MINNESOTA DEPARTMENT OF TRANSPORTATION

THE COUNTY OF OLMSTED

CONSTRUCTION PLAN FOR GRADING, AGGREGATE BASE & BR. NO. 55550

LOCATED ON C.R. 103 OVER SO FORK MIDDLE BRANCH ZUMBRO RIVER, 4 MI NO. OF BYRON (GEOGRAPHIC DESCRIPTION)

FROM 1333.40' S. & 57.21' W. OF SEC. COR 4-5-8-9 KALMAR T107N-R15W TO 1153.00' S. & 1027.29' E. OF SEC. COR. 4-5-8-9 KALMAR T107N-R15W (LEGAL DESCRIPTION)

STATE PROJ. NO. 55-598-35

GROSS LENGTH	1250.00	FEET	0.237 MILES
BRIDGES-LENGTH	149.83	FEET	0.028 MILES
EXCEPTIONS-LENGTH	0	FEET	0 MILES
NET LENGTH	1250.00	FEET	0.237 MILES

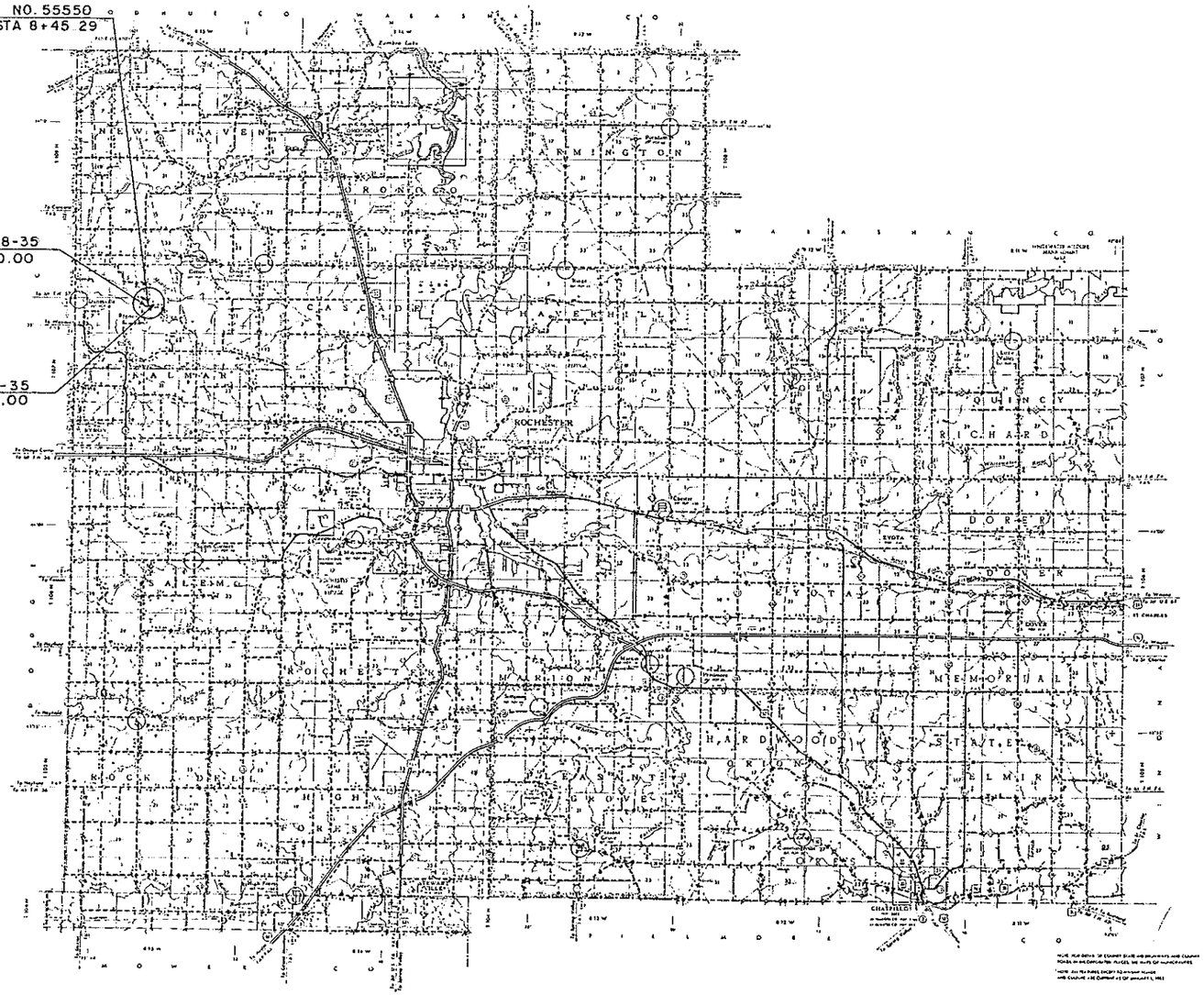
STATE PROJ. NO. _____

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

PROPOSED BRIDGE NO. 55550
STA 6+95.46 TO STA 8+45.29

BEGIN: S.P. 55-598-35
STA 0+00.00

END: S.P. 55-598-35
STA 12+50.00



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
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 POLES
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
ELECTRIC MANHOLE
BURIED TELEPHONE CABLE
BURIED ELECTRICAL CABLE
AERIAL TELEPHONE CABLE
SEWER, (SANITARY OR STORM)
SEWER MANHOLE

SCALES

PLAN 0 100'
PROFILE 0 100' HOR 0 10' VERT
INDEX MAP 0 2 MILES
CROSS SECTIONS 0 10'

ALBINSON MPLS 55405

MINN. PROJ. NO. CRP 0092(023)
MINN PROJ. NO. BROS 9055(014)

GOVERNING SPECIFICATIONS

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

INDEX

SHEET NO 1	TITLE SHEET AND LAYOUT MAP
SHEET NO 2	ESTIMATE OF QUANTITIES & TYPICAL SECTIONS
SHEET NO 3	PLAN AND PROFILE
SHEET NO 4	TRAFFIC CONTROL PLAN
SHEET NO 5-7	CROSS SECTIONS
SHEET NO 8-23	BRIDGE SHEETS

DESIGN DESIGNATION

R _____ ESN 18(20)

ADT (Current Year)	=	290 (1992)	Design Speed 55 MPH
ADT (Future Year)	=	522 (2012)	Based on STOPPING Sight Distance
DHV (Design Hr. Vol.)	=	____	Height of eye 3.5' Height of object 0.5'
D (Directional Distr.)	=	____ %	Design Speed not achieved at:
T (Heavy Commercial)	=	____ %	STA. 2+75 TO STA. 5+25 MPH 40
SOIL FACTOR		130%	STA. 6+60 TO STA. 13+20 MPH 40
SHOULDER WIDTH		4'	STA. ____ TO STA. ____ MPH ____

9 TON DESIGN

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 3/30/89 REG. NO. 10397 ENGR. Michael K Sheridan

COUNTY Olmsted

Recommended for Approval _____ 5-1 1989
DISTRICT STATE AID ENGINEER

Recommended for Approval _____ 6-9 1992
STATE AID PLANS AND SPECS ENGINEER

Approved 6/10 1992 _____
STATE AID ENGINEER

REC. FOR APPROVAL _____ 6-9 1992
STATE BRIDGE ENGR.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
_____ _____
DIVISION ADMINISTRATOR DATE

~~STATE AID PROJ. NO.~~ _____

STATE PROJ. NO. 55-598-35 OLMSTED COUNTY C.R 103 **SHEET NO.** 1 **OF** 23 **SHEETS**

ESTIMATED QUANTITIES

	SPECIFICATION NO.	ITEM	UNIT	PARTICIPATING	NON PARTICIPATING	TOTAL ESTIMATED QUANTITIES
	2101.501	CLEARING	ACRE		0.20	0.20
	2101.502	CLEARING	TREE		11	11
	2101.506	GRUBBING	ACRE		0.20	0.20
	2101.507	GRUBBING	TREE		13	13
	2104.501	REMOVE PIPE CULVERTS	LIN. FT.		90	90
(7)	2105.515	UNCLASSIFIED EXCAVATION	CU. YD.		1380	1380 (P)
	2105.523	COMMON BORROW (LV)	CU. YD.		14290	14290
(1)	2211.501	AGGREGATE BASE CLASS 2	TON		1787	1787
	2501.511	18" C.S. PIPE CULVERT	LIN. FT.		78	78
	2501.511	24" C.S. PIPE CULVERT	LIN. FT.		52	52
(6)	0501.602	18" C.S. SAFETY APRON	EACH		4	4
(6)	0501.602	24" C.S. SAFETY APRON	EACH		2	2
	2575.501	SEEDING	ACRE		2	2 (P)
(2)	2575.502	SEED, MIXTURE 500	POUND		100	100
(3)	2575.502	SEED, MIXTURE 1100	POUND		160	160
	2575.505	SODDING, TYPE EROSION	SQ. YD.		900	900
(4)	2575.511	MULCH MATERIAL TYPE 1	TON		4	4
	2575.519	DISK ANCHORING	ACRE		2	2 (P)
(5)	2575.532	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	POUND		400	400
	0563.601	TRAFFIC CONTROL	LUMP SUM		1	1

(1) INCLUDES 80 TONS FOR APPROACHES & 612 TONS FOR TAPERS
(2) APPLICATION RATE 50 POUNDS PER ACRE
(3) APPLICATION RATE 80 POUNDS PER ACRE
(4) APPLICATION RATE 2 TONS PER ACRE.
(5) APPLICATION RATE 200 POUNDS PER ACRE.

(6) STANDARD PLATES 3128, NO GRATE REQUIRED

(7) INCLUDES APPROX. 533 CU. YDS. OF TOPSOIL THAT IS TO BE SALVAGED.

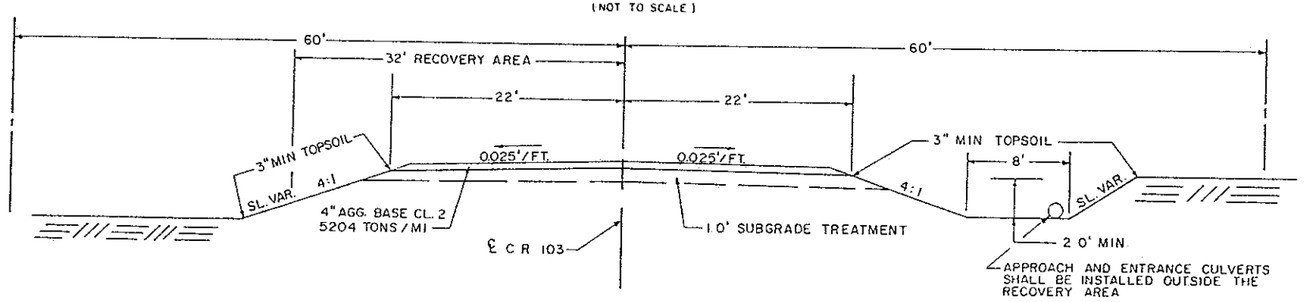
STANDARD PLATES

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

PLATE NO	DESCRIPTION
0005 A	SPECIFICATION REFERENCE TO STANDARD PLATES.
3040 F	CORRUGATED METAL PIPE CULVERT.
3128 D	SAFETY APRON.
3221 C	CORRUGATED STEEL PIPE COUPLING BAND.
8000 I	STANDARD BARRICADES.
9000 B	APPROACHES AND ENTRANCES.

TYPICAL GRADING SECTION

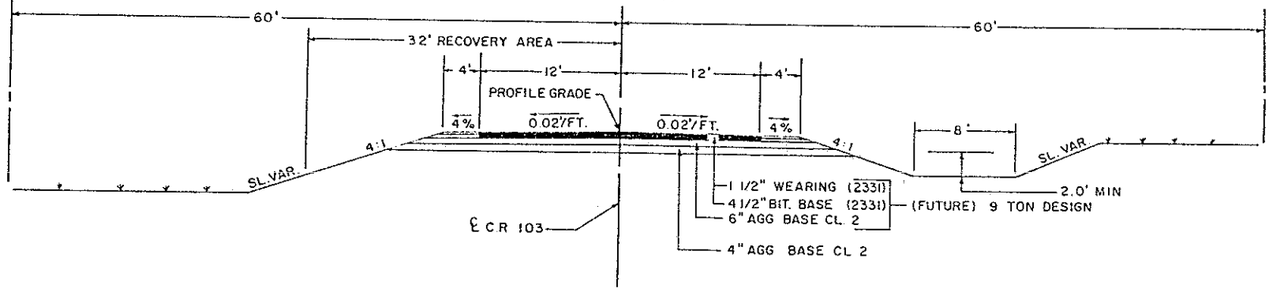
(NOT TO SCALE)



STA 0+00 TO STA 6+95.46
STA 8+45.29 TO STA 12+50.00

FUTURE
TYPICAL SURFACING SECTION

(NOT TO SCALE)



STA 0+00 TO STA 6+95.46
STA 8+45.29 TO STA 12+50.00

NOTE: ALL DIMENSIONS AND SLOPES SHOWN ON TYPICAL SECTIONS ARE APPROXIMATE

NOTE: SALVAGED TOPSOIL SHALL BE PLACED ON SLOPES AS SHOWN ON PLANS AND AS DIRECTED BY THE ENGINEER

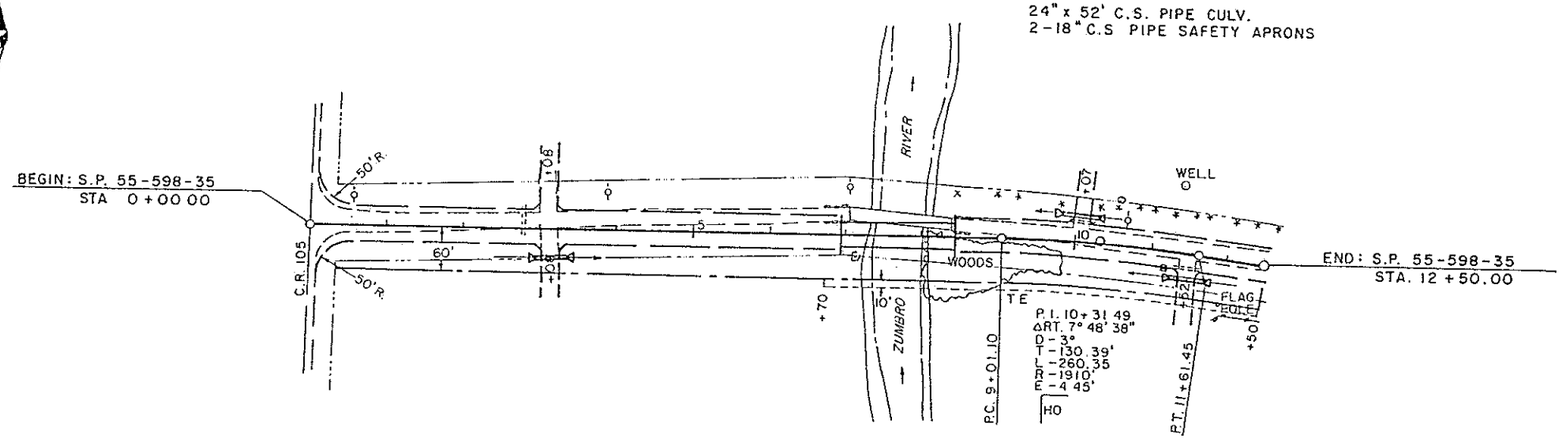
NOTE: ALL UTILITY POLES AND UNYIELDING OBJECTS SHALL BE REMOVED AND RELOCATED OUTSIDE THE 32' RECOVERY AREA (BY OTHERS)

F.E. LT 3+08
DRY

NO CULV. REQ'D.

RES DR. LT. 10+07
INPL 24"x 24' C M P NO APRONS
REMOVE

24" x 52' C.S. PIPE CULV.
2-18" C.S PIPE SAFETY APRONS



MAX. SUPERELEVATION = 0.050 FT./FT.

