MINNESOTA DEPARTMENT OF TRANSPORTATION
OLMSTED COUNTY

CONSTRUCTION PLAN FOR BRIDGE NO. 55549

LOCATED 1.4 MI. SOUTH OF JCT. C.S.A.H. 12 ON T-RD. 312 OVER AN UNNAMED STREAM, (Geographical Description)
5.5 mi. No. of Rochester

SEC. 24 TWP. 108N R 14W (Legal Description)

MN. PROJ. NO.

STATE PROJ. NO.

GROSS LENGTH _____ FEET _____ MILES
BRIDGES-LENGTH _____ FEET _____ MILES
EXCEPTIONS-LENGTH _____ FEET _____ MILES
NET LENGTH _____ FEET _____ MILES

STATE AID PROJ. NO. 55-599-36

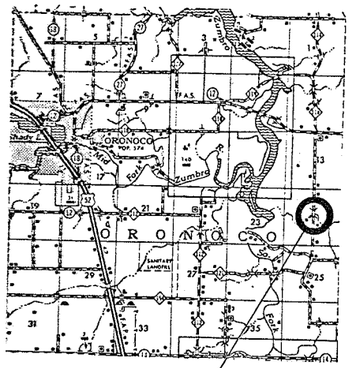
GROSS LENGTH 91.50 FEET 0.017 MILES
BRIDGES-LENGTH 91.50 FEET 0.017 MILES
EXCEPTIONS-LENGTH _____ FEET _____ MILES
NET LENGTH 91.50 FEET 0.017 MILES

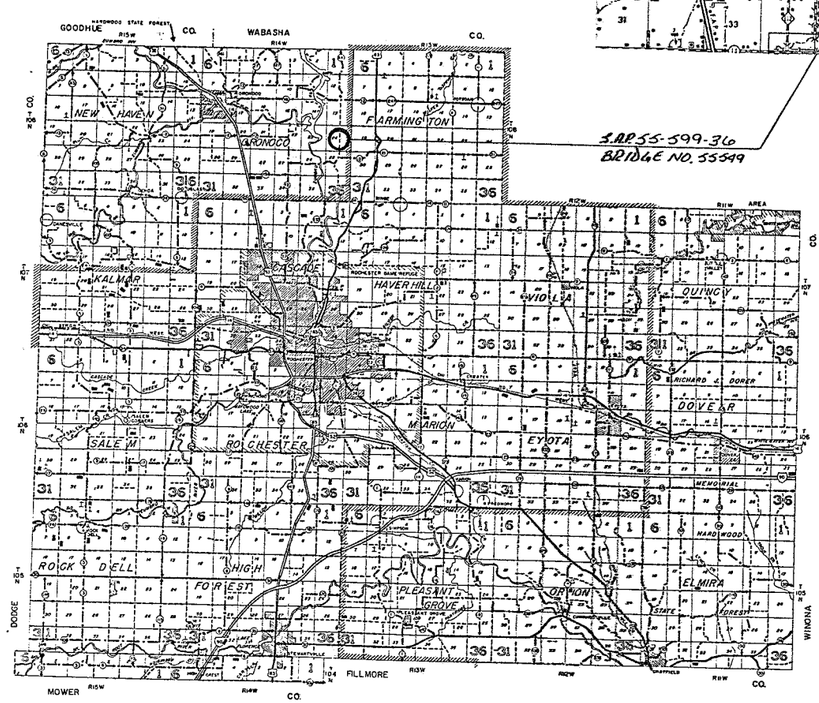
GOVERNING SPECIFICATIONS

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION AS AMMENDED BY THE JANUARY 2,1991 SUPPLEMENTAL SPECIFICATIONS SHALL GOVERN.

LIST OF SHEETS

NO.	TITLE
1	TITLE SHEET
2	GENERAL PLAN & ELEVATION
3	BRIDGE LAYOUT
4	ABUTMENT DETAILS
5-6	SUPERSTRUCTURE DETAILS
7	CONCRETE RAIL (TYPE J)
8	PRESTRESSED CONCRETE BEAM DETAILS
9-14	DETAILS
15	BRIDGE SURVEY
16	BRIDGE SURVEY ~ PLAN & PROFILE





PLANS 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 LINE
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
(TIMBER)
CATCH BASIN C.B.
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 POLES
OR TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDESTAL (TELEPHONE CABLE TERMINAL)
GAS MAIN
WATER MAIN

CONDUIT
TELEPHONE CABLE IN CONDUIT
ELECTRIC CABLE IN CONDUIT
TELEPHONE MANHOLE
ELECTRIC MANHOLE
BURIED TELEPHONE CABLE
BURIED ELECTRIC CABLE
AERIAL TELEPHONE CABLE
SEWER, (SANITARY OR STORM)
SEWER MANHOLE

DESIGN DESIGNATION

℄N18$_{20}$ _____
R VALUE _____
ADT (Current Year) 112 (1993)
PROJ. ADT ( ) _____
PROJ. HCADT _____
SOIL FACTOR 130
__TON DESIGN
LANE WIDTH 11'
SHOULDER WIDTH 3'

Design Speed 30 MPH
Based on Stopping Sight Distance
Height of eye 3.5' Height of object 0.5'
Design Speed not achieved at:
STA. _____ TO STA. _____ MPH
STA. _____ TO STA. _____ MPH
STA. _____ TO STA. _____ MPH

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 5-21-93 REG. NO. 20666 ENGR. Dale Draves

Recommended for Approval Michael L. Herbert 5/25 1993
COUNTY ENGINEER

Recommended for Approval [signature] 6-17 1993
DISTRICT STATE AID ENGINEER

Recommended for Approval [signature] 7-1 1993
STATE AID PLANS & SPECS ENGINEER

Recommended for Approval [signature] 6-25 1993
STATE BRIDGE ENGINEER

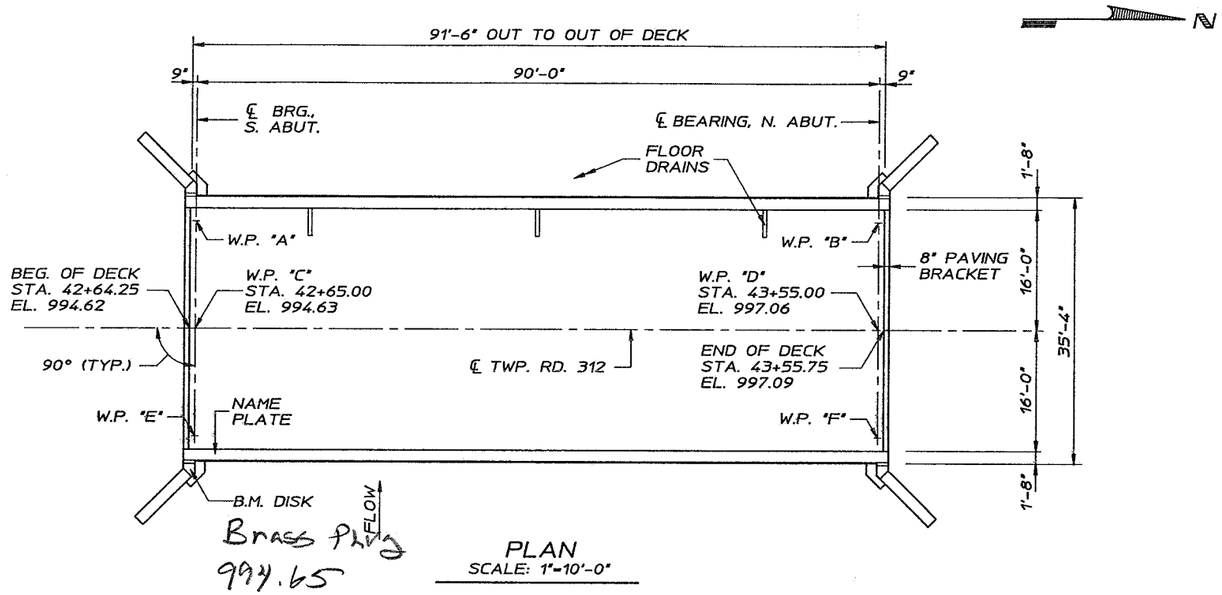
Approved 7/6 1993 [signature]
ASST STATE AID ENGINEER

PLANS PREPARED BY:
ERICKSON ENGINEERING
3340 REPUBLIC AVENUE
ST. LOUIS PARK, MN. 55426

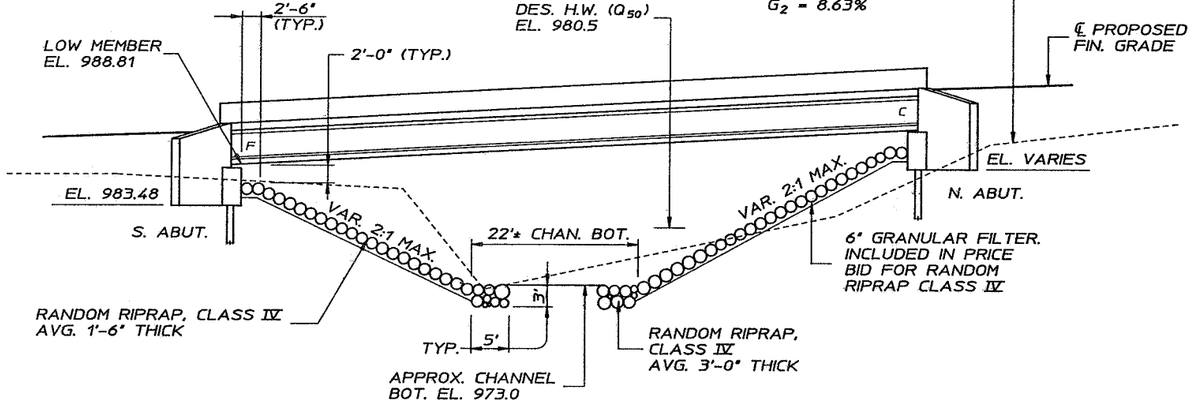
STATE AID PROJ. NO.55-599-36

STATE PROJ. NO.

SHEET NO.1 OF 16 SHEETS

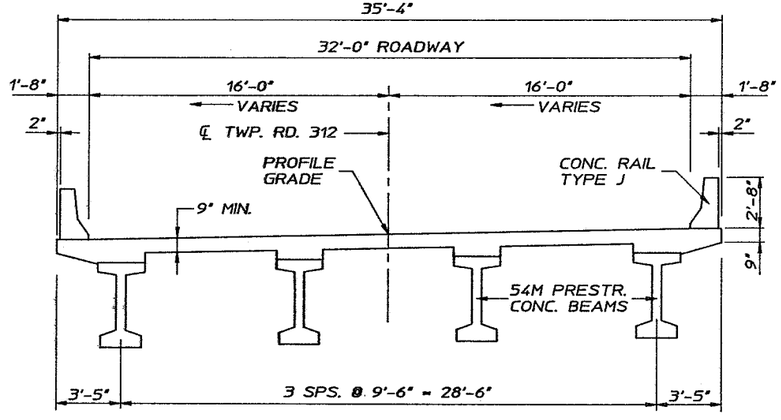


PLAN
SCALE: 1"=10'-0"



NOTE:
ABUT. PILES ARE TO BE HP12X53 STEEL H-PILES WITH TIP PROTECTION.

ELEVATION
SCALE: 1"=10'-0"



TRANSVERSE SECTION THRU DECK
SCALE: 1/4"=1'-0"

(1) STA. 43+10 Non-Participating

SCHEDULE OF QUANTITIES FOR THE ENTIRE BRIDGE

ITEM NO.	2401.501	2401.512	2401.513	2401.541	2402.521	2405.502	2405.511	2402.595	0401.601	0401.601	2511.501	2402.546	2452.511	2452.510	2452.520
ITEM	STRUCTURE CONCRETE (3Y43)	BRIDGE SLAB CONCRETE (3Y33)	TYPE J RAILING CONCRETE (3Y46A)	REIN-FORCEMENT BARS (EPOXY COATED)	STRUCTURAL STEEL (3306)	PRESTR. CONCRETE BEAMS 54M	DIAPHRAGMS FOR TYPE 54M PRESTR. BEAMS	BEARING ASSEMBLY	SLOPE PREP-ARATION	STRUCTURE EXCAVATION	RANDOM RIPRAP, CLASS IV	FLOOR DRAINS, TYPE B702 MODIFIED	STEEL H-PILING DELIVERED 12"	STEEL H-PILING DRIVEN 12"	STEEL H-TEST PILES, 50 FT. LONG 12"
QUANTITY	92 (P)	3233 (P)	186 (P)	31740 (P)	530 (P)	365	29 (P)	8	1	1	310	3	350	350	1
UNIT	CU. YD.	SQ. FT.	LIN. FT.	POUND	POUND	LIN. FT.	LIN. FT.	EACH	LUMP SUM	LUMP SUM	CU. YD.	EACH	LIN. FT.	LIN. FT.	EACH

ITEM NO.	2452.520	2021.501	0452.602	2442.501
ITEM	STEEL H-TEST PILES, 40 FT. LONG 12"	MOBILIZATION	PILE TIP PROTECTION 12"	REMOVE OLD BRIDGE (1)
QUANTITY	1	1	12	1
UNIT	EACH	LUMP SUM	EACH	LUMP SUM

B.M. ELEV. ~~1039.34~~ (M.S.L. 1929 Adj.)
LOCATION:
T INTERSECTION C.R. 121 & T-RD. 312.

CONSTRUCTION NOTES

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AS AMENDED BY THE JANUARY 2, 1991 SPECIFICATIONS SHALL GOVERN.

THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE. BARS MARKED WITH THE SUFFIX 'E' SHALL BE EPOXY COATED.

BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE SUPERSTRUCTURE BEAMS SHALL BE PLACED IN THEIR FINAL POSITION PRIOR TO DRILLING HOLES FOR ANCHOR RODS.

DESIGN DATA

1992 A.A.S.H.T.O. DESIGN SPECIFICATIONS
LOAD FACTOR DESIGN METHOD ~ HS25 LOADING
INCLUDES 17 PSF DEAD LOAD ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS.
MAXIMUM ALLOWABLE DESIGN STRESSES:
REINFORCED CONCRETE:
f'c = 4000 PSI n = 8
fy = 60000 PSI REINFORCEMENT
PRESTRESSED CONCRETE:
f'c = 7000 PSI n = 6
f's = 270000 PSI STRANDS LOW RELAXATION
STRUCTURAL STEEL:
fy = 36000 PSI SPEC. 3306
OPERATING RATING HS 47
DECK AREA = 3233 S.F. A.D.T. = 107 (1993)
DESIGN SPEED 30 M.P.H.

LIST OF SHEETS

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6	SUPERSTRUCTURE DETAILS
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8	PRESTR. CONC. BEAM DETAILS
9-14	DETAILS
15	BRIDGE SURVEY
16	BRIDGE SURVEY ~ PLAN & PROFILE

APPROVED:
Michael J. Kneeland
COUNTY ENGINEER
OLMSTED COUNTY
DATE: 5-25-93

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.
Dale Draves
REG. NO. 20666
DATE: 5-21-93

PLANS PREPARED BY:
ERICKSON ENGINEERING
3340 REPUBLIC AVENUE
ST.LOUIS PARK, MN 55426

TWP. RD. 312 OLMSTED COUNTY
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55549

LOCATED 1.4 MILES SOUTH OF JUNCTION C.S.A.H. 12 ON T-RD. 312 OVER AN UNNAMED STREAM.

