CONSTRUCTION LEADERS

LETTER OF TRANSMITTAL			
DATE:	**January 23, 2015**	PCL JOB NO:	**5515002**
ATTN:	**Kristin Higgins, P.E.**	TRANSMITTAL NO:	**004**

To: **State of Vermont Agency of Transportation**
One National Life Drive
Montpelier, VT 05633-5001
(802) 828-0053

Re: Hartford Lateral Slide
Project No.: IM 091-2(79)
Contract No.: TBD County: Windsor PCL FILE NO: 5515002-1

WE ARE SENDING X Attached ____ Under separate cover via **Email & SP** the following:

X Shop drawings ____ Prints X Plans ____ Samples X Specifications

____ Copy of Letter ____ Change Order ____ Other

COPIES	SPEC.	REVISION	DESCRIPTION
1	**900.670-01**		**Precast Prestressed Concrete Deck Panels**

TRANSMITTED for as checked below:

X For approval ____ Approved as submitted ____ Resubmit **1** Copies for approval

____ For your use ____ Approved as noted ____ Submit ____ Copies for distribution

____ As requested ____ Returned for corrections ____ Return ____ Corrected prints

____ For review and comment

Remarks:

Please return an email of this approved submittal to Erich Heymann (ewheymann@pcl.com) and Jeremy Mackling (jmackling@pcl.com).

We request the review and return of this submittal within 14 days. Please advise if this request cannot be met so we can plan accordingly.

By: **Erich Heymann,** Project Engineer

COPY TO: Project Files

3810 Northdale Blvd., Suite 200; Tampa, FL • (813) 264-9500 • (813) 264-6689 (fax)

CONSTRUCTION LEADERS

SUBMITTAL NO. : 005
Precast Prestressed Concrete Deck Panels

Item No.	Specification	Description
1	900.670-01	Precast Prestressed Concrete Deck Panels

