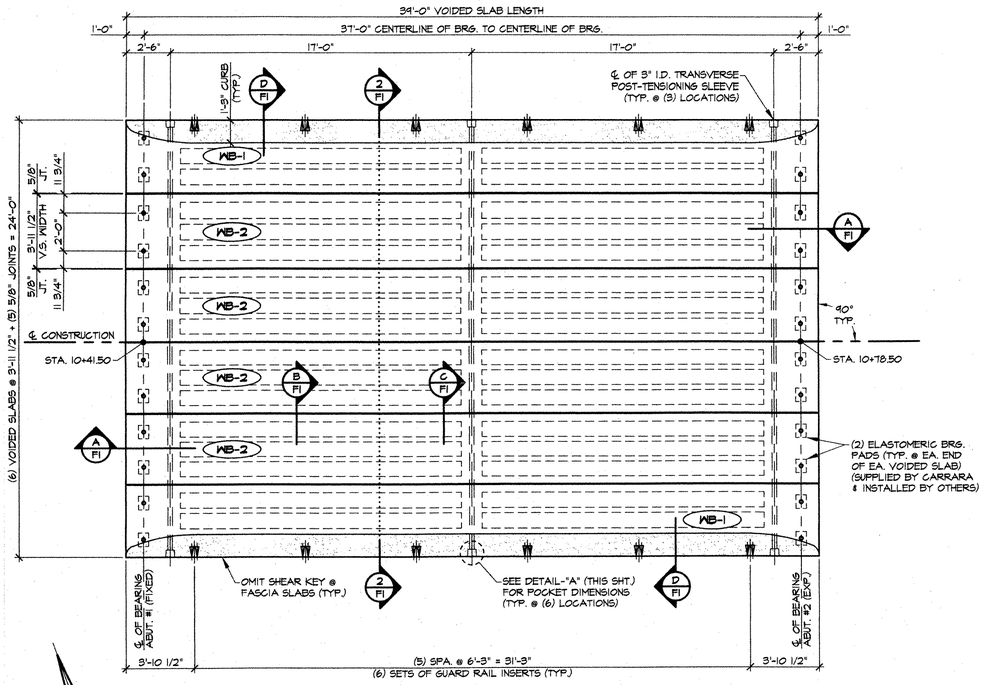
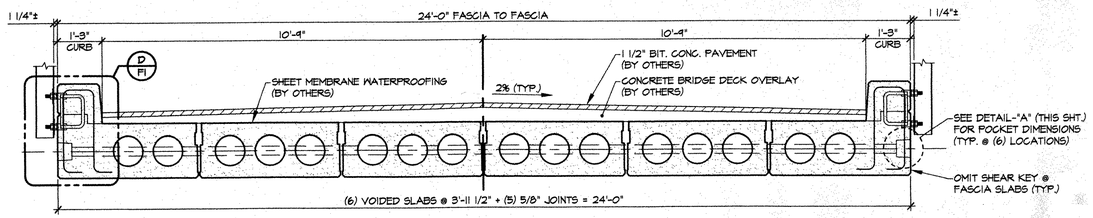


1/F1 PRESTRESSED VOIDED SLAB LAYOUT

1/4" = 1'-0"

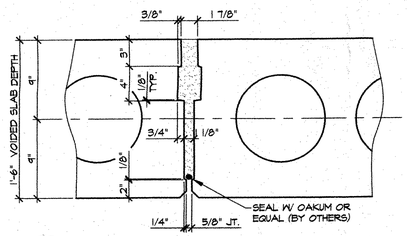
DESIGN LOAD: HS-25-44

SEE J.P. CARRARA & SONS, INC. DESIGN CALCULATIONS FOR LOAD RATING TABLE INFORMATION.



