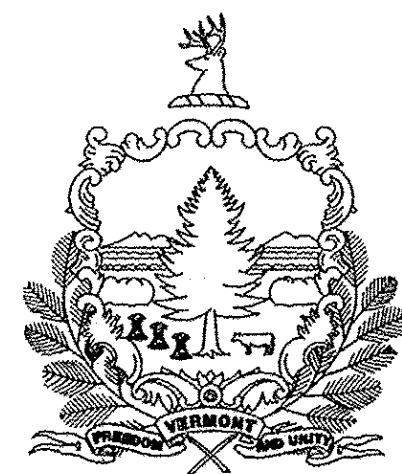


# STATE OF VERMONT AGENCY OF TRANSPORTATION



## PROPOSED IMPROVEMENT BRIDGE PROJECT

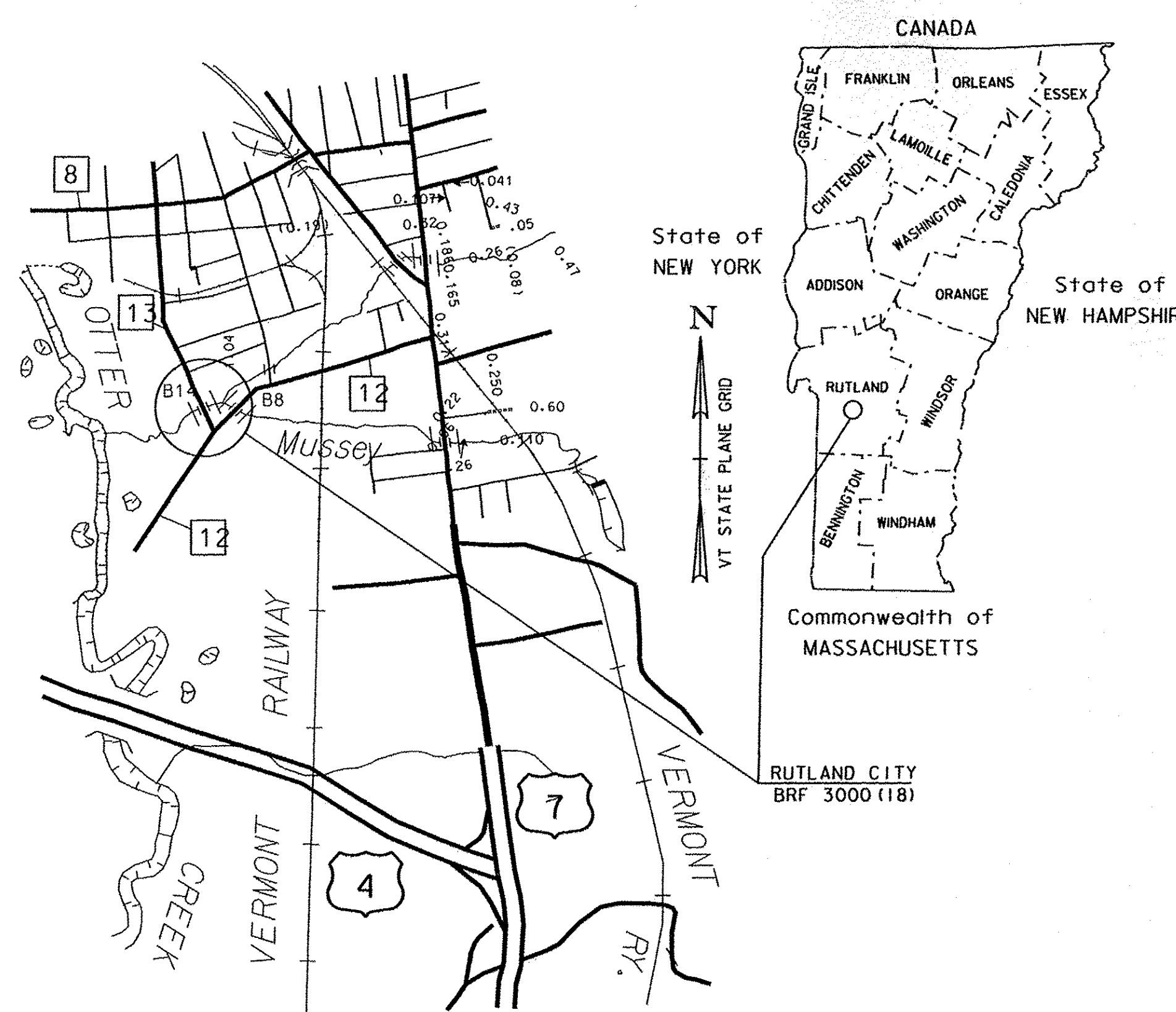
CITY OF RUTLAND  
COUNTY OF RUTLAND

ROUTE NO : TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO : 14

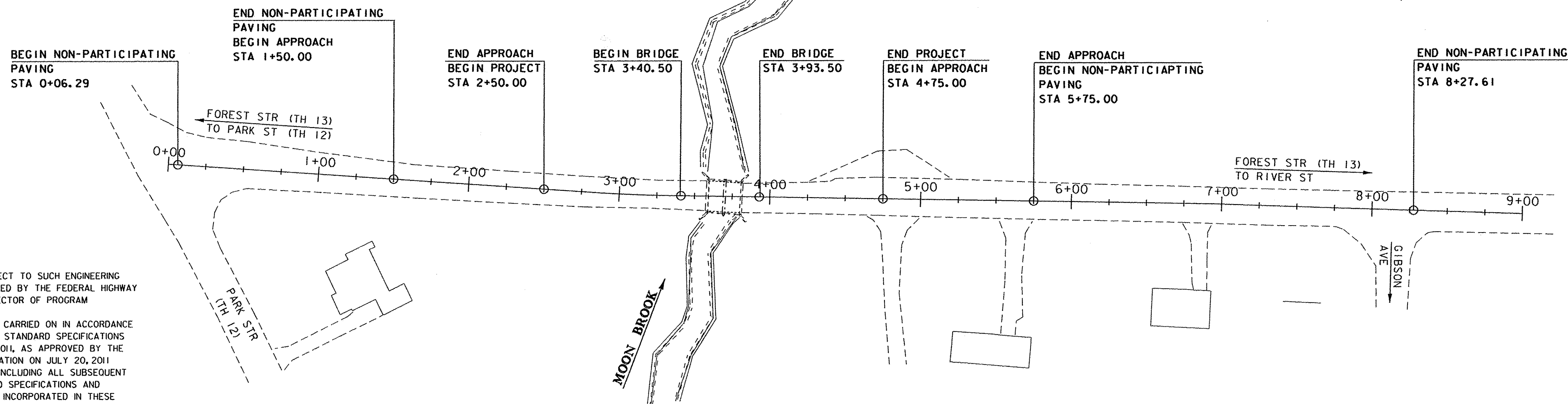
PROJECT LOCATION : ON FOREST STREET (TH 13), APPROXIMATELY 0.1 MILES FROM THE INTERSECTION OF FOREST STREET (TH 13) WITH PARK STREET (TH 12) OVER MOON BROOK

PROJECT DESCRIPTION : REPLACEMENT OF BRIDGE 14 WITH RELATED APPROACH ROADWAY AND CHANNEL WORK NON-PARTICIPATING PAVING

LENGTH OF STRUCTURE : 53 FEET.  
LENGTH OF ROADWAY : 172 FEET.  
LENGTH OF PROJECT : 225 FEET.



RECORD PLANS	
CONTRACTOR:	THE BELDEN CO. INC. - RUTLAND, VT
RESIDENT ENGINEER:	JUDY GILMORE
CONSTRUCTION BEGAN:	JULY 14, 2014
CONSTRUCTION COMPLETE:	OCTOBER 31, 2015
RECORD PLANS BY:	JUDY GILMORE & KEVIN KING
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.	
BY <i>Judy Gilmore</i>	RESIDENT ENGINEER
DATE: <i>1 June 2016</i>	
NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.	



THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.  
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 : LEVEL 2	
SURVEYED BY :	L. ORVIS
SURVEYED DATE :	4-23-1998
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (96)

SCALE 1" = 40'-0"  
40 0 40

DIRECTOR OF PROGRAM DEVELOPMENT	
APPROVED <i>Kevin A. Maslin</i>	DATE 3/3/14
PROJECT MANAGER : CAROLYN CARLSON, P. E.	
PROJECT NAME : RUTLAND CITY	
PROJECT NUMBER : BRF 3000 (18)	
SHEET 1	OF 44 SHEETS

# PRELIMINARY INFORMATION SHEET (BRIDGE)

**LRFD**

**INDEX OF SHEETS**

**FINAL HYDRAULIC REPORT**

**PLAN SHEETS**

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16	BORING LOGS
17	PLAN AND ELEVATION
18	BRIDGE DECK PLAN
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**STANDARDS LIST**

A-76	STANDARDS FOR TOWN & DEVELOPMENT ROADS	03-03-2003
B-12	SIDE ROAD INTERSECTION, DEPRESSED RAMP	06-01-1994
B-71	STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
C-10	CURBING	02-11-2008
D-22	SANITARY SEWER SYSTEMS	03-10-1995
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	01-03-2000
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	01-03-2000

**WATER & SEWER REPLACEMENT PLANS**

1 - 2	WATER AND SEWER NOTES 1 - 2	BY CLD
3 - 4	WATER/SEWER DETAILS 1 - 2	BY CLD
5	WATER/SEWER LAYOUT 1	BY CLD
6	SEWER PROFILE	BY CLD
7	WATER PROFILE	BY CLD

**STRUCTURES DETAIL SHEETS**

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 ASPHALTIC PLUG	5/7/2010

**HYDROLOGIC DATA**

Date: Nov. 2012  
DRAINAGE AREA : 8.3 sq. mi.  
CHARACTER OF TERRAIN : Flat at site to hilly and mountainous uplands.  
STREAM CHARACTERISTICS : Sinuous, alluvial, not incised, wide flood plain  
NATURE OF STREAMBED : Gravel and cobbles

**PEAK FLOW DATA**

Q 2.33 =	325 cfs	Q 50 =	1150 cfs
Q 10 =	725 cfs	Q 100 =	1400 cfs
Q 25 =	950 cfs	Q 500 =	2000 cfs

DATE OF FLOOD OF RECORD : Unknown  
ESTIMATED DISCHARGE : Unknown  
WATER SURFACE ELEV. : Unknown  
NATURAL STREAM VELOCITY : @ Q50 = 6.4 fps (1.7 fps)\*  
ICE CONDITIONS : Moderate  
DEBRIS : Moderate  
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No  
IS ORDINARY RISE RAPID? Yes  
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes  
IF YES, DESCRIBE : Otter Creek is about 1300' downstream. This site is in the Otter Creek floodplain, and thus hydraulics at this site are sometimes controlled by the Otter Creek.

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

**EXISTING STRUCTURE INFORMATION**

STRUCTURE TYPE : Two span steel beam bridge with concrete deck  
YEAR BUILT : 1900  
CLEAR SPAN(NORMAL TO STREAM) : Two 10' spans = 20' total  
VERTICAL CLEARANCE ABOVE STREAMBED : 8'  
WATERWAY OF FULL OPENING : 157 sq. ft.  
DISPOSITION OF STRUCTURE : Remove  
TYPE OF MATERIAL UNDER SUBSTRUCTURE : See boring logs

**WATER SURFACE ELEVATIONS AT:**

Q2.33 =	525.3' (525.6')*	VELOCITY =	4.6 fps (4.2 fps)*
Q10 =	527.3' (530.3')	"	6.9 fps (4.6 fps)
Q25 =	528.2' (531.6')	"	8.6 fps (4.1 fps)
Q50 =	528.9' (532.5')	"	10.1 fps (2.8 fps)
Q100 =	530.0' (533.4')	"	12.2 fps (2.3 fps)

LONG TERM STREAMBED CHANGES : None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No (Yes)\*  
FREQUENCY: Above Q100 without tailwater (About Q10 with Otter Creek tailwater)  
RELIEF ELEVATION: 530.1'  
DISCHARGE OVER ROAD @Q100: None without tailwater (1045 cfs with tailwater)

**UPSTREAM STRUCTURE**

TOWN: N.A. - Stream divides DISTANCE: \_\_\_\_\_  
HIGHWAY #: \_\_\_\_\_ STRUCTURE #: \_\_\_\_\_  
CLEAR SPAN: \_\_\_\_\_ CLEAR HEIGHT: \_\_\_\_\_  
YEAR BUILT: \_\_\_\_\_ FULL WATERWAY: \_\_\_\_\_  
STRUCTURE TYPE: \_\_\_\_\_

**DOWNSTREAM STRUCTURE**

TOWN: N.A. - Otter Creek confluence DISTANCE: \_\_\_\_\_  
HIGHWAY #: \_\_\_\_\_ STRUCTURE #: \_\_\_\_\_  
CLEAR SPAN: \_\_\_\_\_ CLEAR HEIGHT: \_\_\_\_\_  
YEAR BUILT: \_\_\_\_\_ FULL WATERWAY: \_\_\_\_\_  
STRUCTURE TYPE: \_\_\_\_\_

**LRFR LOAD RATING FACTORS**

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY	2.18	1.16					
POSTING							
OPERATING	2.82	1.51	2.43	1.43	1.99	1.81	1.97
COMMENTS:							

AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE: _____	TYPE: _____	TYPE: _____
GRADE: _____	GRADE: _____	GRADE: _____

**PILE DRIVING AND TESTING REQUIREMENTS**

- NOMINAL PILE DRIVING CAPACITY  $\phi$ : 440.00 KIP
- PILE TEST RESISTANCE FACTOR  $\phi$ : 0.65
- MAXIMUM PILE TIP ELEVATION: 503.00 FT
- 0

**PROPOSED STRUCTURE**

STRUCTURE TYPE: Single span, prestressed concrete voided slab  
CLEAR SPAN(NORMAL TO STREAM): 48'  
VERTICAL CLEARANCE ABOVE STREAMBED: 7'  
WATERWAY OF FULL OPENING: 310 sq. ft.

**WATER SURFACE ELEVATIONS AT:**

Q2.33 =	525.2' (525.5')*	VELOCITY =	5.0 fps (4.5 fps)*
Q10 =	526.7' (530.0')	"	6.4 fps (2.9 fps)
Q25 =	527.2' (531.4')	"	7.3 fps (2.9 fps)
Q50 =	527.5' (532.5')	"	8.0 fps (2.1 fps)
Q100 =	528.0' (533.4')	"	8.8 fps (1.9 fps)

IS THE ROADWAY OVERTOPPED BELOW Q100: No (Yes)\*  
FREQUENCY: Above Q100 without tailwater (About Q10 with Otter Creek tailwater)  
RELIEF ELEVATION: 530.1'  
DISCHARGE OVER ROAD @Q100: None without tailwater (800 cfs with tailwater)

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 528.5'  
VERTICAL CLEARANCE: @ Q50 = 1.0' without tailwater (.4.0' with tailwater)

SCOUR: Total contraction scour and long term degradation is 2' at Q100 and Q500.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

**PERMIT INFORMATION**

AVERAGE DAILY FLOW: 20 cfs DEPTH OR ELEVATION:  
ORDINARY LOW WATER: 10 cfs Elev. 521.5'  
ORDINARY HIGH WATER: 140 cfs Elev. 524.0'

**TEMPORARY BRIDGE REQUIREMENTS**

STRUCTURE TYPE: The road will be closed. No temporary bridge required.  
CLEAR SPAN (NORMAL TO STREAM): \_\_\_\_\_  
VERTICAL CLEARANCE ABOVE STREAMBED: \_\_\_\_\_  
WATERWAY AREA OF FULL OPENING: \_\_\_\_\_

**ADDITIONAL INFORMATION**

\*Hydraulics at this site are controlled by floodwaters from the Otter Creek. Water surface elevations and velocities listed first, are without tailwater from Otter Creek. They are followed by values in ( ), that represent conditions with equal frequency floods on the Otter Creek and Moon Brook.

**TRAFFIC MAINTENANCE NOTES**

- MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
- TRAFFIC SIGNALS ARE NOT NECESSARY.
- SIDEWALKS ARE NOT NECESSARY

**DESIGN VALUES**

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	$d_p$ : 3.0 INCH
3. DESIGN SPAN	L: 50.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	$\Delta$ : 0.55 INCH
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	$f_y$ : 270 KSI
6. PRESTRESSED CONCRETE STRENGTH	$f'_c$ : 7.5 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	$f'_{cr}$ : 5.0 KSI
8. CONCRETE, HIGH PERFORMANCE CLASS AA	$f'_c$ : ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	$f'_c$ : ---
10. CONCRETE, HIGH PERFORMANCE CLASS B	$f'_c$ : ---
11. CONCRETE, CLASS C	$f'_c$ : ---
12. REINFORCING STEEL	$f_y$ : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	$f_y$ : ---
14. SOIL UNIT WEIGHT	$\gamma$ : 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	$q_n$ : 4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	$\phi$ : ---
17. NOMINAL BEARING RESISTANCE OF ROCK	$q_n$ : 10.0 KSF
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	$\phi$ : ---
19. NOMINAL AXIAL PILE RESISTANCE	$q_p$ : 440.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	$f_y$ : 50 KSI
21. PILE SIZE	HP 10X57
22. EST. PILE LENGTH	L p: 53 FT
23. PILE RESISTANCE FACTOR	$\phi$ : 0.65
24. LATERAL PILE DEFLECTION	$\Delta$ : ---
25. BASIC WIND SPEED	V3s: ---
26. MINIMUM GROUND SNOW LOAD	p_g: ---
27. SEISMIC DATA	PGA: --- S1: ---

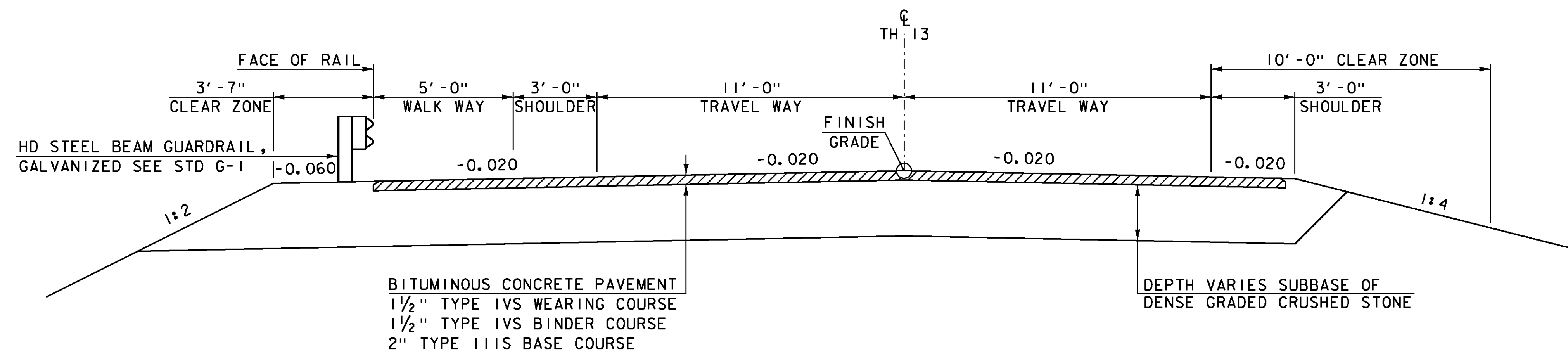
PROJECT NAME: RUTLAND CITY

PROJECT NUMBER: BRF 3000(18)

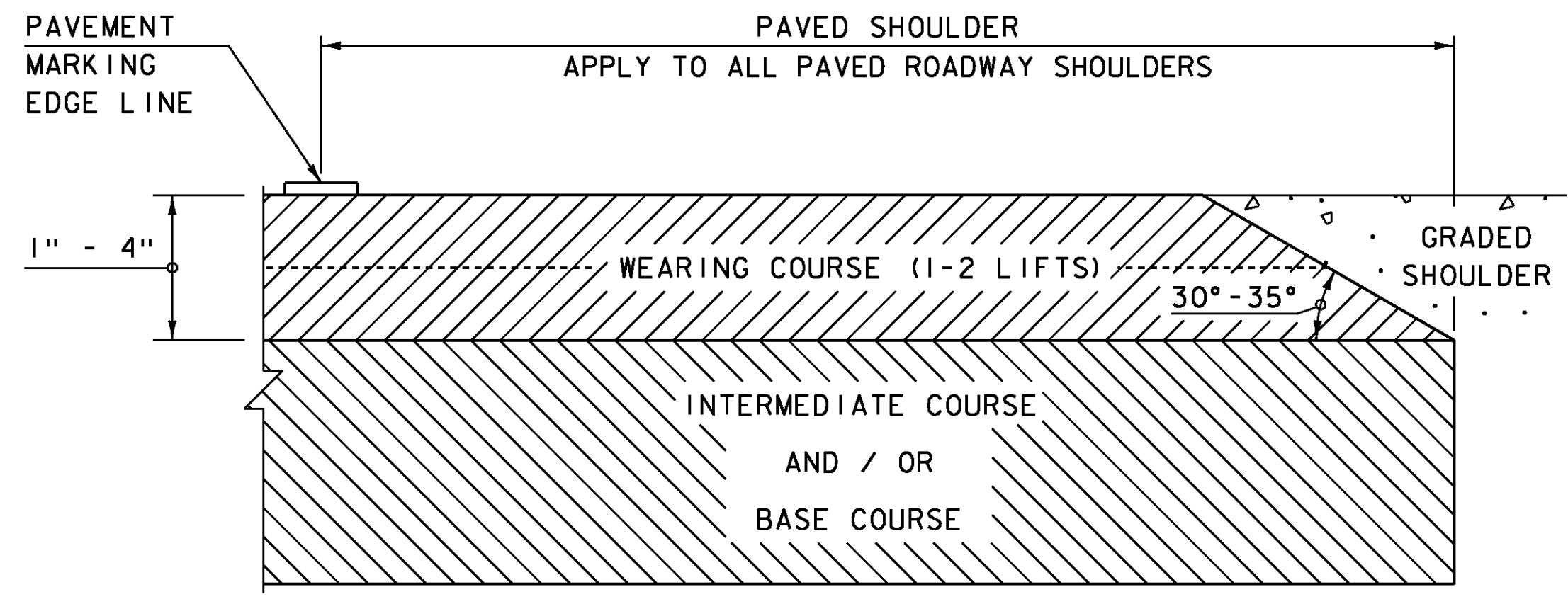
FILE NAME: s96j244pi.xls PLOT DATE: 2/28/2014  
PROJECT LEADER: C. CARLSON DRAWN BY: R. PELLETT  
DESIGNED BY: M. EVANS-MONGEON CHECKED BY: M. E-M  
PRELIMINARY INFORMATION SHEET 2 OF 44

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2012 to 2032 : 387000
2012	3000	340	51	4.9	110	40 year ESAL for flexible pavement from 2012 to 2052 : 750000
2032	3200	360	51	3	70	Design Speed : 30 mph

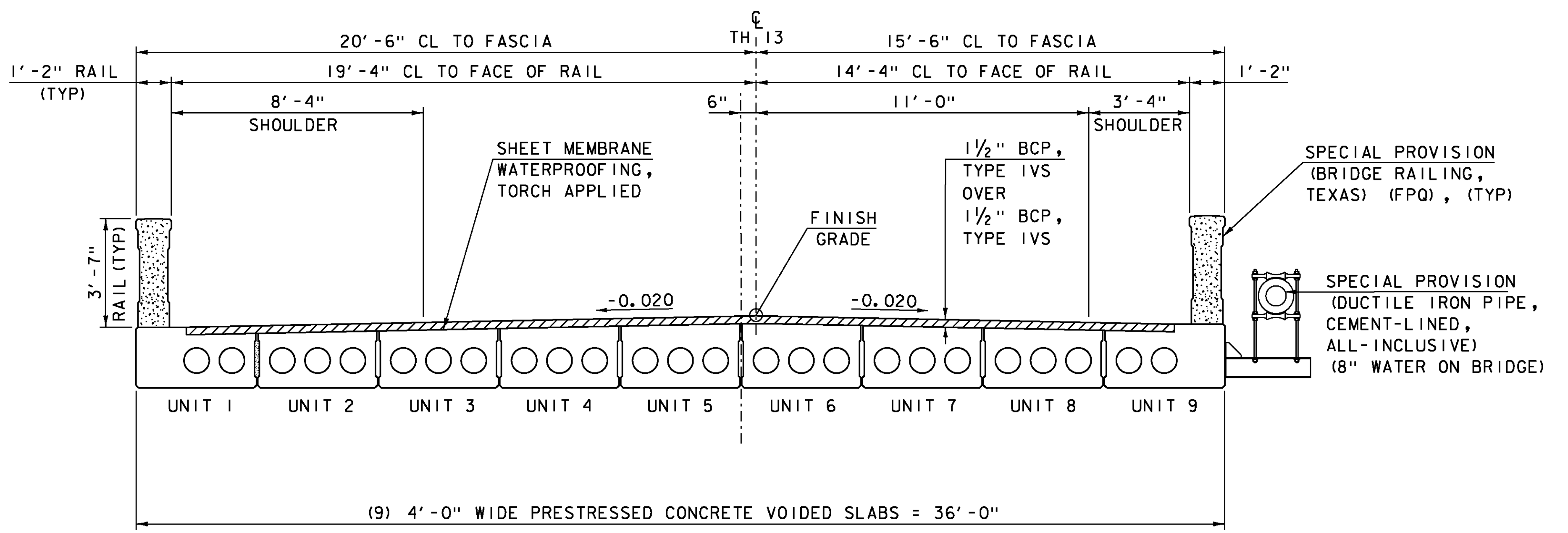


**ROADWAY TYPICAL SECTION**  
SCALE 3/8" = 1'-0"



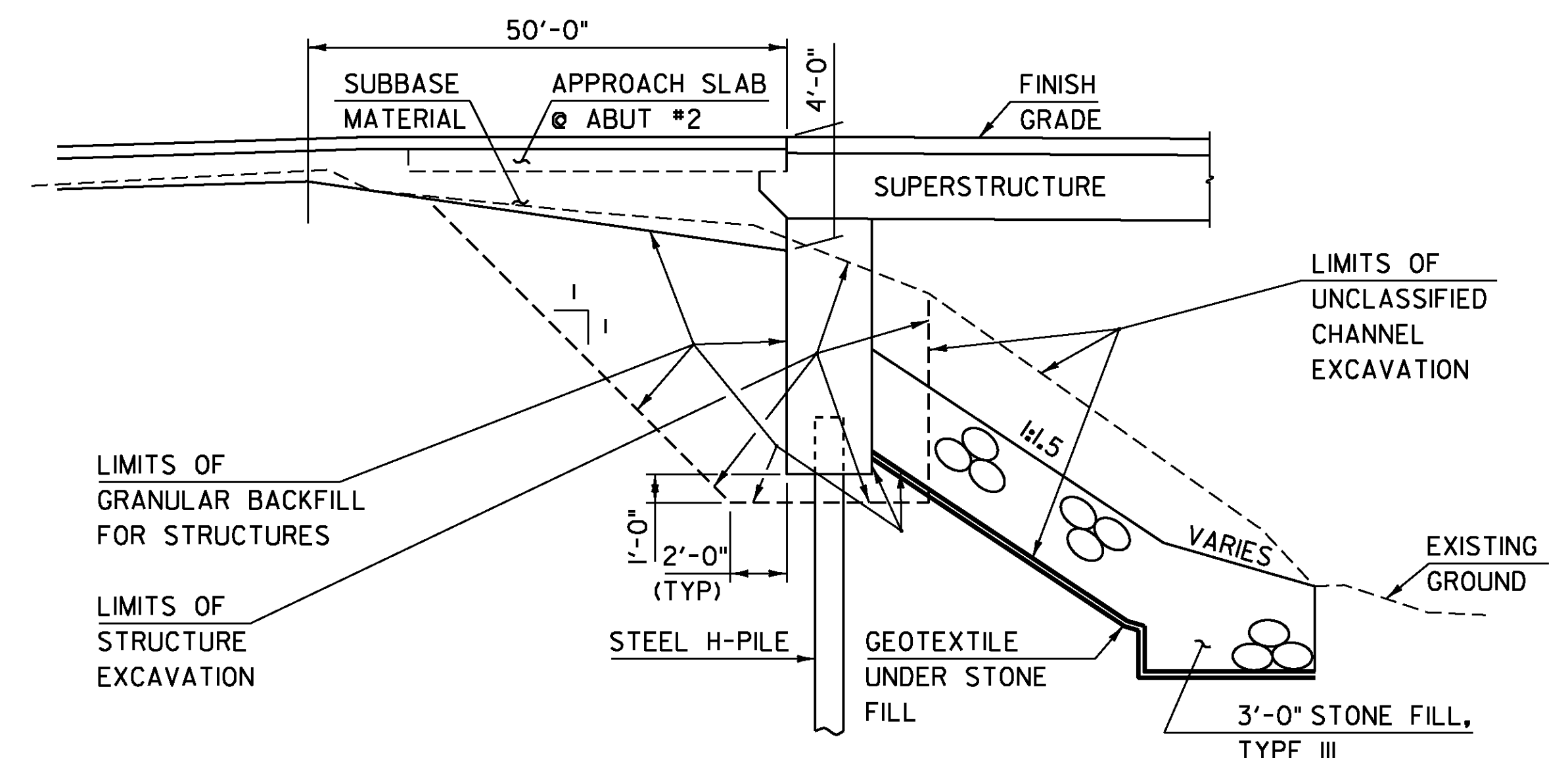
**SAFETY EDGE DETAIL**  
NOT TO SCALE

1. THE EDGE OF PAVEMENT SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE 30 TO 35 DEGREE ANGLE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.

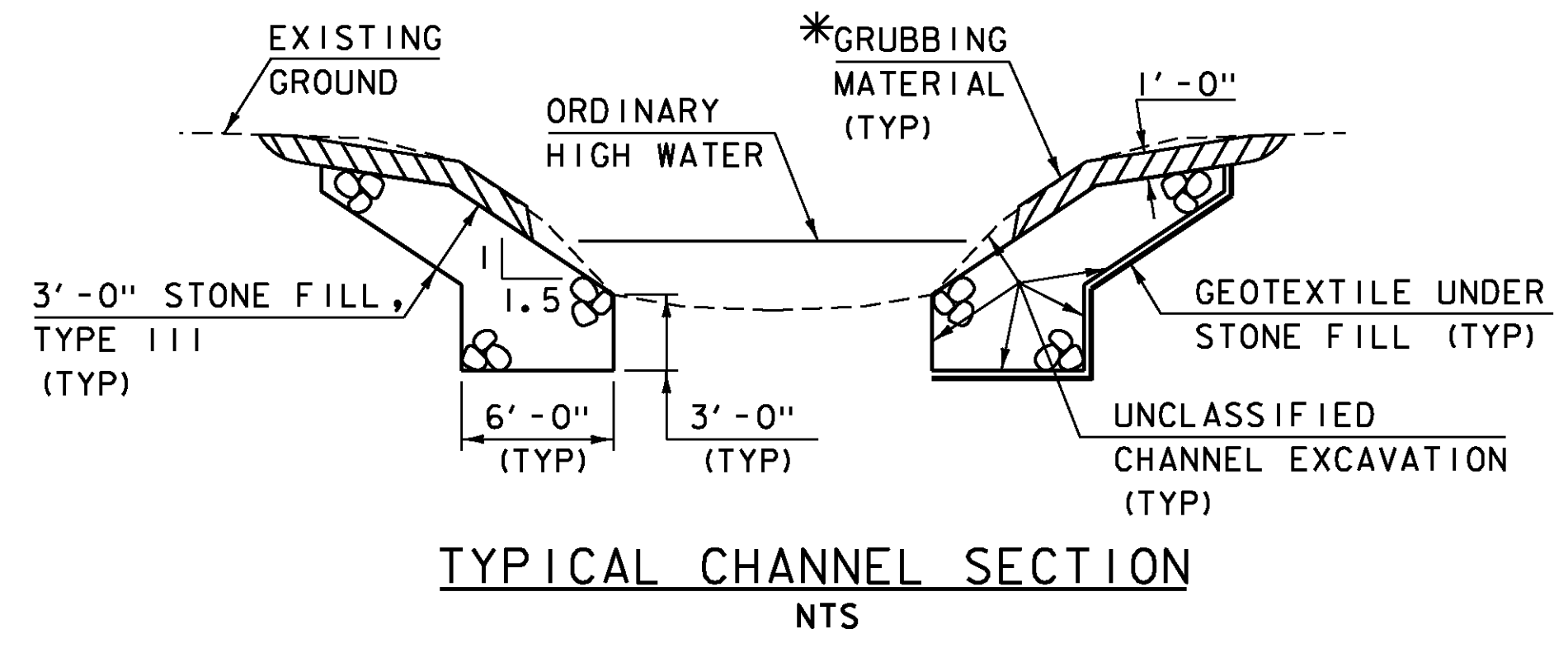


**BRIDGE TYPICAL SECTION**  
SCALE 3/8" = 1'-0"

\*BCP SHOULD BE READ AS BITUMINOUS CONCRETE PAVEMENT AND SHALL BE PAID FOR UNDER PAY ITEM 900.680 "SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)".  
**TACK COAT:** EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.025 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AND ON COLD-PLANED SURFACES, AS DIRECTED BY THE ENGINEER.



**ABUTMENT EARTHWORK TYPICAL SECTION**  
NTS



\*GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	
SAND BORROW	+/- 1"

PROJECT NAME:	RUTLAND CITY	PLOT DATE:	07-MAR-2014
PROJECT NUMBER:	BRF 3000(18)	PROJECT LEADER:	C. CARLSON
FILE NAME:	s96j2441yp.dgn	DESIGNED BY:	M. EVANS-MONGEON
		CHECKED BY:	M. E-M
		TYPICAL SECTIONS	SHEET 3 OF 44

## GENERAL

- 1) ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE VERMONT AGENCY OF TRANSPORTATION 2011 STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE 2012 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, AND THEIR LATEST REVISIONS.
- 2) ALL PRECAST CONCRETE ELEMENTS TO BE FABRICATED TO THE SPECIFIED DIMENSIONS WITHIN THE TOLERANCES DICTATED IN THE PRECAST/PRESTRESSED CONCRETE INSTITUTE TOLERANCE MANUAL FOR PRECAST AND PRESTRESSED CONCRETE CONSTRUCTION, MNL 135-00, AND ITS LATEST REVISIONS.
- 3) ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
- 4) THE WEARING SURFACE SHALL BE SHIMMED TRANSVERSELY AS NECESSARY TO ACCOUNT FOR POTENTIAL DIFFERENTIAL CAMBER OF THE ADJACENT PRESTRESSED UNITS.
- 5) THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL BURIED AND AERIAL UTILITIES AND POLES PRIOR TO STARTING WORK. SEE UTILITY SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

## TRAFFIC CONTROL

- 6) THE CONTRACTOR WILL BE ALLOWED TO CLOSE THE BRIDGE FOR A MAXIMUM OF FOUR CONSECUTIVE WEEKS TO COMPLETE THE BRIDGE REPLACEMENT. SEE THE SPECIAL PROVISIONS FOR WORK REQUIREMENTS AND INCENTIVE/DISINCENTIVE PROVISIONS FOR THE BRIDGE CLOSURE PERIOD.
- 7) THE CONTRACTOR SHALL NOTIFY THE CITY OF RUTLAND A MINIMUM OF FOUR WEEKS PRIOR TO CLOSING THE BRIDGE.
- 8) FULL ACCESS TO ALL SIDE ROADS AND DRIVES WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 900.645 "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)".
- 9) THE CHOICE OF A DETOUR AND THE DETOUR SIGNING WILL BE THE RESPONSIBILITY OF THE CITY OF RUTLAND.
- 10) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF A SITE-SPECIFIC, TRAFFIC CONTROL PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING THE TRAFFIC CONTROL PACKAGE, IDENTIFYING THE PROJECT BEFORE, DURING AND AFTER THE EXISTING TRAFFIC CONTROL PATTERN IS ALTERED. THE CONTRACTOR SHALL SUBMIT A DETAILED TRAFFIC CONTROL PLAN TO THE ENGINEER FOR ALL STAGES OF CONSTRUCTION, FOR APPROVAL PER SUBSECTION 105.03. NO WORK SHALL BEGIN UNTIL THE TRAFFIC CONTROL PLAN HAS BEEN APPROVED. ALL COST SHALL BE INCLUDED IN ITEM 900.645 "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)". SEE SPECIAL PROVISIONS FOR ADDITIONAL DETAILS.
- 11) THE COST FOR ALL ITEMS REQUIRED TO IMPLEMENT THE CONTRACTOR'S TRAFFIC CONTROL PLAN SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 900.645 "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)".
- 12) ALL SIGNS, BARRICADES, AND OTHER TRAFFIC CONTROL DEVICES SHALL BE CLEANED WEEKLY OR AS DIRECTED BY THE ENGINEER. THE COST FOR THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 900.645 "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)".
- 13) ALL SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MUTCD. WHERE CONFLICTS EXISTS BETWEEN THE MUTCD AND THE PLANS, THE MUTCD SHALL GOVERN. FOR ADDITIONAL SIGNING SEE THE T SERIES OF THE STANDARDS.

## EARTHWORK

- 14) REMOVAL OF THE EXISTING STRUCTURE SHALL BE UNDER ITEM 529.15, "REMOVAL OF STRUCTURE". THIS WORK SHALL INCLUDE REMOVAL OF ANY PORTIONS OF THE EXISTING STRUCTURE THAT FALL OUTSIDE THE LIMITS OF ANY OF THE EXCAVATION ITEMS.
- 15) EXCAVATION OF SOILS TO THE LIMITS SHOWN ON THE TYPICAL ABUTMENT SECTION SHALL BE PAID FOR UNDER ITEM 204.25, "STRUCTURE EXCAVATION" AND ITEM 203.27, "UNCLASSIFIED CHANNEL EXCAVATION". ANY EXCAVATION OUTSIDE THESE LIMITS, WHICH IS NOT REMOVAL OF STRUCTURE, WILL BE AT THE CONTRACTOR'S EXPENSE.
- 16) THE "STONE FILL, TYPE III" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE SUPERSTRUCTURE IS SET.

## CONCRETE

- 17) ITEM 514.10, "WATER REPELLENT, SILANE", SHALL BE APPLIED TO ALL EXPOSED CONCRETE ON THE BRIDGE SUPERSTRUCTURE AND SUBSTRUCTURE, WITH THE EXCEPTION OF THE BOTTOM OF THE PRECAST VOIDED SLABS BETWEEN THE DRIP NOTCHES.
- 18) ALL CONCRETE PLACED INTEGRALLY WITH THE SUPERSTRUCTURE SHALL BE ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)". ALL PRECAST SUBSTRUCTURE AND APPROACH SLAB CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 540 - PRECAST CONCRETE.

- 19) ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE "CONCRETE REINFORCING STEEL INSTITUTE".
- 20) ALL REINFORCING STEEL SHALL MEET THE REQUIREMENTS FOR REINFORCING STEEL, LEVEL II. PAYMENT WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE SECTION 540 CONTRACT ITEM.

## PRECAST ABUTMENTS AND POST-TENSIONING

- 21) IF VERTICAL CONSTRUCTION JOINTS ARE REQUIRED BY THE CONTRACTOR FOR SHIPMENT OF THE ABUTMENTS, THEN THE SECTIONS SHALL BE KEYED AND MATCH CAST. A JOINT DETAIL SHALL BE SHOWN ON THE FABRICATION DRAWINGS.
- 22) POST-TENSIONING AND ASSOCIATED ITEMS ARE ONLY REQUIRED IF THE PILE CAP IS CONSTRUCTED IN MORE THAN ONE PIECE. ANY POST-TENSIONING STRANDS AND CONDUIT SHALL ADHERE TO THE REQUIREMENTS OF SECTION 510 - PRESTRESSED CONCRETE. GALVANIZED ANCHOR ASSEMBLIES, CONDUIT, AND POST-TENSIONING STRANDS SHALL BE INCLUDED UNDER ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #1) AND/OR "PRECAST CONCRETE STRUCTURE (ABUTMENT #2)" AS APPROPRIATE. POST-TENSIONING STRANDS SHALL BE COVERED WITH SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND) FOR THE LENGTH OF THE STRAND, EXCEPT AT ANCHORAGE LOCATIONS.
- 23) GALVANIZE ANCHOR ASSEMBLIES AFTER FABRICATION ACCORDING TO AASHTO M232M/M232.
- 24) DESIGN VALUES
  - a) CONCRETE COMPRESSIVE STRENGTH:  $f_c = 5000$  PSI.
  - b) POST-TENSIONING STRANDS: 0.5 INCH DIAMETER, 270 KSI, LOW RELAXATION 7-WIRE STRANDS.
  - c) ASSUMED MODULUS OF ELASTICITY IS 28,500 KSI.
  - d) THERE SHALL BE 2 STRANDS PER POST-TENSIONING CONDUIT.
  - e) THE JACKING FORCE PER STRAND = 32 KIPS
- 25) THE CONCRETE FOR THE ABUTMENT # 1 AND ABUTMENT #2 PILE CAVITIES SHALL MEET THE REQUIREMENTS OF ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)".
- 26) THE CORRUGATED STEEL PIPE SHALL MEET THE REQUIREMENTS OF SUBSECTION 71.10.1. ALL COSTS ASSOCIATED WITH PLACING THE CORRUGATED STEEL PIPE, SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #1)" AND ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #2)".
- 27) PROPOSED SEQUENCE OF CONSTRUCTION:
  - a) PREPARE AND GRADE FOUNDATION TO REQUIRED ELEVATION.
  - b) DRIVE PILES.
  - c) PLACE PRECAST ABUTMENTS AND INSTALL TRANSVERSE STRANDS (IF MORE THAN ONE UNIT).
  - d) APPLY EPOXY TO MATCH CAST FACES OF VERTICAL CONSTRUCTION JOINT.
  - e) USE A CALIBRATED JACK TO TENSION TO 3 KIPS TO REMOVE SAG IN STRANDS.
  - f) CHECK ALIGNMENT OF PILE CAP ELEMENTS.
  - g) STRESS POST-TENSIONING STRANDS USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL WITH PREVIOUS EXPERIENCE IN POST-TENSIONING.
  - h) FILL PILE CAVITIES WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)".
- 28) ALTERNATE SEQUENCE OF CONSTRUCTION MAY BE SUBMITTED TO THE VTRANS PROJECT MANAGER FOR APPROVAL.

## PRESTRESSED VOIDED SLABS

- 29) DESIGN VALUES
  - a) CONCRETE COMPRESSIVE STRENGTH:  $f_c = 7,500$  PSI.
  - b) LIVE LOAD HL-93.
  - c) CONCRETE COMPRESSIVE STRENGTH AT RELEASE:  $f_{ci} = 5,000$  PSI
  - d) PRESTRESSING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW-RELAXATION 7-WIRE STRAND PULLED TO 75% OF THEIR ULTIMATE TENSILE STRENGTH.
  - e) POST TENSIONING STRANDS: 0.5 INCH DIAMETER, 270 KSI, LOW-RELAXATION 7 WIRE STRAND.
  - f) THERE SHALL BE TWO (2) TRANSVERSE STRANDS PER CONDUIT. JACKING FORCE PER STRAND = 32 KIPS.
  - g) POST-TENSIONING STRANDS SHALL BE COVERED WITH SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND) FOR THE LENGTH OF THE STRAND, EXCEPT AT ANCHORAGE LOCATIONS
  - h) ASSUMED MODULUS OF ELASTICITY = 28,500 KSI.
  - i) 

SERVICE LOADS	FASCIA UNITS	INTERIOR UNITS
MEMBER MOMENT	298* K-FT	307 K-FT
SUPERIMPOSED DEAD LOAD MOMENT	81 K-FT	81 K-FT
LIVE LOAD AND IMPACT MOMENT	411 K-FT	357 K-FT
DEAD LOAD REACTION (PER BRG)	16* KIPS	15 KIPS
LIVE LOAD AND IMPACT REACTION (PER BRG)	19 KIPS	17 KIPS
TOTAL REACTION (PER BRG)	35 KIPS	32 KIPS
FINAL CAMBER	3/8 INCH	3/8 INCH

\*INCLUDES WATERLINE DEAD LOAD
- 30) FILL KEYWAY WITH TYPE IV MORTAR ACCORDING TO SECTION 510. GROUTING SHALL BE PAID FOR UNDER ITEM 510.24, "GROUTING SHEAR KEYS".

- 31) THE FABRICATOR MAY ALTER THE DESIGN AS DETAILED IN THESE PLANS TO ACCOMMODATE THEIR SPECIFIC OPERATION. ALTERNATE CONFIGURATIONS SHALL MEET ALL OF THE APPLICABLE DESIGN CRITERIA, LOADINGS AND CODES; AND SHALL BE STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER, LICENSED IN VERMONT.

## PROPOSED CONSTRUCTION SEQUENCE FOR PRESTRESSED VOIDED SLABS

- 32) LAYOUT WORKING LINES:
  - A. LAYOUT WORKING LINES FOR THE ENTIRE BRIDGE WIDTH ON THE SLAB SEAT.
  - B. MEASURE ALL WORKING LINES FROM A COMMON WORKING POINT.
  - C. BASE THE WORKING LINES ON THE NOMINAL SLAB WIDTHS.
- 33) VERIFY SLAB SEAT ELEVATIONS
  1. MEASURE ELEVATIONS AT SLAB SEATS.
  2. IF SEATS ARE HIGH OR LOW, TAKE CORRECTIVE ACTION.
  3. INSTALL BEARINGS.
- 34) ERECT SLAB:
  - A. PLACE SLAB TO FIT WITHIN WORKING LINES.
  - B. AS WORK PROGRESSES, INSTALL HARDWOOD WEDGES BETWEEN ADJACENT SLABS TO MAINTAIN PROPER JOINT OPENING. A MINIMUM OF ONE WEDGE AT TRANSVERSERS ENDON.
  - C. DRILL ANCHOR BOLT HOLES.
  - D. PLACE ANCHOR BOLTS.
- 35) INSTALL BACKER ROD:
  - A. PLACE FILLER BELOW THE KEYWAY BOTTOM, AS SHOWN ON THE PLANS.
- 36) INSTALL TRANSVERSE TENDONS:
  - A. FEED TENDONS THROUGH DUCTS.
  - B. VERIFY THAT HARDWOOD WEDGES ARE IN PLACE AS REQUIRED TO PREVENT SLIPPAGE OF SLABS.
  - C. USING A CALIBRATED JACK, POST-TENSION TENDONS TO APPROXIMATELY 5 KIPS TO REMOVE SAG IN THE TENDON AND SEAT THE CHUCK.
- 37) GROUT SHEAR KEYS:
  - A. CLEAN JOINT WITH AND OIL-FREE AIR-BLAST IMMEDIATELY BEFORE GROUT PLACEMENT. VERIFY THAT BACKER ROD IS STILL IN PLACE.
  - B. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR ADDITIONAL JOINT PREPARATION AND GROUT PLACEMENT.
  - C. CAREFULLY ROD JOINTS TO ELIMINATE THE POSSIBILITY OF VOIDS.
- 38) POST-TENSION TRANSVERSE TENDONS:
  - A. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI, BASED ON THE MANUFACTURER'S RECOMMENDATIONS, PRIOR TO STRESSING.
  - B. POST-TENSION TENDONS TO 32 KIPS EACH USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL. BEGIN WITH TENDONS AT THE ENDS AND WORK SYMMETRICALLY TOWARDS THE MID-SPAN FROM EACH END.
- 39) END DETAILS:
  - A. GROUT ANCHOR BOLTS INTO THE SLEEVES IN THE PRE-STRESSED UNITS, BEFORE THE GROUT CURES, PLACE THE WASHER PLATE AND INSTALL THE NUT ON TOP AND TIGHTEN.
  - B. GROUT OVER THE NUT AND BOLT IN THE ANCHOR BOLT BLOCK OUTS.
- 40) FINISH WORK:
  - A. REMOVE WEDGES AND SURFACE PATCH THE FASCIA SLABS AT TRANSVERSE TENDONS.

## H-PILES

- 41) TO PREVENT DAMAGE TO THE PILES, PILE SHOES ARE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04 (f).
- 42) THE PILES SHALL BE DRIVEN TO A NOMINAL PILE DRIVING RESISTANCE ( $R_{NDR}$ ) OF 286 KIPS, PROVIDED A MINIMUM PENETRATION OF 25 FEET BELOW THE BOTTOM OF PILE CAP HAS BEEN ACHIEVED.
- 43) A MINIMUM OF TWO DYNAMIC TESTS ARE REQUIRED DURING PILE INSTALLATION. NO LESS THAN ONE DYNAMIC PILE TEST SHALL BE CONDUCTED AT EACH ABUTMENT. PAYMENT WILL BE MADE UNDER ITEM 505.45, "DYNAMIC PILE LOADING TEST".
- 44) THE TOPS OF THE PILES AFTER DRIVING SHALL NOT VARY FROM THE POSITION SHOWN ON THE PLANS BY MORE THAN 3 INCHES. THE PILE ORIENTATION SHALL NOT VARY BY MORE THAN 5 DEGREES. THE CONTRACTOR SHALL DEMONSTRATE TO THE SATISFACTION OF THE ENGINEER HOW THE TOLERANCES WILL BE MET. THESE MEASUREMENTS SHALL BE DEMONSTRATED IN A SUBMITTAL TO BE ACCEPTED BEFORE PILE DRIVING COMMENCES.
- 45) FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTHS MAY VARY.

PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BR 3000 (18)

FILE NAME: s96j244gen.dgn PLOT DATE: 07-MAR-2014  
PROJECT LEADER: C.CARLSON DRAWN BY: EVANS-MONGEON  
DESIGNED BY: EVANS-MONGEON CHECKED BY: M.UMBERGER  
PROJECT NOTES SHEET 4 OF 44

# QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
					ROADWAY	ROADWAY (NO FED/STATE PART.)	EROSION CONTROL	UTILITIES - BID ITEMS	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				
					730						730		CY	COMMON EXCAVATION	203.15				
									418		418		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
							43				43		CY	SAND BORROW	203.31		511	CY	COMMON EXCAVATION (0.7 x 730 CY)
							10				10		CY	TRENCH EXCAVATION OF ROCK	204.21		125	CY	UNCLASSIFIED CHANNEL EXCAVATION (0.3 x 418 CY)
					1						1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22		30	CY	STRUCTURE EXCAVATION (0.3 x 320)
									320		320		CY	STRUCTURE EXCAVATION	204.25		666	CY	TOTAL FILL AVAILABLE
									100		100		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				FILL REQUIRED
					280	1210					1490		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10		61.41	CY	FACTORED FILL (1.15 x 53.4)
					710						710		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35		0.59	CY	ROUNDING
					8	9			4		21		CWT	EMULSIFIED ASPHALT	404.65		62	CY	TOTAL FILL REQUIRED
					1						1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50		604	CY	TOTAL WASTE
									1		1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10				
									530		530		LF	STEEL PILING, HP 10 X 57	505.12				
									2		2		EACH	DYNAMIC PILE LOADING TEST	505.45				
									914		914		LB	REINFORCING STEEL, LEVEL II	507.12				
									104		104		LF	PRESTRESSED CONCRETE VOIDED SLABS (21" X 48") (FASCIA)	510.22				
									364		364		LF	PRESTRESSED CONCRETE VOIDED SLABS (21" X 48") (INTERIOR)	510.22				
									416		416		LF	GROUTING SHEAR KEYS	510.24				
									15		15		GAL	WATER REPELLENT, SILANE	514.10				
									68		68		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10				
									212		212		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20				
									1		1		EACH	REMOVAL OF STRUCTURE (510 SF - EST)	529.15				
									36		36		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17				
									1		1		LS	PRECAST CONCRETE STRUCTURE (ABUTMENT #1)	540.10				
									1		1		LS	PRECAST CONCRETE STRUCTURE (ABUTMENT #2)	540.10				
									1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #1)	540.10				
									1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #2)	540.10				
							4				4		CY	CONTROLLED DENSITY (FLOWABLE) FILL	541.45				
							1				1		EACH	REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS III	604.418				
							1				1		EACH	CHANGING ELEVATION OF SEWER MANHOLES	604.42				
							2				2		EACH	CAST IRON COVER WITH FRAME, SEWER	604.56				
					1.6						1.6		MGAL	DUST CONTROL WITH WATER	609.10				
					30				270		300		CY	STONE FILL, TYPE III	613.12				
					48						48		LF	CAST-IN-PLACE CONCRETE CURB, TYPE B	616.28				
					238						238		LF	HD STEEL BEAM GUARDRAIL, GALVANIZED	621.21				
					4						4		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60				
					4						4		EACH	GUARDRAIL APPROACH SECTION TO CONCRETE BRIDGE RAILING, TL-2	621.746				
					106						106		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
											1		LS	TRANSFER TO NEW SYSTEM, SANITARY SEWER	628.42				

PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BRF 3000(18)  
FILE NAME: s96j244qty.dgn  
PROJECT LEADER: C. CARLSON  
DESIGNED BY: M. EVANS-MONGEON  
QUANTITY SHEET 1  
PLOT DATE: 05-MAR-2014  
DRAWN BY: M. LONGSTREET  
CHECKED BY: M. E-M  
SHEET 5 OF 44

# QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES				
					ROADWAY	ROADWAY (NO FED/STATE PART.)	EROSION CONTROL	UTILITIES - BID ITEMS	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS	
								2			2		EACH	GATE VALVE WITH VALVE BOX (6")	629.27					
					480						480		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					
					1						1		LS	MOBILIZATION/DEMobilIZATION	635.11					
					850	800					1650		LF	4 INCH YELLOW LINE	646.21					
						27					27		LF	DURABLE 24 INCH STOP BAR	646.480					
					850	880					1730		LF	TEMPORARY 4 INCH YELLOW LINE	646.610					
									270		270		SY	GEOTEXTILE UNDER STONE FILL	649.31					
							95				95		SY	GEOTEXTILE FOR SILT FENCE	649.51					
							60				60		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61					
							15				15		LB	SEED	651.15					
							10				10		LB	SEED, WINTER RYE	651.17					
							90				90		LB	FERTILIZER	651.18					
							0.4				0.4		TON	AGRICULTURAL LIMESTONE	651.20					
							0.3				0.3		TON	HAY MULCH	651.25					
							100				100		CY	TOPSOIL	651.35					
									55		55		SY	GRUBBING MATERIAL	651.40					
							1				1		LS	EPSC PLAN	652.10					
							50				50		HR	MONITORING EPSC PLAN	652.20					
							1				1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30					
							310				310		SY	TEMPORARY EROSION MATTING	653.20					
							60				60		CY	VEHICLE TRACKING PAD	653.35					
							220				220		LF	BARRIER FENCE	653.50					
							570				570		LF	PROJECT DEMARCATION FENCE	653.55					
					1						1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50					
									22		22		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)(FPQ)	900.608					
								2			2		EACH	SPECIAL PROVISION (SANITARY SEWER MANHOLE, ALL-INCLUSIVE) (4' DIA.)	900.620					
									106		106		LF	SPECIAL PROVISION (BRIDGE RAILING, TEXAS) (FPQ)	900.640					
										335	335		LF	SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL-INCLUSIVE) (12" SEWER)	900.640					
								88.7			88.7		LF	SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL-INCLUSIVE) (8" WATER ON BRIDGE)	900.640					
								157.8			157.8		LF	SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL-INCLUSIVE) (8" WATER)	900.640					
										260	260		LF	SPECIAL PROVISION (TRANSITE PIPE REMOVAL)	900.640					
					1						1		LS	SPECIAL PROVISION (CPM SCHEDULE)	900.645					
					1						1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)	900.645					
					1						1		LU	SPECIAL PROVISION (INCENTIVE/DISINCENTIVE)(N.A.B.I.)	900.650					

PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BRF 3000(18)

FILE NAME: s96j244qty.dgn  
PROJECT LEADER: C. CARLSON  
DESIGNED BY: M. EVANS-MONGEON  
QUANTITY SHEET 2

PLOT DATE: 24-MAR-2014  
DRAWN BY: M. LONGSTREET  
CHECKED BY: M. E-M  
SHEET 6 OF 44



# BRIDGE QUANTITY SHEET

SUMMARY OF BRIDGE QUANTITIES						TOTALS	DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
							UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
APPROACH SLAB #1	ABUTMENT #1	SUPER- STRUCTURE	ABUTMENT #2	APPROACH SLAB #2	BRIDGE TOTAL							
	204		214		418	CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
	150		170		320	CY	STRUCTURE EXCAVATION	204.25				
	50		50		100	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
		4			4	CWT	EMULSIFIED ASPHALT	404.65				
	0.5		0.5		1	LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10				
	265		265		530	LF	STEEL PILING, HP 10 X 57	505.12				
	1		1		2	EACH	DYNAMIC PILE LOADING TEST	505.45				
	457		457		914	LB	REINFORCING STEEL, LEVEL II	507.12				
		104			104	LF	PRESTRESSED CONCRETE VOIDED SLABS (21" X 48") (FASCIA)	510.22				
		364			364	LF	PRESTRESSED CONCRETE VOIDED SLABS (21" X 48") (INTERIOR)	510.22				
		416			416	LF	GROUTING SHEAR KEYS	510.24				
	1	13	1		15	GAL	WATER REPELLENT, SILANE	514.10				
		68			68	LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10				
		212			212	SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20				
		1			1	EACH	REMOVAL OF STRUCTURE (510 SF - EST)	529.15				
	18		18		36	EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17				
	1				1	LS	PRECAST CONCRETE STRUCTURE (ABUTMENT #1)	540.10				
			1		1	LS	PRECAST CONCRETE STRUCTURE (ABUTMENT #2)	540.10				
	1				1	LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #1)	540.10				
				1	1	LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB #2)	540.10				
	130		140		270	CY	STONE FILL, TYPE III	613.12				
	130		140		270	SY	GEOTEXTILE UNDER STONE FILL	649.31				
	25		30		55	SY	GRUBBING MATERIAL	651.40				
	4	7	7	4	22	CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)(FPQ)	900.608				
		106			106	LF	SPECIAL PROVISION (BRIDGE RAILING, TEXAS) (FPQ)	900.640				
		57			57	TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BRF 3000(18)

FILE NAME: s96j244qty.dgn  
PROJECT LEADER: C. CARLSON  
DESIGNED BY: M. EVANS-MONGEON  
BRIDGE QUANTITY SHEET

PLOT DATE: 05-MAR-2014  
DRAWN BY: M. LONGSTREET  
CHECKED BY: M. E-M  
SHEET 8 OF 44



GPS CONTROL POINTS

HVCTRL #1

RUT 13 FOREST  
 NORTH = 398824.83  
 EAST = 1513079.51  
 ELEV. = 538.27

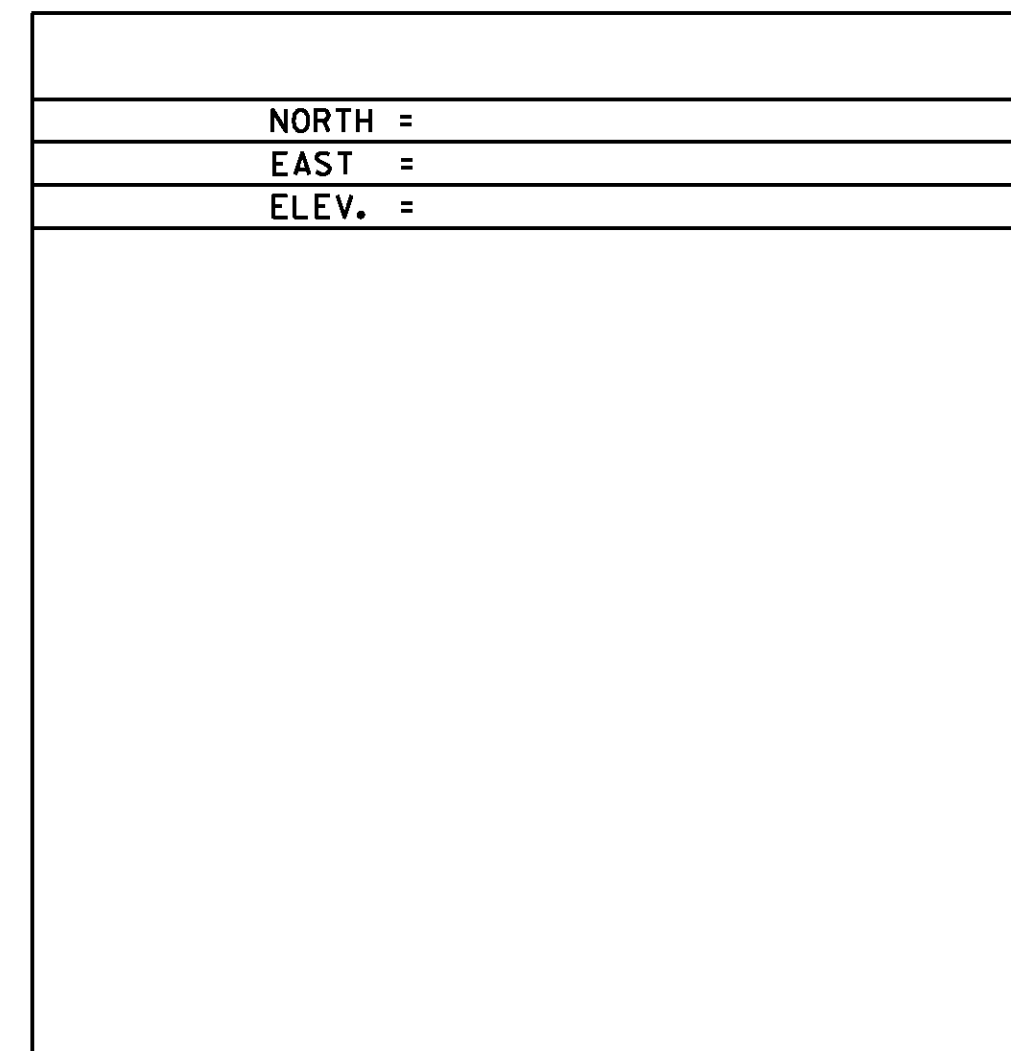
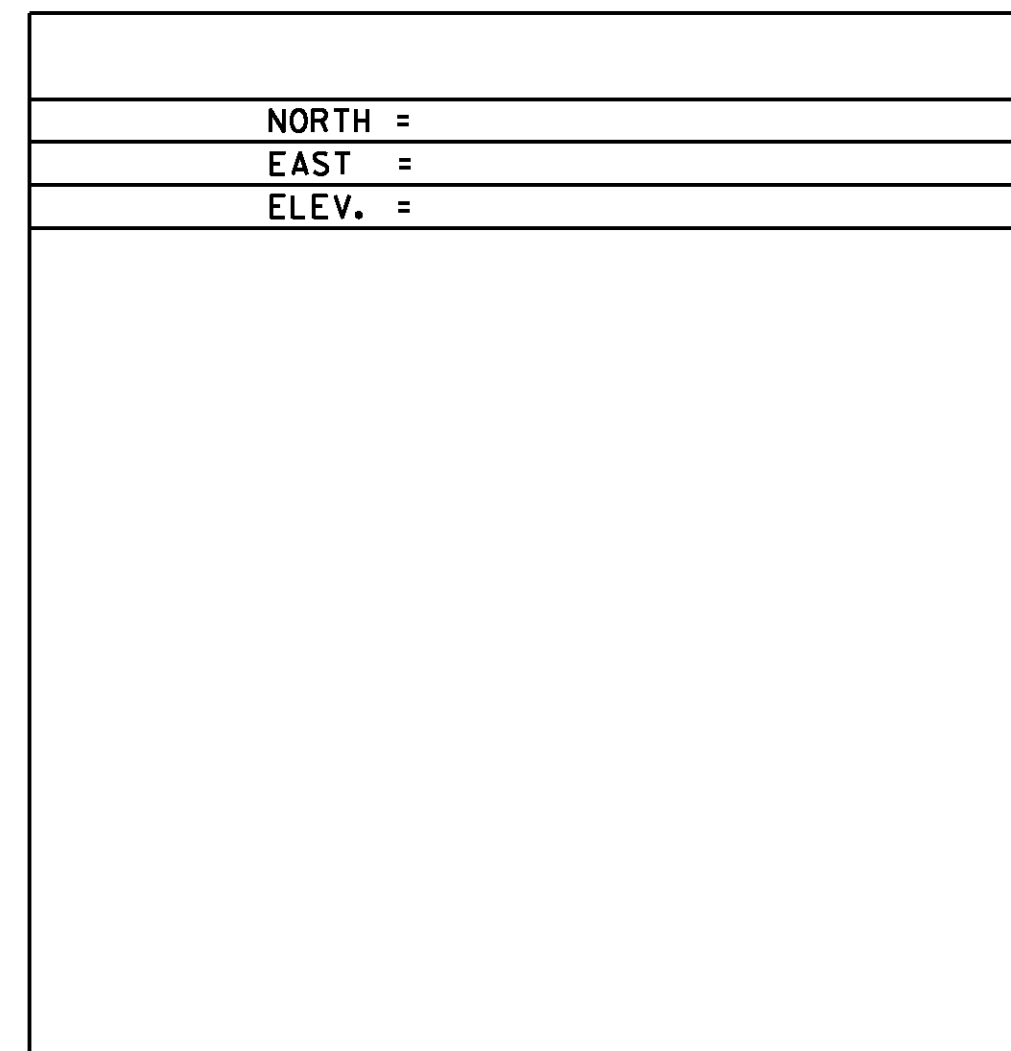
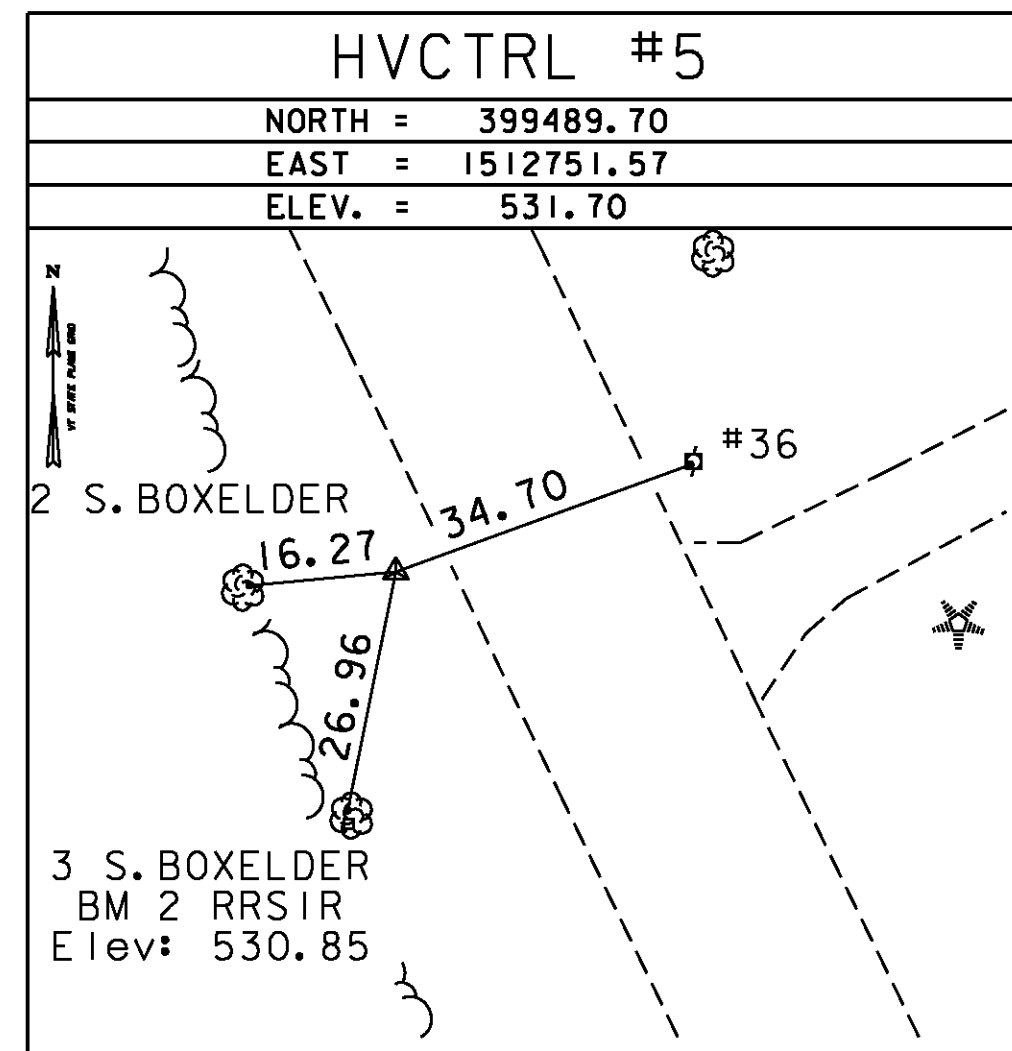
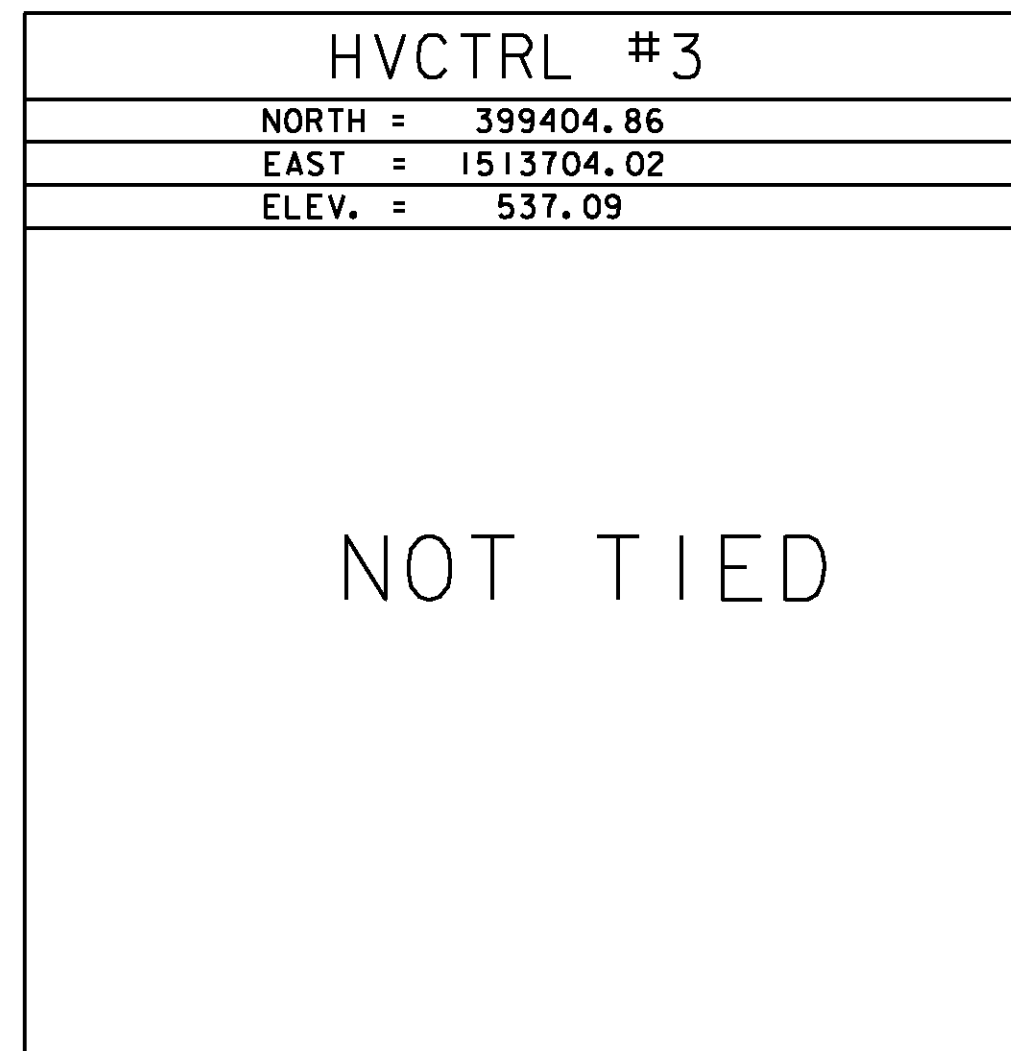
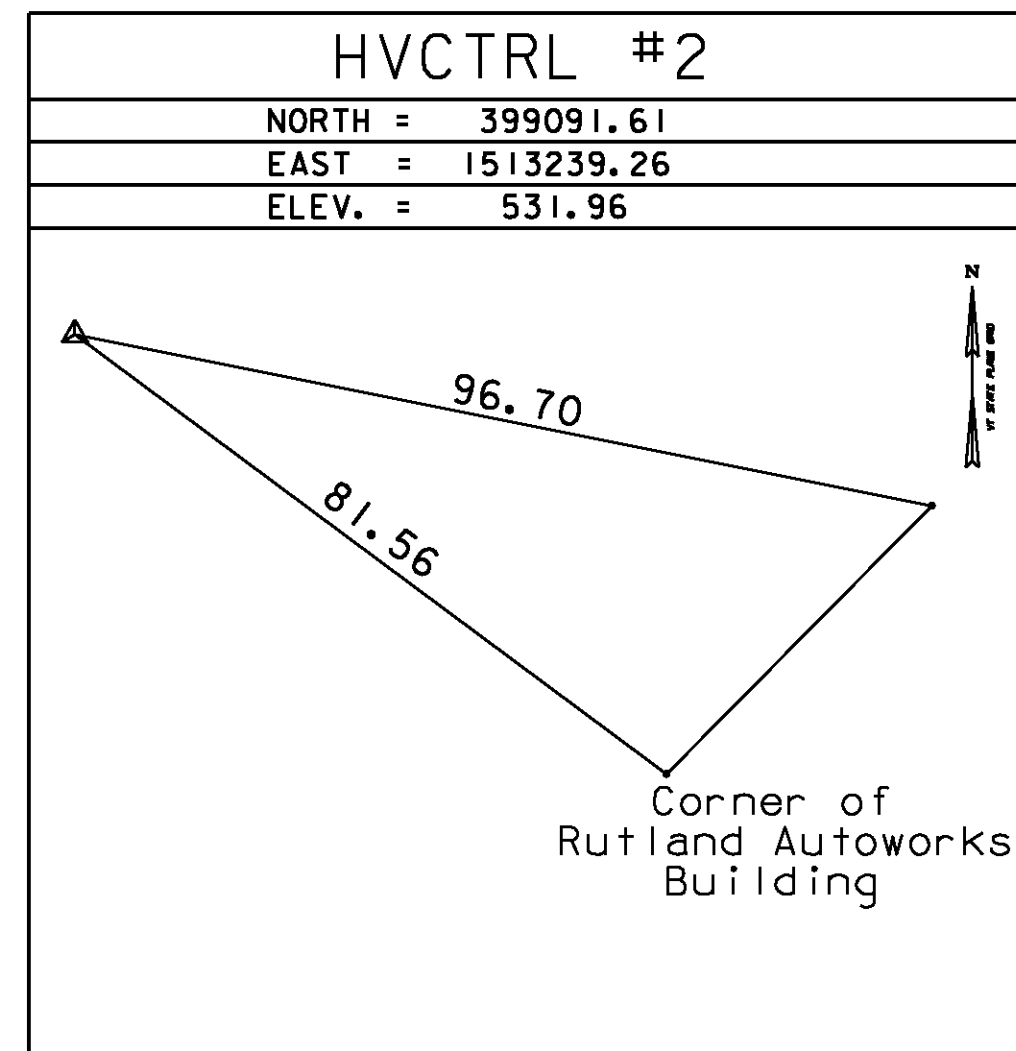
HVCTRL #4

RUT 12 RR PARK  
 NORTH = 399759.65  
 EAST = 1514480.29  
 ELEV. = 543.34

GENERAL LOCATION, RUTLAND, VT. TO REACH FROM THE INTERSECTION OF U.S.ROUTE 7 AND U.S.ROUTE 4 WEST, SOUTH OF RUTLAND, GO NORTH ALONG U.S.ROUTE 7 FOR 1.25 MI(2.01KM) TO THE INTERSECTION OF PARK STREET LEFT, TURN LEFT AND GO WEST ALONG PARK STREET FOR 0.5 MI(0.8 KM) TO THE INTERSECTION OF FOREST STREET RIGHT AND A PAVED DRIVE LEFT AND THE MARK ON THE LEFT. IT IS IN A GRASS STRIP BETWEEN THE PAVED DRIVE AND A GRAVEL DRIVE. THE MARK IS SET 10 CM ABOVE GROUND SURFACE IN THE TOP OF A 60 CM DIAMETER CONCRETE MONUMENT. IT IS 7.4 M (24.3 FT) SOUTH OF THE CENTERLINE OF PARK STREET, 9.9 M (32.5 FT) EAST OF THE CENTERLINE OF THE PAVED DRIVE, 2.5 M (8.2 FT) WEST OF THE CENTERLINE OF THE GRAVEL DRIVE, 13.3 M (43.6 FT) NORTHWEST OF THE NORTHWEST FOUNDATION CORNER OF HOUSE NO.121, AND 12.9 M (42.3 FT) WEST NORTHWEST OF THE NORTHWEST CORNER OF THE PORCH ON HOUSE NO.121.

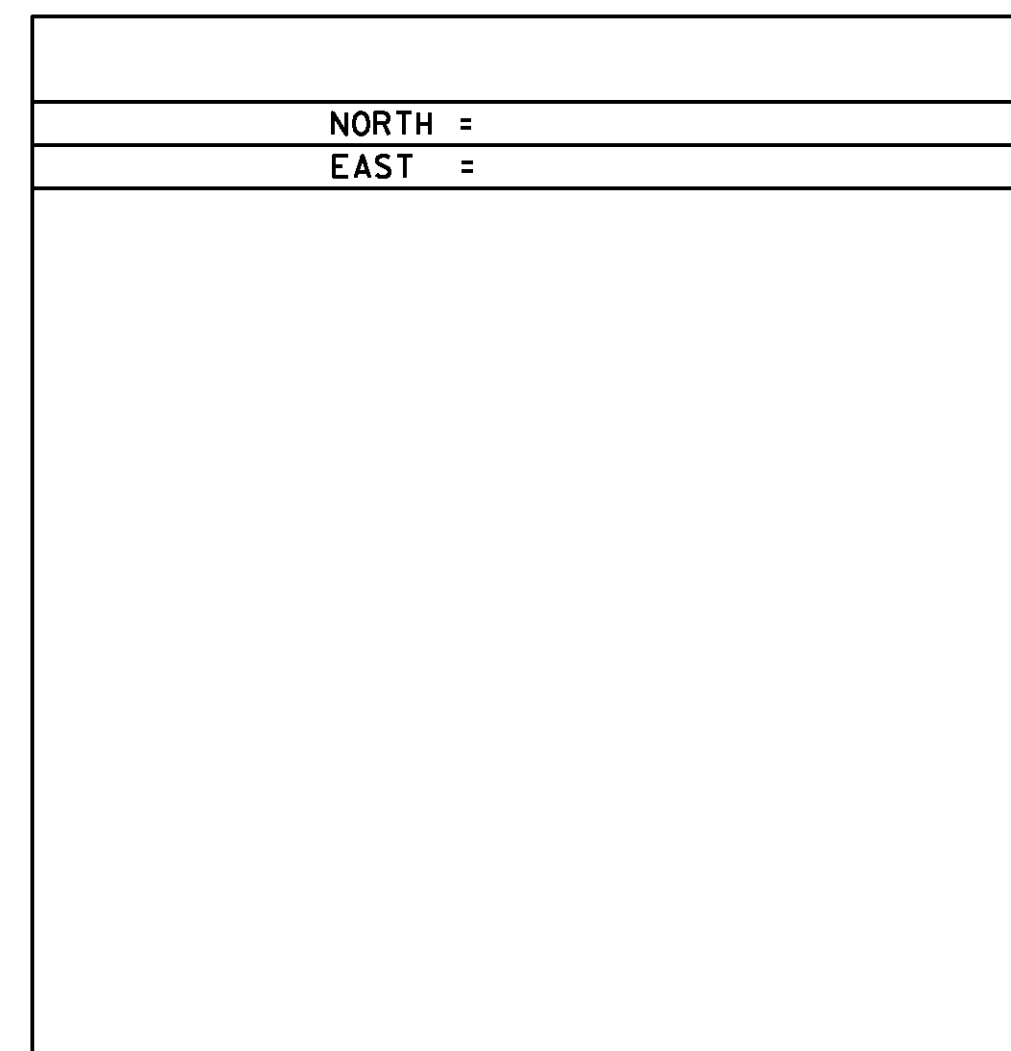
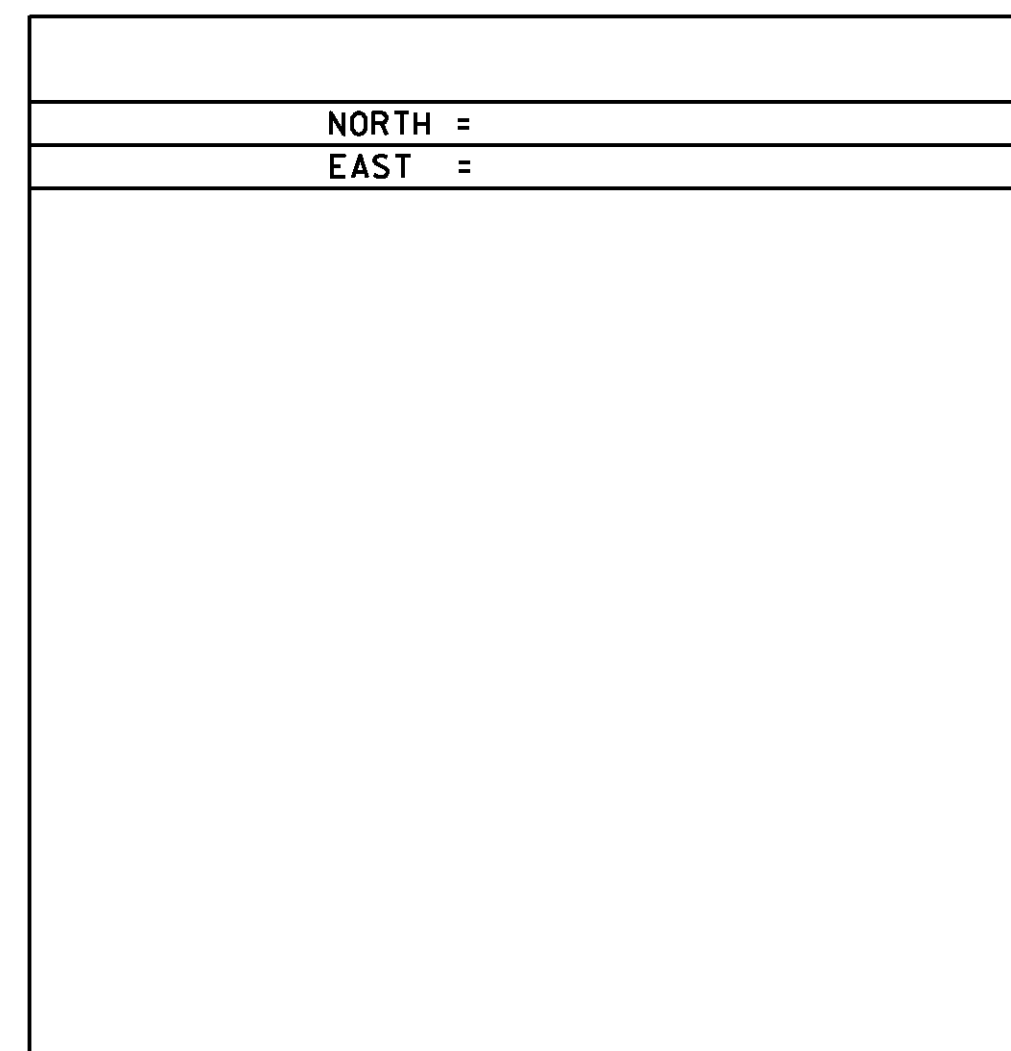
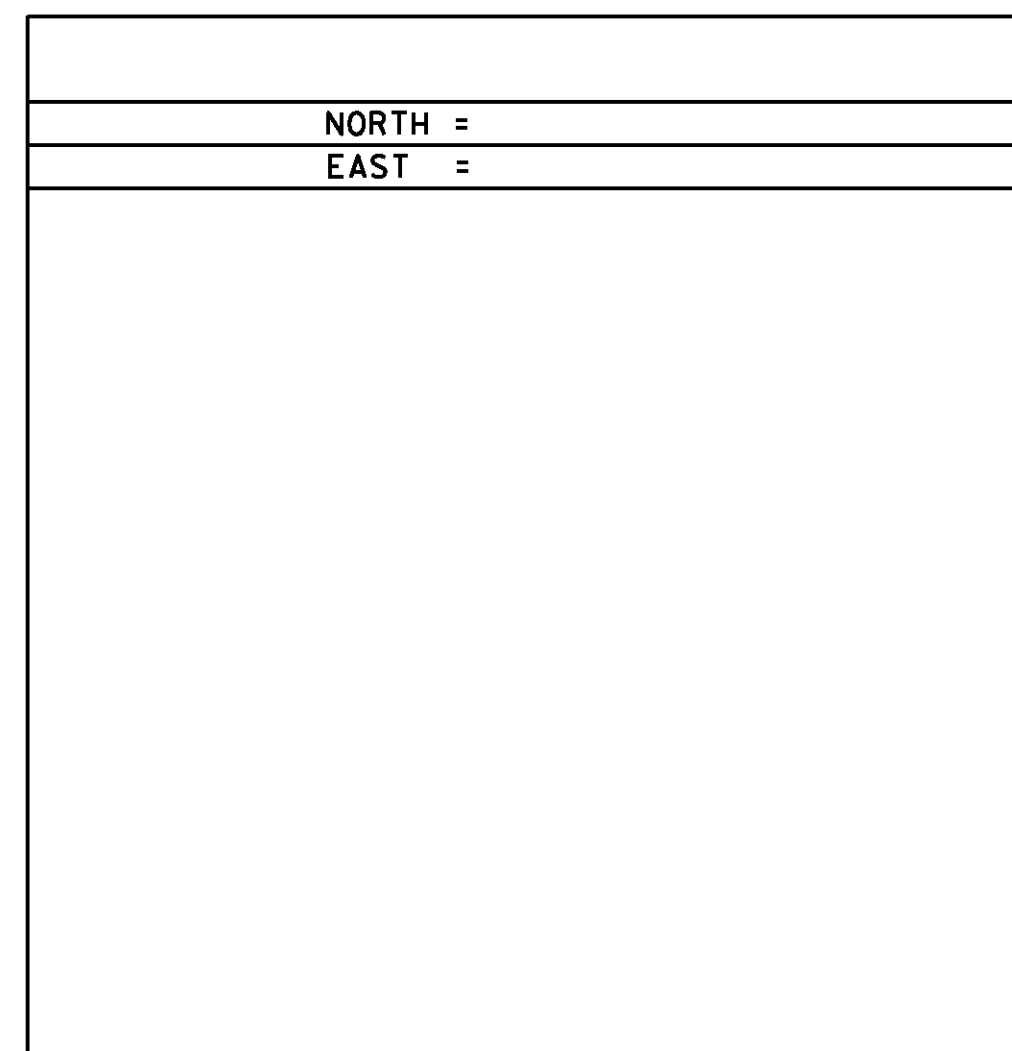
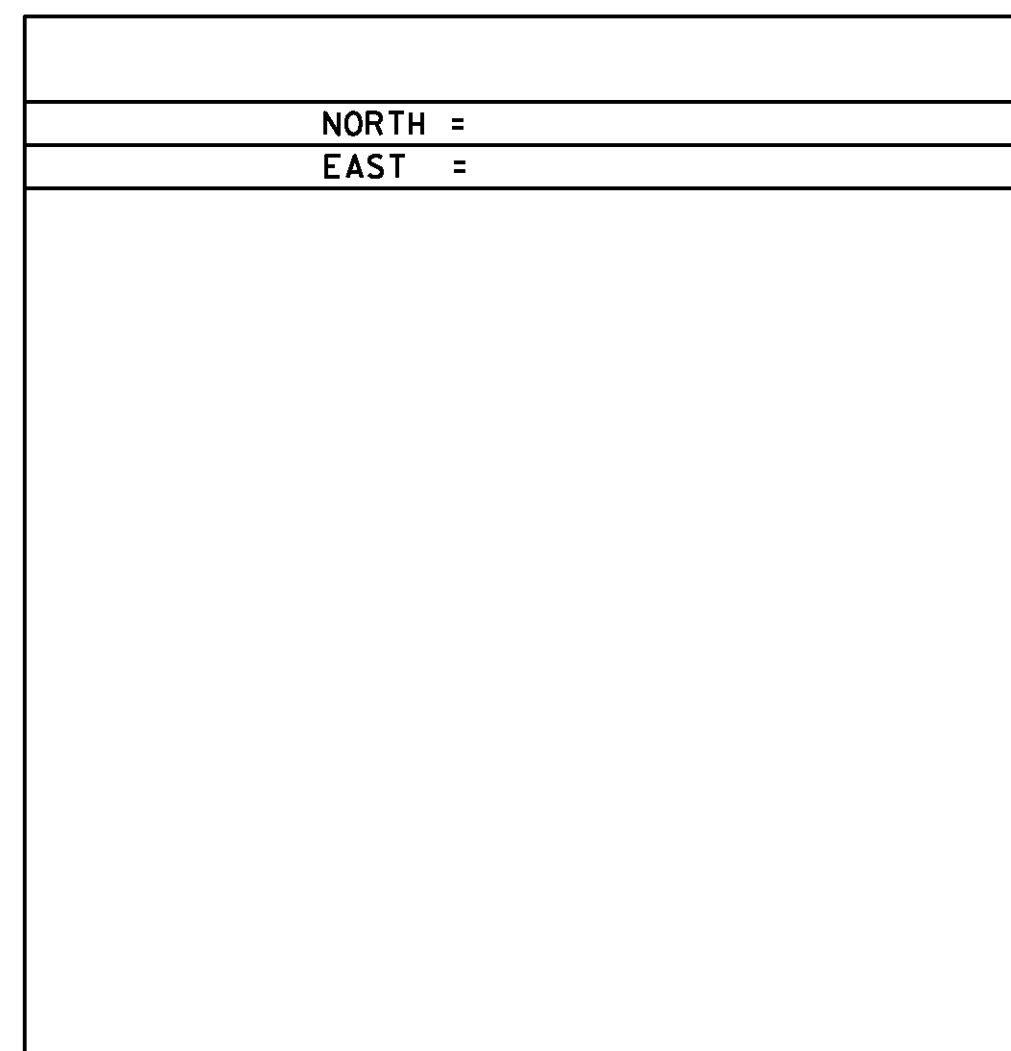
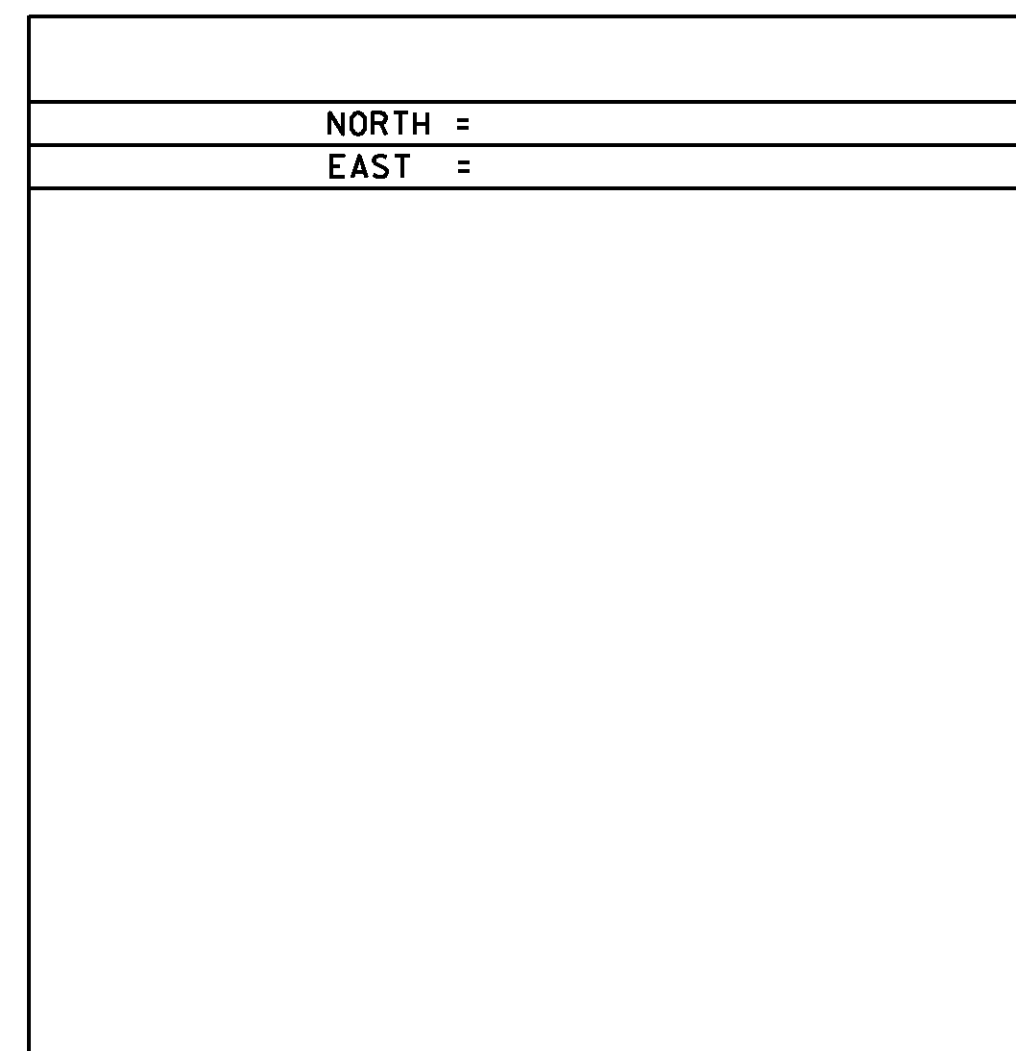
GENERAL LOCATION, RUTLAND, VT. TO REACH FROM THE INTERSECTION OF U.S.ROUTE 7 AND U.S.ROUTE 4 WEST, SOUTH OF RUTLAND, GO NORTH ALONG U.S.ROUTE 7 FOR 1.25 MI(2.01KM) TO THE INTERSECTION OF PARK STREET LEFT, TURN LEFT AND GO WEST ALONG PARK STREET FOR 0.3 MI(0.5 KM) TO THE INTERSECTION OF THE VERMONT RAILWAY TRACKS AND THE MARK ON THE RIGHT IN THE NORTHEAST QUADRANT OF THE INTERSECTION. THE MARK IS SET FLUSH WITH GROUND SURFACE IN THE TOP OF A 70 CM DIAMETER CONCRETE MONUMENT. IT IS 13.7 M (44.9 FT) NORTH OF THE CENTERLINE OF PARK STREET, 2.8 M (9.2 FT) EAST OF THE EAST RAIL OF THE MOST EASTERLY SET OF TRACKS OF THE RAILWAY, 3.0 M (9.8 FT) WEST OF THE WEST EDGE OF A GRAVEL PARKING LOT, 16.2 M (53.1FT) SOUTH OF THE SOUTHWEST CORNER OF THE VERMONT RAILWAY OFFICE BUILDING, AND 7.8 M (25.6 FT) NORTH OF A RAILROAD CROSSING GATE AND SIGNAL POLE.

TRAVERSE TIES



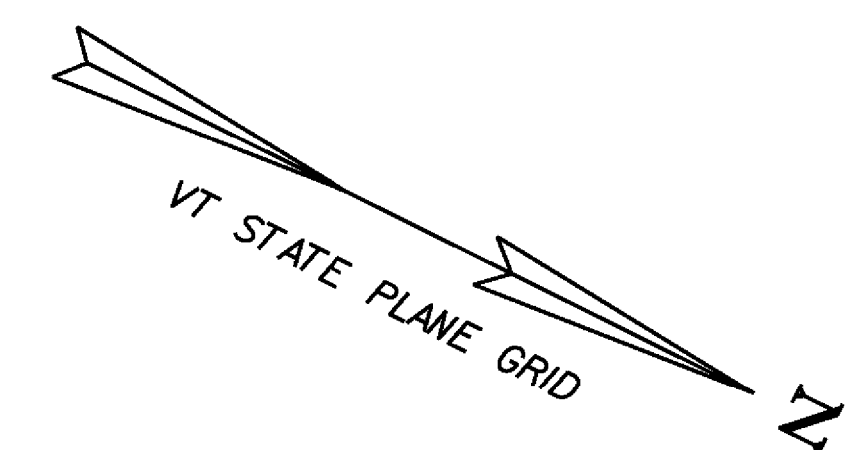
\* Main Traverse Completed 04/23/98 by L.Orvis P.C. & R.Bullock

ALIGNMENT TIES



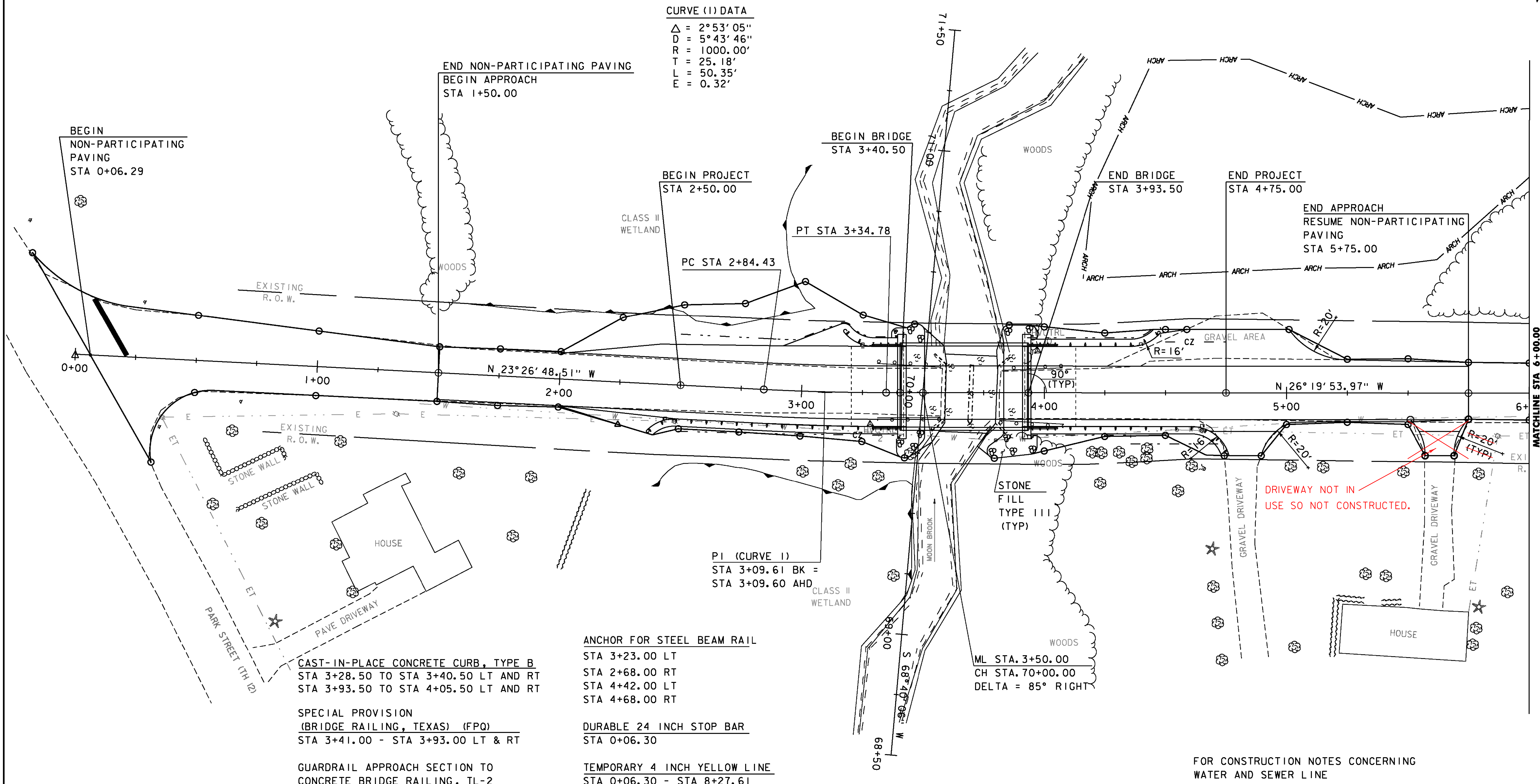
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (96)
ADJUSTMENT	Compass

PROJECT NAME: RUTLAND CITY	
PROJECT NUMBER: BRF 3000(18)	
FILE NAME: s96j2441e.dgn	PLOT DATE: 28-FEB-2014
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: SURVEY	CHECKED BY: M. E-M
TIE	SHEET 10 OF 44



**CURVE (1) DATA**

Δ = 2° 53' 05"  
 D = 5° 43' 46"  
 R = 1000.00'  
 T = 25.18'  
 L = 50.35'  
 E = 0.32'



**BEGIN  
 NON-PARTICIPATING  
 PAVING  
 STA 0+06.29**

**END NON-PARTICIPATING PAVING  
 BEGIN APPROACH  
 STA 1+50.00**

**BEGIN PROJECT  
 STA 2+50.00**

**BEGIN BRIDGE  
 STA 3+40.50**

**END BRIDGE  
 STA 3+93.50**

**END PROJECT  
 STA 4+75.00**

**END APPROACH  
 RESUME NON-PARTICIPATING  
 PAVING  
 STA 5+75.00**

EXISTING  
 R.O.W.

EXISTING  
 R.O.W.

