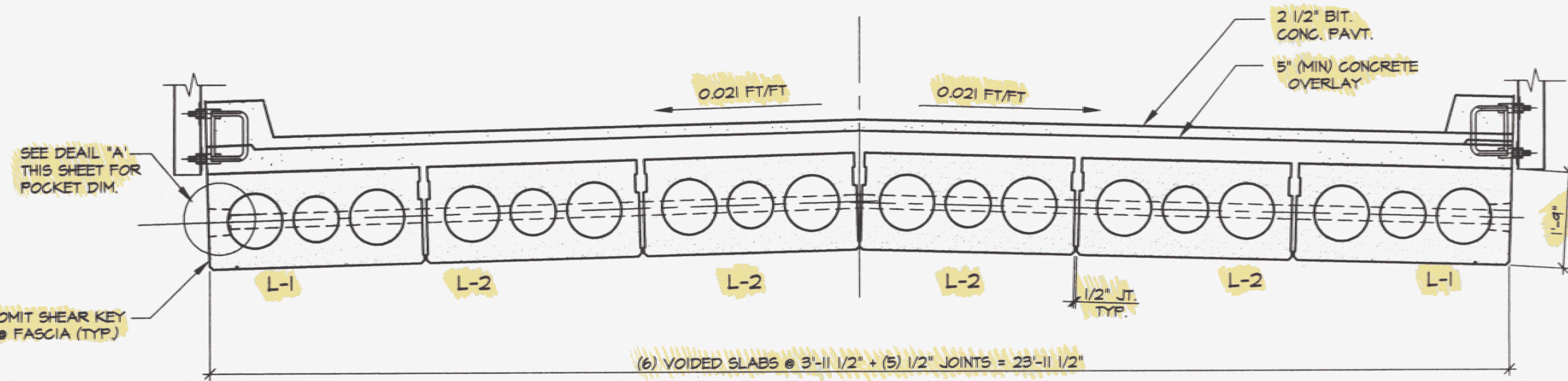


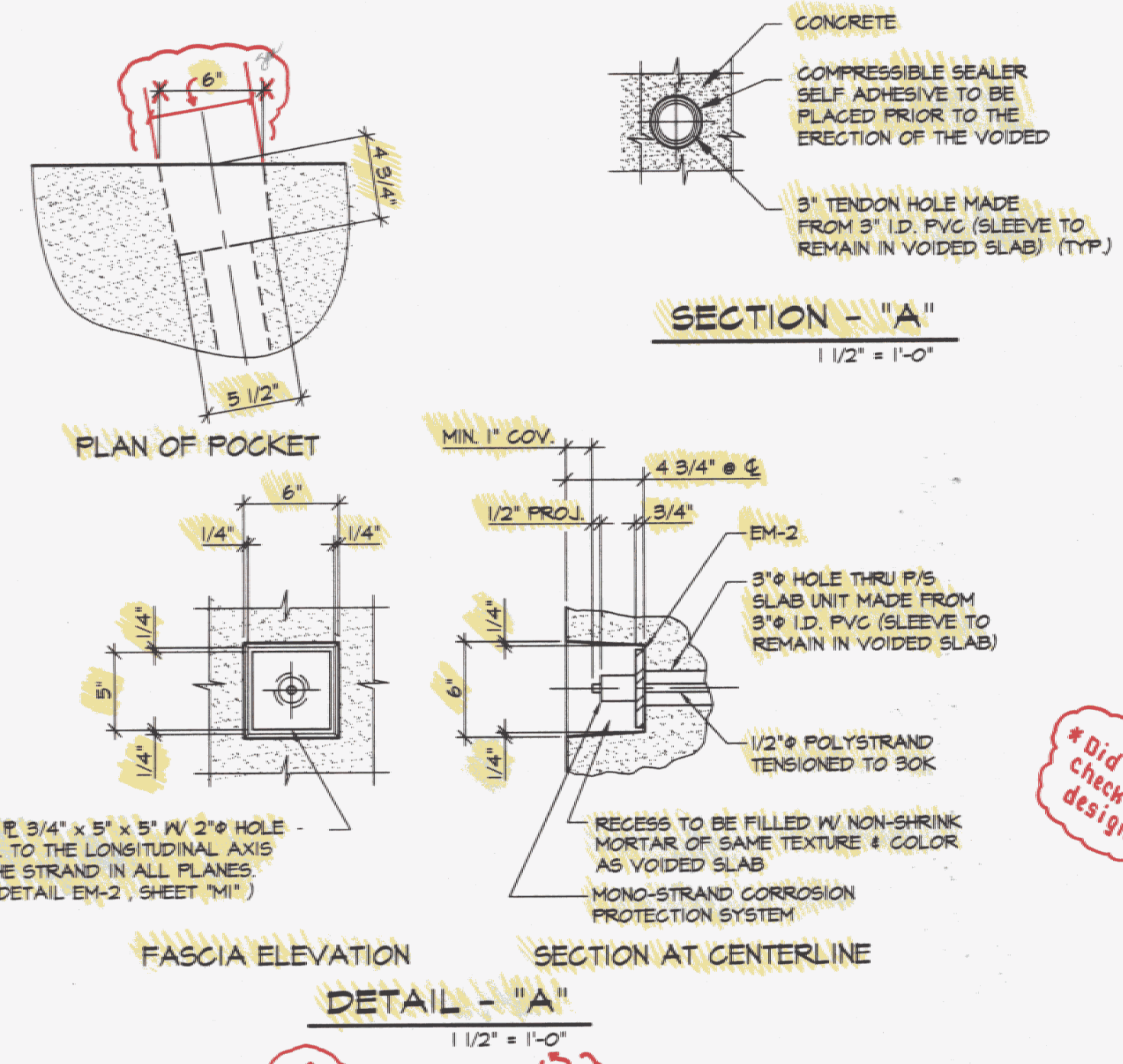
1 PRESTRESSED VOIDED SLAB LAYOUT
1/4" = 1'-0"

