FORM 100-A '65

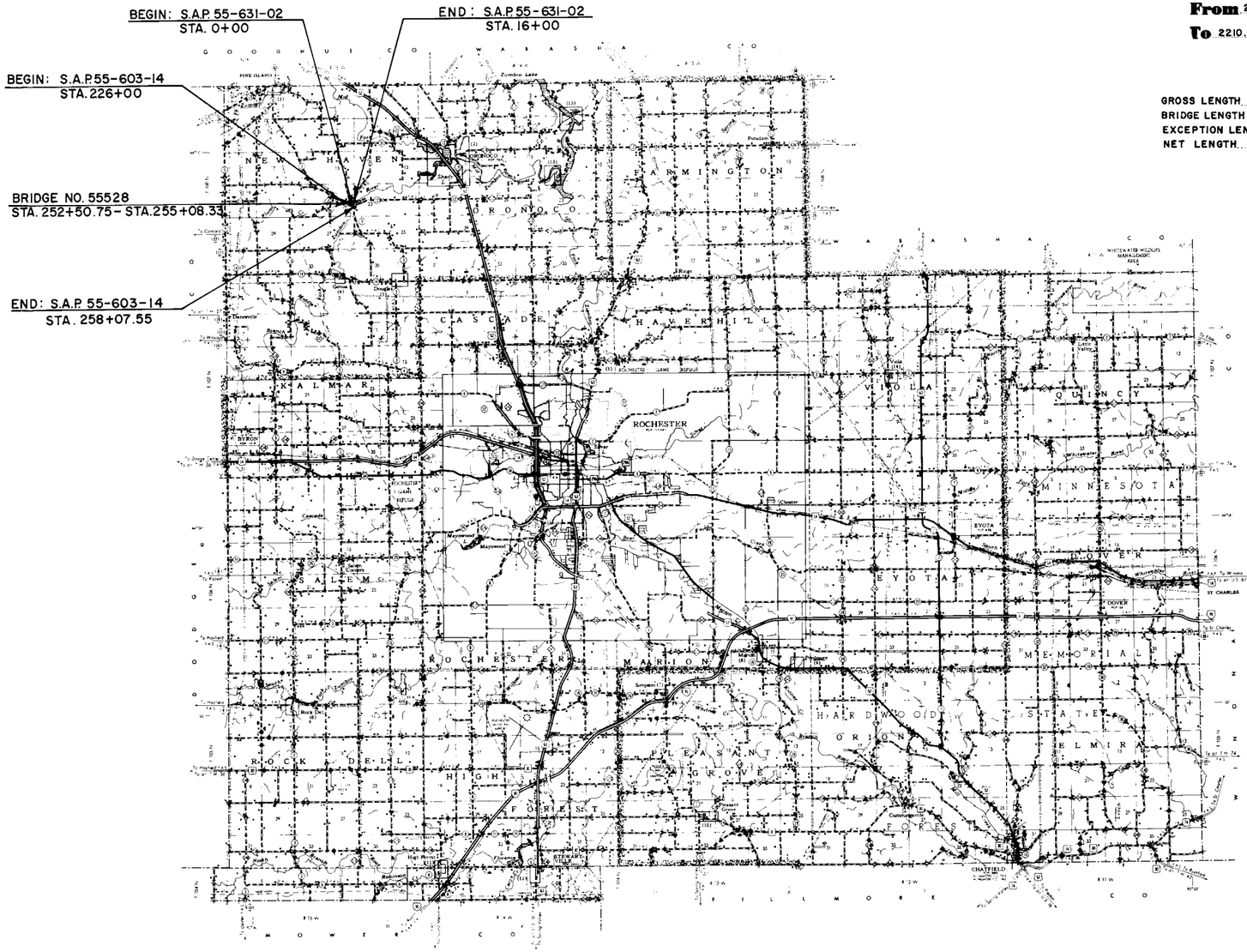
Fed. Proj. No.

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 (NAME)
DRY RUN
DRAINAGE DITCH (SIZE)
DRAIN TILE
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE (C-L)
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 (TIMBER)
NURSERY
CATCH BASIN C.B.
FIRE HYDRANT
CATTLE GUARD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame) (I-S-T)
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 (G)
SAND PIT (S)
BORROW PIT (B)
ROCK QUARRY (Q)

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 (G)
WATER MAIN (W)
CONDUIT
TELEPHONE CABLE IN CONDUIT (T)
ELECTRIC CABLE IN CONDUIT (P)
TELEPHONE MANHOLE (T)
ELECTRIC MANHOLE (P)
BURIED TELEPHONE CABLE T-BUR
BURIED ELECTRIC CABLE P-BUR
AERIAL TELEPHONE CABLE T-AE
SEWER, (SANITARY OR STORM)
SEWER MANHOLE



SPECIFICATION REFERENCE

THE 1978 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION" SHALL GOVERN.

STATE OF MINNESOTA

DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN FOR GRADING, AGGREGATE BASE & BR. NO. 55528

COUNTY STATE AID HIGHWAY NO. 3 & 31

BETWEEN CR. 105 **AND** C.S.A.H. 12

From 2210.12' SO. & 110.78' N.W. OF N.W. CORNER OF THE N.E. 1/4 SEC. 22 T.108N. - R.15W.
Give proper reference to Sections, Township and Range

To 2210.12' SO. & 3097.55' S.E. OF N.W. CORNER OF THE N.E. 1/4 SEC. 22 T.108N. - R.15W.

C.S.A.H. 31			C.S.A.H. 3		
GROSS LENGTH	1600.00 FEET	0.303 MILES	GROSS LENGTH	3207.55 FEET	0.607 MILES
BRIDGE LENGTH	FEET	MILES	BRIDGES-LENGTH	257.58 FEET	0.049 MILES
EXCEPTION LENGTH	FEET	MILES	EXCEPTIONS-LENGTH	FEET	MILES
NET LENGTH	1600.00 FEET	0.303 MILES	NET LENGTH	2949.97 FEET	0.559 MILES

INDEX OF SHEETS

Sheet No. 1 Title Sheet & Layout Map
" No. 2 Est. Quantities & Typical Sec.
" No. 3 To 6. Plan & Profile
" No. 7 Location Map Agg. Stockpile.
" No. 8 To 21. Cross Sections.
" No. 22. Channel Excavation Cross Sections.
" No. 1 To 15 Bridge Sheets Br. No. 55528

SCALES
PLAN 100 FEET
PROFILE HORZ. 100 FEET
VERT. 10 FEET
CROSS SECTION 10 FEET
INDEX MAP 10,560 FEET

S.A.P. 55-631-02	S.A.P. 55-603-14
DESIGN SPEED 50 M.P.H.	DESIGN SPEED 50 M.P.H.
PROJECTED A.D.T. 222	PROJECTED A.D.T. 788
7 TON DESIGN	7 TON DESIGN
SOIL FACTOR 130	SOIL FACTOR 130

ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.

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.

J K Dolan — COUNTY ENGINEER — DATE 6/19/78

Olmsted — COUNTY REG. NO. 10219

RECOMMENDED FOR APPROVAL — DISTRICT STATE AID ENGINEER — 6-20 — 1978

RECOMMENDED FOR APPROVAL Delwert J. Affeldt — 1978

APPROVED 8-3 — 1978 — DIRECTOR, OFFICE OF STATE AID

S.A.P. 55-603-14
S.A.P. 55-631-02
Minn. Project No. _____ State Project No. _____

OLMSTED County, Minnesota. County Proj. No. _____ Plan No. _____ Sheet 1 of 22 Sheets

ESTIMATED QUANTITIES

	SPECIFICATION NO.	ITEM	UNIT	RURAL S.A.P.55-603-14	RURAL S.A.P.55-631-02	TOTAL ESTIMATED QUANTITIES	
	2101.501	CLEARING	ACRE	2.9	0.2	3.1	
	2101.502	CLEARING	TREE	2	13	15	
	2101.506	GRUBBING	ACRE	2.9	0.2	3.1	
	2101.507	GRUBBING	TREE	2	7	9	
	2104.501	REMOVE PIPE CULVERT	LIN. FT.	84		84	
	2105.501	COMMON EXCAVATION	CU. YD.	22360	16261	38621	
	2105.507	SUBGRADE EXCAVATION	CU. YD.	1913	448	2361	
	2105.511	COMMON CHANNEL EXCAVATION	CU. YD.,	2500		2500	
	2105.523	COMMON BORROW (C.V.)	CU. YD.	29208	8364	37572	(P)
②	2123.501	COMMON LABORERS	HR.	8		8	
②	2123.503	MOTOR GRADER	HR.	8		8	
②	2123.508	14 CU. YD. SCRAPER	HR.	8		8	
②	2123.509	DOZER	HR.	16		16	
①	2211.501	AGGREGATE BASE, CLASS 2	TON	10,310	2118	12,428	
③	2211.502	AGGREGATE BASE, CLASS 2 MODIFIED	CU. YD.	223		223	
	2501.511	18" C.S. PIPE CULVERT	LIN. FT.	174	116	290	
	2501.511	24" C.S. PIPE CULVERT	LIN. FT.		92	92	
	2501.511	24" R.C. PIPE CULVERT CLASS II	LIN. FT.		50	50	
	2501.511	24" R.C. PIPE CULVERT CLASS III	LIN. FT.		100	100	
	2501.515	18" G.S. PIPE APRONS	EACH	10	8	18	
	2501.515	24" G.S. PIPE APRONS	EACH		2	2	
	2501.515	24" R.C. PIPE APRONS	EACH		4	4	

① ITEM NO.2211.501 AGGREGATE BASE, CLASS2 INCLUDED 1,410 TONS FOR 10 APPROACHES

② EQUIPMENT HOURS TO BE USED FOR OBLITERATING OLD ROAD IN LOCATION SHOWN ON THE PLAN AND PROFILE SHEETS.

③ AGGREGATE BASE CLASS2 MODIFIED TO BE USED ON D.N.R. TRAIL APPROACHES LEFT & RIGHT STA. 248+40.

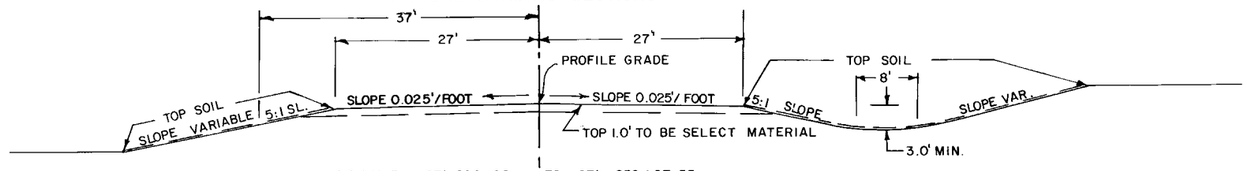
(P) PLAN QUANTITY.

STANDARD PLATES

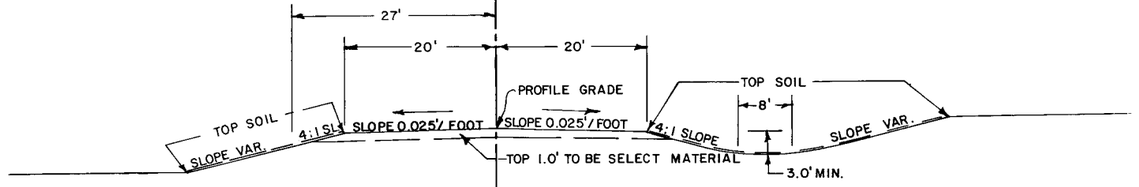
THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.

PLATE NO		DESCRIPTION
0003	A	SPECIFICATION REFERENCE TO STANDARD PLATES.
3000	G	REINFORCED CONCRETE PIPE
3040	D	CORRUGATED METAL PIPE
3100	F	CONCRETE APRON FOR REINFORCED CONCRETE PIPE.
3123	G	METAL APRON FOR C.M. PIPE
3145	A	CONCRETE PIPE JOINT TIES.
8000	F	STANDARD BARRICADES
9000	B	APPROACHES AND ENTRANCES.

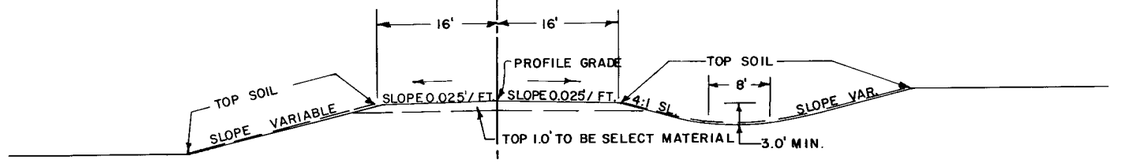
TYPICAL GRADING SECTIONS



C.S.A.H. 3 STA. 226+00 TO STA. 258+07.55



C.S.A.H. 31 STA. 0+00 TO STA. 16+00



NEW HAVEN TWP. ROAD STA 0+00 TO STA. 5+00

NOTE: MATERIAL FROM THE UPPER 1.0' OF THE NATURAL TOPSOIL SHALL NOT BE USED IN THE UPPER 1.0' OF THE ROAD BED. PART OF THIS MATERIAL SHALL BE UNIFORMLY SPREAD ON SLOPES AND DITCH BOTTOMS TO A DEPTH OF 3". NO PAYMENT IN ADDITION TO THE CONTRACT PRICE FOR "COMMON EXCAVATION" WILL BE MADE FOR SPREADING THE TOPSOIL AS ABOVE PROVIDED, NOR WILL ANY UNDER CUTTING MADE IN EXCAVATION PRIOR TO PLACING THE TOPSOIL BE MEASURED FOR PAYMENT.

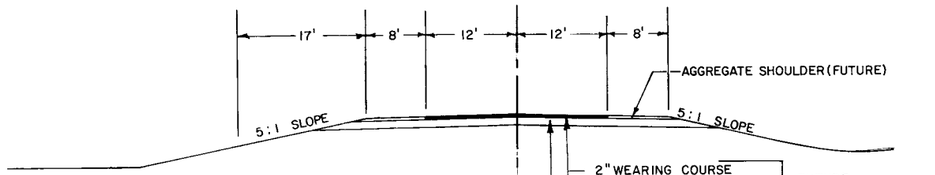
NOTE: CORRUGATED STEEL AND REINFORCED CONCRETE PIPE CULVERT EXCAVATION WILL BE CONSIDERED INCIDENTAL, AND WILL BE INCLUDED FOR PAYMENT UNDER UNIT PRICE FOR "PIPE CULVERT".

NOTE: SUBGRADE TREATMENT: EXCAVATE 1.0' BELOW PROFILE GRADE FOR COMPACTION, AS SHOWN ON THE PLAN AND PROFILE SHEETS. EXCAVATION HAS BEEN COMPUTED AND IS LISTED AS SUBGRADE EXCAVATION. BACKFILL WITH SELECT MATERIAL FROM R.O.W. TAPERS SHALL BE 50:1 IN ALL CASES.

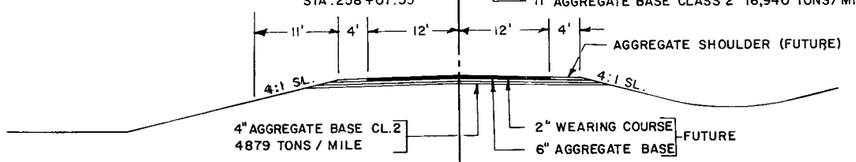
NOTE: PLACE SECTIONAL CONCRETE PIPE ON CLASS "B" BEDDING AS DIRECTED BY THE ENGINEER. ALL BEDDING TO BE CONSIDERED AS INCIDENTAL AND NO DIRECT COMPENSATION SHALL BE MADE THERE FOR.

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

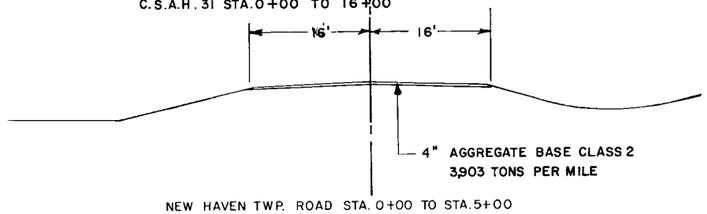
TYPICAL BASE & SURFACE SECTIONS



C.S.A.H. 3 STA. 226+00 TO STA. 258+07.55



C.S.A.H. 31 STA. 0+00 TO 16+00



NEW HAVEN TWP. ROAD STA. 0+00 TO STA. 5+00

S.A.P. 55-603-14 & S.A.P. 55-631-02

State Proj. No. C.S.A.H. 3 & 31 OLMSTED CO. **Sheet No.** 2 **of** 21 **Sheets**

AS BUILT PLANS

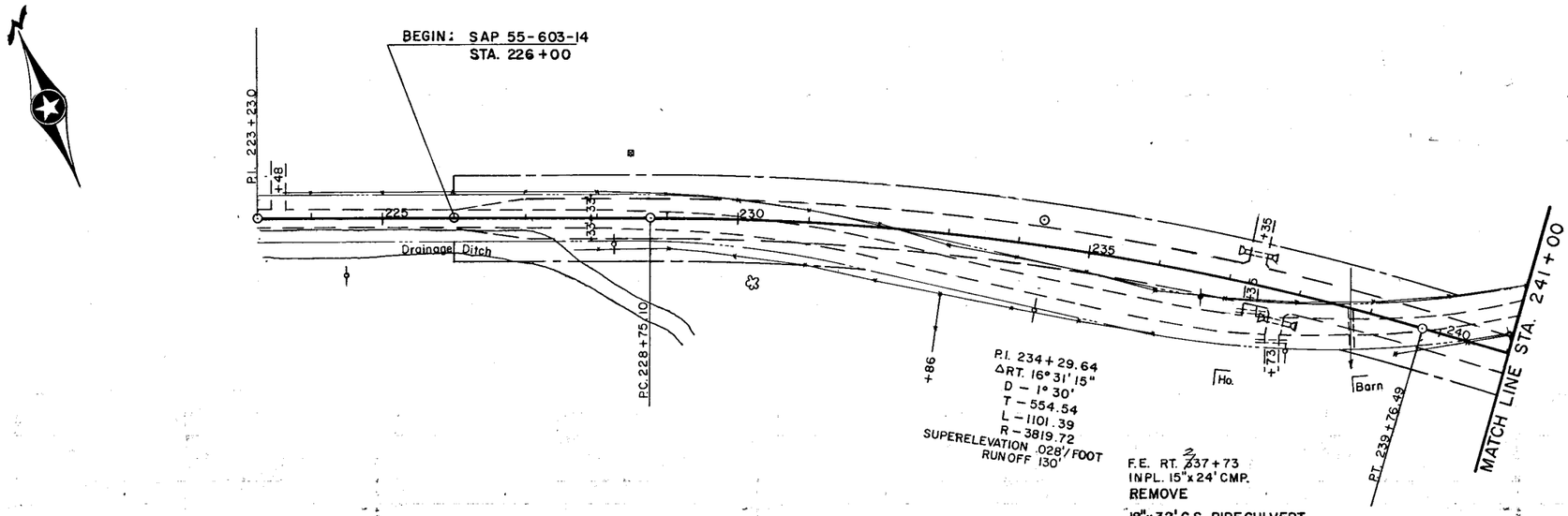
KLEINSCHMIDT, INC. MINNEAPOLIS, MINN.