PARK STREET (TH ID)

**CAST-IN-PLACE CONCRETE CURB, TYPE B**  
 STA 3+28.50 TO STA 3+40.50 LT AND RT  
 STA 3+93.50 TO STA 4+05.50 LT AND RT

**SPECIAL PROVISION  
 (BRIDGE RAILING, TEXAS) (FPQ)**  
 STA 3+41.00 - STA 3+93.00 LT & RT

**GUARDRAIL APPROACH SECTION TO  
 CONCRETE BRIDGE RAILING, TL-2**  
 STA 3+28.50 - STA 3+41.00 LT & RT  
 STA 3+93.00 - STA 4+05.50 LT & RT

**HD STEEL BEAM GUARDRAIL, GALVANIZED**  
 STA 3+18.00 - STA 3+29.50 LT  
 STA 3+36.00 - STA 3+29.50 RT  
 STA 4+04.50 - STA 4+48.25 LT  
 STA 4+04.50 - STA 4+73.25 RT

**ANCHOR FOR STEEL BEAM RAIL**  
 STA 3+23.00 LT  
 STA 2+68.00 RT  
 STA 4+42.00 LT  
 STA 4+68.00 RT

**DURABLE 24 INCH STOP BAR**  
 STA 0+06.30

**TEMPORARY 4 INCH YELLOW LINE**  
 STA 0+06.30 - STA 8+27.61

**4 INCH YELLOW LINE**  
 STA 0+06.30 - STA 8+27.61

**CONSTRUCT DRIVES W/ PAVED APRON**  
 STA 4+39.40 - STA 5+20.25 LT (15'-0" APRON)  
 STA 4+56.10 - STA 5+07.60 RT (5'-0" APRON)  
~~STA 5+50.75 - STA 5+75.00 RT (5'-0" APRON)~~

CLASS II  
 WETLAND

STONE  
 FILL  
 TYPE III  
 (TYP)

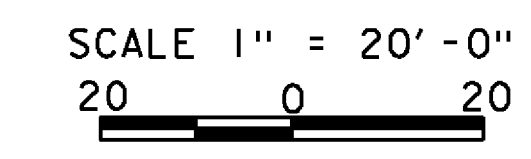
ML STA. 3+50.00  
 CH STA. 70+00.00  
 DELTA = 85° RIGHT

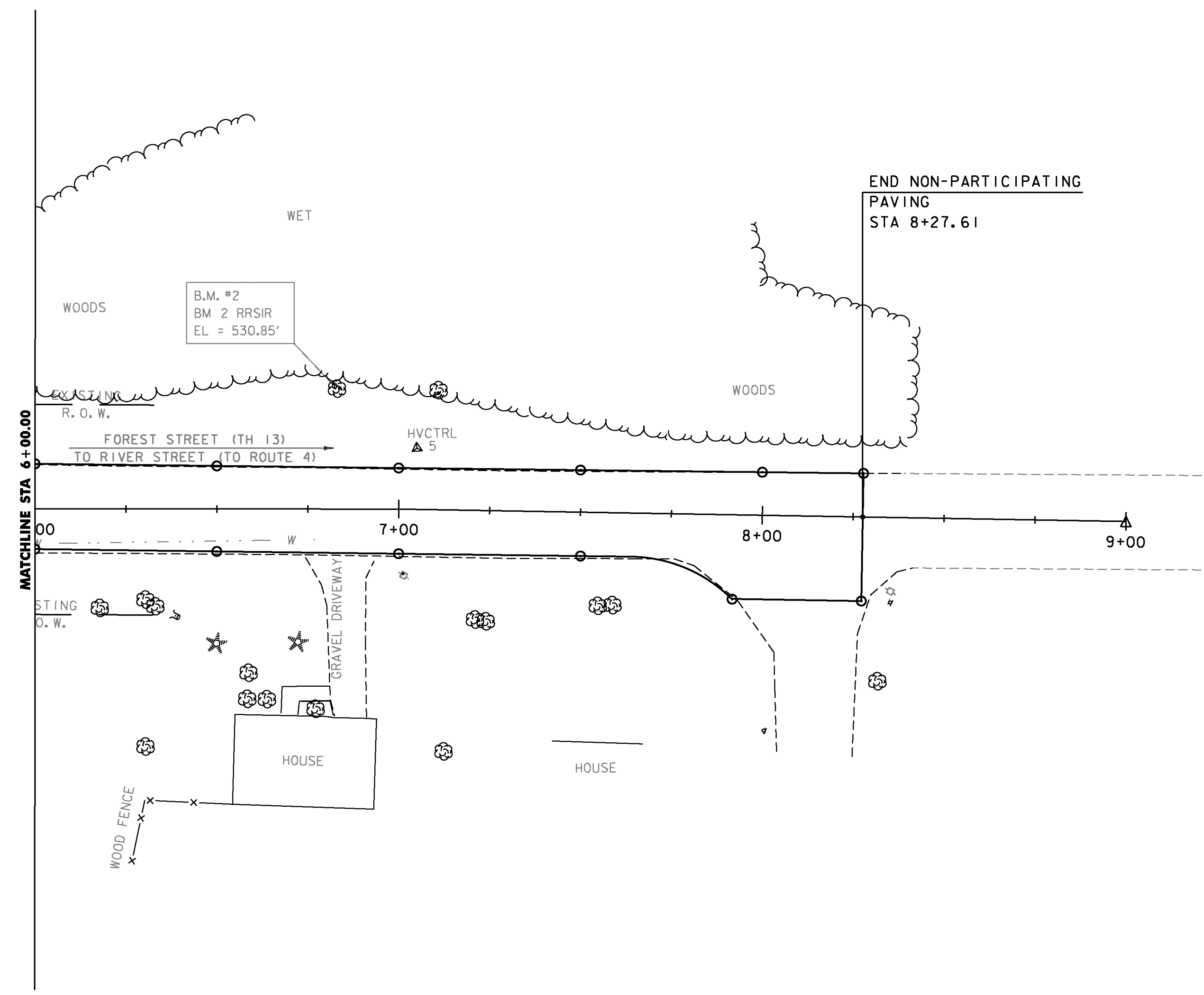
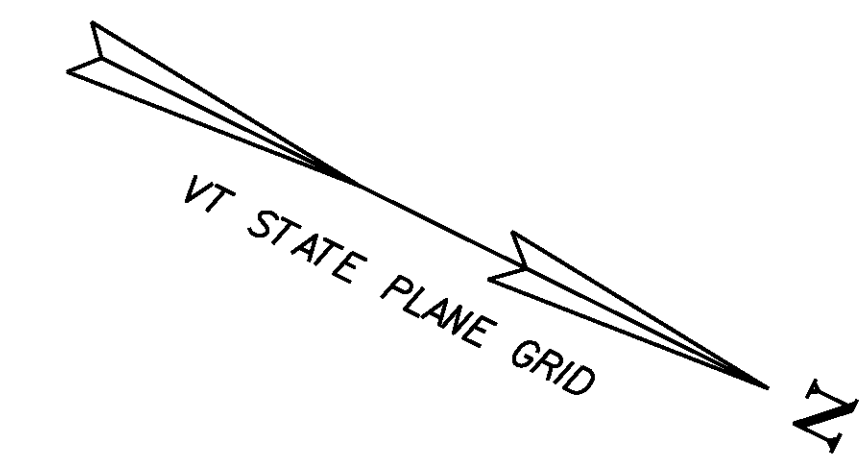
DRIVEWAY NOT IN  
 USE SO NOT CONSTRUCTED.

EXISTING BRIDGE DATA  
 CONCRETE SLAB DECK  
 LENGTH = 20'-0"  
 WIDTH = 23'-0" CURB TO CURB  
 BUILT IN 1900

FOR CONSTRUCTION NOTES CONCERNING  
 WATER AND SEWER LINE  
 RELOCATIONS SEE WATER/SEWER LAYOUT I

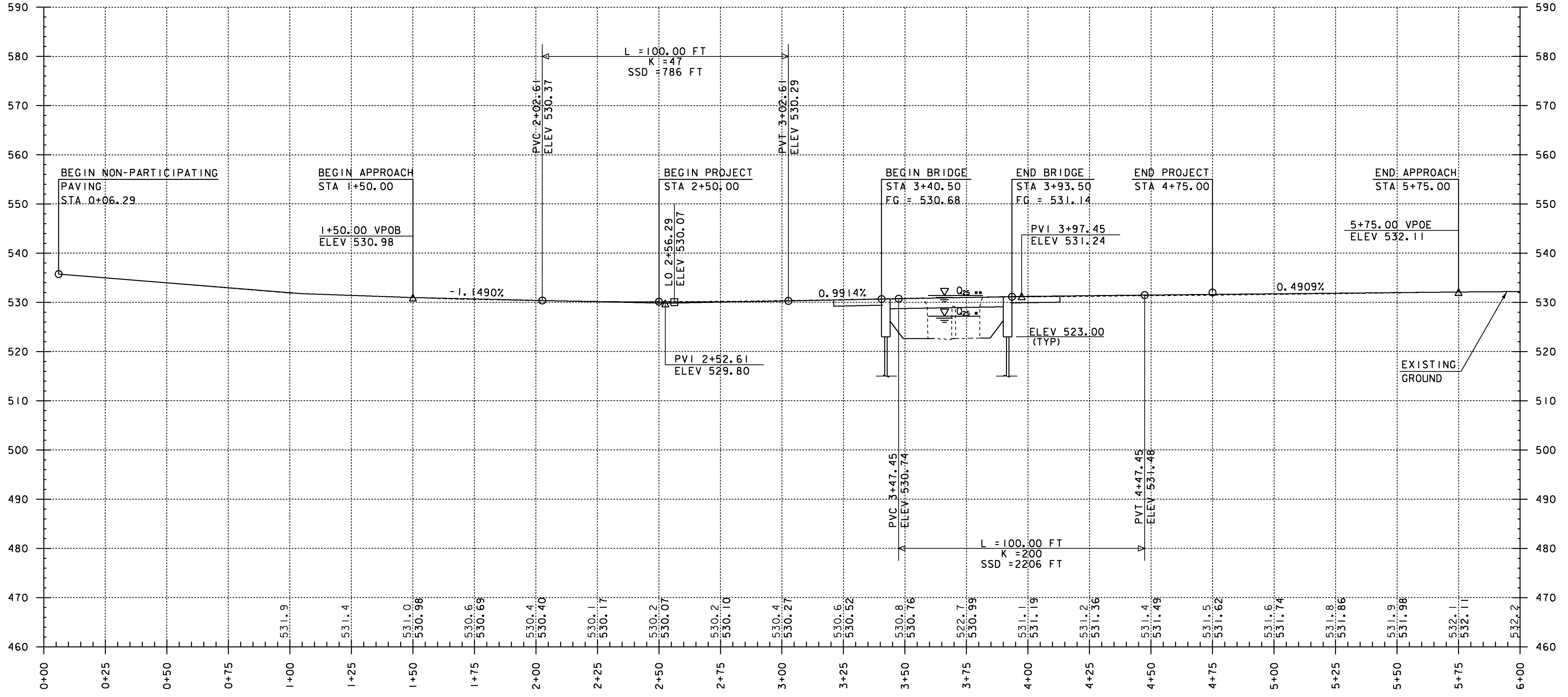
PROJECT NAME:	RUTLAND CITY	PLOT DATE:	28-FEB-2014
PROJECT NUMBER:	BRF 3000(I8)	DRAWN BY:	R. PELLETT
FILE NAME:	s96J244bdr.dgn	CHECKED BY:	M. E-M
DESIGNED BY:	M. EVANS-MONGEON	LAYOUT I	SHEET II OF 44





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

PROJECT NAME: RUTLAND CITY	PLOT DATE: 28-FEB-2014
PROJECT NUMBER: BRF 3000(18)	DRAWN BY: R. PELLETT
FILE NAME: s96j244bdr.dgn	CHECKED BY: M. E-M
DESIGNED BY: M. EVANS-MONGEON	SHEET 12 OF 44
LAYOUT 2	



**PROFILE**

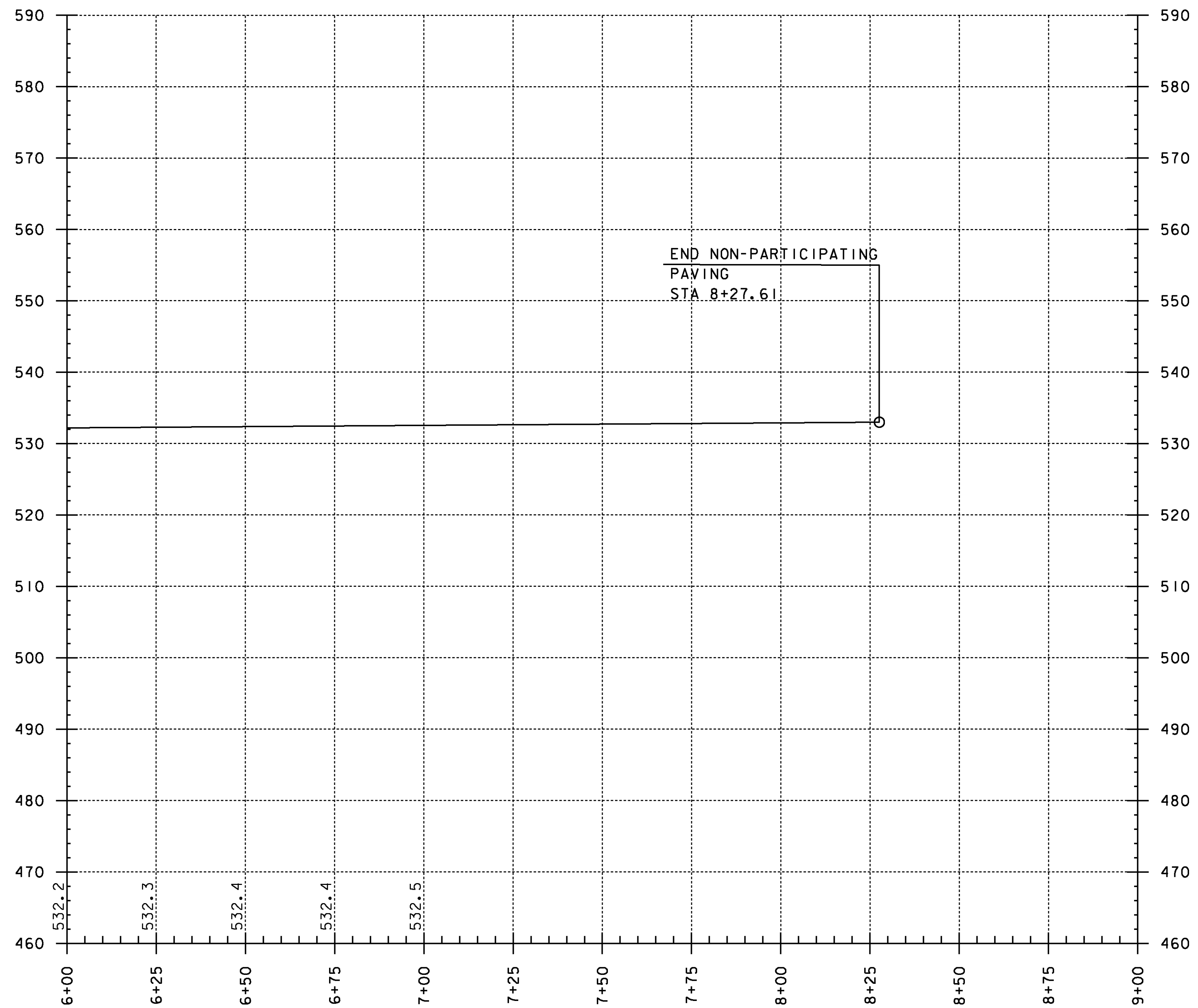
HORIZONTAL SCALE: 1" = 20'-0"  
 VERTICAL SCALE: 1" = 10'-0"

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

THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISH GRADES ALONG THE PROPOSED ALIGNMENT.

Q<sub>25</sub> \*\* = 531.4' WITH OTTER CREEK TAILWATER  
 Q<sub>25</sub> \* = 527.2' WITHOUT OTTER CREEK TAILWATER

PROJECT NAME:	RUTLAND CITY
PROJECT NUMBER:	BRF 3000(18)
FILE NAME:	s96j244profile.dgn
PROJECT LEADER:	C. CARLSON
DESIGNED BY:	M. EVANS-MONGEON
PROFILE 1	
PLOT DATE:	28-FEB-2014
DRAWN BY:	R. PELLET
CHECKED BY:	M. E-M
SHEET	13 OF 44



**PROFILE**

HORIZONTAL SCALE: 1" = 20'-0"  
 VERTICAL SCALE: 1" = 10'-0"

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

THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISH GRADES ALONG THE PROPOSED ALIGNMENT.

PROJECT NAME: RUTLAND CITY  
 PROJECT NUMBER: BR 3000(18)

FILE NAME: s96j244profile.dgn	PLOT DATE: 28-FEB-2014
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. E-M
PROFILE 2	SHEET 14 OF 44

**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**

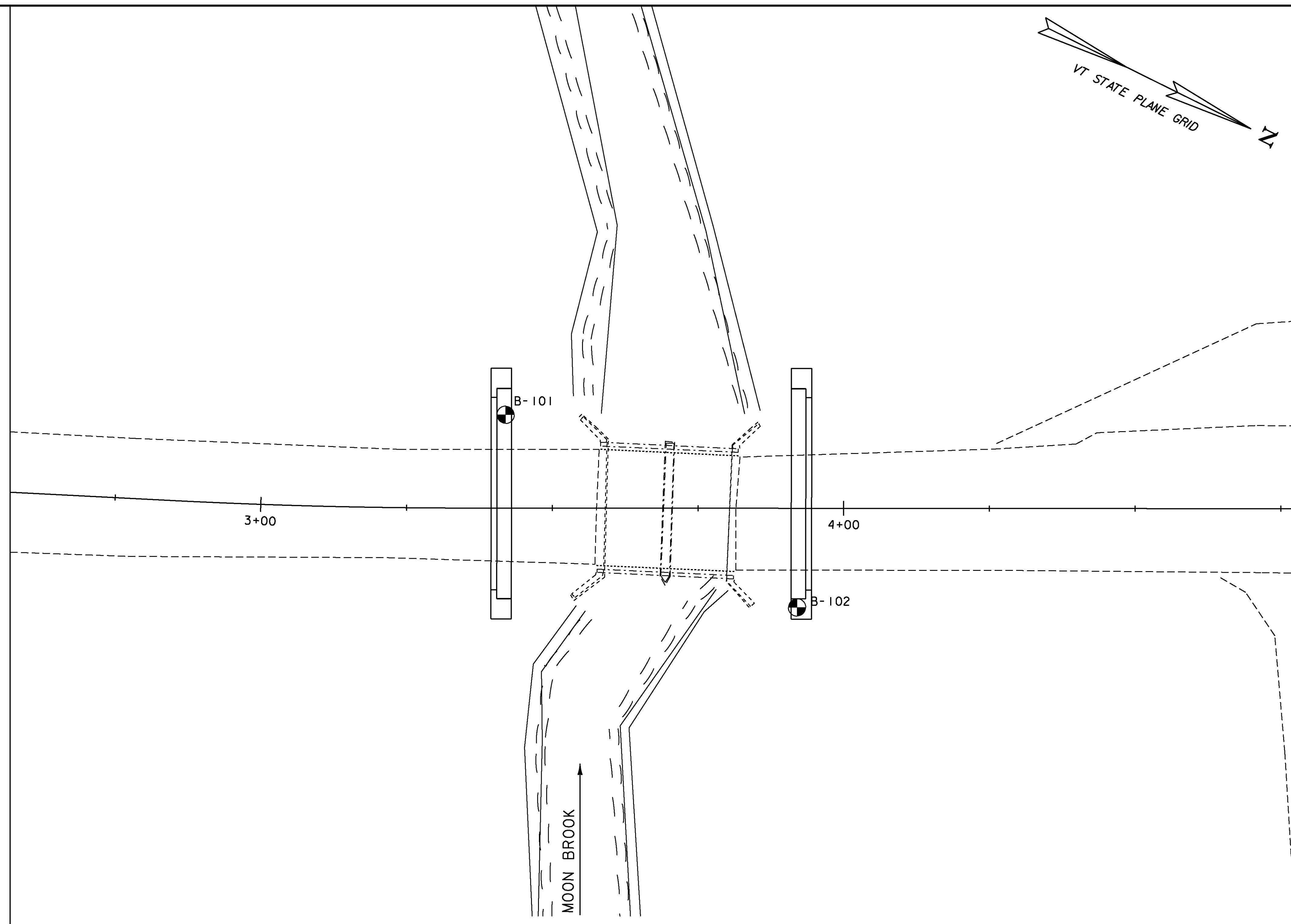
- ▼ Water Elevation
- ⊙ Standard Penetration Boring
- ⊕ Auger Boring
- ⊖ Rod Sounding
- S Sample
- N Standard Penetration Test  
Blow Count Per Foot For:  
2" O.D. Sampler  
1 1/2" I.D. Sampler  
Hammer Weight Of 140 Lbs.  
Hammer Fall Of 30"
- YS Field Vane Shear Test
- US Undisturbed Soil Sample
- 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 3/8"
- 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 Top of Ledge Or Boulder
- NR No Recovery
- Rec. Recovery
- %Rec. Percent Recovery
- ROD Rock Quality Designation
- CBR California Bearing Ratio
- < Less Than
- > Greater Than
- R Refusal (N > 100)
- VTSPG NAD83 - See Note 7

**COLOR**

blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gr	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 > 0.075" (#10 sieve).
- SAND** - Particles of rock < 0.075" (#10 sieve) and > 0.0025" (#200 sieve).
- SILT** - Soil < 0.0025" (#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.



SCALE 1" = 10' - 0"

**GENERAL NOTES**

- The subsurface explorations shown herein were made between 08/09/12 and 08/10/12 by the Agency.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- 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.
- Engineering judgment 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 judgment by the Contractor.
- 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.
- 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.
- Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

**BORING CHART**

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
B-101	3+42.0	16' LT	528.65	476.65
B-102	3+92.0	17' RT	529.71	482.71

PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BRF 3000(18)

FILE NAME: s96j244boring.dgn  
PROJECT LEADER: C. CARLSON  
DESIGNED BY: M. EVANS-MONGEON  
BORING LAYOUT

PLOT DATE: 28-FEB-2014  
DRAWN BY: R. PELLETT  
CHECKED BY: M. E-M  
SHEET 15 OF 44



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

BORING LOG

Boring No.: B-101  
Page No.: 1 of 1  
Pin No.: 96J244  
Checked By: CEE

Boring Crew: GARROW, SALISBURY  
Date Started: 8/09/12 Date Finished: 8/10/12  
VTSPG NAD83: N 399164.67 ft E 1512913.26 ft  
Station: 3+42 Offset: -16.00  
Ground Elevation: 528.65 ft

Casing Sampler  
Type: WB SS  
I.D.: 4 in 1.5 in  
Hammer Wt: N.A. 140 lb.  
Hammer Fall: N.A. 30 in.  
Hammer/Rod Type: Auto/AWJ  
Rig: CME 45C TRACK CE = 1.34

Groundwater Observations  
Date Depth Notes  
08/10/12 7.0 Seated in Bedrock.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. (ROD %)	Drill Rate (min/ft)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
0-0.8	A-1-b	SaGr, brn, Moist, Rec. = 0.8 ft, Roots & Leaves were within sample.				1-1-2-6 (3)	15.7	46.1	37.1	16.8		
0.8-1.0	A-4	GrSaSi, brn, Moist, Rec. = 1.0 ft, Some Asphalt Pavement was within sample.				6-6-3-4 (9)	17.3	27.6	35.1	37.3		
1.0-1.3	A-2-4	SiSa, brn, Wet, Rec. = 0.3 ft				2-2-1-2 (5)	25.5	2.2	75.5	22.3		
1.3-1.8	A-2-4	SiGrSa, brn, Wet, Rec. = 0.8 ft				2-1-1-1 (2)	31.9	23.3	54.7	22.0		
1.8-2.2	A-2-4	Sa, brn, Wet, Rec. = 0.4 ft, Sticks & Wood were within sample.				1-1-1-1 (2)	40.1	0.8	81.4	17.8		
2.2-2.6	A-2-4	SiSa, brn, Wet, Rec. = 0.4 ft, Pieces of Wood were within sample.				1-1-1-1 (2)	53.0	10.6	55.4	34.0		
2.6-3.0	A-4	CISi, gry, Wet, Rec. = 2.0 ft				1-1-WH (1)	40.8		0.2	99.8	36	8
3.0-4.0		Visual Description: CISi, gry, Wet, Rec. = 2.0 ft, Material similar to 12-14 ft.				WR-WR (1)	41.4					
4.0-5.0	A-6	SICl, gry, Wet, Rec. = 2.0 ft				WH-WH (WH)	40.6	0.2	99.8	36	11	
5.0-6.0		Visual Description: SICl, gry, Wet, Rec. = 2.0 ft, Material similar to 16-18 ft.				(WH)	40.5					
6.0-7.0		Visual Description: SICl, gry, Wet, Rec. = 2.0 ft, Material similar to 16-18 ft.				(WH)	40.0					
7.0-8.0		Visual Description: SICl, gry, Wet, Rec. = 2.0 ft, Material similar to 24-26 ft.				(WH)	43.9					
8.0-12.0	A-6	SICl, gry, Wet, Rec. = 2.0 ft				(WH)	46.5	0.3	99.7	40	12	
12.0-16.0	A-4	Si, gry, Wet, Rec. = 1.2 ft				WH-WH-1-1 (1)	34.9	7.4	92.6			
16.0-20.0	A-6	SICl, gry, Wet, Rec. = 2.0 ft				WR-WR-WH-WH (WH)	47.1	1.9	98.1	40	14	
20.0-24.0	A-4	Si, gry, MTW, Rec. = 0.5 ft				1-2-2-2 (4)	39.4	1.0	99.0			
24.0-28.0	A-4	Si, gry, Wet, Rec. = 1.4 ft, Lab Note: Broken Rock was within sample.				2-3-2-2 (5)	30.9	7.4	1.7	90.9		
28.0-30.0		Field Note: BXDC, Cobbles, Fractured Rock										
30.0-32.0		Field Note: Incompetent Fractured Rock										
32.0-52.0		52.0 ft - 57.0 ft, Light gray, Dolomite, with closely spaced jointing. Moderately hard, Unweathered, Poor rock, BXGDC, RMR = 38	1 (NA)	70 (0)	3							
52.0-57.0		57.0 ft - 58.0 ft, BXGDC, No Recovery. Drillers reported as "Seam".	2 (NA)	0 (0)	3							
57.0-63.0		58.0 ft - 63.0 ft, Light gray, Dolomite, with closely spaced jointing. Moderately hard, Unweathered, Poor rock, BXGDC, RMR = 38	3 (NA)	58 (0)	3							
63.0-66.0					6							
66.0-68.0					6							
68.0-70.0					8							

BOTTOM CAP  
ELEV. 523.00

EST. PILE TIP  
ELEV. 472.00

Notes:  
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.  
2. N Values have not been corrected for hammer energy. CE 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.



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

BORING LOG

Boring No.: B-102  
Page No.: 1 of 1  
Pin No.: 96J244  
Checked By: CEE

Boring Crew: GARROW, SALISBURY  
Date Started: 8/08/12 Date Finished: 8/09/12  
VTSPG NAD83: N 399225.08 ft E 1512923.07 ft  
Station: 3+92 Offset: 17.00  
Ground Elevation: 529.71 ft

Casing Sampler  
Type: WB SS  
I.D.: 4 in 1.5 in  
Hammer Wt: N.A. 140 lb.  
Hammer Fall: N.A. 30 in.  
Hammer/Rod Type: Auto/AWJ  
Rig: CME 45C TRACK CE = 1.34

Groundwater Observations  
Date Depth Notes  
08/09/12 6.1 Seated in Bedrock.

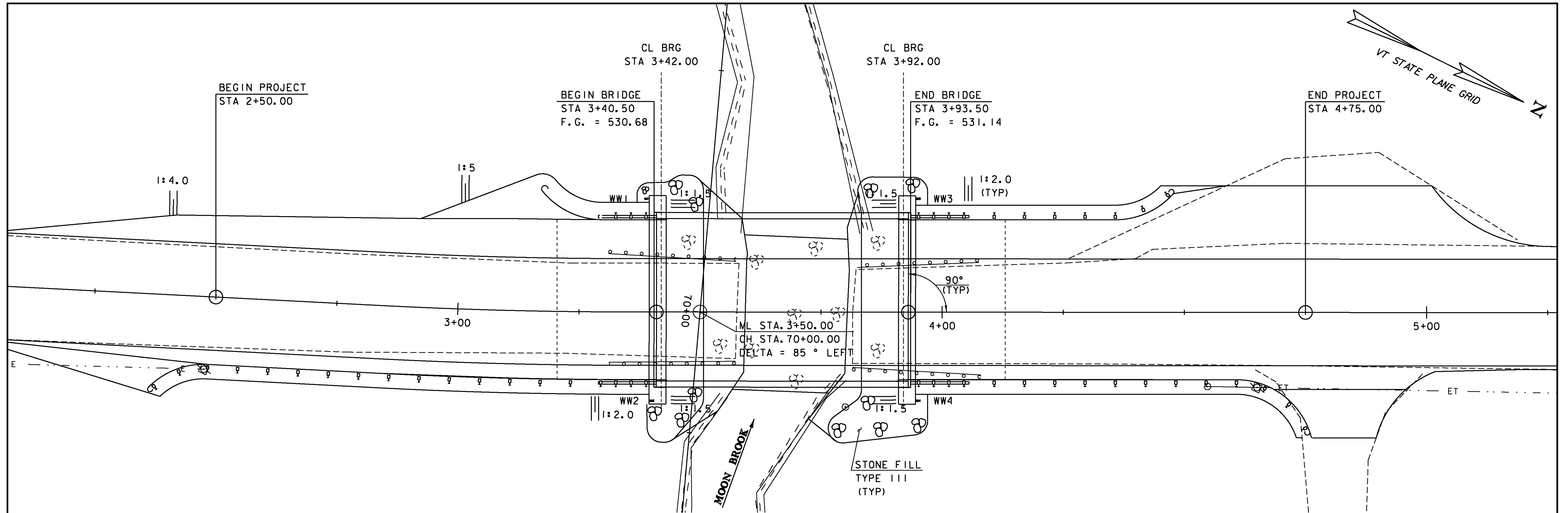
Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. (ROD %)	Drill Rate (min/ft)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
0-0.8	A-4	SaSi, brn, Moist, Rec. = 0.8 ft, Roots & Leaves were within sample.				1-3-2-3 (5)	35.3	13.6	36.7	49.7		
0.8-1.0	A-4	SaSi, brn, Moist, Rec. = 0.2 ft				2-1-1-1 (2)	31.2	12.2	37.4	50.4		
1.0-1.3		Visual Description: CISi, gry-brn, Moist, Rec. = 1.3 ft, Material similar to 8-10 ft.				2-2-2-1 (3)	36.3					
1.3-1.8		Visual Description: CISi, gry, Moist, Rec. = 1.3 ft, Material similar to 8-10 ft.				WH-WH-2-1 (2)	38.0					
1.8-2.2	A-4	CISi, gry, MTW, Rec. = 2.0 ft				WH-WH-2-1 (2)	40.4	0.4	99.6	34	7	
2.2-2.6		Visual Description: SICl, gry, Wet, Rec. = 2.0 ft, Material similar to 12-14 ft.				(WR)	39.2					
2.6-3.0	A-6	SICl, gry, Wet, Rec. = 2.0 ft				(WH)	39.3	0.3	99.7	36	11	
3.0-4.0		Visual Description: SICl, gry, Wet, Rec. = 1.8 ft, Material similar to 12-14 ft.				(WH)	40.7					
4.0-5.0		Visual Description: SICl, gry, Wet, Rec. = 2.0 ft, Material similar to 18-20 ft.				(WR)	38.8					
5.0-6.0	A-6	SICl, gry, Wet, Rec. = 2.0 ft				(WR)	39.2	0.3	99.7	35	11	
6.0-7.0		Visual Description: SICl, gry, Wet, Rec. = 2.0 ft, Material similar to 18-20 ft.				(WH)	38.0					
7.0-8.0	A-6	SICl, gry, Wet, Rec. = 2.0 ft				(WR)	46.6	0.2	99.8	40	14	
8.0-12.0		Visual Description: SICl, gry, Wet, Rec. = 2.0 ft, Material similar to 22-24 ft.				(WR)	46.6					
12.0-16.0	A-4	Si, gry, Wet, Rec. = 2.0 ft				(WR)	39.1	1.5	98.5			
16.0-20.0	A-4	Si, gry, Wet, Rec. = 2.0 ft				WH-WH-2-2 (2)	37.3	0.6	99.4			
20.0-24.0	A-4	Si, gry, Wet, Rec. = 2.0 ft				1-1-1-1 (2)	40.4	1.1	98.9			
24.0-28.0	A-4	SiGr, gry, Wet, Rec. = 0.8 ft, Broken Rock was within sample.				1-13-15-18 (28)	15.6	44.4	14.8	40.8		
28.0-30.0		Field Note: BXDC, Incompetent Fractured Rock										
30.0-47.0		47.0 ft - 52.0 ft, Light gray, Dolomite, with closely spaced jointing. Moderately hard, Unweathered, Poor rock, BXMDC, RMR = 38	1 (NA)	100 (20)	2							
47.0-52.0		52.0 ft - 57.0 ft, Light gray, Dolomite, with closely spaced jointing. Moderately hard, Unweathered, Poor rock, BXGDC, RMR = 38	2 (NA)	42 (0)	4							
52.0-57.0					4							
57.0-58.0					7							
58.0-60.0					6							
60.0-62.0					6							
62.0-64.0					6							
64.0-66.0					6							
66.0-68.0					6							
68.0-70.0					6							

BOTTOM CAP  
ELEV. = 523.00

EST. PILE TIP  
ELEV. 472.00

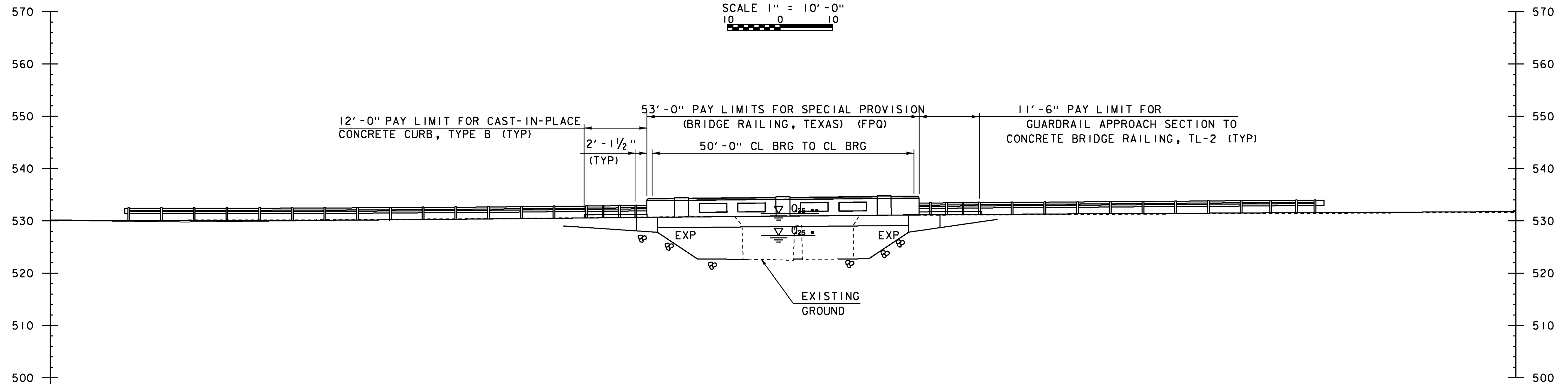
Notes:  
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.  
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.  
3. Water level readings have been made at times and under conditions stated. Fluctuations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

PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BRF 3000(18)  
FILE NAME: s96J244borlog.dgn  
PROJECT LEADER: C. CARLSON  
DESIGNED BY: MATERIALS & RESEARCH  
BORING LOGS  
PLOT DATE: 28-FEB-2014  
DRAWN BY: R. PELLETT  
CHECKED BY: M. E-M  
SHEET 16 OF 44



PLAN

SCALE 1" = 10'-0"  
 10 0 10



ELEVATION

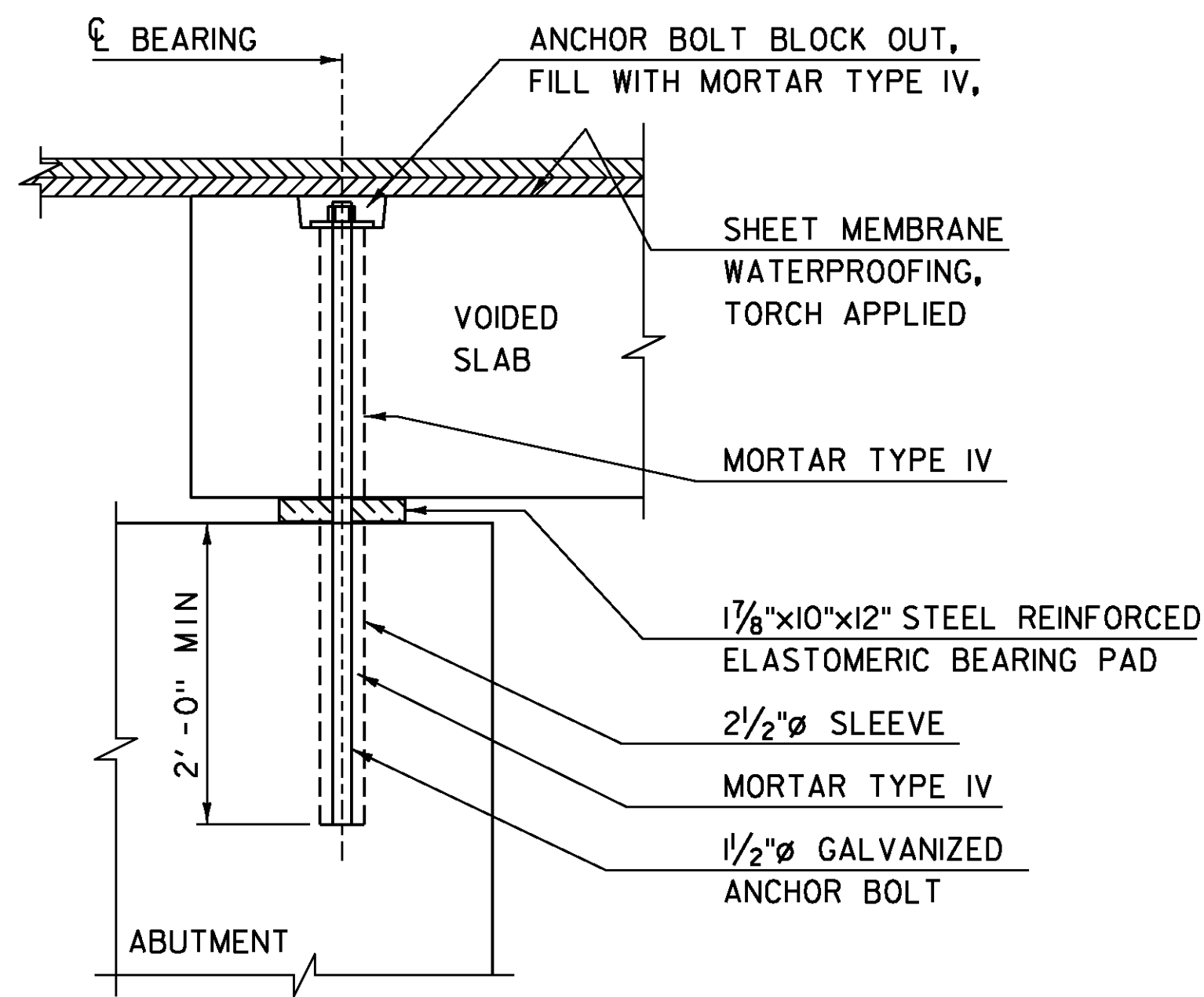
SCALE 1" = 10'-0"  
 10 0 10

Q<sub>25</sub> .. = 531.4' WITH OTTER CREEK TAILWATER  
 Q<sub>25</sub> . = 527.2' WITHOUT OTTER CREEK TAILWATER

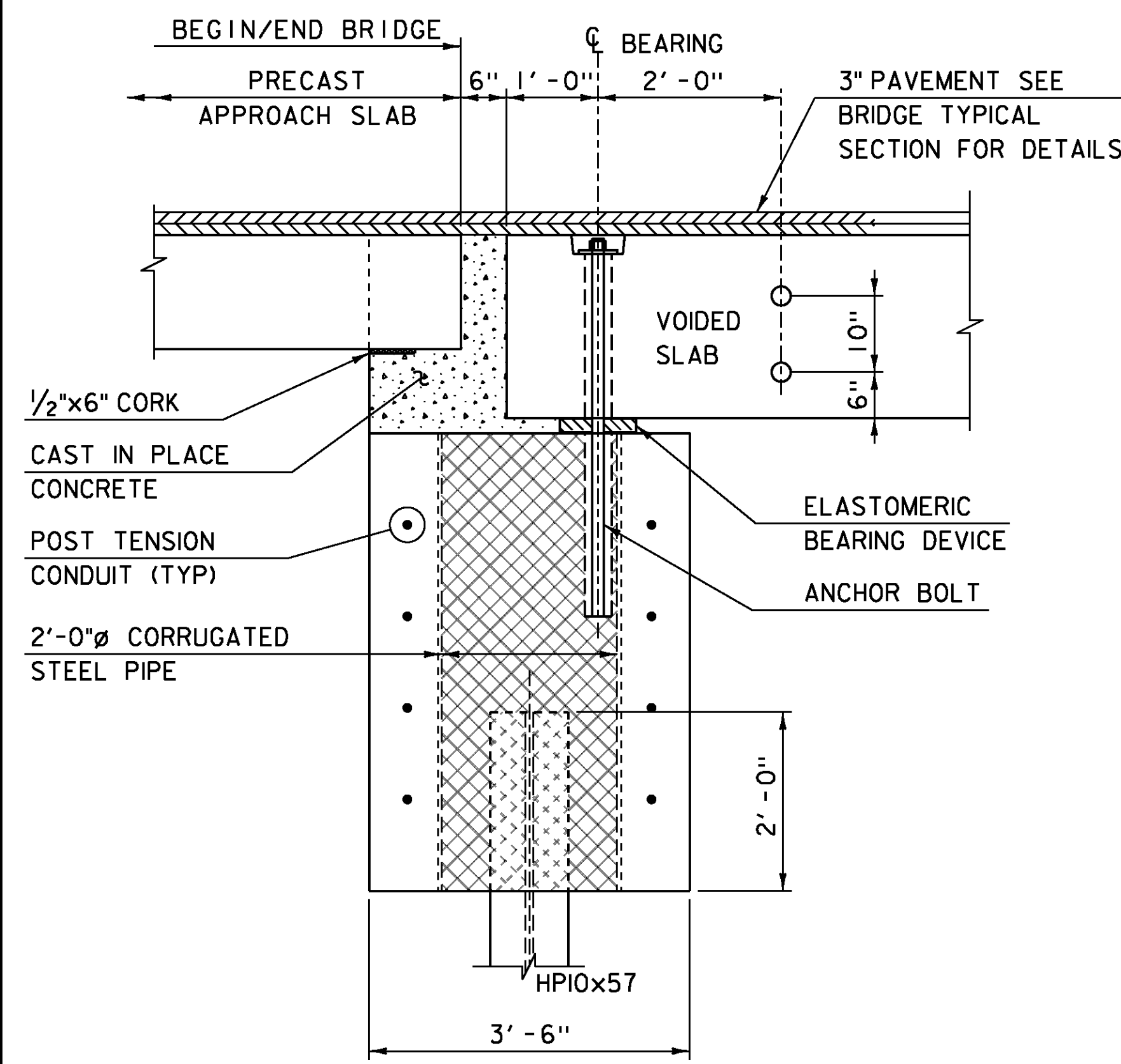
PROJECT NAME: RUTLAND CITY  
 PROJECT NUMBER: BRF 3000(18)

FILE NAME: s96j244pe.dgn  
 PROJECT LEADER: C. CARLSON  
 DESIGNED BY: M. EVANS-MONGEON  
 PLAN AND ELEVATION

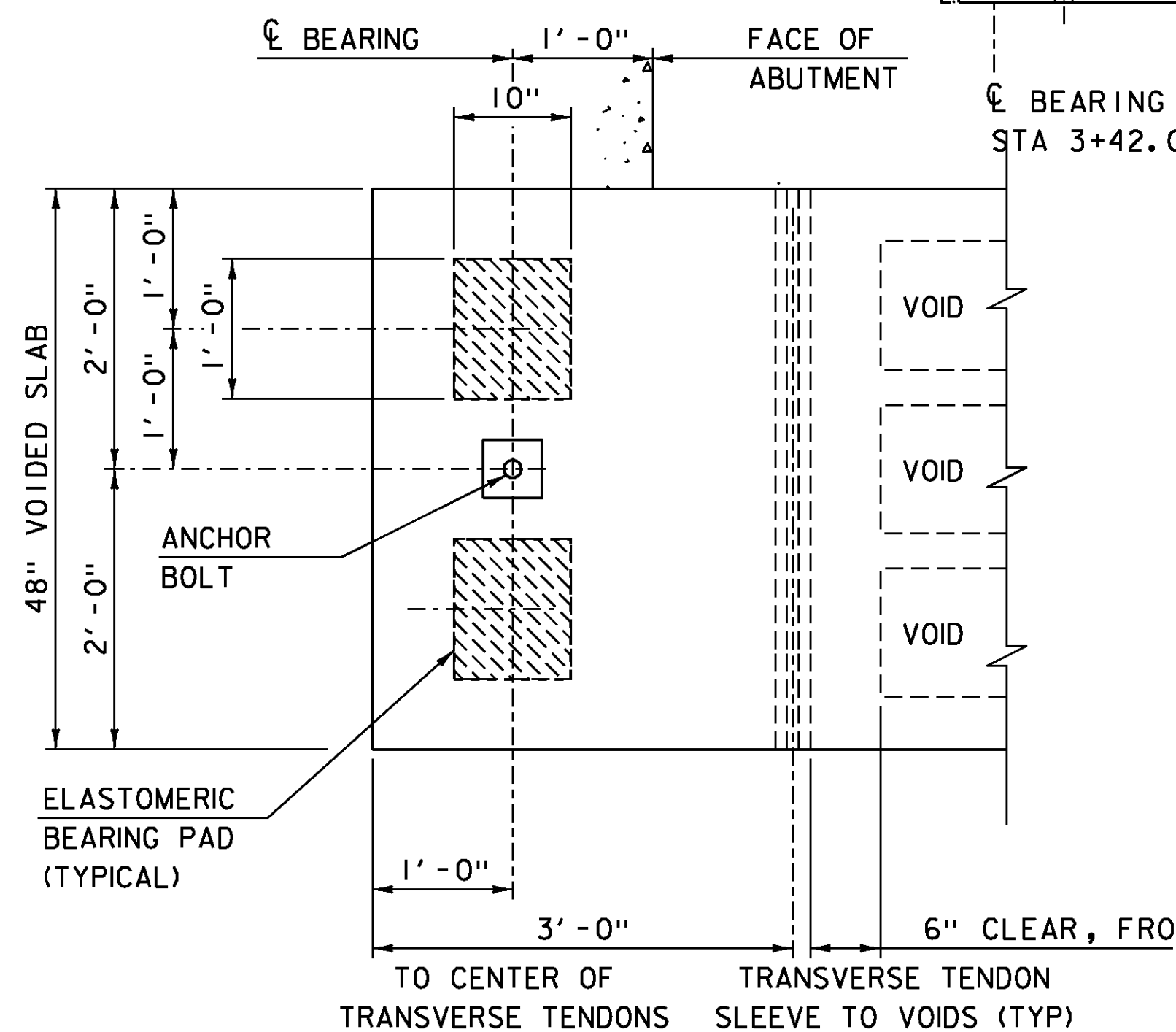
PLOT DATE: 28-FEB-2014  
 DRAWN BY: R. PELLETT  
 CHECKED BY: M. E-M  
 SHEET 17 OF 44



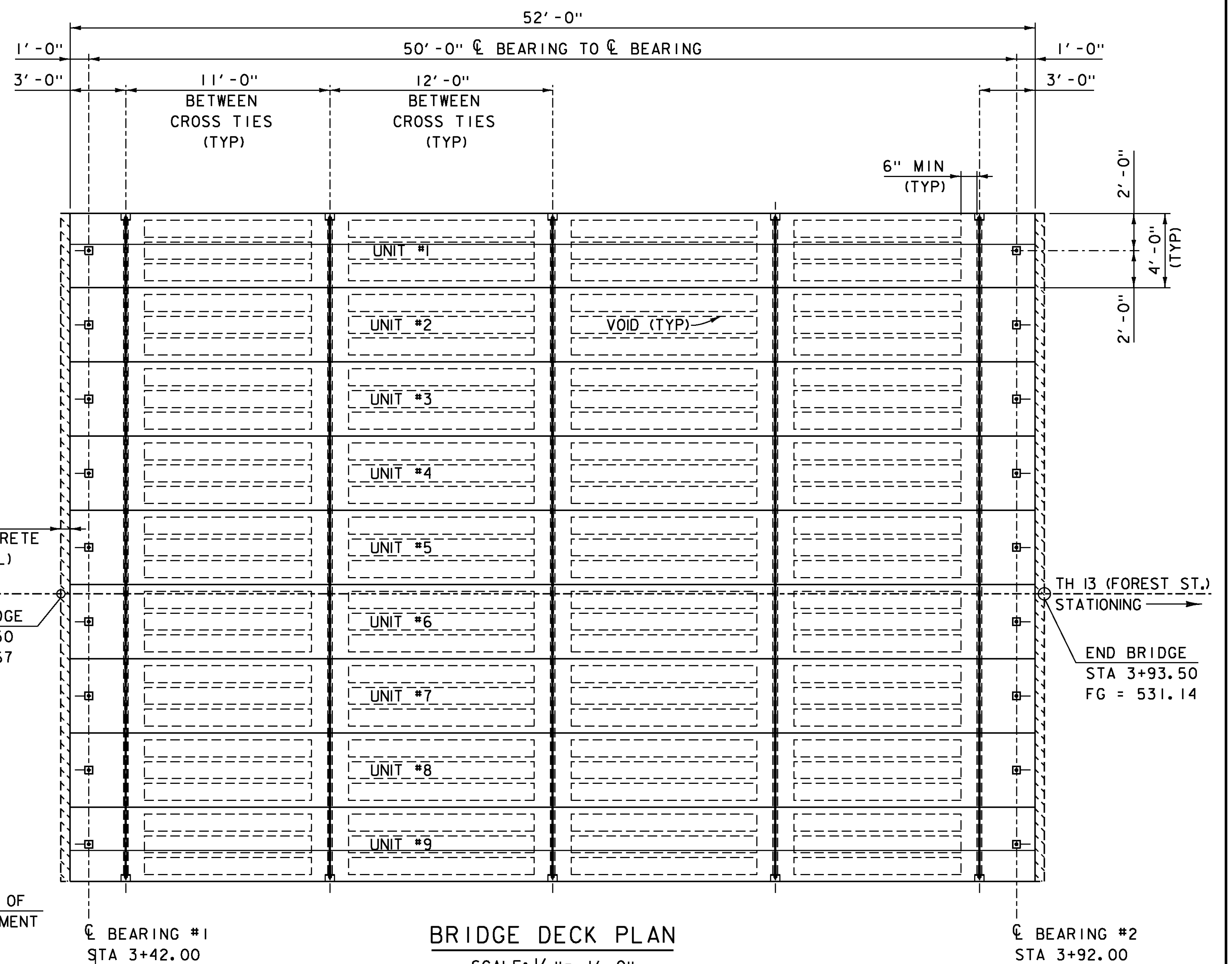
**ANCHOR BOLT DETAIL**  
SCALE: 1" = 1'-0"



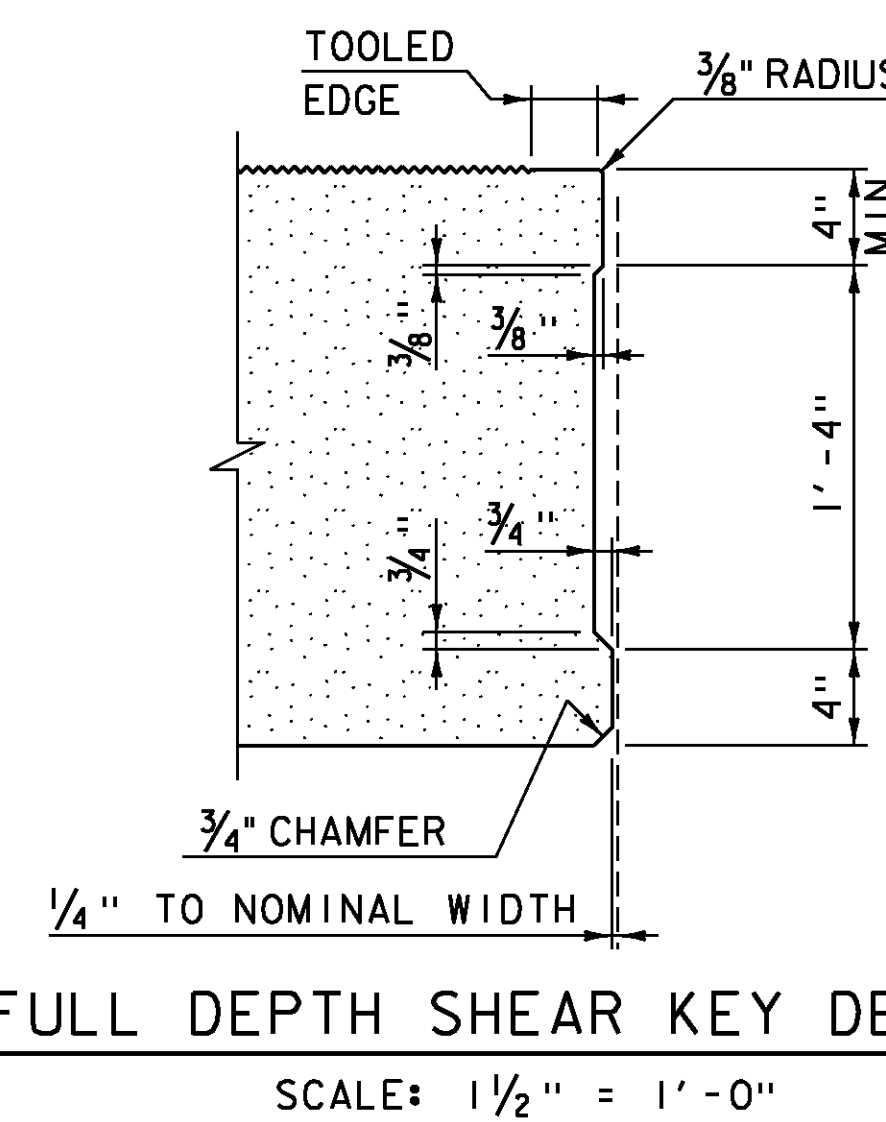
**BEGIN/END BRIDGE DETAIL**  
SCALE: 3/4" = 1'-0"



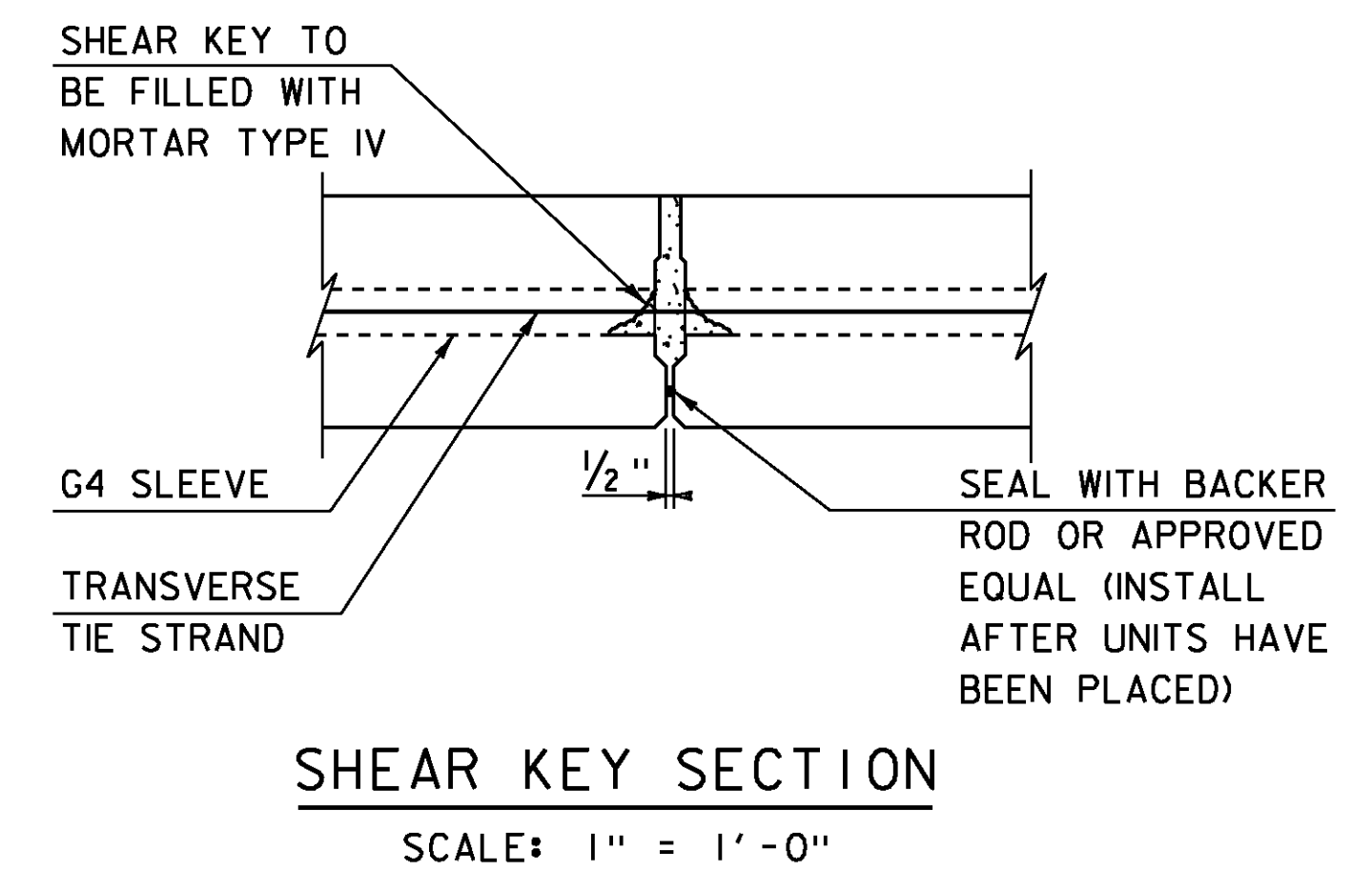
**BEARING PAD PLACEMENT DETAIL**  
SCALE: 1" = 1'-0"



**BRIDGE DECK PLAN**  
SCALE: 1/4" = 1'-0"

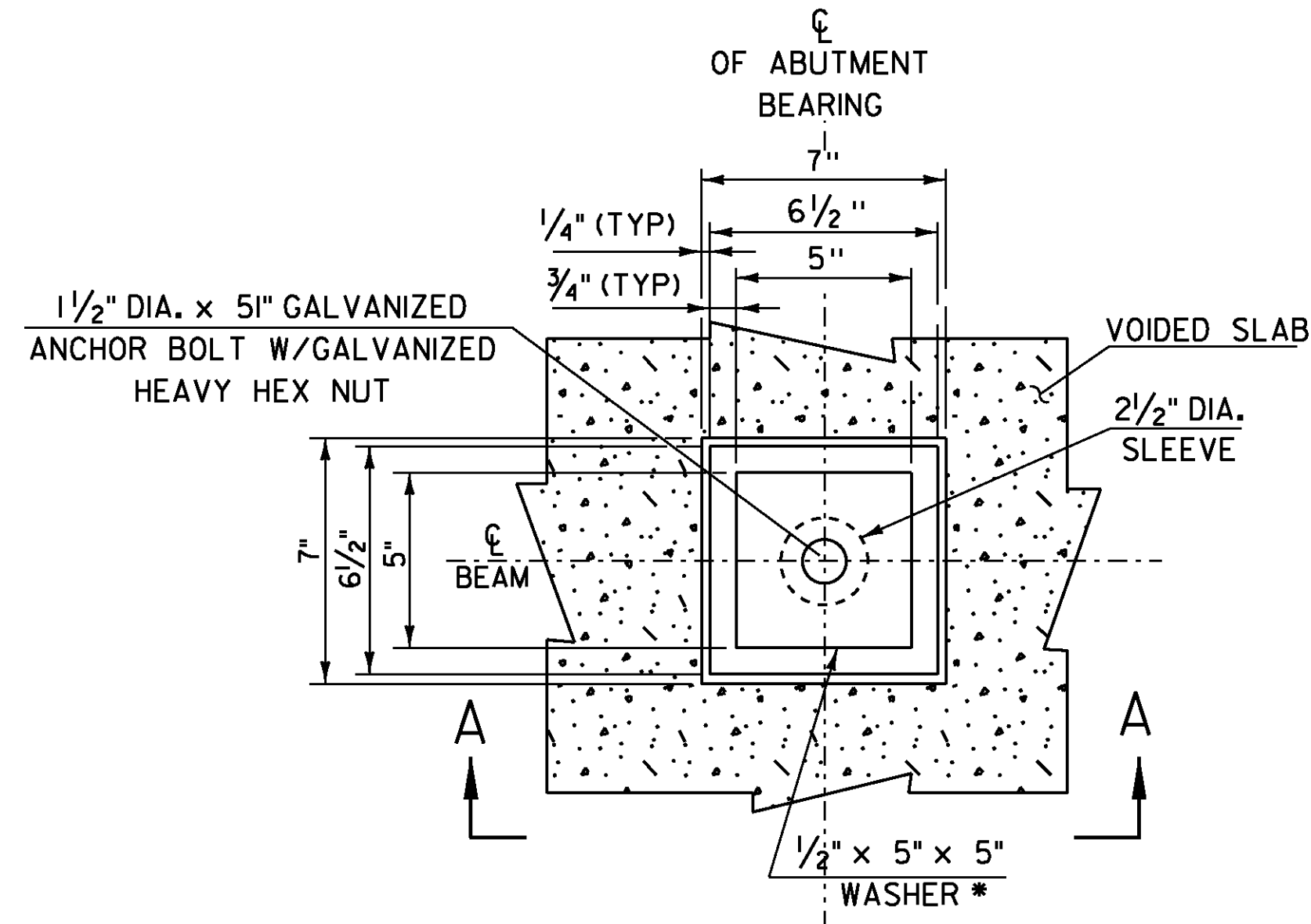


**FULL DEPTH SHEAR KEY DETAIL**  
SCALE: 1/2" = 1'-0"



**SHEAR KEY SECTION**  
SCALE: 1" = 1'-0"

PROJECT NAME:	RUTLAND CITY	FILE NAME:	s96j244sup.dgn	PLOT DATE:	28-FEB-2014
PROJECT NUMBER:	BRF 3000 (18)	PROJECT LEADER:	C. CARLSON	DRAWN BY:	M. LONGSTREET
		DESIGNED BY:	M. EVANS-MONGEON	CHECKED BY:	M. UMBERGER
		BRIDGE DECK PLAN		SHEET	18 OF 44

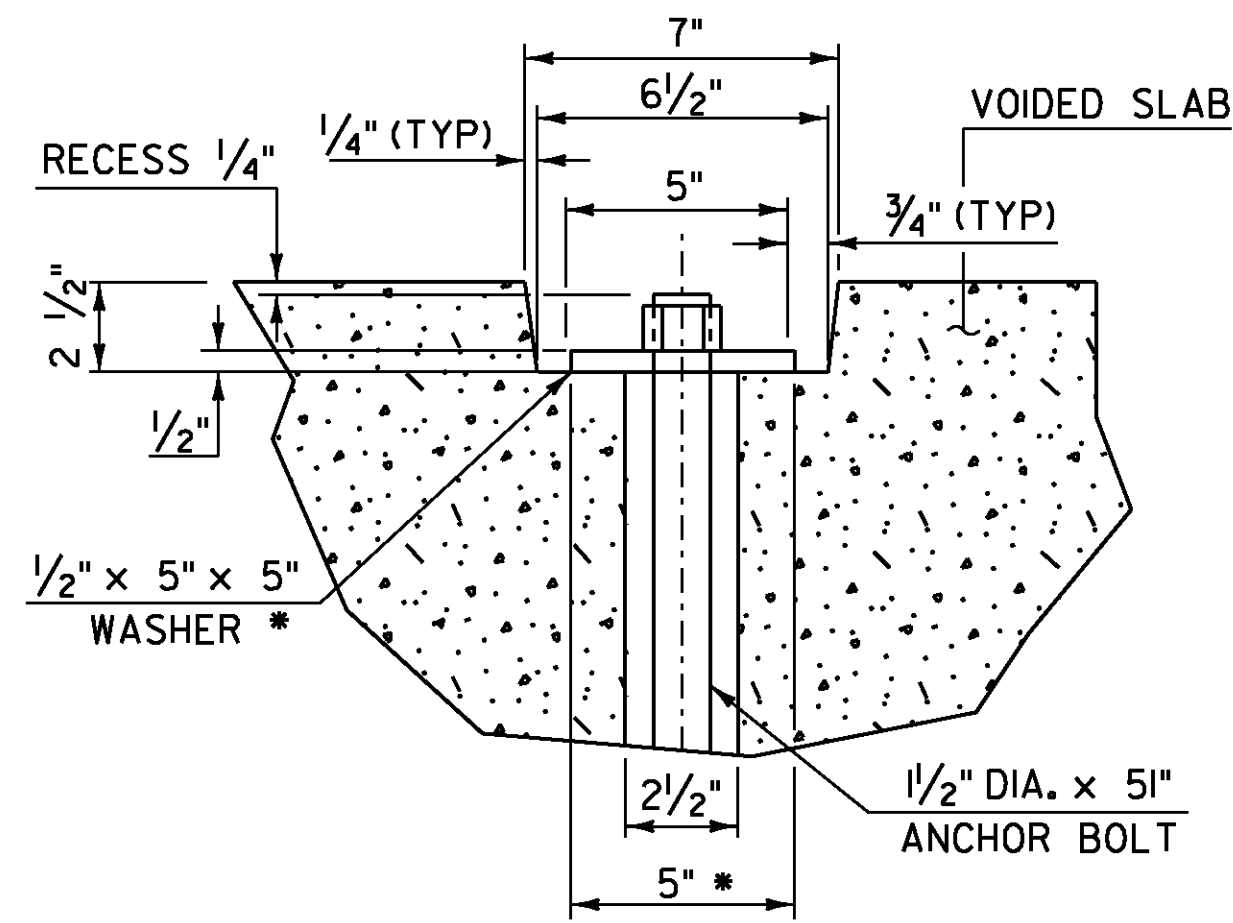


**END BRIDGE ANCHOR BOLT DETAIL**

NOT TO SCALE

NOTE:  
SEE SUBSECTION 714.08  
FOR ANCHOR BOLTS & NUTS

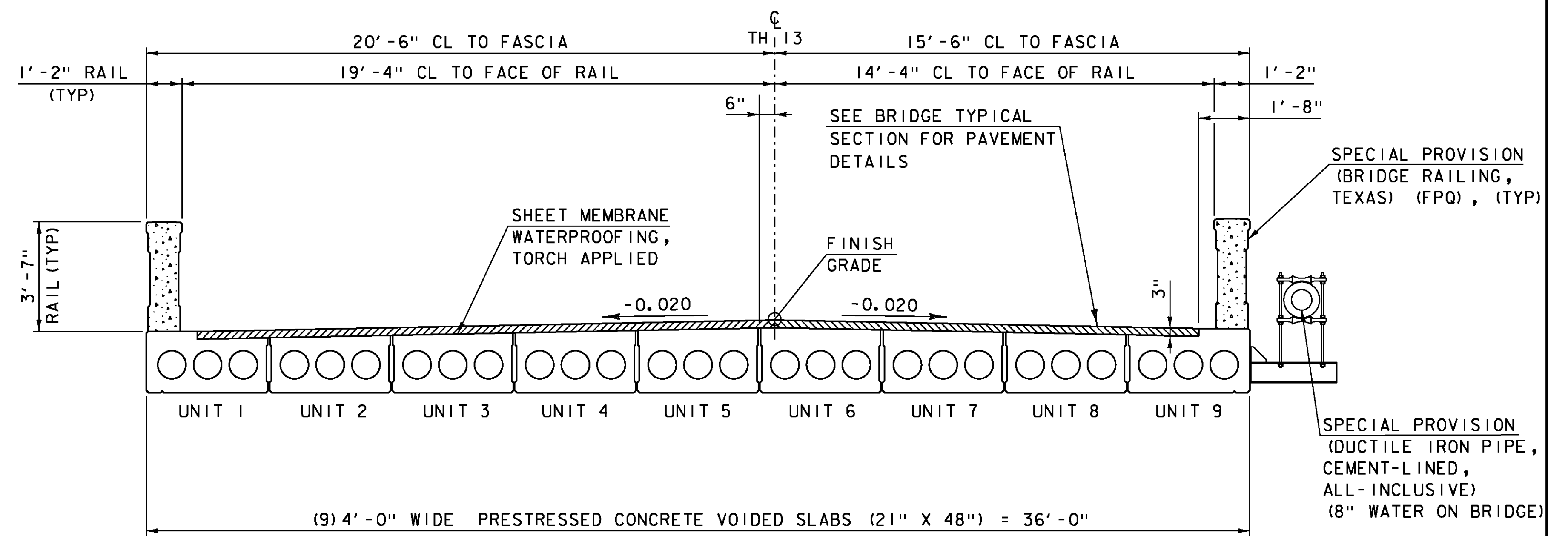
• 1/2" x 5" x 5" WASHER  
WITH 1/2" DIA.  
HOLE (GALVANIZED)



**SECTION A-A**

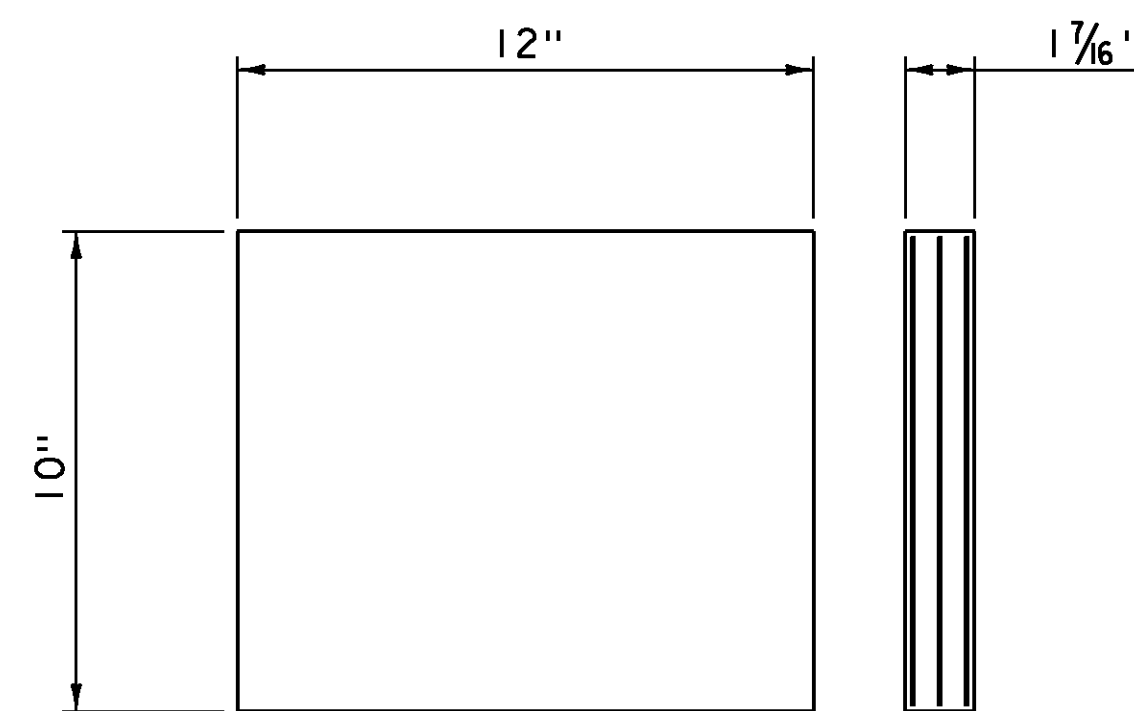
NOT TO SCALE

- NOTES:
1. TRANSVERSE TENDONS SHALL BE COVERED BY SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND TENDON) FOR THE LENGTH OF TENDON, EXCEPT AT ANCHORAGE LOCATIONS. TENDONS SHALL BE TENSIONED TO 145 KIPS.
  2. THE 1/2" PLATE SHALL CONFORM TO AASHTO M 270M/ M 270 GRADE 50. THE PLATE AND CHUCK SHALL BE GALVANIZED ACCORDING TO AASHTO M111M/ M111.



**BRIDGE DECK TYPICAL SECTION**

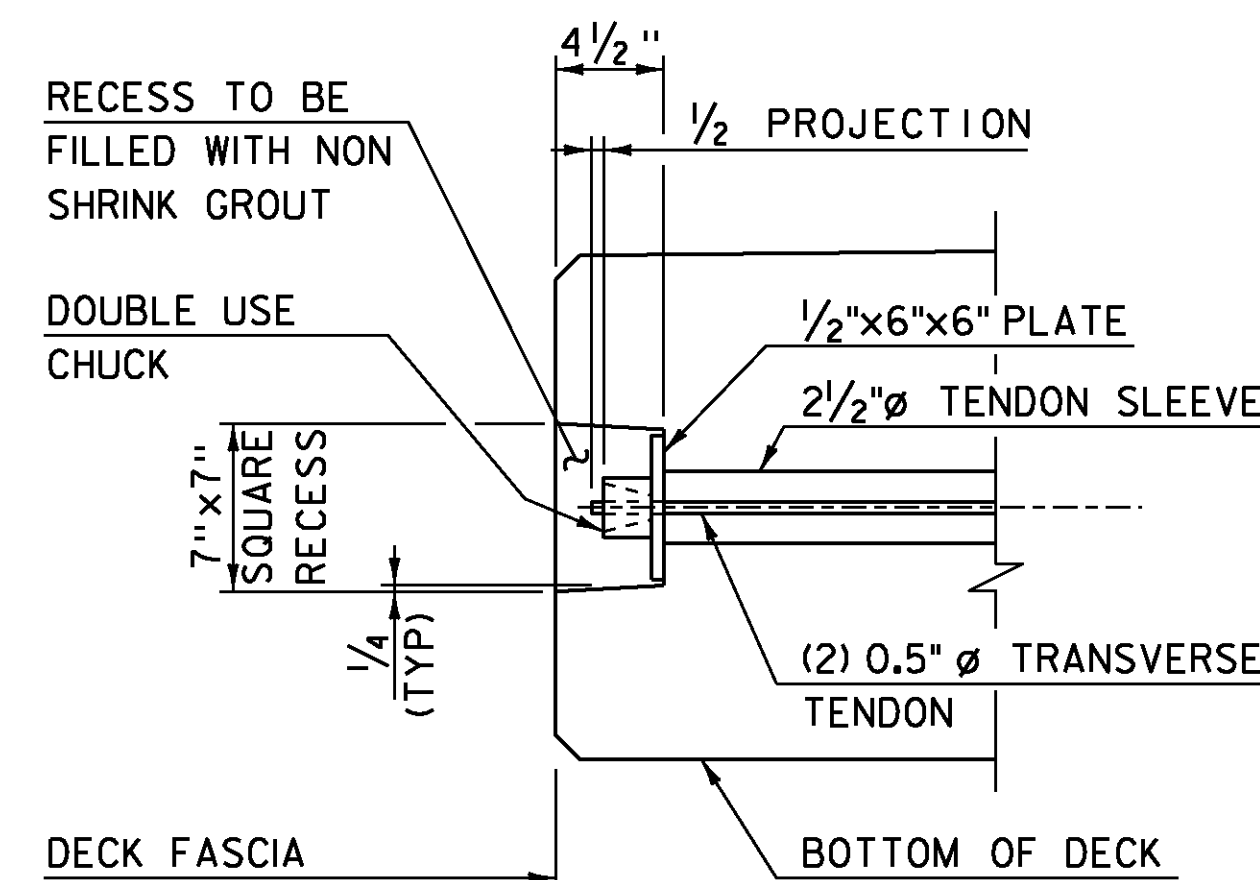
SCALE: 3/8" = 1'-0"



**ELASTOMERIC BEARING DETAIL**

SCALE: 3" = 1'-0"

- 1/8" ELASTOMERIC OUTER LAYER (TOP, BOTTOM, AND SIDES)
- (2) 1/2" LAYERS OF INTERIOR ELASTOMERIC ALTERNATING W/
- (3) 1/16" STEEL REINFORCING PLATES



**TRANSVERSE TENDON CHUCK DETAIL**

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

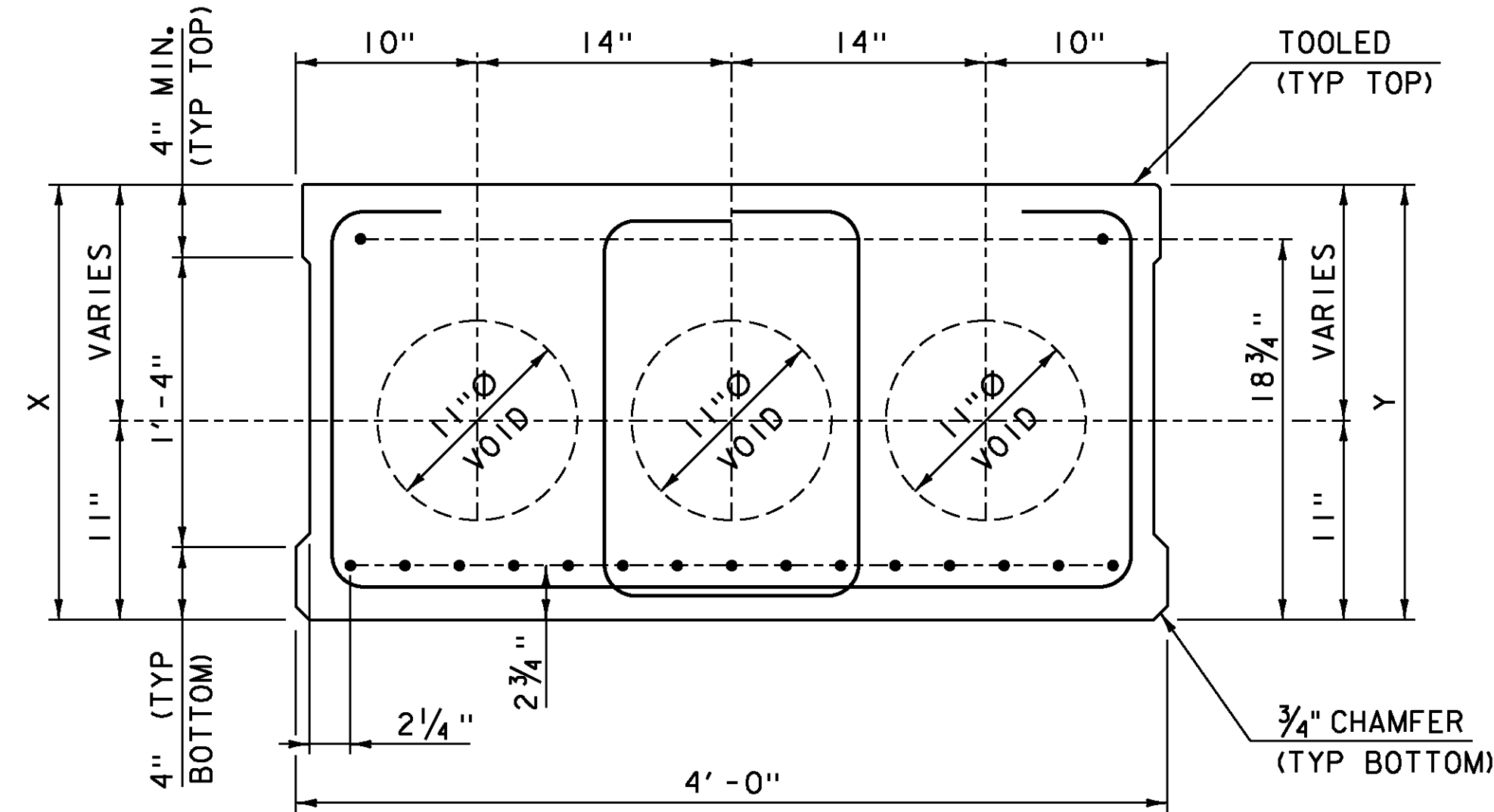
**BEARING NOTES:**

1. BEARINGS WILL BE PAID FOR UNDER ITEM 531.17, "BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD".
2. ALTERNATE CONFIGURATIONS FOR ELASTOMERIC BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE BEARING SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE LOADS AND CRITERIA SHOWN ON THIS SHEET AND MAINTAIN THE ANCHORAGE SYSTEM SHOWN. THE BEARINGS SHALL BE DESIGNED ACCORDING TO AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS" 2012 EDITION AND ITS LATEST REVISIONS.
4. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL GRADE 50. NO FABRIC REINFORCEMENT WILL BE PERMITTED.
5. ELASTOMERIC BEARINGS REINFORCED WITH STEEL SHALL HAVE A 1/8" EDGE SEAL OF ELASTOMERIC INTEGRAL WITH THE BEARING OVER ALL PLATES.
6. DESIGN CRITERIA:
  - A. TEMPERATURE RANGE: 80 F
  - B. 50 DUROMETER ELASTOMERIC
  - C. MAXIMUM BEARING STRESS: 1000 psi
  - D. DESIGN ROTATION: 0.010 rad
  - E. REACTION/BEAM:
    - RDL: 16 kips
    - RLI+1: 19 kips
7. THE FABRICATOR SHALL SUPPLY A SELF ADHESIVE COMPRESSIBLE SEALER BETWEEN THE BOTTOM OF THE UNITS AND THE BRIDGE SEAT. THIS COMPRESSIBLE SEALER SHALL SURROUND THE 2 1/2" DIA SLEEVE IN THE UNIT. THE PURPOSE OF THE SEALER IS TO FACILITATE PLACEMENT OF THE MORTAR AROUND THE ANCHOR BOLTS. PAYMENT WILL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 535.17, "BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD"

PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BRF 3000 (18)

FILE NAME: s96j244sup.dgn  
PROJECT LEADER: C. CARLSON  
DESIGNED BY: M. EVANS-MONGEON  
BRIDGE VOIDED SLAB DETAILS I

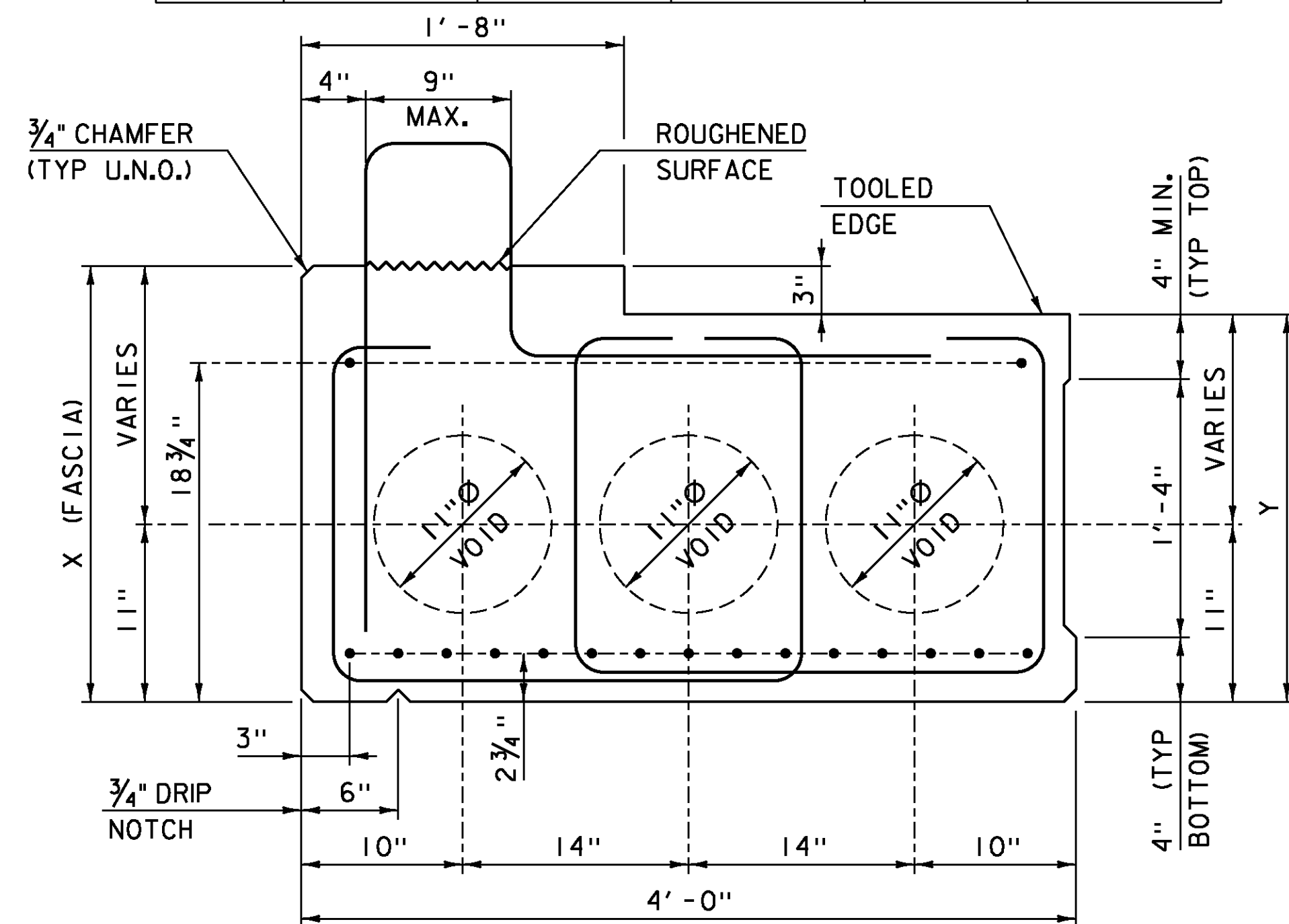
PLOT DATE: 28-FEB-2014  
DRAWN BY: M. LONGSTREET  
CHECKED BY: M. UMBERGER  
SHEET 19 OF 44



VOIDED SLAB UNIT #2-#8 TYPICAL

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

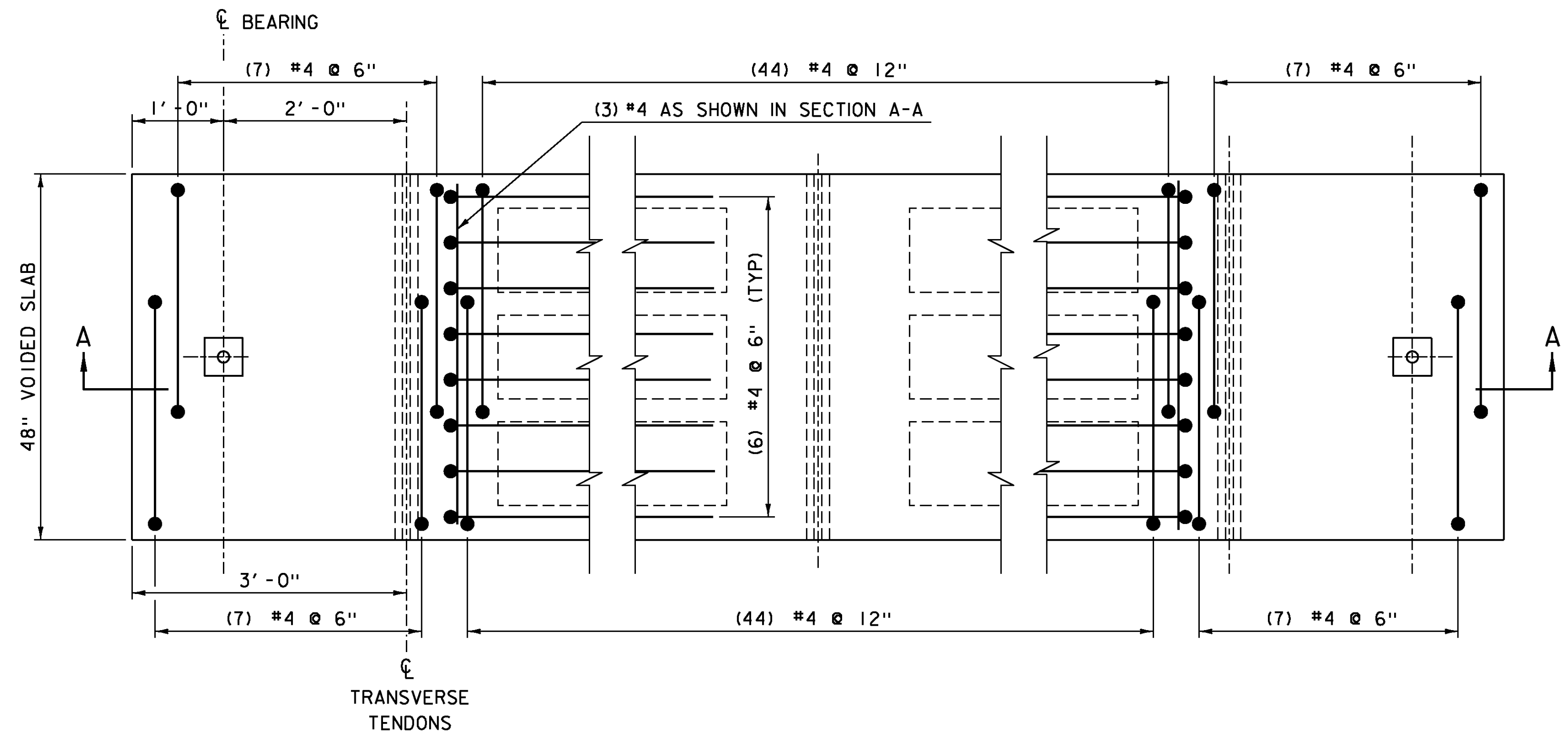
VOIDED SLAB UNIT	QUANTITY	( X ) DIMENSION	( Y ) DIMENSION	BOTTOM STRAND COUNT	TOP STRAND COUNT
#2	1	22"	23"	15	2
#3	1	23"	24"	16	2
#4	1	24"	25"	16	2
#5	1	25"	26"	17	2
#6	1	25"	26"	17	2
#7	1	24"	25"	16	2
#8	1	23"	24"	16	2



VOIDED SLAB UNIT #1 & #9 TYPICAL

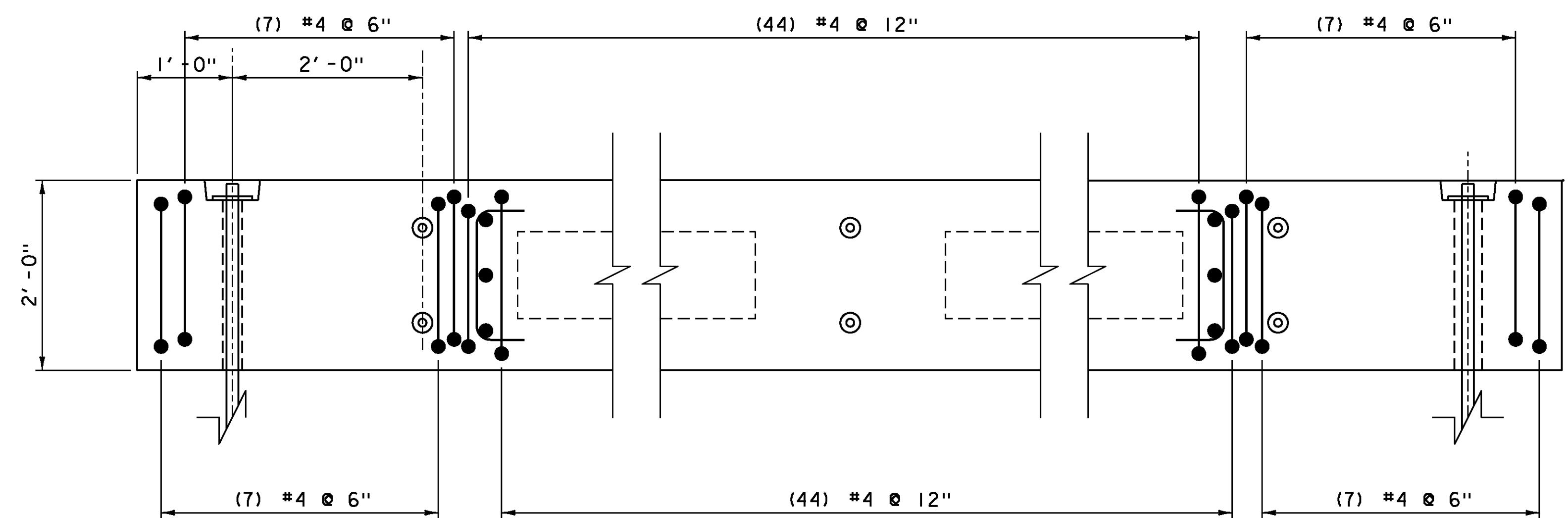
SCALE: 1 1/2" = 1'-0"

VOIDED SLAB UNIT	QUANTITY	( X ) FASCIA DIMENSION	( Y ) DIMENSION	BOTTOM STRAND COUNT	TOP STRAND COUNT
#1	1	24"	22"	16	2
#9	1	25"	23"	17	2



VOIDED SLAB PLAN DETAIL

SCALE: 1" = 1'-0"



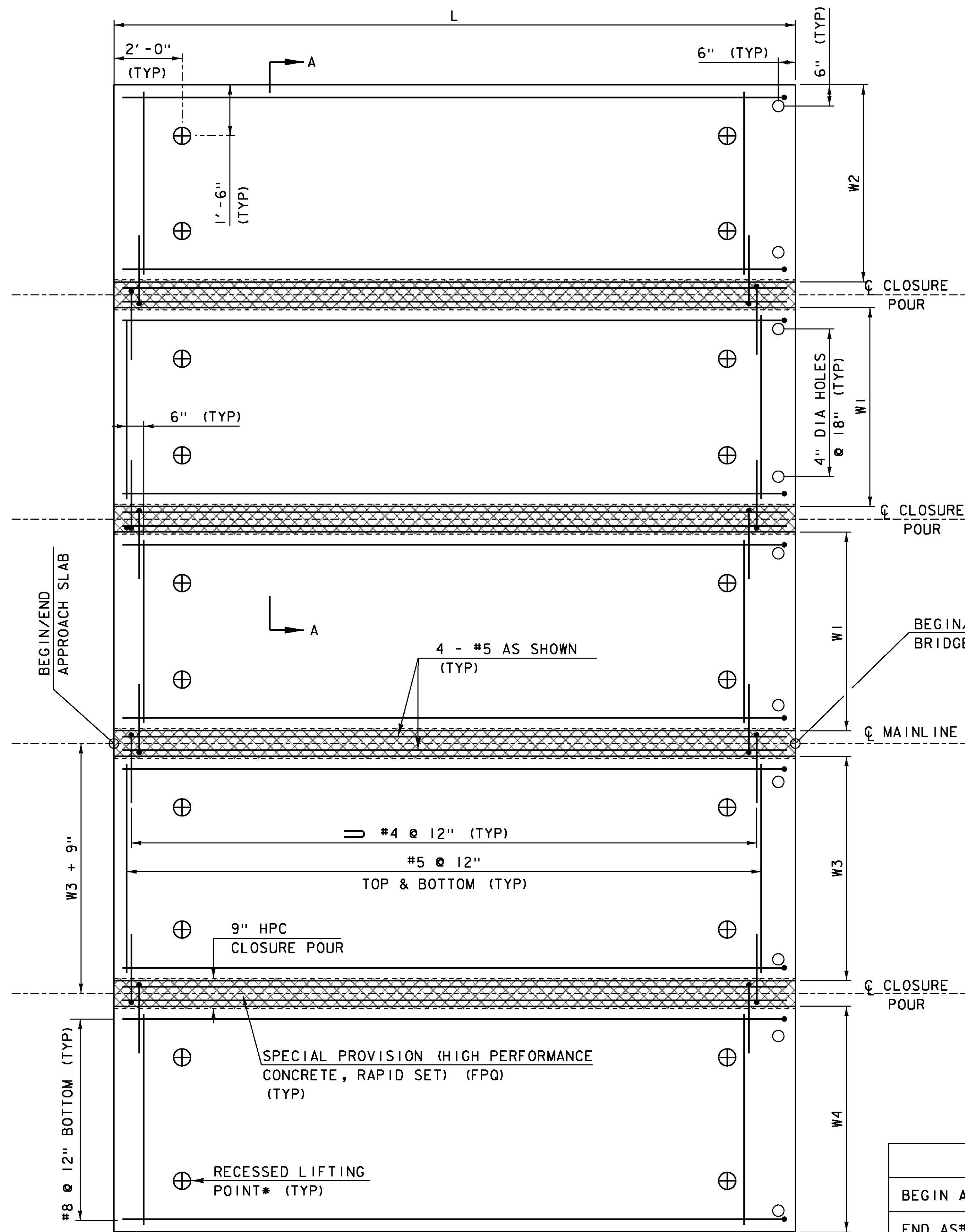
VOIDED SLAB SECTION A-A

SCALE: 1" = 1'-0"

PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BRF 3000 (18)

FILE NAME: s96j244sup.dgn  
PROJECT LEADER: C. CARLSON  
DESIGNED BY: M. EVANS-MONGEON  
BRIDGE VOIDED SLAB DETAILS 2

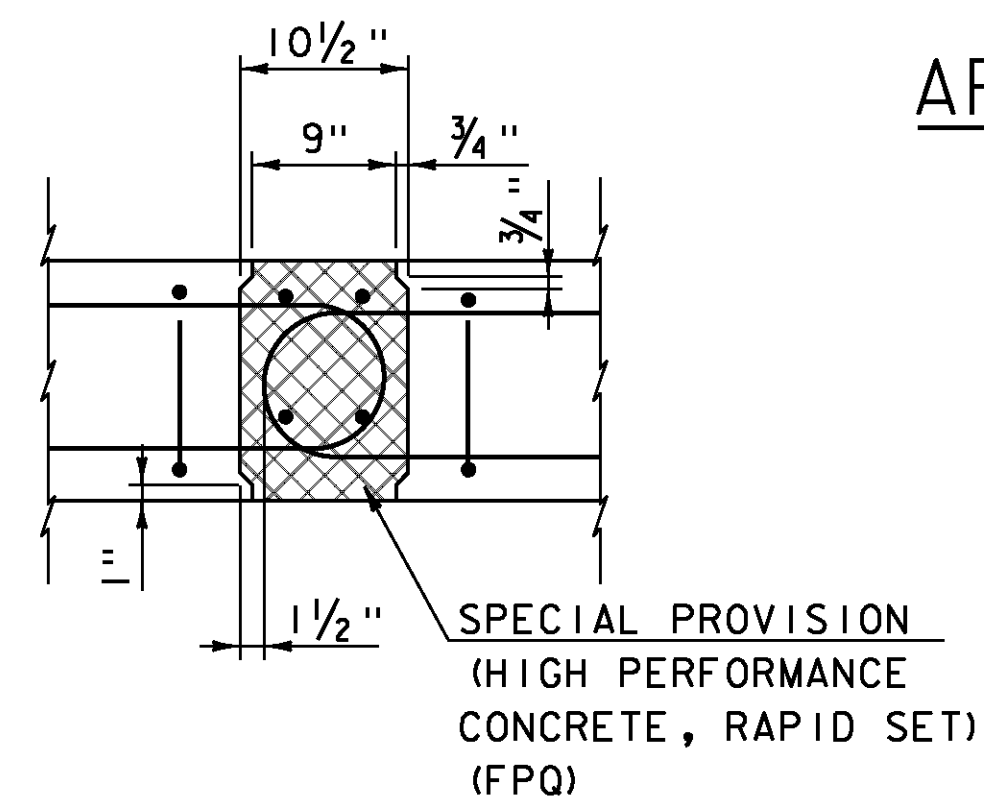
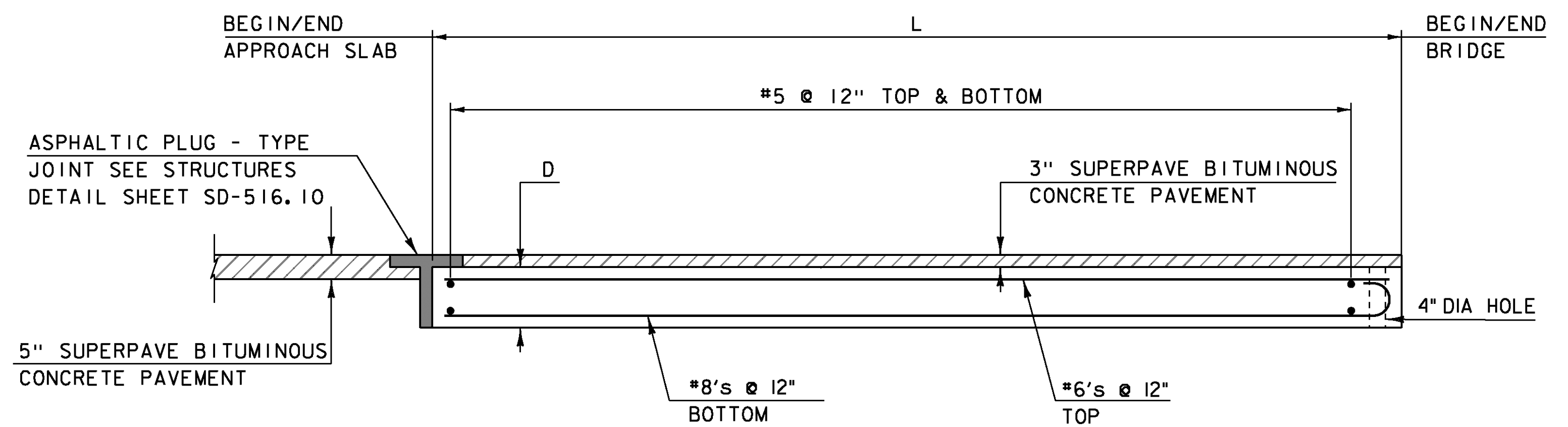
PLOT DATE: 28-FEB-2014  
DRAWN BY: M. LONGSTREET  
CHECKED BY: M. UMBERGER  
SHEET 20 OF 44



\* ALTERNATE LIFTING POINTS MAY BE SUBMITTED WITH CALCULATIONS FOR NEW LOCATIONS.

