MILLER CONSTRUCTION, INC.

P.O. BOX 86 ASCUTNEY BLVD WINDSOR, VERMONT 05089-0086
TELEPHONE (802) 674-5525 / FAX (802) 674-5245

TRANSMITTAL

TO: Kristin M. Higgins, PE Project Manager Vermont Agency of Transportation	DATE	PROJECT NO.
	1/27/2014	Barnard ER BRF 0241 (39)

XX WE ENCLOSE THE FOLLOWING: _____ UNDER SEPARATE COVER WE ARE SENDING THE FOLLOWING

COPIES	NUMBER	DESCRIPTION	CODE
1		Shop Drawings Dated 1/16/14 - Rev 1	H
		Sheets C1, F1-F4, NB1-NB3, AS1-AS2, AB1-AB3, WW1, M1	

CODE:

A FOR INITIAL APPROVAL
B FOR FINAL APPROVAL
C APPROVED AS NOTED-RESUBMISSION REQUIRED
D APPROVED AS NOTED-RESUBMISSION NOT REQUIRED
E DISAPPROVED-RESUBMIT
F QUOTATION REQUESTED
G APPROVED
H FOR APPROVAL
I AS REQUESTED OR REQUIRED
J FOR USE IN ERECTION
K LETTER FOLLOWS
L FOR FIELD CHECK
M FOR YOUR USE

BY: Paul J. [illegible]

ABUTMENT & WING WALL GENERAL NOTES

1. MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 5,000 PSI.
2. MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 3,500 PSI.
3. REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) LEVEL II (DUAL COATED) OR EPOXY COATED (AS NOTED ON SHOP DRAWINGS).
4. THE TOP OF ABUTMENTS SHALL RECEIVE A RAKE FINISH ROUGHENED TO 1/4" AMPLITUDE (UNLESS NOTED OTHERWISE).
5. THE TOP OF WING WALLS SHALL RECEIVE A SMOOTH FLOAT FINISH (UNLESS NOTED OTHERWISE).
6. SHEAR KEY SURFACES SHALL BE BLASTED CLEAN.
7. PRECAST CONCRETE UNITS SHALL BE HANDLED AND ERECTED USING THE LIFTING INSERTS ONLY. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. NON-PRESTRESSED UNITS SHALL BE STORED & TRANSPORTED WITH TIMBER SUPPORTS AT 5th POINTS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
8. MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. P510.02 AND P510.05 RESPECTIVELY.

   DESIGN MIX:

WING WALLS:	J.P.C. BRIDGE MIX #445MSCC
APPROACH SLABS:	J.P.C. BRIDGE MIX #445MSCC
ABUTMENTS:	J.P.C. BRIDGE MIX #445MSCC

9. QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
10. CURING METHOD: AS SOON AS THE TOP OF PRECAST CONCRETE UNITS ARE FINISHED, A COVER OF RIGID INSULATION AND POLY WILL BE PLACED OVER THE UNIT. NATURAL CURE WITH NO EXTERNAL HEAT APPLIED.
11. ABUTMENT POST-TENSIONING SEQUENCE:
    A. ERECT PRECAST CONCRETE ABUTMENTS, AND POST-TENSION CENTER TENDON TO APPROXIMATELY 5,000 LBS.
    B. GROUT SHEAR KEY.
    C. ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI; POST-TENSION TENDONS TO 32,000 LBS.
12. SILANE SEALER SHALL BE SHOP APPLIED, BY OTHERS, TO ALL EXPOSED PRECAST CONCRETE WITH THE EXCEPTION OF THE BOTTOM OF THE PRECAST NEXT BEAMS BETWEEN DRIP NOTCHES.

NEXT BEAM GENERAL NOTES

1. MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 10,000 PSI.
2. MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 8,000 PSI.
3. REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) LEVEL II (DUAL COATED).
4. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M203) AND SHALL CONSIST OF 0.60"ϕ x 270 KSI 7-WIRE LOW RELAXATION STRANDS.
5. PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF **44.0** 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 NEXT BEAM STEMS (UNLESS NOTED OTHERWISE) AND EPOXY PAINTED.
7. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
8. THE TOP OF BEAMS SHALL RECEIVE A SMOOTH FLOAT FINISH (UNLESS NOTED OTHERWISE).
9. SHEAR KEY SURFACES SHALL RECEIVE A ROUGHENED SURFACE.
10. BEAMS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL FORCES ARE APPLIED TO EACH OF THE TWO LIFTING LOOPS AT EACH END OF THE BEAM. **THE PINS OF THE SHACKLES SHALL BE PLACED THOUGH THE LIFTING LOOPS. SEE DETAIL, THIS SHEET.** BEAMS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS WITHIN 2'-0" OF THE BEAM ENDS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
11. MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. P510.02 AND P510.05 RESPECTIVELY.

    DESIGN MIX: J.P.C. BRIDGE MIX #430M
12. QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
13. CURING METHOD: AS SOON AS THE TOP OF BEAM IS FINISHED, A COVER OF INSULATED POLY. 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 100' APART AND WILL CONTINUE UNTIL RELEASE STRENGTH IS ACHIEVED. EACH CHART SHALL BE MARKED WITH THE CASTING DATED AND LOCATION OF THE RECORDER. IF NECESSARY TO MAINTAIN CASTING BED TEMPERATURE PRIOR TO CONCRETE PLACEMENT OR TO ACCELERATE EARLY AGE STRENGTH GAIN, EXTERNAL RADIANT HEAT MAY BE EMPLOYED VIA HOT WATER DUCTS BENEATH AND WITHIN THE PERIPHERY OF THE CASTING BED. MAXIMUM CURING TEMPERATURE SHALL NOT EXCEED PCI SPECIFIED LIMITS.
14. OWNER SHALL PROVIDE APPROPRIATE WATERPROOFING TO GROUTED AND/OR EPOXIED SHEAR KEYS. J.P. CARRARA & SONS, INC. SHALL NOT BE HELD LIABLE FOR PROBLEMS ASSOCIATED WITH MOISTURE INFILTRATING GROUTED AND/OR EPOXIED SHEAR KEYS.

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.60"ϕ x 270 KSI
AREA: 0.217 IN^2
TENSION: 44,000 LB. EACH STRAND
GRIP-TO-GRIP: 252'-0" = 252.00'
Es = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

EXAMPLE:

$$\Delta = \frac{PL}{AE} = \frac{(44{,}000 - 3{,}000) \times 252.00 \times 12}{0.217 \times 28{,}600{,}000} = 19.977''$$

THEREFORE: (TOLERANCES ± 5%)
Δ UPPER LIMIT = 1.05 x 19.977" = 20.98" = 21"
Δ LOWER LIMIT = 0.95 x 19.977" = 18.98" = 19"

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

$$\Delta P = \frac{0.5 \times 41{,}000}{19.977} = 1{,}026 \text{ LBS.}$$

TOTAL TENSIONING FORCE = 44,000 + 1,026 = 45,026 LBS.