DESIGN LOADS HS 25



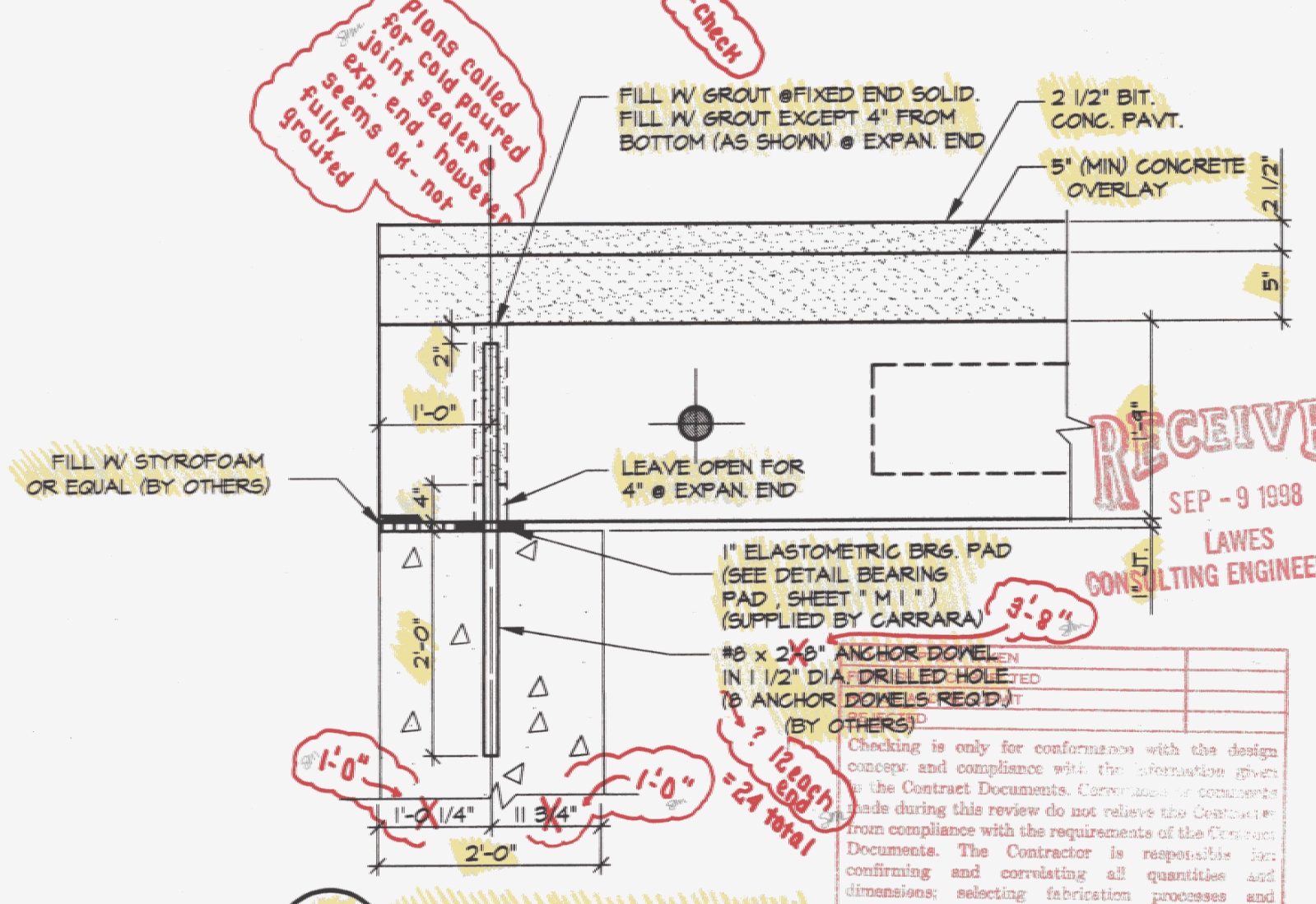
2 TRANSVERSE SECTION
1/2" = 1'-0"

Structures Section Copy - Do Not Throw Away !!



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

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



A SECTION @ BEARING
3/4" = 1'-0"

B SHEAR KEY SECTION
1/2" = 1'-0"

- ### GENERAL NOTES
- MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 5000 PSI.
 - MIN CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 4000 PSI.
 - REINFORCING STEEL SHALL BE #6-60, ASTM A-615 (AASHTO M61) EPOXY COATED.
 - PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M209) AND SHALL CONSIST OF 1/2" x 270 KSI 7 WIRE LOW RELAXATION STRANDS.
 - PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 31.0K (LN) 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 AND EPOXY PAINTED.
 - BEARING PADS SHALL CONFORM TO VERMONT SPEC. 791.09.
 - ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
 - TOP SURFACE OF EACH UNIT SHALL BE RAKED TO A UNIFORM ROUGHNESS WITH AN AVERAGE AMPLITUDE OF 1/4".
 - 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 6'-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 #480A
 675 LBS. TYPE III CEMENT - GLENS FALLS CEMENT
 100 LBS. FLY ASH TYPE-F
 1150 LBS. FINE AGGREGATE
 180 LBS. COARSE AGGREGATE
 31 GAL. WATER - 25# LBS.
 6% (18) AIR CONTENT (5.5 OZ. DAREX II) ADJUST AS REQUIRED
 24 OZ. WDA-H PER 100 LBS. CEMENT, MAX. T' SLUMP
 2 OZ. DARATARD-1 PER 100 LBS. CEMENT
- QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS INC. IS A PCI CERTIFIED PLANT.
 - THE VERMONT AGENCY OF TRANSPORTATION WILL BE NOTIFIED IN A TIMELY MANNER SO THAT ALL PRECAST OPERATIONS MAY BE WITNESSED.
 - 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 BEAM. THE DESIRED CURING TEMPERATURE RANGE SHALL NOT DROP BELOW TO 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.
 - TRANSVERSE POST-TENSIONING SEQUENCE (FOR EACH STAGE):
 A. ONCE BEAMS ARE ERECTED, POST TENSION TENDONS TO APPROXIMATELY 5,000 LBS.
 B. GROUT SHEAR KEYS (BY OTHERS)
 C. ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI, POST-TENSION TENDONS TO 30,000 LBS.

* Did not check mix design

Plans called for joint sealers & styrofoam - not grouted

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EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.800" x 270 KSI
 AREA: 0.215 IN²
 TENSION: 44,000 LB EACH STRAND
 GRIP TO GRIP: 142'-4 3/4" = 142.815'
 Es = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS. VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

EXAMPLE:

$$\Delta = \frac{FL}{AE} = \frac{(44,000 - 3,000) \times 142.815 \times 12}{0.215 \times 28,600,000} = 15.43"$$
 TOLERANCES: ± 5%
 THEREFORE

$$\Delta_{UPPER LIMIT} = 1.05 \times 15.43" = 16.20" = 16 \frac{3}{16}"$$

$$\Delta_{LOWER LIMIT} = 0.95 \times 15.43" = 14.65" = 14 \frac{5}{8}"$$
 EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:

$$\Delta P = 0.5 \times \frac{41,000}{15.43} = 1330 \text{ LB}$$
 TOTAL TENSIONING FORCE = 44,000 + 1330 = 45,330 LB

* Adjust for correct strand & tension

* Example only!! - not true for design/const

STRAND TENSIONING PROCEDURE:

- PULL EACH STRAND INITIALLY TO 3,000 LB AND MARK STRAND.
 - THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,330 LB AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 14 5/8" & 16 3/16"
- * NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.

* Adjust accordingly

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 BY JBM/PMT DATE 9-18-98

STATE OF VERMONT
 AGENCY OF
 TRANSPORTATION

DRAWN: S. PETROSYAN
 DESIGNED: _____
 CHECKED: _____
 APPROVED: _____

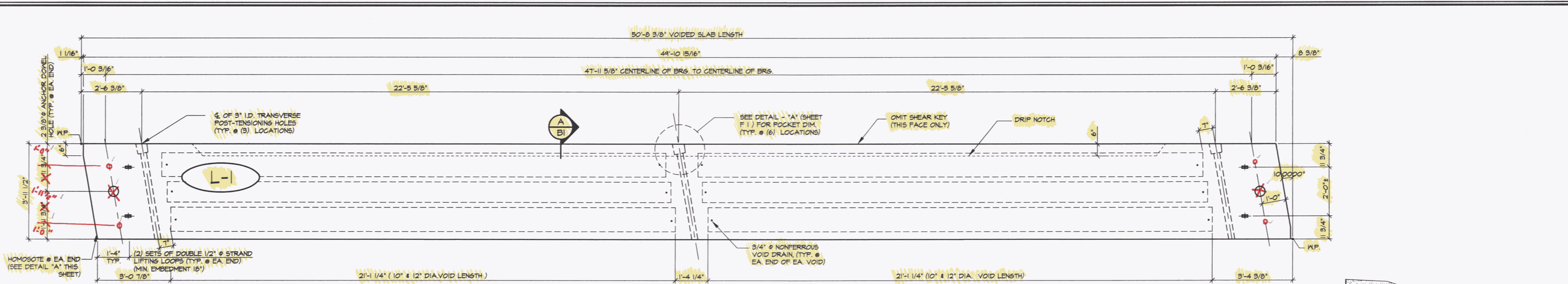
J.P. CARRARA & SONS INC.
 Precast & Prestress Manufacturer
 RTE. 116, MIDDLEBURY, VERMONT 05753
 Phone: (802) 388-6361 Fax: (802) 388-9010