PROJECT:
HARTFORD LATERAL SLIDE
PROJECT NO.: IM 091-2(79)
CONTRACT NO.: TBD

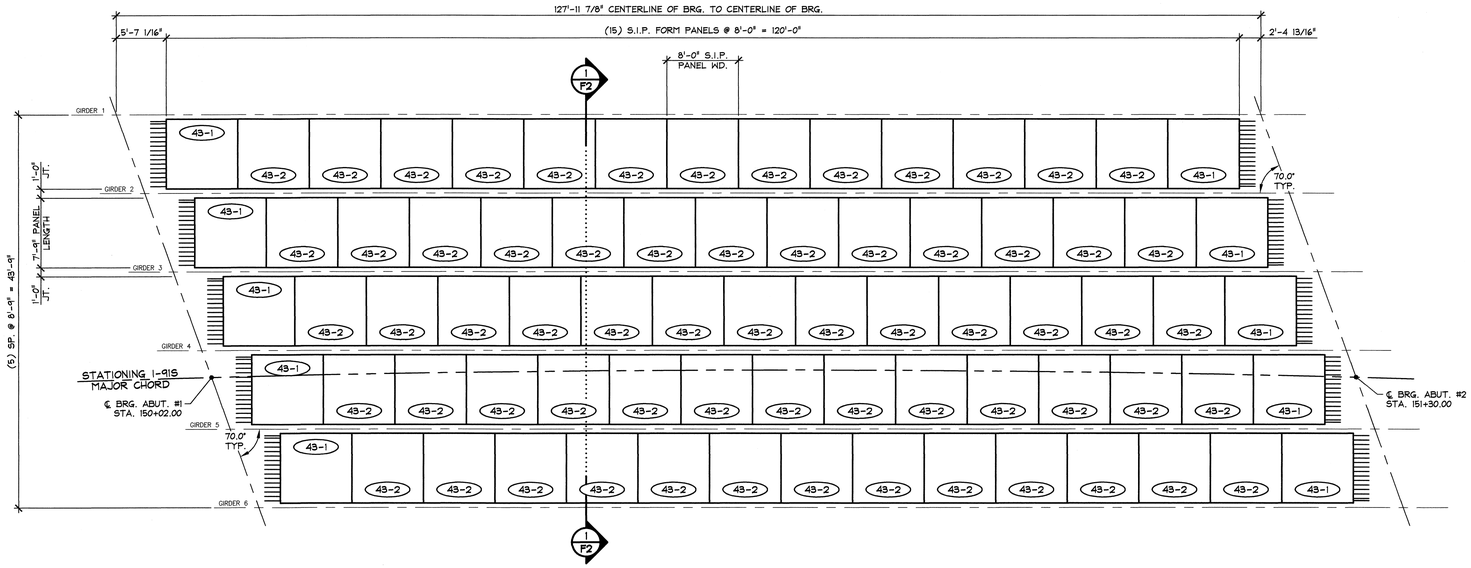
OWNER:
STATE OF VERMONT AGENCY OF TRANSPORTATION

ENGINEER OF RECORD:
STATE OF VERMONT AGENCY OF TRANSPORTATION

CONTRACTOR:
PCL CIVIL CONSTRUCTORS, INC.

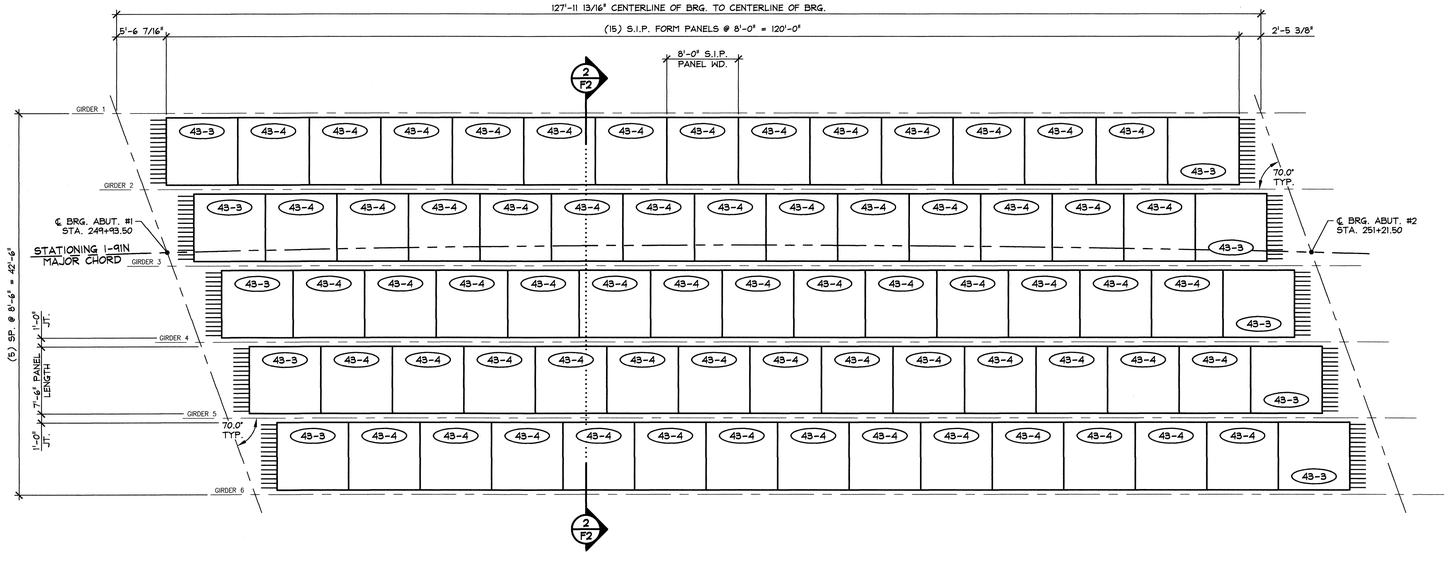
JANUARY 23, 2015

3810 Northdale Blvd., Suite 200; Tampa, FL • (813) 264-9500 • (813) 264-6689 (fax)



1/F1 PRESTRESSED STAY-IN-PLACE FORM PANEL LAYOUT (BRIDGE 43S)

1/8" = 1'-0"



2/F1 PRESTRESSED STAY-IN-PLACE FORM PANEL LAYOUT (BRIDGE 43N)

1/8" = 1'-0"

