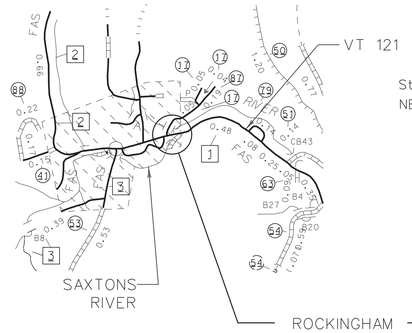
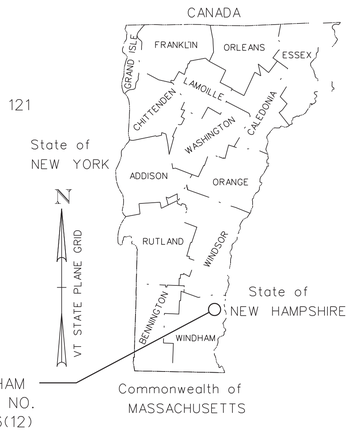
# STATE OF VERMONT
# AGENCY OF TRANSPORTATION

THIS IS A VALUE ENGINEERED PLAN SET. THESE PLANS HAVE BEEN DEVELOPED USING PORTIONS OF THE ORIGINAL VTRANS CONTRACT PLANS FOR BRIDGE NO. 11R, ROCKINGHAM AND MODIFICATIONS MADE BY CALDERWOOD ENGINEERING.
IN ORDER TO PROVIDE A COMPLETE SET PACKAGE FOR RECORD KEEPING PURPOSES AND FOR CONSTRUCT, VTRANS HAS PROVIDED THE ORIGINAL PLAN SET SO THEY COULD BE INCORPORATED WITH THE VALUE ENGINEERED PLANS. REPORT ANY DISCREPANCY BETWEEN THESE PLANS AND THE ACTUAL OBSERVED FIELD CONDITIONS TO THE VALUE ENGINEER OF RECORD IMMEDIATELY. DO NOT PROCEED WITH ANY DEPENDENT WORK UNTIL SUCH REPORTED DISCREPANCY HAS BEEN RESOLVED TO THE SATISFACTION OF THE VALUE ENGINEER OR RECORD.



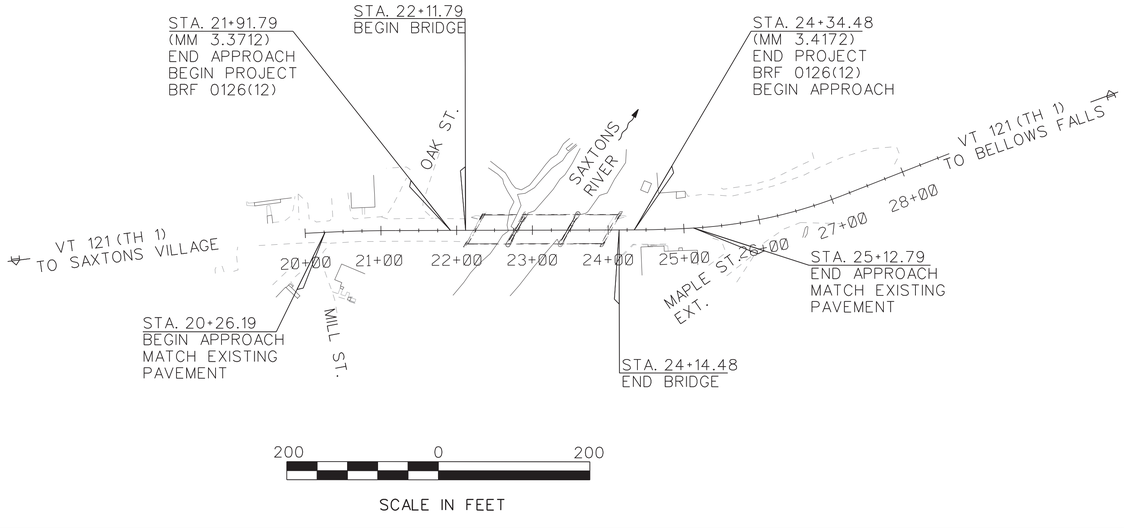




# PROPOSED IMPROVEMENT
# BRIDGE PROJECT
# TOWN OF ROCKINGHAM
# COUNTY OF WINDHAM
# VT 121 (CL 2, TH 1) RURAL MAJOR COLLECTOR
# BRIDGE NO. 11R

PROJECT LOCATION: BEGINNING ON VT 121 (CL2, TH 1)(FAS ROUTE S0126) APPROXIMATELY 4.1 MILES WEST OF THE JUNCTION WITH U.S. ROUTE 5 AND 68.0 FEET EAST OF THE JUNCTION WITH OAK STREET AND EXTENDING EASTERLY ALONG VT 121 APPROXIMATELY 243 FEET (0.04 MILES).

PROJECT DESCRIPTION: WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REPLACEMENT OF BRIDGE NO. 11R SUPERSTRUCTURE WITH NEW SUPERSTRUCTURE ON EXISTING ALIGNMENT, PARTIAL REMOVAL OF EXISTING ABUTMENTS AND REPLACEMENT WITH NEW ABUTMENTS, REPAIR OF EXISTING PIERS AND CHANNEL WORK WITH OTHER RELATED HIGHWAY ITEMS.

STRUCTURE LENGTH: 202.69 FEET
ROADWAY LENGTH: 40.00 FEET
PROJECT LENGTH: 242.69 FEET




CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

| |
|---|
| QUALITY ASSURANCE PROGRAM : LEVEL2 |
| SURVEYED BY : VERMONT SURVEY & ENGINEERING, INC.<br>SURVEYED DATE : 12/2010 |
| DATUM<br>VERTICAL NAVD 88(GEOID09)FT<br>HORIZONTAL NAD 83 (CORS) sFT |


CALDERWOOD ENGINEERING, ETC.
*STRUCTURAL ENGINEERING • DETAILING SERVICES*
222 RIVER RD. RICHMOND, ME 04357 PH/FX (207)737-2007/(207) 737-2008


PREPARED FOR:
**COLD RIVER BRIDGES, LLC**

**CEE 106-BR-14**

P.E. NUMBER

DATE:

| BY | DATE |
|---|---|
| ETC | 2014 |

DESIGN-DETAILED
CHECKED-REVIEWED

REVISIONS 1
REVISIONS 2
REVISIONS 3
REVISIONS 4
FIELD CHANGES

VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

TITLE SHEET

SHEET NUMBER

1


CALDERWOOD ENGINEERING
222 RIVER ROAD
RICHMOND, ME 04357
PH (207) 737-2007 FAX (207) 737-2008

STATE OF VERMONT
AGENCY OF TRANSPORTATION

# PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

## INDEX OF SHEETS

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| 5 | EARTHWORK TYPICAL SECTIONS |
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### STRUCTURES DETAIL SHEETS

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|---|---|---|
| SD-501.00 | CONCRETE DETAILS AND NOTES | 5/7/2010 |
| SD-502.00 | CONCRETE DETAILS AND NOTES | 5/7/2010 |
| SD-516.10 | BRIDGE JOINT ASHPALTIC PLUG | 8/29/2011 |

### STANDARDS LIST

| | | |
|---|---|---|
| B-5 | SLOPE GRADING, EMBANKMENTS, MUCK | 06-01-1994 |
| E-121 | STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD | 08-08-1995 |
| E-123 | GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS | 03-16-2004 |
| E-142 | REGULATORY SIGN DETAILS | 09-20-1995 |
| E-143 | REGULATORY SIGN DETAILS | 06-15-2004 |
| E-152 | WARNING SIGN DETAILS | 05-01-2004 |
| E-160 | FLANGED CHANNEL STEEL SIGN POST | 05-20-1999 |
| E-161 | W-SHAPED STEEL SIGN POST | 08-18-1995 |
| E-171A | TRAFFIC CONTROL SIGNALS GENERAL NOTES & DETAILS | 08-09-1995 |
| E-171B | TRAFFIC CONTROL SIGNALS MISC. DETAILS | 08-09-1995 |
| E-171C | TRAFFIC CONTROL SIGNALS CANTILEVER MOUNTING DETAILS | 08-09-1995 |
| E-172 | VEHICLE DETECTOR LOOP DETAILS | 08-09-1995 |
| E-173 | PULL BOXES AND JUNCTION BOXES | 08-09-1995 |
| E-175 | POWER DROP STANCHIONS | 06-08-2009 |
| E-191 | PAVEMENT MARKING DETAILS | 02-01-1999 |
| E-193 | PAVEMENT MARKING DETAILS | 08-18-1995 |
| G-1B | BOX BEAM GUARD RAIL | 06-01-1994 |
| S-364C | GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM | 04-23-2012 |
| S-364D | GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM | 04-23-2012 |
| T-1 | TRAFFIC CONTROL GENERAL NOTES | 08-06-2012 |
| T-10 | CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING | 08-06-2012 |
| T-17 | TRAFFIC CONTROL MISCELLANEOUS DETAILS | 08-06-2012 |
| T-24 | TRAFFIC CONTROL FOR MAINTENANCE PAVEMENT MARKING OPERATION | 08-06-2012 |
| T-28 | CONSTRUCTION SIGN DETAILS | 08-06-2012 |
| T-29 | CONSTRUCTION SIGN DETAILS | 08-06-2012 |
| T-30 | CONSTRUCTION SIGN DETAILS | 08-06-2012 |
| T-42 | BRIDGE NUMBER PLAQUE | 04-09-2014 |
| T-44 | MILE MARKER DETAILS STATE AND TOWN HIGHWAYS | 04-09-2014 |
| T-45 | SQUARE TUBE SIGN POST AND ANCHOR | 01-02-2013 |

## FINAL HYDRAULIC REPORT

### HYDROLOGIC DATA

DATE:

DRAINAGE AREA: 70.0 SQ. MI.
CHARACTER OF TERRAIN: HILLY TO MOUNTAINOUS VALLEY SETTING
STREAM CHARACTERISTICS: STRAIGHT TO SINUOUS, ALLUVIAL, LITTLE TO NO FLOOD PLAN
NATURE OF STREAMBED: SAND, GRAVEL, SMALL COBBLES

| | | | |
|---|---|---|---|
| Q 2.33 = | 2850 CFS | Q50 = | 8680 CFS |
| Q 10 = | 5170 CFS | Q 100 = | 10550 CFS |
| Q 25 = | 7070 CFS | Q 500 = | 16000 CFS |

DATE OF FLOOD OF RECORD: AUGUST 28, 2011
ESTIMATED DISCHARGE: 20942 CFS
WATER SURFACE ELEVATION: 414.6 FT AT GAGE STATION DOWNSTREAM OF BRIDGE
NATURAL STREAM VELOCITY: 11.2 FPS @ Q50 = 8680 CFS
ICE CONDITIONS: LIGHT TO MODERATE
DEBRIS: LIGHT TO MODERATE
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? NO
IS ORDINARY RISE RAPID? NO
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
IF YES, DESCRIBE N/A

WATERSHED STORAGE: <1%
HEADWATERS: -
UNIFORM: X
IMMEDIATELY ABOVE SITE: -

### EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 3 SPAN STEEL GIRDER BRIDGE
YEAR BUILT: 1954
CLEAR SPAN (NORMAL TO STREAM): 157 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 28.3 FT (AVG.)
WATERWAY OF FULL OPENING: 2220 SQ. FT
DISPOSITION OF STRUCTURE: REMOVE ABUTMENT BACKWALL AND SUPERSTRUCTURE
TYPE OF MATERIAL UNDER SUBSTRUCTURE: GRAVEL

WATER SURFACE ELEVATIONS AT: ONE BRIDGE LENGTH UPSTREAM

| | | | |
|---|---|---|---|
| Q 2.33 = | 428.7 FT | VELOCITY = | 10 FT/SEC |
| Q 10 = | 431.0 FT | " | 10.7 FT/SEC |
| Q 25 = | 432.8 FT | " | 11.2 FT/SEC |
| Q50 = | 434.0 FT | " | 12.4 FT/SEC |
| Q 100 = | 435.4 FT | " | 13.6 FT/SEC |

LONG TERM STREAMBED CHANGES: LITTLE CHANGE SINCE 1953 PLANS

IS THE ROADWAY OVERTOPPED BELOW Q100? NO
FREQUENCY: >Q500
RELIEF ELEVATION: +/- 448.5 FT
DISCHARGE OVER ROAD @ Q100: N/A

### UPSTREAM STRUCTURE

TOWN: ROCKINGHAM
DISTANCE: 0.5 MI
HIGHWAY #: T.H. # 3 (HARTLEY HILL ROAD)
STRUCTURE #: 9
CLEAR SPAN: 128 FT
CLEAR HEIGHT: 15.3 FT
YEAR BUILT: 2004
FULL WATERWAY: 2130 SF
STRUCTURE TYPE: WELDED PLATE GIRDER

### DOWNSTREAM STRUCTURE

TOWN: ROCKINGHAM
DISTANCE: 1.0 MI
HIGHWAY #: T.H. # 51 (HALL BRIDGE ROAD)
STRUCTURE #: 43
CLEAR SPAN: 113
CLEAR HEIGHT: +/- 12 FT
YEAR BUILT: 1982
FULL WATERWAY: +/- 1350 SF

### PROPOSED STRUCTURE

STRUCTURE TYPE: 3 SPAN PRESTRESSED NEXT D BEAM BRIDGE

CLEAR SPAN (NORMAL TO STREAM): 170.21 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 28.1 FT (AVG.)
WATERWAY OF FULL OPENING: 2460 SQ FT

WATER SURFACE ELEVATIONS AT: ONE BRIDGE LENGTH UPSTREAM

| | | | |
|---|---|---|---|
| Q 2.33 = | 428.7 FT | VELOCITY = | 10.0 FT/SEC |
| Q 10 = | 430.8 FT | " | 11.1 FT/SEC |
| Q 25 = | 432.6 FT | " | 11.2 FT/SEC |
| Q50 = | 433.9 FT | " | 12.4 FT/SEC |
| Q 100 = | 435.4 FT | " | 13.6 FT/SEC |

IS THE ROADWAY OVERTOPPED BELOW Q100? NO
FREQUENCY: >Q500
RELIEF ELEVATION: +/- 448.5 FT
DISCHARGE OVER ROAD @ Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 446.7
VERTICAL CLEARANCE: 12.8 FT @ Q50 = 8,680 CFS

SCOUR: CONTRACTION SCOUR FOR Q100 IS 2 FT (Q500 IS 3 FT) TOTAL PIER SCOUR FOR Q100 IS 23 FT (Q500 IS 26 FT) STONE FILL, TYPE IV AT ABUTMENTS TO BE LEFT IN PLACE.
REQUIRED CHANNEL PROTECTION: EXISTING SCOUR CRITICAL PIERS RETAINED WITHOUT ADDED REVETMENT

### PERMIT INFORMATION

AVERAGE DAILY FLOW: 150 CFS
ORDINARY LOW WATER: 70 CFS
ORDINARY HIGH WATER: 1230 CFS
DEPTH OR ELEVATION:
423.1 FT
426.6 FT

### TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: N/A
CLEAR SPAN (NORMAL TO STREAM): N/A
VERTICAL CLEARANCE ABOVE STREAMBED: N/A
WATERWAY AREA OF FULL OPENING: N/A

### ADDITIONAL INFORMATION

### TRAFFIC MAINTENANCE NOTES

1. MAINTAIN SINGLE LANE ALTERNATING TRAFFIC USING PHASED CONSTRUCTION SEQUENCE
2. TEMPORARY TRAFFIC SIGNAL REQUIRED AT ROUTE 121 / OAK STREET INTERSECTION AND ON ROUTE 121 EASTERLY APPROACH

### LRFR LOAD RATING FACTORS

| LOADING LEVELS | TRUCK | | | | | | |
|---|---|---|---|---|---|---|---|
| | H-20 | HL-93 | 3S2 | 6 AXLE | 3A. STR. | 4A. STR. | 5A. SEMI |
| TONNAGE | **20** | **36** | **36** | **66** | **30** | **34.5** | **38** |
| INVENTORY | 2.87 | 1.89 | | | | | |
| POSTING | | | | | | | |
| OPERATING | 3.88 | 2.55 | 3.33 | 2.21 | 2.84 | 2.55 | 2.80 |
| COMMENTS: | | | | | | | |

### DESIGN VALUES

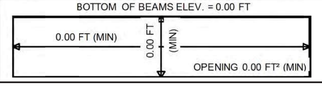
| | | | |
|---|---|---|---|
| 1. | DESIGN LIVE LOAD | | HL-93 |
| 2. | FUTURE PAVEMENT | $d_p$: | 3.0 INCH |
| 3. | ABUTMENT BEARING TO BEARING LENGTH (THREE SPANS) ( 65.50 - 69.00 - 65.50 ) FT | $L$: | 200.00 FT |
| 4. | | $\Delta$: | |
| 5. | | $f_y$: | |
| 6. | | $f'_c$: | |
| 7. | | $f'_{ci}$: | |
| 8. | CONCRETE, HIGH PERFORMANCE CLASS AA | $f'_c$: | 4.0 KSI |
| 9. | CONCRETE, HIGH PERFORMANCE CLASS A | $f'_c$: | 4.0 KSI |
| 10. | CONCRETE, HIGH PERFORMANCE CLASS B | $f'_c$: | 3.5 KSI |
| 11. | CONCRETE, CLASS C | $f'_c$: | |
| 12. | REINFORCING STEEL | $f_y$: | 60 KSI |
| 13. | STRUCTURAL STEEL AASHTO M270 (WEATHERING) | $f_y$: | 50 KSI |
| 14. | NOMINAL BEARING RESISTANCE OF SOIL | $q_n$: | |
| 15. | SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) | $\phi$: | |
| 16. | NOMINAL BEARING RESISTANCE OF ROCK | $q_n$: | |
| 17. | ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) | $\phi$: | |
| 18. | PILE RESISTANCE FACTOR | $\phi$: | 0.65 |
| 19. | LATERAL PILE DEFLECTION | $\Delta$: | 0.066 INCH |
| 20. | BASIC WIND SPEED | $V_{3s}$: | 50 MPH |
| 21. | MINIMUM GROUND SNOW LOAD | $p_g$: | |
| 22. | SEISMIC DATA $PGA$: | $S_s$: | |
| | | $S_1$: | |

### TRAFFIC DATA

| YEAR | ADT | DHV | % D | % T | ADTT |
|---|---|---|---|---|---|
| 2014 | 3700 | 420 | 55 | 7.0 | 280 |
| 2034 | 4000 | 450 | 55 | 9.5 | 410 |

20 year ESAL for flexible pavement from 2014 to 2034 : 1621000
40 year ESAL for flexible pavement from 2014 to 2054 : 3584000
Design Speed : 25 mph

### TEMPORARY BRIDGE PROFILE ALONG TEMP CL




PROJECT NAME: **ROCKINGHAM**
PROJECT NUMBER: **BRF 0126(12)**

FILE NAME: **z10j072bdr_pi.xlsm**
PROJECT LEADER: **R. HEBERT**
DESIGNED BY: **D. BURHANS**
**PRELIMINARY INFORMATION SHEET**

PLOT DATE:
DRAWN BY: **T. POULIN**
CHECKED BY: **R. HEBERT**
SHEET ____ OF ____


CALDERWOOD ENGINEERING, ETC.
*STRUCTURAL ENGINEERING • DETAILING SERVICES*
222 RIVER RD. RICHMOND, ME 04357 PH/FX (207)737-2007/(207) 737-2008


PREPARED FOR:
**COLD RIVER BRIDGES, LLC**

**CEE 106-BR-14**

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DATE:

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|---|---|---|
| DESIGN DETAILED | ETC | 2014 |
| CHECKED-REVIEWED | | |
| REVISIONS 1 | | |
| REVISIONS 2 | | |
| REVISIONS 3 | | |
| REVISIONS 4 | | |
| FIELD CHANGES | | |

VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

PRELIMINARY INFORMATION SHEET

SHEET NUMBER

2

CALDERWOOD ENGINEERING, ETC. 222 RIVER ROAD RICHMOND, ME 04357 PH. (207) 737-2007 FAX (207) 737-2008

## NOTES:

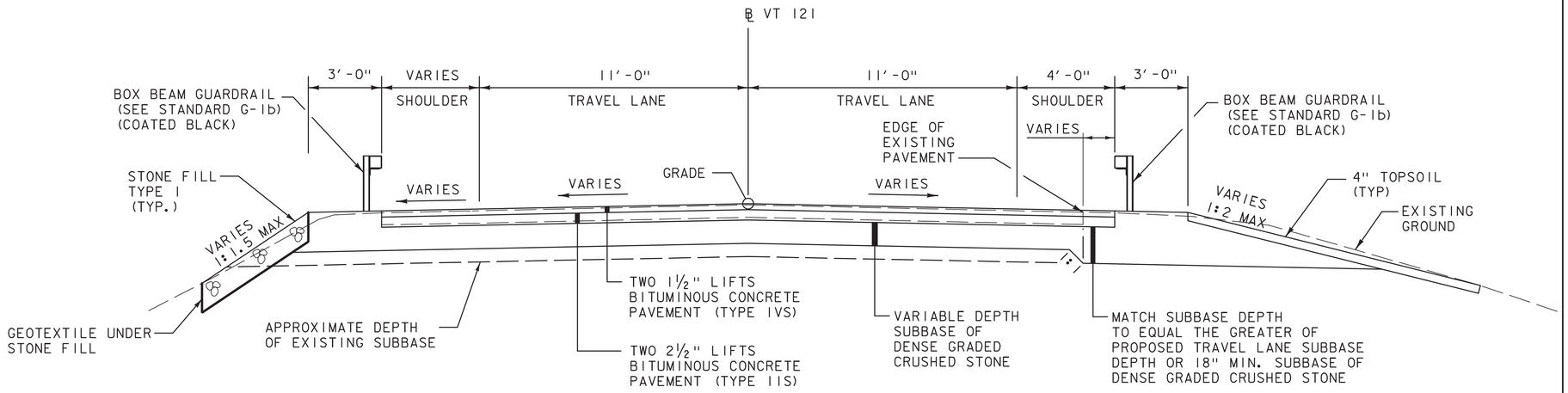
1. SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B-5.

2. TACK COAT: EMULSIFIED ASPHALT SHALL BE APPLIED TO THE COLD PLANED BITUMINOUS CONCRETE PAVEMENT SURFACE AT THE RATE OF 0.040 GAL./SY. OR AS DIRECTED BY THE ENGINEER. EMULSIFIED ASPHALT SHALL ALSO BE APPLIED BETWEEN ALL LIFTS OF PAVEMENT. THE COST SHALL BE PAID UNDER ITEM 404.65, "EMULSIFIED ASPHALT".

## MATERIAL TOLERANCES

(IF USED ON PROJECT)

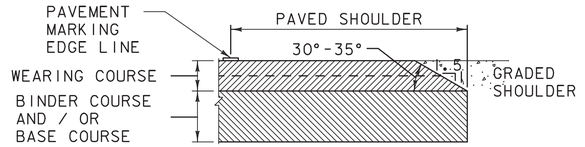
| | TOTAL DEPTH |
|---|---|
| SURFACE<br>- PAVEMENT<br>SUBBASE | <br>+/- 1/4"<br>+/- 1" |




## *FULL DEPTH*
## *TYPICAL ROADWAY SECTION - VT ROUTE 121*

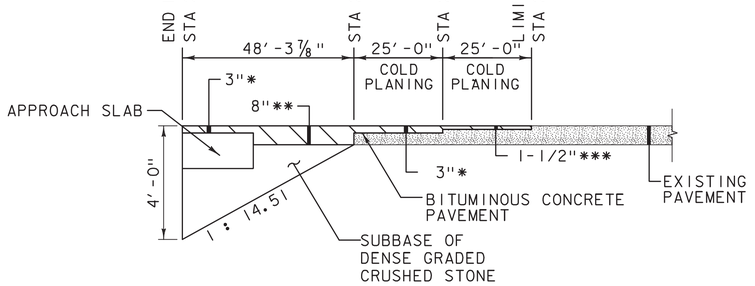
STA 21+61.79 TO STA 22+11.79
STA 24+14.48 TO STA 24+62.80

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



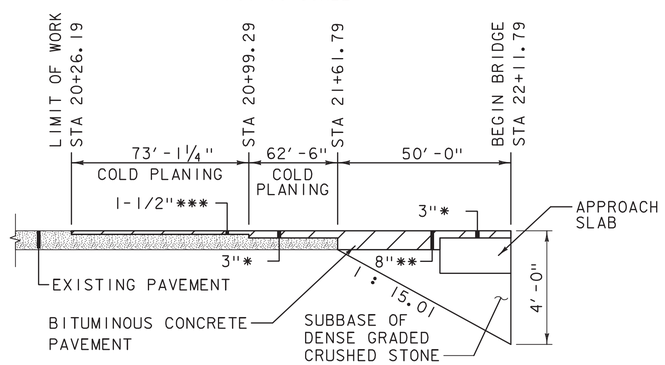

## SAFETY EDGE DETAIL

NOT TO SCALE



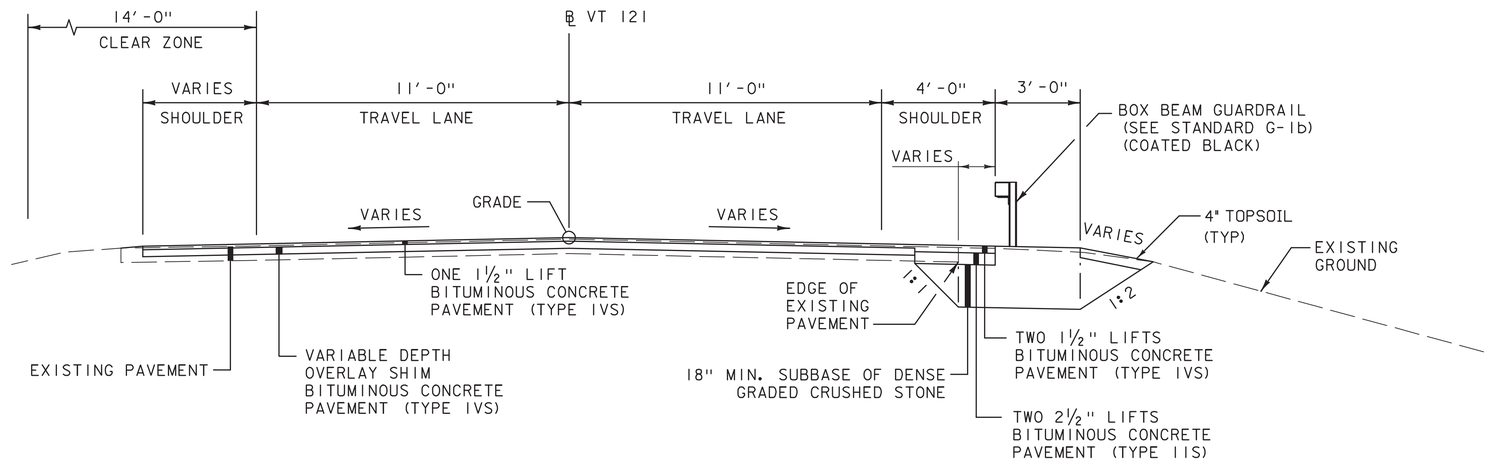

## *SUBBASE TAPER - EAST APPROACH*

ALONG BASELINE
NOT TO SCALE




## *SUBBASE TAPER - WEST APPROACH*

ALONG BASELINE
NOT TO SCALE




* TWO 1½" LIFTS BITUMINOUS CONCRETE PAVEMENT (TYPE IVS)

** TWO 1½" LIFTS BITUMINOUS CONCRETE PAVEMENT (TYPE IVS) OVER TWO 2½" LIFTS BITUMINOUS CONCRETE PAVEMENT (TYPE IIS)

*** ONE 1½" LIFT BITUMINOUS CONCRETE PAVEMENT (TYPE IVS)

## *COLD PLANE AND WIDENING*
## *TYPICAL ROADWAY SECTION - VT ROUTE 121*

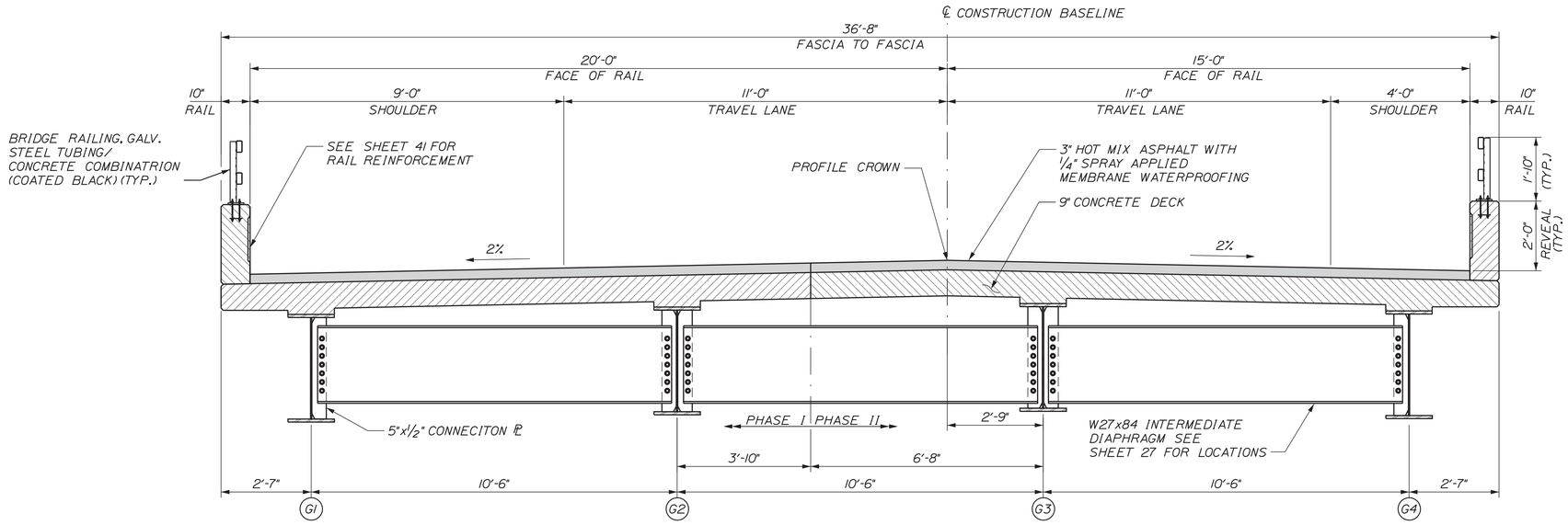
STA 20+26.19 TO STA 21+61.79
STA 24+62.80 TO STA 25+12.79

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

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

TYLIN INTERNATIONAL

| | |
|---|---|
| FILE NAME: z10J072bdr_typ.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: C. SARGEANT |
| DESIGNED BY: C. SARGEANT | CHECKED BY: D. BURHANS |
| ROADWAY TYPICAL SECTIONS | SHEET 3 OF 69 |




BRIDGE TYPICAL SECTION

1/2" = 1'-0"

CALDERWOOD ENGINEERING, ETC.
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CEE 106-BR-14

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| REVISIONS 1 | | |
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| REVISIONS 3 | | |
| REVISIONS 4 | | |
| FIELD CHANGES | | |

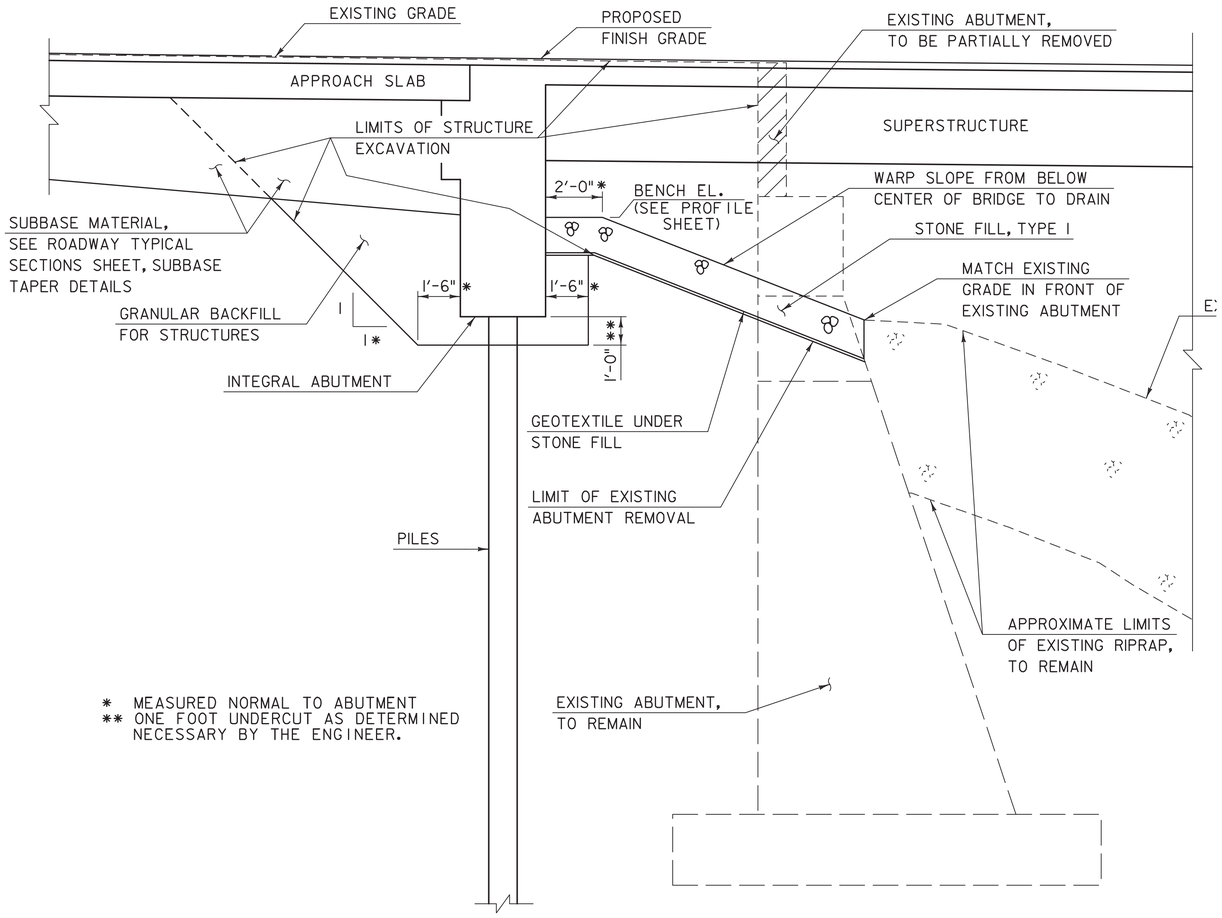
PRELIM VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

TYPICAL SECTION

SHEET NUMBER

4

CALDERWOOD ENGINEERING
222 RIVER ROAD
RICHMOND, ME 04357
PH (207)737-2007 FAX (207) 737-2008




* MEASURED NORMAL TO ABUTMENT
** ONE FOOT UNDERCUT AS DETERMINED NECESSARY BY THE ENGINEER.

## TYPICAL ABUTMENT SECTION

SCALE 3/8" = 1'-0"

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

T·Y·LIN INTERNATIONAL

| | |
|---|---|
| FILE NAME: z10j072bdr_bew.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: S. KELLER |
| DESIGNED BY: S. KELLER | CHECKED BY: D. MYERS |
| EARTHWORK TYPICAL SECTIONS | SHEET 5 OF 69 |

## GENERAL INFORMATION

### SYMBOLOGY LEGEND NOTE

THE SYMBOLOGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLOGY. THE SYMBOLOGY IS USED FOR EXISTING & PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROJECT ANNOTATION, AS NOTED ON PROJECT PLAN SHEETS. THIS LEGEND SHEET COVERS THE BASICS. SYMBOLOGY ON PLANS MAY VARY, PLAN ANNOTATIONS AND NOTES SHOULD BE USED TO CLARIFY AS NEEDED.

## R.O.W. ABBREVIATIONS (CODES) & SYMBOLS

| POINT | CODE | DESCRIPTION |
|---|---|---|
| | CH | CHANNEL EASEMENT |
| | CONST | CONSTRUCTION EASEMENT |
| | CUL | CULVERT EASEMENT |
| | D&C | DISCONNECT & CONNECT |
| | DIT | DITCH EASEMENT |
| | DR | DRAINAGE EASEMENT |
| | DRIVE | DRIVEWAY EASEMENT |
| | EC | EROSION CONTROL |
| | HWY | HIGHWAY EASEMENT |
| | I&M | INSTALL & MAINTAIN EASEMENT |
| | LAND | LANDSCAPE EASEMENT |
| | R&RES | REMOVE & RESET |
| | R&REP | REMOVE & REPLACE |
| | SR | SLOPE RIGHT |
| | UE | UTILITY EASEMENT |
| | (P) | PERMANENT EASEMENT |
| | (T) | TEMPORARY EASEMENT |
| ■ | BNDNS | BOUND SET |
| ⧈ | BNDNS | BOUND TO BE SET |
| ● | IPNS | IRON PIN SET |
| ◎ | IPNS | IRON PIN TO BE SET |
| ⊠ | CALC | EXISTING ROW POINT |
| ○ | PROW | PROPOSED ROW POINT |
| [LENGTH] | | LENGTH CARRIED ON NEXT SHEET |

## COMMON TOPOGRAPHIC POINT SYMBOLS

| POINT | CODE | DESCRIPTION |
|---|---|---|
| | APL | BOUND APPARENT LOCATION |
| | BM | BENCH MARK |
| | BND | BOUND |
| | CB | CATCH BASIN |
| | COMB | COMBINATION POLE |
| | DITHR | DROP INLET THROATED DNC |
| | EL | ELECTRIC POWER POLE |
| | FPOLE | FLAGPOLE |
| | GASFIL | GAS FILLER |
| | GP | GUIDE POST |
| | GSO | GAS SHUT OFF |
| | GUY | GUY POLE |
| | GUYW | GUY WIRE |
| | GV | GATE VALUE |
| | H | TREE HARDWOOD |
| | HCTRL | CONTROL HORIZONTAL |
| | HVCTRL | CONTROL HORIZ. & VERTICAL |
| | HYD | HYDRANT |
| | IP | IRON PIN |
| | IPIPE | IRON PIPE |
| | LI | LIGHT - STREET OR YARD |
| | MB | MAILBOX |
| | MH | MANHOLE (MH) |
| | MM | MILE MARKER |
| | PM | PARKING METER |
| | PMK | PROJECT MARKER |
| | POST | POST STONE/WOOD |
| | RRSIG | RAILROAD SIGNAL |
| | RRSL | RAILROAD SWITCH LEVER |
| | S | TREE SOFTWOOD |
| | SAT | SATELLITE DISH |
| | SHRUB | SHRUB |
| | SIGN | SIGN |
| | STUMP | STUMP |
| | TEL | TELEPHONE POLE |
| | TIE | TIE |
| | TSIGN | SIGN W/DOUBLE POST |
| | VCTRL | CONTROL VERTICAL |
| | WELL | WELL |
| | WSO | WATER SHUT OFF |

THESE ARE COMMON VAOT SURVEY POINT SYMBOLS FOR EXISTING FEATURES, ALSO USED FOR PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROPOSED ANNOTATION.

## PROPOSED GEOMETRY CODES

| CODE | DESCRIPTION |
|---|---|
| PC | POINT OF CURVATURE |
| PI | POINT OF INTERSECTION |
| CC | CENTER OF CURVE |
| PT | POINT OF TANGENCY |
| PCC | POINT OF COMPOUND CURVE |
| PRC | POINT OF REVERSE CURVE |
| POB | POINT OF BEGINNING |
| POE | POINT OF ENDING |
| STA | STATION PREFIX |
| AH | AHEAD STATION SUFFIX |
| BK | BACK STATION SUFFIX |
| D | CURVE DEGREE OF (100FT) |
| R | CURVE RADUIS OF |
| T | CURVE TANGENT LENGTH |
| L | CURVE LENGTH OF |
| E | CURVE EXTERNAL DISTANCE |

## UTILITY SYMBOLOGY

### UNDERGROUND UTILITIES

- UT — TELEPHONE
- UE — ELECTRIC
- UC — CABLE (TV)
- UEC — ELECTRIC+CABLE
- UET — ELECTRIC+TELEPHONE
- UCT — CABLE+TELEPHONE
- UECT — ELECTRIC+CABLE+TELEP.
- G — GAS LINE
- W — WATER LINE
- S — SANITARY SEWER (SEPTIC)

### ABOVE GROUND UTILITIES (AERIAL)

- T — TELEPHONE
- E — ELECTRIC
- C — CABLE (TV)
- EC — ELECTRIC+CABLE
- ET — ELECTRIC+TELEPHONE
- AER E&T — ELECTRIC+TELEPHONE
- CT — CABLE+TELEPHONE
- ECT — ELECTRIC+CABLE+TELEP.
- UTILITY POLE GUY WIRE

## PROJECT CONSTRUCTION SYMBOLOGY

### PROJECT DESIGN & LAYOUT SYMBOLOGY

- CZ — CLEAR ZONE
- PLAN LAYOUT MATCHLINE

### PROJECT CONSTRUCTION FEATURES

- TOP OF CUT SLOPE
- TOE OF FILL SLOPE
- STONE FILL
- BOTTOM OF DITCH ℄
- CULVERT PROPOSED
- STRUCTURE SUBSURFACE
- PDF — PDF — PROJECT DEMARCATION FENCE
- BF — BF — BARRIER FENCE
- TREE PROTECTION ZONE (TPZ)
- STRIPING LINE REMOVAL
- SHEET PILES

## CONVENTIONAL BOUNDARY SYMBOLOGY

### BOUNDARY LINES

- TOWN LINE — TOWN BOUNDARY LINE
- COUNTY LINE — COUNTY BOUNDARY LINE
- STATE LINE — STATE BOUNDARY LINE
- PROPOSED STATE R.O.W. (LIMITED ACCESS)
- PROPOSED STATE R.O.W.
- STATE ROW (LIMITED ACCESS)
- STATE ROW
- TOWN ROW
- PERMANENT EASEMENT LINE (P)
- TEMPORARY EASEMENT LINE (T)
- SURVEY LINE
- P/L — PROPERTY LINE (P/L)
- SR SR SR — SLOPE RIGHTS
- 6F — 6F — 6F PROPERTY BOUNDARY
- 4F — 4F — 4F PROPERTY BOUNDARY
- HAZ — HAZ — HAZARDOUS WASTE

## EPSC LAYOUT PLAN SYMBOLOGY

### EPSC MEASURES

- FILTER CURTAIN
- SILT FENCE
- SILT FENCE WOVEN WIRE
- CHECK DAM
- DISTURBED AREAS REQUIRING RE-VEGETATION
- EROSION MATTING
- AREA OF ARCHAEOLOGICAL SIGNIFICANCE
- STABILIZED CONSTRUCTION ENTRANCE
- SURFACE ROUGHENING

### ENVIRONMENTAL RESOURCES

- WETLAND BOUNDARY
- RIPARIAN BUFFER ZONE
- WETLAND BUFFER ZONE
- SOIL TYPE BOUNDARY
- T&E — THREATENED & ENDANGERED SPECIES
- HAZ — HAZ — HAZARDOUS WASTE AREA
- AG — AGRICULTURAL LAND
- HABITAT — FISH & WILDLIFE HABITAT
- FLOOD PLAIN — FLOOD PLAIN
- OHW — ORDINARY HIGH WATER (OHW)
- STORM WATER
- USDA FOREST SERVICE LANDS
- WILDLIFE HABITAT SUIT/CONN

### ARCHEOLOGICAL & HISTORIC

- ARCH — ARCHEOLOGICAL BOUNDARY
- HISTORIC DIST — HISTORIC DISTRICT BOUNDARY
- HISTORIC — HISTORIC AREA
- Ⓗ HISTORIC STRUCTURE

## CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

### EXISTING FEATURES

- ROAD EDGE PAVEMENT
- ROAD EDGE GRAVEL
- DRIVEWAY EDGE
- DITCH
- FOUNDATION
- FENCE (EXISTING)
- FENCE WOOD POST
- FENCE STEEL POST
- GARDEN
- ROAD GUARDRAIL
- RAILROAD TRACKS
- CULVERT (EXISTING)
- STONE WALL
- WALL
- WOOD LINE
- BRUSH LINE
- HEDGE
- BODY OF WATER EDGE
- LEDGE EXPOSED

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |
| FILE NAME: z10J072bdr_legend.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: S. MORGAN |
| DESIGNED BY: R. HEBERT | CHECKED BY: R. HEBERT |
| CONVENTIONAL SYMBOLOGY LEGEND | SHEET 6 OF 69 |

STATE OF VERMONT
AGENCY OF TRANSPORTATION

# QUANTITY SHEET 1

| SUMMARY OF ESTIMATED QUANTITIES | | | | | | | | TOTALS | | DESCRIPTIONS | | | | DETAILED SUMMARY OF QUANTITIES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROADWAY | TRAINING | EROSION CONTROL | BRIDGE | FULL C.E. ITEMS | | | | GRAND TOTAL | FINAL | UNIT | ITEMS | ITEM NUMBER | ROUND | QUANTITIES | UNIT | ITEMS |
| 1 | | | | | | | | 1 | | LS | CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS | 201.10 | | | | 507.11 REINFORCING STEEL, LEVEL I |
| 620 | | | | | | | | 620 | | CY | COMMON EXCAVATION | 203.15 | | 8200 | LB | APPROACH SLAB |
| 20 | | | | | | | | 20 | | CY | SOLID ROCK EXCAVATION | 203.16 | | 8200 | LB | TOTAL |
| 20 | | | | | | | | 20 | | CY | SAND BORROW | 203.31 | | | | |
| 20 | | | | | | | | 20 | | CY | TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.) | 204.22 | | | | 507.12 REINFORCING STEEL, LEVEL II |
| | | | 635 | | | | | 635 | | CY | STRUCTURE EXCAVATION | 204.25 | | 11720 | LB | DECK CLOSURE POURS |
| | | | 130 | | | | | 130 | | CY | GRANULAR BACKFILL FOR STRUCTURES | 204.30 | | 1340 | LB | DIAPHRAMS |
| 625 | | | | | | | | 625 | | SY | COLD PLANING-BIT.PAVEMENT | 210.10 | | 7110 | LB | ABUTMENTS |
| 450 | | | | | | | | 450 | | CY | SUBBASE OF DENSE GRADED CRUSHED STONE | 301.35 | | 1330 | LB | PIERS |
| 4.8 | | | 1.8 | | | | | 6.6 | | CWT | EMULSIFIED ASPHALT | 404.65 | | 21500 | LB | TOTAL |
| 1 | | | | | | | | 1 | | LU | PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.) | 406.50 | | | | |
| | | | 56 | | | | | 56 | | CY | CONCRETE, HIGH PERFORMANCE CLASS A | 501.33 | | | | |
| | | | 124 | | | | | 124 | | CY | CONCRETE, HIGH PERFORMANCE CLASS B | 501.34 | | | | |
| | | | 1 | | | | | 1 | | LS | FURNISHING EQUIPMENT FOR DRIVING PILING | 504.10 | | | | |
| | | | 960 | | | | | 960 | | LF | STEEL PILING, HP 10 X 57 | 505.12 | | | | |
| | | | 2740 | | | | | 2740 | | SF | TEMPORARY STEEL SHEET PILING | 505.36 | | | | |
| | | | 2 | | | | | 2 | | EACH | DYNAMIC PILE LOADING TEST | 505.45 | | | | |
| | | | 8200 | | | | | 8200 | | LB | REINFORCING STEEL, LEVEL I | 507.11 | | | | |
| | | | 21500 | | | | | 21500 | | LB | REINFORCING STEEL, LEVEL II | 507.12 | | | | |
| | | | 384 | | | | | 384 | | LF | DRILLING AND GROUTING DOWELS | 507.16 | | | | |
| | | | 84 | | | | | 84 | | EACH | MECHANICAL BAR CONNECTOR | 507.19 | | | | |
| | | | 80 | | | | | 80 | | GAL | WATER REPELLENT, SILANE | 514.10 | | | | |
| | | | 82 | | | | | 82 | | LF | BRIDGE EXPANSION JOINT, ASPHALTIC PLUG | 516.10 | | | | |
| | | | 790 | | | | | 790 | | SY | MEMBRANE WATERPROOFING, SPRAY APPLIED | 520.10 | | | | |
| | | | 82 | | | | | 82 | | LF | JOINT SEALER, HOT POURED | 524.11 | | | | |
| | | | 406 | | | | | 406 | | LF | BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION (COATED BLACK) | 525.45 | | | | |
| | | | 1 | | | | | 1 | | LS | MAINTENANCE OF STRUCTURES AND APPROACHES | 527.10 | | | | |
| | | | 600 | | | | | 600 | | SY | REMOVAL OF BRIDGE PAVEMENT | 529.10 | | | | |
| | | | 1 | | | | | 1 | | EACH | PARTIAL REMOVAL OF STRUCTURE | 529.20 | | | | |
| | | | 8 | | | | | 8 | | EACH | BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD | 531.17 | | | | |
| | | | 50 | | | | | 50 | | SY | REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I | 580.13 | | | | |
| | | | 8 | | | | | 8 | | SY | REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II | 580.14 | | | | |
| | | | 2 | | | | | 2 | | CY | REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III | 580.15 | | | | |
| | | 20 | | | | | | 20 | | HR | POWER GRADER RENTAL | 608.15 | | | | |
| | | 20 | | | | | | 20 | | HR | ALL PURPOSE EXCAVATOR RENTAL, TYPE I | 608.25 | | | | |
| | | 20 | | | | | | 20 | | HR | TRUCK RENTAL | 608.37 | | | | |
| | | 20 | | | | | | 20 | | HR | LOADER RENTAL, TYPE I | 608.40 | | | | |
| 40 | | | | | | | | 40 | | MGAL | DUST CONTROL WITH WATER | 609.10 | | | | |
| 50 | | | 50 | | | | | 100 | | CY | STONE FILL, TYPE I | 613.10 | | | | |


CALDERWOOD ENGINEERING, ETC.
*STRUCTURAL ENGINEERING • DETAILING SERVICES*
222 RIVER RD, RICHMOND, ME 04357 PH/FX (207)737-2007/(207) 737-2008


PREPARED FOR:
COLD RIVER BRIDGES, LLC

CEE 106-BR-14

P.E. NUMBER

DATE:

| | BY | DATE |
|---|---|---|
| DESIGN-DETAILED | ETC | 2014 |
| CHECKED-REVIEWED | | |
| REVISIONS 1 | | |
| REVISIONS 2 | | |
| REVISIONS 3 | | |
| REVISIONS 4 | | |
| FIELD CHANGES | | |

VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

QUANTITY SHEET #1

SHEET NUMBER

7

CALDERWOOD ENGINEERING
222 RIVER ROAD
RICHMOND, ME 04357
PH. (207)737-2007 FAX (207) 737-2008

STATE OF VERMONT
AGENCY OF TRANSPORTATION

# QUANTITY SHEET 2

| SUMMARY OF ESTIMATED QUANTITIES | | | | | | TOTALS | | DESCRIPTIONS | | | DETAILED SUMMARY OF QUANTITIES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROADWAY | TRAINING | EROSION CONTROL | BRIDGE | FULL C.E. ITEMS | | GRAND TOTAL | FINAL | UNIT | ITEMS | ITEM NUMBER | ROUND | QUANTITIES | UNIT | ITEMS |
| 440 | | | | | | 440 | | LF | BOX BEAM GUARDRAIL (COATED BLACK) | 621.30 | | | | |
| 1 | | | | | | 1 | | EACH | MANUFACTURED TERMINAL SECTION, TANGENT (COATED BLACK) | 621.51 | | | | |
| 4 | | | | | | 4 | | EACH | ENERGY ABSORPTION ATTENUATOR | 621.56 | | | | |
| 4 | | | | | | 4 | | EACH | GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM (COATED BLACK) | 621.72 | | | | |
| 570 | | | | | | 570 | | LF | REMOVAL AND DISPOSAL OF GUARDRAIL | 621.80 | | | | |
| 380 | | | | | | 380 | | LF | TEMPORARY TRAFFIC BARRIER | 621.90 | | | | |
| 360 | | | | | | 360 | | LF | REMOVE AND RESET TEMPORARY TRAFFIC BARRIER | 621.95 | | | | |
| 160 | | | | | | 160 | | HR | UNIFORMED TRAFFIC OFFICERS | 630.10 | | | | |
| 500 | | | | | | 500 | | 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 | | | | |
| | | | | 3000 | | 3000 | | DL | FIELD OFFICE TELEPHONE (N.A.B.I.) | 631.26 | | | | |
| | 520 | | | | | 520 | | HR | EMPLOYEE TRAINEESHIP | 634.10 | | | | |
| 1 | | | | | | 1 | | LS | MOBILIZATION / DEMOBILIZATION | 635.11 | | | | |
| 1 | | | | | | 1 | | LS | TRAFFIC CONTROL | 641.10 | | | | |
| 2 | | | | | | 2 | | EACH | PORTABLE CHANGEABLE MESSAGE SIGN | 641.15 | | | | |
| 960 | | | | | | 960 | | LF | DURABLE 4 INCH WHITE LINE | 646.400 | | | | |
| 900 | | | | | | 900 | | LF | DURABLE 4 INCH YELLOW LINE | 646.410 | | | | |
| 570 | | | | | | 570 | | LF | DURABLE 12 INCH WHITE LINE | 646.460 | | | | |
| 20 | | | | | | 20 | | LF | DURABLE 24 INCH STOP BAR | 646.480 | | | | |
| 4 | | | | | | 4 | | EACH | DURABLE LETTER OR SYMBOL | 646.490 | | | | |
| 130 | | | 150 | | | 280 | | SY | GEOTEXTILE UNDER STONE FILL | 649.31 | | | | |
| | | 180 | | | | 180 | | SY | GEOTEXTILE FOR SILT FENCE | 649.51 | | | | |
| | | 18 | | | | 18 | | LB | SEED | 651.15 | | | | |
| | | 10 | | | | 10 | | LB | SEED, WINTER RYE | 651.17 | | | | |
| | | 55 | | | | 55 | | LB | FERTILIZER | 651.18 | | | | |
| | | 0.25 | | | | 0.25 | | TON | AGRICULTURAL LIMESTONE | 651.20 | | | | |
| | | 0.25 | | | | 0.25 | | TON | HAY MULCH | 651.25 | | | | |
| 60 | | | | | | 60 | | CY | TOPSOIL | 651.35 | | | | |
| | | 1 | | | | 1 | | LS | EROSION PREVENTION & SEDIMENT CONTROL PLAN | 652.10 | | | | |
| | | 80 | | | | 80 | | HR | MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN | 652.20 | | | | |
| | | 1 | | | | 1 | | LU | MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN (N.A.B.I.) | 652.30 | | | | |
| | | 180 | | | | 180 | | SY | TEMPORARY EROSION MATTING | 653.20 | | | | |
| | | 30 | | | | 30 | | CY | VEHICLE TRACKING PAD | 653.35 | | | | |
| | | 310 | | | | 310 | | LF | BARRIER FENCE | 653.50 | | | | |
| | | 220 | | | | 220 | | LF | PROJECT DEMARCATION FENCE | 653.55 | | | | |
| 10 | | | | | | 10 | | SF | TRAFFIC SIGNS, TYPE A | 675.20 | | | | |
| 60 | | | | | | 60 | | LF | SQUARE TUBE SIGN POST AND ANCHOR | 675.341 | | | | |
| 4 | | | | | | 4 | | EACH | REMOVING SIGNS | 675.50 | | | | |

PROJECT NAME: **ROCKINGHAM**
PROJECT NUMBER: **BRF 0126(12)**

FILE NAME: **z10j072bdr_qnty.xlsm**
PROJECT LEADER: **R. HEBERT**
DESIGNED BY: **D. BURHANS**
**QUANTITY SHEET #2**

PLOT DATE: **07/28/2014**
DRAWN BY: **D. BURHANS**
CHECKED BY: **R. HEBERT**
SHEET **8** OF **69**

STATE OF VERMONT
AGENCY OF TRANSPORTATION

# QUANTITY SHEET 3

| SUMMARY OF ESTIMATED QUANTITIES | | | | | | | | | | | | | | | | | | | | | TOTALS | | DESCRIPTIONS | | | | DETAILED SUMMARY OF QUANTITIES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | ROADWAY | | TRAINING | | EROSION CONTROL | | BRIDGE | | FULL C.E. ITEMS | | GRAND TOTAL | FINAL | UNIT | ITEMS | ITEM NUMBER | ROUND | QUANTITIES | UNIT | ITEMS |
| | | | | | | | | | | | 2 | | | | | | | | | | 2 | | EACH | ERECTING SALVAGED SIGNS | 675.60 | | | | |
| | | | | | | | | | | | 1 | | | | | | | | | | 1 | | EACH | TEMPORARY TRAFFIC SIGNAL SYSTEM | 678.40 | | | | |
| | | | | | | | | | | | 3 | | | | | | | | | | 3 | | EACH | TEMPORARY DETECTOR | 678.42 | | | | |
| | | | | | | | | | | | | | | | | | 30 | | | | 30 | | CY | SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) | 900.608 | | | | |
| | | | | | | | | | | | | | | | | | 1 | | | | 1 | | LS | SPECIAL PROVISION (CONSTRUCTION VIBRATION AND CRACK MONITORING) | 900.645 | | | | |
| | | | | | | | | | | | 1 | | | | | | | | | | 1 | | LU | SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY) (N.A.B.I.) | 900.650 | | | | |
| | | | | | | | | | | | 1 | | | | | | | | | | 1 | | LU | SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.) | 900.650 | | | | |
| | | | | | | | | | | | 280 | | | | | | 140 | | | | 420 | | TON | SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY) | 900.680 | | | | |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PREPARED FOR:
**COLD RIVER BRIDGES, LLC**

**CEE 106-BR-14**

P.E. NUMBER

DATE:

| | BY | DATE |
|---|---|---|
| DESIGN-DETAILED | ETC | 2014 |
| CHECKED-REVIEWED | | |
| REVISIONS 1 | | |
| REVISIONS 2 | | |
| REVISIONS 3 | | |
| REVISIONS 4 | | |
| FIELD CHANGES | | |

VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

QUANTITY SHEET #1

SHEET NUMBER

9


CALDERWOOD ENGINEERING
222 RIVER ROAD
RICHMOND, ME 04357
TEL (207) 737-2007 FAX (207) 737-2008

## GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011. WITH ITS LATEST REVISIONS. AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 6TH EDITION. AND THE PCI NORTHEAST GUIDELINES FOR NEXT BEAM IST EDITION.