Contractor Name:
WINTerset, INC.
 BOX 968
 LYNDONVILLE, VT 05851

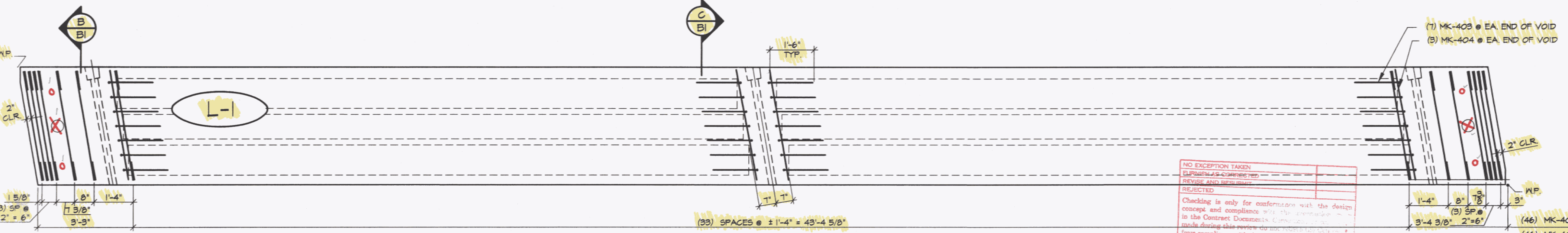
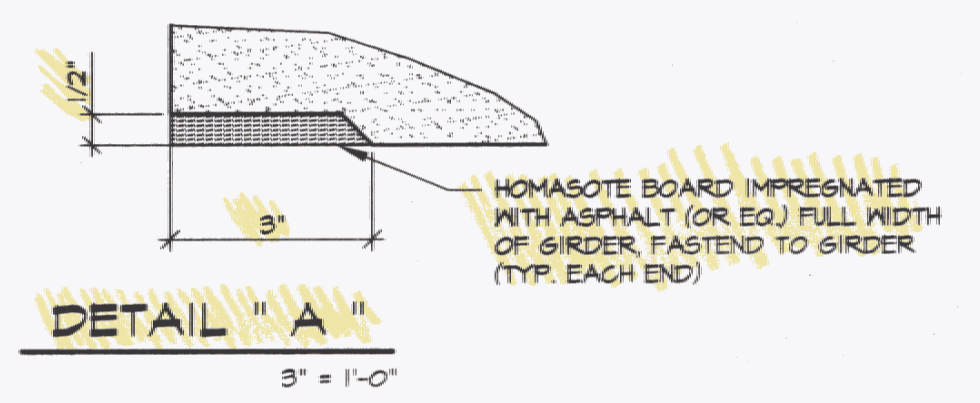
Project Name:
**TOWN OF LOWELL
 ROUTE TH2 BRIDGE # 9
 TOWN OF LOWELL, VT**

SCALE: NOTED
 JOB #: 23065-48
 DATE: 8-9-98
 SHEET #: F1

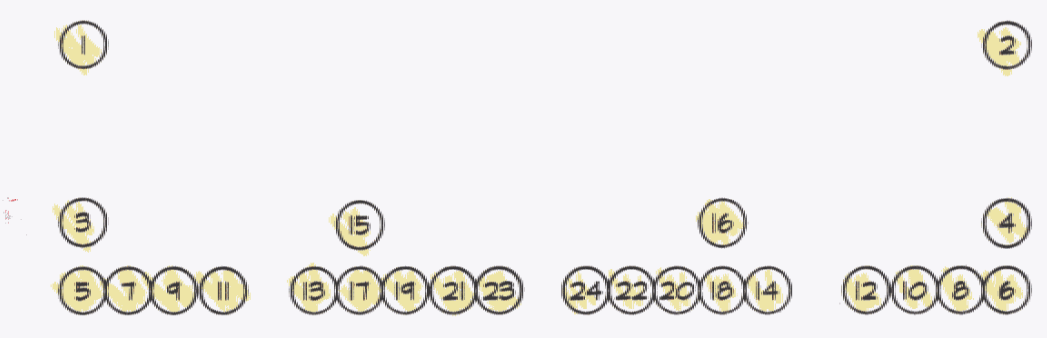
NO.	DATE	REVISION



1 DIMENSIONAL PLAN
BI
1" = 1'-0"



2 REINFORCING PLAN
BI
1" = 1'-0"



DETENSIONING SCHEDULE
N.T.S.

