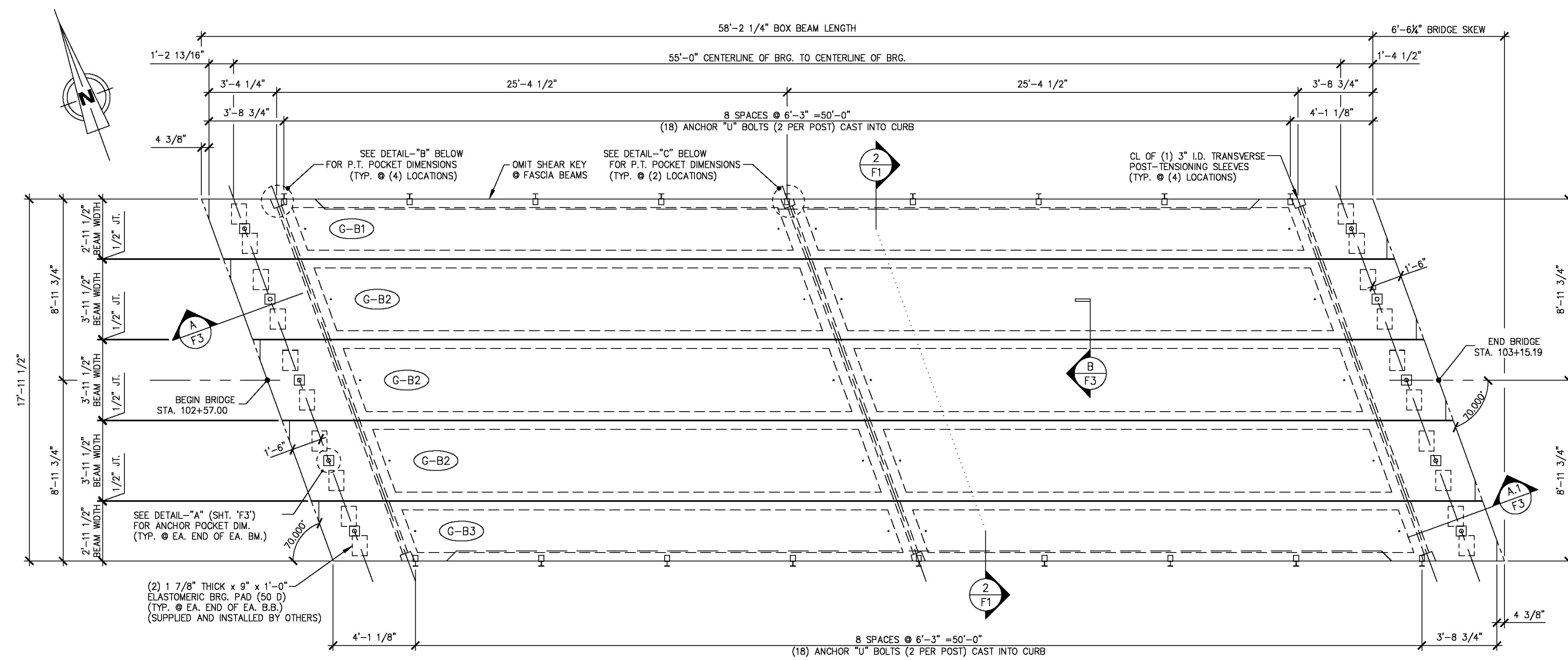
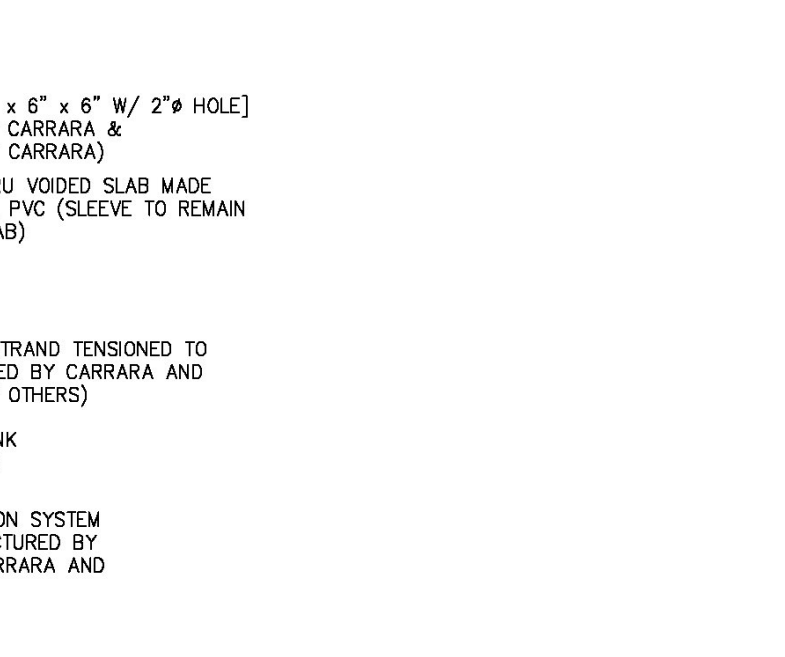
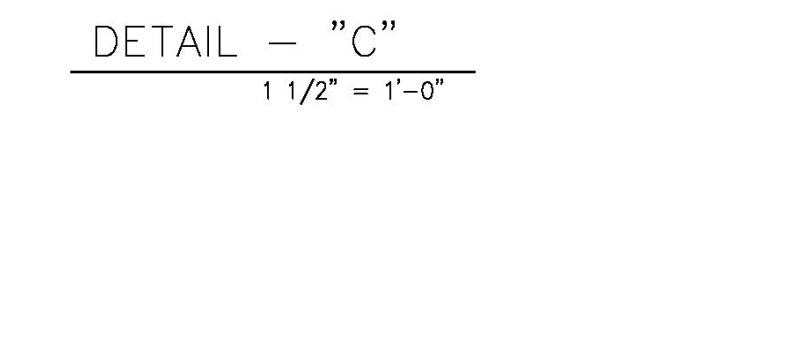
