GENERAL NOTES:

1. FABRICATION SHALL CONFORM TO VAOT STANDARD SPECIFICATIONS, SECTION 540, PRECAST CONCRETE STRUCTURES.
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 8,000 PSI AT 28 DAYS OF AGE FOR BOX CULVERT UNITS (5,000 PSI FOR ALL OTHER PRECAST).
3. AIR CONTENT SHALL BE 5.0 – 9.0%.
4. POSITION OF REINFORCEMENT TO BE MAINTAINED WITH THERMOPLASTIC CHAIRS OR PLASTIC TIPPED SLAB BOLSTERS. CHAIRS, TIE WIRES, AND OTHER DEVICES USED TO SUPPORT, POSITION, OR FASTEN LEVEL II REINFORCEMENT SHALL BE MADE OF OR COATED WITH DIELECTRIC MATERIAL.
5. SEE CURING METHOD THIS SHEET FOR CURING PROCEDURE DESCRIPTION.
6. SEE TYPICAL LEGEND THIS SHEET FOR IDENTIFICATION INFORMATION.
7. CONCRETE REPAIR MATERIAL (IF USED) TO BE IN ACCORDANCE WITH VAOT STANDARD SPECIFICATION SECTION 580.
8. REINFORCEMENT STEEL SHALL MEET VAOT STANDARD SPECIFICATION SUBSECTION 713.01(a), ASTM A615 GRADE 60 LEVEL I (PLAIN). EPOXY REBAR SPLICERS SHALL MEET 713.01(c). REBAR & SPLICER SAMPLES SHALL BE PROVIDED FOR TESTING IN ACCORDANCE WITH SPEC. (1)
9. SEE DIMENSIONAL TOLERANCES THIS SHEET.

DESIGN NOTES:

1. CONCRETE STRENGTH SHALL BE 8,000 PSI AT 28 DAYS FOR BOX CULVERT UNITS (5,000 PSI – ALL OTHER PRECAST, INCLUDING HEADWALLS & BAFFLES).
2. MIN. LIFTING (STRIPPING) STRENGTH = 3,000 PSI U.N.O.

DIMENSIONAL TOLERANCES:

1. SLAB THICKNESS (BOX, WINGWALLS): $-\frac{1}{4}$", $+\frac{1}{2}$"
2. REINFORCEMENT COVER: $\pm\frac{1}{4}$" END COVER LONGITUDINAL BARS/WWR $\pm\frac{1}{2}$"
3. REINFORCEMENT SPACING: ±2" NON–CUMULATIVE
4. LOCATION OF PROJECTING REINFORCEMENT: $\pm\frac{1}{4}$"
5. SPAN: ±1"
6. RISE: ±1"
7. HAUNCH: ± $\frac{1}{4}$" OF DESIGN DIMENSIONS
8. LAYING LENGTH OF TWO ADJACENT UNITS SHALL NOT VARY BY MORE THAN $\frac{5}{8}$" MAX. IN ANY SECTION, EXCEPT WHERE BEVELED ENDS FOR LAYING OF CURVES ARE SPECIFIED.
9. LENGTH OF SECTION: UNDER RUN IN ANY SECTION SHALL NOT BE MORE THAN $\frac{1}{2}$" MAX.
10. LOCAL SMOOTHNESS OF ANY SURFACE: $\frac{3}{4}$" PER 10FT.
11. LOCATION OF INSERTS: $\pm\frac{1}{2}$"
12. VARIATION FROM SPECIFIED END SQUARENESS OR SKEW: $\pm\frac{1}{4}$"
13. LOCATION OF HANDLING DEVICES: ±3"

TESTING/INSPECTION: VAOT

FINISHING:

1. BOX CULVERTS w/ BAFFLES & HEADWALLS, AND WINGWALLS SHALL BE FORMED WITH NON–ABSORPTIVE MATERIALS.
2. ALL KEYWAYS SHALL RECEIVE AN CHEMICALLY EXPOSED AGGREGATE FINISH TO $\pm\frac{1}{4}$" AMPLITUDE.

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F.M. JOB#: 26152 PIECE ID:
DATE OF MANUFACTURE:
VAOT RELV 2405 & RELV 2407

TYPICAL LEGEND

MARKED ON OUTSIDE OF BOX & BACKFILL FACE OF WALLS

Approved

BY:	JGRIFFIN
DATE:	5/5/2025
RESUBMIT:	NO
RECEIVED:	May 5, 2025
CKD BY:	JGRIFFIN

STATE OF VERMONT
AGENCY OF TRANSPORTATION

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CURING METHOD (NON-ACCELERATED CURE / SATURATED COVER):

1. FOR EACH PRODUCTION DAY, CURING TEMPERATURES SHALL BE CONTINUOUSLY MONITORED THROUGH THE USE OF A SINGLE RECORDING TEMPERATURE PROBE. BOTH INTERNAL AND EXTERNAL CONCRETE TEMPERATURES SHALL BE MONITORED. THE CONCRETE SHALL BE COVERED WITH SATURATED BURLAP (PER THE FOLLOWING) AS SOON AS POSSIBLE TO PREVENT MARRING OF CONCRETE SURFACE AND PREMATURE DRYING OF CONCRETE SURFACE. THE CONCRETE SHALL BE RAISED TO AN INTERNAL TEMPERATURE OF NOT LESS THAN 68°F WITHIN THE FIRST 12 HOURS OF THE CURING PERIOD, AND SHALL BE MAINTAINED AT OR ABOVE 68°F FOR THE REMAINDER OF THE CURING PERIOD.
   (1) THIS REQUIREMENT MAY BE WAIVED BY THE ENGINEER IF THE CONCRETE IS NOT SUBJECT TO ACCELERATED CURING AND AMBIENT TEMPERATURES ARE EXPECTED TO BE WELL ABOVE 40°F THROUGHOUT THE DURATION OF PRODUCTION.
2. THE FOLLOWING STEPS SHALL BE FOLLOWED FOR EACH UNIT:
   - 2.1. COVER EACH UNIT WITH (2) LAYERS OF HEAVY, WATER–SATURATED BURLAP (OR OTHER MATERIAL ACCEPTABLE TO VAOT). THE BURLAP SHALL BE KEPT SATURATED AND THE CONCRETE INTERNAL TEMPERATURE NOT ALLOWED TO FALL BELOW 68°F.
   - 2.2. COVER THE SATURATED BURLAP WITH POLYETHYLENE SHEETING.
   - 2.3. IF REQUIRED, PLACE ELECTRIC HEATING BLANKETS OR CONCRETE INSULATING BLANKETS ON TOP OF THE POLYETHYLENE SHEETING.
3. THESE CONDITIONS SHALL BE MAINTAINED UNTIL 80% OF 28 DAY STRENGTH AND 72 HRS HAS ELAPSED FROM TIME OF CASTING.
4. WINTER/SPRING CURING: ALL CONCRETE PLACEMENT WILL TAKE PLACE IN HEATED PRODUCTION BUILDINGS WHERE AMBIENT AIR TEMPERATURES ARE ABOVE 50°F. PRECAST ELEMENTS THAT ARE EXPOSED TO COLD WEATHER CONDITIONS AS DEFINED IN SECTION 540.07(i) MUST BE ALLOWED TO COOL AND DRY IN AN ENVIRONMENT OF AT LEAST 40°F FOR 24 HOURS PRIOR TO EXPOSURE TO COLD WEATHER CONDITIONS.

TESTING:

A. DEFINITIONS:
   - a. LOT – 50 CY OR FRACTION THEREOF, PER MIX, PER PRODUCTION DAY.
   - b. REQUIRED CONCRETE TESTING:
     1) ASTM C172/AASHTO R60 SAMPLING OF FRESH CONCRETE
     2) ASTM C231/AASHTO T152 – PERCENT AIR CONTENT
     3) ASTM C138 – UNIT WEIGHT/YIELD
     4) ASTM C1611/ASTM C143 – SPREAD/SLUMP
     5) ASTM C1064/AASHTO T309– TEMPERATURE
     6) ASTM C39/AASHTO T22 COMPRESSION TESTING
   - i. REQUIRED QUANTITY OF 4X8 CYLINDERS, 8 MIN PER LOT.
   - ii. CYLINDERS CURED PER AASHTO T23, 10.2, FIELD CURING,

B. FROM THE CONCRETE REQUIRED TO MANUFACTURE A LOT, (25 CY OR FRACTION THERE OF) THE REQUIRED SAMPLE SIZE SHALL BE OBTAINED TO BE TESTED PER THE ITEMS LISTED IN (A.b, 1 THRU 6 ABOVE).

C. COMPRESSIVE STRENGTH SHALL BE DETERMINED FROM CONCRETE TEST CYLINDERS MADE IN CONFORMANCE WITH AASHTO T23. ALL CYLINDERS SHALL BE TESTED IN CONFORMANCE WITH AASHTO T22 ON A CERTIFIED CALIBRATED TESTING MACHINE. THE FABRICATION AND TESTING OF CYLINDERS SHALL BE SUBJECT TO INSPECTION BY THE OWNER'S REPRESENTATIVE. CYLINDERS TO BE 4"ø x 8" HIGH FORMED WITH STEEL OR PLASTIC MOLDS (CARDBOARD NOT ACCEPTABLE).

D. THE PRECASTER SHALL CAST A SUFFICIENT NUMBER OF CONCRETE TEST CYLINDERS TO FULFILL THE CONCRETE STRENGTH TEST REQUIREMENTS AS STATED BELOW.

1. MINIMUM LIFTING STRENGTH:
   TWO (2) CYLINDERS REPRESENTING A LOT, SHALL BE TESTED IN IMMEDIATE SUCCESSION TO VERIFY LIFTING STRENGTH. THE AVERAGE STRENGTH OF THE TWO CYLINDERS SHALL BE EQUAL TO OR GREATER THAN THE REQUIRED LIFTING STRENGTH. NO CYLINDER SHALL BE LESS THAN 500 PSI OF THE REQUIRED LIFTING STRENGTH.
2. 28 DAY COMPRESSIVE STRENGTH VERIFICATION PRIOR TO OR AT 28 DAYS OF AGE:
   COMPRESSION TESTING IS TYPICALLY PERFORMED AT (3), (7), AND 28 DAYS OF AGE, OR MAY BE TESTED AT A DATE PRIOR TO 28 DAYS OF AGE. WHEN TWO (2) CYLINDERS, REPRESENTING A LOT ARE TESTED IN IMMEDAITE SUCCESSION, AND THE AVERAGE STRENGTH OF THE CYLINDERS IS EQUAL TO OR GREATER THAN THE REQUIRED 28–DAY STRENGTH, WITH NO INDIVIDUAL CYLINDER TEST LESS THAN 500 PSI OF THE REQUIRED 28–DAY STRENGTH, THE SHIPPING STRENGTH REQUIREMENT FOR THE LOT REPRESENTED SHALL BE CONSIDERED SATISFIED. NO FURTHER COMPRESSION STRENGTH TESTING SHALL BE REQUIRED.

SHIP LOOSE MATERIALS:

1. (4) 8 TON LIFTING EYES (TO BE RETURNED) – ITEM #: 5338
2. (1) 20 TON LIFTING EYE (TO BE RETURNED) – ITEM #: 5340 (SHIP WITH UNITS DW1 AND JW4A)
3. (184) #5 D101 EPOXY DOWELS x 18" – ITEM #: 16127
4. (8) CLIP ANGLE ASSEMBLIES (TO BE RETURNED)
   EACH ASSEMBLY SHALL CONSIST OF THE FOLLOWING:
   - ITEM#: 5115 – (2) 4"x4"x$\frac{1}{2}$"x6"L ANGLES (16 TOTAL)
   - ITEM#: 5128 – (2) 1"øx3"L BOLTS (16 TOTAL)
   - ITEM#: 5129 – (2) 1"ø WASHERS (16 TOTAL)
   - ITEM#: 5154 – (1) $\frac{3}{4}$"øx28" COIL ROD ASSEMBLY (8 TOTAL)
   - ITEM#: 5178 – (1) $\frac{3}{4}$"ø COIL NUT (8 TOTAL)
   - ITEM#: 5171 – (1) $\frac{3}{4}$"ø FLAT WASHER (8 TOTAL)

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REVISIONS

VAOT PROJECTS
RELV 2405 & RELV 2407
DANVILLE & ST. JOHNSBURY, VT
PRODUCTION NOTE SHEET

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
PJR	4/14/25	TMT	1	NONE	26152	S1

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1

TABLE OF UNITS

MK#	Qty	U.O.M.	1st POUR (CY)	2nd POUR (C.Y.)	Total WT (T)
T1	1	7'-1"	8.55	0.80	18.93
T2	16	7'-8 3/8"	9.14		18.51
T3	1	7'-3"	8.50	0.57	18.37
T4	1	7'-1 5/16"	8.30	0.55	17.92
T5	18	7'-10 3/16"	8.89		18.00
T6	1	7'-3 5/16"	8.00	0.31	16.83
B1	1	7'-1"	8.19	0.42	17.44
B2	16	7'-8 3/8"	9.14	0.42	19.36
B3	1	7'-3"	8.75	0.42	18.57
B4	1	7'-1 5/16"	7.81	0.39	16.61
B5	18	7'-10 3/16"	8.89	0.39	18.79
B6	1	7'-3 5/16"	8.49	0.39	17.98
JW1A	1	84.882	3.09	2.86	12.06
JW1B	1	76.400	3.09	2.55	11.42
JW2A	1	89.211	3.19	3.01	12.56
JW2B	1	83.080	3.19	2.79	12.10
JW3A	1	96.000	3.80	3.21	14.20
JW3B	1	69.040	3.80	2.21	12.17
JW4A	1	103.148	4.04	3.45	15.18
JW4B	1	76.938	4.04	2.48	13.21
DW1	1	125.534	4.75	4.22	18.17
DW2	1	115.534	4.75	3.85	17.41
DW3	1	77.585	2.83	2.57	10.94
DW4A	1	83.885	3.33	2.80	12.42
DW4B	1	67.305	3.33	2.19	11.18
C1, C2	1 EA	EA	0.90		1.82
C3, C4	1 EA	EA	0.84		1.70

** WARNING: ALL WEIGHTS AND VOLUMES LISTED ARE BASED ON THE DESIGN THICKNESSES. ACTUAL WEIGHTS CAN AND DO VARY IN ACCORDANCE WITH ALLOWABLE TOLERANCES. ALL LIFTING EQUIPMENT NEEDS TO BE SIZED TAKING THIS FACT INTO CONSIDERATION!

Approved

BY: JGRIFFIN
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Danville & St Johnsbury Fabrication Drawings and Calc

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NO.	DATE	BY	DESCRIPTION
1	1/15/25	PJR	TABLE OF CONTENTS

REVISIONS

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
TABLE OF CONTENTS & TABLE OF UNITS

CONTRACTOR: TBD
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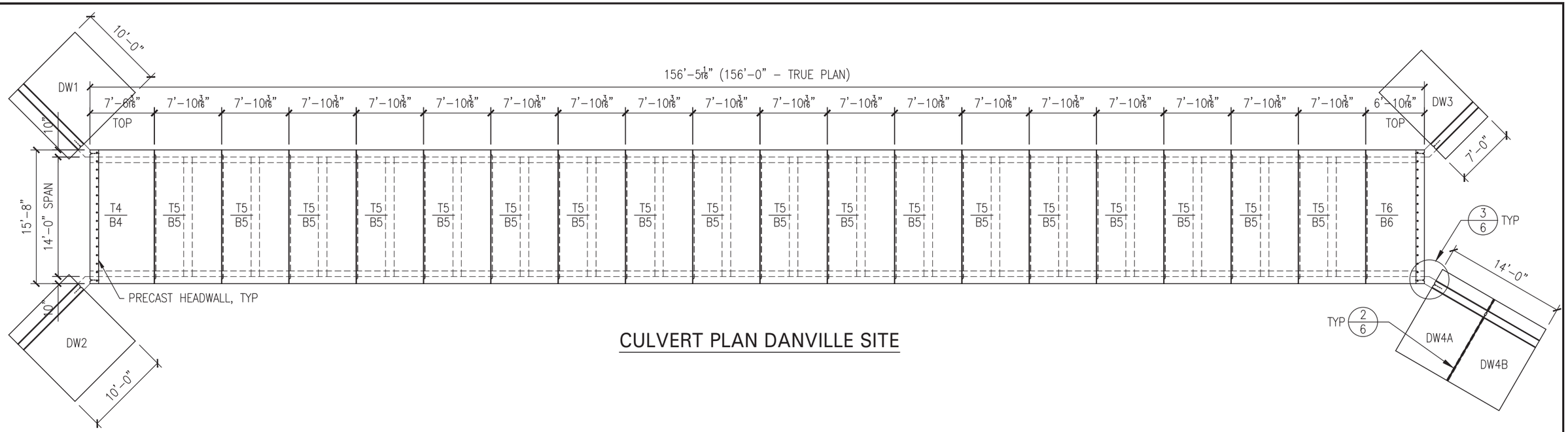
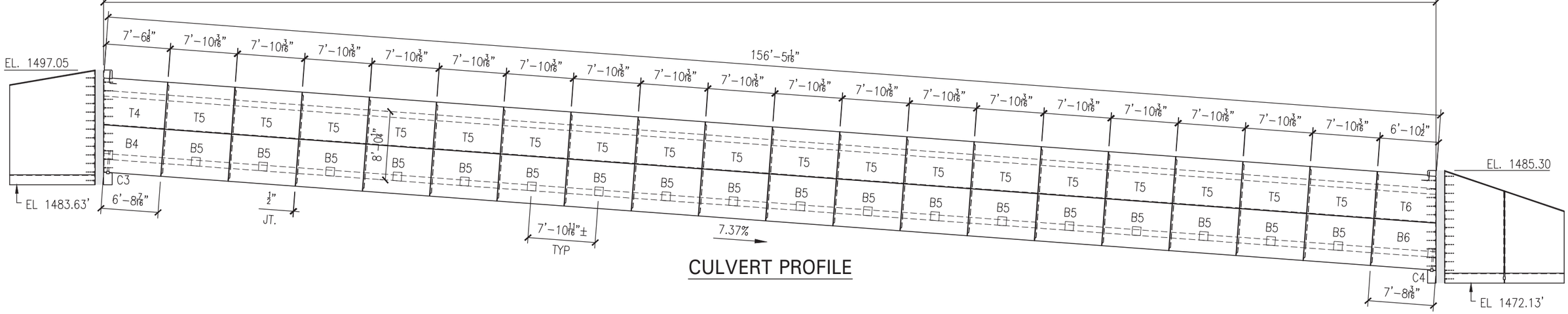


CULVERT PLAN DANVILLE SITE



CULVERT PROFILE

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STATE OF VERMONT
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VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
DANVILLE CULVERT LAYOUT