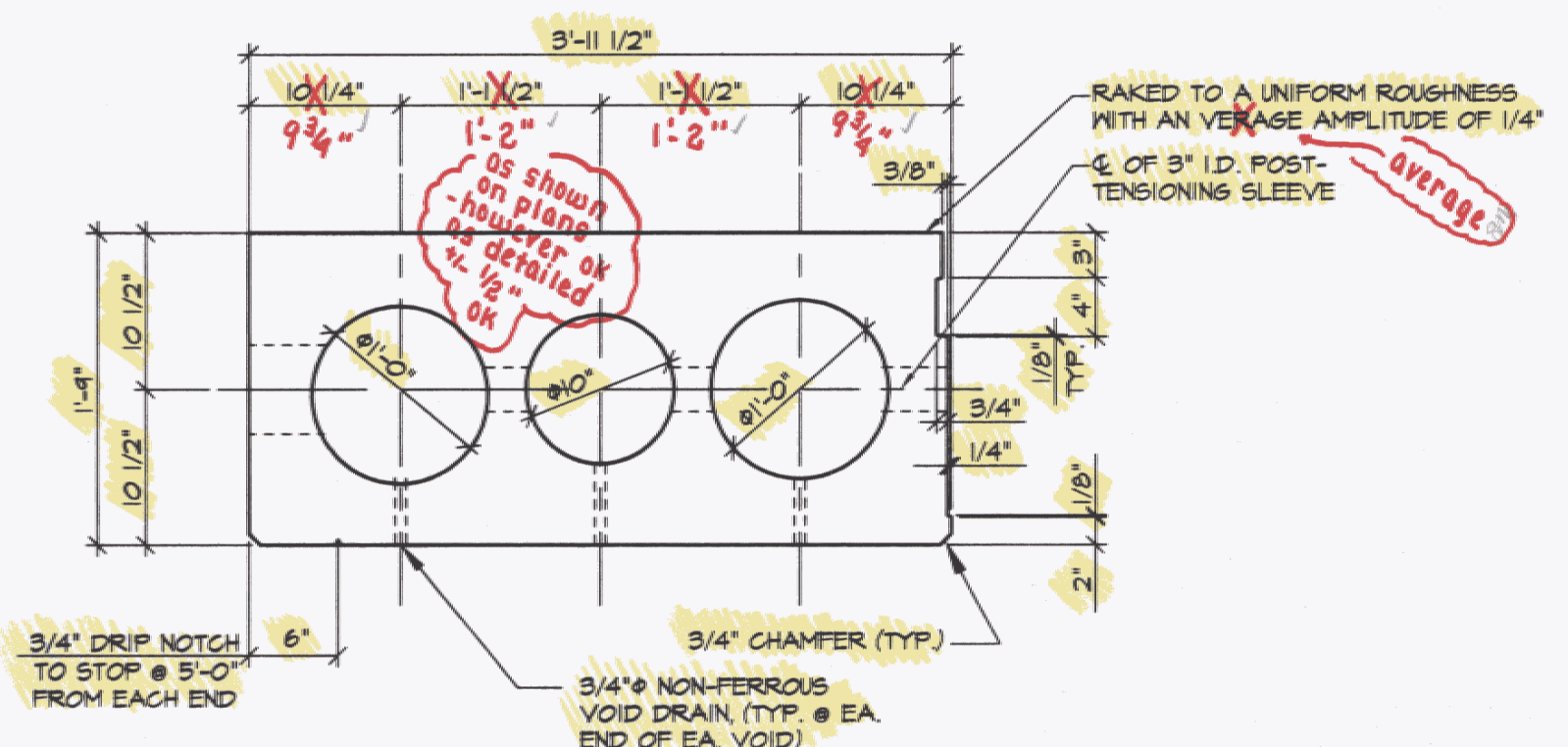
NO EXCEPTION TAKEN
EXEMPTED AS CORRECTED PER
REVISION AND RESUBMIT

Checking is only for conformance with the design concept and compliance with the requirements in the Contract Documents. Compliance with the Code is the Contractor's responsibility. The Contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his work with that of all other trades, and performing his work in a safe and satisfactory manner.

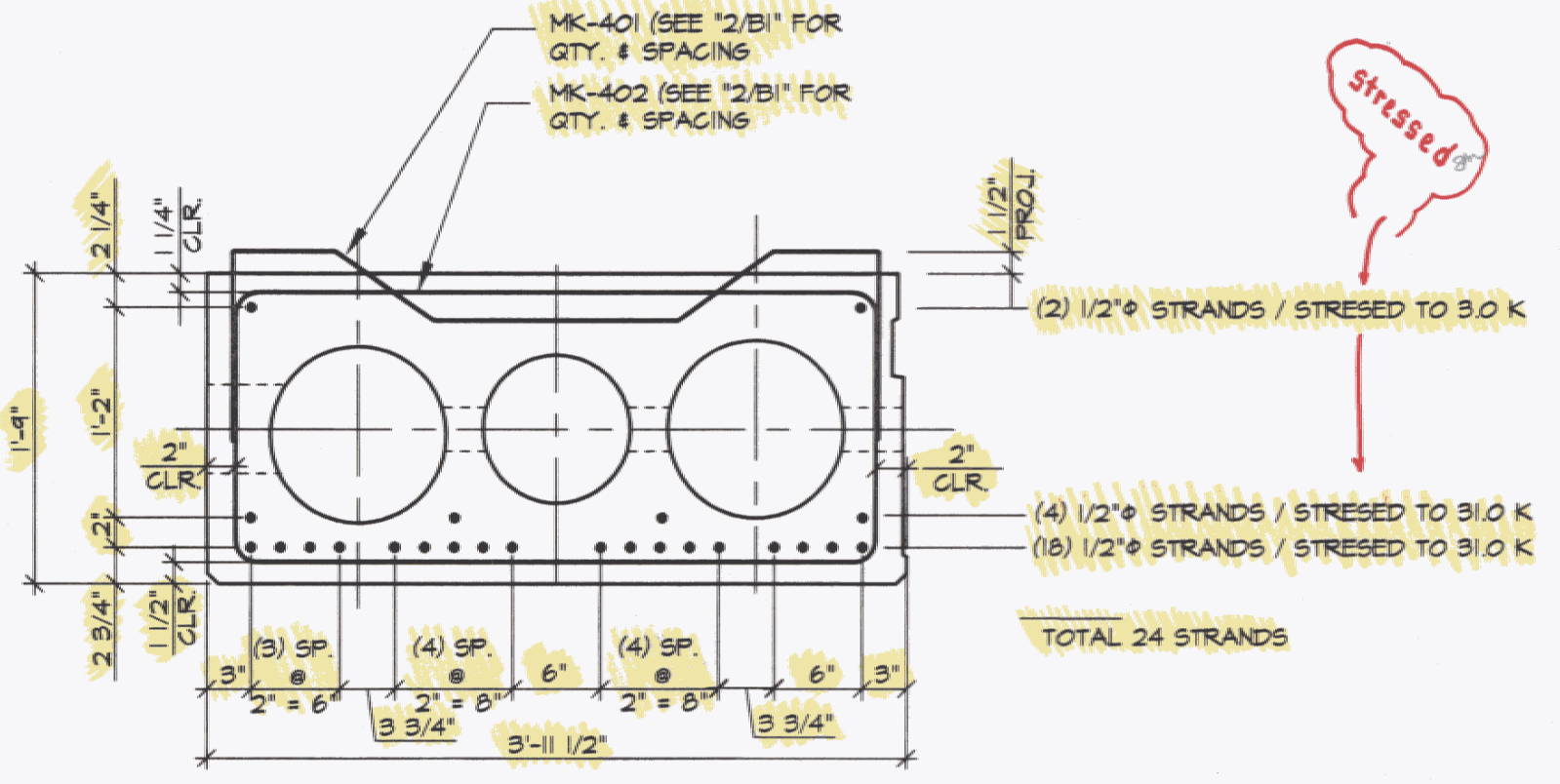
LAWES CONSULTING ENGINEERS, INC.
Date: _____ By: _____

SHOP NOTE:
ADJUST REINFORCING AS REQD. TO CLEAR POST-TENSIONING AND ANCHOR SLEEVES.

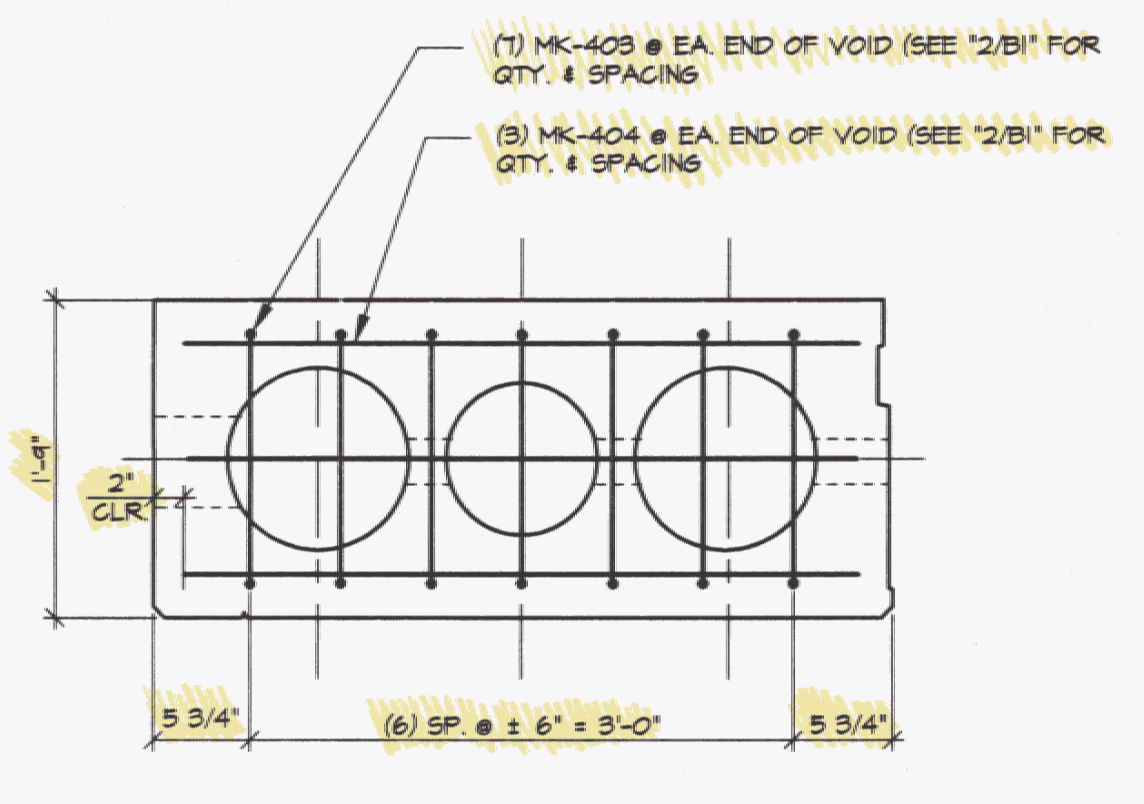
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A DIMENSIONAL SECTION
BI
1" = 1'-0"



