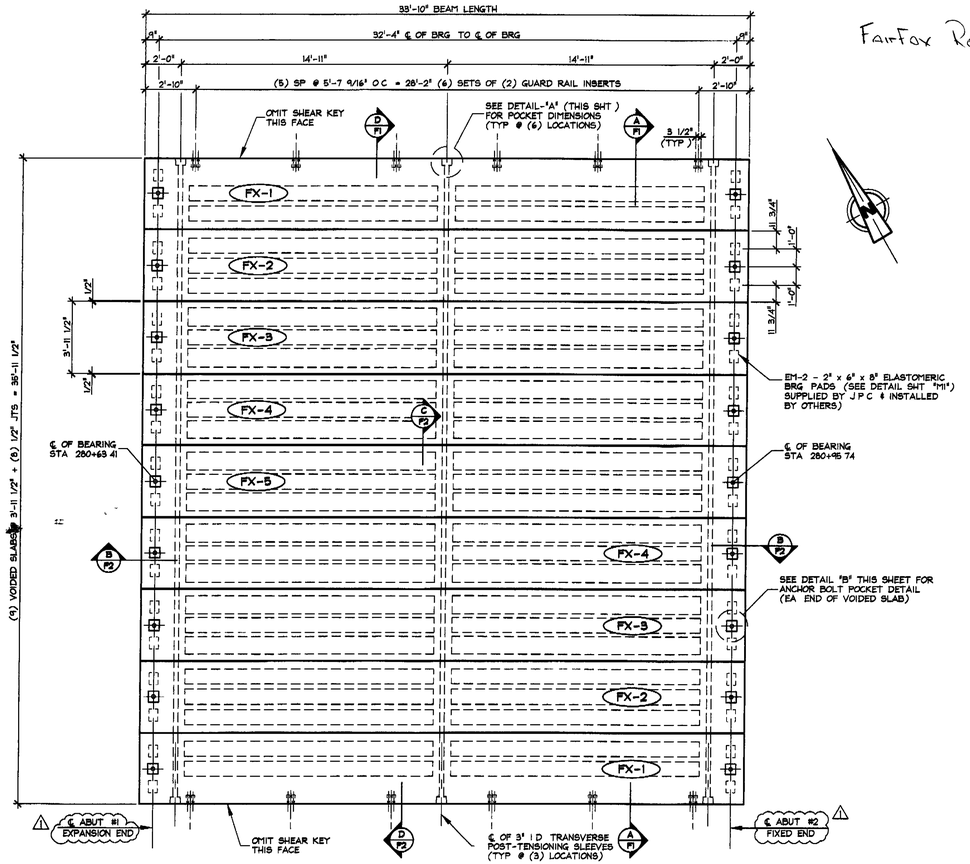
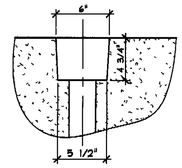
FairFax Record Plan

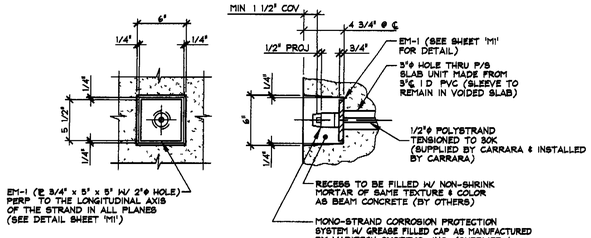


1 / F1 PRESTRESSED VOIDED SLAB LAYOUT
1/4" = 1'-0"