F.E. LT. 223+48
NO CULV. INPL.
NO CHANGE

F.E. RT. 237+35
INPL. 15"x24' CMP.
REMOVE
18"x28' C.S. PIPE CULV.
2-18" G.S. PIPE APRONS

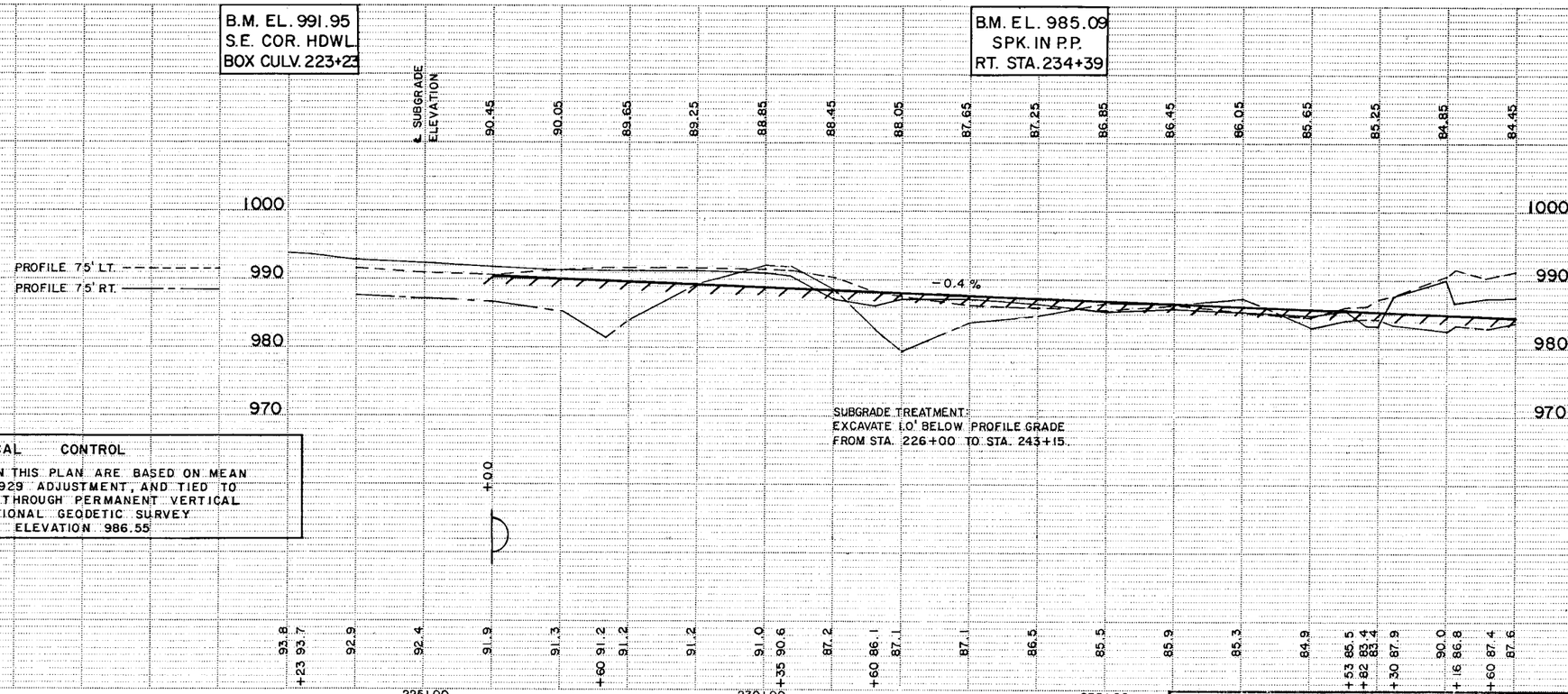
℄ CULV. 238+84
INPL. 30"x 36'
REMOVE
NO CULV. REQ'D.

Fed. Proj. No.



B.M. EL. 991.95
S.E. COR. HDWL.
BOX CULV. 223+23

B.M. EL. 985.09
SPK. IN P.P.
RT. STA. 234+39

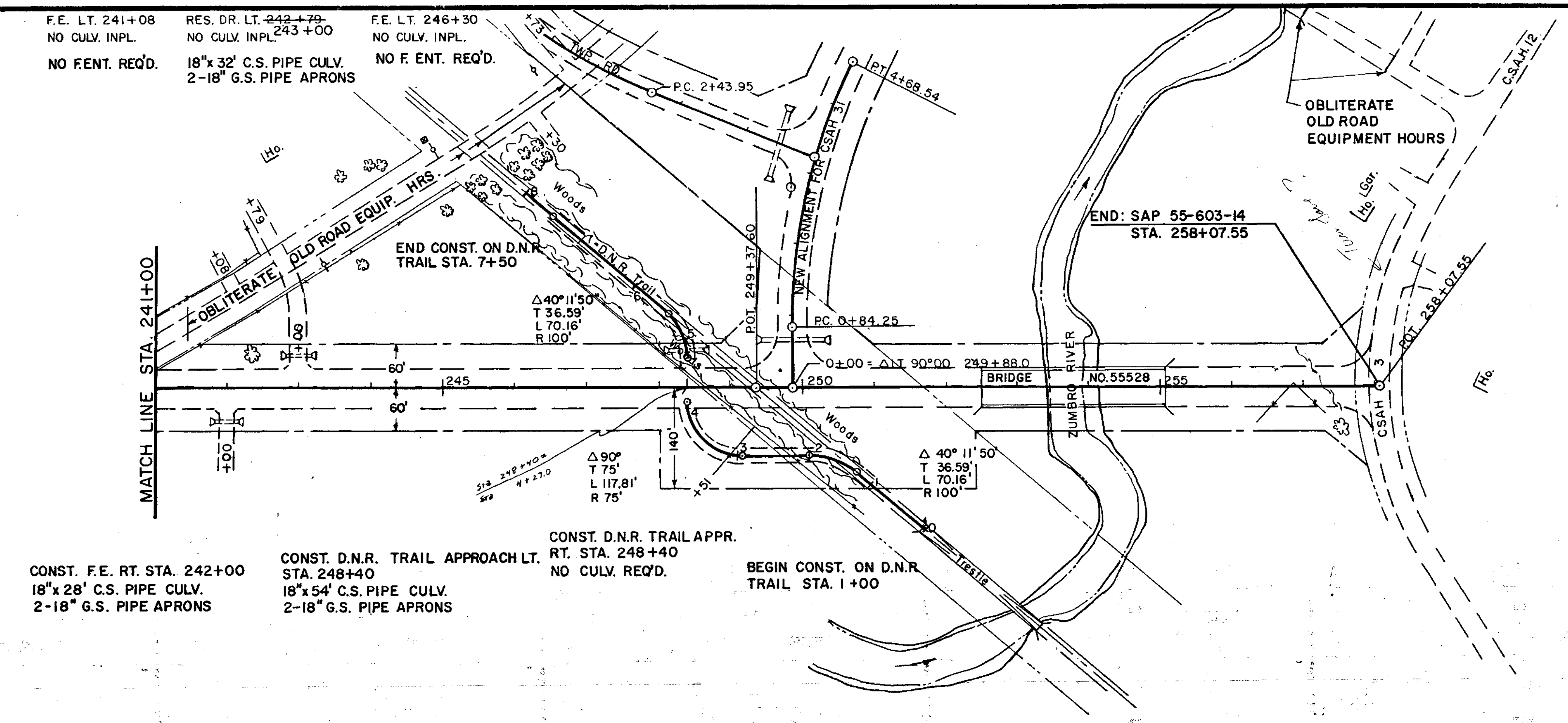


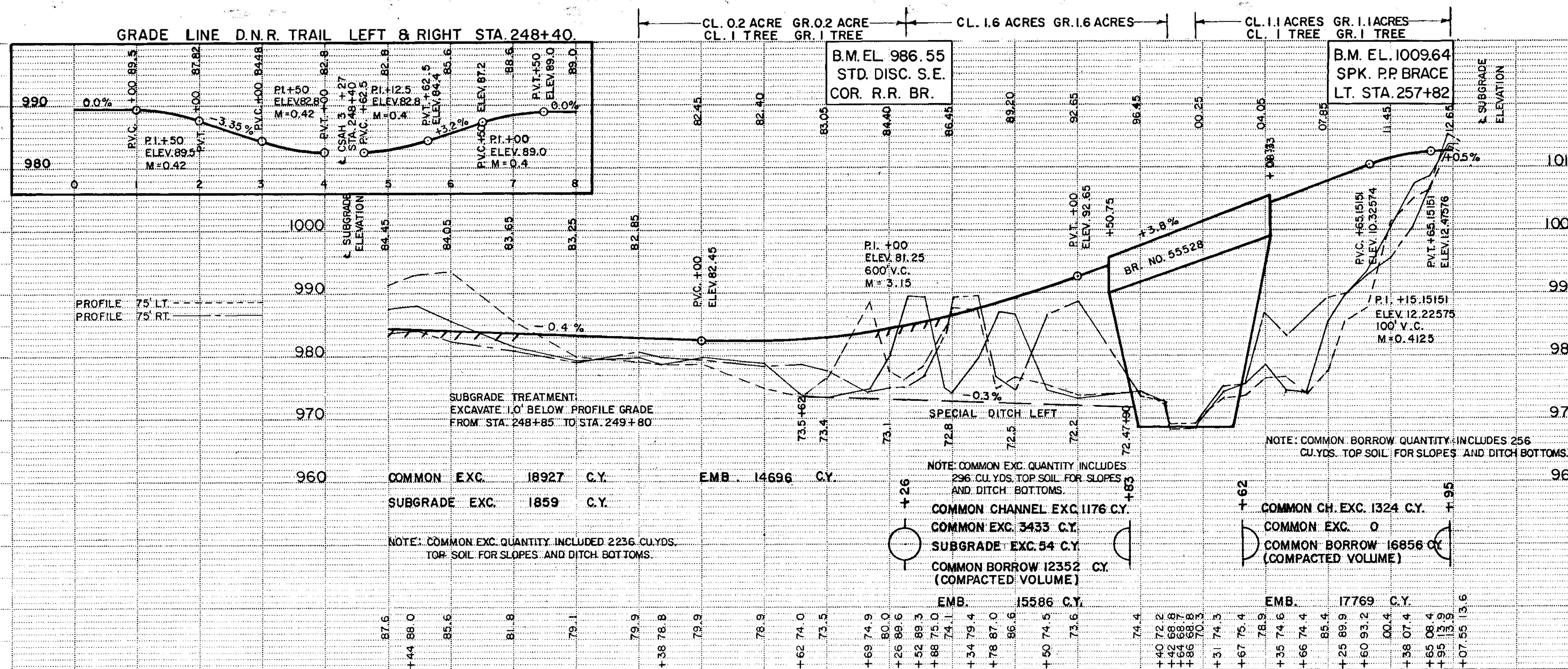
VERTICAL CONTROL

ELEVATIONS SHOWN IN THIS PLAN ARE BASED ON MEAN SEA LEVEL DATUM, 1929 ADJUSTMENT, AND TIED TO THE U.S. LEVEL NET THROUGH PERMANENT VERTICAL CONTROL MARKS, NATIONAL GEODETIC SURVEY
BENCH NO. X24 .. ELEVATION 986.55

State Proj. No. SAP 55-603-14 OLMSTED COUNTY, MINN. CSAH 3 **Sheet No.** 3 **of** 22 **Sheets**

AS BUILT PLANS





AS BUILT PLANS

Fed. Proj. No.

OBLITERATE OLD ROAD EQUIPMENT HERE

60' 60'

Woods

Woods

140'

NEW HAVEN TWP. ROAD

50'

P.I. 0+00 TWP. RD. = 3+23.40 ℄ C.S.A.H. 31

℄ CSAH 31

0+00 = ℄ CSAH 3 Δ90° LT
STA. 249+88.0

98'

1250

P.C. 0+84.25

P.I. 2+80.00
Δ RT. 26° 54'
D 7° 00'
T 198.75
L 384.29
E 23.08
SUPERELEVATION .041'/FT.
RUNOFF 190'

P.T. 4+68.54

BEGIN: SAP 55-631-02
STA. 0+00

BR. NO. 55928

ZUMBRO RIVER

CONST. & CULV. STA. 0+70
CSAH 31
24"x 100' R.C. PIPE CULV. CLASS III
2-24" R.C. PIPE APRONS
PLACE CULV. ON "B" BEDDING
F&I APPROVED JOINT TIES.

CONSTRUCT FE. RT. STA. ~~6+00~~ 7+00
NO CULV. REQ'D.

P.T. 5+26.81

P.I. 3+86.80
Δ RT. 19°48'
D 7°00'
T 142.85
L 282.86
E 1237
SUPERELEV. .041'/FT.
RUNOFF 190'

P.C. 2+43.95

P.C. 6+75.53

SUPERELEVATION .041'/FT.
RUNOFF 190'
P.I. 9+28.90
Δ LT. 34°24'
D 7°00'
T 253.37
L 491.93
E 38.32

P.T. 11+66.96

P.I. 16+34.82

RES. DR. LT. 9+39
NO CULV. INPL.
NO DRIVEWAY REQ'D

END: SAP 55-631-02
STA. 16+00

RES. DR. LT. 10+05
NO CULV. INPL.
18"x 32' C.S. PIPE CULV.
2-18" G.S. PIPE APRONS.

CSAH 33

Ho.

Gar.

CONSTRUCT F. ENT. LT. STA. 7+00
~~18"x 28' C.S. PIPE CULVERT~~
~~2-18" G.S. PIPE APRONS.~~ OMITTED

CONST. & CULVERT STA. 15+00
24"x 50' R.C. PIPE CULVERT CLASS II
2-24" R.C. PIPE APRONS
PLACE CULV. ON "B" BEDDING
F&I APPROVED JOINT TIES.

F.E. RT. 10+40
NO CULV. INPL.
18"x 28' C.S. PIPE CULV.
2-18" G.S. PIPE APRONS

F.E. RT. 13+58
NO CULV. INPL.
~~18"x 28' C.S. PIPE CULV.~~
~~2-18" G.S. PIPE APRONS.~~ OMITTED

BRIDGE NO. 89157
INPL. LOW TRUSS
REMOVE

CL. 0.2 ACRE GR. 0.2 ACRE

CL. 13 GR. 7

B.M. EL. 980.18
SPK. IN P.P. RT.
INTER. 3&31

B.M. EL. 974.26
SPK. IN 30" TREE
LT. STA. 17+05

℄ SUBGRADE ELEVATION

85.4 85.3 84.7 84.0 83.3 82.6 81.9 81.2 80.5 79.8 79.1 78.4 77.7 77.0 76.44 76.15 76.14 76.4

P.I. +00
ELEV. 85.4
100' V.C.
M = 0.0875

P.I. +00
ELEV. 75.6
400' V.C.
M = 0.55

P.V.C. +50
ELEV. 85.4

P.V.T. +50
ELEV. 85.05

P.V.C. +00
ELEV. 77.0

P.V.T. +00
ELEV. 76.4

990

980

970

PROFILE LT. 75'

PROFILE RT. 75'

0.0%

+0.3%

-0.7%

+0.4%

TEMPORARY CONNECTION

FUTURE GRADE LINE

INLET ELEV. 73.0
OUTLET ELEV. 72.7

INLET ELEV. 72.8
OUTLET ELEV. 72.3

SPECIAL DITCH LEFT

73.6 73.9 74.2 74.5 74.8 75.1

SUBGRADE TREATMENT:
EXCAVATION 1.0' BELOW PROFILE GRADE
FROM STA. 0+30 TO STA. 1+30 AND
STA. 7+80 TO STA. 11+20 C.S.A.H. 31.

* COMMON EXC. 16155 C.Y.
COMMON BORROW 3439 C.Y.
(COMPACTED VOLUME)
SUBGRADE EXC. 397 C.Y.

* COMMON EXCAVATION QUANTITY INCLUDES 3268 C.Y. ON C.S.A.H. 31 AND 12,887 C.Y. FROM OLD CSAH 3 ROAD BED BETWEEN STA. 3+73 TO STA. 7+94 AND STA. 8+75 TO STA. 14+38.

NOTE: COMMON EXCAVATION QUANTITY INCLUDES 793 CU. YDS. TOP SOIL FOR SLOPES AND DITCH BOTTOMS.

EMB. 14580 CU. YDS.

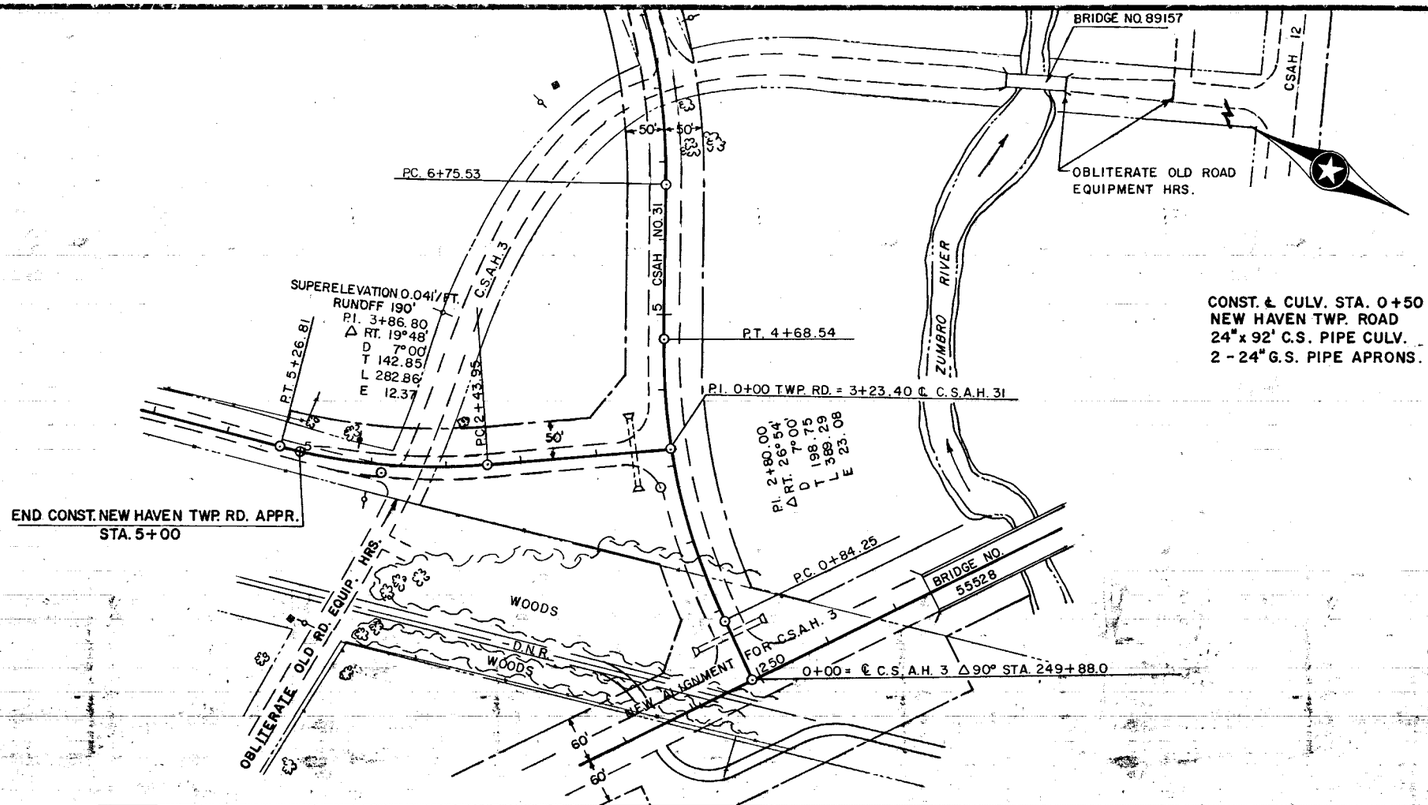
75.0 +75 88.3 89.0 +31 77.6 +65 76.7 76.5 +50 76.6 76.5 +23.40 76.0 76.1 77.1 77.1 +64 76.1 74.8 +50 77.0 +85 78.4 +96 81.2 +25 82.9 +50 82.3 80.6 +50 79.5 77.7 +50 77.9 73.7 72.9 73.7 74.3 74.6 75.0 +34.82 74.7 74.4 74.3 74.9 75.5