B REINFORCING SECTION
BI
1" = 1'-0"



C REINFORCING SECTION @ END OF VOID
BI
1" = 1'-0"

MARK:	L-1	QTY:	2	WT./TONS	16.28	CU. YDS.	8.04
MATERIAL LIST / UNIT							
ITEM	MARK	DESCRIPTION	QTY.				
1	401	#4 BENT BAR (EPOXY COATED)	46				
2	402	#4 BENT BAR (EPOXY COATED)	46				
3	403	#4 BENT BAR (EPOXY COATED)	28				
4	404	#4 BENT BAR (EPOXY COATED)	12				
5							
6							
7							
8							
9							
10		10" ø x 21'-1 1/4" VOID	2				
11		12" ø x 21'-1 1/4" VOID	4				
12							
13							
14							
15							
16							
17							
18		3/4" ø NON-FERROUS VOID DRAIN	12				
19		1/2" ø STRAND LIFTING LOOPS (SET OF 2 LOOPS)	4				
20							

NO.	DATE	REVISION

STATE OF VERMONT
AGENCY OF
TRANSPORTATION

DRAWN: S PETROSYAN
DESIGNED: _____
CHECKED: _____
APPROVED: _____

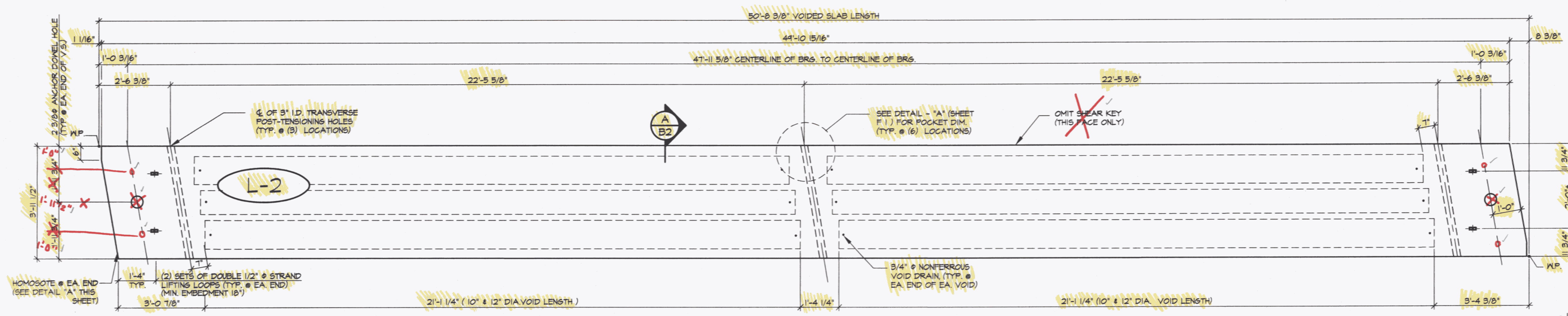
J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
RTE. 116, MIDDLEBURY, VERMONT 05753
Phone: (802) 388-4361 Fax: (802) 388-9010

Contractor Name:
WINTERSET, INC.
BOX 968
LYNDONVILLE, VT 05851

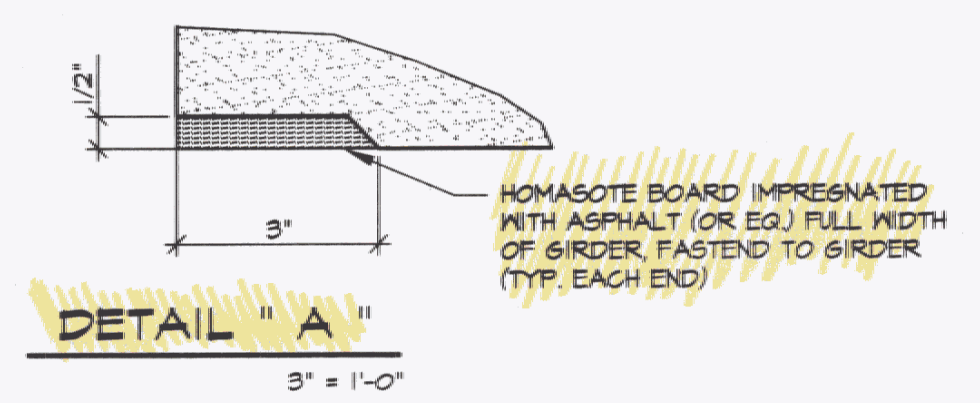
Project Name:
**TOWN OF LOWELL
ROUTE TH2, BRIDGE # 9
TOWN OF LOWELL, VT**

SCALE: JOB #:
NOTED 23065-98
DATE: SHEET #:
8-9-98 B1

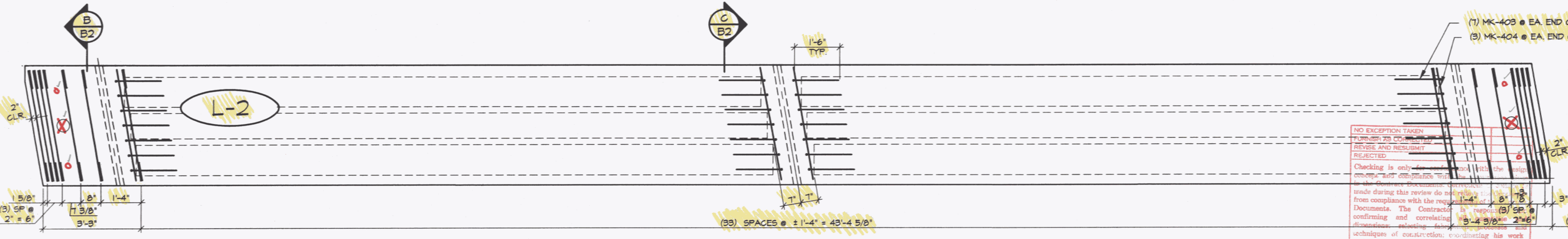
P/S VOIDED SLAB DETAILS



1 DIMENSIONAL PLAN
B2



DETAIL "A"
3' x 1'-0"



