FORM 100-A '65

Fed. Proj. No.

STATE OF MINNESOTA

# DEPARTMENT OF TRANSPORTATION

## CONSTRUCTION PLAN FOR BRIDGE 55525

COUNTY HIGHWAY NO. 116

BETWEEN C.S.A.H. No. 16 AND Co. Road No. 139

From

To T 105 N., R13 W., Sec. 3

(Give proper reference to Sections, Township and Range)

| | | |
|---|---|---|
| GROSS LENGTH | FEET | MILES |
| BRIDGES-LENGTH 232.4 | FEET .0440 | MILES |
| EXCEPTIONS-LENGTH | FEET | MILES |
| NET LENGTH | FEET | MILES |

Sheet No. 1 to 17A Bridge Sheet Bridge No. 55525

DESIGN SPEED M. P. H.

PROJECTED A. D. T. 88

TON DESIGN

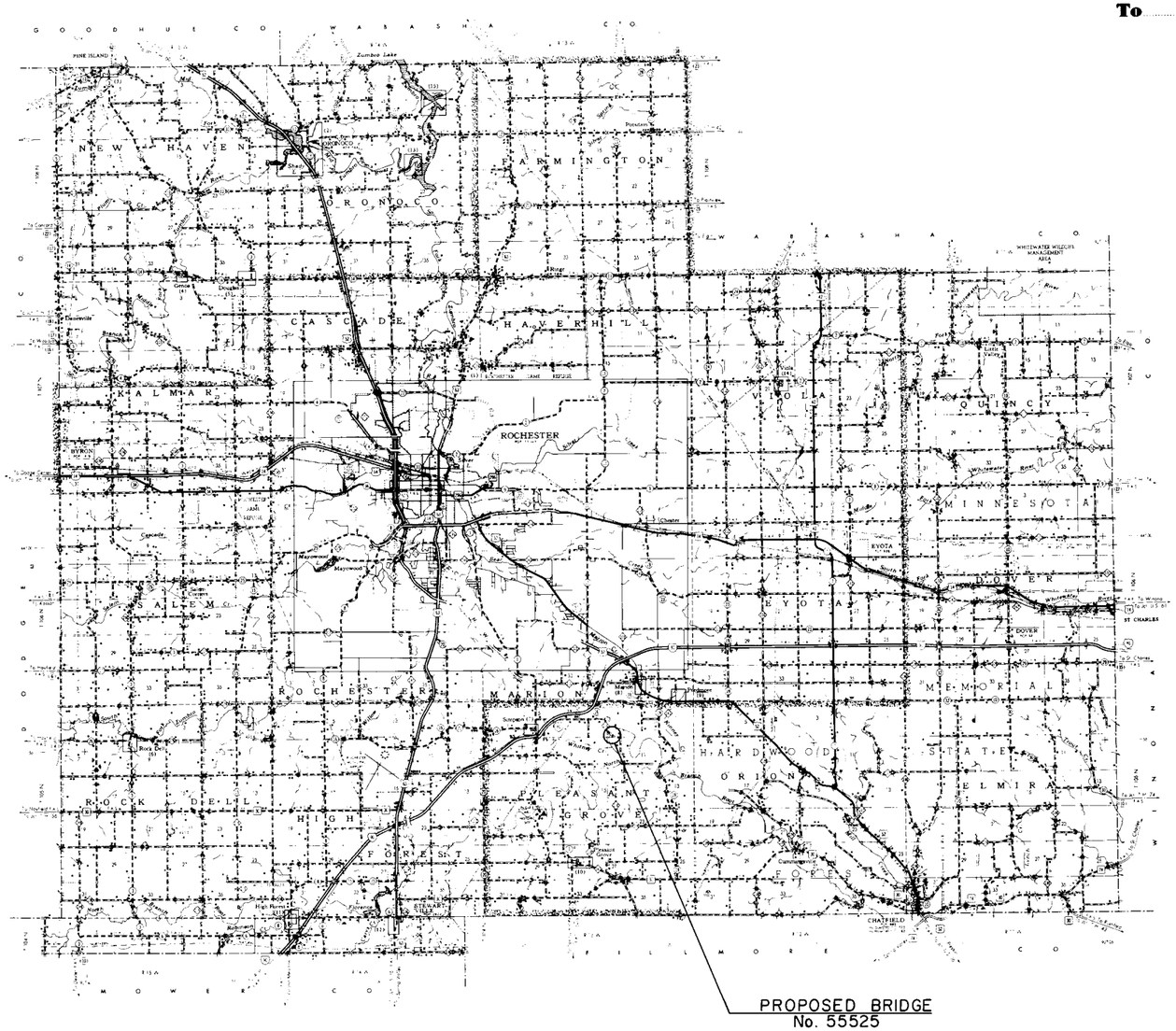
SOIL FACTOR

## 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 (W)
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 / NURSERY (TIMBER)
CATCH BASIN (C.B.)
FIRE HYDRANT
CATTLE GUARD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame) (F.S.F.)
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




— SPECIFICATIONS —

MINNESOTA HIGHWAY DEPARTMENT
STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION DATED JANUARY 1, 1972,
AS AMENDED BY SUPPLEMENTAL SPECIFICATIONS DATED APRIL 1, 1976, SHALL GOVERN.

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. Wilson (COUNTY ENGINEER) DATE 3-24-77

Olmsted (COUNTY) REG. NO. 10219

RECOMMENDED FOR APPROVAL G. Mueller 3-25 (DISTRICT STATE AID ENGINEER) 1977

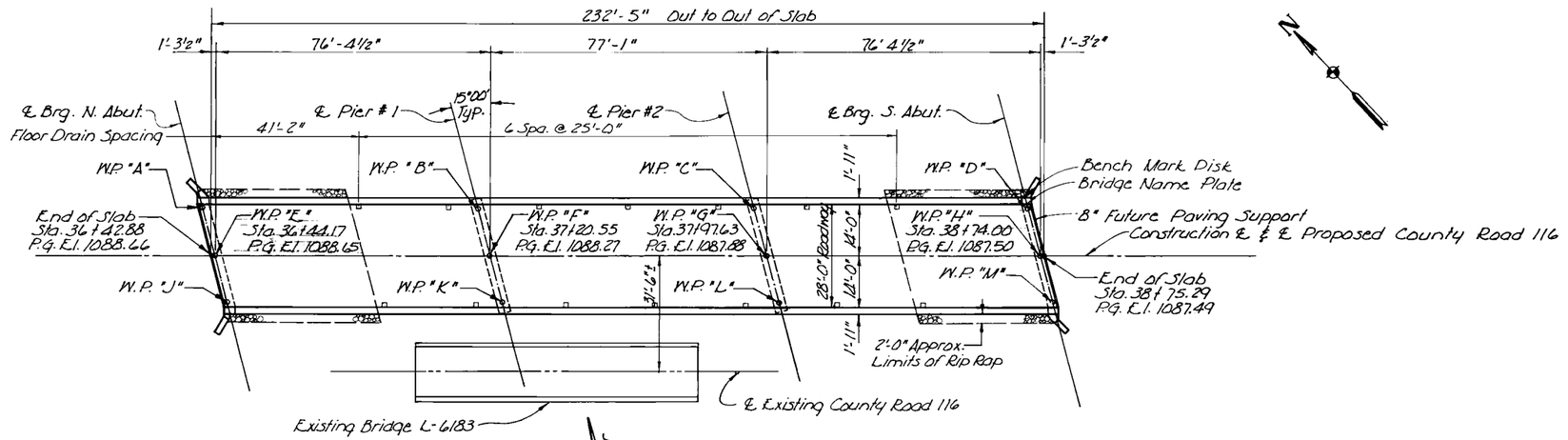
RECOMMENDED FOR APPROVAL K. V. Dowling 4-11 (BRIDGE ENGINEER) 19 77

APPROVED 4/12 19 77 (STATE AID ENGINEER)

Minn. Project No.

S.A.P. 55-598-01
State Project No.

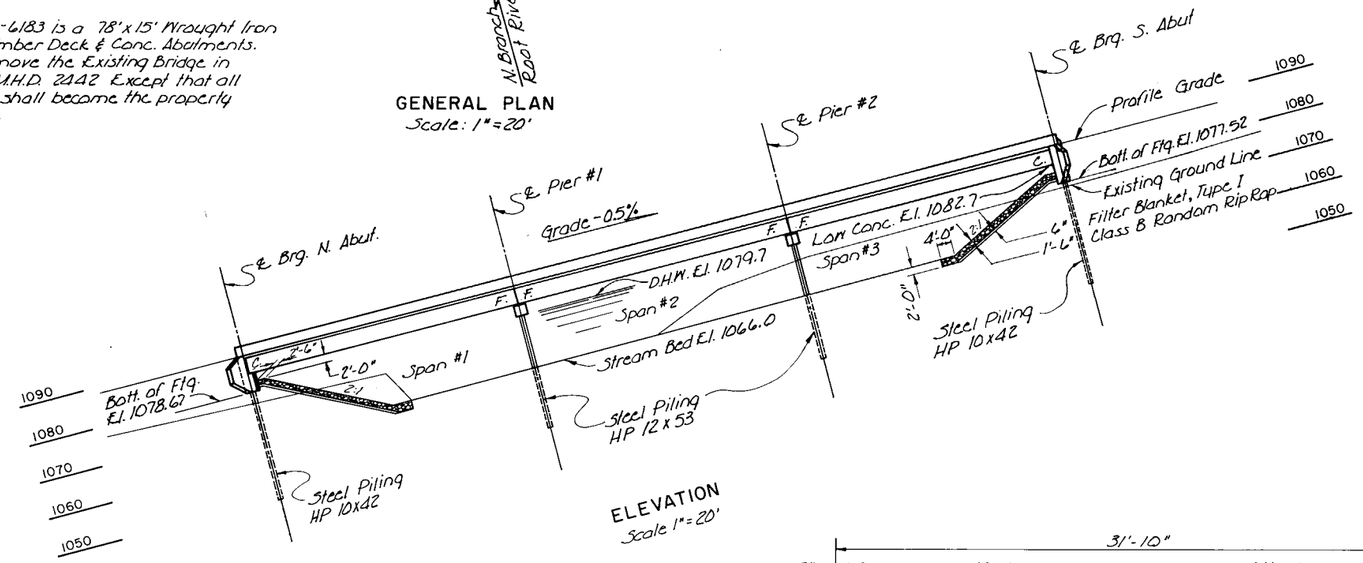
OLMSTED County, Minnesota. County Proj. No. Plan No. Sheet 1 of 17 Sheets




Existing Bridge L-6183 is a 78'x15' Wrought Iron High Truss with Timber Deck & Conc. Abutments. Contractor shall remove the Existing Bridge in accordance with M.H.D. 2442 Except that all materials removed shall become the property of the Contractor.

N. Branch Root River

**GENERAL PLAN**
Scale: 1"=20'




**ELEVATION**
Scale 1"=20'

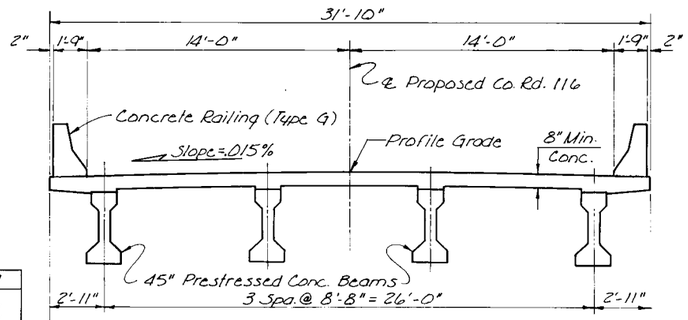
Channel shall be excavated by the ~~Bridge~~ Contractor to the cross sections shown ~~at the bridge for a distance of 20 feet each side of and normal to the ℄ of proposed roadway~~ Suitable materials as determined by the Engineer, shall be used for the approach fills. Unsuitable materials shall be disposed of in the side slopes of the approach fills or as directed by the Engineer. Channel Excavation shall be paid for as "Common Channel Excavation". Approach fill material shall be placed using the Ordinary Compaction Method. ~~Additional Channel Excavation and final approach grading shall be by others.~~ on Sheet 17A.

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

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

Traffic on County Road 116 shall be maintained by the Contractor during the construction period. The existing bridge shall be removed by the Contractor after completion of the new structure. Cost of maintaining traffic including the protection of the in place roadway, as required, shall be considered incidental to the project.

| 2511.504 | 2105.511 |
|---|---|
| Filter Blanket Type I | Common Channel Excav. |
| Cu. Yd. | Cu. Yd. |
| 51 | 4358 |




**TRANSVERSE SECTION**
Scale: ¼"=1'-0"

**SCHEDULE OF QUANTITIES ENTIRE BRIDGE**

| ITEM NO. | 405.601 | 405.610 | 2401.501 | 2401.501 | 2401.501 | 401.610 | 2401.541 | 2402.521 | 2402.546 | 402.625 | 2405.511 | ~~2442.501~~ | 2452.510 | 2452.510 | 2452.511 | 2452.511 | 2452.520 | 2452.520 | 2452.520 | 2511.501 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ITEM | Prestressed Concrete Beams Type 45-77 | Diaphragms for Type 45-77 Prestressed Beams | Concrete Mix No. 3Y43 | Concrete Mix No. 3X33 | Concrete Mix No. 3X46A | Structure Excav. | Reinforcement Bars | Structural Steel (3306) | Floor Drains Type I | Elastomeric Bearing Assemblies Type F1 | Elastomeric Bearing Pad Type E1 | ~~Remove Old Bridge~~ | Steel H-Piling Driven HP 10x42 | Steel H-Piling Driven HP 12x53 | Steel H-Piling Delivered HP 10x42 | Steel H-Piling Delivered HP 12x53 | Steel H-Test Piles 35 ft. long HP 10x42 | Steel H-Test Piles 45 ft. long HP 10x42 | Steel H-Test Piles 45 ft. long HP 12x53 | Random Rip Rap Class B |
| UNIT | Each | Lin. Ft. | Cu. Yd | Cu. Yd. | Cu. Yd. | Lump Sum | Pound | Pound | Each | Each | Each | ~~Lump Sum~~ | Lin. Ft. | Lin. Ft. | Lin. Ft. | Lin. Ft. | Each | Each | Each | Cu. Yd. |
| QUANTITY | 12 | 269 (P) | 76 (P) | 212 (P) | 55 (P) | One | 54,760 (P) | 4420 (P) | 14 | 16 | 8 | ~~One~~ | 350 | 400 | 350 | 400 | 1 | 1 | 2 | 173 |

FED. PROJ. NO.

**DESIGN DATA**

1973 and Interim AASHTO Design Specifications
Load Factor Design Method
HS 20 Loading
Includes 30 psf. Dead Load Allowance for Future Wearing Course Modifications.
Maximum Allowable Design Stresses:
Reinforced Concrete: $f'_c$ = 4,000 psi. n=8
$f_y$ = 60,000 psi. Reinforcement (for Grade 60)
Prestressed Concrete: $f'_c$ = 6,000 psi. n=6
$f_s$ = 270,000 psi. (for 270 K. Strands)
Structural Steel: $f_y$ = 36,000 psi. Structural Steel M.H.D. 3306
Deck Area 7399 Sq. Ft.
88 Projected A.D.T. for 1996

**LIST OF SHEETS**


| NO. | DESCRIPTION |
|---|---|
| 1 | Title Sheet |
| 2 | General Plan & Elevation |
| 3 | Bridge Layout |
| 4 | Abutment Details |
| 5 | Abutment Reinforcement |
| 6 | Pier Details |
| 7 | Superstructure Details |
| 8 | Superstructure Details |
| 9 | Prestressed Concrete Beam |
| 10 | Concrete Railing |
| 11 | Bridge Floor Drain & Protection Angle |
| 12 | Elastomeric Brg. Assembly & Sole Plates |
| 13 | Stl. Intermediate Diaphragm & Elasto. Brg. Pad |
| 14 | Pile Splice, Tip Reinf't. & Bridge Name Plate |
| 15 | Concrete Intermediate Diaphragm |
| 16 | Bridge Survey |
| 17 | Bridge Survey (Plan & Profile) |


**CONSTRUCTION NOTES**

The Minnesota Highway Department "Standard Specifications for Highway Construction" dated January 1, 1972 as amended by "Supplemental Specifications" dated April 1, 1976 shall govern.

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.

Bench Mark El. 1082.97 Head of Bolt 2.5' E. of Beginning of Bridge on South Side.