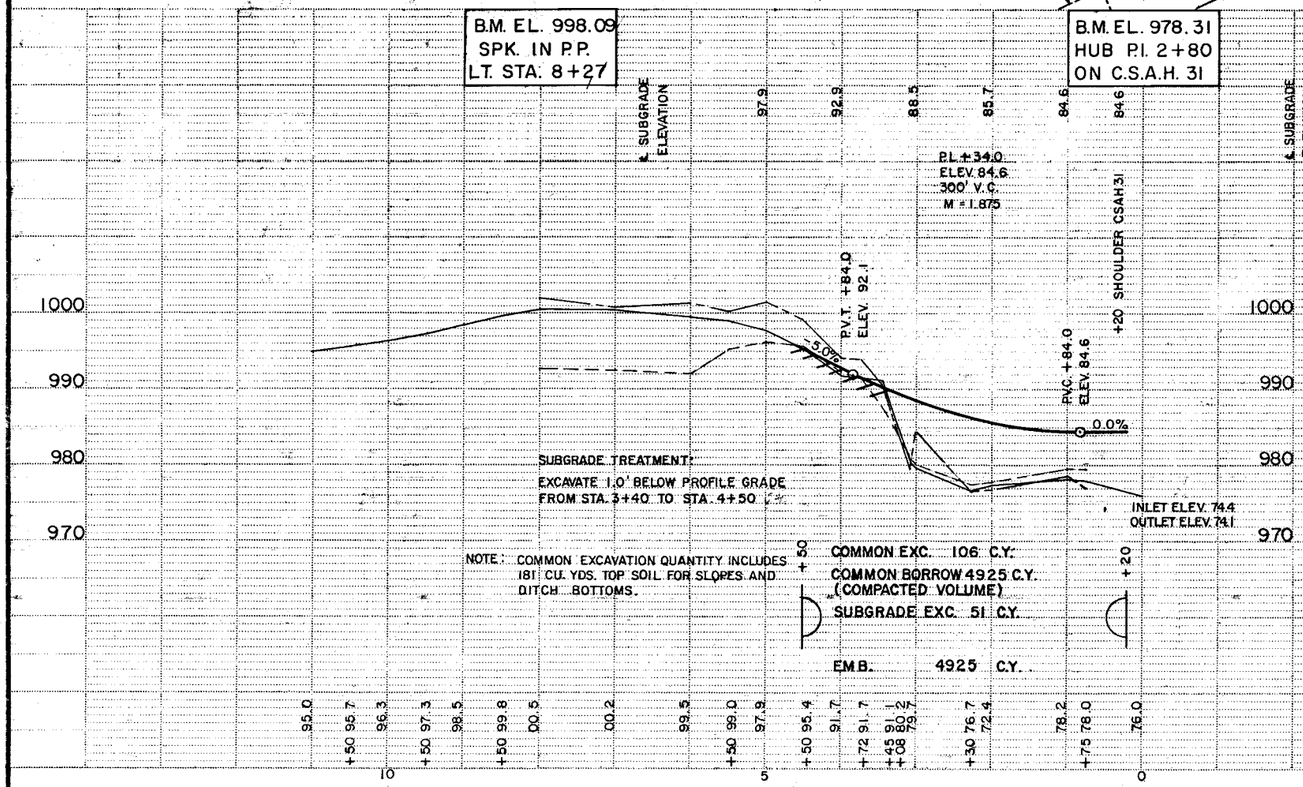
0+00 5+00 10+00 15+00 20+00

State Proj. No. SAP 55-631-02 OLMSTED COUNTY, MINN. CSAH 31 Sheet No. 5 of 22 Sheets

AS BUILT PLANS

Fed. Proj. No.





OLMSTED COUNTY, MINN.

State Proj. No. SAP 55-631-02 NEW HAVEN TWP. RD. Sheet No. 6 of 22 Sheets

AS BUILT PLANS

R 15 W

R 14 W

T 108 N

T 108 N

ORONOCO

ZUMBRO RIVER

LAKE SHADY

ZUMBRO RIVER

AGGREGATE STOCKPILE

LAKE

ZUMBRO RIVER

ZUMBRO

BEGIN: SAP 55-603-14
STA 226+00

END: SAP 55-631-02
STA 16+00

END: SAP 55-603-14
STA 258+07.55

BEGIN: SAP 55-631-02
STA. 0+00

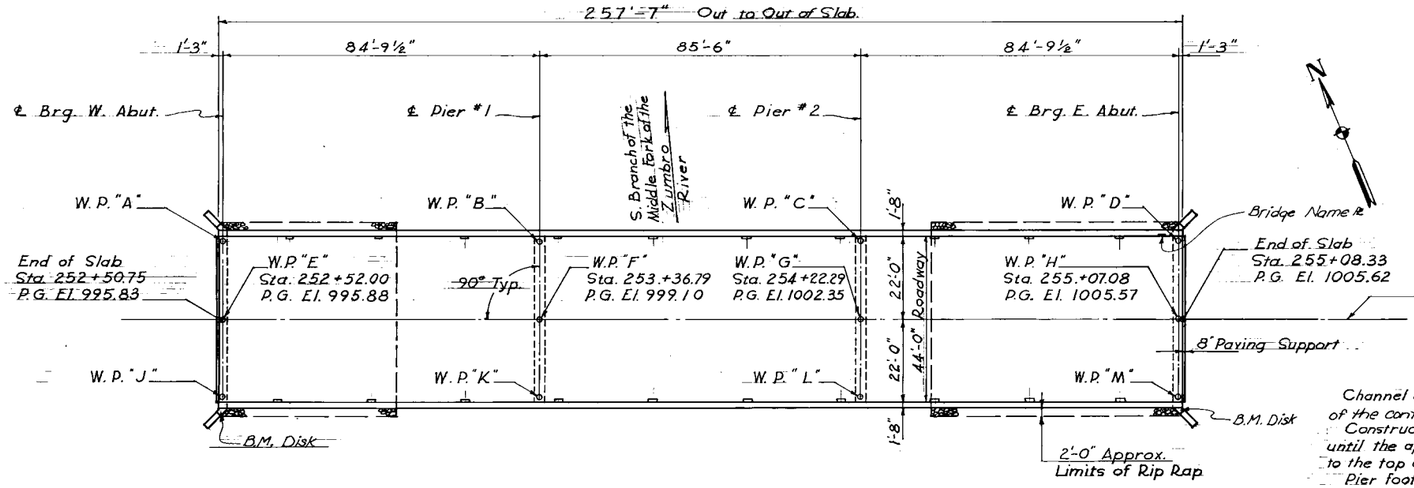
PROPOSED BR. NO. 55528

LOCATION MAP
DESIGNATED SOURCES OF AGGREGATE BASE CLASS 2

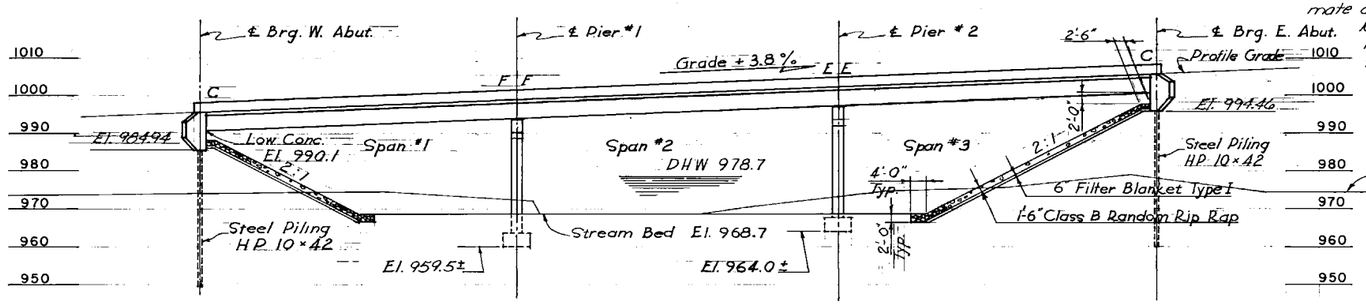
APPROXIMATE SCALE: 3 INCHES = 1 MILE.

CSAH 3
CSAH 31

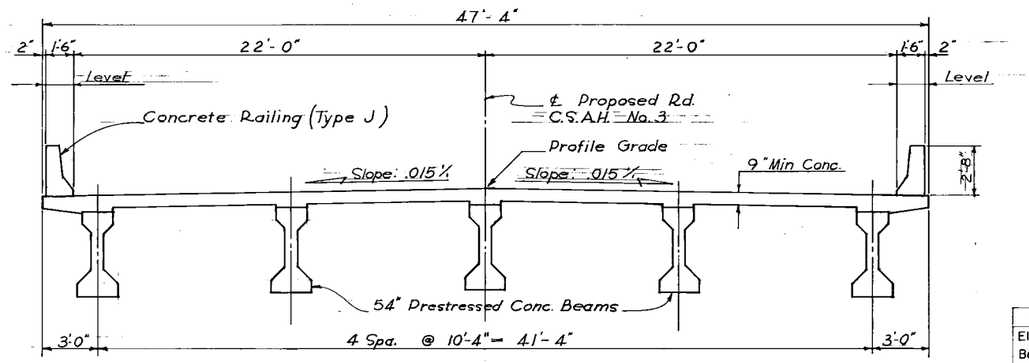
SAP 55-603-14 & SAP 55-631-02 OLMSTED COUNTY SHEET NO. 7 OF 22 SHEETS.



GENERAL PLAN
Scale: 1"=20'



ELEVATION
Scale: 1"=20'



TRANSVERSE SECTION
Scale: ¼"=1'-0"

Item No.	2511.501	2511.504
Item	Random Rip Rap Class B	Filter Blanket Type I
Unit	Cu. Yd.	Cu. Yd.
Quantity	350	106

2402.590
Elastomeric Bearing Pad Type E2
Each
5

① For Abutments Only

SCHEDULE OF QUANTITIES ENTIRE BRIDGE

(P) DENOTES PLAN QUANTITY PAY ITEMS AS PER MDOT 1901

Item No.	2401.501	2401.501	2401.501	2401.501	2401.521	2401.521	2401.541	2402.521	2402.546	2452.510	2452.511	2452.520	2452.520	2442.501	401.601	2401.541	2402.590	2402.592	2405.501	2405.511
Item	Concrete Mix 1A43	Concrete Mix 3X33	Concrete Mix 3Y43	Concrete Mix 3X46A	Structure Excavation Class WE	Structure Excavation Class WR	Reinforcement Bars	Structural Steel (3306)	Floor Drains Type I	Steel H-Piling Driven	Steel H-Piling Delivered	Steel H-Test Piling 50' Long	Steel H-Test Piling 40' Long	Remove Old Bridge	Structure Excavation ①	Reinforcement Bars (Epoxy Coated)	Elastomeric Bearing Pad Type E1	Elastomeric Bearing Ass'y Type F1	Prestressed Concrete Beams Type 54-86	Diaphragms for Type 54-86 Prestressed Beams
Unit	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu. Yd.	Cu.Yd.	Cu.Yd.	Lbs.	Lbs.	Each	Lin.Ft.	Lin.Ft.	Each	Each	Lump Sum	Lump Sum	Lbs.	Each	Each	Each	Lin.Ft.
Quantity	67 (P)	386 (P)	236 (P)	52 (P)	165	80	92,830 (P)	610 (P)	20	480	480	2	2	1	1	47,650 (P)	15	10	15	413 (P)

EXISTING BRIDGE # 89157

The existing structure is an 80'x16' single span steel pony truss with concrete floor on high reinforced concrete abutments located about 650' downstream on existing C.S.A.H. #3. This bridge shall be removed by the Contractor after traffic has been transferred to the new bridge. Removal shall be as per Section 2442 except that all materials removed shall become the property of the Contractor and shall be disposed of by him.

Channel excavation will be made under the grading portion of the contract in advance of bridge construction.

Construction of each abutment shall not be started until the approach fill at that abutment has been constructed to the top of subgrade.

Pier footings shall be keyed into sound bedrock as directed by the Engineer. Top of footing shall have a minimum of 1'-0" cover.

Contractor shall dress slopes and place rip rap in approximate areas shown, as directed by the Engineer. Random Rip Rap Class B average thickness 1'-6". The County reserves the right to eliminate all or part of the filter blanket.

Bridge seat reinforcement shall be carefully placed to avoid interference with drilling holes for anchor rods. The superstructure beams shall be erected in final position prior to drilling holes for placing anchor rods.

The first digit or the first two digits of each bar mark indicate the bar size.

Longitudinal dimensions on plan views are horizontal dimensions on all sheets except where otherwise noted.

Reinforcing Bars marked with a suffix "E" shall be epoxy coated in accordance with the Special Provisions.

Bench Mark El. 986.55 Standard Disc in South Abutment Bridge Seat of D.N.R. Bridge located 3.00' upstream of proposed Bridge. Disc is 8.5' East of the East Rail.

BM 1005.28 Brass Plug S.R. Corner
BM 995.57 Brass Plug N.R. Corner

DESIGN DATA

1973 and Interim AASHTO Design Specifications
Load Factor Design Method
HS 20 Loading
Includes 17 p.s.f. Dead Load Allowance for Future Wearing Course Modifications.
Maximum Allowable Design Stresses:
Reinforced Concrete: $f_c' = 4000$ p.s.i. $n=8$
$f_y = 60,000$ p.s.i. Reinforcement (for Grade 60)
Prestressed Concrete: $f_c' = 6000$ psi $n=6$
$f_s = 270,000$ p.s.i. (for 270 K. Strands)
Structural Steel: $f_y = 36,000$ p.s.i. Structural Steel M.D.O.T. 3306
Deck Area 12192 Sq. Ft.
601 Projected A.D.T. for 1998

LIST OF SHEETS

1	General Plan and Elevation
2	Bridge Layout
3	Abutment Details
4	Pier Details
5	Superstructure Details
6	Superstructure Details
7	54" Prestressed Concrete Beams
8	Concrete Railing (Type J)
9-13	Details
14	Bridge Survey
15	Plan and Profile

CONSTRUCTION NOTES

The 1978 edition of the Minnesota Department of Transportation "Standard Specifications for Highway Construction" shall govern.

WALLACE HOLLAND KASTLER SCHMITZ, COMPANY — CONSULTING ENGINEERS PLANNERS LANDSCAPE ARCHITECTS — MASON CITY, IOWA 50401 — ROCHESTER, MINN. 55901

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
W. Bradley Hansen
Date 3-30-78 Reg. No. 8710

APPROVED:
6/19/78 DATE
J. K. Dolan COUNTY ENGINEER

C.S.A.H. No. 3 OLMSTED COUNTY

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55528

C.S.A.H. No. 3 over THE SOUTH BRANCH of THE MIDDLE FORK of THE ZUMBRO RIVER
4 MILES SOUTHWEST OF ORONOCO

85-85-85 PRESTRESSED BEAM BRIDGE
IDEN. NO. 501
44' RDWY. 0° SKEW TYPE "J" RAILING

GENERAL PLAN & ELEVATION

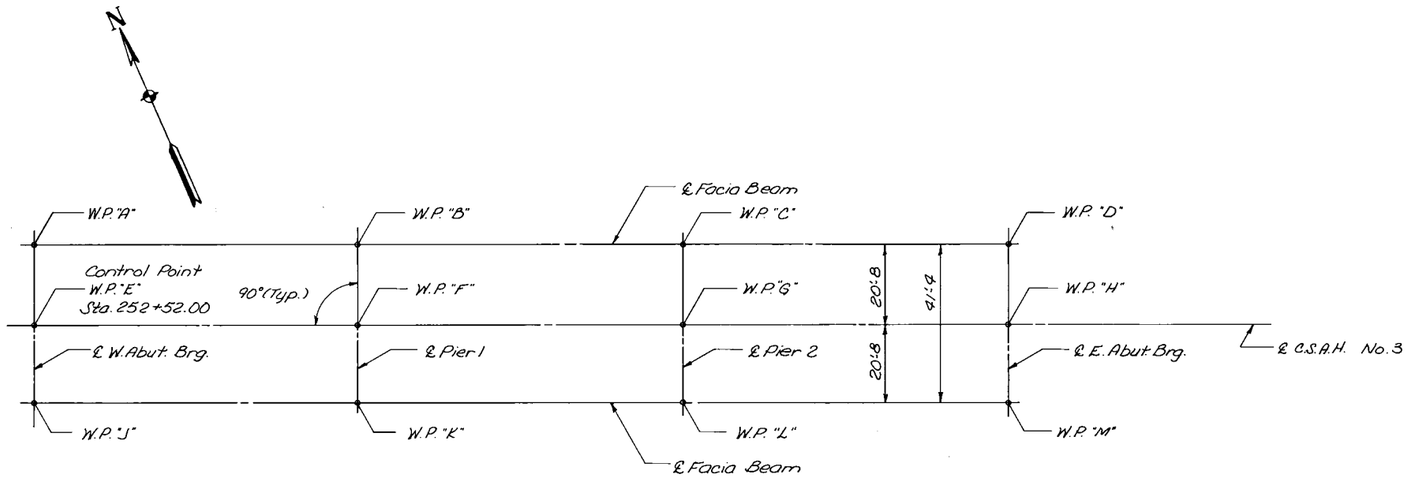
SEC. 22 T108N R15W
NEW HAVEN TWP. OLMSTED COUNTY

K.Y. Gathing BRIDGE ENGR.
8-1-78 DATE

SHEET NO. 1 OF 15 SHEETS | 55528

S.A.P. 55-603-14

AS BUILT PLANS



WORKING POINT LAYOUT

POINT	STATION	DIMENSIONS BETWEEN WORKING POINTS A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
A	252+52.00		84.79			20.67	87.27				94.33	175.24										
B	253+36.79			85.50			20.67	87.96		94.33		94.97	175.24									
C	254+22.29				84.79			20.67	87.27	175.24	94.97		94.33									
D	255+07.08								20.67		175.24	94.33										
E	252+52.00						84.79			20.67	87.27											
F	253+36.79							85.50			20.67	87.96										
G	254+22.29								84.79			20.67	87.27									
H	255+07.08												20.67									
J	252+52.00										84.79											
K	253+36.79											85.50										
L	254+22.29												84.79									
M	255+07.08																					
N																						
P																						
Q																						
R																						
S																						
T																						
U																						
V																						
W																						

POINT	ELEVATIONS TOP OF SLAB	TOP OF SLAB TO BR. SEAT	BRIDGE SEAT	POINT
A	995.57	5.63	989.94	A
B	998.79	5.54	993.25	B
C	1002.04	5.63	996.41	C
D	1005.26	5.80	999.46	D
E	995.88	5.63	990.25	E
F	999.10	5.54	993.56	F
G	1002.35	5.63	996.72	G
H	1005.57	5.80	999.77	H
J	995.57	5.63	989.94	J
K	998.79	5.54	993.25	K
L	1002.04	5.63	996.41	L
M	1005.26	5.80	999.46	M
N				N
P				P
Q				Q
R				R
S				S
T				T
U				U
V				V
W				W

BRIDGE LAYOUT

DES. WBS | DR. SEH | APPROVED: 8-1-78
CHK. SIR | CHK GEG

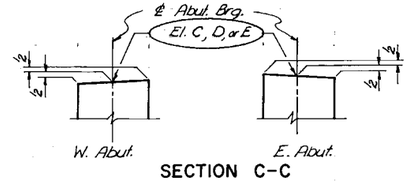
SHEET NO. 2 OF 15 SHEETS

BRIDGE NO. 55528

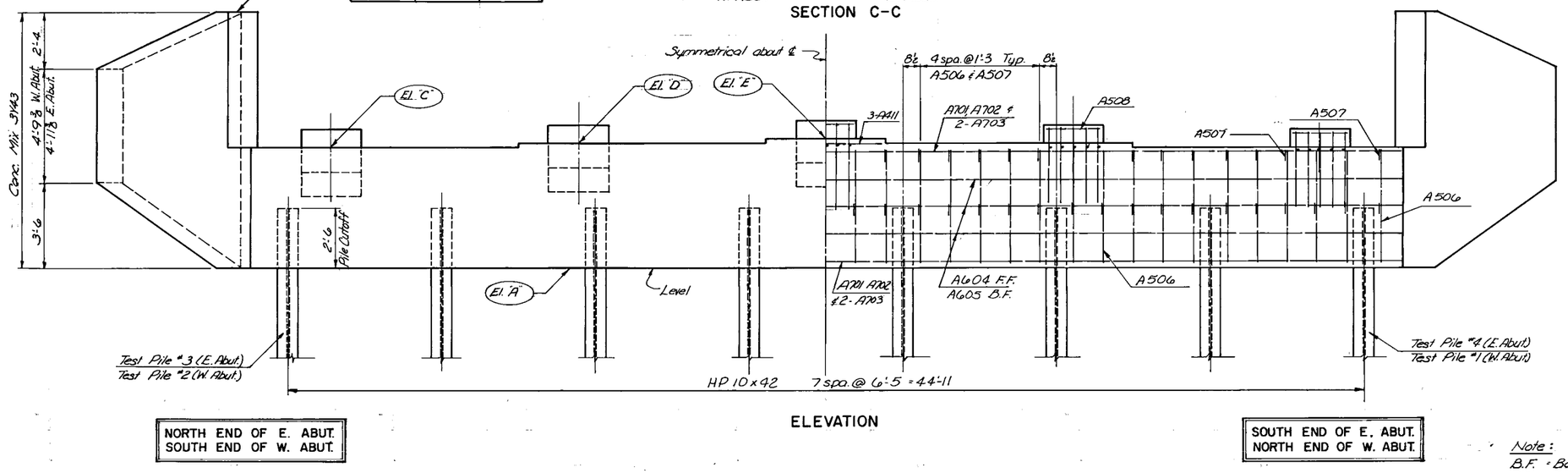
SAP 55-603-14

Note: Bridge seat elevations shown are at ℄ Abut. Brg. Bridge seats shall be sloped as shown in Section C-C.