1 - 90 FT. PRESTRESSED CONCRETE BEAM SPAN ~ 32 FT. RDWY.
SPAN IDENTIFICATION NO. 501

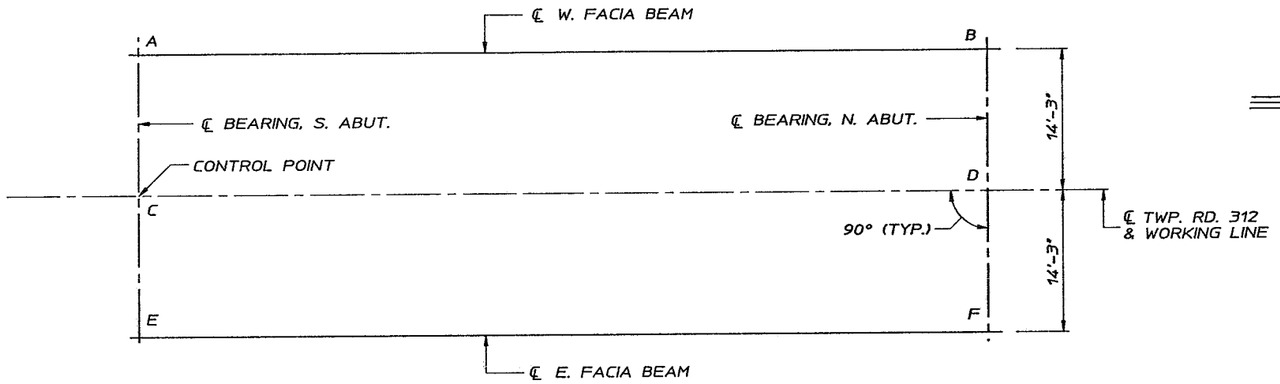
GENERAL PLAN & ELEVATION

SEC. 24 TWP. 108N R 14W

TOWNSHIP: ORONOCO
COUNTY: OLMSTED

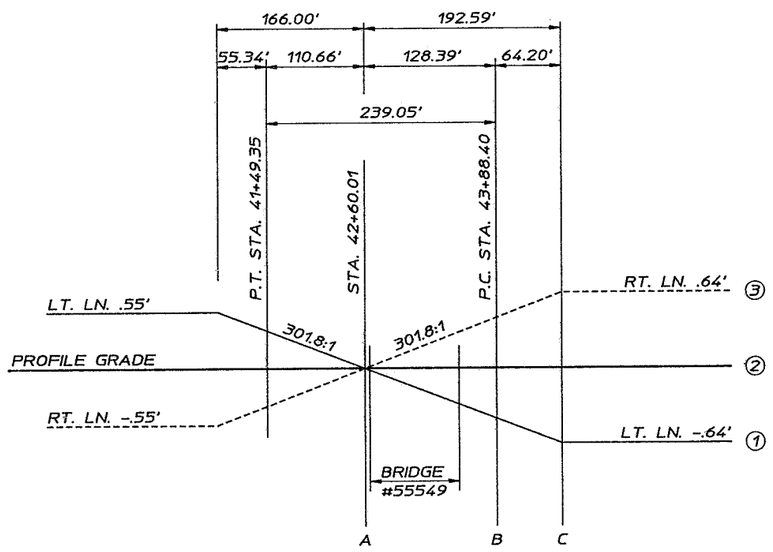
APPROVED: Donald J. Flemming
6-25-93 STATE BRIDGE ENGINEER

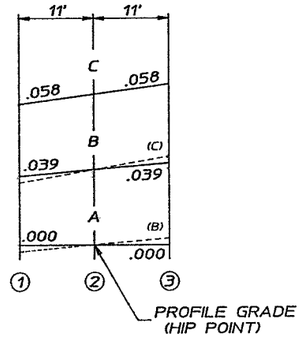
S.A.P. 55-599-36 | 55549 | DM
SHEET 2 OF 16 SHEETS | | DAD

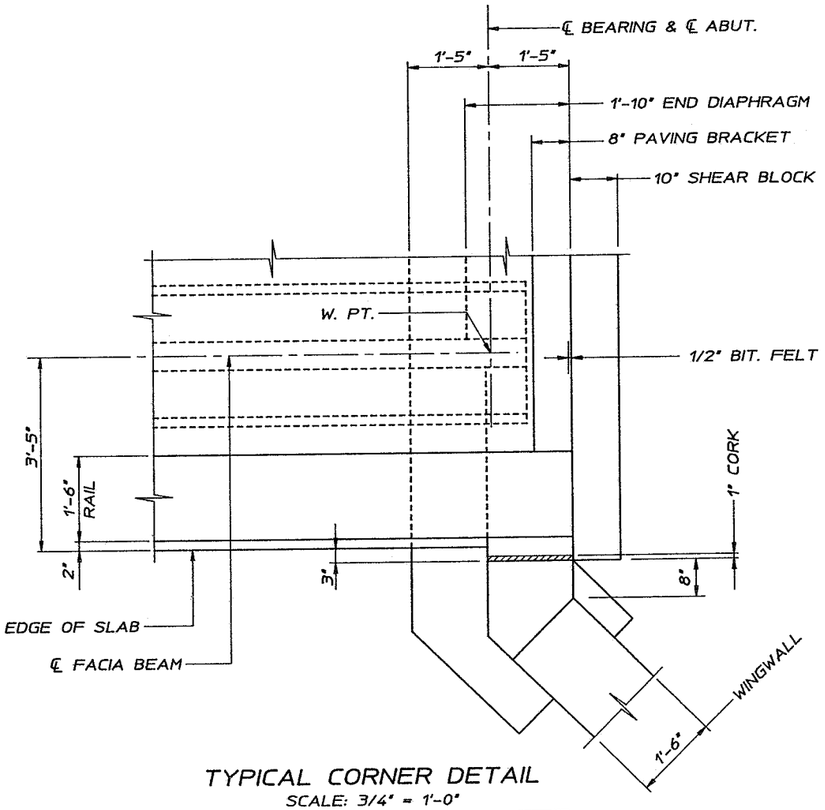


LAYOUT SHOWING WORKING POINTS

SCALE: 1/8" = 1'-0"







TYPICAL CORNER DETAIL

SCALE: 3/4" = 1'-0"

SUPER ELEVATION CHART

DIMENSIONS BETWEEN WORKING POINTS								ELEVATIONS			
POINT	STATION	A	B	C	D	E	F	TOP OF SLAB	SLAB TO BRIDGE SEAT	BRIDGE SEAT	POINT
A	42+65.00		90.00	14.25	91.12		94.40	994.61	6.13	988.48	A
B	43+55.00			91.12	14.25	94.40		996.65	6.28	990.37	B
C	42+65.00				90.00	14.25	91.12	994.63			C
D	43+55.00					91.12	14.25	997.06			D
E	42+65.00						90.00	994.65	6.13	988.52	E
F	43+55.00							997.47	6.28	991.19	F

TOP OF SLAB TO BRIDGE SEAT		
	S. ABUT.	N. ABUT.
SLAB THICKNESS	9"	9"
STOOL HEIGHT	6 3/4"	6 3/4"
BEAM	4'-6"	4'-6"
BEARING HEIGHT	3 3/4"	5 5/8"
TOTAL	6'-1 1/2"	6'-3 3/8"

MINNESOTA DEPARTMENT OF TRANSPORTATION

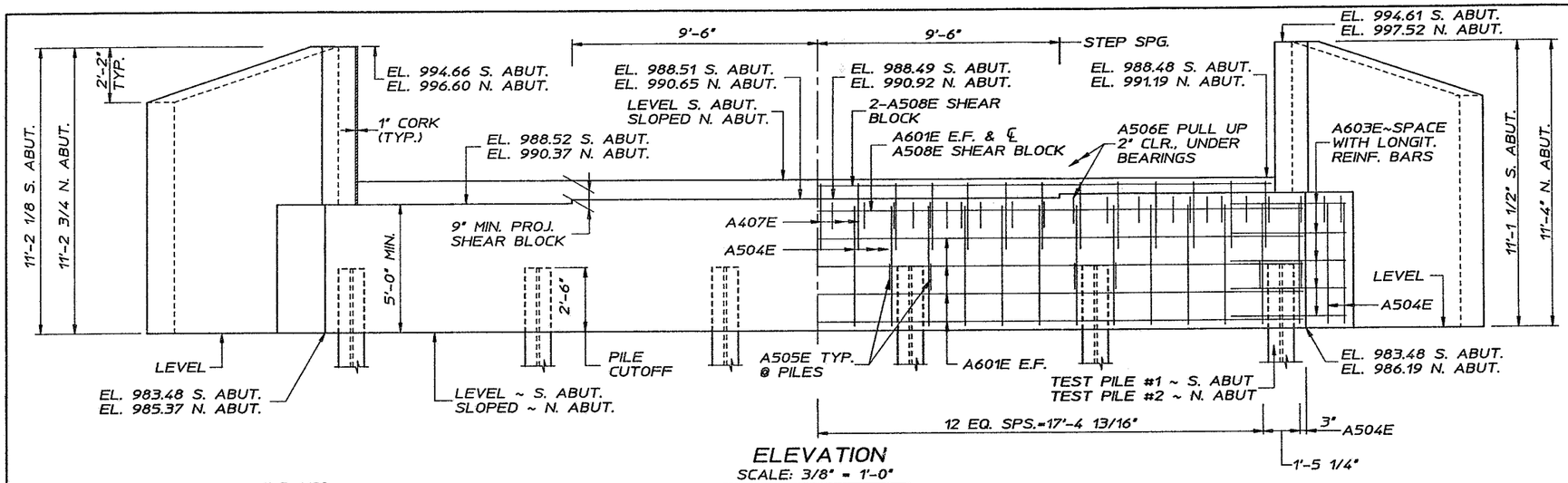
BRIDGE NO. 55549

BRIDGE LAYOUT

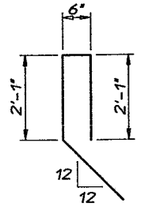
APPROVED: 6-25-93

S.A.P. 55-599-36 | 55549 | DM

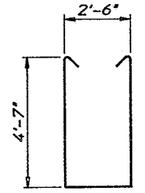
SHEET 3 OF 16 SHEETS | DAD



ELEVATION
SCALE: 3/8" = 1'-0"



A407E



A504E

BILL OF REINFORCEMENT ~ 2 ABUTMENTS

	BAR	NO.	LGTH.	SHAPE	LOCATION
	A601E	22	38'-2"	STRT.	CAP ~ HORIZ.
	A603E	20	10'-9"	BENT	" ~ TIE
	A504E	62	12'-7"	"	" ~ STIRRUP
	A505E	36	4'-6"	"	" ~ TIE
	A506E	80	5'-4"	"	" ~ TIE
	A407E	50	7'-0"	"	SHEAR BLOCK ~ TIE
	A508E	6	35'-6"	STRT.	" " ~ HORIZ.
①	A509E	15	19'-3"	"	WINGWALL ~ VERTICAL
①	A610E	15	19'-3"	"	" "
①	A511E	5	19'-8"	"	N.E. W.W. ONLY ~ VERT.
①	A612E	5	19'-8"	"	" " " " " "
	A613E	12	8'-4"	"	WINGWALL ~ VERTICAL
	A514E	12	10'-6"	BENT	" ~ HORIZ.
	A615E	12	10'-6"	"	" "
	A516E	8	10'-6"	STRT.	" "
	A617E	8	10'-6"	"	" "
	A518E	16	9'-4"	"	" "
	A619E	16	9'-4"	"	" "
	A520E	8	4'-5"	"	" "
	A521E	8	9'-7"	BENT	" "
	A422E	24	5'-2"	"	" "

① CUT 2 FROM 1.

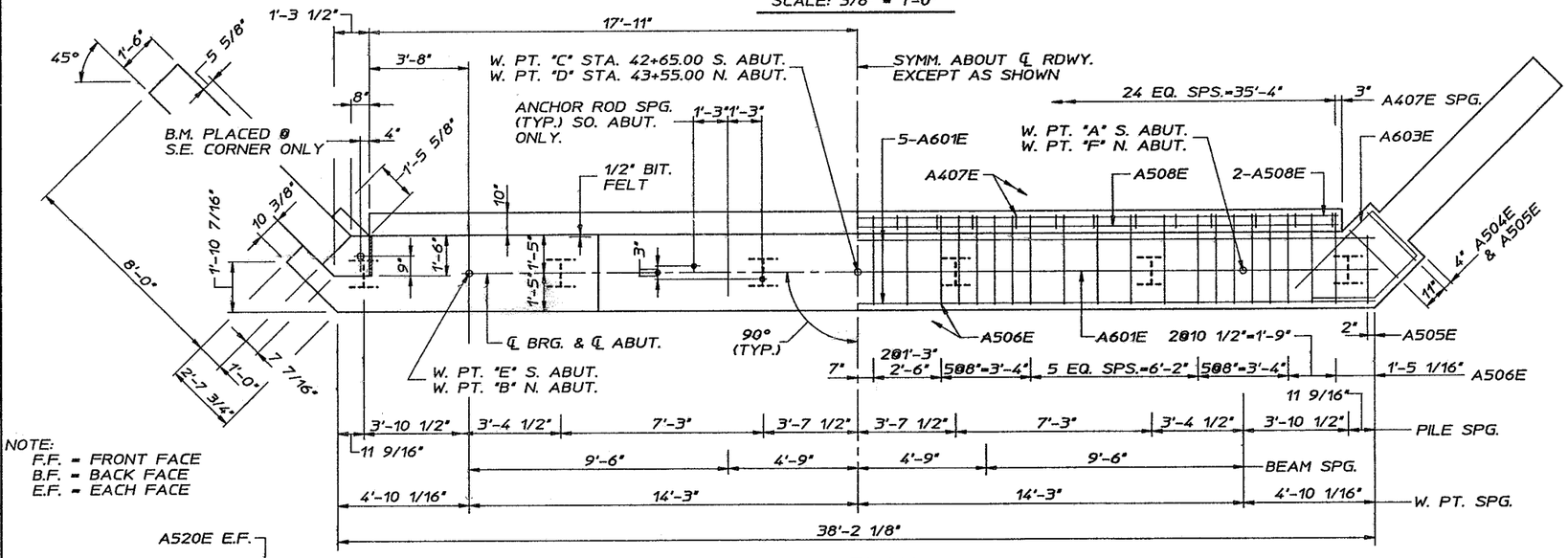
SUMMARY OF QUANTITIES ~ 2 ABUTMENTS

	STRUCTURE CONCRETE (3Y43)	70 CU. YD.
	REINF. BARS (EPOXY COATED)	5700 POUND
④	STRUCTURE EXCAVATION	1 L. SUM
②	B.M. DISK (STD. ℄ NO. 9300)	1
③	STEEL H-PILING DELIVERED, 12"	350 LIN. FT.
③	STEEL H-PILING DRIVEN, 12"	350 LIN. FT.
	STEEL H-TEST PILE, 50' LG., 12"	1 EACH
	STEEL H-TEST PILE, 40' LG., 12"	1 EACH
	PILE TIP PROTECTION, 12"	12 EACH

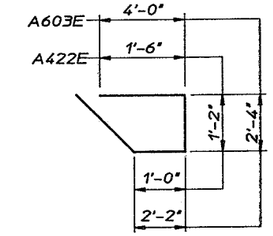
② COUNTY WILL FURNISH DISK. PAYMENT FOR PLACING IS TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS. SEE STD. ℄ #9301 FOR PLACING.

③ DOES NOT INCLUDE TEST PILES.

④ SEE SPECIAL PROVISIONS.

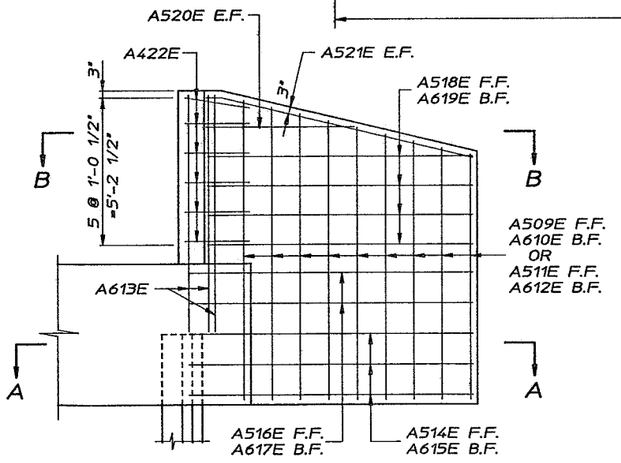


PLAN
SCALE: 3/8" = 1'-0"

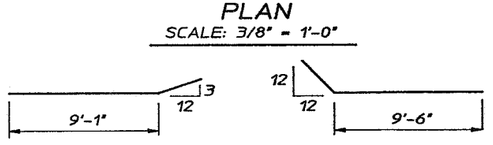


A603E & A422E

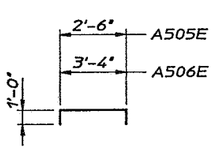
NOTE:
F.F. = FRONT FACE
B.F. = BACK FACE
E.F. = EACH FACE



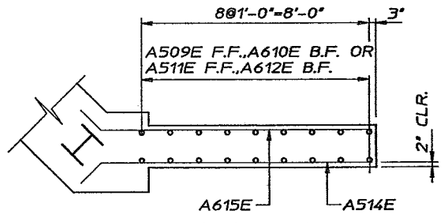
WINGWALL ELEVATION
SCALE: 3/8" = 1'-0"



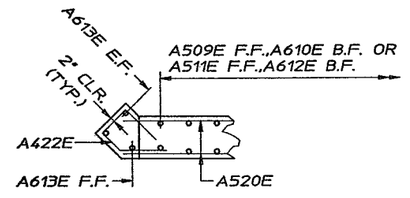
A521E A514E & A615E



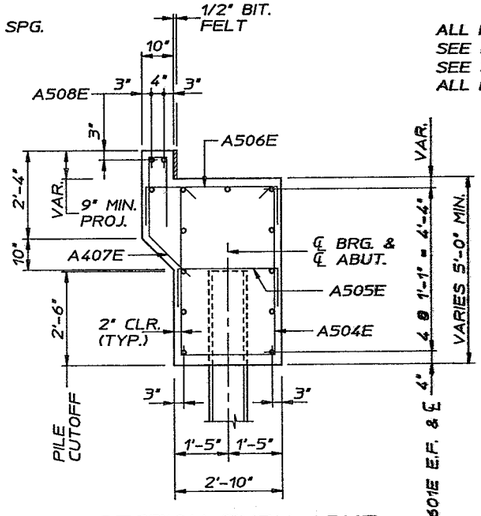
A505E & A506E



SECTION A-A
SCALE: 3/8" = 1'-0"



SECTION B-B
SCALE: 3/8" = 1'-0"



SECTION THRU ABUT.
SCALE: 1/2" = 1'-0"

PILE NOTES:

1 STEEL H-TEST PILE, 50' LG.
5 STEEL H-PILES, EST. LGTH. 40'
6 STEEL H-PILES REQ'D FOR THE SOUTH ABUT.

1 STEEL H-TEST PILE, 40' LG.
5 STEEL H-PILES, EST. LGTH. 30'
6 STEEL H-PILES REQ'D. FOR THE NORTH ABUT.

ALL PILES TO BE HP12X53 STEEL H-PILES.
SEE DETAIL B202 FOR SPLICES.
SEE SURVEY SHEET FOR TEST PILE LOCATIONS.
ALL PILES TO HAVE PILE TIP PROTECTION.