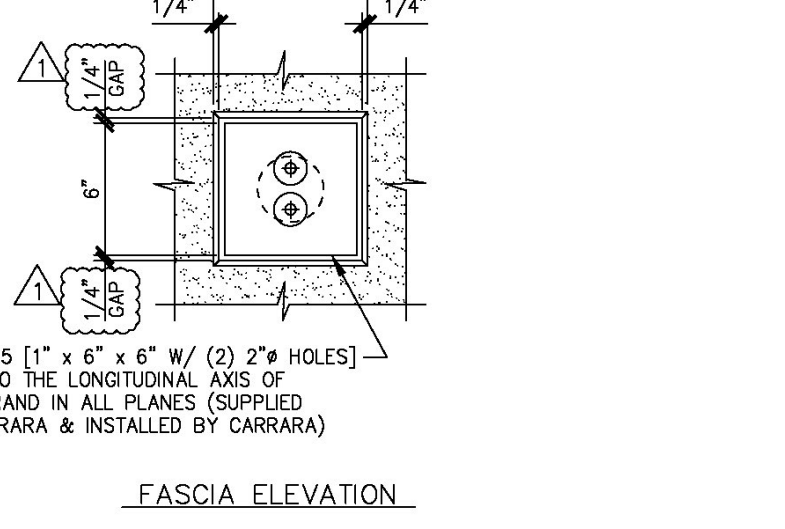
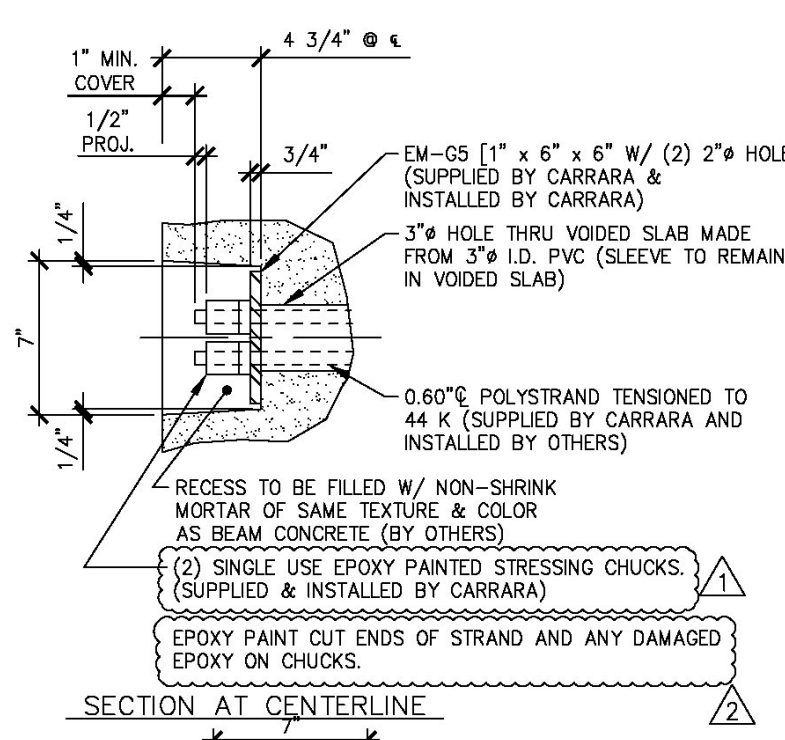
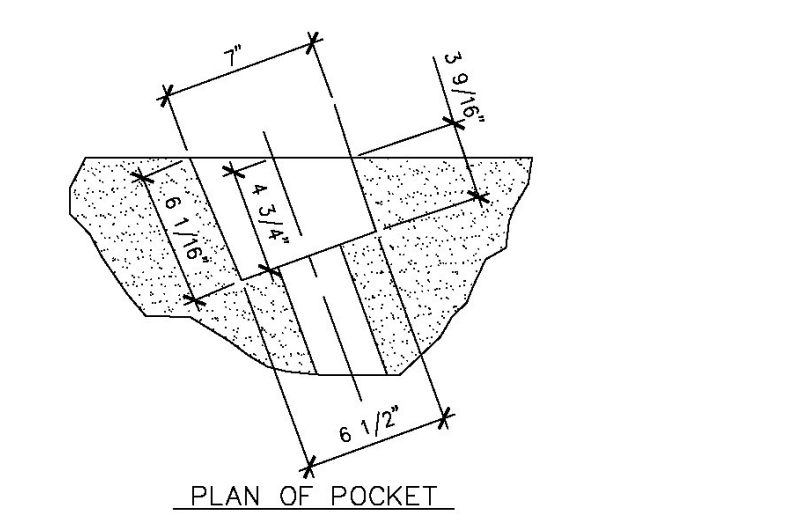