TABLE OF ELEVATIONS		
ELEV.	ABUTMENT	
	WEST	EAST
A	984.94	994.46
B	985.55	1005.24
C	989.94	999.46
D	990.09	999.61
E	990.25	999.77



SECTION C-C



ELEVATION

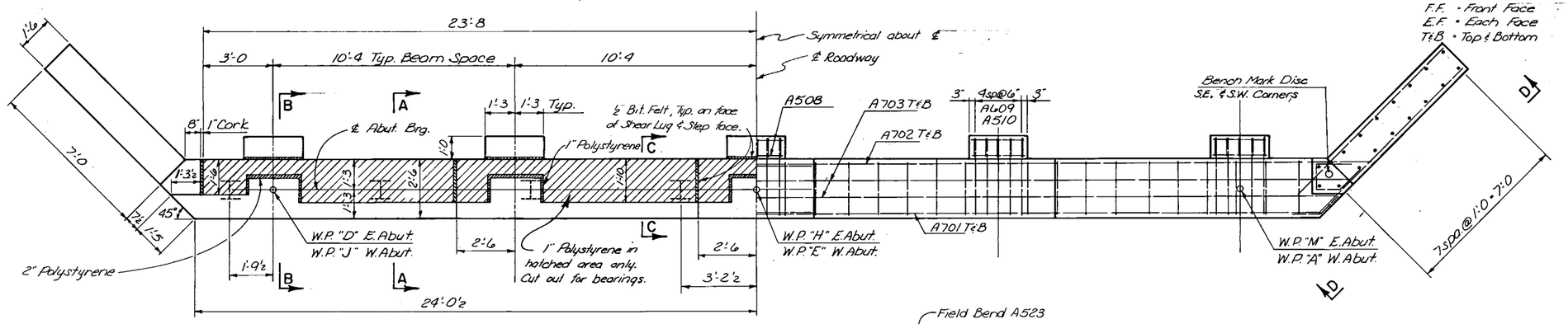
NORTH END OF E. ABUT.
SOUTH END OF W. ABUT.

SOUTH END OF E. ABUT.
NORTH END OF W. ABUT.

BILL OF REINFORCING - 2 ABUTMENTS

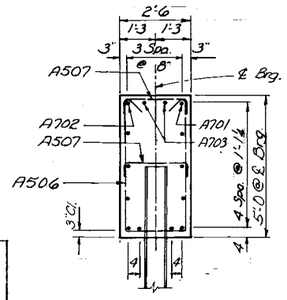
BAR	NO.	LENGTH	SHAPE	LOCATION
A701	4	48'-1	—	Cap Longit. Top & Bottom F.F.
A702	4	52'-4	—	" " " " B.F.
A703	8	49'-6	—	" " " "
A604	6	48'-1	—	" " F.F.
A605	6	52'-4	—	" " B.F.
A506	74	12'-2	⊓	Cap Stirrup
A507	126	3'-8	⊔	Cap Tie
A508	30	2'-2	—	Shear Block Horiz.
A609	50	4'-8	⊔	Cap Tie Shear Block
A510	50	6'-6	▱	Shear Block Vert.
A411	6	4'-8	—	Bridge Seat Long.
A612	8	9'-7	⟋	Wings Horiz. E.F.
A613	4	4'-0	⟋	" " F.F.
A514	4	6'-3	⟋	" " F.F.
A615	4	4'-6	—	" " B.F.
A516	4	8'-9	⟋	" " F.F.
A617	4	6'-9	—	" " B.F.
A518	8	10'-8	⟋	" " F.F.
A619	8	8'-8	—	" " B.F.
A520	12	7'-3	—	" " F.F.
A621	12	7'-8	—	" " B.F.
A622	8	7'-8	◹	" " E.F.
A523	24	5'-3	▽	" " E.F.
A524	8	9'-8	—	Wings Vert. E.F.
A525	8	8'-10	—	" " "
A526	8	8'-0	—	" " "
A527	8	7'-2	—	" " "
A528	8	6'-4	—	" " "
A529	8	5'-6	—	" " "
A530	8	4'-8	—	" " "
A531	12	10'-3	—	" " "
A532	8	6'-3	—	Wings Horiz. "
A533	8	3'-6	—	" " "

Note:
B.F. = Back Face
F.F. = Front Face
E.F. = Each Face
T&B = Top & Bottom

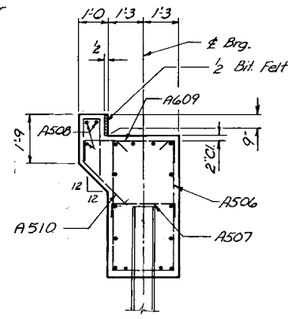


PLAN

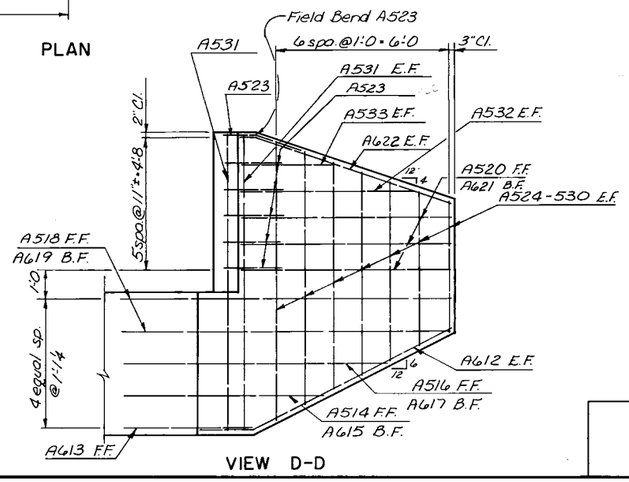
Note:
Provide 2" clear cover on reinforcement bars, except that for footings, 3" clear cover should be provided.



SECTION A-A



SECTION B-B



VIEW D-D

ABUTMENT PILE NOTES

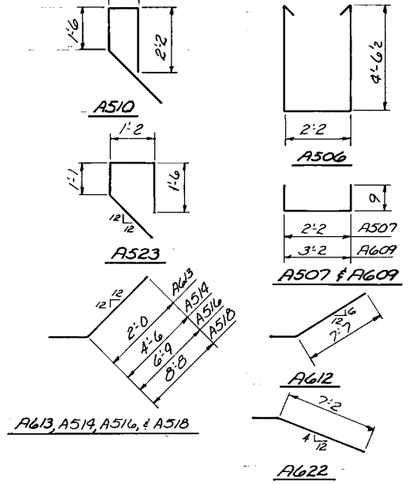
All piles shall be HP10 x 42. Pile spacing is at bottom of footing.

All piles shall be driven to substantial refusal.

COMPUTED PILE LOADS Tons/Pile		
	W. ABUT.	E. ABUT.
Dead Load	43.1	43.1
Live Load	12.0	12.0
Total	55.1	55.1

W. ABUT.
2 - Test Pile 50'
6 - Piles est. length 45'
8 - Piles Required

E. ABUT.
2 - Test Piles 40'
6 - Piles est. length 35'
8 - Piles Required



BENT BAR DETAILS

SUMMARY OF QUANTITIES--TWO ABUTMENTS

	Concrete Mix 3Y43	62 Cu. Yd.
	Reinforcement Bars	6280 Lbs.
	Structure Excavation	Lump Sum
(1)	Steel H-Piling Delivered (HP10 x 42)	480 Lin. Ft.
	Steel H-Test Piles 50' Long	2 Each
	Steel H-Test Piles 40' Long	2 Each
(2)	Bench Mark Disc	2 Units

(1) Does not include test piles.
(2) County will furnish discs. Payment for placing to be included in price bid for other items. See Std. Detail Plate 9301 for placing.

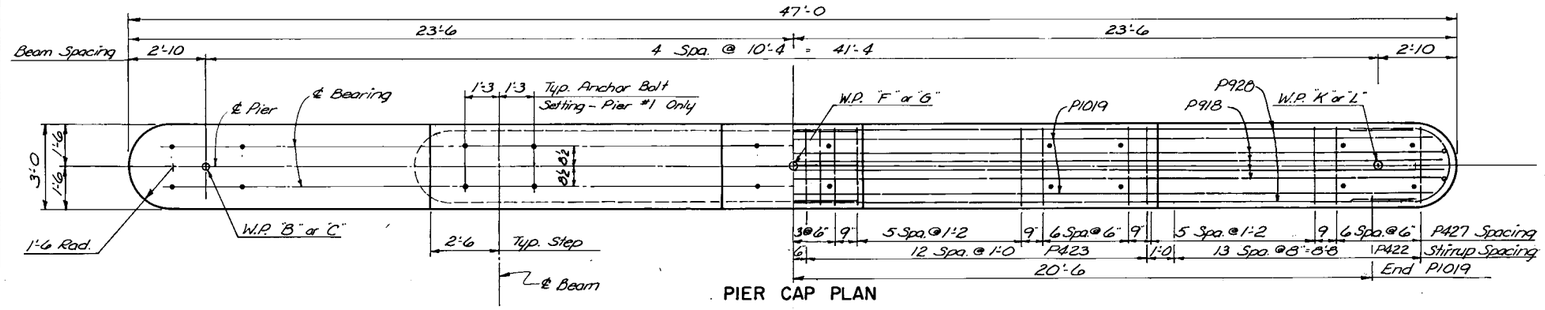
WALLACE HOLLAND KASTLER SCHMITZ + COMPANY — CONSULTING ENGINEERS, PLANNERS, LANDSCAPE ARCHITECTS
MASON CITY, IOWA 50401 — ROCHESTER, MINN. 55901

JOB NO. 3133

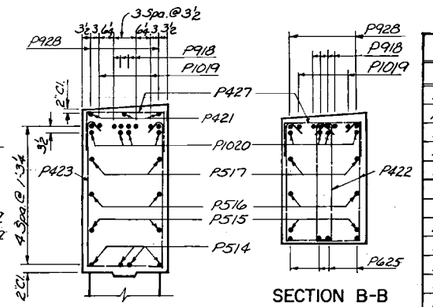
ABUTMENT DETAILS

DES. W.B.S.	DR. D.Lee, S.H.	APPROVED 8-1-78	BRIDGE NO. 55528
CHK. S.I.R.	CHK. G.E.G.		
SHEET NO. 3 OF 15 SHEETS			

SAP 55-603-14 AS BUILT PLANS



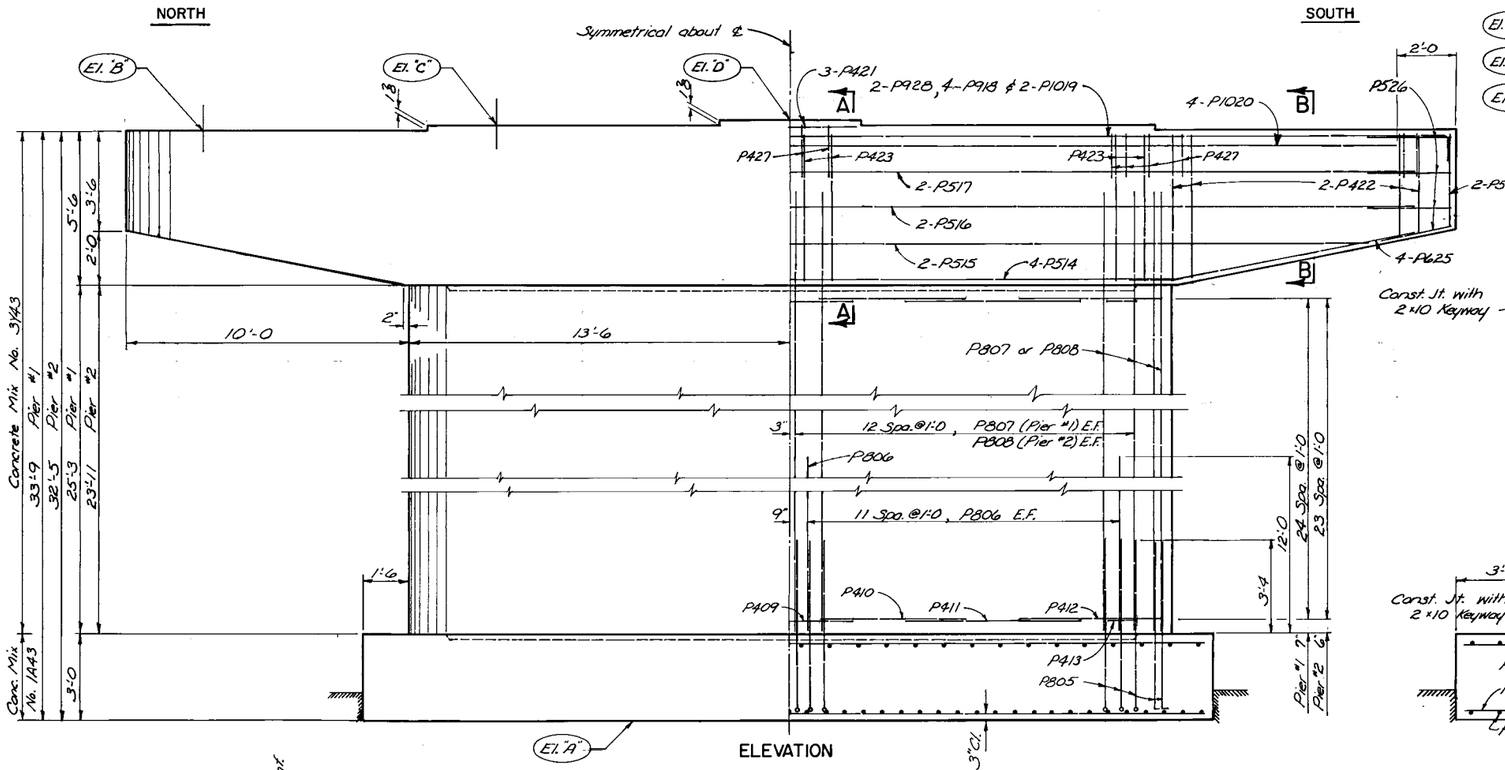
PIER CAP PLAN



SECTION A-A

SECTION B-B

BILL OF REINFORCING -- PIERS 1 & 2						
BAR	LOCATION			SHAPE	NO.	LENGTH
P501	Footing	Longit.	Bottom	—	20	29'-8
P802	"	Transv.	"	—	90	9'-8
P503	"	Longit.	Top	—	20	29'-8
P504	"	Transv.	"	—	60	9'-8
P805	"	Dowels		⌐	212	7'-0
P806	Stem	Vert.		—	96	12'-0
P807	"	"	Pier 1	—	~~98~~ 96	~~28'-8~~ 29'-2"
P808	"	"	Pier 2	—	~~98~~ 96	27'-3
P409	"	Ties		□	49	14'-5
P410	"	"		□	98	15'-5
P411	"	"		□	98	17'-5
P412	"	"		□	98	14'-5
P413	"	"		]	98	4'-2
P514	Cap	Longit.		—	8	27'-0
P515	"	"		—	4	40'-4
P516	"	"		—	4	44'-0
P517	"	"		—	4	44'-0
P918	"	"		⌐	8	48'-6
P1019	"	"		—	4	45'-4
P1020	"	"		—	8	43'-0
P421	"	"		—	6	4'-8
P422	Cap	Stirrup		⌐⌐	~~8 Set~~ 96 Pcs	9'-4 - 12'-8
P423	"	Stirrup		⌐⌐	52	13'-9
P524	"	Vert.		—	8	3'-2
P625	"	Bottom Ends		⌐	16	10'-9
P526	"	End Ties		⌐	16	7'-10
P427	"	Ties		⌐⌐	118	5'-8
P928	"	Longit.		—	4	44'-4



ELEVATION

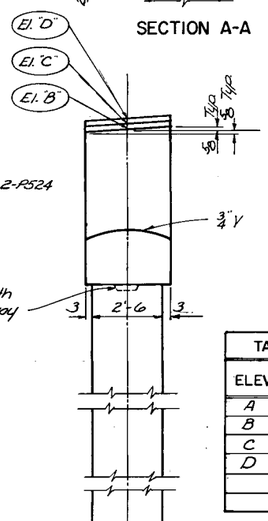
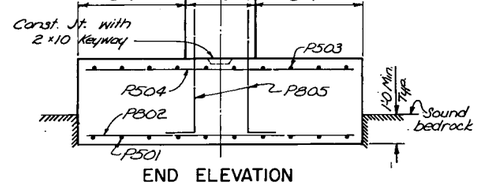
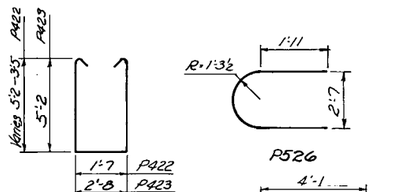


TABLE OF ELEVATIONS		
ELEV.	PIER NO. 1	PIER NO. 2
A	959.30	964.0
B	993.25	996.41
C	993.40	996.56
D	993.56	996.72

P918

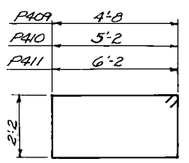


END ELEVATION



COMPUTED SOIL PRESSURE K/SQ.FT.		
	Pier 1	Pier 2
Dead Load	5.61	5.61
Live Load	1.58	1.58
Overturning	4.85	4.85
Design Load	8.60	8.60

12.04 / 1.4 = 8.60 Reduction per AASHTO (1.2.22)



P409, P410, P411

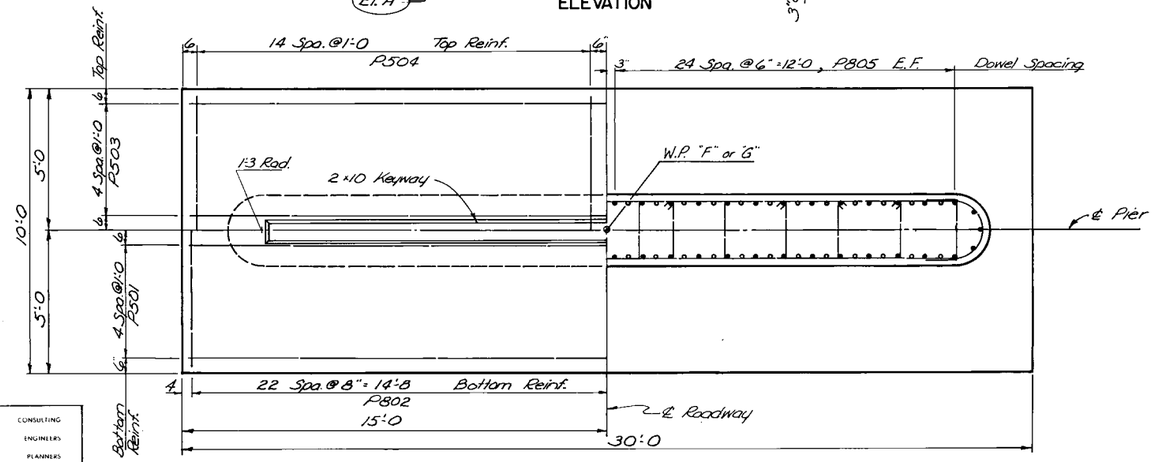
P805

P422, P423

P427, P413

P625

BENT BAR DETAILS



FOOTING PLAN

NOTES:

Clear distance from face of concrete to near reinforcing bar shall be 2" unless noted otherwise.