℄ CULV 2+80
INPL 30"x 34' C M P
NO APRONS
CULV. BURIED
REMOVE

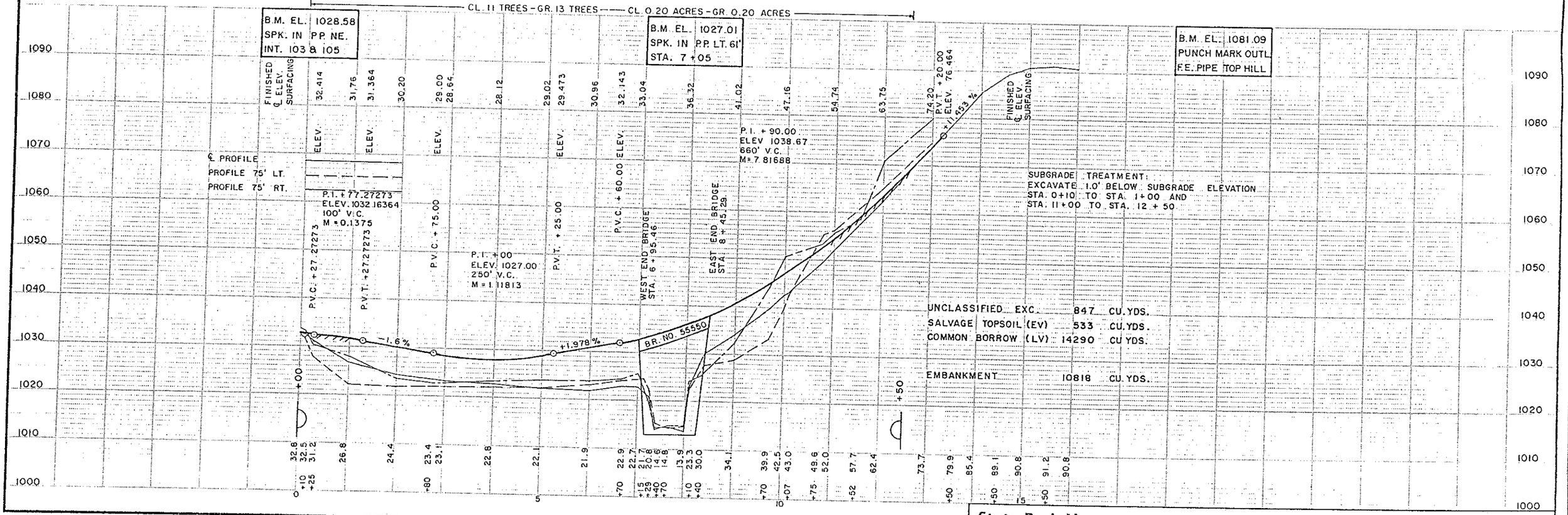
NO CULV REQ'D

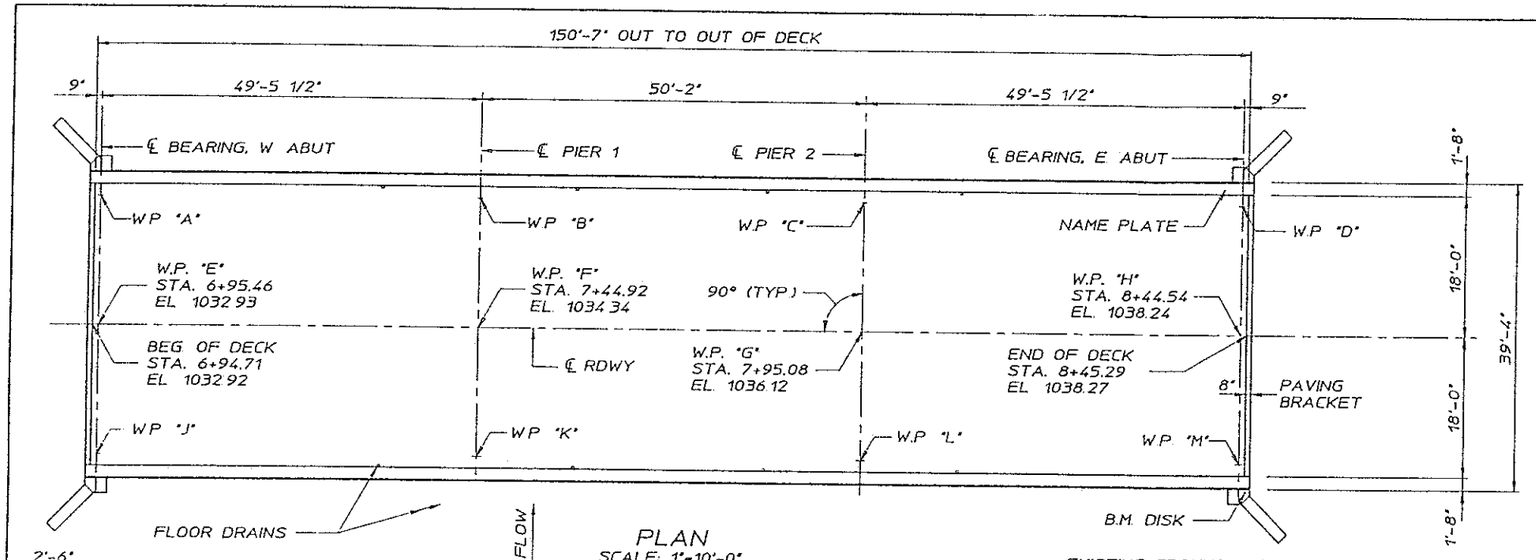
F.E. RT 3+08
DRY

18"x 46' C.S. PIPE CULV.
2-18" C.S. PIPE SAFETY APRONS

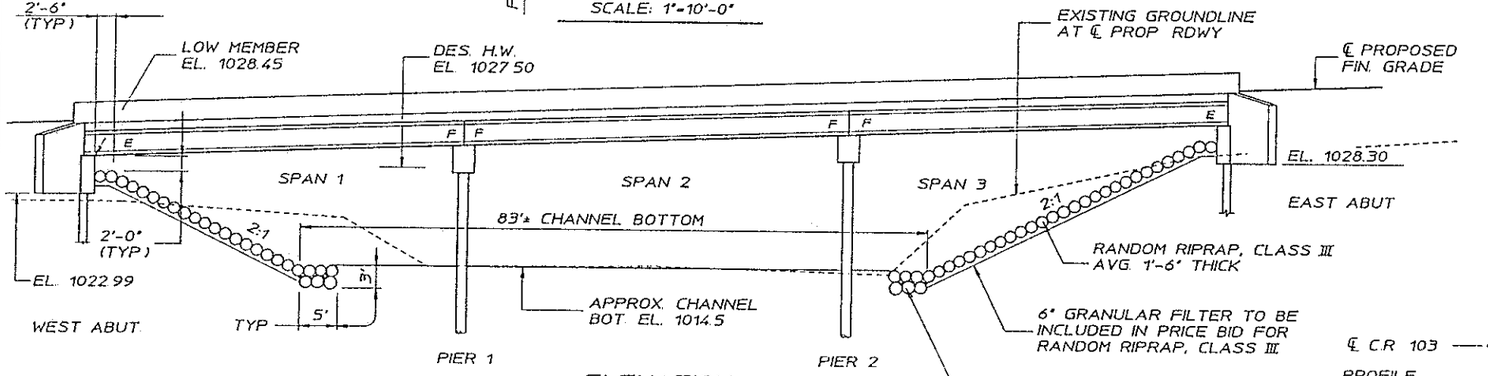
RES DR. RT. 11+52
INPL 12"x 32' C M P
NO APRONS
REMOVE

18" x 32' C.S. PIPE CULV.
2-18" C.S. PIPE SAFETY APRONS





PLAN
SCALE: 1"=10'-0"



ELEVATION
SCALE: 1"=10'-0"

CONSTRUCTION NOTES

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

CONSTRUCTION OF EACH ABUTMENT SHALL NOT BE STARTED UNTIL THE APPROACH FILL AT THAT ABUTMENT HAS BEEN CONSTRUCTED TO THE FULL HEIGHT AND CROSS-SECTION AND ALLOWED TO SETTLE FOR AT LEAST 72 HOURS.

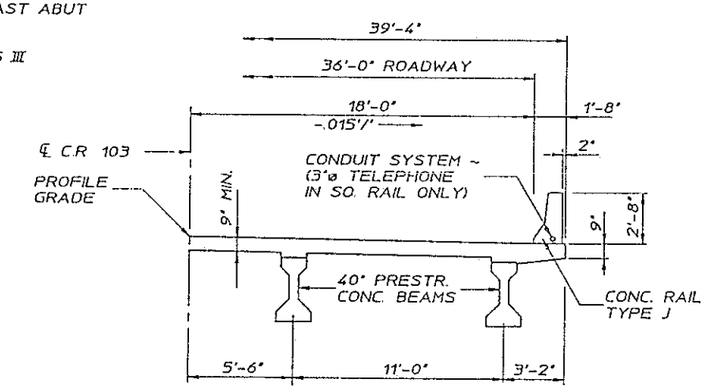
NOTE:
ABUT. PILES ARE TO BE HP10X42 STEEL H-PILES.
PIER PILES ARE TO BE C.I.P CONCRETE PILES, 16".

B.M. ELEV 1027.01 (M.S.L. 1929 ADJ.)

LOCATION: SPIKE IN POWER POLE NO. 22825 AT STA. 7+05 61' LEFT

N

VERTICAL CURVE DATA:
660' V.C.
M = 7.817'
P.I. STA. 9+90.00
EL. 1038.67
G_1 = +1.978%
G_2 = +11.453%



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

DESIGN DATA

1989 & INTERIM A.A.S.H.T.O. DESIGN SPECS.
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 = 6000 PSI n = 6
f's = 270000 PSI STRANDS (LOW RELAX.)
STRUCTURAL STEEL:
fy = 36000 PSI SPEC. 3306
DES. SPEED = 40 MPH OPER. RATING = HS 41.9
DECK AREA = 5923 S.F. A.D.T. = 290 (1992)

LIST OF SHEETS

NO.	TITLE
8	GENERAL PLAN & ELEVATION
9	BRIDGE LAYOUT
10	ABUTMENT DETAILS & REINFORCEMENT
11	PIER DETAILS & REINFORCEMENT
12	SUPER. DETAILS & FRAMING PLAN
13	SUPERSTRUCTURE DETAILS
14	PRESTR. CONCRETE BEAM DETAILS
15	CONCRETE RAIL DETAILS
16-21	BRIDGE DETAILS
22	BRIDGE SURVEY
23	BRIDGE SURVEY ~ PLAN & PROFILE

APPROVED:
Michael J. Sheehan
COUNTY ENGINEER
OLMSTED COUNTY

DATE: 6-8-92

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: 5-6-92

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

C.R. 103 OLMSTED COUNTY
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55550

LOCATED 0.25 MILES EAST OF C.R. 105 ON C.R. 103 OVER THE SOUTH FORK MIDDLE BRANCH ZUMBRO RIVER

3 - 50' PRESTRESSED CONCRETE BEAM SPANS ~ 36 FT. RDWY
SPAN IDENTIFICATION NO. 501

GENERAL PLAN & ELEVATION

SEC 9 TWP 107N R 15W

TOWNSHIP: KALMAR
COUNTY: OLMSTED

APPROVED: Donald J. Flemming
6-9-92 STATE BRIDGE ENGINEER

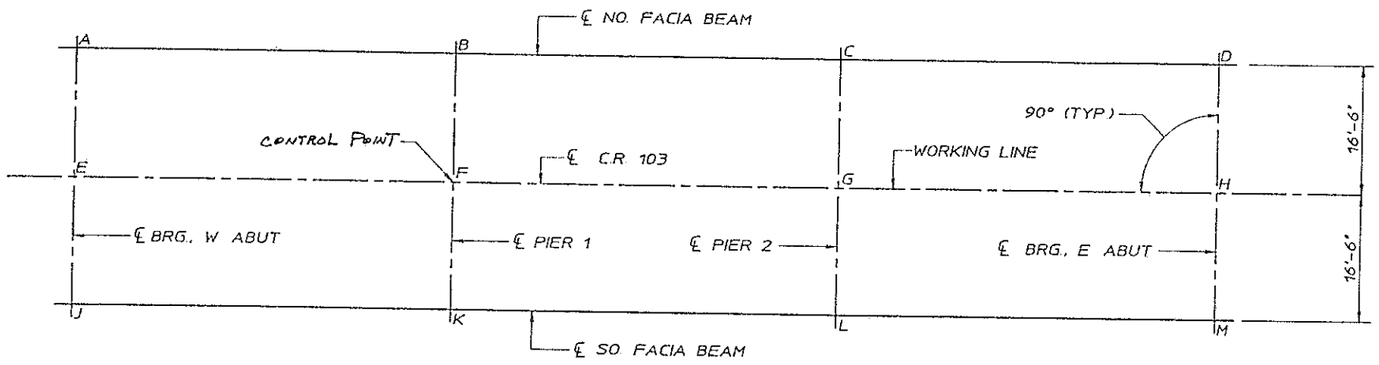
S.P. 55-598-35 | 55550 | RMT

SUMMARY 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	2021.501	2452.511	2452.510
ITEM	STRUCTURE CONCRETE (3Y43)	BRIDGE SLAB CONCRETE (3Y33)	TYPE J RAILING CONCRETE (3Y46)	REIN-FORCEMENT BARS (EPOXY COATED)	STRUCTURAL STEEL (3306) ①	PRESTR. CONCRETE BEAMS 40	DIAPHRAGMS FOR TYPE 40 PRESTR BEAMS	BEARING ASSEMBLY	SLOPE PREP-ARATION	STRUCTURE EXCAVATION	RANDOM RIPRAP, CLASS III	FLOOR DRAIN, TYPE B702 MODIFIED	MOBILIZATION	STEEL H-PILING DELIVERED 10'	STEEL H-PILING DRIVEN 10'
QUANTITY	115 (P)	5923 (P)	304 (P)	67730 (P)	600 (P)	600 (P)	231 (P)	24	1	1	320	8	1	500	500
UNIT	CU. YD.	SQ. FT.	LIN. FT.	POUND	POUND	LIN. FT.	LIN. FT.	EACH	LUMP SUM	LUMP SUM	CU. YD.	EACH	LUMP SUM	LIN. FT.	LIN. FT.

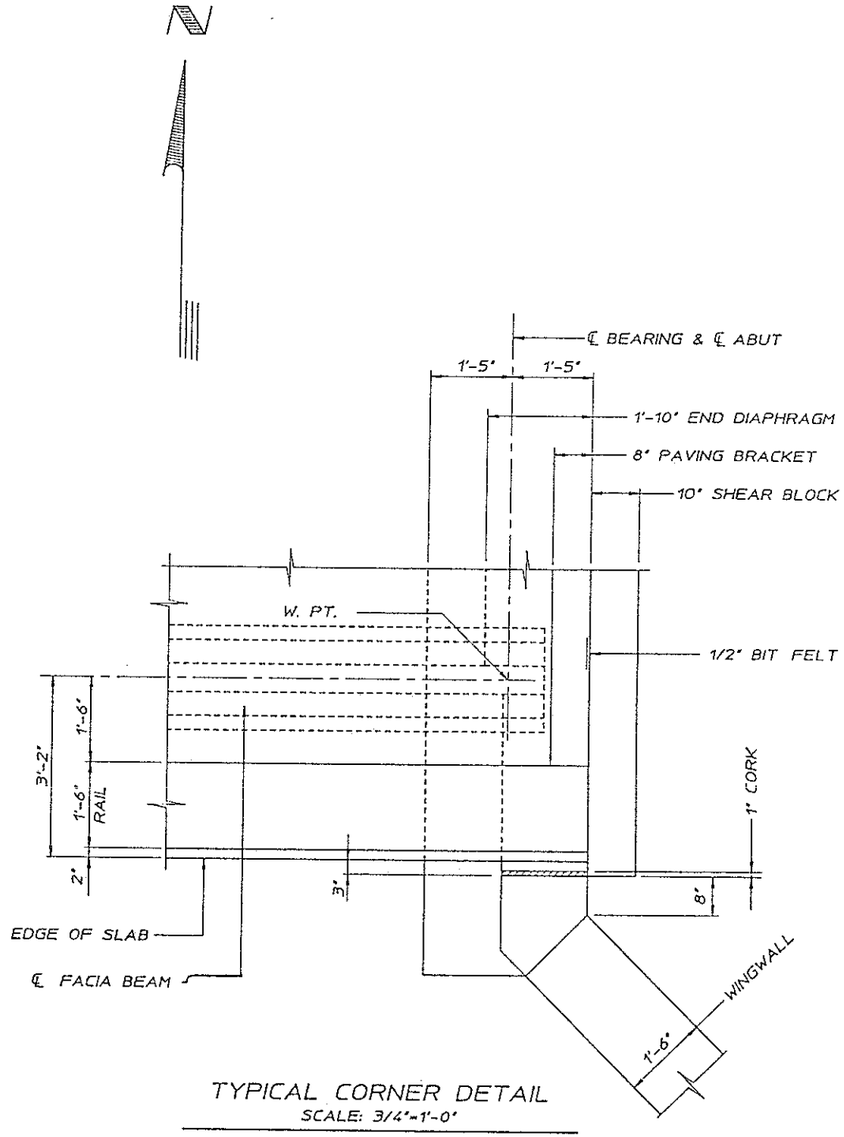
ITEM NO.	2452.520	0452.602	2452.507	2452.508	2452.519	0452.602	2442.501	2545.509	2031.501						
ITEM	STEEL H-TEST PILE 60 FT. LONG 10"	PILE TIP PROTECTION 10"	C.I.P. CONCRETE PILING DELIVERED 16"	C.I.P. CONCRETE PILING DRIVEN 16"	C.I.P. CONCRETE TEST PILES, 60 FT. LONG 16"	PILE POINTS, 16"	REMOVE OLD BRIDGE ①	CONDUIT SYSTEM (TELEPHONE) ①	FIELD OFFICE, TYPE D ①						
QUANTITY	2	12	400	400	2	10	1	1	1						
UNIT	EACH	EACH	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	LUMP SUM	EACH						

① Non-Participating



LAYOUT SHOWING WORKING POINTS

SCALE: 1" = 10'-0"



TYPICAL CORNER DETAIL

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

TOP OF SLAB TO BRIDGE SEAT

	W. ABUT.	PIER 1	PIER 2	E. ABUT.
SLAB THICKNESS	9"	9"	9"	9"
STOOL HEIGHT	2 1/4"	2 1/4"	2 1/4"	2 1/4"
BEAM	3'-4"	3'-4"	3'-4"	3'-4"
BEARING HEIGHT	5"	3 1/4"	3 1/4"	5"
TOTAL	4'-8 1/4"	4'-6 1/2"	4'-6 1/2"	4'-8 1/4"

DIMENSIONS BETWEEN WORKING POINTS

POINT	STATION	A	B	C	D	E	F	G	H	J	K	L	M
A	6+95.46		49.46			16.50	52.14	100.98			59.46		
B	7+44.92			50.17		52.14	16.50	52.81	100.98	59.46		60.05	
C	7+95.08				49.46	100.98	52.81	16.50	52.14		60.05		59.46
D	8+44.54						100.98	52.14	16.50			59.46	
E	6+95.46						49.46			16.50	52.14	100.98	
F	7+44.92							50.17		52.14	16.50	52.81	100.98
G	7+95.08								49.46	100.98	52.81	16.50	52.14
H	8+44.54										100.98	52.14	16.50
J	6+95.46										49.46		
K	7+44.92											50.17	
L	7+95.08												49.46
M	8+44.54												

ELEVATIONS

TOP OF SLAB	SLAB TO BRIDGE SEAT	BRIDGE SEAT	POINT
1032.68	4.69	1027.99	A
1034.09	4.54	1029.55	B
1035.87	4.54	1031.33	C
1037.99	4.69	1033.30	D
1032.93			E
1034.34			F
1036.12			G
1038.24			H
1032.68	4.69	1027.99	J
1034.09	4.54	1029.55	K
1035.87	4.54	1031.33	L
1037.99	4.69	1033.30	M

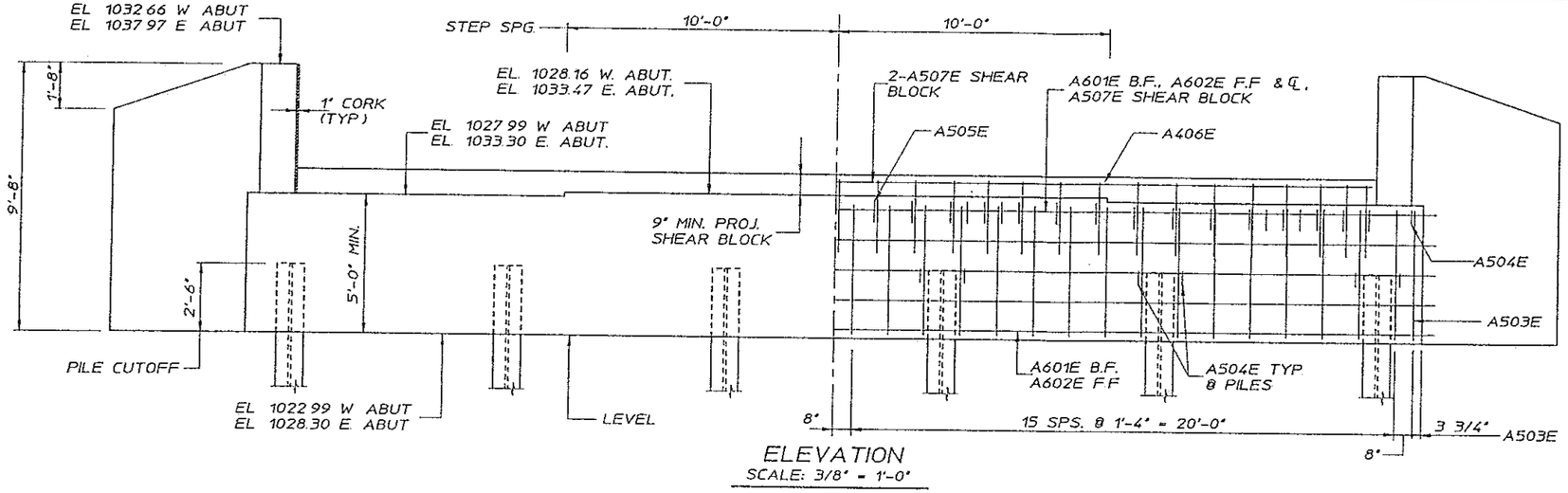
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55550

