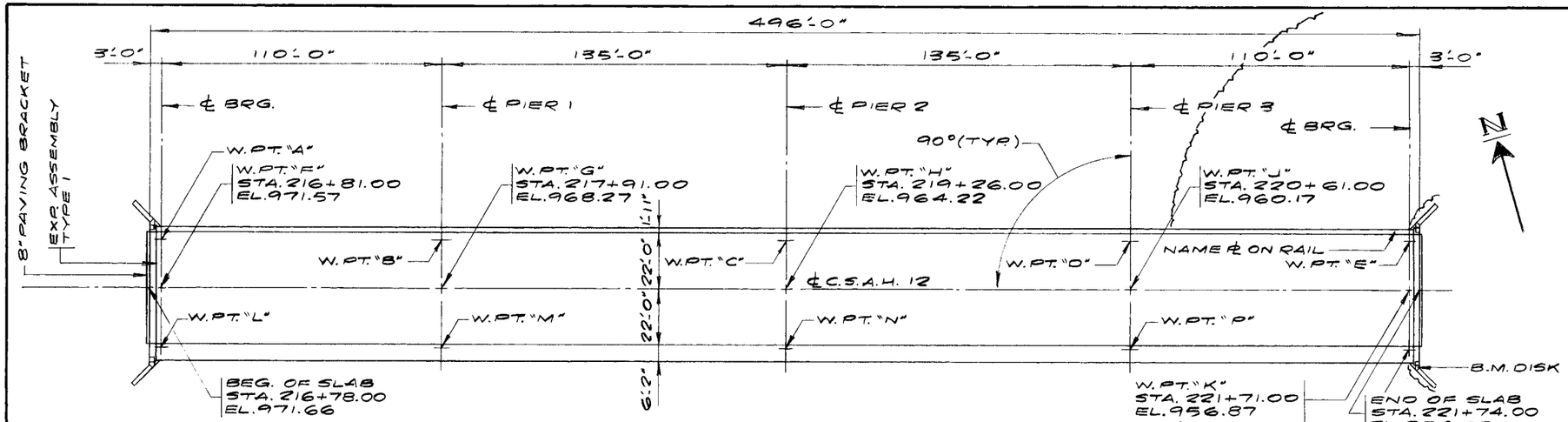



PLAN

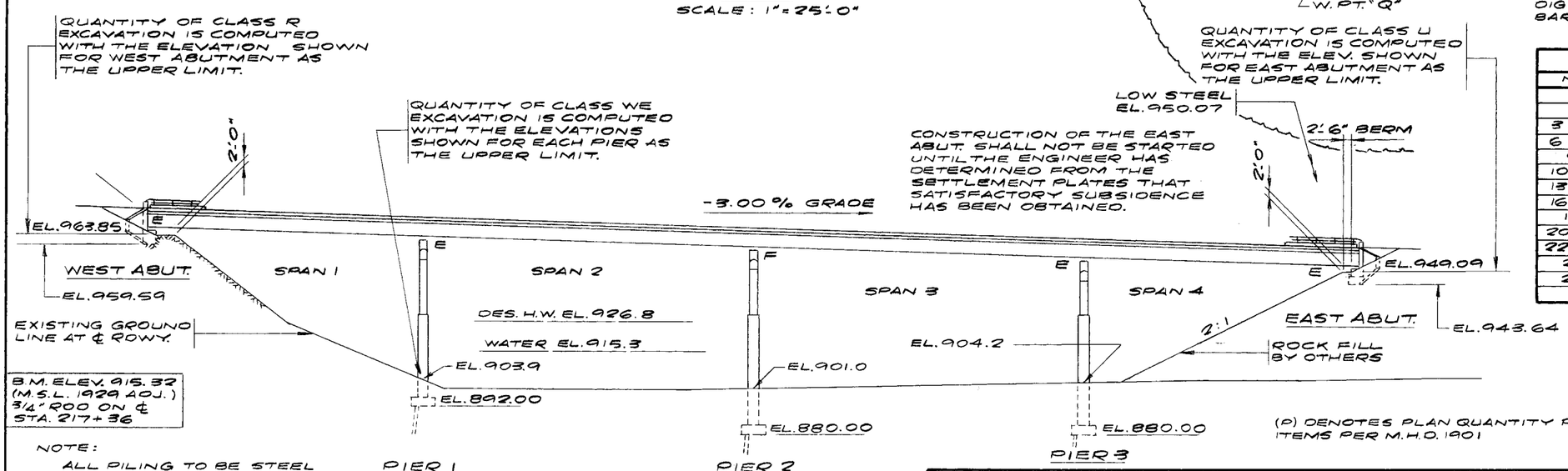
SCALE: 1"=25'-0"

QUANTITY OF CLASS R EXCAVATION IS COMPUTED WITH THE ELEVATION SHOWN FOR WEST ABUTMENT AS THE UPPER LIMIT.

QUANTITY OF CLASS WE EXCAVATION IS COMPUTED WITH THE ELEVATIONS SHOWN FOR EACH PIER AS THE UPPER LIMIT.

QUANTITY OF CLASS U EXCAVATION IS COMPUTED WITH THE ELEV. SHOWN FOR EAST ABUTMENT AS THE UPPER LIMIT.

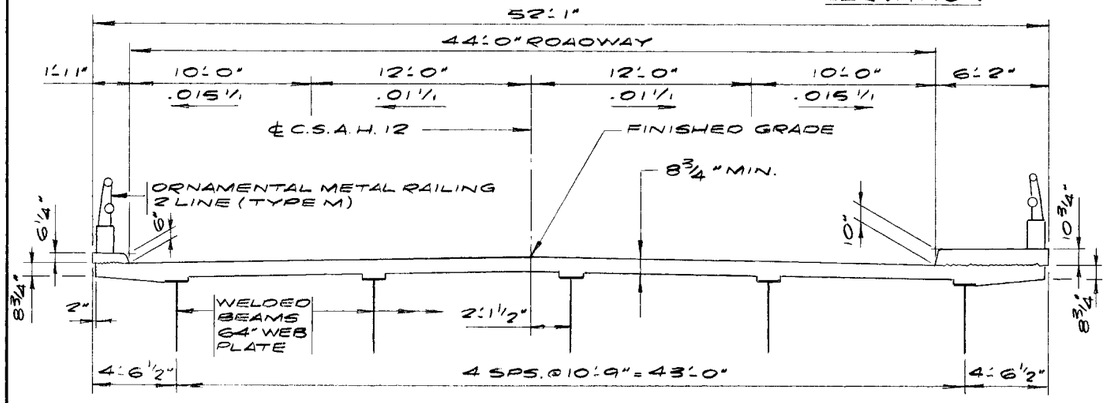
CONSTRUCTION OF THE EAST ABUT. SHALL NOT BE STARTED UNTIL THE ENGINEER HAS DETERMINED FROM THE SETTLEMENT PLATES THAT SATISFACTORY SUBSIDENCE HAS BEEN OBTAINED.




B.M. ELEV. 915.32 (M.S.L. 1929 ADJ.) 3/4" ROD ON ℄ STA. 217+36

NOTE:
ALL PILING TO BE STEEL H-PILES (HP 10X42) PIERS ONLY.

ELEVATION




TRANSVERSE SECTION THRU DECK LOOKING EAST

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

## DESIGN DATA

1973 A.A.S.H.O. DESIGN SPECIFICATIONS

H S 20 LOADING WITH IMPACT - 4 LANES - 30 P.S.F. D.L. ALLOWANCE FOR FUTURE WEARING COURSE

$f_c$ = 1600 P.S.I. n = 8

$f_s$ = 24000 P.S.I. REINFORCEMENT

$f_s$ = 20000 P.S.I. STRUCT. STEEL M.H.O. 3306

$f_s$ = 27000 P.S.I. STRUCT. STEEL M.H.O. 3309

DECK AREA = 25833 SQ. FT.

## CONSTRUCTION NOTES

THE MINNESOTA HIGHWAY DEPARTMENT "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION" DATED JANUARY 1, 1972 SHALL GOVERN AS AMENDED BY "SUPPLEMENTAL SPECIFICATIONS" DATED JANUARY 1, 1974.

REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS CONFORMING TO A.S.T.M. A615 GRADE 60.

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 AND PLACING ANCHOR RODS.

THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE.

## LIST OF SHEETS


| NO. | TITLE |
|---|---|
| 1 | GENERAL PLAN & ELEVATION |
| 2 | BRIDGE LAYOUT |
| 3 - 5 | EAST ABUTMENT DETAILS & REINF. |
| 6 - 8 | WEST ABUTMENT DETAILS & REINF. |
| 9 | EAST & WEST ABUTMENT REINF. |
| 10 - 12 | PIER DETAILS |
| 13 - 15 | SUPERSTRUCTURE DETAILS |
| 16 - 18 | STRUCTURAL STEEL DETAILS |
| 19 | EXPANSION ASSEMBLY TYPE 1 |
| 20 & 21 | ORNAMENTAL METAL RAILING |
| 22 - 25 | DETAILS |
| 26 | BRIDGE SURVEY |
| 27 | BRIDGE SURVEY - PLAN & PROFILE |


## SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

| ITEM NO. | ITEM | UNIT | QUAN. |
|---|---|---|---|
| 2401.501 | CONCRETE, MIX NO. 1A43 | CU.YD. | 251 (P) |
| 2401.501 | CONCRETE, MIX NO. 3Y43 | CU.YD. | 1572 (P) |
| 2401.501 | CONCRETE, MIX NO. 3Y46A | CU.YD. | 168 (P) |
| 2401.521 | STRUCTURE EXCAVATION, CLASS R | CU.YD. | 36 |
| 2401.521 | STRUCTURE EXCAVATION, CLASS WE | CU.YD. | 1256 (P) |
| 2401.541 | REINFORCEMENT BARS | POUND | 306390 (P) |
| 2402.521 | STRUCTURAL STEEL, (3306) | POUND | 3950 |
| 2402.521 | STRUCTURAL STEEL, (3309) | POUND | 691310 |
| 2402.546 | FLOOR DRAINS, TYPE 1 | EACH | 36 |
| 2402.583 | ORNAMENTAL METAL RAILING | LIN. FT. | 992 (P) |
| 2402.593 | FIXED BEARING ASSEMBLIES, TYPE 1 | EACH | 5 |
| 2402.594 | EXPANSION BEARING ASSEMBLIES, TYPE 1 | EACH | 10 |
| 2402.594 | EXPANSION BEARING ASSEMBLIES, TYPE 2 | EACH | 10 |
| 402.602 | EXPANSION ASSEMBLY, TYPE 1 | ASSEMBLY | 2 |
| 2031.501 | FIELD OFFICE, TYPE A | EACH | 1 |
| 7021.501 | MOBILIZATION | LUMP SUM | 1 |
| 452.612 | 10" STEEL H-PILING PLACED | LIN. FT. | 7560 |
| 452.613 | PILE PLACEMENT | EACH | 126 |
| 2401.521 | STRUCTURE EXCAVATION, CLASS U | CU. YD. | 68 (P) |

(P) DENOTES PLAN QUANTITY PAY ITEMS PER M.H.O. 1901

APPROVED:

8/13/74 Alb Schlichenmaier
DATE COUNTY ENGINEER OLMSTED COUNTY

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.

Robert E. Erickson
DATE: 8-1-74 REG. NO. 2297

PLANS PREPARED BY
ROBERT E. ERICKSON ENG'R. CO.
3340 REPUBLIC AVENUE
ST. LOUIS PARK, MINNESOTA

C.S.A.H. 12 OLMSTED COUNTY
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

## BRIDGE NO. 55520

3.7 MI. WEST OF ORONOCO ON C.S.A.H. 12 OVER ZUMBRO LAKE

110'-135'-135'-110' STEEL CONTINUOUS BEAM SPANS IDEN. NO. 401

44'-0" ROWY. - 1, CURB 9" - 1, SOWK. 5'-0"

GENERAL PLAN & ELEVATION

SEC. 11 T108N R14W

ORONOCO TWP.

OLMSTED COUNTY

APPROVED: 12-27-74

BRIDGE DESIGN & PLANNING ENG'R.

S.A.P. NO. 55-612-05

SHEET 1 OF 27 SHEETS

55520 GRC WNJ

FORM 100-A '65

## PLANS SYMBOLS

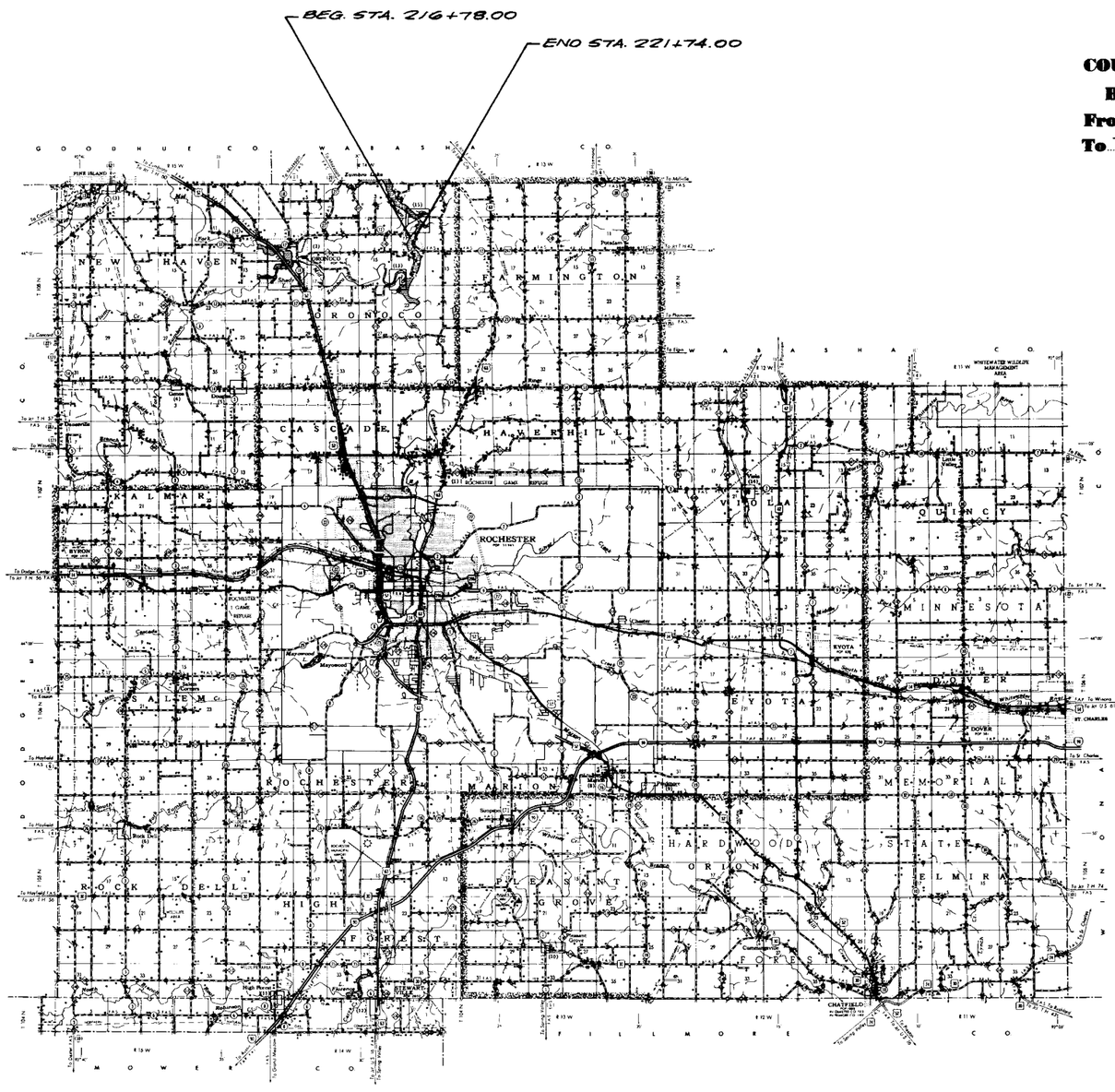
STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT OF WAY LINE
PRESENT RIGHT-OF-WAY LINE
CONTROL OF ACCESS LINE
PROPERTY LINE (Except Land Lines)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
RETAINING WALL
RAILROAD
RAILROAD RIGHT-OF-WAY 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
NURSERY (TIMBER)
CATCH BASIN C.B.
FIRE HYDRANT
CATTLE GUARD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame)
F-FRAME C-CONCRETE
S-STONE T-TILE
B-BRICK ST-STUCCO
IRON PIPE OR ROD
MONUMENT (STONE, CONCRETE, OR METAL)
WOODEN HUB
GRAVEL PIT (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
WATER MAIN
CONDUIT
TELEPHONE CABLE IN CONDUIT
ELECTRIC CABLE IN CONDUIT
TELEPHONE MANHOLE
ELECTRIC MANHOLE
BURIED TELEPHONE CABLE T-BUR
BURIED ELECTRIC CABLE P-BUR
AERIAL TELEPHONE CABLE T-AE
SEWER, (SANITARY OR STORM)
SEWER MANHOLE

BEG. STA. 216+78.00

END STA. 221+74.00




Fed. Proj. No.

**STATE OF MINNESOTA**

# DEPARTMENT OF HIGHWAYS

**CONSTRUCTION PLAN FOR** BRIDGE NO. 55520

**COUNTY STATE AID HIGHWAY NO.** 12

**BETWEEN** ORONOCO **AND** T.H. 63

**From** 258' WEST OF W 1/4 COR. SEC. 11, T108N, R14W
(Give proper address in Section, Township and Range)

**To** 754' WEST OF W 1/4 COR. SEC. 11, T108N, R14W

| | | | |
|---|---|---|---|
| GROSS LENGTH | | FEET | MILES |
| BRIDGES-LENGTH | 496.0 | FEET .094 | MILES |
| EXCEPTIONS-LENGTH | | FEET | MILES |
| NET LENGTH | 496.0 | FEET .094 | MILES |

INDEX OF SHEETS

Title Sheet & Layout Map

SHT. 1-27 BRIDGE PLANS

SPECIFICATIONS

STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION DATED JAN. 1, 1972 SHALL GOVERN, AS AMENDED BY "SUPPLEMENTAL SPECIFICATIONS" DATED JAN. 1, 1974

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

Gale Lichel Hammer COUNTY ENGINEER DATE Nov. 20 1974

Olmsted COUNTY REG. NO. 8284

RECOMMENDED FOR APPROVAL G. Wride DISTRICT STATE AID ENGINEER 11-21 19 74

RECOMMENDED FOR APPROVAL A.D. Swanson 12-27- 19 74

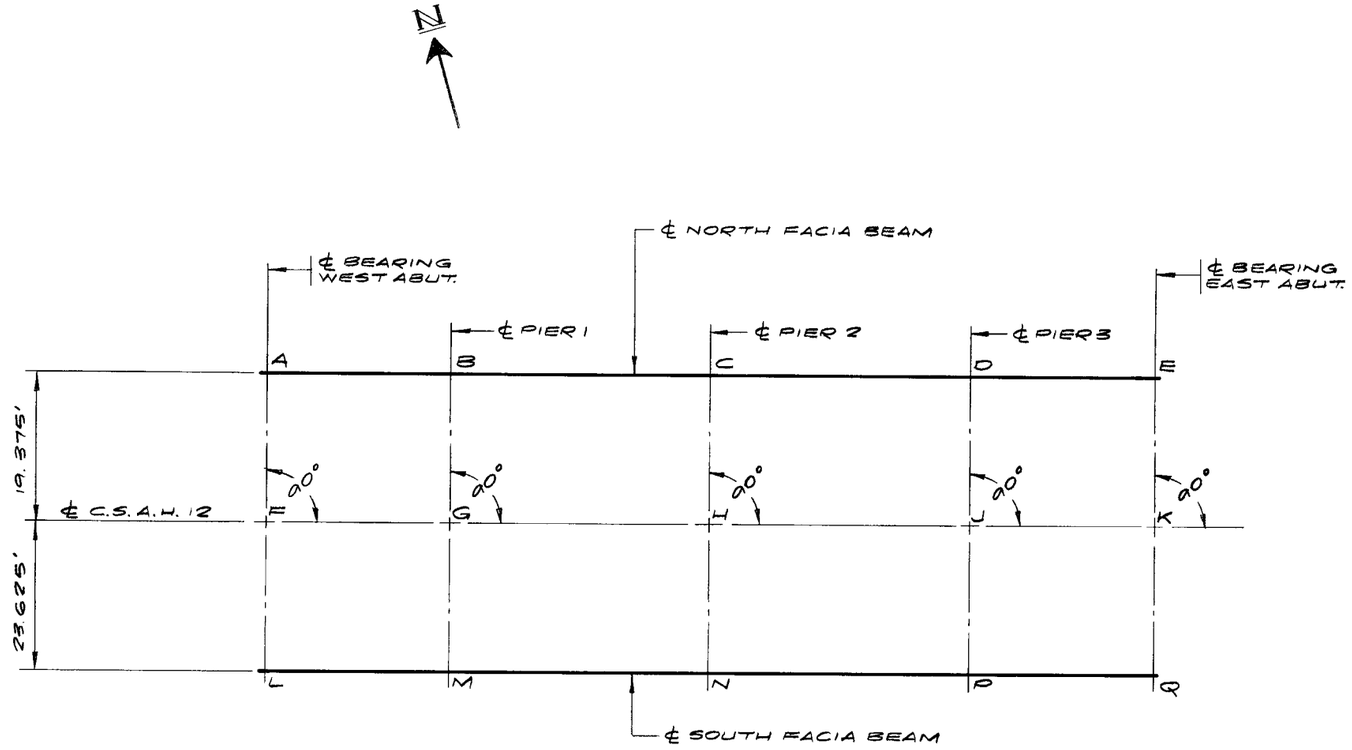
APPROVED 12/31 19 74 Stanley M. Hoy STATE AID ENGINEER

S.A.P. 55-612-05

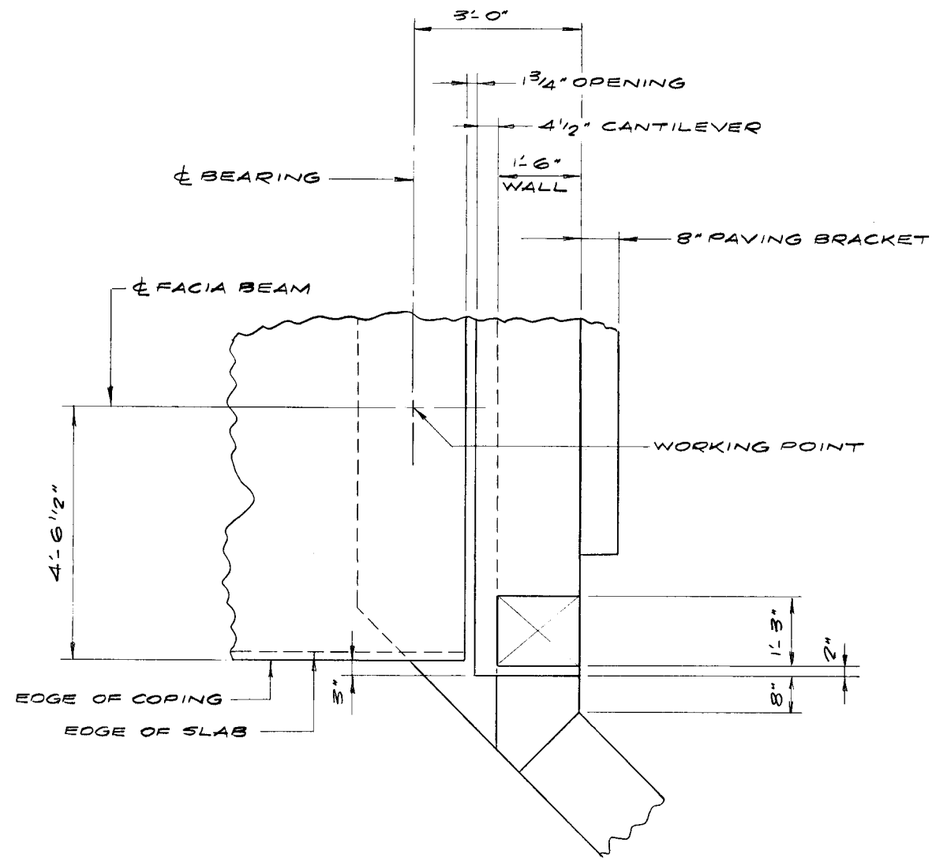
Minn. Project No. _____ State Project No. _____

**OLMSTED** County, Minnesota. County Proj. No. _____ Plan No. 55520

ALBINSON, INC.