Bridge seat elevations shown are at ℄ of Pier. Bridge seats are to be sloped as shown in the "End Elevation."

Pier footings shall be keyed into sound bedrock as shown and as directed by the Engineer. Top of footing shall have a minimum of 1'-0 cover.

Do not order shaft reinforcing until exact bottom of footing elevations have been determined by the Engineer in the field.

SUMMARY OF QUANTITIES - 2 PIERS		
Concrete Mix 1A43	67	Cu. Yd.
Concrete Mix 3Y43	174	Cu. Yd.
Class WE Excavation	165	Cu. Yd.
Class WR Excavation	80	Cu. Yd.
Reinforcement Bars	~~39,490~~ 30,910	Lbs.

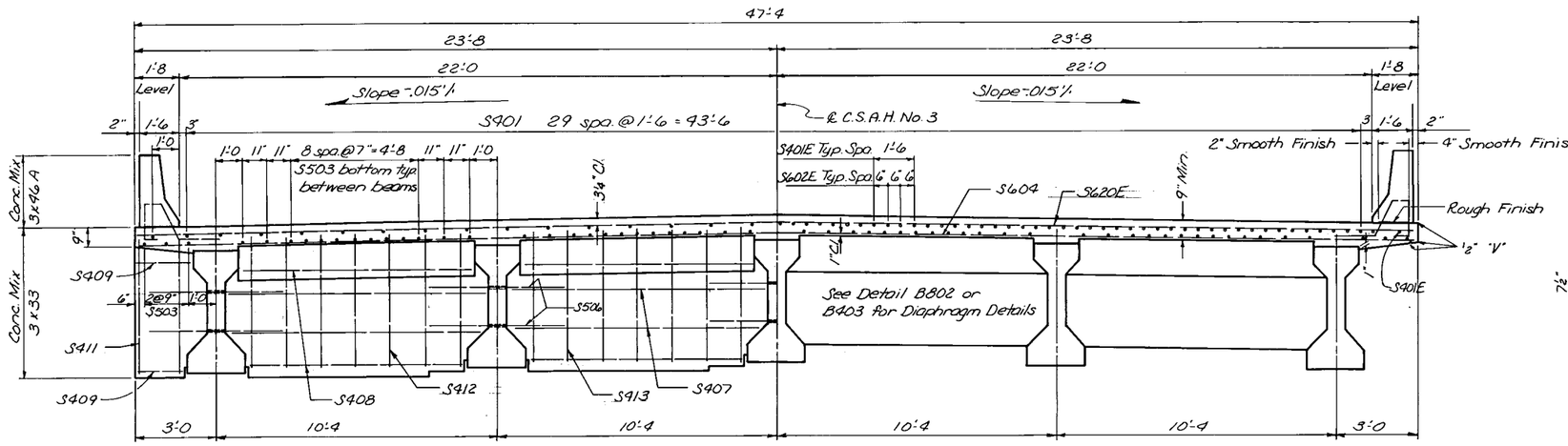
PIER DETAILS

DES. W.B.S	DR. D.Lee	APPROVED 8-1-78	BRIDGE NO. 55528
CHK. S.I.R.	CHK. G.E.G.		
SHEET NO. 4 OF 15 SHEETS			

JOB NO. 3133

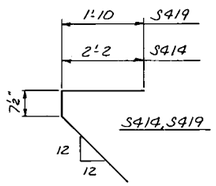
WALLACE HOLLAND KASTLER SCHMITZ + COMPANY — CONSULTING ENGINEERS, PLANNERS, LANDSCAPE ARCHITECTS
MASON CITY, IOWA 50401 ROCHESTER, MINN. 55901

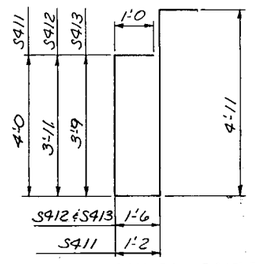
SAP 55-603-14 AS BUILT PLANS

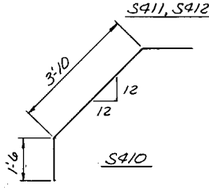


HALF SECTION NEAR ABUTMENT

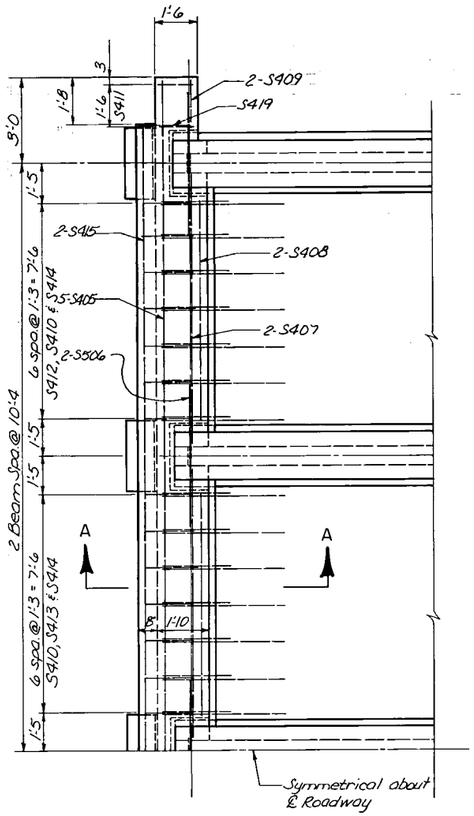
HALF SECTION NEAR PIER





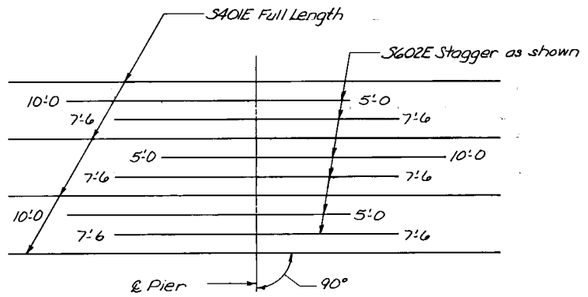


BENT BAR DETAILS

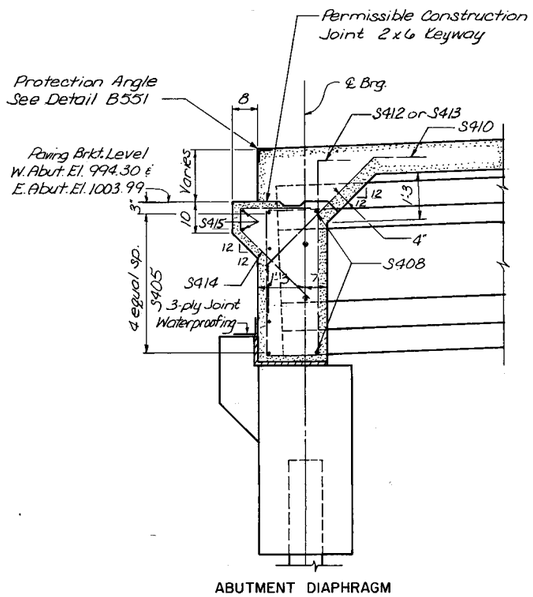


ABUTMENT DIAPHRAGM PLAN

TRANSVERSE SECTION

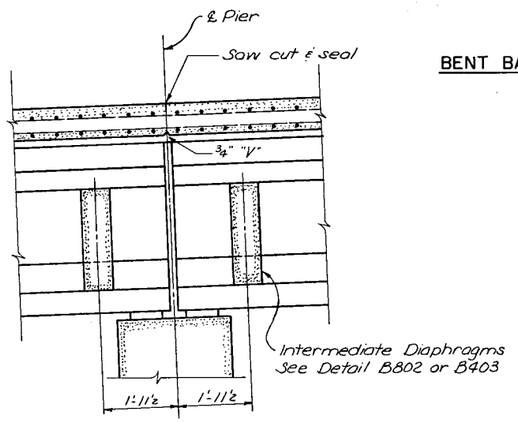


602E TYPICAL SP. OVER PIERS



ABUTMENT DIAPHRAGM

SECTION A-A



SECTION AT PIER

BILL OF REINFORCING - SUPERSTRUCTURE

BAR	NO.	LENGTH	SHAPE	LOCATION
S401E	224	38'-1	—	Top of Slab - Longitudinal
S602E	120	15'-0	—	Top of Slab over Piers
S503	406	38'-5	—	Bottom of Slab - Longitudinal
S604	412	47'-0	—	Slab " Bottom - Transverse
S405	20	29'-3	—	End Diaphragm
S506	20	5'-0	—	End Diaphragm
S407	16	9'-4	—	End Diaphragm
S408	16	7'-10	—	End Diaphragm
S409	4	1'-8	—	End Diaphragm
S410	56	6'-10	⌜	End Diaphragm
S411	8	12'-1	⌜⌟	End Diaphragm
S412	28	12'-4	⌜⌟	End Diaphragm
S413	28	12'-2	⌜⌟	End Diaphragm
S414	56	4'-8	⌜	Paving Support Tie
S415	8	22'-7	—	Paving Support Long.
(A) S516	240	8'-4	—	Intermediate Diaphragm
(A) S417	280	6'-5	□	Intermediate Diaphragm Tie
(A) S518	60	5'-0	—	Intermediate Diaphragm
S419	4	4'-4	⌜	Paving Support Tie - Ends
S620E	412	47'-0	—	Slab Top - Transverse

(A) Included in payment for intermediate diaphragm. See Detail B802.

LIST OF PREFORMED CORK JOINT FILLER

4 pcs. 1'-6 x 1" x 5'-7½	Abut. Wings.
28 pcs. 1'-0 x 1" x 1'-5	Rail Deflection Joints

LIST OF PREFORMED BIT. JOINT FILLER

10 pcs. 9" x ½" x 2'-6	Abut. Shear Blocks
8 pcs. 1'-8" x ½" x 1'-10	Abut. Bridge Seat Steps

LIST OF POLYSTYRENE - TYPE A

10 pcs. 4" x 2" x 2'-4	Back of Beam at Abut. Brg.
16 pcs. 4" x 1" x 1'-2½	Sides of Beam at Abut. Brg.
4 pcs. 4" x 1" x 10½	Sides of Beam at Abut. Brg.
2 pcs. 1'-10 x 1" x 41'-4	Bridge Seat at Abut.
4 pcs. 1'-6 x 1" x 3'-0	Bridge Seat at Abut.

(1) Includes Railing Quantities

SUMMARY OF QUANTITIES - SUPERSTRUCTURE

(2)	Concrete Mix No. 3x33	386 Cu. Yd.
	Concrete Mix No. 3x46A	52 Cu. Yd.
	Reinforcement Bars	47,060 Lbs.
	Structural Steel (3306)	610 Lbs.
	Prestressed Concrete Beams, Type 54-86	15 Each
(3)	Diaphragms for Type 54-86 Prestressed Beams	413 Lin. Ft.
	Elastomeric Bearing Pad, Type E1	15 Each
	Elastomeric Bearing Assembly, Type F1	10 Each
	Floor Drains	20 Each
(6)(5)(4)	3-Ply Joint Waterproofing	135 Lin. Ft.
(4)	Bridge Name Plate	One
	Reinforcement Bars (Epoxy Coated)	47,650 Lbs.
	Elastomeric Bearing Pad, Type E2	5 Each

(2) The volume of deck concrete for payment shall be computed using an average stool height of 1.5".
(3) Length is computed from ℄ to ℄ of beams along ℄ of diaphragm.
(4) To be included in price bid for other items.
(5) Joint between abutment diaphragm and abutment at back face of abutment shall be covered with waterproofing. Waterproofing shall be continuous from top of wing to top of wing.
(6) See Spec. Prov.

JOB NO. 3133

WALLACE HOLLAND KASTLER SCHMITZ + COMPANY — CONSULTING ENGINEERS PLANNERS LANDSCAPE ARCHITECTS — MASON CITY, IOWA 50401 — ROCHESTER, MINN. 55901

SUPERSTRUCTURE DETAILS

DES. W.B.S.	DR. S.E.H.	APPROVED 8-1-78	BRIDGE NO. 55528
CHK. S.I.R.	CHK. G.E.G.		
SHEET NO. 5 OF 15 SHEETS			

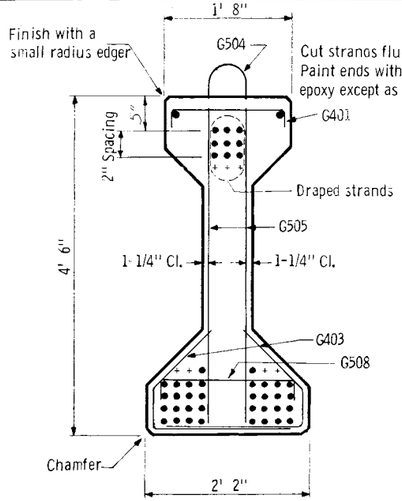
SAP 55-603-14

SUPERSTRUCTURE DETAILS	DES. W.B.S.	DR. S.E.H.	APPROVED 8-1-78
	CHK. S.I.R.	CHK. G.E.G.	
	SHEET NO. 6 OF 15 SHEETS		BRIDGE NO. 5529

SCHMITZ - COMPANY (LANDSCAPE ARCHITECTS) MASON CITY, IOWA 50401 — KASTLER PLANNERS — HOLLAND ENGINEERS — WALL ACE CONSULTING ROCHESTER, MINN. 55901

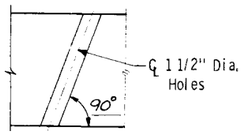
JOB NO. 3733

FC Light Plans SAP 52-603-14



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

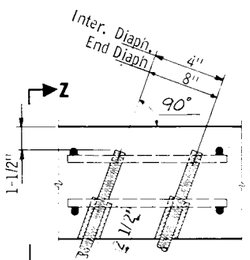
END VIEW



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

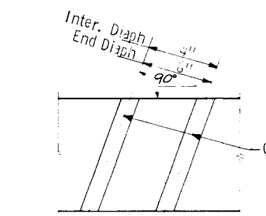
SECTION Y-Y

FOR USE WITH CONCRETE END DIAPHRAGMS WITH PILE BENT ABUTMENTS



Z **SECTION X-X**

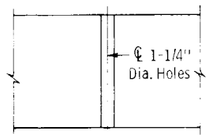
USE AT FASCIA BEAM AND INTERIOR BEAM WITH STAGGERED DIAPHRAGMS



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

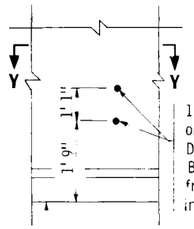
USE AT INTERIOR BEAM WITH CONTINUOUS CONCRETE DIAPHRAGM



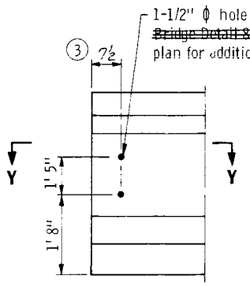
Intermediate stirrups may be shifted the minimum distance required to clear holes or inserts for intermediate diaphragms.

SECTION Y-Y

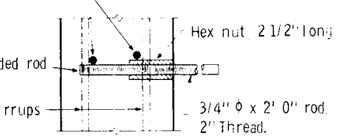
USE AT INTERIOR BEAM WITH STEEL DIAPHRAGM



FOR USE WITH STEEL INTERMEDIATE DIAPHRAGM

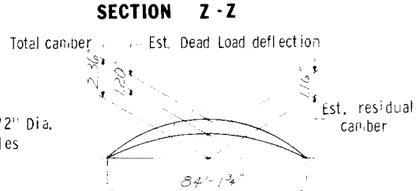


CONCRETE END DIAPHRAGMS PILE BENT ABUTMENT



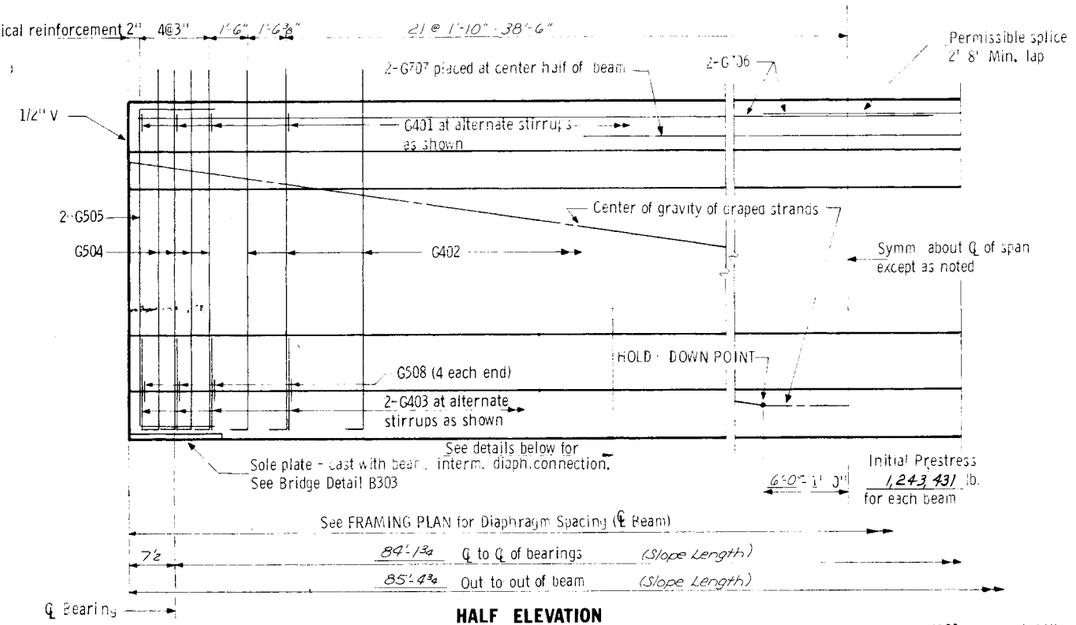
Nuts and rods per Spec. 3306. No paint

SECTION Z-Z

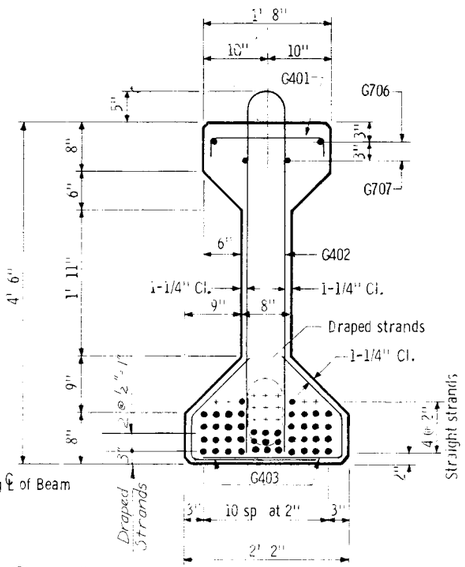


Deflections shown are for weight of slab, wearing course, railing, ~~sidewalk, median~~ and diaphragms only. Engineer will take elevations at top of beams after erection and will allow for deflections shown to enable contractor to build forms to correct grade and specified slab thickness.

CAMBER DIAGRAM



HALF ELEVATION



1 1/2" ϕ hole for rebar or anchorage for 3/4" Diameter Threaded Rods. See Bridge Detail B602 and framing plan for additional information.