CONTRACTOR: TBD

ENGINEER: VAOT

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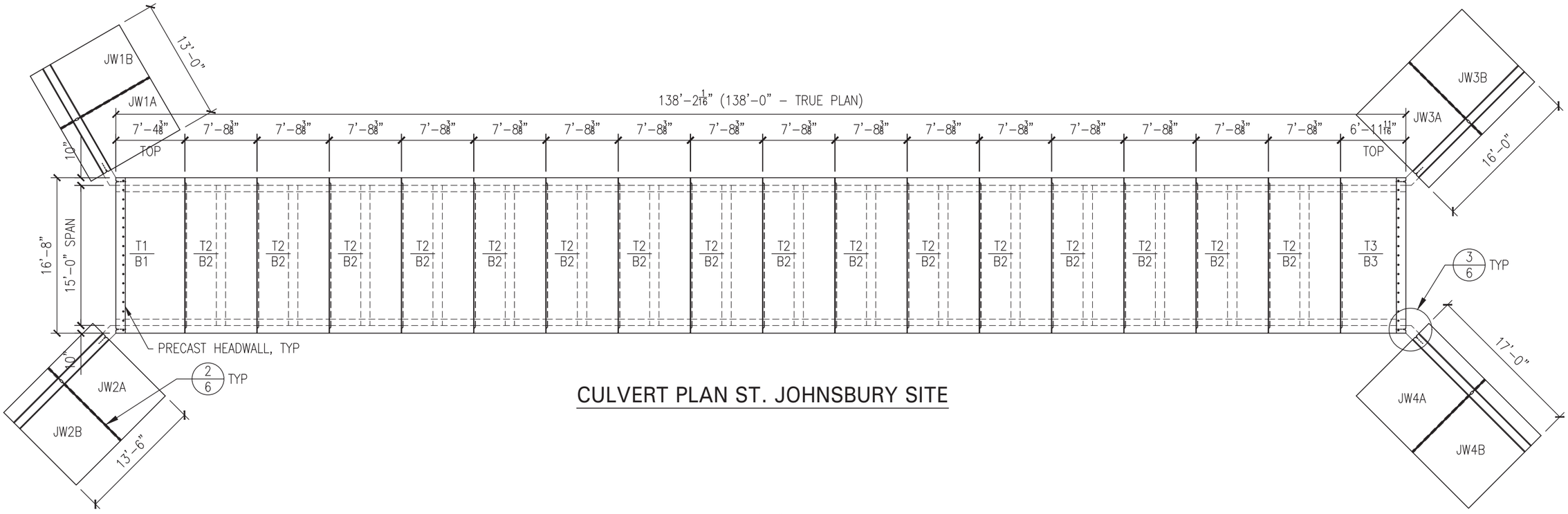
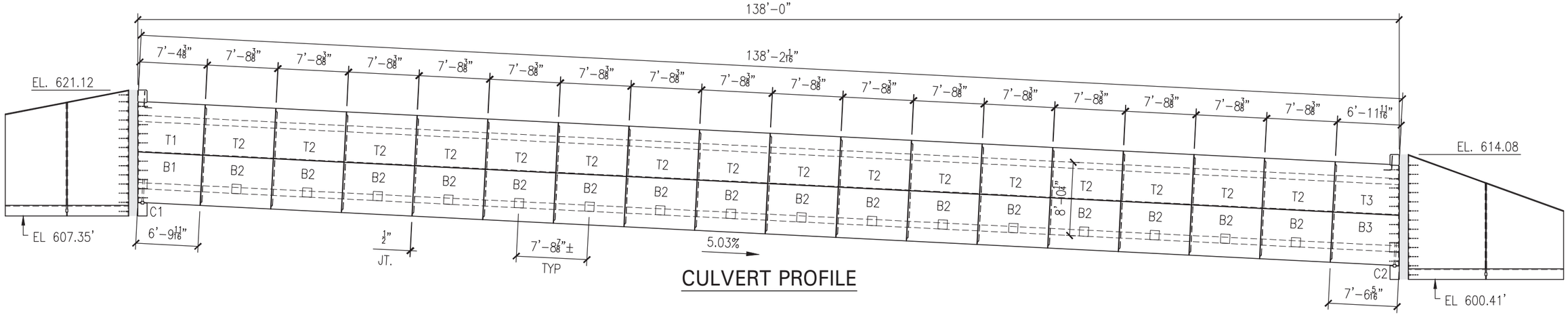
PJR	4/14/25	TMT	3	NONE	26152	S3



CULVERT PLAN ST. JOHNSBURY SITE



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ST. JOHNSBURY CULVERT LAYOUT

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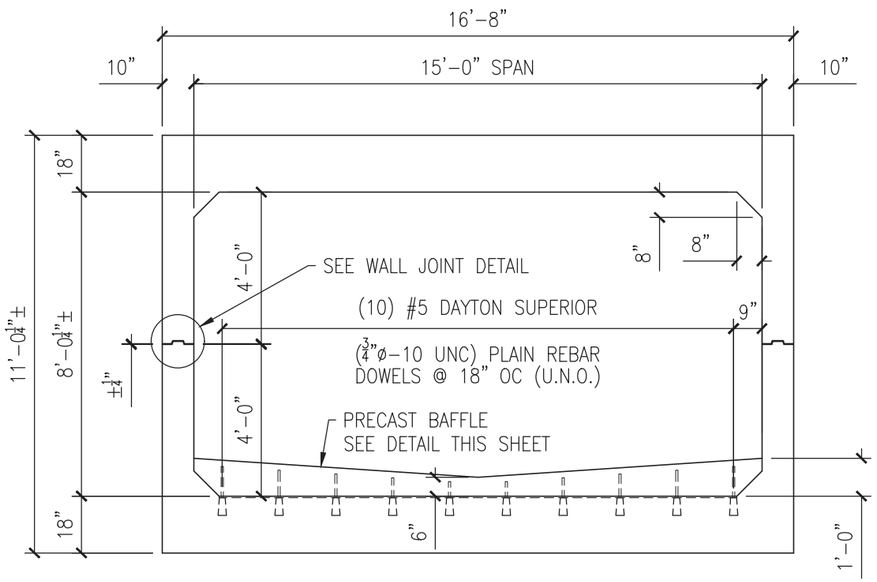
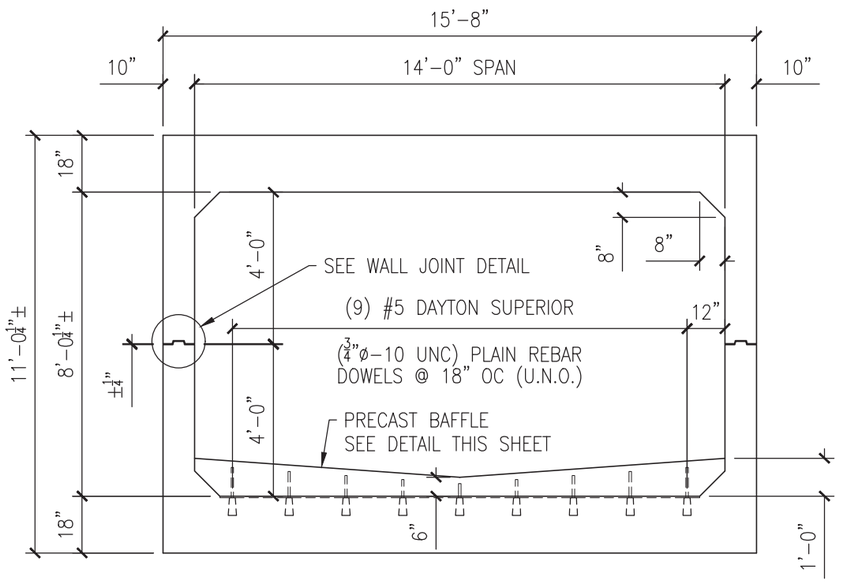
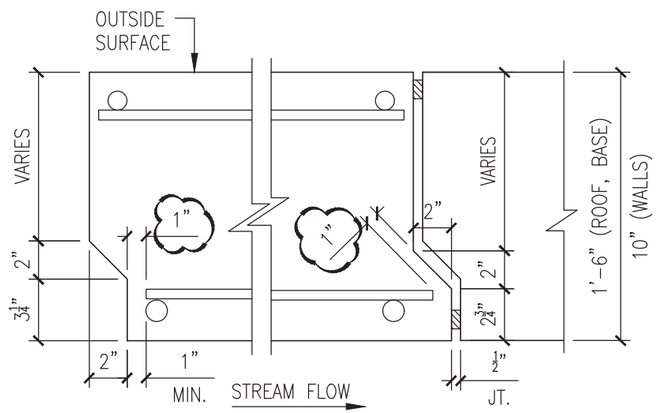


TYPICAL CULVERT SECTION - ST. JOHNSBURY

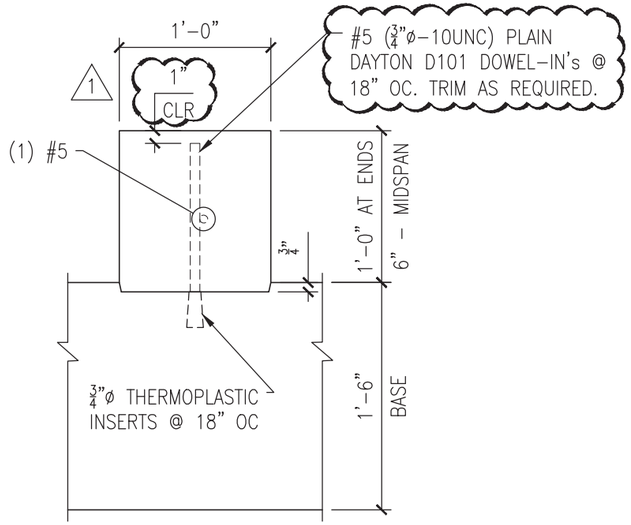


TYPICAL CULVERT SECTION - DANVILLE



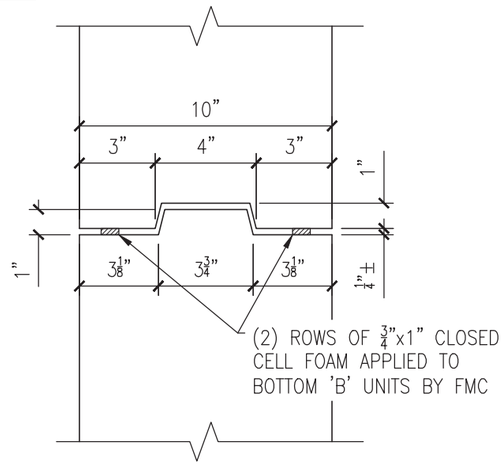
JOINT DETAIL 1

SHOP NOTE: 1"x1" CLOSED CELL FOAM (MEETING ASTM D1056 GR. 2A1 OR 2A2) SHALL BE APPLIED TO THE MALE (DOWN STREAM) END OF ALL UNITS.



PRECAST BAFFLE DETAIL

SLOPE NOT SHOWN



WALL JOINT DETAIL

SHOP NOTE: 3/4"x1" CLOSED CELL FOAM (MEETING ASTM D1056 GR. 2A1 OR 2A2). 1

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VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
CULVERT SECTIONS & DETAILS

CONTRACTOR: TBD

ENGINEER: VAOT

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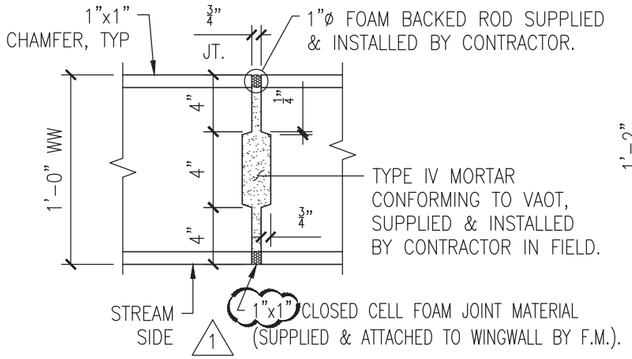
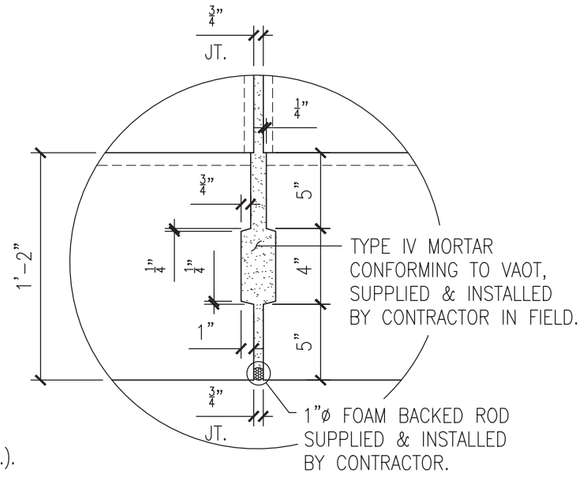
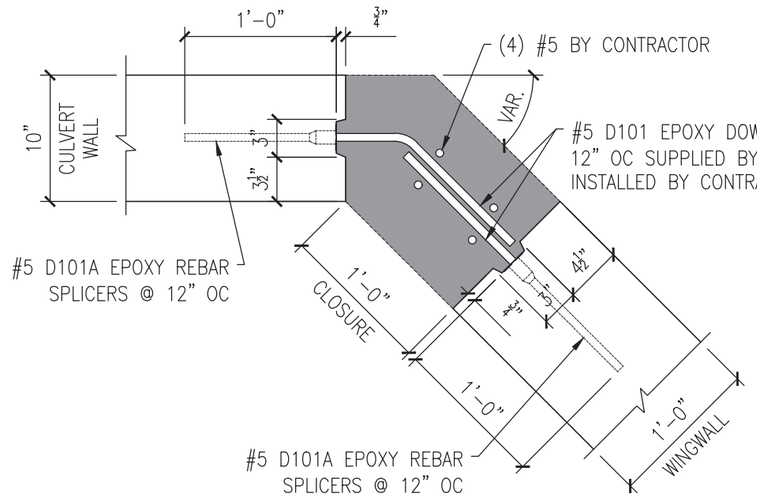


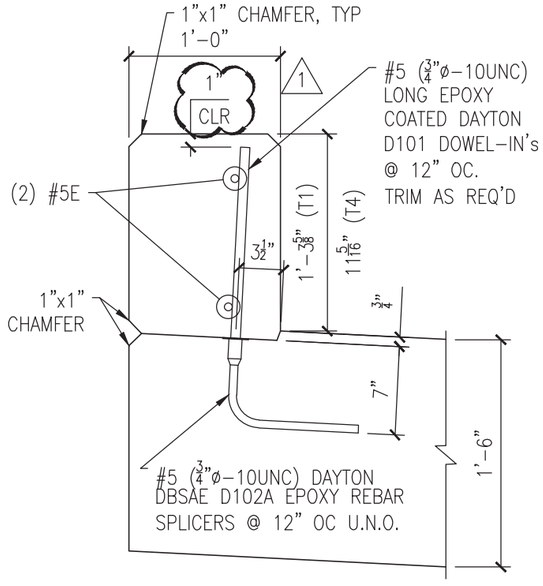
WALL JOINT DETAIL 1/6



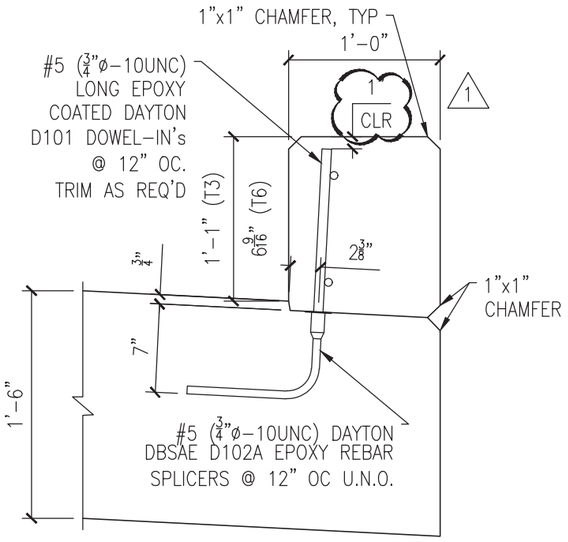
BASE JOINT DETAIL 2/6



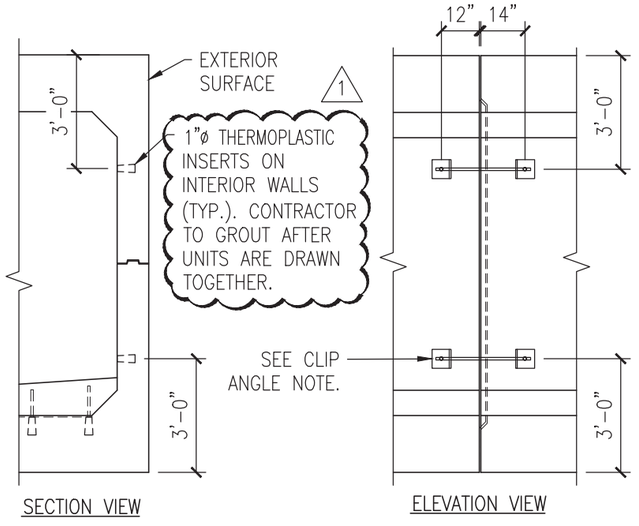
CLOSURE DETAIL 3/6



INLET HEADWALL 4/6



OUTLET HEADWALL 5/6



TEMPORARY CONNECTION DETAIL

CLIP ANGLE NOTE:
4"x4"x½" CLIP ANGLE BOLTED TO 1"ø THERMOPLASTIC INSERTS. USE ¾"ø ALL THREAD ROD TO DRAW SECTIONS TOGETHER. ANGLES AND BOLTS ARE TO BE REMOVED ONCE UNITS ARE DRAWN TOGETHER.