2. THE BRIDGE IS DESIGNED FOR HL-93 LIVE LOADING.

3. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE BASED ON 68° F OR AS NOTED OTHERWISE.

4. THE CONTRACTOR IS RESPONSIBLE FOR FIELD CHECKING ANY AND ALL DIMENSIONS AND ELEVATIONS APPLICABLE TO THIS WORK PRIOR TO COMMENCING WORK OR ORDERING MATERIAL.

5. NO ADJUSTMENT TO THE BITUMINOUS WEARING SURFACE ON THE BRIDGE SHALL BE MADE TO ACCOUNT FOR THE DIFFERENCE BETWEEN BEAM CAMBER AND THE THEORETICAL ROADWAY PROFILE. THE WEARING SURFACE ON THE BRIDGE SHALL BE SHIMMED TRANSVERSELY AS NECESSARY TO ACCOUNT FOR POTENTIAL DIFFERENTIAL CAMBER OF ADJACENT BEAMS AND TO FORM THE ROADWAY CROWN.

6. THE TOWN WILL MAINTAIN RESPONSIBILITY FOR SNOW REMOVAL ON THE EXISTING BRIDGE THROUGHOUT THE DURATION OF THE PROJECT.

7. ALL WORK SHALL TAKE PLACE WITHIN THE EXISTING RIGHT-OF-WAY. NO PROVISIONS HAVE BEEN MADE FOR THE CONTRACTOR TO PERFORM WORK OR SETUP STAGING OUTSIDE THE EXISTING RIGHT-OF-WAY.

8. EXISTING AERIAL ELECTRIC AND TELEPHONE LINES AND POLES SHALL BE REMOVED AND PERMANENTLY RELOCATED BY OTHERS. CONTRACTOR SHALL COORDINATE ALL BRIDGE REPLACEMENT AND APPROACH RECONSTRUCTION WORK WITH UTILITY RELOCATION WORK AS REQUIRED. SEE UTILITY SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

9. EXISTING UTILITY CONDUIT ON THE BRIDGE IS ABANDONED AND WILL BE REMOVED TO LIMITS REQUIRED TO PERFORM THE WORK.

10. THE CONTRACTOR IS HEREBY NOTIFIED THAT AGENCY PERSONNEL WILL PERFORM A VIDEO INSPECTION OF THE NEARBY BUILDINGS AND STUCTURES ADJACENT TO THE PROJECT AND APPROACH LIMITS. A VIDEO INSPECTION WILL BE PERFORMED PRIOR TO THE BEGINNING OF CONSTRUCTION AND FOLLOWING THE COMPLETION OF CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO THE BUILDINGS AND STRUCTURES AS A RESULT OF THE CONTRACTOR'S ACTIVITIES AT NO ADDITIONAL COMPENSATION.

11. THE CONTRACTOR SHALL CONDUCT CONSTRUCTION VIBRATION AND CRACK MONITORING IN ACCORDANCE WITH SPECIAL PROVISION (CONSTRUCTION VIBRATION AND CRACK MONITORING). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO ADJACENT STRUCTURES OR BUILDINGS CAUSED BY THE CONTRACTOR'S ACTIVITIES. NO SEPARATE PAYMENT WILL BE MADE FOR ANY REPAIRS OF EXISTING STRUCTURES OR BUILDINGS. PAYMENT FOR CONSTRUCTION VIBRATION AND CRACK MONITORING SHALL BE MADE UNDER CONTRACT ITEM 900.645 SPECIAL PROVISION (CONSTRUCTION VIBRATION AND CRACK MONITORING).

## EARTHWORK

1. ITEM 613.10. "STONE FILL. TYPE I". UNDER THE BRIDGE AT THE ABUTMENTS AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE NEW BEAMS ARE SET.

2. ITEM 613.10. "STONE FILL. TYPE I" SHALL BE USED TO REPAIR AREAS OF EMBANKMENT AND SLOPE EROSION AS ORDERED BY THE ENGINEER.

## REMOVAL OF EXISTING STRUCTURE

1. PARTIAL REMOVAL OF THE EXISTING STRUCTURE SHALL BE UNDER ITEM 529.20. "PARTIAL REMOVAL OF STRUCTURE". THIS WORK SHALL INCLUDE REMOVAL OF THE SUPERSTRUCTURE AND PARTIAL REMOVAL OF EXISTING ABUTMENTS. THE CONTRACTOR'S METHODS FOR PARTIAL REMOVAL OF THE EXISTING STRUCTURE SHALL BE APPROVED BY THE ENGINEER PRIOR TO ANY REMOVAL WORK.

2. THE EXISTING BRIDGE SUPERSTRUCTURE AND REMOVED PORTIONS OF THE SUBSTRUCTURE AND APPROACH SHALL BECOME THE PROPERTY OF THE CONTRACTOR AFTER DEMOLITION. RECORD PLANS HAVE BEEN INCLUDED AS PART OF THIS PLAN SET.

3. THE EXISTING STRUCTURAL STEEL IS PAINTED WITH A MATERIAL THAT MAY CONTAIN LEAD. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE REGULATIONS WHEN HANDLING AND WORKING WITH THIS STEEL. THE REMOVED STRUCTURAL STEEL IS THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE. ITS OFFICERS. AND EMPLOYEES HARMLESS CONCERNING THE CONTRACTOR'S USE OR DISPOSITION OF THE REMOVED EXISTING STRUCTURAL STEEL.

4. THE EXISTING PAVEMENT ON THE BRIDGE DECK SHALL BE REMOVED UNDER ITEM 529.10. REMOVAL OF BRIDGE PAVEMENT.

5. PAYMENT FOR MAINTAINING THE EXISTING STRUCTURE AND ROADWAY FOR ACCEPTABLE USE DURING PHASED CONSTRUCTION WILL BE MADE UNDER CONTRACT ITEM 527.10 "MAINTENANCE OF STRUCTURES AND APPROACHES".

## CONCRETE

1. THE ABUTMENTS BELOW THE BRIDGE SEAT CONSTRUCTION JOINT. PIER PEDESTALS. AND APPROACH SLABS SHALL BE ITEM 501.34 "CONCRETE. HIGH PERFORMANCE CLASS B".

2. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1". UNLESS NOTED OTHERWISE.

3. ITEM 514.10 "WATER REPELLENT. SILANE". SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES. INCLUDING EXISTING PIERS. EXCEPT THE UNDERSIDE OF THE NEXT D BEAMS BETWEEN DRIP NOTCHES.

4. REINFORCEMENT PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:
   - SPACING +/- 1"
   - CLEARANCE +/- 1/4"

5. MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

| | | |
|---|---|---|
| - CONCRETE BRIDGE RAILING | 3.0 | INCH |
| - SURFACES CAST AGAINST EARTH | 3.0 | INCH |
| - ELSEWHERE. UNLESS NOTED OTHERWISE | 2.0 | INCH |

6. THE KEY-IN CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINTS.

7. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

8. JOINTS IN CONCRETE BRIDGE RAILING SHALL BE SPACED AT 15'-0" MAXIMUM. POUR SEQUENCE SHALL BE IN ALTERNATING SECTIONS.

9. REINFORCING STEEL SHALL CONFORM TO AASHTO M 31. GRADE 420 (GRADE 60) AND SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).

10. PIER CONCRETE REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. A THOROUGH INSPECTION BY THE ENGINEER WILL BE MADE OF ALL PIER SUBSTRUCTURE AREAS PRIOR TO COMMENCING ANY WORK AND THOSE AREAS FOUND TO HAVE SPALLED. DELAMINATED. OR TO OTHERWISE BE UNSOUND CONCRETE WILL BE REPAIRED. THE CONTRACTOR SHALL SUPPLY ANY STAGING REQUIRED FOR THIS INSPECTION. THE COST FOR WHICH SHALL BE INCIDENTAL TO ALL OTHER ITEMS IN THE CONTRACT.

11. ALL REINFORCING STEEL LAP LENGTHS WERE DESIGNED ASSUMING DUAL-COATED STEEL.

12. MECHANICAL CONNECTORS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 507 FOR LEVEL II REINFORCING.

13. UNLESS OTHERWISE NOTED. ALL CAST-IN-PLACE PORTIONS OF THE SUPERSTRUCTURE AND THE PORTION OF THE ABUTMENTS ABOVE THE HORIZONTAL CONSTRUCTION JOINT LOCATED BELOW THE BEAMS SHALL BE ITEM 501.33 "CONCRETE. HIGH PERFORMANCE CLASS A".

14. FORM A 1" V-GROOVE ON THE FASCIAS AT THE HORIZONTAL JOINT BETWEEN THE CONCRETE BRIDGE RAILING AND THE CAST IN PLACE CONCRETE DECK.

15. CONSTRUCTION JOINTS SHALL BE PROVIDED IN THE CONCRETE PARAPET PORTION OF THE BRIDGE RAILING CONSISTENT WITH THE REQUIREMENTS AND DETAILS FOR CONCRETE CURBS AS SHOWN ON STRUCTURES DETAIL SHEET SD-502.00.

## PILE FOUNDATIONS

1. THE PILES SHALL BE HP HP 12x74.

2. PILE SHOES ARE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04(F) OF THE STANDARD SPECIFICATIONS.

3. THE TOPS OF PILES AFTER DRIVING SHALL NOT VARY FROM THE PLAN POSITION BY MORE THAN 3 INCHES. THE PILE ORIENTATION SHALL NOT VARY BY MORE THAN 5 DEGREES. THE CONTRACTOR SHALL DEMONSTRATE HOW THE TOLERANCES WILL BE MET TO THE SATISFACTION OF THE ENGINEER REGARDLESS OF INSTALLATION METHOD.

4. TO ENSURE THAT THE NOMINAL RESISTANCE HAS BEEN ATTAINED AND TO PREVENT THE OVERSTRESSING OF THE PILES DURING DRIVING OPERATIONS. DYNAMIC TESTING SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 505.04(D)-2 OF THE STANDARD SPECIFICATIONS. PAYMENT FOR ONE PILE TEST SHALL BE CONDUCTED ON THE FIRST PILE DRIVEN AT EACH ABUTMENT. FOR A TOTAL OF 2 TESTS. MORE TESTS MAY BE REQUIRED BY THE ENGINEER. PAY ITEM FOR TESTING. INCLUDING ANY ADDITIONAL TESTS ORDERED BY THE ENGINEER IS 505.45 "DYNAMIC PILE LOAD TEST."

5. THE PILES SHALL BE DRIVEN TO A REQUIRED NOMINAL RESISTANCE OF 265 KIPS AS DETERMINED BY THE RESULTS OF DYNAMIC TESTING. AS INTERPRETED BY THE ENGINEER PROVIDED A MINIMUM PENETRATION OF 15 FEET BELOW THE BOTTOM OF PILE CAP HAS BEEN ACHIEVED.

6. FOR ESTIMATING PURPOSES. THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL LENGTHS MAY VARY.

## ELASTOMERIC BEARINGS

1. ELASTOMER COMPOUND SHALL HAVE A NOMINAL HARDNESS OF 60 ON THE SHORE A SCALE. AND SHALL CONFORM TO SUBSECTION 731.03.

2. STEEL REINFORCEMENT FOR THE ELASTOMERIC BEARING PADS SHALL CONFORM TO SECTION 506 FOR GRADE 50 STEEL.

3. THE ELEVATION OF THE BEARING PEDESTALS ARE DETAILED CONSIDERING PREDICTED BEAM CAMBER AND BEAM END ROTATIONS AT ERECTION (30-60 DAYS AFTER STRESSING).

4. THE CONTRACTOR IS ADVISED TO HAVE A MINIMUM OF 8 - 1/4" X 10" X 1'-2". 8 1/8" X 10" X 1'-2". AND 16 - TAPERED 1/8" TO 3/8" X 10" X 1'-2" (TAPERED ALONG 1'-2' DIRECTION) RECTANGULAR GALVANIZED STEEL SHIMS AVAILABLE FOR USE FOR ELEVATION ADJUSTMENTS UPON SETTING OF THE SUPERSTRUCTURE UNITS AT THE ABUTMENT LOCATIONS . A 1/8" THICK NEOPRENE SHEET WILL BE PROVIDED BETWEEN CONCRETE SURFACES AND THE STEEL SHIMS. THE SHIMS SHALL BE FABRICATED ACCORDING TO SECTION 531 AND SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 531.16. "BEARING DEVICE ASSEMBLY. PLAIN ELASTOMERIC PAD".

## BRIDGE RAILING. APPROACH RAILING. AND GUARDRAIL

1. ALL STEEL COMPONENTS OF THE BRIDGE RAILING. APPROACH RAILING. AND GUARDRAIL SHALL BE COATED BLACK IN ACCORDANCE WITH ASTM D7803 FOLLOWING GALVANIZING.

## STRUCTURAL STEEL NOTES

1. CAMBER ORDINATES. AS SHOWN. ARE COMPUTED TO COMPENSATE FOR ALL DEAD LOAD DEFLECTIONS AND FOR THE CURVATURE OF THE FINISHED GRADE PROFILE.

~ THE FOLLOWING NOTE IS USED WHEN MORE THAN ONE STEEL DESIGN IS PROVIDED. ~

2. DIMENSIONS AND ELEVATIONS OMITTED FROM THE BOTTOM OF SLAB ELEVATIONS TABLE. THE CAMBER DIAGRAM. AND THE STRESS DIAGRAM WILL BE PROVIDED TO THE CONTRACTOR FOR THE STRUCTURAL STEEL OPTION THAT HAS BEEN SELECTED.

~ THE FOLLOWING NOTES ARE USED FOR WELDED GIRDERS ONLY. ~

3. NO TRANSVERSE BUTT WELD SPLICES WILL BE ALLOWED IN THE FLANGE PLATES OR WEB PLATES WITHIN 10 FEET OR 10 PERCENT OF THE SPAN LENGTH (WHICHEVER IS GREATER) FROM THE POINTS OF MAXIMUM NEGATIVE MOMENT OR MAXIMUM POSITIVE MOMENT. BUTT WELD SPLICES IN FLANGES SHALL BE NOT LESS THAN ONE FOOT FROM TRANSVERSE BUTT WELDS IN THE WEB PLATES AND NO TRANSVERSE WEB OR FLANGE BUTT WELDS SHALL BE LOCATED WITHIN ONE FOOT OF OTHER TRANSVERSE WELDS (E.G. CONNECTION PLATES TO WEB WELDS) ON EITHER FLANGE OR WEB. NO TRANSVERSE BUTT WELD SPLICES WILL BE ALLOWED IN AREAS OF STRESS REVERSAL.

4. SECTIONS OF FLANGE PLATES OR WEB PLATES BETWEEN TRANSVERSE SHOP SPLICES OR BETWEEN A TRANSVERSE SHOP SPLICE AND A FIELD SPLICE SHALL BE NOT LESS THAN XX FEET IN LENGTH UNLESS OTHERWISE SHOWN ON THE PLANS.

~ THE FOLLOWING NOTE IS USED WITH HAUNCHED WELDED GIRDERS ONLY. ~

5. ONE LONGITUDINAL BUTT WELD SPLICE WILL BE ALLOWED IN THE WEB OF THE HAUNCHED SECTIONS OF THE GIRDERS. FEATHERED EDGES BETWEEN THE LONGITUDINAL WELDS AND THE BOTTOM FLANGES WILL NOT BE ALLOWED.

6. BEARING STIFFENERS SHALL BE PLUMB AFTER ERECTION AND DEAD LOADING OF THE STRUCTURE. INTERMEDIATE WEB STIFFENERS MAY BE EITHER PLUMB OR NORMAL TO THE TOP FLANGE.

7. CROSSFRAME OR DIAPHRAGM CONNECTION PLATES MAY BE EITHER PLUMB OR NORMAL TO THE TOP FLANGE.

~ THE FOLLOWING NOTE IS USED ONLY WITH DESIGNS USING A 709. GRADE 50 OR PAINTED GRADE 50W ~

8. FILLER PLATES MAY BE STEEL CONFORMING TO THE REQUIREMENTS OF ASTM A 709. GRADE 36.

9. AT LOCATIONS MARKED WITH AN ASTERISK (*). THE DESIGNATED DIAPHRAGMS SHALL BE CHANGED TO A TYPE A (C) (D) DIAPHRAGM AS REQUIRED TO ACCOMMODATE THE CONTRACTOR'S DECK PLACEMENT SEQUENCE. NO EXTRA COMPENSATION WILL BE ALLOWED FOR ANY DIAPHRAGMS SO SUBSTITUTED. AND ANY ADDITIONAL COSTS WILL BE CONSIDERED INCIDENTAL TO CONTRACT ITEMS.

~ THE FOLLOWING NOTE IS USED WHEN A SINGLE SPAN ROLLED BEAM WITH 3 INCHES OR MORE CAMBER IS USED. ~

10. THE CONTRACTOR MAY SUBSTITUTE WELDED PLATE GIRDERS IN PLACE OF THE ROLLED BEAMS SHOWN ON THE PLANS. AS APPROVED BY THE RESIDENT. THE FABRICATOR SHALL DETERMINE THE PLATE THICKNESSES BASED UPON THE DEPTH AND MOMENT OF INERTIA OF THE ROLLED SECTION.

CALDERWOOD ENGINEERING, ETC.
STRUCTURAL ENGINEERING • DETAILING SERVICES
222 RIVER RD. RICHMOND, ME 04357 PH/FX (207) 737-2007/(207) 737-2008

PREPARED FOR:
COLD RIVER BRIDGES, LLC

CEE 106-BR-14

P.E. NUMBER

DATE:

| | DATE | BY |
|---|---|---|
| REVISIONS 1 | | |
| REVISIONS 2 | | |
| REVISIONS 3 | | |
| REVISIONS 4 | | |
| FIELD CHANGES | 2014 | ETC |
| DESIGN-DETAILED | | |
| CHECKED-REVIEWED | | |

VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

PROJECT NOTES

SHEET NUMBER

10

CALDERWOOD ENGINEERING
222 RIVER ROAD
RICHMOND, ME 04357
PH. (207) 737-2007 FAX (207) 737-2008

## GPS/NGS CONTROL POINTS

### SPRINGFIELD VT CORS ARP

PID DJ8961
N = 284807.69
E = 1646390.48
ELLIP HEIGHT = 513.30

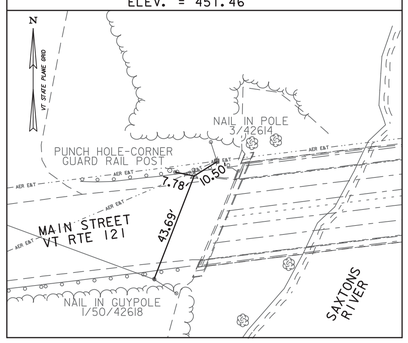
STATION IS A GPS CONTINOUSLY OPERATING REFERENCE STATION. STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA. LOCATED AT THE SPRINGFIELD, VERMONT HIGH SCHOOL, THE MONUMENT IS ATTACHED TO A TWO STORY CONCRETE & BRICK BUILDING WITH AN 8 FT CONCRETE FOUNDATION BUILT IN 1967. THE MAST IS A 1.75 INCH DIA. GALV PIPE THAT IS 108 INCHES LONG. THE MAST IS ATTACHED TO A STEEL MOUNTING FRAME WITH THREE ATTACHMENTS CONSISTING OF 3/8 INCH SS THROUGH BOLTS. THE MOUNTING FRAME IS ATTACHED TO THE BUILDING USING 8 ATTACHMENT POINTS. THE TOP 2 AND THIRD 2 ARE 1/2 INCH SS BOLTS SECURED TO THE BRICK OR CONC WITH LEAD ANCHORS. THE SECOND 2 AND BOTTOM 2 ATTACHMENTS ARE THROUGH BOLTED AND CONSIST OF 1/2 INCH SS THREADED ROD AND NUTS.

## TRAVERSE TIES

### HVCTRL #2

5/8"REBAR SET 0.1'BG W/ CENTER PUNCH MARK

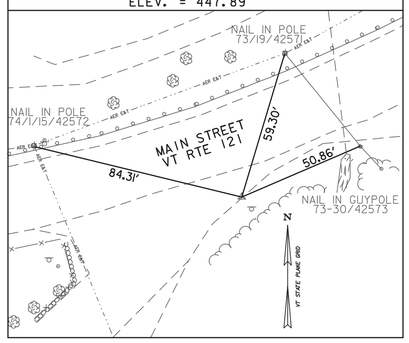
NORTH = 233073.66
EAST = 1639680.82
ELEV. = 451.46




### HVCTRL #3

5/8"REBAR SET 0.1'BG W/ CENTER PUNCH MARK

NORTH = 233098.21
EAST = 1640085.63
ELEV. = 447.89

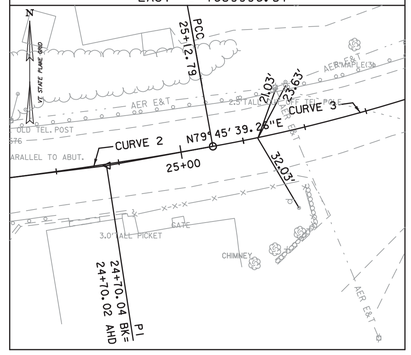



* MAIN TRAVERSE COMPLETED: DECEMBER 1, 2011 BY VSE, M. HUDSON-PC, M. YEFCHAK

## ALIGNMENT TIES

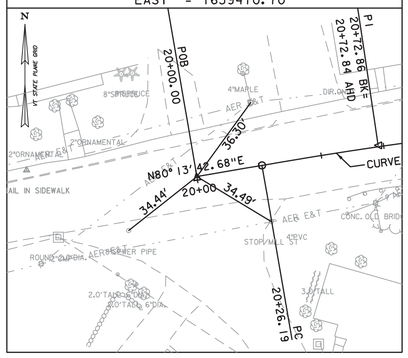
### POE 25+30.90

NORTH = 233098.37
EAST = 1639996.57



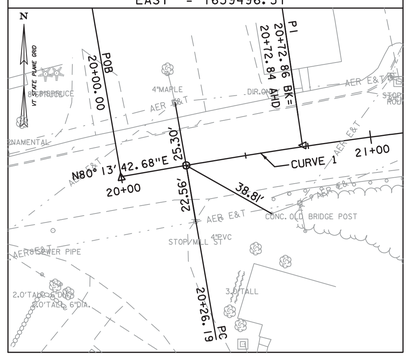

### POB 20+00.00

NORTH = 233026.11
EAST = 1639470.70



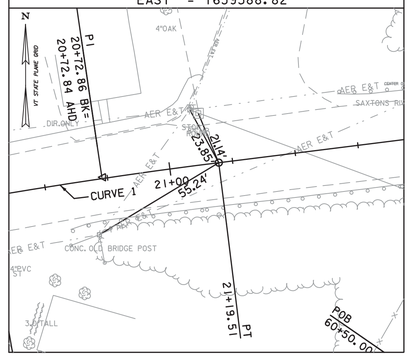

### PC 20+26.19

NORTH = 233030.55
EAST = 1639496.51



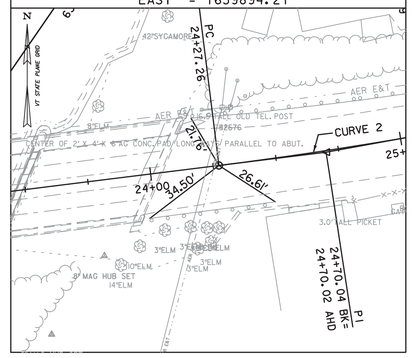

### PT 21+19.51

NORTH = 233044.24
EAST = 1639588.82



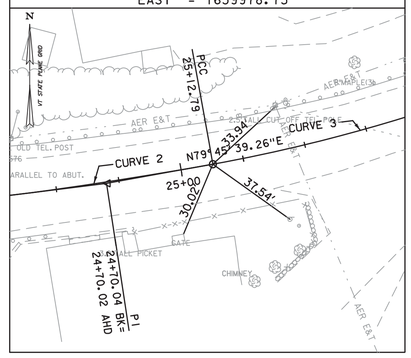

### PC 24+27.26

NORTH = 233082.27
EAST = 1639894.21




### PT 25+12.79

NORTH = 233095.15
EAST = 1639978.75




DATUM
VERTICAL NAVD 88(GEOID09) FT
HORIZONTAL NAD 83(CORS) sFT
ADJUSTMENT LSQ

VERMONT SURVEY AND ENGINEERING

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

FILE NAME: z10j072bdr_t1.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BURHANS
TIE SHEET

PLOT DATE: 7/28/2014
DRAWN BY: D. BURHANS
CHECKED BY: R. HEBERT
SHEET 11 OF 69

N

VT STATE PLANE GRID

GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM (COATED BLACK)

21+69.32, RT - 22+03.33, RT
21+90.01, LT - 22+24.01, LT
24+05.15, RT - 24+38.98, RT
24+25.84, LT - 24+60.21, LT

BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION (COATED BLACK)

22+03.33, RT - 24+05.15, RT
22+24.01, LT - 24+25.84, LT

DURABLE 4" YELLOW LINE

20+26.19 - 21+12.28 (CENTERLINE)
21+52.28 - 25+12.79 (CENTERLINE)

DURABLE 4" WHITE LINE

20+26.19, LT - 21+20.38, LT (EDGELINE)
20+26.19, RT - 25+12.79, RT (EDGELINE)
21+57.35, LT - 25+12.79, LT (EDGELINE)

TOPSOIL AND SEED

20+22.97, RT - 22+15.91, RT
21+60.36, LT - 22+39.94, LT
23+89.09, RT - 24+24.63, RT
24+12.74, LT - 24+62.45, LT

REMOVAL AND DISPOSAL OF GUARDRAIL

21+69.52, LT - 22+31.98, LT
20+57.50, RT - 22+08.42, RT
24+18.55, RT - 24+62.21, LT
23+97.48, RT - 24+47.48, RT

DURABLE 24 INCH STOP BAR

21+15.37, LT - 21+35.37, LT

DURABLE LETTER OR SYMBOL

21+28.00, LT (STOP)

DURABLE 12 INCH WHITE LINE

21+69.09, LT - 25+09.76, LT (DIAGONAL STRIPING)

MANUFACTURED TERMINAL SECTION, TANGENT (COATED BLACK)

20+50.69, 16.00', RT - 21+00.21, 15.50' RT

BOX BEAM GUARDRAIL (COATED BLACK)

21+67.88, LT - 21+78.01, LT (30' RADIUS)
21+78.01, LT - 21+90.01, LT
21+00.21, RT - 21+19.51, RT
21+19.51, RT - 21+51.32, RT
21+51.32, RT - 21+69.32, RT
24+60.21, LT - 24+96.97, LT
24+96.97, LT - 27+15.01, LT
27+15.01, LT - 27+83.30, LT
27+83.30, LT - 28+01.09, LT (20' RADIUS)
24+38.98, RT - 24+43.76, RT

22+04.98, LT
SAXTONS RIVER HISTORIC DISTRICT S
N
SAXTONS RIVER HISTORIC DISTRICT R&S
R

21+11.51, LT
STOP N
N
STOP R
R

STA. 21+91.79
END APPROACH
BEGIN PROJECT
BRF 0126(12)

STA. 20+26.19
BEGIN APPROACH
MATCH EXISTING PAVEMENT

POB 20+00.00

PI 20+72.86 BK= 20+72.84 AHD

OAK ST.

UNNAMED STREAM

HVCTRL #2
5/8" REBAR
ELEV. = 451.46

2 GUYS

EXISTING ROW

℄ BRG. ABUT. #1 STA. 22+13.13

30° SKEW (TYP)

12" DIAGONAL WHITE LINES

APPROXIMATE LIMITS OF EXISTING RIPRAP AT ABUTMENT (TYP.)

POE 63+25.00

63+25

63+00

CHANNEL LINE

℄ EXISTING PIER #1 STA. 22+78.63

℄ EXISTING PIER #2 STA. 23+47.63

APPROXIMATE LOCATION AERIAL UTILITY RELOCATION (BY OTHERS)

℄ BRG. ABUT. #2 STA. 24+13.13

PC 24+27.26

GUY

PCC 25+12.79

SEE GUARDRAIL APPROACH AND GUARDRAIL LAYOUT DETAILS SHEET FOR GUARDRAIL INFORMATION

24+30.02, LT
BRIDGE 11-R VT121 N
N

RELOCATE BY OTHERS

42°

7' (TYP.)

SWEL

VT 121 TO SAXTONS VILLAGE

N80° 13' 42.68"E

+49.93

CURVE 1

+64.12

DYL

N82° 54' 07.87"E

℄ VT 121 (TH 1)

20+00

21+00

22+00

23+00

62+00

24+00

25+84

RELOCATED BY OTHERS

CURVE 2

N79° 45' 39.26"E

CURVE 3

25+00

VT 121 TO BELLOWS FALLS

R 25'

Z9

MILL ST.

RELOCATED BY OTHERS

EXISTING BRIDGE

OHW

EXISTING ROW (TYP)

STA. 22+11.79
BEGIN BRIDGE

SAXTONS RIVER

N34° 34' 53.10"E

61+00

60+50

POB 60+50.00

21+19.51 PT

21+97.75, RT
BRIDGE 11-R VT121 N
N

20+26.09, RT
Mill St R
STOP R&S
R

20+26.19 PC

Mill St N
STOP S
N

24+70.04 BK= 24+70.02 AHD PI

MAPLE ST. EXT.

STA. 24+34.48
END PROJECT
BRF 0126(12)
BEGIN APPROACH

STA. 24+14.48
END BRIDGE

STA. 25+12.79
END APPROACH
MATCH EXISTING PAVEMENT

VT 121
STA. 23+07.97=
CHANNEL LINE
STA. 62+00.00

SIGN LEGEND

N - NEW
R - REMOVE
R&S - REMOVE AND SALVAGE
S - SALVAGE
□ - NEW SIGN ASSEMBLY
⌐ ¬ - EXISTING SIGN ASSEMBLY

STRIPING LEGEND

DYL - 4" DOUBLE YELLOW LINE
SWEL- 4" SOLID WHITE EDGE LINE

EXISTING BRIDGE INFORMATION

BUILT 1954
CONTINUOUS, STEEL BEAM, CONCRETE DECK
3 SPANS @ 55.00', 69.00', AND 55.00'
30'-0" ROADWAY (CURB TO CURB)
CONCRETE POST AND STEEL RAILING

CURVE (1)
PI STA. = 20+72.86
DELTA = 2°40'25"
D = 2°51'53"
R = 2000.00'
T = 46.67'
L = 93.33'
E = 0.54'

CURVE (2)
PI STA. = 24+70.04
DELTA = 3°08'29"
D = 3°40'22"
R = 1560.00'
T = 42.77'
L = 85.53'
E = 0.59'

CURVE (3)
PI STA. = 26+14.75
DELTA = 18°06'13"
D = 8°57'09"
R = 640.00'
T = 101.96'
L = 202.22'
E = 8.07'

SCALE 1" = 20'-0"
20 0 20

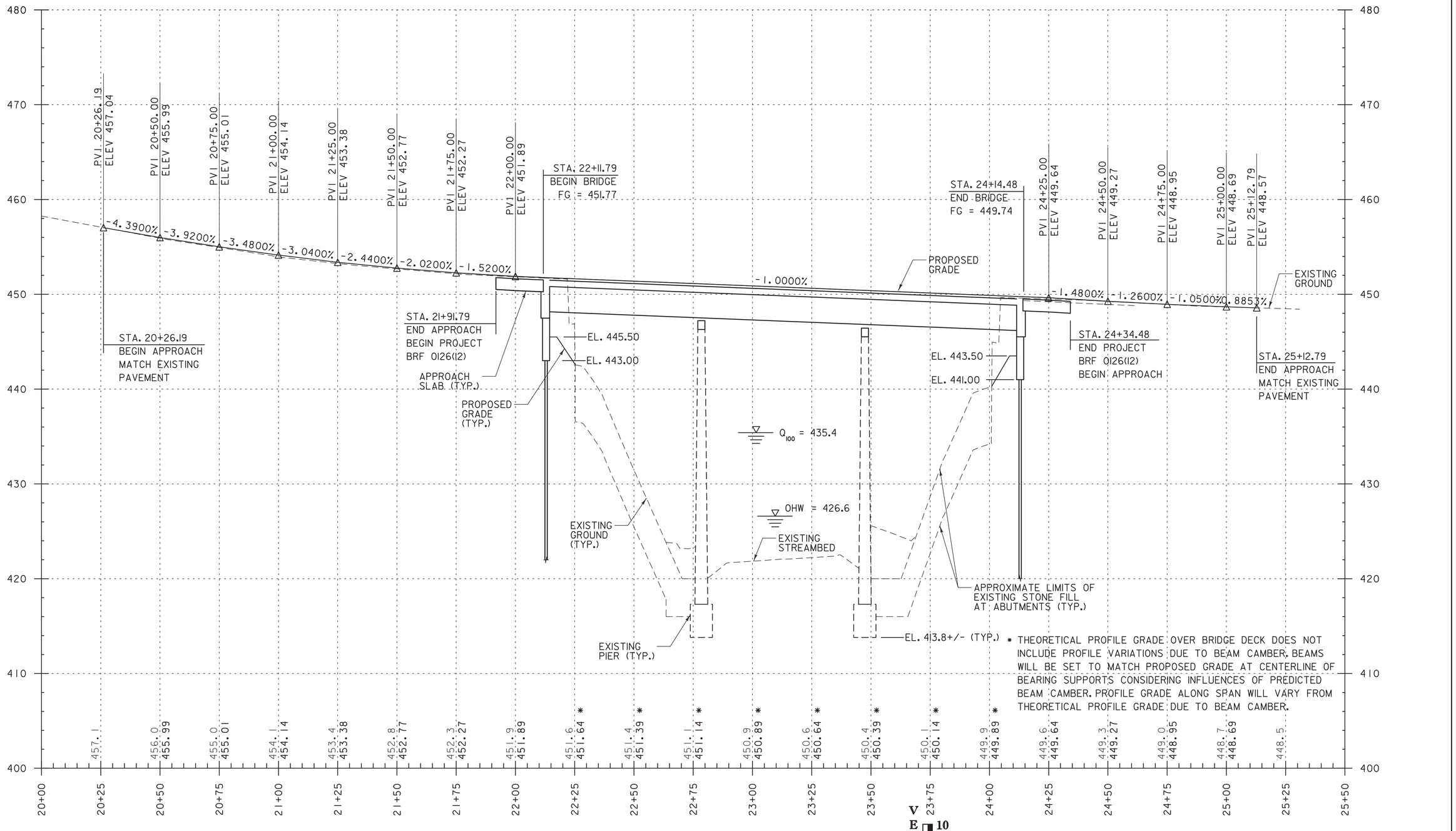
DATUM
VERTICAL NAVD 88(GEOID09) FT
HORIZONTAL NAD 83(CORS) sFT
ADJUSTMENT LSQ

T·Y·LIN INTERNATIONAL

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

FILE NAME: z10J072bdr_nul.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BURHANS
LAYOUT SHEET

PLOT DATE: 7/28/2014
DRAWN BY: D. BURHANS
CHECKED BY: D. BRYANT
SHEET 12 OF 69




* THEORETICAL PROFILE GRADE OVER BRIDGE DECK DOES NOT INCLUDE PROFILE VARIATIONS DUE TO BEAM CAMBER. BEAMS WILL BE SET TO MATCH PROPOSED GRADE AT CENTERLINE OF BEARING SUPPORTS CONSIDERING INFLUENCES OF PREDICTED BEAM CAMBER. PROFILE GRADE ALONG SPAN WILL VARY FROM THEORETICAL PROFILE GRADE DUE TO BEAM CAMBER.

# PROFILE: VT ROUTE 121

SCALES:
HORIZ: 1" = 20'
VERT: 1" = 5'

VERTICAL 0 5 10
HORIZONTAL 0 20 40 60
SCALE IN FEET

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOESD ALIGNMENT

THE GRADES SHOWN TO THE NEAREST HUNDRETH ARE THE PROPOSED GRADES FOR THE NEW ALIGNEMENT

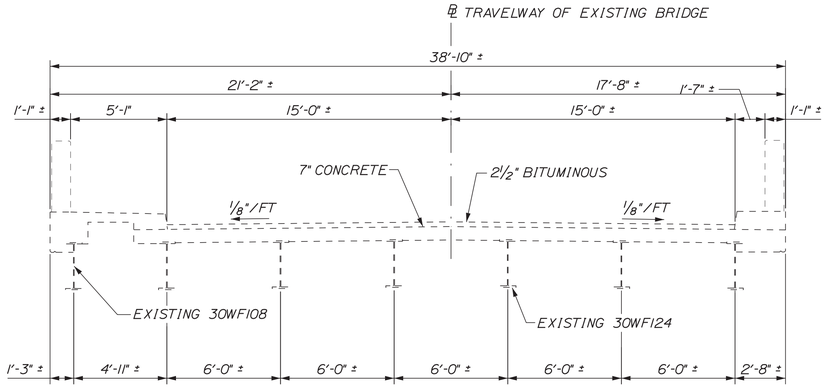
| DATUM | |
|---|---|
| VERTICAL | NAVD 88(GEOID09) FT |
| HORIZONTAL | NAD 83(CORS) sFT |
| ADJUSTMENT | LSQ |

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

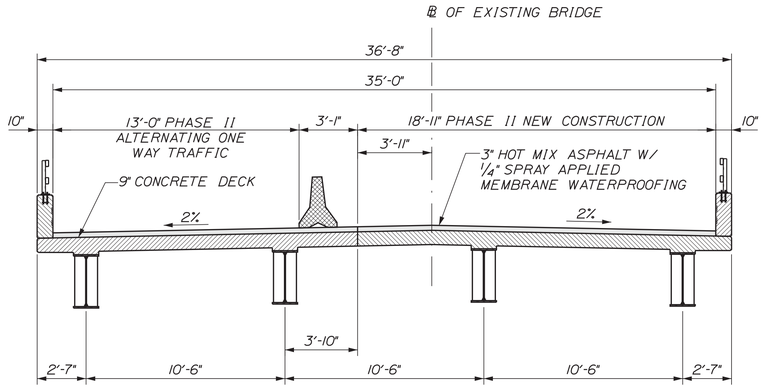
T.Y. LIN INTERNATIONAL

FILE NAME: z10j072bdr_pro.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BURHANS
PROFILE SHEET

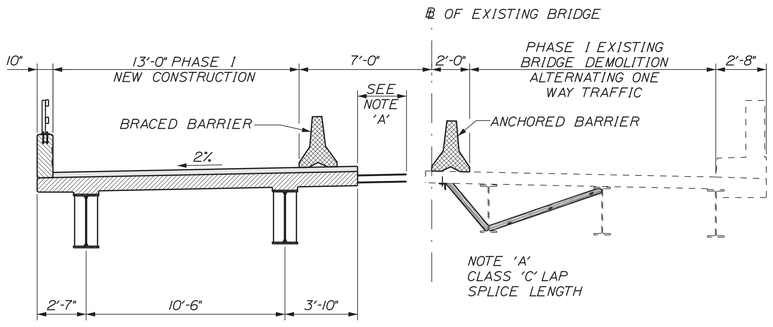
PLOT DATE: 7/28/2014
DRAWN BY: J. DAVIS
CHECKED BY: D. BRYANT
SHEET 13 OF 69



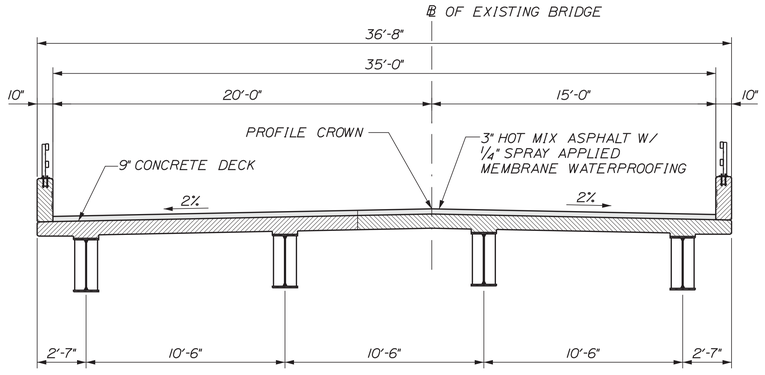

## TYPICAL SECTION - EXISTING
1" = 4'-0"




## TYPICAL SECTION - CONSTRUCTION PHASE II
1" = 4'-0"




## TYPICAL SECTION - CONSTRUCTION PHASE I
1" = 4'-0"




## TYPICAL SECTION - FINAL BUILD
1" = 4'-0"

## SUGGESTED BRIDGE CONSTRUCTION SEQUENCE NOTES:

PHASE 1 - NORTH HALF OF BRIDGE:

1. REMOVE EXISTING BRIDGE SUPERSTRUCTURE AND ABUTMENT BACKWALLS DOWN TO TOP OF EXISTING ABUTMENT BRIDGE SEATS.
2. INSTALL ABUTMENT PILES AND CONSTRUCT ABUTMENTS UP TO HORIZONTAL JOINT BELOW BEAMS.
3. CONSTRUCT ABUTMENT AND PIER PEDESTALS.
4. INSTALL BEARINGS AND NEW STEEL BEAMS.
5. INSTALL DIAPHRAGMS
6. PLACE CONCRETE DECK
7. CONSTRUCT APPROACH SLABS, BRIDGE RAILING, INSTALL SHEET MEMBRANE WATERPROOFING, AND PAVEMENT.

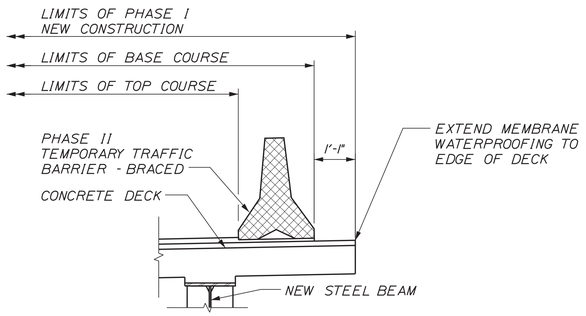
PHASE 2 - SOUTH HALF OF BRIDGE:

1. REMOVE EXISTING BRIDGE SUPERSTRUCTURE AND ABUTMENT BACKWALLS DOWN TO TOP OF EXISTING ABUTMENT BRIDGE SEATS.
2. INSTALL ABUTMENT PILES AND CONSTRUCT ABUTMENTS UP TO HORIZONTAL JOINT BELOW BEAMS.
3. CONSTRUCT ABUTMENT AND PIER PEDESTALS.
4. INSTALL BEARINGS AND NEW STEEL BEAMS.
5. INSTALL DIAPHRAGMS
6. PLACE CONCRETE DECK
7. CONSTRUCT APPROACH SLABS, BRIDGE RAILING, INSTALL SHEET MEMBRANE WATERPROOFING, AND PAVEMENT.

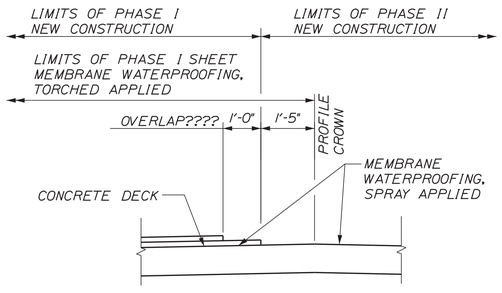
NOTES:

TEMPORARY TRAFFIC BARRIER SHALL MEET THE REQUIREMENTS FOR BRIDGE RAIL PERFORMANCE LEVEL TL3 OF NCHRP 350. TEMPORARY BARRIER CONNECTIONS SHALL BE DEVELOPED BY CONTRACTOR AND SHALL BE SUBMITTED TO VTRANS FOR REVIEW AND APPROVAL. TEMPORARY TRAFFIC BARRIER MAY BE ANCHORED TO EXISTING DECK BUT NOT TO PROPOSED DECK.

PAYMENT FOR TEMPORARY TRAFFIC BARRIER-BRACED SHALL BE MADE UNDER ITEM 621.90 TEMPORARY TRAFFIC BARRIER.




## DETAIL 'A'
½" = 1'-0"




## MEMBRANE OVERLAP DETAIL
½" = 1'-0"

CALDERWOOD ENGINEERING, ETC.
STRUCTURAL ENGINEERING • DETAILING SERVICES
222 RIVER RD. RICHMOND, ME 04357 PH/FX (207)737-2007/(207) 737-2008

PREPARED FOR:
COLD RIVER BRIDGES, LLC

CEE 106-BR-14

P.E. NUMBER

DATE:

| BY | DATE |
|---|---|
| ETC | 2014 |

DESIGN-DETAILED
CHECKED-REVIEWED
REVISIONS 1
REVISIONS 2
REVISIONS 3
REVISIONS 4
FIELD CHANGES

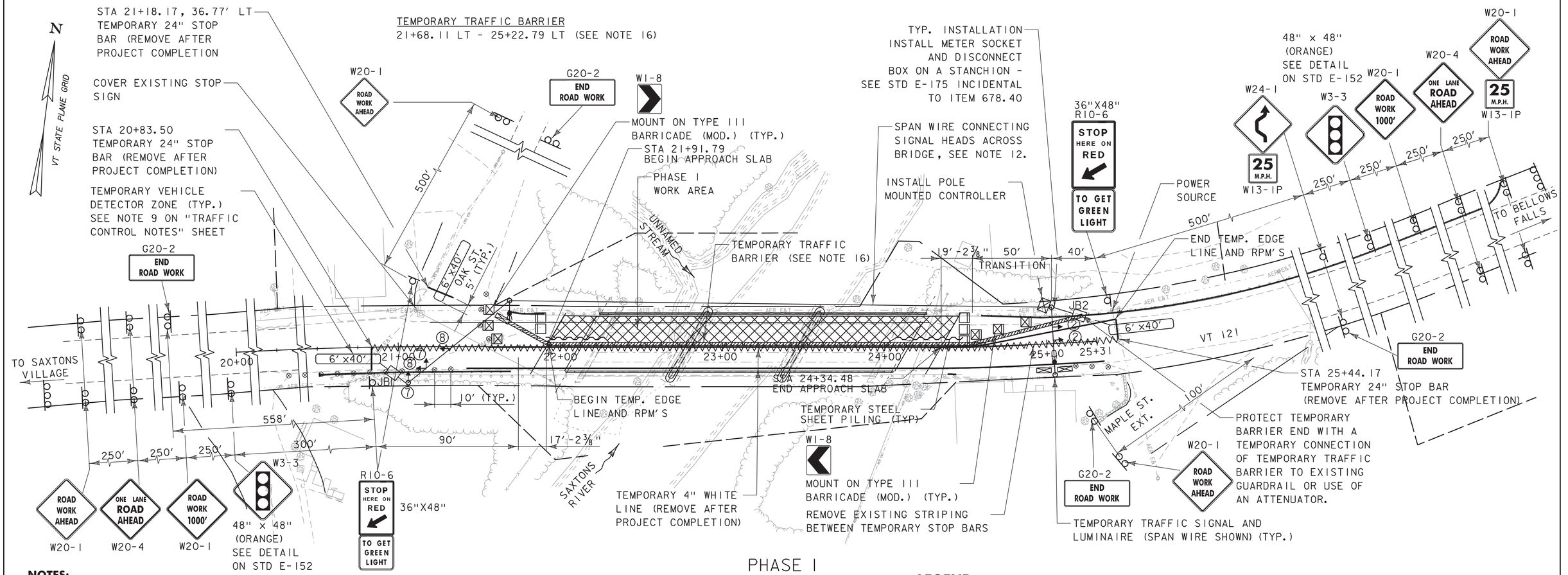
VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

CONSTRUCTION PHASING

SHEET NUMBER
14

CALDERWOOD ENGINEERING, ETC.
222 RIVER ROAD
RICHMOND, ME 04357
PH. (207)737-2007 FAX (207) 737-2008

Filename: ...\014_VE_z10j072bdr_bphase.dgn




**NOTES:**

1. SEE SHEET ENTITLED "TRAFFIC CONTROL NOTES" FOR ADDITIONAL NOTES.
2. ALL SIGNAL RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN THE SIGNAL IS NOT OPERATING.
3. ITEM LOCATIONS ARE APPROXIMATE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONFIRM ALL MEASUREMENTS IN THE FIELD.
5. BRIDGE WORK SHALL BE CONSTRUCTED IN TWO PHASES:
   a. PHASE I: NORTH SIDE OF BRIDGE
   b. PHASE II: SOUTH SIDE OF BRIDGE
6. APPROACH CONSTRUCTION SIGNING SHALL REMAIN IN PLACE DURING THE ENTIRE CONSTRUCTION PERIOD.
7. REMOVE ALL TEMPORARY PAVEMENT MARKINGS AFTER COMPLETION OF PROJECT.
8. THE CONTRACTOR SHALL REPLACE ALL EXISTING PAVEMENT MARKINGS IN KIND AFTER COMPLETION OF PROJECT. SEE LAYOUT SHEET FOR DETAILS.
9. TEMPORARY TRAFFIC SIGNAL POLES MAY BE CANTILEVER OR STRAIN POLE AT THE CONTRACTOR'S OPTION. POSITION TEMPORARY SIGNAL POLES FOR MAXIMUM VISIBILITY.
10. INSTALLATION OF TEMPORARY CONSTRUCTION SIGNS SHALL NOT OBSTRUCT EXISTING SIGNS.
11. LOCATIONS OF CONSTRUCTION APPROACH SIGNS ARE NOT SHOWN TO SCALE. USE THE DIMENSIONING SHOWN UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
12. AT CONTRACTOR'S OPTION, TEMPORARY SIGNAL WIRING ACROSS RIVER MAY BE LOCATED IN TEMPORARY CONDUIT ATTACHED TO BRIDGE.

