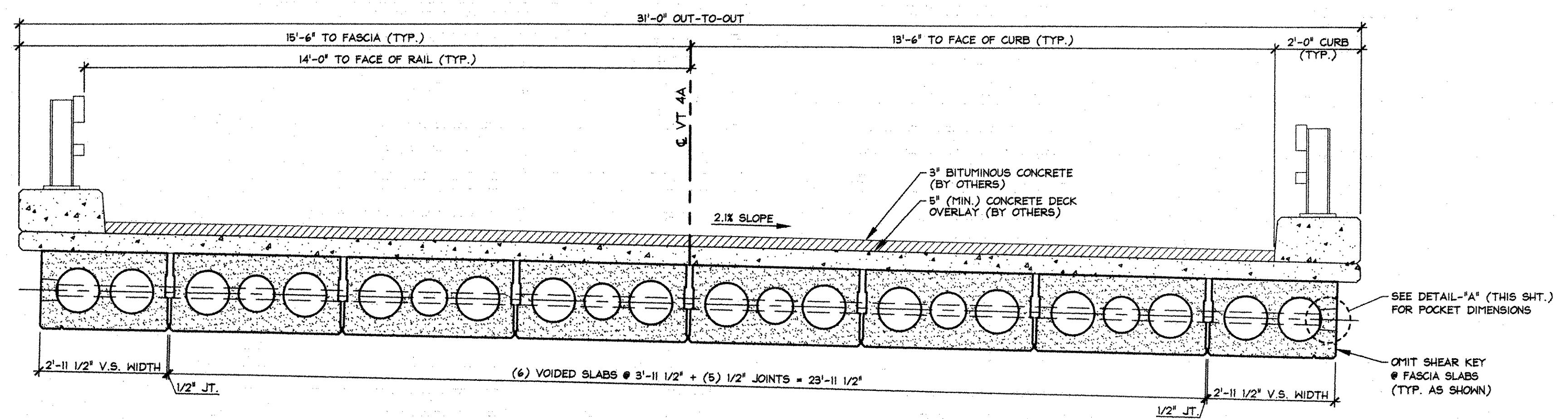


1 PRESTRESSED VOIDED SLAB LAYOUT
 1/4" = 1'-0"

DESIGN LOAD: HS 25-44



2 TRANSVERSE SECTION
 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 4,000 PSI AND SHALL BE EPOXY COATED.
 - REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M51) AND SHALL BE EPOXY COATED.
 - PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M208) 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 SHALL BE VERIFIED BY MEASURING STRAND ELONGATION. (SEE EXAMPLE ELONGATION CALCULATION AND TENSIONING PROCEDURE, THIS SHEET.)
 - ENDS OF PRESTRESSING STRANDS SHALL BE CUT, RECESSED & GROUTED FLUSH WITH END OF BOX BEAMS.
 - ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
 - THE TOP OF BEAMS SHALL RECEIVE A RAKE FINISH ROUGHENED TO 1/4" APLITUDE.
 - SHEAR KEY SURFACES SHALL BE BLASTED CLEAN.
 - 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.
 - MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. PS10.02 AND PS10.05 RESPECTIVELY. DESIGN MIX: J.P.C. BRIDGE MIX 430 MHD8CC
 - QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
 - THE VOIDS MUST BE VENTED DURING CURING PERIOD.
 - CURING METHOD: AS SOON AS THE TOP OF BEAM IS FINISHED, A COVER OF POLY AND A LAYER OF HOPSOTITE (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:
 - ONCE VOIDED SLABS ARE ERECTED, POST-TENSION TENDONS TO APPROXIMATELY 5,000 LBS.
 - GROUT SHEAR KEYS.
 - 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" 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:
 $\Delta P = 0.5 \times \frac{44,000}{15.29} = 1,341$ LBS.
 TOTAL TENSIONING FORCE = 44,000 + 1,341 = 45,341 LBS.

- STRAND TENSIONING PROCEDURE:**
- PULL EACH STRAND INITIALLY TO 3,000+ LBS. AND MARK STRAND.
 - THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,341+ 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.

Structures

6-11-07 REVISED AS NOTED

APPROVAL STAMP:

RECEIVED
 JUN 11 2007
 DATE 6/14/07

J.P. CARRARA & SONS INC.
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FRANK WHITCOMB CONSTRUCTION
 CONTRACTOR
 WALPOLE, NEW HAMPSHIRE

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

TOWN OF CASTLETON
 VERMONT ROUTE 4A
 BRIDGE NO.: 8 PROJECT NO.: RS 0142(10)

DATE: MAY 15, 2007
 SCALE: NOTED
 CHKD: - DFTM: B.L.
 JOB NO: 23256-07
 DWG. NO: F1