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JOINT DETAILS

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THE FORT MILLER Co., Inc.
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STATE OF VERMONT
PHILIP JUSTIN REED
NO. 135364
CIVIL
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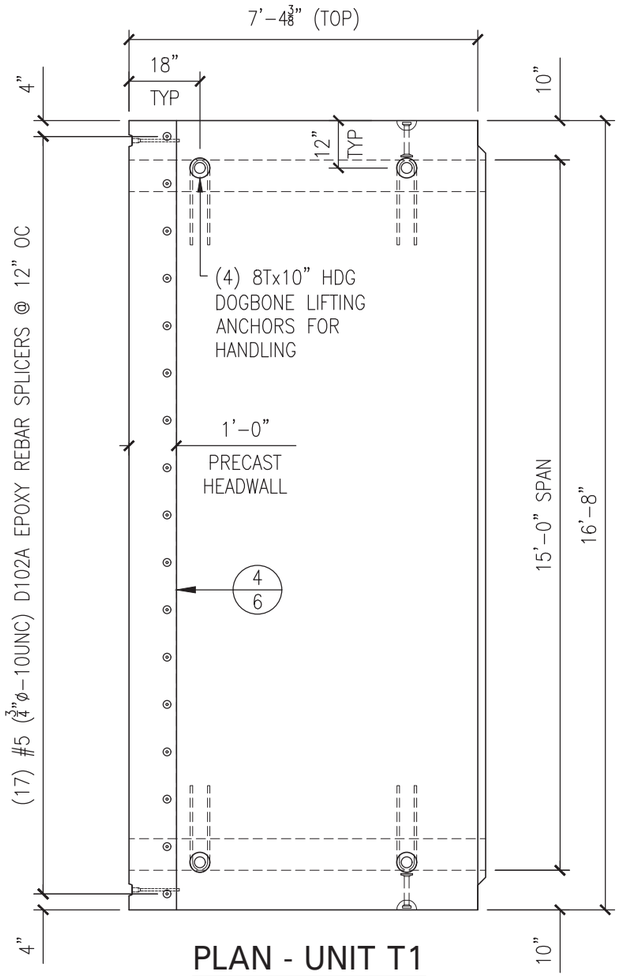
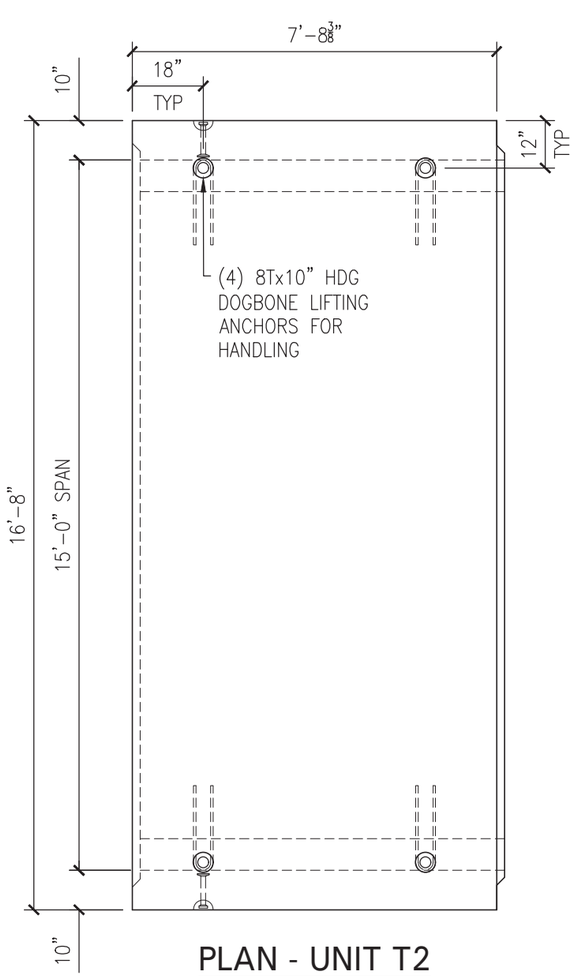
PROFESSIONAL ENGINEER



PLAN - UNIT T1



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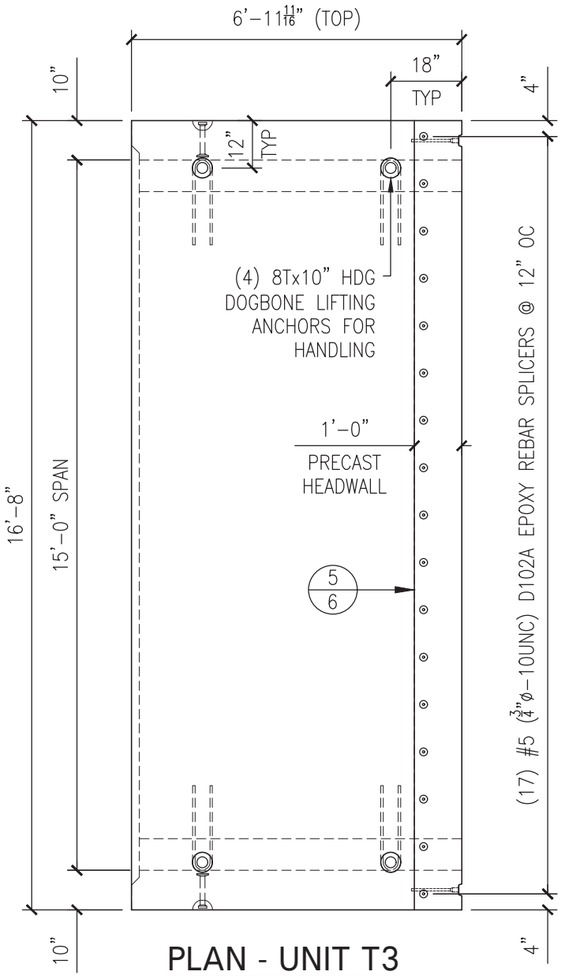

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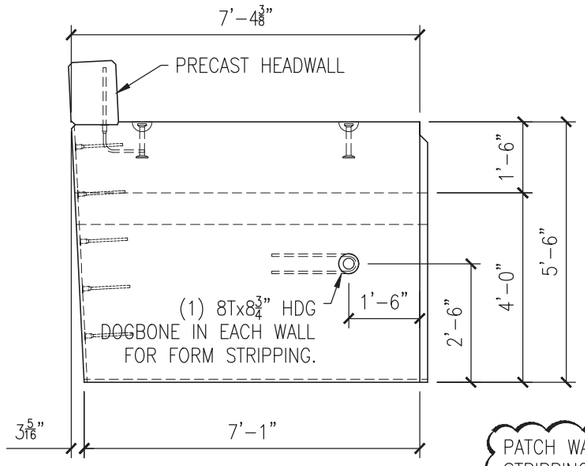
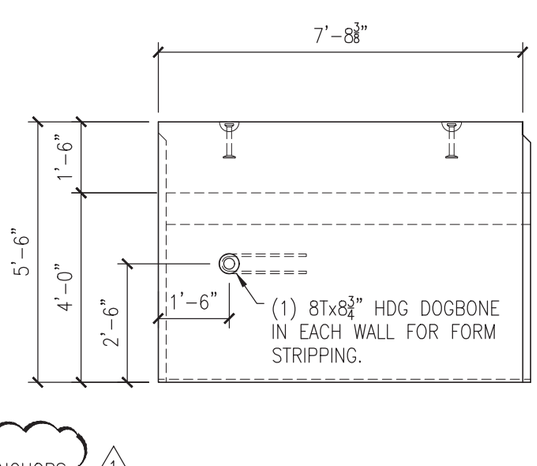


ELEVATION - UNIT T1

PATCH WALL STRIPPING ANCHORS PRIOR TO SHIPPING. 1



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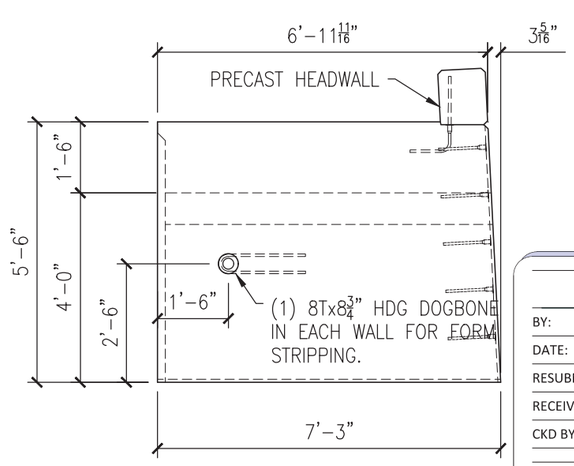

ELEVATION - UNIT T3

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
TOP UNIT DETAILS

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
PJR	4/14/25	TMT	7	NONE	26152	S7

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Approved

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DATE: 5/5/2025
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RECEIVED: May 5, 2025
CKD BY: JGRIFFIN

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Danville & St Johnsbury Fabrication Drawings and Calc

STATE OF VERMONT
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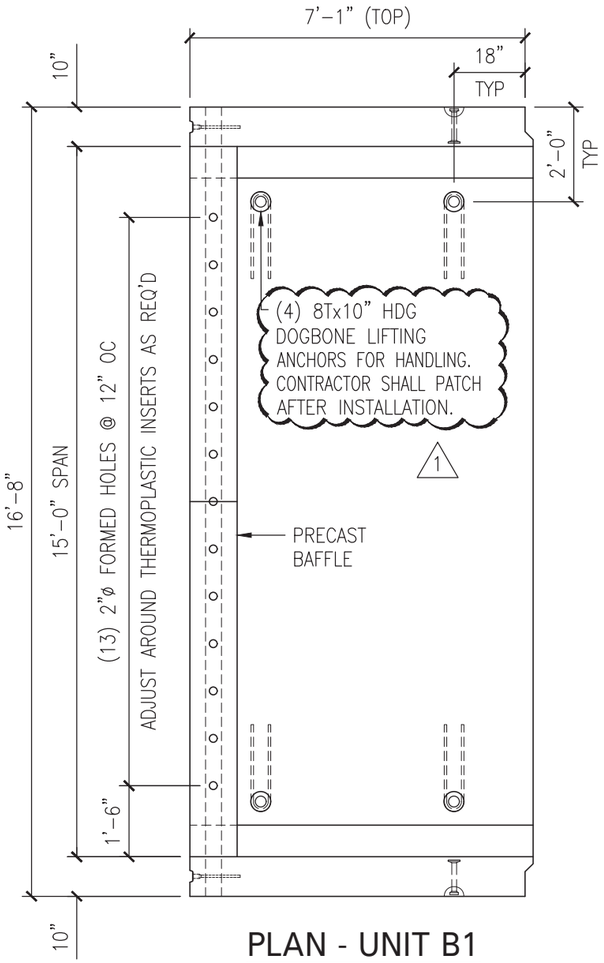

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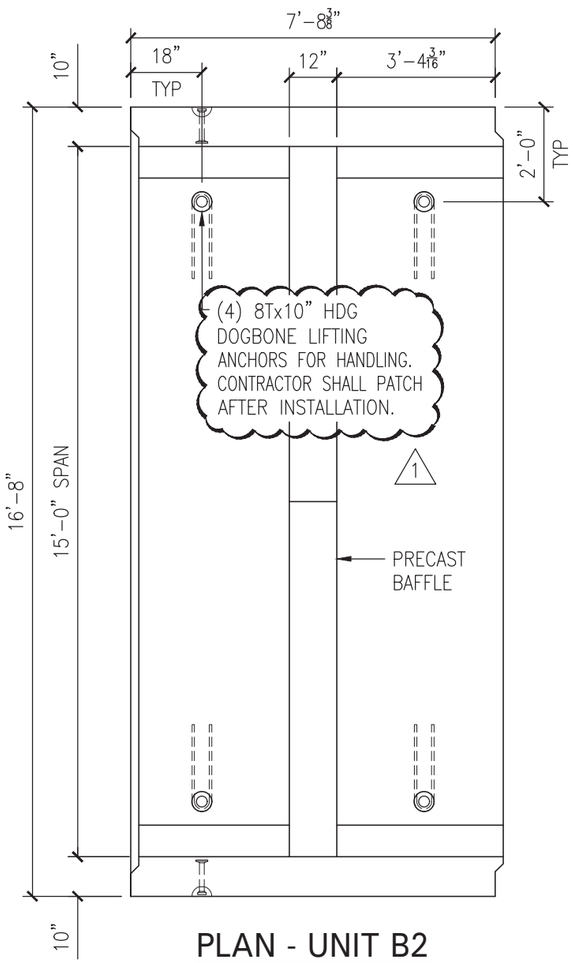

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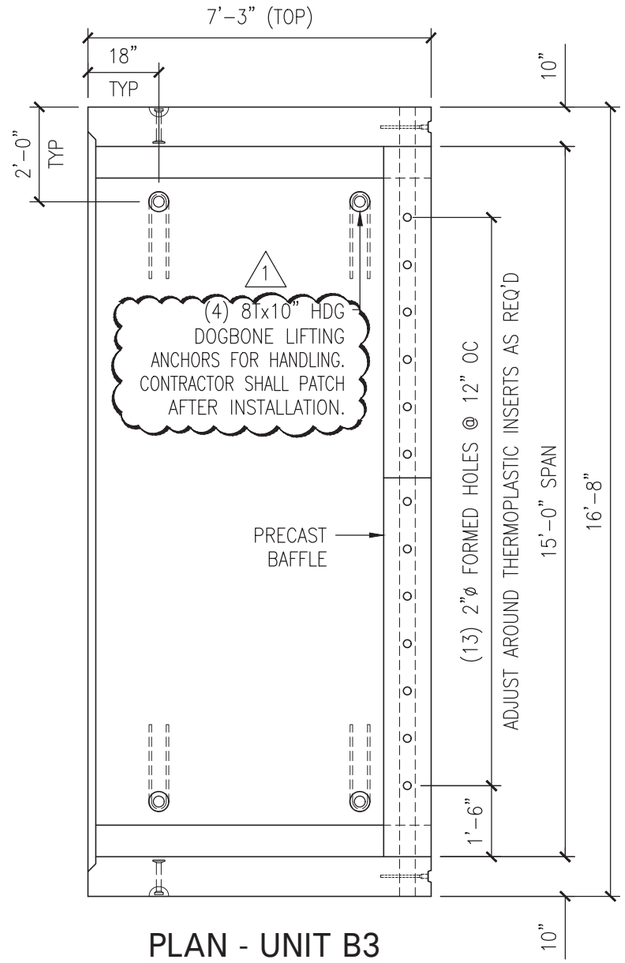

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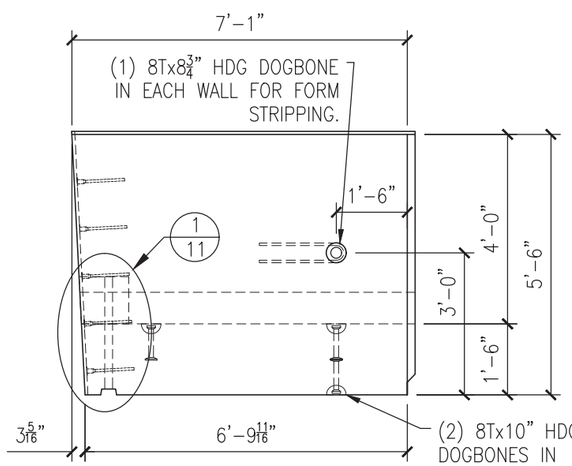

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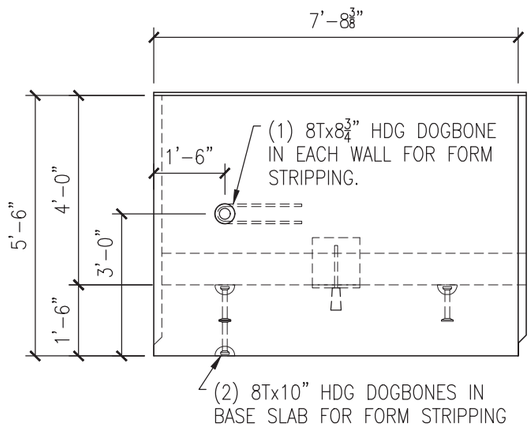

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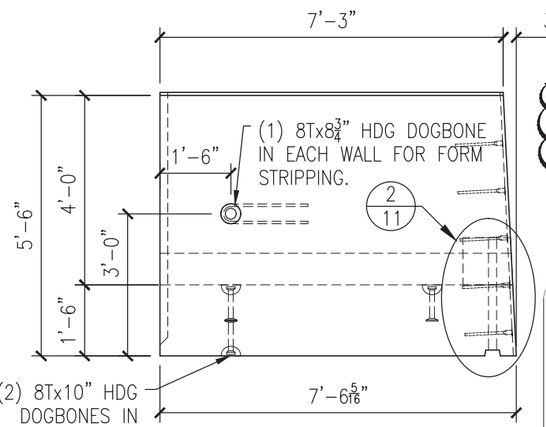

ELEVATION - UNIT B3

1 PATCH WALL STRIPPING ANCHORS PRIOR TO SHIPPING.

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
BOTTOM UNIT DETAILS

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
PJR	4/14/25	TMT	8	NONE	26152	S8

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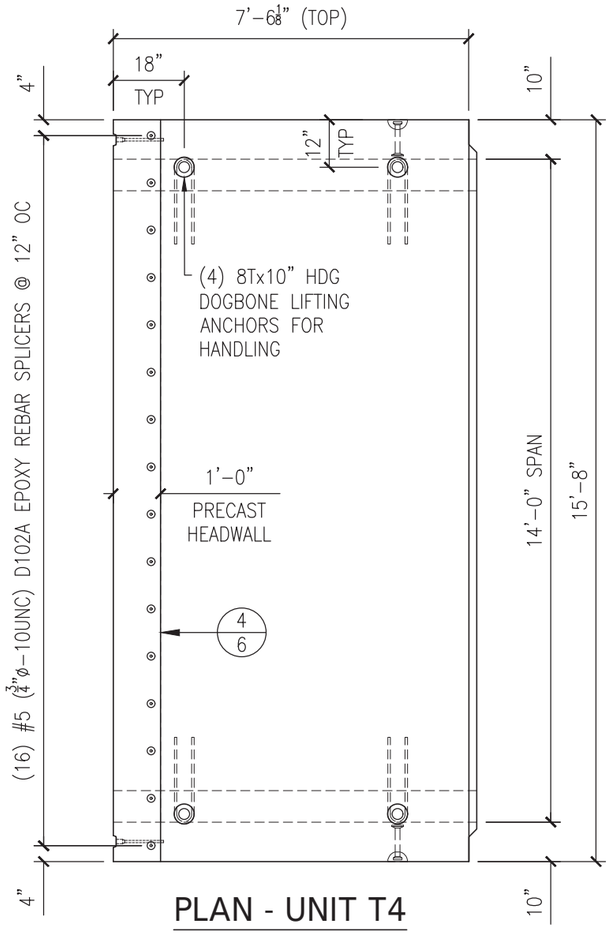
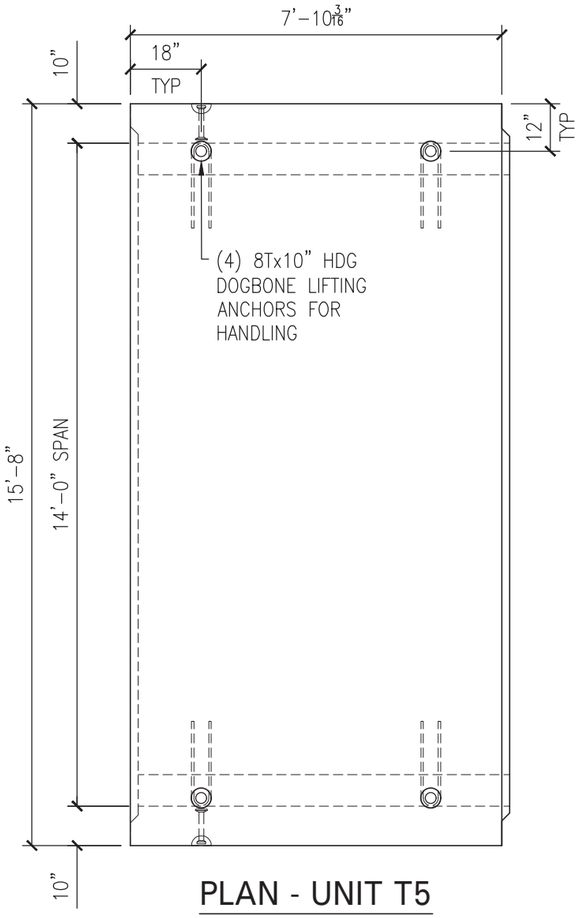


PLAN - UNIT T4



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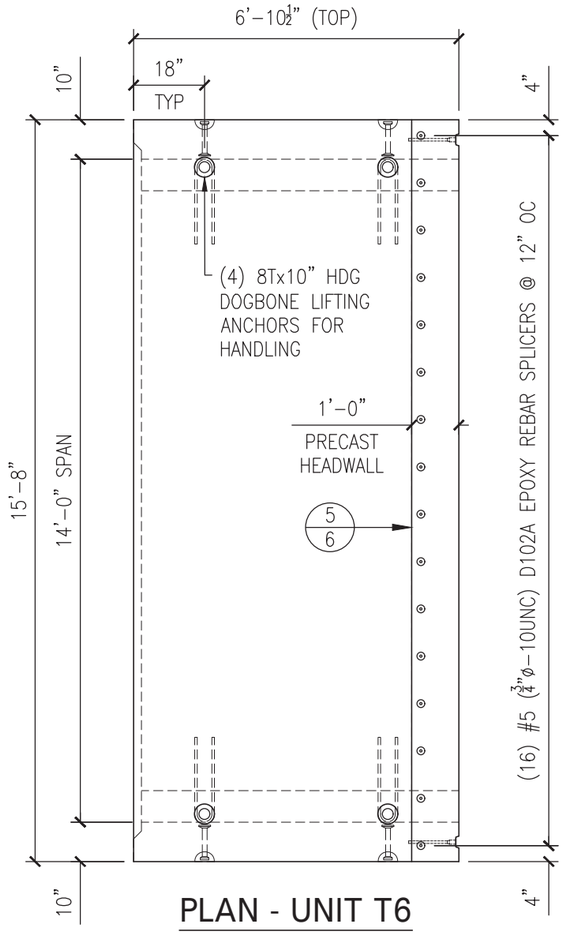
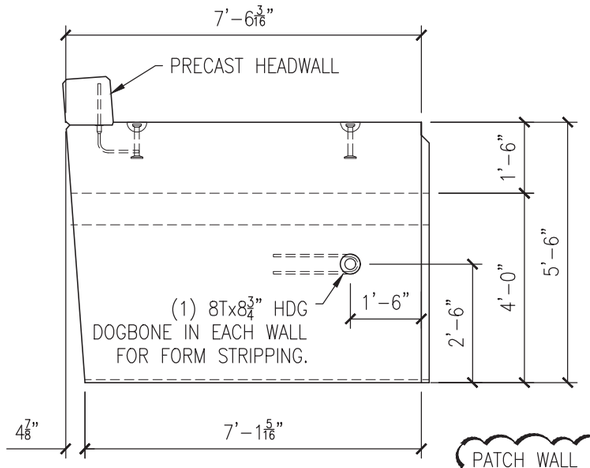
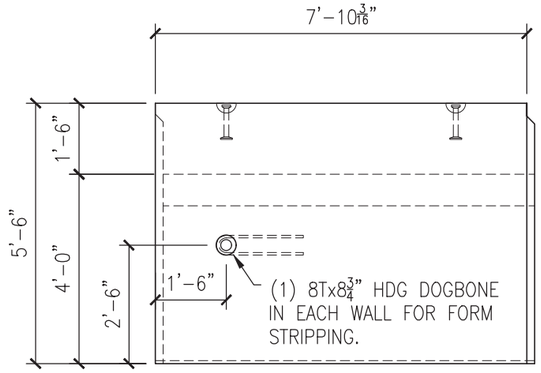