APPR. J.E.
3-24-77 D.K. Nolan
DATE COUNTY ENGINEER

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.
Gene E. Knutzke
Date 1-25-77 Reg. No. 8586

COUNTY ROAD 116 OLMSTED COUNTY

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 55525

COUNTY ROAD 116 OVER THE NORTH BRANCH OF THE ROOT RIVER
2.5 MILES EAST OF SIMPSON

76-77-76 PRESTRESSED BEAM BRIDGE
IDEN. NO. 501
28' RDWY. 15° SKEW TYPE "G" RAILING

**GENERAL PLAN & ELEVATION**

SEC. 3 T105N R13W
PLEASANT GROVE TWP. OLMSTED COUNTY

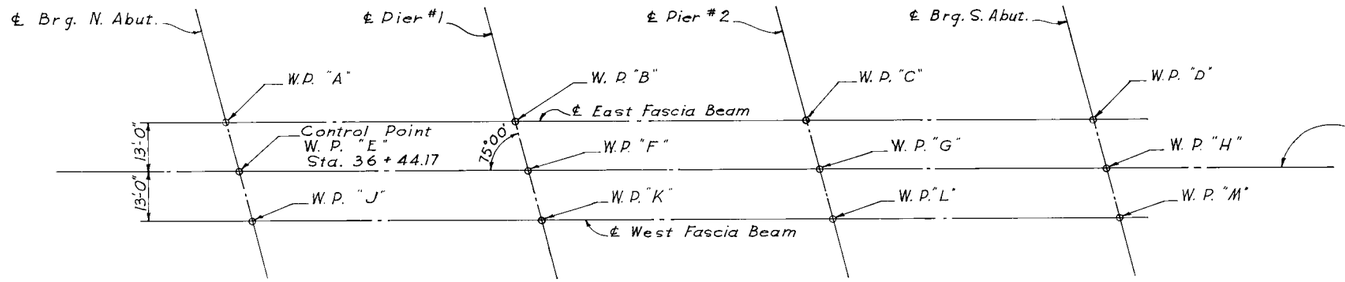
K.V. Bentley 4-11-77
BRIDGE ENGINEER

SHEET NO 2 OF 17 SHEETS 55525

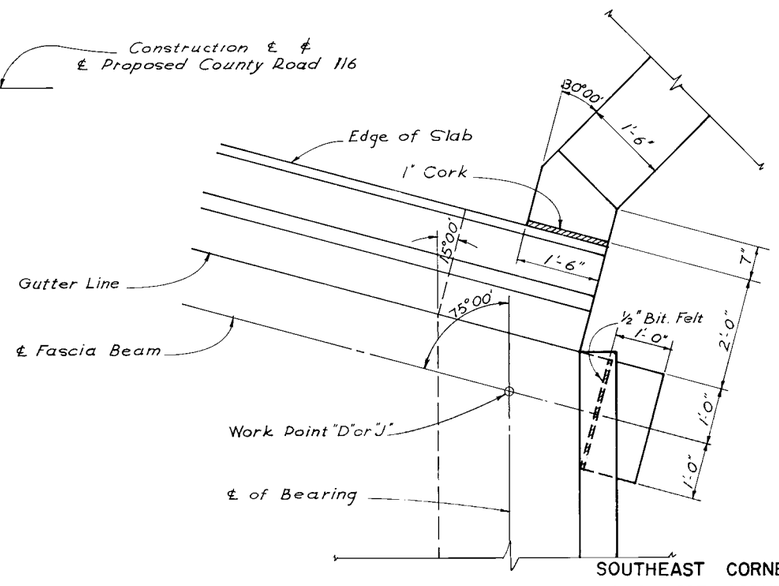
JOB NO. 2853.2

CONSULTING ENGINEERS PLANNERS LANDSCAPE ARCHITECTS
WALLACE HOLLAND KASTLER SCHMITZ COMPANY
KANSAS CITY, IOWA CITY ROCHESTER, N.Y.

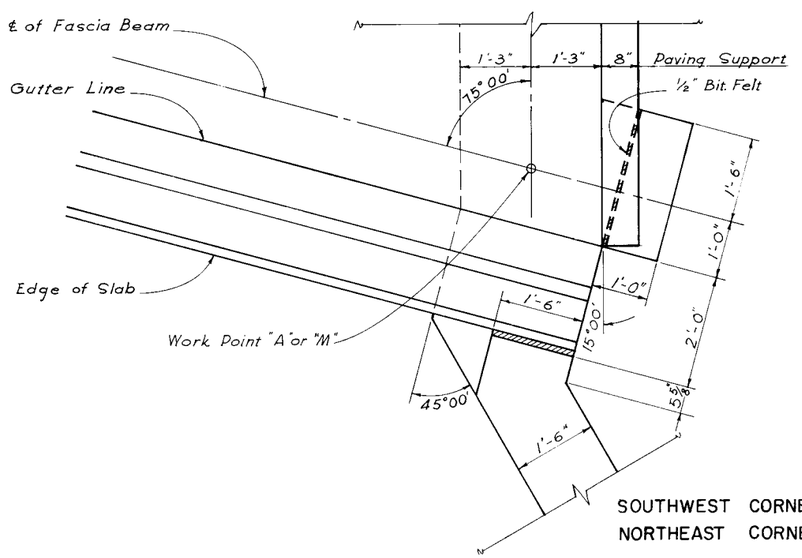
S.A.P. 55-598-01




WORK POINT LAYOUT




SOUTHEAST CORNER &
NORTHWEST CORNER




SOUTHWEST CORNER &
NORTHEAST CORNER

| | | DISTANCE BETWEEN WORKING POINTS | | | | | | | | | | | | ELEVATIONS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W.P. | STATION | A | B | C | D | E | F | G | H | J | K | L | M | TOP OF SLAB | TOP OF SLAB TO BR. SEAT | BRIDGE SEAT |
| A | 36+40.69 | | 76.38 | | | 13.46 | 80.91 | | | | 87.30 | 162.52 | | 1088.47 | 4.77 | 1083.70 |
| B | 37+17.06 | | | 77.08 | | 74.04 | 13.46 | 81.61 | | 74.12 | | 87.98 | 162.52 | 1088.09 | 4.73 | 1083.36 |
| C | 37+94.15 | | | | 76.38 | | | 13.46 | 80.91 | 148.78 | 74.78 | | 87.30 | 1087.70 | 4.73 | 1082.97 |
| D | 38+70.52 | | | | | | | | 13.46 | | 148.78 | 74.12 | | 1087.32 | 4.77 | 1082.55 |
| E | 36+44.17 | | | | | | 76.38 | | | 13.46 | 80.91 | | | 1088.65 | | |
| F | 37+20.55 | | | | | | | 77.08 | | | 13.46 | 81.61 | | 1088.27 | | |
| G | 37+97.63 | | | | | | | | 76.38 | | | 13.46 | 80.91 | 1087.88 | | |
| H | 38+74.00 | | | | | | | | | | | | 13.46 | 1087.50 | | |
| J | 36+47.65 | | | | | | | | | | 76.38 | | | 1088.44 | 4.77 | 1083.67 |
| K | 37+24.03 | | | | | | | | | | | 77.08 | | 1088.06 | 4.73 | 1083.33 |
| L | 38+01.11 | | | | | | | | | | | | 76.38 | 1087.67 | 4.73 | 1082.94 |
| M | 38+77.49 | | | | | | | | | | | | | 1087.29 | 4.77 | 1082.52 |

WILLIAM HEILAND KASTLER
CONSULTING ENGINEERS PLANNERS
SCHMITZ COMPANY
LANDSCAPE ARCHITECTS ROCHESTER BRANCH 1980

JOB NO. 2853.2

# BRIDGE LAYOUT

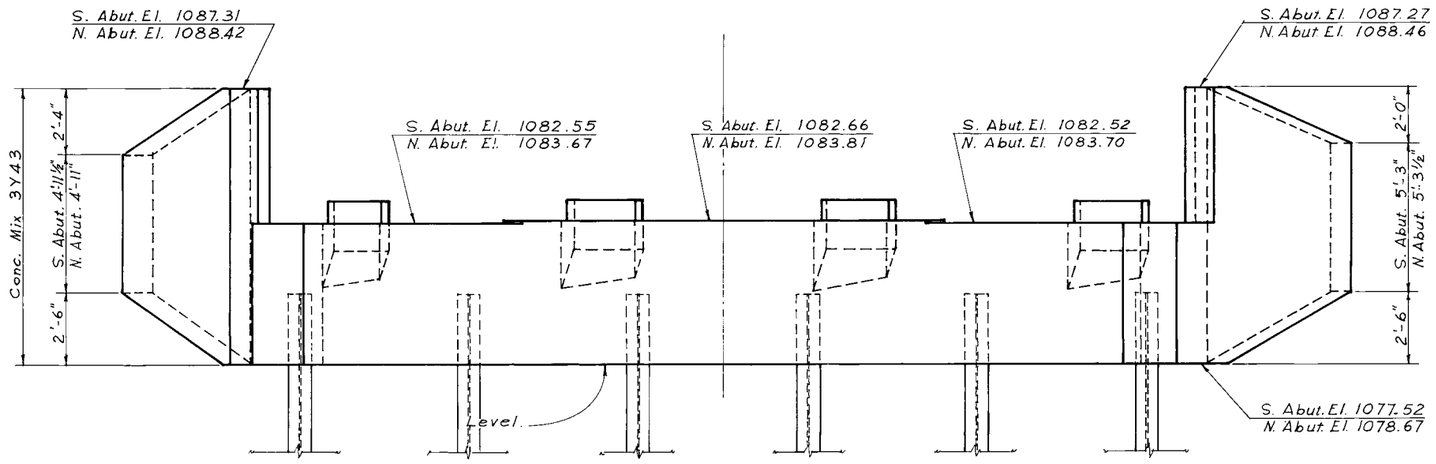
| DES: S.I.R. | DR: W. J. S. | APPROVED 4-11-77 | BRIDGE NO. 55525 |
|---|---|---|---|
| CHK: W. B. S. | CHK: G. E. G. | | |
| SHEET NO. 3 OF 17 | | | |

SAP 55-598-01

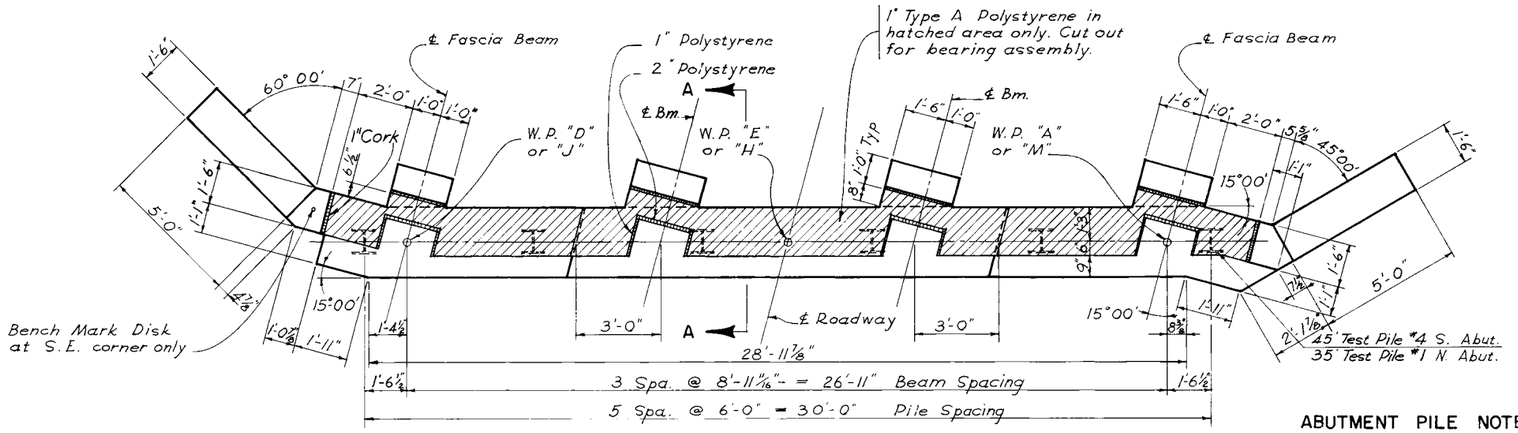
| SUMMARY OF QUANTITIES FOR TWO ABUTMENTS | | |
|---|---|---|
| | Concrete, Mix No. 3Y43 | 44 Cu. Yds. |
| | Reinforcement Bars | 4100 Lbs. |
| | Structure Excavation | Lump Sum |
| ① | Steel H-Piling Delivered (HP10x42) | 350 Lin. Ft. |
| | Steel H-Test Piles 45' Long | 1 Each |
| | Steel H-Test Piles 35' Long | 1 Each |
| ② | Bench Mark Disk | One Unit |

① Does not include test piles.

② County will furnish disk. Payment for placing to be included in price bid for other items. See Std. Detail Plate 9301 for placing.

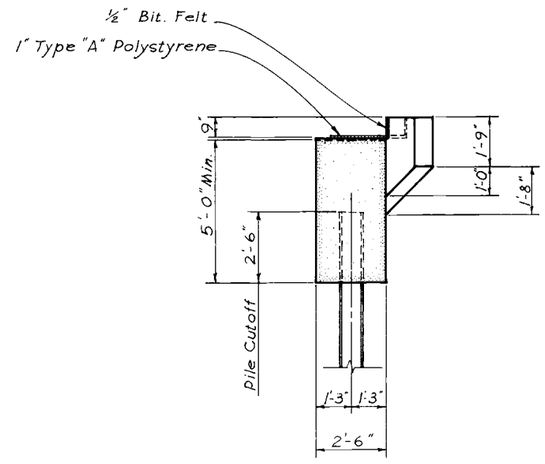



ELEVATION




Bridge seat steps shall be paralliel to beam. Place ½" bit. felt on vertical face of bridge seat steps.

PLAN




SECTION A-A

**ABUTMENT PILE NOTES**

1 Steel Test Pile 45 ft. long.
5 Steel Piles est. length 40 ft.
6 Steel Piles req'd. for S. Abutment.
1 Steel Test Pile 35 ft long
5 Steel Piles est. length 30 ft.
6 Steel Piles reqd. for N. Abutment.
Pile spacing shown is at bottom of footing.
All piles to be HP 10 x 42.
All piles shall be driven to substantial refusal.

| COMPUTED PILE LOAD | TONS/PILE |
|---|---|
| Dead load | 37.9 |
| Live load | 10.5 |
| Total | 48.4 |

JOB NO. 2653.2

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

# ABUTMENT DETAILS

| DES: S.I.R. | DR: W.J.S. | APPROVED 4-11-77 | BRIDGE NO. 55525 |
|---|---|---|---|
| CHK: W.B.S. | CHK: G.E.G. | | |

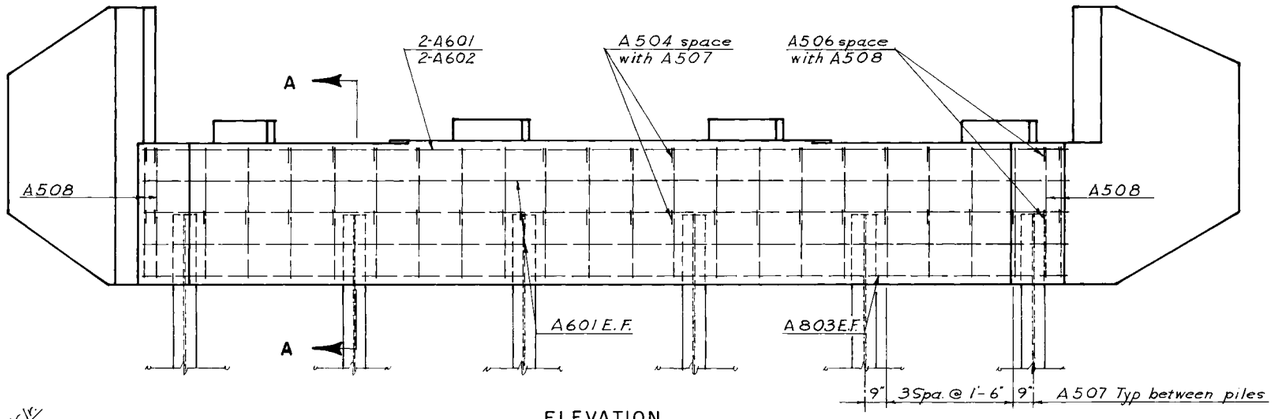
SHEET NO. 4 OF 17

SAP 55-598-01

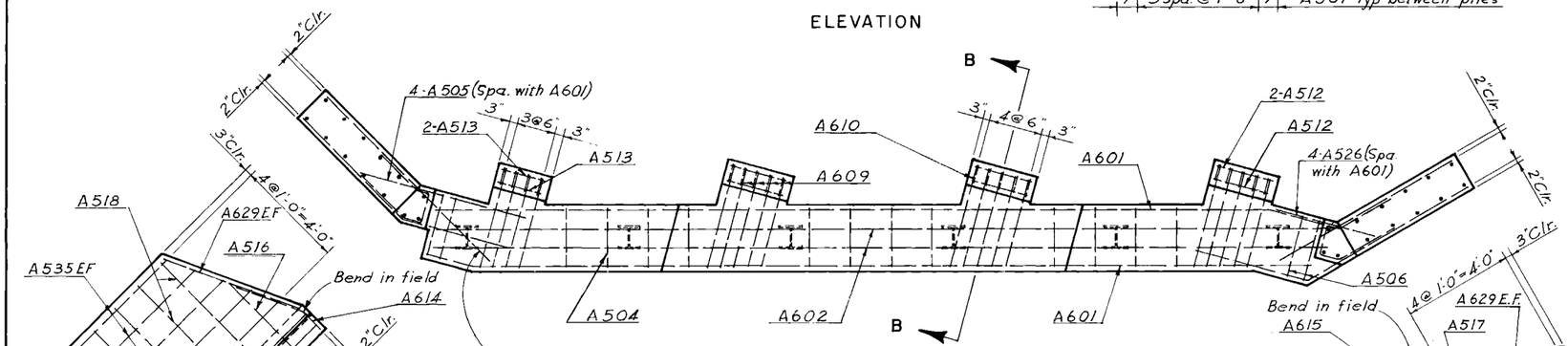
| VARIABLE BAR LENGTH | | |
|---|---|---|
| BAR | NUMBER | LENGTH |
| A609 | 4 Sets of 4 | 4'-10" to 5'-3" |
| A528 | 2 Sets of 5 | 5'-1" to 8'-8" |
| A535 | 2 Sets of 5 | 4'-9" to 8'-7" |