STRAND TENSIONING PROCEDURE:

1. PULL EACH STRAND INITIALLY TO 3,000# LBS. AND MARK STRAND.
2. THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,026# LBS. AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 19"* AND 21"*.

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

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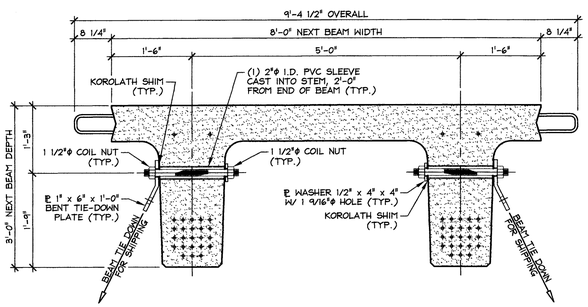
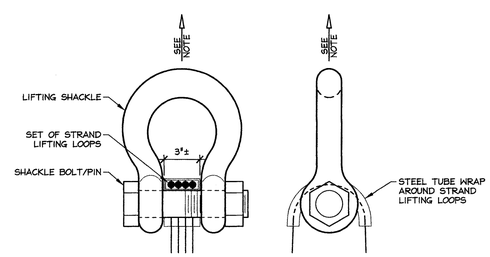
DESIGN LIVE LOAD: HL-93



NEXT BEAM 36D HOLD-DOWN DETAIL FOR SHIPPING

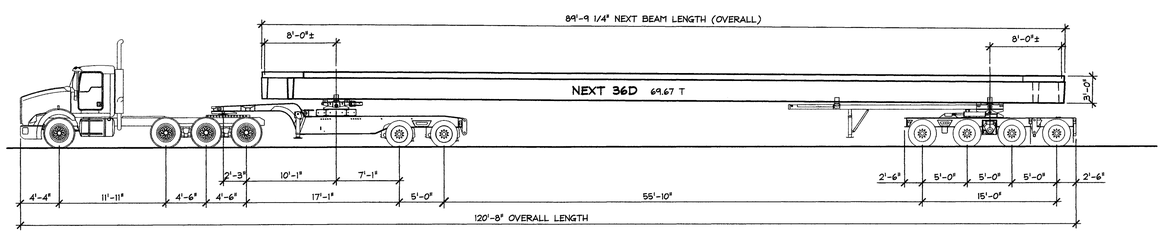
3/4" = 1'-0"



NOTE: BEAMS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL FORCES ARE APPLIED TO EACH SET OF LIFTING LOOPS AT EACH END OF THE BEAM. SHACKLE BOLT/PIN SHALL BE PLACED UNDER LIFT LOOPS AS SHOWN. DESIGN AND CONFIGURATION OF RIGGING BY PURCHASER.

LIFTING SHACKLE DETAILS

N.T.S.



SHIPPING ELEVATION

N.T.S.

1 1-16-14 REVISED AS NOTED

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

COVER SHEET

DATE:	DEC. 18, 2013
SCALE:	NOTED
CHKD: -	DFTM: B.L.
JOB NO:	23413-013
DWG. NO:	C1

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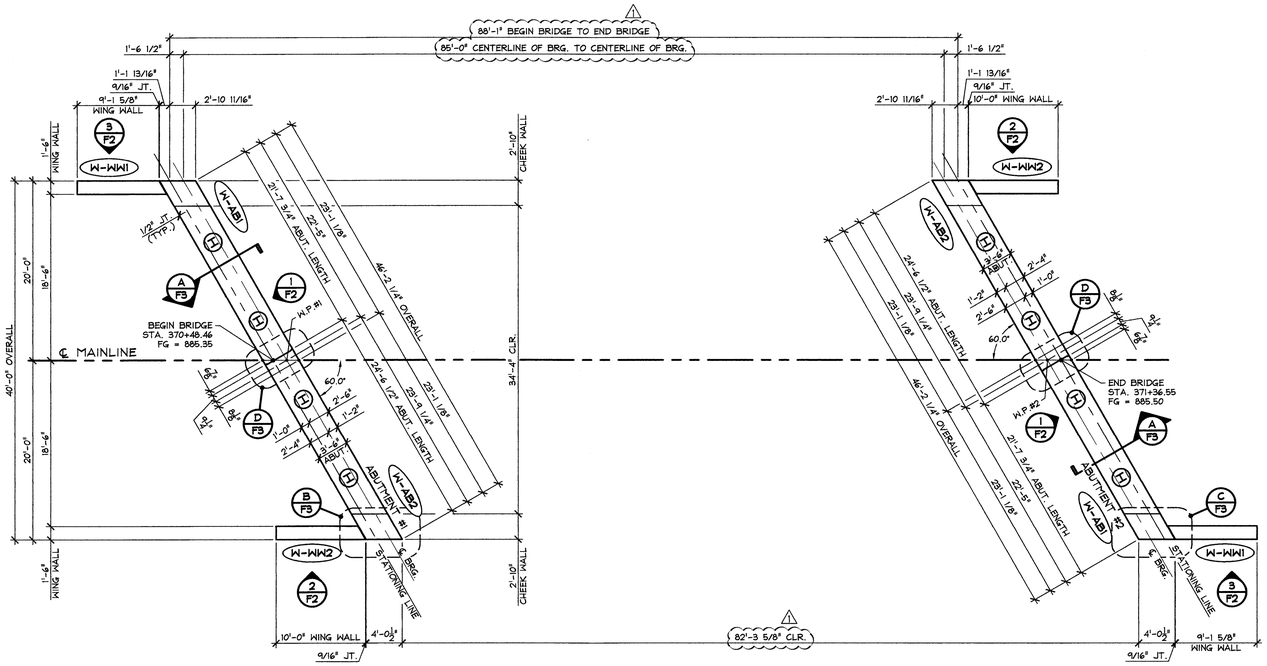
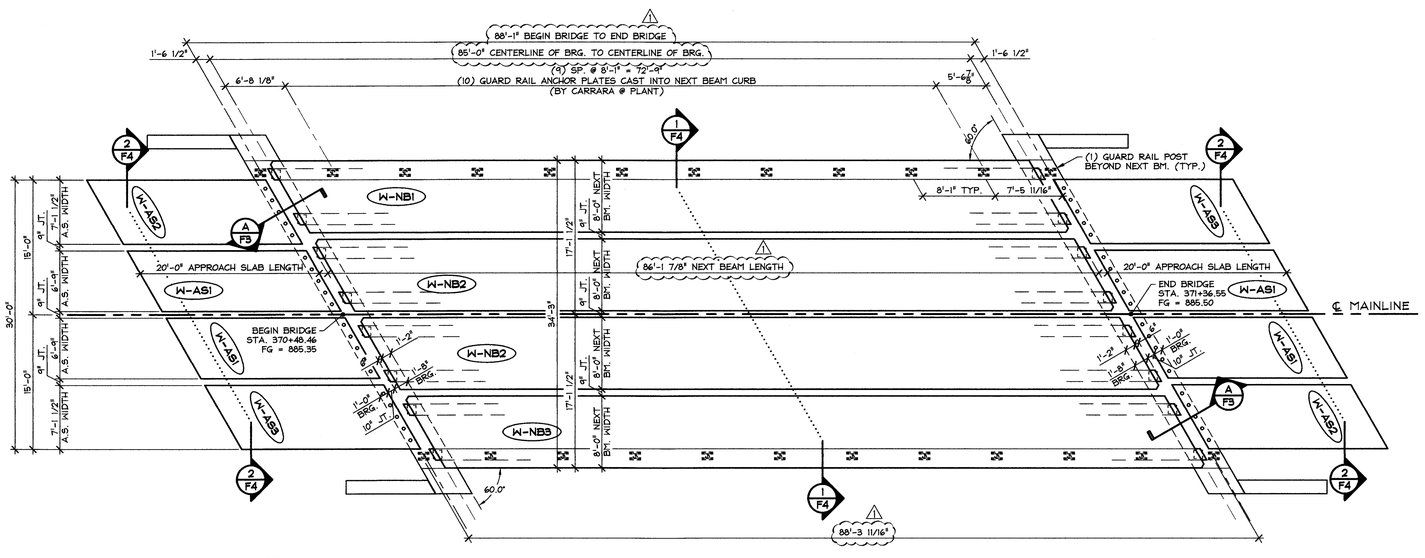