DESIGN LIVE LOAD: HL-93



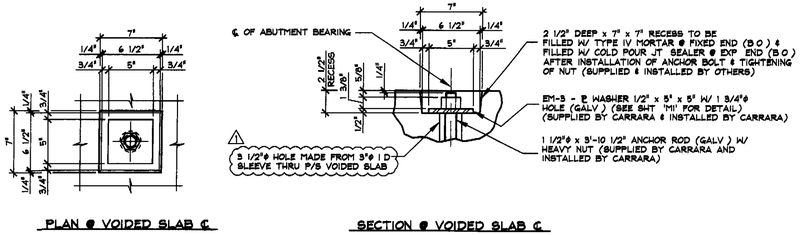
PLAN OF POCKET



FASCIA ELEVATION

SECTION AT CENTERLINE

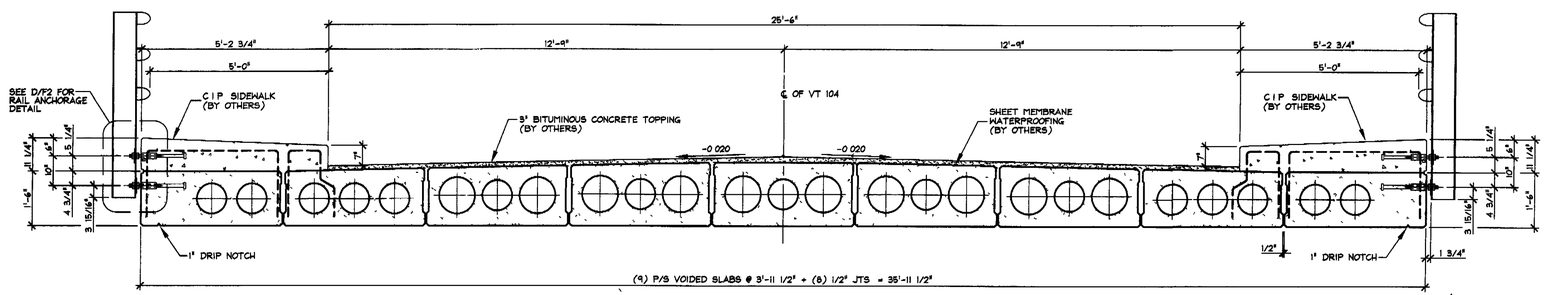
DETAIL - "A"
1 1/2" = 1'-0"



PLAN @ VOIDED SLAB ℄

SECTION @ VOIDED SLAB ℄

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



A / F1 TRANSVERSE SECTION
1/2" = 1'-0"

GENERAL NOTES

1 MIN CONCRETE STRENGTH AT 28 DAYS SHALL BE 6,000 PSI

2 MIN CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 4,000 PSI

3 REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) AND SHALL BE EPOXY COATED

4 PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M203) AND SHALL CONSIST OF 0 60"ø x 270 KSI 7-WIRE LOW RELAXATION STRANDS

5 PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 44 0 K AFTER ACCOUNTING FOR CHUCK SLIPPAGE TENSTION SHALL BE VERIFIED BY MEASURING STRAND ELONGATION (SEE EXAMPLE ELONGATION CALCULATION AND TENSIONING PROCEDURE, THIS SHEET)

6 ENDS OF PRESTRESSING STRANDS SHALL BE CUT, RECESSED & GROUTED FLUSH WITH END OF BOX BEAMS

7 EXPOSED CORNERS SHALL BE CHAMFERED 3/4" AS NOTED

8 THE TOP OF BEAMS SHALL RECEIVE A FLOAT FINISH UNLESS NOTED OTHERWISE

9 SHEAR KEY SURFACES SHALL BE BLASTED CLEAN WITH OIL FREE AIR

10 BEAMS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60° BEAMS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS WITHIN 2'-0" OF THE BEAM ENDS, UNLESS APPROVED BY J P CARRARA & SONS, INC

11 MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC P510 02 AND P510 05 RESPECTIVELY
DESIGN MIX J P C BRIDGE MIX 430

12 QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS J P CARRARA & SONS, INC IS A PCI CERTIFIED PLANT

13 THE VOIDS MUST BE VENTED DURING CURING PERIOD

14 CURING METHOD AS SOON AS THE TOP OF BEAM IS FINISHED, A COVER OF POLY AND A LAYER OF HOMOSOTE (OR BLUE BOARD) WILL BE PLACED OVER THE BEAM 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, (NATURAL CURE WITH NO EXTERNAL HEAT APPLIED) EACH CHART SHALL BE MARKED

15 TRANSVERSE POST-TENSTIONING SEQUENCE:
- A ONCE VOIDED SLABS ARE ERECTED, POST-TENSION TENDONS TO APPROXIMATELY 5,000 LBS
- B GROUT SHEAR KEYS
- C ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI, POST TENSION TENDONS TO 30,000 LBS

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE 0 60"ø x 270 KSI
AREA 0 217 IN^2
TENSION: 44,000 LB EACH STRANDS
GRIP-TO-GRIP 192'-9 3/4" = 192 813'
Es = 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%)
△ UPPER LIMIT = 1 05 x 15 29" = 16 05" = 16 1/16"
△ LOWER LIMIT = 0 95 x 15 29" = 14 53" = 14 1/2"

EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:

$$\Delta P = \frac{0.5 \times 41{,}000}{15\,29} = 1{,}341 \text{ LBS}$$

TOTAL TENSIONING FORCE = 44,000 + 1,341 = 45,341 LBS

STRAND TENSIONING PROCEDURE:

1 PULL EACH STRAND INITIALLY TO 3,000# LBS AND MARK STRAND

2 THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,341# 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

△ 1-18-10 REVISED AS PER ENGINEER COMMENTS 12/29/2009 T D

APPROVAL STAMP:

STATE OF VERMONT
AGENCY OF TRANSPORTATION
RECEIVED 01/27/2010
CK BY WDL MAD GS
ACTION APPROVED
BY CWC DATE 01/27/2010

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
3464 OSE STR., MIDDLEBURY, VERMONT 05753 Phone (802)388-6361 Fax (802)388-9010

BLOW & COTE, INC.
CONTRACTOR
MORRISVILLE, VERMONT

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

TOWN OF FAIRFAX
VERMONT ROUTE 104
BRIDGE NO.: 10 PROJECT NO.: BHF 023-1(5)

SUPERSTRUCTURE PLAN & DETAILS

DATE: NOV 12, 2009
SCALE NOTED
CHKD: DFTM. T D
JOB NO 23304-09
DWG NO F1