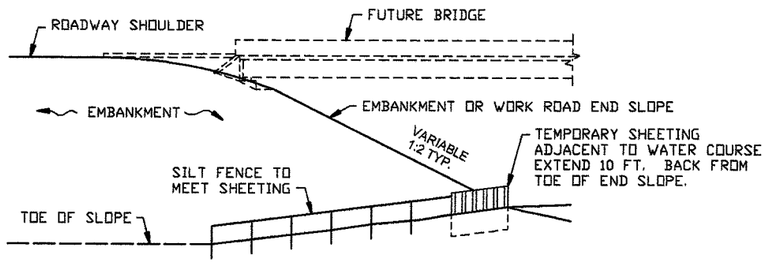
BRIDGE FILL

DESIGN GUIDELINES:
MAX. WATER COURSE FLOW VELOCITY: 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1 ACRE

AS-BUILT

FEB 14 2005

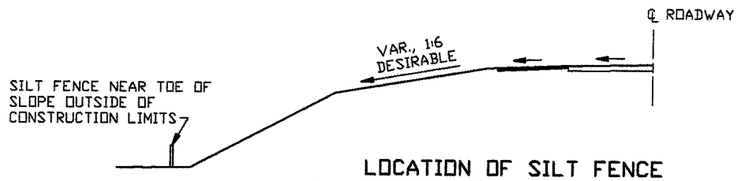
ENGINEERING



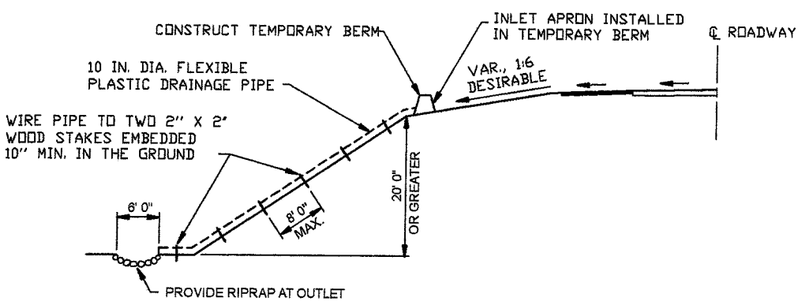
EMBANKMENT OR WORK ROAD FILL

DESIGN GUIDELINES:
MAX. WATER COURSE FLOW VELOCITY: 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES

SILT FENCE AT BRIDGE EMBANKMENT

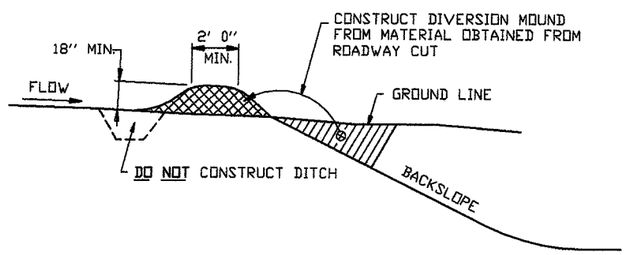


LOCATION OF SILT FENCE AT TOE OF ROADWAY EMBANKMENT



TEMPORARY DRAIN ON FILL SLOPE

DESIGN GUIDELINES:
STORM FREQUENCY: 2 YEAR - 24 HOUR
MAXIMUM DRAINAGE AREA: 3 ACRES



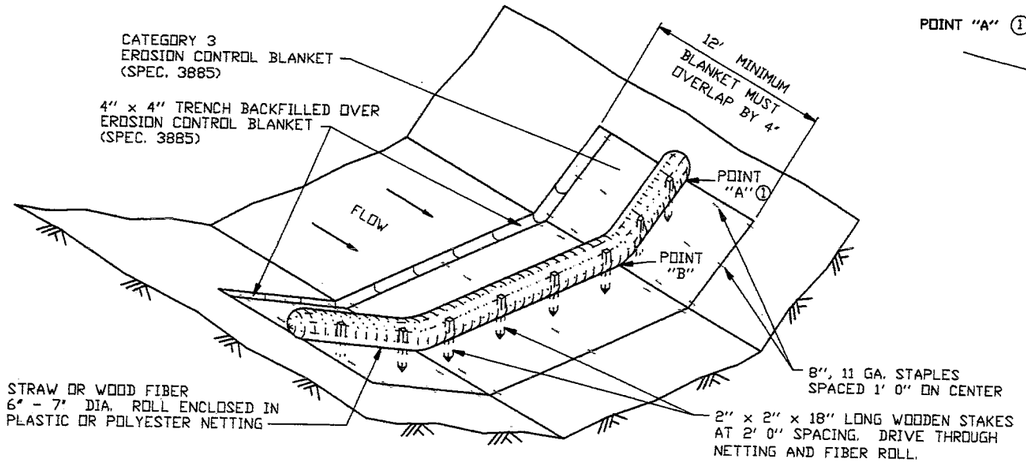
DIVERSION MOUND

DESIGN GUIDELINES:
STORM FREQUENCY: 10 YEAR - 24 HOUR
MAXIMUM DRAINAGE AREA: 5 ACRES
MAXIMUM DIVERSION: GRADE 5%

NOTES:
SEE SPECS. 2573 & 3886.
① ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE DRIVING ON MAIN ROAD. THIS WILL PREVENT AUTO DAMAGE. WE NEED TO KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS.

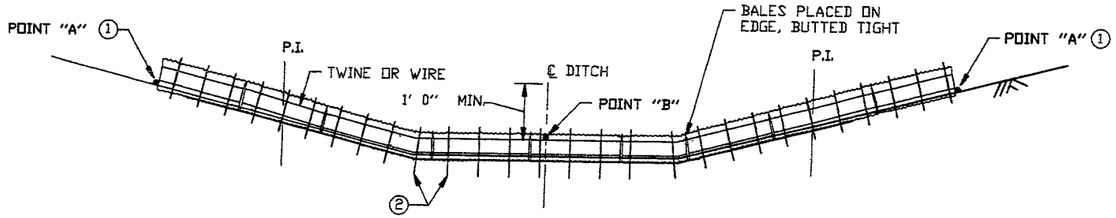
STANDARD SHEET NO. 5-297.405 (2 OF 4)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: JULY 30, 2001	

S.A.P. 55-599-83 HAVERHILL TWP. SHEET NO 7 OF 15 SHEETS



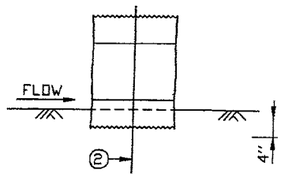
BIOROLL BLANKET SYSTEM

(TYPE 3 SPEC. 3889)



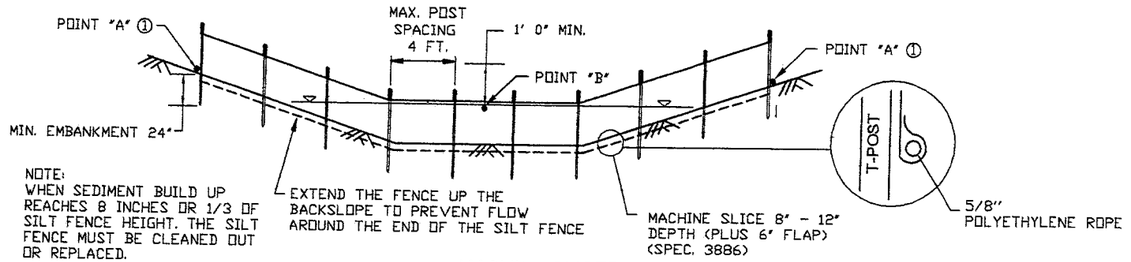
BALE DITCH CHECK

(USED ON ROUGH GRADED SOIL. REMOVE AFTER ROUGH GRADING IS COMPLETED. CAN BE USED AT WETLAND PERIMETERS ANYTIME)



