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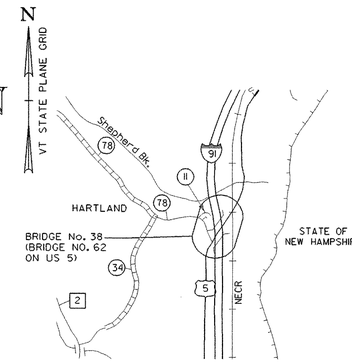
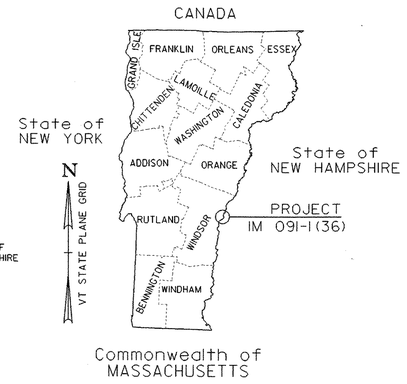
# STATE OF VERMONT
# AGENCY OF TRANSPORTATION

# PROPOSED IMPROVEMENT
# BRIDGE PROJECT

## TOWN OF HARTLAND
## COUNTY OF WINDSOR
## ROUTE No.: I-91 BRIDGE No.: 38

| | |
|---|---|
| PROJECT LOCATION: | US 5 MM 3.75 OVER I-91 MM 63.4, (BRIDGE 62 ON US 5) |
| PROJECT DESCRIPTION: | INSTALL TWO-WAY TEMPORARY BRIDGE, REMOVE AND REPLACE DECK ON EXISTING STEEL, REMOVE TEMPORARY BRIDGE AND PAINT EXISTING STEEL |
| LENGTH OF STRUCTURE: | 374.64 FEET |
| LENGTH OF ROADWAY: | 200 FEET |
| LENGTH OF PROJECT: | 574.64 FEET |




LOCATION MAP

**RECORD PLANS**

CONTRACTOR: FW WHITCOMB CONST. CORP.

RESIDENT ENGINEER: JACK COUTURE

CONSTRUCTION BEGAN: MAY 5, 2003

CONSTRUCTION COMPLETE: SEPTEMBER 27,2004

RECORD PLANS BY: K. NORTH , N. GARBACIK

I HEREBY CERTIFY THAT ALL THE CONSTUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY Jacques D Couture RESIDENT ENGINEER

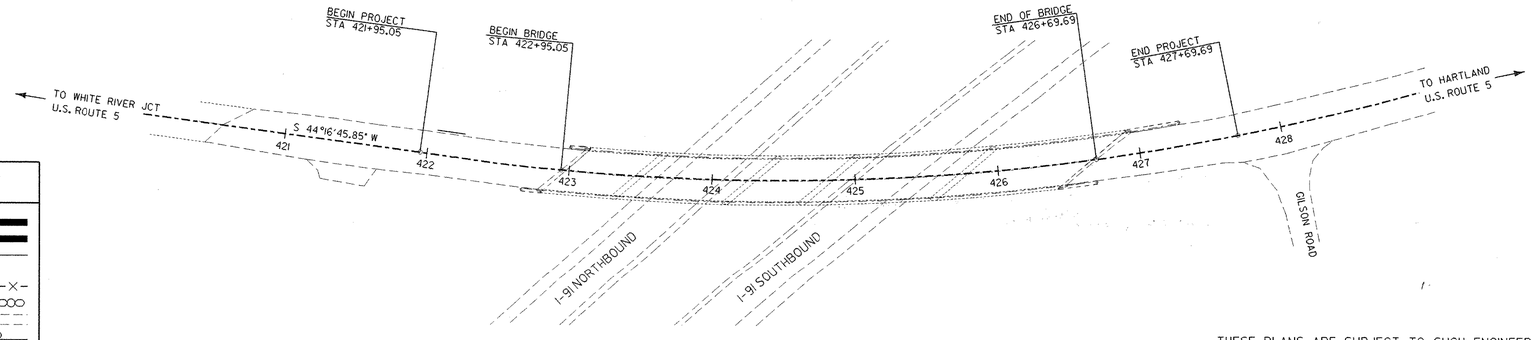
DATE 6-15-05

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.

LIST OF STANDARDS

| | |
|---|---|
| E-100 | 01-06-97 |
| E-101 | 03-10-97 |
| E-102 | 08-08-95 |
| E-103 | 09-23-98 |
| E-106 | 08-08-95 |
| E-140 | 08-30-96 |
| E-152 | 08-08-95 |
| E-171A | 08-09-95 |
| E-171B | 08-09-95 |
| E-172 | 08-09-95 |
| E-173 | 08-09-95 |
| E-175 | 11-17-93 |
| E-193 | 08-18-95 |
| F-1 | 06-01-94 |
| G-1 | 01-03-00 |
| G-1D | 01-03-00 |
| G-18 | 06-01-94 |
| T-1 | 06-01-94 |
| T-2 | 06-01-94 |

SB-RG-82 01/06/95




SCALE 1" = 50'-0

50 0 50

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS SR SR SR
TOP OF CUT
TOE OF SLOPE

DATUM

VERTICAL NAVD 88

HORIZONTAL NAD-83(96)

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROJECT DEVELOPMENT.
CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JANUARY 4, 2001 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

STONE & WEBSTER, INC.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATOR

APPROVED Mark DATE 3/24/03

DIRECTOR OF PROJECT DEVELOPMENT

APPROVED Dan DATE 12/23/02

PROJECT MANAGER : SHERWARD FARNSWORTH

PROJECT NAME : HARTLAND
PROJECT NUMBER : ACIM 091-1(36)

SHEET 1 OF 85 SHEETS

20-DEC-2002

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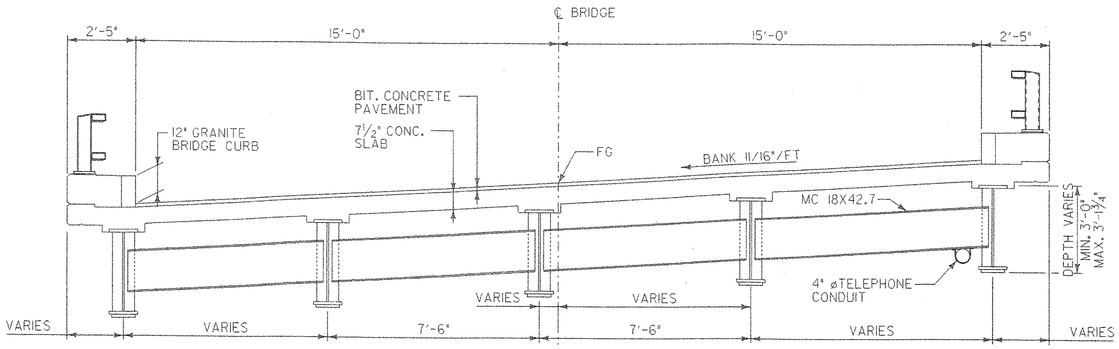
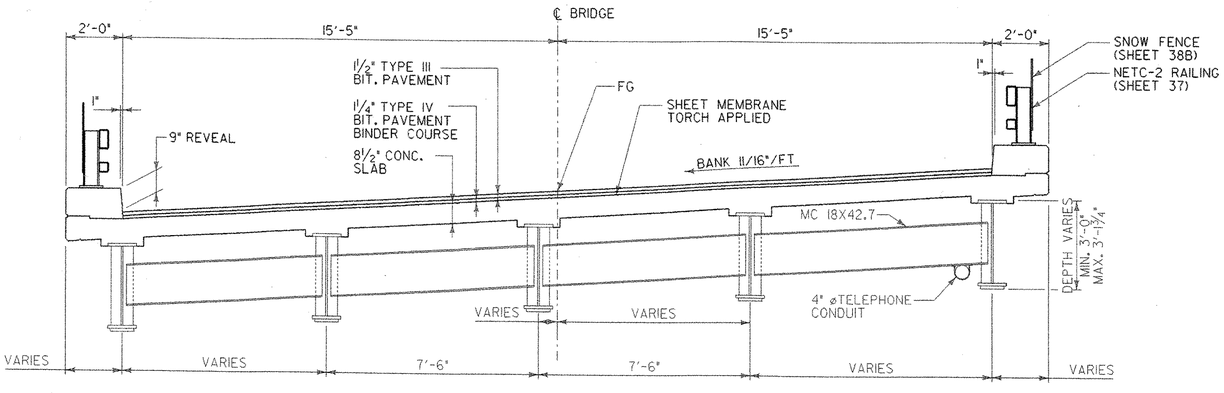



EXISTING BRIDGE
SCALE: 3/8" = 1'-0"




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

## TRAFFIC DATA

| YEAR | ADT | DHV | % D | % T | ADTT |
|---|---|---|---|---|---|
| 2001 | 2300 | 320 | - | 8% | - |
| 2002 | 2400 | 330 | - | 8% | - |

SCALE 3/8" = 1'-0
1 0 1 2 3 4

# FINAL HYDRAULICS REPORT

## HYDROLOGIC DATA

DRAINAGE AREA:
CHARACTER OF TERRAIN:
CHARACTER & TYPE OF STREAM:
NATURE OF STREAMBED:

Q2.33 = Q50 =
Q10 = Q100 =
Q25 = Q500 =

DATE OF FLOOD OF RECORD:
WATER SURFACE ELEV.: ESTIMATED DISCHARGE:
NATURAL STREAM VELOCITY @ Q50 =
ICE CONDITIONS: DEBRIS:
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY?
IS ORDINARY RISE RAPID?
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS?
IF YES, DESCRIBE:

WATERSHED STORAGE ___ HEADWATERS
UNIFORM THROUGHOUT WATERSHED ___ IMMEDIATELY ABOVE SITE ___

## EXISTING STRUCTURE

STRUCTURE TYPE:
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY OF FULL OPENING:
DISPOSITION OF STRUCTURE:

TYPE OF MATERIAL UNDER SUBSTRUCTURE:

WATER SURFACE ELEV. @ Q2.33 = ____ VELOCITY =
Q10 = ____ =
Q25 = ____ =
Q50 = ____ =
Q100 = ____ =

LONG TERM STREAM BED CHANGES:

IS THE ROADWAY OVERTOPPED BELOW THE Q100? ____ FREQUENCY:
RELIEF ELEVATION: ____ DISCHARGE OVER ROAD @ Q100:

UPSTREAM STRUCTURE: TOWN: ____ DISTANCE:
HIGHWAY NO.: ____ STRUCTURE NO.:
STRUCTURE TYPE:
CLEAR SPAN: ____ CLEAR HEIGHT:
YEAR BUILT: ____ FULL WATERWAY:

DOWNSTREAM STRUCTURE: TOWN: ____ DISTANCE:
HIGHWAY NO.: ____ STRUCTURE NO.:
STRUCTURE TYPE:
CLEAR SPAN: ____ CLEAR HEIGHT:
YEAR BUILT: ____ FULL WATERWAY:

## PROPOSED STRUCTURE

STRUCTURE TYPE:

CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY OF FULL OPENING:

WATER SURFACE ELEV. @ Q2.33 = ____ VELOCITY =
Q10 = ____ =
Q25 = ____ =
Q50 = ____ =
Q100 = ____ =

IS THE ROADWAY OVERTOPPED BELOW THE Q100? ____ FREQUENCY:
RELIEF ELEVATION: ____ DISCHARGE OVER ROAD @ Q100:

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE:
VERTICAL CLEARANCE @ Q 100 =

SCOUR:
REQUIRED CHANNEL PROTECTION:

## PERMIT INFORMATION

AVERAGE DAILY FLOW: ____ ELEV. =
ORDINARY LOW WATER: ____ ELEV. =
ORDINARY HIGH WATER: ____ ELEV. =

## TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE:
CLEAR SPAN (NORMAL TO STREAM): ____ TOTAL
VERTICAL CLEARANCE ABOVE STREAMBED: ____ ELEV.
WATERWAY OF FULL OPENING:

## DESIGN CRITERIA:

1. DESIGN LIVE LOAD AASHTO HS - 25 FOR DECK AND SUPERSTRUCTURE
2. DESIGN SPAN 54-79-54-94-94
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A ON LEDGE N/A
4. ALLOWABLE LOAD FOR PILING 20 TONS TYPE TIMBER ESTIMATED LENGTH N/A
5. STRUCTURAL STEEL AASHTO GRADE ASTM-A36-62 PAINTED
6. REINFORCING STEEL GRADE 60
7. CONCRETE CLASS A $f'_c$ = 4000 PSI
   CONCRETE CLASS B $f'_c$ = 3500 PSI
   SILICA-FUME CONCRETE $f'_c$ = 5000 PSI

## TRAFFIC MAINTENANCE:

1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE NO OR ON TEMPORARY BRIDGE YES
   SEE SPECIAL PROVISIONS 528.11
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY TWO TRAFFIC CONTROL SIGNALS REQUIRED N/A
   MINIMUM CLEAR SPAN (NORMAL TO STREAM): N/A VERTICAL CLEARANCE ABOVE STREAMBED: N/A
   WATERWAY AT FULL OPENING: N/A
   ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE? N/A

## LOAD FACTOR LOAD RATING (TONS)

| LOADING LEVELS (LOAD FACTOR) | TRUCK | | | | | | |
|---|---|---|---|---|---|---|---|
| | H | HS | 3S2 | 6 AXLE | 3A.STR. | 4A.STR. | 5A.SEMI |
| INVENTORY A = 2.17 | 26 | 46 | | | | | |
| POSTED A = 1.55 | 37 | 65 | 75 | | 55 | 61 | 70 |
| OPERATING A = 1.30 | | 77 | 89 | 104 | 65 | 73 | |

STRENGTH RF = $\frac{\phi M_N - 1.3 M_{DL}}{A \times M_{LL+I}}$

SERVICEABILITY RF = $B\left[\frac{.95 F_y S_{LL+I} - M_{DL}\frac{S_{LL+I}}{S_{DL}} - M_{SDL}\frac{S_{LL+I}}{S_{SDL}}}{1.67 M_{LL+I}}\right]$

STONE & WEBSTER, INC

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |

PRELIMINARY INFORMATION SHEET

| | |
|---|---|
| Designed By E. JOHNSTON | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| I.G.C. Info. za272pis.dgn | |
| Bridge Sheet No. | Sheet 2 of 85 |

04-FEB-2003
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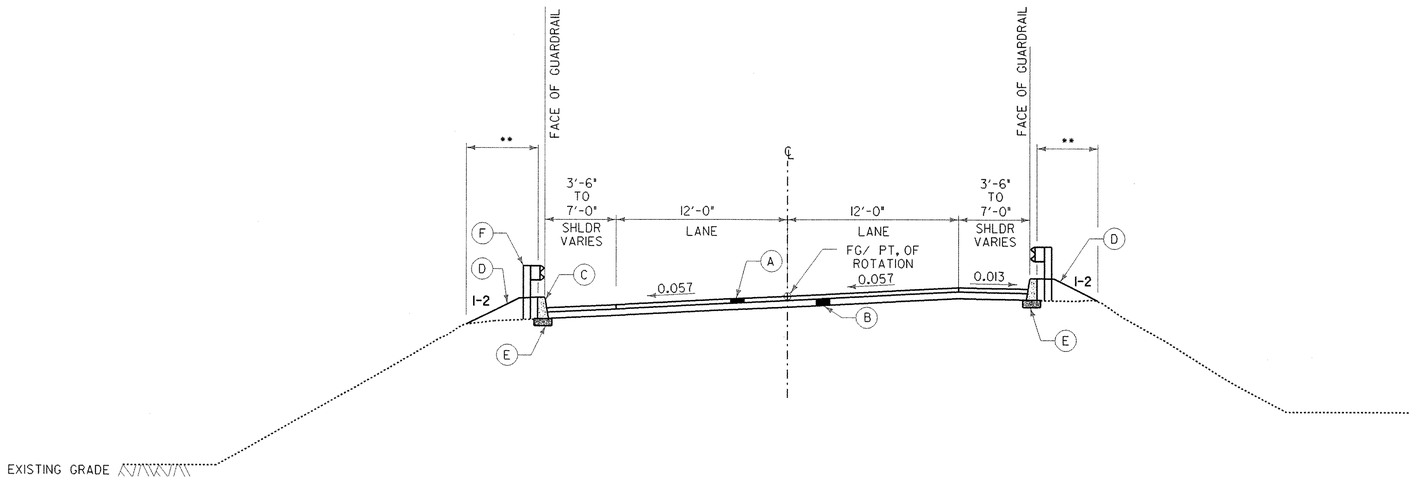
# ROADWAY TYPICAL SECTION




## U.S. ROUTE 5
## FULL BANKED SECTION

STA 421+95 TO STA 422+95
STA 426+69 TO STA 427+69

COLD PLANE* BIT. CONCRETE AND PLACE 1.5" BIT. CONCRETE TYPE III FROM STA 421+95 TO STA 422+20, STA 426+95 TO STA 427+69.

REMOVE TOP 4" OF MATERIAL, PLACE BIT. CONCRETE TYPE III, AND BIT. CONC TYPE II FROM STA 422+20 TO 422+70.

PLACE BIT. CONCRETE TYPE IV, AND BIT. CONC TYPE III OVER NEW CONCRETE APPROACH SLAB. SEE SHEET 27 FOR APPROACH SLAB AND BIT. CONCRETE DETAILS.

| | | MATERIAL ITEM | THICKNESS TOLERANCE |
|---|---|---|---|
| (A) | ITEM 406.25 | 1½" BITUMINOUS CONCRETE TYPE III | ± ¼" |
| (B) | ITEM 406.25 | BITUMINOUS CONCRETE PAVEMENT, TYPE II (DEPTH VARIES) (EACH LIFT = 2 INCHES MAX.) | ± ¼" |
| (C) | ITEM 616.28 | CONCRETE CURB, FOR LIMITS OF CURBING, SEE "GUARDRAIL APPROACH SECTION NETC 2 RAIL" SHEET 37 AND 38. | |
| (D) | ITEM 651.35<br>ITEM 651.15<br>ITEM 651.25 | 6" TOPSOIL, SEED AND HAY MULCH | |
| (E) | ITEM 301.15 | 6" GRAVEL SUBBASE | |
| (F) | ITEM 621.21 | HEAVY DUTY STEEL BEAM GUARDRAIL (WITH STEEL POST) | |

* COLD PLANE DEPTH VARIES FROM 1" TO 2".
** LIMIT OF 6" TOPSOIL, SEED AND MULCH

### SEEDING FORMULA
### URBAN AREAS

| % WT. | LB/AC | NAME | PUR % | GERM % |
|---|---|---|---|---|
| 42.5 | 33.91 | CREEPING RED FESCUE | 98 | 85 |
| 10.0 | 8.03 | PERENNIAL RYE GRASS | 95 | 90 |
| 42.5 | 33.91 | KENTUCKY BLUE GRASS | 85 | 85 |
| 5.0 | 4.46 | ANNUAL RYE GRASS | 95 | 85 |
| 100.0 | 80.31 | | | |

### GENERAL NOTES

SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.

SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.

FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 1692 LB/ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

MARKER POSTS: TO BE REMOVED AND RESET AS DIRECTED BY THE ENGINEER.

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.015 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.

| MATERIAL ITEM | THICKNESS TOLERANCE |
|---|---|
| PAVEMENT (TOTAL DEPTH) | ± ¼" |
| SUBBASE | ± 1" |
| SAND | ± 1" |

SCALE 1" = 5'-0
5 0 5

STONE & WEBSTER, INC.

**STATE OF VERMONT**
**AGENCY OF TRANSPORTATION**

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| ROADWAY TYPICAL SECTION | |
| FULL BANKED SECTION | |
| Designed By J. BARRACK | Drawn By K. PRM-TAN |
| Checked By J. BARRACK Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272txl.dgn | |
| Bridge Sheet No. | Sheet 3 of 85 |

09-DEC-2002
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STATE OF VERMONT
AGENCY OF TRANSPORTATION

# QUANTITY SHEET

## SUMMARY OF ESTIMATED QUANTITIES

| ROADWAY | | SUPER-STRUCT. | APPR. SLABS 1 &2 | ABUT NO. 1 | PIER NO.1 | PIER NO. 2 | PIER NO. 3 | PIER NO. 4 | ABUT. NO. 2 | TEMP. DETOUR | BRIDGE PAINTING | EROSION CONTROL | | FULL C.E. | TRAINING | BRIDGE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | |
| 374 | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | |
| 150 | | 198 | 39 | | | | | | | 100 | | | | | | 337 |
| | | 455 | | | 1 | | 2 | 1 | | | | | | | | 459 |
| | | | 79 | | | | | | | | | | | | | 79 |
| | | 50 | | | | | | | | | | | | | | 50 |
| | | 5280 | | | | | | | | | | | | | | 5280 |
| | | | | | 130 | 660 | | 200 | | | | | | | | 990 |
| | | | | 300 | 170 | | 340 | 240 | 830 | | | | | | | 1880 |
| | | | | 60 | 90 | | 180 | 126 | 165 | | | | | | | 621 |
| | | 127870 | 10540 | | | | | | | | | | | | | 138410 |
| | | 1 | | | | | | | | | | | | | | 1 |
| | | | | | | | | | | 7980 | | | | | | 7980 |
| | | | | | | | | | | | 1 | | | | | 1 |
| | | | | | | | | | | | 1 | | | | | 1 |
| | | | | | | | | | | | 1 | | | | | 1 |
| | | 37 | | 9 | 9 | 9 | 9 | 10 | 9 | | | | | | | 92 |
| | | 111 | | | | | | | | | | | | | | 111 |
| | | 1460 | | | | | | | | | | | | | | 1460 |
| | | 832 | | | | | | | | | | | | | | 832 |
| | | 832 | | | | | | | | | | | | | | 832 |
| | | | | | | | | | | 570 | | | | | | 570 |
| | | 1 | | | | | | | | | | | | | | 1 |
| | | | | | | | | | | 1 | | | | | | 1 |
| | | | | | | | | | | 1 | | | | | | 1 |
| | | 1250 | | | | | | | | | | | | | | 1250 |
| | | 1 | | | | | | | | | | | | | | 1 |
| | | | 61 | 3 | 1 | | 2 | 1 | 7 | | | | | | | 75 |
| | | 30 | | | | | | | | | | | | | | 30 |
| | | 20 | | | | | | | | | | | | | | 20 |
| | | | | 1 | 2 | 2 | | 2 | | | | | | | | 7 |
| | | | | | 1 | 1 | | | | | | | | | | 2 |
| | | | | | 1 | | 1 | 1 | | | | | | | | 3 |
| | | | | | | | | | | 1 | | | | | | 1 |
| 20 | | | | | | | | | | 40 | 80 | | | | | 120 |
| | | | | | 2 | | | 2 | | | | | | | | 4 |
| | | | | | | | | | | 20 | | | | | | 20 |
| 160 | | | | | | | | | | | | | | | | |

## TOTALS

| ROUND | GRAND TOTAL | FINAL |
|---|---|---|
| | 10 | |
| | 21 | |
| | 374 | |
| | 30 | |
| | 487 | |
| | 459 | |
| | 79 | |
| | 50 | |
| | 5280 | |
| | 990 | |
| | 1880 | |
| | 621 | |
| | 138410 | |
| | 1 | |
| | 7980 | |
| | 1 | |
| | 1 | |
| | 1 | |
| | 92 | |
| | 111 | |
| | 1460 | |
| | 832 | |
| | 832 | |
| | 570 | |
| | 1 | |
| | 1 | |
| | 1 | |
| | 1250 | |
| | 1 | |
| | 75 | |
| | 30 | |
| | 20 | |
| | 7 | |
| | 2 | |
| | 3 | |
| | 1 | |
| | 140 | |
| 6 | 10 | |
| | 20 | |
| | 160 | |

## DESCRIPTIONS

| UNIT | ITEMS | ITEM NUMBER |
|---|---|---|
| CY | COMMON EXCAVATION | 203.15 |
| CY | EXCAVATION OF SURFACES AND PAVEMENTS | 203.28 |
| SY | COLD PLANING-BIT.PAVEMENT | 210.10 |
| CY | SUBBASE OF GRAVEL | 301.15 |
| TON | BITUMINOUS CONCRETE PAVEMENT (PG 58-28) | 406.25 |
| CY | CONCRETE, HIGH PERFORMANCE CLASS A | 501.33 |
| CY | CONCRETE, HIGH PERFORMANCE CLASS B | 501.34 |
| EACH | SHORING SUPERSTRUCTURE BEARINGS | 502.11 |
| LB | STRUCTURAL STEEL | 506.60 |
| LB | STRUCTURAL STEEL (BEARING SHIMS) | 506.60 |
| LB | REINFORCING STEEL | 507.15 |
| LF | DRILLING AND GROUTING DOWELS | 507.16 |
| LB | EPOXY COATED REINFORCING STEEL | 507.17 |
| LS | SHEAR CONNECTORS (4330 7/8" DIA x 7" STUDS) | 508.15 |
| SF | STEEL GRID FLOORING | 509.20 |
| LS | STRUCTURAL PAINTING,FIELD APPLIED (250 TON) | 513.30 |
| LS | CONTAINMENT & ENVIRON. PROTECTION,FIELD (250 TON) | 513.36 |
| LS | SURFACE PREPARATION, FIELD (250 TON) | 513.41 |
| GAL | WATER REPELLENT | 514.10 |
| LF | BRIDGE EXPANSION JOINT (VERMONT JOINT) | 516.10 |
| SY | SHEET MEMBRANE WATERPROOFING (MOD) (TORCH APPLIED) | 519.20 |
| LF | REMOVAL OF EXISTING RAILING | 525.10 |
| LF | BRIDGE RAILING-NETC 2 RAIL | 525.33 |
| LF | BRIDGE RAILING - HD STEEL BEAM / CURB MOUNTED (MOD 1) (H-PILE CURB) | 525.40 |
| LS | TRAFFIC PROTECTION FOR BRIDGE PROJECT | 527.11 |
| LS | TWO-WAY TEMPORARY BRIDGE (MOD 1) (SUBSTRUCTURES & APPROACH FILLS) | 528.11 |
| LS | TWO-WAY TEMPORARY BRIDGE (MOD 2) (STRUCTURAL STEEL) | 528.11 |
| SY | REMOVAL OF BRIDGE PAVEMENT | 529.10 |
| EACH | PARTIAL REMOVAL OF STRUCTURE | 529.20 |
| CY | REMOVAL OF CONCRETE OR MASONRY | 529.25 |
| EACH | BEARING DEVICE ASSEMBLY (PREFORMED) | 531.10 |
| EACH | BEARING DEVICE ASSEMBLY (PREFORMED PTFE) | 531.10 |
| SY | REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS I | 580.13 |
| SY | REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS II | 580.14 |
| CY | REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS III | 580.15 |
| HR | ALL PURPOSE EXCAVATOR RENTAL, TYPE I | 608.25 |
| HR | TRUCK-MOUNTED ATTENUATOR | 608.45 |
| CY | STONE FILL, TYPE I | 613.10 |
| CY | STONE FILL, TYPE I (MOD) (ROCK CHECK DAMS) | 613.10 |
| LF | CAST-IN-PLACE CEMENT CONCRETE CURB, TYPE B | 616.28 |

## DETAILED SUMMARY OF QUANTITIES

| QUANTITIES | UNIT | ITEMS |
|---|---|---|

PROJECT NAME: **HARTLAND**
PROJECT NUMBER: **IM 091-1(36)**

FILE NAME: **scan_qty.xls**
PROJECT LEADER: **S. FARNSWORTH**
DESIGNED BY: **R. PELLETT**
**QUANTITY SHEET #1**

PLOT DATE: **2/4/2003**
DRAWN BY: **R. PELLETT**
CHECKED BY: **S. FARNSWORTH**
SHEET **4** OF **85**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

# QUANTITY SHEET

| SUMMARY OF ESTIMATED QUANTITIES | | | | | | | | | | | | | | | | TOTALS | | | DESCRIPTIONS | | | DETAILED SUMMARY OF QUANTITIES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROADWAY | | SUPER-STRUCT. | APPR. SLABS 1 &2 | ABUT NO. 1 | PIER NO.1 | PIER NO. 2 | PIER NO. 3 | PIER NO. 4 | ABUT. NO. 2 | TEMP. DETOUR | BRIDGE PAINTING | EROSION CONTROL | | FULL C.E. | TRAINING | BRIDGE | ROUND | GRAND TOTAL | FINAL | UNIT | ITEMS | ITEM NUMBER | QUANTITIES | UNIT | ITEMS |
| | | | | | | | | | | 250 | | | | | | 250 | | 250 | | LF | WOVEN WIRE FENCE W/STEEL POSTS | 620.25 | | | |
| | | | | | | | | | | 2 | | | | | | 2 | | 2 | | EACH | STEEL BRACE FOR WOVEN WIRE FENCE | 620.40 | | | |
| | | | | | | | | | | 250 | | | | | | 250 | | 250 | | LF | REMOVAL OF EXISTING FENCE | 620.55 | | | |
| | | 360 | | | | | | | | | | | | | | 360 | | 360 | | LF | SNOW BARRIER - GALVANIZED | 620.75 | | | |
| | | | | | | | | | | 400 | | | | | | 400 | | 400 | | LF | STEEL BEAM GUARD RAIL | 621.20 | | | |
| 161 | | | | | | | | | | | | | | | | | | 161 | | LF | HVY DUTY STEEL BEAM GUARD RAIL | 621.21 | | | |
| 1 | | | | | | | | | | 2 | | | | | | 2 | | 3 | | EACH | MANUFACTURED TERMINAL SECTION | 621.505 | | | |
| | | | | | | | | | | 2 | | | | | | 2 | | 2 | | EACH | ANCHOR FOR STEEL BEAM RAIL | 621.60 | | | |
| 4 | | | | | | | | | | | | | | | | | | 4 | | EACH | GUARD RAIL APPR. SECTION,NETC 2 RAIL | 621.72 | | | |
| 317 | | | | | | | | | | 180 | | | | | | 180 | | 497 | | LF | REMOVL AND DISP OF GUARD RAIL | 621.80 | | | |
| 60 | | | | | | | | | | 100 | | | | | | 100 | | 160 | | LF | TEMPORARY TRAFFIC BARRIER | 621.90 | | | |
| 160 | | | | | | | | | | 160 | 80 | | | | | 240 | | 400 | | HR | UNIFORMED TRAFFIC OFFICERS | 630.10 | | | |
| 100 | | | | | | | | | | 100 | 200 | | | | | 300 | | 400 | | HR | FLAGGERS | 630.15 | | | |
| | | | | | | | | | | | | | | 1 | | | | 1 | | LS | FIELD OFFICE-ENGINEERS | 631.10 | | | |
| | | | | | | | | | | | | | | 1 | | | | 1 | | LS | TESTING EQUIPMENT - CONCRETE | 631.16 | | | |
| | | | | | | | | | | | | | | 1 | | | | 1 | | LS | TESTING EQUIPMENT - BITUMINOUS | 631.17 | | | |
| | | | | | | | | | | | | | | 1 | | | | 1 | | LS | TESTING EQUIPMENT - PROTECTIVE COATINGS | 631.18 | | | |
| | | | | | | | | | | | | | | 1 | | | | 1 | | LU | FIELD OFFICE - TELEPHONE (N.A.B.I.) | 631.25 | | | |
| | | | | | | | | | | | | | | | 520 | | | 520 | | HR | EMPLOYEE TRAINEESHIP | 634.10 | | | |
| | | | | | | | | | | | | | | | | 1 | | 1 | | LS | MOBILIZATION | 635.10 | | | |
| 1 | | | | | | | | | | | | | | | | | | 1 | | LS | TRAFFIC CONTROL (INTERSTATE 91) | 641.10 | | | |
| 1 | | | | | | | | | | | | | | | | | | 1 | | LS | TRAFFIC CONTROL (US 5) | 641.10 | | | |
| | | | | | | | | | | 1 | | | | | | 1 | | 1 | | LS | TRAFFIC CONTROL (TEMPORARY BRIDGE STEEL ERECTION) | 641.10 | | | |
| | | | | | | | | | | | 1 | | | | | 1 | | 1 | | LS | TRAFFIC CONTROL (BRIDGE PAINTING) | 641.10 | | | |
| 2 | | | | | | | | | | | | | | | | | | 2 | | EACH | PORTABLE CHANGEABLE MESSAGE SIGN | 641.15 | | | |
| 1600 | | | | | | | | | | | | | | | | | | 1600 | | LF | DURABLE 4" WHITE LINE | 646.40 | | | |
| 1600 | | | | | | | | | | | | | | | | | | 1600 | | LF | DURABLE 4" YELLOW LINE | 646.41 | | | |
| | | | | | | | | | | 2000 | | | | | | 2000 | | 2000 | | LF | TEMPORARY 4" WHITE LINE | 646.60 | | | |
| | | | | | | | | | | 2000 | | | | | | 2000 | | 2000 | | LF | TEMPORARY 4" YELLOW LINE | 646.61 | | | |
| | | | | | | | | | | 15 | | | | | | 15 | | 15 | | LF | TEMPORARY 24" STOP BAR | 646.66 | | | |
| 180 | | | | | | | | | | | | | | | | | | 180 | | SF | REMOVAL OF EXISTING PAVEMENT MARKINGS | 646.85 | | | |
| | | | | | | | | | | 100 | | | | | | 100 | | 100 | | SY | GEOTEXTILE UNDER STONE FILL | 649.31 | | | |
| | | | | | | | | | | | | 290 | | | | | | 290 | | SY | GEOTEXTILE FOR SILT FENCE | 649.51 | | | |
| 40 | | | | | | | | | | | | 70 | | | | | | 110 | | LB | SEED | 651.15 | | | |
| | | | | | | | | | | | | 10 | | | | | | 10 | | LB | SEED-WINTER RYE | 651.17 | | | |
| 100 | | | | | | | | | | | | 400 | | | | | | 500 | | LB | FERTILIZER | 651.18 | | | |
| 2 | | | | | | | | | | | | 2 | | | | | | 4 | | TON | AGRICULTURAL LIMESTONE | 651.20 | | | |
| 1 | | | | | | | | | | | | 2 | | | | | | 3 | | TON | HAY MULCH | 651.25 | | | |
| | | | | | | | | | | | | 10 | | | | | | 10 | | EACH | HAY BALES FOR EROSION CONTROL | 651.26 | | | |
| 50 | | | | | | | | | | | | | | | | | | 50 | | CY | TOPSOIL | 651.35 | | | |

PROJECT NAME: **HARTLAND**
PROJECT NUMBER: **IM 091-1(36)**

FILE NAME: **scan_qty.xls**
PROJECT LEADER: **S. FARNSWORTH**
DESIGNED BY: **R. PELLETT**
**QUANTITY SHEET #2**

PLOT DATE: **2/4/2003**
DRAWN BY: **R. PELLETT**
CHECKED BY: **S. FARNSWORTH**
SHEET **4 A** OF **85**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

# QUANTITY SHEET

## SUMMARY OF ESTIMATED QUANTITIES

| ROADWAY | | SUPER-STRUCT. | APPR. SLABS 1 &2 | ABUT. NO. 1 | PIER NO.1 | PIER NO. 2 | PIER NO. 3 | PIER NO. 4 | ABUT. NO. 2 | TEMP. DETOUR | BRIDGE PAINTING | EROSION CONTROL | | FULL C.E. | TRAINING | BRIDGE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | | | | | | | | | | | 40 | | | | |
| 100 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |

## TOTALS

| ROUND | GRAND TOTAL | FINAL |
|---|---|---|
| | 60 | |
| | 100 | |
| | 4 | |
| | 4 | |

## DESCRIPTIONS

| UNIT | ITEMS | ITEM NUMBER |
|---|---|---|
| SY | EROSION MATTING | 654.10 |
| LB | FLANGED CHANNEL SIGN POSTS | 675.30 |
| EACH | REMOVING SIGNS | 675.50 |
| EACH | ERECTING SALVAGED SIGNS | 675.60 |

## DETAILED SUMMARY OF QUANTITIES

| QUANTITIES | UNIT | ITEMS |
|---|---|---|

PROJECT NAME: **HARTLAND**
PROJECT NUMBER: **IM 091-1(36)**

FILE NAME: **scan_qty.xls**
PROJECT LEADER: **S. FARNSWORTH**
DESIGNED BY: **R. PELLETT**
**QUANTITY SHEET #3**

PLOT DATE: **2/4/2003**
DRAWN BY: **R. PELLETT**
CHECKED BY: **S. FARNSWORTH**
SHEET **4 B** OF **85**

## GPS CONTROL POINTS

### HVCTRL #1

STANDARD DISK STAMPED
EASY
N = 387983.4500
E = 1670810.0100
ELEV= 486.680

GENERAL LOCATION, HARTLAND, VERMONT. TO REACH FROM THE INTERSECTION OF INTERSTATE 91 AND THE INTERSTATE 91 EXIT 9 NORTH BOUND ON RAMP IN HARTLAND GO NORTH ALONG INTERSTATE 91 FOR 2.8 MI (4.5 KM) TO THE SITE OF THE MARK ON THE LEFT, SET IN THE MEDIAN BETWEEN INTERSTATE 91 NORTH AND SOUTH BOUND LANES. THE MARK IS SET FLUSH IN THE TOP OF A 30 CM ROUND CONCRETE MONUMENT POURED 1.3M (4.3 FT) DEEP.

THE MARK IS LOCATED 12.0 M (39.4 FT) WEST OF AND ABOUT 2.0 M (6.6 FT) HIGHER THAN THE WEST EDGE OF PAVEMENT OF THE NORTH BOUND LANE OF INTERSTATE 91, 16.4 M (53.8 FT) EAST OF AND ABOUT LEVEL WITH THE EAST EDGE OF PAVEMENT OF THE SOUTH BOUND LANE OF INTERSTATE 91, 56.1M (184.1FT) SOUTH OF A 1.2 M (3.9 FT) X 1.2 M (3.9 FT) DROP INLET, AND 0.4 M (1.3 FT) EAST OF A FIBERGLASS WITNESS POST.

### HVCTRL #10

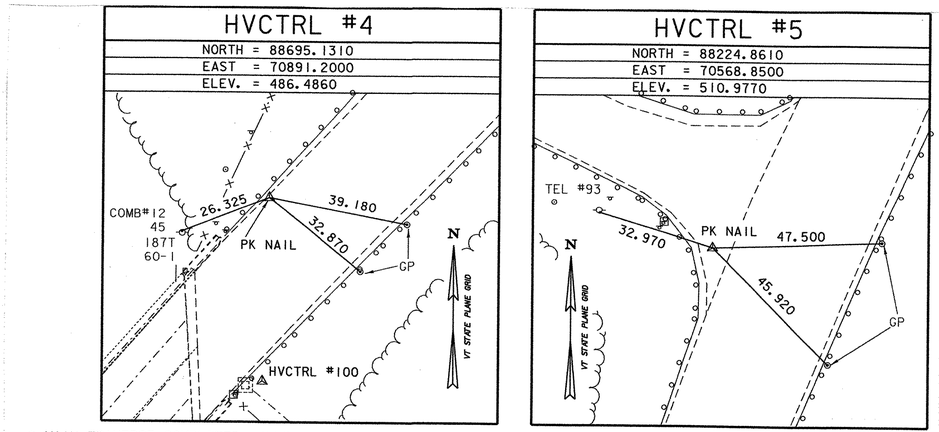
STANDARD DISK STAMPED
EASY AZ MK
N = 389147.9300
E = 1670717.7200
ELEV= 460.500

GENERAL LOCATION, HARTLAND, VERMONT. TO REACH FROM THE INTERSECTION OF INTERSTATE 91 AND THE INTERSTATE 91 EXIT 9 NORTH BOUND ON RAMP IN HARTLAND GO NORTH ALONG INTERSTATE 91 FOR 3.05 MI (4.91KM) TO THE MARK ON THE LEFT, SET IN THE NORTHEAST CORNER OF A 1.2 M (3.9 FT) X 1.2 M (3.9 FT) CONCRETE BASE FOR A DROP INLET.

THE MARK IS LOCATED 13.0 M (42.7 FT) EAST OF AND ABOUT 2.5 M (8.2 FT) LOWER THAN THE EAST EDGE OF PAVEMENT OF THE INTERSTATE 91 SOUTH BOUND LANE, 6.0 M (19.7 FT) WEST OF AND ABOUT 2.0 M (6.6 FT) LOWER THAN THE WEST EDGE OF PAVEMENT OF THE INTERSTATE 91 NORTH BOUND LANE, 0.2 M (0.7 FT) SOUTH OF THE NORTH EDGE OF THE 1.2 M (3.9 FT) X 1.2 M (3.9 FT) CONCRETE PAD, 1.0 M (3.3 FT) NORTH OF THE SOUTH EDGE OF THE 1.2 M (3.9 FT) X 1.2 M (3.9 FT) CONCRETE PAD, AND 0.55 M (1.80 FT) WEST OF A FIBERGLASS WITNESS POST.

*TO ALLOW THE STATE PLANE COORDINATES TO FIT THE AGENCY DESIGN PLANE, SUBTRACT 300000 FROM THE NORTHING AND SUBTRACT 1600000 FROM THE EASTING.
*DESCRIPTION PROVIDED BY VERMONT AGENCY OF TRANSPORTATION GEODETIC SURVEY UNIT.

## TRANSVERSE TIES




* MAIN TRAVERSE COMPLETED: JUNE 9, 2000 BY: R. GILMAN PC/ R. BULLOCK

## ALIGNMENT COORDINATES

| | NORTHING | EASTING | ELEVATION |
|---|---|---|---|
| ℳ POT STA 421+95.05 | 88724.72 | 70939.54 | 482.33 |
| ℳ PC STA 422+24.807 | 88703.41 | 70918.77 | 484.35 |
| ℳ POC STA 427+69.44 | 88257.97 | 70609.77 | 509.15 |

## NOTES:

1. THE ELEVATIONS GIVEN FOR THE ALIGNMENT COORDINATES REFLECT THE EXISTING CONDITIONS BASED ON THE SURVEY PERFORMED ON JUNE 21, 2000.
2. ALL DIMENSIONS GIVEN ON THIS SHEET ARE IN FEET UNLESS OTHERWISE NOTED.

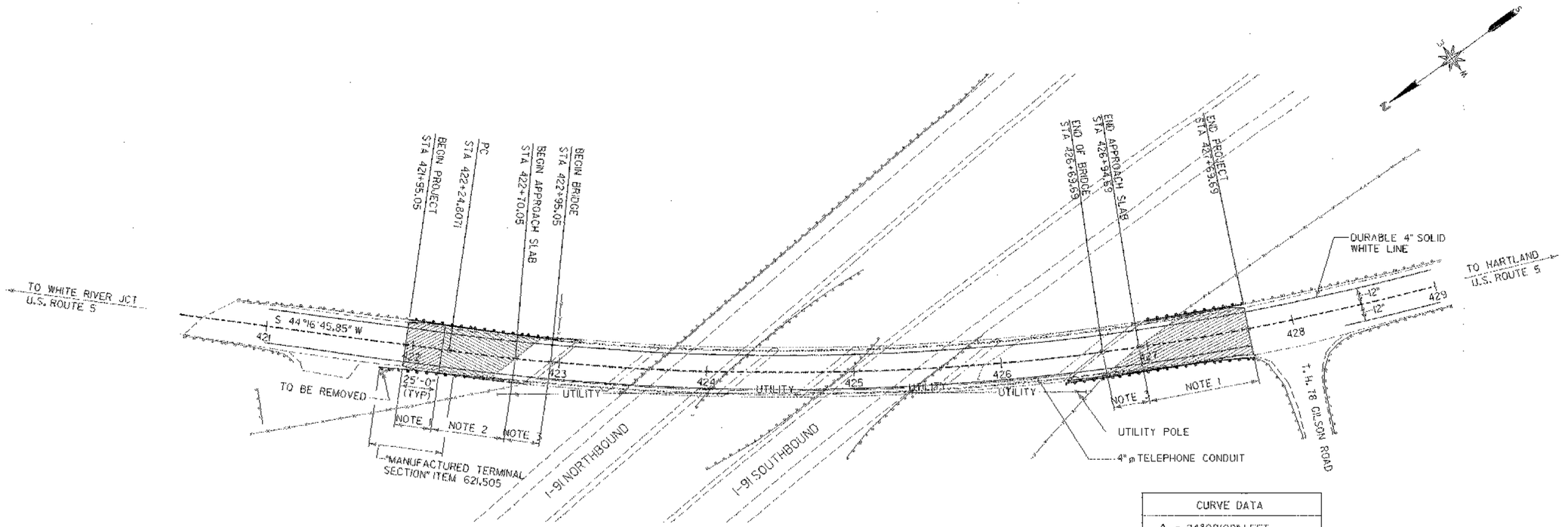
| DATUM | |
|---|---|
| VERTICAL | NAVD 88 |
| HORIZONTAL | NAD-83(96) |
| ADJUSTMENT | NONE |

09-DEC-2002
v:\Struc\working\za272tie.dgn

STONE & WEBSTER, INC.

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| TIE SHEET | |
| Designed By E. JOHNSTON | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272tie.dgn | |
| Bridge Sheet No. | Sheet 5 of 85 |




| CURVE DATA |
|---|
| △ = 24°00'00" LEFT |
| R = 1637.0223' |
| T = 347.9598' |
| L = 685.7143' |
| E = 36.5721' |
| BANK = 0.057 |

NOTES:

1. COLD PLANE BIT. PAVEMENT AND PLACE BIT. CONCRETE SURFACE COURSE.
2. PLACE BIT. CONCRETE SURFACE AND BIT. CONCRETE BASE COURSE OVER EXISTING BIT. CONCRETE.
3. PLACE BIT. CONCRETE SURFACE AND BIT. CONCRETE BASE COURSE OVER NEW CONCRETE APPROACH SLAB. SEE SHEET 27.
4. NOT USED.
5. FILL SLOPES ARE 1-2 (VERT-HORZ)
6. DURABLE 4" DOUBLE YELLOW LINE IS COINCIDENT WITH CONSTRUCTION BASELINE.

SCALE 1" = 40'-0

40 0 40

ITEM 210.10
COLD PLANING-BIT. PAVEMENT
STA 421+95 TO 422+20
STA 426+95 TO 427+69

ITEM 621.80
REMOVAL AND DISPOSAL OF GUARD RAIL
421+~~95~~18 LT TO 422+99 LT
427+30 LT TO ~~427+69~~ LT 428+53
421+~~95~~80 RT TO 422+67 RT
426+67 RT TO 427+69 RT
426+54 TH 8 COMPLETE REMOVAL

ITEM 646.40
DURABLE 4" WHITE LINE
STA 421+00 LT TO 429+00 LT
STA 421+00 RT TO 429+00 RT

ITEM 646.41
DURABLE 4" YELLOW LINE
STA 421+00 TO 429+00

ITEM 203.28
EXCAVATION OF SURFACES AND PAVEMENTS
STA 422+20 TO 422+70

ITEM 621.21
HEAVY DUTY STEEL BEAM GUARD RAIL (WITH STEEL POSTS)
STA 421+95 LT TO 422+69 LT
STA 427+~~61~~60 LT TO 427+~~69~~85 LT
STA 422+~~30~~14 RT TO 422+~~38~~39 RT
STA ~~426+98 RT TO 427+69 RT~~
422+45 TO 422+70

ITEM 651.15, 651.18, 651.20, 651.25, 651.35
SEED, FERTILIZER, HAY MULCH LIMESTONE AND TOP SOIL (6")
STA 421+95 TO 423+40
STA 426+45 TO 427+69

ITEM 616.28 616.21 VERTICLE GRANITE CURB
~~CAST-IN-PLACE CEMENT CONCRETE CURB, TYPE B~~
STA 422+59 LT TO 422+99 LT
STA 427+31 LT TO 427+71 LT
STA 422+27 RT TO 422+67 RT
STA 426+68 RT TO 427+08 RT

ITEM 621.505
MANUFACTURED TERMINAL SECTION
STA 421+~~80~~75 RT TO 422+~~30~~15 RT
STA 426+97 RT TO 427+47 RT

ITEM 621.72
GUARDRAIL APPROACH SECTION, NETC2 RAIL (MOD)
STA 422+69 LT TO 422+99 LT
STA 427+31 LT TO 427+61 LT
STA 422+38 RT TO 422+67 RT
STA 426+68 RT TO 426+98 RT

ITEM 646.85
REMOVAL OF EXISTING PAVEMENT MARKINGS
STA 425+09 TO 426+69
STA 421+85 TO 422+95

ITEM 675.50
REMOVING SIGNS
SIGN OM-3, QTY=4

ITEM 675.30
FLANGED CHANNEL SIGN POST
SIGN POST FOR OM-3,
QTY = 4 @ 25 LBS EA = 100 LBS

ITEM 675.60
ERECTING SALVAGED SIGNS
SIGN OM-3, QTY=4

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD-83(96)

STONE & WEBSTER, INC.

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

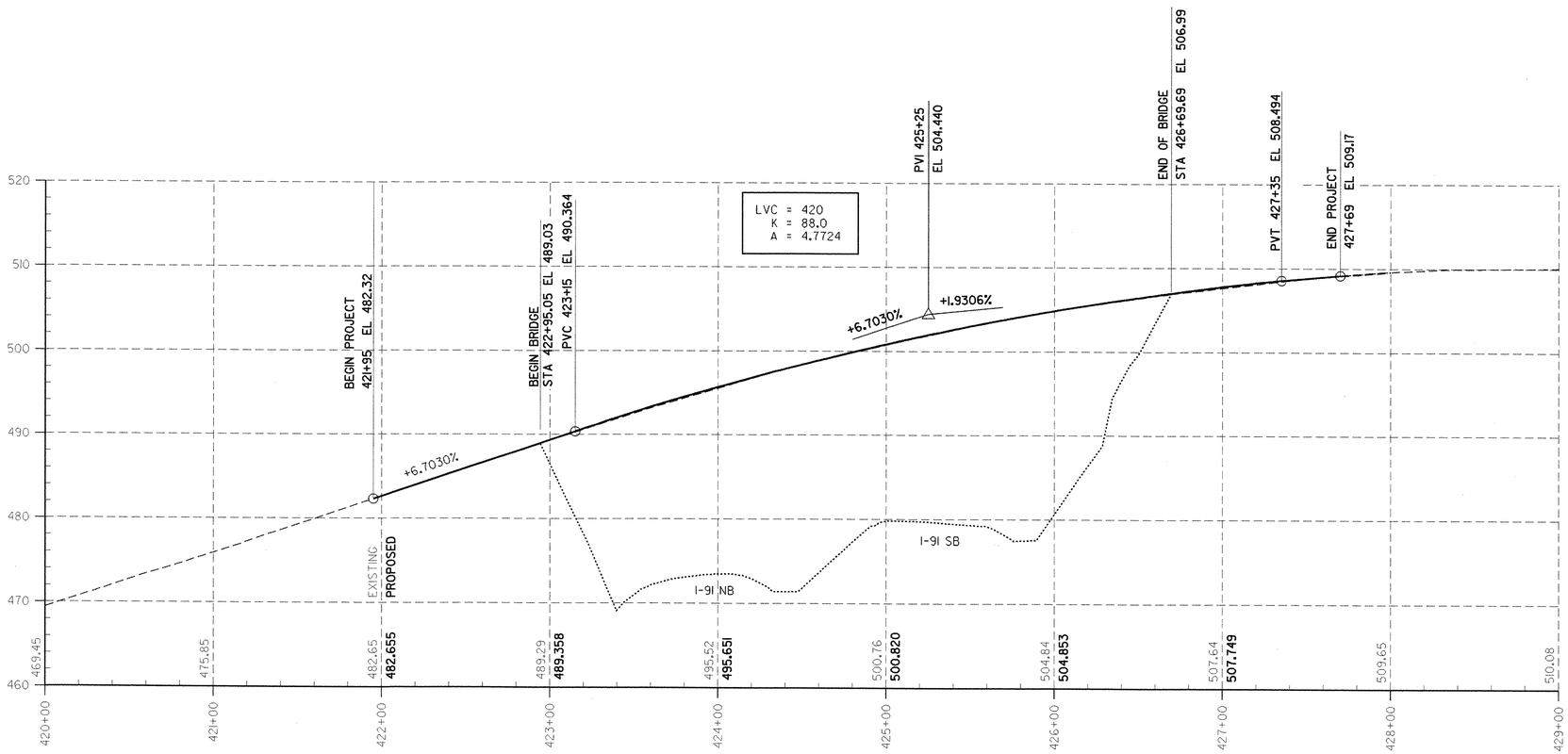
| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |

LAYOUT SHEET

| | |
|---|---|
| Designed By J. BARRACK | Drawn By N. HERRERA |
| Checked By J. BARRACK Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272lay.dgn | |
| Bridge Sheet No. | Sheet 6 of 85 |

04-FEB-2002

v:\Civil\working\za272lay.dgn




PROFILE

VERTICAL 10 0
HORIZONTAL 0 20 40 60
SCALE IN FEET

09-DEC-2002

v:\Civil\working\za272prl.dgn

DATUM

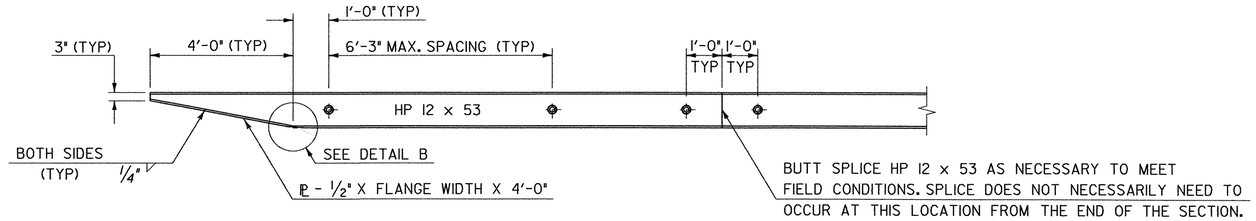
VERTICAL NAVD 88

HORIZONTAL NAD-83(96)

STONE & WEBSTER, INC.

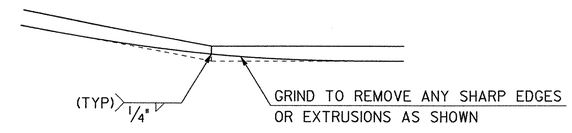
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| US 5 PROFILE | |
| Designed By J. BARRACK | Drawn By K. PRM-TAN |
| Checked By J. BARRACK Date DEC 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272prl.dgn | |
| Bridge Sheet No. | Sheet 7 of 85 |



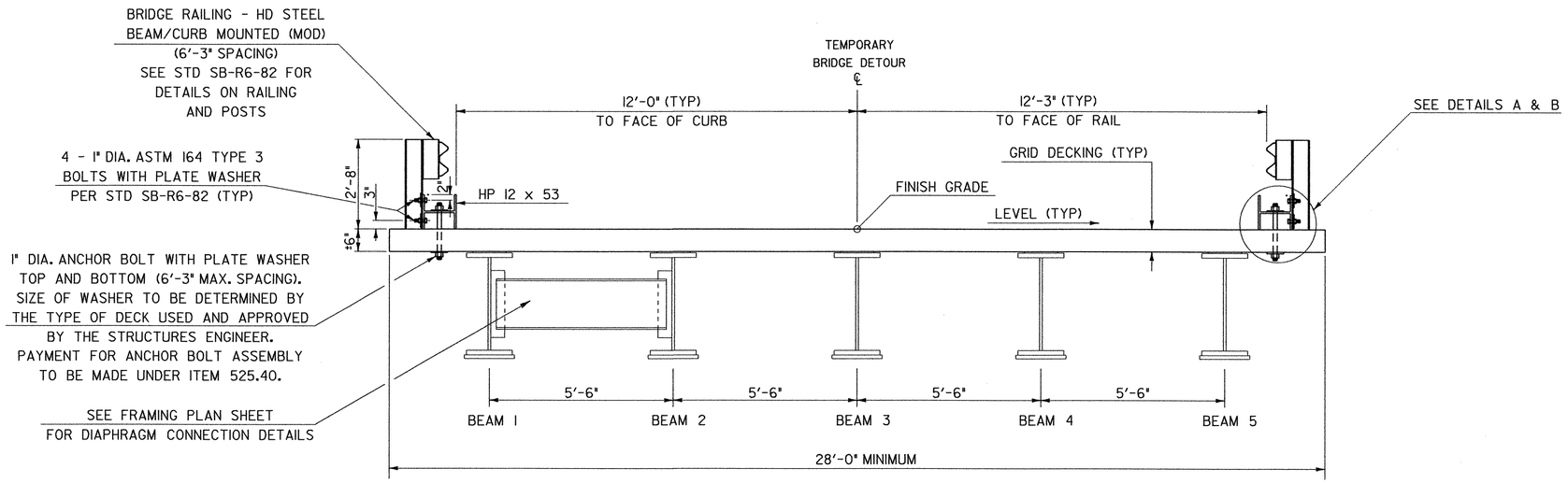

## DETAIL A

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



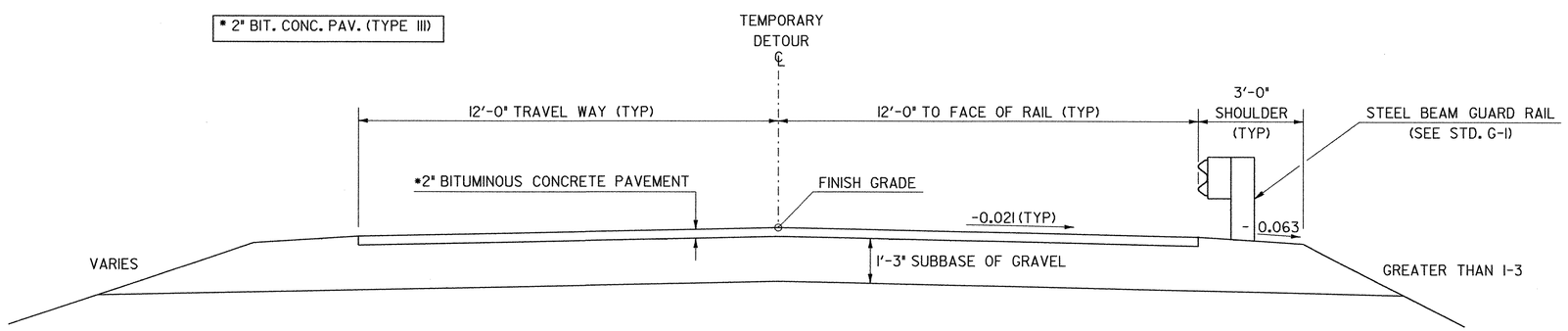

## DETAIL B

N.T.S.




## TEMPORARY BRIDGE TYPICAL

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




## TEMPORARY ROADWAY TYPICAL

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

### NOTES

1.) SEE PROJECT SPECIAL PROVISIONS FOR A LISTING OF THE MATERIALS BEING SUPPLIED BY THE STATE.

2.) HP 12 x 53 TO BE PAID AS ITEM 525.40, "BRIDGE RAILING - HD STEEL BEAM CURB MOUNTED (MOD-1) (H-PILE CURB).

3.) GUARDRAIL AND SUBBASE OF GRAVEL SHALL BE INCLUDED IN ITEM 528.11 "TWO WAY TEMPORARY BRIDGE (MOD 1) (SUBSTRUCTURES AND APPROACH FILLS)

# TEMP. DETOUR - BRIDGE AND ROADWAY TYPICALS

PROJECT NAME: HARTLAND
PROJECT NUMBER: IM 091-1(36)

FILE NAME: str7/99a272/sa272typ.dgn
PROJECT LEADER: S. FARNSWORTH
DESIGNED BY: FOWLER/UPMAL
sa272typ.I

PLOT DATE: 05-FEB-2003
DRAWN BY: K. UPMAL
CHECKED BY: M. FOWLER
SHEET 8 OF 85

ITEM 621.80 REMOVAL AND DISPOSAL OF GUARD RAIL

NORTHBOUND
STA. 3368+~~80~~68 - 3369+05 LT
STA. 3369+22.5 - 3369+35 RT
SOUTHBOUND
75STA. 3368+~~87~~ - 3369+~~52~~ RT50
3367+92.5STA. ~~3368+05~~ - 3368+~~70~~ LT67.5

MAINLINE STATION 420+00.00 =
TEMPORARY DETOUR STATION 100+00.00

STATION 101+00.00
BEGIN TEMPORARY DETOUR

ITEM 621.20 STEEL BEAM GUARD RAIL
(EXTEND EXISTING INTERSTATE GUARD RAIL)

NORTHBOUND
STA. 3369+35 - 3370+97.50 RT
STA. 3368+~~80~~68 - ~~3370+05~~ LT3369+45
SOUTHBOUND
STA. 3368+~~87~~75 - ~~3370+12~~ RT3373+50
STA. 3368+05 - 3369+17.50 LT
STA. 3368+87 - 3373+87 LT

ITEM 621.60 ANCHOR FOR STEEL BEAM RAIL

STA. 3370+91.50 RT
STA. 3369+99 LT
STA. 3370+06 RT
STA. 3369+11.50 LT

| CURVE #2 DATA |
|---|
| △ = 44°-17'-23.23" LT |
| D = 40°-55'-32.00" |
| R = 140.00 |
| T = 56.98 |
| L = 108.22 |
| E = 10.33 |
| BANK = NORMAL CROWN |

*** NOTE: REFER TO FRAMING PLANS FOR ALL OTHER CENTERLINE OF BEARING LOCATIONS FOR MEDIAN SPAN 3 AND APPROACH SPANS

VT STATE PLANE GRID

STATION 102+98.00
CENTERLINE BEARING
SPAN 1 - ABUTMENT #1
***

STATION 103+95.00
CENTERLINE BEARING
SPAN 1 - ABUTMENT #2
***

STATION 104+45.00
CENTERLINE BEARING
SPAN 2 - ABUTMENT #3
***

MAINLINE PC
Sta 422+24.77

U.S. ROUTE 5
TO WHITE RIVER JCT.

S44° 16' 45.90"W

INTERSTATE 91 R.O.W.

POB
STA 100+00.00

PI #1
STA 101+26.04

PC
STA 101+85.45

PT
STA 102+93.67

PC
STA 100+81.55

PT
STA 101+67.71

S19° 32' 30.10"W

S35° 15' 06.72"W

TRUCKS ENTERING

BENCH MARK
191 (122)
ELEV=469.82

BRIDGE
38
191

FENCE
PIPE
WOODS
GUIDE POST
HVCTRL
SUB TEL
SIGN SUBT
GUY WIRE
TEL M.H.
COMB 187/152 SUBTEL
GUY

100+00
420+00
421+00
101+00
422+00
423+00
424+00
102+00
103+00
104+00
105

3368
3369
3370
3371

MATCH LINE
STATION 105+00
MATCH LINE

| CURVE #1 DATA |
|---|
| △ = 35°-15'-44.18" RT |
| D = 40°-55'-32.00" |
| R = 140.00 |
| T = 44.49 |
| L = 86.16 |
| E = 6.58 |
| BANK = NORMAL CROWN |

SILT FENCE

SILT FENCE 10'

CHECK DAMS AS DIRECTED BY THE RESIDENT ENGINEER

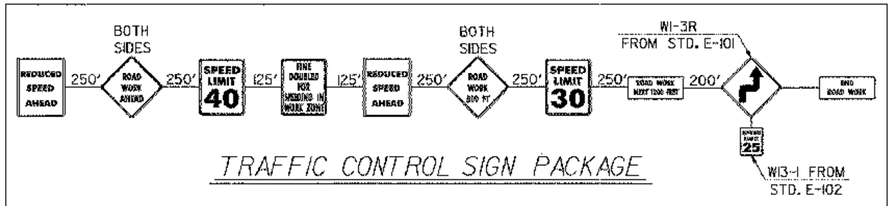
MANUFACTURED TERMINAL SECTION

MANUFACTURED TERMINAL SECTION

△ TEMP. DETOUR PI #2 STA 102+42.43 =
MAINLINE STATION 422+23.38 (68.82 RT)

NORTHBOUND INTERSTATE 91

SOUTHBOUND INTERSTATE 91




TRAFFIC CONTROL SIGN PACKAGE

NOTES

1) REFER TO STANDARD E-100 FOR CONSTRUCTION APPROACH SIGNS CRITERIA

2) ALL SIGNS ARE TO BE LOCATED ON THE RIGHT SIDE OF THE ROAD APPROACHING THE CONSTRUCTION AREA UNLESS OTHERWISE NOTED

3) THE LAST SIGN APPROACHING THE CONSTRUCTION AREA ON THE NORTH SIDE OF THE TEMPORARY DETOUR IS TO BE PLACED IMMEDIATELY OFF THE NORTH END OF THE RAILROAD UNDERPASS. ALL OTHER SIGNS IN THE SIGN PACKAGE ARE TO PRECEED

0 20 40
SCALE 1:20 IN FEET

# TEMP. DETOUR PLAN - SHEET 1 OF 2

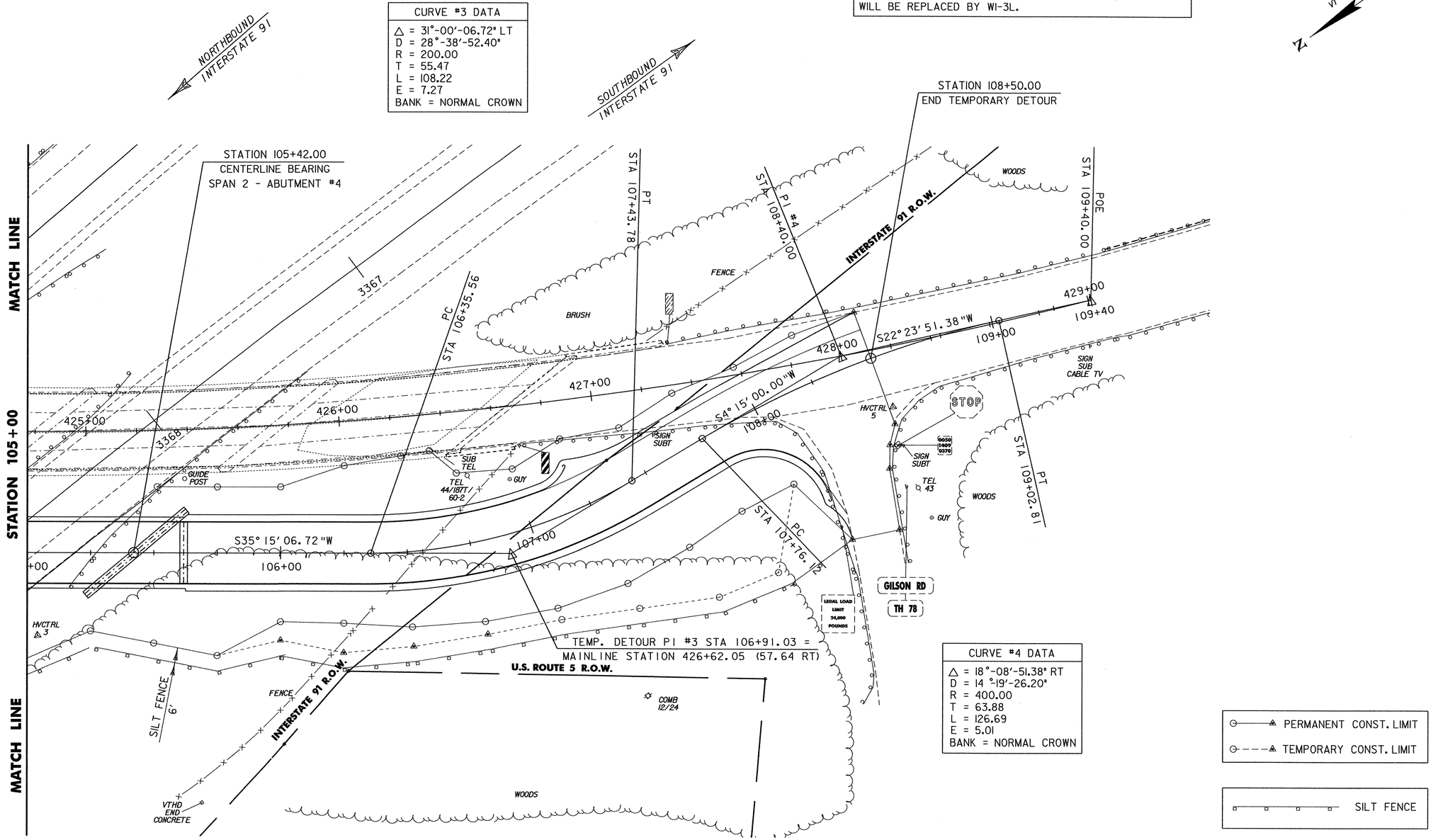
| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |
| FILE NAME: | str7/99a272/sa272bdr.dgn |
| PROJECT LEADER: | S. FARNSWORTH |
| DESIGNED BY: | K. UPMAL |
| SA272PLLI | |
| PLOT DATE: | 03-FEB-2003 |
| DRAWN BY: | K. UPMAL |
| CHECKED BY: | |
| SHEET 9 | OF 85 |

*** NOTE: REFER TO FRAMING PLANS FOR ALL OTHER CENTERLINE OF BEARING LOCATIONS FOR APPROACH SPAN

REFER TO SHEET 9 FOR THE TEMPORARY TRAFFIC CONTROL SIGN PACKAGE. THE SOUTHERN APPROACH WILL CONSIST OF THE SAME SIGNS ENDING 200' FROM THE INTERSECTION OF U.S. ROUTE 5 AND T.H. 78 (GILSON ROAD). ALSO, NOTE WI-3R WILL BE REPLACED BY WI-3L.

VT STATE PLANE GRID

| CURVE #3 DATA |
|---|
| △ = 31°-00'-06.72" LT |
| D = 28°-38'-52.40" |
| R = 200.00 |
| T = 55.47 |
| L = 108.22 |
| E = 7.27 |
| BANK = NORMAL CROWN |




| CURVE #4 DATA |
|---|
| △ = 18°-08'-51.38" RT |
| D = 14°-19'-26.20" |
| R = 400.00 |
| T = 63.88 |
| L = 126.69 |
| E = 5.01 |
| BANK = NORMAL CROWN |

PERMANENT CONST. LIMIT

TEMPORARY CONST. LIMIT

SILT FENCE

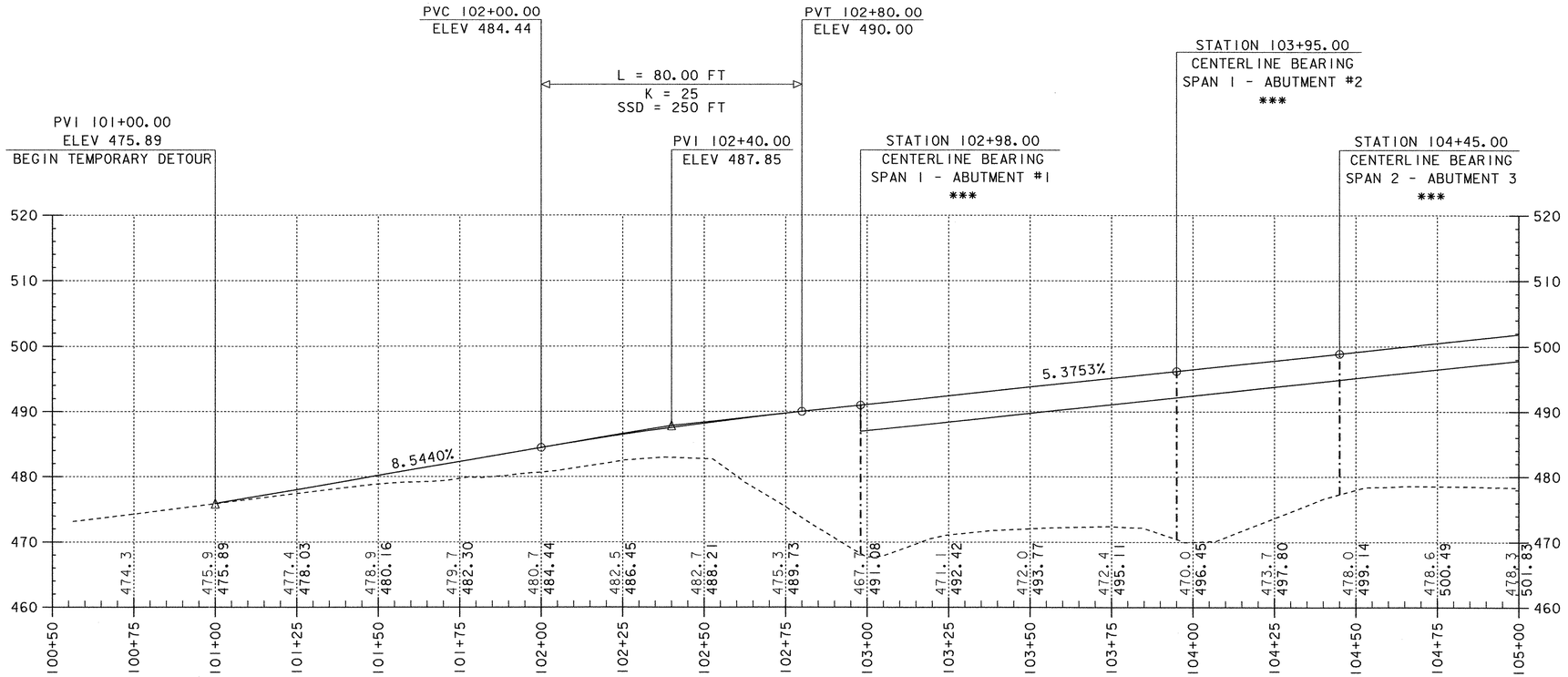
0 20 40

SCALE 1:20 IN FEET

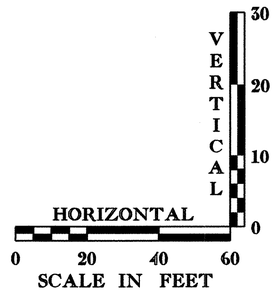
## TEMP. DETOUR PLAN – SHEET 2 OF 2

| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |
| FILE NAME: str7/99a272/sa272bdr.dgn | PLOT DATE: 03-FEB-2003 |
| PROJECT LEADER: S. FARNSWORTH | DRAWN BY: K. UPMAL |
| DESIGNED BY: K. UPMAL | CHECKED BY: |
| SA272PL2.1 | SHEET 10 OF 85 |

***NOTE: REFER TO FRAMING PLANS FOR ALL OTHER CENTERLINE OF BEARING LOCATIONS FOR MEDIAN SPAN 3 AND APPROACH SPANS




## TEMPORARY DETOUR PROFILE



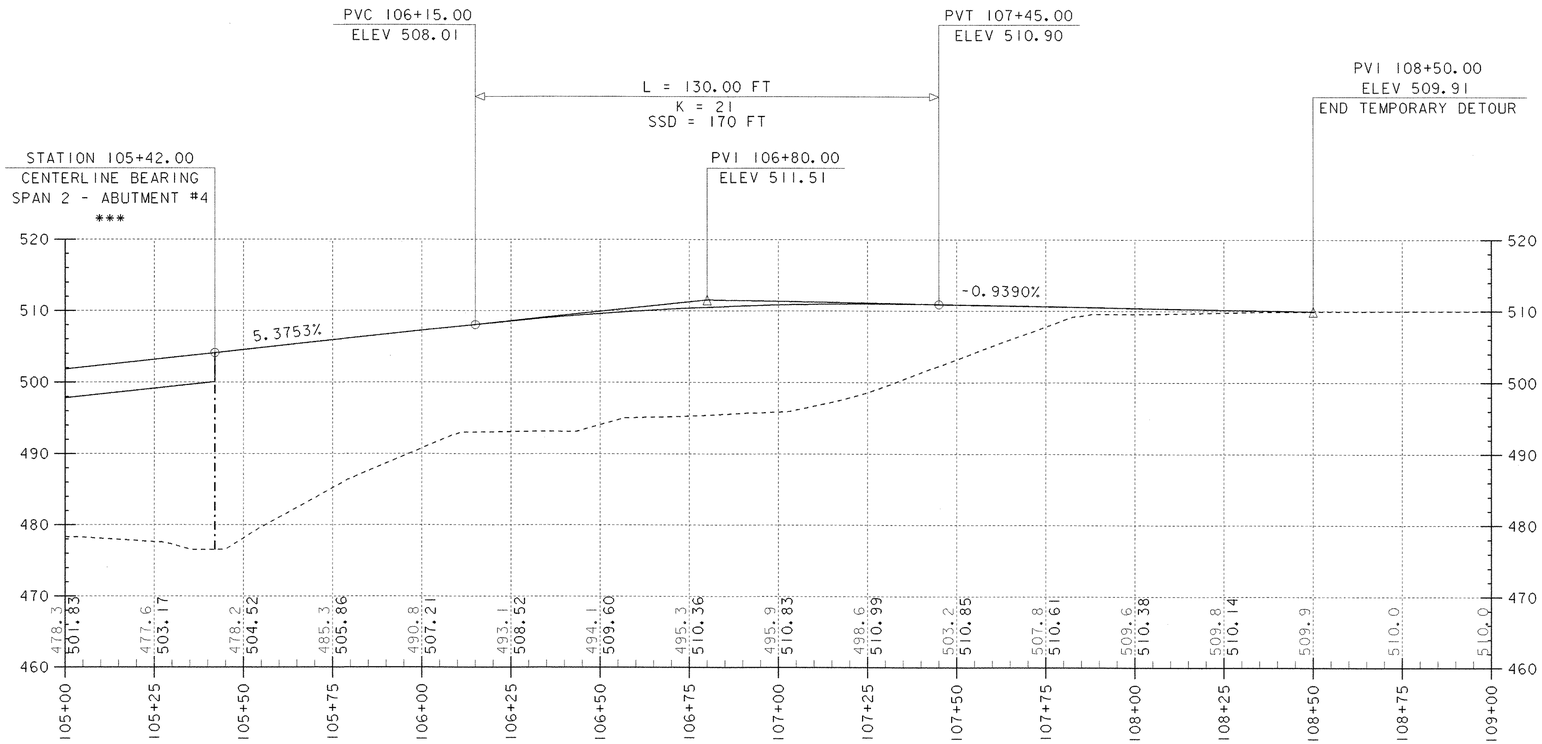

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE OLD GROUND ALONG THE CENTERLINE. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED FINISHED GRADE ALONG THE CENTERLINE.

**TEMP. DETOUR PROFILE - SHEET 1 OF 2**

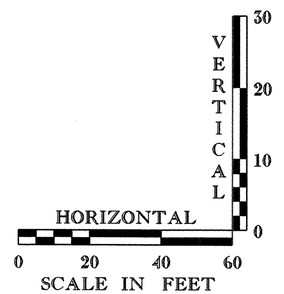
| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |

| | | | |
|---|---|---|---|
| FILE NAME: | str7/99a272/sa272xs.dgn | PLOT DATE: | 26-FEB-2003 |
| PROJECT LEADER: | S. FARNSWORTH | DRAWN BY: | K. UPMAL |
| DESIGNED BY: | K. UPMAL | CHECKED BY: | |
| sa272pr1.1 | | SHEET 11 | OF 85 |

***NOTE: REFER TO FRAMING PLANS FOR ALL OTHER CENTERLINE OF BEARING LOCATIONS FOR MEDIAN SPAN 3 AND APPROACH SPANS




## TEMPORARY DETOUR PROFILE

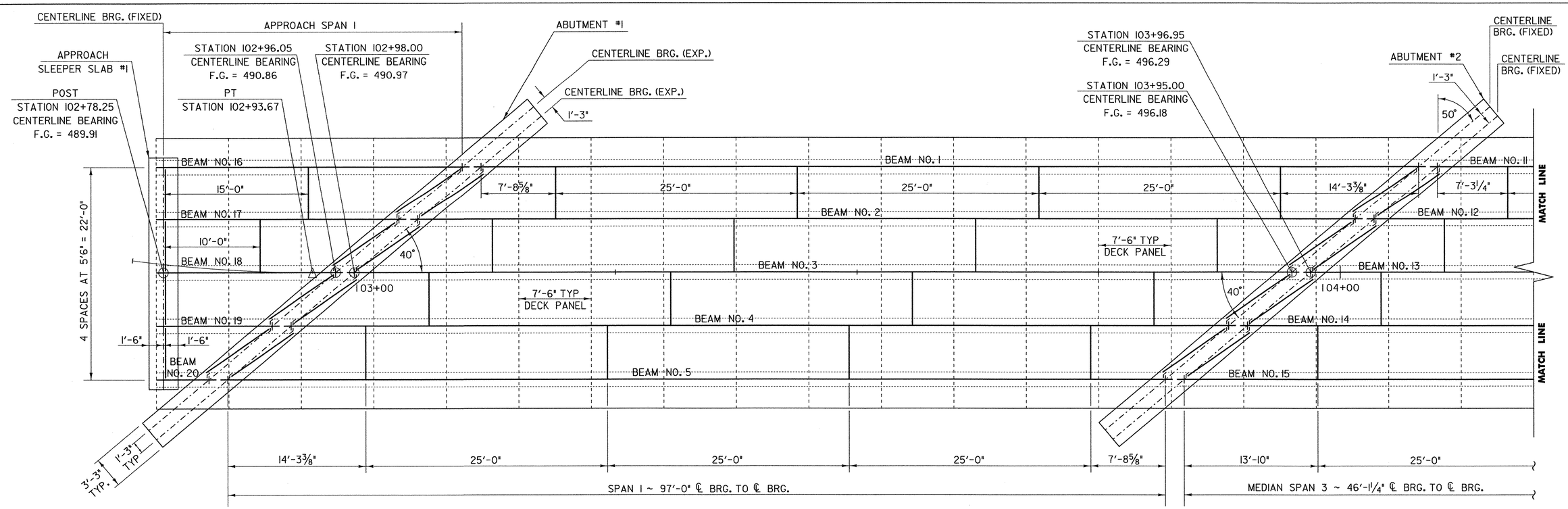



**TEMP. DETOUR PROFILE – SHEET 2 OF 2**

*THE GRADES SHOWN TO THE NEAREST TENTH ARE THE OLD GROUND ALONG THE CENTERLINE. THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE PROPOSED FINISHED GRADE ALONG THE CENTERLINE.*

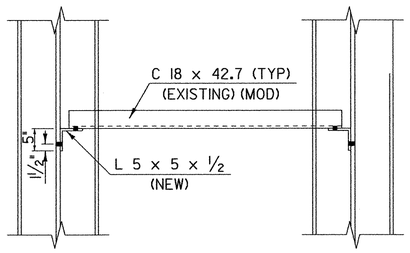
| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |

| | | | |
|---|---|---|---|
| FILE NAME: | str7/99a272/sa272xs.dgn | PLOT DATE: | 24-DEC-2002 |
| PROJECT LEADER: | S. FARNSWORTH | DRAWN BY: | K. UPMAL |
| DESIGNED BY: | K. UPMAL | CHECKED BY: | |
| sa272pr2.1 | | SHEET IIA | OF 85 |



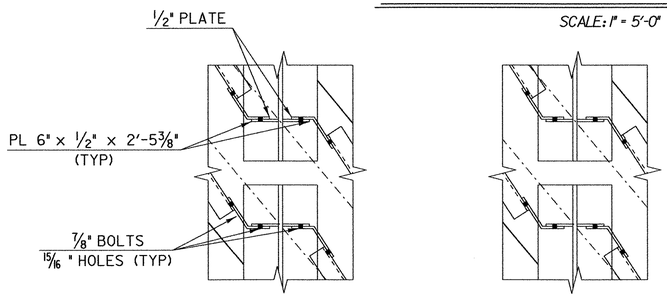

## TEMPORARY DETOUR FRAMING PLAN

SCALE: 1" = 5'-0"



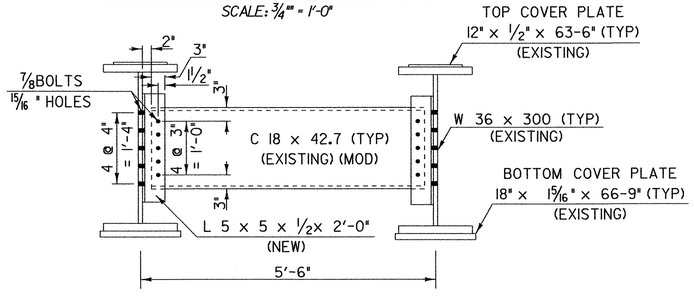

## INTERIOR DIAPRAGM PLAN

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



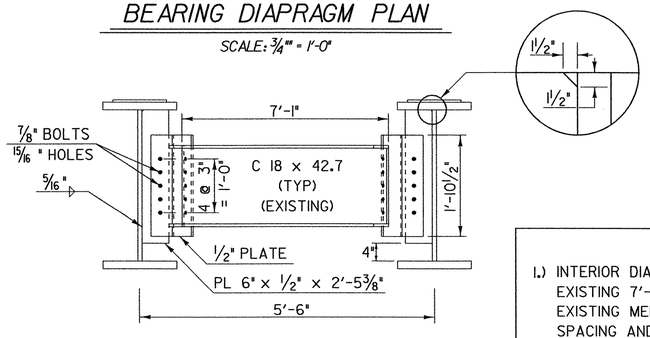

## BEARING DIAPRAGM PLAN

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




## INTERIOR DIAPHRAGM PROFILE

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




## BEARING DIAPHRAGM PROFILE

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

| BEAM NO. | LOCATION | STATION | LENGTH (℄ BRG. - ℄ BRG.) | TOTAL LENGTH |
|---|---|---|---|---|
| 1 | SPAN 1 | 103+11.10 - 104+08.10 LT | 97.00 (97'-0") | 98.50 (98'-6") |
| 2 | SPAN 1 | 103+04.55 - 104+01.55 LT | 97.00 (97'-0") | 98.50 (98'-6") |
| 3 | SPAN 1 | 102+98.00 - 103+95.00 C/L | 97.00 (97'-0") | 98.50 (98'-6") |
| 4 | SPAN 1 | 102+91.45 - 103+88.45 RT | 97.00 (97'-0") | 98.50 (98'-6") |
| 5 | SPAN 1 | 102+84.90 - 103+81.90 RT | 97.00 (97'-0") | 98.50 (98'-6") |
| 11 | SPAN 3 | 104+10.05 - 104+56.15 LT | 46.10 (46'-1 1/4") | 47.60 (47'-7 1/4") |
| 12 | SPAN 3 | 104+03.50 - 104+49.50 LT | 46.10 (46'-1 1/4") | 47.60 (47'-7 1/4") |
| 13 | SPAN 3 | 103+96.95 - 104+43.05 C/L | 46.10 (46'-1 1/4") | 47.60 (47'-7 1/4") |
| 14 | SPAN 3 | 103+90.40 - 104+36.50 RT | 46.10 (46'-1 1/4") | 47.60 (47'-7 1/4") |
| 15 | SPAN 3 | 103+83.85 - 104+29.95 RT | 46.10 (46'-1 1/4") | 47.60 (47'-7 1/4") |
| 16 | SPAN 4 | *102+78.25 - 103+09.15 LT | 30.90 (30'-10 3/4") | 32.40 (32'-4 3/4") |
| 17 | SPAN 4 | *102+78.25 - 103+02.60 LT | 24.35 (24'-4 1/4") | 25.85 (25'-10 1/4") |
| 18 | SPAN 4 | *102+78.25 - 102+96.05 C/L | 17.80 (17'-9 5/8") | 19.30 (19'-3 5/8") |
| 19 | SPAN 4 | *102+78.25 - 102+89.50 RT | 11.25 (11'-3") | 12.75 (12'-9") |
| 20 | SPAN 4 | *102+78.25 - 102+82.95 RT | 4.70 (4'-8 1/2") | 6.20 (6'-2 3/8") |

*NOTE: STATIONS MEASURED BACK ALONG TANGENT

NOTES

1.) INTERIOR DIAPHRGMS ARE TO BE MODIFIED FROM EXISTING 7'-I" CHANNEL SECTIONS BY CUTTING EXISTING MEMBERS TO ACCOMODATE NEW 5'-6" BEAM SPACING AND DRILLING NEW BOLT HOLES ON CUT END

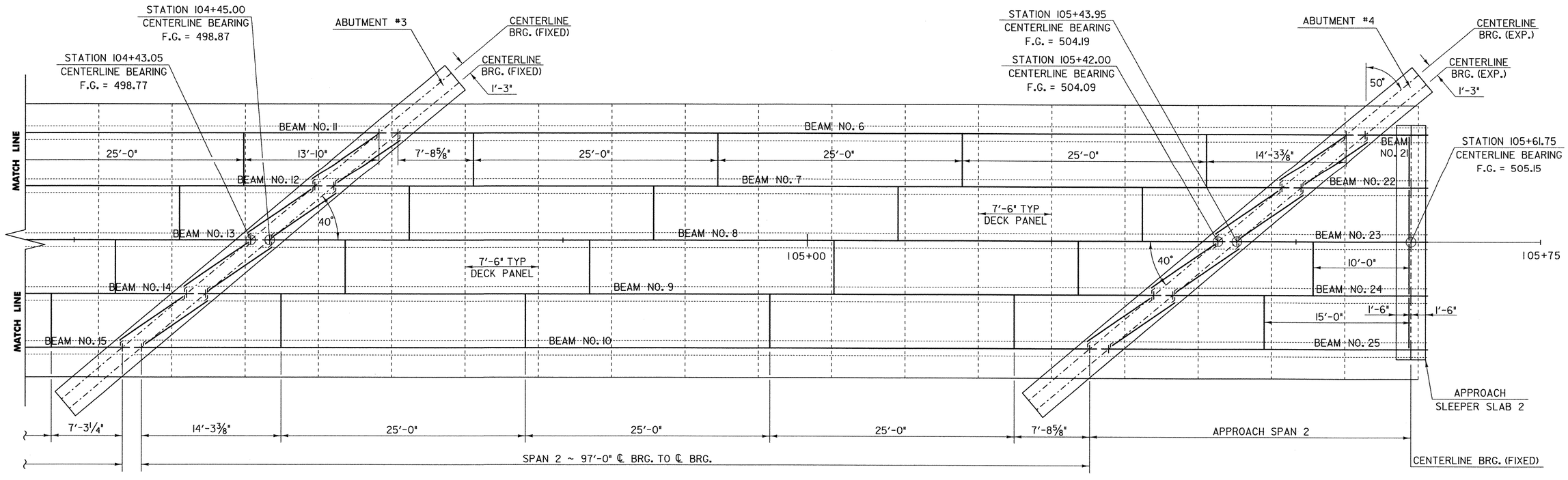
2.) ALL BOLTS SHALL BE "HIGH STRENGTH BOLTS CONFORMING WITH AASHTO MI64-TYPE 3 BOLTS

**TEMP. BRIDGE FRAMING PLAN – SHEET 1 OF 2**

PROJECT NAME: HARTLAND
PROJECT NUMBER: IM 091-1(36)

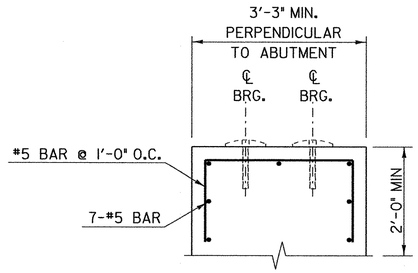
FILE NAME: /99a272/str/sa272fra.dgn
PROJECT LEADER: S. FARNSWORTH
DESIGNED BY: FOWLER/UPMAL
sa272fr1.1

PLOT DATE: 03-FEB-2003
DRAWN BY: K. UPMAL
CHECKED BY: M. FOWLER
SHEET IIB OF 85



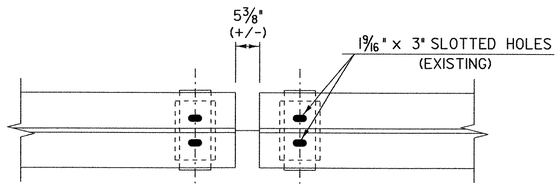

## TEMPORARY DETOUR FRAMING PLAN

SCALE: 1" = 5'-0"



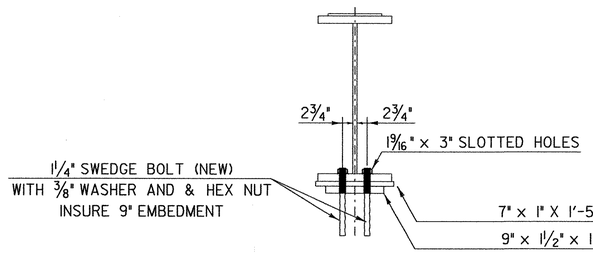

## TYPICAL ABUTMENT / PIER CAP

SCALE: ¾" = 1'-0"



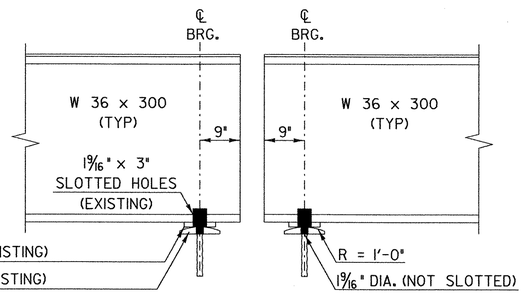

## TYPICAL BEARING PLAN

SCALE: ¾" = 1'-0"




## TYPICAL BEARING SECTION

SCALE: ¾" = 1'-0"




## TYPICAL BEARING PROFILE

SCALE: ¾" = 1'-0"

| BEAM NO. | LOCATION | STATION | LENGTH (℄ BRG. - ℄ BRG.) | TOTAL LENGTH |
|---|---|---|---|---|
| 6 | SPAN 2 | 104+58.10 - 105+55.10 LT | 97.00 (97'-0") | 98.50 (98'-6") |
| 7 | SPAN 2 | 104+51.55 - 105+48.55 LT | 97.00 (97'-0") | 98.50 (98'-6") |
| 8 | SPAN 2 | 104+45.00 - 105+42.00 C/L | 97.00 (97'-0") | 98.50 (98'-6") |
| 9 | SPAN 2 | 104+38.45 - 105+35.45 RT | 97.00 (97'-0") | 98.50 (98'-6") |
| 10 | SPAN 2 | 104+31.90 - 105+28.90 RT | 97.00 (97'-0") | 98.50 (98'-6") |
| 11 | SPAN 3 | 104+10.05 - 104+56.15 LT | 46.10 (46'-1¼") | 47.60 (47'-7¼") |
| 12 | SPAN 3 | 104+03.50 - 104+49.50 LT | 46.10 (46'-1¼") | 47.60 (47'-7¼") |
| 13 | SPAN 3 | 103+96.95 - 104+43.05 C/L | 46.10 (46'-1¼") | 47.60 (47'-7¼") |
| 14 | SPAN 3 | 103+90.40 - 104+36.50 RT | 46.10 (46'-1¼") | 47.60 (47'-7¼") |
| 15 | SPAN 3 | 103+83.85 - 104+29.95 RT | 46.10 (46'-1¼") | 47.60 (47'-7¼") |
| 21 | SPAN 5 | 105+57.05 - 105+61.75 LT | 4.70 (4'-8½") | **7.20 (7'-2⅜") |
| 22 | SPAN 5 | 105+50.50 - 105+61.75 LT | 11.25 (11'-3") | **13.75 (13'-9") |
| 23 | SPAN 5 | 105+43.95 - 105+61.75 C/L | 17.80 (17'-9⅝") | **20.30 (20'-3⅝") |
| 24 | SPAN 5 | 105+37.40 - 105+61.75 RT | 24.35 (24'-4¼") | **26.85 (26'-10¼") |
| 25 | SPAN 5 | 105+30.85 - 105+61.75 RT | 30.90 (30'-10¾") | **33.40 (33'-4¾") |

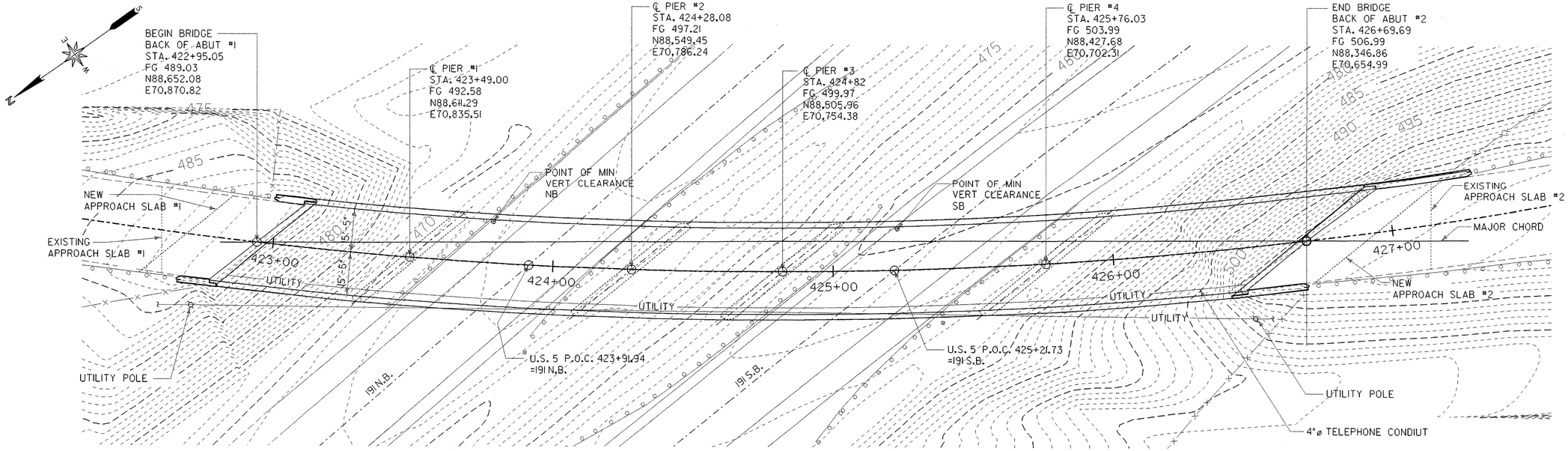
**NOTE: TOTAL BEAM LENGTH INCLUDES ADDITIONAL FOOT (12") TO PROVIDE FOR PANEL SPACING

**TEMP. BRIDGE FRAMING PLAN – SHEET 2 OF 2**

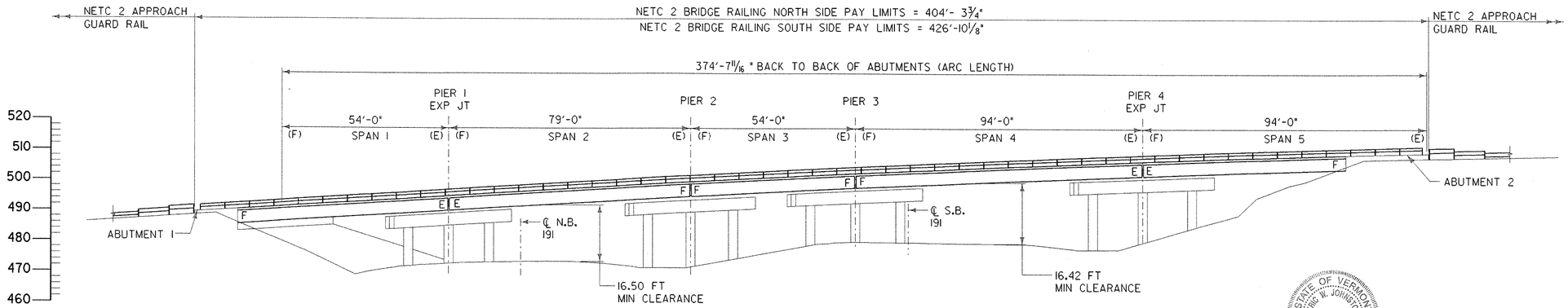
PROJECT NAME: HARTLAND
PROJECT NUMBER: IM 091-1(36)

FILE NAME: /99A272/STR/SA272FRA.DGN
PROJECT LEADER: S. FARNSWORTH
DESIGNED BY: FOWLER/UPMAL
sa272fr2.1

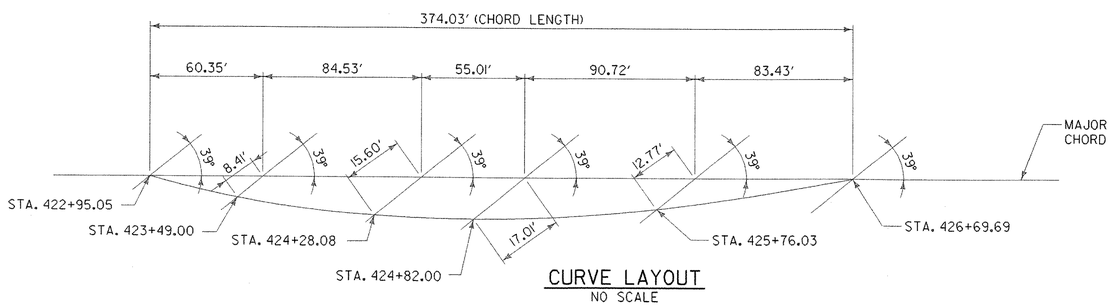
PLOT DATE: 03-FEB-2003
DRAWN BY: K. UPMAL
CHECKED BY: M. FOWLER
SHEET IIC OF 85




PLAN
SCALE: 1"=20'




ELEVATION
SCALE: 1"=20'




CURVE LAYOUT
NO SCALE

## NOTES:

1. STATIONING IS NOT IN ACCORDANCE WITH STANDARD VTRANS PROCEDURE BUT HAS BEEN SELECTED TO MAINTAIN CONSISTENCY WITH THE ORIGINAL BRIDGE PLANS.
2. REFER TO THE LAYOUT SHEET (SHEET 6) FOR NEW HORIZONTAL ALIGNMENT DATA.
3. REFER TO THE PROFILE SHEET (SHEET 7) FOR NEW VERTICAL PROFILE DATA.
4. THE VERTICAL DATUM USED IS THE 1998 NAVD DATUM. THE ORIGINAL BRIDGE VERTICAL DATUM WAS THE NGVD 1929 DATUM.
5. STATIONS ARE BASED ON SURVEY DATA. PIER 3 ORIGINAL BRIDGE STATION WAS HELD.
6. EXPANSION/FIXED BEARING LOCATIONS NOTED (E) AND (F) ARE FOR THE EXISTING CONDITION ONLY. "E" AND "F" AT THE BEAM ENDS DENOTE THE FINAL BEARING TYPE.
7. DECK EXPANSION JOINTS OCCUR ONLY AT PIERS 1& 4. THE DECK WILL BE CONTINUOUS OVER PIERS 2 & 3. DECK CLOSURE POURS OVER PIERS 2 & 3 SHALL BE PLACED AFTER THE DECK HAS BEEN PLACED IN SPANS 2, 3, AND 4. FOR CLOSURE DETAILS REFER TO SHEETS 15 - 17

SCALE 1" = 20'-0
20 0 20

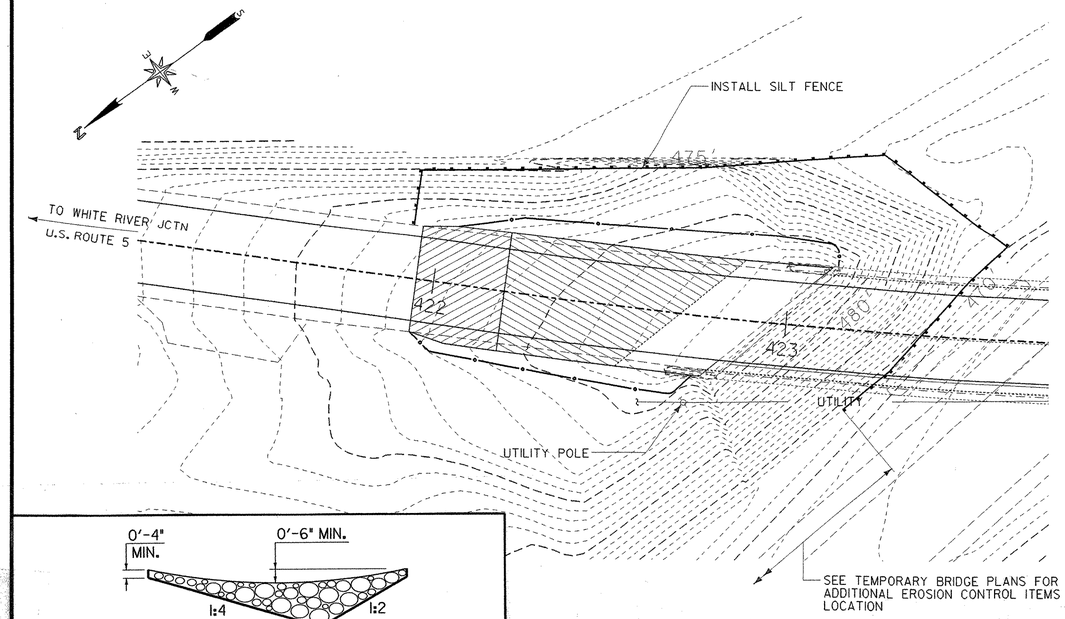
STATE OF VERMONT
ERIC W. JOHNSTON
NO. 7862
STRUCTURAL
LICENSED
PROFESSIONAL ENGINEER

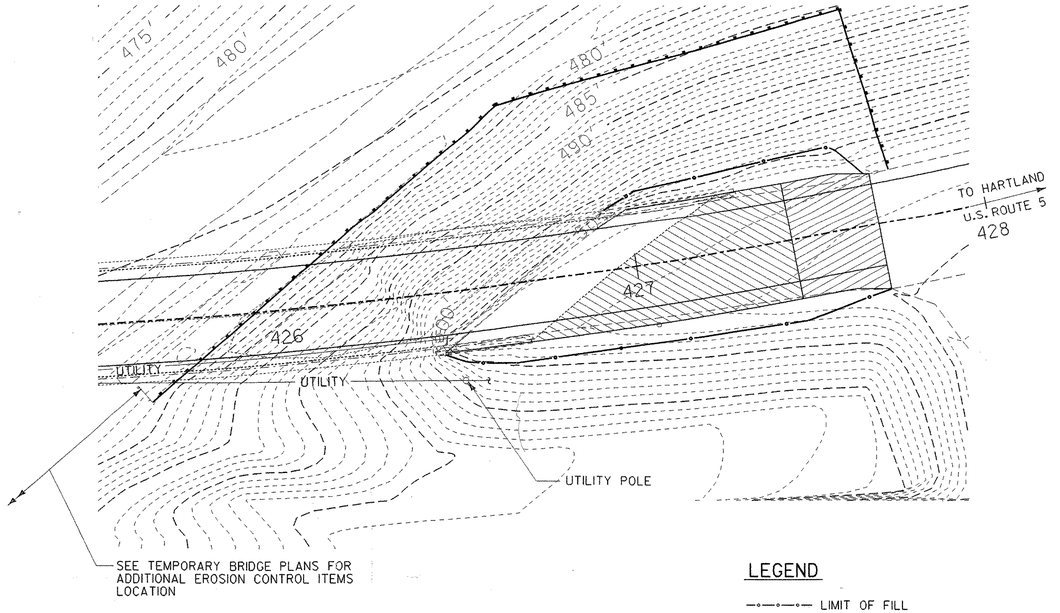
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| GENERAL PLAN AND ELEVATION | |
| Designed By E. JOHNSTON | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272gpe.dgn | |
| Bridge Sheet No. | Sheet 12 of 85 |

STONE & WEBSTER, INC.