GENERAL NOTES

1. MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 5,000 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 STAINLESS STEEL.
4. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M203M), AND SHALL CONSIST OF 3/8"Φ x 270 KSI 7 WIRE LOW RELAXATION STRANDS.
5. PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 17.2 K (U.N.O.) 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 PROJECT 6" MIN. FROM EACH END OF PANEL
7. THE TOPS OF THE PANELS SHALL BE BROOMED TO A SURFACE ROUGHNESS OF 1/16" (U.N.O.) (BROOM DIRECTION PARALLEL TO STRANDS).
8. PANELS SHALL BE HANDLED AND ERECTED USING THE LIFTING INSERTS ONLY. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. PANELS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS WITHIN 2'-0" OF THE PANEL ENDS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
9. DESIGN MIX: J.P.C. BRIDGE MIX #425M (NO DCI)
10. QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS, CONTRACT DOCUMENTS & SPECIFICATIONS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
11. THE ENGINEER WILL BE NOTIFIED AT LEAST 14 DAYS PRIOR TO THE SCHEDULED START OF CASTING AND AT LEAST 2 DAYS BEFORE THE ACTUAL WORK BEGINS.
12. CURING METHOD: AS SOON AS THE TOP OF THE PANEL IS FINISHED A COVER OF POLY AND A LAYER OF HOMOSOTE, (OR BLUEBOARD) WILL BE PLACED OVER THE PANEL IN A MANNER THAT WILL NOT DISTURB THE BROOM FINISH. THE DESIRED CURING TEMPERATURE RANGE SHALL NOT DROP BELOW 70°F. THE TEMPERATURE SHALL BE RECORDED BY AUTOMATIC SENSOR INSTRUMENTS ON GRAPH CHARTS SPACED NOT MORE THAN 50 FEET APART & WILL CONTINUE UNTIL RELEASE STRENGTH IS ACHIEVED (NATURAL CURE WITH NO EXTERNAL HEAT APPLIED). EACH CHART SHALL BE MARKED AND GIVEN TO THE INSPECTOR (IF APPLICABLE).
13. THE DRILLING OF HOLES OR USE OF POWER ACTUATED TOOLS ON PANELS SHALL NOT BE PERMITTED.
14. THE PANELS SHALL BE ORIENTED AND ERECTED WITH THE MARK-END AS SHOWN ON PLANS.
15. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR FORMING THE END OF THE DECK SLAB PRIOR TO CASTING DECK.

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 3/8"Φ x 270 KSI

AREA: 0.085 IN^2

TENSION: 17,200 LBS. EACH STRAND

GRIP TO GRIP: 120'-6" = 120.5'

Es = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

EXAMPLE: $\Delta = \frac{PL}{AE} = \frac{(17,200 - 3,000) \times 120.5 \times 12}{0.085 \times 28,600,000} = 8.45"$

THEREFORE: TOLERANCES: ± 5%

Δ UPPER LIMIT = 1.05 x 8.45" = 8.87" = 8 7/8"

Δ LOWER LIMIT = 0.95 x 8.45" = 8.03" = 8"

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

$\Delta P = \frac{0.5 \times 14,200}{8.45} = 840$ LBS.

TOTAL TENSIONING FORCE = 17,200 + 840 = 18,040 LBS.

STRAND TENSIONING PROCEDURE:

1. PULL EACH STRAND INITALLY TO 3,000 LBS.* AND MARK STRAND.
2. THEN PULL EACH STRAND TO A TOTAL TENSION OF 18,404 LBS.* AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 8" AND 8 7/8".

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

APPROVAL STAMP:

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

PCL CONSTRUCTION
CONTRACTOR
TAMPA, FLORIDA

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF HARTFORD
INTERSTATE 91 EXIT 11
BRIDGE NO.: 43 N/S PROJECT NO.: IM 091-2(79)