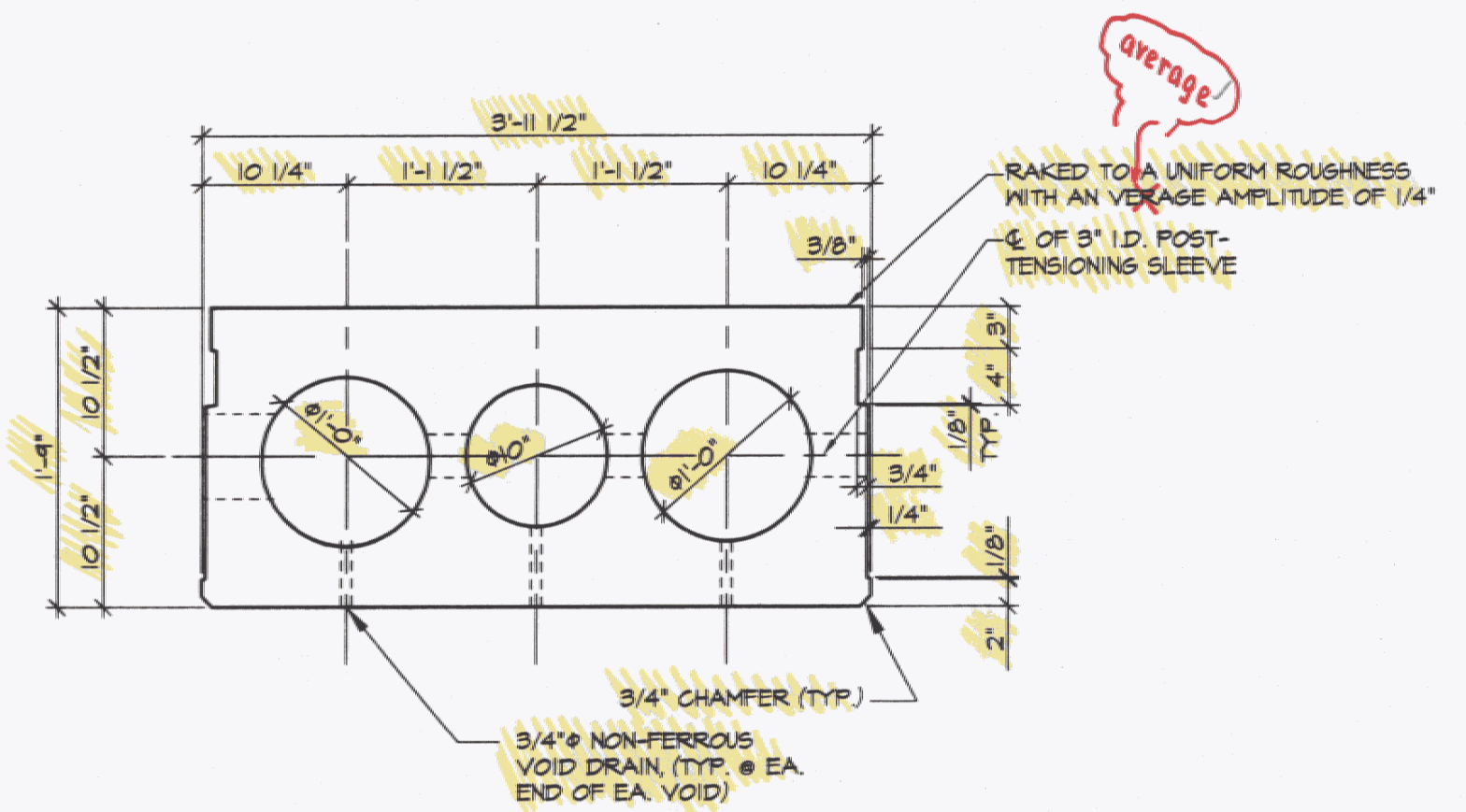
2 REINFORCING PLAN
B2

NO EXCEPTION TAKEN
FOR THIS DOCUMENT
REVISE AND RESUBMIT
REJECTED.
Checking is only for compliance with the requirements of the contract documents. The Contractor is responsible for confirming and correlating all dimensions, quantities, and materials with the contract documents, including the shop drawings, and performing his work in a safe and satisfactory manner.
LAWES CONSULTING ENGINEERS, INC.
Date: _____ By: _____

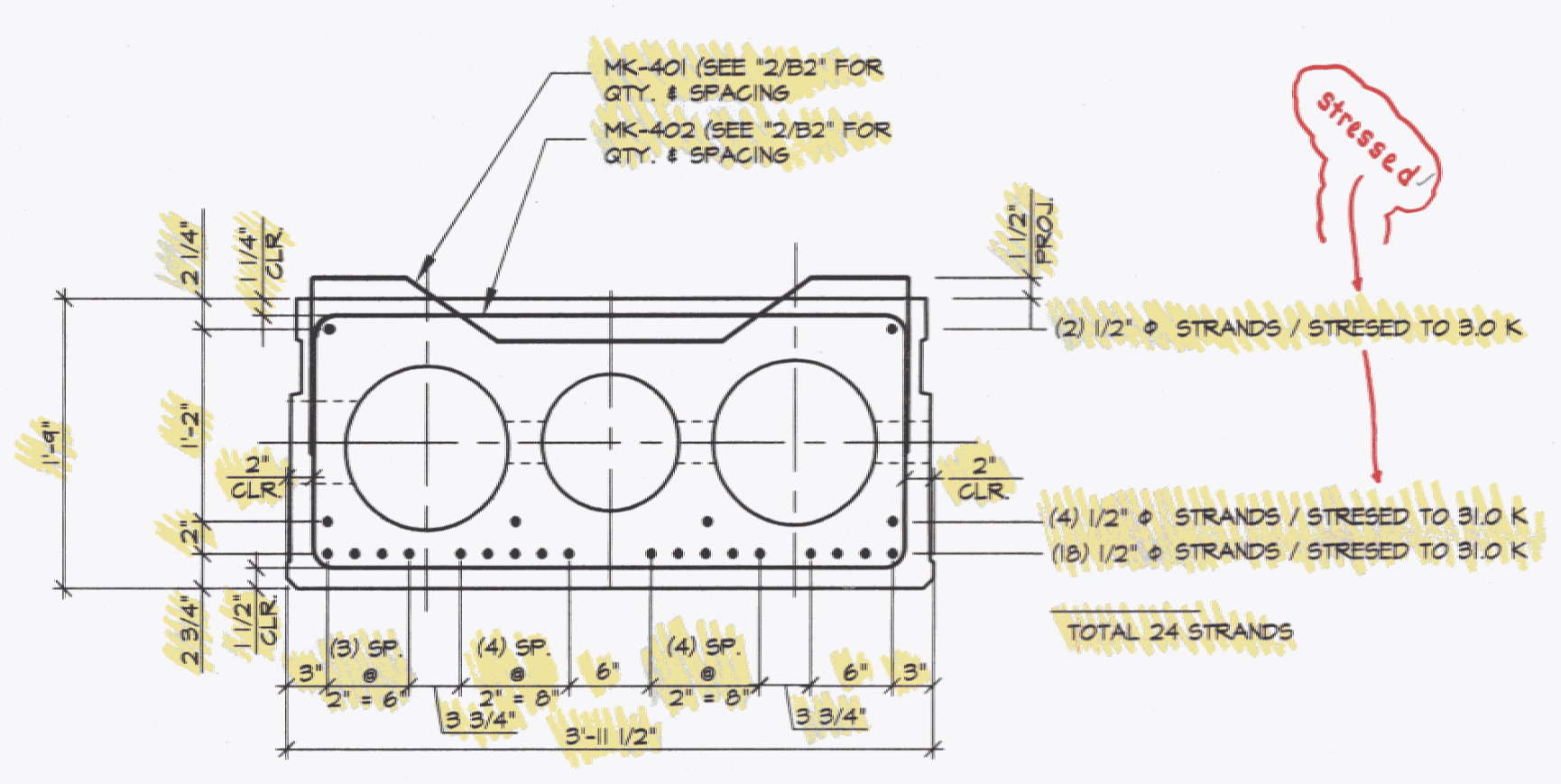
SHOP NOTE:
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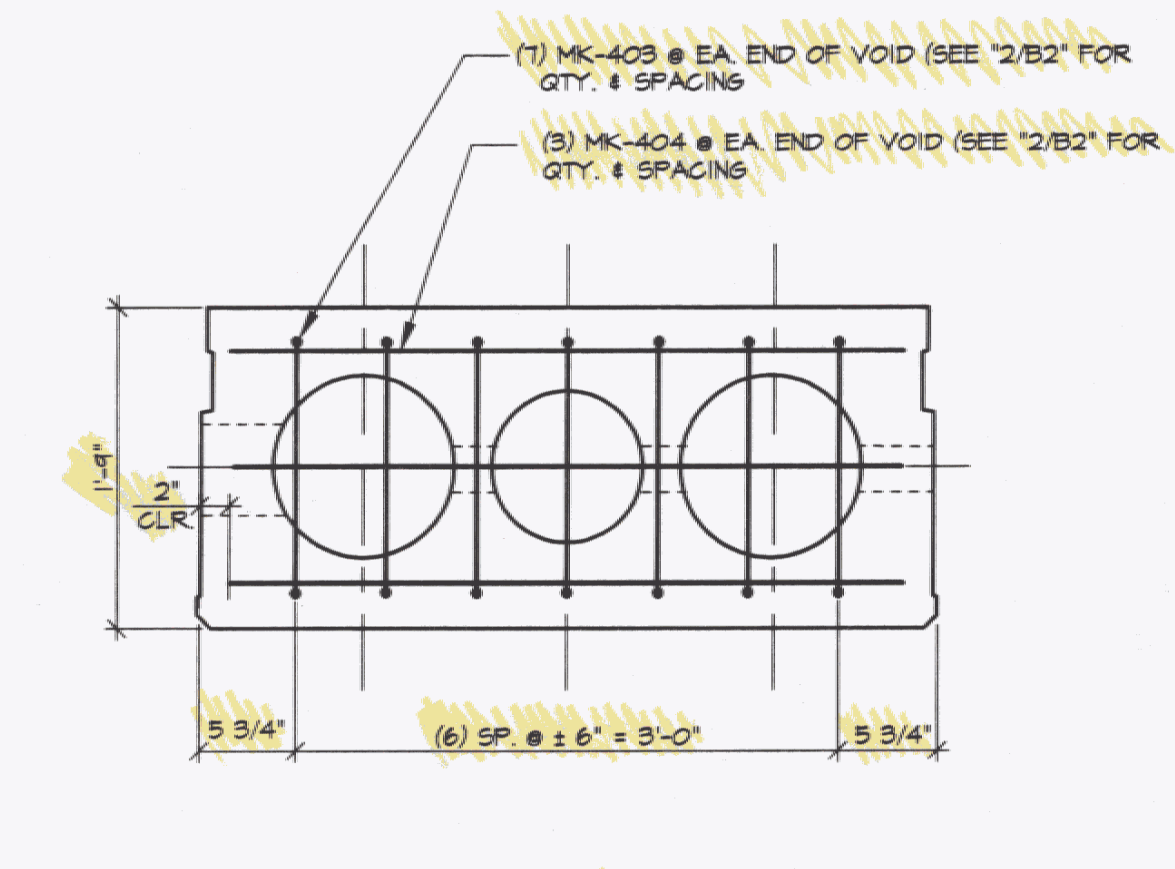
MARK: L-2	QTY: 4	WT./TONS 16.28	CU. YDS. 8.04
MATERIAL LIST / UNIT			
ITEM	MARK	DESCRIPTION	QTY.
1	401	#4 BENT BAR (EPOXY COATED)	46
2	402	#4 BENT BAR (EPOXY COATED)	46
3	403	#4 BENT BAR (EPOXY COATED)	28
4	404	#4 BENT BAR (EPOXY COATED)	12
5			
6			
7			
8			
9			
10		10" x 2'-1 1/4" VOID	2
11		12" x 2'-1 1/4" VOID	4
12			
13			
14			
15			
16			
17			
18		3/4" NON-FERROUS VOID DRAIN	12
19		1/2" STRAND LIFTING LOOPS (SET OF 2 LOOPS)	4
20			