1/F1 PRECAST CONCRETE ABUTMENT & WING WALL LAYOUT

1/8" = 1'-0"



2/F1 PRESTRESSED APPROACH SLAB & NEXT BEAM LAYOUT

1/8" = 1'-0"

1 1-16-14 REVISED AS NOTED

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SUPERSTRUCTURE PLANS

DATE:	DEC. 18, 2013
SCALE:	NOTED
CHKD: -	DFTM: B.L.
JOB NO:	23413-013
DWG. NO:	F1

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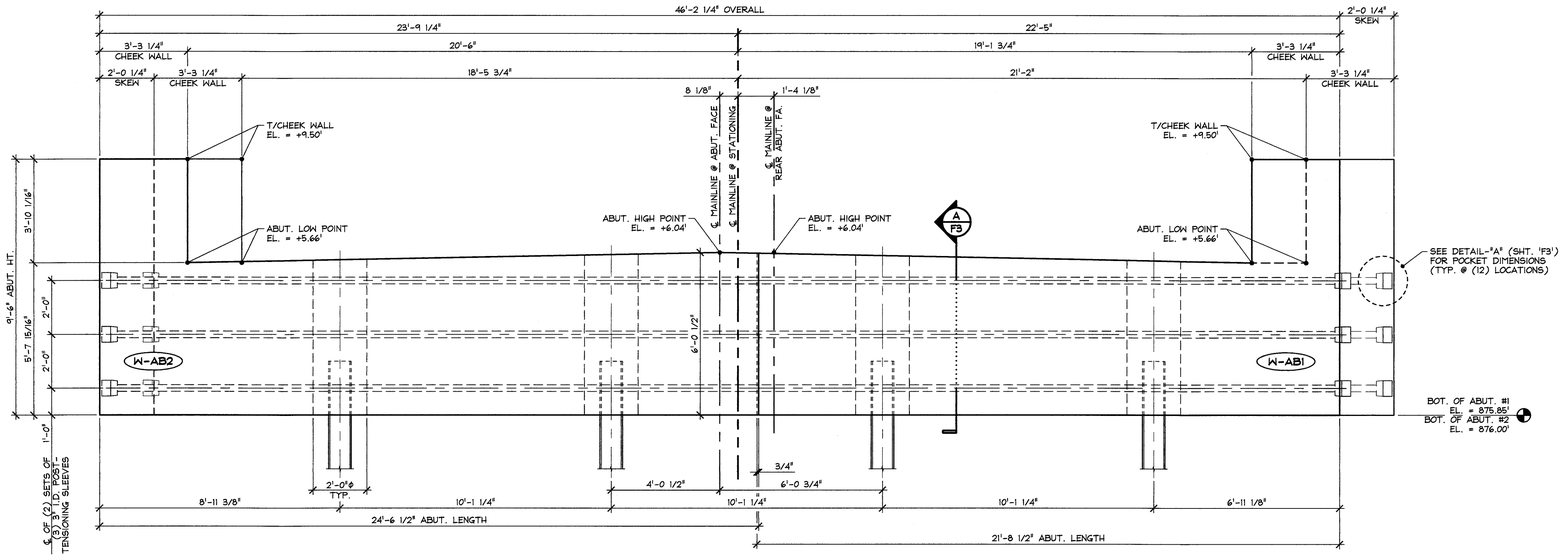
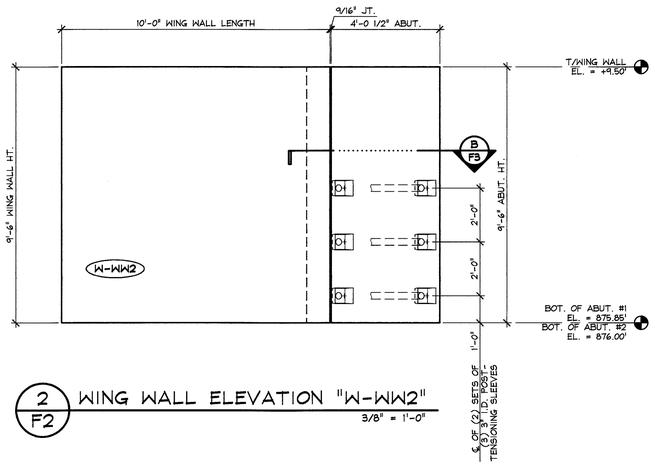


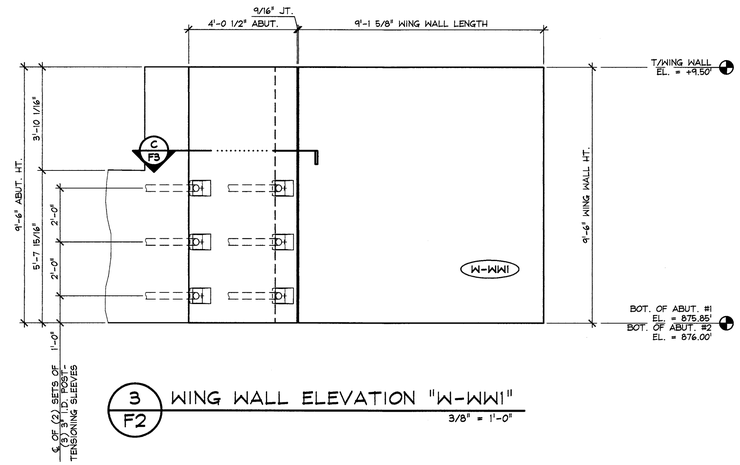
1 / F2 ABUTMENT #1 & #2 ELEVATION

3/8" = 1'-0"