COMPUTED PILE LOADS TONS/PILE @ ABUTS.	
DEAD LOAD	49.1
LIVE LOAD	13.4
TOTAL	62.5

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55549

ABUTMENT DETAILS

APPROVED: 6-25-93

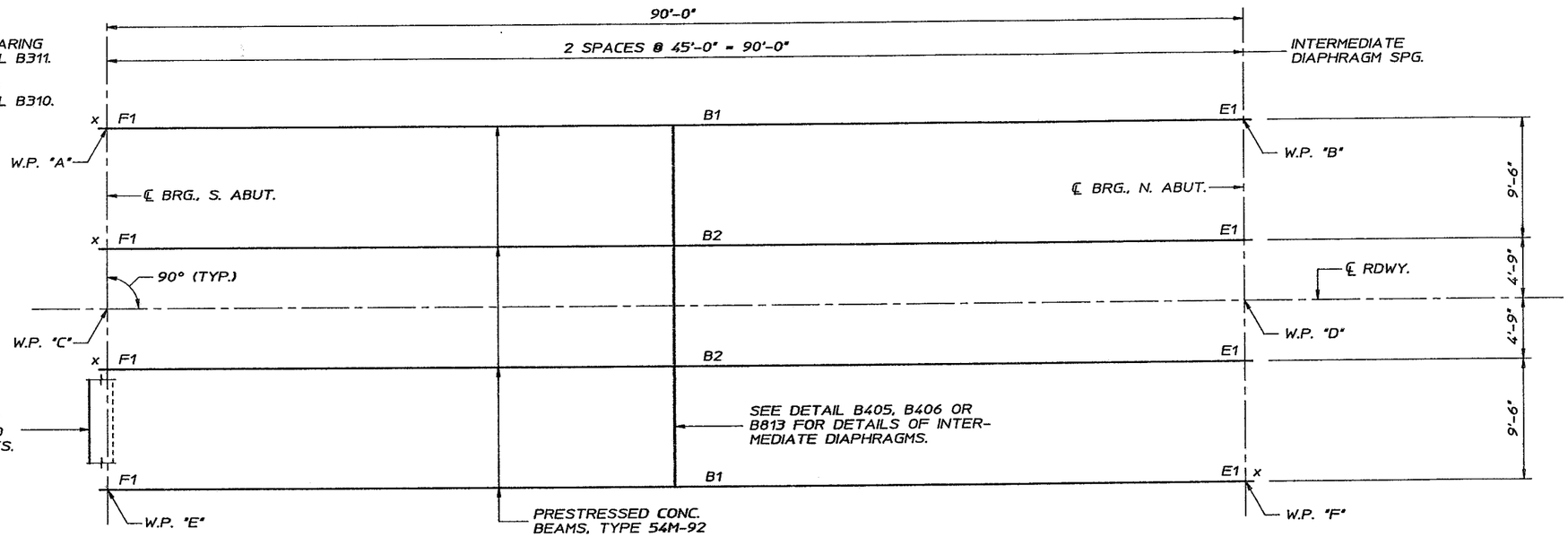
S.A.P. 55-599-36	55549	DM
SHEET 4 OF 16 SHEETS		DAD

NOTE:

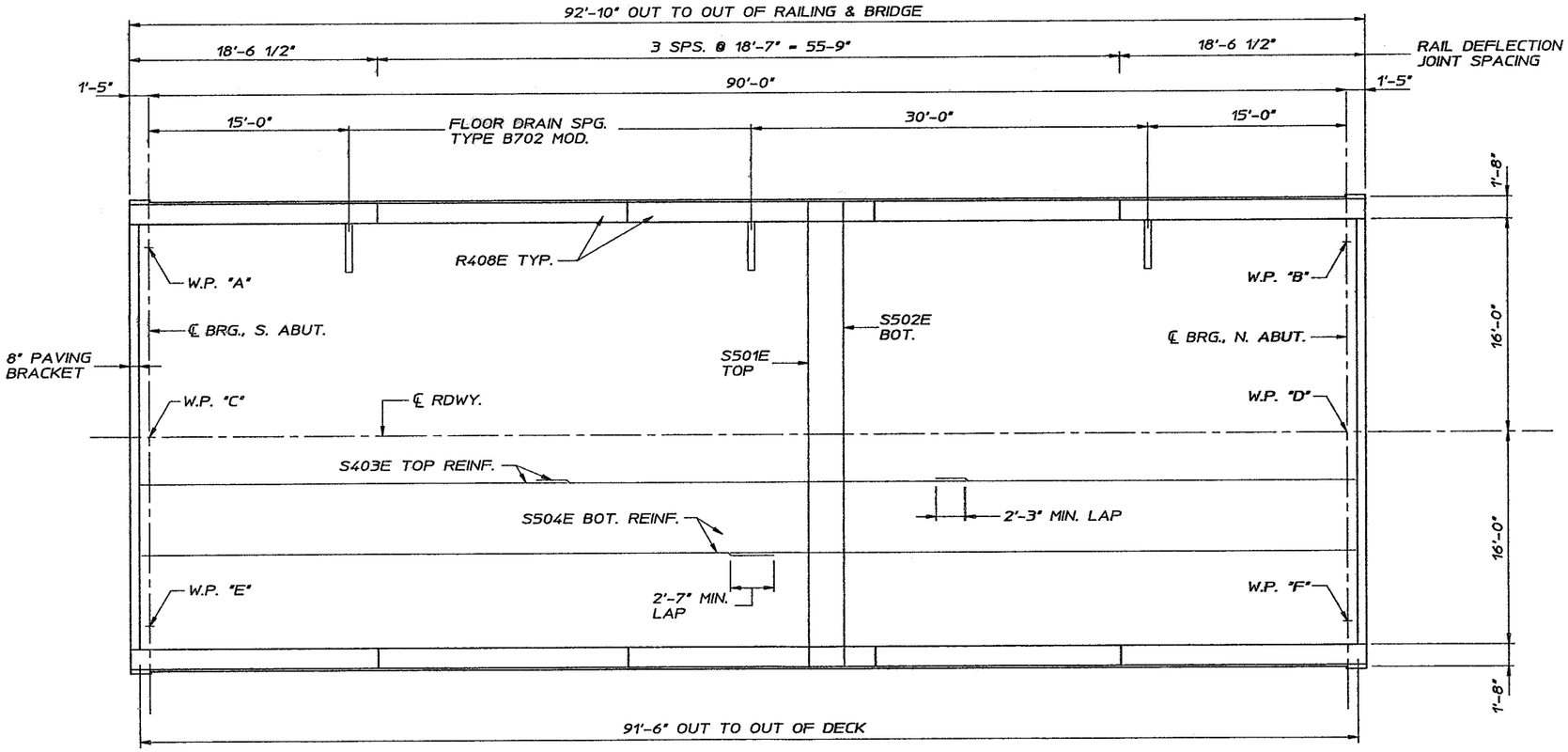
E1 = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1. SEE DETAIL B311.

F1 = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1. SEE DETAIL B310.





FRAMING PLAN
SCALE: 3/16" = 1'-0"



DECK PLAN
SCALE: 3/16" = 1'-0"



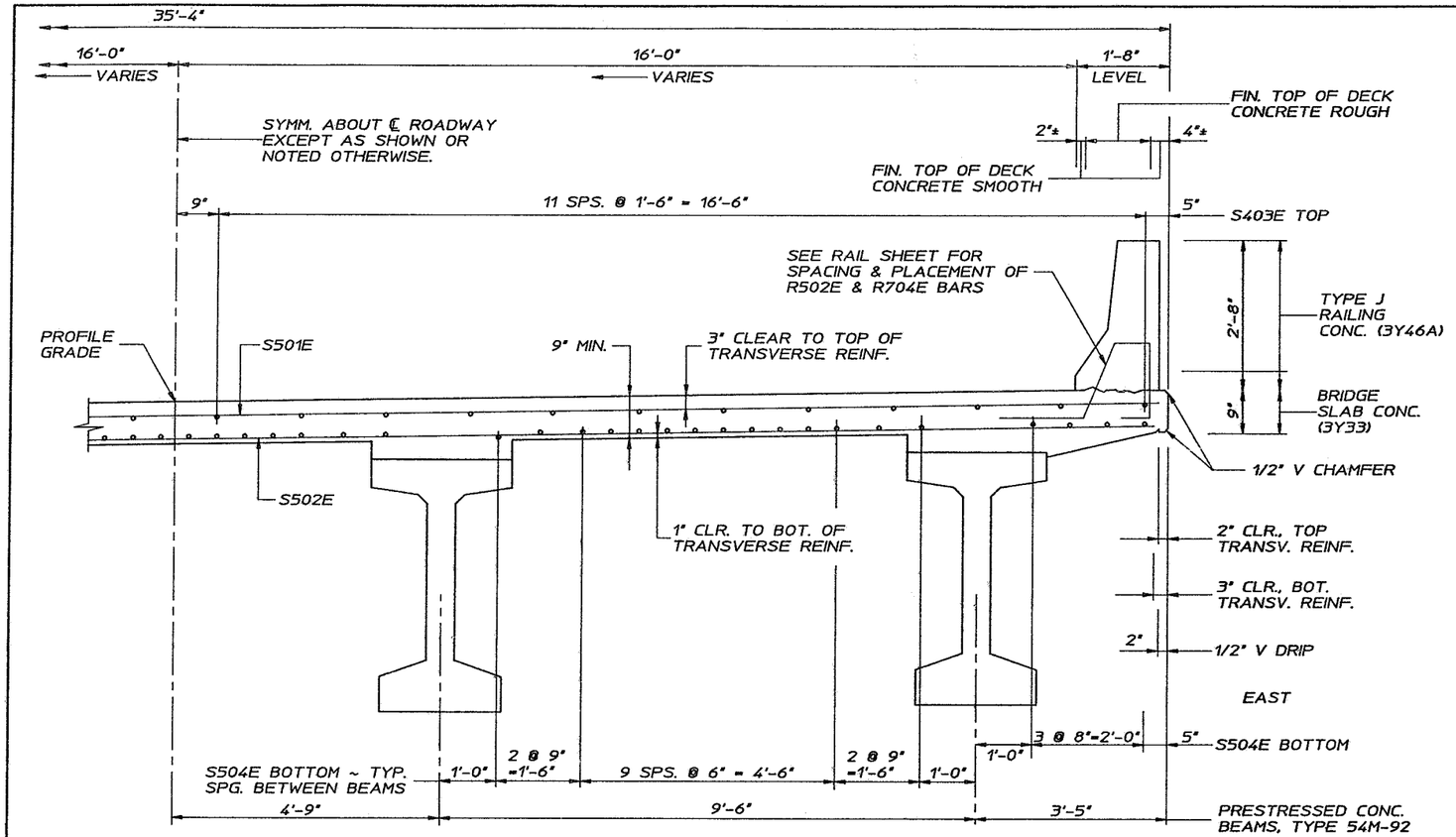
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55549

SUPERSTRUCTURE DETAILS

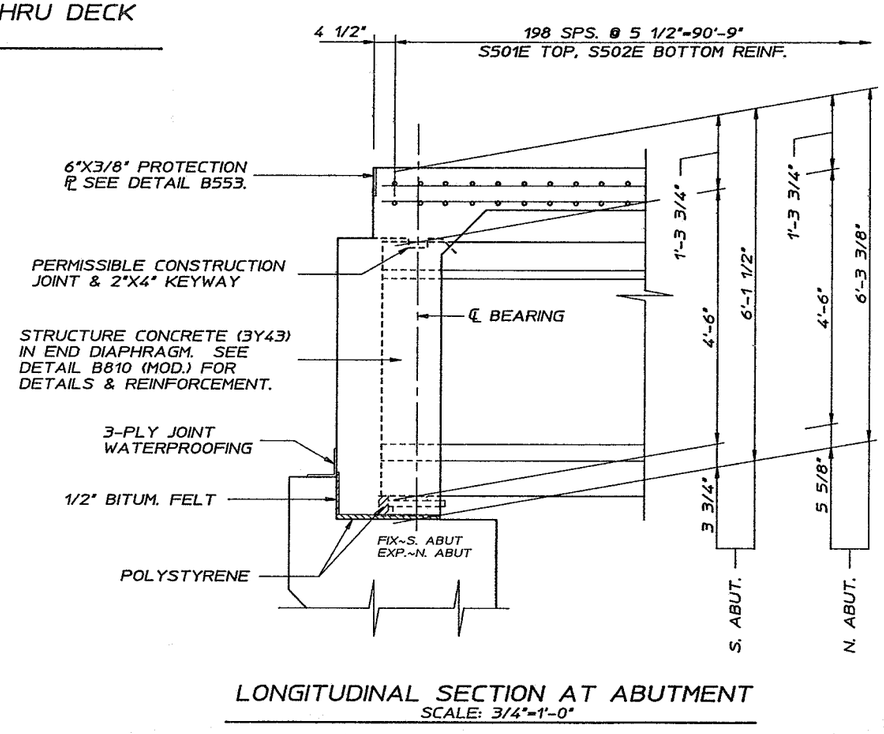
APPROVED: 6-25-93

S.A.P. 55-599-36	55549	DM
SHEET 5 OF 16 SHEETS		DAD



PART TRANSV. SECTION THRU DECK

SCALE: 3/4" = 1'-0"



LONGITUDINAL SECTION AT ABUTMENT

SCALE: 3/4"=1'-0"

BILL OF REINFORCEMENT ~ SUPERSTRUCTURE

	BAR	NO.	LENGTH	SHAPE	LOCATION
	S501E	199	35'-0"	STRT.	SLAB ~ TRANSVERSE
	S502E	199	34'-10"	"	" "
(2)	S403E	72	31'-11"	"	" ~ LONGITUDINAL
(3)	S504E	100	46'-11"	"	" "
(1)	S405E	12	35'-4"	"	END DIAPHRAGM
(1)	S406E	12	6'-8"	"	" "
(1)	S407E	36	8'-8"	"	" "
(1)	S508E	16	5'-0"	"	" "
(1)	S409E	24	2'-0"	"	" "
(1)	S410E	4	1'-6"	"	" "
(1)	S411E	36	13'-3"	BENT	" "
(1)	S412E	4	12'-11"	"	" "
(1)	S413E	8	13'-10"	"	" "
(1)	S414E	36	6'-4"	"	" "

(1) SEE DETAIL B810 FOR BAR DETAILS.
(2) 3 LINES WITH 2'-3" MINIMUM LAP.
(3) 2 LINES WITH 2'-7" MINIMUM LAP.

(4) SUMMARY OF QUANTITIES ~ SUPERSTRUCTURE

(12)	STRUCTURE CONCRETE (3Y43)	22 CU. YD.
(6)	BRIDGE SLAB CONCRETE (3Y33)	3233 SQ. FT.
(11)	TYPE J RAILING CONCRETE (3Y46A)	186 LIN. FT.
	REINFORCEMENT BARS, EPOXY COATED	26040 POUND
(9)	PRESTRESSED CONCRETE BEAMS, TYPE 54M-92	4 EACH
	PRESTRESSED CONCRETE BEAMS 54M	365 LIN. FT.
	DIAPH. FOR TYPE 54M PRESTR. CONC. BEAMS	29 LIN. FT.
	STRUCTURAL STEEL (3306)	530 POUND
	FLOOR DRAINS, TYPE B702 (MOD.)	3 EACH
(7)	NAME PLATE (SEE DETAIL B103)	1
(10)	PROTECTION PLATE (SEE DETAIL B553)	
	BEARING ASSEMBLY	8 EACH
(8)	EXP. CURVED PLATE BRG. ASSEMBLY, TYPE E1	4 EACH
(8)	FIXED CURVED PLATE BRG. ASSEMBLY, TYPE F1	4 EACH
(5)(7)	3-PLY JOINT WATERPROOFING	80 LIN. FT.
(5)(7)	CORK ~ 1"X11" (RAILING)	13 LIN. FT.
(5)(7)	CORK ~ 1"X18" (ABUTS.)	25 LIN. FT.
(5)(7)	POLYSTYRENE, TYPE A 1"X22" (BR. SEAT, ABUTS)	72 LIN. FT.
(5)(7)	POLYSTYRENE, TYPE A 1"X6" (SIDES OF BRGS.)	10 LIN. FT.
(5)(7)	POLYSTYRENE, TYPE A 2"X6" (BEHIND BRGS.)	9 LIN. FT.
(5)(7)	POLYSTYRENE, TYPE A 1"X4" (SIDES OF BRGS.)	10 LIN. FT.
(5)(7)	POLYSTYRENE, TYPE A 2"X4" (BEHIND BRGS.)	12 LIN. FT.
(5)(7)	BIT FELT, 1/2"X12"	72 LIN. FT.