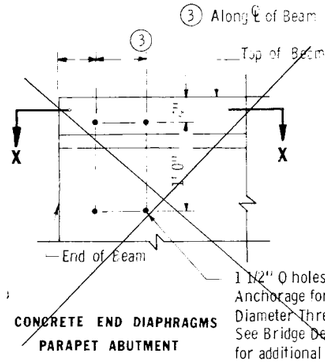
Bottom of Beam

③ Along ℄ of Beam

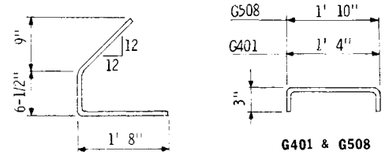
FOR USE WITH CONCRETE INTERMEDIATE DIAPHRAGM

③ Along ℄ of Beam

SECTION AT ℄ BEAM

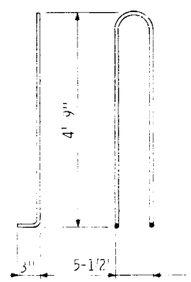


CONCRETE END DIAPHRAGMS PARAPET ABUTMENT

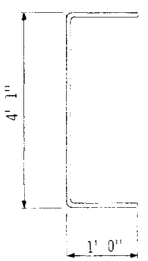


G403

G401 & G508



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	34	5.29	
Draped strands	9	3.50	47.00 [a]
Total strands	43	4.92	

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.

Bar	Wt.
G401	1,22 lb.
G402	6,62 lb.
G403	2,11 lb.
G504	10,34 lb.
G505	5,54 lb.
G706	
G707	
G508	2,48 lb.

Girder Section Data
Wt./Ft. - 822 lbs.
Cross sec. area at ℄ of span = 789 in.²
C.G. (from bottom) = 24.73 in.
I_x = 260,730 in.⁴
S_{ℓ} = 10,543 in.³
1/2" ϕ 270K strand wt./ft. = .965 lb.
1/2" ϕ 270K strand area = .1531 sq. in.

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. MnDOT 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. 2301.

See framing plan for beam ends marked "X".

Approximate weight of beam 35.1 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 10 kips per anchorage.

MINIMUM CONCRETE STRENGTH - P.S.I.	① f'ci	② f'c
Required Min. Concrete Strength	4700	6000

① Minimum concrete strength at time of prestress transfer.

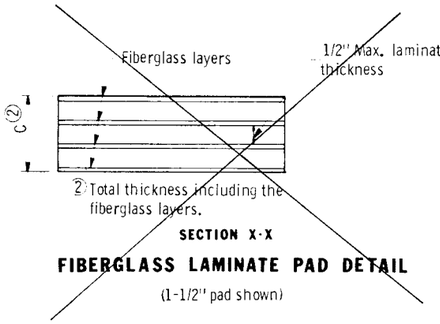
② Minimum concrete strength when curing can be discontinued and beam transported and installed.

Fig. 5-397.505

Revised: December 27, 1977 Approved: May 18, 1977

BEAMS B1 thru B9

TITLE: 54" PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 54 - 86	DES:	DR: D Lee	APPROVED: 5-1-78	Bridge No. 55528
	CHK:	CHK: GEG		
	Sheet No. 7 of 15 Sheets			

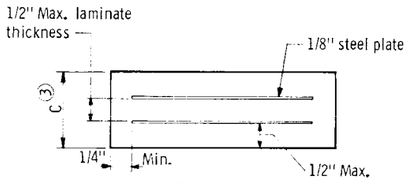


② Total thickness including the fiberglass layers.

SECTION X-X

FIBERGLASS LAMINATE PAD DETAIL

(1-1/2" pad shown)



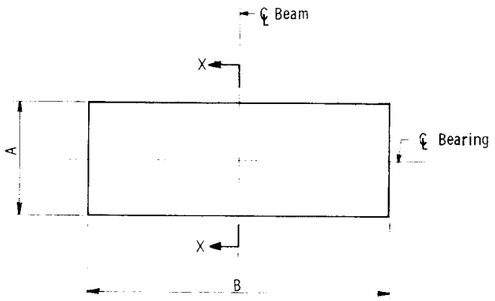
SECTION X-X

③ Total thickness including the steel plates.

STEEL LAMINATE PAD DETAIL

(1-1/2" pad shown)

MAX. MOVEMENT	PAD THICKNESS C	NO. OF LAMINATES	
3/8"	1"	2	
5/8"	1-1/2"	3	
3/4"	2"	4	
1"	2-1/2"	5	E1
1-1/4"	3"	5	
1-3/8"	3-1/2"	6	
1-5/8"	4"	7	
1-3/4"	4-1/2"	8	E2
2"	5"	9	
2-1/4"	5-1/2"	9	
2-3/8"	6"	10	
2-5/8"	6-1/2"	11	
2-3/4"	7"	12	
3"	7-1/2"	13	
3-1/4"	8"	13	



PLAN

NOTE: Min. A dimension shall be 3C
Min. B dimension shall be 2C

NOTES:
For elastomeric materials & pad construction see MDOT 3741

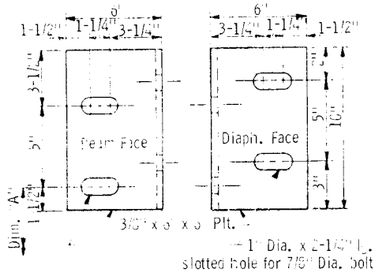
① ELASTOMERIC PAD DIMENSIONS

Beam Size	A	B	C	DL Min. (Kips)	DL Max. (Kips)	DL + LL Max. (Kips)	Shape Factor	Pad Type	
28"	10"	14"		28	70	112	6		
	12"	"		34	84	134	6		
	14"	"		39	98	157	7		
	16"	"		45	112	179	7		
	18"	"		50	126	202	8		
	20"	"		56	140	224	8		
	22"	"		62	154	246	9		
36"	10"	16"		32	80	128	6		
	12"	"		38	96	154	7		
	14"	"		45	112	179	7		
	16"	"		51	128	205	8		
	18"	"		58	144	230	8		
	20"	"		64	160	256	9		
	22"	"		70	176	282	9		
	24"	"		77	192	307	10		
40"&45"	10"	20"		40	100	160	7		
	12"	"		48	120	192	8		
	14"	"		56	140	224	8		
	16"	"		64	160	256	9		
	18"	"		72	180	288	8		
	20"	"		80	200	320	10		
	22"	"		88	220	352	10		
	24"	"		96	240	384	11		
54"-61"	10"	24"	2½	48	120	192	7	E1	← use
	12"	"	4½	58	144	230	8	E2	← use
	14"	"		67	168	269	9		
	16"	"		77	192	307	10		
	18"	"		86	216	346	10		
	20"	"		96	240	384	11		
	22"	"		106	264	422	11		
	24"	"		115	288	461	12		

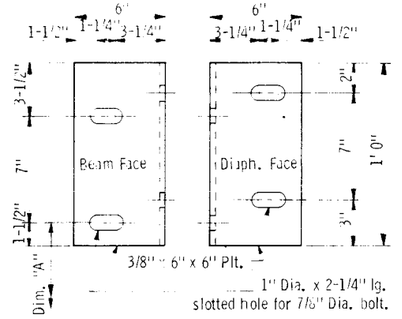
use
use

① Laminated pads to have steel ~~or fiberglass~~ reinforcement.

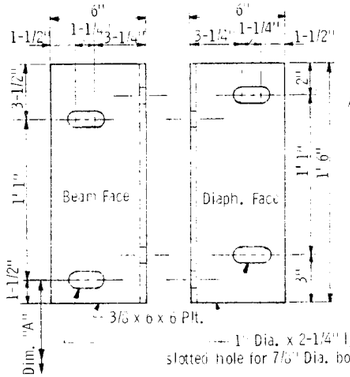
APPROVED: March 3, 1977 Developed by: ENGINEERING STANDARDS, BRIDGES AND STRUCTURES Issued by: ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **ELASTOMERIC BEARING PAD** **PRESTRESSED CONCRETE BEAMS** **(EXPANSION)**	DETAIL NO. **B305**



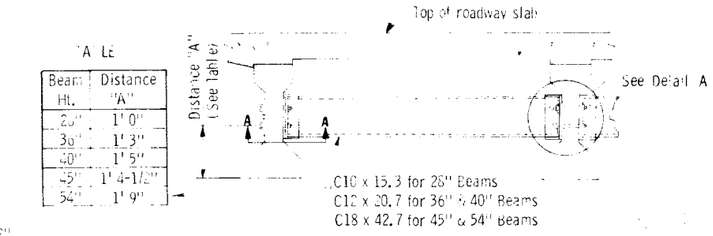
DIAPHRAGM SUPPORT FOR 28" BEAMS



DIAPHRAGM SUPPORT FOR 36" & 40" BEAMS AND 30" BULB TEES

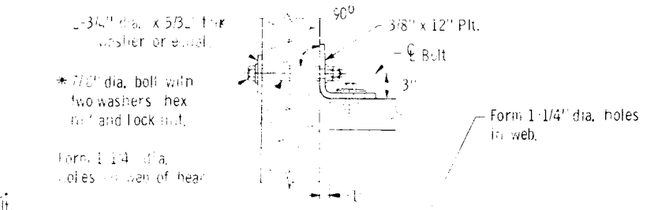


DIAPHRAGM SUPPORT FOR 45" & 54" BEAMS



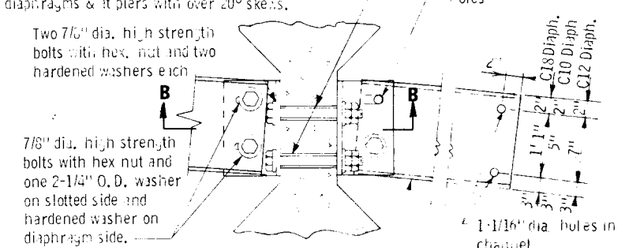
Beam Ht.	Distance "A"
28"	1'0"
36"	1'3"
40"	1'5"
45"	1'4-1/2"
54"	1'9"

PART TRANSVERSE SECTION AT DIAPHRAGM



SECTION A-A

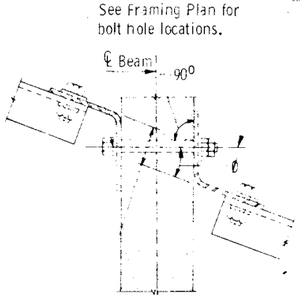
Section A-A applies at all fascia beams and at interior diaphragms & at piers with over 20° skews.



DETAIL A

Interior beam with continuous line of diaphragms

C10 x 15.3 for 28" Beam
C12 x 20.7 for 36" & 40" Beams
C18 x 42.7 for 45" & 54" Beams



SECTION B-B

Typ. Section for Skews under 20°

℄ Conc. Diaphragm. See Framing Plan

GENERAL NOTES:

The leg of the 12" plate shall be shop bent to conform to diaphragm line. For Ø angles less than 3° shop bends will not be required.

* As an alternate to the 7/8" bolt connection shown, the contractor may submit details of a cast-in-place anchorage to the engineer for approval. Anchorage must provide ultimate pull out strength of 15 kips per anchorage.

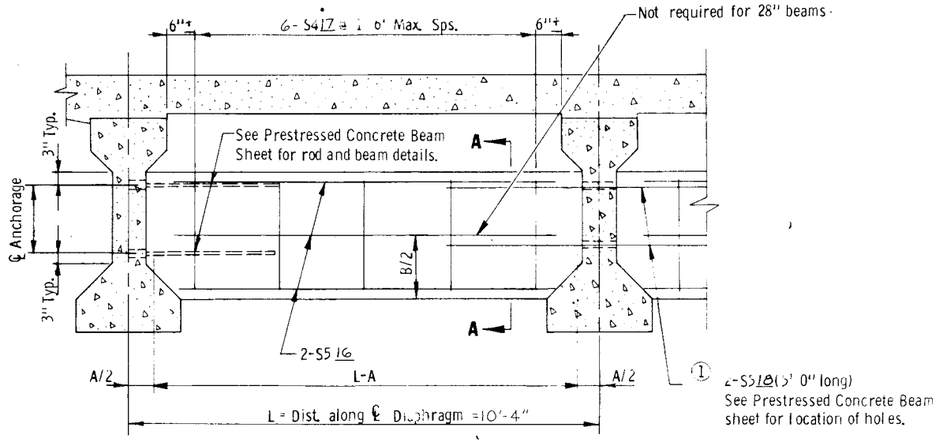
See MDOT 2405.3M for steel requirements.

The use of concrete intermediate diaphragms or steel intermediate diaphragms shall be optional to the contractor. All structural steel shown on this detail including bolts and washers to be included in payment for diaphragms for prestressed beams.

Diaphragms over piers considered to be intermediate if slab is continuous.

APPROVED: July 8, 1976 Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN Issued by: OFFICE OF ENGINEER AND STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **STEEL INTERMEDIATE DIAPHRAGM** **(FOR 28"- 54" PRESTRESSED CONCRETE BEAM SPANS AND 30" BULB TEE BEAMS)**	REVISION Jan. 3 1978 DETAIL NO **B403**

TITLE: STEEL INT. DIAPHRAGM ELASTOMERIC BEARING PAD	DES. DR D.Lee CHK GEG APPROVED 5-1-75	**Bridge No. 55528** Sheet No. 10 of 15 Sheets

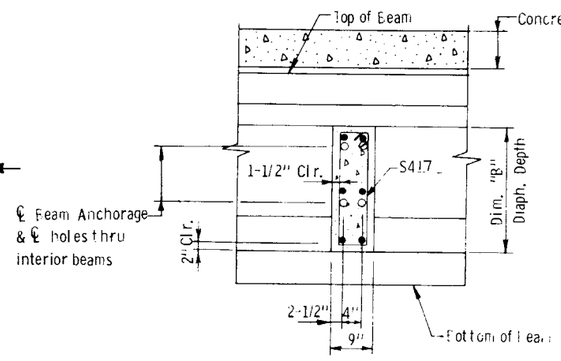


PART TRANSVERSE SECTION

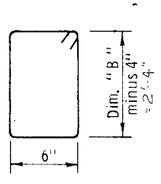
Bm. Ht.	Dim. "A" For comp. volume	Diaph. Dim. "B"	S4 17 Length
28"	7-1/2"	1'-4"	3'-9"
36"	7-3/4"	1'-9"	4'-7"
40"	8-3/4"	1'-11"	4'-11"
45"	9"	2'-2 1/2"	5'-6"
54"	10-1/2"	2'-8"	6'-5"

Concrete volume per diaphragm

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



SECTION A-A



S417

GENERAL NOTES

1. For Diaphragms 20º 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.

APPROVED: July 8, 1976

Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN

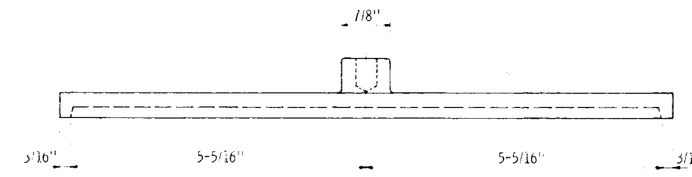
Issued by: OFFICE OF ENGINEERING STANDARDS

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

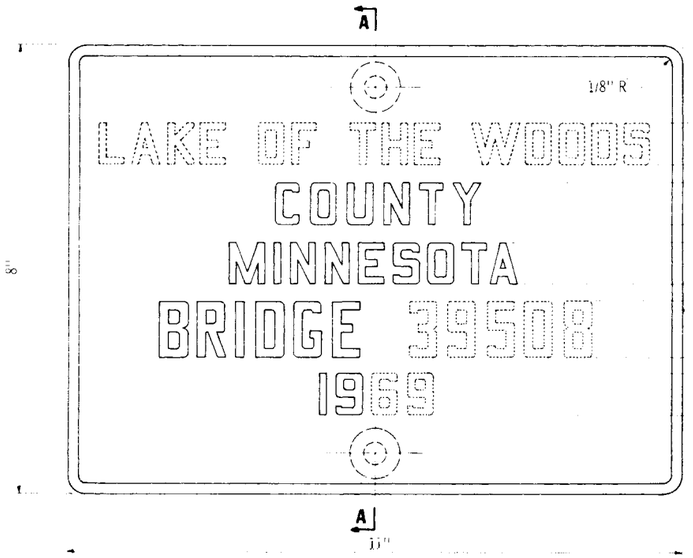
CONCRETE INTERMEDIATE DIAPHRAGM
(FOR 28"-54" PRESTRESSED CONCRETE BEAM SPANS)

DETAIL NO. **B802**

TITLE	DES DR D.Lee CK GEG	APPROVED 5-1-78	Bridge No. 55528
CONCRETE INTERMEDIATE DIAPHRAGM	Sheet No. 11 of 15 Sheets		



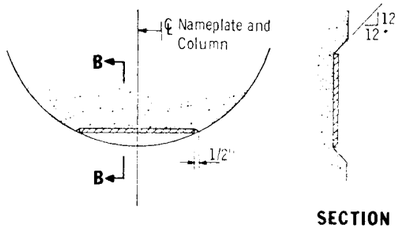
PLAN VIEW



ELEVATION

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

BRIDGE 55528
YEAR 1978

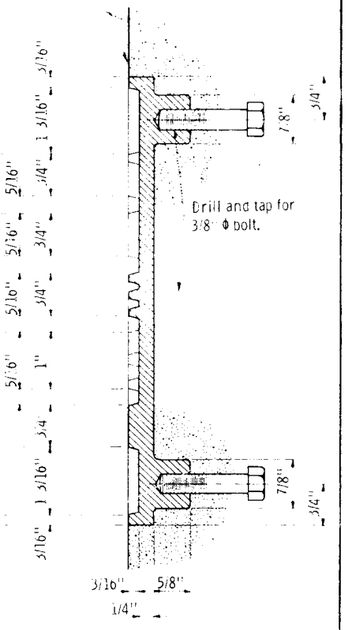


SECTION B-B

NAMEPLATE PLACEMENT

(Round Concrete Pier Columns)

Set name plate flush with surface of concrete except at round columns for piers.



SECTION A - A

NOTES:

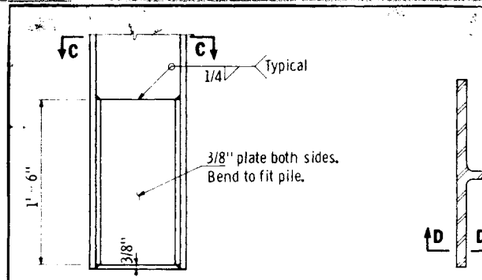
No shop drawing required.
Material shall comply with MDOT 3327.
Numbers and letters shall conform to those shown.
Draft on letters shall not be more than 3" in 12"
Horizontal spacing of letters shall produce a balanced layout in proportion to spacing shown.
Top surface of letters and frames shall be burnished.
Furnish 2 steel bolts 3/8" ϕ 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.



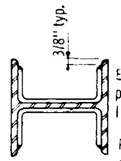
Specification reference: 1973 A.S.T.M. Designation: B145 - Alloy 836.

LETTERS & NUMBERS FOR NAMEPLATES

APPROVED: March 15, 1976 Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN Issued by: OFFICE OF ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **BRIDGE NAMEPLATE** **COUNTY BRIDGES**		DETAIL NO. **B103**



ELEVATION

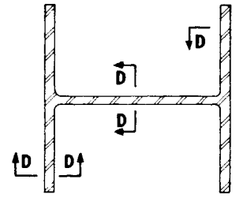


Each pile tip reinforced, will be paid for in amount equal to 5 linear feet of piling delivered.

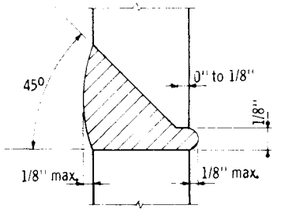
Pile tips shall be reinforced only when directed by the Engineer

SECTION C - C

DETAIL OF PILE TIP REINFORCEMENT



SECTION AT JOINT



SECTION D - D

NOTES:

A. W. S Type E7016 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.

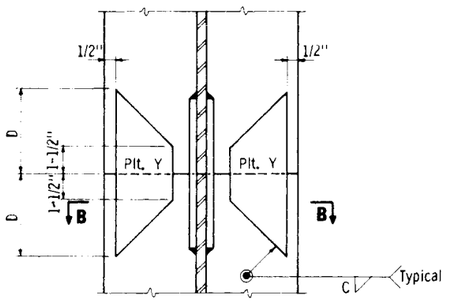
Low-hydrogen electrodes shall be stored in holding ovens at a temperature of not less than 250° F

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

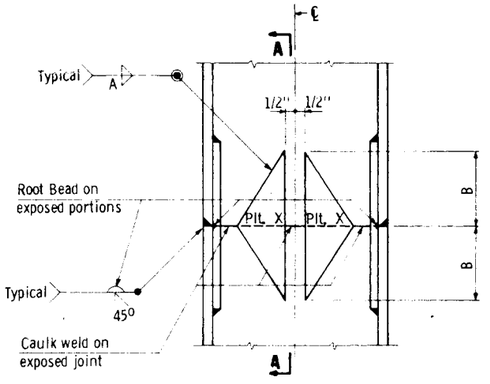
Any type electrode which has become wet, soiled, or damaged shall not be used

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.