2 / F2 WING WALL ELEVATION "W-WW2"

3/8" = 1'-0"



3 / F2 WING WALL ELEVATION "W-WW1"

3/8" = 1'-0"

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BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

ABUTMENT ELEVATIONS

DATE: DEC. 18, 2013
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23413-013
DWG. NO: F2

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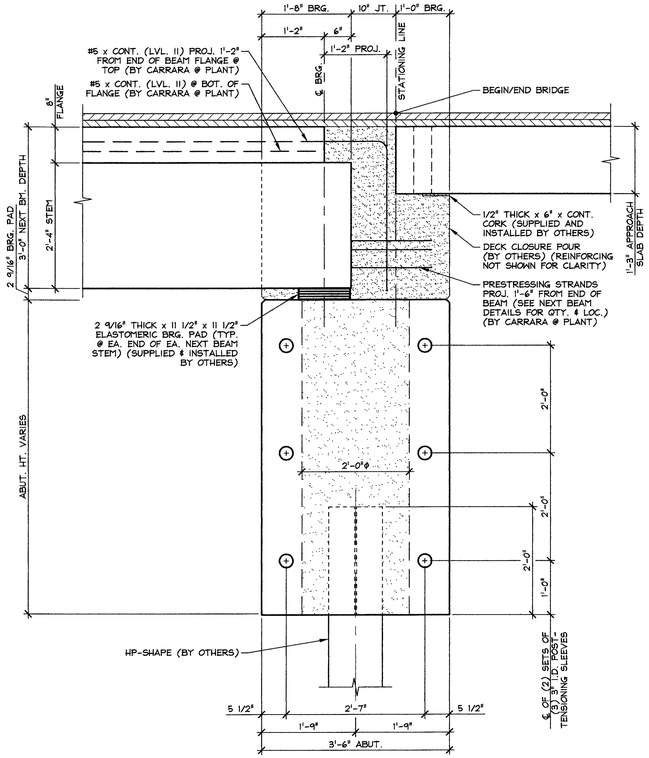
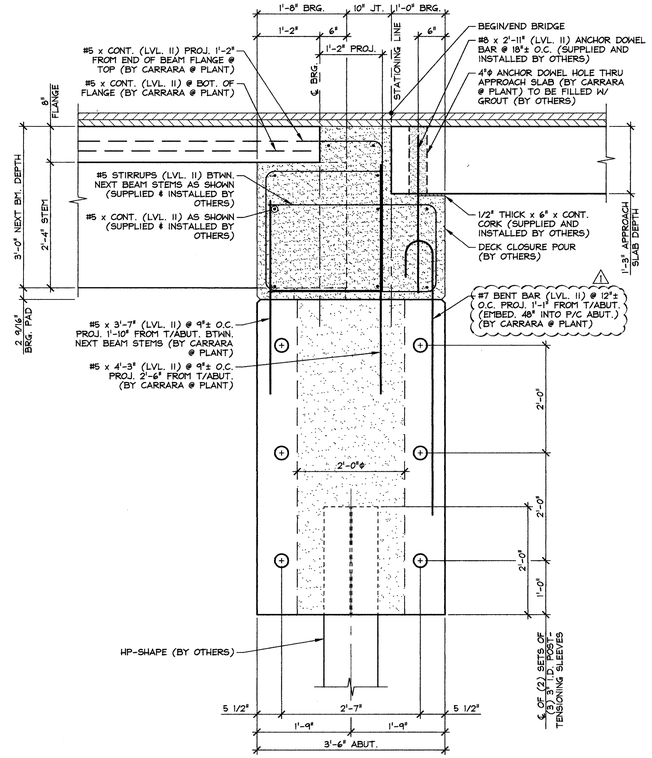
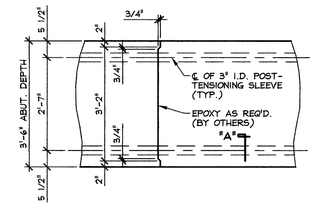


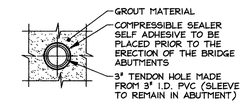
A F3 BEARING SECTION
NEXT BEAM STEM BEARING 3/4" = 1'-0"



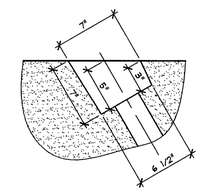
A.1 F3 BEARING SECTION
BETWEEN NEXT BEAM STEM BEARING 3/4" = 1'-0"



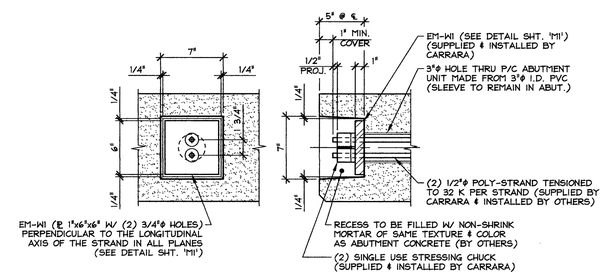
D F3 MATCH CAST SECTION @ P.T. SLEEVE 1/2" = 1'-0"