F.F. Denotes front face
B.F. Denotes back face
E.F. Denotes each face

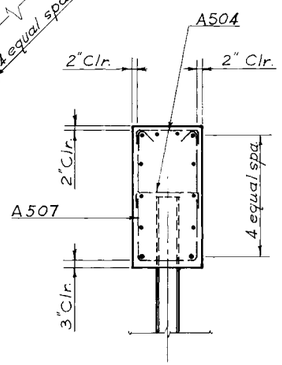
| BILL OF REINFORCING ONE ABUTMENT | | | | |
|---|---|---|---|---|
| BAR | NO. | LENGTH | SHAPE | LOCATION |
| A601 | 8 | 32'-9" | —— | Cap Long. |
| A602 | 2 | 33'-0" | —— | Cap Long. |
| A803 | 2 | 32'-9" | —— | Cap Long. |
| A504 | 32 | 3'-2" | ⌐¬ | Cap Tie |
| A505 | 4 | 6'-0" | —— | Cap & Wing Horiz. |
| A506 | 8 | 3'-3" | ⌐ | Cap Tie End |
| A507 | 20 | 12'-3" | ⊓ | Cap Stirrup |
| A508 | 4 | 12'-4" | ⊓ | Cap Stirrup End |
| A609 | 4 sets | Variable | ⌐¬ | Cap Tie Shear Block |
| A610 | 3 | 5'-4" | ⌐¬ | Cap Tie Shear Block |
| A511 | 19 | 8'-2" | ⌐ | Shear Block Vert. |
| A512 | 9 | 2'-2" | —— | Shear Block Horiz. |
| A513 | 3 | 1'-8" | —— | Shear Block Horiz. |
| A614 | 1 | 7'-8" | ⇒ | Wing Horizontal |
| A615 | 1 | 7'-11" | ⇒ | " " |
| A516 | 1 | 7'-8" | ⇒ | " " |
| A517 | 1 | 7'-11" | ⇒ | " " |
| A518 | 2 | 12'-2" | ⇒ | " " |
| A519 | 2 | 12'-3" | ⇒ | " " |
| A520 | 3 | 10'-10" | ⟋ | " " |
| A521 | 1 | 8'-4" | ⟋ | " " |
| A522 | 3 | 7'-1" | —— | " " |
| A523 | 1 | 4'-8" | —— | " " |
| A824 | 1 | 6'-0" | ⟋ | Cap Long. |
| A825 | 2 | 7'-4" | ⟋ | Wing Horizontal |
| A526 | 4 | 4'-4" | —— | Cap & Wing Horiz. |
| A527 | 6 | 9'-5" | —— | Wing Vertical |
| A528 | 2 sets | Variable | —— | " " |
| A629 | 4 | 5'-2" | —— | Wing Horizontal |
| A530 | 3 | 9'-2" | ⟋ | " " |
| A531 | 4 | 8'-9" | —— | " " |
| A532 | 1 | 5'-3" | ⟋ | " " |
| A833 | 1 | 7'-10" | ⟋ | " " |
| A834 | 1 | 8'-0" | ⟋ | " " |
| A535 | 2 sets | Variable | —— | Wing Vertical |
| A536 | 1 | 6'-3" | —— | Wing Horizontal |



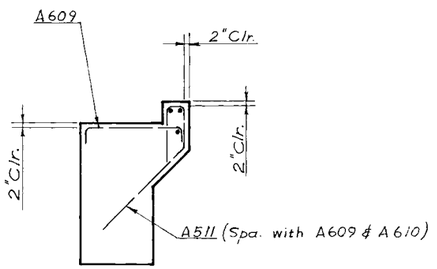

ELEVATION




PLAN

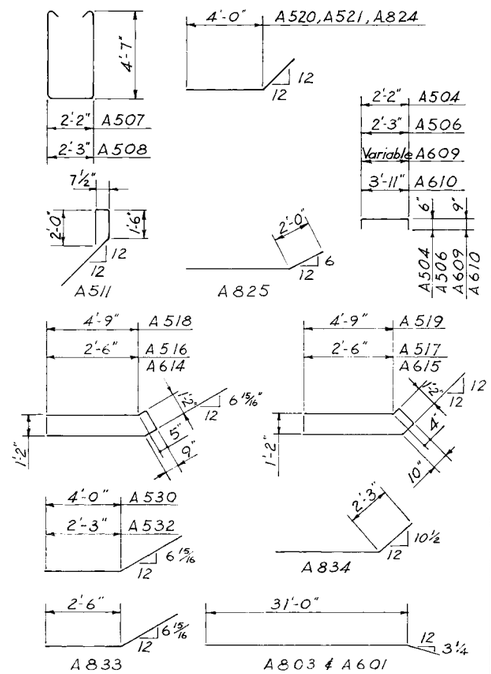



SECTION A-A




SECTION B-B
AT SHEAR BLOCK

## BENT BAR DETAILS




JOB NO. 2853.2

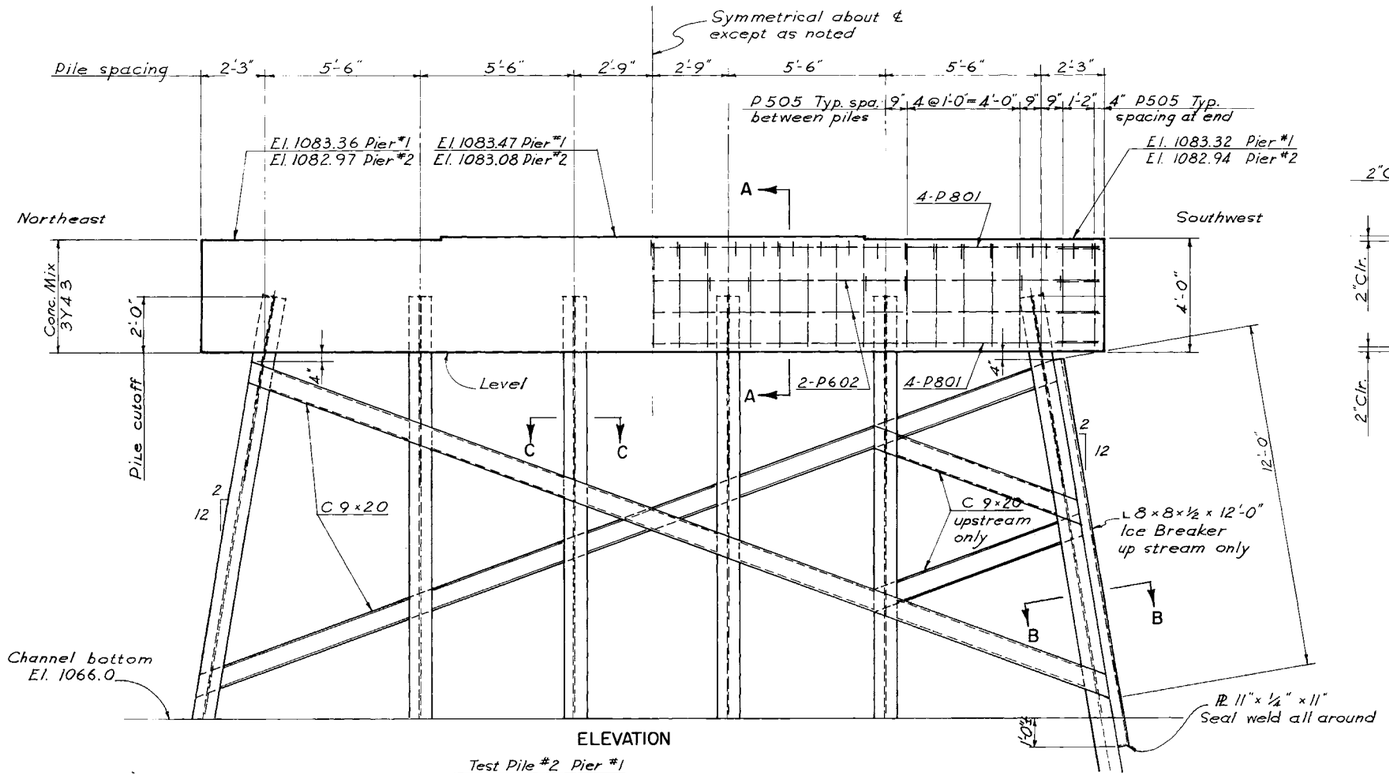
WALLACE HOLLAND KASTLER SCHMITZ COMPANY — CONSULTING ENGINEERS PLANNERS LANDSCAPE ARCHITECTS — MASON CITY, IOWA 50401 — ROCHESTER, MINN. 55901

ABUTMENT REINFORCING

| DES: S.I.R. | DR: W.J.S. | APPROVED |
|---|---|---|
| CHK: W.B.S. | CHK: G.E.G. | 4-11-77 |

SHEET NO. 5 OF 17

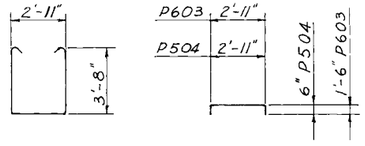
BRIDGE NO. 55525




## BILL OF REINFORCING FOR ONE PIER

| BAR | NO. | LENGTH | SHAPE | LOCATION |
|---|---|---|---|---|
| P 801 | 8 | 31'-8" | —— | Cap long. |
| P 602 | 4 | 31'-8" | —— | Cap long. |
| P 603 | 8 | 5'-11" | ⌐¬ | Cap end |
| P 504 | 49 | 3'-11" | ⌐¬ | Cap tie |
| P 505 | 29 | 11'-2" | □ | Cap tie |

## BENT BAR DETAILS




P505 P603 & P504

## SUMMARY OF QUANTITIES TWO PIERS

| | |
|---|---|
| Concrete, Mix No. 3Y43 | 32 Cu.Yd. |
| Reinforcement Bars | 2950 Lbs. |
| Structural Steel (3306) | 4040 Lbs. |
| (1) Steel H Piling Delivered (HP 12x53) | 400 Lin.Ft. |
| Steel H Test Pile 45ft. long (HP 12x53) | 2 Each |

(1) Does not include test piles.

## PIER PILE NOTES

2 Steel Test Piles 45ft. long.
10 Steel Piles est. length 40ft.
12 Steel Piles req'd. for two Piers.
All piles to be HP 12x53.
Outside piles shall be battered 2" per foot.
Pile spacing is at bottom of cap.
All piles shall be driven to substantial refusal.
For splicing see bridge detail B202
Paint Pier Piles, Bracing and Ice Breaker angles per 2452.3J and Special Provisions.

## COMPUTED PILE LOADS TONS/PILE

| | |
|---|---|
| Dead load | 55.8 |
| Live load | 14.1 |
| Total | 69.9 |

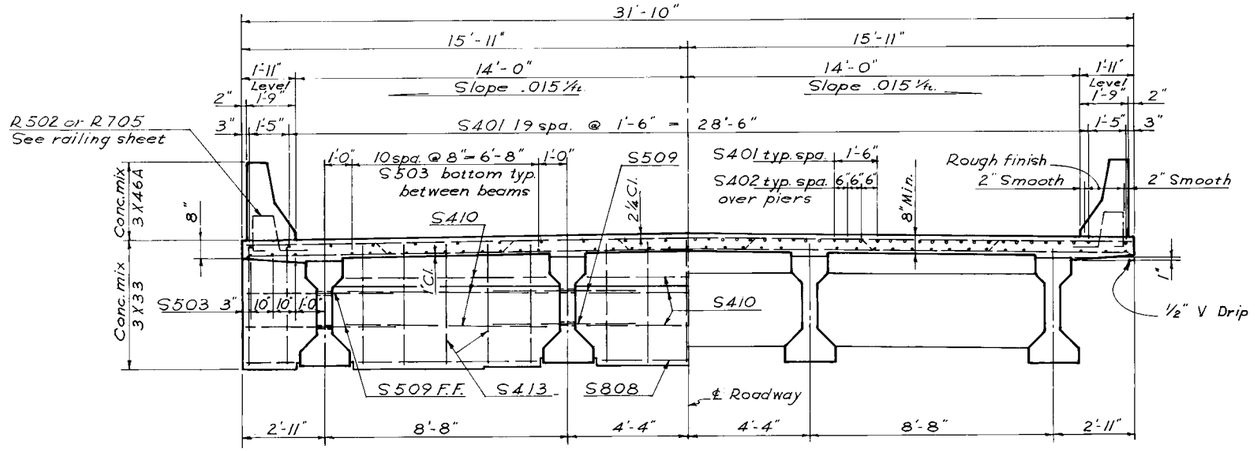
JOB NO. 2853.2

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

# PIER DETAILS

| DES: S.I.R. | DR: W.J.S. | APPROVED 4-11-77 | BRIDGE NO. 55525 |
|---|---|---|---|
| CHK: W.B.S. | CHK: G.E.G. | | |
| SHEET NO. 6 OF 17 | | | |

SAP 55 598-01

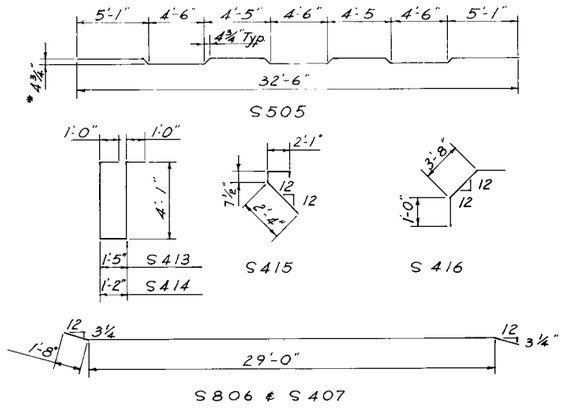



HALF SECTION NEAR ABUTMENT

HALF SECTION NEAR PIER

For Intermediate Diaphragms
See Detail B802 Sh. 15 or B403 Sh. 13

TRANSVERSE SECTION




BENT BAR DETAILS

* A tolerance of ¼" will be permitted for vertical dimension of bar S505.

Ⓐ BILL OF REINFORCING- SUPERSTRUCTURE

| BAR | NO. | LENGTH | SHAPE | LOCATION |
|---|---|---|---|---|
| S401 | 132 | 40'-0" | —— | Slab Top Long. |
| S402 | 76 | 15'-0" | —— | Slab Top Long. over Piers. |
| Ⓒ S503 | 234 | 40'-4" | —— | Slab Bottom Long. |
| S504 | 466 | 32'-8" | —— | Slab Top & Bottom Trans. |
| S505 | 232 | 33'-6" | ~~~ | Slab Trans. |
| S806 | 2 | 32'-4" | ⌒ | Abut. Diaphragm Horiz. |
| S407 | 4 | 32'-4" | ⌒ | " " " |
| S808 | 6 | 6'-9" | —— | " " " |
| S509 | 16 | 5'-3" | —— | " " " |
| S410 | 6 | 7'-5" | —— | " " " |
| S811 | 4 | 1'-8" | —— | " " " |
| S412 | 4 | 28'-8" | —— | Paving Support Horiz |
| S413 | 31 | 11'-7" | ⊓ | Abut. Diaphragm Stirrups |
| S414 | 6 | 11'-4" | ⊓ | Abut. Diaphragm End |
| S415 | 32 | 5'-6" | ⌐ | Paving Support Tie |
| S416 | 30 | 5'-8" | ⌐ | Abut. Diaphragm Fillet |

Ⓐ See Sh. No. 10 for Bill of Reinforcing for Railing.
Ⓑ 6 lines, 1'-6" lap
Ⓒ 6 lines, 1'-11" lap

④ LIST OF PREFORMED CORK JOINT FILLER

| | |
|---|---|
| 4 pcs. | 1'-6" × 1" × 4'-9" Abut. Wings |
| 16 pcs. | 1'-0" × 1" × 1'-5" Railing Deflection Joint |

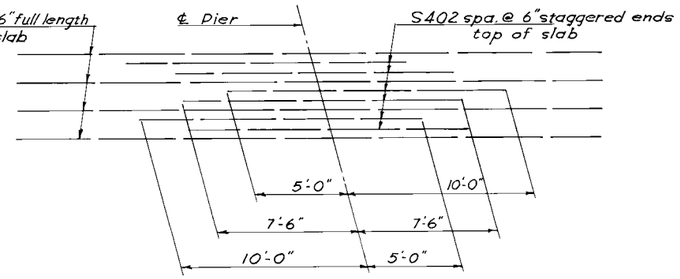
④ LIST OF PREFORMED BIT. JOINT FILLER

| | |
|---|---|
| 2 pcs. | 9" × ½" × 2'-0" Abut. Shear Blocks |
| 3 pcs. | 9" × ½" × 2'-6" " " " |
| 4 pcs. | 1¼" × ½" × 1'-8" Abut. Bridge Seat Steps |