LAYOUT SHOWING WORKING POINTS
(NO SCALE)




TYPICAL CORNER DETAIL

CURB, SIDEWALK & EAST ABUTMENT FOOTING NOT SHOWN

## DIMENSIONS BETWEEN WORKING POINTS

| POINT | STATION | A | B | C | O | E | F | G | H | J | K | L | M | N | P | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 216+81.00 | | | | | | | | | | | | | | | |
| B | 217+91.00 | 110.00' | | | | | | | | | | | | | | |
| C | 219+26.00 | | 135.00' | | | | | | | | | | | | | |
| D | 220+61.00 | | | 135.00' | | | | | | | | | | | | |
| E | 221+71.00 | | | | 110.00' | | | | | | | | | | | |
| F | 216+81.00 | 19.38' | | | | | | | | | | | | | | |
| G | 217+91.00 | 111.69' | 19.38' | | | | 110.00' | | | | | | | | | |
| H | 219+26.00 | | 136.38' | 19.38' | | | | 135.00' | | | | | | | | |
| J | 220+61.00 | | | 136.38' | 19.38' | | | | 135.00' | | | | | | | |
| K | 221+71.00 | | | | 111.69' | 19.38' | | | | 110.00' | | | | | | |
| L | 216+81.00 | | 118.11' | 248.74' | | | 23.63' | | | | | | | | | |
| M | 217+91.00 | 118.11' | | 141.68' | 273.40' | | 112.51' | 23.63' | | | | 110.00' | | | | |
| N | 219+26.00 | 248.74' | 141.68' | | 141.68' | 248.74' | | 137.05' | 23.63' | | | | 135.00' | | | |
| P | 220+61.00 | | 273.40' | 141.68' | | 118.11' | | | 137.05' | 23.63' | | | | 135.00' | | |
| Q | 221+71.00 | | | 248.74' | 118.11' | | | | | 112.51' | 23.63' | | | | 110.00' | |

## ELEVATIONS

| TOP OF SLAB | SLAB TO BR. SEAT | BRIDGE SEAT | POINT |
|---|---|---|---|
| 971.34 | 6.96 | 964.38 | A |
| 968.03 | 7.82 | 960.21 | B |
| 963.99 | 7.71 | 956.28 | C |
| 959.93 | 7.82 | 952.11 | O |
| 956.64 | 6.96 | 949.68 | E |
| 971.57 | | | F |
| 968.27 | | | G |
| 964.22 | | | H |
| 960.17 | | | J |
| 956.87 | | | K |
| 971.30 | 6.96 | 964.34 | L |
| 967.99 | 7.82 | 960.17 | M |
| 963.95 | 7.71 | 956.24 | N |
| 959.89 | 7.82 | 952.07 | P |
| 956.60 | 6.96 | 949.64 | Q |

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

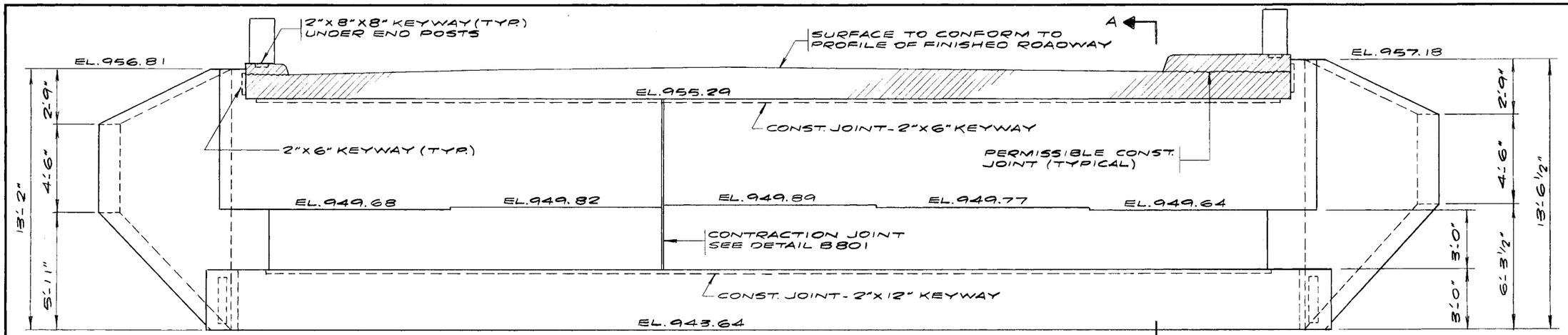
BRIDGE LAYOUT

APPROVED: 12/27/74

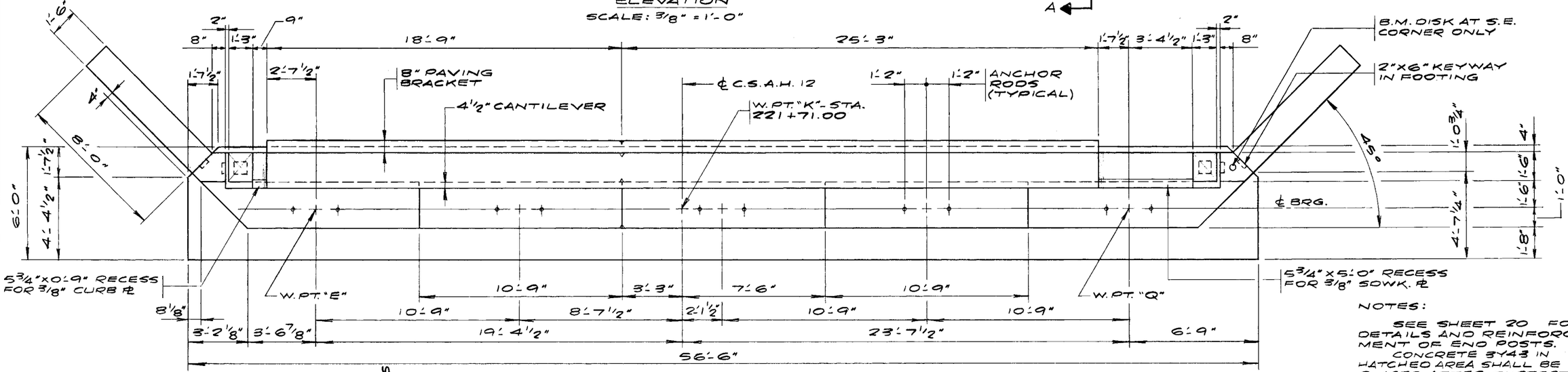
S.A.P. NO. 55-612-05



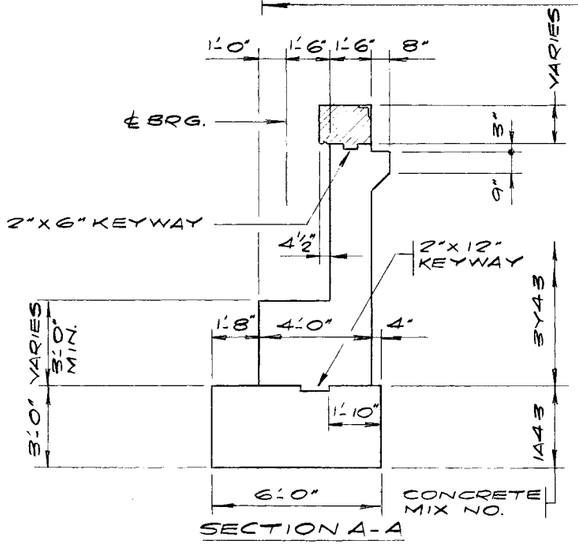
55520 GRC WNJ




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




PLAN




SECTION A-A

| SUMMARY OF QUAN. - EAST ABUTMENT | | |
|---|---|---|
| CONCRETE, MIX NO. 1A43 | 38 | CU.YD. |
| CONCRETE, MIX NO. 3Y43 | 51 | CU.YD. |
| REINFORCEMENT BARS | 6360 | POUND |
| CLASS U EXCAVATION | 68 | CU.YD. |
| (1) B.M. DISK (SEE STD. PLATE NO. 9300) | | ONE |

(1) COUNTY WILL FURNISH DISK. PAYMENT FOR PLACING DISK TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS. SEE STD. PLATE NO. 9301 FOR PLACING.

| COMPUTED SOIL PRESSURE - K/SQ. FT. | |
|---|---|
| D.L. + EARTH PRESSURE | 3.69 |
| LIVE LOAD | 0.81 |
| TOTAL | 4.50 |

NOTES:

SEE SHEET 20 FOR DETAILS AND REINFORCEMENT OF END POSTS.

CONCRETE 3Y43 IN HATCHED AREA SHALL BE PLACED AFTER SUPERST. ROADWAY SLAB, SIDEWALK, CURB AND EXPANSION ASSEMBLY ARE IN PLACE. INCLUDED IN SUPERSTRUCTURE QUANTITIES.

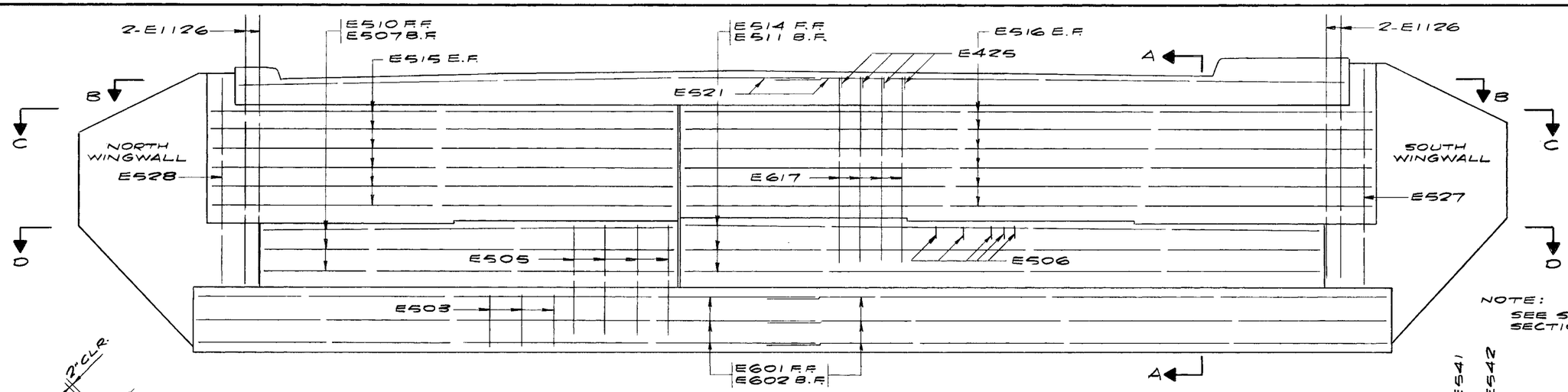
PLACE PROTECTIVE EPOXY COATING ON BRIDGE SEAT ℄ 3" UP ON PARAPET WALL. PAINT REMAINDER OF EXPOSED CONCRETE SURFACES WITH PROTECTIVE COATING. SEE SPECIAL PROVISIONS.

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

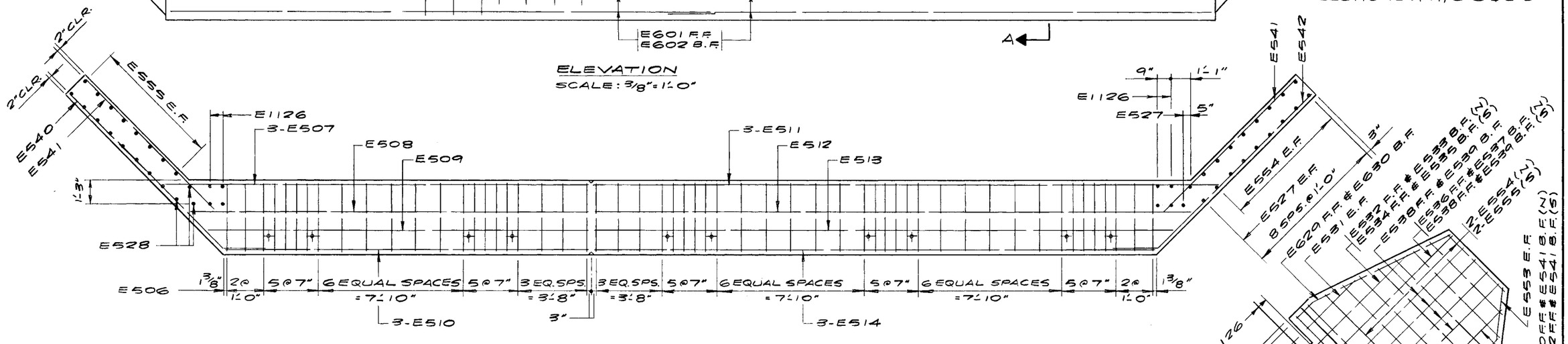
EAST ABUTMENT DETAILS

APPROVED: 12-27-74




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

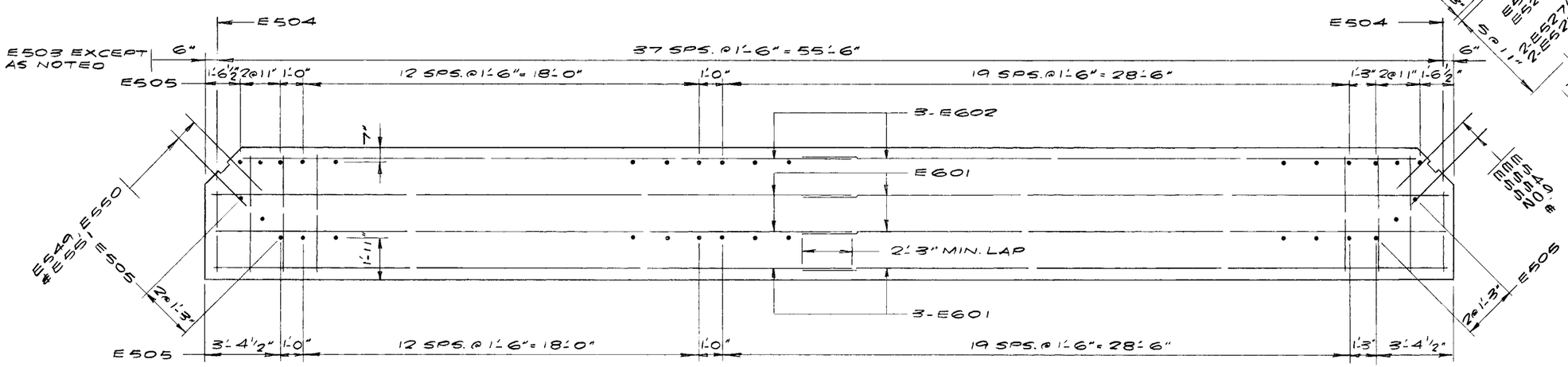
NOTE:
SEE SHEET 5 FOR SECTIONS A-A, B-B & C-C




SECTION O-O

F.F. = FRONT FACE
B.F. = BACK "
E.F. = EACH "
(N) = NORTH WINGWALL
(S) = SOUTH "



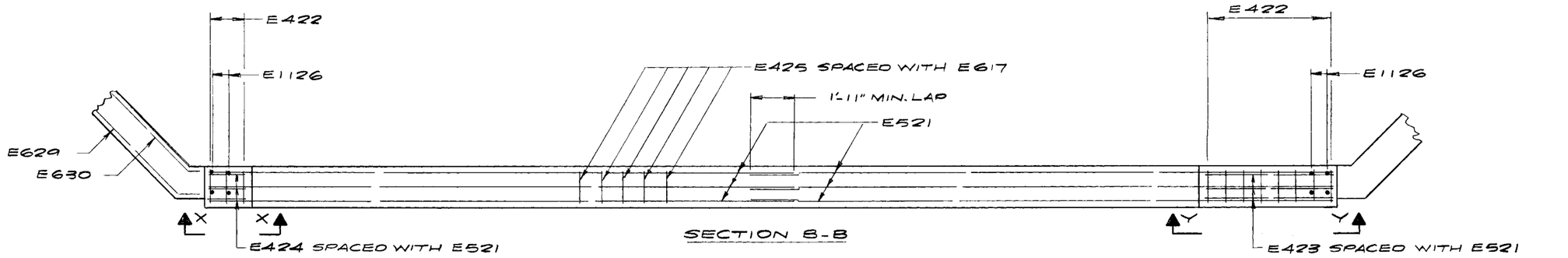

FOOTING PLAN

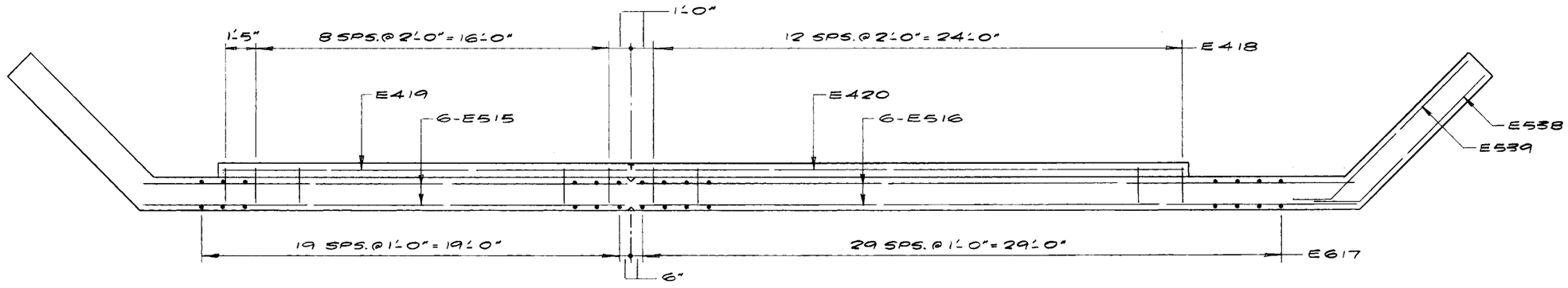
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

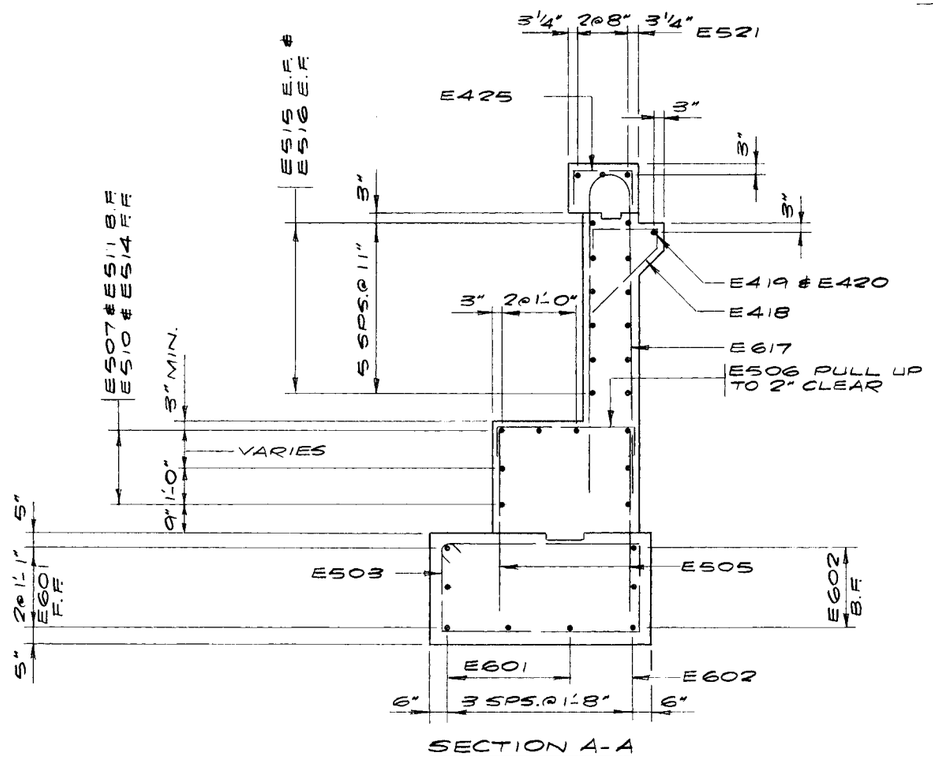
BRIDGE NO. 55520

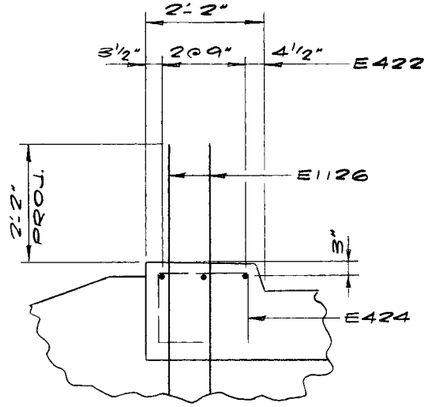
EAST ABUTMENT
REINFORCEMENT

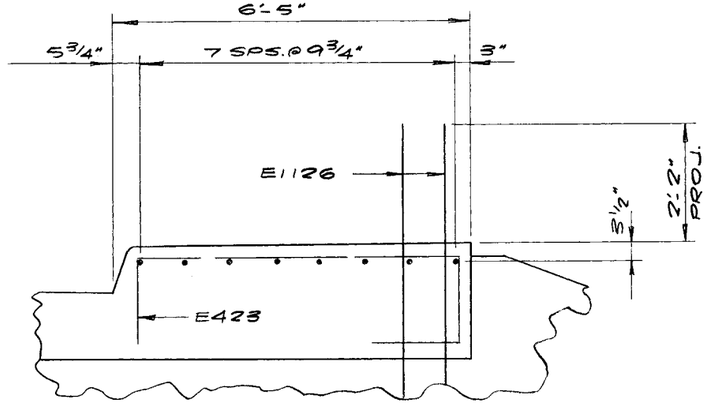
APPROVED: 12-27-74



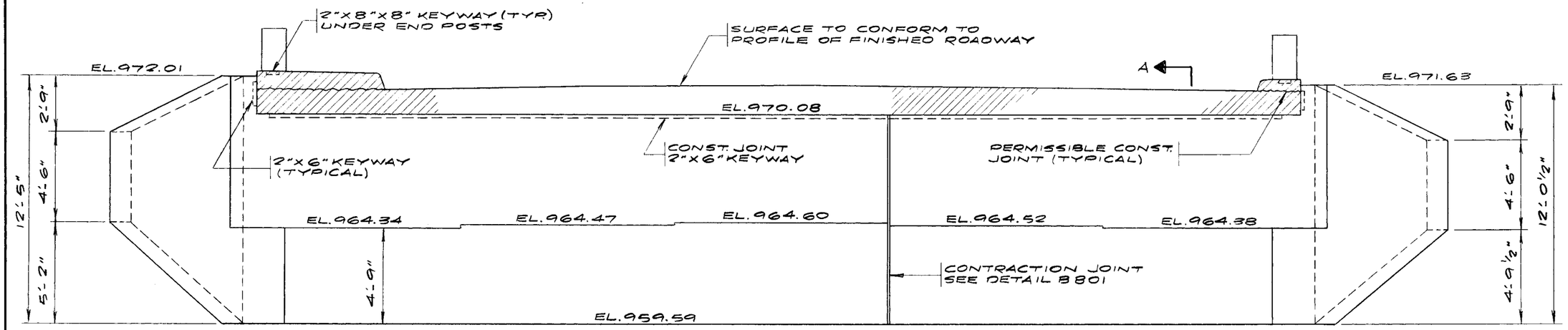




STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

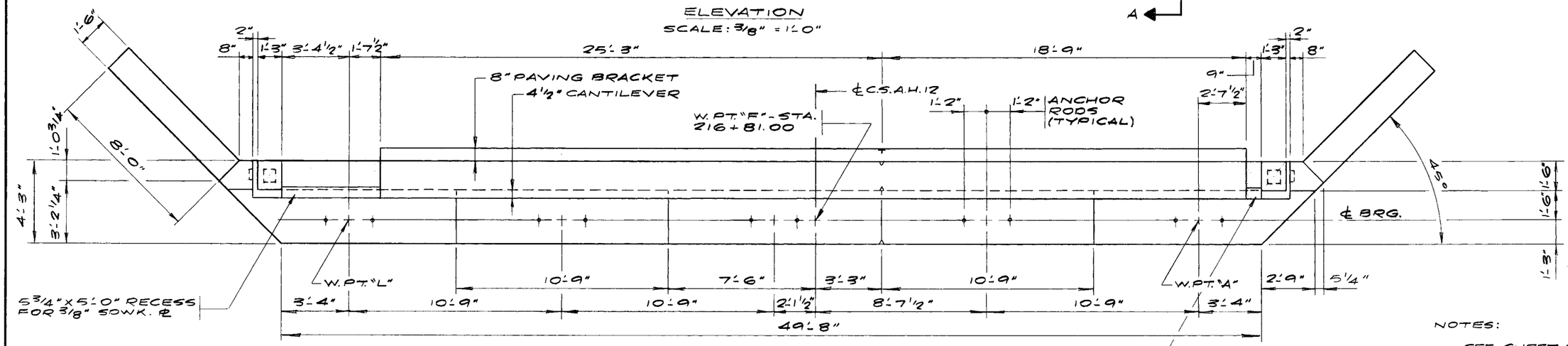
BRIDGE NO. 55520

EAST ABUTMENT REINFORCEMENT

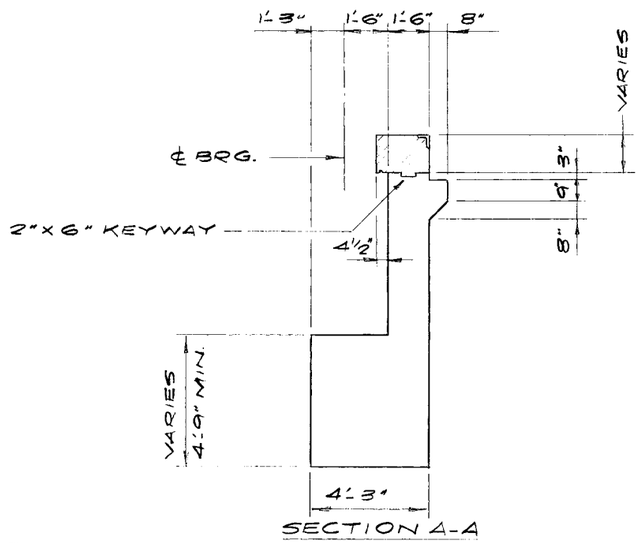
APPROVED: 12-27-74




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




PLAN




SECTION A-A

| SUMMARY OF QUAN.-WEST ABUTMENT | | |
|---|---|---|
| CONCRETE, MIX NO. 3Y43 | 67 | CU.YD. |
| REINFORCEMENT BARS | 5960 | POUND |
| CLASS R EXCAVATION | 36 | CU.YD. |

| COMPUTED SOIL PRESSURE - K/SQ. FT. | |
|---|---|
| D.L. + EARTH PRESSURE | 7.57 |
| LIVE LOAD | 1.91 |
| TOTAL | 9.48 |

NOTES:

SEE SHEET 20 FOR DETAILS AND REINFORCEMENT OF END POSTS.

CONCRETE 3Y43 IN HATCHED AREA SHALL BE PLACED AFTER SUPERST. ROADWAY SLAB, SIDEWALK, CURB AND EXPANSION ASSEMBLY ARE IN PLACE. INCLUDED IN SUPERSTRUCTURE QUANTITIES.

PLACE PROTECTIVE EPOXY COATING ON BRIDGE SEAT & 3" UP ON PARAPET WALL. PAINT REMAINDER OF EXPOSED CONCRETE SURFACES WITH GRAY PROTECTIVE COATING. SEE SPECIAL PROVISIONS.

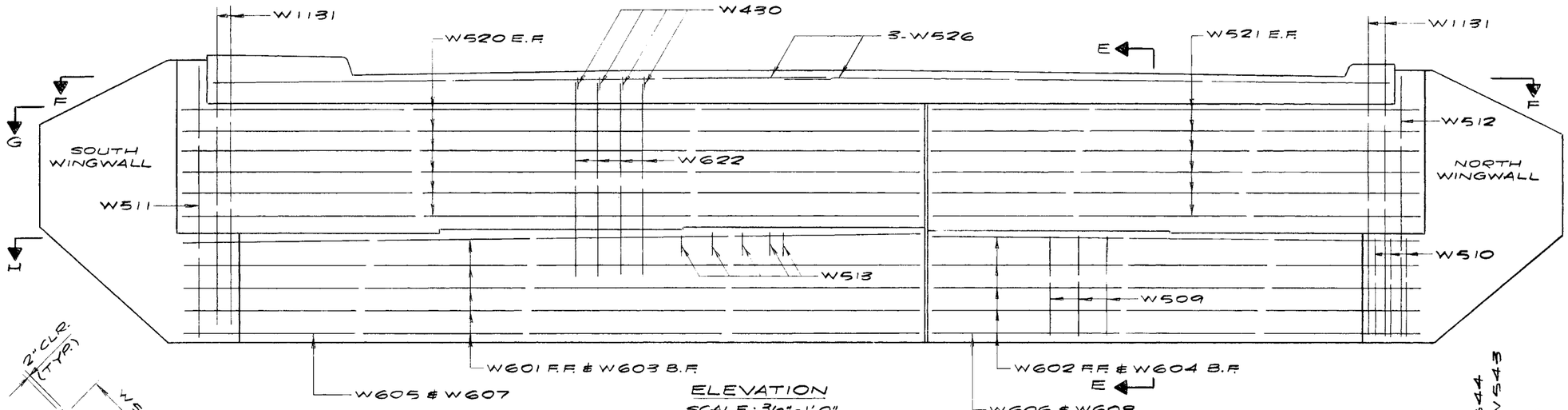
ABUTMENT SHALL BE KEYED INTO SOUND BEDROCK WITH NO VOIDS BETWEEN CONCRETE AND ROCK.