04-FEB-2003
v:\Struc\working\za272gpe.dgn




## SEDIMENT AND EROSION CONTROL PLAN

SCALE: 1" = 20'-0"

## LEGEND

—o—o— LIMIT OF FILL

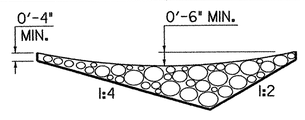
——— GEOTEXTILE FILTER FABRIC (SILT FENCE)

## CONSTRUCTION NOTES:

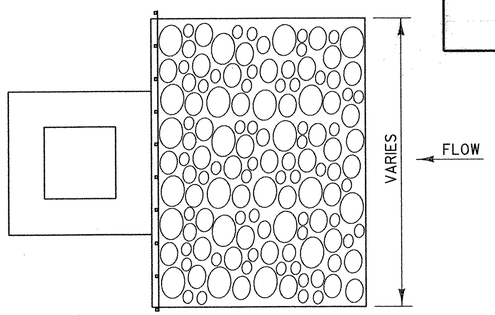
1. REFER TO STANDARD DRAWING T-1 FOR SILT FENCE DETAILS.
2. PRIOR TO EARTHWORK ACTIVITIES, INSTALL GEOTEXTILE FILTER FABRIC AT LOCATIONS SHOWN. THE FABRIC SHALL BE ON THE UPHILL SIDE OF ALL WOOD POSTS. THE FABRIC SHALL BE ANCHORED IN A 6" TRENCH.
3. FILTER FABRIC SHALL NOT BE PLACED ACROSS ANY STREAM OR SWALE.
4. CONTRACTOR SHALL CLEAN ALL SILT/DEBRIS FROM FENCE ON A MONTHLY BASIS.
5. CONTRACTOR SHALL REMOVE FILTER FABRIC AFTER ALL SEEDING/MULCHING IS COMPLETED, OR AT THE DIRECTION OF THE ENGINEER.

SCALE 1" - 20'-0

20 0 20



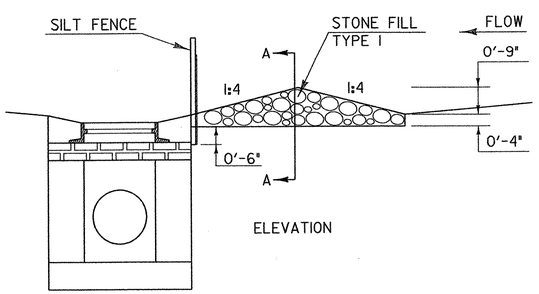

SECTION A - A



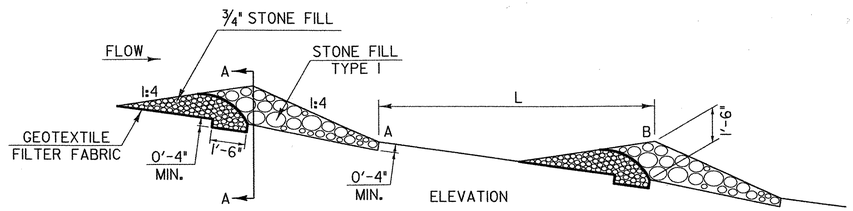

PLAN

## DROP INLET ROCK CHECK DAM

NOT TO SCALE




ELEVATION




ELEVATION

## DITCHLINE ROCK CHECK DAMS

NOT TO SCALE

NOTES:

* L = THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION.
* SEDIMENT SHOULD BE REMOVED IF DEPTH REACHES HALF THE ORIGINAL HEIGHT OF ROCK CHECK DAM.
* ROCK CHECK DAMS SHOULD BE REMOVED AFTER PERMANENT VEGETATION HAS ESTABLISHED.
* GEOTEXTILE SHOULD BE USED UNDERNEATH STONE TO IMPROVE STABILITY AND ASSIST IN REMOVAL.
* LARGER STONE MAY BE REQUIRED FOR ROCK CHECK DAMS THAT ARE LOCATED ON STEEPER SLOPES. THIS STONE SHOULD BE PLACED ON THE DOWN STREAM HALF OF THE ROCK CHECK DAM FOR SUPPORT.
* ALL WORK NEEDED FOR CONSTRUCTION AND REMOVAL OF THE ROCK CHECK DAMS WILL BE PAID FOR UNDER THE FOLLOWING ITEMS.
* THE SILT FENCE SHALL BE PAID FOR UNDER ITEM 649.51 "GEOTEXTILE FOR SILT FENCE".
* THE 3/4" STONE AND STONE FILL, TYPE I, WILL BE PAID FOR UNDER ITEM 613.10 "STONE FILL, TYPE I (MOD) (ROCK CHECK DAMS)".
* THE GEOTEXTILE FILTER FABRIC UNDER THE STONE FILL SHALL BE PAID FOR UNDER ITEM 649.31 "GEOTEXTILE UNDER STONE FILL".
* SEED AND HAY MULCH SHALL BE PAID FOR UNDER THEIR INDIVIDUAL ITEMS 651.15 AND 651.25.

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |

SEDIMENT AND EROSION CONTROL PLAN

| | |
|---|---|
| Designed By J. BARRACK | Drawn By N. HERRERA |
| Checked By J. BARRACK Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272ecs.dgn | |
| Bridge Sheet No. | Sheet 13 of 85 |

STONE & WEBSTER, INC.

04-FEB-2003

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## GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, AND ITS LATEST REVISIONS, AND THE LATEST AASHTO SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, DATED 1996, AND ITS LATEST REVISIONS.

2. A FIELD SURVEY WAS CONDUCTED BY VAOT, IN WHICH THE FACES OF THE ABUTMENTS AND PIER SURFACES WERE LOCATED. LOCATION OF THE GIRDERS, CURB AND FASCIA OF THE SUPERSTRUCTURE WERE ALSO ESTABLISHED ALONG WITH GROUND FEATURES WITHIN THE PROJECT AREA. THIS INFORMATION WAS THEN USED IN COMBINATION WITH THE ORIGINAL BRIDGE DESIGN PLANS TO DEVELOP THE EXISTING STRUCTURE INFORMATION DEPICTED IN THESE PLANS. THE ORIGINAL BRIDGE DESIGN PLANS ARE INCLUDED IN THIS SET. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING ANY AND ALL DIMENSIONS APPLICABLE TO THIS PROJECT.

3. ALL DIMENSIONS SHOWN ARE EITHER HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES F.

4. ALL EXPOSED EDGES OF ANY NEW CONCRETE SHALL BE CHAMFERED 1" × 1" UNLESS OTHERWISE NOTED. WHENEVER NEW CONCRETE IS PLACED AGAINST EXISTING CONCRETE, THE EXISTING SURFACE SHALL BE CLEANED AS CALLED FOR IN SECTION 501.13.

5. JOINTS AND SCORE MARKS SHALL BE MONOLITHIC AND CONTINUES FOR THE FULL LENGTH OF THE JOINT. ANY UPWARD KEY SHALL BE INTEGRAL WITH THE CONCRETE BELOW JOINT.

6. REINFORCEMENT PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:

   SPACING: +/- 1"
   CLEARANCE: +/- 1/4"

7. ALL NEW REINFORCING STEEL SHALL CONFORM TO AASHTO M31 (ASTM A615) GRADE 60 AND SHALL BE EPOXY COATED UNLESS OTHERWISE STATED AND PAID FOR UNDER ITEM 507.17. IF AND WHEN ANY EPOXY COATED REINFORCING STEEL HAS TO BE CUT IN THE FIELD, THE UNCOATED ENDS SHALL BE REPAIRED WITH MATERIALS AND PROCEDURES APPROVED BY THE COATING MANUFACTURER. FLAME CUTTING OF EPOXY COATED REBAR WILL NOT BE PERMITTED.

8. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE, BOTH NEW AND EXISTING (INCLUDING ABUTMENTS, WINGWALLS AND PIERS), EXCEPT THE BOTTOM OF THE DECK BETWEEN THE DRIP BEADS.

9. DECK CONCRETE SHALL BE "CONCRETE, HIGH PERFORMANCE CLASS A" APPROACH SLABS, ABUTMENT AND PIER CONCRETE SHALL BE "CONCRETE, HIGH PERFORMANCE CLASS B," UNLESS OTHERWISE NOTED.

10. ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE" SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING CONCRETE DECK, ABUTMENT CURTAIN WALLS, GRANITE CURBS, BEARING DEVICES AND GIRDER SHEAR CONNECTORS.

11. THE ITEM 529.25, "REMOVAL OF CONCRETE OR MASONRY," SHALL INCLUDE THE PARTIAL REMOVAL OF THE EXISTING WINGWALLS AS DETAILED IN THE PLANS AND THE EXISTING PIER CAPS TO THE ELEVATIONS INDICATED IN THE PLANS.

12. PAYMENT FOR REMOVAL OF THE EXISTING BITUMINOUS CONCRETE PAVEMENT ON THE BRIDGE SHALL BE MADE UNDER THE ITEM 529.10, "REMOVAL OF BRIDGE PAVEMENT." THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY AT AN OFFSITE LOCATION.

13. NOT USED

14. NOT USED

15. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION PROJECT SIGNING AND BARRICADES, AND WILL BE PAID FOR UNDER THE ITEM 641.10 "MINTENANCE OF TRAFFIC CONTROL".

16. NOT USED

17. NOT USED

18. PAVE THE BRIDGE AND APPROACH SLABS WITH 1 1/4" BITUMINOUS CONCRETE, TYPE IV BINDER COURSE, AND 1/2" BITUMINOUS CONCRETE TYPE III.

19. NOT USED

20. FOLLOWING REMOVAL OF THE DECK AND BEFORE DECK FORMS ARE SET, OR SHEAR STUDS INSTALLED, THE ENGINEER SHALL PROFILE ALONG THE TOP OF THE EXISTING BEAMS TO OBTAIN ELEVATIONS FOR USE IN DETERMINING THE FINISH GRADE AND FOR DETERMINING SHEAR STUD LENGTHS.

21. THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THERE ARE NO BOLT HOLES IN THE EXISTING FASCIA BEAMS THAT COULD BE USED TO SUPPORT FALSE WORK.

22. ALL EXISTING STRUCTURAL STEEL SHALL BE 100% CLEANED AND PAINTED PER SUPPLEMENTAL SPECIFICATION SECTION 513, AND GREASED PER SECTION 513.06(C). PAINT COLOR SHALL BE GREEN AND SHALL CONFORM WITH FEDERAL STANDARD NO. 595, COLOR CHIP NO. 14062. THE PAINTING AND SURFACE PERPARATION OF THE EXISTING STEEL SHALL BE PAID FOR AS ITEMS 513.30 "STRUCTURAL PAINTING, FIELD APPLIED", 513.36 "CONTAINMENT AND ENVIROMENTAL PROTECTION, FIELD", AND 513.41 "SURFACE PREPARATION, FIELD".

23. PAINTING OF THE SUPERSTRUCTURE STRUCTURAL STEEL SHALL BE PERFORMED AFTER THE COMPLETION OF THE COMPLETE DECK REPLACEMENT AND IN THE SECOND CONSTRUCTION SEASON.

24. SURFACE OF BRIDGE SEATS AT PIERS UNDER BEARING DEVICES SHALL BE LEVEL. OTHER PORTIONS OF THE PIER SEAT AREAS SHALL BE SLOPED 1/2" PER FOOT AWAY FROM THE CENTER LINE OF THE PIERS. THE ENTIRE PIER BRIDGE SEAT SURFACES SHALL BE SMOOTH WITH EITHER A WOOD OR MAGNESIUM FLOAT FINISH.

25. THE CONTRACTOR SHALL PROTECT TRAFFIC UNDER THE BRIDGE IN SPANS 2 AND 4 BY USING ONE LANE CLOUSURES PER E-103 AND ERECTING PROTECTION BETWEEN STEEL STRINGERS. THE COST OF THIS WORK SHALL BE PAID FOR AS ITEM 527.11 "TRAFFIC PROTECTION FOR BRIDGE PROJECTS".

26. WHERE SHEAR CONNECTORS EXIST IN COMPRESSION ZONES OF EXISTING GIRDERS, CONTRACTOR SHALL CUT THE SHEAR CONNECTOR OFF AT THE TOP OF THE WELD WITHOUT DAMAGING THE TOP FLANGE.

27. THE EXISTING BRIDGE RAILING AND ALL OF THE COMPONENTS INCLUDING THE SNOW FENCE SHALL REMAIN THE PROPERTY OF THE STATE. WHEN REMOVED BY THE CONTRACTOR, THESE ITEMS SHALL BE STOCKED PILED AND DELIVERED TO THE WINDSOR GARAGE LOCATED OFF US 5 APPROXIMATELY TWO MILES SOUTH OF EXIT 9 INTERCHANGE WITH I-91. THE CONTRACTOR SHALL COORDINATE THE DELIVERY WITH THE RESIDENT AND DISTRICT ENGINEER. COST SHALL BE INCLUDED UNDER ITEM 525.10 REMOVAL OF EXISTING RAILING.

28. EPOXY BONDING COMPOND USED BETWEEN EXISTING CONCRETE AND NEW CONCRETE SHALL BE INCLUDED IN THE UNIT COST OF THE NEW CONCRETE ITEM.

## CONSTRUCTION SCOPE:

THE SCOPE OF CONSTRUCTION INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

- PROJECT SIGNING AND MOBILIZATION
- TRAFFIC CONTROL FOR INTERSTATE 91 AND US 5
- INSPECTION, LOADING, TRANSPORTATION AND CONSTRUCTION OF TWO-WAY TEMPORARY BRIDGE USING VTRANS BEAMS. SEE PROJECT SPECIAL PROVISIONS FOR THE LOCATION OF BEAMS.
- COMPLETE REMOVAL OF EXISTING CONCRETE DECK AND APPERTENANCES
- SUPPORTING THE EXISTING STEEL AND REMOVAL OF EXISTING BEARINGS
- REPAIRING DETERIORATED SUBSTRUCTURE CONCRETE
- REMOVE EXISTING SHEAR CONNECTORS
- INSTALLING SHEAR CONNECTORS ON EXISTING GIRDERS
- REPLACING ALL EXISTING BEARINGS
- CONSTRUCTING NEW CONCRETE DECK
- CONSTRUCTING NEW EXPANSION JOINTS
- CONSTRUCTING NEW BRIDGE RAILING
- CONSTRUCTING NEW APPROACH SLABS
- INSTALLING SHEET MEMBRANE TORCH APPLIED WATERPROOFING SYSTEM ON NEW CONCRETE DECK
- PAVING BRIDGE DECK AND APPROACHES
- APPLYING WATER REPELLANT TO EXPOSED CONCRETE SURFACES
- INSTALLING GUARDRAIL APPROACHES
- TIEING INTO EXISTING GUARDRAIL
- REMOVAL, TRANSPORTING AND STOCKPILING THE TEMPORARY BRIDGE
- IN SECOND CONSTRUCTION SEASON COMPLETE CLEANING AND PAINTING OF SUPERSTRUCTURE STEEL
- CLEAN UP OF CONSTRUCTION SITE AND COMPLETION OF PROJECT

04-FEB-2003

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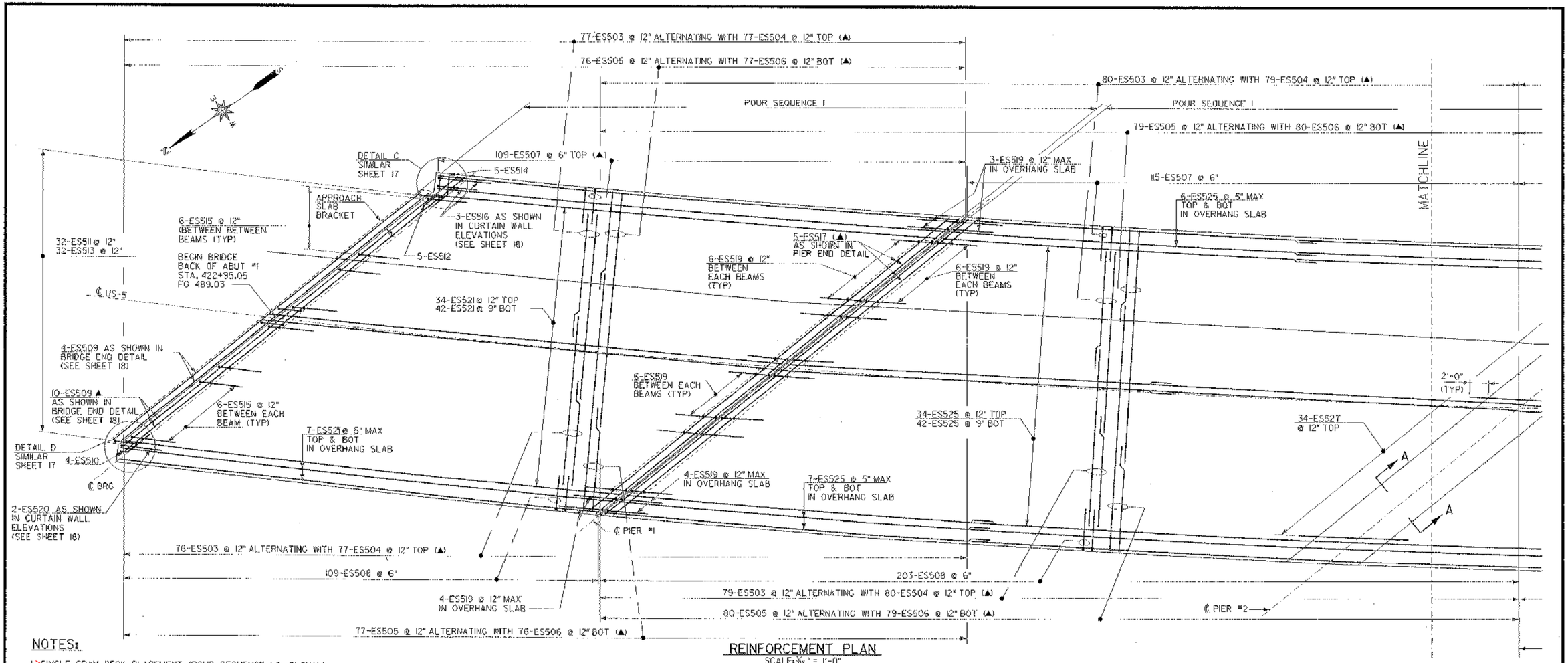
STONE & WEBSTER, INC.

**STATE OF VERMONT**
**AGENCY OF TRANSPORTATION**

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| GENERAL NOTES & CONSTRUCTION SCOPE | |
| Designed By E. JOHNSTON | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272gcn.dgn | |
| Bridge Sheet No. | Sheet 14 of 85 |




## NOTES:

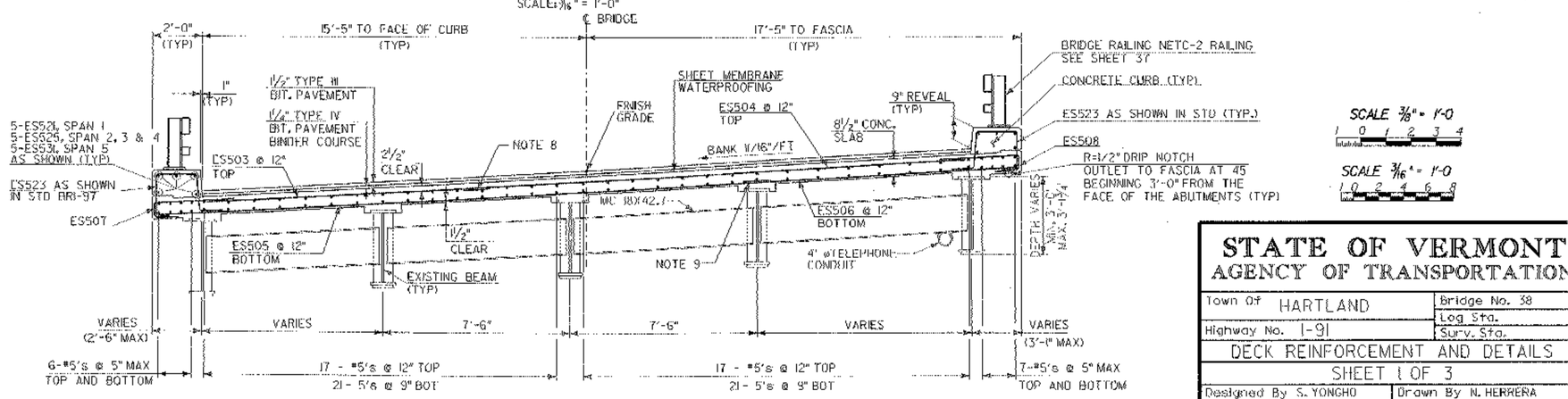
1. SINGLE SPAN DECK PLACEMENT (POUR SEQUENCE 1 & 3) SHALL BE MADE IN A SINGLE POUR STARTING FROM THE LOW END AND PROCEEDING TO THE HIGH END.
2. EACH POUR SEQUENCE 1 MAY BE PLACED IN ANY ORDER OR ALL AT ONE TIME. POUR SEQUENCE 2 SHALL BE PLACED A MINIMUM OF 48 HOURS AFTER POUR SEQUENCE 1 HAS BEEN PLACED. A POUR SEQUENCE 2 MAY BE PLACED AT THE SAME TIME AS A POUR SEQUENCE 1 WHEN THE POUR SEQUENCE 2 IS ON THE HIGH END OF THE TOTAL PLACEMENT AND A MINIMUM OF 48 HOURS HAS PASSED SINCE THE ADJACENT POUR SEQUENCE 1 WAS PLACED.
3. EACH POUR SEQUENCE 3 MAY BE PLACED IN ANY ORDER OR ALL AT ONE TIME. POUR SEQUENCE 4 SHALL BE PLACED A MINIMUM OF 48 HOURS AFTER POUR SEQUENCE 3 HAS BEEN PLACED. A POUR SEQUENCE 4 MAY BE PLACED AT THE SAME TIME AS A POUR SEQUENCE 3 WHEN THE POUR SEQUENCE 4 IS ON THE HIGH END OF THE TOTAL PLACEMENT AND A MINIMUM OF 48 HOURS HAS PASSED SINCE THE ADJACENT POUR SEQUENCE 3 WAS PLACED.
4. APPLY TAR EMULSION AS A BOND BREAKER TO THE TOP SURFACE OF THE GIRDER TOP FLANGE BENEATH THE LINK SLAB.
5. NF = NEAR FACE
   FF = FAR FACE
   EF = EACH FACE
   ▲ = CUT TO FIT IN FIELD
6. REINFORCEMENT SHALL BE PLACED WITH 3" CLEAR UNLESS OTHERWISE NOTED.
7. LAP SPLICE FOR #5 BAR SHALL BE 2'-2" MINIMUM UNLESS OTHERWISE NOTED.
8. ALTERNATE SPLICE LOCATIONS OF ES503 AND ES504 SO THAT THE SPLICE LOCATION OCCURS AT MID SPAN BETWEEN GIRDERS 2 AND 3 AND 3 AND 4 IN AN ALTERNATING PATTERN.
9. ALTERNATE SPLICE LOCATION OF ES505 AND ES506 SO THAT THE SPLICE LOCATION OCCUR AT GIRDER 2 AND 4 IN AN ALTERNATING PATTERN.

## REINFORCEMENT PLAN

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

## TYPICAL SECTION

SCALE 3/8" = 1'-0"




SCALE 3/8" = 1'-0
1 0 1 2 3 4

SCALE 3/16" = 1'-0
1 0 2 4 6 8

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. |
| | Surv. Sta. |

DECK REINFORCEMENT AND DETAILS

SHEET 1 OF 3

| | |
|---|---|
| Designed By S. YONGHO | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT No. IM 091-1(36) |
| Drawing Name za272dr1.dgn | |
| Bridge Sheet No. | Sheet 15 of 85 |

STONE & WEBSTER, INC.

31-DEC-2002

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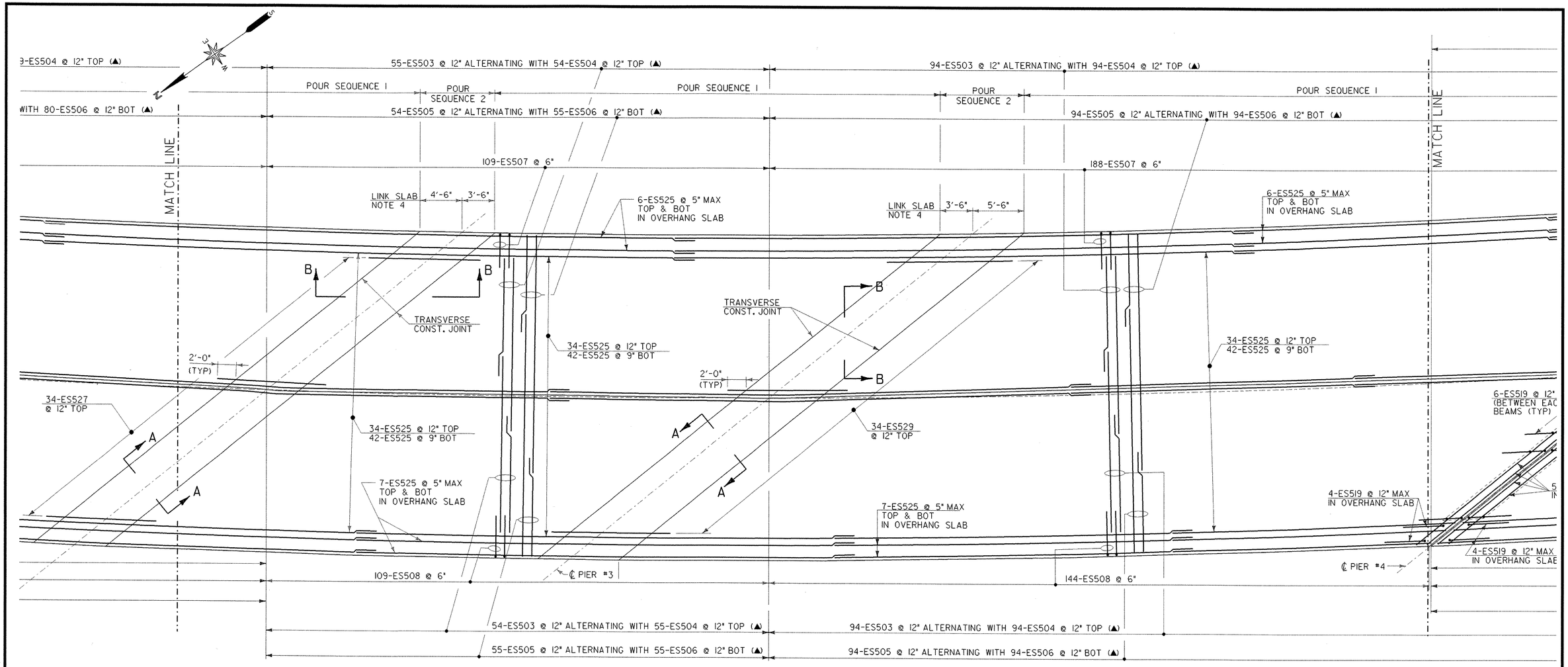



## REINFORCEMENT PLAN

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

SCALE 1" = 1'-0"

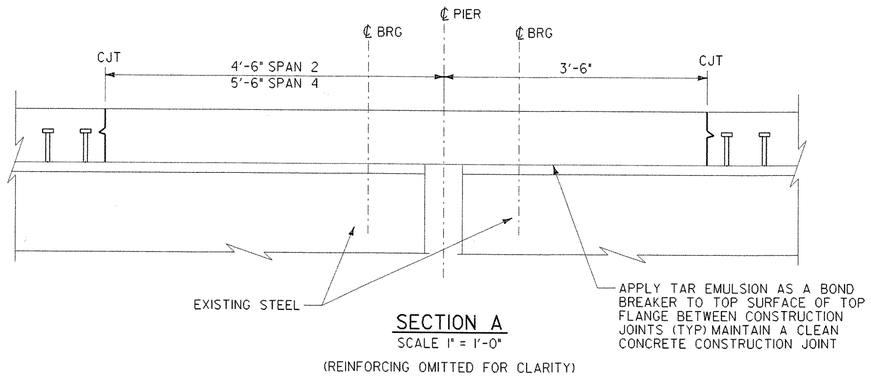
1 9 6 3 0 1 2

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

1 9 6 3 0 1

SCALE 3/16" = 1'-0"

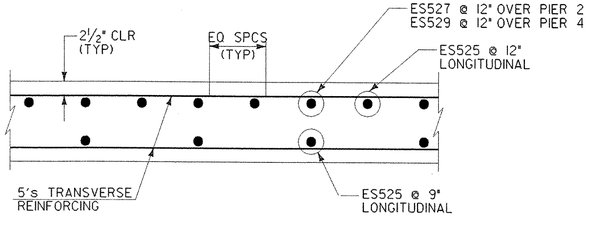
1 0 2 4 6 8




## SECTION A

SCALE 1" = 1'-0"

(REINFORCING OMITTED FOR CLARITY)




## SECTION B

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

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. |
| | Surv. Sta. |

DECK REINFORCEMENT & DETAILS

SHEET 2 OF 3

| | |
|---|---|
| Designed By S. YONCHO | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272dr2.dgn | |
| Bridge Sheet No. | Sheet 16 of 85 |

STONE & WEBSTER, INC.

04-FEB-2003

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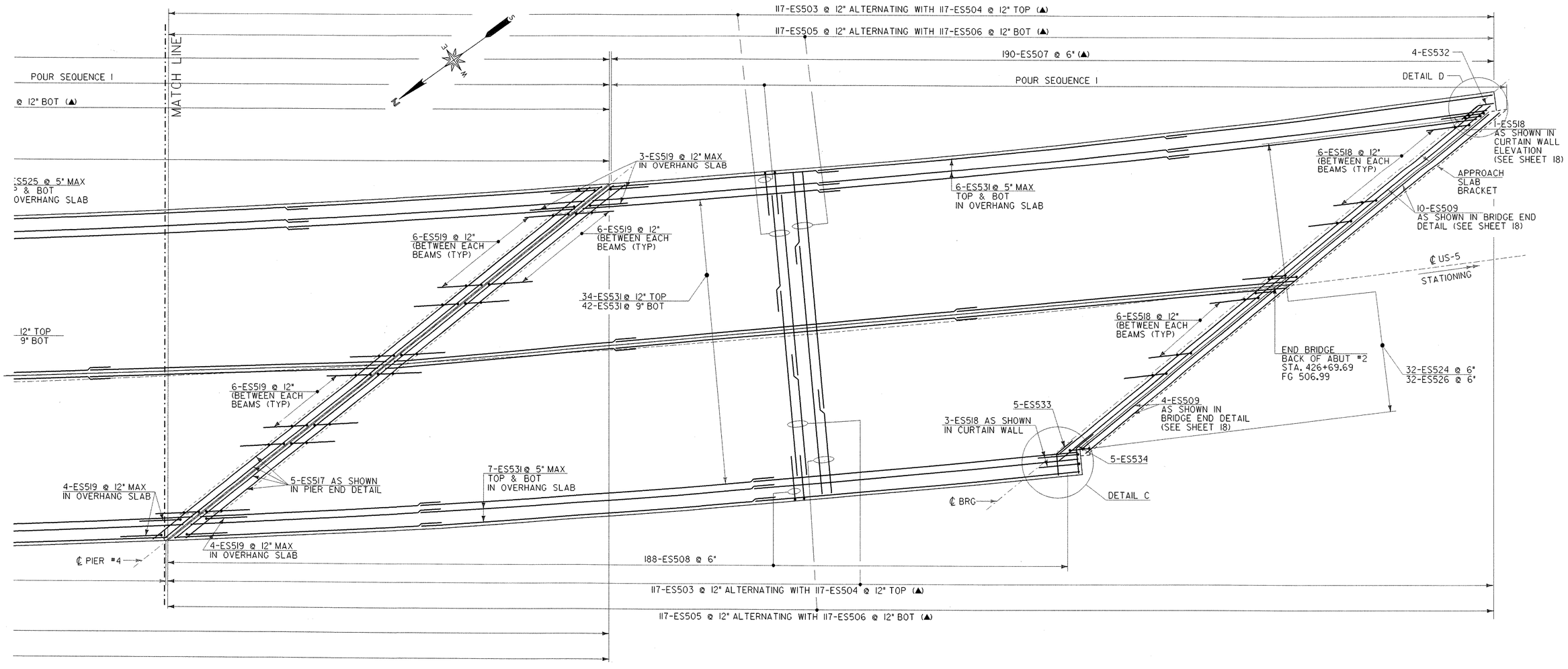
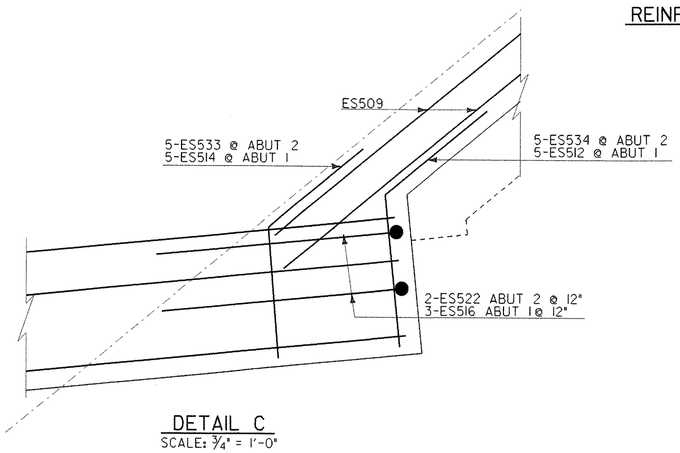


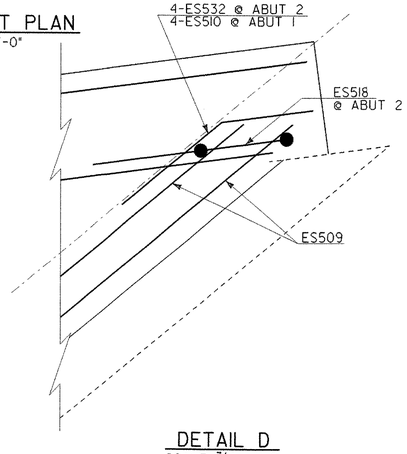

## REINFORCEMENT PLAN

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




### DETAIL C

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




### DETAIL D

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

SCALE 3/4" = 1'-0
0 1 2

SCALE 3/16" = 1'-0
0 2 4 6 8

STONE & WEBSTER, INC.

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| DECK REINFORCEMENT & DETAILS | |
| SHEET 3 OF 3 | |
| Designed By S. YONGHO | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272dr3.dgn | |
| Bridge Sheet No. | Sheet 17 of 85 |

04-FEB-2003

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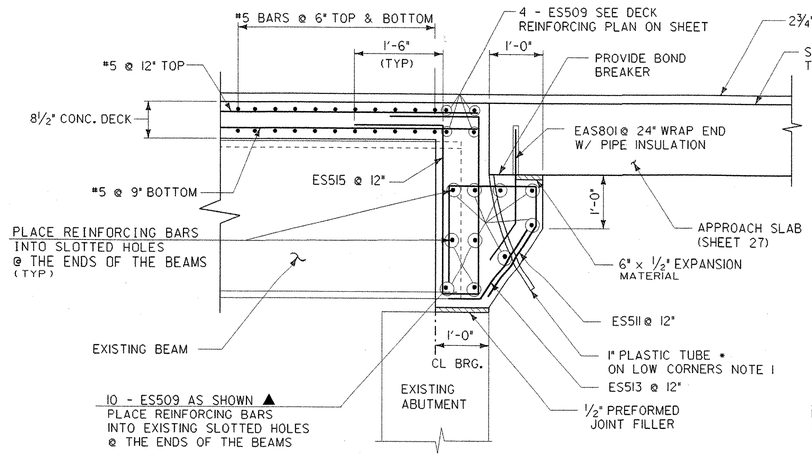
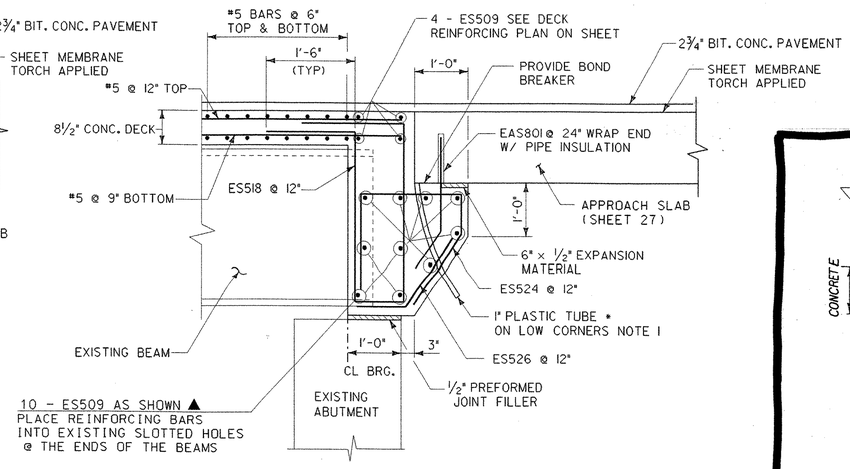
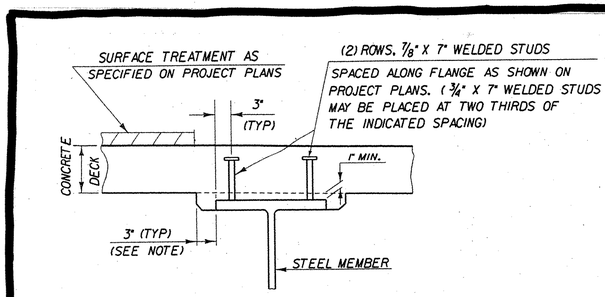



EXISTING ABUTMENT NO. 1
BRIDGE END DETAIL
NORMAL TO ℄ BRG
SCALE: ¾" = 1'-0"




EXISTING ABUTMENT NO. 2
BRIDGE END DETAIL
NORMAL TO ℄ BRG
SCALE: ¾" = 1'-0"

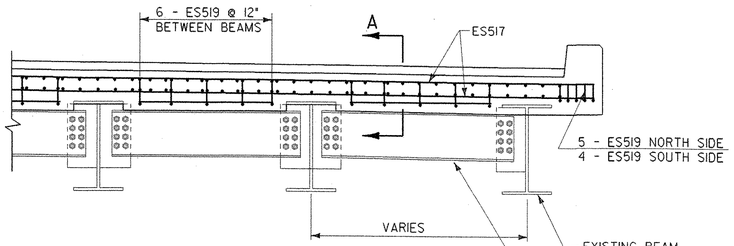



## HAUNCH AND SHEAR CONNECTOR DETAILS

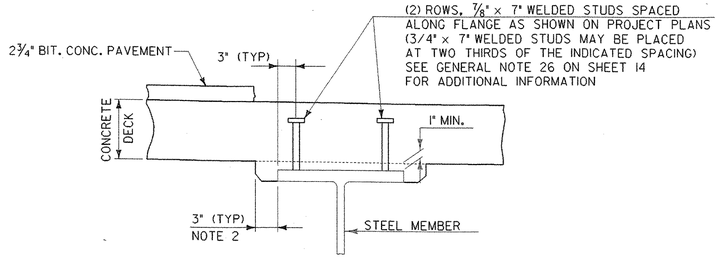
NOTE: THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES. SYSTEMS SHALL BE SUBMITTED FOR APPROVAL TO THE STRUCTURES ENGINEER. ALL VOIDS SHALL BE FILLED WITH MORTAR, TYPE IV OR AN EQUIVALENT PRODUCT FROM THE APPROVED PRODUCTS LIST.

OPTIONAL HAUNCH AND SHEAR CONNECTOR DETAILS

VTRANS -- 2/5/03



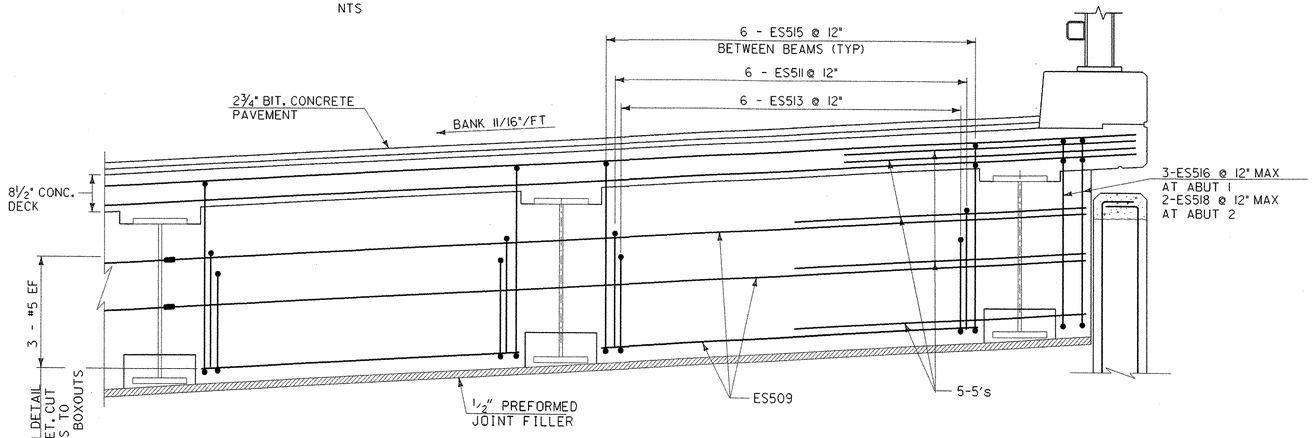

ELEVATION VIEW
REINFORCING @ PIER 1 & 4
NTS



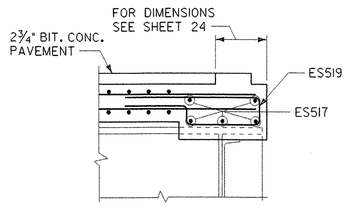

HAUNCH AND SHEAR
CONNECTOR DETAILS
NTS

## NOTE:

1. SEE SPEC. 740.01. TO BE PAID AS PART OF THE ITEM "CONCRETE, CLASS A".
2. THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES IF APPOVED BY THE STRUCTURES ENGINEER.




CURTAIN WALL ELEVATION
NTS




SECTION A-A
SCALE: ¾" = 1'-0"

SCALE ¾" = 1'-0"
1 0 1 2

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| BRIDGE END AND MISCELLANEOUS DETAILS (SHEET 1 OF 2) | |
| Designed By S. YONGHO | Drawn By R. J. FERRANTE |
| Checked By S. YONGHO Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272bed.dgn | |
| Bridge Sheet No. | Sheet 18 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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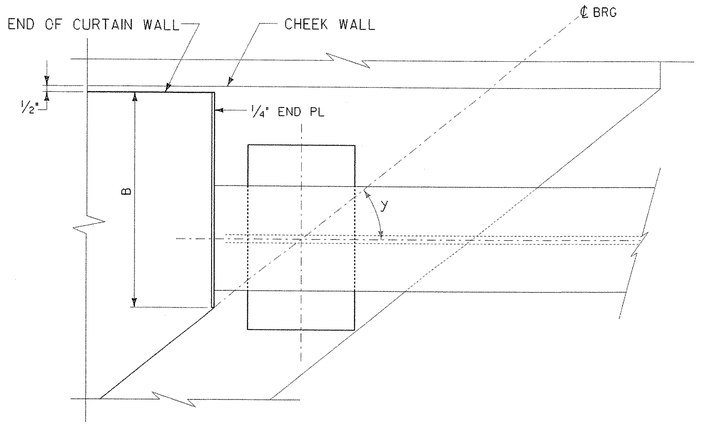
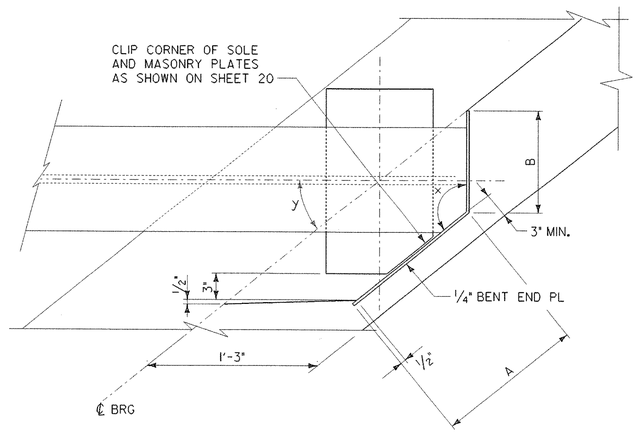
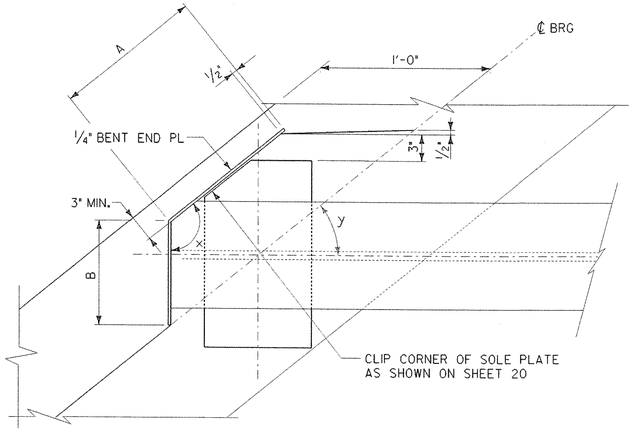



PLAN - BI
SCALE: 1 1/2" = 1'-0

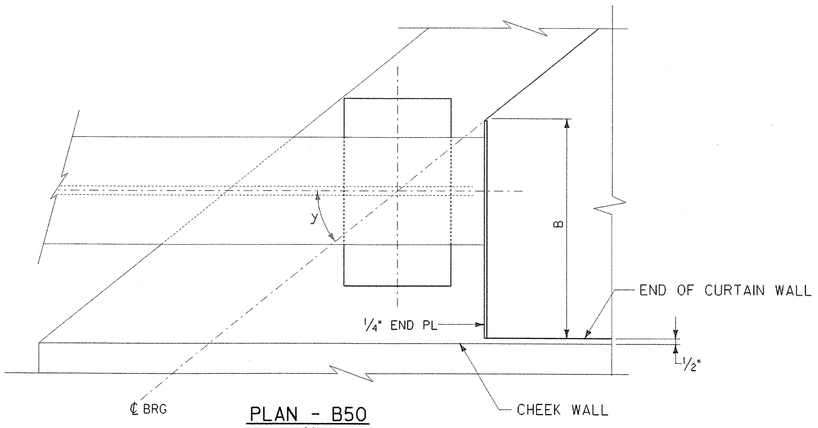



PLAN - B46, B47, B48 & B49
SCALE: 1 1/2" = 1'-0

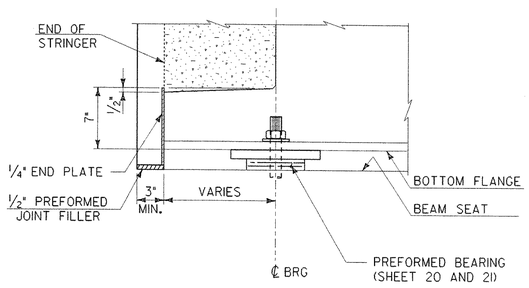
NOTES:
1. SOLE PLATE WILL REQUIRE ONE CORNER TO BE CLIPPED TO CLEAR CURTAIN WALL. FOR DETAILS AND DIMENSIONS OF THE CLIP, SEE SOLE PLATE PLAN - FIXED, BEARING DETAILS SHEET 20.




PLAN - B2, B3, B4 & B5
SCALE: 1 1/2" = 1'-0




PLAN - B50
SCALE: 1 1/2" = 1'-0




STRINGER BOXOUT DETAILS
SCALE: 1 1/2" = 1'-0

| END PLATE SCHEDULE | | | | |
|---|---|---|---|---|
| BEAM | A | B | x | y |
| BI | - | 2'-0 3/8" | - | - |
| B2, B3 & B4 | 1'-2 7/8" | 1'-0 5/8" | 134°-37'-04.45" | 44°-37'-04.45" |
| B5 | 1'-2 13/16" | 1'-0 3/4" | 135°-08'-37.22" | 45°-08'-37.22" | |
| B46 | 1'-2 1/2" | 1'-2 3/8" | 123°-17'-23.52" | 33°-17'-23.52" |
| B47, B48 & B49 | 1'-2 1/4" | 1'-2 5/8" | 124°-05'-00.02" | 34°-05'-00.02" |
| B50 | - | 1'-10 3/16" | - | - |

SCALE 1 1/2" = 1'-0
1 9 6 3 0 1

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. / Surv. Sta. |
| BRIDGE END AND MISCELLANEOUS DETAILS (SHEET 2 OF 2) | |
| Designed By S. YONGHO | Drawn By R. J. FERRANTE |
| Checked By S. YONGHO Date FEB. 2001 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272be2.dgn | |
| Bridge Sheet No. | Sheet 18A of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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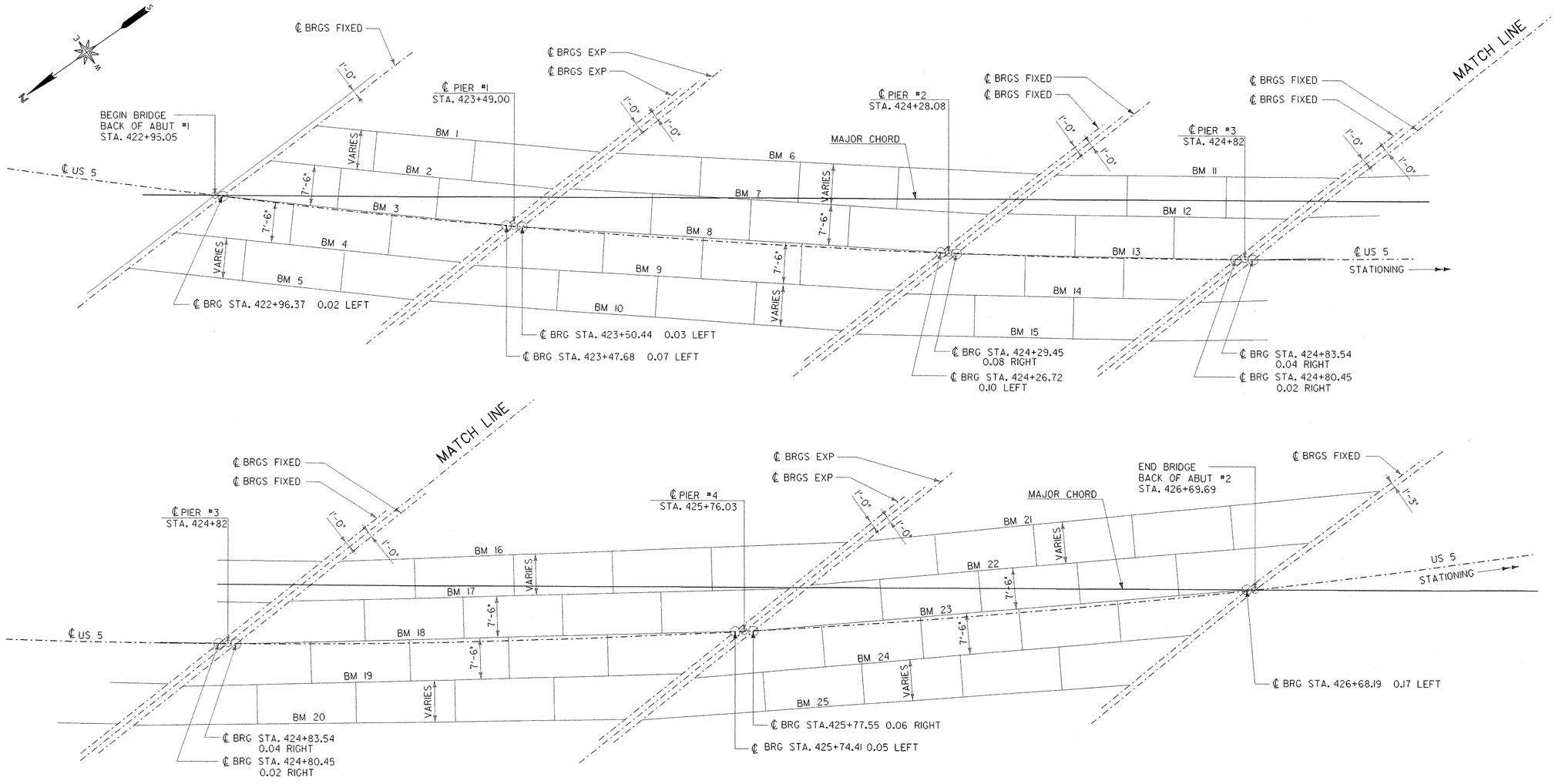
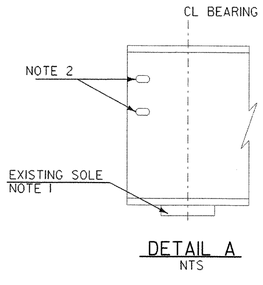



## FRAMING PLAN
SCALE: 1" = 10'-0"

SCALE 1" = 10'-0
10 0 10




## DETAIL A
NTS

### NOTES:

1. EXISTING SOLE PLATES WILL NEED TO BE REMOVED. A REMOVAL PROCEDURE WILL BE REQUIRED TO BE SUBMITTED PRIOR TO ANY OF THIS WORK BEING DONE. THERE WILL BE NO CUTTING INTO THE BASE METAL OF THE FLANGE ALLOWED DURING THE REMOVAL OF EXISTING SOLE PLATES FROM THE BOTTOM FLANGE. THIS WORK WILL BE INCLUDED AS PART OF THE ITEM 531.10 "BEARING DEVICE ASSEMBLY."

2. EXISTING SLOTTED HOLES. IF SLOTTED HOLE IS NOT PRESENT DRILL IN FIELD $1\frac{1}{16} \times 2\frac{1}{2}$ TO ACCEPT REINFORCEMENT SHOWN IN CURTAIN WALL ELEVATION ON SHEET 18

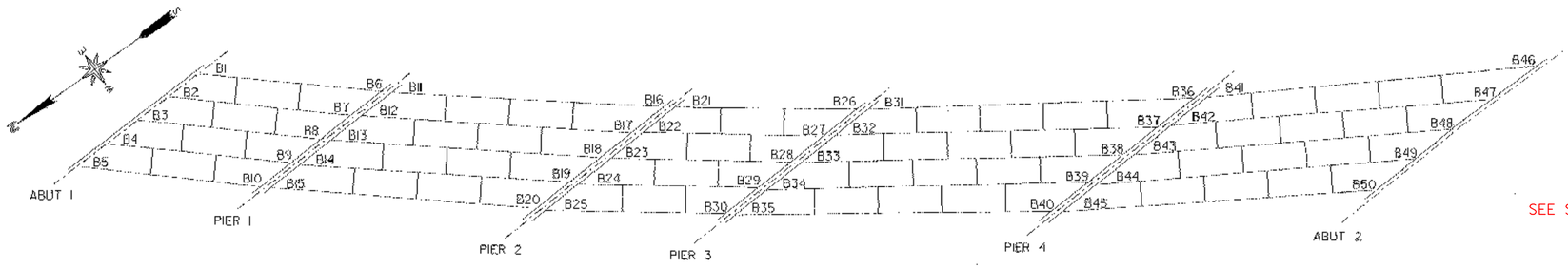
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. / Surv. Sta. |
| BRIDGE FRAMING PLAN | |
| Designed By E. JONHSTON | Drawn By N. HERRERA |
| Checked By E. JONHSTON Date DEC. 2000 | Bridge Design Supervisor E. JONHSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272frp.dgn | |
| Bridge Sheet No. | Sheet 19 of 85 |

STONE & WEBSTER, INC.

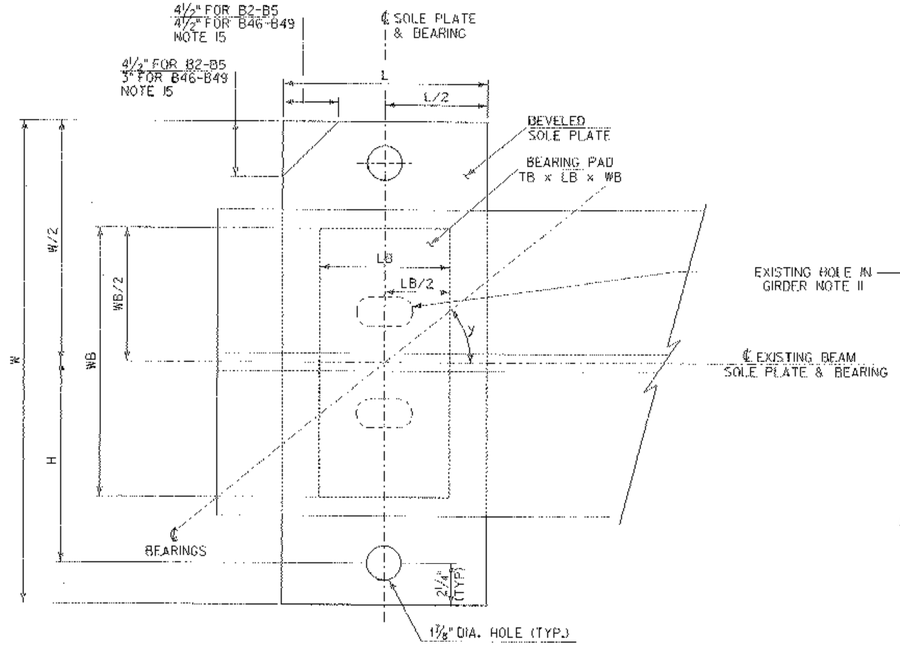
10-DEC-2002

v:\Struc\working\za272frp.dgn




## BEARING LOCATION PLAN

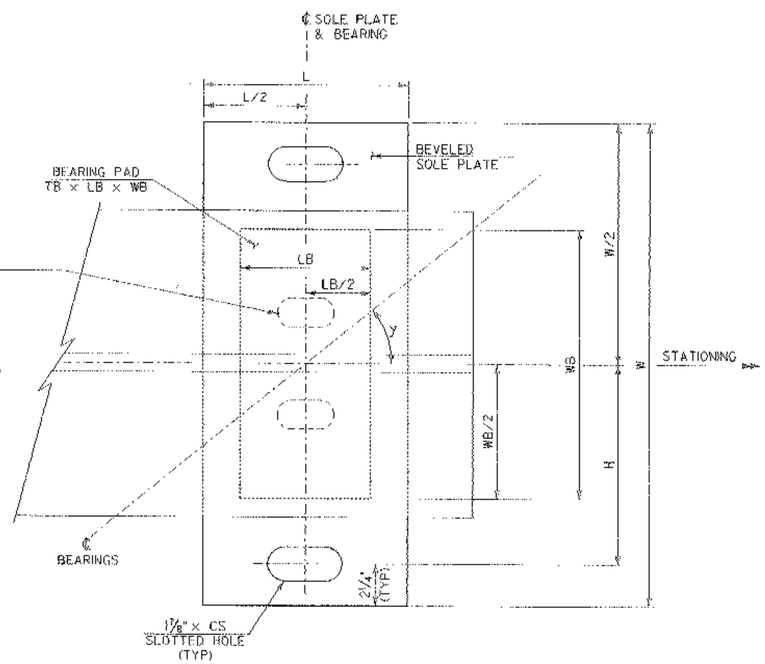
NTS




## SOLE PLATE PLAN - FIXED

SCALE 3" = 1'-0"

B16-B20, B26-B30, B46-B50 - OPPOSITE HAND




## SOLE PLATE PLAN - EXPANSION

SCALE 3" = 1'-0"

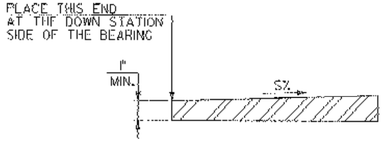
B1-B15, B41-B45 - OPPOSITE HAND

### BEARING & SOLE PLATE SCHEDULE (UNITS=INCHES)

| PAD | WB | LB | TB | W | L | H | CS | TYPE |
|---|---|---|---|---|---|---|---|---|
| B1-B5, B21-B30 | 12 | 9 | 1¾ | 21¾ | 12 | 8⅝ | - | FIXED |
| B6-B10 | 12 | 9 | 1¾ | 21¾ | 12½ | 8⅝ | 2¾ | EXPANSION |
| B11-B15 | 13 | 9 | 1¾ | 22¾ | 13 | 9⅛ | 3⅛ | EXPANSION |
| B16-B20 | 13 | 9 | 1¾ | 22¾ | 12 | 9⅛ | - | FIXED |
| B31-B35, B46-B50 | 17 | 8 | 1½ | 26¾ | 11 | 11⅛ | - | FIXED |
| B36-B40 | 17 | 8 | 1½ | 26⅜ | 12 | 11⅛ | 3⅜ | EXPANSION |
| B41-B45 | 17 | 8 | 1½ | 26⅜ | 11¾ | 11⅛ | 3¾ | EXPANSION |

### BEAM/BEARING LINE ANGLE

| BEARING PAD | y |
|---|---|
| B1, B6 | 44°-04'-42.42" |
| B2-B4, B7-B9 | 44°-37'-04.45" |
| B5, B10 | 45°-08'-37.22" |
| B11, B16 | 41°-42'-12.73" |
| B12-B14, B17-B19 | 42°-17'-24.45" |
| B15, B20 | 42°-51'-41.13" |
| B21, B26 | 39°-19'-35.50" |
| B22-B24, B27-B29 | 39°-57'-48.28" |
| B25, B30 | 40°-34'-50.06" |
| B31, B36 | 36°-40'-23.81" |
| B32-B34, B37-B39 | 37°-22'-26.99" |
| B35, B40 | 38°-03'-01.12" |
| B41, B46 | 33°-17'-23.52" |
| B42-B44, B47-B49 | 34°-05'-00.02" |
| B45, B50 | 34°-50'-48.26" |




## BEVELED SOLE PLATE DETAIL

NTS

| BEARING | SHIM THK "C" | BEARING | SHIM THK "C" | BEARING | SHIM THK "C" |
|---|---|---|---|---|---|
| B1 | 0.36 in | B17 | 2.28 in | B37 | 0.48 in |
| B2 | 0.36 in | B18 | 2.40 in | B38 | 0.72 in |
| B3 | 0.36 in | B19 | 2.16 in | B39 | 0.36 in |
| B4 to B5 | - | B20 | 2.52 in | B40 to B45 | - |
| B7 | 0.48 in | B21 | 0.24 in | B46 | 2.04 in |
| B8 | 0.48 in | B22 | 0.36 in | B47 | 0.60 in |
| B9 | 0.48 in | B23 | 0.36 in | B48 | 0.72 in |
| B10 | 0.60 in | B24 | 0.48 in | B49 | 0.36 in |
| B11 to B15 | - | B25 | 0.48 in | B50 | - |
| B16 | 2.28 in | B26 to B36 | - | | |

### SOLE PLATE SLOPE

| PAD | S |
|---|---|
| B1-B5 | 6.79% |
| B6-B10 | 6.30% |
| B11-B15 | 6.35% |
| B16-B20 | 5.80% |
| B21-B25 | 5.27% |
| B26-B30 | 4.76% |
| B31-B35 | 4.44% |
| B36-B40 | 3.94% |
| B41-B45 | 3.36% |
| B46-B50 | 2.85% |

## BEARING NOTES:

1. BEARINGS SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTION 531 AND 731.
2. BEARINGS SHALL BE PAID FOR UNDER THE ITEM 531.10 "BEARING DEVICE ASSEMBLY."
3. SHOP DRAWINGS CONFORMING TO SUBSECTION 531.03 SHALL BE SUBMITTED TO INCLUDE WELDING AND BONDING PROCEDURES.
4. THE CONCRETE SURFACE UNDER THE BEARING DEVICE SHALL BE LEVEL.
5. AT EXPANSION BEARINGS THE "A" DISTANCE IS THE FINAL SETTING FOR THE BEARING PAD AFTER THE CONCRETE SLAB, CURB, PAVEMENT AND BRIDGE RAIL ARE PLACED. "B" DISTANCE IS LISTED FOR SETTING THE BEARING BEFORE THE CONCRETE DECK AND CURBS HAVE BEEN PLACED. THE DIFFERENCE IS THE THEORETICAL ELONGATION OF THE BOTTOM FLANGE DUE TO DEAD LOAD DEFLECTION. THE FINAL "A" DISTANCE, AS SHOWN IN THE TABLE MUST BE ATTAINED WITHIN 1/16 OF AN INCH.
6. ALL STEEL IN BEARING DEVICES (EXCEPT STAINLESS) SHALL BE AASHTO M-270, GRADE 36.
7. ANCHOR BOLTS SHALL HAVE A MINIMUM OF 15" EMBEDMENT INTO THE EXISTING CONCRETE AND SHALL CONFORM TO SUBSECTION 714.08 IN THE "VERMONT SPECIFICATION." THE ANCHOR BOLTS SHALL BE DRILLED AND GROUTED INTO THE ABUTMENT AND PIER BRIDGE SEATS. THE DRILLING AND GROUNTING OF THE ANCHOR BOLTS WILL BE INCLUDED AS PART OF THE ITEM "BEARING DEVICE ASSEMBLY."
8. ALL BEARING DEVICES SHALL BE GALVANIZED OR METALIZED AS PER SUBSECTION 531.04 (B) AND 506.15 OF THE GENERAL SPECIAL PROVISIONS. AREAS OF GALVANIZING OR METALIZING DAMAGED BY FIELD WELDING OR HANDLING SHALL BE REPAIRED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 513 WHICH REFERENCES ASTM A760.
9. CONNECTION PLATES FOR END DIAPHRAGMS AT THE PIERS HAVE BEEN EXCLUDED FROM THE DRAWINGS FOR CLARITY PURPOSES.
10. JACKING AND SHORING FROM THE BEAM SEAT OR FROM THE GROUND WILL BE REQUIRED IN ORDER TO REPLACE THE EXISTING BEARINGS AT THE ABUTMENTS AND CONSTRUCT NEW SEATS AND REPLACE THE BEARINGS AT THE PIERS. DETAILS OF JACKING AND SHORING PROPOSALS SHALL BE SUBMITTED TO THE ENGINEER FOR INFORMATIONAL PURPOSES ONLY (TWO WEEKS PRIOR TO COMMENCEMENT OF THIS WORK). IN ADDITION, SUBSTANTIATING DESIGN CALCULATIONS PREFORMED BY A PROFESSIONAL ENGINEER SHALL BE SUBMITTED FOR INFORMATIONAL PURPOSES ONLY TO THE ENGINEER. THIS WORK SHALL BE PAID FOR UNDER THE ITEM 502.11 "SHORING SUPERSTRUCTURE BEARINGS", WHETHER FROM THE BEAM SEAT OR FROM THE GROUND.
11. EXISTING HOLES IN THE EXISTING BEAM FLANGE ENDS SHALL BE CLEANED AND FILLED WITH JOINT SEALER, POLYURETHANE. THIS WORK WILL BE INCLUDED WITH THE ITEM 531.10, "BEARING DEVICE ASSEMBLY."
12. EXISTING ANCHOR BOLTS SHALL BE CUT OFF FLUSH WITH BRIDGE SEATS AND REMOVE THEIR UPPER PORTION. THE EXISTING BOLTS MAY BE PULLED OUT IF THIS CAN BE DONE WITHOUT DAMAGE TO EXISTING CONCRETE. THIS WORK WILL BE SUBSIDIARY TO THE ITEM 531.10, "BEARING DEVICE ASSEMBLY."
13. ¼" PLATE SHALL BE AASHTO M270 GRADE 36 TO BE PAID FOR AS ITEM 506.60 "STRUCTURAL STEEL."
14. FOR ¼" PLATE AT ABUTMENT CURTAIN WALL SEE STRINGER BOXOUT DETAILS ON SHEET 18A.
15. CLIP SOLE PLATE AS SHOWN TO CLEAR CURTAIN WALL, SEE SHEET 18A.
16. EACH BEARING SHALL BE MARKED WITH BEARING NUMBER AS GIVEN IN THE BEARING LOCATION PLAN AND SHALL ALSO BE MARKED WITH AN 'X' ON THE UPSTATION SIDE OF THE BEARING.

SEE SHEET 20

SCALE 3" = 1'-0

1 9 6 3 0 1

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |

BEARING LAYOUT & DETAILS

SHEET 1 OF 2

| | |
|---|---|
| Designed By E. JOHNSTON | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272bll.dgn | |
| Bridge Sheet No. | Sheet 20 of 85 |

STONE & WEBSTER, INC.

30-DEC-2002

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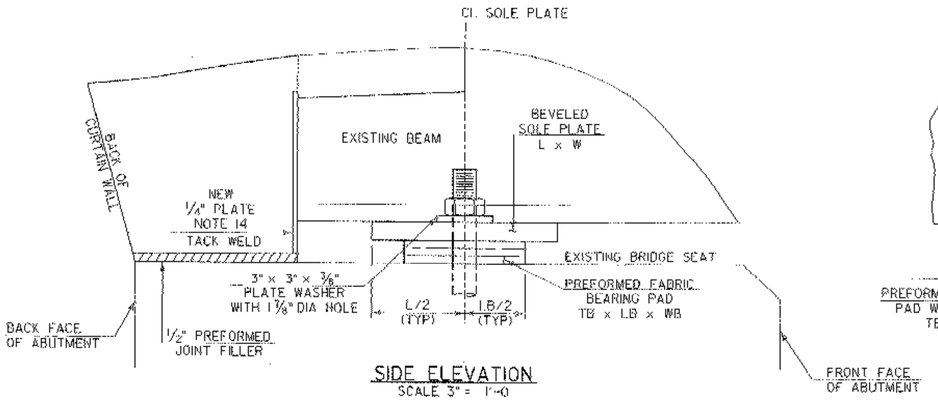
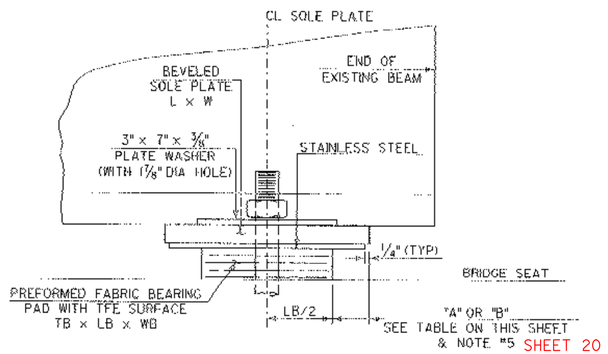
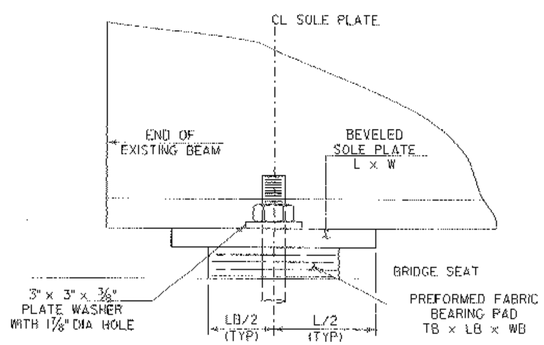


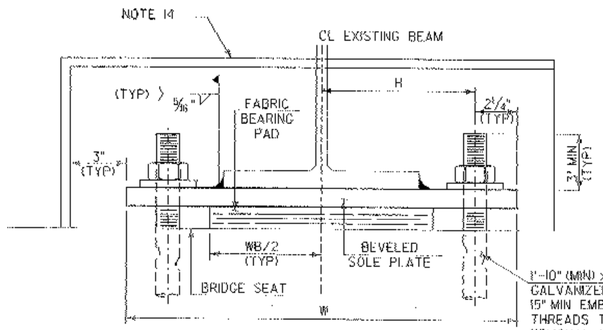

SIDE ELEVATION
SCALE 3" = 1'-0




SIDE ELEVATION
SCALE 3" = 1'-0

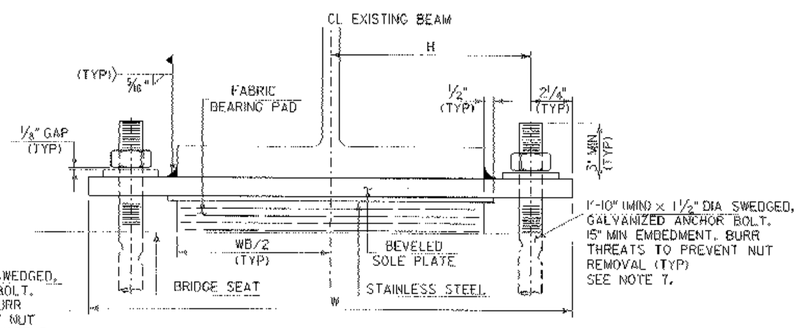



SIDE ELEVATION
SCALE 3" = 1'-0



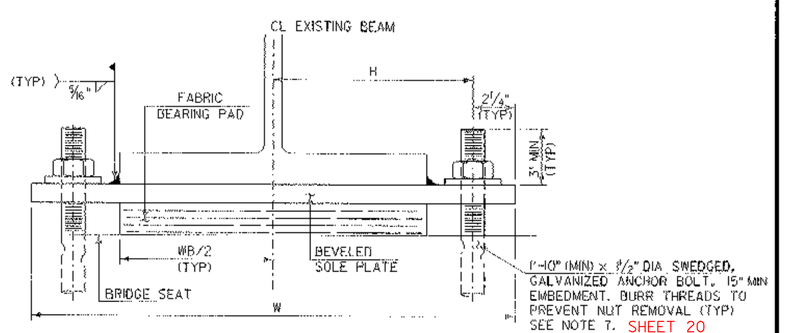

FRONT VIEW
SCALE 3" = 1'-0

FIXED BEARING AT ABUTMENT



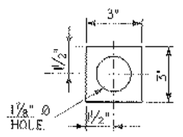

FRONT VIEW
SCALE 3" = 1'-0

EXPANSION BEARING AT PIER 1 & 4

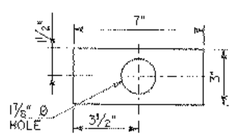



FRONT VIEW
SCALE 3" = 1'-0

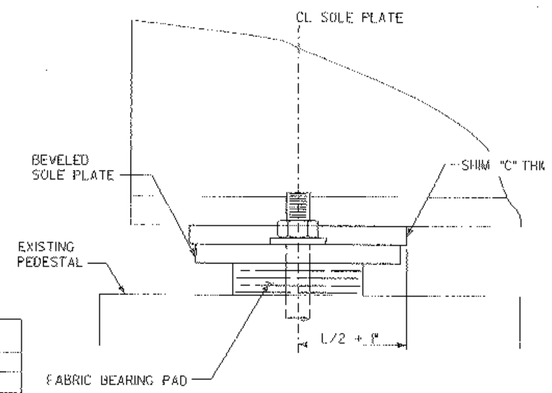
FIXED BEARINGS AT PIERS



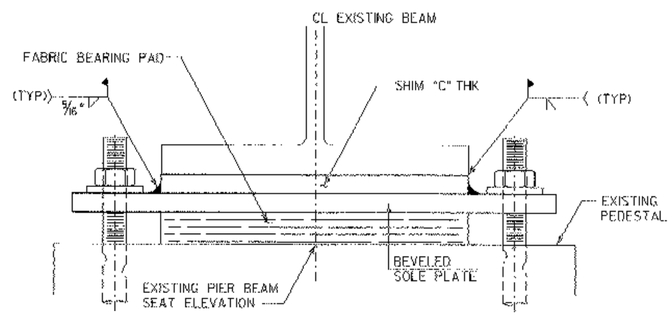

3 x 3 WASHER
SCALE 3" = 1'-0




3 x 7 WASHER
SCALE 3" = 1'-0




SIDE ELEVATION
SCALE 3" = 1'-0




FRONT VIEW
SCALE 3" = 1'-0

NOTES:
1. REFER TO SHEET 20 FOR NOTES.

SCALE 3" = 1'-0
1 9 6 3 0

"A" OR "B" TABLE

| TEMP | SPAN 1 | | SPAN 2 | | SPAN 4 | | SPAN 5 | |
|---|---|---|---|---|---|---|---|---|
| | A | B | A | B | A | B | A | B |
| 0°F | 1 1/2" | 1 3/8" | 1 7/8" | 1 5/16" | 1 9/16" | 1 1/8" | 1 7/16" | 1" |
| 15°F | 1 9/16" | 1 3/8" | 1 11/16" | 1 3/8" | 1 5/8" | 1 1/4" | 1 1/2" | 1 1/8" |
| 30°F | 1 5/8" | 1 7/16" | 1 5/8" | 1 1/2" | 1 3/4" | 1 3/8" | 1 5/8" | 1 1/4" |
| 45°F | 1 11/16" | 1 1/2" | 1 7/8" | 1 3/16" | 1 7/8" | 1 7/16" | 1 3/4" | 1 3/8" |
| 60°F | 1 3/4" | 1 5/16" | 1 15/16" | 1 11/16" | 1 15/16" | 1 5/16" | 1 15/16" | 1 7/16" |
| 75°F | 1 3/4" | 1 5/8" | 2" | 1 11/16" | 2" | 1 5/8" | 1 7/8" | 1 1/2" |
| 90°F | 1 7/8" | 1 11/16" | 2 1/8" | 1 7/8" | 2 3/16" | 1 13/16" | 2 1/16" | 1 11/16" |

BEARING PAD WITH SHIM

(EXPANSION BEARING SIMILAR)

(REFER TO DETAILS ABOVE FOR INFORMATION NOT PROVIDED)

**SEE SHEET 20 FOR THICKNESS OF SHIMS.**
**BEARING SHIMS TO BE PAID FOR UNDER ITEM 506.60 "STRUCTURAL STEEL (BEARING SHIMS)".**

STONE & WEBSTER, INC.

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |

BEARING LAYOUT & DETAILS
SHEET 2 OF 2

| | |
|---|---|
| Designed By E. JOHNSTON | Drawn By N. HERRERA |
| Checked By Date | Bridge Design Supervisor |
| E. JOHNSTON DEC 2000 | E. JOHNSTON Date |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272bl2.dgn | |
| Bridge Sheet No. | Sheet 21 of 85 |

20-DEC-2000
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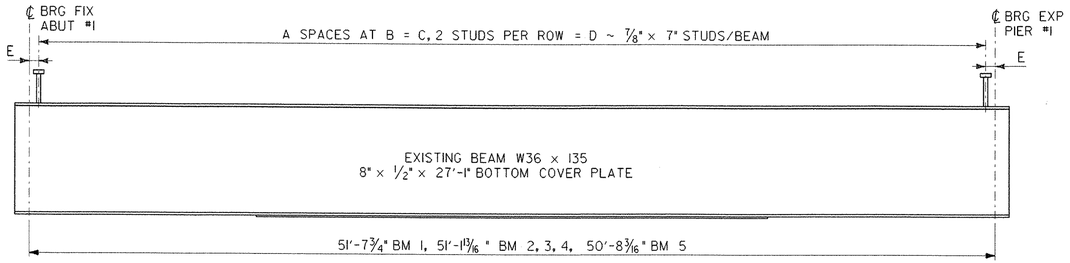
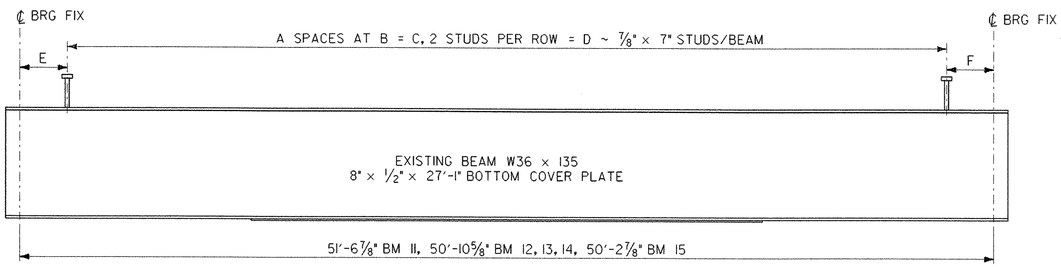
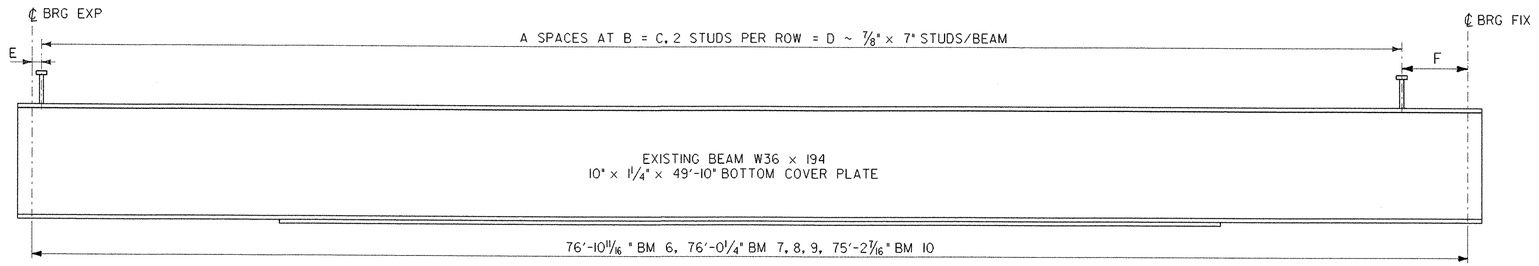



SPAN 1
SCALE: 1/4" = 1'-0" HORIZ
SCALE: 1/2" = 1'-0" VERT



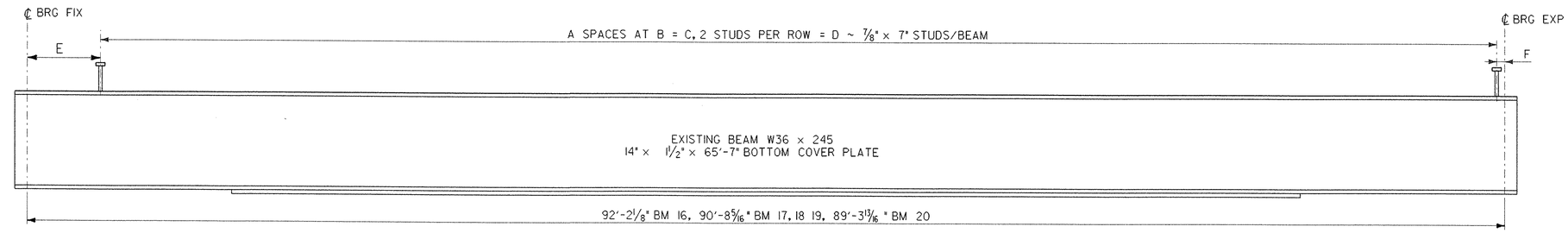

SPAN 3
SCALE: 1/4" = 1'-0" HORIZ
SCALE: 1/2" = 1'-0" VERT



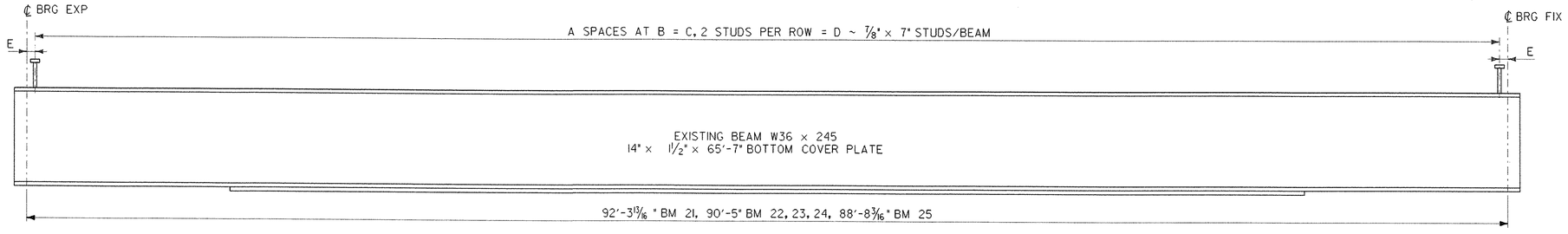

SPAN 2
SCALE: 1/4" = 1'-0" HORIZ
SCALE: 1/2" = 1'-0" VERT

## SHEAR STUD SCHEDULE

| BEAM | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| BM 1 | 61 | 10" | 50'-10" | 124 | 0'-4 7/8" | - |
| BM 2, BM 3, BM 4 | 61 | 10" | 50'-10" | 124 | 0'-1 7/8" | - |
| BM 5 | 60 | 10" | 50'-0" | 122 | 0'-4 1/16" | - |
| BM 6 | 88 | 10" | 73'-4" | 178 | 0'-0 5/16" | 3'-6 5/16" |
| BM 7, BM 8, BM 9 | 96 | 9" | 72'-0" | 194 | 0'-3 1/8" | 3'-9 1/8" |
| BM 10 | 86 | 10" | 71'-8" | 174 | 0'-0 3/16" | 3'-6 3/16" |
| BM 11 | 62 | 9" | 46'-6" | 126 | 2'-6 3/16" | 2'-6 3/16" |
| BM 12, BM 13, BM 14 | 61 | 9" | 45'-9" | 124 | 2'-6 1/16" | 2'-6 1/16" |
| BM 15 | 60 | 9" | 45'-0" | 122 | 2'-7 1/16" | 2'-7 1/16" |
| BM 16 | 105 | 10" | 87'-6" | 212 | 4'-7 1/16" | 0'-1 1/16" |
| BM 17, BM 18, BM 19 | 114 | 9" | 85'-6" | 230 | 4'-10 1/8" | 0'-4 1/8" |
| BM 20 | 101 | 10" | 84'-2" | 204 | 4'-9 7/8" | 0'-3 7/8" |
| BM 21 | 100 | 11" | 91'-8" | 202 | 0'-3 7/8" | - |
| BM 22, BM 23, BM 24 | 108 | 10" | 90'-0" | 218 | 0'-2 1/2" | - |
| BM 25 | 96 | 11" | 88'-0" | 194 | 0'-4 1/16" | - |




SPAN 4
SCALE: 1/4" = 1'-0" HORIZ
SCALE: 1/2" = 1'-0" VERT




SPAN 5
SCALE: 1/4" = 1'-0" HORIZ
SCALE: 1/2" = 1'-0" VERT

## NOTES:

1. FOR HAUNCH AND SHEAR CONNECTOR DETAILS SEE SHEET 18.

SCALE 1/4" = 1'-0
1 0 2 4 6 HORIZONTAL

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

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. |
| | Surv. Sta. |
| SHEAR STUD CONNECTION & LAYOUT | |
| Designed By E. JOHNSTON | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272scl.dgn | |
| Bridge Sheet No. | Sheet 22 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002
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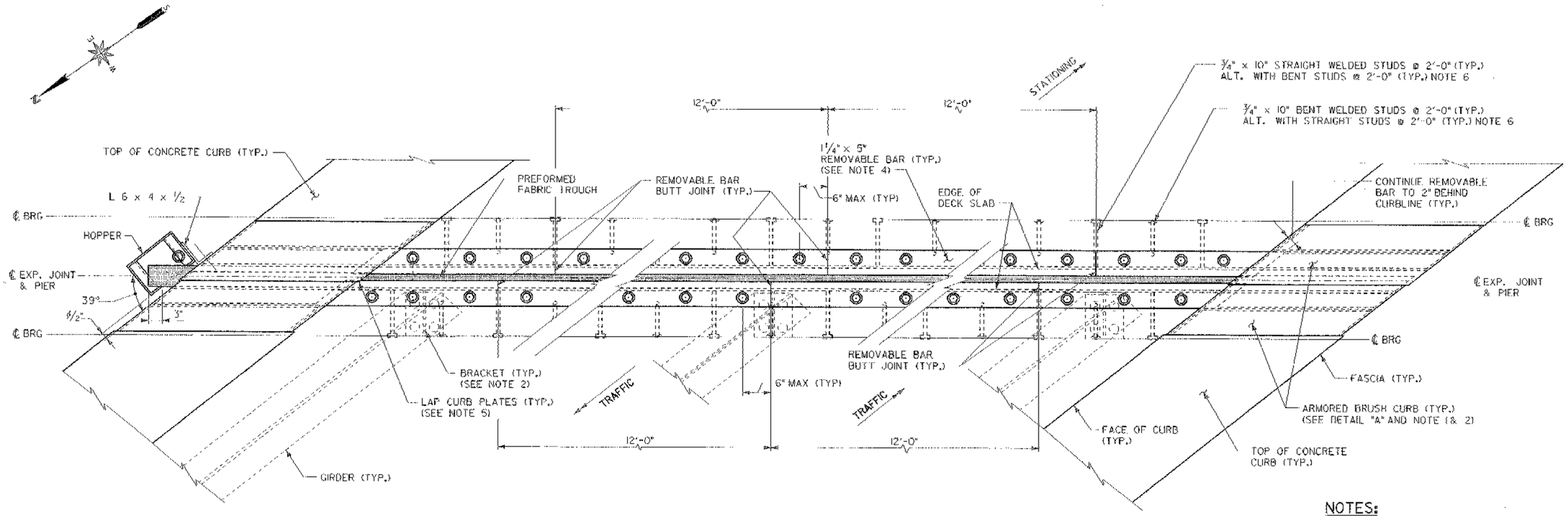
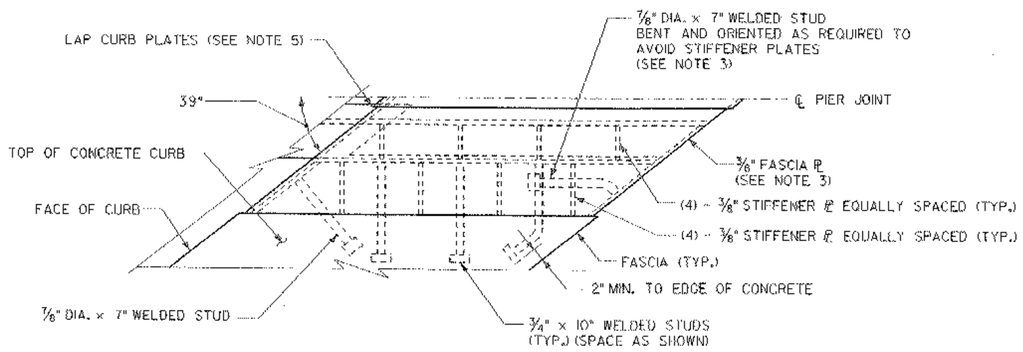



## TYPICAL EXPANSION JOINT PLAN

NOT TO SCALE

THE SKEW ON THIS EXPANSION JOINT IS INCORRECT.
IT IS MIRRORED TO WHAT IT SHOULD BE.
PLEASE SEE THE SHOP DRAWINGS FOR THE CORRECT SKEW!




## DETAIL "A"

SCALE: 1½" = 1'-0"

(ONE QUADRANT OF ARMORED BRUSH CURB SHOWN - ALL OTHER QUADRANTS SIMILAR)

## NOTES:

1. TOP AND FACE OF ARMORED BRUSH CURB ARE ATTACHED BY BOLTS AND ARE REMOVABLE TO ALLOW CLEANING AND/OR REPLACEMENT OF FABRIC TROUGH.
2. FOR TYPICAL SECTIONS OF EXPANSION JOINT AND ARMORED BRUSH CURB, SEE TYPE JOINT DETAILS, BRIDGE SHEETS 24 AND 25
3. FOR VIEW OF FASCIA PLATES, AND LOCATION OF WELDED STUDS ON FASCIA PLATES, SEE DETAILS SHEET 26.
4. BARS IN ROADWAY ARE REMOVABLE TO ALLOW CLEANING AND/OR REPLACEMENT OF FABRIC TROUGH.
5. LAP CURB PLATES IN DIRECTION OF TRAFFIC. SEE PLAN FOR DIRECTION OF TRAFFIC
6. STUDS NOT SHOWN IN BRUSH CURB FOR CLARITY, REFER TO DETAIL A FOR STUD LAYOUT.

SCALE 1½" = 1'-0

1 9 6 3 0 1

SCALE 1" = 1'-0

1 9 6 3 0 1 2

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |

EXPANSION JOINT AT PIERS 1 & 4

SHEET 1 OF 4

| | |
|---|---|
| Designed By E. JOHNSTON | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272jt1.dgn | |
| Bridge Sheet No. | Sheet 23 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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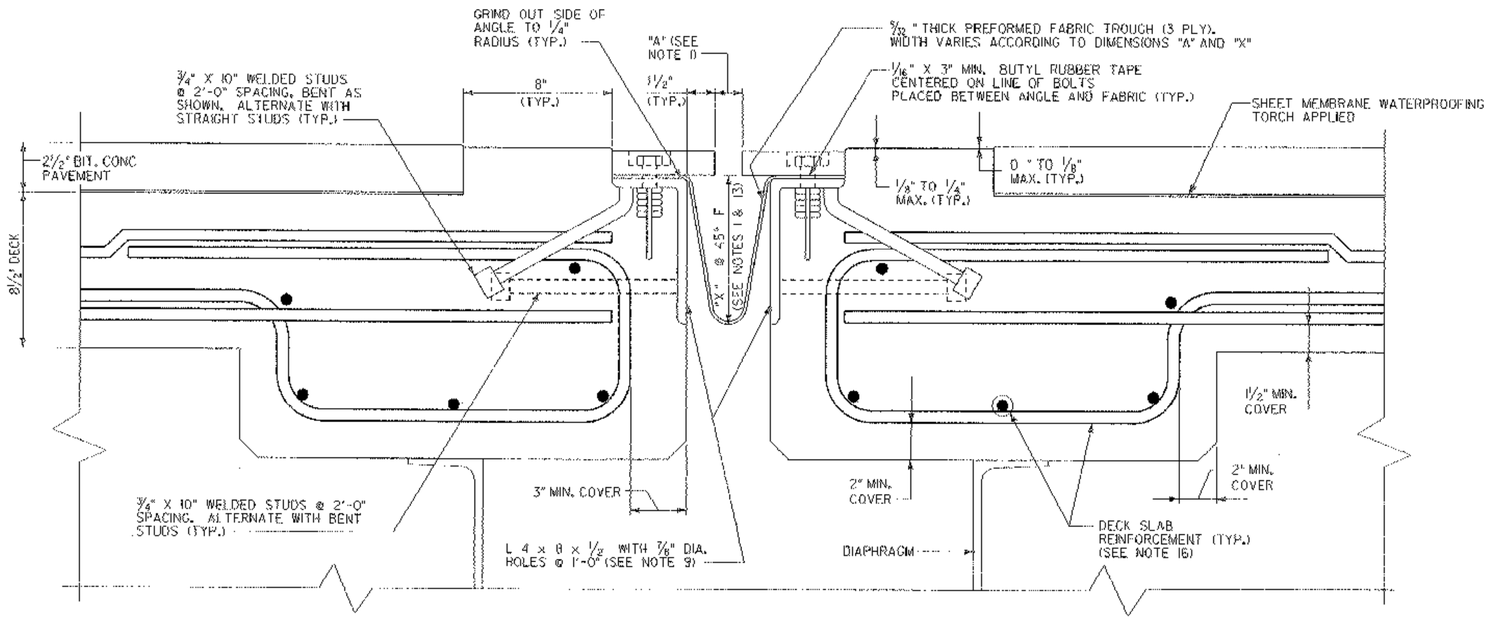
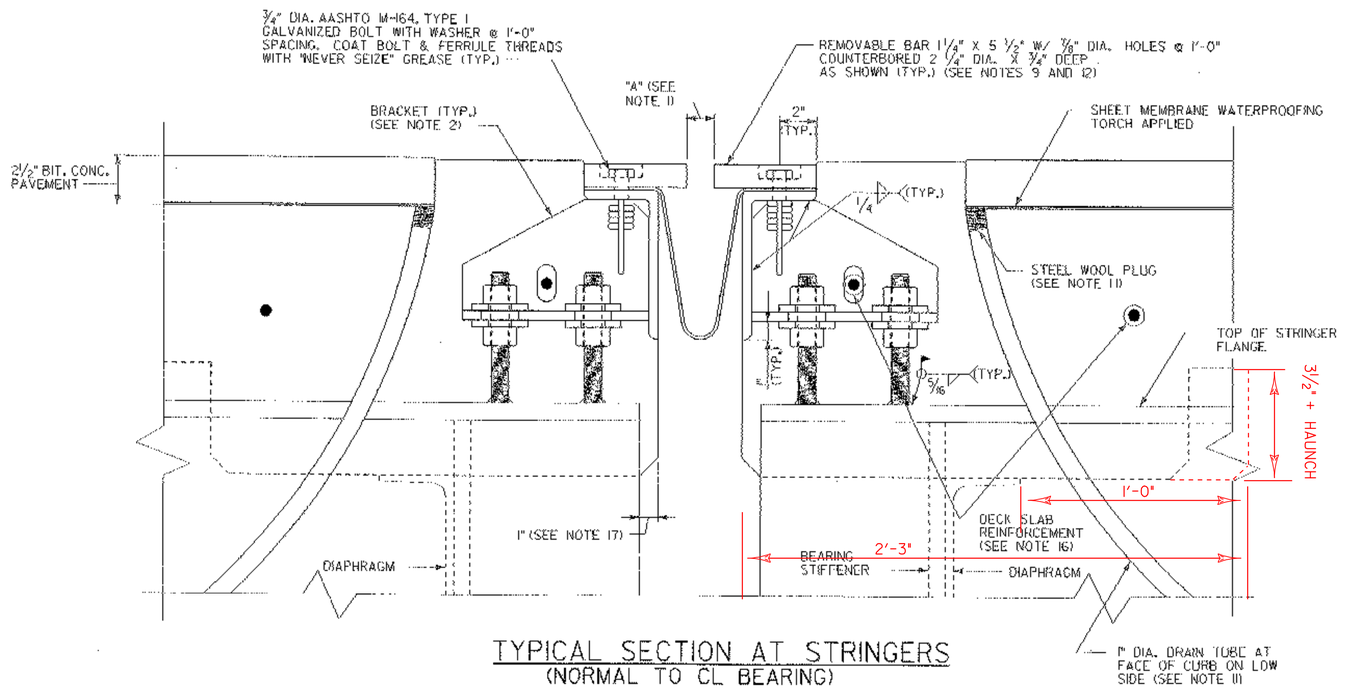



## TYPICAL SECTION BETWEEN STRINGERS
(NORMAL TO CL BEARING)

SCALE: 3" = 1'-0"




## TYPICAL SECTION AT STRINGERS
(NORMAL TO CL BEARING)

SCALE: 3" = 1'-0"

## NOTES:

1. FOR TABLES OF "A" AND "X" DIMENSIONS, SEE EXPANSION JOINT AT JOINT AT PIERS 1& 4 (3 OF 4), SHEET 25
2. FOR BRACKET, PLATE, WASHER AND ANCHOR FERRULE DETAILS, SEE TYPE EXPANSION JOINT AT PIER 1& 4 (3 OF 4 ), SHEET 25
3. DETAILS ON THIS SHEET ARE FOR ITEM 516.10, "BRIDGE EXPANSION JOINT".
4. PREFORMED FABRIC MATERIAL SHALL BE CONTINUOUS AND SHALL CONFORM TO SUBSECTION 707.07 OF THE SPECIFICATIONS.
5. BUTYL RUBBER TAPE SHALL CONFORM TO AASHTO SPECIFICATION M-198, TYPE B.
6. THE FINAL FINISH OF THE EXPANSION DEVICE SHALL BE COVERED DURING THE PLACING OF BRIDGE DECK CONCRETE.
7. ALL STEEL COMPONENTS SHALL BE AASHTO M270 GRADE 36, UNLESS OTHERWISE SPECIFIED. THREADED ROD AND ASSOCIATED NUTS AND WASHERS SHALL CONFORM TO SUBSECTION 714.08 OF THE SPECIFICATIONS. ALL STEEL COMPONENTS AND HARDWARE SHALL BE GALVANIZED OR METALIZED PER SUBSECTION 506.15 OF THE SPECIFICATIONS, UNLESS OTHERWISE SPECIFIED.
8. PAYMENT FOR ITEM 516.10, "BRIDGE EXPANSION JOINT" SHALL INCLUDE THE FABRICATION AND ERECTION OF THE COMPLETE JOINT ASSEMBLY INCLUDING ALL STEEL PLATES, BRACKETS, ANGLES, WELDED STUDS OR RODS, PREFORMED FABRIC DRAIN TROUGH MATERIAL AND PLASTIC DRAIN TUBES, BUTYL RUBBER TAPE AND ANY OTHER MISCELLANEOUS MATERIAL NECESSARY TO INSTALL JOINT.
9. THE 4 x 8 x 1/2 ANGLES SHALL BE FURNISHED AS ONE CONTINUOUS FOR EACH PHASE THE 1 1/4" X 5 1/2" BARS EACH SIDE OF THE JOINT SHALL BE PROVIDED IN EQUAL LENGTHS. SEE TYPICAL EXPANSION JOINT PLAN ON SHEET 23 FOR APPROPRIATE LENGTHS.
10. COAT CONCRETE CONTACT SURFACES WITH EPOXY BONDING COMPOUND MEETING THE REQUIREMENTS OF SUBSECTION 719.02 OF THE SPECIFICATIONS. PAYMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 516.10, "BRIDGE EXPANSION JOINT".
11. A 1" DIAMETER PLASTIC DRAIN TUBE SHALL BE INSTALLED AS SHOWN AT THE FACE OF CURB. THE UPPER END IS TO BE PLUGGED WITH STEEL WOOL AND THE LOWER END IS TO EXTEND BELOW THE BOTTOM OF THE ADJACENT STRINGER. THE DRAIN TUBES SHALL BE FASTENED TO THE STRINGERS USING A METHOD APPROVED BY THE ENGINEER.
12. FILL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER AFTER BOLT INSTALLATION. COSTS FOR THE WORK SHALL BE SUBSIDIARY TO ITEM 516.10.
13. FABRIC TROUGHS SHALL BE INSTALLED SO THAT MINIMUM SLOPE IS 0% FOR POSITIVE DRAINAGE.
14. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION.
15. EXPANSION JOINTS SHALL BE SHOP ASSEMBLED AND SHIPPED AS ONE UNIT.
16. FOR DECK SLAB REINFORCEMENT, SEE THE TRANSVERSE SECTION AND DECK REINFORCEMENT PLANS.
17. THE DIMENSION FROM END OF EXISTING STRINGER TO END OF NEW DECK SLAB SHALL BE 3 1/2" ±.
18. WORK THIS SHEET WITH TYPICAL DECK SLAB DETAILS AT PIER 1 & 4, SHEET 18.

| STATE OF VERMONT<br>AGENCY OF TRANSPORTATION | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| EXPANSION JOINT AT PIER 1 & 4 | |
| SHEET 2 OF 4 | |
| Designed By E. JOHNSTON | Drawn By R J FERRANTE |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272jt2.dgn | |
| Bridge Sheet No. | Sheet 24 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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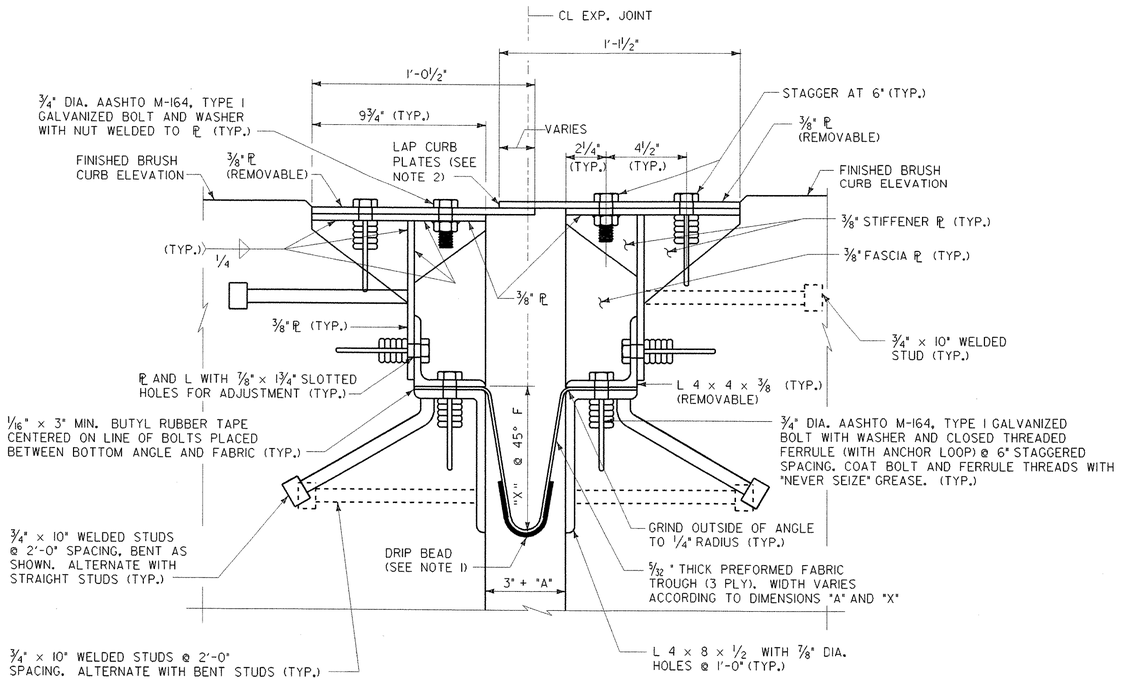
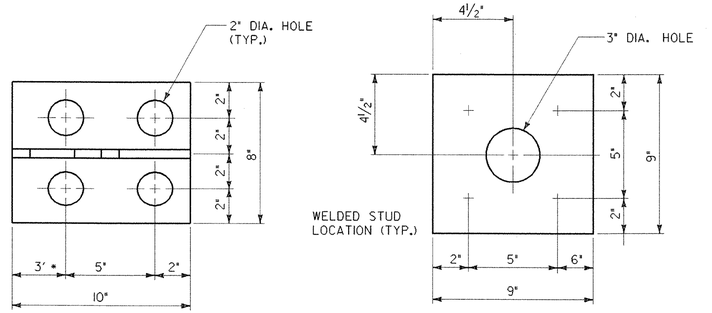



## TYPICAL SECTION AT ARMORED BRUSH CURB (NORMAL TO CL BEARING)

SCALE: 3" = 1'-0"



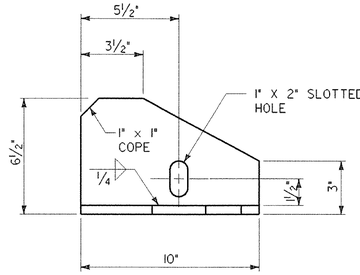

## BRACKET PLAN

SCALE: 3" = 1'- 0"

## PLATE PLAN (NOT GALVANIZED)

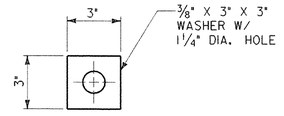
SCALE: 3" = 1'- 0"

NOTE: ALL PLATES ½" THICK



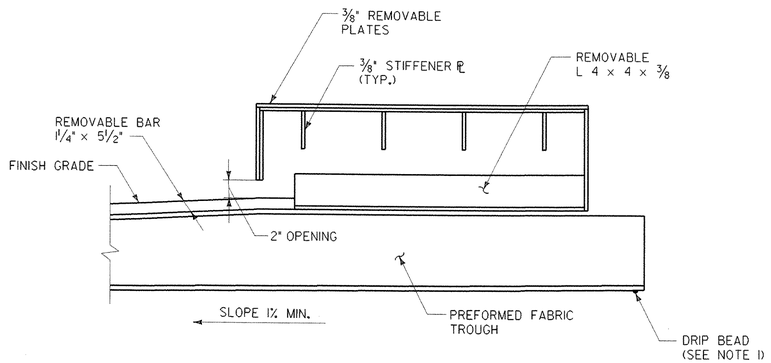

## BRACKET ELEVATION

SCALE: 3" = 1'- 0"




## WASHER FOR BRACKET

SCALE: 3" = 1'- 0"




## LONGITUDINAL SECTION THROUGH ARMORED BRUSH CURB

N.T.S.

## ANCHOR FERRULE DETAIL

SCALE: 3" = 1'- 0"

| LOCATION | "A" DIMENSION | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0° F | 15° F | 30° F | 45° F | 60° F | 75° F | 90° F | 105° F |
| PIER NO 1 | 1¾" | 1⅝" | 1⅜" | 1⅛" | 1" | ⅞" | ⅝" | 7/16" |
| PIER NO 2 | 2⅛" | 1⅞" | 1⅝" | 1⅛" | 1⅛" | ⅝" | 11/16" | ½" |

| EXPANSION JOINT LOCATION | "X" @ 45° F | | |
|---|---|---|---|
| | @ LEFT FASCIA | @ CL CONST. | @ RIGHT FASCIA |
| PIER NO 1 | 8" | 8" | 8" |
| PIER NO 2 | 8" | 8" | 8" |

## NOTES:

1. A DRIP BEAD OF ¼" × 7" STRIP OF PREFORMED MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 1" FROM THE DOWNSPOUT END OF THE TROUGH.
2. LAP CURB PLATES IN DIRECTION OF TRAFFIC. FOR DIRECTION OF LAP REFER TO TYPICAL EXPANSION JOINT PLAN, SHEET 23.