(4) INCLUDES RAILING AND END DIAPHRAGM QUANTITIES.
(5) SEE SPECIAL PROVISIONS.
(6) APPROX. VOLUME = 106 CU YDS. BASED ON AN AVERAGE STOOL HEIGHT OF 4".
(7) INCLUDED IN PRICE BID FOR OTHER ITEMS.
(8) PAYMENT FOR BEARINGS INCLUDED IN ITEM BEARING ASSEMBLIES PER EACH.
(9) PAYMENT FOR BEAMS INCLUDED IN ITEM PRESTRESSED CONCRETE BEAMS 54M PER LINEAR FOOT.
(10) INCLUDED IN STRUCTURAL STEEL (3306).
(11) APPROX. VOLUME = 19 CU. YDS.
(12) END DIAPHRAGM CONCRETE

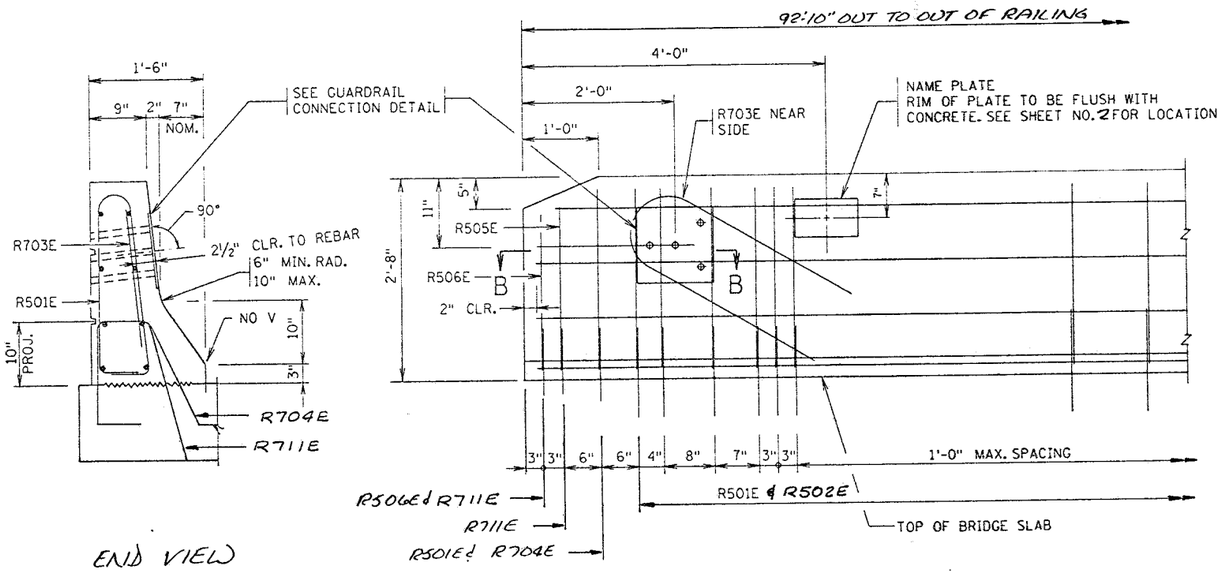
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55549

SUPERSTRUCTURE DETAILS

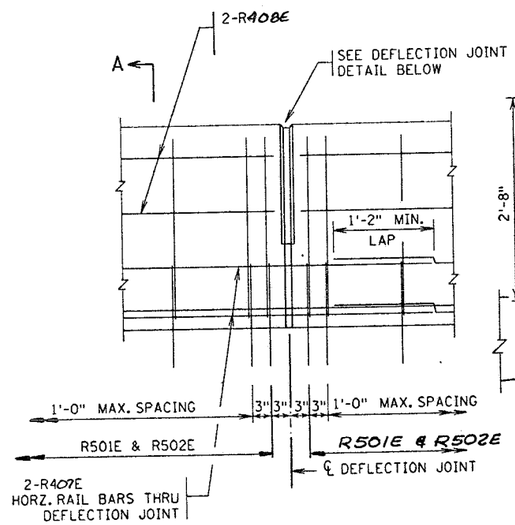
APPROVED: 6-25-93

S.A.P. 55-599-36	55549	DM
SHEET 6 OF 16 SHEETS		DAD



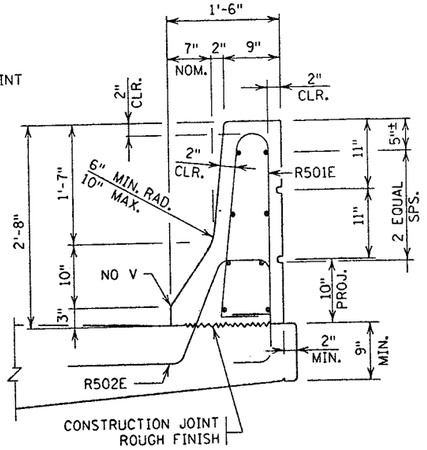
END VIEW

INSIDE ELEVATION OF RAILING



EXPANSION JOINT
EXPANSION DEVICE NOT SHOWN

A ← DEFLECTION JOINT



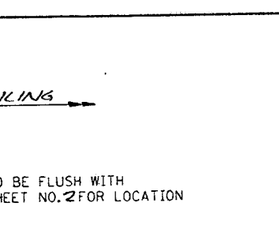
SECTION A-A

BILL OF REINFORCEMENT FOR RAILING				
BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	218	6'-3"	BENT	RAIL VERT.
R502E	214	5'-6"	BENT	RAIL VERT.
R703E	4	6'-7"	BENT	RAIL VERT.
R704E	4	5'-6"	BENT	" "
R505E	4	5'-10"	BENT	RAIL VERT.
R506E	4	5'-7"	BENT	RAIL VERT.
① R407E	24	31'-8"	STR'T.	RAIL HORZ.
R408E	40	18'-2"	STR'T.	RAIL HORZ.
~~R409E~~			~~STR'T.~~	~~RAIL HORZ.~~
~~R410E~~			~~STR'T.~~	~~RAIL HORZ.~~
R711E	8	5'-0"	BENT	RAIL VERT

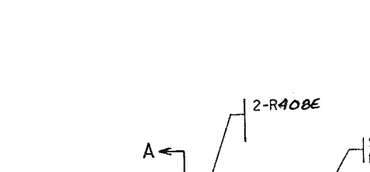
① 3 LINES, 1'-2" MIN. LAP

SECTION B-B
(REINFORCEMENT NOT SHOWN)

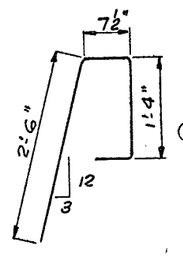
RAIL RUSTICATION



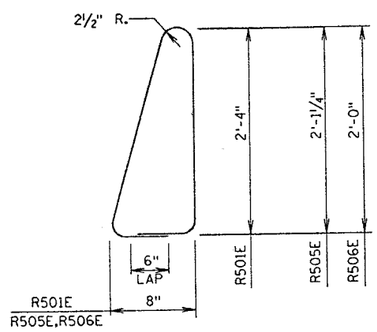
R502E & R704E



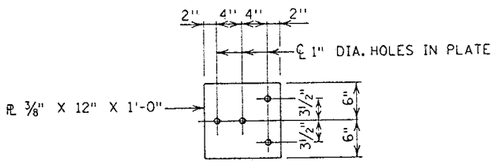
R703E



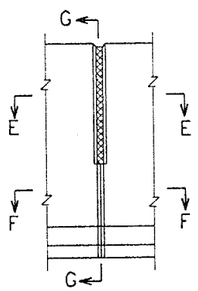
R711E



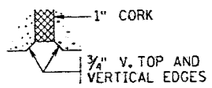
R501E, R505E & R506E



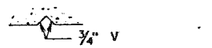
GUARDRAIL CONNECTION DETAIL
GALVANIZE AFTER FABRICATION PER SPEC. 3394
ESTIMATED WEIGHT = 20 LBS.



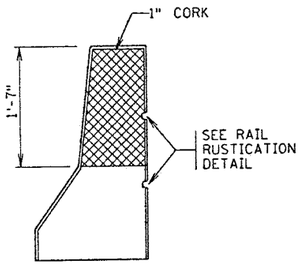
ELEVATION



SECTION E-E



SECTION F-F



SECTION G-G

DEFLECTION JOINT

GENERAL NOTES:

CONCRETE RAILING = 403 LBS./FT. (.100 CU. YDS./FT.)

GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, SPEC. 3306.

FINISH ALL EDGES OF RAIL WITH ½" VEE, EXCEPT WHERE OTHERWISE NOTED.

SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

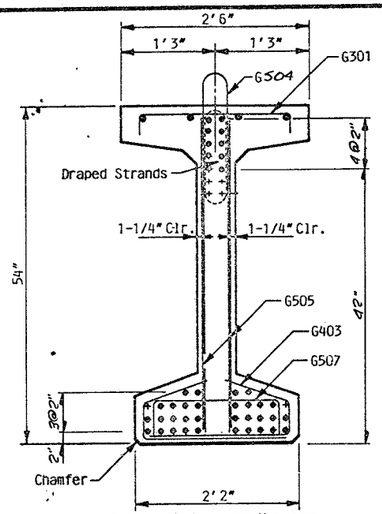
GUARDRAIL CONNECTION TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

RAIL QUANTITIES ARE INCLUDED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

MAXIMUM SPACING OF CONCRETE DEFLECTION JOINTS SHALL BE 20'-0".

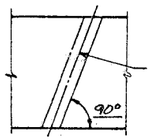
S.A.P. 55-599-36

TITLE: CONCRETE RAILING (TYPE J) WITH INTEGRAL END POST	DES:	DR:	APPROVED: 8/31/91	FIG. 5-397.115
	CHK:	CHK:	APPROVED: 6-25-93	Bridge No. 55549
	Sheet No. 7 of 16 Sheets			



Details not shown are the same as the SECTION AT ℄ BEAM

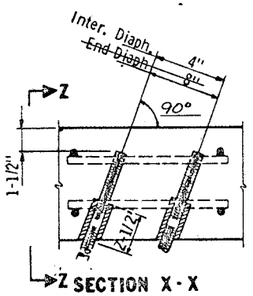
END VIEW



See FRAMING PLAN for skew direction. Intermediate stirrups may be shifted the minimum distance required to clear holes or inserts for intermediate diaphragms.

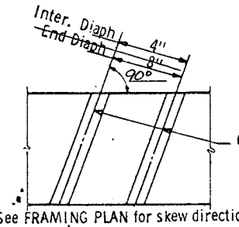
SECTION Y-Y

FOR USE WITH CONCRETE END DIAPHRAGMS WITH PILE BENT ABUTMENTS



SECTION X-X

USE AT FACIA BEAM ~~AND INTERIOR BEAM WITH STAGGERED DIAPHRAGMS~~

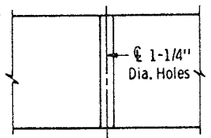


See FRAMING PLAN for skew direction. Intermediate stirrups may be shifted the minimum distance required to clear holes or inserts for intermediate diaphragms.

SECTION X-X

USE AT INTERIOR BEAM WITH CONTINUOUS CONCRETE DIAPHRAGM

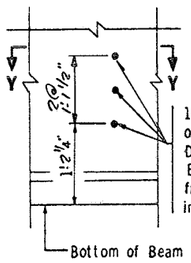
Cut strands flush with concrete. Paint ends with an approved gray epoxy except as noted.



Intermediate stirrups may be shifted the minimum distance required to clear holes or inserts for intermediate diaphragms.

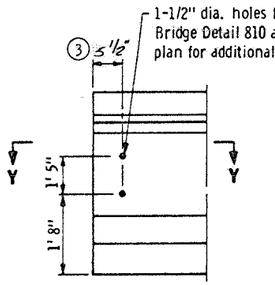
SECTION Y-Y

USE AT INTERIOR BEAM WITH STEEL DIAPHRAGM

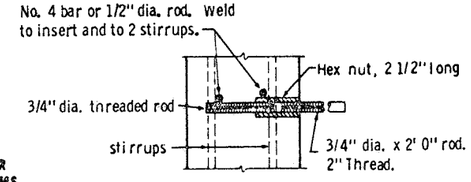


1-1/4" dia. holes for 7/8" bolts or Anchorage for 7/8" Diameter Bolts. See Bridge Detail B405, B406 & framing plan for additional information.

FOR USE WITH STEEL INTERMEDIATE DIAPHRAGM

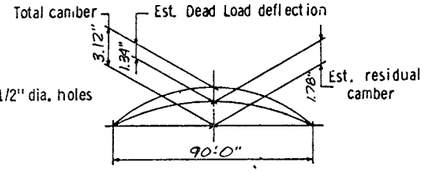


CONCRETE END DIAPHRAGMS PILE BENT ABUTMENT



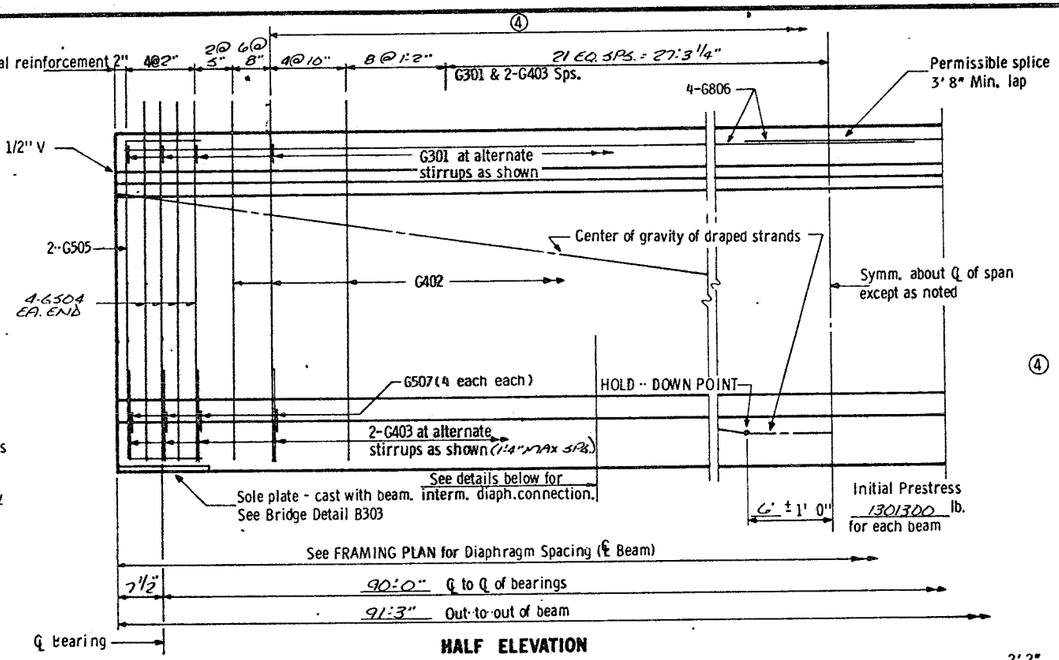
Nuts and rods per Spec. 3306. No paint

SECTION Z-Z



Deflections shown are for weight of slab, wearing course, railing, ~~sidewalk, median~~ and diaphragms only. Engineer will take elevations at top of beams after erection and will allow for deflections shown to enable contractor to build forms to correct grade and specified slab thickness.

CAMBER DIAGRAM



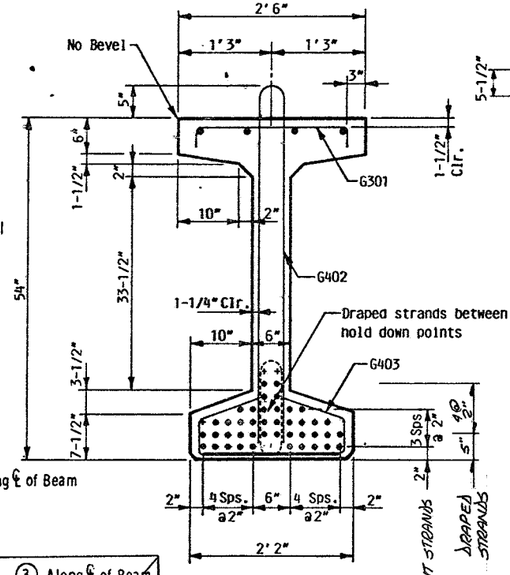
HALF ELEVATION

Bar	Wt.
G301	1.001b.
G402	6.461b.
G403	2.171b.
G505	6.341b.
G806	
G507	2.611b.
G504	8.34 LB.

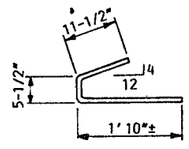
Girder Section Data
Wt./Ft. = 730 lbs.
Cross sec. area at $\bar{C}_L$ of span = 678 $in.^2$
C. G. (from bottom) = 26.75 in.
I = 265,828 $in.^4$
S_B = 9,937 $in.^3$
1/2" dia. 270k strand wt./ft. = .525 lb.
1/2" dia. 270k strand area = .1531 sq. in.

ALL REINFORCING STEEL TO BE EPOXY COATED.

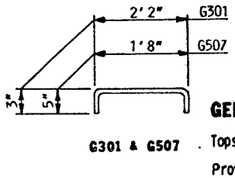
④ Additional G402 bars are required when vertical reinforcement spacing is greater than 1' 9". Space additional G402 bars midway between G301 & G403 bars.



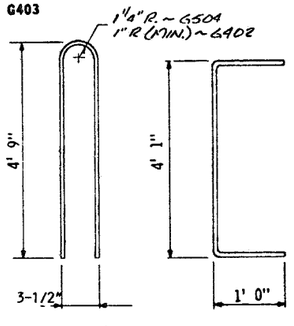
SECTION AT ℄ BEAM



G301 & G507



G403



G402 & G504 **G505**

First digit of bar mark indicates bar size. All bar dimensions are out-to-out.

Y DISTANCES (IN INCHES)	NO.	℄ SPAN	END
Straight strands	32	4.38	
Draped strands	10	9.00	46.00 °
Total strands	42	5.98	

Y = distance of Center of Gravity of strands from bottom of beam. All strands spaced 2" c-c, horizontally and vertically except as noted.

All strands 1/2" dia. 270 kip, ultimate strength, LOW RELAX.

° A tolerance of ± 2" will be permitted in this dimension.

S.A.P. 55-599-36

GENERAL NOTES:

Tops of beams shall be rough floated and broomed transversely for bond.

Provide handling hooks or devices as required by Contractor. Hooks or devices provided will be subject to approval of Engineer and shall be installed within 4' 0" of the end of beam.