SUPERSTRUCTURE PLANS

DATE:	JAN. 20, 2015
SCALE:	NOTED
CHKD: -	DFTM: B.L.
JOB NO:	23455-015
DWG. NO:	F1

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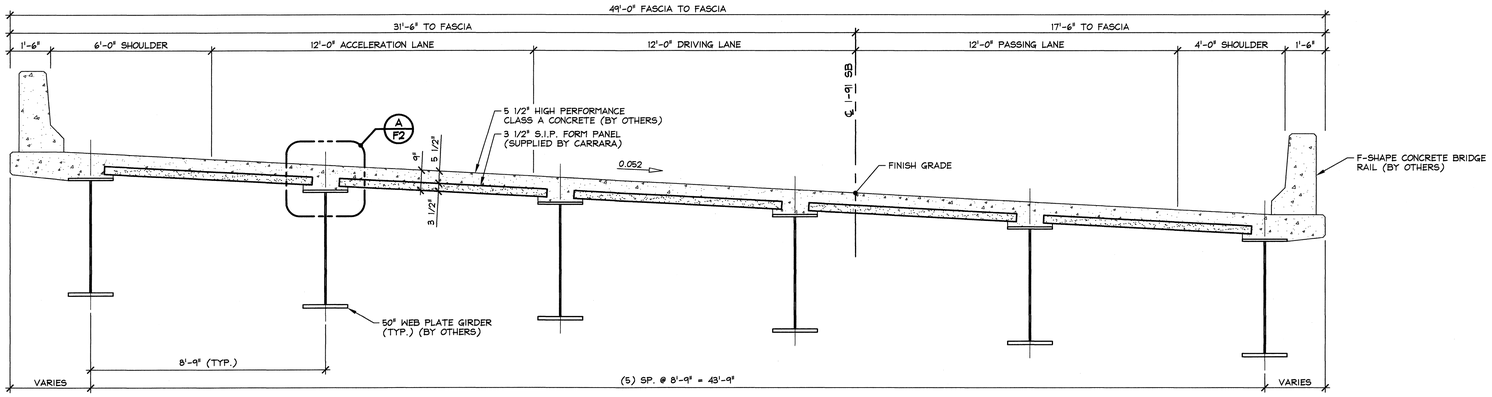
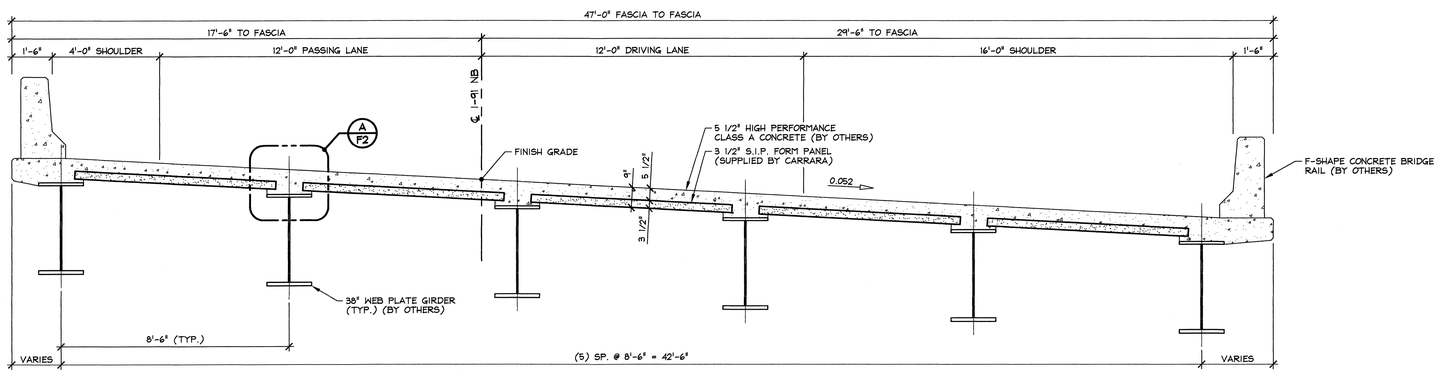


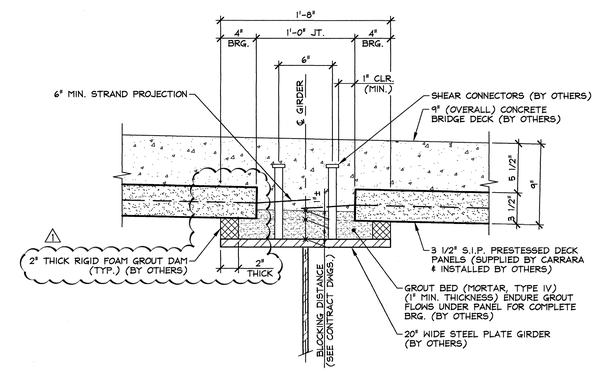
1/F2 TRANSVERSE SECTION (BRIDGE 43S)