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1 PRESTRESSED BOX BEAM LAYOUT
1/4" = 1'-0"



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

- ### GENERAL NOTES
- MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 6,000 PSI.
 - MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 4,800 PSI.
 - REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) AND SHALL BE BLACK BAR WITH THE EXCEPTION OF REINFORCEMENT IN BOX BEAMS AND CURBS WHICH SHALL BE 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 RECESSED 3/4" AND PATCHED WITH AN APPROVED GROUT.
 - ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
 - THE TOP OF BEAMS SHALL RECEIVE A SMOOTH FLOAT FINISH, U.N.O.
 - SHEAR KEY SURFACES SHALL BE SAND BLASTED CLEAN.
 - BEAMS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. THE PINS OF THE SHACKLES SHALL BE PLACED THROUGH THE LIFTING LOOPS. SEE DETAIL, SHEET F-3. BEAMS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS WITHIN 2'-0" OF THE BEAM ENDS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
 - MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. PS-40.05
DESIGN MIX : J.P.C. BRIDGE MIX #425M (NO DC)
 - 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 BEAM IS FINISHED, A COVER OF POLY AND A LAYER OF HOMOSOL (OR BLUE BOARD) WILL BE PLACED OVER THE BEAM. THE DESIRED CURING TEMPERATURE RANGE SHALL NOT DROP BELOW 70°. 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. (NATURAL CURE WITH NO EXTERNAL HEAT APPLIED). EACH CHART SHALL BE MARKED.
 - TRANSVERSE POST-TENSIONING SEQUENCE:
 - ERECT BOX BEAMS, AND POST-TENSION TENDONS TO APPROXIMATELY 5,000 LBS.
 - GROUT SHEAR KEYS.
 - ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1,500 PSI; POST-TENSION TENDONS TO 44,000 LBS. FOR EACH 0.60" STRAND.