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

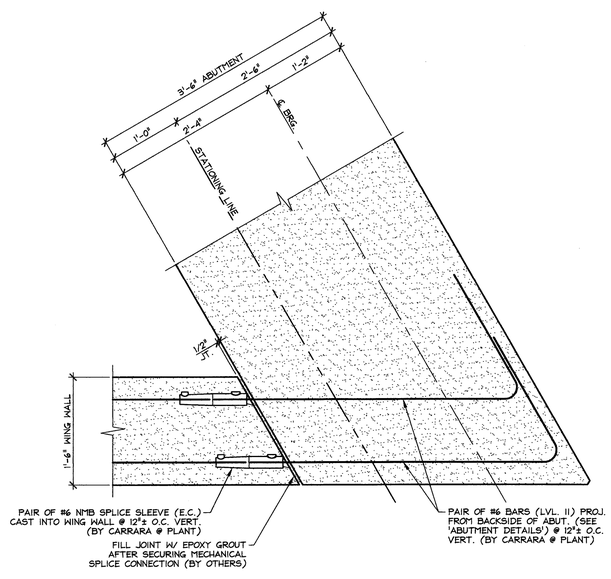


PLAN OF POCKET

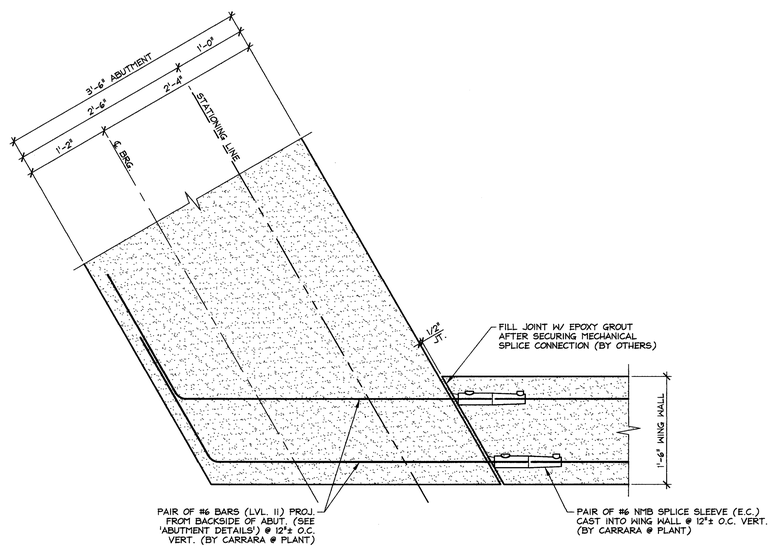


ABUTMENT ELEVATION SECTION AT CENTERLINE

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



B F3 WING WALL CONNECTION DETAIL
1" = 1'-0"



C F3 WING WALL CONNECTION DETAIL
1" = 1'-0"

1 1-16-14 REVISED AS NOTED

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BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

ABUTMENT DETAILS

DATE: DEC. 18, 2013	
SCALE: NOTED	
CHKD: -	DFTM: B.L.
JOB NO: 23413-013	
DWG. NO: F3	

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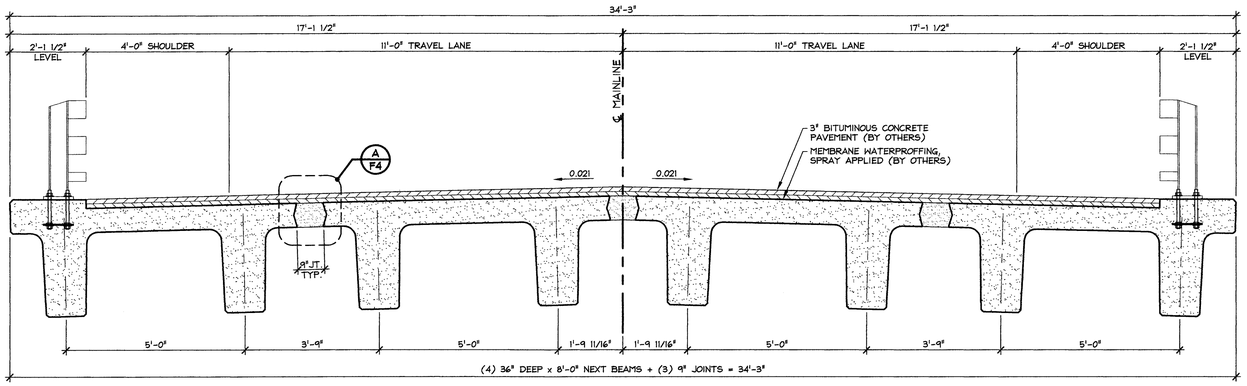
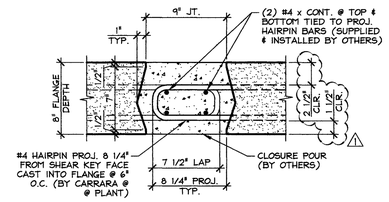
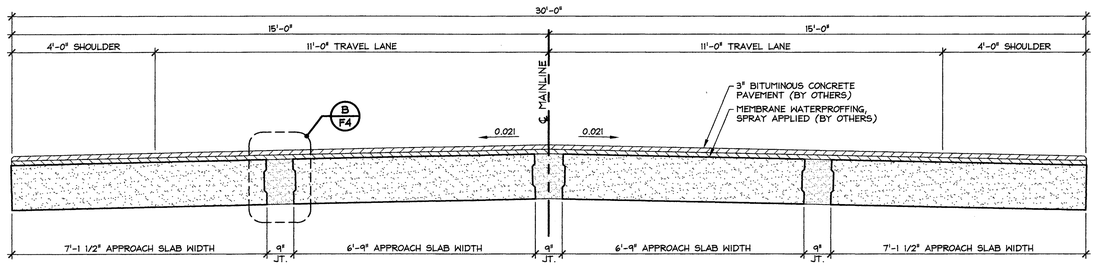


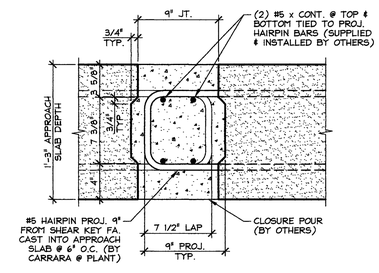
1 / F4 NEXT BEAM TRANSVERSE SECTION
1/2" = 1'-0"



A / F4 NEXT BEAM CLOSURE POUR
1 1/2" = 1'-0"



2 / F4 APPROACH SLAB TRANSVERSE SECTION
1/2" = 1'-0"



B / F4 APPROACH SLAB CLOSURE POUR
1 1/2" = 1'-0"

⚠1 1-16-14 REVISED AS NOTED

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BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