A modified strand pattern or a bundled strand pattern which does not change center of gravity of strands may be submitted to the Engineer for approval.

Each beam shall be marked, showing bridge number, casting date, and individual identification letters and numbers. Markings shall be made on the face of the beam, near the end, so located that they will be exposed after the end diaphragms have been cast. Facia beams shall be marked on an inside face. All markings shall be stencilled and be clearly legible. For location of beams, see framing plan.

All material and work shown or noted on this sheet shall be included in unit price bid for prestressed concrete beams. See Spec. 2405.

See framing plan for beam ends marked "X".

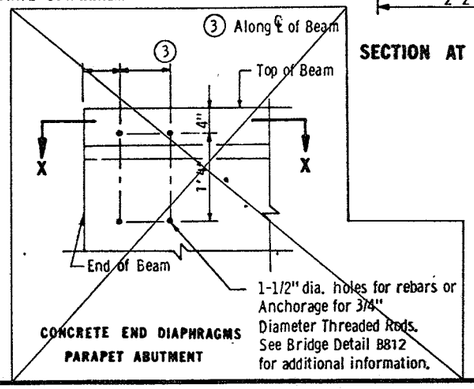
Approximate weight of beam 33.3 tons.

As an alternate to the diaphragm anchorages shown, the contractor may submit details of a cast-in-place anchorage to the engineer for approval. Anchorage must provide an ultimate pull out strength of 15 kips per anchorage.

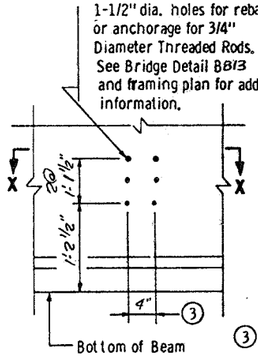
MINIMUM CONCRETE STRENGTH - P.S.I.	① f'ci	② f'c
Required min. Concrete Strength	5600	7000

① Minimum concrete strength at time of prestressed transfer.

② Minimum concrete strength when curing can be discontinued and beam transported and installed.



CONCRETE END DIAPHRAGMS PARAPET ABUTMENT



③ Along ℄ of Beam

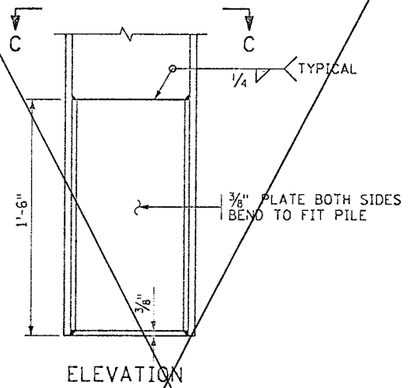
FOR USE WITH CONCRETE INTERMEDIATE DIAPHRAGM

REVISED:	APPROVED: May 27, 1986	FIG.5-397.515

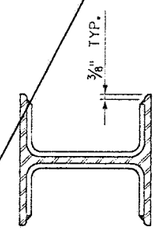
TITLE: **54" PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 54M-92**

BEAMS B1-B2

DES:	DR:	APPROVED: 6-25-93	Bridge No. 55549
CHK:	CHK:	Sheet No. 8 of 16 Sheets	



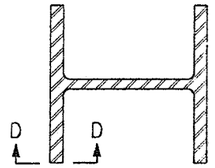
ELEVATION



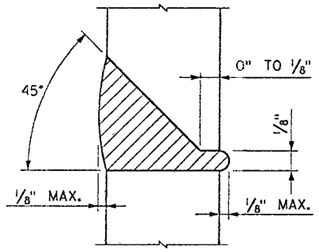
SECTION C-C

DETAIL OF PILE TIP REINFORCEMENT

USE PILE TIP DETAIL ONLY WHEN PERMITTED BY SPECIAL PROVISIONS.



SECTION AT JOINT



SECTION D-D

100% BUTT WELDED PILE SPLICE

NOTES:

A.W.S. TYPE E7016 OR E7018 (LOW-HYDROGEN) ELECTRODES SHALL BE USED FOR 100% BUTT WELDED SPLICES.

LOW-HYDROGEN ELECTRODES SHALL BE SUPPLIED IN HERMETICALLY (AIR-TIGHT) SEALED CONTAINERS.

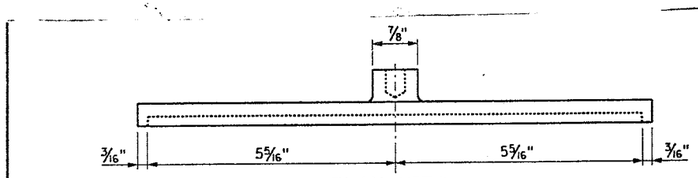
LOW-HYDROGEN ELECTRODES SHALL BE STORED IN HOLDING OVENS AT A TEMPERATURE OF NOT LESS THAN 250°F.

LOW-HYDROGEN ELECTRODES SHALL BE PLACED IN A HOLDING OVEN FOR AT LEAST 8 HOURS, IF THEY HAVE BEEN EXPOSED TO THE ATMOSPHERE FOR MORE THAN 2 HOURS.

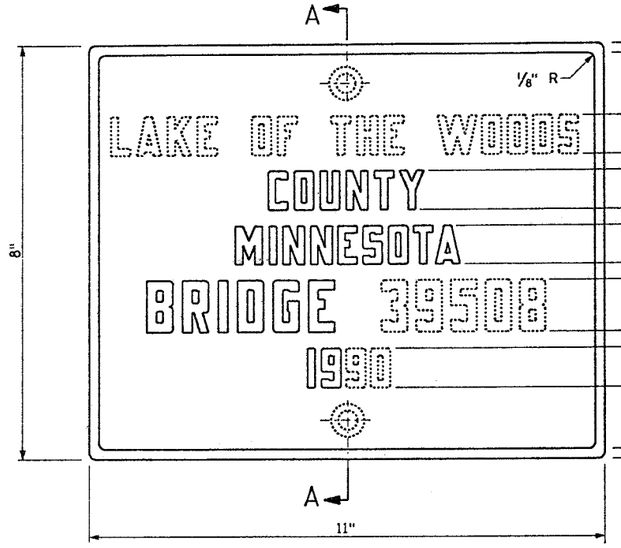
ELECTRODES WHICH HAVE BECOME WET, SOILED OR DAMAGED SHALL NOT BE USED.

WELDING SHALL NOT BE DONE WHEN THE AMBIENT TEMPERATURE IS LOWER THAN 0°F. OR WHEN THE PILE IS WET OR EXPOSED TO FALLING RAIN OR SNOW. WHEN THE PILE METAL TEMPERATURE IS BELOW 32°F., THE PILE METAL IN THE AREA OF THE WELD SHALL BE HEATED TO A MINIMUM TEMPERATURE OF 70°F. AND MAINTAINED AT THIS TEMPERATURE DURING WELDING.

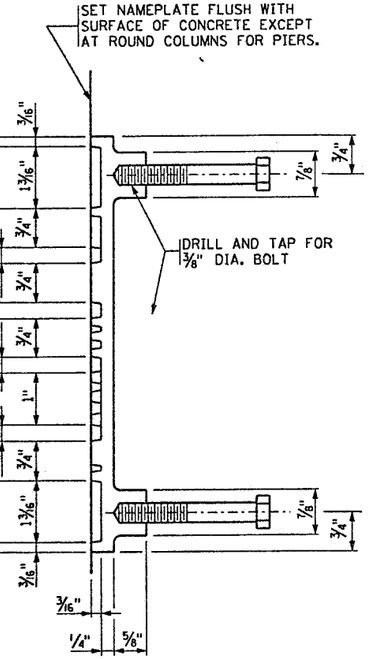
APPROVED: AUGUST 4,1992	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	DATE:	DETAIL NO.
OFFICE of BRIDGES and STRUCTURES	PILE SPLICE AND TIP REINFORCEMENT STEEL H BEARING PILES 10" TO 14"	DR: CHK:	B202



PLAN VIEW



ELEVATION



SECTION A-A

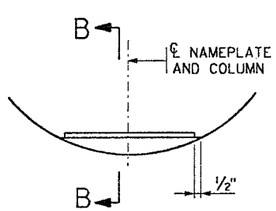
THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.
DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

COUNTY OLMSTED
BRIDGE 55549
YEAR 1993

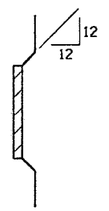




LETTERS AND NUMBERS FOR NAMEPLATE



NAMEPLATE PLACEMENT
(ROUND CONCRETE PIER COLUMNS)



SECTION B-B

NOTES:

NO SHOP DRAWING REQUIRED.

MATERIAL SHALL COMPLY WITH SPEC. 3327.

LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.

DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".

HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

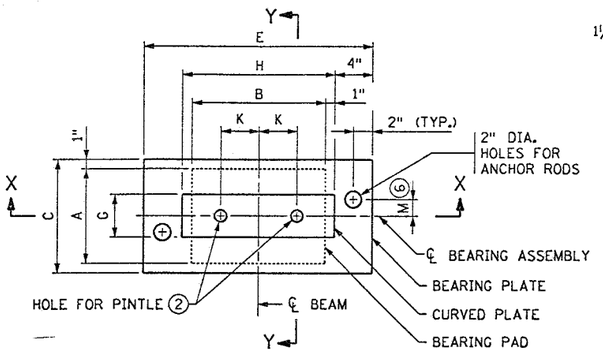
TOP SURFACE OF LETTERS, NUMBERS AND FRAME SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.

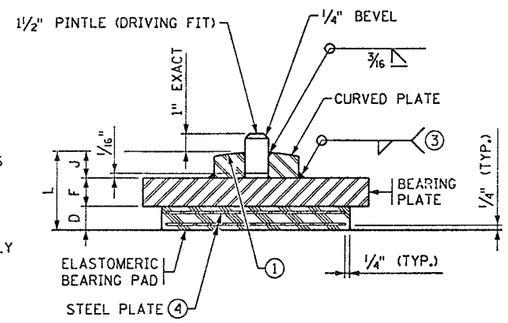
ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

APPROVED: SEPT. 8, 1992	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	DATE:	DETAIL NO.
OFFICE of BRIDGES and STRUCTURES	BRIDGE NAMEPLATE COUNTY BRIDGES	DR: CHK: 6-25-93	B103

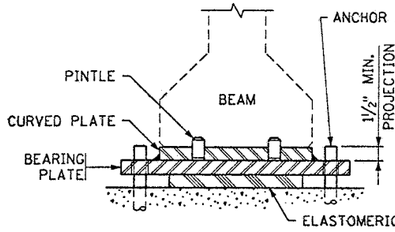
S.A.P. 55-599-36	DETAILS	BRIDGE NO. 55549
SHEET 9 OF 16 SHEETS		



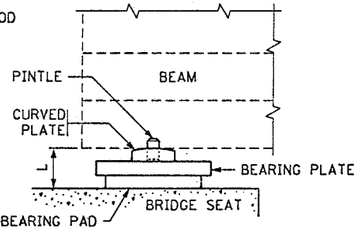
PLAN



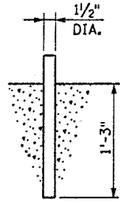
SECTION Y-Y



SECTION X-X



END ELEVATION
(ANCHOR RODS NOT SHOWN)



ANCHOR ROD DETAIL

TABLE

ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			STEEL PLATES		LAMINATES		SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			PINTLE DIA.	PINTLE DISTANCE	ANCHOR ROD OFFSET	ASSY. HEIGHT
			A	B	D	NO.	THICK.	NO.	THICK.		C	E	F	G	H	J		K (5)	M (6)	L
F1	S.ABUT	54M	12	24	1¼	2	⅛	1	½	8.0	14	34	1¼	4½	26	1¼	1½	8	3	3¾

NOTES:

ELASTOMERIC MATERIALS & PAD CONSTRUCTION SHALL COMPLY WITH SPEC. 3741.

ALL STEEL PLATES & ANCHOR RODS SHALL COMPLY WITH SPEC. 3306.

ALL PLATES SHALL BE FLAT AFTER FABRICATION AND GALVANIZING. WELDING DISTORTION OF BEARING PLATES SHALL BE STRAIGHTENED TO WITHIN 1/16" OF FLATNESS BY MECHANICAL MEANS WITHOUT DAMAGE TO THE ZINC COATING.

PINTLES SHALL COMPLY WITH SPEC. 3314, TYPE II.

GALVANIZE ANCHOR RODS AND STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

(1) THE RADIUS OF THE CURVED PLATE SHALL BE 1'-0" MINIMUM AND 1'-6" MAXIMUM. FINISH TO 250 MICRO. THE FINISHED THICKNESSES OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

(2) 2 PINTLES, 1½" DIA. FOR TOTAL LOADS TO 390 KIPS.

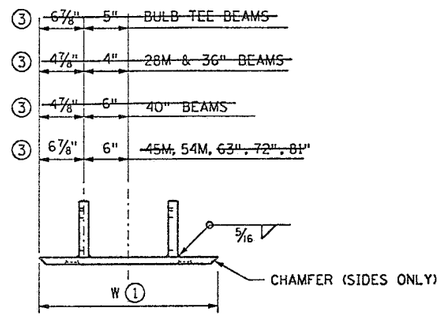
(3) FOR BEARING AND CURVED PLATE THICKNESSES UP TO 1½" USE 5/16" FILLET WELDS; FOR THICKNESSES OVER 1½" TO 2¼" USE ⅜" FILLET WELDS; FOR THICKNESSES OVER 2¼" USE ½" FILLET WELDS. USE MINIMUM PREHEAT OF 300° F.

(4) DO NOT GALVANIZE THESE PLATES.

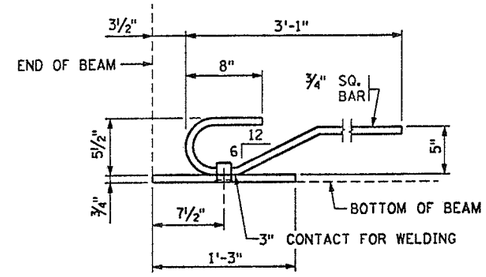
(5) SEE DETAIL B303 FOR PINTLE DISTANCE K.

(6) OFFSET MAY BE OPPOSITE OF THAT SHOWN. SEE ANCHOR ROD LAYOUT FOR DETAILS.

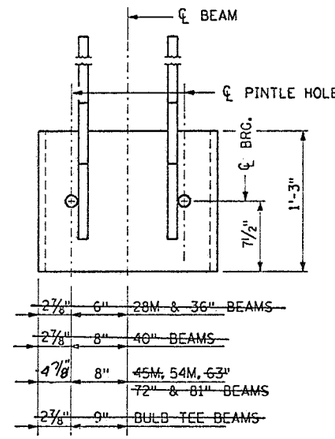
APPROVED: JANUARY 12, 1993	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION		DETAIL NO.
OFFICE of BRIDGES and STRUCTURES	CURVED PLATE BEARING ASSEMBLY PRESTRESSED CONCRETE BEAMS (FIXED)		B310



FRONT VIEW

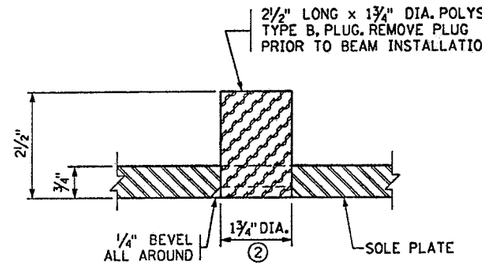


SIDE VIEW



TOP VIEW

BEAM SIZE	W VALUE
28M,36"	1' 5¾"
40"	1' 9¾"
45M,54M 63",72",81"	2'-1¾"
BULB TEES	1' 11¾"



PINTLE HOLE DETAIL

NOTES:

MATERIAL TO BE STRUCTURAL STEEL PER SPEC. 3306.

SOLE PLATE FOR BEARING ASSEMBLY TO BE HOT DIPPED GALVANIZED PER SPEC. 3394 AFTER FABRICATION.

PINTLE HOLES SHALL BE FREE OF ZINC BUILD UP FROM GALVANIZING.

PAYMENT FOR SOLE PLATES TO BE INCLUDED IN PRICE BID FOR PRESTRESSED CONCRETE BEAMS.

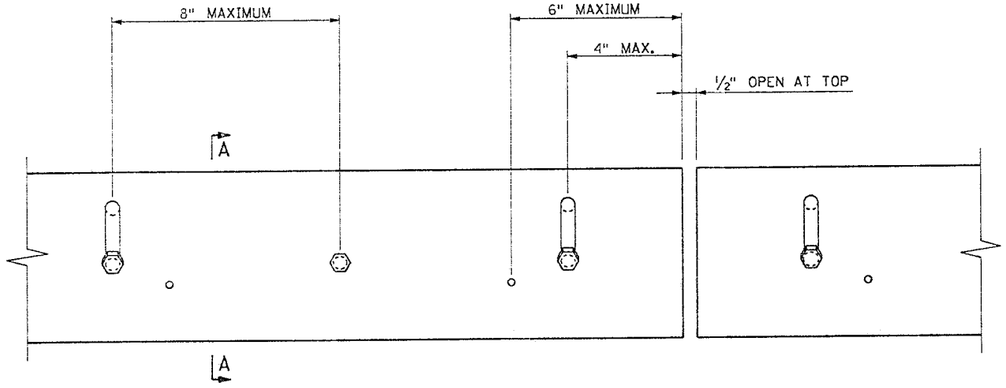
(1) DIMENSION "W" TO BE THE WIDTH AT THE BOTTOM FLANGE OF THE BEAM MINUS ¼".