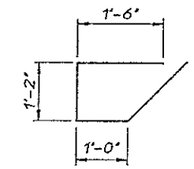
BRIDGE LAYOUT

APPROVED: 6-9-92

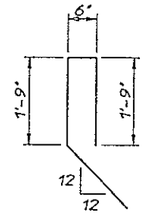
S.P. 55-598-35	55550	RMT
SHEET 2 OF 23 SHEETS		DWG



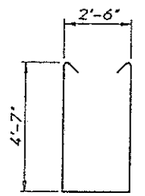
ELEVATION
SCALE: 3/8" = 1'-0"



A411E



A406E

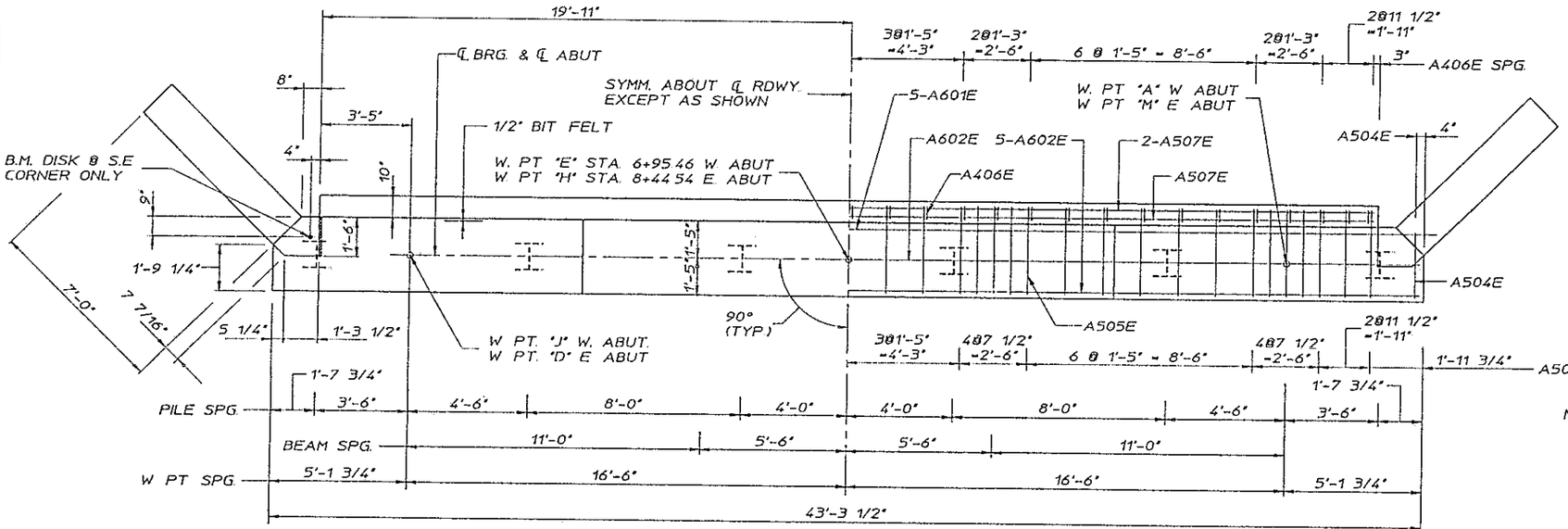


A503E

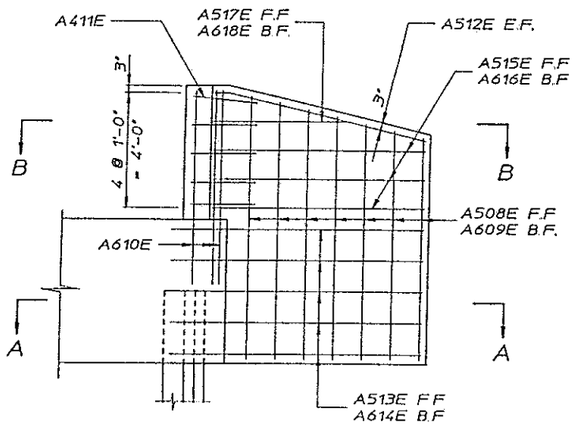
BILL OF REINFORCEMENT ~ 2 ABUTMENTS

	BAR	NO.	LGTH.	SHAPE	LOCATION
	A601E	10	44'-2"	STRT	CAP ~ HORIZONTAL
	A602E	12	42'-10"	STRT	" "
	A503E	68	12'-7"	BENT	" ~ STIRRUP
	A504E	28	3'-6"	BENT	" ~ PILE TIE
	A505E	78	4'-10"	BENT	" ~ BR. SEAT TIE
	A406E	62	6'-0"	BENT	SHEAR BLOCK ~ TIE
	A507E	6	39'-6"	STRT	" " ~ HORIZ.
①	A508E	14	16'-10"	STRT	WINGWALL ~ VERTICAL
①	A609E	14	16'-10"	STRT	" "
	A610E	12	6'-9"	STRT	" "
	A411E	20	5'-2"	BENT	" ~ TIE
	A512E	8	7'-7"	BENT	" ~ DIAG.
	A513E	20	8'-9"	STRT	" ~ HORIZ.
	A614E	20	9'-1"	STRT	" "
	A515E	12	7'-4"	STRT	" "
	A616E	12	7'-4"	STRT	" "
	A517E	4	4'-8"	STRT	" "
	A618E	4	4'-8"	STRT	" "

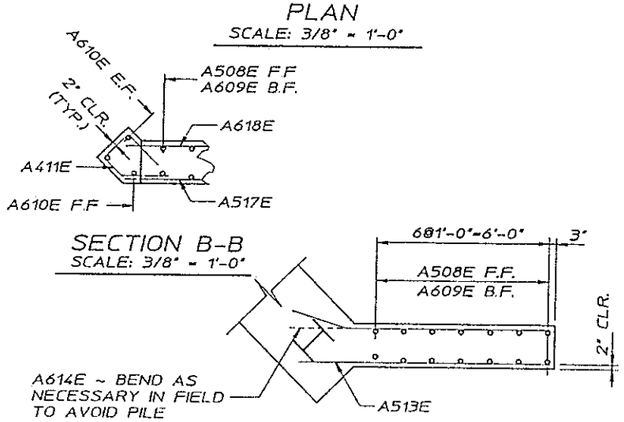
① CUT 2 FROM 1.



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

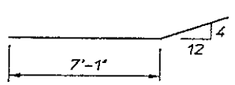


WINGWALL ELEVATION
SCALE: 3/8" = 1'-0"

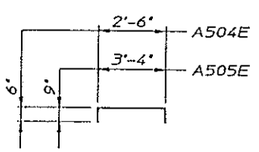


SECTION B-B
SCALE: 3/8" = 1'-0"

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

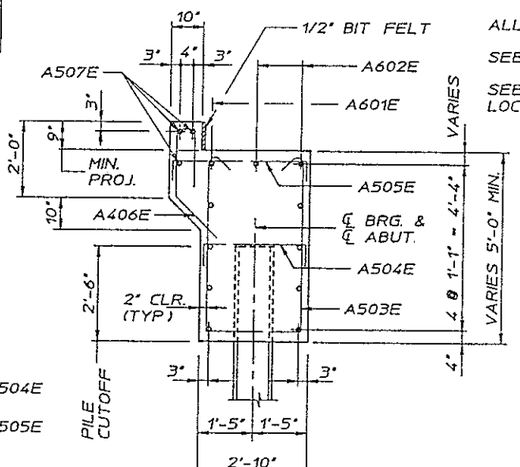


A512E



A504E & A505E

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



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

SUMMARY OF QUANTITIES ~ 2 ABUTMENTS

	STRUCTURE CONCRETE (3Y43)	68 CU. YD.
	REINF. BARS (EPOXY COATED)	4900 POUND
④	STRUCTURE EXCAVATION	1 L. SUM
②	B.M. DISK (STD. ℄ NO. 9300)	
③	STEEL H-PILING DELIVERED, 10"	500 LIN. FT.
③	STEEL H-PILING DRIVEN, 10"	500 LIN. FT.
	STEEL H-TEST PILE, 60' LG., 10"	2 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. ℄ NO. 9301 FOR PLACING.

③ DOES NOT INCLUDE TEST PILES.

④ SEE SPECIAL PROVISIONS.

PILE NOTES:

2 STEEL H-TEST PILES, 60' LG.

10 STEEL H-PILES, EST. LGTH. 50'

12 STEEL H-PILES REQ'D FOR 2 ABUTS.

ALL PILES TO BE HP10X42 STEEL H-PILES.

SEE DETAIL B202 FOR SPLICES.

SEE SURVEY SHEET FOR TEST PILE LOCATIONS.

COMPUTED PILE LOADS TONS/PILE @ ABUTS.	
DEAD LOAD	30.2
LIVE LOAD	16.5
TOTAL	46.7

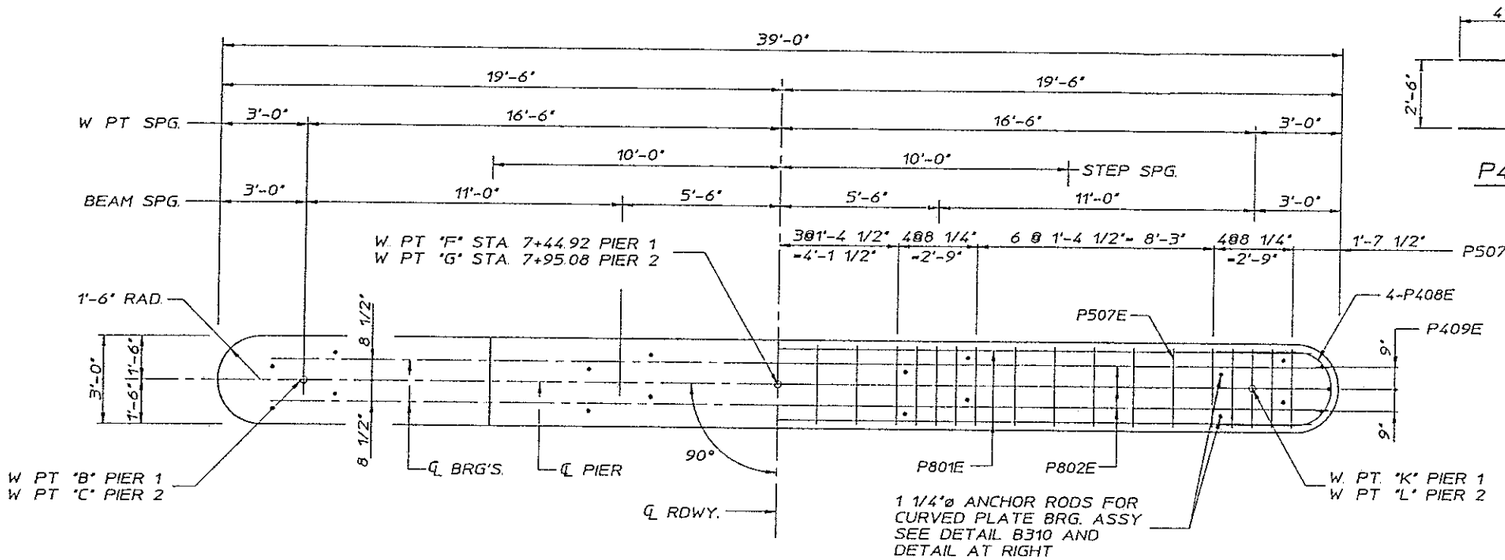
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55550

ABUTMENT DETAILS

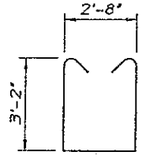
APPROVED: 6-9-92

S.P. 55-598-35	55550	RMT
SHEET 10 OF 23 SHEETS		DAD



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

P408E



P505E

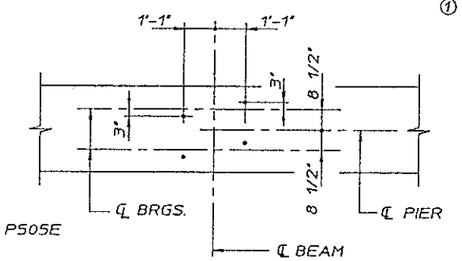
BILL OF REINFORCEMENT ~ 2 PIERS

BAR	NO.	LENGTH	SHAPE	LOCATION
P801E	8	37'-0"	STRT.	CAP ~ LONGITUDINAL
P802E	6	38'-0"	STRT.	CAP ~ LONGITUDINAL
P603E	8	37'-0"	STRT.	CAP ~ LONGITUDINAL
P704E	12	37'-0"	STRT.	CAP ~ LONGITUDINAL
P505E	52	9'-11"	BENT	CAP ~ STIRRUP
P506E	20	3'-8"	BENT	CAP ~ TIE @ PILES
P507E	70	4'-2"	BENT	CAP ~ TIE @ BR. SEAT
P408E	16	9'-6"	BENT	CAP ~ TIE AT ENDS
P409E	12	3'-2"	STRT.	CAP ~ VERT. AT ENDS

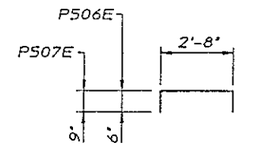
SUMMARY OF QUANTITIES ~ 2 PIERS

	STRUCTURE CONCRETE (3Y43)	31	CU. YD.
	REINFORCEMENT BARS, EPOXY COATED	3800	POUND
①	C.I.P. CONC. PILING DRIVEN, 16"	400	LIN. FT.
①	C.I.P. CONC. PILING DELIVERED, 16"	400	LIN. FT.
	C.I.P. CONC. TEST PILES, 60' LONG, 16"	2	EACH
	PILE POINTS, 16"	10	EACH

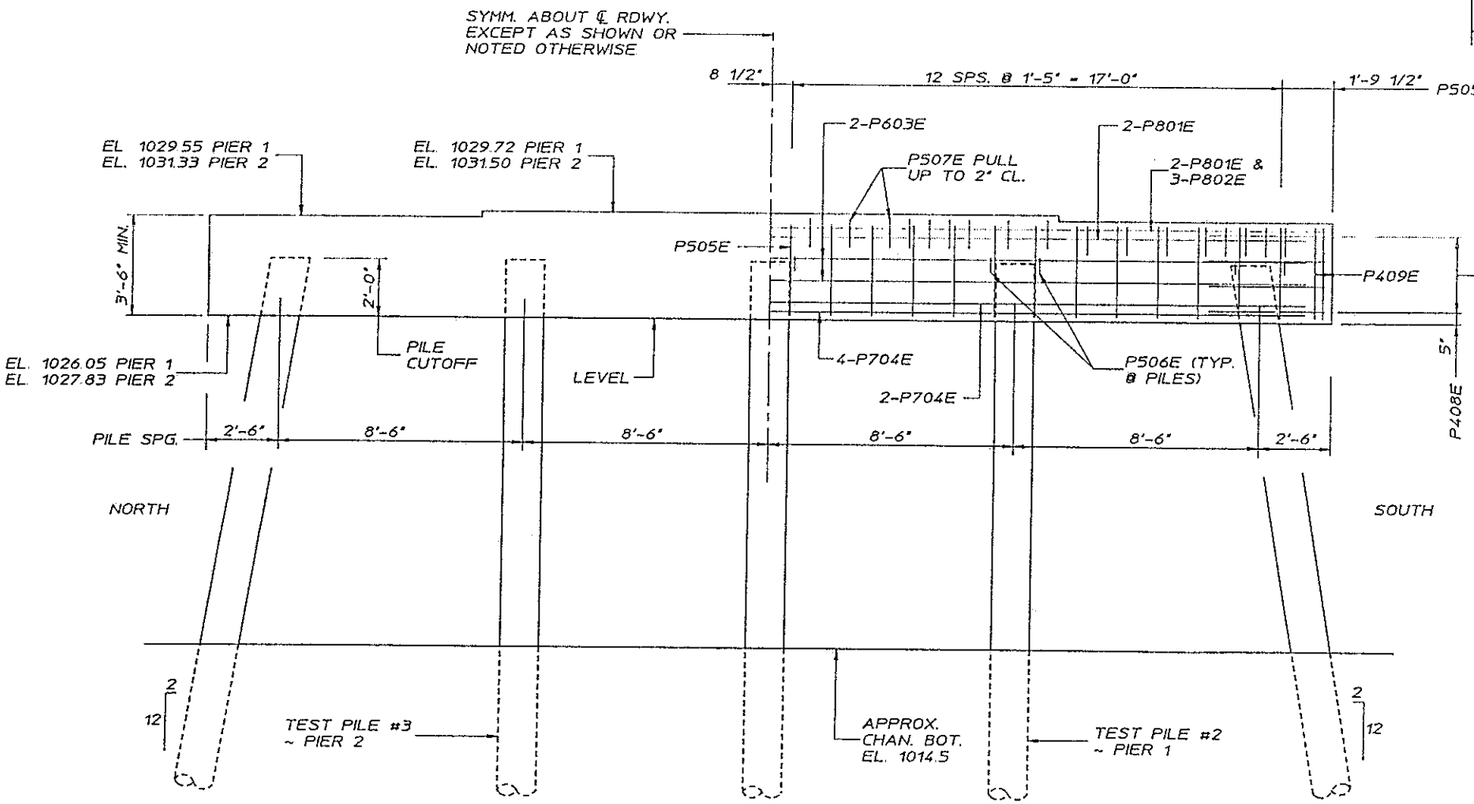
① DOES NOT INCLUDE TEST PILES.



ANCHOR ROD LAYOUT
SCALE: 3/8"=1'-0"



P506E, P507E



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

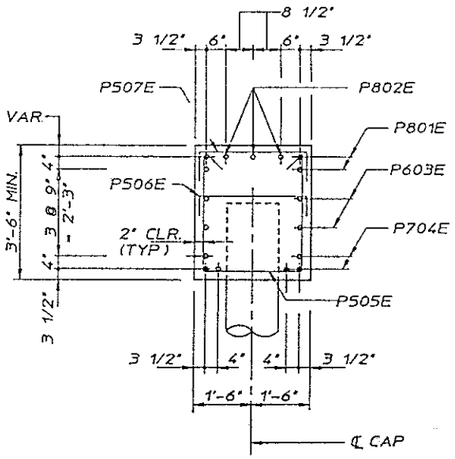
COMPUTED PILE LOADS TONS PER PILE ~ PIERS

DEAD LOAD	50.3
LIVE LOAD	20.5
TOTAL	70.8

PILE NOTES

8 ~ C.I.P. CONCRETE PILES, 50' LONG
2 ~ C.I.P CONCRETE TEST PILES, 60' LONG
10 ~ C.I.P CONCRETE PILES REQ'D ~ 2 PIERS

ALL PILES ARE TO HAVE A NOMINAL DIAMETER OF 16".
PILE SPACING SHOWN IS AT BOTTOM OF CAP.
END PILES ARE TO BE BATTERED 2" PER FOOT IN DIRECTION SHOWN.
SEE DETAIL B201 FOR SPLICES.
SEE SURVEY SHEET FOR TEST PILE LOCATIONS.