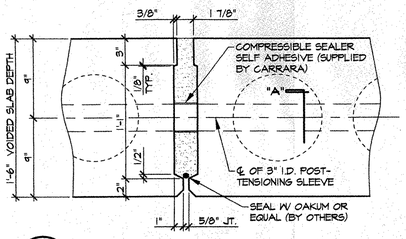
2/F1 TRANSVERSE SECTION

1/2" = 1'-0"



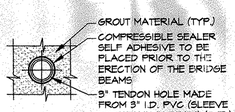
B/F1 TYP. SHEAR KEY SECTION

1 1/2" = 1'-0"



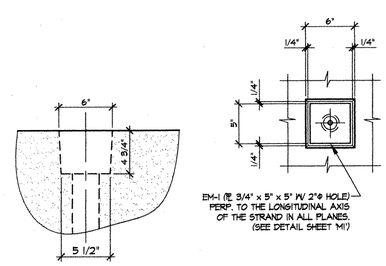
C/F1 SHEAR KEY SECTION @ P.T. SLEEVE

1 1/2" = 1'-0"

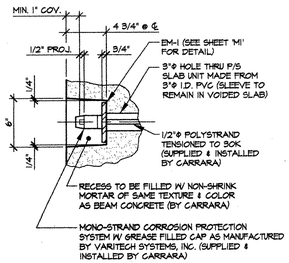


SECTION - "A"

1 1/2" = 1'-0"



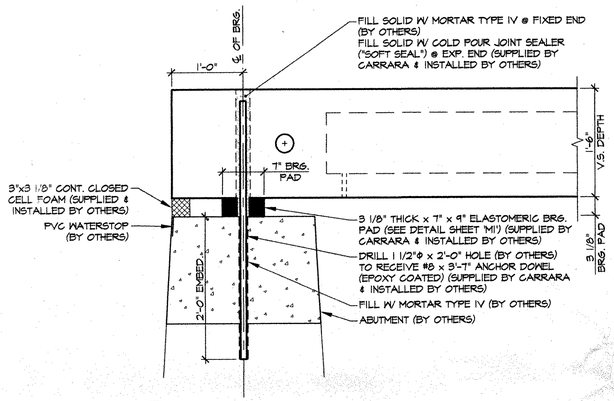
PLAN OF POCKET — FASCIA ELEVATION



SECTION AT CENTERLINE

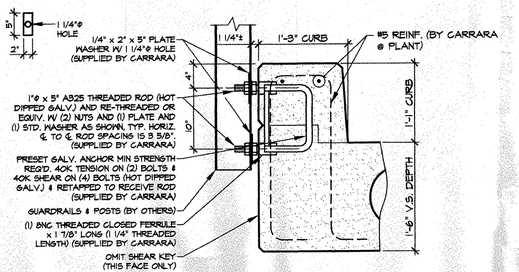
DETAIL - "A"

1 1/2" = 1'-0"



A/F2 SECTION AT BEARING

1" = 1'-0"



D/F1 GUARDRAIL ANCHORAGE DETAIL

1" = 1'-0"

J.P. CARRARA & SONS, INC.
NOV 12 2003
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GENERAL NOTES

1. MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 6,000 PSI.
2. MIN CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 4,800 PSI.
3. REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) AND SHALL BE BLACK STEEL.
4. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M203) AND SHALL CONSIST OF 1/2"ø x 270 KSI 7 WIRE LOW RELAXATION STRANDS.
5. PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 31.0K AFTER ACCOUNTING FOR CHUCK SLIPPAGE. TENSION SHALL BE VERIFIED BY MEASURING STRAND ELONGATION. SEE EXAMPLE ELONGATION CALCULATION AND TENSIONING PROCEDURE, THIS SHEET.
6. ENDS OF PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH END OF BOX BEAMS AND EPOXY PAINTED.
7. BEARING PADS SHALL CONFORM TO VERMONT SPEC. 731.03.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
9. THE TOPS OF THE SLABS SHALL RECEIVE A SMOOTH FLOAT FINISH, (UNLESS NOTED OTHERWISE).
10. SHEAR KEY SURFACES SHALL BE BLASTED CLEAN.
11. 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 2'-0" OF THE SLAB ENDS, UNLESS APPROVED BY J.P. CARRARA & SONS INC.
12. MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. P510.02 AND P510.05 RESPECTIVELY.