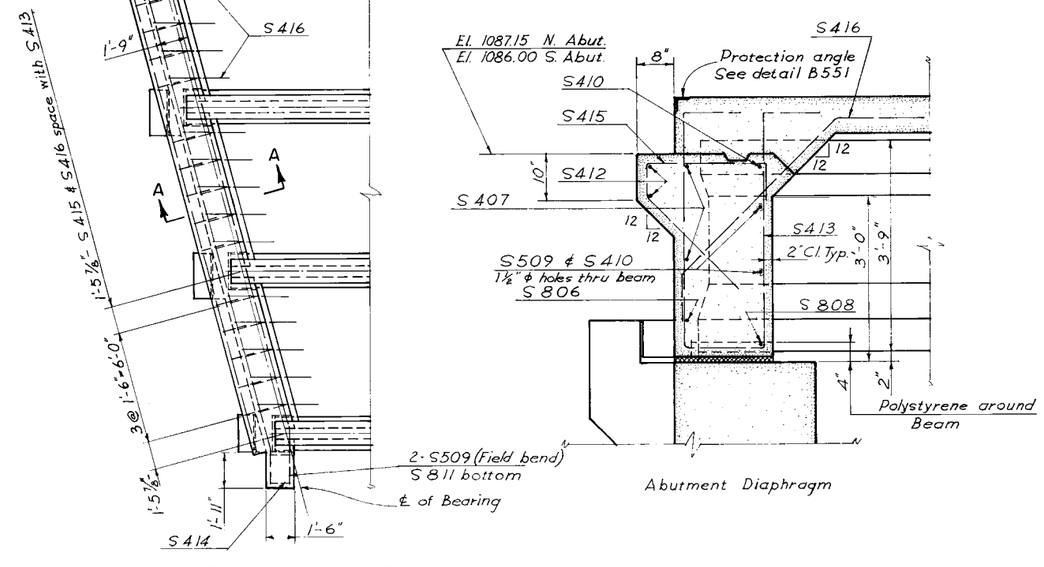
④ LIST OF POLYSTYRENE TYPE A

| | |
|---|---|
| 8 pcs. | 4" × 2" × 2'-0" Back of Abut. Brg. |
| 8 pcs. | 4" × 1" × 11" Sides of Abut. Brg. |
| 2 pcs. | 4" × 1" × 1'-2" " " " |
| 6 pcs. | 4" × 1" × 1'-4" " " " |
| 2 pcs. | 1'-9" × 1" × 29'-8" Bridge Seat of Abut. |
| 2 pcs. | 1'-6" × 1" × 2'-10" " " " |
| 3 pcs. | 8" × 1" × 2'-6" " " " |
| 1 pc. | 7" × 1" × 2'-0" " " " |

⑦ Length is computed from ℄ to ℄ of beams along ℄ of diaphragm.




ADDITIONAL BAR OVER PIERS




ABUTMENT DIAPHRAGM PLAN

SECTION A-A

Abutment Diaphragm

SUMMARY OF QUANTITIES- SUPERSTRUCTURE

| | | |
|---|---|---|
| ① | Concrete Mix No. 3 X 33 | 212 Cu.Yd. |
| ② | Concrete Mix No. 3X 46 A | 55 Cu.Yd. |
| | Reinforcement Bars | 47,710 Lbs. |
| | Structural Steel (3306) | 380 Lbs. |
| | Elastomeric Bearing Pad, Type E 1 | 8 Each |
| | Elastomeric Bearing Assemblies, Type F 1 | 16 Each |
| | Prestressed Concrete Beams, Type 45-77 | 12 Each |
| ⑦ ⑥ | Diaphragms for Type 45-77 Prestressed Beams | 269 Lin.Ft. |
| | Floor Drains | 14 Each |
| ③ ⑤ | 3-Ply Joint Waterproofing | 102 Lin.Ft. |
| ③ | Bridge Name Plate | One Unit |

① Includes Railing Quantities
② The volume of deck concrete for payment shall be computed using an average stool height of 1.5".
③ To be included in price bid for other items.
④ See Special Provisions.
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 Includes reinforcing steel if concrete diaphragm alternate is selected.

JOB NO. 2853.2

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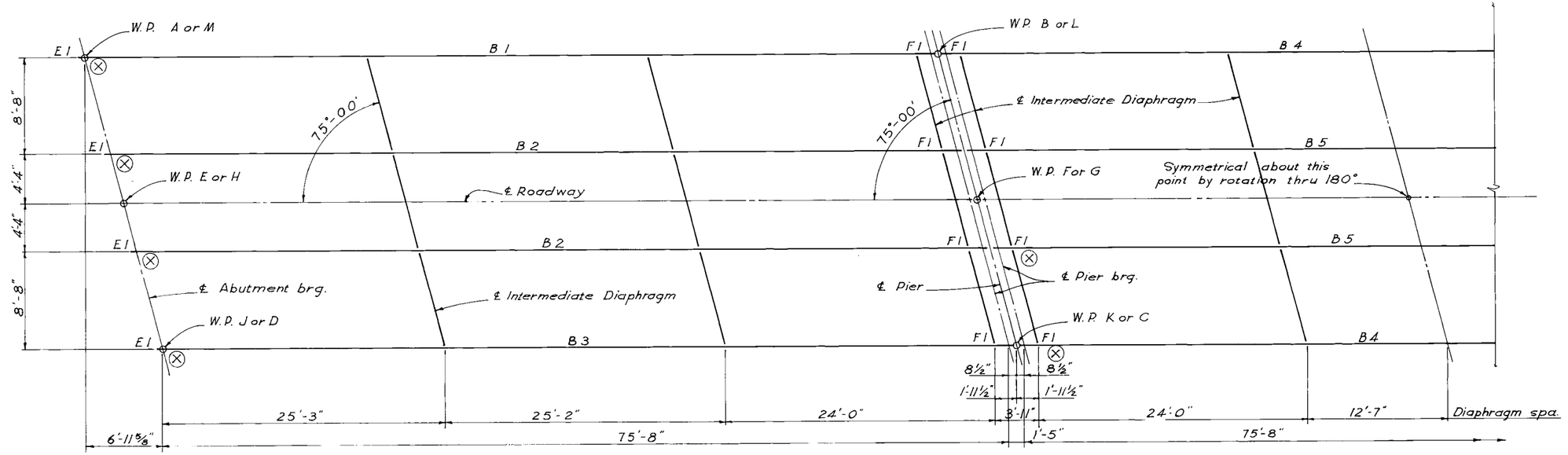
# SUPERSTRUCTURE DETAILS

| DES: S.I.R. | DR: W. J. S. | APPROVED | BRIDGE NO. |
|---|---|---|---|
| CHK: W. B. S. | CHK: G. E. G. | 4-11-77 | 55525 |
| SHEET 7 OF 17 | | | |

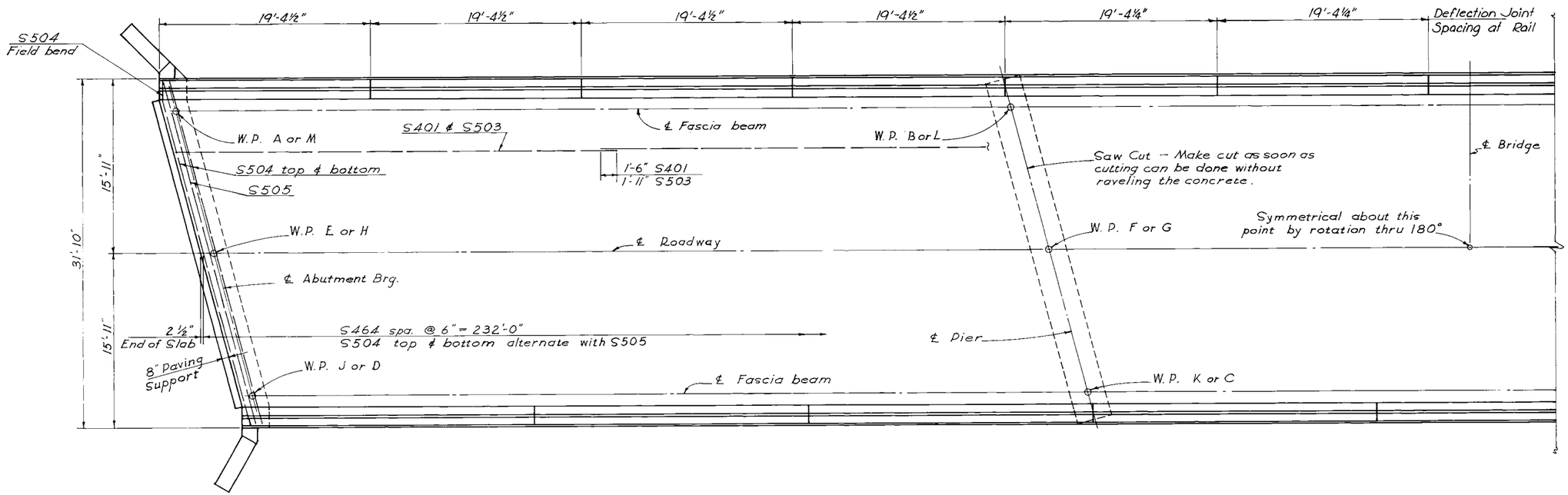
SAP 55-598-01

E 1 denotes Elastomeric Bearing Pad Type E 1

F 1 denotes Elastomeric Bearing Assembly Type F1




FRAMING PLAN




DECK PLAN

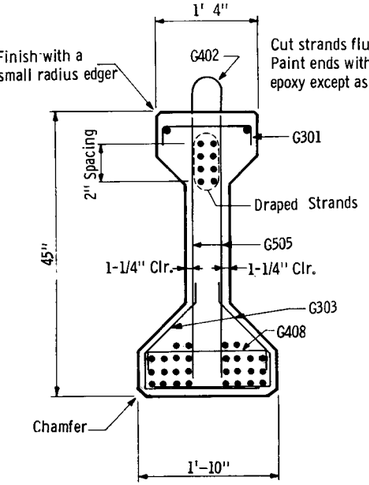
JOB NO. 2853.2


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


# SUPERSTRUCTURE DETAILS

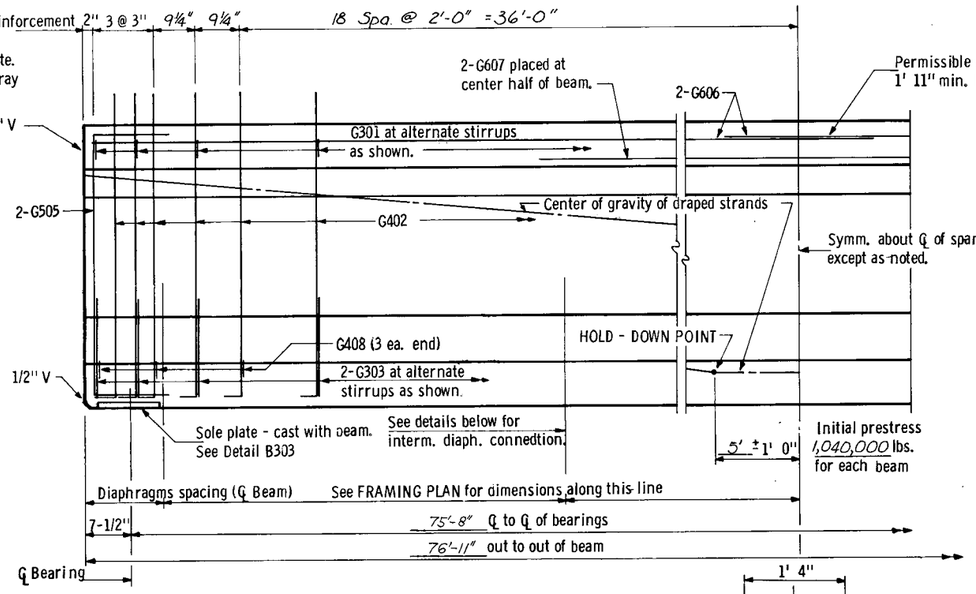
| DES: S. I. R. | DR: W. J. S. | APPROVED 4-11-77 | BRIDGE NO. 55525 |
|---|---|---|---|
| CHK: W. B. S. | CHK: G. E. G. | | |
| SHEET 8 OF 17 | | | |

SAI 55-57B-01

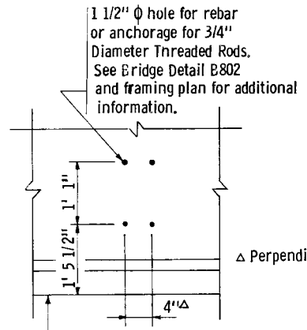



Details not shown are the same as the SECTION AT ℄ BEAM

**END VIEW**

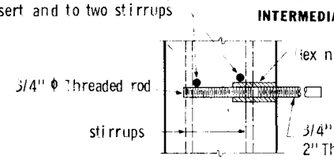



**HALF ELEVATION**




△ Perpendicular to ℄ of diaphragm.

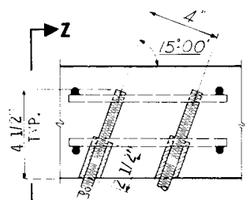
**FOR USE WITH CONCRETE INTERMEDIATE DIAPHRAGM**




Nuts and rods per M. H. D. 3306. No paint

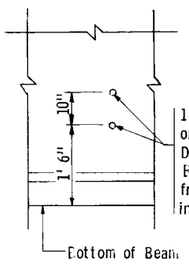
**SECTION Z - Z**

See FRAMING PLAN for skew direction



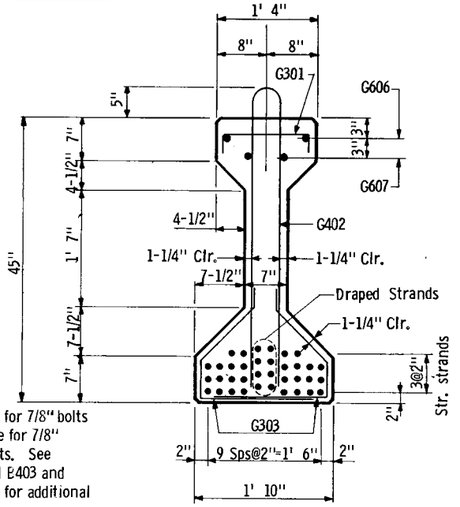

**SECTION X - X**

**USE AT FASCIA BEAM AND INTERIOR BEAM WITH STAGGERED DIAPHRAGMS**

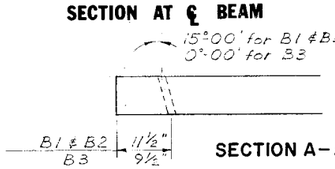



1 1/4" ϕ hole for 7/8" bolts or Anchorage for 7/8" Diameter Bolts. See Bridge Detail B403 and framing plan for additional information.

**FOR USE WITH STEEL INTERMEDIATE DIAPHRAGM**




**SECTION AT ℄ BEAM**



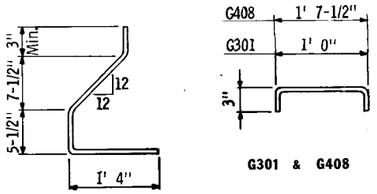

**SECTION A - A**

| Y DISTANCES (IN INCHES) | | | |
|---|---|---|---|
| | NO. | ℄ SPAN | END |
| Straight strands | 28 | 4.57 | |
| Draped strands | 8 | 6.00 | 37 |
| Total strands | 36 | 4.89 | |

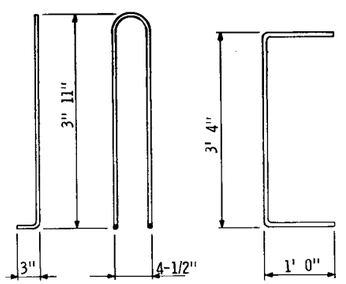
Y = distance of Center of Gravity of strands from bottom of beam. All strands spaced 2" c-c, horizontally and vertically.

All strands 1/2" ϕ 270 kip, ultimate strength

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




**G303** **G301 & G408**




**G402** **G505**

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

**BEAMS** B1 thru B5

| Bar | Wt. |
|---|---|
| G 301 | .56 lb. |
| G 402 | 5.18 lb. |
| G 303 | 1.00 lb. |
| G 505 | 5.56 lb. |
| G 606 | |
| G 607 | |
| G 408 | 1.45 lb. |

| Girder Section Data |
|---|
| Wt./Ft. = 583 lbs. |
| Cross sec. area at ℄ of span = 560in.$^2$ |
| C. G. (from bottom) = 20.27 in. |
| I = 125,390 in.$^4$ |
| $S_B$ = 6,186 in.$^3$ |
| 1/2" ϕ 270k strand wt./ft. = .525 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 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. M. H. D. 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 girders. See M. H. D. 2405.

See framing plan for beam ends marked "X".

Approximate weight of beam 22.5 tons.

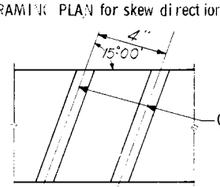
As an alternate to the diaphragm anchorages shown, the contractor may submit details of a cast - in - place anchorage to the engineer for approval. Anchorage must provide an ultimate pull out strength of 15 kips per anchorage.

| MINIMUM CONCRETE STRENGTH - P.S.I. | | |
|---|---|---|
| | ① f'ci | ② f'c |
| Required min. Concrete Strength | 5000 | 5800 |

① Minimum concrete strength at time of prestress transfer.