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

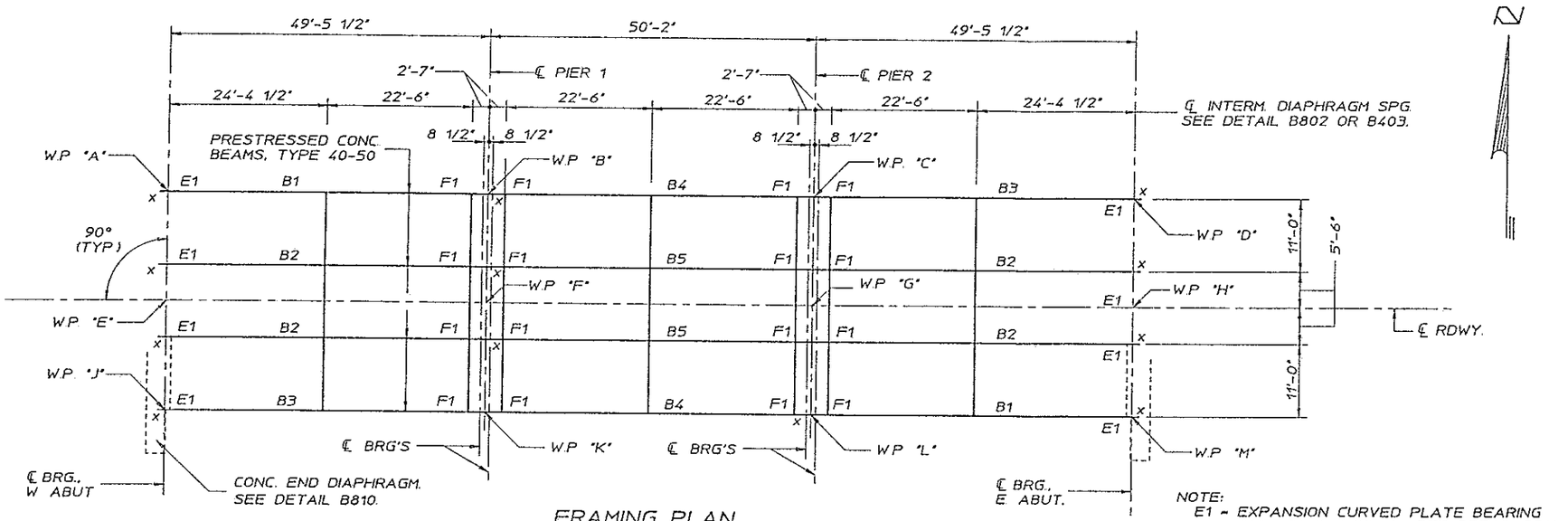
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55550

PIER DETAILS

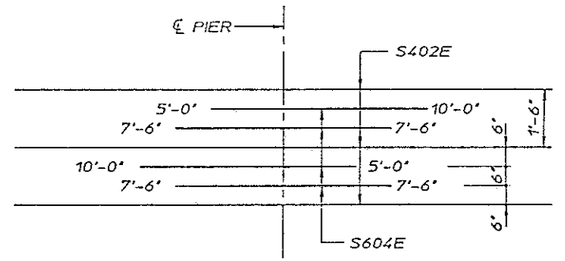
APPROVED: 6-9-92

S.P. 55-598-35	55550	RMT
SHEET 11 OF 33 SHEETS		DAD

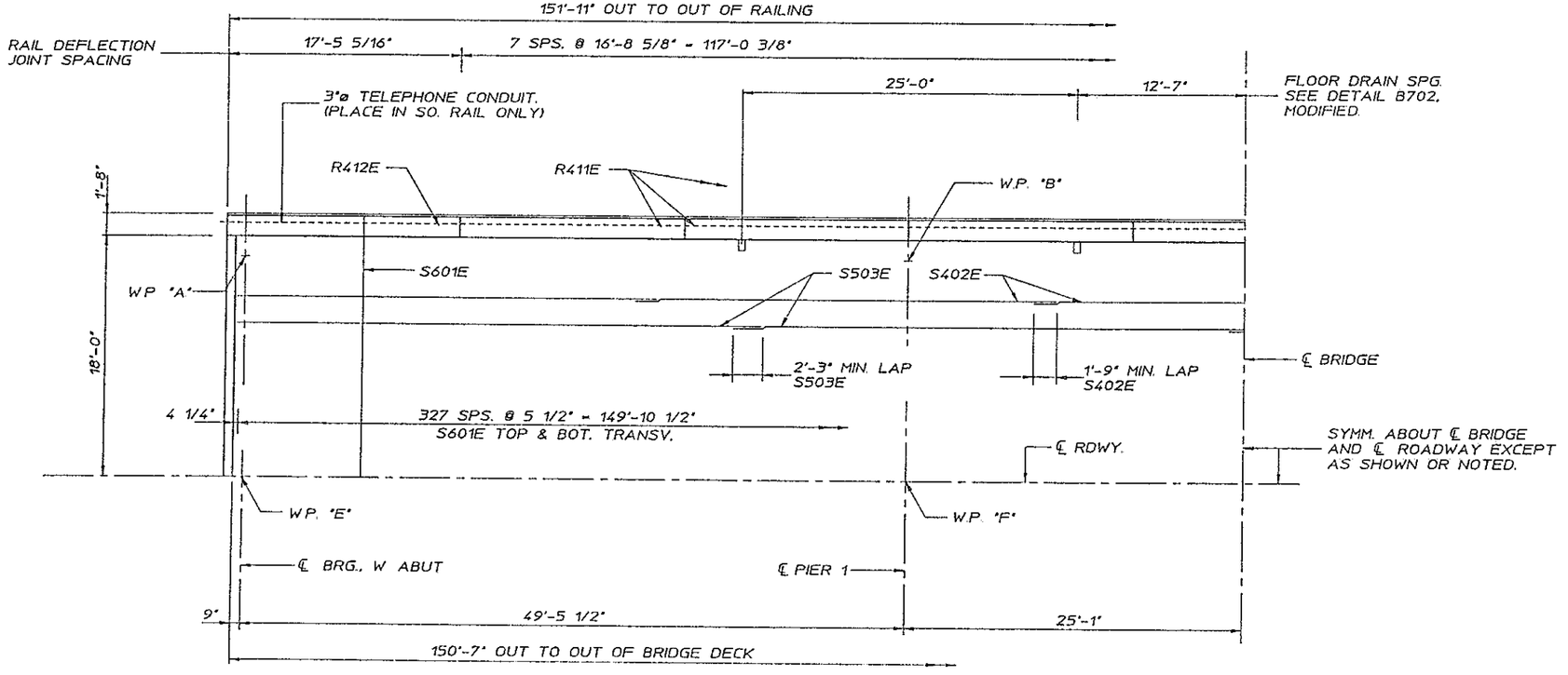


FRAMING PLAN
SCALE: 3/32" = 1'-0"

NOTE:
E1 - EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1. SEE DETAIL B311.
F1 - FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1. SEE DETAIL B310.



S604E PLACEMENT DIAGRAM



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

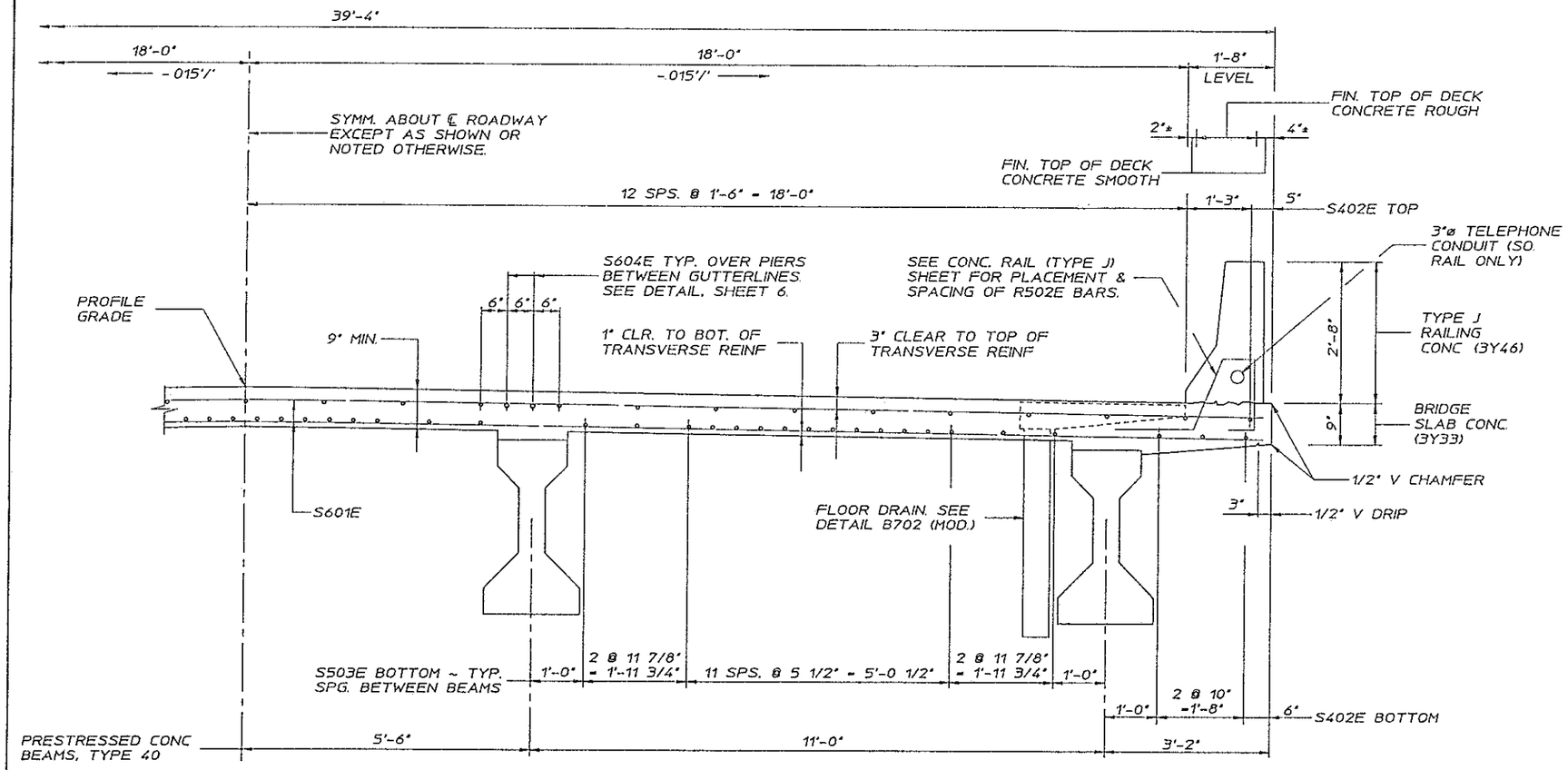
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55550

SUPERSTRUCTURE DETAILS

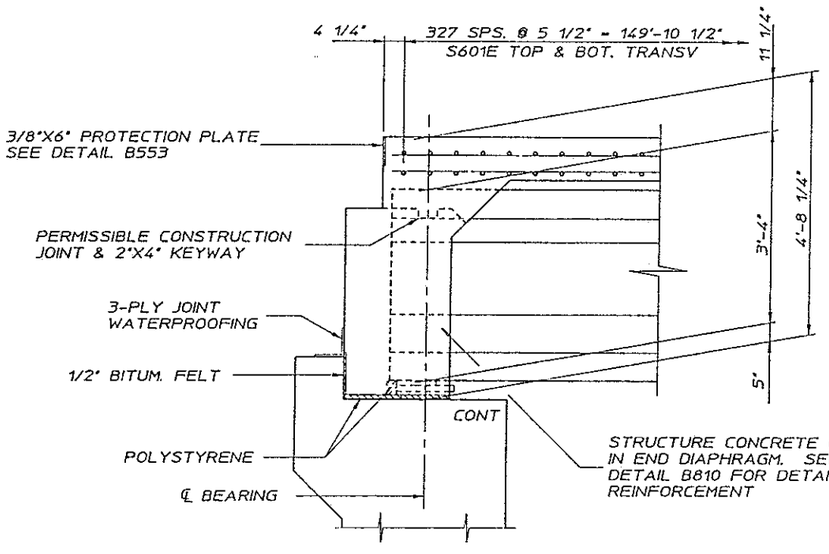
APPROVED: 6-9-92

S.P. 55-598-35	55550	RMT
SHEET 12 OF 23 SHEETS		BDW



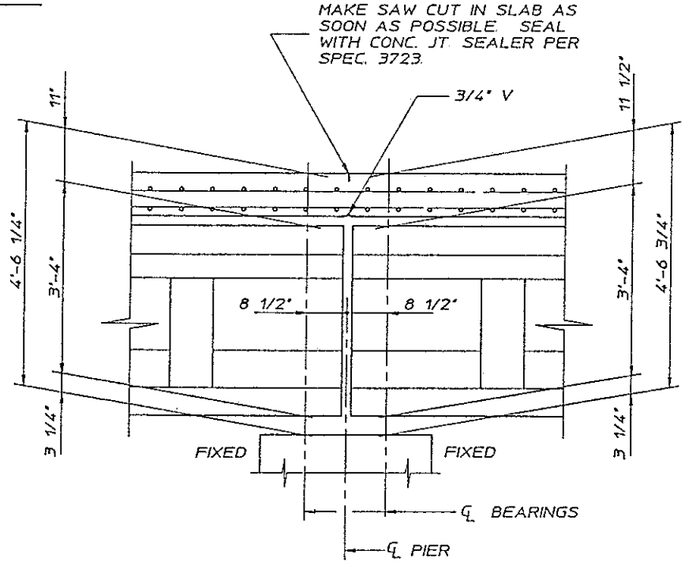
PART TRANSV. SECTION THRU DECK

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



LONGITUDINAL SECTION AT ABUTMENTS

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



LONGITUDINAL SECTION AT PIERS

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

BILL OF REINFORCEMENT ~ SUPERSTRUCTURE

	BAR	NO.	LENGTH	SHAPE	LOCATION
	S601E	656	38'-10"	STRT.	SLAB ~ TRANSVERSE
②	S402E	165	31'-6"	STRT.	" ~ LONGITUDINAL
③	S503E	192	39'-3"	STRT.	" ~ "
	S604E	96	15'-0"	STRT.	" ~ " @ PIERS
①	S405E	42	10'-5"	BENT	END DIAPHRAGM
①	S406E	8	11'-4"	BENT	" "
①	S407E	42	6'-4"	BENT	" "
	S408E	8	39'-4"	STRT.	" "
	S409E	24	8'-6"	STRT.	" "
	S410E	12	10'-2"	STRT.	" "
	S411E	16	2'-0"	STRT.	" "
	S512E	16	5'-0"	STRT.	" "
	S413E	4	1'-6"	STRT.	" "
①	S414E	4	10'-1"	BENT	" "

① SEE DETAIL B810 FOR BAR DETAILS.

② 5 LINES WITH 1'-9" MINIMUM LAP

③ 4 LINES WITH 2'-3" MINIMUM LAP.

④ SUMMARY OF QUANTITIES ~ SUPERSTRUCTURE

⑫	STRUCTURE CONCRETE (3Y43)	16	CU. YD.
⑥	BRIDGE SLAB CONCRETE (3Y33)	5923	SQ. FT.
⑪	TYPE J RAILING CONCRETE (3Y46)	304	LIN. FT.
	REINFORCEMENT BARS, EPOXY COATED	59030	POUND
⑨	PRESTRESSED CONCRETE BEAMS, TYPE 40-50	12	EACH
	PRESTRESSED CONCRETE BEAMS 40	600	LIN. FT.
	DIAPH. FOR TYPE 40 PRESTR. CONC. BEAMS	231	LIN. FT.
	STRUCTURAL STEEL (3306)	600	POUND
	FLOOR DRAIN, TYPE B702 MODIFIED	8	EACH
⑦	NAME PLATE (SEE DETAIL B103)		
⑩	PROTECTION PLATE (SEE DETAIL B553)		
	BEARING ASSEMBLY	24	EACH
⑧	EXP. CURVED PLATE BRG. ASSEMBLY, TYPE 1	8	EACH
⑧	FIXED CURVED PLATE BRG. ASSEMBLY, TYPE 1	16	EACH
⑤⑦	CORK ~ 1"X18" (ABUT. WINGWALLS)	19	LIN. FT.
⑤⑦	CORK ~ 1"X11" (RAILING)	26	LIN. FT.
⑤⑦	POLYSTYRENE TYPE A 1"X22" (ABUT. BR. SEAT)	80	LIN. FT.
⑤⑦	POLYSTYRENE TYPE A 1"X5" (BEARING PLATES)	16	LIN. FT.
⑤⑦	POLYSTYRENE TYPE A 2"X5" (BEARING PLATES)	16	LIN. FT.
⑤⑦	BITUMINOUS FELT ~ 1/2"X11" (ABUTMENTS)	80	LIN. FT.
⑤⑦	3-PLY JOINT WATERPROOFING	110	LIN. FT.
⑬	CONDUIT SYSTEM (TELEPHONE)	1	L. SUM

④ INCLUDES RAILING AND END DIAPHRAGM QUANTITIES.

⑤ SEE SPECIAL PROVISIONS.

⑥ APPROX. VOLUME = 173 CU YDS. BASED ON AN AVERAGE STOOL HEIGHT OF 1 5/8"

⑦ INCLUDED IN PRICE BID FOR OTHER ITEMS.

⑧ PAYMENT FOR BEARINGS INCLUDED IN ITEM BEARING ASSEMBLIES PER EACH. SEE SPECIAL PROVISIONS.

⑨ PAYMENT FOR BEAMS INCLUDED IN ITEM PRESTRESSED CONCRETE BEAMS 40 PER LINEAR FOOT

⑩ INCLUDED IN STRUCTURAL STEEL (3306).

⑪ APPROX VOLUME = 31 CU. YDS.

⑫ END DIAPHRAGM CONCRETE

⑬ INCLUDES 153 L.F. 3"ø I.M.C. PIPE & 2 END CAPS. PROJECT 6" MINIMUM PAST ENDS OF SO. RAIL & ATTACH END CAPS. ALL MATERIALS TO BE FURNISHED BY UTILITY AND TO BE PLACED BY THE CONTRACTOR.