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| EXPANSION JOINT AT PIER 1 & 4 | |
| SHEET 3 OF 4 | |
| Designed By E. JOHNSTON | Drawn By R J FERRANTE |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272jt3.dgn | |
| Bridge Sheet No. | Sheet 25 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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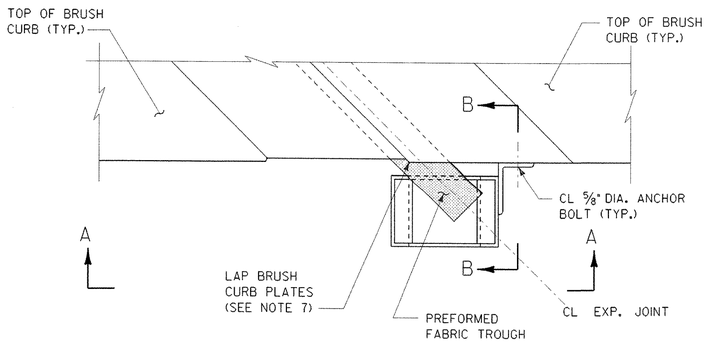
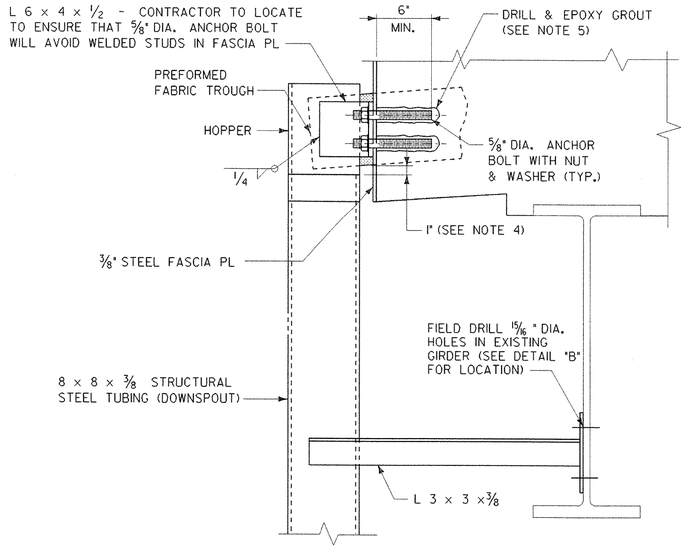


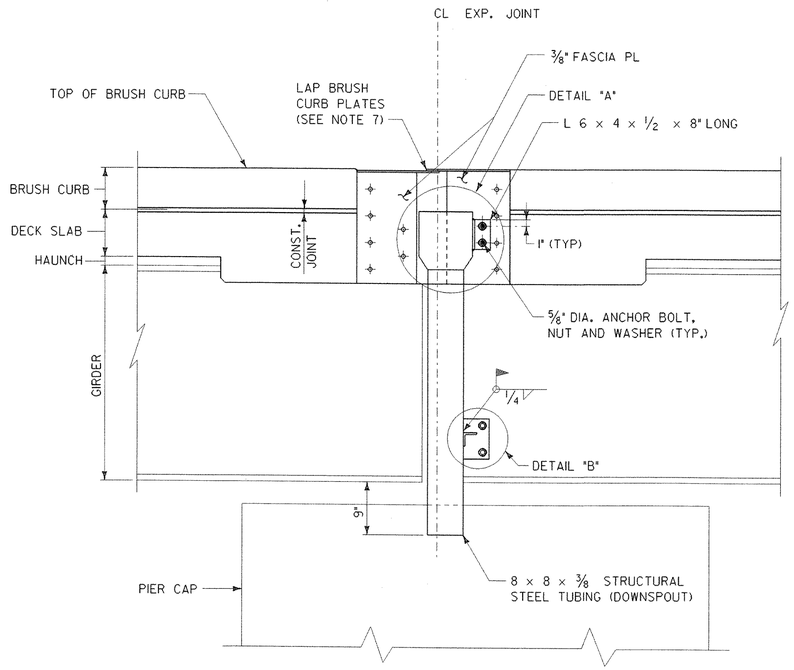

## HOPPER LOCATION PLAN

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



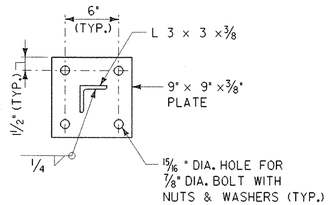

## SECTION B-B

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



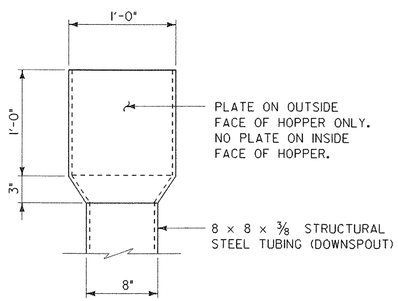

## ELEVATION A-A

N.T.S.




## DETAIL "B"

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




## DETAIL "A"

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

## 1. NOTES:

WORK THIS SHEET WITH EXPANSION JOINT AT PIER 1 & 4 SHEETS 1, 2 & 3, SEE SHEETS 23 THROUGH 25.

2. HOPPERS AND ALL COMPONENTS SHALL BE AASHTO M270 GRADE 36 STEEL. STRUCTURAL TUBING (DOWNSPOUT) SHALL BE ASTM A-500 OR A-501 STEEL. ALL STEEL SHALL BE GALVANIZED OR METALIZED IN ACCORDANCE WITH SECTION 506.15 OF THE SPECIFICATIONS. ALL HOPPER AND DOWNSPOUT WORK SHALL BE PAID FOR UNDER ITEM 506.60, "STRUCTURAL STEEL".

3. HOPPERS SHALL BE FABRICATED FROM 3/8" STEEL PLATE. THE FABRICATION WELDS SHALL BE 1/4" FILLET WELDS ON THE INSIDE OF THE HOPPER AND SHALL BE FULL LENGTH TO ENSURE A WATERTIGHT CONTAINER.

4. THE HOPPERS SHALL BE PLACED TO LEAVE A ONE INCH VERTICAL GAP BETWEEN THE BOTTOM OF THE TROUGH AND THE HOPPER. THE TROUGH SHOULD BE ENCLOSED AS MUCH AS POSSIBLE BY THE HOPPER BUT SHOULD NOT BE BENT OR BUCKLED TO RESTRICT THE FLOW OF WATER.

5. ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO SUBSECTION 714.08 OF THE SPECIFICATIONS, AND BE GALVANIZED IN ACCORDANCE WITH SUBSECTION 506.15. ANCHOR BOLTS SHALL BE DRILLED AND EPOXY GROUTED 6" MINIMUM INTO THE CONCRETE. DRILL AND EPOXY GROUT SYSTEM SHALL BE:
   - DAYTON SUPERIOR SURE-ANCHOR J-51 SYSTEM
   - HILTI, INC. HIT HY-150 SYSTEM
   - UNITEX PRO-POXY 300 FAST SYSTEM

   OR EQUIVALENT APPROVED BY VAOT MATERIALS SECTION. ALL COSTS FOR DRILLING AND EPOXY GROUTING ANCHOR BOLTS SHALL BE INCLUDED AS PART OF ITEM 506.60, "STRUCTURAL STEEL".

6. STRAPS SHALL NOT BE BENT IN THE FIELD.

7. LAP CURB PLATES IN DIRECTION OF TRAFFIC. FOR DIRECTION OF LAP REFER TO TYPICAL EXPANSION JOINT PLAN ON SHEET 23.

8. PROVIDE A SIX FOOT SQUARE PAD ONE FOOT THICK CONSISTING OF GEOTEXTILE UNDER STONE FILL BENEATH EACH DOWNSPOUT. WORK SHALL BE PAID FOR UNDER ITEM 613.10, "STONE TYPE I"

**STATE OF VERMONT**
**AGENCY OF TRANSPORTATION**

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| EXPANSION JOINT AT PIER 1 & 4 | |
| SHEET 4 OF 4 | |
| Designed By E. JOHNSTON | Drawn By R J FERRANTE |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272jt4.dgn | |
| Bridge Sheet No. | Sheet 26 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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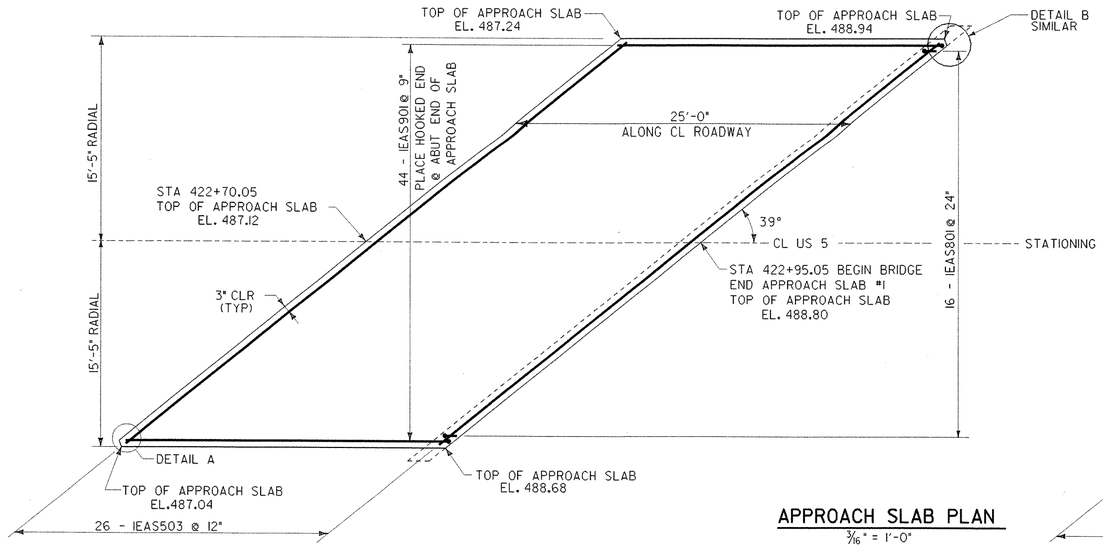
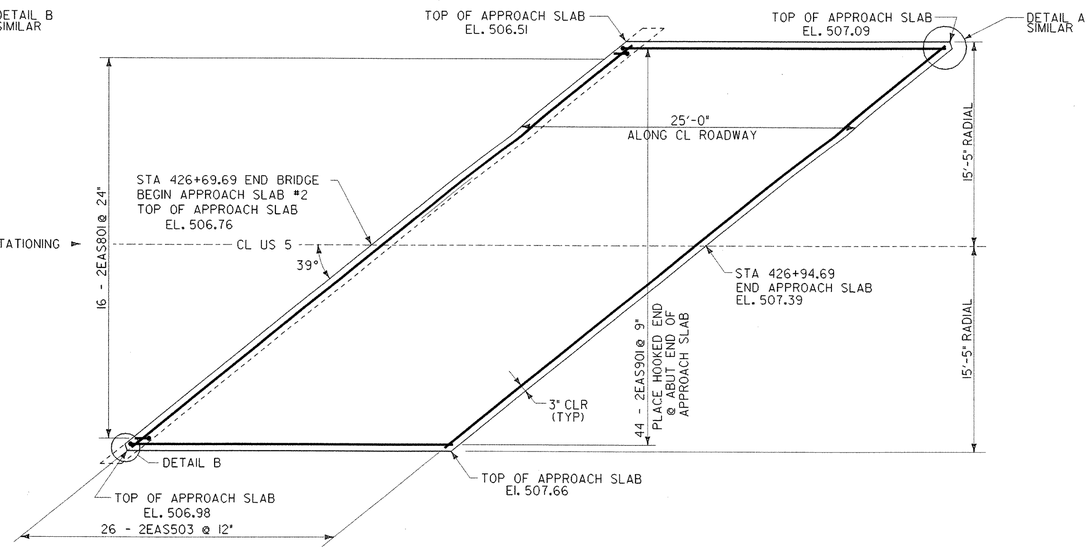



## APPROACH SLAB PLAN

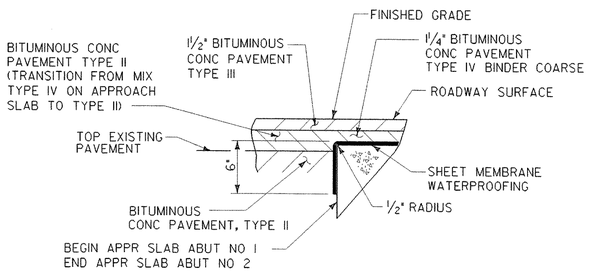
3/16" = 1'-0"




STATIONING

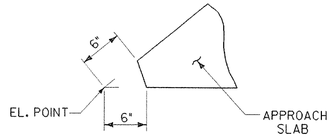
NOTES:

1. 3" CLEAR UNLESS OTHERWISE NOTED.
2. NOT USED
3. FILLET EXISTS IN CORNER OF BACK WALL. APPROACH SLAB TO BE POUR AGAINST BACK WALL. APPLY BOND BREAKER TO BACK WALL PRIOR TO POUR.



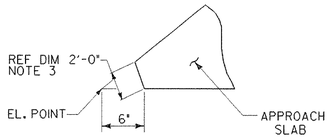

## DETAIL FOR SHEET MEMBRANE AT APPROACH SLAB END

NTS



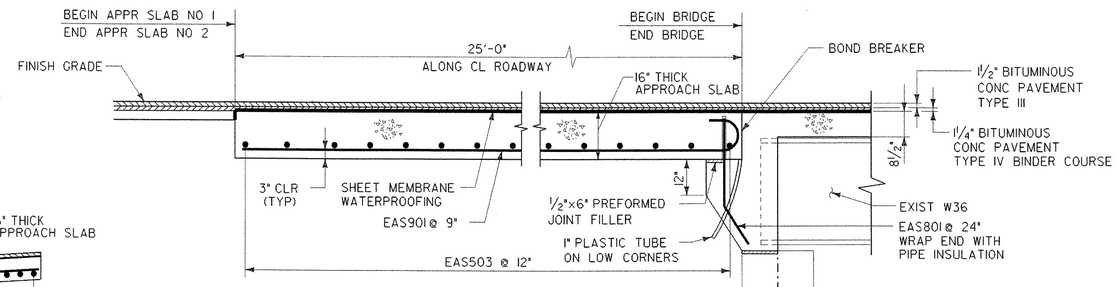

## DETAIL A

NTS



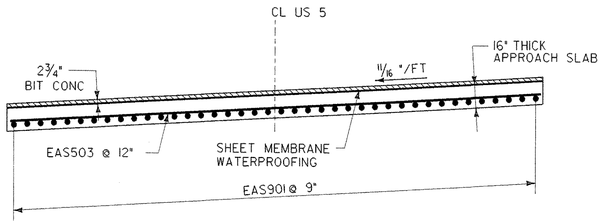

## DETAIL B

NTS




## TYP APPROACH SLAB CROSS SECTION

½" = 1'-0"




## TYPICAL APPROACH SLAB SECTION

¼" = 1'-0"

SCALE ½" = 1'-0
1 0 1 2

SCALE ¼" = 1'-0
1 0 2 4 6

SCALE 3/16" = 1'-0
1 0 2 4 6 8

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| APPROACH SLAB DETAILS | |
| Designed By S. YONGHO | Drawn By J. HORAN |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272as.dgn | |
| Bridge Sheet No. | Sheet 27 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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## EXISTING SUBSTRUCTURE REPAIR NOTES:

1. THIS WORK SHALL INCLUDE REMOVAL AND DISPOSAL OF UNSOUND AND DELAMINATED CONCRETE FROM ALL ABUTMENTS AND PIERS AS DIRECTED BY THE ENGINEER. THE PREPARED SURFACES SHALL BE THOROUGHLY SANDBLASTED TO REMOVE ALL LOOSE MATERIAL AND ANY CONTAMINANTS OR EFFLORESCENCE. THE REINFORCING STEEL (IF EXPOSED), SHALL BE SANDBLASTED. THE MATERIAL USED TO FILL A PATCH SHALL BE PLACED AND FINISHED OR FORMED SO THAT THE FINAL SURFACE WILL HAVE THE SAME SCORE MARKS AND EXTERIOR FACE APPEARANCE AS THE ORIGINAL SURFACES BEING REPAIRED. THE SURFACE SHALL BE THOROUGHLY WETTED PRIOR TO PLACEMENT OF PATCHING MATERIAL OR NEW CONCRETE. INMEDIATELY PRIOR TO PLACEMENT, THE SURFACE SHALL BE COATED WITH NEAT CEMENT PASTE, MIXED TO CONSISTENCY OF THICK LATEX PAINT, AND THOROUGHLY BRUSHED INTO THE SURFACE. WHEN "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION SECTION 780 IS USED, THE BONDING AGENT (IF ANY REQUIRED) AND ITS APPLICATION PROCEDURE SHALL COMPLY WITH THE REQUIREMENTS OF THE PATCHING MATERIAL MANUFACTURER. PAYMENT FOR BONDING AGENT WILL BE SUBSIDIARY TO ITEM 580.13, 580.14 OR 580.15.

2. THE LIMITS FOR REMOVAL OF CONCRETE UNDER THE ITEM 580.13, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I SHALL BE FROM THE EXISTING CONCRETE SURFACE TO A MAXIMUM DEPTH OF THE OUTSIDE FACE OF THE REINFORCING STEEL. ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING IT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 580.13, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I". THE FILLING MATERIAL SHALL BE "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION SECTION 780.02. THE EDGES OF ALL PATCHES SHALL BE SAW CUT IN STRAIGHT LINES TO A MINIMUM DEPTH OF I INCH. IF MORE THAN $\frac{1}{4}$ OF THE REBAR IS EXPOSED, OR THE BOND BETWEEN THE REBAR AND THE CONCRETE IS BROKEN, THEN PROCEED TO ITEM 508.14, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II".

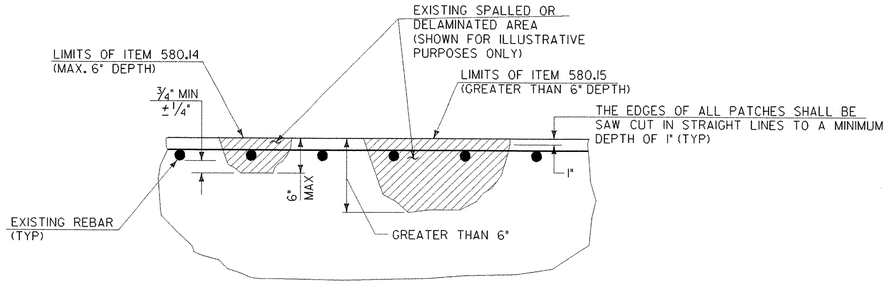
3. THE LIMITS FOR REMOVAL OF CONCRETE UNDER THE ITEM 580.14, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II" SHALL BE FROM THE EXISTING CONCRETE SURFACE TO A MINIMUM DEPTH OF $\frac{3}{4}$" +/- $\frac{1}{4}$" INSIDE THE INSIDE FACE OF REINFORCING STEEL AND TO A MAXIMUM DEPTH OF 6" FROM THE EXISTING CONCRETE SURFACE. ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING IT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 580.14, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II". THE FILLING MATERIAL MAY BE EITHER "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION SECTION 780, "CONCRETE CLASS AA", CLASS A, OR AN ACCEPTABLE PNEUMATICALLY APPLIED CONCRETE (SEE SPECIAL PROVISIONS). THE EDGES OF ALL PATCHES SHALL BE SAW CUT IN STRAIGHT LINES TO A MINIMUM DEPTH OF 1INCH.

4. THE LIMITS FOR REMOVAL OF CONCRETE UNDER THE ITEM 580.15 "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III" SHALL BE FROM THE EXISTING CONCRETE SURFACE TO A DEPTH OF GREATER THAN 6". ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING IT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 580.15, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS III". THE FILLING MATERIAL MAY BE EITHER "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING WITH SUPPLEMENTAL SPECIFICATION SECTION 780 OR "CONCRETE CLASS AA", CLASS A, CLASS B OR AN ACCEPTABLE PNEUMATICALLY APPLIED CONCRETE (SEE SPECIAL PROVISIONS). THE EDGES OF ALL PATCHES SHALL BE SAW CUT IN STRAIGHT LINES TO A MINIMUM DEPTH OF 1INCH.

5. IF PNEUMATICALLY APPLIED CONCRETE IS SELECTED FOR REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II OR III, THEN THIS TYPE OF CONCRETE REPAIR SHALL BE CONFINED ONLY TO VERTICAL AND OVERHEAD SURFACES OF THE SUBSTRUCTURE. ALSO, THE BRIDGE BEARINGS AND GIRDERS SHOULD BE COMPLETELY PROTECTED FROM REBOUND MATERIAL DURING PNEUMATICALLY APPLIED CONCRETE APPLICATION PROCEDURES.

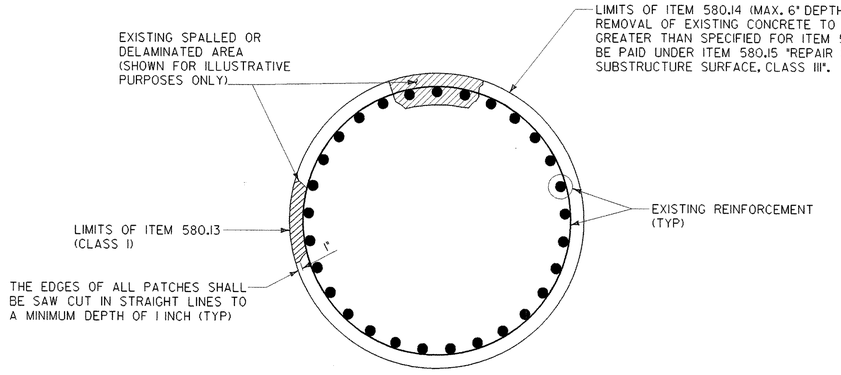
6. THE ENGINEER SHALL ORDER REPLACEMENT OF ANY EXISTING SUBSTRUCTURE REINFORCING STEEL THAT IS DETERIORATED (WITH MORE THAN 25% SECTION LOSS) WITH NEW REINFORCING STEEL OF THE SAME SIZE. ALL REINFORCING STEEL SHALL HAVE AN APPROPRIATE LAP SPLICE.

7. THE SPALLED AREAS SHOWN ARE ONLY ESTIMATES, AND THE EXACT AREA WILL BE DETERMINED BY THE RESIDENT ENGINEER IN THE FIELD.



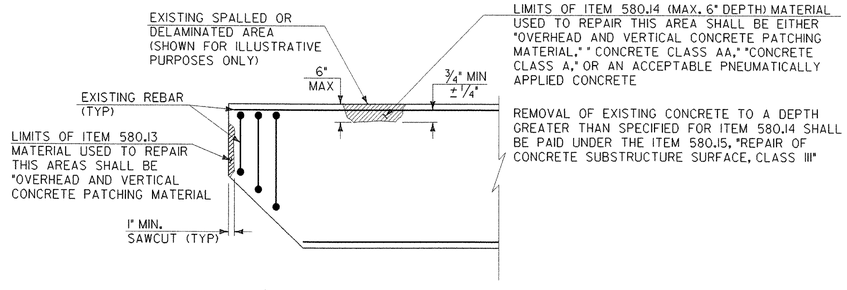

### TYPICAL DETAIL SHOWING LIMITS OF ITEMS 580.14 AND 580.15 REPAIR OF CONCRETE AT ABUTMENT SURFACE CLASS II OR CLASS III

NTS




### TYPICAL CONCRETE COLUMN DETAIL

SCALE: $\frac{3}{4}$" = 1'-0"




### TYPICAL DETAIL SHOWING LIMITS OF ITEMS 580.13, 580.14 581.15 REPAIR OF CONCRETE PIER CAP CLASS I, CLASS II, OR CLASS III

NTS

10-DEC-2002

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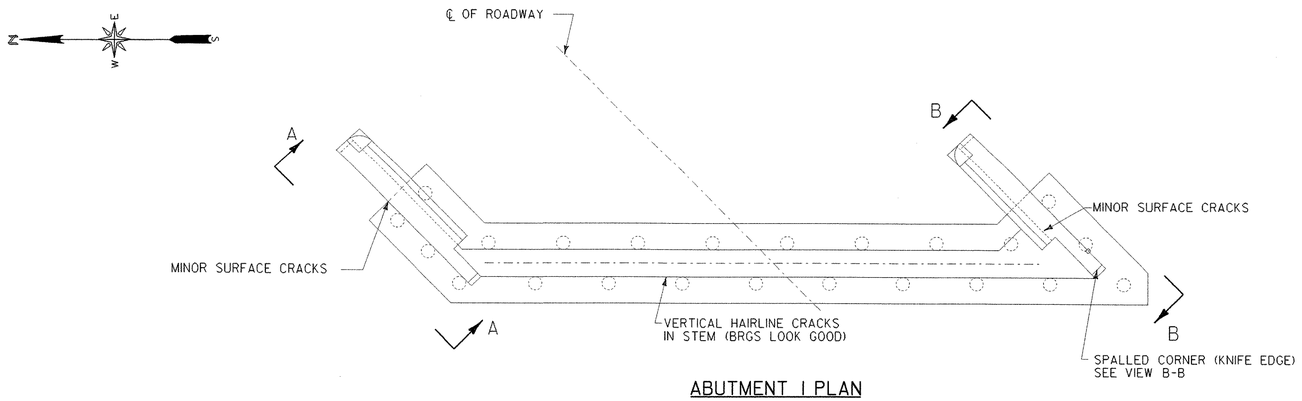
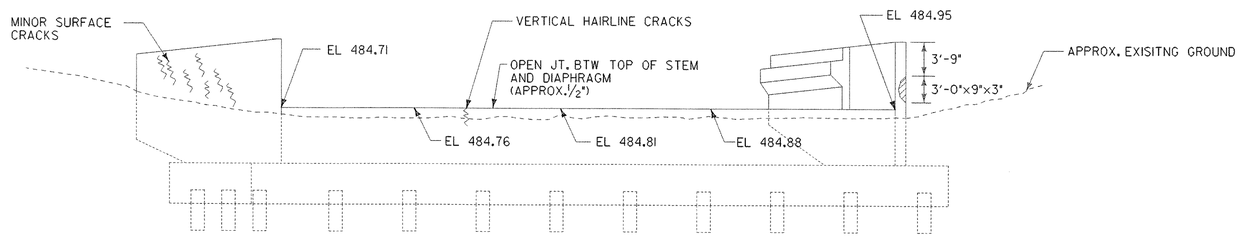
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| SUBSTRUCTURE REPAIR NOTES AND DETAILS | |
| Designed By S. YONGHO | Drawn By N. HERRERA |
| Checked By S. YONGHO Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272ssr.dgn | |
| Bridge Sheet No. | Sheet 28 of 85 |

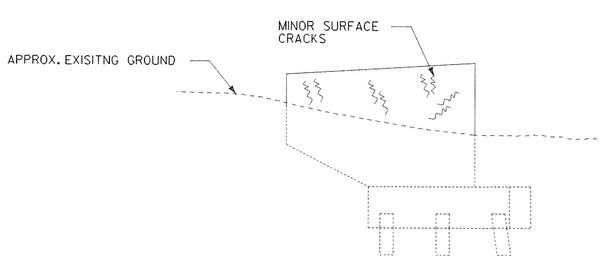
STONE & WEBSTER, INC.



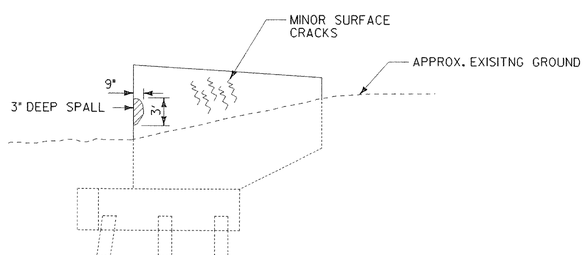

ABUTMENT 1 PLAN




ABUTMENT 1 ELEVATION




VIEW A-A




VIEW B-B

NOTES:

1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.

LEGEND:

SPALL

SURFACE CRACK

SCALE 3/16" - 1'-0

1 0 2 4 6 8

10-DEC-2002

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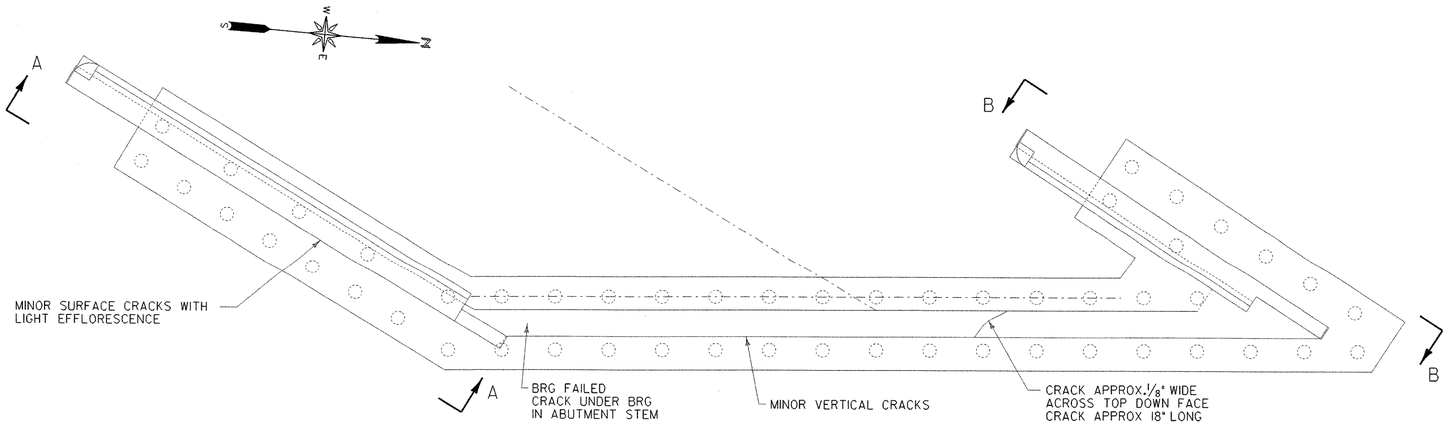
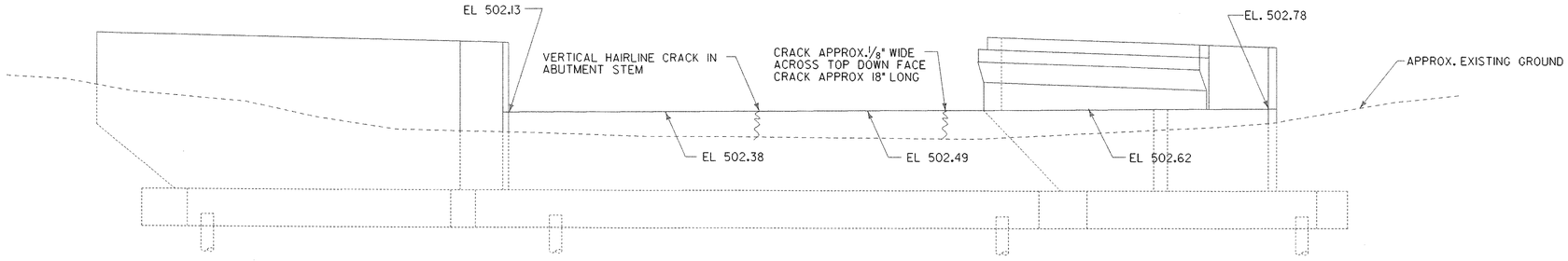
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. |
| | Surv. Sta. |
| ABUTMENT 1 | |
| REPAIR AREAS | |
| Designed By S. YONGHO | Drawn By N. HERRERA |
| Checked By S. YONGHO Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272ab1.dgn | |
| Bridge Sheet No. | Sheet 29 of 85 |

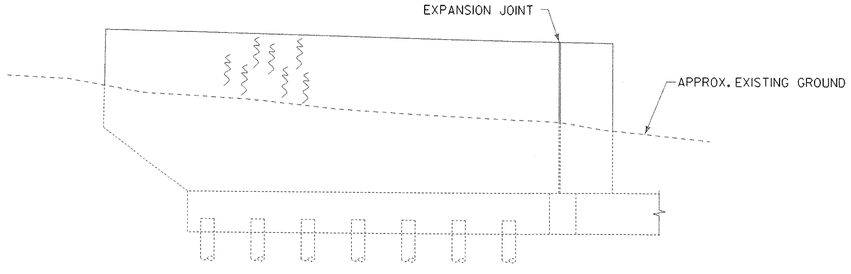
STONE & WEBSTER, INC.



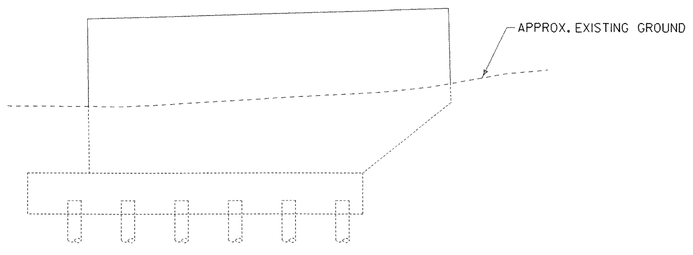

ABUTMENT 2 PLAN




ABUTMENT 2 ELEVATION




VIEW A-A




VIEW B-B

NOTES:

1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.

LEGEND:

- SPALL
- DELANIMATION
- SURFACE CRACK

SCALE 3/16" = 1'-0

1 0 2 4 6 8

10-DEC-2002

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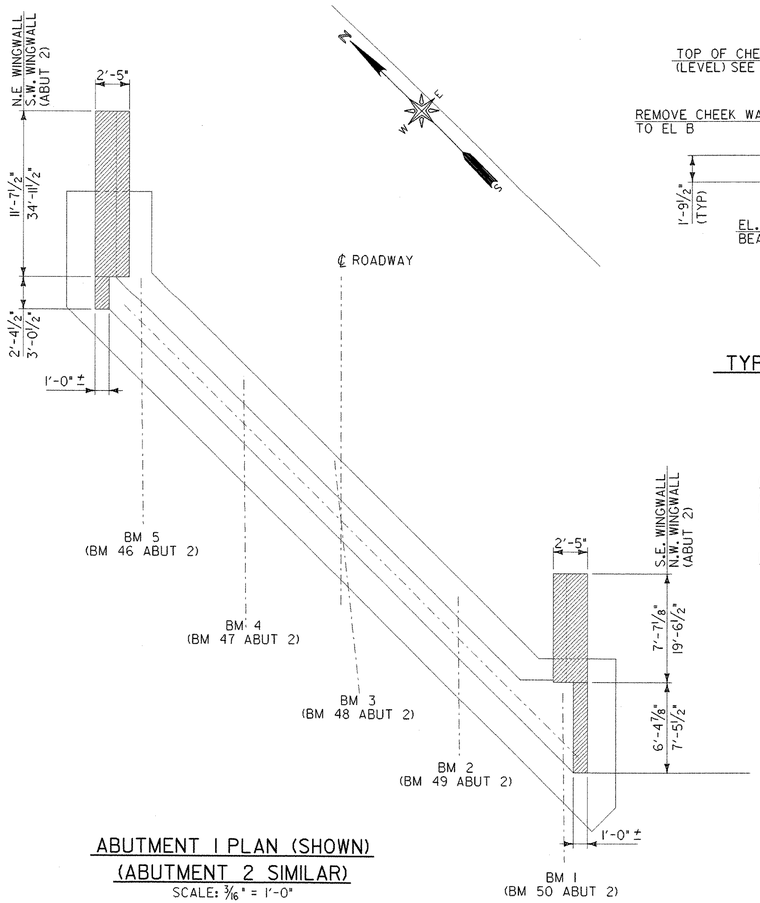
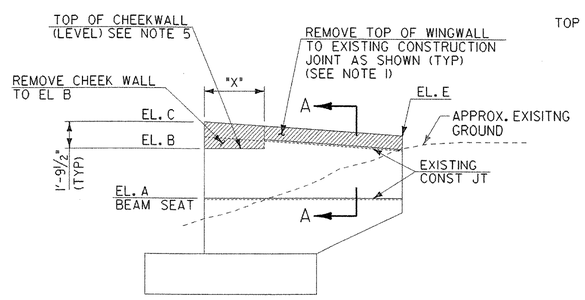
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| ABUTMENT 2 | |
| REPAIR AREAS | |
| Designed By S. YONGHO | Drawn By N. HERRERA |
| Checked By S. YONGHO Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272ab2.dgn | |
| Bridge Sheet No. | Sheet 30 of 85 |

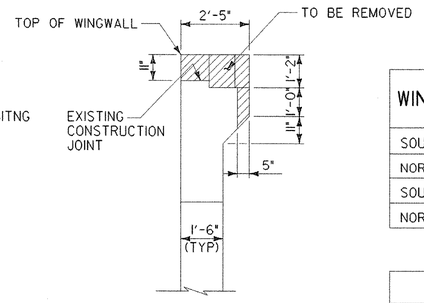
STONE & WEBSTER, INC.




ABUTMENT 1 PLAN (SHOWN)
(ABUTMENT 2 SIMILAR)
SCALE: 3/16" = 1'-0"



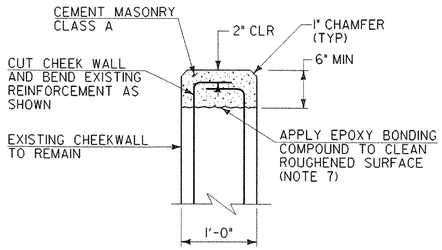

TYPICAL WINGWALL ELEVATION
SCALE: 3/16" = 1'-0"



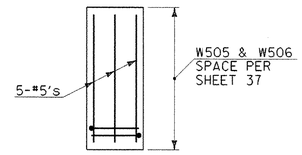

SECTION A
SCALE: 3/8" = 1'-0"

| WINGWALL | TOP OF WINGWALL ELEVATIONS (FT) | | | | DIMENSIONS |
|---|---|---|---|---|---|
| | A | B | C | E | X (FT) |
| SOUTH EAST | 484.71 | 488.53 | 490.32 | 489.37 | 6'-4⅞" |
| NORTH EAST | 484.95 | 488.06 | 489.85 | 488.91 | 2'-4½" |
| SOUTH WEST | 502.13 | 505.80 | 507.59 | 508.31 | 3'-0½" |
| NORTH WEST | 502.18 | 506.20 | 507.99 | 508.70 | 7'-5½" |

| | BEAM SEAT ELEVATIONS | | | | |
|---|---|---|---|---|---|
| ABUTMENT 1 | BM 1 | BM 2 | BM 3 | BM 4 | BM 5 |
| | 484.98 | 484.91 | 484.84 | 484.77 | 484.72 |
| ABUTMENT 2 | BM 46 | BM 47 | BM 48 | BM 49 | BM 50 |
| | 502.30 | 502.43 | 502.55 | 502.65 | 502.76 |



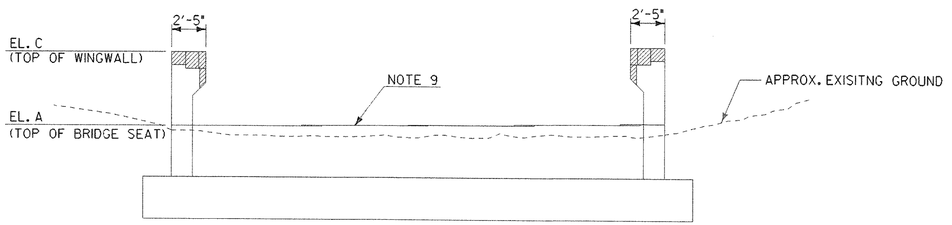

TYPICAL DETAIL FOR CONCRETE
CAP AT EXISTING CHEEKWALL
SCALE: 1" = 1'-0"



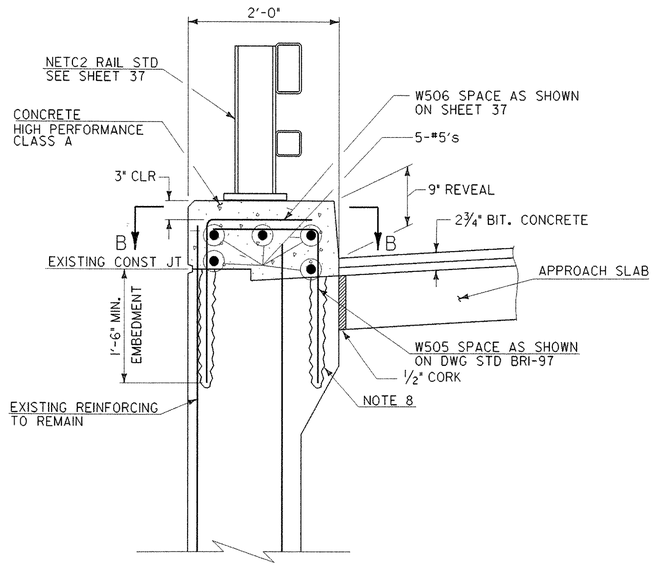

SECTION B
NTS

## NOTES:

1. ALL EXISTING VERTICAL REINFORCEMENT STEEL IN WINGWALLS AND CHEEK WALLS SHALL BE RETAINED. CUT EXISTING REINFORCING TO FIT PROPOSED WINGWALL AND CHEEK WALL CONFIGURATION.
2. REMOVAL OF WINGWALL AND CHEEKWALL MASONRY, SHALL BE PAID AS ITEM 529.25, 'REMOVAL OF CONCRETE OR MASONRY'. EXCAVATION AND BACKFILLING OF EXISTING GROUND REQUIRED TO PERFORM THIS WORK SHALL BE INCLUDED IN ITEM 529.25.
3. SEE SHEET 28 FOR SUBSTRUCTURE REPAIR NOTES AND DETAILS.
4. ALL DIMENSIONS ARE APPROX. AND SHOULD BE VERIFIED IN THE FIELD.
5. TOP OF CHEEKWALL TO BE AT LEAST 6" CLEAR OF SLAB.
6. FOR CONCRETE CURB DIMENSIONS SEE SHEET 39.
7. EPOXY BONDING COMPOUND MEETING THE REQUIREMENTS OF SUBSECTION 719.02 BETWEEN EXISTING AND NEW CONCRETE SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURE'S RECOMENDATIONS.
8. FILL DRILLED HOLES WITH NON-SHRINK, NON-METALLIC EPOXY GROUT AFTER PLACING REINFORCEMENT.
9. USE NON-SHRINK NON-METALIC EPOXY GROUT TO BUILD UP EXISTING BEAM SEAT TO THE BEAM SEAT ELEVATION. APPLY EPOXY BONDING COMPOUND TO TOP OF EXISTING ROUGHENED CONCRETE PRIOR TO PLACING GROUT.




ABUTMENT 1 ELEVATION (SHOWN)
(ABUTMENT 2 SIMILAR)
SCALE: 3/16" = 1'-0"




TYPICAL WINGWALL DETAIL
SCALE: 1" = 1'-0"

LEGEND:

MASONRY REMOVAL

SCALE 1" = 1'-0
1 9 6 3 0 1 2

SCALE 3/16" = 1'-0
1 0 2 4 6 8

SCALE 3/8" = 1'-0
1 0 1 2 3 4

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| ABUTMENT MODIFICATIONS | |
| Designed By S. YONGHO | Drawn By N. HERRERA |
| Checked By S. YONGHO Date DEC 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272abm.dgn | |
| Bridge Sheet No. | Sheet 31 of 85 |

STONE & WEBSTER, INC.

04-FEB-2003

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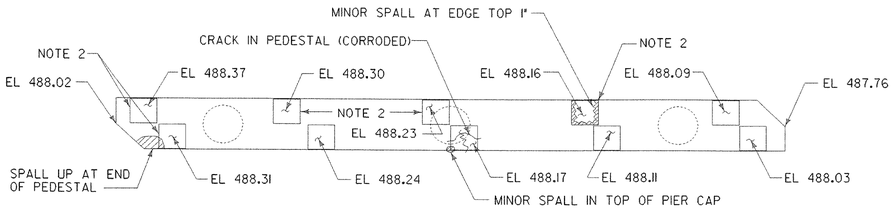
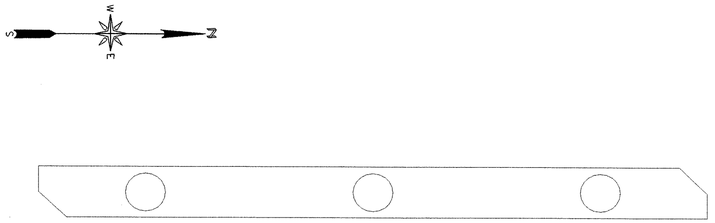
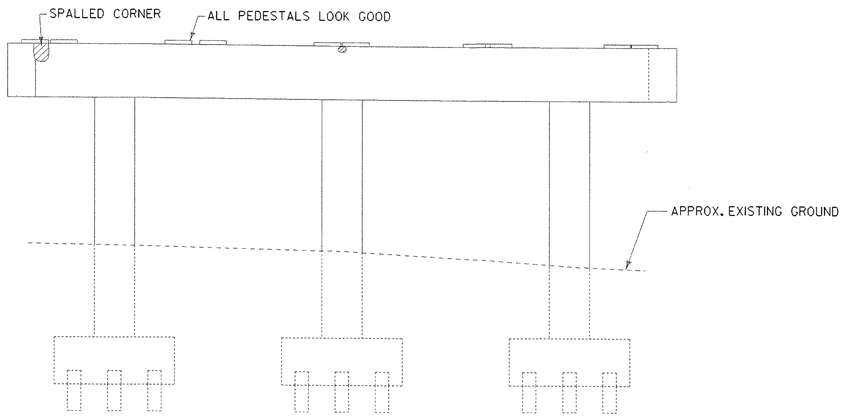


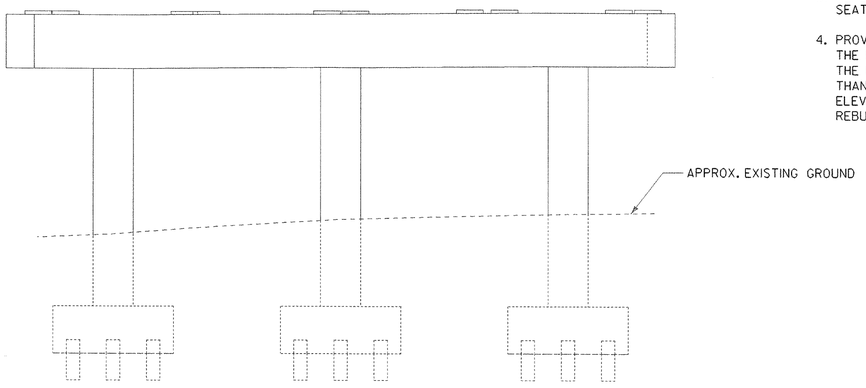

PIER I CAP PLAN - TOP



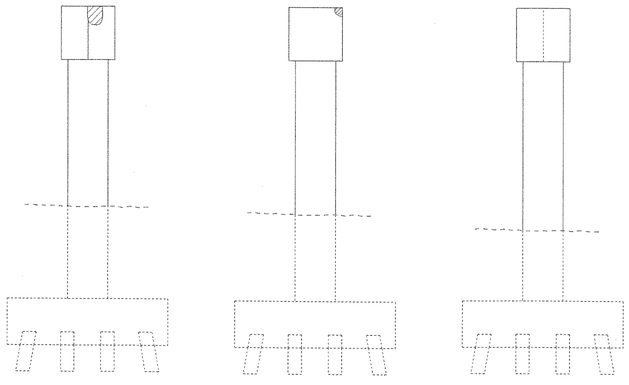
PIER I CAP PLAN - BOTTOM (LOOKING UP)




EAST ELEVATION



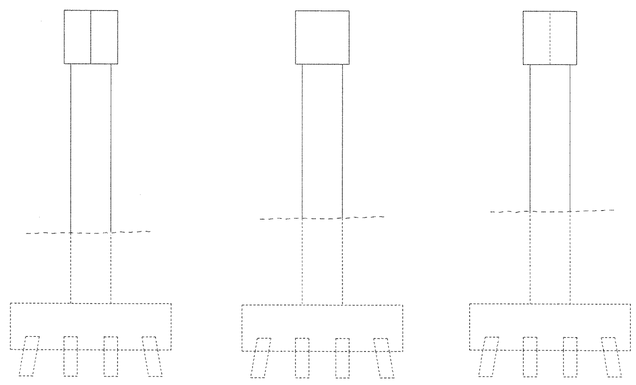

WEST ELEVATION



SOUTH FACE SOUTH COLUMN

SOUTH FACE MIDDLE COLUMN

SOUTH FACE NORTH COLUMN



NORTH FACE NORTH COLUMN

NORTH FACE MIDDLE COLUMN

NORTH FACE SOUTH COLUMN

## NOTES:

1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.
2. REMOVE AND REBUILD NOTED PEDESTALS PER DETAILS GIVEN ON SHEET 36.
3. REFER TO SHEET 36 FOR THE PIER BEAM SEAT ELEVATIONS.
4. PROVIDE A SHIM IN ACCORDANCE WITH THE DETAILS GIVEN ON SHEET 21 WHEN THE PIER BEAM SEAT ELEVATION IS HIGHER THAN THE EXISTING PIER BEAM SEAT ELEVATION AND THE PEDESTAL IS NOT BEING REBUILT PER NOTE 2.

## LEGEND:

- SPALL
- DELANIMATION
- SURFACE CRACK

SCALE 3/16" = 1'-0
1 0 2 4 6 8

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. / Surv. Sta. |
| PIER NO. I | |
| REPAIR AREAS | |
| Designed By S. YONGHO | Drawn By N. HERRERA |
| Checked By S. YONGHO Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272prl.dgn | |
| Bridge Sheet No. | Sheet 32 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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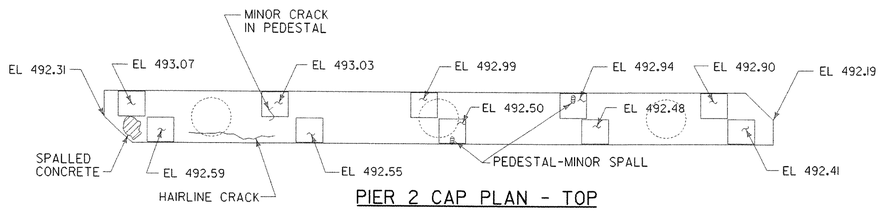
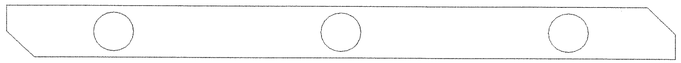
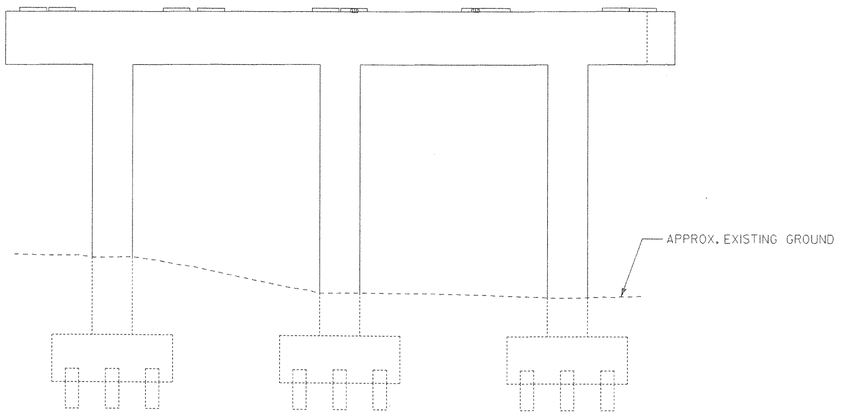


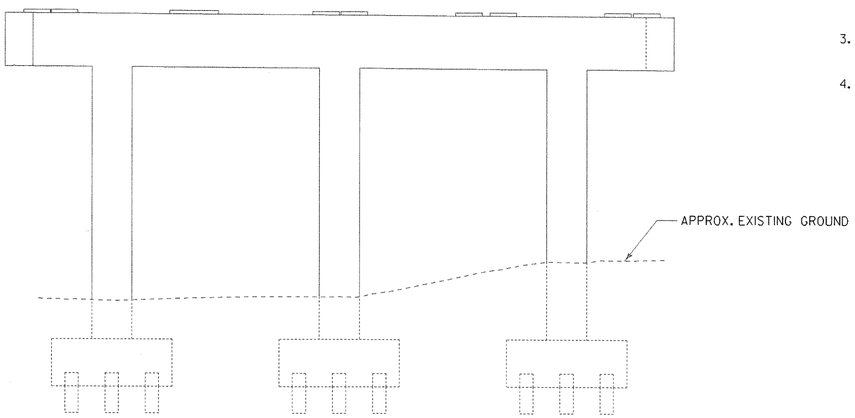

PIER 2 CAP PLAN - TOP



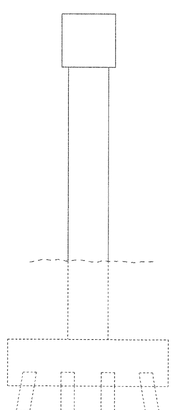
PIER 2 CAP PLAN - BOTTOM (LOOKING UP)



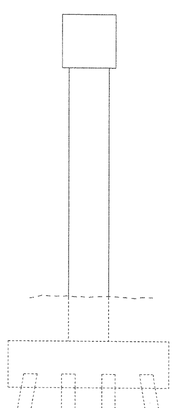

EAST ELEVATION



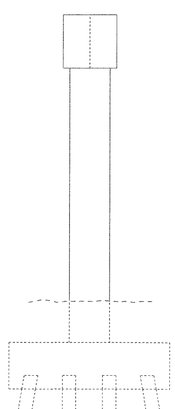

WEST ELEVATION



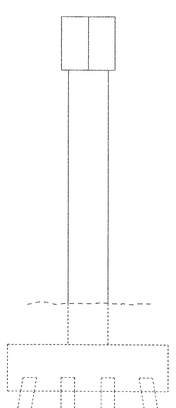
SOUTH FACE
SOUTH COLUMN



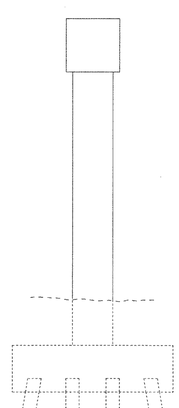
SOUTH FACE
MIDDLE COLUMN



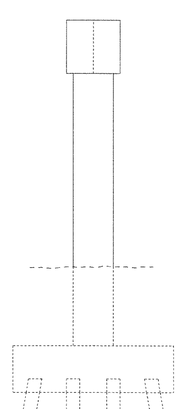
SOUTH FACE
NORTH COLUMN



NORTH FACE
NORTH COLUMN



NORTH FACE
MIDDLE COLUMN



NORTH FACE
SOUTH COLUMN

## NOTES:

1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.
2. REMOVE AND REBUILD NOTED PEDESTALS PER DETAILS GIVEN ON SHEET 36.
3. REFER TO SHEET 36 FOR THE PIER BEAM SEAT ELEVATIONS.
4. PROVIDE A SHIM IN ACCORDANCE WITH THE DETAILS GIVEN ON SHEET 21 WHEN THE PIER BEAM SEAT ELEVATION IS HIGHER THAN THE EXISTING PIER BEAM SEAT ELEVATION AND THE PEDESTAL IS NOT BEING REBUILT PER NOTE 2.

## LEGEND:

SPALL

DELANIMATION

SURFACE CRACK

SCALE 3/16" = 1'-0
1 0 2 4 6 8

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. |
| | Surv. Sta. |
| PIER NO. 2 | |
| REPAIR AREAS | |
| Designed By S. YONGHO | Drawn By N. HERRERA |
| Checked By S. YONGHO Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272pr2.dgn | |
| Bridge Sheet No. | Sheet 33 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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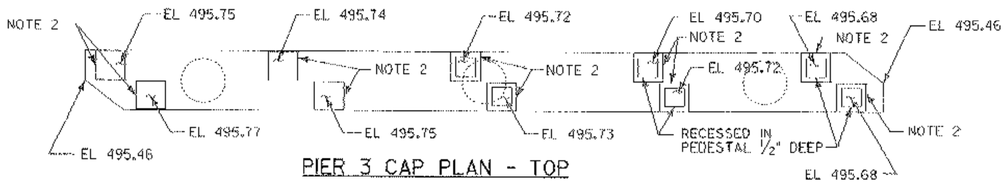
ALL PEDESTALS HAVE RECESSES

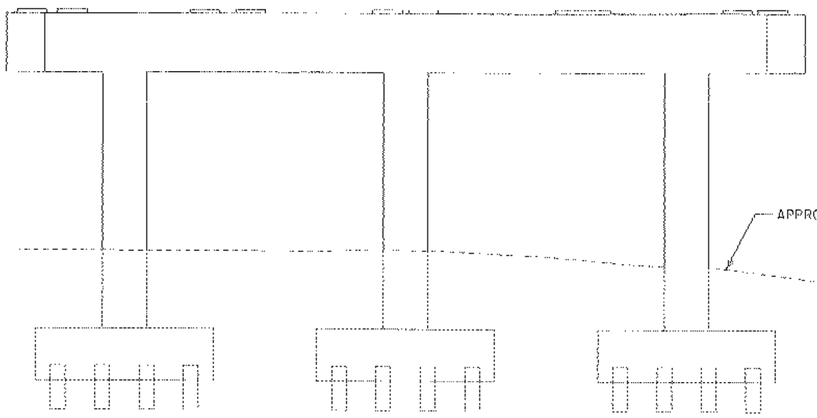



PIER 3 CAP PLAN - TOP

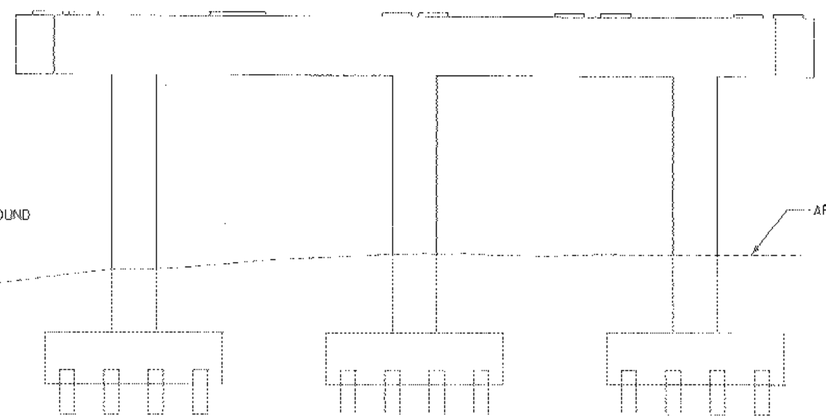
PIER 3 CAP PLAN - BOTTOM (LOOKING UP)

## NOTES:

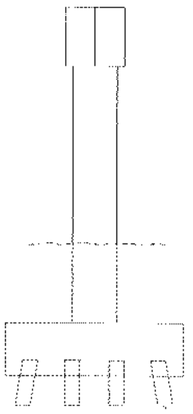
1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.
2. REMOVE AND REBUILD NOTED PEDESTALS PER DETAILS GIVEN ON SHEET 36.
3. REFER TO SHEET 36 FOR THE PIER BEAM SEAT ELEVATIONS.
4. PROVIDE A SHIM IN ACCORDANCE WITH THE DETAILS GIVEN ON SHEET 21 WHEN THE PIER BEAM SEAT ELEVATION IS HIGHER THAN THE EXISTING PIER BEAM SEAT ELEVATION AND THE PEDESTAL IS NOT BEING REBUILT PER NOTE 2.



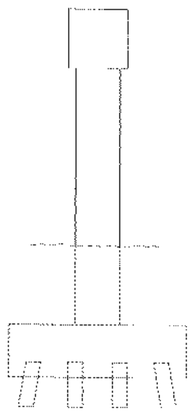

EAST ELEVATION



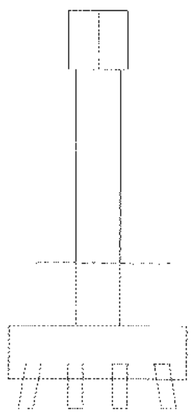

WEST ELEVATION



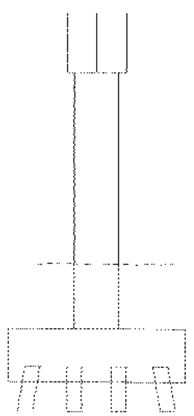
SOUTH FACE
SOUTH COLUMN



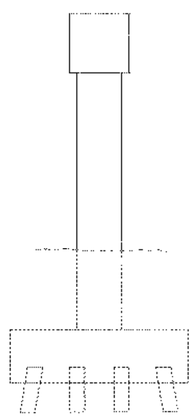
SOUTH FACE
MIDDLE COLUMN



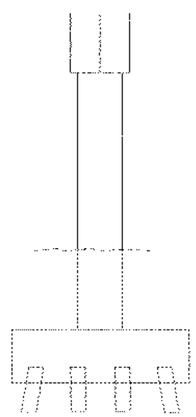
SOUTH FACE
NORTH COLUMN



NORTH FACE
NORTH COLUMN



NORTH FACE
MIDDLE COLUMN



NORTH FACE
SOUTH COLUMN

LEGEND:

- SPALL
- DELAMINATION
- SURFACE CRACK

SCALE 3/16" = 1'-0
1 0 2 4 6 8

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. |
| | Surv. Sta. |
| PIER NO. 3 | |
| REPAIR AREAS | |
| Designed By S. YONGHO | Drawn By N. HERRERA |
| Checked By S. YONGHO Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name 2a272pr3.dgn | |
| Bridge Sheet No. | Sheet 34 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002
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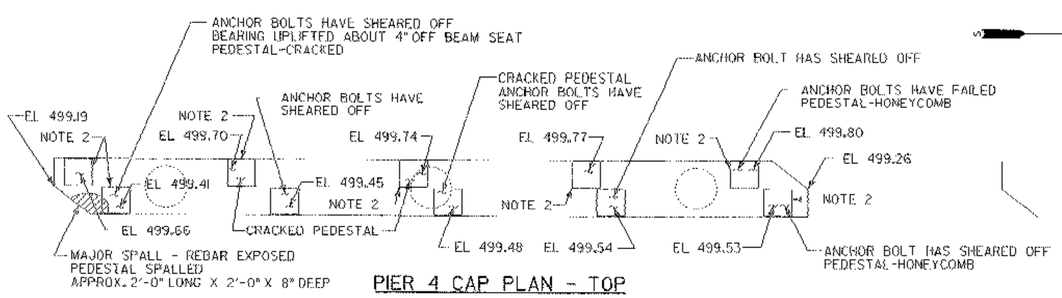
BEARING MASONRY PLATES ARE RECESSED IN ALL PEDESTALS

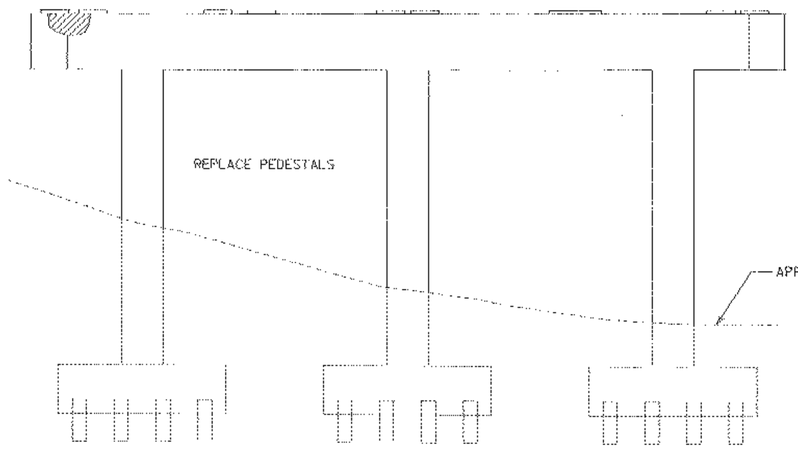



PIER 4 CAP PLAN - TOP

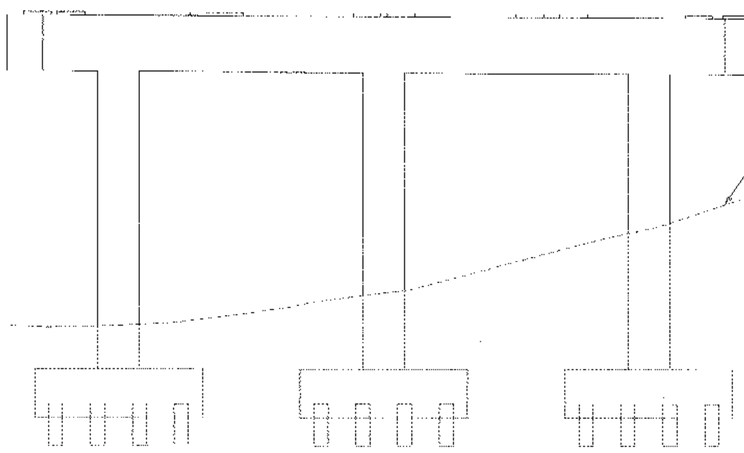
PIER 4 CAP PLAN - BOTTOM (LOOKING UP)

NOTES:

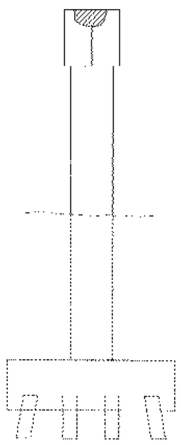
1. ELEVATIONS ARE REFERENCE ELEVATIONS BASED ON SURVEY DATA.
2. REMOVE AND REBUILD NOTED PEDESTALS PER DETAILS GIVEN ON SHEET 36.
3. REFER TO SHEET 36 FOR THE PIER BEAM SEAT ELEVATIONS.
4. PROVIDE A SHIM IN ACCORDANCE WITH THE DETAILS GIVEN ON SHEET 21 WHEN THE PIER BEAM SEAT ELEVATION IS HIGHER THAN THE EXISTING PIER BEAM SEAT ELEVATION AND THE PEDESTAL IS NOT BEING REBUILT PER NOTE 2.



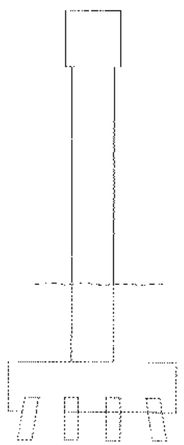

EAST ELEVATION



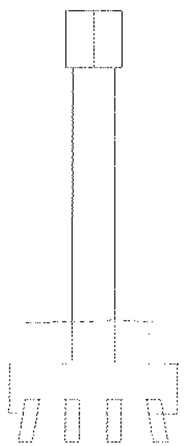

WEST ELEVATION



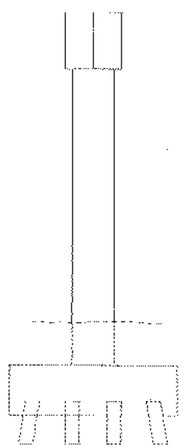
SOUTH FACE
SOUTH COLUMN



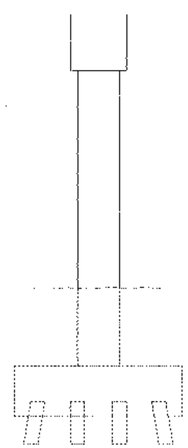
SOUTH FACE
MIDDLE COLUMN



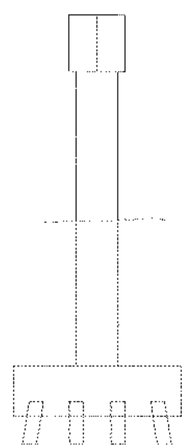
SOUTH FACE
NORTH COLUMN



NORTH FACE
NORTH COLUMN



NORTH FACE
MIDDLE COLUMN



NORTH FACE
SOUTH COLUMN

LEGEND:

- SPALL
- DELAMINATION
- SURFACE CRACK

SCALE 3/16" = 1'-0
0 2 4 6 8

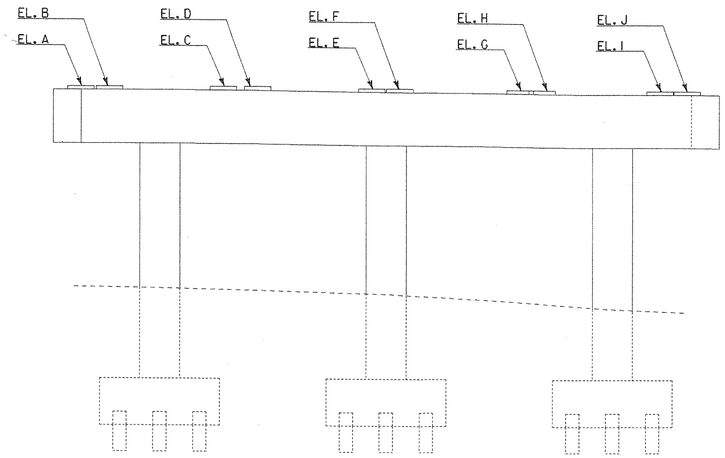
STATE OF VERMONT
AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| PIER NO. 4 | |
| REPAIR AREAS | |
| Designed By S. YONGHO | Drawn By N.HERRERA |
| Checked By S. YONGHO Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272pr4.dgn | |
| Bridge Sheet No. | Sheet 35 of 85 |

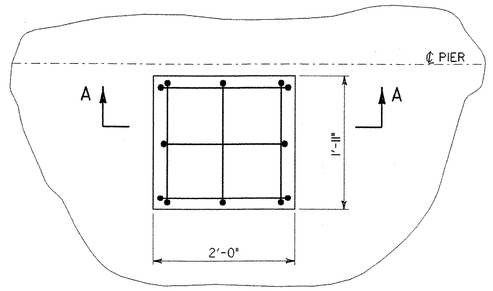
STONE & WEBSTER, INC.

10-DEC-2002

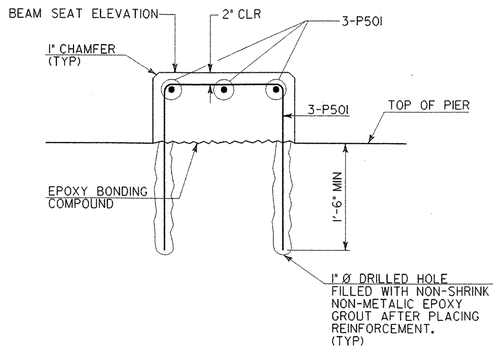
\Structures\za272pr4.dgn



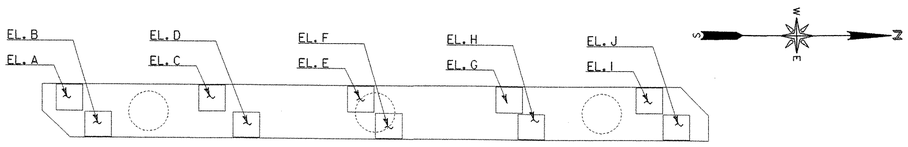

ELEVATION




PLAN VIEW REBUILT PEDESTAL
SCALE: 1"=1'-0"




SECTION A
SCALE: 1"=1'-0"




PIER CAP PLAN

| PIER BEAM SEAT ELEVATIONS (NOTE 2) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PIER | A | B | C | D | E | F | G | H | I | J |
| 1 | 488.36 | 488.35 | 488.29 | 488.28 | 488.23 | 488.21 | 488.16 | 488.15 | 488.09 | 488.08 |
| 2 | 493.09 | 492.78 | 493.06 | 492.74 | 493.02 | 492.70 | 492.98 | 492.66 | 492.94 | 492.62 |
| 3 | 495.68 | 495.65 | 495.67 | 495.64 | 495.66 | 495.62 | 495.64 | 495.61 | 495.63 | 495.58 |
| 4 | 499.56 | 499.45 | 499.61 | 499.49 | 499.66 | 499.54 | 499.70 | 499.57 | 499.73 | 499.61 |

## NOTES:

1. REBUILD PEDESTAL AS NOTED ON SHEETS 32 THROUGH 35.
2. PROVIDE A SHIM IN ACCORDANCE WITH THE DETAILS GIVEN ON SHEET 21 WHEN THE PIER BEAM SEAT ELEVATION IS HIGHER THAN THE EXISTING PIER BEAM SEAT ELEVATION AND THE PEDESTAL IS NOT BEING REBUILT PER NOTE 1.
3. THE REMOVAL OF EXISTING PIER PEDESTALS WILL BE PAID FOR UNDER ITEM 529.25 "REMOVAL OF CONCRETE OR MASONRY". THE NEW PEDESTAL CONCRETE WILL BE PAID FOR UNDER ITEM 501.33 "CONCRETE, HIGH PERFORMANCE CLASS A".
4. **THE PEDESTALS TO BE REMOVED AND REPLACED ARE NOTED ON SHEETS 32 THROUGH 35 IN THE "PIER CAP PLAN – TOP" VIEW AS "NOTE 2". ANY PEDESTAL IN THESE VIEWS WITH THE WORDS "NOTE 2" POINTING TO A PEDESTAL MEANS PLAN ON REMOVING AND REPLACING THIS PEDESTAL.**

SCALE 3/16" = 1'-0
1 0 2 4 6 8

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| PIER REPAIRS | |
| Designed By S. YONGHO | Drawn By N. HERRERA |
| Checked By S. YONGHO Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272pr.dgn | |
| Bridge Sheet No. | Sheet 36 of 85 |

STONE & WEBSTER, INC.

04-FEB-2003

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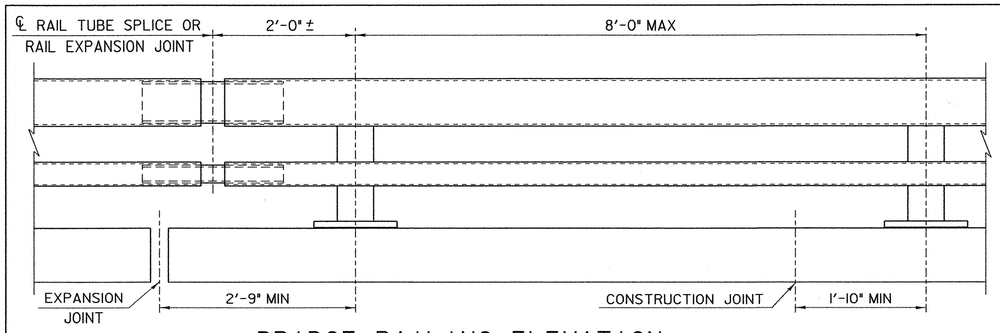
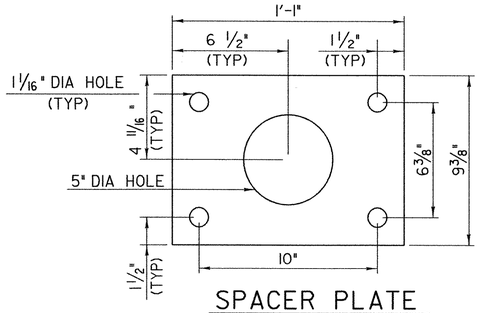
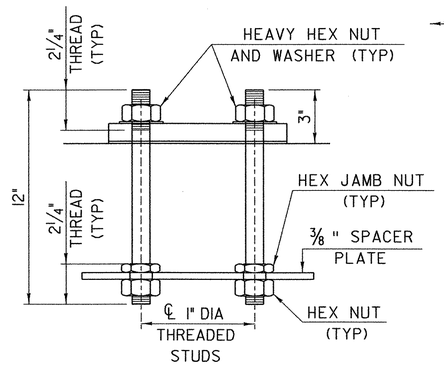


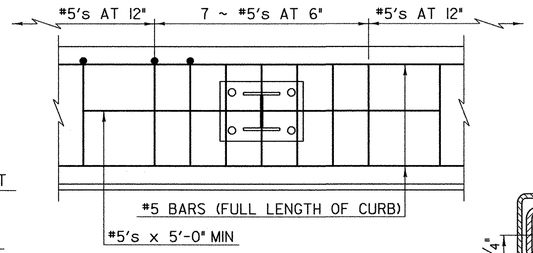

## BRIDGE RAILING ELEVATION




## SPACER PLATE



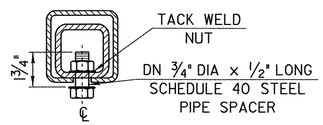

## RAIL POST ANCHORAGE




## CURB REINFORCING PLAN



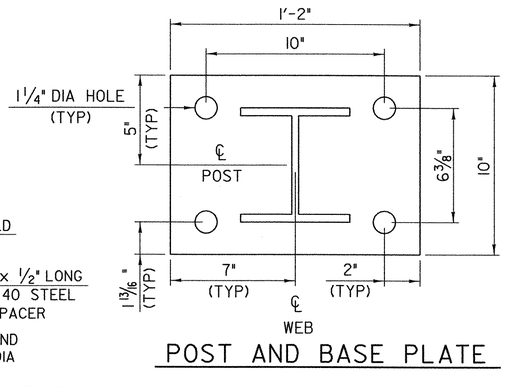

## BASE WELD DETAIL




5/8" DIA TAPPED HOLE IN SPLICE TUBE AND 1 1/8" x 'C' SLOT IN RAIL TUBE FOR 5/8" DIA BOLT AND PLAIN HARDENED WASHER

## EXPANSION JOINT SECTION

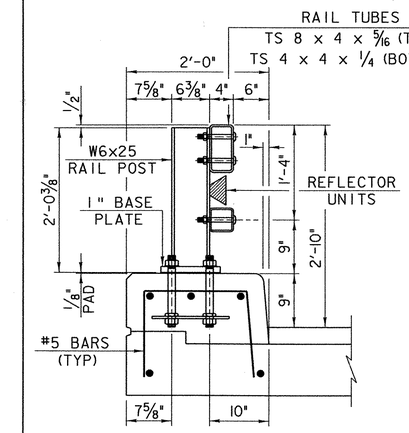
FOR DETAILS NOT SHOWN, SEE "RAIL TUBE SPLICE SECTION."



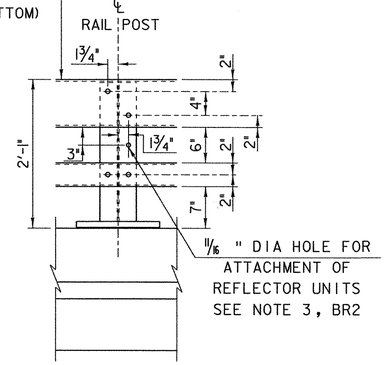

## POST AND BASE PLATE

| SPLICE TABLE | | | | | |
|---|---|---|---|---|---|
| T | A | B | C | L | X |
| N/A | 4" | 2" | -- | 20" | 3/4" |
| EXPANSION JOINT TABLE | | | | | |
| <4" | 4" | 2" | 2 1/2" | 20" | 2 1/2" |
| >4" <6 1/2" | 5 1/2" | 2 3/8" | 3 1/2" | 23 3/4" | 4" |
| >6 1/2" <9" | 6 1/2" | 3 3/8" | 9"* | 27 3/4" | 5" |
| >9" <13" | 8 1/2" | 4 3/8" | 11"* | 33 3/4" | 7" |

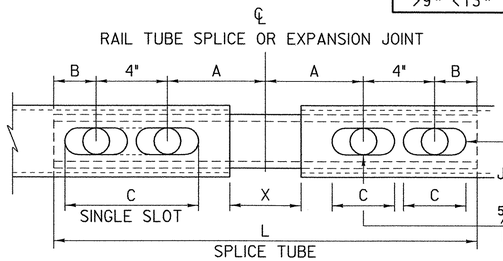
T = TOTAL MOVEMENT BETWEEN BRIDGE EXPANSION JOINTS. SEE NOTE 6.
* = SINGLE SLOT




## TYPICAL SECTION

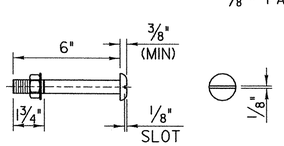



## ELEVATION




## RAIL TUBE SPLICE AND RAIL EXPANSION JOINT DETAIL

(BOTTOM VIEW)

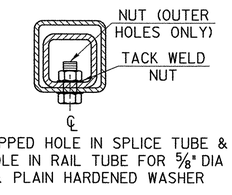


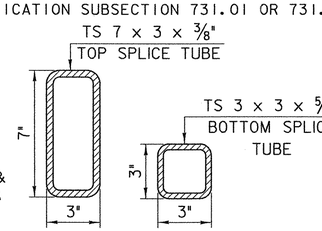




## 3/4 " DIA M164 (TYPE I) ROUND HEAD BOLT

(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT)
(SEE NOTE #9)
ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.




## RAIL TUBE SPLICE SECTION

## NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE PROVISIONS OF SECTION 525, "RAILINGS OF THE STANDARD SPECIFICATION FOR CONSTRUCTION."
2. TUBING AND POSTS SHALL MEET THE REQUIREMENTS OF SECTION 732, "RAILING MATERIALS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION" EXCEPT THE DROP-WEIGHT TEAR TEST IN SECTION 732 SHALL NOT APPLY TO THE STRUCTURAL TUBING IN THIS STANDARD.
3. ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 1/16" RADIUS AND BE FREE OF BURRS.
4. RAIL POSTS SHALL BE SET NORMAL TO GRADE.
5. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.
6. RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING A SUPERSTRUCTURE EXPANSION JOINT. EXPANSION JOINT WIDTH SHALL BE "X" AT 45°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
7. ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT THAT HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M232.
8. RAIL POSTS ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.
9. RAIL TUBES SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY AASHTO M164 (TYPE 1) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 1/16" LARGER THAN THE BOLT SIZE.
10. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO ERECTION.
11. IF THERE IS A CONFLICT BETWEEN THESE STANDARD DETAILS AND THE DESIGN, THE REQUIREMENTS OF THE DESIGN DRAWINGS SHALL BE FOLLOWED.
12. ANY BENDING OF RAIL SHALL BE BY SHOP PROCEDURE ONLY.
13. THE FABRICATOR SHALL SUBMIT SHOP DRAWINGS INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISION OF 506.04, SHOP DRAWINGS. ALL WELDING SHALL CONFORM WITH SECTION 506.10.
14. RAIL POSTS AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A-370 CHARPY IMPACT TESTING USING TYPE A SPECIMEN.

## MATERIALS

RAIL TUBES.....ASTM A500, GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATES.....ASTM A709A709M, GRADE 50
ALL OTHER SHAPES AND PLATES.....ASTM A709/A709M, GRADE 36
ANCHOR STUDS.....ASTM A449
ALL OTHER BOLTS (UNLESS NOTED).....AASHTO M164, TYPE 1

NUTS FOR AASHTO M164 BOLTS AND FOR ANCHOR STUDS SHALL COMPLY WITH AASHTO M291 (ASTM A563).

WASHERS SHALL COMPLY WITH AASHTO M293 (ASTM F436) SPECIFICATIONS.

1/8" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.

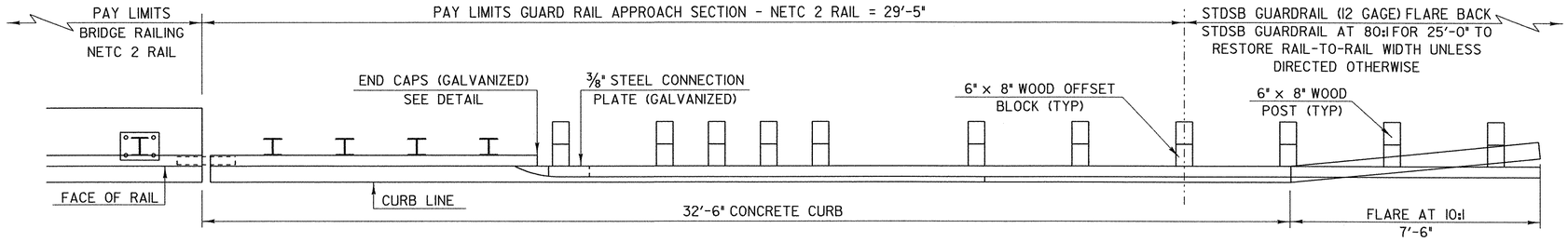
# BRIDGE RAILING - NETC 2 RAIL

VERMONT AGENCY OF TRANSPORTATION

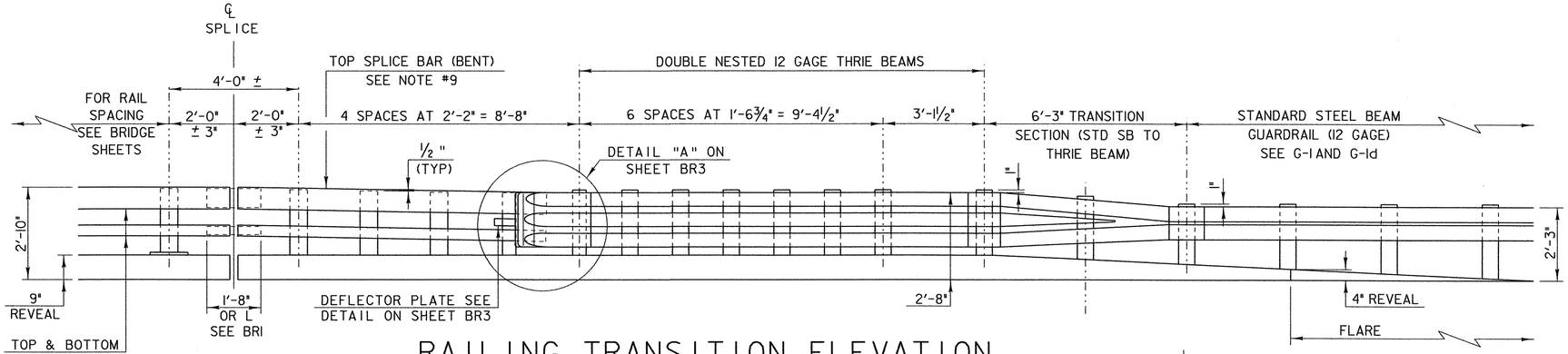
**DETAIL BR 1**

**HARTLAND IM 091-1(36)**
**I-91 BRIDGE 38**

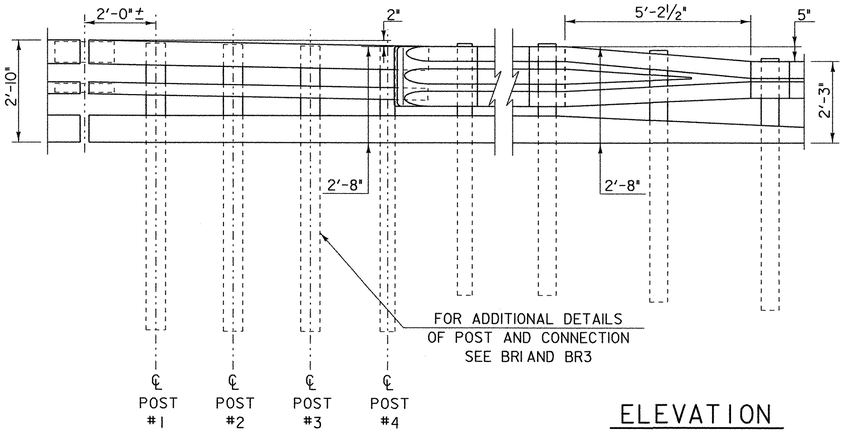
**PROJECT SHEET 37 of 85**



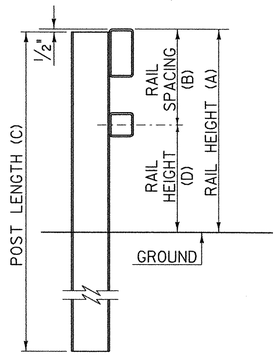

## RAILING TRANSITION PLAN




## RAILING TRANSITION ELEVATION

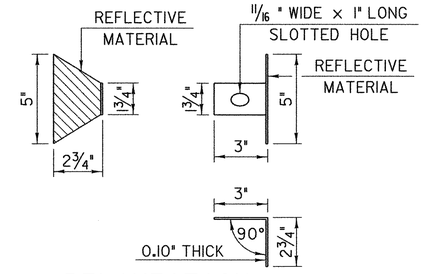



## ELEVATION




## TYPICAL SECTION

| POST NUMBER | RAIL HEIGHT (A) | RAIL SPACING (B) | POST LENGTH (C) | RAIL HEIGHT (D) |
|---|---|---|---|---|
| 1 | 2'-9 1/2" | 1'-3 3/4" | 8'-0" | 1'-5 3/4" |
| 2 | 2'-9" | 1'-3 1/2" | 8'-0" | 1'-5 1/2" |
| 3 | 2'-8 1/2" | 1'-3 3/16" | 8'-0" | 1'-5 5/16" |
| 4 | 2'-8" | 1'-2 7/8" | 8'-0" | 1'-5 1/8" |




## DELINEATION DEVICE DETAILS

## NOTES

1. REFER TO SHEET BR1 FOR ADDITIONAL DETAILS, NOTES AND MATERIAL SPECIFICATIONS.
2. PAYMENT FOR GUARD RAIL APPROACH SECTION - NETC 2 RAIL SHALL INCLUDE THE TERMINAL CONNECTOR, THE CONNECTION PLATE, THE DEFLECTOR PLATE, RAIL, POSTS, BLOCKS AND ATTACHMENT HARDWARE.
3. THE REFLECTORIZED ALUMINUM DELINEATION IS TO BE ERECTED EVERY 30' (OR CLOSEST POST) WITH A 5/8" DIAMETER BOLT. DELINEATORS SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052-H32.
4. REFLECTIVE MATERIAL SHALL MEET REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE OF ENCAPSULATED LENS SILVER OR AMBER. AMBER IS TO BE INSTALLED ON THE DRIVER'S LEFT AND SILVER ON THEIR RIGHT.
5. ON BRIDGES WITH A SIDWALK, DELINEATORS ARE NOT TO BE INSTALLED ON THE SIDEWALK SIDE OF THE BRIDGE (I.E. DELINEATORS INSTALLED ONLY ON THE CURB SIDE AND ON THE APPROACH ON THE CURB SIDE). PAYMENT SHALL BE SUBSIDIARY TO ALL OTHER ITEMS.
6. ALL APPROACH RAIL SPLICES SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW.
7. ALL BRIDGE APPROACH RAIL MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED.
8. CARRIAGE BOLTS SHALL BE AASHTO M164 AND NUTS SHALL BE ASTM A563 GRADE A OR BETTER (GALVANIZED).
9. WELD TOP SPLICE BAR TO FIT BEND. USE COMPLETE PENETRATION WELD (B-U2).
10. THE CONCRETE CURB WILL BE PAID FOR AS ITEM 616.28, "CAST-IN-PLACE CONCRETE CURB, TYPE B."

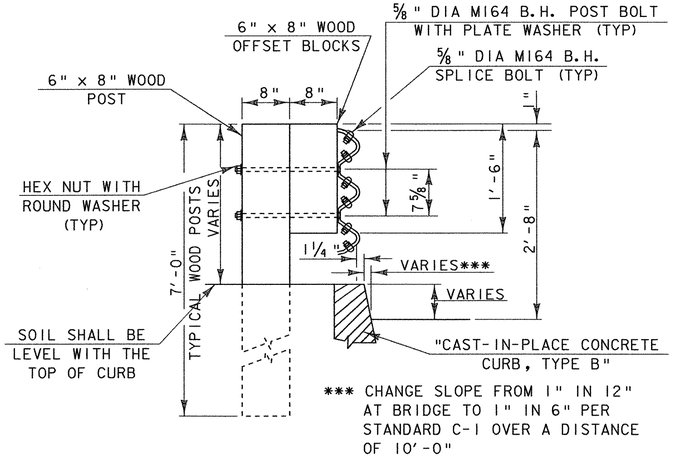
# BRIDGE RAILING - NETC 2 RAIL - THRIE BEAM APPROACH RAIL

VERMONT AGENCY OF TRANSPORTATION

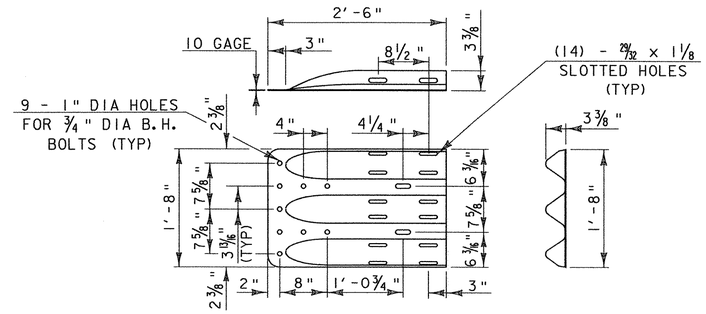
**DETAIL BR 2**

**HARTLAND IM 091-1(36)**
**I-91 BRIDGE 38**

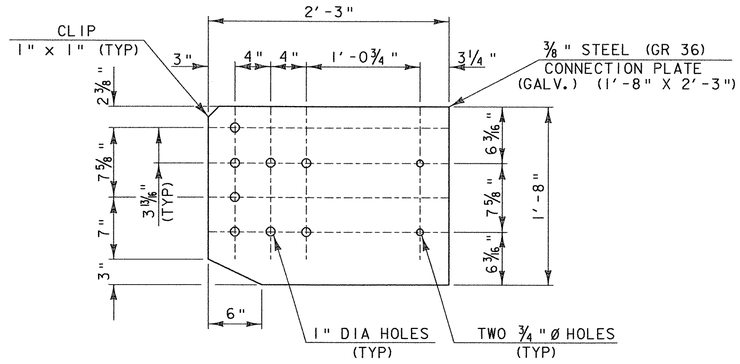
**PROJECT SHEET 38 of 85**



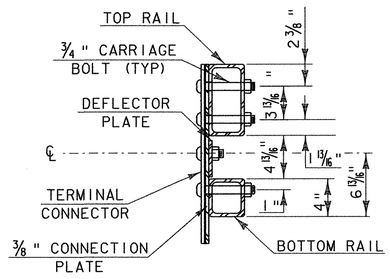

## WOOD POST-RAIL ASSEMBLY




## THRIE-BEAM TERMINAL CONNECTOR

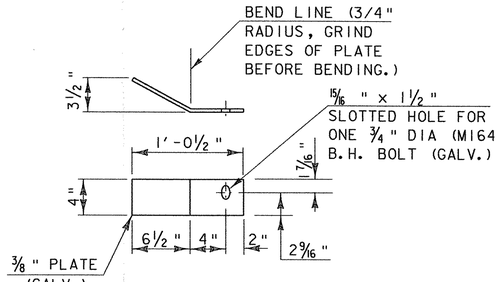



## CONNECTION PLATE

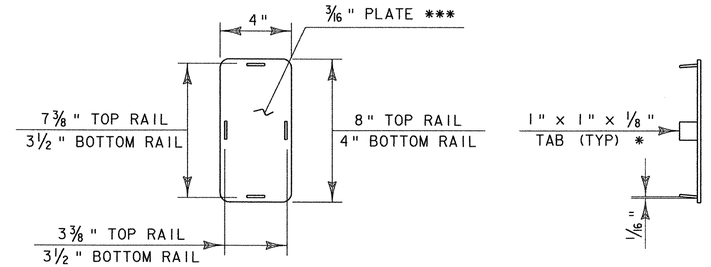



C

## SECTION C-C (CONNECTION PLATE)

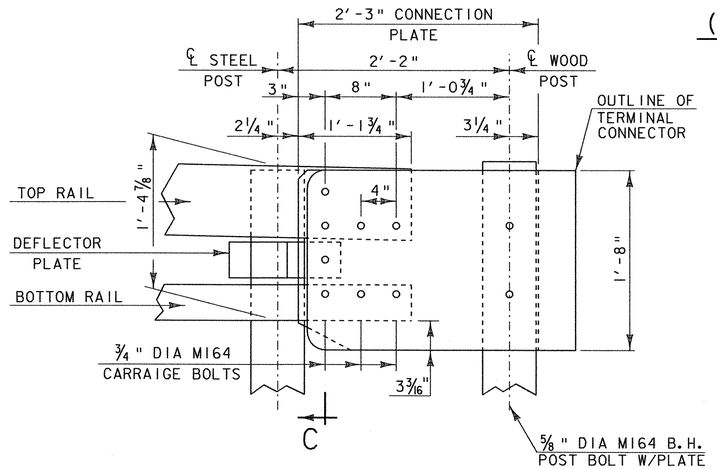



## DEFLECTOR PLATE DETAIL

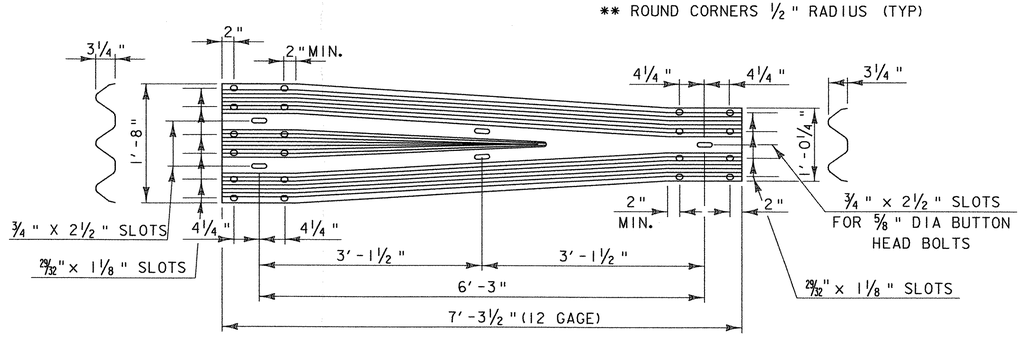



* WELD TABS TO END CAP PLATE IN TAPERED POSITION SO CAP CAN BE JAMMED INTO END OF RAIL TUBE.
** ROUND CORNERS 1/2" RADIUS (TYP)

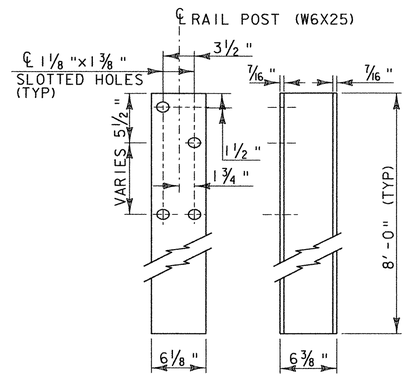
## END CAP DETAIL




## DETAIL A




## THRIE-BEAM TO STD SB TRANSITION SECTION




## RAIL POST

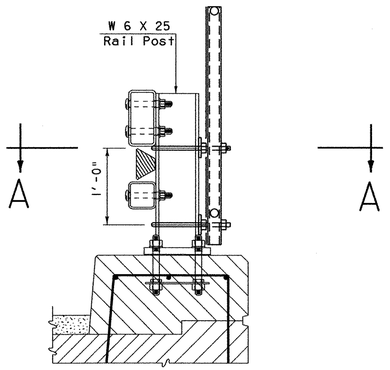
# BRIDGE RAILING - NETC 2 RAIL - THRIE BEAM APPROACH RAIL

VERMONT AGENCY OF TRANSPORTATION

**DETAIL BR 3**

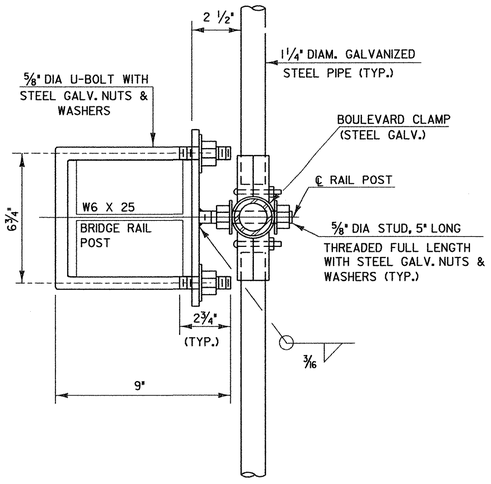
**HARTLAND IM 091-1(36)**
**I-91 BRIDGE 38**

**PROJECT SHEET 38A of 85**

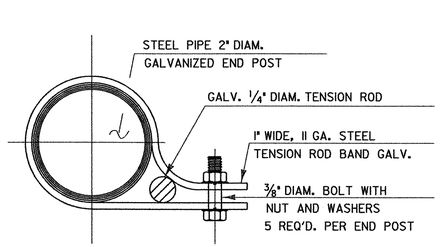



TYPICAL SECTION

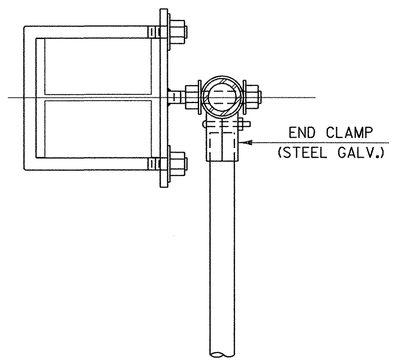
NOTE: FOR DIMENSIONS SEE SHEETS BR1 & BR2.



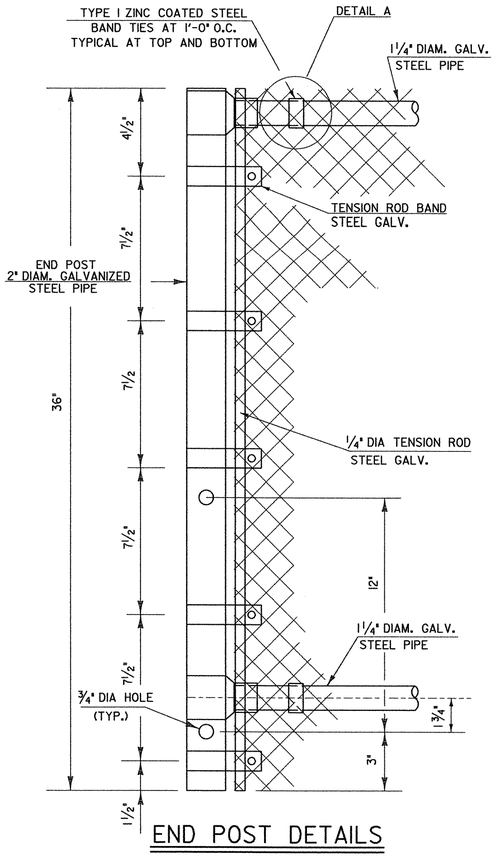

SECTION A-A




TENSION ROD BAND



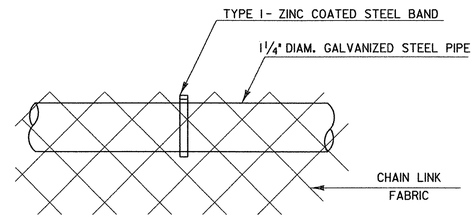

PLAN VIEW AT END POST




END POST DETAILS

## NOTES

1. THREADS OF STUDS AND U-BOLTS TO BE 5/8-11 UNC.
2. ALL CONNECTION PLATES TO BE GALVANIZED AFTER FABRICATION.
3. 1 ¼" PIPE LENGTH SHALL BE FIELD CUT TO FIT POST SPACING.
4. CHAIN LINK FABRIC TO BE KNUCKLED TOP AND BOTTOM.
5. ALL BOLTS, THREADED STUDS AND WASHERS SHALL CONFORM TO THE SPECIFICATIONS FOR AASHTO M-164, TYPE 1. NUTS SHALL CONFORM TO AASHTO M-291.
6. ALL STEEL PLATES SHALL CONFORM TO THE SPECIFICATION FOR AASHTO M270 GRADE 36.
7. ALL GALVANIZING SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-181 WITH HARDWARE AND FITTINGS CONFORMING TO THE REQUIREMENTS OF AASHTO M-111 OR AASHTO M-232 WHICHEVER IS APPLICABLE. ALL BOLTS, NUTS AND WASHERS SHALL BE EITHER HOT-DIP GALVANIZED IN ACCORDANCE WITH THE ABOVE AASHTO REQUIREMENTS OR MECHANICALLY GALVANIZED USING A MECHANICALLY DEPOSITED PROCESS CONFORMING TO THE REQUIREMENTS OF AASHTO M-298, CLASS 110.
8. GALVANIZED CHAIN-LINK FABRIC SHALL BE TYPE 1 (ZINC) CLASS D AS SPECIFIED IN AASHTO M-181.
9. SNOW BARRIER SHALL BEGIN AT THE BRIDGE RAIL POST WHICH WILL PROVIDE A MINIMUM DISTANCE OF 20' (AS SHOWN) OR AS DIRECTED BY THE ENGINEER.
10. ALL REFERENCES TO THE DIAMETERS OF GALVANIZED STEEL PIPE SHALL REFER TO THE OUTSIDE DIAMETER (O.D.).
11. ALL POSTS, RAILS AND HARDWARE SHALL BE ZINC COATED AND CONFORM TO THE REQUIREMENTS OF AASHTO M-181, GRADE 1 OR GRADE 2.