(2) FOR 1½" DIA. PINTLES.

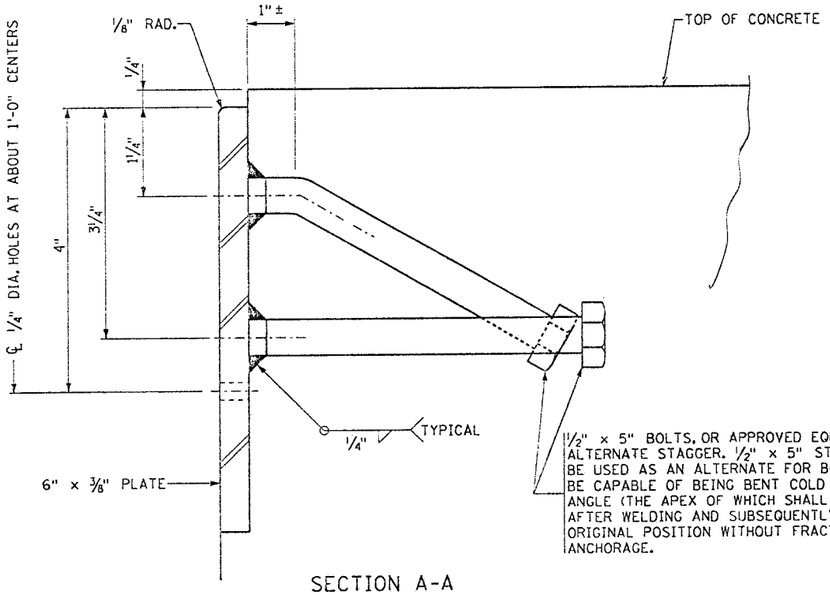
(3) THESE DIMENSIONS MAY BE MODIFIED TO CLEAR PRESTRESSED STRANDS, HOWEVER, CHANGES MUST BE APPROVED BY THE ENGINEER.

APPROVED: SEPT. 8, 1992	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION 11/19/92 KLW	DETAIL NO.
OFFICE of BRIDGES and STRUCTURES	SOLE PLATE PRESTRESSED CONCRETE BEAMS (FOR BEARINGS WITH PINTLES)	6-25-93	B303

S.A.P. 55-599-36	DETAILS	BRIDGE NO. 55599
SHEET 10 OF 16 SHEETS		



ELEVATION
(CONCRETE NOT SHOWN)



SECTION A-A

½" x 5" BOLTS, OR APPROVED EQUAL AT 8" CENTERS WITH ALTERNATE STAGGER. ½" x 5" STUD WELDED FASTENERS MAY BE USED AS AN ALTERNATE FOR BOLTS. THE ANCHORAGE SHALL BE CAPABLE OF BEING BENT COLD BY HAMMERING THRU A 30° ANGLE (THE APEX OF WHICH SHALL BE AT THE FUSION POINT) AFTER WELDING AND SUBSEQUENTLY STRAIGHTENED TO ITS ORIGINAL POSITION WITHOUT FRACTURE OF THE WELD OR ANCHORAGE.

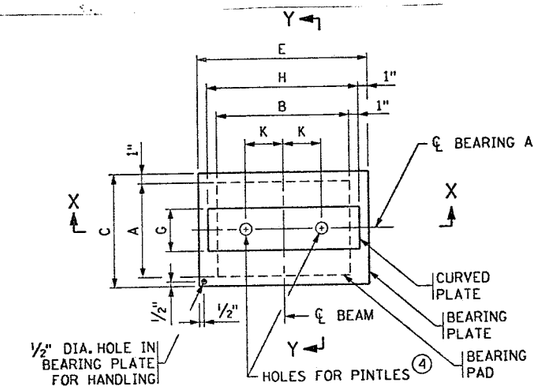
NOTES:

PLATES SHALL EXTEND FULL WIDTH OF ROADWAY BETWEEN GUTTER LINES WITH A ½" OPEN JOINT AT EACH BREAK IN CROWN PROFILE. MAXIMUM LENGTH 22 FEET.

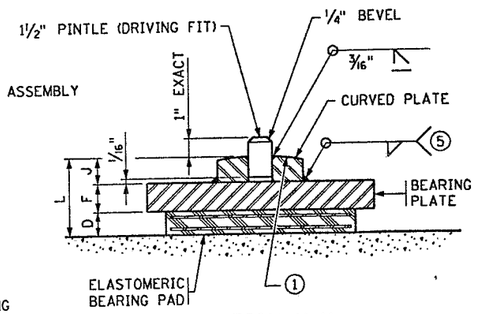
MATERIALS: STRUCTURAL STEEL PER SPEC. 3306. GALVANIZE AFTER FABRICATION PER SPEC. 3394

SET PLATE TO PROPER GRADE AND CROWN . PLATES SHALL BE STRAIGHTENED TO A TOLERANCE OF 1/16" IN 10 FEET AFTER GALVANIZING.

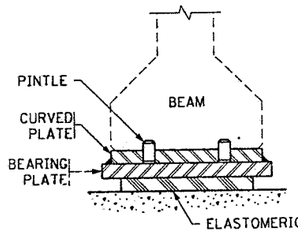
APPROVED: AUGUST 4,1992 OFFICE of BRIDGES and STRUCTURES	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION PROTECTION PLATE FOR END OF SLAB	DATE: DR: CHK:	DETAIL NO. B553



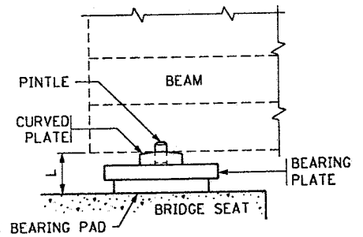
PLAN



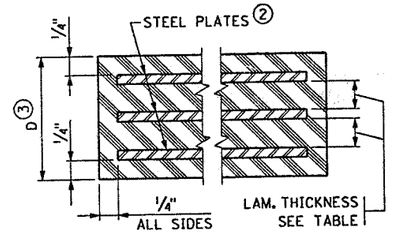
SECTION Y-Y
(ENLARGED BEARING ASSEMBLY)



SECTION X-X



END ELEVATION



SECTION THRU BEARING PAD

TABLE

ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			STEEL PLATES		LAMINATES		SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			PINTLE DIA.	PINTLE DISTANCE	ASSY. HEIGHT
			A	B	D	NO.	THICK.	NO.	THICK.		C	E	F	G	H	J		K ⑥	L
E1	N. ABUT.	54M	12	24	3 11/8	5	1/8	4	1/2	8.0	14	27	1 1/4	4 1/2	26	1 1/4	1 1/2	8	5 5/8

NOTES:

ELASTOMERIC MATERIALS & PAD CONSTRUCTION, SHALL COMPLY WITH SPEC. 3741

ALL STEEL PLATES SHALL COMPLY WITH SPEC. 3306

ALL PLATES SHALL BE FLAT AFTER FABRICATION AND GALVANIZING. WELDING DISTORTION OF BEARING PLATES SHALL BE STRAIGHTENED TO WITHIN 1/16" OF FLATNESS BY MECHANICAL MEANS WITHOUT DAMAGE TO THE ZINC COATING.

PINTLES SHALL COMPLY WITH SPEC. 3314, TYPE II.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

① THE RADIUS OF THE CURVED PLATE SHALL BE 1'-0" MINIMUM AND 1'-6" MAXIMUM. FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

② DO NOT GALVANIZE THESE PLATES.

③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.

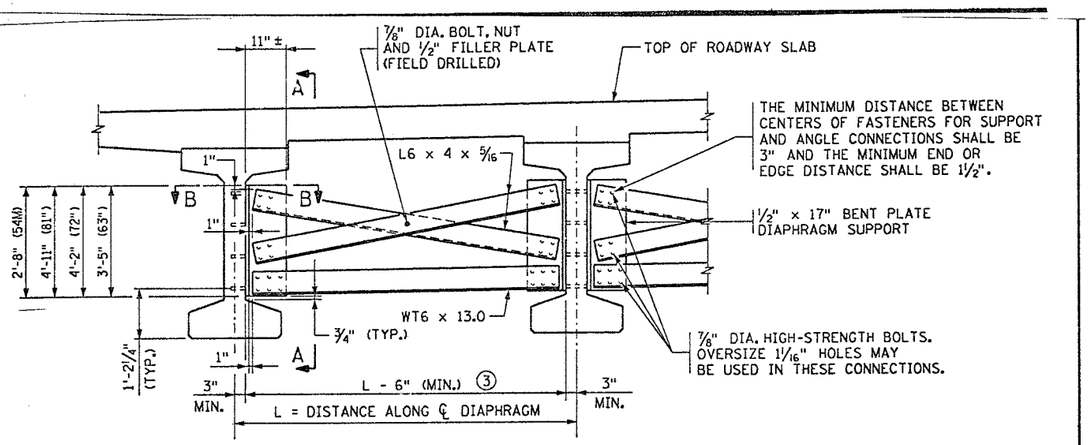
④ 2 PINTLES, 1½" DIA. FOR TOTAL LOADS TO 390 KIPS.

⑤ FOR BEARING AND CURVED PLATE THICKNESSES UP TO 1½" USE 5/16" FILLET WELDS; FOR THICKNESSES OVER 1½" TO 2¼" USE ⅜" FILLET WELDS; FOR THICKNESSES OVER 2¼" USE ½" FILLET WELDS. USE MINIMUM PREHEAT OF 300°F.

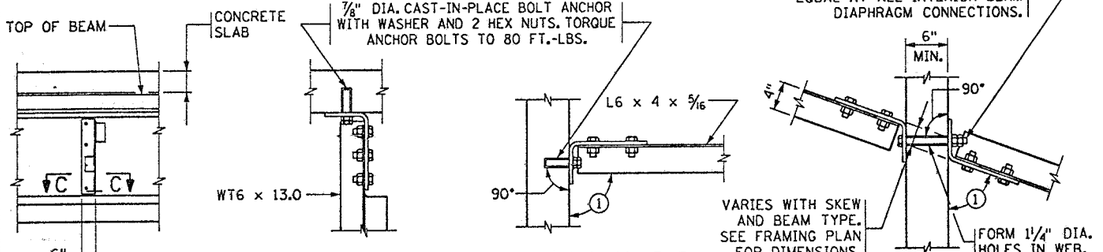
⑥ SEE DETAIL B303 FOR PINTLE DISTANCE K.

APPROVED: AUGUST 4,1992 OFFICE of BRIDGES and STRUCTURES	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION CURVED PLATE BEARING ASSEMBLY PRESTRESSED CONCRETE BEAMS (EXPANSION)	DATE: DR: CHK: 6-25-93	DETAIL NO. B311

	S.A.P. 55-599-36 SHEET 11 OF 16 SHEETS	DETAILS	BRIDGE NO. 55549



PART TRANSVERSE SECTION
(SQUARE BRIDGE SHOWN)

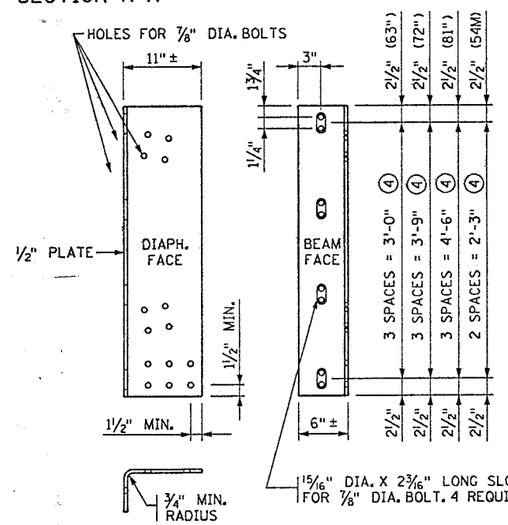


SECTION A-A

SECTION C-C
(FACIA BEAM)

SECTION B-B
TYPICAL SECTION AT ALL FACIA BEAM AND STAGGERED DIAPH. CONNECTIONS

TYP. INTERMEDIATE DIAPHRAGM
TYPICAL SECTION AT CONTINUOUS INTERIOR DIAPHRAGMS



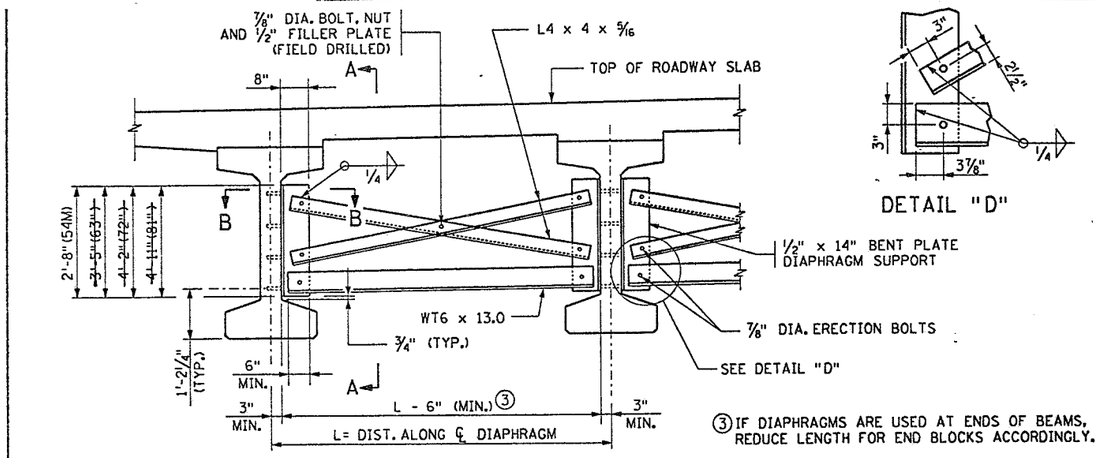
DIAPHRAGM SUPPORT

NOTES:

ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND WASHERS, SHALL BE INCLUDED IN THE PAYMENT FOR DIAPHRAGMS FOR PRESTRESSED BEAMS.
DIAPHRAGMS OVER THE PIERS ARE CONSIDERED TO BE INTERMEDIATE IF THE SLAB IS CONTINUOUS.
FOR BOLT LENGTHS GREATER THAN 9", USE HIGH STRENGTH BOLTS PER SPEC. SAE GRADE 5 OR BETTER. SEE SPEC. 2405.3M FOR INSTALLATION.

(1) FOR SKEW ANGLES UNDER 20°, USE 90° LESS THE SKEW ANGLE. FOR ANGLES OVER 20°, USE 90°.
(2) AS AN ALTERNATIVE TO THE 7/8" BOLT CONNECTION, THE CONTRACTOR MAY SUBMIT DETAILS AND CATALOGUE OR PERFORMANCE INFORMATION OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL.
(3) IF DIAPHRAGMS ARE USED AT ENDS OF BEAMS, REDUCE THE LENGTH FOR END BLOCKS ACCORDINGLY.
(4) BOLT HOLES SHALL BE SPACED SO AS TO MISS PRESTRESSED STRANDS IN CONCRETE BEAMS. SEE PRESTRESSED CONCRETE BEAM SHEETS FOR MORE INFORMATION.

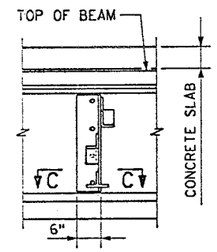
APPROVED: SEPT. 8, 1992	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION		DETAIL NO.
OFFICE of BRIDGES and STRUCTURES	STEEL INTERMEDIATE BOLTED DIAPHRAGM FOR 54M & 63"-81" PRESTRESSED CONCRETE BEAMS		B406



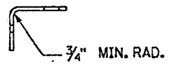
DETAIL "D"

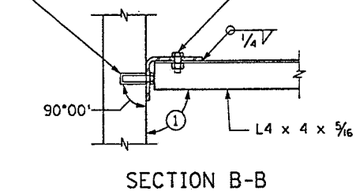
PART TRANSVERSE SECTION
(SQUARE BRIDGE SHOWN)

(3) IF DIAPHRAGMS ARE USED AT ENDS OF BEAMS, REDUCE LENGTH FOR END BLOCKS ACCORDINGLY.

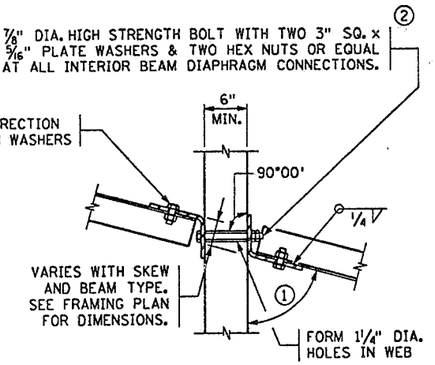


SECTION A-A

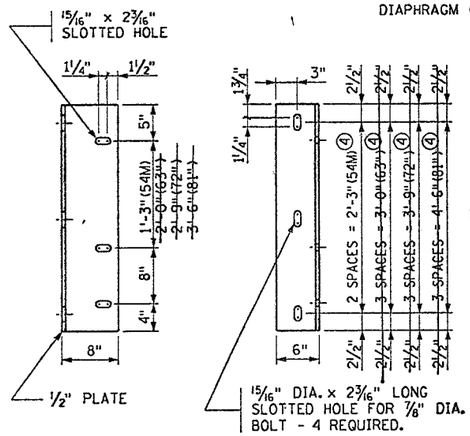




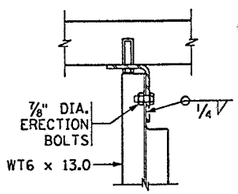
SECTION B-B
TYPICAL SECTION AT ALL FACIA BEAM AND STAGGERED DIAPHRAGM CONNECTIONS



TYPICAL INTERMEDIATE SECTION
TYPICAL SECTION AT CONTINUOUS INTERIOR DIAPHRAGMS



DIAPHRAGM SUPPORT



SECTION C-C
(FACIA BEAM)

(4) BOLT HOLES SHALL BE SPACED SO AS TO MISS PRESTRESSED STRANDS IN CONCRETE BEAMS. SEE PRESTRESSED CONCRETE BEAM SHEETS FOR MORE INFORMATION.