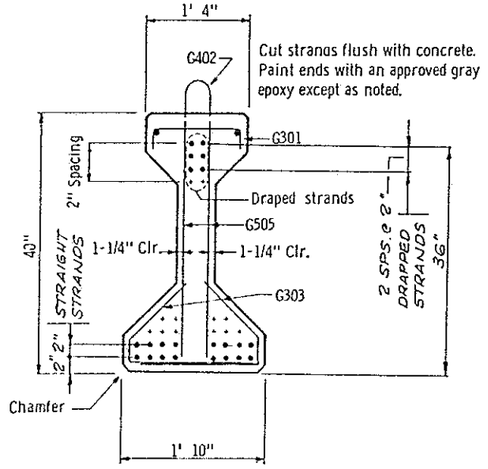
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55550

SUPERSTRUCTURE DETAILS

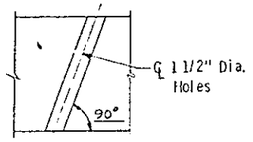
APPROVED: 6-9-92

S.P. 55-598-35	55550	RMT
SHEET 13 OF 23 SHEETS		BDW



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

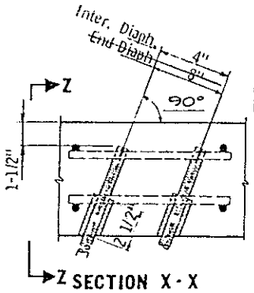
END VIEW



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

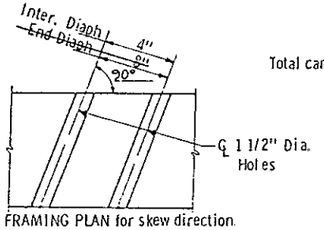
SECTION Y-Y

FOR USE WITH CONCRETE END DIAPHRAGMS WITH PILE BENT ABUTMENTS



SECTION X-X

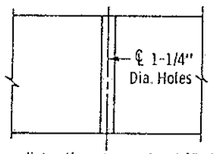
USE AT FASCIA BEAM AND INTERIOR BEAM WITH STAGGERED DIAPHRAGMS



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

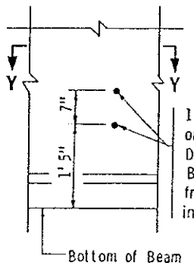
USE AT INTERIOR BEAM WITH CONTINUOUS CONCRETE DIAPHRAGM



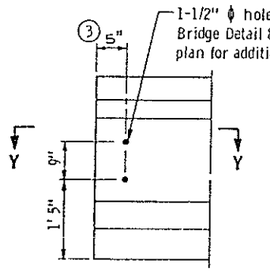
Intermediate stirrups may be shifted the minimum distance required to clear holes or inserts for intermediate diaphragms.

SECTION Y-Y

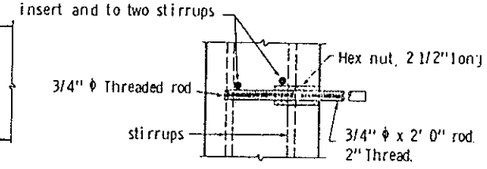
USE AT INTERIOR BEAM WITH STEEL DIAPHRAGM



FOR USE WITH STEEL INTERMEDIATE DIAPHRAGM

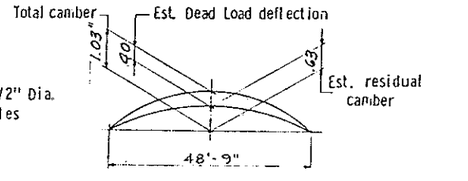


CONCRETE END DIAPHRAGMS PILE BENT ABUTMENT



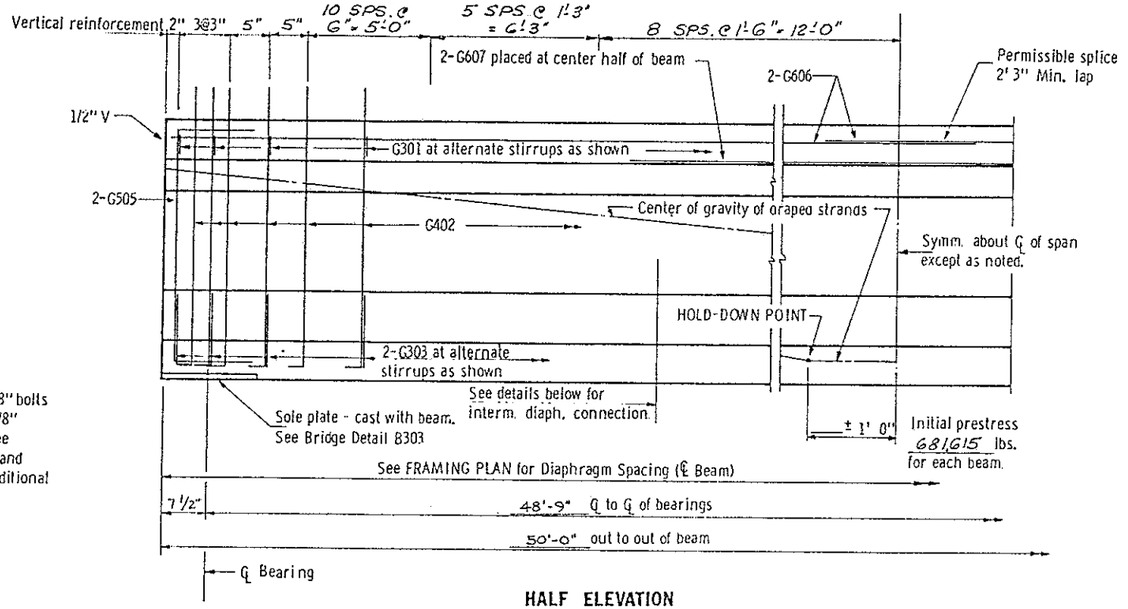
Nuts and rods per Spec. 3306. No paint

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

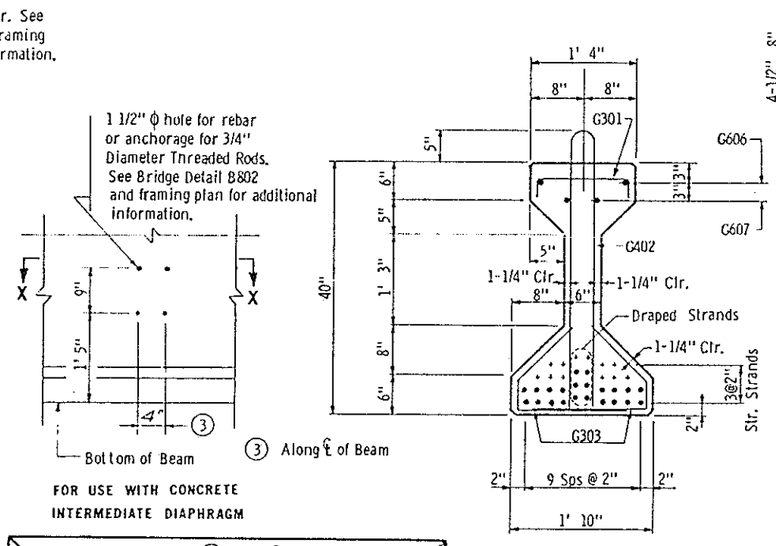


HALF ELEVATION

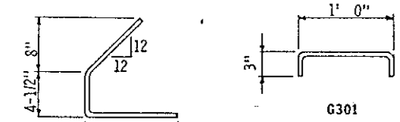
Bar	Wt.
G 301	.36 lb.
G 402	5.12 lb.
G 303	1.60 lb.
G 505	5.13 lb.
G 606	
G 607	

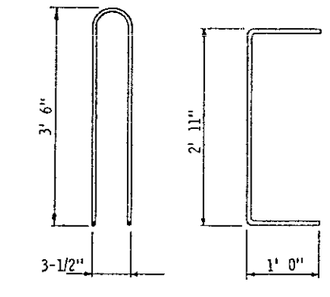
Girder Section Data
Wt. /Ft. = 505 lbs.
Cross sec. area at ℄ of span = 485 in.^{2}
C. G. (from bottom) = 1.88 in.
I = 87,690 in.^{4}
S_B = 4,904 in.^{3}
1/2" ϕ 270k strand wt. /ft. = .525 lb.
1/2" ϕ 270k strand area = .1531 sq. in.

ALL REINFORCING STEEL TO BE EPOXY COATED



SECTION AT ℄ BEAM





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

Y DISTANCES (IN INCHES)			
	NO.	℄ SPAN	END
Straight strands	16	3.00	
Draped strands	6	5.00	34.00[a]
Total strands	22	3.55	

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 ϕ 270 kip. ultimate strength.

[a] A tolerance of ± 2" will be permitted in this dimension.

CONCRETE END DIAPHRAGMS PARAPET ABUTMENT

FOR USE WITH CONCRETE INTERMEDIATE DIAPHRAGM

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.

A post-tensioned beam may be used as an alternate for the pretensioned design shown. Mn/DOT will provide plans for the post-tensioned alternate on request.

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. Fascia 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 12.63 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	5200	6000

① Minimum concrete strength at time of prestress transfer.

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

Fig. 5-397.503

Revised: SEPT. 11, 1981 Approved: May 18, 1977

S.P 55-598-35

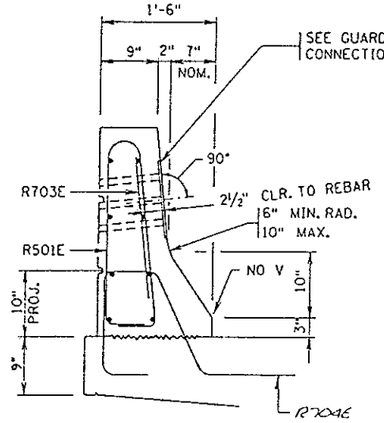
BEAMS 81, 82, 83, 84, 85

TITLE: 40" PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 40 - 50

DES:	DR: CJD	APPROVED: 6-9-92
CHK:	CHK: BDW	

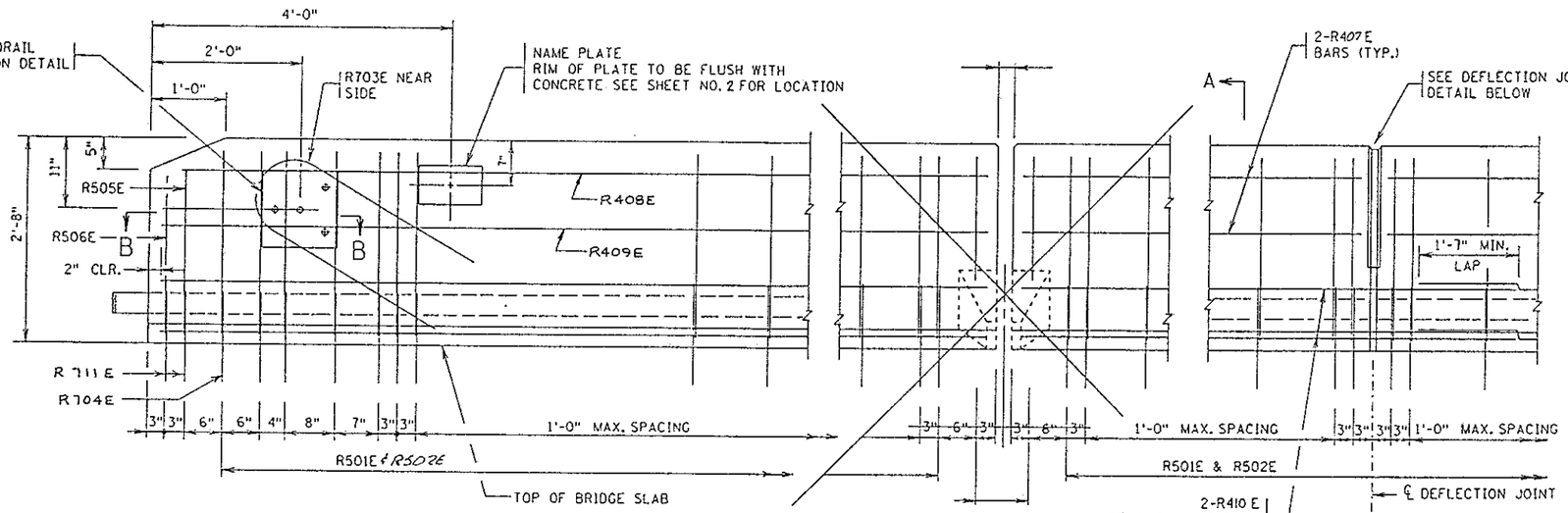
Sheet No. 14 of 23 Sheets

Bridge No. 55550



SECTION C-C

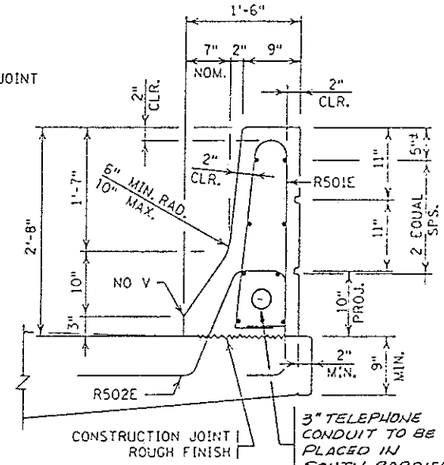
* THICKNESS TO BE THE SAME AS SLAB IN SECTION A-A



INSIDE ELEVATION OF RAILING

EXPANSION JOINT
EXPANSION DEVICE NOT SHOWN

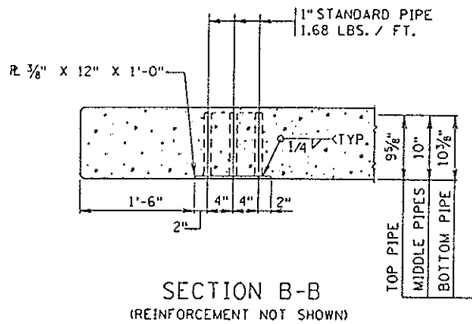
DEFLECTION JOINT



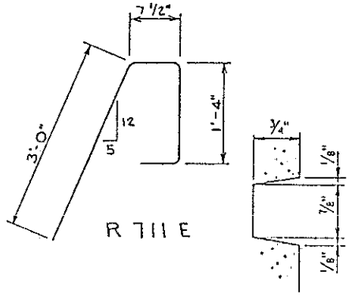
SECTION A-A

BILL OF REINFORCEMENT FOR RAILING				
BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	354	6'-3"	BENT	RAIL VERT.
R502E	350	5'-6"	BENT	RAIL VERT.
R703E	4	6'-7"	BENT	RAIL VERT.
R704E	4	5'-6"	BENT	RAIL VERT.
R505E	4	5'-10"	BENT	RAIL VERT.
R506E	4	5'-7"	BENT	RAIL VERT.
R407E	56	16'-3"	STR'T.	RAIL HORZ.
R408E	8	16'-9"	STR'T.	RAIL HORZ.
R409E	8	17'-0"	STR'T.	RAIL HORZ.
① R410E	32	39'-1"	STR'T.	RAIL HORZ.
R711E	8	5'-6"	BENT	RAIL VERT.

① 4 LINES WITH A 1'-7" MIN. LAP

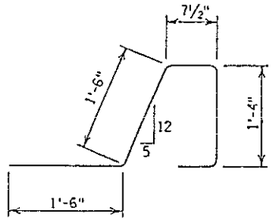


SECTION B-B
(REINFORCEMENT NOT SHOWN)

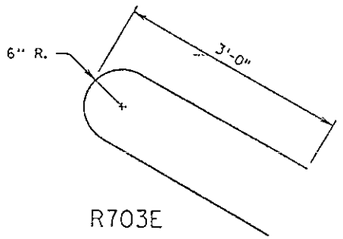


R711E

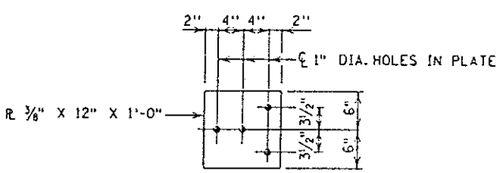
RAIL RUSTICATION



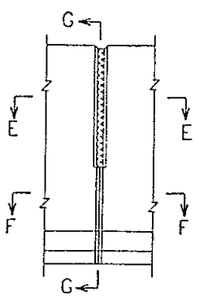
R502E, R704E



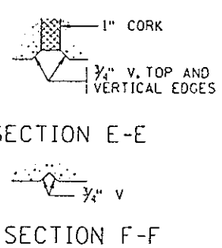
R703E



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

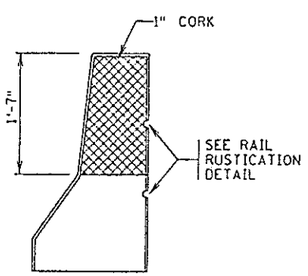


ELEVATION



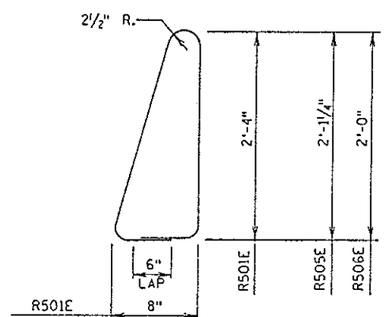
SECTION E-E

SECTION F-F



SECTION G-G

DEFLECTION JOINT



R501E, R505E & R506E

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.P. 55-598-35

APPROVED: 8/31/91

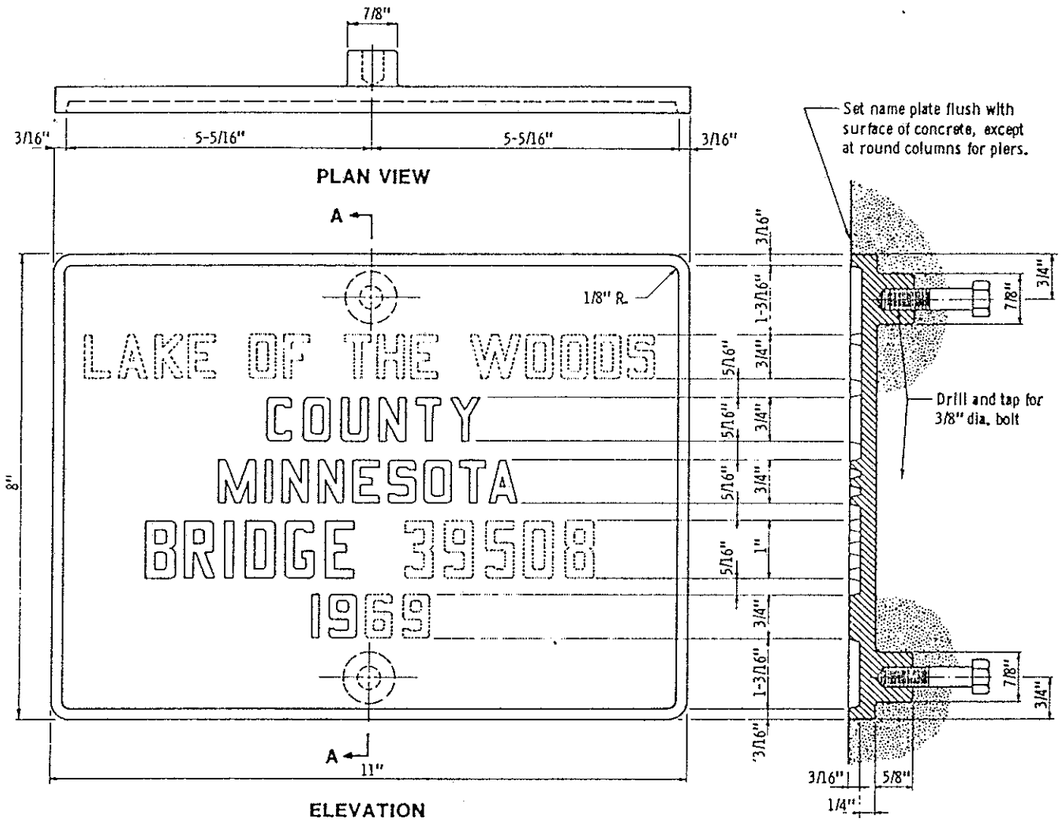
FIG. 5-397.115

TITLE: CONCRETE RAILING (TYPE J) WITH INTEGRAL END POST

DES: | DR: CJD | CHK: | CHK: BDW | APPROVED: 6-9-92

Sheet No. 15 of 23 Sheets

Bridge No. 55550

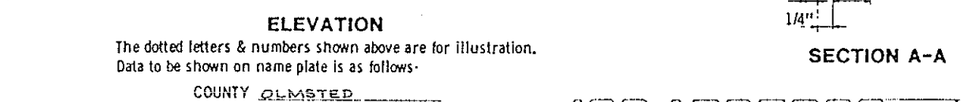


ELEVATION

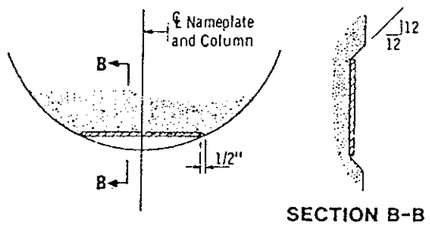
The dotted letters & numbers shown above are for illustration.
Data to be shown on name plate is as follows:

COUNTY OLMSTED
BRIDGE 55550
YEAR 1992

SECTION A-A



LETTERS & NUMBERS FOR NAMEPLATES



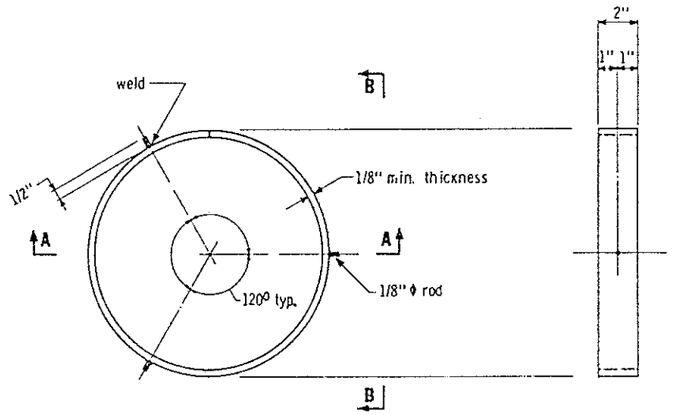
SECTION B-B

NAMEPLATE PLACEMENT
(Round Concrete Pier Columns)

NOTES:

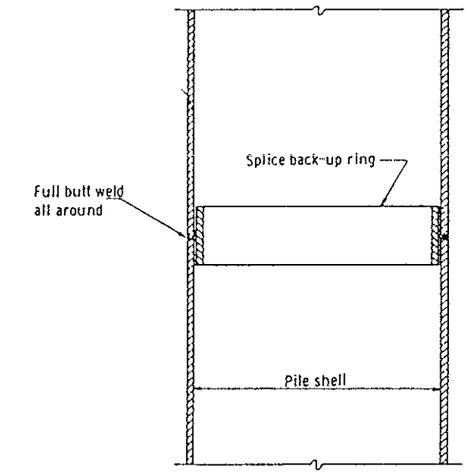
No shop drawing required.
Material shall comply with Spec. 3327
Letters and numbers shall conform to those shown.
Draft on letters and numbers shall not be more than 3" in 12".
Horizontal spacing of letters and numbers shall produce a balanced layout in proportion to spacing shown.
Top surface of letters, numbers and frames 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: May 1, 1985 Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES Issued by: OFFICE OF ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION BRIDGE NAMEPLATE COUNTY BRIDGES	REVISION	DETAIL NO. B103



PLAN VIEW
(Pile not shown)

SECTION B - B
(Pile not shown)



SECTION A-A

NOTES:

Approved commercial pile splice back-up ring may be used in lieu of the type detailed. Back-up ring shall have a tight fit.

Welding electrodes shall be A.W.S. Type E7016 or E7018 (low-hydrogen).

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, after having been exposed to the atmosphere for more than 2 hours.

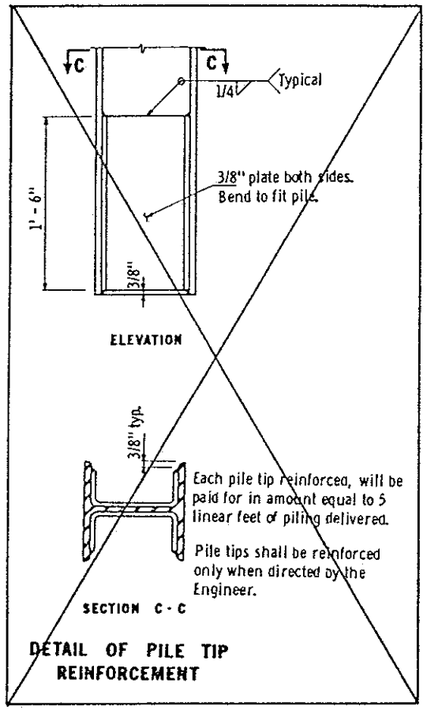
Electrodes which have become wet, soiled or damaged shall not be used.

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.

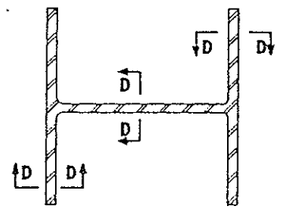
APPROVED July 21, 1972 Engineering Standards Engineer RESEARCH AND STANDARDS DIVISION	MINNESOTA DEPARTMENT OF TRANSPORTATION PILE SPLICE CAST-IN-PLACE CONCRETE PILES		DETAIL NO B201

6-9-92

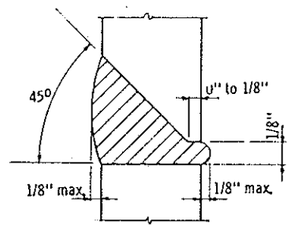
DETAILS	S.P. 55-598-35 SHEET 16 OF 23 SHEETS	55550	CJD BDW



DETAIL OF PILE TIP REINFORCEMENT



SECTION AT JOINT



SECTION D - D

100% BUTT WELDED PILE SPLICE

NOTES:

A. W. S. Type E7010 or E7018 (low-hydrogen) electrodes shall be used for 100% butt welded splices.

A. W. S. Type E6010, E6011 electrodes, or E7016 or E7018 (low-hydrogen) electrodes, shall be used for the alternate plate type pile splice.

Low-hydrogen electrodes shall be supplied in hermetically (air-tight) sealed containers.

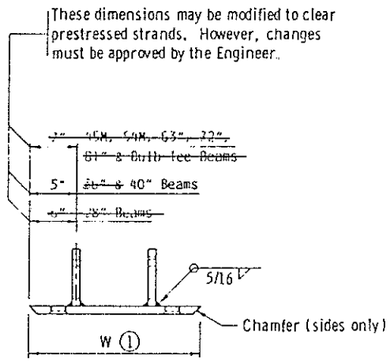
Low-hydrogen electrodes shall be stored in holding ovens at a temperature of not less than 250° F

Low-hydrogen electrodes shall be placed in a holding oven for at least 8 hours, after having been exposed to the atmosphere for more than 2 hours

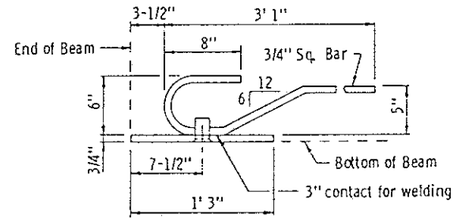
Any type electrode which has become wet, soiled, or damaged shall not be used.

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.

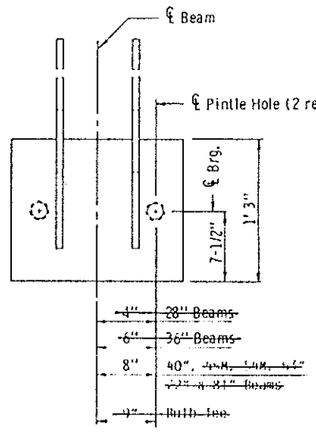
APPROVED: November 5, 1979 Developed by: BRIDGE STANDARDS & BRIDGE AND STRUCTURES SECTION Issued by: ENGINEERING STANDARDS SECTION	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **PILE SPLICE and TIP REINFORCEMENT** **STEEL H BEARING PILES 10" TO 14"**		DETAIL NO **B202**



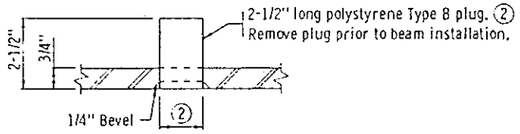
FRONT VIEW



SIDE VIEW



TOP VIEW



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.

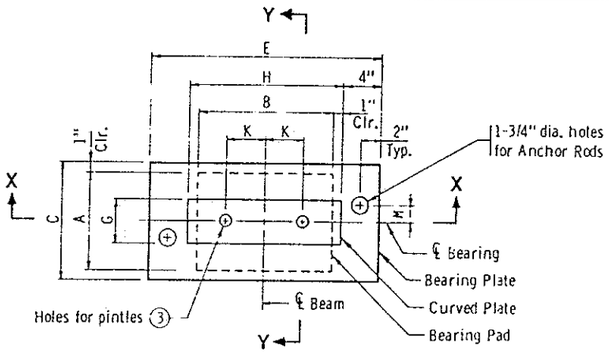
Payment for sole plates to be included in price bid for Prestressed Concrete Beams.

(1) Dimension "W" to be the width at the bottom flange of the beam minus 1/4".

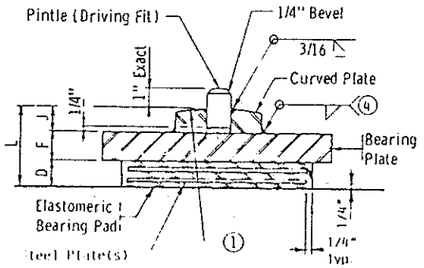
(2) 1-1/2" dia. for 1-1/4" dia. pintles.
1-3/4" dia. for 1-1/2" dia. pintles.
Check bearing assemblies for pintle size used.

APPROVED March 12, 1987 Developed by ENGINEERING STANDARDS and BRIDGE & STRUCTURE Issued by ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION SOLE PLATE PRESTRESSED CONCRETE BEAMS (FOR BEARINGS WITH PINTLES)	REVISION	DETAIL NO **B303**

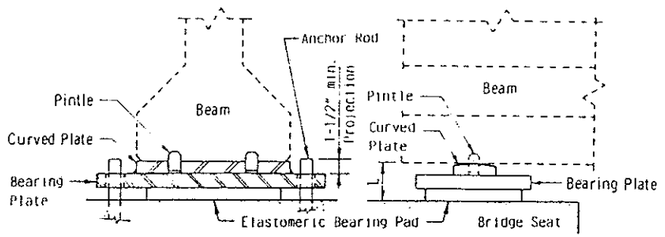
6-9-92



PLAN

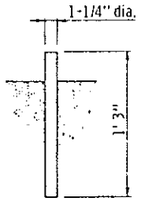


SECTION Y-Y
(ENLARGED BEARING ASSEMBLY)



SECTION X-X

END ELEVATION
(Anchor Rods Not Shown)



ANCHOR ROD DETAIL

PINTLE SPACING TABLE

BEAM SIZE	K
~~28"~~	~~4"~~
~~36"~~	~~6"~~
40", ~~45M, 54M, 63"~~ ~~72" & 81~~	8"
~~Bulb Tee~~	~~9"~~

TABLE (2)

Beam Size	Bearing Pad Size A	B	D	Steel Plates No.	Thick.	Laminates No.	Thick.	Shape Factor	Bearing Plate Size C	E	F	Curved Plate Size G	H	J	Pintle Dia.	Pintle Spacing K	Anchor Rod Offset M	Assy. Height L	Assembly Type
40"	10	20	1 1/4	2	1/8	1	1/2	6.7	12	30	1	4 1/2	22	1	1 1/2	8	3"	3 1/4	F1

NOTES:

For elastomeric materials & pad construction, see Spec. 3741 and special provisions, except as noted.

All steel plates & anchor rods shall comply with Spec. 3306, except as noted.

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.

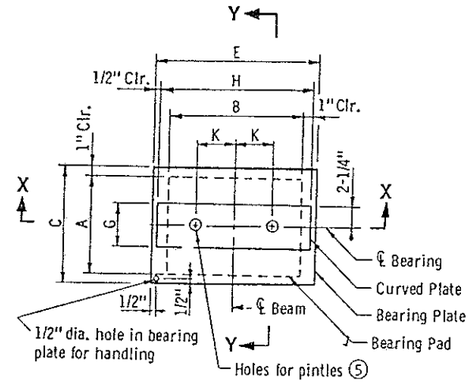
(1) The radius of the curved plate shall be 1' 0" min. & 1' 6" max. finish to 250 Micro. The finished thickness of the plate may be 1/16" less than shown.

(2) See Bridge Design Manual for design requirements.

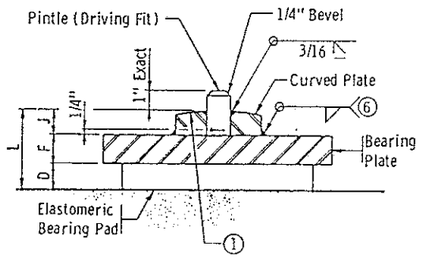
(3) 1-1/4" dia. pintle for total loads to 200 Kips. 1-1/2" dia. pintle for total loads over 200 Kips

(4) For bearing plate thicknesses up to 1-1/2" use 5/16" fillet welds; for thicknesses over 1 1/2" to 2 1/4" use 3/8" fillet welds; for thicknesses over 2 1/4" use 1/2" fillet welds with minimum preheat of 300°.

APPROVED Aug 4, 1987	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Developed by ENGINEERING STANDARDS and BRIDGES & STRUCTURES. Issued by ENGINEERING STANDARDS.	CURVED PLATE BEARING ASSEMBLY PRESTRESSED CONCRETE BEAMS (FIXED)		B310



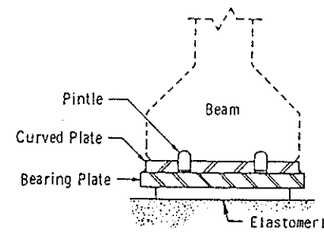
PLAN



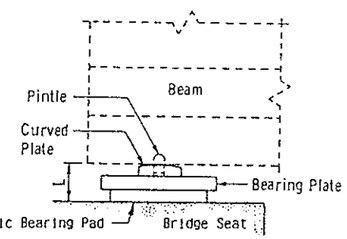
SECTION Y-Y
(ENLARGED BEARING ASSEMBLY)

PINTLE SPACING TABLE

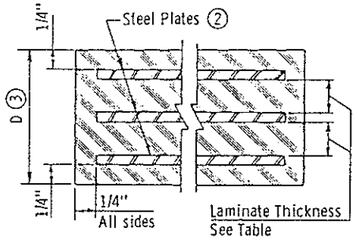
BEAM SIZE	K
~~28"~~	~~4"~~
~~36"~~	~~6"~~
40", ~~45M, 54M, 63"~~ ~~72" & 81~~	8"
~~Bulb Tee~~	~~9"~~



SECTION X-X



END ELEVATION



SECTION THRU BEARING PAD

TABLE (4)

Beam Size	Bearing Pad Size A	B	D	Steel Plates No.	Thick.	Laminates No.	Thick.	Shape Factor	Bearing Plate Size C	E	F	Curved Plate Size G	H	J	Pintle Dia.	Pintle Spacing K	Assy. Height L	Assembly Type
40"	12	20	2 1/2	4	1/8	3	1/2	7.5	14	23	1 1/4	4 1/2	22	1 1/4	1 1/2	8	5	E1

NOTES:

for elastomeric materials & pad construction, see Spec. 3741 and special provisions, except as noted.

All steel plates shall comply with Spec. 3306, except as noted.

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. 3594, 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" min. & 1' 6" max. 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) See Bridge Design Manual for design requirements.

(5) 1-1/4" dia. pintle for total loads to 200 Kips. 1-1/2" dia. pintle for total loads over 200 Kips.

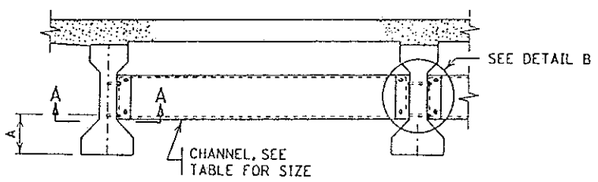
(6) For sole plate or bearing plate thicknesses up to 1-1/2", use 5/16" fillet welds; for thicknesses over 1-1/2" to 2-1/4", use 3/8" fillet welds; for thicknesses over 2-1/4", use 1/2" fillet welds with minimum preheat of 300°.