DETAIL A

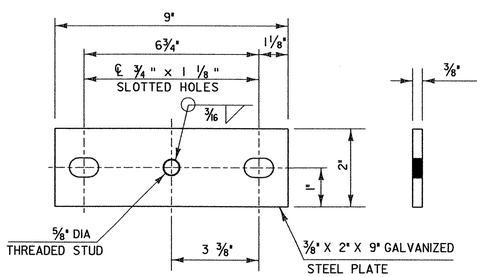
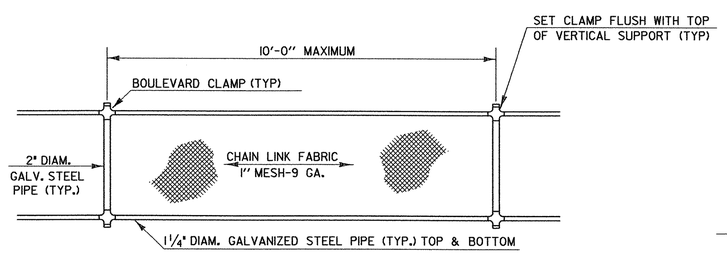
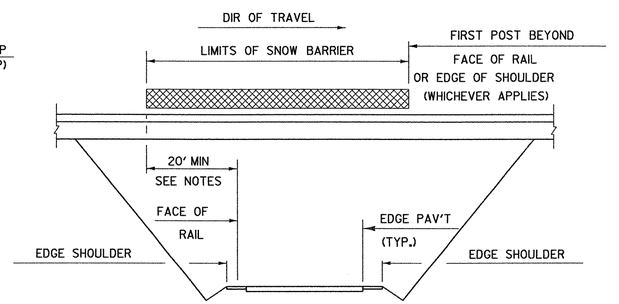



PLATE DETAILS




ELEVATION SNOW BARRIER




SCHEMATIC SNOW BARRIER LIMITS

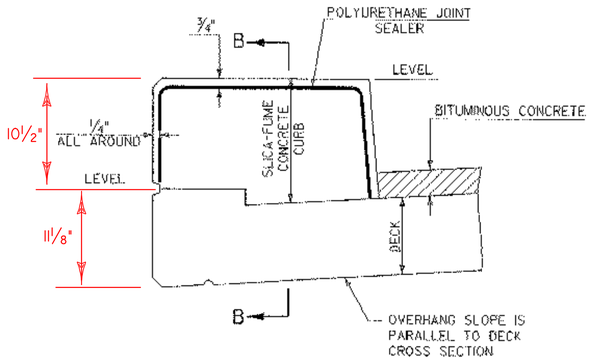
# SNOW FENCE FOR BRIDGE RAILING - N.E.T.C. 2 RAIL

VERMONT AGENCY OF TRANSPORTATION

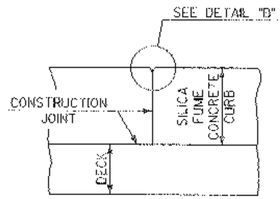
**DETAIL BR 4**

**HARTLAND IM 091-1(36)**
**I-91 BRIDGE 38**

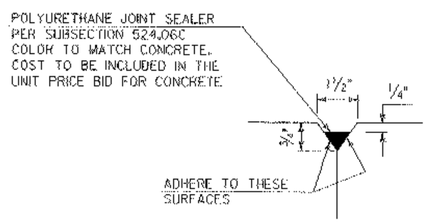
**PROJECT SHEET 38B of 85**



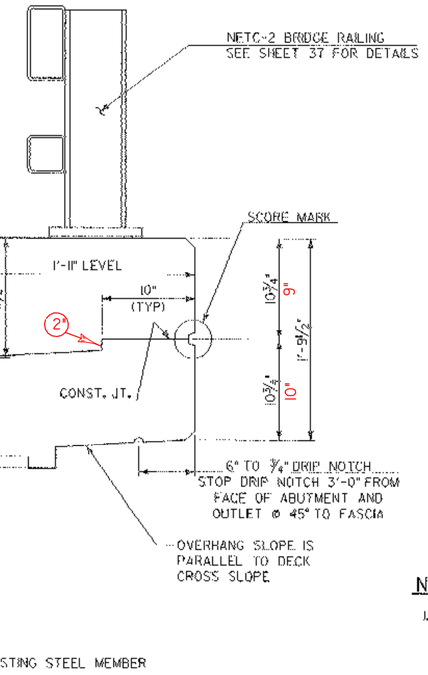

TYPICAL SECTION THROUGH
CONCRETE CURB CONSTRUCTION JOINT
NTS




SECTION B - B
NTS




DETAIL "B"
NTS




TYPICAL CURB SECTION
SCALE: 1 1/2" = 1'-0"

SCALE 1 1/2" = 1'-0
1 9 6 3 0 1

SCALE 3" = 1'-0
1 9 6 3 0 1

## NOTES:

1. CONSTRUCTION JOINTS THROUGH CONCRETE CURBS SHALL BE SPACED MAXIMUM 15'-0" CENTER TO CENTER AND SHALL BE 1'-6" MINIMUM FROM THE CENTER OF THE NEAREST BRIDGE RAIL POST. CONCRETE SHALL BE PLACED IN ALTERNATING SECTIONS WITH A MINIMUM OF 48 HOURS DELAY BETWEEN ADJACENT POURS.
2. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS EXCEPT AT PIERS.
3. POLYURETHANE MEMBRANE AND BLAST CLEANING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SHEET MEMBRANE TORCH APPLIED

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

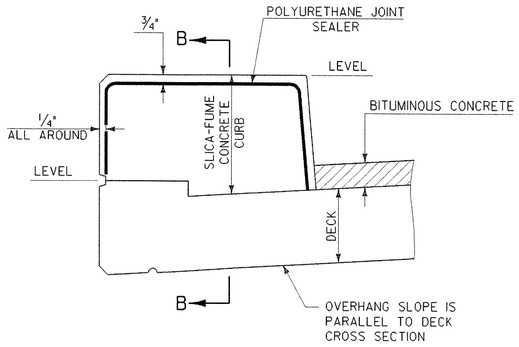
| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |

CURB & CONSTRUCTION JOINT DETAILS

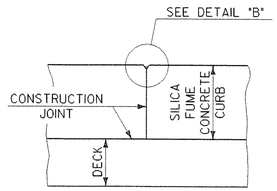
| | |
|---|---|
| Designed By E. JOHNSTON | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272cf.dgn | |
| Bridge Sheet No. | Sheet 39 of 85 |

STONE & WEBSTER, INC.

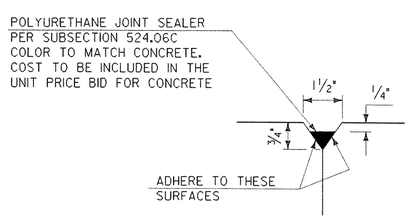
10-DEC-2002
c:\Structures\working\za272cf.dgn



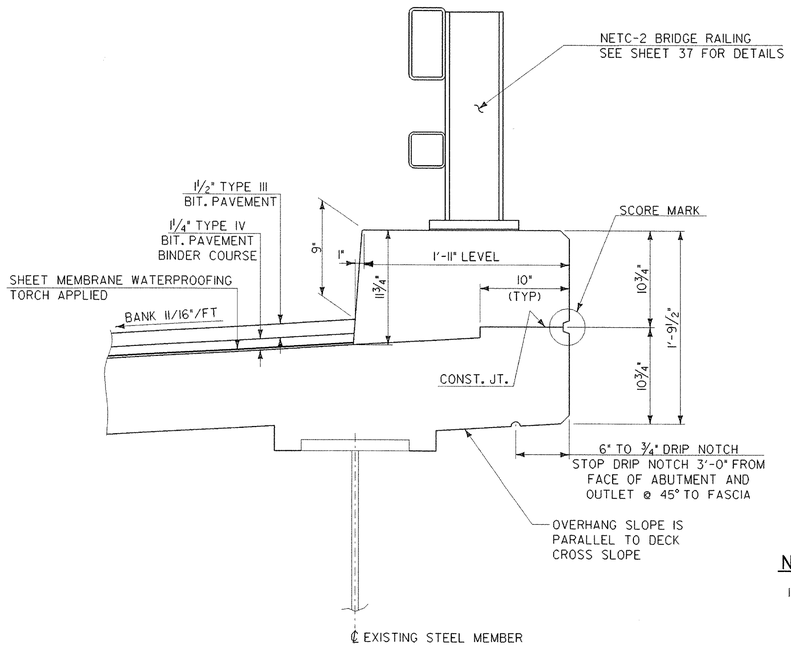

TYPICAL SECTION THROUGH
CONCRETE CURB CONSTRUCTION JOINT
NTS




SECTION B - B
NTS




DETAIL "B"
NTS




TYPICAL CURB SECTION
SCALE: 1 1/2" = 1'-0"

SCALE 1 1/2" = 1'-0
1 9 6 3 0 1

SCALE 3" = 1'-0
1 9 6 3 0 1

## NOTES:

1. CONSTRUCTION JOINTS THROUGH CONCRETE CURBS SHALL BE SPACED MAXIMUM 15'-0" CENTER TO CENTER AND SHALL BE 1'-6" MINIMUM FROM THE CENTER OF THE NEAREST BRIDGE RAIL POST. CONCRETE SHALL BE PLACED IN ALTERNATING SECTIONS WITH A MINIMUM OF 48 HOURS DELAY BETWEEN ADJACENT POURS.
2. LONGITUDINAL REINFORCING SHALL PASS THROUGH CONCRETE CURB CONSTRUCTION JOINTS EXCEPT AT PIERS.
3. POLYURETHANE MEMBRANE AND BLAST CLEANING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SHEET MEMBRANE TORCH APPLIED

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. |
| | Surv. Sta. |

CURB & CONSTRUCTION JOINT DETAILS

| | |
|---|---|
| Designed By E. JOHNSTON | Drawn By N. HERRERA |
| Checked By E. JOHNSTON Date DEC. 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 200 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272cj.dgn | |
| Bridge Sheet No. | Sheet 39 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

v:\Struc\working\za272cj.dgn

STATE OF VERMONT
AGENCY OF TRANSPORTATION

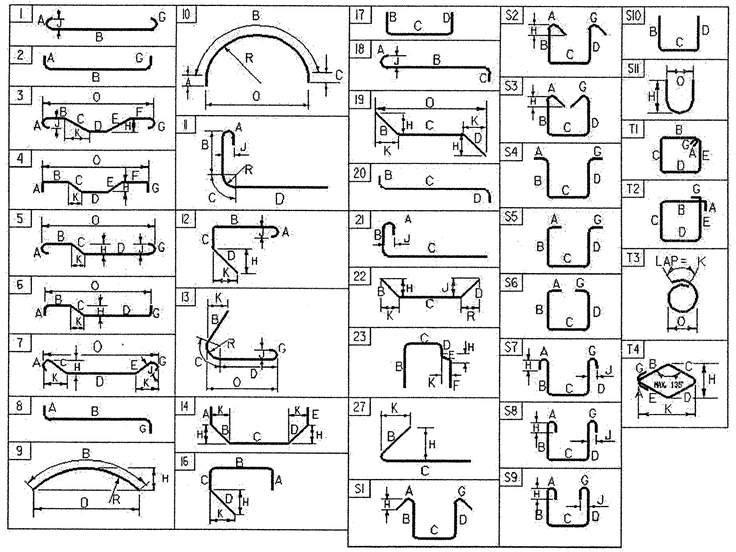
# REINFORCING STEEL SCHEDULE

| | EACH | SIZE | LENGTH | MARK | TYPE | A | B | C | D | E | F | G | H | J | K | R | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SUPERSTRUCTURE** | | | | | | | | | | | | | | | | | |
| **SPAN ONE** | | | | | | | | | | | | | | | | | |
| ▲ | 153 | 5 | 12'- 9" | ES503 | STR | | | | | | | | | | | | |
| ▲ | 153 | 5 | 19'- 3" | ES504 | STR | | | | | | | | | | | | |
| ▲ | 153 | 5 | 25'- 9" | ES505 | STR | | | | | | | | | | | | |
| ▲ | 153 | 5 | 10'- 9" | ES506 | STR | | | | | | | | | | | | |
| | 10 | 5 | 19'- 3" | ES517 | STR | | | | | | | | | | | | |
| | 112 | 5 | 54'- 0" | ES521 | STR | | | | | | | | | | | | |
| | 109 | 5 | 5'- 3" | ES507 | 1 | 0'- 7" | 4'- 8" | | | | | | | | | | |
| | 109 | 5 | 5'- 10" | ES508 | 1 | 0'- 7" | 5'- 3" | | | | | | | | | | |
| | 4 | 5 | 3'- 2" | ES510 | 19 | | 1'- 0" | 2'- 2" | | | | | 0'- 6" | | | | |
| ✳ | 34 | 5 | 10'- 10" | ES511 | 16 | 1'- 3" | 2'- 6" | 6'- 1" | 1'- 0" | | | | | | | | |
| | 5 | 5 | 5'- 0" | ES512 | 19 | | 2'- 2" | 2'- 10" | | | | | 1'- 6" | | | | |
| | 32 | 5 | 2'- 8" | ES513 | 16 | --- | --- | 1'- 2" | 1'- 6" | | | | | | | | |
| | 5 | 5 | 5'- 7" | ES514 | 19 | | 2'- 2" | 3'- 5" | | | | | 1'- 8" | | | | |
| | 24 | 5 | 10'- 5" | ES515 | S5 | 1'- 6" | 3'- 3" | 0'- 8" | 3'- 6" | | | 1'- 6" | | | | | |
| | 3 | 5 | 11'- 5" | ES516 | S5 | 1'- 6" | 3'- 3" | 1'- 8" | 3'- 6" | | | 1'- 6" | | | | | |
| | 31 | 5 | 5'- 3" | ES519 | S5 | 1'- 6" | 0'- 10" | 1'- 2" | 0'- 3" | | | 1'- 6" | | | | | |
| | 3 | 5 | 9'- 1" | ES520 | S5 | 1'- 6" | 2'- 7" | 0'- 8" | 2'- 10" | | | 1'- 6" | | | | | |
| | 210 | 5 | 6'- 1" | ES523 | S5 | 1'- 0" | 1'- 4" | 1'- 5" | 1'- 4" | | | 1'- 0" | | | | | |
| **SPAN TWO** | | | | | | | | | | | | | | | | | |
| ▲ | 159 | 5 | 12'- 9" | ES503 | STR | | | | | | | | | | | | |
| ▲ | 159 | 5 | 19'- 3" | ES504 | STR | | | | | | | | | | | | |
| ▲ | 159 | 5 | 25'- 9" | ES505 | STR | | | | | | | | | | | | |
| ▲ | 159 | 5 | 10'- 9" | ES506 | STR | | | | | | | | | | | | |
| | 10 | 5 | 19'- 3" | ES517 | STR | | | | | | | | | | | | |
| | 222 | 5 | 47'- 7" | ES525 | STR | | | | | | | | | | | | |
| ✳ | 35 | 5 | 12'- 0" | ES527 | STR | | | | | | | | | | | | |
| | 115 | 5 | 5'- 3" | ES507 | 1 | 0'- 7" | 4'- 8" | | | | | | | | | | |
| | 203 | 5 | 5'- 10" | ES508 | 1 | 0'- 7" | 5'- 3" | | | | | | | | | | |
| | 31 | 5 | 5'- 3" | ES519 | S5 | 1'- 6" | 0'- 10" | 1'- 2" | 0'- 3" | | | 1'- 6" | | | | | |
| | 318 | 5 | 6'- 1" | ES523 | S5 | 1'- 0" | 1'- 4" | 1'- 5" | 1'- 4" | | | 1'- 0" | | | | | |
| **SPAN THREE** | | | | | | | | | | | | | | | | | |
| ▲ | 109 | 5 | 12'- 9" | ES503 | STR | | | | | | | | | | | | |
| ▲ | 109 | 5 | 19'- 3" | ES504 | STR | | | | | | | | | | | | |
| ▲ | 109 | 5 | 25'- 9" | ES505 | STR | | | | | | | | | | | | |
| ▲ | 109 | 5 | 10'- 9" | ES506 | STR | | | | | | | | | | | | |
| | 112 | 5 | 47'- 7" | ES525 | STR | | | | | | | | | | | | |
| | 34 | 5 | 13'- 0" | ES529 | STR | | | | | | | | | | | | |
| | 4 | 5 | 13'- 0" | ES529 | STR | | | | | | | | | | | | |
| | 109 | 5 | 5'- 3" | ES507 | 1 | 0'- 7" | 4'- 8" | | | | | | | | | | |
| ✳ | 110 | 5 | 5'- 10" | ES508 | 1 | 0'- 7" | 5'- 3" | | | | | | | | | | |
| | 210 | 5 | 6'- 1" | ES523 | S5 | 1'- 0" | 1'- 4" | 1'- 5" | 1'- 4" | | | 1'- 0" | | | | | |
| **SPAN FOUR** | | | | | | | | | | | | | | | | | |
| ✳ ▲ | 189 | 5 | 12'- 9" | ES503 | STR | | | | | | | | | | | | |
| ▲ | 188 | 5 | 19'- 3" | ES504 | STR | | | | | | | | | | | | |
| ▲ | 188 | 5 | 25'- 9" | ES505 | STR | | | | | | | | | | | | |
| ▲ | 188 | 5 | 10'- 9" | ES506 | STR | | | | | | | | | | | | |
| | 10 | 5 | 19'- 3" | ES517 | STR | | | | | | | | | | | | |
| | 222 | 5 | 47'- 7" | ES525 | STR | | | | | | | | | | | | |
| | 188 | 5 | 5'- 3" | ES507 | 1 | 0'- 7" | 4'- 8" | | | | | | | | | | |
| ✳ | 145 | 5 | 5'- 10" | ES508 | 1 | 0'- 7" | 5'- 3" | | | | | | | | | | |
| | 31 | 5 | 5'- 3" | ES519 | S5 | 1'- 6" | 0'- 10" | 1'- 2" | 0'- 3" | | | 1'- 6" | | | | | |
| | 384 | 5 | 6'- 1" | ES523 | S5 | 1'- 0" | 1'- 4" | 1'- 5" | 1'- 4" | | | 1'- 0" | | | | | |
| **SPAN FIVE** | | | | | | | | | | | | | | | | | |
| ▲ | 234 | 5 | 12'- 9" | ES503 | STR | | | | | | | | | | | | |
| ▲ | 232 | 5 | 19'- 3" | ES504 | STR | | | | | | | | | | | | |
| ▲ | 234 | 5 | 25'- 9" | ES505 | STR | | | | | | | | | | | | |
| ▲ | 232 | 5 | 10'- 9" | ES506 | STR | | | | | | | | | | | | |
| ▲ | 28 | 5 | 19'- 3" | ES509 | STR | | | | | | | | | | | | |
| | 10 | 5 | 19'- 3" | ES517 | STR | | | | | | | | | | | | |
| | 321 | 5 | 33'- 6" | ES531 | STR | | | | | | | | | | | | |
| | 190 | 5 | 5'- 3" | ES507 | 1 | 0'- 7" | 4'- 8" | | | | | | | | | | |
| ✳ | 189 | 5 | 5'- 10" | ES508 | 1 | 0'- 7" | 5'- 3" | | | | | | | | | | |
| | 24 | 5 | 11'- 0" | ES518 | S5 | 1'- 6" | 3'- 5" | 0'- 11" | 3'- 8" | | | 1'- 6" | | | | | |
| | 31 | 5 | 5'- 3" | ES519 | S5 | 1'- 6" | 0'- 10" | 1'- 2" | 0'- 3" | | | 1'- 6" | | | | | |
| | 2 | 5 | 13'- 1" | ES522 | S5 | 1'- 6" | 3'- 5" | 2'- 3" | 3'- 8" | | | 1'- 6" | | | | | |
| | 354 | 5 | 6'- 1" | ES523 | S5 | 1'- 0" | 1'- 4" | 1'- 5" | 1'- 4" | | | 1'- 0" | | | | | |
| ✳ | 33 | 5 | 11'- 1" | ES524 | 16 | 1'- 3" | 2'- 9" | 6'- 1" | 1'- 0" | | | | | | | | |
| | 32 | 5 | 2'- 11" | ES526 | 16 | --- | --- | 1'- 5" | 1'- 6" | | | | | | | | |
| | 4 | 5 | 3'- 2" | ES532 | 19 | | 1'- 0" | 2'- 2" | | | | | 0'- 6" | | | | |
| | 5 | 5 | 3'- 10" | ES533 | 19 | | 1'- 8" | 2'- 2" | | | | | 1'- 4" | | | | |
| | 5 | 5 | 4'- 7" | ES534 | 19 | | 2'- 2" | 2'- 5" | | | | | 1'- 10" | | | | |

| ITEM | EACH | SIZE | LENGTH | MARK | TYPE | A | B | C | D | E | F | G | H | J | K | R | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APPROACH SLAB NUMBER ONE** | | | | | | | | | | | | | | | | | |
| | 26 | 5 | 48'- 0" | 1EAS503 | STR | | | | | | | | | | | | |
| | 16 | 8 | 2'- 7" | 1EAS801 | 22 | | | 1'- 9" | 0'- 10" | --- | | | | | | | |
| ✳ | 44 | 9 | 25'- 9" | 1EAS901 | 1 | 1'- 3" | 24'- 6" | | | | | | | 0'- 11" | | | |
| **APPROACH SLAB NUMBER TWO** | | | | | | | | | | | | | | | | | |
| ✳ | 26 | 5 | 48'- 0" | 2EAS503 | STR | | | | | | | | | | | | |
| | 16 | 8 | 2'- 7" | 2EAS801 | 22 | | | 1'- 9" | 0'- 10" | --- | | | | | | | |
| | 44 | 9 | 25'- 9" | 2EAS901 | 1 | 1'- 3" | 24'- 6" | | | | | | | 0'- 11" | | | |
| **ABUTMENT ONE** | | | | | | | | | | | | | | | | | |
| **SOUTH WINGWALL** | | | | | | | | | | | | | | | | | |
| ⑦ | 7 | 5 | 7'- 1" | 1W501 | STR | | | | | | | | | | | | |
| | 7 | 5 | 4'- 6" | 1W505 | S10 | | 3'- 0" | 1'- 6" | --- | | | | | | | | |
| | 7 | 5 | 4'- 6" | 1W506 | S10 | | 3'- 0" | 1'- 6" | --- | | | | | | | | |
| **NORTH WINGWALL** | | | | | | | | | | | | | | | | | |
| | 5 | 5 | 11'- 1" | 1W503 | STR | | | | | | | | | | | | |
| | 12 | 5 | 4'- 6" | 1W505 | S10 | | 3'- 0" | 1'- 6" | --- | | | | | | | | |
| | 12 | 5 | 4'- 6" | 1W506 | S10 | | 3'- 0" | 1'- 6" | --- | | | | | | | | |
| **ABUTMENT TWO** | | | | | | | | | | | | | | | | | |
| **SOUTH WINGWALL** | | | | | | | | | | | | | | | | | |
| | 5 | 5 | 34'- 6" | 2W502 | STR | | | | | | | | | | | | |
| | 35 | 5 | 4'- 6" | 1W505 | S10 | | 3'- 0" | 1'- 6" | --- | | | | | | | | |
| | 35 | 5 | 4'- 6" | 1W506 | S10 | | 3'- 0" | 1'- 6" | --- | | | | | | | | |
| **NORTH WINGWALL** | | | | | | | | | | | | | | | | | |
| ⑦ | 7 | 5 | 19'- 0" | 2W504 | STR | | | | | | | | | | | | |
| | 19 | 5 | 4'- 6" | 1W505 | S10 | | 3'- 0" | 1'- 6" | --- | | | | | | | | |
| | 19 | 5 | 4'- 6" | 1W506 | S10 | | 3'- 0" | 1'- 6" | --- | | | | | | | | |
| **PIER ONE** | | | | | | | | | | | | | | | | | |
| ▲ | 30 | 5 | 5'- 4" | 1P501 | 17 | | 1'- 10" | 1'- 8" | 1'- 10" | | | | | | | | |
| **PIER THREE** | | | | | | | | | | | | | | | | | |
| ▲ | 60 | 5 | 5'- 4" | 3P501 | 17 | | 1'- 10" | 1'- 8" | 1'- 10" | | | | | | | | |
| **PIER FOUR** | | | | | | | | | | | | | | | | | |
| ▲ | 42 | 5 | 5'- 4" | 4P501 | 17 | | 1'- 10" | 1'- 8" | 1'- 10" | | | | | | | | |

## ~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. ⑦ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. "E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



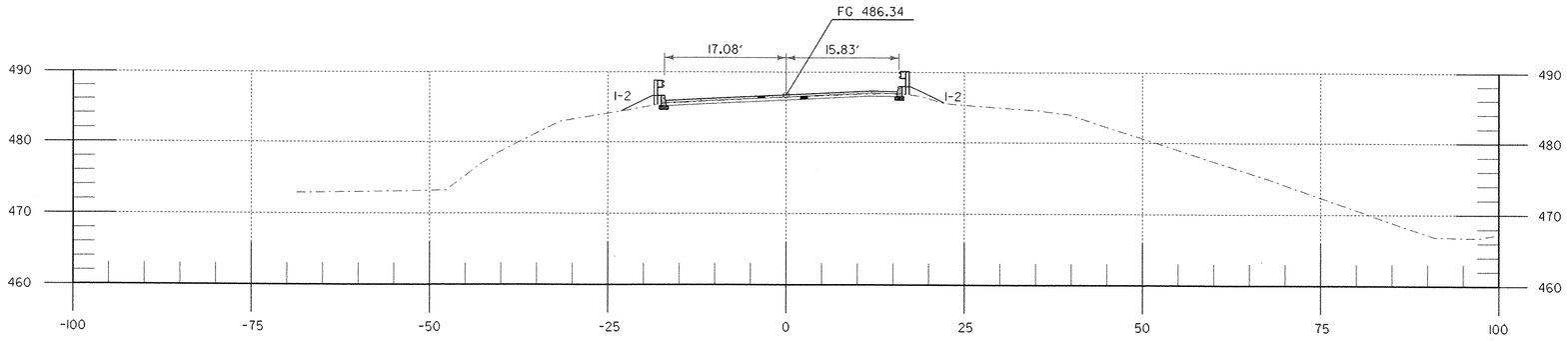

## ASTM STANDARD REINFORCING BARS

| BAR SIZE DESIGNATION | WEIGHT POUNDS PER FOOT | NOMINAL DIMENSIONS ROUND SECTION | | |
|---|---|---|---|---|
| | | DIAMETER INCHES | AREA INCHES$^2$ | PERIMETER INCHES |
| #3 | 0.376 | 0.375 | 0.11 | 1.178 |
| #4 | 0.668 | 0.500 | 0.20 | 1.571 |
| #5 | 1.043 | 0.625 | 0.31 | 1.963 |
| #6 | 1.502 | 0.750 | 0.44 | 2.356 |
| #7 | 2.044 | 0.875 | 0.60 | 2.749 |
| #8 | 2.670 | 1.000 | 0.79 | 3.142 |
| #9 | 3.400 | 1.128 | 1.00 | 3.544 |
| #10 | 4.303 | 1.270 | 1.27 | 3.990 |
| #11 | 5.313 | 1.410 | 1.56 | 4.430 |
| #14 | 7.65 | 1.693 | 2.25 | 5.32 |
| #18 | 13.60 | 2.257 | 4.00 | 7.09 |

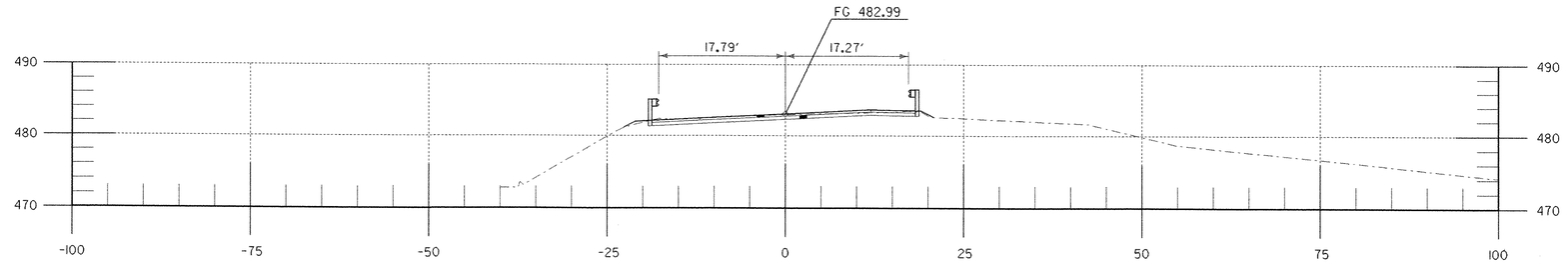
PROJECT NAME: **HARTLAND**
PROJECT NUMBER: **IM 091-1 (36)**

FILE NAME: **za272rs.xls**
PROJECT LEADER: **E JOHNSTON**
DESIGNED BY: **S YONGHO**
**REINFORCING STEEL SCHEDULE SHEET #1**

PLOT DATE: **12/10/2002**
DRAWN BY: **N HERRERA**
CHECKED BY: **E JOHNSTON**
SHEET **40** OF **85**




422+55




422+05

SCALE 1" = 10'-0
10 0 10

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| US 5 CROSS SECTIONS | |
| STA 422+05 TO 422+55 | |
| Designed By J. BARRACK | Drawn By N. HERRERA |
| Checked By J. BARRACK Date DEC 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272xsl.dgn | |
| Bridge Sheet No. | Sheet 42 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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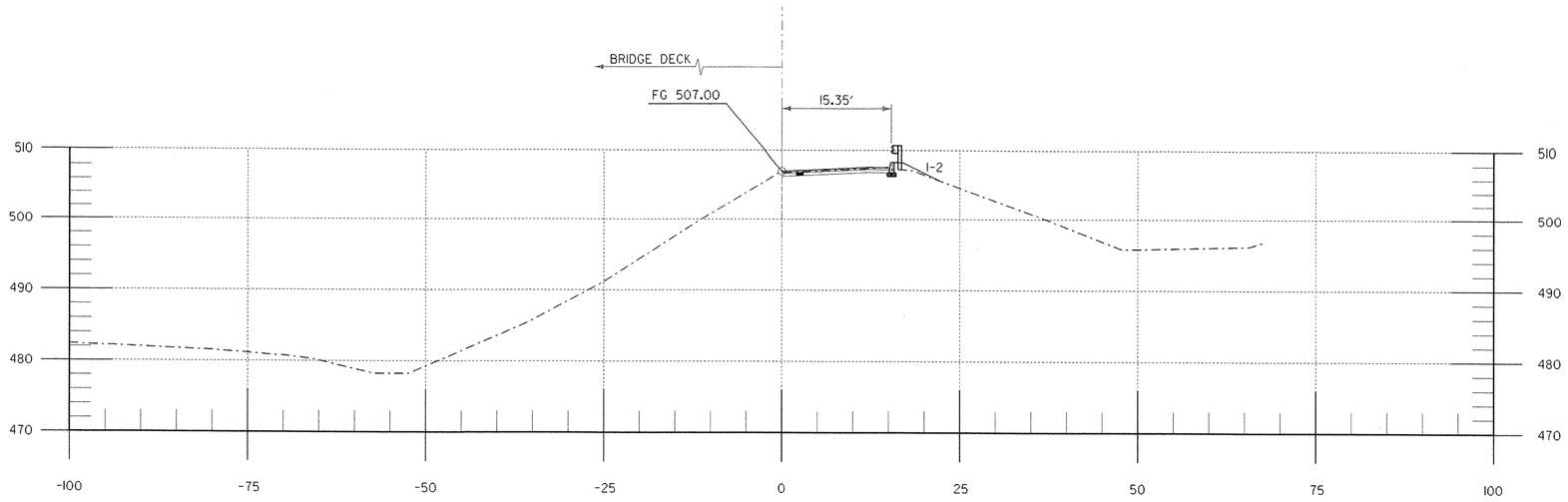
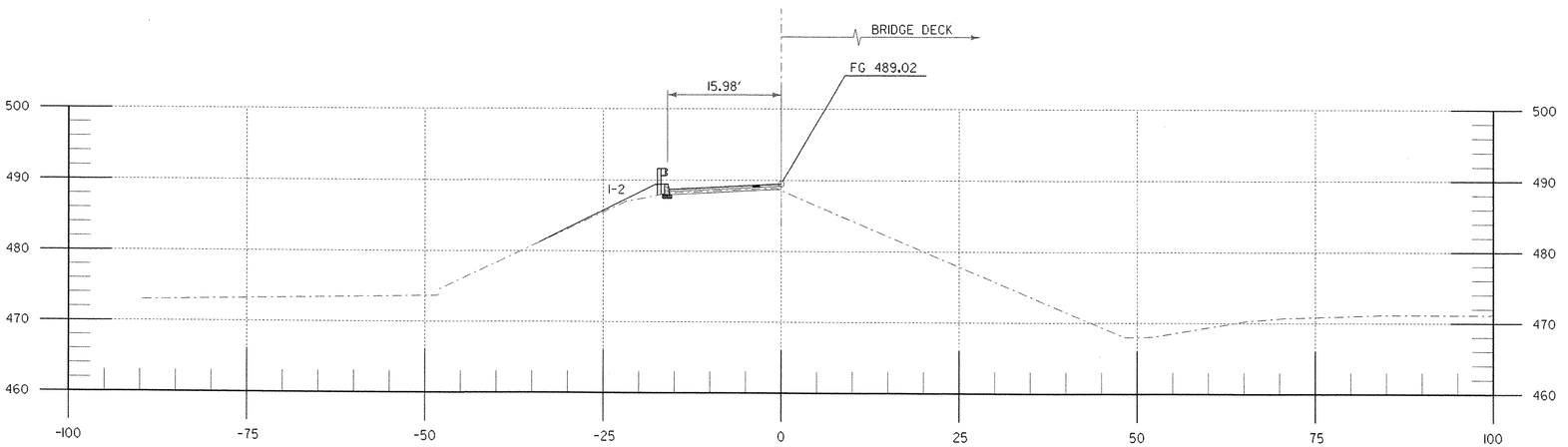



426+70




422+95

SCALE 1" = 10'-0
10 0 10

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| US 5 CROSS SECTIONS | |
| STA 422+95 TO 426+70 | |
| Designed By J. BARRACK | Drawn By N. HERRERA |
| Checked By J. BARRACK Date DEC 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272xs2.dgn | |
| Bridge Sheet No. | Sheet 43 of 85 |

STONE & WEBSTER, INC.

10-DEC-2002

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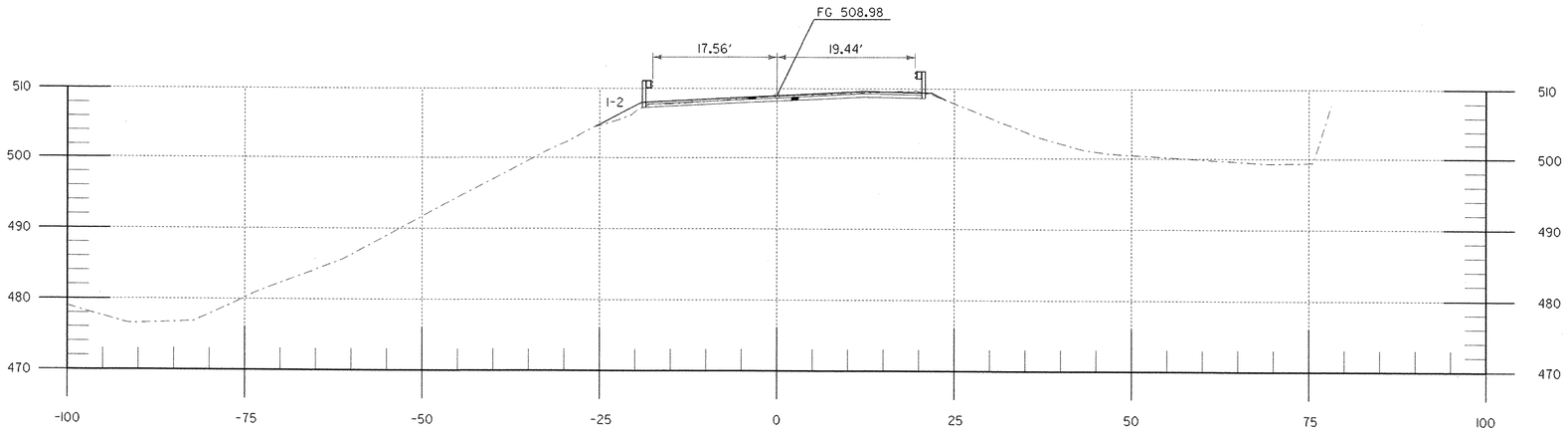
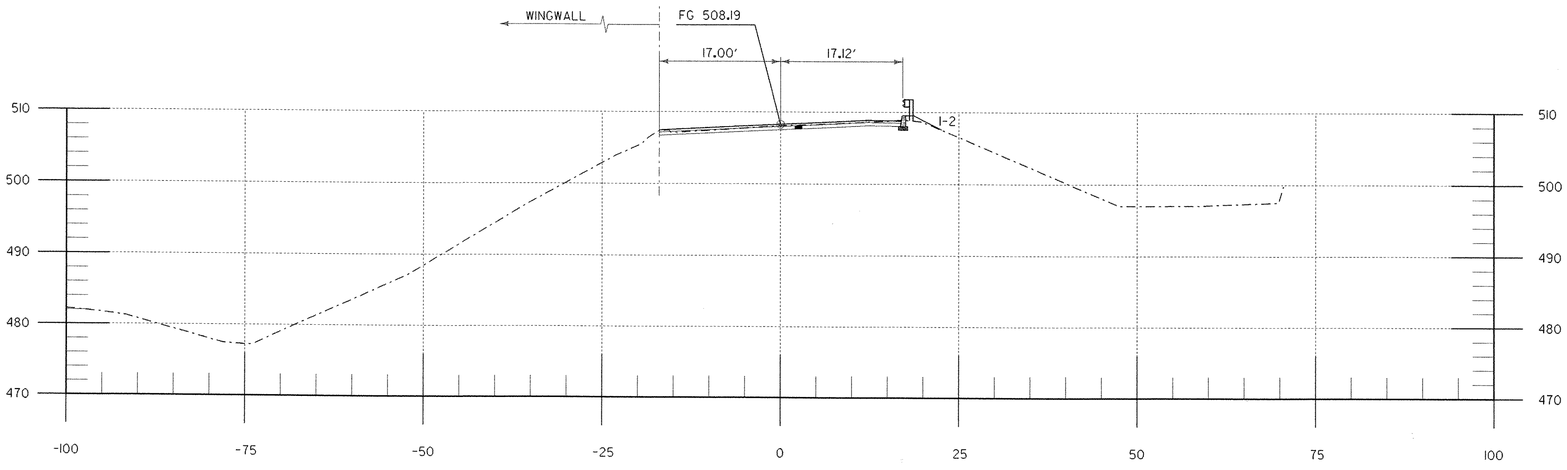



427+60




427+20

SCALE 1" = 10'-0
10 0 10

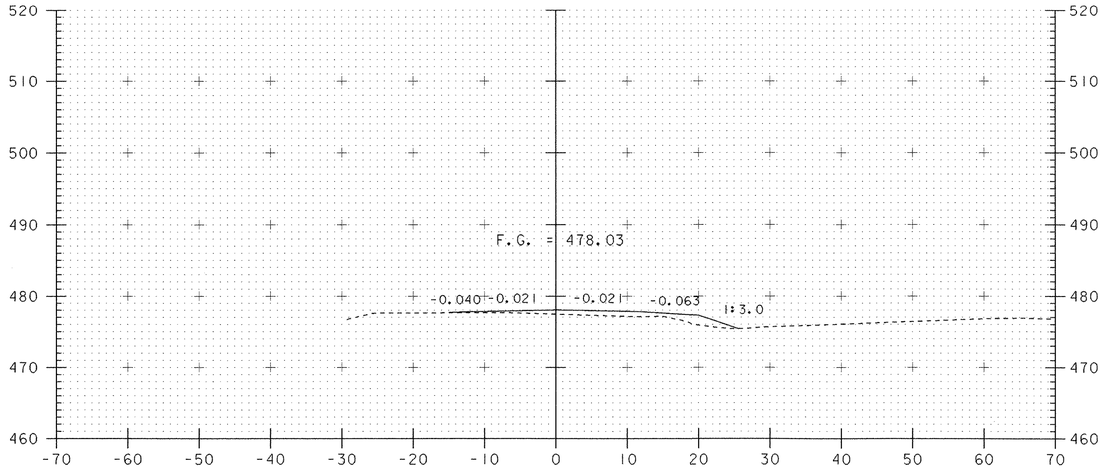
10-DEC-2002

v:\Civil\working\za272xs3.dgn

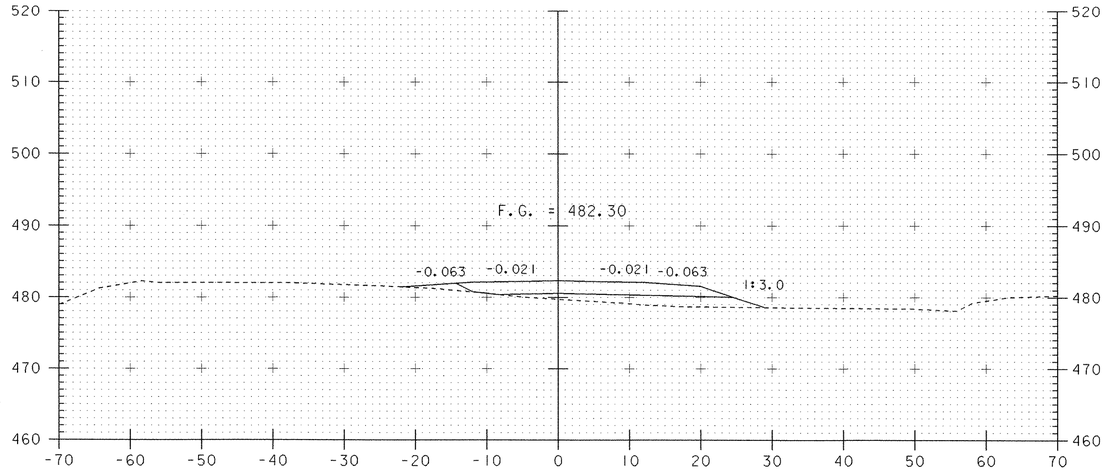
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| | Log Sta. |
| Highway No. I-91 | Surv. Sta. |
| US 5 CROSS SECTIONS | |
| STA 427+20 TO 427+60 | |
| Designed By J. BARRACK | Drawn By N. HERRERA |
| Checked By J. BARRACK Date DEC 2000 | Bridge Design Supervisor E. JOHNSTON Date FEB. 2001 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272xs3.dgn | |
| Bridge Sheet No. | Sheet 44 of 85 |

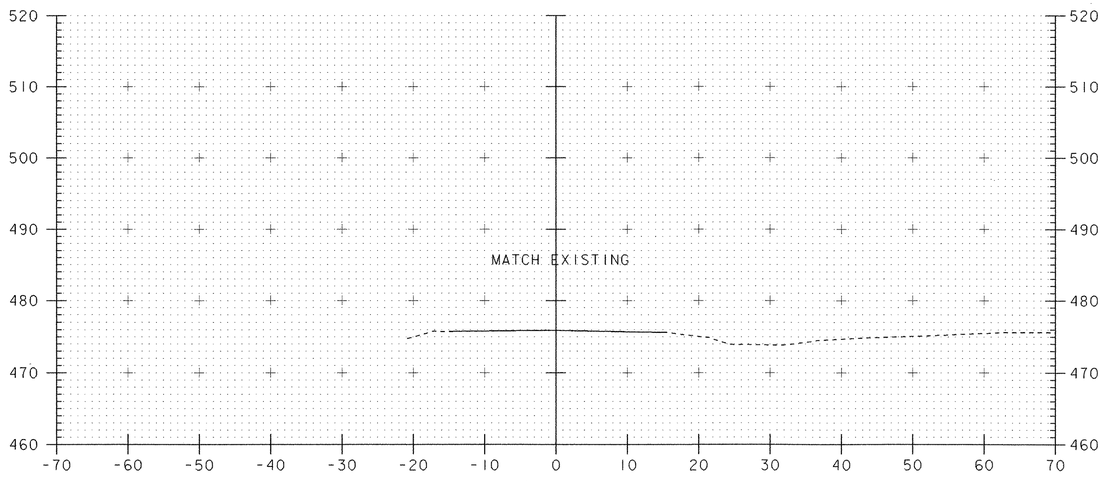
STONE & WEBSTER, INC.




101+25

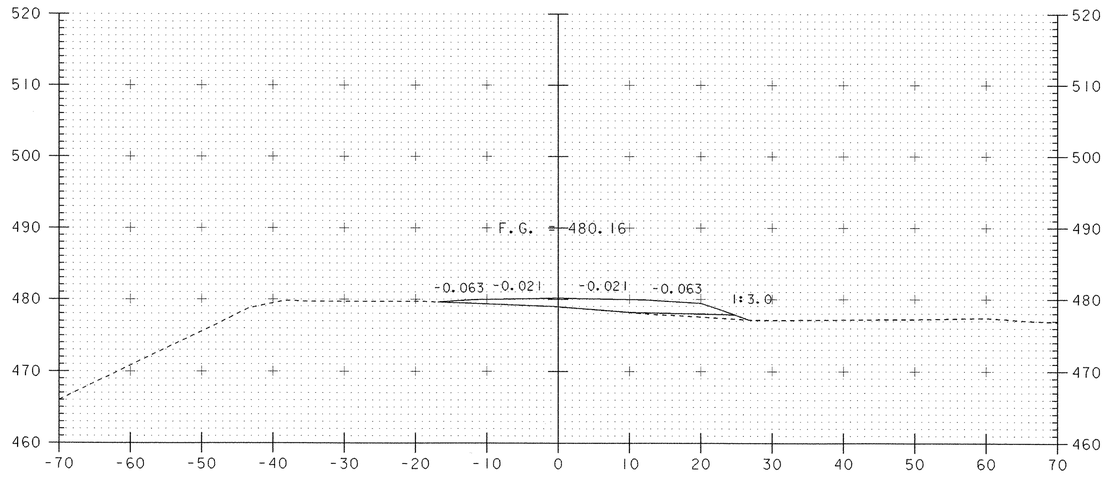



101+75




101+00

BEGIN TEMPORARY DETOUR

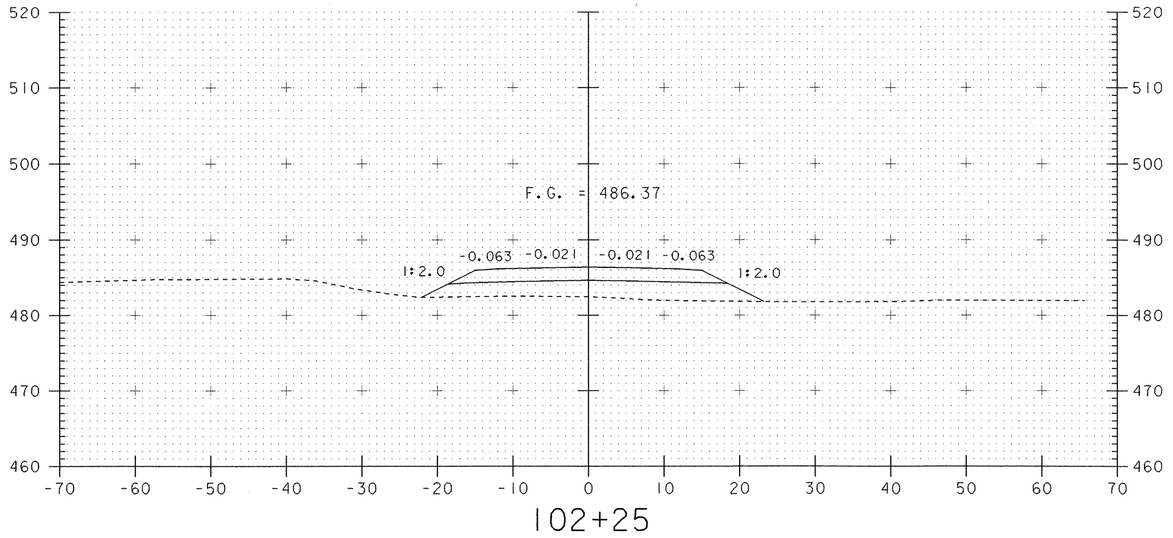



101+50

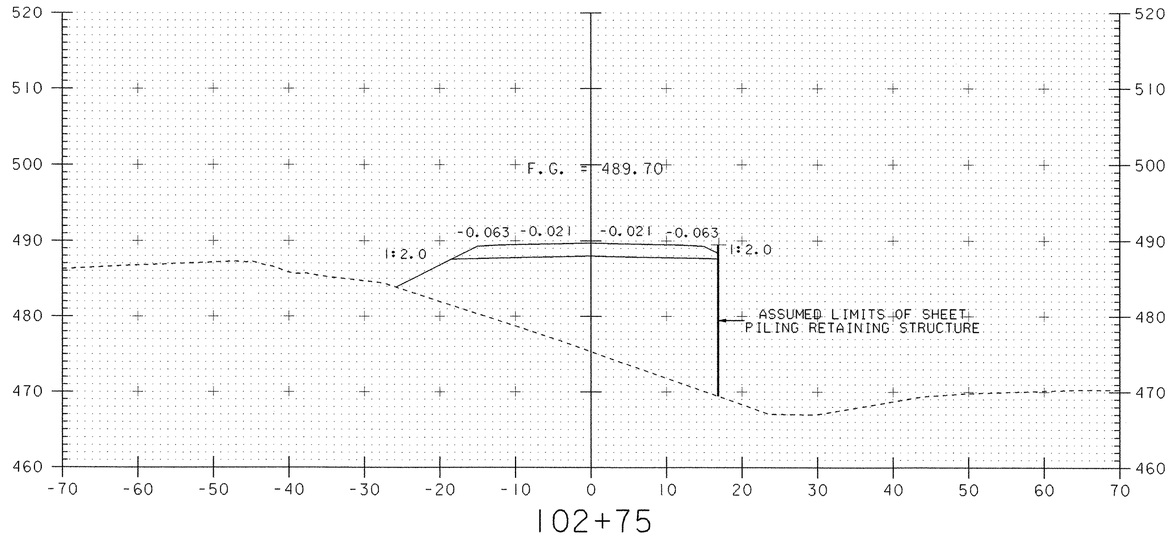
**TEMPORARY DETOUR CROSS SECTIONS**
**STATION 101+00 TO 101+75**

SCALE 1" = 10'-0

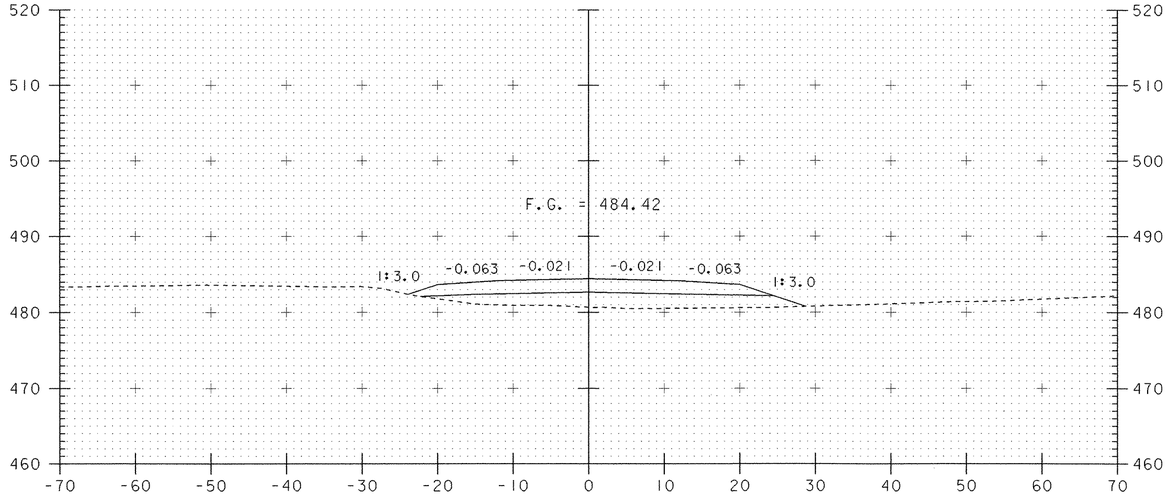
| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |
| FILE NAME: str7/99a272/sa272xs.dgn | PLOT DATE: 24-DEC-2002 |
| PROJECT LEADER: S. FARNSWORTH | DRAWN BY: K. UPMAL |
| DESIGNED BY: FOWLER / UPMAL | CHECKED BY: |
| sa272txl.i | SHEET 44A OF 85 |



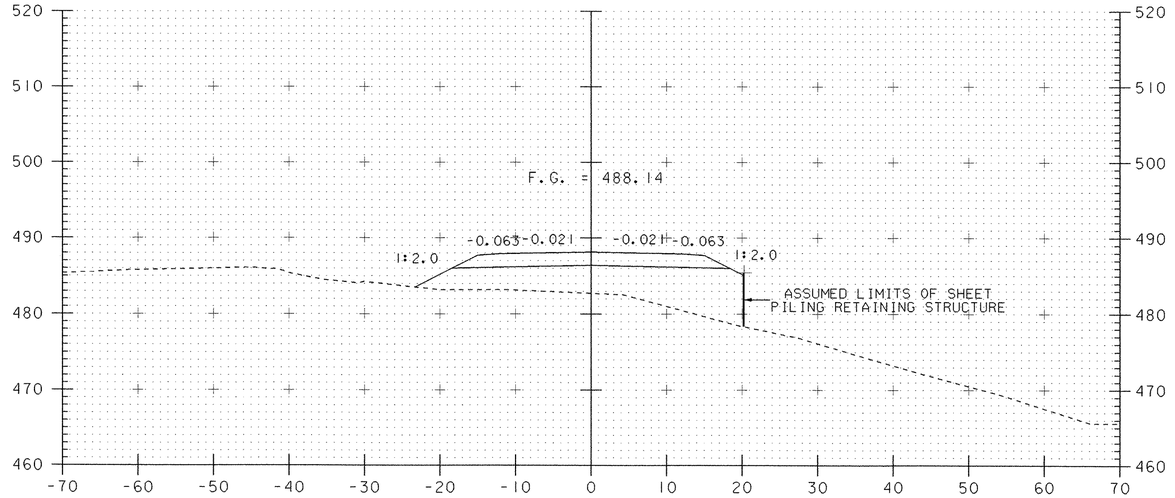

102+25




102+75




102+00




102+50

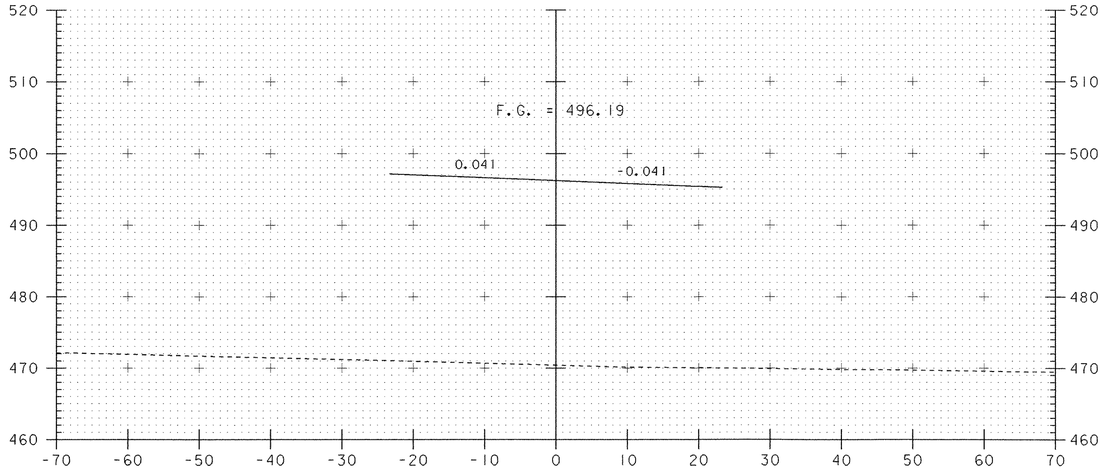
STA 102+42 RT - BEGIN W.W. 1

**TEMPORARY DETOUR CROSS SECTIONS**
**STATION 102+00 TO 102+75**

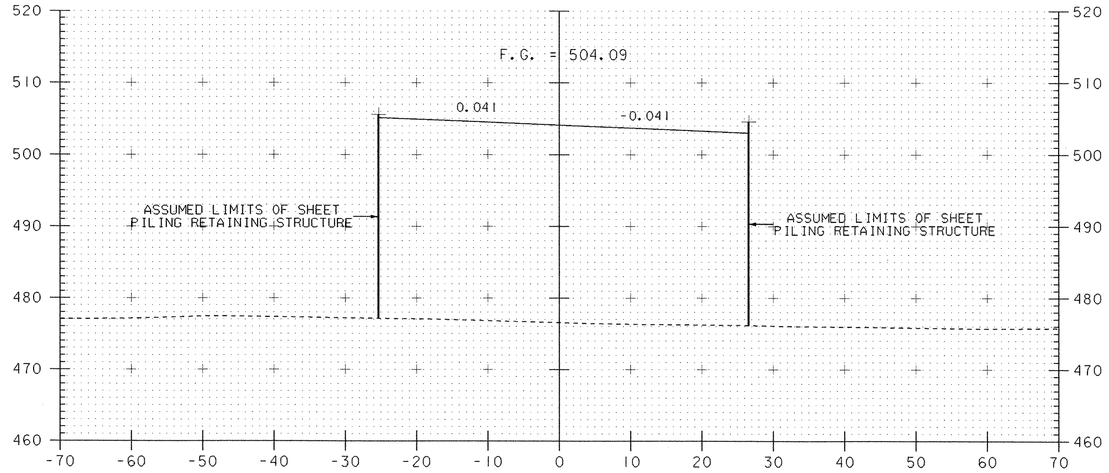
SCALE 1" = 10'-0
10 0 10

| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |

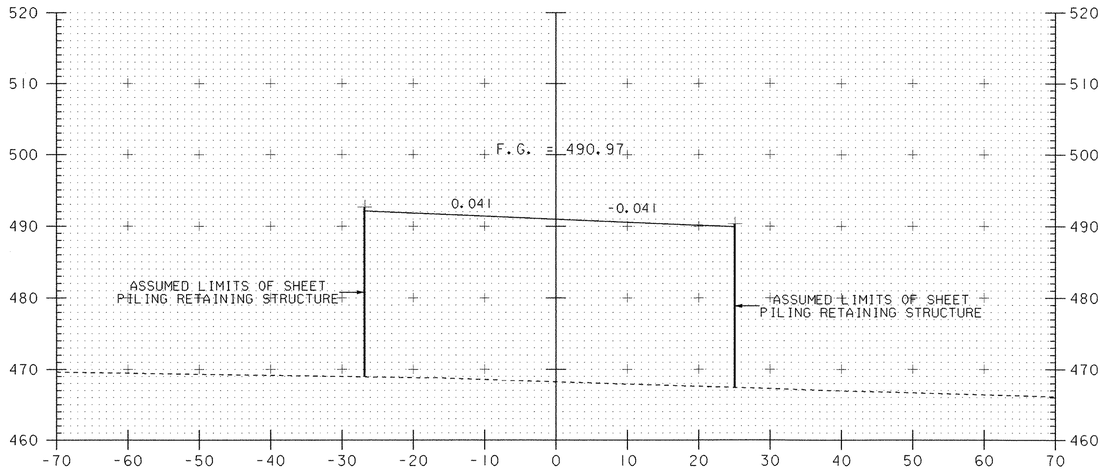
| | | | |
|---|---|---|---|
| FILE NAME: str7/99a272/sa272xs.dgn | | PLOT DATE: | 24-DEC-2002 |
| PROJECT LEADER: | S. FARNSWORTH | DRAWN BY: | K. UPMAL |
| DESIGNED BY: | FOWLER / UPMAL | CHECKED BY: | |
| sa272tx2.i | | SHEET 44B | OF 85 |



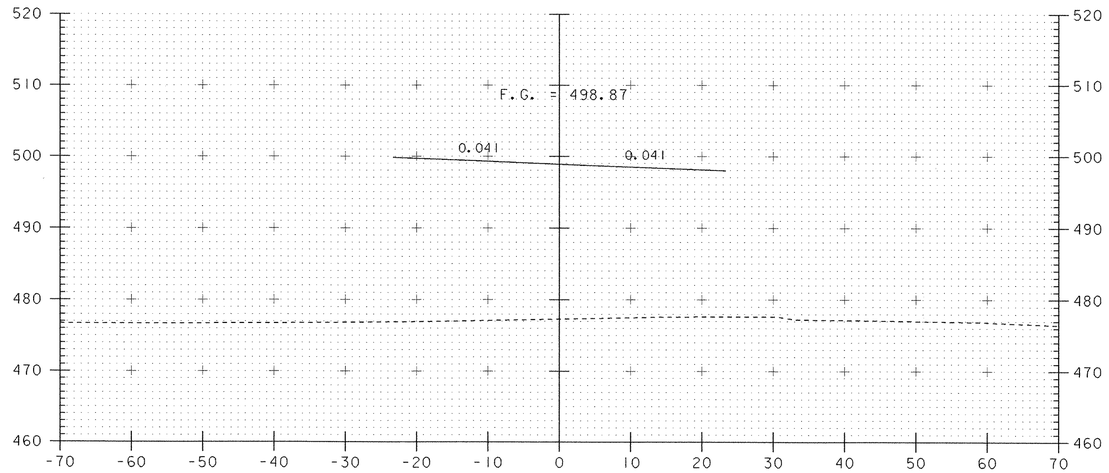

103+95.00
CENTERLINE BEARING - SPAN 1 - ABUTMENT #2
ASKEW 40°-00'-00''




105+42.00
CENTERLINE BEARING - SPAN 2 - ABUTMENT #4
ASKEW 40°-00'-00''




102+98.00
CENTERLINE BEARING - SPAN 1 - ABUTMENT #1
ASKEW 40°-00'-00''
STA 103+14 LT - BEGIN W.W. 2



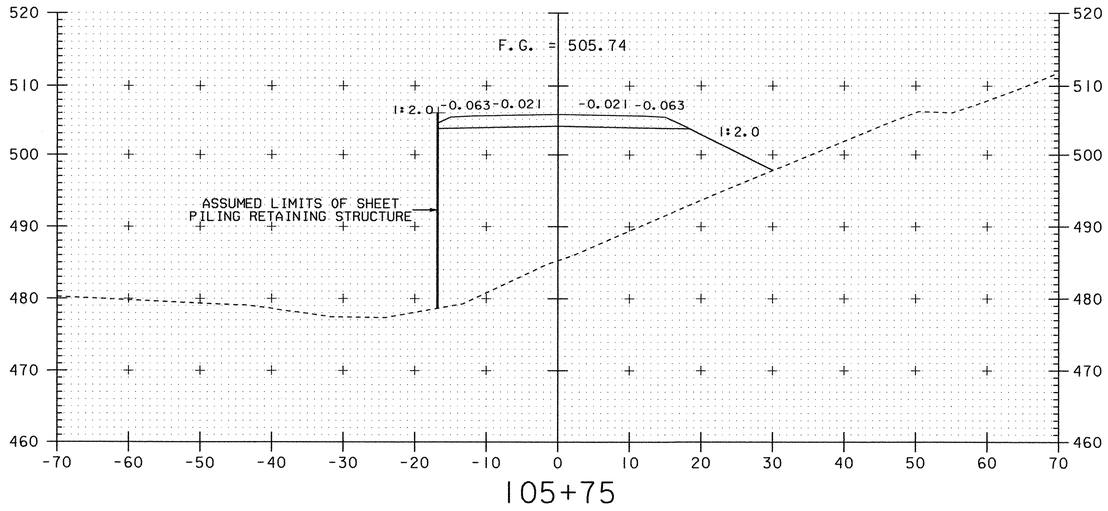

104+45.00
CENTERLINE BEARING - SPAN 2 - ABUTMENT #3
ASKEW 40°-00'-00''

**TEMPORARY DETOUR CROSS SECTIONS**
**STATION 102+98 TO 105+42**

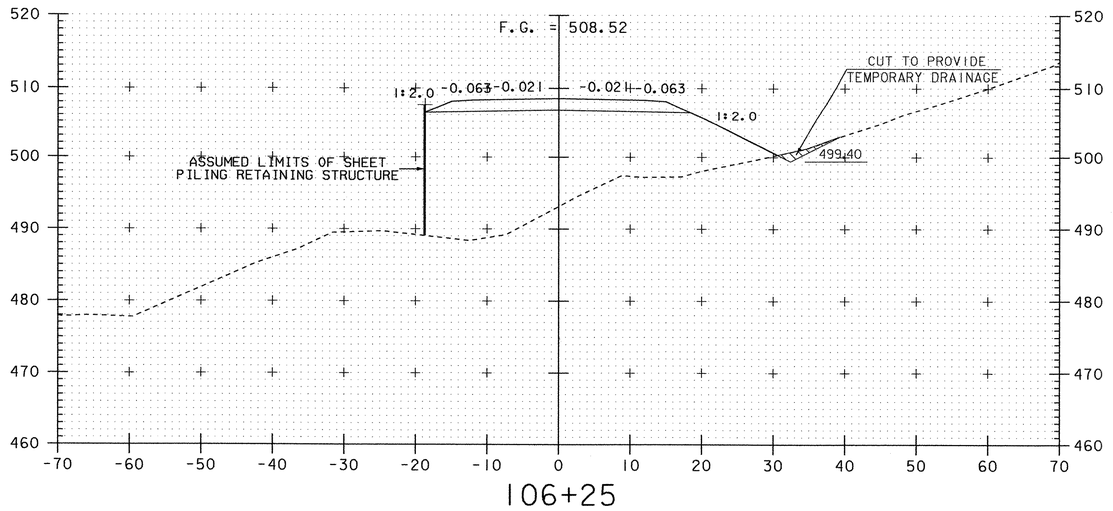
SCALE 1"-10'-0
10 0 10

| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |

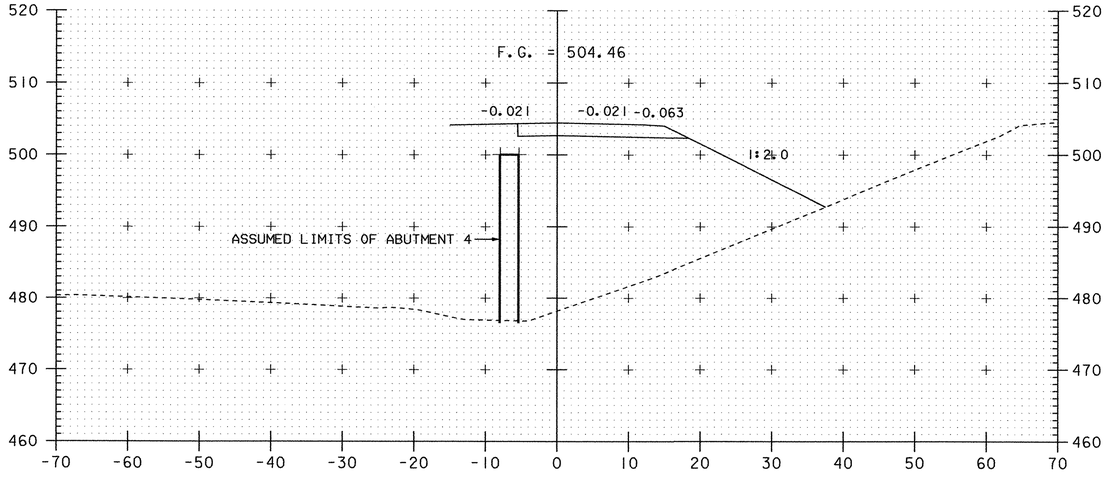
| | | | |
|---|---|---|---|
| FILE NAME: | str7/99a272/sa272xs.dgn | PLOT DATE: | 24-DEC-2002 |
| PROJECT LEADER: | S. FARNSWORTH | DRAWN BY: | K. UPMAL |
| DESIGNED BY: | FOWLER / UPMAL | CHECKED BY: | |
| sa272tx3.1 | | SHEET | 44C OF 85 |




105+75

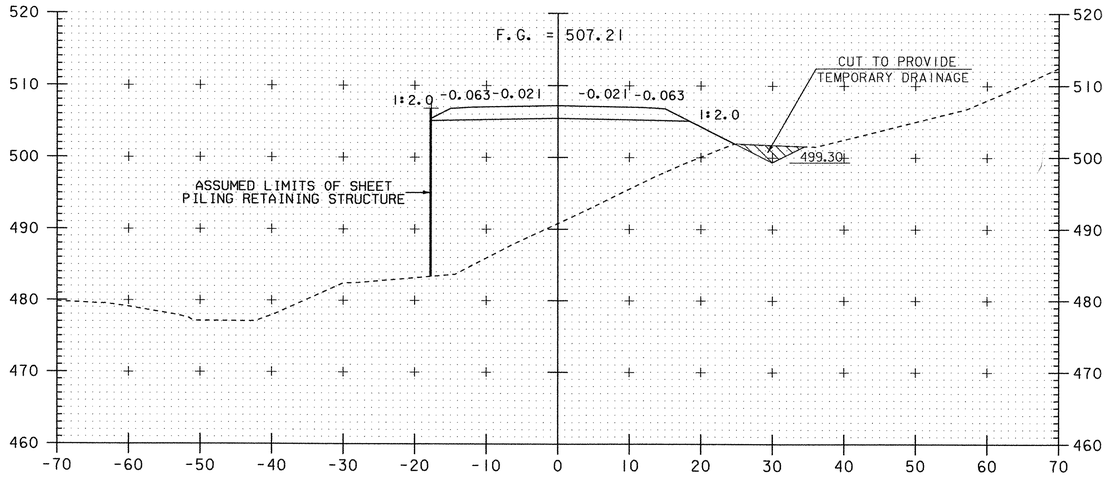



106+25




105+50

STA 105+36 RT - END W. W. 3



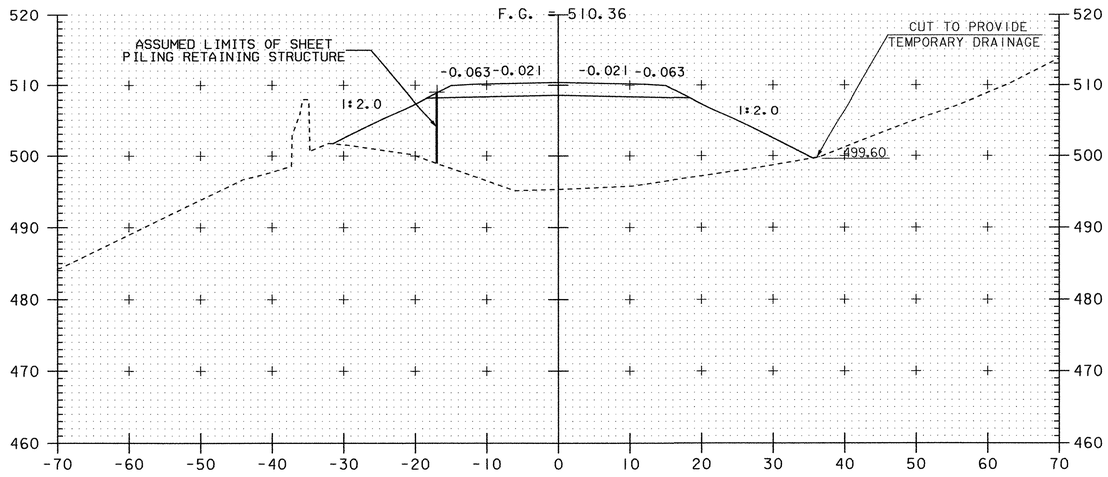

106+00

**TEMPORARY DETOUR CROSS SECTIONS**
**STATION 105+50 TO 106+25**

SCALE 1" = 10'-0
10 0 10

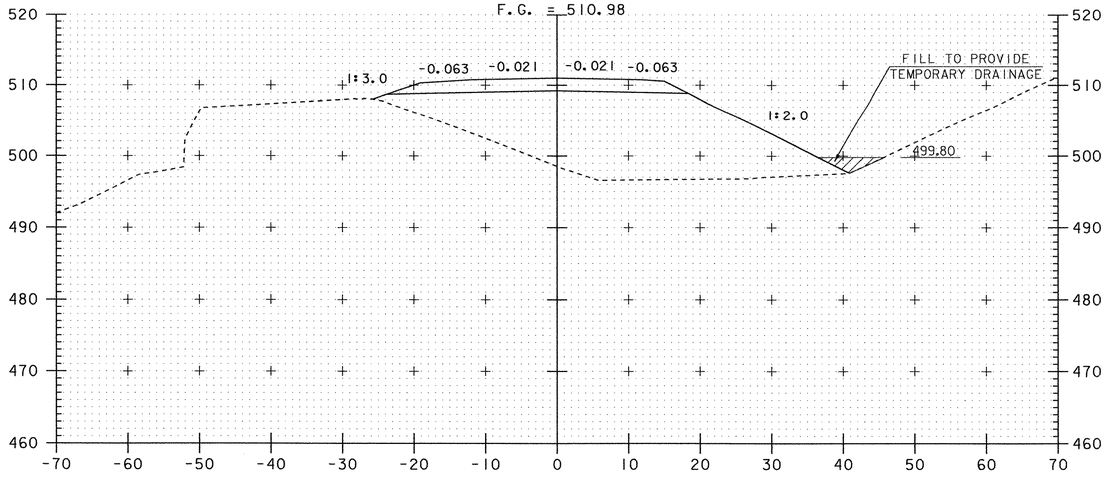
| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |

| | | | |
|---|---|---|---|
| FILE NAME: | str7/99a272/sa272xs.dgn | PLOT DATE: | 03-FEB-2003 |
| PROJECT LEADER: | S. FARNSWORTH | DRAWN BY: | K. UPMAL |
| DESIGNED BY: | FOWLER / UPMAL | CHECKED BY: | |
| sa272tx4.1 | | SHEET 44D | OF 85 |

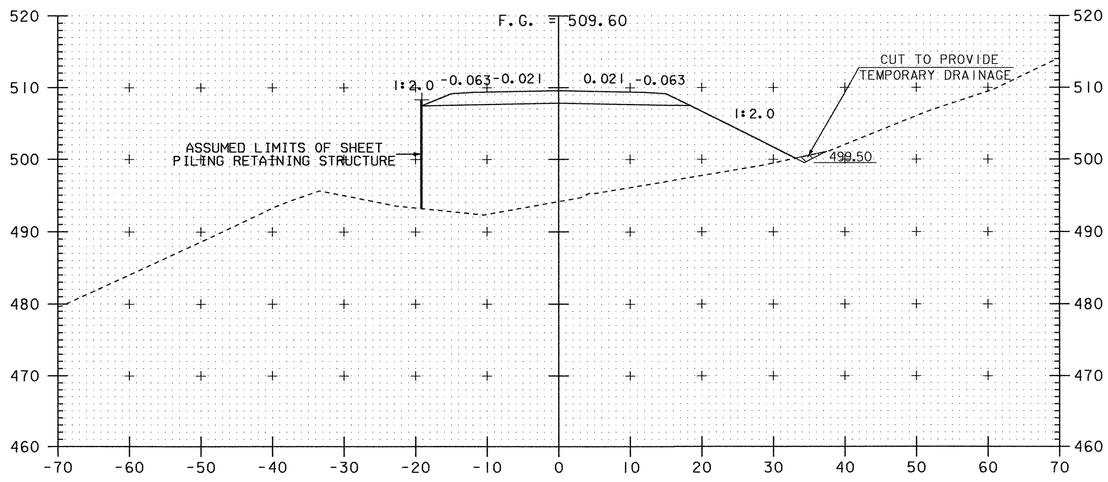



106+75

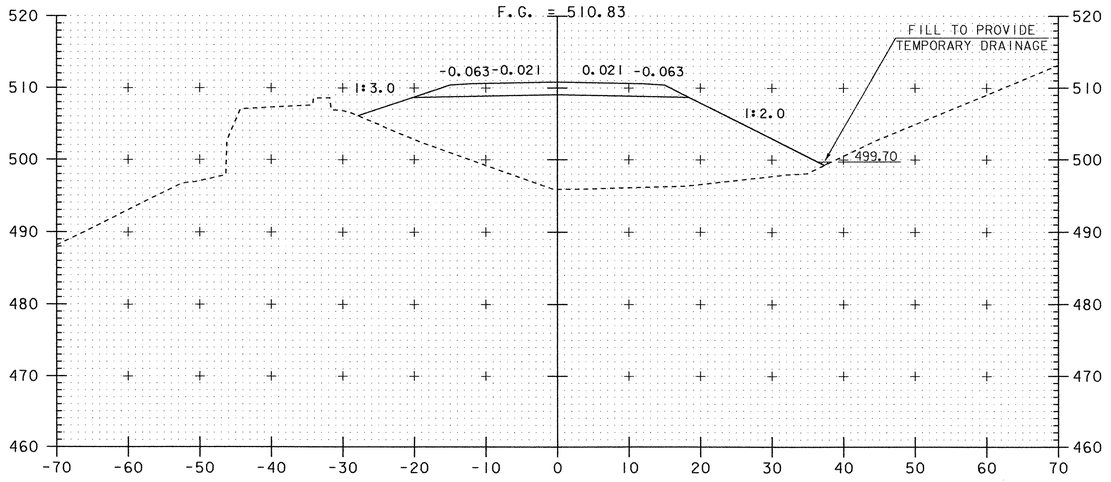
STA 106+75 LT - END W.W. 4




107+25




106+50



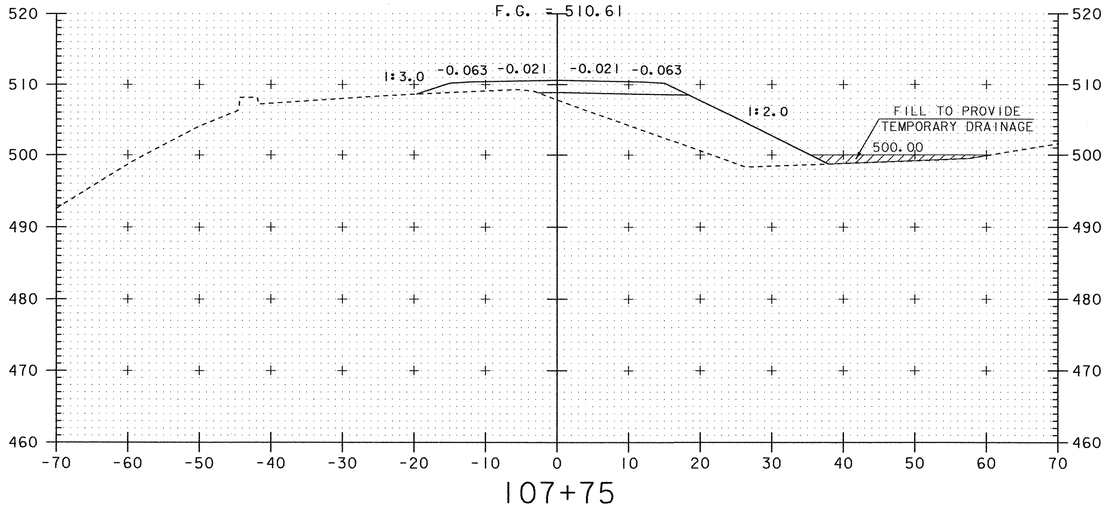

107+00

**TEMPORARY DETOUR CROSS SECTIONS**
**STATION 106+50 TO 107+25**

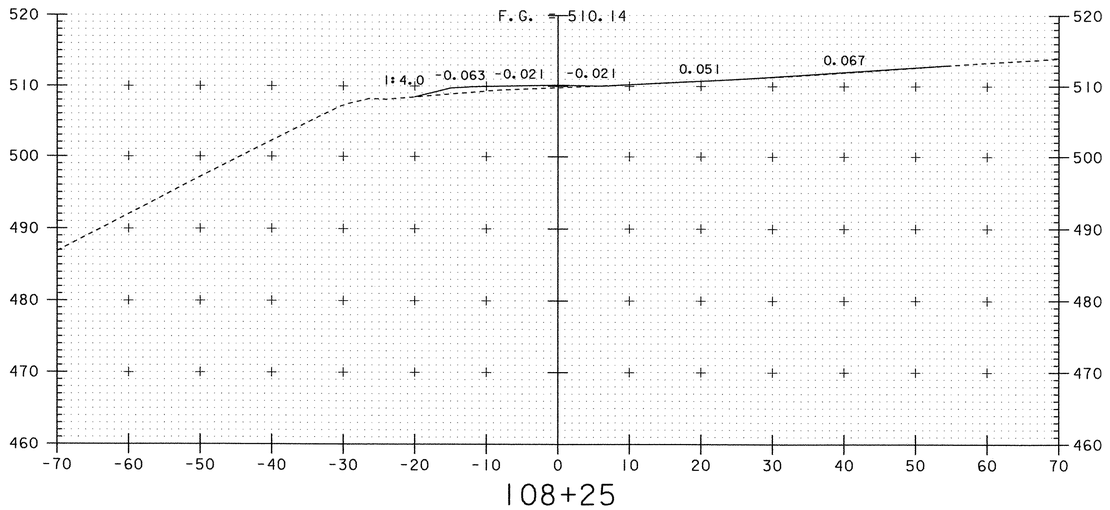
SCALE 1" = 10'-0
10 0 10

| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |

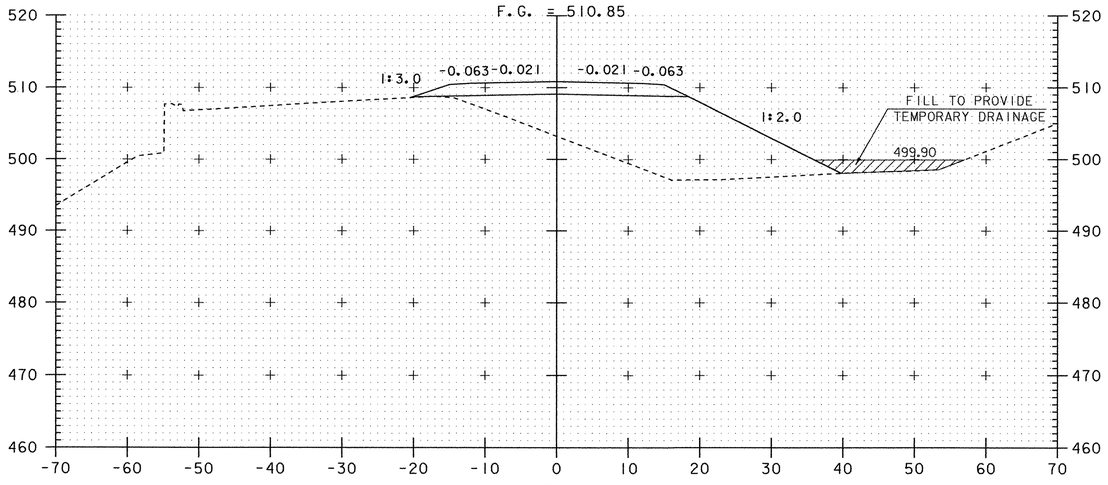
| | | | |
|---|---|---|---|
| FILE NAME: str7/99a272/sa272xs.dgn | | PLOT DATE: 03-FEB-2003 | |
| PROJECT LEADER: | S. FARNSWORTH | DRAWN BY: | K. UPMAL |
| DESIGNED BY: | FOWLER / UPMAL | CHECKED BY: | |
| sa272tx5.1 | | SHEET 44E | OF 85 |



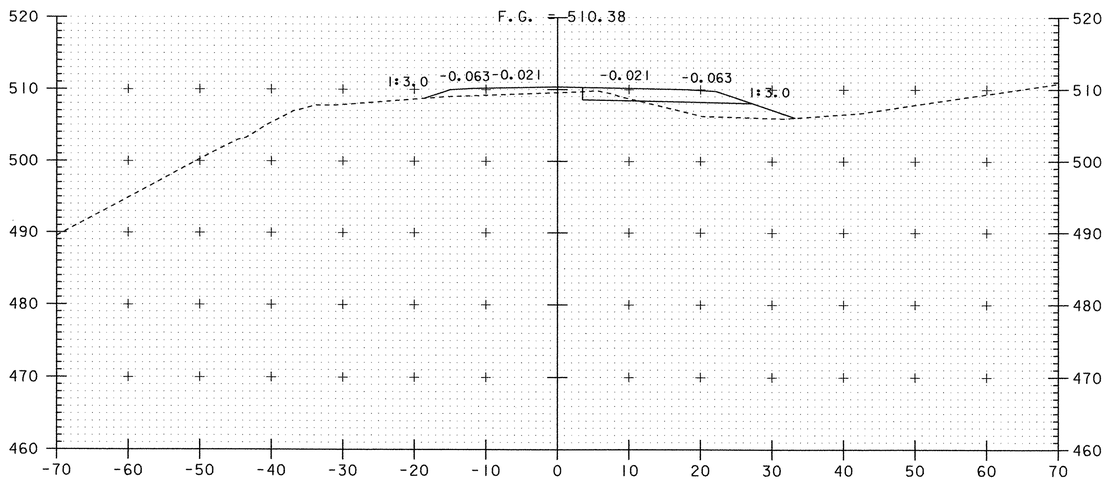

107+75




108+25




107+50



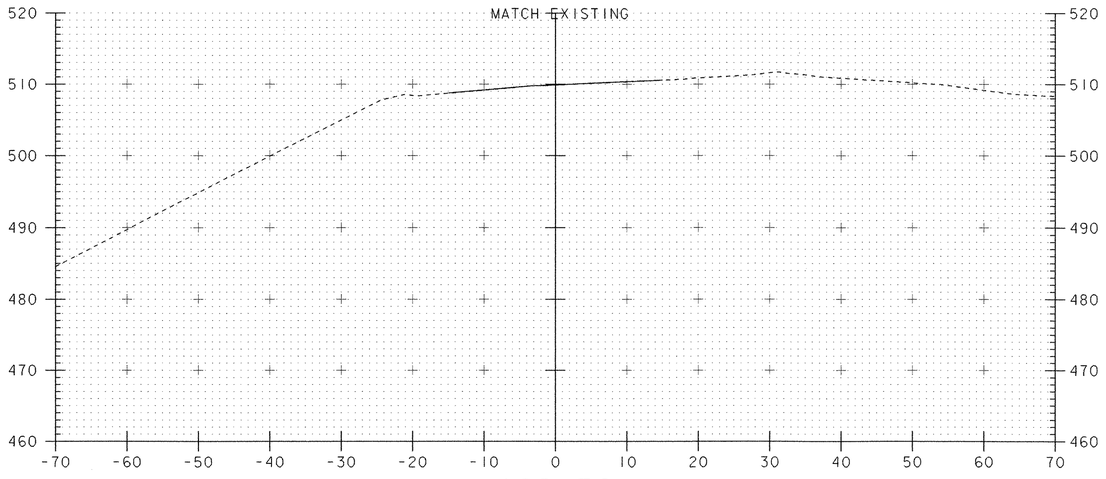

108+00

**TEMPORARY DETOUR CROSS SECTIONS**
**STATION 107+50 TO 108+25**

SCALE 1" = 10'-0
10 0 10

| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |

| | | | |
|---|---|---|---|
| FILE NAME: | str7/99a272/sa272xs.dgn | PLOT DATE: | 03-FEB-2003 |
| PROJECT LEADER: | S. FARNSWORTH | DRAWN BY: | K. UPMAL |
| DESIGNED BY: | FOWLER / UPMAL | CHECKED BY: | |
| sa272tx6.1 | | SHEET 44F | OF 85 |




108+50

END TEMPORARY DETOUR

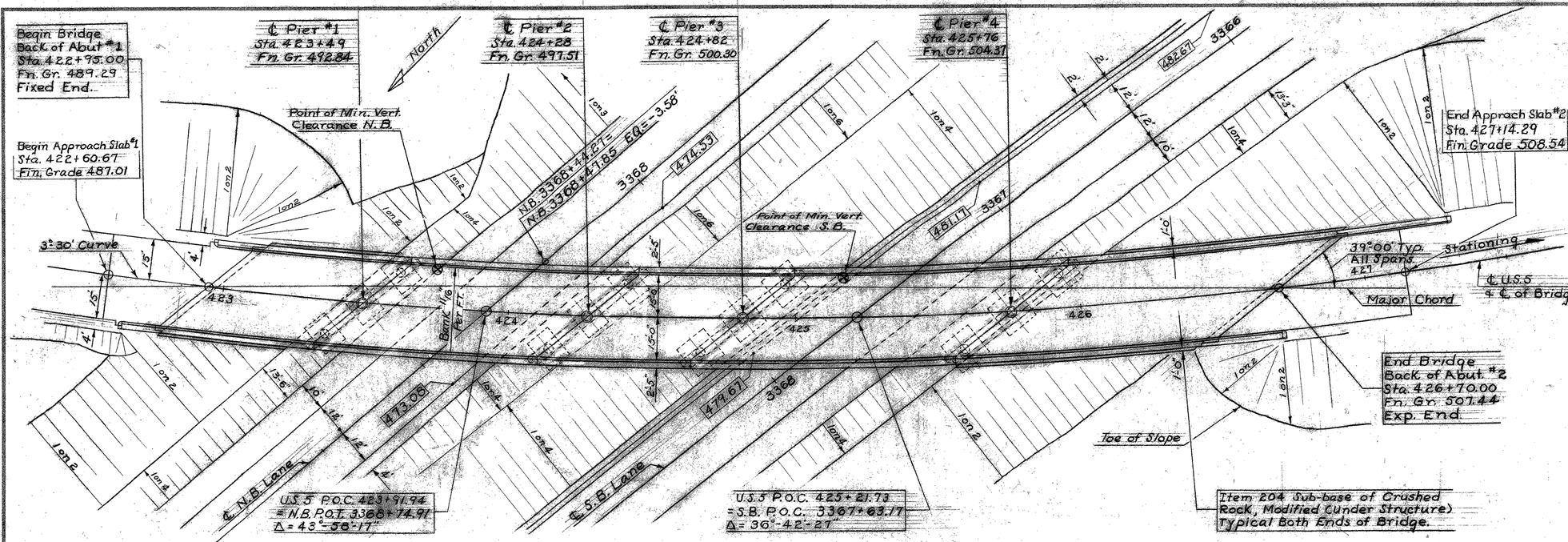
SCALE 1" = 10'-0

10 0 10

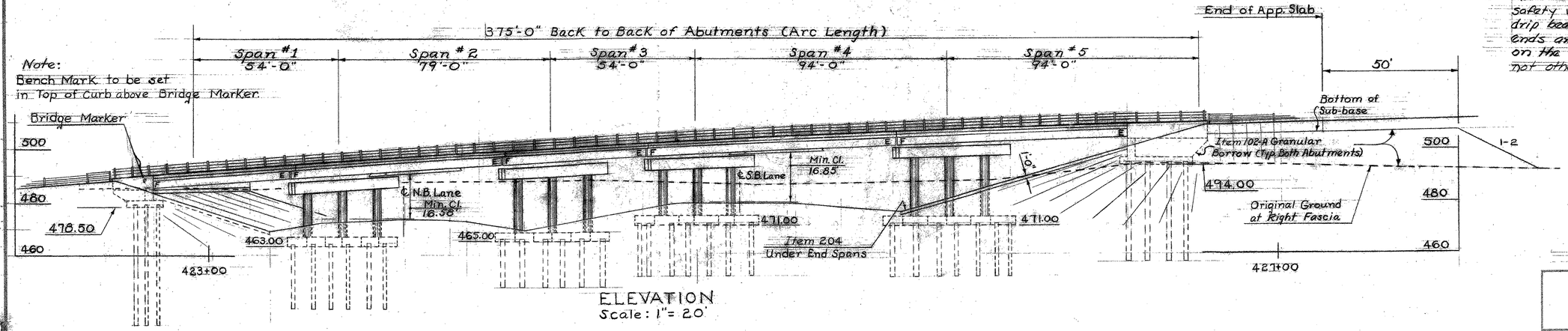
**TEMPORARY DETOUR CROSS SECTIONS**
**STATION 108+50**

| | |
|---|---|
| PROJECT NAME: | HARTLAND |
| PROJECT NUMBER: | IM 091-1(36) |

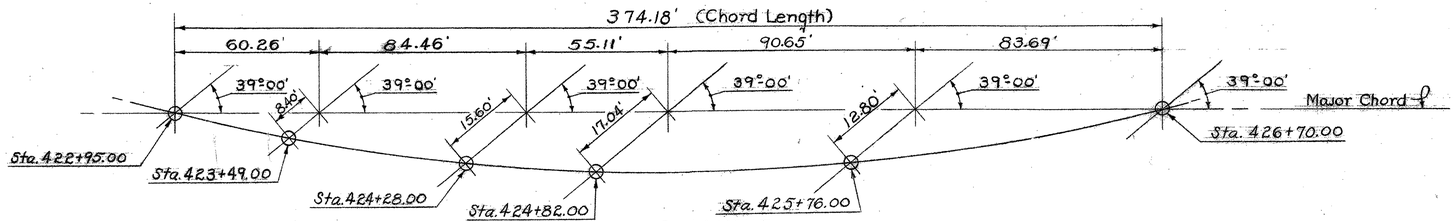
| | | | |
|---|---|---|---|
| FILE NAME: | str7/99a272/sa272xs.dgn | PLOT DATE: | 24-DEC-2002 |
| PROJECT LEADER: | S. FARNSWORTH | DRAWN BY: | K. UPMAL |
| DESIGNED BY: | FOWLER / UPMAL | CHECKED BY: | |
| sa272tx7.1 | | SHEET 44G | OF 85 |




PLAN
Scale: 1" = 20'




ELEVATION
Scale: 1" = 20'




CURVE LAYOUT
No Scale

- LIST OF BRIDGE SHEETS -


| | |
|---|---|
| BR-100 | General Plan and Elevation |
| BR-101 | Bridge Quantity Sheet |
| BR-102 | Preliminary Information Sheet |
| BR-103 | Auger Borings - Sheet #1 |
| BR-104 | Auger Borings - Sheet #2 |
| BR-105 | Casing Borings |
| BR-106 | Framing Plan |
| BR-107 | Typical Section, Rail & Granite Curb Lengths |
| BR-108 | Details of Abutment #1 (Fixed End) |
| BR-109 | Details of Abutment #2 (Exp. End) |
| BR-110 | Details of Abutment #2 Wingwalls |
| BR-111 | Pier #1 Layout Details |
| BR-112 | Pier #1 Reinforcing Steel |
| BR-113 | Pier #2 Layout Details |
| BR-114 | Pier #2 Reinforcing Steel |
| BR-115 | Pier #3 Layout Details |
| BR-116 | Pier #3 Reinforcing Steel |
| BR-117 | Pier #4 Layout Details |
| BR-118 | Pier #4 Reinforcing Steel |
| BR-119 | Details of Approach Slab #1 |
| BR-120 | Details of Approach Slab #2 |
| BR-121 | Reinforcing Schedule - Sheet #1 |
| BR-122 | Reinforcing Schedule - Sheet #2 |


- BRIDGE STANDARDS -

SCB-30-62, Typical Section, Plan View and Quantities
SCB-D1-62, SCB-D2-62, SCB-D3-62, SCB-D4-62, SCB-D5-62, SCB-D6-62, SCB-D7-62, SCB-D8-62, & SCB-D9-62, Details of WF Beam Bridges
SB-5G-62, Sheets #1 & #2, Details of Bridge Railing
G-3a, Dead End Anchorage at Bridge Approach.

- REFERENCE SHEETS -

Interstate Plan, (Scale: 1"=50'), Sta. 335i+00 to 3383+00, (2 Sheets).
Profile of Interstate, Northbound and Southbound, Sta. 335i+00 to 3383+00. (2 Sheets).
U.S. Rte. 5 Plan, (Scale: 1"=50'), Sta. 419+00 to 430+00 (1 Sheet).
Profile of U.S. Rte 5, Sta. 419+00 to 430+00, (1 Sheet).
Interstate Sections, Southbound Sta. 3365+50 to 3368+50, (4 Sheets).
Interstate Sections, Northbound Sta. 3368+00 to 3370+50, (2 Sheets).
U.S. Rte. 5 Sections, Sta. 420+50 to 429+00 (6 Sheets).

- NOTES -

1. For General Notes see Std. Dwg. SCB-D1-62.
2. The superstructure is of Composite WF Beam - Simple Span Design for a 30'-ft. Roadway as per Std. Dwg. SCB-30-62.
3. Bridge seat elevations shown on these plans are for the centerline of bearings.
4. All exposed edges of concrete in the superstructure, abutments, and piers shall be chamfered 1" by 1".
5. Item 440 Water Repellent shall consist of furnishing and applying water repellent on exterior concrete surfaces on top of the safety walks, on the facia and back to the drip bead under the slab, on the sides, ends and bottoms of all pier caps, and on the exposed areas of abutments not otherwise treated.

Stage ■ Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROAD NO. I 91 BRIDGE NO.
General Plan & Elevation
US #5 over I-91
SCALE As Noted
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY L.F.S.
PROJECT NO. I 91-1(22) Cont. #2 (37)
SHEET 42 OF 220 Sheets 42 of 242

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 45 OF 85

BR-100

# EARTHWORK

| VC. | % GRD | STATION | GRADES ELEVATION ON TAN. | GRADES ELEVATION ON V.C. | CORR. V.C. | DIST. | AREA | CU.YDS. | AREA | CU.YDS. | AREA | CU.YDS. | AREA | CU.YDS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |

# BRIDGE QUANTITY SHEET

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
BRIDGE DIVISION

| NO. | ITEM | UNIT | QUANTITY BREAKDOWN: Appr Slab 1 | Abut No. 1 | Pier No. 1 | Pier No. 2 | Pier No. 3 | Pier No. 4 | Abut No. 2 | Appr Slab 2 | Super-Structure | NET | OVER-RUN | TOTAL | FINAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 107 | Structure Excavation | CY | | ~~46~~ 132 | 103 V | ~~86~~ 77 | ~~114~~ 109 | ~~109~~ 131 | ~~40~~ 37 | | | | | ~~498~~ | 589 |
| 204 | Subbase of Crushed Rock (Modified Under Structure) | CY | | ~~10~~ 60 | | | | | 130 V | | | | | ~~200~~ | 198 |
| 222 | Gravel Backfill | CY | | 28 V | | | | | ~~76~~ 77 | | | | | ~~104~~ | 105 |
| * 318 | Tar Emulsion for Bridge Floors | Gal | 47 | | | | | | | 59 | 500 | | | 606 | |
| * 361B | Bituminous Concrete Pavement Mod. Dense Graded Top Course) | Ton | 10 | | | | | | | 12 | 122 | | | 144 | |
| * 372A | Joint Sealer: Hot Poured | LF | | | | | | | | | 160 | | | 160 | |
| 372C | Joint Sealer - Preformed Type A | LF | | | | | | | | | 150 | | | 150 | |
| 372C | Joint Sealer - Preformed Type B | LF | | | | | | | | | 80 | | | 80 | |
| 401AA | Concrete Class AA (Mod) | CY | | | 44 | 47 V | 46 V | ~~58~~ 57 | | | ~~414~~ 424 | | | ~~608~~ | 612 |
| 401B | Concrete Class B (Mod) | CY | 40 V | ~~66~~ 67 | 42 V | 42 V | 56 V | 56 V | ~~157~~ 102 | 51 V | | | | ~~510~~ | 516 |
| 402 | Reinforcing Steel | LB | ~~6230~~ 6205 | ~~3720~~ 3,715 | ~~13,710~~ 13,926 | ~~14,770~~ 14,540 | ~~16,240~~ 16,610 | ~~18,400~~ 18,579 | ~~9160~~ 9,188 | ~~7830~~ 7,825 | ~~98,170~~ 97,158 | | | ~~187,960~~ 1 V | 187,746 1 |
| 403 | Spiral Reinforcement (10380") | LS | | | | | | | | | | | | | |
| 404A | Structural Steel | LB | | | | | | | | | ~~503866~~ 496,775 | | | ~~503860~~ | 496,775 |
| 407 | Asphaltic Asbestos Coating | SY | | 5 V | ~~23~~ 22 | ~~24~~ 23 | 24 V | 26 V | 7 V | | | | | ~~109~~ | 107 |
| 501 | Furnishing Equipment for Driving Piles | LS | | | | | | | | | | | | 1 (½) V | 1/2 |
| 502B | Treated Timber Piling | LF | | ~~1035~~ 450 | ~~664~~ 448 | ~~720~~ 269 | ~~960~~ 474 | ~~960~~ 461 | ~~1961~~ 1333 | | | | | ~~6500~~ | 3,441 |
| 556C | Granite Bridge Curb (Mod) | LF | | 231 V | | | | | 58 V | | ~~755~~ 751 | | | ~~836~~ | 832 |
| 572 | Bridge Railing | LF | | | | | | | | | 830 V | | | 830 V | 830 |
| 440 | Water Repellant | Gal | | ~~11~~ 8 | ~~8~~ 7½ | ~~8~~ 7¾ | ~~8~~ 8 | ~~9~~ 8½ | ~~8~~ 9 | | ~~11~~ 12 | | | ~~86~~ | 80¾ |
| | Cut-offs @ 50% Unit Price | LF | | 285 | 302 | 153 | 116 | 464 | 588 | | | | | | 1908 |

* Roadway Quantities

Stage I Construction

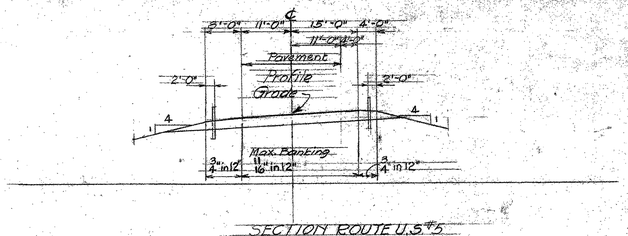
Compiled: AER
Checked: J.J.C.

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 46 OF 85

BRIDGE(S) AT STATION(S) U.S. 5 P.O.C. 423+91.94 = N.B.P.O.T. 3368+74.91
LOCATION(S) U.S. Rte. 5 over Interstate I 91

Hartland – Hartford
BR 101 OF 122

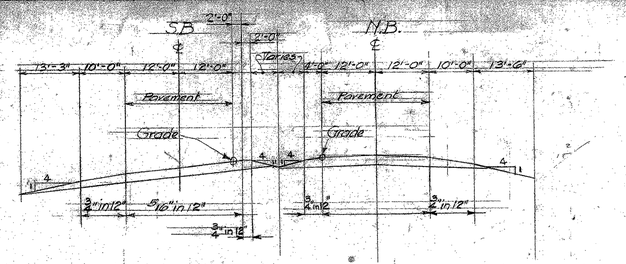
PROJECT NO. I 91-1(22) Cont. #2
SHEET NO. 43 OF 220




SECTION ROUTE U.S.#5

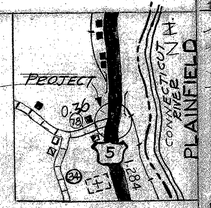
TYPICAL HIGHWAY SECT. ~~STA~~ ~~TO STA~~

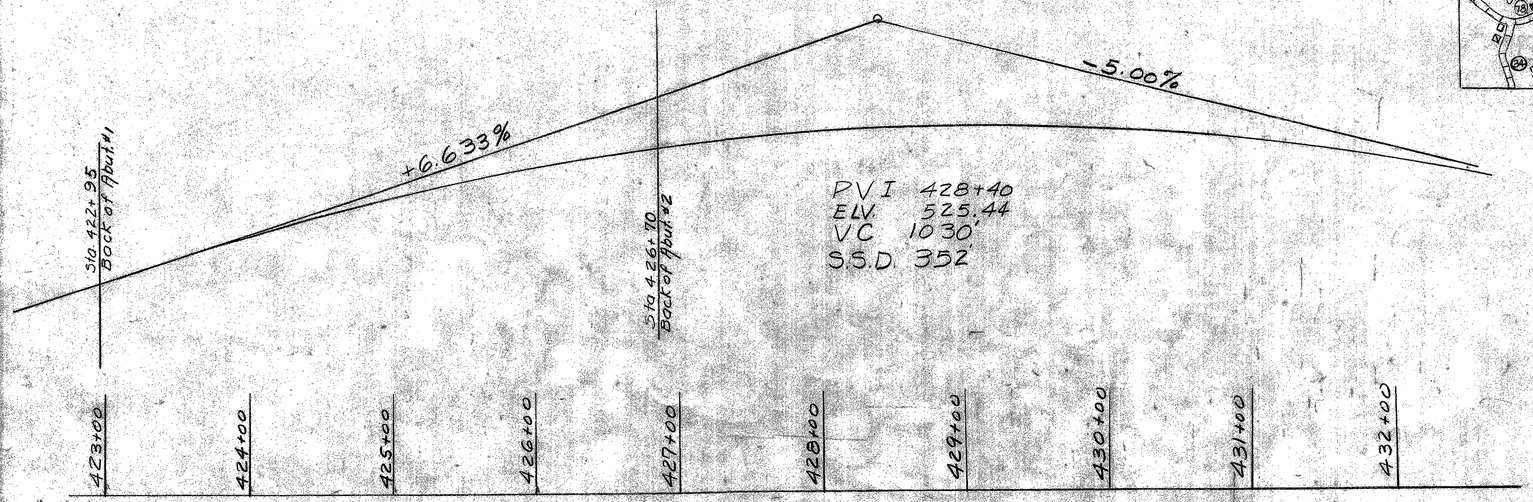
SCALE 16"=1'-0"




NEW HIGHWAY: TYPICAL SECTION OF INTERSTATE

SCALE

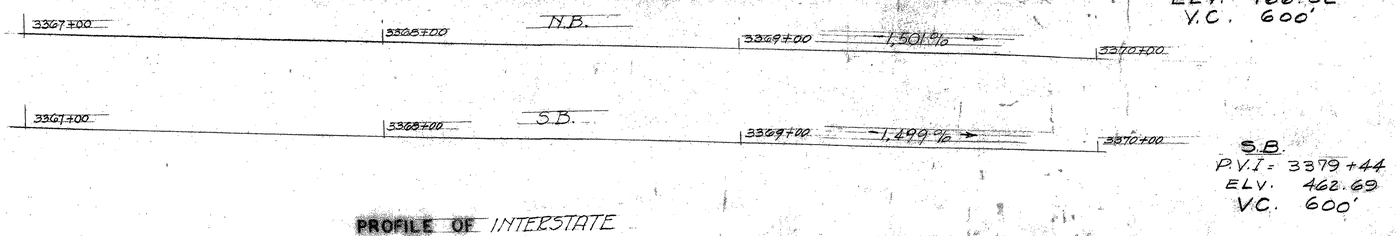



PROFILE ROUTE U.S.#5

~~PLATE~~

SCALE




N.B.
P.V.I 3373+70
ELV. 466.02
V.C. 600'

S.B.
P.V.I = 3379+44
ELV. 462.69
V.C. 600'

PROFILE OF INTERSTATE

SCALE

HIGHWAY NO I 91 NAME OF HIGHWAY U.S.#5

STRUCTURE NO ____ COUNTY WINDSOR TOWN HARTLAND

PROJECT NO I 91-1(22) LOCATION U.S.#5 OVER INTERSTATE (3370+00±)

## EXISTING STRUCTURE

1 RATED LOADING OF EXISTING STRUCTURE ____

2 TYPE OF EXISTING STRUCTURE ____

3 UNDERCLEARANCE ELEVATION OF EXISTING STRUCTURE ____

4 WHAT DISPOSITION SHOULD BE MADE OF EXISTING STRUCTURE ____ COST OF REMOVAL ____

5 SHOULD EXISTING STRUCTURE BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION OF NEW STRUCTURE ____

6 SHOULD NEW TEMPORARY STRUCTURE BE BUILT ____

7 ORDINARY HIGH WATER SURFACE ELEV. AT EXISTING STRUCTURE ____ WATERWAY TO ORDINARY H.W. ____

8 EXTREME HIGH WATER AT EXISTING STRUCTURE ____ WATERWAY TO EXTREME H.W. ____

9 SPAN OF EXISTING BRIDGE UPSTREAM ____ WATERWAY TO EXTREME H.W. ____

SPAN OF EXISTING BRIDGE DOWNSTREAM ____ WATERWAY TO EXTREME H.W. ____

10 TYPE OF FOUNDATION UNDER EXISTING ABUTMENTS ____

11 DOES ALL WATER AT FLOOD ELEVATION PASS THROUGH EXISTING STRUCTURE ____

12 IF NOT AT WHAT ELEVATION IS RELIEF AFFORDED ____

13 ADDITIONAL WATERWAY AREA PROVIDED ____

## NEW STRUCTURE

1 RECOMMENDED TYPE OF STRUCTURE 5-W Beam Composite Simple Spans

2 RECOMMENDED CLEAR SPAN OR SPANS 54-79-54-94-94

MEASURED PARALLEL TO ℄ NEW HIGHWAY ____

MEASURED AT RIGHT ANGLES TO ℄ STREAM ____

3 ARE THERE OBJECTIONS TO A PIER IN THE STREAM, ANSWER YES OR NO ____

4 ORDINARY HIGH WATER ELEVATION AT NEW STRUCTURE —

5 EXTREME HIGH WATER ELEVATION AT NEW STRUCTURE ____ SOURCE OF INFORMATION ____

6 IS ALL WATER INTENDED TO PASS THROUGH NEW STRUCTURE? ____

7 DOES STREAM REACH ITS MAXIMUM HIGH WATER ELEVATION RAPIDLY? ____ IS ORDINARY RISE RAPID? ____

8 LOW WATER ELEVATION AT NEW STRUCTURE ____

9 DRAINAGE AREA IN ACRES ABOVE STRUCTURE ____ CHARACTER OF TERRAIN ____

10 IS STREAM EVER DRY? ____

11 VELOCITY OF STREAM AT HIGH WATER STAGE ____ ESTIMATED DISCHARGE ____

12 AREA FULL OPENING ____ AREA BELOW ORDINARY H.W. ____

13 CHARACTER OF BOTTOM ____ DRIFT ____ ICE ____

14 ESTIMATED DRAINAGE AREA ABOVE NATURAL OR ARTIFICIAL STORAGE ____

15 VERTICAL CLEARANCE ABOVE FLOOD ELEVATION No ____

16 ARE SIDEWALKS REQUIRED, IF SO ON WHAT SIDE ____ BOTH SIDES ____

17 RECOMMENDED TYPE OF PAVEMENT 1½" Bituminous Concrete Pav't and 7½" Slab

18 TRAFFIC TO BE MAINTAINED UNDER ITEM NO. 108 ONE OR TWO WAYS ____ PROBABLE COST ____

19 PROBABLE COST OF CLEARING AND SNAGGING STREAM CHANNEL AT STRUCTURE SITE N/A

20 SHOULD PROVISIONS BE MADE FOR PUBLIC UTILITIES? NO

21 ESTIMATED ALLOWABLE LOAD ON FOUNDATIONS 20 Tons/sq.ft. SHOULD PILES BE USED? Yes EST. LGTH. *

## FOUNDATION INFORMATION

OBTAINED FOR DESIGN PURPOSES ONLY, AND THE STATE ASSUMES NO RESPONSIBILITY WHATSOEVER FOR THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN. BOULDERS MAY BE ENCOUNTERED AT ANY PIER OR ABUTMENT LOCATION.