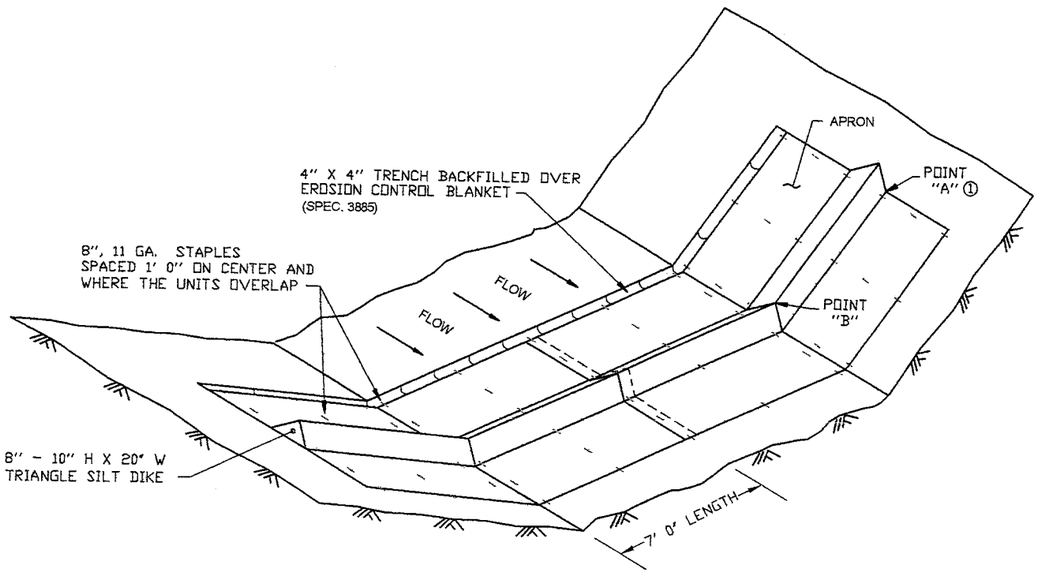
EMBEDMENT METHOD

BALE CHECK DETAIL



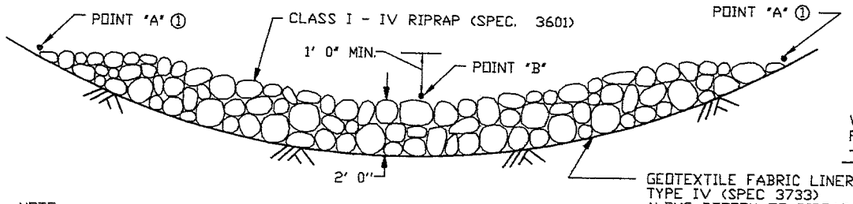
MACHINE SLICED

(TYPE 1 SPEC. 3889)



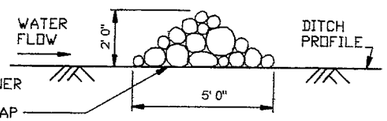
GEOTEXTILE TRIANGULAR DIKE

(TYPE 6 SPEC. 3889)



CROSS SECTION

NOTE:
ROCK DITCH CHECK SHALL
BE REMOVED FROM THE CLEAR
ZONE AFTER SEEDING OR TURF
IS ESTABLISHED AND PRIOR TO
FINAL ACCEPTANCE.



PROFILE VIEW

ROCK CHECK

(TYPE 7 SPEC. 3889)

AS-BUILT

FEB 14 2005

ENGINEERING

NOTES:

SEE SPECS. 2573, 3885, 3886 & 3889.

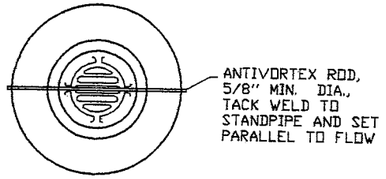
SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM SPACING FORMULA:

$$\text{SPACING OF DITCH CHECKS (FT.)} = \frac{\text{HEIGHT OF DITCH CHECK (FT.)} \times 100}{\text{DITCH GRADE IN PERCENT}}$$

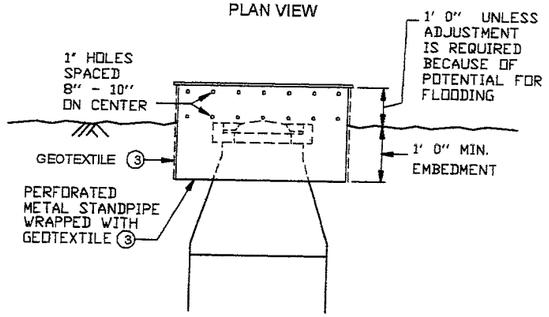
① POINT "A" MUST BE 1' 0" MIN. HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

② TWO 2 IN. x 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE AND ENBEDDED IN THE GROUND 10 IN. MIN.

STANDARD SHEET NO.	TITLE:
5-297.405 (3 OF 4)	TEMPORARY EROSION CONTROL DITCH CHECKS
STANDARD APPROVED: NOVEMBER 5, 2002	



PLAN VIEW



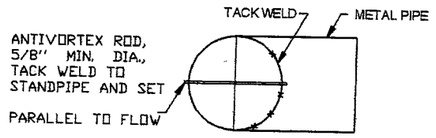
ELEVATION

RISER STANDPIPE

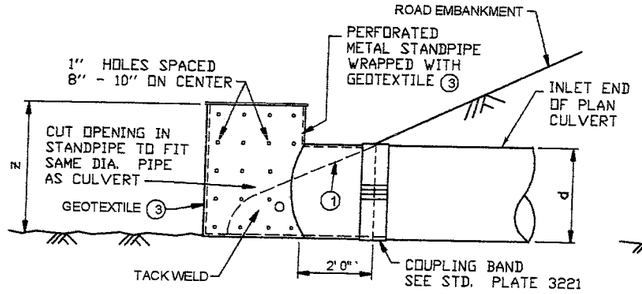
TO PROTECT DROP INLET

DESIGN GUIDELINES:

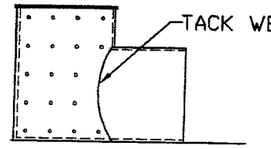
STORM FREQUENCY: 10 YEAR. - 24 HOUR.



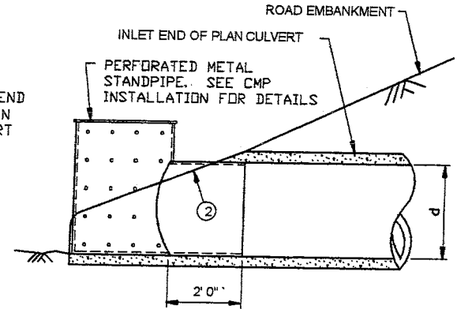
PLAN VIEW



ELEVATION OF CMP INSTALLATION



CULVERT STANDPIPE



ELEVATION OF RCP INSTALLATION

RISER STANDPIPE

FOR SEDIMENT CONTROL ON CULVERT INLET

(TYPE D SPEC. 3891)

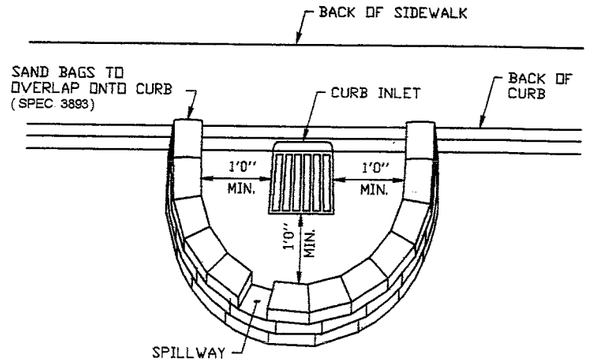
d = DIA. OF STANDPIPE EQUAL TO DIA. OF PLAN CULVERT

z = LENGTH OF PERFORATED STANDPIPE (**d** + 12")

DESIGN GUIDELINES:

CULVERT SIZE: 12" - 36"

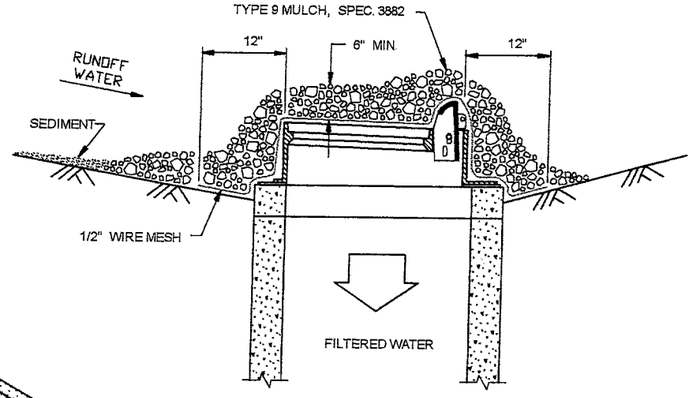
STORM FREQUENCY: 10 YR. - 24 HR.