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

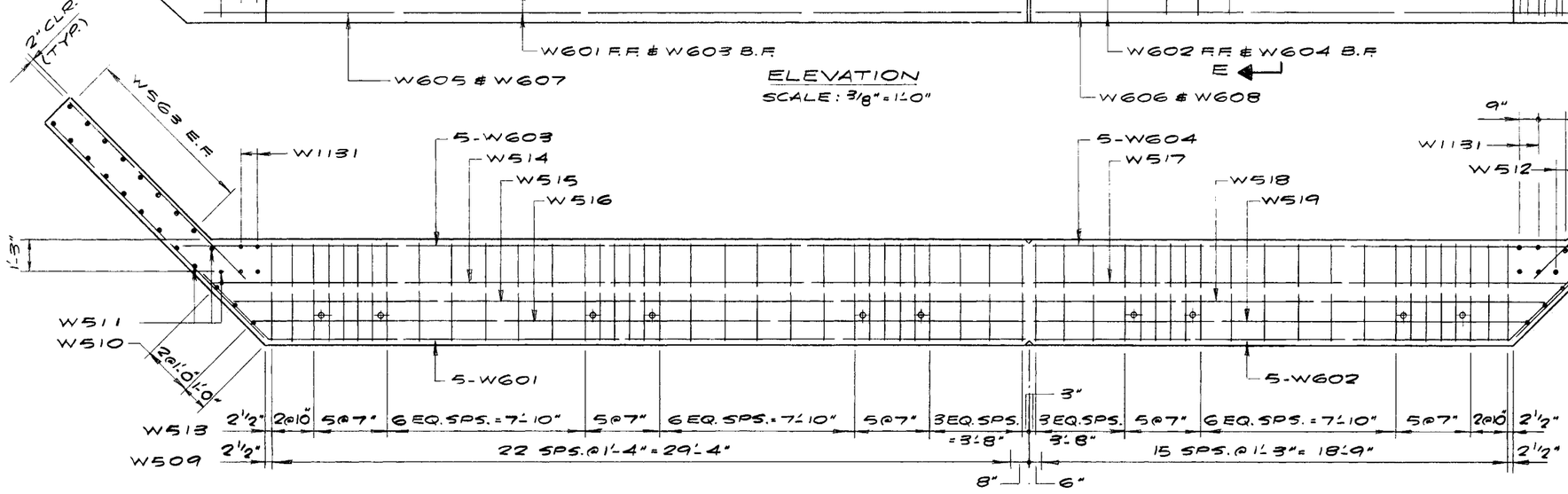
WEST ABUTMENT DETAILS

APPROVED: 12-27-74

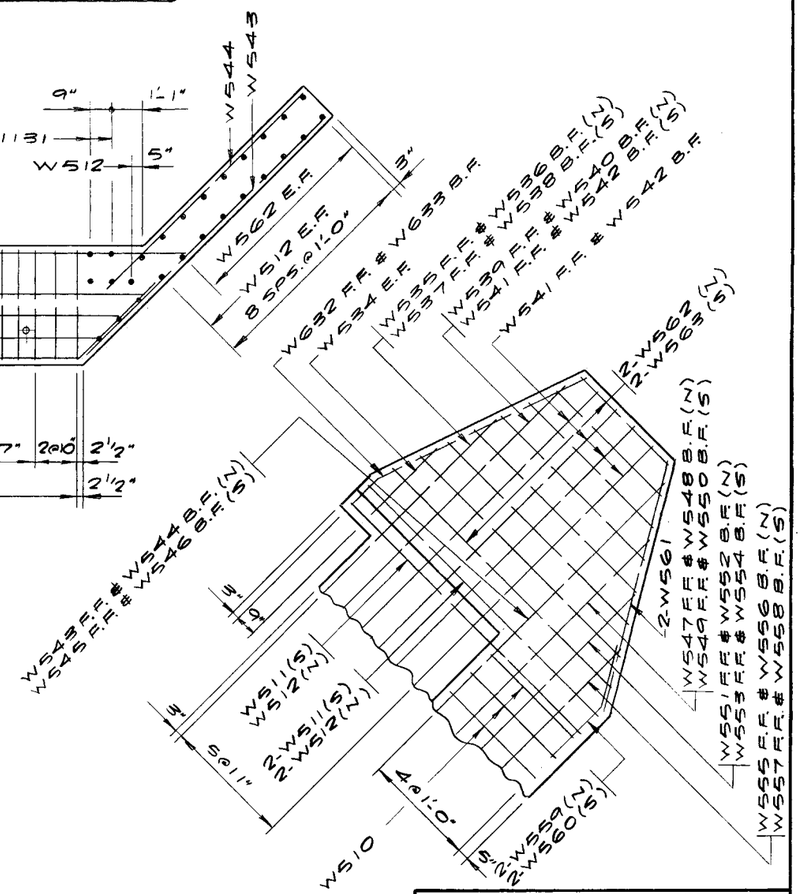



ELEVATION
SCALE: 3/8" = 1'-0"

NOTE:
SEE SHEET 8 FOR SECTIONS E-E, F-F & G-G




SECTION H-H



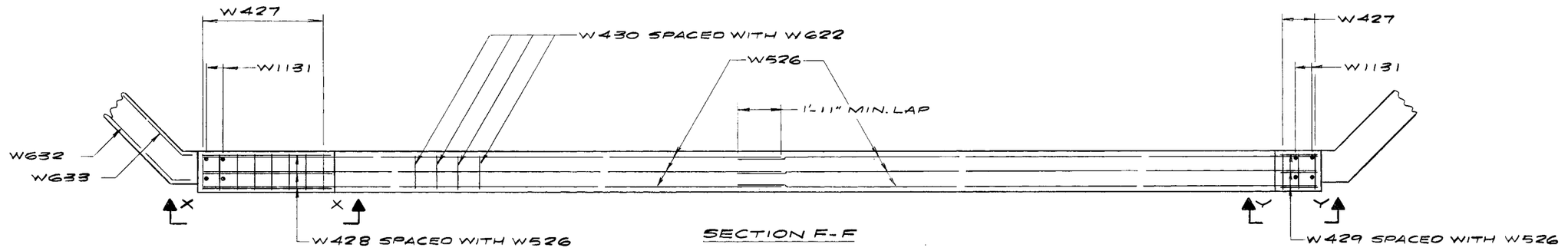

F.F. = FRONT FACE
B.F. = BACK "
E.F. = EACH "
(N) = NORTH WINGWALL
(S) = SOUTH "

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

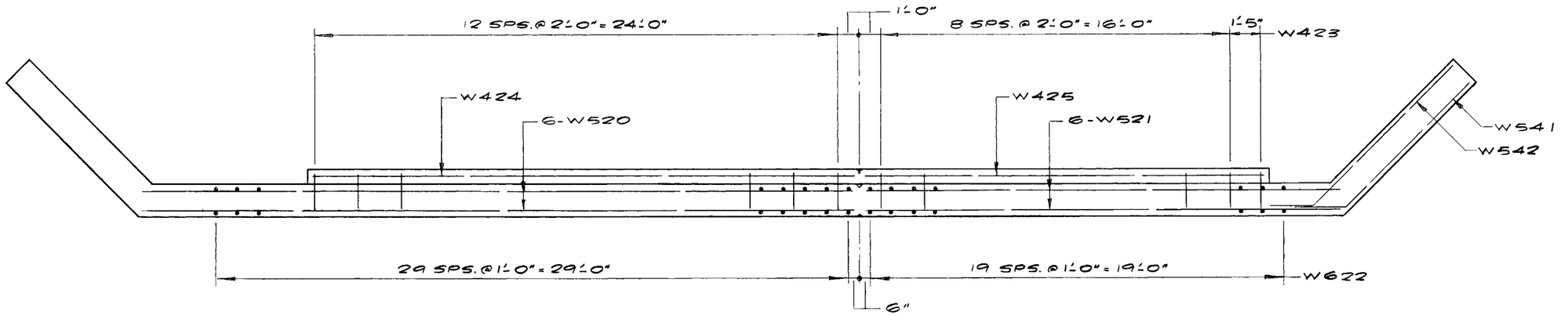
BRIDGE NO. 55520

WEST ABUTMENT
REINFORCEMENT

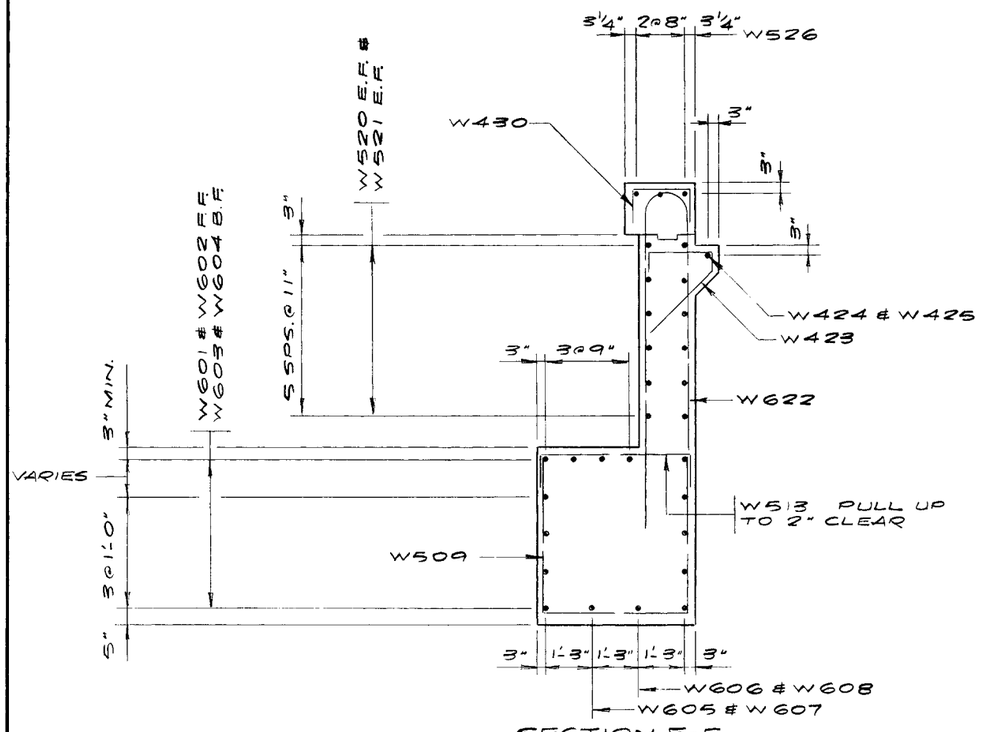
APPROVED: 12-27-74



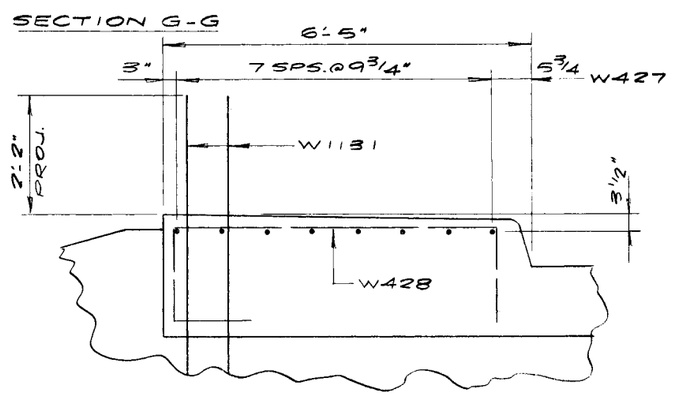

SECTION F-F



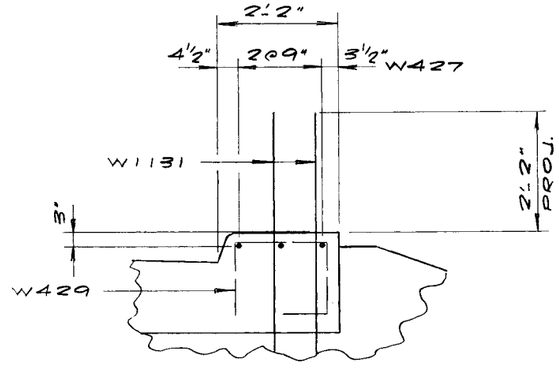

SECTION G-G




SECTION E-E




VIEW X-X



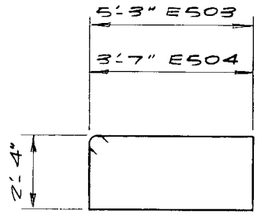

VIEW Y-Y

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

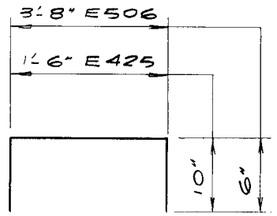
BRIDGE NO. 55520

WEST ABUTMENT
REINFORCEMENT

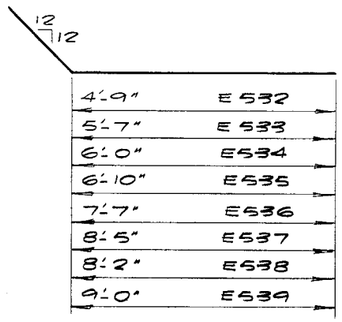
APPROVED: 12-27-74



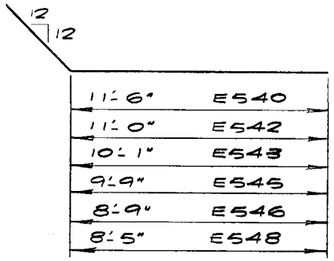

E503 & E504



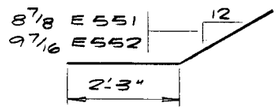

E506 & E425



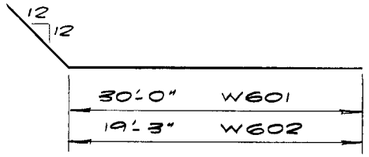

E532 - E539



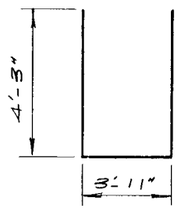

E540, E542, E543, E545, E546 & E548



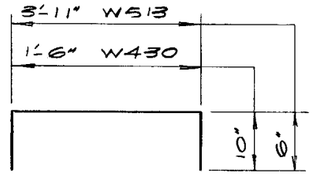

E551 & E552



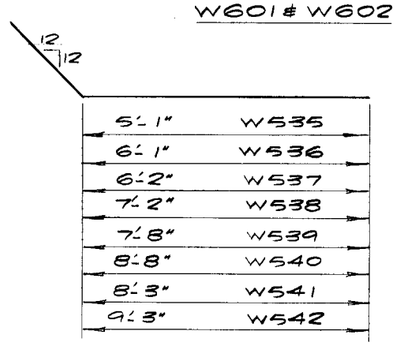

W601 & W602



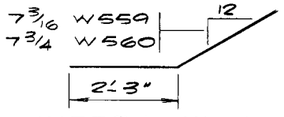

W509



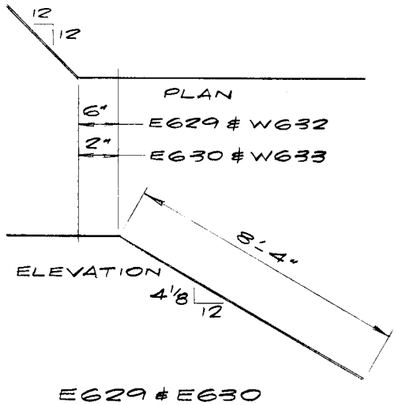

W513 & W430



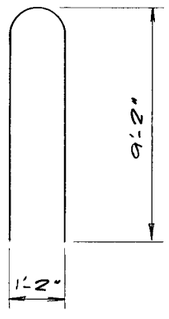

W535 - W542



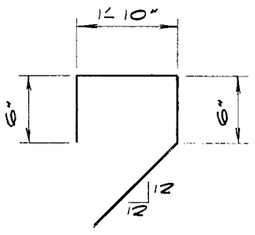

W559 & W560



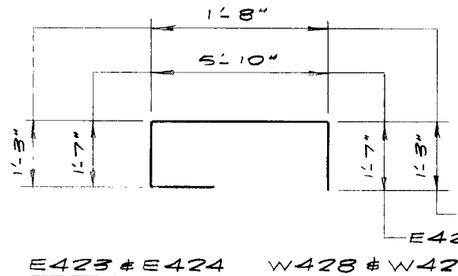

E629 & E630
W632 & W633




E617 & W622




E418 & W423




E423 & E424 W428 & W429

## BILL OF REINF. - EAST ABUTMENT

| BAR | NO. | LEN. | SHAPE | LOCATION |
|---|---|---|---|---|
| E601 | 10 | 29'-2" | STR. | FOOTING - LONGIT. |
| E602 | 6 | 27'-9" | " | " " |
| E503 | 36 | 16'-1" | BENT | " TIES |
| E504 | 2 | 12'-9" | " | " " |
| E505 | 78 | 4'-9" | STR. | BR. SEAT - DOWELS |
| E506 | 55 | 4'-8" | BENT | " " TIES |
| E507 | 3 | 23'-0" | STR. | " " LONGIT. |
| E508 | 1 | 21'-7" | " | " " " |
| E509 | 1 | 20'-7" | " | " " " |
| E510 | 3 | 19'-6" | " | " " " |
| E511 | 3 | 33'-9" | " | " " " |
| E512 | 1 | 32'-4" | " | " " " |
| E513 | 1 | 31'-4" | " | " " " |
| E514 | 3 | 30'-3" | " | " " " |
| E515 | 12 | 22'-0" | " | PARAPET - LONGIT. |
| E516 | 12 | 32'-9" | " | " " |
| E617 | 50 | 19'-0" | BENT | " VERT. |
| E418 | 23 | 5'-2" | " | PAVING BRACKET |
| E419 | 1 | 18'-6" | STR. | " " |
| E420 | 1 | 25'-0" | " | " " |
| E521 | 6 | 27'-1" | " | ROADWAY |
| E422 | 11 | 1'-6" | " | " |
| E423 | 3 | 10'-0" | BENT | " |
| E424 | 3 | 5'-2" | " | " |
| E425 | 50 | 3'-2" | " | " |
| E1126 | 8 | 12'-4" | STR. | END POST DOWELS |
| E527 | 3 | 10'-2" | " | PARAPET - VERT. - END |
| E528 | 3 | 9'-9" | " | " " " " |
| E629 | 2 | 9'-10" | BENT | WINGWALL |
| E630 | 2 | 9'-0" | " | " |
| E531 | 4 | 3'-0" | STR. | " |
| E532 | 1 | 6'-9" | BENT | " |
| E533 | 1 | 7'-7" | " | " |
| E534 | 1 | 8'-0" | " | " |
| E535 | 1 | 8'-10" | " | " |
| E536 | 1 | 9'-7" | " | " |
| E537 | 1 | 10'-5" | " | " |
| E538 | 9 | 10'-2" | " | " |
| E539 | 9 | 11'-0" | " | " |
| E540 | 1 | 13'-6" | " | " |
| E541 | 2 | 9'-6" | STR. | " |
| E542 | 1 | 13'-0" | BENT | " |
| E543 | 1 | 12'-1" | " | " |
| E544 | 2 | 8'-0" | STR. | " |
| E545 | 1 | 11'-9" | BENT | " |
| E546 | 1 | 10'-9" | " | " |
| E547 | 2 | 6'-9" | STR. | " |
| E548 | 1 | 10'-5" | BENT | " |
| E549 | 4 | 5'-1" | STR. | " |
| E550 | 4 | 3'-8" | " | " |
| E551 | 2 | 4'-6" | BENT | " |
| E552 | 2 | 4'-6" | " | " |
| E553 | 4 | 9'-6" | STR. | " |
| (1) E554 | 8 | 16'-4" | " | " |
| (1) E555 | 8 | 16'-8" | " | " |

(1) CUT 2 FROM 1

## BILL OF REINF. - WEST ABUTMENT

| BAR | NO. | LEN. | SHAPE | LOCATION |
|---|---|---|---|---|
| W601 | 5 | 34'-0" | BENT | ABUTMENT BASE |
| W602 | 5 | 23'-3" | " | " " |
| W603 | 5 | 33'-7" | STR. | " " |
| W604 | 5 | 22'-10" | " | " " |
| W605 | 1 | 31'-3" | " | " " |
| W606 | 1 | 20'-7" | " | " " |
| W607 | 1 | 32'-7" | " | " " |
| W608 | 1 | 21'-11" | " | " " |
| W509 | 39 | 12'-5" | BENT | " " TIES |
| W510 | 6 | 4'-4" | STR. | " " COR. |
| W511 | 3 | 12'-0" | " | " " " |
| W512 | 3 | 11'-7" | " | " " " |
| W513 | 55 | 4'-11" | BENT | BR. SEAT - TIES |
| W514 | 1 | 32'-3" | STR. | " " |
| W515 | 1 | 31'-6" | " | " " |
| W516 | 1 | 30'-9" | " | " " |
| W517 | 1 | 21'-6" | " | " " |
| W518 | 1 | 20'-9" | " | " " |
| W519 | 1 | 20'-0" | " | " " |
| W520 | 12 | 32'-9" | " | PARAPET - HORZ. |
| W521 | 12 | 22'-0" | " | " " |
| W622 | 50 | 19'-0" | BENT | " VERT. |
| W423 | 23 | 5'-2" | " | PAVING BRACKET |
| W424 | 1 | 25'-0" | STR. | " " |
| W425 | 1 | 18'-6" | " | " " |
| W526 | 6 | 27'-1" | " | ROADWAY |
| W427 | 11 | 1'-6" | " | " |
| W428 | 3 | 10'-0" | BENT | " |
| W429 | 3 | 5'-2" | " | " |
| W430 | 50 | 3'-2" | " | " |
| W1131 | 8 | 14'-0" | STR. | END POST DOWELS |
| W632 | 2 | 9'-10" | BENT | WINGWALL |
| W633 | 2 | 9'-0" | " | " |
| W534 | 4 | 3'-0" | STR. | " |
| W535 | 1 | 7'-1" | BENT | " |
| W536 | 1 | 8'-1" | " | " |
| W537 | 1 | 8'-2" | " | " |
| W538 | 1 | 9'-2" | " | " |
| W539 | 1 | 9'-8" | " | " |
| W540 | 1 | 10'-8" | " | " |
| W541 | 9 | 10'-3" | " | " |
| W542 | 9 | 11'-3" | " | " |
| W543 | 1 | 11'-3" | STR. | " |
| W544 | 1 | 9'-0" | " | " |
| W545 | 1 | 10'-9" | " | " |
| W546 | 1 | 8'-6" | " | " |
| W547 | 1 | 9'-7" | " | " |
| W548 | 1 | 7'-4" | " | " |
| W549 | 1 | 9'-3" | " | " |
| W550 | 1 | 7'-0" | " | " |
| W551 | 1 | 8'-0" | " | " |
| W552 | 1 | 5'-9" | " | " |
| W553 | 1 | 7'-7" | " | " |
| W554 | 1 | 5'-4" | " | " |
| W555 | 1 | 6'-3" | " | " |
| W556 | 1 | 4'-0" | " | " |
| W557 | 1 | 6'-1" | " | " |
| W558 | 1 | 3'-10" | " | " |
| W559 | 2 | 4'-6" | BENT | " |
| W560 | 2 | 4'-6" | " | " |
| W561 | 4 | 9'-0" | STR. | " |
| (1) W562 | 8 | 15'-3" | " | " |
| (1) W563 | 8 | 15'-7" | " | " |

DO NOT ORDER WEST ABUTMENT REINF. UNTIL EXACT ABUT. BASE ELEV. HAS BEEN DETERMINED BY THE ENGINEER IN THE FIELD.

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

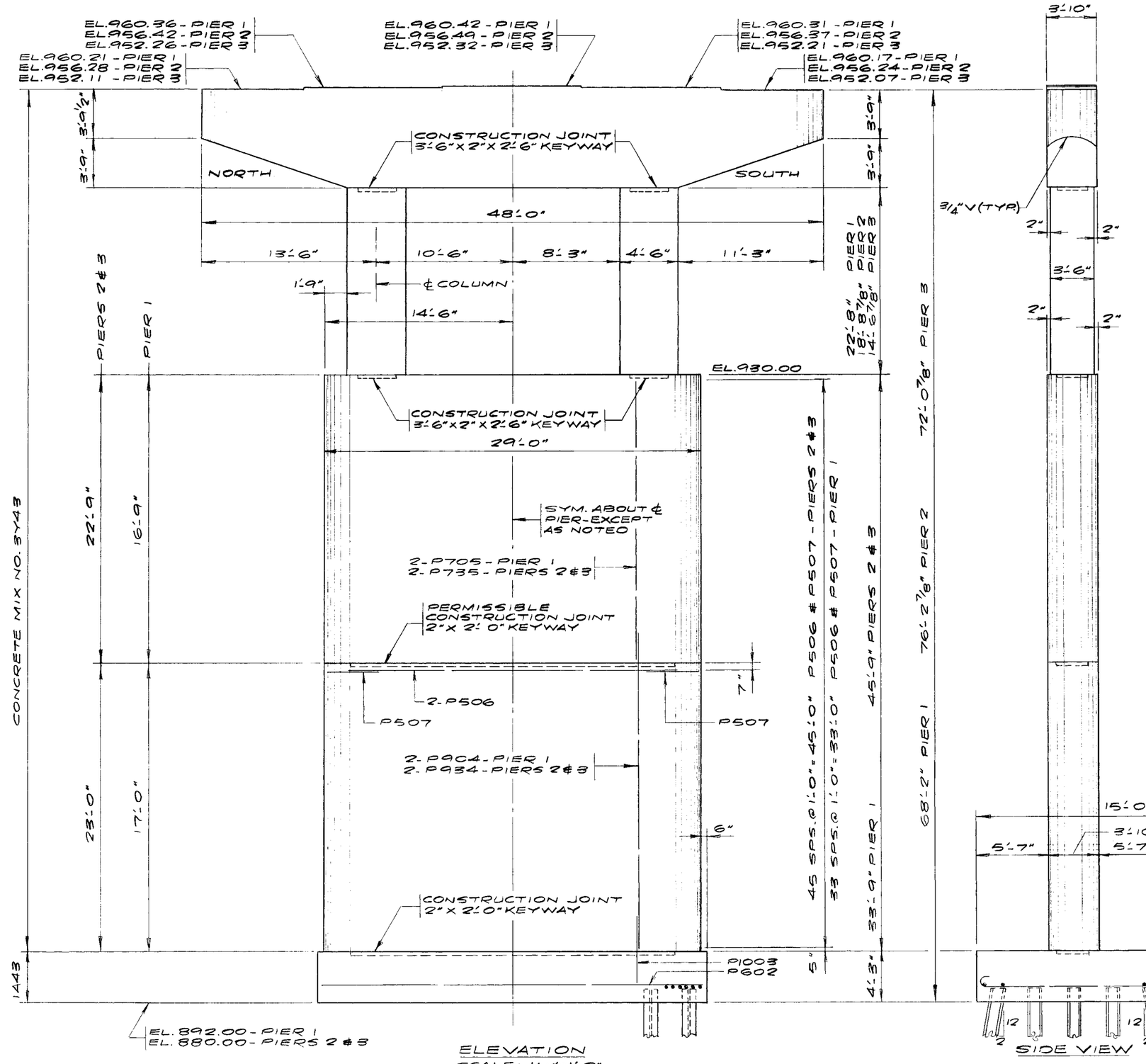
EAST & WEST ABUTMENT REINFORCEMENT

APPROVED 12-27-74

S.A.P. NO. 55-612-05



55520 GRC WNJ




## SUMMARY OF QUANTITIES - 3 PIERS

| | PIER 1 | PIER 2 | PIER 3 | TOTAL |
|---|---|---|---|---|
| CONCRETE, MIX NO. 1A43 | 71 | 71 | 71 | 213 CU.YD. |
| CONCRETE, MIX NO. 3Y43 | 207 | 251 | 246 | 704 CU.YD. |
| REINFORCEMENT BARS | 33960 | 36750 | 34630 | 104340 LB. |
| CLASS WE EXCAVATION | 262 | 462 | 532 | 1256 CU.YD. |
| 10" STEEL H-PILING PLACED | 840 | 3360 | 3360 | 7560 LIN.FT. |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

## PILE NOTES

42 STEEL PILES EST. LENGTH 20 FT. - PIER 1
42 " " " " 80 " " " 2
42 " " " " 80 " " " 3
126 " " REQUIRED FOR 3 PIERS

ALL PILES TO BE HP 10X42.
PILES MARKED THUS ⊢→ TO BE BATTERED 2" PER FOOT IN DIRECTION SHOWN.
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
FOR SPLICES SEE BRIDGE DETAIL 8202.