TRANSVERSE SECTION & DETAILS

DATE:	DEC. 18, 2013
SCALE:	NOTED
CHKD: -	DFTM: B.L.
JOB NO:	23413-013
DWG. NO:	F4

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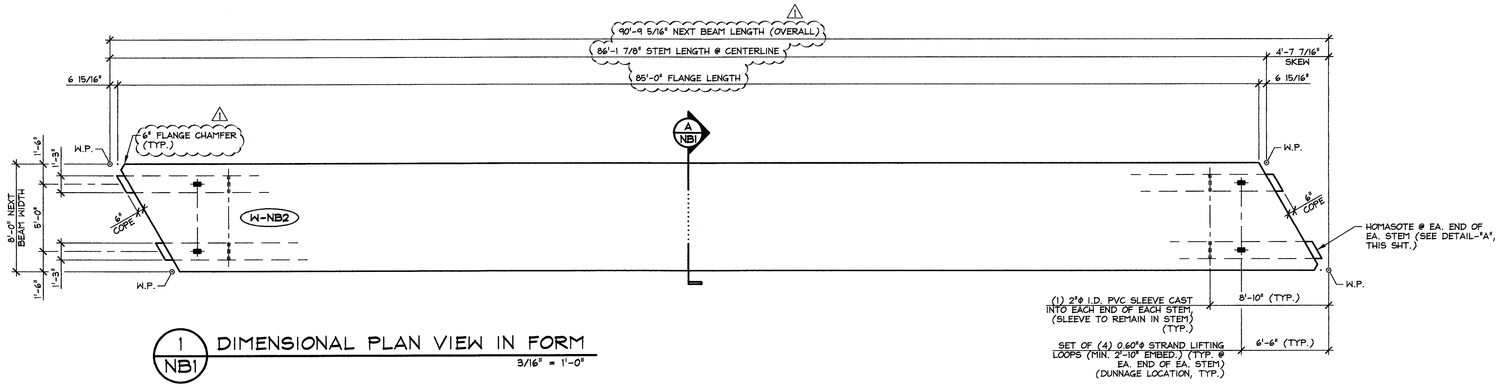
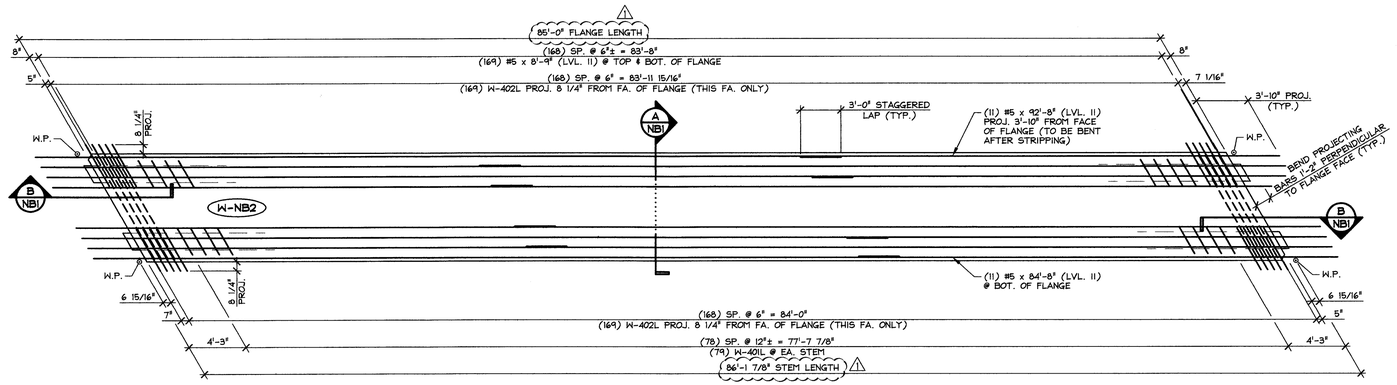


1 NB1 DIMENSIONAL PLAN VIEW IN FORM

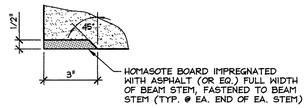
3/16" = 1'-0"



2 NB1 REINFORCING PLAN VIEW IN FORM

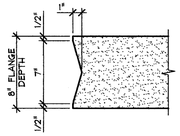
ALL DIMENSIONS INDICATED ARE PARALLEL OR PERPENDICULAR TO ℄ OF STEMS (U.N.O.)

3/16" = 1'-0"



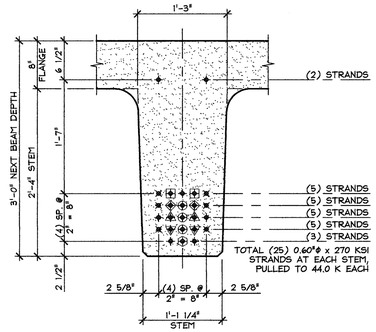
DETAIL - "A"

3" = 1'-0"



DETAIL - "B"

1 1/2" = 1'-0"

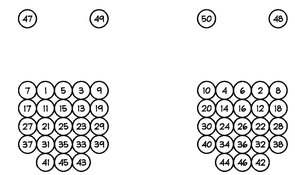


PRESTRESSING NOTATIONS

- ✦ DENOTES STRAIGHT STRANDS TO BE CUT FLUSH WITH EA. END OF EA. STEM
- ✖ DENOTES STRAIGHT STRANDS TO PROJECT 1'-6" FROM EA. END OF EA. STEM
- ⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 6" FROM EA. END OF EA. STEM
- ⊞ DENOTES STRAIGHT STRANDS TO BE DEBONDED 10'-0" FROM EA. END OF EA. STEM
- ◈ DENOTES STRAIGHT STRANDS TO BE DEBONDED 14'-0" FROM EA. END OF EA. STEM
- ◬ DENOTES STRAIGHT STRANDS TO BE DEBONDED 16'-0" FROM EA. END OF EA. STEM
- ⚜ DENOTES STRAIGHT STRANDS TO BE DEBONDED 18'-0" FROM EA. END OF EA. STEM
- ⊛ DENOTES STRAIGHT STRANDS TO BE DEBONDED 20'-0" FROM EA. END OF EA. STEM

DETAIL - "C" (STEM STRAND PATTERN)

1" = 1'-0"



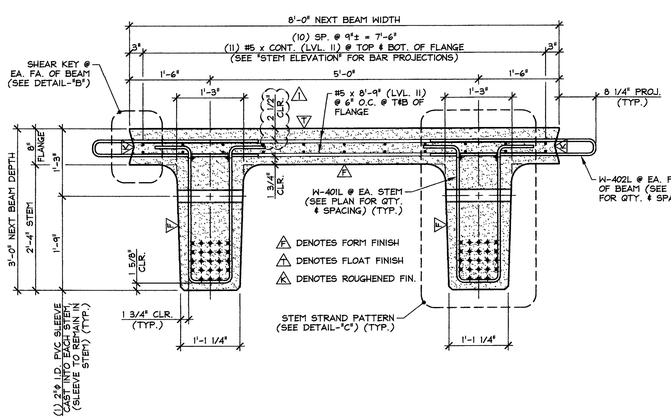
DETENSIONING SCHEDULE

N.T.S.

MARK: W-NB2	QTY.: 2	WT.: 69.67 T	VOL.: 34.41 cy

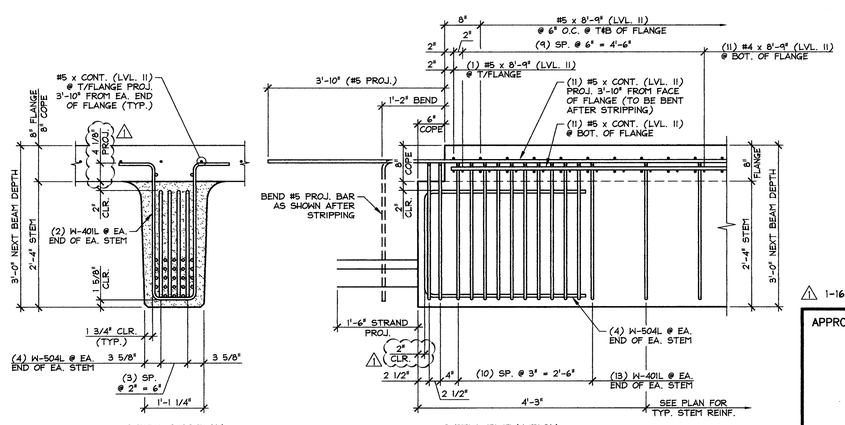
MATERIAL LIST / NEXT BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	W-401L	#4 BENT BAR (LEVEL II, DUAL COATED)	210
2	W-402L	#4 BENT BAR (LEVEL II, DUAL COATED)	338
3		#4 x 8'-9" (LEVEL II, DUAL COATED)	22
4			
5	W-504L	#5 BENT BAR (LEVEL II, DUAL COATED)	16
6		#5 x 8'-9" (LEVEL II, DUAL COATED)	340
7		#5 x 92'-8" (W/ (1) 2'-6" STAGGERED LAP) (LVL. II, DUAL COATED)	11
8		#5 x 84'-8" (W/ (1) 2'-6" STAGGERED LAP) (LVL. II, DUAL COATED)	11
9			
10			
11			
12			
13			
14		SET OF (4) 0.60"ϕ x 270 KSI STRAND LIFTING LOOPS	4
15			