(1) FOR SKEW ANGLES UNDER 20°, USE 90° LESS THE SKEW ANGLE. FOR SKEW ANGLES OVER 20°, USE 90°.

(2) AS AN ALTERNATIVE TO THE 7/8" BOLT CONNECTION, THE CONTRACTOR MAY SUBMIT DETAILS AND CATALOGUE OR PERFORMANCE INFORMATION OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL.

GENERAL NOTES:

SEE SPEC. 2405.3M FOR INSTALLATION.

THE LEG OF THE 1/4" PLATE SHALL BE SHOP BENT TO CONFORM TO THE DIAPHRAGM. A 1/2" x 6" x 8" ANGLE MAY BE USED FOR DIAPHRAGMS PERPENDICULAR TO BEAMS.

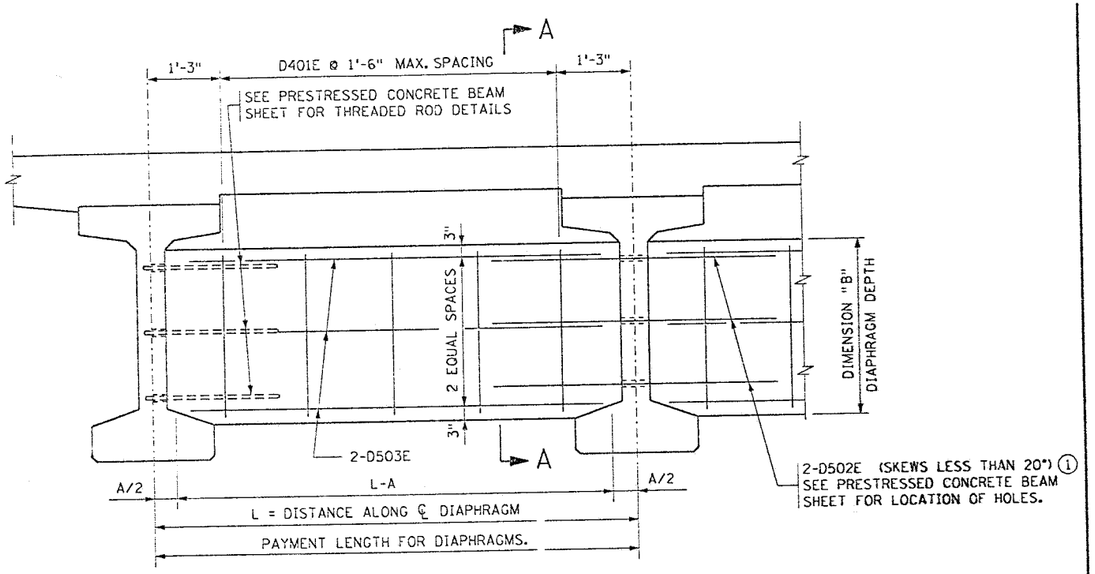
FOR BOLT LENGTHS GREATER THAN 9", USE HIGH STRENGTH BOLTS PER SPEC. SAE GRADE 5 OR BETTER.

ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS & WASHERS, SHALL BE INCLUDED IN THE PAYMENT FOR DIAPHRAGMS FOR PRESTRESSED BEAMS.

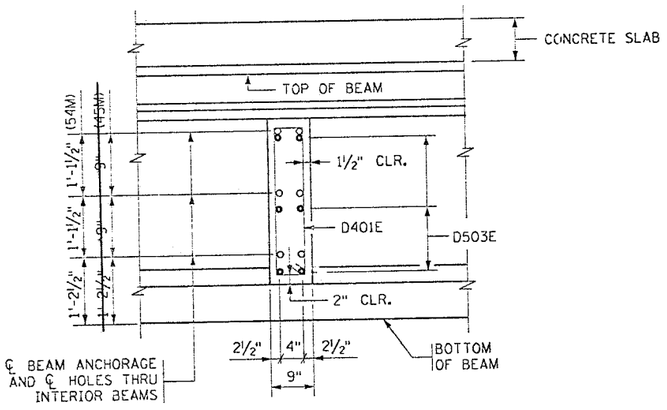
DIAPHRAGMS OVER THE PIERS ARE CONSIDERED TO BE INTERMEDIATE IF THE SLAB IS CONTINUOUS.

APPROVED: DECEMBER 11, 1992	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION		DETAIL NO.
OFFICE of BRIDGES and STRUCTURES	STEEL INTERMEDIATE WELDED DIAPHRAGM FOR 54M & 63"-81" PRESTRESSED CONCRETE BEAMS	6-25-93	B405

S.A.P. 55-599-36	DETAILS	BRIDGE NO.
SHEET 12 OF 16 SHEETS		55549



PART TRANSVERSE SECTION

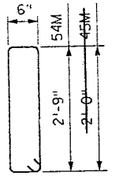


SECTION A-A

BEAM HEIGHT	DIM. "A" VOLUME COMP.	DIM. "B" DIAPHRAGM DEPTH	D401E LENGTH
~~45M-45"~~	~~7¼"~~	~~2'-4"~~	~~5'-9"~~
54M-54"	6⅞"	3'-1"	7'-3"

CONCRETE VOLUME PER DIAPHRAGM

$$\frac{(L-A) \times B \times 0.75}{27} = \text{CUBIC YARDS}$$



D401E

BILL OF REINFORCEMENT FOR DIAPHRAGMS

BAR	NO.	LENGTH	SHAPE	LOCATION
D401E	18	7'-3"		TIE-VERTICAL
D502E	12	5'-0"		HORIZONTAL-THRU BEAM
D503E	18	8'-2"		HORIZONTAL

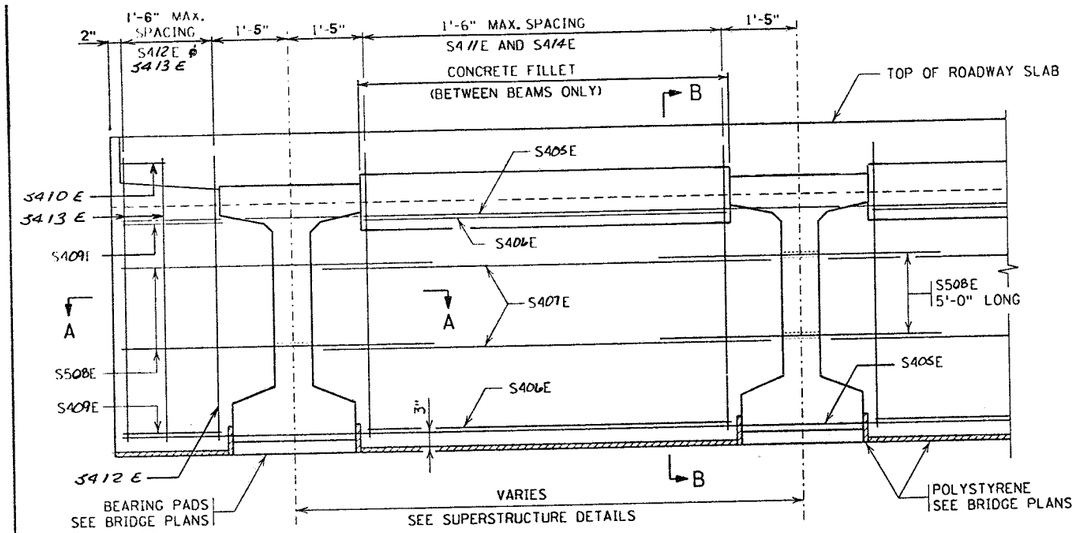
GENERAL NOTES

DIAPHRAGMS TO BE CONCRETE MIX NO. 3Y43

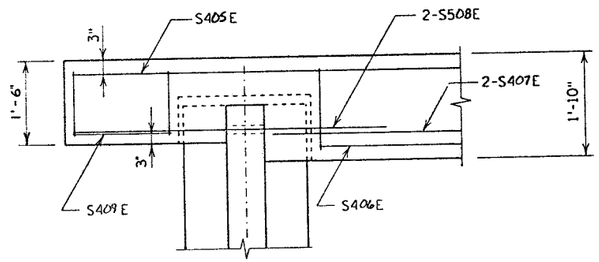
ALL DIAPHRAGM CONCRETE AND REINFORCEMENT BARS SHOWN ON THIS DETAIL TO BE INCLUDED IN PAYMENT FOR DIAPHRAGMS FOR PRESTRESSED BEAMS. THREADED RODS ARE INCLUDED IN PAYMENT FOR PRESTRESSED CONCRETE BEAMS.

(1) FOR DIAPHRAGMS 20° AND OVER, USE THREADED RODS AS SHOWN ON STANDARD PRESTRESSED CONCRETE BEAM SHEET.

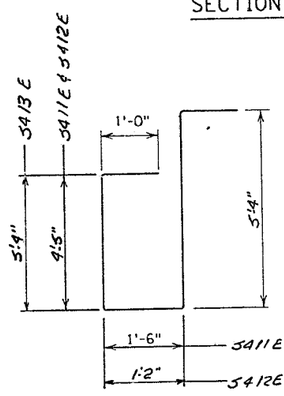
APPROVED: AUGUST 4,1992	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	DATE:	DETAIL NO.
OFFICE of BRIDGES and STRUCTURES	CONCRETE INTERMEDIATE DIAPHRAGM (45M - 54M PRESTRESSED CONCRETE BEAM SPANS)	DR: CHK:	B813



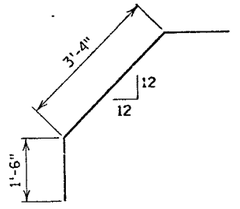
PART TRANSVERSE SECTION AT END DIAPHRAGM



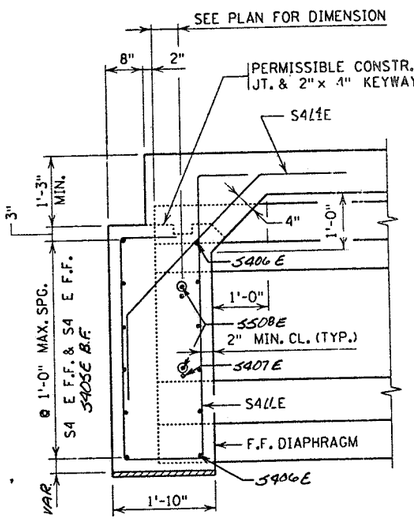
SECTION A-A



S411E, S412E & S413E



S414E



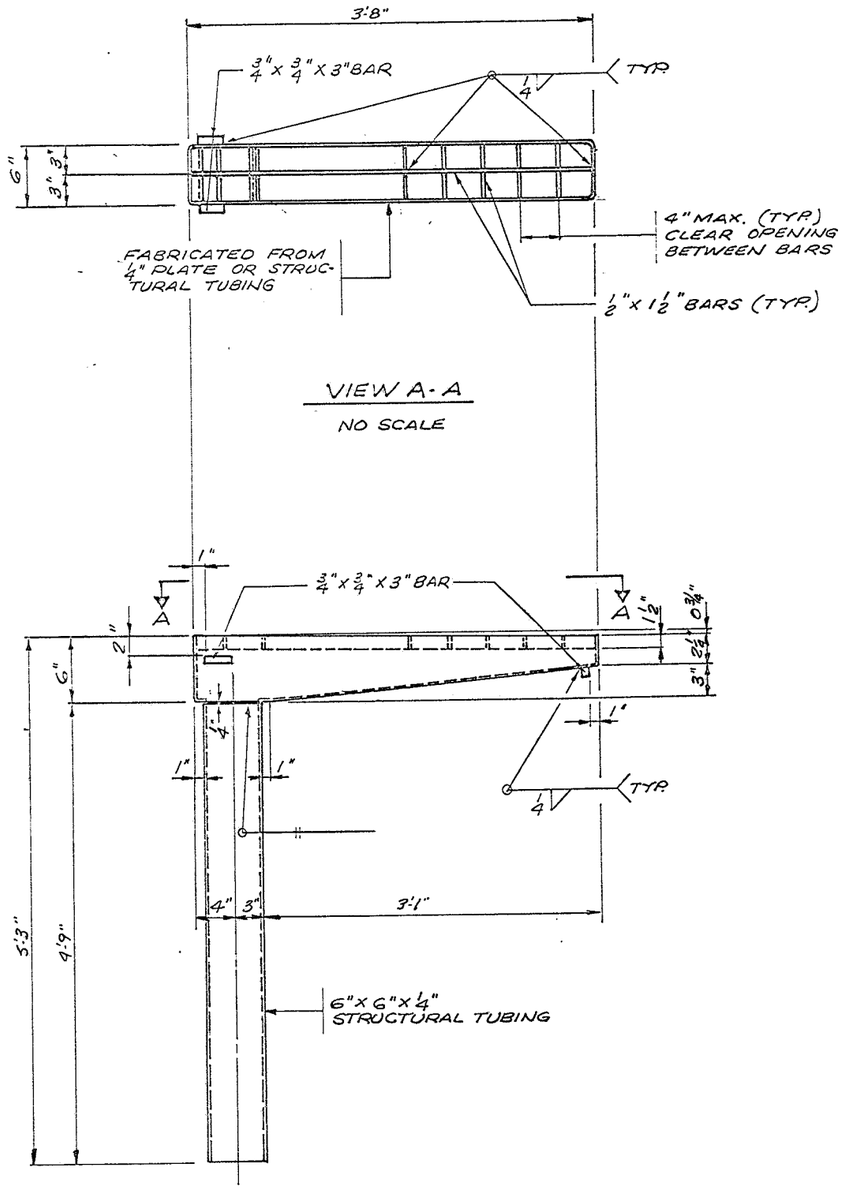
SECTION B-B

NOTES

ALL DIAPHRAGM BARS SHOWN ARE LISTED WITH THE SUPERSTRUCTURE REINFORCEMENT. DIAPHRAGM CONCRETE AND REINFORCEMENT QUANTITIES ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.

DIAPHRAGM TO BE USED AT ABUTMENT END ONLY.

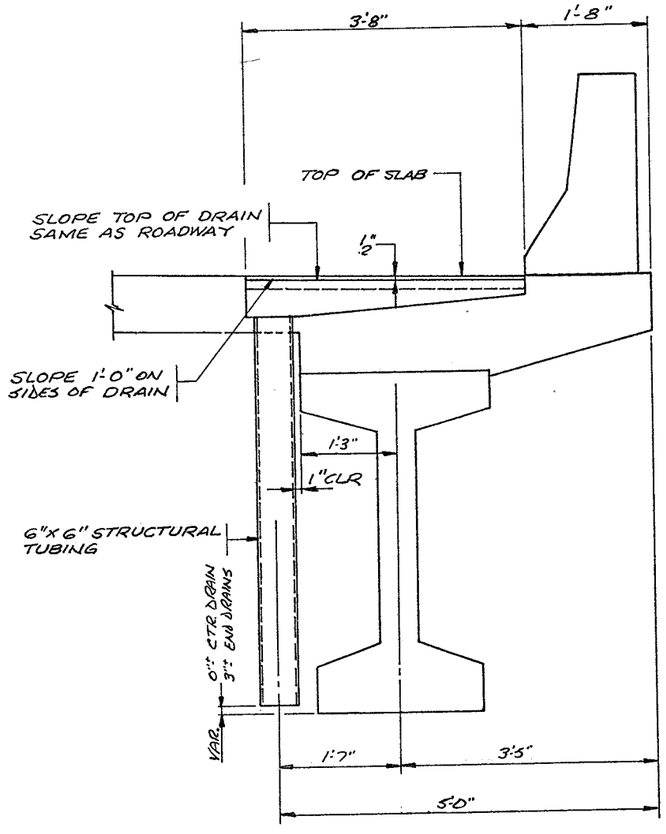
APPROVED:	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	DATE: 11/8/91 DR: ~~NKL~~ CHK: ~~BENNETT~~ 6-25-93	DETAIL NO. MODIFIED
OFFICE of BRIDGES and STRUCTURES	CONCRETE END DIAPHRAGM (45M-54M PRESTRESSED CONCRETE BEAM SPAN WITH PILE BENT ABUTMENT)	S.A.P. 55-599-36 SHEET 13 OF 16 SHEETS	B810 DETAILS BRIDGE NO. 55549



ELEVATION - B702 MOD.

NO SCALE

GALVANIZE AFTER FABRICATION PER MN. SPEC. 3394.