## COMPUTED PILE LOADS (TONS/PILE)

| | |
|---|---|
| DEAD LOAD | 32.3 |
| LIVE LOAD | 4.5 |
| OVERTURNING | 27.8 |
| TOTAL | 64.6 |

$\frac{64.6}{1.25} = 51.7$ REDUCTION PER A.A.S.H.O. 1.2.22

NOTES:

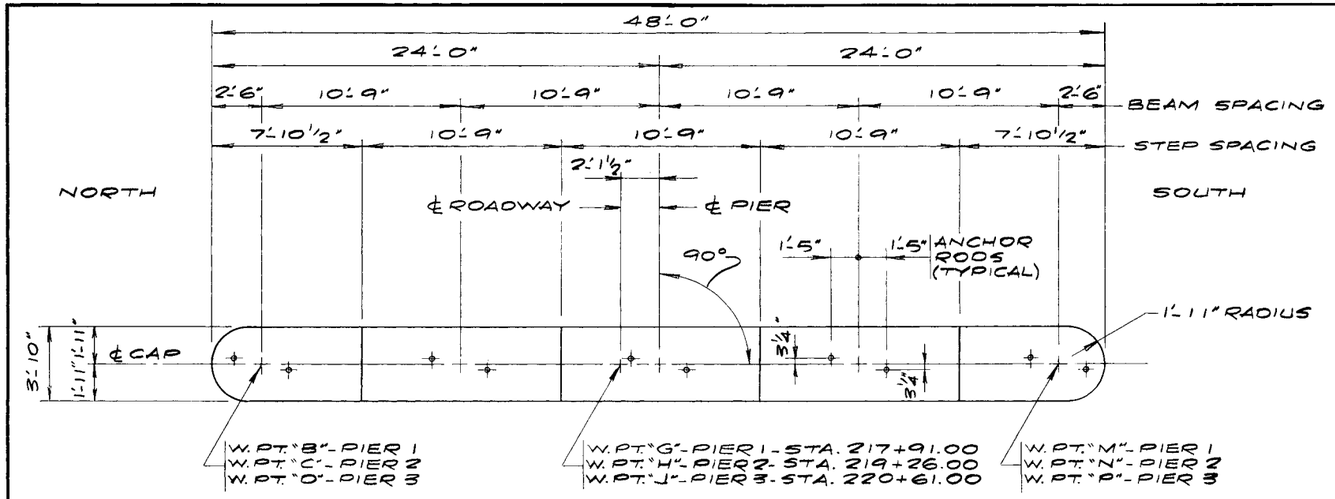
PAINT ALL EXPOSED CONCRETE SURFACES WITH PROTECTIVE COATING. SEE SPECIAL PROVISIONS.

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

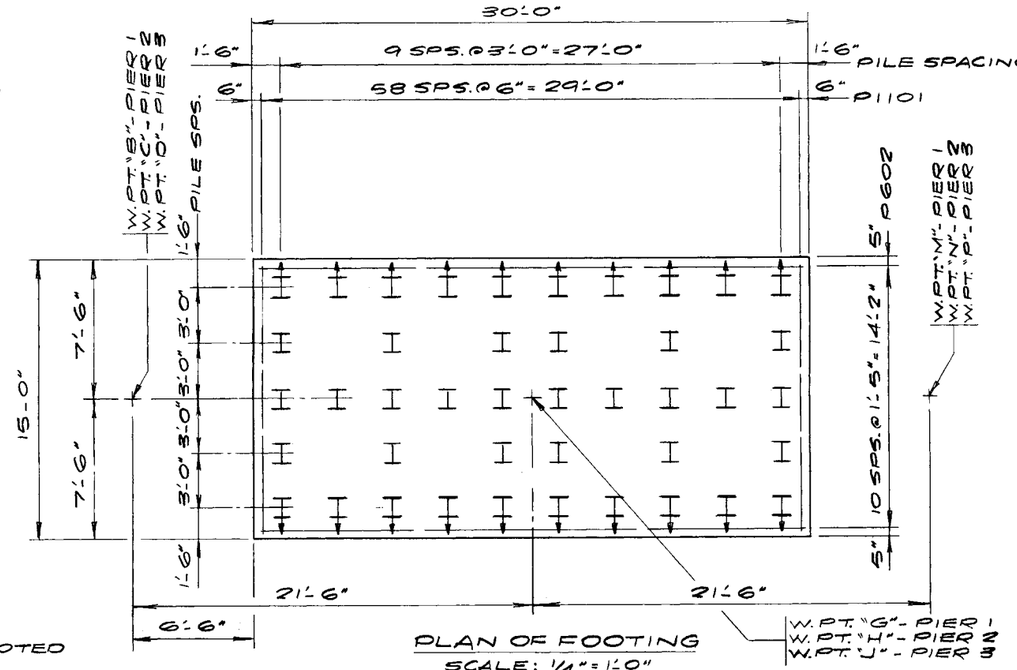
BRIDGE NO. 55520

PIER DETAILS

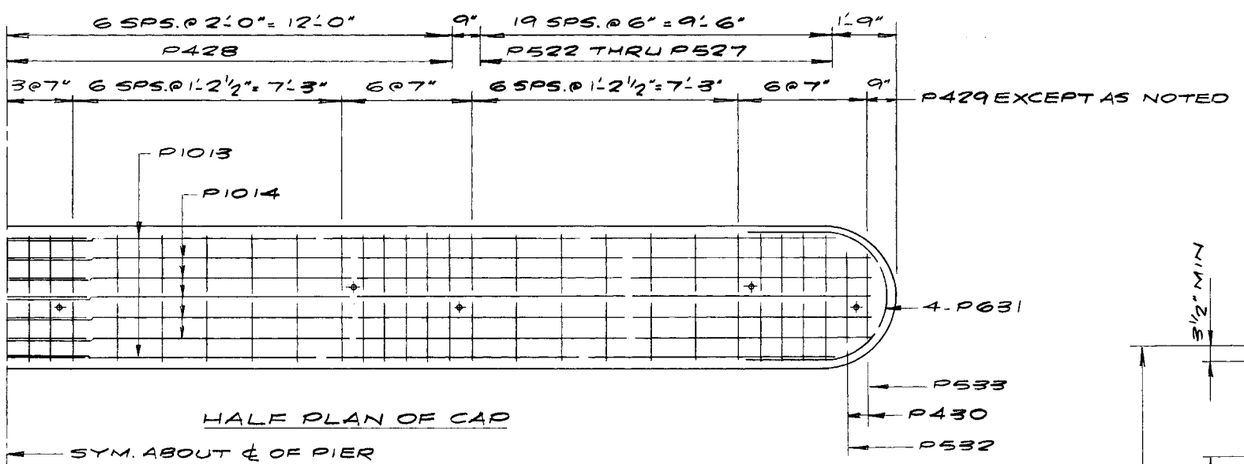
APPROVED: 12-27-74



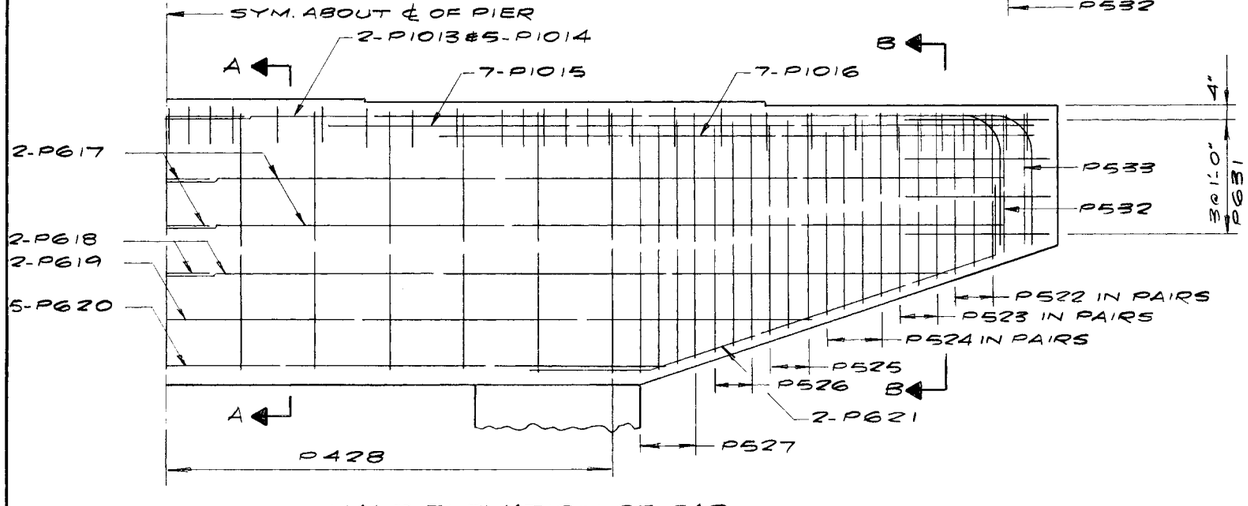

PLAN OF CAP
SCALE: 1/4" = 1'-0"



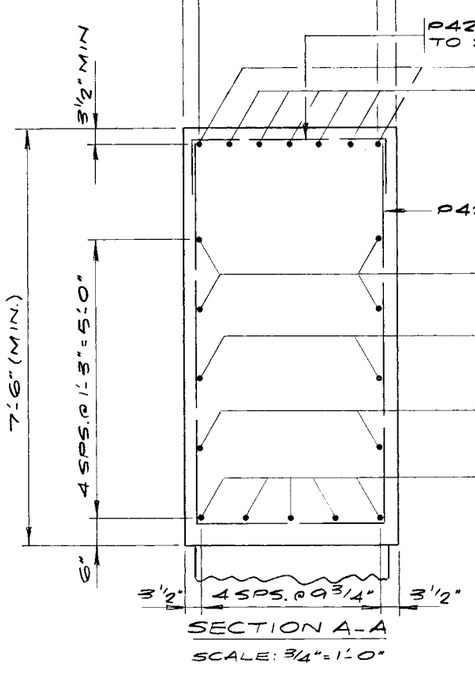

PLAN OF FOOTING
SCALE: 1/4" = 1'-0"



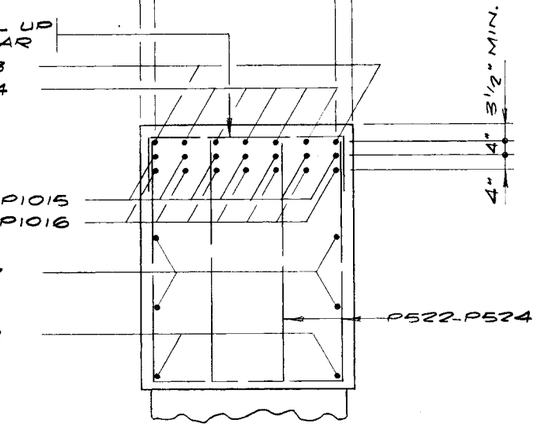

HALF PLAN OF CAP




HALF ELEVATION OF CAP
SCALE: 1/2" = 1'-0"




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



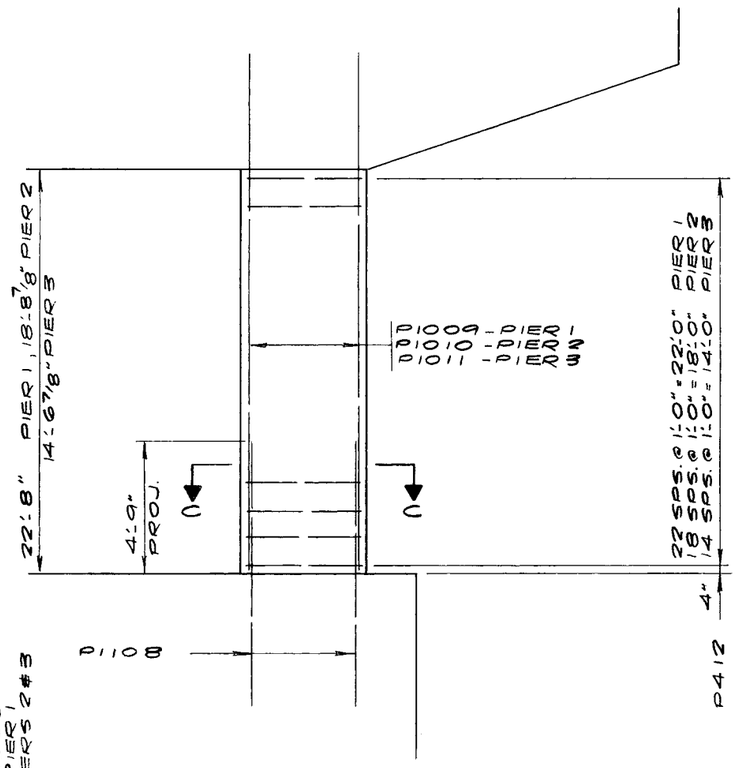

SECTION B-B
SCALE: 3/4" = 1'-0"

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

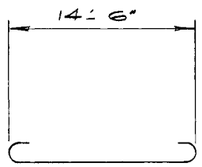
PIER DETAILS

APPROVED: 12-27-74

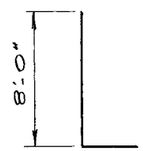



ELEVATION OF COLUMN

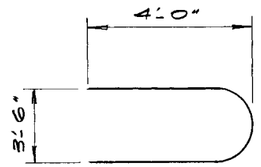
SCALE: 3/8" = 1'-0"



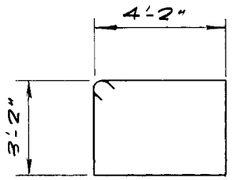

P1101



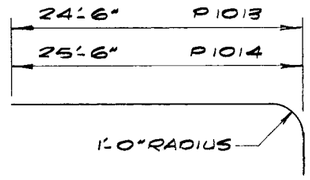

P1003



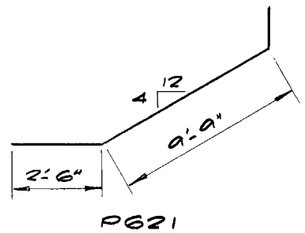

P507 & P631



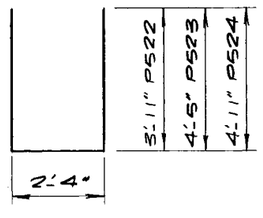

P412



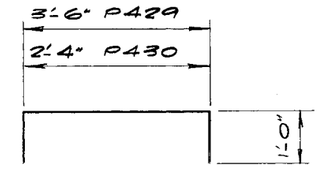

P1013 & P1014



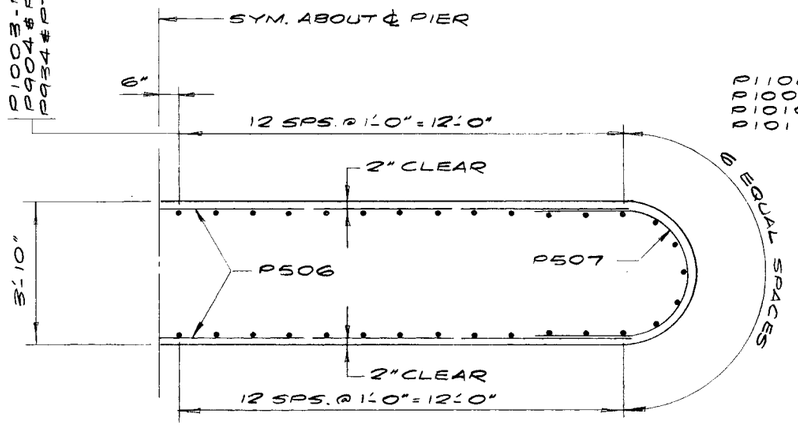

P621




P522, P523 & P524

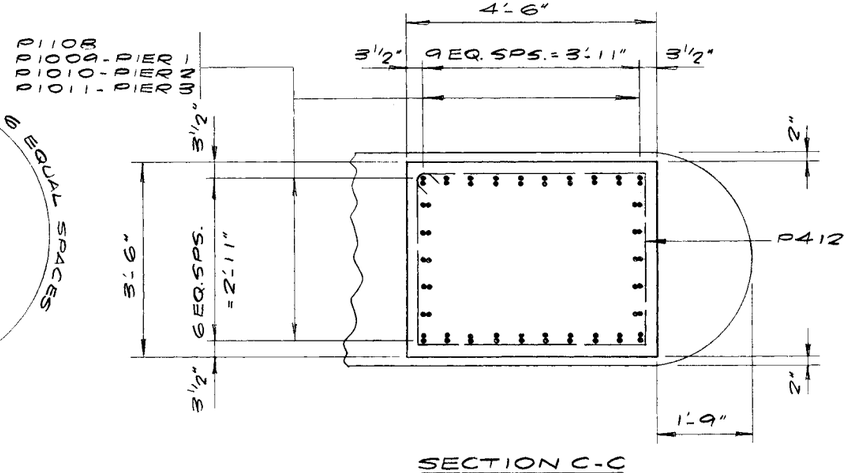



P429 & P430



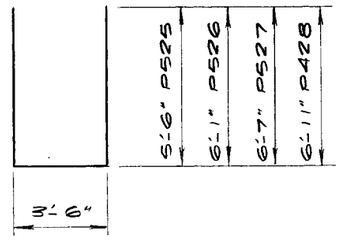

HALF SECTION THRU SHAFT

SCALE: 1/2" = 1'-0"

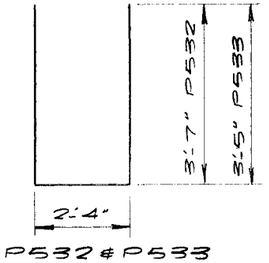



SECTION C-C

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




P525, P526, P527 & P428




P532 & P533

BILL OF REINFORCEMENT - 3 PIERS

| | BAR | NUMBER PIER 1 | PIER 2 | PIER 3 | LEN. | SHAPE | LOCATION |
|---|---|---|---|---|---|---|---|
| | P1101 | 59 | 59 | 59 | 17'-8" | BENT | FOOTING |
| | P602 | 11 | 11 | 11 | 29'-6" | STR. | " |
| | P1003 | 62 | 62 | 62 | 9'-7" | BENT | " DOWELS |
| | P904 | 62 | —— | —— | 20'-10" | STR. | SHAFT - VERT. |
| | P705 | 62 | —— | —— | 16'-6" | " | " " |
| | P506 | 68 | 92 | 92 | 25'-3" | " | " HORZ. |
| | P507 | 68 | 92 | 92 | 10'-0" | BENT | " ENDS |
| | P1108 | 60 | 60 | 60 | 9'-6" | STR. | COLUMN - DOWELS |
| | P1009 | 60 | —— | —— | 27'-0" | " | " VERT. - PIER 1 |
| | P1010 | —— | 60 | —— | 23'-0" | " | " " " 2 |
| | P1011 | —— | —— | 60 | 19'-0" | " | " " " 3 |
| | P412 | 46 | 38 | 30 | 15'-5" | BENT | " TIES |
| ① | P1013 | 4 | 4 | 4 | 27'-5" | " | CAP |
| ① | P1014 | 10 | 10 | 10 | 28'-5" | " | " |
| | P1015 | 14 | 14 | 14 | 19'-0" | STR. | " |
| | P1016 | 14 | 14 | 14 | 16'-0" | " | " |
| ② | P617 | 8 | 8 | 8 | 23'-6" | " | " |
| ② | P618 | 4 | 4 | 4 | 22'-2" | " | " |
| | P619 | 2 | 2 | 2 | 34'-8" | " | " |
| | P620 | 5 | 5 | 5 | 27'-0" | " | " |
| | P621 | 4 | 4 | 4 | 14'-3" | BENT | " |
| | P522 | 12 | 12 | 12 | 10'-2" | " | " STIRRUPS |
| | P523 | 12 | 12 | 12 | 11'-2" | " | " " |
| | P524 | 16 | 16 | 16 | 12'-2" | " | " " |
| | P525 | 6 | 6 | 6 | 14'-6" | " | " " |
| | P526 | 6 | 6 | 6 | 15'-8" | " | " " |
| | P527 | 8 | 8 | 8 | 16'-8" | " | " " |
| | P428 | 13 | 13 | 13 | 17'-4" | " | " " |
| | P429 | 51 | 51 | 51 | 5'-6" | " | " TIES |
| | P430 | 4 | 4 | 4 | 4'-4" | " | " " |
| | P631 | 8 | 8 | 8 | 10'-0" | " | " ENDS |
| | P532 | 2 | 2 | 2 | 9'-6" | " | " STIRRUPS |
| | P533 | 2 | 2 | 2 | 9'-2" | " | " " |
| | P934 | —— | 62 | 62 | 26'-10" | STR. | SHAFT - VERT. |
| | P735 | —— | 62 | 62 | 22'-6" | " | " " |

① 4'-3" MIN. LAP
② 2'-3" MIN. LAP

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

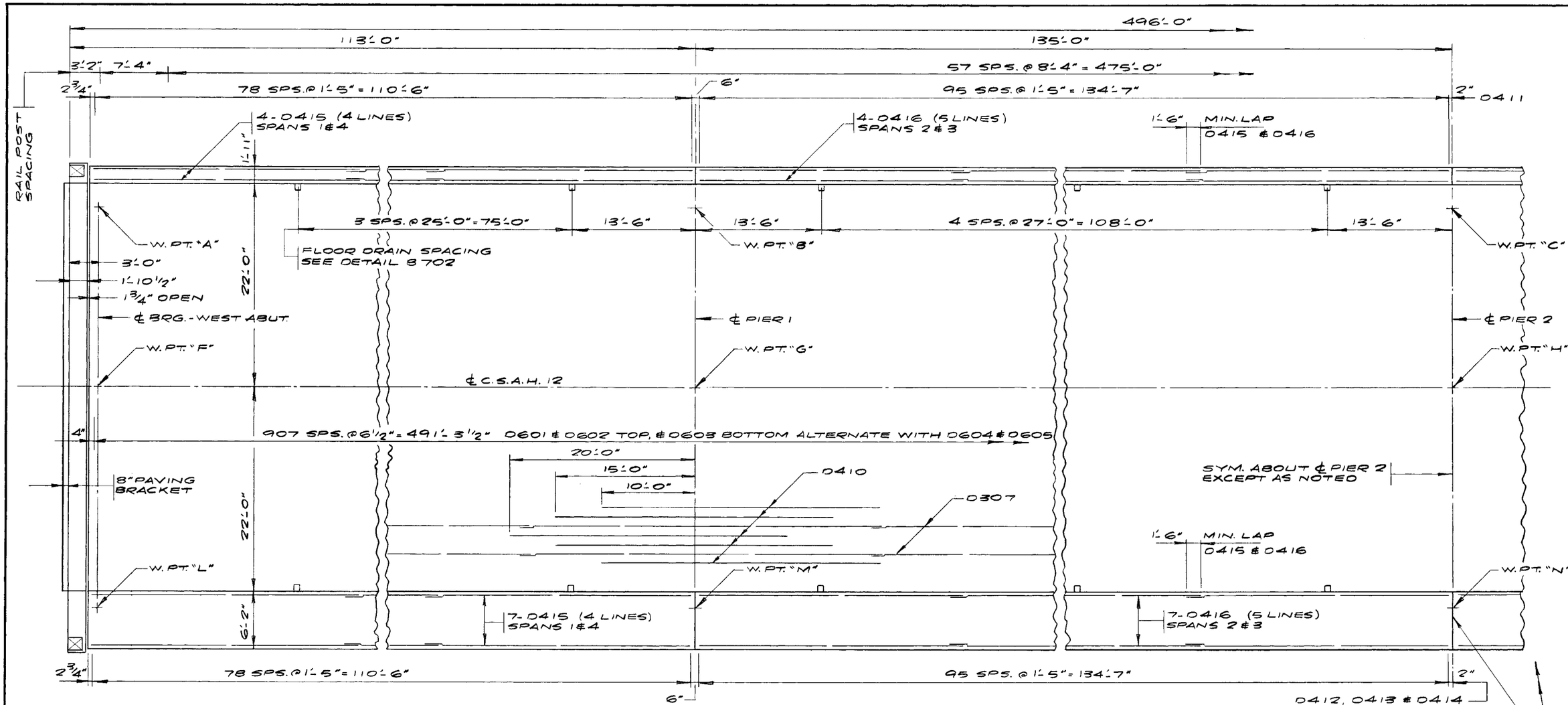
PIER DETAILS

APPROVED: 12-27-74

S.A.P. NO. 55-612-05

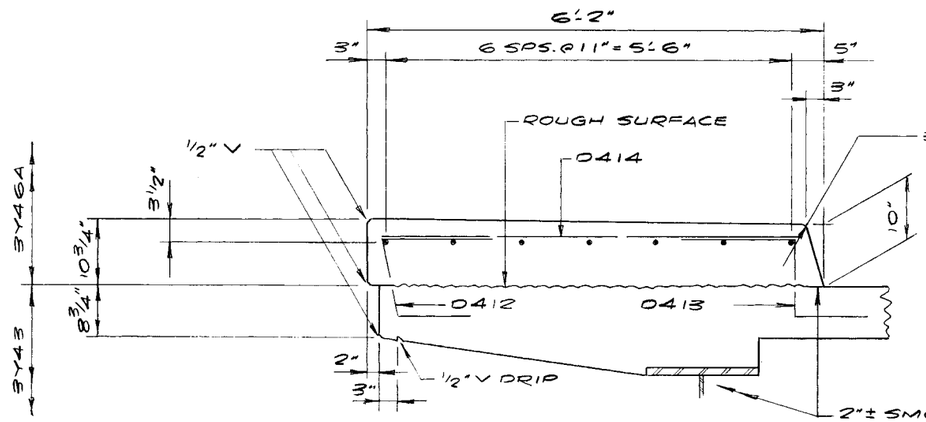
SHEET 12 OF 27 SHEETS

55520 | GRC | WNJ

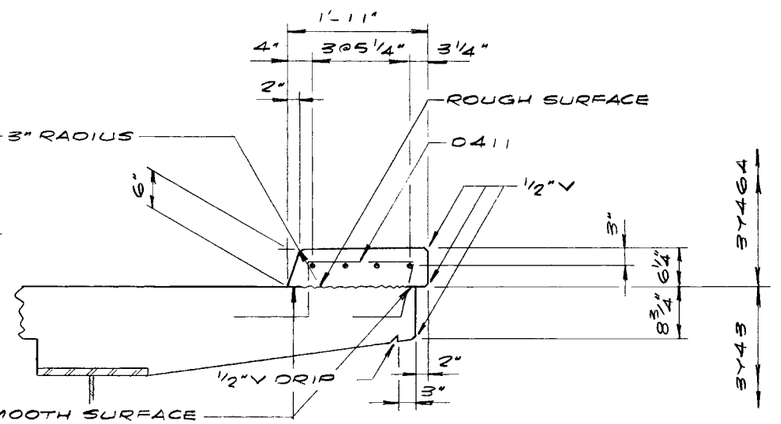



PART PLAN OF DECK

FINISH TOP OF ALL CURB AND SIDEWALK JOINTS WITH SMALL RADIUS EDGER, AND VERTICAL EDGES WITH 1/2" V STRIPS. BREAK BOND AT JOINT BY APPROVED METHOD. NO REINF. THRU JOINT.