## PHASE I

13. PAYMENT FOR INSTALLATION OF TEMPORARY TRAFFIC SIGNAL SYSTEM, INCLUDING PAVEMENT MARKINGS AND PAVEMENT MARKING REMOVAL, AND ALL RELATED TRAFFIC CONTROL DEVICES AS SPECIFIED IN SECTION 678 WILL BE MADE UNDER THE APPROPRIATE SECTION 678 ITEMS IN THE CONTRACT. PAYMENT FOR FURNISHING AND MAINTAINING ALL REMAINING TRAFFIC CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO CONSTRUCTION APPROACH SIGNING, WILL BE MADE UNDER CONTRACT ITEM 641.10
14. PAYMENT FOR TEMPORARY PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS ASSOCIATED WITH THE TEMPORARY SIGNAL SYSTEM WILL BE MADE UNDER CONTRACT ITEM 678.40.
15. A SHORT TERM FULL ROADWAY CLOSURE, WITHIN THE PROJECT LIMITS, WILL BE REQUIRED FOR COMPLETION OF THE KEYWAY CLOSURE POUR BETWEEN BEAMS B2 AND B3. CLOSURE SHALL NOT EXCEED 6 HOURS. THE CONTRACTOR SHALL PROVIDE A PLAN FOR THE SHORT TERM FULL ROAD CLOSURE TO THE ENGINEER FOR APPROVAL A MINIMUM OF 14 DAYS PRIOR TO THE CLOSURE. THE CONTRACTOR SHALL PROVIDE TWO (2) PORTABLE CHANGEABLE MESSAGE SIGNS. THEY SHALL BE PLACED ON VT RTE 121 IN ADVANCE OF THE PROJECT, ONE TO THE EAST AND ONE TO THE WEST. THE PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE PLACED 14 DAYS PRIOR TO THE CLOSURE TO GIVE ADVANCED NOTICE TO THE PUBLIC. THE ADVANCED NOTICE MESSAGE SHALL BE APPROVED BY THE ENGINEER. FOR CLOSURE PERIOD THE MESSAGE SHALL READ "BRIDGE CLOSED - SEEK ALTERNATE ROUTE". THESE SIGNS WILL BE PAID FOR UNDER ITEM 641.15. ALL OTHER ITEMS SPECIFIC TO THE FULL CLOSURE SHALL BE PAID FOR UNDER ITEM 641.10 TRAFFIC CONTROL.
16. TEMPORARY TRAFFIC BARRIER-BRACED SHALL BE USED EXCEPT FLARED ENDS MAY BE TEMPORARY TRAFFIC BARRIER IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 621.07. SEE " TEMPORARY TRAFFIC BARRIER-BRACED" SHEETS FOR DETAILS.

## LEGEND

- TEMPORARY TRAFFIC BARRIER
- TYPE III BARRICADES
- TYPE III BARRICADES (MOD.)
- REFLECTORIZED PLASTIC DRUM
- PAVEMENT MARKING REMOVAL
- TRAFFIC SIGNAL POLE WITH LUMINAIRE
- SIGNAL HEAD AND STEP
- CONTROLLER
- JUNCTION BOX
- ATTENUATOR
- PORTABLE CHANGEABLE MESSAGE SIGN
- SIGN WITH ONE POST
- SIGN WITH TWO POSTS

SIGNING NOTES:

1. INSTALL SIGNS WITH THE FLOW OF TRAFFIC.
2. ADJUST SIGN SPACINGS TO ACCOMODATE EXISTING SIGNS OR OBSTRUCTIONS - TRIM BRANCHES AS NECESSARY. PAYMENT FOR TRIMING BRANCHES SHALL BE INCIDENTAL TO ITEM 641.10 TRAFFIC CONTROL
3. COVER CONTRADICTORY EXISTING SIGNING.
4. SEE LEGEND ON TRAFFIC CONTROL PLAN -2.

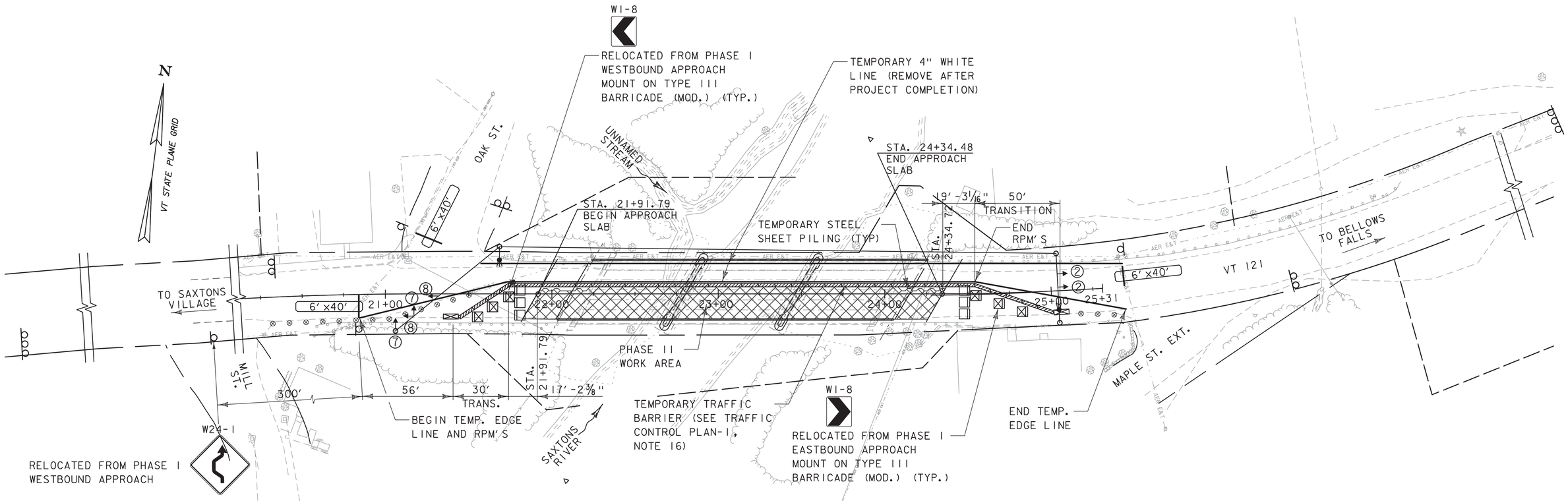
SCALE 1" = 30'-0"
30 0 30

TYLIN INTERNATIONAL

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

FILE NAME: z10j072bdr_mot_01.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: C. SARGEANT
TRAFFIC CONTROL PLAN - 1

PLOT DATE: 7/28/2014
DRAWN BY: C. SARGEANT
CHECKED BY: D. BURHANS
SHEET 15 OF 69




## PHASE II

**NOTES:**

1. FOR ADDITIONAL NOTES SEE TRAFFIC CONTROL PLAN - 1.
2. SEE TRAFFIC CONTROL PLAN - 1 FOR CONSTRUCTION APPROACH SIGNING.

| SIGN # | DESCRIPTION | SIZE | QTY | SUPPORT |
|---|---|---|---|---|
| W20-1 | ROAD WORK AHEAD | 48x48 | 4 | 8 - POSTS (2/SIGN ASSEMBLY) |
| WI3-1P | 25 M.P.H. | 24x30 | 2 | |
| W20-1 | ROAD WORK 1000 FT | 48x48 | 2 | 4 - POSTS (2/SIGN) |
| W20-4 | ONE LANE ROAD AHEAD | 48x48 | 4 | 8 - POSTS (2/SIGN) |
| W3-3 | TRAFFIC SIGNAL | 48x48 | 2 | 4 - POSTS (2/SIGN) |
| R10-6 | STOP HERE ON RED | 36x48 | 2 | 2 - POSTS (1/SIGN) |
| G20-2 | END ROAD WORK | 48x24 | 4 | 8 - POSTS (2/SIGN) |
| WI-8 | CHEVRON | 24X30 | 2 | ON BARRICADE |
| W24-1 | DOUBLE REVERSE CURVE (1LANE) | 48x48 | 1 | 1- POSTS (1/SIGN ASSEMBLY) |
| WI3-1P | 25 M.P.H. | 24x30 | 1 | |

| | |
|---|---|
| SQUARE SIGN POSTS | 35 |
| POST ANCHORS | 35 |

REMOVE AND RESET
TEMPORARY TRAFFIC BARRIER
21+40.71 RT - 24+88.45 RT

TEMPORARY TRAFFIC BARRIER
24+88.45 RT - 25+00.71 RT

SCALE 1" = 30'-0"
30 0 30

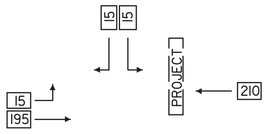
| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

T.Y. LIN INTERNATIONAL

| | |
|---|---|
| FILE NAME: z10j072bdr_mot_02.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: C. SARGEANT |
| DESIGNED BY: C. SARGEANT | CHECKED BY: D. BURHANS |
| TRAFFIC CONTROL PLAN - 2 | SHEET 16 OF 69 |

COLORS: BLACK TEXT & BORDER
WHITE REFL. BACKGROUND
MATERIALS: PER STD. E-142

## MOVEMENT VOLUME ASSUMPTIONS




**SEE TRAFFIC CONTROL PLAN FOR PHASED CONSTRUCTION PLANS.**

## CONTROLLER TIMING CHART

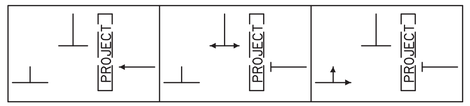
| PHASE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| IN USE | - | X | - | - | - | - | X | X | - |
| TRAFFIC MOVEMENT | | WBT | | | | | SBLR | EBLT | |
| MIN GREEN | | 8 | | | | | 8 | 8 | |
| MAX GREEN | | 23 | | | | | 20 | 24 | |
| YELLOW CLEARANCE | | 5 | | | | | 5 | 5 | |
| ALL RED CLEARANCE | | 6 | | | | | 6 | 6 | |
| VEHICLE EXTENSION | | 3 | | | | | 3 | 3 | |
| RECALL MODE | | SOFT | | | | | NONE | SOFT | |

## SIGNAL FACE ARRANGEMENT
**(12" LENSES)**

ALL

NOTE:
RED BALL AND RED ARROW INDICATIONS REQUIRE LED LAMPS WITH A VISIBLE BEAM SPREAD OF 80 DEGREES OFF AXIS

## PHASING DIAGRAM




## NOTES:

1. DESIGN OF THE SIGNAL SUPPORT(S) AND ANY REQUIRED GUYING IS THE RESPONSIBILITY OF THE CONTRACTOR. ALL WORK SHALL BE COMPLETED WITHIN THE EXISTING ROW.

2. SIGNAL TIMING/TIMING ADJUSTMENTS REQUESTED BY THE ENGINEER SHALL BE ACCOMPLISHED AS DIRECTED BY THE ENGINEER AND PAYMENT SHALL BE INCIDENTAL TO THE TRAFFIC SIGNAL ITEM. THE ALL-RED CLEARANCE INTERVAL IS BASED ON AN ASSUMED SPEED OF 10-20 MPH, THE ENGINEER SHALL MAKE SEVERAL TRIAL RUNS TO DETERMINE THE PROPER ALL-RED CLEARANCE INTERVAL.

3. SIGNAL FACES SHALL CONSIST OF 12" LENSES. (RED, YELLOW, AND GREEN)

4. THE BOTTOM OF THE HOUSING OF A SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 16½ FEET NOR MORE THAN 19 FEET ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE ROADWAY. THE BOTTOM OF A SIGNAL FACE NOT MOUNTED OVER A ROADWAY, SHALL NOT BE LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE GROUND. CAUTION SHOULD BE USED TO ENSURE COMPLIANCE WITH THE HEIGHT REQUIREMENTS IN THE EVENT THE NEW APPROACH GRADES DIFFER SIGNIFICANTLY FROM THE OLD ROAD GRADE.

5. SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 8 FEET APART MEASURED HORIZONTALLY BETWEEN CENTER OF FACES.

6. SIGNAL HEADS MAY BE HUNG ON A SPAN WIRE OR ON A CANTILEVER MAST ARM. AT LEAST ONE SIGNAL HEAD SHALL BE UNMISTAKABLY IN LINE WITH THE CENTER OF APPROACHING TRAFFIC AT ALL TIMES. THE SECOND SIGNAL HEAD MAY BE POST MOUNTED, LOCATED AT A DISTANCE NO GREATER THAN 14½ FEET FROM THE CENTER OF THE APPROACH LANE WHEN THE STOP BAR IS 40 FEET FROM THE SIGNAL HEAD. CONSULT THE M.U.T.C.D. FOR ADDITIONAL INFORMATION CONCERNING SIGNAL PLACEMENT.

7. SIGNAL HEAD PLACEMENT IS CRITICAL. HEADS SHALL BE ADJUSTED TO REFLECT LANE LOCATION CHANGES.

8. THE CONTRACTOR SHALL PROVIDE AN ACTUATED CONTROLLER. THE APPROACHES NOTED SHALL HAVE A TEMPORARY VEHICLE DETECTOR (VIA MICROWAVE EQUIPMENT). LOOPS ARE SHOWN FOR PLACEMENT PURPOSES ONLY. THE CONTROLLER, DETECTOR AND ALL OTHER SIGNAL EQUIPMENT SHALL MEET OR EXCEED ALL NEMA STANDARDS.

9. VEHICLE DETECTION SHALL BE VIA MICROWAVE DETECTION AND SHALL BE 6' X 40' FOR PRESENCE DETECTION AT THE STOP BAR WITH THE NEAR PORTION LOCATED 5 FEET BEYOND THE STOP BAR.

10. INTERVAL TIMING SHOWN IN SECONDS.

11. INTERCONNECT BETWEEN SIGNAL POLES BY WHATEVER MEANS POSSIBLE OR CONVENIENT TO PROVIDE FOR A SAFE INSTALLATION.

12. PLACE TEMPORARY POLES BEHIND GUARDRAIL WHERE POSSIBLE.

13. POLES SUPPORTING SPAN WIRES AND/OR MAST ARMS SHALL BE ADEQUATELY BRACED OR GUYED AND SHALL NOT BE PLACED SO AS TO CREATE A HAZARD TO THE TRAVELLING PUBLIC.

14. ALL TEMPORARY SIGNAL EQUIPMENT, SIGNS, ETC., SHALL BELONG TO THE CONTRACTOR AT THE END OF THE PROJECT AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL, INCLUDING ANY TEMPORARY PAVEMENT MARKINGS, UTILITY POLES, WIRES, ETC.

15. A 250 WATT MER/150 WATT HPS LUMINAIRE AND MAST ARM SHALL BE PROVIDED ON A POLE ON EACH APPROACH AT A MOUNTING HEIGHT OF 30' ABOVE ROADWAY CENTERLINE. THE INTENT IS TO LIGHT UP THE AREA AROUND THE SIGNAL HEADS AND STOP BAR FOR INCREASED VISIBILITY. THE ENGINEER SHALL DETERMINE THE ADEQUACY OF THE LIGHTING AND DIRECT CHANGES IF THE LIGHTING IS INSUFFICIENT.

16. STOP BARS SHALL BE LOCATED A MINIMUM OF 40' AND A MAXIMUM OF 120' FROM THE NEAREST SIGNAL HEAD.

17. PAYMENT FOR THE VEHICLE DETECTORS SHALL BE FOR EACH UNIT INSTALLED UNDER ITEM 678.42.

18. SEE STANDARDS E-171A, E171B, AND E-171C FOR ADDITIONAL INFORMATION ON SIGNALS AND DETECTORS.

19. A "SIGNAL AHEAD" SIGN SHALL BE PLACED AT LEAST 500' FROM THE SIGNAL OR AT A POSITION TO BE DETERMINED BY THE ENGINEER. THE COST OF THIS SIGN SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 678.40.

20. ADDITIONAL PROJECT CONSTRUCTION SIGNS SHALL BE INSTALLED AS REQUIRED BY THE ENGINEER PER STANDARDS T-10, T-28, T-29 AND T-30. PAYMENT FOR THESE SIGNS, THE REFLECTORIZED PLASTIC DRUMS, ETC, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 641.10.

21. THE "TO GET GREEN LIGHT" SIGN IS TO BE USED ONLY ON APPROACHES WITH VEHICLE DETECTORS.

22. WHEN TEMPORARY BARRIER IS USED, BARRIER ENDS FACING ONCOMING TRAFFIC SHALL BE TAPERED BEYOND THE CLEAR ZONE, OR PROTECTED WITH AN APPROVED END TREATMENT DESIGNED FOR THE 85TH PERCENTILE SPEED OR THE POSTED SPEED LIMIT OF THE ROAD WAY.

23. THE CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO ACTIVATING THE TRAFFIC SIGNALS SUCH THAT THEY CAN FIELD REVIEW CONDITIONS. THE SIGNAL SYSTEM SHALL BE PAID FOR UNDER ITEM 678.40 AND SHALL CONSIST OF POLES, SIGNS AND POSTS, WARNING SIGNS, LUMINAIRES (IF USED) AND SIGNAL EQUIPMENT TO PROVIDE FOR AN ADEQUATE DESIGN. ALSO INCLUDED ARE PERMITS AND COSTS ASSOCIATED WITH PROVIDING ELECTRICAL POWER.

24. PAYMENT FOR ALL TEMPORARY TRAFFIC CONTROL DEVICES NOT ASSOCIATED DIRECTLY WITH THE TEMPORARY TRAFFIC SIGNAL SYSTEM, INCLUDING BUT NOT LIMITED TO CONSTRUCTION APPROACH SIGNING, SHALL BE MADE UNDER ITEM 641.10.

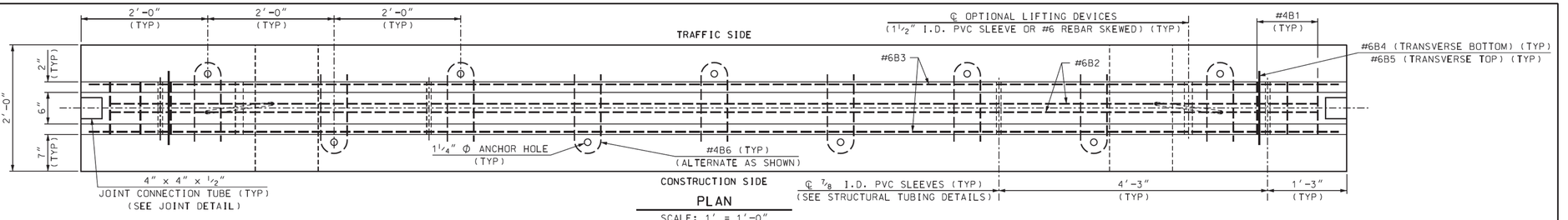
25. SIGNS, POSTS, TEMPORARY PAVEMENT MARKINGS REMOVAL, RAISED PAVEMENT MARKINGS AND PAVEMENT MARKING REMOVAL RELATED TO THE TEMPORARY TRAFFIC SIGNAL SYSTEM INSTALLATION AS SHOWN ON THE TRAFFIC CONTROL PLAN ("STOP HERE ON RED", "SIGNAL AHEAD", "TO GET GREEN LIGHT", ETC.) ARE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 678.40.

26. PAYMENT FOR TEMPORARY TRAFFIC BARRIER, REMOVING AND RESETTING TEMPORARY TRAFFIC BARRIER, AND ASSOCIATED ENERGY ABSORPTION ATTENUATORS USED, SHALL BE MADE UNDER THE APPROPRIATE ITEMS. PAYMENT FOR THE REMOVING AND RESETTING OF THE ENERGY ABSORPTION ATTENUATORS SHALL BE INCIDENTAL TO THE ENERGY ABSORPTION ATTENUATOR ITEM.

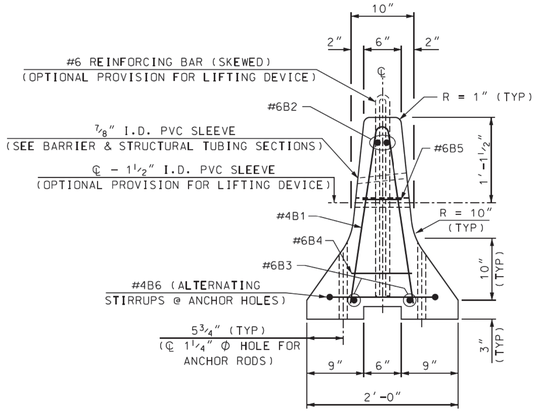
| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

T.Y.LIN INTERNATIONAL

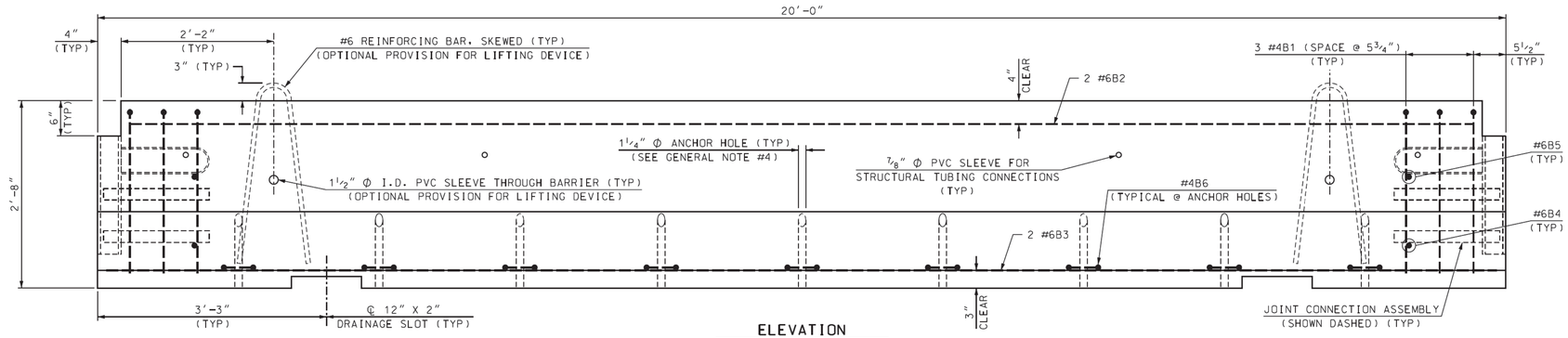
| | |
|---|---|
| FILE NAME: z10J072bdr_mot_03.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: C. SARGEANT |
| DESIGNED BY: C. SARGEANT | CHECKED BY: D. BRYANT |
| TRAFFIC CONTROL NOTES | SHEET 17 OF 69 |



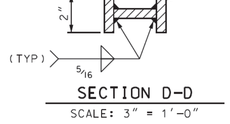

## PLAN
SCALE: 1' = 1'-0"



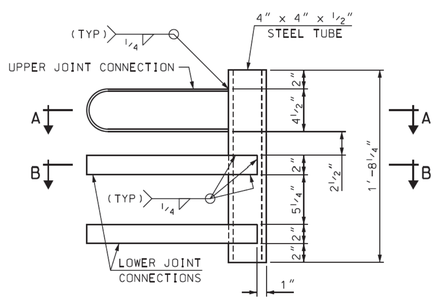

## TYPICAL SECTION
SCALE: 1" = 1'-0"



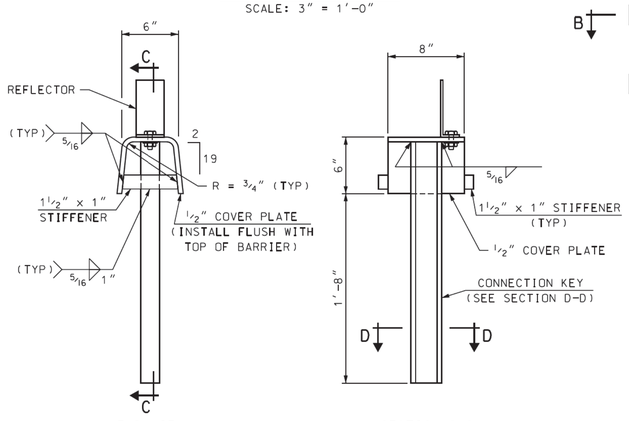

## ELEVATION
SCALE: 1' = 1'-0"



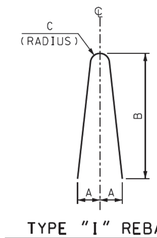

## SECTION D-D
SCALE: 3" = 1'-0"



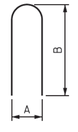

## JOINT ASSEMBLY
SCALE: 1½" = 1'-0"



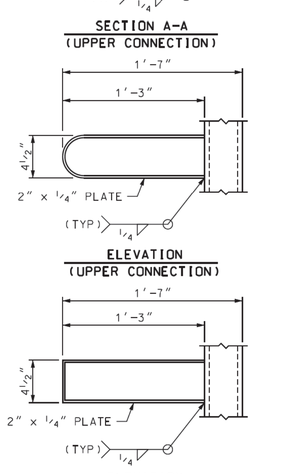

## CONNECTION KEY ASSEMBLY DETAILS
SCALE: 1½" = 1'-0"




## TYPE "I" REBAR
NOT TO SCALE




## TYPE "II" REBAR
NOT TO SCALE




## JOINT CONNECTION DETAILS
SCALE: 1½" = 1'-0" (EXCEPT AS NOTED)

## GENERAL NOTES

1. TEMPORARY TRAFFIC BARRIER-BRACED SHALL BE FURNISHED BY THE CONTRACTOR AND PAID FOR AS ITEM 621.90 TEMPORARY TRAFFIC BARRIER. CONCRETE BARRIER AND ALL ATTACHMENTS SHALL BE FABRICATED IN ACCORDANCE WITH SECTION 621. ALL BARRIER UNITS FOR BRACED SYSTEMS SHALL BE 20' LONG.

2. TEMPORARY TRAFFIC BARRIER-BRACED DETAILS, AS SHOWN IN THESE PLANS, ARE IN COMPLIANCE WITH REQUIREMENTS PER UPDATED NCHRP REPORT 350 FOR TEST NO. 3-11, TL-3 CRASH TESTED BY MIDWEST ROADSIDE SAFETY; NY BOX BEAM STIFFENING OF UNANCHORED TCB, MARCH 2008. THE BARRIER SYSTEM TESTED WITH A 27.6" DYNAMIC DEFLECTION AND ALLOWS FOR PLACEMENT AT A MINIMUM 12" DISTANCE BETWEEN BARRIERS AND EDGE OF BRIDGE DECK.

3. A MINIMUM OF TWO BARRIER UNITS WITH BRACED JOINTS ARE REQUIRED TO BE PLACED BEYOND BOTH ENDS OF THE BRIDGE WORK AREA FOR SPEED GREATER THAN 45 MPH. FOR SPEEDS ≤ 45 MPH, A MINIMUM OF ONE BRACED BARRIER IS REQUIRED TO BE FULLY SET BEYOND EACH END OF BRIDGE WORK AREA.

4. THE LAST CONCRETE BARRIER UNIT, AT EACH END OF BARRIER LAYOUT, SHALL BE ANCHORED A MINIMUM 18" BELOW THE ROADWAY SURFACE. REQUIRED 1" DIA. ANCHOR RODS (A36 STEEL) SHALL BE INSTALLED WITH 5 ANCHORS ON THE TRAFFIC SIDE OF BARRIER AND 4 ON THE CONSTRUCTION SIDE. IF THE END(S) OF THE BRACED CONCRETE BARRIER SYSTEM EXTENDS 50' OR MORE BEYOND LIMITS OF BRIDGE WORK THE LAST BARRIER UNIT DOES NOT REQUIRE ANCHORAGE.

5. TEMPORARY TRAFFIC BARRIER - BRACED, MAY BE INSTALLED WITH A 230' MINIMUM RADIUS. GAPS CREATED BETWEEN STRUCTURAL TUBES AND CONCRETE BARRIER, DURING A RADIAL LAYOUT, SHALL BE SHIMMED WITH 8"x8"x½" PLATES & FENDER WASHERS TO FIRMLY ATTACH STRUCTURAL TUBING TO BARRIER.

6. THE CONTRACTOR SHALL FURNISH AND INSTALL APPROVED RETROREFLECTIVE DELINEATORS AT 25-FOOT INTERVALS ALONG TOP AND/OR ONE FOOT DOWN THE SIDE OF PORTABLE CONCRETE BARRIER. PAYMENT FOR DELINEATORS SHALL BE MADE UNDER ITEM 621.90 TEMPORARY TRAFFIC BARRIER. THE COLOR OF DELINEATORS SHALL, IN ALL INSTANCES, CONFORM TO THE COLOR OF EDGE LINE MARKINGS. DELINEATORS SUPPLEMENT, BUT DO NOT REPLACE, THE NEED FOR RETROREFLECTIVE SOLID EDGE LINE MARKINGS.

## MATERIAL NOTES

1. BARRIERS SHALL BE LIGHT COLORED CLASS AA CONCRETE, WITH MINIMUM COMPRESSIVE STRENGTH OF 4000 psi, AND SHALL HAVE A SMOOTH UNIFORM SURFACE FREE OF DEFECTS AND IRREGULARTIES. CASTING DATE SHALL BE SHOWN ON BARRIER. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED ¾", UNLESS OTHERWISE NOTED.

2. ALL REINFORCING STEEL SHALL BE AASHTO M31 (ASTM A615) GRADE 60. ALL REINFORCEMENT SHALL HAVE 1½" MINIMUM CLEAR COVER, UNLESS OTHERWISE NOTED.

3. STRUCTURAL STEEL, EXCEPT THE STEEL TUBES, SHALL BE ASTM A36 GRADE 345. ALL STEEL SHALL BE FABRICATED IN ACCORDANCE WITH SECTION 506.

4. STEEL TUBES, 6x6x⅜ & 4x4x½, SHALL BE ASTM A 500 GRADE B OR C. THE 6x6x⅜ TUBES SHALL BE 12' LONG AND GALVANIZED IN ACCORDANCE WITH SUBSECTION 560.15.

5. A MINIMUM OF 2 RECESSED LIFTING DEVICES, EACH WITH THE CAPACITY TO LIFT A MASS OF 6 TONS (MINIMUM), SHALL BE INSTALLED TO EACH BARRIER UNIT. TWENTY FOOT LONG CONCRETE BARRIER UNITS ARE APPROXIMATELY 400 LBS./FT.

6. DELINEATORS SHALL BE ATTACHED TO BARRIER USING AN APPROVED ADHESIVE MATERIAL OR AS SHOWN ON THIS SHEET.

## REINFORCING SCHEDULE (PER 20' BARRIER UNIT)

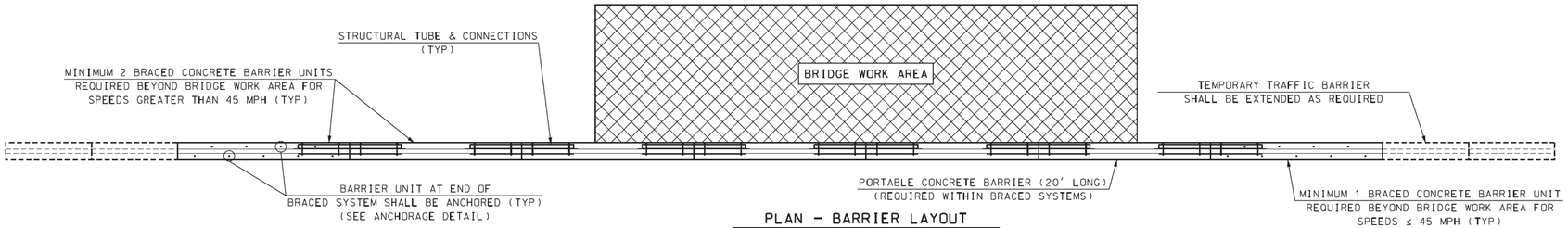
| MARK | SIZE | LENGTH | # PIECES | TYPE | A | B | C | LOCATION |
|---|---|---|---|---|---|---|---|---|
| B1 | #4 | 4'-10" | 6 | I | 5" | 2'-4" | 1" | STIRRUPS |
| B2 | #6 | 19'-1" | 2 | — | | | | LONGITUDINAL (TOP) |
| B3 | #6 | 19'-9" | 2 | — | | | | LONGITUDINAL (BOTTOM) |
| B4 | #6 | 1'-2" | 2 | — | | | | TRANSVERSE (BOTTOM) |
| B5 | #6 | 6" | 2 | — | | | | TRANSVERSE (TOP) |
| B6 | #4 | 2'-9" | 9 | II | 5" | 1'-3" | | STIRRUPS |

T.Y.LIN INTERNATIONAL

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

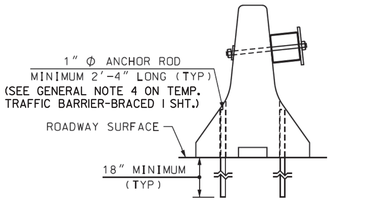
FILE NAME: x10J072bdr_ttb.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: -
PLOT DATE: 7/28/2014
DRAWN BY: P. MCCLURE
CHECKED BY: D. BURHANS

TEMPORARY TRAFFIC BARRIER-BRACED (1 OF 2) SHEET 18 OF 69



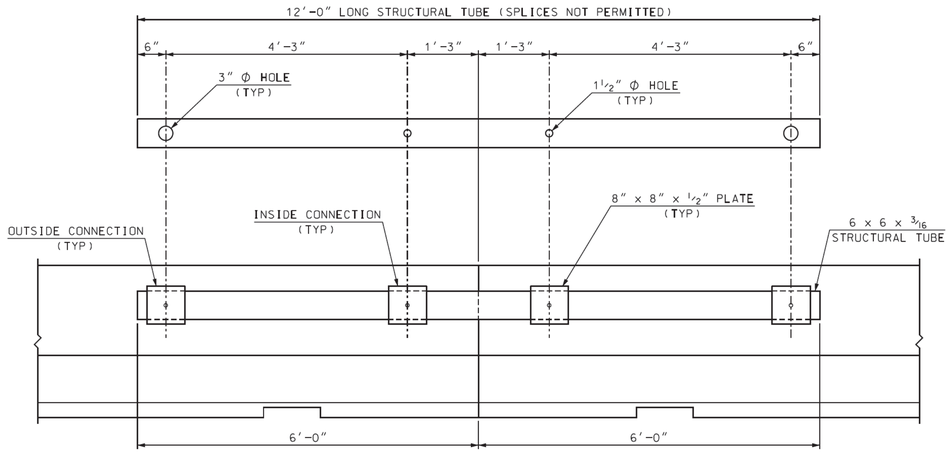

PLAN - BARRIER LAYOUT

NOT TO SCALE




ANCHORAGE DETAIL

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

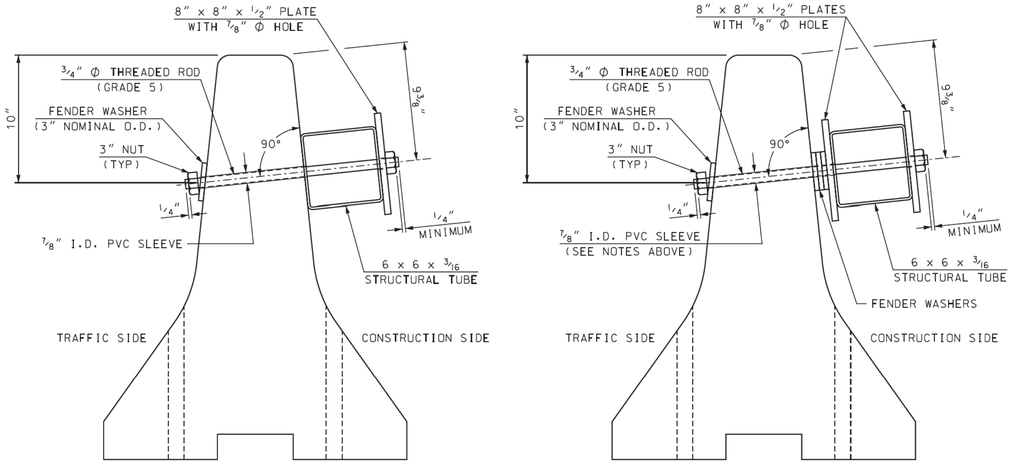



STRUCTURAL TUBING DETAILS

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

PVC SLEEVE OPENINGS SHALL BE MODIFIED/DRILLED AS REQUIRED TO PROPERLY ALIGN STRUCTURAL TUBE BRACING UNITS FOR CURVED ALIGNMENTS

THE PRESENCE OF NORMAL HOLES WHICH HAVE BEEN MODIFIED/DRILLED WILL NOT AFFECT THE REUSE OF CONCRETE BARRIER UNITS

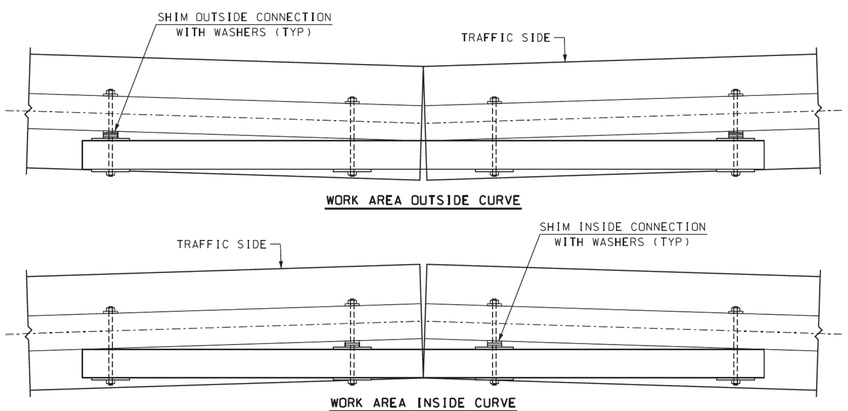



SECTION WITHOUT SHIMS

SECTION WITH SHIMS

BARRIER & STRUCTURAL TUBING SECTIONS

SCALE: 2" = 1'-0"




TUBE CONNECTIONS (CURVED ALIGNMENT)

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

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

TY LIN INTERNATIONAL

| | |
|---|---|
| FILE NAME: x10J072bdr_ttb.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: P. MCLURE |
| DESIGNED BY: - | CHECKED BY: D. BURHANS |

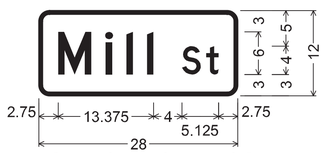
TEMPORARY TRAFFIC BARRIER-BRACED (2 OF 2) SHEET 19 OF 69

STATE OF VERMONT
AGENCY OF TRANSPORTATION

# TRAFFIC SIGN SUMMARY SHEET

| MILE MARKER, STATION OR SIGN NUMBER | SIGN LEGEND | SIGN DIMENSIONS | | | NEW & SALVAGED SIGNS | | | | EXIST POST | | NEW SIGN POSTS | | | | | | | | | | | | | | | | | | | | | REMARKS | SIGN DETAIL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EACH | WIDTH (in) | HEIGHT (in) | "A" | "B" | SALV SIGN | SALV TIS | RETAIN | SALVAGE | NO. OF POST | FLANGED CHANNEL (LB / FT) | | | SQUARE STEEL (in) (LB / FT) | | | ANCHOR | SLEEVE | TUBULAR ALUMINUM Ø (IN) (LB / FT) | | | FOUNDATION | TUBULAR STEEL Ø (IN) (LB / FT) | | | | W-SHAPE STEEL | | | | | | DETAIL ON SHEET NUMBER | STANDARD SHEET NUMBER |
| | | | | | | | | | | | | | | | 1.75 | 2.00 | 2.50 | | | 3.00 | 4.00 | 4.0 MOD | | 3.00 | 3.50 | 4.00 | 5.00 | FTG. SIZE 24" | FTG. SIZE 30" | WEIGHT | POST SIZE | SIGN FRAME REQUIRED | | | |
| | | | | | | | | | | | | 1.12 | 2.00 | 3.00 | 1.88 | 2.42 | 3.35 | | | 1.30 | 1.70 | 1.70 | | 7.60 | 9.00 | 10.80 | 14.60 | | | | | | | | |
| **OPTION ITEMS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20+26.09, RT | Mill St / STOP | | 28.0 | 12.0 | 2.3 | | 1.0 | | | | 1.0 | | | | | X | | 1.0 | | | | | | | | | | | | | | MOUNT TO STOP SIGN WITH BRACKET | 20 | |
| 21+11.51, LT | STOP | | 30.0 | 30.0 | 6.3 | | | | | | 1.0 | | | | | X | | 1.0 | | | | | | | | | | | | | | | | |
| 22+04.98, LT | SAXTONS RIVER HISTORIC DISTRICT | | | | | | 1.0 | | | | 1.0 | | | | | X | | 1.0 | | | | | | | | | | | | | | | | E-143 |
| 21+97.75, RT | BRIDGE 11-R VT121 | | 6.0 | 8.0 | 0.3 | | | | | | 1.0 | | | | | X | | 1.0 | | | | | | | | | | | | | | BRIDGE NO. PLAQUE VD-701 | | T-42 |
| 24+30.02, LT | BRIDGE 11-R VT121 | | 6.0 | 8.0 | 0.3 | | | | | | 1.0 | | | | | X | | 1.0 | | | | | | | | | | | | | | BRIDGE NO. PLAQUE VD-701 | | T-42 |
| | | | | | | | | | | | | FT . | FT . | FT . | FT . | FT 60. | FT . | EA 5. | EA . | LB . | LB . | LB . | | LB . | LB . | LB . | LB . | | | | | | | |
| | TOTALS | | | | SF 9.2 | SF . | EA. 2. | SF . | | | | FT . | | | FT 60. | | | | | LB . | | | EA. | LB . | | | | EA. . | EA. . | LB . | | | | |

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD.
POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."




DOUBLE-SIDED STREET SIGN:;
1.500" Radius, 0.500" Border, White on Green;
[Mill] D; [St] D;

D3-1 STREET NAME SIGN DETAIL

T.Y.LIN INTERNATIONAL

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

FILE NAME: z10J072bdr_TSS.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: B. TOOTHAKER
SIGN SUMMARY SHEET

PLOT DATE: 7/28/2014
DRAWN BY: B.TOOTHAKER
CHECKED BY: D. BURHANS
SHEET 20 OF 69

## SOIL CLASSIFICATION

| AASHTO | |
|---|---|
| A1 | Gravel and Sand |
| A3 | Fine Sand |
| A2 | Silty or Clayey Gravel and Sand |
| A4 | Silty Soil - Low Compressibility |
| A5 | Silty Soil - Highly Compressible |
| A6 | Clayey Soil - Low Compressibility |
| A7 | Clayey Soil - Highly Compressible |

## ROCK QUALITY DESIGNATION

| R.Q.D. (%) | ROCK DESCRIPTION |
|---|---|
| <25 | Very Poor |
| 25 to 50 | Poor |
| 51 to 75 | Fair |
| 76 to 90 | Good |
| >90 | Excellent |

## SHEAR STRENGTH

| UNDRAINED SHEAR STRENGTH IN P.S.F. | CONSISTENCY |
|---|---|
| <250 | Very Soft |
| 250-500 | Soft |
| 500-1000 | Med. Stiff |
| 1000-2000 | Stiff |
| 2000-4000 | Very Stiff |
| >4000 | Hard |

## CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

| DENSITY (GRANULAR SOILS) | | CONSISTENCY (COHESIVE SOILS) | |
|---|---|---|---|
| N | DESCRIPTIVE TERM | N | DESCRIPTIVE TERM |
| <5 | Very Loose | <2 | Very Soft |
| 5-10 | Loose | 2-4 | Soft |
| 11-24 | Med. Dense | 5-8 | Med. Stiff |
| 25-50 | Dense | 9-15 | Stiff |
| >50 | Very Dense | 16-30 | Very Stiff |
| | | 31-60 | Hard |
| | | >60 | Very Hard |

## COMMONLY USED SYMBOLS

| | |
|---|---|
| ▼ | Water Elevation |
| | Standard Penetration Boring |
| ⊕ | Auger Boring |
| ⊙ | Rod Sounding |
| S | Sample |
| N | Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30" |
| VS | Field Vane Shear Test |
| US | Undisturbed Soil Sample |
| B | Blast |
| DC | Diamond Core |
| MD | Mud Drill |
| WA | Wash Ahead |
| HSA | Hollow Stem Auger |
| AX | Core Size 1 1/8" |
| BX | Core Size 1 5/8" |
| NX | Core Size 2 1/8" |
| M | Double Tube Core Barrel Used |
| LL | Liquid Limit |
| PL | Plastic Limit |
| PI | Plasticity Index |
| NP | Non Plastic |
| w | Moisture Content (Dry Wgt. Basis) |
| D | Dry |
| M | Moist |
| MTW | Moist To Wet |
| W | Wet |
| Sat | Saturated |
| Bo | Boulder |
| Gr | Gravel |
| Sa | Sand |
| Si | Silt |
| Cl | Clay |
| HP | Hardpan |
| Le | Ledge |
| NLTD | No Ledge To Depth |
| CNPF | Can Not Penetrate Further |
| TLOB | To Ledge Or Boulder |
| NR | No Recovery |
| Rec. | Recovery |
| %Rec. | Percent Recovery |
| RQD | Rock Quality Designation |
| CBR | California Bearing Ratio |
| < | Less Than |
| > | Greater Than |
| R | Refusal (N > 100) |

| COLOR | | | |
|---|---|---|---|
| blk | Black | pnk | Pink |
| bl | Blue | pu | Purple |
| brn | Brown | rd | Red |
| dk | Dark | tn | Tan |
| gry | Gray | wh | White |
| gn | Green | yel | Yellow |
| lt | Light | mltc | Multicolored |
| or | Orange | | |

## DEFINITIONS (AASHTO)

**BEDROCK (LEDGE)** - Rock in its native location of indefinite thickness.

**BOULDER** - A rock fragment with an average dimension > 12 inches.

**COBBLE** - Rock fragments with an average dimension between 3 and 12 inches.

**GRAVEL** - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

**SAND** - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

**SILT** - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

**CLAY** - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

**VARVED** - Alternate layers of silt and clay.

**HARDPAN** - Extremely dense soil, cemented layer, not softened when wet.

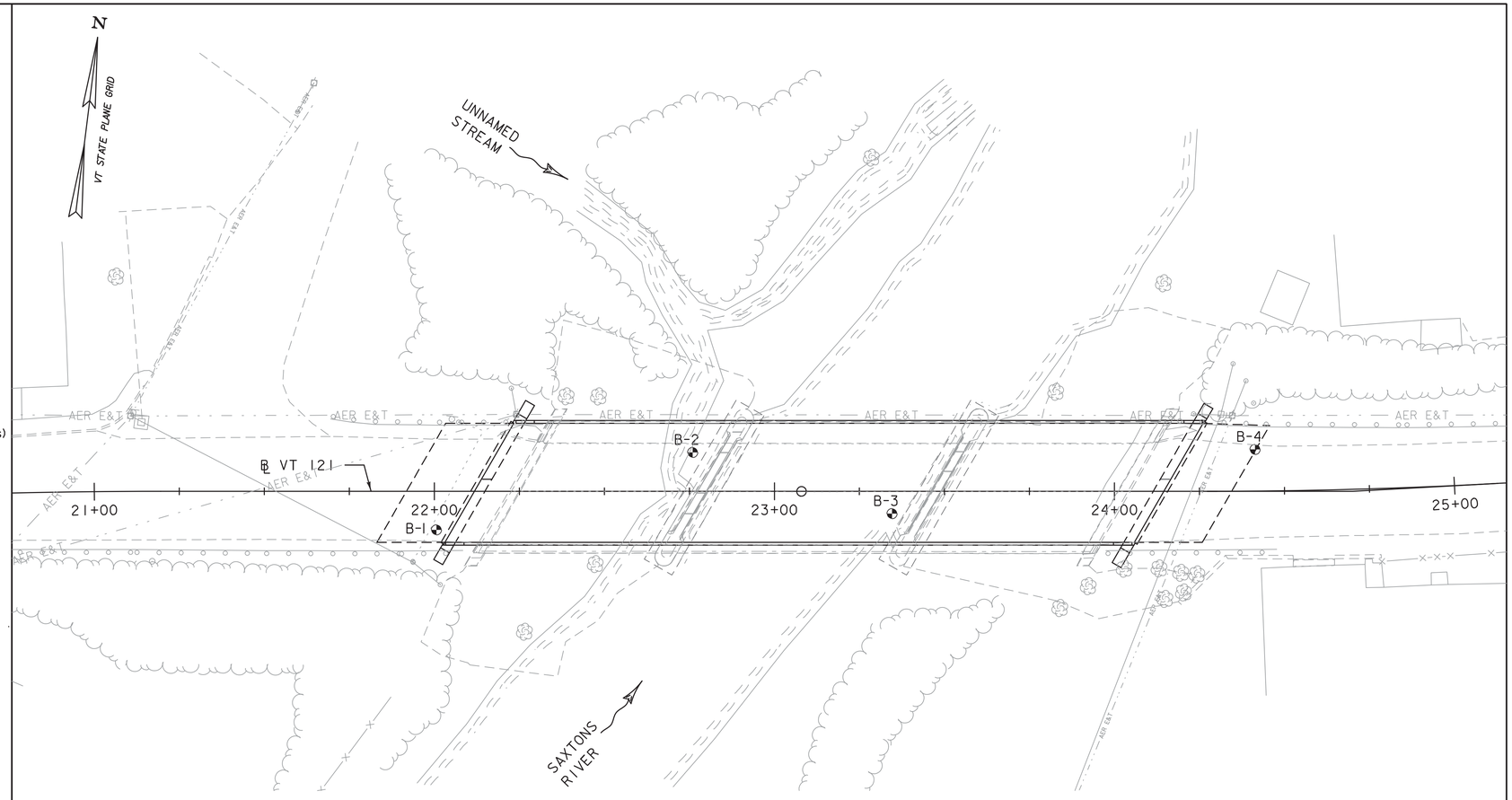
**MUCK** - Soft organic soil (containing > 10% organic material.