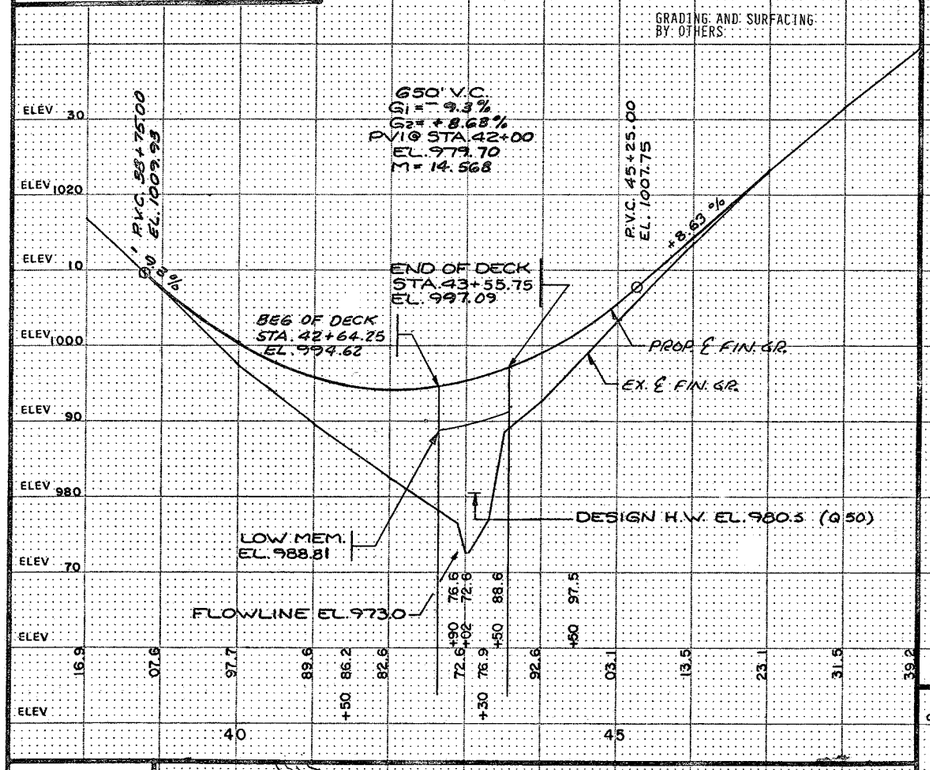
FLOOR DRAIN PLACEMENT DIAGRAM

S.A.P. 55-599-36

FLOOR DRAIN DETAIL (B702 MODIFIED)	DRAWN W.N.J.	CHECKED	APPROVED 6-25-93	BRIDGE NO. 55549
	SHEET 14 OF 16 SHEETS			

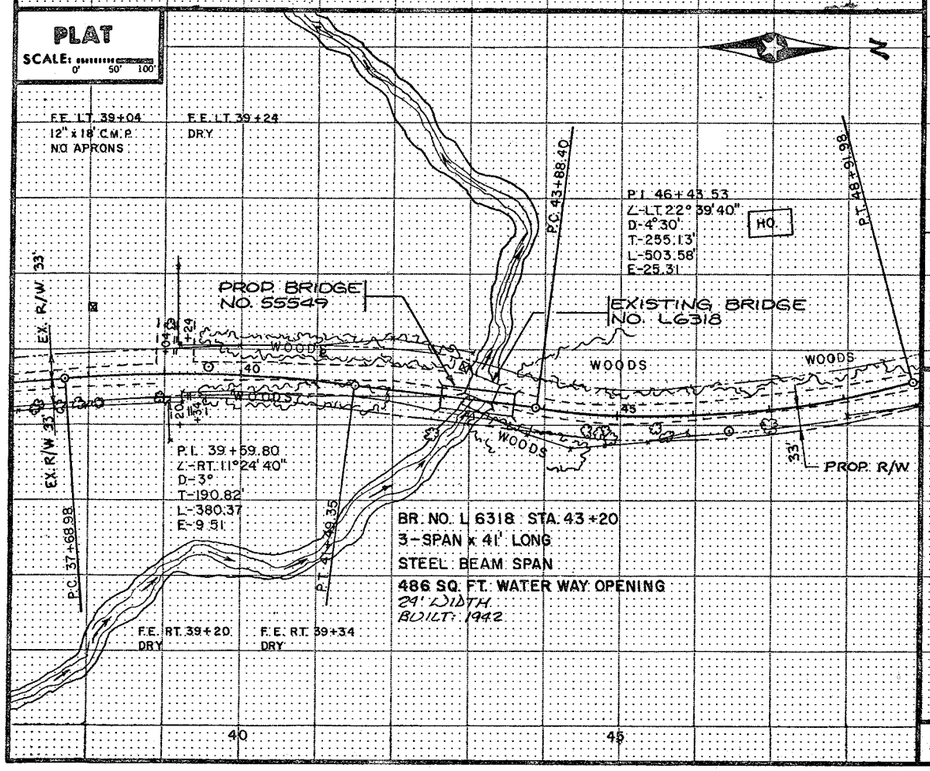
CONTRACTED PROFILE

SCALE: HOR. 0' 50' 100' VER. 0' 5' 10'



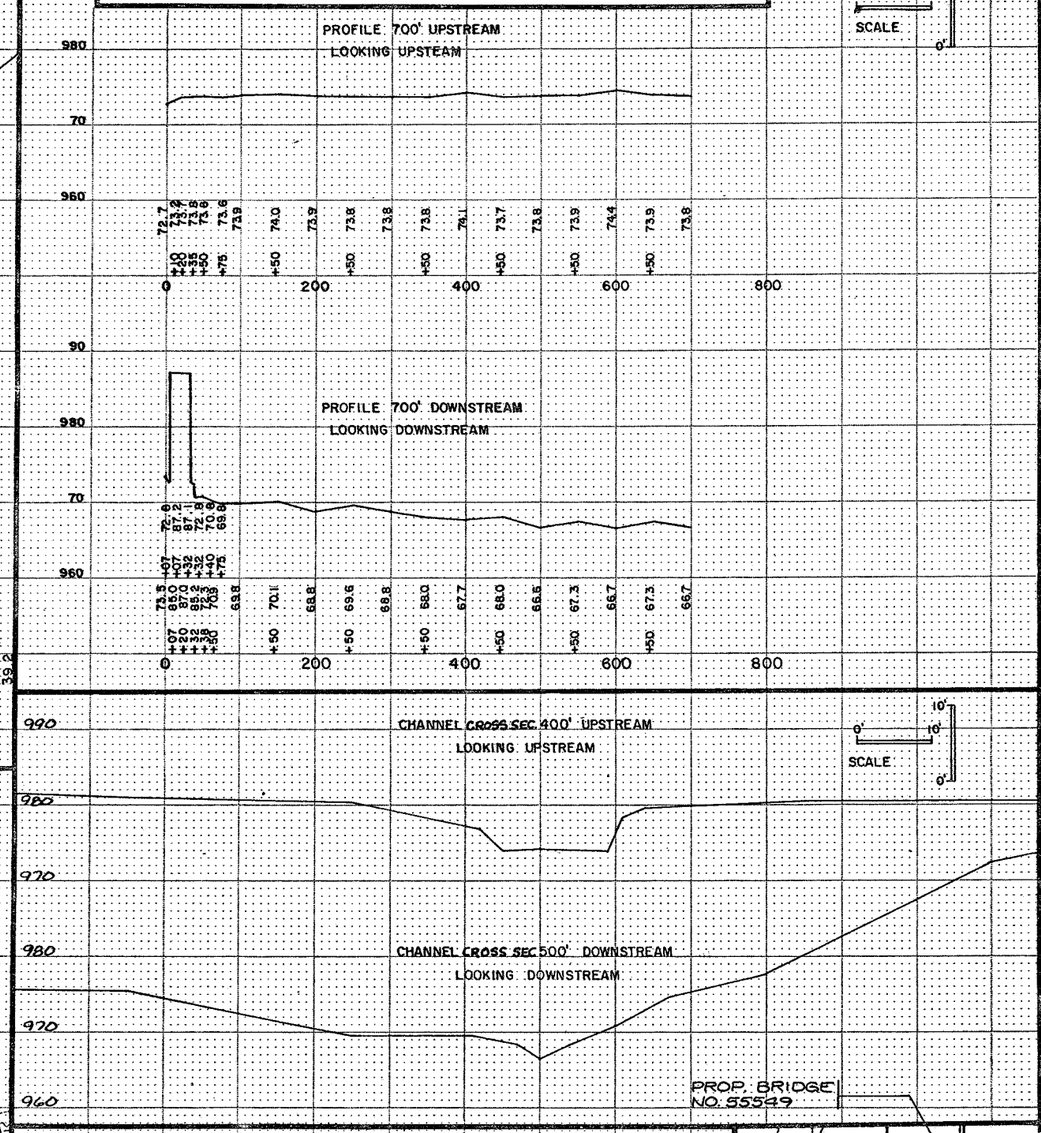
PLAT

SCALE: 0' 50' 100'

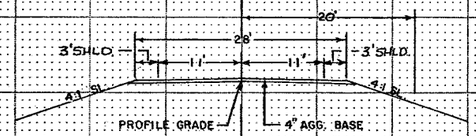


TYPICAL SECTIONS & PERTINENT DATA

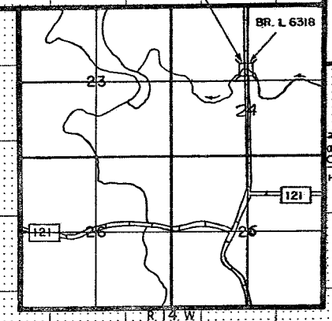
SCALES AS SHOWN



TYPICAL SECTION



℄ ROADWAY
TWP. ROAD



Fed. Proj. No.

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

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 7/3/91

Stream or ditch designation UNNAMED
Drainage area 9.9 SQ. MI.
Max. flood on record. UNK. Design flood (.. 50 .. yr. freq.) 2390 C.F.S.
Max. observed highwater elevation UNK. Design highwater elevation 982.4
Design mean velocity through structure .... 9.6 F.P.S.
Low superstructure at or above elevation 983.5
Flowline elevation 973.0 Skew angle 0°
Waterway area req'd. below elevation 980.5 = 247 Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr. freq.) is 2920 C.F.S. at stage 983.6 and mean velocity of 10.2 F.P.S. with .... 2.6 .... Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Natural Resources.

ENGINEERS RECOMMENDATION

DATE 3-12-93

1-90' PRESTRESSED CONCRETE BEAM SPAN
37'-0" CLEAR ROADWAY

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

Bench mark elevation 1039.314 (M.S.L. 1929 Adj.)
Location: T INTERSECTION CR. 121 & TWP. RD.

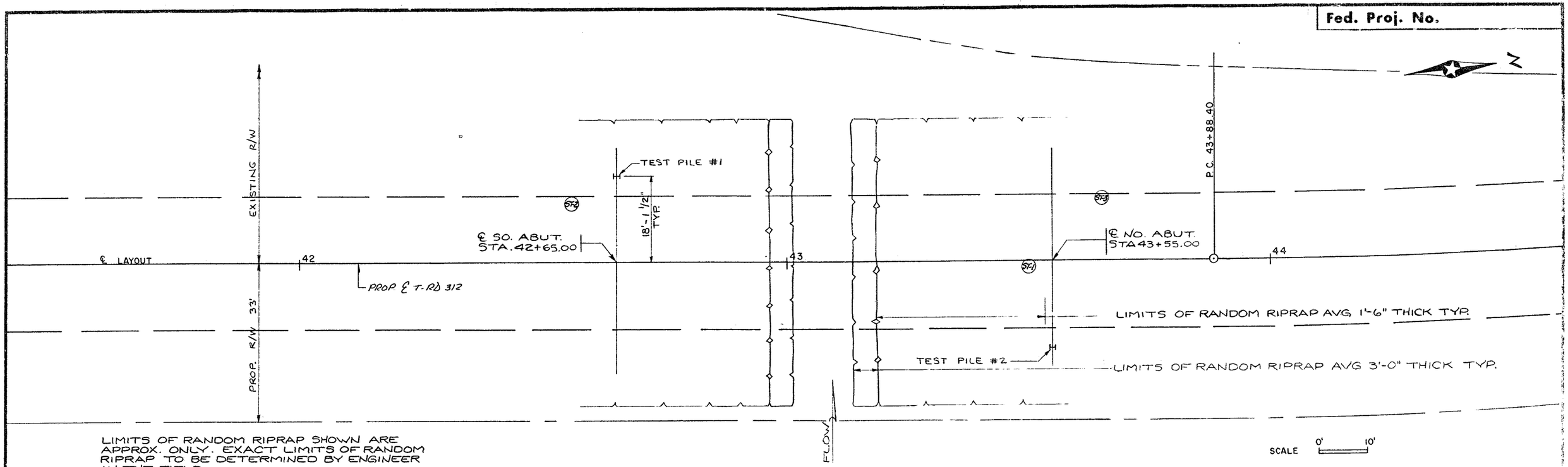
MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 1.4 ON TWP. RD. 312 (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 1.4 MILES SOUTH OF JCT. C.S.A.H. 12
SEC. 24 TWP 108 N R 14 W
TOWNSHIP ORONOCO COUNTY OLMSTED
BRIDGE NO. 55549
6-25-93

Area No. | Job No. | S.A.P. No. 55-599-36 | Sheet No. 15 of 16 Sheets

Fed. Proj. No.



LIMITS OF RANDOM RIPRAP SHOWN ARE APPROX. ONLY. EXACT LIMITS OF RANDOM RIPRAP TO BE DETERMINED BY ENGINEER IN THE FIELD.

APPROACH GRADING BY BRIDGE CONTRACTOR.

GRANULAR FILTER IS INCLUDED IN PRICE BID FOR RANDOM RIPRAP CL IV APPROX QUANTITY 80 CU YDS.

℄ PROFILE
PROFILE 20' LT
PROFILE 20' RT
PROP. ℄ PROFILE

BEG. OF DECK STA. 42+64.25 EL. 994.62

650' V.C. PVI @ STA 42+00 EL 979.70 G1 = -9.3% G2 = 8.63% M = 14.568

END OF DECK STA. 43+55.75 EL. 992.09

90'-0"

(2) MEMBER EL. 988.81

2'-0" TYP.

2'-6" TYP.

22' ± CHAN. BOT.

3:0 TYP.

3'-0" TYP.

RANDOM RIPRAP CLASS IV

FL. EL 973.0

DES. H.W. EL. 980.5 Q 50

6" GRANULAR FILTER

HP 12X53 STEEL H-TEST PILE, 40' LG., N. ABUT.

HP 12X53 STEEL H-TEST PILE, 50' LG., S. ABUT.

B.M. EL 1039.314 (M.S.L. 1929 ADJ.) T. INTERSECTION CR 121 & TWP RD

FILL: S. SI., M. GRAINED S. BWN. MIXED W/ BLK. FROZEN	50.2	
FILL: SI. S., BWN., FROZEN	50.2	
FILL: SI., BWN., MOIST, M. DENSE	15	
SI., W/ORGANICS, BLK., MOIST, LOOSE	9	
SI., BLK., MOIST, LOOSE (TOPSOIL)	9	
SI., DK BWN., MOIST, LOOSE (ALLUVIUM)	8	
POORLY GRADED S.W/G., F. GRAINED, BWN., MOIST, LOOSE (ALLUVIUM)	19	
SI. S., W/ LIMESTONE RUBBLE, BWN., MOIST, M. DENSE (ALLUVIUM)	18	
POORLY GRADED S.W/G., F. TO M. GRAINED, W/ WX. LIMESTONE, BWN., MOIST, DENSE (ALLUVIUM)	46	
POORLY GRADED S. W/ LIMESTONE RUBBLE, F. GRAINED, BWN., MOIST, M. DENSE	17	
WX. LIMESTONE, W/ SI., BWN., MOIST, VERY DENSE	73	
	ST-1	

FILL: CRUSHED ROCK BASE, BWN.	16	
FILL: S. SI. S. W/ LIMESTONE RUBBLE, BWN., FROZEN	6	
FILL: S. SI., F. GRAINED, BLK.	6	
FILL: S. DK. BWN., M. DENSE	10	
SI. BWN., MOIST, M. DENSE	16	
TOPSOIL	52	
SI. S. W/ F. TO M. GRAINED G. & LIMESTONE RUBBLE, BWN., MOIST, M. DENSE	16	
WX. LIMESTONE W/ F. S. LAYERS, BWN., MOIST, VERY DENSE	100.5	
	ST-3	

FILL: CRUSHED ROCK, BWN., FROZEN	76	
FILL: SI. S., W/ LIMESTONE RUBBLE, F. GRAINED, BWN., FROZEN	8	
FILL: SI. SI., W/ TREE ROOTS & BARK, F. GRAINED, BWN., MOIST, LOOSE	6	
FILL: SI., W/ S. & LIMESTONE, BWN., MOIST, LOOSE.	6	
S., BWN., MOIST, LOOSE (F. ALLUVIUM)	10	
SI., W/ LIMESTONE RUBBLE, M. DENSE. (RESIDUAL)	16	
WX. LIMESTONE BWN., MOIST, VERY DENSE. (RESIDUAL)	52	
SI. S. W/ WX. LIMESTONE, F. GRAINED, BWN., MOIST, M. DENSE (RESIDUAL)	16	
WX. LIMESTONE, BWN., MOIST, VERY DENSE	100.5	
	ST-3	

BRIDGE CONTRACTOR SHALL EXCAVATE AND FILL TO THESE LINES FOR APPROX. 30' LT & RT. THEN TAPER AT A 2:1 SLOPE TO NATURAL CHANNEL SLOPES INCLUDED IN PRICE BID FOR SLOPE PREPARATION.

BORINGS SHOWN ⌊ ⌋ TAKEN WITH
STD 140 LB HAMMER
30 INCH DROP
2 INCH O.D. SAMPLER

BRIDGE SURVEY PLAN AND PROFILE	DES:	DR:	APPROVED: 6-25-93
	CHK:	CHK:	
State Proj. No. 55-599-36	Sheet No. 16 of 16 Sheets		Bridge No. 55549