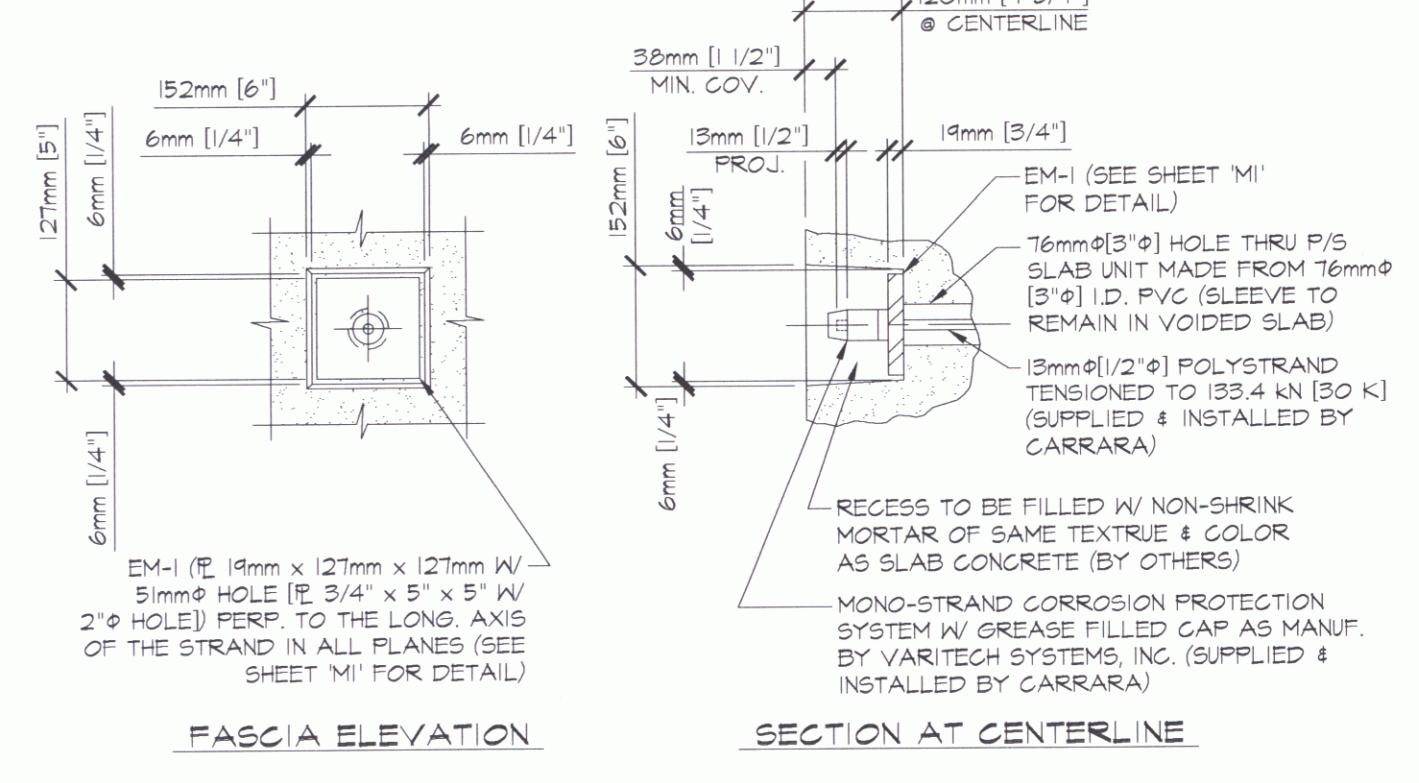
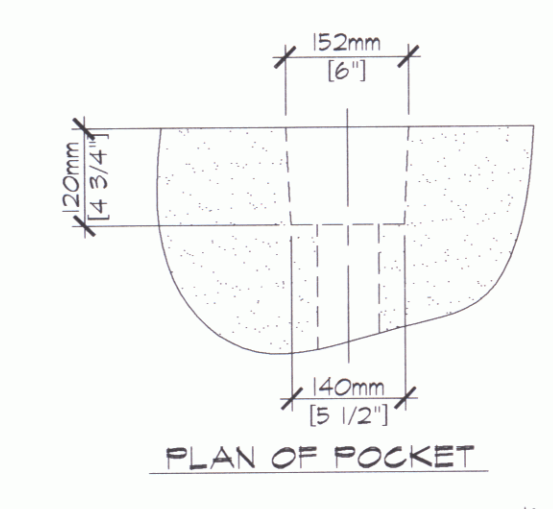