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

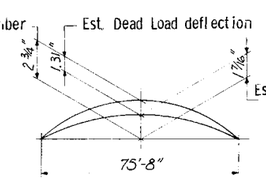
**Fig. 5-397,504**
Nov. 12, 1974




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

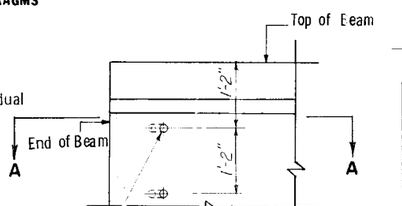
**SECTION X-X**

**USE AT INTERIOR BEAM WITH CONTINUOUS DIAPHRAGMS**




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.

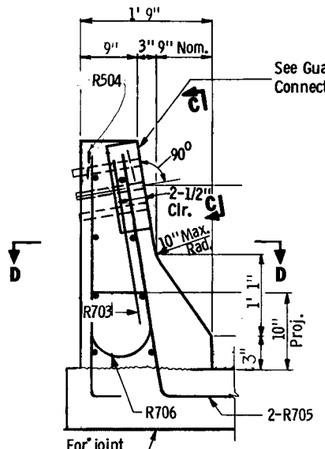
**CAMBER DIAGRAM**



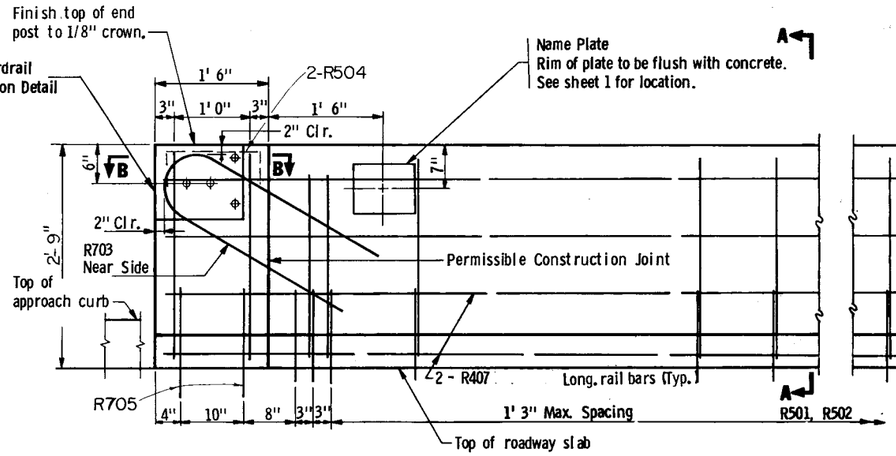

1 1/2" ϕ holes for rebars or Anchorage for 3/4" Diameter Threaded Rods. See Sheet No. 7 of 17 for additional information.

**END DIAPHRAGMS**

| TITLE: 45" PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 45 - 77 | DES: | DR: | APPROVED: 4-11-77 | Bridge No. 55525 |
|---|---|---|---|---|
| | CHK: | CHK: G. E. G. | Sheet No. 9 of 17 Sheets | |



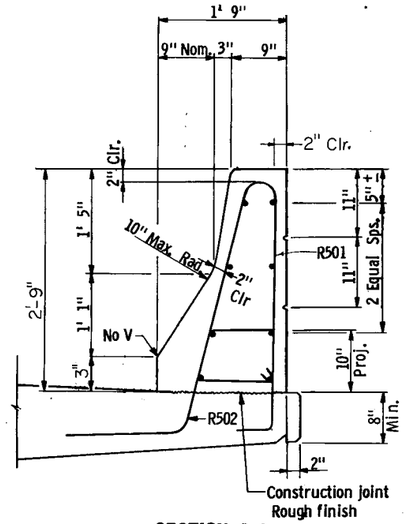

**END VIEW**




**INSIDE ELEVATION OF RAILING**
(WEARING COURSE NOT SHOWN)

**DEFLECTION JOINT**

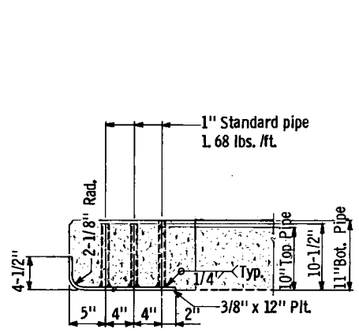
**EXPANSION JOINT**
Expansion device not shown.
Expansion joint required only if expansion device is used.
See superstructure sheets.



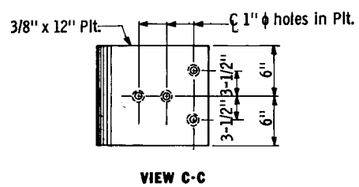

**SECTION A-A**

| BILL OF REINFORCEMENT FOR RAILING | | | | |
|---|---|---|---|---|
| BAR | NO. | LENGTH | SHAPE | LOCATION |
| R501 | 428 | 7' 2" | Bent | Rail Vertical |
| R502 | 432 | 5' 7" | Bent | Rail Vertical |
| R703 | 4 | 6' 6" | Bent | End Post |
| R504 | 8 | 2' 3" | Bent | End Post |
| R705 | 8 | 5' 7" | Bent | End Post |
| R706 | 8 | 5' 8" ① | Bent | End Post |
| R407 | 72 | 27'- 2" | Str't. | Rail Long. |
| R408 | 96 | 19'- 1" | Str't. | Rail Long. |

① Minimum Lap 1'-6"

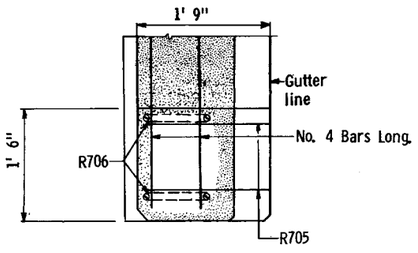



**SECTION B-B**
(Reinf. not shown)

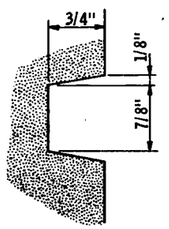



**VIEW C-C**

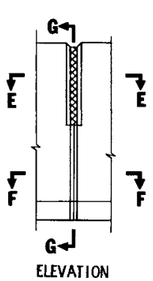
**GUARDRAIL CONNECTION DETAIL**
**GALVANIZE AFTER FABRICATION PER M.H.D. 3394**
Est. Wt. 31 Lbs.



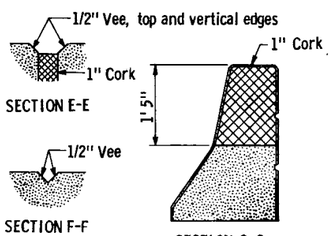

**SECTION D-D**




**RAIL RUSTICATION**

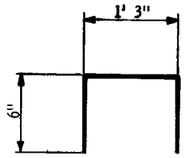



ELEVATION

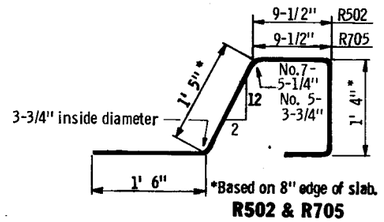



CONCRETE JOINT

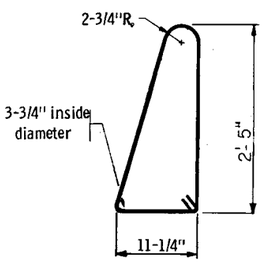
**DEFLECTION JOINT DETAILS**



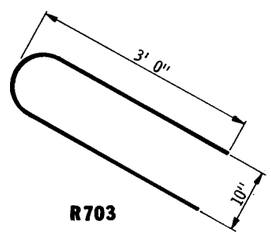

**R504**



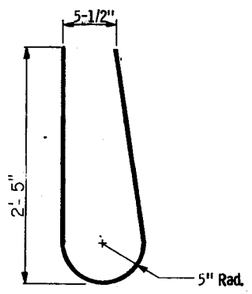

**R502 & R705**




**R501**




**R703**




**R706**

**GENERAL NOTES**

Conc. Railing = 475 lbs./ft.

Conc. Railing = .117 cu. yds./ft.

Rail and end post to be Concrete Mix No. 3X46A.

**Structural steel shall comply with M.H.D. 3306.**

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

**See superstructure sheet for joint spacing.**

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

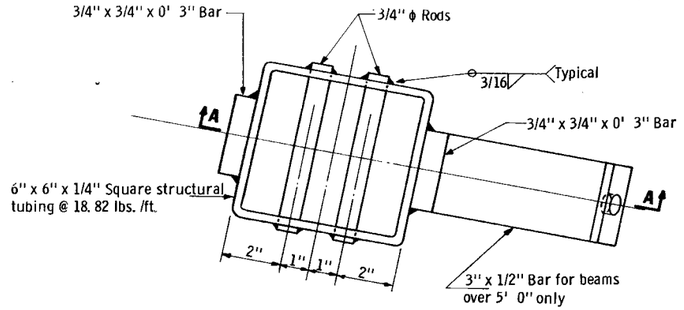
**Guardrail connection to be included in** price bid for other items.

**Rail quantities are included in summary of quantities for superstructure.**

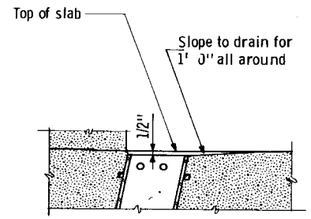
**Fig. 5-397.117**
March 7, 1975

| TITLE: CONCRETE RAILING (TYPE G) WITH INTEGRAL END POST | DES: | DR: | APPROVED: | Bridge No. 55525 |
|---|---|---|---|---|
| | CHK: | CHK: G. E. G. | | |
| | Sheet No. 10 of 17 Sheets | | | |

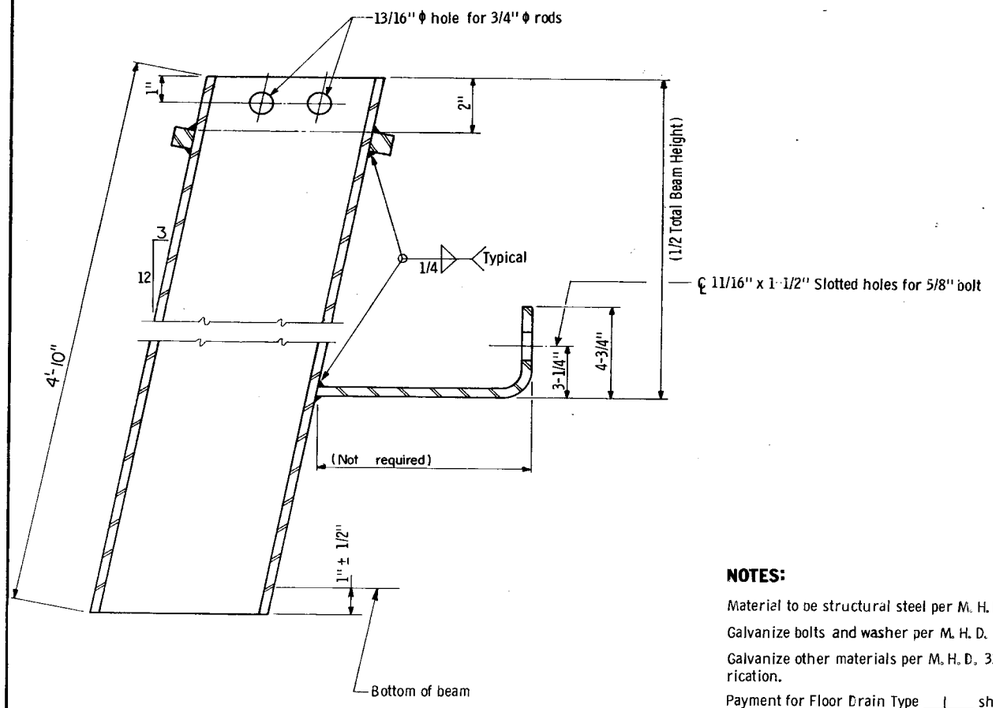
SAP 55-598-01




**PLAN VIEW**




**PLACEMENT DIAGRAM**




**SECTION A - A**

**NOTES:**

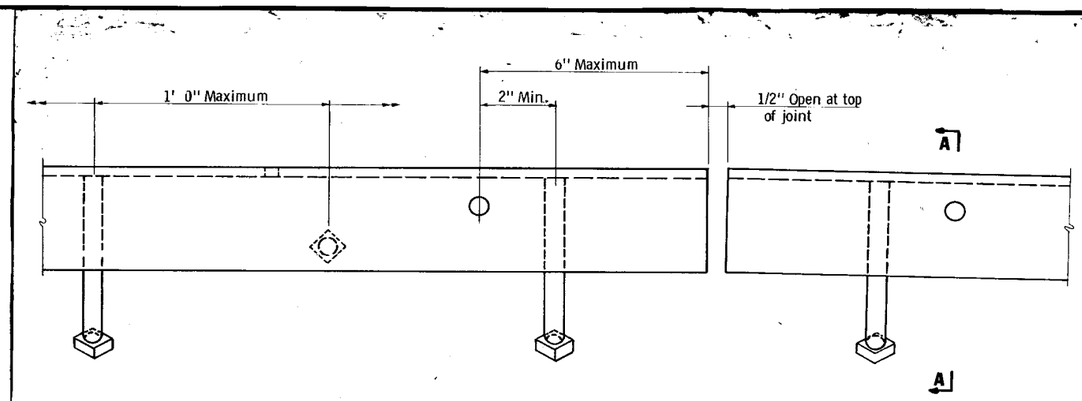
Material to be structural steel per M. H. D. 3306.

Galvanize bolts and washer per M. H. D. 3392.

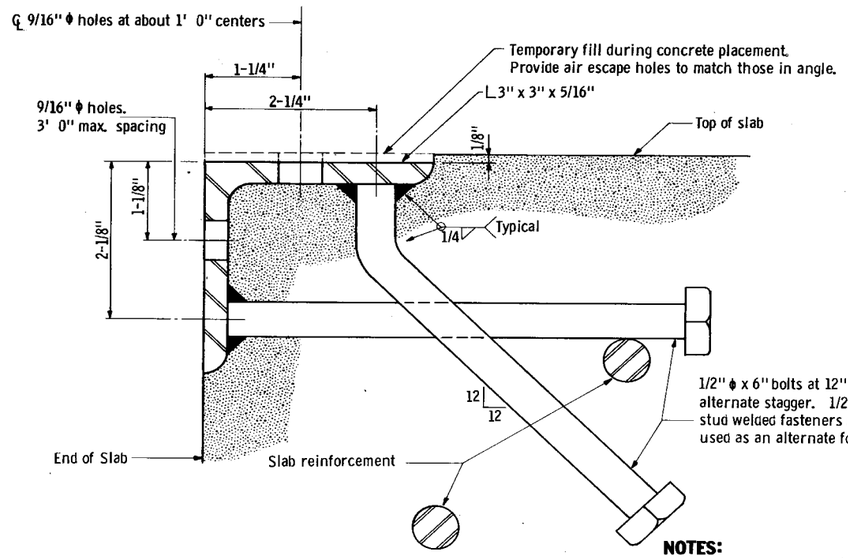
Galvanize other materials per M. H. D. 3394 after fabrication.

Payment for Floor Drain Type 1 shall include all material shown on this detail.

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




**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.

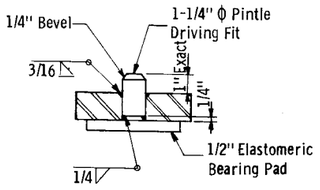
Material: Structural steel per M. H. D. 3306. Galvanize after fabrication per M. H. D. 3394.

Set angle to proper grade and crown.