For Details of Superstructure See SCB-30-62

*Estimated Length of Piles (Treated Timber Piles)

Abut. #1 — 45'
Pier #1 — 24'
Pier #2 — 20'
Pier #3 — 20'
Pier #4 — 20'
Abut. #2 — 37'

Design Stresses:

Structural Steel (A-36) fs = 20,000 psi

Reinforcing Steel fs = 20,000 psi

Concrete fc = 3000 psi N=10

Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

IN THE TOWNS OF
HARTLAND - HARTFORD

ROUTE NO. I-91 LOG STA.
U.S.#5 OVER INTERSTATE

SURVEYED BY D.R.B. & Q.K.B. ENGINEER IN CHARGE R.C.G. SCALE ____ DATE ____

PROJECT NO. I 91-1(22) SHEET 44 OF 220

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 47 OF 85

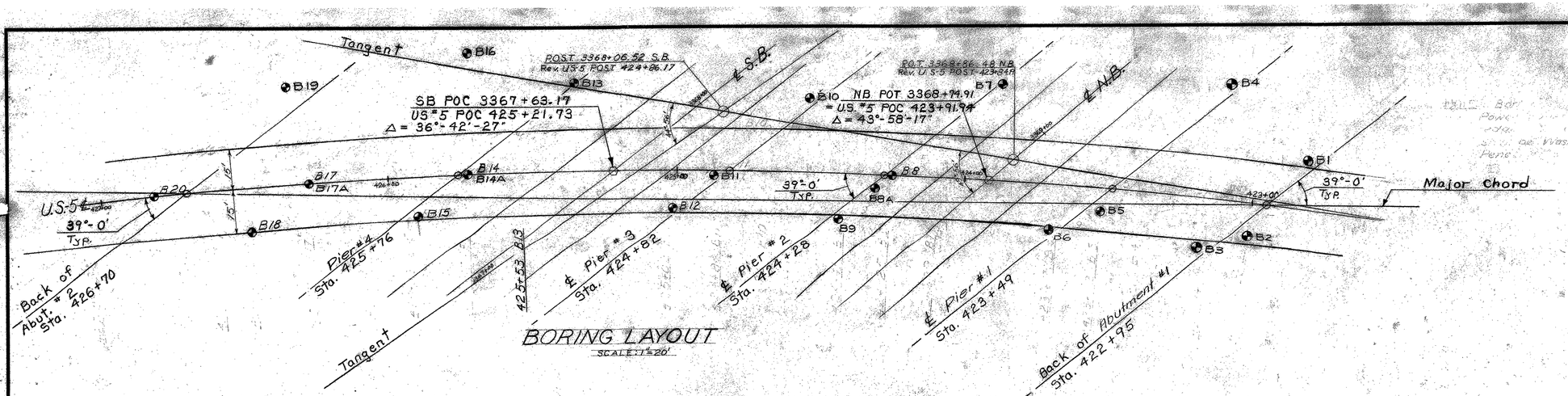
Recommended for Approval 8/5/63
BRIDGE ENGINEER

Recommended for Approval R.C. Curtis 8/9/63
ASST. CHIEF ENGINEER

Approved by A.D. Bullock 8/11/63
Chief Engineer

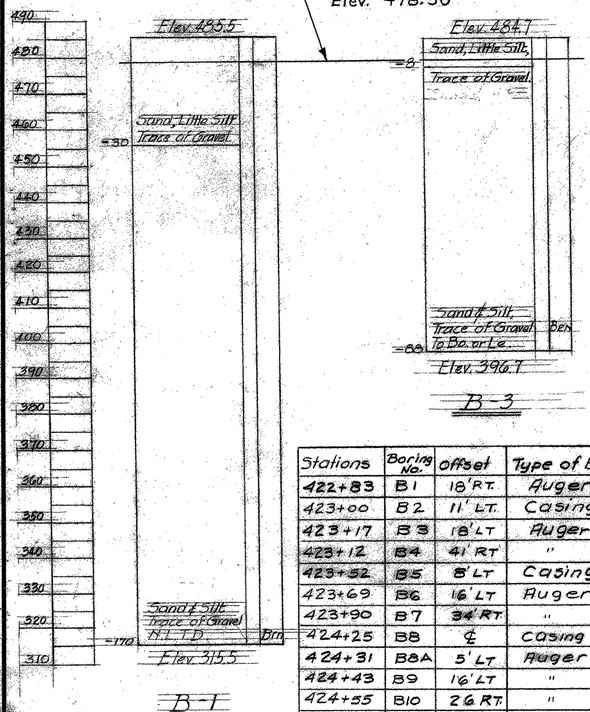
CONT #2

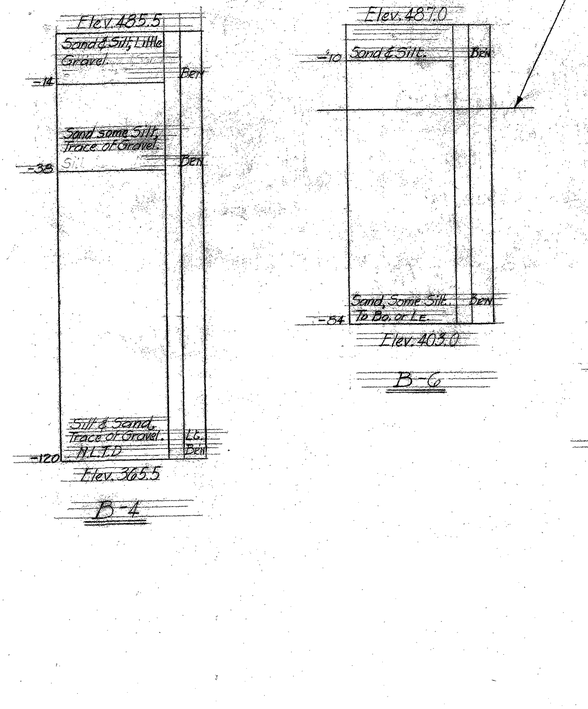
BR-102

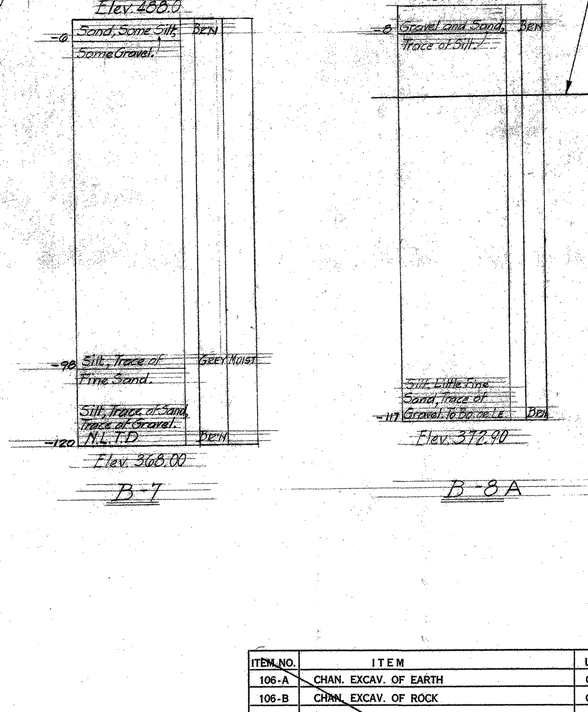


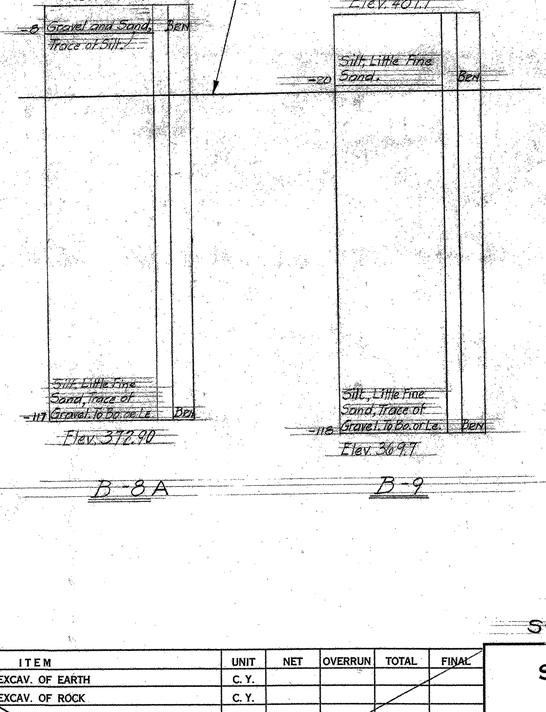

## BORING LAYOUT

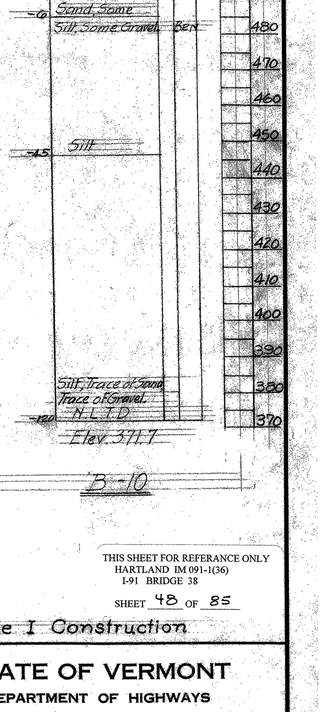
SCALE: 1"=20'




| Stations | Boring No. | offset | Type of Boring |
|---|---|---|---|
| 422+83 | B1 | 18' RT. | Auger |
| 423+00 | B2 | 11' LT. | Casing |
| 423+17 | B3 | 18' LT | Auger |
| 423+12 | B4 | 41' RT | " |
| 423+52 | B5 | 8' LT | Casing |
| 423+69 | B6 | 16' LT | Auger |
| 423+90 | B7 | 34' RT | " |
| 424+25 | B8 | ℄ | Casing |
| 424+31 | B8A | 5' LT | Auger |
| 424+43 | B9 | 16' LT | " |
| 424+55 | B10 | 26 RT | " |
| 424+87 | B11 | 2' LT | " |
| 425+01 | B12 | 13 LT | " |
| 425+35 | B13 | 31' RT | " |
| 425+72 | B14A | ℄ | " |
| 425+73 | B14 | ℄ | Casing |
| 425+90 | B15 | 14' LT | Auger |
| 425+72 | B16 | 42' RT | " |
| 426+27 | B17 | ℄ | Casing |
| 426+27 | B17A | ℄ | Auger |
| 426+48 | B18 | 15' LT | Casing |
| 426+33 | B19 | 34' RT | Auger |
| 426+81 | B20 | ℄ | Casing |

Casing: Outside Diameter 2 5/8"
Inside " 1 7/8"
Wtg. of Hammer 350 #
Hammer Fall 24"

| ITEM NO. | ITEM | UNIT | NET | OVERRUN | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| 106-A | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| 106-B | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| 106-C | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| 107 | STRUCT. EXCAV. | C. Y. | | | | |
| 401-B | CONC. CLASS B (MOD.) | C. Y. | | | | |
| 402 | REINF. STEEL | LBS. | | | | |
| 407 | ASPHALTIC-ASB. COATING | S. Y. | | | | |
| 502-B | TREATED TIMBER PILING | L. F. | | | | |
| 503 | SPLICES FOR STEEL PILING | EA. | | | | |
| 504 | STEEL PILING | L. F. | | | | |
| 502-A | UNTREATED TIMBER PILING | L. F. | | | | |

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 48 OF 85

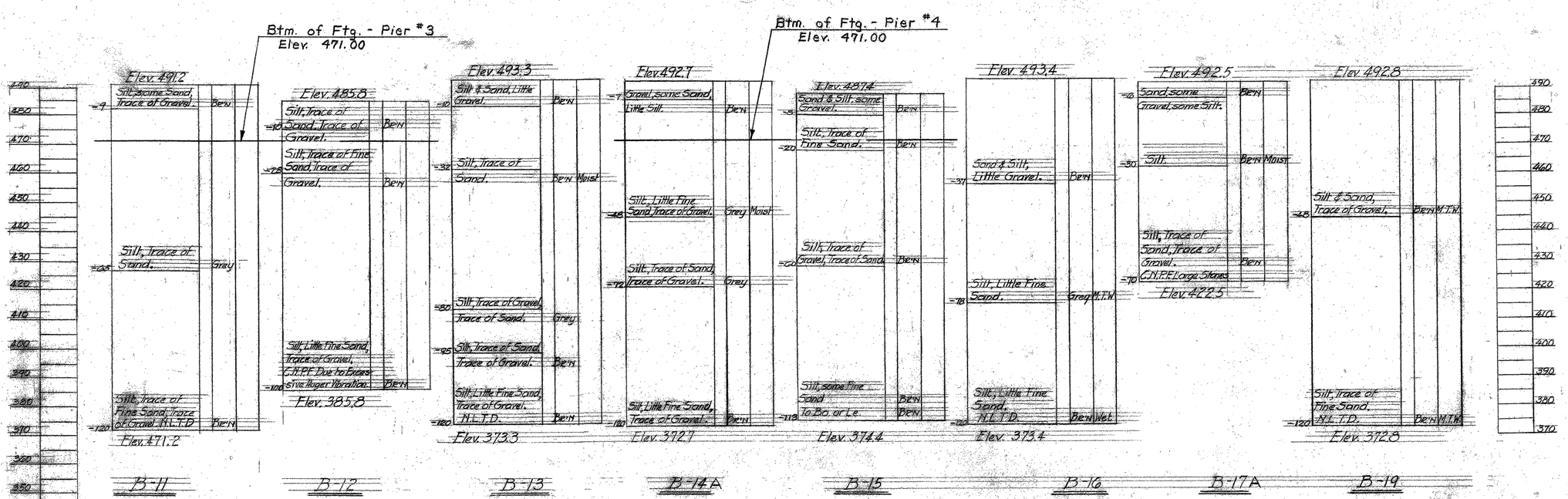
Stage I Construction

**STATE OF VERMONT**
**DEPARTMENT OF HIGHWAYS**

TOWN OF HARTLAND - HARTFORD
ROUTE NO. US 5 OVER INTERSTATE
AUGER BORINGS
(Sheet #1)
SCALE 1" = 20'
SURVEYED BY
DRAWN BY G.V.K. CHECKED BY G.V.K.
PROJECT NO. I-91-1(22)CONT #2
SHEET 45 OF 220

BR-103

K+E PRINTED IN U.S.A. D. L. M. INC. 67560




| ITEM NO. | ITEM | UNIT | NET | OVERRUN | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| 106-A | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| 106-B | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| 106-C | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| 107 | STRUCT. EXCAV. | C. Y. | | | | |
| 401-B | CONC. CLASS B (MOD.) | C. Y. | | | | |
| 402 | REINF. STEEL | LBS. | | | | |
| 407 | ASPHALTIC-ASB. COATING | S. Y. | | | | |
| 502-B | TREATED TIMBER PILING | L. F. | | | | |
| 503 | SPLICES FOR STEEL PILING | EA. | | | | |
| 504 | STEEL PILING | L. F. | | | | |
| 502-A | UNTREATED TIMBER PILING | L. F. | | | | |

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 49 OF 85

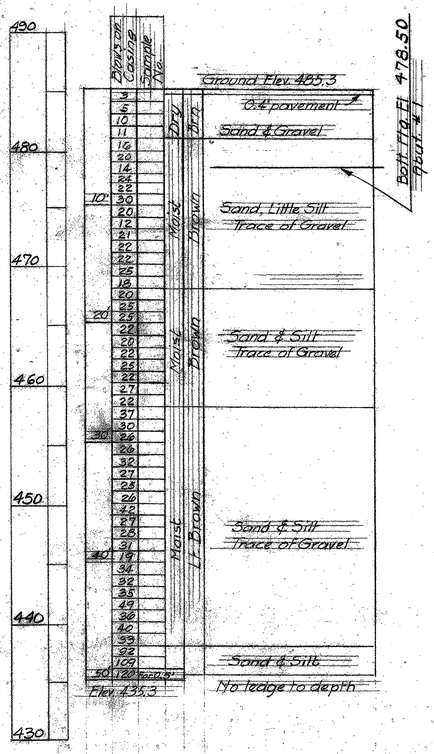
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

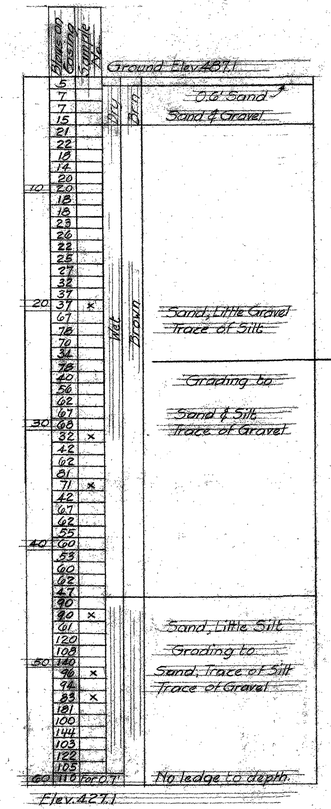
TOWN OF HARTLAND - HARTFORD
ROUTE NO. U.S. 5 OVER INTERSTATE
AUGER BORINGS
(Sheet # 2)
SCALE 1" = 20'
SURVEYED BY
DRAWN BY D.E.B. CHECKED BY G.V.K.
PROJECT NO. I-91-1(22) CONT. 2
SHEET 46 OF 220

BR-104

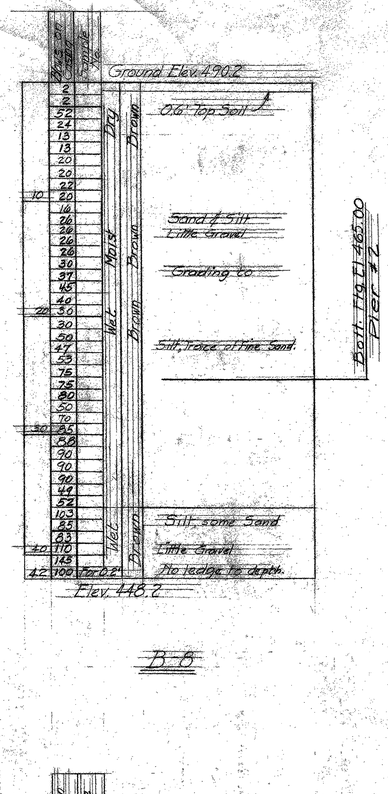
IX R166 S. L. M. INC. 6/013



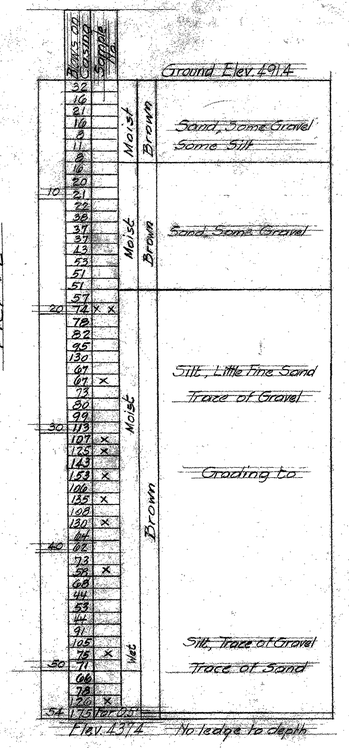

B-2



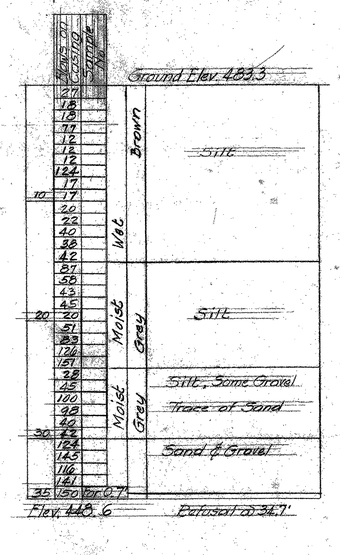

B-5



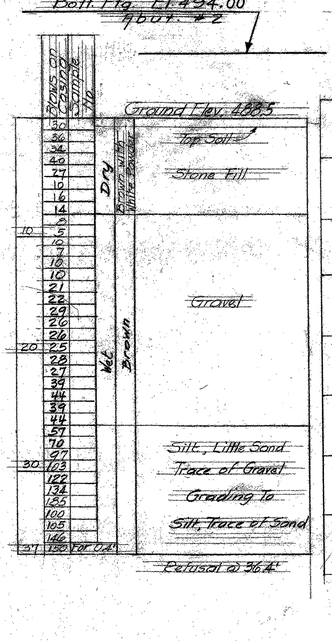

B-8



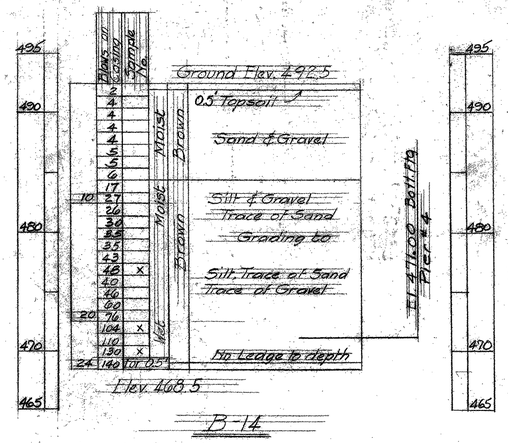

B-17




B-18




B-20




B-14

Note: X Indicated sample taken - No blow Counts

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 50 OF 85

Stage I Construction

| ITEM NO. | ITEM | UNIT | NET | OVERRUN | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| 106-A | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| 106-B | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| 106-C | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| 107 | STRUCT. EXCAV. | C. Y. | | | | |
| 401-B | CONC. CLASS B (MOD.) | C. Y. | | | | |
| 402 | REINF. STEEL | LBS. | | | | |
| 407 | ASPHALTIC-ASB. COATING | S. Y. | | | | |
| 502-B | TREATED TIMBER PILING | L. F. | | | | |
| 503 | SPLICES FOR STEEL PILING | EA. | | | | |
| 504 | STEEL PILING | L. F. | | | | |
| 502-A | UNTREATED TIMBER PILING | L. F. | | | | |

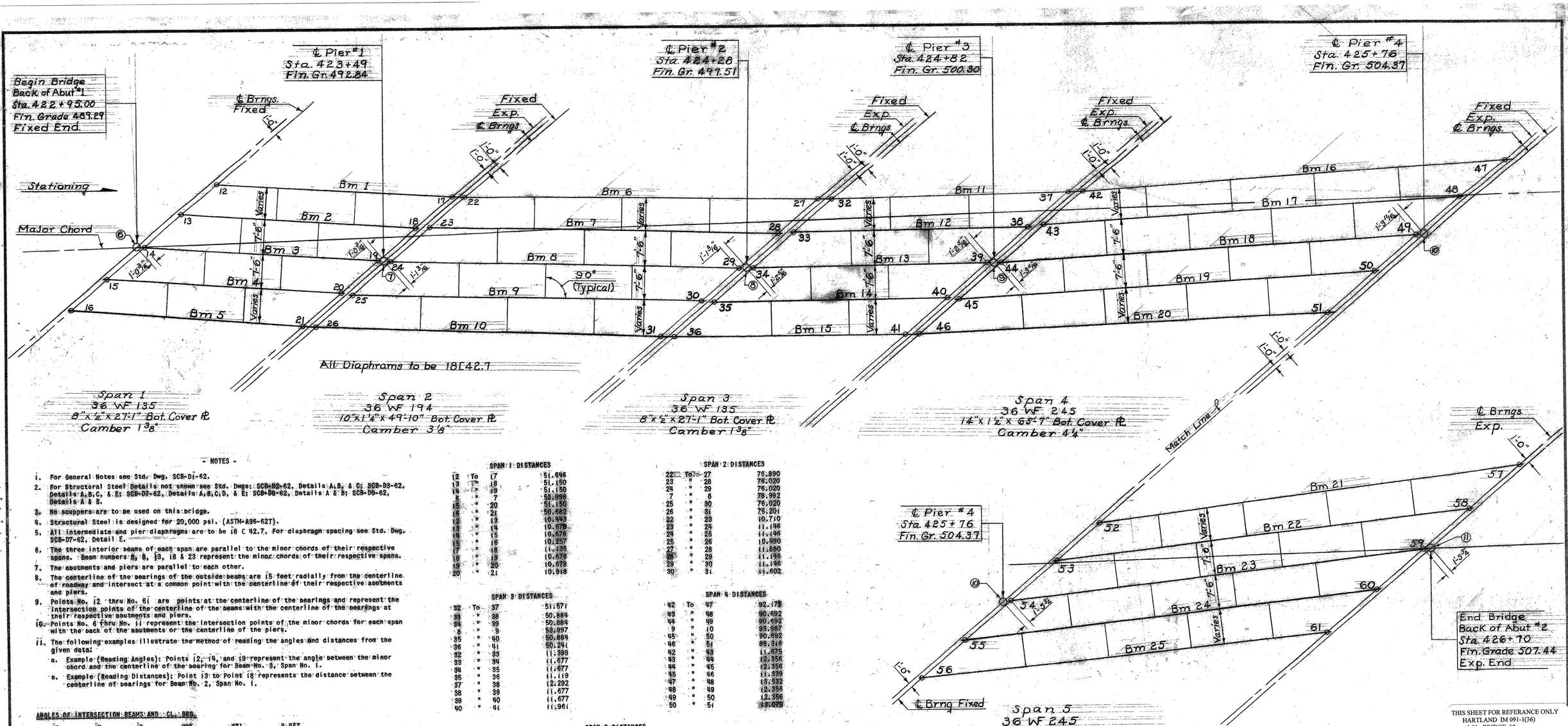
# STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND - HARTFORD
ROUTE No. U.S. 5 OVER INTERSTATE
CASING BORINGS

SCALE 1" = 6'
SURVEYED BY
DRAWN BY J.K.P. G.V.K. CHECKED BY G.V.K.
PROJECT No. I-91-1(22) CONT. #2
SHEET 47 OF 220

BR-105

K+E PRINTED IN U.S.A. B. L. M. INC. 05112




## - NOTES -

1. For General Notes see Std. Dwg. SCB-D1-62.
2. For Structural Steel Details not shown see Std. Dwgs: SCB-D2-62, Details A,B, & C; SCB-D3-62, Details A,B,C, & E; SCB-D7-62, Details A,B,C,D, & E; SCB-D8-62, Details A & B; SCB-D9-62, Details A & B.
3. No scuppers are to be used on this bridge.
4. Structural Steel is designed for 20,000 psi. (ASTM-A36-62T).
5. All intermediate and pier diaphragms are to be 18 C 42.7. For diaphragm spacing see Std. Dwg. SCB-D7-62, Detail E.
6. The three interior beams of each span are parallel to the minor chords of their respective spans. Beam numbers 8, 8, 13, 18 & 23 represent the minor chords of their respective spans.
7. The abutments and piers are parallel to each other.
8. The centerline of the bearings of the outside beams are 15 feet radially from the centerline of roadway and intersect at a common point with the centerline of their respective abutments and piers.
9. Points No. 12 thru No. 61 are points at the centerline of the bearings and represent the intersection points of the centerline of the beams with the centerline of the bearings at their respective abutments and piers.
10. Points No. 6 thru No. 11 represent the intersection points of the minor chords for each span with the back of the abutments or the centerline of the piers.
11. The following examples illustrate the method of reading the angles and distances from the given data:
    a. Example (Reading Angles): Points 12, 14, and 19 represent the angle between the minor chord and the centerline of the bearing for Beam No. 8, Span No. 1.
    b. Example (Reading Distances): Point 13 to Point 18 represents the distance between the centerline of bearings for Beam No. 2, Span No. 1.

### ANGLES OF INTERSECTION: BEAMS AND ℄ BRG.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 12 | 14 | 19 | 44° | — | 37' | — | 4.45" |
| 14 | 16 | 21 | 45° | — | 8' | — | 37.22" |
| 19 | 17 | 12 | 44° | — | 4' | — | 42.01" |
| 22 | 24 | 29 | 42° | — | 17' | — | 28.45" |
| 24 | 26 | 31 | 42° | — | 54' | — | 41.13" |
| 29 | 27 | 22 | 41° | — | 42' | — | 12.73" |
| 32 | 34 | 39 | 39° | — | 57' | — | 48.28" |
| 34 | 36 | 41 | 40° | — | 34' | — | 50.06" |
| 39 | 37 | 32 | 39° | — | 19' | — | 35.50" |
| 42 | 44 | 49 | 37° | — | 22' | — | 26.99" |
| 44 | 46 | 51 | 38° | — | 9' | — | 1.12" |
| 49 | 47 | 42 | 36° | — | 40' | — | 23.81" |
| 52 | 54 | 59 | 36° | — | 5' | — | 0.02" |
| 54 | 56 | 61 | 34° | — | 50' | — | 48.26" |
| 59 | 57 | 52 | 33° | — | 17' | — | 23.52" |

### SPAN 1 DISTANCES

| | | | |
|---|---|---|---|
| 12 | To | 17 | 51.646 |
| 13 | " | 18 | 51.150 |
| 14 | " | 19 | 51.150 |
| 6 | " | 7 | 58.999 |
| 15 | " | 20 | 51.150 |
| 16 | " | 21 | 50.682 |
| 12 | " | 13 | 10.443 |
| 13 | " | 14 | 10.679 |
| 14 | " | 15 | 10.678 |
| 15 | " | 16 | 10.257 |
| 17 | " | 18 | 11.135 |
| 18 | " | 19 | 10.678 |
| 19 | " | 20 | 10.678 |
| 20 | " | 21 | 10.918 |

### SPAN 2 DISTANCES

| | | | |
|---|---|---|---|
| 22 | To | 27 | 76.890 |
| 23 | " | 28 | 76.020 |
| 24 | " | 29 | 76.020 |
| 7 | " | 8 | 78.992 |
| 25 | " | 30 | 76.020 |
| 26 | " | 31 | 75.201 |
| 22 | " | 23 | 10.710 |
| 23 | " | 24 | 11.196 |
| 24 | " | 25 | 11.196 |
| 25 | " | 26 | 10.890 |
| 27 | " | 28 | 11.880 |
| 28 | " | 29 | 11.196 |
| 29 | " | 30 | 11.196 |
| 30 | " | 31 | 11.602 |

### SPAN 3 DISTANCES

| | | | |
|---|---|---|---|
| 32 | To | 37 | 51.571 |
| 33 | " | 38 | 50.884 |
| 34 | " | 39 | 50.884 |
| 8 | " | 9 | 58.997 |
| 35 | " | 40 | 50.884 |
| 36 | " | 41 | 50.241 |
| 32 | " | 33 | 11.399 |
| 33 | " | 34 | 11.677 |
| 34 | " | 35 | 11.677 |
| 35 | " | 36 | 11.119 |
| 37 | " | 38 | 12.292 |
| 38 | " | 39 | 11.677 |
| 39 | " | 40 | 11.677 |
| 40 | " | 41 | 11.961 |

### SPAN 4 DISTANCES

| | | | |
|---|---|---|---|
| 42 | To | 47 | 92.175 |
| 43 | " | 48 | 90.692 |
| 44 | " | 49 | 90.692 |
| 9 | " | 10 | 93.987 |
| 45 | " | 50 | 90.692 |
| 46 | " | 51 | 89.318 |
| 42 | " | 43 | 11.675 |
| 43 | " | 44 | 12.356 |
| 44 | " | 45 | 12.356 |
| 45 | " | 46 | 11.339 |
| 47 | " | 48 | 13.532 |
| 48 | " | 49 | 12.356 |
| 49 | " | 50 | 12.356 |
| 50 | " | 51 | 13.079 |

### SPAN 5 DISTANCES

| | | | |
|---|---|---|---|
| 52 | To | 57 | 92.316 |
| 53 | " | 58 | 90.418 |
| 54 | " | 59 | 90.418 |
| 10 | " | 11 | 93.987 |
| 55 | " | 60 | 90.418 |
| 56 | " | 61 | 88.681 |
| 52 | " | 53 | 12.583 |
| 53 | " | 54 | 13.383 |
| 54 | " | 55 | 13.383 |
| 55 | " | 56 | 12.125 |
| 57 | " | 58 | 14.664 |
| 58 | " | 59 | 13.383 |
| 59 | " | 60 | 13.383 |
| 60 | " | 61 | 14.232 |

* Roadway Quantities

### Estimated Superstructure Quantities

| | Item No. | Item | Unit | Total | Final |
|---|---|---|---|---|---|
| * | 318 | Tar Emulsion for Bridge Floors | Gal. | 500 | |
| * | 361-B | Bituminous Conc. Pavement (Mod). | Ton | 122 | |
| * | 372-A | Joint Sealer Hot-Poured | L.F. | 160 | |
| | 372-C | Joint Sealer-Pre Formed Type A | L.F. | 150 | |
| | 401-AA | Concrete Class AA (Mod.) | C.Y. | 414 | |
| | 402 | Reinforcing Steel | LB. | 98,170 | |
| | 403 | Spiral Reinforcement (10 380#) | L.S. | 1 | |
| | 404-A | Structural Steel | LB. | 503806 | |
| | 556-C | Granite Bridge Curb (Mod.) | L.F. | 755 | |
| | 572 | Bridge Railing | L.F. | 830 | |
| | 440 | Water Repellent | Gal. | 41½ | |
| | 372-C | Joint Sealer-Preformed Type B | L.F. | 80 | |

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 51 OF 85

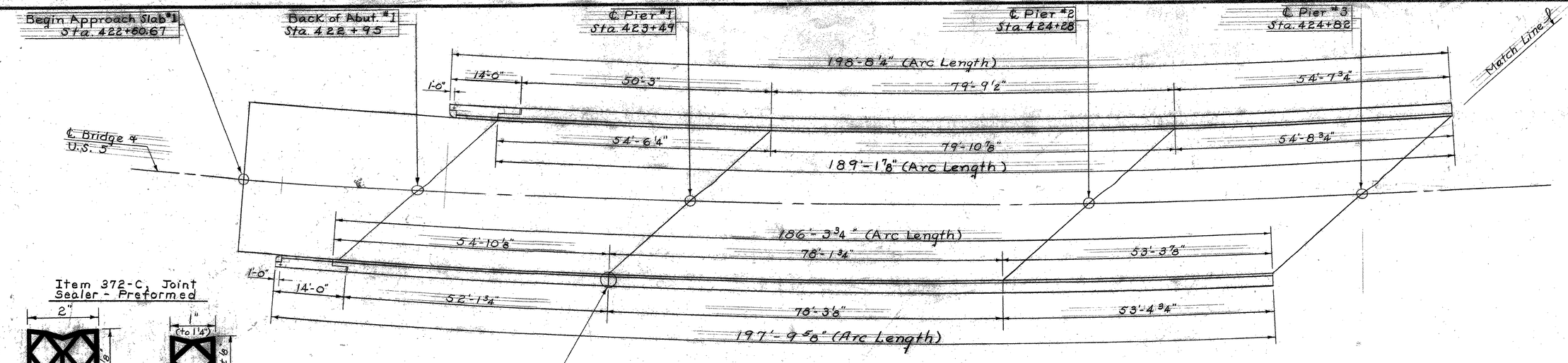
Stage I Construction

**STATE OF VERMONT**
DEPARTMENT OF HIGHWAYS

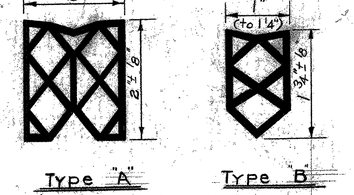
TOWN OF Hartland-Hartford
ROUTE NO. I91 LOG STA.
Framing Plan

SCALE 1"=10'-0"
SURVEYED BY
DRAWN BY JJC+F.W.B CHECKED BY L.E.S.
PROJECT NO. I 91-1(22) Cont 2
SHEET 48 OF 220

BR-106




Item 372-C, Joint Sealer - Preformed

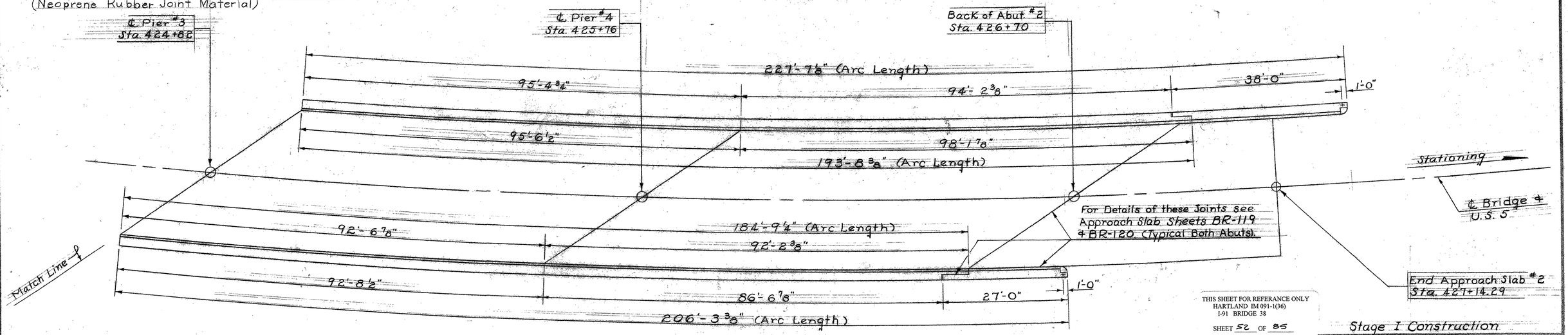


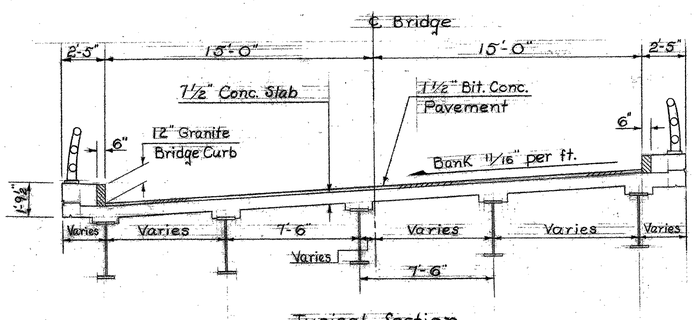

Type "A" Type "B"

(Neoprene Rubber Joint Material)

For details of expansion joints in the curb at the piers, see Std. Dwg. SCB-D3-62, Details A & D. Seal joint with Item 372-C, Type A.

Rail and Granite Curb Lengths
Scale: 1"=10'-0"




Typical Section
Scale: 1'= 4'-0"

NOTES

1. For General Notes See Standard Drawing SCB-D1-62.
2. For Details not shown on the Typical Section see Standard Drawing SCB-D2-62.
3. For Curb Details refer to Standard Drawing SCB-D5-62, Detail A.
4. For Bridge Railing Details see Standard Drawings SB-SG-62, Sheets 1 and 2.
5. The Contractor has the option of using Aluminum or Steel Bridge Railing. Maximum Post spacing for Aluminum Railing will not exceed 7'-2". This spacing may be increased to 10'-0" provided steel railing is used.
6. Item 372-C, Joint Sealer-Preformed, Type A - 150 feet required. Provide a 1 1/8" to 1 1/2" wide by 3 1/4" deep joint for installation.
   Item 372-C, Joint Sealer-Preformed, Type B - 80 feet required. Provide a 1/2" to 5/8" wide x 2 3/4" deep joint for installation.

| ITEM NO. | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| | STRUCT. EXCAV. | C. Y. | | | | |
| | CONC. CLASS AA (MOD.) | C. Y. | | | | |
| | CONC. CLASS B (MOD.) | C. Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC-ASB. COATING | S. Y. | | | | |
| | TREATED TIMBER PILING | L. F. | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L. F. | | | | |
| | UNTREATED TIMBER PILING | L. F. | | | | |

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 52 OF 85

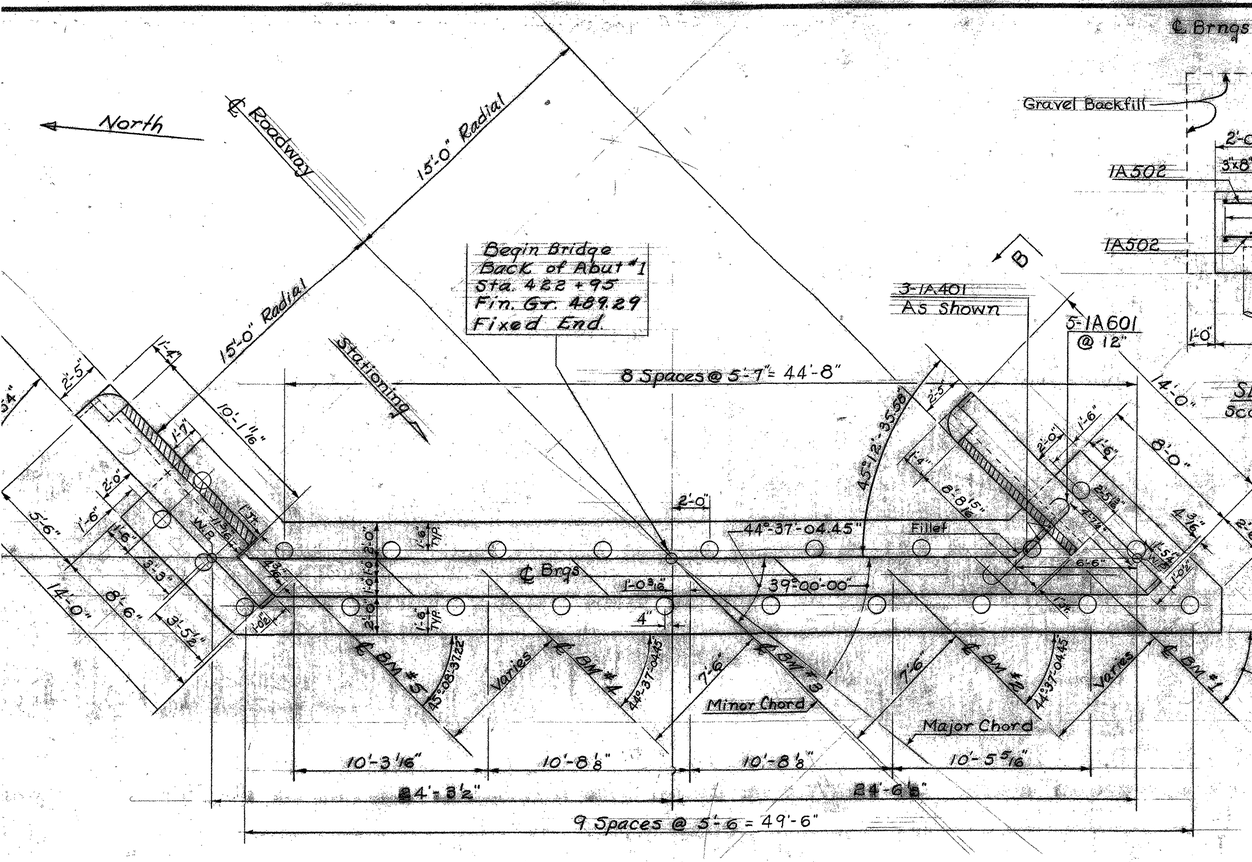
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

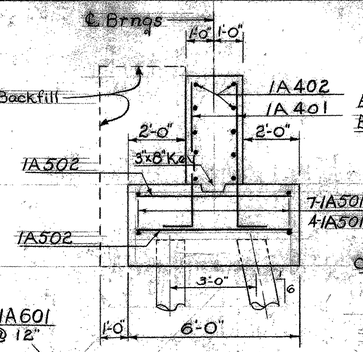
TOWN OF Hartland-Hartford
ROUTE NO. 191 LOG STA.
Typical Section, Rail and Granite Curb Lengths
SCALE As Noted
SURVEYED BY
DRAWN BY JJC+FWB CHECKED BY LES
PROJECT NO. I 91-1(22) Cont. #2
SHEET 49 OF 220

BR-107

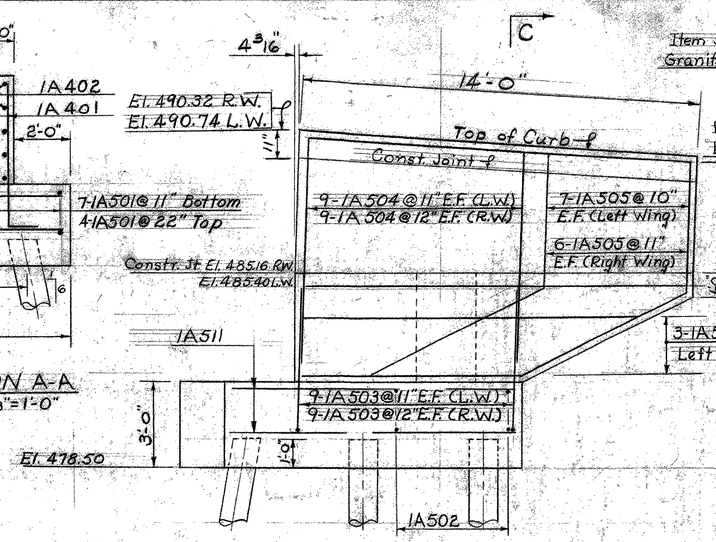
K&E PHOENIX © 71233



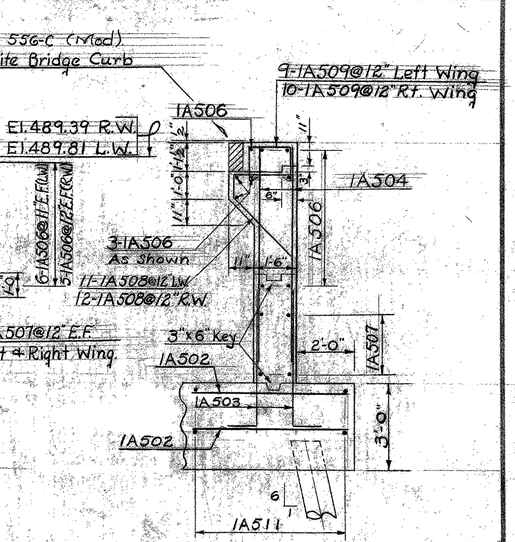

PLAN
Scale: 1/4" = 1'-0"




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

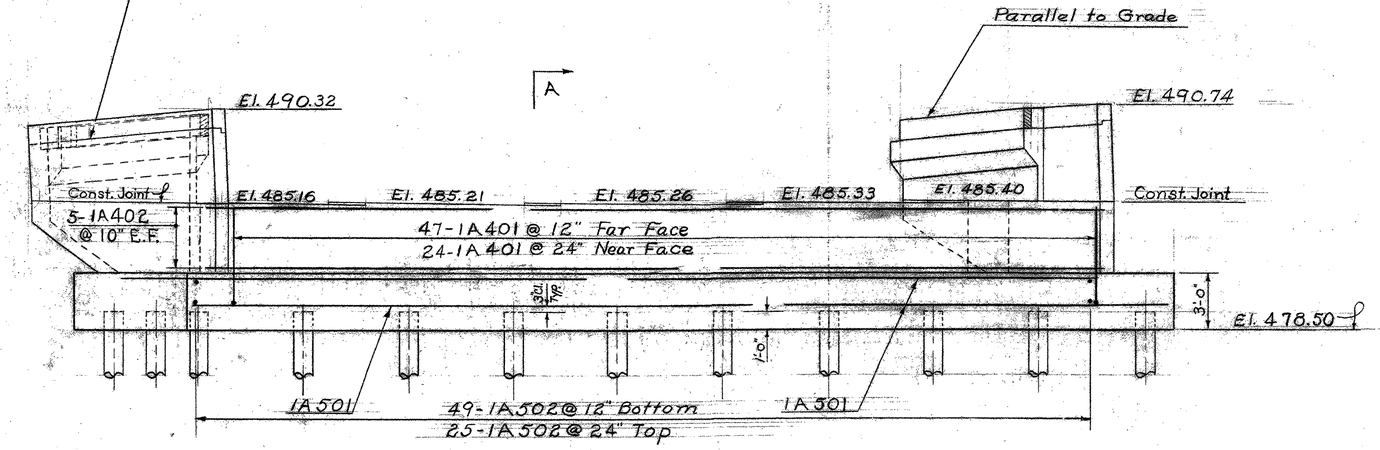



VIEW B-B
Scale: 3/8" = 1'-0"

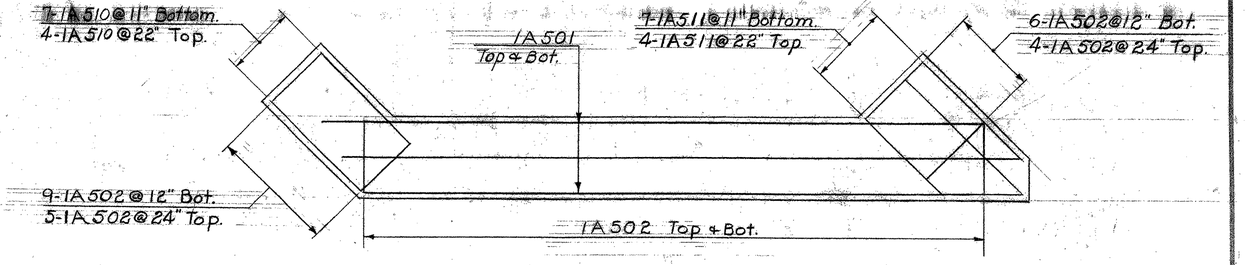



SECTION C-C
Scale: 3/8" = 1'-0"

Note:
Do not construct above this joint until structural steel is in place and final grade is determined. (Typical both sides).




ELEVATION
Scale: 1/4" = 1'-0"




Footing Reinforcement
No Scale

For Notes See Details Abut. No. 2 Wing Walls, Sheet BR-110.

Estimated Length of Piles 45'

E.F. Each Face
F.F. Far Face
N.F. Near Face
L.W. Left Wing
R.W. Right Wing

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 53 OF 85

Stage I Construction

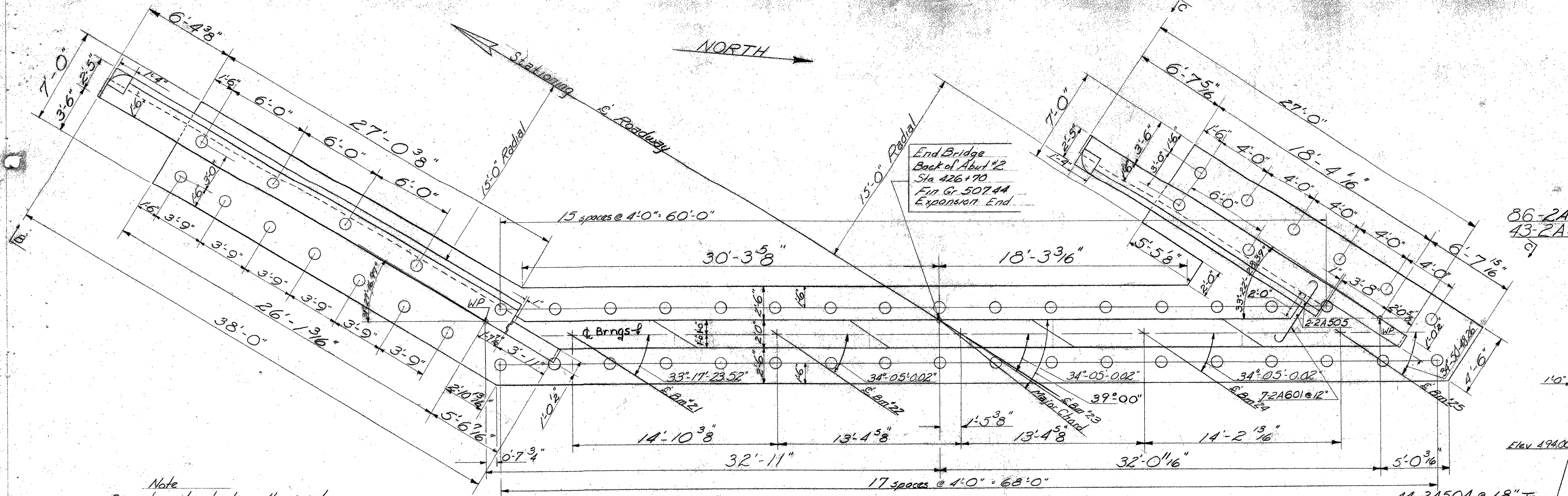
Estimated Quantities Abut. No. 1.

| ITEM NO. | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| 107 | STRUCT. EXCAV. | C. Y. | | | ~~46~~ | 132 |
| | CONC. CLASS AA (MOD.) | C. Y. | | | | |
| 401-B | CONC. CLASS B (MOD.) | C. Y. | | | ~~66~~ | 67 |
| 402 | REINF. STEEL | LBS. | | | ~~8780~~ | 3715 |
| 407 | ASPHALTIC-ASB. COATING | S. Y. | | | 5 V | 5 |
| 502B | TREATED TIMBER PILING | L. F. | | | ~~1035~~ | 456 |
| | ~~SPLICES FOR STEEL PILING~~ Cut-offs @ 50% | Ea | | | | |
| 440 | Water Repellent | Gal. | | | ~~41~~ | 8 |
| | UNTREATED TIMBER PILING | L. F. | | | | |
| 204 | Sub-base of Crushed Rock (Modified Under Structure). | C.Y. | | | ~~90~~ | 68 |
| 222 | Gravel Backfill | C.Y. | | | 28 V | 28 |
| 501 | Furnishing Equip. for Driving Piles | L.S. | (See Br. Quantity Sheet). | | | |
| 556-C | Granite Bridge Curb (Mod.) | L.F. | | | 23 V | 23 |

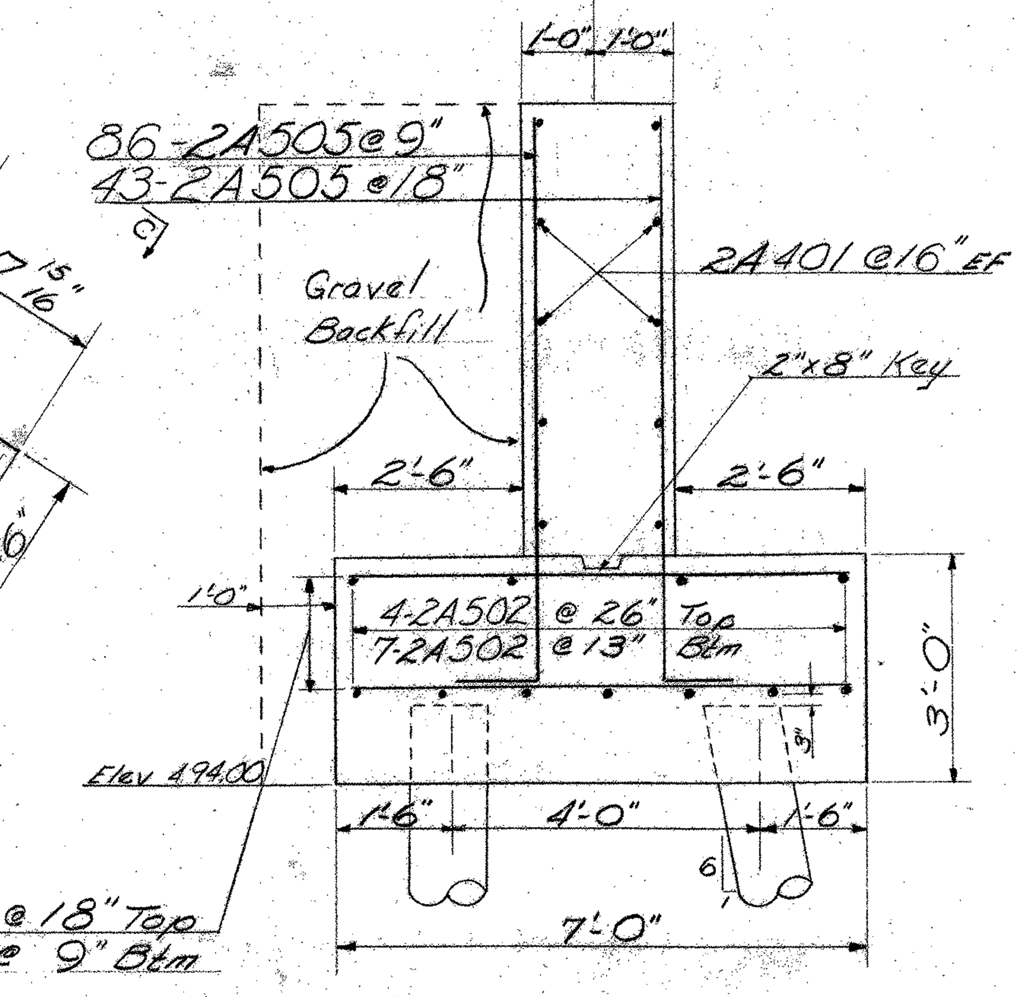
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I91 LOG STA.
Details of Abutment No. 1
(Fixed End)
SCALE As Noted
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY A.E.R.
PROJECT NO. I91-1(22) Cont #2
SHEET 50 OF 220

BR-108



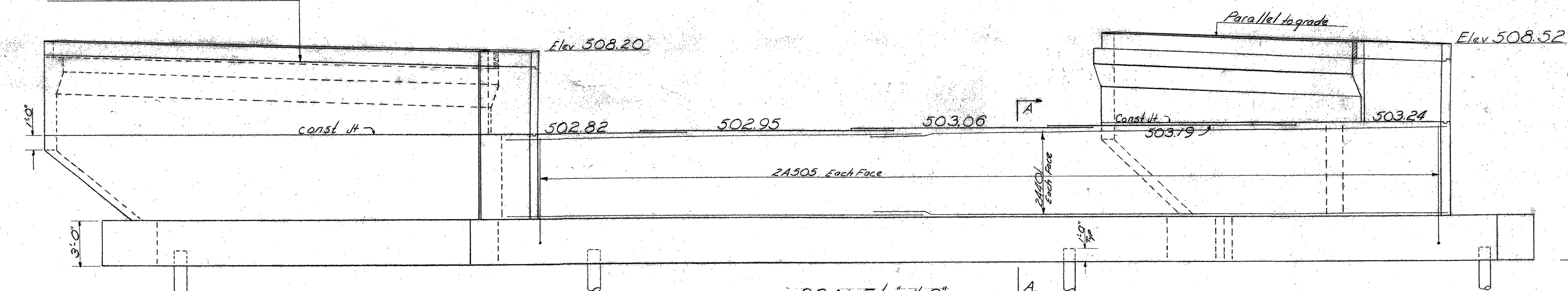

PLAN
SCALE 1/4" = 1'-0"




SCALE 1/2" = 1'-0"
SECTION A-A

Note
Do not construct above this joint until structural steel is in place and final grade is determined

Typical both sides

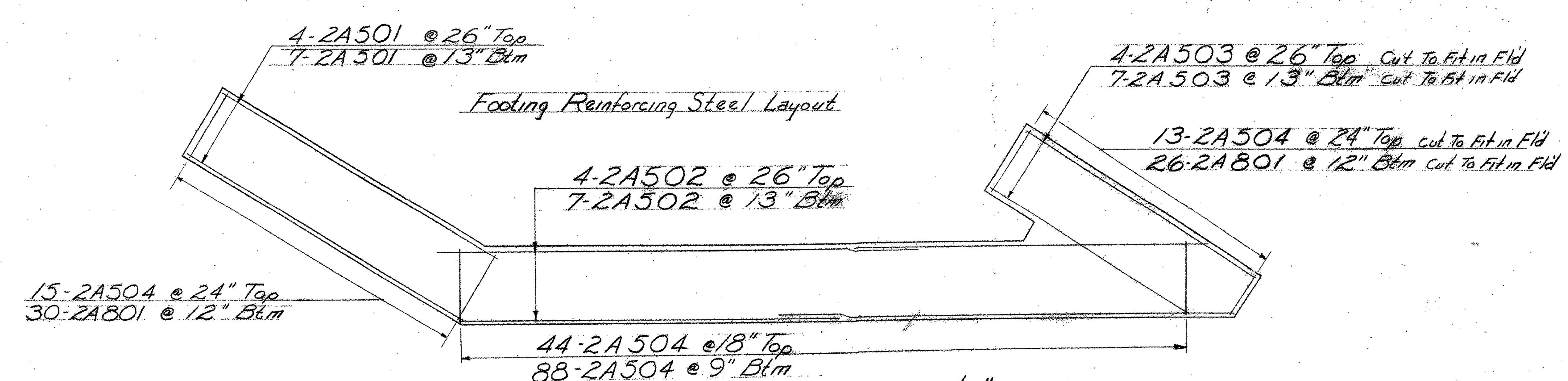



SCALE 1/4" = 1'-0"
ELEVATION

For Abut #2 notes
see sheet BR 110

Estimated Length of Piles 37'

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 54 OF 85




SCALE 1/8" = 1'-0"

Estimated Quantities Abutment No. 2.

| ITEM NO. | ITEM | UNIT | NET | OVERRUN | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| 106-A | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| 106-B | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| 106-C | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| 107 | STRUCT. EXCAV. | C. Y. | | | ~~40~~ | 37 |
| 401-B | CONC. CLASS B (MOD.) | C. Y. | | | ~~157~~ | 162 |
| 402 | REINF. STEEL | LBS. | | | ~~9190~~ | 9188 |
| 407 | ASPHALTIC-ASB. COATING | S. Y. | | | 7 ✓ | 7 |
| 502-B | TREATED TIMBER PILING | L. F. | | | ~~1961~~ | 1333 |
| 503 | ~~SPLICES FOR STEEL PILING~~ Cut-offs @ 50% | L.F. ~~EA.~~ | | | 0 | 588 |
| 440 | Water Repellent | GAL. | | | ~~8 1/4~~ | 9 |
| 502-A | UNTREATED TIMBER PILING | L. F. | | | | |
| 204 | Sub-base of Crushed Rock (Modified under Structure) | C.Y. | | | 130 ✓ | 130 |
| 222 | Gravel Backfill | C.Y. | | | ~~76~~ | 77 |
| 501 | Furnishing Equip. For Driving Piles | L.S. | (See Br. Quantity Sheet). | | | |
| 556-C | Granite Bridge Curb (Mod.). | L.F. | | | 58 ✓ | 58 |

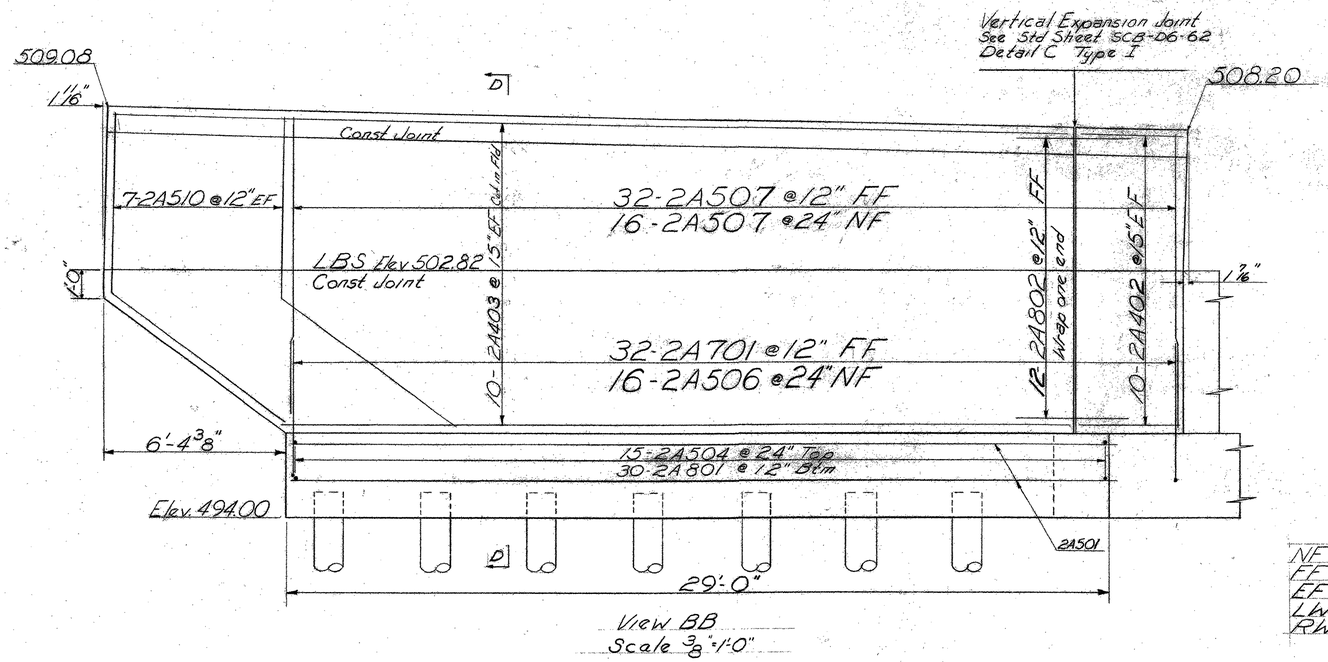
Stage I Construction

**STATE OF VERMONT**
**DEPARTMENT OF HIGHWAYS**

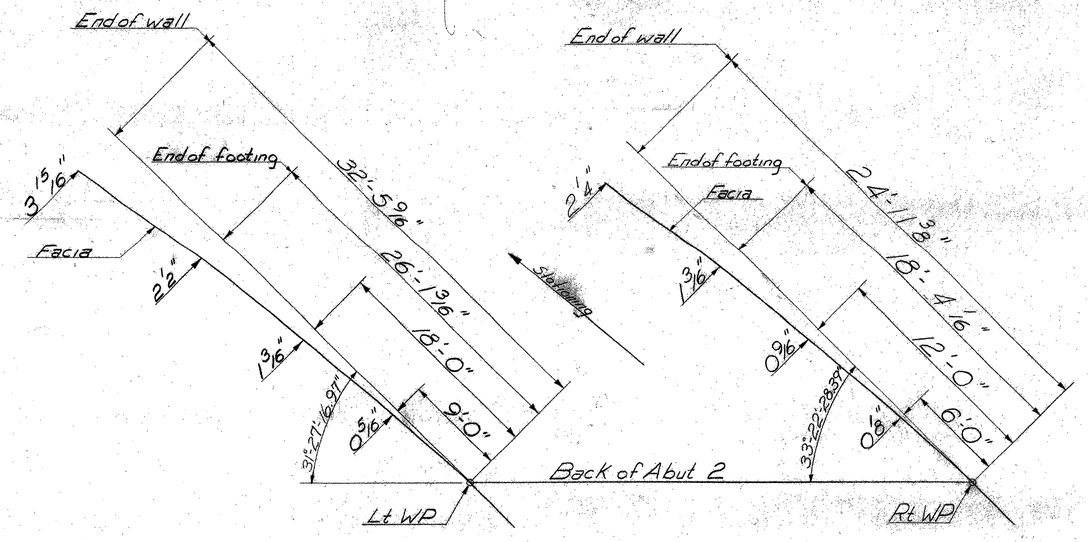
TOWN OF HARTLAND-HARTFORD
ROUTE NO. I 91 LOG STA.
Details of Abut #2. Exp End
US 5 over I 91
SCALE As noted
SURVEYED BY
DRAWN BY AER CHECKED BY J.J.C.
PROJECT NO. I 91-1(22) c/2
SHEET 51 OF 220

BR 109

K+E PHOENIX N166 TRACING CLOTH B. L. M. INC. 67565



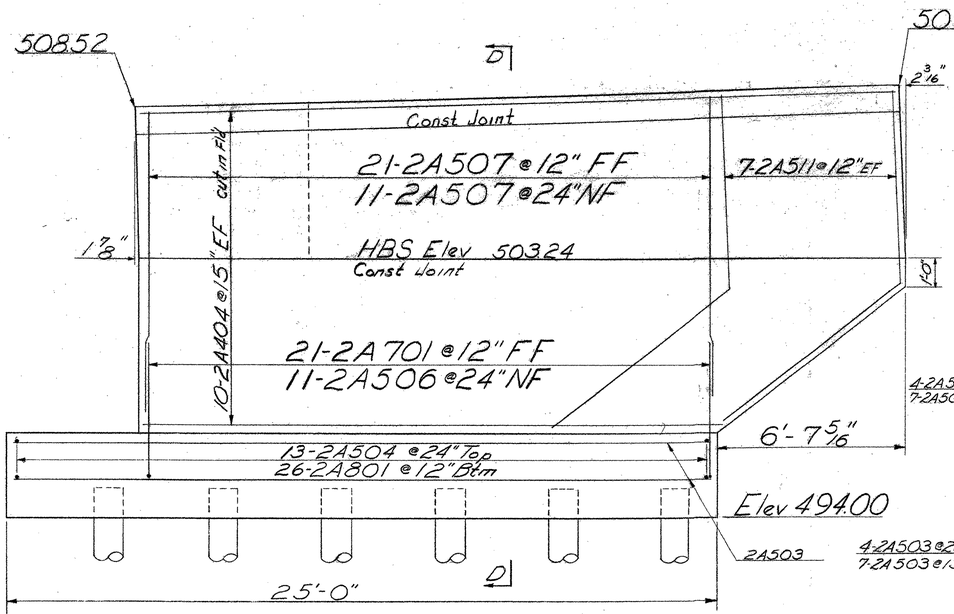

NF = Near Face
FF = Far Face
EF = Each Face
LW = Left Wall
RW = Right Wall



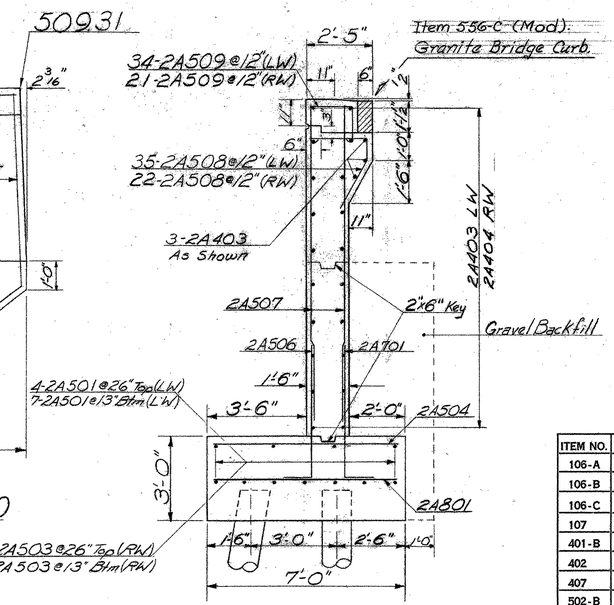

Information for laying out curved wing walls on Abut 2
NTS

## NOTES

1. All reinforcing steel to have a min clear cover of 2", except 3" in the footing.
2. Top of curb to be parallel to grade.
3. Step bridge seats midway between beams as shown.
4. Estimated pile length Abut #1-45 Feet Abut #2-37 Feet
5. All piles to be driven to a 20 Ton Capacity.
6. For additional notes see sheet BR 100.
7. Batter Front Row of Piles 1 on 6.
8. For details of dead end anchorage and post attachment at wingwalls see Std. Sh. G-3a.




View C-C
Scale 3/8"=1'-0"




SECTION D-D
Scale 3/8"=1'-0"

| ITEM NO. | ITEM | UNIT | NET | OVERRUN | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| 106-A | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| 106-B | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| 106-C | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| 107 | STRUCT. EXCAV. | C. Y. | | | | |
| 401-B | CONC. CLASS B (MOD.) | C. Y. | | | | |
| 402 | REINF. STEEL | LBS. | | | | |
| 407 | ASPHALTIC-ASB. COATING | S. Y. | | | | |
| 502-B | TREATED TIMBER PILING | L. F. | | | | |
| 503 | SPLICES FOR STEEL PILING | EA. | | | | |
| 504 | STEEL PILING | L. F. | | | | |
| 502-A | UNTREATED TIMBER PILING | L. F. | | | | |

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 55 OF 85

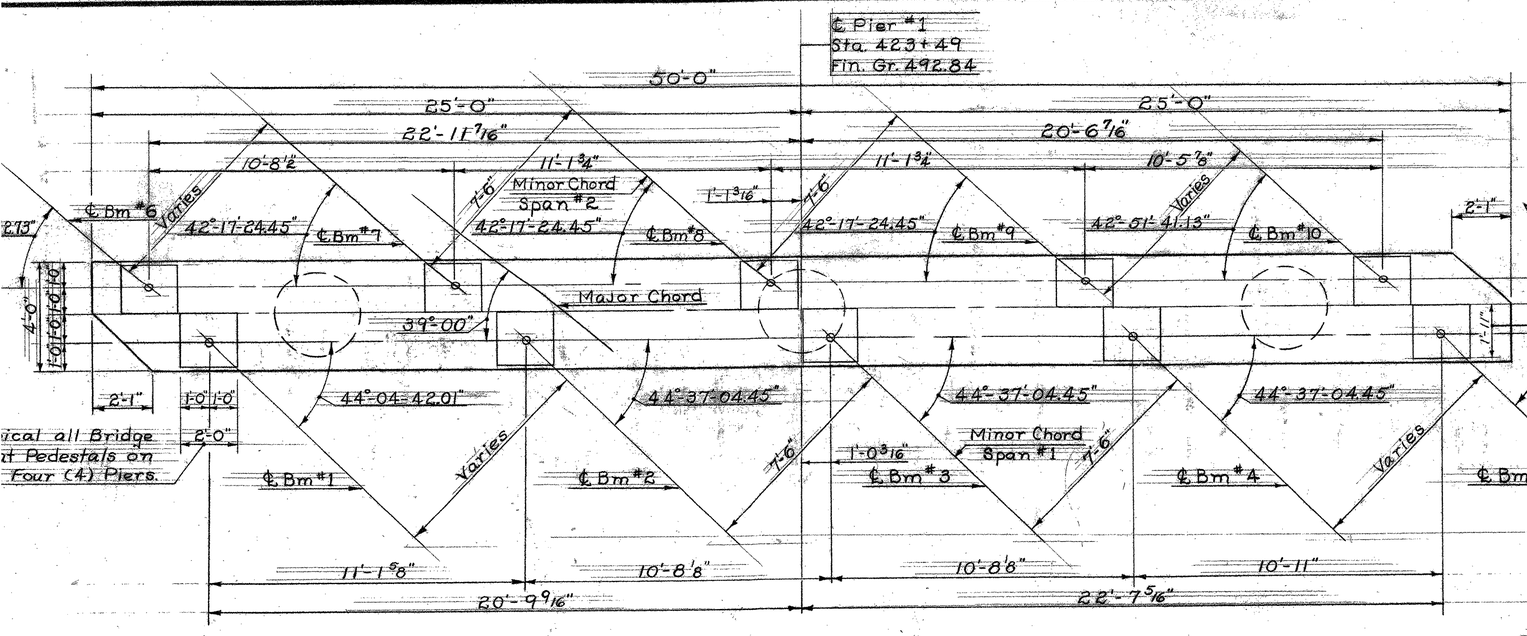
Stage I Construction

**STATE OF VERMONT**
**DEPARTMENT OF HIGHWAYS**

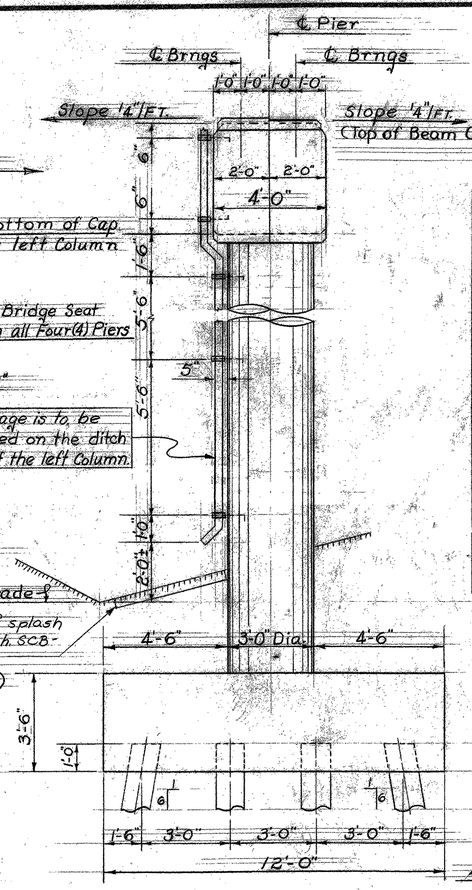
TOWN OF Hartland - Hartford
ROUTE NO. I-91 LOG STA.
Details of Abut 2 Wing Walls
US 5 over I-91
SCALE As noted
SURVEYED BY
DRAWN BY AER CHECKED BY J.J.C.
PROJECT NO. I 91-(22) c/2
SHEET 52 OF 220

R110

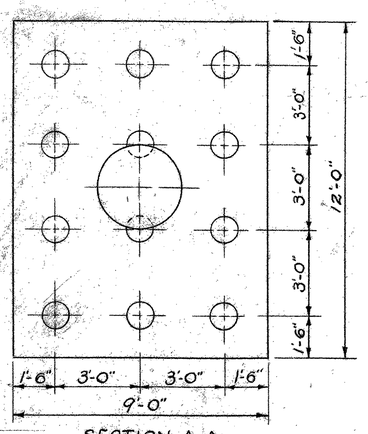
B. L. M. INC. 07585



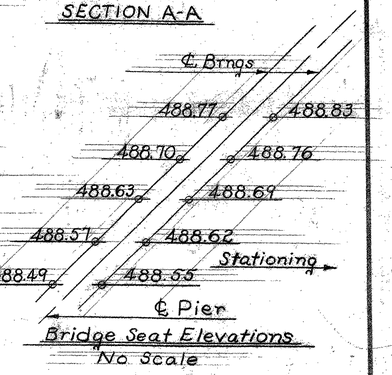

PLAN



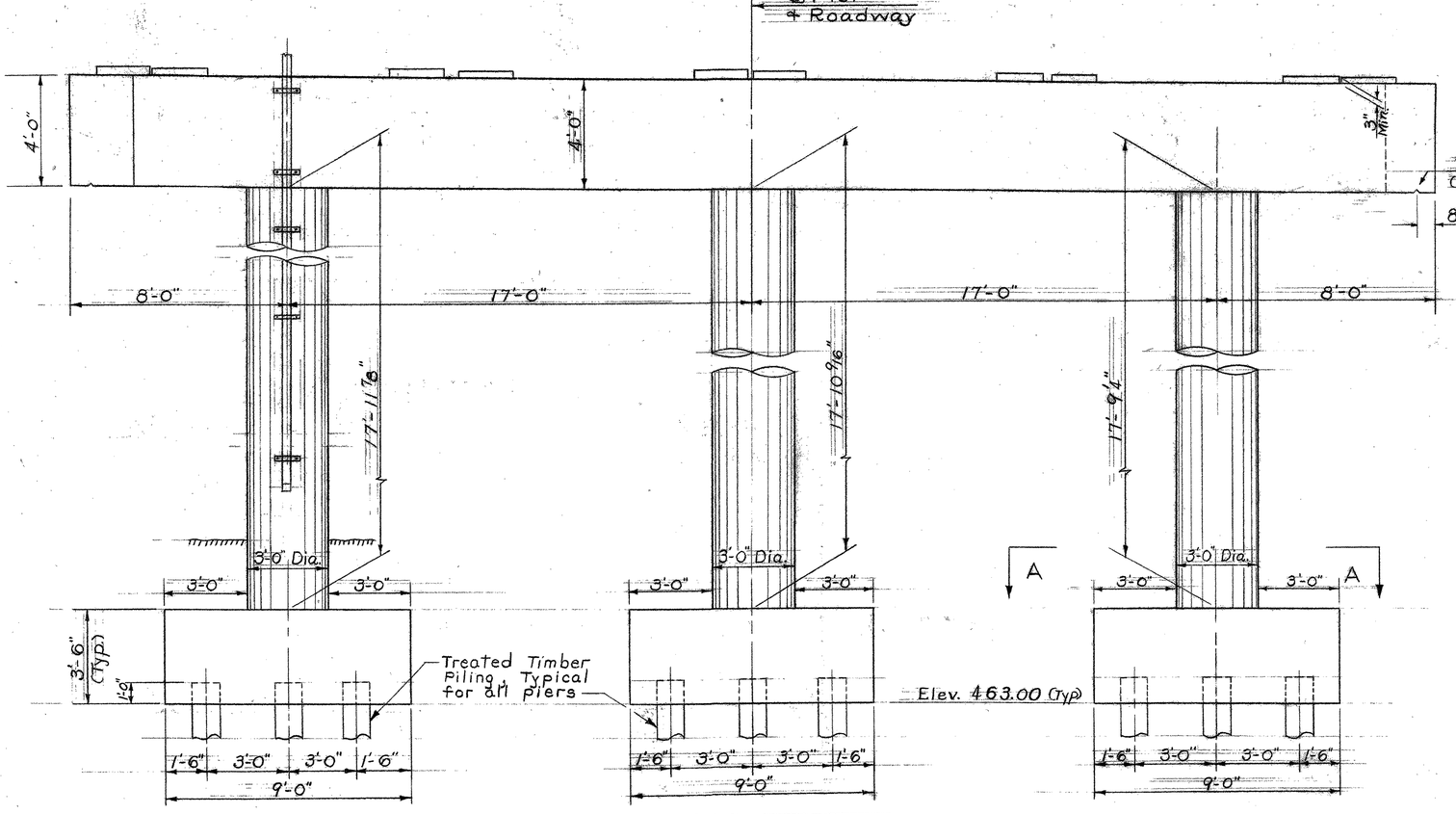

END ELEVATION




SECTION A-A




Bridge Seat Elevations
No Scale




ELEVATION

① For General Notes See Standard Drawing SCB-D1-62.

② For details of drainage not shown See Standard Drawing SCB-D3-62, Type "B", Details A, B, C & E.

③ All pier footings are designed for a maximum pile bearing pressure of 20 Tons.

④ Concrete in the footings is to be Class B (Mod). Concrete above the top of the footings is to be Class AA (Mod.).

⑤ Bridge Seat elevations given are for ℄ of bearings.

Stage I Construction.

Estimated Length of Piles 24'

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 56 OF 85

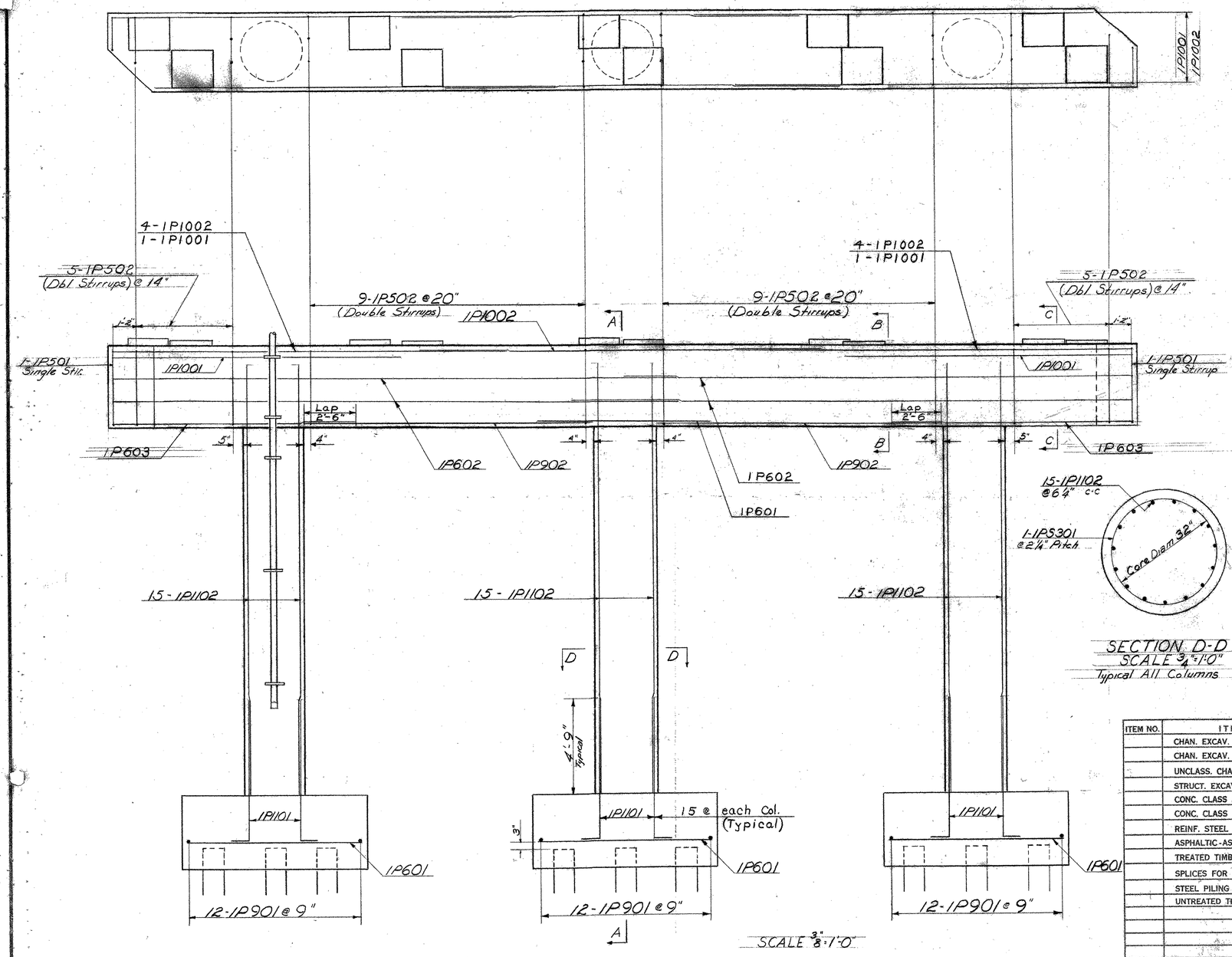
Estimated Quantities Pier No.1

| Item No. | Item | Unit | Total | Final |
|---|---|---|---|---|
| 107 | Structure Excavation | C.Y. | 103 | 103 |
| 401-AA | Concrete Class AA (Mod). | C.Y. | 44 | 44 |
| 401-B | Concrete Class B (Mod). | C.Y. | 42 | 42 |
| 402 | Reinforcing Steel | L.B. | ~~13,710~~ | 13926 |
| 407 | Asphaltic-Asbestos Coating | S.Y. | ~~23~~ | 22 |
| 501 | Furnishing Equip. For Driving Piles (See Est. Quantity Sheet) | | | |
| 502-B | Treated Timber Piling | L.F. | ~~864~~ | 448 |
| 440 | Water Repellent | Gal. | ~~3~~ | 7½ |

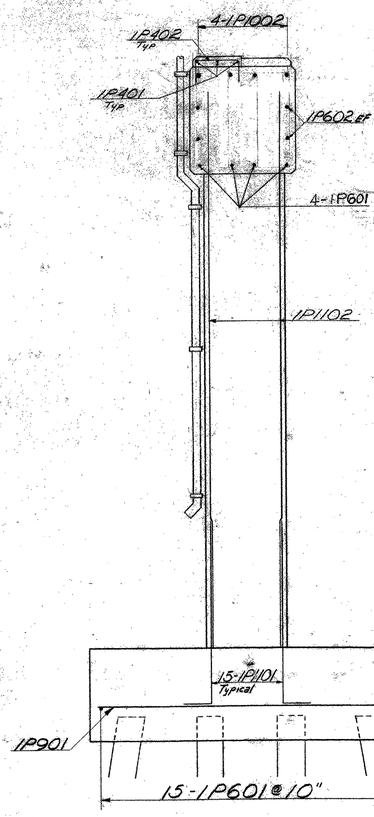
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I91 LOG STA.
Pier No. 1 Layout Details
U.S. 5 Over I 91
SCALE 3/8"=1'-0"
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY AER
PROJECT NO. I91-1(22) Cont 2
SHEET 33 OF 220

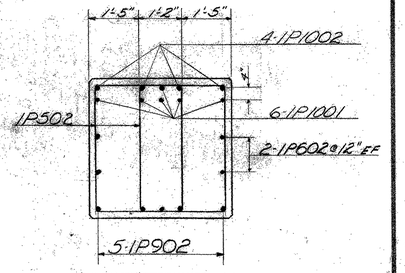
BR-III



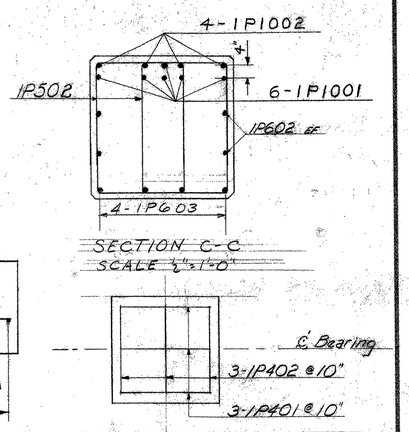

SCALE 3/8"=1'-0"




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




SECTION B-B
SCALE 1/2"=1'-0"




SECTION C-C
SCALE 1/2"=1'-0"

Typical Pad Reinf. Steel Layout
SCALE 3/4"=1'-0"




SECTION D-D
SCALE 3/4"=1'-0"
Typical All Columns

- NOTES -

1. Reinforcing Steel is to have a minimum clear cover of 3 inches in the footings and 2 inches in the columns, cap beam, and bearing pedestals.
2. Reinforcing steel in the top of the pier shall be placed so as to allow for drilling and placing of anchor bolts.
3. All Spiral Reinforcement shall conform to AASHO Designation M 32-60 Cold-Drawn Steel Wire for Concrete Reinforcement and shall be paid for under Item 402, Reinforcing Steel.

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 57 OF 85

Stage I Construction

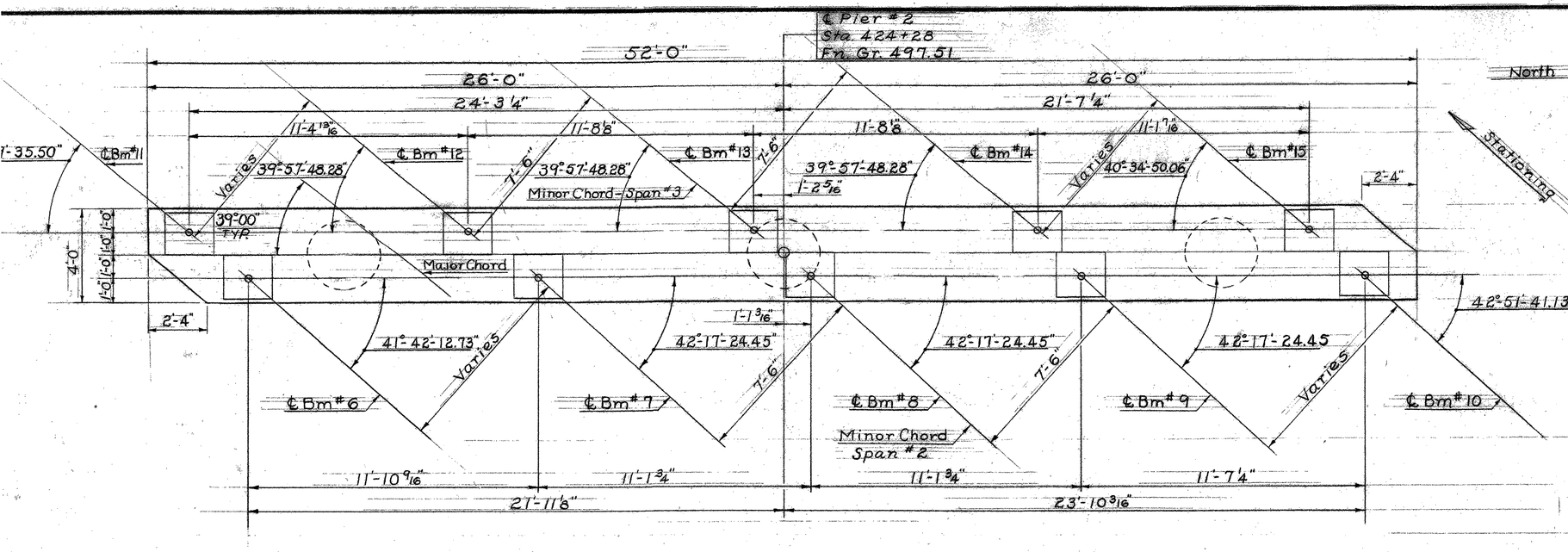
| ITEM NO. | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| | STRUCT. EXCAV. | C. Y. | | | | |
| | CONC. CLASS AA (MOD.) | C. Y. | | | | |
| | CONC. CLASS B (MOD.) | C. Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC-ASB. COATING | S. Y. | | | | |
| | TREATED TIMBER PILING | L. F. | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L. F. | | | | |
| | UNTREATED TIMBER PILING | L. F. | | | | |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

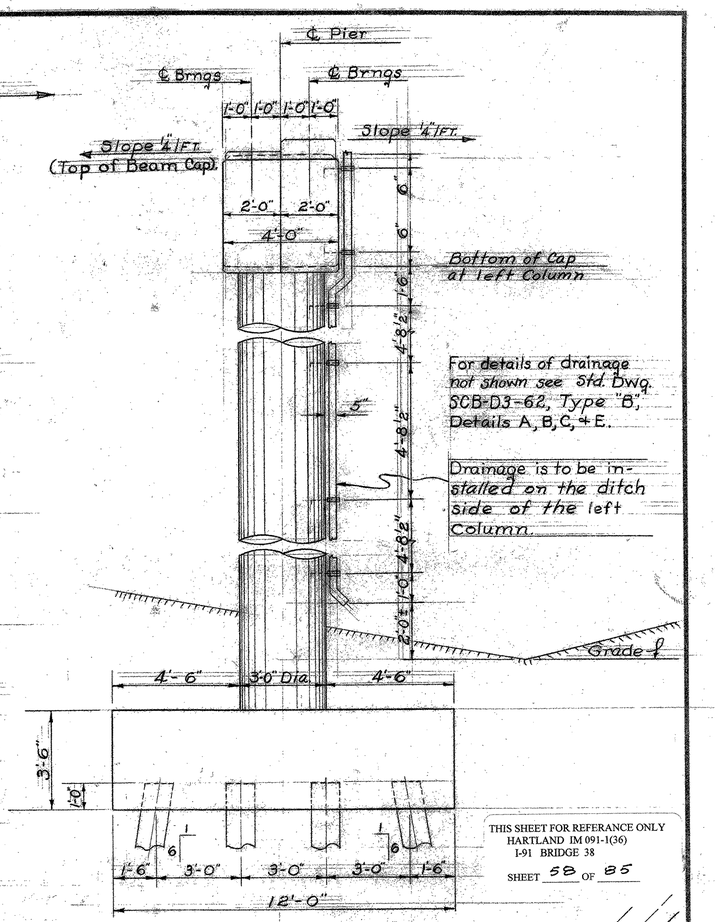
TOWN OF HARTLAND-HARTFORD
ROUTE NO. I91 LOG STA.
Pier No.1 Reinforcing Steel
US 5 over I-91
SCALE As noted
SURVEYED BY
DRAWN BY AER CHECKED BY F.W.B. 4/2/64
PROJECT NO. I 91-1(22) C/2.
SHEET 34 OF 220

BR-112

K+E PHOENIX ® 71233 TRACING CLOTH




PLAN

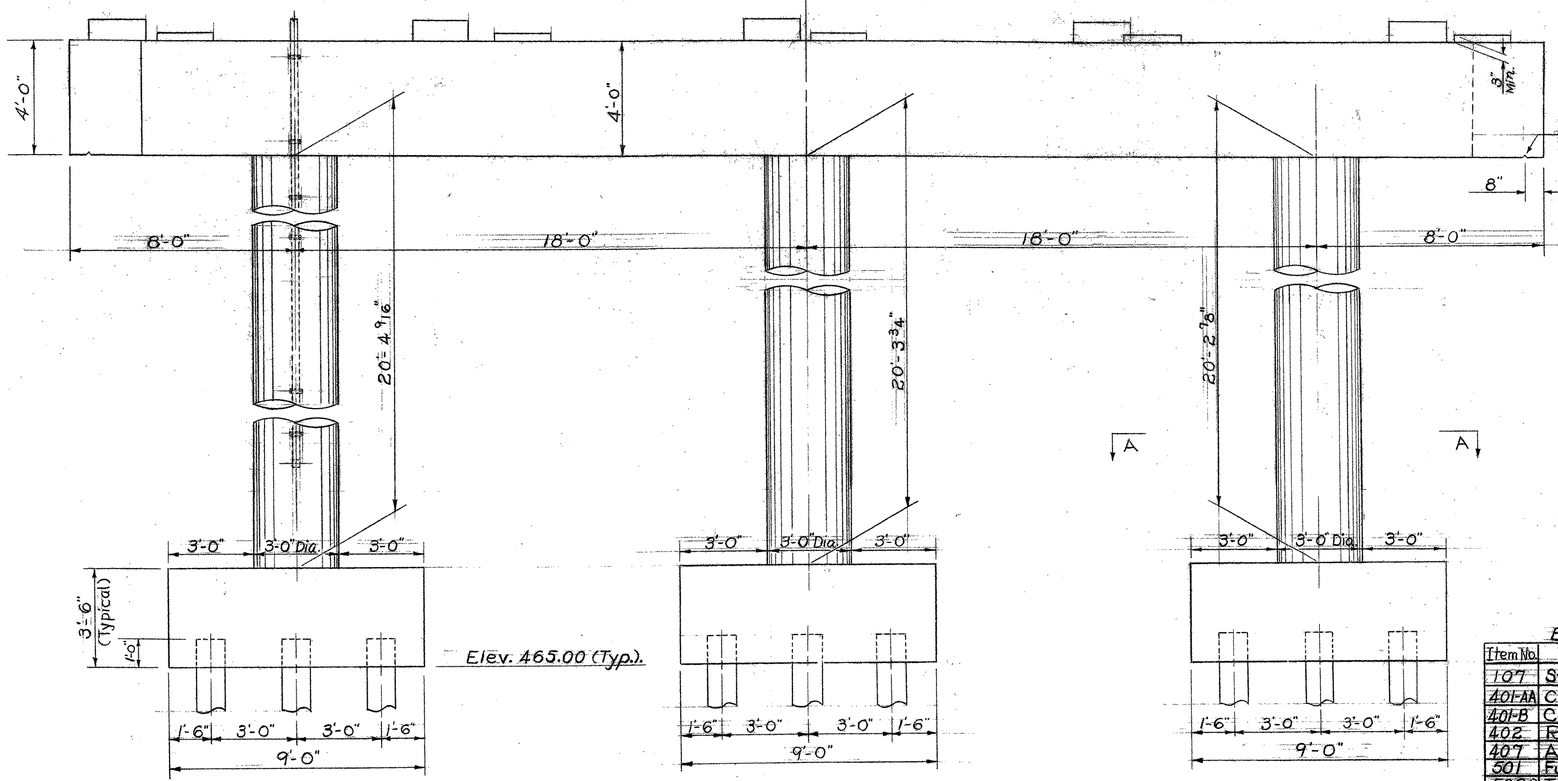



For Notes see Pier No.1 Layout Details Sheet BR-111.

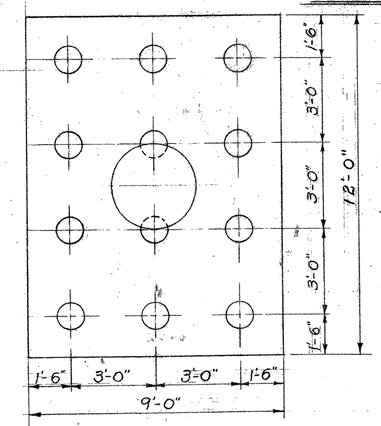
Estimated Length of Piles 20'

For details of drainage not shown see Std. Dwg. SCB-D3-62, Type "B", Details A, B, C, & E.

Drainage is to be installed on the ditch side of the left Column.