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.60" DIA. x 270 KSI
 AREA: 0.217 IN²
 TENSION: 44,000 LB. EACH STRANDS
 GRIP-TO-GRIP: 192'-9 3/4" = 192.813'
 E_s = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

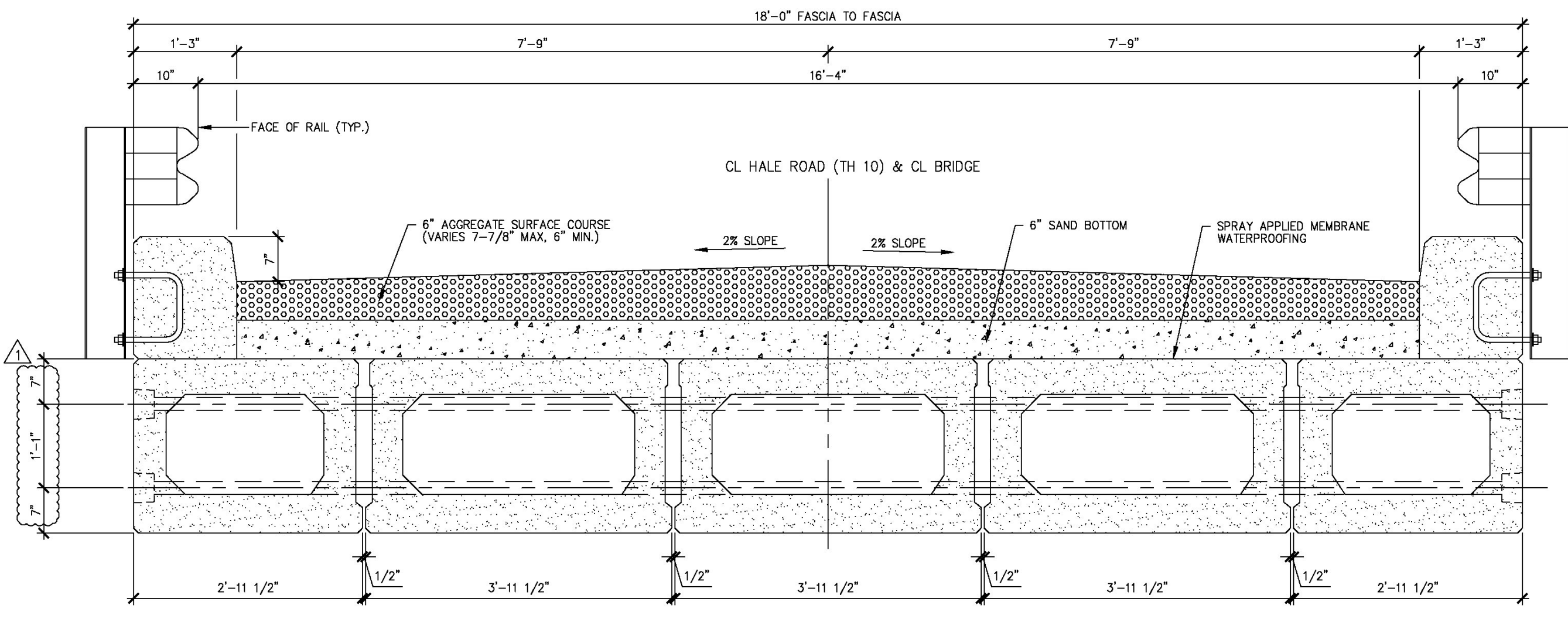
EXAMPLE:
 $\Delta = \frac{PL}{AE} = \frac{(44,000 - 3,000) \times 192.813 \times 12}{0.217 \times 28,600,000} = 15.29"$

THEREFORE (TOLERANCES ± 5%)
 Δ UPPER LIMIT = 1.05 x 15.29" = 16.05" = 16 1/16"
 Δ LOWER LIMIT = 0.95 x 15.29" = 14.53" = 14 1/2"