TYPICAL SECTION THRU SIDEWALK



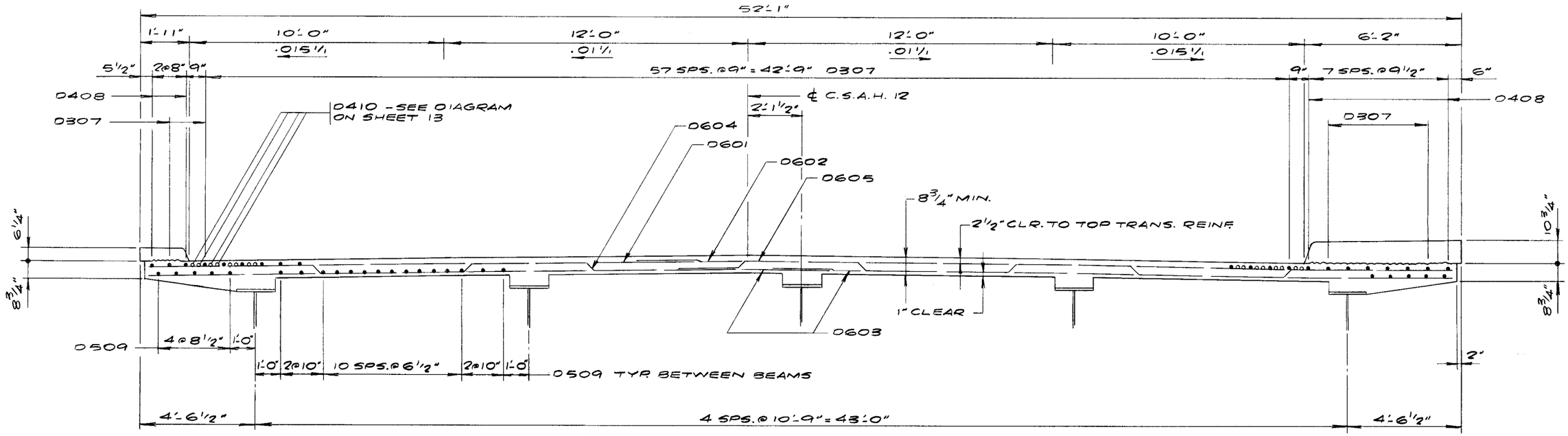

TYPICAL SECTION THRU CURB

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

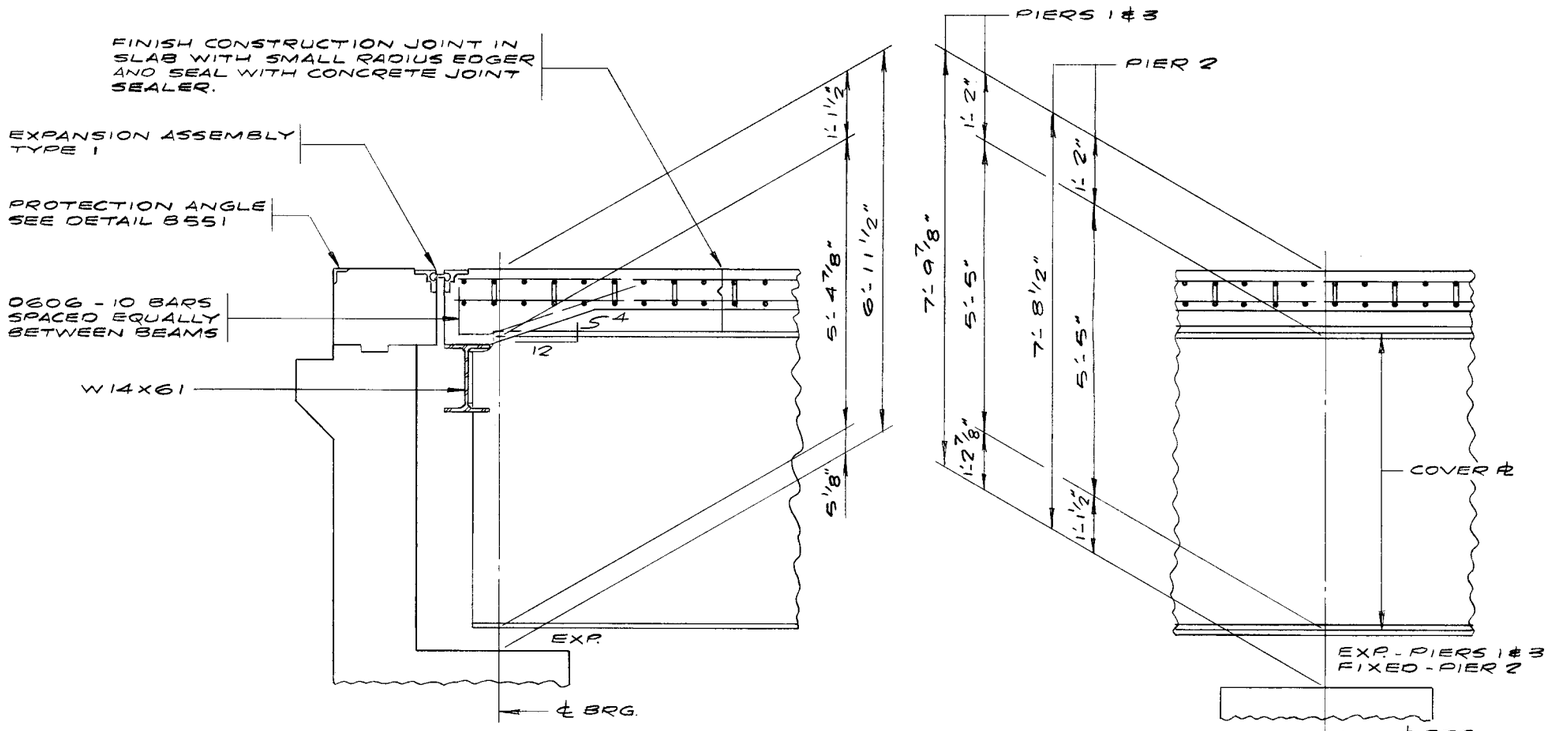
SUPERSTRUCTURE DETAILS

APPROVED: 12-27-74




TRANSVERSE SECTION THRU DECK LOOKING EAST

SCALE: 1/2" = 1'-0"




PART LONGITUDINAL SECTION

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

| | | | |
|---|---|---|---|
| (1) | SUMMARY OF QUANTITIES - SUPERST. | | |
| (2) | CONCRETE, MIX NO. 3Y43 | 750 | CU.YD. |
| | CONCRETE, MIX NO. 3Y46A | 168 | CU.YD. |
| | REINFORCEMENT BARS | 189730 | POUND |
| | STRUCTURAL STEEL, (3306) | 3950 | POUND |
| | STRUCTURAL STEEL, (3309) | 691310 | POUND |
| | ORNAMENTAL METAL RAILING | 992 | LIN. FT. |
| | FLOOR DRAINS, TYPE 1 | 36 | EACH |
| | EXP. BRG. ASSEMBLIES, TYPE 1 | 10 | EACH |
| | EXP. BRG. ASSEMBLIES, TYPE 2 | 10 | EACH |
| | FIXED BRG. ASSEMBLIES, TYPE 1 | 5 | EACH |
| | EXPANSION ASSEMBLY, TYPE 1 | 2 | ASSEMBLY |
| (3) (4) | NAME PLATE (SEE DETAIL B103) | | ONE |
| (5) | PROTECTION ANGLE (SEE DETAIL B551) | | |
| (5) | GUARD RAIL CONNECTION | | |
| (6) | 42-PCS. 12"x1/4"x1'-6" (PREFORMED CORK) | | |

(1) INCLUDES RAILING QUANTITIES.

(2) THE VOLUME OF DECK CONC. FOR PAYMENT SHALL BE COMPUTED USING AN AVERAGE STOOL HEIGHT OF 2 3/4".

(3) BRIDGE NO. 55520, DATED 1974

(4) INCLUDED IN PRICE BID FOR OTHER ITEMS.

(5) INCLUDED IN WEIGHT OF STRUCT. STEEL 3306.

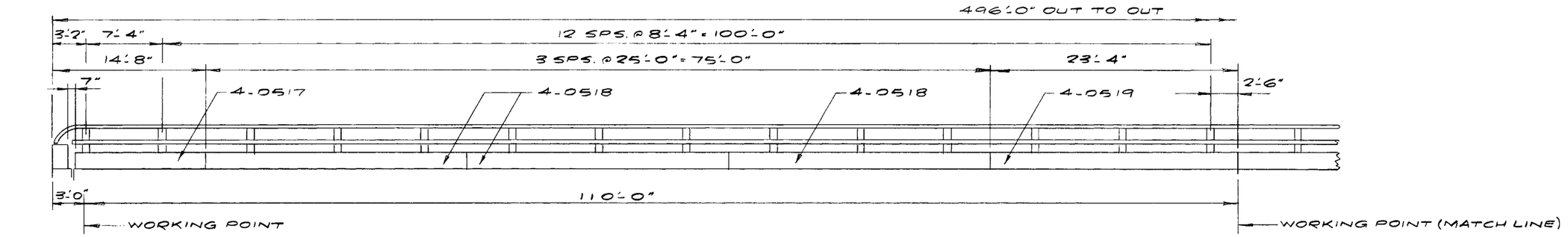
(6) SEE SPECIAL PROVISIONS.

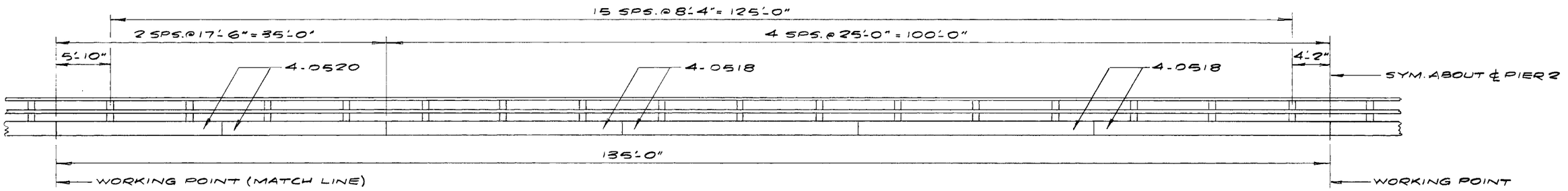
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

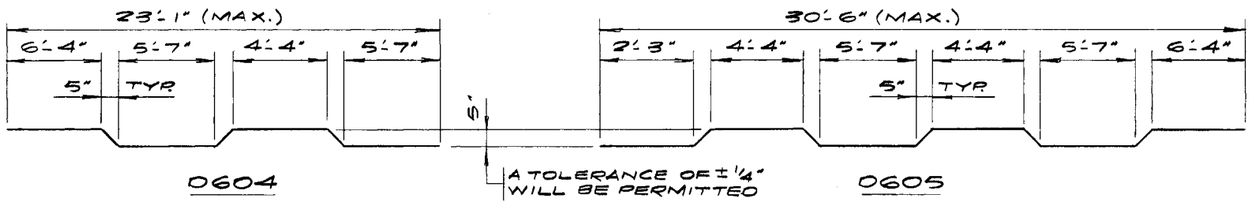
SUPERSTRUCTURE DETAILS

APPROVED: 12-27-74

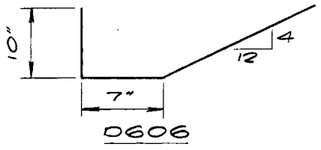


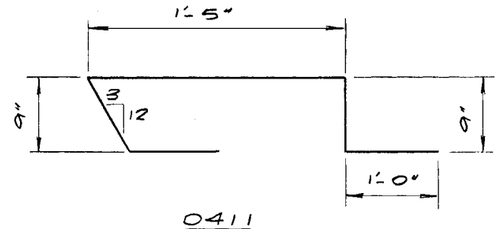

HALF RAILING ELEVATION



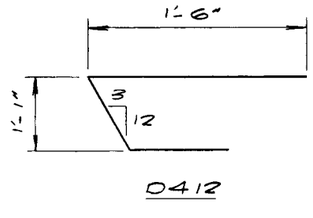

0604 0605



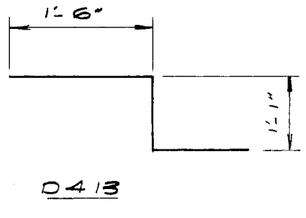

0606



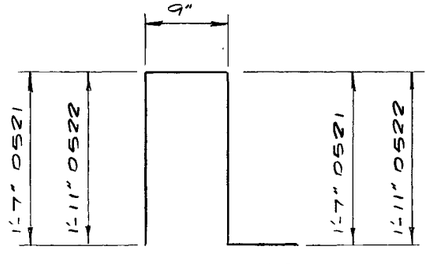

0411



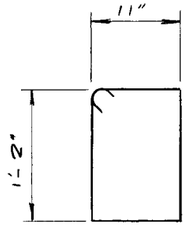

0412




0413




0521 & 0522




0523

BILL OF REINF. FOR SUPERSTRUCTURE

| | BAR | NO. | LEN. | SHAPE | LOCATION |
|---|---|---|---|---|---|
| ① | 0601 | 454 | 21'-5" | STR. | SLAB - TRANS. |
| ① | 0602 | 454 | 32'-2" | 〃 | 〃 〃 |
| ① | 0603 | 908 | 26'-10" | 〃 | 〃 〃 |
| | 0604 | 454 | 23'-8" | BENT | 〃 〃 |
| | 0605 | 454 | 31'-5" | 〃 | 〃 〃 |
| | 0606 | 80 | 4'-2" | 〃 | 〃 ENDS |
| ② | 0307 | 1040 | 31'-10" | STR. | 〃 LONGIT. - TOP |
| ③ | 0408 | 60 | 34'-2" | 〃 | 〃 〃 〃 |
| ④ | 0509 | 980 | 36'-11" | 〃 | 〃 〃 〃 BOT. |
| | 0410 | 354 | 30'-0" | 〃 | 〃 〃 OVER PIERS |
| | 0411 | 350 | 4'-6" | BENT | CURB - TIES |
| | 0412 | 350 | 3'-7" | 〃 | SIDEWALK - TIES |
| | 0413 | 350 | 5'-7" | 〃 | 〃 〃 |
| | 0414 | 350 | 5'-7" | STR. | 〃 〃 |
| | 0415 | 88 | 28'-10" | 〃 | CURB & SOWK. - LONGIT. |
| | 0416 | 110 | 28'-2" | 〃 | 〃 〃 〃 〃 |
| | 0517 | 16 | 12'-3" | 〃 | RAILBASE - LONGIT. |
| | 0518 | 112 | 24'-8" | 〃 | 〃 〃 |
| | 0519 | 16 | 23'-0" | 〃 | 〃 〃 |
| | 0520 | 32 | 17'-2" | 〃 | 〃 〃 |
| | 0521 | 710 | 5'-0" | BENT | 〃 TIES - CURB |
| | 0522 | 710 | 5'-8" | 〃 | 〃 〃 SOWK. |
| | 0523 | 28 | 5'-1" | 〃 | END POST - TIES |

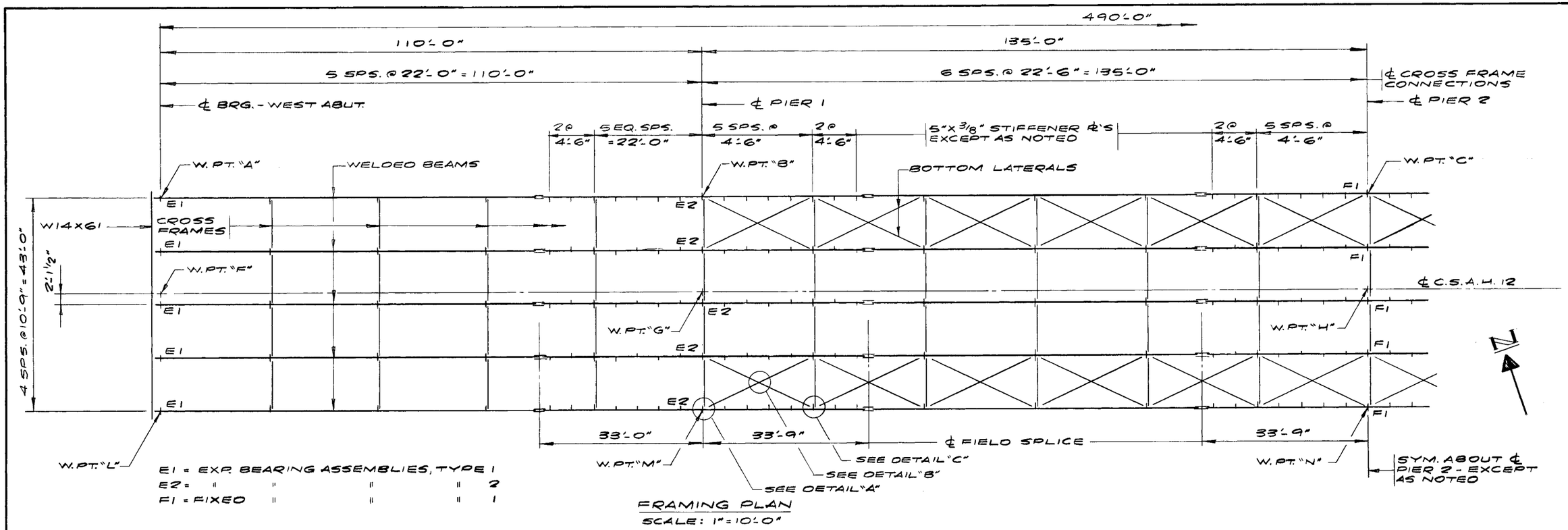
① 2'-3" MIN. LAP
② 16 LINES, 1'-2" MIN. LAP
③ 15 〃 1'-6" 〃 〃
④ 14 〃 1'-11" 〃 〃

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

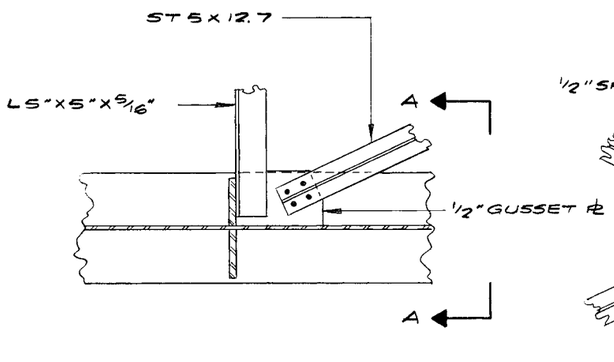
SUPERSTRUCTURE DETAILS

APPROVED: 12-27-74

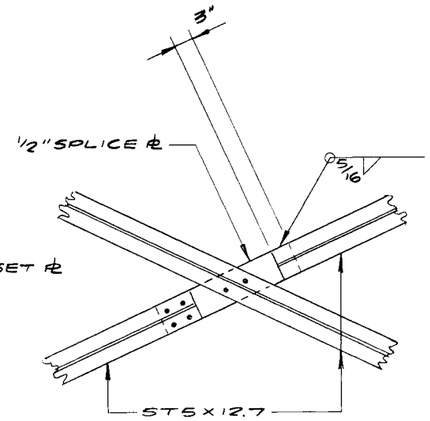



E1 = EXP. BEARING ASSEMBLIES, TYPE 1
E2 = " " " " 2
F1 = FIXED " " " 1

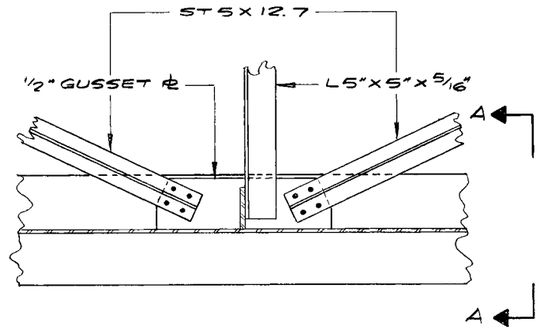
FRAMING PLAN
SCALE: 1"=10'-0"



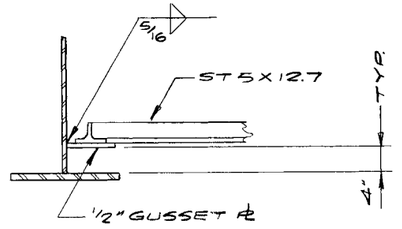

DETAIL "A"




DETAIL "B"




DETAIL "C"



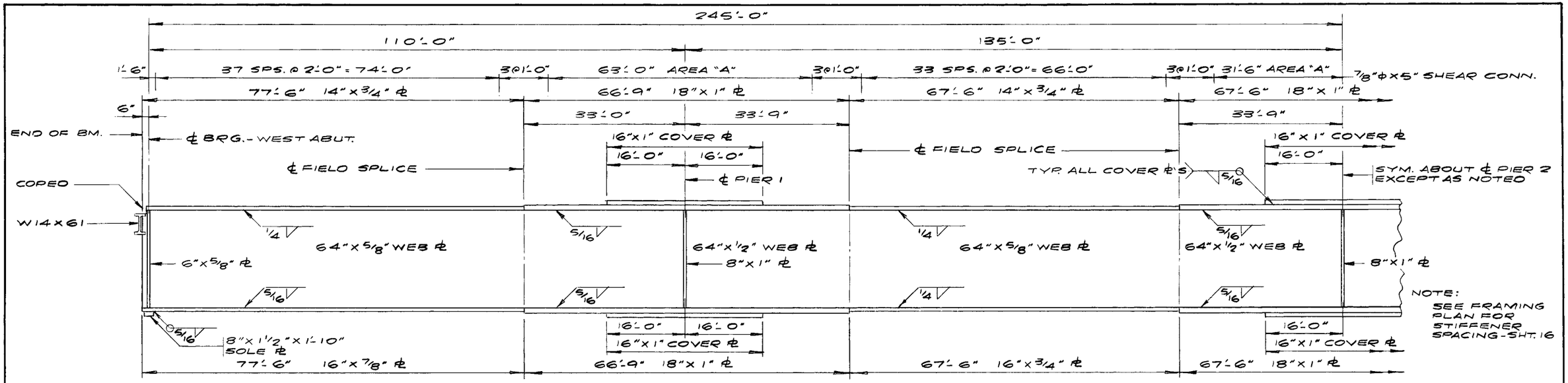

SECTION A-A

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

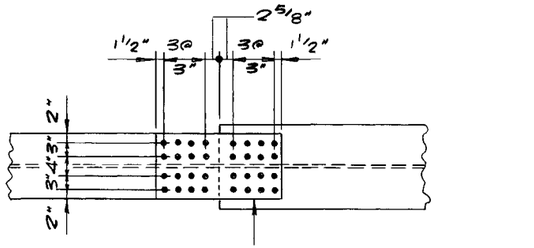
BRIDGE NO. 55520

STRUCTURAL STEEL DETAILS

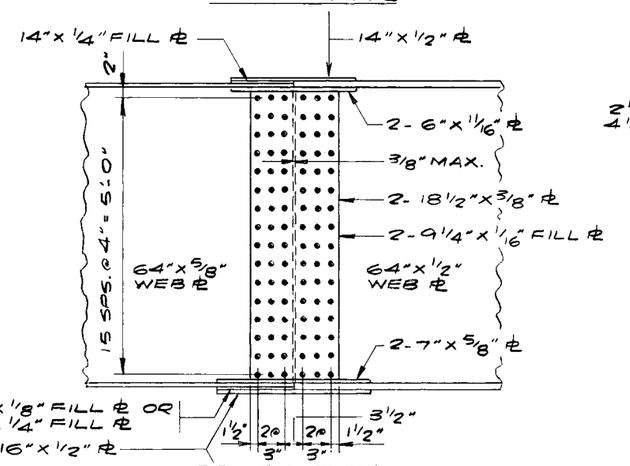
APPROVED: 12-27-74



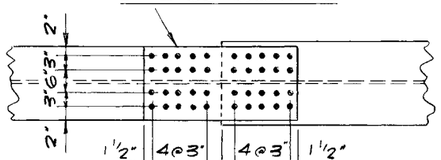

HALF BEAM ELEVATION



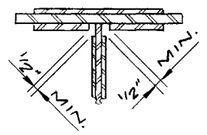

TOP FLANGE



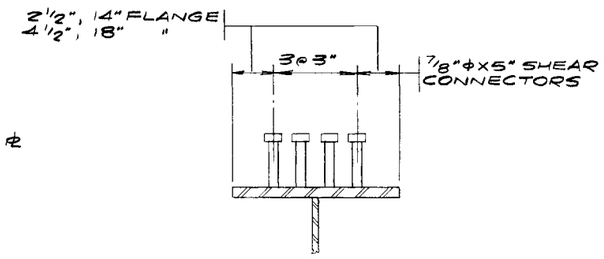

SPLICE DETAIL



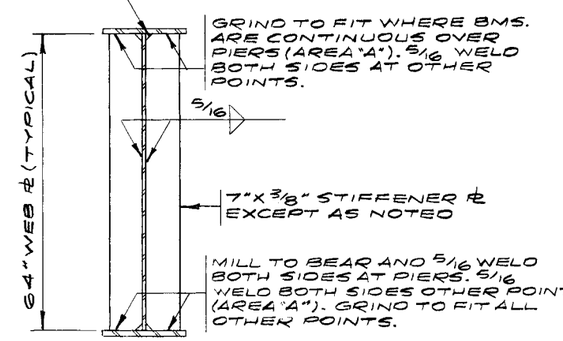

BOTTOM FLANGE



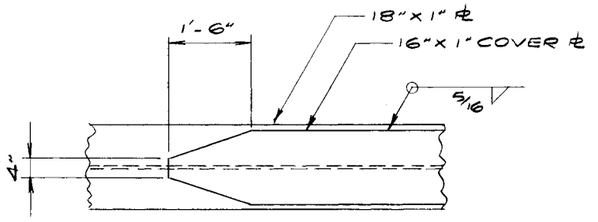

PART SECTION AT SPLICE




SHEAR CONNECTOR DETAIL




SECTION THRU BEAM AT STIFFENER




COVER PLATE DETAIL

START COVER PLATE WELDS AT CENTER OF PLATE AND PROCEED SIMULTANEOUSLY ON BOTH SIDES OF THE PLATE TOWARD EITHER END. DO NOT TACK WELD. USE "C" CLAMPS AND RELEASE CLAMPS AS WELDING PROCEEDS, TO RELIEVE STRESS.

## STRUCTURAL STEEL NOTES

ALL STRUCTURAL STEEL SHALL CONFORM TO M.H.D. 3309 UNLESS OTHERWISE NOTED.

FIELD CONNECTIONS SHALL BE MADE WITH 7/8" HIGH STRENGTH BOLTS OR 7/8" PIN BOLTS, EXCEPT AS NOTED.

WEIGHT OF SHEAR CONNECTORS TO BE INCLUDED IN STRUCTURAL STEEL M.H.D. 3306.

FULL ASSEMBLY REAMING WILL BE REQUIRED PER M.H.D. 2471.3E1d.

WEB PLATES SHALL BE FURNISHED IN AVAILABLE MILL LENGTHS. LOCATION OF SPLICES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER AND SHALL BE A MINIMUM OF 1'-0" FROM STIFFENERS OR FLANGE SPLICES.

ALL BUTT SPLICES SHALL BE FULL BUTT WELDS USING LOW HYDROGEN PROCESS AND SHALL BE GROUND FLUSH.

BEARING STIFFENERS SHALL BE VERTICAL TO GRADE.

ENDS OF BEAMS SHALL BE VERTICAL.

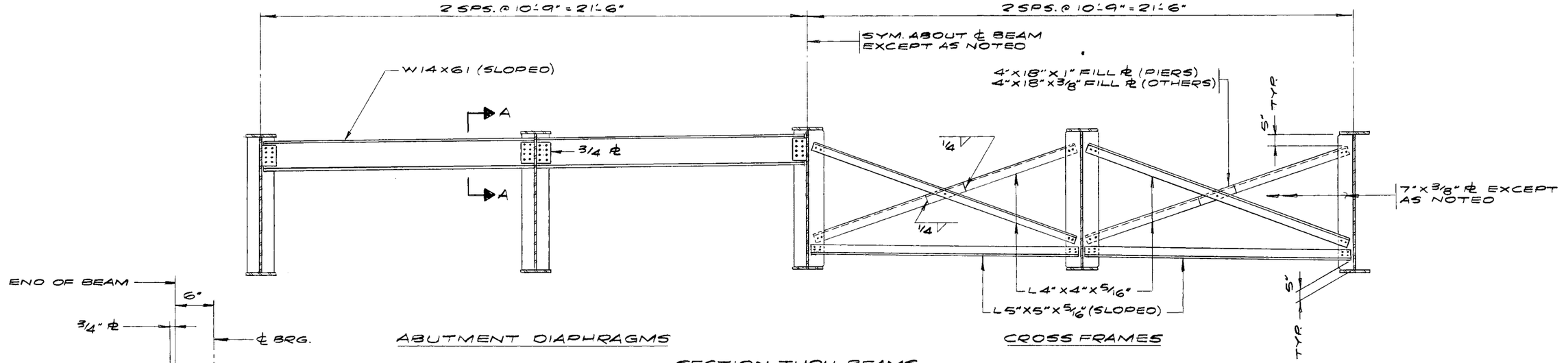
TOE OF ANGLE IN ALL CROSS FRAMES TO FACE DOWN GRADE.