**MOISTURE CONTENT** - Weight of water divided by dry weight of soil.

**FLOWING SAND** - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

**STRIKE** - Angle from magnetic north to line of intersection of bed with a horizontal plane.

**DIP** - Inclination of bed with a horizontal plane.




## BORING LAYOUT

SCALE 1" = 20'-0"

0 20 40

SCALE IN FEET

## GENERAL NOTES

1. The subsurface explorations shown herein were made between November 11, 2011 and November 12, 2011 and between December 15, 2011 and December 16, 2011 by S.W. Cole Engineering, Inc.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by S.W. Cole Engineering and may not necessarily reflect actual variations in sub-surface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

## BORING LAYOUT

| HOLE NO. | STATION | OFFSET | NORTHING | EASTING | GROUND ELEVATION | ELEVATION TLOB |
|---|---|---|---|---|---|---|
| B-1 | 22+00.6 | 11.3 RT | 233043.05 | 1639670.68 | 452.0 | 356.0 |
| B-2 | 22+76.0 | 11.4 LT | 233074.93 | 1639742.67 | 451.0 | - |
| B-3 | 23+34.6 | 6.6 RT | 233064.31 | 1639803.06 | 450.0 | - |
| B-4 | 24+41.5 | 12.3 LT | 233096.24 | 1639906.66 | 449.0 | - |

T.Y.LIN INTERNATIONAL

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

FILE NAME: z10j072bdr_bor_lnf.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: T. POULIN
BORING INFORMATION & LAYOUT SHEET

PLOT DATE: 7/28/2014
DRAWN BY: S. MORGAN
CHECKED BY: R. HEBERT
SHEET 21 OF 69

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

**BRF 0126(12) Bridge Replacement Proj.**
**Route 121 over the Saxton River**
**Rockingham, Vermont**

Boring No.: **B- 1**
Page No.: 1 of 3
Pin No.:
Checked By:

Boring Crew: Nate Seguin (SWCE), Tony Martinelli (CDS)
Date Started: 11/11/11 Date Finished: 11/15/11
VTSPG NAD83: N 233043.05 ft E 1639670.68 ft
Station: Offset:
Ground Elevation: 452.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | PW | SS |
| I.D.: | 5 in | 1.25 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Auto/AWJ | |
| Rig: | Truck Mount D-120 | $C_E$ = |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Run (D/p deg.) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|---|
| | | BITUMINOUS PAVEMENT, 0.0 ft - 0.3 ft | | 12-10-10-9 (20) | | | | |
| | | Dark brown silty gravelly SAND, Rec. = 0.5 ft, 0.3 ft - 0.6 ft | | | | | | |
| | | Brown SAND with some gavel and silt, 0.6 ft - 3.0 ft | | | | | | |
| 5 | | Brown Silty SAND with some gravel, 3.0 ft - 8.0 ft<br>Rec. = 1.0 ft | | 5-5-5-5 (10) | | | | |
| | | Brown silty gravelly SAND, 8.0 ft - 21.0 ft<br>Rec. = 0.25 ft | | 4-3-4-3 (7) | | | | |
| 10 | | | | | | | | |
| 15 | | Rec. = 0.8 ft | | 8-9-10-7 (19) | | | | |
| | | Rec. = 0.7 ft | | 9-7-7-11 (14) | | | | |
| 20 | | Brown gravelly silty SAND, 21.0 ft - 28.0 ft, (NATIVE) | | | | | | |
| 25 | | Rec. = 1.2 ft | | 20-13-19-27 (32) | | | | |
| | | Gray silty gravelly SAND, 28.0 ft - 33.0 ft, (TILL)<br>Rec. = 1.5 ft | | 30-48-31-34 (79) | | | | |
| 30 | | | | | | | | |
| | | Gray silty SAND with some gravel, 33.0 ft - 68.0 ft, (TILL)<br>Rec. = 1.3 ft | | 24-35-53-79 (88) | | | | |
| 35 | | | | | | | | |
| 40 | | Rec. = 1.5 ft | | 32-34-41-46 (75) | | | | |
| 45 | | Rec. = 1.5 ft | | 44-48-76-50-4" (124) | | | | |
| | | Rec. = 1.5 ft | | 41-36- | | | | |

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY 11-1030.GPJ VERMONT AOT.GDT 12/21/12

BOTTOM OF
ABUT. NO. 1
ELEV. = 443.00

ESTIMATED PILE TIP
@ ABUT. NO. 1
ELEV. = 367.00

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

**BRF 0126(12) Bridge Replacement Proj.**
**Route 121 over the Saxton River**
**Rockingham, Vermont**

Boring No.: **B- 1**
Page No.: 2 of 3
Pin No.:
Checked By:

Boring Crew: Nate Seguin (SWCE), Tony Martinelli (CDS)
Date Started: 11/11/11 Date Finished: 11/15/11
VTSPG NAD83: N 233043.05 ft E 1639670.68 ft
Station: Offset:
Ground Elevation: 452.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | PW | SS |
| I.D.: | 5 in | 1.25 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Auto/AWJ | |
| Rig: | Truck Mount D-120 | $C_E$ = |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Run (D/p deg.) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|---|
| | | | | 47-50-4" (83) | | | | |
| 55 | | Rec. = 0.5 ft | | 21-50-4" | | | | |
| 60 | | Rec. = 0.3 ft | | 71-6" | | | | |
| 65 | | Rec. = 0.8 ft | | 22-36-50-5" | | | | |
| | | Gray silty gravelly SAND with occasional cobbles, 68.0 ft - 95.0 ft, (TILL)<br>Rec. = 0.3 ft | | 50-6" | | | | |
| 70 | | | | | | | | |
| 75 | | Rec. = 0.25 ft | | 50-5" | | | | |
| 80 | | Rec. = 0.3 ft | | 30-37-72-25-1" | | | | |
| 85 | | Rec. = 0.2 ft | | 50-3" | | | | |
| 90 | | Rec. = 0.3 ft | | 94-6" | | | | |
| | | Rec. = 0.3 ft | | 70-82 | | | | |
| 95 | | Weathered ROCK, 95.0 ft - 96.0 ft | | | | | | |
| | | BEDROCK, 96.0 ft - 106.0 ftNQ | R-1 | Top of Bedrock @ 96.0 ft | | | | |

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY 11-1030.GPJ VERMONT AOT.GDT 12/21/12

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

**BRF 0126(12) Bridge Replacement Proj.**
**Route 121 over the Saxton River**
**Rockingham, Vermont**

Boring No.: **B- 1**
Page No.: 3 of 3
Pin No.:
Checked By:

Boring Crew: Nate Seguin (SWCE), Tony Martinelli (CDS)
Date Started: 11/11/11 Date Finished: 11/15/11
VTSPG NAD83: N 233043.05 ft E 1639670.68 ft
Station: Offset:
Ground Elevation: 452.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | PW | SS |
| I.D.: | 5 in | 1.25 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Auto/AWJ | |
| Rig: | Truck Mount D-120 | $C_E$ = |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Run (D/p deg.) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|---|
| 105 | | Hole stopped @ 106.0 ft | | | | | | |
| 110 | | | | | | | | |
| 115 | | | | | | | | |
| 120 | | | | | | | | |
| 125 | | | | | | | | |
| 130 | | | | | | | | |
| 135 | | | | | | | | |
| 140 | | | | | | | | |
| 145 | | | | | | | | |

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY 11-1030.GPJ VERMONT AOT.GDT 12/21/12

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

TY LIN INTERNATIONAL

FILE NAME: z10J072bdr_borl.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: S. KELLER
BORING LOG (1 OF 4)

PLOT DATE: 7/28/2014
DRAWN BY: T. KELLEY
CHECKED BY: S. KELLER
SHEET 22 OF 69

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

**BRF 0126(12) Bridge Replacement Proj.**
**Route 121 over the Saxton River**
**Rockingham, Vermont**

Boring No.: **B- 2**
Page No.: 1 of 2
PIn No.:
Checked By:

Boring Crew: Nate Seguin (SWCE), Tony Martinelli (CDS)
Date Started: 11/17/11 Date Finished: 11/17/11
VTSPG NAD83: N 233074.93 ft E 1639742.67 ft
Station: Offset:
Ground Elevation: 451.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | HW | SS |
| I.D.: | 4 in | 1.25 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Auto/AWJ | |
| Rig: Truck Mount D-120 | $C_E$ = | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|
| 0 | | Rec. = 0.5 ft | | | | | |
| | | BITUMINOUS PAVEMENT, 0.0 ft - 0.3 ft | | | | | |
| | | REINFORCED CONCRETE, 0.3 ft - 0.8 ft | | | | | |
| | | Open air, 0.8 ft - 26.0 ft | | | | | |
| 25 | | River Bottom Alluvial soils, cobbles, 26.0 ft - 32.0 ft | | | | | |
| 30 | | Gray silty SAND with some gravel, 32.0 ft - 63.0 ft, (TILL) | | | | | |
| 35 | | Rec. = 0.4 ft | 82-63-56 (119) | | | | |
| 40 | | Rec. = 1.5 ft | 25-33-37-25 (70) | | | | |
| 45 | | Rec. = 0.75 ft | 30-44-50-5" | | | | |
| | | Rec. = 1.0 ft | 20-26- | | | | |

BOTTOM OF EXISTING PIER. NO. I
ELEV. = 413.8 ±

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY 11-1030.GPJ VERMONT AOT.GDT 12/21/12

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

**BRF 0126(12) Bridge Replacement Proj.**
**Route 121 over the Saxton River**
**Rockingham, Vermont**

Boring No.: **B- 2**
Page No.: 2 of 2
PIn No.:
Checked By:

Boring Crew: Nate Seguin (SWCE), Tony Martinelli (CDS)
Date Started: 11/17/11 Date Finished: 11/17/11
VTSPG NAD83: N 233074.93 ft E 1639742.67 ft
Station: Offset:
Ground Elevation: 451.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | HW | SS |
| I.D.: | 4 in | 1.25 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Auto/AWJ | |
| Rig: Truck Mount D-120 | $C_E$ = | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|
| 55 | | Rec. = 0.7 ft | 24-36 (50) | | | | |
| 60 | | Rec. = 0.8 ft | 73-75-3" | | | | |
| 65 | | Gray silty SAND with some gravel with occasional cobbles, 63.0 ft - 69.5 ft, (TILL) | 54-50-5" | | | | |
| | | Rec. = 0.5 ft | 75-6" | | | | |
| 70 | | Rec. = 0.3 ft | 69-6" | | | | |
| | | Hole stopped @ 69.5 ft | | | | | |

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY 11-1030.GPJ VERMONT AOT.GDT 12/21/12

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

T.Y.LIN INTERNATIONAL

FILE NAME: z10J072bdr_bor2.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: S. KELLER
BORING LOG (2 OF 4)

PLOT DATE: 7/28/2014
DRAWN BY: T. KELLEY
CHECKED BY: S. KELLER
SHEET 23 OF 69

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

**BRF 0126(12) Bridge Replacement Proj.**
**Route 121 over the Saxton River**
**Rockingham, Vermont**

Boring No.: B- 3
Page No.: 1 of 2
Pin No.:
Checked By:

Boring Crew: Nate Seguin (SWCE), Tony Martinelli (CDS)
Date Started: 11/16/11 Date Finished: 11/16/11
VTSPG NAD83: N 233064.31 ft E 1639803.06 ft
Station: Offset:
Ground Elevation: 450.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | HW | SS |
| I.D.: | 4 in | 1.25 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Auto/AW-J | |
| Rig: Truck Mount D-120 | $C_E$ = | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|
| | | BITUMINOUS PAVEMENT, 0.0 ft - 0.3 ft | | | | | |
| | | REINFORCED CONCRETE, 0.3 ft - 0.8 ft | | | | | |
| | | Open air, 0.8 ft - 27.0 ft | | | | | |
| 30 | | Alluvial Soils? (silty sands), 27.0 ft - 33.0 ft | | | | | |
| | | Rec. = 0.0 ft | 8-3-4-4 (7) | | | | |
| | | Gray silty SAND with some gravel, 33.0 ft - 58.0 ft, (TILL) | | | | | |
| 35 | | Rec. = 0.6 ft | 19-25-17-28 (42) | | | | |
| 40 | | Rec. = 0.7 ft | 15-29-50 (79) | | | | |
| 45 | | Rec. = 0.8 ft | 31-48-50-4" | | | | |

BOTTOM OF EXISTING PIER. NO. 2 ELEV. = 413.8 ±

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. $C_E$ is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY 11-1030.GPJ VERMONT AOT.GDT 12/21/12

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

**BRF 0126(12) Bridge Replacement Proj.**
**Route 121 over the Saxton River**
**Rockingham, Vermont**

Boring No.: B- 3
Page No.: 2 of 2
Pin No.:
Checked By:

Boring Crew: Nate Seguin (SWCE), Tony Martinelli (CDS)
Date Started: 11/16/11 Date Finished: 11/16/11
VTSPG NAD83: N 233064.31 ft E 1639803.06 ft
Station: Offset:
Ground Elevation: 450.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | HW | SS |
| I.D.: | 4 in | 1.25 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Auto/AW-J | |
| Rig: Truck Mount D-120 | $C_E$ = | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|
| 55 | | Rec. = 1.5 ft | 19-31-37-41 (68) | | | | |
| | | Rec. = 0.6 ft | 56-70 | | | | |
| 60 | | Gray gravelly silty SAND, 58.0 ft - 68.0 ft, (TILL) | | | | | |
| | | Rec. = 0.3 ft | 100-5" | | | | |
| 65 | | Rec. = 0.25 ft | 78-5" | | | | |
| 70 | | Gray silty fine SAND with some gravel, 68.0 ft - 71.5 ft, (TILL) | | | | | |
| | | Rec. = 0.88 ft | 21-37-50 (87) | | | | |
| | | Hole stopped @ 71.5 ft | | | | | |

Notes:
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3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

2010 COPY 11-1030.GPJ VERMONT AOT.GDT 12/21/12

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

T·Y·LIN INTERNATIONAL

FILE NAME: z10J072bdr_bor3.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: S. KELLER
BORING LOG (3 OF 4)

PLOT DATE: 7/28/2014
DRAWN BY: T. KELLEY
CHECKED BY: S. KELLER
SHEET 24 OF 69

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

**BRF 0126(12) Bridge Replacement Proj.**
**Route 121 over the Saxton River**
**Rockingham, Vermont**

Boring No.: **B- 4**
Page No.: 1 of 2
Pin No.:
Checked By:

Boring Crew: Nate Seguin (SWCE), Tony Martinelli (CDS)
Date Started: 12/15/11 Date Finished: 12/16/11
VTSPG NAD83: N 233096.24 ft E 1639906.66 ft
Station: Offset:
Ground Elevation: 449.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | HW | SS |
| I.D.: | 4 in | 1.25 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Auto/AWJ | |
| Rig: Truck Mount D-120 | $C_e$ = | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|
| | | BITUMINOUS PAVEMENT, Rec. = 1.0 ft, 0.0 ft - 0.3 ft | 17-15-16-19 | | | | |
| | | Dark brown silty gravelly Sand, 0.3 ft - 1.0 ft | | | | | |
| | | Brown silty SAND with some gravel, 1.0 ft - 18.0 ft, (FILL) | | | | | |
| 5 | | Rec. = 0.8 ft | 10-7-7-6 | | | | |
| 10 | | Rec. = 0.8 ft | 6-2-3-3 | | | | |
| 15 | | Rec. = 0.8 ft | 9-5-6-6 | | | | |
| | | Gray-brown silty gravelly SAND, 18.0 ft - 36.0 ft, (TILL) | | | | | |
| 20 | | Rec. = 0.66 ft | 23-13-16-50-5" | | | | |
| 25 | | Rec. = 0.8 ft | 13-15-17-17 | | | | |
| 30 | | Rec. = 1.3 ft | 23-24-30-39 | | | | |
| 35 | | Rec. = 1.0 ft | 22-28-37-37 | | | | |
| | | With occasional cobbles, 36.0 ft - 46.0 ft | | | | | |
| 40 | | Rec. = 0.8 ft | 24-26-24-26 | | | | |
| 45 | | Rec. = 0.66 ft | 58-50-4" | | | | |
| | | Changing to brown, 46.0 ft - 58.0 ft | | | | | |
| | | Rec. = 0.66 ft | 44-25- | | | | |

Notes:
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2010 COPY 11-1000.GPJ VERMONT AOT.GDT 12/21/12

BOTTOM OF
ABUT. NO. 2
ELEV. = 441.00

ESTIMATED PILE TIP
@ ABUT. NO. 2
ELEV. = 367.00

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

# BORING LOG

**BRF 0126(12) Bridge Replacement Proj.**
**Route 121 over the Saxton River**
**Rockingham, Vermont**

Boring No.: **B- 4**
Page No.: 2 of 2
Pin No.:
Checked By:

Boring Crew: Nate Seguin (SWCE), Tony Martinelli (CDS)
Date Started: 12/15/11 Date Finished: 12/16/11
VTSPG NAD83: N 233096.24 ft E 1639906.66 ft
Station: Offset:
Ground Elevation: 449.0 ft

| | Casing | Sampler |
|---|---|---|
| Type: | HW | SS |
| I.D.: | 4 in | 1.25 in |
| Hammer Wt: | N.A. | 140 lb. |
| Hammer Fall: | N.A. | 30 in. |
| Hammer/Rod Type: | Auto/AWJ | |
| Rig: Truck Mount D-120 | $C_e$ = | |

Groundwater Observations

| Date | Depth (ft) | Notes |
|---|---|---|
| | | |
| | | |
| | | |

| Depth (ft) | Strata (1) | CLASSIFICATION OF MATERIALS (Description) | Blows/6" (N Value) | Moisture Content % | Gravel % | Sand % | Fines % |
|---|---|---|---|---|---|---|---|
| | | | 1" | | | | |
| 55 | | Rec. = 0.2 ft | 50-6" | | | | |
| 60 | | Gray-brown silty SAND with some gravel, 58.0 ft - 63.0 ft, (TILL) Rec. = 0.0 ft | 50-5" | | | | |
| 65 | | Gray-brown silty gravelly SAND, 63.0 ft - 69.6 ft, (TILL) Rec. = 0.0 ft | 50-5" | | | | |
| 70 | | Rec. = 0.0 ft | 47-25-1" | | | | |
| | | Hole stopped @ 69.6 ft | | | | | |
| 75 | | | | | | | |
| 80 | | | | | | | |
| 85 | | | | | | | |
| 90 | | | | | | | |
| 95 | | | | | | | |

Notes:
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2. N Values have not been corrected for hammer energy. $C_e$ is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

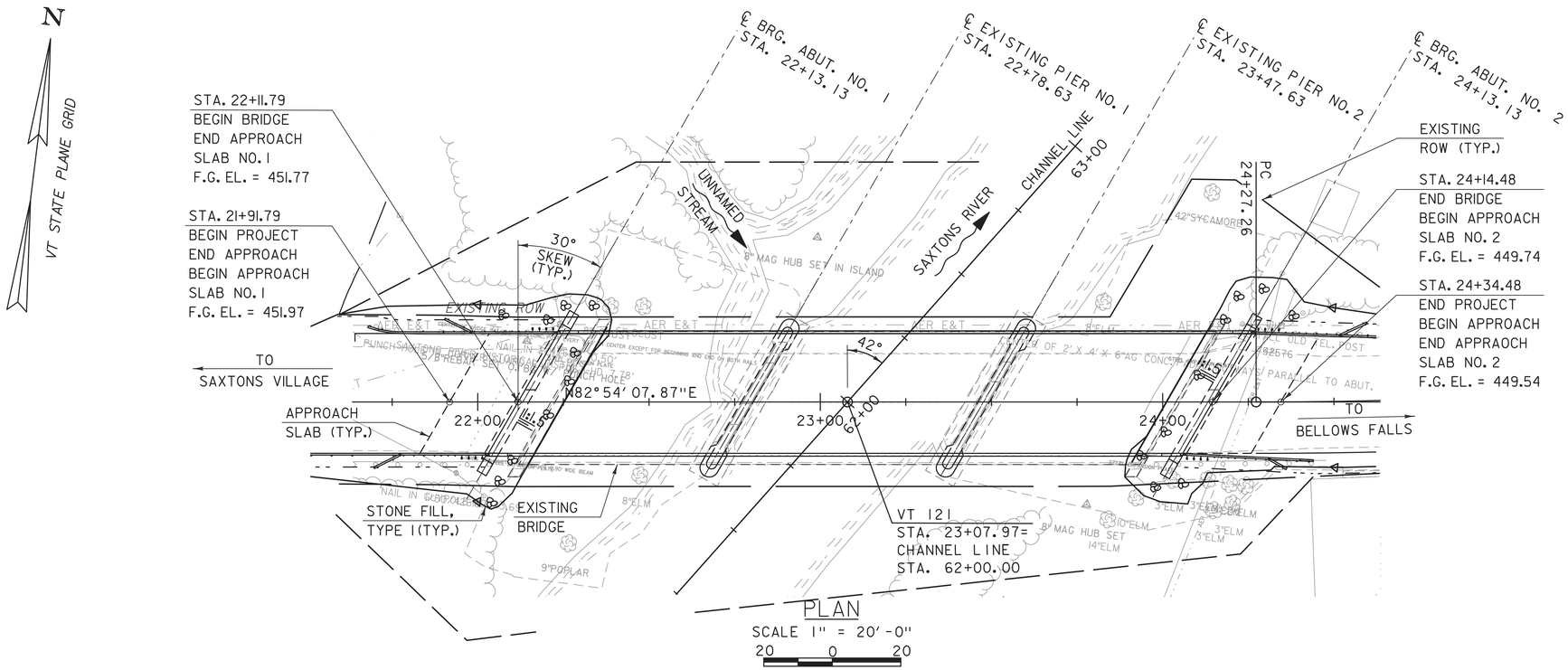
2010 COPY 11-1000.GPJ VERMONT AOT.GDT 12/21/12

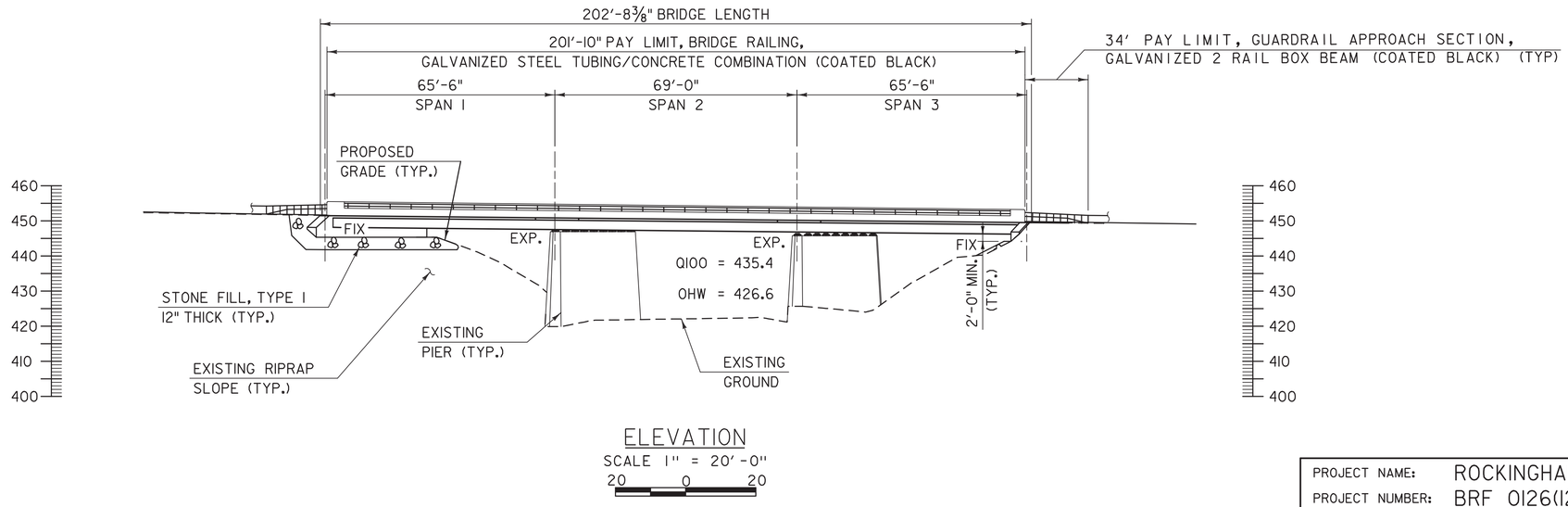
PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

T.Y. LIN INTERNATIONAL

FILE NAME: z10J072bdr_bor4.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: S. KELLER
BORING LOG (4 OF 4)

PLOT DATE: 7/28/2014
DRAWN BY: T. KELLEY
CHECKED BY: S. KELLER
SHEET 25 OF 69

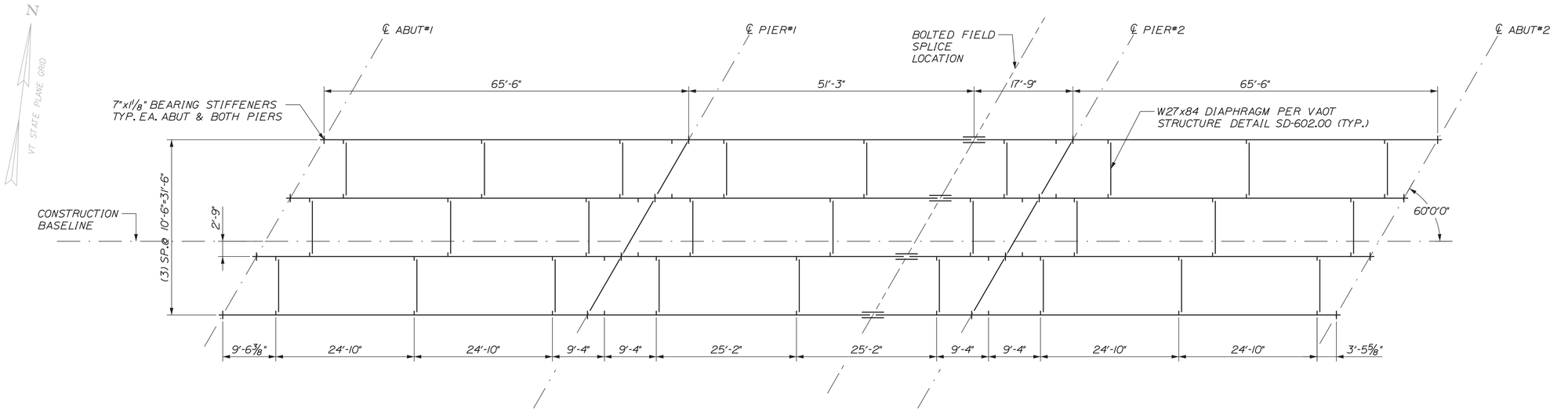


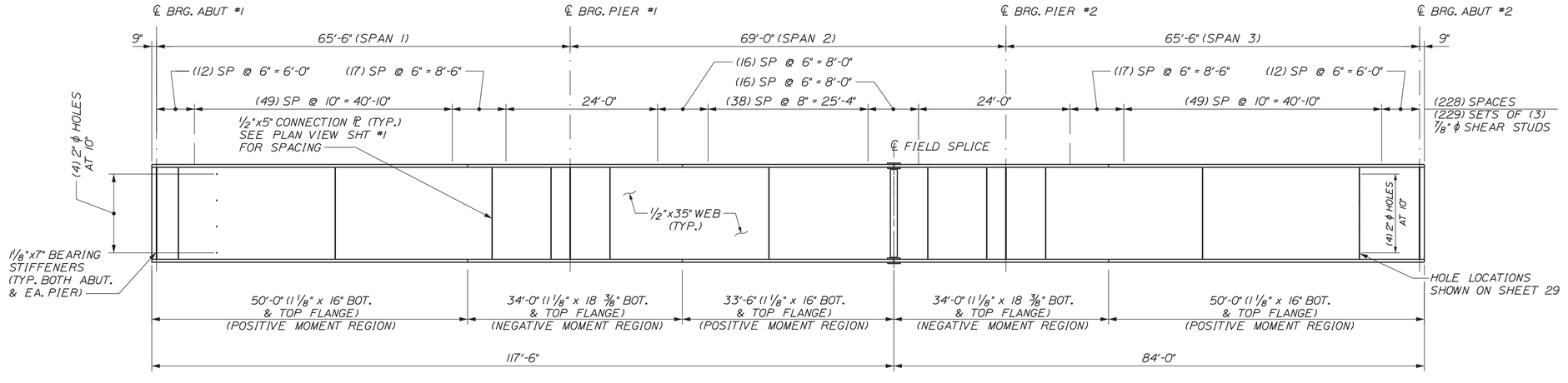

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

T·Y LIN INTERNATIONAL

| | |
|---|---|
| FILE NAME: z10J072bdr_gpe.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: D. AXTELL |
| DESIGNED BY: S. KELLER | CHECKED BY: T. POULIN |
| BRIDGE PLAN AND ELEVATION | SHEET 26 OF 69 |




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




GIRDER ELEVATION
10V: 1H

CALDERWOOD ENGINEERING, ETC.
STRUCTURAL ENGINEERING • DETAILING SERVICES
222 RIVER RD. RICHMOND, ME 04357 PH/FX (207)737-2007/(207) 737-2008

PREPARED FOR:
COLD RIVER BRIDGES, LLC

CEE 106-BR-14

P.E. NUMBER

DATE:

| BY | DATE |
|---|---|
| ETC | 2014 |

| | |
|---|---|
| DESIGN-DETAILED | |
| CHECKED-REVIEWED | |
| REVISIONS 1 | |
| REVISIONS 2 | |
| REVISIONS 3 | |
| REVISIONS 4 | |
| FIELD CHANGES | |

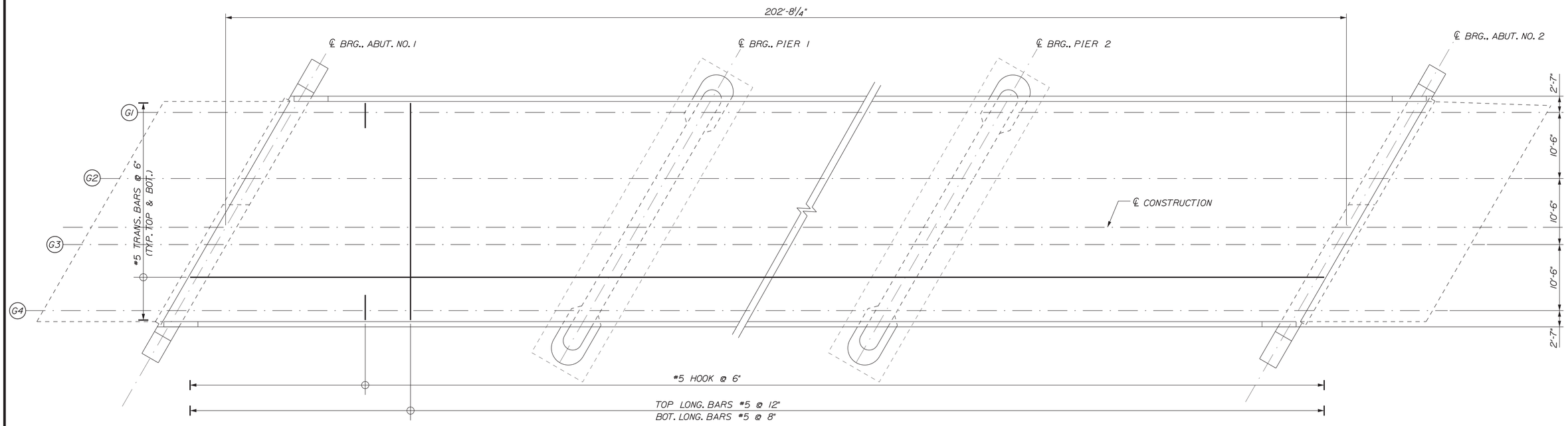
# VE SUPER. DESIGN ROCKINGHAM VT. BRF 0126 (12)

## STEEL GIRDER DETAILS (1 OF 3)

SHEET NUMBER

27

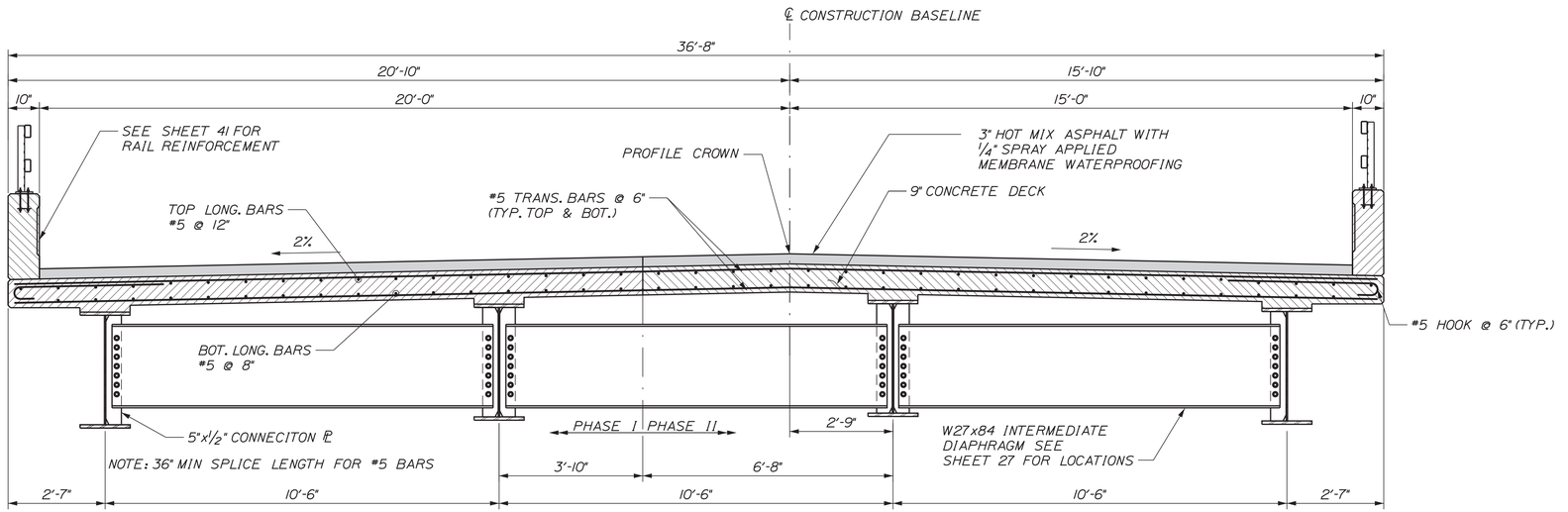
CALDERWOOD ENGINEERING
222 RIVER ROAD
W. RICHMOND, ME 04357
PH. (207)737-2007 FAX (207)737-2008




## DECK REINFORCING PLAN

1/8" = 1'-0"

Bar Callouts and Lengths to be updated




## TYPICAL REINFORCMENT SECTION

½" = 1'-0"

CALDERWOOD ENGINEERING, ETC.
STRUCTURAL ENGINEERING • DETAILING SERVICES
222 RIVER RD. RICHMOND, ME 04357 PH/FX (207)737-2007/(207) 737-2008

PREPARED FOR:
**COLD RIVER BRIDGES, LLC**

**CEE 106-BR-14**

P.E. NUMBER

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| CHECKED-REVIEWED | |
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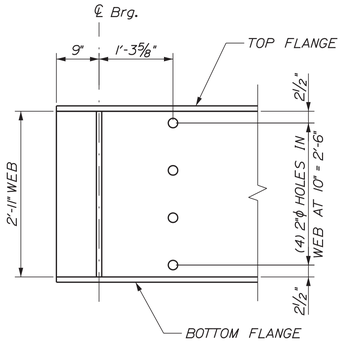
| FIELD CHANGES | |

VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

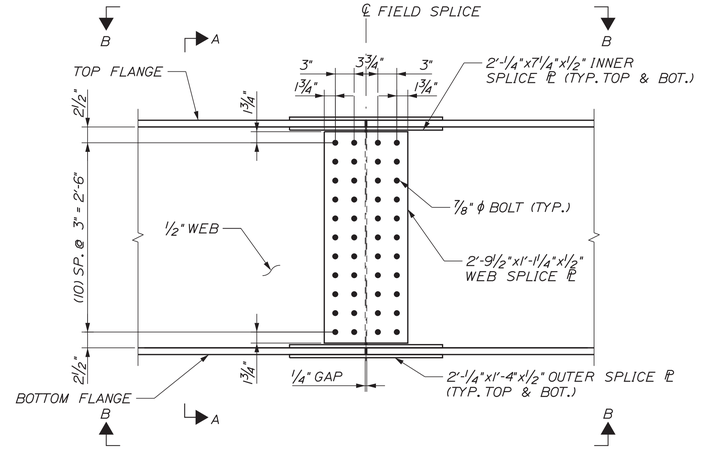
STEEL GIRDER DETAILS (2 OF 3)

SHEET NUMBER

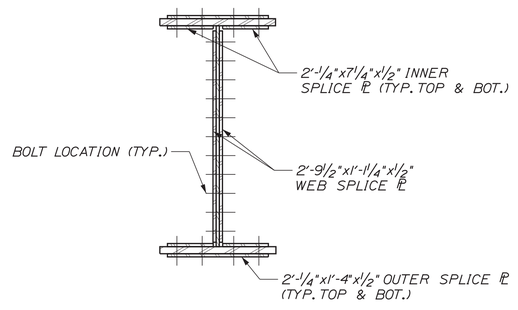
28



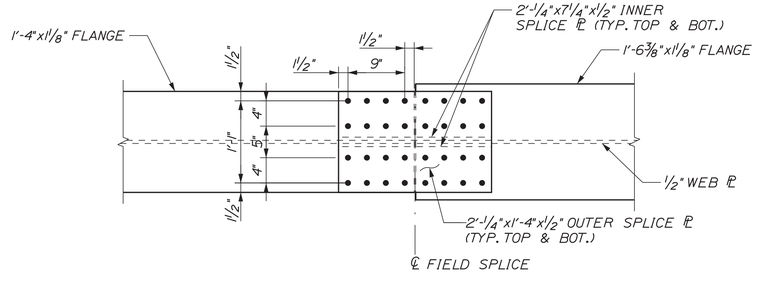

GIRDER END DETAIL
SCALE: ¾" = 1'-0"




BOLTED FIELD SPLICE ELEVATION
1" = 1'-0"




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




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

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STEEL GIRDER DETAILS (3 OF 3)

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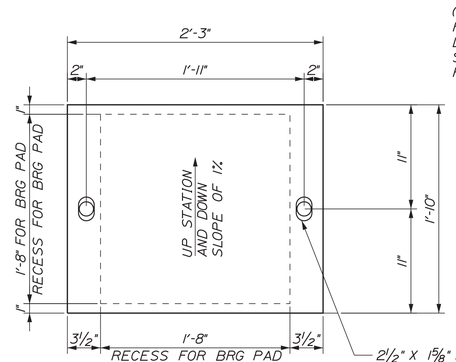
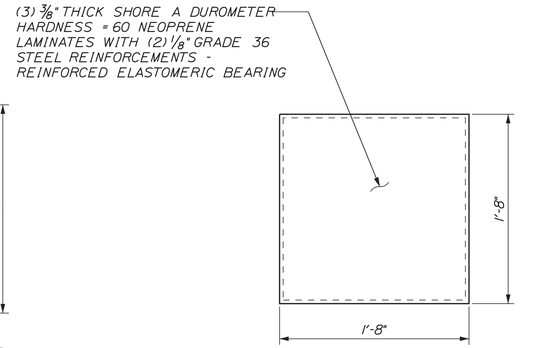
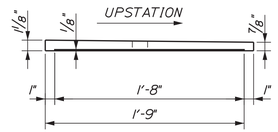
CALDERWOOD ENGINEERING, ETC. STRUCTURAL ENGINEERING • DETAILING SERVICES 222 RIVER ROAD RICHMOND, ME 04357 PH/FX (207) 737-2007/(207) 737-2008




SOLE PLATE DETAIL

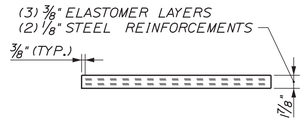



BEARING PAD PLAN DETAIL

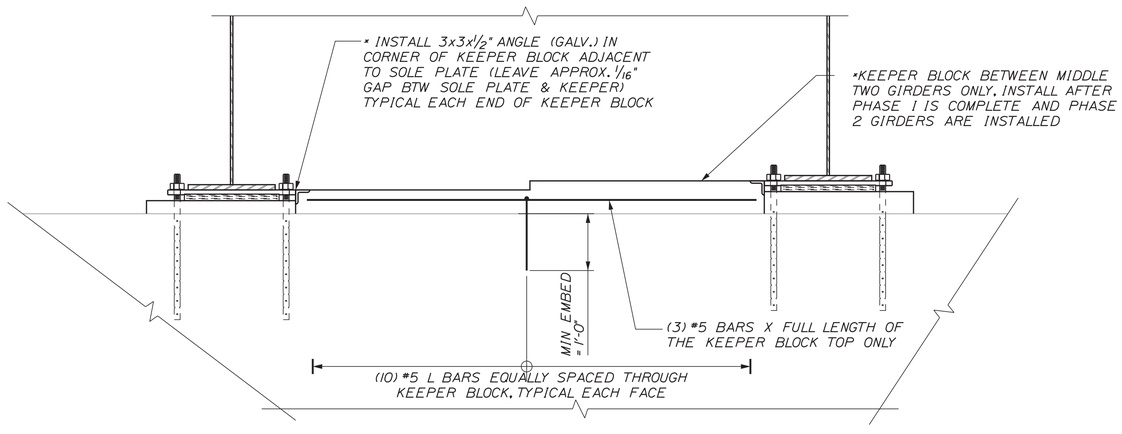



SECTION THRU SOLE PLATE

PIER BEARINGS

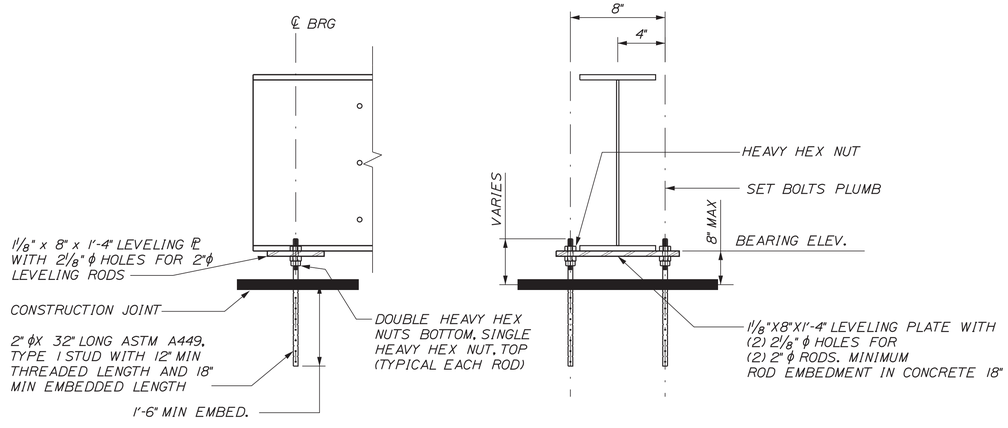



BEARING PAD ELEV. DETAIL




KEEPER BLOCK ELEVATION - INSTALL BETWEEN GIRDER LINES 2 & 3 AT EACH PIER

SCALE: 3/4" : 1




ANCHORAGE & BEARING DETAILS

SCALE: 3/4" : 1

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ELASTOMERIC BEARING DETAILS

SHEET NUMBER

31

CALDERWOOD ENGINEERING
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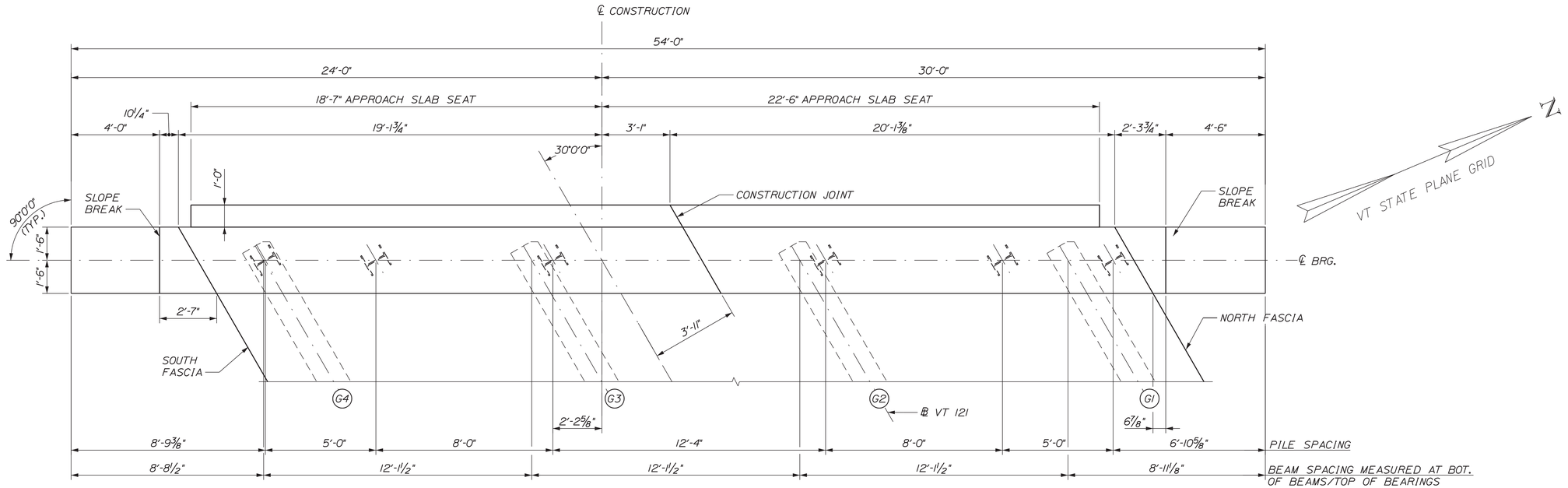
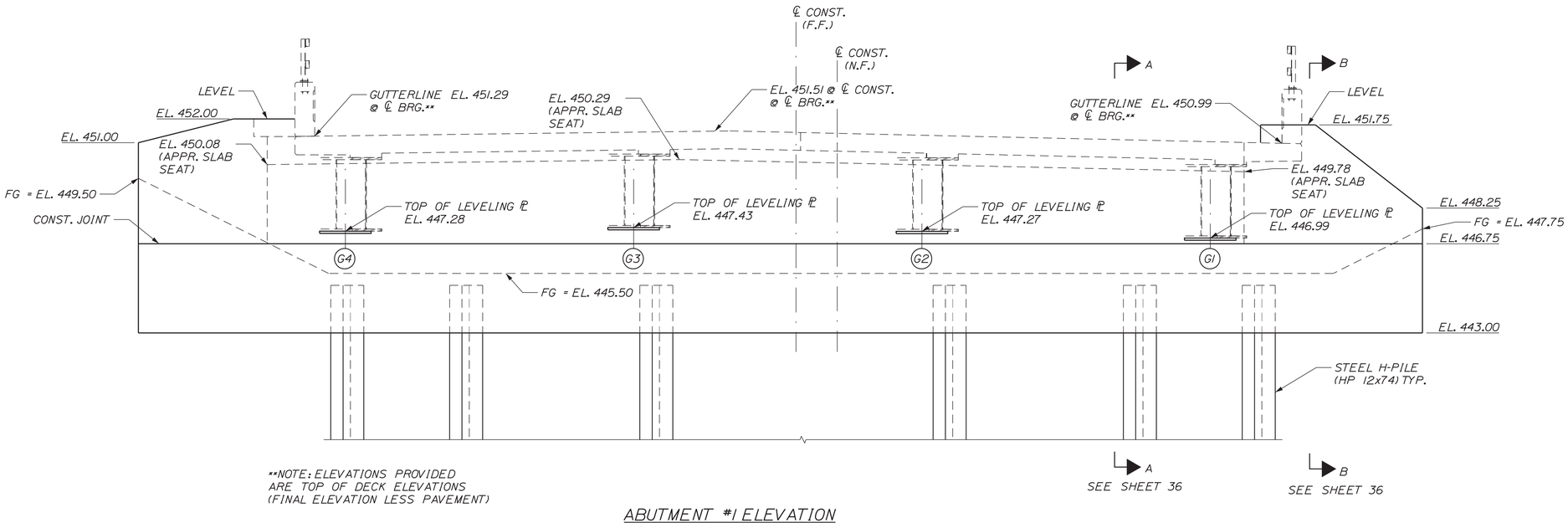



## ABUTMENT #1 PLAN

PHASE II

PHASE I




**NOTE: ELEVATIONS PROVIDED ARE TOP OF DECK ELEVATIONS (FINAL ELEVATION LESS PAVEMENT)

## ABUTMENT #1 ELEVATION

⅜"=1'-0"

NOTE: FRONT FACE OF DECK & RAIL ONLY SHOWN FOR CLARITY

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## ABUTMENT 1 MASONRY

SHEET NUMBER

32

CALDERWOOD ENGINEERING, ETC.
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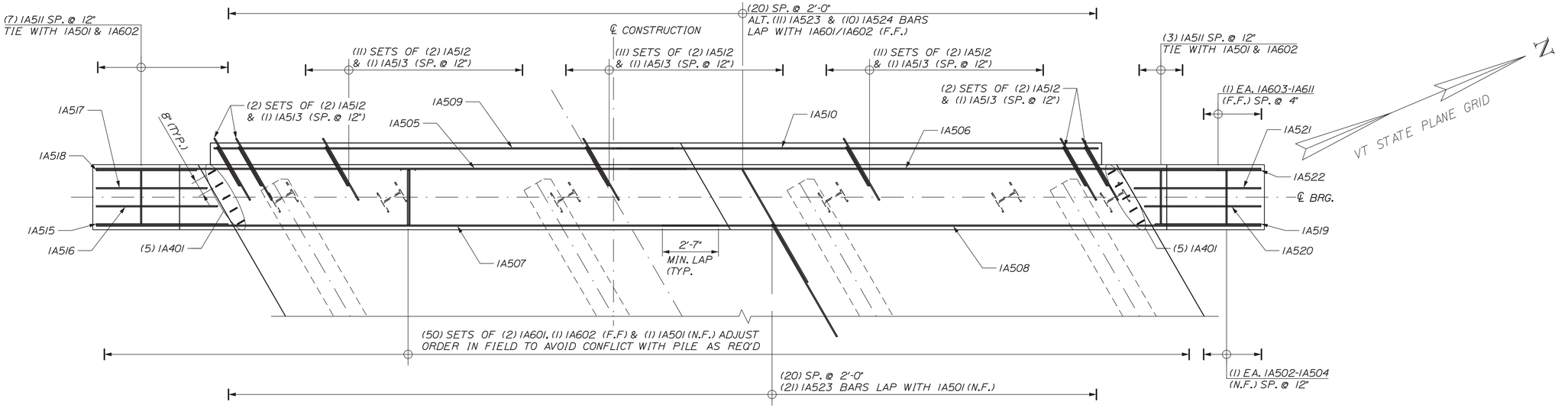
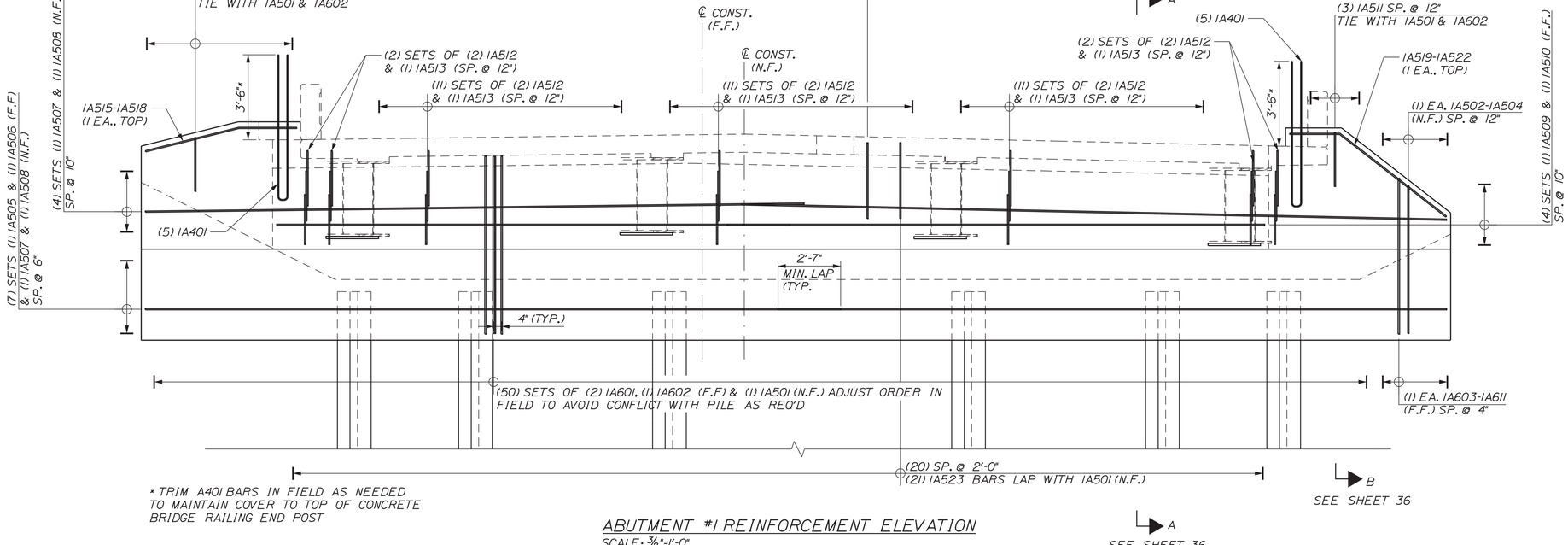



