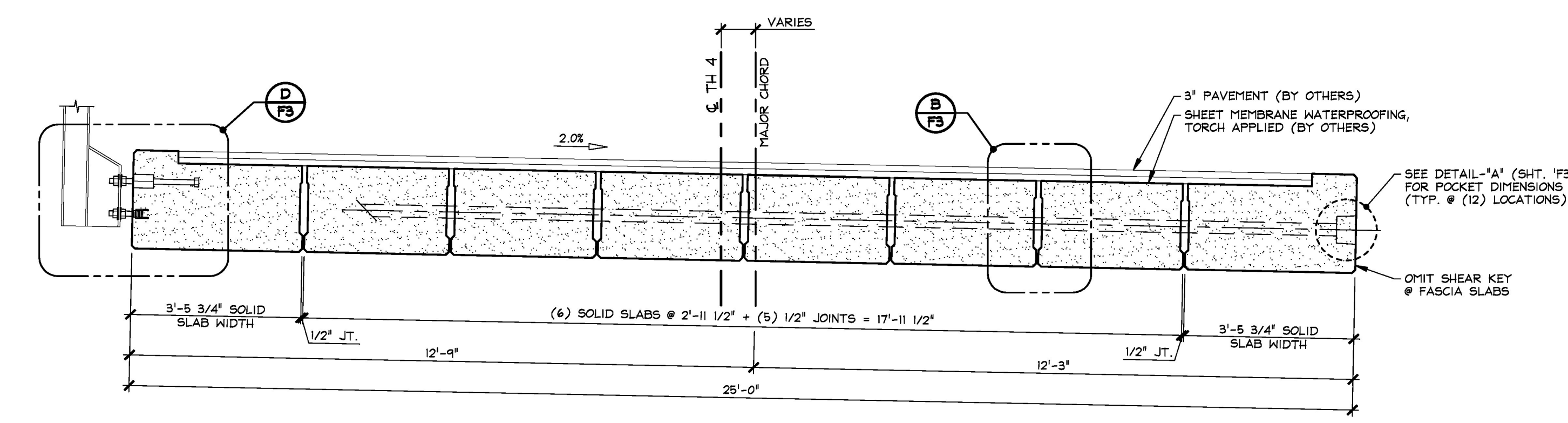


1 PRESTRESSED SOLID SLAB LAYOUT
1/4" = 1'-0"



2 PRESTRESSED SOLID SLAB TRANSVERSE SECTION
1/2" = 1'-0"

- ### SOLID SLAB GENERAL NOTES
- MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 9,000 PSI.
 - MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 6,000 PSI.
 - REINFORCING STEEL SHALL BE GR-520, ASTM A965 M, STAINLESS STEEL (2304 DUPLEX UNS-S323041) (AS NOTED ON SHOP DRAWINGS).
 - 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 SOLID SLABS USING AN ABRASIVE WHEEL (UNLESS NOTED OTHERWISE) AND TWO PART 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 FOR A ROUGHENED SURFACE.
 - 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 MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. THE PINS OF THE SHACKLES SHALL BE PLACED THROUGH THE LIFTING LOOPS. SEE DETAIL, SHEET 'F3'. 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 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. PS10.02 AND PS10.05 RESPECTIVELY.
DESIGN MIX: J.P.C. BRIDGE MIX #430M NO-DC1
SUBMITTED DEC. 20, 2016
 - QUALITY CONTROL AND REPAIR PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
 - CURING METHOD: EITHER OF THE METHODS DESCRIBED BELOW MAY BE EMPLOYED AT THE FABRICATORS OPTION.
MOISTURE & HEAT RETENTION: AS SOON AS THE TOP OF THE UNITS ARE FINISHED A COVER OF POLY AND A LAYOUT OF RIGID INSULATION WILL BE PLACED OVER THE UNIT IN A MANNER THAT WILL NOT DISTURB THE FINISH.
LOW-PRESSURE LIVE STEAM PER 510.1(5): AS SOON AS THE TOP OF THE UNITS ARE FINISHED A COVER OF POLY WILL BE PLACED OVER THE UNIT IN A MANNER THAT WILL NOT DISTURB THE FINISH. ONCE INITIAL SET IS ATTAINED, LIVE STEAM SHALL HEAT THE ENCLOSURE AT A RATE NOT TO EXCEED 40°F PER HOUR. THE PEAK INTERNAL CONCRETE TEMPERATURE SHALL NOT EXCEED 160°F.
FOR EITHER METHOD, THE INTERNAL CONCRETE AND AMBIENT ENCLOSURE TEMPERATURE SHALL BE RECORDED BY AN AUTOMATIC SENSOR INSTRUMENT FOR EACH 100 FEET OF THE CASTING BED UNTIL RELEASE STRENGTH IS ACHIEVED AND THE UNITS ARE DETENSIONED. A CHART OF THE TEMPERATURE DATA SHALL BE LABELED AND PROVIDED TO THE QA INSPECTOR AT THE COMPLETION OF THE CURING PERIOD.
THE UNITS SHALL NOT BE EXPOSED TO A TEMPERATURE DIFFERENTIAL BETWEEN THE SURFACE OF THE HARDENED CONCRETE AND THE AMBIENT STORAGE ENVIRONMENT OF GREATER THAN 40°F AT ANY TIME. UNITS SHALL NOT BE EXPOSED TO AMBIENT TEMPERATURES LESS THAN 36°F UNTIL THE DESIGN STRENGTH IS ACHIEVED.
 - TRANSVERSE POST-TENSIONING SEQUENCE:
A. ERECT SOLID SLABS, AND POST-TENSION TENDONS TO A MAXIMUM OF 3,000 LBS.
B. GROUT SHEAR KEYS (BY OTHERS).
C. ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1,500 PSI AND BEEN CURED FOR (3) DAYS; POST-TENSION TENDONS TO 47,000 LBS.
D. EXCESS TENDON LENGTH SHALL BE CUT USING AN ABRASIVE WHEEL.
E. APPLY TWO PART EPOXY TO EXPOSED TENDON AND CHUCK (BY OTHERS).
F. SEE SECTION 510 FOR ADDITIONAL GROUTING AND POST-TENSIONING REQUIREMENTS.
 - OWNER SHALL PROVIDE APPROPRIATE WATERPROOFING TO GROUTED SHEAR KEYS. J.P. CARRARA & SONS, INC. SHALL NOT BE HELD LIABLE FOR PROBLEMS ASSOCIATED WITH MOISTURE INFILTRATING GROUTED 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 IN²
TENSION: 44,000 LB. EACH STRAND
GRIP-TO-GRIP: 184'-0" = 184.00'
E_s = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