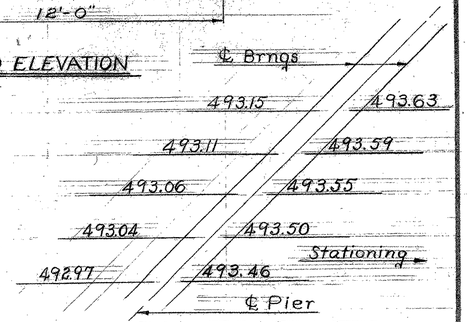



ELEVATION




SECTION A-A

END ELEVATION




Bridge Seat Elevations
No Scale

Estimated Quantities Pier No. 2

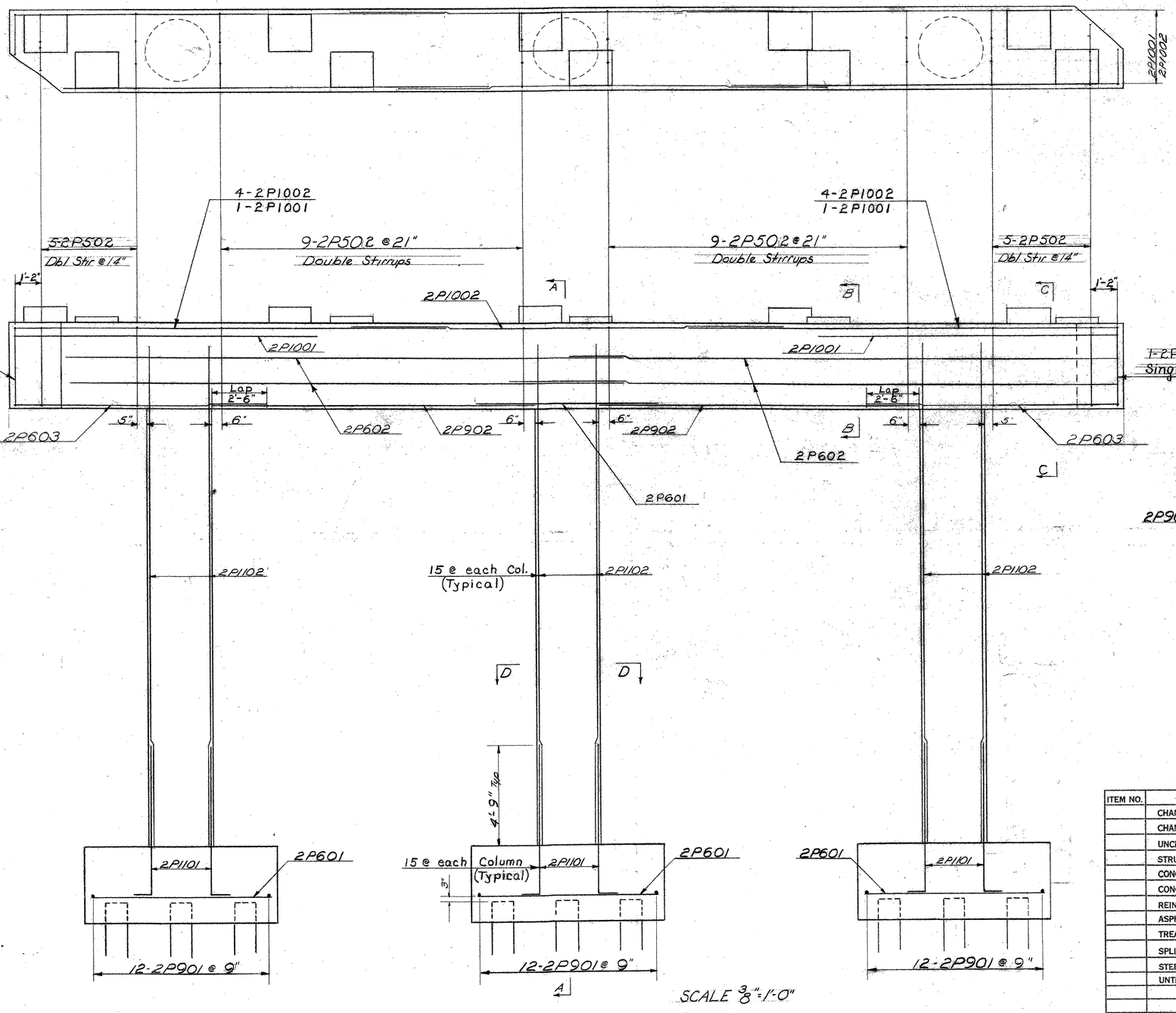
| Item No. | Item | Unit | Total | Final |
|---|---|---|---|---|
| 107 | Structure Excavation | C.Y. | ~~86~~ | 77 |
| 401-AA | Concrete Class AA (Mod.) | C.Y. | 47 V | |
| 401-B | Concrete Class B (Mod.) | C.Y. | 42 V | 42 |
| 402 | Reinforcing Steel | LB. | ~~14,490~~ | 14,540 |
| 407 | Asphaltic-Asbestos Coating | S.Y. | ~~24~~ | 23 |
| 501 | Furnishing Equip. For Driving Piles | (See Pin Quantity Sheet). | | |
| 502.8 | Treated Timber Piling | L.F. | ~~720~~ | 269 |
| 440 | Water Repellent | Gal. | ~~24~~ | 7 3/4 |

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 58 OF 85

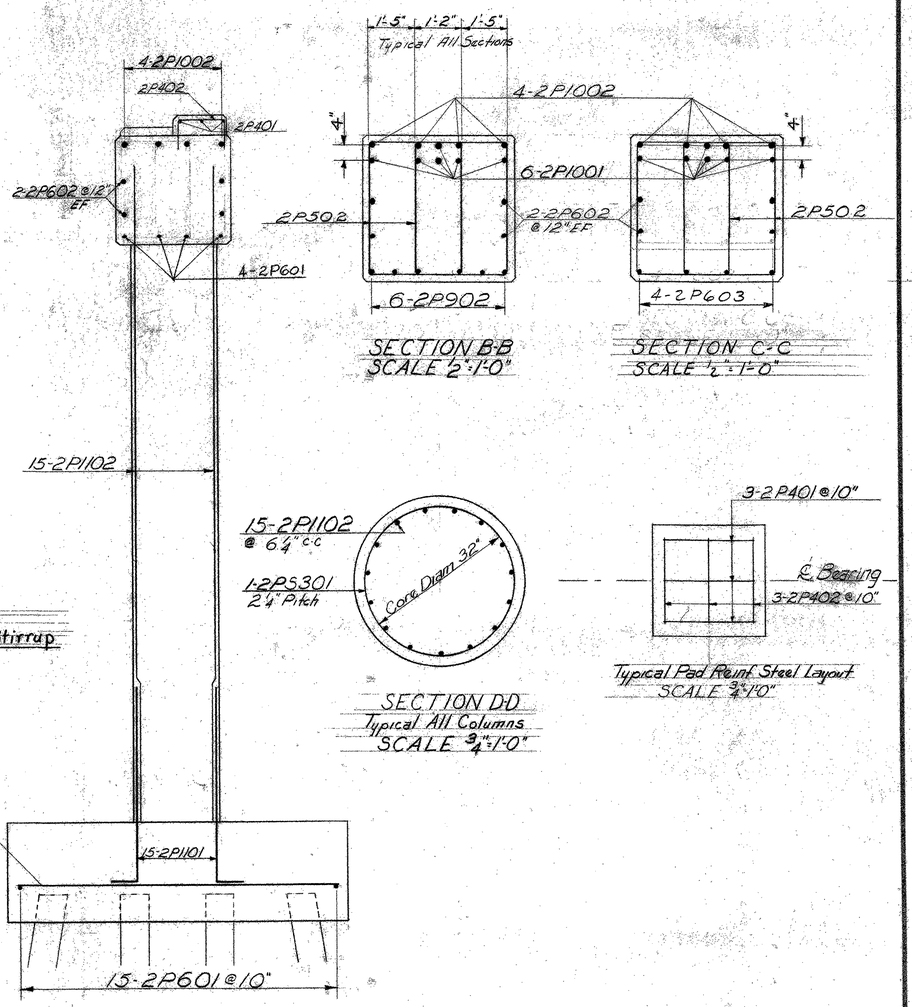
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I 91 LOG STA.
Pier No. 2 Layout Details
U.S. 5 Over I 91
SCALE 3/8" = 1'-0"
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY AER
PROJECT NO. I 91-1(22) Cont. 2
SHEET 55 OF 220

STAGE I CONSTRUCTION BR-113




SCALE $\frac{3}{8}$"=1'-0"




SECTION A-A
SCALE $\frac{3}{8}$"=1'-0"




SECTION B-B
SCALE 2"=1'-0"




SECTION C-C
SCALE $\frac{1}{2}$"=1'-0"




SECTION D-D
Typical All Columns
SCALE $\frac{3}{4}$"=1'-0"




Typical Pad Reinf. Steel Layout
SCALE 3"=1'-0"

| ITEM NO. | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| | STRUCT. EXCAV. | C. Y. | | | | |
| | CONC. CLASS AA (MOD.) | C. Y. | | | | |
| | CONC. CLASS B (MOD.) | C. Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC-ASB. COATING | S. Y. | | | | |
| | TREATED TIMBER PILING | L. F. | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L. F. | | | | |
| | UNTREATED TIMBER PILING | L. F. | | | | |

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 59 OF 85

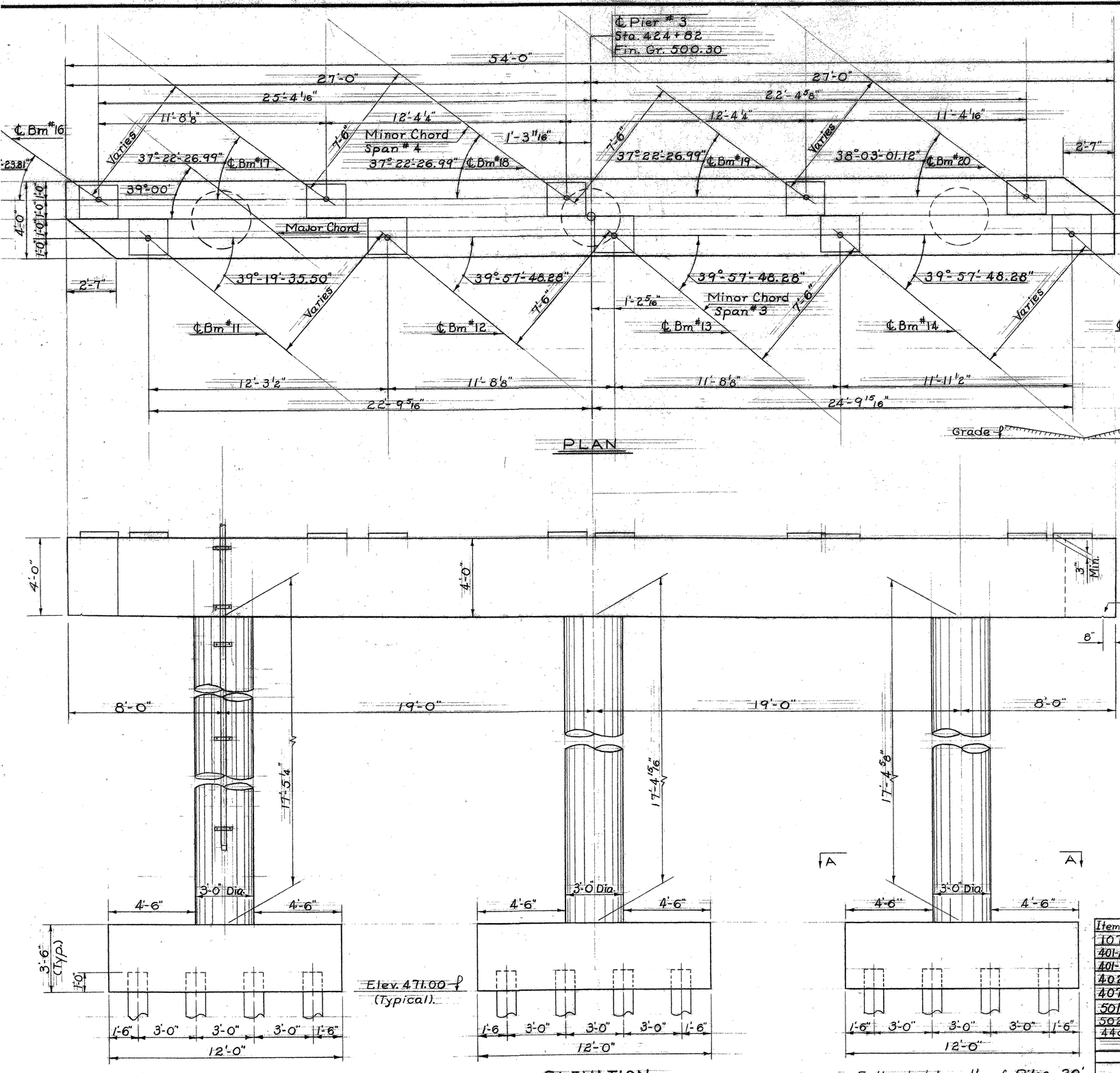
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I 91 LOG STA.
Pier No 2 Reinforcing Steel
U.S 5 over I 91
SCALE As noted
SURVEYED BY
DRAWN BY AER CHECKED BY F.W.B. 3/30/64
PROJECT NO. I-91-1(22) C/2
SHEET 56 OF 220

BR-114

IX © 71333




THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 60 OF 85

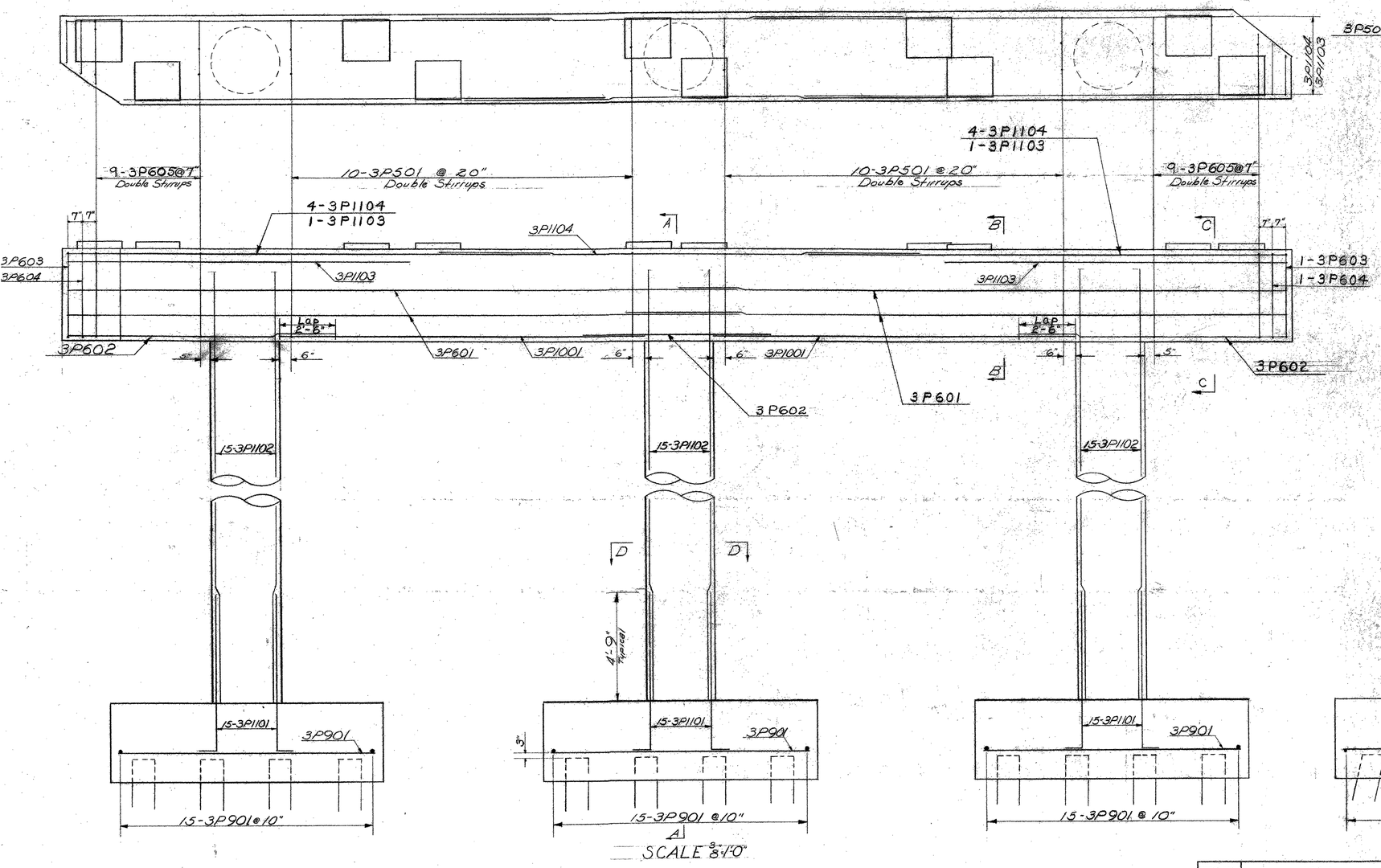
Estimated Quantities Pier No.3

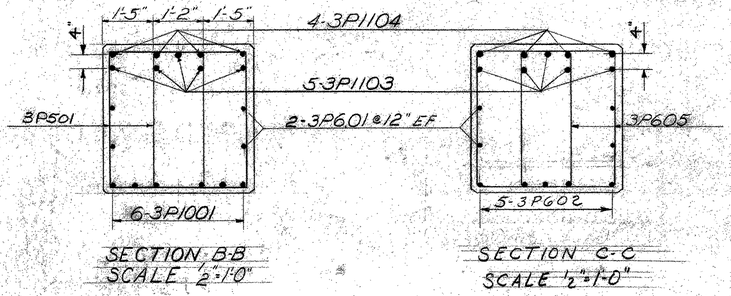
| Item No. | Item | Unit | Total | Final |
|---|---|---|---|---|
| 107 | Structure Excavation | C.Y. | ~~114~~ | 109 |
| 401-AA | Concrete Class AA (Mod.) | C.Y. | 4 CY | 46 |
| 401-B | Concrete Class B (Mod.) | C.Y. | 56 V | 56 |
| 402 | Reinforcing Steel | L.B. | ~~16,240~~ | 16,610 |
| 407 | Asphaltic-Asbestos Coating | S.Y. | 24 V | 24 |
| 501 | Furnishing Equip. For Driving Piles | (See BR. Quantity Sheet) | | |
| 502-B | Treated Timber Piling | L.F. | ~~960~~ | 474 |
| 440 | Water Repellent | Gal. | ~~82~~ | 9 |
| | Cut offs @ 50% Unit Price | L.F. | 0 | 116 |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I91 LOG STA.
Pier No.3 Layout Details
U.S. 5 Over I 91
SCALE 3/8"=1'-0"
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY AER
PROJECT NO. I91-1(22)Cont.2
SHEET 57 OF 220

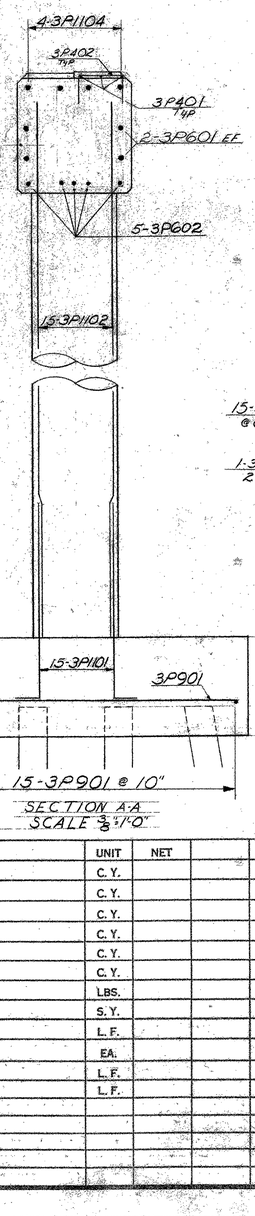
BR-115

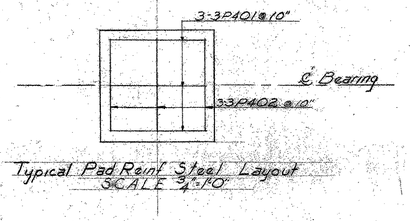


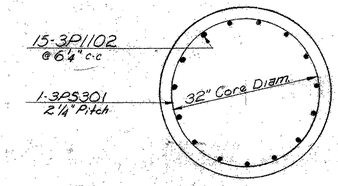

SECTION B-B
SCALE 1/2"=1'-0"

SECTION C-C
SCALE 1/2"=1'-0"




Typical Pad Reinf Steel Layout
SCALE 3/4"=1'0"




SECTION D-D
Typical for all Columns
SCALE 3/4"=1'0"

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38

SHEET 61 OF 85

Stage I Construction

| ITEM NO. | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| | STRUCT. EXCAV. | C. Y. | | | | |
| | CONC. CLASS AA (MOD.) | C. Y. | | | | |
| | CONC. CLASS B (MOD.) | C. Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC-ASB. COATING | S. Y. | | | | |
| | TREATED TIMBER PILING | L. F. | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L. F. | | | | |
| | UNTREATED TIMBER PILING | L. F. | | | | |

## STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD

ROUTE NO. I 91 LOG STA.

Pier No 3 Reinforcing Steel

US 5 over I 91

SCALE As noted

SURVEYED BY

DRAWN BY AER CHECKED BY F.W.B. 3/30/64

PROJECT NO. I 91-1(22)C/2

SHEET 60 OF 220

BR-116

℄ Pier #4
Sta. 425+76
Fin. Gr. 504.37

North

Stationing

58'-0"
29'-0"
27'-5 3/8"
12'-7"
13'-4 5/8"
29'-0"
24'-0 3/8"
13'-4 5/8"
12'-1 1/2"
2'-9"
2'-9"
Major Chord
Minor Chord Span #5
Minor Chord Span # 4
Varies
34°-05'-00.02"
℄ Bm #22
39°-00"
1'-5 3/4"
34°-05'-00.02"
℄ Bm #23
34°-05'-00.02"
℄ Bm #24
34°-50'-48.26"
℄ Bm #25
36°-40'-23.81"
℄ Bm #16
37°-22'-26.99"
℄ Bm #17
1'-3 11/16"
37°-22'-26.99"
℄ Bm #18
37°-22'-26.99"
℄ Bm #19
38°-03'-01.12"
℄ Bm #20
7'-6"
13'-6 3/8"
24'-6 15/16"
12'-4 1/4"
12'-4 1/4"
13'-0 15/16"
26'-8 7/8"
1'-0"
1'-0"
1'-0"
1'-0"
4'-0"

PLAN

℄ Pier
℄ Brngs
℄ Brngs
1'-0" 1'-0" 1'-0" 1'-0"
Slope 1/4" Ft. (Top of Beam Cap)
Slope 1/2" Ft.
2'-0" 2'-0"
4'-0"
6" 6" 1'-6"
4'-10"
4'-10"
2'-0"
5"
Bottom of Cap at left Column
Drainage is to be installed on the ditch side of the left Column.
Grade
4'-6" 3'-0" Dia. 4'-6"
3'-6"
1'-0"
1'-6" 3'-0" 3'-0" 3'-0" 1'-6"
12'-0"
Elev. 471.00

END ELEVATION

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 62 OF 85

For Notes see Pier No.1 Layout Details Sheet BR-111

For Estimated Quantities See Pier No.4 Reinforcing Steel, Sheet BR-118

℄ Brngs.
499.90 500.15
499.94 500.19
499.97 500.23
500.03 500.26
500.02 500.29
Stationing
℄ Pier

Bridge Seat Elevations
No Scale

3" Min.
4'-0"
8'-0"
21'-0"
21'-0"
8'-0"
8"
3/4" Drip Bead (Typ. each end)
21'-1 15/16"
21'-2 1/2"
21'-3 3/8"
3'-0" Dia.
3'-0" Dia.
3'-0" Dia.
4'-6" 4'-6"
4'-6" 4'-6"
4'-6" 4'-6"
1'-0" (Typ)
Elev. 471.00 (Typical)
1'-6" 3'-0" 3'-0" 3'-0" 1'-6"
12'-0"
1'-6" 3'-0" 3'-0" 3'-0" 1'-6"
12'-0"
1'-6" 3'-0" 3'-0" 3'-0" 1'-6"
12'-0"

ELEVATION

Estimated Length of Piles 20'

A
A
1'-6"
3'-0"
3'-0"
3'-0"
1'-6"
12'-0"

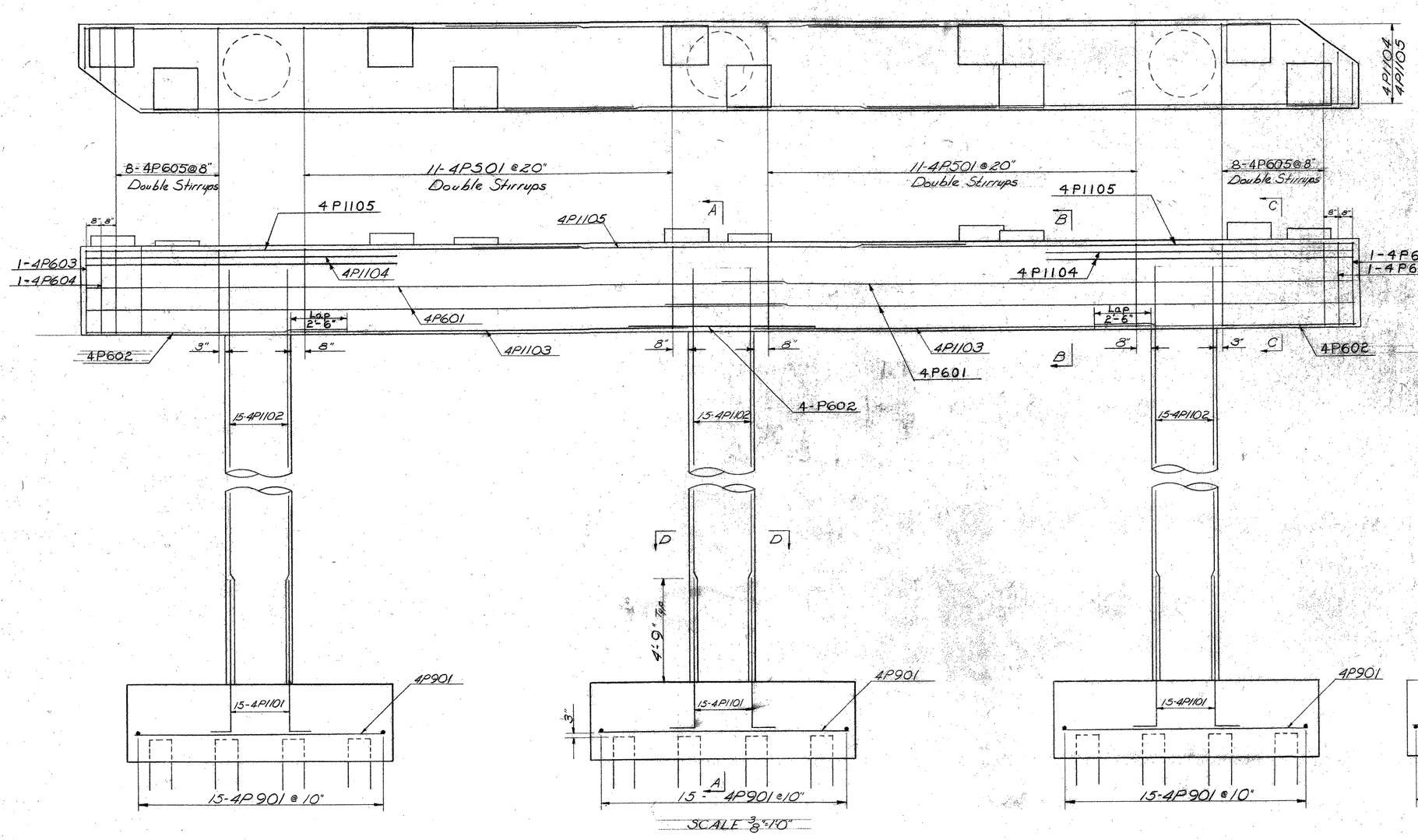
SECTION A-A

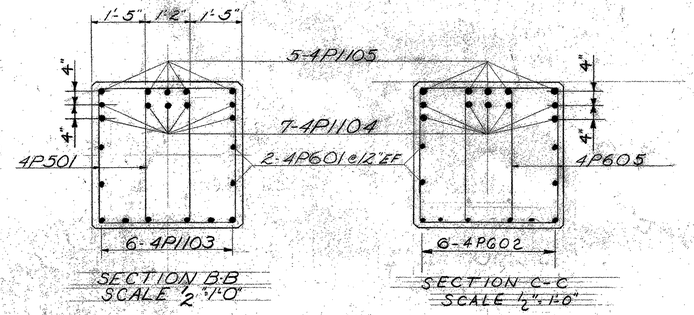
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

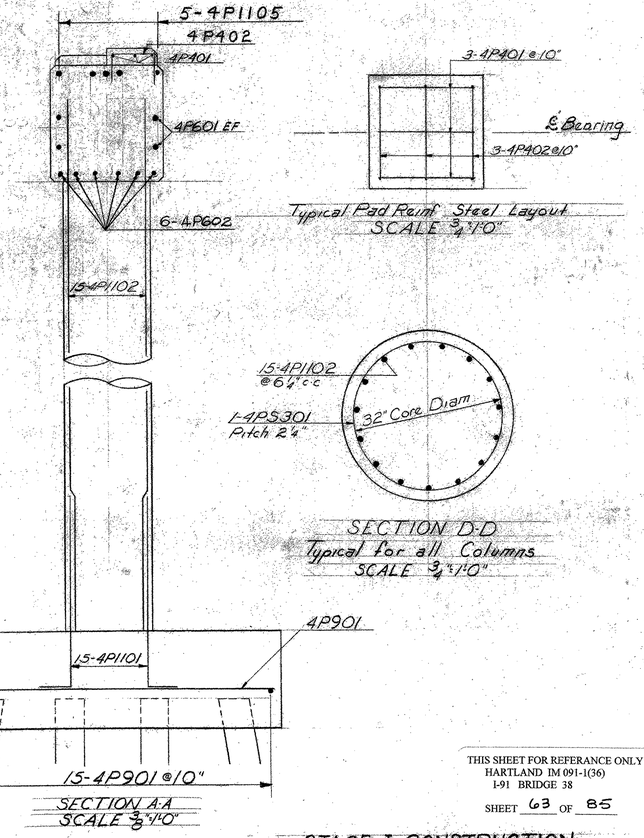
TOWN OF HARTLAND-HARTFORD
ROAD NO. I91 BRIDGE NO.
Pier No.4 Layout Details
U.S. 5 Over I 91
SCALE 3/8"=1'-0"
SURVEYED BY
DRAWN BY J.J.C. CHECKED BY AER
PROJECT NO. I91-1(22)Cont.2
SHEET 61 OF 220

Stage I Construction

BR-117




THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 63 OF 85

STAGE I CONSTRUCTION

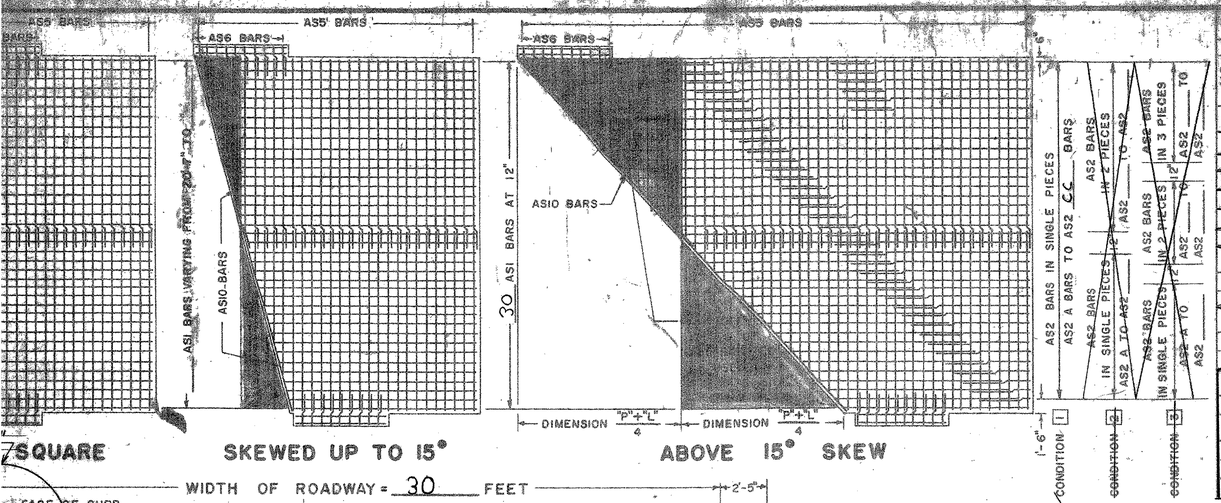
## Estimated Quantities Pier #4

| ITEM NO. | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C. Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C. Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C. Y. | | | | |
| 107 | STRUCT. EXCAV. | C. Y. | ~~109~~ | | | 131 |
| 401-AA | CONC. CLASS AA (MOD.) | C. Y. | ~~52~~ | | | 51 |
| 401-B | CONC. CLASS B (MOD.) | C. Y. | 56 V | | | 56 |
| 402 | REINF. STEEL | LBS. | ~~18400~~ | | | 18574 |
| 407 | ASPHALTIC-ASB. COATING | S. Y. | 26 V | | | 26 |
| 502-B | TREATED TIMBER PILING | L. F. | ~~960~~ | | | 461 |
| | ~~SPLICES FOR STEEL PILING~~ Cut-offs@50% | ~~EE~~ | 0 | | | 464 |
| | STEEL PILING | L. F. | | | | |
| | UNTREATED TIMBER PILING | L. F. | | | | |
| 501 | Furnishing Equipment For Driving Piles | L.S. | (See Bridge Quantity sheet) | | | |
| 440 | Water Repellant | Gal. | ~~94~~ | | | 81/2 |

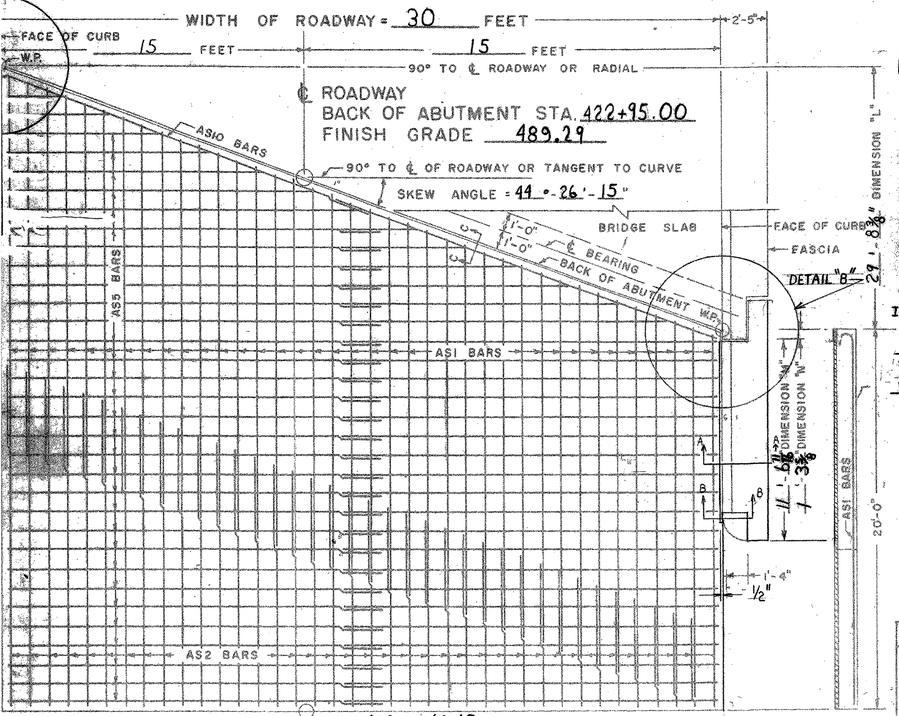
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I-91 LOG STA.
Pier No 4 Reinforcing Steel
US 5 over I 91
SCALE As noted
SURVEYED BY
DRAWN BY AER CHECKED BY FWB 3/30/64
PROJECT NO. I 91-1(22) c/2
SHEET 62 OF 220

BR-118




SQUARE SKEWED UP TO 15° ABOVE 15° SKEW

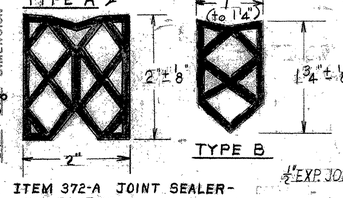



PLAN VIEW

END SECTION VIEW

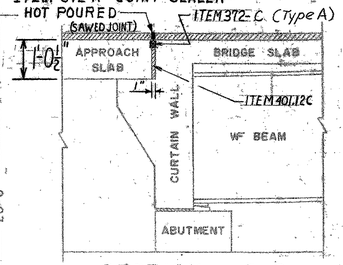
(See note G on Sheet BR-107)

ITEM 372-C JOINT SEALER - PREFORMED



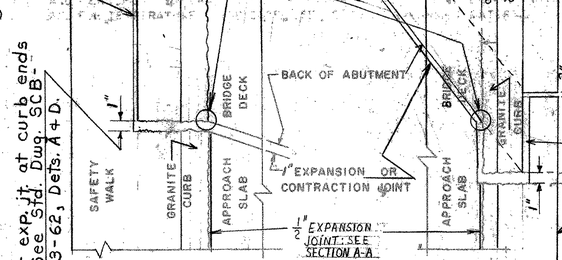

ITEM 372-A JOINT SEALER - HOT POURED (SAWED JOINT)

ITEM 372-C (Type A)

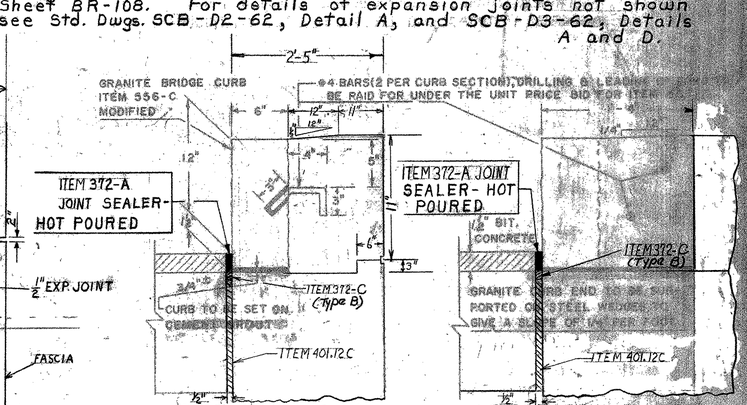



SECTION C-C NOT TO SCALE

For exp. jt. at curb ends See Std. Dwg. SCB-D3-62, Dets. A+D.




CURB ENDS & JOINT DETAIL "A" NOT TO SCALE DETAIL "B"




SECTION A-A NOT TO SCALE

SECTION B-B NOT TO SCALE

| 30' ROADWAY | | | | | | 38' ROADWAY | | | | | | 42' ROADWAY | | | | | | 44' ROADWAY | | | | | | ROADWAY | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NO. PIECES | SIZE | LENGTH | MARK | TYPE | REMARKS | NO. PIECES | SIZE | LENGTH | MARK | TYPE | REMARKS | NO. PIECES | SIZE | LENGTH | MARK | TYPE | REMARKS | NO. PIECES | SIZE | LENGTH | MARK | TYPE | REMARKS | NO. PIECES | SIZE | LENGTH | MARK | TYPE | REMARKS |
| SQUARE OR SKEWED | | | | | | SQUARE OR SKEWED | | | | | | SQUARE OR SKEWED | | | | | | SQUARE OR SKEWED | | | | | | SQUARE OR SKEWED | | | | | |
| 2 | 10 | | AS3 | STR. | | 2 | 10 | | AS3 | STR. | | 2 | 10 | | AS3 | STR. | | 2 | 10 | | AS3 | STR. | | | | | AS3 | STR. | |
| 2 | 10 | | AS4 | STR. | | 2 | 10 | | AS4 | STR. | | 2 | 10 | | AS4 | STR. | | 2 | 10 | | AS4 | STR. | | | | | AS4 | STR. | |
| 5 | 3'-6" | | AS6 | STR. | | 5 | 3'-6" | | AS6 | STR. | | 5 | 3'-6" | | AS6 | STR. | | 5 | 3'-6" | | AS6 | STR. | | 5 | 3'-6" | | AS6 | STR. | |
| 5 | 5'-0" | | AS7 | S6 | | 5 | 5'-0" | | AS7 | S6 | | 5 | 5'-0" | | AS7 | S6 | | 5 | 5'-0" | | AS7 | S6 | | 5 | 5'-0" | | AS7 | S6 | |
| 2 | 5 | | AS8 | STR. | | 2 | 5 | | AS8 | STR. | | 2 | 5 | | AS8 | STR. | | 2 | 5 | | AS8 | STR. | | 2 | 5 | | AS8 | STR. | |
| 2 | 5 | | AS9 | STR. | | 2 | 5 | | AS9 | STR. | | 2 | 5 | | AS9 | STR. | | 2 | 5 | | AS9 | STR. | | 2 | 5 | | AS9 | STR. | |
| SQUARE | | | | | | SQUARE | | | | | | SQUARE | | | | | | SQUARE | | | | | | SQUARE | | | | | |
| 30 | 10 | 20'-7" | AS1 | 1 | | 38 | 10 | 20'-7" | AS1 | 1 | | 42 | 10 | 20'-7" | AS1 | 1 | | 44 | 10 | 20'-7" | AS1 | 1 | | 10 | 20'-7" | | AS1 | 1 | |
| 20 | 5 | 29'-6" | AS5 | STR. | | 40 | 5 | 19'-9" | AS5 | STR. | | 40 | 5 | 21'-9" | AS5 | STR. | | 40 | 5 | 22'-9" | AS5 | STR. | | 5 | | | AS5 | STR. | |
| SKEWED UP TO 15° | | | | | | SKEWED UP TO 15° | | | | | | SKEWED UP TO 15° | | | | | | SKEWED UP TO 15° | | | | | | SKEWED UP TO 15° | | | | | |
| 30 | 10 | AVE. | AS1 | 1 | 1. | 38 | 10 | AVE. | AS1 | 1 | 1. | 42 | 10 | AVE. | AS1 | 1 | 1. | 44 | 10 | AVE. | AS1 | 1 | 1. | 10 | AVE. | | AS1 | 1 | 1. |
| 5 | 29'-6" | | AS5 | STR. | 2. | 5 | | 19'-9" | AS5 | STR. | 3. | 5 | | 21'-9" | AS5 | STR. | 3. | 5 | | 22'-9" | AS5 | STR. | 3. | 5 | | | AS5 | STR. | 3. |
| ALL SKEWED SPANS | | | | | | ALL SKEWED SPANS | | | | | | ALL SKEWED SPANS | | | | | | ALL SKEWED SPANS | | | | | | ALL SKEWED SPANS | | | | | |
| 2 | 5 | 21'-9" | ASIO | STR. | | 5 | | | ASIO | STR. | | 5 | | | ASIO | STR. | | 5 | | | ASIO | STR. | | 5 | | | ASIO | STR. | |
| ABOVE 15° SKEW | | | | | | ABOVE 15° SKEW | | | | | | ABOVE 15° SKEW | | | | | | ABOVE 15° SKEW | | | | | | ABOVE 15° SKEW | | | | | |
| 30 | 10 | 20'-7" | AS1 | 1 | | 38 | 10 | 20'-7" | AS1 | 1 | | 42 | 10 | 20'-7" | AS1 | 1 | | 44 | 10 | 20'-7" | AS1 | 1 | | 10 | 20'-7" | | AS1 | 1 | |
| 29 | 10 | 19'-1/2" AVE. | AS2 | STR. | 4. | 37 | 10 | AVE. | AS2 | STR. | 4. | 41 | 10 | AVE. | AS2 | STR. | 4. | 43 | 10 | AVE. | AS2 | STR. | 4. | 10 | AVE. | | AS2 | STR. | 4. |
| 35 | 5 | 29'-6" | AS5 | STR. | 2. | 5 | | 19'-9" | AS5 | STR. | 3. | 5 | | 21'-9" | AS5 | STR. | 3. | 5 | | 22'-9" | AS5 | STR. | 3. | 5 | | | AS5 | STR. | 3. |

REMARKS: (1) AS1 BAR "B" DIMENSION VARIES FROM 19'-6" TO 19'-6". (2) 20 + DIMENSION ("P"+"L") ÷ 4 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. (3) 40 + DIMENSION ("P"+"L") ÷ 2 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. (4) THE LENGTH OF AS2 BARS VARIES FROM 5'-8" TO 32'-5". THE AS2 BARS MAY BE DIVIDED INTO TWO OR MORE PIECES, AS MAY BE NECESSARY, TO LIMIT THE MAXIMUM BAR LENGTH TO 30 FEET. THE LOCATION OF SPLICES IS LEFT TO THE OPTION OF THE DESIGNER. THE NO. PIECES SHOWN ARE FOR CONDITION 1. (FOR CONDITION 2. & 3. SEE REINF. SCHEDULE.)

GENERAL NOTES: ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. WHEN A BAR LENGTH VARIES IN INCREMENTS EACH BAR MUST BE DETAILED. SPLICES SHALL BE 2'-1" FOR NUMBER 5 BARS, AND 4'-3" FOR NUMBER 10 BARS. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1953. DESIGNED FOR H-20 LOADING.

* DENOTES EXTRA BAR FOR TESTING PURPOSES

For layout details of curb not shown see Details of Abut. #1, Sheet BR-108. For details of expansion joints not shown see Std. Dwgs. SCB-D2-62, Detail A, and SCB-D3-62, Details A and D.

## DETAILS OF REINFORCING BARS

TYPE I: A = 1'-1" J = 0'-9" B = 19'-6" OR VARIES

TYPE S6 C: A = 0'-6" B = 1'-9" C = 0'-6" D = 1'-9" G = 0'-6"

| ITEM NO. | ITEM | UNIT | | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| 318 | TAR EMULSION FOR BRIDGE FLOORS | GAL. | 47 | | | |
| 361-8 | BITUMINOUS CONCRETE PAVEMENT (MOD.) | TONS | 10 | | | |
| 401-8 | CONCRETE CLASS B (MOD.) | C.Y. | 40 V | | | 40 |
| 402 | REINFORCING STEEL | LB. | ~~6230~~ | | | 6205 |
| 556-C | GRANITE BRIDGE CURB (MOD.) | L.F. | (See Sheet BR-108) | | | |

## REINFORCING STEEL

| BAR NO. | A NO. PIECES | B LENGTH | C WEIGHT PER FT. | A x B x C WEIGHT IN LBS. |
|---|---|---|---|---|
| AS1 | 30 | 20'-7" | 4.303 | 2657. |
| * AS2 | 30 | 18'-9 3/4" | 4.303 | 2428.1 |
| AS3 | ~~2~~ | | 4.303 | — |
| AS4 | ~~2~~ | — | 4.303 | — |
| AS5 | 35 | 29'-6" | 1.043 | 1076.9 |
| AS6 | — | ~~3'-6"~~ | 1.043 | — |
| AS7 | — | ~~5'-0"~~ | 1.043 | — |
| AS8 | ~~2~~ | — | 1.043 | — |
| AS9 | ~~2~~ | — | 1.043 | — |
| AS10 | 3 | 21'-9" | 1.043 | 68. |
| TOTAL WEIGHT = CALL | | | | 6230. |

## QUANTITY COMPUTATION

W = WIDTH OF ROADWAY Z = 20 + DIMENSION "P"+"L" / 4 T = DIMENSION

W = 30.00 Z = 34.62 T = 10.82

BITUMINOUS CONCRETE = W x Z x 0.0092 = TONS 30.00 x 34.62 x 0.0092 = 9.55 TONS

TAR EMULSION = W x Z x 0.0444 = GALLONS 30.00 x 34.62 x 0.0444 = 46.11 GALLONS

CONCRETE CLASS B = W x Z x 0.0386 + T x 0.1029 + (T - 1.8333) x 0.0733 = CUBIC YARDS

[30.00 x 34.62 x 0.0386] + [~~10.82 x 0.1029~~] + [~~(10.82 - 1.8333) x 0.0733~~] = 40.09 CUBIC YARDS

GRANITE BRIDGE CURB = 2(T + 0'-3") = LINEAR FEET 2(~~10.82~~ + 0.25) = ~~22.14~~ LINEAR FEET

BAR LENGTHS: AS3 BARS = DIMENSION "M" - 0'-6"; AS4 BARS = DIMENSION "R" - 0'-6"; AS6 BARS = 3'-6"; AS7 BARS = 5'-0"; AS8 BARS = DIMENSION "M" - 2'-2"; AS9 BARS = DIMENSION "R" - 2'-2"

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 64 OF 85

Stage I Construction

REVISIONS AND CORRECTIONS
Joint Filler Item 323 - 6-21-63 WR

APPROVED

DRAWN BY: R.S. HAUPT NOV. 1960

TRACED BY: R.S. HAUPT NOV. 1960

CHECKED BY: A.H. SMALLEY NOV. 1960

Recommended For Approval — Bridge Engineer — Date 12/19/62

Recommended For Approval — Asst. Chief Engineer — Date

Approved By — Chief Engineer — Date

# DETAILS OF APPROACH SLAB #1 FOR 30'-0" (WIDTH) FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 3370±

LOCATION US #5 over I91

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURE

SB-AS-62

TOWN OF HARTLAND-HARTFORD

ROUTE NO. I91

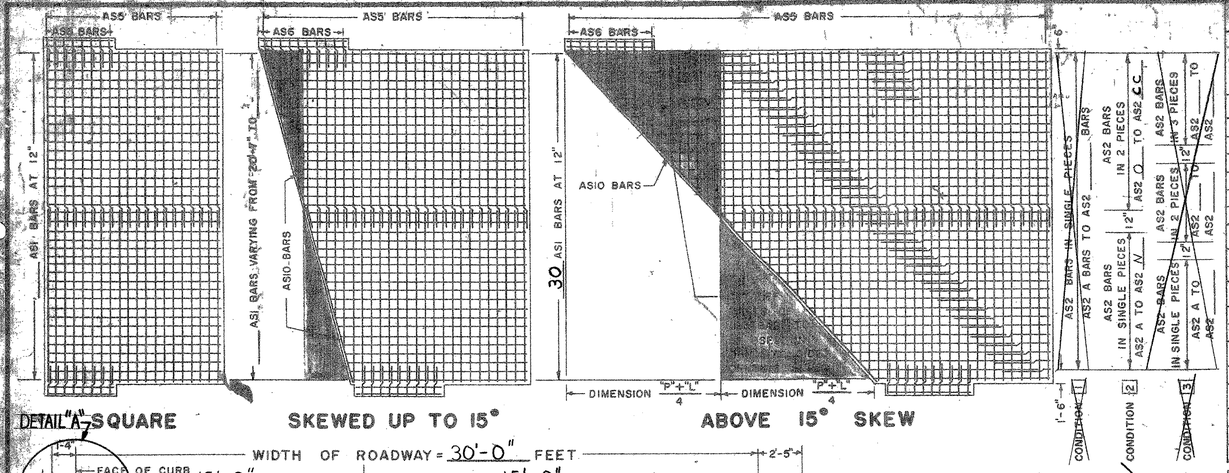
LOG STA. —

SCALE AS NOTED

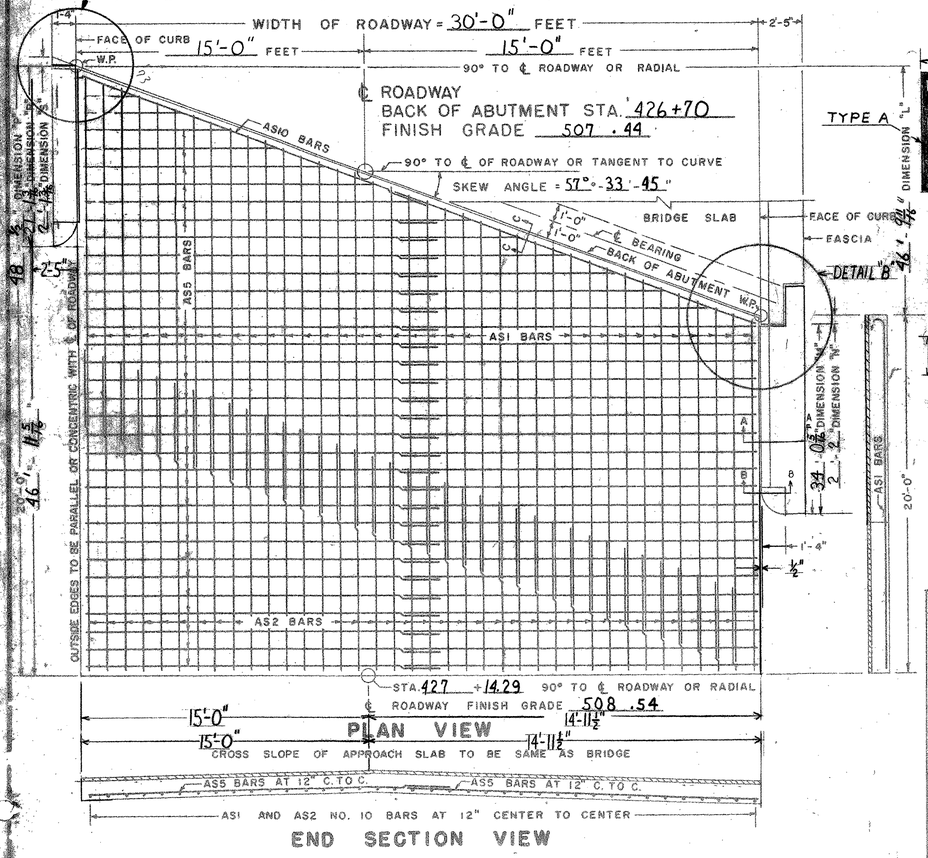
DESIGNED BY LES CHECKED BY AER

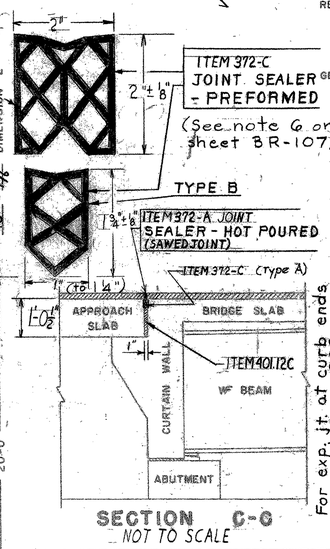
PROJECT NO. I-91-1(22)-C/2

BR. 119 OF 122 SHEET 63 220

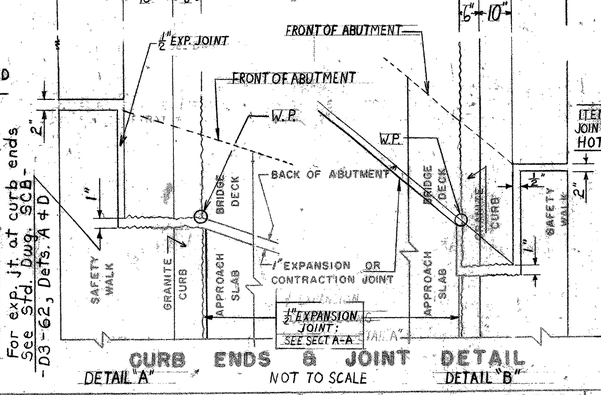



DETAIL "A" — SQUARE — SKEWED UP TO 15° — ABOVE 15° SKEW

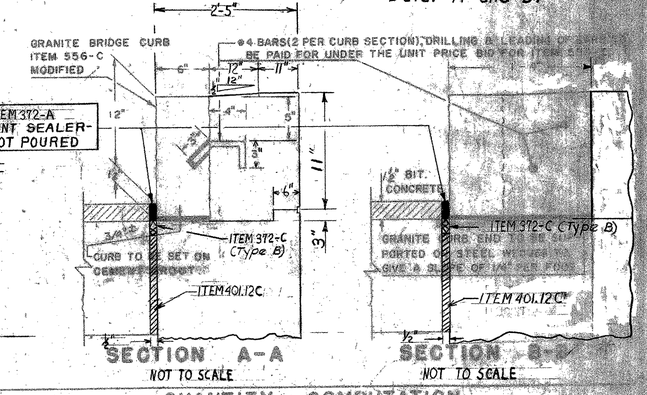



SECTION C-C
NOT TO SCALE




CURB ENDS & JOINT DETAIL
DETAIL "A" NOT TO SCALE DETAIL "B"




SECTION A-A
NOT TO SCALE

SECTION B-B
NOT TO SCALE

| 30' ROADWAY | | | | | 38' ROADWAY | | | | | 42' ROADWAY | | | | | 44' ROADWAY | | | | | ROADWAY | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NO. PIECES | SIZE | LENGTH | MARK | TYPE | NO. PIECES | SIZE | LENGTH | MARK | TYPE | NO. PIECES | SIZE | LENGTH | MARK | TYPE | NO. PIECES | SIZE | LENGTH | MARK | TYPE | NO. PIECES | SIZE | LENGTH | MARK | TYPE |
| SQUARE OR SKEWED | | | | | SQUARE OR SKEWED | | | | | SQUARE OR SKEWED | | | | | SQUARE OR SKEWED | | | | | SQUARE OR SKEWED | | | | |
| 0 | 10 | | AS3 | STR. | 2 | 10 | | AS3 | STR. | 2 | 10 | | AS3 | STR. | 2 | 10 | | AS3 | STR. | 2 | 10 | | AS3 | STR. |
| 2 | 10 | | AS4 | STR. | 2 | 10 | | AS4 | STR. | 2 | 10 | | AS4 | STR. | 2 | 10 | | AS4 | STR. | 2 | 10 | | AS4 | STR. |
| 5 | 3'-6" | | AS6 | STR. | 5 | 3'-6" | | AS6 | STR. | 5 | 3'-6" | | AS6 | STR. | 5 | 3'-6" | | AS6 | STR. | 5 | 3'-6" | | AS6 | STR. |
| 5 | 5'-0" | | AS7 | S6 | 5 | 5'-0" | | AS7 | S6 | 5 | 5'-0" | | AS7 | S6 | 5 | 5'-0" | | AS7 | S6 | 5 | 5'-0" | | AS7 | S6 |
| 5 | | | AS8 | STR. | 5 | | | AS8 | STR. | 5 | | | AS8 | STR. | 5 | | | AS8 | STR. | 5 | | | AS8 | STR. |
| 5 | | | AS9 | STR. | 5 | | | AS9 | STR. | 5 | | | AS9 | STR. | 5 | | | AS9 | STR. | 5 | | | AS9 | STR. |
| SQUARE | | | | | SQUARE | | | | | SQUARE | | | | | SQUARE | | | | | SQUARE | | | | |
| 10 | 20'-7" | | AS1 | 1 | 10 | 20'-7" | | AS1 | 1 | 10 | 20'-7" | | AS1 | 1 | 10 | 20'-7" | | AS1 | 1 | 10 | 20'-7" | | AS1 | 1 |
| 5 | 29'-6" | | AS5 | STR. | 5 | 19'-9" | | AS5 | STR. | 5 | 21'-9" | | AS5 | STR. | 5 | 22'-9" | | AS5 | STR. | 5 | | | AS5 | STR. |
| SKEWED UP TO 15° | | | | | SKEWED UP TO 15° | | | | | SKEWED UP TO 15° | | | | | SKEWED UP TO 15° | | | | | SKEWED UP TO 15° | | | | |
| 10 | AVE. | | AS1 | 1 | 10 | AVE. | | AS1 | 1 | 10 | AVE. | | AS1 | 1 | 10 | AVE. | | AS1 | 1 | 10 | AVE. | | AS1 | 1 |
| 5 | 29'-6" | | AS5 | STR. 2. | 5 | 19'-9" | | AS5 | STR. 3. | 5 | 21'-9" | | AS5 | STR. 3. | 5 | 22'-9" | | AS5 | STR. 3. | 5 | | | AS5 | STR. 3. |
| ALL SKEWED SPANS | | | | | ALL SKEWED SPANS | | | | | ALL SKEWED SPANS | | | | | ALL SKEWED SPANS | | | | | ALL SKEWED SPANS | | | | |
| 5 | 29'-1" | | ASIO | STR. | 5 | | | ASIO | STR. | 5 | | | ASIO | STR. | 5 | | | ASIO | STR. | 5 | | | ASIO | STR. |
| ABOVE 15° SKEW | | | | | ABOVE 15° SKEW | | | | | ABOVE 15° SKEW | | | | | ABOVE 15° SKEW | | | | | ABOVE 15° SKEW | | | | |
| 10 | 20'-7" | | AS1 | 1 | 10 | 20'-7" | | AS1 | 1 | 10 | 20'-7" | | AS1 | 1 | 10 | 20'-7" | | AS1 | 1 | 10 | 20'-7" | | AS1 | 1 |
| 10 | AVE. | | AS2 | STR. 4. | 10 | AVE. | | AS2 | STR. 4. | 10 | AVE. | | AS2 | STR. 4. | 10 | AVE. | | AS2 | STR. 4. | 10 | AVE. | | AS2 | STR. 4. |
| 5 | 29'-6" | | AS5 | STR. 2. | 5 | 19'-9" | | AS5 | STR. 3. | 5 | 21'-9" | | AS5 | STR. 3. | 5 | 22'-9" | | AS5 | STR. 3. | 5 | | | AS5 | STR. 3. |

REMARKS: ① ASI BAR "B" DIMENSION VARIES FROM 19'-6" TO 19'-6". ② 20 + DIMENSION ("P"+"L") ÷ 4 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. ③ 40 + DIMENSION ("P"+"L") ÷ 2 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. ④ THE LENGTH OF AS2 BARS VARIES FROM — TO —. THE AS2 BARS MAY BE DIVIDED INTO TWO OR MORE PIECES, AS MAY BE NECESSARY, TO LIMIT THE MAXIMUM BAR LENGTH TO 30 FEET. THE LOCATION OF SPLICES IS LEFT TO THE OPTION OF THE DESIGNER. THE NO. PIECES SHOWN ARE FOR CONDITION 1. (FOR CONDITION 2. & 3. SEE REINF. SCHEDULE) ⑤ CONDITION 2 PREVAILS; HENCE 14 SINGLE BARS AVE. LENGTH = 16'-1½" AND 15 AS2 BARS IN TWO PIECES AVE. LENGTH = 43'-1" ARE USED)

GENERAL NOTES: ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. WHEN A BAR LENGTH VARIES IN INCREMENTS EACH BAR MUST BE DETAILED. SPLICES SHALL BE 2'-1" FOR NUMBER 5 BARS AND 4'-3" FOR NUMBER 10 BARS. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1953 DESIGNED FOR HS 20 LOADING.

For layout details of curb not shown see Details of Abut. "2, Sheet BR-109. For details of expansion joints not shown see Std. Dwgs. SCB-D2-62, Det. A, and SCB-D3-62, Defs. A and D.

## DETAILS OF REINFORCING BARS

TYPE I: A = 1'-1" J = 0'-9"; B = 19'-6" OR VARIES

TYPE S6: A = 0'-6"; B = 1'-9"; C = 0'-6"; D = 1'-9"; G = 0'-6"

| ITEM NO. | ITEM | UNIT | | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| 318 | TAR EMULSION FOR BRIDGE FLOORS | GAL. | 59 | | | |
| 361-B | BITUMINOUS CONCRETE PAVEMENT (MOD.) | TONS | 12 | | | |
| 401-B | CONCRETE CLASS B (MOD.) | CY. | 51 ✓ | | | 51 |
| 402 | REINFORCING STEEL | LB. | ~~7830~~ | | | 7825 |
| 556-C | GRANITE BRIDGE CURB (MOD.) | LF. | (See Sheet BR-109) | | | |

## REINFORCING STEEL

| BAR NO. | A NO. PIECES | B LENGTH | C WEIGHT PER FT. | A×B×C WEIGHT IN LBS. |
|---|---|---|---|---|
| AS1 | 30 | 20'-7" | 4.303 | 2657.10 |
| AS2 | 29 | 14@16'-2" & 15@43'-1" | 4.303 | 3754.3 |
| AS3 | 2 | —— | 4.303 | —— |
| AS4 | 2 | —— | 4.303 | —— |
| AS5 | 44 | 29'-6" | 1.043 | 1353.81 |
| AS6 | — | 3'-6" | 1.043 | —— |
| AS7 | — | 5'-0" | 1.043 | —— |
| AS8 | 2 | —— | 1.043 | —— |
| AS9 | 2 | —— | 1.043 | —— |
| ASIO | 2 | 29'-1" | 1.043 | 66.67 |

TOTAL WEIGHT = 7830. CALL

## QUANTITY COMPUTATION

W = WIDTH OF ROADWAY Z = 20 + DIMENSION "P"+"L" / 4 T = DIMENSION "P"+"L" / 4

W = 30.00 Z = 43.71 T = 27.54

BITUMINOUS CONCRETE = W×Z×0.0028 = TONS 30.00 × 43.71 × 0.0028 = 12.064

TAR EMULSION = W×Z×0.0444 = GALLONS 30.00 × 43.71 × 0.0444 = 58.22

CONCRETE CLASS B = W×Z×0.0386 + T×0.1029 + T²×0.00533 + 0.0723 = CUBIC YARDS

[30.00 × 43.71 × 0.0386] + [ × 0.1029] + [ × 0.00533 × 0.0723] = 50.616 CUBIC YARDS

GRANITE BRIDGE CURB = 2(T + 0'-3") = LINEAR FEET 2( + 0.25 ). = LINEAR FEET

BAR LENGTHS: AS3 BARS = DIMENSION "M" – 0'-6"; AS4 BARS = DIMENSION "R" – 0'-6"; AS6 BARS = 3'-6"; AS7 BARS = 5'-0"; AS8 BARS = DIMENSION "M" – 2'-2"; AS9 BARS = DIMENSION "R" – 2'-2"

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 65 OF 85

Stage I Construction

REVISIONS AND CORRECTIONS
Revised Joint Filler Item 373 – 6-21-63 W

APPROVED

DRAWN BY: R.S.HAUPT NOV. 1960

TRACED BY: R.S.HAUPT NOV. 1960

CHECKED BY: A.H.SMALLEY NOV. 1960

Recommended For Approval: Bridge Engineer Date 12/9/62

Recommended For Approval: Asst. Chief Engineer Date

Approved By: Chief Engineer Date 12/14/62

# DETAILS OF APPROACH SLAB #2 FOR 30'-0" (WIDTH) FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 3370 ±

LOCATION US #5 OVER I91

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURE

SB-AS-60

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I-91
LOG STA. —
SCALE AS NOTED
DESIGNED BY LFS CHECKED BY AER
PROJECT NO. I91-1(22) CONT #2
BR 120 OF 122 SHEET 64 220

PROFILE SCALE
HORIZ. 50 FEET
VERT. 10 FEET

SB +1.508%
NB +1.546%

NB PVI
3354+34
1900' VC
495.03
55D 933'

SB PVI
3354+33
1900' VC
500.16
55D 940'

N.B. 3365+35 ~ 3366+10
Cut to Fill Transition

SB -1.499%
NB -1.501%

S.B.
N.B.

S.B. 3363+75 ~ 3364+50
Cut to Fill Transition

520
510
500
490
480
470
460
450
440

N.B.
S.B.

3351 3352 3353 3354 3355 3356 3357 3358 3359 3360 3361 3362 3363 3364 3365 3366 3367

CONTRACT 2
Stage 21 Construction

HARTLAND-HARTFORD
I 91 - 1(22)(31)
Sheet 29 of 220
Sheet 68 of 242

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 66 OF 85

PLATE 4 (PROFILE) SCALE C. P. R. & B. S. STANDARD
MITCHELL & TAYLOR CO., NEW YORK

| PLAN | BY | DATE |
|---|---|---|
| SURVEYED | Penniman | 9-61 |
| PLOTTED | GAjo - R. Smith | 2-61 |
| ALIGNMENT CHECKED | | |
| R.O.W. CHECKED | | |
| TRACED | WC | 3-61 |

NOTE BOOK

NO. ___

Boston Blue Print-200-7-58

Bituminous Concrete Curb
S.B. 3372+80 — 3375+50 Lt.
SUB-BASE of SAND, ITEM 202
3367+00 - 3372+50 SB
3368+00 - 3373+60 NB
* STEEL GUIDE POSTS, ITEM 548-B
3381+00 - 3383+00 SB Rt.
* STAGE TWO CONSTRUCTION
* STANDARD STEEL BEAM GUARD RAIL w/ STEEL POSTS, ITEM 547-A
3367+00 - 3367+72 SB Lt.
3368+26 - 3368+93 NB Lt.
3367+50 - 3368+65 SB Rt.
3367+00 - 3369+29 NB Rt.
* THREE CABLE GUARD RAIL w/STEEL POSTS, ITEM 543 542
3374+00 - 3377+40 NB Rt.
3379+50 - 3380+94 NB Rt.
3380+00 - 3383+00 NB Lt.
3372+50 - 3375+50 SB Lt.
3374+22 ~ 3377+42 N.B. Rt.
3380+53 — 3383+00 N.B. Rt.
3381+85 — 3383+00 S.B. Rt.
DEMOLITION & REMOVAL of BUILDING ITEM 586
3370+85 - 3372+50 Lt - Rt SB (7 buildings) Sold
3370+25 ℄ NB
3371+00 ℄ NB Sold
3371+50 Rt NB Sold
* TREATED TIMBER CURB, ITEM 558
3372+50 - 3375+50 SB Lt.
STONE FILL for SLOPE PROTECTION ITEM 512
3368+00 NB Rt.
3374+00 - 3376+00 NB Rt.
3381+82 SB Rt. - 3182+00 NB Lt.
3382+00 NB Lt. - 3383+50 NB Lt.
3374+00 - 3375+60 SB Lt.
3380+10 - 3382+00 NB Rt.
PROPERTY LINE FENCE, ITEM 583-B
3368+00 - 3381+00 S.B. Lt.
3367+00 - 3368+50 N.B. Rt.
3369+80 - 3383+00 N.B. Rt.
3381+00 — 3383+00 S.B. Lt.
JUTE MATTING, ITEM 623
3375+60 - 3376+85 SB Lt.
Bituminous Concrete Surface for Gutters Item 554
3367+75 S.B. Rt
3370+75 ~ 3371+00 Med.
3374+00 ~ 3374+50 Med.
THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 68 OF 85
PLAN
SURVEYED Penniman 9-6
PLOTTED G.Ajo · R.Smith 2-61
ALIGNMENT CHECKED
R.O.W. CHECKED
TRACED V/G 3-61
VT. GRID
N
SB
Δ 9°53'40" Lt.
D 1°
R 5729.58
T 495.96
L 989.45
E 21.46
Bnk. 5/16"/ft.
See Layout for U.S. #5 for utilities.
T.R. #78
3368+39 132' Lt.
3368+00 125'
3367+45 74'
3370+65 165'
3370+00 157'
3370+68 161'
3372+50 250'
3375+24.59 160'
3378+00 160'
3380+43.22 100'
3382+43 100'
3369+54 207'
3370+70 216'
3372+20 228'
3373+88 248'
3381+29 320'
3371+00 SB New 18"x84' RCP, Mod. Cl. IV RCDI w/cover
S.B. 3374+00 - 3375+60 Lt. Special Ditch, Item 103
3375+24.59 = 3375+36.54 EQ. -11.95'
Rev. S.B. P.T.
3375+50 SB Lt. New 12"x34' CGMP 16ga. 1-Special Elbow (15°) & 2 Cplg. Bands all joints
3374+08 N.B. New 84"x440' CGMP Rs #7ga. Top R. 8 1/0 ga. Bot.
PRCCDI @ Inlet
CH@ Inlet & Outlet
3381+50 SB Lt. - 3381+82 Rt. New 30"x96' RCP, Mod. Cl. IV SH @ Inlet
3381+50 - 3383+00 SB Lt. Special Ditch Item 101
BM 38-A U.S. Elev. 473.64
B.M. 39-A U.S. Elev. 460.88
BM 36-A U.S. Elev. 488.47
BM 37A U.S. Elev. 434.10
POT 3371+41.57
POT 3372+91.57
POT 3374+87.80
POT 3377+66.88
POT 3382+65.11
SB POST 3367+63.79
POT 3368+17.20
NB POT 3368+44.27 = 3368+47.85 EQ. - 3.58'
SB P.I. 3370+31.10 3370+28.63
NB POT 3373+55.90
NB POT 3375+47.81
NB POT 3377+49.92
NB POT 3379+79.89
Rev. N.B. POST 3381+73.96
SB P.C. 3380+43.22
NB P.C. 3380+36.20
Surv. ℄ & Rev. S.B.
N 10°19' W
N 5°27' W
3367+00 NB New 18"x80' RCP, Mod. Cl. III RCDI w/ Grate
3368+75 New 6"x 660' Underdrain w/F.D.
3371+16 - 3374+50 NB Lt. New 24"x332' RCP, Mod. Cl. III RCDI w/ Grate
3374+50 NB New 24"x88' RCP Cl. IV RCDI w/ Grate
3371+16 NB New 18"x68' RCP, Mod. Cla. III RCDI w/ Cover
3367+00 - 3372+50 SB Lt. New 6"x 600' Underdrain FB @ 600
3368+93 140' Lt.
3369+50 7'
3368+60 10'
3369+23 40'
3369+50 140'
5'x7.27 4'x4'x350' D.D.M. Box 3369+00 N.B. Rt. 60"x151' Tunnel Liner to be installed by R.R. forces
3380+00 - 3382+00 NB Rt. Lt. New 60"x262' ACCGMP #10 Gauge Strutted CH@ Outlet SH Inlet
NB 3380+10 - 3382+00 Rt. Special Ditch, Item 103
3382+00 - 3383+50 NB Lt. Construct Channel, Item 106-C
3382+00 - 3383+00 N.B. Rt. Special Ditch, Item 101
WATER LINE TO: NEIL H. & VENA H. SWEET
COURTEMANCHE WATKINS
OSMER C.V.R.
WATKINS C.V. Rwy, Inc.
COURTEMANCHE C.V.R.
COURTEMANCHE GOODWIN
C.V. Rwy, Inc.
N.E.P. Co.
CENTRAL VERMONT RAILWAY, INC.
Rte. U.S. 5 To Hartford
Shepard Brook
Special Ditch
gully
MATCH
329E 354B 355 353A 356
5A 5B 5C 5D 5E 5F 5G 5H 5I 5J
Restaurant
Cabin
Septic Tank
Well
2 s.f. Ho.
PLAN SCALE 0 50 100 100 FEET
CONTROL OF ACCESS IS COMPLETE ON THIS SHEET EXCEPT FOR DRIVE ON T.R. #78 OPPOSITE S.B. 3368+50 Lt.
Contract 2
Stage 21 Construction
HARTLAND-HARTFORD
I-91-1(22)(31)
Sheet 30 of 220
Sheet 69 of 242
Boston Blue Print-200-7-58

PLAN
SURVEYED
PLOTTED
ALIGNMENT CHECKED
ALT. OF MAT CHECKED
NOTE BOOK
NO.
BY
DATE

PROFILE
SURVEYED
PLOTTED
GRADES CHECKED
ALIGNMENT CHECKED
STRUCTURE NO. (IF ANY)
NO.
BY
DATE

S.B. 3366+95 - 3367+70
Cut to Cut Transition

N.B. 3367+85-3368+60
Cut to Fill Transition

N.B. Eq. -3.58

N.B. 3368+44.77 = S.B. 3367+70.85 Eq. -3.58

N.B. PVI 3373+70
600' VC
466.02

S.B. Eq. -11.95

S.B. PVI 3379+40
600' VC
462.69

PROFILE SCALE
HORIZ. 50 FEET
VERT. 10 FEET

N.B. -1.501%

S.B. -1.493%

N.B. 0.000%

S.B. +0.104%

N.B. 465.60

N.B. Lt. Underdrain Gradient 1.5%

N.B. Lt. Ø 465.73

S.B. Lt. Underdrain Gradient 1.5%

S.B. 3372+65-3373+40
Cut to Fill Transition

N.B. 3373+30-3374+05
Cut to Fill Transition

S.B. 3377+00-3377+75
Fill to Cut Transition

6" Pipe N

5374.06 N.B. Invert

S.B. 3375+14.59

S.B. 3374+96.54

Eq. -1.05

490
480
470
460
450
440
430
420

3367 3368 3369 3370 3371 3372 3373 3374 3375 3376 3377 3378 3379 3380 3381 3382 3383

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 58
SHEET 6A OF 85

CONTRACT 2
Stage 2.1 Construction

HARTLAND-HARTFORD
I 91-1 (22)(31)
Sheet 31 of 220

Sheet 70 of 242

PLATE 1 PROFILE G.R.S. & R.R. RAILROAD
KLUPPEL ENGINEERING, NEW YORK

| PLAN | BY | DATE |
|---|---|---|
| SURVEYED | Watson - Martin | 1-62 |
| PLOTTED | Sheridan | 2-62 |
| ALIGNMENT CHECKED | | |
| NOTE BOOK R.O.W. CHECKED | | |
| NO. TRACED | V.H. | 4-62 |

PLAN
SUBMITTED
PLOTTED
NOTE BOOK
ALIGNMENT CHECKED
ST. OF WAY CHECKED
NO.

PROFILE
SUBMITTED
PLOTTED
NOTE BOOK
CROSS SECTIONS
R. R.'S NOTED
STRUCTURE NOTATIONS
NO.

BY
Wilson-Martin
WJS
DATE
1-62
4-62

TOWN ROAD STA. 0+00 = US 5 POC 428+00

+5.729 %

+3.17 %

present road profile

9+00
END CONSTRUCTION

5+50
300' VC
541.56
SSD 423'

End Bridge - Back of Abut. #2 Sta. 426+70

420+75
BEGIN CONSTRUCTION

+6.33 %

375'
54' 79' 54' 94' 94'

Begin Bridge - Back of Abut. #1 Sta. 422.30

℄ Pier #1 423+49

℄ Pier #2 424+28

℄ Pier #3 424.82

℄ Pier #4 425+76

-5.000 %

present road profile

Treated Timber Piles (Typical)

428+40
1030' VC
523.44
SSD 382'

PROFILE SCALE
HORIZ: 50 FEET
VERT. 10 FEET

TOWN ROAD # 78
SIDE LINE Rt. U.S. Rte. 5
@ P.O.C. 428+00
Contract 2
Sheet of

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 71 OF 85

U.S. Rte. 5 @ N.B. 3368

HARTLAND - HARTFORD
I 91 - 1 (22)
Contract 2
Sheet 40 of 220

EXCAVATION AND REMOVAL OF ROAD SURFACE ON ROADWAYS ITEM 118-A
430+00 - 431+25 ✓

THREE CABLE GUARD RAIL w/ STEEL POSTS ITEM 543
430+00 - 434+00 @ Lt.

Rev. N.B. PT 3362+01.66

hen ho.

3383

cottage

3363+00 100'

Sta. P.C. 335+35.14

430+25 430+75 Lt. Spec. Ditch, Item 103

431+00 Lt. New 12"x44" CGMP, 16 ga. or ERCP-16ga. w/ 2-2/3"x1/2" Spec. Elbows @ 10'-6" & 2 Cplg. Bands @ all joints. P.R.C.C.I. w/ Grate, @ Inlet

96'

412'

431+00 90'

3538

430

431

432

433

434

435

436

437

438

439

440

OSMER COURTEMANCHE present U.S. Route 6

P L

130'

263'

431+00 80' ✓

DITCH

PI 4

433+50 70' ✓

354A

125'

COURTEMANCHE & MERRITT, EST. L

434+00 Lt. ERCP-16ga. w/ Grate

434+70 60' ✓

POST 434+95.2

240'

435+32 75' ✓

435+12

351B

79'

434+00 Lt. New 12"x44" CGMP, 16 ga. or ERCP-16ga. w/ 3x6 Elbows & 16"x1" Cplg. Bands @ all joints

434+50 New 18"x11" RCP Mast. Class III or ACCGMP, #16ga. or ACCAAECP-16ga. 15.2 CY REMOVE ✓

OSMER MILLER

435+97 L

BM 3 U.S. Elev. 487.57

Approx. Aerial Utility Relocation Route by C.V.P.S. Corp. & Hartland Telephone Co.

1.52 ft

437+52 L

464'

MILLER 237

MERRITT, EST. 453'

352

262'

65'

437+00 60' ✓

437+50 100' ✓

439+20 15" RCP ✓ New 18" x 11" RCP Mast. Class III or ACCGMP, #16ga. or ACCAAECP-16ga.

S.H. 35.96

S.H. 35.96

439

438

D L S 2°04' E

440+00 25' ✓

440+00 0

440+00 25' ✓

POST 440+00.0

N

VT. GRID

PLAN SCALE
0 50 100
100 FEET

PROFILE SCALE
HORIZ. 50 FEET
VERT. 10 FEET

520
510
500
490
480

436+20
300' V.C.
486.44

-5.000%

-0.426%

present road profile

439+50
End Construction
U.S. #5
Construct Approach

U.S. Route 5 is to be built in its entirety during Stage 1 Construction.

U.S. Rte. 5 @ NB 3360

HARTLAND - HARTFORD
I 91-1(22)
Contract 2
Sheet 41 of 220

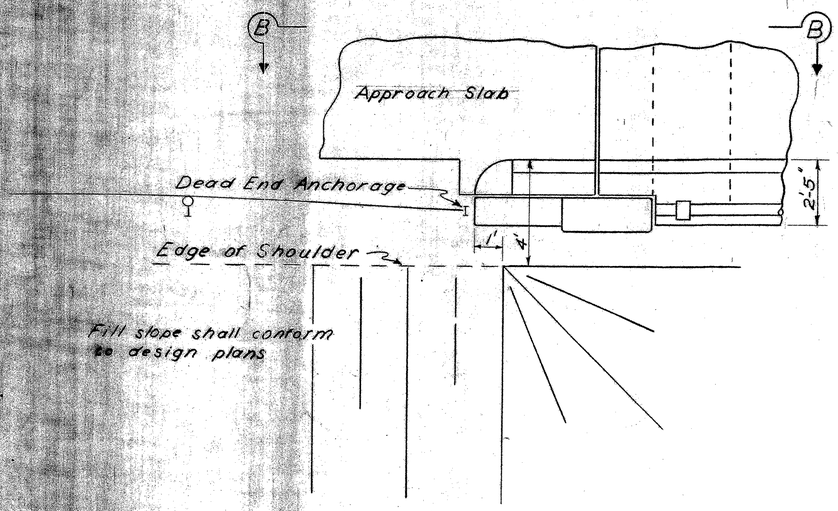
THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 72 OF 85

PLAN — DESIGNED — DRAWN — TRACED — CHECKED — QUANTITIES CHECKED — NOTE BOOK — ALIGNMENT CHECKED — PLOTTED — NO. — STRUCTURE DESIGN CHECKED

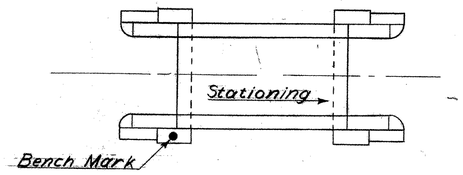
TITLE — DESIGNED — DRAWN — TRACED — CHECKED — QUANTITIES CHECKED — NOTE BOOK — PLOTTED — NO. — STRUCTURE DESIGN CHECKED

Watson - Martin WD

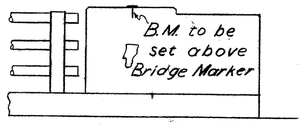
DATE 1-62 4-62



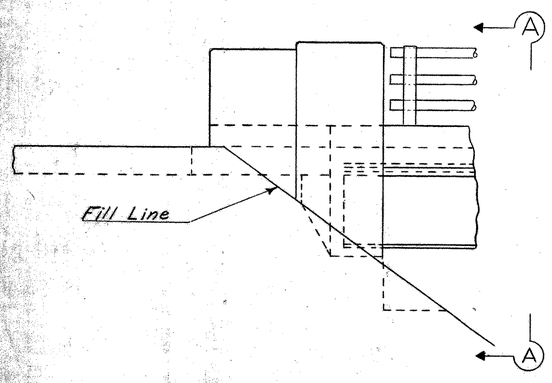

PLAN OF END POST



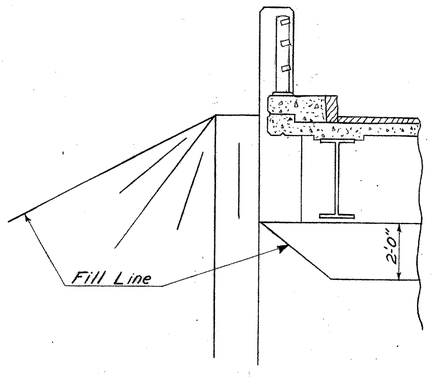

Bridge Marker to be set on right end post at low bridge station as shown




SECTION - B-B




ELEVATION OF END POST




SECTION - A-A

## GENERAL - NOTES

SPECIFICATIONS: ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE A.A.S.H.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DATED 1961.
DESIGN IS FOR H20-S16-44 LOADING MODIFIED FOR THE NATIONAL SYSTEM OF INTERSTATE HIGHWAYS, APPLIED IN ACCORDANCE WITH THE PROVISIONS OF THE A.A.S.H.O. STANDARD SPECIFICATIONS, ARTICLE 1.2.8.

STRUCTURAL STEEL: UNLESS OTHERWISE NOTED ON THE PLANS ALL STRUCTURAL STEEL SHALL CONFORM WITH A.S.T.M. DESIGNATION A-36-62 T.
UNLESS OTHERWISE DETAILED ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" Ø HIGH STRENGTH BOLTS, USING 15/16"Ø HOLES. WHERE CONNECTIONS ARE NOT DETAILED ON THE PLANS, THEY SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STATE FOR APPROVAL.

DETAILS OF SHEAR CONNECTORS SHALL BE SUBMITTED TO THE STATE FOR APPROVAL. EITHER CHANNEL OR STUD CONNECTORS MAY BE SUBSTITUTED IN LIEU OF THE SPIRAL. STUDS SHALL BE SUBSTITUTED ON THE BASIS OF TWO (2) 3/4" STUD FOR EACH PITCH OF A 5/8" Ø SPIRAL, OR ON THE BASIS OF TWO (2) 7/8" STUDS TO 1 1/2 TIMES THE PITCH OF A 5/8" Ø SPIRAL. NO SCUPPERS SHALL BE USED ON GRADE SEPARATIONS UNLESS INDICATED ON THE PLANS.

ON SUPERELEVATED BRIDGES, PLACE SCUPPERS ON THE LOW SIDE ONLY. EXCEPT FOR THE ABOVE RESTRICTIONS, SCUPPERS ARE NORMALLY PLACED MIDWAY BETWEEN INTERMEDIATE DIAPHRAGMS. PAYMENT FOR SCUPPERS SHALL BE INCLUDED IN THE UNIT PRICE FOR STRUCTURAL STEEL, ITEM 404.

UNLESS OTHERWISE CALLED FOR, BEAMS SHALL BE CAMBERED TO THE MINIMUM CAMBER LIKELY TO REMAIN PERMANENT AS INDICATED IN THE A.I.S.C. HANDBOOK. THE CAMBER SHALL APPROXIMATE A SIMPLE CIRCULAR CURVE FROM END TO END OF BEAM. TOLERANCES IN CAMBER SHALL BE AS INDICATED IN THE A.I.S.C. HANDBOOK.
AFTER THE SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS OF THE TOP OF THE ERECTED BEAMS SHALL BE TAKEN UNDER THE DIRECTION OF THE ENGINEER TO DETERMINE THE FINAL GRADE.

PAINT: THE FINAL COAT OF FIELD PAINT SHALL BE GREEN, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

CONCRETE: ALL CONCRETE IN THE SUPERSTRUCTURE SHALL BE CLASS AA(MOD) ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1" UNLESS OTHERWISE INDICATED ON THE PLANS.
CONSTRUCTION JOINTS SHALL BE AS INDICATED ON THE STANDARDS UNLESS OTHERWISE INDICATED ON THE PLANS.

REINFORCING STEEL: FOR SKEWED BRIDGES: TRANSVERSE BARS, "S 1" SHALL BE FURNISHED AS FOR A SQUARE SPAN; THE "S1" BARS SHALL BE CUT IN THE FIELD TO FIT THE SKEWED END, THE CUT-OFF BARS SHALL BE USED AT THE OPPOSITE END OF THE SPAN; THE S 5 BARS SHALL BE LENGTHENED AND THE NUMBER OF S6A AND S7 BARS SHALL BE INCREASED; THE S6B BARS SHALL BE ADDED AT PIERS AS INDICATED. MINIMUM COVER FOR REINFORCING STEEL, MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF THE REINFORCEMENT, SHALL BE 3" UNLESS OTHERWISE SPECIFIED.

QUANTITIES: THE QUANTITIES GIVEN IN THE SCB-24 TO 44-62 STANDARDS ARE NET QUANTITIES FOR A SINGLE SQUARE SPAN.

GENERAL: NORMALLY THE FIXED END BEARING DEVICE IS ON THE DOWN-GRADE END OF THE SPAN. UNLESS OTHERWISE DESIGNATED ALL EXPANSION MATERIAL SHALL NOT CONTAIN ASPHALT OR BITUMINOUS MATERIAL AND IT SHALL CONFORM WITH A.A.S.H.O. DESIGNATION: M153 TYPE II.

ALL DIMENSIONS GIVEN ARE MEASURED HORIZONTALLY OR VERTICALLY UNLESS OTHERWISE NOTED.

BORINGS INDICATED ON THE DRAWINGS HAVE BEEN MADE FOR DESIGN PURPOSES ONLY AND ARE NOT WARRANTED TO SHOW ACTUAL SUB-SURFACE CONDITIONS.

TOP SURFACES OF ALL PIERS AND ABUTMENTS SHALL BE SLOPED 1/4" PER FOOT EXCEPT AT BEARING PADS, WHERE THE SURFACES SHALL BE LEVEL. ABUTMENTS SHALL BE SLOPED FROM THE FRONT EDGE OF THE CURTAIN WALL OR FACE OF BACKWALL, AND PIERS SHALL BE SLOPED FROM THE CENTERLINE OF PIER.

THE ENTIRE EXPOSED TOP SURFACE OF THE ABUTMENTS AND PIERS SHALL BE COATED WITH ASPHALTIC ASBESTOS COATING 1/2" THICK AS PER ITEM 407. THIS ITEM SHALL BE APPLIED AFTER ALL PAINTING AND INCIDENTAL ITEMS ARE COMPLETED.

ALL DIMENSIONS ARE GIVEN AT 68° F. UNLESS OTHERWISE NOTED.

WHERE BITUMINOUS CONCRETE PAVEMENT IS CALLED FOR AS A WEARING SURFACE ON BRIDGE DECKS AND APPROACH SLABS IT SHALL BE A DENSE GRADED TOP COURSE MATERIAL, APPLIED IN ONE COURSE, ONE AND ONE HALF (1 1/2) INCHES THICK. THE ITEM TO BE USED SHALL BE DESIGNATED ON THE PLANS, EITHER AS ITEM 361-B OR ITEM 363.

PILES: STEEL PILES SHALL BE DRIVEN TO REFUSAL UNLESS OTHERWISE DIRECTED BY THE ENGINEER. WHERE PILES ARE DRIVEN IN FILL, THE MATERIAL SHOULD BE SUCH AS TO HAVE NO STONES LARGE ENOUGH TO INTERFERE WITH THE DRIVING OF PILES.

REVISIONS & CORRECTIONS

Drawn By: XX Date: Dec. 1962
Traced By: XX Date: Dec. 1962
Checked By: E.F.E. W.M.S. R.S.H. Date: Dec. 1962

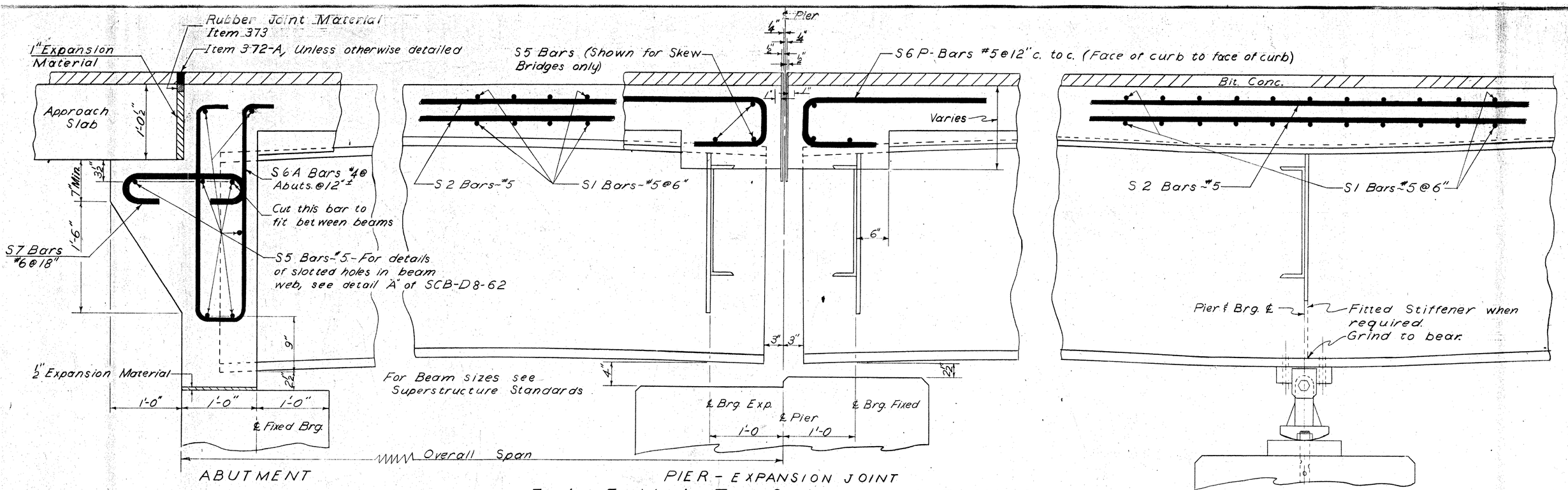
Recommended For Approval: Lin Ryan, Bridge Engineer — Date 12/7/62
Recommended For Approval: Assist. Chief Engineer — Date 1/4/63
Approved By: Chief Engineer — Date 1/4/63

# DETAILS OF WF BEAM BRIDGES
## GENERAL INFORMATION & GENERAL NOTES

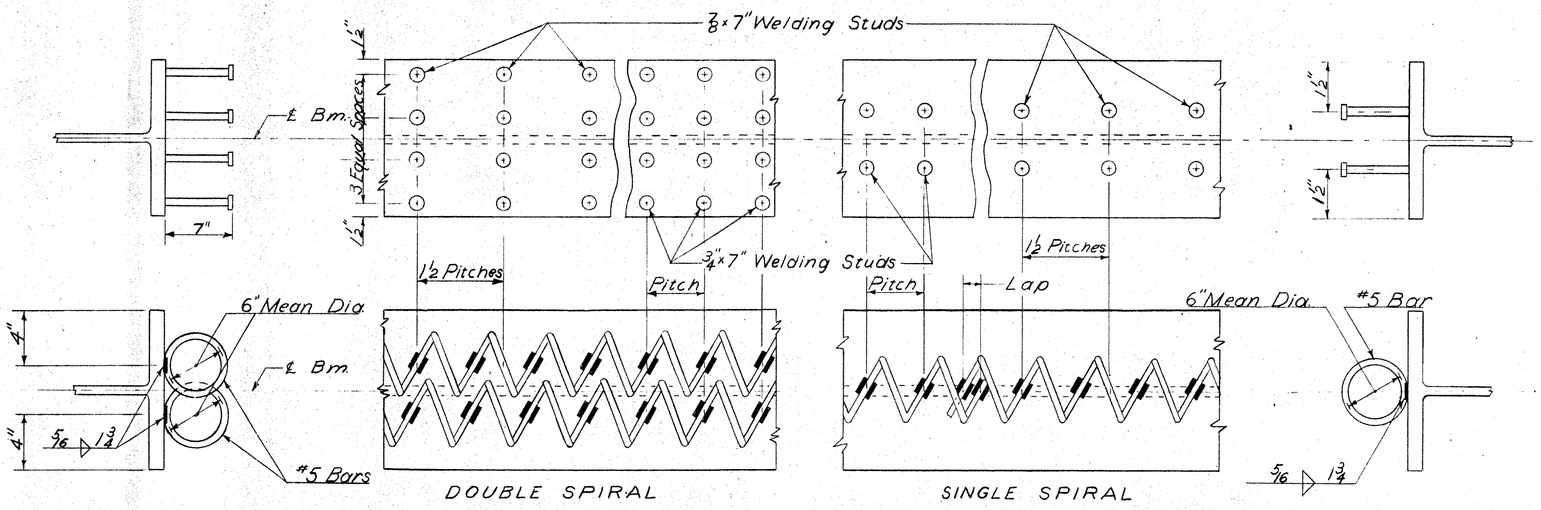
VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 82 OF 85

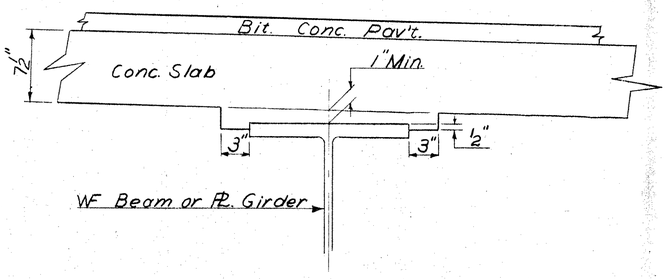
# SCB-DI-62




E L E V A T I O N  V I E W S




SHEAR CONNECTOR DETAILS




BEAM HAUNCH

REVISIONS & CORRECTIONS
ised Joint Sealer Items 372- and
3. Changed S5 Bar in Curtain Wall
S6A Bars. 6-21-63 XX

Drawn By: XX Date: Dec. 4 1962
Traced By: XX Date: Dec. 4 1962
Checked By: E.E.P. W.M.S. R.S.H. Date: Dec. 4 1962

Recommended _____ 12/7/62
For Approval Bridge Engineer Date
Recommended _____ 1/4/63
For Approval Assist. Chief Engineer Date
Approved By _____
Chief Engineer Date

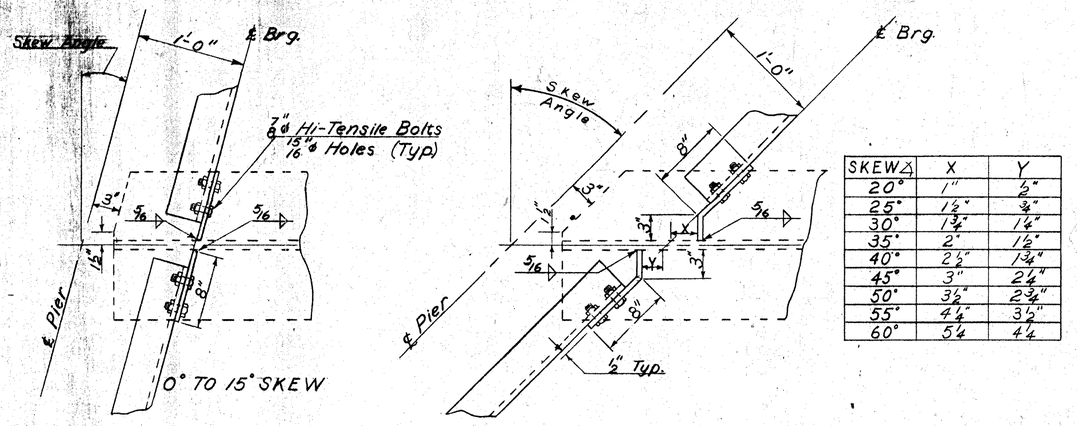
# DETAILS OF WF BEAM BRIDGES

(A) ELEVATION VIEWS
(B) SHEAR CONNECTOR DETAILS
(C) BEAM HAUNCH DETAIL

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 83 OF 85

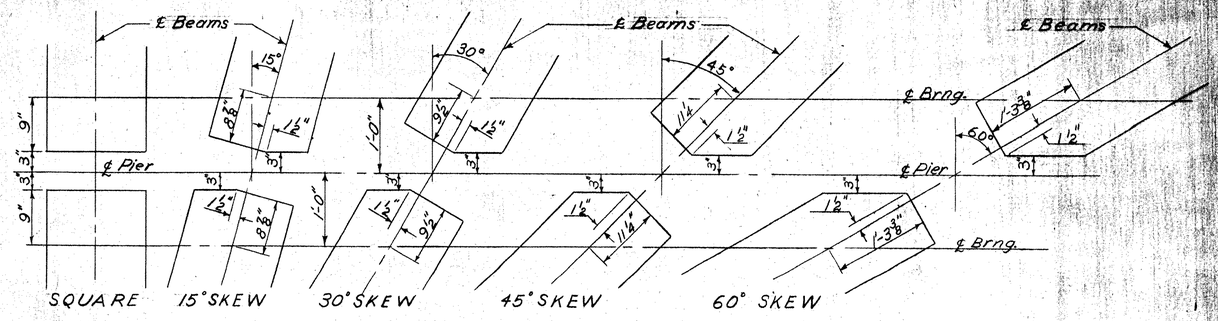
# SCB-D2-62




| SKEW △ | X | Y |
|---|---|---|
| 20° | 1" | 1/2" |
| 25° | 1 1/2" | 3/4" |
| 30° | 1 3/4" | 1 1/4" |
| 35° | 2" | 1 1/2" |
| 40° | 2 1/2" | 1 3/4" |
| 45° | 3" | 2 1/4" |
| 50° | 3 1/2" | 2 3/4" |
| 55° | 4 1/4" | 3 1/2" |
| 60° | 5 1/4" | 4 1/4" |

DETAILS OF PIER DIAPHRAGM CONNECTIONS

(A)

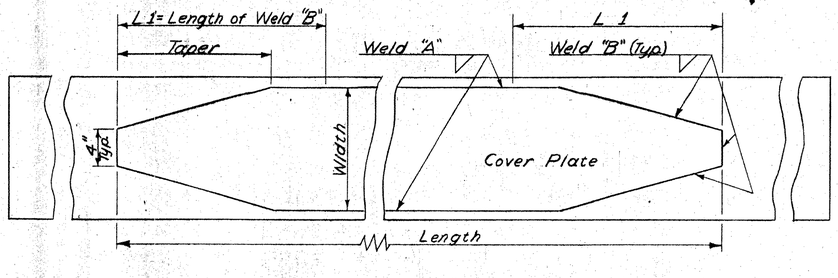



INTERIOR WF BEAM CUT-OFFS AT PIER

(B)

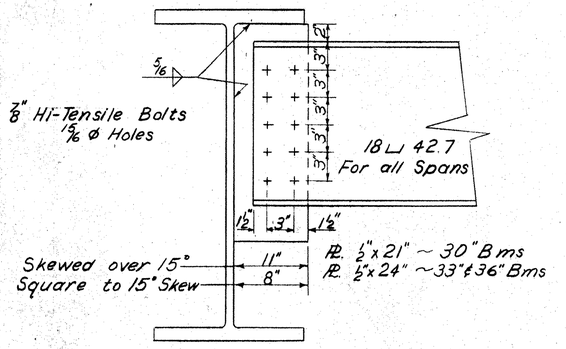
| Max. Design 7'-6 Bm. Spacing ~ S.C.B-24, 30, 38, 44-62 | | | | | | | |
|---|---|---|---|---|---|---|---|
| SPAN | Cover Pl. Length | Width | Thick-ness | Taper | Weld "A" | Weld "B" | L 1 |
| 99'-0 | 66'-1 | 14" | 1 1/2" | 1'-6 | 3/8" | 1/2" | 3'-5 1/2 |
| 94'-0 | 65'-7 | 14" | 1 5/8" | 1'-6 | 3/8 | 1/2 | 3'-5 1/2 |
| 89'-0 | 59'-5 | 14" | 1 1/4 | 1'-6 | 5/16 | 1/2 | 2'-10 |
| 84'-0 | 49'-5 | 14" | 7/8" | 1'-6 | 5/16 | 1/2 | 1'-11 |
| 79'-0 | 49'-10 | 10" | 1 1/4" | 1'-0 | 5/16 | 1/2 | 2'-0 |
| 74'-0 | 47'-1 | 10" | 1 1/8" | 1'-0 | 5/16 | 1/2 | 1'-9 1/2 |
| 69'-0 | 45'-9 | 10" | 1" | 1'-0 | 5/16 | 5/16 | — |
| 64'-0 | 42'-5 | 10" | 7/8" | 1'-0 | 5/16 | 5/16 | — |
| 59'-0 | 31'-11 | 10" | 3/4" | 1'-0 | 5/16 | 5/16 | — |
| 54'-0 | 27'-1 | 8" | 1/2" | 1'-0 | 5/16 | 5/16 | — |

| Max. Design 7'-0 Bm. Spacing S.C.B. -42-62 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Cover Pl. Length | Width | Thick-ness | Taper | Weld "A" | Weld B | L 1 |
| 67'-5 | 14" | 1 1/2" | 1'-6 | 3/8 | 1/2 | 3'-5 |
| 64'-7 | 14" | 1 3/8" | 1'-6 | 3/8 | 1/2 | 3'-5 1/2 |
| 54'-9 | 14" | 1" | 1-6 | 5/16 | 1/2 | 2'-3 |
| 45'-1 | 14" | 5/8" | 1'-6 | 5/16 | 5/16 | — |
| 48'-11 | 10" | 1 1/8" | 1'-0 | 5/16 | 1/2 | 1'-9 1/2 |
| 48'-1 | 10" | 1" | 1'-0 | 5/16 | 5/16 | — |
| 41'-3 | 10" | 3/4" | 1'-0 | 5/16 | 5/16 | — |
| 37'-8 | 10" | 5/8" | 1'-0 | 5/16 | 5/16 | — |
| 29'-1 | 8" | 1/2" | 1'-0 | 5/16 | 5/16 | — |
| 27'-1 | 8" | 1/2" | 1'-0 | 5/16 | 5/16 | — |



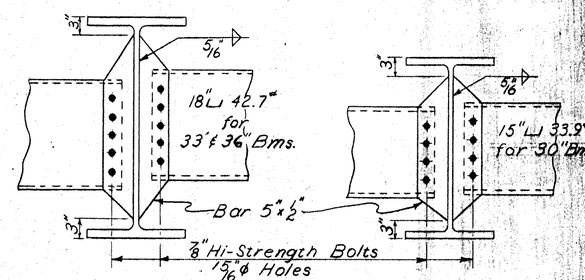

COVER PLATE DETAILS

(C)



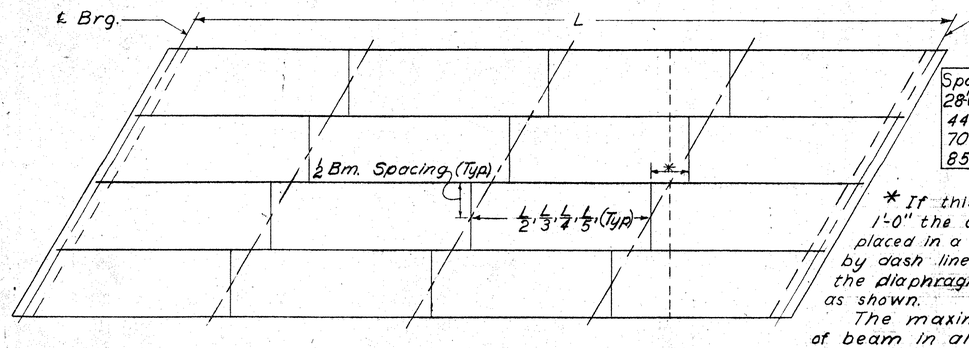

PIER DIAPHRAGMS

Hi-Strength Bolts, Nuts & Washers shall conform to A.A.S.H.O. Designation M 164-60




INTERMEDIATE DIAPHRAGMS

(D)




| Span Length | | Sets of Diaph. Required |
|---|---|---|
| 28'0 through 43' | | 1 |
| 44'-0 | 69'0 | 2 |
| 70'-0 | 84'-0 | 3 |
| 85'-0 | 99'-0 | 4 |

* If this dimension is less than 1'-0" the diaphragms may be placed in a straight line as indicated by dash line. If it is greater than 1'-0 the diaphragms shall be staggered as shown.

The maximum unbraced length of beam in all cases shall be 25'-0

DIAPHRAGM LOCATION PLAN

(E)

REVISIONS & CORRECTIONS
Added size of Diaphragms on Detail D 6/21/63 WW

Drawn By: WW Date: Dec. 1962
Traced By: WW Date: Dec. 1962
Checked By: E.E.P. W.M.S. R.S.H Date: Dec. 1962

Recommended _____ 12/17/62
For Approval Bridge Engineer Date

Recommended _____ 1/14/63
For Approval Assist. Chief Engineer Date

Approved By _____ 1/14/63
Chief Engineer Date

# DETAILS OF WF BEAM BRIDGES
## STRUCTURAL STEEL DETAILS
(A) (D) (E) DIAPRAGM DETAILS
(B) WF BEAM CUT-OFFS
(C) COVER PLATE DETAILS

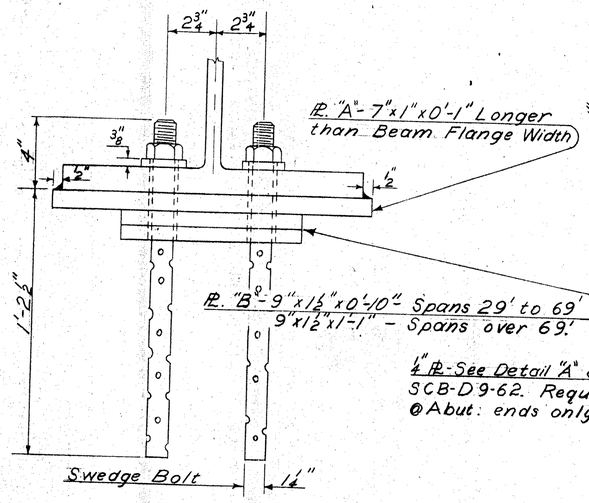
THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 84 OF 85

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

# SCB-D 7-62

253

When bridge is on a grade exceeding 5%, plate "A" shall be beveled to fit, with a mean thickness of 1".




Approx. Wgt. = 90 lbs.

DETAIL FOR 0° TO 15° SKEW

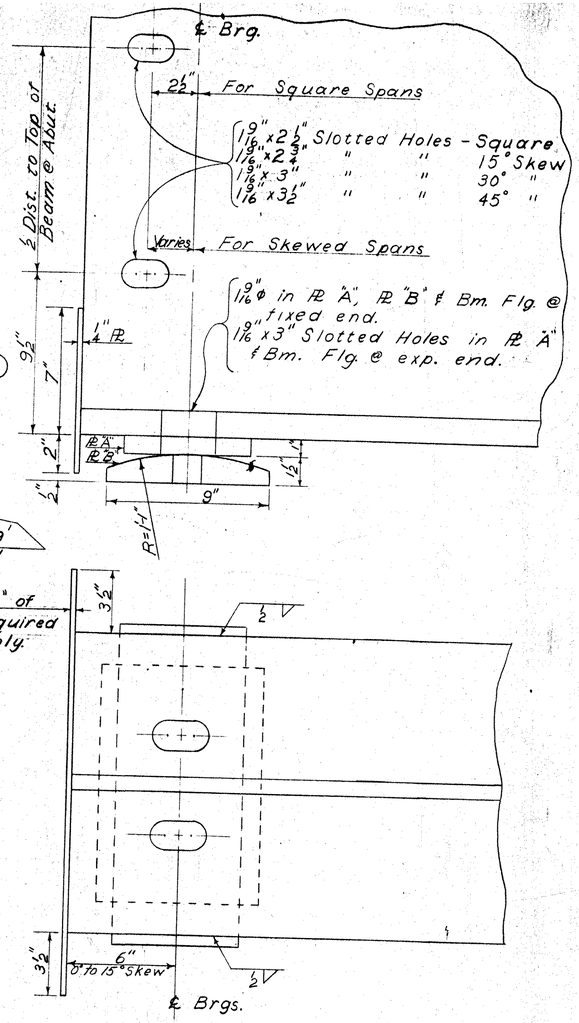
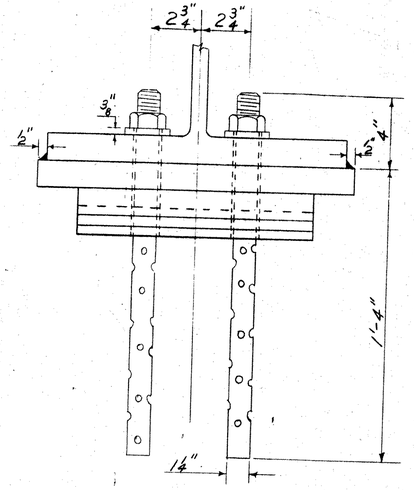


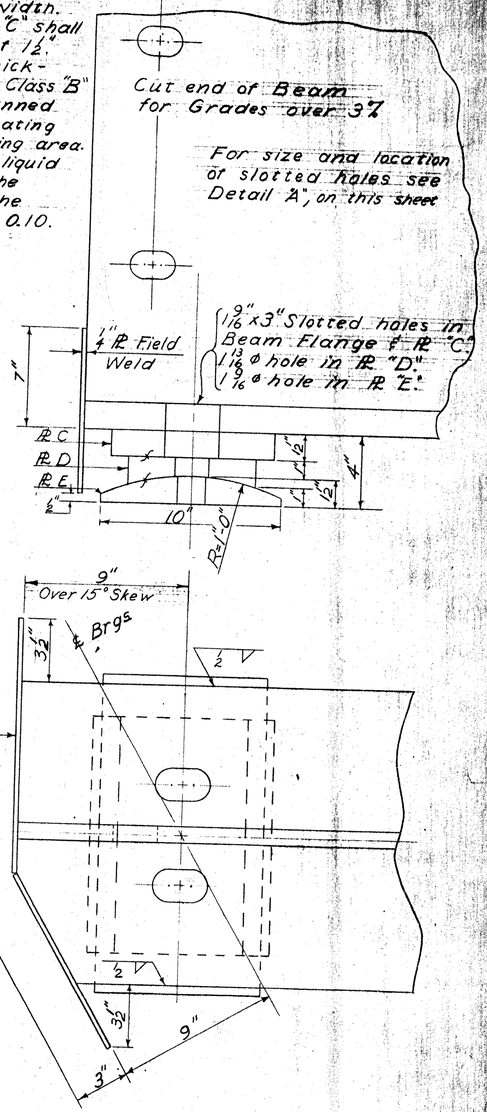

Plate "C" - 9"x1½"x1'-1" longer than the beam flange width. When the bridge is on a grade exceeding 5%, plate "C" shall be beveled to fit the grade with a mean thickness of 1½".