3/8" = 1'-0"



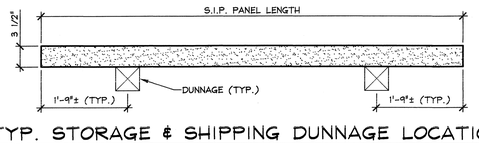
2/F2 TRANSVERSE SECTION (BRIDGE 43N)

3/8" = 1'-0"



A/F2 SECTION

1 1/2" = 1'-0"



TYP. STORAGE & SHIPPING DUNNAGE LOCATIONS

N.T.S.

1 1-23-15 REVISED AS NOTED

APPROVAL STAMP:

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2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

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TAMPA, FLORIDA

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COUNTY OF WINDSOR

TOWN OF HARTFORD
INTERSTATE 91 EXIT 11
BRIDGE NO.: 43 N/S PROJECT NO.: IM 091-2(79)

SUPERSTRUCTURE
SECTIONS & DETAILS

DATE:	JAN. 20, 2015
SCALE:	NOTED
CHKD: -	DFTM: B.L.
JOB NO:	23455-015
DWG. NO:	F2

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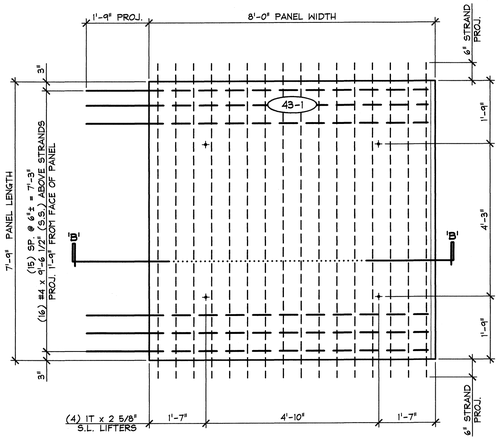
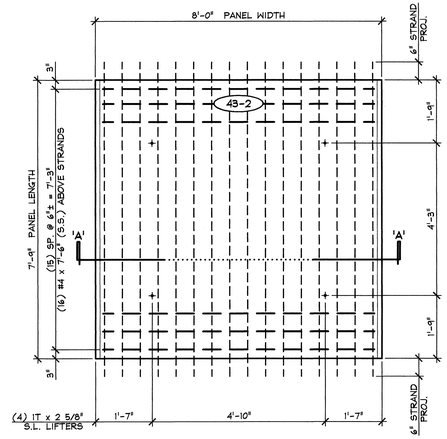


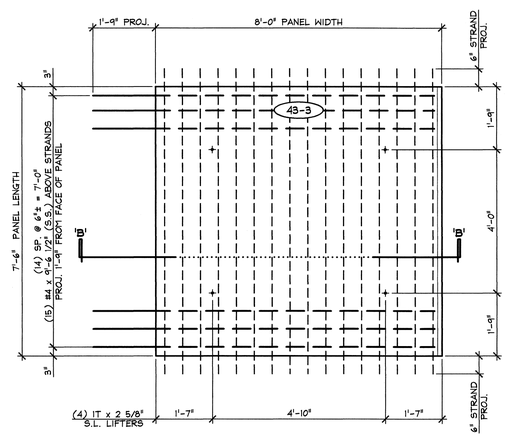
DECK PANEL - '43-1'

1/2" = 1'-0"



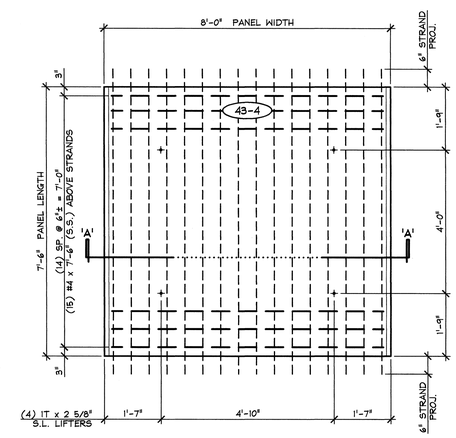
DECK PANEL - '43-2'