SANDBAG BARRIER AT STREET INLET

THIS INLET PROTECTION IS USED DURING ROUGH GRADING ONLY. USE BEFORE ROAD IS OPEN TO TRAFFIC OR IS PAVED.

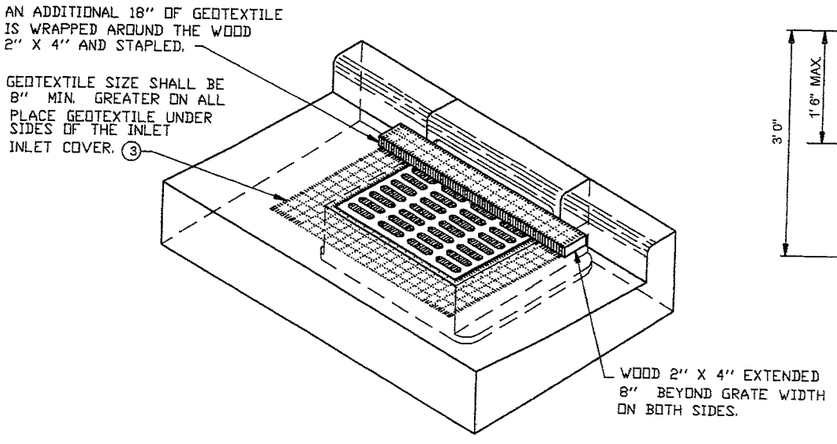
(TYPE B OR C SPEC. 3893)



AGGREGATE FILTER AT CURB INLET

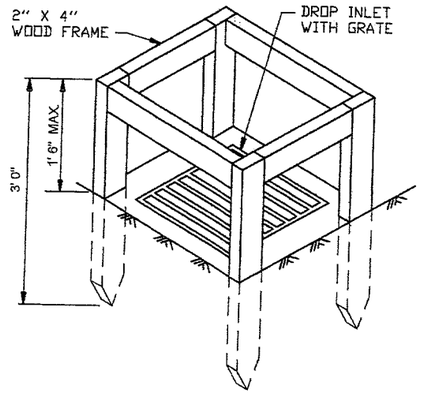
(TYPE B WITHOUT CURB SPEC. 3891)

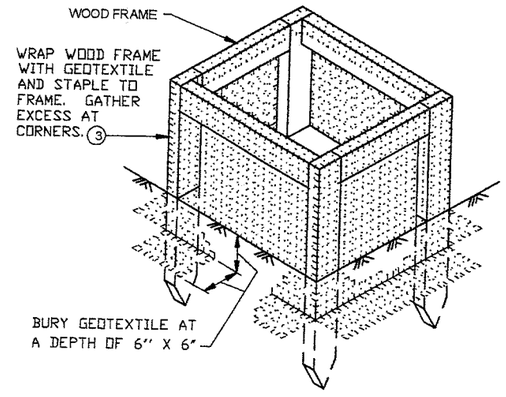
(TYPE C WITH CURB SPEC 3891)



GEOTEXTILE FILTER AT STREET INLET WITH CURB BOX

(TYPE A SPEC. 3891)





SILT FENCE BOX TO PROTECT DROP INLETS

USE WHERE INLET DRAINS AN AREA WITH SLOPES AT 1:3 or LESS

(TYPE A SPEC. 3891)

AS-BUILT

FEB 14 2005

ENGINEERING

NOTES:

SEE SPECS. 2573, 3891 & 3893.

MANUFACTURED ALTERNATIVES LISTED ON Mn/DOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.

(1) FOR CMP, REMOVE TEMPORARY STANDPIPE AND INSTALL CULVERT APRON AFTER VEGETATION IS ESTABLISHED.

(2) FOR RCP, INSTALL CULVERT APRON AND SLIDE TEMPORARY STANDPIPE INTO RCP. AFTER VEGETATION IS ESTABLISHED REMOVE TEMPORARY STANDPIPE.

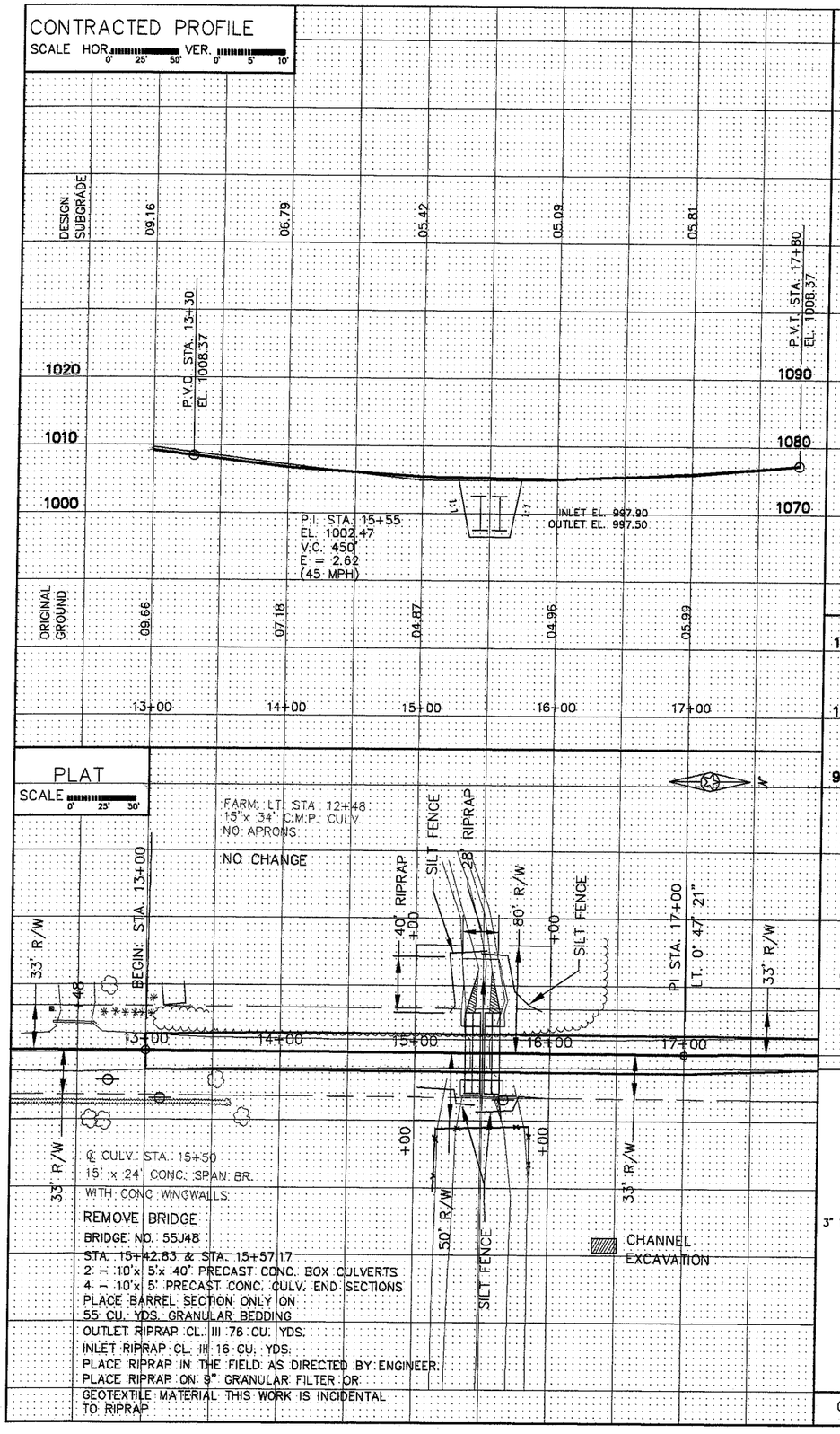
(3) ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MOND/MOND, MEETING SPEC. 3886 FOR MACHINE SLICED. SLICED.