EXAMPLE:
 $\Delta = \frac{P_L}{AE} = \frac{(44,000 - 3,000) \times 184.00 \times 12}{0.217 \times 28,600,000} = 14.983'$

THEREFORE: (TOLERANCES ± 3%)
 Δ UPPER LIMIT = 1.05 x 14.983' = 15.73' = 15 3/4"
 Δ LOWER LIMIT = 0.95 x 14.983' = 14.23' = 14 1/4"

EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:
 $\Delta P = \frac{0.5 \times 41,000}{14.983} = 1,368$ LBS.

TOTAL TENSIONING FORCE = 44,000 + 1,368 = 45,368 LBS.

- ### STRAND TENSIONING PROCEDURE:
- PULL EACH STRAND INITIALLY TO 3,000+ LBS. AND MARK STRAND.
 - THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,368+ LBS. AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 14 1/4" AND 15 3/4".
- * NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.

T.Y. LIN INTERNATIONAL
THE STAMPED DOCUMENTS ARE HEREBY:
- APPROVED
- APPROVED AS NOTED
- REVISE AND RESUBMIT

SEE TRANSMITTAL FOR ADDITIONAL INFORMATION AS APPLICABLE.

THIS REVIEW IS FOR GENERAL CONFORMANCE WITH DESIGN CONCEPT ONLY. ANY DEVIATION FROM THE PLANS OR SPECIFICATIONS NOT CLEARLY NOTED BY THE CONTRACTOR HAS NOT BEEN REVIEWED. REVIEW BY THE ENGINEER SHALL NOT RELIEVE THE CONTRACTOR OF THE CONTRACTUAL RESPONSIBILITY FOR ANY ERRORS OR DEVIATION FROM THE CONTRACT REQUIREMENTS.

JOSH OLUND
REVIEWER
January 25, 2017
DATE

- 1-24-17 REVISED AS NOTED
- 1-3-17 REVISED AS NOTED

APPROVAL STAMP:

J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 244 GAGE ST., WOODBURY, VERMONT 05730 Phone: (802)388-6361 Fax: (802)388-9910	J.P. SICARD, INC. CONTRACTOR BARTON, VERMONT
	STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF ORLEANS
VILLAGE OF BARTON TH 4 (ROARING BROOK RD.), RURAL MINOR COLLECTOR BRIDGE NO.: 58 PROJECT NO.: BO 1449(33)	DATE: NOV. 18, 2016 SCALE: NOTED CHKD: A.S. DFTM: B.L. JOB NO: 23498-016
PRESTRESSED SOLID SLAB LAYOUT & TRANSVERSE SECTION	DWG. NO: F1 ROARING BROOK RD.

Vermont Agency of Transportation
RECEIVED
CK'D BY T.Y. Lin International OK'D BY J. Olund
January 24, 2017
RESUBMIT No Approved
BY D. Borneau DATE 01/25/17