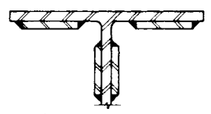
100% BUTT WELDED PILE SPLICE



SECTION A - A



ELEVATION



SECTION B - B

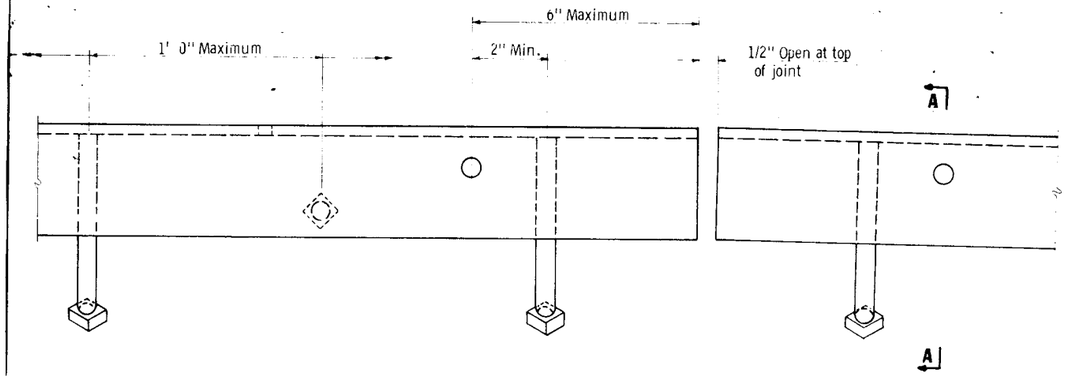
PILE SECTION	PLATE X Size	A	B	PLATE Y Size	C	D
HP10 x 42	2-1/2 x 3/8	1/4	4	3 x 3/8	5/16	4
HP10 x 57	2-1/2 x 1/2	5/16	4	3 x 1/2	5/16	5
HP12 x 53	3-1/2 x 3/8	1/4	5	4 x 3/8	5/16	5
HP12 x 74	3-1/2 x 1/2	5/16	6	4 x 1/2	5/16	6
HP14 x 73	4-1/2 x 3/8	1/4	7	5 x 3/8	5/16	6
HP14 x 89	4-1/2 x 7/16	5/16	7	5 x 1/2	5/16	7
HP14 x 102	4-1/2 x 1/2	5/16	7	5 x 9/16	3/8	7
HP14 x 117	4-1/2 x 9/16	3/8	7	5 x 5/8	3/8	8

USE — USE

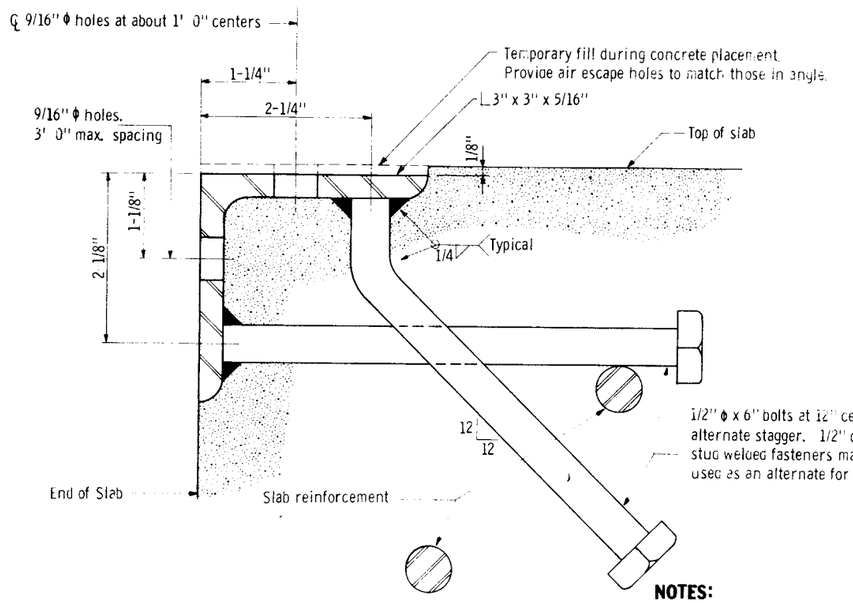
ALTERNATE PILE SPLICE

APPROVED July 21, 1972 Engineering Standards Engineer RESEARCH AND STANDARDS DIVISION	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **PILE SPLICE and TIP REINFORCEMENT** **STEEL H BEARING PILES 10" TO 14"**	DETAIL NO. **B202**

BRIDGE NAMEPLATE PILE DETAILS	DES. JR D.Lee GEG APPROVED 6-1-78 Sheet No 12 of 15 Sheets	Bridge No. 55528



ELEVATION
(Concrete not shown)



SECTION A - A

NOTES:

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

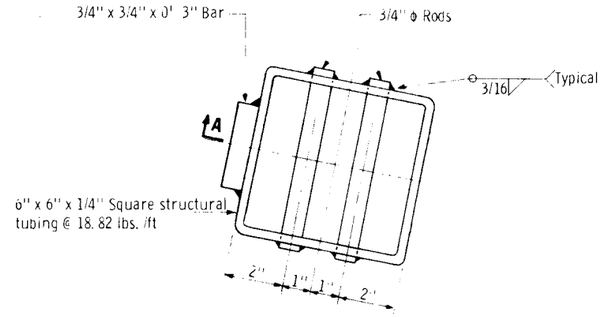
Angles shall be straightened to a tolerance of 1/16" in 10 feet after galvanizing

Material: Structural steel per MnDOT 3306. Galvanize after fabrication per MnDOT 3394

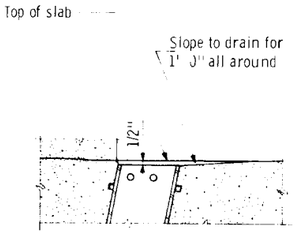
Set angle to proper grade and crown.

All material will be paid for as structural steel MnDOT 3306

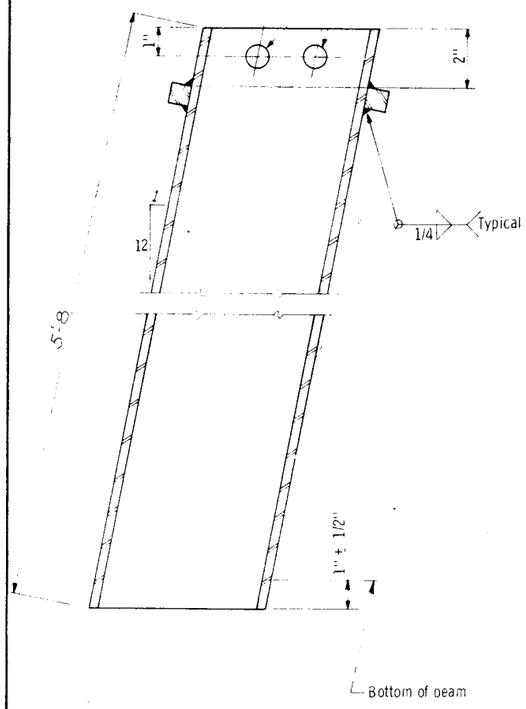
APPROVED May 26, 1972 Engineering Standards Engineer RESEARCH AND STANDARDS DIVISION	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **PROTECTION ANGLE FOR END OF SLAB**		DETAIL NO. **B551**



PLAN VIEW



PLACEMENT DIAGRAM



SECTION A - A

NOTES:

Material to be structural steel per MnDOT 3306.

Galvanize bolts and washer per MnDOT 3392

Galvanize other materials per MnDOT 3394 after fabrication.

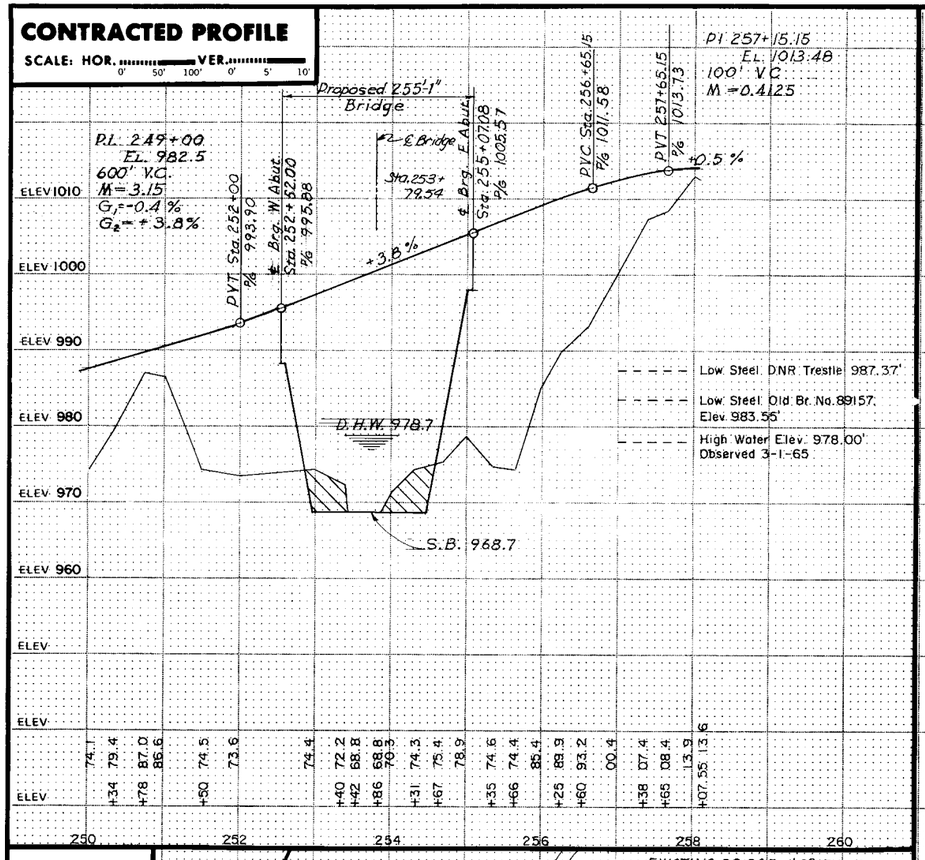
Payment for Floor Drain Type I shall include all material shown on this detail

APPROVED: Aug. 12, 1975 Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN Issued by: OFFICE OF ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **BRIDGE FLOOR DRAIN STRUCTURAL TUBING**		DETAIL NO. **B702**

FLOOR DRAIN PROTECTION ANGLE	D Lee GES	Sheet No. 13 of 15 Sheets	Bridge No. 55528

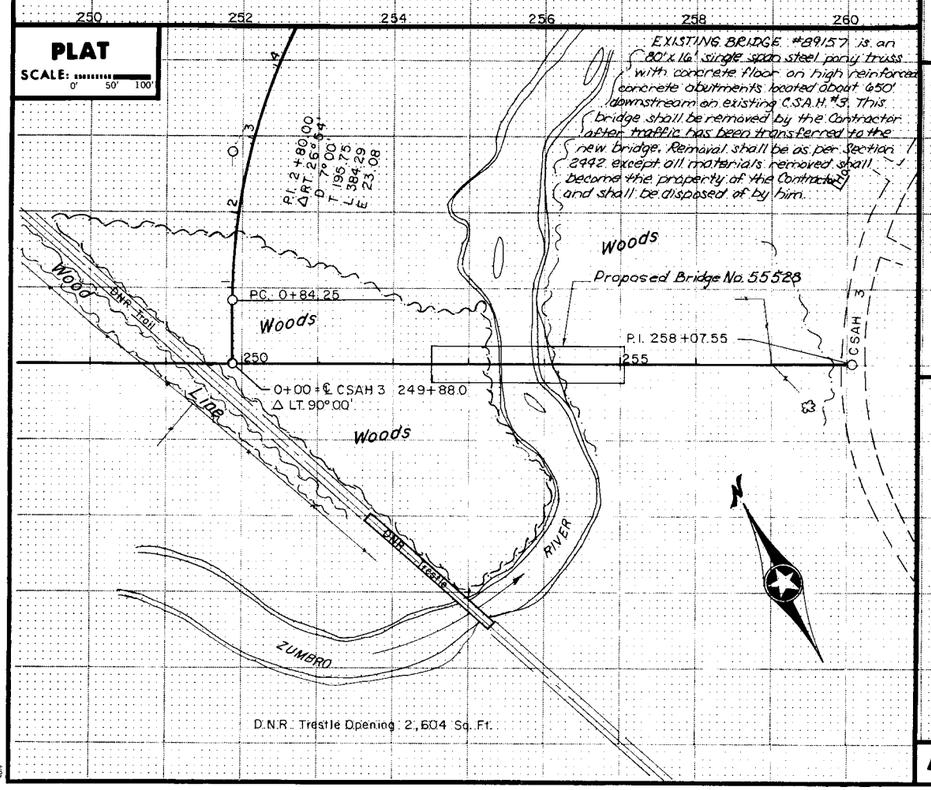
CONTRACTED PROFILE

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



PLAT

SCALE: 0' 50' 100'

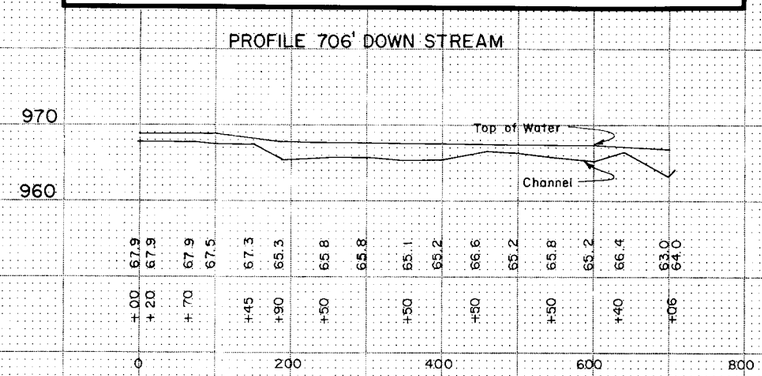


TYPICAL SECTIONS & PERTINENT DATA

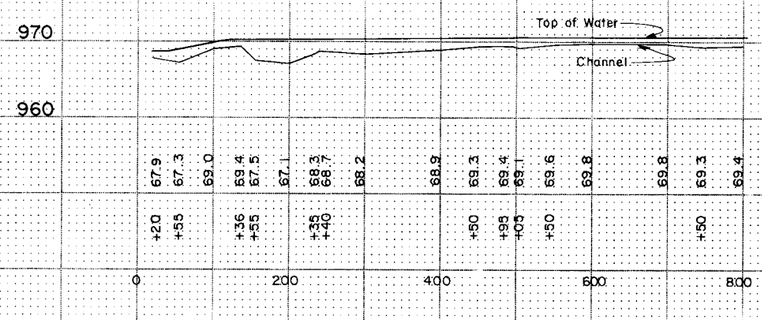
SCALES AS SHOWN

PROFILE 706' DOWN STREAM

SCALE 1" = 100' HOR. 1" = 10' VER.



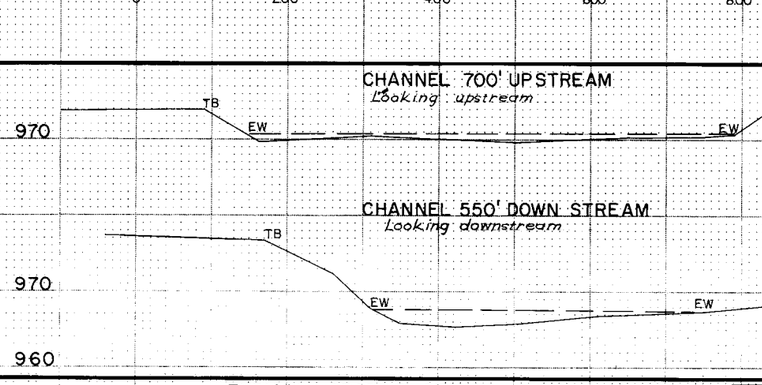
PROFILE 800' UP STREAM



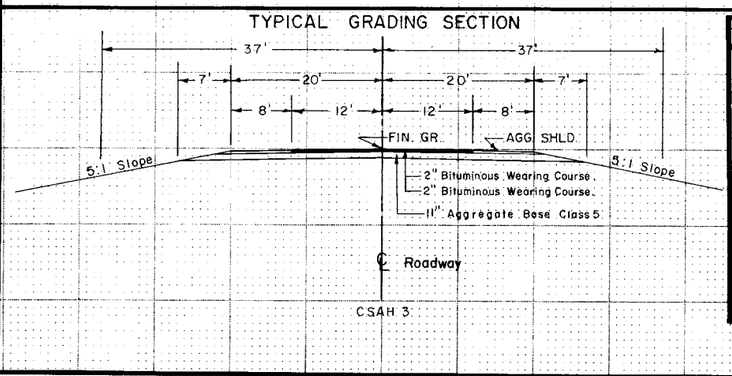
CHANNEL 700' UPSTREAM
Looking upstream

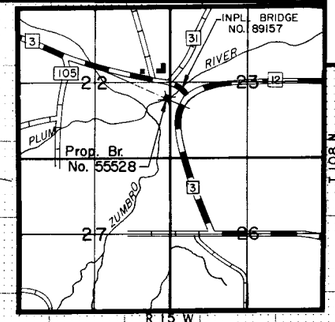
CHANNEL 550' DOWN STREAM
Looking downstream

SCALE 1" = 10' HOR. 1" = 10' VER.



TYPICAL GRADING SECTION





Fed. Proj. No.

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

1. Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, recreational boating.
None

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 978.0 Obtained from gaging station 600 feet downstream

4. Other data: Approx. velocity of water at time of survey

HYDRAULIC ENGINEERS RECOMMENDATION

DATE 9-77

Stream or ditch designation South Branch of Middle Fork of the Zumbro River
Drainage area 210 sq. miles
Max. flood on record unknown Design flood (50 yr. freq.) 11600 C.F.S.
Max. observed highwater elevation Design highwater elevation 978.7
Design mean velocity through structure 6.9 F.P.S.
Low superstructure at or above elevation 981.7
Flowline elevation 968.7 Skew angle 0°
Waterway area req'd. below elevation 978.7 = 1670 Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr. freq.) is 13900 C.F.S. at stage 980.7 and mean velocity of 7.6 F.P.S. with 1.2 Ft. freeboard. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Natural Resources.

FOUNDATION ENGINEERS RECOMMENDATION

DATE 10-17-77

AT THE EASTERN THREE BORING LOCATIONS, THE BEDROCK IS PRESENT AT DEPTHS OF 4.5' TO 12' BELOW EXISTING GRADE. IN THESE AREAS, IT WOULD BE POSSIBLE TO PLACE SPREAD FOOTINGS DIRECTLY UPON THE UNDERLYING SHAKOPEE LIMESTONE FORMATION WHERE HARD ROCK CORING WAS PERFORMED. DUE TO THE LARGE AMOUNTS OF SANDSTONE WITHIN THE BEDROCK, WE WOULD SUGGEST THE UNIT LOADS ON THIS FORMATION BE MAINTAINED AT A MAXIMUM OF 15 TSF. CARE SHOULD BE TAKEN DURING CONSTRUCTION TO ASSURE REMOVAL OF ALL WEATHERED LIMESTONE AND SOIL SEAMS WITHIN THE BEDROCK FORMATION PRIOR TO CONCRETE PLACEMENT. COMPLETE REPORT AVAILABLE FOR REVIEW AT COUNTY ENGINEERS OFFICE. D.L. MORRILL, SOIL EXPLORATION COMPANY

Bridge survey sheets made from: Bridge Survey conducted by Olmsted County

Bench mark elevation 986.55 (M.S.L. 1929 Adj.)
Location Std. Disc. in S. Abutment of the D.N.R. Bridge 300' upstream from the Proposed Bridge

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT ON C.S.A.H. 3 (T.H., C.S.A.H., C.R. etc.)
PROPOSED BRIDGE LOCATED 4 MILES S.W. OF ORONOCO
SEC. 22 TWP 108 N R 15 W
TOWNSHIP NEW HAVEN COUNTY OLMSTED
BRIDGE NO. 55528

Area No. Job No.