## ABUTMENT #1 REINFORCEMENT PLAN

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

PHASE II PHASE I

Reinforcement Callouts to be updated. See sheet 33a for Phase I Bars




* TRIM A40I BARS IN FIELD AS NEEDED TO MAINTAIN COVER TO TOP OF CONCRETE BRIDGE RAILING END POST

## ABUTMENT #1 REINFORCEMENT ELEVATION

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

### LEGEND

N.F. = NEAR FACE
F.F. = FAR FACE
E.F. = EACH FACE

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| CHECKED-REVIEWED | |
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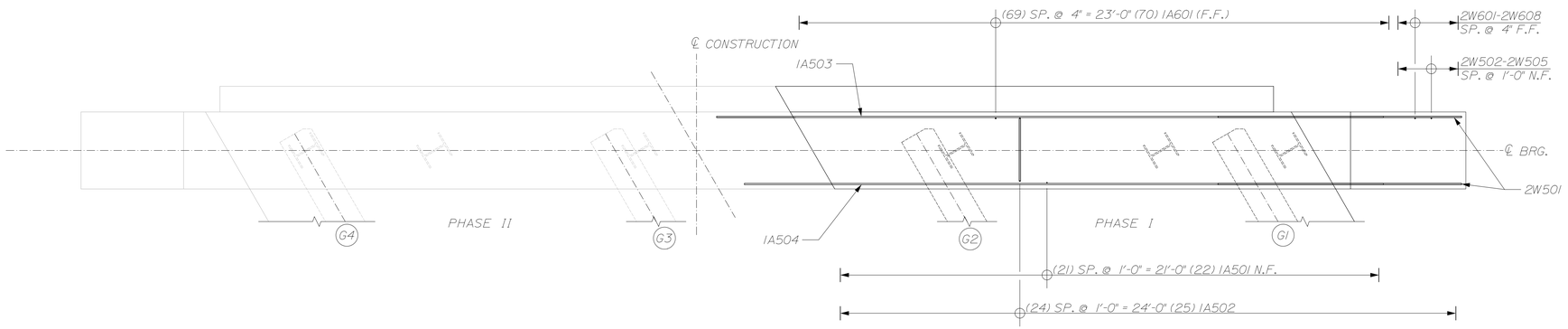
ABUTMENT 1 REINFORCEMENT

SHEET NUMBER

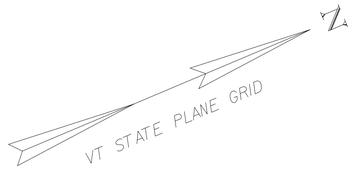
33

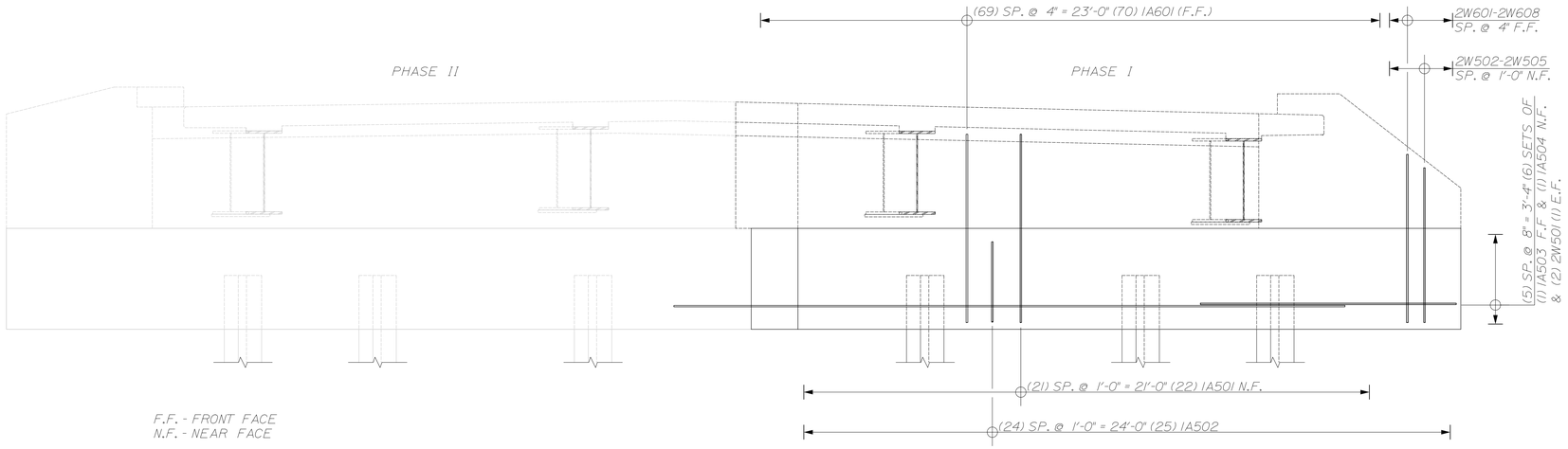
CALDERWOOD ENGINEERING, ETC. 222 RIVER ROAD RICHMOND, ME 04357 PH (207) 737-2007 FAX (207) 737-2008




ABUTMENT #1 PLAN ~ PHASE I REINFORCEMENT

3/8"=1'-0"




F.F. - FRONT FACE
N.F. - NEAR FACE

ABUTMENT #1 ELEVATION ~ PHASE I REINFORCEMENT

3/8"=1'-0"

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ABUTMENT 1 PHASE I REINFORCEMENT

SHEET NUMBER

33a

CALDERWOOD ENGINEERING
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RICHMOND, ME 04357
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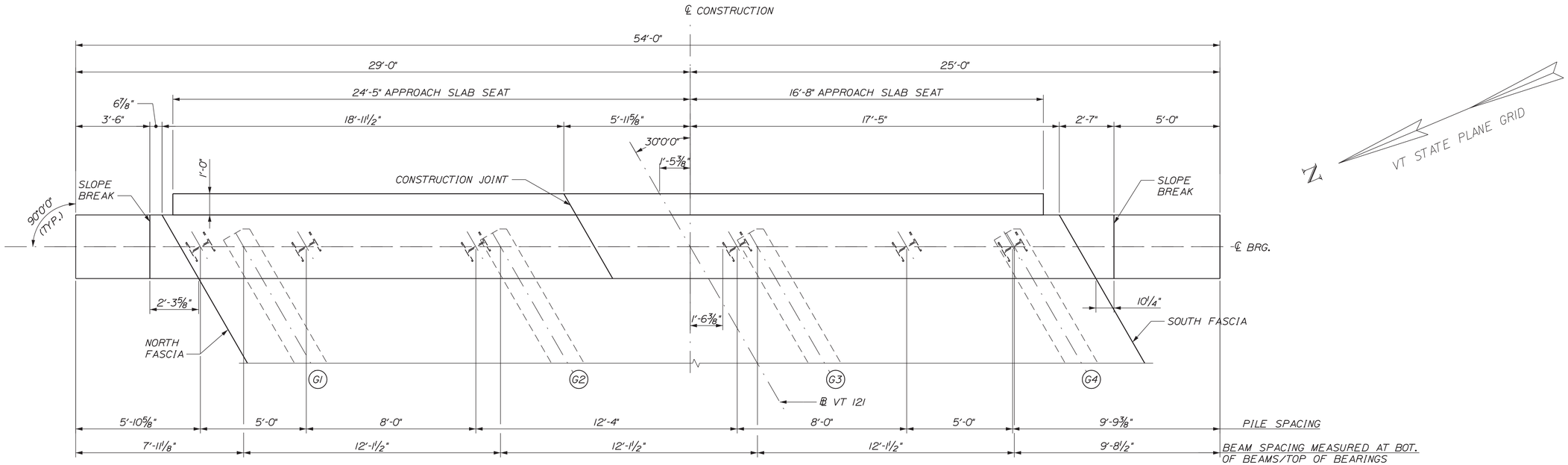
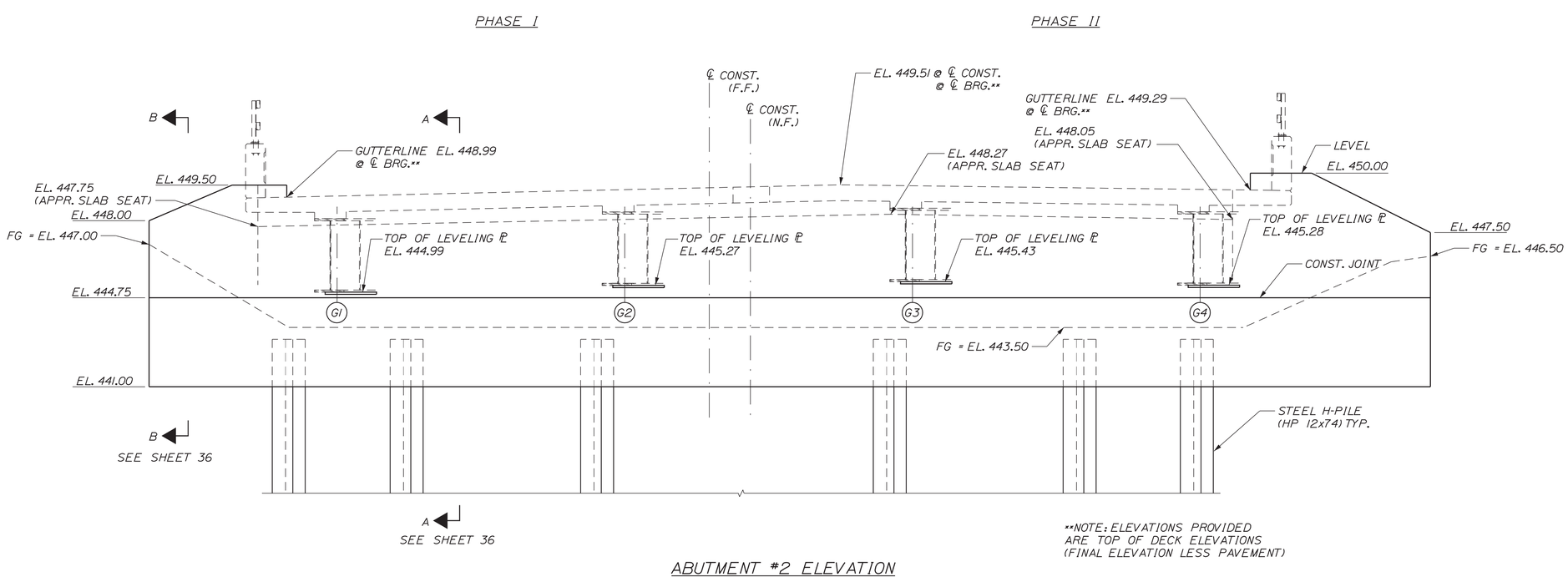



## ABUTMENT #2 PLAN




**NOTE: ELEVATIONS PROVIDED ARE TOP OF DECK ELEVATIONS (FINAL ELEVATION LESS PAVEMENT)

## ABUTMENT #2 ELEVATION

3/8"=1'-0"

NOTE: FRONT FACE OF DECK & RAIL ONLY SHOWN FOR CLARITY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ABUTMENT 2 MASONRY

SHEET NUMBER

34


CALDERWOOD ENGINEERING
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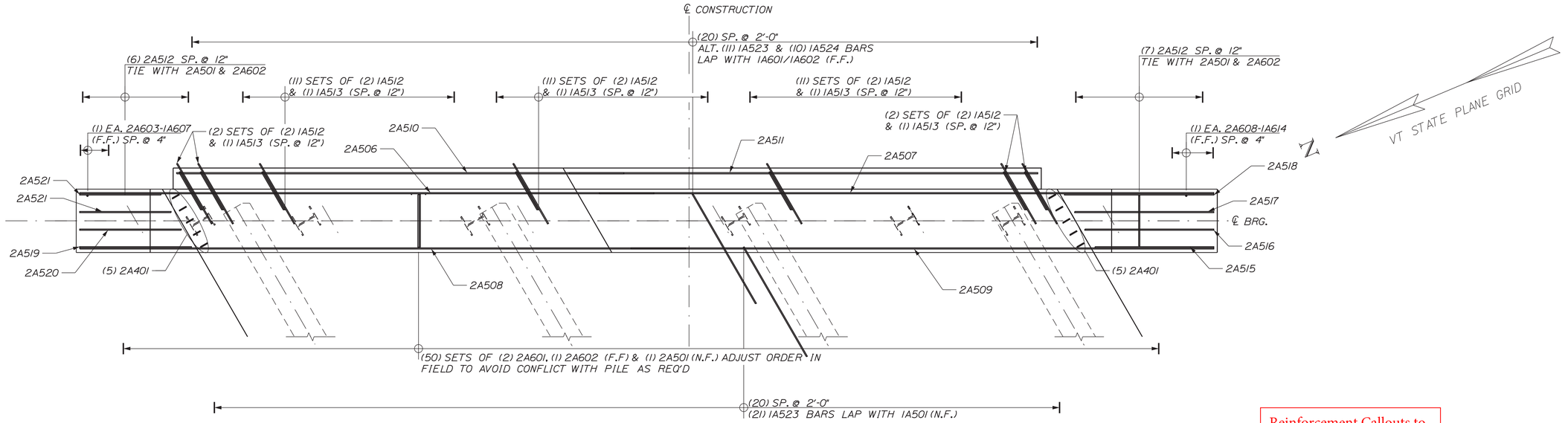
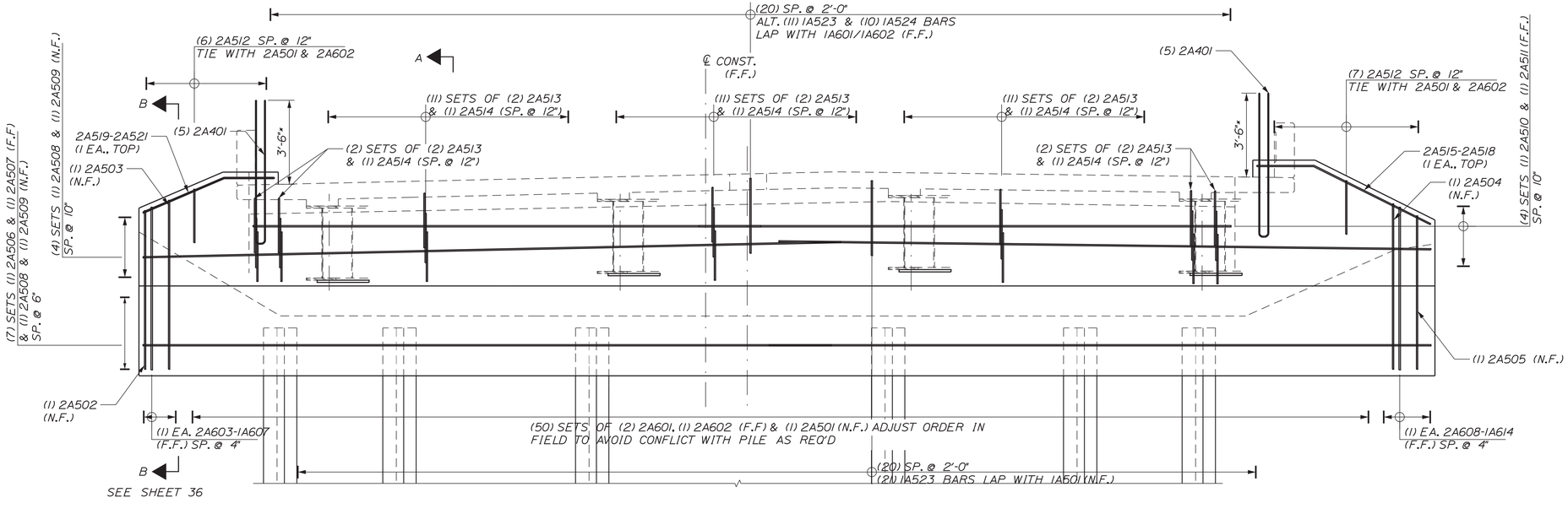



ABUTMENT #2 REINFORCEMENT PLAN
SCALE: 3/8"=1'-0"

PHASE II

PHASE I

Reinforcement Callouts to be updated. See sheet 35a for Phase I Bars




* TRIM A401 BARS IN FIELD AS NEEDED TO MAINTAIN COVER TO TOP OF CONCRETE BRIDGE RAILING END POST

A
SEE SHEET 36

ABUTMENT #2 REINFORCEMENT ELEVATION
SCALE: 3/8"=1'-0"

LEGEND
N.F. = NEAR FACE
F.F. = FAR FACE
E.F. = EACH FACE

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ABUTMENT 2 REINFORCEMENT

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35

CALDERWOOD ENGINEERING, ETC.
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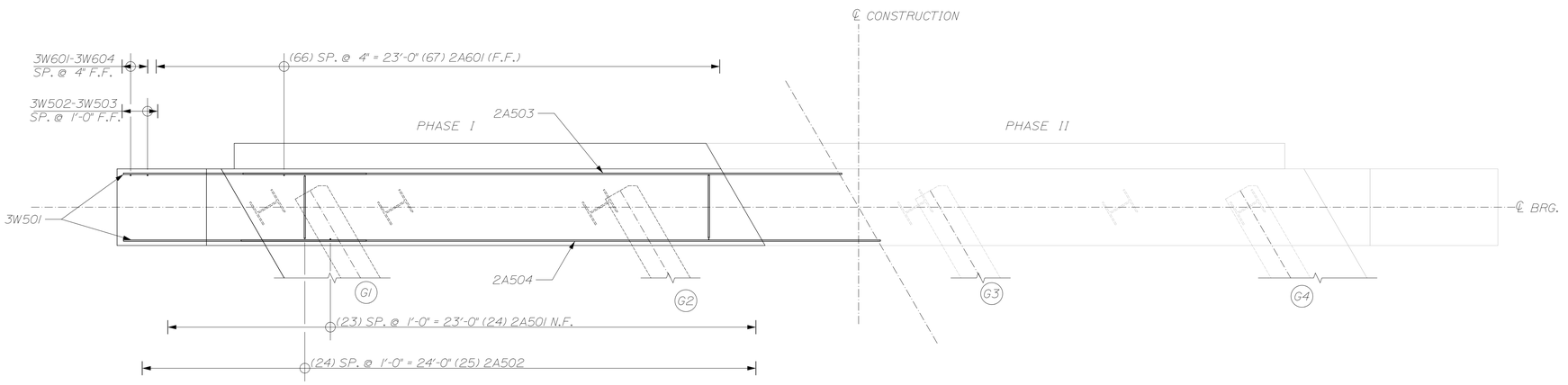
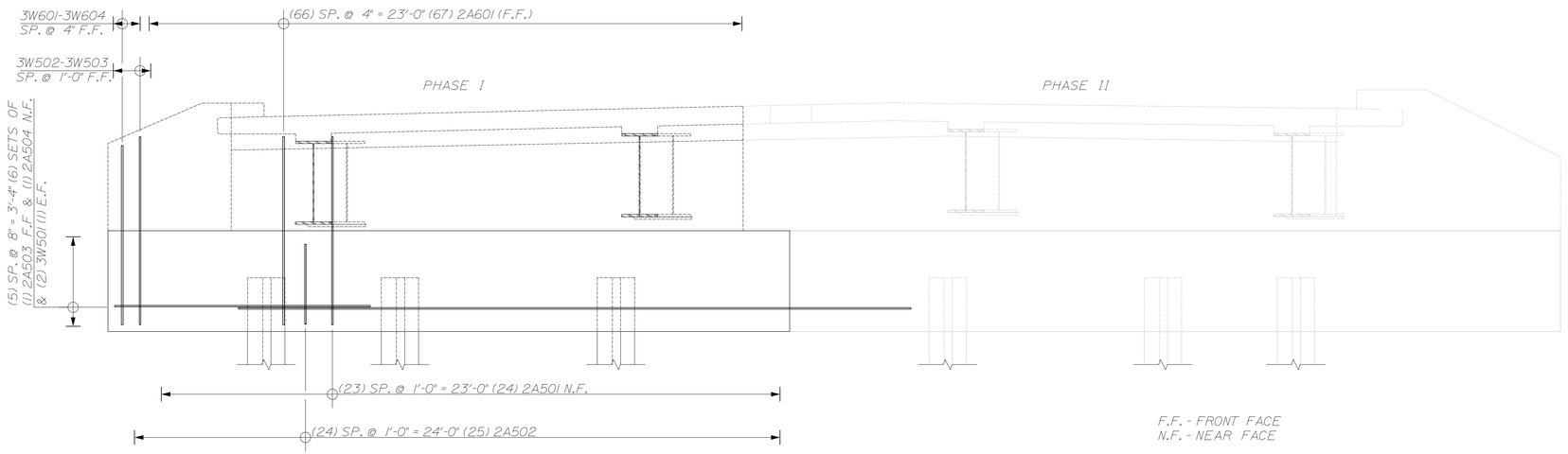



ABUTMENT #2 PLAN ~ PHASE I REINFORCEMENT

3/8"=1'-0"




ABUTMENT #2 ELEVATION ~ PHASE I REINFORCEMENT

3/8"=1'-0"

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ABUTMENT 2 PHASE I REINFORCEMENT

SHEET NUMBER

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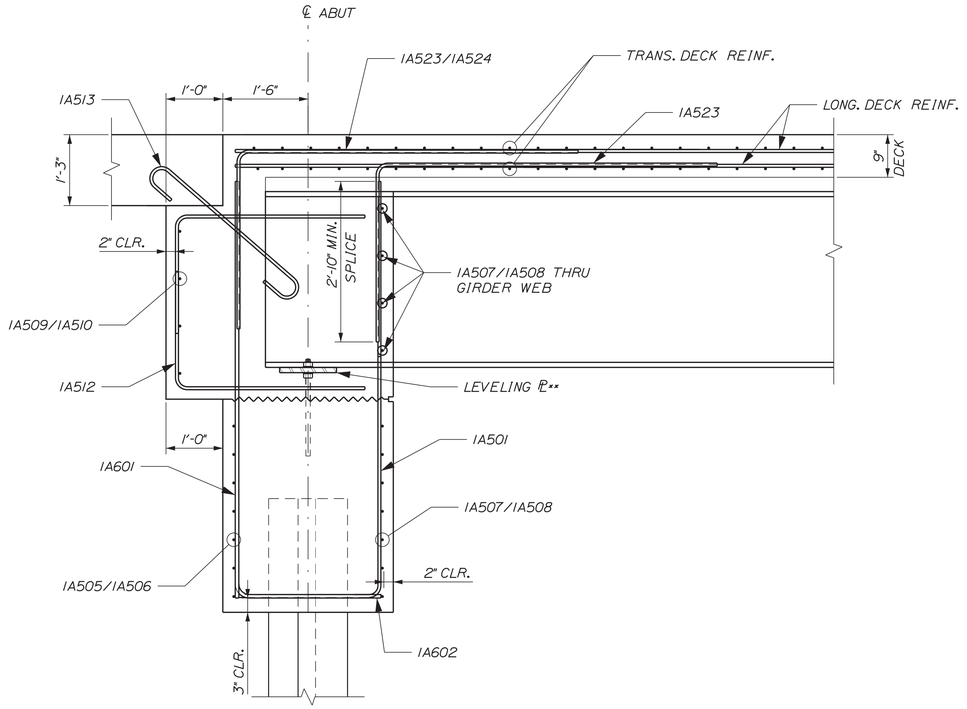
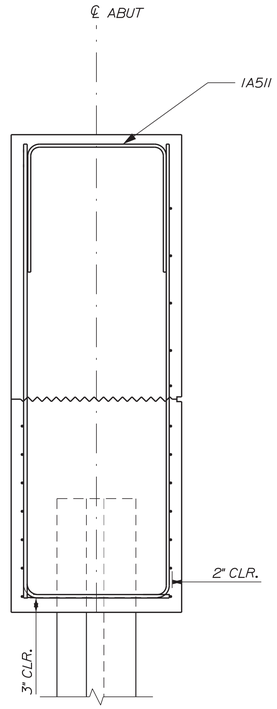



ABUTMENT REINF. SECTION
3/4" = 1'-0"

** NOTE: AMBIENT TEMP. SHALL BE 30°-60° WHEN WELDING GIRDERS TO LEVELING ℄




WINGWALL REINF. SECTION
3/4" = 1'-0"

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ABUTMENT SECTIONS

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CALDERWOOD ENGINEERING
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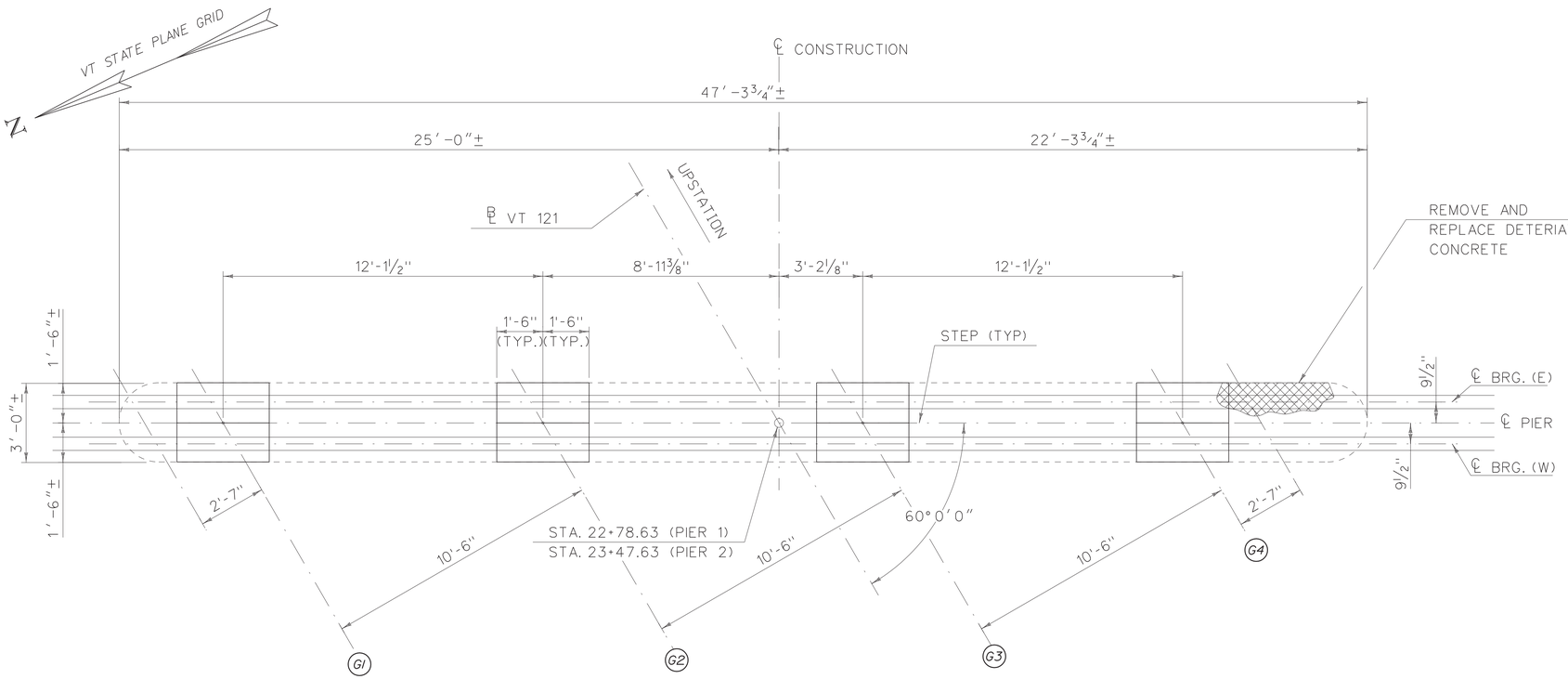
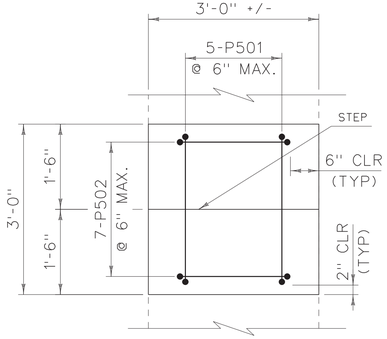


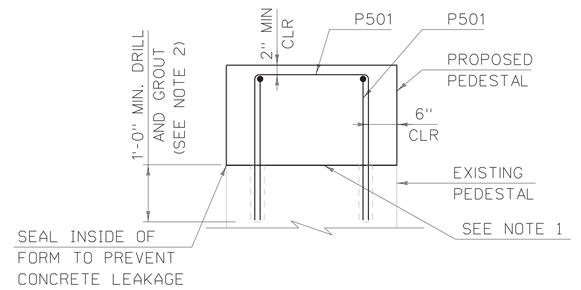

PIERS 1 AND 2 - PLAN

SCALE ⅜" = 1'-Ø"



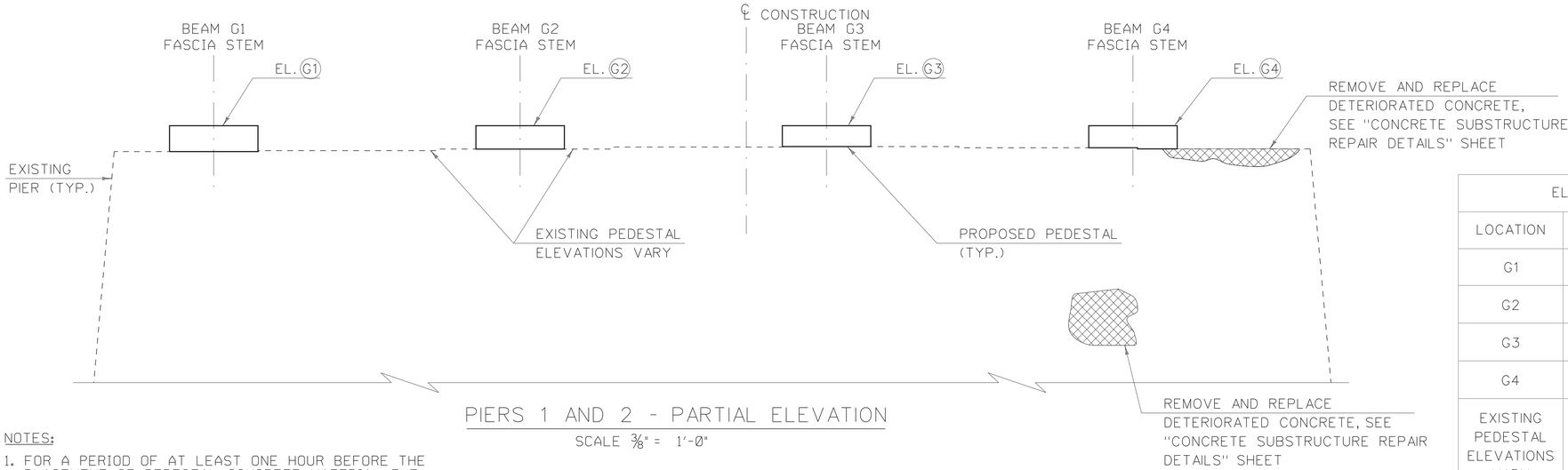

PEDESTAL REINFORCEMENT PLAN

SCALE ¾" = 1'-Ø"




PEDESTAL REINFORCEMENT ELEVATION

SCALE ¾" = 1'-Ø"




PIERS 1 AND 2 - PARTIAL ELEVATION

SCALE ⅜" = 1'-Ø"

| ELEVATION TABLE | | |
|---|---|---|
| LOCATION | PIER 1 WEST | PIER 2 WEST |
| G1 | 446.15 | 445.46 |
| G2 | 446.42 | 445.73 |
| G3 | 446.58 | 445.89 |
| G4 | 446.43 | 445.74 |
| EXISTING PEDESTAL ELEVATIONS VARY | 446.0± TO 446.3± | 445.2± TO 445.5± |

NOTES:

1. FOR A PERIOD OF AT LEAST ONE HOUR BEFORE THE PLACEMENT OF PEDESTAL CONCRETE MATERIAL, THE PREPARED SURFACE SHALL BE FLOODED WITH WATER. AFTER REMOVAL OF ALL FREE WATER, THE PEDESTAL CONCRETE MATERIAL SHALL BE DEPOSITED ON THE DAMPENED SURFACE.
2. DIAMETER OF DRILLED HOLE SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

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PIER MODIFICATION

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## EXISTING SUBSTRUCTURE CONCRETE REPAIR NOTES:

1. WHEN "OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL" CONFORMING TO SUBSECTION 780.02 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 INCIDENTAL TO ITEM 580.13, 580.14 OR 580.15.

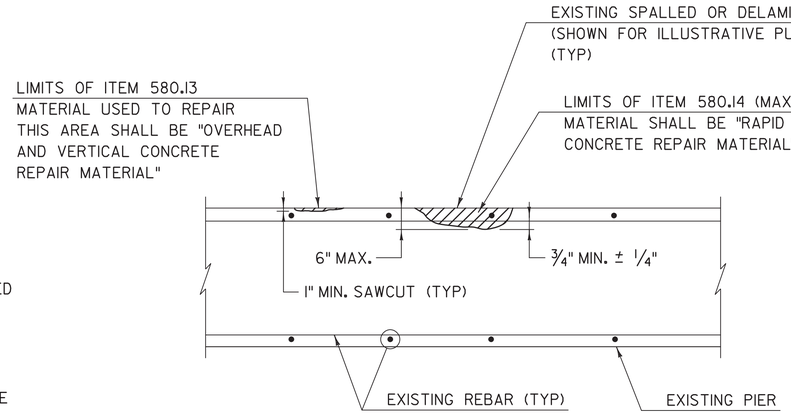
2. ALL WORK AND MATERIALS NECESSARY FOR PREPARING A PATCH AND FILLING IT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 580.13, 580.14 OR 580.15

3. ITEM 580.14 FILLING MATERIAL SHALL BE "RAPID SETTING CONCRETE REPAIR MATERIAL" CONFORMING TO SUBSECTION 780.03.

4. ITEM 580.15 FILLING MATERIAL SHALL BE "RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE" CONFORMING TO SUBSECTION 780.04.

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 AND BEAMS SHOULD BE COMPLETELY PROTECTED FROM REBOUND MATERIAL DURING PNEUMATICALLY APPLIED CONCRETE APPLICATION PROCEDURES.

6. THE ENGINEER SHALL ORDER REPLACEMENT OF ANY 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. SUBSTRUCTURE REINFORCING STEEL REPLACED WILL BE PLAIN BAR REINFORCING STEEL, LEVEL I OR BETTER AND WILL BE INCIDENTAL TO ITEM 580.14 "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS II" OR ITEM 580.15 "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE CLASS III".




## NOTES:

1. PLAN VIEW OF EXISTING PIER SHOWN.
2. REMOVAL OF EXISTING CONCRETE TO A DEPTH GREATER THAN SPECIFIED FOR ITEM 580.14 SHALL BE PAID UNDER ITEM 580.15, "REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III".
3. DETAIL SHOWS LIMIT OF ITEMS 580.13, 580.14 AND 580.15 REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I, CLASS II, OR CLASS III.

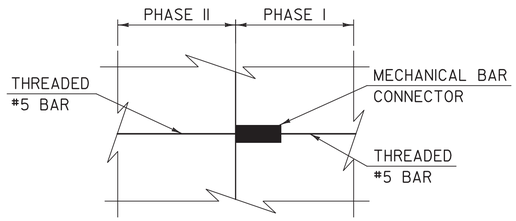
## CONCRETE SUBSTUCTURE REPAIR DETAIL

NOT TO SCALE

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

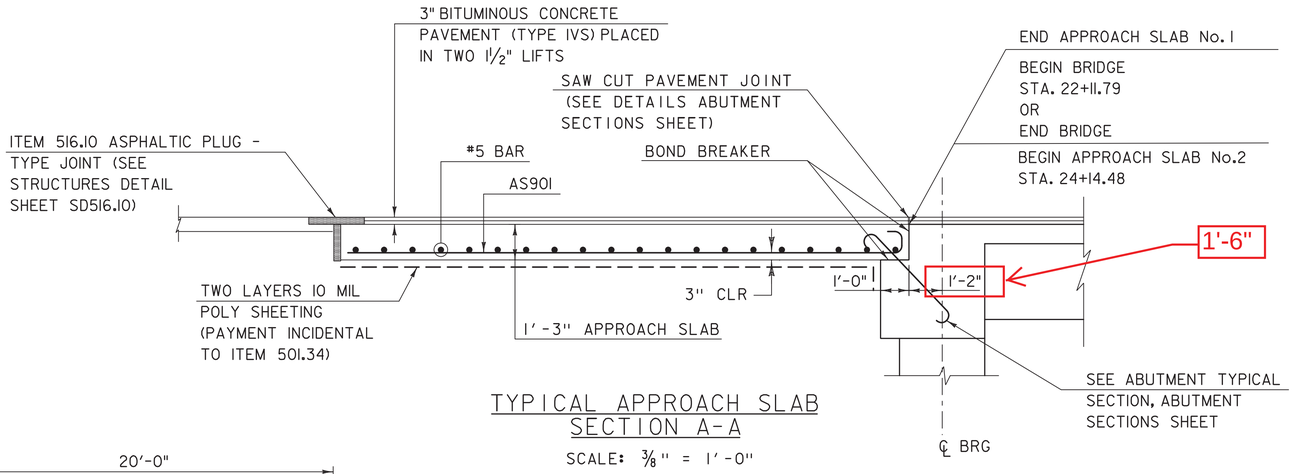
T·Y·LIN INTERNATIONAL

| | |
|---|---|
| FILE NAME: z10J072bdr_repair.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: D. AXTELL |
| DESIGNED BY: S. KELLER | CHECKED BY: T. POULIN |
| CONCRETE SUBSTRUCTURE REPAIR DETAILS | SHEET 38 OF 69 |



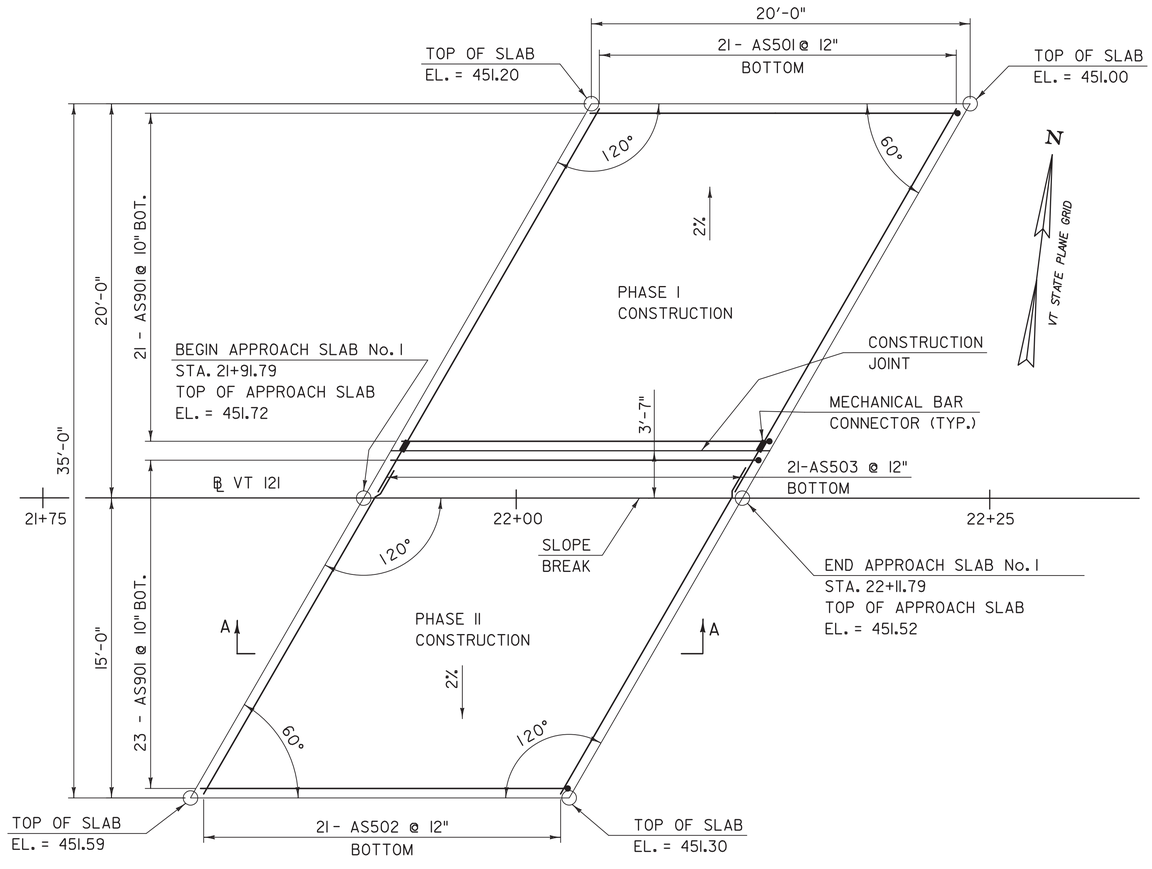

## TYPICAL MECHANICAL CONNECTOR DETAIL

SCALE: 1½" = 1'-0"



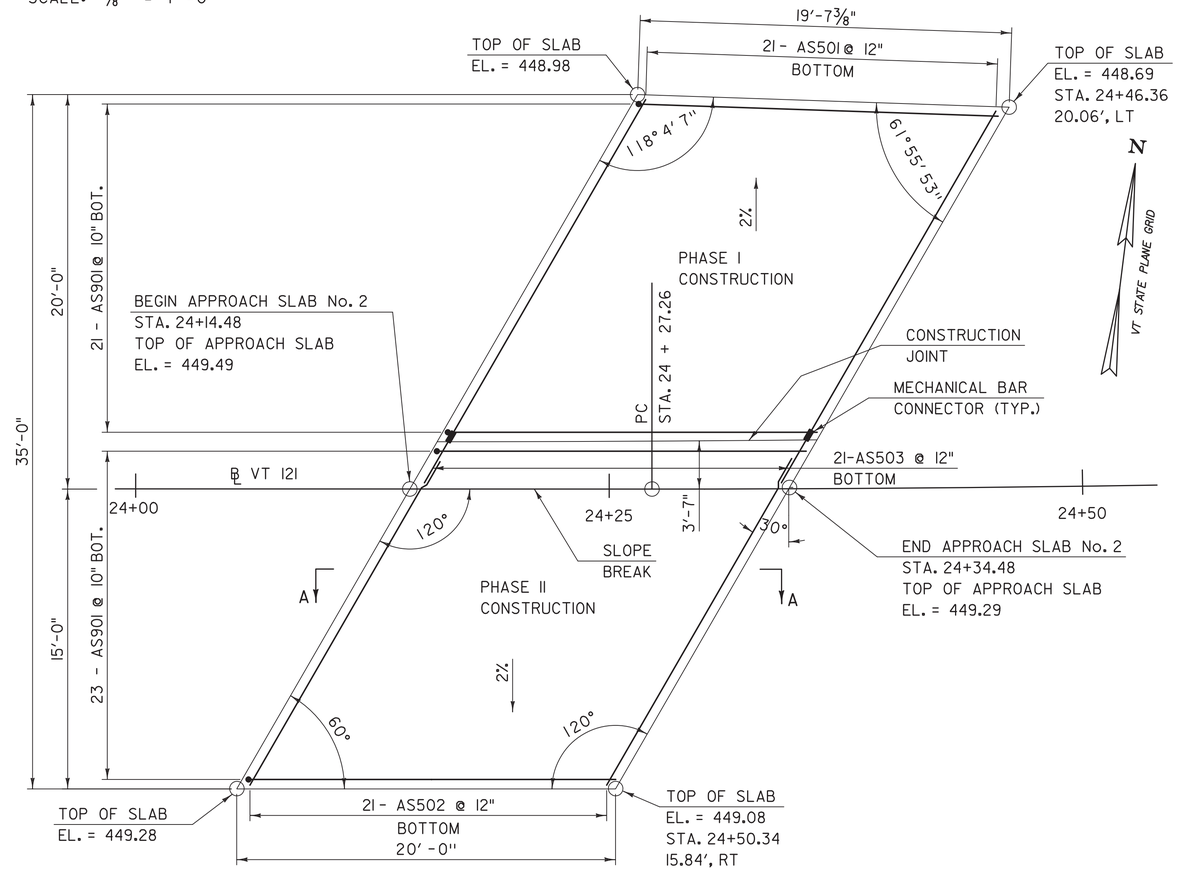

## TYPICAL APPROACH SLAB SECTION A-A

SCALE: ⅜" = 1'-0"




## APPROACH SLAB No. 1 PLAN

SCALE: ¼" = 1'-0"




## APPROACH SLAB No. 2 PLAN

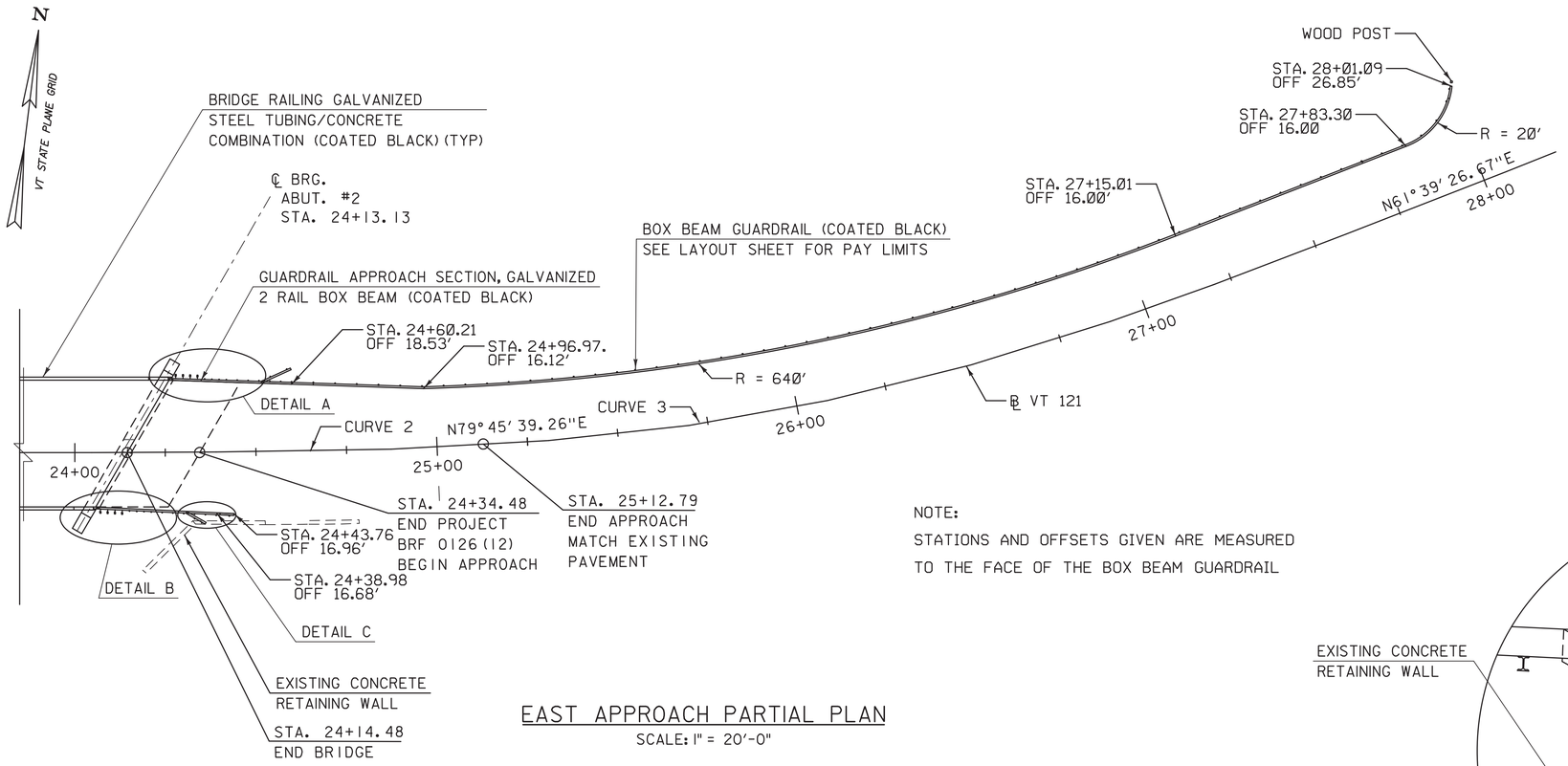
SCALE: ¼" = 1'-0"

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

T·Y·LIN INTERNATIONAL

FILE NAME: z10J072bdr_apprslab.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: S. KELLER
APPROACH SLAB DETAILS

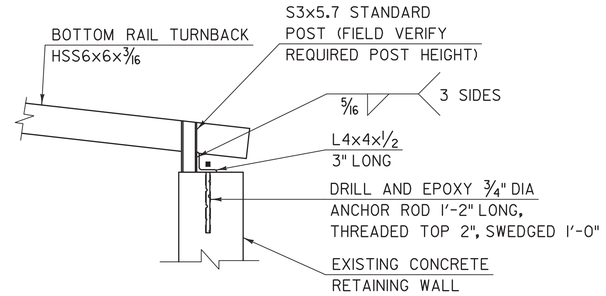
PLOT DATE: 7/28/2014
DRAWN BY: D. AXTELL
CHECKED BY: T. POULIN
SHEET 39 OF 69




## EAST APPROACH PARTIAL PLAN

SCALE: 1" = 20'-0"

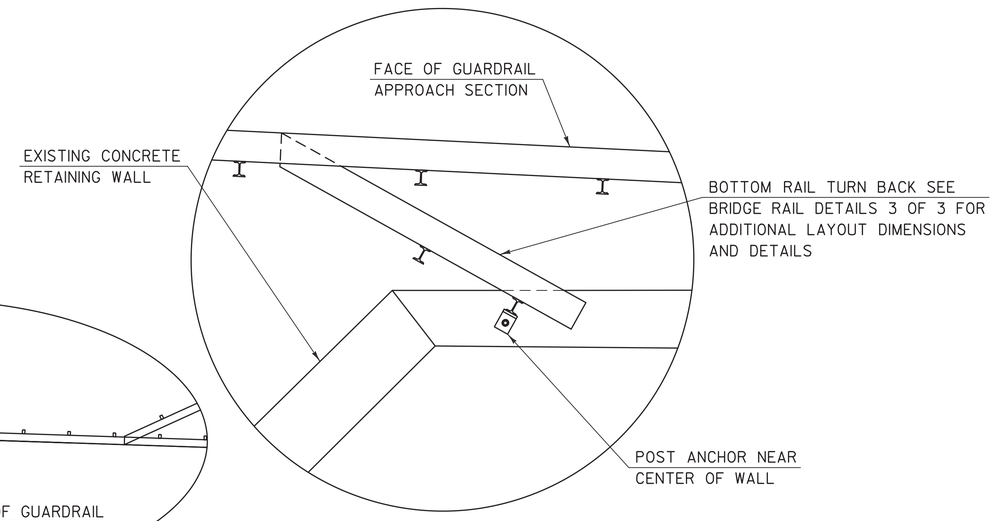
NOTE:
STATIONS AND OFFSETS GIVEN ARE MEASURED TO THE FACE OF THE BOX BEAM GUARDRAIL




## POST ANCHOR DETAIL

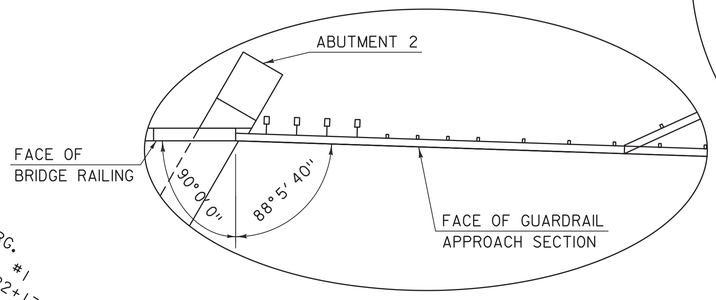
N.T.S.

NOTE: PAYMENT FOR POST ANCHOR SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 621.72.



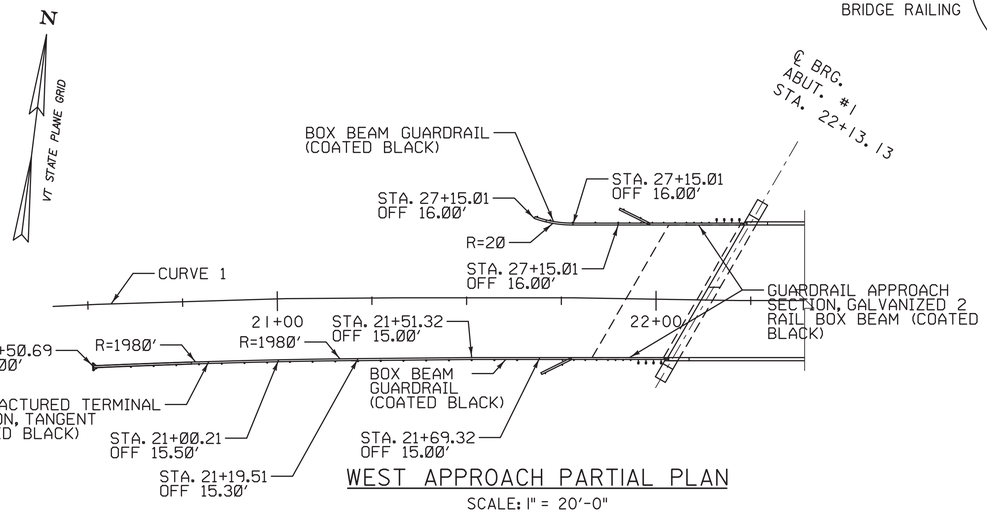

## DETAIL C

N.T.S.