APPROACH SLAB PLAN VIEW

SCALE 1/2" = 1'-0"



JOINT DETAIL

SCALE 1" = 1'-0"

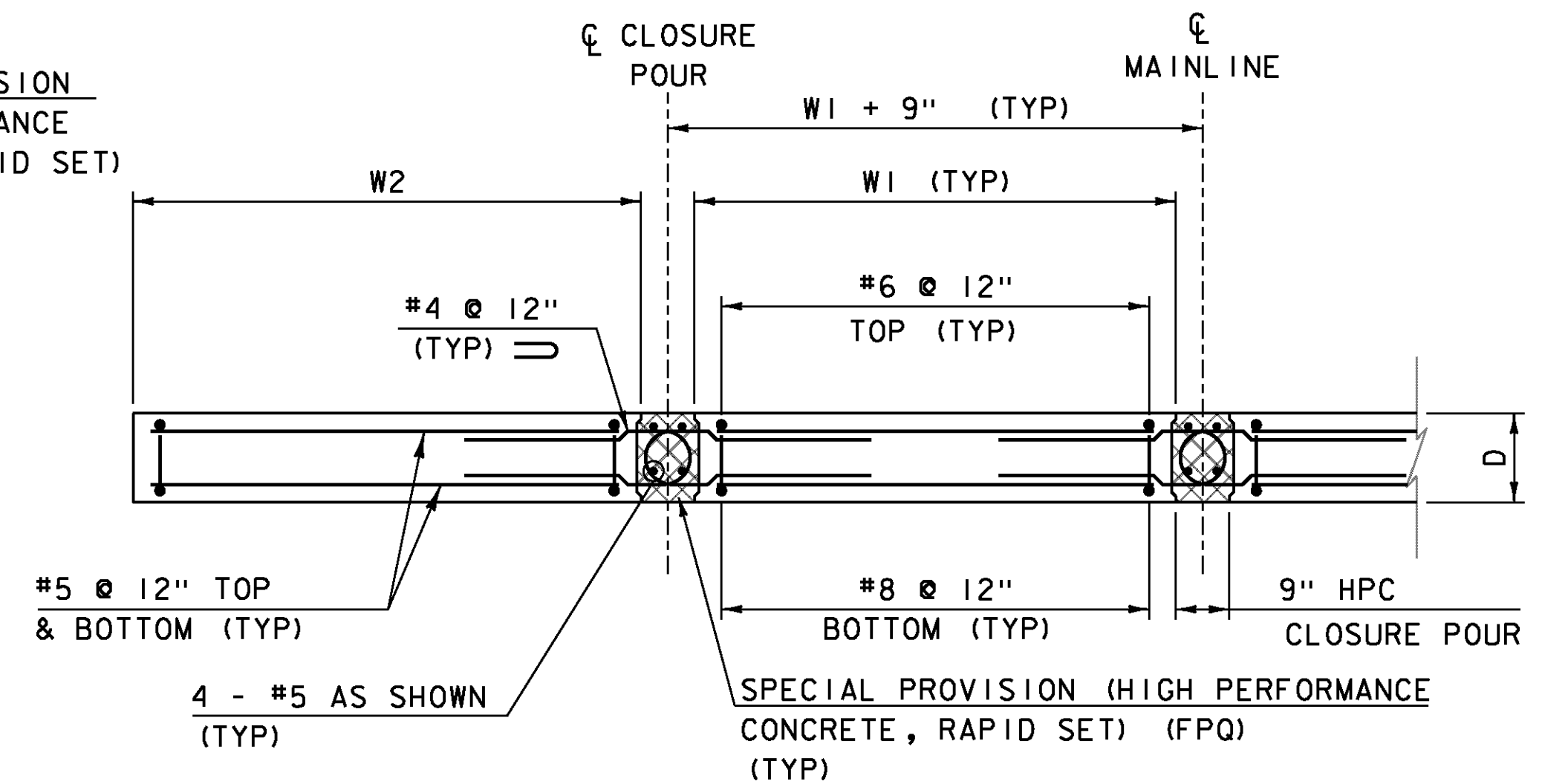
D	1' - 3"
L	20' - 0"
W	7' - 4"
W1	5' - 10"
W2	5' - 9 1/2"
W3	6' - 7"
W4	6' - 7 1/2"

APPROACH SLAB DIMENSIONS

	STATION	19' - 4" LT	CL	14' - 4" RT
BEGIN AS#1	3+20.50	529.83	530.22	529.93
END AS#1	3+40.50	530.04	530.43	530.14
BEGIN AS#2	3+93.50	530.50	530.89	530.60
END AS#2	4+13.50	530.65	531.04	530.75

APPROACH SLAB ELEVATIONS

ALL ELEVATIONS ARE TOP OF SLAB



NOTE:

- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- ▲ = CUT TO FIT IN FIELD
- 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- 2' - 2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

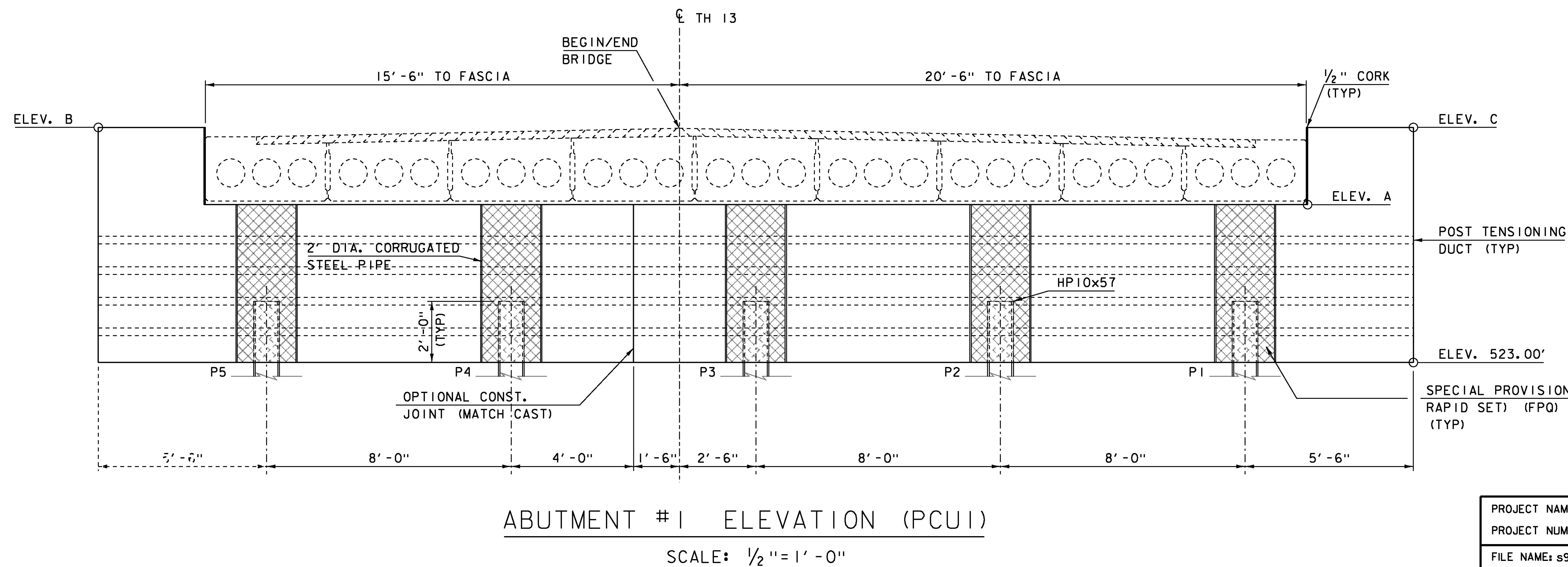
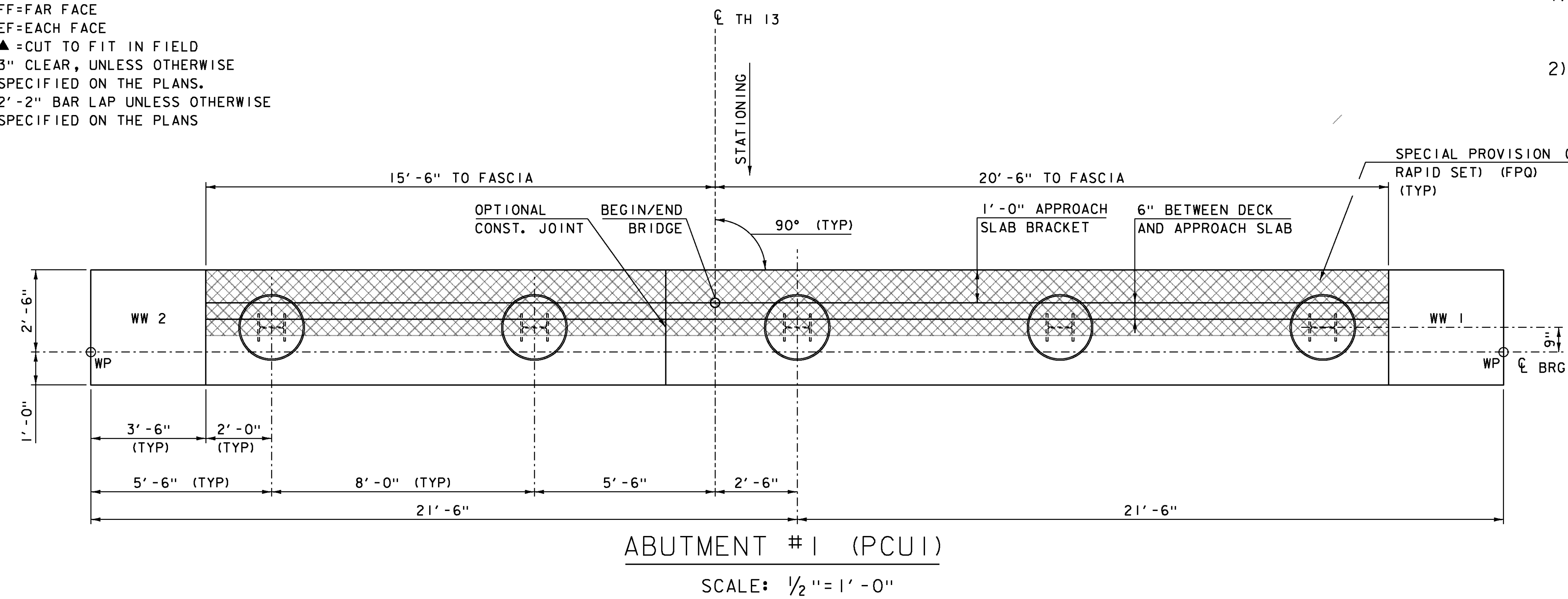
PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BRF 3000 (18)

FILE NAME: s96j244appslab.dgn  
PROJECT LEADER: C. CARLSON  
DESIGNED BY: EVANS-MONGEON  
APPROACH SLAB DETAILS

PLOT DATE: 28-FEB-2014  
DRAWN BY: EVANS-MONGEON  
CHECKED BY: C. CARLSON  
SHEET 21 OF 44

NOTE:  
 NF=NEAR FACE  
 FF=FAR FACE  
 EF=EACH FACE  
 ▲=CUT TO FIT IN FIELD  
 3" CLEAR, UNLESS OTHERWISE  
 SPECIFIED ON THE PLANS.  
 2'-2" BAR LAP UNLESS OTHERWISE  
 SPECIFIED ON THE PLANS

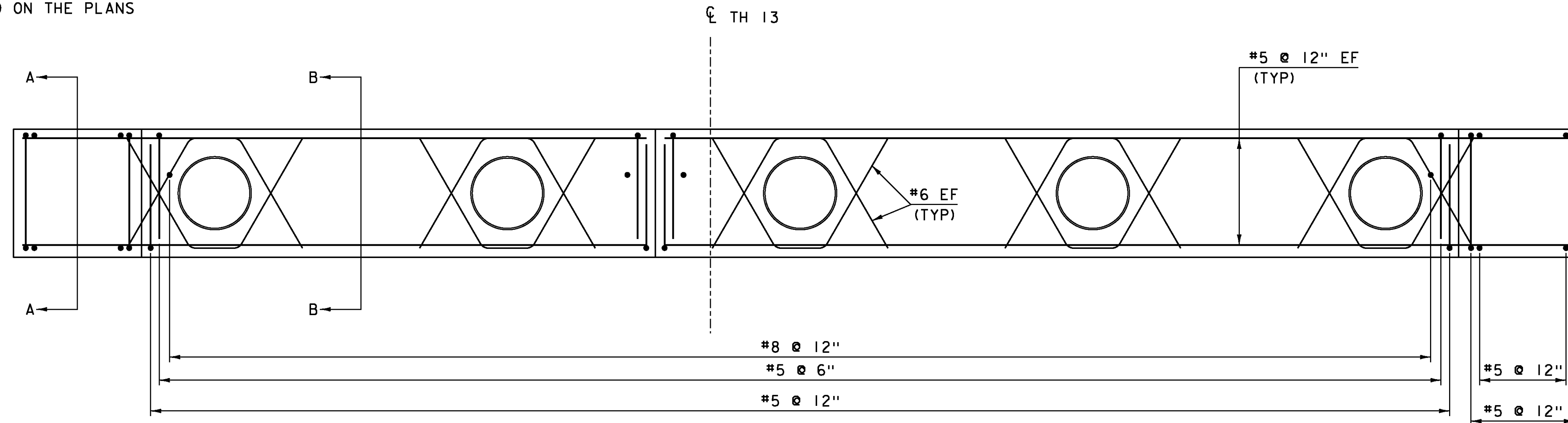
NOTES:  
 1) POST-TENSIONING AND ASSOCIATED  
 ITEMS ONLY REQUIRED IF PILE CAP IS  
 CONSTRUCTED IN MORE THAN ONE PIECE.  
 2) PCU 2 MIRRORS PCU 1 ABOUT LINE  
 PARALLEL TO CENTERLINE OF BEARING.



	ABUTMENT 1	ABUTMENT 2
ELEV. A	528.16'	528.60'
ELEV. B	530.65'	531.09'
ELEV. C	530.55'	531.00'

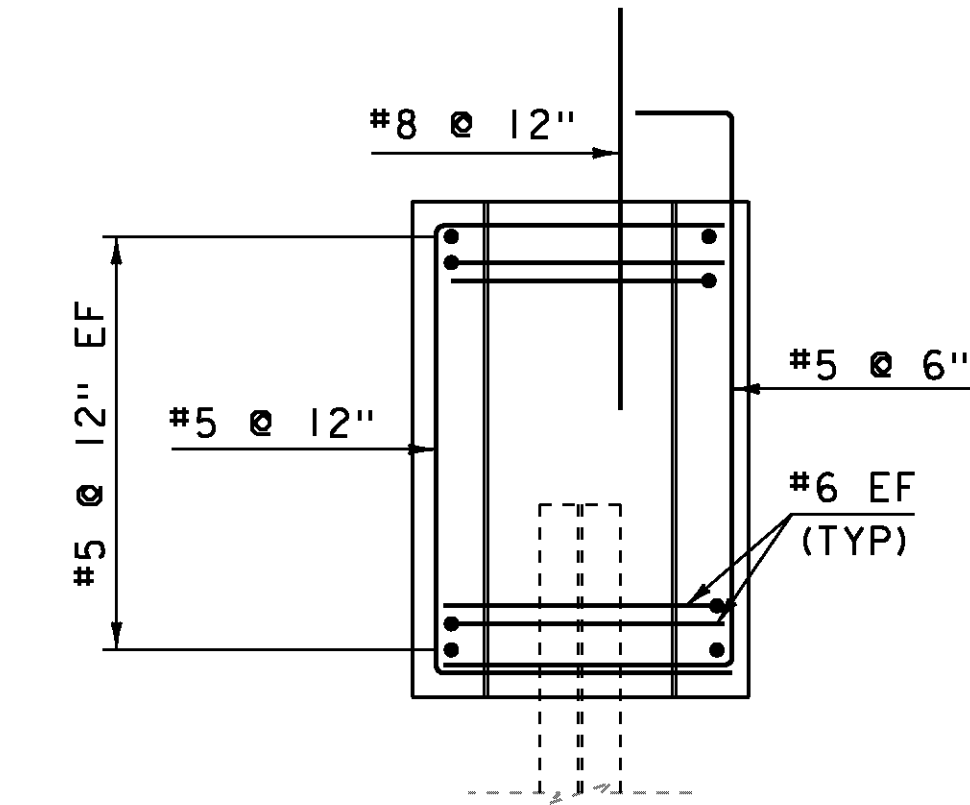
PROJECT NAME: RUTLAND CITY  
 PROJECT NUMBER: BRF 3000 (18)  
 FILE NAME: s96j244sub.dgn  
 PROJECT LEADER: C. CARLSON  
 DESIGNED BY: M. EVANS-MONGEON  
 ABUTMENT 1 & 2 PLAN & ELEVATION  
 PLOT DATE: 28-FEB-2014  
 DRAWN BY: M. UMBERGER  
 CHECKED BY: M. LONGSTREET  
 SHEET 22 OF 44

NOTE:  
 NF=NEAR FACE  
 FF=FAR FACE  
 EF=EACH FACE  
 ▲=CUT TO FIT IN FIELD  
 3" CLEAR, UNLESS OTHERWISE  
 SPECIFIED ON THE PLANS.  
 2'-2" BAR LAP UNLESS OTHERWISE  
 SPECIFIED ON THE PLANS

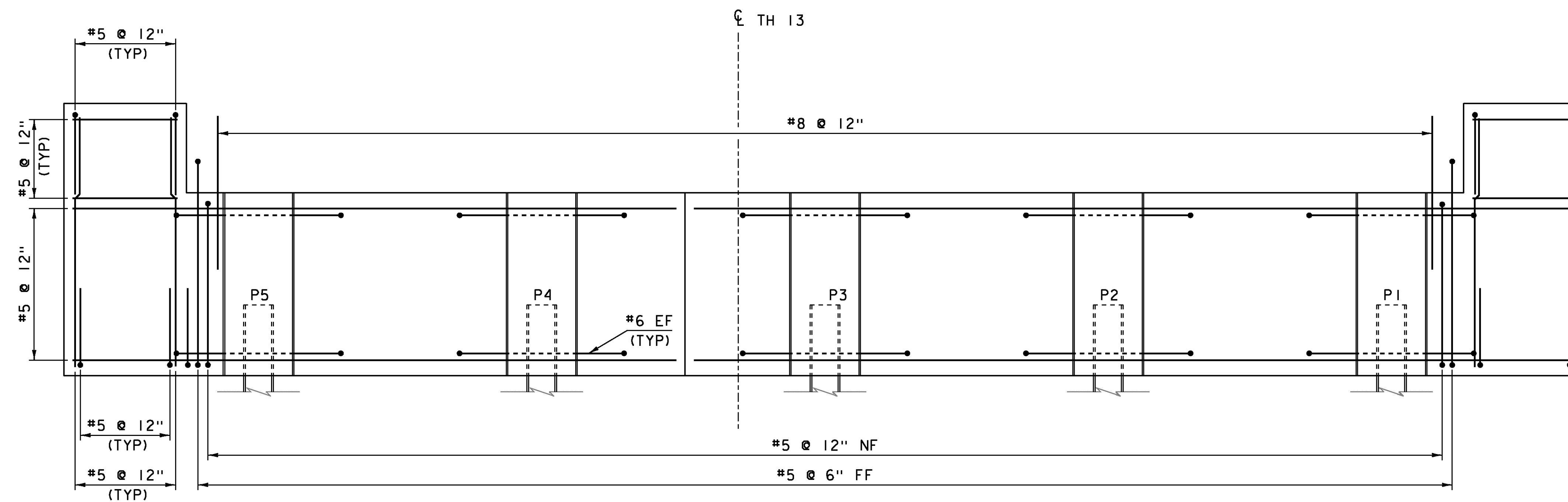


ABUTMENT #1 REINFORCING PLAN (PCU1)  
 SCALE: 1/2" = 1' - 0"

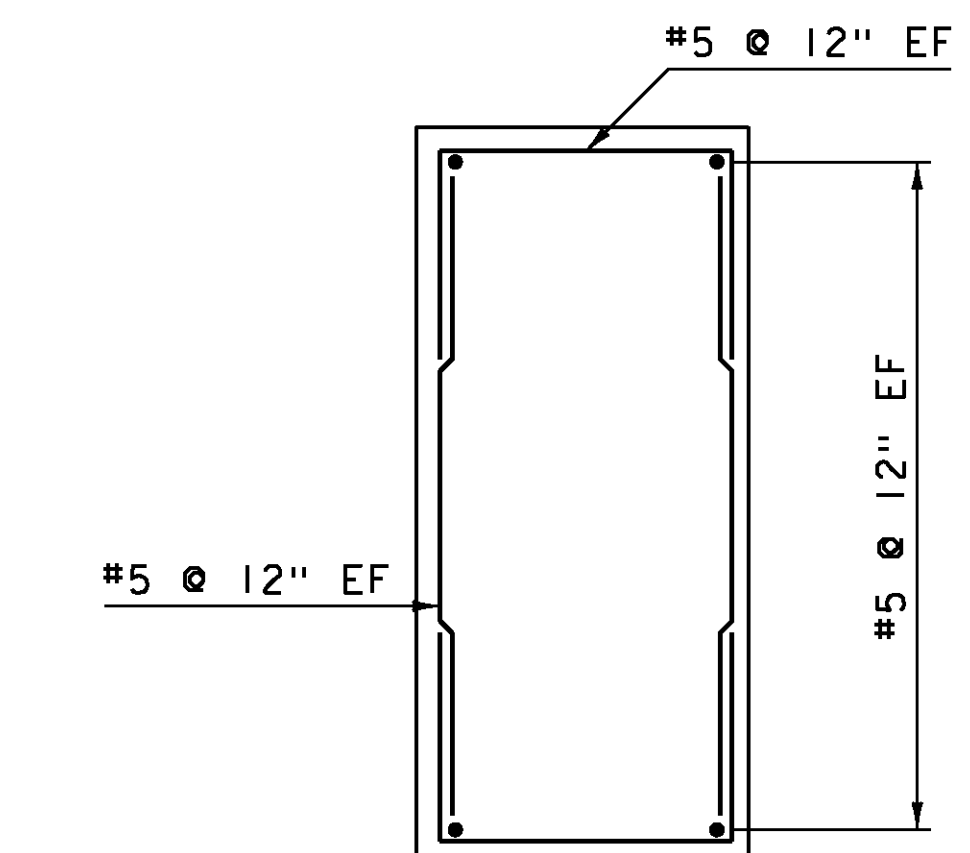
NOTES:  
 1) POST-TENSIONING AND ASSOCIATED  
 ITEMS ONLY REQUIRED IF PILE CAP IS  
 CONSTRUCTED IN MORE THAN ONE PIECE.  
 2) PCU 2 MIRRORS PCU 1 ABOUT LINE  
 PARALLEL TO CENTERLINE OF BEARING.



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

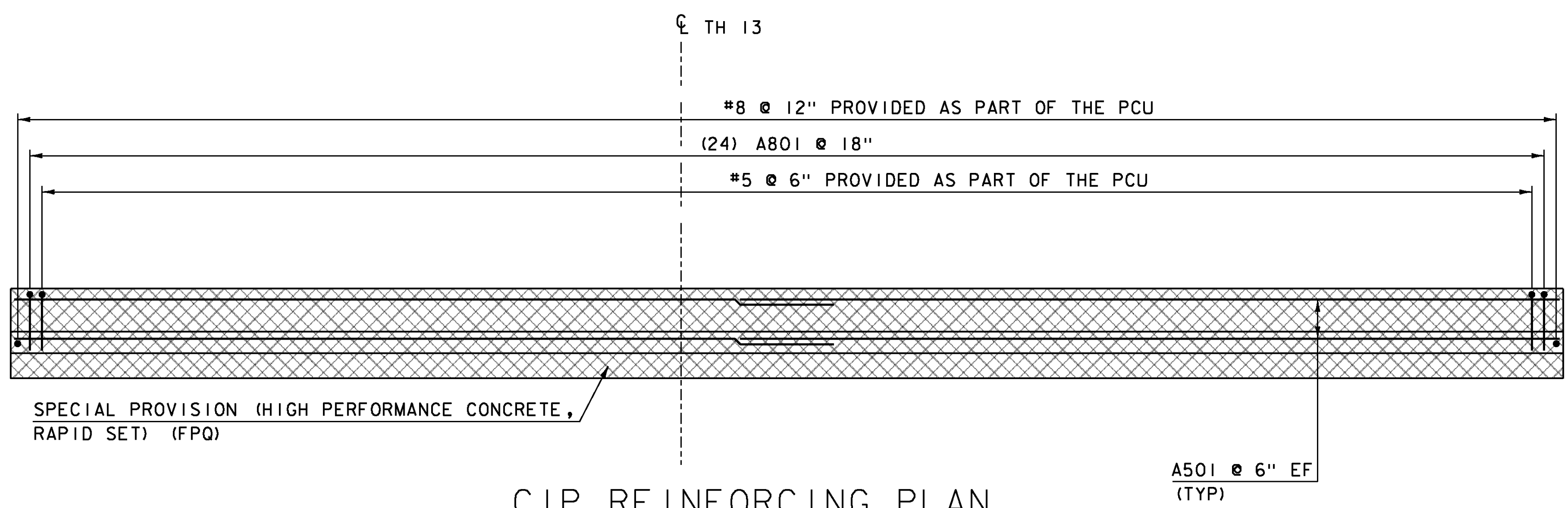


ABUTMENT #1 REINFORCING ELEVATION (PCU1)  
 SCALE: 1/2" = 1' - 0"



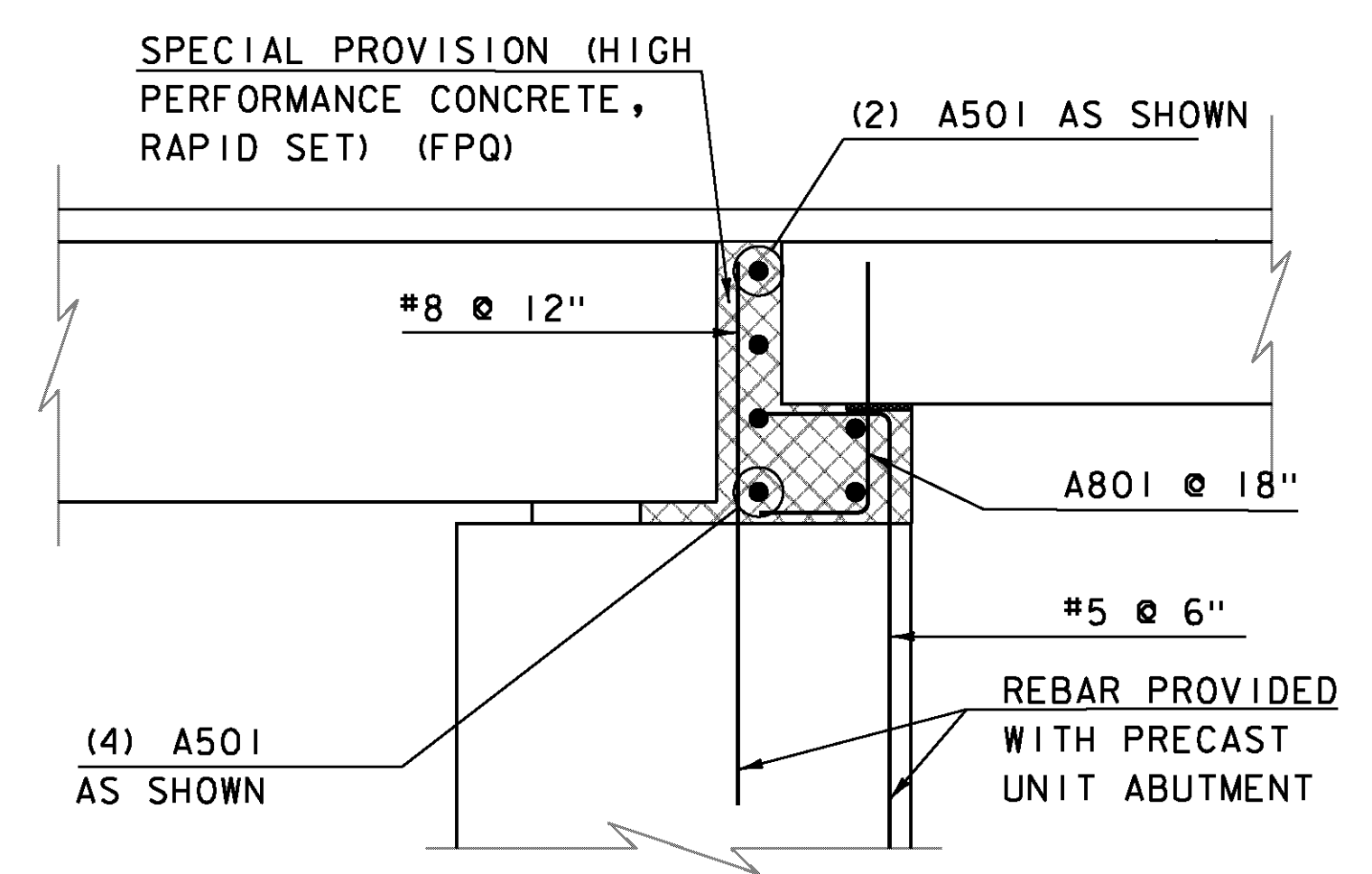
SECTION A-A  
 SCALE: 1/2" = 1' - 0"

PROJECT NAME: RUTLAND CITY	PLOT DATE: 28-FEB-2014
PROJECT NUMBER: BRF 3000 (18)	DRAWN BY: M.UMBERGER
FILE NAME: s96j244sub.dgn	CHECKED BY: M. LONGSTREET
PROJECT LEADER: C. CARLSON	SHEET 23 OF 44
DESIGNED BY: M. EVANS-MONGEON	
ABUTMENT 1 & 2 REINFORCING DETAILS 1	



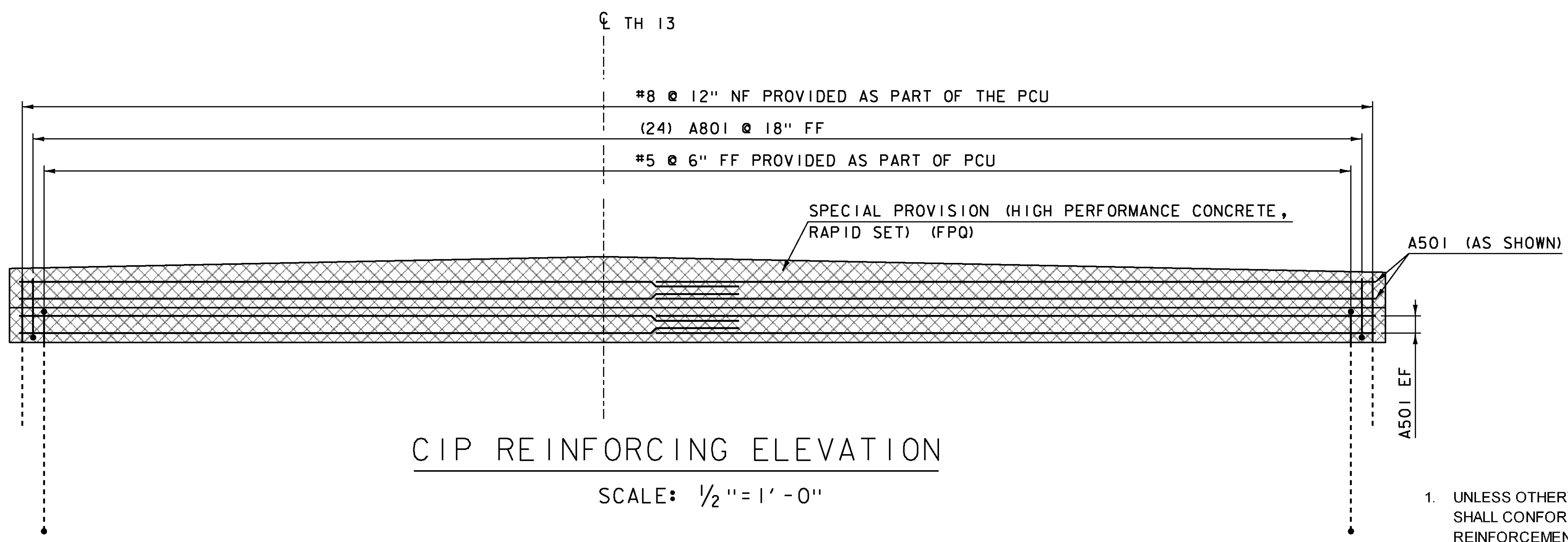
CIP REINFORCING PLAN

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



CIP REINFORCING TYPICAL

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



CIP REINFORCING ELEVATION

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

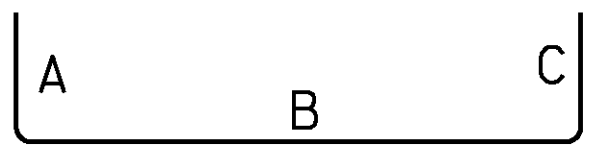
NOTE: NF=NEAR FACE  
 FF=FAIR FACE  
 EF=EACH FACE  
 ▲=CUT TO FIT IN FIELD  
 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.  
 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS

REINFORCING STEEL NOTES

- 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 (ASTMA 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
- 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".
- BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
- ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
- "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
- "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
- WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
- ▲ DENOTES BARS TO BE CUT IN FIELD.
- \* DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.

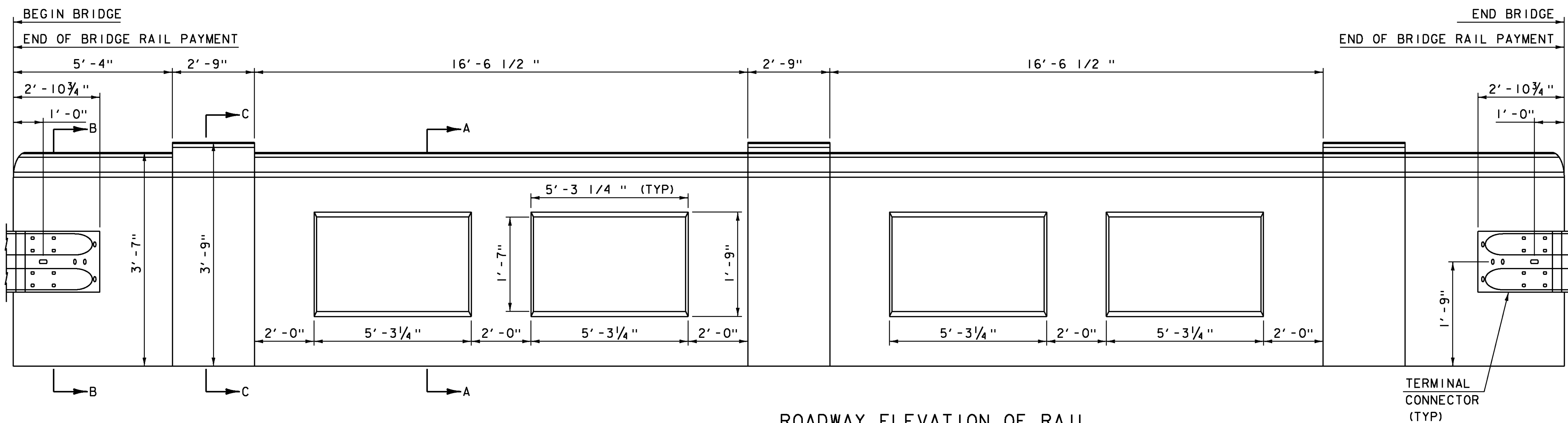
REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
*	13	5	18'- 10"	1A501	STR	18'- 10"											
*	25	8	3'- 0"	1A801	2	1'- 3"	1'- 9"	---									
*	13	5	18'- 10"	2A501	STR	18'- 10"											
*	25	8	3'- 0"	2A801	2	1'- 3"	1'- 9"	---									

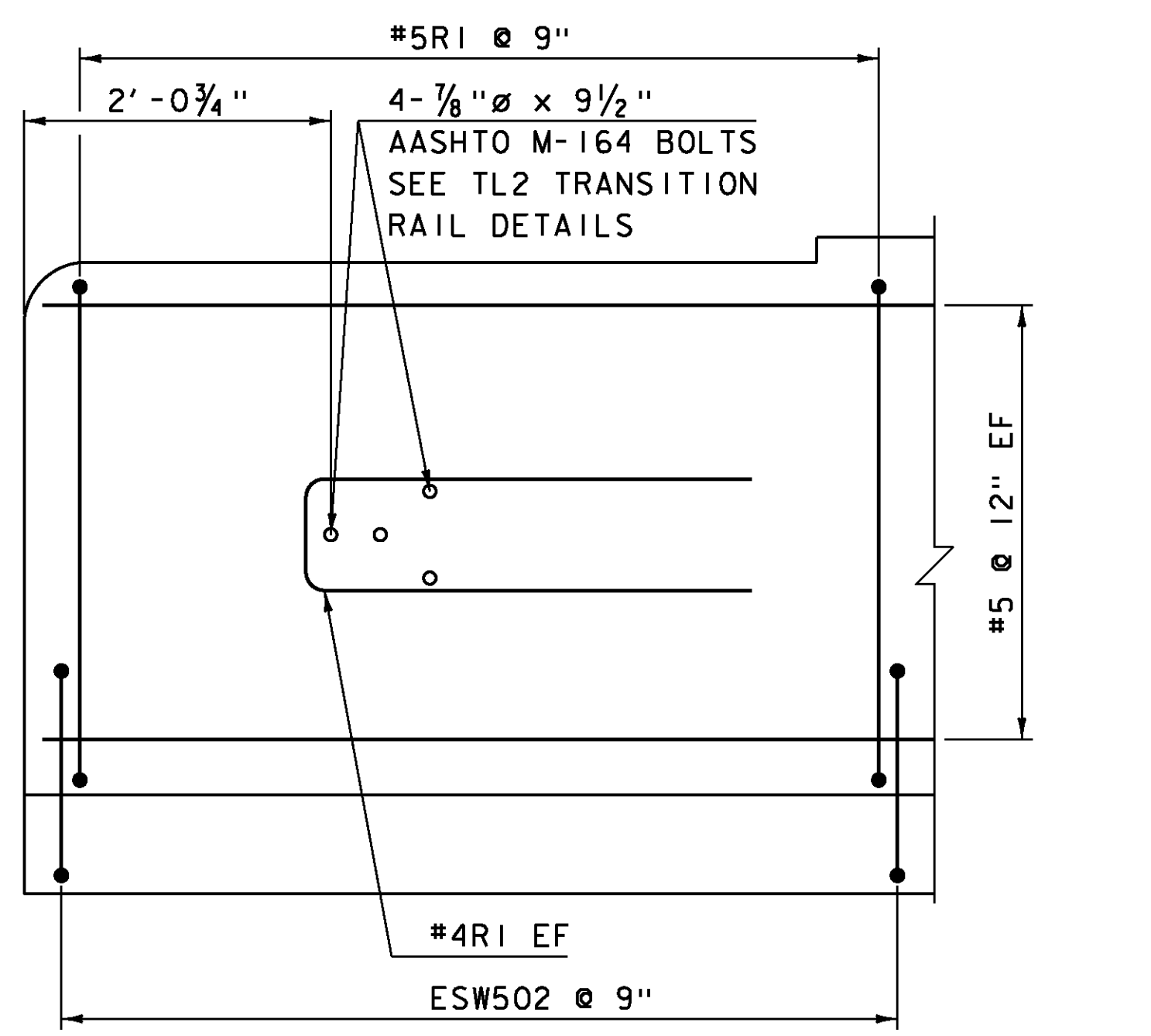


BAR TYPE 2

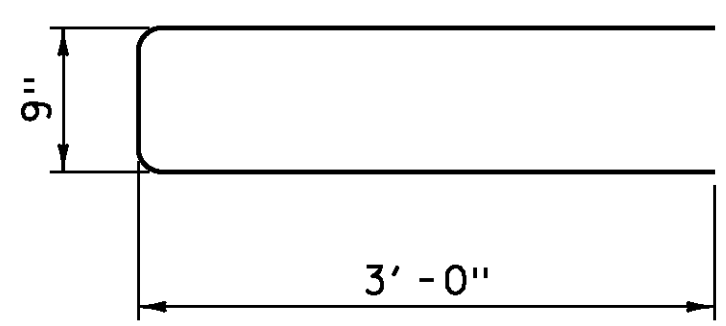
PROJECT NAME: RUTLAND CITY  
 PROJECT NUMBER: BRF 3000 (18)  
 FILE NAME: s96j244sub.dgn  
 PROJECT LEADER: C. CARLSON  
 DESIGNED BY: M. EVANS-MONGEON  
 ABUTMENT 1 & 2 REINFORCING DETAILS 2  
 PLOT DATE: 28-FEB-2014  
 DRAWN BY: M.UMBERGER  
 CHECKED BY: M. LONGSTREET  
 SHEET 24 OF 44



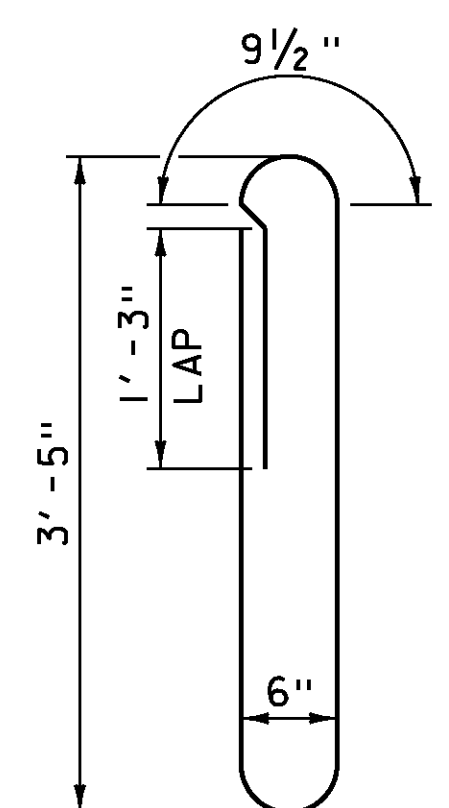
**ROADWAY ELEVATION OF RAIL**  
 SCALE: VERTICAL: 1" = 1'-0"  
 HORIZONTAL: 1/2" = 1'-0"



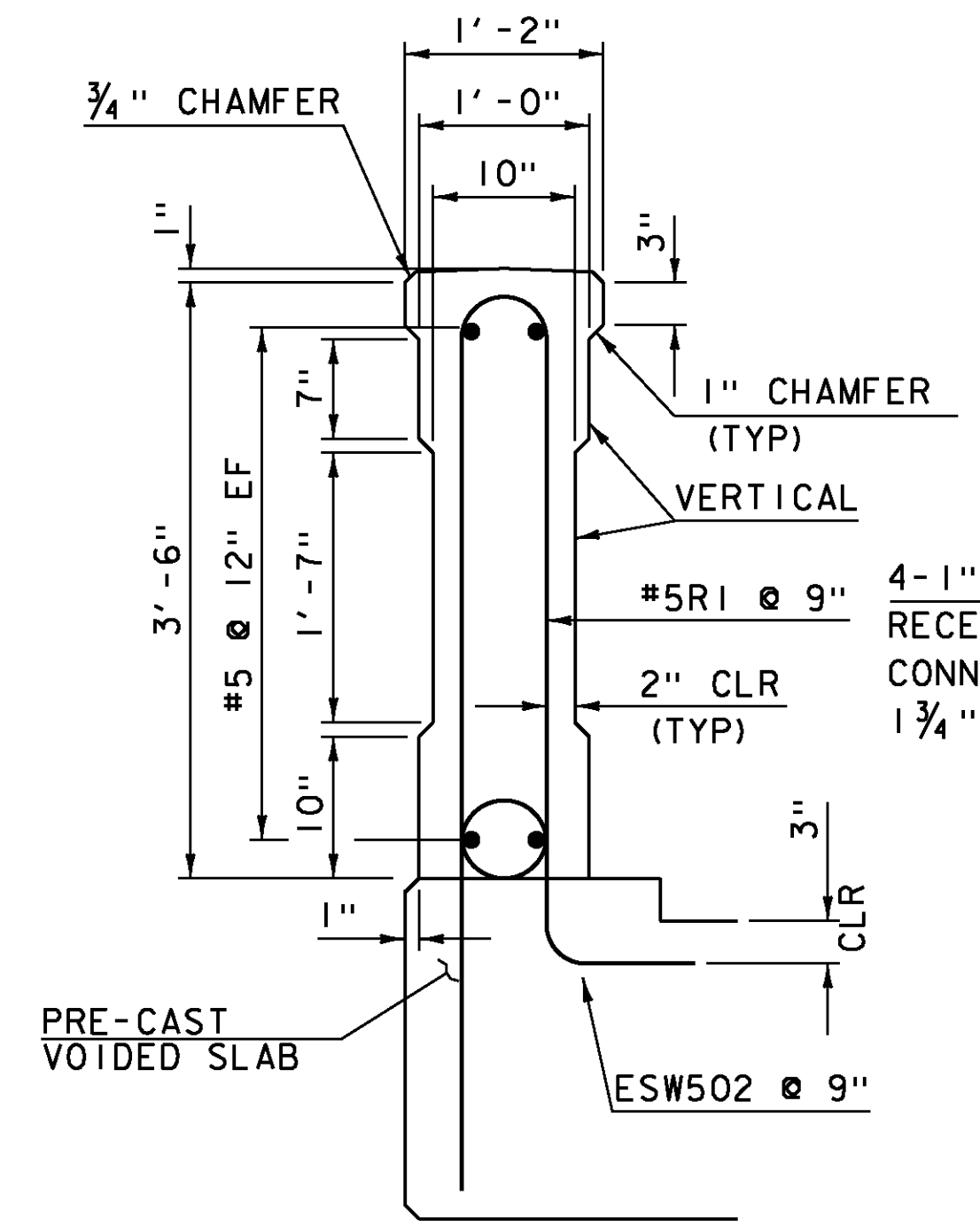
**TYPICAL REINFORCING PLACEMENT**  
 SCALE 1" = 1'-0"



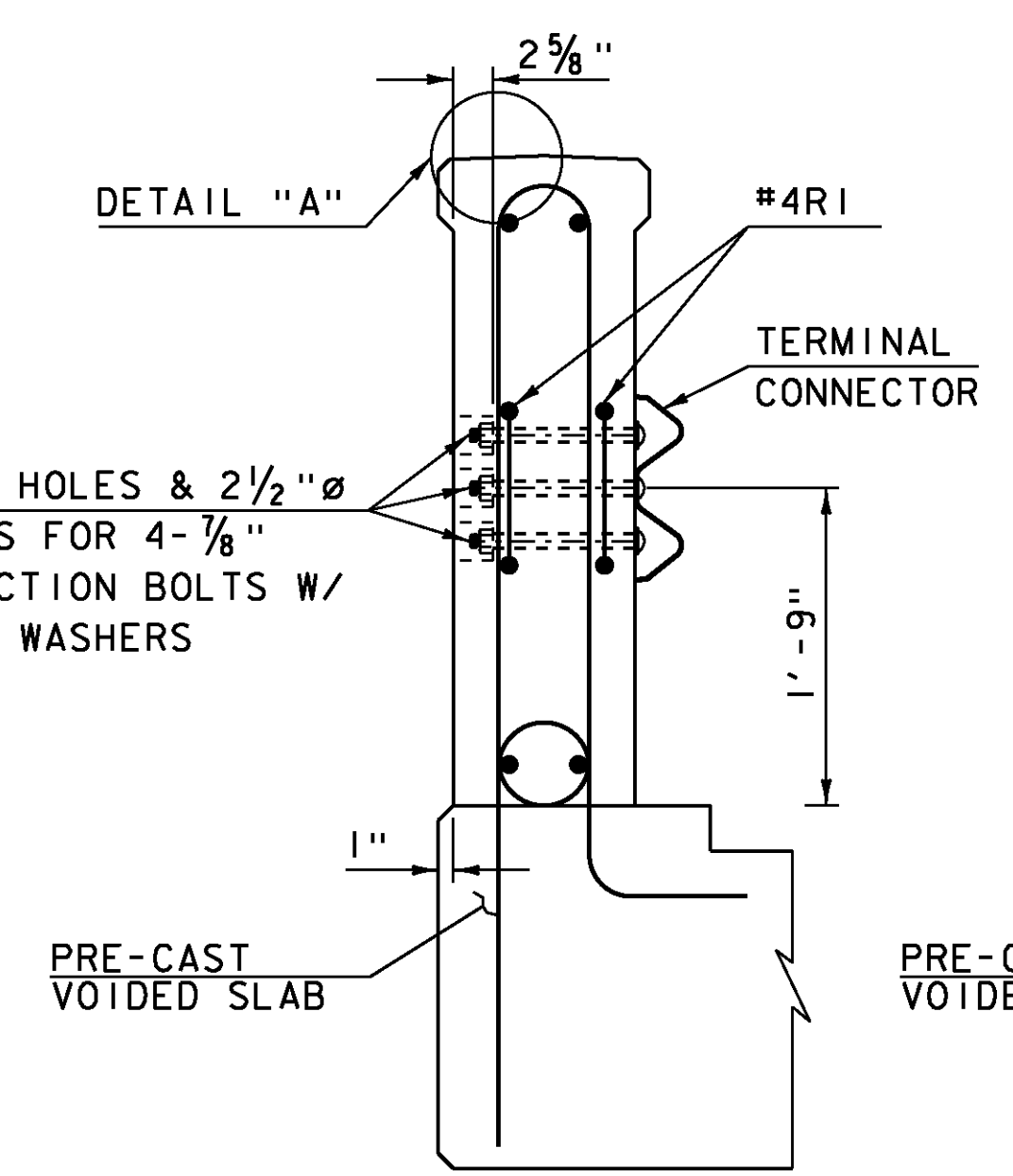
**BAR #4RI**  
 SCALE 1" = 1'-0"  
 8 - REQUIRED



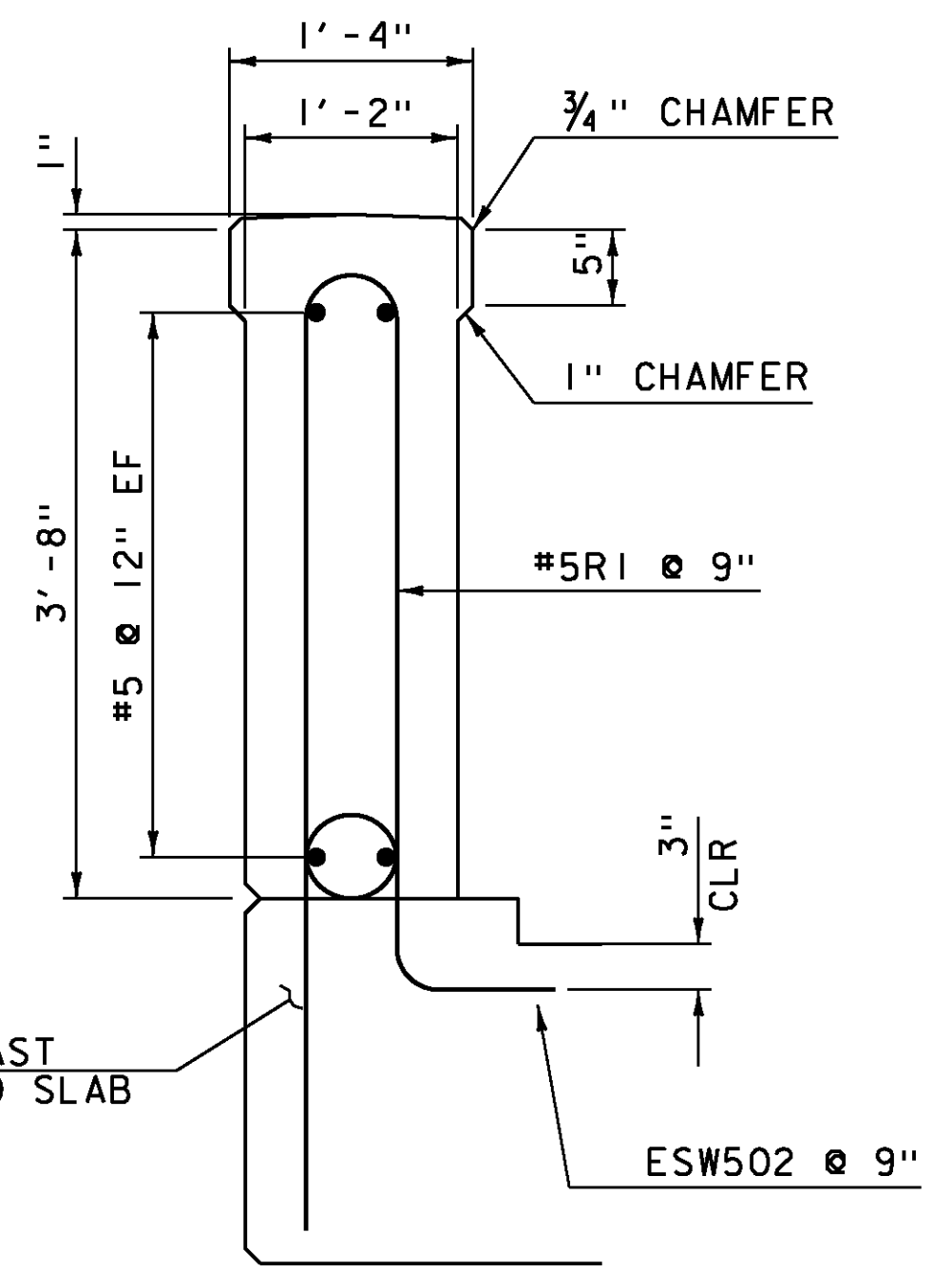
**BAR #5RI**  
 SCALE 1" = 1'-0"  
 164 - REQUIRED



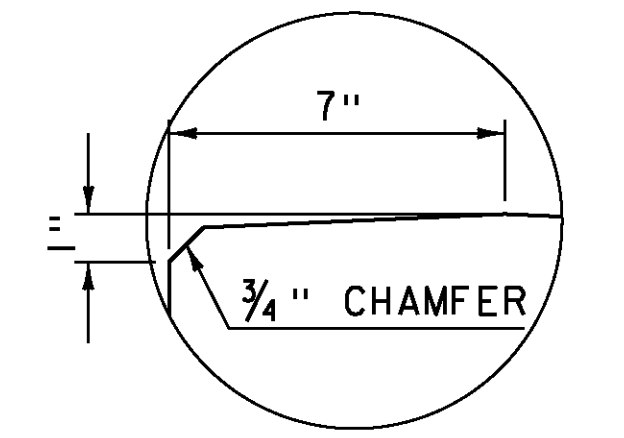
**SECTION A-A**  
 SCALE 1" = 1'-0"



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



**SECTION C-C**  
 SCALE 1" = 1'-0"

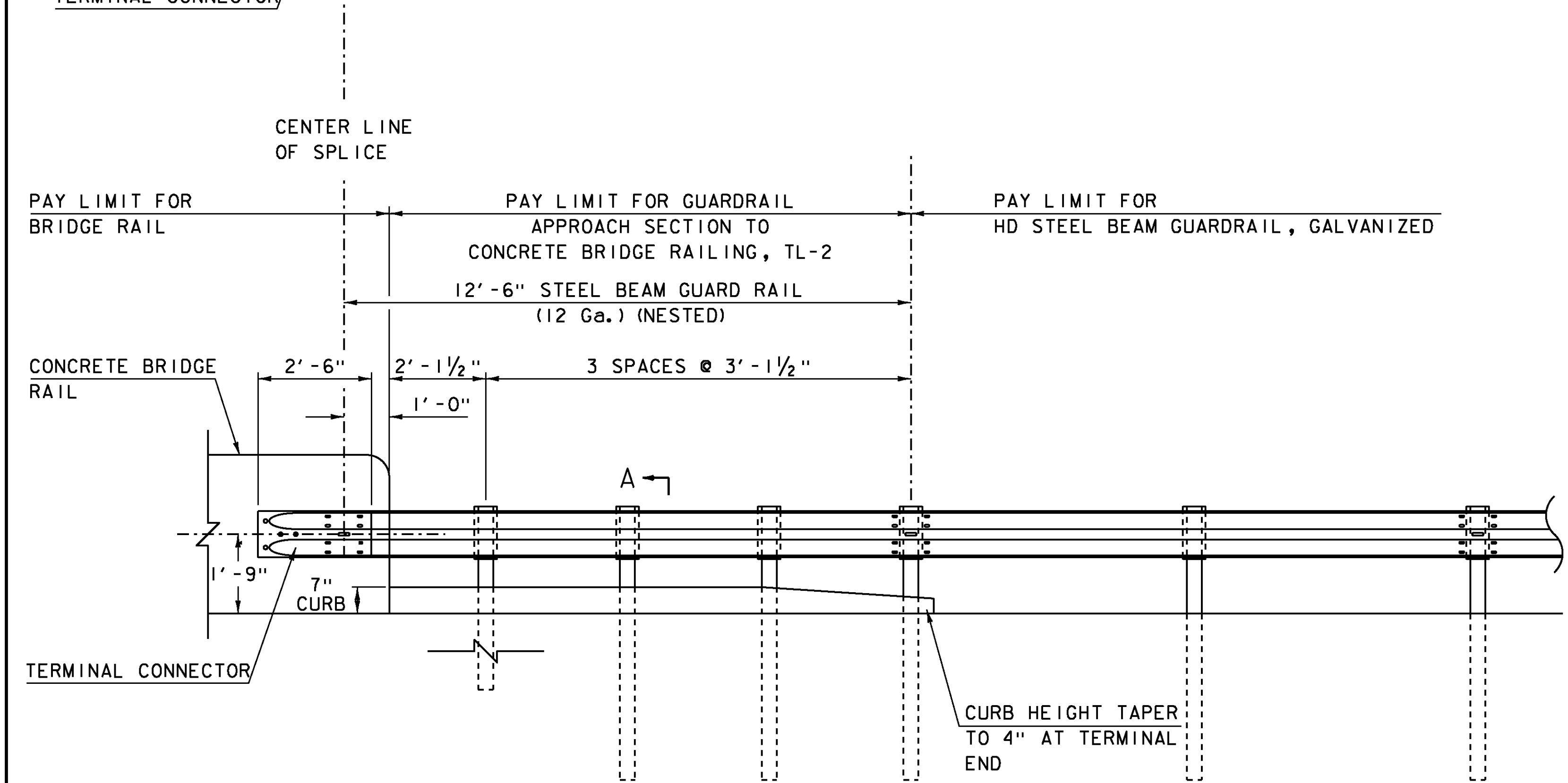
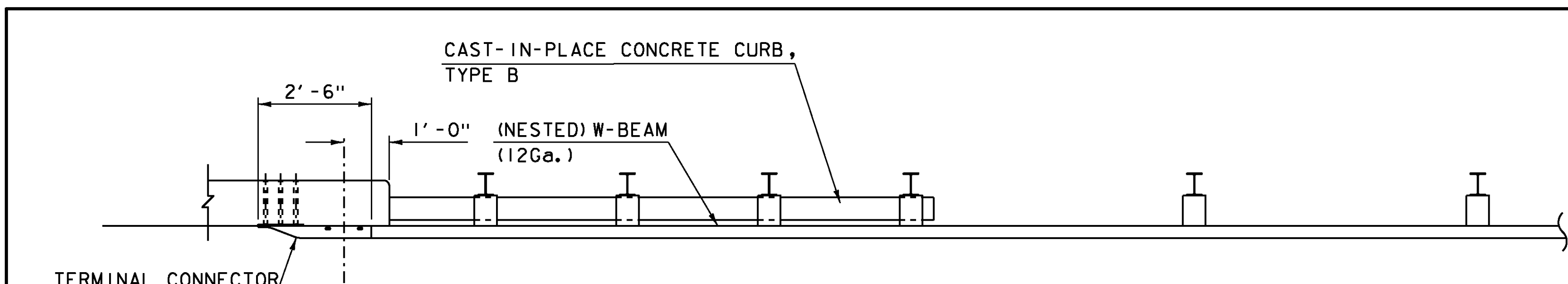


**DETAIL "A"**  
 SCALE 3" = 1'-0"

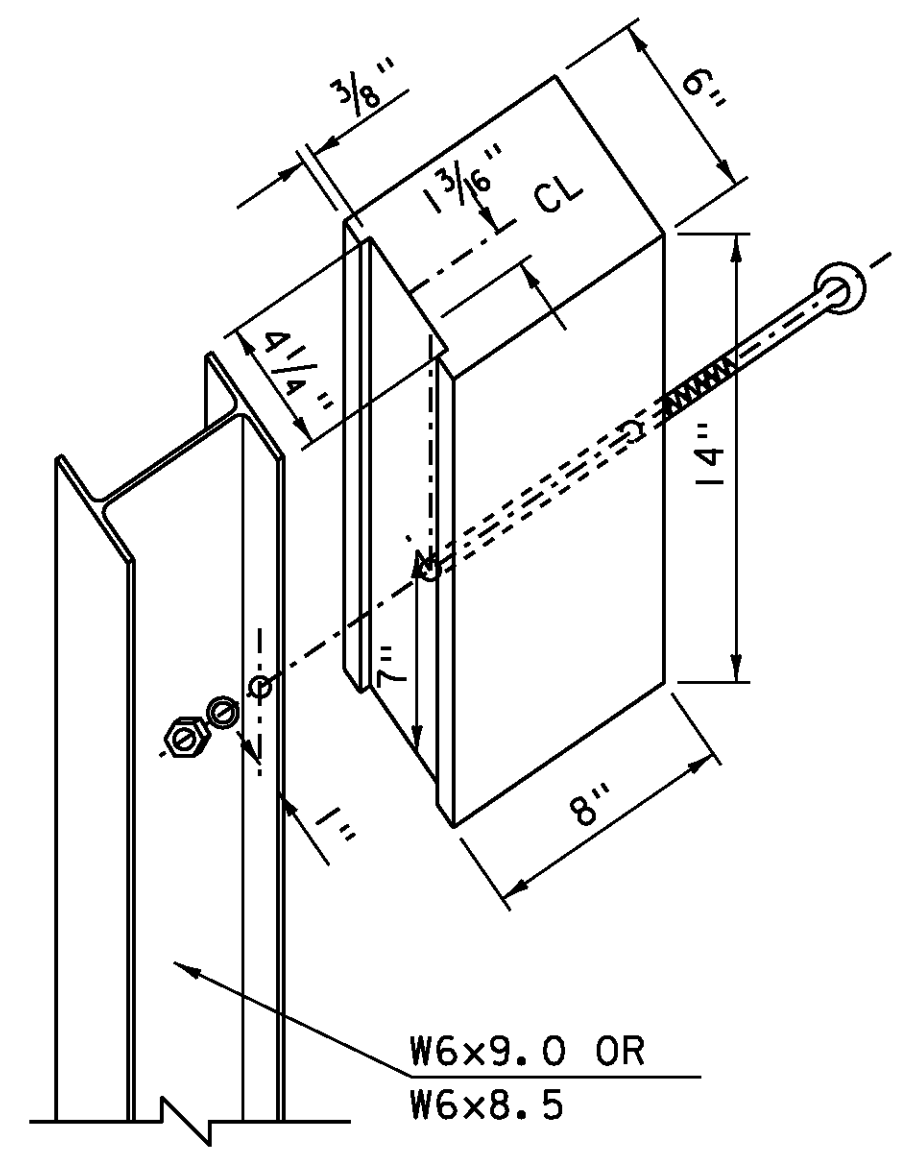
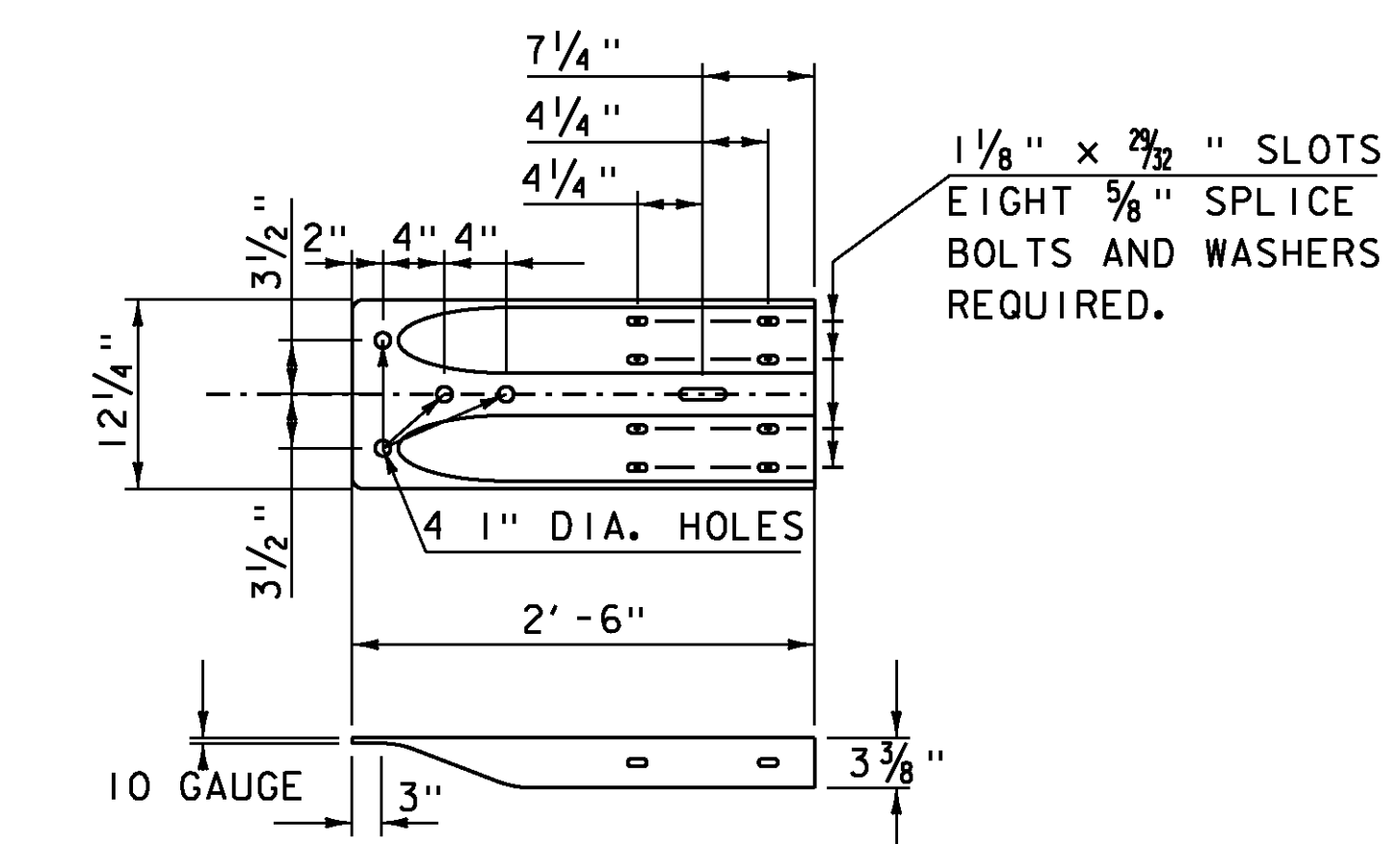
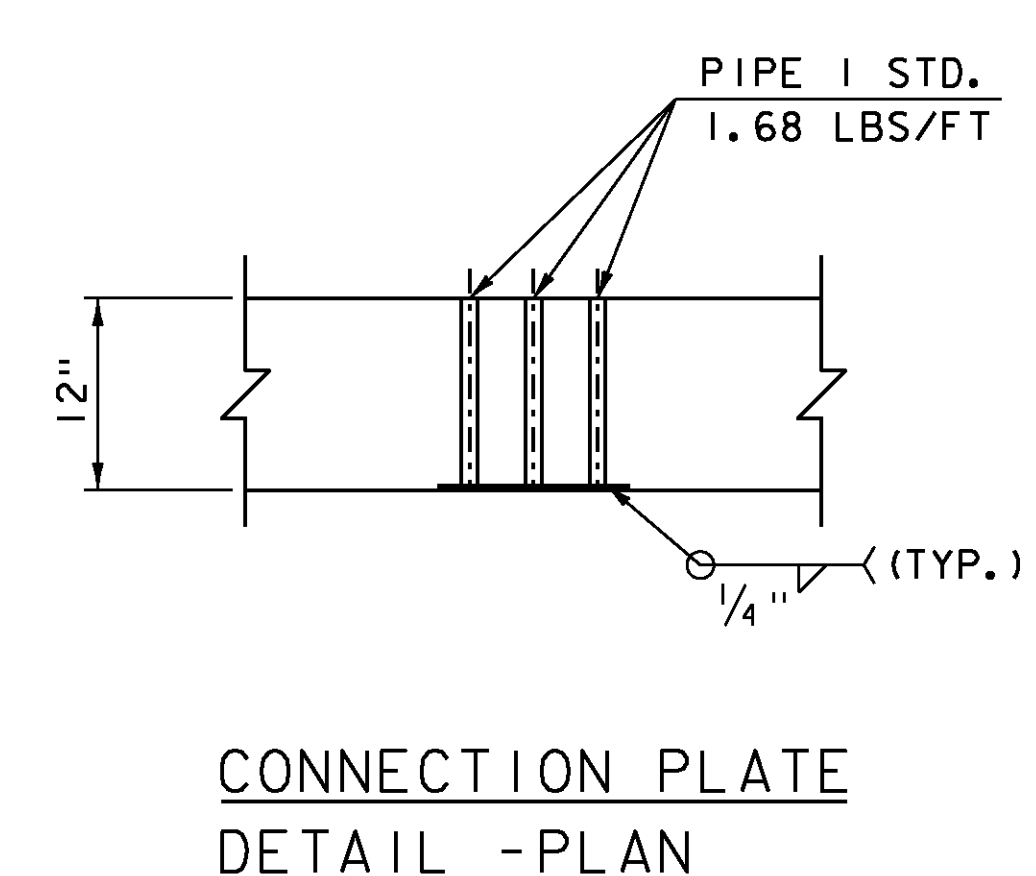
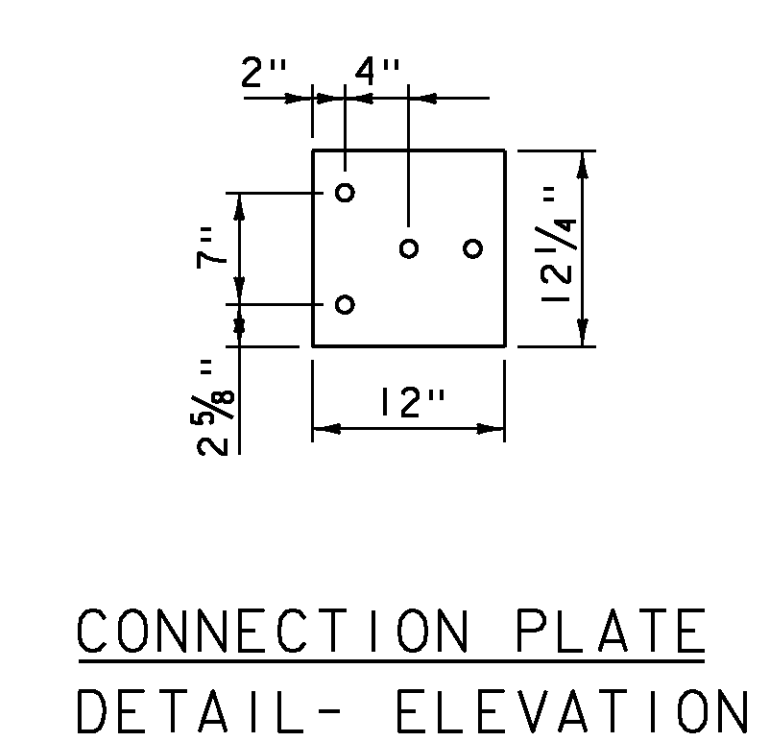
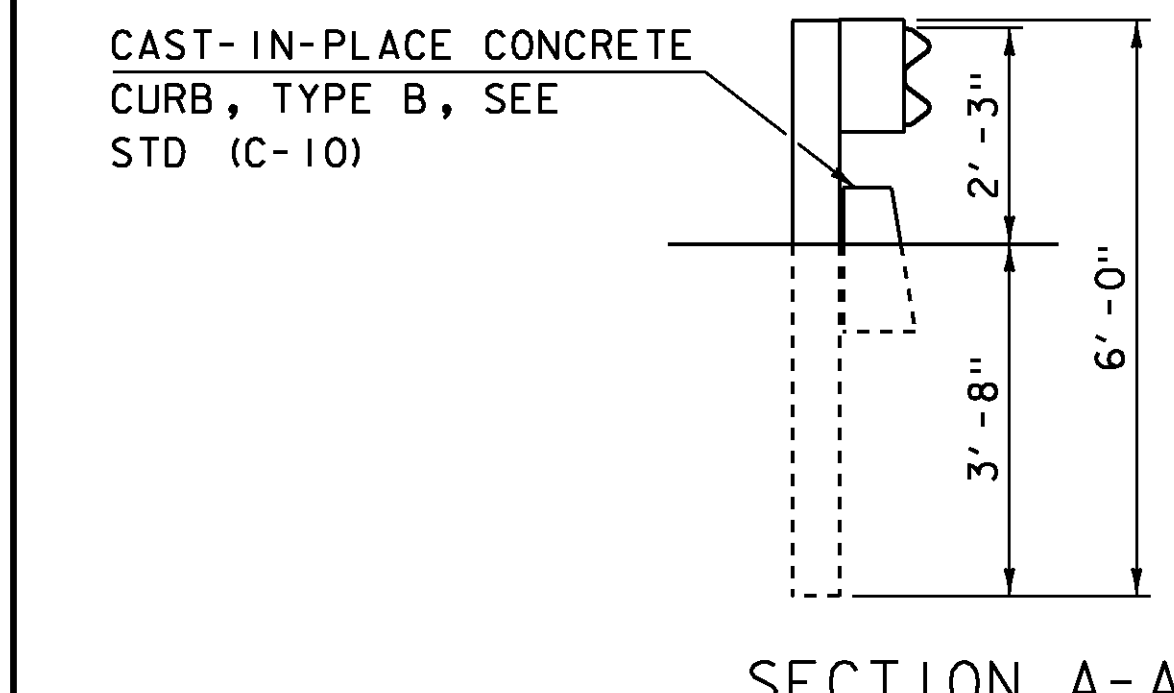
- NOTES:**
- BRIDGE RAIL SHALL BE PAID FOR UNDER ITEM 900.640 "SPECIAL PROVISION (BRIDGE RAILING, TEXAS) (FPQ)"
  - REINFORCING STEEL SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR LEVEL II REINFORCING AND WILL BE PAID FOR UNDER ITEM 900.640 SPECIAL PROVISION (BRIDGE RAILING, TEXAS) (FPQ)
  - ALL EXPOSED CONCRETE SHALL BE TREATED WITH WATER REPELLANT, SILANE IN ACCORDANCE WITH SECTION 514.
  - THE BRIDGE RAIL SHALL HAVE A RUBBED FINISH IN ACCORDANCE WITH SECTION 501.

**NOTE:**  
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 EF = EACH FACE  
 ▲ = CUT TO FIT IN FIELD  
 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.  
 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: RUTLAND CITY	PLOT DATE: 28-FEB-2014
PROJECT NUMBER: BRF 3000 (18)	DRAWN BY: EVANS-MONGEON
FILE NAME: s96j244rail.dgn	CHECKED BY:
PROJECT LEADER: C.W. CARLSON	SHEET 25 OF 44
DESIGNED BY: EVANS-MONGEON	
BRIDGE RAIL DETAILS	



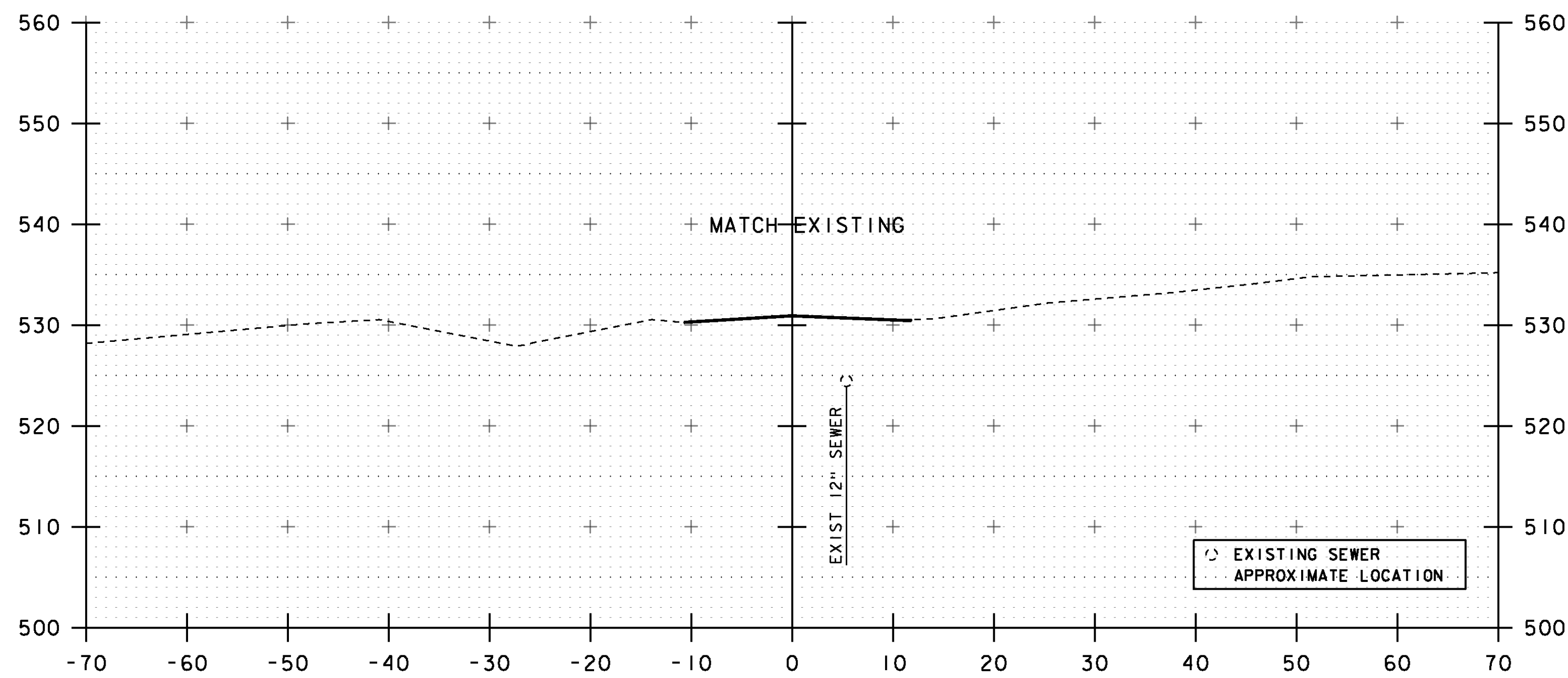
TYPICAL ELEVATION VIEW



GENERAL NOTES

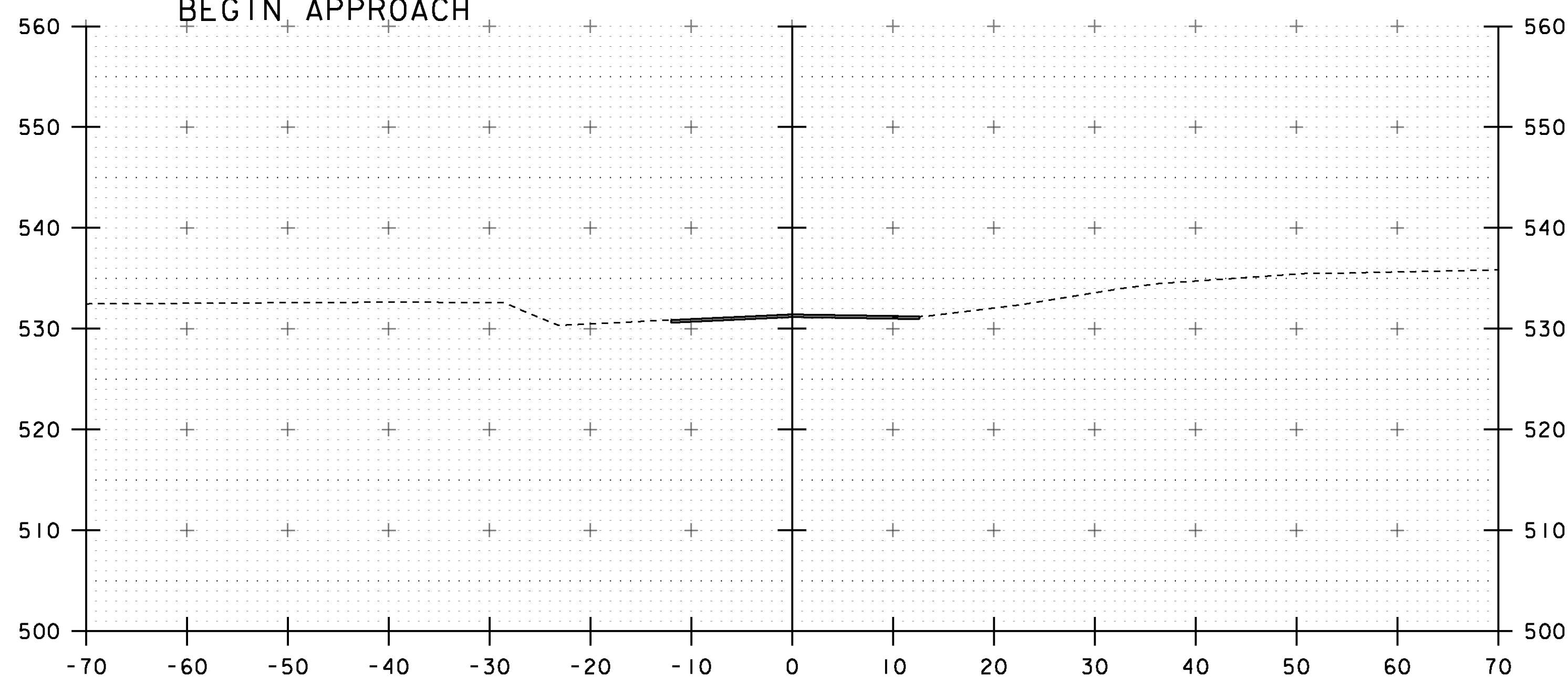
1. A COMPOSITE MATERIAL POST AND/OR BLOCKOUT FROM THE APPROVED PRODUCTS LIST MAY BE SUBSTITUTED FOR A POST AND/OR BLOCKOUT OF SIMILAR DIMENSIONS.
2. REFER TO STANDARD DRAWINGS G-1 AND G-ID FOR ADDITIONAL DETAILS.
3. THE TERMINAL CONNECTOR SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 621.746 "GUARDRAIL APPROACH SECTION TO CONCRETE BRIDGE RAILING, TL-2". THE CONNECTION PLATE SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 900.640 "SPECIAL PROVISION (BRIDGE RAILING, TEXAS) (FPQ)".

PROJECT NAME:	RUTLAND CITY	PLOT DATE:	24-MAR-2014
PROJECT NUMBER:	BRF 3000 (18)	DRAWN BY:	EVANS-MONGEON
FILE NAME:	s96j244rail.dgn	CHECKED BY:	M. LONGSTREET
PROJECT LEADER:	C. CARLSON	SHEET	26 OF 44
DESIGNED BY:	M. EVANS-MONGEON	TRANSITION RAIL DETAIL	



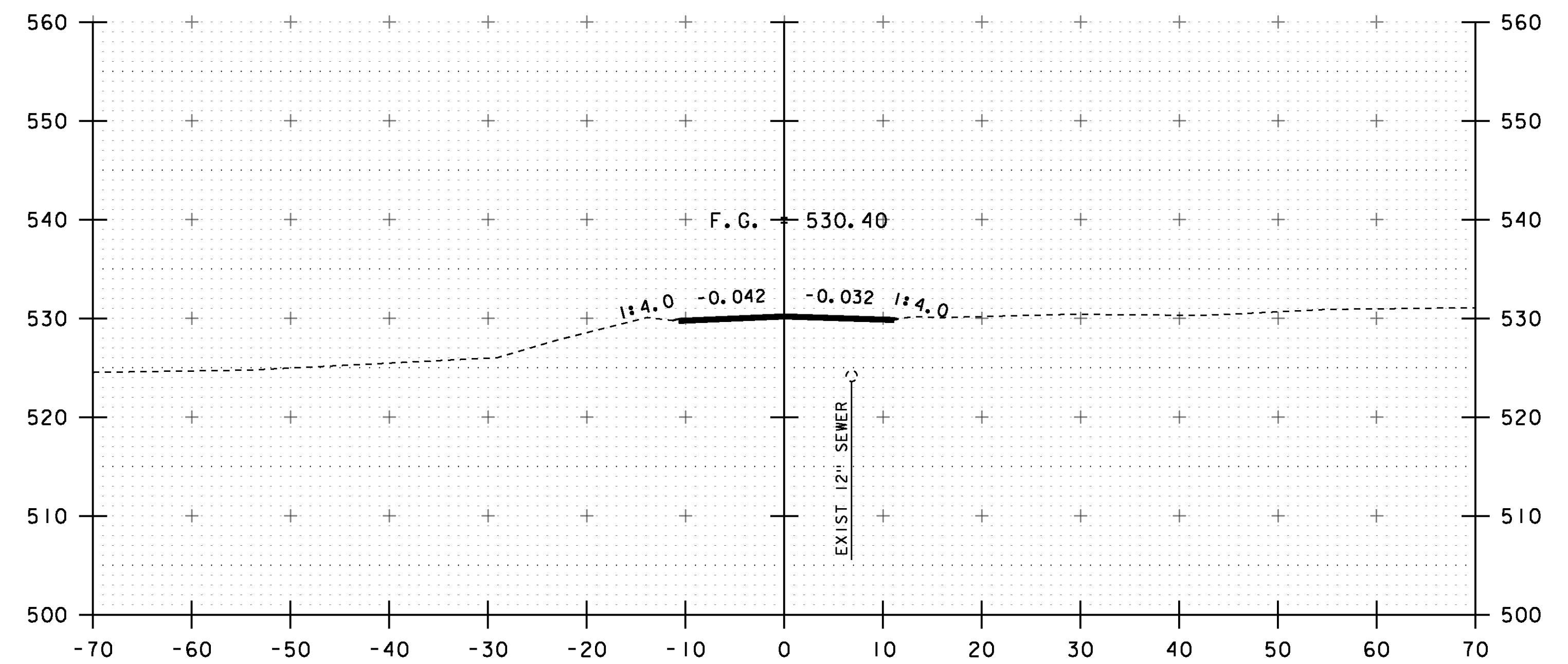
1+50

STA 1+50  
END NON-PARTICIPATING PAVING  
BEGIN APPROACH

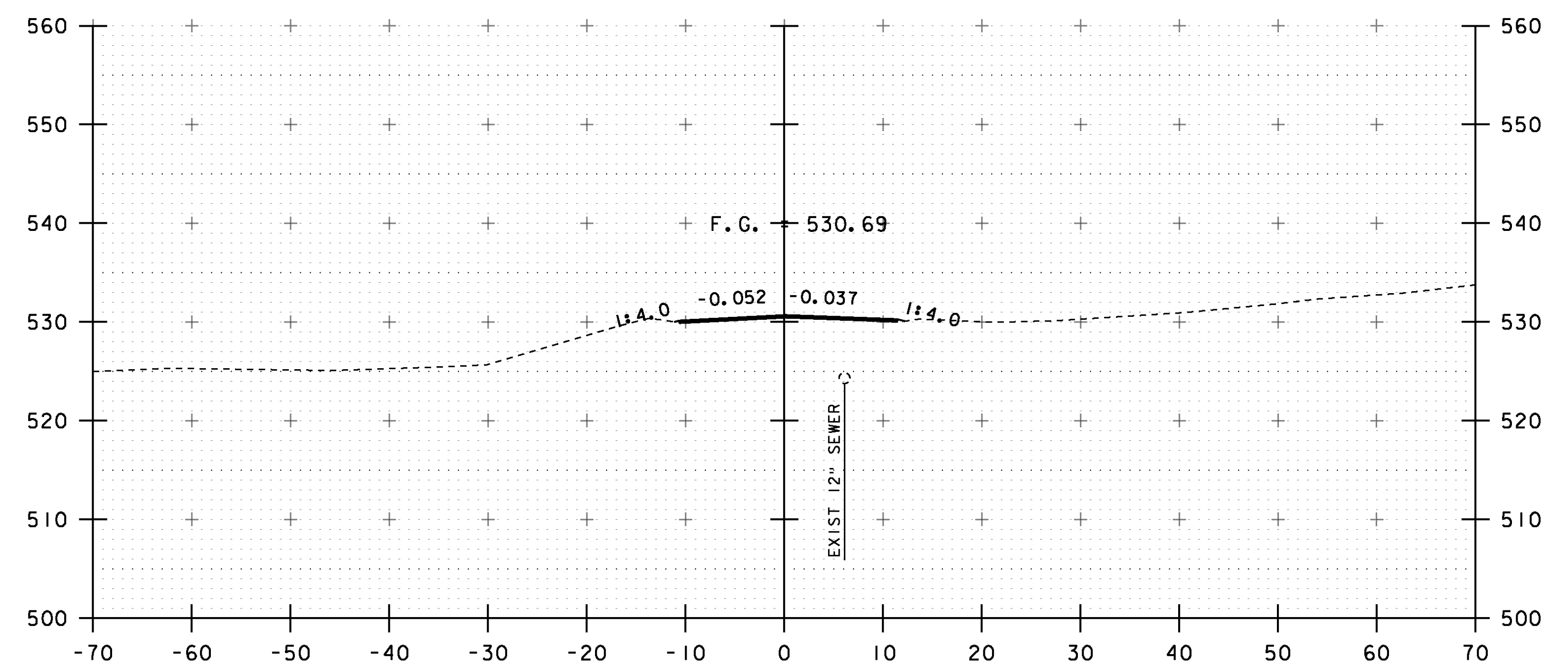


1+25

STA 0+06.29  
BEGIN NON-PARTICIPATING PAVING



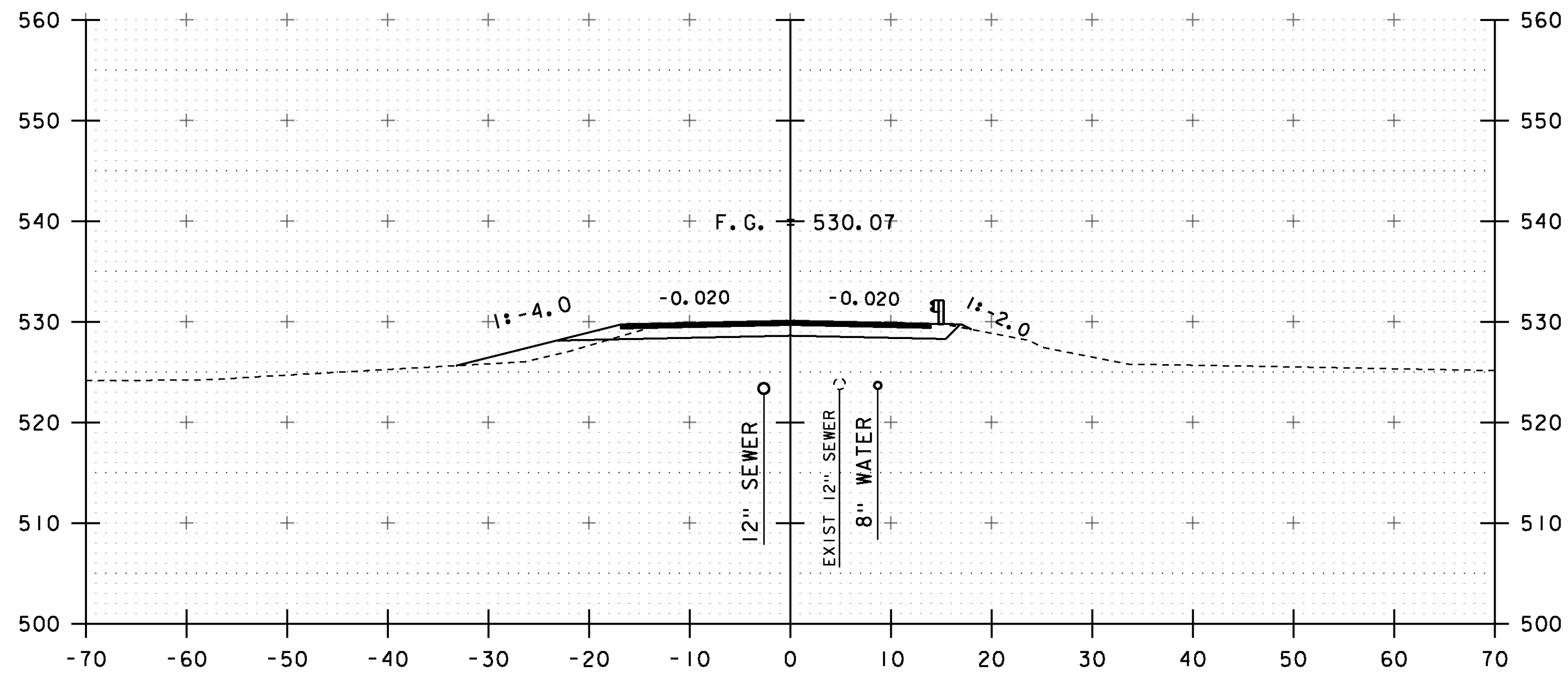
2+00



1+75

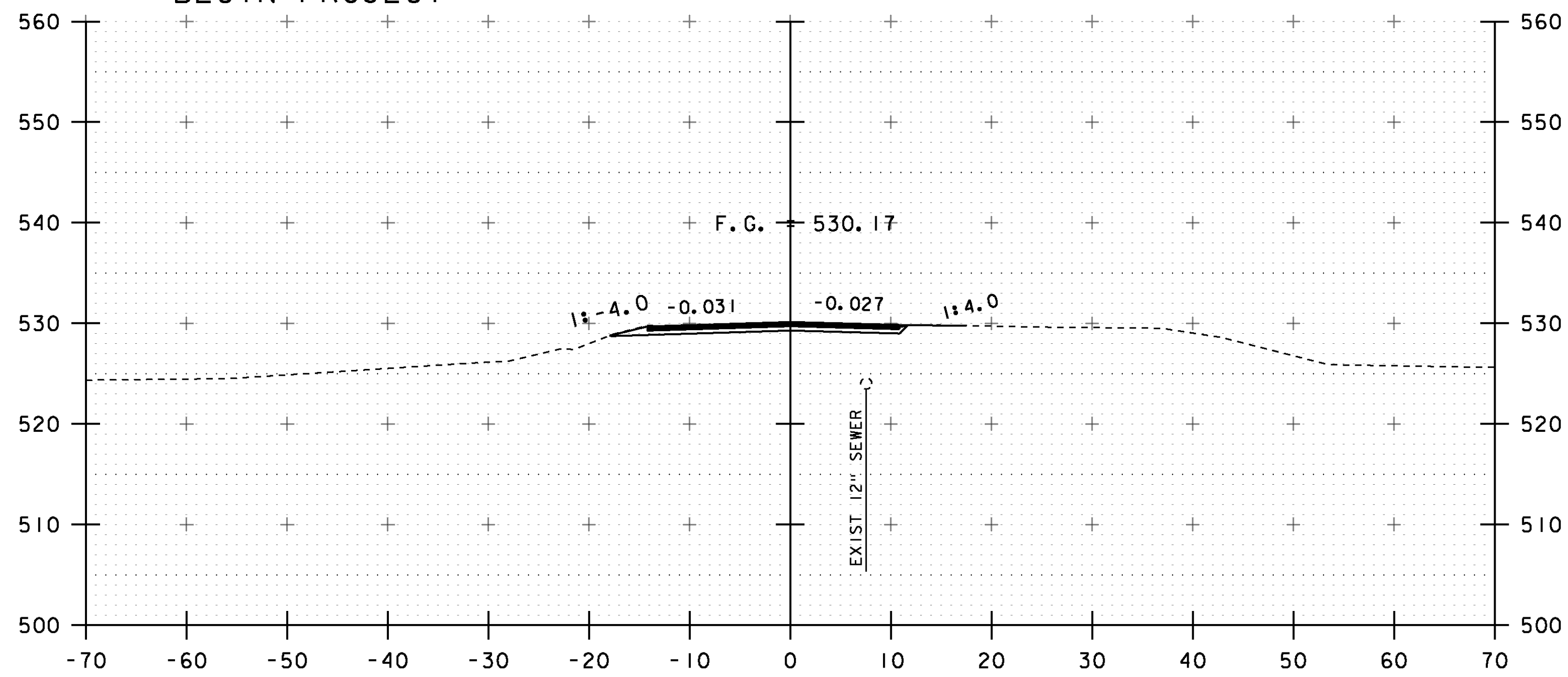
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PROJECT NAME: RUTLAND CITY	PLOT DATE: 28-FEB-2014
PROJECT NUMBER: BRF 3000(18)	DRAWN BY: R. PELLETT
FILE NAME: s96j244xs.dgn	CHECKED BY: M. E-M
PROJECT LEADER: C. CARLSON	SHEET 27 OF 44
DESIGNED BY: M. EVANS-MONGEON	
MAINLINE CROSS SECTIONS I	

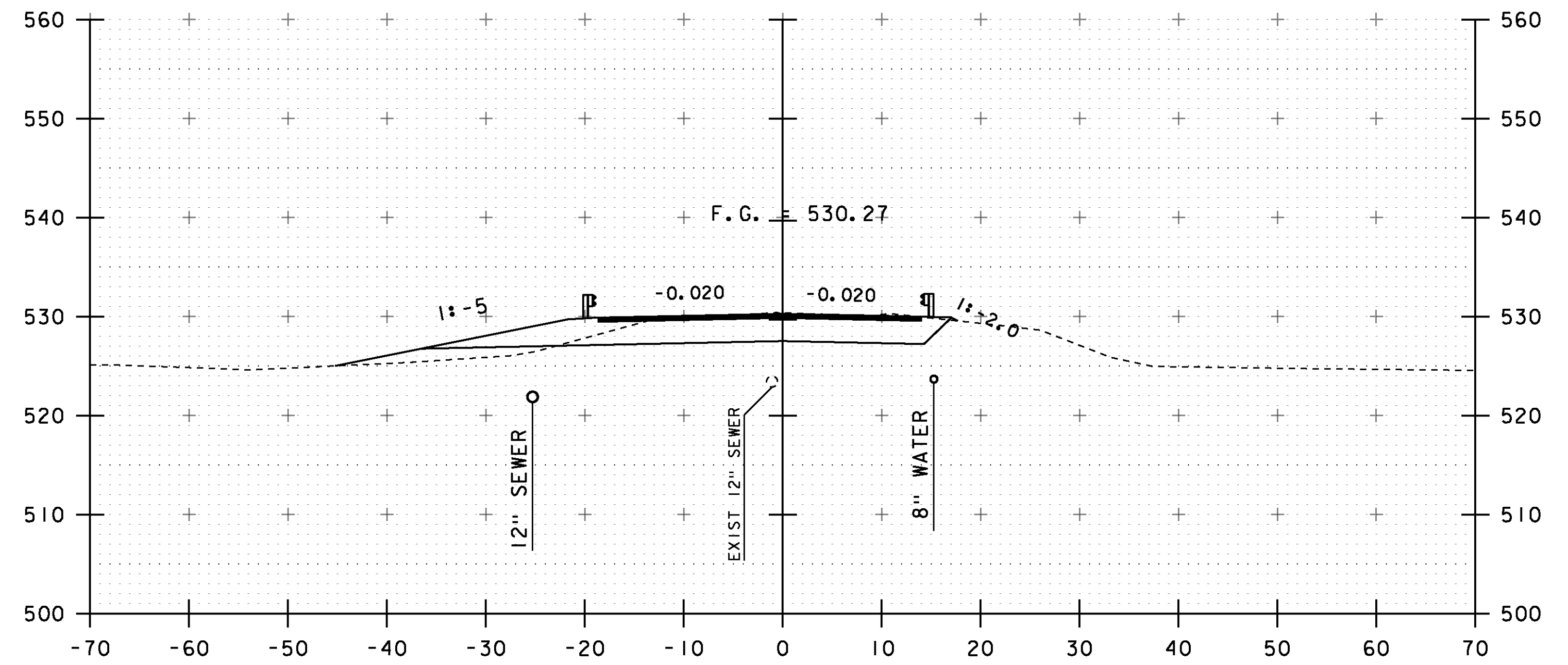


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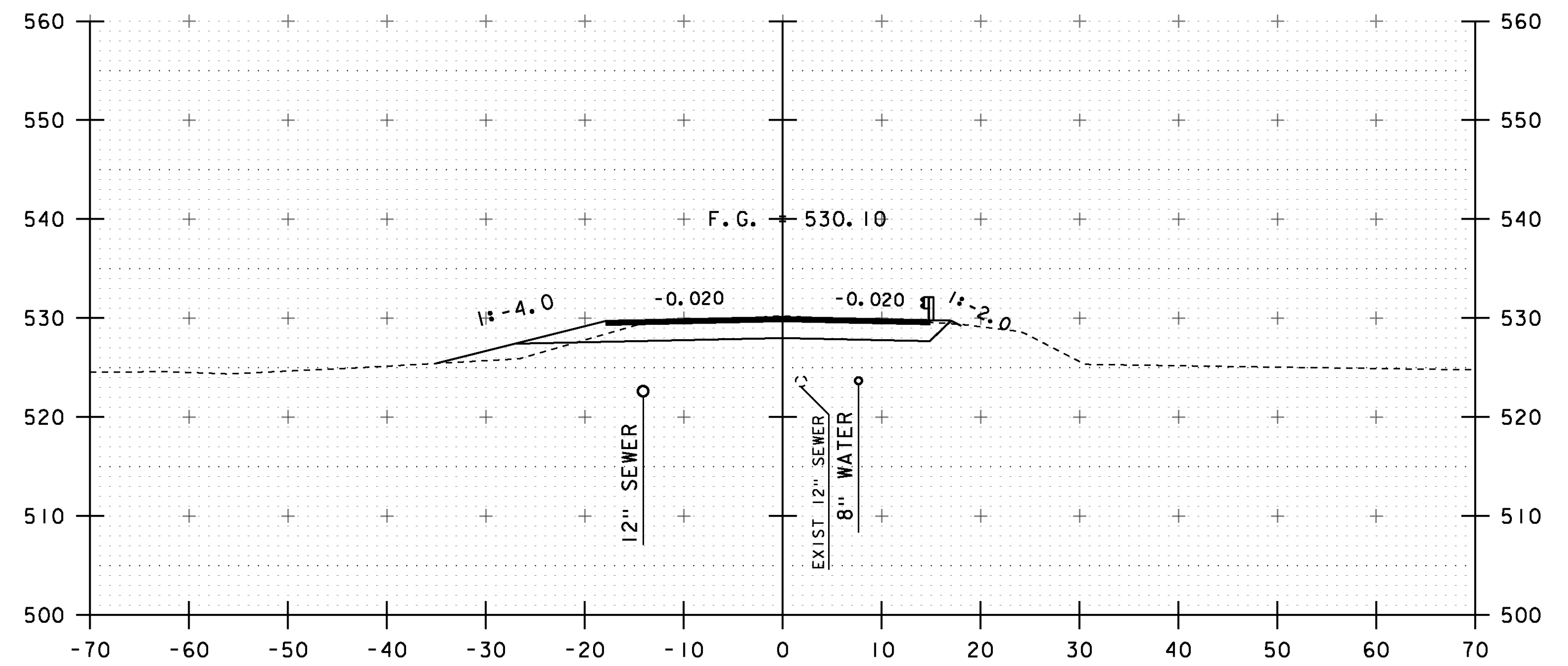
STA 2+50  
END APPROACH  
BEGIN PROJECT