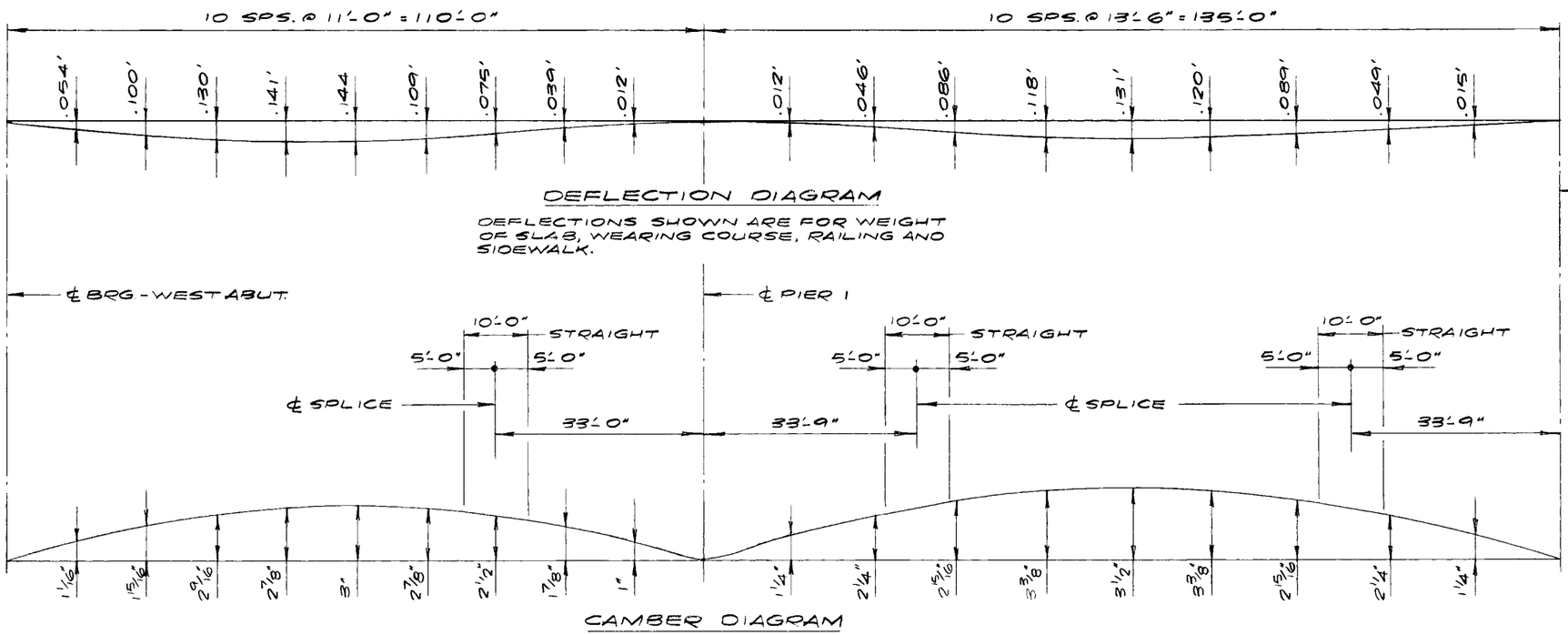
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

STRUCTURAL STEEL DETAILS

APPROVED: 12-27-74



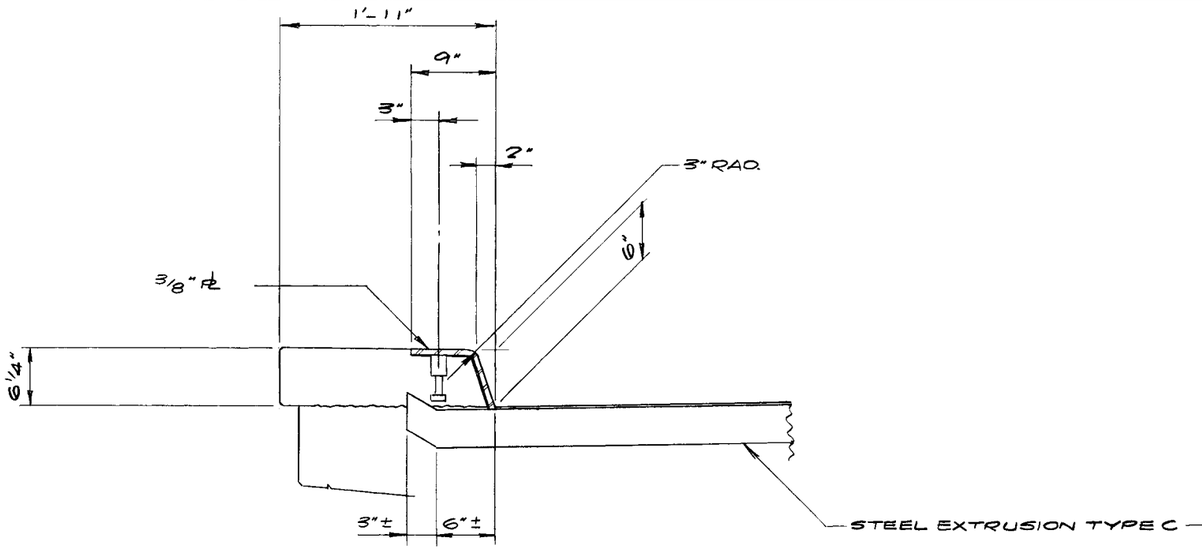




STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

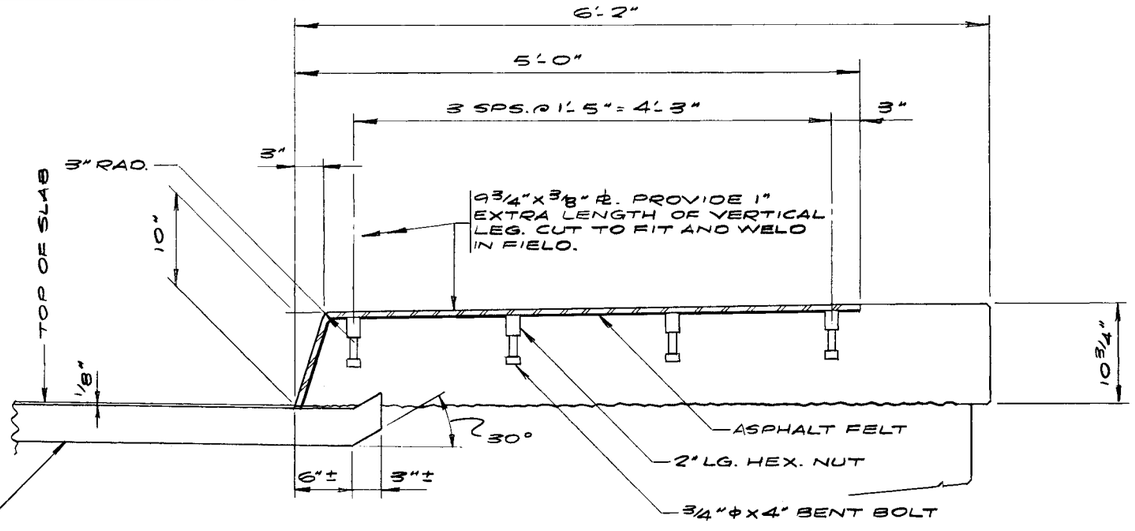
BRIDGE NO. 55520

STRUCTURAL STEEL DETAILS

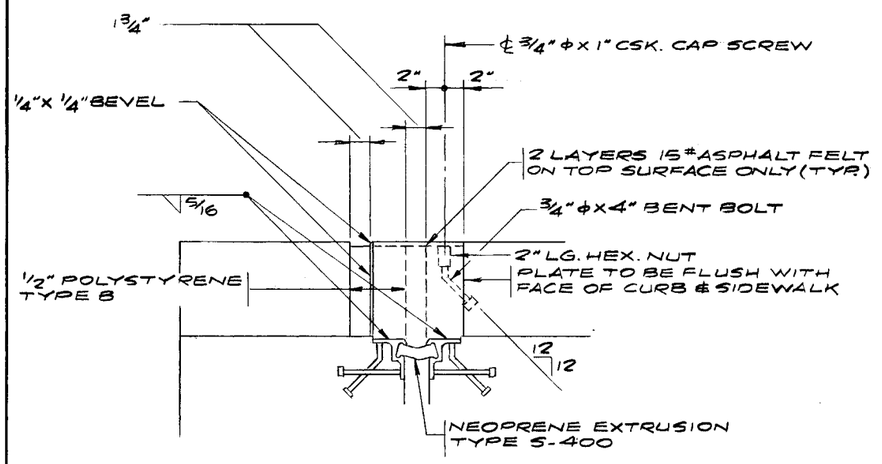
APPROVED: 12-27-74



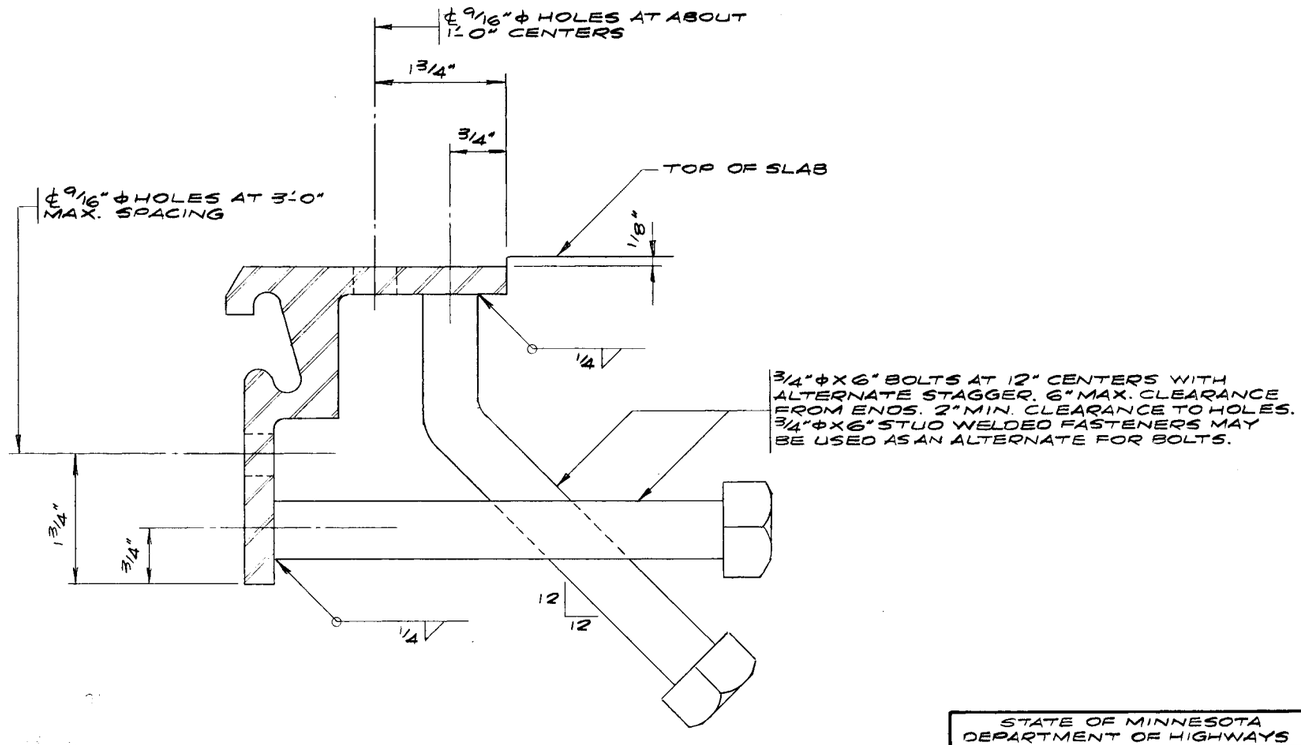

CURB SECTION




SIDEWALK SECTION




CURB & SIDEWALK ELEVATION




STEEL EXTRUSION - TYPE C

NOTES:

PLATES SHALL BE FLAT AFTER GALVANIZING.

STRUCTURAL STEEL SHALL COMPLY WITH M.H.D. 3306.

GALVANIZE PLATES PER M.H.D. 3394 AFTER FABRICATION.

GALVANIZE CAP SCREWS & 2" LG. HEX. NUTS PER M.H.D. 3392.

REPAIR GALVANIZING AFTER FIELD WELDING PER M.H.D. 2471.31.

3/4" Φ CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF PLATE.

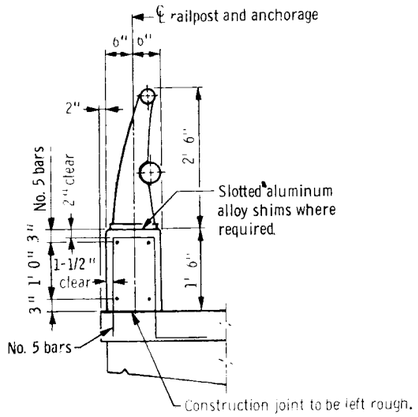
PAYMENT FOR EXPANSION ASSEMBLY, TYPE 1 SHALL INCLUDE ALL MATERIAL SHOWN ON THIS SHEET.

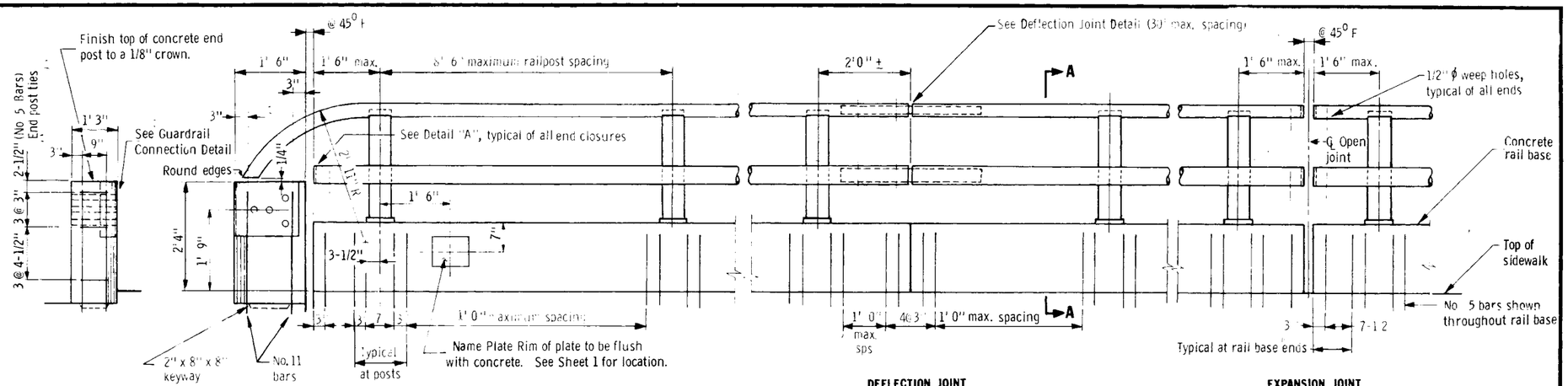
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

BRIDGE NO. 55520

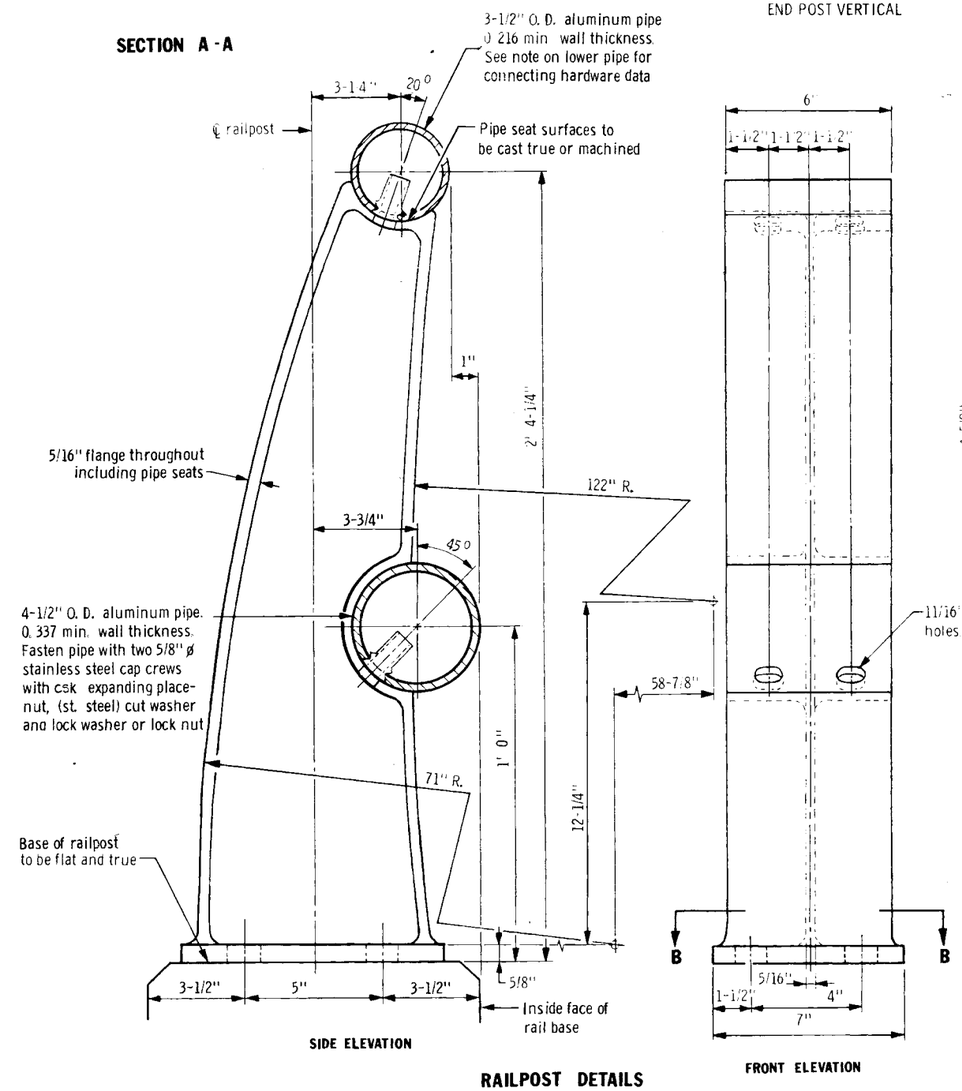
EXPANSION ASSEMBLY
TYPE 1

APPROVED: 12-27-74

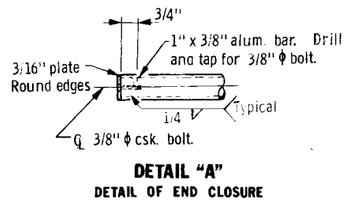


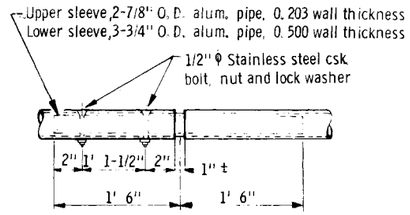

**SECTION A - A**

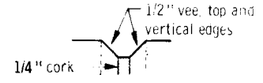



**PART INSIDE ELEVATION**

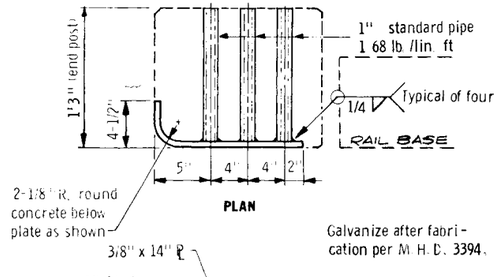



**DETAIL "A"**
**DETAIL OF END CLOSURE**

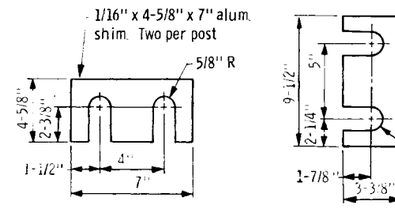


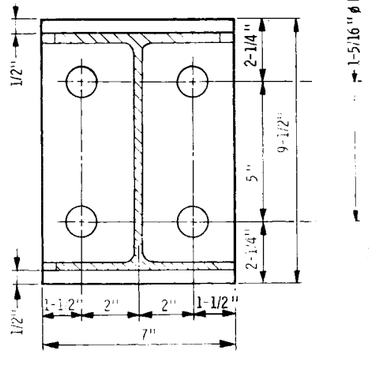

**DEFLECTION JOINT DETAILS**



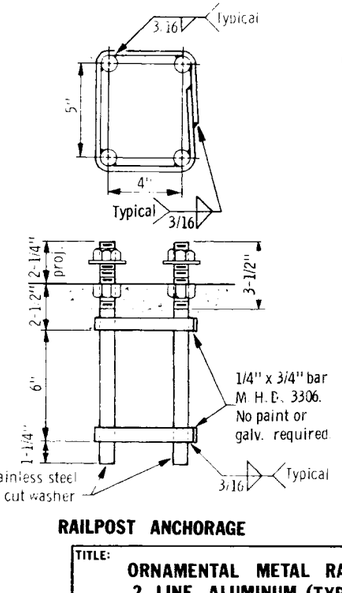

**ELEVATION**
**GUARD RAIL CONNECTION DETAIL**
Est. Wt. 35 lbs.




**ALUMINUM SHIM DETAILS**




**SECTION B - B**




**RAILPOST ANCHORAGE**

**GENERAL NOTES:**

Concrete in rail base and end posts shall be mix No. 3Y46A.

For other materials and workmanship see special provisions.

Railpost spacing is measured horizontally along top of rail base.

Place metal railposts and anchorages normal to grade.

For railpost spacing, joints in railing and reinforcement, see superstructure sheet.

Holes for expanding place nuts in rail pipe may be drilled in the field.

Finish edges of concrete rail base and end post to a 1/2" V except where noted.

All surfaces of aluminum in contact with concrete shall be given a heavy coating of an approved aluminum inpregnated caulking compound to provide complete insulation between aluminum and concrete. Synthetic rubber gaskets may be used as an alternate.

Place the No. 5 end post stirrups when the No. 11 vertical bars are cast in the abutment.

All material in concrete rail base and concrete end posts except railpost anchorages, is included in superstructure quantities. Guardrail connection to be included in weight of structural steel M. H. D. 3306.

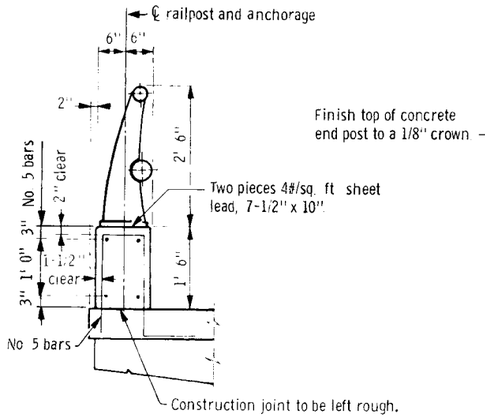
Length of railing for payment is measured between outside faces of concrete end posts.

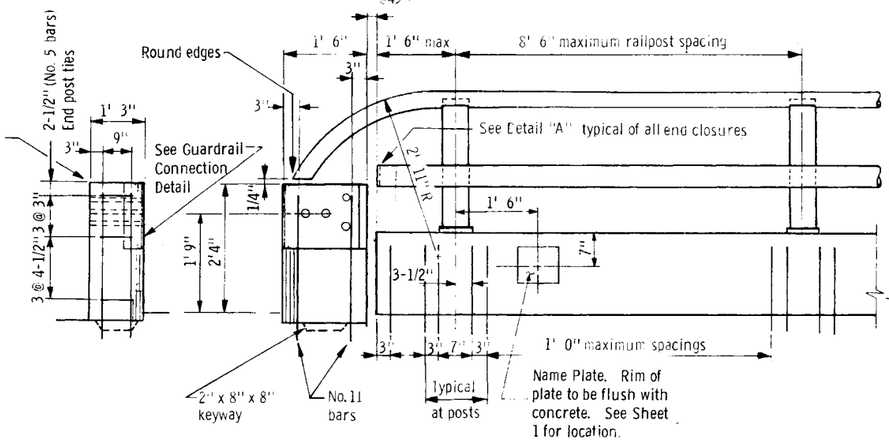
Price bid for ornamental metal railing includes the railpost anchorage and all material above top of rail base.

**Fig. 5-397.106**

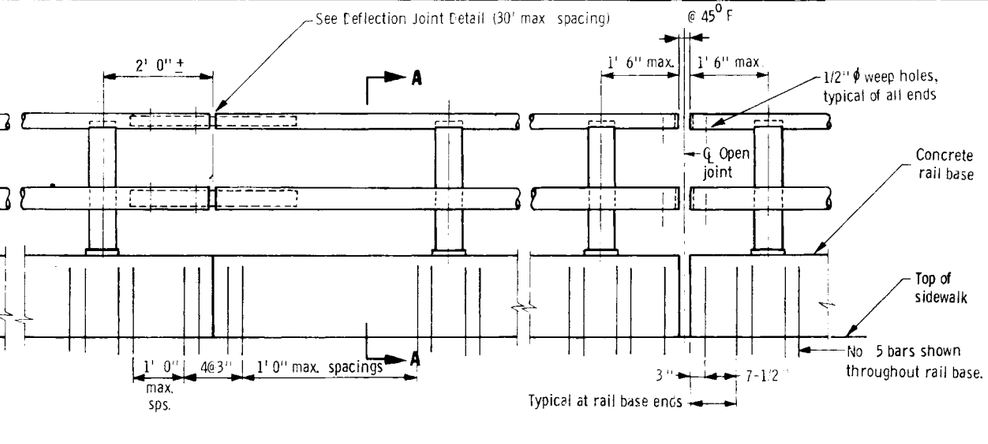
AUGUST 6, 1970

| TITLE: ORNAMENTAL METAL RAILING 2 LINE ALUMINUM (TYPE M) | DES: | DR: | APPROVED: | Bridge No. |
|---|---|---|---|---|
| | CHK: | CHK: | | |
| | Sheet No. | of | Sheets | |

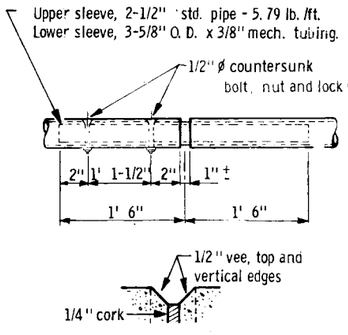


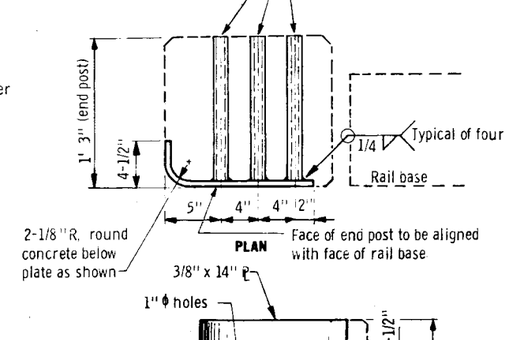

END POST VERTICAL




PART INSIDE ELEVATION

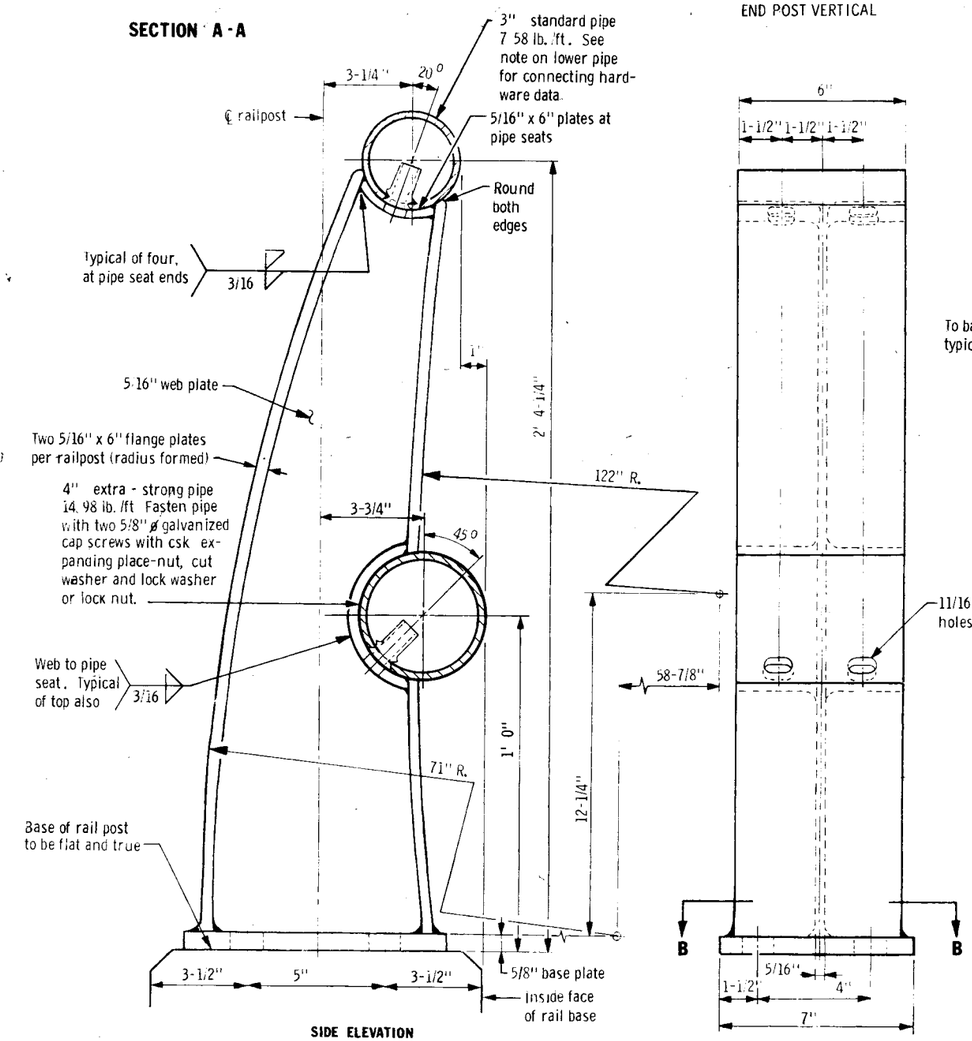



DEFLECTION JOINT DETAILS

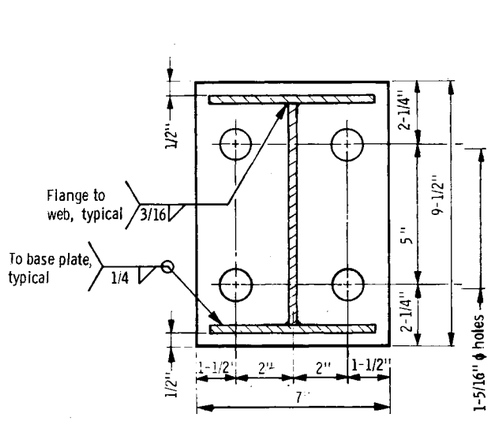



GUARD RAIL CONNECTION DETAIL

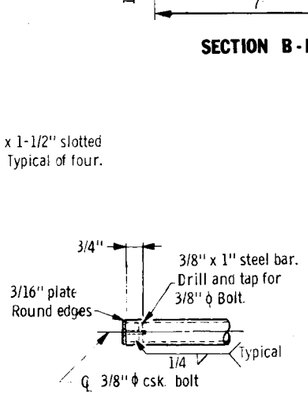
Est. Wt. 35 lbs.