STANDARD SHEET NO.	TITLE:
5-297.405 (4 OF 4)	TEMPORARY EROSION CONTROL TEMPORARY INLET PROTECTION
STANDARD APPROVED: NOVEMBER 5, 2002	

S.A.P. 55-599-83 HAVERHILL TWP. SHEET NO 9 OF 15 SHEETS

CONTRACTED PROFILE

SCALE HOR. 0' 25' 50' VER. 0' 5' 10'



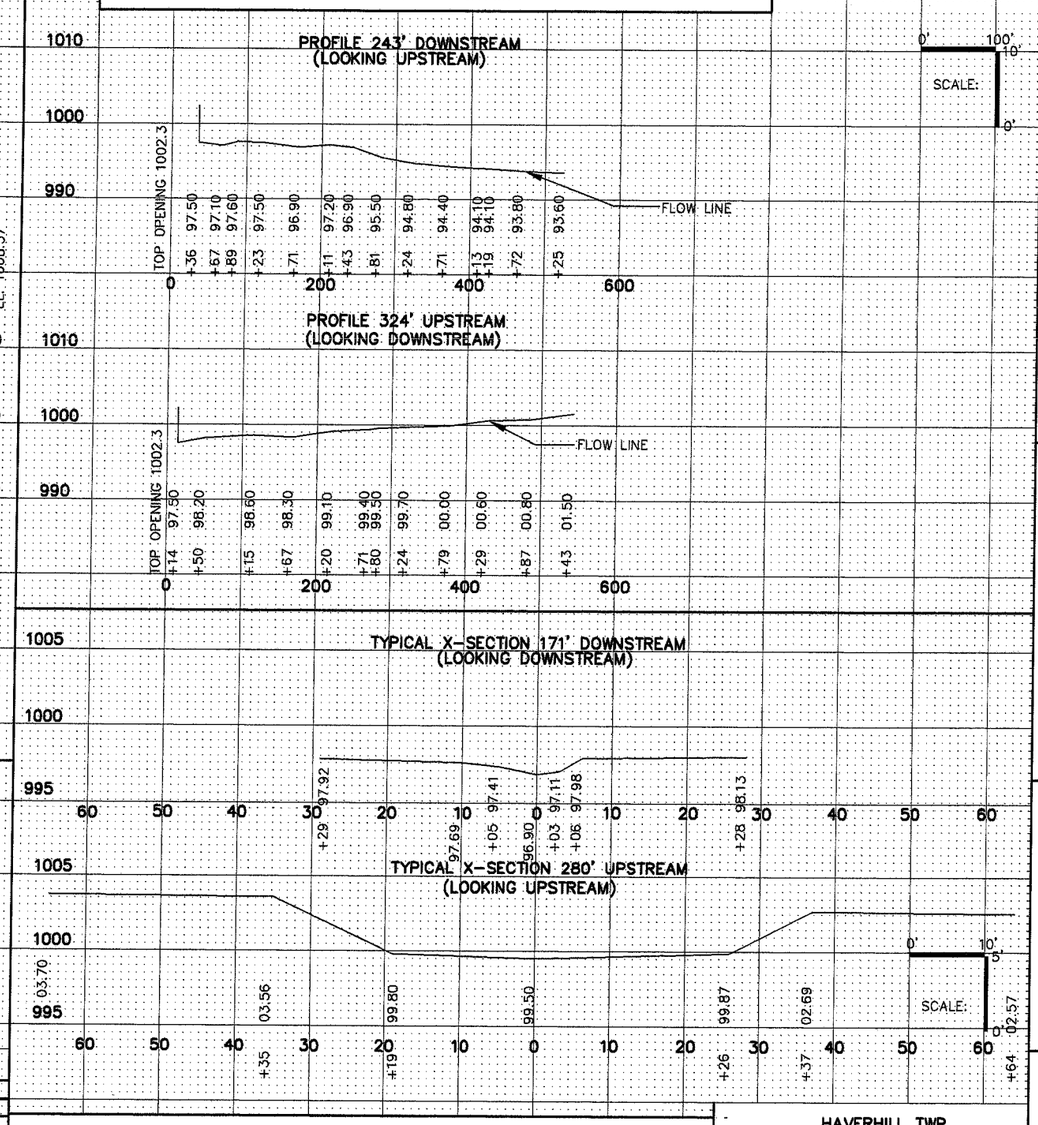
PLAT

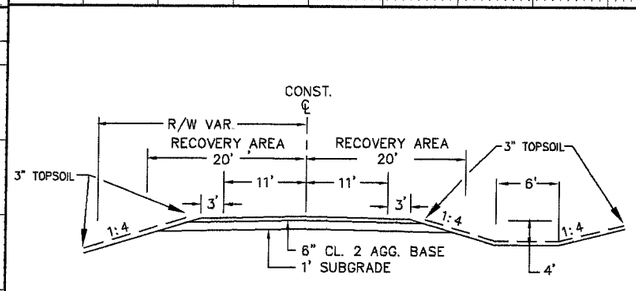
SCALE 0' 25' 50'

REMOVE BRIDGE
BRIDGE NO. 55J48
STA. 15+42.83 & STA. 15+57.17
2 - 10'x 5'x 40' PRECAST CONC. BOX CULVERTS
4 - 10'x 5' PRECAST CONC. CULV. END SECTIONS
PLACE BARREL SECTION ONLY ON
55 CU. YDS. GRANULAR BEDDING
OUTLET RIPRAP CL. III 76 CU. YDS.
INLET RIPRAP CL. III 16 CU. YDS.
PLACE RIPRAP IN THE FIELD AS DIRECTED BY ENGINEER.
PLACE RIPRAP ON 9" GRANULAR FILTER OR
GEOTEXTILE MATERIAL THIS WORK IS INCIDENTAL TO RIPRAP

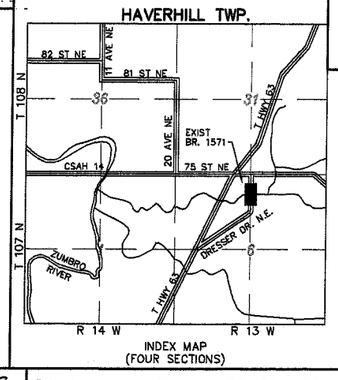
TYPICAL SECTIONS & PERTINENT DATA

SCALE AS SHOWN





STA. 13+00 TO 18+00





CERTIFIED BY Kaye M Bruemmer REG. NO. 19917 12/9 2003
LICENSED PROFESSIONAL ENGINEER

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 5/23/2003

Stream or ditch designation UNNAMED
Drainage area 1.5 SQ. MI.
Max. flood on record UNKNOWN Design flood (60 yr. freq.) 1010 C.F.S.
Max. observed highwater elevation UNKNOWN Design highwater elevation 1005.5
Design mean velocity through structure 11.7 F.P.S. OUTLET
Low superstructure at or above elevation NA
Flowline 997.5 Skew angle NO SKEW
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 1200 C.F.S. at stage 1001.4 and mean velocity of 12.0 F.P.S. with 4.6 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
FEB 14 2005
ENGINEERING

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

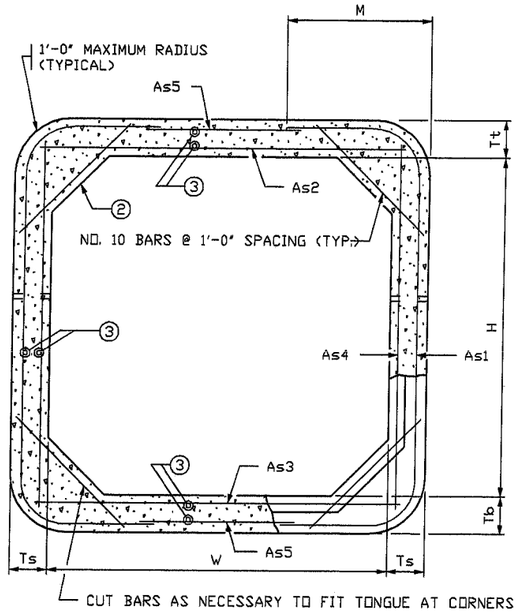
Bench mark elevation (M.S.L. 1929 Adj.)
Location:

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

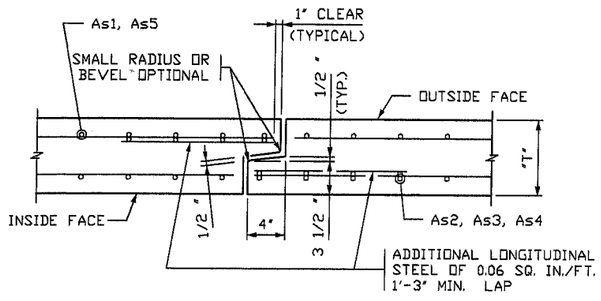
AT MILE POINT 0.1 TWP. RD. 310 (DRESSER DR. N.E.) (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 0.1 MILES SOUTH OF JCT C.S.A.H. 14
SEC. 6 TWP. 107 R 13
TOWNSHIP HAVERHILL COUNTY OLMSTED
BRIDGE NO. 55J48

State Aid Proj. 55-599-83 HAVERHILL TWP. Sheet No. 10 of 15 Sheets

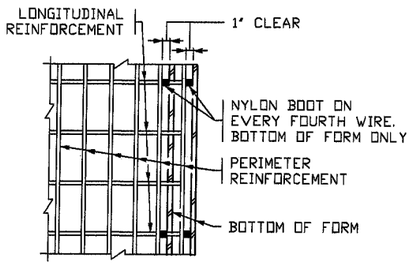


TRANSVERSE BARREL SECTION

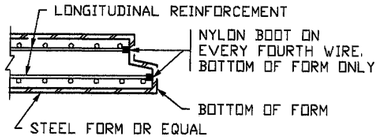
BAR REINFORCEMENT OPTION SHOWN



TONGUE AND GROOVE JOINT DETAIL

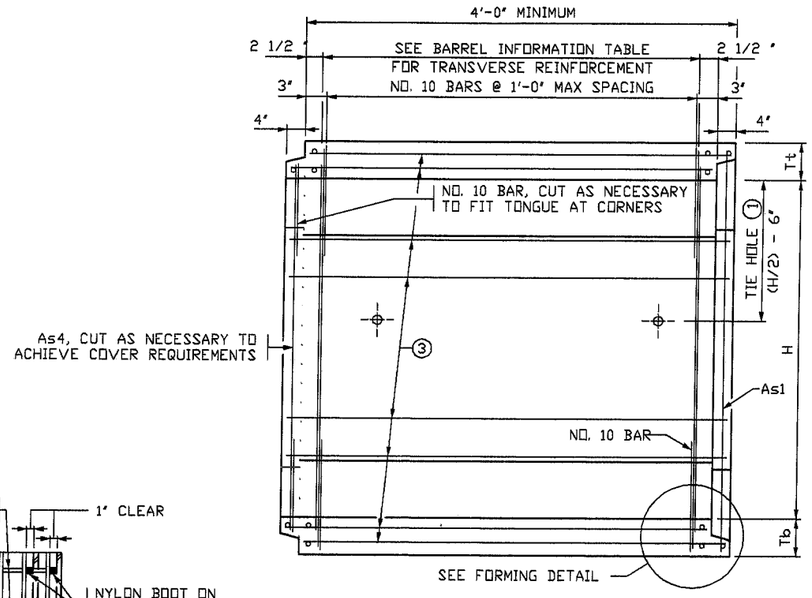


PLAN



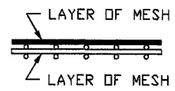
SECTION

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 MnDOT 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(MnDOT 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 MnDOT 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.)
15+42.83	10' x 5'	2	5000	2-8	10	5	9	10	8	3910	0.48	10'-7"	2'-8"	0.75	10'-6"	0.68	10'-6"	0.20	5'-6"	0.06	8'-0"
15+57.17	10' x 5'	2	5000	2-8	10	5	9	10	8	3910	0.48	10'-7"	2'-8"	0.75	10'-6"	0.68	10'-6"	0.20	5'-6"	0.06	8'-0"

REVISION:

APPROVED: DECEMBER 11, 2000
Donald J. Flemming
STATE BRIDGE ENGINEER

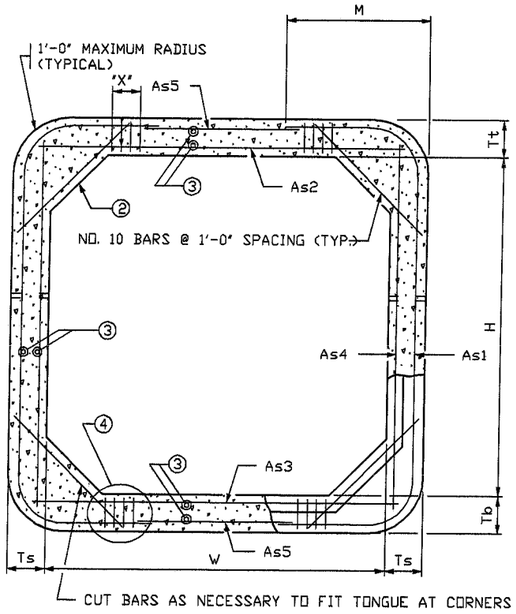
S.A.P. 55-599-83 STA. 15+42.83 & STA. 15+57.17 | FIG. 5-395.101(A)

CERTIFIED BY Kaye M Bieniek
LICENSED PROFESSIONAL ENGINEER
REG. NO. 19917 12/9 2003

TITLE: BARREL DETAILS

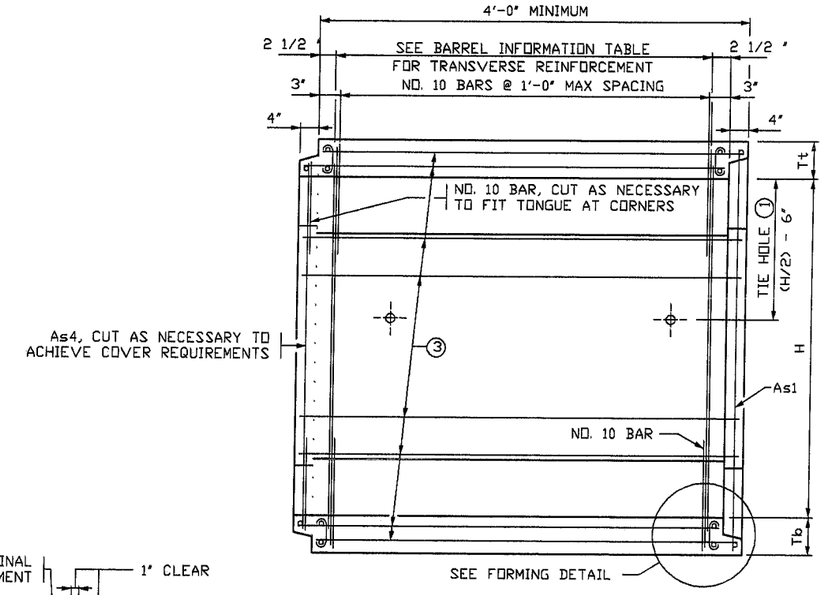
DES: | DR: | APPROVED:
CHK: | CHK:

SHEET NO. 11 OF 15 SHEETS | BRIDGE NO. 55J48



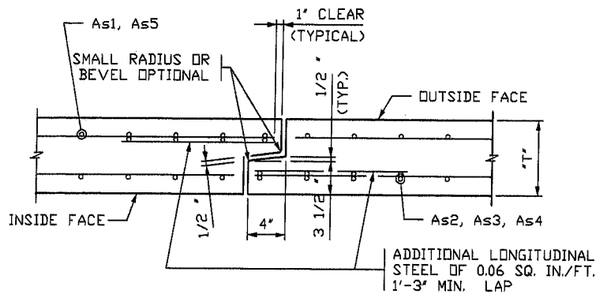
TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

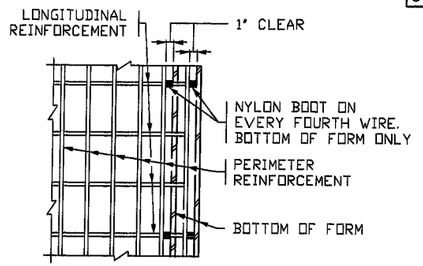


LONGITUDINAL BARREL SECTION

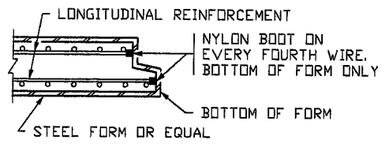
BAR REINFORCEMENT OPTION SHOWN



TONGUE AND GROOVE JOINT DETAIL

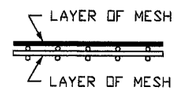


PLAN



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 MnDOT 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 (MnDOT 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 MnDOT SPEC. 3238.2A IS REQUIRED.