2+25



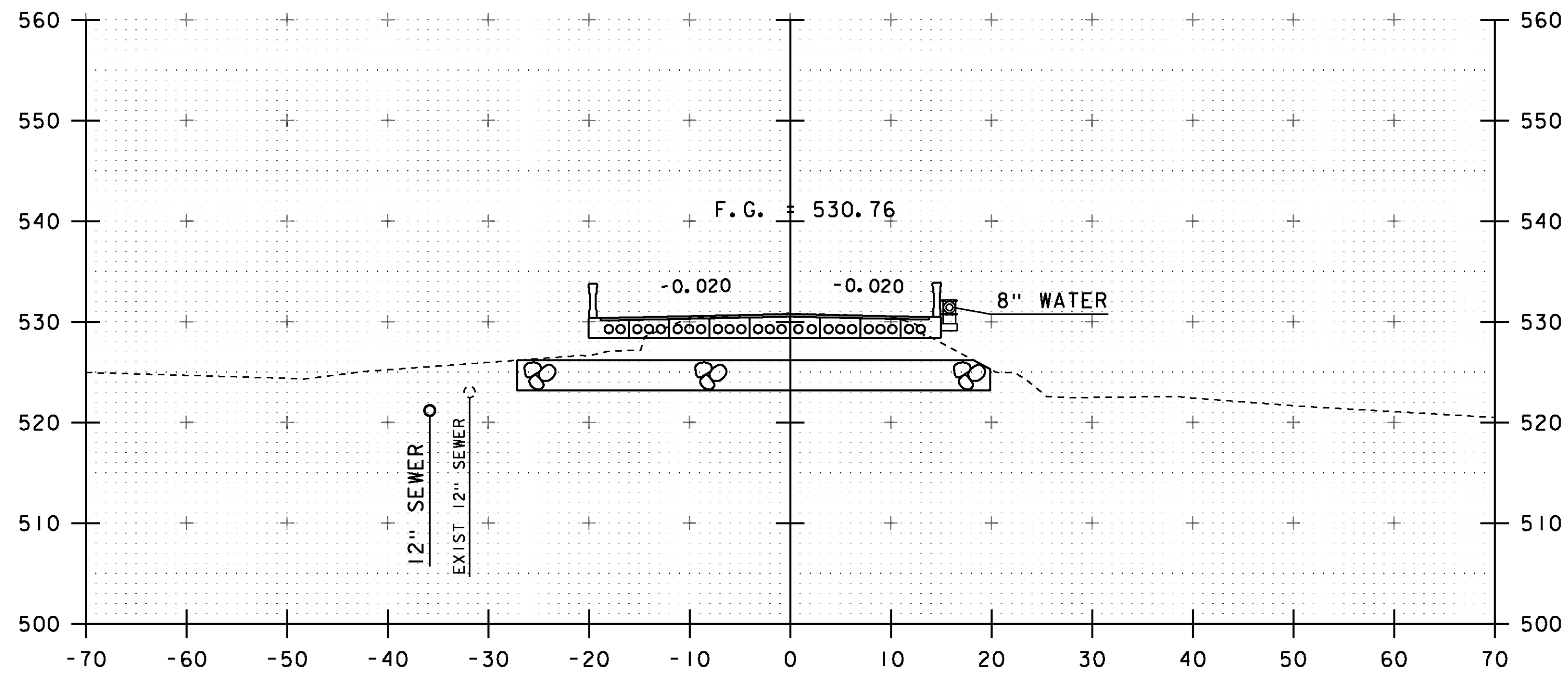
3+00



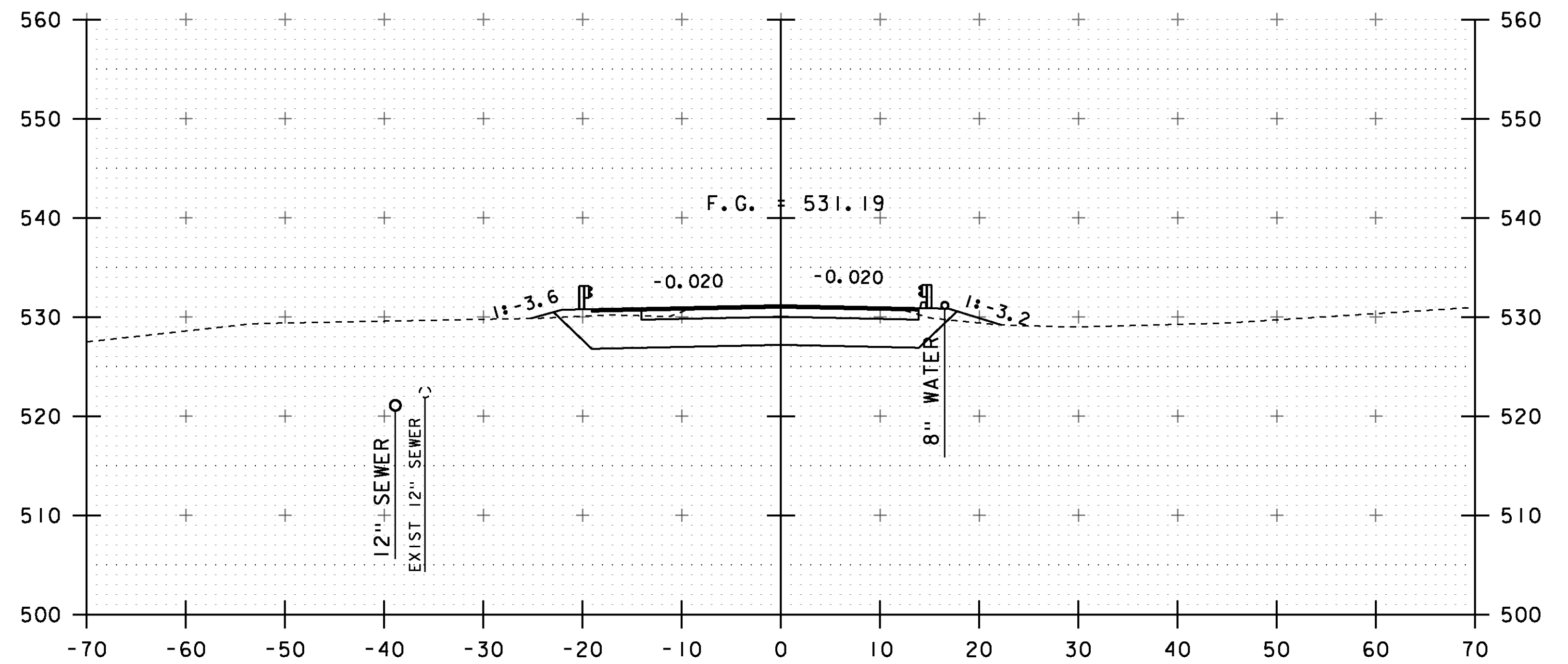
2+75

STA. 2+25 TO STA. 3+00

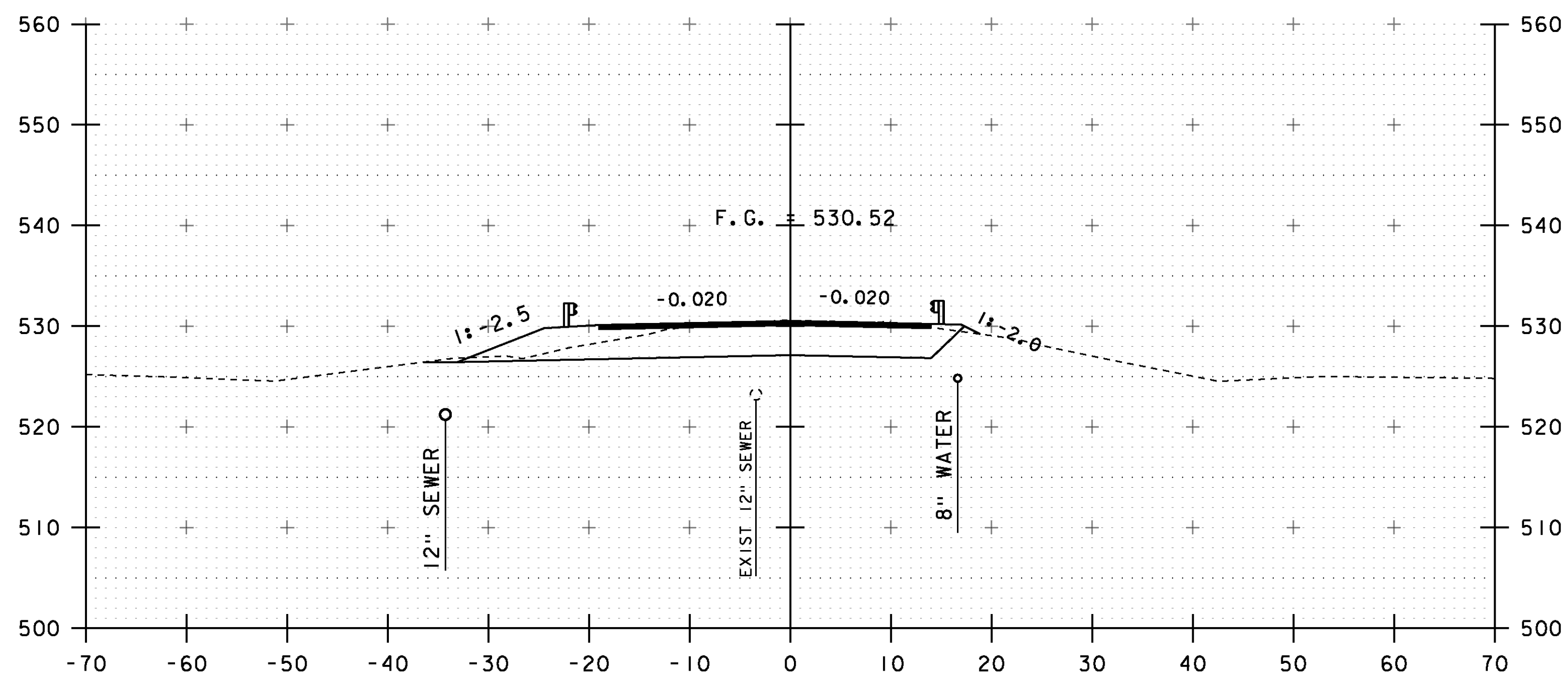
PROJECT NAME: RUTLAND CITY	
PROJECT NUMBER: BRF 3000(18)	
FILE NAME: s96j244xs.dgn	PLOT DATE: 28-FEB-2014
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. E-M
MAINLINE CROSS SECTIONS 2	SHEET 28 OF 44



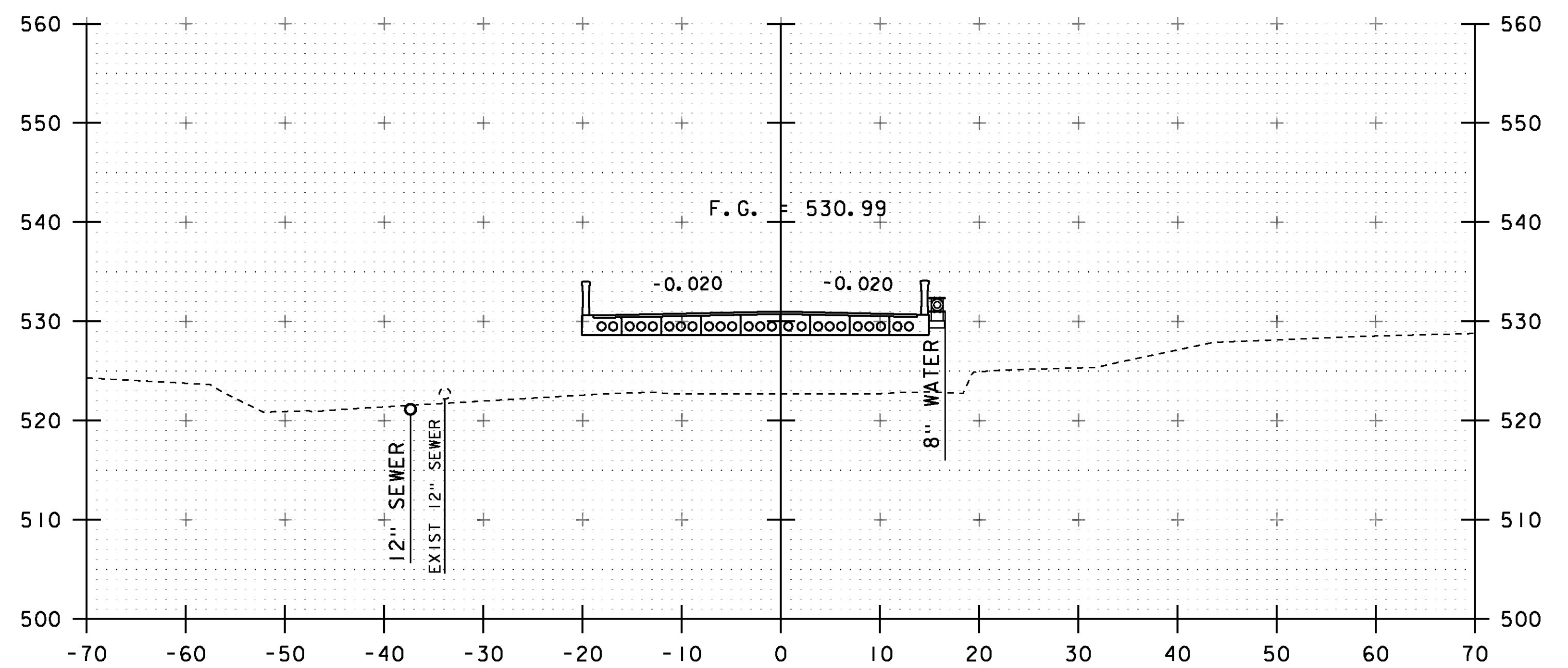
3+50  
BEGIN BRIDGE STA 3+40.50



4+00  
END BRIDGE STA 3+93.50



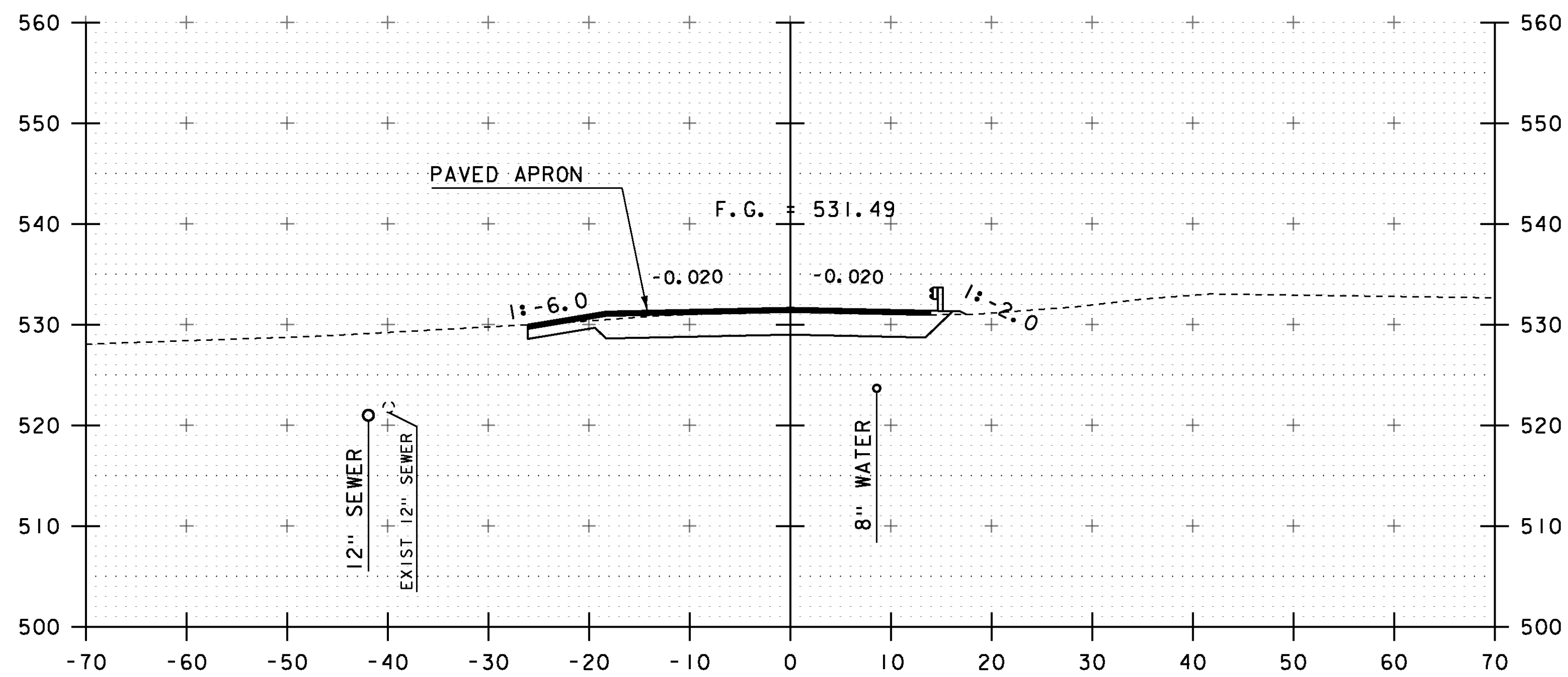
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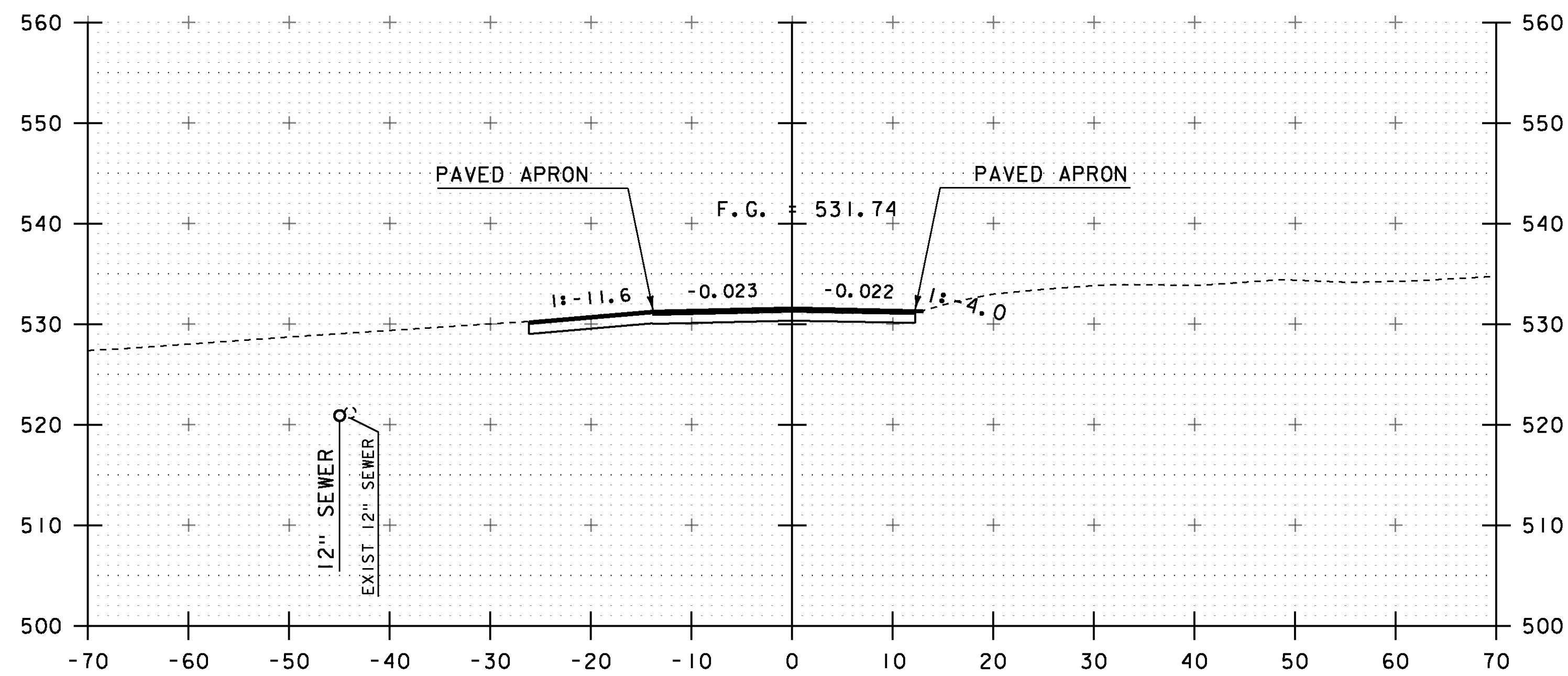
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STA. 3+25 TO STA. 4+00

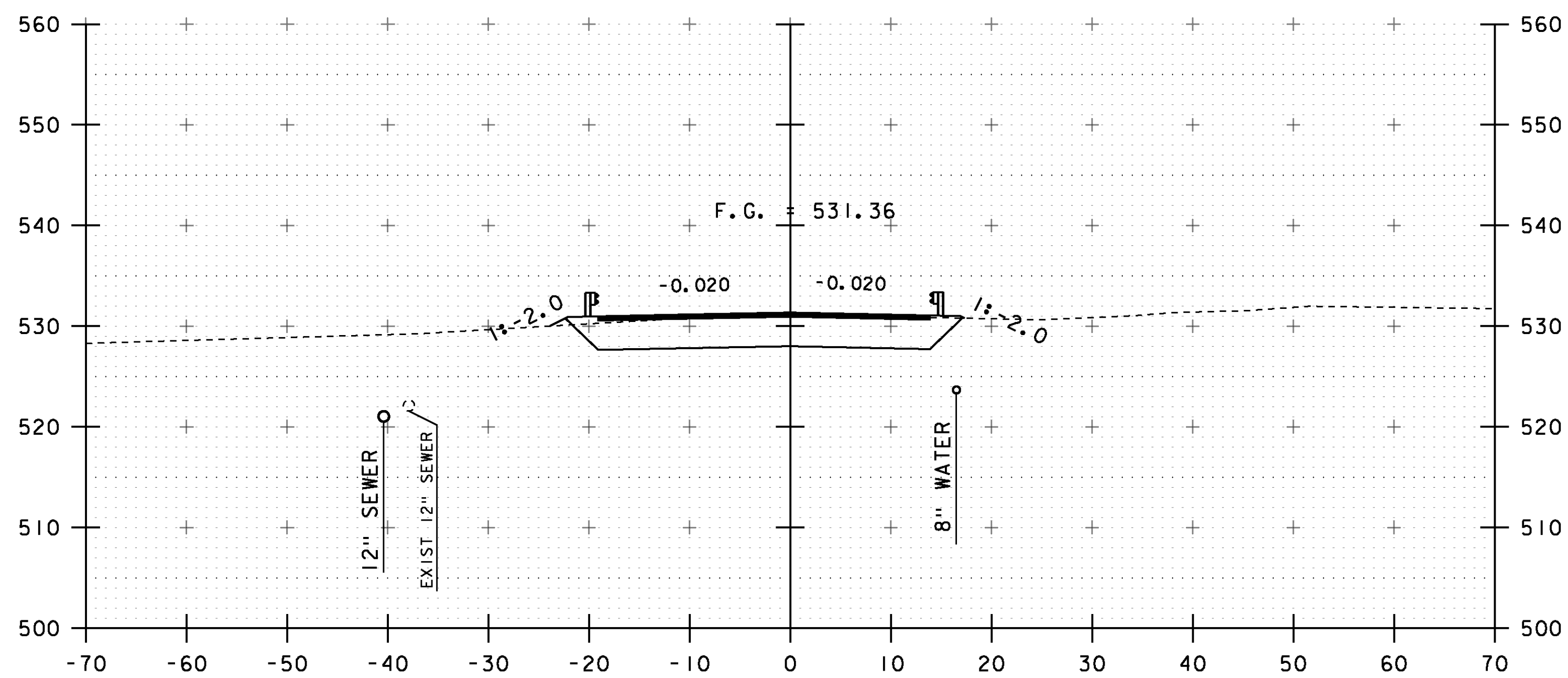
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PROJECT NUMBER:	BRF 3000(18)	PROJECT LEADER:	C. CARLSON	DRAWN BY:	R. PELLETT
		DESIGNED BY:	M. EVANS-MONGEON	CHECKED BY:	M. E-M
		MAINLINE CROSS SECTIONS 3		SHEET	29 OF 44



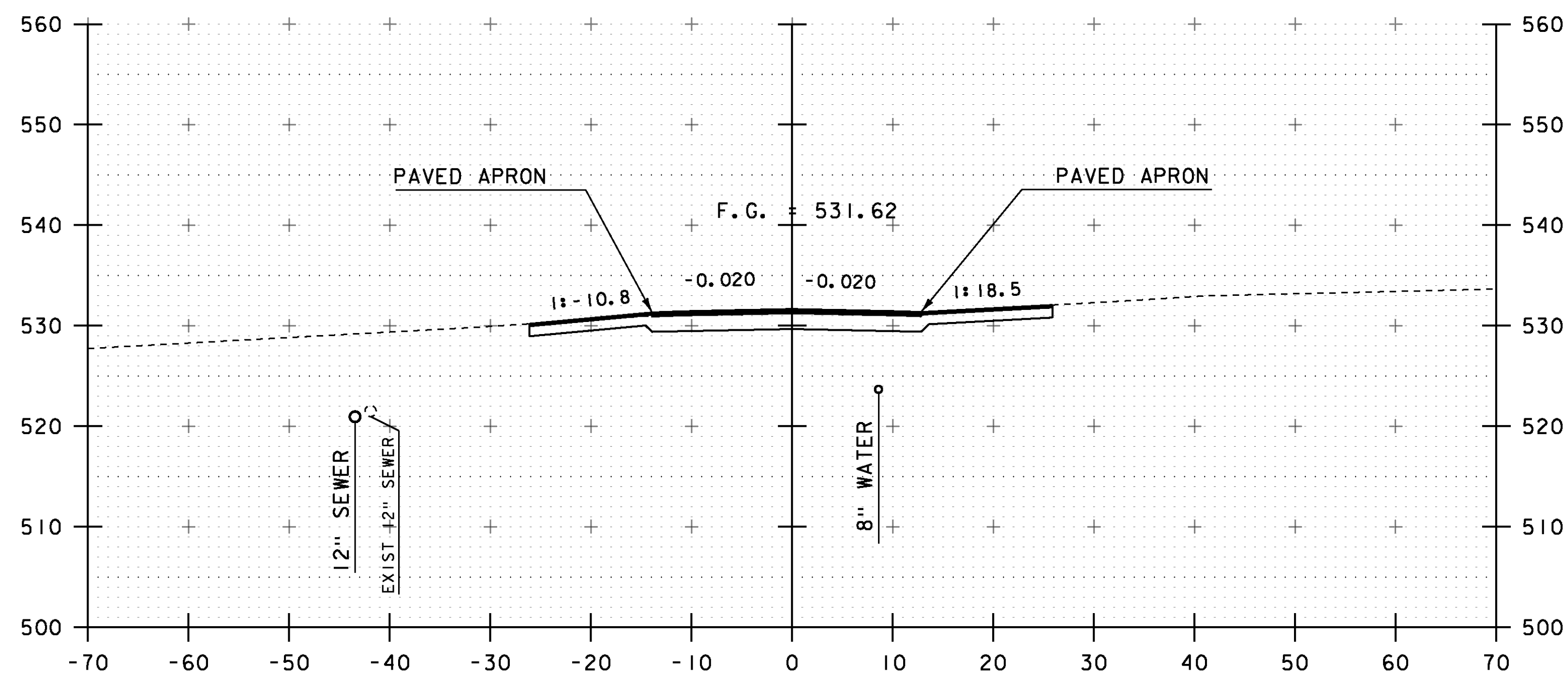
4+50



5+00



4+25



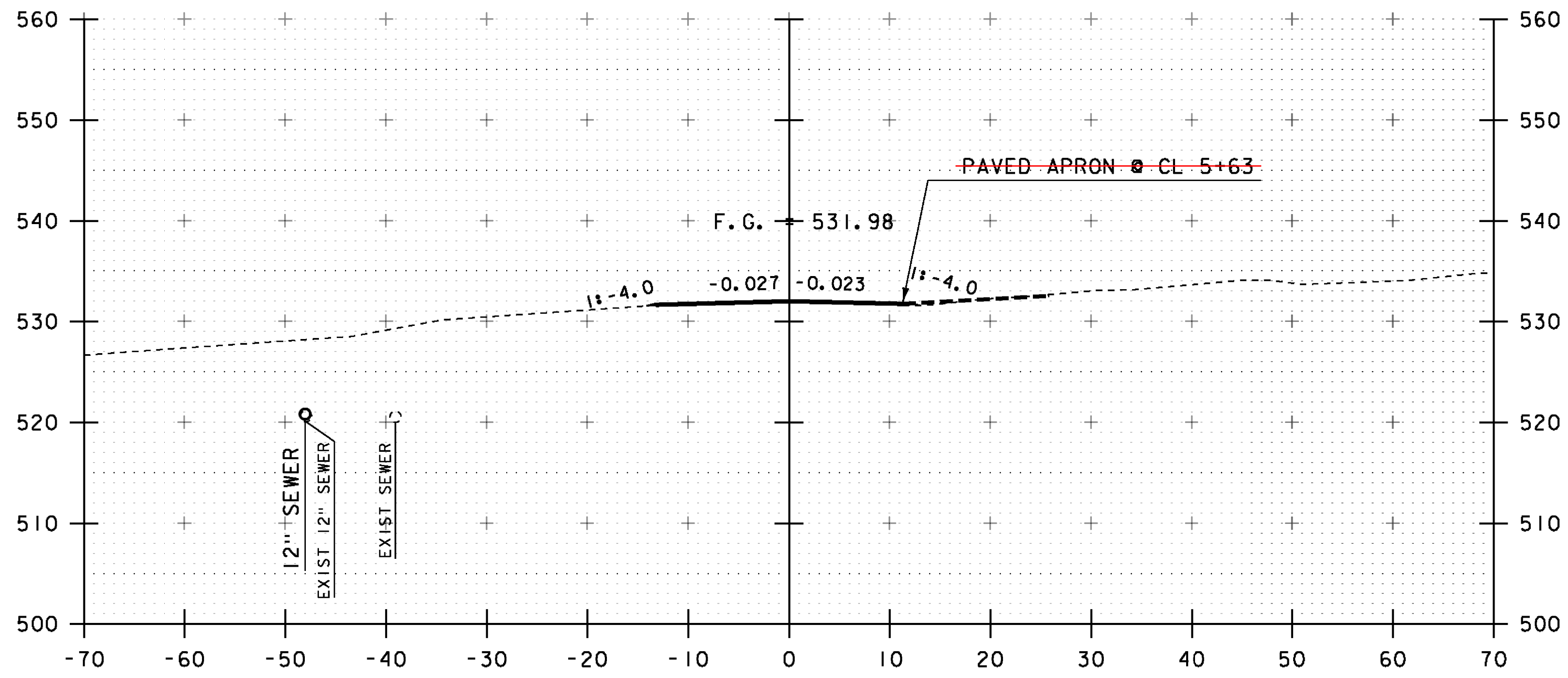
4+75

STA 4+75  
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BEGIN APPROACH

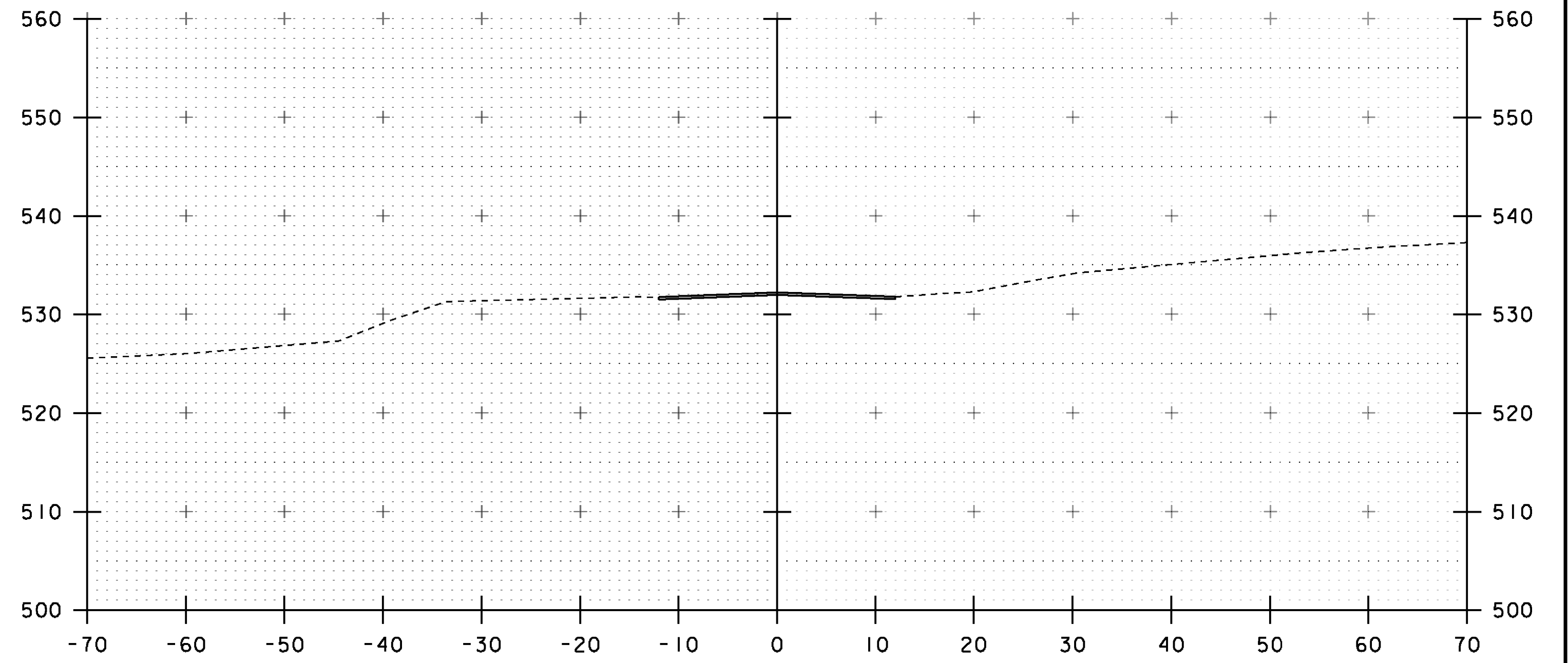
STA. 4+25 TO STA. 5+00

PROJECT NAME:	RUTLAND CITY	PLOT DATE:	28-FEB-2014
PROJECT NUMBER:	BRF 3000(18)	DRAWN BY:	R. PELLETT
FILE NAME:	s96j244xs.dgn	CHECKED BY:	M. E-M
PROJECT LEADER:	C. CARLSON	SHEET	30 OF 44
DESIGNED BY:	M. EVANS-MONGEON	MAINLINE CROSS SECTIONS 4	

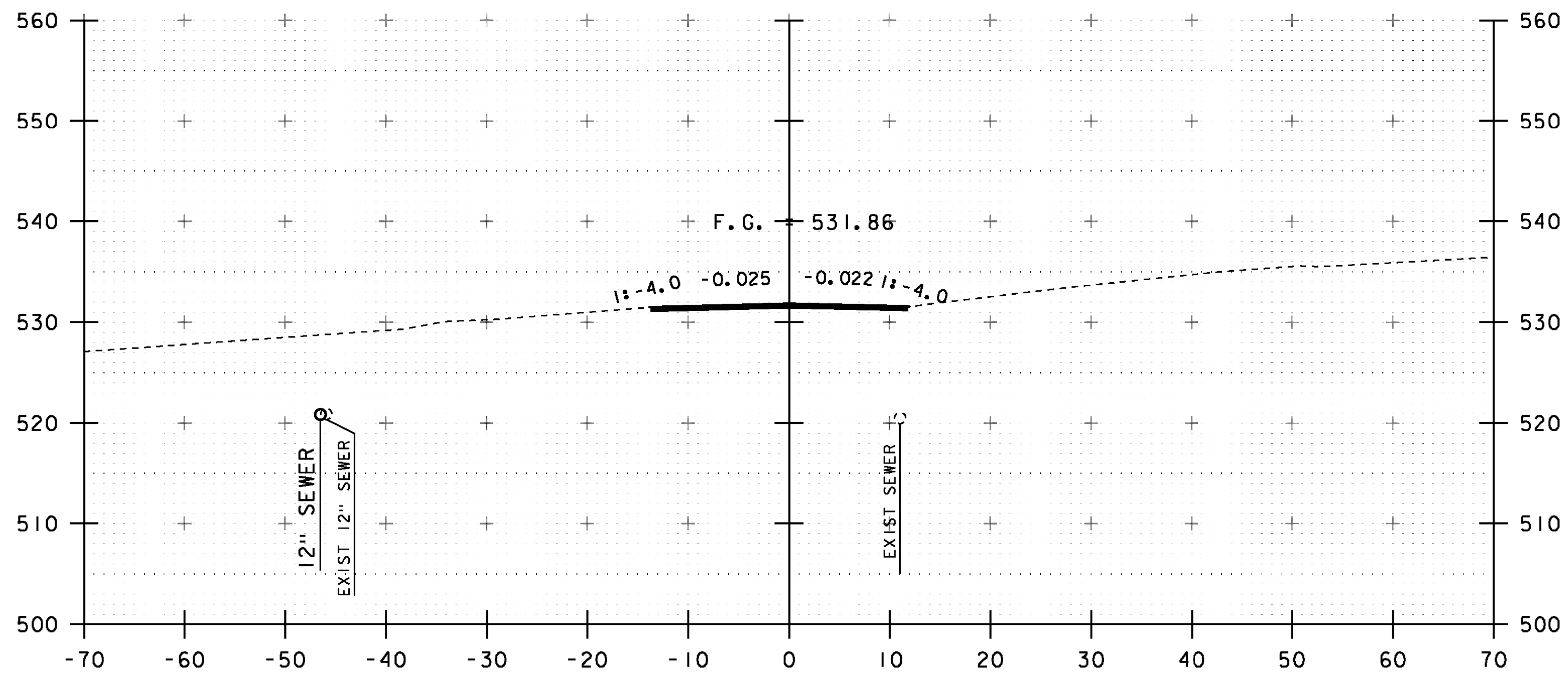
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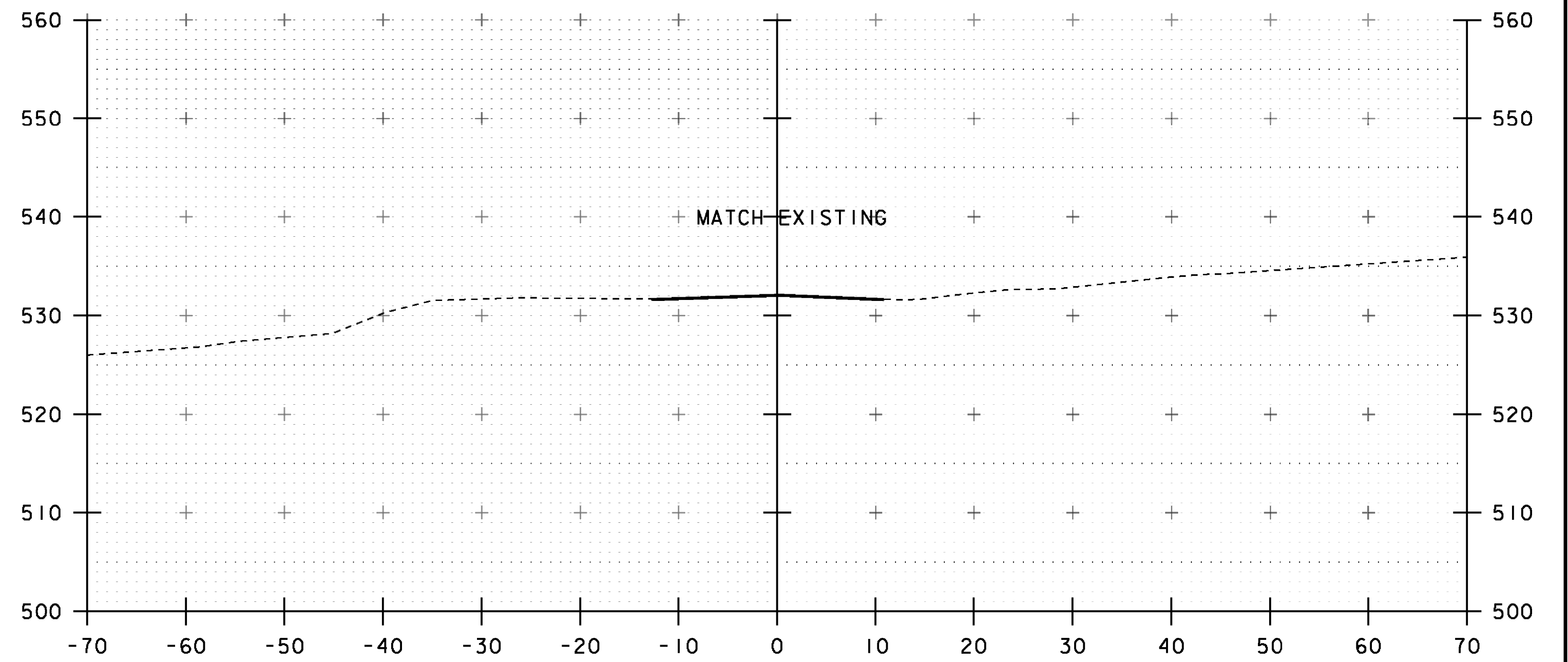
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6+00



5+25

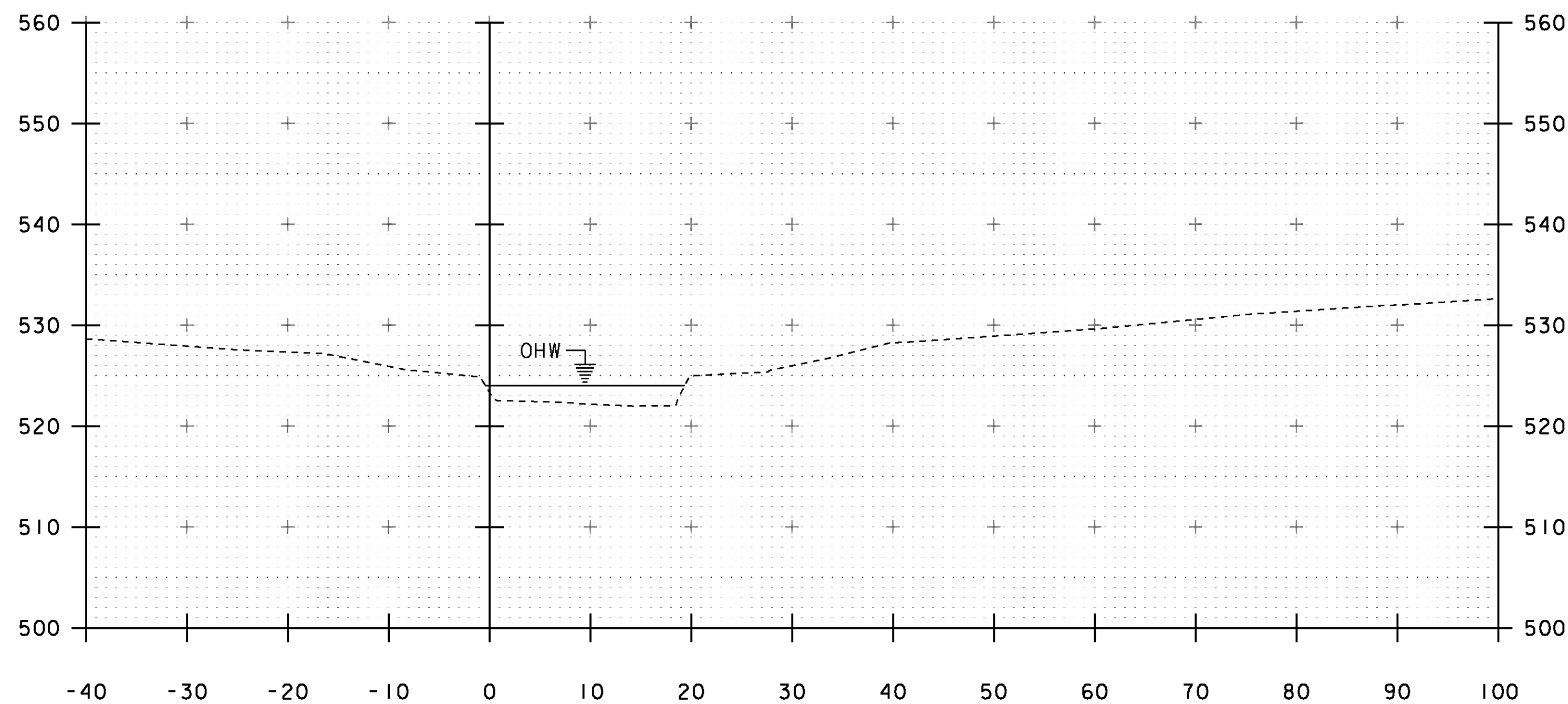


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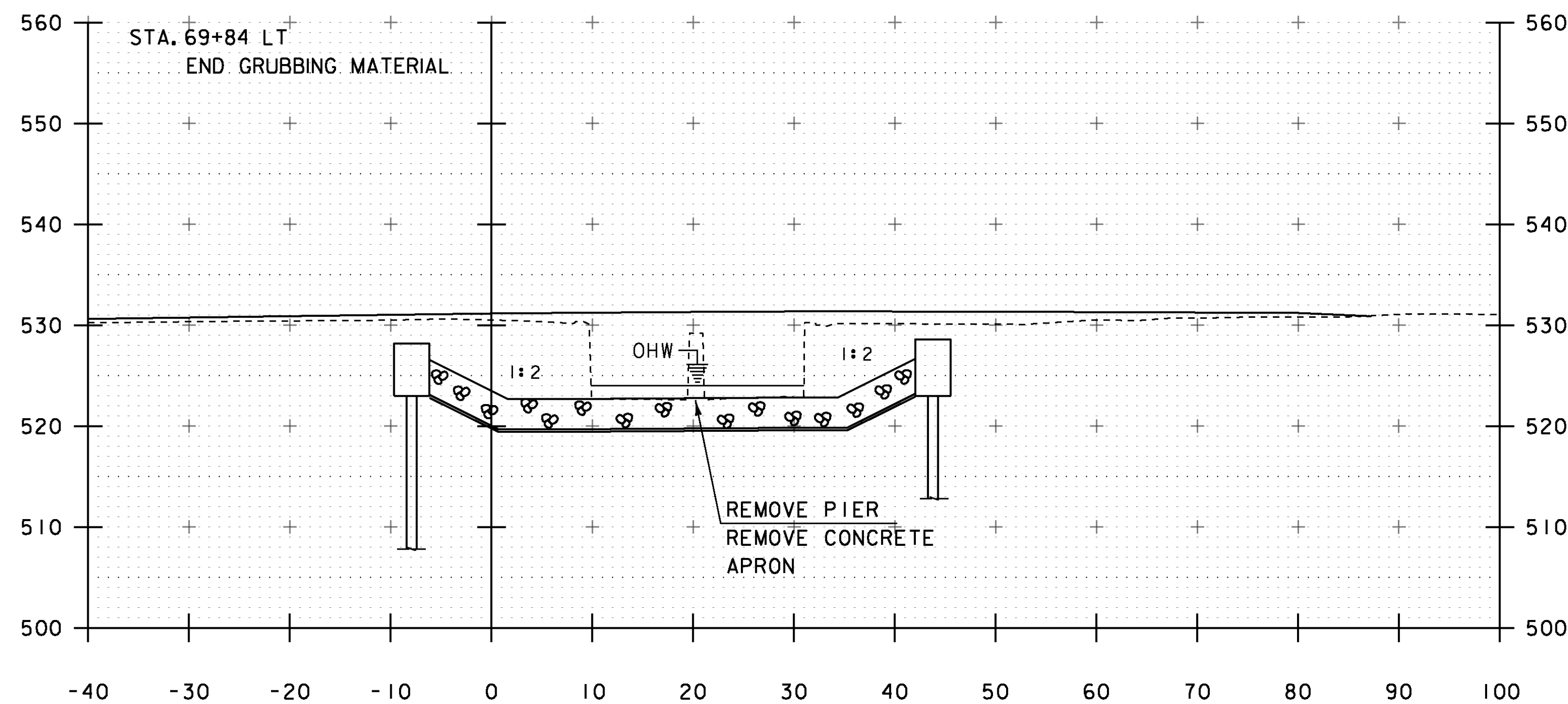
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END APPROACH  
RESUME NON-PARTICIPATING PAVING

STA. 5+25 TO STA. 6+00

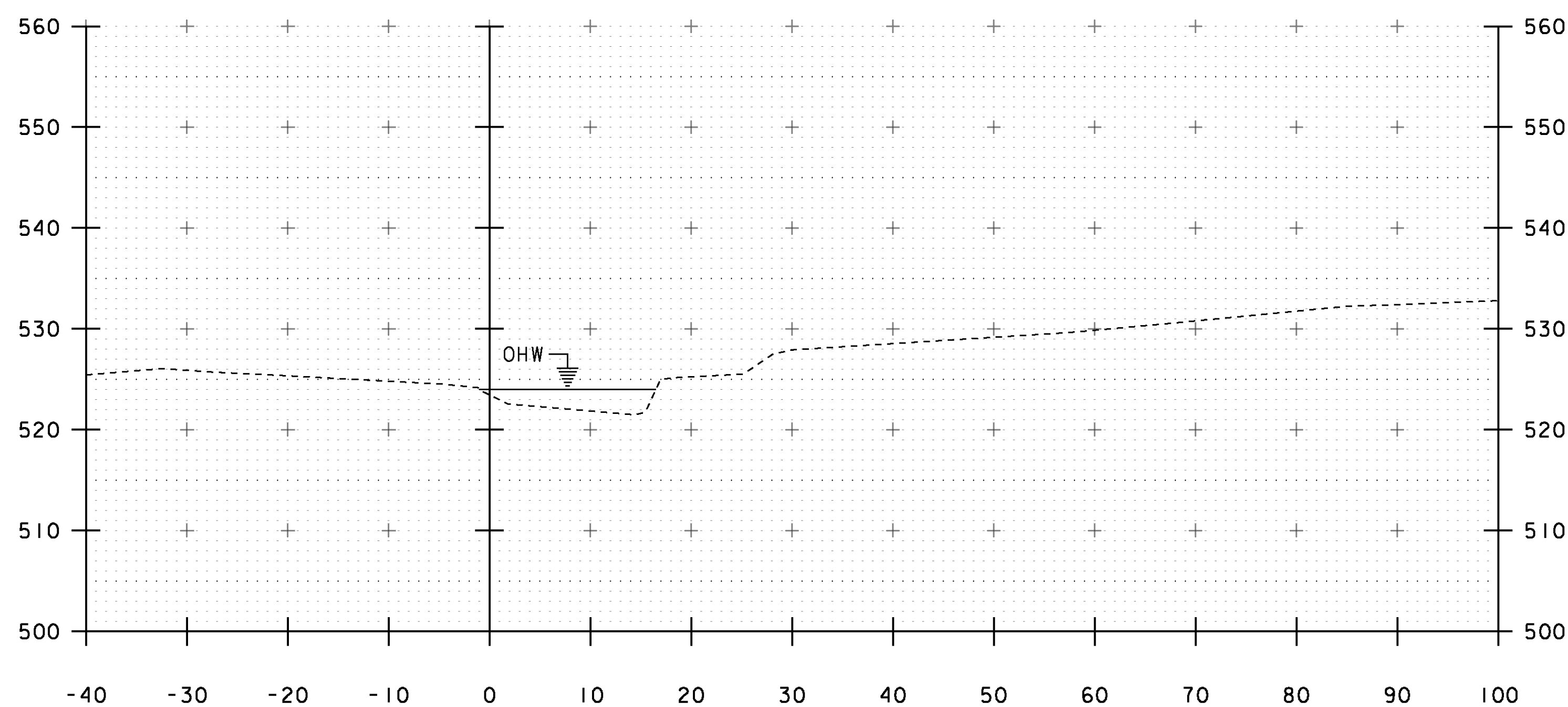
PROJECT NAME: RUTLAND CITY	
PROJECT NUMBER: BRF 3000(18)	
FILE NAME: s96j244xs.dgn	PLOT DATE: 28-FEB-2014
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. E-M
MAINLINE CROSS SECTIONS 5	SHEET 31 OF 44



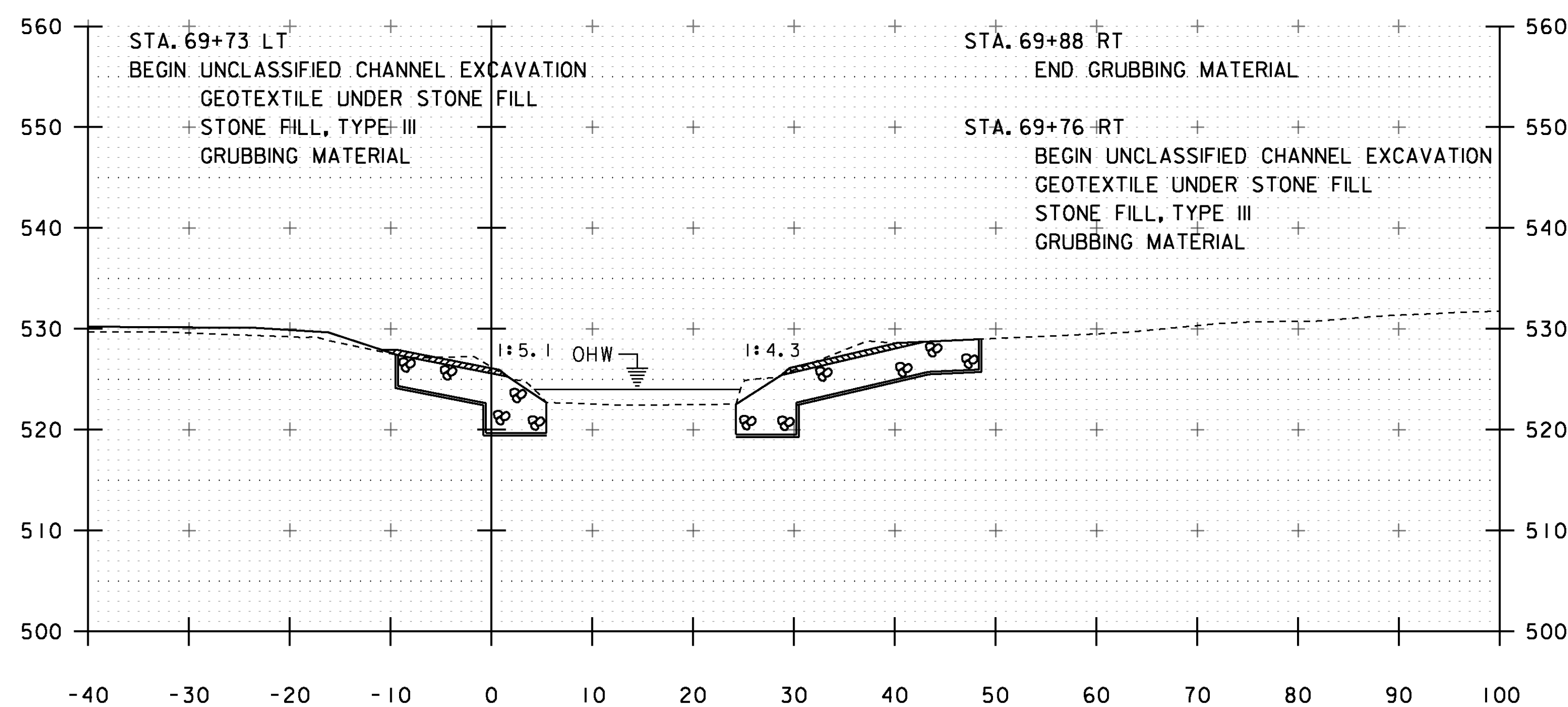
69+70



69+90



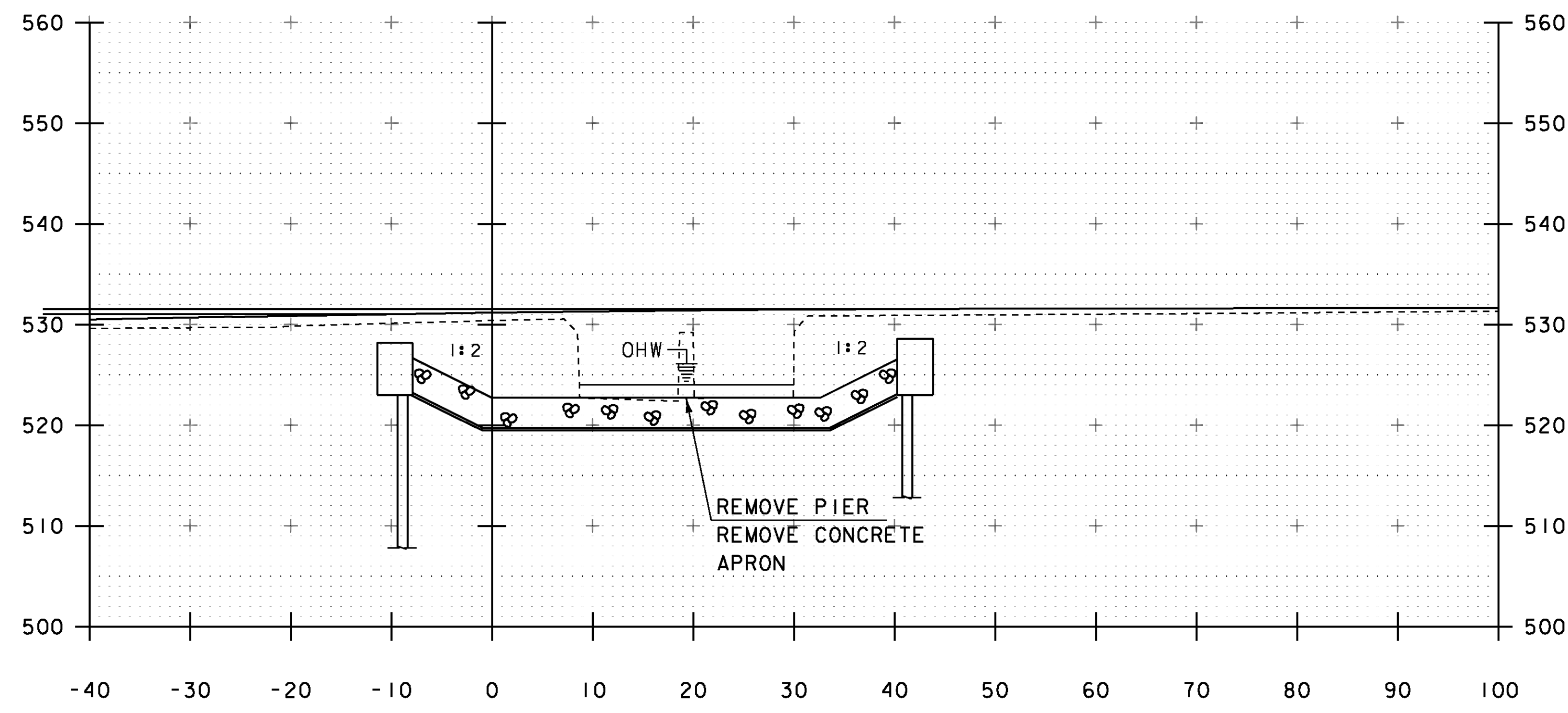
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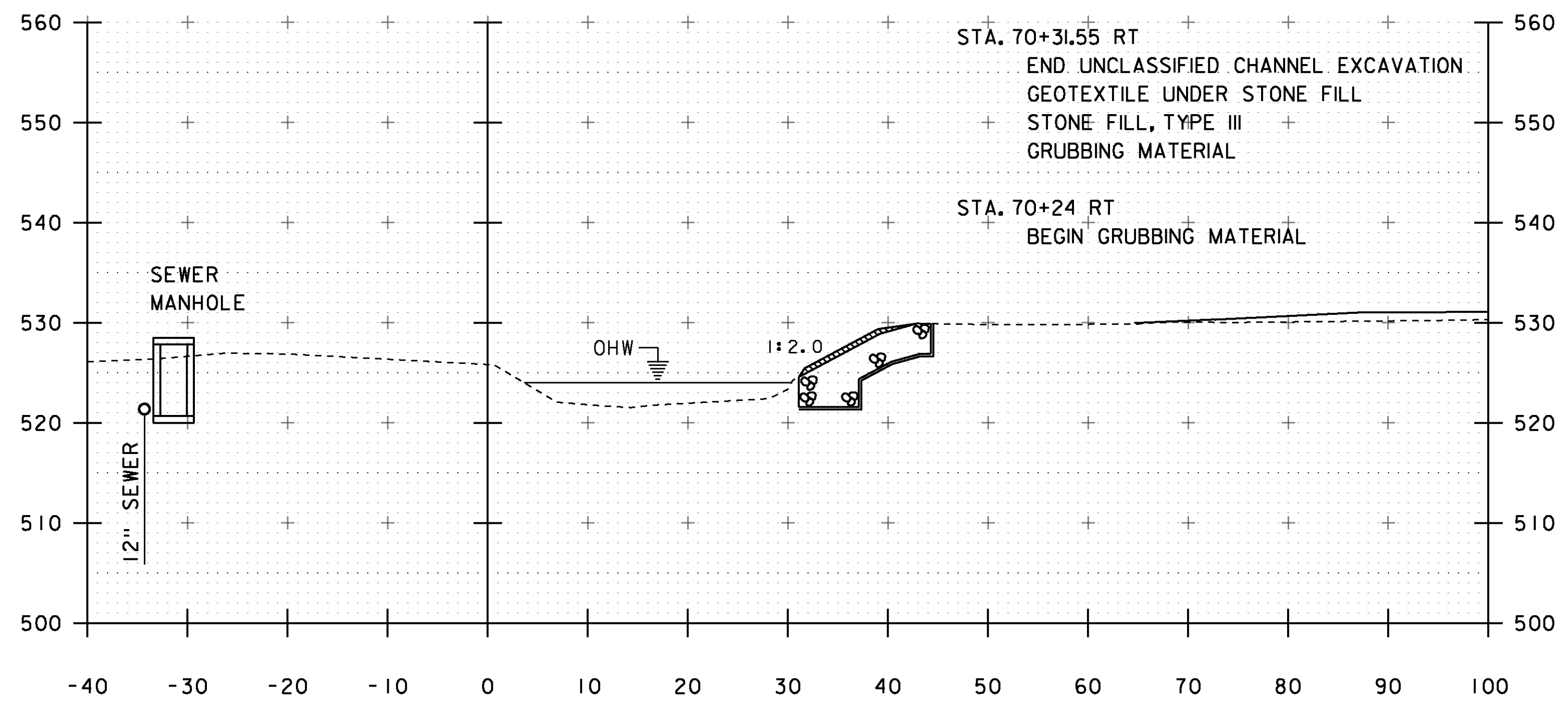
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STA. 69+60 TO STA. 69+90

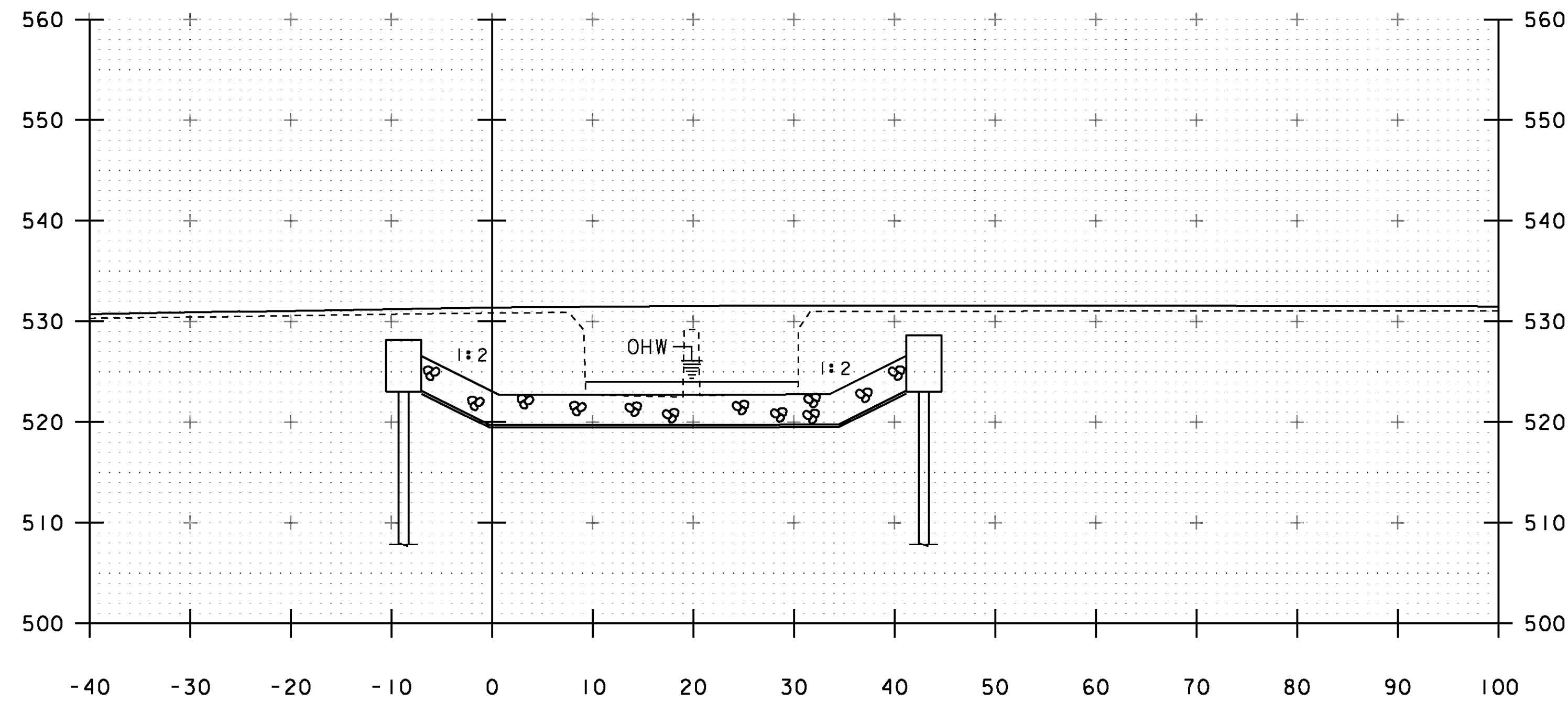
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PROJECT NUMBER:	BRF 3000(18)	DRAWN BY:	R. PELLETT
FILE NAME:	s96j244xs.dgn	CHECKED BY:	M. E-M
PROJECT LEADER:	C. CARLSON	SHEET	32 OF 44
DESIGNED BY:	M. EVANS-MONGEON	CHANNEL CROSS SECTIONS I	



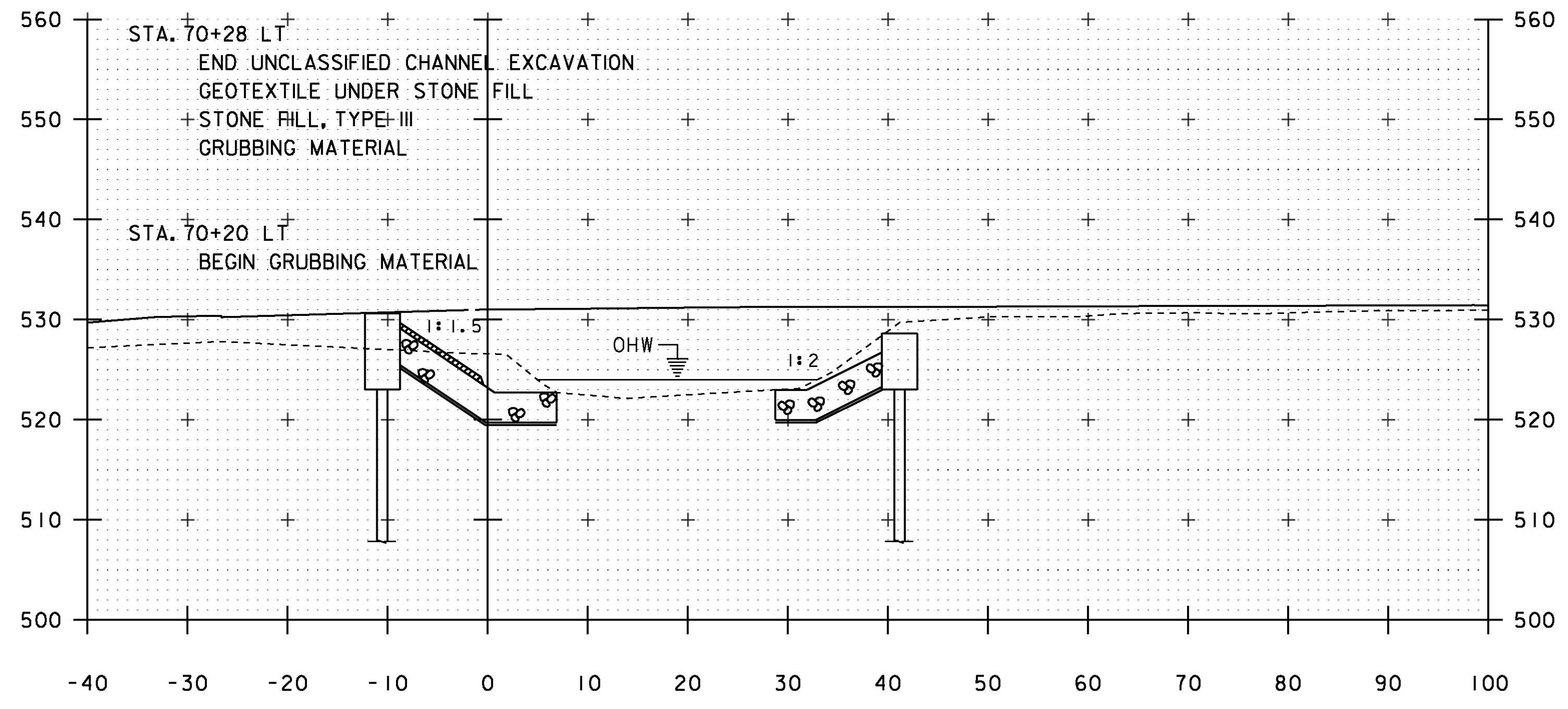
70+10



70+30



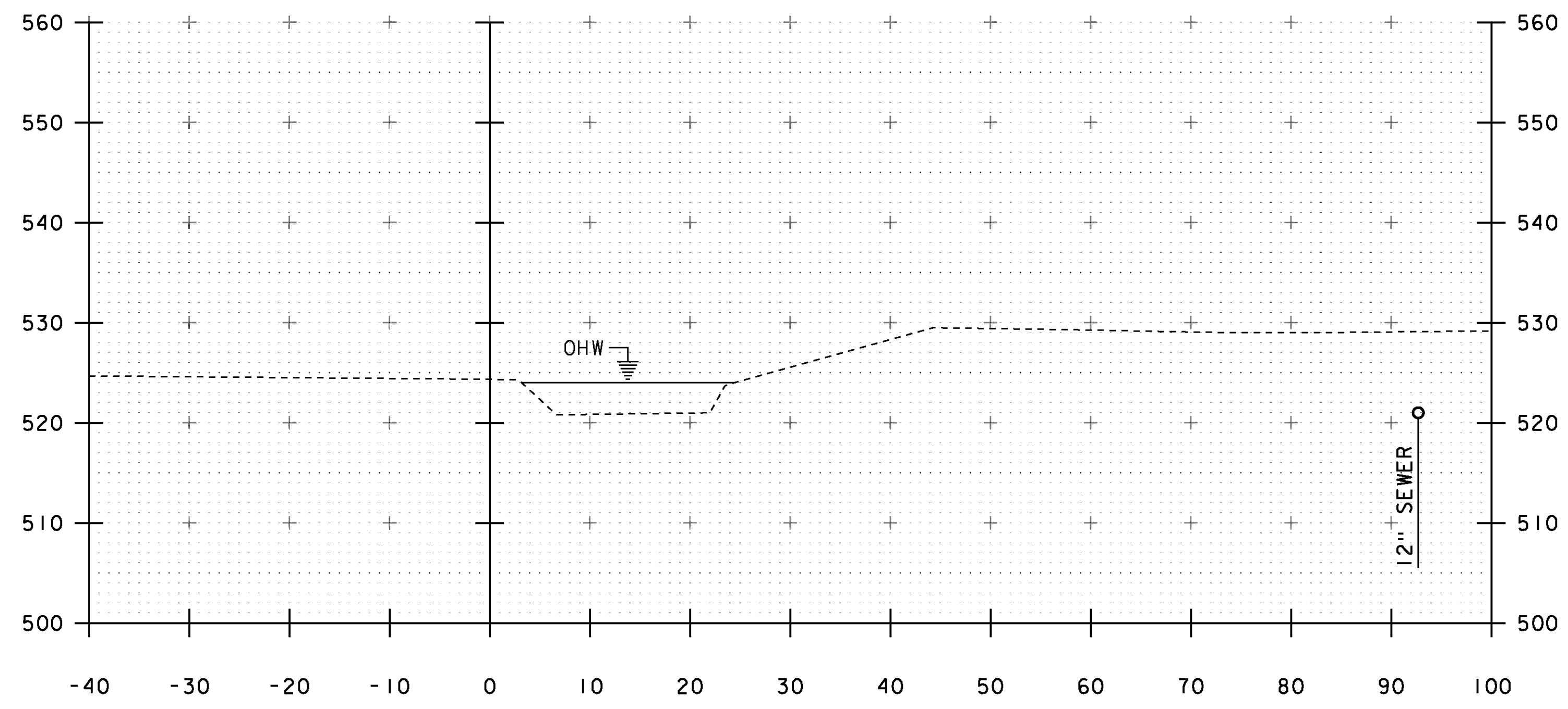
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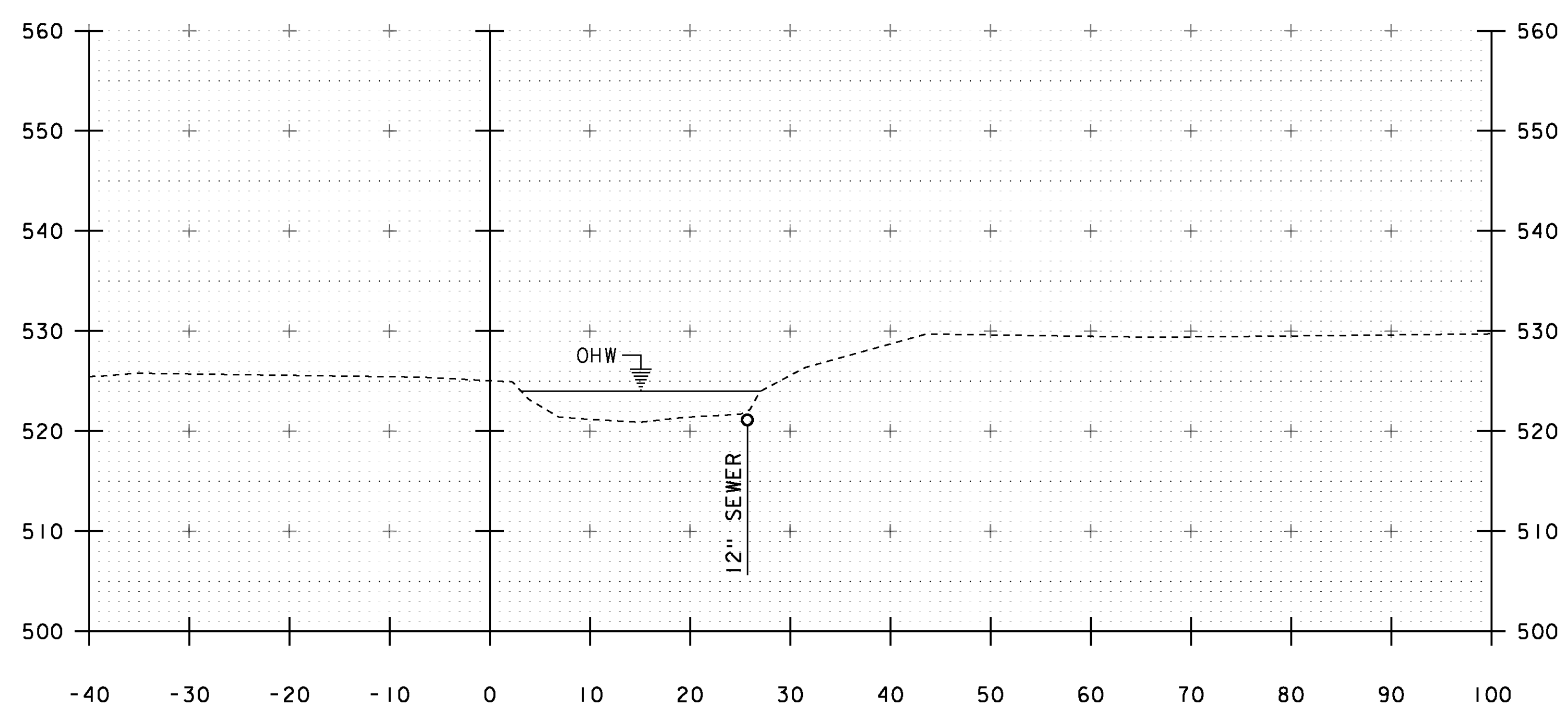
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PROJECT NAME:	RUTLAND CITY	FILE NAME:	s96j244xs.dgn	PLOT DATE:	28-FEB-2014
PROJECT NUMBER:	BRF 3000(18)	PROJECT LEADER:	C. CARLSON	DRAWN BY:	R. PELLETT
		DESIGNED BY:	M. EVANS-MONGEON	CHECKED BY:	M. E-M
		CHANNEL CROSS SECTIONS 2		SHEET	33 OF 44

STA. 70+00 TO STA. 70+30



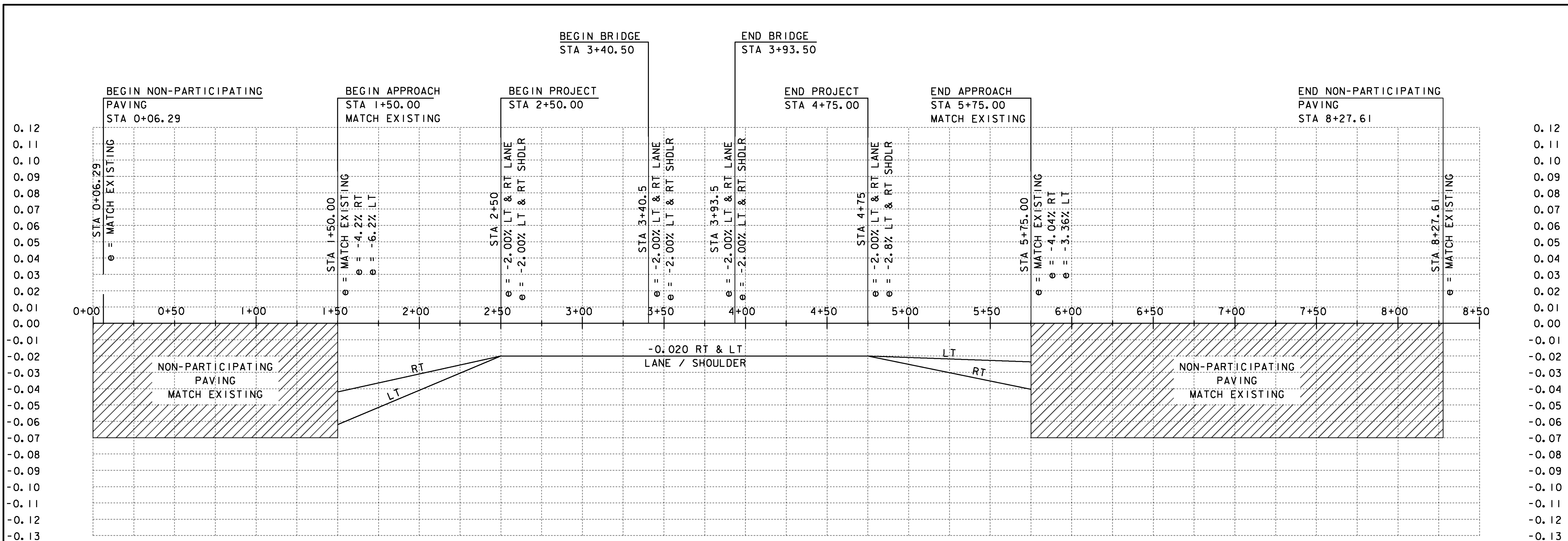
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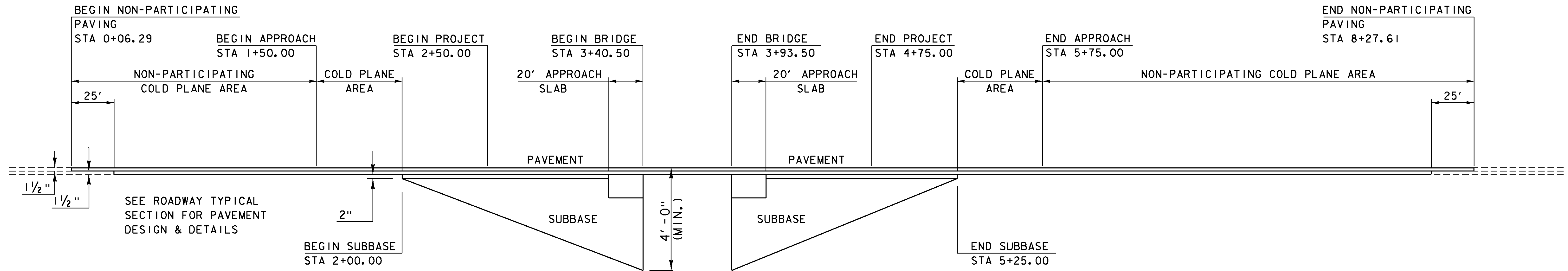
70+40

STA. 70+40 TO STA. 70+50

PROJECT NAME: RUTLAND CITY	
PROJECT NUMBER: BRF 3000(18)	
FILE NAME: s96j244xs.dgn	PLOT DATE: 28-FEB-2014
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. E-M
CHANNEL CROSS SECTIONS 3	SHEET 34 OF 44



**BANKING DIAGRAM**  
 HORIZONTAL SCALE 1" = 30'-0"  
 NO VERTICAL SCALE



**MATERIAL TRANSITION**  
 HORIZONTAL SCALE 1" = 30'-0"  
 NO VERTICAL SCALE

PROJECT NAME: RUTLAND CITY	PLOT DATE: 28-FEB-2014
PROJECT NUMBER: BRF 3000(18)	DRAWN BY: R. PELLETT
FILE NAME: s96j244xs.dgn	CHECKED BY: M. E-M
PROJECT LEADER: C. CARLSON	SHEET 35 OF 44
DESIGNED BY: M. EVANS-MONGEON	
BANKING / MATERIAL TRANSITION	

## EPSC PLAN NARRATIVE

### 1.1 PROJECT DESCRIPTION

THIS PROJECT IS LOCATED ON FOREST STREET (TH 13), APPROXIMATELY 0.1 MILES FROM THE INTERSECTION OF FOREST STREET (TH 13) AND PARK STREET (TH 12) OVER THE MOON BROOK. IT INVOLVES THE RECONSTRUCTION OF THE EXISTING BRIDGE WITH RELATED APPROACH ROADWAY AND CHANNEL WORK. THE BRIDGE IS BEING REPLACED WITH A 53 FOOT PRESTRESSED CONCRETE VOIDED SLAB BRIDGE. THE ROAD WILL BE CLOSED AND TRAFFIC MAINTAINED ON AN OFFSITE DETOUR. THE TOTAL LENGTH OF PROJECT IS 305 FEET.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.52 ACRES.

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

### 1.2 SITE INVENTORY

#### 1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE AREA IS A SADDLE THAT IS AGRICULTURAL FIELDS AND SOME RESIDENTIAL AREAS. FOREST STREET (TH 13) AND THREE DRIVES ARE WITHIN THE PROJECT SITE. THERE IS A RESIDENCE ON THE NORTH WEST AND SOUTH WEST SIDES OF THE PROJECT.

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

MOON BROOK IS THE ONLY WATER SOURCE ON THE PROJECT SITE. THE BROOK IS CLASSIFIED AS SHALLOW. THE STREAM BED CONSISTS OF COBBLES, GRAVEL AND CONCRETE.

#### 1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF HARDWOOD TREES AND UNDERGROWTH. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REPLACEMENT OF THE BRIDGE. UPON PROJECT COMPLETION, THE CHANNEL WILL BE ARMORED WITH STONE FILL TYPE III AS SPECIFIED ON THE PLANS. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

#### 1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF RUTLAND, VERMONT. SOILS ON THE PROJECT SITE ARE:  
BELGRADE SILT LOAM, 3% TO 8% SLOPES, "K FACTOR" = 0.49  
RIPPOWAM FINE SANDY LOAM, 0% TO 3% SLOPES, "K FACTOR" = 0.20  
TEEL SILT LOAM, SANDY SUBSTRATUM, 0% TO 3% SLOPES, "K FACTOR" = 0.37.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:

0.0-0.23 = LOW EROSION POTENTIAL  
0.24-0.36 = MODERATE EROSION POTENTIAL  
0.37 AND HIGHER = HIGH EROSION POTENTIAL

#### 1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO  
HISTORICAL OR ARCHEOLOGICAL AREAS: YES, ARCHEOLOGICAL ON NORTH WEST SIDE OF PROJECT.  
PRIME AGRICULTURAL LAND: YES, AGRICULTURAL ON NORTH WEST SIDE OF PROJECT.  
THREATENED AND ENDANGERED SPECIES: NO  
WATER RESOURCE: MOON BROOK  
WETLANDS: YES, ON SOUTH WEST & SOUTH EAST SIDES OF PROJECT.

### 1.3 RISK EVALUATION

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, 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 CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE 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 OF 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.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK 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 AS PROPOSED ON THE EPSC PLAN AND 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 SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.  
FILTER CURTAIN WILL BE INSTALLED AS SHOWN ON THE EPSC PLAN.

#### 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.

THE PROJECT AREA IS RELATIVELY FLAT. THEREFORE IT IS NOT ANTICIPATED THAT DIVERSION MEASURES WILL BE NECESSARY.

#### 1.4.6 SLOW DOWN CHANNELIZED RUNOFF

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

THE PROJECT AREA IS RELATIVELY FLAT; THEREFORE IT IS NOT ANTICIPATED THAT CHECK STRUCTURES WILL BE NECESSARY.

#### 1.4.7 CONSTRUCT PERMANENT CONTROLS

NO PERMANENT STORMWATER TREATMENT DEVICES ARE REQUIRED.

#### 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.

NO DEWATERING ACTIVITIES ARE ANTICIPATED FOR THIS PROJECT. IF THE CONTRACTOR FINDS THAT DEWATERING IS NECESSARY THE CONTRACTOR WILL BE RESPONSIBLE FOR DESIGNING THE METHOD AND CHOOSING THE LOCATION FOR THESE ACTIVITIES.

#### 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.

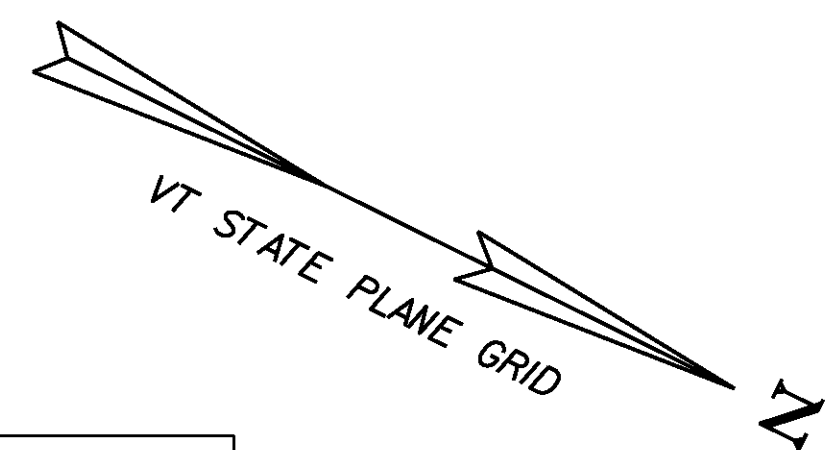
#### 1.5.1 CONSTRUCTION SEQUENCE

#### 1.5.2 OFF-SITE ACTIVITIES

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

PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BRP 3000(18)

FILE NAME: s96j244epsc\_narr.dgn PLOT DATE: 28-FEB-2014  
PROJECT LEADER: C. CARLSON DRAWN BY: R. PELLETT  
DESIGNED BY: M. EVANS-MONGEON CHECKED BY: M. E-M  
EPSC NARRATIVE SHEET 36 OF 44



25B - BELGRADE SILT LOAM  
WITH 3% TO 8% SLOPES  
"K FACTOR" = 0.49

21 - RIPPOWAM FINE SANDY LOAM  
WITH 0% TO 3% SLOPES  
"K FACTOR" = 0.20

109 - TEEL SILT LOAM, SANDY SUBSTRATUM  
WITH 0% TO 3% SLOPES  
"K FACTOR" = 0.37

BEGIN  
NON-PARTICIPATING  
PAVING  
STA 0+06.29

END NON-PARTICIPATING PAVING  
BEGIN APPROACH  
STA 1+50.00

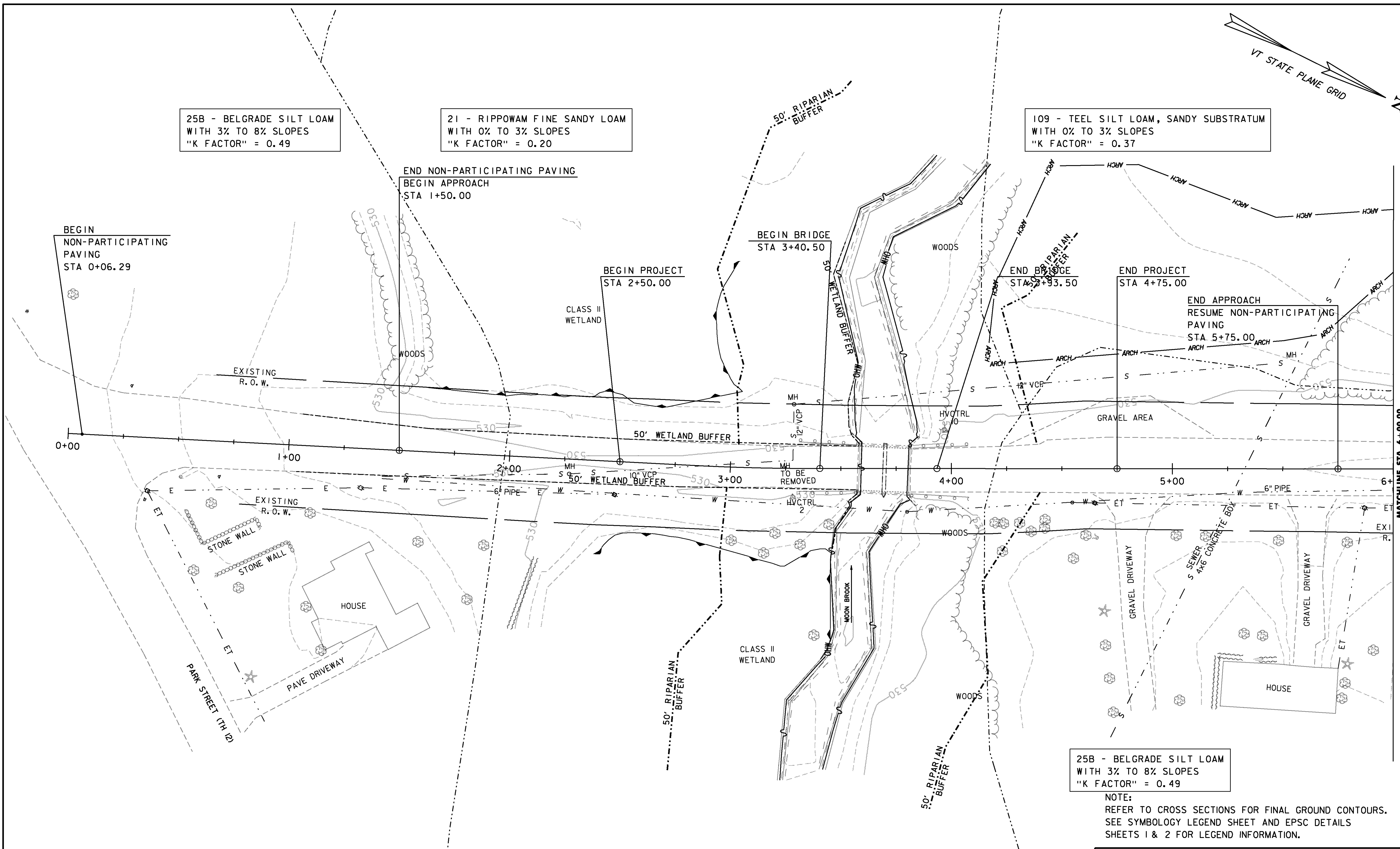
BEGIN PROJECT  
STA 2+50.00

BEGIN BRIDGE  
STA 3+40.50

END BRIDGE  
STA 4+33.50

END PROJECT  
STA 4+75.00

END APPROACH  
RESUME NON-PARTICIPATING  
PAVING  
STA 5+75.00



MATCHLINE STA 6+00.00

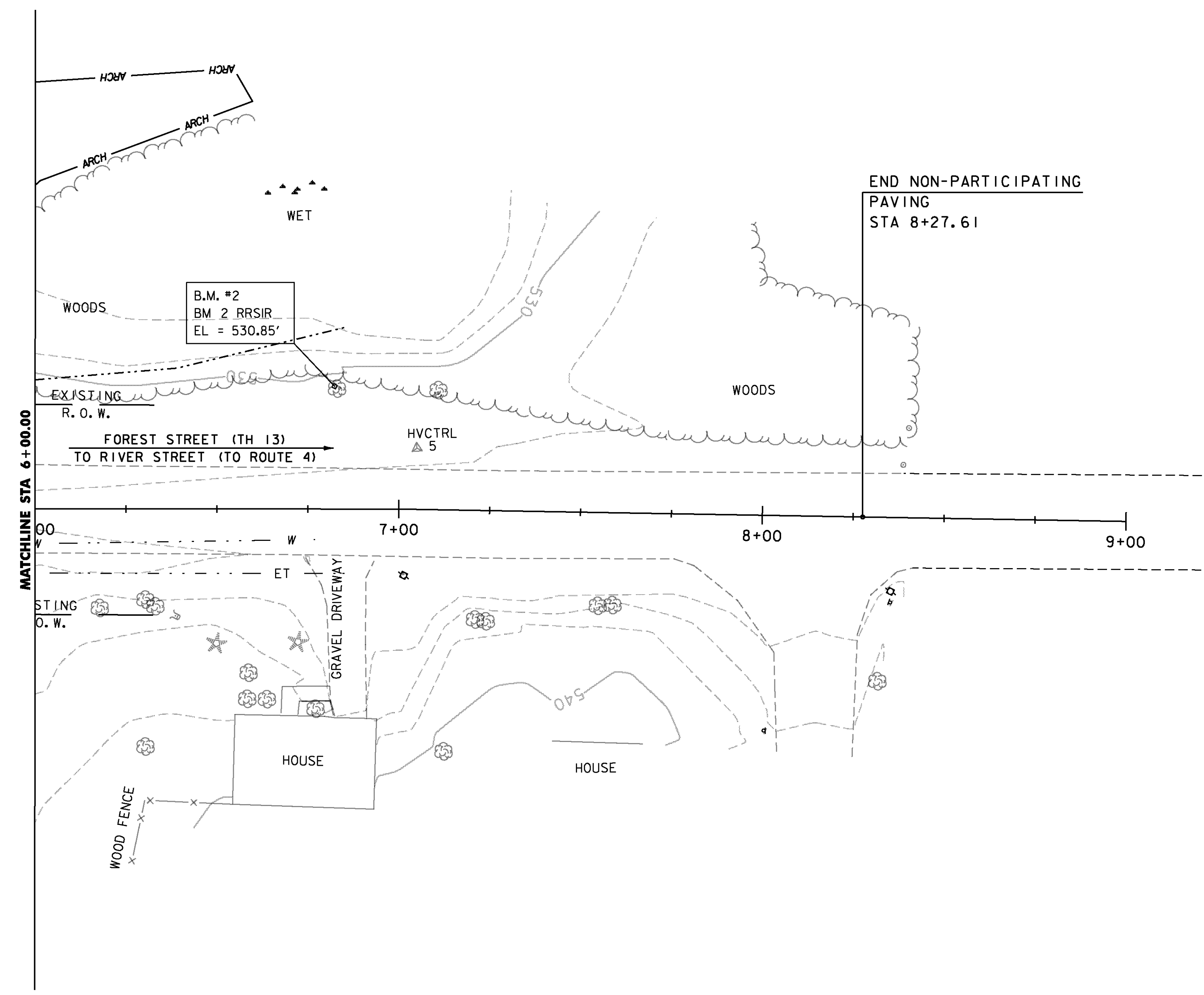
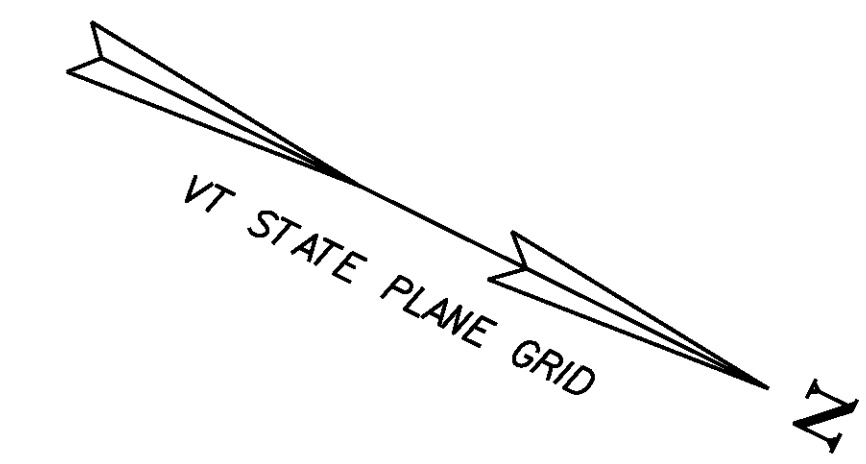
25B - BELGRADE SILT LOAM  
WITH 3% TO 8% SLOPES  
"K FACTOR" = 0.49

NOTE:  
REFER TO CROSS SECTIONS FOR FINAL GROUND CONTOURS.  
SEE SYMBOLY LEGEND SHEET AND EPSC DETAILS  
SHEETS 1 & 2 FOR LEGEND INFORMATION.