Plate "D" - 7"x(outer edge thickness 1½", center thickness 1")x1'-1". To be Cast Bronze - A.S.T.M. - B 22-40T. Class "B" unless otherwise specified. This plate shall have trepanned recesses filled with a lubricating compound. The lubricating area shall comprise not less than 25% of the total bearing area. The manufacturer shall supply additional lubricant in liquid form with which the Contractor shall thoroughly coat the bearing surfaces that contact the lubricated portion of the bronze plate. The coefficient of friction shall not exceed 0.10.

Plate "E" - 10"x½"x1'-1". Finish as indicated.




Approx. Wgt. = 150 lbs.




Attention is called to State of Vermont Department of Highways Standard Specifications for Highway and Bridge Construction, Item #404, paragraph 404.02(T) for bearing materials for Shoes and Pedestals.

FIXED END BEARING DEVICE
USE FOR EXPANSION END ON SPANS UP TO AND INCLUDING 69'

EXPANSION END BEARING DEVICE
FOR SPANS OVER 69'

(A) (B)

REVISIONS & CORRECTIONS
Revised weight of Exp. Brg. Device to 150 Lbs. 6/27/63 WM

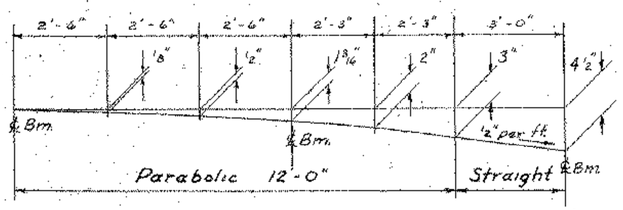
Drawn By: WM Date: Dec. 1, 1962
Traced By: WM Date: Dec. 1, 1962
Checked By: E.F.B. W.M.S. R.S.H Date: Dec. 1, 1962
Recommended For Approval: Bridge Engineer 12/7/62 Date
Recommended For Approval: Asst. Chief Engineer 1/4/63 Date
Approved By: Chief Engineer 1/4/63 Date

# DETAILS OF WF BEAM BRIDGES
## BEARING DEVICES

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

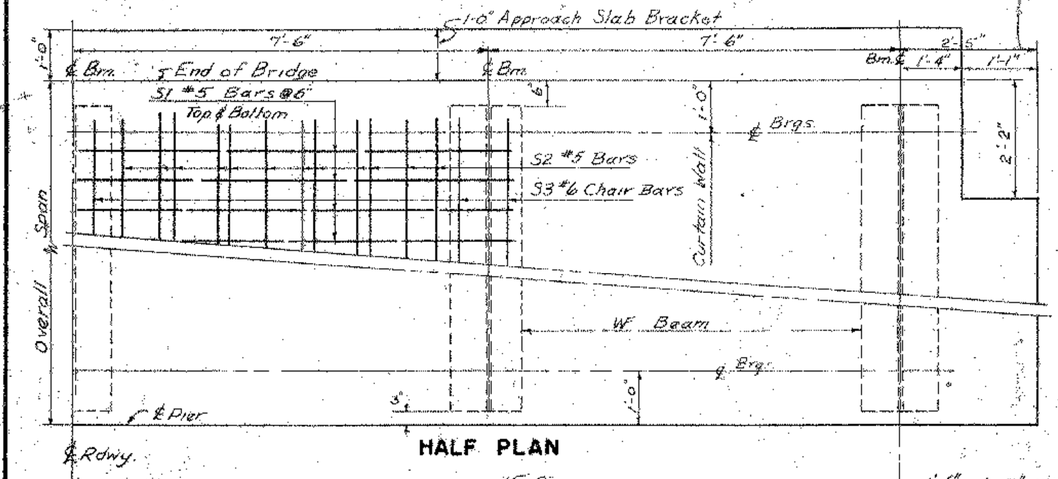
THIS SHEET FOR REFERANCE ONLY
HARTLAND IM 091-1(36)
I-91 BRIDGE 38
SHEET 85 OF 85

# SCB-D8-62

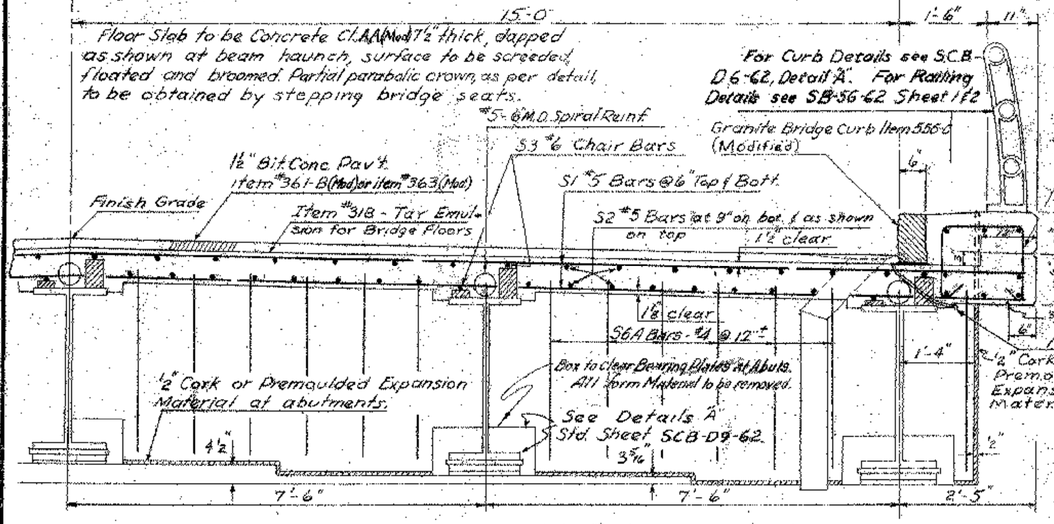



DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB

*Excluding Scuppers & Bearing Devices




HALF PLAN




TYPICAL HALF SECTION

## TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN

| Span, Out to Out | 99-0 | 94-0 | 89-0 | 84-0 | 79-0 | 74-0 | 69-0 | 64-0 | 59-0 | 54-0 | 49-0 | 44-0 | 39-0 | 34-0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Span, ℄ to ℄ Brngs. | 97-0 | 92-0 | 87-0 | 82-0 | 77-0 | 72-0 | 67-0 | 62-0 | 57-0 | 52-0 | 47-0 | 42-0 | 37-0 | 32-0 |
| Length of Bms. | 98-0 | 93-0 | 88-0 | 83-0 | 78-0 | 73-0 | 68-0 | 63'-0 | 58-0 | 53-0 | 48-0 | 43-0 | 38-0 | 33-0 |
| Size W Beam | 36WF280 | 36WF245 | 36WF230 | 36WF230 | 36WF194 | 36WF170 | 36WF150 | 36WF135 | 36WF135 | 36WF135 | 36WF135 | 36WF135 | 33WF118 | 30WF108 |
| Lgth. & Size Cover Pl (Bott. only) | 66'-7"/8" 17"×2¼" | 65'-7"/8" 16"×2¼" | 39'-5"/8" 14"×1¾" | 43'-5"/8" 14"×1⅞" | 43'-8"/8" 10"×1¼" | 43'-1"/8" 10"×1⅛" | 43'-9"/8" 10"×1⅛" | 43'-5"/8" 10"×1" | 37'-11"/8" 10"×⅞" | 27'-11"/8" 8"×⅞" | — | — | — | — |
| Dead Load Deflection | 3½" | 3⅜" | 2⅝" | 2'4" | 1'8" | 1⅝" | 1⅝" | 1⅜" | ⅞" | ⅝" | ½" | ⅜" | ¼" | ⅛" |
| Dia. of Spiral Bars | — | — | — | — | — | — | ⅝" | — | — | — | — | — | Non Composite | |
| Mean Dia. of Spiral | — | — | — | — | — | — | 6" | — | — | — | — | " | " | |
| Spiral Pitch 0'-10" from Brng. | Double @ 5½ | Double @ 5½ | Double @ 5½ | Double @ 5½ | Double @ 5 | Double @ 5 | Double @ 5 | Double @ 5 | Double @ 5 | Double @ 5½ | Double @ 6½ | " | " | |
| " " 10'-20" or ℄ Span | Double @ 6½ | Double @ 6" | Double @ 6½ | Double @ 7" | Double @ 7" | Double @ 7½ | Double @ 7" | Double @ 7" | Double @ 7" | Double @ 7" | Double @ 7½ | " | " | |
| " " 20'-30" or ℄ Span | 4" | 4" | 4½ | 4½" | 4½" | 4½" | 4½" | 5" | 5½" | 6" | 6" | " | " | |
| " " 30'-40" or ℄ Span | 5" | 5" | 5" | 6" | 6" | 6" | 6" | 5" | — | — | — | " | " | |
| " " 40' ℄ Span | 6½" | 6½" | 6" | 6" | — | — | — | — | — | — | — | " | " | |
| *Tot. Struct. Steel (1 span) (lbs.) | 169,590 | 145670 | 126,840 | 112,050 | 92,150 | 76,670 | 62,740 | 52,610 | 45,490 | 41150 | 35830 | 32390 | 24,240 | 19280 |
| Reinforcing Bars - S1 | 396 | 376 | 356 | 336 | 316 | 296 | 276 | 256 | 236 | 216 | 196 | 176 | 156 | 136 |
| " " - S2 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 150 | 150 | 150 | 150 | 150 | 150 | 75 |
| " " - S3 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 | 20 | 20 | 20 | 20 | 20 | 10 |
| " " - S4 | 132 | 126 | 120 | 112 | 106 | 100 | 92 | 86 | 80 | 72 | 66 | 60 | 52 | 46 |
| " " - S5 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| " " - S6A | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| " " - S7 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 |
| Tot. Weight - Reinf. Bars (lbs.) | 25,300 | 24,100 | 22,900 | 21,700 | 20,400 | 19,300 | 18,000 | 16,600 | 15,400 | 14200 | 13,000 | 11,800 | 10,600 | 9,200 |
| Approx. Wt. Spiral Reinf. (lbs.) | 2,580 | 2550 | 2,380 | 2,190 | 2,160 | 2,040 | 1,990 | 1,860 | 1700 | 1560 | 1440 | Non Composite | | |
| Tot. Cu. Yds. Conc. Class "AA" - (Cu. yds.) | 116 | 111 | 106 | 101 | 95 | 90 | 85 | 79 | 73 | 68 | 63 | 58 | 51 | 45 |
| Tot. Wt. Bitum. Conc. Pav't. (Mod.) (Tons) | 32 | 30 | 29 | 27 | 26 | 24 | 22 | 21 | 19 | 18 | 16 | 15 | 13 | 12 |
| Tot. Emulsion for Bridge Floors (Gals.) | 132 | 125 | 119 | 112 | 105 | 99 | 92 | 85 | 79 | 72 | 65 | 59 | 52 | 45 |
| Approx. Quantity 3/4" × 7" Studs | 3180 | 3120 | 2940 | 2680 | 2640 | 2500 | 2440 | 2280 | 2120 | 1900 | 1760 | Non Composite | | |
| Approx. Quantity 5/8" × 7" Studs | 2,110 | 2080 | 1960 | 1790 | 1760 | 1670 | 1630 | 1520 | 1410 | 1270 | 1170 | Non Composite | | |

## REINFORCING STEEL SCHEDULE

S1 - #5 34'-4" Straight | S5 - #5 32'-2" Straight

| Span | S2 - #5 Str. Length | S3 - #6 Str. Length | S6A - #4 B & D | S6A - #4 Total Length | S4 - #4 | S6A - #4 |
|---|---|---|---|---|---|---|
| 34 | 33'-6" | 33'-6" | 2'-6" | 6'-6" | T.L. = 5'-3" B = 1'-6" D = 1'-6" C = 1'-5" H = 3" A-5" G-5" | T.L. Varies A-5" G-5" A G B D C-B |
| 39 | 20'-3" | 20'-6" | 2'-9" | 7'-0" | | |
| 44 | 22'-9" | 23'-0" | 3'-0" | 7'-6" | | |
| 49 | 25'-3" | 25'-6" | 3'-0" | 7'-6" | | |
| 54 | 27'-9" | 28'-0" | 3'-0" | 7'-6" | | |
| 59 | 30'-3" | 30'-6" | 3'-0" | 7'-6" | | |
| 64 | 32'-9" | 33'-0" | 3'-0" | 7'-6" | | |
| 69 | 24'-3" | 24'-6" | 3'-2" | 7'-10" | | |
| 74 | 26'-0" | 26'-3" | 3'-2" | 7'-10" | S7 - #6 | S6P - #5 |
| 79 | 27'-6" | 28'-0" | 3'-3" | 8'-0" | T.L. = 3'-0" B = 1'-8" J = 6" A-8" G-8" | T.L. = 4'-2" B = 2'-6" C-8" D-1'-0" |
| 84 | 29'-3" | 29'-6" | 3'-3" | 8'-0" | | |
| 89 | 31'-0" | 31'-3" | 3'-3" | 8'-0" | | |
| 94 | 32'-6" | 33'-0" | 3'-4" | 8'-2" | | |
| 99 | 34'-3" | 34'-6" | 3'-4" | 8'-2" | | |

Revisions & Corrections

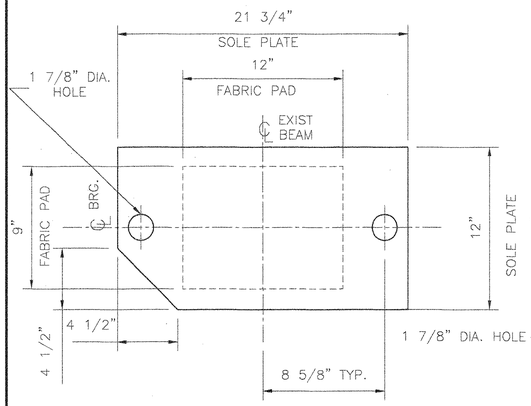
Drawn By: R.S.H. June 1960
Traced By: R.S.H. June 1960
Checked By: R.T.B. & R.S.H. July 1960

Recommended For Approval: Bridge Engineer — 10/5/62 Date
Recommended For Approval: Asst. Chief Engineer — 10/8/62 Date
Approved By: Chief Engineer — 11/1/62 Date

TYPICAL SECTION, PLAN VIEW, & QUANTITIES
30 FOOT ROADWAY WF BEAM BRIDGES
DESIGN LOADING - H-20-S16-44 (A.S.T.M. - A36-62T STEEL)
34-44 NON COMPOSITE, 49-99 COMPOSITE
FOR ADDITIONAL DETAILS SEE STANDARD SCB-D-62

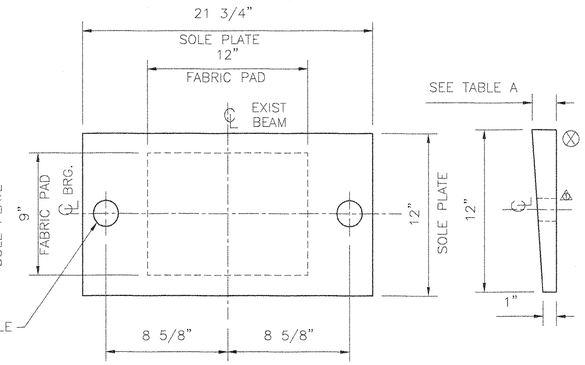
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

# SCB-30-62




PLAN

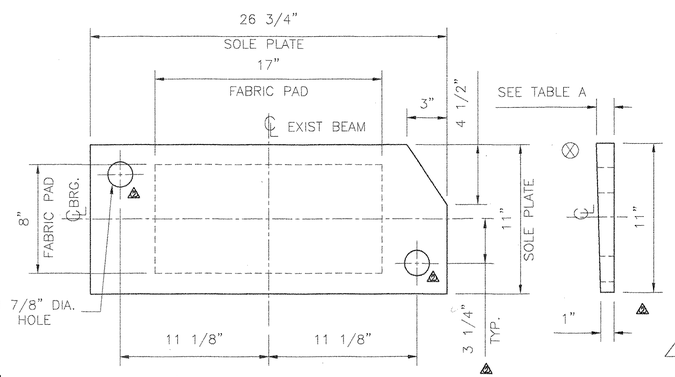
FIXED PREFORMED FABRIC PAD BEARING
LOCATION: B2–B5
QUANTITY: 4




PLAN

FIXED PREFORMED FABRIC PAD BEARING
LOCATION: B1, B21–B30
QUANTITY: 11



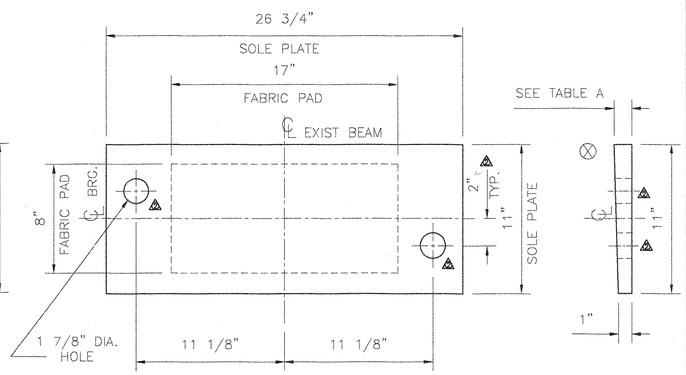

PLAN

FIXED PREFORMED FABRIC PAD BEARING
LOCATION: B46–B49 ABUTMENT 2
QUANTITY:4




SIDE ELEVATION

SOLE PLATE ONLY
B46–B49 ABUTMENT 2



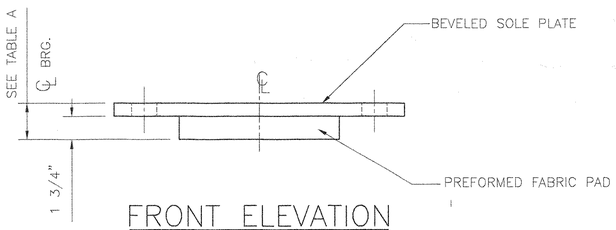

PLAN

FIXED PREFORMED FABRIC PAD BEARINGS
LOCATION: B31–B35 PIER 3, SPAN 4
QUANTITY: 5



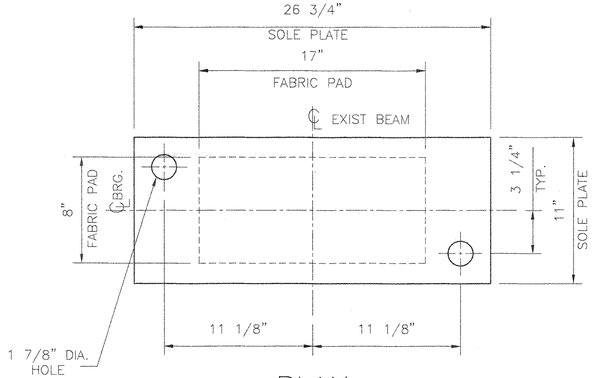

SIDE ELEVATION

SOLE PLATE ONLY
B31–B35



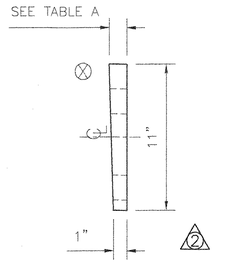

FRONT ELEVATION

B1–B5, B21–B30



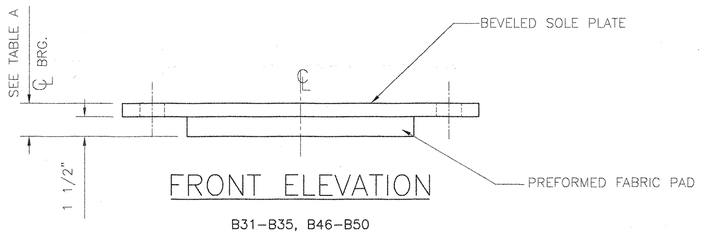

PLAN ⚠2

FIXED PREFORMED FABRIC PAD BEARING
LOCATION: B50 ABUTMENT 2
QUANTITY:1




SIDE ELEVATION

SOLE PLATE ONLY
B50 ABUTMENT 2




FRONT ELEVATION

B31–B35, B46–B50

## TABLE A

| | SOLE PLATES | SOLE PLATE ⚠ THICKNESS AT CENTER LINE | THICK END OF BEVEL | BEARING ASSEMBLY HEIGHT AT CENTER LINE ⚠ |
|---|---|---|---|---|
| SHT 1 | FIX B1–B5 | 1.41" | 1.82" | 3.16" |
| SHT 3 | EXP B6–B10 | 1.39" .12 | 1.78" | (3.14) 3.26" |
| SHT 3 | EXP B11–B15 | 1.41" | 1.82" | (3.16) 3.28" |
| SHT 2 | FIX B16–B20 | 1.35" | 1.70" | 3.1" |
| SHT 1 | FIX B21–B25 | 1.32" | 1.64" | 3.07" |
| SHT 1 | FIX B26–B30 | 1.29" | 1.58" | 3.04" |
| SHT 1 | FIX B31–B35 | 1.24" | 1.48" | 2.74" |
| SHT 3 | EXP B36–B40 | 1.24" | 1.48" | (2.74) 2.86" |
| SHT 2 | EXP B41–B45 | 1.20" | 1.40" | (2.70) 2.82" |
| SHT 1 | FIX B46–B50 | 1.16" | 1.32" | 2.66" |

16" Flange

16" Flange

MATERIAL:
STEEL– AASHTO M–270, GRADE 36 (ASTM A709 GR.36) METALIZED
STAINLESS STEEL– ASTM A240 TYPE 304, 10 RMS FINISH OR LESS
PTFE– ASTM D1457
PREFORMED FABRIC PAD– AASHTO 10.4.10.1
ANCHOR BOLTS– F1554, GRADE 55, SWEDGED AND GALVANIZED

NOTES:
1. ⊗ MARKS THE UPSTATION SIDE OF THE BEARING
2. ALL BEARING DEVICES SHALL BE METALIZED AS PER SUBSECTION 531.04 (B) AND 506.15 OF THE GENERAL SPECIAL PROVISIONS. AREAS OF METALIZING DAMAGED BY FIELD WELDING OR HANDLING SHALL BE REPAIRED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATIONS 513 WHICH REFERENCE ASTM A760.
3. ALL CORNERS AND EDGES OF STEEL PLATES SHALL BE GROUND TO A 1/16" RADIUS.
4. BEARING MUST NOT BE DISASSEMBLED
5. LOCATION OF FABRICATION 70 SOUTH ST. WALPOLE, MA 02081
6. COSMEC REPRESENTATIVE: MR. MATT McANDREWS (508–668–6600)

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED<br>APPROVED AS REVISED<br>REJECTED | NONE<br>CONFIRM<br>RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM, THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY [signature] DATE 2/4/03

STATE OF VERMONT

AGENCY OF TRANSPORTATION

PROJECT NO. IM 091–1(36)
BRIDGE 38
HIGHWAY NO. I–91
TOWN OF HARTLAND

SHEET 1 OF 3

086

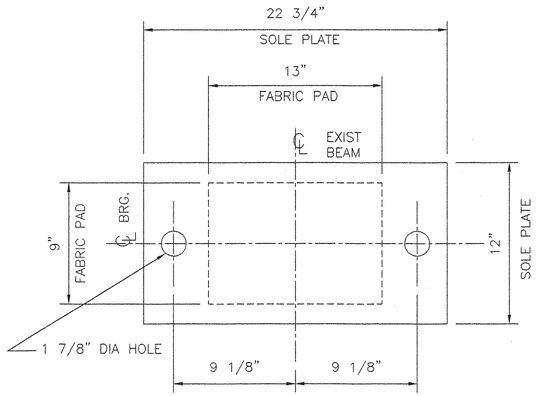
COSMEC, INC. 70 SOUTH STREET WALPOLE, MA. 02081

| SCALE: 3/16"=1" | DRAWN BY: MK | DATE: 6/17/03 | CHECK BY: RFC | DATE: 6/30/03 |
|---|---|---|---|---|

PREFORMED FABRIC PAD BEARINGS

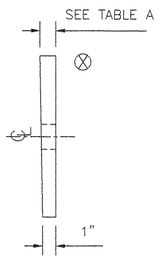
| CUSTOMER | S.O. NUMBER | DRAWING NUMBER | REV. |
|---|---|---|---|
| FRANK W. WHITCOMB | 59856 | 3897 | 2 |

| REV. | DESCRIPTION | BY | DATE | CHECKED | DATE |
|---|---|---|---|---|---|
| ⚠ | CHANGED HOLE LOCATIONS FOR ABUTMENT BEARINGS & BEARINGS @ SPAN 4 & 5, & PLAN FOR BEARING 50 | MK | 7/22/03 | MCM | 7/22/03 |
| ⚠ | ADDED HIDDEN LINES, SOLE PLATE & BEARING ASSY | MK | 7/15/03 | NH | 7/15/03 |



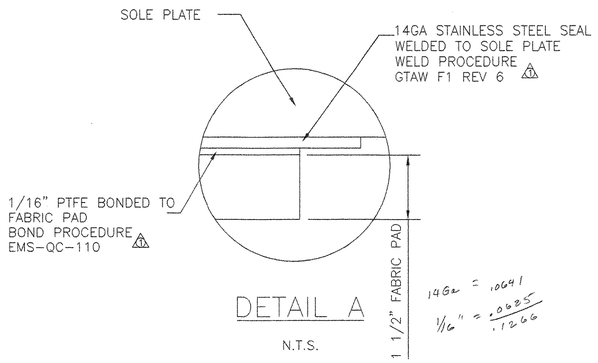

## PLAN

FIXED PREFORMED FABRIC PAD BEARINGS
LOCATION: B16–B20
QUANTITY: 5



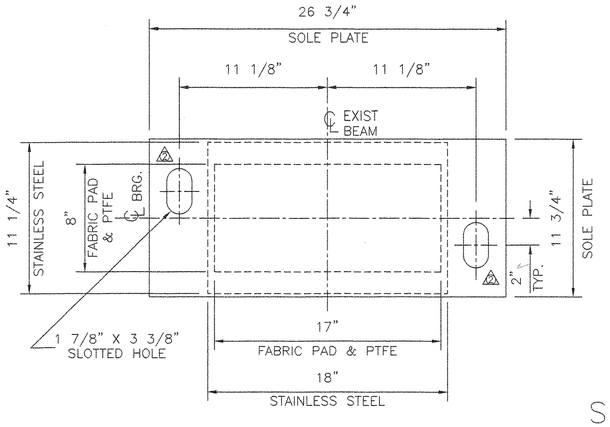

## SIDE ELEVATION

SOLE PLATE ONLY
B16–B20



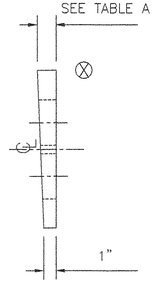

## DETAIL A

N.T.S.



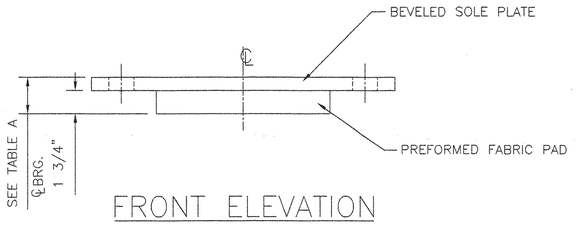

## PLAN

EXPANSION PREFORMED FABRIC PAD BEARING
LOCATION: B41–B45 PIER 4 SPAN 5
QUANTITY: 5



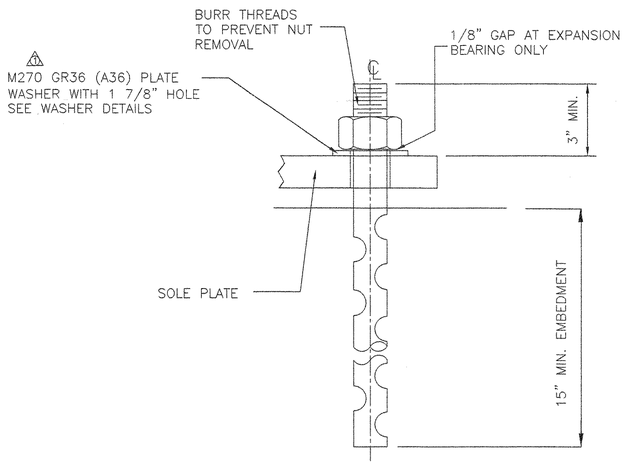

## SIDE ELEVATION

SOLE PLATE ONLY
B41–B45



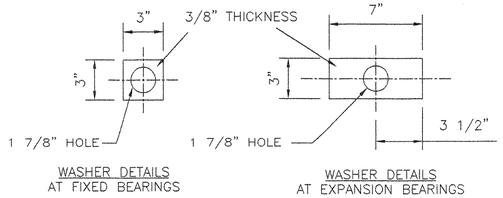

## FRONT ELEVATION

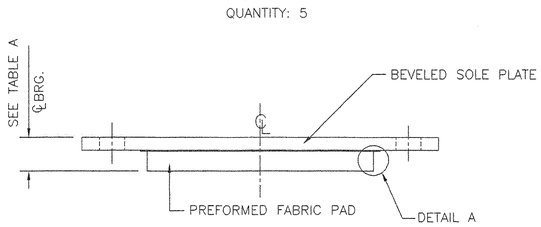
B16–B20




## ANCHOR BOLT DETAIL

N.T.S ⚠1
1' 10" X 1 1/2" DIA AASHTO M183 SWEDGED ANCHOR BOLT, ONE M270 GR36 (A36) PLATE WASHER AND ONE HEAVY HEX NUT ALL GALVANIZED




## FRONT ELEVATION

B41–B45

NOTES:
1. SEE SHEET 1
2. TABLE A LOCATED ON SHEET 1

VENDOR SUBMITTAL REVIEW

REVIEW STATUS: APPROVED; APPROVED AS REVISED; REJECTED
CONTRACTOR ACTION: NONE; CONFIRM; RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS OF TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY [signature] DATE 7/30/03

STATE OF VERMONT
AGENCY OF TRANSPORTATION
PROJECT NO. IM 091–1(36)
BRIDGE 38
HIGHWAY NO. I–91
TOWN OF HARTLAND



087

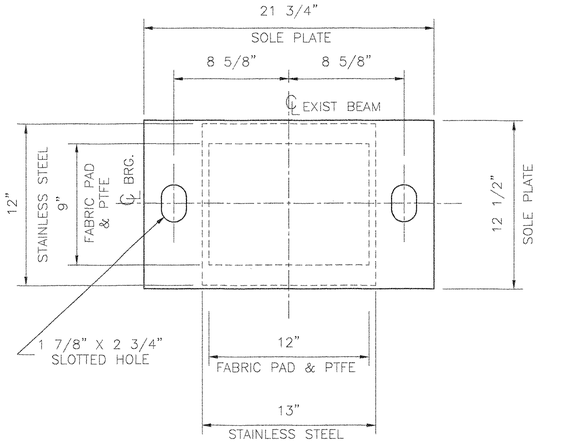
| REV. | DESCRIPTION | BY | DATE | CHECKED | DATE |
|---|---|---|---|---|---|
| ⚠2 | CHANGED HOLE LOCATIONS FOR B41–B45 PIER 4 SPAN 5 | MK | 7/22/03 | MCM | 7/22/03 |
| ⚠1 | ADDED WELD PROC. + BOND PROC., M270 GR36, AASHTO M183 WAS A36 | MK | 7/15/03 | NH | 7/15/03 |

COSMEC, INC.
70 SOUTH STREET
WALPOLE, MA. 02081

| SCALE: | DRAWN BY: | DATE: | CHECK BY: | DATE: |
|---|---|---|---|---|
| 3/16"=1" | MK | 6/17/03 | RFC | 6/30/03 |

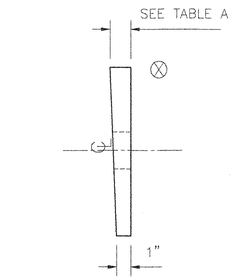
PREFORMED FABRIC PAD BEARINGS

| CUSTOMER | S.O. NUMBER | DRAWING NUMBER | REV. |
|---|---|---|---|
| FRANK W. WHITCOMB | 59856 | 3898 | 2 |



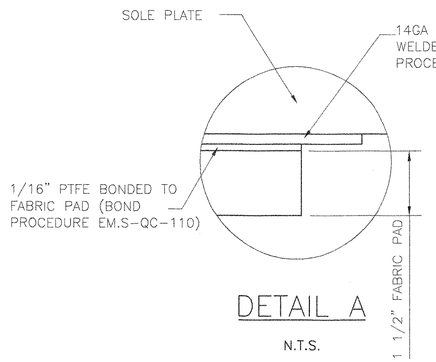

# PLAN

EXPANSION PREFORMED FABRIC PAD BEARING
LOCATION: B6–B10
QUANTITY: 5



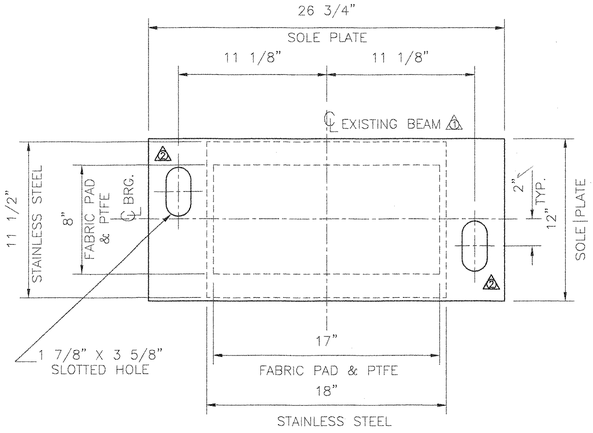

# SIDE ELEVATION

SOLE PLATE ONLY
LOCATION: B6–B10



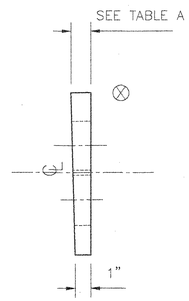

# DETAIL A

N.T.S.



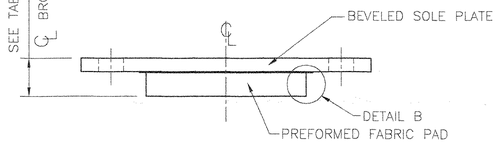

# PLAN

EXPANSION PREFORMED FABRIC PAD BEARING
LOCATION: B36–B40 PIER 4, SPAN 4
QUANTITY: 5



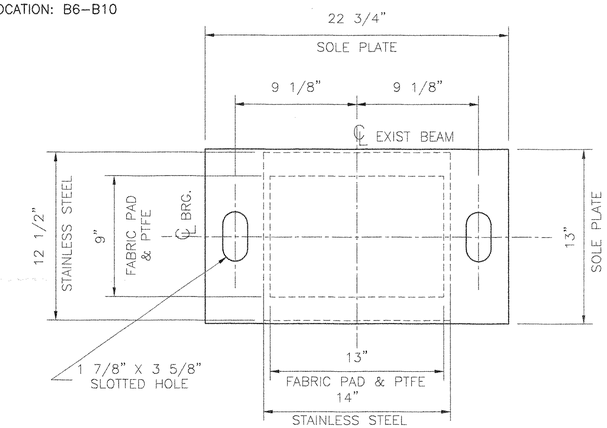

# SIDE ELEVATION

SOLE PLATE ONLY
LOCATION: B36–B40



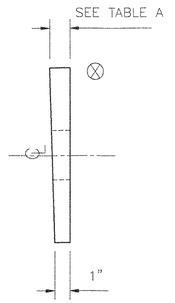

# FRONT ELEVATION

LOCATION: B6–B10



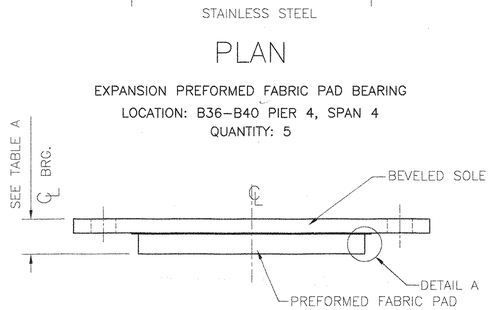

# PLAN

EXPANSION PREFORMED FABRIC PAD BEARING
LOCATION: B11–B15
QUANTITY: 5



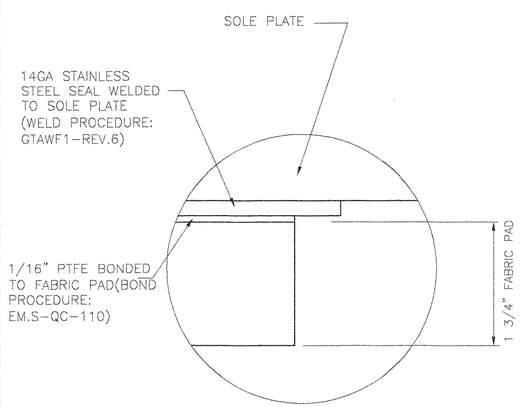

# SIDE ELEVATION

SOEL PLATE ONLY
LOCATION: B11–B15



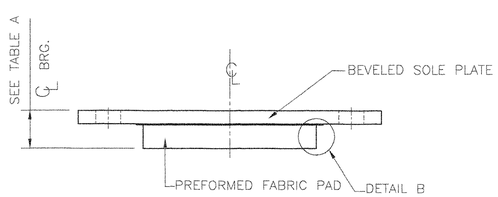

# FRONT ELEVATION

LOCATION: B36–B40




# DETAIL B

N.T.S.




# FRONT ELEVATION

LOCATION: B11–B15

NOTES:
1. SEE SHEET 1
2. TABLE A LOCATED ON SHEET 1

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED | NONE |
| APPROVED AS REVISED | CONFIRM |
| REJECTED | RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS AND DEPARTURES THEREON. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.
BY: [signature] DATE 29 Jul 03

STATE OF VERMONT
AGENCY OF TRANSPORTATION
PROJECT NO. IM 091–1 (36)
BRIDGE 38
HIGHWAY NO. I–91
TOWN OF HARTLAND
SHEET 3 OF 3

033

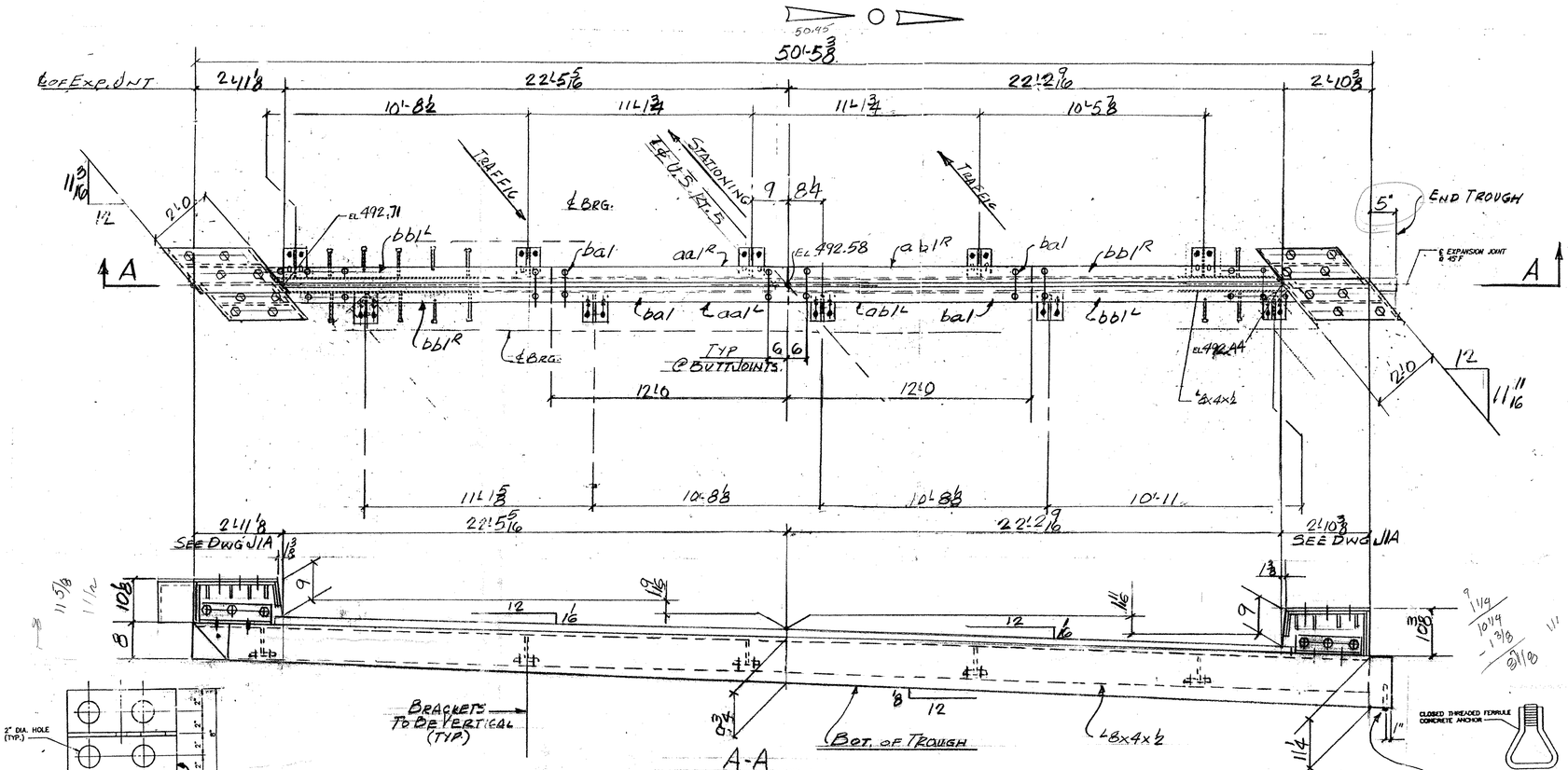
*COSMEC, INC.* 70 SOUTH STREET WALPOLE, MA. 02081

| SCALE: 3/16"=1" | DRAWN BY: MK | DATE: 6/17/03 | CHECK BY: RFC | DATE: 6/30/03 |
|---|---|---|---|---|

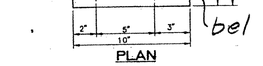
PREFORMED FABRIC PAD BEARINGS

| CUSTOMER | S.O. NUMBER | DRAWING NUMBER | REV. |
|---|---|---|---|
| FRANK W. WHITCOMB | 59856 | 3899 | 2 |

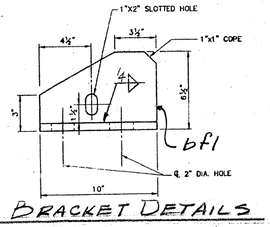
| REV. | | BY | DATE | CHECKED | DATE |
|---|---|---|---|---|---|
| 2 | CHANGED HOLE LOCATIONS FOR B36–40 PIER 4 SPAN 4 | MK | 7/22/03 | MCM | 7/22/03 |
| 1 | ADDED "EXCISTNG BEAM" | MK | 7/15/03 | NH | 7/15/03 |



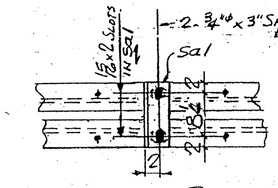

EXP. JOINT EJ1 - ONE REQ'D (@ PIER 1)




PLAN

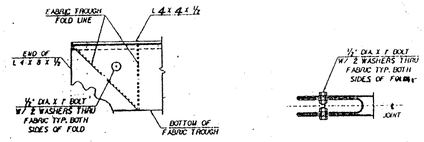



BRACKET DETAILS

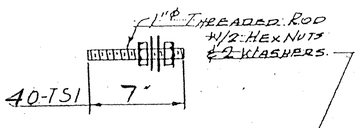


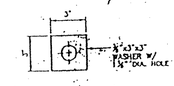

SHIPPING DEVICE
SPACED 5'-0" OC. MAX. (9 REQ'D)

TROUGH SHALL BE SLOPED TOWARD LOW SIDE OF BRIDGE (right to left, opposite that of the joint) AT 1% FOR POSITIVE DRAINAGE

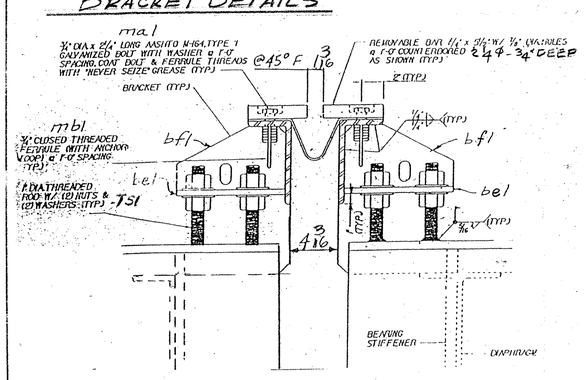



FOLDED TROUGH END DETAILS

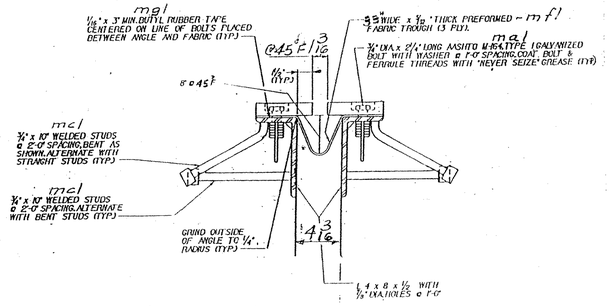



WASHER FOR BRACKET W1




TYP. SECTION @ GIRDERS




TYP. SECT. BETWEEN GIRDERS

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED<br>APPROVED AS REVISED<br>REJECTED | NONE<br>CONFIRM<br>RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING VENDOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS OR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS, FOR COORDINATION OF ALL TRADES, FOR SELECTED FABRICATION PROCESSES AND TECHNIQUES, AND FOR SAFETY PRECAUTIONS AND PROGRAMS IN PERFORMING HIS WORK. IT IS A DATE STAMPER.

BY Bruce L DATE 10/09/03

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1996, AND ITS LATEST REVISIONS.

ABM INFO

# SHOP BILL

JOB NO. 198 — DRG. NO. J1

| PAGE | LINE | NO. | DESCRIPTION | FT | IN | ASSEM. MARK | SHIPPING MARK | REMARKS | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | EXP. JOINT ASS'Y | 51 | 0± | | EJ1 | | — |
| | | 1 | L 8 X 4 X 1/2 | 25 | 9 | aa1R | | | |
| | | 1 | DO | 25 | 4 | aa1L | | | |
| | | 1 | DO | 25 | 4 | ab1R | | | |
| | | 1 | DO | 25 | 9 | ab1L | | | |
| | | 4 | BAR 1/4 X 5 1/2 | 12 | 0 | ba1 | | | |
| | | 2 | DO | 10 | 11± | bb1R | | | |
| | | 2 | DO | 10 | 8± | bb1L | | | |
| | | 10 | PL 1/2 X 8 | | 10 | be1 | | | |
| | | 10 | PL 1/2 X 6 | | 10 | bf1 | | | |
| | | 128 | 3/4"ø H.S. BOLTS | | 2 4 | ma1 | | | |
| | | 128 | 3/4"ø CLOSED THREADED ANC. FERRULES | | | mb1 | | | |
| | | 122 | 3/4"ø OVAL STUDS | | 10 | mc1 | | | |
| | | 1 | PREFORMED FABRIC SI 32 x 33 | 52 | 0 | mf1 | | 3 PLY PER CHEMFAST 7020 W/ NUT & WASHERS | |
| | | 2 | 1/2" ø M. BOLT | | 1 | SHOP | | | |
| | 40 | | 1"ø THREADED RODS | | 7 | | TS1 | | |
| | | 80 | 1"ø HEX NUTS | | | SHOP | | | |
| | | 80 | BAR 3 X 3/8 | | 3 | W1 | | | |
| | | 9 | L 4 X 4 X 3/8 | 1 | 0 4 | sa1 | | | |
| | | 18 | 3/4"ø H.S. BOLTS | | 3 | SA0F | | | |
| | | 2 | BUTYL RUBBER TAPE 1/4 X 3" | 52 | 0 | mg1 | | AASHTO M-198 TYPE B | |
| | | 2 | PL 3/8 X 13 1/2 | 4 | 1± | cp1 | | | |
| | | 2 | PL 3/8 X 6 5/8 | 1 | 7 3/4 | cp1a | | | |
| | | 1 | PL 3/8 X 8 1/2 | 1 | 7 3/4 | cp1b | | | |
| | | 1 | PL 3/8 X 9 1/2 | 1 | 7 3/4 | cp1c | | | |
| | | 2 | PL 3/8 X 12 1/2 | 3 | 11± | cp2 | | | |
| | | 2 | PL 3/8 X 6 1/4 | 1 | 6 3/8 | cp2a | | | |
| | | 1 | PL 3/8 X 8 1/8 | 1 | 6 3/8 | cp2b | | | |
| | | 1 | PL 3/8 X 9 1/8 | 1 | 6 3/8 | cp2c | | | |
| | | 2 | PL 3/8 X 9 3/4 | 3 | 10± | cp3 | | | |
| | | 2 | PL 3/8 X 6 1/2 | 1 | 2 4 | cp3a | | | |
| | | 1 | PL 3/8 X 8 1/8 | 1 | 2 4 | cp3b | | | |
| | | 1 | PL 3/8 X 9 1/8 | 1 | 2 4 | cp3c | | | |
| | | 2 | PL 3/8 X 9 3/4 | 3 | 5 1/2 | cp4 | | | |
| | | 2 | PL 3/8 X 5 7/8 | 1 | 2 | cp4a | | | |
| | | 1 | PL 3/8 X 7 3/4 | 1 | 2 | cp4b | | | |
| | | 1 | PL 3/8 X 8 3/4 | 1 | 2 | cp4c | | | |
| | | 1 | PL 3/8 X 9 | 2 | 8 3/8 | cp5 | | | |
| | | 1 | PL 3/8 X 8 5/8 | 2 | 7 3/8 | cp6 | | | |
| | | 1 | PL 3/8 X 9 3/8 | 2 | 7 | cp7 | | | |
| | | 1 | PL 3/8 X 9 | 2 | 8 | cp8 | | | |
| | | 16 | BAR 5 3/8 X 3/8 | | 5 3/8 | sp1 | | | |
| | | 16 | BAR 4 X 3/8 | | 4 | sp2 | | | |
| | | 4 | L 4 X 4 X 3/8 | 2 | 0 | a1 | | | |
| | | 12 | 3/4"ø H.S. BOLTS | | 2 | mh1 | | W/ NUT & WASHER | |

PAY ITEM 516.10

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| OUT FOR APPROVAL | 6-04-03 | | | | | | | | | | |
| OUT FOR APPROVAL Final | 8-4-03 | | | | | | | | | | |
| ISSUED TO SHOP | | | | | | | | | | | |
| FIELD & OFFICE | | | | | | | | | | | |
| REV. | REMARKS | DATE | DWN | CHK | APP | Q.A. | NO. | DIA. | LGT | TYPE | WASHER |

PROJECT NO. IM-091-1(36) — STATE BRIDGE NO. 38

MATERIAL AASHTO M270-Gr36 — ELECTRODES: PER PROC. — HOLES: AS NOTED — SHOP BOLTS: 3/4"ø

SURFACE PREP. & PAINT: M-164-GALV. TYPE I

GALV. AFTER FAB (ASTM-A123)

Rec'd 9-19-03

DESCRIPTION: EXP. JOINT - PIER 1

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

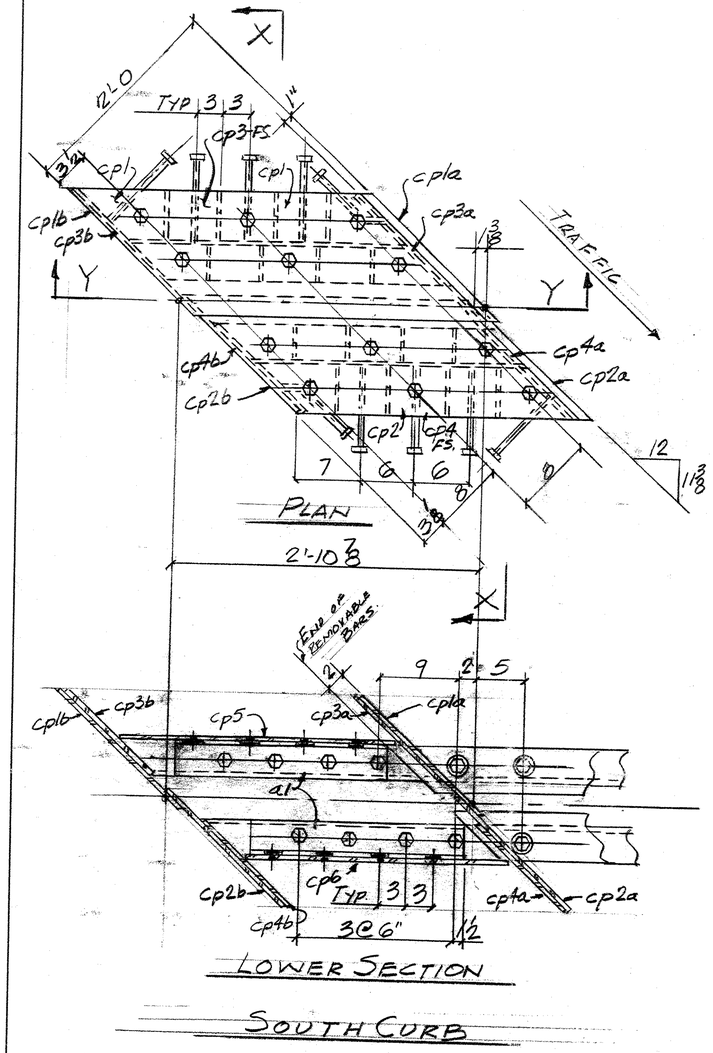
CUSTOMER: F.W. WHITCOMB

| | | |
|---|---|---|
| DRAWN BY | JPF | DATE 6-03 |
| CHKD BY | EJ | (2) |
| APPROV BY | | |
| Q.A. | | |


CASCO BAY STEEL STRUCTURES, INC.
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7350 FAX. (207) 282-1179

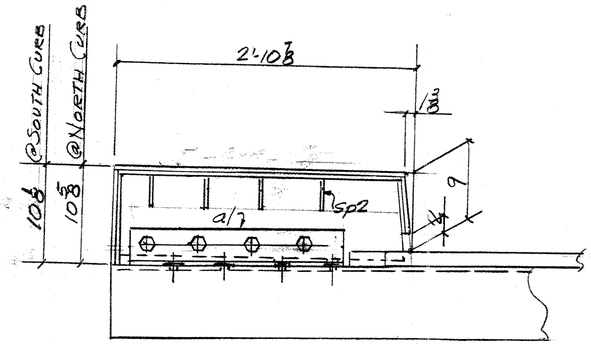

JOB NO. 198 — DRG. NO. J1 — REV. △ 089

JOB NO. 198 | DRG. NO. J1A



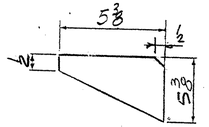

LOWER SECTION

SOUTH CURB

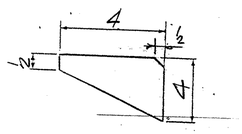



Y-Y - AS SHOWN

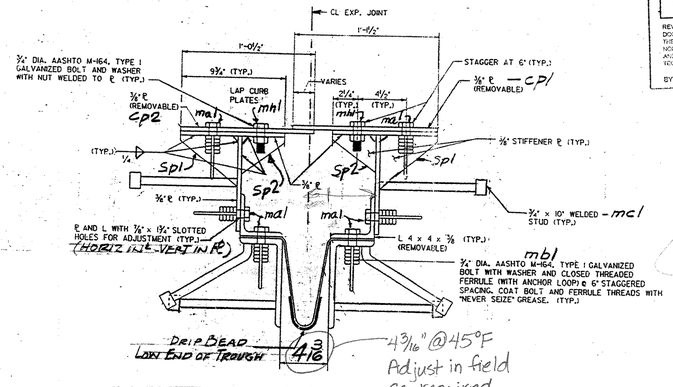
Y'-Y' - OPP HAND.




STIFFENER PLATE - sp1




STIFFENER PLATE - sp2



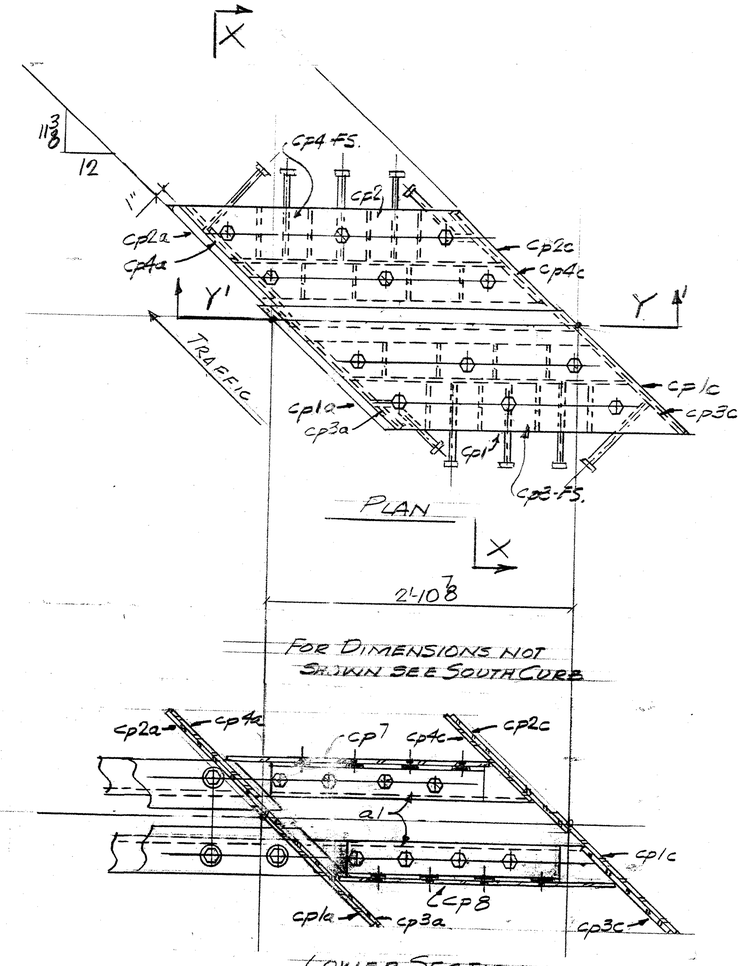

X-X

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED | NONE |
| APPROVED AS REVISED | CONFIRM |
| REJECTED | RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY Martha Skeis DATE 7/15/03




FOR DIMENSIONS NOT SHOWN SEE SOUTH CURB

LOWER SECTION

NORTH CURB

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OUT FOR APPROVAL | 6-24-03 | | | | | | | | | |
| OUT FOR APPROVAL | | | | | | | | | | |
| ISSUED TO SHOP | | | | | | | | | | |
| FIELD & OFFICE | | | | | | | | | | |
| REV. | REMARKS | DATE | DWN | CHK | APP | Q.A. | NO. | DIA. | LGT | TYPE | WASHER |

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL AASHTO M270-Gr36 ELECTRODES: PER PROC. HOLES: AS NOTED SHOP BOLTS: ¾" ø M-164-GALV.

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: EXP. JOINT - PIER 1

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

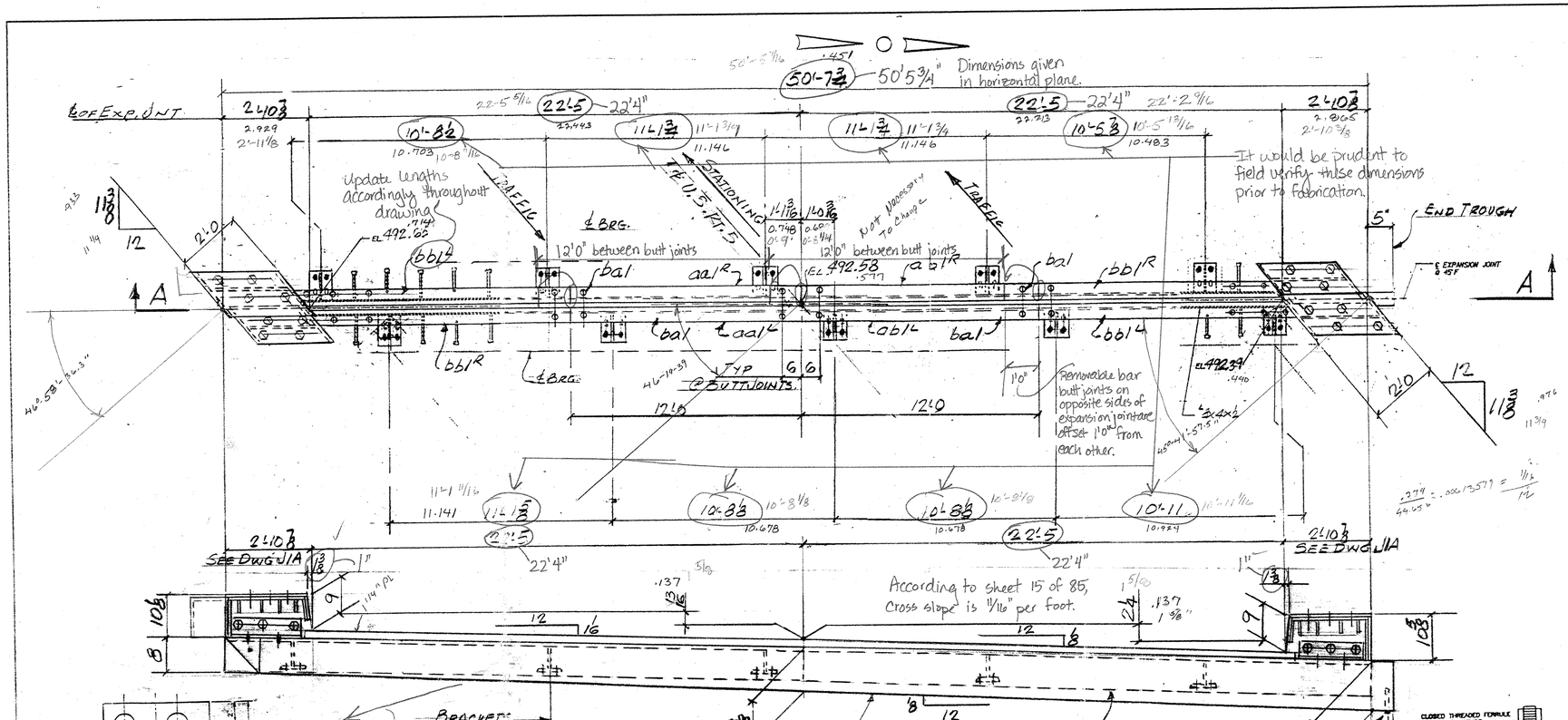
CUSTOMER: F.W. WHITCOMB

| | DRAWN BY | DATE |
|---|---|---|
| | JPF | 6-03 |
| CHKD BY | EJ | |
| APPROV BY | | |
| Q.A. | | |
| JOB NO. | 198 | |
| DRG. NO. | J1A | |
| REV. | 090 | △ |

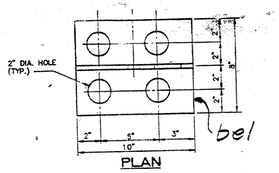
**CASCO BAY STEEL STRUCTURES, INC.**

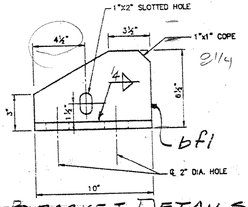
75 SPRING HILL ROAD SACO, MAINE 04072

PHONE (207) 282-7360 FAX. (207) 282-1179



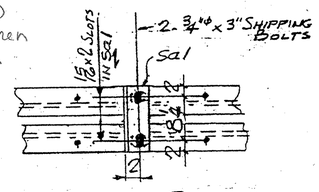

## EXP. JOINT EJI - ONE REQ'D (@ PIER 1)




BRACKET DETAILS

Trough shall slope towards low side of bridge. Low side, when looking upstation, is to the left.



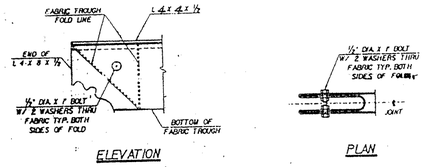

SHIPPING DEVICE
SPACED 540. OC. MAX. (9 REQ'D)

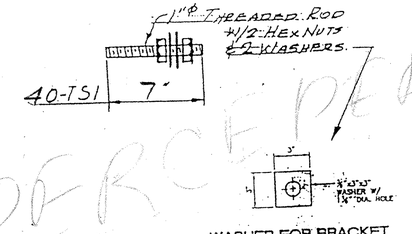
VENDOR SUBMITTAL REVIEW

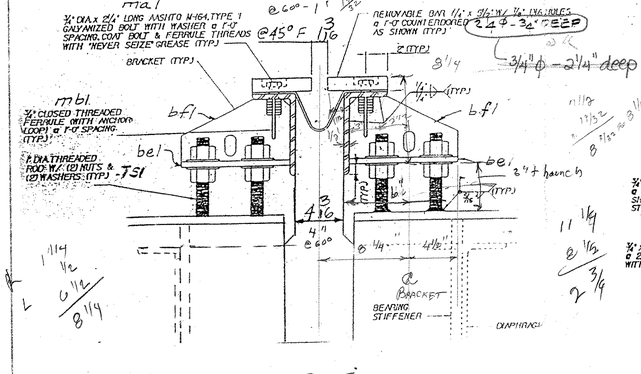
| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED | NONE |
| APPROVED AS REVISED | CONFIRM |
| REJECTED | RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS AND ENDORSING, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

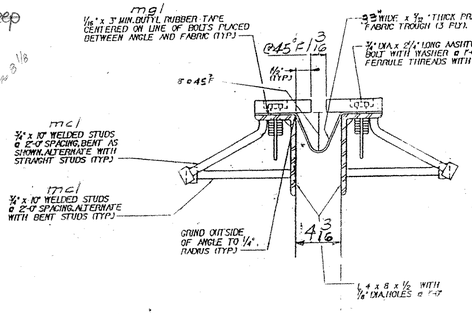
BY Martha Shaw DATE 7/15/03




TYP. SECTION @ GIRDERS




TYP. SECT. BETWEEN GIRDERS

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1996, AND ITS LATEST REVISIONS.

SUPERCEDED

## SHOP BILL

JOB NO. 198 DRG. NO. J1

| PAGE | LINE | NO. | DESCRIPTION | FT | IN | ASSEM. MARK | SHIPPING MARK | REMARKS | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | EXP. JOINT ASS'Y | 51 | 0# | | EJ1 | | — |
| | | 1 | L 8x4 x 1/2 | 25 | 9 | aa1R | | | |
| | | 1 | DO | 25 | 4 | aa1L | | | |
| | | 1 | DO | 25 | 4 | ab1R | | | |
| | | 1 | DO | 25 | 9 | ab1L | | | |
| | | 4 | BAR 1/4 x 5 1/2 | 12 | 0 | ba1 | | | |
| | | 2 | DO | 10 | 8 | bb1R | | | |
| | | 2 | DO | 11 | 2 | bb1L | | | |
| | | 10 | PL 1/2 x 8 | | 10 | be1 | | | |
| | | 10 | PL 1/2 x 6 | | 10 | bf1 | | | |
| | | 128 | 3/4"ϕ H.S. BOLTS | | 2 1/2 | ma1 | | | |
| | | 128 | 3/4"ϕ CLOSED THREADED FERRULES AND ANCHORS | | | mb1 | | | |
| | | 122 | 3/4"ϕ ANC. STUDS | | 10 | mc1 | | | |
| | | 1 | PREFORMED FABRIC 9"x3'-3" | 52 | 0 | mf1 | | 3 PLY PER SUBSECT. 714(7) OF SPEC. | |
| | | 2 | 1/2" M. BOLT | | 1 | SHOP | | 2 WASHERS | |
| | | 40 | 1"ϕ THREADED RODS | | 7 | | TS1 | | |
| | | 80 | 1"ϕ HEX NUTS | | | SHOP | | | |
| | | 80 | BAR 3x3/8 | | 3 | wi | | | |
| | | 9 | L 4x4 x 3/8 | 1 | 0 1/2 | sa1 | | | |
| | | 18 | 3/4"ϕ H.S. BOLTS | | 3 | SHOP | | | |
| | | 2 | BUTYL RUBBER TAPE 1/16 x 3" | 52 | 0 | mg1 | | AASHTO M-198 TYPE B | |
| | | 2 | PL 3/8 X 13 1/2 | 3 | 11 3/4 | cp1 | | | |
| | | 2 | PL 3/8 X 6 5/8 | 1 | 7 1/4 | cp1a | | | |
| | | 1 | PL 3/8 X 8 1/2 | 1 | 7 1/4 | cp1b | | | |
| | | 1 | PL 3/8 X 9 3/4 | 1 | 7 1/2 | cp1c | | | |
| | | 2 | PL 3/8 X 12 1/2 | 3 | 10 3/4 | cp2 | | | |
| | | 2 | PL 3/8 X 6 1/4 | 1 | 5 3/4 | cp2a | | | |
| | | 1 | PL 3/8 X 8 1/8 | 1 | 5 3/4 | cp2b | | | |
| | | 1 | PL 3/8 X 9 3/8 | 1 | 5 3/4 | cp2c | | | |
| | | 2 | PL 3/8 X 9 3/4 | 3 | 6 1/2 | cp3 | | | |
| | | 2 | PL 3/8 X 6 1/2 | 1 | 1 3/4 | cp3a | | | |
| | | 1 | PL 3/8 X 8 1/8 | 1 | 1 3/4 | cp3b | | | |
| | | 1 | PL 3/8 X 9 3/8 | 1 | 1 3/4 | cp3c | | | |
| | | 2 | PL 3/8 X 9 3/4 | 3 | 5 1/2 | cp4 | | | |
| | | 2 | PL 3/8 X 5 7/8 | 1 | 1 3/4 | cp4a | | | |
| | | 1 | PL 3/8 X 7 3/4 | 1 | 1 3/4 | cp4b | | | |
| | | 1 | PL 3/8 X 9 | 1 | 1 3/4 | cp4c | | | |
| | | 1 | PL 3/8 X 9 | 2 | 8 1/2 | cp5 | | | |
| | | 1 | PL 3/8 X 8 3/8 | 2 | 7 1/2 | cp6 | | | |
| | | 1 | PL 3/8 X 9 3/8 | 2 | 7 1/2 | cp7 | | | |
| | | 1 | PL 3/8 X 9 | 2 | 8 1/2 | cp8 | | | |
| | | 16 | BAR 5/8 X 3/8 | | 5/8 | sp1 | | | |
| | | 16 | BAR 4X 3/8 | | 4 | sp2 | | | |
| | | 4 | L 4 x 4 x 3/8 | 2 | 0 | a1 | | | |
| | | 12 | 3/4"ϕ H.S BOLTS | | 2 | mb1 | | W/ NUT & 1 WASHER | |

PAY ITEM 516.10

| REV. | REMARKS | DATE | DWN | CHK | APP | Q.A. | NO. | DIA. | LGT | TYPE | WASHER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | OUT FOR APPROVAL | 6-03 | | | | | | | | | |
| | OUT FOR APPROVAL | | | | | | | | | | |
| | ISSUED TO SHOP | | | | | | | | | | |
| | FIELD & OFFICE | | | | | | | | | | |

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL AASHTO M270-Gr36 ELECTRODES: PER PROC. HOLES: AS NOTED SHOP BOLTS: 3/4"ϕ M-164-GALV.

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: EXP. JOINT - PIER 1

JOB: SUPERCEDED SUS ROUTE 5 OVER I-91 HARTLAND, VT.

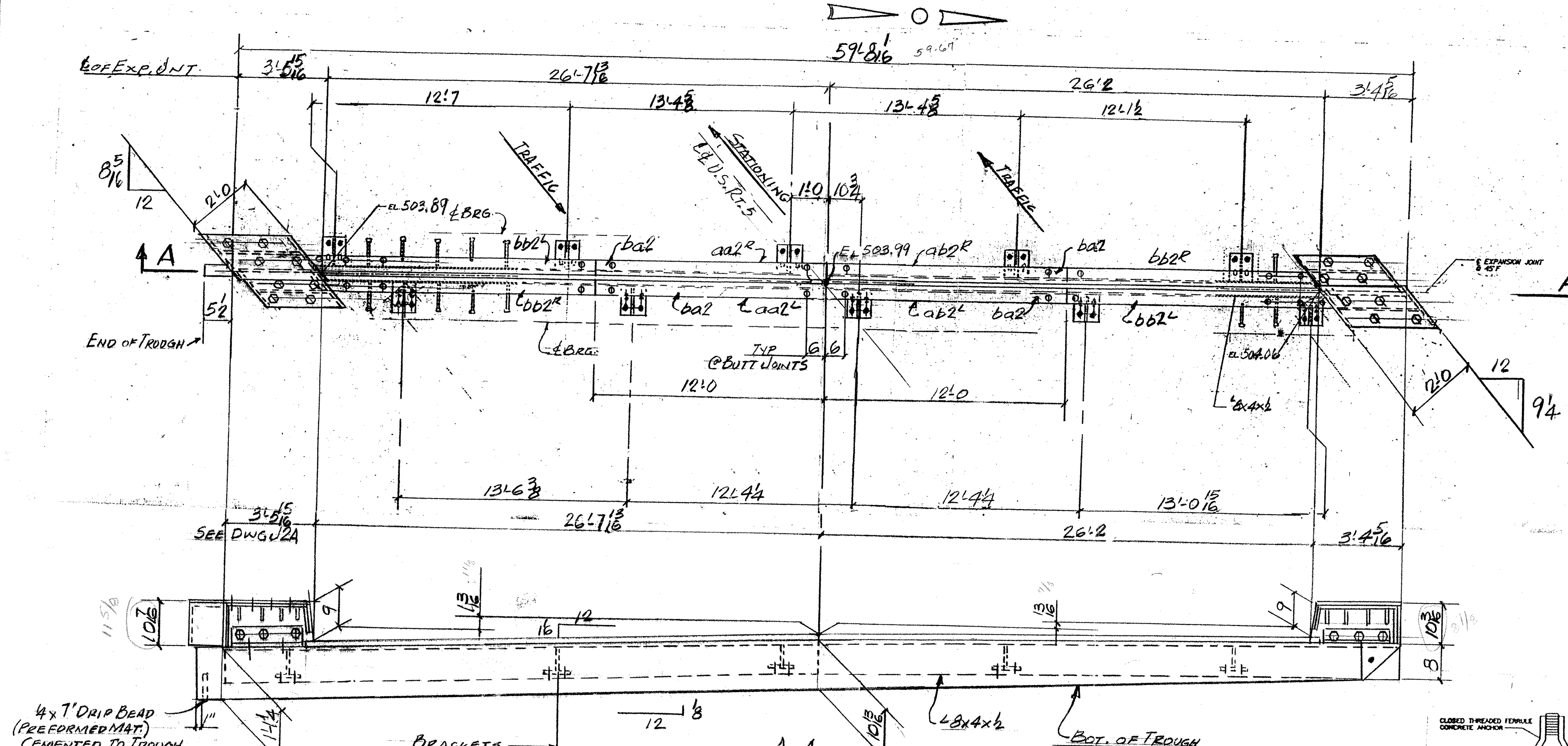
CUSTOMER: F.W. WHITCOMB SUPERCEDED

| DRAWN BY | DATE |
|---|---|
| JPF | 6-03 |
| CHKD BY | |
| APPROV BY | |
| Q.A. | |

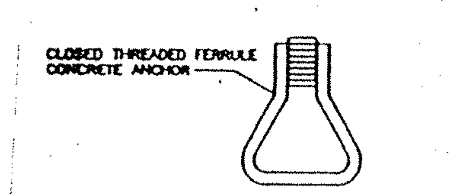
**CASCO BAY STEEL STRUCTURES, INC.**

75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

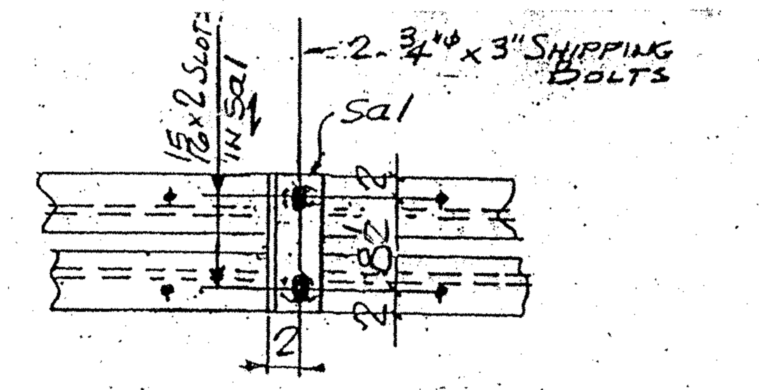
JOB NO. 198 DRG. NO. J1 REV. 091 △



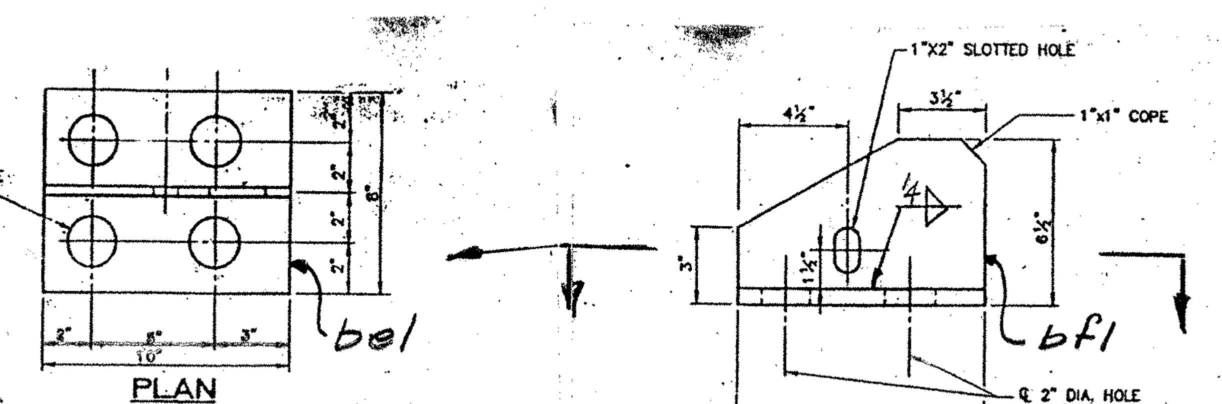

## Exp. Joint-EJ2-One Req'd (@Pier 4)



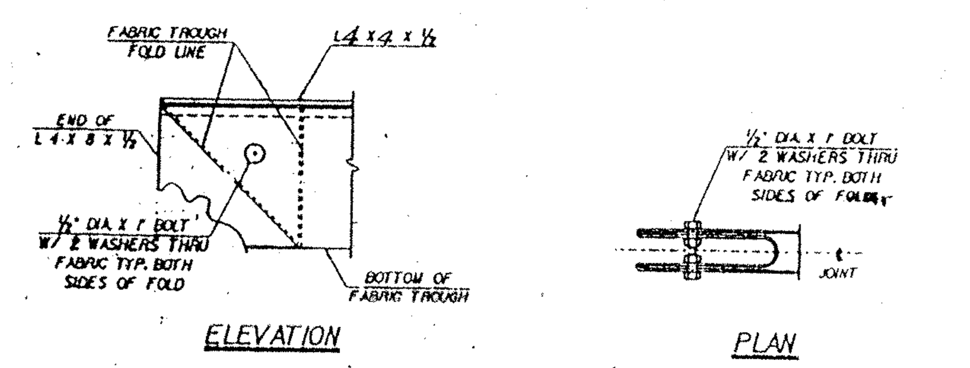

ANCHOR FERRULE DETAIL



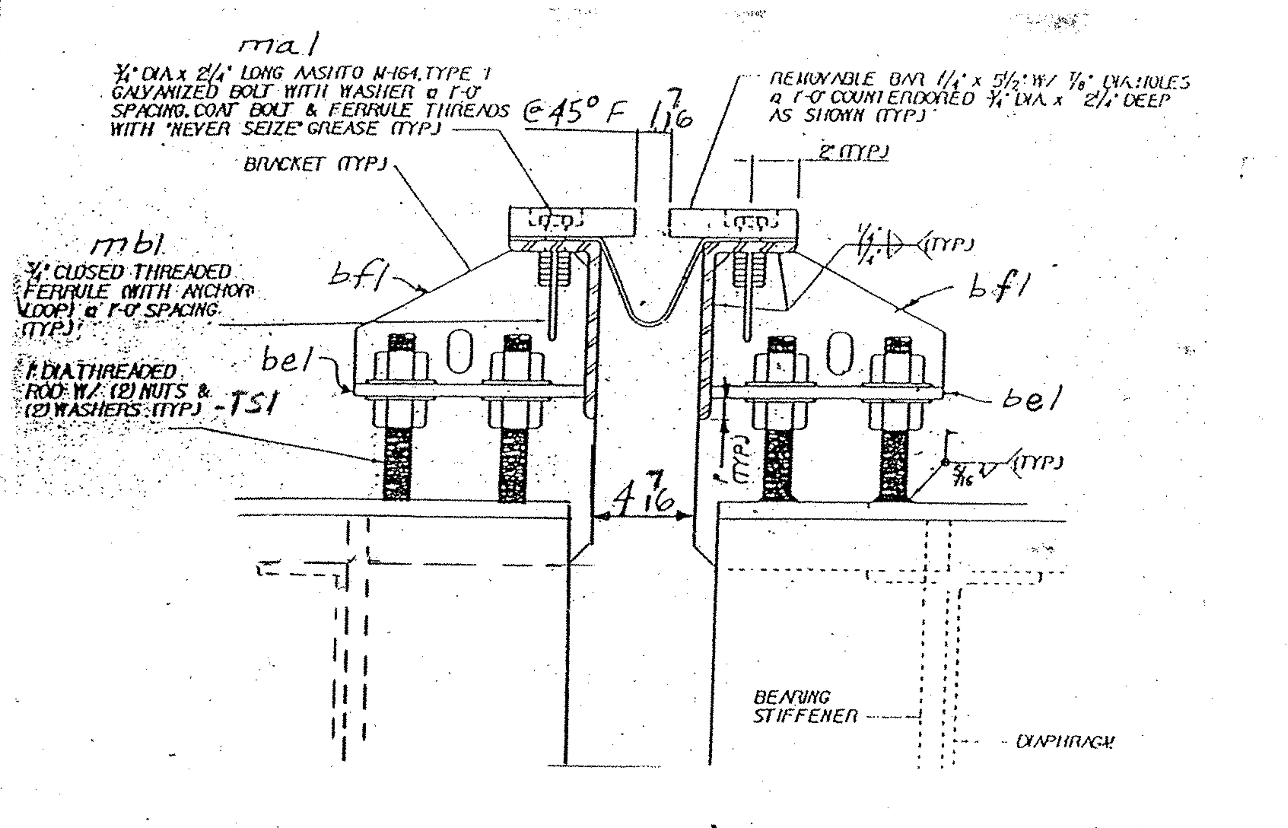

Shipping Device
Spaced 5'-0 o.c. Max. (11 Req'd)



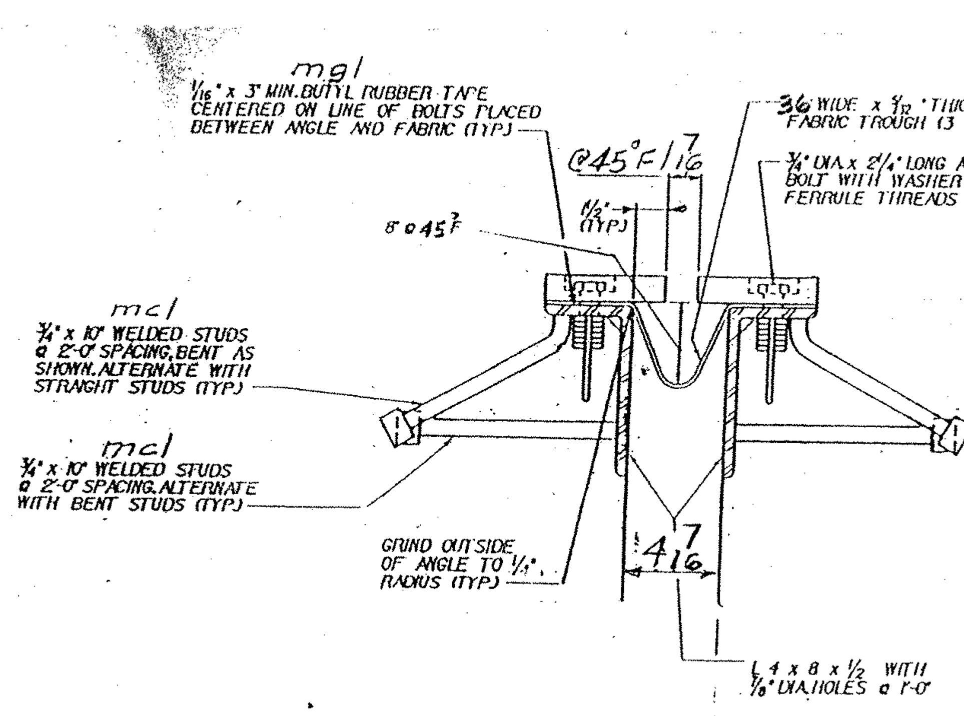

Bracket Details



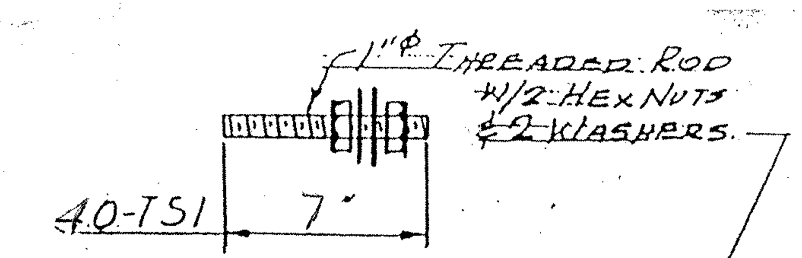

FOLDED TROUGH END DETAILS

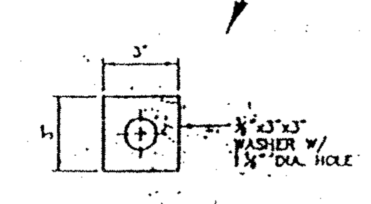



Typ. Section @ Girders




Typ. Sect. Between Girders




WASHER FOR BRACKET
W1

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED / APPROVED AS REVISED / REJECTED | NONE / CONFIRM / RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY ______ DATE 12 Aug 03

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1996, AND ITS LATEST REVISIONS.

## SHOP BILL

JOB NO. 198 — DRG. NO. J2

| ABM Page | ABM Line | No. | Description | FT | IN | Assem. Mark | Shipping Mark | Remarks | Weight |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | Exp. Joint Ass'y | 61 | 0± | | EJ2 | | — |
| | | 1 | ∟8x4x½ | 30 | 2½ | aa2R | | | |
| | | 1 | DO | 30 | 0 | aa2L | | | |
| | | 1 | DO | 30 | 0 | ab2R | | | |
| | | 1 | DO | 30 | 2½ | ab2L | | | |
| | | 4 | Bar 1¼x5½ | 12 | 0 | ba2 | | | |
| | | 2 | DO | 14 | 10± | bb2R | | | |
| | | 2 | DO | 15 | 6± | bb2L | | | |
| | | 10 | PL ½x8 | | 10 | be1 | | | |
| | | 10 | PL ½x6 | | 10 | bf1 | | | |
| | | 106 | ¾"φ H.S. Bolts | | 2¼ | ma1 | | | |
| | | 106 | ¾"φ closed threaded anc. ferrules | | | mb1 | | | |
| | | 120 | ¾"φ anc. studs | | 10 | mc1 | | | |
| | | 1 | Preformed fabric 5/32 x 36 | 61 | 0 | mf1 | | 3 PLY PER SUBSECT. 707.07 | |
| | | 2 | Butyl rubber tape 1/16 x 3 | 61 | 0 | mg1 | | AASHTO M.198-TYPE B | |
| | | 2 | ½"φ m. bolt | | 1 | Shop | | W/ NUT & 2 WASHERS | |
| | | 40 | 1"φ threaded rods | | 7 | | TS1 | | |
| | | 80 | 1"φ hex nuts | | | Shop | | | |
| | | 80 | Bar 3 x ⅜ | | 3 | W1 | | | |
| | | 11 | ∟4x4x⅜ | 1 | 0½ | sa1 | | | |
| | | 22 | ¾"φ HS. Bolts | | 3 | Shop | | | |
| | | 2 | PL ⅜x13½ | 5 | 0± | cp11 | | | |
| | | 2 | PL ⅜x6⅝ | 1 | 11¾ | cp11a | | | |
| | | 1 | PL ⅜x10 | 1 | 11¾ | cp11b | | | |
| | | 1 | PL ⅜x9 13/16 | 1 | 11⅝ | cp11c | | | |
| | | 2 | PL ⅜x12½ | 4 | 10± | cp12 | | | |
| | | 2 | PL ⅜x6¼ | 1 | 10 | cp12a | | | |
| | | 1 | PL ⅜x9 5/16 | 1 | 10 | cp12b | | | |
| | | 1 | PL ⅜x9 | 1 | 10 | cp12c | | | |
| | | 2 | PL ⅜x9¾ | 4 | 6± | cp13 | | | |
| | | 2 | PL ⅜x6¼ | 1 | 5 | cp13a | | | |
| | | 1 | PL ⅜x9 1/16 | 1 | 5 | cp13b | | | |
| | | 1 | PL ⅜x9 7/16 | 1 | 5 | cp13c | | | |
| | | 2 | PL ⅜x9¾ | 4 | 4½ | cp14 | | | |
| | | 2 | PL ⅜x5⅞ | 1 | 5 | cp14a | | | |
| | | 1 | PL ⅜x9 | 1 | 5 | cp14b | | | |
| | | 1 | PL ⅜x8 13/16 | 1 | 5 | cp14c | | | |
| | | 1 | PL ⅜x9¼ | 3 | 3¼ | cp15 | | | |
| | | 1 | PL ⅜x8⅞ | 3 | 1⅞ | cp16 | | | |
| | | 1 | PL ⅜x8⅞ | 3 | 0⅜ | cp17 | | | |
| | | 1 | PL ⅜x9¼ | 3 | 1¾ | cp18 | | | |
| | | 16 | Bar 5⅜x⅜ | | 5⅜ | sp1 | | | |
| | | 16 | Bar 4x⅜ | | 4 | sp2 | | | |
| | | 4 | ∟4x4x⅜ | 2 | 3 | az | | | |
| | | 12 | ¾"φ H.S. Bolts | | 2 | mh1 | | W/ NUT & WASHER | |

Pay Item: 516.10

| | |
|---|---|
| OUT FOR APPROVAL | 6-24-03 |
| OUT FOR APPROVAL | [illegible] 8-4-03 |
| ISSUED TO SHOP | |
| FIELD & OFFICE | |

| REV. | REMARKS | DATE | DWN | CHK | APP | Q.A. | NO. | DIA. | LGT | TYPE | WASHER |
|---|---|---|---|---|---|---|---|---|---|---|---|

PROJECT NO. IM-091-1(36) — STATE BRIDGE NO. 38

MATERIAL: AASHTO M270-GR36 — ELECTRODES: PER PROC — HOLES: AS NOTED — SHOP BOLTS: ¾"φ M-164 TYPE I GALV

SURFACE PREP. & PAINT: GALV. AFTER FAB (ASTM-A123)

Rec'd 8-19-03

DESCRIPTION: EXP. JOINT - PIER 4

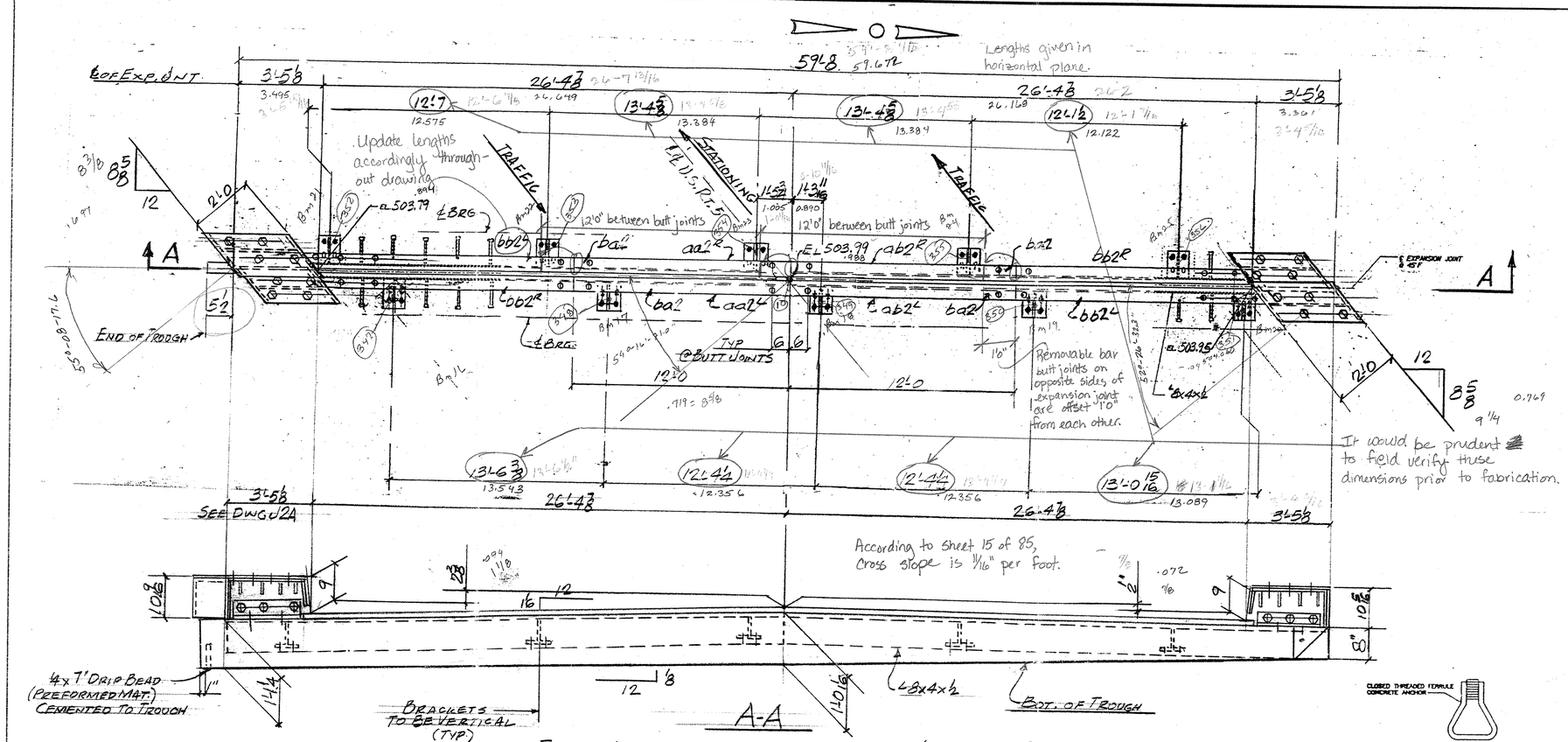
JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

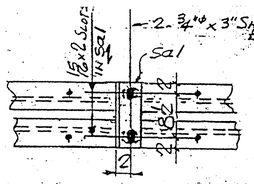
| DRAWN BY | DATE |
|---|---|
| JPF | 6-03 |
| CHKD BY | |
| EJ | © |
| APPROV BY | |
| Q.A. | |

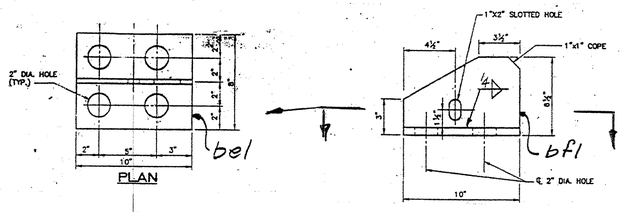
CUSTOMER: F.W. WHITCOMB

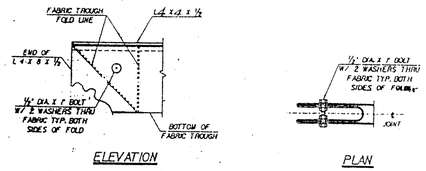
**CASCO BAY STEEL STRUCTURES, INC.**
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

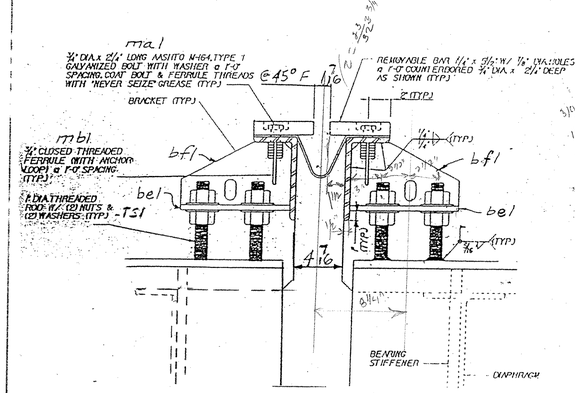
JOB NO. 198 — DRG. NO. J2 — 092 — REV 1 △

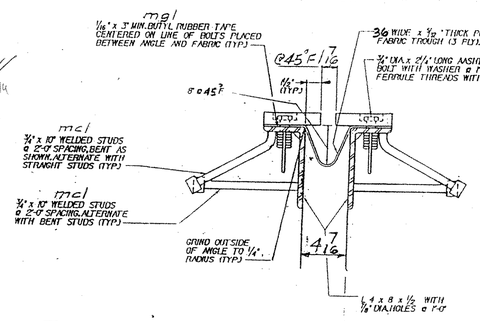


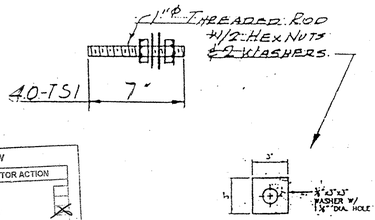










ABM INFO

# SHOP BILL

JOB NO. 198 DRG. NO. J2

| PAGE | LINE | NO. | DESCRIPTION | FT | IN | ASSEM. MARK | SHIPPING MARK | REMARKS | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| | | / | EXP. JOINT ASS'Y | 61 | 0 | EJ | EJ 2 | | — |
| | | 1 | L 8 X 4 X 1/2 | 30 | 2 1/2 | aa2R | | | |
| | | 1 | DO | 29 | 10 | aa2L | | | |
| | | 1 | DO | 29 | 10 | ab2R | | | |
| | | 1 | DO | 30 | 2 1/2 | ab2L | | | |
| | | 4 | BAR 1/4 X 5 1/2 | 12 | 0 | ba2 | | | |
| | | 2 | DO | 14 | 9 | bb2R | | | |
| | | 2 | DO | 15 | 6 | bb2L | | | |
| | | 10 | R 1/2 X 8 | 10 | | bf1 | | | |
| | | 10 | R 1/2 X 6 | 10 | | bf1 | | | |
| | | 106 | 3/4"ø H.S. BOLTS | | 2 | ma1 | | | |
| | | 106 | 3/4"ø CLOSED THREADED FERRULES | | | mb1 | | | |
| | | 120 | 3/4"ø ANC. STUDS | | 10 | mc1 | | | |
| | | 1 | PREFORMED FABRIC 5126 | 61 | 0 | mf1 | | 3M# PER SUBSEQ. 707.07 | |
| | | 2 | BUTYL RUBBER FABRIC 1116 | 61 | 0 | mg1 | | AASHTO M-198-76 TYPE B | |
| | | 2 | 1/2"ø M. BOLT | | 1 | SHOP | | W/ NUT & 2 WASHERS | |
| | | 40 | 1"ø THREADED RODS | (7) | | TS1 | | | |
| | | 80 | 1"ø HEX NUTS | | | SHOP | | | |
| | | 80 | BAR 3 X 3/8 | | 3 | W1 | | | |
| | | 11 | L 4 X 4 X 3/8 | 1 | 10 1/2 | sa1 | | | |
| | | 22 | 3/4"ø HS. BOLTS | | 3 | SHOP | | | |
| | | 2 | R 3/8 X 13 1/2 | 4 | 10 3/8 | cp11 | | | |
| | | 2 | R 3/8 X 6 3/8 | 1 | 11 3/8 | cp11a | | | |
| | | 1 | R 3/8 X 10 3/16 | 1 | 11 3/8 | cp11b | | | |
| | | 1 | R 3/8 X 9 15/16 | 1 | 11 3/8 | cp11c | | | |
| | | 2 | R 3/8 X 12 1/2 | 4 | 7 1/2 | cp12 | | | |
| | | 2 | R 3/8 X 6 1/4 | 1 | 9 1/2 | cp12a | | | |
| | | 1 | R 3/8 X 9 7/16 | 1 | 9 1/2 | cp12b | | | |
| | | 1 | R 3/8 X 9 3/16 | 1 | 9 1/2 | cp12c | | | |
| | | 2 | R 3/8 X 9 3/4 | 4 | 3 3/8 | cp13 | | | |
| | | 2 | R 3/8 X 6 1/4 | 1 | 4 3/8 | cp13a | | | |
| | | 1 | R 3/8 X 9 3/8 | 1 | 4 3/8 | cp13b | | | |
| | | 1 | R 3/8 X 9 7/16 | 1 | 4 3/8 | cp13c | | | |
| | | 2 | R 3/8 X 9 3/4 | 4 | 2 1/4 | cp14 | | | |
| | | 2 | R 3/8 X 5 7/8 | 1 | 4 1/4 | cp14a | | | |
| | | 1 | R 3/8 X 9 3/16 | 1 | 4 1/4 | cp14b | | | |
| | | 1 | R 3/8 X 8 15/16 | 1 | 4 1/4 | cp14c | | | |
| | | 1 | R 3/8 X 9 1/4 | 3 | 2 1/2 | cp15 | | | |
| | | 1 | R 3/8 X 8 3/8 | 3 | 1/8 | cp16 | | | |
| | | 1 | R 3/8 X 8 3/8 | 3 | 1/8 | cp17 | | | |
| | | 1 | R 3/8 X 9 1/4 | 3 | 2 1/2 | cp18 | | | |
| | | 16 | BAR 5 3/8 X 3/8 | | 5 3/8 | sp1 | | | |
| | | 16 | BAR 4 X 3/8 | | 4 | sp2 | | | |
| | | 4 | L 4 X 4 X 3/8 | 2 | 3 | a2 | | | |
| | | 12 | 3/4"ø H.S. BOLTS | | 2 | mb1 | | W/ NUT & WASHER | AASHTO M-164 TYPE I |

PAY ITEM: 516.10

| | |
|---|---|
| OUT FOR APPROVAL | 6/24/03 JB |
| OUT FOR APPROVAL | |
| ISSUED TO SHOP | |
| FIELD & OFFICE | |

| REV. | REMARKS | DATE | DWN | CHK | APP | Q.A. | NO. | DIA. | LGT. | TYPE | WASHER |
|---|---|---|---|---|---|---|---|---|---|---|---|

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL: ~~AASHTO~~ M270 GR 36 ELECTRODES: PER PROC HOLES: AS NOTED SHOP BOLTS:

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: EXP. JOINT - PIER 4

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

CUSTOMER: F.W. WHITCOMB

| | DRAWN BY | DATE |
|---|---|---|
| | JPF | 6-03 |
| CHKD BY | | |
| APPROV BY | | |
| Q.A. | | |

**CASCO BAY STEEL STRUCTURES, INC.**

75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

| JOB NO. | DRG. NO. |
|---|---|
| 198 | J2 |
| 093 | REV. 1 |

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED | NONE |
| APPROVED AS REVISED | CONFIRM |
| REJECTED | RESUBMIT |

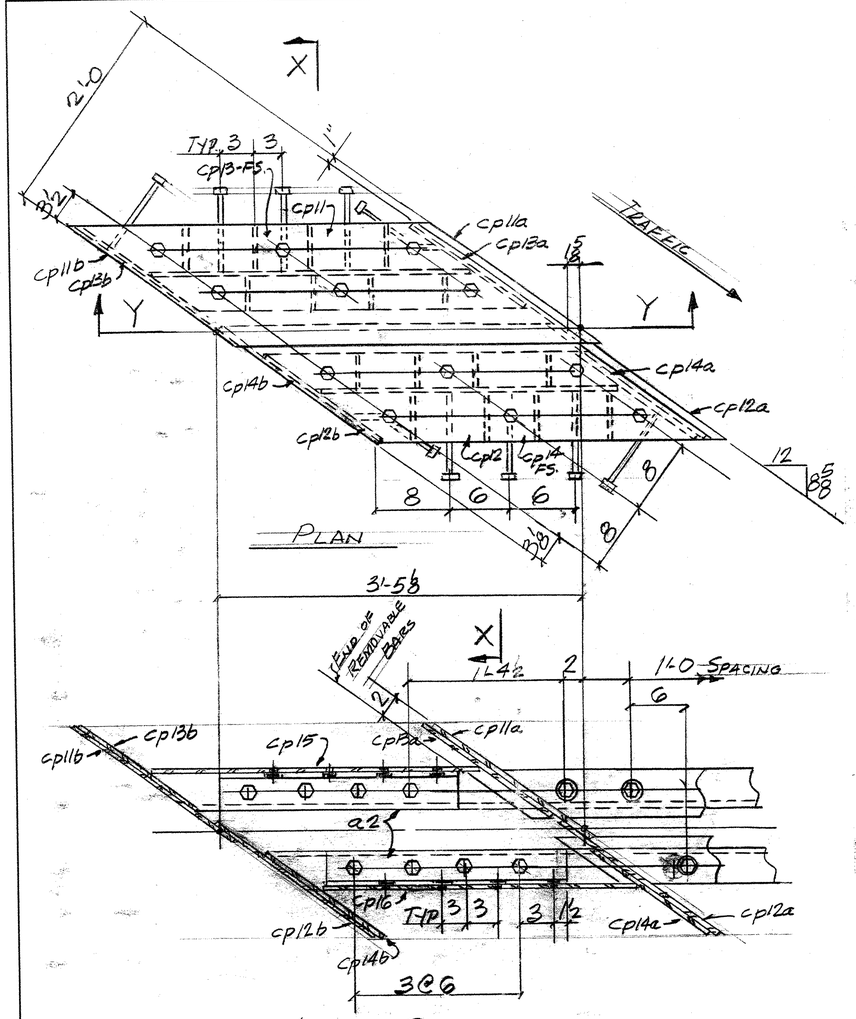
REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS AND FOR SELECTING FABRICATION PROCESSES FOR ASSEMBLIES AND SUBASSEMBLIES, FOR SELECTING FABRICATION PROCESSES AND TECHNIQUES OF HANDLING, AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

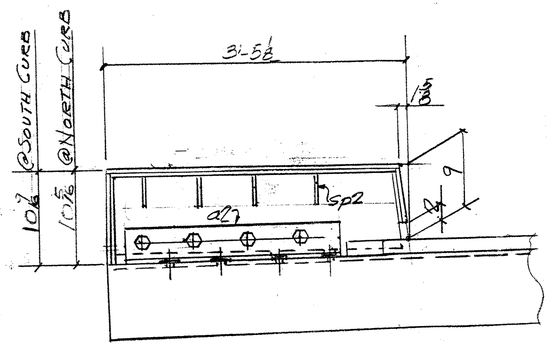
BY Martha Iten DATE 7/15/03

SUPERSEDED

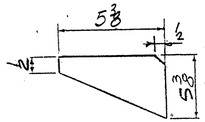
ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1990, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1996, AND ITS LATEST REVISIONS.