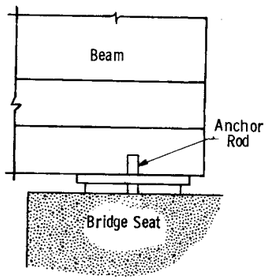
All material will be paid for as structural steel - M. H. D. 3306.

| | | | |
|---|---|---|---|
| APPROVED May 26, 1972<br>Douglas Duffert<br>Engineering Standards Engineer<br>RESEARCH AND STANDARDS DIVISION | MINNESOTA<br>DEPARTMENT OF TRANSPORTATION<br>**PROTECTION ANGLE**<br>**FOR END OF SLAB** | | DETAIL NO.<br>**B551** |

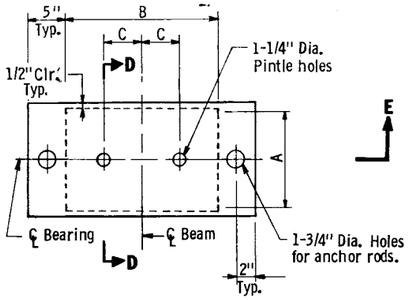
| | | | | |
|---|---|---|---|---|
| TITLE:<br>**DETAILS**<br>SAP 55.525-31 | DES: | DR: | APPROVED:<br>4-11-77 | **Bridge No.**<br>55525 |
| | CHK: | CHK: G. E. G. | | |
| | **Sheet No. 11 of 17 Sheets** | | | |



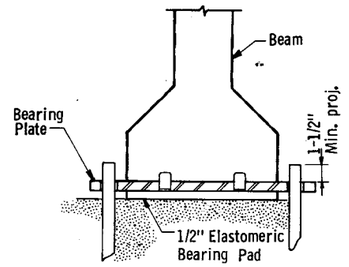

**SECTION D-D**
(ENLARGED)




**SIDE ELEVATION**




**PLAN**

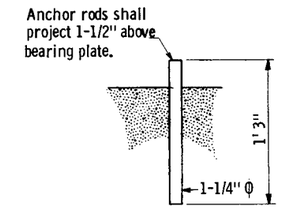



**SECTION E-E**

**1/2" ELASTOMERIC PAD DIMENSIONS**

| Beam Size | A | B | C | DL + LL Min. | DL Max | DL + LL Max | Shape Factor | Bearing Plt. Size | Assembly Type |
|---|---|---|---|---|---|---|---|---|---|
| 28" | 10" | 14" | 4" | 27.5 | 68.8 | 110.0 | 6 | 11" x 24" x 1" | |
| ↓ | 12" | ↓ | 4" | 33.1 | 82.8 | 132.4 | 6 | 13" x 24" x 1" | |
| ↓ | 14" | ↓ | 4" | 38.7 | 96.8 | 154.8 | 7 | 15" x 24" x 1" | |
| 36" | 10" | 16" | 6" | 31.5 | 78.8 | 126.0 | 6 | 11" x 26" x 1" | |
| ↓ | 12" | ↓ | 6" | 37.9 | 94.8 | 151.6 | 7 | 13" x 26" x 1" | |
| ↓ | 14" | ↓ | 6" | 44.3 | 110.8 | 177.2 | 7 | 15" x 26" x 1" | |
| 40"&45" | 10" | 20" | 8" | 39.5 | 98.8 | 158.0 | 7 | 11" x 30" x 1" | F1 |
| ↓ | 12" | ↓ | 8" | 47.5 | 118.8 | 190.0 | 8 | 13" x 30" x 1" | |
| ↓ | 14" | ↓ | 8" | 55.5 | 138.8 | 222.0 | 8 | 15" x 30" x 1" | |
| 54"- 81" | 10" | 24" | 9" | 47.5 | 118.2 | 190.0 | 7 | 11" x 34" x 1" | |
| ↓ | 12" | ↓ | 9" | 57.1 | 142.8 | 228.4 | 8 | 13" x 34" x 1" | |
| ↓ | 14" | ↓ | 9" | 66.7 | 166.8 | 266.8 | 9 | 15" x 34" x 1" | |

**SECTION E-E**




**ANCHOR ROD DETAIL**

**NOTES**

For elastomeric bearing pads, see Special Provisions.

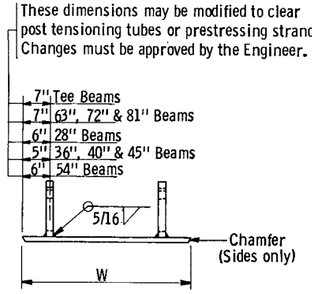
Plates and anchor rods shall comply with M. H. D. 3306.

Pintles shall comply with M. H. D. 3314, Type II.

Galvanize structural steel per M. H. D. 3394.

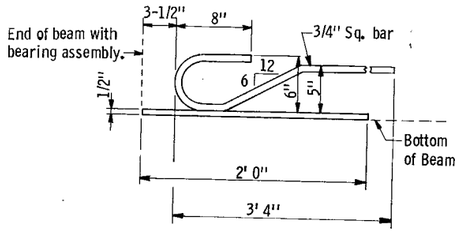
Payment for bearing assembly shall include all material on this detail.

| APPROVED: May 6, 1976<br>Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN<br>Issued by: OFFICE OF ENGINEERING STANDARDS | MINNESOTA DEPARTMENT OF TRANSPORTATION<br>**ELASTOMERIC BEARING ASSEMBLY**<br>**PRESTRESSED CONCRETE BEAMS**<br>**(FIXED)** | | DETAIL NO.<br>**B304** |
|---|---|---|---|




**FRONT VIEW**

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




**SIDE VIEW**

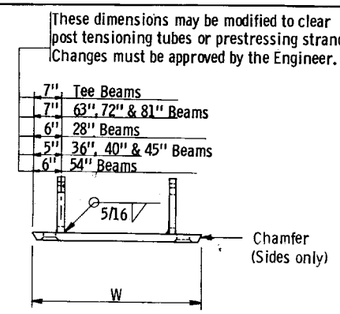
**NOTES**

Material to be Structural Steel per M. H. D. 3306

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

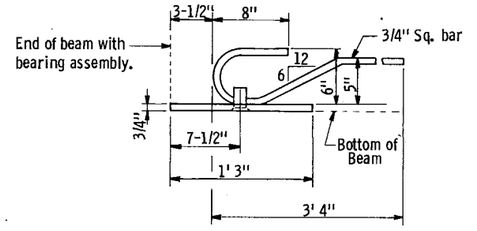
Payment for sole plates to be included in price bid for Prestressed Concrete Beams.

**SOLE PLATE FOR**
**B305 BEARING**



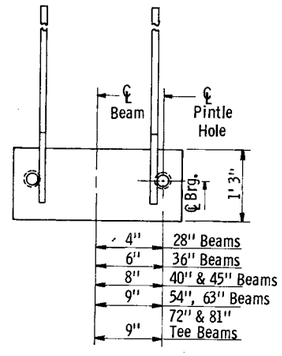

**FRONT VIEW**

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

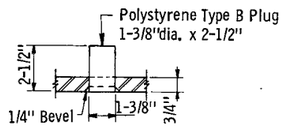



**SIDE VIEW**

Showing placement in beam




**PLAN VIEW**




**PINTLE HOLE DETAIL**
( 2 Required)

**NOTES**

Material to be Structural Steel per M. H. D. 3306

Sole plate for Bearing Assembly to be hot dipped galvanized as per M. H. D. 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

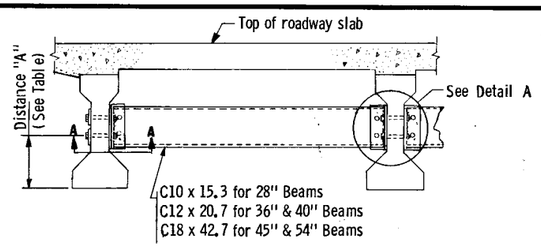
**SOLE PLATE FOR**
**B304 BEARING ASSEMBLY**

| APPROVED: Sept. 17, 1976<br>Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN<br>Issued by: OFFICE OF ENGINEERING STANDARDS | MINNESOTA DEPARTMENT OF TRANSPORTATION<br>**SOLE PLATES**<br>**PRESTRESSED CONCRETE BEAMS** | | DETAIL NO.<br>**B303** |
|---|---|---|---|

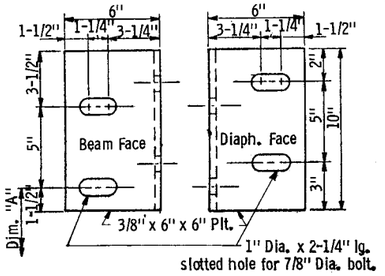
| TITLE: DETAILS SAP 55-598-01 | DES: | DR: | APPROVED: | Bridge No. 55525 |
|---|---|---|---|---|
| | CHK: | CHK: G.E.G. | | |
| | Sheet No. 12 of 17 Sheets | | | |

TABLE

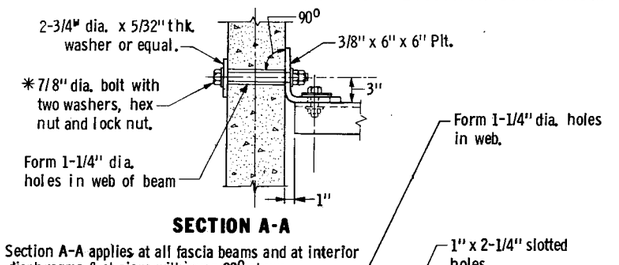
| Beam Ht. | Distance "A" |
|---|---|
| 28" | 1' 0" |
| 36" | 1' 3" |
| 40" | 1' 5" |
| 45" | 1' 4-1/2" |
| 54" | 1' 9" |




**PART TRANSVERSE SECTION AT DIAPHRAGM**

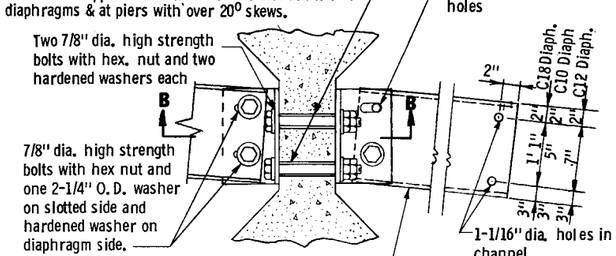



**DIAPHRAGM SUPPORT FOR 28" BEAMS**



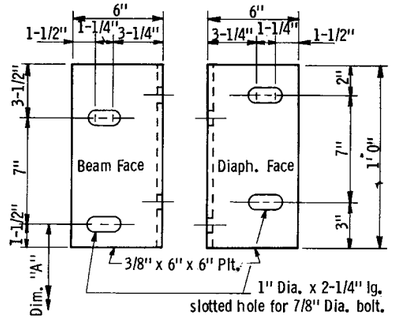

**SECTION A-A**

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

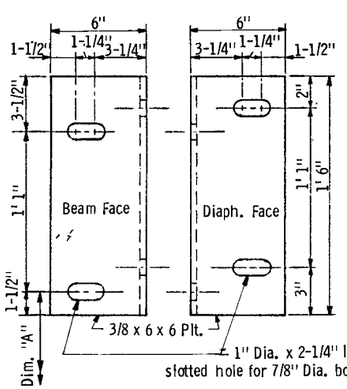



**DETAIL A**

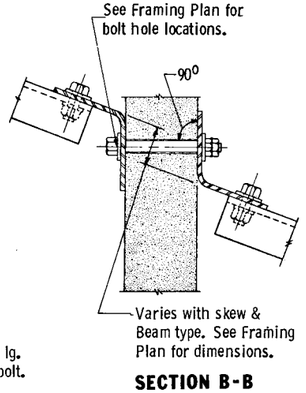
Interior beam with continuous line of diaphragms




**DIAPHRAGM SUPPORT FOR 36" & 40" BEAMS**




**DIAPHRAGM SUPPORT FOR 45" & 54" BEAMS**




**SECTION B-B**

Typ. Section for Skews under 20°

GENERAL NOTES:

The leg of 6" x 6" Plate shall be shop bent to conform to diaphragm line. For angles less than 3°, shop bends will not be required.

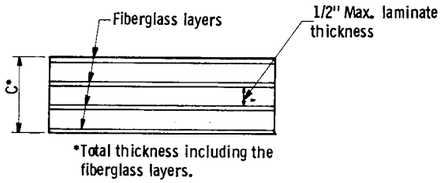
*As an alternate to the 7/8" bolt connection shown, the contractor may submit details of a cast-in-place anchorage to the engineer for approval. Anchorage must provide ultimate pull out strength of 15 kips per anchorage.

See Special Provisions 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 | MINNESOTA DEPARTMENT OF TRANSPORTATION | | DETAIL NO. |
|---|---|---|---|
| Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN | **STEEL INTERMEDIATE DIAPHRAGM** | | **B403** |
| Issued by: OFFICE OF ENGINEERING STANDARDS | **(FOR 28"- 54" PRESTRESSED CONCRETE BEAM SPANS)** | | |

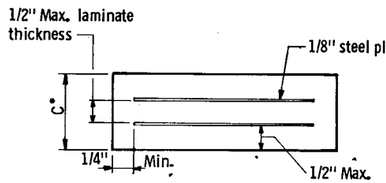



*Total thickness including the fiberglass layers.

SECTION X-X

**FIBERGLASS LAMINATE PAD DETAIL**

(1-1/2" pad shown)




SECTION X-X

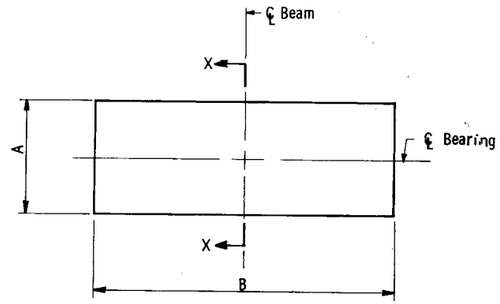
* Total thickness including the steel plates.

**STEEL LAMINATE PAD DETAIL**

(1-1/2" pad shown)

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

① Steel
② Fiberglass




PLAN

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

**NOTES:**

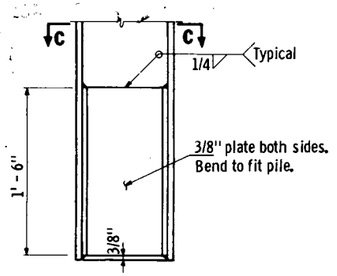
For elastomeric bearing pads see special provisions.

**ELASTOMERIC PAD DIMENSIONS**

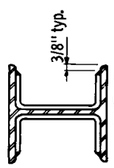
| Beam Size | A | B | C | DL Min. | DL Max. | DL + LL Max. | Shape Factor | Pad Type |
|---|---|---|---|---|---|---|---|---|
| 28" | 10" | 14" | | 28.0 | 70.0 | 112.0 | 6 | |
| | 12" | | | 33.6 | 84.0 | 134.4 | 6 | |
| | 14" | | | 39.2 | 98.0 | 156.8 | 7 | |
| | 16" | | | 44.8 | 112.0 | 179.2 | 7 | |
| | 18" | | | 50.4 | 126.0 | 201.6 | 8 | |
| | 20" | | | 56.0 | 140.0 | 224.0 | 8 | |
| | 22" | | | 61.6 | 154.0 | 246.4 | 9 | |
| 36" | 10" | 16" | | 32.0 | 80.0 | 128.0 | 6 | |
| | 12" | | | 38.4 | 96.0 | 153.6 | 7 | |
| | 14" | | | 44.8 | 112.0 | 179.2 | 7 | |
| | 16" | | | 51.2 | 128.0 | 204.8 | 8 | |
| | 18" | | | 57.6 | 144.0 | 230.4 | 8 | |
| | 20" | | | 64.0 | 160.0 | 256.0 | 9 | |
| | 22" | | | 70.4 | 176.0 | 281.6 | 9 | |
| | 24" | | | 76.8 | 192.0 | 307.2 | 10 | |
| 40"&45" | 10" | 20" | 2" | 40.0 | 100.0 | 160.0 | 7 | E1 |
| | 12" | | | 48.0 | 120.0 | 192.0 | 8 | |
| | 14" | | | 56.0 | 140.0 | 224.0 | 8 | |
| | 16" | | | 64.0 | 160.0 | 256.0 | 9 | |
| | 18" | | | 72.0 | 180.0 | 288.0 | 9 | |
| | 20" | | | 80.0 | 200.0 | 320.0 | 10 | |
| | 22" | | | 88.0 | 220.0 | 352.0 | 10 | |
| | 24" | | | 96.0 | 240.0 | 384.0 | 11 | |
| 54"-81" | 10" | 24" | | 48.0 | 120.0 | 192.0 | 7 | |
| | 12" | | | 57.6 | 144.0 | 230.4 | 8 | |
| | 14" | | | 67.2 | 168.0 | 268.8 | 9 | |
| | 16" | | | 76.8 | 192.0 | 307.2 | 10 | |
| | 18" | | | 86.4 | 216.0 | 345.6 | 10 | |
| | 20" | | | 96.0 | 240.0 | 384.0 | 11 | |
| | 22" | | | 105.6 | 264.0 | 422.4 | 11 | |
| | 24" | | | 115.2 | 288.0 | 460.8 | 12 | |

| APPROVED: May 6, 1976 | MINNESOTA DEPARTMENT OF TRANSPORTATION | | DETAIL NO. |
|---|---|---|---|
| Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN | **ELASTOMERIC BEARING PAD** | | **B305** |
| Issued by: OFFICE OF ENGINEERING STANDARDS | **PRESTRESSED CONCRETE BEAMS** | | |
| | **(EXPANSION)** | | |

| TITLE: DETAILS | DES: | DR: | APPROVED: | Bridge No. 55525 |
|---|---|---|---|---|
| SAP 55 518 01 | CHK: | CHK: G.E.G. | | |
| | Sheet No. 13 of 17 Sheets | | | |




ELEVATION

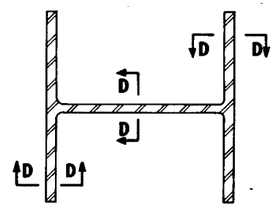



Each pile tip reinforced, will be paid for in amount equal to 5 linear feet of piling delivered.

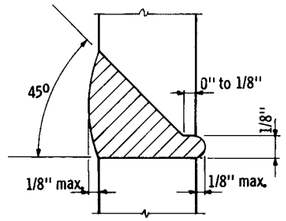
Pile tips shall be reinforced only when directed by the Engineer.

SECTION C - C

## DETAIL OF PILE TIP REINFORCEMENT




SECTION AT JOINT




SECTION D - D

## 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.

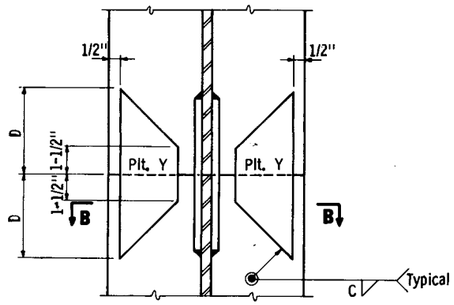
Low-hydrogen electrodes shall be supplied in hermetically (air-tight) sealed containers.