EXISTING BRIDGE DATA  
CONCRETE SLAB DECK  
LENGTH = 20'-0"  
WIDTH = 23'-0" CURB TO CURB  
BUILT IN 1900

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

PROJECT NAME: RUTLAND CITY	PLOT DATE: 05-MAR-2014
PROJECT NUMBER: BRF 3000(18)	DRAWN BY: R. PELLET
FILE NAME: s96j244epsc_dur.dgn	CHECKED BY: M. E-M
PROJECT LEADER: C. CARLSON	SHEET 37 OF 44
DESIGNED BY: M. EVANS-MONGEON	
EPSC EXISTING LAYOUT I	



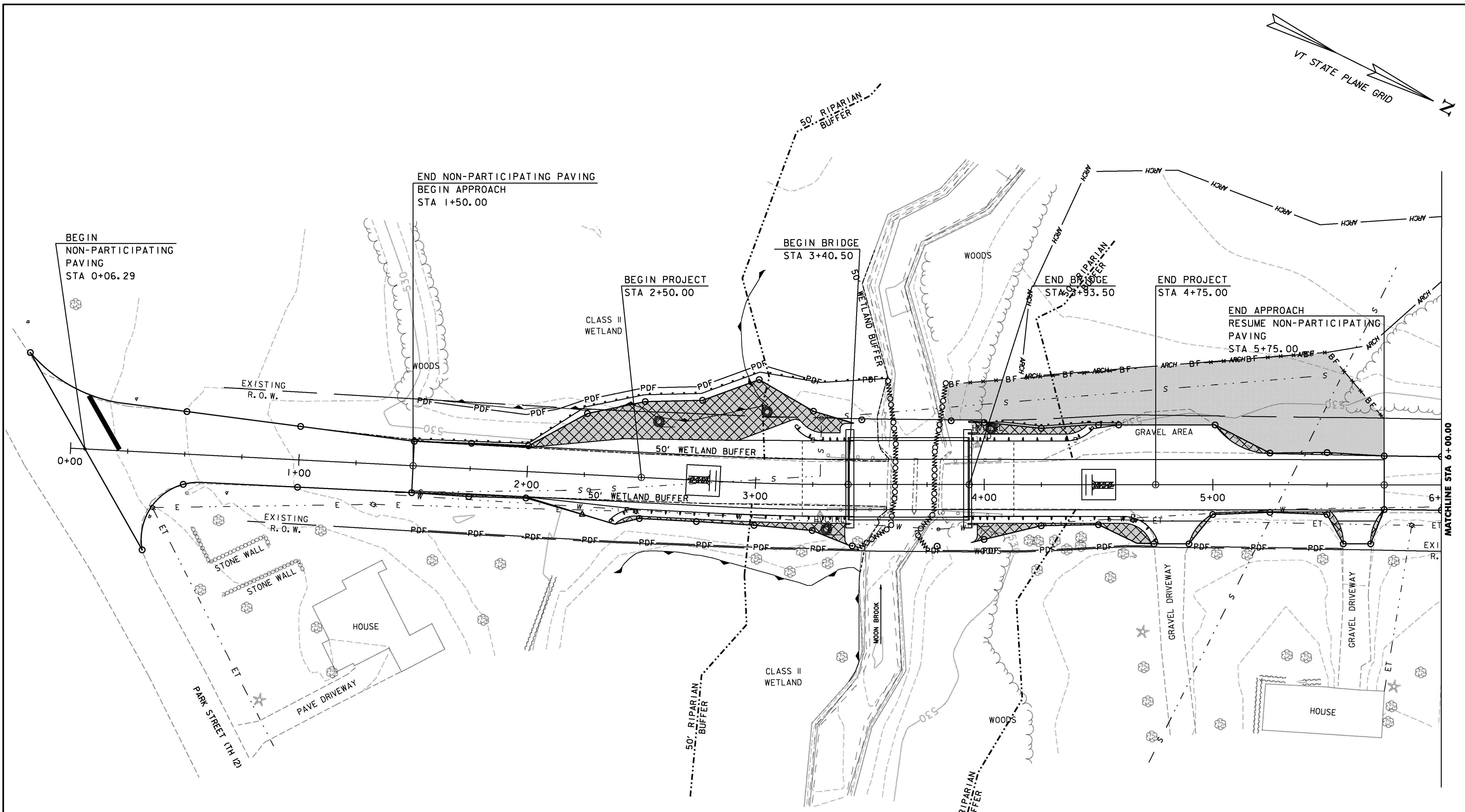
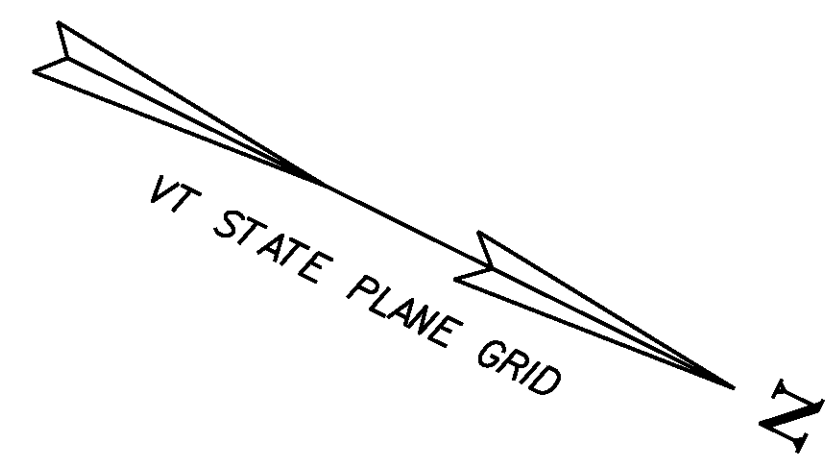
END NON-PARTICIPATING  
PAVING  
STA 8+27.61

MATCHLINE STA 6+00.00

NOTE:  
REFER TO CROSS SECTIONS FOR FINAL GROUND CONTOURS.  
SEE SYMBOLOLOGY LEGEND SHEET AND EPSC DETAILS  
SHEETS 1 & 2 FOR LEGEND INFORMATION.

PROJECT NAME:	RUTLAND CITY
PROJECT NUMBER:	BRF 3000(18)
FILE NAME:	s96j244er08dr.dgn
PROJECT LEADER:	C. CARLSON
DESIGNED BY:	M. EVANS-MONGEON
EPSC EXISTING LAYOUT 2	
PLOT DATE:	28-FEB-2014
DRAWN BY:	R. PELLETT
CHECKED BY:	M. E-M
SHEET	38 OF 44

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



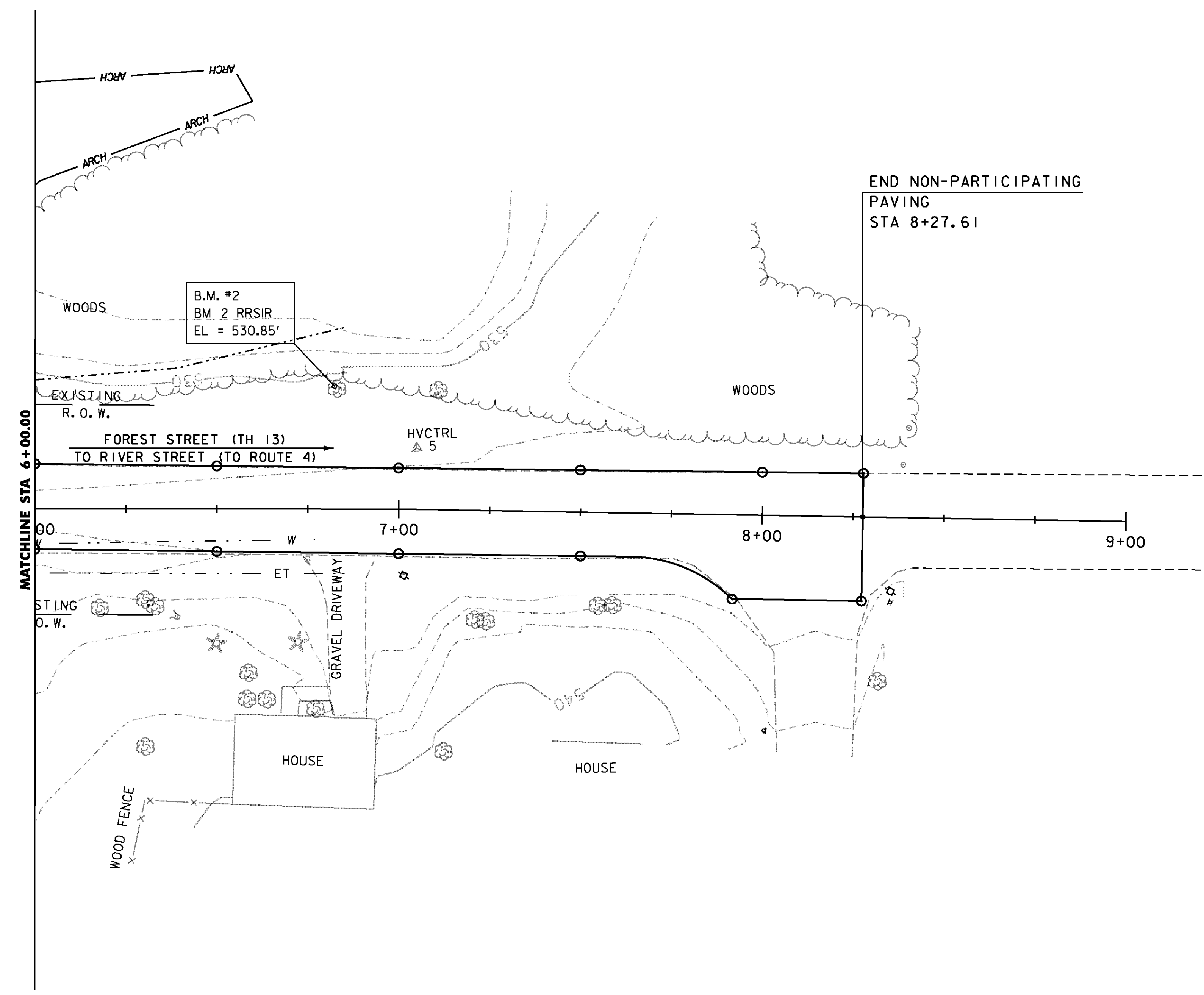
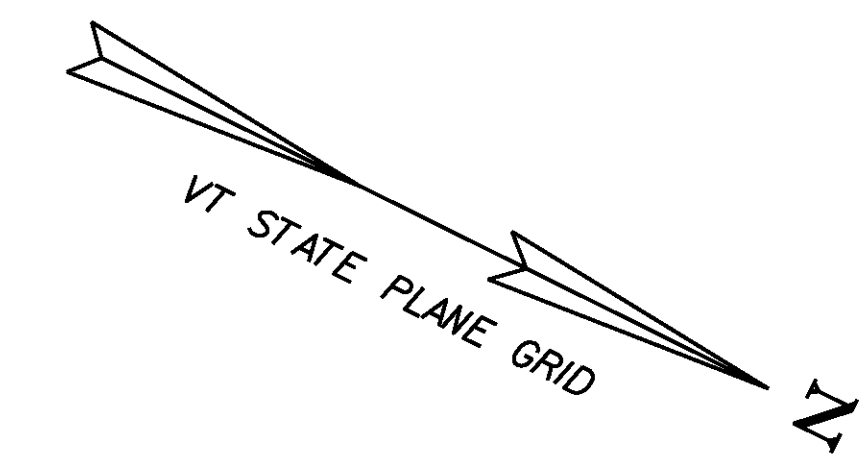
EXISTING BRIDGE DATA  
 CONCRETE SLAB DECK  
 LENGTH = 20'-0"  
 WIDTH = 23'-0" CURB TO CURB  
 BUILT IN 1900

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

NOTE:  
 REFER TO CROSS SECTIONS FOR FINAL GROUND CONTOURS.  
 SEE SYMBOLY LEGEND SHEET AND EPSC DETAILS  
 SHEETS 1 & 2 FOR LEGEND INFORMATION.

PROJECT NAME:	RUTLAND CITY
PROJECT NUMBER:	BRF 3000(18)
FILE NAME:	s96j244epsc_dur.dgn
PROJECT LEADER:	C. CARLSON
DESIGNED BY:	M. EVANS-MONGEON
EPSC CONSTRUCTION LAYOUT I	
PLOT DATE:	05-MAR-2014
DRAWN BY:	R. PELLETT
CHECKED BY:	M. E-M
SHEET	39 OF 44

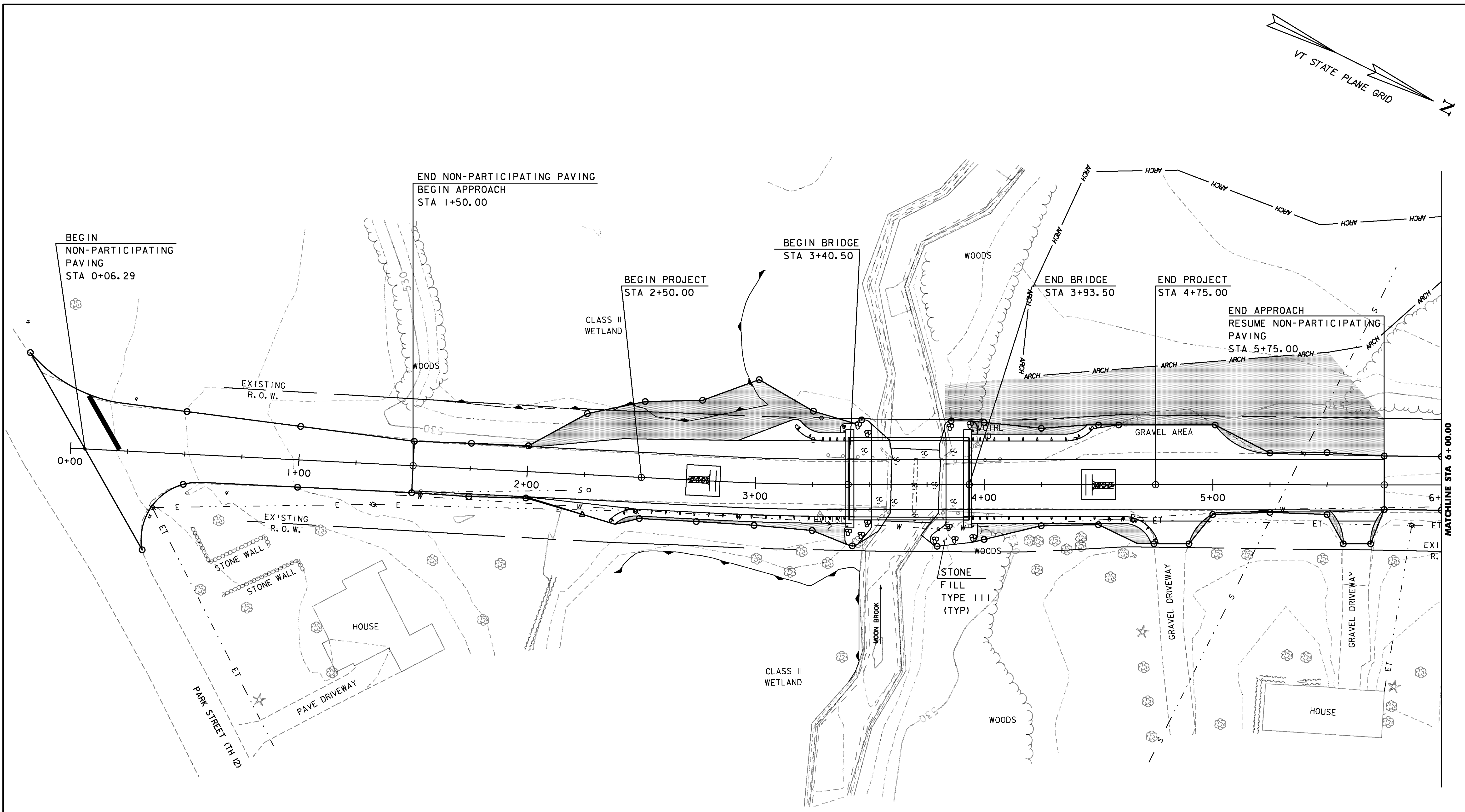
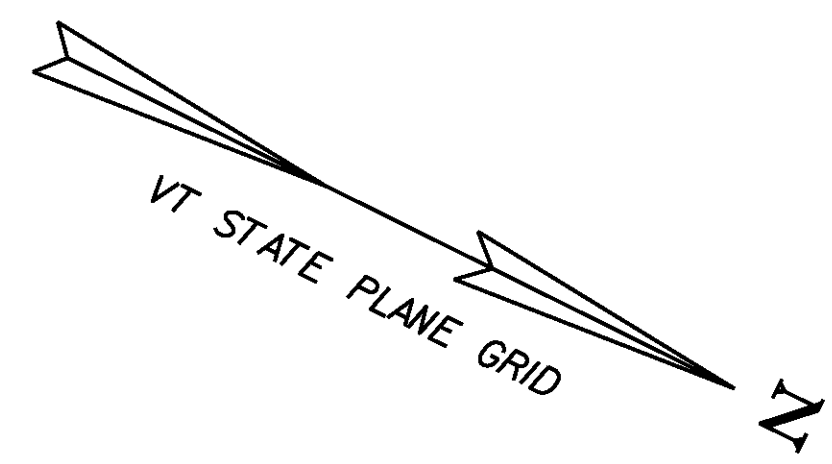
MATCHLINE STA 6+00.00



NOTE:  
 REFER TO CROSS SECTIONS FOR FINAL GROUND CONTOURS.  
 SEE SYMBOLGY LEGEND SHEET AND EPSC DETAILS  
 SHEETS 1 & 2 FOR LEGEND INFORMATION.

PROJECT NAME:	RUTLAND CITY
PROJECT NUMBER:	BRF 3000(18)
FILE NAME:	s96j244er08dr.dgn
PROJECT LEADER:	C. CARLSON
DESIGNED BY:	M. EVANS-MONGEON
EPSC CONSTRUCTION LAYOUT 2	
PLOT DATE:	28-FEB-2014
DRAWN BY:	R. PELLETT
CHECKED BY:	M. E-M
SHEET	40 OF 44

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

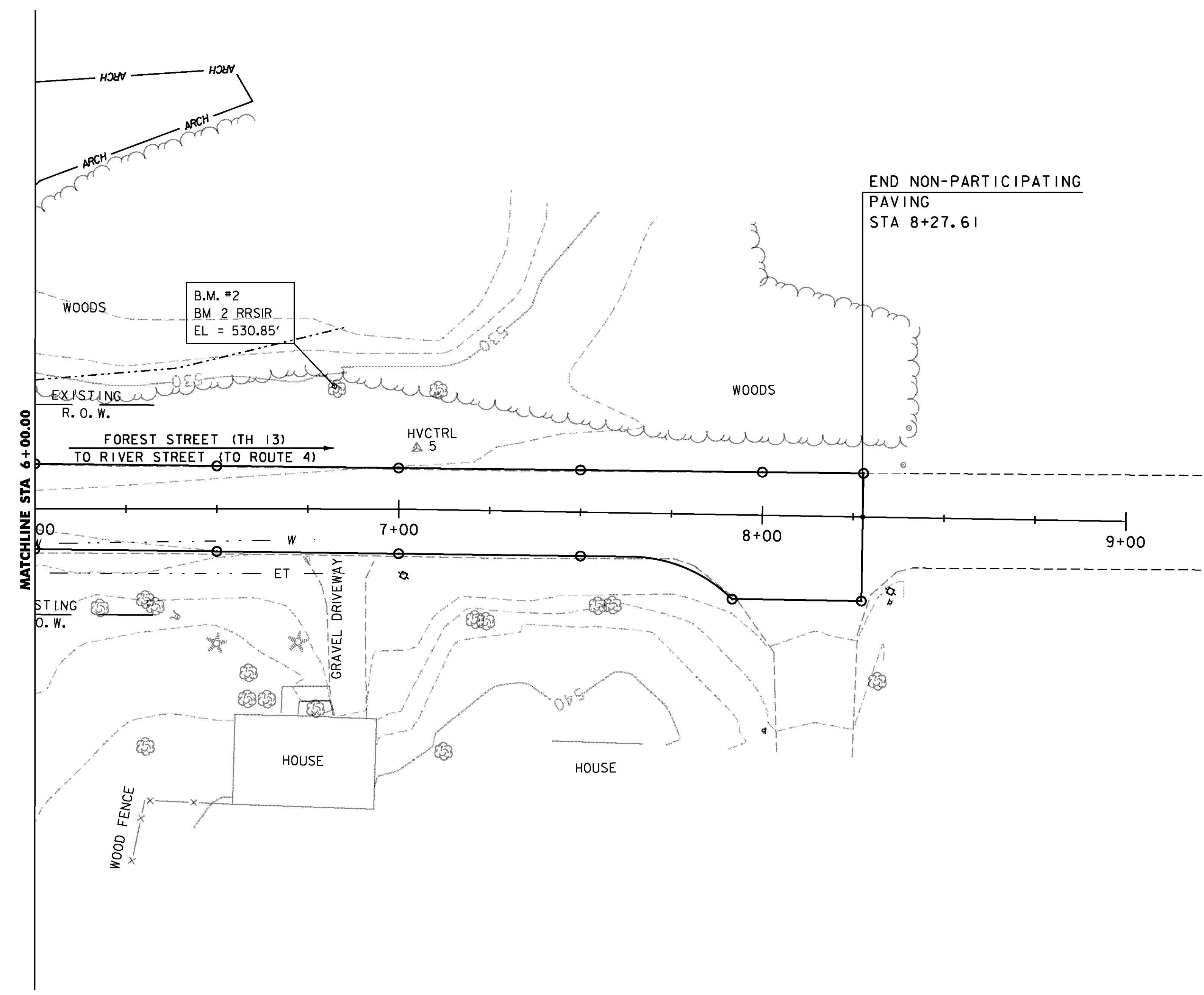
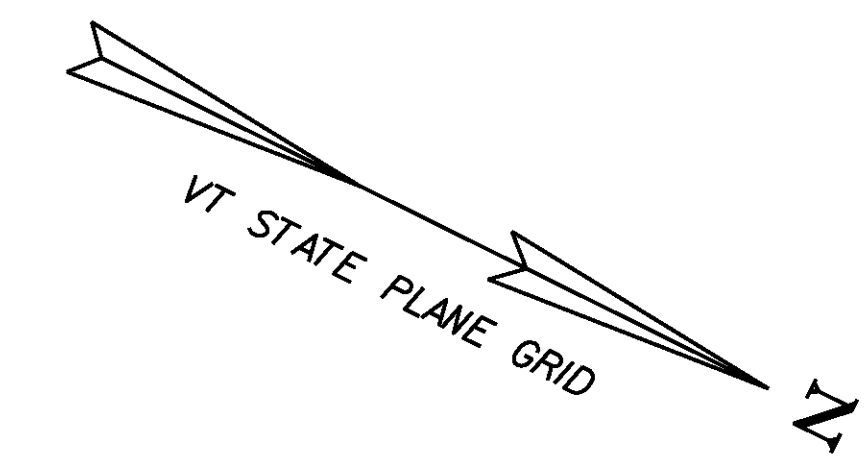


EXISTING BRIDGE DATA  
 CONCRETE SLAB DECK  
 LENGTH = 20'-0"  
 WIDTH = 23'-0" CURB TO CURB  
 BUILT IN 1900

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

NOTE:  
 REFER TO CROSS SECTIONS FOR FINAL GROUND CONTOURS.  
 SEE SYMBOLGY LEGEND SHEET AND EPSC DETAILS  
 SHEETS 1 & 2 FOR LEGEND INFORMATION.

PROJECT NAME:	RUTLAND CITY
PROJECT NUMBER:	BRF 3000(18)
FILE NAME:	s96j244epsc_dur.dgn
PROJECT LEADER:	C. CARLSON
DESIGNED BY:	M. EVANS-MONGEON
EPSC FINAL LAYOUT 1	
PLOT DATE:	05-MAR-2014
DRAWN BY:	R. PELLET
CHECKED BY:	M. E-M
SHEET	41 OF 44

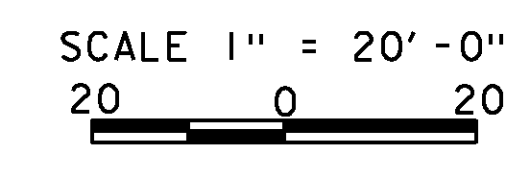


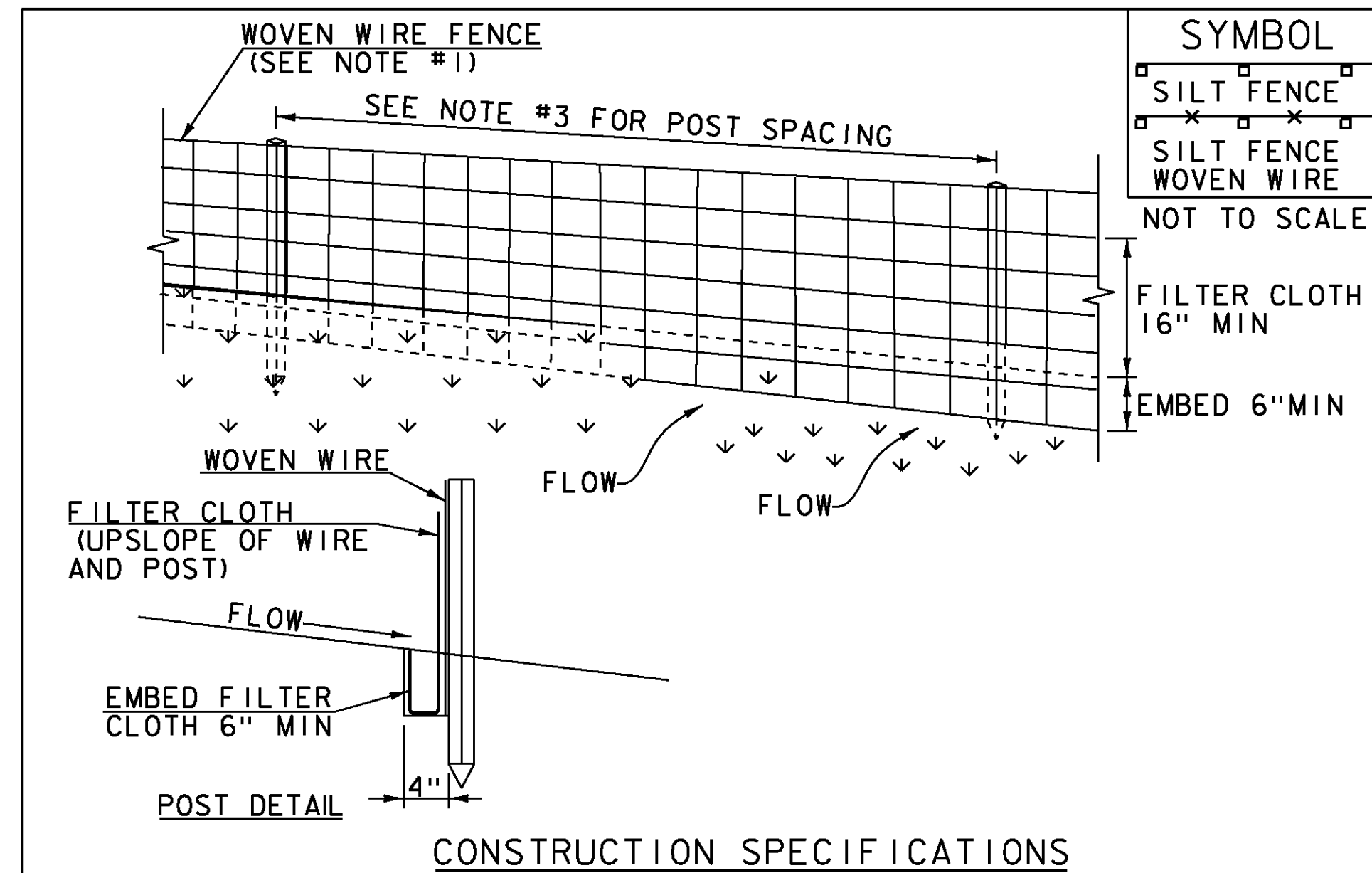
END NON-PARTICIPATING  
PAVING  
STA 8+27.61

MATCHLINE STA 6+00.00

NOTE:  
REFER TO CROSS SECTIONS FOR FINAL GROUND CONTOURS.  
SEE SYMBOLGY LEGEND SHEET AND EPSC DETAILS  
SHEETS 1 & 2 FOR LEGEND INFORMATION.

PROJECT NAME: RUTLAND CITY	PLOT DATE: 28-FEB-2014
PROJECT NUMBER: BRF 3000(18)	DRAWN BY: R. PELLETT
FILE NAME: s96j244er08dr.dgn	CHECKED BY: M. E-M
PROJECT LEADER: C. CARLSON	SHEET 42 OF 44
DESIGNED BY: M. EVANS-MONGEON	
EPSC FINAL LAYOUT 2	





SYMBOL	
	SILT FENCE
	SILT FENCE WOVEN WIRE
NOT TO SCALE	

- CONSTRUCTION SPECIFICATIONS**
- 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.
  - FILTER CLOTH SHALL BE EITHER FILTER X, MIRAF1100X, STABILINKA T140N OR APPROVED EQUIVALENT.
  - 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'.
  - 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.
  - WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
  - MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

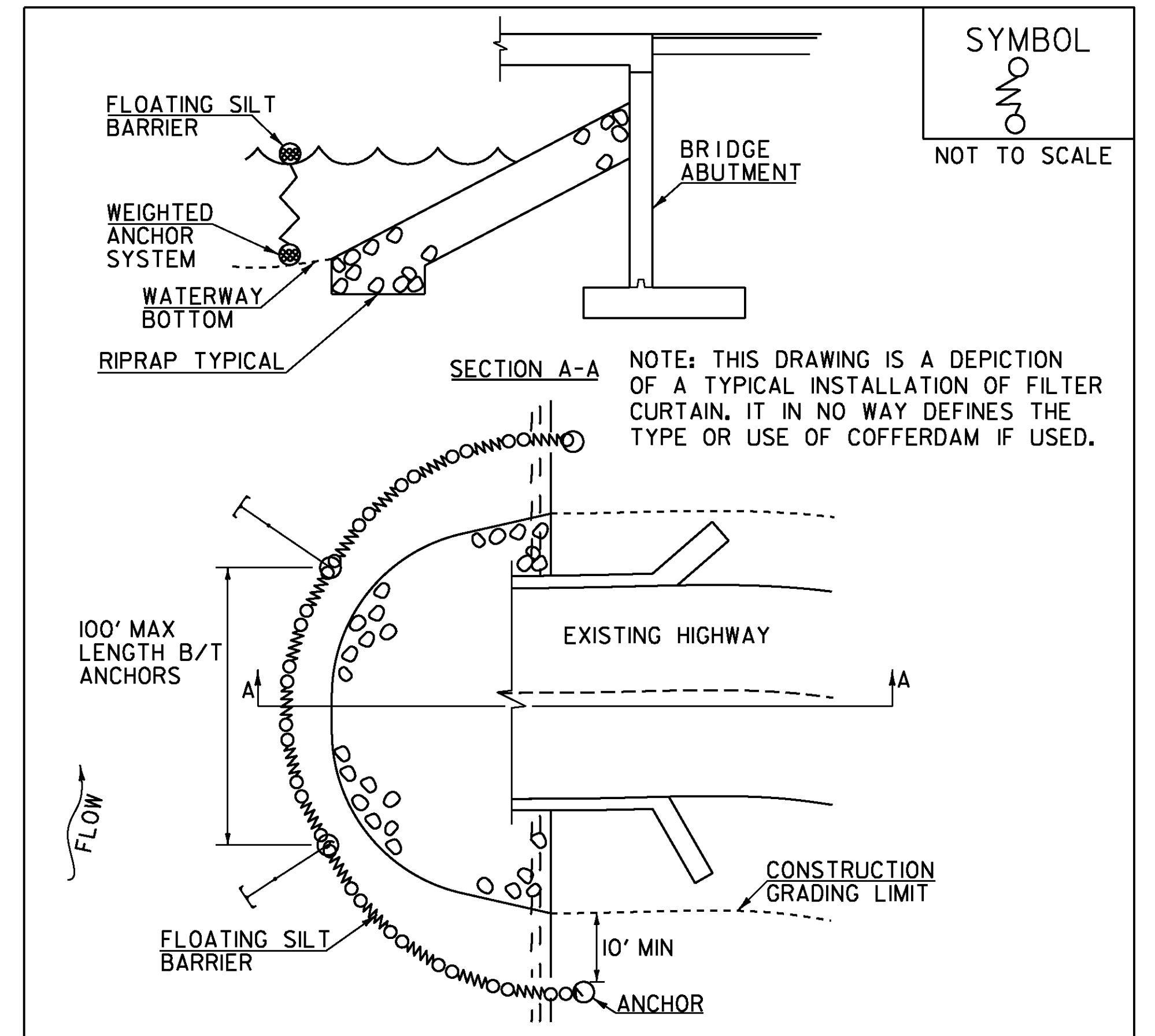
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**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.

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

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).



SYMBOL	
	FILTER CURTAIN
NOT TO SCALE	

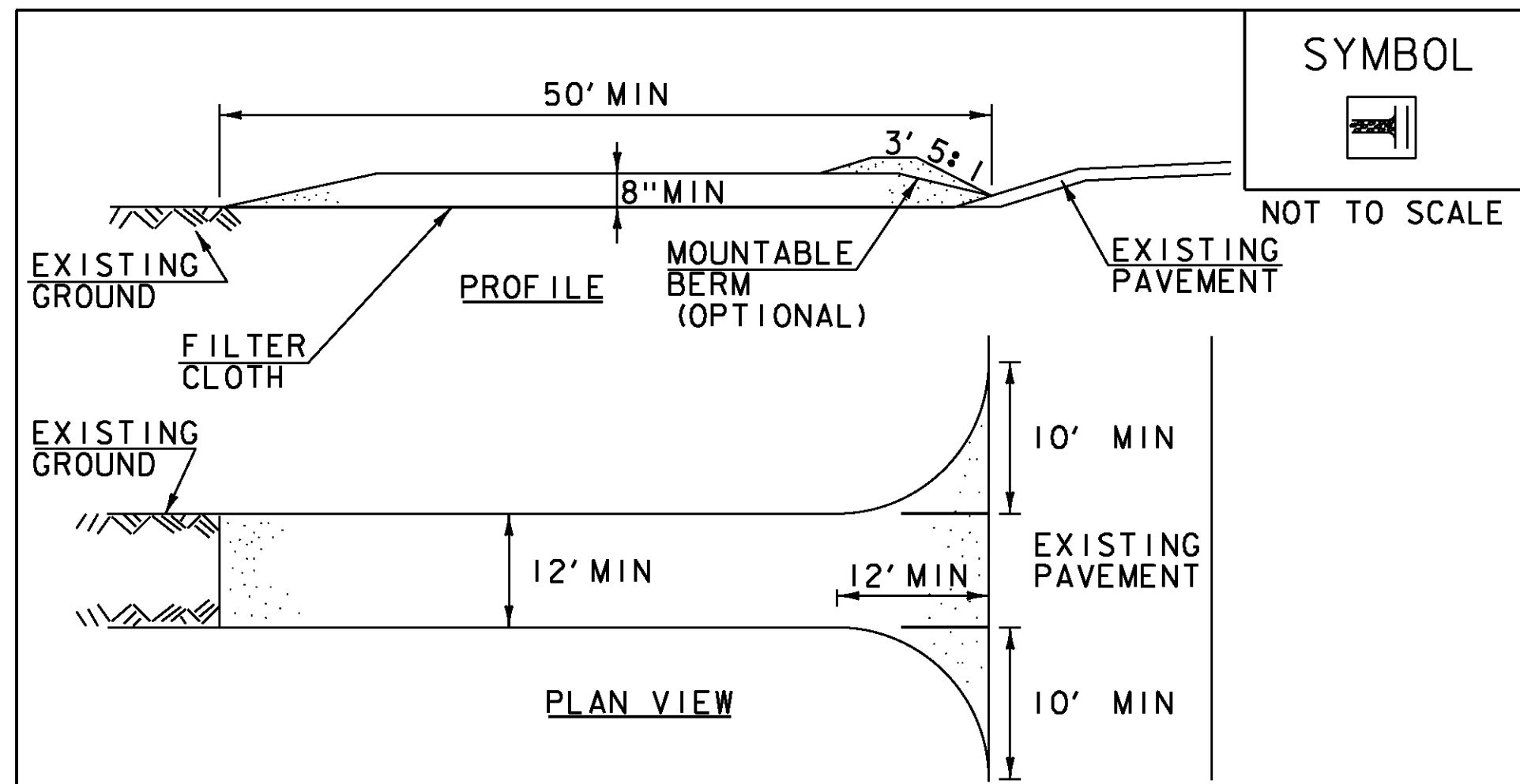
- CONSTRUCTION SPECIFICATIONS**
- FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FEET/SECOND.
  - MAXIMUM 100' LENGTH BETWEEN ANCHORS.
  - LAST SECTION SHALL TERMINATE A MINIMUM OF 10' BEYOND LIMIT OF DISTURBANCE.
  - THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE WHICH ALLOWS THE CURTAIN TO CONFORM TO THE BOTTOM OF THE WATERWAY.
  - THE CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE MINIMIZING THE ESCAPE OF SEDIMENTS INTO WATERWAY.

**FILTER CURTAIN**

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF
SEPTEMBER 4, 2009	WHF

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

PROJECT NAME:	RUTLAND CITY	PLOT DATE:	28-FEB-2014
PROJECT NUMBER:	BRF 3000(18)	DRAWN BY:	R. PELLETT
FILE NAME:	s96j244epsc_de1.dgn	CHECKED BY:	M. E-M
PROJECT LEADER:	C. CARLSON	SHEET	43 OF 44
DESIGNED BY:	M. EVANS-MONGEON		
EPSC DETAILS I			



**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.

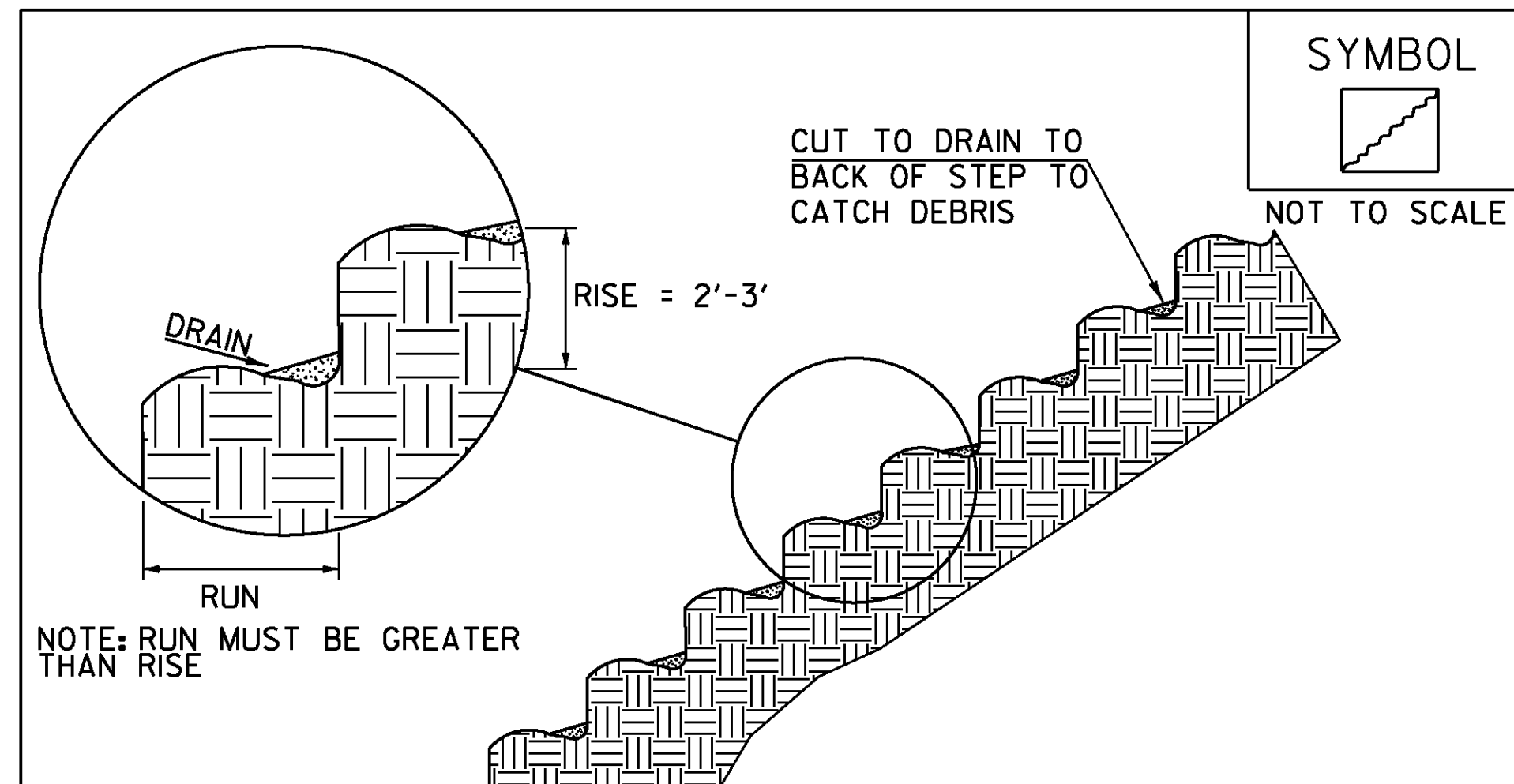
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC  
ORIGINALLY DEVELOPED BY USDA-NRCS  
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**STABILIZED  
CONSTRUCTION  
ENTRANCE**

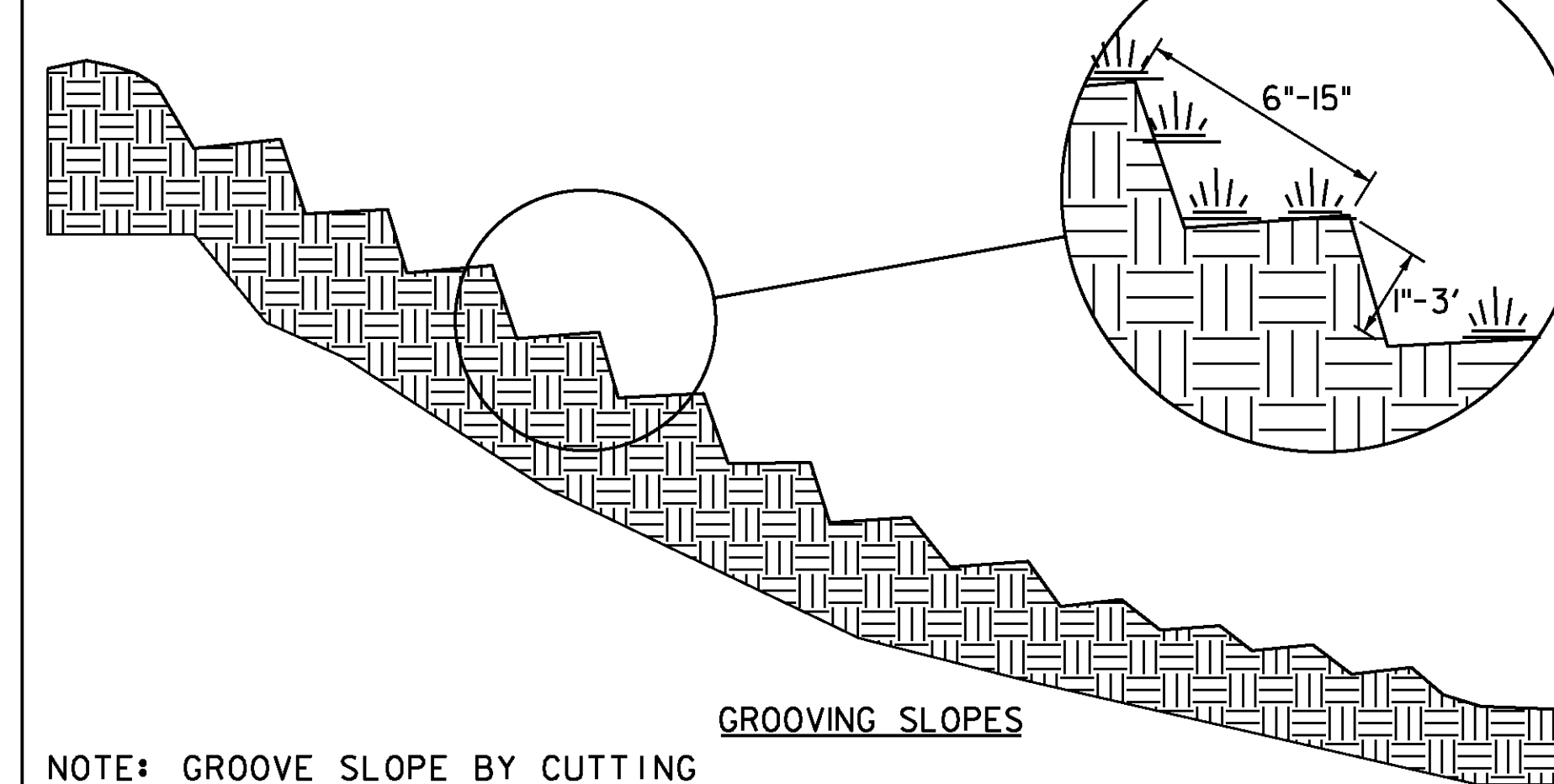
NOTES:  
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR  
EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM  
THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL  
GUIDANCE.

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



**STAIR STEPPING CUT SLOPES**



**GROOVING SLOPES**

NOTE: GROOVE SLOPE BY CUTTING  
FURROWS ALONG THE CONTOUR.  
IRREGULARITIES IN THE SOIL SURFACE  
CATCH RAINWATER AND RETAIN LIME,  
FERTILIZER AND SEED.

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

VAOT RURAL AREA MIX					
% WEIGHT	LBS/AC		NAME	GERM %	PURITY %
	BROADCAST	HYDROSEED			
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					
% WEIGHT	LBS/AC		NAME	GERM %	PURITY %
	BROADCAST	HYDROSEED			
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**

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH  
SECTION 651 FOR SEED (PAY ITEM 651.15)

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

PROJECT NAME: RUTLAND CITY  
PROJECT NUMBER: BRF 3000(18)

FILE NAME: s96j244epsc\_de+.dgn PLOT DATE: 28-FEB-2014  
PROJECT LEADER: C. CARLSON DRAWN BY: R. PELLET  
DESIGNED BY: M. EVANS-MONGEON CHECKED BY: M. E-M  
EPSC DETAILS 2 SHEET 44 OF 44

STATE OF VERMONT  
AGENCY OF TRANSPORTATION



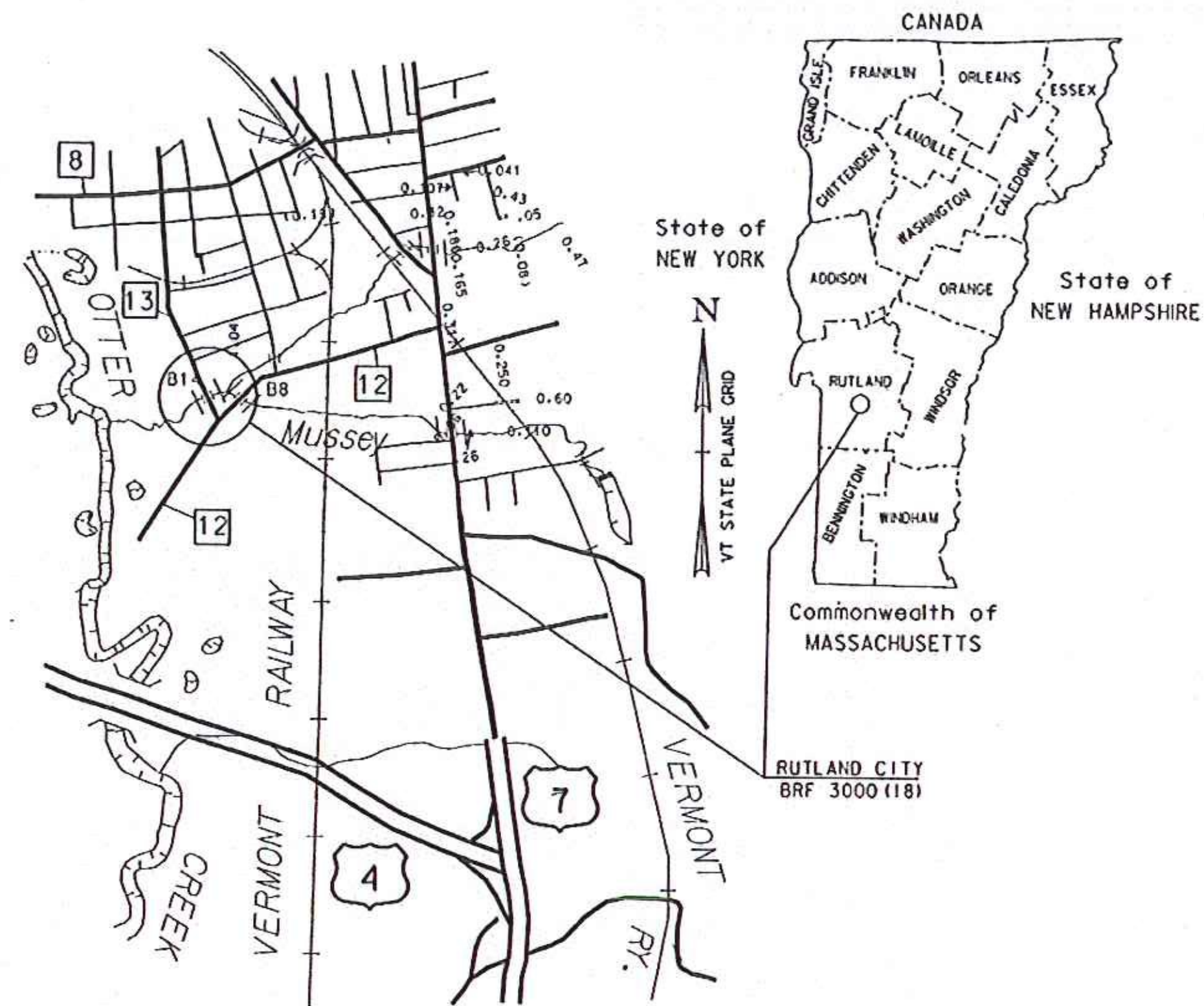
PROPOSED IMPROVEMENT  
BRIDGE PROJECT  
TOWN OF RUTLAND CITY  
COUNTY OF RUTLAND

ROUTE NO : TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO : 14

PROJECT LOCATION : ON FOREST STREET (TH 13), APPROXIMATELY 0.1 MILES FROM THE INTERSECTION OF FOREST STREET (TH 13) WITH PARK STREET (TH 12) OVER MOON BROOK

PROJECT DESCRIPTION : REPLACEMENT OF BRIDGE 14 WITH RELATED APPROACH ROADWAY AND CHANNEL WORK NON-PARTICIPATING PAVING AND WATERLINE

LENGTH OF STRUCTURE : 52 FEET.  
LENGTH OF ROADWAY : 173 FEET.  
LENGTH OF PROJECT : 225 FEET.

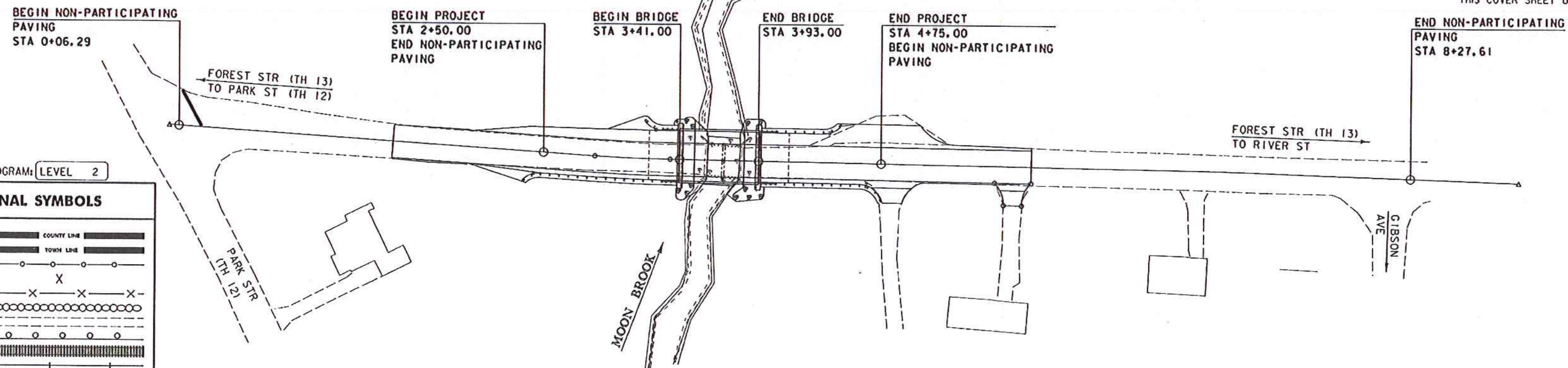


**RECORD PLANS**

**WATER & SEWER  
REPLACEMENT  
PLAN SUBSET**

**DECEMBER 2014**

NOTE: THIS COVER SHEET USED TO SHOW PROJECT LOCUS.



QUALITY ASSURANCE PROGRAM: LEVEL 2

**CONVENTIONAL SYMBOLS**

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

SURVEYED BY : L. ORVIS  
SURVEYED DATE : 4-23-1998

DATUM  
VERTICAL : NAVD 88  
HORIZONTAL : NAD 88 (96)

SCALE 1" = 40'-0"  
40 0 40

**RECORD DRAWING WATER AND SEWER ELEMENTS**  
SOME OF THE CONTENT SHOWN ON THESE RECORD DRAWINGS HAS BEEN PREPARED BASED ON INFORMATION FURNISHED BY OTHERS. THE LOCATION OF ITEMS SHOWN WITHOUT LABELED DIMENSIONS SHALL BE CONSIDERED AS APPROXIMATE. MODIFICATIONS TO BRIDGE ELEMENTS ARE NOT ADDRESSED ON THESE RECORD PLANS. THE SITE WAS NOT RE-SURVEYED AFTER CONSTRUCTION, SO RECORD LOCATIONS, ELEVATIONS AND FINISH GRADES ARE APPROXIMATE AND SHALL BE CONSIDERED "SCHEMATIC." DETAILS AND CROSS SECTIONS MAY NOT REFLECT "AS-BUILT" CONDITIONS.  
CONTRACTOR: THE BELDEN COMPANY, INC.  
UTILITY ENGINEER: CLD CONSULTING ENGINEERS, INC.



THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2014, 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.

PROJECT MANAGER : CAROLYN CARLSON

PROJECT NAME : RUTLAND CITY  
PROJECT NUMBER : BRF 3000 (18)

SHEET 0 OF 7 SHEETS

CLD 13-0126 MODEL-TITLE

GENERAL WATER AND SEWER NOTES:

1. THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS. ADDITIONAL REFERENCE IS MADE TO THE FOLLOWING DOCUMENTS:
  - STATE OF VERMONT, AGENCY OF TRANSPORTATION -STANDARD DRAWINGS AND STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011.
  - STATE OF VERMONT, AGENCY OF NATURAL RESOURCES - WATER SUPPLY RULE, DATED 2010.
  - STATE OF VERMONT, AGENCY OF NATURAL RESOURCES - WASTEWATER SYSTEM AND POTABLE WATER SUPPLY RULES, DATED 2007.
  - STATE OF VERMONT, DEPARTMENT OF ENVIRONMENTAL CONSERVATION STANDARDS AND SPECIFICATIONS FOR EROSION PREVENTION AND SEDIMENT CONTROL, DATED 2006.
  - AMERICAN WATER WORKS ASSOCIATION STANDARDS - AWWA STANDARDS, LATEST EDITIONS.
  - AMERICAN SOCIETY FOR TESTING AND MATERIALS - ASTM, LATEST EDITIONS.
2. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR IN THE GROUND, WITHIN THE CONSTRUCTION AREA, AND SHALL COORDINATE WITH THE OWNERS OF SAID UTILITIES. THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL EXISTING UTILITIES. RELOCATION OF ANY UTILITY, IF REQUIRED, SHALL BE ONLY AS DIRECTED BY THE OWNER OF SAID UTILITY. UTILITIES THAT ARE DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL ARRANGEMENTS FOR ANCHORING, SUPPORTING, AND/OR RELOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. SEE UTILITY SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
3. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR DESIGN ENGINEER HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PAYMENT OF ALL NECESSARY PERMITS AND INSPECTIONS AS REQUIRED.
5. ALL EXCAVATIONS SHALL COMPLY WITH OSHA AND VERMONT OSHA REQUIREMENTS.
6. NO WORK WILL TAKE PLACE UNLESS THE OWNER'S REPRESENTATIVE IS PRESENT. THE OWNER RESERVES THE RIGHT TO REJECT ANY AND ALL WORK NOT MEETING THIS REQUIREMENT.
7. THE CONTRACTOR IS RESPONSIBLE FOR ALL ENGINEERING AND RELATED COSTS ASSOCIATED WITH ANY DESIGN ALTERNATIVES IN ACCORDANCE WITH SUBSECTION 105.30 OF THE SPECIFICATIONS. DESIGN ALTERNATIVES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO IMPLEMENTATION.
8. THE CONTRACTOR SHALL MAINTAIN "RED LINE" DRAWINGS DURING CONSTRUCTION THAT REFLECT LOCATIONS AND ELEVATIONS OF INSTALLED WORK TO INCLUDE AT A MINIMUM, PIPE INVERTS, WATER CORPORATION STOPS, AND TEE LOCATIONS.
9. TEMPORARY BYPASS UTILITIES WILL BE NECESSARY TO ACCOMMODATE THE INSTALLATION OF THE NEW SEWER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 628.42 TRANSFER TO NEW SYSTEM, SANITARY SEWER.
10. NO VERTICAL DEPTH FACTOR WILL APPLY TO EARTHWORK EXCAVATION OR BACKFILL FOR WATER OR SEWER WORK.

WORK LIMITATIONS IN ROADWAY:

1. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY THE WORK AT ALL TIMES.
2. ALL CROSS-COUNTRY EXCAVATIONS SHALL BE THOROUGHLY SECURED WITH STEEL PLATES ON A DAILY BASIS BY THE CONTRACTOR.
3. EXCAVATION UNDER CLOSED ROADWAYS SHALL BE PLATED AT THE COMPLETION OF EACH WORKING DAY. NO OPEN TRENCHES WILL BE PERMITTED OVERNIGHT.

DEMOLITION WITHIN TRENCH LIMITS:


1. MANHOLES AND PIPES THAT ARE NO LONGER NECESSARY SHALL BE COMPLETELY REMOVED OR FLOW FILLED.
2. MANHOLES AND PIPES THAT ARE NO LONGER NECESSARY AND EXTEND BEYOND THE ROADWAY LIMIT SHALL BE CAPPED AND FLOW FILLED.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND PROPER DISPOSAL OF ALL ITEMS REMOVED DURING CONSTRUCTION.
4. FRAMES AND COVERS SHALL BE SALVAGED TO THE OWNER.
5. THE EXISTING SANITARY SEWER MAY CONSIST OF TRANSITE PIPE. A QUANTITY OF ITEM 900.640 SPECIAL PROVISION (TRANSITE PIPE REMOVAL) HAS BEEN INCLUDED FOR REMOVAL OF TRANSITE PIPE IF ENCOUNTERED WHERE THE NEW SEWER ALIGNMENT IS IN THE VICINITY OF THE EXISTING SEWER.

SURVEY NOTES:

1. THE BASE MAPPING SHOWN WAS DEVELOPED BY VTRANS AND SUPPLEMENTED BY CITY AND ENGINEER MEASUREMENTS. SOME SUBSURFACE FEATURES SHOWN WERE INPUT BASED ON THE BEST AVAILABLE DATA SUPPLIED BY THE CITY.
2. THE CONTRACTOR WILL ESTABLISH AND MAINTAIN SURVEY CONTROL THROUGHOUT THE PROJECT. THIS WORK IS SUBJECT TO THE CHECKING, APPROVAL, AND SURVEILLANCE BY THE ENGINEER.

PLAN REVISIONS

① 1/16/14: MINOR NOTE REVISIONS.

WATER AND SEWER PLANS		PROJECT NAME: RUTLAND CITY
		PROJECT NUMBER: BRF 3000(18)
	640 Commercial Street, Manchester, NH 03101 (603) 668-8223 • Fax: (603) 668-8802 clde@cldeengineers.com • www.cldeengineers.com Maine • New Hampshire • Vermont	FILE NAME: \$FILEABBREV\$
		PLOT DATE: 3/5/2014
		PROJECT LEADER: C. BEAN
		DRAWN BY: W. GORDON
		DESIGNED BY: D. LEWIS
		CHECKED BY: S. REICHERT
		WATER AND SEWER NOTES I
		SHEET 1 OF 7

WATER CONSTRUCTION


1. BUY AMERICA REQUIREMENTS APPLY TO ALL STEEL AND IRON PRODUCTS. SEE SUBSECTION 107.22.
2. ONLY CITY PERSONNEL MAY OPERATE VALVES.
3. ISOLATION OF WATER MAIN FOR BRIDGE PROJECT:
  - THE FOREST STREET WATER MAIN CAN BE VALVED OFF BY THE CITY SOUTH OF THE PROJECT AREA AT THE PARK STREET INTERSECTION (STA. 0+10). THE CONTRACTOR SHALL ASSEMBLE SPOOL LENGTHS OF PIPE, REDUCER, 8-INCH GATE VALVE, AND FITTINGS TO INSERT NEAR STA. 2+50 AS SHOWN ON WATER/SEWER LAYOUT 1.
  - THE FOREST STREET WATER MAIN CAN BE VALVED OFF BY THE CITY NORTH OF THE PROJECT AREA AT THE GIBSON AVENUE INTERSECTION. THE CONTRACTOR SHALL ASSEMBLE SPOOL LENGTHS OF PIPE, REDUCER, 8-INCH GATE VALVE, AND FITTINGS TO INSERT NEAR STA. 4+85 AS SHOWN ON WATER/SEWER LAYOUT 1.
  - AT EACH LOCATION, THIS ASSEMBLY SHALL BE INSTALLED AND RESTRAINED BY INSTALLING A MINIMUM OF 20' OF PIPE, FITTINGS AND THRUST BLOCK WITHIN THE PROJECT AREA TO ALLOW WATER SYSTEM RECHARGING. THIS WORK SHALL BE PERFORMED DURING NIGHT HOURS (10 P.M. TO 5 A.M.) MONDAY THROUGH THURSDAY. BOTH LOCATIONS SHALL BE COMPLETED DURING A SINGLE NIGHT SHIFT. PROVIDE 2 WEEKS NOTICE TO THE CITY AND WATER CUSTOMERS. THIS WORK WILL BE PAID FOR USING ESTABLISHED CONTRACT ITEMS. NO ADDITIONAL COMPENSATION WILL BE PROVIDED.
4. THE CONTRACTOR SHALL SUPPLY A TIE-CARD TO THE OWNER AND THE WATER CUSTOMER DOCUMENTING THE LOCATION OF EACH INSTALLED SERVICE CONNECTION (CORPORATION AND CURB STOP).
5. WATER MAIN INSTALLATION SHALL COMPLY WITH AWWA C-600 AND THE VERMONT WATER SUPPLY RULE. HYDROSTATIC TESTING PER AWWA C-600 SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER AND CITY DPW PERSONNEL. THE OWNER RESERVES THE RIGHT TO REJECT WORK NOT COMPLYING WITH THIS REQUIREMENT. NOTE THAT SECTION SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE OF LEAST 150 PERCENT OF WORKING PRESSURE FOR A TWO HOUR DURATION. WORKING PRESSURE IS 150 PSI.
6. WATER MAIN DISINFECTION SHALL COMPLY WITH AWWA C-651. CHLORINATED WATER SHALL BE NEUTRALIZED PER APPENDIX C, AWWA C-651, PRIOR TO DISCHARGE TO SANITARY SEWER. COORDINATE WITH OWNER.
7. WATER MAIN SHALL HAVE 5.5 FT COVER MIN. (TYP.).
8. ALL DUCTILE IRON (DI) PIPE SHALL BE CLASS 52, DOUBLE CEMENT LINED AND SEAL COATED
9. ALL WATER SERVICE PIPE TO BE TYPE K COPPER.
10. THRUST RESTRAINT REQUIREMENTS:
  - RETAINER GLANDS WITHIN THREE PIPE LENGTHS ON EACH SIDE SHALL BE USED IN LIEU OF THREADED ROD OR GRIP RINGS AT ALL PIPE BENDS, FITTINGS, VALVES, AND APPURTENANCES.
  - CONTRACTOR SHALL IDENTIFY SELECTION OF RESTRAINT IN WORKING DRAWINGS PROVIDED TO ENGINEER FOR REVIEW.
11. ALL HYDRANTS TO OPEN LEFT AND VALVES TO OPEN RIGHT.
12. THE OPEN ENDS OF EXPOSED PIPE SHALL BE LEFT PLUGGED IN EXCAVATIONS AT THE CONCLUSIONS OF THE DAY'S WORK. DURING PERIODS OF DELAY AND AT THE CONCLUSION OF THE DAY'S WORK, LENGTHS OF PIPE WITH OPEN ENDS SHALL BE TIGHTLY CLOSED WITH WATERTIGHT PLUGS, SPECIAL SEALS, OR BY OTHER SUITABLE MEANS ACCEPTED BY THE ENGINEER TO PREVENT THE ENTRY OF ANIMALS, FOREIGN MATTER AND TRENCH WATER. TRENCH WATER SHALL BE PUMPED OUT BEFORE THE SEALS, PLUGS, OR OTHER TEMPORARY CLOSURES ARE REMOVED.
13. EXISTING WATER MAIN THAT WILL NO LONGER REMAIN IN SERVICE SHALL BE ABANDONED IN PLACE WHERE IT EXISTS BEYOND TRENCHING LIMITS FOR NEW PIPE. PIPE ENDS SHALL BE GROUTED AND CAPPED. THE CONTRACTOR SHALL NOTE LOCATIONS AND DEPTHS OF CAPPED ENDS ON THE RED-LINE DRAWINGS. WHERE THE EXISTING PIPING IS LOCATED WITHIN THE TRENCH LIMITS FOR NEW PIPING, REMOVAL OF OLD PIPE SHALL BE CONSIDERED INCIDENTAL TO INSTALLATION OF NEW PIPE.
14. PROVIDE BRONZE CONDUCTIVE WEDGES ON WATER MAIN INSTALLATION.

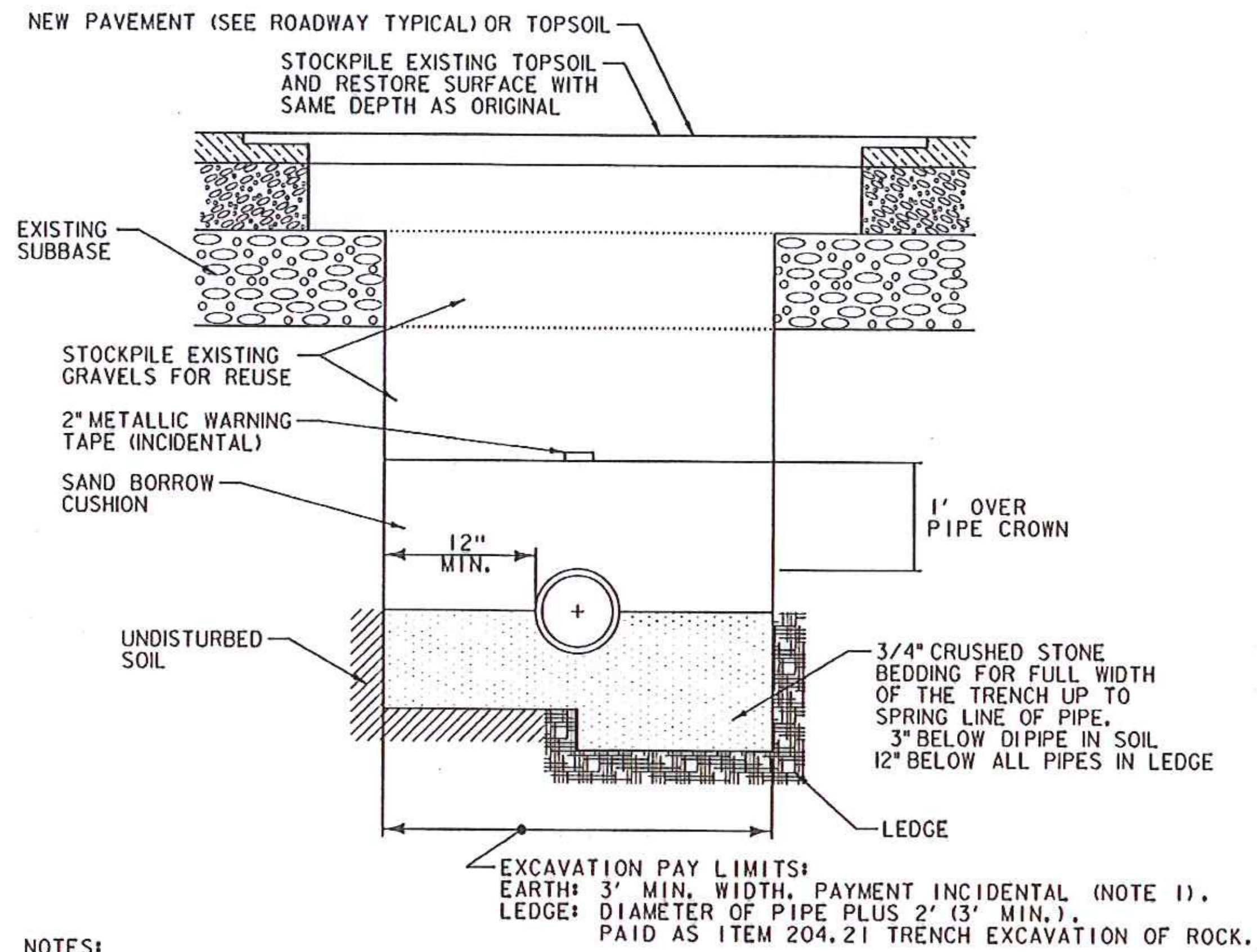
SEWER CONSTRUCTION

1. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO ANY CONSTRUCTION ACTIVITIES, AND SHALL BE MAINTAINED THROUGHOUT THE PROJECT.
2. NO SEWER SURCHARGING WILL BE PERMITTED. WASTEWATER FLOW SHALL BE MAINTAINED BY BYPASS PUMPING OR OTHER METHODS AS APPROVED BY THE ENGINEER.
3. CONTRACTOR TO VERIFY INVERTS ON CONNECTING MANHOLES PRIOR TO LAYING SEWER PIPE.
4. THE CONTRACTOR SHALL SUPPLY A TIE-CARD TO THE TOWN AND BUILDING OWNER FOR DOCUMENTING THE LOCATION OF EACH SERVICE CONNECTION.
5. THE CONTRACTOR SHALL EXCAVATE, REMOVE, AND REPLACE ALL EXISTING PIPE TO REMAIN THAT IS DAMAGED AT THE CONTRACTOR'S OWN EXPENSE. THE NEW PIPE SHALL BE THE SAME SIZE AS THE EXISTING PIPE AND SHALL BE CONNECTED TO THE EXISTING PIPE WITH APPROVED REPAIR COUPLINGS.
6. UNLESS OTHERWISE SPECIFIED, MINIMUM PIPE COVER SHALL BE 5 FT.
7. ALL PIPE LENGTHS ARE MEASURED FROM INSIDE MANHOLE WALL TO INSIDE MANHOLE WALL. SLOPES ARE SHOWN IN PERCENT.
8. SEWER LINES SHALL BE LOCATED A MINIMUM OF 10 FT HORIZONTALLY FROM ALL PROPOSED AND EXISTING WATER MAINS, AS MEASURED FROM OUTSIDE PIPE WALLS.
9. ALL SANITARY MANHOLES SHALL PASS LEAKAGE TESTING CRITERIA OUTLINED IN SECTION 628 OF THE SPECIFICATIONS. AS AN ALTERNATIVE, THE CONTRACTOR MAY ELECT TO PERFORM VACUUM TESTING ON MANHOLES PRIOR TO BACK FILLING AS FOLLOWS:
  - ALL LIFT HOLES AND INVERT HOLES SHALL BE PLUGGED.
  - THE INITIAL VACUUM GAUGE TEST PRESSURE SHALL BE 10 INCHES Hg.
  - THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR A 1 INCH Hg DROP TO 9 INCHES Hg SHALL BE:
    - a) NOT LESS THAN 1 MINUTE FOR MANHOLES LESS THAN 14 FT DEEP;
    - b) NOT LESS THAN 2 MINUTES FOR MANHOLES DEEPER THAN 14 FT.
  - THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE CRITERIA LISTED ABOVE.
10. ALL SMHs TO BE 4 FT DIAMETER UNLESS NOTED OTHERWISE.
11. CONTRACTOR SHALL FLUSH INSTALLED SEWER AND VIDEOTAPE FOR ENGINEER'S REVIEW PRIOR TO FINAL ACCEPTANCE AND APPLICATION OF WEARING COURSE PAVEMENT.
12. SEWER PIPE SHALL BE CLASS 50 DUCTILE IRON DOUBLE CEMENT LINED, AND SEAL COATED UNLESS NOTED OTHERWISE.
13. TRENCH DAM SHALL BE INSTALLED ON NORTH SIDE OF STREAM CROSSING. SEE TRENCH DAM DETAIL.

PLAN REVISIONS

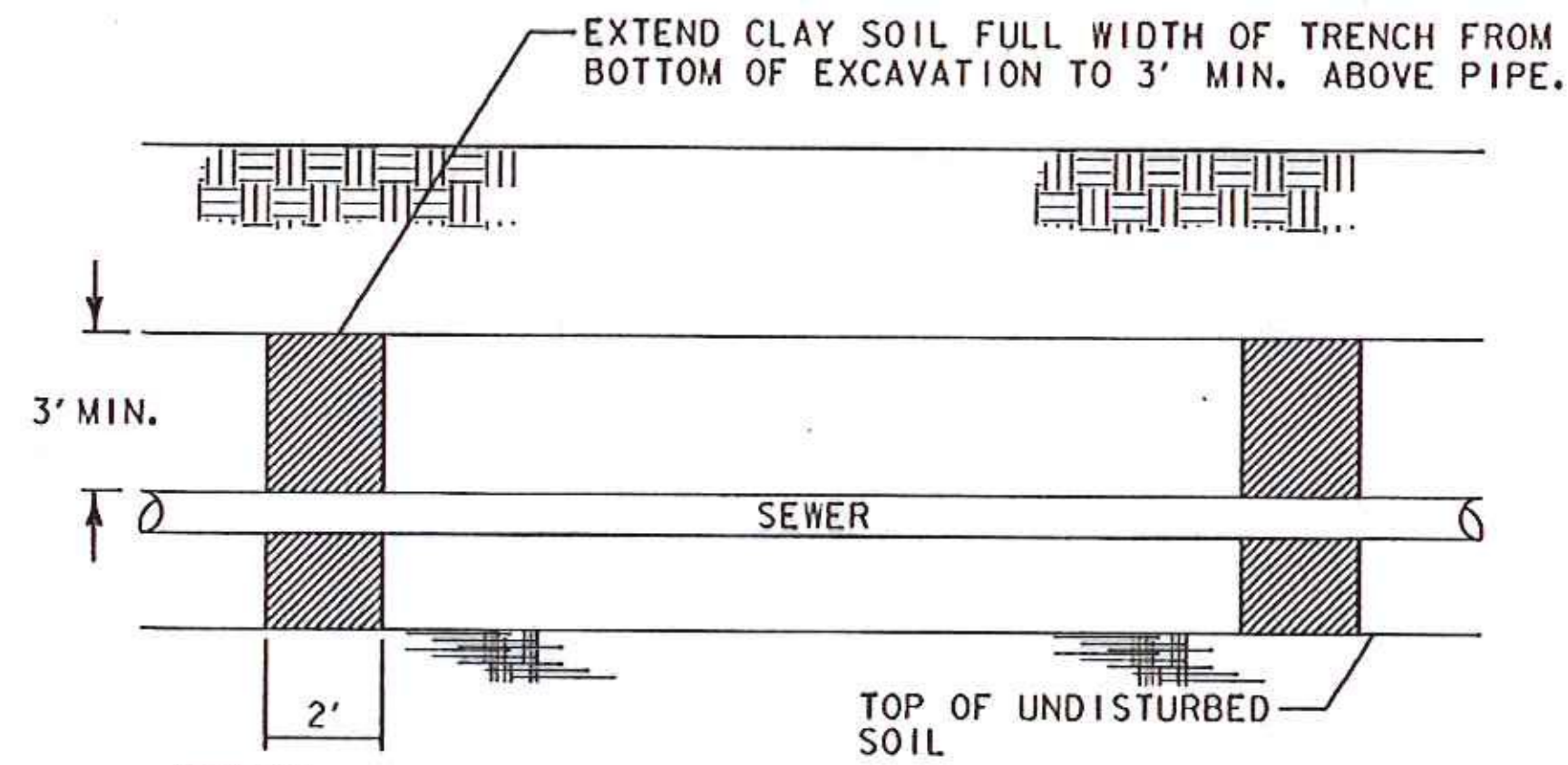
- ② 3/5/14: WATER CONSTRUCTION NOTE 3 REVISED (PER CITY).
- ① 1/16/14: MINOR NOTE REVISIONS.

WATER AND SEWER PLANS		PROJECT NAME: RUTLAND CITY
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	540 Commercial Street, Manchester, NH 03101 (603) 668-8223 • Fax: (603) 668-8802 cld@cdengineers.com • www.cdengineers.com Maine • New Hampshire • Vermont	FILE NAME: \$FILEABBREV\$
		PLOT DATE: 3/5/2014
		DRAWN BY: W. GORDON
		CHECKED BY: S. REICHERT
		DESIGNED BY: D. LEWIS
		WATER AND SEWER NOTES 2
		SHEET 2 OF 7



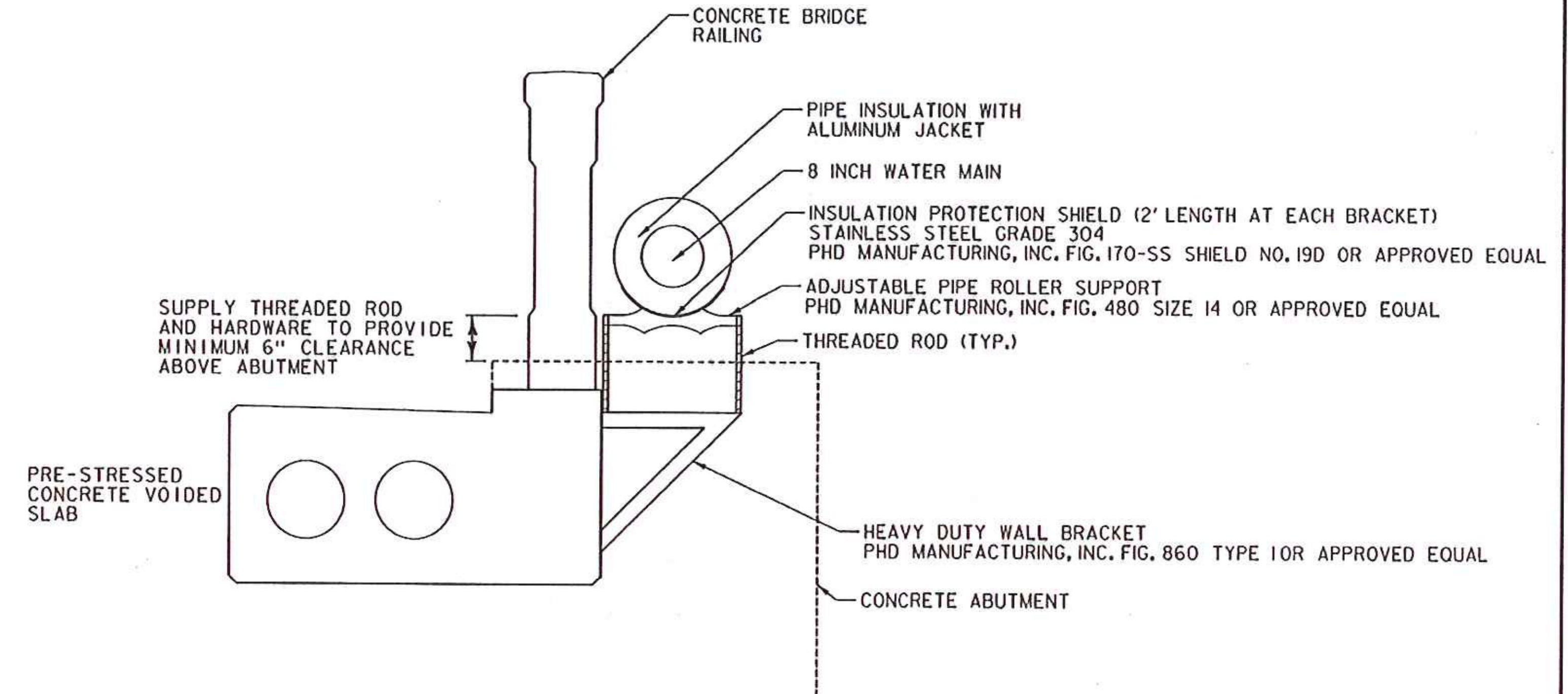
- NOTES:**
- EXCEPT FOR NEW PAVEMENT AND TRENCH EXCAVATION OF ROCK, WORK DEPICTED ON THIS DETAIL SHALL BE INCIDENTAL TO EITHER SPECIAL PROVISION WATER MAIN OR SPECIAL PROVISION SEWER ITEMS.
  - FOR STREET EXCAVATIONS, SUITABLE STOCKPILED MATERIAL FOR BACKFILL SHALL BE PLACED TO MATCH THE DEPTH OF EXISTING SUBBASE. UNSUITABLE BACKFILL WILL INCLUDE STONES OVER 4 INCHES IN LARGEST DIMENSION, CLAY, WET OR UNSTABLE MATERIAL, WOOD OR OTHER ORGANIC MATERIAL, AND FROZEN MATERIAL.
  - PAYMENT FOR TRENCH EXCAVATION OF EARTH, STOCKPILING, DISPOSAL OF ALL SURPLUS MATERIAL, BACKFILL, SAND BORROW CUSHION, CRUSHED STONE BEDDING, LABOR, TOOLS, EQUIPMENT AND ALL INCIDENTALS NECESSARY TO COMPLETE THE WORK SHALL BE INCIDENTAL TO THE APPLICABLE PAY ITEM REFERENCED IN NOTE 1; EXCEPT FOR NEW PAVEMENT AND TRENCH EXCAVATION OF ROCK, WHICH WILL BE PAID FOR SEPARATELY.

**TYPICAL TRENCH DETAIL**



- NOTES:**
- CLAY SOIL TO EXHIBIT  $1 \times 10^{-6}$  CM/SEC PERMEABILITY MAX.
  - TRENCH DAM REQUIRED ON NORTH SIDE OF STREAM CROSSING AS SHOWN ON SEWER PROFILE.
  - THIS WORK WILL BE CONSIDERED INCIDENTAL TO ITEM 900.640 SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL-INCLUSIVE) (12" SEWER)

**TRENCH DAM DETAIL**



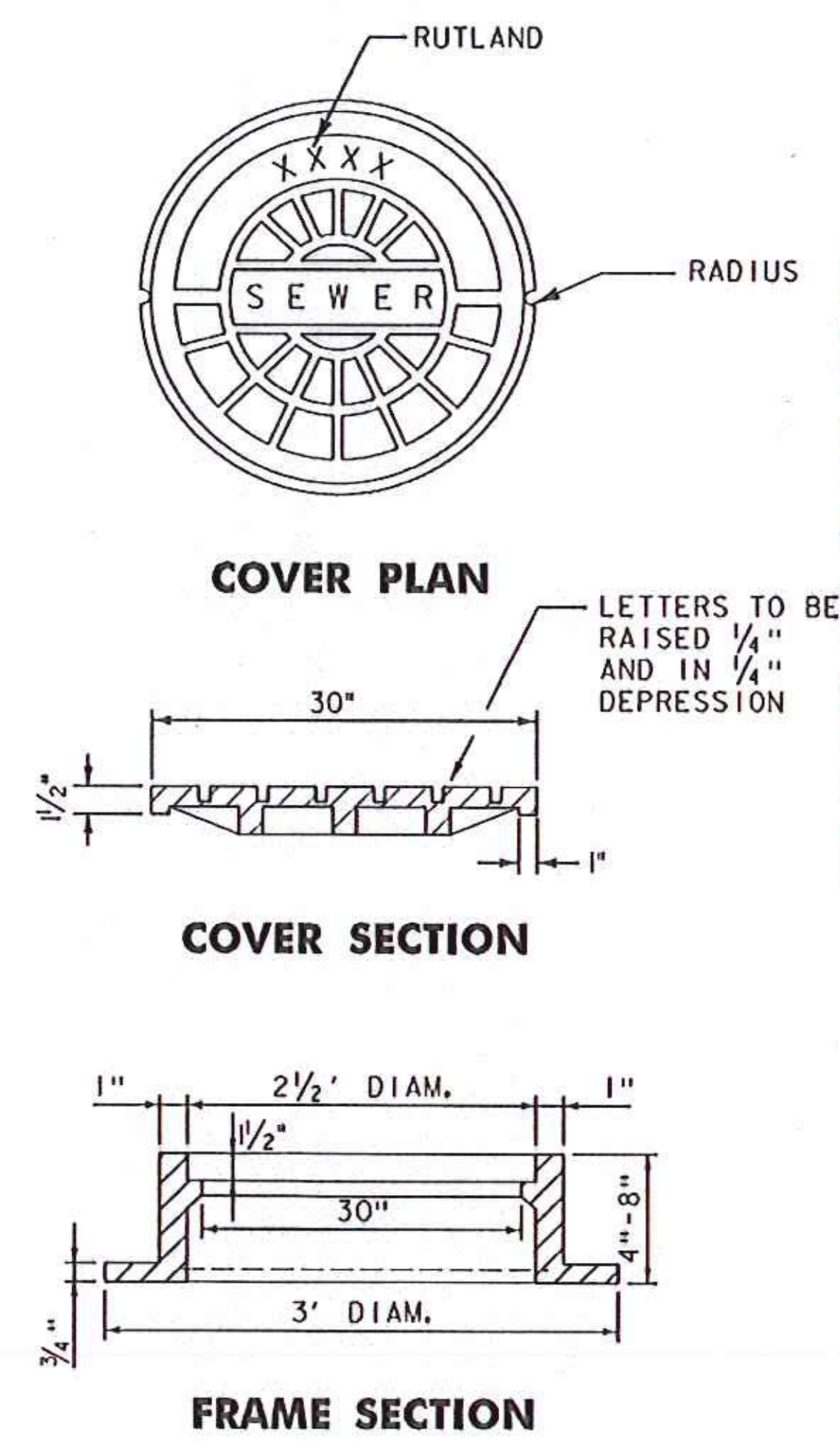
- NOTES:**
- PIPE SHALL FEATURE RESTRAINED JOINTS.
  - PROVIDE AT LEAST ONE PIPE SUPPORT PER PIPE LENGTH.
  - INSULATION SHALL BE 3-INCH POLYISOCYANURATE WITH A 0.020-INCH THICK ALUMINUM JACKET.
  - PROVIDE THREADED ANCHOR SLEEVE AND PROPOSE WALL BRACKET BOLT CONFIGURATION IN PRE-STRESSED CONCRETE VOIDED SLAB WORKING PLANS. PROVIDE LOAD CALCULATIONS SHOWING PIPE AND SUPPORT COMPONENT WEIGHTS WITH VOIDED SLAB WORKING PLANS.
  - INSTALL LOCKABLE 2-INCH CORPORATION FOR MANUAL AIR RELEASE.
  - ALL WORK SHALL BE PAID FOR UNDER ITEM 900.640 SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL-INCLUSIVE) (8" WATER ON BRIDGE).

**WATER MAIN ON BRIDGE CROSSING**

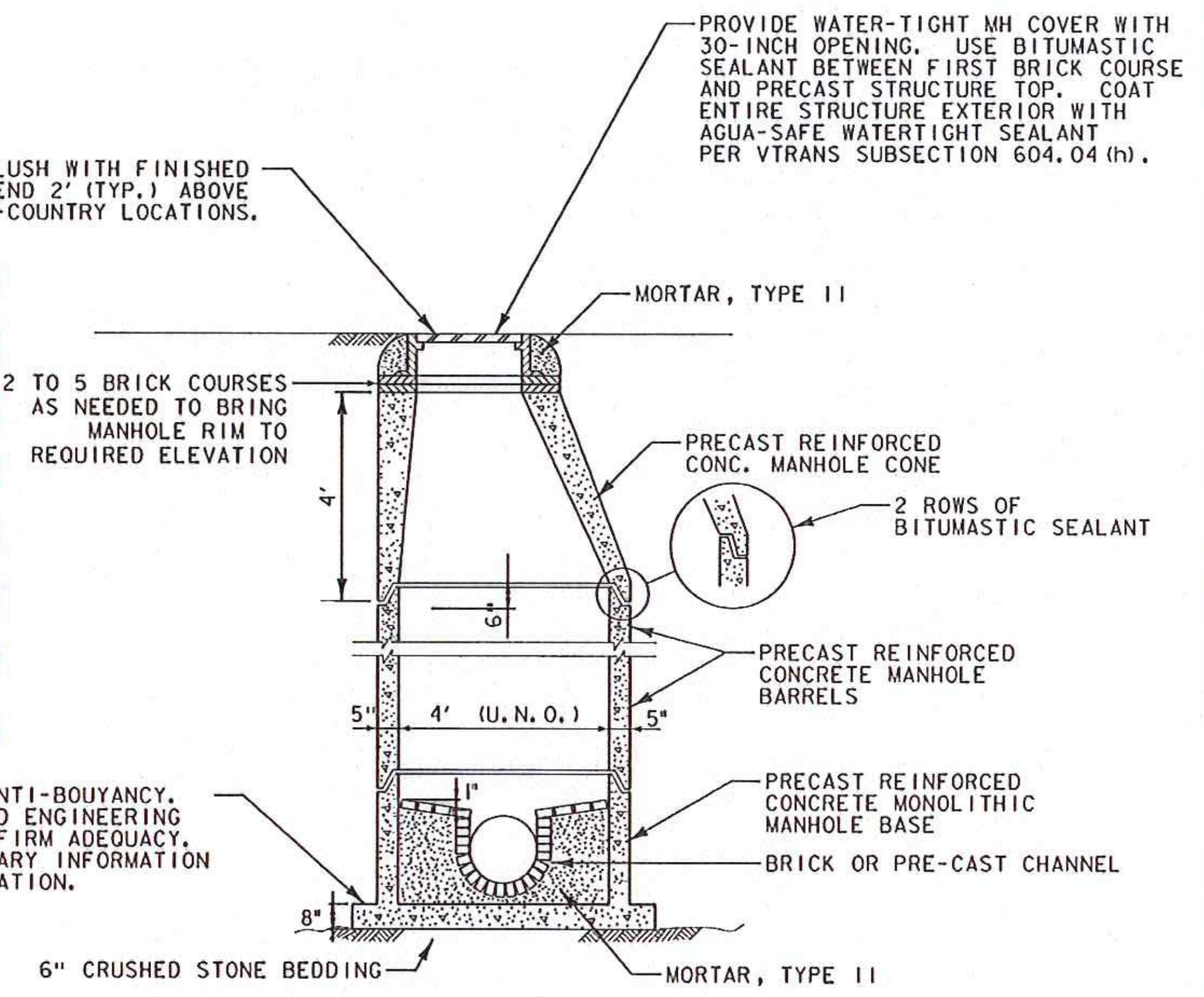
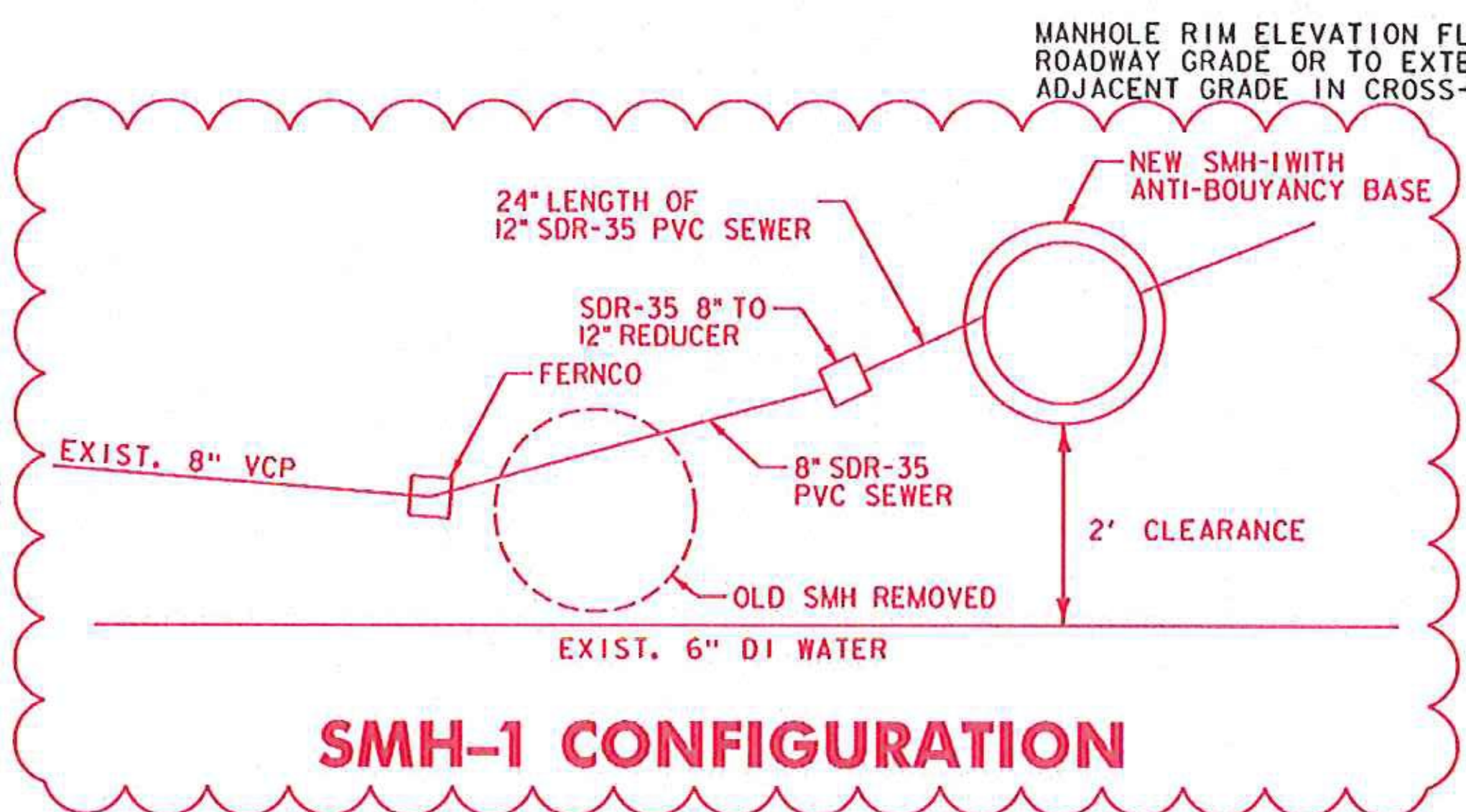
- PLAN REVISIONS**
- ② 3/5/14: MODIFICATIONS TO WATER MAIN ON BRIDGE CROSSING DETAIL.
  - ① 1/16/14: MODIFIED TRENCH DAM DETAIL (PER DEC).

NOT TO SCALE

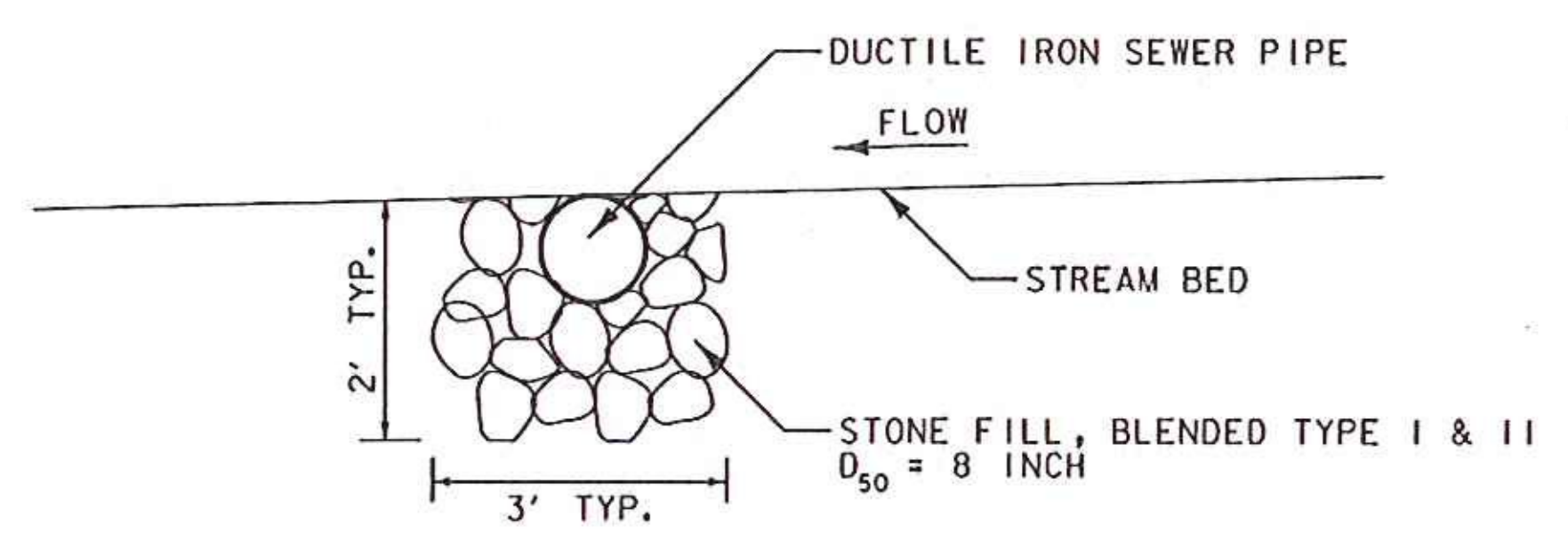
WATER AND SEWER PLANS		PROJECT NAME: RUTLAND CITY
		PROJECT NUMBER: BRF 3000(18)
<p>540 Commercial Street, Manchester, NH 03101          (603) 668-8223 • Fax (603) 668-8302          cld@cdengineers.com • www.cdengineers.com          Maine • New Hampshire • Vermont</p>	FILE NAME: \$FILEABBREV\$	
	PROJECT LEADER: C. BEAN	PLOT DATE: 3/5/2014
	DESIGNED BY: D. LEWIS	DRAWN BY: W. GORDON
	WATER/SEWER DETAILS 1	CHECKED BY: S. REICHERT
		SHEET 3 OF 7



**MANHOLE FRAME AND COVER DETAIL**



**NOTES:**  
 1. ALL MATERIALS AND WORK DEPICTED THIS DETAIL SHALL BE PAID UNDER ITEM 900.620 SPECIAL PROVISION (SANITARY MANHOLE, ALL-INCLUSIVE) (4' DIA.) OR ITEM 604.56 CAST IRON COVER WITH FRAME, SEWER.



**NOTES:**  
 1. COST OF STONE FILL, INCLUDING EXCAVATION, SHALL BE INCIDENTAL TO ITEM 900.640 SPECIAL PROVISION (SEWER, DUCTILE IRON PIPE, CEMENT-LINED, ALL-INCLUSIVE) (12" SEWER)

2 RECORD CHANGES [CLOUD]

**PLAN REVISIONS**

1 1/16/14: MODIFIED SEWER MANHOLE DETAIL AND ADDED STREAM BEDDING DETAIL (PER DEC).

NOT TO SCALE

<b>WATER AND SEWER PLANS</b> 	PROJECT NAME: RUTLAND CITY PROJECT NUMBER: BRF 3000(18)
	FILE NAME: \$FILEABBREV\$ PROJECT LEADER: C. BEAN DESIGNED BY: D. LEWIS WATER/SEWER DETAILS 2
540 Commercial Street, Manchester, NH 03101 (603) 668-8223 • Fax: (603) 668-8802 clde@cldeengineers.com • www.cldeengineers.com Maine • New Hampshire • Vermont	PLOT DATE: 3/5/2014 DRAWN BY: W. GORDON CHECKED BY: S. REICHERT SHEET 4 OF 7

**CONSTRUCTION NOTES NOT REVISED TO REFLECT CHANGES**

SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL-INCLUSIVE) (8" WATER)  
 2+50.0 TO 3+26.6 RT  
 4+12.5 TO 4+88.3 RT

SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL-INCLUSIVE) (8" WATER ON BRIDGE)  
 3+26.6 TO 4+12.5 RT

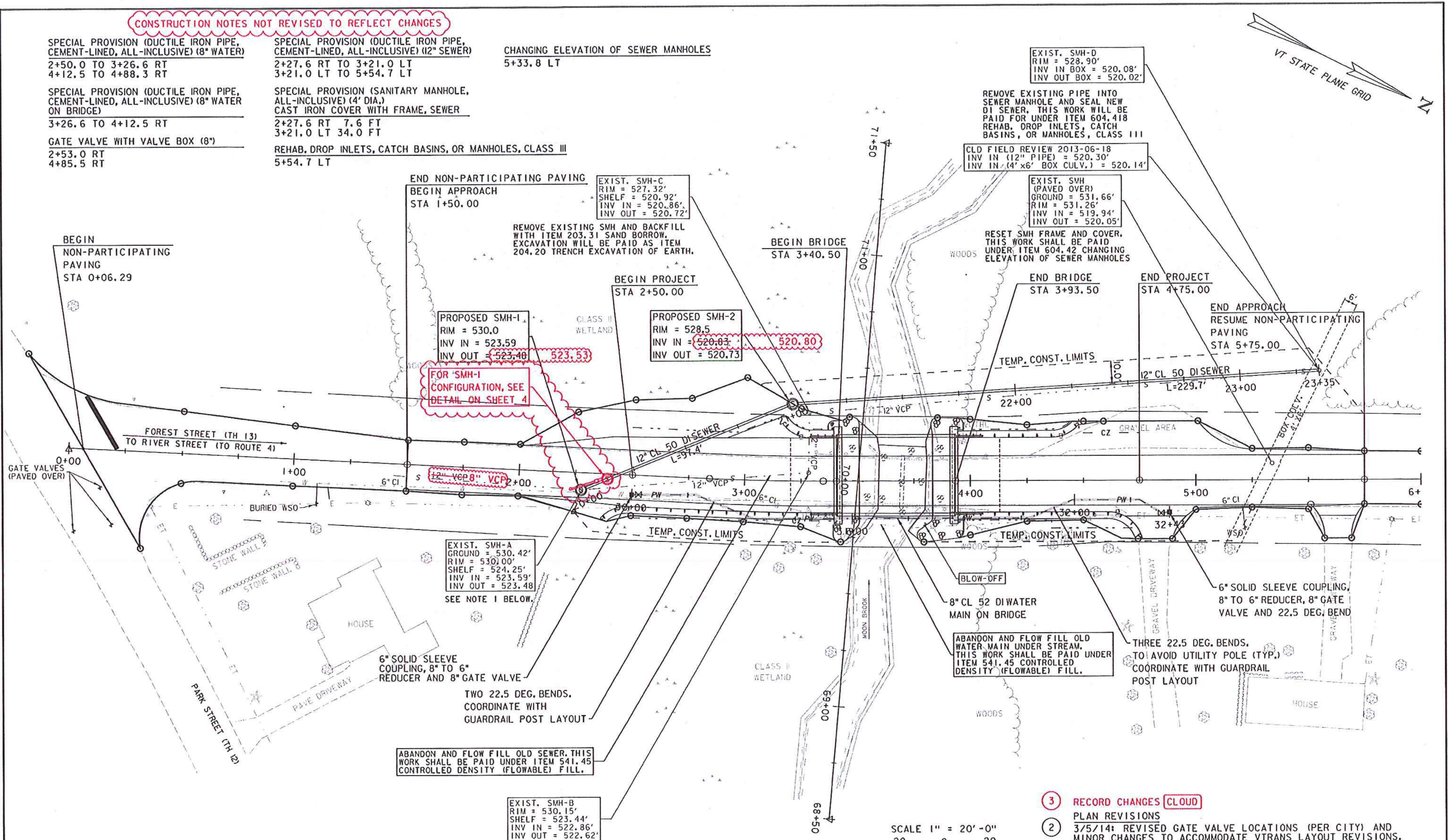
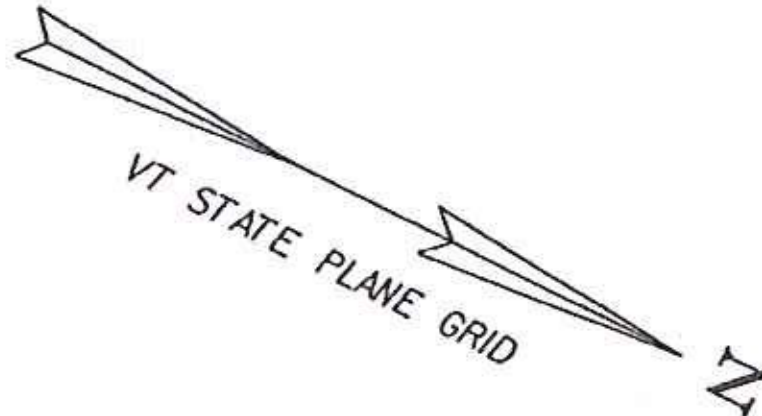
GATE VALVE WITH VALVE BOX (8")  
 2+53.0 RT  
 4+85.5 RT

SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL-INCLUSIVE) (12" SEWER)  
 2+27.6 RT TO 3+21.0 LT  
 3+21.0 LT TO 5+54.7 LT

SPECIAL PROVISION (SANITARY MANHOLE, ALL-INCLUSIVE) (4' DIA.)  
 CAST IRON COVER WITH FRAME, SEWER  
 2+27.6 RT 7.6 FT  
 3+21.0 LT 34.0 FT

REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS III  
 5+54.7 LT

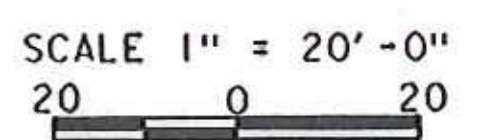
CHANGING ELEVATION OF SEWER MANHOLES  
 5+33.8 LT



**NOTE:**  
 1. REMOVE EXISTING SMH-A AND REPLACE WITH NEW MANHOLE SMH-1 AT SAME LOCATION. PROVIDE SPOOL SECTION OF 12" SDR 35 SEWER PIPE AND SOLID SLEEVE COUPLING TO CONNECT TO EXISTING 12" VCP. ADJUST NEW RIM ELEVATION TO FINAL ROADWAY GRADE. ALL EXCAVATION, MATERIALS AND WORK TO REMOVE AND REPLACE MANHOLE AND CONNECT TO EXISTING SEWER SHALL BE INCIDENTAL TO ITEM 900.620 SPECIAL PROVISION (SANITARY MANHOLE, ALL-INCLUSIVE) (4' DIA.).