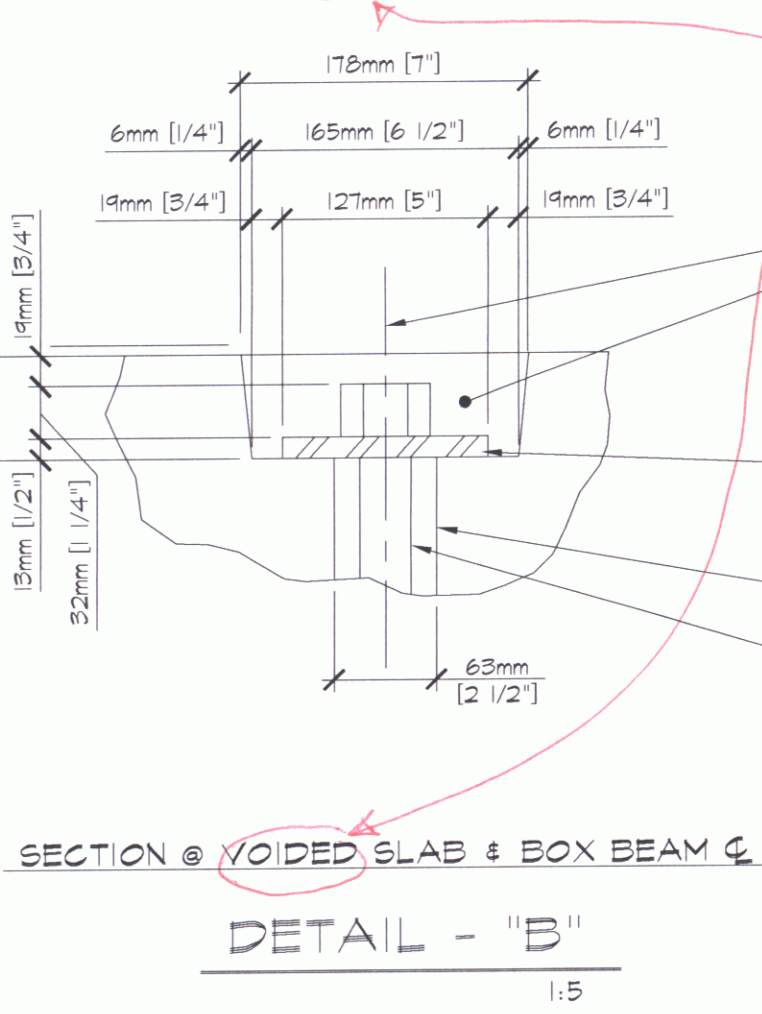
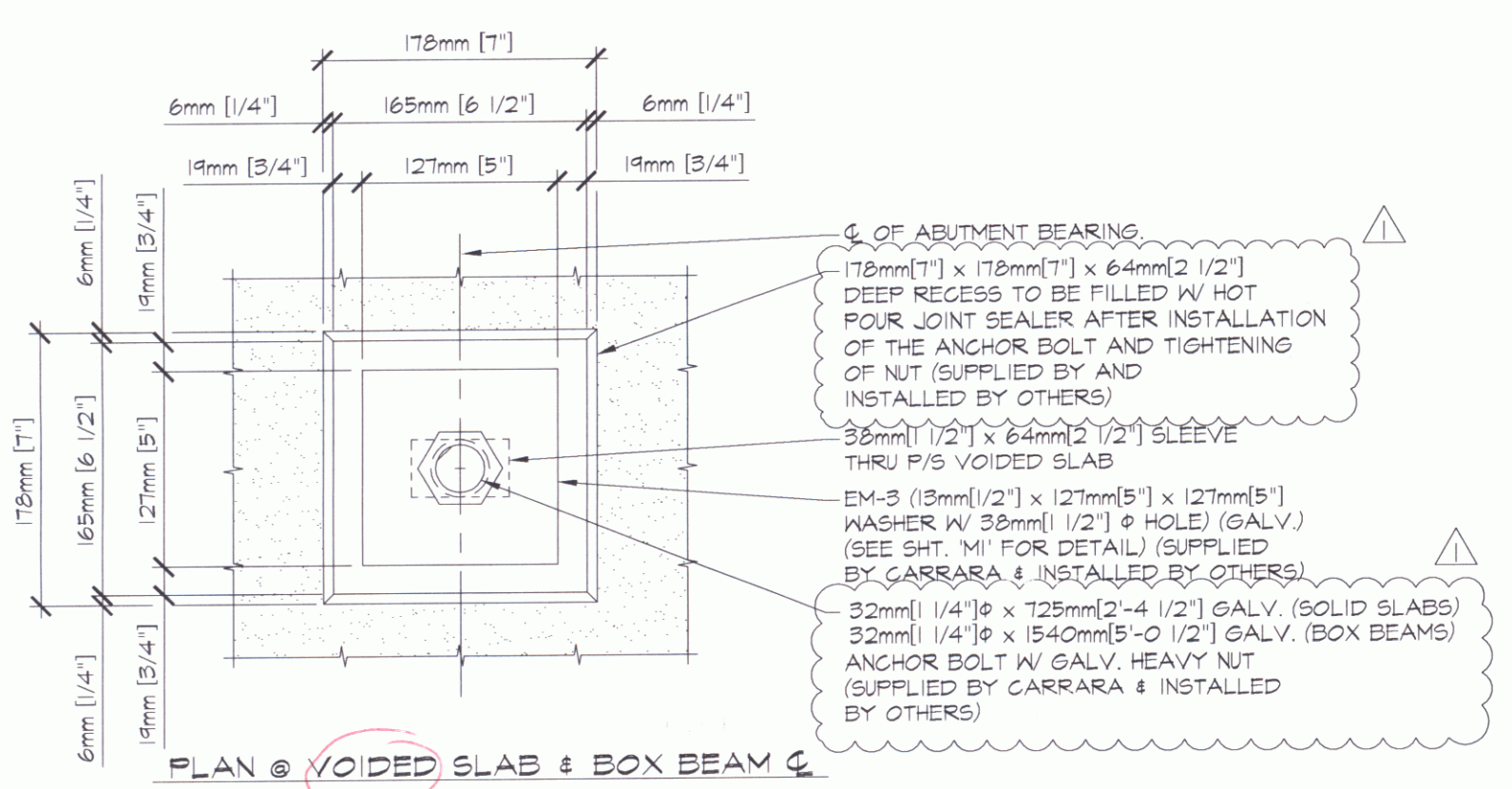