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

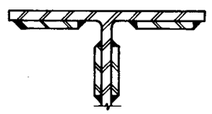
Low-hydrogen electrodes shall be placed in a holding oven for at least 8 hours, after having been exposed to the atmosphere for more than 2 hours.

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

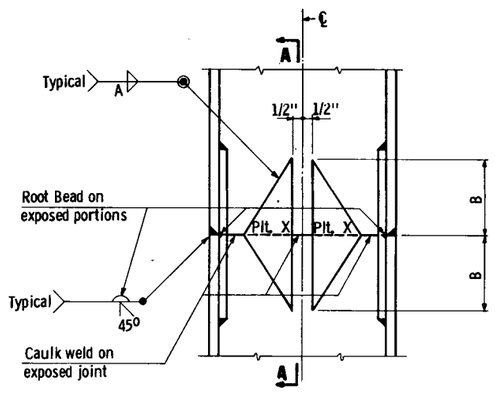
Welding shall not be done when the ambient temperature is lower than 0° F. or when the pile is wet or exposed to falling rain or snow. When the pile metal temperature is below 32° F., the pile metal in the area of the weld shall be heated to a minimum temperature of 70° F. and maintained at this temperature during welding.




SECTION A - A



SECTION B - B

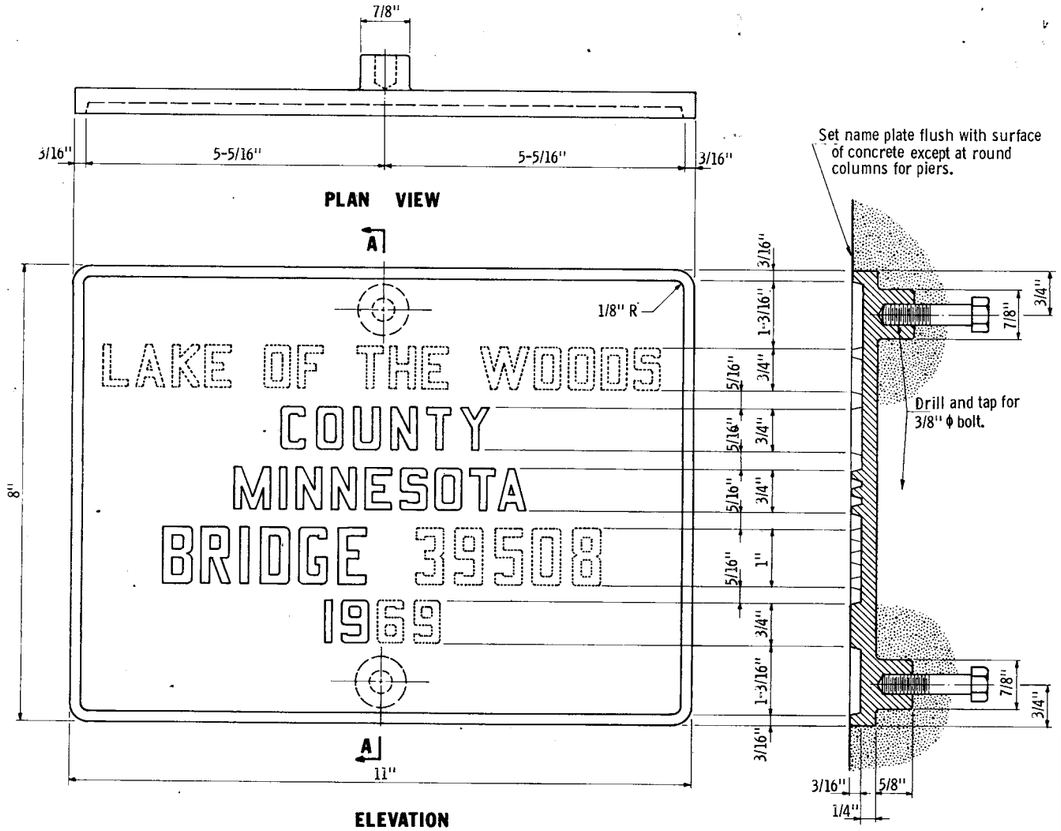



ELEVATION

| PILE SECTION | PLATE X | | | PLATE Y | | |
|---|---|---|---|---|---|---|
| | Size | A | B | 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 |

## ALTERNATE PILE SPLICE

| | | | |
|---|---|---|---|
| APPROVED July 21, 1972<br>Douglas A. Dight<br>Engineering Standards Engineer<br>RESEARCH AND STANDARDS DIVISION | MINNESOTA<br>DEPARTMENT OF TRANSPORTATION<br>**PILE SPLICE and TIP REINFORCEMENT**<br>**STEEL H BEARING PILES 10" TO 14"** | | DETAIL NO.<br>**B202** |

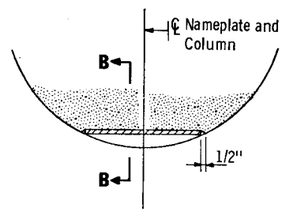



ELEVATION

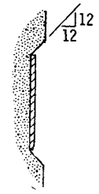
The numbers shown above are for illustration.
Data to be shown on name plate is as follows:

BRIDGE 55525
YEAR 1977

SECTION A - A




SECTION B-B




## NAMEPLATE PLACEMENT

(Round Concrete Pier Columns)

**NOTES:**

No shop drawing required.
Material shall comply with M. H. D. 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.

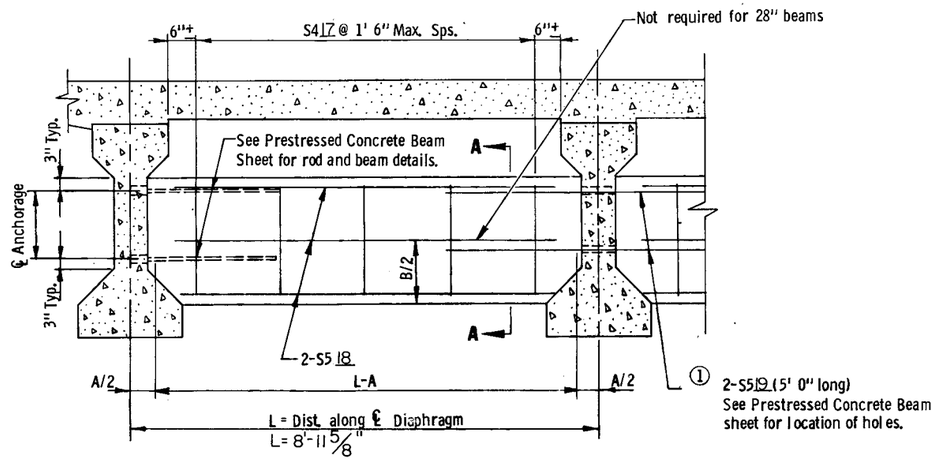



Specification reference: 2471, 3H, A.S.T.M. Designation: B145 - Alloy 836.

**LETTERS & NUMBERS FOR NAMEPLATES**

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

| | | | | |
|---|---|---|---|---|
| TITLE: **DETAILS** SAP 55-598-01 | DES: | DR: | APPROVED: | **Bridge No.** 55525 |
| | CHK: | CHK: G.E.G. | | |
| | **Sheet No. 14 of 17 Sheets** | | | |

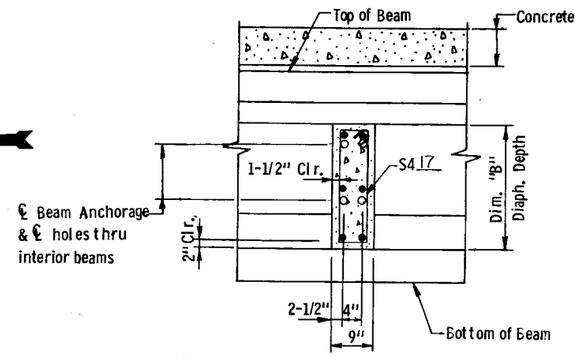



**PART TRANSVERSE SECTION**

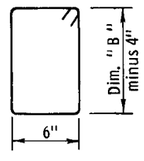
| Bm. Ht. | Dim. "A" For comp. volume | Diaph. Dim. "B" | S4 17 Length |
|---|---|---|---|
| 28" | 7-1/2" | 1'-4" | 3'-9" |
| 36" | 7-3/4" | 1'-9" | 4'-7" |
| 40" | 8-3/4" | 1'-11" | 4'-11" |
| 45" | 9" | 2'-2 1/2" | 5'-6" |
| 54" | 10-1/2" | 2'-8" | 6'-5" |

Concrete volume per diaphragm

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




**SECTION A-A**




**S4 17**

## 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.

APPROVED: July 8, 1976

Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN

Issued by: OFFICE OF ENGINEERING STANDARDS

MINNESOTA
DEPARTMENT OF TRANSPORTATION

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

DETAIL NO.

**B802**

TITLE: DETAILS

SAP 55-599-01

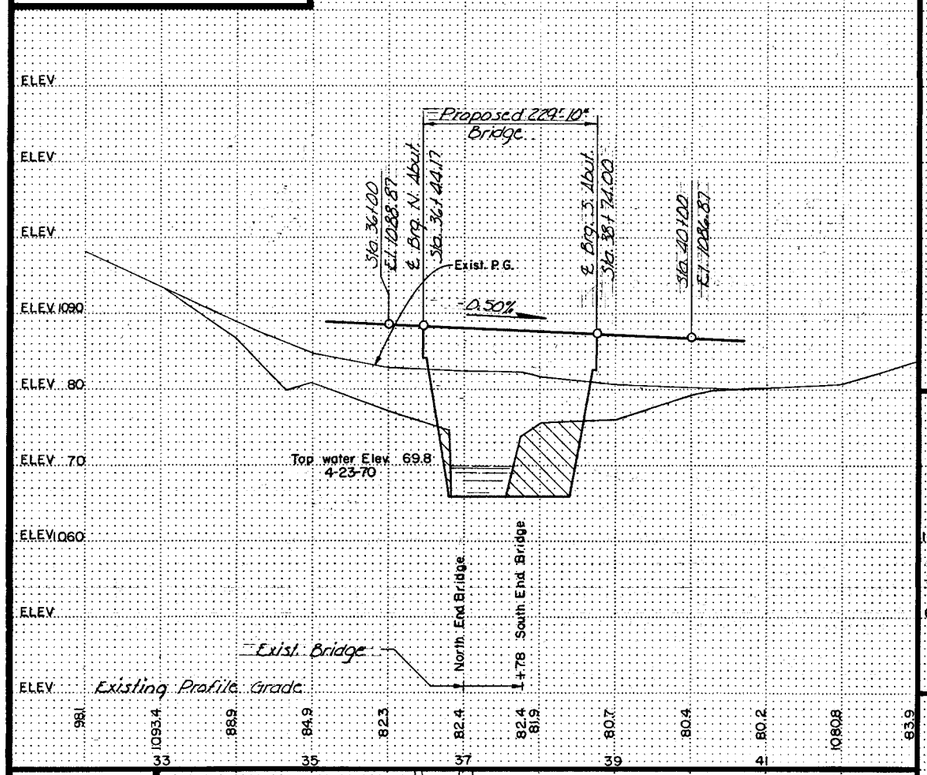
| DES: | DR: | APPROVED: |
|---|---|---|
| CHK: | CHK: G.E.G. | 4-11-77 |

Sheet No. 15 of 17 Sheets

Bridge No. 55525

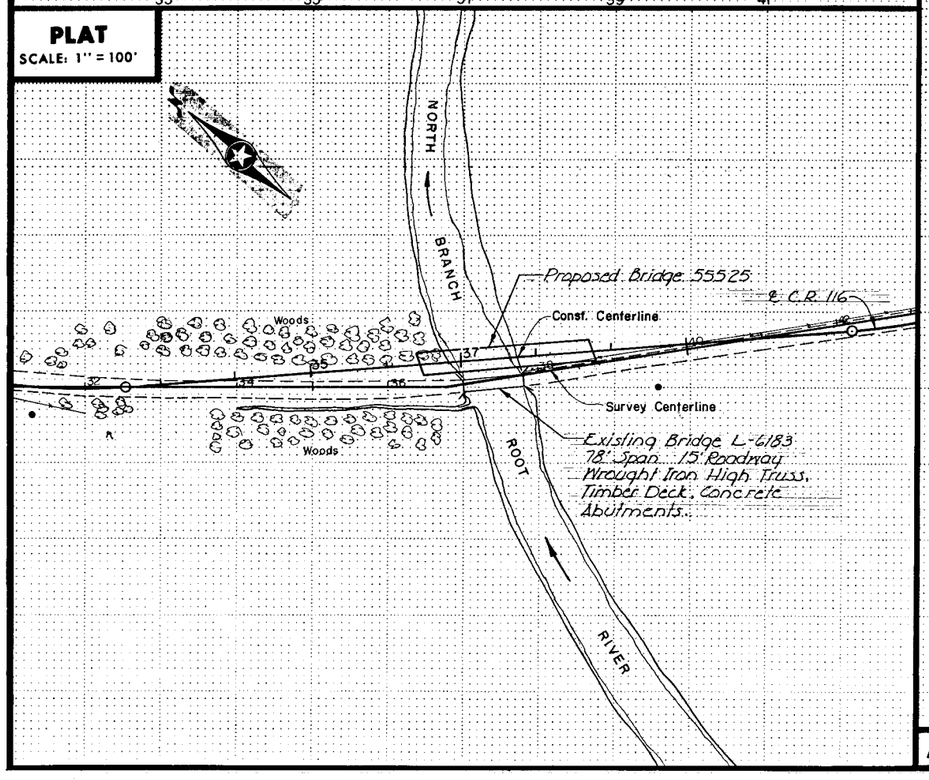
## CONTRACTED PROFILE

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



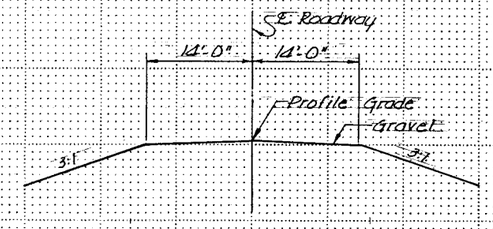

## PLAT

SCALE: 1" = 100'

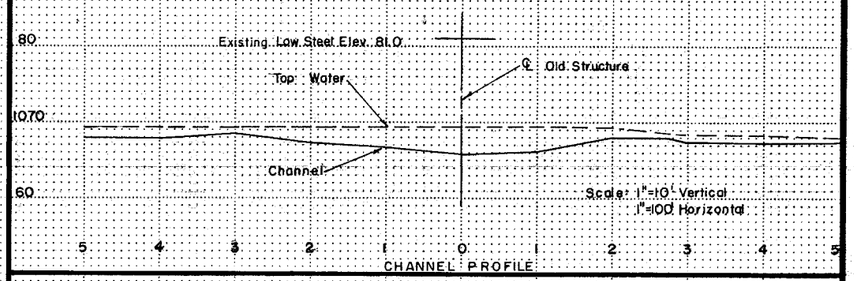



## TYPICAL SECTIONS & PERTINENT DATA

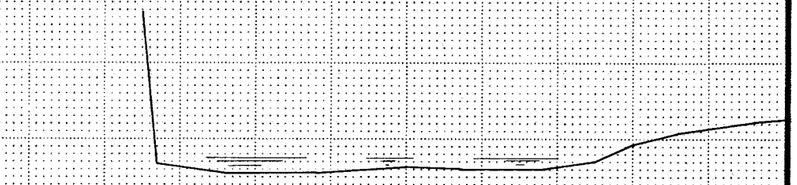
SCALES AS SHOWN



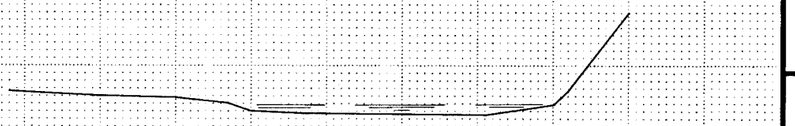

APPROACH SECTION




CHANNEL PROFILE



TYPICAL CHANNEL SECTION 700' DOWNSTREAM
(LOOKING DOWNSTREAM)

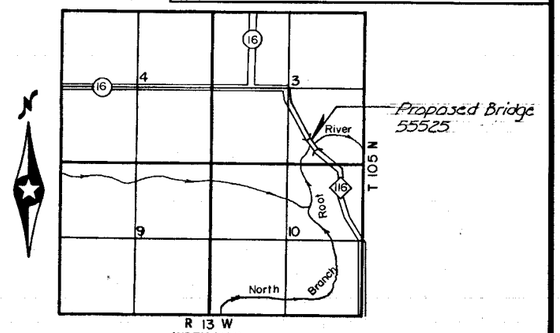


TYPICAL CHANNEL SECTION 700' UPSTREAM
(LOOKING UPSTREAM)

B.M. ELEV 1082.97
Head of Bolt 2.5' East of Beginning of Bridge on South side.

