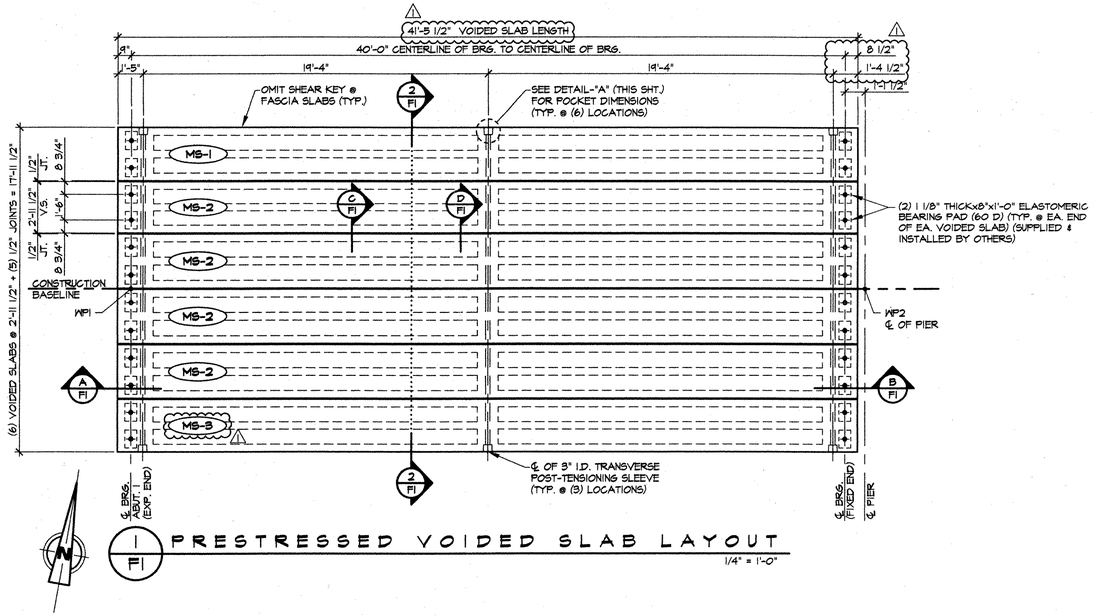
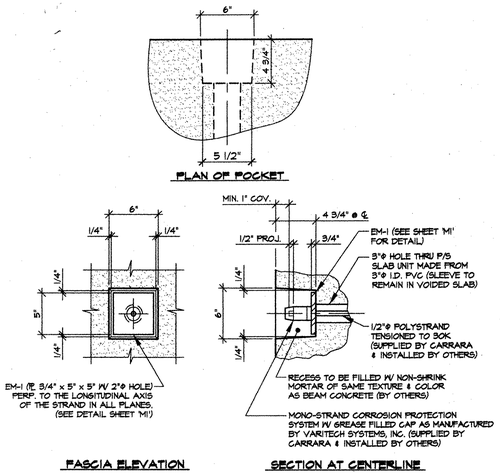


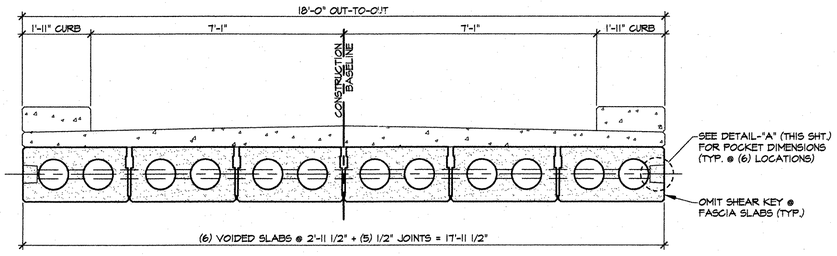
1 / F1 PRESTRESSED VOIDED SLAB LAYOUT

1/4" = 1'-0"



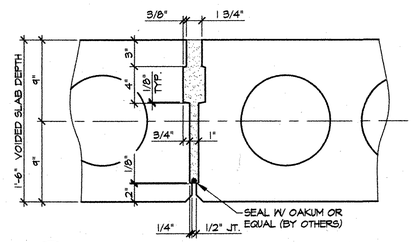
DETAIL - "A"

1 1/2" = 1'-0"