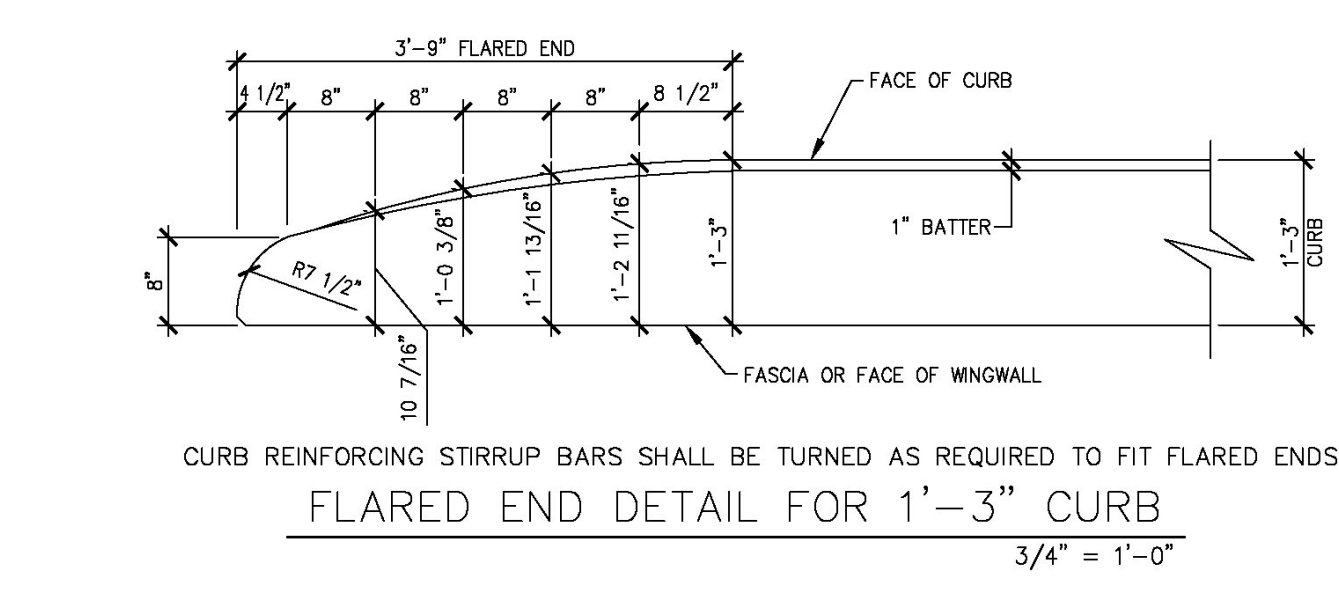
EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:
 $\Delta P = \frac{0.5 \times 41,000}{15.29} = 1,340$ LBS.

TOTAL TENSIONING FORCE = 44,000 + 1,340 = 45,340 LBS.

- ### STRAND TENSIONING PROCEDURE:
- PULL EACH STRAND INITIALLY TO 3,000* LBS. AND MARK STRAND.
 - THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,340* LBS. AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 14 1/2" & 16 1/16".
- * NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.



2 APPROACH SLAB TRANSVERSE SECTION
3/4" = 1'-0"



SHOP DRAWING REVIEW

REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

REJECTED REVISE AND RESUBMIT FURNISH AS CORRECTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATING HIS WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING HIS WORK IN A SAFE AND SATISFACTORY MANNER.

Vanasse Hangen Brustlin, Inc. 7056 US Route 7 North Ferrisburgh, VT 05473 802-425-7789	Job Number: 57427.00 Reviewed By: S.E. Burbank Date: 06/19/2014
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Vermont Agency of Transportation

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CK'D BY MJC OK'D BY TAS

June 18, 2014

RESUBMIT No Approved

BY M. J. Chenette DATE 06/19/2014

Eriksson technologies

813.989.3317
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4-7-14 REVISED AS NOTED
5-6-14 REVISED AS NOTED

APPROVAL STAMP:

J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer N.T.S. <small>244 CASE ST., WINDLEBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010</small>	
STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF WINDHAM	DATE: MAR. 04, 2014 SCALE: NOTED
TOWN OF GUILFORD ROUTE NO. T.H.10, CLASS III (LOCAL ROAD) BRIDGE NO.: 65 PROJECT NO.: BRO 1442 (36)	CHKD: JJ/KLT DFTM:AA1/RWS JOB NO: 23420-014
SUPERSTRUCTURE PLANS	
DWG. NO: F1	