SEE SHEET OF SHEETS FOR PLAN AND PROFILE

**Fed. Proj. No.**




INDEX MAP
(FOUR SECTIONS)

FOLLOW SEPARATE "INSTRUCTIONS FOR PREPARATION OF BRIDGE SURVEYS" WHEN MAKING BRIDGE SURVEYS.

DATA

1. Preliminary recommendations of Engineer in charge of Bridge Survey:
   a. Net span length and type of bridge. 76'-4½" - 77'-1" - 76'-4½" PRESTRESSED BEAM BRIDGE
   b. Width of roadway on bridge. 28' CURB-CURB
   c. Number and width of sidewalks, if any
   d. Locate center of bridge at station 37+59.08
   e. If a skew bridge is recommended, the angle of skew should be 15° R.A.
   f. Is piling required? YES
2. Special features: Waterfalls, dams, exceptional floods, ice, driftwood, sliding banks, logging, etc.
3. Changes: In height or length from that of old bridge, and reasons why. BOTH HEIGHT AND LENGTH ARE INCREASED TO PROVIDE MORE WATERWAY AREA AND 3 FT. OF CLEARANCE ABOVE $Q_{50}$
4. Other bridges in vicinity:
   a. Over same stream (particularly structures which carry high water without overflow of roadway); give location, length, height above water, net cross-sectional area at high water stage and estimated age. BRIDGE NO. 55518 APPROX. .9 MILES UPSTREAM. LENGTH 221'-10" C-C ABUT. BRGS., 3' ABOVE WATER. WATERWAY AREA BELOW H.W.EL. = 2190 SQ.FT., CONSTRUCTED 1969.
   b. Over or under same highway or railroad; give location, length, horizontal and vertical clearances and estimated age
   c. Reasons why these bridges are, or are not, fair indications of what length the proposed bridge should be
5. If structure is over a drainage ditch, is ditch gradient liable to be altered?
6. Navigation clearances required, if any. NONE
7. Information and evidence in regard to high water stages was obtained as follows:
8. Must contractor provide for traffic during construction of proposed bridge? YES
   If so, by what means? OLD BRIDGE WILL BE USED AS BY-PASS DURING CONSTRUCTION.

HYDRAULIC ENGINEERS RECOMMENDATION

Drainage Area = 157 Sq.Mi.
$Q_{50}$ = 13,500 c.f.s.
Area Below El. 1079.7 = 2398 Sq.Ft.
Average Velocity = 5.6 f.p.s.

HIGH AND LOW WATER ELEVATIONS

Data obtained from..... reflects highest water elevation in the area of this construction to be.....and the lowest water elevation to be..... The above figures are for informational purposes only. The state neither warrants nor represents that these figures for high water and low water are in any way indicative of the high water or low water to be expected or encountered during this construction.

SHIPPING POINT

Proposed Bridge is 2 1/2 miles East of * Simpson which is the nearest Railroad shipping point.

*(Give name of town, station or siding)

Date Project or County Engineer

Date District Engineer

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

## BRIDGE SURVEY

FOR

PROPOSED BRIDGE LOCATED 2 1/2 MILES EAST OF SIMPSON (TOWN OR CITY) ON CO. RD. #116 (T.H., C.S.A.H. OR C.A.R. NUMBER)

SEC. 3 TWP. 105N R. 13W

TOWNSHIP PLEASANT GROVE COUNTY OLMSTED

SURVEY MADE DURING MONTH OF APRIL 19 70

SURVEY MADE BY OLMSTED COUNTY

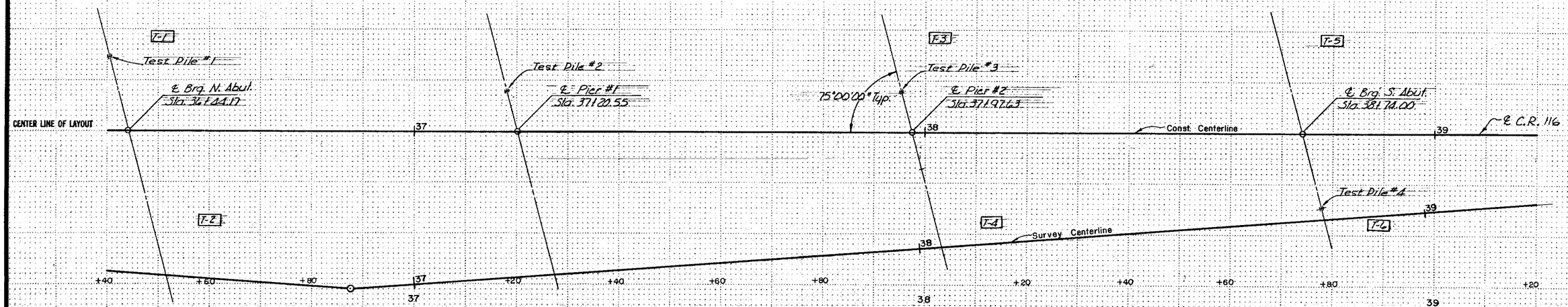
BRIDGE NO. 55525

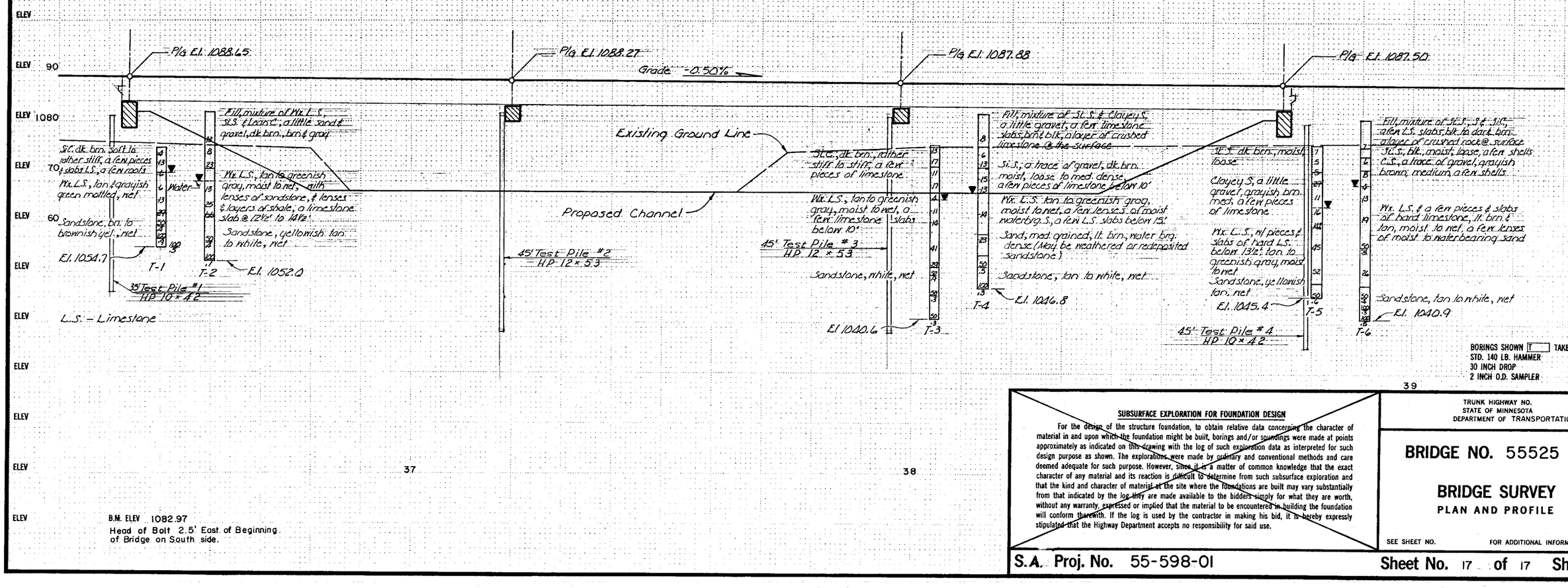
Bridge Survey Sheet (Sheet 1 of 2)

**Area No.** **Job No.** **S. A. Proj. No.** 55-598-01 **Sheet No.** 16 **of** 17 **Sheets**

Fed. Proj. No.

SCALE: 1" = 10'




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

B.M. ELEV 1082.97
Head of Bolt 2.5' East of Beginning of Bridge on South side.

**SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN**

For the design of the structure foundation, to obtain relative data concerning the character of material in and upon which the foundation might be built, borings and/or soundings were made at points approximately as indicated on this drawing with the log of such exploration data as interpreted for such design purpose as shown. The explorations were made by ordinary and conventional methods and care deemed adequate for such purpose. However, since it is a matter of common knowledge that the exact character of any material and its reaction is difficult to determine from such subsurface exploration and that the kind and character of material at the site where the foundations are built may vary substantially from that indicated by the log they are made available to the bidders simply for what they are worth, without any warranty, expressed or implied that the material to be encountered in building the foundation will conform therewith. If the log is used by the contractor in making his bid, it is hereby expressly stipulated that the Highway Department accepts no responsibility for said use.

TRUNK HIGHWAY NO.
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

**BRIDGE NO. 55525**

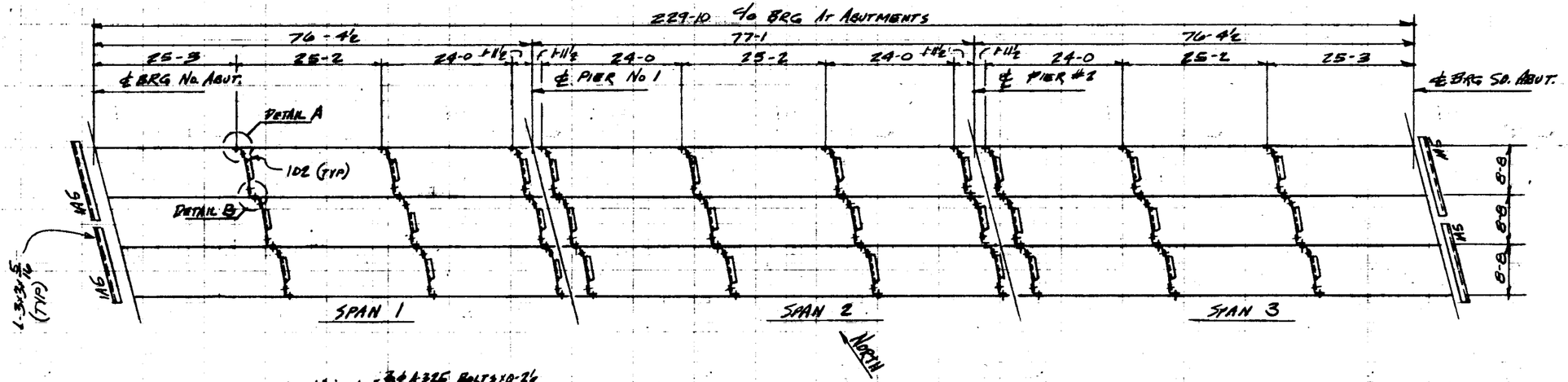
**BRIDGE SURVEY**
**PLAN AND PROFILE**

SEE SHEET NO. FOR ADDITIONAL INFORMATION

S.A. Proj. No. 55-598-01

Sheet No. 17 of 17 Sheets

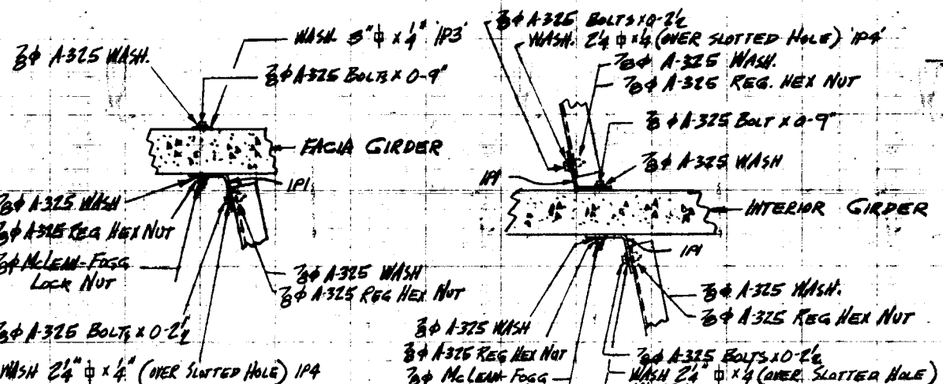
Bridge Survey Sheet (Sheet 2 of 2)




FRAMING PLAN

| ITEM | QTY | MATERIAL |
|---|---|---|
| 1D2 | 30 | C18x42.7 x 7-11⅞ |
| 1P1 | 60 | Bar ⅜x11¼x1-6 |
| 1P3 | 40 | BAR ¼x3x0-3 |
| 1P4 | 120 | BAR ¼x2¼x0-2¼ |
| — | 80 | ⅞ϕ A325 TYPE 3 BOLTS x 0-9" |
| — | 120 | ⅞ϕ A325 TYPE 3 BOLTS x 0-2½ |
| — | 80 | McLEAN FOGG LOCK NUTS ⅞ϕ |
| 1A5 | 4 | L3x3x7/16 x 14-6½ |
| 1A4 | 32 | STUD ½ϕ 10-6 |
| 1A6 | 28 | STUD ½ϕ x0-6 |

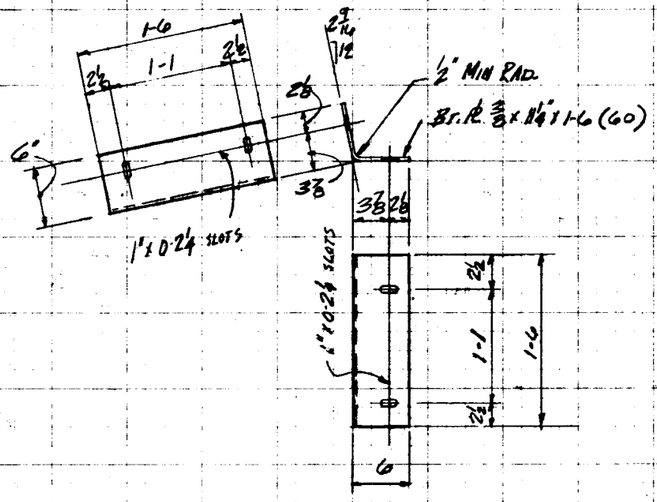
1. MATERIAL FOR 1P1, 1D2, 1P3 & 1P4 PER MHD 3309. MATERIAL FOR 1A5 PER MHD 3306
2. WORKMANSHIP & MATERIALS TO BE IN ACCORDANCE WITH MHD SPECS FOR HIGHWAY CONST. DATED JAN 1ST 1972 AS AMENDED BY SUPPLEMENTAL SPECS DATED APRIL 1ST 1976 AND SPECIAL PROVISIONS.
3. SHOP INSPECTION BY MHD
4. REMOVE LOOSE MILL SCALE WITH WIRE BRUSH ON MHD 3309 STEEL IN THE SHOP.



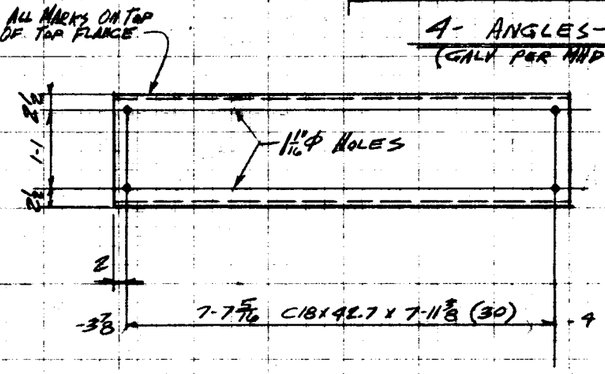

DETAIL 'A'



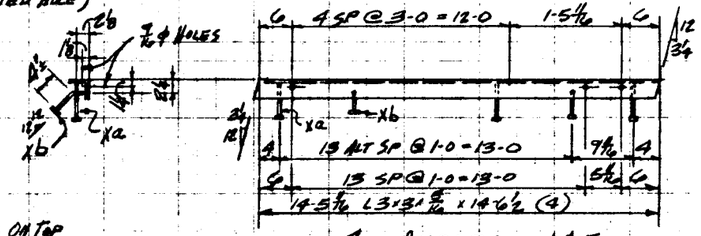

DETAIL 'B'



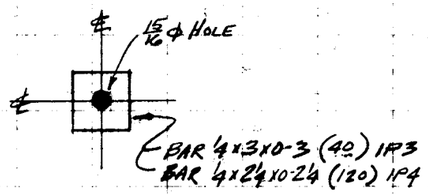

60 - BENT PLS - 1P1




30 - CHANNELS - 1D2




4 - ANGLES - 1A5
(GALV PER MHD 3394)




40 - WASHERS - IP3
120 - DO - IP4

| SHAPE | DEPTH | FLG | WEB |
|---|---|---|---|
| C18x42.7 | 18 | 4x⅝ | 7/16 |

ST. PAUL STRUCTURAL STEEL CO.
102 YORK AVE. ST. PAUL, MINN 55117

BRIDGE NO. 55526
MADE BY RDM DATE 7-15-77
CHECKED BY HJK DATE 7-21-77
SHOP PAINT NONE
OPEN HOLES NOTED UNLESS NOTED
S.A. PROJ. No. 55-598-01
CONTRACT NO. 77191 SHEET 1

DESCRIPTION ERECTION PLAN & STEEL DETAILS