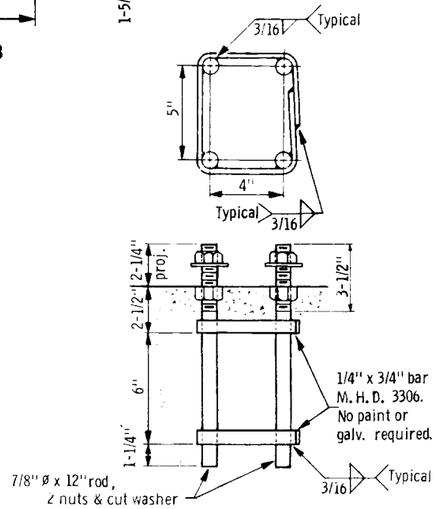

RAILPOST DETAILS




SECTION B-B




DETAIL "A"
DETAIL OF END CLOSURE




RAILPOST ANCHORAGE

## GENERAL NOTES

Concrete in railbase and end posts shall be mix No. 3Y46A.

For materials, galvanizing and workmanship see special provisions.

Railpost spacing is measured horizontally along top of rail base.

Place metal railposts and anchorages normal to grade.

For railpost spacing, joints in railing and reinforcement details see superstructure sheet.

Place the No. 5 end post stirrups when the No. 11 vertical bars are cast in the abutment.

Finish edges of concrete rail base and end post to a 1/2" V except where noted. Holes for expanding place nuts in rail pipe may be drilled in the field.

All material in concrete rail base and concrete end posts except railpost anchorages, is included in superstructure quantities. Guardrail connection to be included in weight of structural steel M.H.D. 3306.

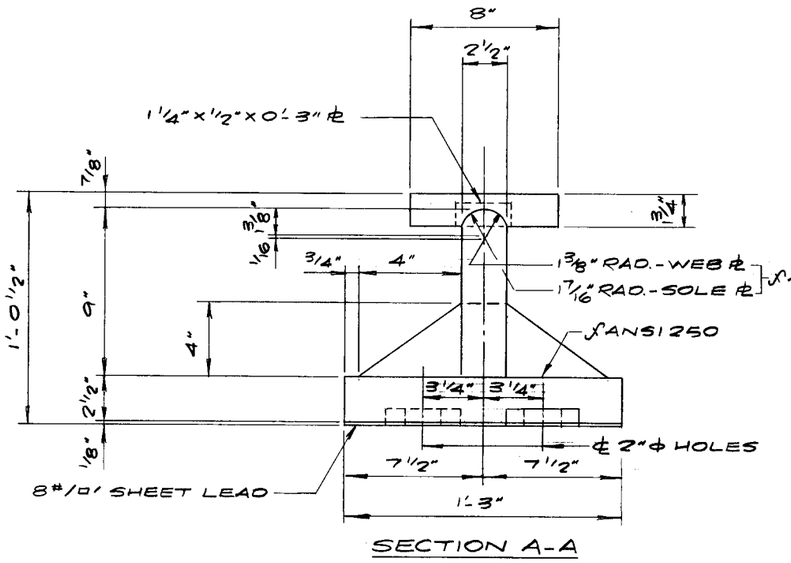
Length of railing for payment is measured between outside faces of concrete end posts.

Price bid for ornamental metal railing includes the railpost anchorage and all material above top of rail base.

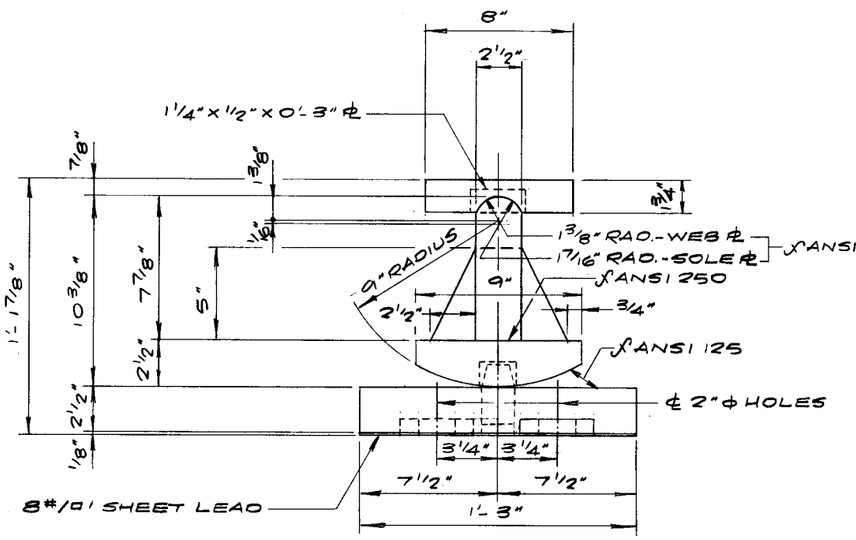
**Fig. 5-397.105**

August 6, 1970

| TITLE: ORNAMENTAL METAL RAILING 2 LINE STEEL (TYPE M) | DES: | DR: | APPROVED: | Bridge No. |
|---|---|---|---|---|
| | CHK: | CHK: | | |
| | Sheet No. | of | Sheets | |




SECTION A-A




SECTION B-B

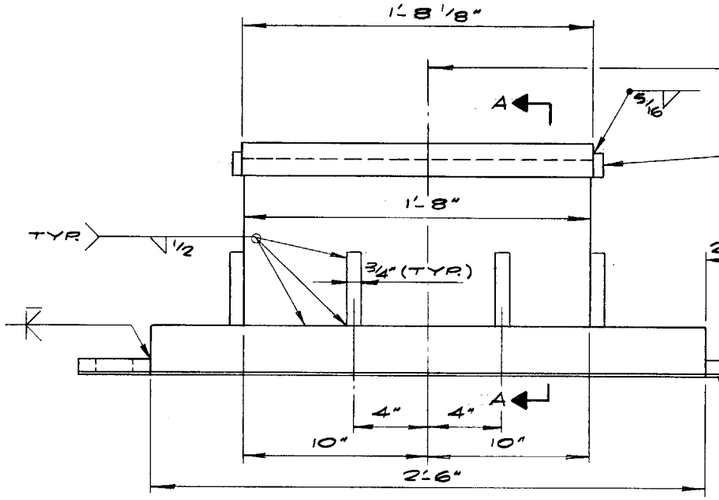
BEARING ASSEMBLY NOTES:

STRUCTURAL STEEL SHALL CONFORM TO M.H.D. 3309 EXCEPT AS NOTED.

PINTLES SHALL BE COLD FINISHED ALLOY BAR STEEL M.H.D. 3314 TYPE II.

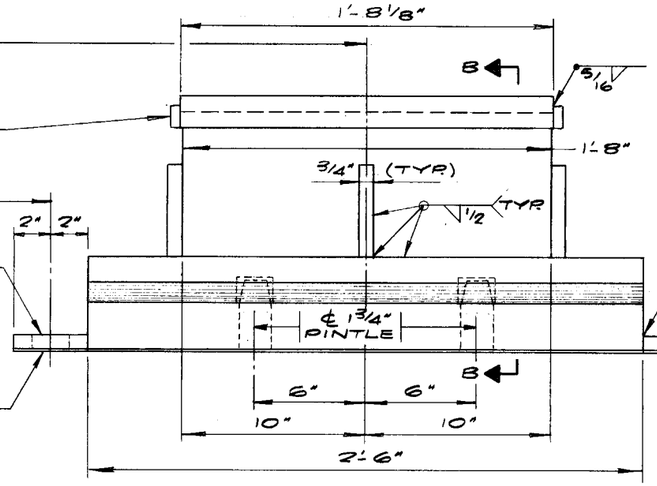
ALL WELDED BEARING ASSEMBLIES SHALL BE ANNEALED AFTER WELDING. TOP AND BOTTOM PLATES SHALL BE FINISHED AFTER ANNEALING.

THE PRICE BID FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL (ANCHOR RODS, SHEET LEAD, FLEXIBLE FILLER, PLATES AND PINTLES) FOR EACH TYPE AS SHOWN.



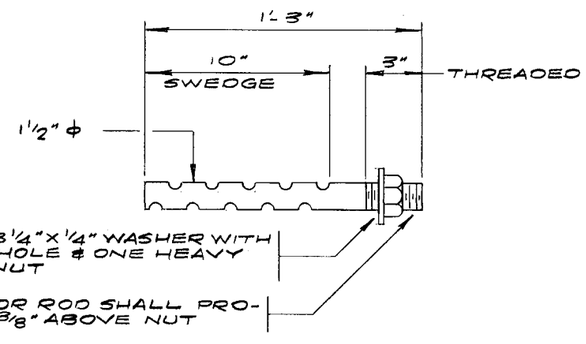

FIXED BEARING ASSEMBLY-TYPE 1

SCALE: 3"=1'-0"

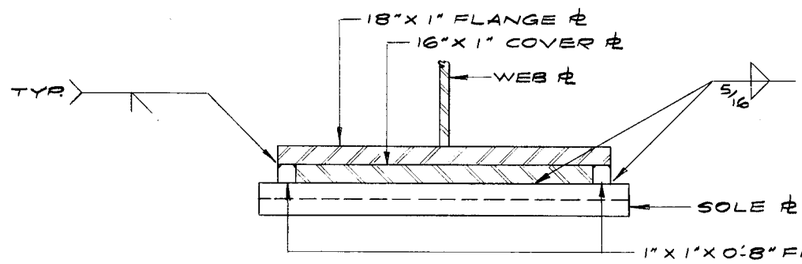



EXPANSION BEARING ASSEMBLY-TYPE 2

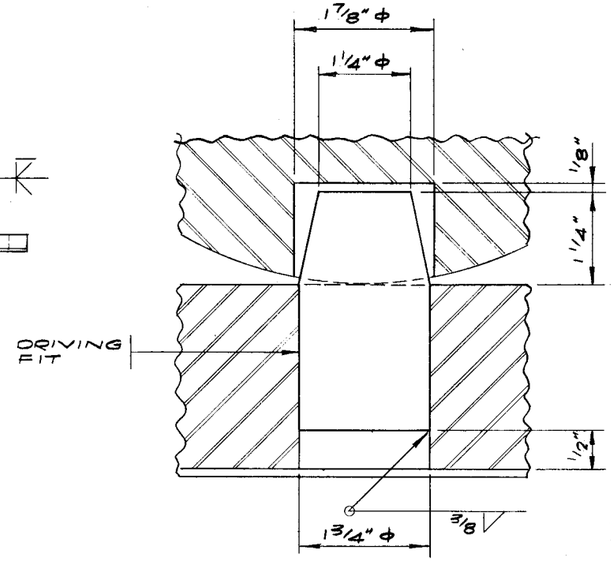
SCALE: 3"=1'-0"




ANCHOR ROD DETAIL




SOLE PLATE CONNECTION DETAIL




PINTLE DETAIL

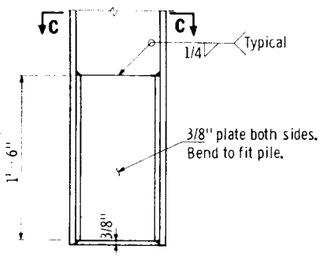
FINISH ALL OVER

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

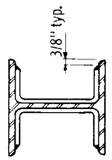
BRIDGE NO. 55520

DETAILS

APPROVED: 12-27-74




ELEVATION

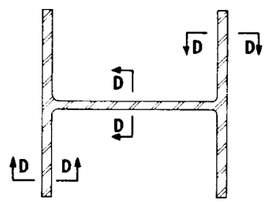



Each pile tip reinforced, will be paid for in amount equal to 5 linear feet of piling delivered.

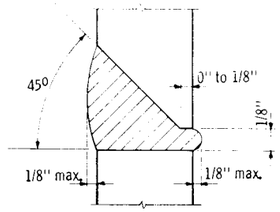
Pile tips shall be reinforced only when directed by the Engineer

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 E7010 or E7018 (low-hydrogen) electrodes, shall be used for the alternate plate type pile splice.

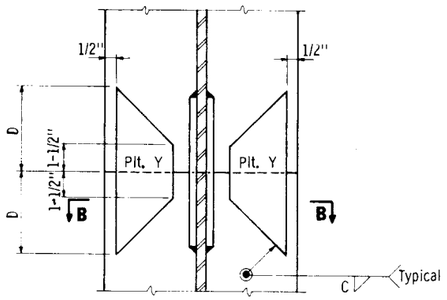
Low-hydrogen electrodes shall be supplied in hermetically (air-tight) sealed containers.

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

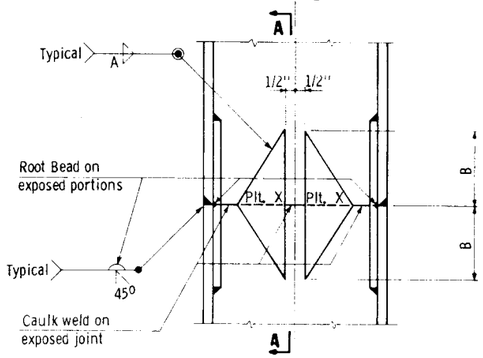
Low-hydrogen electrodes shall be placed in a holding oven for at least 8 hours, after having been exposed to the atmosphere for more than 2 hours.

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

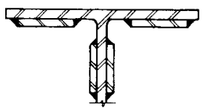
Welding shall not be done when the ambient temperature is lower than 0° F. or when the pile is wet or exposed to falling rain or snow. When the pile metal temperature is below 32° F., the pile metal in the area of the weld shall be heated to a minimum temperature of 70° F. and maintained at this temperature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




SECTION A - A




ELEVATION



SECTION B - B

| 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**

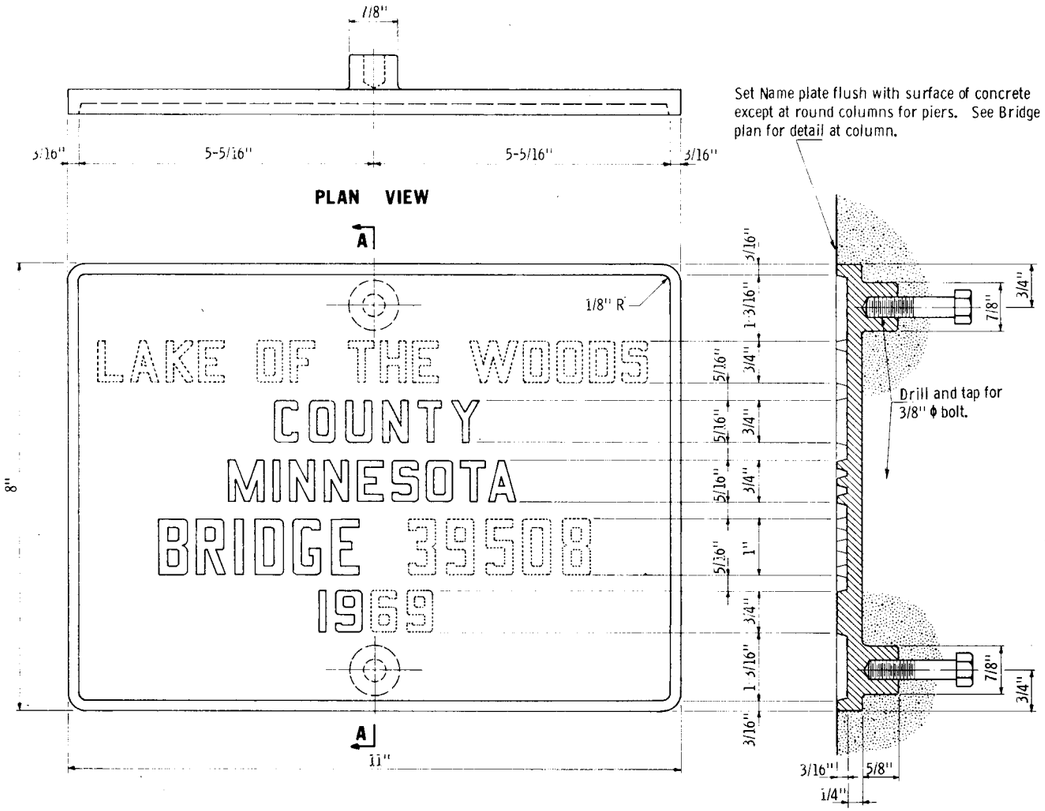
APPROVED July 21, 1972

Engineering Standards Engineer
RESEARCH AND STANDARDS DIVISION

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

**PILE SPLICE and TIP REINFORCEMENT**
**STEEL H BEARING PILES 10" TO 14"**

DETAIL NO. **B202**




ELEVATION

SECTION A - A




**LETTERS FOR NAME PLATES**

**NOTES:**

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.
Background of plate shall have a deep brown oxidized finish.
Furnish 2 steel bolts 3/8" ϕ x 3" long with each plate.
Plates ordered in pairs shall be cast from the same heat.
Numbers and letters shown dotted are to be obtained from Bridge plans.
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, 3327 (Bronze castings)

APPROVED July 1, 1969

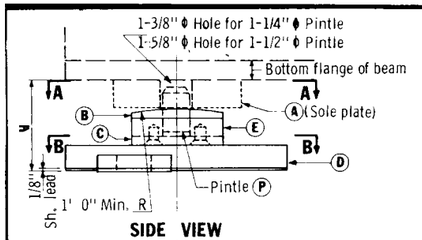
Design Standards Engineer
ENGINEERING STANDARDS DIVISION

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

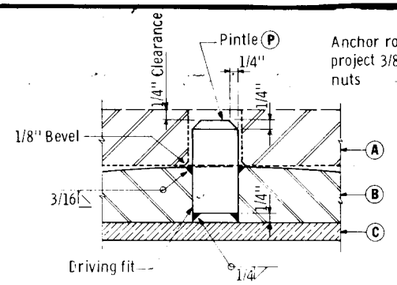
**BRIDGE NAME PLATE**
**COUNTY BRIDGES**
**(STATE AID)**

REVISION

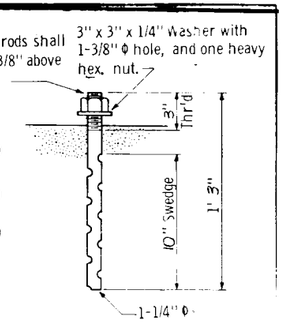
DETAIL NO. **B103**



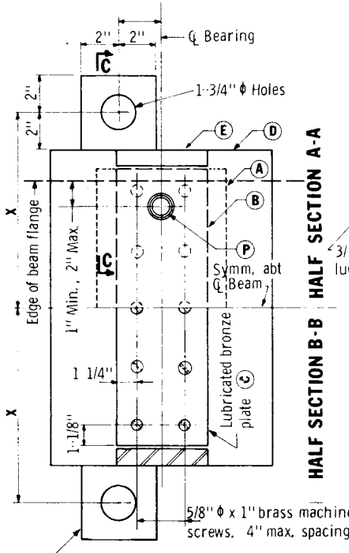

**SIDE VIEW**



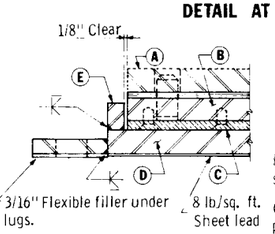

**DETAIL AT PINTLE "P"**



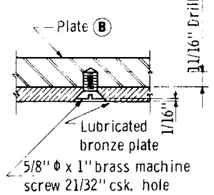

**ANCHOR ROD DETAIL**




**HALF SECTION B-B HALF SECTION A-A**




**SECTION C - C**




**MACHINE SCREW DETAIL**

NOTES:

Pintle "P" shall comply with M. H. D. 3314 Type II. All other structural steel shall comply with M. H. D. 3306.

On top of plate "B" finish center 3" to 250 Micro. Thickness of plate "B" may be 1/16" less than shown.

Galvanize anchor rods per M. H. D. 3392. Galvanize other structural steel except plate "A" per M. H. D. 3394 after fabrication

Plates shall be flat after fabrication and welding.

Bottom of plate "A" shall be at right angles to web of beam. Plate "A" shall be shop welded to the beam.

Plate "C" shall be lubricated bronze per M. H. D. 3329. The lubricated surface is on the bottom.

Finish sliding surfaces of bronze plate "C" and masonry plate "D" to 125 Micro in direction of movement.

Plate "A" is included in weight of structural steel. All other material on this detail is included in bearing assembly for payment.

FLEXIBLE FILLER MATERIAL SHALL BE AN APPROVED SPONGE RUBBER INSTALLED SOAS TO PREVENT THE FLOW OF GROUT UNDER THE 3/4" LUG PLATE.

| FOR BEAMS WITH 9" TO 10½" FLANGES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| LOAD(KIPS) | PLATE A | PLATE B | PLATE C | PLATE D | BAR E | PINTLE P | DIM. H | DIM. X | TOTAL MOV. |
| 105 | 5"x1-1/2"x1' 0" | 5"x1-1/2"x1' 0" | 5"x1/2"x1' 0" | 12"x1-1/4"x1' 2" | 7/8"x1-1/2"x0' 8" | 1-1/4" ϕx2-1/2" | 4-7/8" | 9" | 2-1/2" |
| 130 | 7"x1-1/2"x1' 3" | 5"x1-1/2"x1' 3" | 5"x1/2"x1' 3" | 12"x1-1/4"x1' 5" | 7/8"x1-1/2"x0' 8" | 1-1/4" ϕx2-1/2" | 4-7/8" | 10-1/2" | 2-1/2" |
| 165 | 8"x1-1/2"x1' 3" | 6"x1-3/4"x1' 3" | 6"x1/2"x1' 3" | 15"x1-1/2"x1' 5" | 7/8"x1-1/2"x0' 9" | 1-1/4" ϕx2-3/4" | 5-3/8" | 10-1/2" | 2-1/2" |
| 200 | 8"x1-1/2"x1' 3" | 7"x2-1/4"x1' 3" | 7"x1/2"x1' 3" | 16"x1-1/2"x1' 5" | 7/8"x1-1/2"x0' 9" | 1-1/4" ϕx3-1/4" | 5-7/8" | 10-1/2" | 2" |

| FOR BEAMS WITH 11½" TO 12" FLANGES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 125 | 5"x1-1/2"x1' 2" | 5"x1-1/2"x1' 2" | 5"x1/2"x1' 2" | 12"x1-1/4"x1' 4" | 7/8"x1-1/2"x0' 8" | 1-1/4" ϕx2-1/2" | 4-7/8" | 10" | 2-1/2" |
| 155 | 7"x1-1/2"x1' 6" | 5"x1-1/2"x1' 6" | 5"x1/2"x1' 6" | 12"x1-1/2"x1' 8" | 7/8"x1-1/2"x0' 8" | 1-1/4" ϕx2-1/2" | 5-1/8" | 12" | 2-1/2" |
| 195 | 8"x1-1/2"x1' 6" | 6"x1-3/4"x1' 6" | 6"x1/2"x1' 6" | 15"x1-1/2"x1' 8" | 7/8"x1-1/2"x0' 9" | 1-1/4" ϕx2-3/4" | 5-3/8" | 12" | 2-1/2" |
| 235 | 8"x1-1/2"x1' 6" | 7"x2-1/4"x1' 6" | 7"x1/2"x1' 6" | 16"x1-1/2"x1' 8" | 7/8"x1-1/2"x0' 9" | 1-1/2" ϕx3-1/4" | 5-7/8" | 12" | 2" |

| FOR BEAMS WITH 15" TO 16" FLANGES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 145 | 5"x1-1/2"x1' 5" | 5"x1-1/2"x1' 5" | 5"x1/2"x1' 5" | 13"x1-1/4"x1' 7" | 7/8"x1-1/2"x0' 8" | 1-1/4" ϕx2-1/2" | 4-7/8" | 11-1/2" | 3" |
| 185 | 8"x1-1/2"x1' 10" | 5"x1-1/2"x1' 10" | 5"x1/2"x1' 10" | 13"x1-1/2"x2' 0" | 7/8"x1-1/2"x0' 8" | 1-1/4" ϕx2-1/2" | 5-1/8" | 1' 2" | 3" |
| 235 | 8"x1-1/2"x1' 10" | 6"x1-3/4"x1' 10" | 6"x1/2"x1' 10" | 15"x1-1/2"x2' 0" | 7/8"x1-1/2"x0' 9" | 1-1/2" ϕx2-3/4" | 5-3/8" | 1' 2" | 3" |
| 280 | 8"x1-3/4"x1' 10" | 7"x2-1/4"x1' 10" | 7"x1/2"x1' 10" | 17"x1-3/4"x2' 0" | 7/8"x1-1/2"x0' 10" | 1-1/2" ϕx3-1/2" | 6-3/8" | 1' 2" | 2-1/2" |
| 320 | 8"x2"x1' 11" | 7-1/2"x2-1/4"x1' 11" | 7-1/2"x1/2"x1' 11" | 19"x2"x2' 1" | 7/8"x1-1/2"x0' 10" | 1-1/2" ϕx3-3/4" | 6-7/8" | 1' 2-1/2" | 2-1/2" |

| FOR BEAMS WITH TO FLANGES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

APPROVED MAY 26, 1972

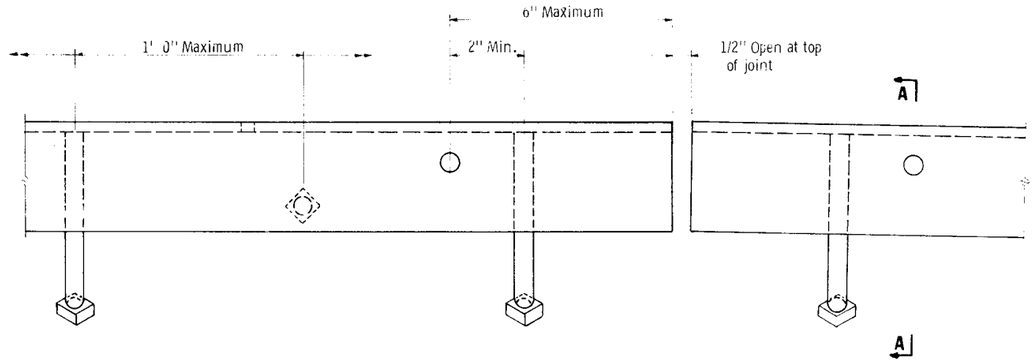
M. V. Barnhart
Bridge Design Standards Engineer
RESEARCH AND STANDARDS DIVISION