PLAN - UNIT T6

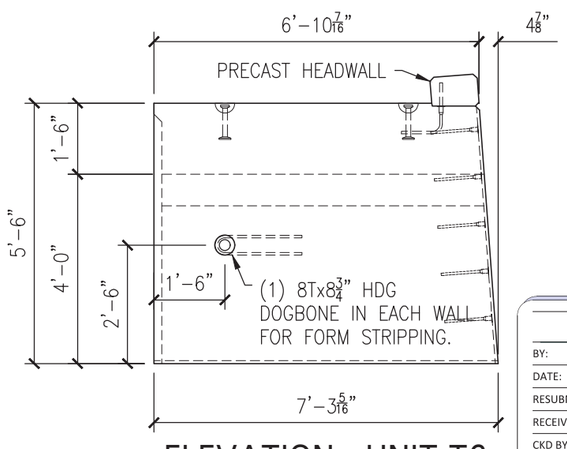


ELEVATION - UNIT T4

PATCH WALL STRIPPING ANCHORS PRIOR TO SHIPPING. 1



ELEVATION - UNIT T5



ELEVATION - UNIT T6

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
TOP UNIT DETAILS

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
PJR	4/14/25	TMT	9	NONE	26152	S9

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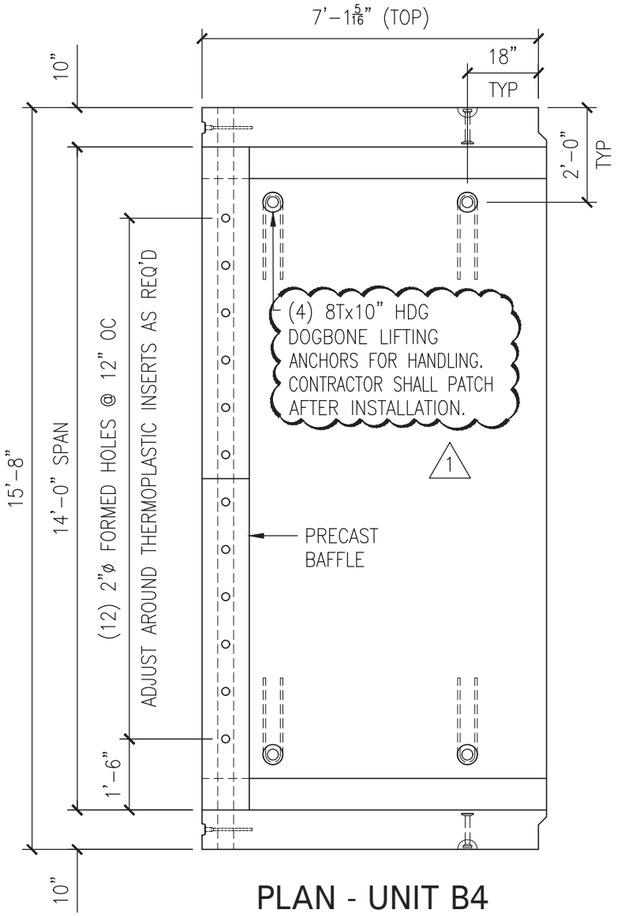

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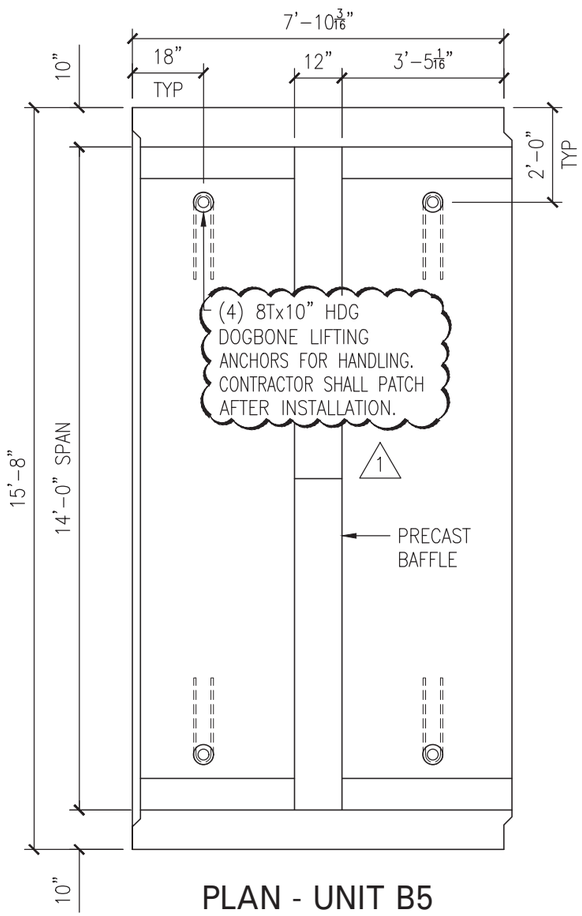

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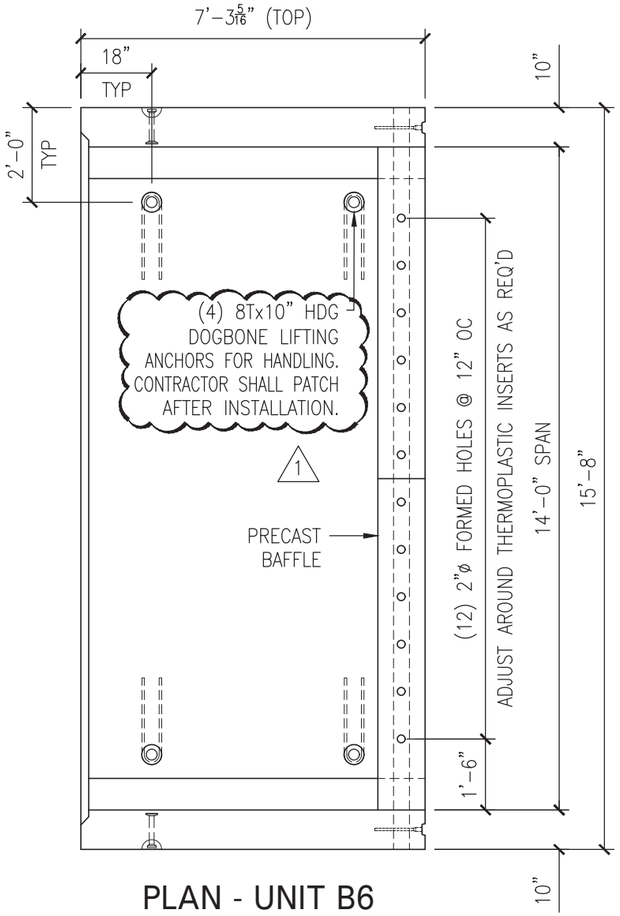

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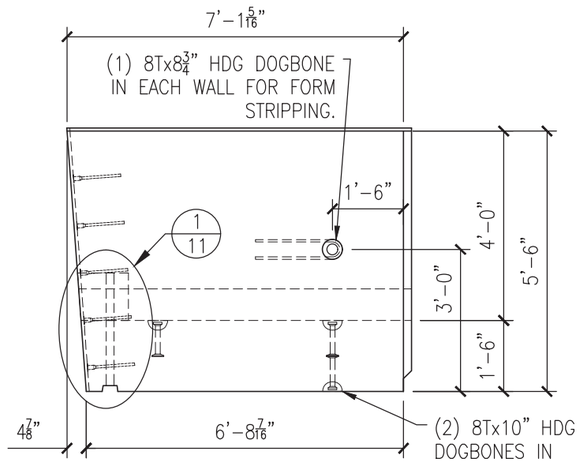

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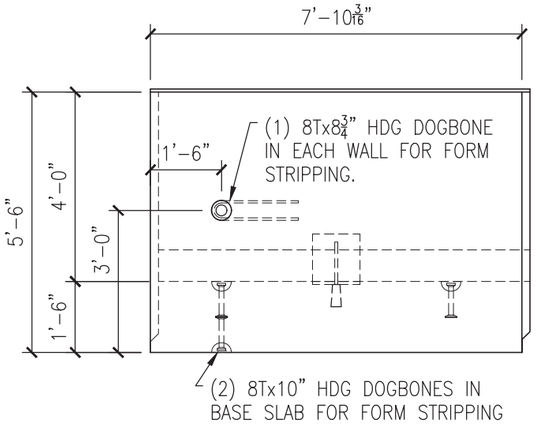

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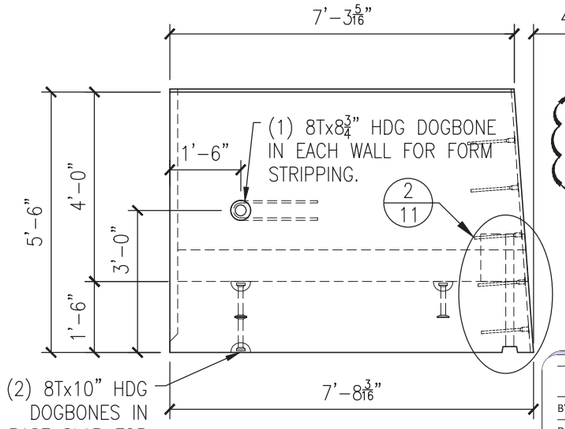

ELEVATION - UNIT B6

1

PATCH WALL STRIPPING ANCHORS PRIOR TO SHIPPING.

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
BOTTOM UNIT DETAILS

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
PJR	4/14/25	TMT	10	NONE	26152	S10

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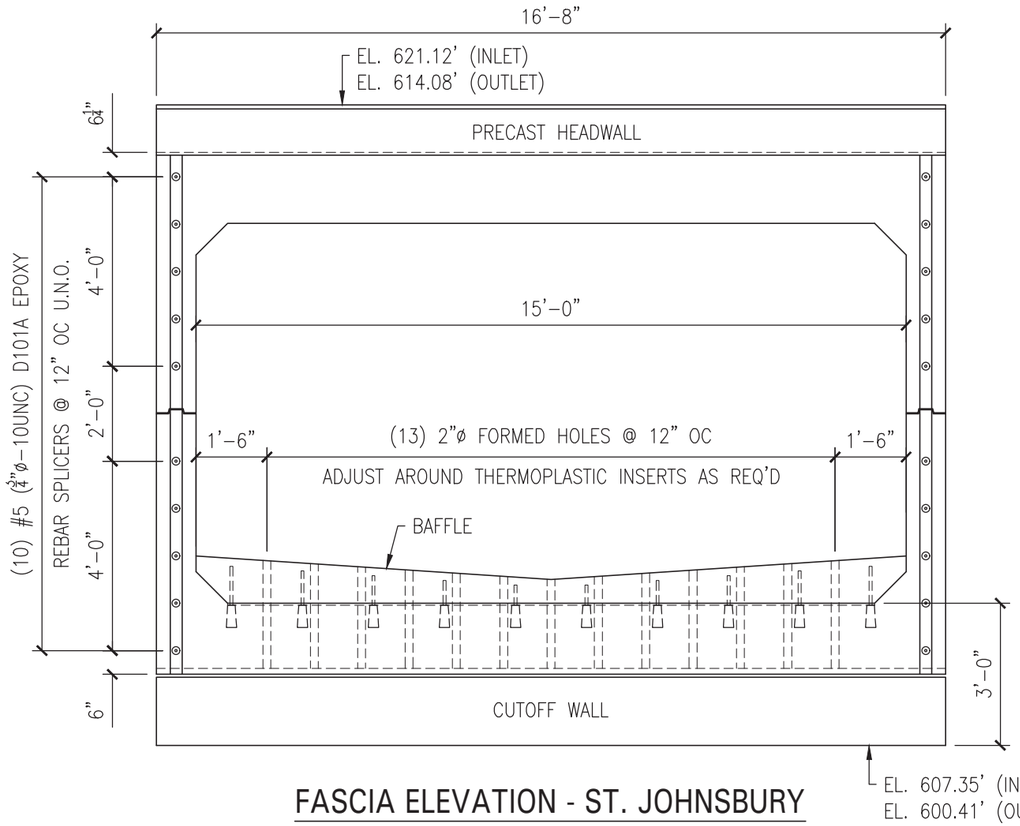
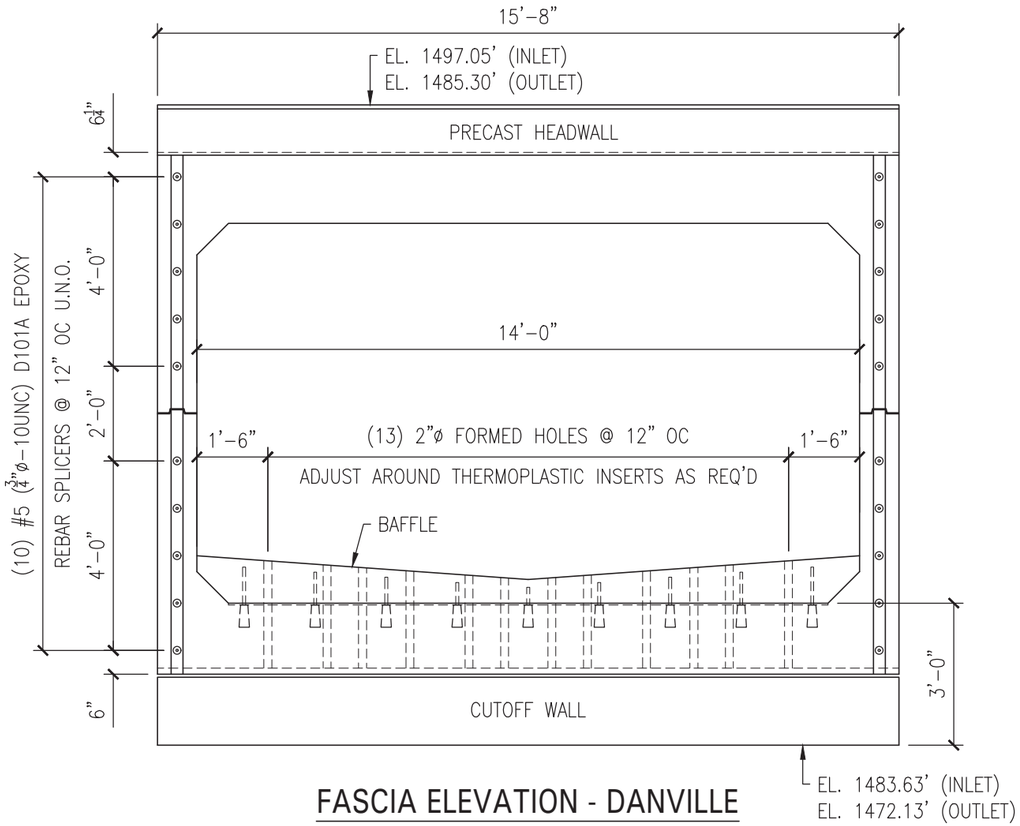
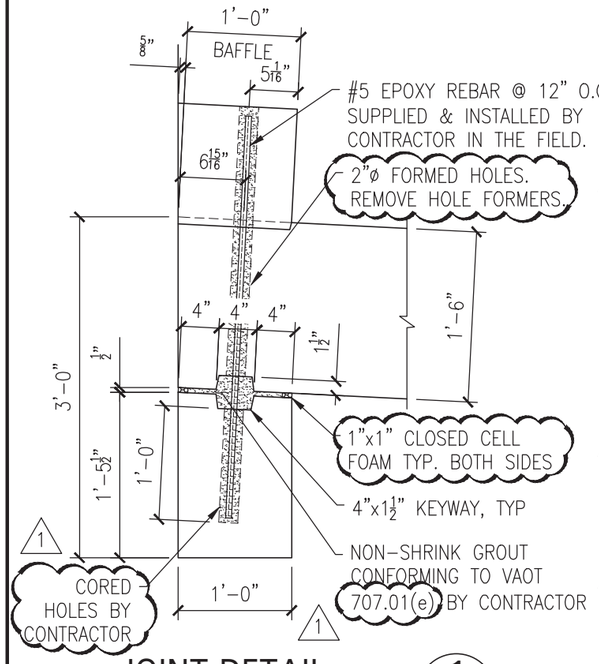


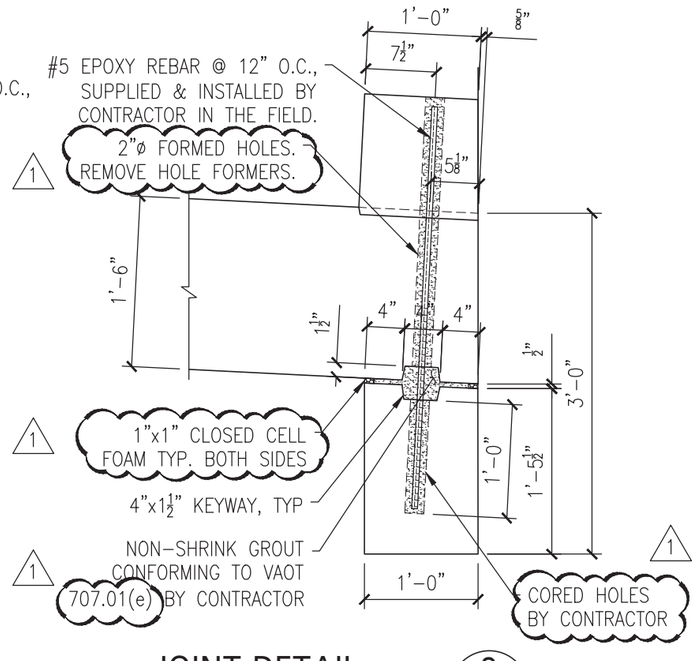
FASCIA ELEVATION - ST. JOHNSBURY



FASCIA ELEVATION - DANVILLE



JOINT DETAIL 1/11
INLET CUTOFF WALL



JOINT DETAIL 2/11
OUTLET CUTOFF WALL

Approved

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Danville & St Johnsbury Fabrication Drawings and Cast