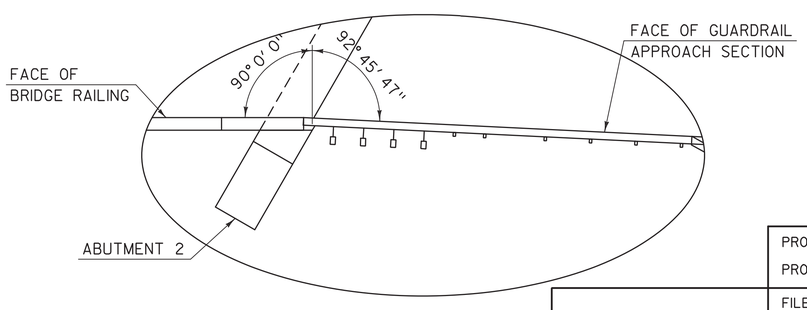

## DETAIL A

N.T.S.




## WEST APPROACH PARTIAL PLAN

SCALE: 1" = 20'-0"



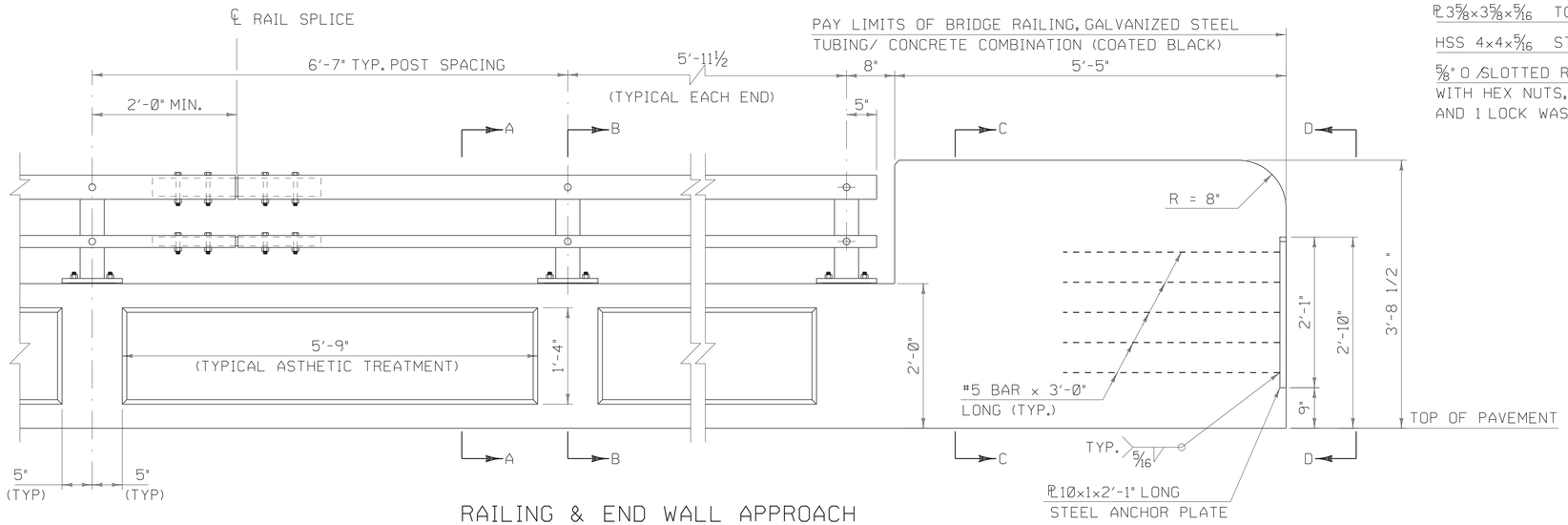

## DETAIL B

N.T.S.

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

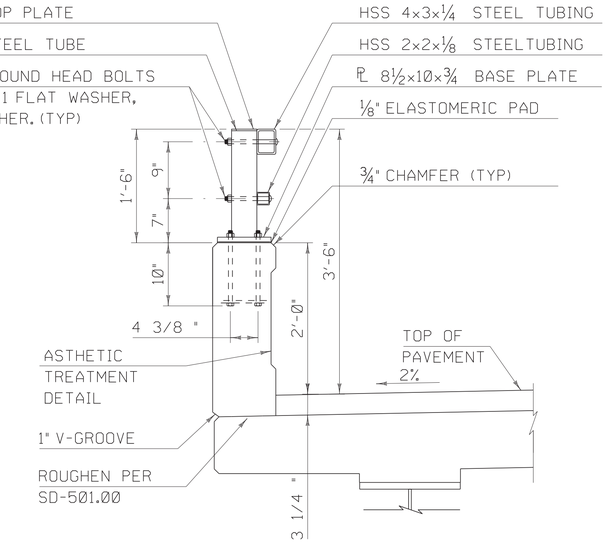
T.Y. LIN INTERNATIONAL

| | |
|---|---|
| FILE NAME: z10j072bdr_rail_pln.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: S. KELLER |
| DESIGNED BY: S. KELLER | CHECKED BY: D. BURHANS |
| GUARDRAIL APPROACH AND GUARDRAIL LAYOUT DETAILS | SHEET 40 OF 69 |



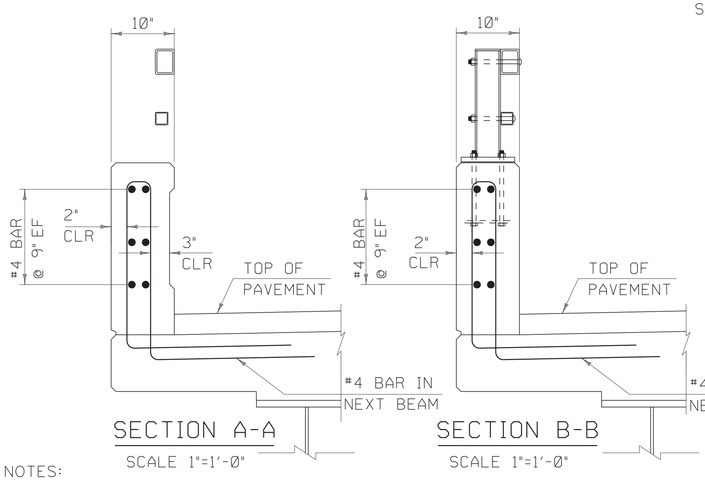

## RAILING & END WALL APPROACH

SCALE 1"=1'-0"




## RAIL TYPICAL SECTION

SCALE 1"=1'-0"



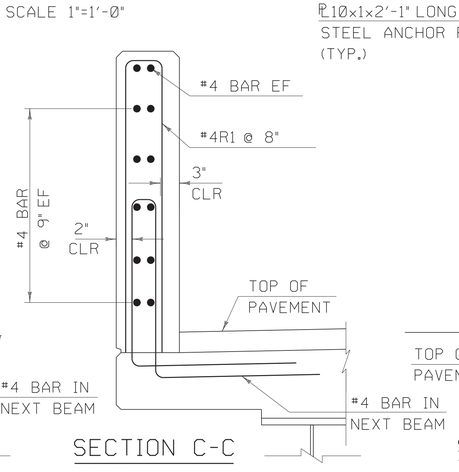

## SECTION A-A

SCALE 1"=1'-0"



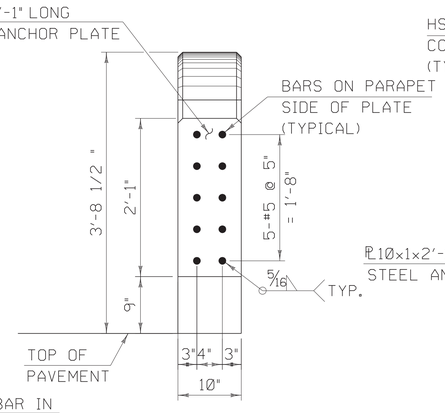

## SECTION B-B

SCALE 1"=1'-0"

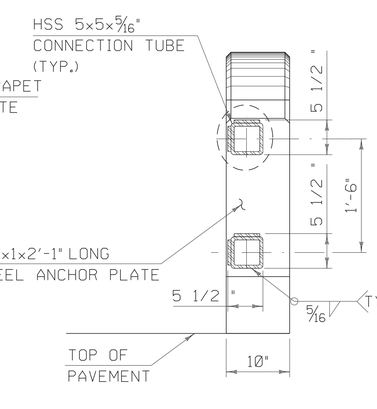



## SECTION C-C

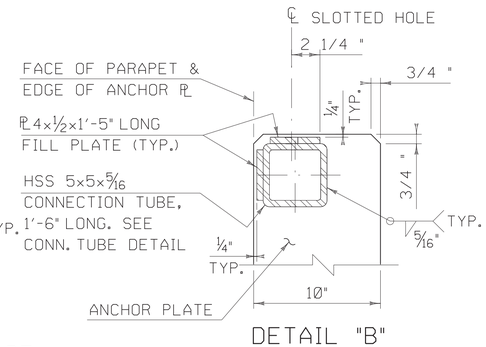
SCALE 1"=1'-0"




## SHOWING EMBEDED REBAR

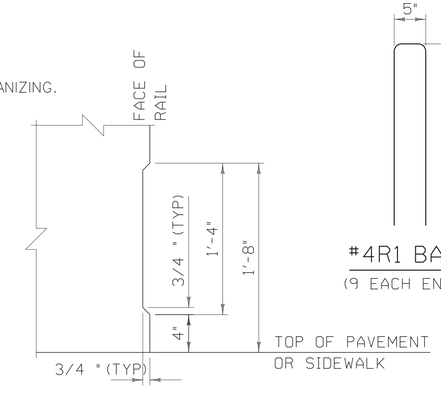



## WITH HSS CONNECTOR TUBE




## DETAIL "B"

NTS




## #4R1 BAR DETAIL

(9 EACH END, 36 TOTAL)

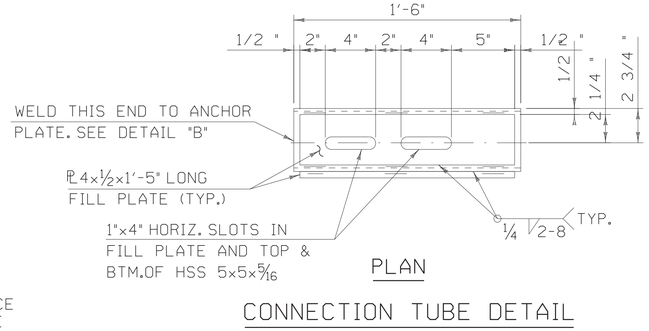
## VIEW D-D

SCALE 1"=1'-0"




## ASTHETIC TREATMENT DETAIL

SCALE 1½"=1'




PLAN

## CONNECTION TUBE DETAIL

NTS

NOTES:

1. BRIDGE RAIL SHALL HAVE A RUBBED FINISH IN ACCORDANCE WITH SECTION 501.
2. HOLES AND RECESSES ARE TO BE FORMED OR CORED, PERCUSSION DRILLING IS NOT ALLOWED.
3. ALL STEEL COMPONENTS SHALL BE COATED BLACK IN ACCORDANCE WITH ASTM D7803 FOLLOWING GALVANIZING.
4. ALL REINFORCEMENT SHALL BE LEVEL II.
5. ALL LONGITUDINAL BARS SHALL HAVE A MINIMUM LAP LENGTH OF 2'-1".
6. ALL WORK AND MATERIALS SHALL CONFORM TO SECTION 525.
7. PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".
8. ALL POSTS SHALL BE SET NORMAL TO GRADE.
9. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO BRIDGE POSTS AND PREFERABLY TO AT LEAST 4 POSTS.
10. HOLES IN RAILS FOR TUBE ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.
11. BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB).
12. RAIL TUBES SHALL BE ATTACHED USING ⅝" FULL DIAMETER BODY ASTM A 449 (TYPE 1) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE.
13. SEE STANDARD DRAWING G-1 FOR DETAILS OF DELINEATORS. A DELINEATOR SHALL BE INSTALLED AT 30 FOOT SPACING OR THE NEAREST POST. WHITE IS TO BE INSTALLED ON THE DRIVER'S RIGHT. PAYMENT FOR DELINEATORS SHALL BE INCIDENTAL TO OTHER ITEMS.
14. SEE "GUARDRAIL APPROACH AND GUARDRAIL LAYOUT DETAILS" SHEET FOR ADDITIONAL EAST APPROACH CONNECTION TUBE DETAILS.

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

CALDERWOOD ENGINEERING, ETC.
*STRUCTURAL ENGINEERING • DETAILING SERVICES*
222 RIVER RD. RICHMOND, ME 04357 PH/FX (207)737-2007/(207) 737-2008

PREPARED FOR:
**COLD RIVER BRIDGES, LLC**

**CEE 106-BR-14**

P.E. NUMBER

DATE:

| DESIGN-DETAILED | BY | DATE |
|---|---|---|
| CHECKED-REVIEWED | ETC | 2014 |

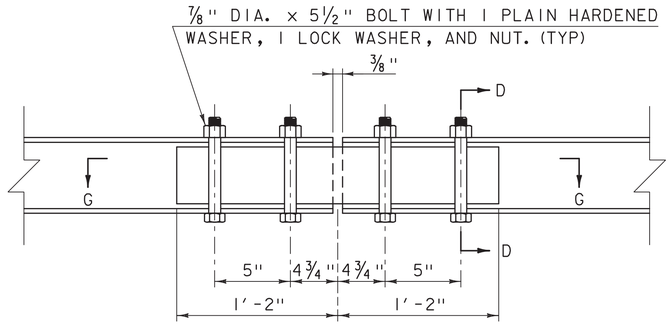
| REVISIONS | |
|---|---|
| REVISIONS 1 | |
| REVISIONS 2 | |
| REVISIONS 3 | |
| REVISIONS 4 | |
| FIELD CHANGES | |

VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

BRIDGE RAILING DETAILS (1 OF 3)

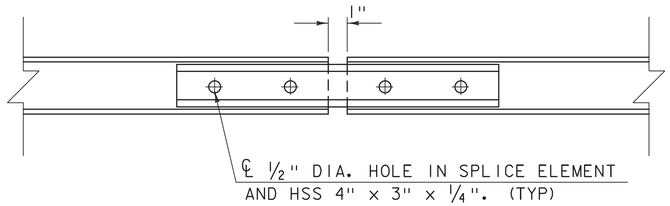
SHEET NUMBER

41



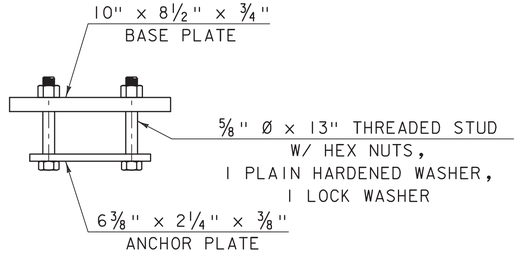

## TOP RAIL SPLICE DETAIL

N.T.S.



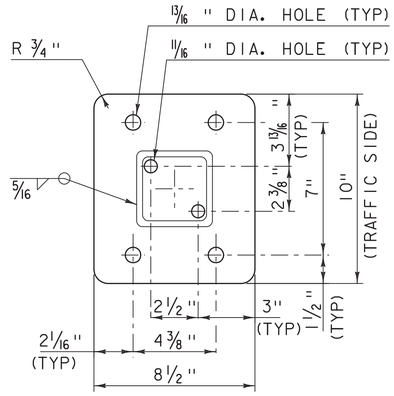

## SECTION E-E

N.T.S.



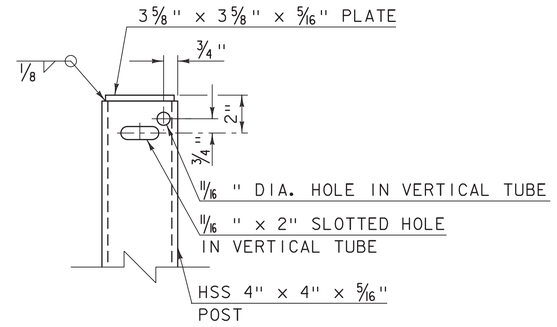

## RAIL POST ANCHORAGE

N.T.S.



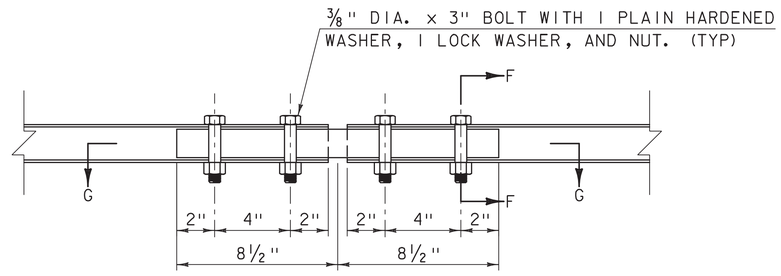

## BASE PLATE

N.T.S.



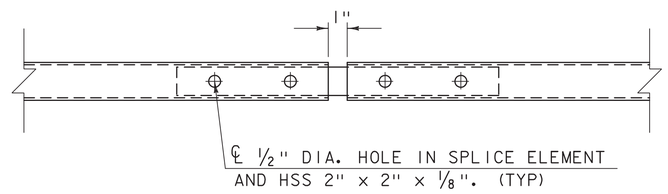

## VERTICAL TUBE DETAIL (FRONT VIEW)

N.T.S.



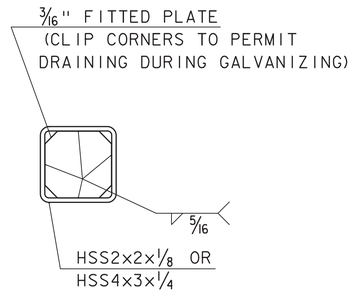

## BOTTOM RAIL SPLICE DETAIL ELEVATION VIEW

N.T.S.



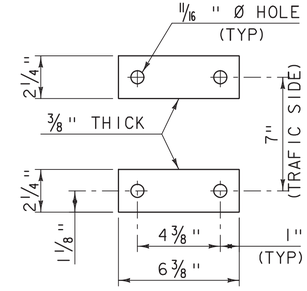

## SECTION G-G

N.T.S.



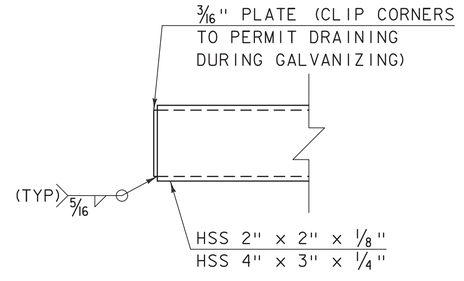

## END OF RAIL DETAIL

N.T.S.



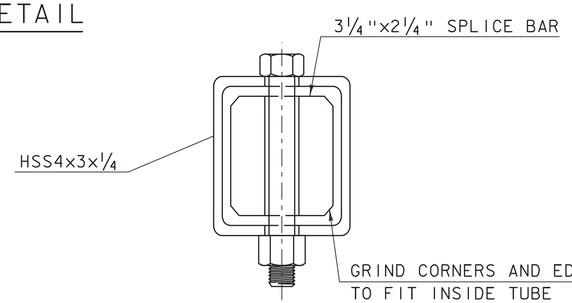

## ANCHOR PLATES

N.T.S.



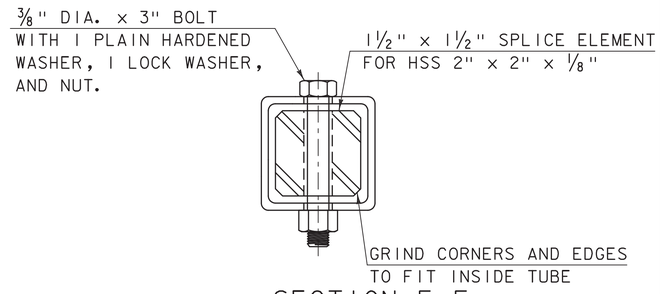

## END OF RAIL DETAIL

N.T.S.




## SECTION D-D

N.T.S.



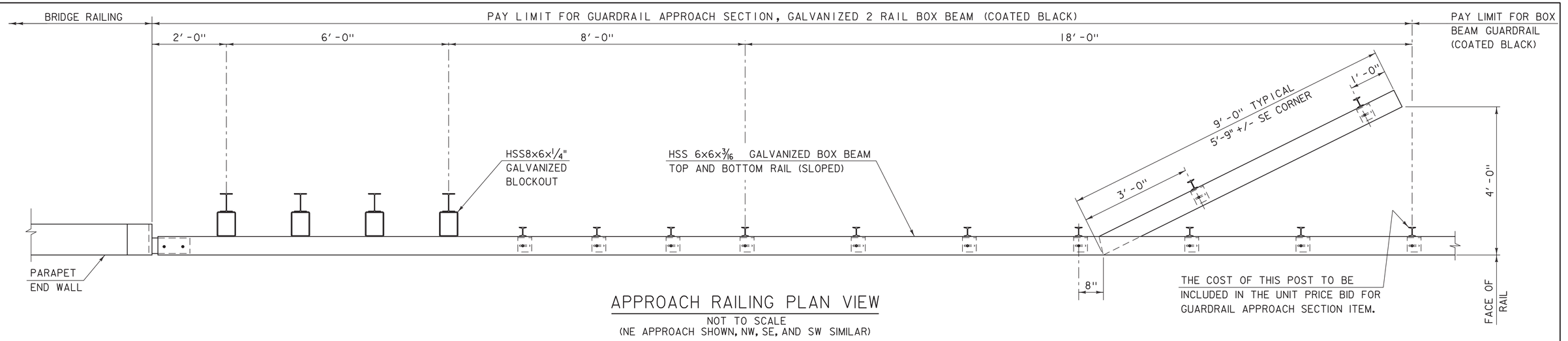

## SECTION F-F

N.T.S.

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

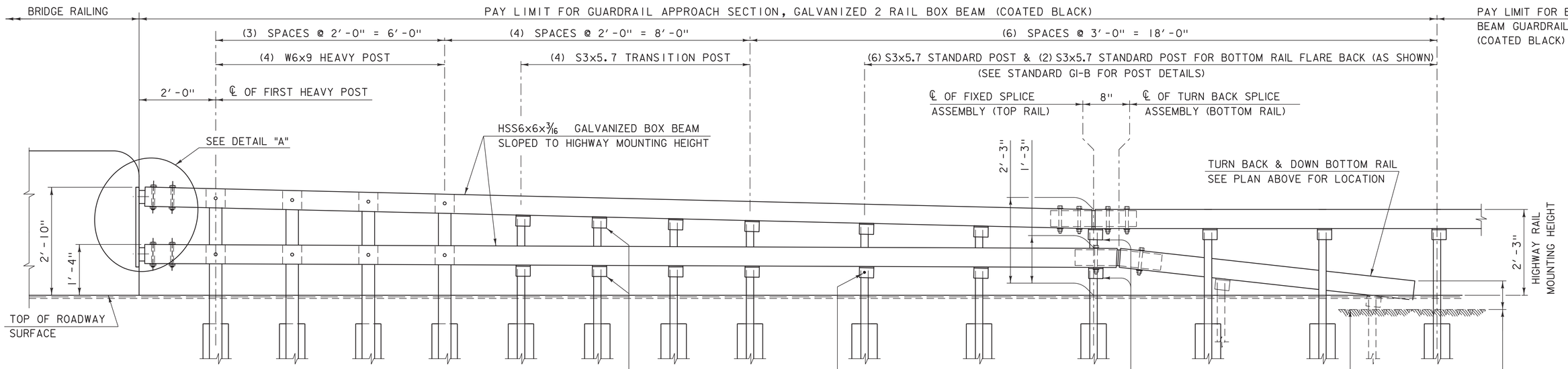
T.Y.LIN INTERNATIONAL

| | |
|---|---|
| FILE NAME: z10j072bdr_rail_02.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: B. CARTER |
| DESIGNED BY: S. KELLER | CHECKED BY: T.POULIN |
| BRIDGE RAILING DETAILS (2 OF 3) | SHEET 42 OF 69 |



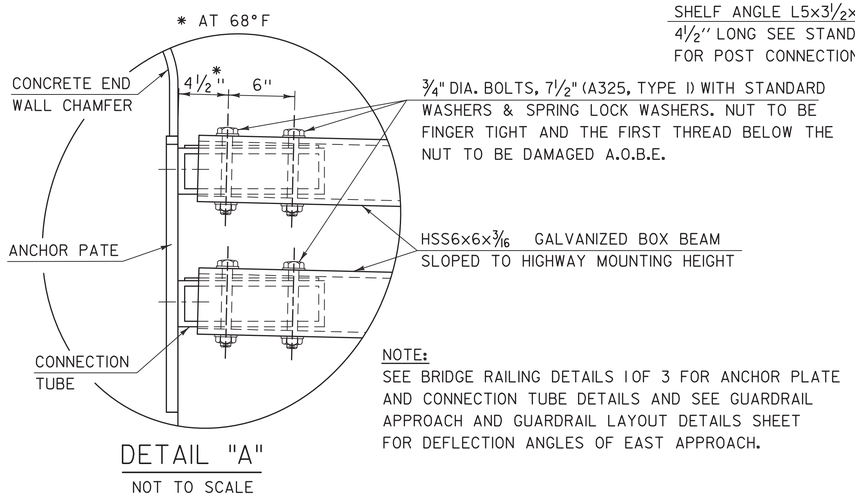

## APPROACH RAILING PLAN VIEW

NOT TO SCALE
(NE APPROACH SHOWN, NW, SE, AND SW SIMILAR)




## APPROACH RAILING ELEVATION

NOT TO SCALE
* LONG LEG HORIZONTAL




## DETAIL "A"

NOT TO SCALE

NOTE:
SEE BRIDGE RAILING DETAILS 1OF 3 FOR ANCHOR PLATE AND CONNECTION TUBE DETAILS AND SEE GUARDRAIL APPROACH AND GUARDRAIL LAYOUT DETAILS SHEET FOR DEFLECTION ANGLES OF EAST APPROACH.

NOTES:

1. ALL STEEL COMPONENTS SHALL BE COATED BLACK IN ACCORDANCE WITH ASTM D7803 FOLLOWING GALVANIZING.
2. FOR "FIXED SPLICE TUBE", "FIXED SPLICE BAR", "FIXED SPLICE TUBE ASSEMBLY", AND "FIXED SPLICE BAR ASSEMBLY" DETAILS, SEE STANDARD S-364C.
3. FOR "TURN BACK SPLICE TUBE DETAIL" AND "TURN BACK SPLICE TUBE ASSEMBLY" DETAILS, SEE STANDARD S-364D.
4. FOR "HEAVY POST DETAIL" AND "TRANSITION POST DETAIL", SEE STANDARD S-364D.
5. FOR SE CORNER MODIFICATION DETAILS, SEE 'BRIDGE RAILING AND GUARDRAIL LAYOUT' SHEET.
6. SEE "GUARDRAIL APPROACH AND GUARDRAIL LAYOUT DETAILS" SHEET FOR ADDITIONAL EAST APPROACH RAILING DETAILS.

T.Y.LIN INTERNATIONAL

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

FILE NAME: z10j072bdr_rail_03.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: S. KELLER
BRIDGE RAILING DETAILS (3 OF 3)

PLOT DATE: 7/28/2014
DRAWN BY: D. AXTELL
CHECKED BY: T. POULIN
SHEET 43 OF 69

STATE OF VERMONT
AGENCY OF TRANSPORTATION

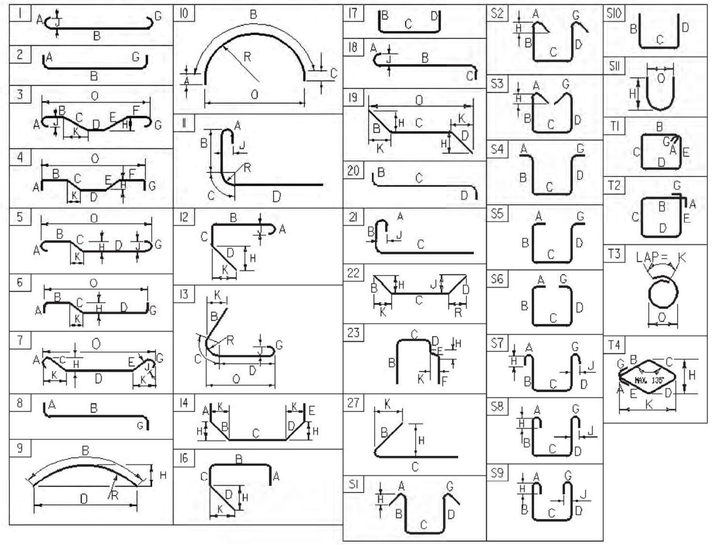
# REINFORCING STEEL SCHEDULE

| ITEM | EACH | SIZE | LENGTH | MARK | TYPE | A | B | C | D | E | F | G | H | J | K | R | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SUPERSTRUCTURE REINFORCEMENT** | | | | | | | | | | | | | | | | | |
| | 74 | 4 | 6'- 2" | S401 | S11 | | | | | | | | 2'- 11" | | | | 0'- 4" |
| | 68 | 4 | 11'- 0" | S402 | S5 | 3'- 0" | 2'- 5" | 0'- 4" | 2'- 7" | | | 2'- 8" | | | | | |
| | 482 | 5 | 10'- 3" | S501 | STR | | | | | | | | | | | | |
| | 76 | 5 | 19'- 6" | S502 | STR | | | | | | | | | | | | |
| | 72 | 5 | 21'- 2" | S503 | STR | | | | | | | | | | | | |
| | 192 | 5 | 2'- 3" | S504 | STR | | | | | | | | | | | | |
| | 112 | 5 | 2'- 9" | S505 | STR | | | | | | | | | | | | |
| | 12 | 5 | 20'- 3" | S506 | STR | | | | | | | | | | | | |
| | 12 | 5 | 23'- 3" | S507 | STR | | | | | | | | | | | | |
| | 8 | 5 | 0'- 11" | S508 | STR | | | | | | | | | | | | |
| | 8 | 5 | 1'- 4" | S509 | STR | | | | | | | | | | | | |
| | 48 | 5 | 52'- 6" | S510 | STR | | | | | | | | | | | | |
| **ABUTMENT 1 REINFORCEMENT** | | | | | | | | | | | | | | | | | |
| ✳ | 10 | 4 | 12'- 4" | 1A401 | S11 | | | | | | | | 6'- 0" | | | | 0'- 5" |
| | 50 | 5 | 9'- 10" | 1A501 | S10 | | 7'- 4" | 2'- 6" | | | | | | | | | |
| | 1 | 5 | 9'- 5" | 1A502 | S11 | | 6'- 11" | 2'- 6" | | | | | | | | | |
| | 1 | 5 | 8'- 7" | 1A503 | S12 | | 6'- 2" | 2'- 6" | | | | | | | | | |
| | 1 | 5 | 7'- 10" | 1A504 | S13 | | 5'- 4" | 2'- 6" | | | | | | | | | |
| | 7 | 5 | 27'- 2" | 1A505 | STR | | | | | | | | | | | | |
| | 7 | 5 | 29'- 1" | 1A506 | STR | | | | | | | | | | | | |
| | 11 | 5 | 28'- 8" | 1A507 | STR | | | | | | | | | | | | |
| | 11 | 5 | 27'- 7" | 1A508 | STR | | | | | | | | | | | | |
| | 4 | 5 | 21'- 2" | 1A509 | STR | | | | | | | | | | | | |
| | 4 | 5 | 22'- 2" | 1A510 | STR | | | | | | | | | | | | |
| | 10 | 5 | 6'- 8" | 1A511 | S10 | | 2'- 3" | 2'- 5" | | | | 2'- 3" | | | | | |
| | 74 | 5 | 5'- 5" | 1A512 | S10 | | 3'- 4" | 2'- 1" | | | | | | | | | |
| | 37 | 5 | 4'- 6" | 1A513 | 1 | 0'- 7" | 3'- 4" | | | | | 0'- 7" | | 0'- 5" | | | |
| | 0 | | 0'- 0" | 1A514 | | | | | | | | | | | | | |
| | 1 | 5 | 6'- 2" | 1A515 | 22 | | 3'- 11" | 2'- 3" | 0'- 0" | | | | 0'- 10" | 0'- 0" | 3'- 10" | 0'- 0" | |
| | 1 | 5 | 5'- 8" | 1A516 | 22 | | 3'- 11" | 1'- 9" | 0'- 0" | | | | 0'- 10" | 0'- 0" | 3'- 10" | 0'- 0" | |
| | 1 | 5 | 5'- 2" | 1A517 | 22 | | 3'- 11" | 1'- 3" | 0'- 0" | | | | 0'- 10" | 0'- 0" | 3'- 10" | 0'- 0" | |
| | 1 | 5 | 4'- 8" | 1A518 | 22 | | 3'- 11" | 0'- 9" | 0'- 0" | | | | 0'- 10" | 0'- 0" | 3'- 10" | 0'- 0" | |
| | 1 | 5 | 5'- 11" | 1A519 | 22 | | 5'- 6" | 0'- 5" | 0'- 0" | | | | 3'- 4.5" | 0'- 0" | 4'- 4.5" | 0'- 0" | |
| | 1 | 5 | 6'- 5" | 1A520 | 22 | | 5'- 6" | 0'- 11" | 0'- 0" | | | | 3'- 4.5" | 0'- 0" | 4'- 4.5" | 0'- 0" | |
| | 1 | 5 | 6'- 11" | 1A521 | 22 | | 5'- 6" | 1'- 5" | 0'- 0" | | | | 3'- 4.5" | 0'- 0" | 4'- 4.5" | 0'- 0" | |
| | 1 | 5 | 7'- 5" | 1A522 | 22 | | 5'- 6" | 1'- 11" | 0'- 0" | | | | 3'- 4.5" | 0'- 0" | 4'- 4.5" | 0'- 0" | |
| | 100 | 7 | 7'- 4" | 1A601 | STR | | | | | | | | | | | | |
| | 50 | 7 | 9'- 10" | 1A602 | S10 | | 7'- 4" | 2'- 6" | | | | | | | | | |
| | 1 | 7 | 9'- 5" | 1A603 | S10 | | 6'- 11" | 2'- 6" | | | | | | | | | |
| | 1 | 7 | 6'- 8" | 1A604 | STR | | | | | | | | | | | | |
| | 1 | 7 | 6'- 5" | 1A605 | STR | | | | | | | | | | | | |
| | 1 | 7 | 8'- 8" | 1A606 | S10 | | 6'- 2" | 2'- 6" | | | | | | | | | |
| | 1 | 7 | 5'- 11" | 1A607 | STR | | | | | | | | | | | | |
| | 1 | 7 | 5'- 8" | 1A608 | STR | | | | | | | | | | | | |
| | 1 | 7 | 7'- 11" | 1A609 | S10 | | 5'- 5" | 2'- 6" | | | | | | | | | |
| | 1 | 7 | 5'- 2" | 1A610 | STR | | | | | | | | | | | | |
| | 1 | 7 | 4'- 11" | 1A611 | STR | | | | | | | | | | | | |

| ITEM | EACH | SIZE | LENGTH | MARK | TYPE | A | B | C | D | E | F | G | H | J | K | R | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ABUTMENT 2 REINFORCEMENT** | | | | | | | | | | | | | | | | | |
| | 24 | 4 | 3'- 9" | 2A401 | S11 | | | | | | | | | | | | 0'- 5" |
| | 4 | 4 | 11'- 3" | 2A402 | S11 | | | | | | | | | | | | 0'- 5" |
| | 4 | 5 | 24'- 7" | 2A501 | STR | | | | | | | | | | | | |
| | 4 | 5 | 20'- 8" | 2A502 | STR | | | | | | | | | | | | |
| | 13 | 5 | 28'- 3" | 2A503 | STR | | | | | | | | | | | | |
| | 13 | 5 | 21'- 4" | 2A504 | STR | | | | | | | | | | | | |
| | 4 | 5 | 21'- 8" | 2A505 | STR | | | | | | | | | | | | |
| | 4 | 5 | 18'- 10" | 2A506 | STR | | | | | | | | | | | | |
| | 21 | 5 | 4'- 5" | 2A507 | STR | | | | | | | | | | | | |
| | 58 | 5 | 5'- 5" | 2A508 | S10 | | 3'- 4" | 2'- 1" | | | | | | | | | |
| | 29 | 5 | 4'- 6" | 2A509 | 1 | 0'- 7" | 3'- 4" | | | | | 0'- 7" | | 0'- 5" | | | |
| | 45 | 5 | 9'- 6" | 2A510 | 2 | 2'- 6" | 7'- 0" | | | | | 0'- 0" | | | | | |
| | 45 | 5 | 8'- 9" | 2A511 | 2 | 2'- 6" | 6'- 3" | | | | | 0'- 0" | | | | | |
| | 12 | 5 | 3'- 11" | 2A512 | STR | | | | | | | | | | | | |
| | 3 | 5 | 3'- 6" | 2A513 | STR | | | | | | | | | | | | |
| | 3 | 5 | 2'- 9" | 2A514 | STR | | | | | | | | | | | | |
| | 1 | 5 | 6'- 1" | 2A515 | 22 | | 5'- 5" | 0'- 8" | 0'- 0" | | | | 2'- 5" | 0'- 0" | 4'- 11" | 0'- 0" | |
| | 1 | 5 | 6'- 8" | 2A516 | 22 | | 5'- 5" | 1'- 3" | 0'- 0" | | | | 2'- 5" | 0'- 0" | 4'- 11" | 0'- 0" | |
| | 1 | 5 | 7'- 2" | 2A517 | 22 | | 5'- 5" | 1'- 9" | 0'- 0" | | | | 2'- 5" | 0'- 0" | 4'- 11" | 0'- 0" | |
| | 1 | 5 | 7'- 8" | 2A518 | 22 | | 5'- 5" | 2'- 3" | 0'- 0" | | | | 2'- 5" | 0'- 0" | 4'- 11" | 0'- 0" | |
| | 1 | 5 | 5'- 7" | 2A519 | 22 | | 3'- 7" | 2'- 0" | 0'- 0" | | | | 1'- 4.5" | 0'- 3" | 3'- 4.5" | 0'- 0" | |
| | 1 | 5 | 5'- 1" | 2A520 | 22 | | 3'- 7" | 1'- 6" | 0'- 0" | | | | 1'- 4.5" | 0'- 3" | 3'- 4.5" | 0'- 0" | |
| | 1 | 5 | 4'- 6" | 2A521 | 22 | | 3'- 7" | 0'- 11" | 0'- 0" | | | | 1'- 4.5" | 0'- 3" | 3'- 4.5" | 0'- 0" | |
| | 1 | 5 | 4'- 0" | 2A522 | 22 | | 3'- 7" | 0'- 5" | 0'- 0" | | | | 1'- 4.5" | 0'- 3" | 3'- 4.5" | 0'- 0" | |
| | 11 | 5 | 4'- 4" | 2A523 | 2 | 0'- 10" | 2'- 8" | | | | | 0'- 10" | | | | | |
| | 2 | 5 | 4'- 8" | 2A524 | 2 | 0'- 10" | 3'- 0" | | | | | 0'- 10" | | | | | |
| | 2 | 5 | 7'- 2" | 2A525 | STR | | | | | | | | | | | | |
| | 1 | 5 | 6'- 3" | 2A526 | STR | | | | | | | | | | | | |
| | 1 | 5 | 2'- 10" | 2A527 | STR | | | | | | | | | | | | |
| | 4 | 5 | 12'- 6" | 2A528 | STR | | | | | | | | | | | | |
| | 2 | 5 | 6'- 6" | 2A529 | STR | | | | | | | | | | | | |
| | 1 | 5 | 4'- 7" | 2A530 | STR | | | | | | | | | | | | |
| | 1 | 5 | 3'- 0" | 2A531 | STR | | | | | | | | | | | | |
| | 4 | 5 | 8'- 9" | 2A532 | STR | | | | | | | | | | | | |
| | 2 | 5 | 8'- 8" | 2A533 | 2 | 2'- 6" | 6'- 2" | | | | | 0'- 0" | | | | | |
| | 2 | 5 | 9'- 1" | 2A534 | 2 | 2'- 6" | 6'- 7" | | | | | 0'- 0" | | | | | |
| | 2 | 5 | 9'- 7" | 2A535 | 2 | 2'- 6" | 7'- 1" | | | | | 0'- 0" | | | | | |
| | 2 | 5 | 10'- 1" | 2A536 | 2 | 2'- 6" | 7'- 7" | | | | | 0'- 0" | | | | | |
| | 5 | 5 | 10'- 7" | 2A537 | 2 | 2'- 6" | 8'- 1" | | | | | 0'- 0" | | | | | |
| | 2 | 5 | 11'- 1" | 2A538 | 2 | 2'- 6" | 8'- 7" | | | | | 0'- 0" | | | | | |
| | 2 | 5 | 9'- 1" | 2A539 | 2 | 2'- 6" | 6'- 7" | | | | | 0'- 0" | | | | | |
| | 2 | 5 | 9'- 5" | 2A540 | 2 | 2'- 6" | 6'- 11" | | | | | 0'- 0" | | | | | |
| | 2 | 5 | 9'- 10" | 2A541 | 2 | 2'- 6" | 7'- 4" | | | | | 0'- 0" | | | | | |
| | 2 | 5 | 10'- 3" | 2A542 | 2 | 2'- 6" | 7'- 9" | | | | | 0'- 0" | | | | | |
| | 4 | 5 | 10'- 7" | 2A543 | 2 | 2'- 6" | 8'- 1" | | | | | 0'- 0" | | | | | |
| ✳ | 22 | 5 | 4'- 5" | 2A544 | STR | | | | | | | | | | | | |
| ✳ | 4 | 5 | 2'- 2" | 2A545 | STR | | | | | | | | | | | | |
| | 3 | 5 | 1'- 3" | 2A546 | 1 | 0'- 7" | 0'- 8" | | | | | 0'- 0" | | 0'- 5" | | | |
| | 7 | 7 | 12'- 6" | 2A701 | STR | | | | | | | | | | | | |
| ✳ | 8 | 7 | 8'- 9" | 2A702 | STR | | | | | | | | | | | | |
| **PIER REINFORCEMENT** | | | | | | | | | | | | | | | | | |
| | 80 | 5 | 7'- 0" | P501 | S10 | | 2'- 2" | 2'- 8" | 2'- 2" | | | | | | | | |
| | 112 | 5 | 6'- 4" | P502 | S10 | | 2'- 2" | 2'- 0" | 2'- 2" | | | | | | | | |
| **APPROACH SLAB REINFORCEMENT** | | | | | | | | | | | | | | | | | |
| | 42 | 5 | 18'- 9" | AS501 | STR | | | | | | | | | | | | |
| | 42 | 5 | 21'- 2" | AS502 | STR | | | | | | | | | | | | |
| ✳ | 43 | 5 | 2'- 8" | AS503 | STR | | | | | | | | | | | | |
| ✳ | 89 | 9 | 20'- 11" | AS901 | 1 | 1'- 3" | 19'- 8" | | | | | 0'- 0" | | 0'- 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. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. SUPERSTRUCTURE, ABUTMENT, AND PIER REINFORCEMENT SHALL BE LEVEL II. APPROACH SLAB REINFORCEMENTSHALL BE LEVEL I.




**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 |


CALDERWOOD ENGINEERING, ETC.
STRUCTURAL ENGINEERING • DETAILING SERVICES
222 RIVER RD, RICHMOND, ME 04357 PH/FX (207)737-2007/(207) 737-2008


PREPARED FOR:
COLD RIVER BRIDGES, LLC

CEE 106-BR-14

P.E. NUMBER

DATE:

| | BY | DATE |
|---|---|---|
| DESIGN-DETAILED | ETC | 2014 |
| CHECKED-REVIEWED | | |
| REVISIONS 1 | | |
| REVISIONS 2 | | |
| REVISIONS 3 | | |
| REVISIONS 4 | | |
| FIELD CHANGES | | |

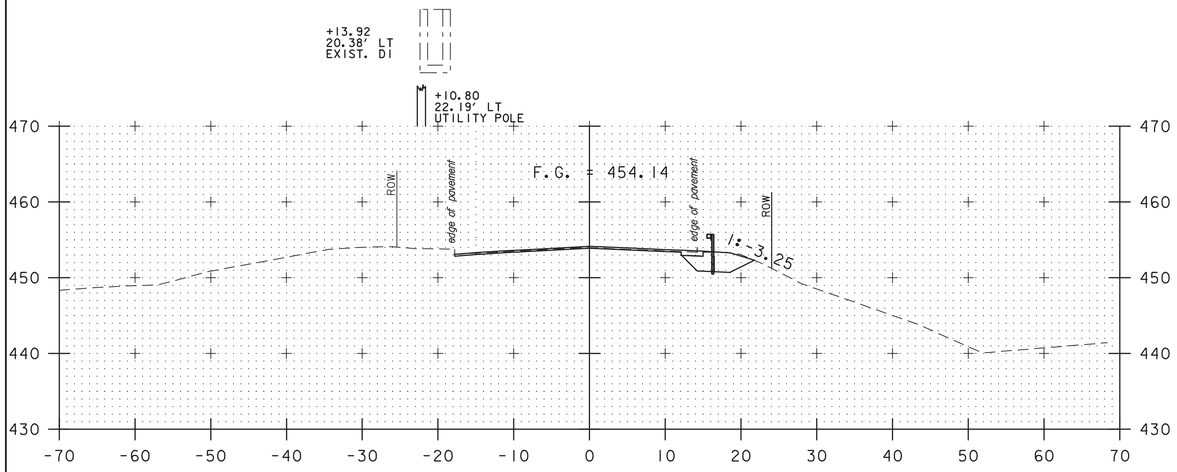
VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

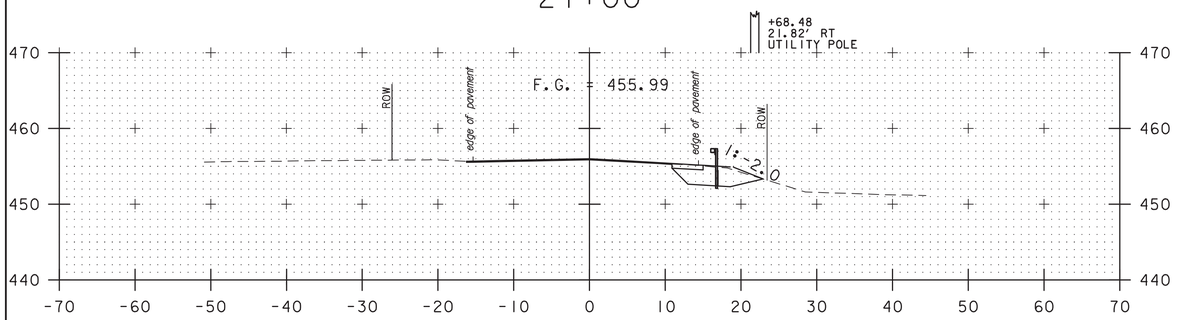
REINFORCING STEEL SCHEDULE

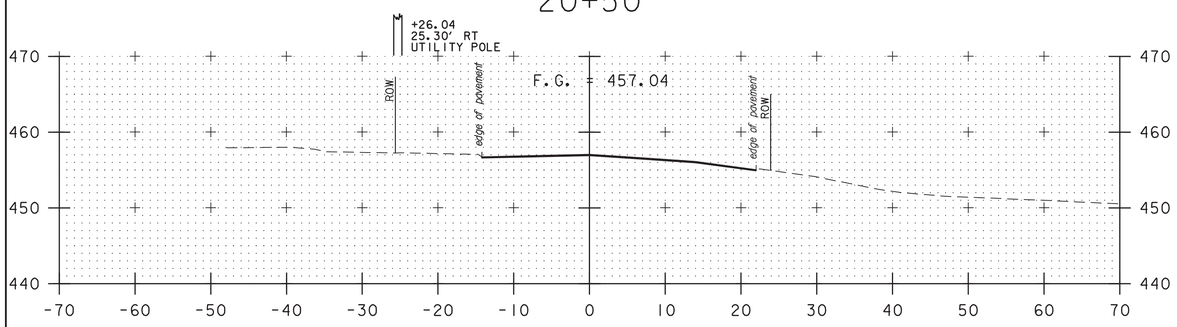
SHEET NUMBER

44


CALDERWOOD ENGINEERING, ETC. 222 RIVER ROAD RICHMOND, ME 04357 PH/FX (207)737-2007/(207)737-2008



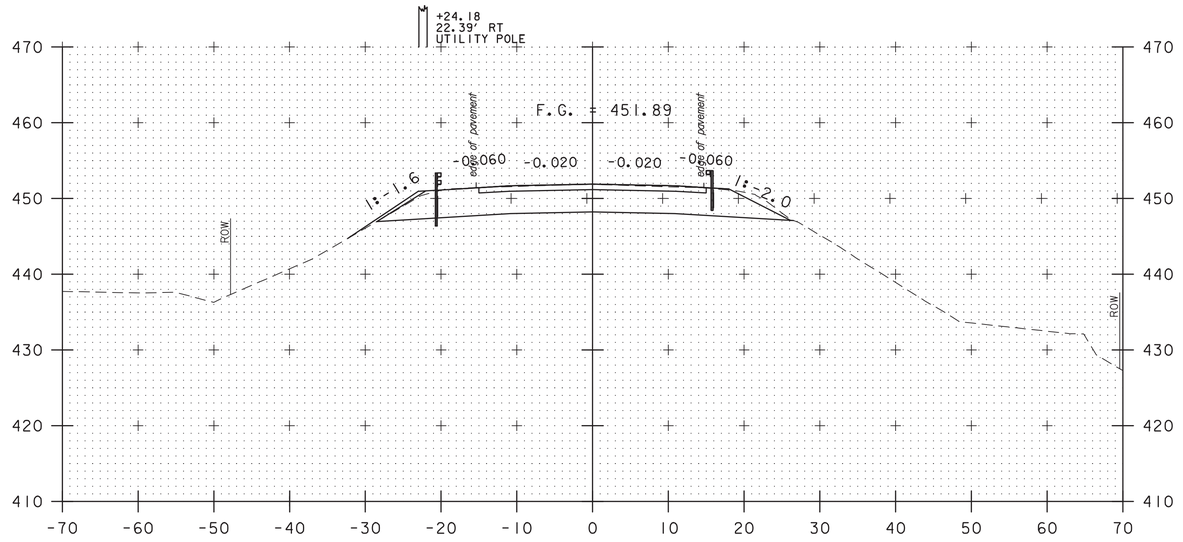




20+26

STA. 20+26.19
BEGIN APPROACH
MATCH EXISTING PAVEMENT

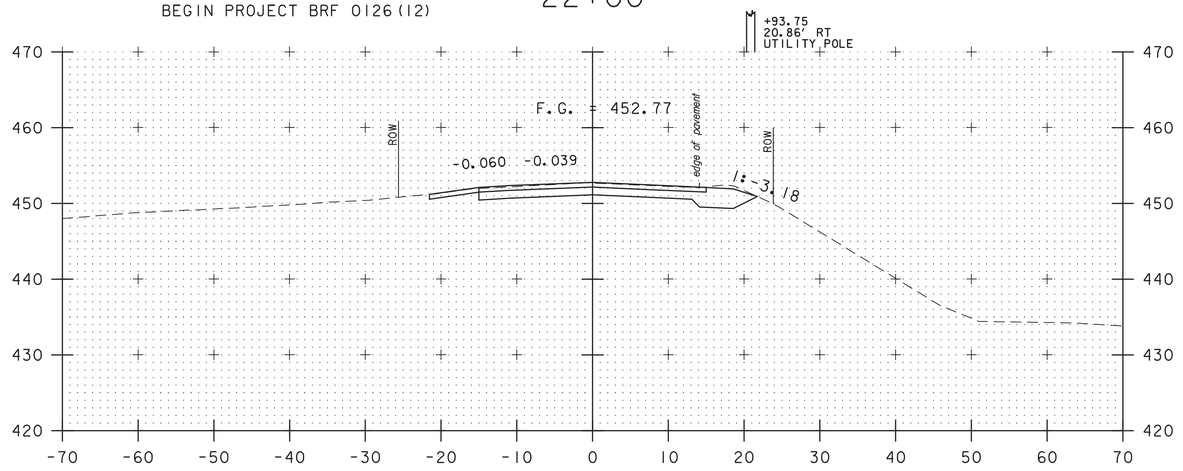
STA. 22+11.79
BEGIN BRIDGE




STA. 21+91.79
END APPROACH
BEGIN PROJECT BRF 0126(12)