1 PRESTRESSED BOX BEAM LAYOUT @ SPAN 1
DESIGN LOAD: AASHTO MS-22.5 LIVE LOAD



DETAIL - "A"
1:10



DETAIL - "B"
1:5

GENERAL NOTES

- MIN. CONCRETE STRENGTH AT 28 DAYS: $f'_c = 45 \text{ MPa}$ [6,500 PSI]
 MIN. CONCRETE STRENGTH AT STRESS TRANSFER: $f'_{ci} = 28 \text{ MPa}$ [4,000 PSI]
- REINFORCING STEEL SHALL BE GR-420 (GR-60), AASHTO M 31M
 ASTM A-615 AND SHALL BE EPOXY COATED
- PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO
 M 203M) AND SHALL CONSIST OF:
 15mm(1/2") ϕ x 1860 MPa [270 KSI] BOX BEAMS
 13mm(1/2") ϕ x 1860 MPa [270 KSI] SOLID SLABS
 7-WIRE LOW RELAXATION STRANDS
- PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET
 TENSION OF (BOX BEAMS) 195.5 kN [44.0 K] BOT. 14kN [3.14K] TOP STRDS
 (SOLID SLABS) 158kN [35.0K]
 AFTER ACCOUNTING FOR CHUCK SLIPPAGE. TENSION SHALL BE
 VERIFIED BY MEASURING STRAND ELONGATION.
 SEE EXAMPLE ELONGATION CALCULATION AND
 TENSIONING PROCEDURE (THIS SHEET).
- END OF PRESTRESSING STRANDS SHALL BE CUT W/ A TORCH,
 RECESSED AND PATCHED WITH AN APPROVED VT. DOT MATERIAL.
- TOP OF THE BEAMS SHALL RECEIVE A RAKE FINISH ROUGHNESS
 TO 6mm (1/4") AMPLITUDE (UNLESS NOTED OTHERWISE).
- SLABS SHALL BE HANDLED AND ERECTED USING THE LIFTING
 LOOPS ONLY. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL
 SHALL BE 60°. SLABS SHALL BE STORED AND TRANSPORTED
 WITH TIMBER SUPPORTS WITHIN 6.0mm(2") OF THE SLAB ENDS,
 UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
- SHEAR KEY SURFACES SHALL BE BLAST CLEAN.
- DESIGN MIX: J.P.C. BRIDGE MIX #45MESC
 106.8kg [180 LBS] FLY ASH - 15G RESOURCES
 421.2 kg [720 LBS] TYPE III CEMENT - GLENS FALLS CEMENT
 742 kg [1250 LBS] FINE AGGREGATE
 860 kg [1450 LBS] COARSE AGGREGATE
 160.0 L [42.2 GALL] WATER - 159.2 kg [352 LBS]
 5% - 9.0% AIR CONTENT (25.42 mL [6.5 OZ] DAREX II) ADJ. AS REQ.
 619.3 mL MB 3400 PER 100 kg CEMENT, SPREAD 559mm - 71mm
 [9.5 OZ. MB 3400 PER 100 LBS. CEMENT, SPREAD 22" - 28"]
 14.85 L [3 GAL.] DCI
 195.6 mL DARATARD PER 100 kg CEMENT
 [3.0 OZ. DARATARD PER 100 LBS. CEMENT, SPREAD 22" - 28"]
- QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI
 REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED
 PLANT.
- THE ENGINEER OF RECORD WILL BE NOTIFIED (7) WORKING DAYS
 SO THAT ALL PRECAST OPERATIONS MAY BE WITNESSED.
- THE VOIDS MUST BE VENTED DURING THE CURING PERIOD.
- CURING METHOD:
 13. NATURAL CURE: AS SOON AS THE TOP OF THE BEAM IS FINISHED,
 COVER WITH POLY UNTIL RELEASE STRENGTH IS ACHIEVED.
- TRANSVERSE POST-TENSIONING SEQUENCE:
 A. ONCE BOX BEAMS & SOLID SLABS ARE ERECTED, POST-
 TENSION TENDONS TO APPROXIMATELY 22 kN [4,946 LBS].
 B. GROUT SHEAR KEYS. (BY OTHERS)
 C. ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM
 COMPRESSIVE STRENGTH OF 10.3 MPa [1,500 PSI], POST-
 TENSION TENDONS TO 133.4 kN [30,000 LBS].
- POST-TENSIONING STRANDS SHALL CONFORM TO AASHTO M 203M
 (ASTM A-416) AND SHALL CONSIST OF 13mm(1/2") ϕ x 1860 MPa
 [270 KSI] POLYSTRAND.
- NO INSERTS SHALL BE FIELD INSTALLED IN SLABS WITHOUT
 APPROVAL OF J.P. CARRARA & SONS, INC.