APPROVED Aug 4, 1987	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES. Issued by: OFFICE OF ENGINEERING STANDARDS	CURVED PLATE BEARING ASSEMBLY PRESTRESSED CONCRETE BEAMS (EXPANSION)		B311

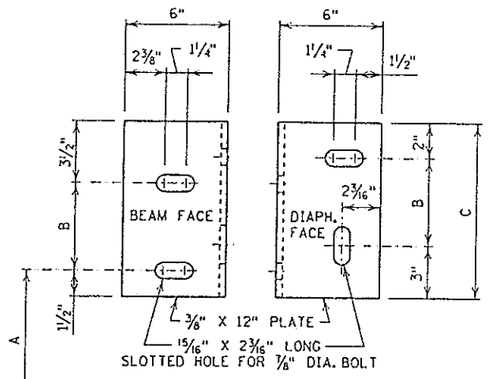
6-9-92

DETAILS	S.P. 55-598-35	55550	CJD
	SHEET 18 OF 27 SHEETS		

TABLE				
BEAM HEIGHT	DISTANCE			CHANNEL SIZE
	A	B	C	
28M	1'-0"	5"	10"	C10X15.3
30" BULB TEE	1'-2"	7"	1'-0"	C12X20.7
~~36"~~	~~1'-3"~~	~~7"~~	~~1'-0"~~	~~C12X20.7~~
40"	1'-5"	7"	1'-0"	C12X20.7
~~45M~~	~~1'-3¾"~~	~~1'-1"~~	~~1'-6"~~	~~MC18X42.7~~

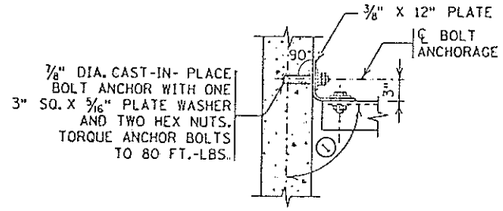


PART TRANSVERSE SECTION AT DIAPHRAGM

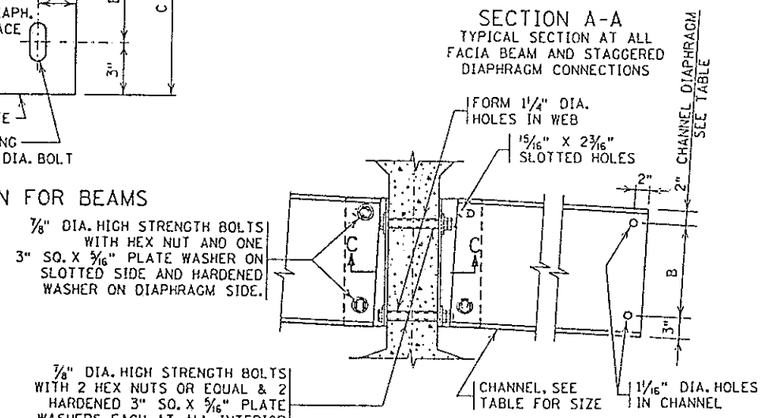


DIAPHRAGM CONNECTION FOR BEAMS

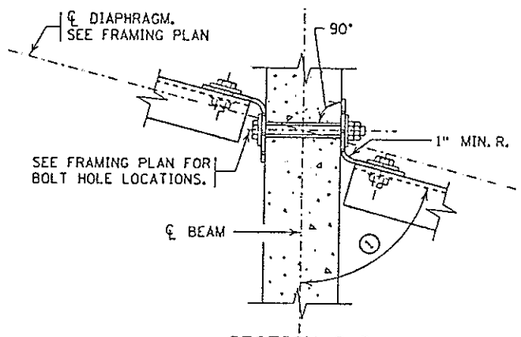
BOTTOM OF BEAM



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



DETAIL B
INTERIOR BEAM WITH CONTINUOUS LINE OF DIAPHRAGMS



SECTION C-C
TYPICAL SECTION AT INTERIOR DIAPHRAGMS

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 ⅞" BOLT CONNECTION THE CONTRACTOR MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL.

GENERAL NOTES:

SEE SPEC. 2405.3M FOR INSTALLATION

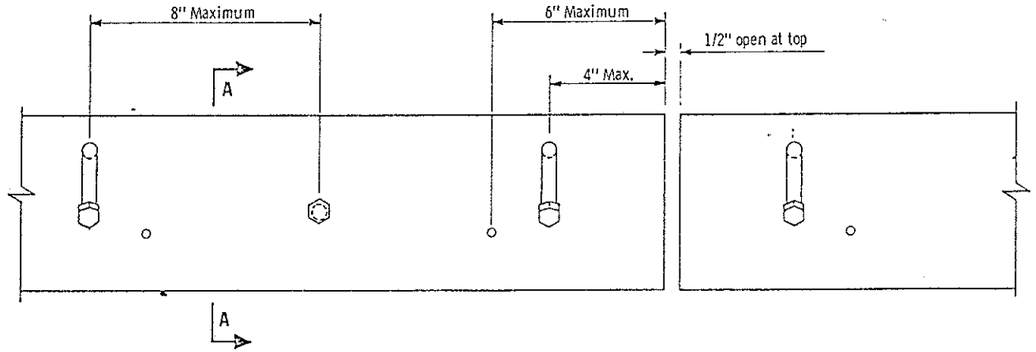
THE LEG OF THE 12" PLATE SHALL BE SHOP BENT TO CONFORM TO THE DIAPHRAGM. A ⅜" X 6" X 6" ANGLE MAY BE USED FOR DIAPHRAGMS PERPENDICULAR TO BEAMS.

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

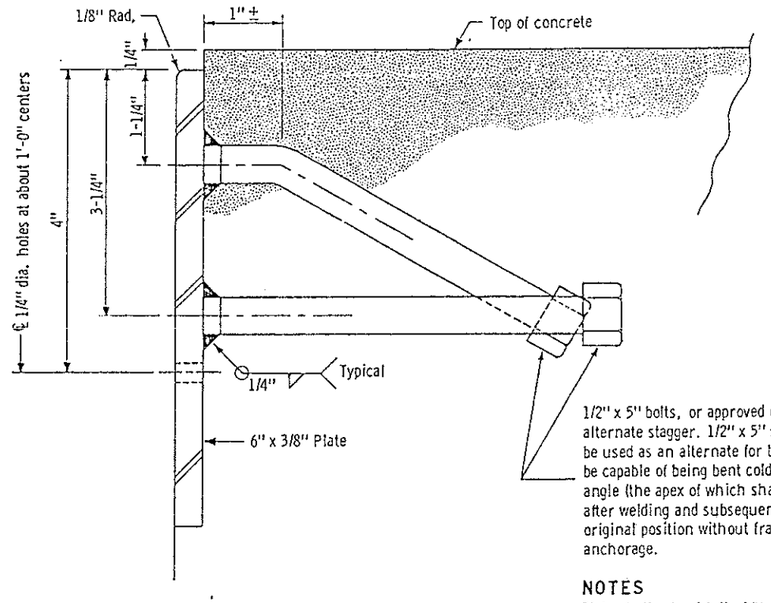
ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND WASHERS, SHALL BE INCLUDED IN THE PAYMENT FOR DIAPHRAGMS FOR PRESTRESSED BEAMS.

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

APPROVED: FEBRUARY 25, 1991	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	DATE: 10/31/91	DETAIL NO. MODIFIED
OFFICE of BRIDGES and STRUCTURES	STEEL INTERMEDIATE DIAPHRAGM (FOR 28M - 45M PRESTRESSED CONC. BEAM SPANS AND 30" BULB TEE BEAMS)	OR: ALB CHK:	B403



ELEVATION
(Concrete not shown)



1/2" x 5" bolts, or approved equal, at 8" centers with alternate stagger. 1/2" x 5" stud welded fastners 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.

SECTION A-A

NOTES

Plate shall extend full width of roadway between gutter lines with a 1/2" open joint at each break in crown profile. Maximum length 22 feet.

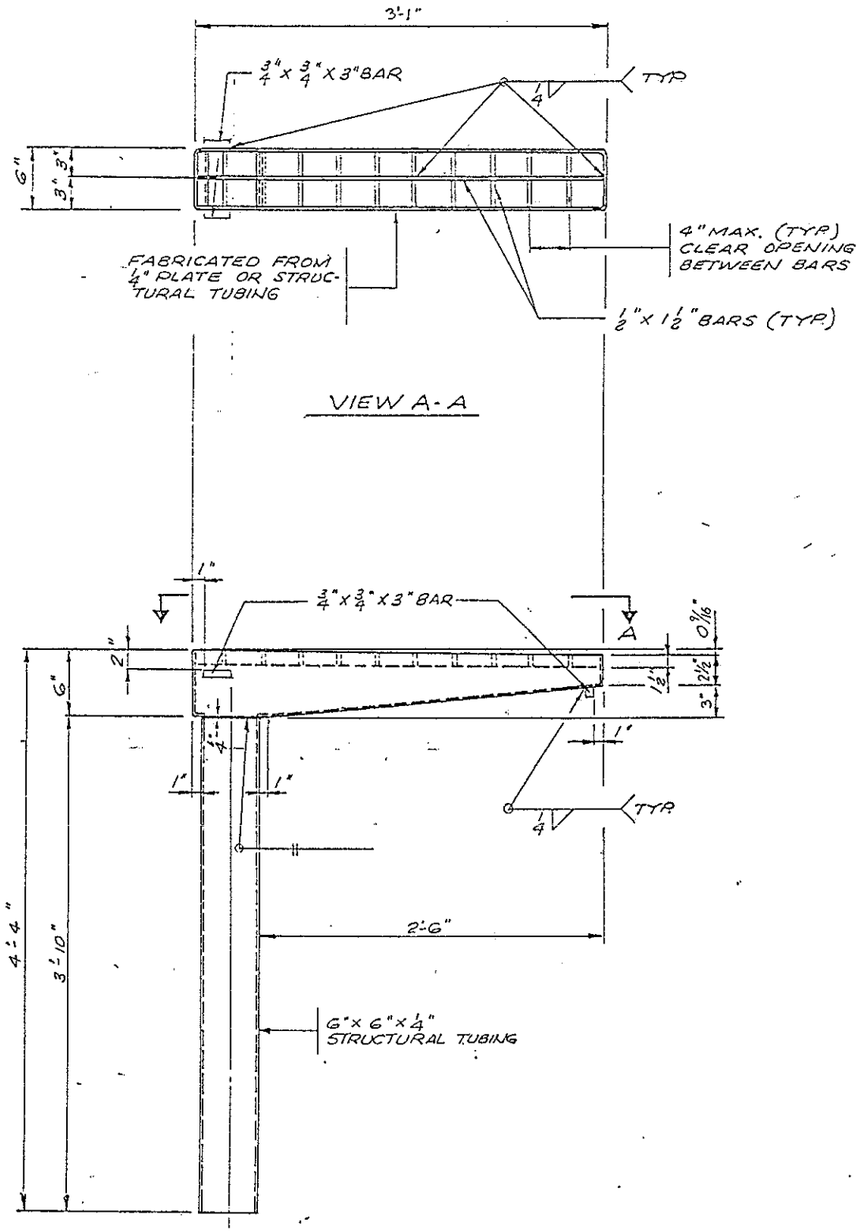
Materials: Structural steel per spec. 3306. Galvanize after fabrication per spec. 3394

Set plate to proper grade and crown. Plates shall be straightened to a tolerance of 1/16" in 10 feet after galvanizing.

APPROVED: Sept. 28, 1977 Developed by: BRIDGE STANDARDS AND THE BRIDGES & STRUCTURES SECTION Issued by: RESEARCH & STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION PROTECTION PLATE FOR END OF SLAB		DETAIL NO. B553

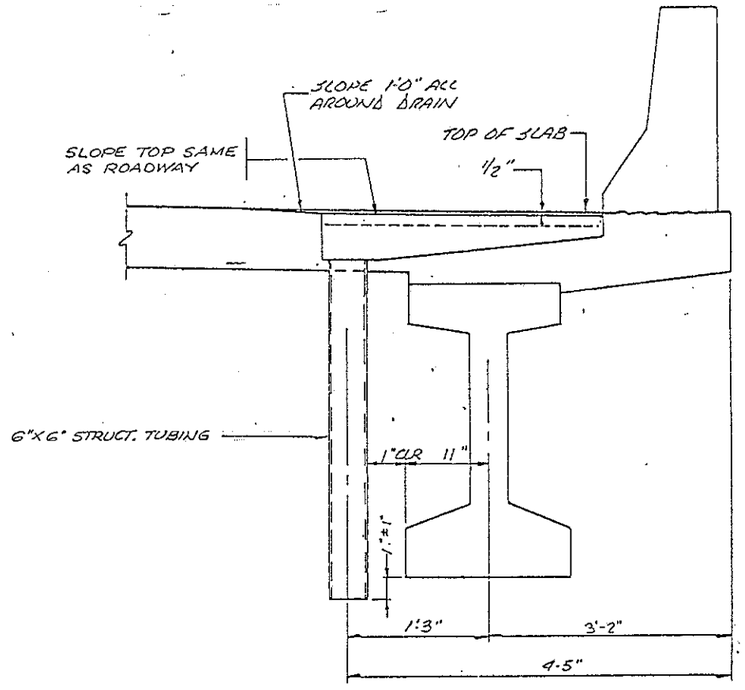
6-7-92

DETAILS	S.P. 55-598-35	55550	CJD
	SHEET 19 OF 23 SHEETS		BDW



ELEVATION - B702 MOD.

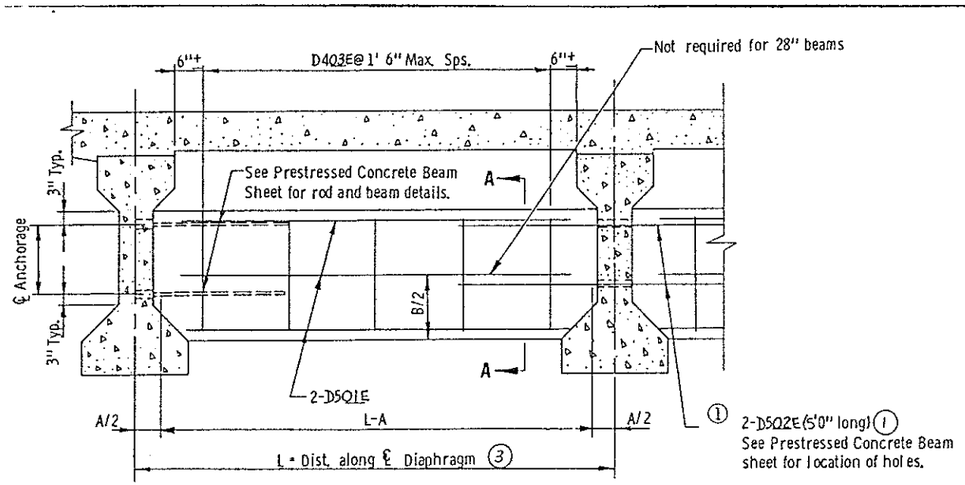
GALVANIZE AFTER FABRICATION PER SPEC 3394



PLACEMENT DIAGRAM AT FLOOR DRAINS

6-9-92

FLOOR DRAIN - B702 MODIFIED	S.P. 55-598-35 SHEET 20 OF 23 SHEETS	DETAILS	55550

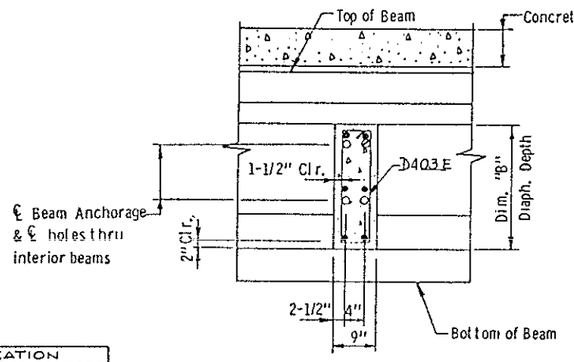


PART TRANSVERSE SECTION

Bm. Ht.	Dim. "A" For comp. volume	Diaph. Dim. "B"	D403E Length
~~28"~~	~~7-1/2"~~	~~1'-4"~~	~~3'-9"~~
~~36"~~	~~7-3/4"~~	~~1'-9"~~	~~4'-7"~~
40"	8-3/4"	1'-11"	4'-11"
~~45"~~	~~9"~~	~~2'-2-1/2"~~	~~5'-6"~~
~~54"~~	~~10-1/2"~~	~~2'-8"~~	~~6'-5"~~

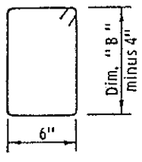
Concrete volume per diaphragm

$\frac{(L - A) \times B \times .75}{27}$ = (Cu. yd.)



SECTION A-A

BAR	NO	LENGTH	SHAPE	LOCATION
D501E	126	9'-2"	STR.	DIAPH. HORIZ.
D502E	112	5'-0"	STR.	DIAPH. HORIZ
D403E	147	4'-11"	BENT	DIAPH. VERT.



D403E

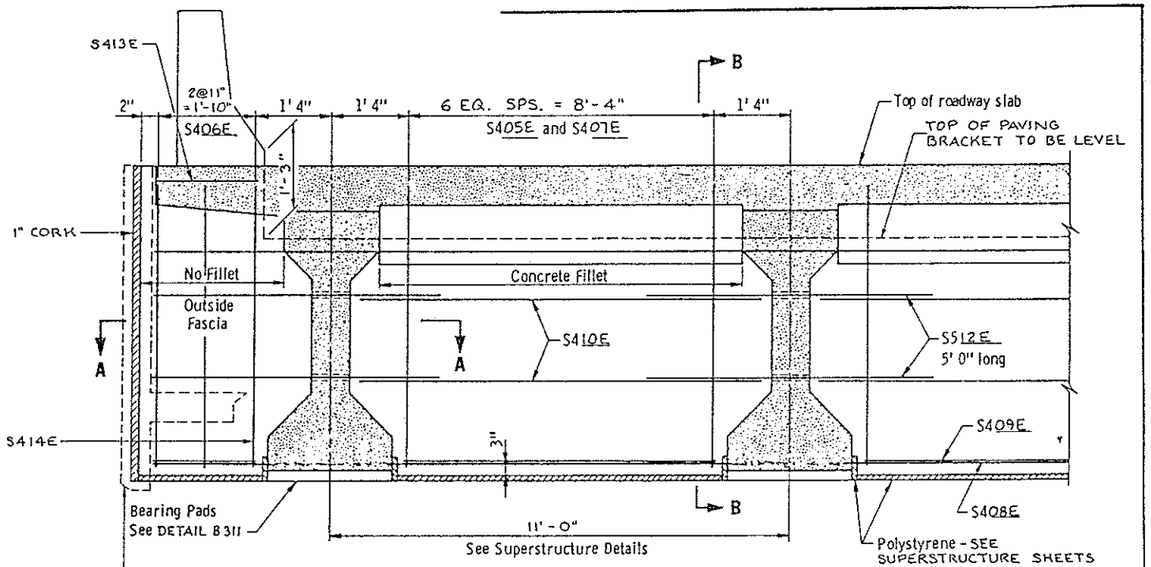
GENERAL NOTES

(1) For Diaphragms 20⁰ and over, use threaded rods as shown on standard prestressed concrete beam sheet.

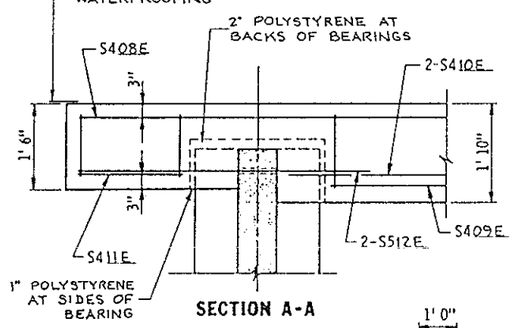
(2) All diaphragm concrete and reinforcement bars shown on this detail to be included in payment for diaphragms for prestressed beams. Threaded rods are included in payment for prestressed concrete beams.

(3) PAYMENT LENGTH FOR DIAPHRAGMS.