(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.

(4) SEE STANDARD PLATE NO. 3007 FOR SHEAR REINFORCEMENT OPTIONS. THE MAXIMUM SHEAR REINFORCEMENT SPACING IN THE LONGITUDINAL DIRECTION SHALL BE 6".

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BARREL INFORMATION

LOCATION	SIZE	f'c (P.S.I.)	OVERFILL LIMITS (FT.)	DIMENSIONS					WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT										(4) SHEAR REINFORCEMENT TOP AND BOTTOM OF BARREL		
										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.)	AREA (IN.²/FT.)	MAX. SPG. (IN.)	X (IN.)

REVISION:
APPROVED: DECEMBER 11, 2000
Donald J. Flemming
STATE BRIDGE ENGINEER

S.A.P. 55-599-83 STA. 15+42.83 & STA. 15+57.17

FIG. 5-395.101(B)

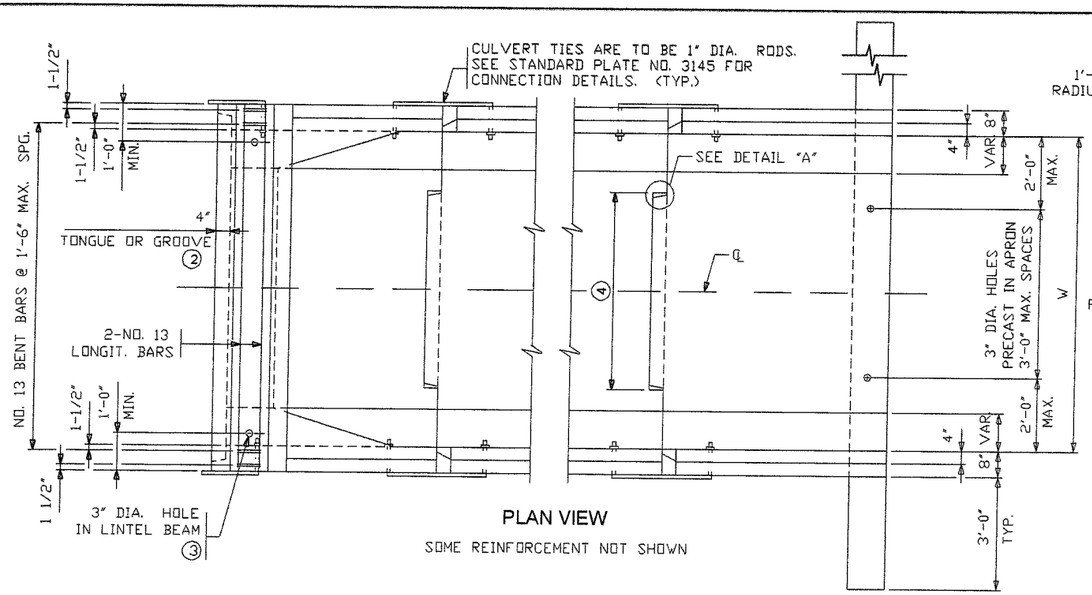
CERTIFIED BY Kaye M Bieniek
LICENSED PROFESSIONAL ENGINEER
REG. NO. 19917 12/9 2003

TITLE: BARREL DETAILS (SPECIAL DESIGN)

DES: DR: APPROVED:
CHK: CHK:

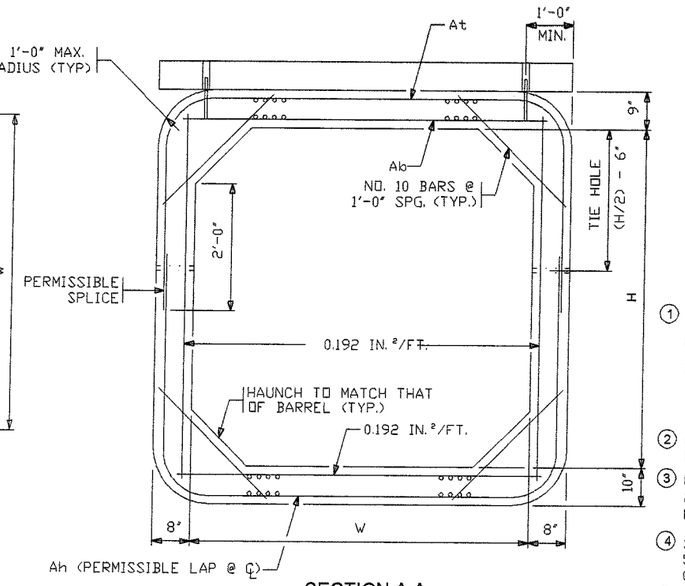
SHEET NO. 12 OF 15 SHEETS

BRIDGE NO. 55J48



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.

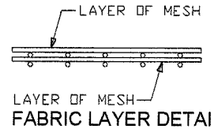
(1) WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. SEE FIG. 5-395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL TO BE CONCRETE MIX NO. 1A43 OR MIX NO. 3Y43. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED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

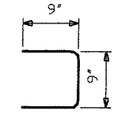
(4) 3'-6" TONGUE AND 3'-7" GROOVE FOR 6'-0" WIDE CULVERTS. 5'-0" TONGUE AND 5'-1" GROOVE FOR CULVERTS OVER 6'-0" WIDE. CENTER TONGUE AND GROOVE ON ℄ OF EACH APRON JOINT.

(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.

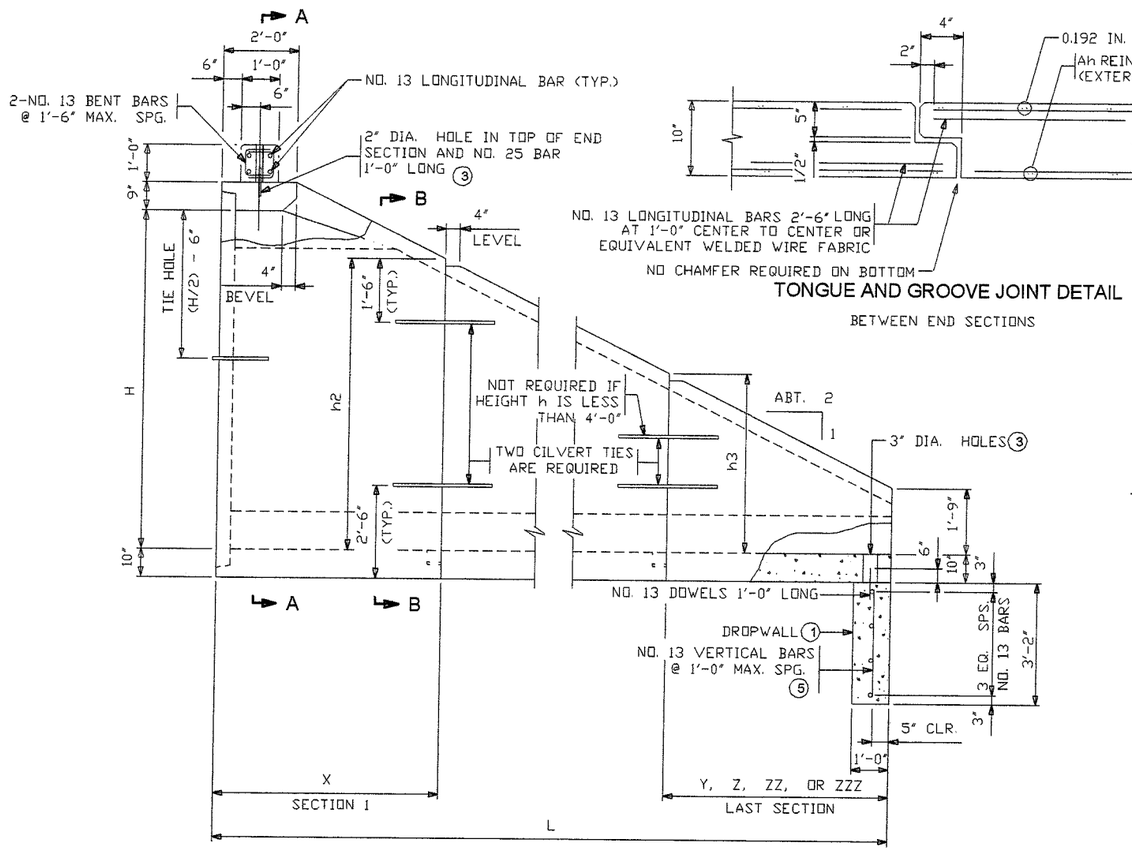


FABRIC LAYER DETAIL

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.