**EXAMPLE PRESTRESSING STRAND ELONGATION
 CALCULATION AND TENSIONING**
 (NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.60" ϕ x 270 KSI
 AREA: 0.217 IN²
 TENSION: 44,000 LBS EACH STRAND
 GRIP TO GRIP: 192'-9 3/4" = 192.81'
 $E_s = 28,600,000 \text{ PSI}$ (ASSUMED FOR THESE CALCULATIONS;
 VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

EXAMPLE: $\Delta = \frac{F_L}{AE} = \frac{(44,000 - 3,000) \times 192.81 \times 12}{0.217 \times 28,600,000} = 15.24"$

THEREFORE: TOLERANCES: $\pm 5\%$
 Δ UPPER LIMIT = $1.05 \times 15.24" = 16.05" = 16 \frac{1}{16}"$
 Δ LOWER LIMIT = $0.95 \times 15.24" = 14.53" = 14 \frac{1}{2}"$

EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:
 $\Delta P = \frac{0.5 \times 41,000}{15.24} = 1,341 \text{ LBS.}$

TOTAL TENSIONING FORCE = 44,000 + 1,341 = 45,341 LBS. [201.7 kN]

STRAND TENSIONING PROCEDURE

- PULL EACH STRAND INITIALLY TO 13.34 kN [3,000 LBS]* & MARK
 STRAND.
 - THE PULL EACH STRAND TO A TOTAL TENSION OF 201.7 kN*
 [45,341 LBS]* AND MEASURE ELONGATION AFTER SEATING. IT MUST
 BE BETWEEN 369mm(14 1/2") AND 408mm(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.

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.

VHB Vanasse Hangen Brustlin, Inc.
 Engineers, Planners, and Scientists
 Six Bedford Farms, Milton Rd.
 Bedford, NH 03110 603 644 0988

Job Number: 50135.0-0
 Reviewed By: LSG/NAK
 Date: 5/6/14

APPROVAL STAMP: 1-6-06 REVISED AS PER ENGINEERS COMM. T.D.

J.P. CARRARA & SONS INC.
 Precast & Prestress Manufacturer
 244 GALE STR., MIDDLEBURY, VERMONT 05753 Phone: (802)388-8361 Fax: (802)388-9010

KUBRICK CONST. CORP.
 CONTRACTOR
 GLENS FALLS, NEW YORK

STATE OF VERMONT A.O.T.
 COUNTY OF CHITTENDEN

TOWN OF COLCHESTER - SOUTH BURLINGTON
 PROJECT: LIME KILN BRIDGE
 TH 4/3 (URBAN MINOR ARTERIAL), BRIDGE NO.6

BOX BEAM LAYOUT AT SPAN NO. 1
 P/T PCKT. DETAILS & GENERAL NOTES

DATE: NOV. 14, 2005
 SCALE: NOTED
 CHKD: - DFTM: T.J.D.
 JOB NO: 23229-05
 DWG. NO: F1