A NB1 DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"



B NB1 END BLOCK STEM REINFORCING DETAILS

3/4" = 1'-0"

△1 1-16-14 REVISED AS NOTED

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

PRESTRESSED NEXT BEAM DETAILS

DATE: DEC. 18, 2013
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23413-013
DWG. NO: NB1

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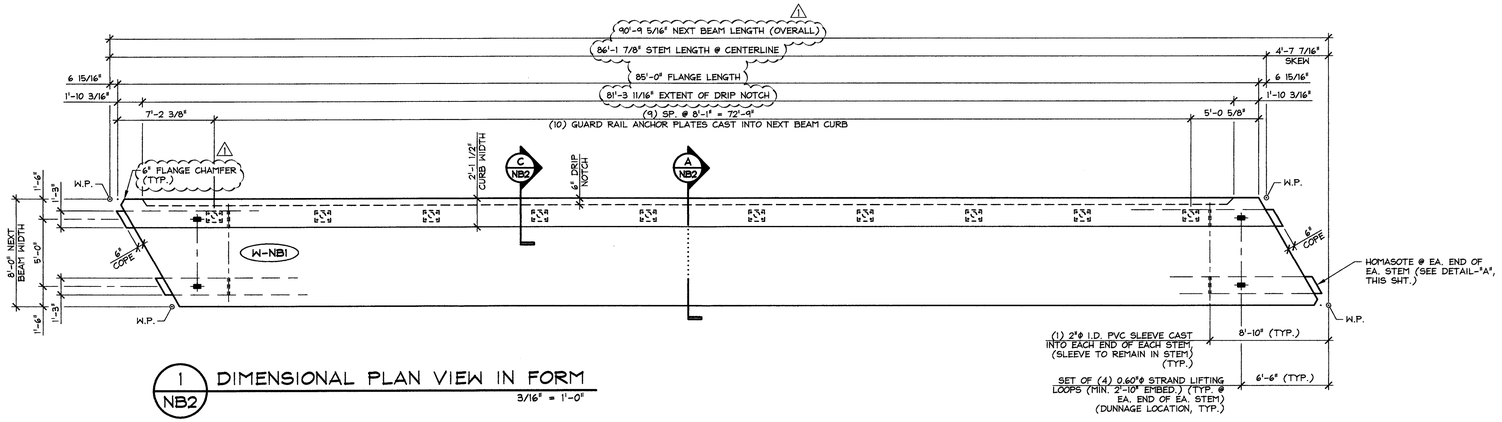
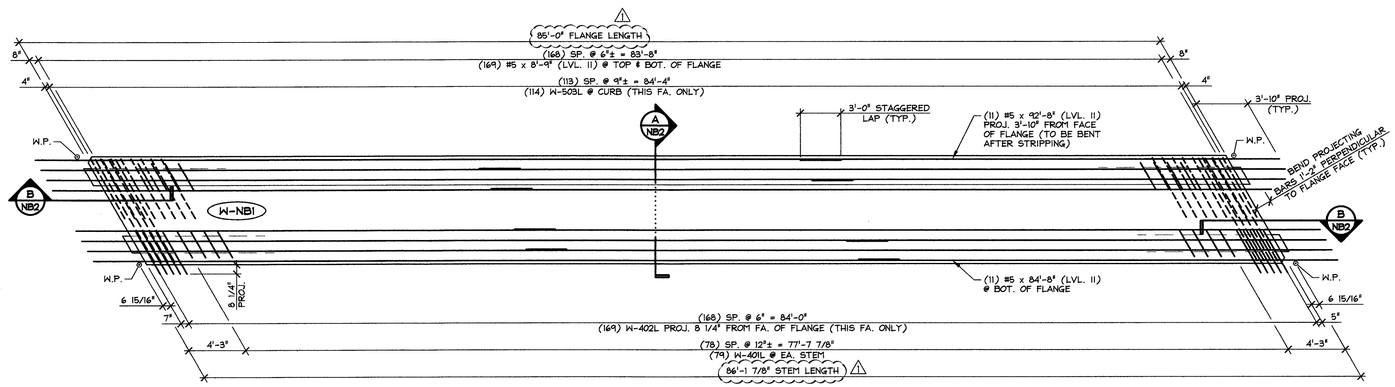


1 NB2 DIMENSIONAL PLAN VIEW IN FORM

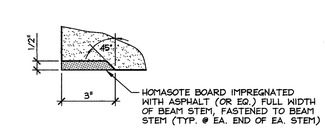
3/16" = 1'-0"



2 NB2 REINFORCING PLAN VIEW IN FORM

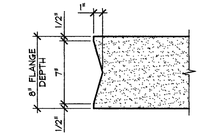
ALL DIMENSIONS INDICATED ARE PARALLEL OR PERPENDICULAR TO ℄ OF STEMS (U.N.O.)

3/16" = 1'-0"



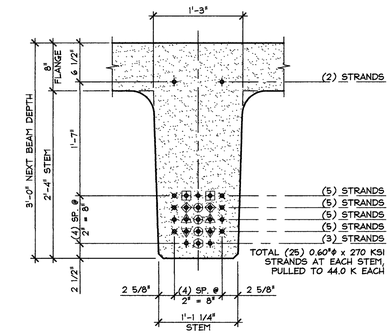
DETAIL - "A"

3" = 1'-0"



DETAIL - "B"

1 1/2" = 1'-0"

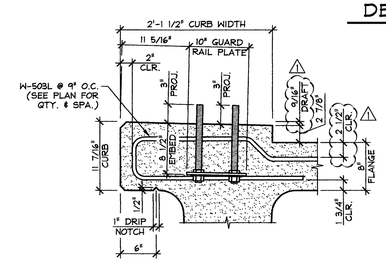


PRESTRESSING NOTATIONS

- ✦ DENOTES STRAIGHT STRANDS TO BE CUT FLUSH WITH EA. END OF EA. STEM
- ✖ DENOTES STRAIGHT STRANDS TO PROJECT 1'-6" FROM EA. END OF EA. STEM
- ⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 6" FROM EA. END OF EA. STEM
- ⊞ DENOTES STRAIGHT STRANDS TO BE DEBONDED 10'-0" FROM EA. END OF EA. STEM
- ◈ DENOTES STRAIGHT STRANDS TO BE DEBONDED 14'-0" FROM EA. END OF EA. STEM
- ♣ DENOTES STRAIGHT STRANDS TO BE DEBONDED 16'-0" FROM EA. END OF EA. STEM
- ♥ DENOTES STRAIGHT STRANDS TO BE DEBONDED 18'-0" FROM EA. END OF EA. STEM
- ⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 20'-0" FROM EA. END OF EA. STEM