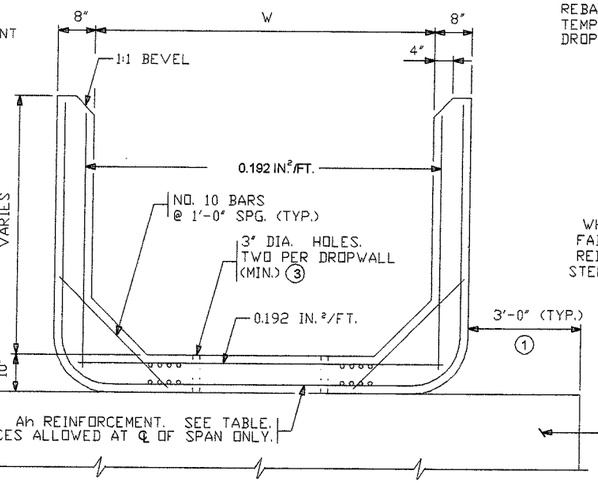
NO. 13 BENT BAR



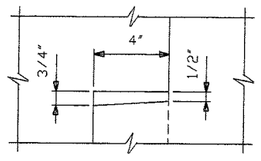
SIDE ELEVATION

TONGUE AND GROOVE JOINT DETAIL

BETWEEN END SECTIONS



SECTION B-B



DETAIL "A"

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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:
APPROVED: DECEMBER 11, 2000
Donald J. Flemming
STATE BRIDGE ENGINEER

S.A.P. 55-599-83 STA. 15+42.83 & STA. 15+57.17

FIG. 5-395.102 (MODIFIED)

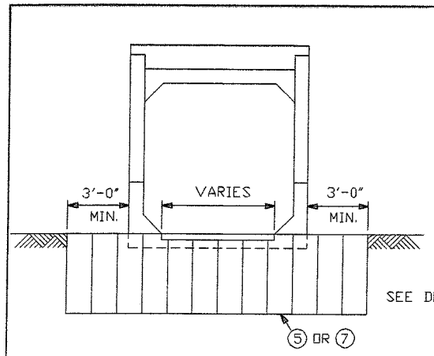
CERTIFIED BY Kaye M Bzieniek
LICENSED PROFESSIONAL ENGINEER
REG. NO. 19917 12/9 2003

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

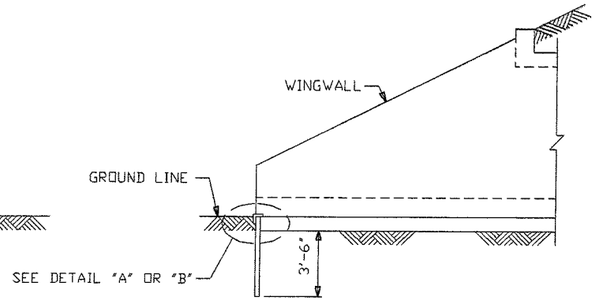
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CHK: CHK:

SHEET NO. 13 OF 15 SHEETS

BRIDGE NO. 55J48

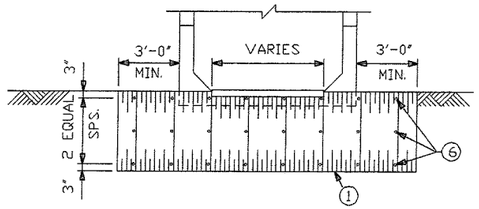


END VIEW

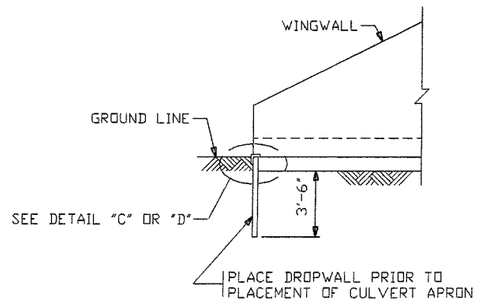


ELEVATION

ALTERNATES 1 & 2 (STEEL SHEET PILING)

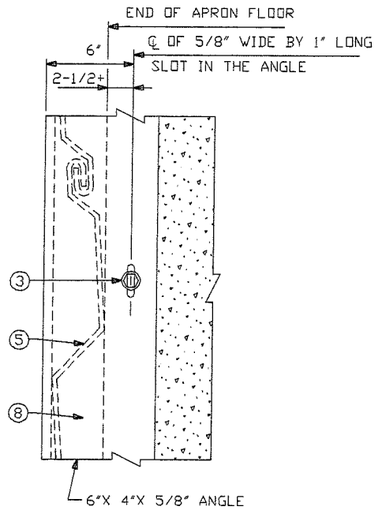


END VIEW

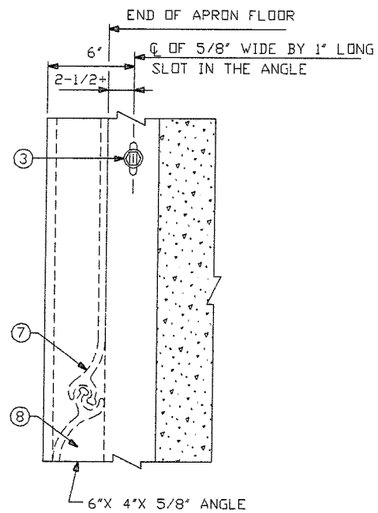


ELEVATION

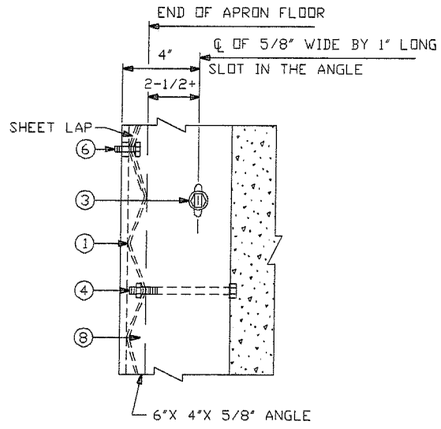
ALTERNATES 3 & 4 (GALVANIZED STEEL SHEETS)



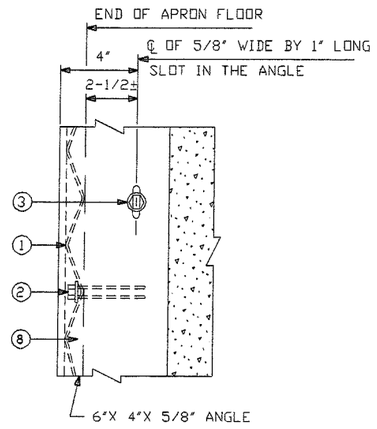
PLAN



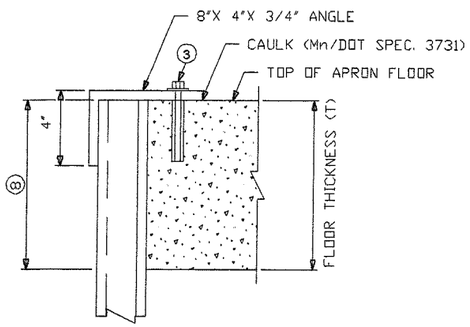
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PLAN