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

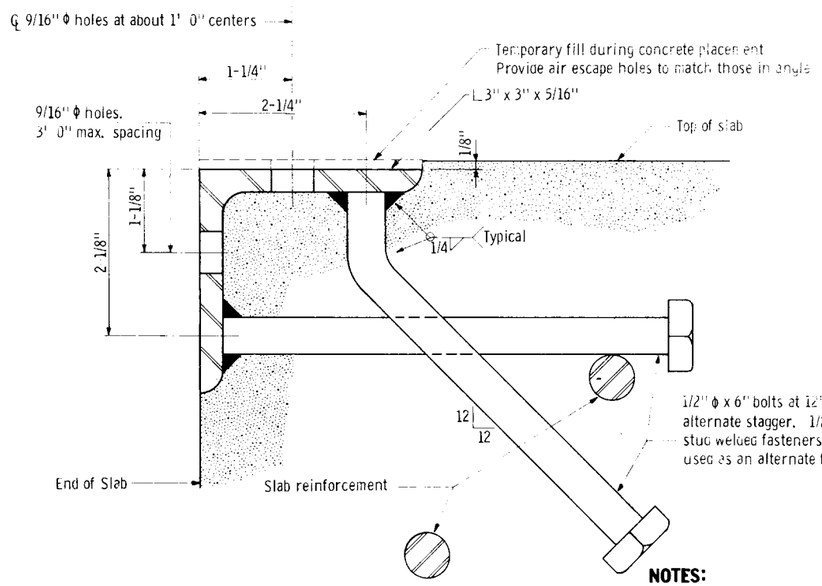
**BEARING ASSEMBLIES**
**STEEL BEAMS**
**(EXPANSION W/GUIDE BARS)**

REVISION

DETAIL NO. **B352**




**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

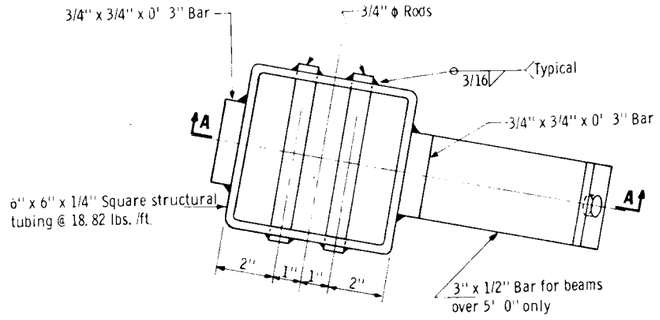
APPROVED May 26, 1972

Douglas DeFant
Engineering Standards Engineer
RESEARCH AND STANDARDS DIVISION

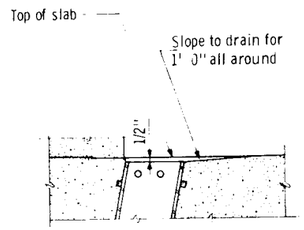
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

**PROTECTION ANGLE**
**FOR END OF SLAB**

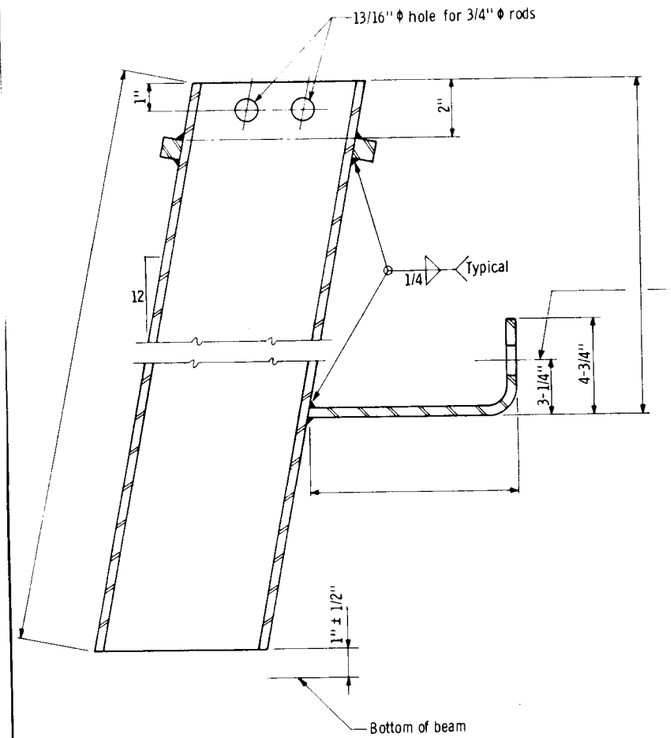
DETAIL NO. **B551**




PLAN VIEW




PLACEMENT DIAGRAM




SECTION A - A

**NOTES:**

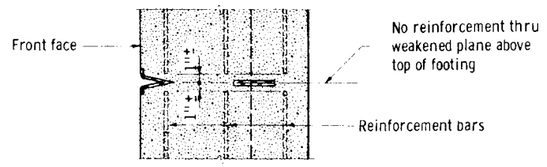
Material to be structural steel per M. H. D. 3306.

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

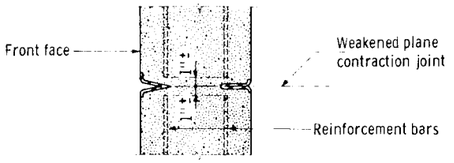
Galvanize other materials per M. H. D. 3394 after fabrication.

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

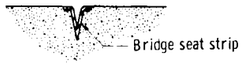
| APPROVED July 24, 1972 | STATE OF MINNESOTA DEPARTMENT OF HIGHWAYS | | DETAIL NO. |
|---|---|---|---|
| Douglas Differt Engineering Standards Engineer RESEARCH AND STANDARDS DIVISION | **BRIDGE FLOOR DRAIN STRUCTURAL TUBING** | | **B702** |



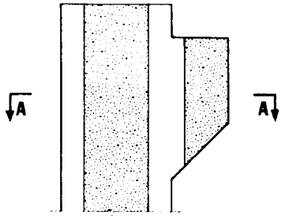

SECTION A - A



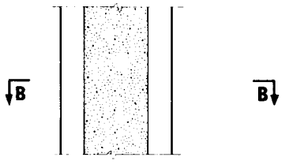

SECTION B - B



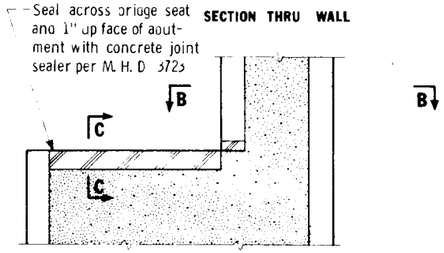

SECTION C - C




SECTION THRU PAVING BRACKET

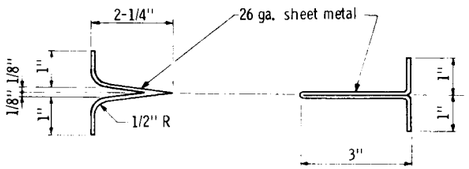



SECTION THRU WALL



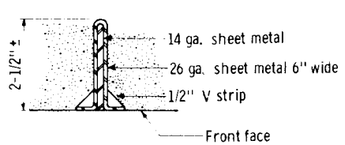

SECTION THRU BRIDGE SEAT

PART SECTION THRU ABUTMENT AT JOINT




**BRIDGE SEAT and FRONT STRIP**
6" wide

**BACK STRIP**
8" wide




**ALTERNATE BRIDGE SEAT and FRONT STRIP**

**NOTES:**

The methods and materials indicated hereon shall be considered as suggested only. Variations will be permitted, subject to approval by the Engineer, but must provide dummy joints of a depth not less than the depth shown, and a width at the front face of the abutment of not greater than 5/16". The separation of the horizontal reinforcement bars shall be not less than 1-1/2" nor more than 3", centered as shown, regardless of the procedure used for forming the dummy joint.

Front and bridge seat strips shall be removed with forms, except if a suitable plastic or other durable material satisfactory to the Engineer, is used the material may be left in place. Back strip to remain in place.

Back metal strips to be galvanized sheet metal. Fasten to forms with 7/8" roofing nails about 6" centers.

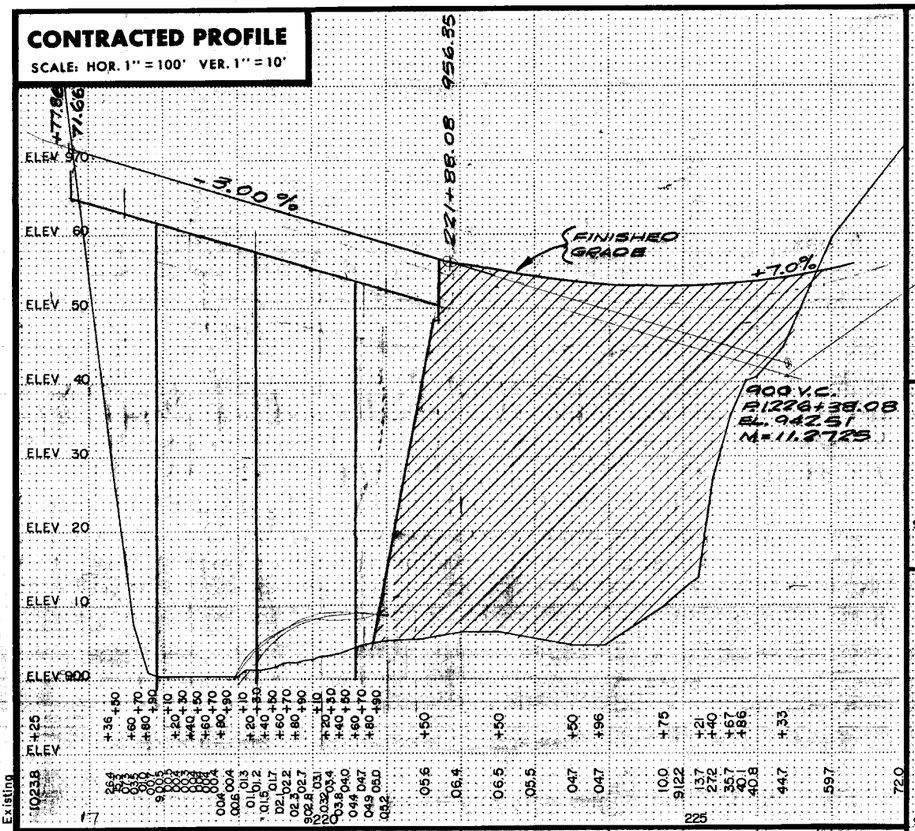
Cost of forming joint to be included in price bid for other items.

| APPROVED Feb. 15, 1972 | STATE OF MINNESOTA DEPARTMENT OF HIGHWAYS | | DETAIL NO. |
|---|---|---|---|
| Douglas Differt Engineering Standards Engineer RESEARCH AND STANDARDS DIVISION | **CONTRACTION JOINT** | | **B801** |

400' V.C.
P.I. 24+77.86
El. 977.66

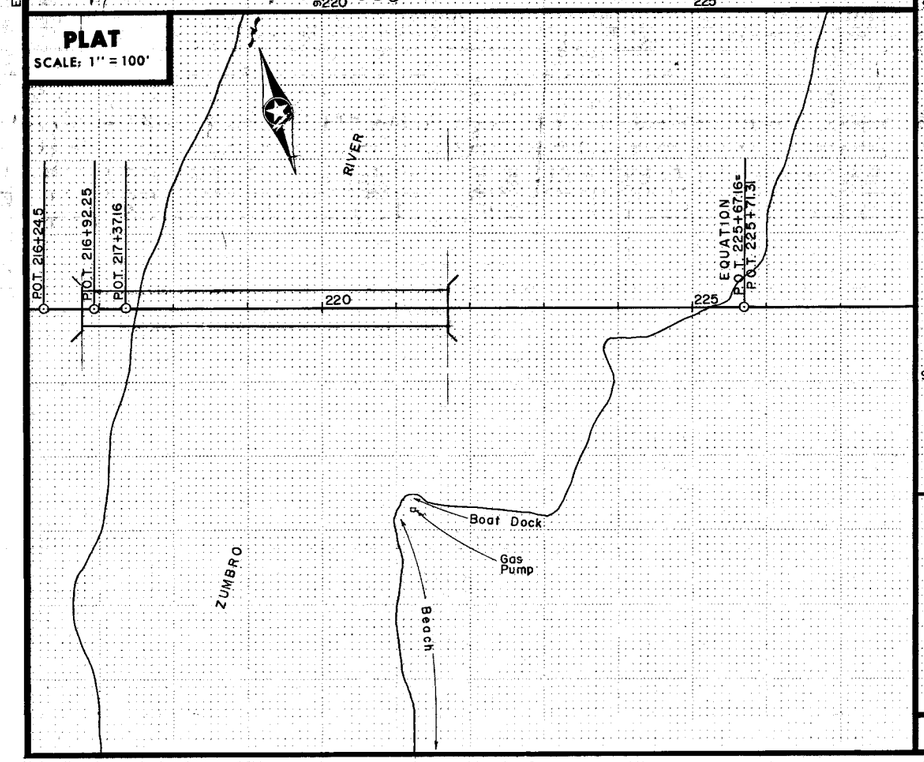
## CONTRACTED PROFILE

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



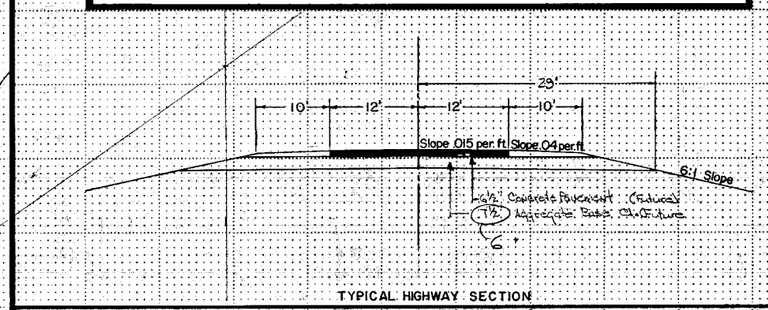

## PLAT

SCALE: 1" = 100'

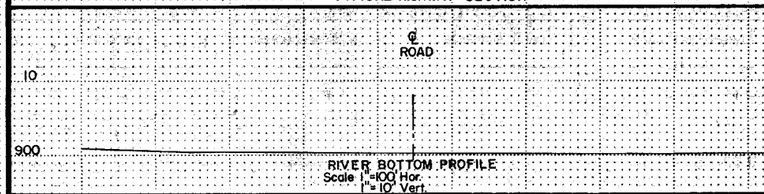


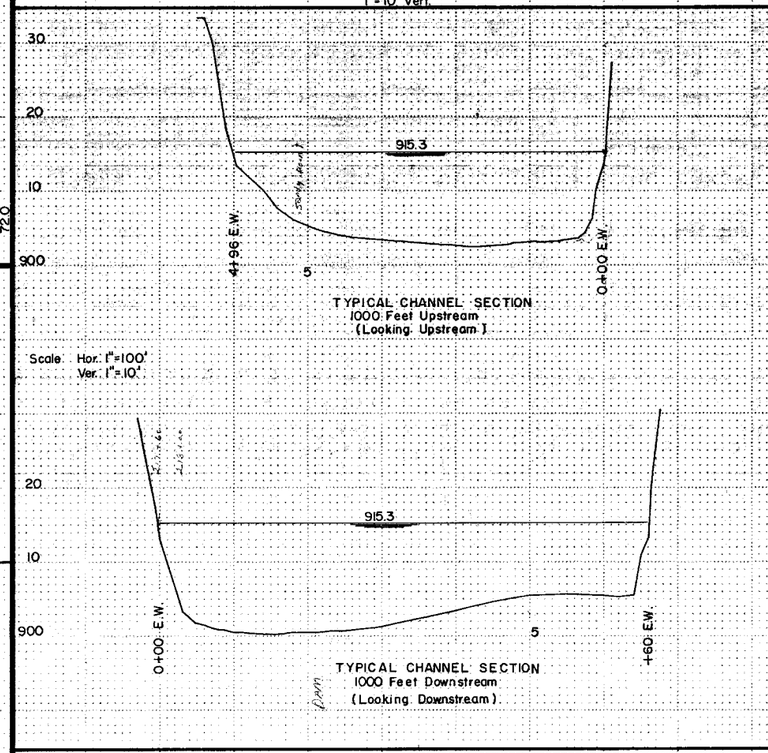

## TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN




TYPICAL HIGHWAY SECTION



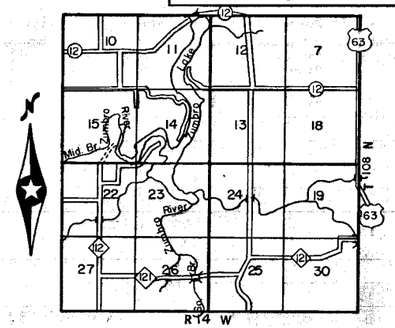

TYPICAL CHANNEL SECTION
1000 Feet Upstream
(Looking Upstream)

TYPICAL CHANNEL SECTION
1000 Feet Downstream
(Looking Downstream)

B.M. ELEV 915.32 (M.S.L. 19 ADJ.)
3/4" Rod on ℄
Sta. 217+36

SEE SHEET 27 OF 27 SHEETS FOR PLAN AND PROFILE

Fed. Proj. No.




INDEX MAP
(SIXTEEN 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. 110-135-135-110 WELD. BEAM SPANS
   b. Width of roadway on bridge 44' curb to curb
   c. Number and width of sidewalks, if any 1-5'0" - SOUTH SIDE
   d. Locate center of bridge at station 219+26.00
   e. If a skew bridge is recommended, the angle of skew should be No
   f. Is piling required? Anticipate - Soundings will be taken

2. Special features: Waterfalls, dams, exceptional floods, ice, driftwood, sliding banks, logging, etc.
   Lake - Caused by hydro-electric plant

3. Changes: In height or length from that of old bridge, and reasons why 25' clearance on old bridge downstream

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 Upstream 3 miles Bridge L6322 72.5' span width 5-15' Approach Spans Built in 1895
   Downstream 1/2 mile Bridge 89171 2-157.3' spans
   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 Resort area
7. Information and evidence in regard to high water stages was obtained as follows: from information available we estimate high water to be 921.5
8. Must contractor provide for traffic during construction of proposed bridge? No
   If so, by what means?

### HYDRAULIC ENGINEERS RECOMMENDATION

Drainage Area - 816 Sq. Miles
Design Discharge - 29,000 cfs
Design Highwater Elevation - 926.8'
Max. Observed Highwater - 927.85'
Waterway Area Below Elev. 926.8 - 6445 Sq. Ft.
Mean Velocity Thru Bridge - 4.5 fps

### 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 12.5 miles North of
* Rochester 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 HIGHWAYS

## BRIDGE SURVEY

FOR

PROPOSED BRIDGE LOCATED 3.75 MILES West OF Oronoco (TOWN OR CITY) ON C.S.A.H. 12 (T.H., C.S.A.H. OR C.A.R. NUMBER)
SEC. 11 TWP. 108 N R. 14 W
TOWNSHIP Oronoco COUNTY Olmsted
SURVEY MADE DURING MONTH OF January 19 70
SURVEY MADE BY T.W. Halloran
BRIDGE NO. 55520

Area No. | Job No. | S.A.P. NO. 55-612-05 | Sheet No. 26 of 27 Sheets

Bridge Survey Sheet (Sheet 1 of 2)

Fed. Proj. No.

SCALE: 1" = 10' VERT.
1" = 20' HOR.

CENTER LINE OF LAYOUT

℄ BRG.-WEST ABUT.
STA. 216+81.00

℄ PIER 1
STA. 217+91.00

℄ PIER 2
STA. 219+26.00

℄ PIER 3
STA. 220+61.00

℄ BRG.-EAST ABUT.
STA. 221+71.00

-3.00%

LOW STEEL EL. 950.07

ROCK

ROCK FILL

OES. H.W.
EL. 926.8

ELEV 950.0
ELEV 940.0
ELEV 930.0
ELEV 920.0
ELEV 910.0
ELEV 900.0
ELEV 890.0
ELEV 880.0
ELEV 870.0
ELEV 860.0
ELEV 850.0
B.M. ELEV (M.S.L. 19 ADJ.)

B-3 B-4 B-2 B-1 B-5 T-1 T-2 T-3

WATER

SiC blk. soft

SiC w/pieces limestone, blk. soft

pieces & slabs WX & hard limestone brn. water brg. v. loose to v. dense, lenses S

SiS fine grain w/pieces & hard limestone, brn, wet v dense to dense

Dolomitic limestone, lt. brn. & brn., WX & fractured above 43' many small cavities below 45'

SiC, blk. soft

SF, gr. v. loose

SiC, blk. soft

SiG w/limestone seam at

Med. SH/brack. limestone brn. water brg. v. dense

Pieces & slabs WX limestone some S & G

Dolomitic limestone lt. brn. & brn. somewhat fractured many small cavities filled w/ S & G

NO SAMPLES TAKEN

S/M GRAINED SOME G & LIMESTONE SLABS LT. BWN. WATERBRG. VERY DENSE, SOME LENSES OF S & G

NOTE: CORE BARREL ADVANCED RAPIDLY BELOW 11.8' W/NO RECOVERY. ACTION OF DRILLING EQUIPMENT INDICATED POSSIBLY SAND

MUCK, BLK. SOFT,

S. FINE GRAINED GR. WATERBRG. VERY LOOSE

MUCK BLK. SOFT, A FEW LENSES OF WATERBRG. S

S. FINE GRAINED GR. WATERBRG. VERY LOOSE

SiC, BLK. SOFT

S/C CR. TO M. GRAIN W/G & PCS OF LIMESTONE & WX LIMESTONE, CR-BWN, WATERBRG, VERY DENSE

LIMESTONE SLABS, BWN. W/LAYERS OF WATERBRG. S

S(M. TO CR.), TAN WET

S/M GRAINED, SOME GR. & PCS. OF LIMESTONE BWN. WATERBRG. DENSE TO VERY DENSE

CR. S & FG. TAN, WET W/ PIECES OF WX DOLOMITE (MOSTLY PLUG DRILLED) QUAN. & SIZE OF FLOAT NOT ESTABLISHED

S & FG, TAN, WET

S (M. TO CR.) & FG TAN, WET

TOP OF WX BEDROCK - ELE. 808.8, PD 107'-111' & ONEOTA DOLOMITE, FIELD LOGS SUGGESTS 101 - 107.2' SOFT, 107.2 - 108.1 HARD, 108.1 - 109.5 SOFT, 109.5 - 112.4 SOFT TO PA. MAY BE HIGHLY BROKEN

TOP OF FRESH BEDROCK ELE. 802.8 DOLOMITE, BUFF MANY RUGS, SOME CALCITE, BROKEN T (LONGEST CORE PIECE 0.4')

ONEOTA - JORDAN CONTACT ELE. 798.8, JORDAN SANDSTONE, BUFF, CORED: 112.4 - 120.5, 52% REC.
NOTE: WATER LEVEL IS AT ELEVATION OF RIVER WHICH FLUCUATES DAILY.

C, ORG., BLK. WET, SOFT. 17.0 - 19.0 V. SOFT W/FS SEAMS
19.5 - 22.0 FS LAYERS

C, ORG. BLK. WET, V. SOFT

C. ORG. (MUCK) BLK. WET, V. SOFT

C. ORG. (MUCK) BLK. WET, V. SOFT W/ SL PL SIL SEAMS

S & SOME G, GR, WET

R.G.H. DRILLING PCS. OF DOLOMITE & WX DOLOMITE YEL. BRN. WET TAN

S. L. 2' STONE NOSE TOP, TAN, WET PARTIALLY P.D.

S & FG, TAN TO GR. WET, R.G.H. DRILLING 86 - 90 F.T.

MOSTLY P.D.

HOLE CAVED TO 60 F.T. OVERNITE

HEAVY CONC. OF DOLOMITE FLOAT SOME PIECES MAY BE 1 FT. OR MORE IN THICKNESS, PD TO 106.4 FT. CORED 104 - 105.4 27% REC. NX 109.1 - 110.4 100% REC. CORE REC. INCREASES PIECES OF DOLOMITE FLOAT (LONGEST PIECE 0.5 FT.) BOTTOM FOOT BEING DOLOMITIC CHERT, BASALT AND QUARTZ GRAVEL, PROBABLE TOP OF BEDROCK ELE. 803.2

UNIFORM FS, YEL., WET. MORE WX TOWARD TOP, PROBABLY JORDAN SANDSTONE (TOP FEW FT. MAY NOT BE IN PLACE)

BOTTOM AT ELE. 793.2
NOTE: WATER LEVEL IS AT ELEVATION OF RIVER WHICH FLUCUATES DAILY

VERY RGH. DRILLING 43.0' - 48.0'

RGH. DRILLING 48.8' - 50.8'

RGH. DRILLING 52.5' - 55.8'

ORG. S/CL W/ SOME S SEAMS
BLK., WET, SOFT

T & FG TAN, WET

N.S.R. FIELD LOG INDICATES S & G

R.G.H. DRILLING & LOST MUD TO 45'

S & G PIECES OF LIMESTONE (UNAMIXED) FLOAT, TAN, WET

S & SOME G TAN, WET PIECES OF WX DOLOMITE PARTIALLY P.D.

BORINGS SHOWN (T-) TAKEN WITH STD. 100 LB. HAMMER 30 INCH DROP 2 INCH O.D. SAMPLER

RGH. DRILLING 73.8' - 80.0'

PLUG DRILLED 81.0' - 90.0'

S & FG W/ WX LIMESTONE TAN, WET

WX LIMESTONE W/ SOME G VERY RGH. DRILLING

S W/ SOME G TAN, WET

WX LIMESTONE W/ S & G TAN, WET
BOTTOMED AT ELE. 799.7 IN S & G W/ WX LIMESTONE. NOTE: BORING TAKEN FROM A BARGE. GROUND WATER LEVEL TAKEN AS RIVER LEVEL

ORG. SiCL, BLK, WET, V. SOFT

SOME PLANT ROOTS 20.5' - 22.5'

L & FG, GR., WET
ORG. SiCL & S LAYERS
GR., WET
ORG. LS W/ SOME G
GR., WET
LS & G, TAN, WET
SOME PIECES OF LIMESTONE

S & G, TAN, WET
PIECES OF LIMESTONE

TRUNK HIGHWAY NO.
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

# BRIDGE NO. 55520

## BRIDGE SURVEY
### PLAN AND PROFILE

SEE SHEET NO 26 FOR ADDITIONAL INFORMATION

S.A.P. NO. 55-612-05

Sheet No. 27 of 27 Sheets

Bridge Survey Sheet (Sheet 2 of 2)