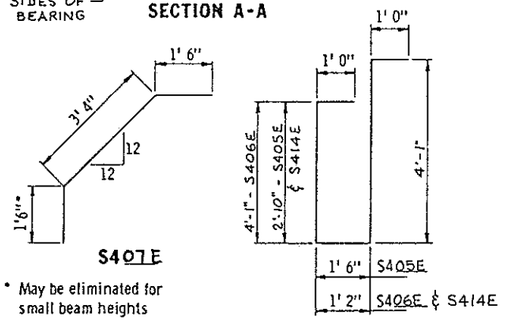
APPROVED: MARCH 27, 1979	MINNESOTA DEPARTMENT OF TRANSPORTATION		DETAIL NO.
Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN	CONCRETE INTERMEDIATE DIAPHRAGM		B802
Issued by: OFFICE OF ENGINEERING STANDARDS	(FOR 28"-54" PRESTRESSED CONCRETE BEAM SPANS)		



PART TRANSVERSE SECTION AT END DIAPHRAGM

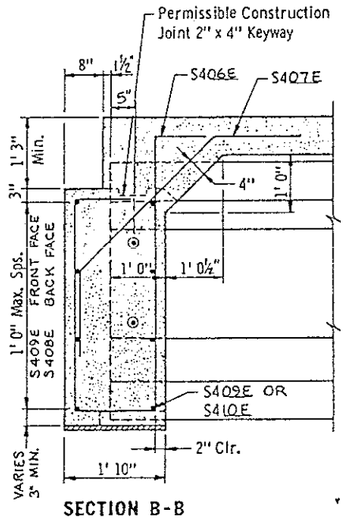


SECTION A-A



S407E

* May be eliminated for small beam heights



SECTION B-B

NOTE

All diaphragm bars shown are listed with the superstructure reinforcement. Diaphragm concrete and reinforcement quantities are included in superstructure quantities.

To be used at abutment end only.

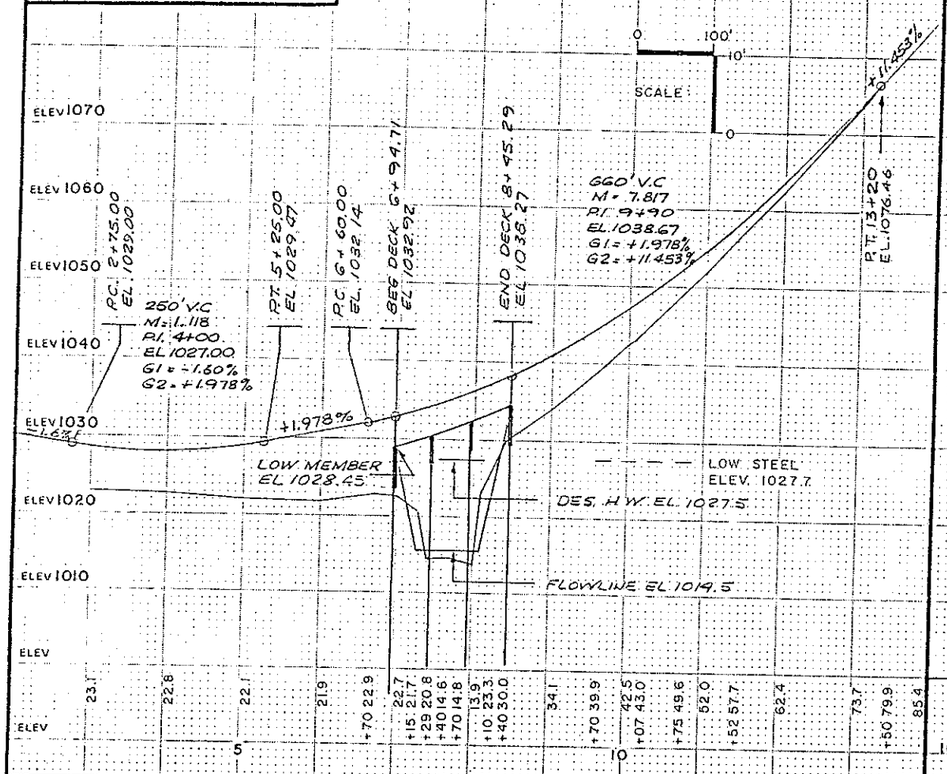
APPROVED: Oct. 20, 1976	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN	CONCRETE END DIAPHRAGM	July 25, 1980	B810
Issued by: OFFICE OF ENGINEERING STANDARDS	(28"-54" PRESTRESSED CONCRETE BEAM SPAN WITH PILE BENT ABUTMENT)		

6-9-92

DETAILS	S.P. 55-598-35	55550	CJD
	SHEET 21 OF 23 SHEETS		BDW

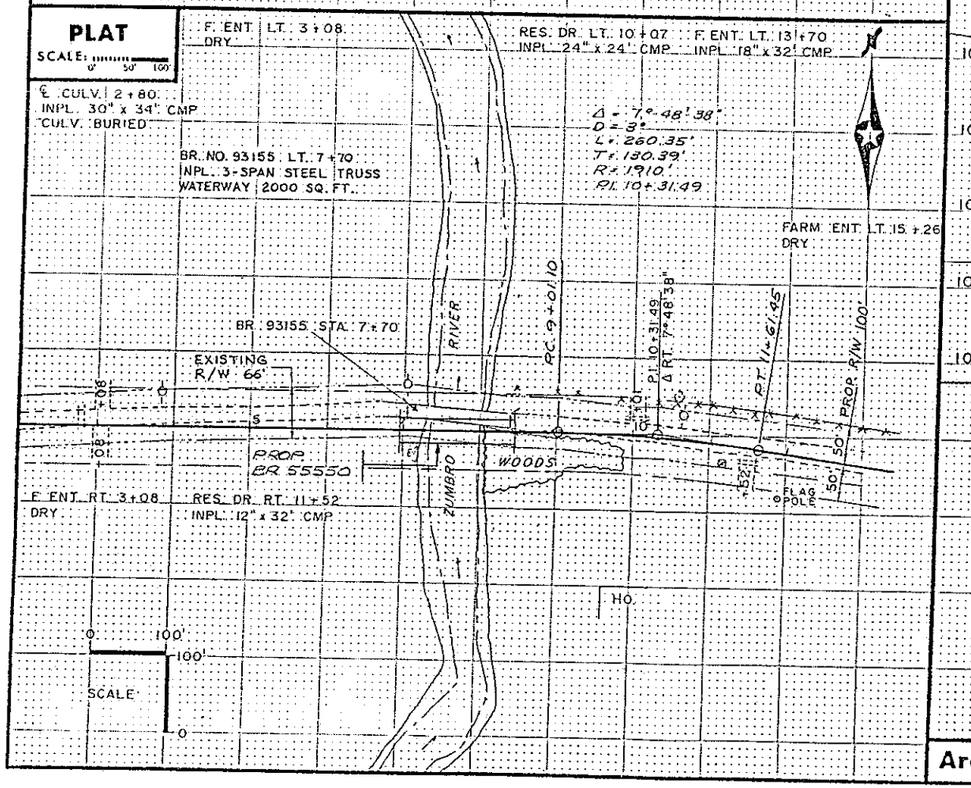
CONTRACTED PROFILE

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



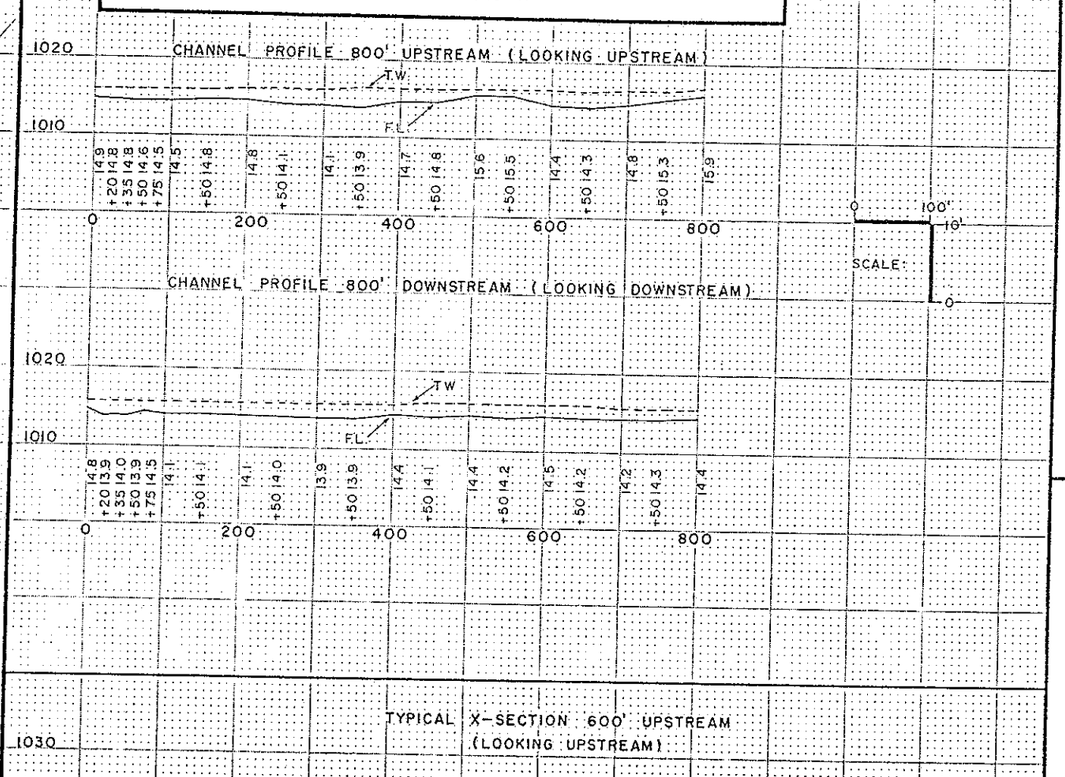
PLAT

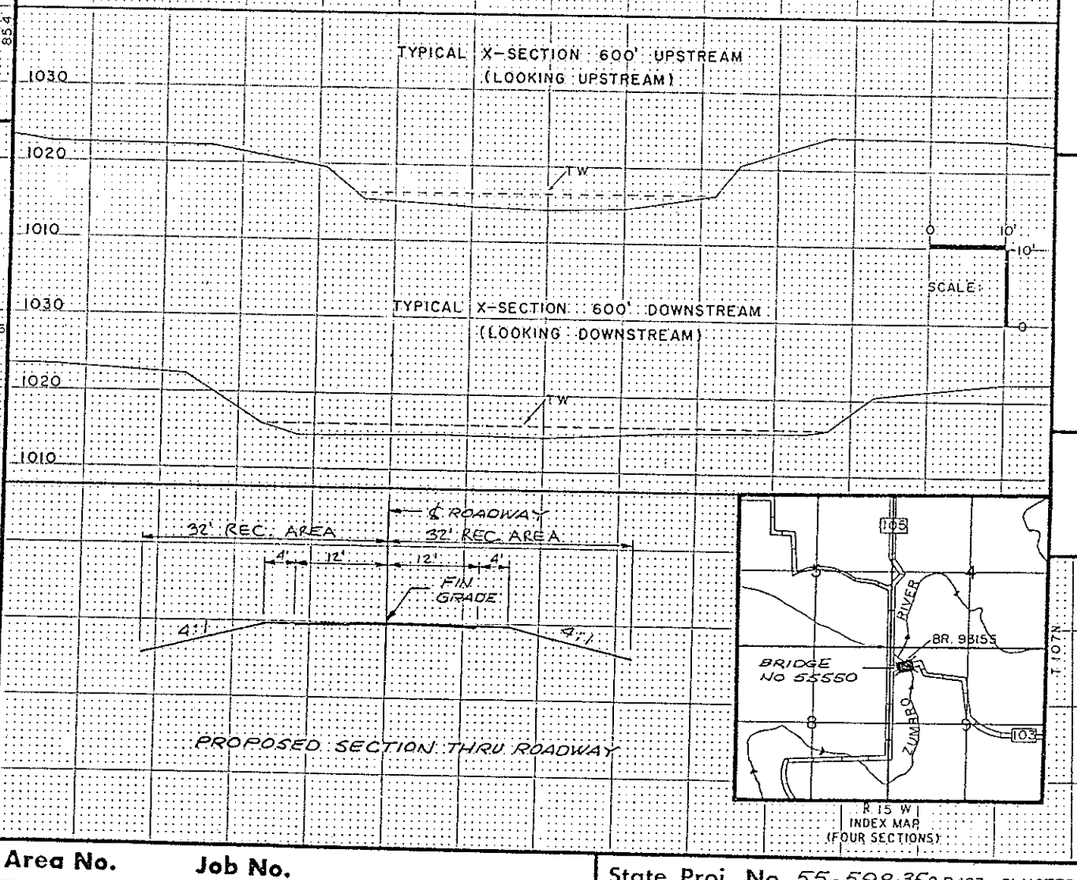
SCALE: 0' 50' 100'



TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN





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 5-13-87

Stream or ditch designation S. FORK MIDDLE BRANCH OF ZUMBRO RIVER
Drainage area 189.5 SQ. MI.
Max. flood on record UNKNOWN. Design flood (10 yr. freq.) 8615 C.F.S.
Max. observed highwater elevation UNKNOWN Design highwater elevation 1027.5
Design mean velocity through structure 6.5 F.P.S.
Low superstructure at or above elevation 1028.3
Flowline elevation 1014.5 Skew angle NONE
Waterway area req'd. below elevation 1027.5 = 1320 Sq. Ft. at Rt. angles to channel
MIN. OVERFLOW AREA BETWEEN EL 1031.4 & EL 1027.5 = 1135 SQ FT
In the interest of flood plain zoning the regional flood (100 yr. freq.) is 17,835 C.F.S. at stage 1031.4 and mean velocity of 6.9 F.P.S. with 0.4 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.
ESTIMATED PIER SCOUR DEPTH = 4 FT.

~~FOUNDATION~~ ENGINEERS RECOMMENDATION

DATE 7-14-87

3-50'-0" PRESTRESSED CONCRETE BEAM SPANS
36'-0" ROADWAY

Bridge survey sheets made from: SURVEY CONDUCTED BY OLMSTED COUNTY

Bench mark elevation 1027.01 (M.S.L. 1929 Adj.)
Location: SPK IN PP 22825 STA. 7+05 LT 61'

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 0.25 ON C.R. 103 (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 0.25 MILES EAST OF C.R. 105
SEC. 9 TWP. 107 N R. 15 W
TOWNSHIP KALMAR COUNTY OLMSTED
PROP BR NO. 55550
BRIDGE NO. 93155
6-9-92

Area No. Job No.

State Proj. No. 55-598-35 C.R.103 OLMSTED COUNTY

Sheet No. 22 of 23 Sheets

Fed. Proj. No.

PROP. R/W 50'

PROP. R/W 50'

SURVEY ℄

PROP. ℄ C.R. 103

ST-1

℄ BRG WEST ABUT
STA. 6+95.46
EL. 1032.93

TEST PILE #1

20'-0"

7

30'-0" (TYP.)

℄ PIER 1
STA 7+44.92
EL 1034.34

8'-6"

TEST PILE #2

FLOW

℄ PIER 2
STA. 7+95.08
EL. 1036.12

TEST PILE #3

8'-6"

8

ST-2

℄ BRG-EAST ABUT
STA 8+44.54
EL. 1038.24

9

20'-0"

LIMITS OF RANDOM RIPRAP
AVG. 1'-6" THICK

TEST PILE #4

LIMITS OF RANDOM RIPRAP
AVG. 3'-0" THICK.

SCALE: 0 10' 10' 0

PLAN

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

APPROACH FILLS UNDER GRADING PORTION OF CONTRACT

ELEVATION

PROFILE
℄
20' LT.
20' RT

660' V.C.
M = 7.817
Pl. 9+90
EL. 1038.67
G1 = 1.978
G2 = 11.453

49'-5½"
50'-2"
49'-5½"

℄ BRG - WEST ABUT
℄ PIER 1
℄ PIER 2
℄ BRG. - EAST ABUT

BEG OF DECK
STA. 6+94.71
EL. 1032.92

LOW. MEMBER
EL. 1028.45

END OF DECK
STA 8+45.29
EL. 1038.27

1040
1030
1020
1010
1000
990
980
970

FILL: SI. C., dk. brn., MOIST
FILL: SANDY SI. W/C, dk. brn. to brn MOIST
LEAN C, brn, WET, M. (FINE ALLUVIUM)
SI. W C. LENS, POORLY GRADED S., brn, WET, M. (FINE ALLUVIUM)
SANDY SI W/ TRACE G, brn, WET, M (FINE ALLUVIUM)
POORLY GRADED S. W/SI, F. TO Cr. GRAINED W/G., brn., WATERBRG, M. DENSE (Cr. ALLUVIUM)
SI. S W/C, F. TO Cr. GRAINED W/G, brn, WET, M. DENSE (Cr. ALLUVIUM)
SI. S. W/C, F. TO Cr. GRAINED W/G. brn., WET, M. DENSE (Cr. ALLUVIUM)
CLAYEY S. F. GRAINED W/G., gr. WET (ALLUVIUM)
FAT C. W/G., OLIVE & blue gr., MOIST, HARD. (FINE ALLUVIUM)
LEAN C, gr. WET, RATHER STIFF (F. ALLUVIUM)
LEAN C W/G., gr. & brn, WET, VERY STIFF (FINE ALLUVIUM)
POORLY GRADED S, F. GRAINED, LIGHT brn, TO WHT, WATERBRG, VERY LOOSE TO VERY DENSE (WEATHERED SANDSTONE)

4
7
7
30
20
14
23
46
11
26
11/1

WATER LEVEL DOWN 16.1' WITH 59' OF HOLLOW-STEM AUGER IN GROUND. WATER LEVEL DOWN 16.2' IMMEDIATELY AFTER WITHDRAWAL OF AUGER BORING IMMEDIATELY BACKFILLED

ST-1

+70 22.9
+15 22.7
+29 21.7
+40 20.8
+70 14.6
+15 14.8
+29 13.9
+40 23.3
+10 30.0

* 100 BLOWS TO ADVANCE SAMPLER 1' @ ST-1

7

8

① BRIDGE CONTRACTOR SHALL EXCAVATE & FILL TO THESE LINES FOR APPROX. 20 FT. LT. & RT. OF ℄ ROADWAY BETWEEN NEW ABUTMENTS. THAN TAPER AT 2:1 SLOPE TO NATURAL CHANNEL SLOPES. INCLUDED IN PRICE BID FOR SLOPE PREPARATION.

5'-0"

2:1

6" GRANULAR FILTER

DES H.W. EL 1027.5

2:1

30'

APPROX. FLOWLINE
EL 1014.5

FILL: LEAN C, gr. MOIST
S. SI, dk. brn. MOIST
M. TO RATHER SOFT (TOPSOIL)
WET @ 8'

POORLY GRADED S, F. TO Cr. GRAINED W/G. brn, WATER BEARING, M. DENSE TO VERY DENSE (Cr. ALLUVIM)

60 FT. 10 x 42 STEEL H PILES WITH TIP PROTECTION

60 FT. CAST-IN-PL CONC. TEST PILES, 16" ϕ WITH POINTS

POORLY GRADED S, F. GRAINED, LIGHT brn TO WHT, WATERBRG, M DENSE TO VARY. DENSE WEATHERED SANDSTONE

4
17
21
39
32
38
46
44
44
56
19
42

ST-2

SCALE: 0 10' 10' 0

34'

9

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

* 100 BLOWS TO ADVANCE SAMPLER 2' @ ST-2

1040
1030
1020
1010
1000

C.R.103 OLMSTED COUNTY

BRIDGE SURVEY PLAN AND PROFILE

DR:

CHK:

CHK:

APPROVED: 6-9-92

Bridge No. -55550

State Proj. No. 55-598-35-

Sheet No. 23 of 23 Sheets