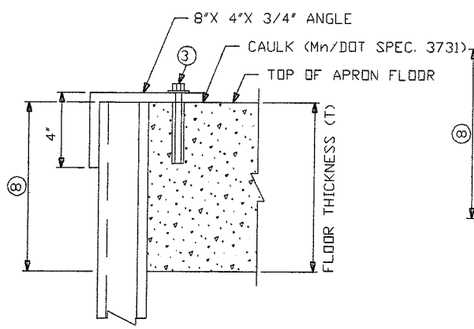
PLAN



ELEVATION

DETAIL "A" - ALTERNATE 1

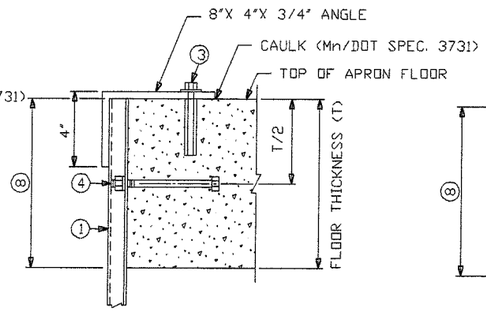
STEEL SHEET PILING SHOWN



ELEVATION

DETAIL "B" - ALTERNATE 2

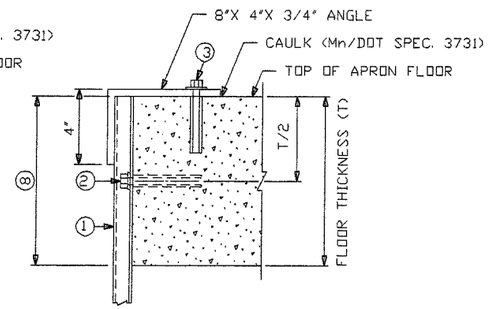
STEEL SHEET PILING SHOWN



ELEVATION

DETAIL "C" - ALTERNATE 3

ON NEW CONSTRUCTION ONLY



ELEVATION

DETAIL "D" - ALTERNATE 4

ON NEW OR OLD CONSTRUCTION

CONSTRUCTION NOTES

GALVANIZE ALL FASTENERS AS PER Mn/DOT SPEC. 3392. BEFORE CULVERT PLANS ARE PREPARED, SAMPLES SHALL BE TAKEN 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.

① 2-1/2"x 1/2" OR 2 - 2/3 "x 1/2" CORRUGATED (12 GAGE) OR HEAVIER GALVANIZED STEEL SHEETS.

② FASTEN THE STEEL SHEETS TO THE FRONT EDGE OF THE APRON WITH 3/8" DIAMETER BY 4" LONG BOLTS AND APPROVED ANCHORAGES (10" ` CENTER TO CENTER, TO THE NEAREST VALLEY).

③ FASTEN THE 8"x 4"x 3/4" OR 6"x 4"x 5/8" ANGLE WITH 3/8" 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 3/8" 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 3/8" 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.

AS-BUILT

FEB 14 2005

ENGINEERING

REVISION:

APPROVED: DECEMBER 11, 2000

Donald J. Flemming

STATE BRIDGE ENGINEER

S.A.P. 55-599-83 STA. 15+42.83 & STA. 15+57.17 FIG. 5-395.111

CERTIFIED BY Kay M Brimeck

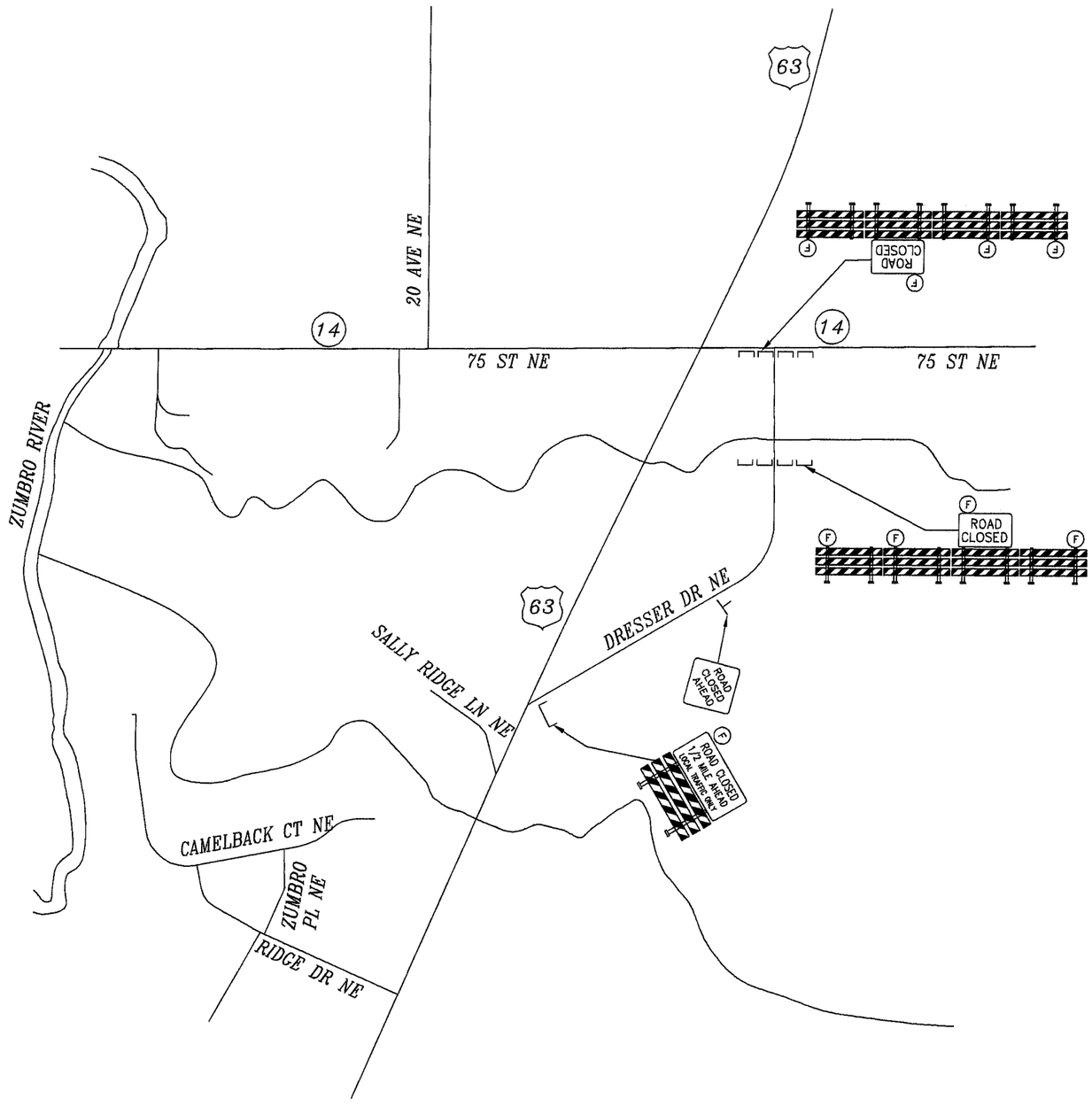
LICENSED PROFESSIONAL ENGINEER

REG. NO. 19917 12/9 2003

TITLE: ALTERNATE DROPWALLS FOR BOX CULVERTS

DES:	DR:	APPROVED:	BRIDGE NO.
CHK:	CHK:		55J48

SHEET NO. 14 OF 15 SHEETS



N

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	9
ROAD CLOSED 1/2 MILE AHEAD LOCAL TRAFFIC ONLY	R11-3	60 x 30	BLK/WH	1	(F)	TYPE A	FLASHING LAMP	AMBER	9
ROAD CLOSED AHEAD	W20-3	48 x 48	BLK/OR	1					

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 2001.
4. CONSTRUCTION ZONE SIGNING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL INCLUDE, BUT NOT BE LIMITED TO SIGNS FOR LANE CLOSURE, 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

FEB 14 2005

ENGINEERING

TRAFFIC CONTROL

CERTIFIED BY Kaye M Briesek REG. NO. 19917 12/9 2003
LICENSED PROFESSIONAL ENGINEER

S.A.P. 55-599-83 HAVERHILL TWP.

SHEET 15 OF 15 SHEETS