A DIMENSIONAL SECTION
B2



B REINFORCING SECTION
B2



C REINFORCING SECTION @ END OF VOID
B2

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SEP 16 1998
RESUBMIT _____ APPROVED AS NOTED
BY JBM/PMT DATE 9-18-98

STATE OF VERMONT AGENCY OF TRANSPORTATION	DRAWN: S. PETROSYAN DESIGNED: _____ CHECKED: _____ APPROVED: _____	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer RTE. 116, MOORESBURY, VERMONT 05753 Phone: (802) 388-6361 Fax: (802) 388-9010 Double-Tees Hollow-Core Plank Flat Panels	Contractor Name: WINTERSET, INC. BOX 966 LYNDONVILLE, VT 05851	Project Name: TOWN OF LOWELL ROUTE TH2, BRIDGE # 9 TOWN OF LOWELL, VT P/S VOIDED SLAB DETAILS	SCALE: NOTED JOB #: 23065-98 DATE: 8-9-98 SHEET #: B 2
	NO. DATE REVISION				

BENT BARS, TIES, & STIRRUPS																		
ITEM	MARK	QTY.	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	J	K	O	GRADE	REMARKS
1	401	276	4	5'-3 1/8"	L4	14"	7"	7 7/8"	1'-5 1/8"	7 7/8"	7"	14"	4 1/2"		6 1/2"		60	EPOXY COATED
2	402	276	4	12'-5 3/4"	T2	6"	3'-3 1/8"	1'-6 1/4"	3'-3 1/8"	1'-6 1/4"							60	EPOXY COATED
3	403	168	4	4'-2 1/2"	S10		1'-6"	1'-4 1/2"	1'-6"								60	EPOXY COATED
4	404	T2	4	3'-3 1/8"	STR												60	EPOXY COATED
5																		
6																		
7																		
8																		
9																		
10																		
11																		
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26																		
27																		
28																		
29																		

3'-7 1/2" (circled)