    DESIGN MIX: J.P.C. BRIDGE MIX #450
    752 LBS. TYPE III CEMENT - GLENS FALLS CEMENT
    1215 LBS. FINE AGGREGATE
    1650 LBS. COARSE AGGREGATE
    28 GAL. WATER - 233 LBS.
    7% (± 2%) AIR CONTENT (5.5 OZ. DAREX II) ADJUST AS REQUIRED
    6.0 OZ. ADVA PER 100 LBS. CEMENT, MAX. 7" SLUMP
    3 OZ. DARACEM PER 100 LBS. CEMENT
    512 OZ. DCI
13. QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS INC. IS A PCI CERTIFIED PLANT.
14. THE VOIDS MUST BE VENTED DURING CURING PERIOD.
15. CURING METHOD: AS SOON AS THE TOP OF THE BEAM IS FINISHED, A COVER OF POLY AND A LAYER OF HOMOSOTE (OR BLUE BOARD) WILL BE PLACED OVER THE SLAB. THE DESIRED CURING TEMPERATURE RANGE SHALL NOT DROP BELOW 70 DEGREES 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.
16. TRANSVERSE POST-TENSIONING SEQUENCE:
    A. ONCE VOIDED SLABS ARE ERECTED, POST-TENSION TENDONDS TO APPROXIMATELY 5,000 LBS.
    B. GROUT SHEAR KEYS.
    C. ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1,500 PSI, POST-TENSION TENDONS TO 30,000 LBS.

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 1/2"ø 270 KSI

AREA: 0.153 IN^2

TENSION: 31,000 LB EACH STRAND

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:

$$\Delta = \frac{PL}{AE} = \frac{(31{,}000 - 3{,}000) \times 192.813 \times 12}{0.153 \times 28{,}600{,}000} = 14.81"$$

THEREFORE TOLERANCES: ± 5%
- Δ UPPER LIMIT = 1.05 x 14.81" = 15.55" = 15 9/16"
- Δ LOWER LIMIT = 0.95 x 14.81" = 14.07" = 14 1/16"

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

$$\Delta P = \frac{0.5 \times 28{,}000}{14.81} = 945 \text{ LB}$$

TOTAL TENSIONING FORCE = 31,000 + 945 = 31,945 LB

STRAND TENSIONING PROCEDURE:

1. PULL EACH STRAND INITIALLY TO 3,000* LB AND MARK STRAND.
2. THEN PULL EACH STRAND TO A TOTAL TENSION OF 31,945* LB AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 14 1/16" & 15 9/16"

*NOTE : FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.

⚠ 11-12-03 ISSUED FOR PRODUCTION

APPROVAL STAMP:
☒ Reviewed ☐ Furnish as Corrected
☐ Rejected ☐ Revise and Resubmit
☐ Submit Specified Item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the jobsite. Information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction, coordination of the Work with that of all other trades and performing all work in a safe and satisfactory manner

by Stephno-Johnson, Inc.
Date 11/25/03
By RJ Jorg

STATE OF VERMONT ERNEST J. ROD No. 3614 REGISTERED PROFESSIONAL ENGINEER

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6351 Fax:(802)388-9010

R.C. CONTRACTORS
CONTRACTOR
GLOVER, VERMONT

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TOWN OF WATERBURY
TH 3-9687 LOOMIS HILL ROAD (T.H. 6, CLASS 3) BRIDGE NO. 14

SUPERSTRUCTURE PLAN & DETAILS

DATE: JULY 18, 2003
SCALE: NOTED
CHKD: -- DFTM: B.L.
JOB NO: 23185-03
DWG. NO: F1

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