EXIST. SMH-B  
 RIM = 530.15'  
 SHELF = 523.44'  
 INV IN = 522.86'  
 INV OUT = 522.62'

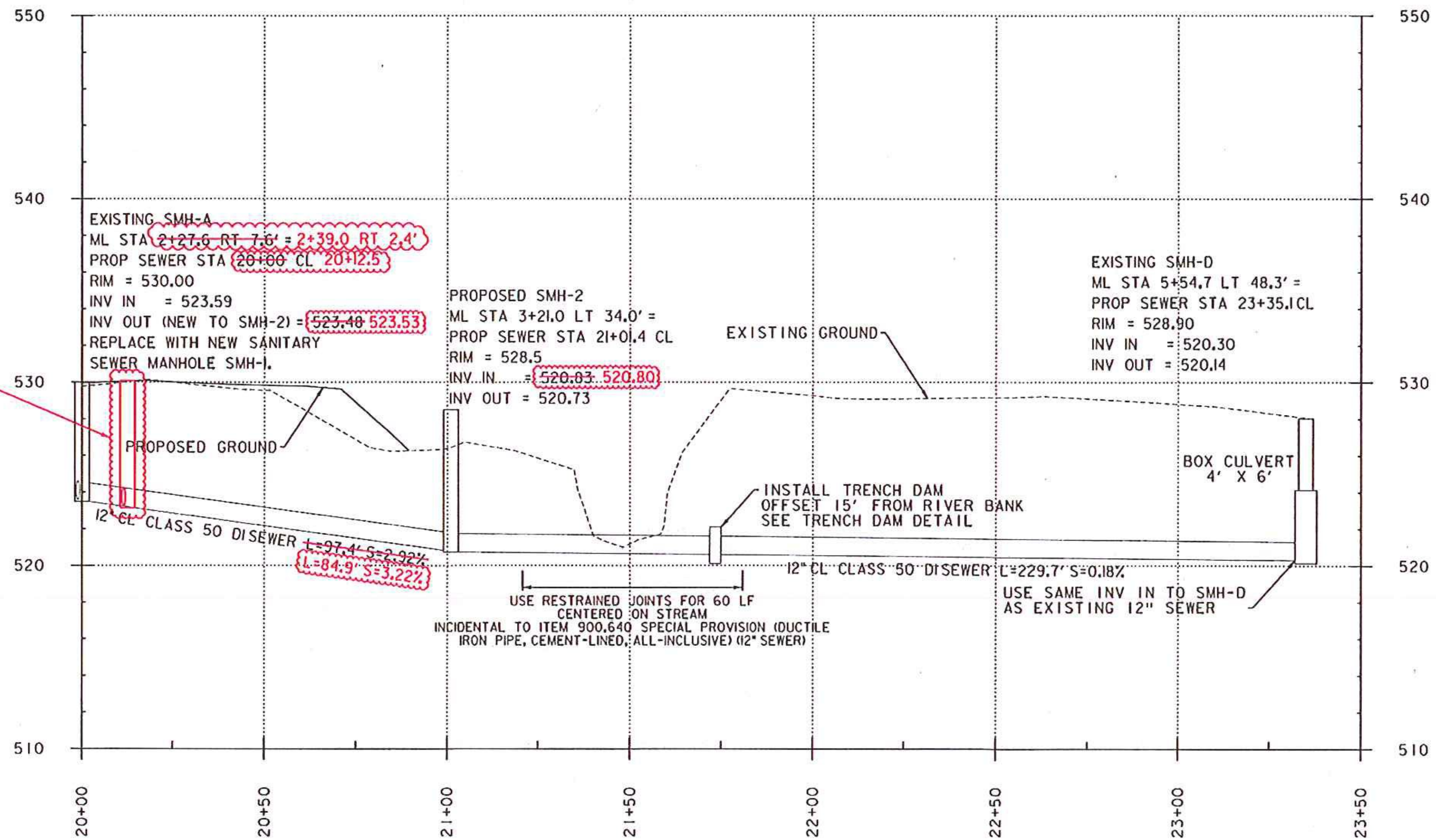
REMOVE EXISTING SMH AND BACKFILL WITH ITEM 203.31 SAND BORROW. EXCAVATION WILL BE PAID AS ITEM 204.20 TRENCH EXCAVATION OF EARTH.



- 3 RECORD CHANGES **CLOUD**
- 2 PLAN REVISIONS
- 2 3/5/14: REVISED GATE VALVE LOCATIONS (PER CITY) AND MINOR CHANGES TO ACCOMMODATE VTRANS LAYOUT REVISIONS.
- 1 1/16/14: MINOR NOTE REVISIONS.

<b>WATER AND SEWER PLANS</b>		PROJECT NAME: RUTLAND CITY
		PROJECT NUMBER: BRF 3000(18)
	540 Commercial Street, Manchester, NH 03101 (603) 668-8223 • Fax: (603) 668-8892 cl@cldeing.com • www.cldeing.com Maine • New Hampshire • Vermont	FILE NAME: s96j244bdr.dgn
		PLOT DATE: 3/5/2014
	PROJECT LEADER: C. BEAN	DRAWN BY: W. GORDON
	DESIGNED BY: D. LEWIS	CHECKED BY: S. REICHERT
	WATER/SEWER LAYOUT I	SHEET 5 OF 7

FOR SMH-1  
CONFIGURATION, SEE  
DETAIL ON SHEET 4




**SEWER STATION**

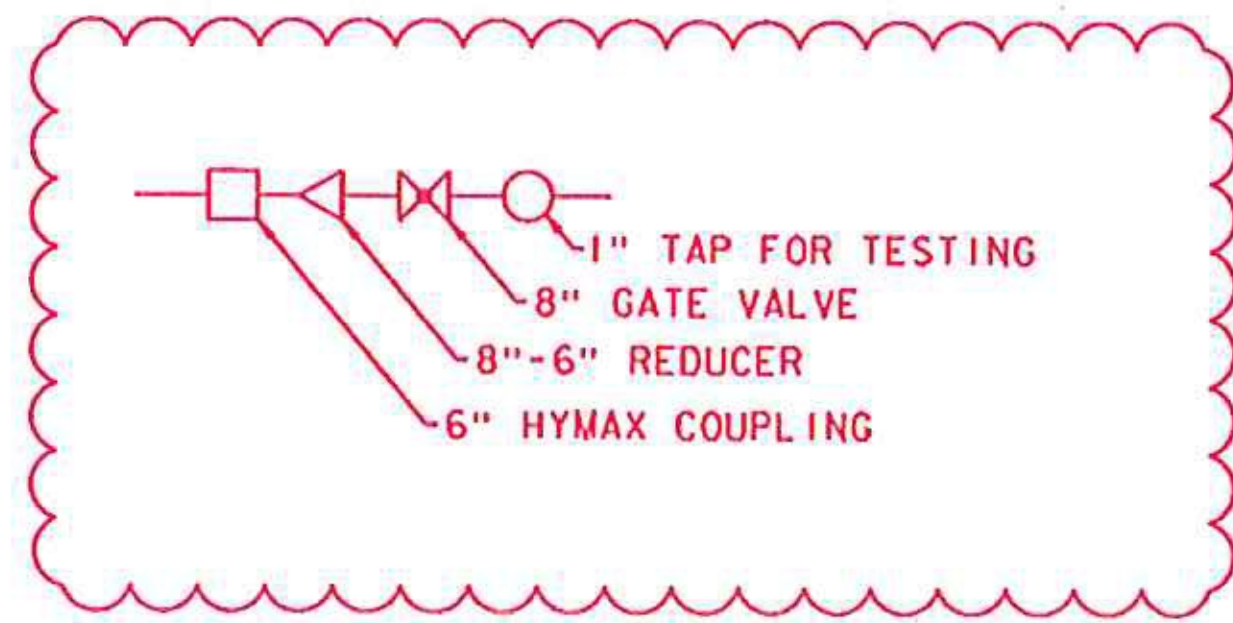
HOR. SCALE 1" = 20' -0"  
VER. SCALE 1" = 4' -0"

② RECORD CHANGES CLOUD

① PLAN REVISIONS

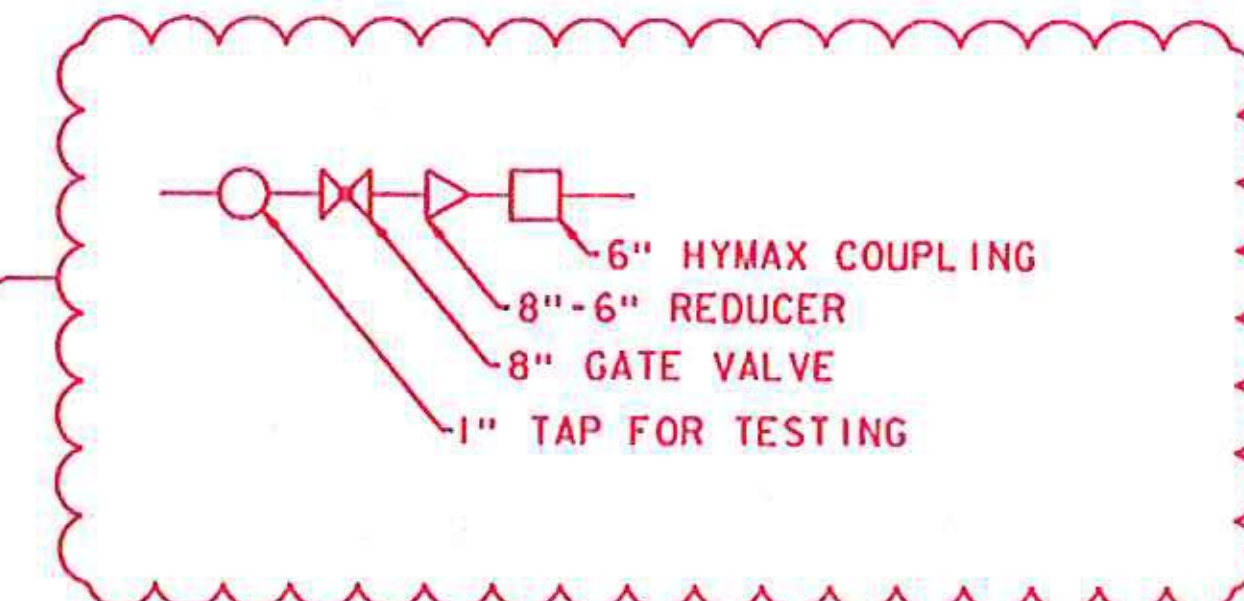
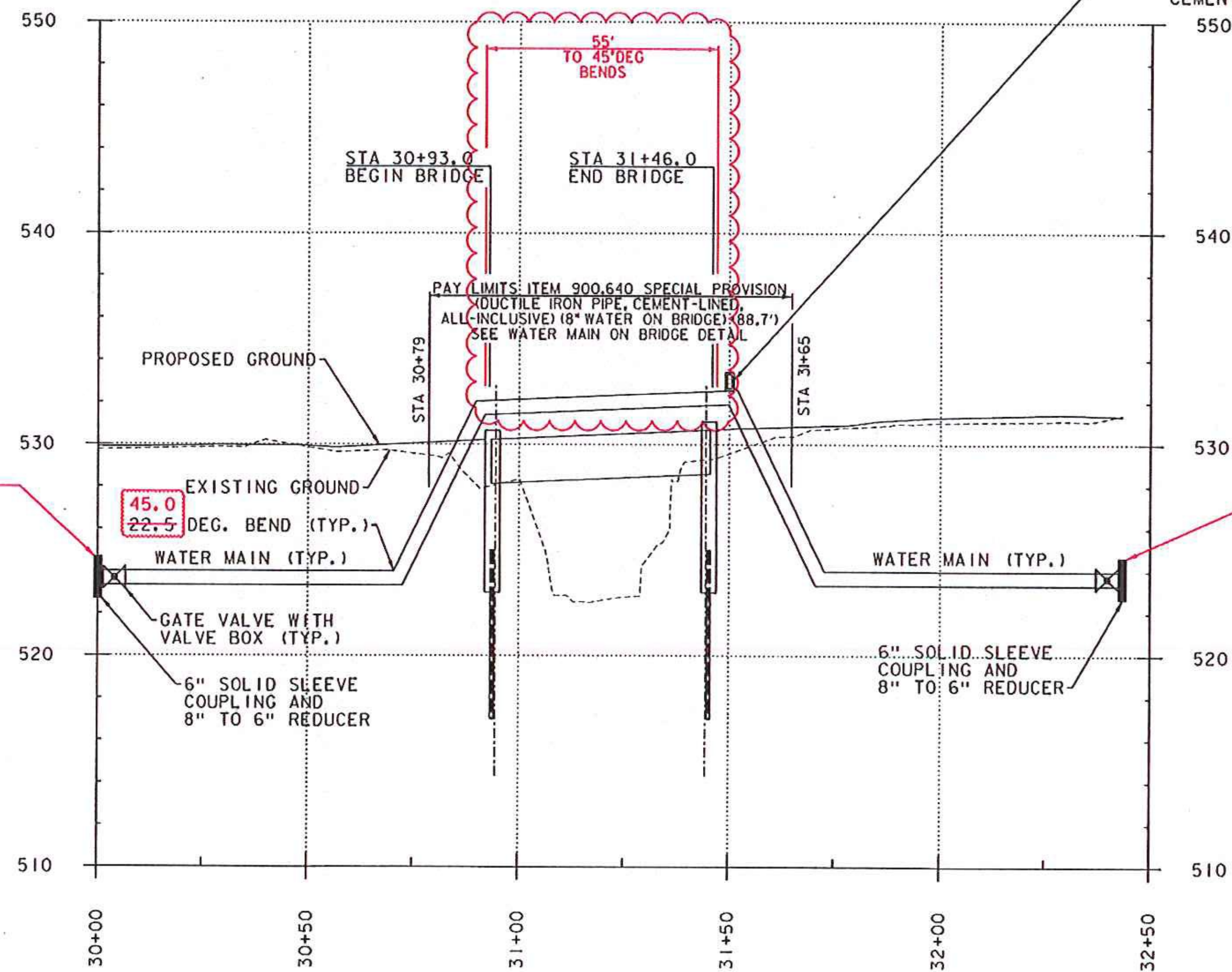
1/16/14: RESTRAINED JOINTS SHALL BE MEGALUGS OR APPROVED EQUAL AND CORRECTED SCALE (PER DEC).

WATER AND SEWER PLANS		PROJECT NAME: RUTLAND CITY
		PROJECT NUMBER: BRF 3000(18)
 540 Commercial Street, Manchester, NH 03101 (603) 668-8223 • Fax: (603) 668-8902 clde@cldeengineers.com • www.cldeengineers.com Maine • New Hampshire • Vermont	FILE NAME: \$FILEABBREV\$	PLOT DATE: 3/5/2014
	PROJECT LEADER: C. BEAN	DRAWN BY: W. GORDON
	DESIGNED BY: D. LEWIS	CHECKED BY: S. REICHERT
	SEWER PROFILE	SHEET 6 OF 7



~~INSTALL AIR RELIEF VALVE WITH WEATHERPROOF, INSULATED AND LOCKABLE ENCLOSURE. PROVIDE FABRICATION DRAWING FOR REVIEW. COST SHALL BE INCIDENTAL TO ITEM 900.640 SPECIAL PROVISION (DUCTILE IRON PIPE, CEMENT-LINED, ALL-INCLUSIVE) (8" WATER ON BRIDGE)~~

NOT REQUIRED BY CITY



**WATER MAIN STATION**

HOR. SCALE 1" = 20'-0"  
VER. SCALE 1" = 4'-0"

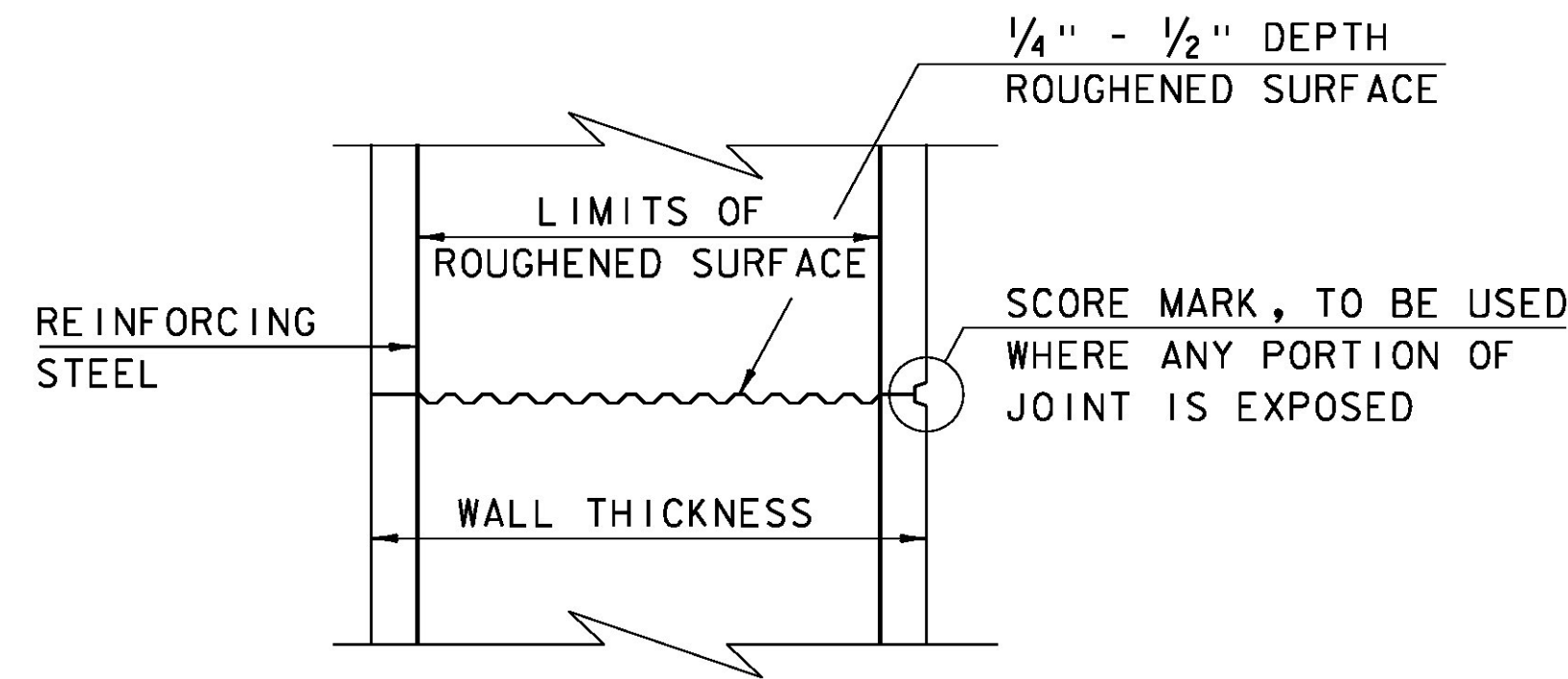
- 3 RECORD CHANGES [CLOUD]
- PLAN REVISIONS
- 2 3/5/14: REVISED WATER MAIN PROFILE ON BRIDGE TO ACCOMMODATE HANGER INSTALLATION REQUIREMENTS. REVISED AIR RELIEF VALVE AND GATE VALVE LOCATIONS.
- 1 1/16/14: ADDED NOTE TO DEFINE INSULATION EXTENT AND CORRECTED SCALE (PER DEC).

	PROJECT NAME: RUTLAND CITY PROJECT NUMBER: BRF 3000(18)
	FILE NAME: #FILEABBREV# PROJECT LEADER: C. BEAN DESIGNED BY: D. LEWIS WATER PROFILE

540 Commercial Street, Manchester, NH 03101  
(603) 668-8223 • Fax (603) 668-8502  
clde@cldeengineers.com • www.cldeengineers.com  
Maine • New Hampshire • Vermont

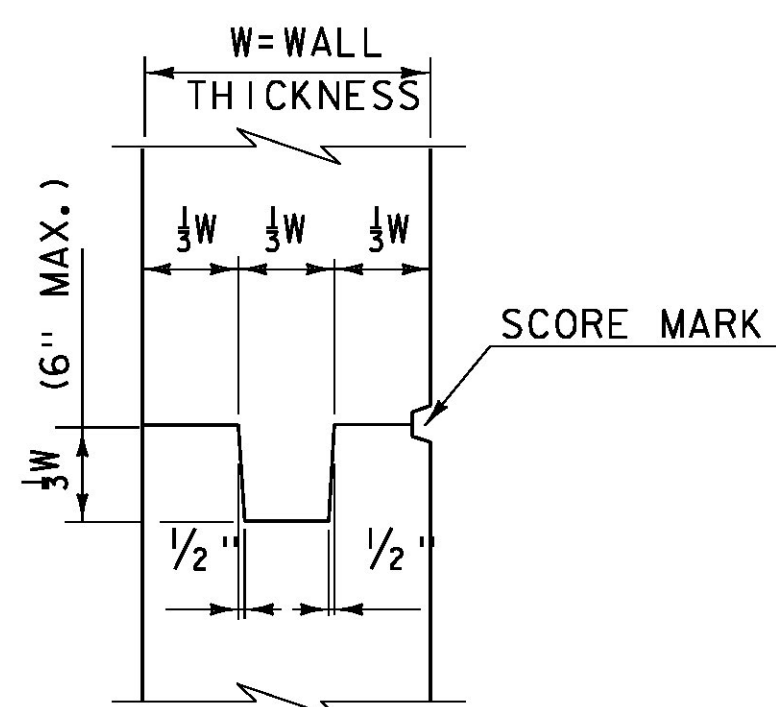
**CONCRETE GENERAL NOTES**

1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"
2. REINFORCING STEEL SIZE AND SPACING SHOWN IN THE PLANS IS BASED ON 60 KSI STEEL, UNLESS NOTED OTHERWISE. WITH THE ENGINEER'S PERMISSION, BAR SIZE AND SPACING MAY BE MODIFIED ACCORDING TO THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND STRUCTURES DESIGN MANUAL WHEN USING HIGHER STRENGTH STEEL.

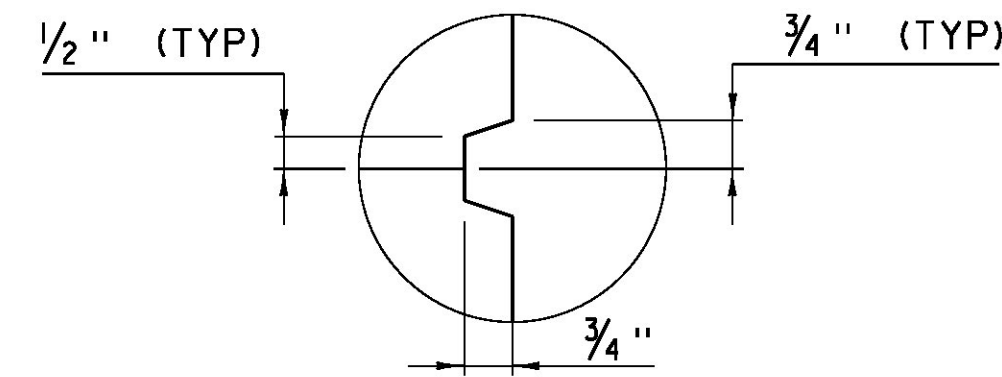


**TYPICAL HORIZONTAL CONSTRUCTION JOINT**  
(NOT TO SCALE)

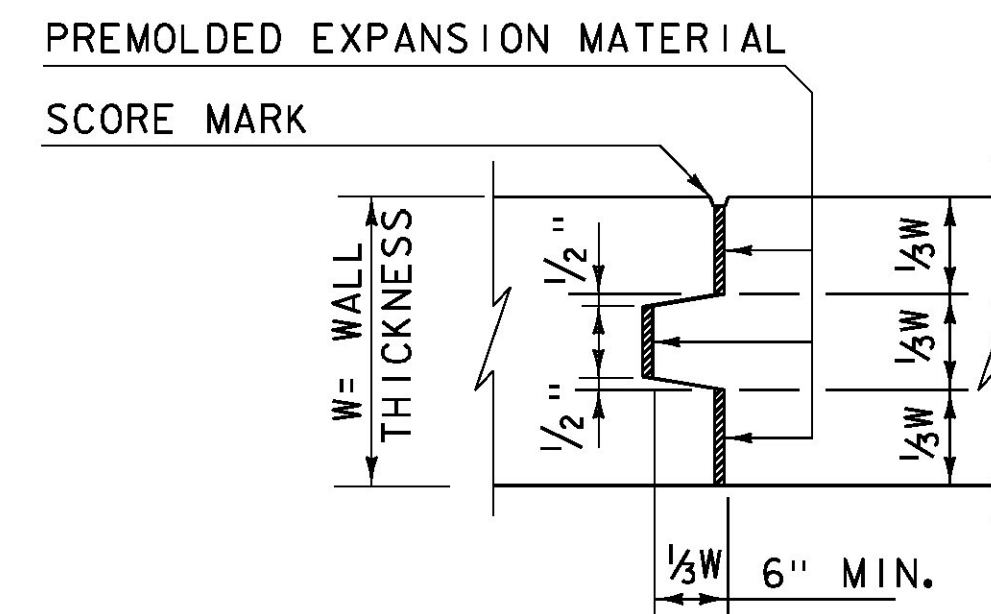
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



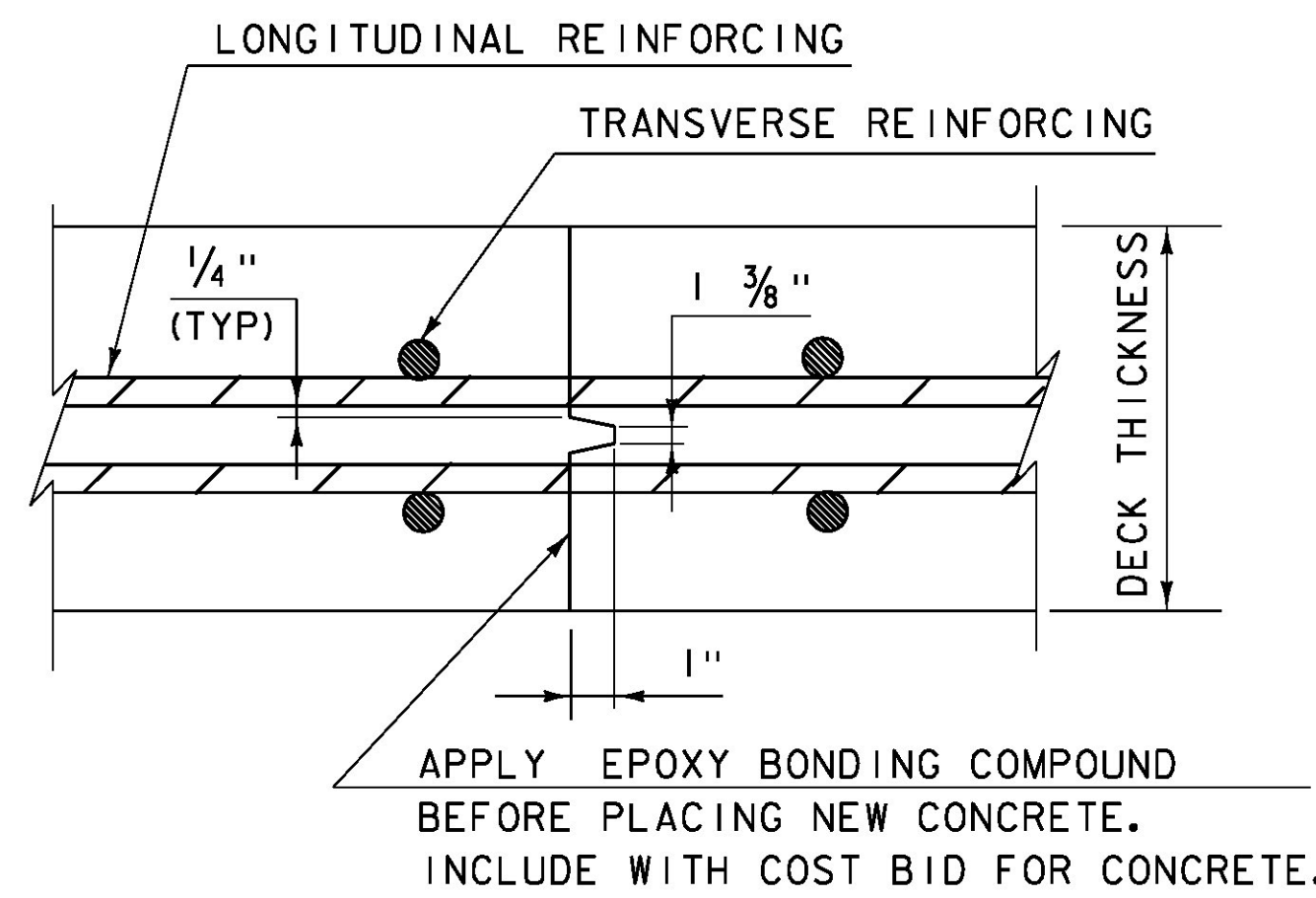
**TYPICAL CONCRETE CONSTRUCTION JOINT**  
(NOT TO SCALE)



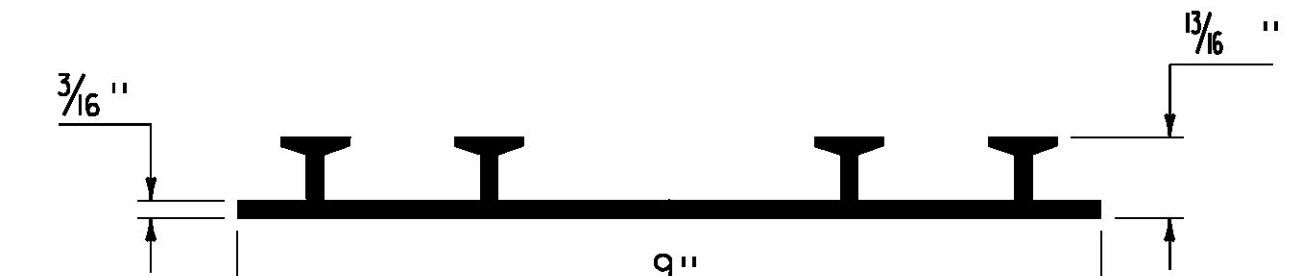
**SCORE MARK DETAIL**  
(NOT TO SCALE)



**TYPICAL CONCRETE EXPANSION JOINT**  
(NOT TO SCALE)



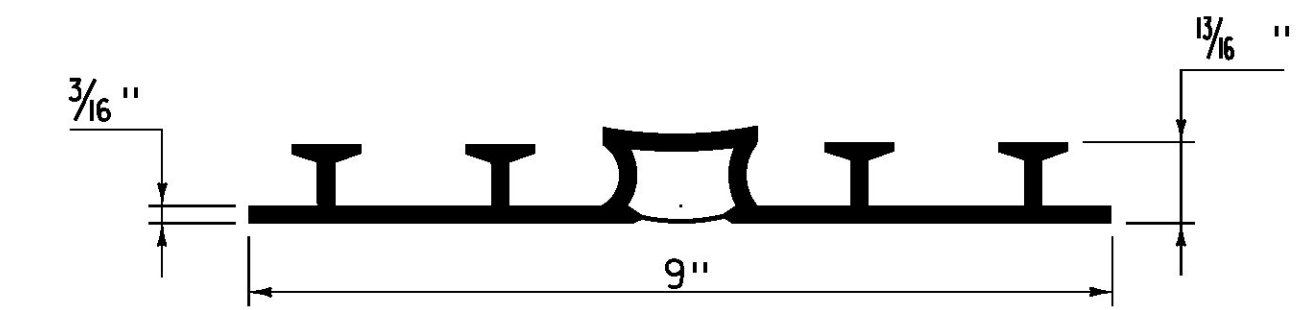
**TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS**  
(NOT TO SCALE)



**P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS**  
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

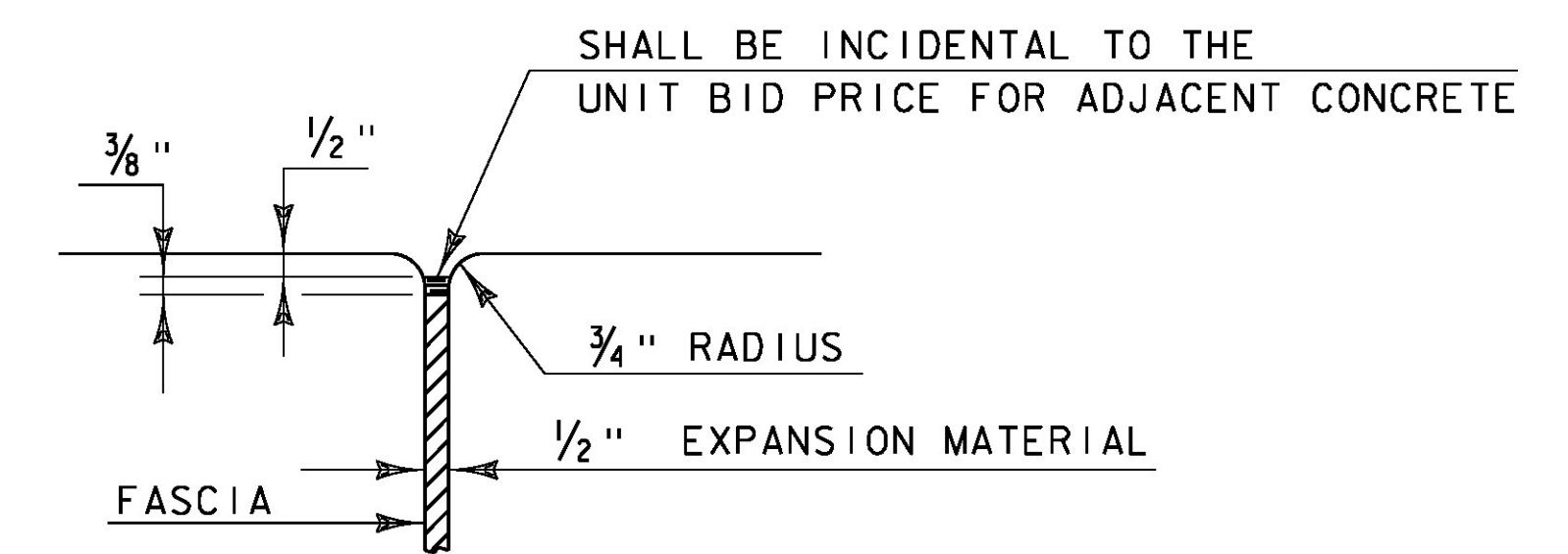
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



**P.V.C. WATERSTOP FOR EXPANSION JOINTS**  
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

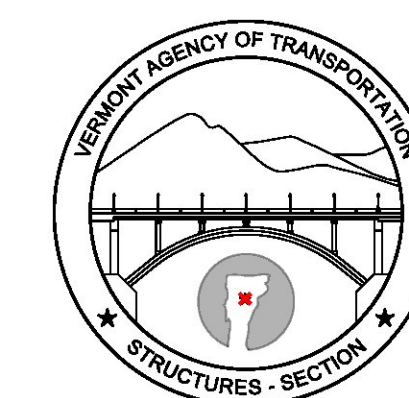
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



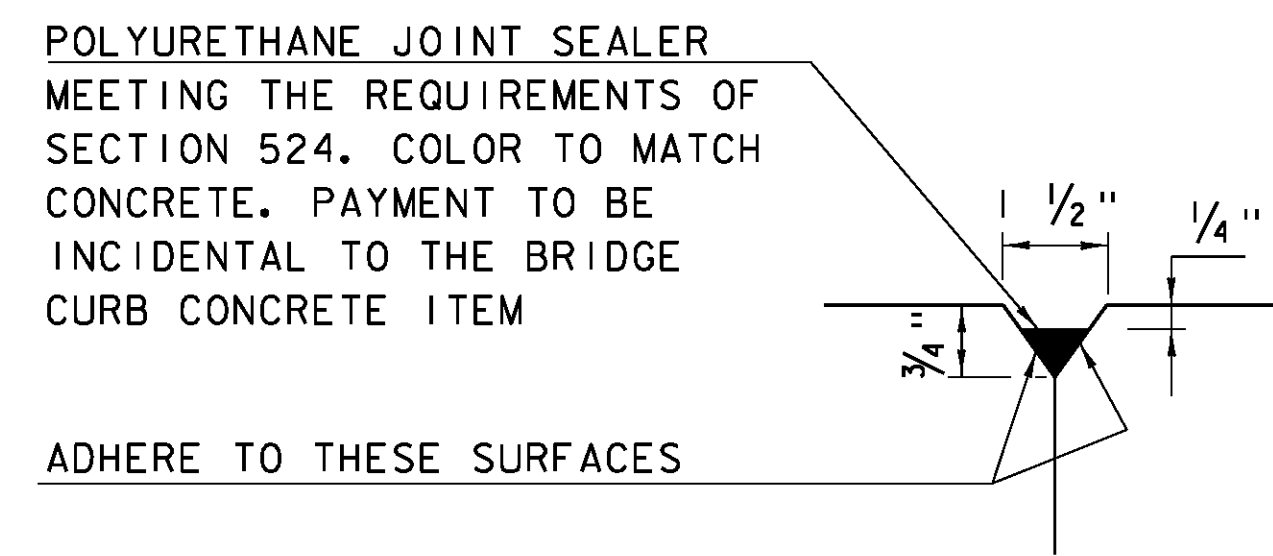
**JOINT BETWEEN FASCIA AND WINGWALL**  
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
FEBRUARY 9, 2012	REBAR SUBSTITUTION ALLOWANCE ADDED TO CONCRETE GENERAL NOTES.

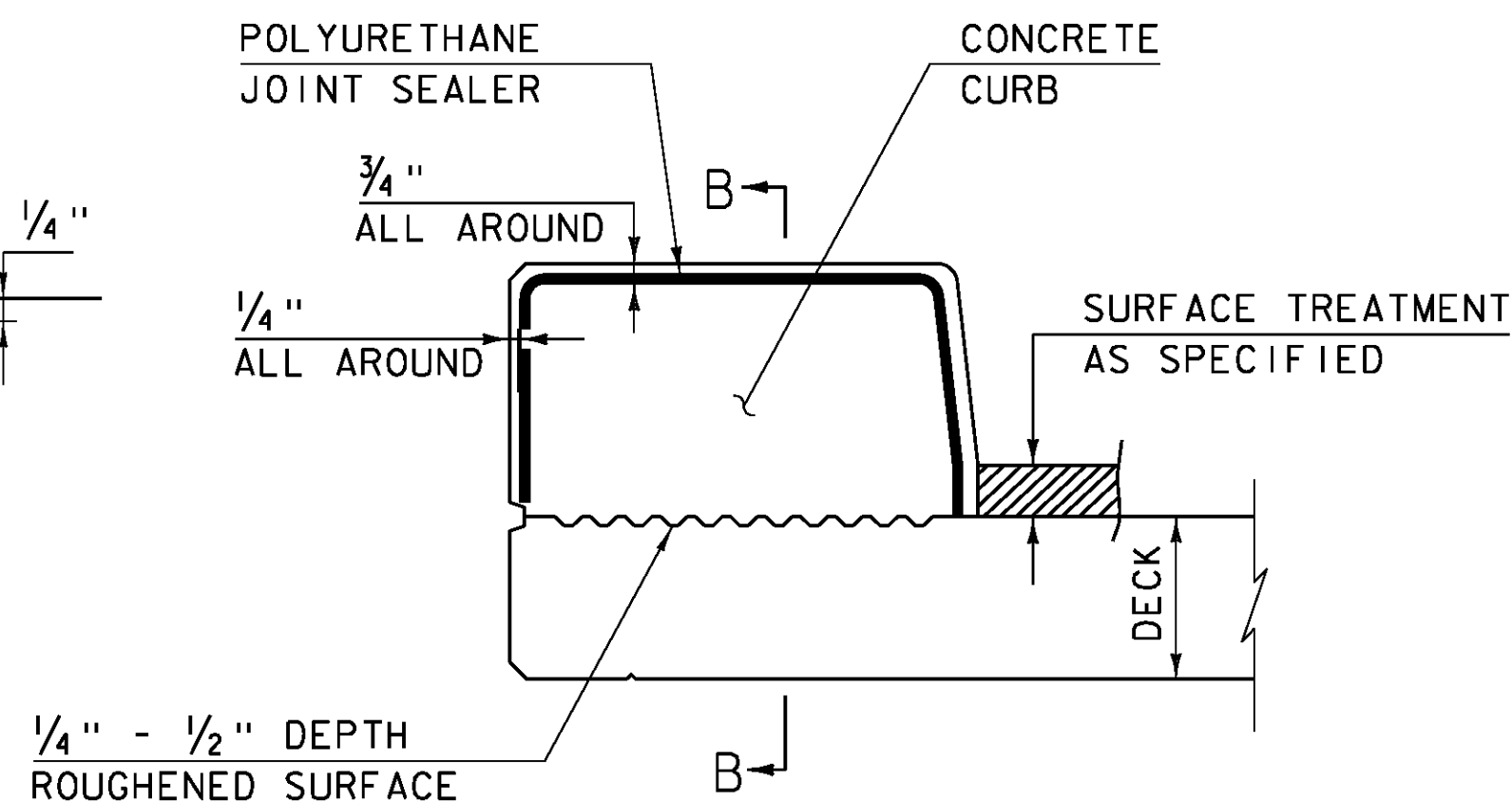
**CONCRETE  
DETAILS AND NOTES**



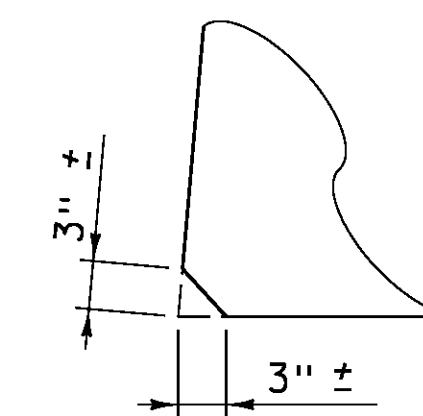
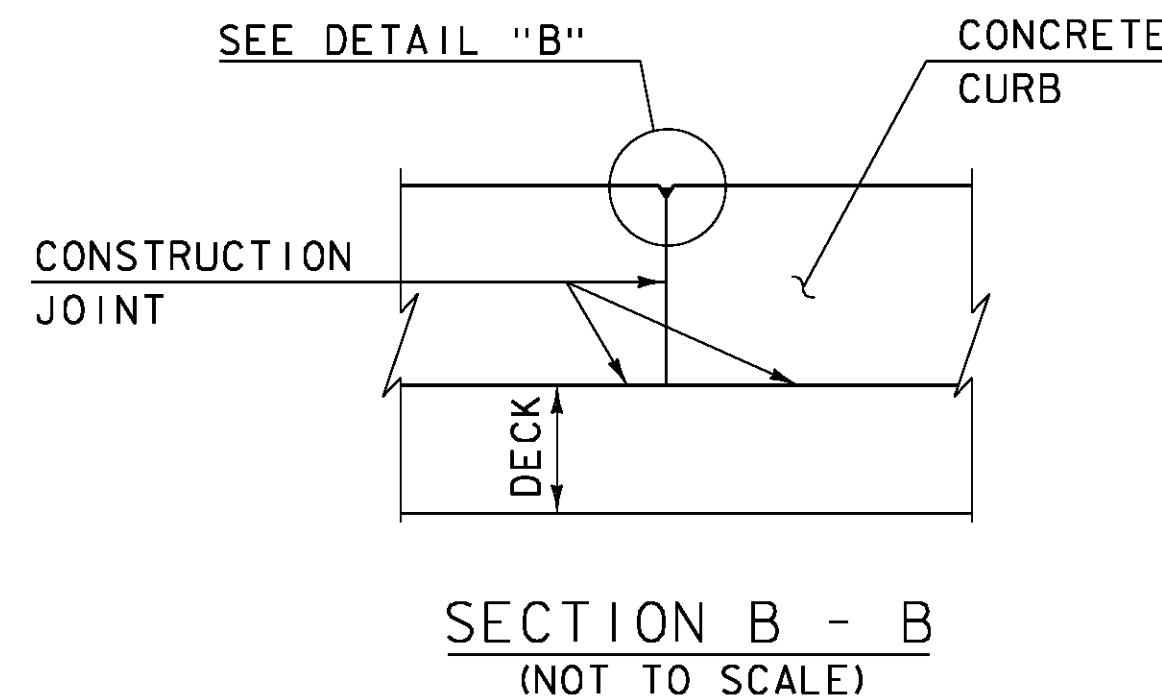
**STRUCTURES  
DETAIL  
SD-501.00**



DETAIL "B"  
(NOT TO SCALE)

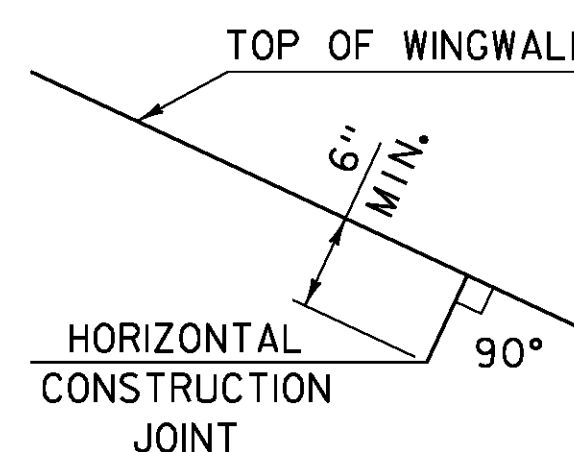


CONCRETE CURB JOINT SECTION  
(NOT TO SCALE)

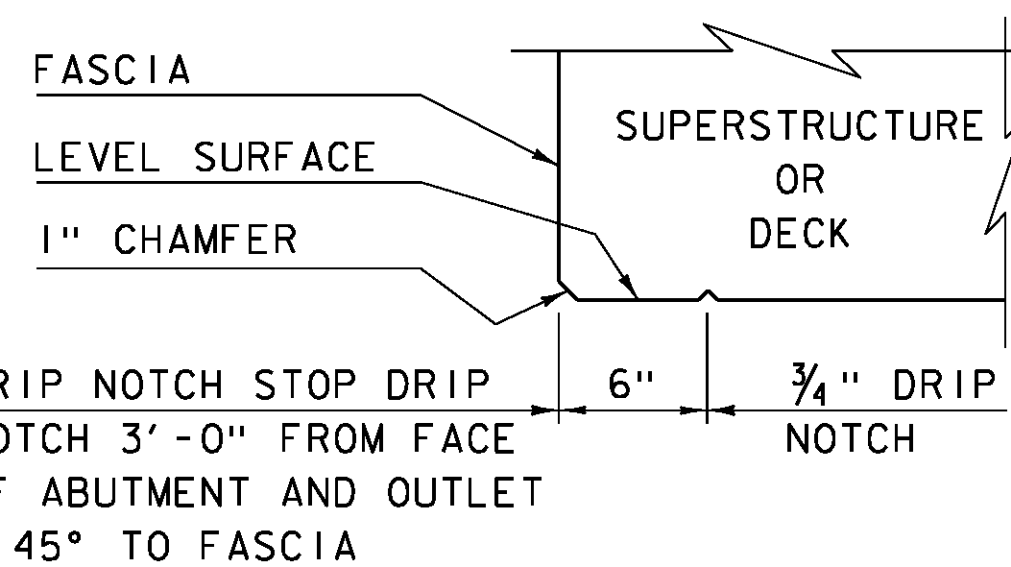


ACUTE ANGLE  
CLIP DETAIL  
(NOT TO SCALE)

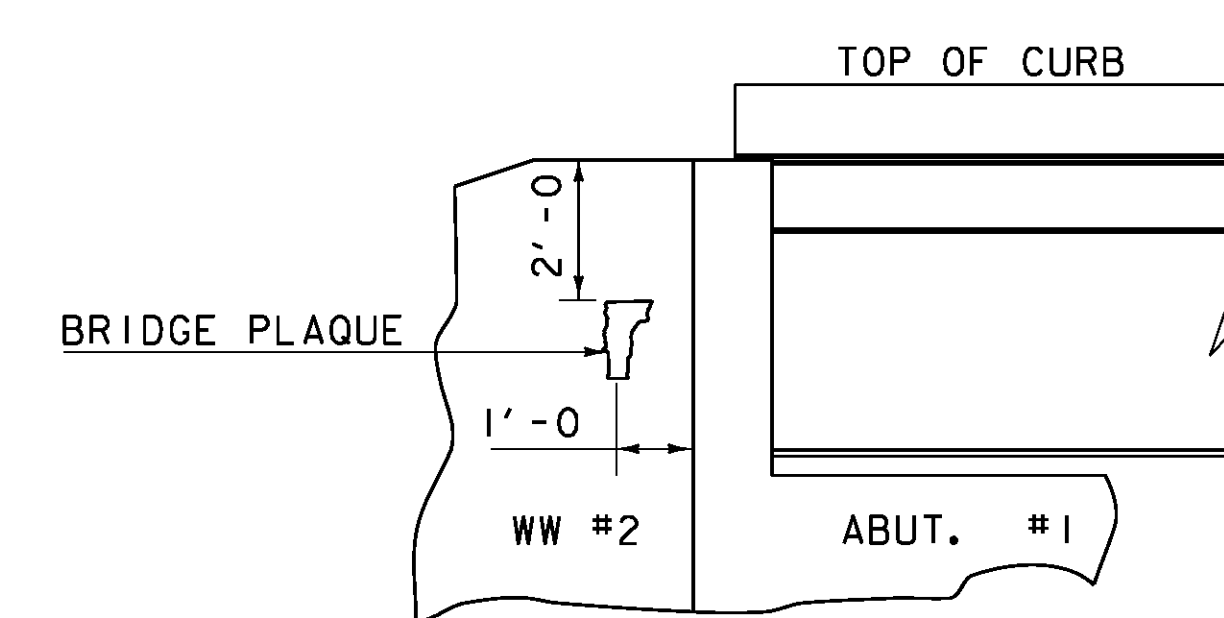
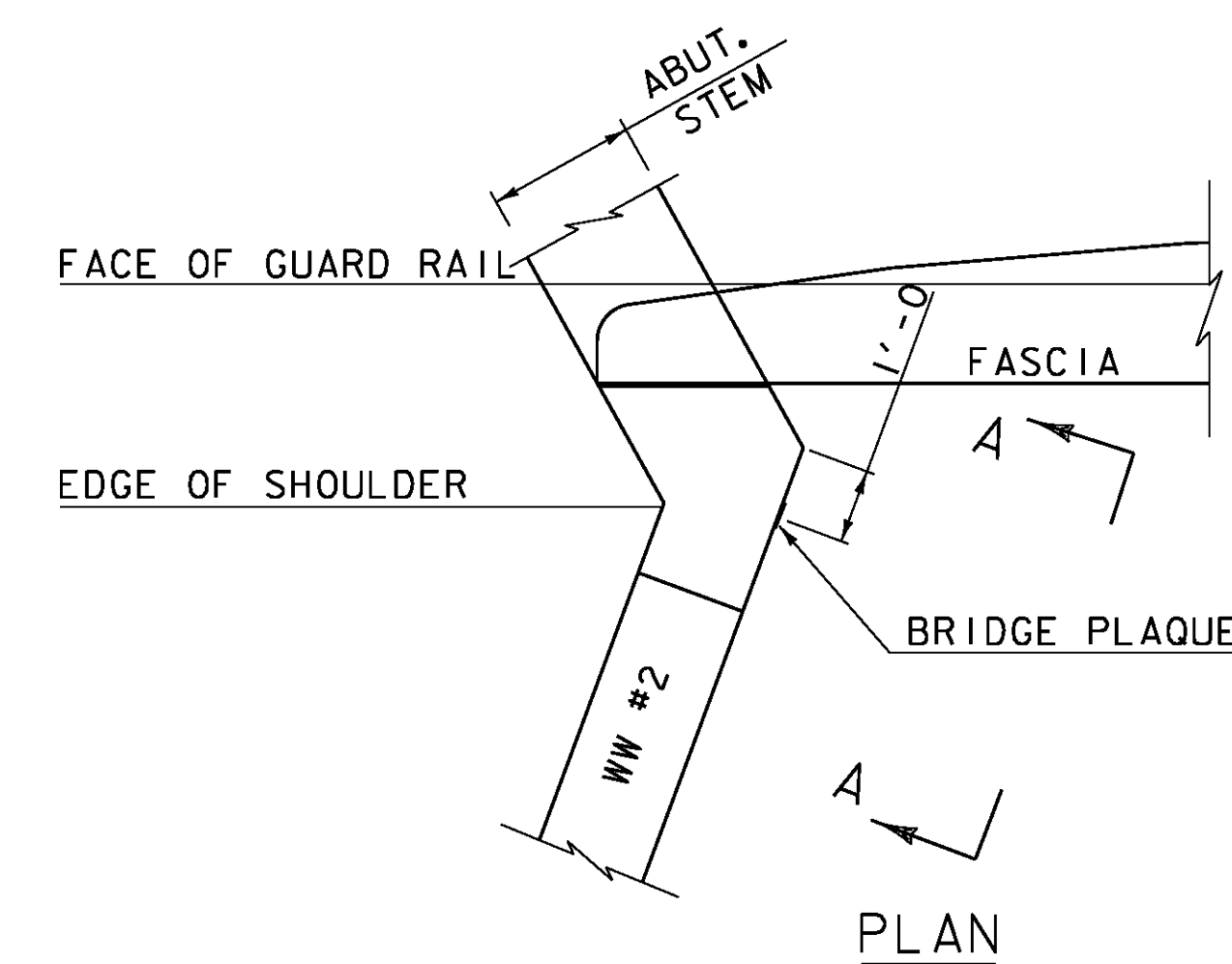
1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



HORIZONTAL WINGWALL  
CONSTRUCTION JOINT  
(NOT TO SCALE)



DRIP NOTCH DETAIL  
(NOT TO SCALE)



VIEW "A - A"  
BRIDGE PLAQUE  
(NOT TO SCALE)

THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

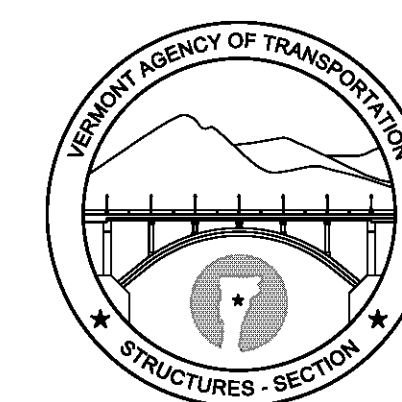
CONCRETE CURB JOINT NOTES

1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.
3. ON MULTI-SPAN CONTINUOUS SUPERSTRUCTURES, REGARDLESS OF WHETHER APPROVED SHRINKAGE REDUCING ADMIXTURE IS USED, CURB JOINTS SHALL BE LOCATED OVER THE CENTERLINE OF PIERS AND 7'-0" EACH SIDE OF THE CENTERLINE OF EACH PIER.
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.
5. LONGITUDINAL REINFORCING SHALL BE CONTINUOUS THROUGH CURB CONSTRUCTION JOINTS. CURB STIRRUP BARS SHALL BE TURNED AS NECESSARY TO MAINTAIN COVER IN THE FLARED CURB ENDS.
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.

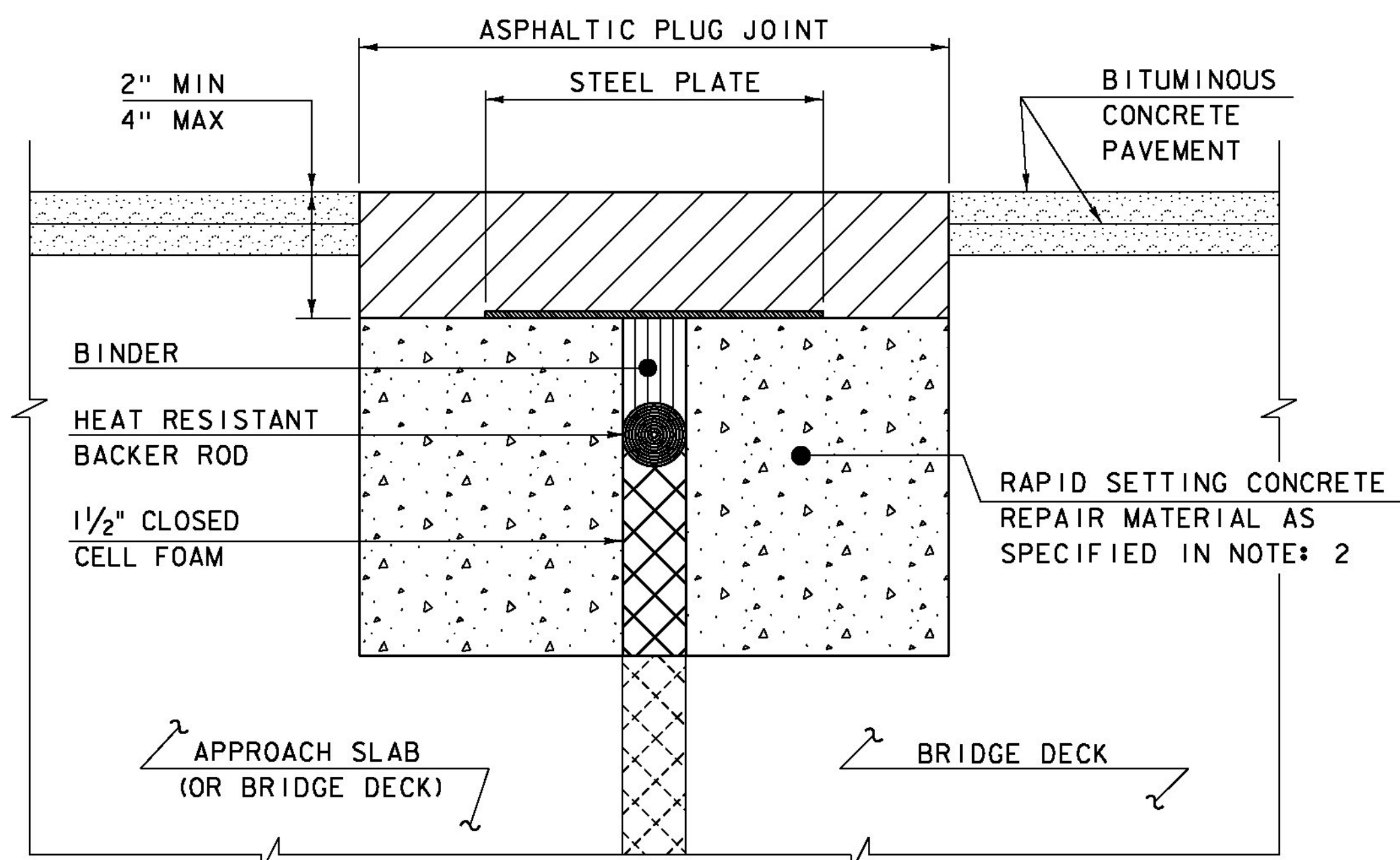
REVISIONS

MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED AND ADDED TWO DETAILS
OCTOBER 10, 2012	MODIFIED HORZ. JOINT WINGWALL ADD 6" MIN. DIMENSION

CONCRETE  
DETAILS AND NOTES



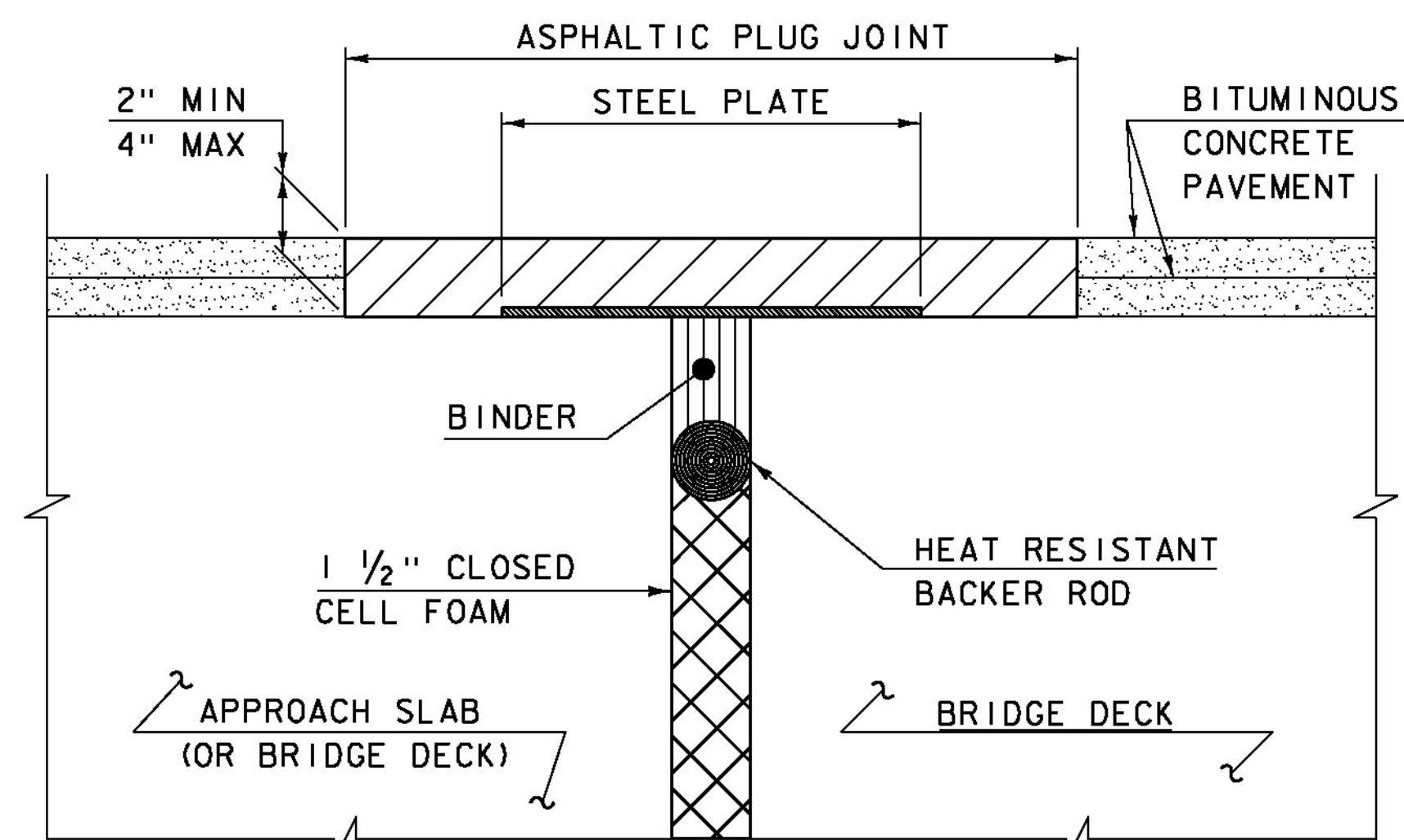
STRUCTURES  
DETAIL  
SD-502.00



**ASPHALTIC PLUG JOINT DETAIL - REHAB**

**NOTES:**

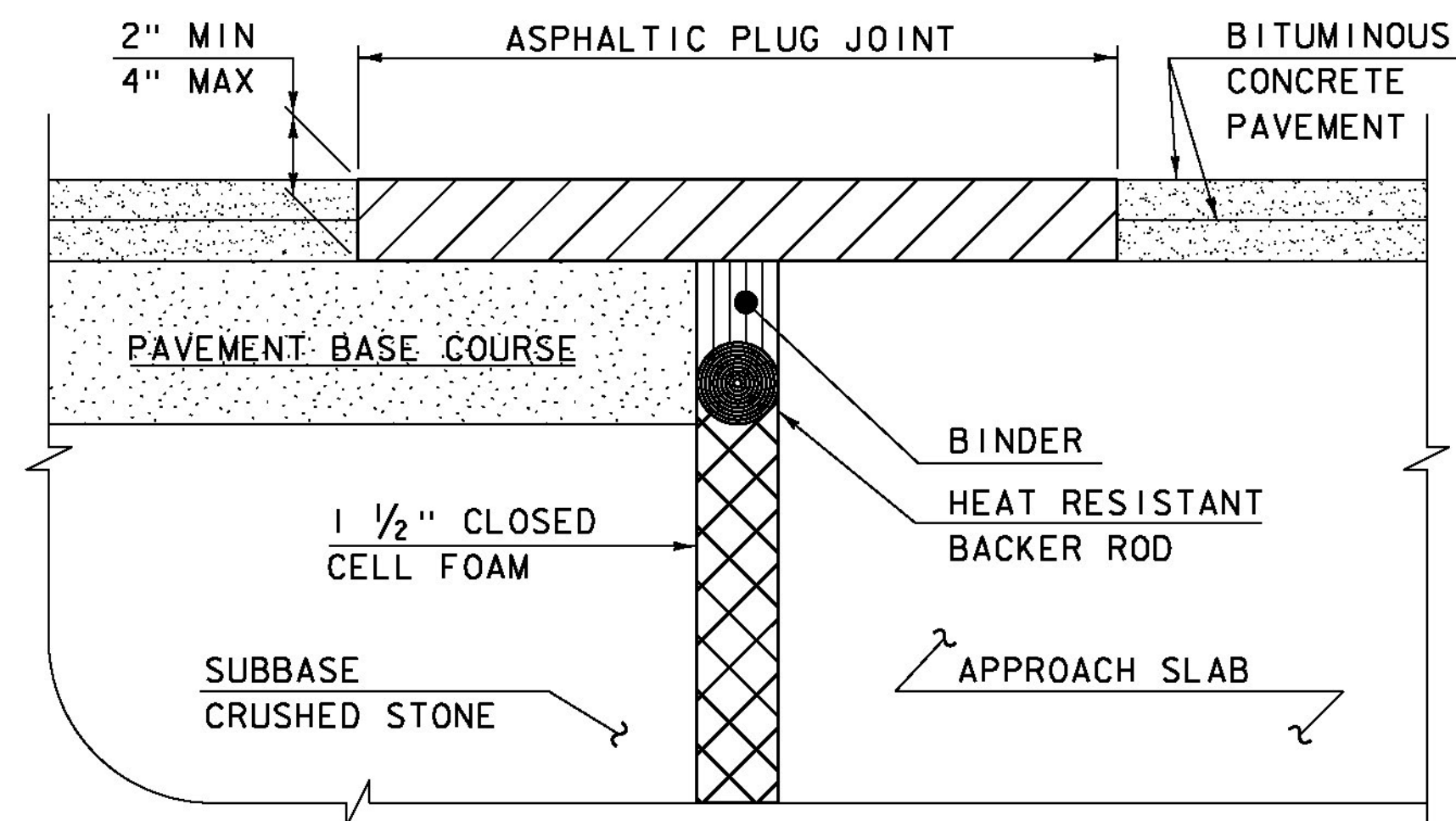
1. THE CONTRACTOR SHALL REMOVE ALL ASPHALTIC PLUG JOINT MATERIAL AND DETERIORATED CONCRETE AS DIRECTED BY THE ENGINEER. REMOVAL OF THE FIRST 4 INCHES OF MATERIAL SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 516.10 BRIDGE EXPANSION JOINT, ASPHALTIC PLUG. ANY REMOVAL OF MATERIAL GREATER THAN 4 INCHES SHALL BE INCLUDED IN THE BID PRICE OF ITEM 580.20 RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE.
2. THE CONTRACTOR SHALL REPLACE REMOVED MATERIAL THAT IS LESS THAN 4" FROM FINISHED GRADE WITH ASPHALTIC PLUG JOINT MATERIAL MEETING THE REQUIREMENTS OF SUBSECTION 707.15. ALL REMOVED MATERIAL THAT IS GREATER THAN 4 INCHES FROM FINISHED GRADE SHALL BE REPLACED WITH RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE MEETING THE REQUIREMENTS OF SUBSECTION 780.04.
3. REINFORCING STEEL NOT SHOWN FOR CLARITY.
4. PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER. THE STEEL PLATES MAY BE OMITTED WHERE THE ENGINEER DETERMINES THAT THE APPROACH SLAB OR BRIDGE DECK WILL PROVIDE INADEQUATE SUPPORT AND WHERE VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.



**ASPHALTIC PLUG JOINT DETAIL "A" - NEW**

**NOTE:**

PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER.



**ASPHALTIC PLUG JOINT DETAIL "B" - NEW**

**ASPHALTIC PLUG JOINT NOTES**

**INSTALLATION:**

1. LOCATE THE JOINT CENTRALLY OVER THE DECK OVERLAY EXPANSION GAP OR FIXED JOINT, MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.
2. REMOVE THE BITUMINOUS CONCRETE PAVEMENT FULL DEPTH AS SHOWN ON THE PLANS. THE PAVEMENT SHALL BE DRY AND SAW CUT TO THE LIMITS REQUIRED TO PLACE THE JOINT. A PNEUMATIC HAMMER AND CHISEL MAY BE USED ADJACENT TO THE CURB ONLY WHEN SAW CUTTING IS NOT POSSIBLE.
3. BLAST CLEAN THE JOINT AREA OF DEBRIS, ASPHALT AND SHEET MEMBRANE. THOROUGHLY DRY THE JOINT AREA WITH COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.
4. PLACE PROPERLY SIZED HEAT RESISTANT BACKER ROD IN THE MOVEMENT GAP ALLOWING FOR 1" +/- OF BINDER ABOVE THE ROD.
5. HEAT AND PLACE THE BINDER MATERIAL AS RECOMMENDED BY THE MANUFACTURER.
6. IMMEDIATELY AFTER TOP COATING, CAST AN ANTI-SKID MATERIAL OVER THE JOINT TO REDUCE THE RISK OF TRACKING.

**WEATHER LIMITATIONS**

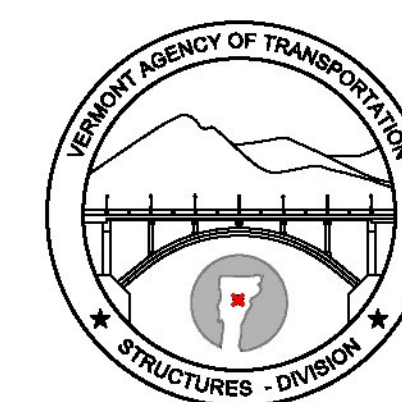
APPLY BINDER MATERIAL ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL OR AS RECOMMENDED BY THE MANUFACTURER:

1. THE AMBIENT AIR TEMPERATURE IS AT LEAST 10 DEG C (50 DEG F) AND RISING.
2. THE ROAD SURFACE IS DRY.
3. WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.

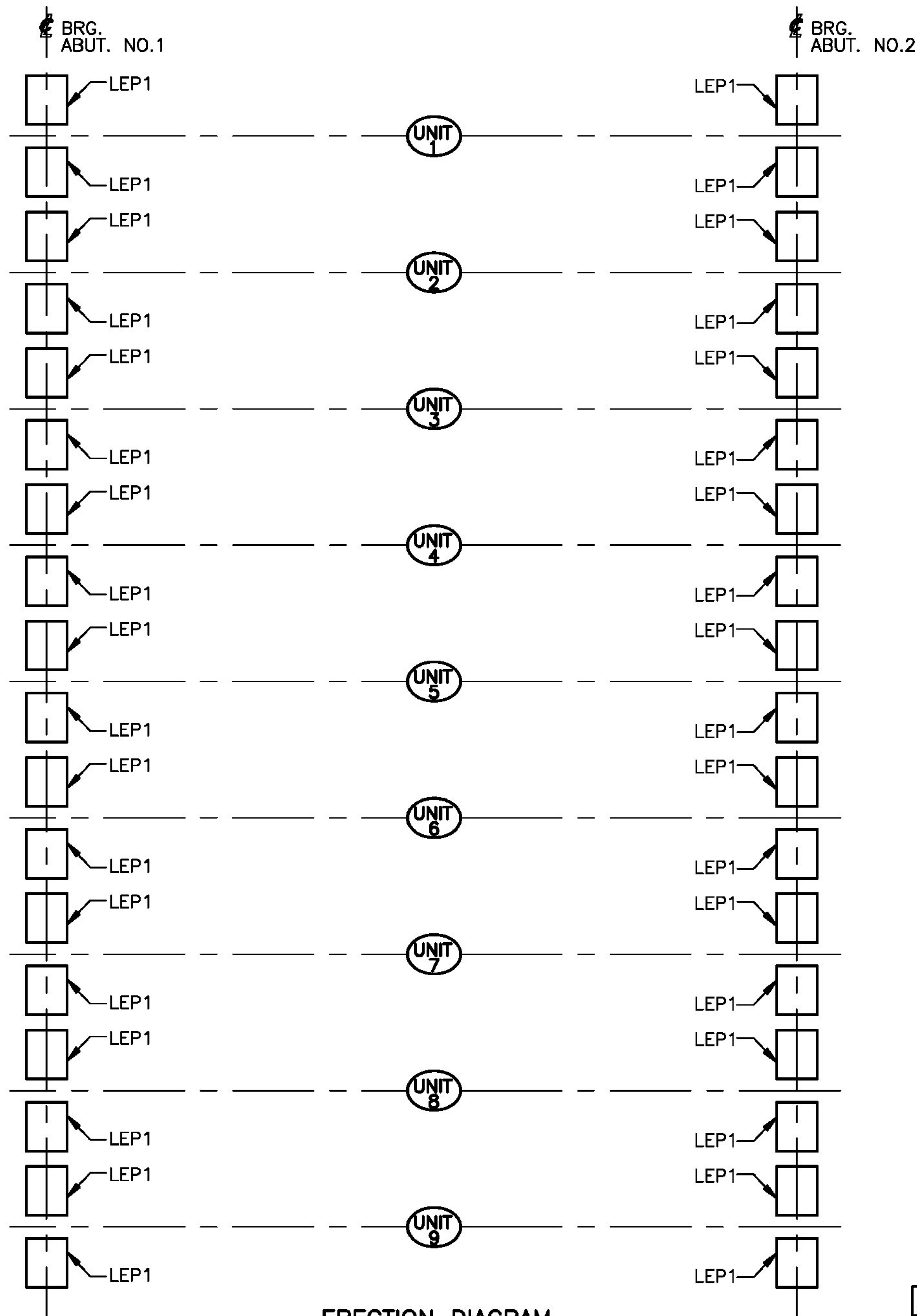
DETAILS ON THIS SHEET ARE NOT TO SCALE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
AUGUST 29, 2011	ADD DETAIL "B" AND REV. NOTES

**BRIDGE JOINT  
ASPHALTIC PLUG**



**STRUCTURES  
DETAIL  
SD-516.10**



**Vermont Agency of Transportation**  
**RECEIVED**  
Erection Diagram and Bearings 0-0-14.ppt  
**CK'D BY M. UMBERGER OK'D BY C. CARLSON**  
**June 9, 2014**  
**RESUBMIT NO Approved**  
**BY C. CARLSON DATE 06/24/2014**  
 SEE SHEET DI FOR SHOP NOTES

STATE OF VERMONT  
 AGENCY OF TRANSPORTATION  
 BRIDGE NO.14  
 ROUTE NO: TH 13 (FOREST STREET)  
 OVER MOON BROOK  
 ITEM NO. 513.17  
 CITY OF RUTLAND

STATE	COUNTY	CONTROL NO.
VT	RUTLAND	N/A

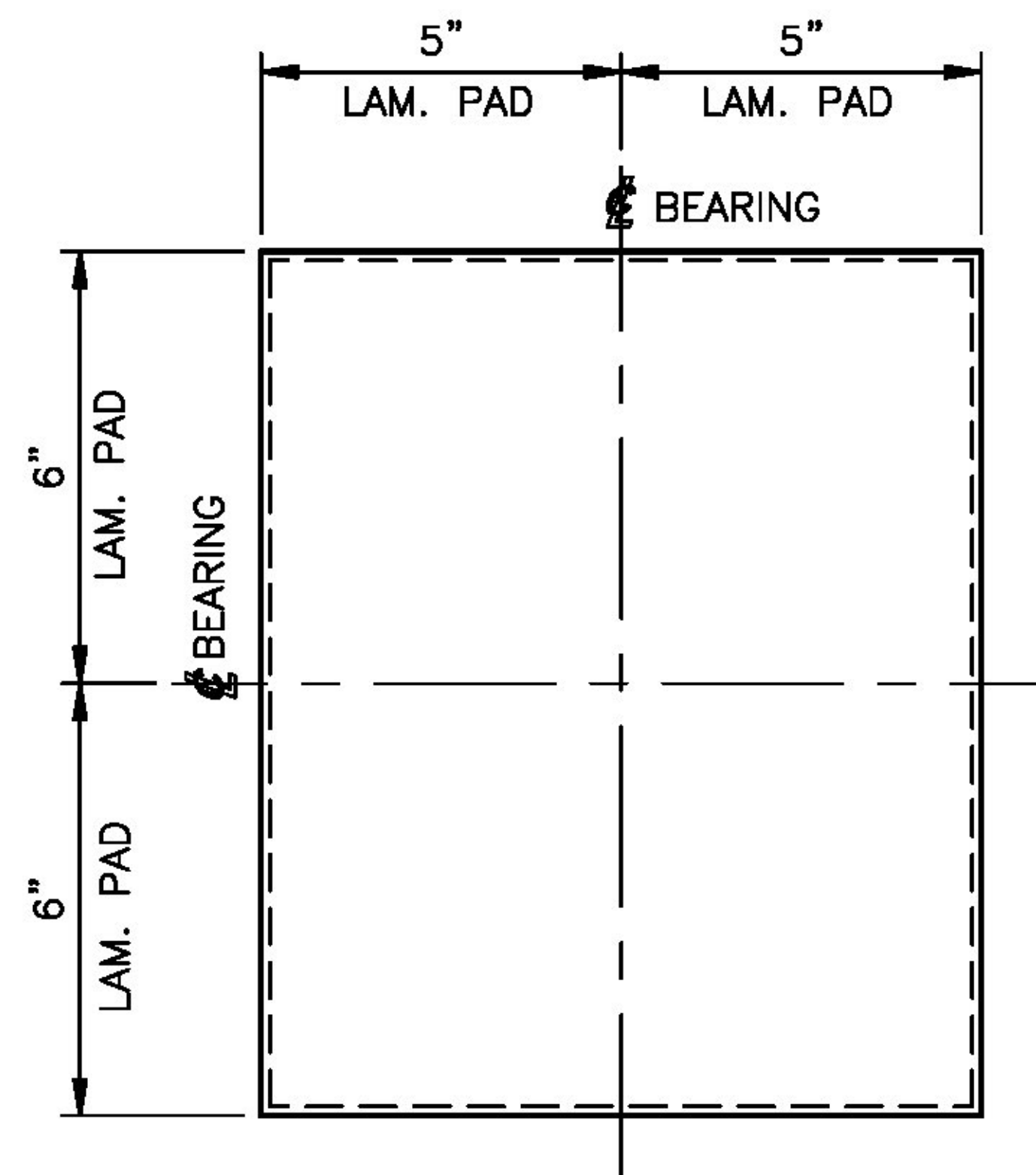
PROJ. NO.: BRF 3000 (18)  
**DYNAMIC RUBBER:**  
**LAMINATED BEARING PADS**

1501 ROCKY RIDGE ROAD  
 P.O. BOX 2159  
 ATHENS, TEXAS 75751

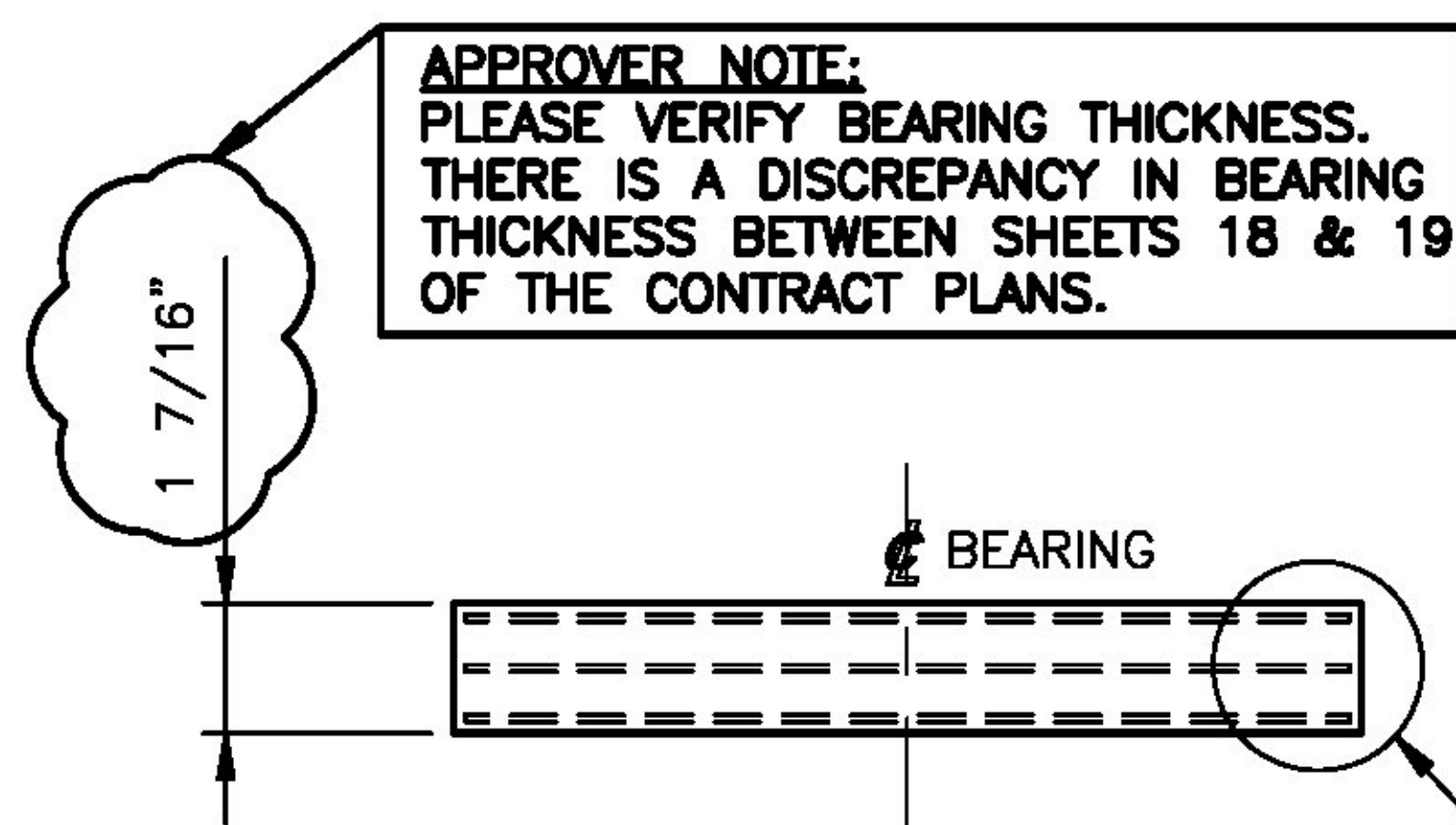
SCALE: NONE	DRAWN BY: RO	CHECKED BY: SL
	DATE: 5/22/14	DATE: 8/5/14

SHEET E1 OF 1    **JOB NO.: 12541**

REV.	DESCRIPTION	BY	DATE	CK'D	DATE	CUSTOMER:	DRAWING NUMBER	REV.
						THE BELDEN COMPANY	12541-E1	0



PLAN VIEW



ELEVATION VIEW

**LAMINATED ELASTOMERIC BEARING PAD**

**MARK: LEP1**

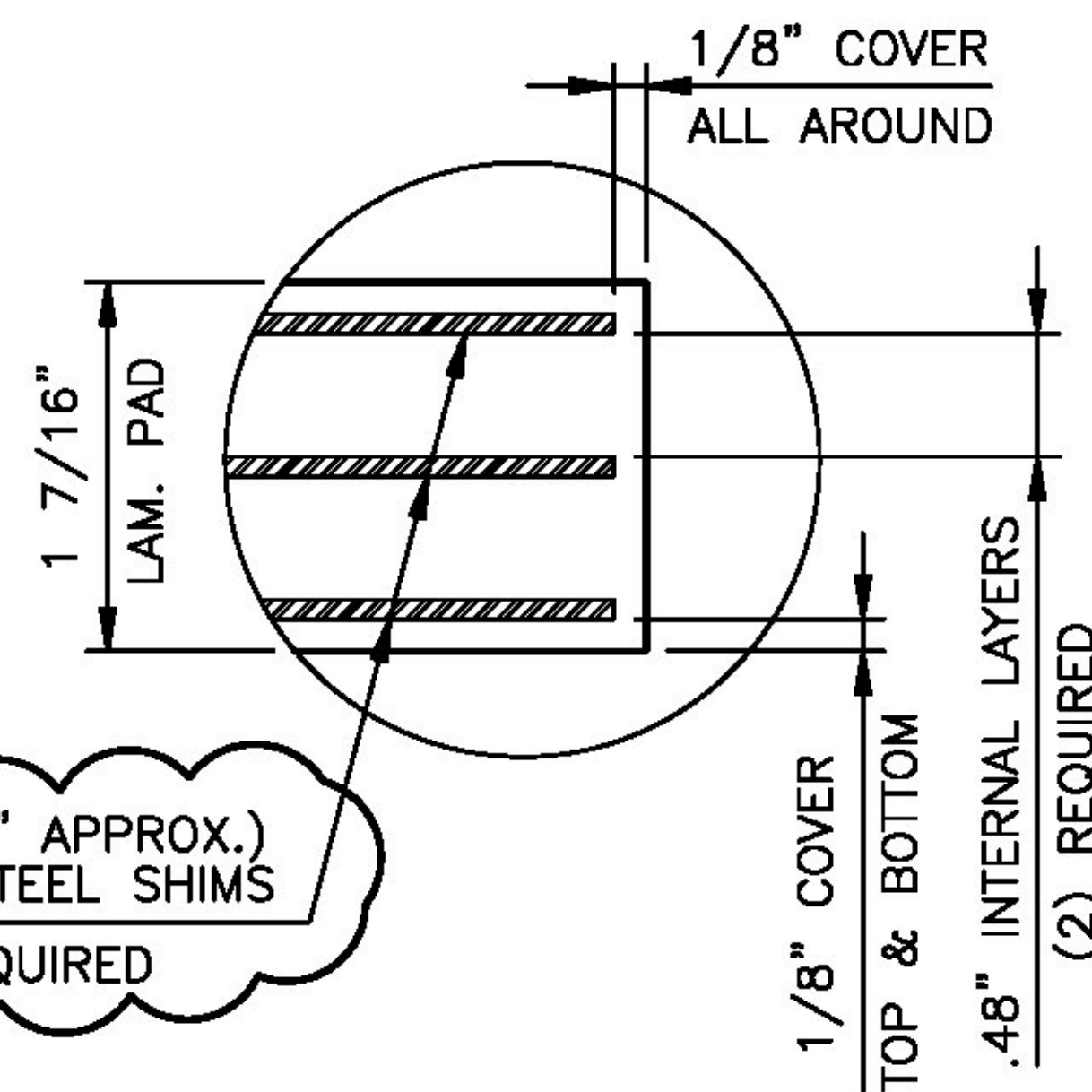
- (18) REQUIRED AT ABUT. NO.1
- (18) REQUIRED AT ABUT. NO.2
- (36) REQUIRED

14Ga SHIMS ARE ACCEPTABLE

**APPROVER NOTE:**  
1/16" THICK SHIMS ARE NOT AVAILABLE. PLEASE VERIFY THAT 14Ga (.071" APPROX.) THICK SHIMS ARE ACCEPTABLE.

14Ga (.071" APPROX.) INTERNAL STEEL SHIMS (3) REQUIRED

THIS BEARING THICKNESS IS CORRECT



**DETAIL 1**

LAMINATED BEARING PAD  
1 7/16" X 12" X 10"  
50 DUROMETER GRADE 4 NATURAL RUBBER  
(36) REQUIRED FOR STRUCTURE

**TEST PAD**

LAMINATED BEARING PAD  
1 7/16" X 12" X 10"  
50 DUROMETER GRADE 4 NATURAL RUBBER  
(2) REQUIRED FOR TESTING

**MAX. REACTION/BEAM**

DEAD LOAD = 16 kips  
LIVE LOAD = 19 kips

**SHOP NOTES:**

1. ALL BEARINGS SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731 OF THE 2011 VTAOT STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
2. MATERIAL:  
ELASTOMER: 50 DUROMETER GRADE 4 NATURAL RUBBER.  
STEEL LAMINAE: ASTM A1011 GRADE 50 OR EQ.
3. ALL BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. ALL MARKS SHALL BE PERMANANT AND BE VISIBLE AFTER ERECTION.
4. ALL DIMENSIONS ARE IN INCHES.
5. COSMEC REPRESENTATIVE KERRY MARCHAND: (508) 455-3290
6. VT.A.O.T. WILL BE NOTIFIED (7) DAYS BEFORE THE START OF FABRICATION.

Vermont Agency of Transportation  
**RECEIVED**

CK'D BY M. UMBERGER OK'D BY C. CARLSON

June 9, 2014

RESUBMIT NO Approved  
BY C. CARLSON DATE 06/24/2014

STATE OF VERMONT  
AGENCY OF TRANSPORTATION  
BRIDGE NO.14  
ROUTE NO: TH 13 (FOREST STREET)  
OVER MOON BROOK  
ITEM NO. 531.17  
CITY OF RUTLAND

STATE	COUNTY	CONTROL NO.
VT	RUTLAND	N/A
PROJ. NO.: BRF 3000 (18)		

**DYNAMIC RUBBER:**  
**LAMINATED BEARING PADS**

**Cosmec** 1501 ROCKY RIDGE ROAD  
P.O. BOX 2159  
ATHENS, TEXAS 75751

SCALE: NONE	DRAWN BY: RO	CHECKED BY: SL
	DATE: 5/22/14	DATE: 6/5/14

SHEET 1 OF 1 **JOB NO.: 12541**

REV.	DESCRIPTION	BY	DATE	CK'D	DATE	CUSTOMER:	DRAWING NUMBER	REV.
						THE BELDEN COMPANY	12541-D1	0

**ABUTMENT & APPROACH SLAB GENERAL NOTES**

- MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 5,000 PSI.
- MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 3,500 PSI (UNLESS NOTED OTHERWISE).
- REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) LEVEL II (DUAL COATED) (AS NOTED ON SHOP DRAWINGS).
- THE TOP OF ABUTMENTS SHALL RECEIVE A SMOOTH FLOAT FINISH (UNLESS NOTED OTHERWISE).
- SHEAR KEY SURFACES SHALL BE SAND BLASTED CLEAN.
- PRECAST CONCRETE UNITS SHALL BE HANDLED AND ERECTED USING THE LIFTING INSERTS ONLY. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. NON-PRESTRESSED UNITS SHALL BE STORED & TRANSPORTED WITH TIMBER SUPPORTS AT 5th POINTS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
- MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. F510.02 AND F510.05 RESPECTIVELY.  
 DESIGN MIX:  
 APPROACH SLABS: J.P.C. BRIDGE MIX #448M5CC  
 ABUTMENTS: J.P.C. BRIDGE MIX #448M5CC
- QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
- CURING METHOD: AS SOON AS THE TOP OF PRECAST CONCRETE UNITS ARE FINISHED, A COVER OF RIGID INSULATION AND POLY WILL BE PLACED OVER THE UNIT. NATURAL CURE WITH NO EXTERNAL HEAT APPLIED.
- TRANSVERSE POST-TENSIONING SEQUENCE:  
 A. ERECT PRECAST ABUTMENTS.  
 B. EPOXY CONSTRUCTION JOINT.  
 C. POST TENSION TENDONS TO 32,000 LBS.

**VOIDED SLAB GENERAL NOTES**

- MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 7,500 PSI.
- MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 5,000 PSI.
- REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) LEVEL II (DUAL COATED).
- PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M203) AND SHALL CONSIST OF 0.60" x 270 KSI 7-WIRE LOW RELAXATION STRANDS.
- PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 44.0 K AFTER ACCOUNTING FOR CHUCK SLIPPAGE. TENSION SHALL BE VERIFIED BY MEASURING STRAND ELONGATION. (SEE EXAMPLE ELONGATION CALCULATION AND TENSIONING PROCEDURE, THIS SHEET.)
- ENDS OF PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH END OF VOIDED SLABS (UNLESS NOTED OTHERWISE) AND EPOXY PAINTED.
- ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
- THE TOP OF SLABS SHALL RECEIVE A SMOOTH FLOAT FINISH (UNLESS NOTED OTHERWISE).
- SHEAR KEY SURFACES SHALL BE SAND BLASTED CLEAN.
- SLABS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL FORCES ARE APPLIED TO EACH OF THE TWO LIFTING LOOPS AT EACH END OF THE SLAB. THE PINS OF THE SHACKLES SHALL BE PLACED THROUGH THE LIFTING LOOPS. SEE DETAIL, SHEET 'F5'. SLABS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS WITHIN 2'-0" OF THE SLAB ENDS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC. (ONCE VOIDED SLABS HAVE BEEN ERECTED, CUT LIFTING LOOPS AT RECESS, EPOXY PAINT AND PATCH AS REQUIRED (BY OTHERS)).
- MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. F510.02 AND F510.05 RESPECTIVELY.  
 DESIGN MIX: J.P.C. BRIDGE MIX #426M1 (NO DC1)
- QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
- CURING METHOD: AS SOON AS THE TOP OF SLAB IS FINISHED, A COVER OF INSULATED POLY. THE DESIRED CURING TEMPERATURE RANGE SHALL NOT DROP BELOW 70°F. THE TEMPERATURE SHALL BE RECORDED BY AUTOMATIC SENSOR INSTRUMENTS ON GRAPH CHARTS, SPACED NOT MORE THAN 100' APART AND WILL CONTINUE UNTIL RELEASE STRENGTH IS ACHIEVED. EACH CHART SHALL BE MARKED WITH THE CASTING DATED AND LOCATION OF THE RECORDER. IF NECESSARY TO MAINTAIN CASTING BED TEMPERATURE PRIOR TO CONCRETE PLACEMENT OR TO ACCELERATE EARLY AGE STRENGTH GAIN, EXTERNAL RADIANT HEAT MAY BE EMPLOYED VIA HOT WATER DUCTS BENEATH AND WITHIN THE PERIMETRY OF THE CASTING BED. MAXIMUM CURING TEMPERATURE SHALL NOT EXCEED PCI SPECIFIED LIMITS.
- TRANSVERSE POST-TENSIONING SEQUENCE:  
 A. ERECT VOIDED SLABS.  
 B. GROUT SHEAR KEYS.  
 C. ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1,500 PSI, POST TENSION TENDONS TO 32,000 LBS.
- OWNER SHALL PROVIDE APPROPRIATE WATERPROOFING TO GROUTED AND/OR EPOXIED SHEAR KEYS. J.P. CARRARA & SONS, INC. SHALL NOT BE HELD LIABLE FOR PROBLEMS ASSOCIATED WITH MOISTURE INFILTRATING GROUTED AND/OR EPOXIED SHEAR KEYS.

**EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING**

(NOT TO BE USED FOR CONSTRUCTION)  
 SIZE & GRADE: 0.60" x 270 KSI  
 AREA: 0.217 IN<sup>2</sup>  
 TENSION: 44,000 LB. EACH STRAND  
 GRIP-TO-GRIP: 252'-0" = 252.00'  
 E<sub>s</sub> = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)  
 EXAMPLE:  

$$\Delta = \frac{P_L}{AE} = \frac{(44,000 - 3,000) \times 252.00 \times 12}{0.217 \times 28,600,000} = 19.977'$$
 THEREFORE: (TOLERANCES ± 5%)  
 $\Delta$  UPPER LIMIT = 1.05 x 19.977' = 20.98' = 21'  
 $\Delta$  LOWER LIMIT = 0.95 x 19.977' = 18.98' = 19'  
 EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:  
 $\Delta P = \frac{0.5 \times 41,000}{19.977} = 1,026$  LBS.  
 TOTAL TENSIONING FORCE = 44,000 + 1,026 = 45,026 LBS.

**STRAND TENSIONING PROCEDURE:**

- PULL EACH STRAND INITIALLY TO 3,000\* LBS. AND MARK STRAND.
  - THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,026\* LBS. AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 19" AND 21".
- \*NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.