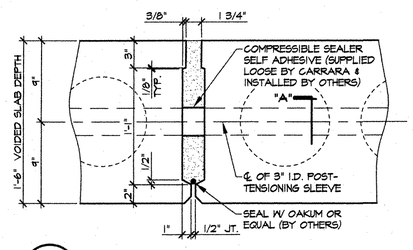
2 / F1 TRANSVERSE SECTION

1/2" = 1'-0"



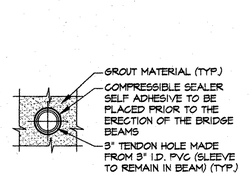
C / F1 TYP. SHEAR KEY SECTION

1 1/2" = 1'-0"



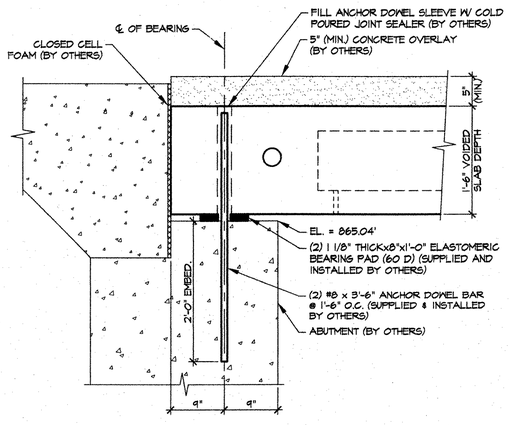
D / F1 SHEAR KEY SECTION @ P.T. SLEEVE

1 1/2" = 1'-0"



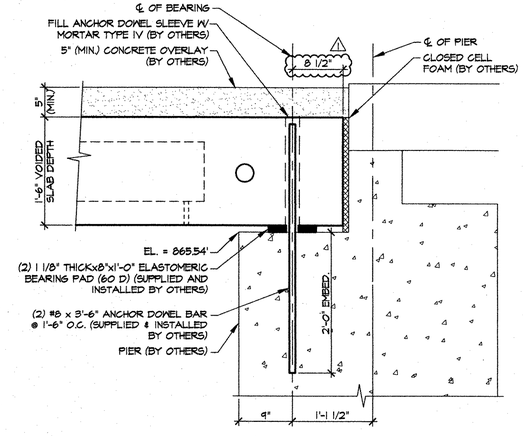
SECTION - "A"

1 1/2" = 1'-0"



A / F1 SECTION AT BEARING

EXPANSION END 1" = 1'-0"



B / F1 SECTION AT BEARING

FIXED END 1" = 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 1/2"ø x 270 KSI 7 WIRE LOW RELAXATION STRANDS.
5. PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 30.9 K 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 VOIDED SLABS AND EPOXY PAINTED.
7. THE TOPS OF THE SLABS SHALL RECEIVE A TRANSVERSE RAKE FINISH ROUGHENED TO 1/4" AMPLITUDE.
8. SHEAR KEY SURFACES SHALL BE BLASTED CLEAN.
9. 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.
10. 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
11. QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS INC. IS A PCI CERTIFIED PLANT.
12. THE VOIDS MUST BE VENTED DURING CURING PERIOD.
13. CURING METHOD: AS SOON AS THE TOP OF THE SLAB 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.
14. TRANSVERSE POST-TENSIONING 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 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:

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

TOLERANCES: ± 5%

THEREFORE 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.

⚠ 12-15-03 REVISED FIXED END BEARING

APPROVAL STAMP:

APPROVED
LCE 1/13/04 JM

RECEIVED
CK'D BY_____ OK'D BY_____
JAN 0 5 2004
RESUBMIT_____ APPROVED
BY _____ DATE 1/6/04

RECEIVED
JAN 12 2004
LICHTENSTEIN

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

WINTERSET, INC.
CONTRACTOR
LYNDONVILLE, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION	DATE: NOV. 14, 2003
	SCALE: NOTED
TOWN OF MAIDSTONE MAIDSTONE STP 2134(1)S and MAIDSTONE-STRATFORD, NH BHO 1447(24)	CHKD: DFTM: B.L.
	JOB NO: 23188-03
SUPERSTRUCTURE PLAN & DETAILS	DWG. NO: F1

F:\NH\...\23188-03 Maidstone\23188-F1.dwg, 12/16/2003 01:22:03 PM

072 SHOP