JOB NO. 198 | DRG. NO. J2A

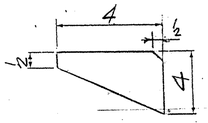


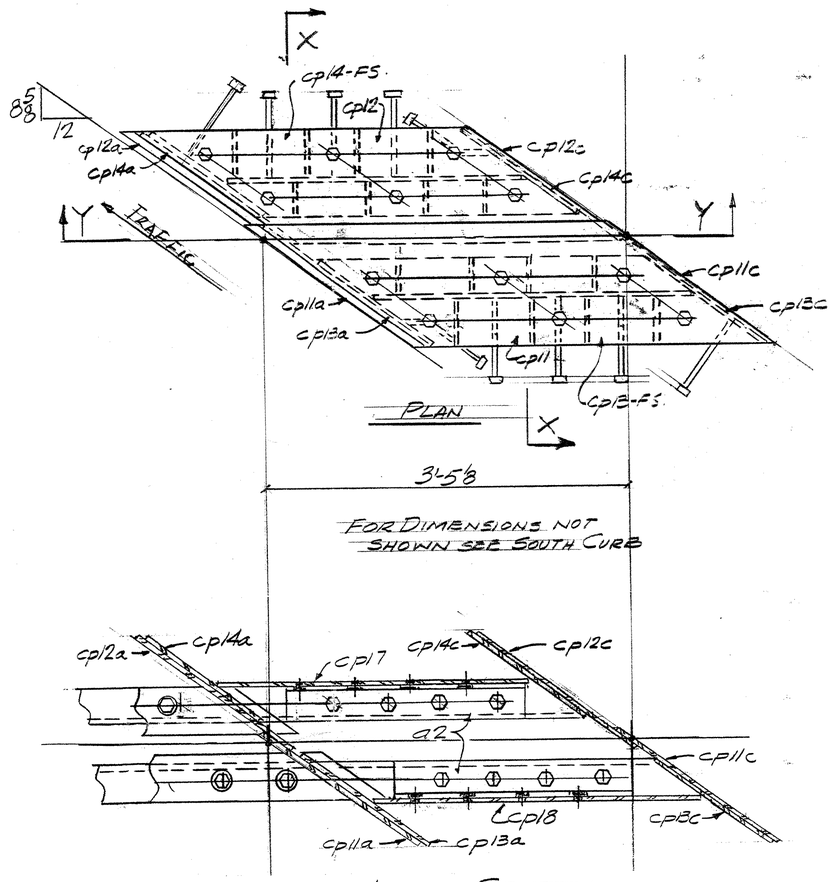

Y-Y - AS SHOWN
Y'-Y' - OPP HAND.




STIFFENER PLATE - SP1

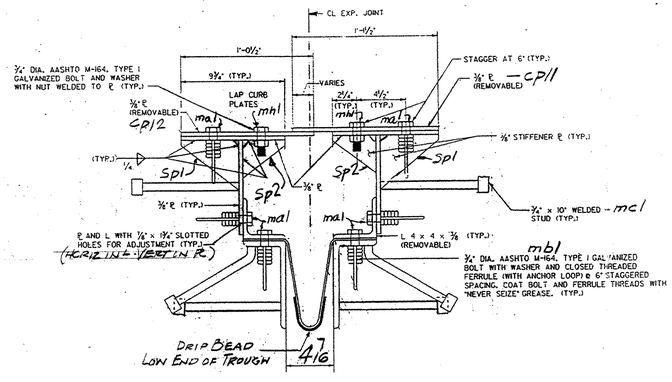



STIFFENER PLATE - SP2




FOR DIMENSIONS NOT SHOWN SEE SOUTH CURB

LOWER SECTION
NORTH CURB




X-X

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED<br>APPROVED AS REVISED<br>REJECTED | NONE<br>CONFIRM<br>RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER

BY Martha Klein DATE 7/15/03

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OUT FOR APPROVAL | 6-24-03 | | | | | | | | | |
| OUT FOR APPROVAL | | | | | | | | | | |
| ISSUED TO SHOP | | | | | | | | | | |
| FIELD & OFFICE | | | | | | | | | | |
| REV. | REMARKS | DATE | DWN | CHK | APP | Q.A. | NO. | DIA. | LGT | TYPE | WASHER |

PROJECT NO. IM-091-1 (36) STATE BRIDGE NO. 38

MATERIAL AASHTO M270 GR36 | ELECTRODES: PER PROC | HOLES: AS NOTED | SHOP BOLTS: 3/4" ø M164-GALV.

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: EXP. JOINT - PIER 4

JOB:

US ROUTE 5
OVER I-91
HARTLAND, VT.

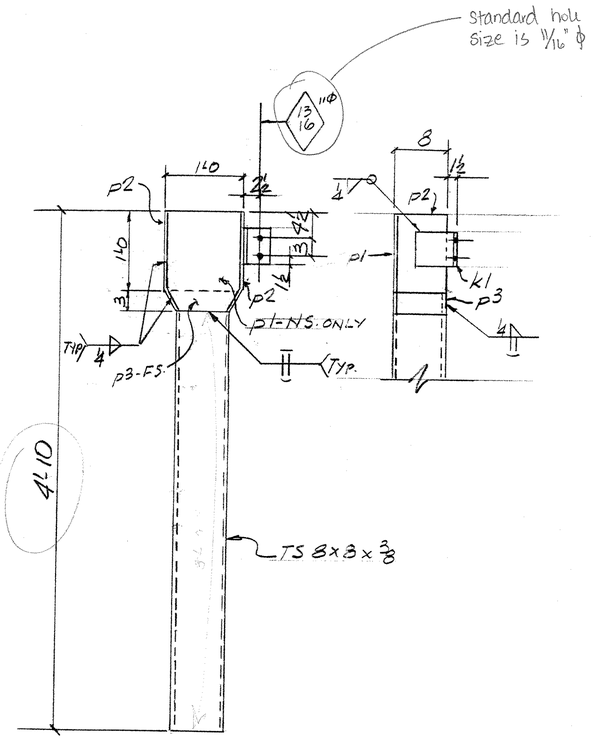
CUSTOMER: F.W. WHITCOMB

| | DRAWN BY | DATE |
|---|---|---|
| | JPF | 6-03 |
| CHKD BY | EJ | |
| APPROV BY | | |
| Q.A. | | |

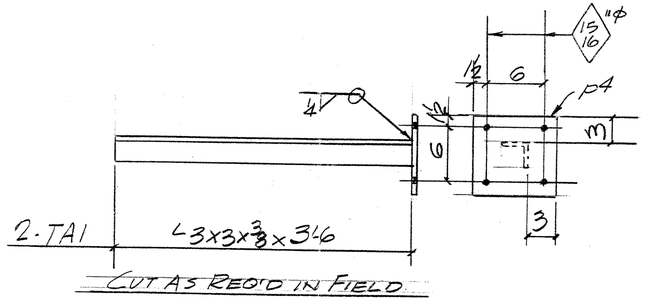
**CASCO BAY STEEL STRUCTURES, INC.**
75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

| JOB NO. | DRG. NO. |
|---|---|
| 198 | J2A |
| 094 | REV. △ |

| ABM INFO | | SHOP BILL | | | | | | JOB NO. 198 | DRG. NO. M1 |
|---|---|---|---|---|---|---|---|---|---|
| PAGE | LINE | NO. | DESCRIPTION | FT | IN | ASSEM. MARK | SHIPPING MARK | REMARKS | WEIGHT |
| | | 2 | TS 8x8x3/8 | 3 | 7 | | DS1 | ASTM A-500 or A-501 | |
| | | | 2 PL 3/8x11/4 | 1 | 3 | P1 | | | |
| | | | 4 PL 3/8 x 7 3/8 | 1 | 3 3/8 | P2 | | BEND | |
| | | | 2 PL 3/8 x 3 | | 11/4 | P3 | | | |
| | | | 2 L 6x4x1/2 | | 6 | K1 | | | |
| | | 2 | L 3x3x3/8 | 3 | 6 | | TA1 | | |
| | | | 2 PL 3/8 x 9 | | 9 | P4 | | | |
| | | 4 | 3/4" HIT HY-150 SYSTEM (GALV. PER SUBSEC. T 506.15) | | 8 | | FIELD | HILTI INC. | |
| | | | PAY ITEM 506.60 | | | | | | |




DS1 - 2 REQ'D.




VENDOR SUBMITTAL REVIEW

REVIEW STATUS: APPROVED / APPROVED AS REVISED / REJECTED

CONTRACTOR ACTION: NONE / CONFIRM / RESUBMIT

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY Martha Klein DATE 7/15/03

| REV. | REMARKS | DATE | DWN | CHK | APP | Q.A. | NO. | DIA. | LGT | TYPE | WASHER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | OUT FOR APPROVAL | 6-24-03 | | | | | | | | | |
| | OUT FOR APPROVAL | | | | | | | | | | |
| | ISSUED TO SHOP | | | | | | | | | | |
| | FIELD & OFFICE | | | | | | | | | | |

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL AASHTO M270 GR 36 ELECTRODES: PER PROC HOLES: AS NOTED SHOP BOLTS: —

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: DOWNSPOUTS PIERS 1 & 4

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

CUSTOMER: F.W. WHITCOMB

| | DRAWN BY | DATE |
|---|---|---|
| | JPF | 6-03 |
| CHKD BY | EJ | |
| APPROV BY | | |
| Q.A. | | |

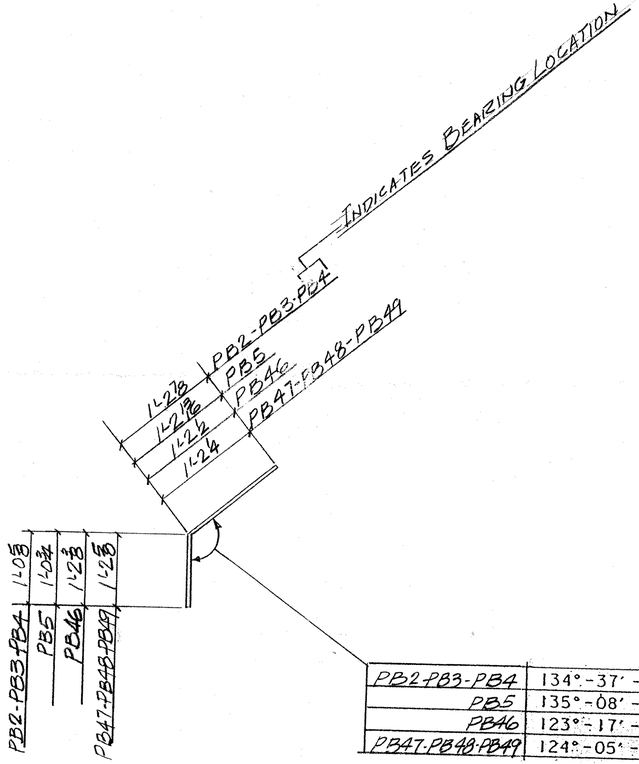
**CASCO BAY STEEL STRUCTURES, INC.**

75 SPRING HILL ROAD SACO, MAINE 04072

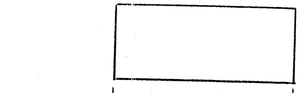
PHONE (207) 282-7360 FAX. (207) 282-1179

| JOB NO. | DRG. NO. |
|---|---|
| 198 | M1 |
| 095 | REV. △ |

| ABM INFO | | SHOP BILL | | | | | | JOB NO. 198 | DRG. NO. M12 |
|---|---|---|---|---|---|---|---|---|---|
| PAGE | LINE | NO. | DESCRIPTION | FT | IN | ASSEM. MARK | SHIPPING MARK | REMARKS | WEIGHT |
| | | 1 | PL 4 x 10 3/8 | 2 | 0 3/8 | | PB1 | | |
| | | 1 | DO | 2 | 3 1/2 | | PB2 | BEND | |
| | | 1 | DO | 2 | 3 1/2 | | PB3 | | |
| | | 1 | PL 4 x 10 | 2 | 3 1/2 | | PB4 | | |
| | | 1 | DO | 2 | 3 7/16 | | PB5 | | |
| | | 1 | PL 4 x 11 3/8 | 2 | 4 3/8 | | PB46 | | |
| | | 1 | PL 4 x 10 | 2 | 4 3/8 | | PB47 | | |
| | | 1 | PL 4 x 10 3/8 | 2 | 4 3/8 | | PB48 | | |
| | | 1 | PL 4 x 9 3/4 | 2 | 4 3/8 | | PB49 | BEND. | |
| | | 1 | PL 4 x 9 3/8 | 1 | 10 3/16 | | PB50 | | |
| | | | PAY ITEM 506.60 | | | | | | |




| | |
|---|---|
| PB2-PB3-PB4 | 134°-37'-04.45" |
| PB5 | 135°-08'-37.22" |
| PB46 | 123°-17'-23.52" |
| PB47-PB48-PB49 | 124°-05'-00.02" |



| | |
|---|---|
| PB1 | PL 4 x 10 3/8 x 2'-0 3/8" |
| PB50 | PL 4 x 9 3/8 x 1'-10 3/16" |

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED | NONE |
| APPROVED AS REVISED | CONFIRM |
| REJECTED | RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. NOTATION OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURE THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND FOR SAFETY PRECAUTIONS AND PROCEDURES IN CONNECTION WITH THE WORK.

BY: [signature] DATE: 12 Aug 03

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OUT FOR APPROVAL | 10-21-03 | | | | | | | | | |
| OUT FOR APPROVAL | 11-18-03 | | | | | | | | | |
| ISSUED TO SHOP | | | | | | | | | | |
| FIELD & OFFICE | | | | | | | | | | |
| REV. | REMARKS | DATE | DWN | CHK | APP | Q.A. | NO. | DIA. | LGT | TYPE | WASHER |

PROJECT NO. IM-091-1(36) STATE BRIDGE NO. 38

MATERIAL: AASHTO M270 GR36 ELECTRODES: — HOLES: — SHOP BOLTS: —

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

Rev'd 8-14-03

DESCRIPTION: BEAM END #'S - ABUTS. 1 & 2

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

CUSTOMER: F.W. WHITCOMB

| | DRAWN BY | DATE |
|---|---|---|
| | JPF | 6-03 |
| CHKD BY | EJ | |
| APPROV BY | | |
| Q.A. | | |

**CASCO BAY STEEL STRUCTURES, INC.**

75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

| JOB NO. | DRG. NO. |
|---|---|
| 198 | M12 |
| 096 | REV. △ |

ABM INFO

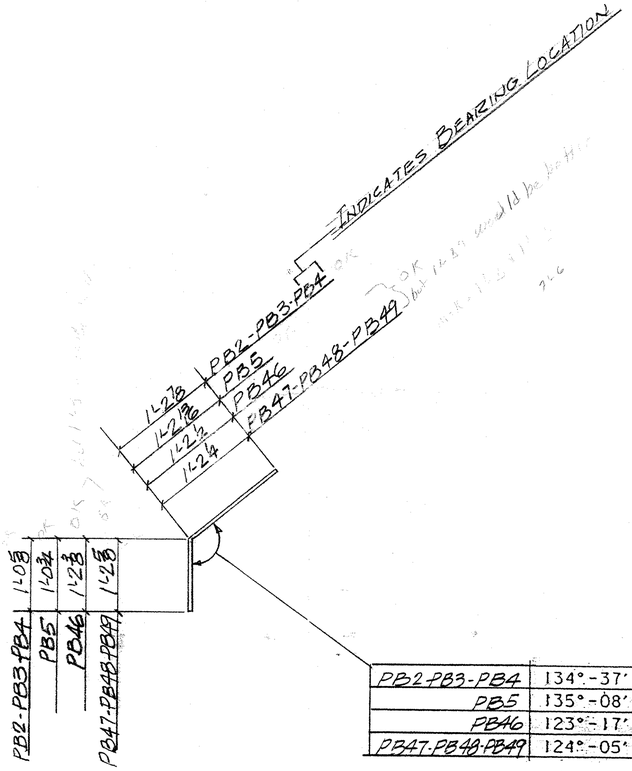
# SHOP BILL

JOB NO. 198 | DRG. NO. M12

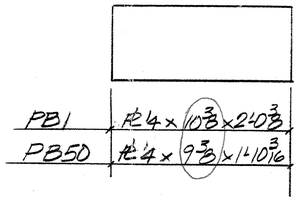
| PAGE | LINE | NO. | DESCRIPTION | FT | IN | ASSEM. MARK | SHIPPING MARK | REMARKS | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | R4x10 3/8 | 2 | 0 3/8 | | PB1 | | |
| | | 1 | DO | 2 | 3 1/2 | | PB2 | BEND | |
| | | 1 | DO | 2 | 3 1/2 | | PB3 | | |
| | | 1 | R4x10 | 2 | 3 1/2 | | PB4 | | |
| | | 1 | DO | 2 | 3 15/16 | | PB5 | | |
| | | 1 | R4x11 1/8 | 2 | 4 3/8 | | PB46 | | |
| | | 1 | R4x10 | 2 | 4 3/8 | | PB47 | | |
| | | 1 | R4x10 5/8 | 2 | 4 5/8 | | PB48 | | |
| | | 1 | R4x9 3/4 | 2 | 4 5/8 | | PB49 | BEND. | |
| | | 1 | R4x9 3/4 | 1 | 10 3/8 | | PB50 | | |

RAY ITEM 506.60

Bearing height at centerline of bearing is 3.16" for B1-B5 and 2.66" for B46-B50. Verify with Contractor (J. Hollar of F. Whitcomb) that shim plates are not being used. Update heights accordingly.




| | |
|---|---|
| PB2-PB3-PB4 | 134°-37'-04.45" |
| PB5 | 135°-08'-37.22" |
| PB46 | 123°-17'-23.52" |
| PB47-PB48-PB49 | 124°-05'-00.02" |




VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | | CONTRACTOR ACTION | |
|---|---|---|---|
| APPROVED | | NONE | |
| APPROVED AS REVISED | | CONFIRM | |
| REJECTED | | RESUBMIT | X |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY Martha Reis DATE 7/15/03

Absolutely

VERIFY

| REV. | REMARKS | DATE | DWN | CHK | APP | Q.A. | NO. | DIA. | LGT | TYPE | WASHER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | OUT FOR APPROVAL | 10-24-03 | | | | | | | | | |
| | OUT FOR APPROVAL | | | | | | | | | | |
| | ISSUED TO SHOP | | | | | | | | | | |
| | FIELD & OFFICE | | | | | | | | | | |

PROJECT NO. IM-091-1 (36) STATE BRIDGE NO. 38

MATERIAL AASHTO M270 Gr 36 ELECTRODES: — HOLES: — SHOP BOLTS: —

SURFACE PREP. & PAINT:

GALV. AFTER FAB (ASTM-A123)

DESCRIPTION: BEAM END PLATES - ABUTS. 1 & 2

JOB: US ROUTE 5 OVER I-91 HARTLAND, VT.

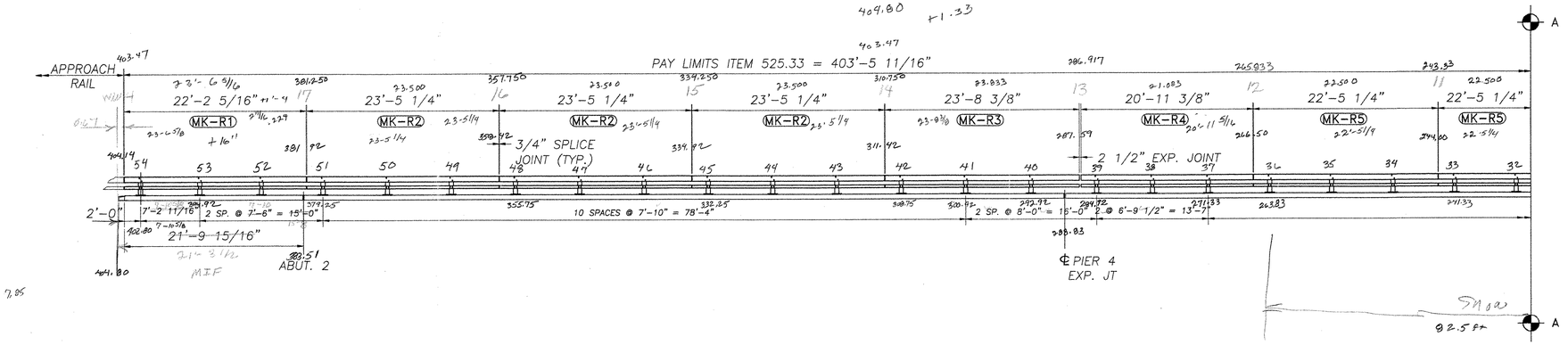
CUSTOMER: F.W. WHITCOMB

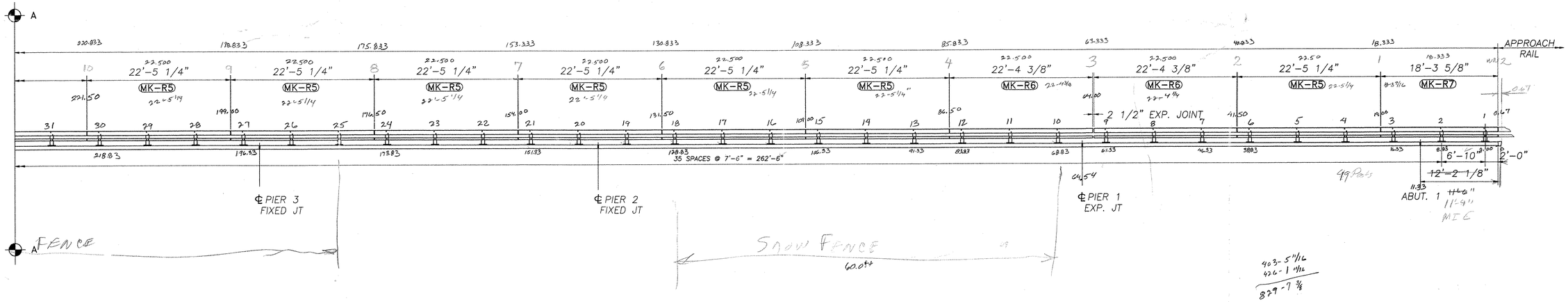
| DRAWN BY | DATE |
|---|---|
| JPF | 6-03 |
| CHKD BY | |
| E.J. | |
| APPROV BY | |
| | |
| Q.A. | |

**CASCO BAY STEEL STRUCTURES, INC.**

75 SPRING HILL ROAD SACO, MAINE 04072
PHONE (207) 282-7360 FAX. (207) 282-1179

| JOB NO. | DRG. NO. |
|---|---|
| 198 | M12 |
| 097 | REV. △ |




| BILL OF MATERIAL (ITEM 563.22) | | | | | |
|---|---|---|---|---|---|
| Mk. | Qty. | Description | Size/Shape | length/qty. per unit | Material |
| P1 | 54 | BRIDGE RAIL PED POST 680mm OAH W/ BASE PLATE | | | |
| | 54 | *POST UPRIGHT* | *W6 x 25* | *2'-03/8"* | *A709 Gr. 50* |
| | 54 | *POST BASE PLATE* | *1" x 10"* | *1'-2"* | *A709 Gr. 50* |
| S1 | 17 | UPPER SPLICE TUBE FOR 8 x 4 RAIL | | | |
| | 17 | *TUBE* | *TS 7x3x3/8* | *1'-8"* | *A500 Gr. B* |
| | 34 | *LOCK NUTS* | *5/8"* | *2 pcs.* | *A563 Gr. DH* |
| S2 | 17 | LOWER SPLICE TUBE FOR 4 x 4 RAIL | | | |
| | 17 | *TUBE* | *TS 3x3x5/16* | *1'-8"* | *A500 Gr. B* |
| | 34 | *LOCK NUTS* | *5/8"* | *2 pcs.* | *A563 Gr. DH* |
| R1 | 1 | UPPER RAIL | TS 8x4x5/16 | 22'-2 5/16" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 22'-2 5/16" | A500 Gr. B |
| R2 | 3 | UPPER RAIL | TS 8x4x5/16 | 23'-5 1/4" | A500 Gr. B |
| | 3 | LOWER RAIL | TS 4x4x1/4 | 23'-5 1/4" | A500 Gr. B |
| R3 | 1 | UPPER RAIL | TS 8x4x5/16 | 23'-8 3/8" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 23'-8 3/8" | A500 Gr. B |
| R4 | 1 | UPPER RAIL | TS 8x4x5/16 | 20'-11 3/8" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 20'-11 3/8" | A500 Gr. B |
| R5 | 9 | UPPER RAIL | TS 8x4x5/16 | 22'-5 1/4" | A500 Gr. B |
| | 9 | LOWER RAIL | TS 4x4x1/4 | 22'-5 1/4" | A500 Gr. B |
| R6 | 2 | UPPER RAIL | TS 8x4x5/16 | 22'-4 3/8" | A500 Gr. B |
| | 2 | LOWER RAIL | TS 4x4x1/4 | 22'-4 3/8" | A500 Gr. B |
| R7 | 1 | UPPER RAIL | TS 8x4x5/16 | 18'-3 5/8" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 18'-3 5/8" | A500 Gr. B |
| *AP | 54 | ANCHOR PLATE | *3/8 x 9 3/8* | *1'-1"* | *A709 Gr. 36* |
| *AS | 216 | ANCHOR STUD | *1" DIA.* | *12"* | *A449* |
| *H1 | 432 | HEX NUT | *1" DIA.* | *- - -* | *A563* |
| *H2 | 216 | JAMB NUT | *1" DIA.* | *- - -* | *A563* |
| *H3 | 216 | WASHER | *1" DIA.* | *- - -* | *F436* |
| H4 | 216 | ROUND HEAD BOLT | *3/4" DIA.* | *6"* | *M164 TYPE 1* |
| H5 | 216 | HEX NUT | *3/4" DIA.* | *- - -* | *A563* |
| H6 | 216 | WASHER | *3/4" DIA.* | *- - -* | *F436* |
| H7 | 70 | SPLICE BOLT | *5/8" DIA.* | *1 3/4"* | *M164 TYPE 1* |
| H8 | 70 | WASHER | *5/8" DIA.* | *- - -* | *F436* |
| H9 | 16 | PIPE SPACER (SCH. 40) | *3/4" DIA.* | *1/2"* | *A563* |
| BP | 54 | BEARING PAD | *1/8 x 10* | *1'-2"* | *M251* |

* ANCHORS NOT PROVIDED BY HIGHWAY SAFETY CORP. – SHOWN FOR REFERENCE ONLY.

ELEVATON – NORTH–WEST BRIDGE RAIL Rt Side
FACING (NW) FROM ℄ OF ROADWAY
PAY LIMIT ITEM 525.33 = 403'–5 11/16"

TOTAL PAY LIMIT ITEM (NORTH AND SOUTH RAIL)
ITEM 525.33 = 832'

VENDOR SUBMITTAL REVIEW
REVIEW STATUS: APPROVED / APPROVED AS REVISED / REJECTED
CONTRACTOR ACTION: NONE / CONFIRM / RESUBMIT
REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEVIATIONS THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER
BY ____ DATE 7/24/03

| REVISIONS | | |
|---|---|---|
| No. | Remarks | Date |
| 0 | Initial submittal | 7/23/03 |

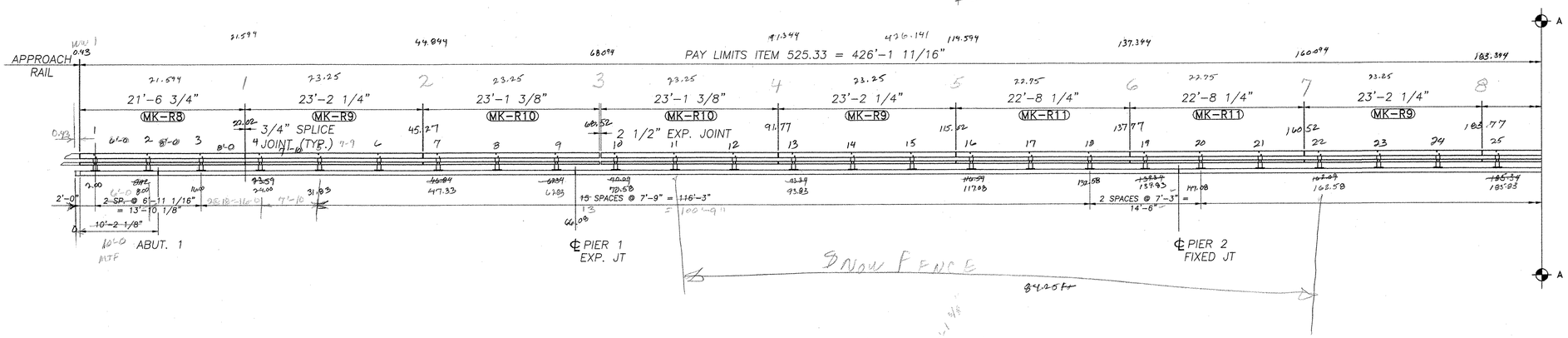
RECEIVED
CK'D BY ____ OK'D BY ____
JUL 30 2003
RESUBMIT ____ APPROVED ____
BY DATE

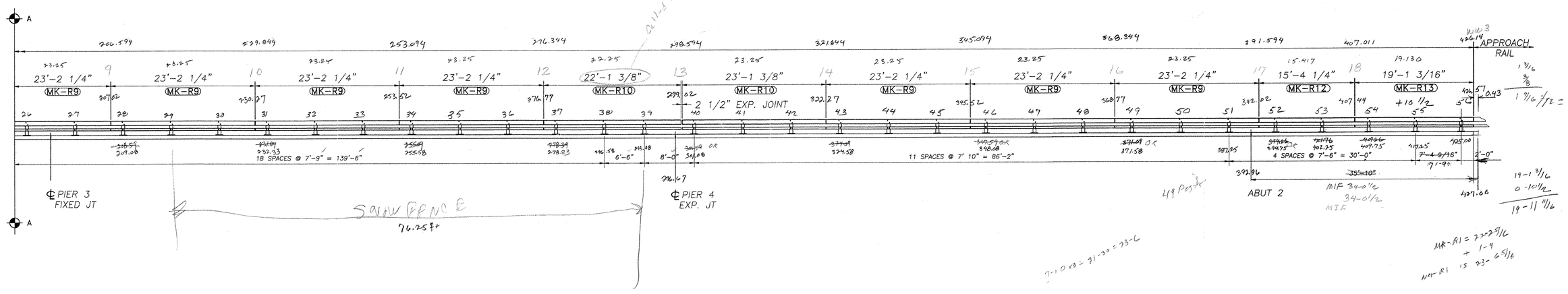
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.33 – BRIDGE RAILING – NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

GENERAL CONTRACTOR 098
SUB CONTRACTOR F.R. Lafayette, Inc.

DRAWN MHM
CHECKED
DATE 5-28-03
SCALE 1/8"=1'-0"
NSC REFERENCE NO. 1354
SIZE D REVISION 0
SHEET NO. 1 of 3




## ELEVATON – SOUTH-EAST BRIDGE RAIL
FACING (SE) FROM ℄ OF ROADWAY
PAY LIMIT ITEM 525.33 = 426'-1 11/16'

COGO DIST 426.141

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED | NONE |
| APPROVED AS REVISED | CONFIRM |
| REJECTED | RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURE THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY, AND FOR PERFORMING HIS WORK IN A SAFE MANNER

BY _____ DATE 10/10/03

| REVISIONS | | |
|---|---|---|
| No. | Remarks | Date |
| 0 | Initial submittal | 7/23/03 |
| | | |
| | | |

RECEIVED
CK'D BY _____ ORIG BY _____
JUL 30 2003
RESUBMIT _____ APPROVED _____
BY _____ DATE _____

| BILL OF MATERIAL (ITEM 563.22) | | | | | |
|---|---|---|---|---|---|
| Mk. | Qty. | Description | Size/Shape | length/qty. per unit | Material |
| P1 | 56 | BRIDGE RAIL PED POST 680mm OAH W/ BASE PLATE | | | |
| | 56 | POST UPRIGHT | W6 x 25 | 2'-03/8" | A709 Gr. 50 |
| | 56 | POST BASE PLATE | 1" x 10" | 1'-2" | A709 Gr. 50 |
| S1 | 18 | UPPER SPLICE TUBE FOR 8 x 4 RAIL | | | |
| | 18 | TUBE | TS 7x3x3/8 | 1'-8" | A500 Gr. B |
| | 36 | LOCK NUTS | 5/8" | 2 pcs. | M164 TYPE 1 |
| S2 | 18 | LOWER SPLICE TUBE FOR 4 x 4 RAIL | | | |
| | 18 | TUBE | TS 3x3x5/16 | 1'-8" | A500 Gr. B |
| | 36 | LOCK NUTS | 5/8" | 2 pcs. | A563M Gr. A |
| R8 | 1 | UPPER RAIL | TS 8x4x5/16 | 21'-6 3/4" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 21'-6 3/4" | A500 Gr. B |
| R9 | 10 | UPPER RAIL | TS 8x4x5/16 | 23'-2 1/4" | A500 Gr. B |
| | 10 | LOWER RAIL | TS 4x4x1/4 | 23'-2 1/4" | A500 Gr. B |
| R10 | 4 | UPPER RAIL | TS 8x4x5/16 | 23'-1 3/8" | A500 Gr. B |
| | 4 | LOWER RAIL | TS 4x4x1/4 | 23'-1 3/8" | A500 Gr. B |
| R11 | 2 | UPPER RAIL | TS 8x4x5/16 | 22'-8 1/4" | A500 Gr. B |
| | 2 | LOWER RAIL | TS 4x4x1/4 | 22'-8 1/4" | A500 Gr. B |
| R12 | 1 | UPPER RAIL | TS 8x4x5/16 | 15'-4 1/4" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 15'-4 1/4" | A500 Gr. B |
| R13 | 1 | UPPER RAIL | TS 8x4x5/16 | 19'-1 3/16" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 19'-1 3/16" | A500 Gr. B |
| *AP | 56 | ANCHOR PLATE | 3/8 x 9 3/8 | 1'-1" | A709 Gr. 36 |
| *AS | 224 | ANCHOR STUD | 1" DIA. | 12" | A449 |
| *H1 | 448 | HEX NUT | 1" DIA. | – – – | A563 |
| *H2 | 224 | JAMB NUT | 1" DIA. | – – – | A563 |
| *H3 | 224 | WASHER | 1" DIA. | – – – | F436 |
| H4 | 224 | ROUND HEAD BOLT | 3/4" DIA. | 6" | M164 TYPE 1 |
| H5 | 224 | HEX NUT | 3/4" DIA. | – – – | A563 |
| H6 | 224 | WASHER | 3/4" DIA. | – – – | F436 |
| H7 | 74 | SPLICE BOLT | 5/8" DIA. | 1 3/4" | M164 TYPE 1 |
| H8 | 74 | WASHER | 5/8" DIA. | – – – | F436 |
| H9 | 16 | PIPE SPACER (SCH. 40) | 3/4" DIA. | 1/2" | A563 |
| BP | 56 | BEARING PAD | 1/8 x 10 | 1'-2" | M251 |

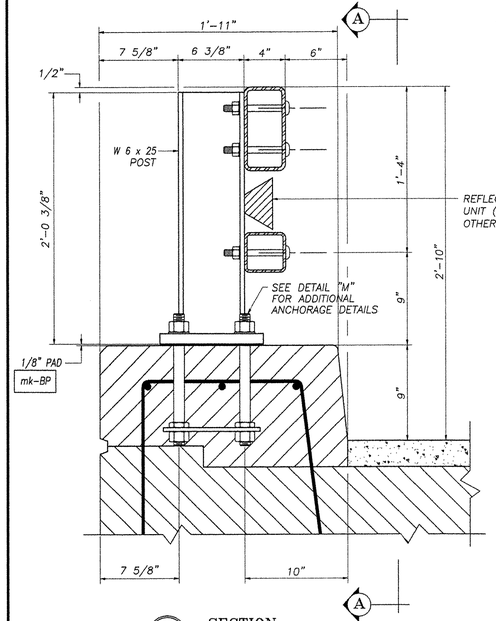
* ANCHORS NOT PROVIDED BY HIGHWAY SAFETY CORP. – SHOWN FOR REFERENCE ONLY.

# HIGHWAY SAFETY CORP.
GLASTONBURY, CT

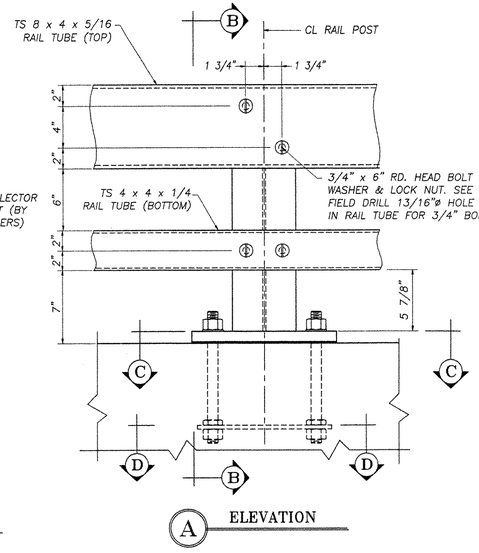
ITEM 525.33 – BRIDGE RAILING – NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

| | |
|---|---|
| DRAWN | MHM |
| CHECKED | |
| DATE | 5-28-03 |
| SCALE | 1/8"=1'-0" |
| HSC REFERENCE NO. | 1354 |
| SIZE | D |
| REVISION | 0 |
| SHEET NO. | 2 of 3 |

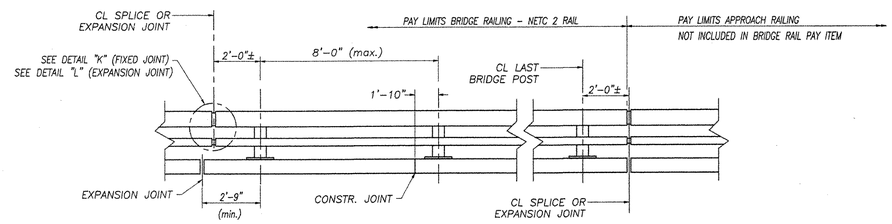
GENERAL CONTRACTOR 099
SUB CONTRACTOR F.R. Lafayette, Inc.




B SECTION
POST & CURB

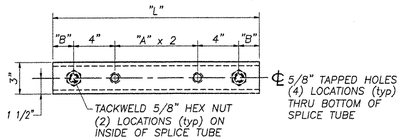



A ELEVATION

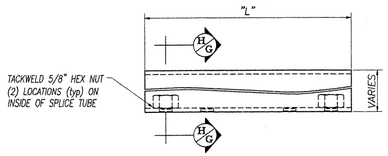



TYPICAL BRIDGE RAILING ELEVATION

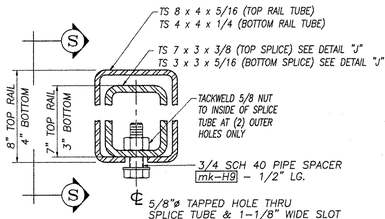
NOTE: SPLICE TUBES & HARDWARE FOR CONNECTION BETWEEN BRIDGE RAIL & BRIDGE APPROACH RAIL ARE INCLUDED IN APPROACH RAIL PAY ITEM, NOT INCLUDED UNDER BRIDGE RAIL ITEM 525.33



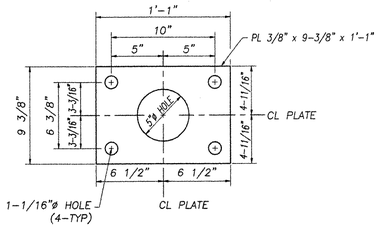

J DETAIL
SPLICE TUBE - BOTTOM VIEW
(SEE CHART FOR DIMENSIONS)



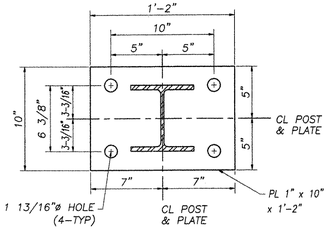

S SECTION
SPLICE TUBE ELEVATION



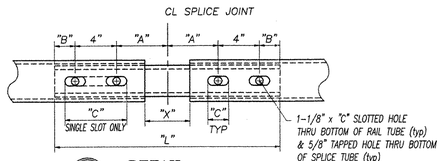

H SECTION
THRU EXPANSION SPLICE JOINT



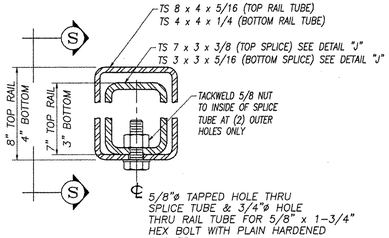

D SECTION
ANCHOR PALTE
mk-AP



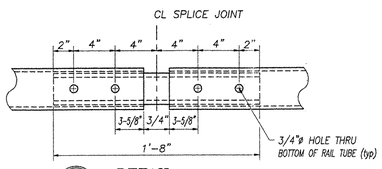

C SECTION
RAIL POST BASE PLATE
SEE DETAIL "F" FOR POST-BASE WELD



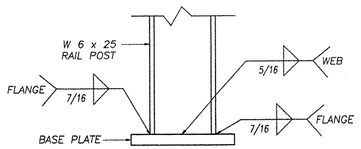

L DETAIL
EXPANSION JOINT - BOTTOM VIEW
HARDWARE NOT SHOWN FOR CLARITY



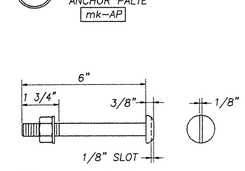

G SECTION
THRU FIXED SPLICE JOINT




K DETAIL
SPLICE JOINT - BOTTOM VIEW
HARDWARE NOT SHOWN FOR CLARITY

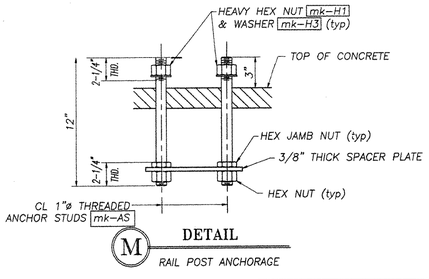



F DETAIL
POST-BASE WELD




E DETAIL
POST BOLT
mk-H4

3/4"ø M164 (TYPE I) ROUND HEAD BOLT WITH WASHER mk-H6 & LOCKNUT mk-H5 (typ) FOR ALL RAIL TO POST CONNECTIONS, THRU "FIELD-DRILLED" 13/16"ø HOLES IN RAIL TUBE




M DETAIL
RAIL POST ANCHORAGE

| SPLICE & EXPANSION JOINT TABLE | | | | | |
|---|---|---|---|---|---|
| "T" | "A" | "B" | "C" | "L" | "X" |
| SPLICE | 4" | 2" | -- | 20" | 3/4" |
| ≤4" | 4" | 2" | 2-1/2" | 20" | 2-1/2" |
| >4" ≤ 6-1/2" | 5-1/2" | 2-3/8" | 3-1/2" | 23-3/4" | 4" |
| >6 1/2" ≤ 9" | 6 1/2" | 3 3/8" | 9" * | 27 3/4" | 5" |
| >9" ≤ 13" | 8 1/2" | 4 3/8" | 11" * | 33-3/4" | 7" |

"T" = TOTAL REQUIRED MOVEMENT  * = SINGLE SLOT

| REVISIONS | | |
|---|---|---|
| No. | Remarks | Date |
| 0 | Initial submittal | 7/8/03 |
| | | |
| | | |

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED | NONE |
| APPROVED AS REVISED | CONFIRM |
| REJECTED | RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS AND FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

BY _____ DATE 14Aug03

## GENERAL ERECTION NOTES

1. All work and materials shall conform to the provisions of Section 525 – Railings of the Vermont Standard Specifications for Construction.
2. Tubing & posts shall meet the requirements of Section 732 – Railing materials of the Standard Specifications for Construction.
3. All exposed cut or sheared edges shall be rounded to a 1/16" radius & be free of burrs.
4. Rail posts shall be set normal to grade.
5. Sections of rail bar shall be attached to a minimum of two (2) posts and preferebly to at least four (4) posts.
6. Rail bar expansion joints shall be provided in any rail bay spanning a superstructure expansion joint. Expansion joint width shall be "X" at 45° F and will be adjusted in the field by the engineer.
7. All parts shall be galvanized after fabrication in accordance with AASHTO M111, except that hardware shall meet the requirements of AASHTO M232.
8. Rail posts anchoring nuts shall be tightened to a snug-tight fit and given an additional 1/8 turn.
9. Rail bars shall be attached using 3/4"ø full diameter body head bolts AASHTO M164 (Type-I) inserted through the face of the bar. Holes in post shall be 1/16" larger than the bolt size.
10. Holes in rails for attachment to posts will be field-drilled. Holes shall be coated with an approved zinc-rich paint prior to erection.
11. Radiused rails (if required) will be shop-curved. No field-bending of rail tubes.
12. The drop-weight tear test in section 732 shall not apply to the structure tubing on this standard.
13. The rail posts & base plates shall be tested for impact properties in accordance with ASTM A370 Charpy Impact Testing, using a type A specimen.
14. All welds are to be cleaned prior to galvanizing to insure proper bonding of zinc to welded areas.

## MATERIALS

Rail bars.....ASTM A500 GR B or ASTM A501
Rail posts.....ASTM A709 GR 50
All other shapes & plates.....ASTM A709 GR 36
Anchor studs.....ASTM A449
All other bolts [unless noted].....AASHTO M164, TYPE I

Nuts for ASTM A307 bolts & AASHTO M164 bolts shall comply with AASHTO M291. Nuts for anchor studs shall comply with ASTM A563.

washers shall comply with ASTM F436

1/8" pad shall comply with standard specification subsection 731.01 or 731.02 of Vermont Standard Specifications.

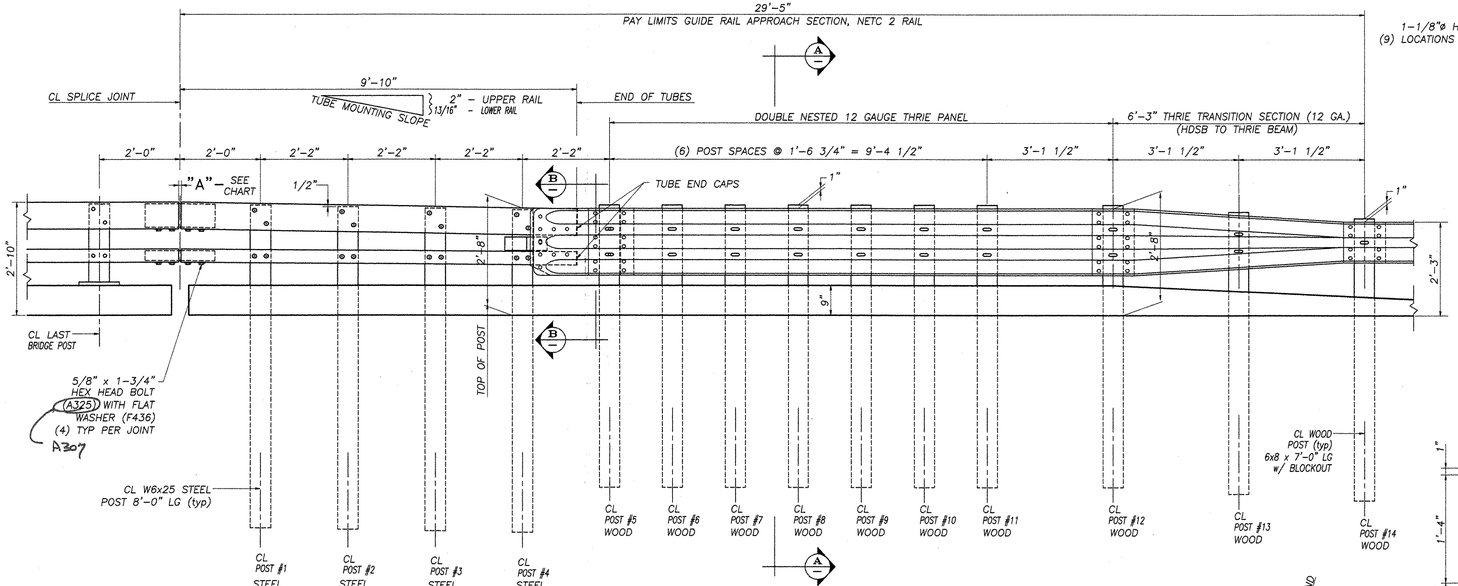
RECEIVED
JUL 30 2003
CK'D BY _____ OK'D BY _____
RESUBMIT _____ APPROVED _____
BY _____ DATE _____

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.33 - BRIDGE RAILING - NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

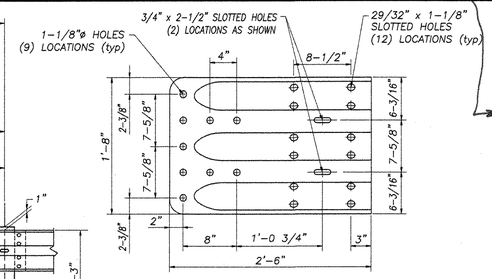
GENERAL CONTRACTOR 160
SUB CONTRACTOR F.R. Lafayette, Inc.

DRAWN MHM
CHECKED
DATE 5-28-03
SCALE NONE
HSC REFERENCE NO. 1354
SIZE D REVISION
SHEET NO. 3 of 3




## ELEVATION – APPROACH RAIL

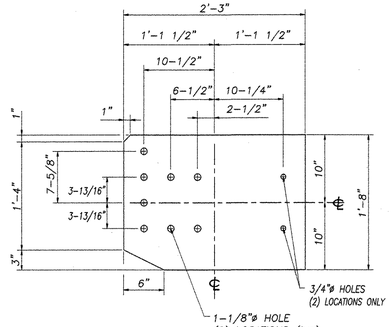
TYPICAL (4) LOCATIONS




## TERMINAL CONNECTOR

10 GAUGE (AASHTO M180 B2)

MK-TC



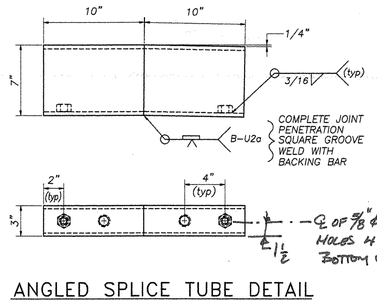

## BILL OF MATERIAL

BRIDGE No. 38

| Mk. | Qty. | Description | Size/Shape | Length/Qty. Per unit | Material |
|---|---|---|---|---|---|
| TU1 | 2 | APPROACH RAIL TUBE (UPPER) | TS 8x4x5/16" | 9'-9 5/8" | A500 Gr. B |
| | 2 | APPROACH RAIL TUBE (LOWER) | TS 4x4x1/4" | 9'-9 5/8" | A500 Gr. B |
| TU2 | 2 | APPROACH RAIL TUBE (UPPER) | TS 8x4x5/16" | 9'-8 3/4" | A500 Gr. B |
| | 2 | APPROACH RAIL TUBE (LOWER) | TS 4x4x1/4" | 9'-8 3/4" | A500 Gr. B |
| PO | 16 | STEEL POST | W6 x 25 | 8'-0" | A709 Gr. 50 |
| | 320 | WOOD POST | 6x8 | 7'-0" | |
| | 320 | WOOD OFFSET BLOCK | 6x8 | 1'-6" | |
| SPU | 4 | SPLICE TUBE FOR 8 x 4 RAIL TUBE | TS 7x3x3/8 | | |
| | | TUBE | TS 7x3x5/16" | 1'-8" | A500 Gr. B |
| | | LOCK NUTS | 5/8" | 2 pcs. | A563 |
| SPL | 4 | SPLICE TUBE FOR 4 x 4 RAIL TUBE | TS 3x3x5/16 | | |
| | | TUBE | TS 7x3x1/4" | 1'-8" | A500 Gr. B |
| | | LOCK NUTS | 5/8" | 2 pcs. | A563 |
| TC | 4 | TERMINAL CONNECTOR | 10 Ga. | 2'-6" | M180 B2 |
| CP | 4 | CONNECTION PLATE | PL 3/8 x 1'-8" | 2'-3" | A709 Gr. 36 |
| DP | 4 | DEFLECTOR PLATE | PL 3/8 x 4" | 1'-9 1/2" | A709 Gr. 36 |
| ECU | 4 | END CAP FOR 8 x 4 RAIL TUBE | | | |
| | | PLATE | 1/8 x 1" x1" | 4 pcs. | A709 Gr. 36 |
| | | PLATE | PL 3/8 x 4" | 8" | A709 Gr. 36 |
| ECL | 4 | END CAP FOR 4 x 4 RAIL TUBE | 1/8x1"x1" | | |
| | | PLATE | PL 3/16 x | 4 pcs. | A709 Gr. 36 |
| | | PLATE | PL 3/8 x 4" | 4" | A709 Gr. 36 |
| TTP | 4 | THRIE TRANSITION PANEL | 12 Ga. | 7'-3 1/2" | M180 A2 |
| -- | 64 | 3/4"ø x 6" LG. ROUND HEAD BOLT W/NUT & ROUND WASHER | | | A325 |
| -- | 4 | 3/4" x 2" LG. ROUND HEAD BOLT W/NUT | | | A307 |
| -- | 76 | 5/8" x 1'-8" LG. POST BOLT W/DBL RECESSED NUT, PLATE & ROUND WASHER | | | A307 |
| -- | 32 | 5/8" x 1 3/4" LG. HEX BOLT W/WASHER | | | A325 |
| -- | 80 | 5/8" x 1 1/4" LG. PANEL SPLICE BOLT W/DBL RECESSED NUT | | | A307 |
| -- | 32 | 3/4"x 1/2" LG. (SCH 40) SPACER PIPE | | | A53 Gr. B |

No Expansion Joint at Abut #12
Per Note 6 on Sheet 12

A307

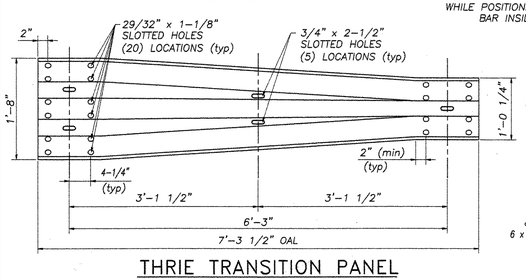



## ANGLED SPLICE TUBE DETAIL

UPPER RAIL SPLICE SHOWN

SEE BRIDGE RAIL DETAILS (SHOP DRAWING #1354) FOR ADDITIONAL SPLICE TUBE FABRICATION & ASSEMBLY DETAILS

LOWER RAIL DOES NOT REQUIRE BENT SPLICE TUBE TO MATCH TUBE ANGLE – USE STRAIGHT SPLICE TUBE




## THRIE TRANSITION PANEL

12 GAUGE (AASHTO M180 A2)

MK-TTP

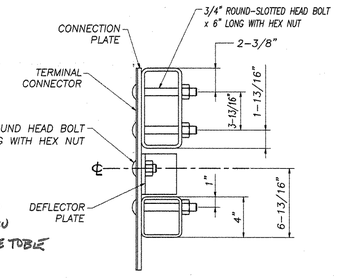
## MATERIALS

*Rail bars.....ASTM A500 GR B or ASTM A501*
*Rail posts.....ASTM A709 GR 50*
*All other shapes & plates.....ASTM A709 GR 36*
*Round-slotted head bolts for Rail-Post connections ..... M164 (type I)*
*Hex head bolts for tube splice joints ..... M164 (type 1)*
*All other bolts [unless noted].....ASTM A307*

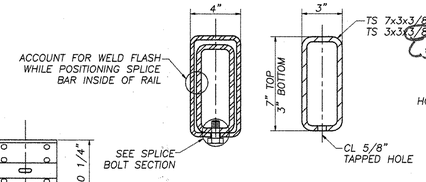
*Nuts for ASTM A307 bolts & AASHTO M164 bolts shall comply with AASHTO M291. Nuts for anchor studs shall comply with ASTM A563.*

*washers shall comply with ASTM F436*

*1/8" pad shall comply with standard specification subsection 731.01 or 731.02 of Vermont Standard Specifications.*

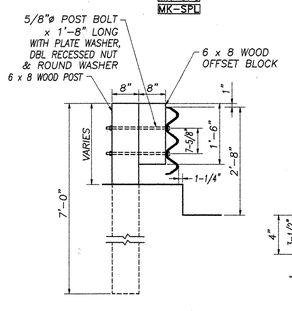



## SECTION B–B

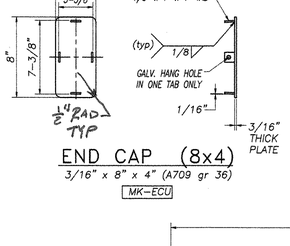



## SPLICE TUBE SECTION

MK-SPU
MK-SPL



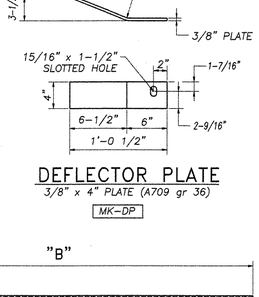

## SECTION A–A




## END CAP (8x4)

3/16" x 8" x 4" (A709 gr 36)

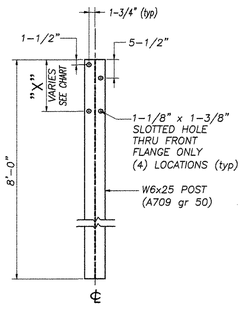
MK-ECU




## DEFLECTOR PLATE

3/8" x 4" PLATE (A709 gr 36)

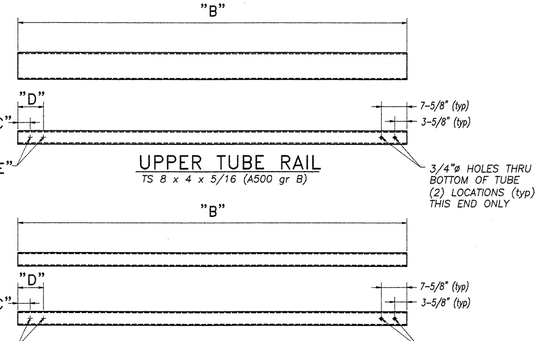
MK-DP




## STEEL POST

### STEEL POST CHART

| No. | " X " |
|---|---|
| #1 | 1'-3 3/4" |
| #2 | 1'-3 1/2" |
| #3 | 1'-3 3/16" |
| #4 | 1'-2 7/8" |




## UPPER TUBE RAIL

TS 8 x 4 x 5/16 (A500 gr B)

## LOWER TUBE RAIL

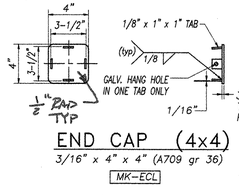
TS 4 x 4 x 1/4 (A500 gr B)

No Expansion Joint at Abut #2
Per Note 6 on Sheet 12

### STEEL TUBE DIMENSIONS

| No. | JOINT "A" | OAL "B" | "C" | "D" | "E" |
|---|---|---|---|---|---|
| TU-1 | 3/4" SPLICE | 9'-9 5/8" | 3-5/8" | 7-5/8" | 3/4" DIA HOLES |
| TU-2 | 2-1/2" EXPANSION | 9'-8 3/4" | 2-3/4" | 6-3/4" | 3/4" x 2-1/2" SLOTTED HOLES |

*SEE BRIDGE PLANS (SHOP DRAWING #1354) FOR LOCATIONS OF FIXED & EXPANSION JOINTS*




## END CAP (4x4)

3/16" x 4" x 4" (A709 gr 36)

MK-ECL

| REVISIONS | | |
|---|---|---|
| No. | Remarks | Date |
| 0 | Initial submittal | 6/9/03 |
| | | |
| | | |

## GENERAL ERECTION NOTES

1. *ALL BRIDGE RAIL APPROACH RAIL MATERIALS, DIMENSION SIZES, AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGERAIL UNLESS OTHERWISE NOTED.*
2. *CARRIAGE BOLTS SHALL BE ASTM A307 AND NUTS SHALL BE ASTM A563 GRADE A OR BETTER (GALVANIZED)*
3. *CUT & WELD TOP SPLICE BAR TO FIT BEND. USE COMPLETE PENETRATION WELD B–L1A WITH BACKING BAR.*
4. *REFLECTORIZED ALUMINUM DELINEATION IS TO BE ERECTED EVERY 30 ft. (OR CLOSEST POST) WITH 2 NO. 8 x 3/4" SELF TAPPING SCREWS. DELINEATORS SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052–H32.*
5. *REFLECTIVE MATERIAL SHALL MEET THE REQUIREMENTS OF SUBSECTION 750.08 AND SHALL BE ENCAPSULATED LENS SILVER OR AMBER. AMBER IS TO BE INSTALLED ON THE DRIVERS LEFT AND SILVER ON THE RIGHT.*
6. *All work and materials shall conform to the provisions of Section 525 – Railings of the Vermont Standard Specifications for Construction.*
7. *Tubing & posts shall meet the requirements of Section 732 – Railing materials of the Standard Specifications for Construction.*
8. *All exposed cut or sheared edges shall be rounded to a 1/16" radius & be free of burrs.*
9. *Rail posts shall be set normal to grade.*
10. *Sections of rail bar shall be attached to a minimum of two (2) posts and preferably to at least four (4) posts.*
11. *Rail bar expansion joints shall be provided in any rail bay spanning a superstructure expansion joint. Expansion joint width shall be "X" at 45° F and will be adjusted in the field by the engineer.*
12. *All parts shall be galvanized after fabrication in accordance with AASHTO M111, except that hardware shall meet the requirements of AASHTO M232.*
13. *Rail bars shall be attached to steel posts using 3/4"ø full diameter body head bolts AASHTO M164 (Type–I) inserted through the face of the bar. Holes in post shall be 1/16" larger than the bolt size.*
14. *Holes in rails for attachment to posts will be field–drilled. Holes shall be coated with an approved zinc–rich paint prior to erection.*
15. *Radiused rails (if required) will be shop–curved. No field–bending of rail tubes.*
16. *The drop–weight tear test in section 732 shall not apply to the structure tubing on this standard.*
17. *The rail posts & base plates shall be tested for impact properties in accordance with ASTM A370 Charpy Impact Testing, using a type A specimen.*

**VENDOR SUBMITTAL REVIEW**

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED<br>APPROVED AS REVISED<br>REJECTED | NONE<br>CONFIRM<br>RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS AND FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY. NOT FOR PERFORMING HIS WORK IN A SAFE MANNER.

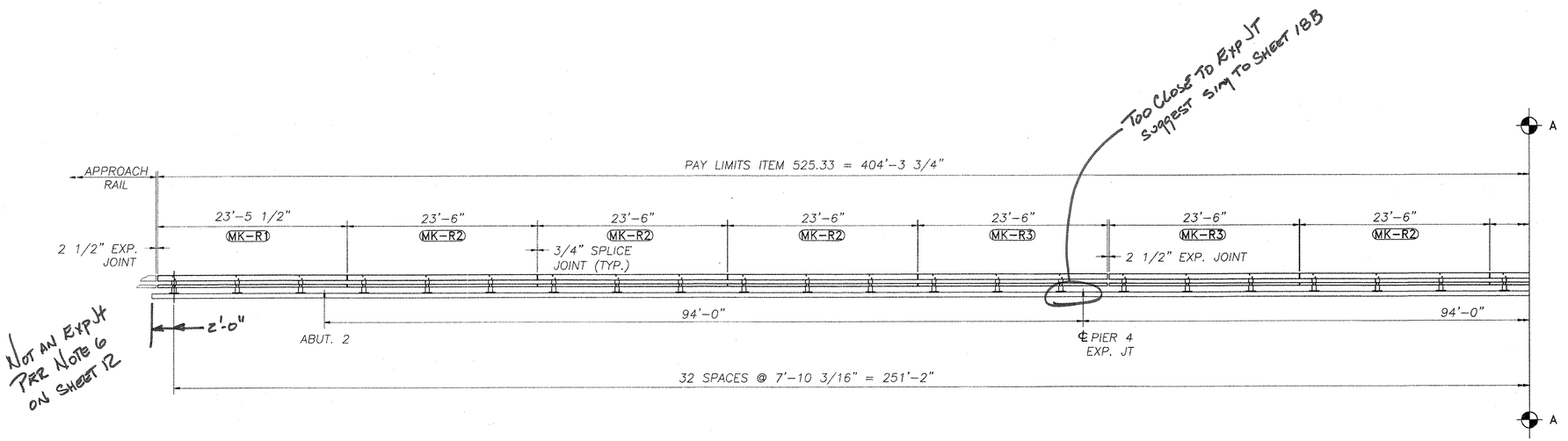
BY _____ DATE 8/26/03

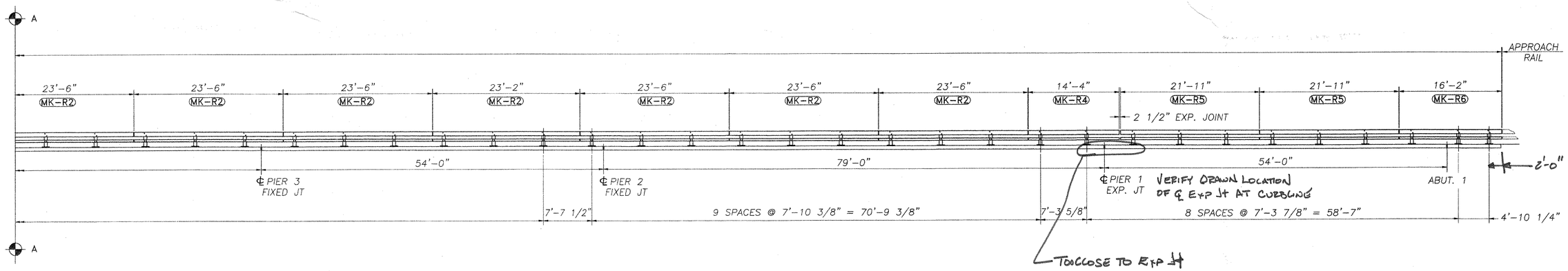
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 621.72 – GUARDRAIL APPROACH SECTION – NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

GENERAL CONTRACTOR 101
SUB CONTRACTOR F.R. Lafayette, Inc.

DRAWN MHM
CHECKED
DATE 5-28-03
SCALE NONE
HSC REFERENCE NO. 1355
SIZE D REVISION 0
SHEET NO. 1 of 1




ELEVATON – NORTH-WEST BRIDGE RAIL
FACING (NW) FROM ℄ OF ROADWAY
PAY LIMIT ITEM 525.33 = 404'-3 3/4"

SUPERCEDED

TOTAL PAY LIMIT ITEM (NORTH AND SOUTH RAIL)
ITEM 525.33 = 832'

BILL OF MATERIAL (ITEM 563.22)

| Mk. | Qty. | Description | Size/Shape | length/qty. per unit | Material |
|---|---|---|---|---|---|
| P1 | 53 | BRIDGE RAIL PED POST 680mm OAH W/ BASE PLATE | | | |
| | 53 | POST UPRIGHT | W6 x 25 | 2'-03/8" | A709 Gr. 50 |
| | 53 | POST BASE PLATE | 1" x 10" | 1'-2" | A709 Gr. 50 |
| S1 | 17 | UPPER SPLICE TUBE FOR 8 x 4 RAIL | | | |
| | 17 | TUBE | TS 7x3x3/8 | 1'-8" | A500 Gr. B |
| | 34 | LOCK NUTS | 5/8" | 2 pcs. | M164 TYPE I |
| S2 | 17 | LOWER SPLICE TUBE FOR 4 x 4 RAIL | | | |
| | 17 | TUBE | TS 3x3x5/16 | 1'-8" | A500 Gr. B |
| | 34 | LOCK NUTS | 5/8" | 2 pcs. | A563M Gr. A |
| R1 | 1 | UPPER RAIL | TS 8x4x5/16 | 23'-5 1/2" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 23'-5 1/2" | A500 Gr. B |
| R2 | 11 | UPPER RAIL | TS 8x4x5/16 | 23'-6" | A500 Gr. B |
| | 11 | LOWER RAIL | TS 4x4x1/4 | 23'-6" | A500 Gr. B |
| R3 | 2 | UPPER RAIL | TS 8x4x5/16 | 23'-6" | A500 Gr. B |
| | 2 | LOWER RAIL | TS 4x4x1/4 | 23'-6" | A500 Gr. B |
| R4 | 1 | UPPER RAIL | TS 8x4x5/16 | 14'-4" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 14'-4" | A500 Gr. B |
| R5 | 2 | UPPER RAIL | TS 8x4x5/16 | 21'-11" | A500 Gr. B |
| | 2 | LOWER RAIL | TS 4x4x1/4 | 21'-11" | A500 Gr. B |
| R6 | 1 | UPPER RAIL | TS 8x4x5/16 | 16'-2" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 16'-2" | A500 Gr. B |
| AP | 53 | ANCHOR PLATE | 3/8 x 9 3/8 | 1'-1" | A709 Gr. 36 |
| AS | 212 | ANCHOR STUD | 1" DIA. | 12" | A449 |
| H1 | 424 | HEX NUT | 1" DIA. | – – – | A563 |
| H2 | 212 | JAMB NUT | 1" DIA. | – – – | A563 |
| H3 | 212 | WASHER | 1" DIA. | – – – | F436 |
| H4 | 212 | ROUND HEAD BOLT | 3/4" DIA. | 6" | M164 TYPE I |
| H5 | 212 | HEX NUT | 3/4" DIA. | – – – | A563 |
| H6 | 212 | WASHER | 3/4" DIA. | – – – | F436 |
| H7 | 70 | SPLICE BOLT | 5/8" DIA. | 1 3/4" | M164 TYPE I |
| H8 | 70 | WASHER | 5/8" DIA. | – – – | F436 |
| H9 | 70 | PIPE SPACER (SCH. 40) | 3/4" DIA. | 1/2" | A563 |
| BP | 53 | BEARING PAD | 1/8 x 10 | 1'-2" | M251 |

REVISIONS

| No. | Remarks | Date |
|---|---|---|
| 0 | Initial submittal | 6/9/03 |
| | | |
| | | |

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED | NONE |
| APPROVED AS REVISED | CONFIRM |
| REJECTED | RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS FOR SELECTING FABRICATION PROCESSES FOR THE TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

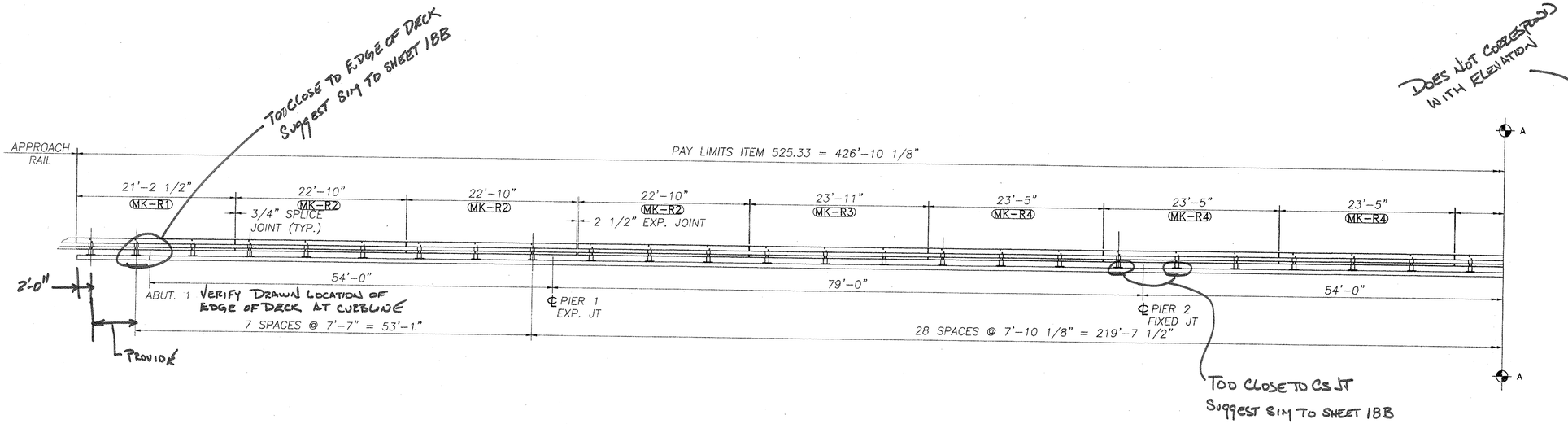
BY _____ DATE 8/6/03

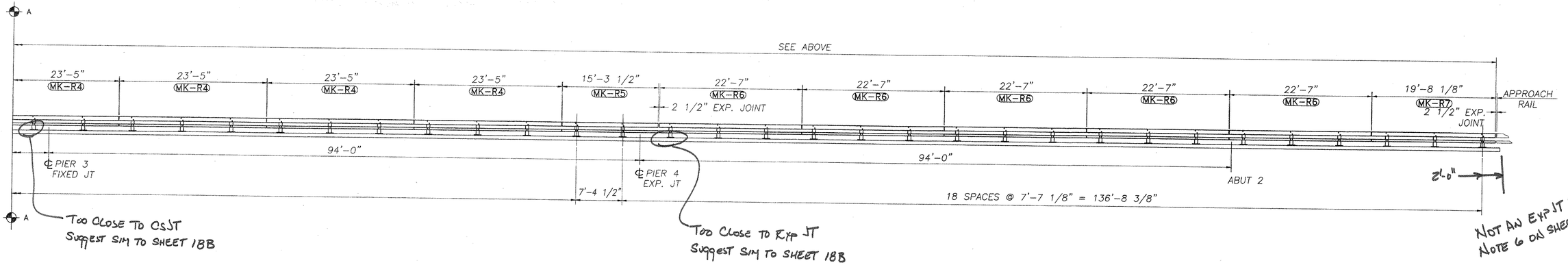
HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.33 – BRIDGE RAILING – NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

GENERAL CONTRACTOR 102
SUB CONTRACTOR F.R. Lafayette, Inc.

DRAWN MHM
CHECKED
DATE 5-28-03
SCALE 1/8"=1'-0"
HSC REFERENCE NO. 1354
SIZE D REVISION 0
SHEET NO. 1 of 3




ELEVATON – SOUTH-EAST BRIDGE RAIL
FACING (SE) FROM ℄ OF ROADWAY
PAY LIMIT ITEM 525.33 = 426'-10 1/8'

BILL OF MATERIAL (ITEM 563.22)

| Mk. | Qty. | Description | Size/Shape | length/qty. per unit | Material |
|---|---|---|---|---|---|
| P1 | 56 | BRIDGE RAIL PED POST 680mm OAH W/ BASE PLATE | | | |
| | 56 | POST UPRIGHT | W6 x 25 | 2'-03/8" | A709 Gr. 50 |
| | 56 | POST BASE PLATE | 1" x 10" | 1'-2" | A709 Gr. 50 |
| S1 | 18 | UPPER SPLICE TUBE FOR 8 x 4 RAIL | | | |
| | 18 | TUBE | TS 7x3x3/8 | 1'-8" | A500 Gr. B |
| | 36 | LOCK NUTS | 5/8" | 2 pcs. | M164 TYPE I |
| S2 | 18 | LOWER SPLICE TUBE FOR 4 x 4 RAIL | | | |
| | 18 | TUBE | TS 3x3x5/16 | 1'-8" | A500 Gr. B |
| | 36 | LOCK NUTS | 5/8" | 2 pcs. | A563M Gr. A |
| R7 | 1 | UPPER RAIL | TS 8x4x5/16 | 21'-2 1/2" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 21'-2 1/2" | A500 Gr. B |
| R8 | 1 | UPPER RAIL | TS 8x4x5/16 | 22'-10" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 22'-10" | A500 Gr. B |
| R9 | 2 | UPPER RAIL | TS 8x4x5/16 | 22'-10" | A500 Gr. B |
| | 2 | LOWER RAIL | TS 4x4x1/4 | 22'-10" | A500 Gr. B |
| R10 | 8 | UPPER RAIL | TS 8x4x5/16 | 23'-11" | A500 Gr. B |
| | 8 | LOWER RAIL | TS 4x4x1/4 | 23'-11" | A500 Gr. B |
| R11 | 1 | UPPER RAIL | TS 8x4x5/16 | 23'-5" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 23'-5" | A500 Gr. B |
| R12 | 1 | UPPER RAIL | TS 8x4x5/16 | 15'-3 1/2" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 15'-3 1/2" | A500 Gr. B |
| R13 | 1 | UPPER RAIL | TS 8x4x5/16 | 22'-7" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 22'-7" | A500 Gr. B |
| R14 | 1 | UPPER RAIL | TS 8x4x5/16 | 22'-7" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 22'-7" | A500 Gr. B |
| R15 | 1 | UPPER RAIL | TS 8x4x5/16 | 19'-8 1/8" | A500 Gr. B |
| | 1 | LOWER RAIL | TS 4x4x1/4 | 19'-8 1/8" | A500 Gr. B |
| AP | 56 | ANCHOR PLATE | 3/8 x 9 3/8 | 1'-1" | A709 Gr. 36 |
| AS | 224 | ANCHOR STUD | 1" DIA. | 12" | A449 |
| H1 | 448 | HEX NUT | 1" DIA. | - - - | A563 |
| H2 | 224 | JAMB NUT | 1" DIA. | - - - | A563 |
| H3 | 224 | WASHER | 1" DIA. | - - - | F436 |
| H4 | 224 | ROUND HEAD BOLT | 3/4" DIA. | 6" | M164 TYPE I |
| H5 | 224 | HEX NUT | 3/4" DIA. | - - - | A563 |
| H6 | 224 | WASHER | 3/4" DIA. | - - - | F436 |
| H7 | 74 | SPLICE BOLT | 5/8" DIA. | 1 3/4" | M164 TYPE I |
| H8 | 74 | WASHER | 5/8" DIA. | - - - | F436 |
| H9 | 74 | PIPE SPACER (SCH. 40) | 3/4" DIA. | 1/2" | A563 |
| BP | 56 | BEARING PAD | 1/8 x 10 | 1'-2" | M251 |

SUPERCEDED

| REVISIONS | | |
|---|---|---|
| No. | Remarks | Date |
| 0 | Initial submittal | 6/9/03 |
| | | |
| | | |

VENDOR SUBMITTAL REVIEW

| REVIEW STATUS | | CONTRACTOR ACTION | |
|---|---|---|---|
| APPROVED | | NONE | |
| APPROVED AS REVISED | | CONFIRM | |
| REJECTED | N | RESUBMIT | N |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

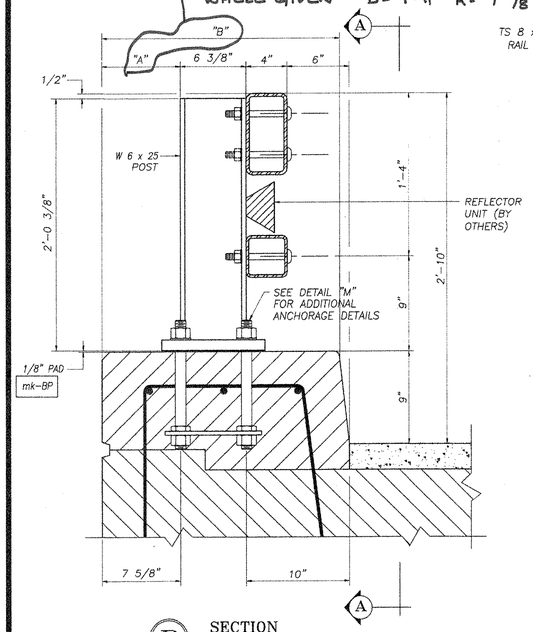
BY _____ DATE 6.6.03

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

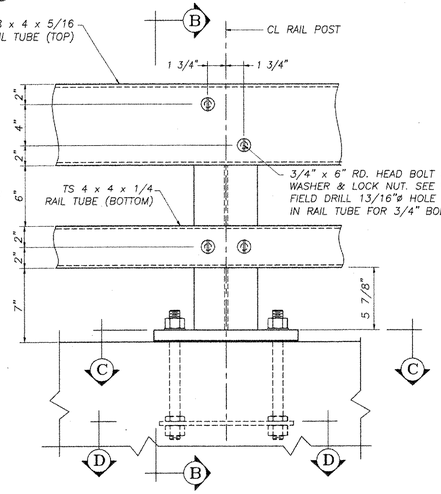
ITEM 525.33 – BRIDGE RAILING – NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

GENERAL CONTRACTOR
103
SUB CONTRACTOR
F.R. Lafayette, Inc.

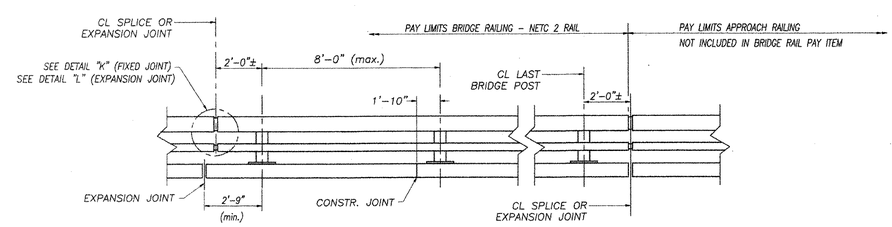
DRAWN MHM
CHECKED
DATE 5-28-03
SCALE 1/8"=1'-0"
NSC REFERENCE NO. 1354
SIZE D REVISION 0
SHEET NO. 2 of 3




B SECTION
POST & CURB

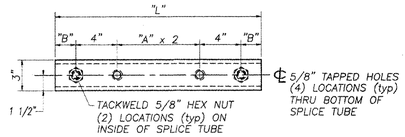



A ELEVATION

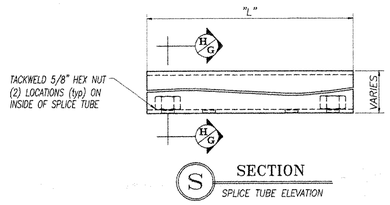



## TYPICAL BRIDGE RAILING ELEVATION

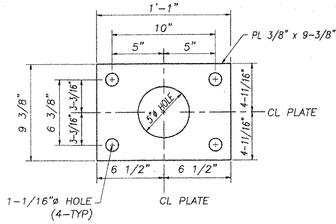
NOTE: SPLICE TUBES & HARDWARE FOR CONNECTION BETWEEN BRIDGE RAIL & BRIDGE APPROACH RAIL ARE INCLUDED IN APPROACH RAIL PAY ITEM. NOT INCLUDED UNDER BRIDGE RAIL ITEM 525.33



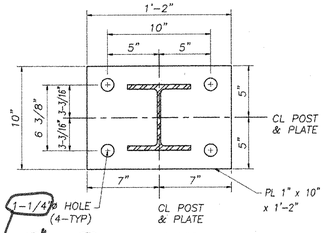

J DETAIL
SPLICE TUBE - BOTTOM VIEW
(SEE CHART FOR DIMENSIONS)



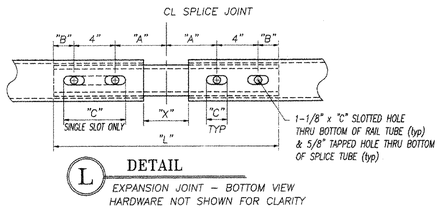

S SECTION
SPLICE TUBE ELEVATION



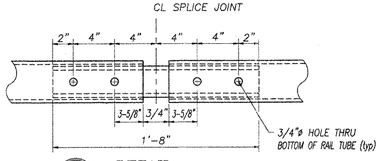

D SECTION
ANCHOR PALTE
mk-AP



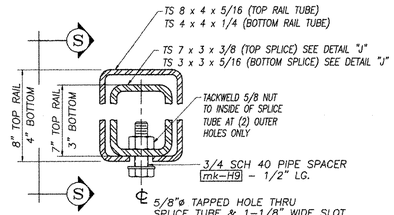

C SECTION
RAIL POST BASE PLATE
SEE DETAIL "F" FOR POST-BASE WELD



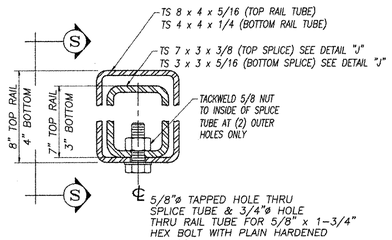

L DETAIL
EXPANSION JOINT - BOTTOM VIEW
HARDWARE NOT SHOWN FOR CLARITY



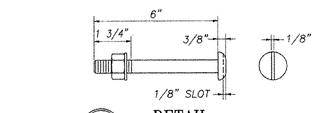

K DETAIL
SPLICE JOINT - BOTTOM VIEW
HARDWARE NOT SHOWN FOR CLARITY




H SECTION
THRU EXPANSION SPLICE JOINT

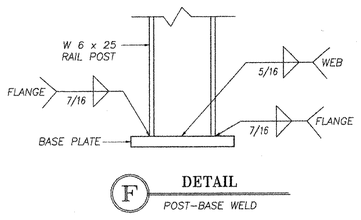



G SECTION
THRU FIXED SPLICE JOINT

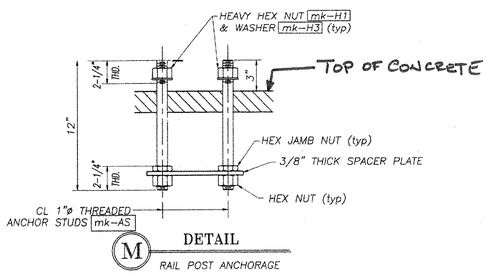



E DETAIL
POST BOLT
mk-H4

3/4"ø M164 (TYPE I) ROUND HEAD BOLT WITH WASHER mk-H6 & LOCKNUT mk-H5 (typ) FOR ALL RAIL TO POST CONNECTIONS, THRU "FIELD-DRILLED" 13/16"ø HOLES IN RAIL TUBE




F DETAIL
POST-BASE WELD




M DETAIL
RAIL POST ANCHORAGE

| SPLICE & EXPANSION JOINT TABLE | | | | | |
|---|---|---|---|---|---|
| "T" | "A" | "B" | "C" | "L" | "X" |
| SPLICE | 4" | 2" | -- | 20" | 3/4" |
| ≤4" | 4" | 2" | 2-1/2" | 20" | 2-1/2" |
| >4" ≤ 6-1/2" | 5-1/2" | 2-3/8" | 3-1/2" | 23-3/4" | 4" |
| >6 1/2" ≤ 9" | 6 1/2" | 3 3/8" | 9" * | 27 3/4" | 5" |
| >9" ≤ 13" | 8-1/2" | 4-3/8" | 11" * | 33-3/4" | 7" |

"T" = TOTAL REQUIRED MOVEMENT  * = SINGLE SLOT

## GENERAL ERECTION NOTES

1. All work and materials shall conform to the provisions of Section 525 - Railings of the Vermont Standard Specifications for Construction.
2. Tubing & posts shall meet the requirements of Section 732 - Railing materials of the Standard Specifications for Construction.
3. All exposed cut or sheared edges shall be rounded to a 1/16" radius & be free of burrs.
4. Rail posts shall be set normal to grade.
5. Sections of rail bar shall be attached to a minimum of two (2) posts and preferebly to at least four (4) posts.
6. Rail bar expansion joints shall be provided in any rail bay spanning a superstructure expansion joint. Expansion joint width shall be "X" at 45° F and will be adjusted in the field by the engineer.
7. All parts shall be galvanized after fabrication in accordance with AASHTO M111, except that hardware shall meet the requirements of AASHTO M232.
8. Rail posts anchoring nuts shall be tightened to a snug-tight fit and given an additional 1/8 turn.
9. Rail bars shall be attached using 3/4"ø full diameter body head bolts AASHTO M164 (Type-I) inserted through the face of the bar. Holes in post shall be 1/16" larger than the bolt size.
10. Holes in rails for attachment to posts will be field-drilled. Holes shall be coated with an approved zinc-rich paint prior to erection.
11. Radiused rails (if required) will be shop-curved. No field-bending of rail tubes.
12. The drop-weight tear test in section 732 shall not apply to the structure tubing on this standard.
13. The rail posts & base plates shall be tested for impact properties in accordance with ASTM A370 Charpy Impact Testing, using a type A specimen.
14. All welds are to be cleaned prior to galvanizing to insure proper bonding of zinc to welded areas.

## MATERIALS

Rail bars.....ASTM A500 GR B or ASTM A501
Rail posts.....ASTM A709 GR 50
All other shapes & plates.....ASTM A709 GR 36
Anchor studs.....ASTM A449
All other bolts [unless noted].....AASHTO M164, TYPE I

Nuts for ASTM A307 bolts & AASHTO M164 bolts shall comply with AASHTO M291. Nuts for anchor studs shall comply with ASTM A563.

washers shall comply with ASTM F436

1/8" pad shall comply with standard specification subsection 731.01 or 731.02 of Vermont Standard Specifications.

| REVISIONS | | |
|---|---|---|
| No. | Remarks | Date |
| 0 | Initial submittal | 6/9/03 |
| | | |
| | | |

**VENDOR SUBMITTAL REVIEW**

| REVIEW STATUS | CONTRACTOR ACTION |
|---|---|
| APPROVED<br>APPROVED AS REVISED<br>REJECTED | NONE<br>CONFIRM<br>RESUBMIT |

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OF COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS NOR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND DIMENSIONS AND FOR SELECTING FABRICATION PROCESSES FOR TECHNIQUES OF ASSEMBLY AND FOR PERFORMING HIS WORK IN A SAFE MANNER.

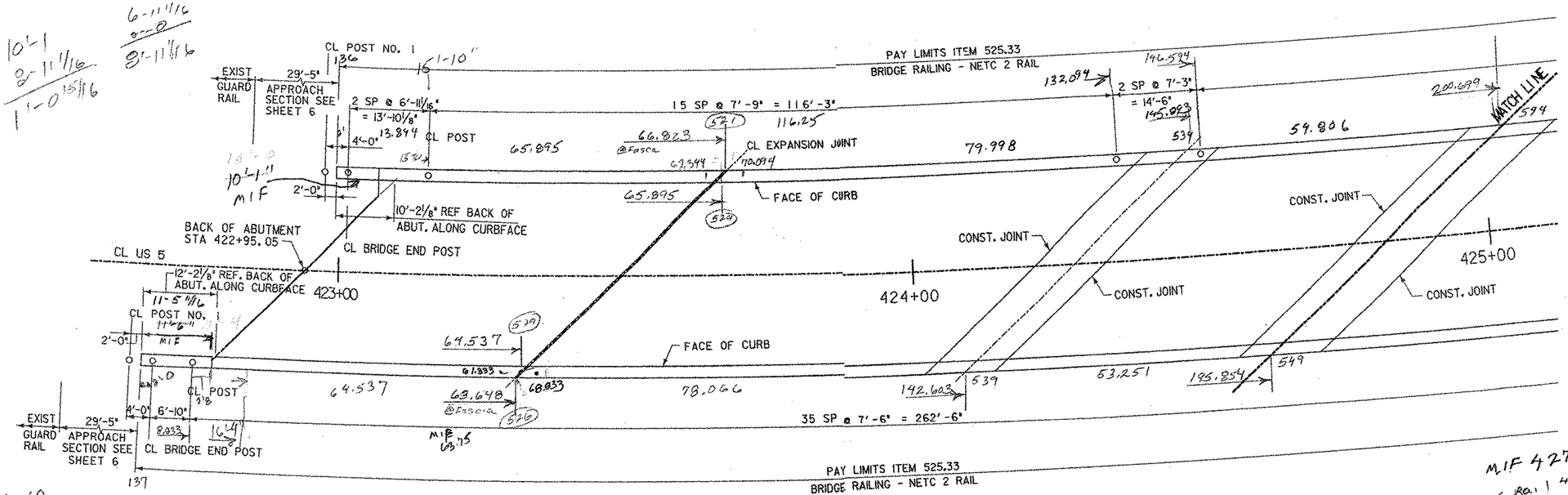
BY [signature]  DATE 6.9.03

HIGHWAY SAFETY CORP.
GLASTONBURY, CT

ITEM 525.33 - BRIDGE RAILING - NETC 2 RAIL
PROJECT No. IM-091-1(36)
TOWN OF HARTLAND
INTERSTATE ROUTE 91 BRIDGE No. 38
STATE OF VERMONT WINDSOR COUNTY

GENERAL CONTRACTOR 104
SUB CONTRACTOR F.R. Lafayette, Inc.

| | |
|---|---|
| DRAWN | MHM |
| CHECKED | |
| DATE | 5-28-03 |
| SCALE | NONE |
| HSC REFERENCE NO. | 1354 |
| SIZE | D |
| REVISION | |
| SHEET NO. | 3 of 3 |




NOTES:

1. FOR NETC 2 - RAIL BRIDGE RAILING DETAILS AND INFORMATION ABOUT THE NETC GUARDRAIL APPROACH SECTION, SEE STANDARD SHEET BRI- BR2-, BR3- AND BR4- AND LAYOUT SHEET, SHEET 6
2. END OF WINGWALL HAVE BEEN LOCATED APPROXIMATELY BY VOAT SURVEY. CONTRACTOR SHALL VERIFY REQUIRED RAIL LENGTHS PROIR TO SUMITTING SHOP DRAWING FOR APPROVAL.
3. RAIL EXPANSION JOINT SHALL BE LOCATED 2'-0" FROM CL OF THE POST ADJACENT TO THE EXPANSION JOINT AND ON THE EXPANSION JOINT SIDE OF THE POST.
4. CENTERLINE OF POST IS 16'-6 3/16" OFF THE CENTER OF THE BRIDGE.

## RAILING LAYOUT

SCALE 1" - 10'-0

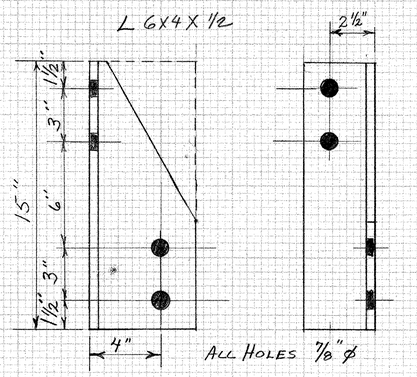
STONE & WEBSTER, INC.

**STATE OF VERMONT**
**AGENCY OF TRANSPORTATION**

| | |
|---|---|
| Town Of HARTLAND | Bridge No. 38 |
| Highway No. I-91 | Log Sta. |
| | Surv. Sta. |

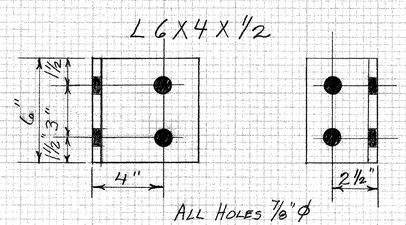
BRIDGE RAILING PLAN

| | |
|---|---|
| Designed By E. JONHSTON | Drawn By R. FERRANTE |
| Checked By E. JONHSTON Date 4-24-03 | Bridge Design Supervisor E. JOHNSTON Date 4-24-03 |
| PROJECT HARTLAND | PROJECT NO. IM 091-1(36) |
| Drawing Name za272ri.dgn | |
| Bridge Sheet No. | Sheet 18B of 85 |




PIER 1 HOPPER ANGLE

SCALE: 1" = 4"




PIER 4 HOPPER ANGLE

SCALE: 1" = 4"

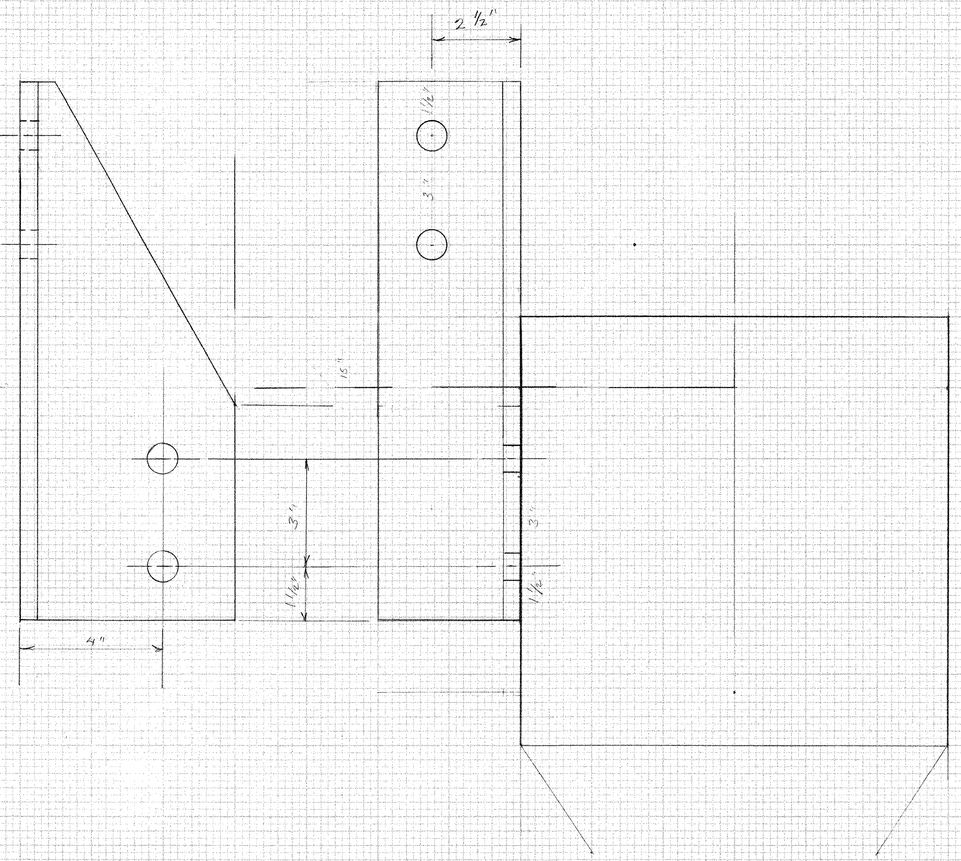
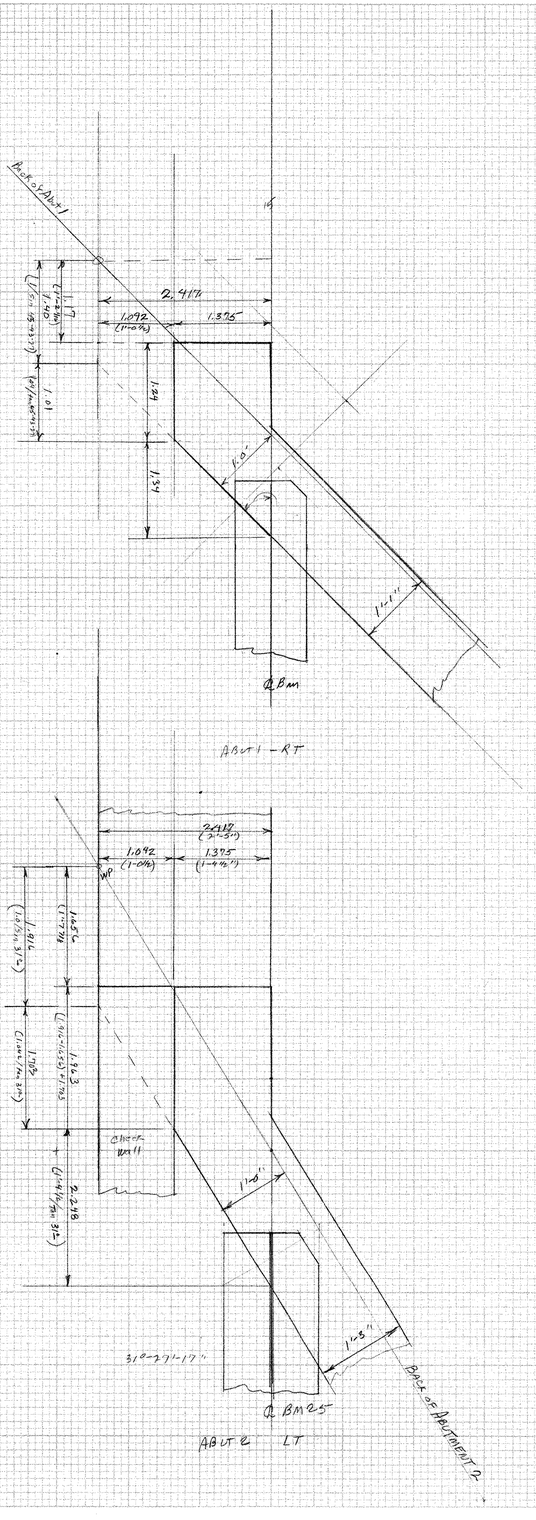
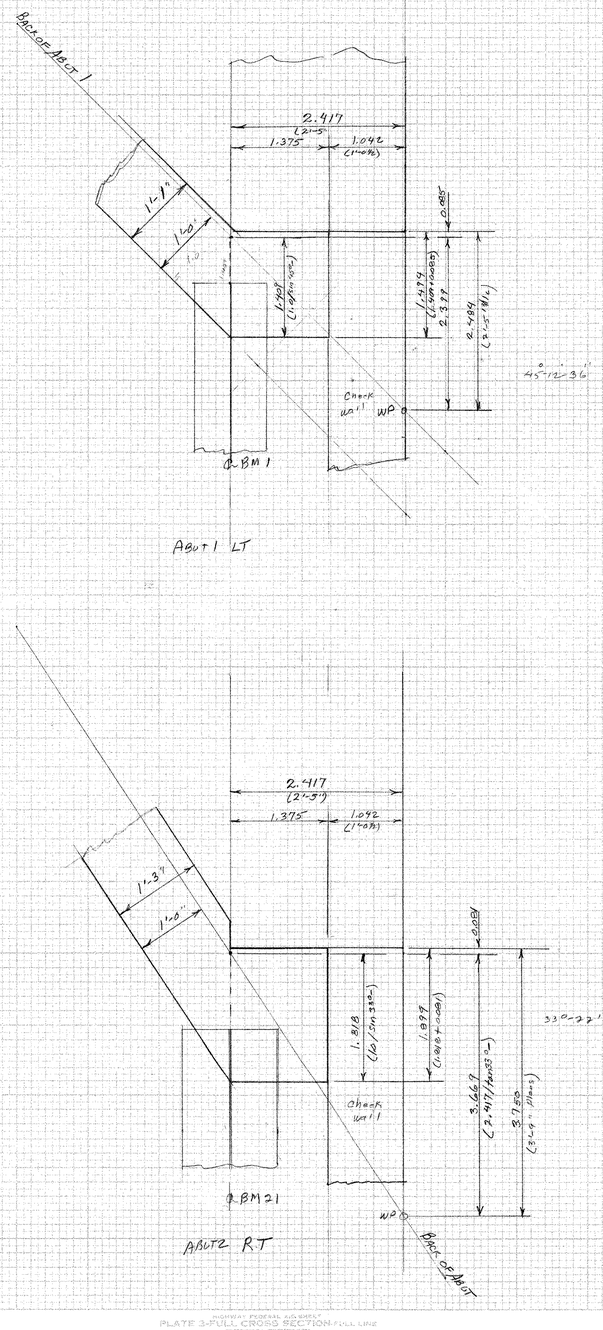



PLATE 3-FULL CROSS SECTION-FULL LINE




ABUT 1 – RT



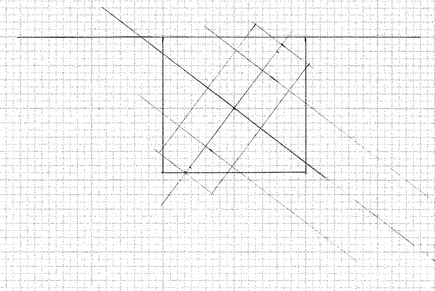

ABUT 1 LT




ABUT 2 LT




ABUT 2 RT




HARTLAND
ACIM091-1(36)

CURTAIN WALL DETAILS

FINAL SURVEY
ORIGINAL SURVEY
BY
DATE
SURVEYED
DRAWN
TRACED
INCPT. BOOK
ESTIMATE
SHEETS
NO.
CHECKED
QUANTITIES CHECKED

FINAL SURVEY
SURVEYED BY
DRAWN BY
CHECKED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL SURVEY
SURVEYED BY
DRAWN BY
CHECKED BY
QUANTITIES BY
CHECKED BY
DATE

120 110 100 90 80 70 60 50 40 30 20 10

480
470
460
450
480
470
450
440

Elev 439.4
Exist Ht 3
Exist Ht 2
10'
18'

Elev 448.87
15.42'
FG 487.70
20° Elbow
8'
Type 8
Center of DI @ 14.42' Lt
Bot of DI Elev 481.5
Elev 482.8
35.5' Lt
2'
90'
25° Elbow
Elev. 443.5
104'-Lt
Elev 444.5
93'-Lt
8'
1'

422475
New 12" x 86' CMP
w/ 1-20° Elbow, 1-25° Elbow
DI @ Inlet, Type E Grate

3- 20 ft lengths
3- 10 ft lengths
1- 20° Elbow
1- 25° Elbow
7- 24" Coupling Bands

HIGHWAY FEDERAL AID SYSTEM
PLATE 3 FULL CROSS SECTION ROLL LINE
MATERIAL FURNISHED
PRINTED IN U.S.A.

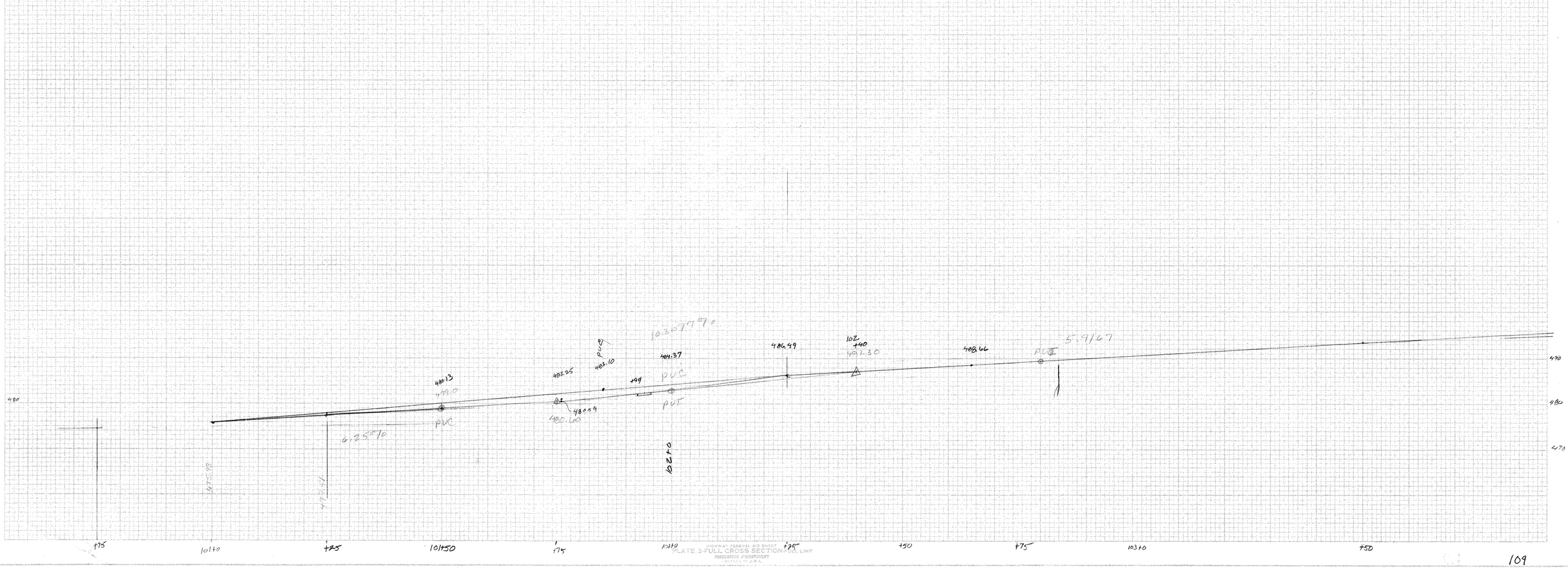
105

11/16

108

FINAL SURVEY
SURVEYED BY:
PLOTTED:
NOTE BOOK:
TERMINATE:
AREAS:
PAGE:
DATE:
BY:

ORIGINAL SURVEY
SURVEYED BY:
PLOTTED:
NOTE BOOK:
TERMINATE:
AREAS:
PAGE:
DATE:
BY:




HIGHWAY FEDERAL AID PROJECT
PLATE 3-FULL CROSS SECTIONAL LINE
MISSISSIPPI HIGHWAY DEPARTMENT
JACKSON, MISS.