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
FASCIA ELEVATIONS

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
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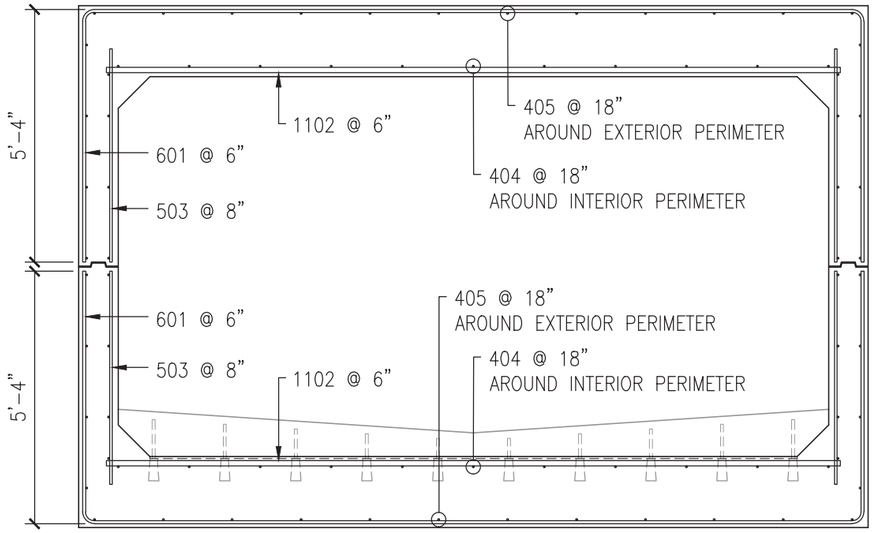
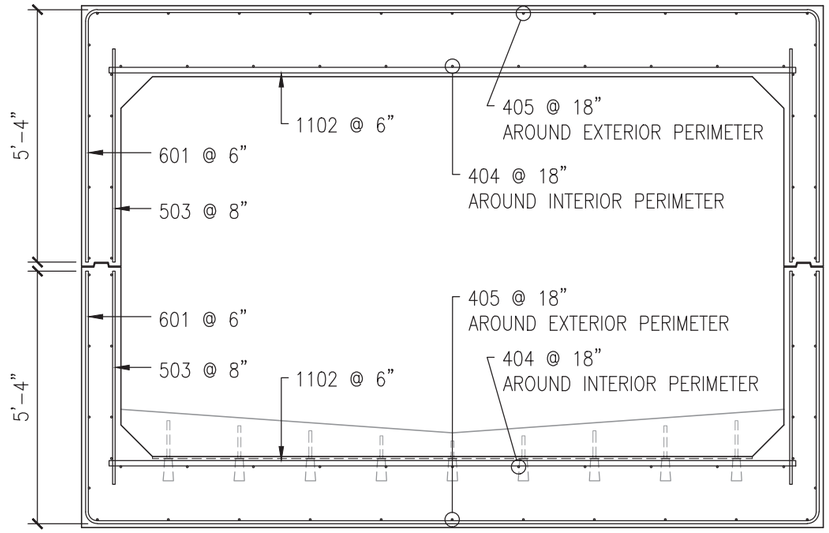


REINFORCEMENT SECTION - ST. JOHNSBURY

1" CLEAR U.N.O.
NOTE: FM SHALL HAVE THE OPTION TO REPLACE ANY REINFORCEMENT WITH WWR MATS WITH EQUIVALENT A_s.



REINFORCEMENT SECTION - DANVILLE

1" CLEAR U.N.O.
NOTE: FM SHALL HAVE THE OPTION TO REPLACE ANY REINFORCEMENT WITH WWR MATS WITH EQUIVALENT A_s.

NOTE: TRIM REINFORCEMENT IN FASCIA UNITS AS REQUIRED

REINFORCEMENT SCHEDULE: UNITS T1 - T3

MK#	Qty	Size	Type	Length	B	C	D	H	O
601	16	6	17	27'-2"	5'-4"	16'-6"	5'-4"		
1102	16	11		15'-6"					
503	26	5		4'-6"					
404	19	4		7'-6 1/4"					
405	20	4		7'-6 1/4"					
E550	12	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"	5"

REINFORCEMENT SCHEDULE: UNITS T4 - T6

MK#	Qty	Size	Type	Length	B	C	D	H	O
601	16	6	17	26'-2"	5'-4"	15'-6"	5'-4"		
1102	16	11		14'-6"					
503	26	5		4'-6"					
404	19	4		7'-8 1/4"					
405	20	4		7'-8 1/4"					
E550	12	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"	5"

REINFORCEMENT SCHEDULE: UNITS B1 - B3

MK#	Qty	Size	Type	Length	B	C	D	H	K	O
601	16	6	17	27'-2"	5'-4"	16'-6"	5'-4"			
1102	16	11		15'-6"						
503	26	5		4'-6"						
404	19	4		7'-6 1/4"						
405	20	4		7'-6 1/4"						
506	1	5	16	14'-10"	7'-5"	7'-5"		1'-0"	7'-4"	
E550	12	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"		5"

REINFORCEMENT SCHEDULE: UNITS B4 - B6

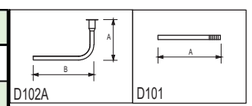
MK#	Qty	Size	Type	Length	B	C	D	H	K	O
601	16	6	17	26'-2"	5'-4"	15'-6"	5'-4"			
1102	16	11		14'-6"						
503	26	5		4'-6"						
404	19	4		7'-8 1/4"						
405	20	4		7'-8 1/4"						
506	1	5	16	14'-10"	7'-5"	7'-5"		1'-0"	7'-4"	
E550	12	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"		5"

REBAR SPLICER SCHEDULE: 'B' UNITS

MK#	Qty	Size	Type	Length	A	B
550	10/9	5	D101	10"		

REBAR SPLICER SCHEDULE: T1, T3, T4, T6 UNITS

MK#	Qty	Size	Type	Length	A	B
E550	17/16	E5	D102A	10"	7"	10"
E551	17/16	E5	D101	12"		



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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Danville & St Johnsbury Fabrication Drawings and Calc

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
CULVERT REINFORCEMENT

CONTRACTOR: TBD
ENGINEER: VAOT
DRAWN PJR | DATE 4/14/25 | CHK'D TMT | SHEET 12 | SCALE NONE | F.M. JOB No. 26152 | DWG. S12

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NO.	DATE	BY	DESCRIPTION

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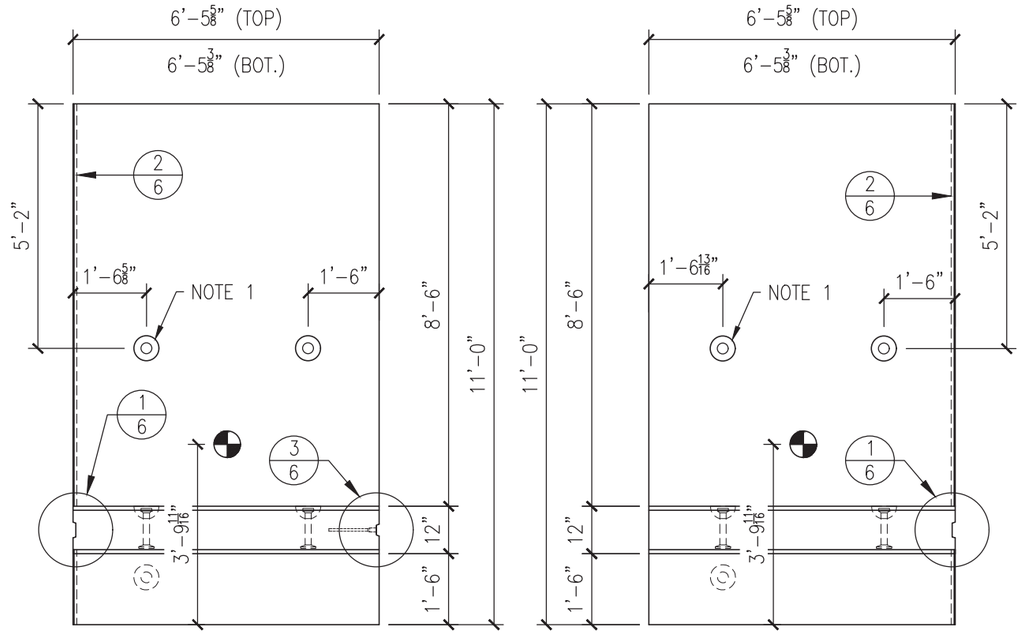
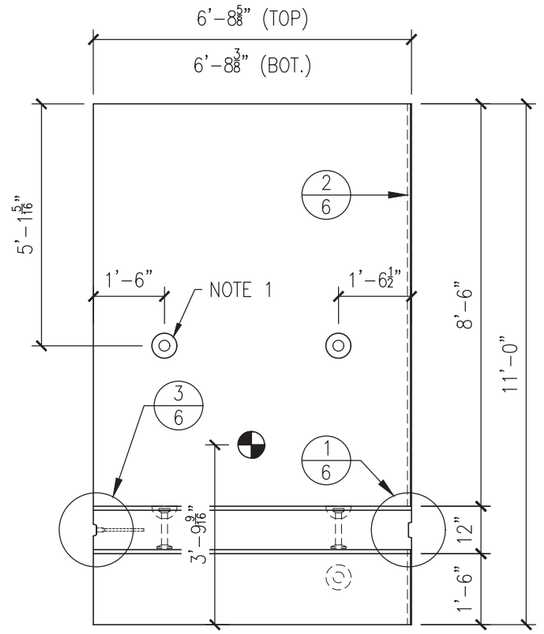


PLAN - UNIT JW1A

PLAN - UNIT JW1B



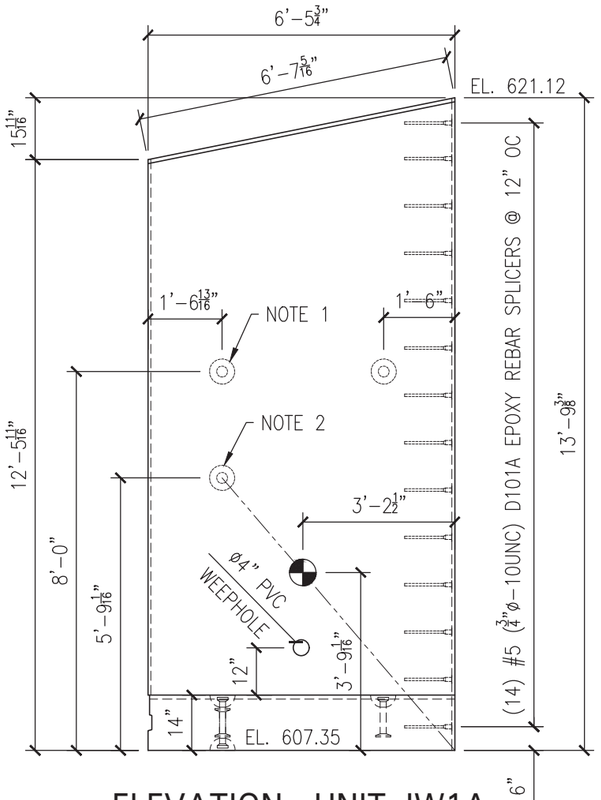
PLAN - UNIT JW2A

NOTE 1:
(4) 8Tx10" HDG DOGBONE LIFTING ANCHORS FOR HANDLING.

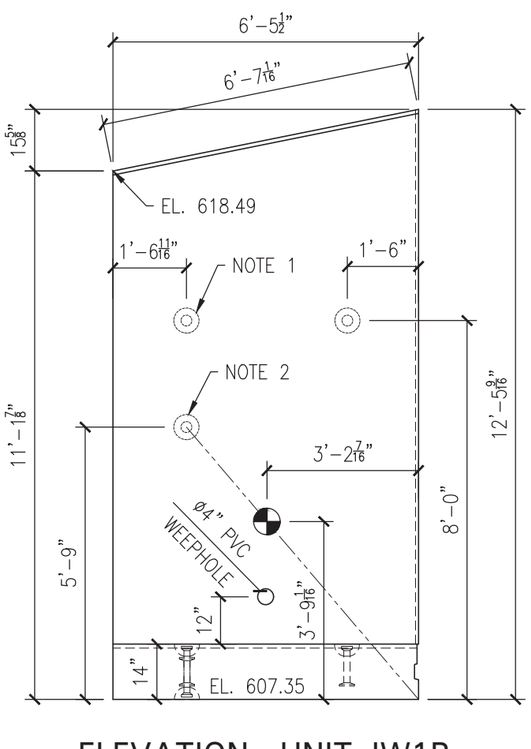
NOTE 2:
(1) 8Tx10" HDG DOGBONE LIFTING ANCHOR FOR FIELD ROTATING.

CONTRACTOR SHALL GROUT ALL LIFTING DEVICES AFTER INSTALLATION.

1



ELEVATION - UNIT JW1A



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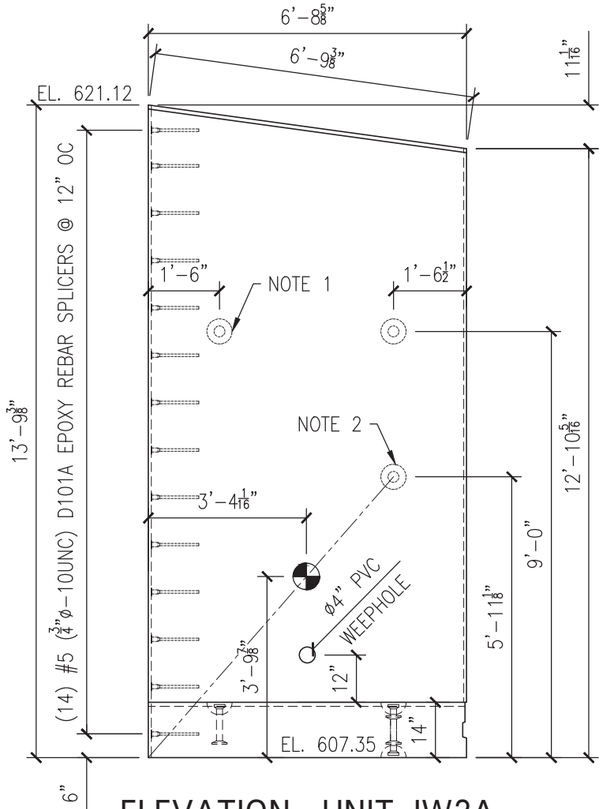

ELEVATION - UNIT JW2A

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
WINGWALL DETAILS

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
PJR	4/14/25	TMT	13	NONE	26152	S13

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	1/15/25	PJR	PER REVIEW COMMENTS

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Approved

BY:	JGRIFFIN
DATE:	5/5/2025
RESUBMIT:	NO
RECEIVED:	May 5, 2025
CKD BY:	JGRIFFIN

STATE OF VERMONT
AGENCY OF TRANSPORTATION

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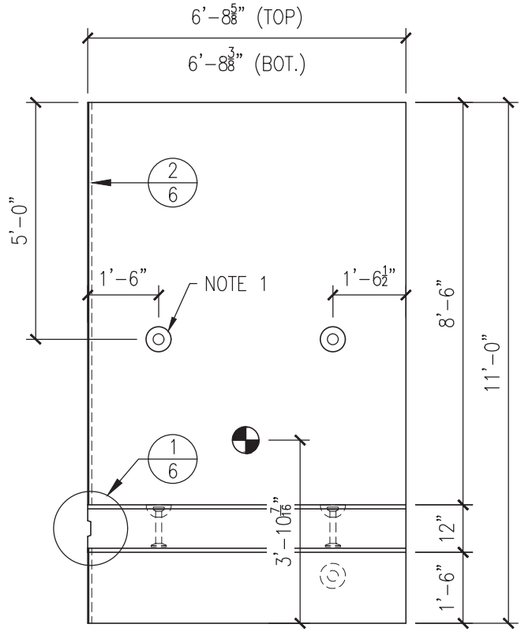
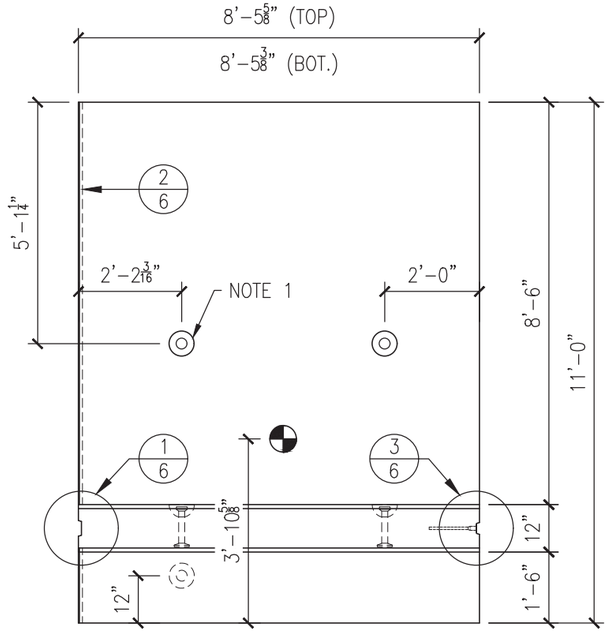
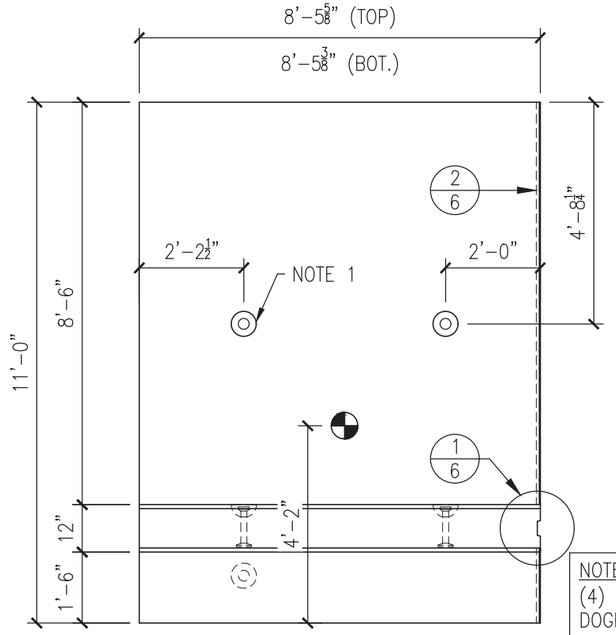


PLAN - UNIT JW2B



PLAN - UNIT JW4A



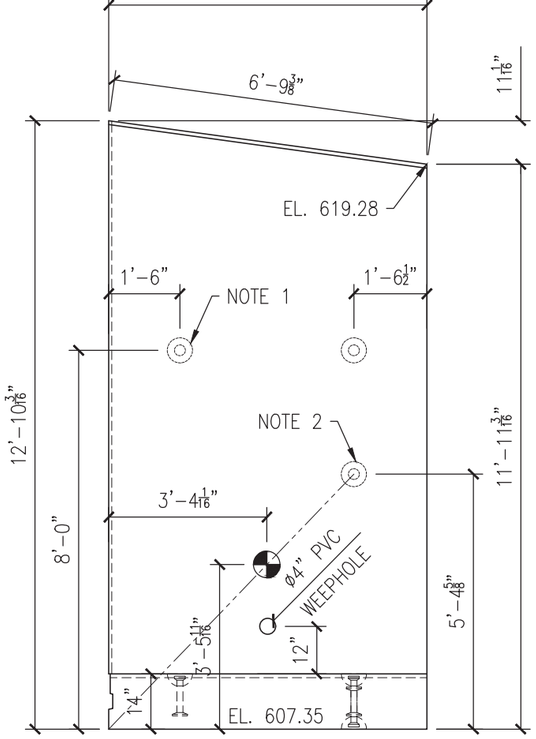
PLAN - UNIT JW4B

NOTE 1:
(4) 8Tx10" HDG DOGBONE LIFTING ANCHORS FOR HANDLING.