21+50

22+00




SCALE 1" = 10'-0"

STA. 20+26 TO STA. 22+00

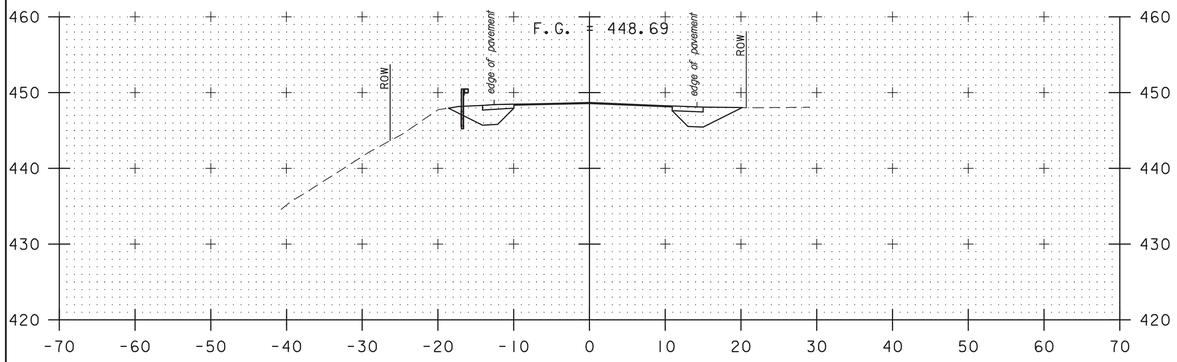
PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

T·Y·LIN INTERNATIONAL

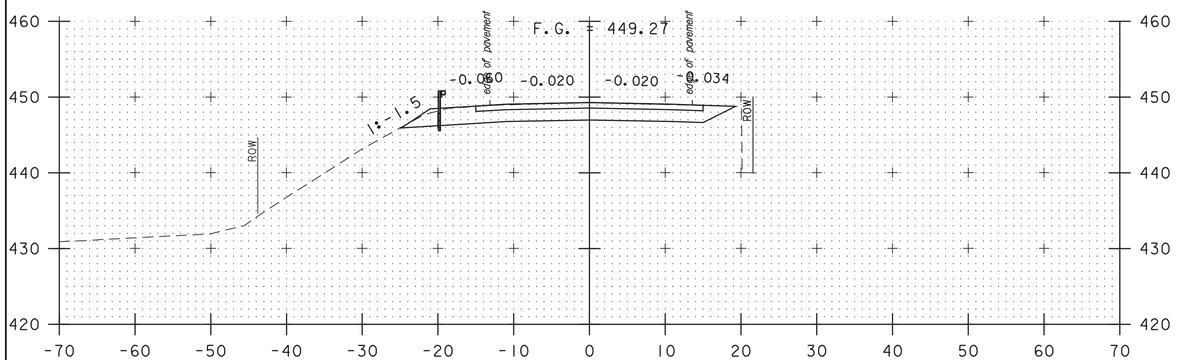
FILE NAME: z10j072bdr_xs.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BRYANT
VT ROUTE 121 - CROSS SECTIONS - 1

PLOT DATE: 7/28/2014
DRAWN BY: D. BRYANT
CHECKED BY: D. BURHANS
SHEET 45 OF 69

STA. 25+12.79
END APPROACH
MATCH EXISTING PAVEMENT




25+00




24+50

STA. 24+34.48
END PROJECT BRF 0126(12)
BEGIN APPROACH

STA. 24+14.48
END BRIDGE

SCALE 1" = 10'-0"

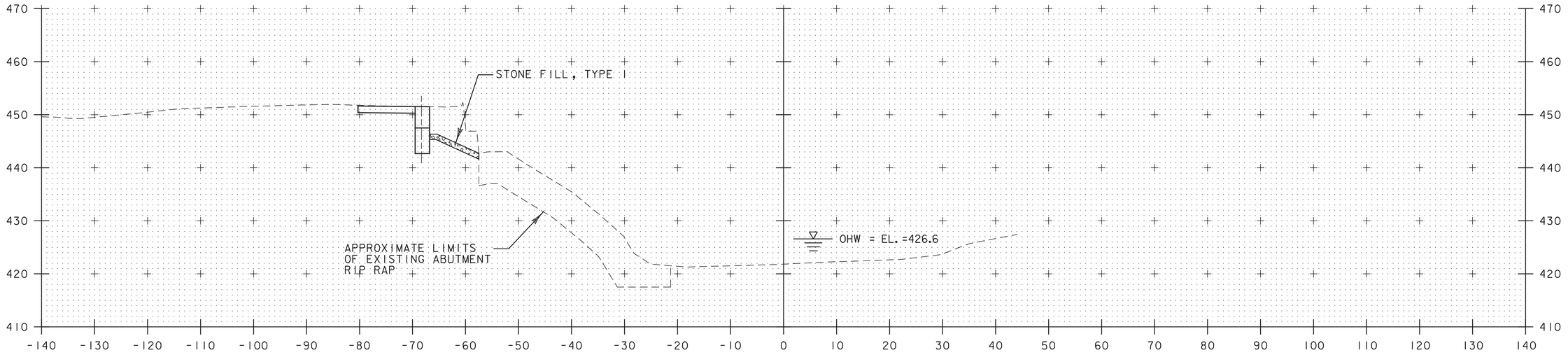
STA. 24+50 TO STA. 25+00

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

T.Y.LIN INTERNATIONAL

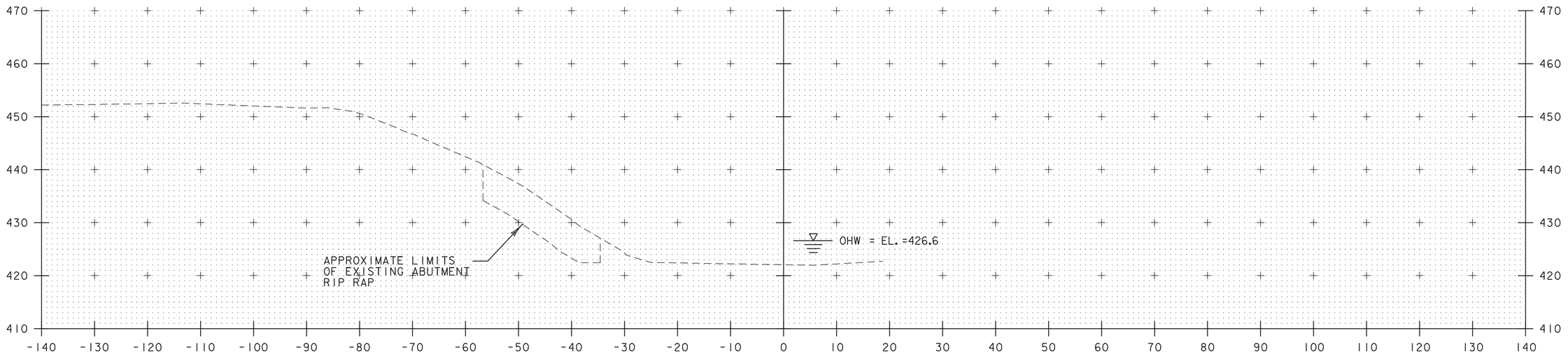
FILE NAME: z10J072bdr_xs.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BRYANT
VT ROUTE 121 - CROSS SECTIONS - 2

PLOT DATE: 7/28/2014
DRAWN BY: D. BRYANT
CHECKED BY: D. BURHANS
SHEET 46 OF 69




STA 61+07.38 LEFT
BEGIN GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I

61+25




61+00

SCALE 1" = 10'-0"

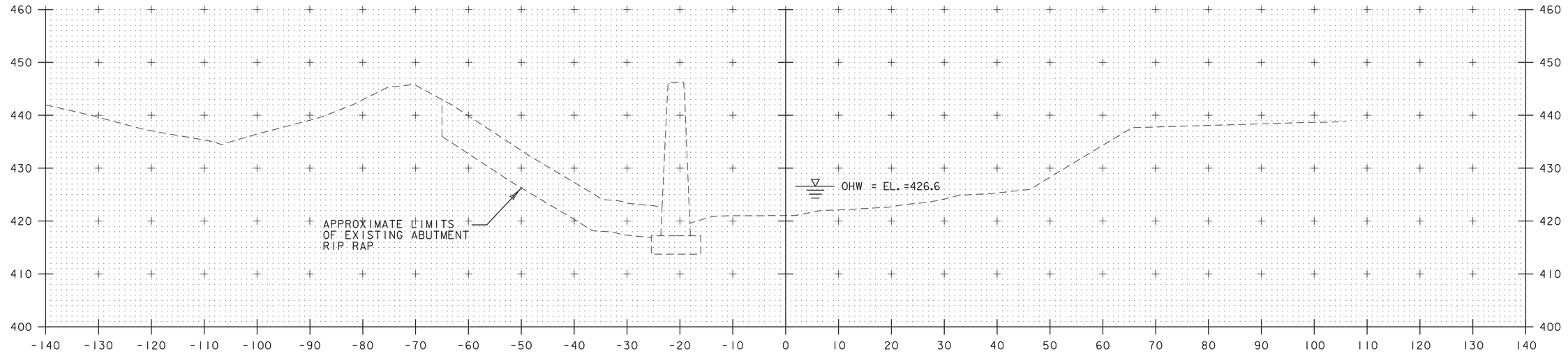
STA. 61+00 TO STA. 61+25

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

T·Y·LIN INTERNATIONAL

FILE NAME: z10j072bdr_xs02.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BURHANS
CHANNEL CROSS SECTIONS - 1

PLOT DATE: 7/28/2014
DRAWN BY: D. BURHANS
CHECKED BY: D. BRYANT
SHEET 47 OF 69




61+75

STA 61+74.48 LEFT
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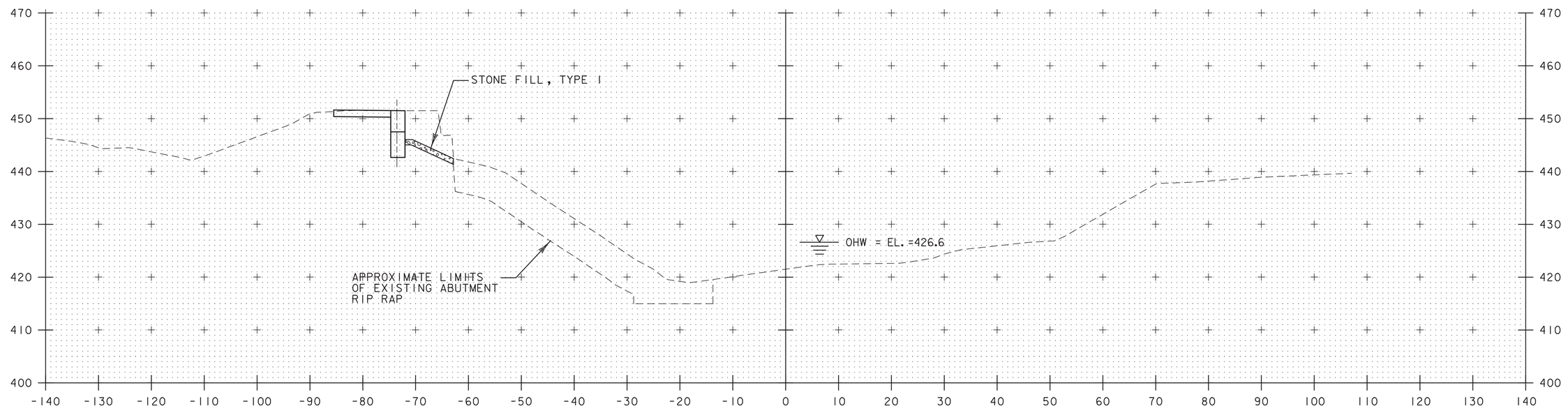
STONE FILL, TYPE I




61+50

SCALE 1" = 10'-0"

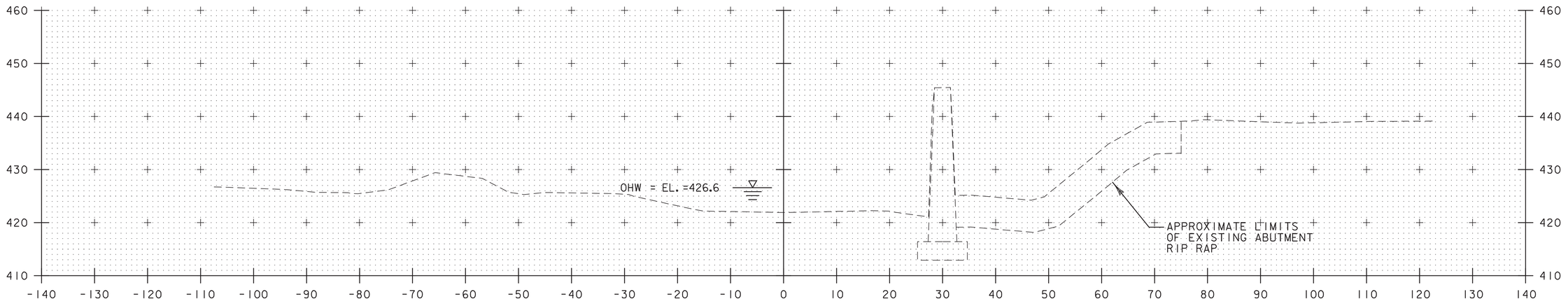
STA. 61+50 TO STA. 61+75

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

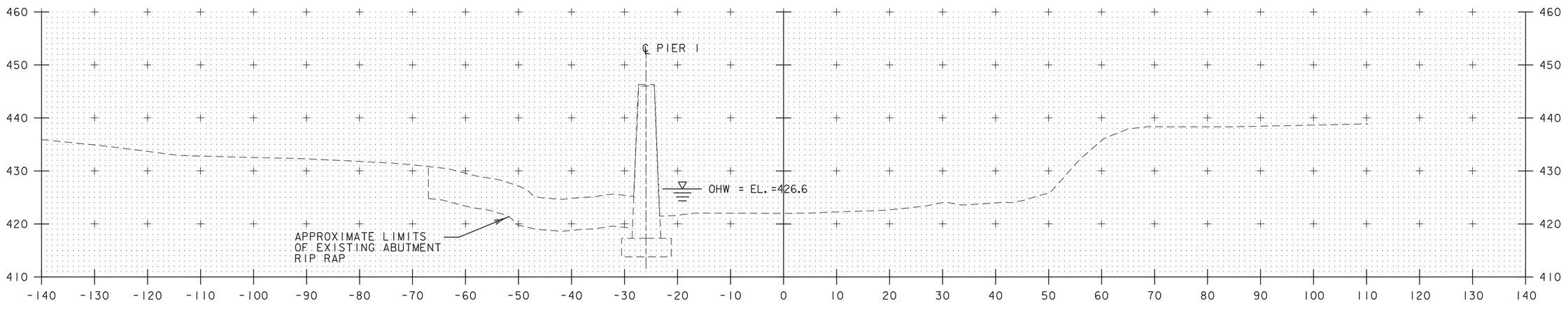
T·Y LIN INTERNATIONAL

FILE NAME: z10j072bdr_xs02.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BURHANS
CHANNEL CROSS SECTIONS - 2

PLOT DATE: 7/28/2014
DRAWN BY: D. BURHANS
CHECKED BY: D. BRYANT
SHEET 48 OF 69




62+25




62+00

SCALE 1" = 10'-0"

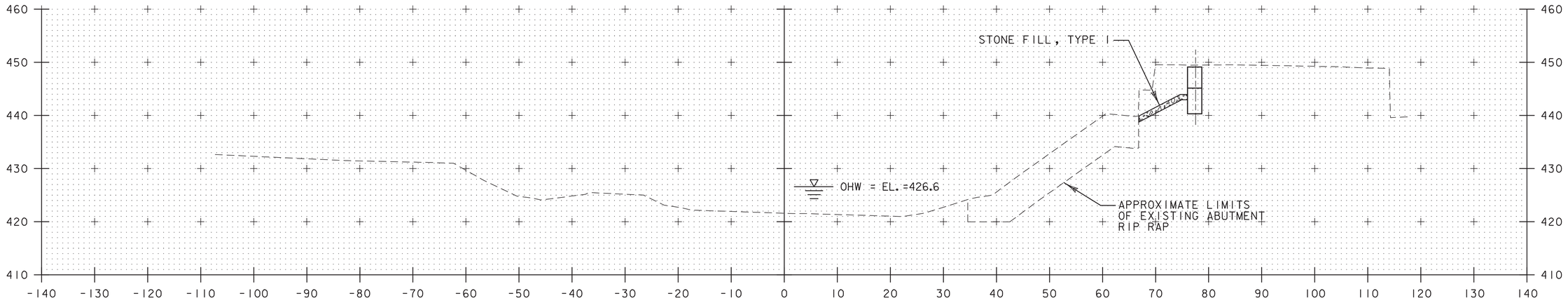
STA. 62+00 TO STA. 62+25

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

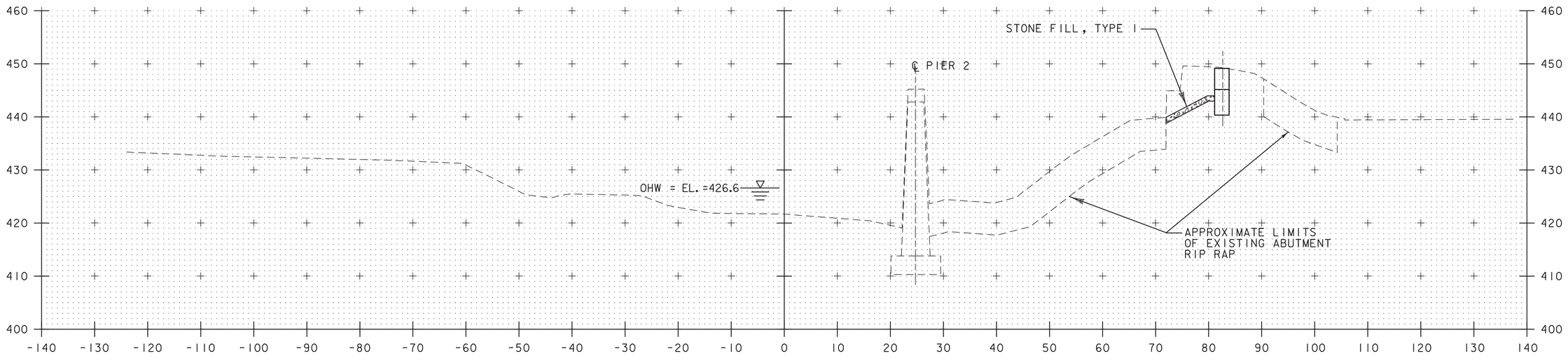
T-Y LIN INTERNATIONAL

FILE NAME: z10J072bdr_xs02.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BURHANS
CHANNEL CROSS SECTIONS - 3

PLOT DATE: 7/28/2014
DRAWN BY: D. BURHANS
CHECKED BY: D. BRYANT
SHEET 49 OF 69




62+75




STA 62+37.05 RIGHT
BEGIN GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I

62+50

SCALE 1" = 10'-0"

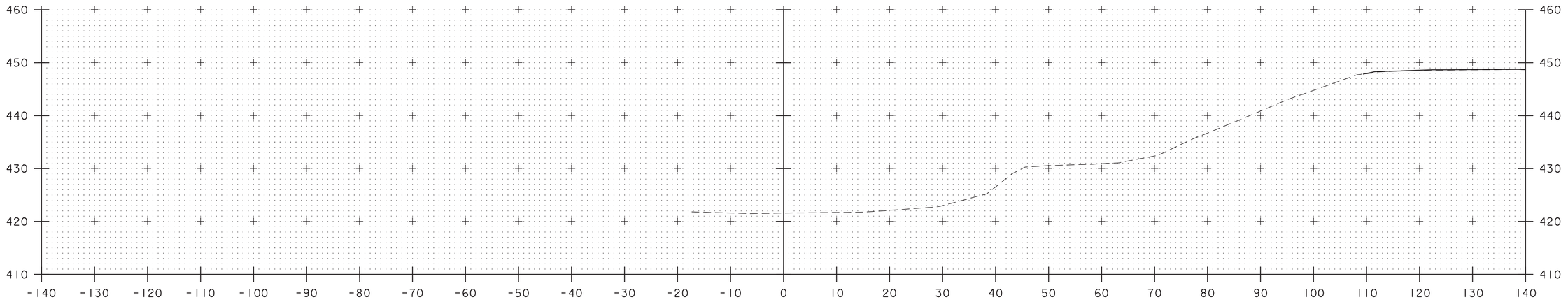
STA. 62+50 TO STA. 62+75

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

T·Y·LIN INTERNATIONAL

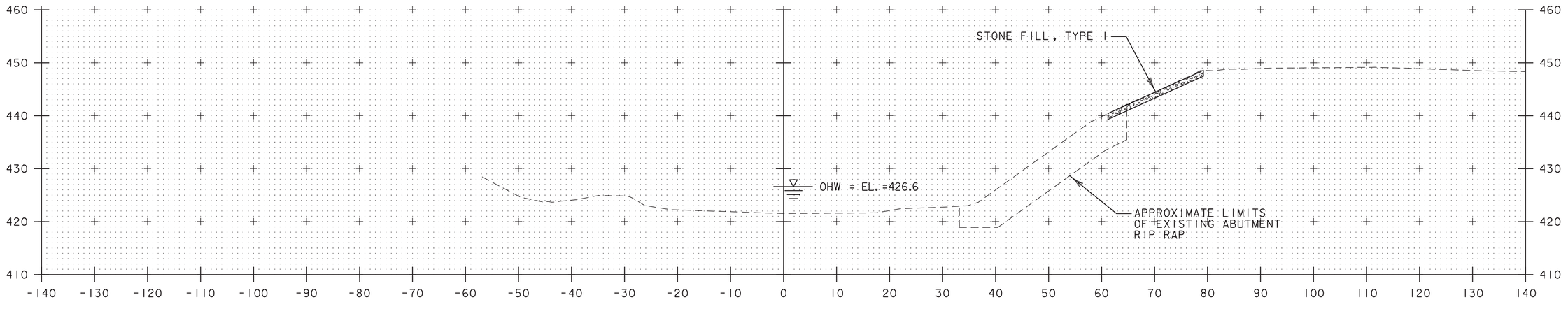
FILE NAME: z10j072bdr_xs02.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BURHANS
CHANNEL CROSS SECTIONS - 4

PLOT DATE: 7/28/2014
DRAWN BY: D. BURHANS
CHECKED BY: D. BRYANT
SHEET 50 OF 69




63+25

STA 63+12.02 RIGHT
END GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I




63+00

SCALE 1" = 10'-0"

STA. 63+00 TO STA. 63+25

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

T-Y-LIN INTERNATIONAL

FILE NAME: z10J072bdr_xs02.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BURHANS
CHANNEL CROSS SECTIONS - 5

PLOT DATE: 7/28/2014
DRAWN BY: D. BURHANS
CHECKED BY: D. BRYANT
SHEET 51 OF 69

# EROSION CONTROL NARRATIVE

## 1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REPLACEMENT OF THE BRIDGE ON STATE ROUTE 121 SPANNING OVER THE BODY OF WATER KNOWN AS SAXTONS RIVER IN THE TOWN OF ROCKINGHAM. WORK WILL INVOLVE REPLACEMENT OF BOTH ABUTMENTS AND THE BRIDGE SUPERSTRUCTURE ON THE EXISTING ALIGNMENT. EXISTING ABUTMENTS WILL BE PARTIALLY REMOVED TO THE LIMITS SHOWN ON THE EARTHWORK TYPICAL SECTION SHEET. ALSO INCLUDED WILL BE RELATED CHANNEL AND APPROACH WORK. THE LENGTH OF THE PROJECT IS APPROXIMATELY 243 FEET ALONG VT ROUTE 121. THE SITE IS LOCATED, BASED ON NAD 83/92 AT 233073.66 N, 1639680.82 E (POINT HVCTRL #2- SEE TIE SHEET).

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA AS SHOWN ON THE ATTACHED EPSC PLAN. THE AREA OF DISTURBANCE DOES NOT INCLUDE WASTE, BORROW AND STAGING AREAS. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING TO VTRANS ENVIRONMENTAL SECTION FOR APPROVAL, THE LOCATION OF THE WASTE, BORROW AND STAGING AREAS, AS WELL AS THE MATERIAL STOCKPILE, REFUELING AND MAINTENANCE AREAS. A MAP SHALL BE ATTACHED IF NECESSARY.

TOTAL AREA OF DISTURBANCE IS APPROXIMATELY 17,067 SF (0.39 ACRES).

IT IS ANTICIPATED THAT THE PROJECT WILL LAST ONE CONSTRUCTION SEASON.

## 1.2 SITE INVENTORY

### 1.2.1 TOPOGRAPHY, EXISTING ROADS, UTILITIES

THE TOPOGRAPHY SURROUNDING THE PROJECT SITE CONSISTS MOSTLY OF LIGHTY WOODED AREAS AND RESIDENTIAL PROPERTIES WITH WELL ESTABLISHED LAWNS. PORTIONS NEAR THE WATER BODY INCLUDE LIGHTLY WOODED AREAS WITH MODERATE SLOPES. THE GENERAL TOPOGRAPHY OF THE AREA SLOPES FROM THE SOUTH TO THE NORTH. ALL ROAD SURFACES IN THE PROJECT AREA ARE BITUMINOUS CONCRETE PAVEMENT. THERE IS ONE COMMERICAL BUILDING AND ONE RESIDENTIAL BUILDING ON THE SOUTH AND NORTH SIDES OF THE EAST APPROACH ROADWAY RESPECTIVELY. THERE IS ONE RESIDENTIAL BUILDING ON EACH SIDE OF THE WEST APPROACH ROADWAY.

THERE ARE OVERHEAD ELECTRICAL AND TELEPHONE LINES ON THE EAST AND WEST ENDS OF THE PROJECT THAT SPAN THE FULL LENGTH OF THE BRIDGE ON THE NORTH SIDE. OVERHEAD LINES ALSO CROSS ROUTE 121 ON THE EAST AND WEST ENDS OF THE PROJECT.

### 1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE BRIDGE SPANS THE BODY OF WATER KNOWN AS SAXTONS RIVER. THE STREAM IS CHARACTERIZED AS STRAIGHT TO SINUOUS, ALLUVIAL, PROBABLY INCISED AND STABLE WITH A GRAVEL AND COBBLE STREAMBED. THERE IS ALSO AN UNNAMED STREAM NEAR THE NORTHWEST CORNER OF THE BRIDGE.

THE FOLLOWING DESCRIPTIONS ARE FOR THE EXISTING SITE PLANS: SURFACE DRAINAGE FROM STATE ROUTE 121 FLOWS DOWN EXISTING VEGETATED AND WOODED SIDESLOPES AND INTO SAXTONS RIVER.

### 1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS MOSTLY OF LIGHTLY WOODED AREAS. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS REQUIRED FOR REPLACEMENT OF THE EXISTING BRIDGE. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES OR REPLACED WITH STONE FILL.

### 1.2.4 SOILS

SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE FOR THE COUNTY OF WINDHAM, VERMONT. SOILS ON THE PROJECT SITE ARE:

THROUGHOUT THE PROJECT THE SOIL TYPE IS QUONSET AND WARWICK, 2 TO 8 PERCENT SLOPE, “K FACTOR” = 0.16. THE EROSION HAZARD IS “LOW” DUE TO ITS K FACTOR.

### 1.2.4 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: SAXTONS RIVER IS DEFINED AS ESSENTIAL FISH HABITAT.
HISTORICAL OR ARCHAEOLOGICAL AREAS: THERE ARE SEVERAL AREAS OF ARCHAEOLOGICAL SIGNIFICANCE ON BOTH THE EAST AND WEST ENDS OF THE PROJECT. THE WEST BANK OF THE RIVER IS A NATIONAL REGISTERED LANDMARK DESIGNATED HISTORIC VILLAGE DISTRICT.
PRIME AGRICULTURE LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: SAXTONS RIVER AND UNNAMED BROOK
WETLANDS: NO

## 1.3 RISK EVALUATION

THE PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES FOR LOW RISK PROJECTS. ANY MODIFICATIONS TO THE PROJECT THAT INCREASE THE RISK TO ENVIRONMENTAL RESOURCES SHALL BE EVALUATED IN ACCORDANCE WITH THE PERMIT REQUIREMENTS. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

## 1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSISTS OF APPLYING MEASURES THROUGHOUT THE LIFE OF THE PROJECT TO AVOID SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

### 1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

THE SITE BOUNDARIES SHALL BE PHYSICALLY MARKED. THE CONTRACTOR MAY CHOOSE PROJECT DEMARCATION FENCING (PDF) AND/OR BARRIER FENCE TO MARK THE SITE BOUNDARIES.

### 1.4.2 LIMIT DISTURBANCE AREA

PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

### 1.4.3 SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

### 1.4.4 INSTALL SEDIMENT BARRIERS

SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHOULD BE INSTALLED PRIOR TO ANY UPSLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN OR AS NECESSARY.

### 1.4.5 DIVERT UPLAND RUNOFF

DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

DIVERSION OF UPLAND RUNOFF NOT ANTICIPATED.

### 1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSIVE POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

THE USE OF STONE CHECK DAMS IS NOT ANTICPATED FOR THIS PROJECT.

### 1.4.7 CONSTRUCT PERMANENT CONTROLS

PERMANENT STOMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS.

SEED AND MULCH WILL BE USED AS PERMANENT CONTROLS TO STABILIZE EXPOSED SOIL. STONE FILL WILL BE USED TO STABILIZE THE STREAMBED SLOPES AROUND ABUTMENTS.

### 1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

### 1.4.9 WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

### 1.4.10 STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER, AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

### 1.4.11 DE-WATERING ACTIVITIES

DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

TREATMENT OF DEWATERING COFFERDAM IS NOT ANTICIPATED.

### 1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

## 1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

### 1.5.2 OFF-SITE ACTIVITIES

IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

T.Y.LIN INTERNATIONAL

| | |
|---|---|
| FILE NAME: z10j072bdr_epscn.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: S. AMOROSO |
| DESIGNED BY: S. AMOROSO | CHECKED BY: D. BRYANT |
| EPSC NARRATIVE | SHEET 52 OF 69 |

N

VT STATE PLANE GRID

STA. 20+26.19
BEGIN APPROACH
MATCH EXISTING
PAVEMENT

STA. 22+11.79
BEGIN BRIDGE

STA. 21+91.79
END APPROACH
BEGIN PROJECT
BRF 0126(12)

APPROXIMATE LIMITS
OF EXISTING RIPRAP
TO REMAIN (TYP)

EXISTING ROW (TYP.)

OAK ST.

UNNAMED
STREAM

CHANNEL LINE

SAXTONS
RIVER

℄ VT 121

TO SAXTONS
VILLAGE

TO BELLOWS
FALLS

20+00
21+00
22+00
23+00
62+00
24+00
25+00

MILL ST.

MAPLE ST.
EXT.

VT 121
STA. 23+07.97=
CHANNEL
STA. 62+00.00

STA. 24+34.48
END PROJECT
BRF 0126(12)
BEGIN APPROACH

STA. 24+14.48
END BRIDGE

STA. 25+12.79
END APPROACH
MATCH EXISTING
PAVEMENT

SCALE 1" = 20'-0"
0 20 40
SCALE IN FEET

NOTES:
1. ORDINARY HIGH WATER ELEVATION = 426.6 FT

2. CONTOURS REFLECT CONDITIONS PRIOR TO TROPICAL STORM IRENE, AUGUST 2011.

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

T·Y LIN INTERNATIONAL

FILE NAME: z10j072bdr_ece01.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: S. AMOROSO
EPSC EXISTING CONDITIONS SITE PLAN

PLOT DATE: 7/28/2014
DRAWN BY: S. AMOROSO
CHECKED BY: D. BRYANT
SHEET 53 OF 69

N

VT STATE PLANE GRID

STA. 20+26.19
BEGIN APPROACH
MATCH EXISTING
PAVEMENT

EXISTING ROW (TYP)

STA. 21+91.79
END APPROACH
BEGIN PROJECT
BRF 0126(12)

OAK ST.

UNNAMED
STREAM

APPROXIMATE LIMITS
OF EXISTING RIPRAP
TO REMAIN (TYP)

CHANNEL LINE

63+00

63+25

STONE FILL, TYPE I (TYP.)

℄ VT 121 (TH 1)

TO SAXTONS
VILLAGE

20+00

21+00

22+00

23+00

62+00

24+00

25+00

TO BELLOWS
FALLS

MILL ST.

STA. 22+11.79
BEGIN BRIDGE

SAXTONS
RIVER

61+00

60+50

VT 121
STA. 23+07.97=
CHANNEL LINE
STA. 62+00.00

STA. 24+34.48
END PROJECT
BRF 0126(12)
BEGIN APPROACH

STA. 24+14.48
END BRIDGE

MAPLE ST.
EXT.

STA. 25+12.79
END APPROACH
MATCH EXISTING
PAVEMENT

LEGEND:

STABILIZED CONSTRUCTION ENTRANCE

SURFACE ROUGHENING

SCALE 1" = 20'-0"

0 20 40

SCALE IN FEET

NOTES:

1. TEMPORARY EROSION MATTING TO BE USED ON SLOPES STEEPER THAN 3:1.
2. CONTOURS REFLECT CONDITIONS PRIOR TO TROPICAL STORM IRENE, AUGUST 2011.
3. ORDINARY HIGH WATER ELEVATION = 426.6 FT.

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

T.Y.LIN INTERNATIONAL

FILE NAME: z10J072bdr_ect01.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: S. AMOROSO
EPSC CONSTRUCTION CONDITIONS SITE PLAN

PLOT DATE: 7/28/2014
DRAWN BY: S. AMOROSO
CHECKED BY: D. BRYANT
SHEET 54 OF 69

N

VT STATE PLANE GRID

STA. 20+26.19
BEGIN APPROACH
MATCH EXISTING
PAVEMENT

STA. 21+91.79
END APPROACH
BEGIN PROJECT
BRF 0126(12)

EXISTING
ROW (TYP.)

OAK ST.

UNNAMED
STREAM

CHANNEL LINE

63+00

63+25

℄ VT 121 (TH 1)

VT RTE 121
TO SAXTONS VILLAGE

VT RTE 121
TO BELLOWS FALL

20+00

21+00

22+00

23+00

62+00

24+00

25+00

MILL ST.

MAPLE ST.
EXT.

STA. 22+11.79
BEGIN BRIDGE

SAXTONS
RIVER

61+00

60+50

VT 121
STA. 23+07.97=
CHANNEL LINE
STA. 62+00.00

STONE FILL,
TYPE I(TYP.)

STA. 24+34.48
END PROJECT
BRF 0126(12)
BEGIN APPROACH

STA. 24+14.48
END BRIDGE

STA. 25+12.79
END APPROACH
MATCH EXISTING
PAVEMENT

SCALE 1" = 20'-0"

0 20 40

SCALE IN FEET

NOTES:

1. CONTOURS SHOWN REFLECT EXISTING CONDITIONS PRIOR TO TROPICAL STORM IRENE, AUGUST 2011. FINAL CONTOURS WILL BE SIMILAR. SEE CROSS SECTION SHEETS FOR FINAL GRADES.

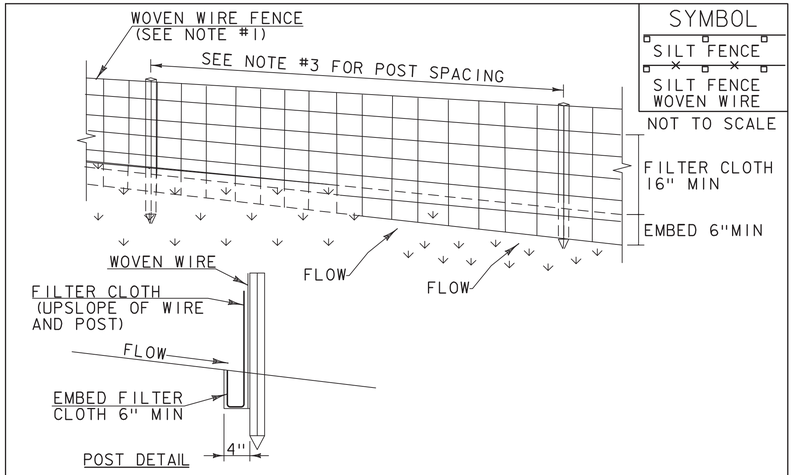
2. TEMPORARY EROSION MATTING TO BE USED ON SLOPES STEEPER THAN 3:1.

3. ORDINARY HIGH WATER ELEVATION = 426.6 FT.

| | |
|---|---|
| PROJECT NAME: | ROCKINGHAM |
| PROJECT NUMBER: | BRF 0126(12) |

T·Y LIN INTERNATIONAL

| | |
|---|---|
| FILE NAME: z10J072bdr_ecf01.dgn | PLOT DATE: 7/28/2014 |
| PROJECT LEADER: R. HEBERT | DRAWN BY: S. AMOROSO |
| DESIGNED BY: S. AMOROSO | CHECKED BY: D. BRYANT |
| EPSC FINAL CONDITIONS SITE PLAN | SHEET 55 OF 69 |




## CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.

2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, STABILINKA T140N OR APPROVED EQUIVALENT.

3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.

4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.

5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.

6. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.

7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

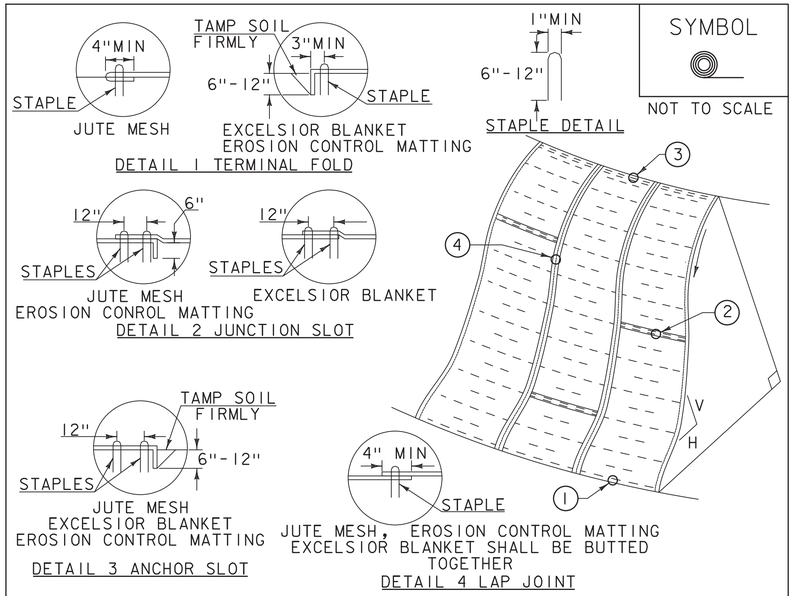
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

# SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

| REVISIONS | |
|---|---|
| MARCH 21, 2008 | WHF |
| DECEMBER 11, 2008 | WHF |
| JANUARY 13, 2009 | WHF |
| | |
| | |




## CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.

2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.

3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.

4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.

5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

# ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

| REVISIONS | |
|---|---|
| APRIL 16, 2007 | JMF |
| JANUARY 13, 2009 | WHF |
| | |
| | |
| | |

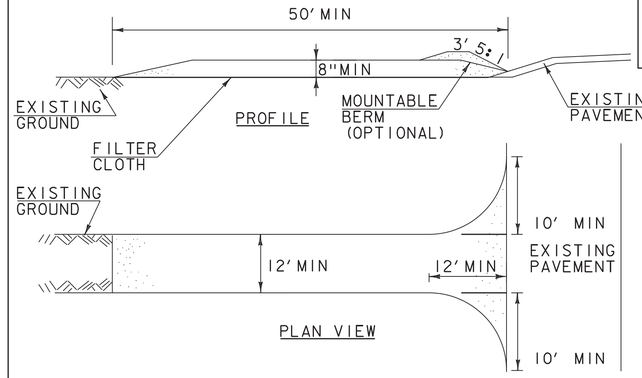
PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

FILE NAME: z10j072bdr_erodet.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: Const. Env. Section
EPSC DETAIL SHEET 1 OF 3

PLOT DATE: 7/28/2014
DRAWN BY: S. AMOROSO
CHECKED BY: D. BRYANT
SHEET 56 OF 69

SYMBOL

NOT TO SCALE




## CONSTRUCTION SPECIFICATIONS

1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

# STABILIZED CONSTRUCTION ENTRANCE

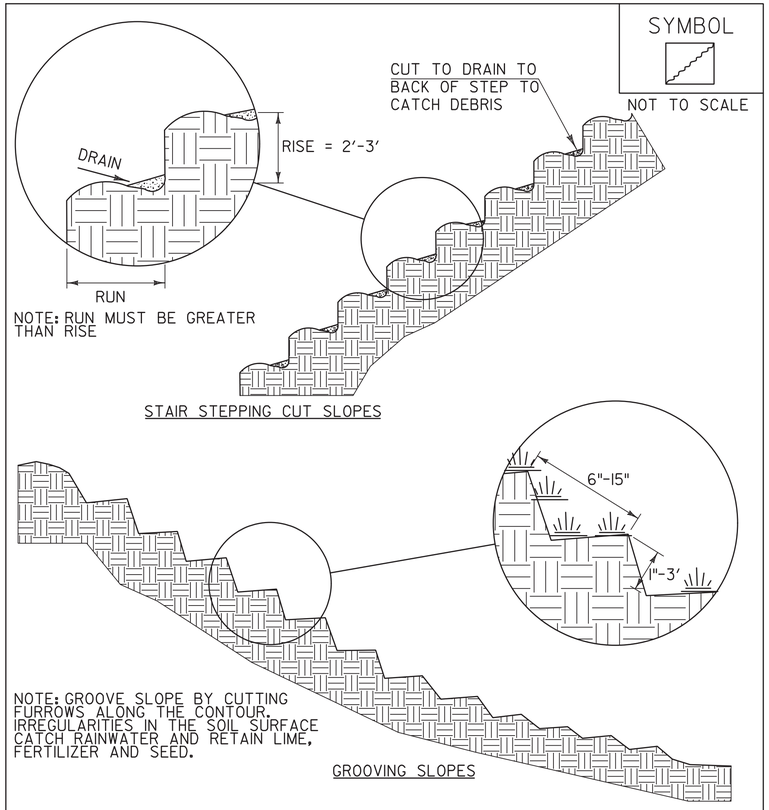
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

| REVISIONS | |
|---|---|
| MARCH 24, 2008 | WHF |
| JANUARY 13, 2009 | WHF |
| | |
| | |
| | |

SYMBOL

NOT TO SCALE




ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

# SURFACE ROUGHENING

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

| REVISIONS | |
|---|---|
| APRIL 1, 2008 | WHF |
| JANUARY 13, 2009 | WHF |
| | |
| | |
| | |

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

FILE NAME: z10J072bdr_erodet.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: Const. Env. Section
EPSC DETAIL SHEET 2 OF 3

PLOT DATE: 7/28/2014
DRAWN BY: S. AMOROSO
CHECKED BY: D. BRYANT
SHEET 57 OF 69

| VAOT RURAL AREA MIX | | | | | |
|---|---|---|---|---|---|
| | LBS/AC | | | | |
| % WEIGHT | BROADCAST | HYDROSEED | NAME | GERM % | PURITY % |
| 37.5% | 22.5 | 45 | CREEPING RED FESCUE | 85% | 98% |
| 37.5% | 22.5 | 45 | TALL FESCUE | 90% | 95% |
| 5.0% | 3 | 6 | RED TOP | 90% | 95% |
| 15.0% | 9 | 18 | BIRDSFOOT TREFOIL | 85% | 98% |
| 5.0% | 3 | 6 | ANNUAL RYE GRASS | 85% | 95% |
| 100% | 60 | 120 | | | |

| VAOT URBAN AREA MIX | | | | | |
|---|---|---|---|---|---|
| | LBS/AC | | | | |
| % WEIGHT | BROADCAST | HYDROSEED | NAME | GERM % | PURITY % |
| 42.5% | 34 | 68 | CREEPING RED FESCUE | 85% | 98% |
| 10.0% | 8 | 16 | PERENNIAL RYE GRASS | 90% | 95% |
| 42.5% | 34 | 68 | KENTUCKY BLUE GRASS | 85% | 85% |
| 5.0% | 4 | 8 | ANNUAL RYE GRASS | 85% | 95% |
| 100% | 80 | 160 | | | |

| SOIL AMENDMENT GUIDANCE | | | |
|---|---|---|---|
| FERTILIZER | | LIME | |
| BROADCAST | HYDROSEED | BROADCAST | HYDROSEED |
| 10-20-10 | *FOLLOW* | PELLETIZED | *FOLLOW* |
| 500 LBS/AC | *MANUFACTURER* | 2 TONS/AC | *MANUFACTURER* |

## CONSTRUCTION GUIDANCE

1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
7. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED
8. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

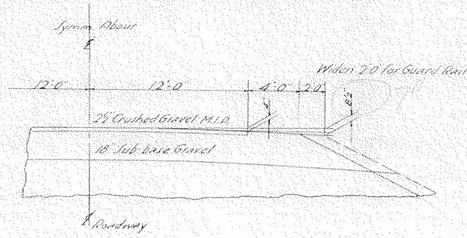
# TURF ESTABLISHMENT

| REVISIONS | |
|---|---|
| JUNE 23, 2009 | WHF |
| JANUARY 15, 2010 | WHF |
| FEBRUARY 16, 2011 | WHF |
| | |
| | |

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

FILE NAME: z10J072bdr_erodet.dgn
PROJECT LEADER: R. HEBERT
DESIGNED BY: Const. Env. Section
EPSC DETAIL SHEET 3 OF 3

PLOT DATE: 7/28/2014
DRAWN BY:
CHECKED BY:
SHEET 58 OF 69



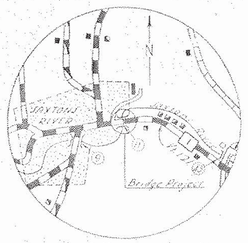

NEW HIGHWAY SECT. STA. TO STA.

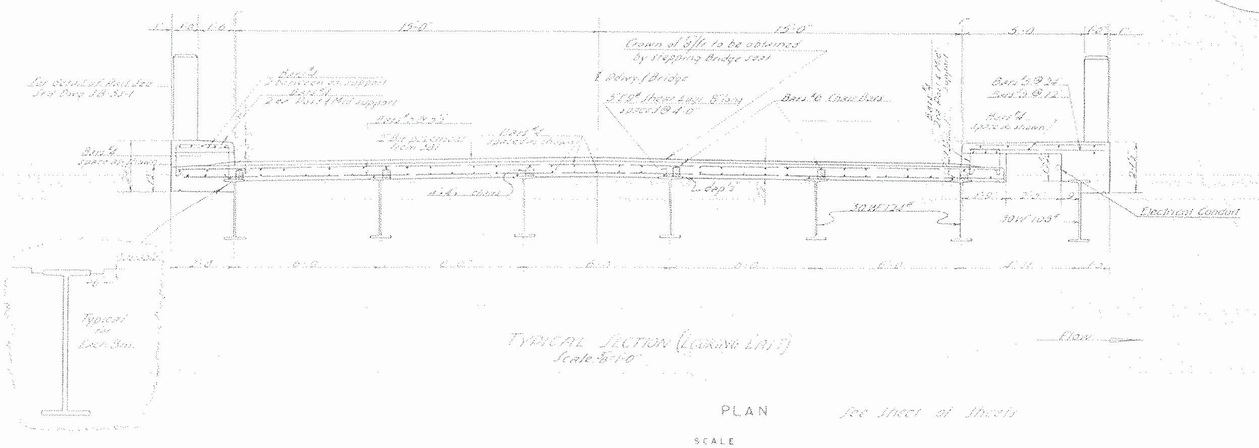
SCALE

See Plan & Profile Sheet

NEW HIGHWAY PROFILE ALONG ℄

SCALE

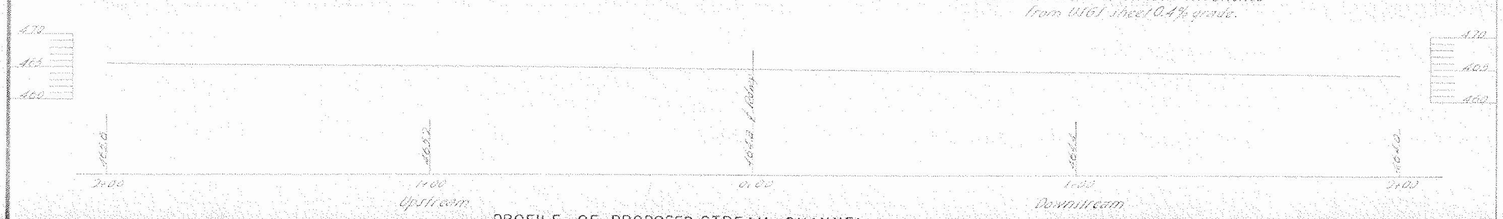



TYPICAL SECTION (LOOKING LEFT)
Scale 3/4"=1'0"

PLAN See sheet of Sheets

SCALE




PROFILE OF PROPOSED STREAM CHANNEL

SCALE

Highway No. VT 121 Name of Highway
Structure No. 11 County WINDHAM Town ROCKINGHAM
Approved Date
Bridge Engineer, Dist. No. 9

EXISTING STRUCTURE

1. Posted loading of existing structure 20,000 lbs
2. Location and type of existing structure 1.66 Miles from Westminster Town Line - Steel Truss
3. Underclearance elevation of existing structure 25'-0
4. What disposition should be made of the existing structure and probable cost of removal $ 400
5. Should existing structure be utilized to maintain traffic during construction of new structure No
6. Should new Temporary structure be built Yes
7. Ordinary high water surface elevation of existing structure 472.0 ±
8. Extreme high water of existing structure 492.0 ±
9. Span and waterway area below ordinary high water surface elevation of existing structure or structures up or down stream Up Str. 3 spans @ 30'-0" = 1650 sq. ft. Dwn. Str. Single span 100' = 2100 sq. ft.
10. Type of foundation under existing abutments Gravel with Clay Filler - Nearly Hardpan
11. If existing structure is to be widened or extended, attach sketch containing complete data to prepare plans for widening or extending and to determine safe loading capacity superstructure and superstructure No

NEW STRUCTURE

1. Recommended type of structure Standard WF Beam Bridge Continuous
2. Recommended clear span or spans
   Measured parallel to ℄ new highway 32'-1½", 65'-6½", 32'-1½"
   Measured at right angles to ℄ stream 43'-1½", 56'-9", 43'-1½"
3. Are there objections to a pier in the stream, answer yes or no No
4. Ordinary high water elevation at new structure 479.0 ±
5. Ordinary elevation of water at new structure 467.5 ±
6. Extreme high water elevation at new structure 489.0 ±
7. Does stream reach its maximum high water elevation rapidly No Is ordinary rise rapid No
8. Low water elevation at new structure 463.2 ±
9. Drainage area in acres above structure 45,440 Character of terrain Hilly
10. Is stream ever dry No
11. Velocity of stream at high water stage 6 ft/sec
12. Recommended waterway area below ordinary high water elevation, measured at ⊥ to ℄ of stream
13. Does erosion occur No
14. Does stream carry light, medium or heavy drift and ice Light
15. Should roadway be banked ? If so how much per foot No
16. Are sidewalks required ? If so, on what side. Downstream both sides ? No
17. Recommended type of pavement Reinforced Conc. Slab with Bituminous Surface
18. Traffic to be maintained under what item no. 641 One or two ways ? One Probable cost $ 5000.00
19. Probable cost of clearing and grubbing stream channel at structure site
20. Should provisions be made for public utilities Yes
21. Estimated allowable load on foundations 4 tsf. Should piles be used ? No Est. lgth.

FOUNDATION INFORMATION

Obtained for design purposes only and State assumes no responsibility whatsoever for sufficiency or accuracy of the information shown. Boulders may be encountered at either Abutment location.