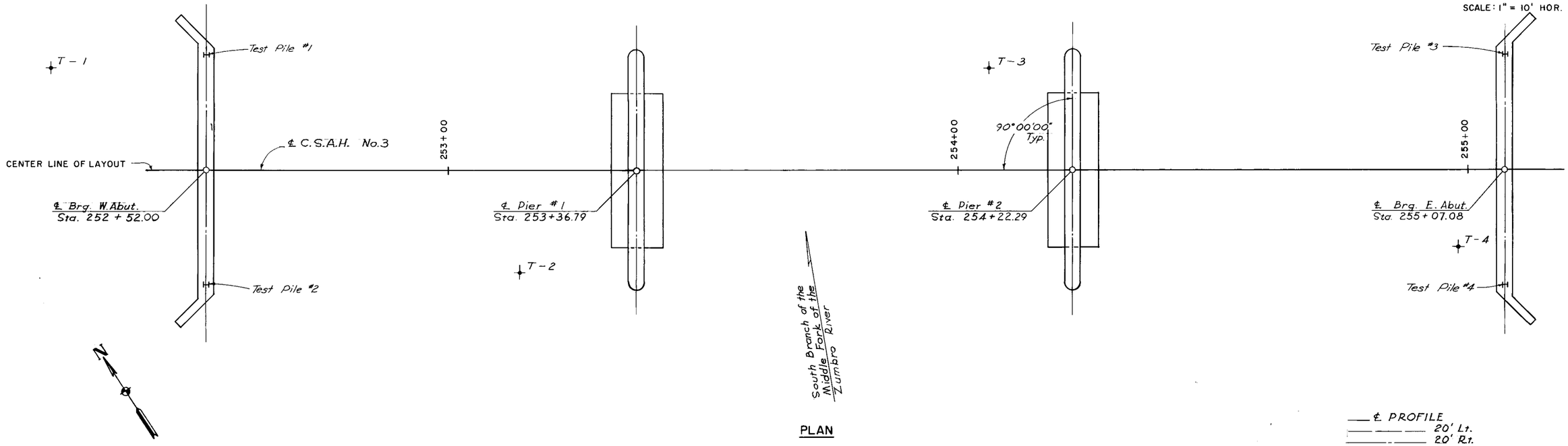
State Proj. No. S.A.P. 55-603-14

Sheet No. 14 of 15 Sheets

TELESYNE POST BRIDGE SURVEY REC 2-9-76

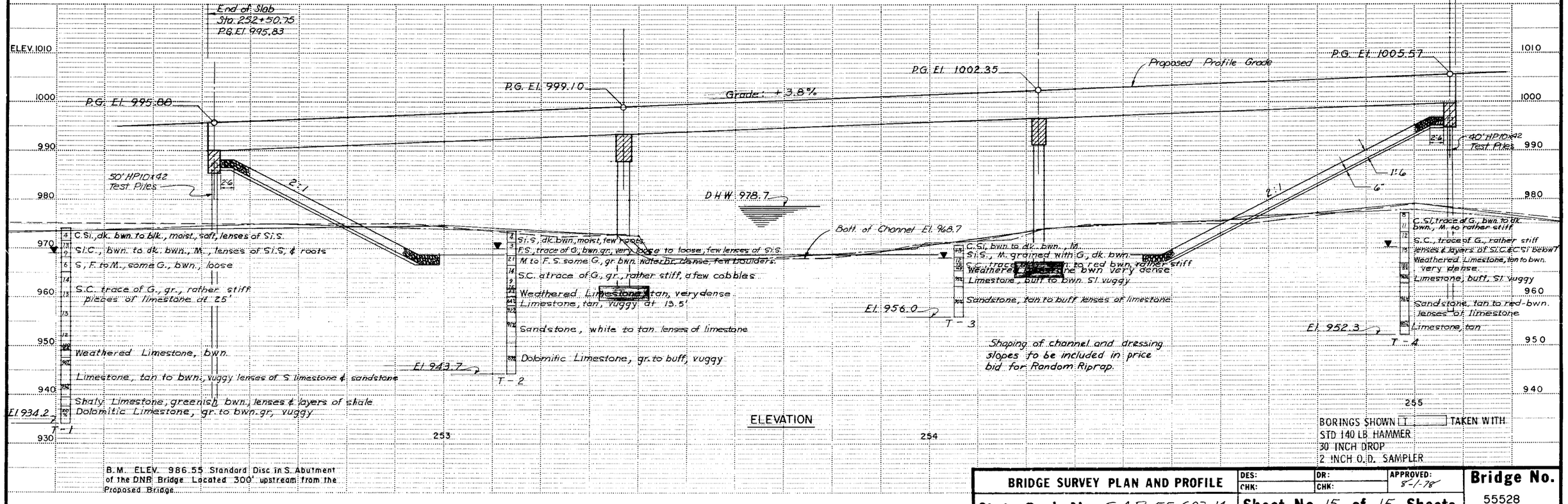
Fed. Proj. No.

SCALE: 1" = 10' HOR. & VER.



PLAN

℄ PROFILE
20' Lt.
20' Rt.



ELEVATION

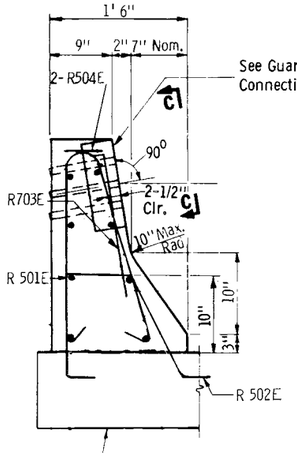
Shaping of channel and dressing slopes to be included in price bid for Random Riprap.

B.M. ELEV. 986.55 Standard Disc in S. Abutment of the DNR Bridge Located 300' upstream from the Proposed Bridge.

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

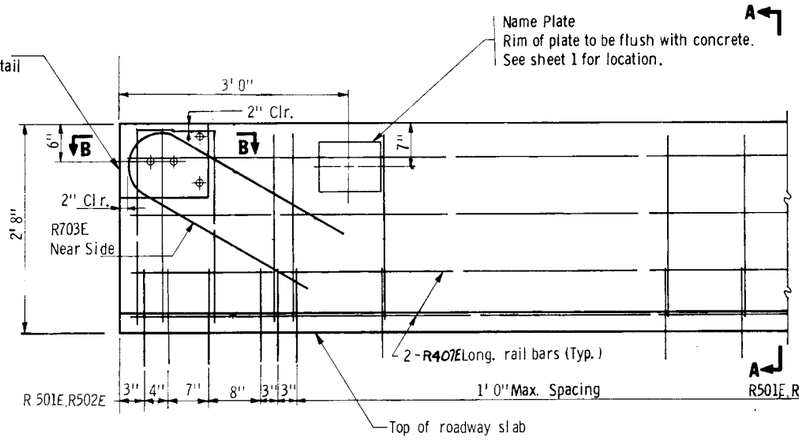
BRIDGE SURVEY PLAN AND PROFILE	DES:	DR:	APPROVED: 8-1-78	Bridge No. 55528
State Proj. No. S.A.P. 55-603-14	CHK:	CHK:	Sheet No. 15 of 15 Sheets	

TECH 2127 (COST BRIDGE SURVEY) REC-1 9-76

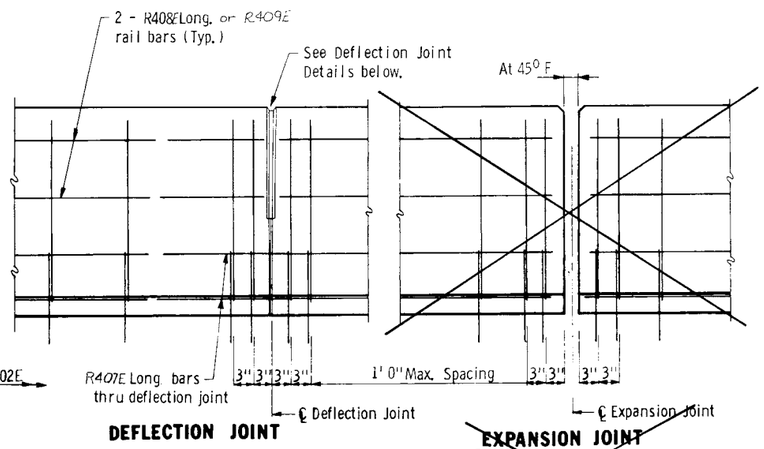


For Joint location, See Abutment Sheet.

END VIEW



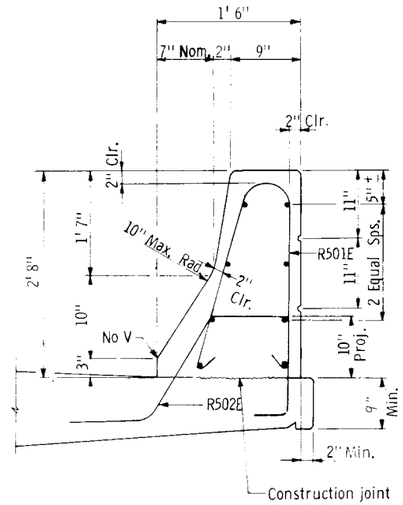
INSIDE ELEVATION OF RAILING



DEFLECTION JOINT

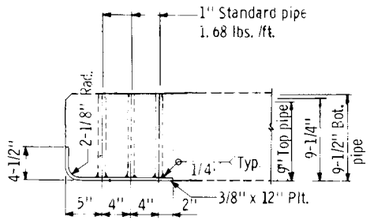
EXPANSION JOINT

Expansion device not shown.
Expansion joint required only if expansion device is used.
See superstructure sheets.

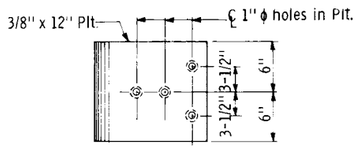


SECTION A-A

BILL OF REINFORCEMENT FOR RAILING				
BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	608	6'-0"	Bent	Rail Vertical
R502E	608	5'-7"	Bent	Rail Vertical
R703E	4	6'-6"	Bent	End Post
R504E	8	2'-3"	Bent	End Post
R407E	56	38'-1"	Strt.	Rail Long.
R408E	40	16'-9"	Strt.	Rail Long
R409E	80	16'-10"	Strt.	Rail Long

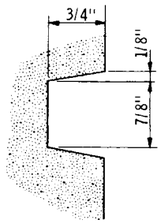


SECTION B-B
(Reinf. not shown)

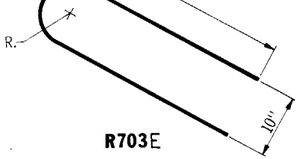


VIEW C-C

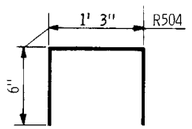
GUARDRAIL CONNECTION DETAIL
GALVANIZE AFTER FABRICATION PER SPEC. 3394
Est. Wt. 30 Lbs.



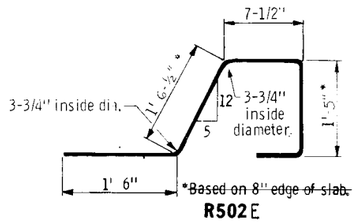
RAIL RUSTICATION



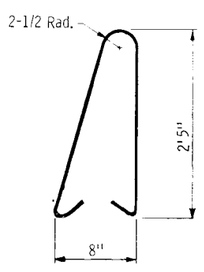
R703E



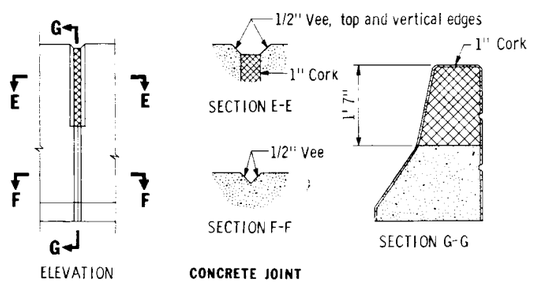
R504E



R502E



R501E



DEFLECTION JOINT DETAILS

GENERAL NOTES

Concrete Railing = .405 lbs. /ft.
Concrete Railing = .100 cu. yds.

Rail to be Concrete Mix No. 3X46A.

Guardrail connection to be Structural Steel, Spec. 3306

Finish all edges of rail with 1/2" vee except where otherwise noted.

See superstructure sheet for joint spacing.

Maximum spacing of concrete deflection joints shall be 20'-0".

Guardrail connection to be included in price bid for other items.

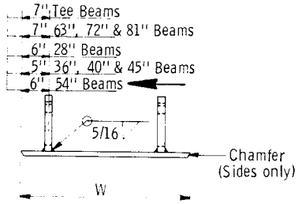
Rail quantities are included in summary of quantities for superstructure.

Length of railing concrete to be measured for payment between outside faces of end posts.

Fig. 5-397.115
Approved : December 5, 1977

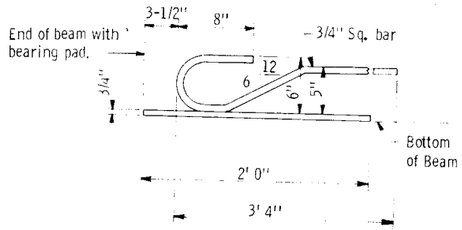
TITLE:	DES:	DR: D Lee	APPROVED:	Bridge No.
CONCRETE RAILING (TYPE J) WITH INTEGRAL END POST (Without Wearing Course)	CHK:	CHK: GEG	5-1-78	55528
	Sheet No. 8 of 15 Sheets			

These dimensions may be modified to clear post tensioning tubes or prestressing strands. Changes must be approved by the Engineer.



FRONT VIEW

Dimension "W" to be the width at the bottom flange of the beam.



SIDE VIEW

SOLE PLATE FOR B305 BEARING

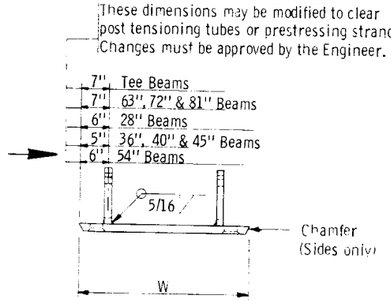
NOTES

Material to be Structural Steel per Spec. 3306

Sole plate for Bearing Assembly to be hot dipped galvanized as per Spec. 3394 after fabrication.

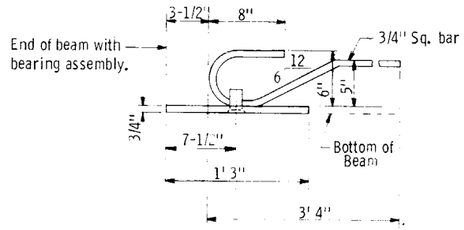
Payment for sole plates to be included in price bid for Prestressed Concrete Beams.

These dimensions may be modified to clear post tensioning tubes or prestressing strands. Changes must be approved by the Engineer.



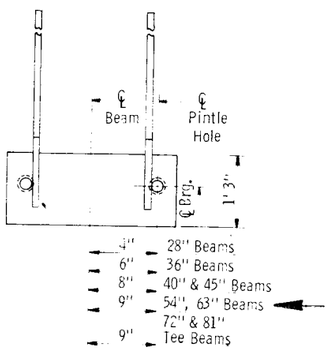
FRONT VIEW

Dimension "W" to be the width at the bottom flange of the beam.

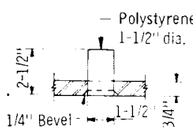


SIDE VIEW

Showing placement in beam



PLAN VIEW



PINTLE HOLE DETAIL

(2 Required)

SOLE PLATE FOR B302, & B304 BEARING ASSEMBLY

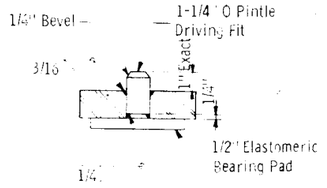
NOTES

Material to be Structural Steel per Spec. 3306

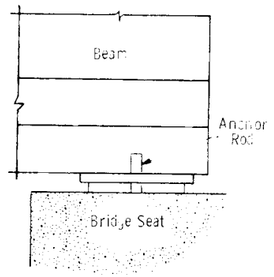
Sole plate for Bearing Assembly to be hot dipped galvanized as per Spec. 3394 after fabrication. Pintle holes shall be free of zinc build up from galvanizing.

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

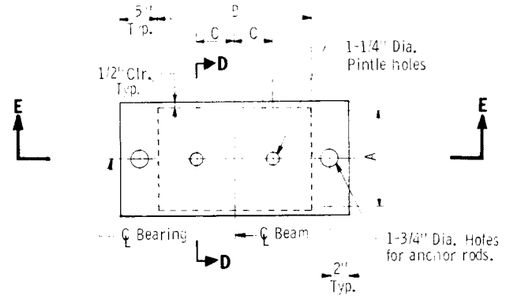
APPROVED: Sept. 17, 1976	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Developed by: ENGINEERING STANDARDS, AND BRIDGES AND STRUCTURES	**SOLE PLATES PRESTRESSED CONCRETE BEAMS**	May 18, 1977	**B303**
Issued by: ENGINEERING STANDARDS			



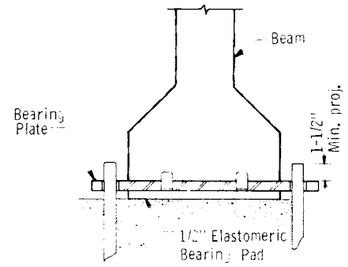
SECTION D-D
(ENLARGED)



SIDE ELEVATION



PLAN



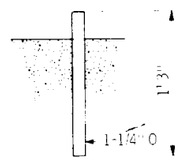
SECTION E-E

1/2" ELASTOMERIC PAD DIMENSIONS

Beam Size	A	B	C	DL + LL Min. (Kips)	DL Max (Kips)	DL + LL Max (Kips)	Shape Factor	Bearing Plt. Size	Assy. Type
	12"	1'-"	4"	28	69	110	6	11" x 2'-" x 1"	
	12"		4"	33	83	132	6	13" x 2'-" x 1"	
	1'-"		4"	39	97	155	7	15" x 2'-" x 1"	
36"	12"	1'-"	6"	32	79	126	6	11" x 26" x 1"	
	12"		6"	38	95	152	7	13" x 26" x 1"	
	1'-"		6"	44	111	177	7	15" x 26" x 1"	
40" & 45"	12"	20"	8"	40	99	158	7	11" x 30" x 1"	
	12"		8"	48	119	190	7	13" x 30" x 1"	
	1'-"		8"	56	139	222	7	15" x 30" x 1"	
54", 63"	1'-1"	1'-"	9"	48	118	190	7	11" x 3'-" x 1"	F1
	12"		9"	57	143	228	6	13" x 3'-" x 1"	
	1'-"		9"	67	167	267	7	15" x 3'-" x 1"	

USE

ANCHOR ROD DETAIL



NOTES

For elastomeric materials & pad construction, see [illegible] 3741

Plates and anchor rods shall comply with Spec. 3306.

Pintles shall comply with Spec. 3314, Type II

Galvanize structural steel per Spec 3394.

Payment for bearing assembly shall include all material on this detail.

APPROVED: March 3, 1977	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION		DETAIL NO.
Developed by: ENGINEERING STANDARDS, BRIDGES AND STRUCTURES	**ELASTOMERIC BEARING ASSEMBLY PRESTRESSED CONCRETE BEAMS (FIXED)**		**B304**
Issued by: ENGINEERING STANDARDS			

BEARING DETAILS

D Lee GEG

APPROVED 5-1-78

Sheet No. 9 of 15 Sheets

Bridge No. 55528