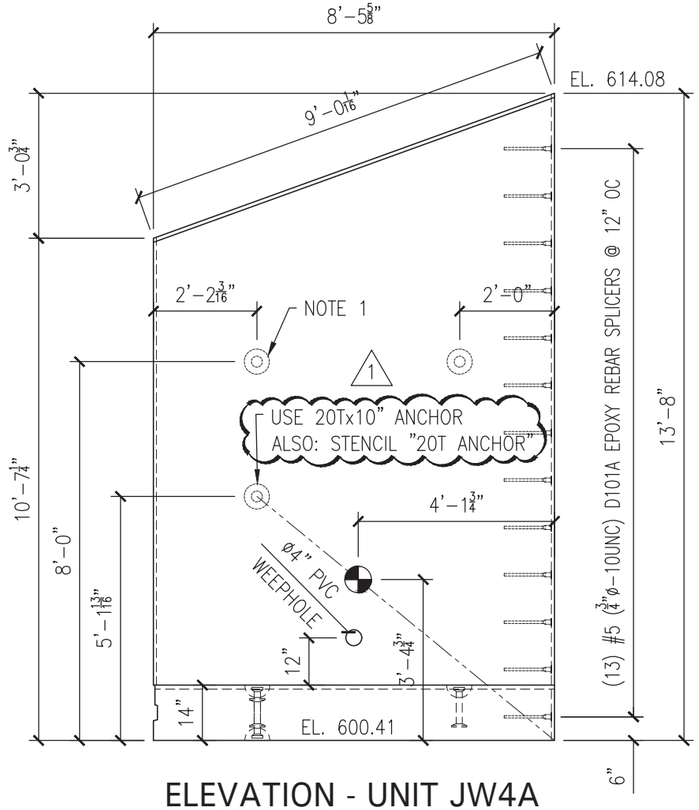
NOTE 2:
(1) 8Tx10" HDG DOGBONE LIFTING ANCHOR FOR FIELD ROTATING.

CONTRACTOR SHALL GROUT ALL LIFTING DEVICES AFTER INSTALLATION.

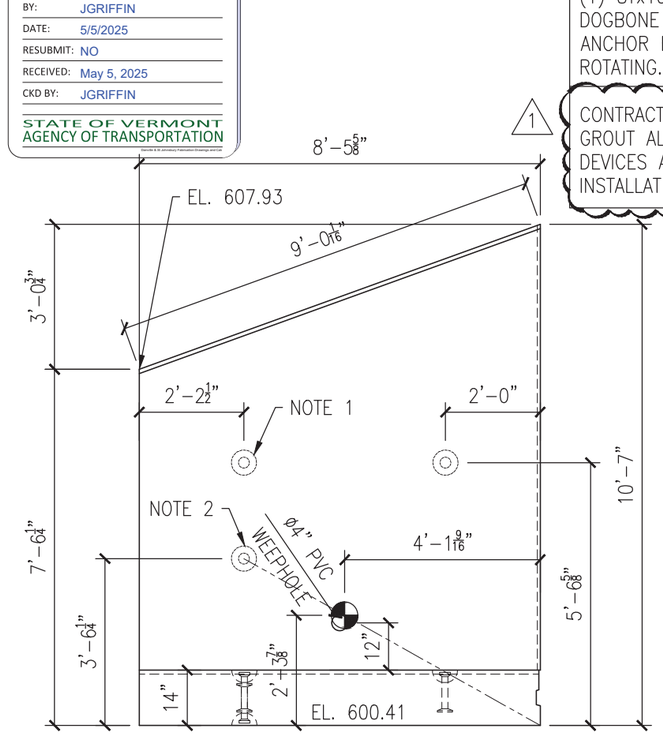
Approved
BY: JGRIFFIN
DATE: 5/5/2025
RESUBMIT: NO
RECEIVED: May 5, 2025
CKD BY: JGRIFFIN
STATE OF VERMONT
AGENCY OF TRANSPORTATION



ELEVATION - UNIT JW2B



ELEVATION - UNIT JW4A



ELEVATION - UNIT JW4B

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
WINGWALL DETAILS

CONTRACTOR: TBD

ENGINEER:	DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
VAOT	PJR	4/14/25	TMT	14	NONE	26152	S14

NO.	DATE	BY	DESCRIPTION
1	1/15/25	PJR	PER REVIEW COMMENTS

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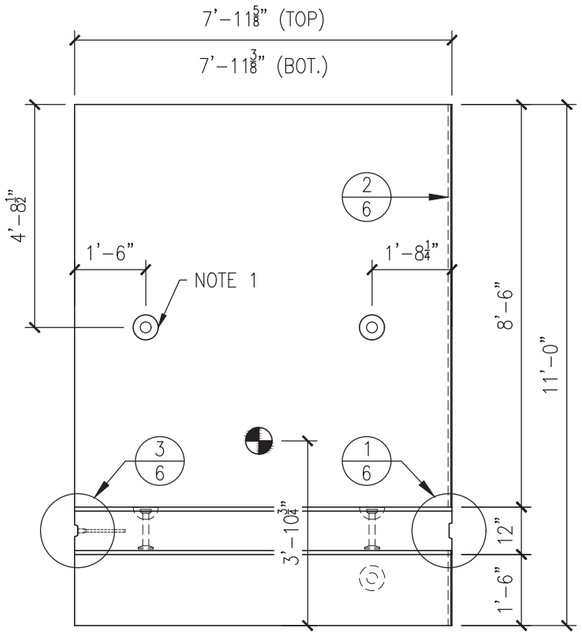
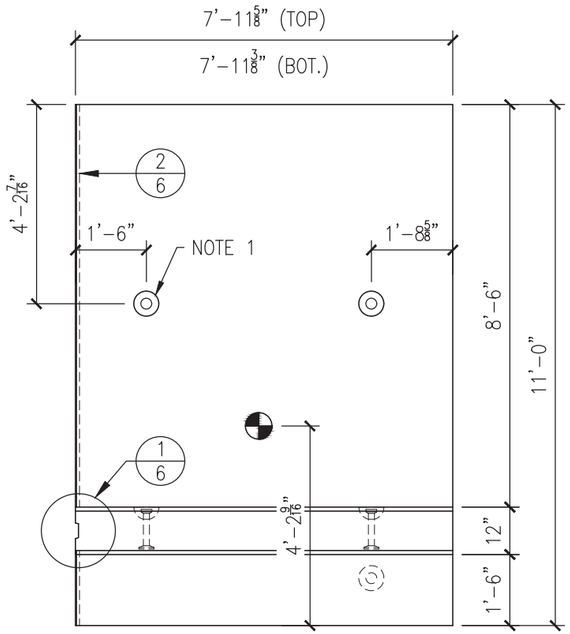


PLAN - UNIT JW3A

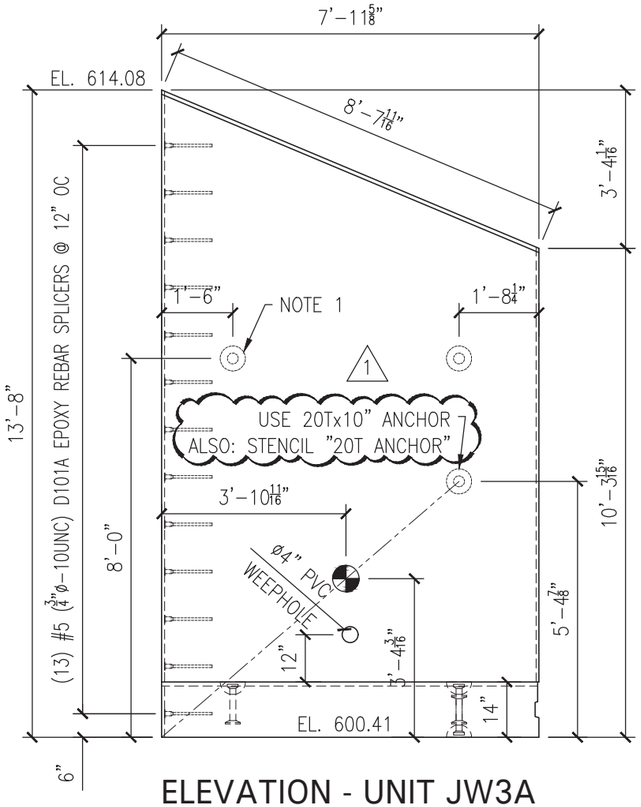


PLAN - UNIT JW3B

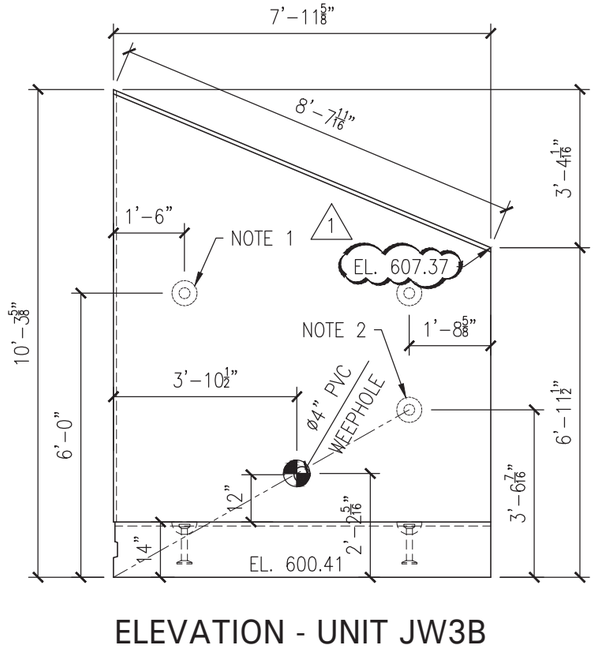
NOTE 1:
(4) 8Tx10" HDG DOGBONE LIFTING ANCHORS FOR HANDLING.

NOTE 2:
(1) 8Tx10" HDG DOGBONE LIFTING ANCHOR FOR FIELD ROTATING.

CONTRACTOR SHALL GROUT ALL LIFTING DEVICES AFTER INSTALLATION. 1



ELEVATION - UNIT JW3A



ELEVATION - UNIT JW3B

Approved

BY:	JGRIFFIN
DATE:	5/5/2025
RESUBMIT:	NO
RECEIVED:	May 5, 2025
CKD BY:	JGRIFFIN

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Danville & St Johnsbury Fabrication Drawings and Calc

STATE OF VERMONT
PHILIP JUSTIN REED
NO. 135364
CIVIL
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PROFESSIONAL ENGINEER

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
WINGWALL DETAILS

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
PJR	4/14/25	TMT	15	NONE	26152	S15

REVISIONS

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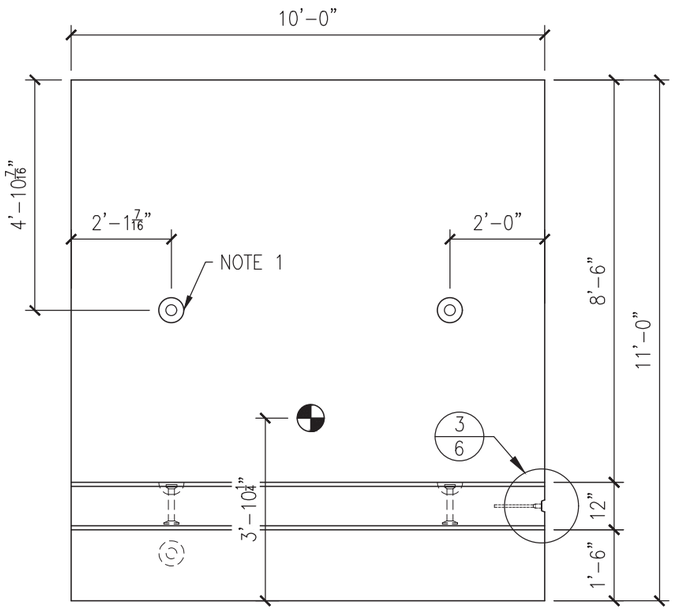
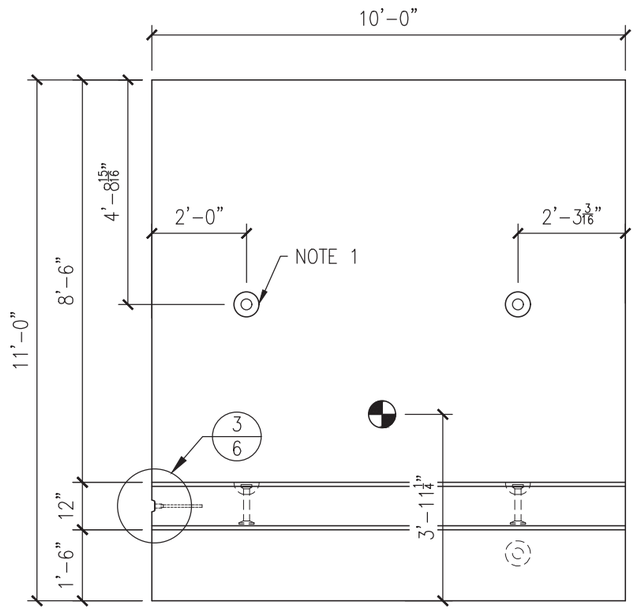


PLAN - UNIT DW1



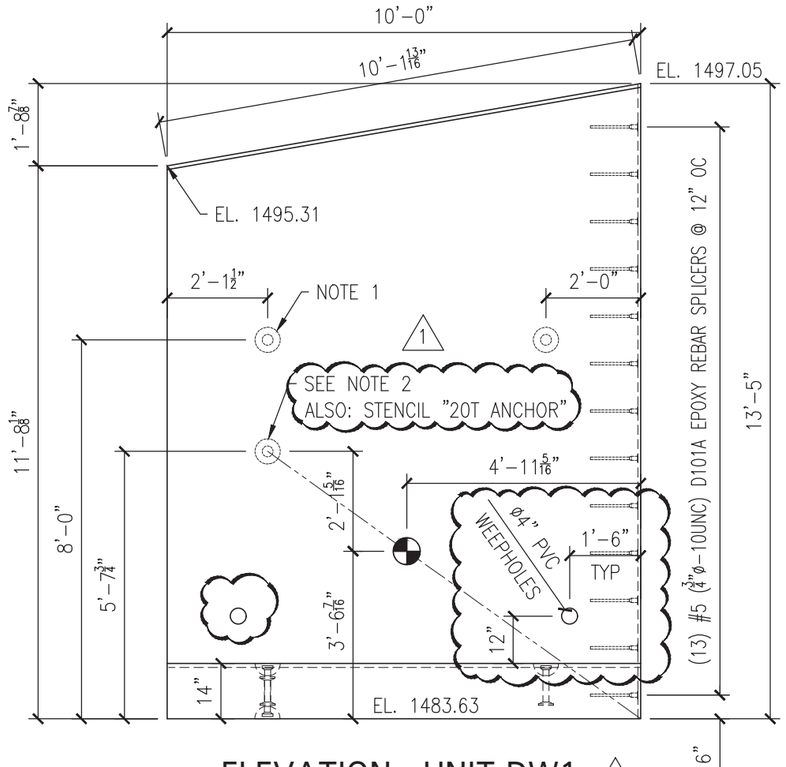
PLAN - UNIT DW2

NOTE 1:
(4) 8Tx10" HDG DOGBONE LIFTING ANCHORS FOR HANDLING.

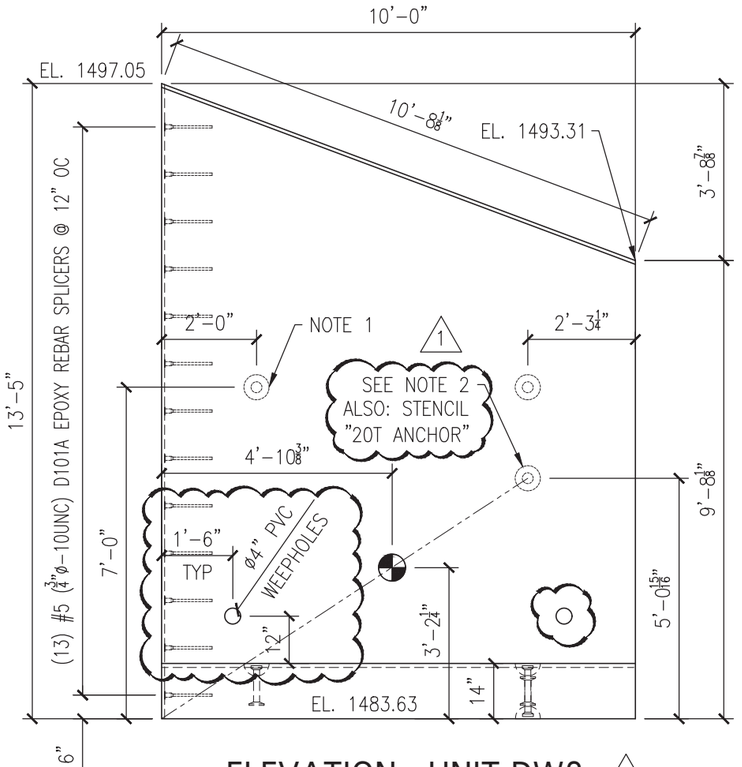
NOTE 2:
(1) 20Tx10" HDG DOGBONE LIFTING ANCHOR FOR FIELD ROTATING.

CONTRACTOR SHALL GROUT ALL LIFTING DEVICES AFTER INSTALLATION.