**DRAWING INDEX**

SHT. #	DRAWING TITLE	REV. #	REV. DATE
C1	COVER SHEET	1	7-1-14
F1	PRECAST ABUTMENT LAYOUT		
F2	PRECAST ABUTMENT ELEVATIONS		
F3	PRESTRESSED VOIDED SLAB & PRECAST APPROACH SLAB LAYOUT		
F4	PRESTRESSED VOIDED SLAB & PRECAST APPROACH SLAB SECTIONS		
F5	SUPERSTRUCTURE SECTIONS & DETAILS	1	7-1-14
SS1	PRESTRESSED VOIDED SLAB DETAILS "R-SS3"		
SS2	PRESTRESSED VOIDED SLAB DETAILS "R-SS4"		
SS3	PRESTRESSED VOIDED SLAB DETAILS "R-SS5"		
SS4	PRESTRESSED VOIDED SLAB DETAILS "R-SS6"		
SS5	PRESTRESSED VOIDED SLAB DETAILS "R-SS1"		
SS6	PRESTRESSED VOIDED SLAB DETAILS "R-SS2"		
AS1	PRECAST APPROACH SLAB DETAILS "R-AS1" & "R-AS2"	1	7-1-14
AS2	PRECAST APPROACH SLAB DETAILS "R-AS5" & "R-AS6"	1	7-1-14
AS3	PRECAST APPROACH SLAB DETAILS "R-AS3" & "R-AS4"	1	7-1-14
AB1	PRECAST ABUTMENT DETAILS "R-AB1"	1	7-1-14
AB2	PRECAST ABUTMENT DETAILS "R-AB2"	1	7-1-14
AB3	PRECAST ABUTMENT DETAILS "R-AB3"	1	7-1-14
AB4	PRECAST ABUTMENT DETAILS "R-AB4"	1	7-1-14
M1	MATERIALS LIST		

DESIGN LIVE LOAD: HL-93

Vermont Agency of Transportation

**RECEIVED**

23430-14 Forest St\_Rutland\_vt14.pdf

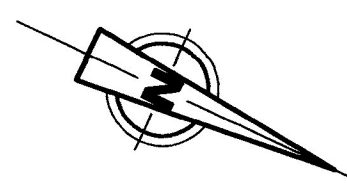
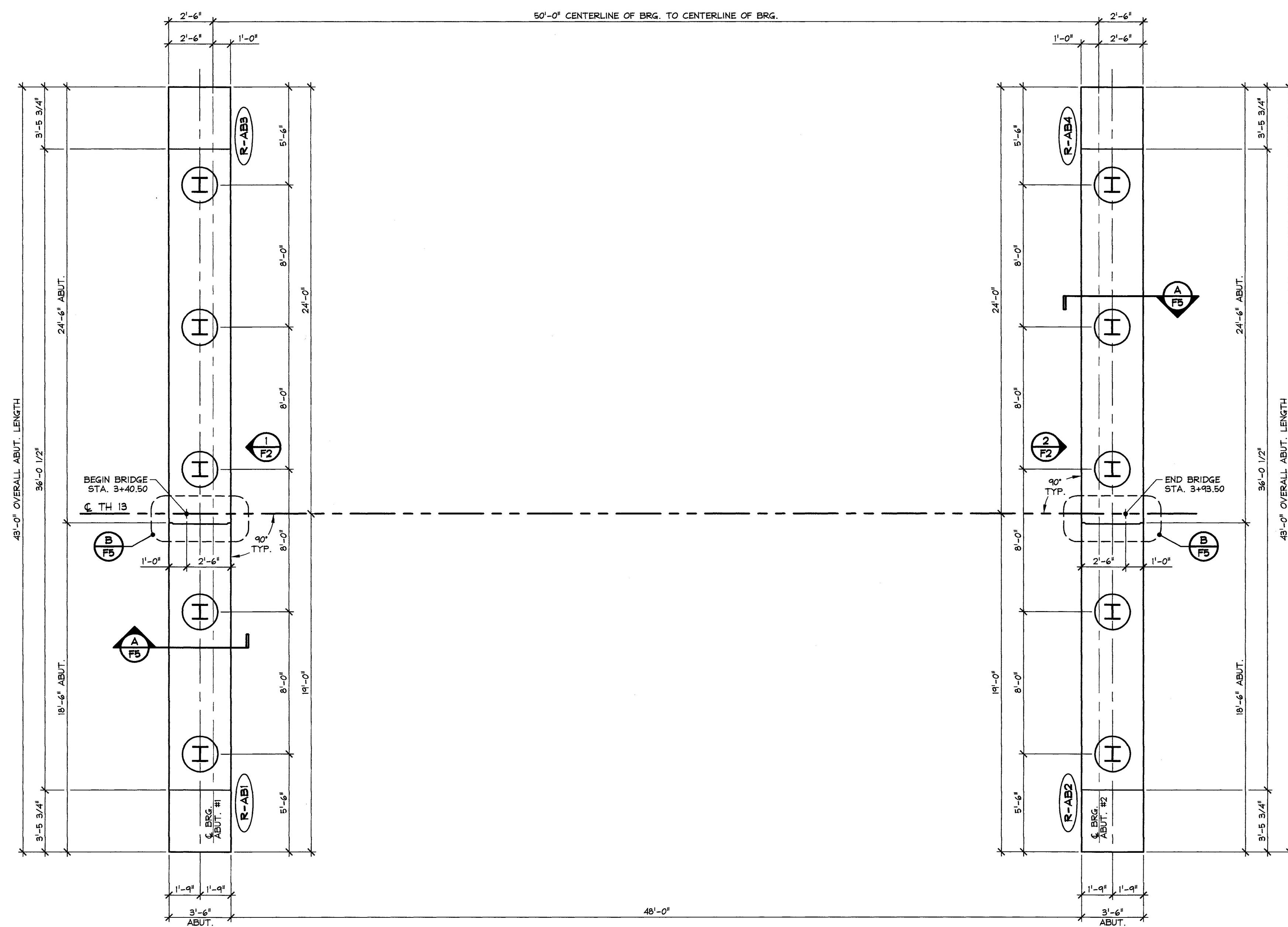
CK'D BY M. Umberger OK'D BY C. Carlson

July 1, 2014

RESUBMIT No Approved  
 BY C. Carlson DATE 07/08/2014

7-1-14 REVISED AS NOTED

APPROVAL STAMP:	<b>J.P. CARRARA &amp; SONS INC.</b> Precast & Prestress Manufacturer 244 OSE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	<b>THE BELDEN COMPANY, INC.</b> CONTRACTOR RUTLAND, VERMONT
	<b>STATE OF VERMONT AGENCY OF TRANSPORTATION</b> COUNTY OF RUTLAND	DATE: APR. 25, 2014 SCALE: NOTED
	<b>CITY OF RUTLAND</b> ROUTE NO.: TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRF 3000(1B)	CHKD: M.D. DFTM: B.L. JOB NO: 23430-014
	<b>COVER SHEET</b>	DWG. NO: C1



**1** PRECAST ABUTMENT LAYOUT  
 F1  
 1/4" = 1'-0"

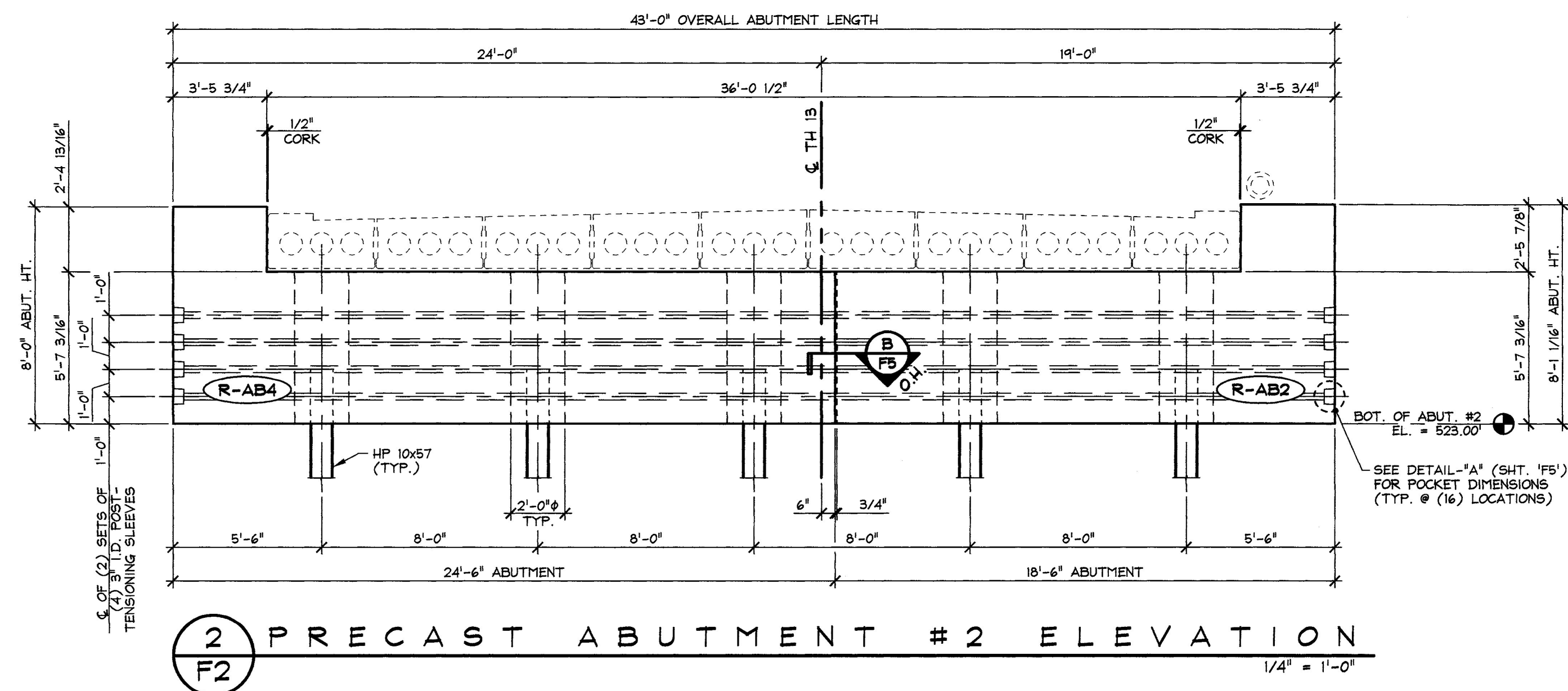
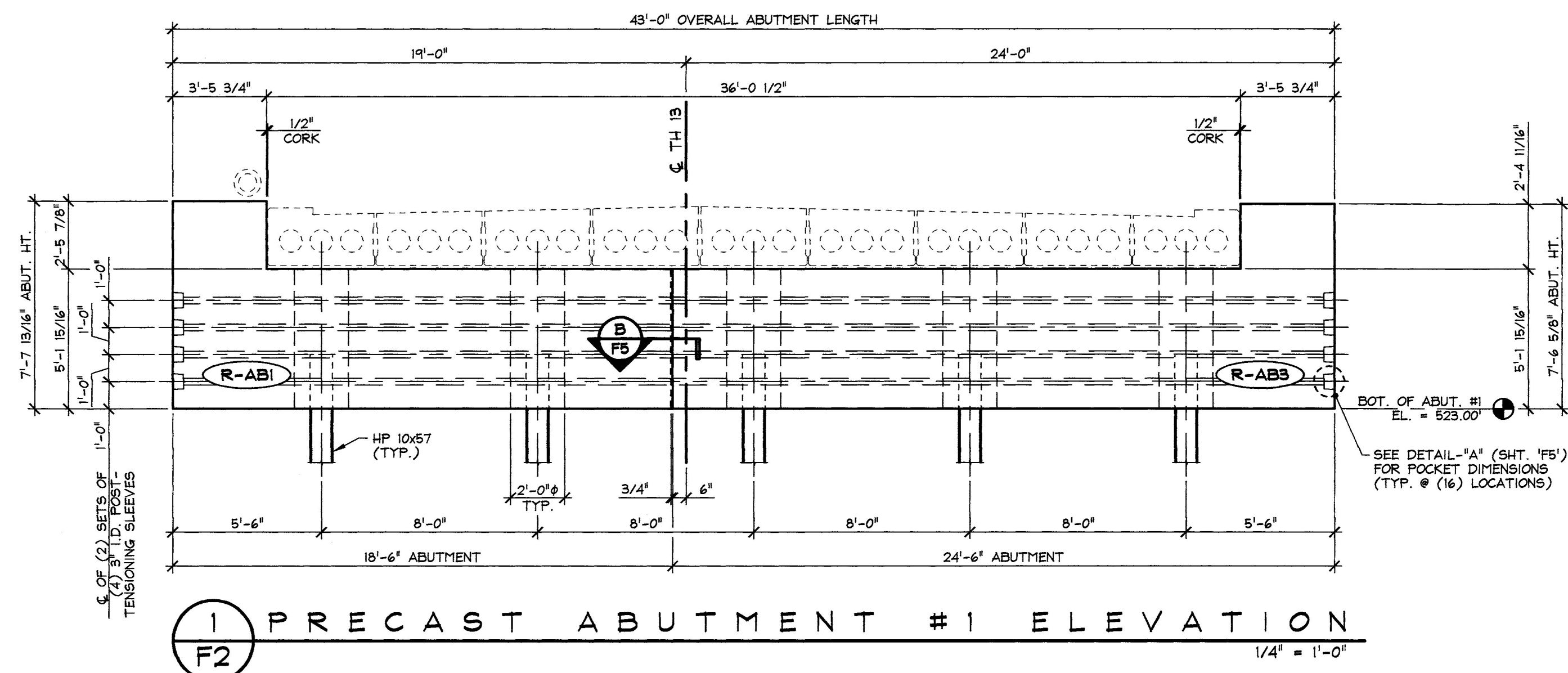
Vermont Agency of Transportation  
**RECEIVED**

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July 1, 2014

RESUBMIT No Approved             
 BY C. Carlson DATE 07/08/2014

APPROVAL STAMP:	<b>J.P. CARRARA &amp; SONS INC.</b> Precast & Prestress Manufacturer <small>2444 OASE ST., MIDDLEBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010</small>		<b>THE BELDEN COMPANY, INC.</b> CONTRACTOR RUTLAND, VERMONT	
	STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF RUTLAND		DATE: APR. 25, 2014 SCALE: NOTED	
	CITY OF RUTLAND ROUTE NO.: TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRP 3000(18)		CHKD: M.D. DFTM: B.L. JOB NO: 23430-014	
	<b>PRECAST ABUTMENT LAYOUT</b>		DWG. NO: <b>F1</b>	



Vermont Agency of Transportation

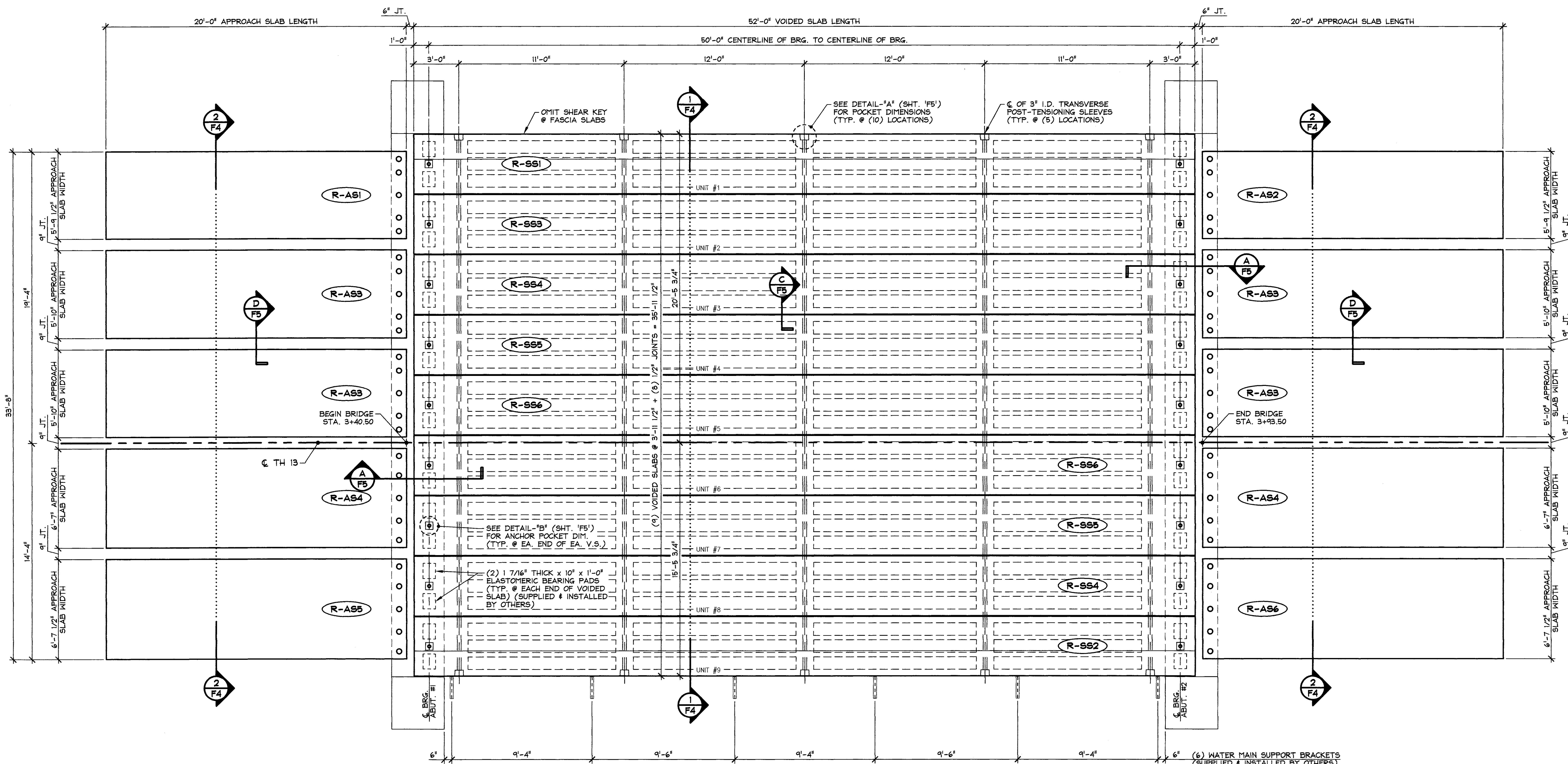
**RECEIVED**

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July 1, 2014

RESUBMIT No Approved  
BY C. Carlson DATE 07/08/2014

APPROVAL STAMP:	<b>J.P. CARRARA &amp; SONS INC.</b> Precast & Prestress Manufacturer <small>2464 OASE ST., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010</small>		<b>THE BELDEN COMPANY, INC.</b> CONTRACTOR RUTLAND, VERMONT	
	STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF RUTLAND		DATE: APR. 25, 2014 SCALE: NOTED	
	CITY OF RUTLAND ROUTE NO.: TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRF 3000(18)		CHKD: M.D. DFTM: B.L. JOB NO: 23430-014	
	PRECAST ABUTMENT ELEVATIONS		DWG. NO: <b>F2</b>	



1 PRESTRESSED VOIDED SLAB & APPROACH SLAB LAYOUT  
 F3  
 1/4" = 1'-0"

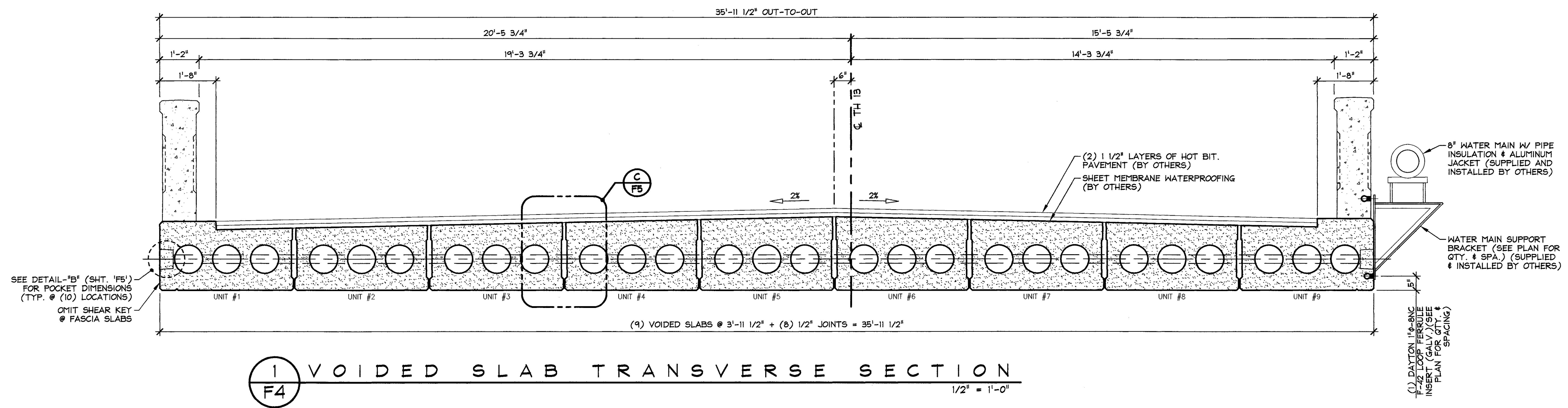
Vermont Agency of Transportation  
**RECEIVED**

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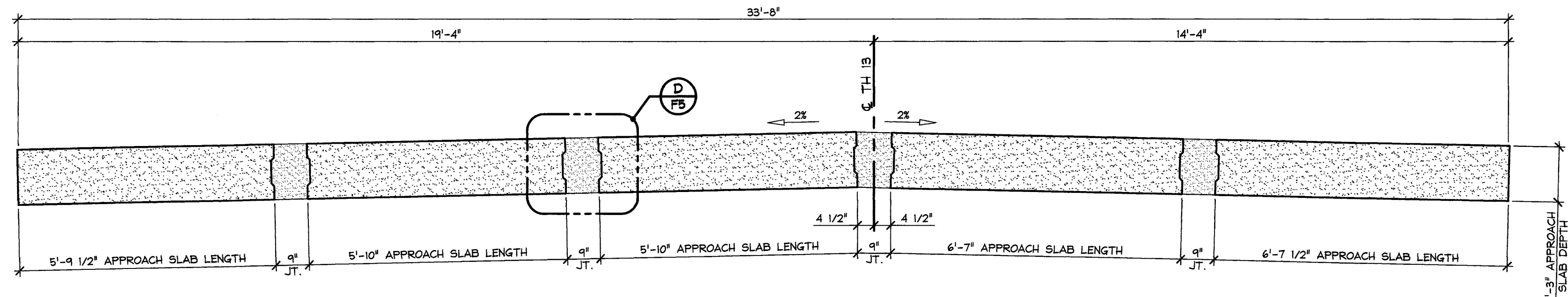
July 1, 2014

RESUBMIT No Approved  
 BY C. Carlson DATE 07/08/2014

APPROVAL STAMP:	<b>J.P. CARRARA &amp; SONS INC.</b> Precast & Prestress Manufacturer <small>2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010</small>		<b>THE BELDEN COMPANY, INC.</b> CONTRACTOR RUTLAND, VERMONT	
	STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF RUTLAND		DATE: APR. 25, 2014 SCALE: NOTED	
	CITY OF RUTLAND ROUTE NO.: TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRF 3000(1B)		CHKD: M.D. DFTM: B.L. JOB NO: 23430-014	
	<b>PRESTRESSED VOIDED SLAB &amp;          PRECAST APPROACH SLAB LAYOUT</b>		DWG. NO: <b>F3</b>	



1 VOIDED SLAB TRANSVERSE SECTION  
 F4  
 1/2" = 1'-0"



2 APPROACH SLAB TRANSVERSE SECTION  
 F4  
 1/2" = 1'-0"

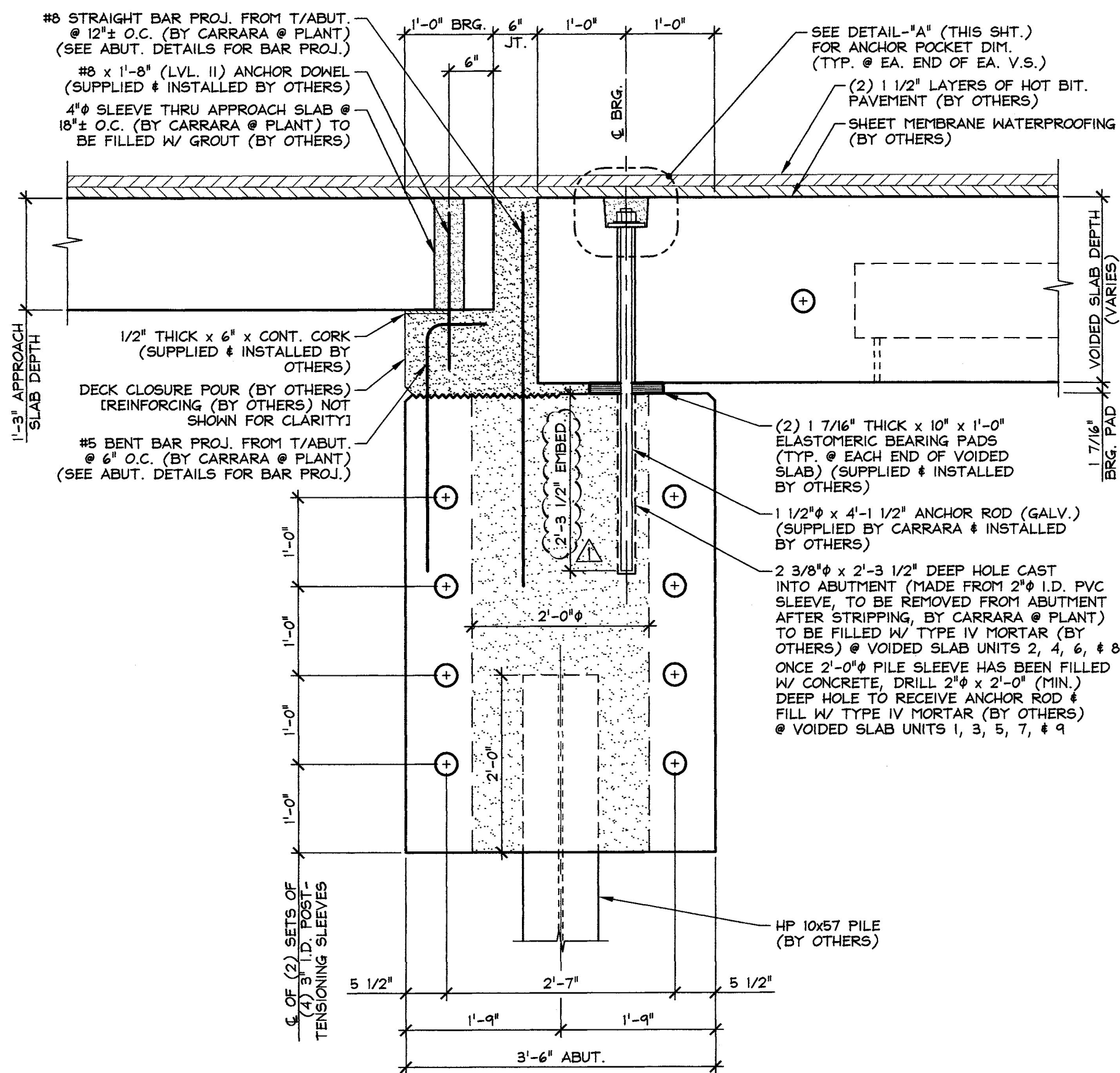
Vermont Agency of Transportation  
**RECEIVED**

CK'D BY M. Umberger OK'D BY C. Carlson

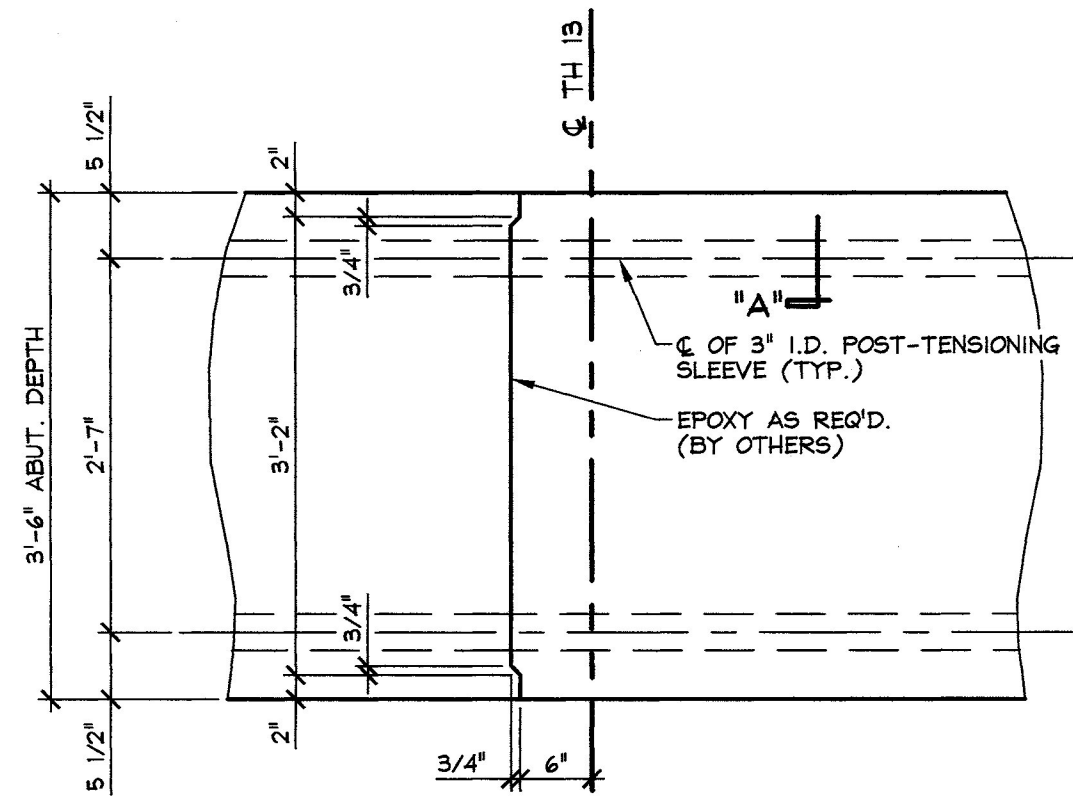
July 1, 2014

RESUBMIT No Approved  
 BY C. Carlson DATE 07/08/2014

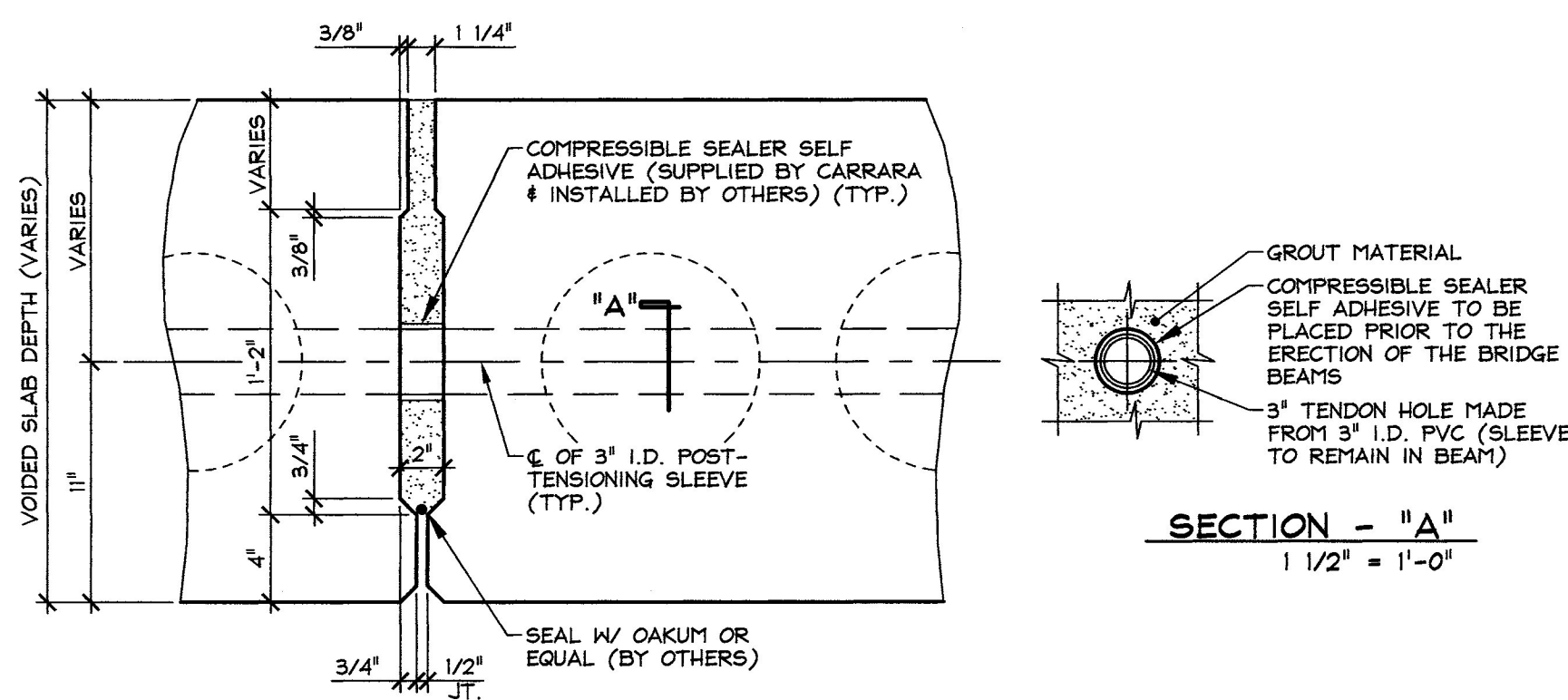
APPROVAL STAMP:	<b>J.P. CARRARA &amp; SONS INC.</b> Precast & Prestress Manufacturer <small>264 OSE ST., MIDDLEBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010</small>		<b>THE BELDEN COMPANY, INC.</b> CONTRACTOR RUTLAND, VERMONT	
	STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF RUTLAND		DATE: APR. 25, 2014 SCALE: NOTED	
	CITY OF RUTLAND ROUTE NO.: TH 1B (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRF 3000(1B)		CHKD: M.D. DFTM: B.L. JOB NO: 23430-014	
	PRESTRESSED VOIDED SLAB & PRECAST APPROACH SLAB SECTIONS		DWG. NO: <b>F4</b>	



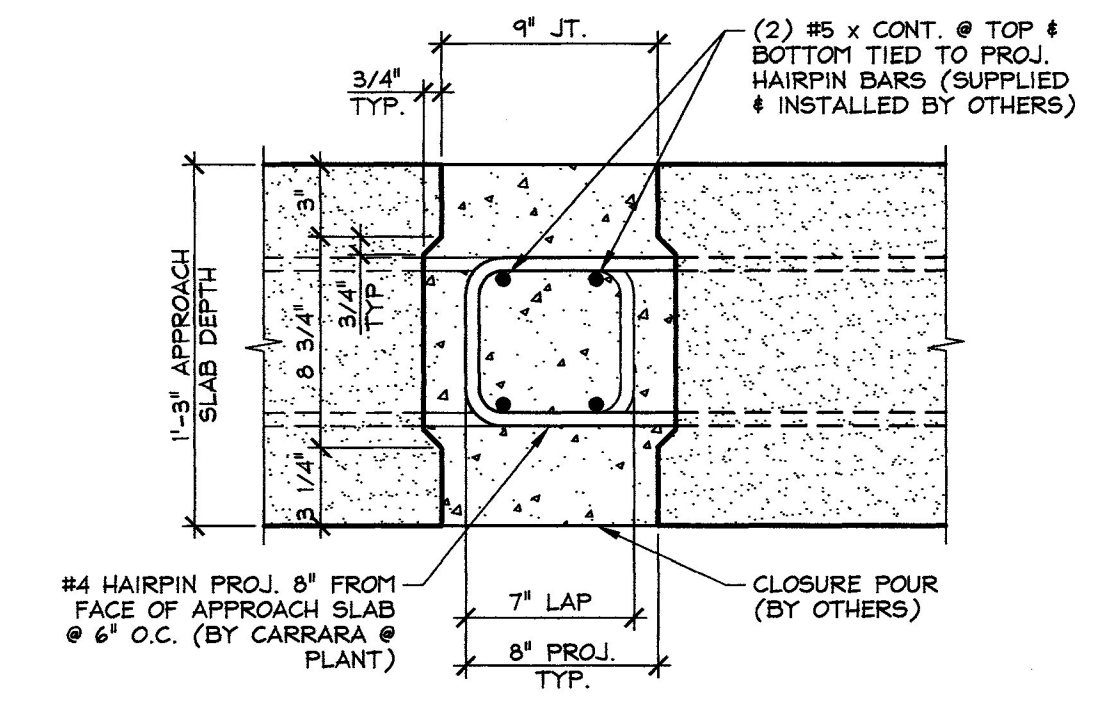
**A BEARING SECTION**  
F5 @ P.T. SLEEVE (ABUTMENT)  
3/4" = 1'-0"



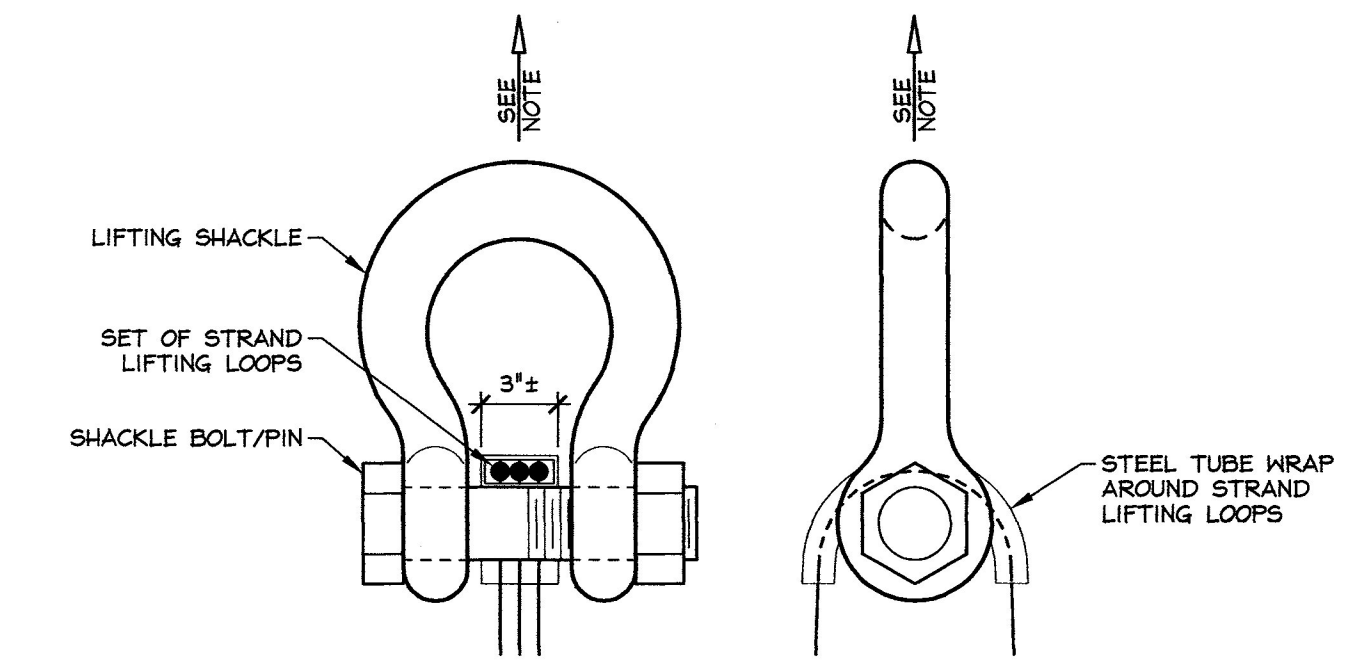
**B CONSTRUCTION JOINT SECTION**  
F5 @ P.T. SLEEVE (ABUTMENT)  
3/4" = 1'-0"



**C SHEAR KEY SECTION @ P.T. SLEEVE**  
F5 (VOIDED SLABS)  
1 1/2" = 1'-0"

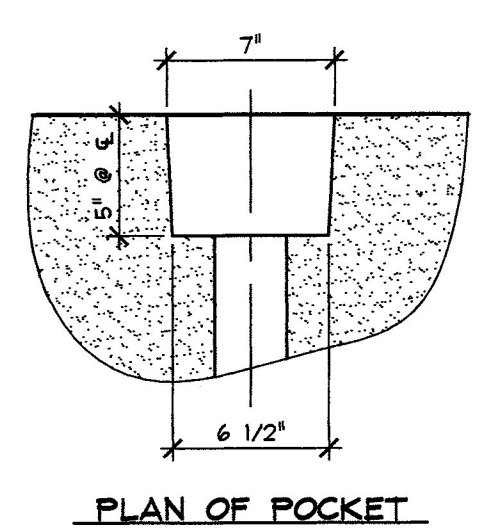


**D APPROACH SLAB CLOSURE POUR**  
F5  
1 1/2" = 1'-0"

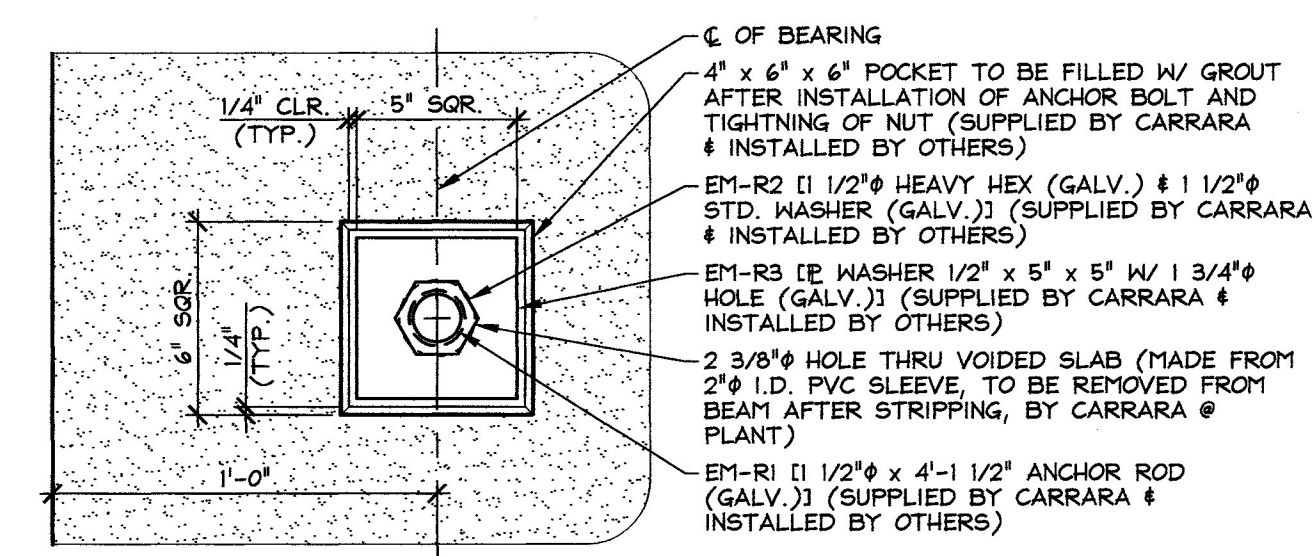


NOTE: SLAB SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL FORCES ARE APPLIED TO EACH SET OF LIFTING LOOPS AT EACH END OF THE SLAB. SHACKLE BOLT/PIN SHALL BE PLACED UNDER LIFT LOOPS AS SHOWN. DESIGN AND CONFIGURATION OF RIGGING BY PURCHASER.

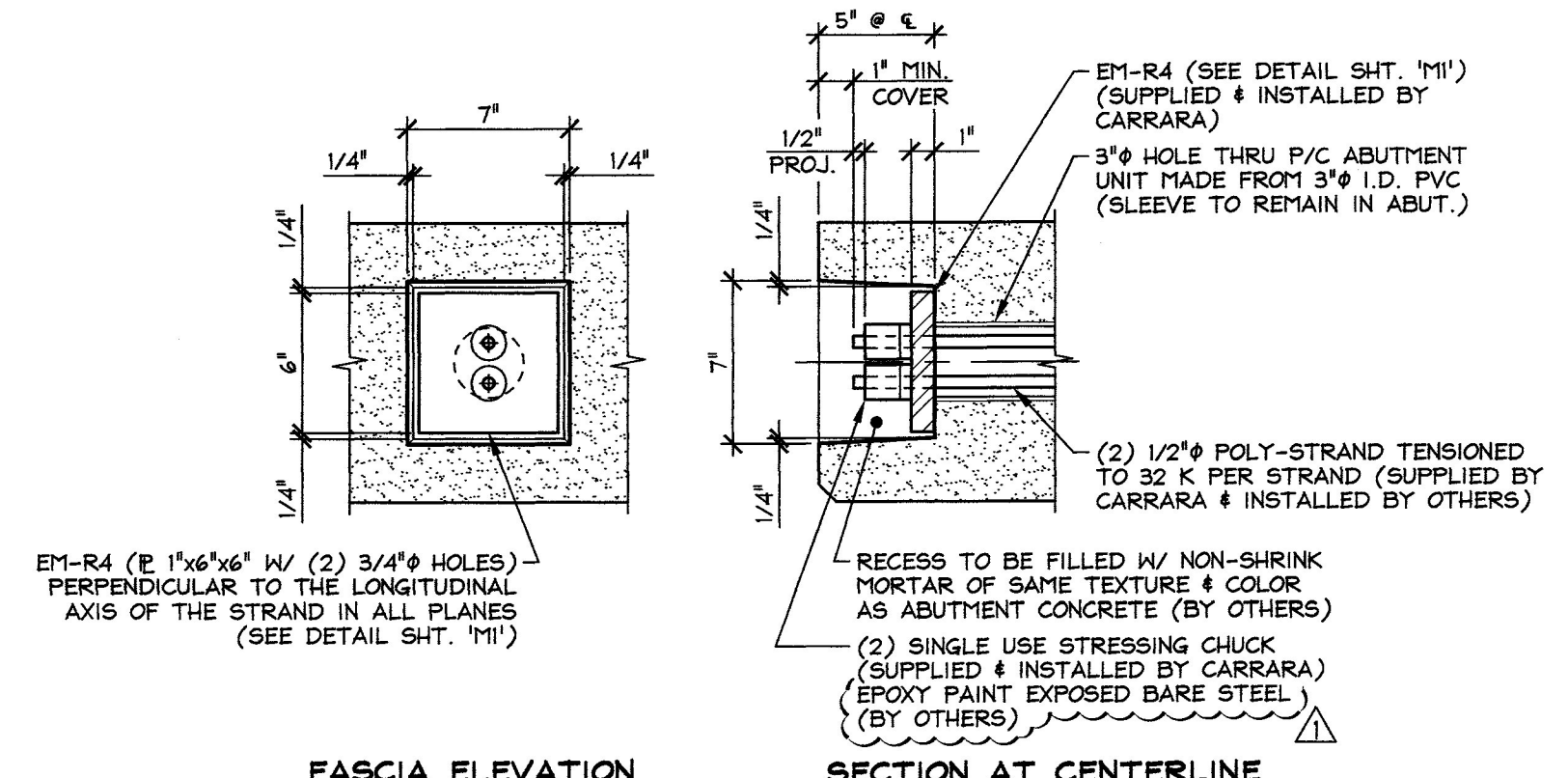
**LIFTING SHACKLE DETAILS**  
N.T.S.



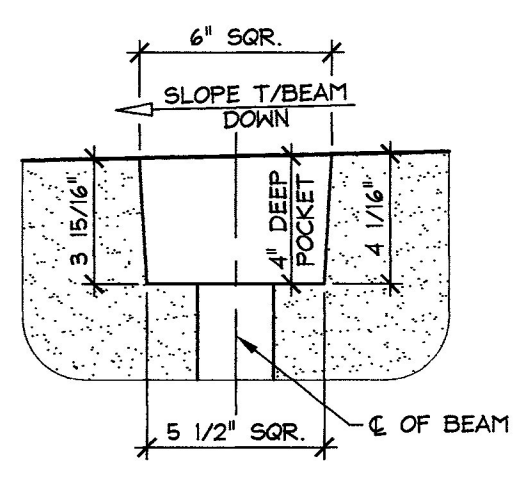
**PLAN OF POCKET**



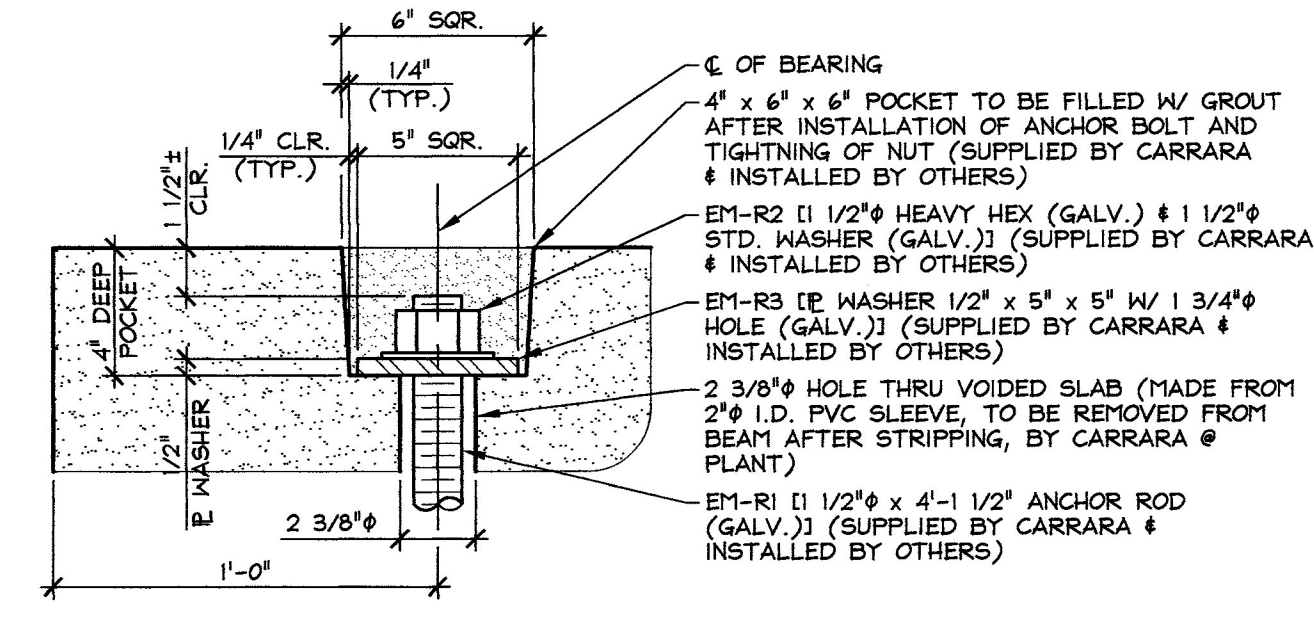
**PLAN @ BEAM C**



**DETAIL - "A"**  
1 1/2" = 1'-0"



**POCKET ELEVATION**



**SECTION @ BEAM C**

**DETAIL - "B"**  
2" = 1'-0"

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July 1, 2014

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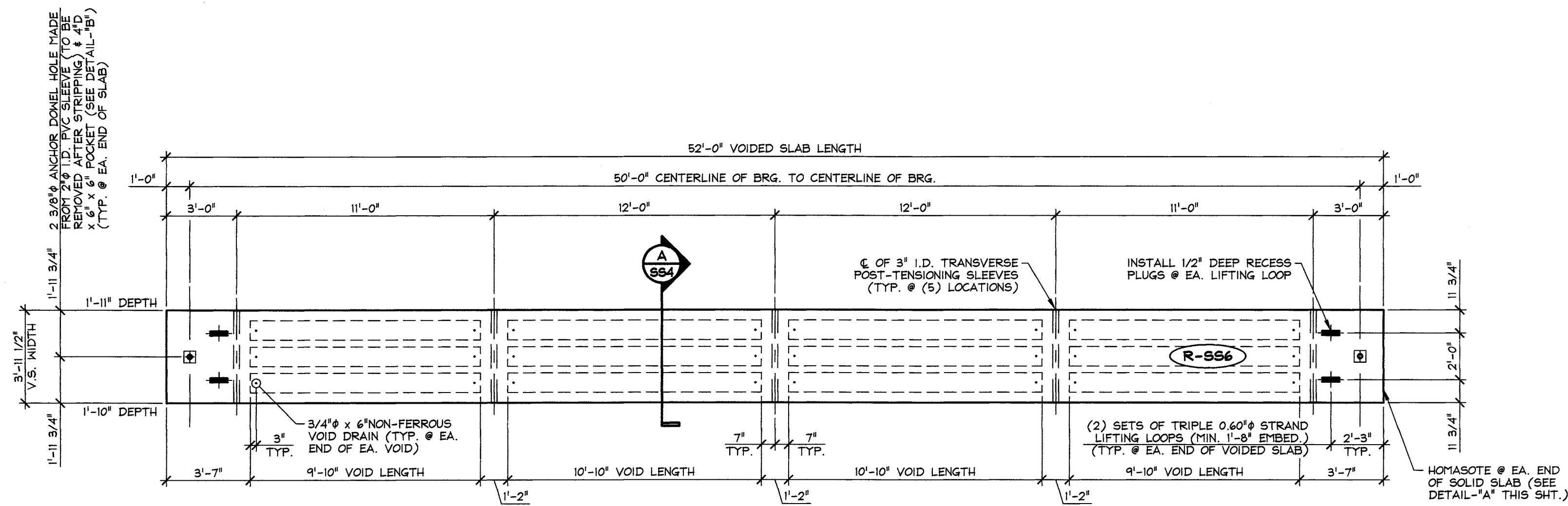
7-1-14 REVISED AS NOTED

APPROVAL STAMP:	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2464 CASE ST., WOODLURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010	THE BELDEN COMPANY, INC. CONTRACTOR RUTLAND, VERMONT
STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF RUTLAND	DATE: APR. 25, 2014	SCALE: NOTED
CITY OF RUTLAND ROUTE NO.: TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRP 3000(18)	CHKD: M.D. DFTM: B.L.	JOB NO: 23430-014
<b>SUPERSTRUCTURE SECTIONS &amp; DETAILS</b>	DWG. NO:	<b>F5</b>

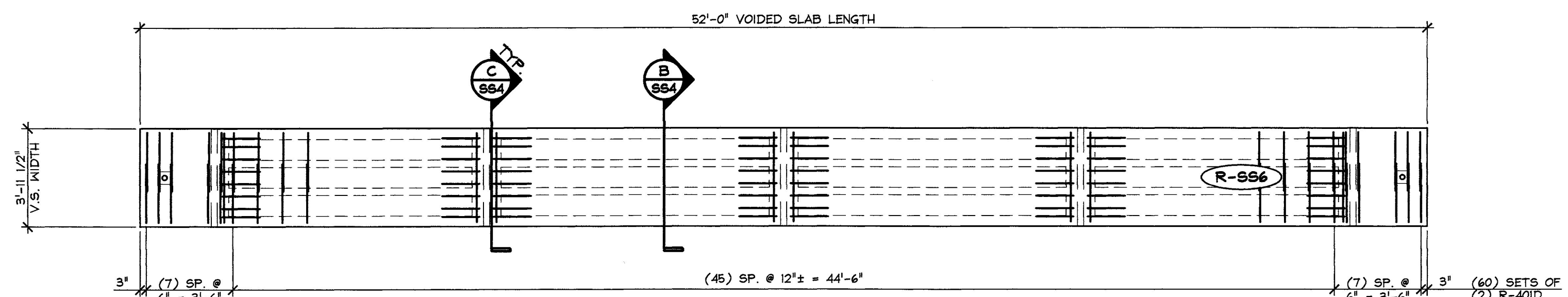
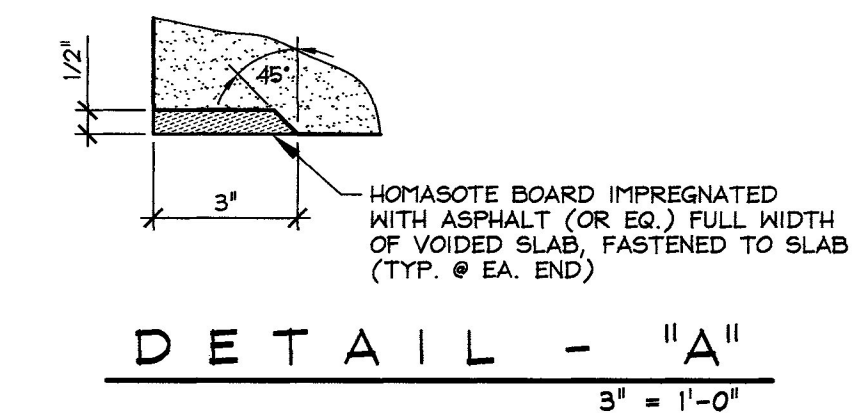




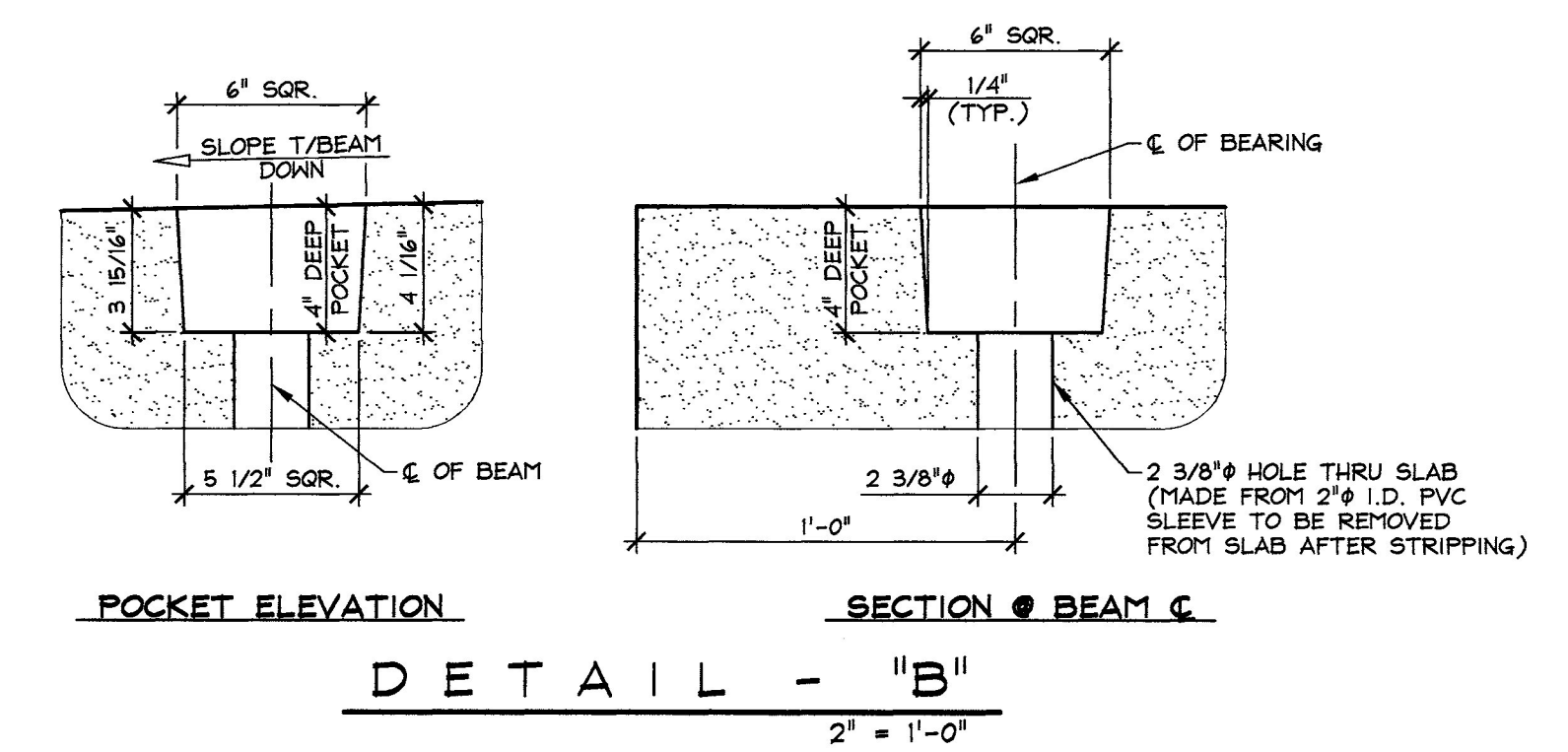




1 DIMENSIONAL PLAN VIEW IN FORM  
SS4 1/4" = 1'-0"



2 REINFORCING PLAN VIEW IN FORM  
SS4 1/4" = 1'-0"



DETAIL - 'B' 2' = 1'-0"

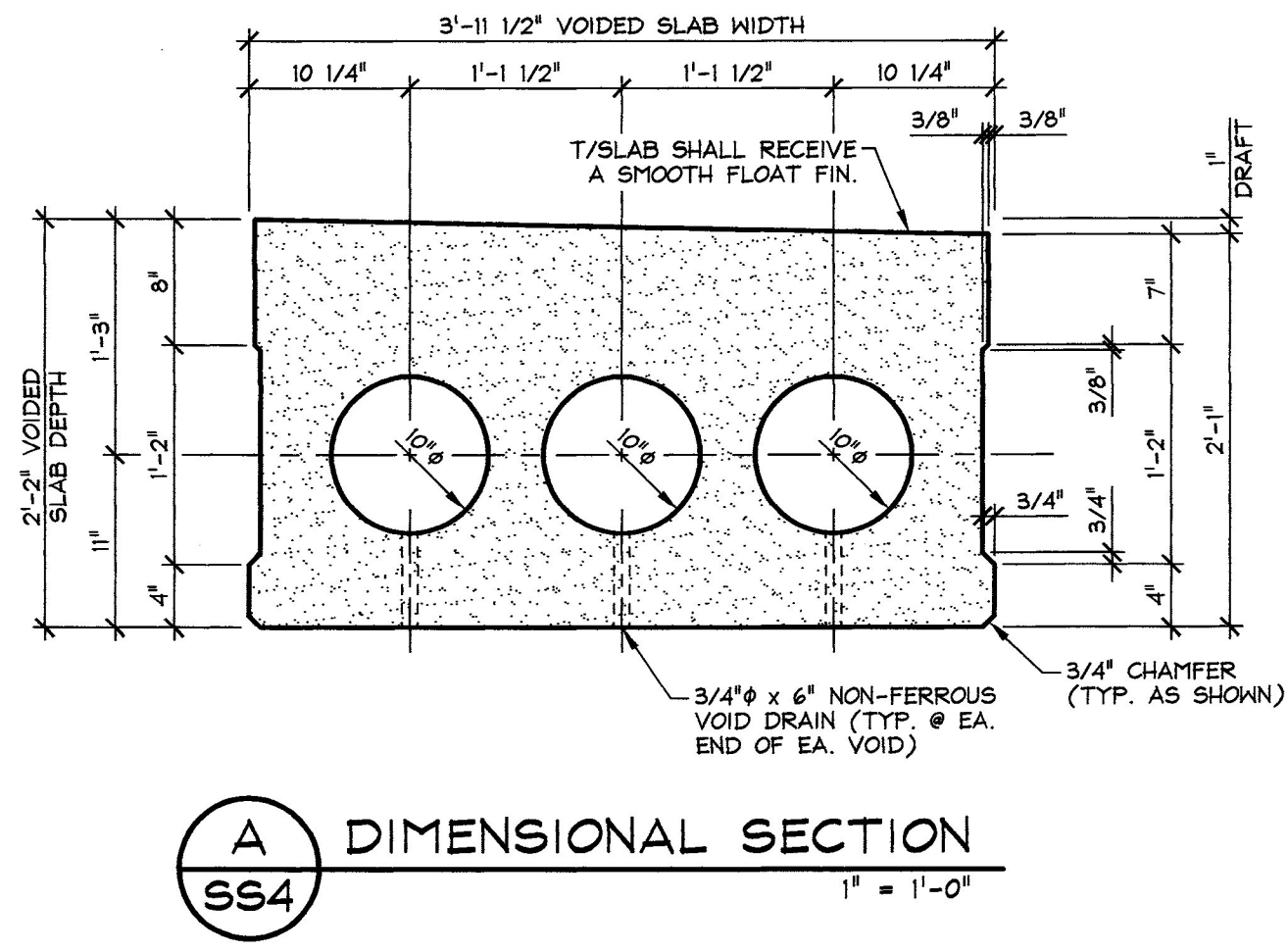
① ②

⑤ ⑦ ⑨ ⑪ ⑬ ⑮ ⑰ ⑲ ⑳ ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺ ㊻ ㊼ ㊽ ㊾ ㊿

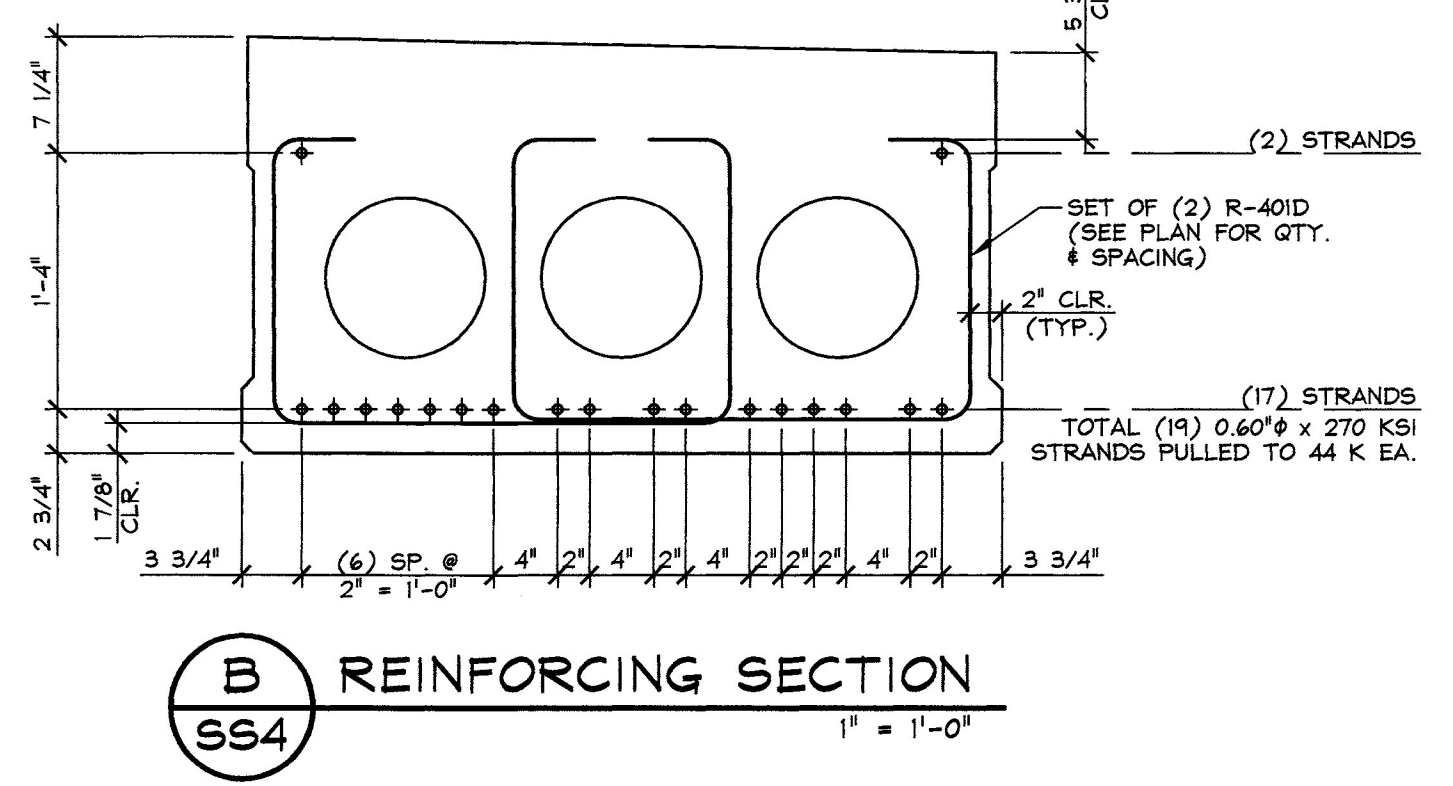
DETENSIONING SCHEDULE  
N.T.S.

Vermont Agency of Transportation  
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July 1, 2014  
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BY C. Carlson DATE 07/08/2014

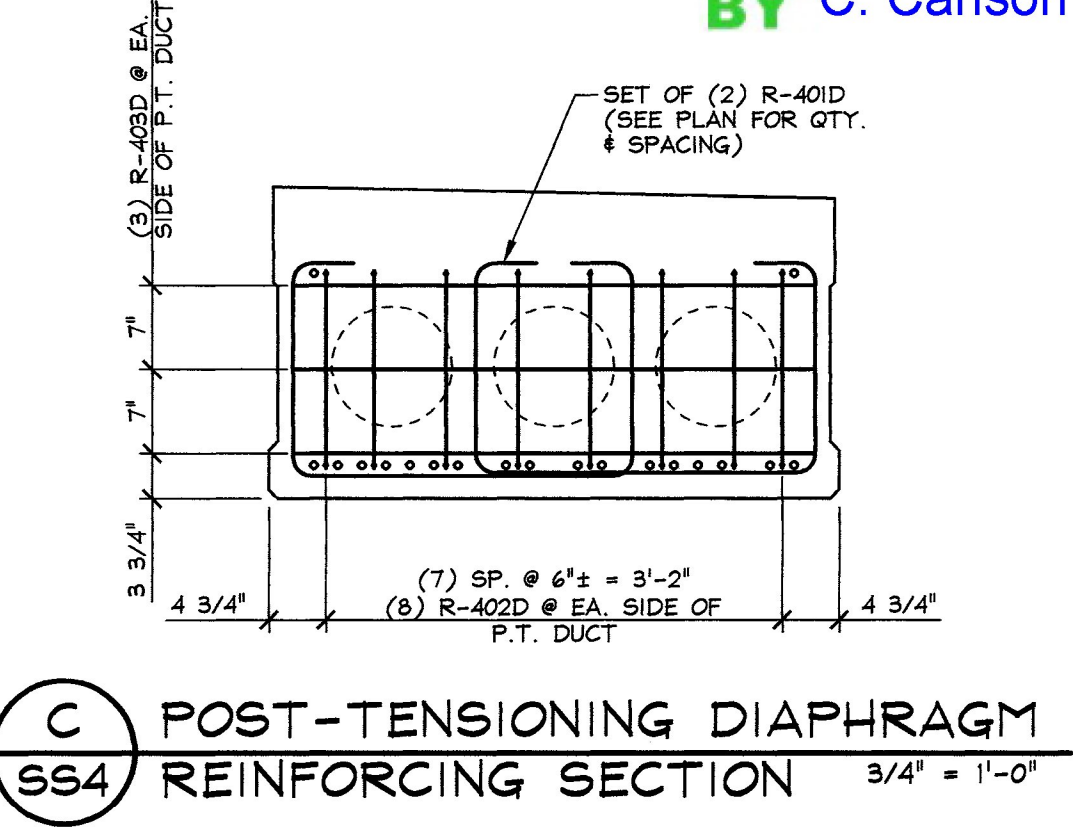
MARK:	R-SS6	QTY.:	2	WT.:	27.02 T	VOL.:	13.34 cy
MATERIAL LIST / VOIDED SLAB							
ITEM	MARK	DESCRIPTION	QTY.				
1	R-401D	#4 BENT BAR (LEVEL II, DUAL COATED)	120				
2	R-402D	#4 BENT BAR (LEVEL II, DUAL COATED)	64				
3	R-403D	#4 x 3'-7 1/2" (LEVEL II, DUAL COATED)	24				
4							
5							
6							
7							
8							
9							
10							
11		3/4" x 6" NON-FERROUS VOID DRAIN	24				
12		10" x 9'-10" VOID	6				
13		10" x 10'-10" VOID	6				
14		SET OF TRIPLE 0.60" STRAND LIFTING LOOPS	4				
15							



A DIMENSIONAL SECTION  
SS4 1" = 1'-0"



B REINFORCING SECTION  
SS4 1" = 1'-0"



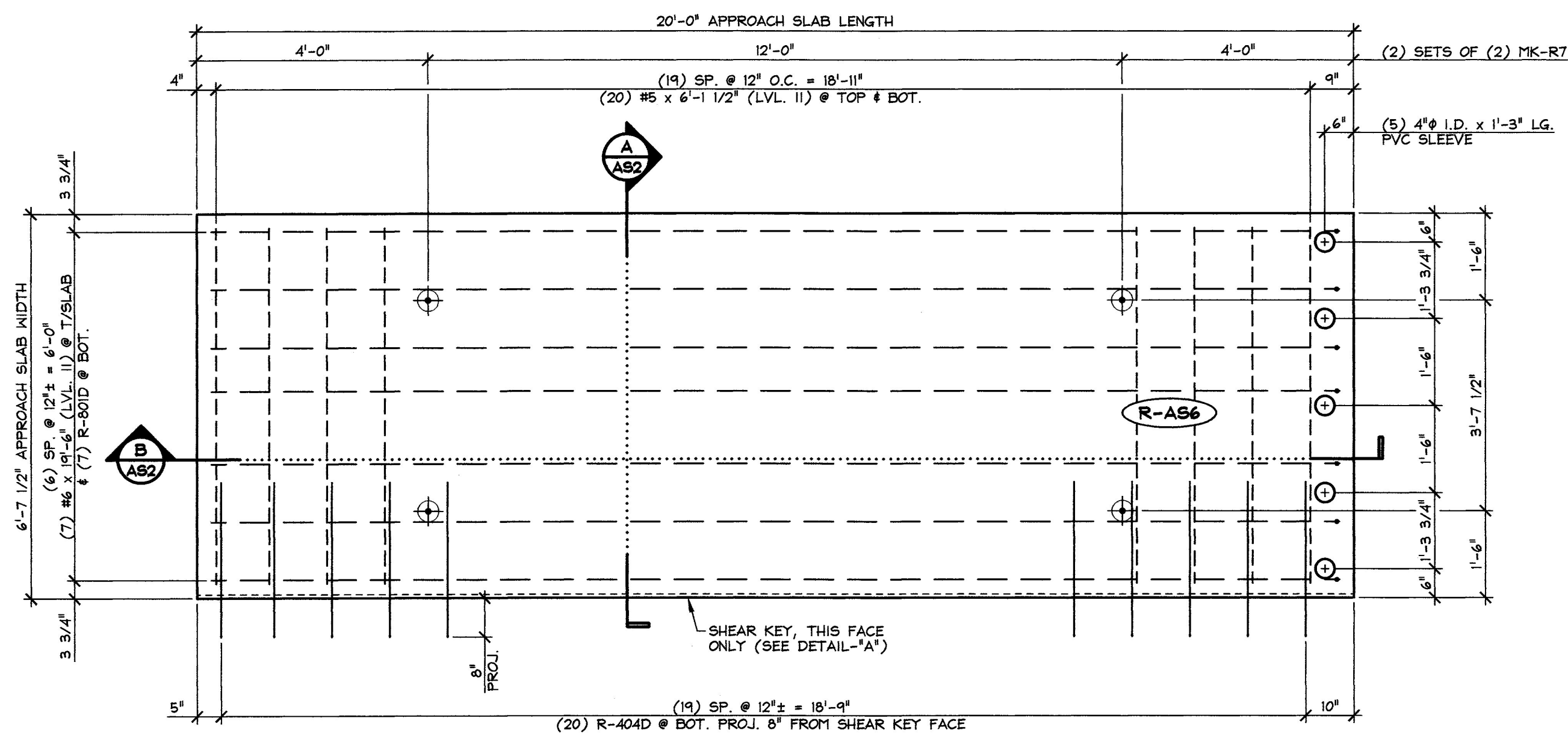
C POST-TENSIONING DIAPHRAGM REINFORCING SECTION  
SS4 3/4" = 1'-0"

APPROVAL STAMP:	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2464 OSE ST., MIDDLEBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010	THE BELDEN COMPANY, INC. CONTRACTOR RUTLAND, VERMONT
STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF RUTLAND	DATE: APR. 25, 2014 SCALE: NOTED	CHKD: M.D. DFTM: B.L. JOB NO: 23430-014
CITY OF RUTLAND ROUTE NO.: TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRP 3000(18)	PRESTRESSED VOIDED SLAB DETAILS	
DWG. NO: SS4		

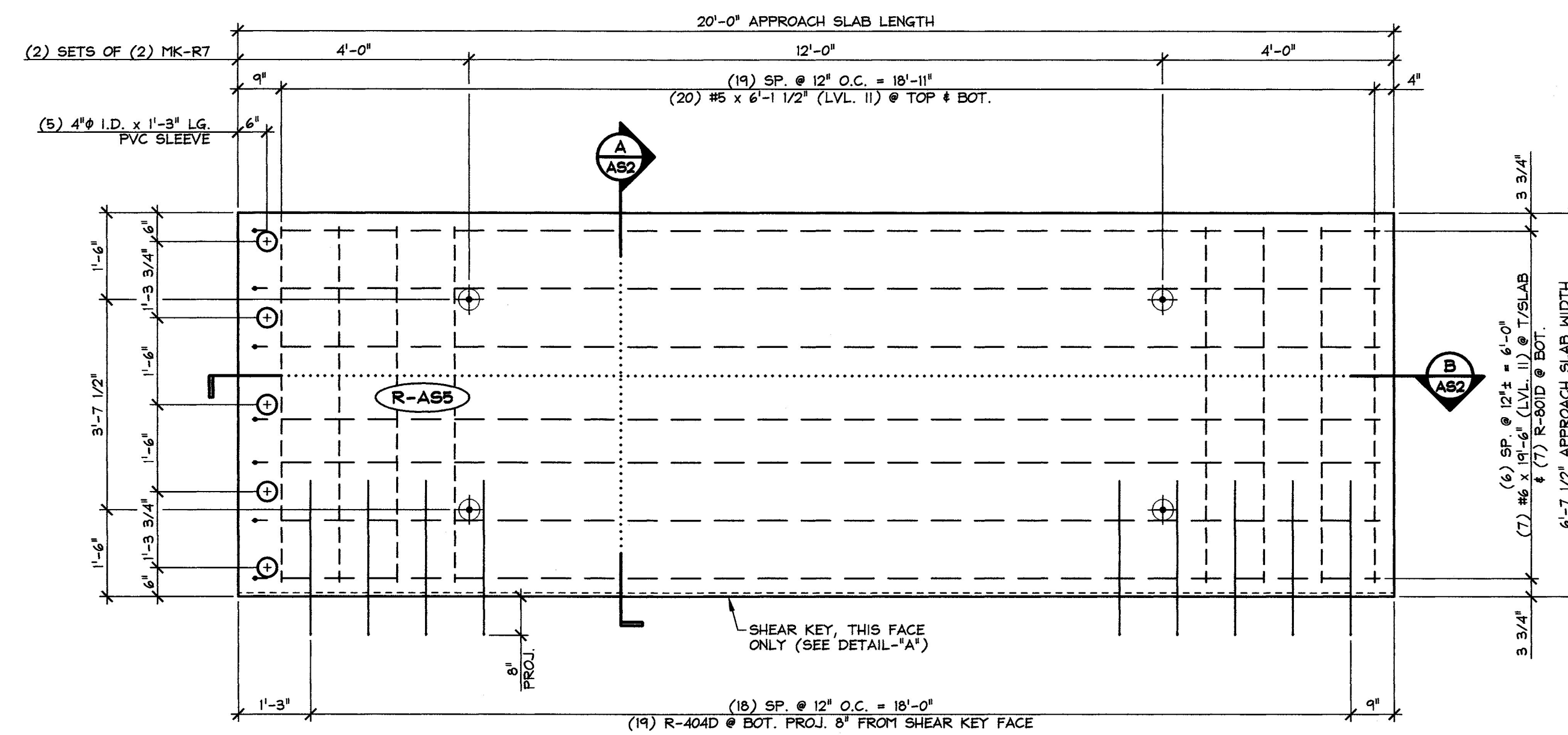




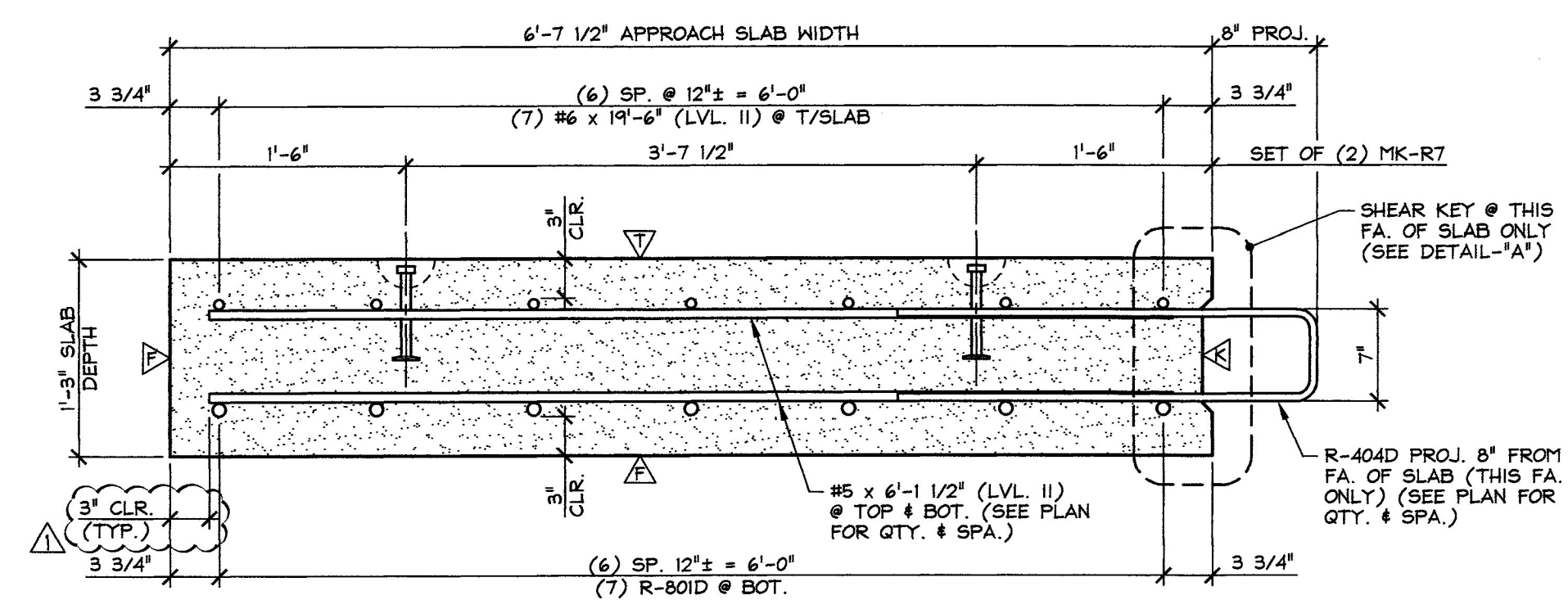




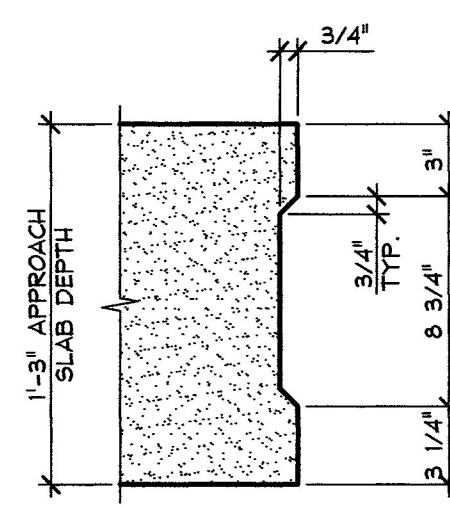
1 APPROACH SLAB PLAN VIEW IN FORM  
AS2 1/2" = 1'-0"



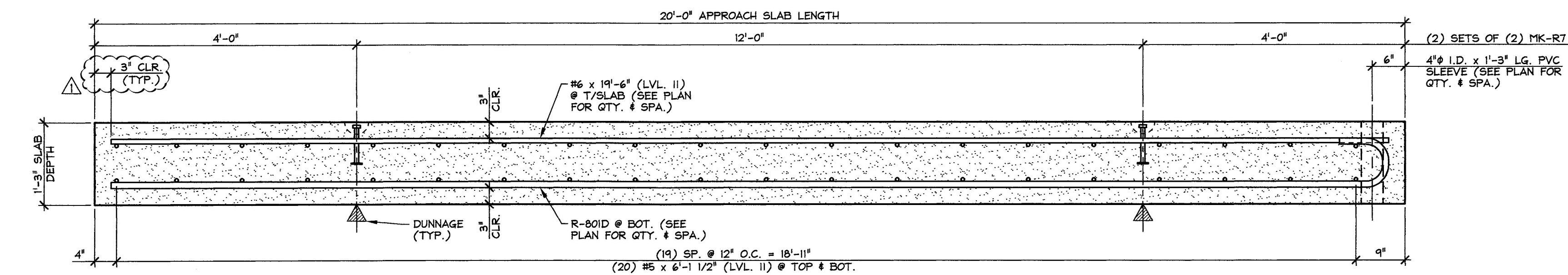
2 APPROACH SLAB PLAN VIEW IN FORM  
AS2 1/2" = 1'-0"



A TRANSVERSE SECTION  
AS2 1" = 1'-0"



DETAIL - "A"  
1 1/2" = 1'-0"



B LONGITUDINAL SECTION  
AS2 3/4" = 1'-0"

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July 1, 2014

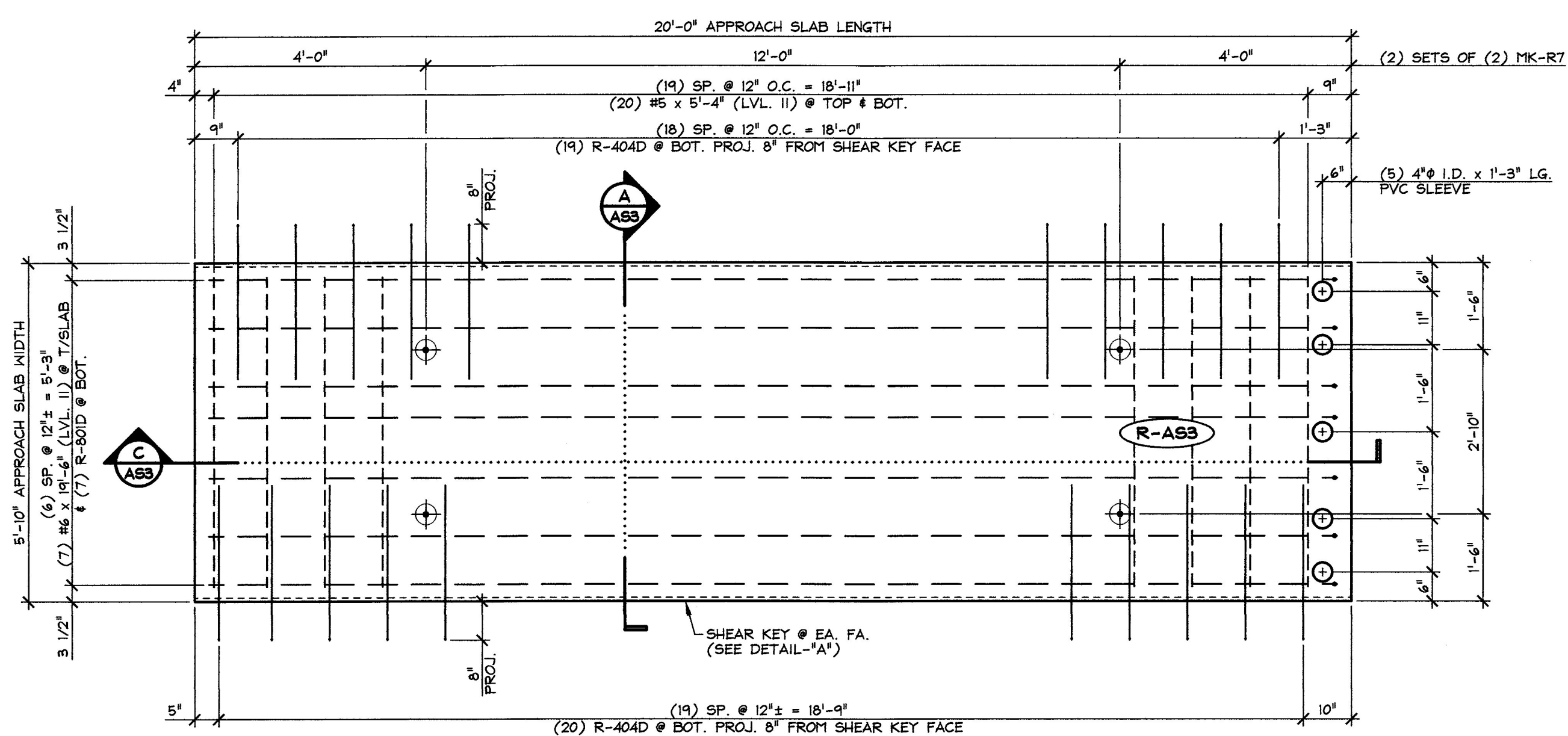
RESUBMIT No Approved  
BY C. Carlson DATE 07/08/2014

MARK: R-AS6	QTY.: 1	WT.: 12.4 T	VOL.: 6.1 cy
MARK: R-AS5	QTY.: 1	WT.: 12.4 T	VOL.: 6.1 cy

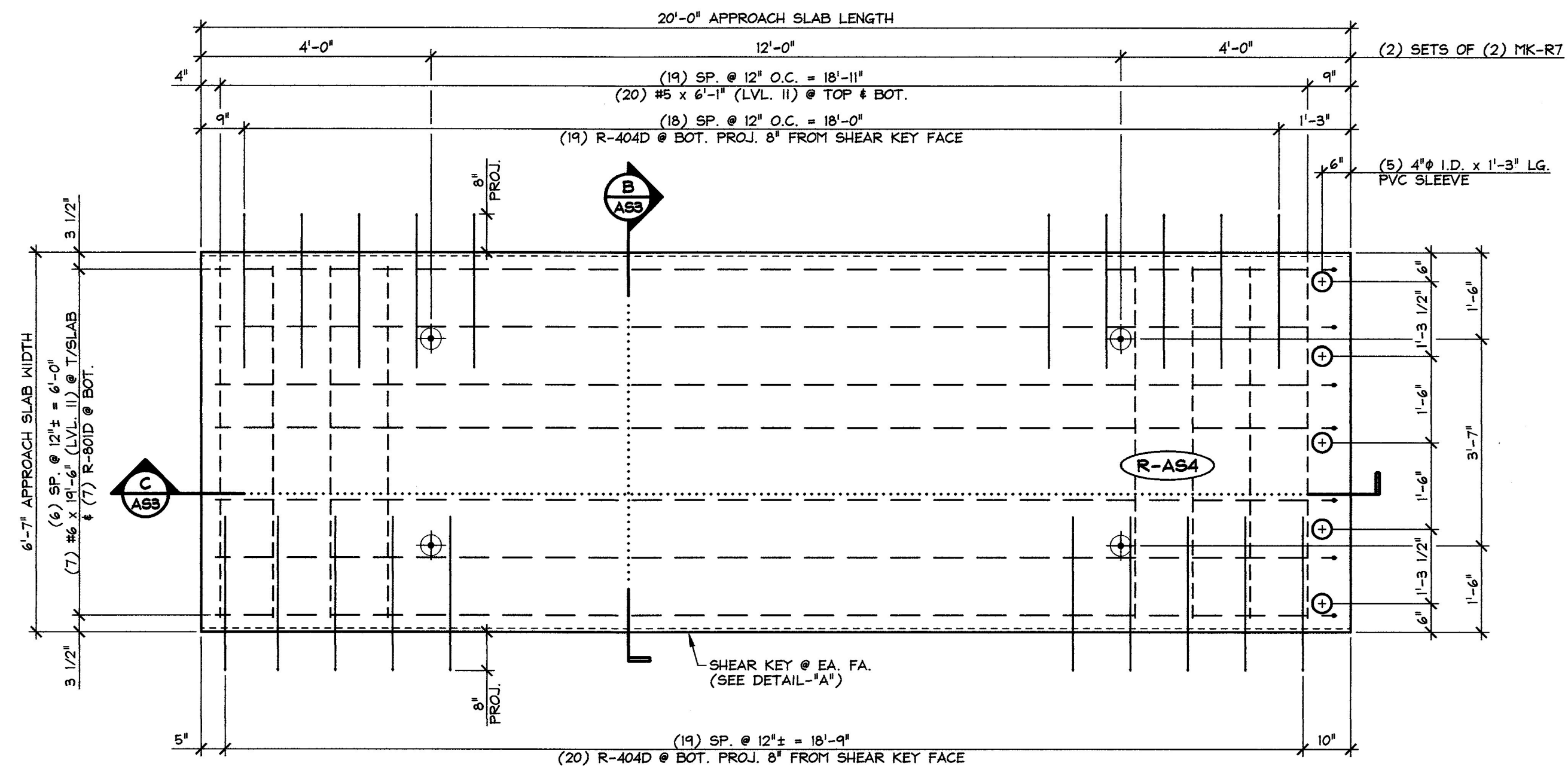
MATERIAL LIST / APPROACH SLAB				
ITEM	MARK	DESCRIPTION	QTY./SLAB	
			R-AS6	R-AS5
1	R-404D	#4 BENT BAR (LEVEL II, DUAL COATED)	20	19
2				
3		#5 x 6'-1 1/2" (LEVEL II, DUAL COATED)	40	40
4				
5		#6 x 19'-6" (LEVEL II, DUAL COATED)	7	7
6				
7	R-80ID	#8 BENT BAR (LEVEL II, DUAL COATED)	7	7
8				
9	MK-R7	4T x 7 1/8" SNIFF LIFT LIFTER (GALVANIZE)	4	4
10		4" I.D. x 1'-3" PVC SLEEVE	5	5

7-1-14 REVISED AS NOTED

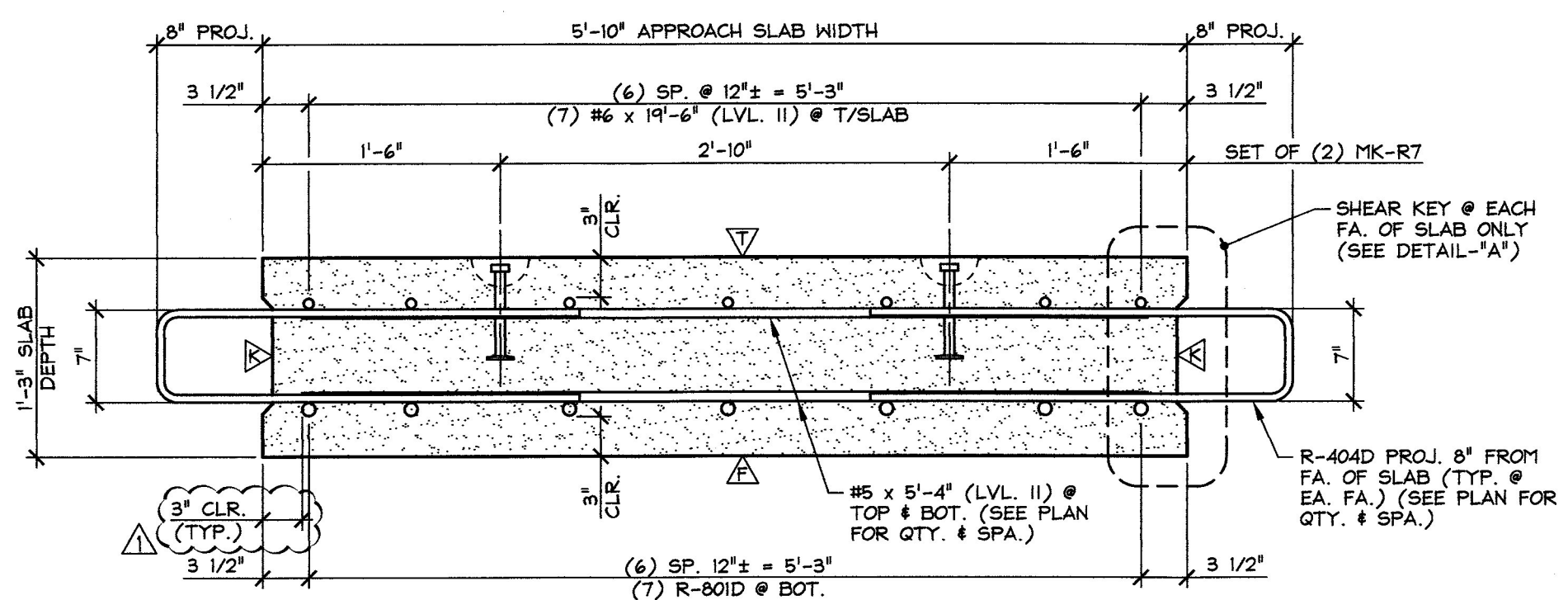
APPROVAL STAMP:	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	THE BELDEN COMPANY, INC. CONTRACTOR RUTLAND, VERMONT
STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF RUTLAND		DATE: APR. 25, 2014 SCALE: NOTED
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PRECAST APPROACH SLAB DETAILS		DWG. NO: AS2



1 APPROACH SLAB PLAN VIEW IN FORM  
AS3 1/2" = 1'-0"

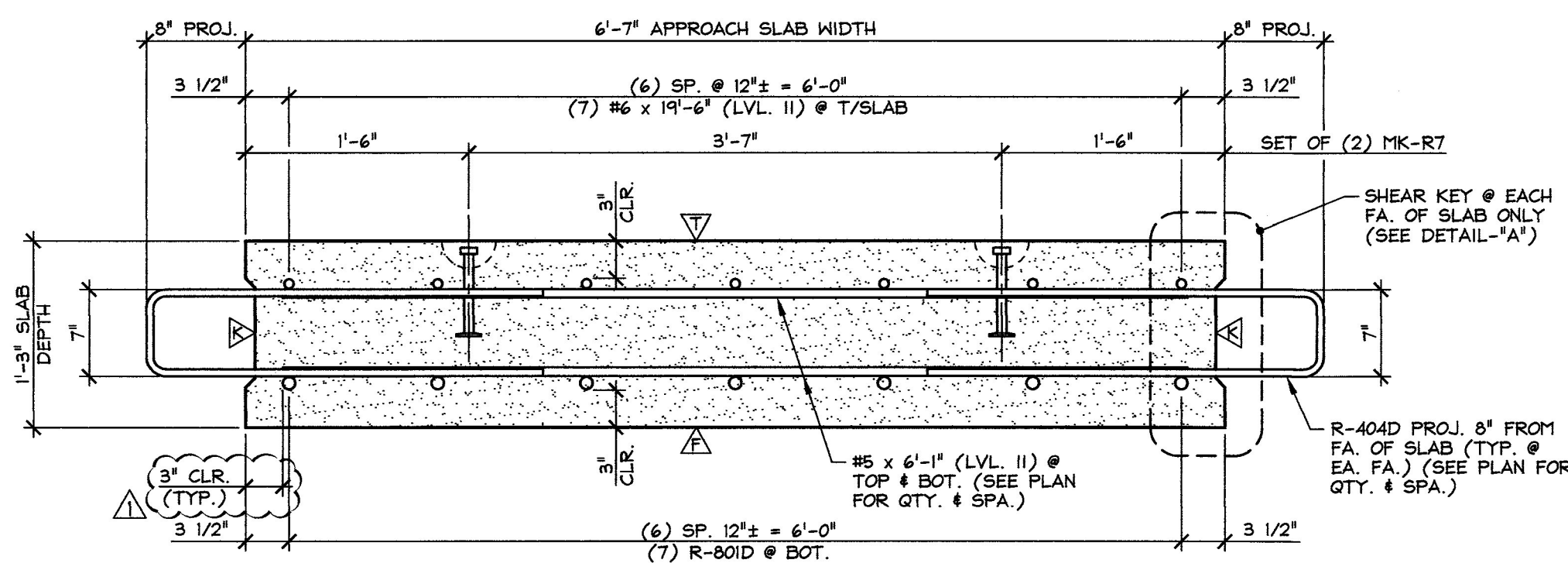


2 APPROACH SLAB PLAN VIEW IN FORM  
AS3 1/2" = 1'-0"



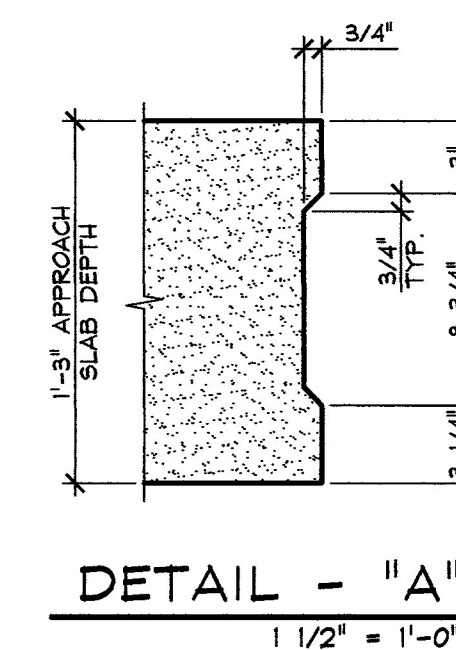
A TRANSVERSE SECTION  
AS3 1" = 1'-0"

△ DENOTES FORM FINISH  
△ DENOTES FLOAT FINISH  
△ DENOTES ROUGHENED FINISH

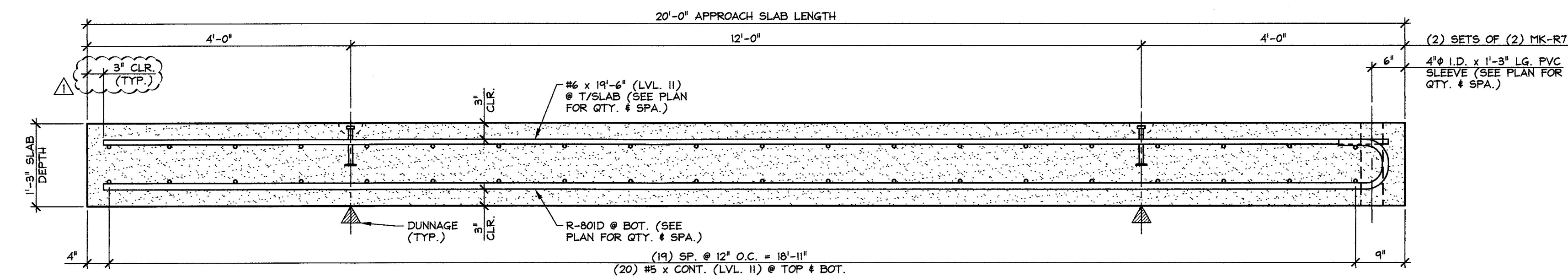


B TRANSVERSE SECTION  
AS3 1" = 1'-0"

△ DENOTES FORM FINISH  
△ DENOTES FLOAT FINISH  
△ DENOTES ROUGHENED FINISH



DETAIL - "A"  
1/2" = 1'-0"



C LONGITUDINAL SECTION  
AS3 3/4" = 1'-0"

Vermont Agency of Transportation  
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CK'D BY M. Umberger OK'D BY C. Carlson

July 1, 2014

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7-1-14 REVISED AS NOTED

MATERIAL LIST / APPROACH SLAB				
ITEM	MARK	DESCRIPTION	QTY./SLAB	
			R-AS3	R-AS4
1	R-404D	#4 BENT BAR (LEVEL II, DUAL COATED)	39	39
2		#5 x 5'-4" (LEVEL II, DUAL COATED)	40	
3		#5 x 6'-1" (LEVEL II, DUAL COATED)		40
4				
5		#6 x 19'-6" (LEVEL II, DUAL COATED)	7	7
6				
7	R-80ID	#8 BENT BAR (LEVEL II, DUAL COATED)	7	7
8				
9	MK-R7	4T x 7 1/8" SHIFT LIFT LIFTER (GALVANIZE)	4	4
10		4" I.D. x 1'-3" PVC SLEEVE	5	5