1/2" = 1'-0"



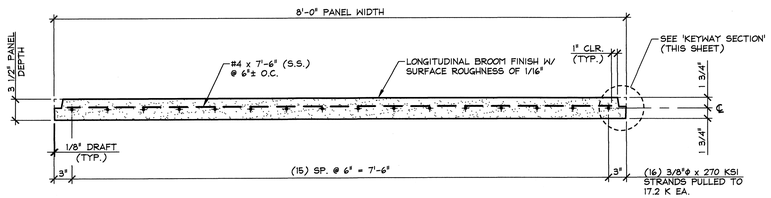
DECK PANEL - '43-3'

1/2" = 1'-0"



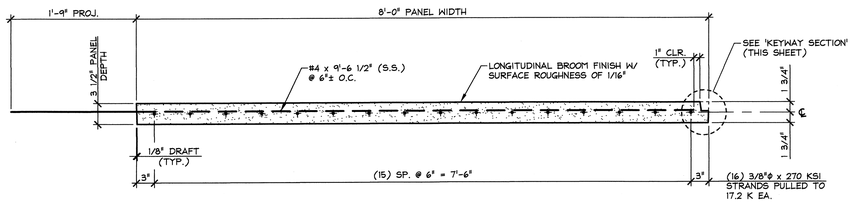
DECK PANEL - '43-4'

1/2" = 1'-0"



DECK PANEL SECTION - 'A-A'

1" = 1'-0"



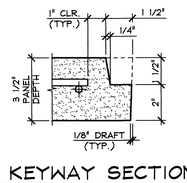
DECK PANEL SECTION - 'B-B'

1" = 1'-0"

① ③ ⑤ ⑦ ⑨ ⑪ ⑬ ⑮ ⑯ ⑭ ⑫ ⑩ ⑧ ⑥ ④ ②

DETENSIONING SCHEDULE

N.T.S.



KEYWAY SECTION

3" = 1'-0"

MARK:	43-1	QTY.:	10	WT.:	1.35 T	VOL.:	0.66 cy
MARK:	43-2	QTY.:	65	WT.:	1.34 T	VOL.:	0.66 cy
MARK:	43-3	QTY.:	10	WT.:	1.30 T	VOL.:	0.64 cy
MARK:	43-4	QTY.:	65	WT.:	1.29 T	VOL.:	0.64 cy

MATERIAL LIST / PANEL

ITEM	DESCRIPTION	QTY./PANEL			
		43-1	43-2	43-3	43-4
1	#4 x 7'-6" (STAINLESS STEEL)		16		15
2	#4 x 9'-6 1/2" (STAINLESS STEEL)	16		15	
3					
4					
5					
6	1T x 2 5/8" SWIFT LIFT LIFTER (GALV.)	4	4	4	4
7					
8	~~LEVELING JACK EMBED INSERTS~~ △1				
9					
10					
11					

△1 1-23-15 OMIT LEVELING JACKS

APPROVAL STAMP:

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PCL CONSTRUCTION
CONTRACTOR
TAMPA, FLORIDA

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF HARTFORD
INTERSTATE 91 EXIT 11
BRIDGE NO.: 43 N/S PROJECT NO.: IM 091-2(79)

PRESTRESSED S.I.P. FORM PANEL DETAILS

DATE: JAN. 20, 2015
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23455-015
DWG. NO: P1

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J.P. CARRARA & SONS, Inc.