1



ELEVATION - UNIT DW1 1



ELEVATION - UNIT DW2 1

Approved	
BY:	JGRIFFIN
DATE:	5/5/2025
RESUBMIT:	NO
RECEIVED:	May 5, 2025
CKD BY:	JGRIFFIN

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AGENCY OF TRANSPORTATION

Danville & St Johnsbury Fabrication Drawings and Cert

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VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
WINGWALL DETAILS

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
PJR	4/14/25	TMT	16	NONE	26152	S16

REVISIONS

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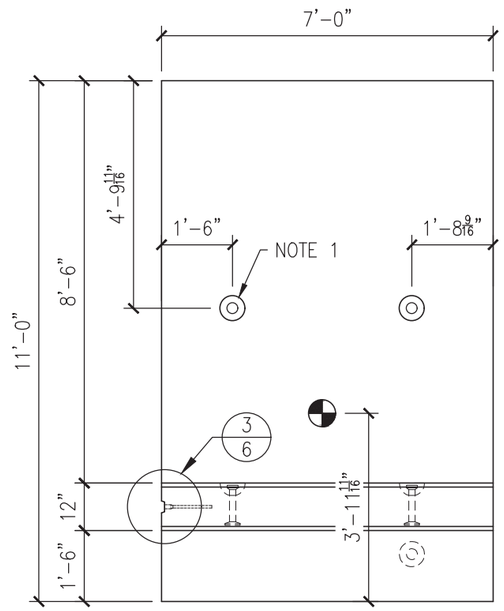
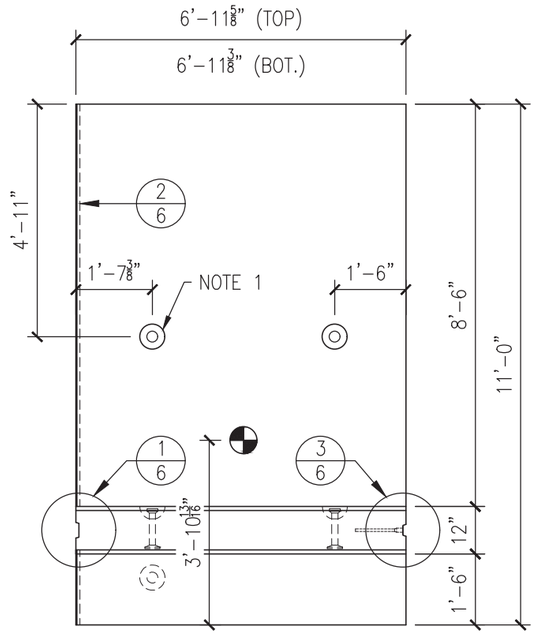
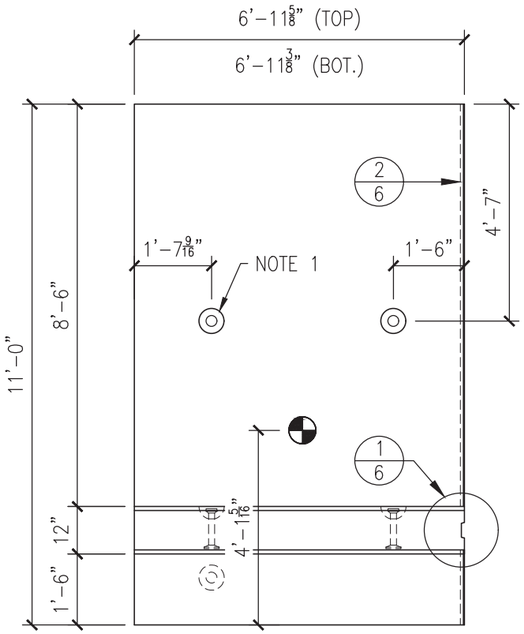


PLAN - UNIT DW3



PLAN - UNIT DW4A

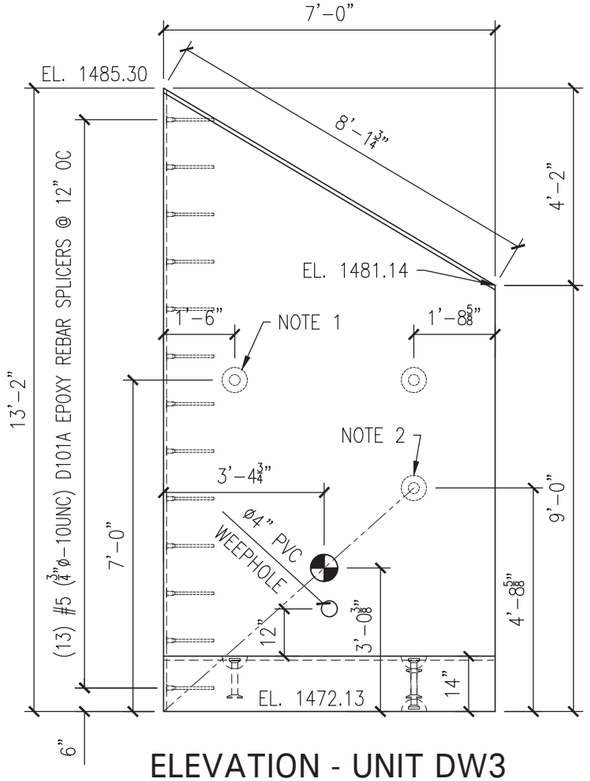


PLAN - UNIT DW4B

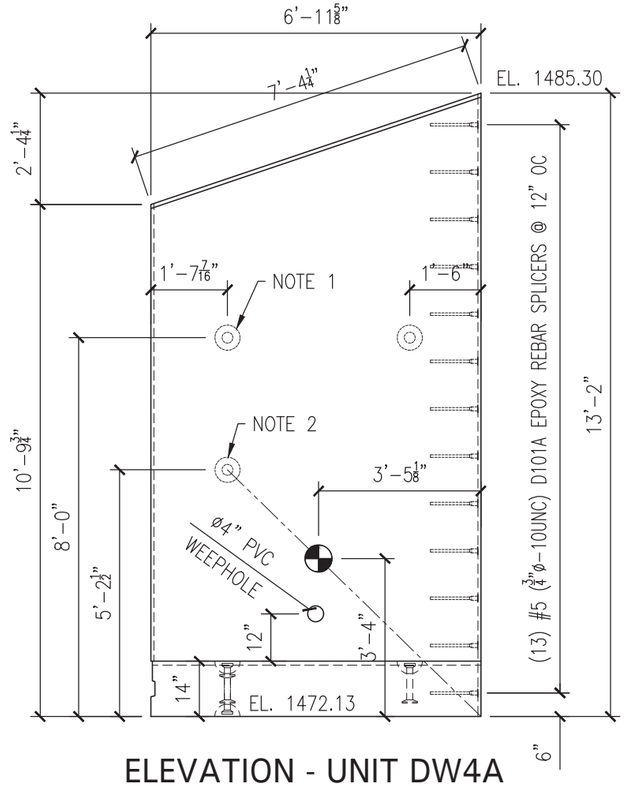
NOTE 1:
(4) 8Tx10" HDG DOGBONE LIFTING ANCHORS FOR HANDLING.

NOTE 2:
(1) 8Tx10" HDG DOGBONE LIFTING ANCHOR FOR FIELD ROTATING.

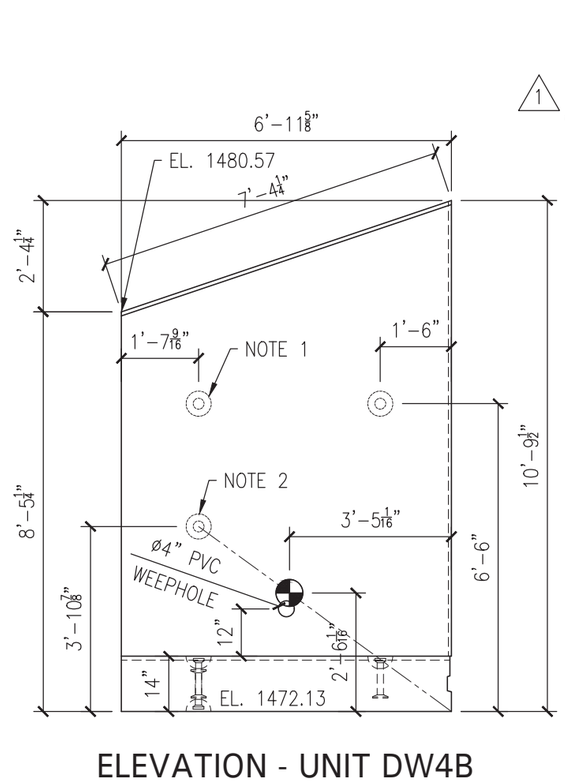
1 CONTRACTOR SHALL GROUT ALL LIFTING DEVICES AFTER INSTALLATION.



ELEVATION - UNIT DW3



ELEVATION - UNIT DW4A



ELEVATION - UNIT DW4B

Approved

BY:	JGRIFFIN
DATE:	5/5/2025
RESUBMIT:	NO
RECEIVED:	May 5, 2025
CKD BY:	JGRIFFIN

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Danville & St Johnsbury Fabrication Drawings and Calc

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
WINGWALL DETAILS

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
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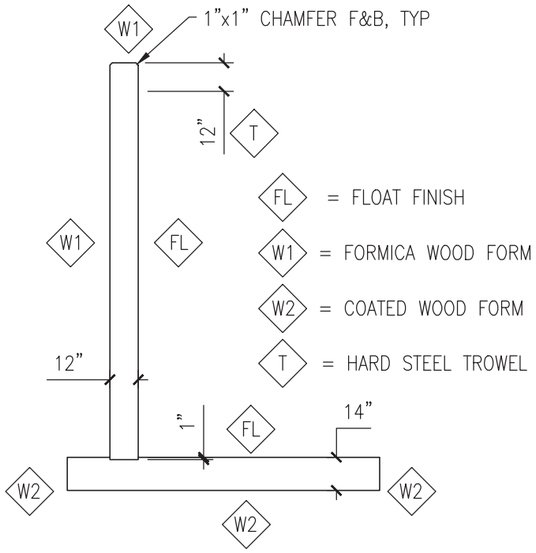
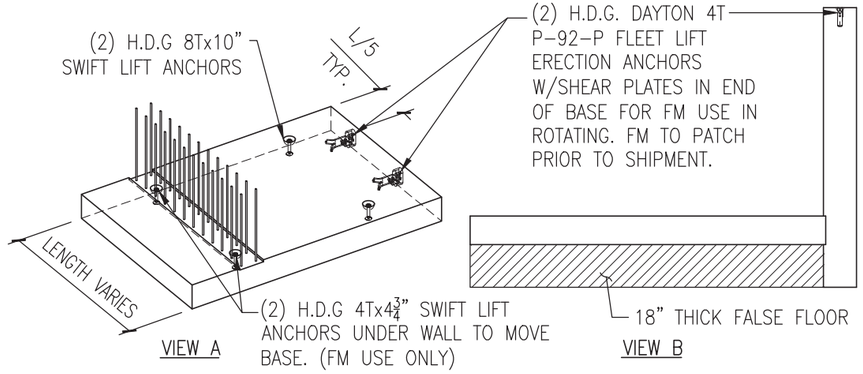


WINGWALL FINISHING

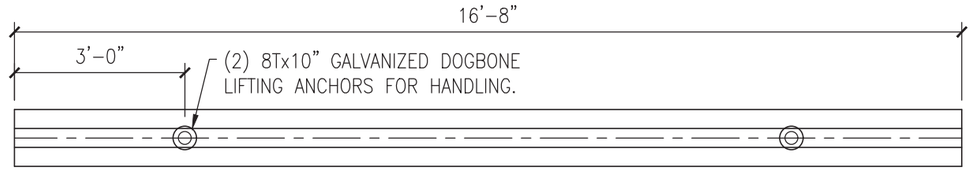
KEYWAYS TO RECEIVE AN EXPOSED AGGREGATE FINISH



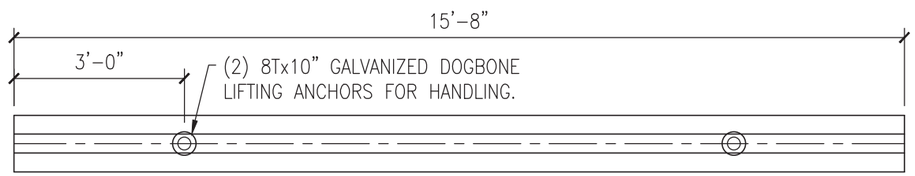
WINGWALL CONSTRUCTION SEQUENCE

(TYPICAL ALL WINGWALL SECTIONS)

1. FIRST POUR SHALL BE WINGWALL BASE AS IT WILL BE SET IN THE FIELD. REINFORCEMENT SHALL PROTRUDE FOR SECONDARY WALL POUR, SEE VIEW A.
2. BASE SHALL THEN BE ROTATED 90° AND SECONDARY WALL POUR SHALL BE ACCOMPLISHED AS SHOWN IN VIEW B. FMC SHALL HAVE THE OPTION TO ADD THREADED INSERTS IN BASE SLAB FOR CONNECTION TO BRACING TO PREVENT BASE FROM MOVING WHEN VERTICAL. IF USED, FMC SHALL PATCH INSERTS PRIOR TO SHIPPING.
3. WINGWALL SECTIONS SHALL BE SHIPPED AS SHOWN IN VIEW B.
4. CONTRACTOR TO ROTATE & SET UNITS IN THE FIELD AS SHOWN IN THE SETTING SEQUENCE SCHEMATIC ON SHEET 13.



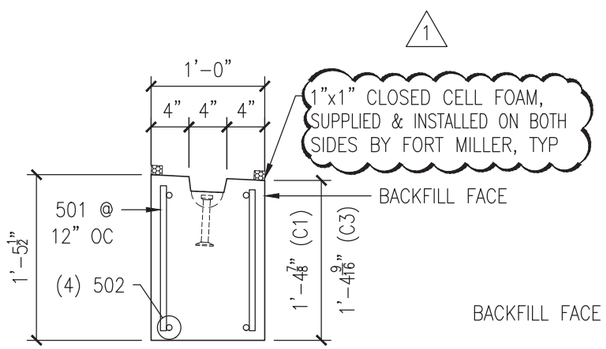
PLAN - CUTOFF WALLS C1, C2



PLAN - CUTOFF WALLS C3, C4

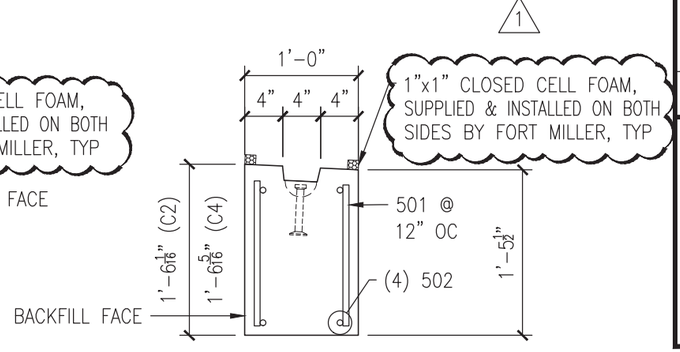
NOTE: HOLES IN CUTOFF WALLS SHALL BE FIELD-DRILLED BY CONTRACTOR

1



C1, C3 CUTOFF WALL SECTION

2" CLEAR U.N.O.



C2, C4 CUTOFF WALL SECTION

2" CLEAR U.N.O.

Approved

BY:	JGRIFFIN
DATE:	5/5/2025
RESUBMIT:	NO
RECEIVED:	May 5, 2025
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STATE OF VERMONT
AGENCY OF TRANSPORTATION

Danville & St Johnsbury Fabrication Drawings and Calc

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VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
WINGWALL FABRICATION DETAILS

CONTRACTOR: TBD

ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
PJR	4/14/25	TMT	18	NONE	26152	S18

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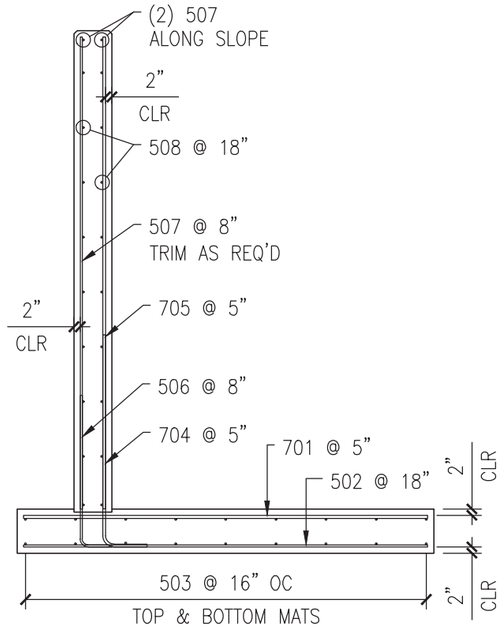


REINFORCEMENT SECTION

–704, 503 BASE SLAB SIDE COVER = 3". AS A RESULT, 704 BARS WILL HAVE 3" SIDE COVER IN WALLS AS WELL.
–PLACE 1st 701 BAR TO INSIDE OF 1st 704 BOTH SIDES.

REINFORCEMENT SCHEDULE: UNITS JW1A, JW1B

MK#	Qty	Size	Type	Length	A	B	C	H	O
701	16	7		10'-8"					
502	6	5		10'-8"					
503	18	5		5'-11 1/2"					
704	16	7	2	6'-0"	1'-2"	4'-10"			
705	16	7		12'-6"					
506	11	5	2	6'-0"	1'-2"	4'-10"			
507	11	5		12'-6"					
508	18/14	5		6'-2 1/2"					
509	2	5		6'-4"					
E550	10	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"	5"

REINFORCEMENT SCHEDULE: UNITS JW2A, JW2B

MK#	Qty	Size	Type	Length	A	B	C	H	O
701	16	7		10'-8"					
502	6	5		10'-8"					
503	18	5		6'-2 1/2"					
704	16	7	2	6'-0"	1'-2"	4'-10"			
705	16	7		12'-6"					
506	11	5	2	6'-0"	1'-2"	4'-10"			
507	11	5		12'-6"					
508	18/16	5		6'-5 1/2"					
509	2	5		6'-4"					
E550	10	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"	5"

REINFORCEMENT SCHEDULE: UNITS JW3A, JW3B

MK#	Qty	Size	Type	Length	A	B	C	H	O
701	19	7		10'-8"					
502	6	5		10'-8"					
503	18	5		7'-5 1/2"					
704	19	7	2	6'-0"	1'-2"	4'-10"			
705	19	7		12'-0"					
506	13	5	2	6'-0"	1'-2"	4'-10"			
507	13	5		12'-0"					
508	18/12	5		7'-8 1/2"					
509	2	5		8'-4 1/2"					
E550	10	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"	5"

REINFORCEMENT SCHEDULE: UNITS JW4A, JW4B

MK#	Qty	Size	Type	Length	A	B	C	H	O
701	20	7		10'-8"					
502	7	5		10'-8"					
503	18	5		7'-11 1/2"					
704	20	7	2	6'-0"	1'-2"	4'-10"			
705	20	7		12'-0"					
506	14	5	2	6'-0"	1'-2"	4'-10"			
507	14	5		12'-0"					
508	18/12	5		8'-2 1/2"					
509	2	5		8'-9"					
E550	10	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"	5"

REINFORCEMENT SCHEDULE: UNITS DW1, DW2

MK#	Qty	Size	Type	Length	A	B	C	H	O
701	24	7		10'-8"					
502	8	5		10'-8"					
503	18	5		9'-6"					
704	24	7	2	6'-0"	1'-2"	4'-10"			
705	24	7		12'-0"					
506	16	5	2	6'-0"	1'-2"	4'-10"			
507	16	5		12'-0"					
508	18/12	5		9'-9"					
509	2	5		9'-10 1/2"					
E550	10	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"	5"

REINFORCEMENT SCHEDULE: UNIT DW3

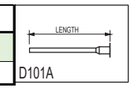
MK#	Qty	Size	Type	Length	A	B	C	H	O
701	17	7		10'-8"					
502	6	5		10'-8"					
503	18	5		6'-6"					
704	17	7	2	6'-0"	1'-2"	4'-10"			
705	17	7		11'-9"					
506	11	5	2	6'-0"	1'-2"	4'-10"			
507	11	5		11'-9"					
508	16	5		6'-9"					
509	2	5		7'-11"					
E550	10	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"	5"

REINFORCEMENT SCHEDULE: UNITS DW4A, DW4B

MK#	Qty	Size	Type	Length	A	B	C	H	O
701	17	7		10'-8"					
502	6	5		10'-8"					
503	18	5		6'-5 1/2"					
704	17	7	2	6'-0"	1'-2"	4'-10"			
705	17	7		11'-9"					
506	11	5	2	6'-0"	1'-2"	4'-10"			
507	11	5		11'-9"					
508	18/12	5		6'-8 1/2"					
509	2	5		7'-1"					
E550	10	E5	S11	3'-2 1/2"	At Lifting Devices			1'-6"	5"

REBAR SPLICER SCHEDULE (PER UNIT)

MK#	Qty	Size	Type	Length	A	B
E550	13	E5	D101A	1'-0"		



VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
WINGWALL REINFORCEMENT

CONTRACTOR: TBD
ENGINEER: VAOT

DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
PJR	4/14/25	TMT	19	NONE	26152	S19