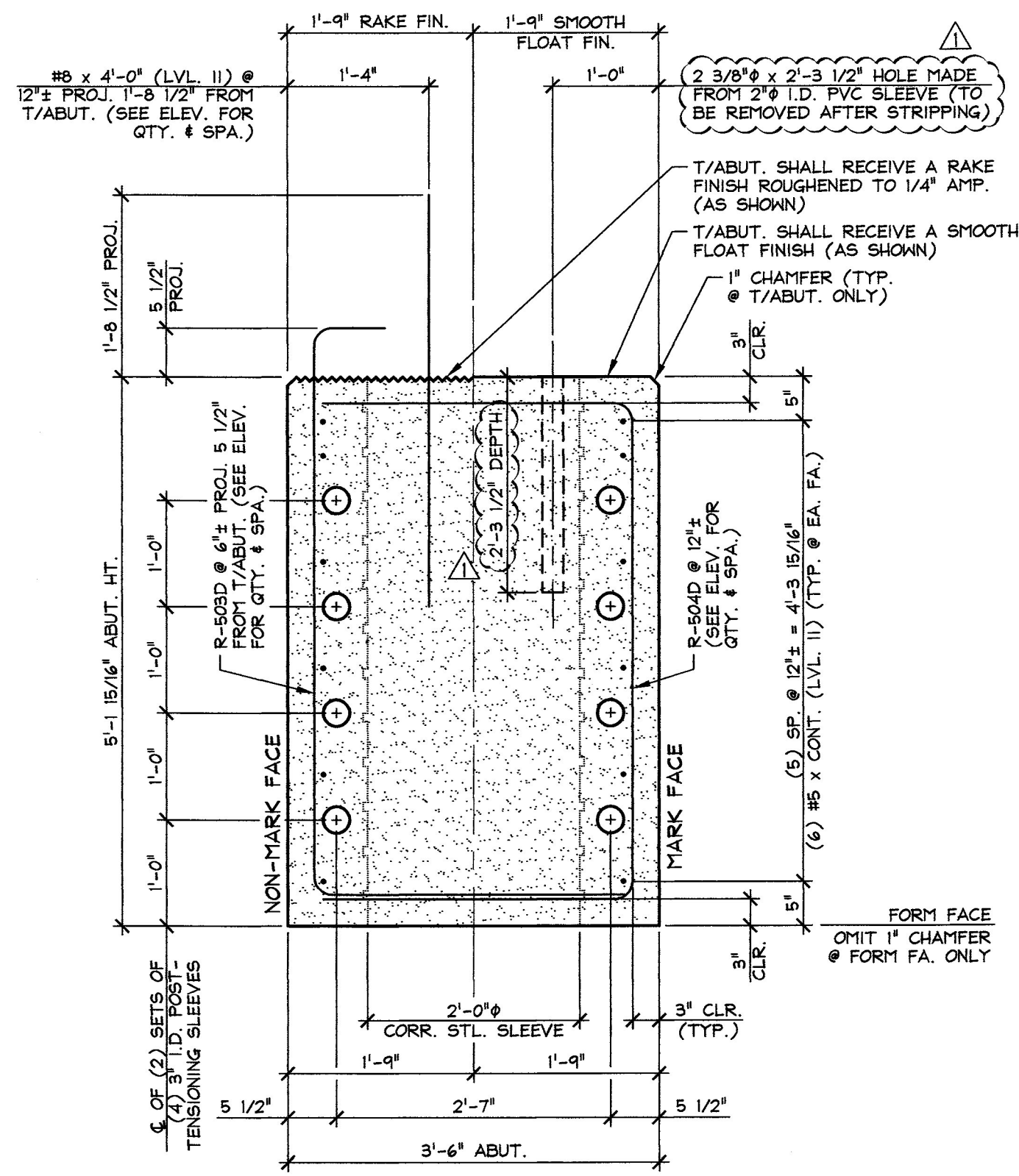
APPROVAL STAMP:

J.P. CARRARA & SONS INC. THE BELDEN COMPANY, INC.  
Precast & Prestress Manufacturer CONTRACTOR  
244 OSE STR., MOULBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010 RUTLAND, VERMONT

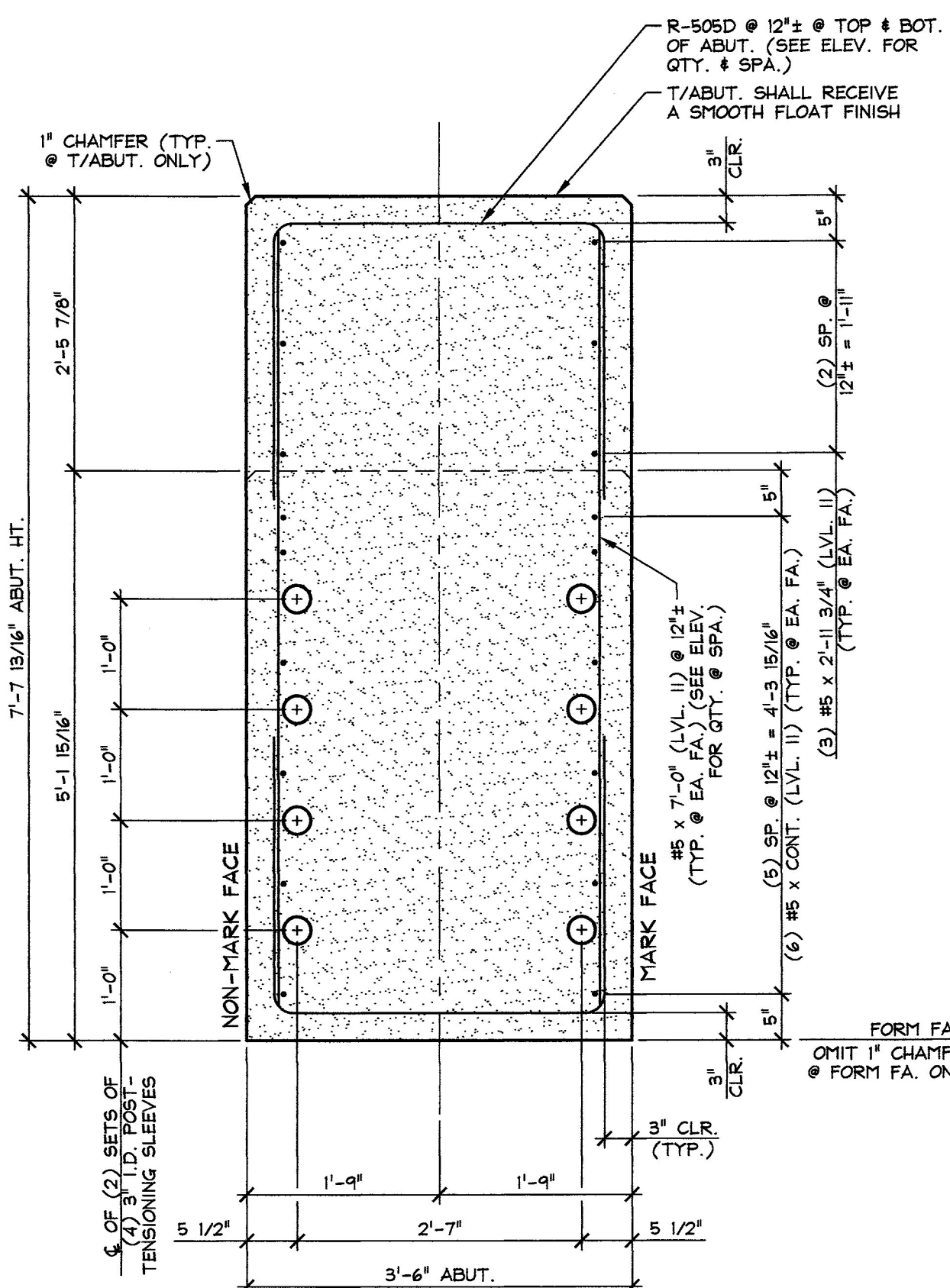
STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF RUTLAND DATE: APR. 25, 2014  
SCALE: NOTED

CITY OF RUTLAND CHKD: M.D. DFTM: B.L.  
ROUTE NO. TH 13 (FOREST STREET) - URBAN COLLECTOR PROJECT NO.: BRF 3000(18) JOB NO: 23430-014  
BRIDGE NO.: 14

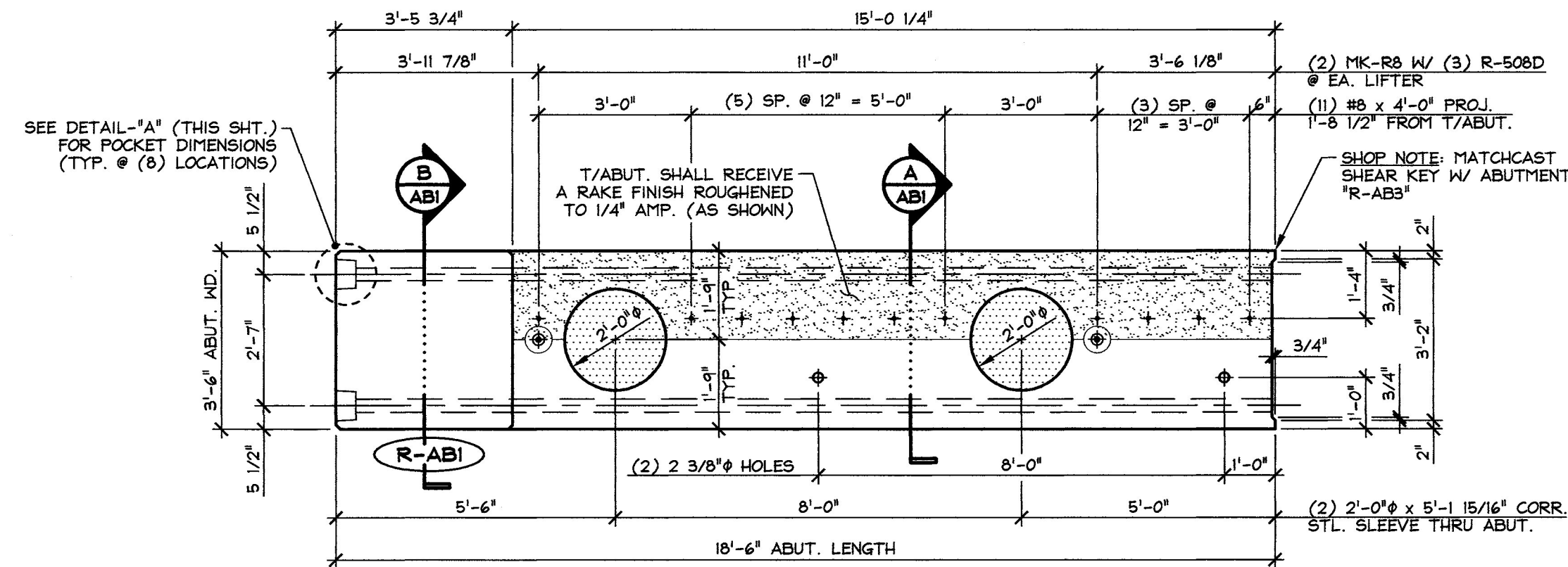
PRECAST APPROACH SLAB DETAILS DWG. NO: AS3



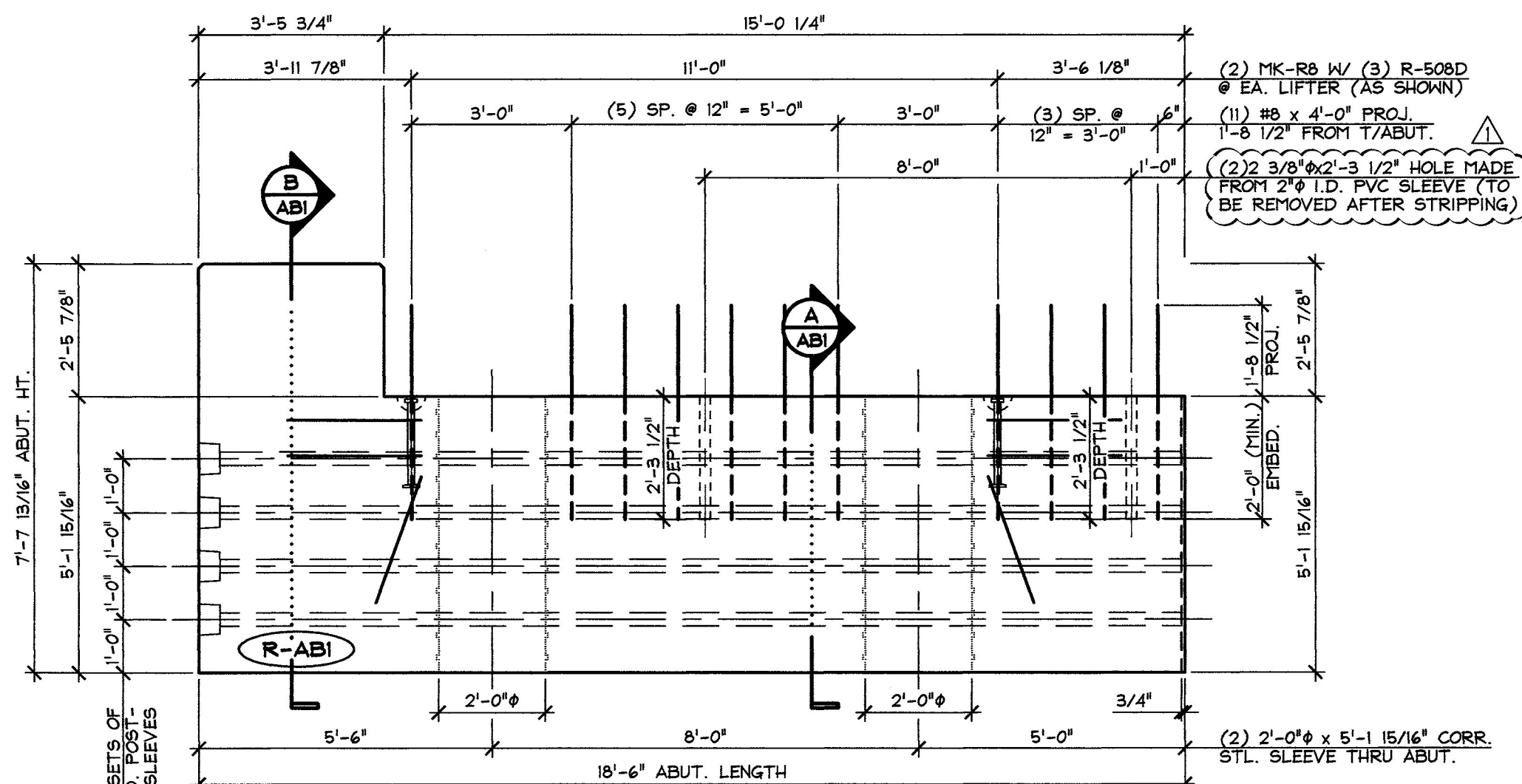
**A** ABUTMENT SECTION  
3/4" = 1'-0"



**B** ABUTMENT SECTION  
3/4" = 1'-0"

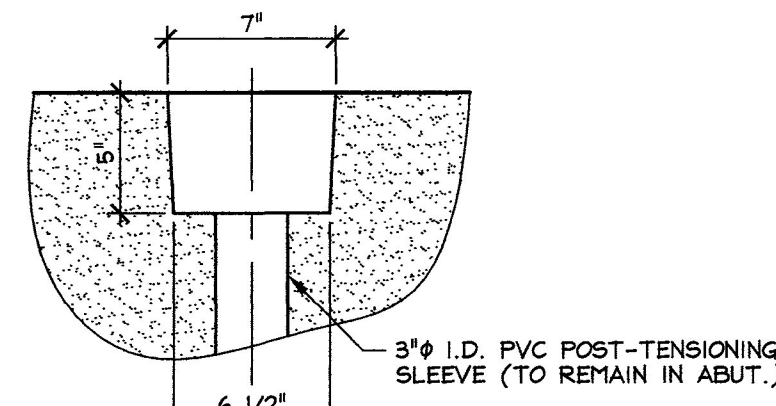


PLAN VIEW IN FORM

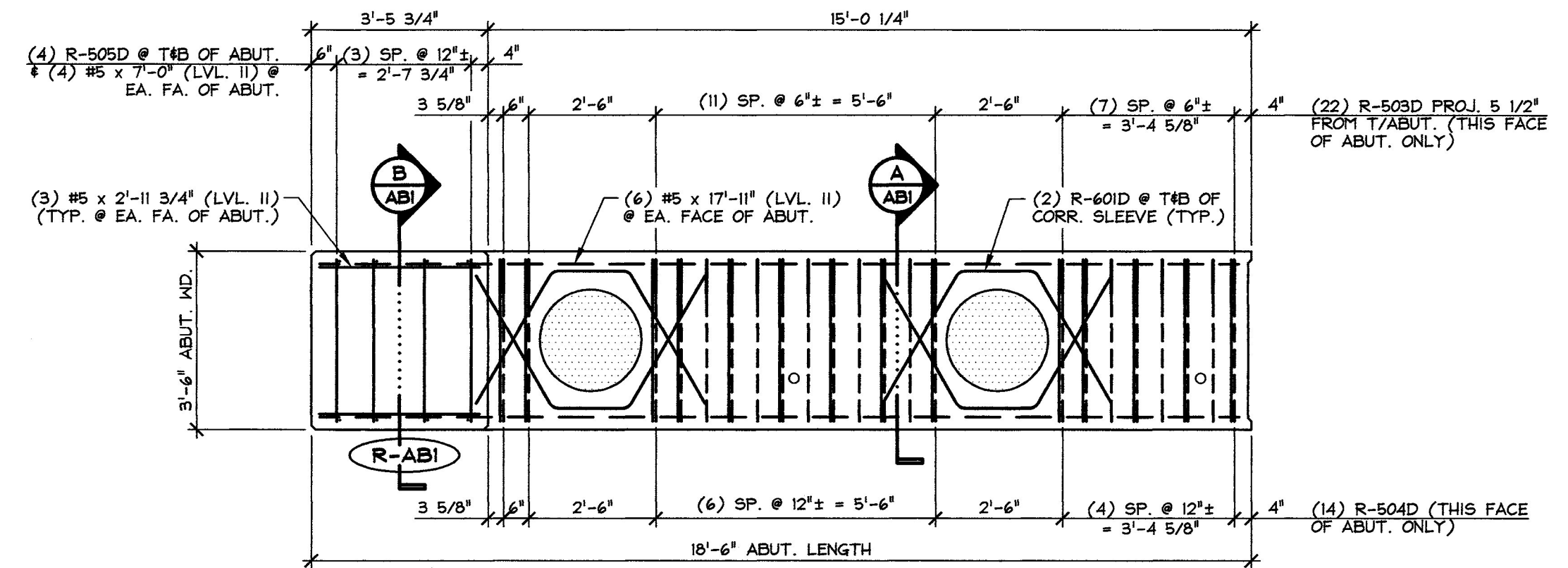


MARK FACE ELEVATION

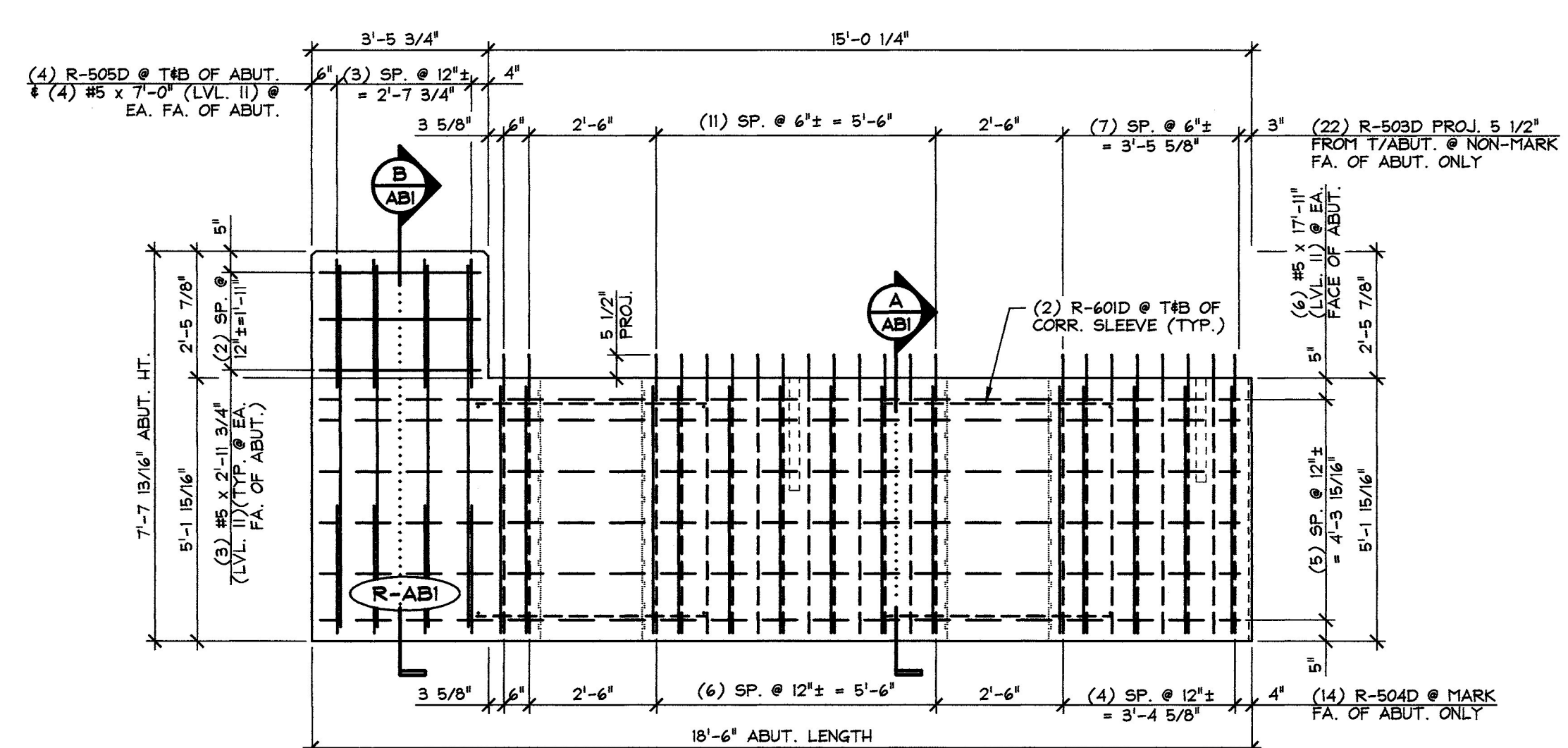
**1** ABUTMENT DIMENSIONAL DETAILS  
3/8" = 1'-0"



DETAIL - "A"  
1 1/2" = 1'-0"



PLAN VIEW IN FORM



MARK FACE ELEVATION

**2** ABUTMENT REINFORCING DETAILS  
3/8" = 1'-0"

SHOP NOTE:  
ALL EDGES OF ABUTMENT SHALL RECEIVE A 1" CHAMFER (U.N.O.)

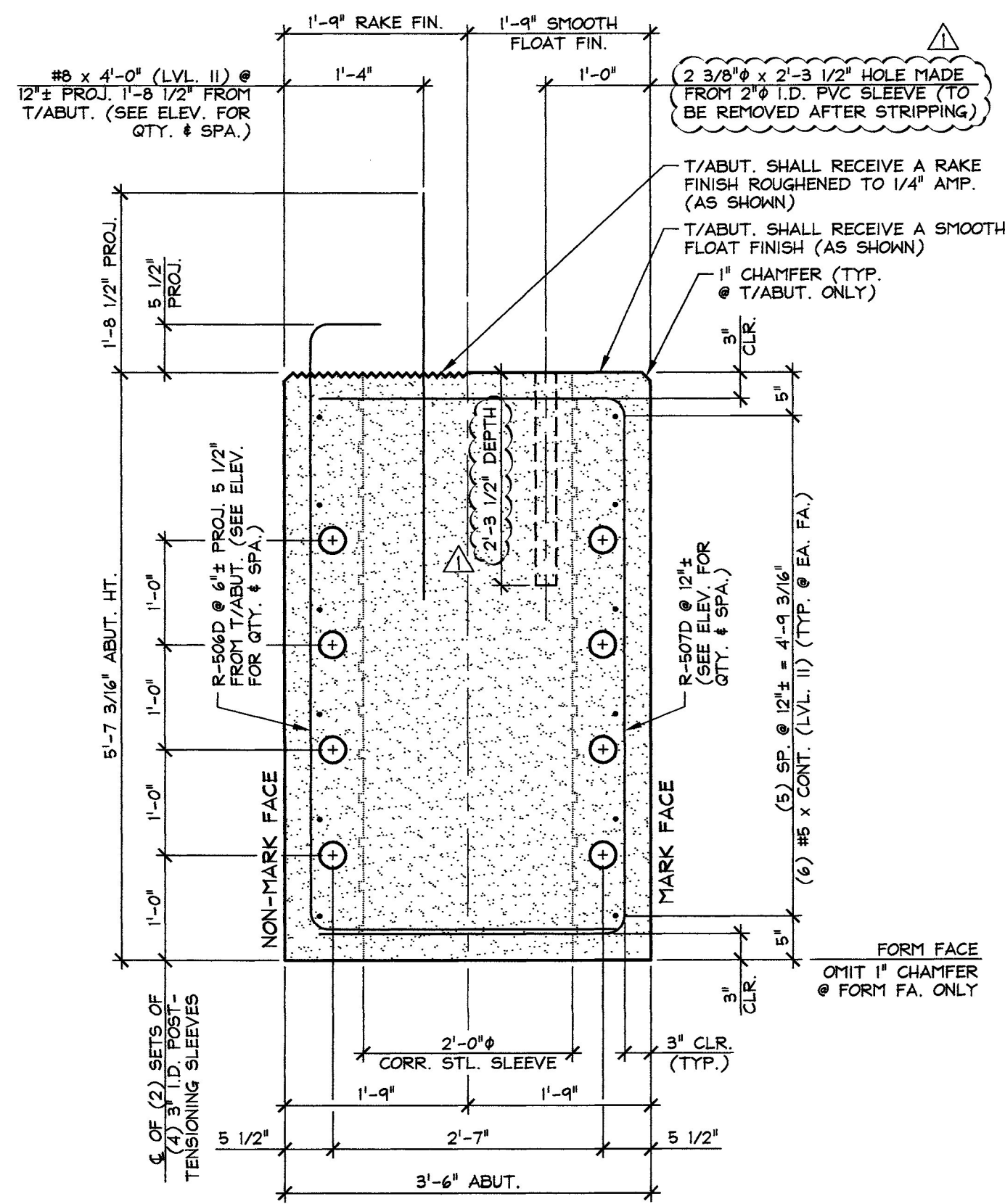
MARK: R-ABI QTY.: 1 WT.: 24.83 T VOL.: 12.26 cy

MATERIAL LIST / ABUTMENT			
ITEM	MARK	DESCRIPTION	QTY.
1	R-503D	#5 BENT BAR (LEVEL II, DUAL COATED)	22
2	R-504D	#5 BENT BAR (LEVEL II, DUAL COATED)	14
3	R-505D	#5 BENT BAR (LEVEL II, DUAL COATED)	8
4	R-508D	#5 HAIRPIN (LEVEL II, DUAL COATED)	6
5		#5 x 7'-0" (LEVEL II, DUAL COATED)	8
6		#5 x 17'-11" (LEVEL II, DUAL COATED)	12
7		#5 x 2'-11 3/4" (LEVEL II, DUAL COATED)	6
8			
9	R-601D	#6 BENT BAR (LEVEL II, DUAL COATED)	8
10			
11		#8 x 4'-0" (LEVEL II, DUAL COATED)	11
12			
13		2'-0" x 5'-1 15/16" CORRUGATED STEEL PIPE (GALV.)	2
14	MK-R8	20T x 19 3/4" SWIFT LIFT LIFTER (GALV.)	2
15			

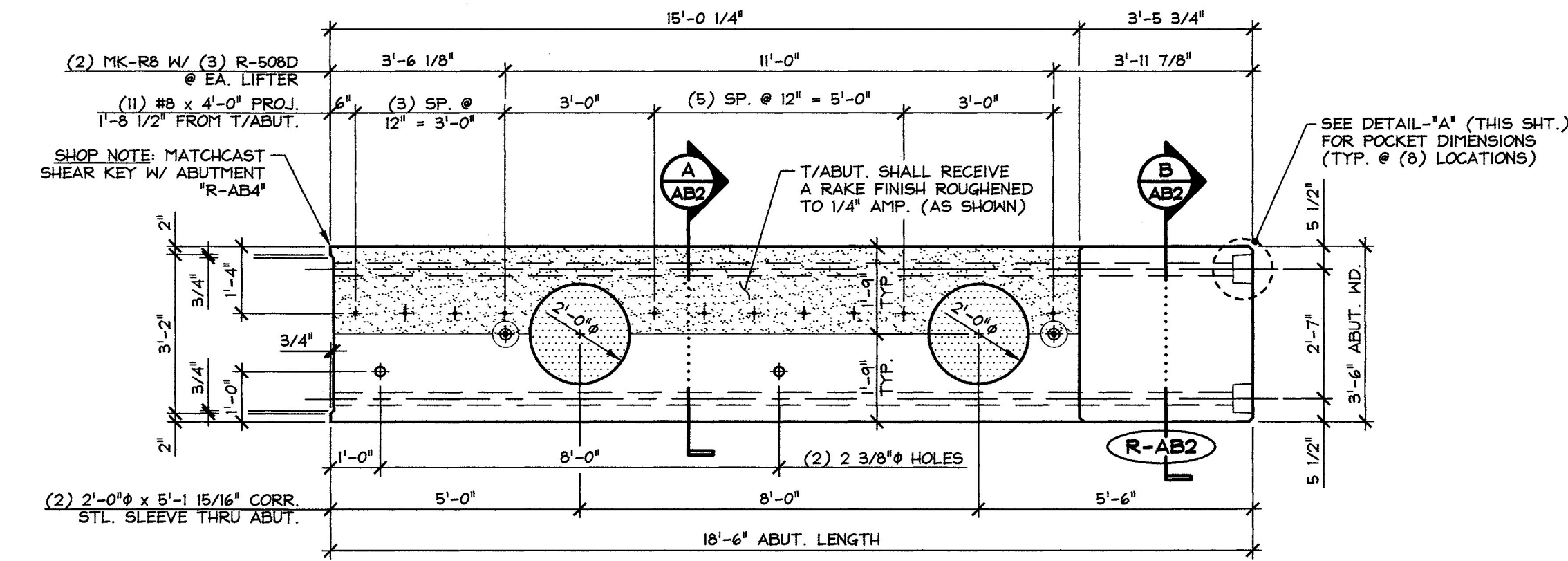
Vermont Agency of Transportation  
**RECEIVED**  
CK'D BY M. Umberger OK'D BY C. Carlson  
July 1, 2014  
RESUBMIT No Approved  
BY C. Carlson DATE 07/08/2014

7-1-14 REVISED AS NOTED

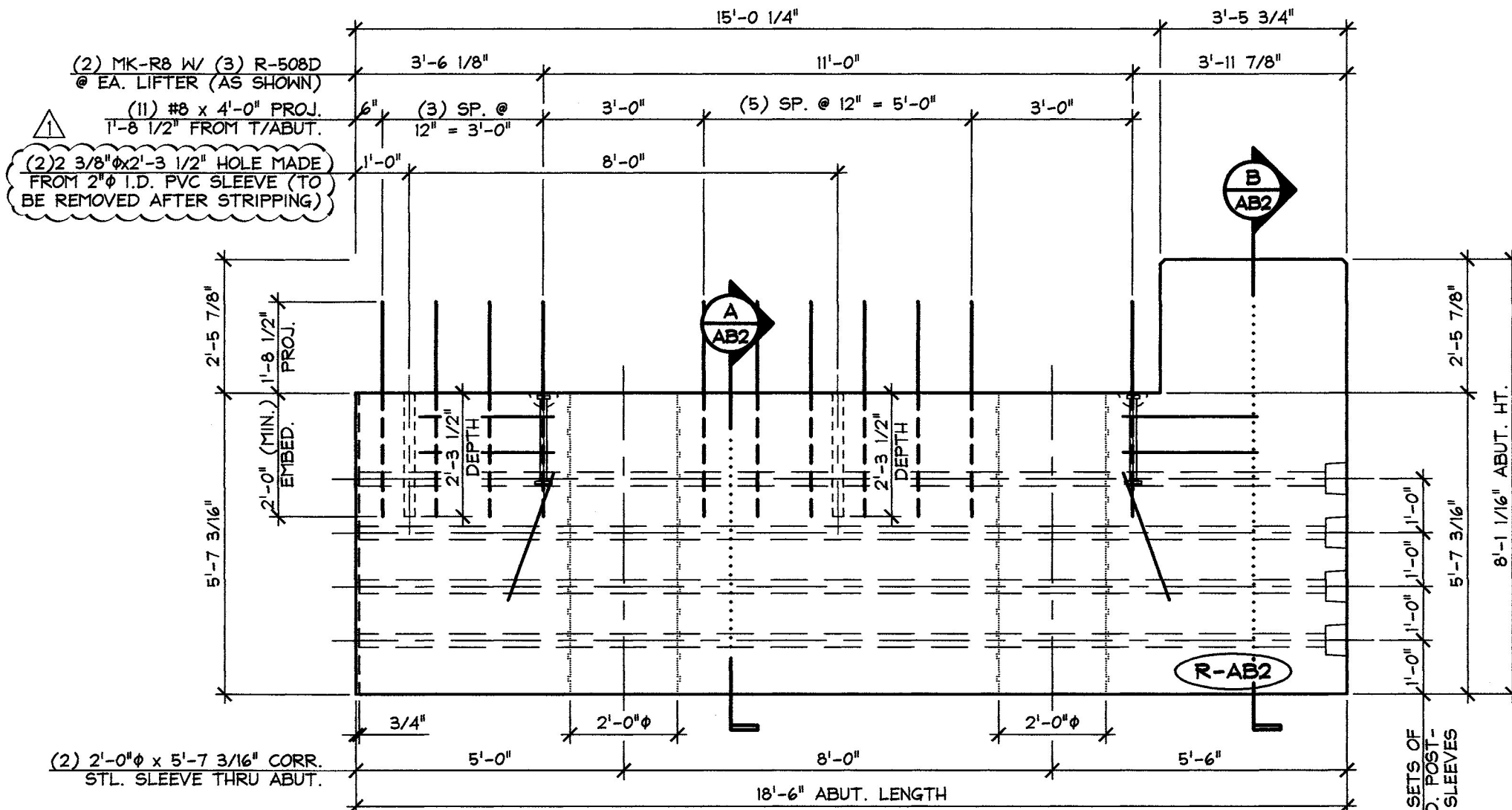
APPROVAL STAMP:	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 284 GSE SR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	THE BELDEN COMPANY, INC. CONTRACTOR RUTLAND, VERMONT
	STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF RUTLAND	DATE: APR. 25, 2014 SCALE: NOTED
	CITY OF RUTLAND ROUTE NO.: TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRP 3000(18)	CHKD: M.D. DFTM: B.L. JOB NO: 23430-014
	PRECAST ABUTMENT DETAILS	DWG. NO: ABI



**A** ABUTMENT SECTION  
3/4" = 1'-0"

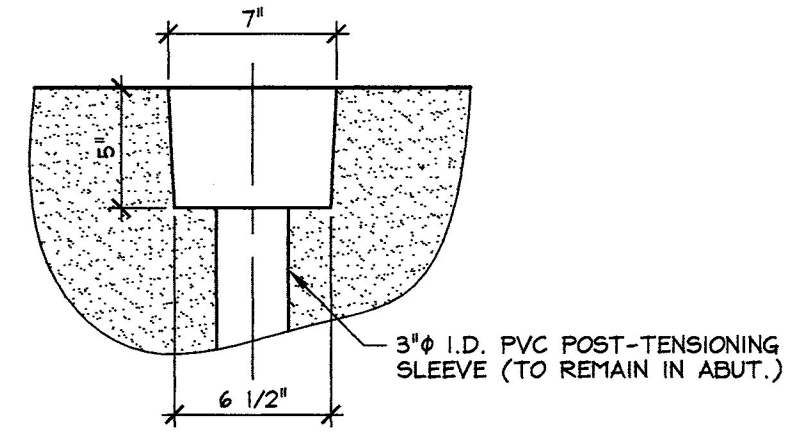


PLAN VIEW IN FORM

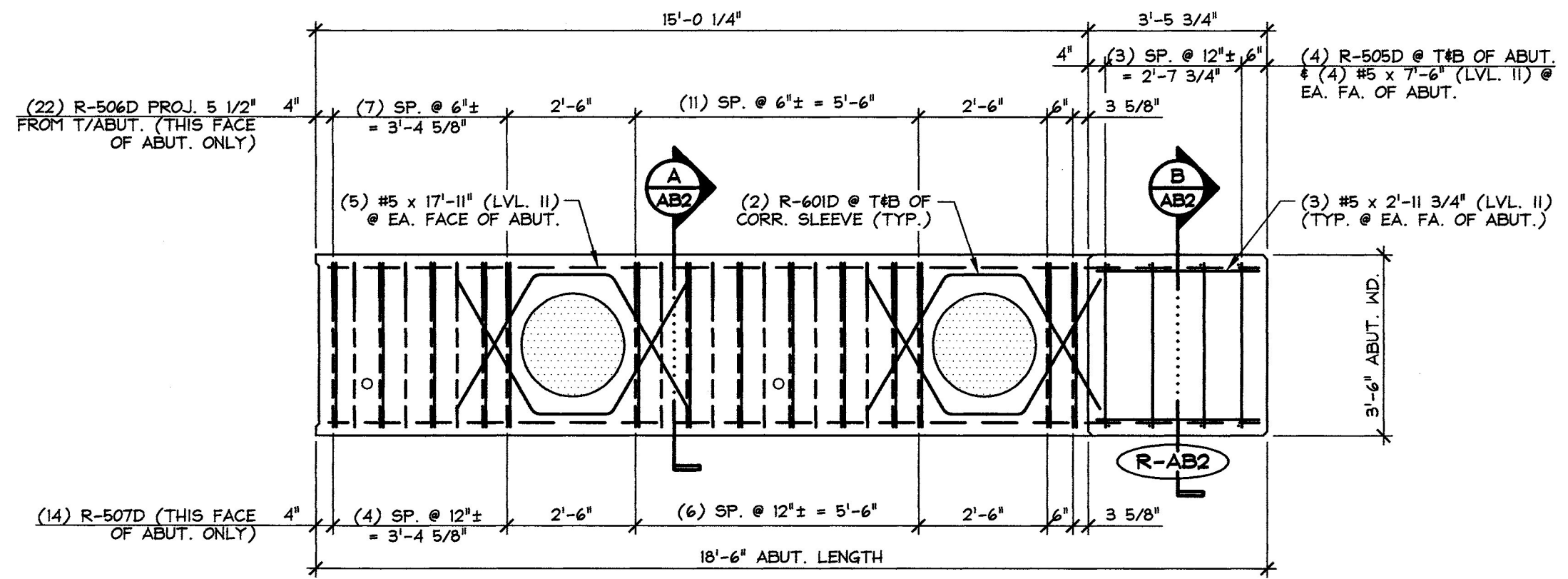


MARK FACE ELEVATION

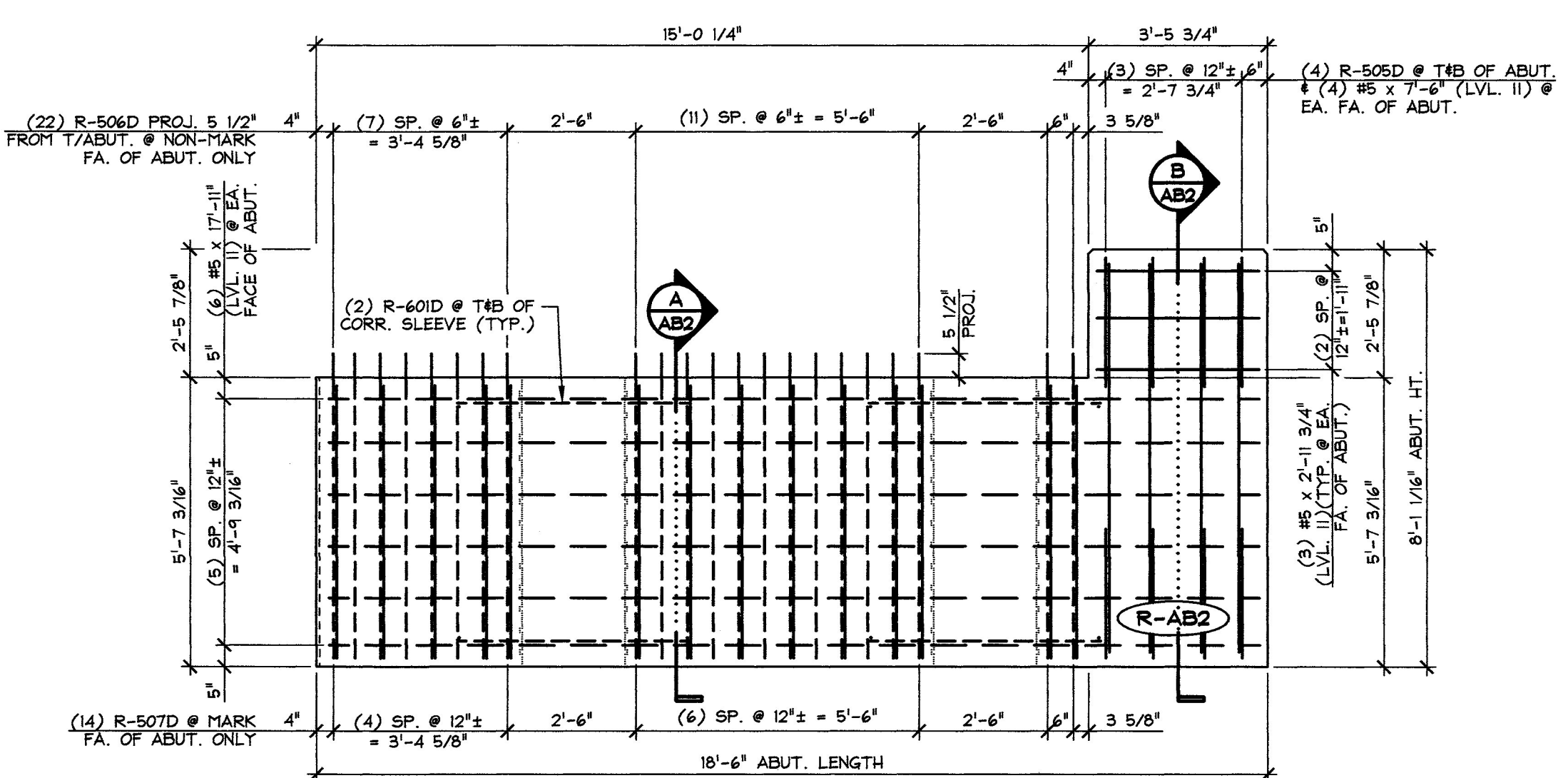
**1** ABUTMENT DIMENSIONAL DETAILS  
3/8" = 1'-0"



DETAIL - "A"  
1 1/2" = 1'-0"

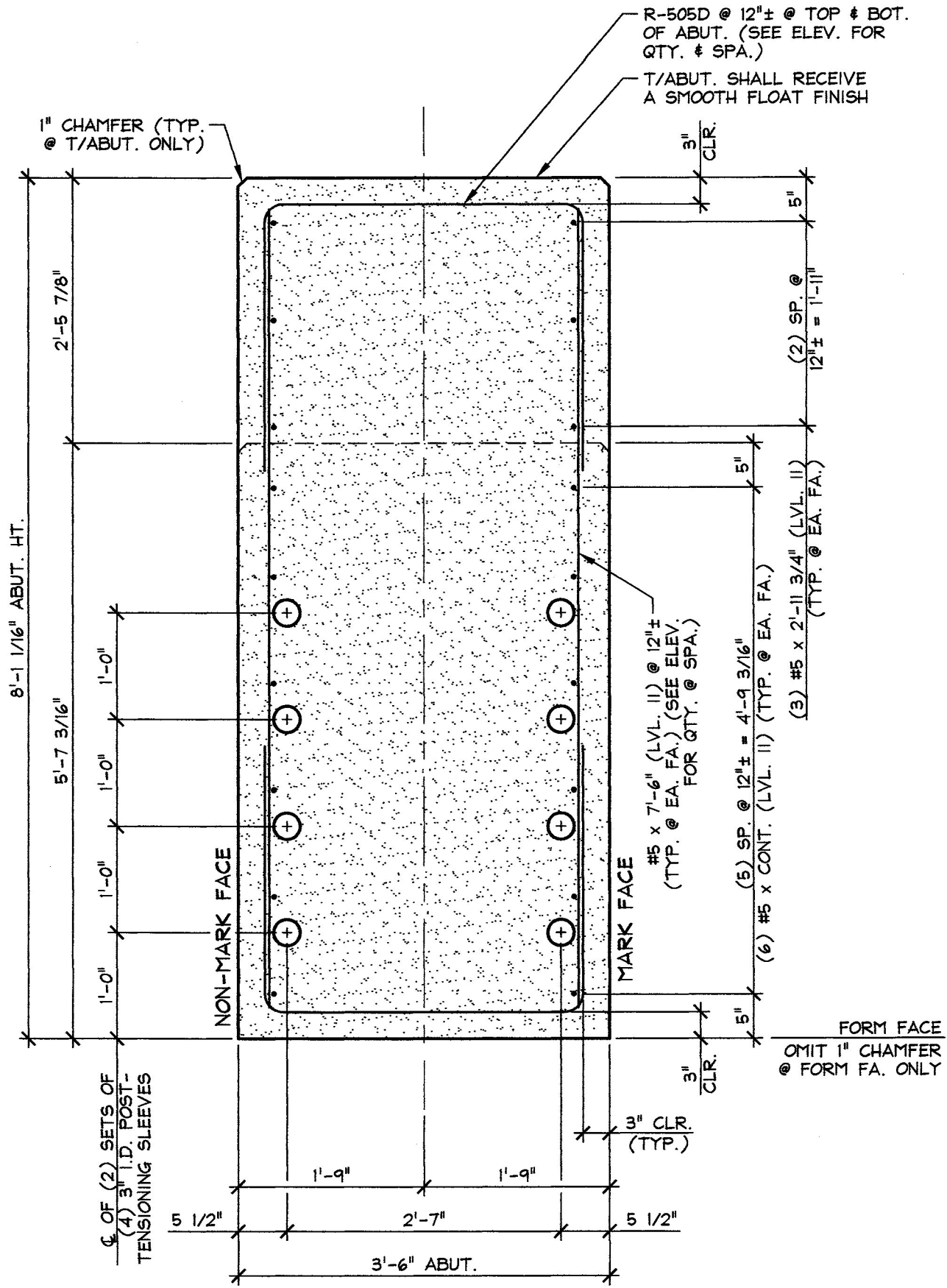


PLAN VIEW IN FORM



MARK FACE ELEVATION

**2** ABUTMENT REINFORCING DETAILS  
3/8" = 1'-0"



**B** ABUTMENT SECTION  
3/4" = 1'-0"

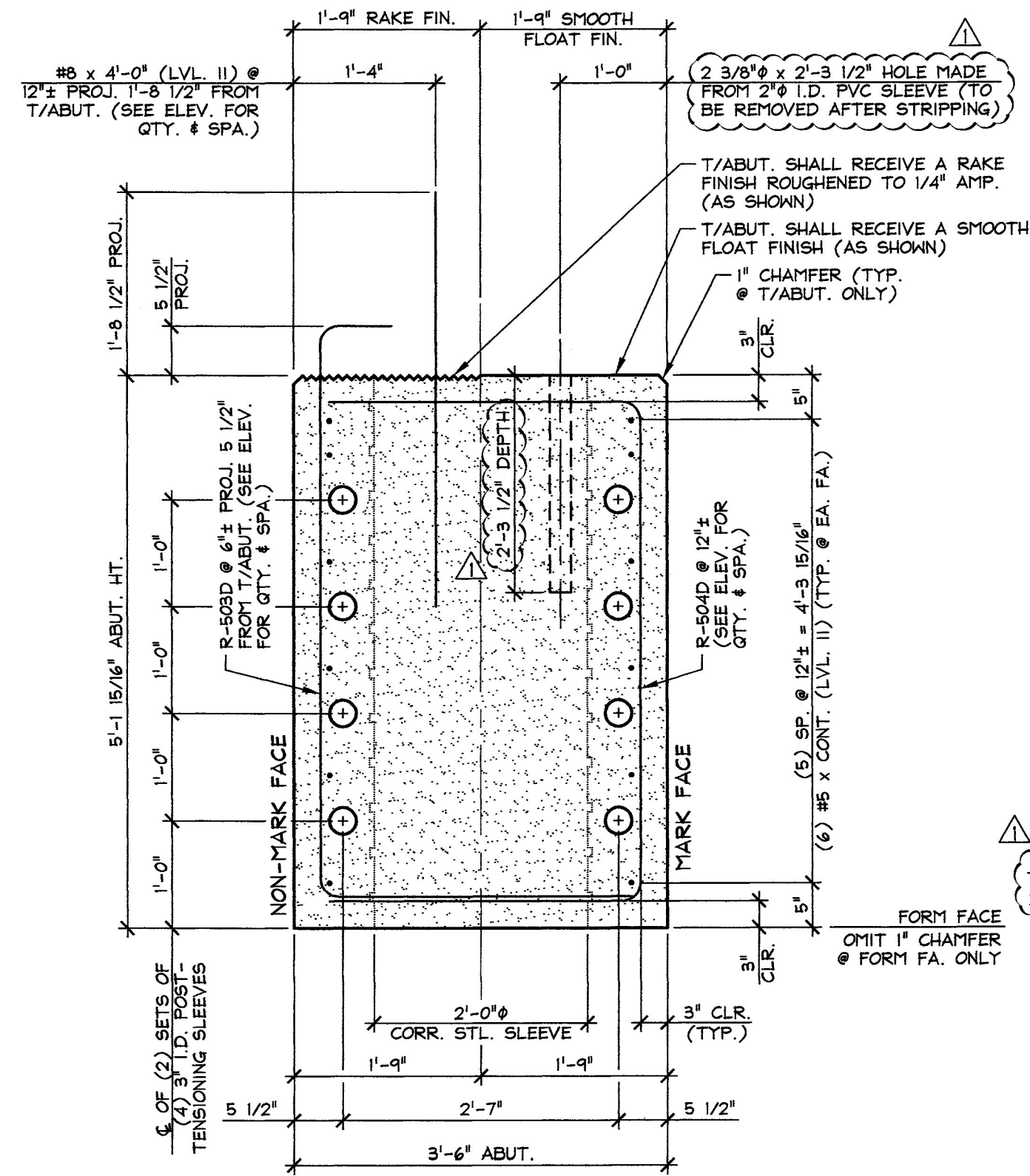
SHOP NOTE:  
ALL EDGES OF ABUTMENT SHALL  
RECEIVE A 1" CHAMFER (U.N.O.)

MARK: R-AB2	QTY.: 1	WT.: 26.74 T	VOL.: 13.20 cy
MATERIAL LIST / ABUTMENT			
ITEM	MARK	DESCRIPTION	QTY.
1	R-505D	#5 BENT BAR (LEVEL II, DUAL COATED)	8
2	R-506D	#5 BENT BAR (LEVEL II, DUAL COATED)	22
3	R-507D	#5 BENT BAR (LEVEL II, DUAL COATED)	14
4	R-508D	#5 HAIRPIN (LEVEL II, DUAL COATED)	6
5		#5 x 7'-6" (LEVEL II, DUAL COATED)	8
6		#5 x 17'-11" (LEVEL II, DUAL COATED)	12
7		#5 x 2'-11 3/4" (LEVEL II, DUAL COATED)	6
8			
9	R-601D	#6 BENT BAR (LEVEL II, DUAL COATED)	8
10			
11		#8 x 4'-0" (LEVEL II, DUAL COATED)	11
12			
13		2'-0" x 5'-7 3/16" CORRUGATED STEEL PIPE (GALV.)	2
14	MK-RB	20T x 19 3/4" SWIFT LIFT LIFTER (GALV.)	2
15			

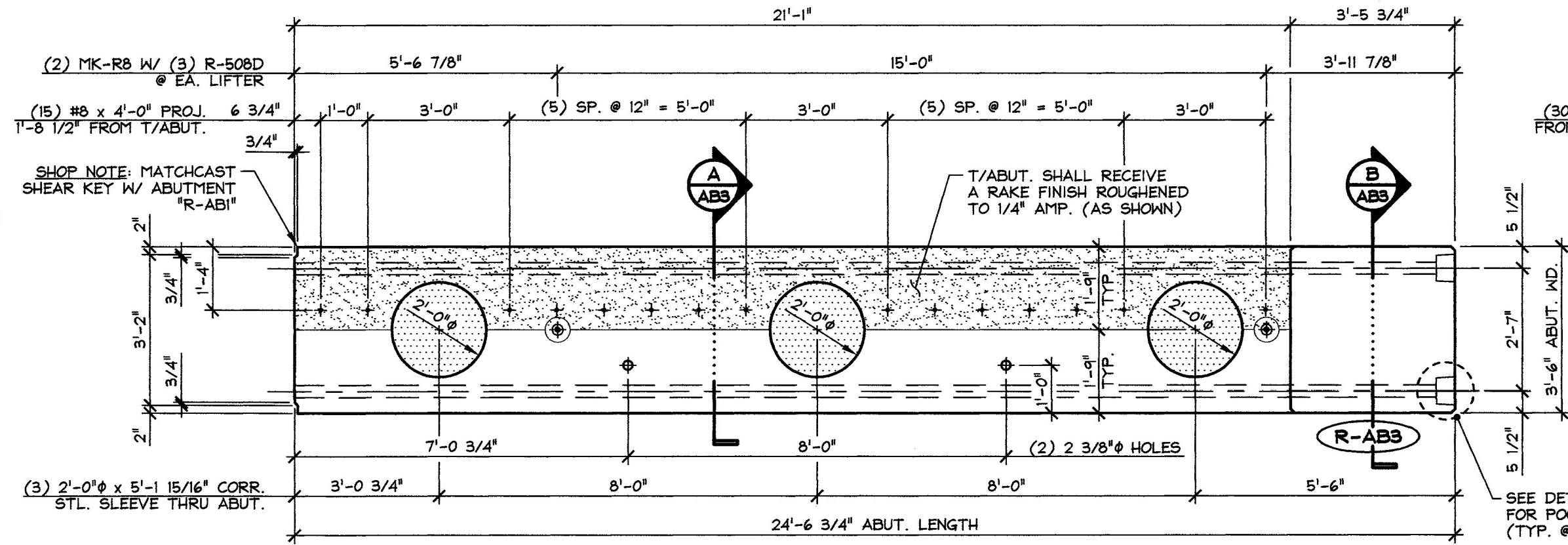
Vermont Agency of Transportation  
**RECEIVED**  
CK'D BY M. Umberger OK'D BY C. Carlson  
July 1, 2014  
RESUBMIT No Approved  
BY C. Carlson DATE 07/08/2014

7-1-14 REVISED AS NOTED

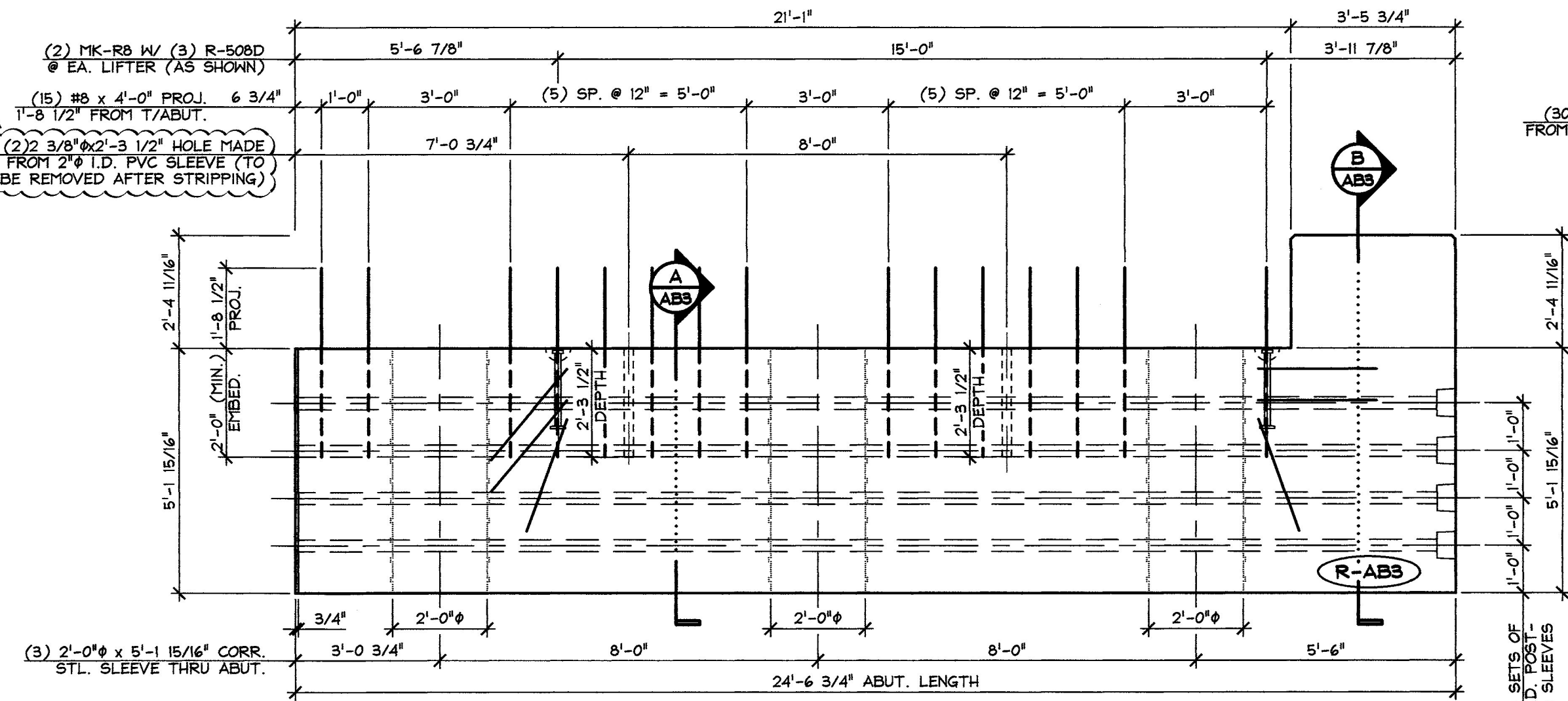
APPROVAL STAMP:	<b>J.P. CARRARA &amp; SONS INC.</b> Precast & Prestress Manufacturer 2464 CASE ST., MIDDLEBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010	<b>THE BELDEN COMPANY, INC.</b> CONTRACTOR RUTLAND, VERMONT
	<b>STATE OF VERMONT AGENCY OF TRANSPORTATION</b> COUNTY OF RUTLAND	DATE: APR. 25, 2014 SCALE: NOTED
	<b>CITY OF RUTLAND</b> ROUTE NO.: TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRF 3000(18)	CHKD: M.D. DFTM: B.L. JOB NO: 23430-014
	<b>PRECAST ABUTMENT DETAILS</b>	DWG. NO: <b>AB2</b>



**A** ABUTMENT SECTION  
3/4" = 1'-0"

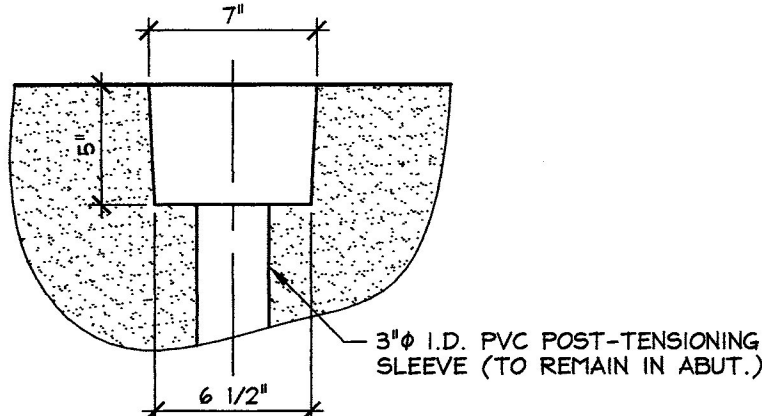


PLAN VIEW IN FORM

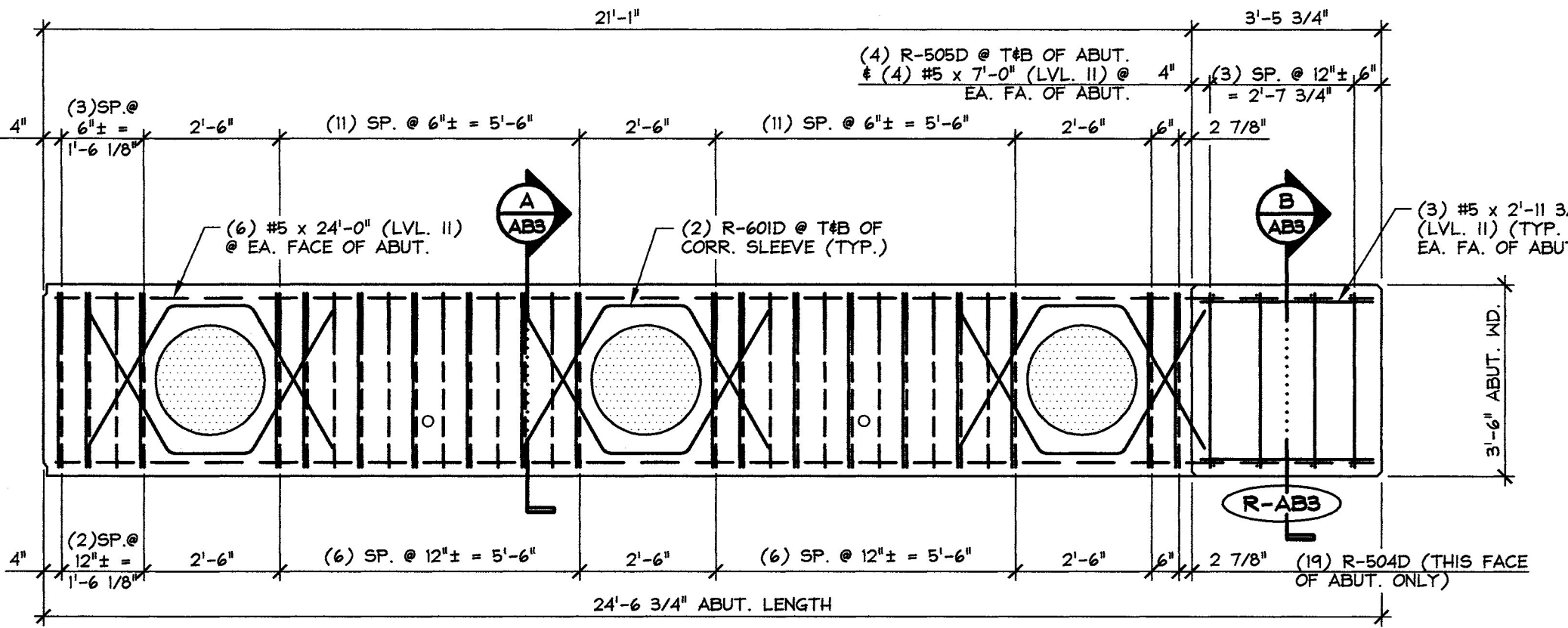


MARK FACE ELEVATION

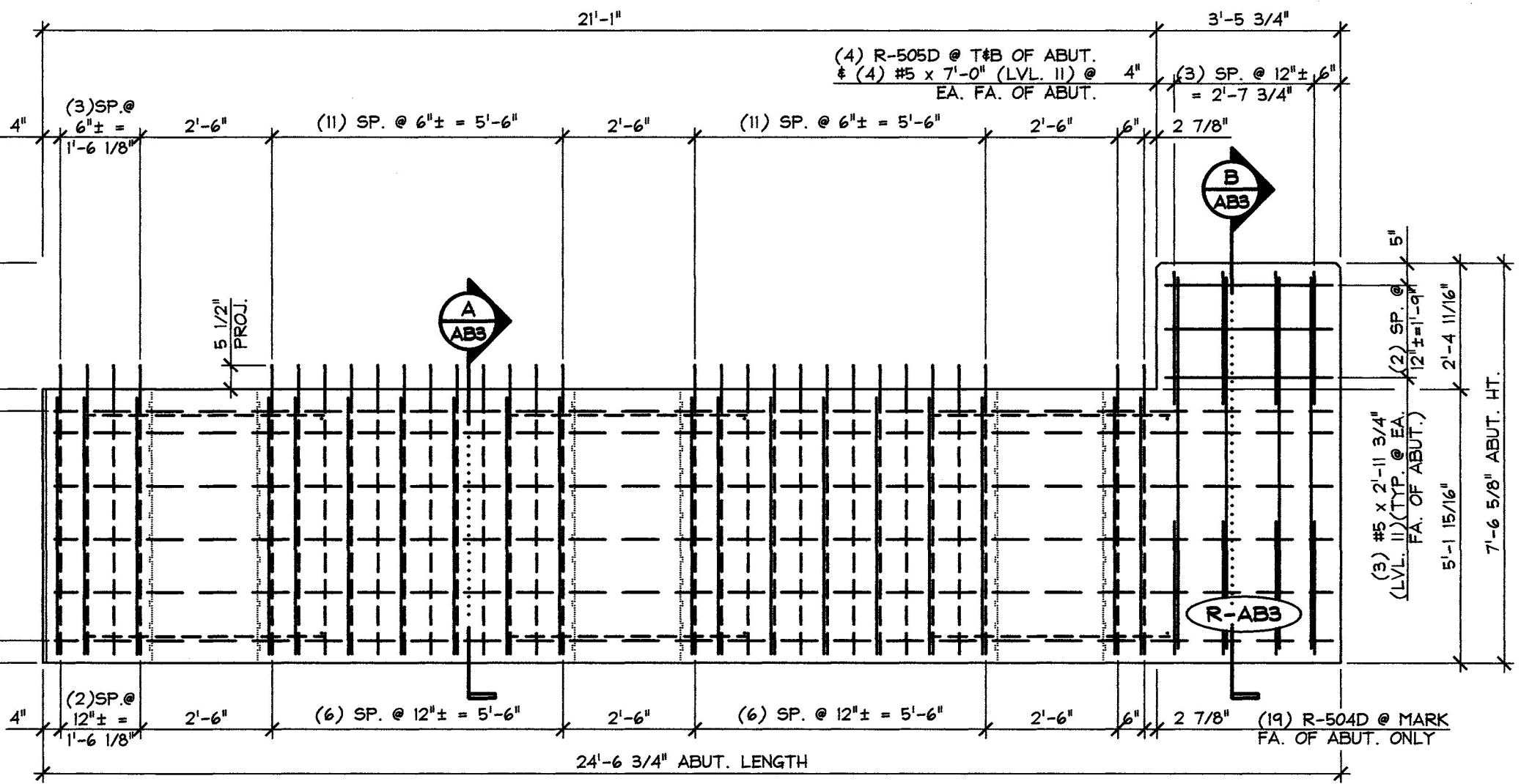
**1** ABUTMENT DIMENSIONAL DETAILS  
3/8" = 1'-0"



DETAIL - "A"  
1 1/2" = 1'-0"

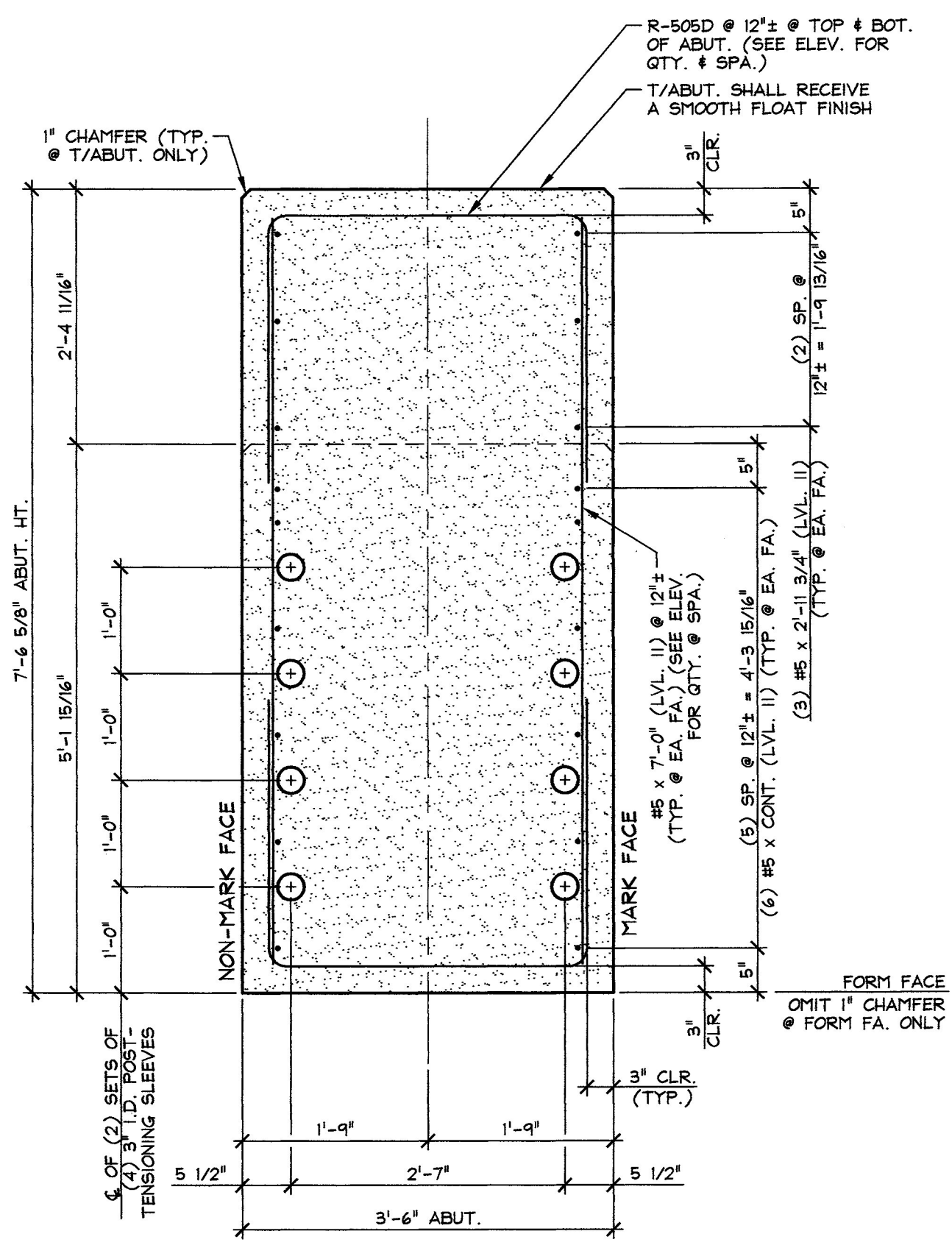


PLAN VIEW IN FORM



MARK FACE ELEVATION

**2** ABUTMENT REINFORCING DETAILS  
3/8" = 1'-0"



**B** ABUTMENT SECTION  
3/4" = 1'-0"

SHOP NOTE:  
ALL EDGES OF ABUTMENT SHALL RECEIVE A 1" CHAMFER (U.N.O.)

MARK: R-AB3	QTY.: 1	WT.: 27.44 T	VOL.: 13.55 cy
MATERIAL LIST / ABUTMENT			
ITEM	MARK	DESCRIPTION	QTY.
1	R-503D	#5 BENT BAR (LEVEL II, DUAL COATED)	30
2	R-504D	#5 BENT BAR (LEVEL II, DUAL COATED)	19
3	R-506D	#5 BENT BAR (LEVEL II, DUAL COATED)	8
4	R-508D	#5 HAIRPIN (LEVEL II, DUAL COATED)	6
5		#5 x 7'-0" (LEVEL II, DUAL COATED)	8
6		#5 x 24'-0" (LEVEL II, DUAL COATED)	12
7		#5 x 2'-11 3/4" (LEVEL II, DUAL COATED)	6
8			
9	R-601D	#6 BENT BAR (LEVEL II, DUAL COATED)	12
10			
11		#8 x 4'-0" (LEVEL II, DUAL COATED)	15
12			
13		2'-0" x 5'-1 15/16" CORRUGATED STEEL PIPE (GALV.)	3
14	MK-RB	20T x 19 3/4" SWIFT LIFT LIFTER (GALV.)	2
15			

Vermont Agency of Transportation  
**RECEIVED**

CK'D BY M. Umberger OK'D BY C. Carlson

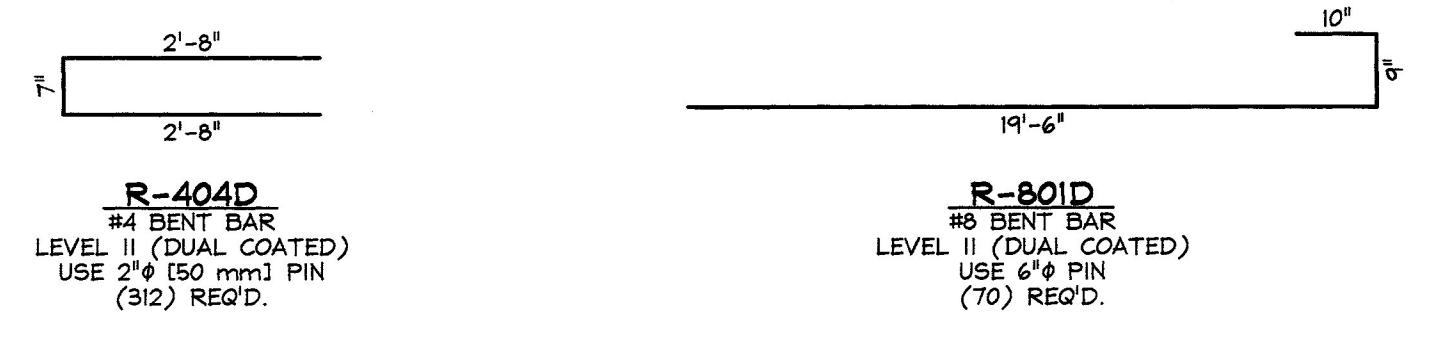
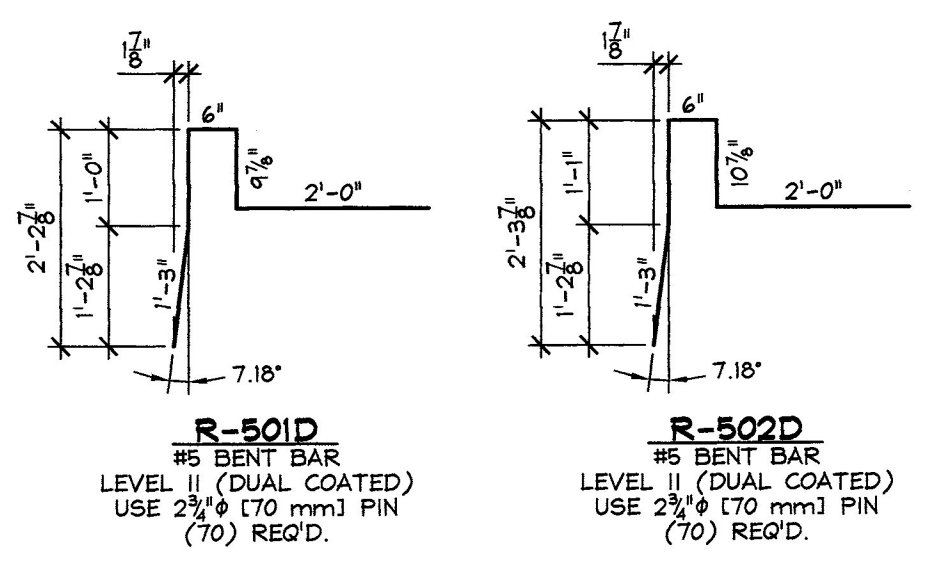
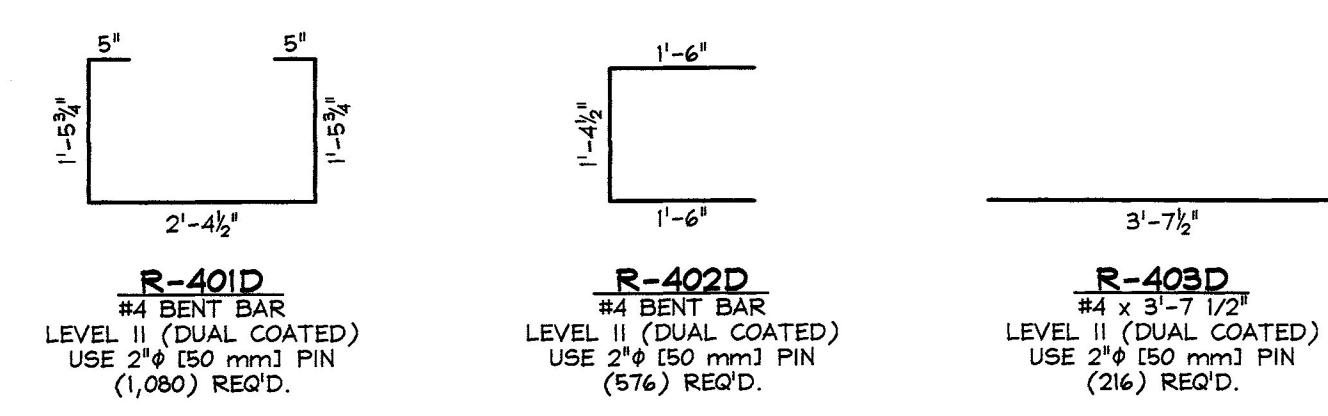
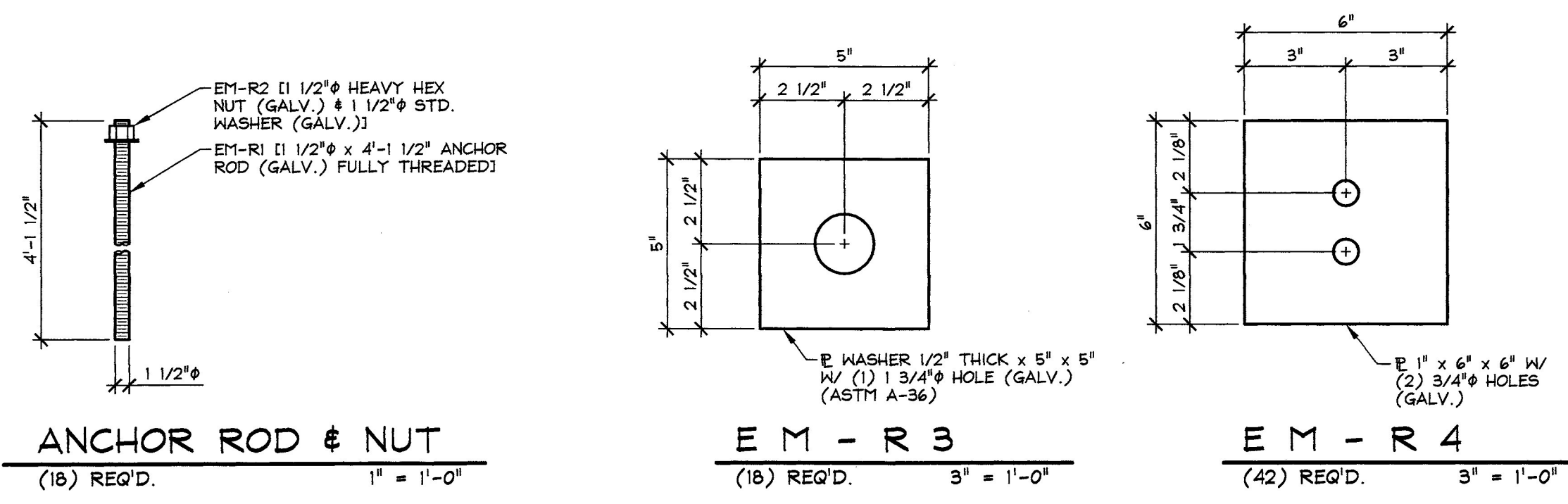
July 1, 2014

RESUBMIT No Approved  
BY C. Carlson DATE 07/08/2014

7-1-14 REVISED AS NOTED

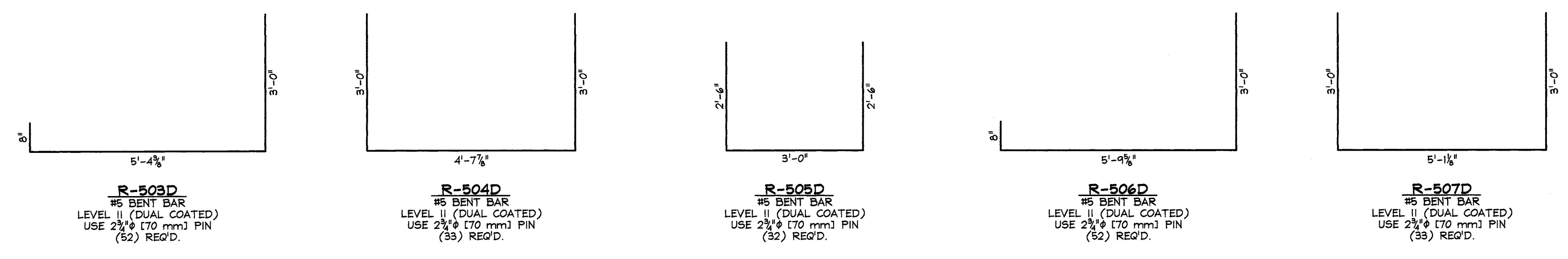
APPROVAL STAMP:	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	THE BELDEN COMPANY, INC. CONTRACTOR RUTLAND, VERMONT
STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF RUTLAND	DATE: APR. 25, 2014	SCALE: NOTED
CITY OF RUTLAND ROUTE NO.: TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRP 3000(18)	CHKD: M.D. DFTM: B.L.	JOB NO: 23430-014
PRECAST ABUTMENT DETAILS	DWG. NO: AB3	





**PRESTRESSED NEXT BEAMS**

**PRECAST APPROACH SLABS**



**PRECAST APPROACH SLABS**

Vermont Agency of Transportation

**RECEIVED**

CK'D BY M. Umberger OK'D BY C. Carlson

July 1, 2014

RESUBMIT No Approved

BY C. Carlson DATE 07/08/2014

ERECTION MATERIALS				
ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1	EM-R4	32	E 1" x 6" x 6" W/ (2) 3/4" HOLES (GALV.)	FOR ERECTION; SEE DETAIL THIS SHEET
2		32	1/2" x 45'-9" POLY-STRAND	FOR ERECTION
3		64	1/2" SINGLE USE STRESSING CHUCK	FOR ERECTION
4				
5				
6				
7				
8				
9				
10				
11	EM-R1	16	1 1/2" x 3'-9" ANCHOR DOVEL ROD (GALV.)	
12	EM-R2	16	1 1/2" HEAVY HEX NUT (GALV.) & 1 1/2" STD. WASHER (GALV.)	FOR ERECTION; SEE DETAIL THIS SHEET
13	EM-R3	16	E WASHER 1/2" x 5" x 5" W/ 1 3/4" HOLE (GALV.)	FOR ERECTION; SEE DETAIL THIS SHEET
14	EM-R4	10	E 1" x 6" x 6" W/ (2) 3/4" HOLES (GALV.)	FOR ERECTION; SEE DETAIL THIS SHEET
15		10	1/2" x 38'-9" POLY-STRAND	FOR ERECTION
16		20	1/2" SINGLE USE STRESSING CHUCK	FOR ERECTION
17		40	COMPRESSIBLE SEALER SELF ADHESIVE	FOR ERECTION
18				
19				
20				

EMBEDDED MATERIALS				
ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1	MK-R5	24	DAYTON C-24 TYPE 4-APR DECK FORM HANGER (GALV.)	
2	MK-R6	6	DAYTON 1" BNC F-42 LOOP FERRULE INSERT (GALV.)	31 S.F. & SKL (TKV) = 5,300 LBS
3				
4		216	3/4" x 6" NON-FERROUS VOID DRAIN	
5		54	10" x 9'-10" VOID	
6		54	10" x 10'-10" VOID	
7		36	SET OF TRIPLE 0.60" STRAND LIFTING LOOPS	
8				
9				
10				
11		80	#5 x 5'-3 1/2" (LEVEL II, DUAL COATED)	
12		160	#5 x 5'-4" (LEVEL II, DUAL COATED)	
13		80	#5 x 6'-1" (LEVEL II, DUAL COATED)	
14		80	#5 x 6'-1 1/2" (LEVEL II, DUAL COATED)	
15				
16		70	#6 x 19'-6" (LEVEL II, DUAL COATED)	
17				
18	MK-R7	40	4T x 7 1/8" SWIFT LIFT LIFTER (GALVANIZE)	
19		50	4" I.D. x 1'-3" PVC SLEEVE	
20				
21		16	#5 x 7'-0" (LEVEL II, DUAL COATED)	
22		16	#5 x 7'-6" (LEVEL II, DUAL COATED)	
23		24	#5 x 17'-11" (LEVEL II, DUAL COATED)	
24		24	#5 x 24'-0" (LEVEL II, DUAL COATED)	
25		24	#5 x 2'-11 3/4" (LEVEL II, DUAL COATED)	
26				
27		52	#6 x 4'-0" (LEVEL II, DUAL COATED)	
28				
29		5	2'-0" x 5'-1 15/16" CORRUGATED STEEL PIPE (GALV.)	
30		5	2'-0" x 5'-7 3/16" CORRUGATED STEEL PIPE (GALV.)	
31	MK-R8	8	20T x 19 3/4" SWIFT LIFT LIFTER (GALV.)	
32				
33				
34				
35				

APPROVAL STAMP:	<b>J.P. CARRARA &amp; SONS INC.</b> Precast & Prestress Manufacturer 2464 OISE STR., MIDDLEBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010		<b>THE BELDEN COMPANY, INC.</b> CONTRACTOR RUTLAND, VERMONT	
	<b>STATE OF VERMONT AGENCY OF TRANSPORTATION</b> COUNTY OF RUTLAND		DATE: APR. 25, 2014 SCALE: NOTED	
	<b>CITY OF RUTLAND</b> ROUTE NO.: TH 13 (FOREST STREET) - URBAN COLLECTOR BRIDGE NO.: 14 PROJECT NO.: BRP 3000(18)		CHKD: M.D. DFTM: B.L. JOB NO: 23430-014	
	<b>MATERIALS LIST</b>		DWG. NO: <b>M1</b>	

J.P. Carreard & Sons, Inc

ERNEST J. BRON  
C-10014

RUTLAND BRIDGE  
JPC #23430-014

INSERT DESIGN FOR WATER LINE BRACKET  
(WORK W/ CARREARD SHOP DWGS)

FOR TYPE #2 BRACKET

$$V_1 = 60 \text{ PLF} \times 9.5' = 570 \text{ LB WATER LINE } \&$$

$$V_2 = 66 \text{ LB BRACKET}$$

$$V_{TOT} = \frac{570}{66} = 636 \text{ LB ; THERE IS NO}$$

TENSION ON BOTTOM INSERT.

EDGE DISTANCE AT BOTTOM JOINT IS 5"

AUG SIZE OF INSERT IS 1"  $\phi$  AS BUY HOLE

IN BRACKET IS 1 1/4"  $\phi$ .

FROM ATTACHED DATED SUPERIOR PRODUCT

LITERATURE

WE 1"  $\phi$  8 NL F-42 600 FERRULE INSERT

SWL(V) 3111.1 F IS 4060 LB FOR

8" EDGE DISTANCE, SINCE THERE IS ONLY

A 5" EDGE DISTANCE, USE INFO FOR

5/8" - 11 NL INSERT F-42 INSERT

$$SWL(V) 3111.1 F = 1990 \text{ LB} > 636 \text{ LB, OK}$$

(NOTE: IT IS CONSERVATIVELY ASSUMED THAT

ALL VERTICAL STORM LOAD IS REACTED BY

THEM INSERT)



Vermont Agency of Transportation  
**RECEIVED**

CK'D BY M. Umberger OK'D BY C. Mooney

June 19, 2014

RESUBMIT BY C. Carlson DATE 06/30/2014

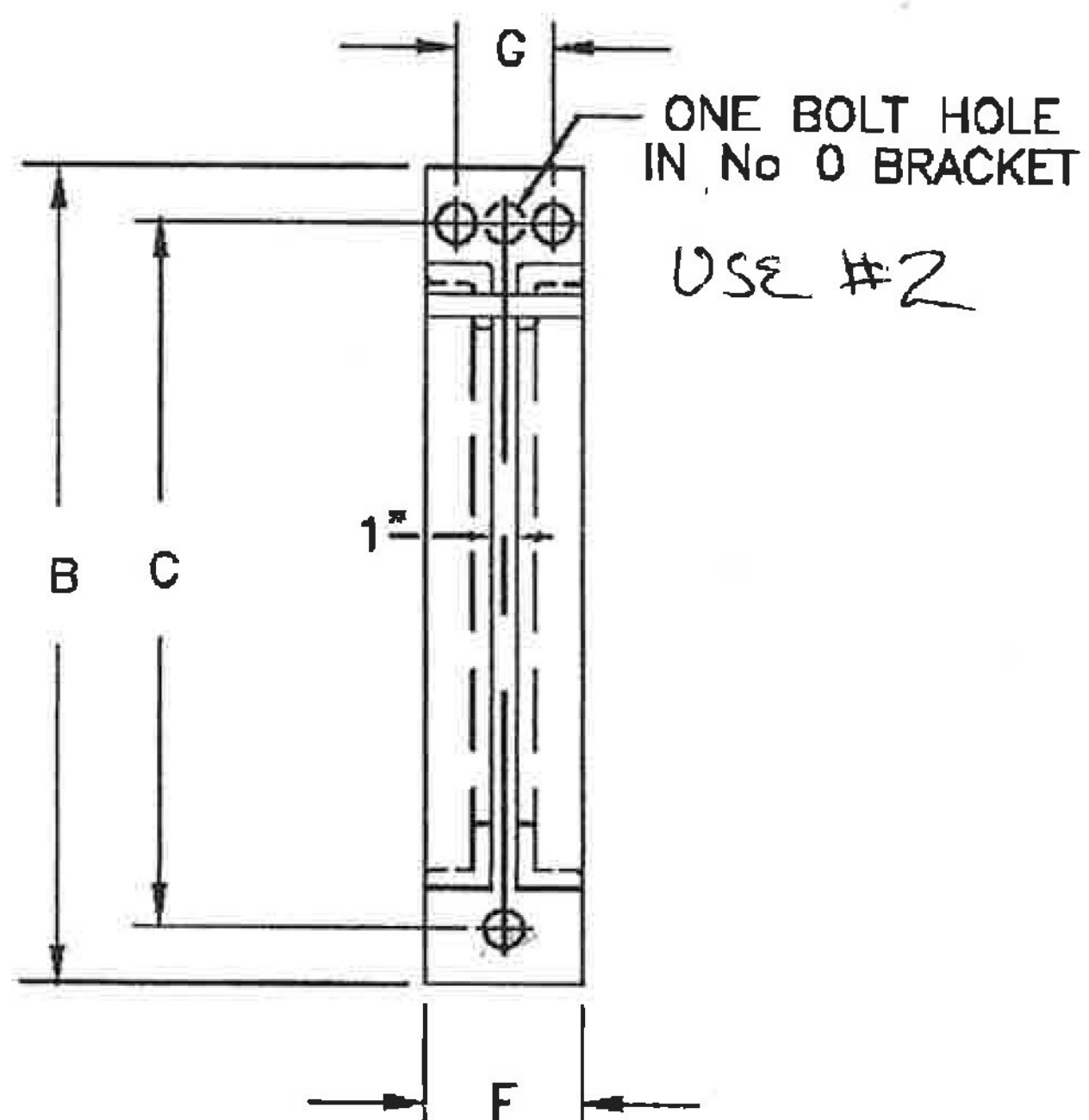
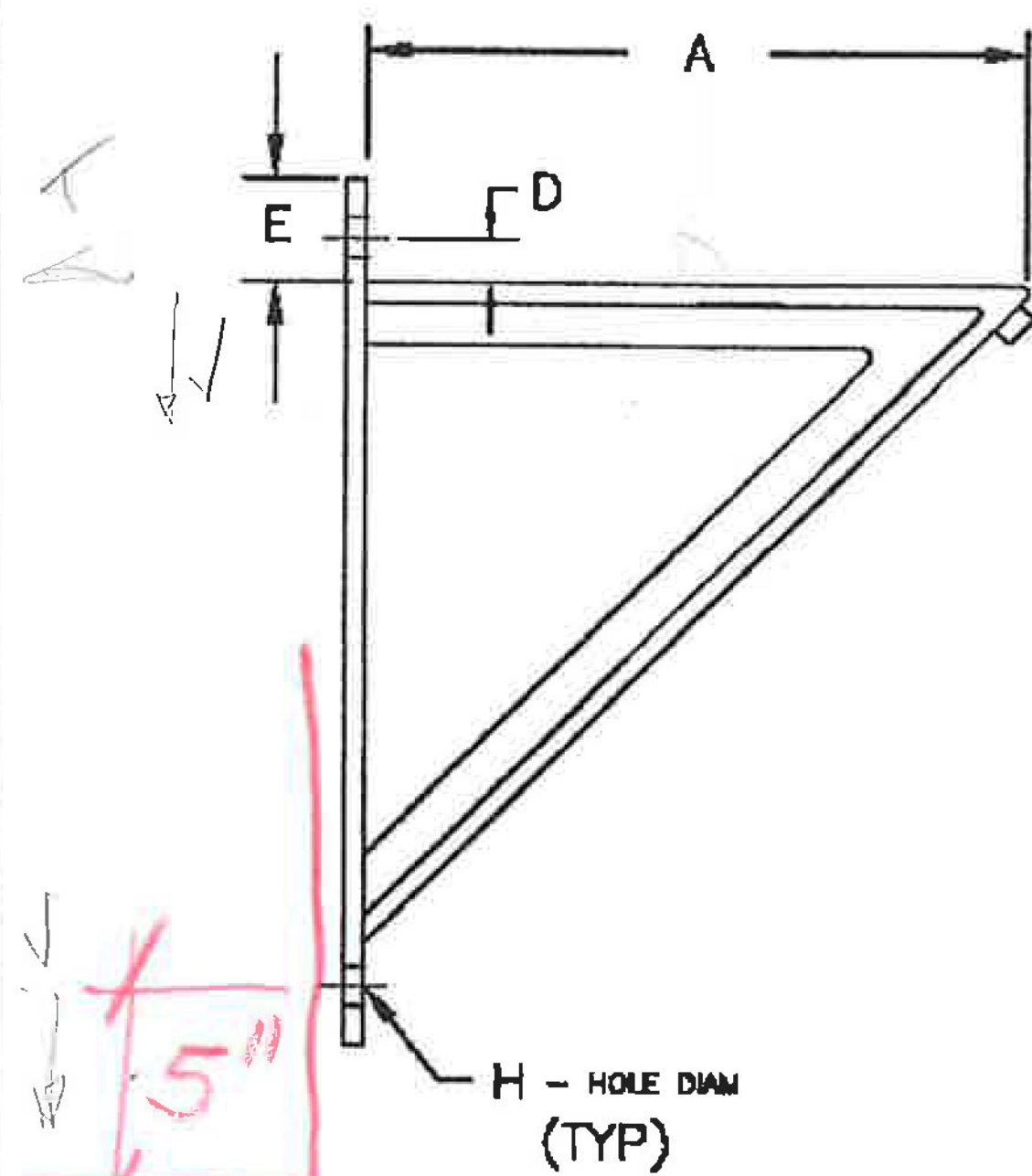


SPACING for 6 Brackets

2.5', 11.9', 21.3', 30.7', 40.1', 49.5'  
 9.25' 9.5' 9.33' 9.5' 9.42'

DESC: HD WALL BRACKET  
 PROJ: RUTLAND BRF3000(18)  
 CUST: BELDEN COMPANY

REVISED 6/6/14



5"  
 BM BOTTOM

#2

BRACKET NO	A	B	C	D	E	F	G	H	MAX LOAD	UNIT WGT
0	12	18	15 1/2	1 3/8	2 3/4	4	-	13/16	3000	24.00
1	18	24	21 1/2	1 7/16	2 3/4	5	2 3/4	13/16	3000	52.00
2	24	30	27 1/2	1 1/2	2 3/4	5	2 1/2	1 1/16	3000	66.00
3	30	36	33 1/4	1 5/8	3	5	2 1/2	1 1/16	3000	82.00
4	36	42	39	1 1/2	3	6	3 1/2	1 1/16	3000	141.00
5	42	50	46	1 1/2	3 1/2	6	3 1/2	1 1/16	3000	166.00

LOAD (LBS) • DIMENSIONS (INCHES) • WEIGHT (LBS)

MSS-SP-69 TYPE 33

CARPENTER AND PATERSON INC  
 WOBURN, MA 01801 / SADDLE BROOK, NJ 07663

SUBMITTAL DRAWING

MATERIAL: CARBON STEEL  
 FINISH: HOT-DIP GALVANIZED

DESCRIPTION: HEAVY WELDED STEEL BRACKET

DRAWN: BM  
 CHKD: RP  
 APPVD: UB  
 DATE: 3/94  
 SCALE: N/A  
 SHEET: 1

DWG/FIGURE NO. 139G  
 REV 2

REV	DATE	APP	DESCRIPTION
6			
5			
4			
3	03/01/07	UB	ADDED MSS-SP-69 TYPE NUMBER
2	02/20/01	UB	REVERSED HOLE SIZE 1 FROM 15/16" TO 13/16"
1			

# NC Threaded Inserts

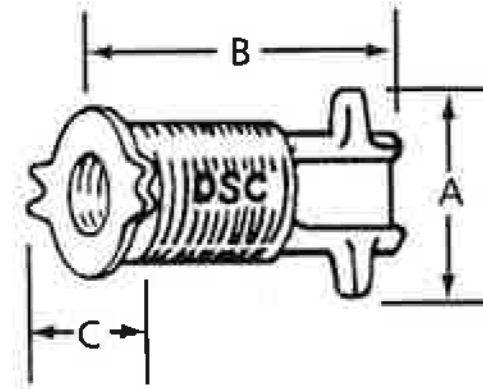
For Suspending, Connecting and Anchoring to Concrete



## F-5 Threaded Insert

The Dayton Superior F-5 Threaded Inserts have National Course (NC) threads and are recommended for use under permanent loading conditions. This insert has been approved by the Board of Standards and Appeals for use in New York City under Calendar No. 447-60SM.

The F-5 insert is cast from ductile iron that meets ASTM A-395, Grade 60-40-18.



F-5 Threaded Insert

**To Order:**  
Specify: (1) quantity, (2) name, (3) bolt diameter.  
**Example:**  
200, F-5 Threaded Inserts, 3/4" bolt diameter.

Bolt Diameter and Threads per Inch	Tension Safe Working Load	Bolt Engagement	A	B	C
1/2" - 13	1,500 lbs.	15/16"	1-5/8"	2-1/2"	1-5/8"
5/8" - 11	2,000 lbs.	3/4"	1-5/8"	3"	1-5/8"
3/4" - 10	2,500 lbs.	7/8"	1-13/16"	3"	1-7/8"
7/8" - 9	3,000 lbs.	1-5/16"	2-1/2"	3-3/8"	2-5/8"
1" - 8	3,000 lbs.	1-5/16"	2-1/2"	3-3/8"	2-5/8"

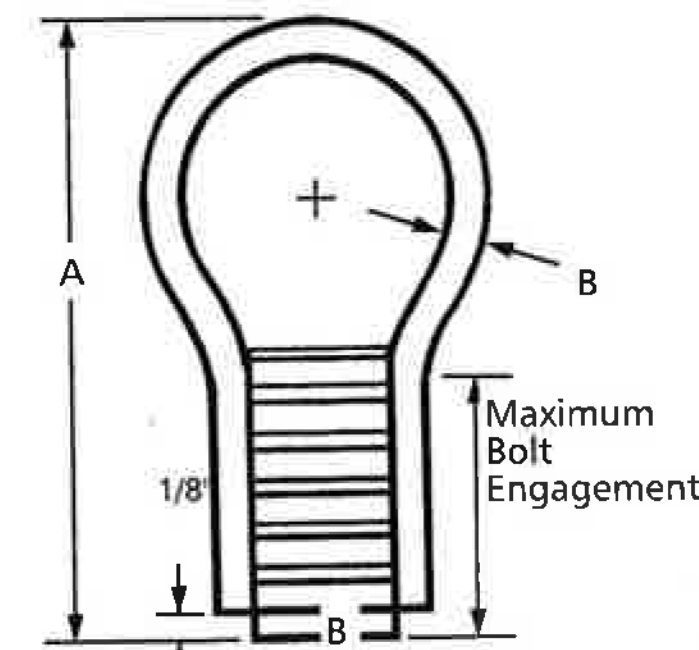
Safe Working Load provides a factor of safety of approximately 3 to 1 when the insert is properly embedded in 3,000 psi normal weight concrete.

## F-42 Loop Ferrule Insert

The Dayton Superior F-42 Loop Ferrule Insert is fabricated by welding a looped strut to a closed-end ferrule. F-42 insert is available in the sizes shown in the chart below and is well suited for structural connections and the suspension of equipment, piping, etc.

Minimum spacing between inserts is twice the minimum corner distance.

**To Order:**  
Specify: (1) quantity, (2) name, (3) bolt diameter.  
**Example:**  
200, F-42 Loop Ferrule Inserts, 3/4" bolt diameter.



F-42 Loop Ferrule Insert

Bolt Diameter and Threads per Inch	Minimum Edge Distance	Minimum Corner Distance	Safe Working Load Tension	Safe Working Load Shear	Maximum Bolt Engagement	A	B
1/4" - 20 NC	5"	5"	650 lbs.	650 lbs.	3/4"	2-3/4"	0.243"
3/8" - 16 NC	5"	5"	2,000 lbs.	1,260 lbs.	3/4"	2-3/4"	0.243"
	10"	15"	2,000 lbs.	2,000 lbs.			
1/2" - 13 NC	5"	5"	2,000 lbs.	1,280 lbs.	1"	2-3/4"	0.243"
	7"	10"	2,000 lbs.	2,000 lbs.			
5/8" - 11 NC	5"	7"	2,200 lbs.	1,990 lbs.	1-1/8"	3-1/2"	0.258"
	8"	8"	2,200 lbs.	2,200 lbs.			
3/4" - 10 NC	5"	7"	2,200 lbs.	1,990 lbs.	1-1/8"	3-1/2"	0.258"
	8"	8"	2,200 lbs.	2,200 lbs.			
7/8" - 9 NC	8"	8"	5,300 lbs.	4,060 lbs.	1-1/8"	6"	0.375"
	10"	15"	5,300 lbs.	5,300 lbs.			
1" - 8 NC	8"	8"	5,300 lbs.	4,060 lbs.	1-1/8"	6"	0.375"
	10"	15"	5,300 lbs.	5,300 lbs.			

Safe Working Load provides a factor of safety of approximately 3 to 1 in 3,000 psi normal weight concrete. Safe Working Loads are based on 1/2" setback from face of concrete.

Structural Connectors