See Sheet 7 of 12 Sheets for Boring Information

STATE OF VERMONT

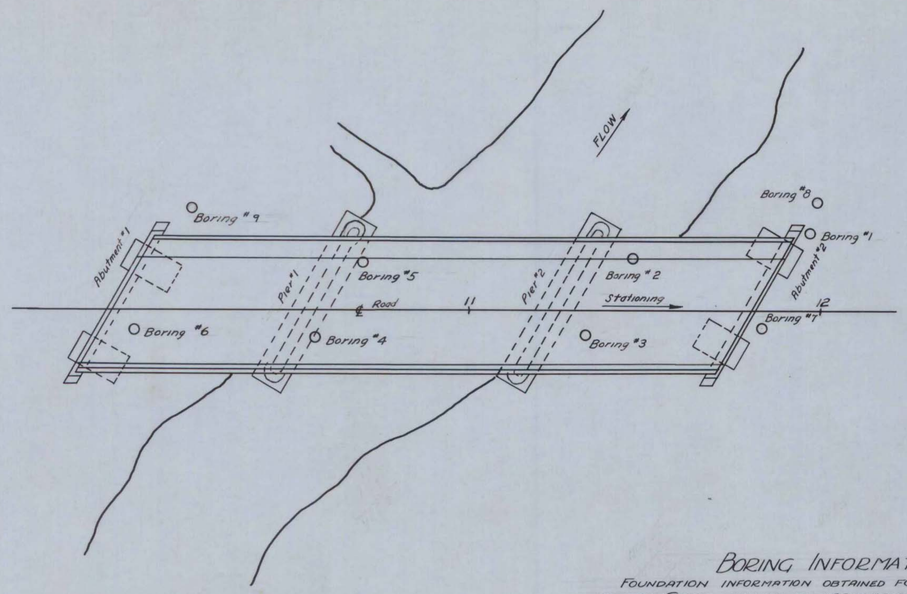
DEPT. OF HIGHWAYS

RECOMMENDED FOR APPROVAL

APPROVED

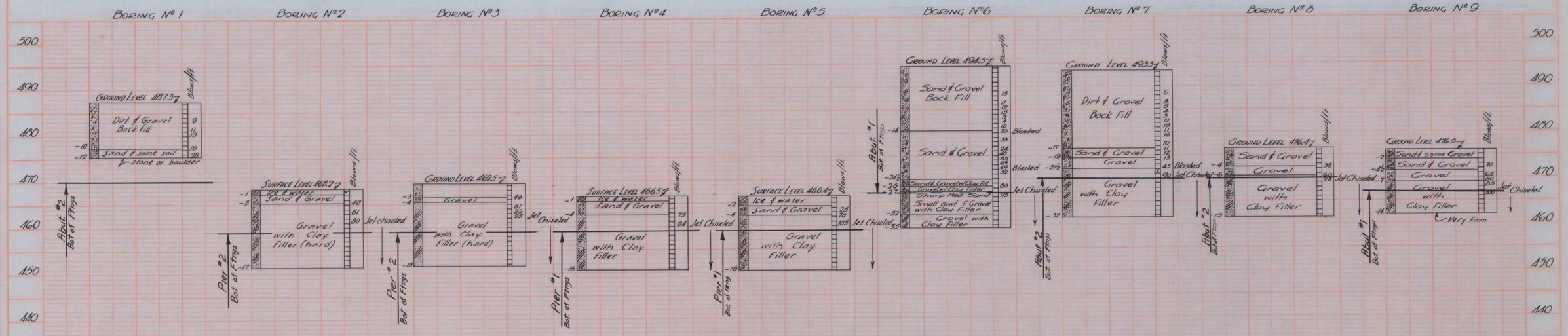
FOR REFERENCE ONLY

| CORRECT | APPROVED | ROCKINGHAM 1966(3) |
|---|---|---|
| BRIDGE ENGINEER | CHIEF ENGINEER | Sheet 6 of 12 |




## BORING INFORMATION

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.

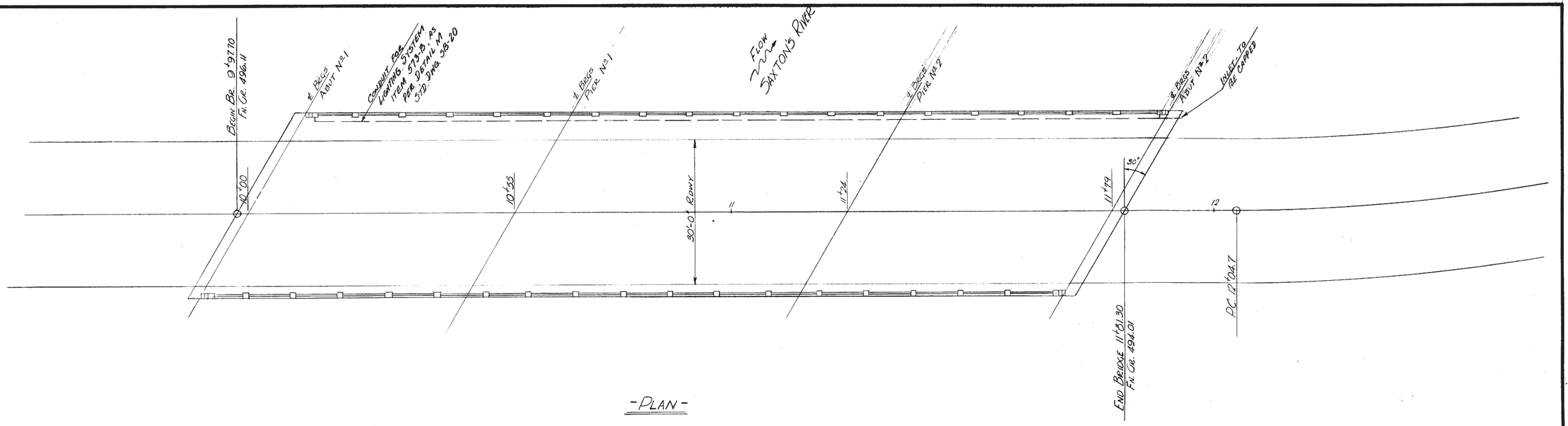



| | |
|---|---|
| OUTSIDE DIAMETER OF PIPE CASING | = 2½" |
| THICKNESS OF SHELL | = ⅜" |
| WEIGHT OF HAMMER | = 350# |
| DROP OF HAMMER | = 24" |

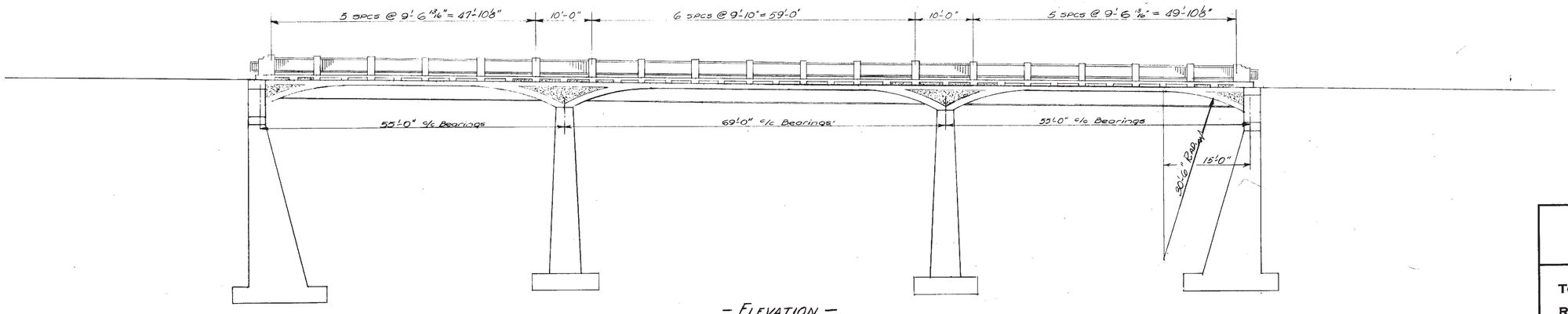
ROCKINGHAM
5-156 (3)

Sheet 7 of 49 Sheets

FOR REFERENCE ONLY




-PLAN-



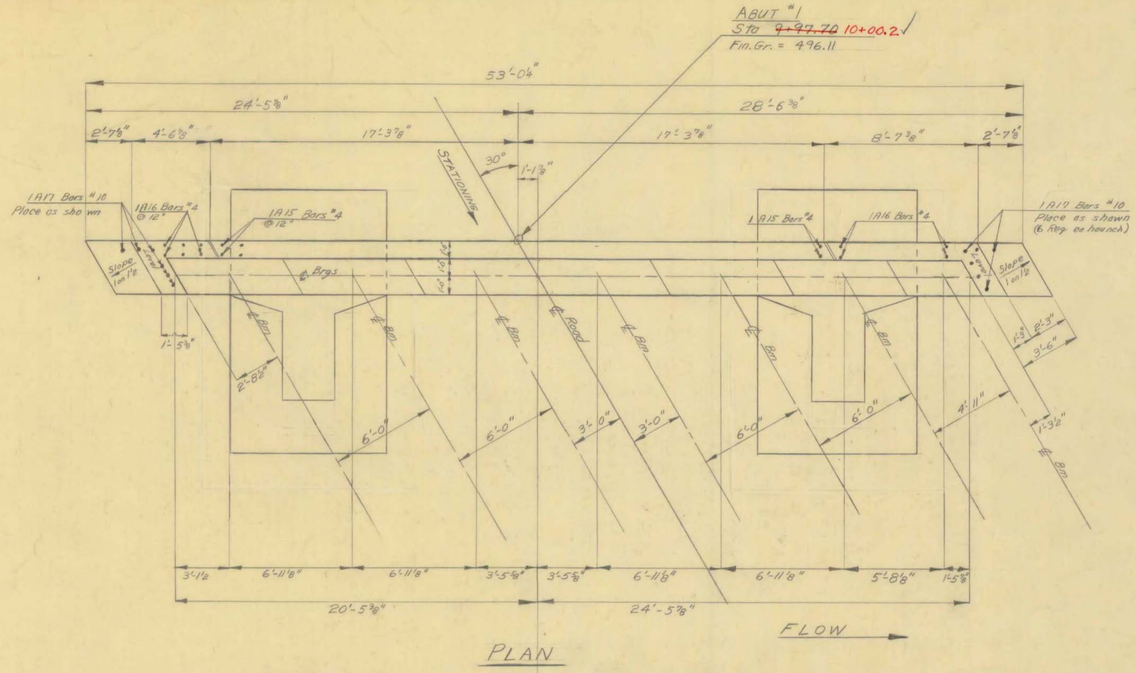

-ELEVATION-

FOR REFERENCE ONLY

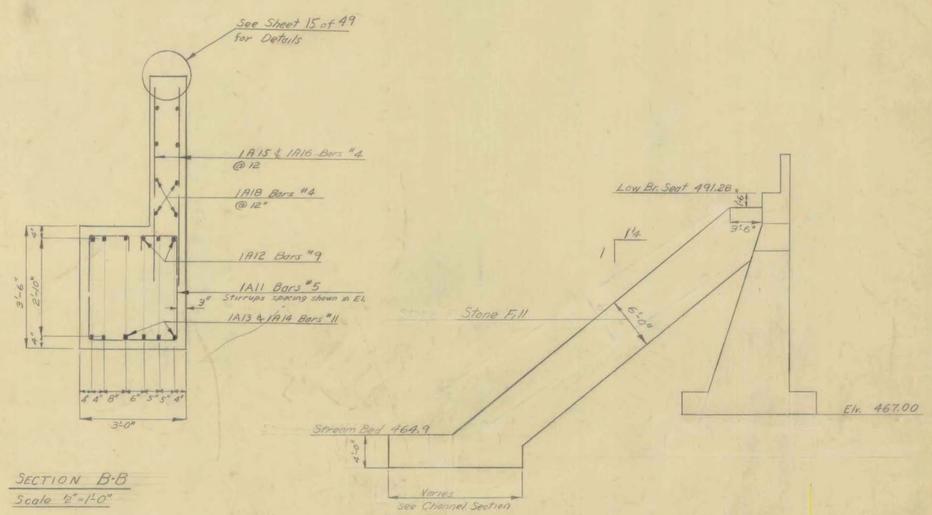
**STATE OF VERMONT**
**DEPARTMENT OF HIGHWAYS**

TOWN OF ROCKINGHAM
ROAD NO. Vt. 121 BRIDGE NO. 11
BRIDGE PLAN & ELEVATION

SCALE 1"=10'-0"
SURVEYED BY POGAR
DRAWN BY JRJ CHECKED BY E.E.P.
PROJECT NO. 5156(3)
SHEET 8 OF 49

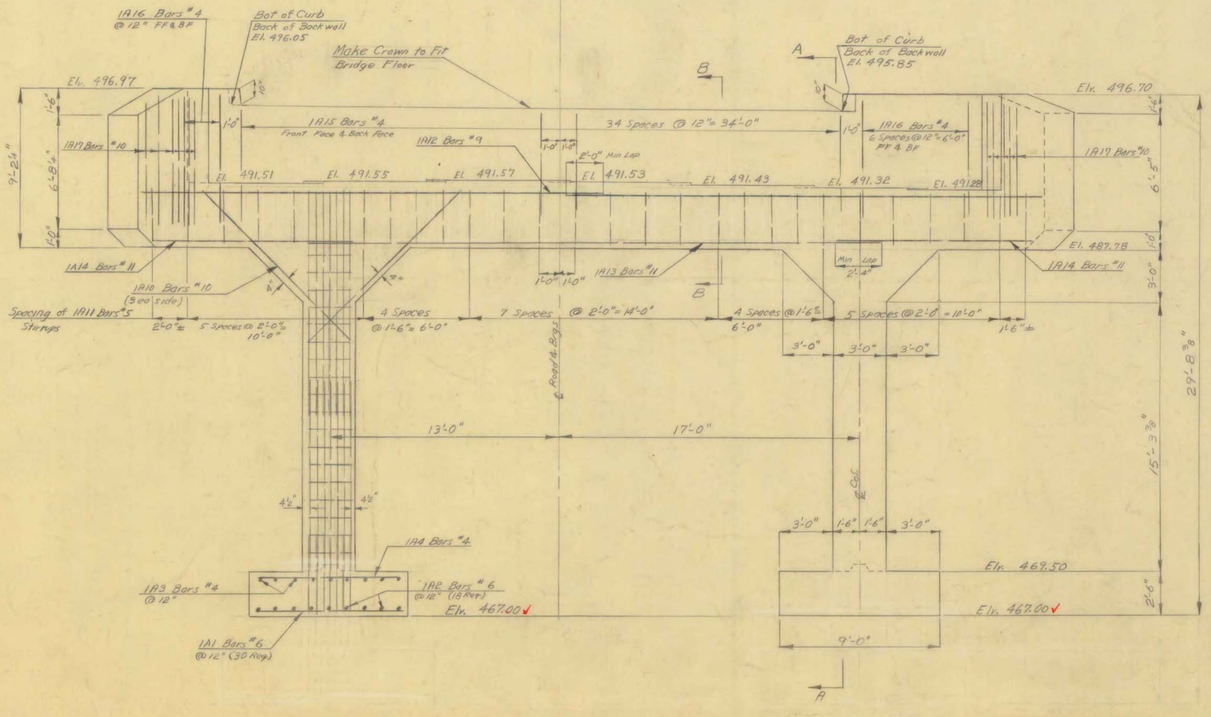



PLAN

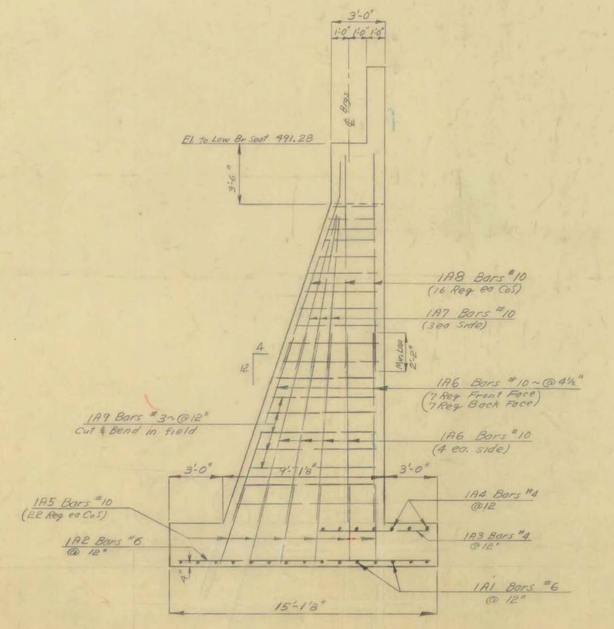



SECTION B-B
Scale ½"=1'-0"

TYPICAL SECTION
Scale ⅛"=1'-0"




ELEVATION




SECTION A-A

Note: All Laps 2'-0" except as noted.
Max. foundation Pressure = 3.7 kips per sq. ft.

ESTIMATED QUANTITIES

| | | | |
|---|---|---|---|
| 1060 | Unclassified Channel Excavation | 1,700 | C.Y. |
| 107 | Structure Excavation | 275 | C.Y. |
| 4018 | Concrete Class B | 86 | C.Y. |
| | | | |
| 521 | Stone Fill | 1,200 | C.Y. |
| | | | |

**STATE OF VERMONT**
DEPARTMENT OF HIGHWAYS

TOWN OF ROCKINGHAM
ROAD NO. Vt 121 BRIDGE NO. 11
DETAILS of ABUTMENT #1

SCALE 1"=1'-0" or as noted
SURVEYED BY Pagar
DRAWN BY C.F.H. CHECKED BY Asst. Des. W.L.H.
PROJECT NO. S 156(3)
SHEET 9 OF 49

FOR REFERENCE ONLY

STA. ~~10+55.0~~ 10+57.5 ✓ PIER 1 FN. GR. EL. 495.46 – EXPANSION JOINT

STA. ~~11+24.0~~ 11+26.5 ✓ PIER 2 FN. GR. EL. 494.67 – FIXED

ROADWAY STATIONING

℄ BEARING

PIER 1 EL 490.63 EL 490.66 EL 490.76 EL 490.86 EL 490.90 EL 490.88 EL 490.86

PIER 2 EL 489.84 EL 489.87 EL 489.97 EL 490.07 EL 490.11 EL 490.09 EL 490.07

30°

℄ BM 4'-11" ℄ BM 6'-0" ℄ BM 6'-0" ℄ BM 3'-0" 3'-0" ℄ BM 6'-0" ℄ BM 6'-0" ℄ BM

℄ RDWY

Pier1 4'-10 5/8" Pier2 4'-9 3/4" | 2'-0" | 5'-8 5/8" | 6'-11 1/8" | 6'-11 1/8" | 3'-5 5/16" | 3'-5 5/16" | 6'-11 1/8" | 6'-11 1/8" | 2'-0" | 1'-2 1/4" 1'-1 1/8" | 3'-8 3/8" Pier1 3'-7 7/8" Pier2

## PLAN

PIER 1 ℄ 2 47'-3 3/4" "A"

26'-5 7/8"

20'-9 7/8"

STEP MIDWAY BETWEEN BEAM SEATS

PIER 1 2'-4 5/8" PIER 2 2'-3 3/4"

"P13 & P14" BARS "6 (5)

"P15" BARS "5 2'-0" ℄" "P12" BARS "5 2'-0" ℄

SCORE MARKS SEE S.B. 20 – DETAIL "D"

"P10 & P11" BARS "4

"P4" Bars "9

"P6" BARS "4 1'-0" ℄

"P7, P8 & P9" BARS "4 1'-0" ℄

Const. Joint Elev. 470.00

"B" "B"

"P1" BARS "6 1'-0" ℄ "P2" BARS "6 1'-0" ℄

"P5" BARS "4 1'-0" ℄ "P3" BARS "9 0'-9" ℄

PIER 1 29'-10 1/2" PIER 2 29'-9 5/8"

PIER 1 24'-2 1/2" PIER 2 24'-1 5/8"

PIER 1 54'-1" PIER 2 53'-11 1/4" "A"

## ELEVATION

PIER 1 28'-7 1/4" PIER 2 27'-10 1/8"

## SECTION "B-B"

PIER 1 1'-8 3/8" 5'-8 1/4" PIER 2 1'-7 7/8" 5'-7 7/8"

45°

"P3" BARS "9 0'-9" ℄

"P7" BARS "4 1'-0" ℄

"P5" BARS "4 1'-0" ℄

4'-0" 2'-0" 2'-0"

PIER 1 2'-8 3/8" PIER 2 2'-7 7/8"

PIER 1 5'-4 3/4" PIER 2 5'-3 3/4"

FLOW

LOW BRIDGE SEAT ELEV. PIER 1 490.63 PIER 2 489.84

3'-0" 1'-6" 1'-6" ℄ BRG

"P12" BARS "5 2'-0" ℄

"P13 & P14" BARS "6 (5)

"P10 & P11" BARS "4

"P15" BARS "5 2'-0" ℄

"P6" BARS "4 1'-0" ℄

4'-0" 45° 4'-0"

12 12 2'-0" 4" 4"

PIER 1 5'-4 3/8" PIER 2 5'-3 3/4"

PIER 1 1'-11 5/8" 1'-8 3/8" 1'-0" 1'-0" 1'-8 3/8" 1'-11 5/8"

PIER 2 2'-0 3/8" 1'-7 7/8" 1'-7 7/8" 2'-0 3/8"

PIERS 1 & 2 EL 462.00 1'-6"

PIERS 1 & 2 EL ~~459.00~~ 458.5 ✓ 3'-0" 2'-6" 6"

"P5" Bars "4 1'-0" ℄ "P2" BARS "6 1'-0" ℄ "P1" BARS "6 1'-0" ℄

9'-4 1/2"

## SECTION "A-A"

### NOTES

All reinforcing Steel to be Intermediate grade

All reinforcing Steel dimensions on this sheet to ℄ of bars

All concrete to be Class "B"

All concrete edges to be chamfered 3/4"

Pier 1 drawn here. Pier 2 Similar

1P1 denotes reinforcing steel bar in Pier 1

2P1 denotes reinforcing steel bar in Pier 2

Construction Joints to be in accordance with Det. "D" Dwg. S.B. 20 under direction of the Engineer

Max. foundation Pressure - 4.8 kips per sq. ft.

| | ESTIMATED QUANTITIES | PIER 1 | PIER 2 |
|---|---|---|---|
| 107 | Structure Excavation | 140 c.y. | 152 c.y. |
| 401B | Concrete Class "B" | 205 c.y. | 200 c.y. |

**STATE OF VERMONT**
DEPARTMENT OF HIGHWAYS

TOWN OF ROCKINGHAM

ROAD NO. VT 121 BRIDGE NO. 11

DETAILS PIER 1 PIER 2 SIMILAR

SCALE 3/8" = 1'

SURVEYED BY POGAR

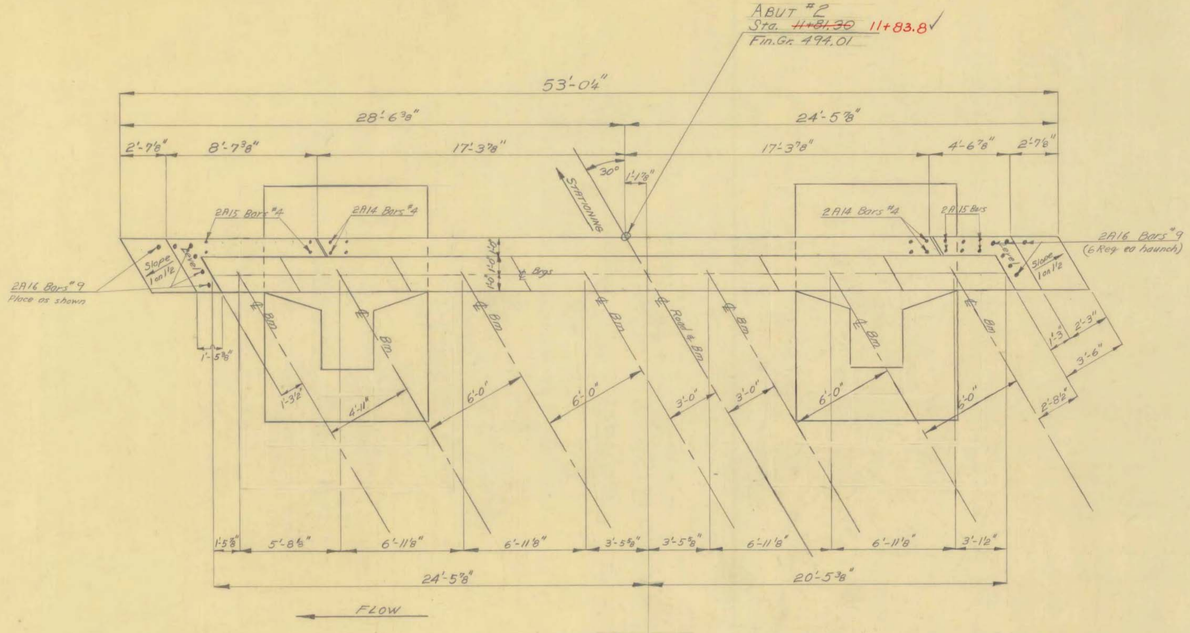
DRAWN BY WMS CHECKED BY E.F.P.

PROJECT NO. S 156(3)

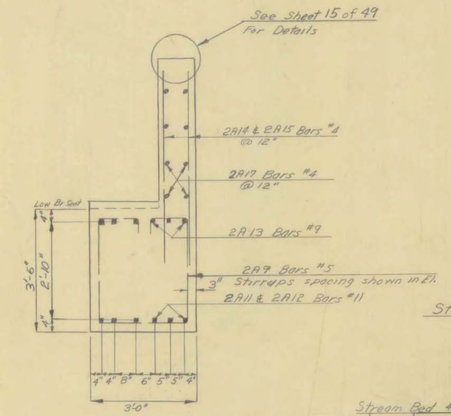
SHEET 10 OF 49

Rev. to show Construction Joint at 470.0 10/30/53 SMB.

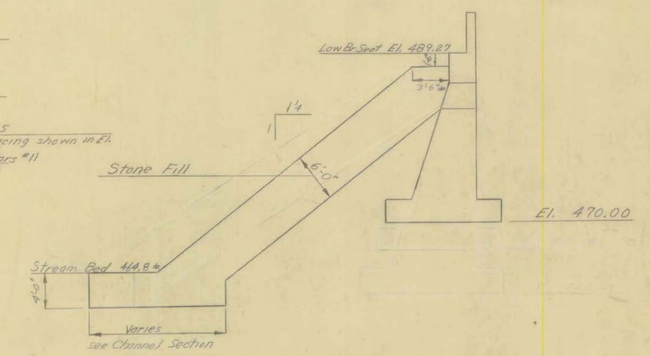
FOR REFERENCE ONLY



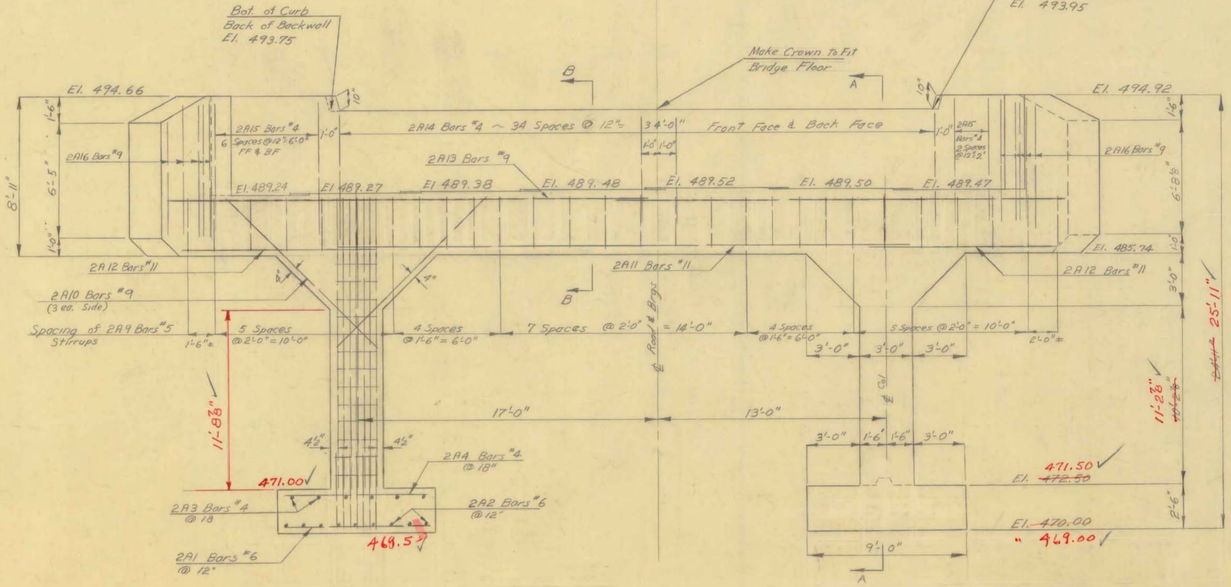

PLAN



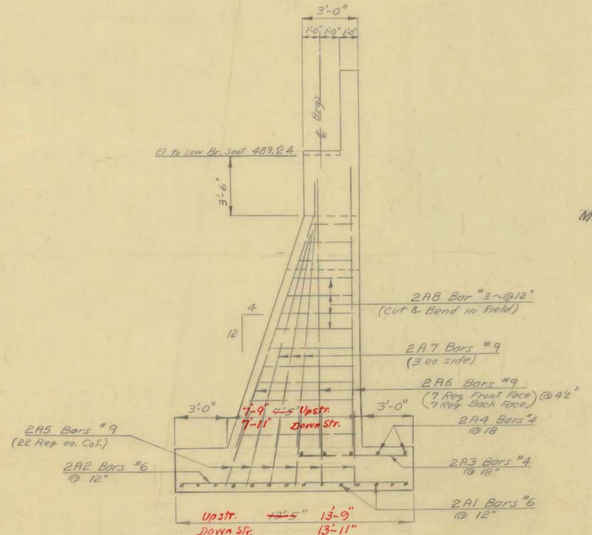

SECTION B-B
Scale ½"=1'-0"




TYPICAL SECTION
Scale ⅛"=1'-0"




ELEVATION




SECTION A-A

Max. Foundation Pressure - 3.7 kips per sq. ft.

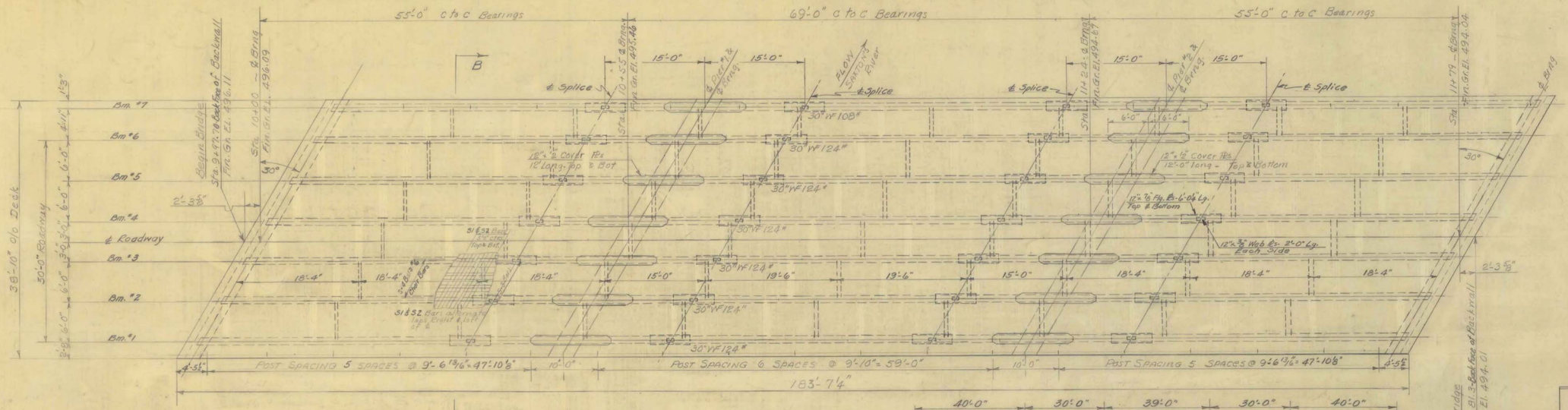
| ESTIMATED QUANTITIES | | | |
|---|---|---|---|
| 106-C | Unclassified Channel Excavation | 715 | C.Y. |
| 107 | Structure Excavation | 196 | C.Y. |
| 401B | Concrete Class B | 75 | C.Y. |
| | | | |
| 521 | Stone Fill | 1050 | C.Y. |

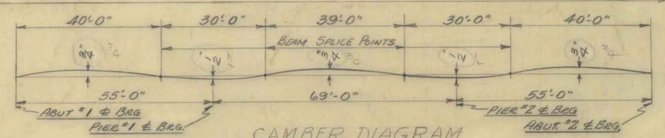
**STATE OF VERMONT**
**DEPARTMENT OF HIGHWAYS**

TOWN OF Rockingham
ROAD NO. Vt 121 BRIDGE NO. 11
DETAILS of ABUTMENT # 2

SCALE 4"=1'-0" or as noted
SURVEYED BY Pagar
DRAWN BY C.F.H. CHECKED BY Consult Des. JLH
PROJECT NO. S-156 (3)
SHEET 11 OF 49

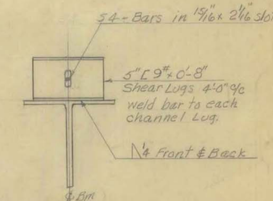
FOR REFERENCE ONLY



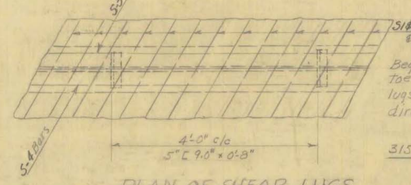




CAMBER DIAGRAM

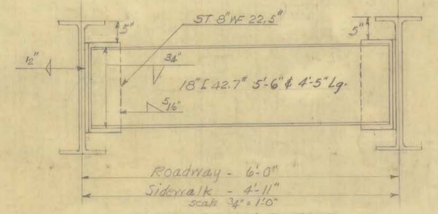
Beams shall have true circular camber with middle ordinate as shown above. No change in the above camber will be allowed, except by written order of the Engineer.



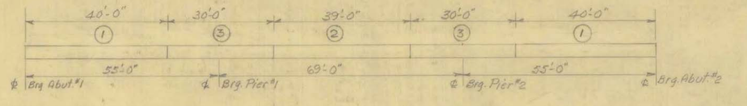

SHEAR LUG DETAILS



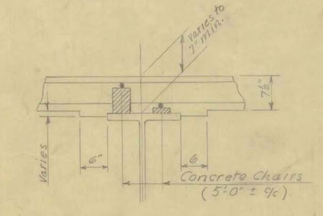

PLAN OF SHEAR LUGS
Scale ¾"=1'-0"



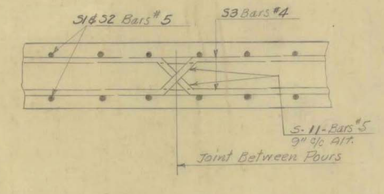

DIAPHRAGM DETAIL
(Span 1 & 3 - 18'-4" Spacing)
(Span 2 - 15'-0" & 19'-6" Spacing) As shown.



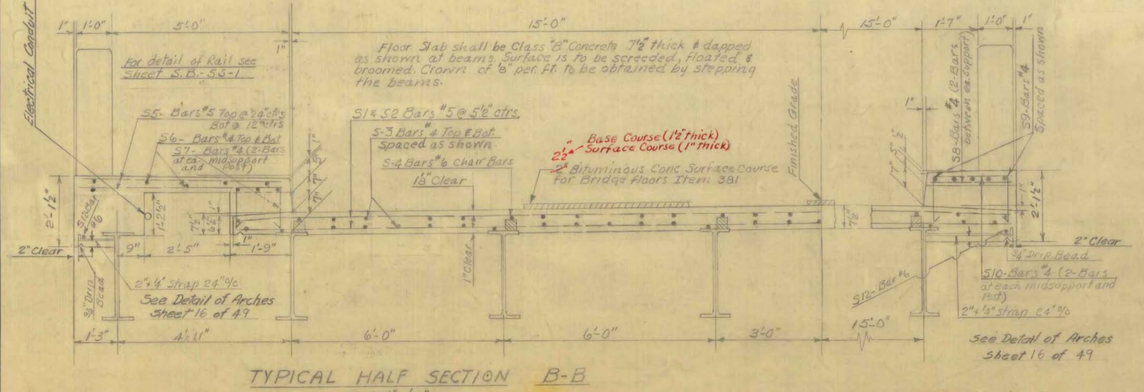

POURING SCHEDULE




TYPICAL DETAIL INTERIOR WITHOUT COVER Pls.
Scale ¾"=1'-0"




TYPICAL LONGIT. SECT. & POUR JOINTS




TYPICAL HALF SECTION B-B
Scale ½"=1'-0"

Rev. 7/30/53 Amt3. Cambers revised to conform with Min. Camber likely to remain permanent.

Estimated Quantities on this Sheet for Structural Steel include Bearing Devices, Cover Plates and all structural Steel on Expansion Plate Detail Sheet 16 of 49 DOES NOT include Bridge Railing Steel.

NOTE: ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, DEPT. OF HIGHWAYS, STD. SPEC. FOR ROAD & BRIDGE CONSTRUCTION, DATED NOVEMBER 1948 AND THE A.A.S.H.O. SPEC. FOR 1949. DESIGNED FOR H-20(42) LIVE LOADING, 25#/0' PAVING ALLOWANCE; DEAD LOAD INCLUDES WEIGHT OF BEAMS, SLAB & RAIL

FOR REFERENCE ONLY

ESTIMATED QUANTITIES

| | |
|---|---|
| Bituminous Conc. Pavement | 68 Tons |
| Concrete Class "B" | 224 C.Y. |
| Structural Steel | 210,196 Lbs. |
| Asphaltic Asbestos Coating | 42 S.Y. |
| Bridge Railing | 364 L.F. |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF ROCKINGHAM
ROAD NO. VT. 121 BRIDGE NO 11
SUPERSTRUCTURE DETAILS

SCALE As shown
SURVEYED BY POGAR
DRAWN BY D.W.P CHECKED BY JLH E.F.P
PROJECT NO. S-156 (3)
SHEET 12 OF 49

SECTION "E-E"

PLAN

SECTION A-A

SECTION - "D-D"

SECTION B-B (ABUT #2 SIMILAR)

SECTION "C-C" (ABUT #1 SIMILAR)

## Notes

Structural steel indicated on this sheet is included in the estimated quantities on superstructure Sheet No. 12 of 49

FOR REFERENCE ONLY

**STATE OF VERMONT**
DEPARTMENT OF HIGHWAYS

TOWN OF ROCKINGHAM
ROAD NO. VT. 121 BRIDGE NO. 11
EXPANSION PLATE DETAILS

SCALE 1" = 1'-0"
SURVEYED BY POGAR
DRAWN BY J.L.H. - E.F.P. CHECKED BY E.T.B.
PROJECT NO. S-156(3)
SHEET 15 OF 49

THREE CABLE GUARD RAIL
WITH STEEL POSTS
Lt Rt
9+424-10+064 8+99-9+89

GRANITE CURB
Lt Rt
9+91.4-10+06.4 9+74-9+89

CONSTRUCT DRIVE
8+25 Lt

CONSTRUCT APPROACH
9+00 Lt

Geo. Lanou
House

Helen
Duplesses
2.5F
House

P.I. 7+100
7+092

BM #1
Elev. 500.00

POST 9+000 =
App. POT. 0+000
Δ 64°49' Lt

B.L. Clark
"Hotpoint"
Appliances

Drive

N71°03'E

N79°26'E

64°49'

Δ 8°23' Rt
D 2°
R 2864.9
T 210.0
L 419.2
E 7.7
Do Not Bank

Robert
Gay

Dr. F.L. Osgood

Meadow

Guide Post

Side Road

Stone Retwall

Roscoe
Olmstead

P.C. 5+00

P.T. 9+19.2

REMOVE 2
Item 710

STA. 9+00.0
BEGIN PROJECT
S156(3)

0.000%
-2.200%
-3.852%
-1.143%

5+50
100' V.C.
509.60

6+50
100' V.C.
507.40

9+20
125' V.C.
497.00

Construct Satisfactory
Approach

9+00 - 9+97.7
18" Base

510
500
490

| 5 | | 6 | | 7 | | 8 | | 9 | | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 509.6 | 509.4 | 509.3 | 508.4 | 507.4 | 505.7 | 504.5 | 503.8 | 502.8 | 501.8 | 500.5 | 499.3 | 498.3 | 497.3 | 496.4 | 495.2 | 494.2 | 493.2 |
| | 125 | 150 | | 150 | | 134 | 150 | 175 | | 125 | 150 | 175 | | 119 | 150 | 175 | |

BM #1 - Chiseled square on concrete curb 17 ft. lt. Sta. 8+53 Elevation 500.00

ROCKINGHAM
Proj. S No 156(3)
Sheet 32 of 49

FOR REFERENCE ONLY

SHEET 67 OF 69

POT 10+00.0=
0+00.0 Chan Line
Δ 60°00' Lt.

CONSTRUCT DRIVE
14+50 Rt.

POT 11+50.0=
0+00.0 Chan Line
Δ 60°00 Lt.

SAXTONS RIVER

CONSTRUCT APPROACH
13+50 Rt.

THREE CABLE GUARD RAIL
WITH STEEL POSTS
Lt. 11+90-14+14, 14+19-14+88
Rt. 11+72.6-12+30.6, 12+43.5-13+27.5

Rev. Curve
Δ 22°15' Lt.
D 7°
R 819.0
T 160.8
L 317.4
E 15.4
Do Not Bank
George Lanou

Rev. PC 12+31.5

REMOVE Item 110

Born

GRANITE CURB
Lt. 11+90-12+05
Rt. 11+72.6-11+87.6

SAW MILL

14+44.5-21+2.5 BoltING 76'-30Lt
New 30"x.38 ACCGM P-construct
Inlet and Outlet Ditches

12" CMP

Rev. PT. 15+48.2

Rev. Sta 13+76.7
Rev. PT 15+17.50
Sur. PT 10.7
EQ.

N57°18'E 16 TO Bellows Falls
Route 121

Approach ℄

TOWN GARAGE

8.00
15.50

Tool Shed

Gas Pump

Stone Ret. Wall

Bump to Barn (wood)

FULLER HARDWARE Co.

REMOVE 2 Item 110

REMOVE Item 110

Toe of Stone Fill

Toe of Stone Fill

The Location of the entire bridge was moved along the Stationing two and one half feet (2.5')

Bearing #9
Bearing #3
Bearing #8
Bearing #1
Bearing #6
Bearing #2
Bearing #7

N79°26'E

60°

BM#2
El 493.79

Survey
P.I. 13+92.3=
13+87.4
Δ 22°15' Lt.
D 6°

Revised
P.I. 13+92.3=
13+88.1

STA 15+00.0
END APPROACH CONSTRUCTION

REV. STA. 13+50.0
END PROJECT
S 156 (3)

STA 13+50.0
BEGIN APPROACH CONSTRUCTION

11+36.09-12+65.66 Rt.
Construct Retaining Wall
See sheets 35 & 36 of 49

Sta 10+00.2
Sta 9+97.70-STOP ROADWAY
BEGIN BRIDGE
Abut #1-Fixed-Face Back Wall-Fin. Gr. El. 496.11

Sta 10+57.5
Sta 10+55.0-Pier #1
℄ Bearing-Fixed
Fin. Gr. El. 495.46

Sta 11+26.5
Sta 11+24-Pier #2
℄ Bearing-Expansion
Fin. Gr. El. 494.67

Sta 11+83.8
Sta 11+81.30-END BRIDGE
RESUME ROADWAY
Abut #2-Fixed-Face Back Wall-Fin. Gr. El. 494.01

55'-0" 69'-0" 55'-0"

-1.143%

-0.500%

-1.317%

12+70
100' V.C.
493.00

14+50
100' V.C.
492.10

EQ+0.7'

E.H.W. 489.0'±
N.H.W. 479.0'±
N.W. 467.5'±
Stone Fill
1 on 1½
Up Str. Footing 469.0
Down " " 468.5
467.0
458.5

490
480
470
460

LIST OF QUANTITIES (Bridge Only)

| Quantity | Unit | Item | Item No. | Final Quantities |
|---|---|---|---|---|
| 2415 | c.y. | Channel Excavation Unclassified | 106-C | 3058 C.Y. |
| 769 | c.y. | Structure Excavation (modified) | 107 | 870 " |
| 1 | l.s. | Maintenance of Traffic for Bridge Projects | 109 | 1 L.S. |
| 2 | each | Cutting and Removing Trees | 110 | 2 Ea. |
| 68 | tons | Bituminous Concrete Pavement for Bridge Floors | 381 | 68 Ton |
| 790 | c.y. | Concrete Class "B" (modified) | 401-B | 813 C.Y. |
| 74834 | lbs | Reinforcing Steel | 402 | 97216 Lbs. |
| 210196 | lbs | Structural Steel | 403-A | 210631 " |
| 42 | s.y. | Asphaltic Asbestos Coating | 407 | 40 Sq.Yd. |
| 1 | l.s. | Temporary Bridge | 441 | 1 L.S. |
| 1 | l.s. | Removal of Present Superstructure | 442 | 1 " |
| 2250 | c.y. | Stone Fill | 521 | 2381 C.Y. |
| 364 | l.f. | Bridge Railing | 572 | 365 Lf. |
| 1 | l.s. | Conduit for Lighting System | 573-B | 1 L.S. |

LIST OF SHEETS (Bridge Only)

Sheet 33 of 49 Plan and Profile
6 " Preliminary Information Sheet
7 " Boring Data
8 " Bridge Plan and Elevation
9 " Details Abutment N° 1
10 " Details Piers #1 & #2
11 " Details Abutment N° 2
12 " Superstructure Details
13 " Details of Bearings
14 " Details of Cover Plates and Splice Plates
15 " Expansion Plate Details
16 " Details of Concrete Facing
17 " Details of Reinforcing Steel
18 " Std. Sheet SB-11-Barricades Signs and Lights
19 " Std. Sheet SB-20 Details C-D-H-J-M
20 " Std. Sheet SB-55-1 Bridge Railing Details
21-30 " Channel Sections

11+81.3-13+50
18" Base

13+50-15+00
18" Base

10 11 12 13 14 15 16

BM# 2 - S.I.R. 30" Elm 26 ft. rt. Sta 13+38 Elevation 493.79

FOR REFERENCE ONLY

SHEET 68 OF 69

ROCKINGHAM
Proj. S N° 156(3)
Sheet 33 of 49

Expansion Joints as shown on Std. Dwg. SC-21, (Sect. Thru Top Slab & Sidewalk). Copper Sealing Strip on back face of Wall to extend from footing to 6" from Top

Warehouse

30'-0" ±

12'-0"

L Bars Two rows staggered 12" c-c, row 3" from row 1, Triple Wrap end in filled pipes

L Bars See note at opposite wing

Expansion Joint - See Note.

Guard Rail Posts

Notch for Ramp - 13'-0"

Guard Rail Posts Constn Joint

Bullet ½ in 12

Expansion Joint See note above

24'-0"

(4) F3 - #5 @ 12"

(4) F4 - #4 @ 12"

(4) F4 - #4 @ 12"

(2) F3 - #6 @ 12"

(3) F4 - #4 @ 12"

(3) F4 - #4 @ 12"

(2) F3 - #5 @ 12"

(2) F3 - #6 @ 18"

(2) F3 - #6 @ 16"

(20) J2 - #7 @ 24"

(20) F2 - #7 @ 24"

G - #4 @ 18"

(7) J1 - #9 @ 20"

(12) F1 - #9 @ 20" (2 spc. @ 10)

(21) F1 - #9 @ 20" (12 F2 - #7 @ 20")

(5) J1 - #9 @ 20"

G - #4 @ 18": Cut & bend in field as req.

10'-3"

18'-0"

7'-3"

9'-0"

40°

E of Rdwy

18+05.66

+27.42

+36.44

+51.55

+86.66

+91.77

+96.88

18+91.88

+27

+22

+11

18+12

12+00

11+95.03

E of Roadway

PC. 12+31.5

T° Curve to Left.

## PLAN

Scale 1/4" = 1'-0"

## SECTION E-E

DETAIL OF SEAT FOR RAMP INTO WAREHOUSE

Scale 1" = 1'-0"

(Ramp to be built by others)

This dimension varies - See Elevation for all Sections

H - #6 (±)

B1 - #4 @ 12"

E - #4 @ 18" (EF)

D1 - #4 @ 18

A1 - #9 @ 12"

F1 & J1 - #9 - Alternate @ 10"

El. 478.0

El. 492.14

3'Cl.

8'Cl.

3½'Cl.

4'Cl.

2'-0"

4"

12'-0"

C - #4 @ 18"

G - #4 @ 18"

Floor of Warehouse El. 493.1

Building Line (Existg)

B2 - #4 @ 10"

D2 - #4 @ 18"

E - #4 @ 18" (EF)

A2 - #6 @ 10"

F2 & J2 - #7 - Alternate @ 12"

El. 482.0

Sill of exist'g. Building. Not to be disturbed

5'-0"

9'-0"

## SECTION B-B

Scale 3/8" = 1'-0"

## SECTION A-A

Scale 3/8" = 1'-0"

## ELEVATION

ELEVATION NORMAL TO ALL FACES GIVING FULL LENGTH TO WINGS

Scale 1/4" = 1'-0"

NF (44) A2 & B2 Bars @ 10 : FF (25) C & D2 @ 18"

46'-0"

Top of Wall 7" above Shoulder except where notched for Ramp.

NF (10) A1 & B1 @ 12"

FF (7) C & D1 @ 18"

12'-0"

24'-0"

(FF) D10 to D17 @ 18"

(NF) B5 to B16 @ 12'

(FF) D3 to D18 - #4 @ 18"

(8) B1 - #4 @ 12" NF

(1) E5, (2) E4, (2) E3, (4) E2 @ 18" (FF)

(NF) B3 to B18 @ 12"

El. 493.18

El. 493.14

El. 493.26

El. 493.33

El. 493.37

El. 493.45

El. 493.52

El. 493.55

El. 493.61

493.66

El. 492.25

El. 480.0

El. 476.0

5'-1"

2'-0"

4'-3"

2'-0"

11'-2⅜"

11'-3½"

11'-4"

10'-11⅝"

11'-5⅜"

11'-5⅜"

11'-6⅜"

15'-7⅜"

15'-0"

40°

6'-6"

6'-6"

(14) L - #6 Thru Exp Joint.

(161) L - #6 @ 3" Staggered Thru Exp Joint.

4" Weep Holes @ 10'-0" ±

Construction Joint

(2) E5, (2) E4 @ 18" (FF)

(5) A3 - #5 @ 12"

(7) C - #4 @ 12"

(32) E - #4 @ 18

(5) K - #7 @ 18"

(5) K - #7 @ 18"

4'-0"

(1) A1 - #7 @ 12" NF

(7) A3 - #5 @ 12

(9) C - #4 @ 12" NF

Stationing at Wall - 18" Ict. on ℄ of Roadway

12+57.42 +56.44

12+68 +37

+91.55 +52

+46.66 +47

+43.24 +43.5

+36.88 +37

+30.5 +30.5

+27 +27

+22 +22

+17 +17

12+12 12+12

PC - 12+31.5

## DETAIL OF GUARD RAIL POSTS

Scale 1" = 1'-0"

Posts 6 J 8.5

Sta. 12+37

Holes for End Anchorage

7'-3"

7'-3"

12'-0"

6'-6"

6'-6"

1'-9"

2'-0"

Top of posts to be on even grade with Top of guard rail posts along roadway

Top of Retaining Wall 7" above shoulder of Roadway

Four 6 J 8.5 posts for Guard Rail to be supplied & installed under Retaining Wall participation. 2 posts to be drilled for dead end anchorage & 2 posts for offset brackets, all as shown on Std. Dwg. S 48-46, details of Steel Posts & Dead End Anchorage.

Guard Rail Cable, Brackets, Cable Ends & Hardware to be supplied & installed under Road participation. Spacing and height of posts may be changed by Engineer in field to correspond with guard rail on Roadway.

## SECTION D-D

Scale 3/8" = 1'-0"

B - #4 @ 12"

D - #4 @ 18"

E - #4 @ 18"

F4 - #4 @ 12"

El. 478.0

C - #4 @ 18"

G - #4 @ 18"

C - #4 @ 12

Varies

## SECTION C-C

Scale 3/8" = 1'-0"

F3 - #5 @ 12"

A3 - #5 @ 18"

C - #4 @ 18"

G - #4 @ 18"

Varies

Notes

All Concrete to be Class B (Mod)

Top edge along road to be rounded to ½" radius. All other exposed edges to be chamfered ¾"

All footings to be poured on undisturbed earth.

Work to be in accordance with State of Vermont Standard Specs. for Road & Bridge Constn. Nov. 1948.

## ESTIMATED QUANTITIES

| | | |
|---|---|---|
| Item 107 | Structure Excavation (Mod) | 250 CY |
| " 222 | Gravel Backfill | 280 CY |
| " 401-B | Concrete, Class B (Mod) | 116 CY |
| " 403-A | Structural Steel (G.R. Posts) | 128 Lbs. |

STATE OF VERMONT

DEPARTMENT OF HIGHWAYS

TOWN OF ROCKINGHAM

ROAD NO. Vt. 121 BRIDGE NO.

RETAINING WALL

Between Stas. 11+95.03 & 12+65.66

SCALE As Noted.

SURVEYED BY

DRAWN BY Niven CHECKED BY EFP

PROJECT NO. S-156 (3)

SHEET 35 OF 49

FOR REFERENCE ONLY