REVISIONS

NO.	DATE	BY	DESCRIPTION

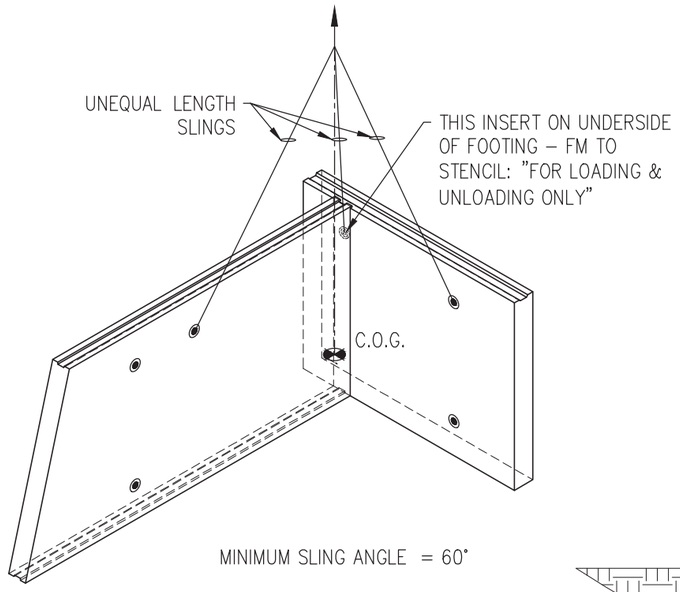
THE FORT MILLER Co., Inc.
P.O. BOX 98
SCHUYLERVILLE, NY 12871
(518) 695–5000
www.fortmiller.com

Approved

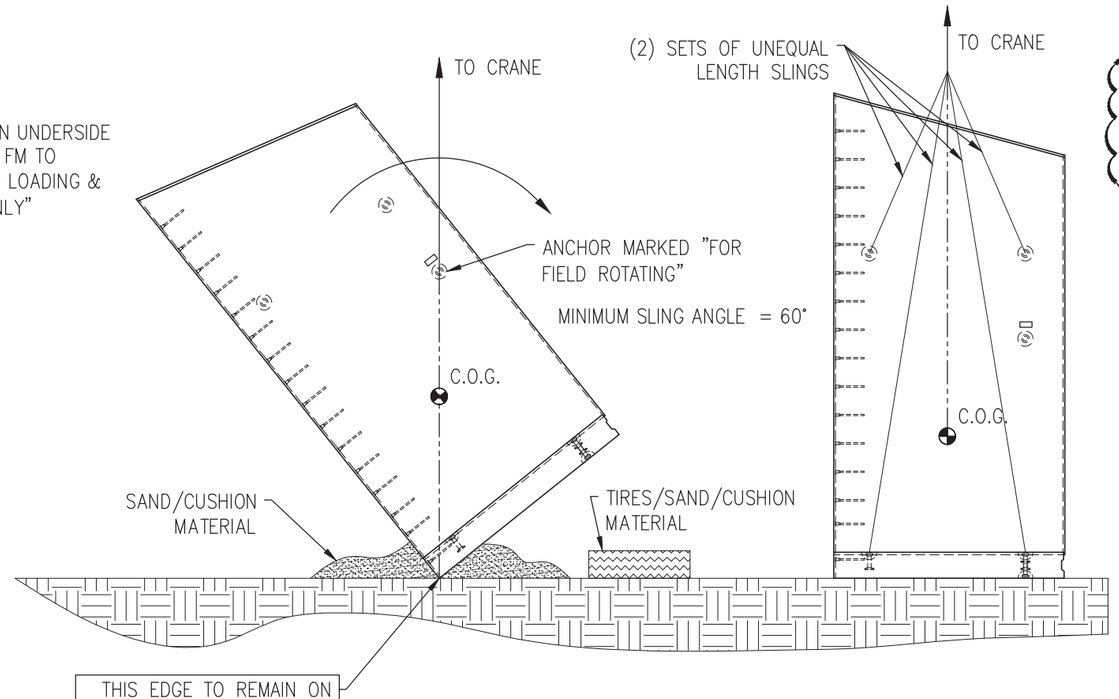
BY: JGRIFFIN
DATE: 5/5/2025
RESUBMIT: NO
RECEIVED: May 5, 2025
CKD BY: JGRIFFIN

STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE OF VERMONT
PHILIP JUSTIN REED
NO. 135364
CIVIL
LICENSED
PROFESSIONAL ENGINEER



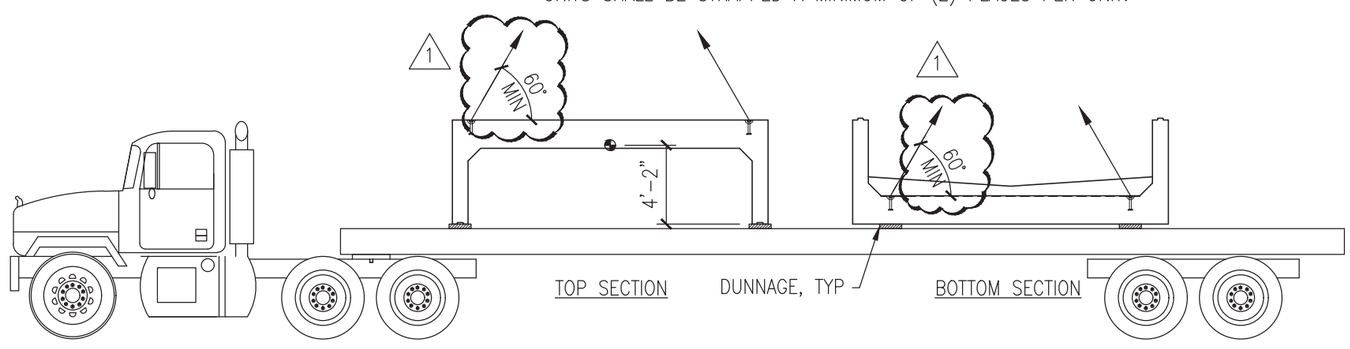
TYPICAL VIEW ON TRUCK BED/GROUND



TYPICAL FIELD ROTATION & SETTIING SEQUENCE

1. NOTE: LOAD EQUALIZERS REQUIRED FOR ALL STAGES OF WINGWALL HANDLING, EXCEPT ROTATING.

UNITS SHALL BE STRAPPED A MINIMUM OF (2) PLACES PER UNIT.



CULVERT SECTION SHIPPING

NOTE: CULVERT UNITS SHALL BE SHIPPED (1) PER LOAD; THIS DRAWING ONLY DEPICTS ORIENTATION OF TOP & BOTTOM UNITS ON TRUCK

NOTE: FIELD LIFTING ANCHORS MUST BE EQUALLY ENGAGED. PROVIDE LOAD EQUALIZERS.

Approved

BY:	JGRIFFIN
DATE:	5/5/2025
RESUBMIT:	NO
RECEIVED:	May 5, 2025
CKD BY:	JGRIFFIN

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Danville & St Johnsbury Fabrication Drawings and Calc

STATE OF VERMONT
PHILIP JUSTIN REED
NO. 135364
CIVIL
LICENSED PROFESSIONAL ENGINEER

VAOT PROJECTS
RELV 2405 & RELV2407
DANVILLE & ST. JOHNSBURY, VT
SHIPPING DETAILS

CONTRACTOR: TBD

ENGINEER:	DRAWN	DATE	CHK'D	SHEET	SCALE	F.M. JOB No.	DWG.
VAOT	PJR	4/14/25	TMT	20	NONE	26152	S20

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	1/15/25	PJR	PER REVIEW COMMENTS

THE FORT MILLER Co., Inc.
P.O. BOX 98
SCHUYLERVILLE, NY 12871
(518) 695-5000
www.fortmiller.com

CANTILEVER WALL HANDLING CALCULATIONS

Job #: 26152

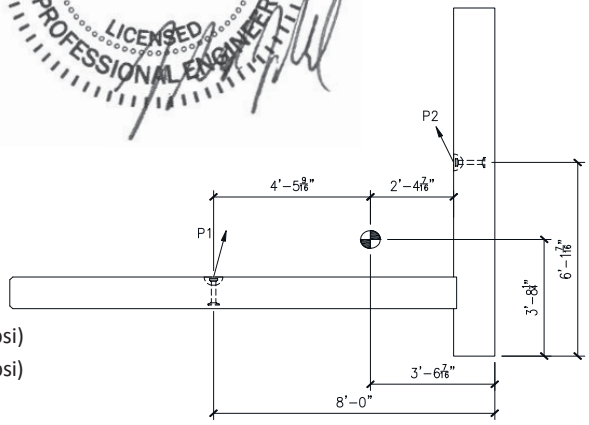
By: PJR

Form Removal / Yard Handling

DW1 Weight (P):	36340	lbs
Concrete Strength @ Handling:	3000	psi
a =	4.46	ft
b =	2.375	ft

$$P_1 = P\left(\frac{b}{a+b}\right) = \quad 12627 \text{ lbs}$$

$$P_2 = P\left(\frac{a}{a+b}\right) = \quad 23713 \text{ lbs}$$



Wall Inserts (Tension)

Load On Inserts (P_1):	12627	
Dayton 8Tx10" Lifting Pin Anchor Capacity:	14813.12	lbs (@ 3,000 psi)
Dayton 8T x 10" Lifting Pin Anchor Capacity (C_W):	14813.12	lbs (@ 3,000 psi)
No. of Inserts:	2	
Minimum Sling Angle:	60	Deg
Sling Angle Modification Factor:	0.86	
Total Capacity of Wall inserts:	25540	lbs (Load Equalizers Required for form Stripping)
$C_B > P_1$	**OK**	

Required Edge Distance in Direction of lift:	19	in (From Dayton Catalog)
Actual Edge Distance in Direction of lift:	24	in
Meets Minimum Edge Distance	**YES**	

*Note: Tabulated loads in Dayton catalog are for any direction of load when anchor is properly embedded.

Base Inserts (Shear)

Load On Inserts (P_2):	23713	lbs
Dayton 8Tx10" Lifting Pin Anchor Capacity:	16000	lbs (@ 3,500 psi)
Dayton 8T x 10" Lifting Pin Anchor Capacity (C_B):	16000	lbs (@ 3,500 psi)
No. of Inserts:	2	
Minimum Sling Angle:	60	Deg
Sling Angle Modification Factor:	0.86	
Total Capacity of Wall inserts:	27586	lbs (Load Equalizers Required for form Stripping)
$C_W > P_1$	**OK**	

Required Edge Distance in Direction of lift:	24	in (From Dayton Catalog)
Actual Edge Distance in Direction of lift:	24	in
Meets Minimum Edge Distance	**YES**	

Loading & Unloading

Load On Inserts:	36340	lbs
Dayton 8Tx10" Lifting Pin Anchor Capacity:	16000	lbs
No. of Inserts:	3	
Minimum Sling Angle:	n/a	Deg (pure shear)
Sling Angle Modification Factor:	0.86	
Total Capacity of Wall inserts:	41280	lbs (3-pt pick will self-equalize)
C>P	**OK**	

Sling is parallel to the lifter causing pure shear on lifter however contractor will be required to design sling for increased tension due to sling angle.

Required Edge Distance in Direction of lift:	19	in (From Dayton Catalog)
Actual Edge Distance in Direction of lift:	24	in
Meets Minimum Edge Distance	**YES**	

Field Rotating

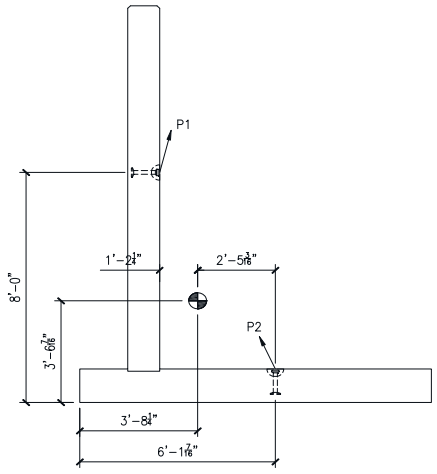
When on their sides, rotating anchor will experience about 5/8 of the total unit weight when the unit is rotated about the bottom edge of the unit (which stays on the ground). The heaviest unit is DW1.
5/8 * 36340 = 22713 lbs, which is > 16,000. For units DW1, DW2, JW3A, and JW4A, use a 20Tx10" anchor for rotating.
Capacity = 29,880 lbs in 5,000 psi concrete. All other units shall remain with an 8Tx10" anchor for rotating.

Field Setting

DW1 Weight (P):	36340	lbs
Concrete Strngth @ Handling:	5000	psi
a =	1.1875	ft
b =	2.43	ft

$$P_1 = P\left(\frac{b}{a+b}\right) =$$ 24411 lbs

$$P_2 = P\left(\frac{a}{a+b}\right) =$$ 11929 lbs



Wall Inserts (Shear)

Load On Inserts (P_1):	12205	lbs
Dayton 8T x 10" Lifting Pin Anchor Capacity:	16000	lbs (@ 5,000 psi)

Concrete Strength Adjustment Factor

$$\frac{\sqrt{5000}}{\sqrt{5000}} =$$ 1.00

Dayton 8T x 10" Lifting Pin Anchor Capacity (C_W):	16000	lbs (@ 6,000 psi)
No. of Inserts:	2	
Minimum Sling Angle:	60	Deg
Sling Angle Modification Factor:	0.86	
Total Capacity of Wall inserts:	27586	lbs (Assumes load equalizers required for field setting)
$C_W > P_1$	**OK**	

Required Edge Distance in Direction of lift:	24	in (From Dayton Catalog)
Actual Edge Distance in Direction of lift:	24	in
Meets Minimum Edge Distance	**YES**	

Base Inserts (Tension)

Load On Inserts (P_1)	5965	lbs (@ 5,000 psi)
Dayton 8T x 10" Lifting Pin Anchor Capacity:	16000	lbs (@ 5,000 psi)

Concrete Strength Adjustment Factor

$$\frac{\sqrt{5000}}{\sqrt{5000}} =$$ 1.00

Dayton 8T x 10" Lifting Pin Anchor Capacity (C_B):	16000	lbs (@ 6,000 psi)
No. of Inserts:	2	
Minimum Sling Angle:	60	Deg
Sling Angle Modification Factor:	0.86	
Total Capacity of Base inserts:	27586	lbs (Assumes load equalizers required for field setting)
$C_B > P_1$	**OK**	

Required Edge Distance in Direction of lift:	24	in (From Dayton Catalog)
Actual Edge Distance in Direction of lift:	24	in
Meets Minimum Edge Distance	**YES**	

3-SIDED INSERT HANDLING CALCULATIONS

Dayton 8T x 10" Lifting Pin Anchor Capacity:	16,000	lbs
Maximum culvert weight:	38720	lbs
No. of Inserts:	4	(assume all equally engaged)
Minimum Sling Angle:	60	Deg
Sling Angle Modification Factor:	0.86	
Total capacity of (4) inserts:	55172	lbs, OK

Form Stripping / Field Handling:

Note: the 18" edge distance of the field handling anchors in the culvert does not meet the required minimum edge distance shown in the Dayton catalog; however, given the shear cone angle of 35 deg from horizontal per Dayton, and the 10" insert depth, the shear cone radius is 15", meaning that the shear cone is not interrupted.

Swift Lift® System

The Swift Lift System is a quick connect-disconnect system that allows precast concrete elements to be handled repeatedly, with speed, safety and economy. It is a non-welded system and void of threaded connections. The quality, reusable Swift Lift Lifting Eye's heavy duty construction will provide years of good service.

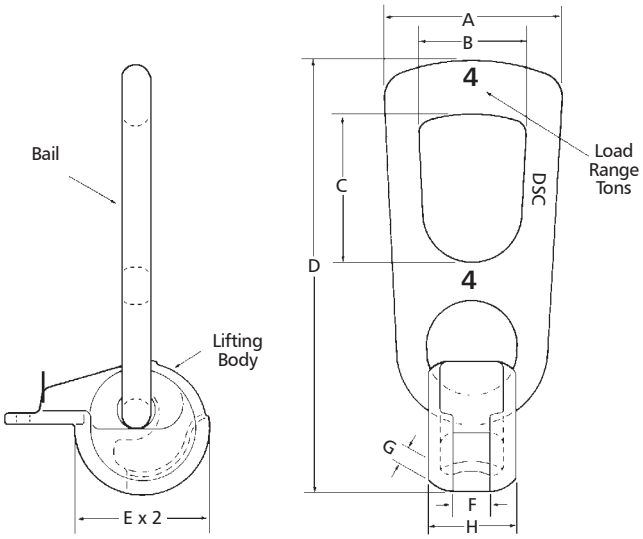
The Swift Lift System is available with safe load ratings of 1, 2, 4, 8 and 20 tons. Each component is clearly marked with its maximum safe working load. The System is extremely versatile and can be utilized for vertical and diagonal pulls. It can be used to lift concrete elements from a horizontal to a vertical position without the aid of a tilting table.

P50 Swift Lift® Universal Lifting Eye

The Swift Lift Universal Lifting Eye (P50) consists of a flat-sided, spherical lifting body and a high strength bail. The lifting body has a T-shaped slot that permits rapid attachment and release of the head on Swift Lift Anchors.

The design of the P50 Universal Lifting Eye permits the bail to freely rotate 180°, while the complete lifting eye may rotate through a 360° arc. This design feature allows precast concrete elements to be turned, tilted and/or rotated under load.

Dayton Superior does not recommend the use of this lifting eye for edge lifting of thin precast concrete panels.



P50 Swift Lift Universal Lifting Eye Dimensions

Rated Load Tons	A	B	C	D	E x 2	H
1	2.9"	1.7"	2.8"	7.5"	2.20"	1.26"
2	3.5"	2.3"	3.3"	9.0"	2.68"	1.65"
4	4.6"	2.8"	3.5"	11.0"	3.46"	2.26"
8	6.3"	3.3"	4.4"	15.6"	4.40"	2.90"
20	7.3"	4.6"	5.9"	20.4"	5.98"	4.35"

The rated load provides a factor of safety of approximately 5 to 1 (ultimate to rated load).

P50 Inspection and Maintenance

The P50 Universal Lifting Eye may be subjected to wear, misuse, overloading and other factors that can affect the lifting eye's rated load. Therefore, it is imperative that the lifting eye be user-inspected at least once a month to determine its general condition and degree of wear.

During the user's monthly inspection, the lifting eye should be checked for evidence of heat application. If evidence of heat application is found, the unit must be scrapped. Check for a bent or twisted bail and discard all units found to have these flaws. Also, check to make certain that the bail rotates freely in all directions.

At least once every three months, dimensions "F" and "G" on each unit should be checked. The upper limits are shown in the chart. If either of these limits is exceeded, the P50 Universal Lifting Eye must be removed from service and destroyed.

Limiting Dimensions on P50 Swift Lift Universal Lifting Eye

Rated Load (Tons)	F Maximum Width	G Minimum Thickness
1	0.45"	0.25"
2	0.63"	0.35"
4	0.85"	0.4"
8	1.18"	0.55"
20	1.67"	0.83"

The proper method for scrapping a lifting eye is to cut through the bail with a cutting torch to render the unit useless as a lifting device.

No repairs or welding to the P50 Swift Lift Universal Lifting Eye are permitted.

P52 Swift Lift® Anchor Tensile and Shear Capacity

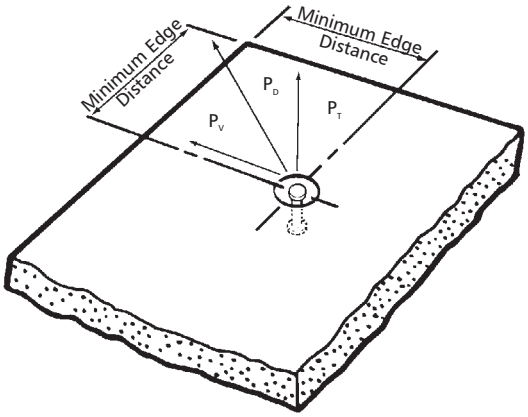
When anchors are used in the face of thin concrete elements

The following table lists the P52 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 P52 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 4-3/4"	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 4-3/4"	4,000 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 5-1/4"	6,850 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.