ERNEST J. BROD
1-20-15

1

HARTFORD BRIDGE
JPC # 23455-015

STATE OF VERMONT
ERNEST J. BROD
No. 2818
REGISTERED
PROFESSIONAL ENGINEER

LIFTING INSERT DESIGN CALCULATIONS
(WORK W/ CARRARA SHOP DWGS)

WEIGHT OF HEAVIEST SIP PANEL

$= 1.35T = 2.70^k$

THERE ARE 4 LIFTING INSERTS/PANEL AND

ASSUME A 60° SLING ANGLE W/ THE HORIZONTAL

$\therefore$ THE DESIGN LOAD/INSERT $= \frac{2.70}{4 \times 0.866} = 0.78\ K$

FROM ATTACHED PRODUCT LITERATURE

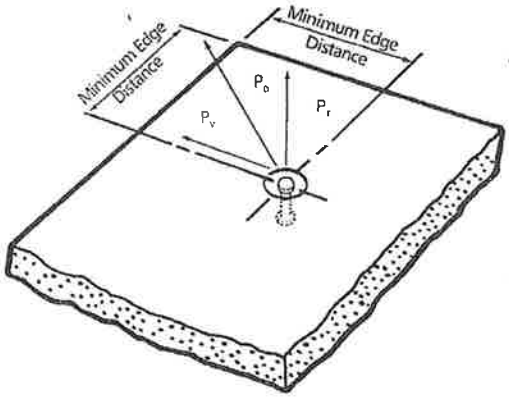
USE 1T x 2 5/8" S.L. SWL = 1700 LB > 0.78^k, OK

TOPS

DAYTON® SUPERIOR

P-52 Swift Lift® Anchor Tensile and Shear Capacity

When anchors are used in the face of thin concrete elements



The following table lists the P-52 Swift Lift Anchors that are currently manufactured. Other sizes and lengths are available on special order. However, the sizes and lengths of anchors shown will handle the majority of flat precast concrete elements.

When the P-52 Swift Lift Anchor is properly embedded in normal weight concrete, the tabulated working loads are applicable for any direction of load. This applies even if the direction of load is parallel to the axis of the anchor, perpendicular to it or at any other angle.

Minimum distance between anchors is twice the minimum edge distance.

It is critical to remember that in order to obtain the safe working loads listed in the table below, the normal weight concrete must have obtained the minimum concrete strength shown, prior to initial load application.

Swift Lift Anchor Ton x Length	Safe Working Load	Minimum Concrete Strength	Minimum Edge Distance
1 ton x 2-5/8"	1,700 lbs.	3,500 psi	8"
1 ton x 3-3/8"	2,000 lbs.	2,200 psi	10"
1 ton x 4-3/8"	2,000 lbs.	1,600 psi	10"
1 ton x 8"	2,000 lbs.	1,600 psi	10"
1 ton x 9-1/2"	2,000 lbs.	1,600 psi	10"
2 ton x 2-3/4"	2,100 lbs.	3,500 psi	8"
2 ton x 3-3/8"	2,900 lbs.	3,500 psi	10"
2 ton x 5-1/2"	4,000 lbs.	1,600 psi	13"
2 ton x 6"	4,000 lbs.	1,600 psi	13"
2 ton x 6-3/4"	4,000 lbs.	1,600 psi	13"
2 ton x 11"	4,000 lbs.	1,600 psi	14"
4 ton x 3-3/4"	4,000 lbs.	3,500 psi	12"
4 ton x 4-1/4"	4,900 lbs.	3,500 psi	13"
4 ton x 4-3/4"	5,800 lbs.	3,500 psi	14"
4 ton x 5-1/2"	7,400 lbs.	3,500 psi	17"
4 ton x 5-3/4"	7,900 lbs.	3,500 psi	17"
4 ton x 7-1/8"	8,000 lbs.	1,800 psi	20"
4 ton x 9-1/2"	8,000 lbs.	1,600 psi	17"
4 ton x 14"	8,000 lbs.	1,600 psi	18"
4 ton x 19"	8,000 lbs.	1,600 psi	20"
8 ton x 4-3/4"	6,400 lbs.	3,500 psi	16"
8 ton x 6-3/4"	11,200 lbs.	3,500 psi	21"
8 ton x 10"	16,000 lbs.	3,500 psi	19"
8 ton x 13-3/8"	16,000 lbs.	1,600 psi	23"
8 ton x 26-3/4"	16,000 lbs.	1,600 psi	27"
20 ton x 10"	25,000 lbs.	3,500 psi	24"
20 ton x 19-3/4"	40,000 lbs.	3,500 psi	31"

Safe Working Loads provide a factor of safety of approximately 4 to1 in normal weight concrete. Safe Working Load is based on anchor setback from face of concrete "X" dimension, as shown on page 26.