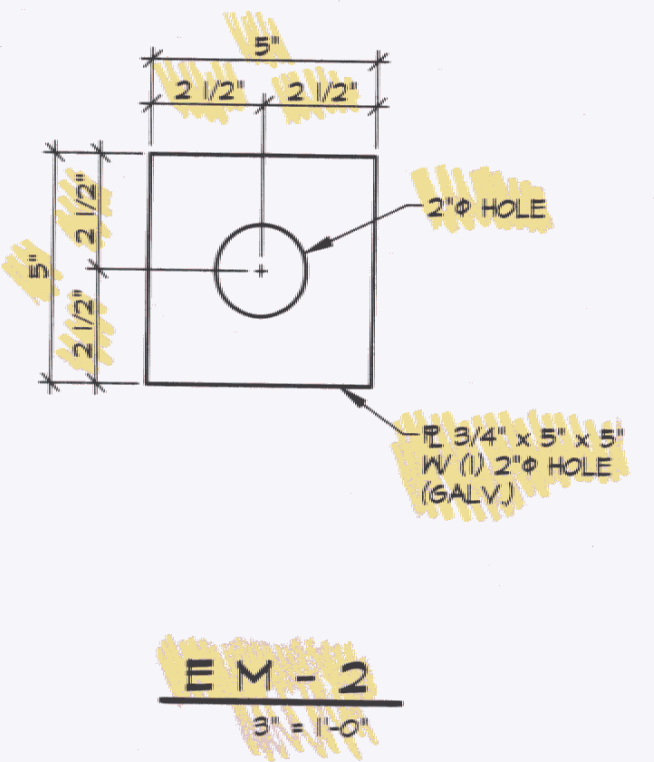
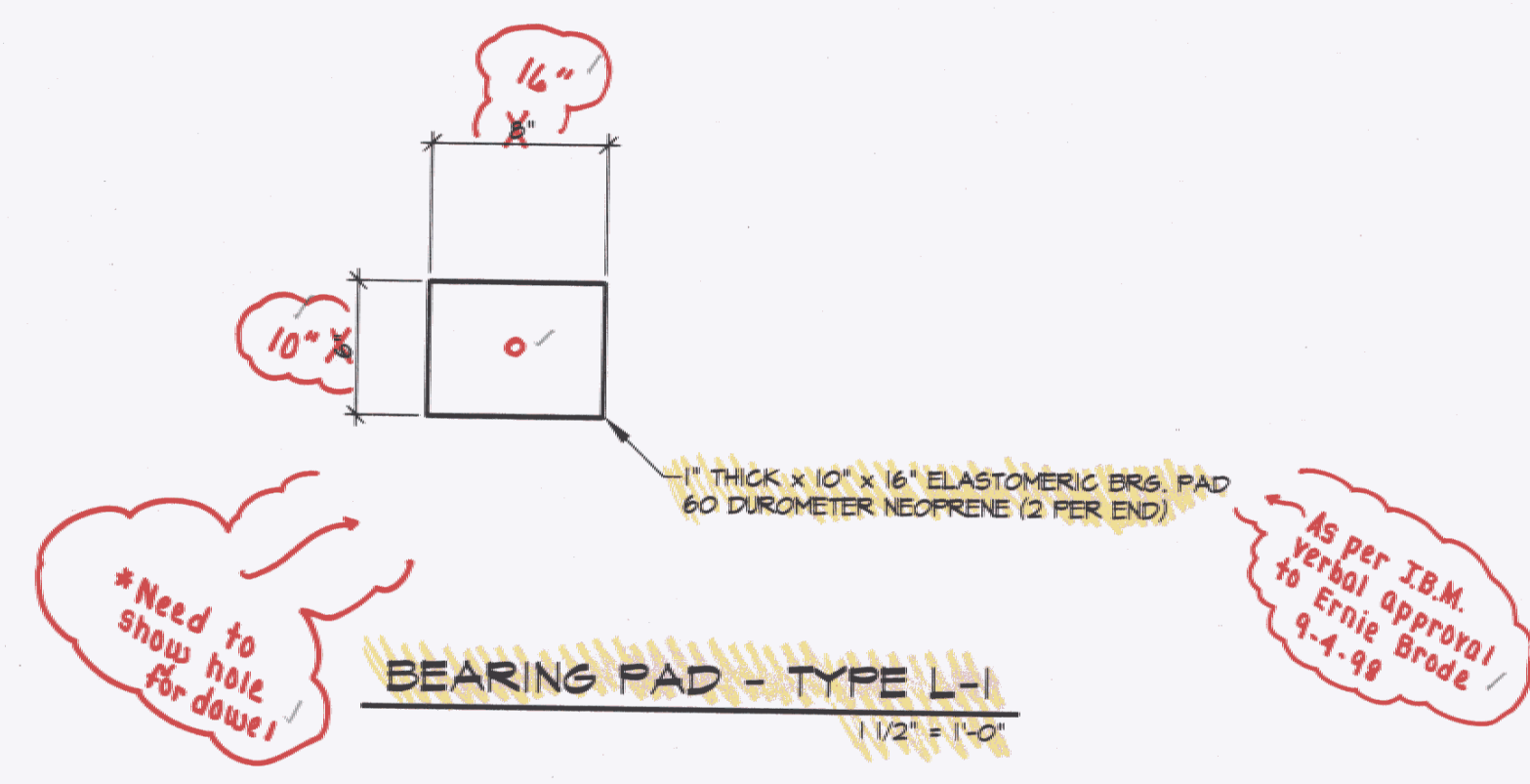
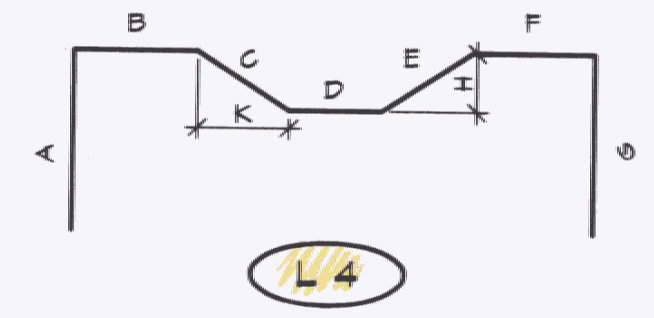
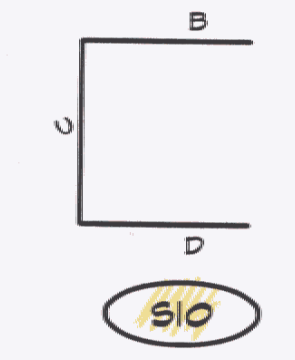
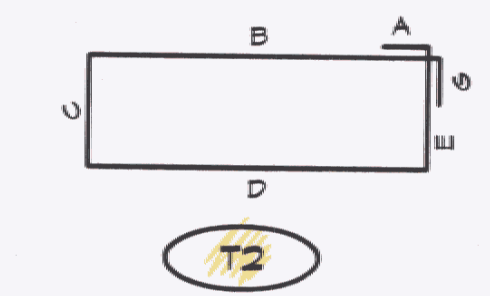
1'-4 1/8" (circled)

3'-7 1/2" (circled)

3'-7 1/2" (circled)

Check rebar markings (circled)

MISCELLANEOUS MATERIAL				
ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1	EM-2	6	2 3/4" x 5" x 5" W/ 2" HOLE (GALV.)	FOR TRANS. TENSIONING (SEE DETAIL THIS SHEET)
2		3	1/2" POLYSTRAND x 30'-0" 20k	FOR TRANS. TENSIONING
3		6	SINGLE USE STRESSING CHUCK	FOR TRANS. TENSIONING
4				
5		24	DOUBLE 1/2" STRAND LIFT LOOPS	
6				
7		12	1/2" x 2 1/2" ANCHOR DOWEL	
8				
9		T2	NON-FERROUS VOID DRAIN	
10		24	1" THICK x 10" x 16" ELASTOMERIC BRG. PAD (60D)	SEE DETAIL THIS SHEET
11				
12				
13				
14				
15		12	10" x 21'-1 1/4" VOID	
16		24	12" x 21'-1 1/4" VOID	
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				



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CONSULTING ENGINEERS, INC.

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REJECT:

Checking is only for conformance with the design and compliance with the requirements of the Contract Documents. Contractor is responsible for confirming and certifying all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

LAWES CONSULTING ENGINEERS, INC.
Date: _____ By: _____

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CK'D BY PMT OK'D BY SLM
SEP 16 1998
RESUBMIT _____ APPROVED AS NOTED
BY JBM/PMT DATE 9-18-98

STATE OF VERMONT AGENCY OF TRANSPORTATION		DRAWN: S. PETROSYAN	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer RTE. 116, MIDDLEBURY, VERMONT 05753 Phone: (802) 388-6361 Fax: (802) 388-9010	Contractor Name: WINTERSSET, INC. BOX 968 LYNDONVILLE, VT 05851	Project Name: TOWN OF LOWELL ROUTE TH2, BRIDGE # 9 TOWN OF LOWELL, VT	SCALE: NOTED	JOB #: 23065-98
NO.	DATE	REVISION	APPROVED: _____	Double-Tees Hollow-Core Plank Flat Panels	MATERIAL LIST	DATE: 8-9-98	SHEET #: M 1