DETAIL - "C" (STEM STRAND PATTERN)

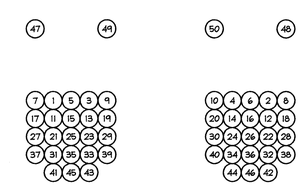
1" = 1'-0"



C NB2 CURB & GUARD RAIL ANCHOR PLATE SECTION

TYP. BEAM REINF. NOT SHOWN FOR CLARITY

1" = 1'-0"



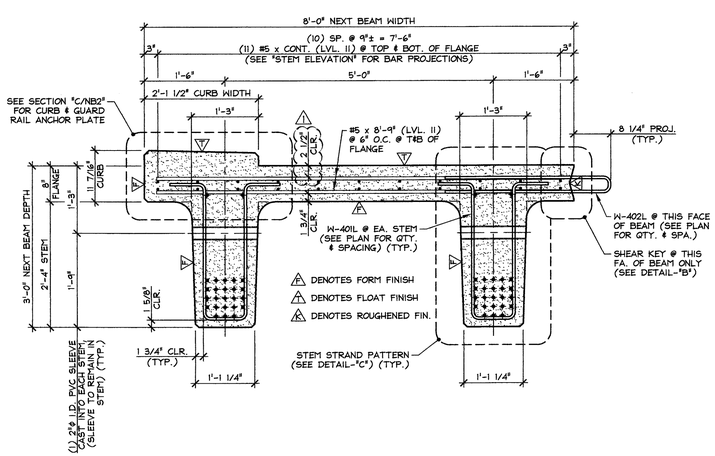
DETENSIONING SCHEDULE

N.T.S.

MARK: W-NB1	QTY.: 1	WT.: 73.38 T	VOL.: 36.24 cy

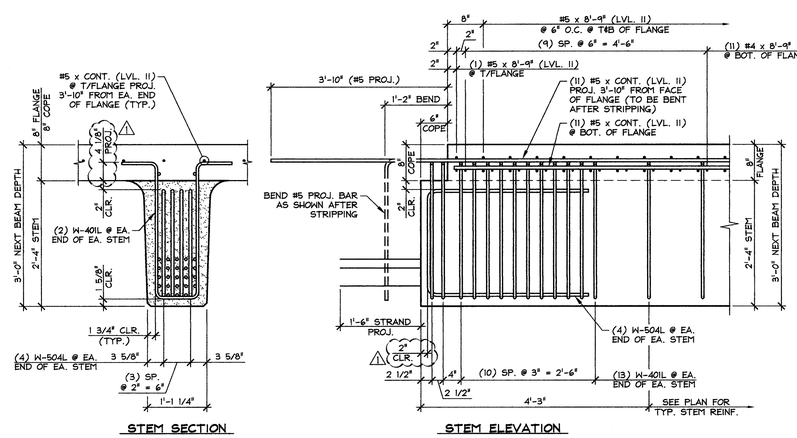
MATERIAL LIST / NEXT BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	W-401L	#4 BENT BAR (LEVEL II, DUAL COATED)	210
2	W-402L	#4 BENT BAR (LEVEL II, DUAL COATED)	169
3		#4 x 8'-9" (LEVEL II, DUAL COATED)	22
4			
5	W-503L	#5 BENT BAR (LEVEL II, DUAL COATED)	114
6	W-504L	#5 BENT BAR (LEVEL II, DUAL COATED)	16
7		#5 x 8'-9" (LEVEL II, DUAL COATED)	340
8		#5 x 92'-8" (W/ (1) 2'-6" STAGGERED LAP) (LVL. II, DUAL COATED)	11
9		#5 x 84'-8" (W/ (1) 2'-6" STAGGERED LAP) (LVL. II, DUAL COATED)	11
10			
11			
12			
13		GUARD RAIL ANCHOR PLATE (GALV.) (SUPPLIED BY OTHERS)	10
14		SET OF (4) 0.60"ϕ x 270 KSI STRAND LIFTING LOOPS	4
15			



A NB2 DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"



B NB2 END BLOCK STEM REINFORCING DETAILS

3/4" = 1'-0"

△1 1-16-14 REVISED AS NOTED

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

PRESTRESSED NEXT BEAM DETAILS

DATE: DEC. 18, 2013
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23413-013
DWG. NO: NB2

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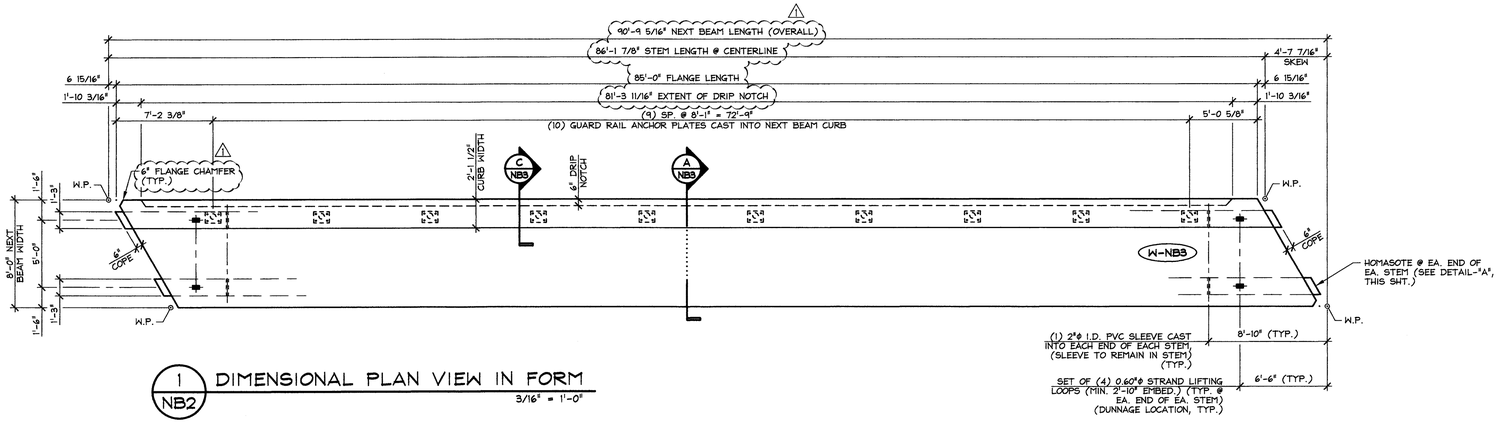
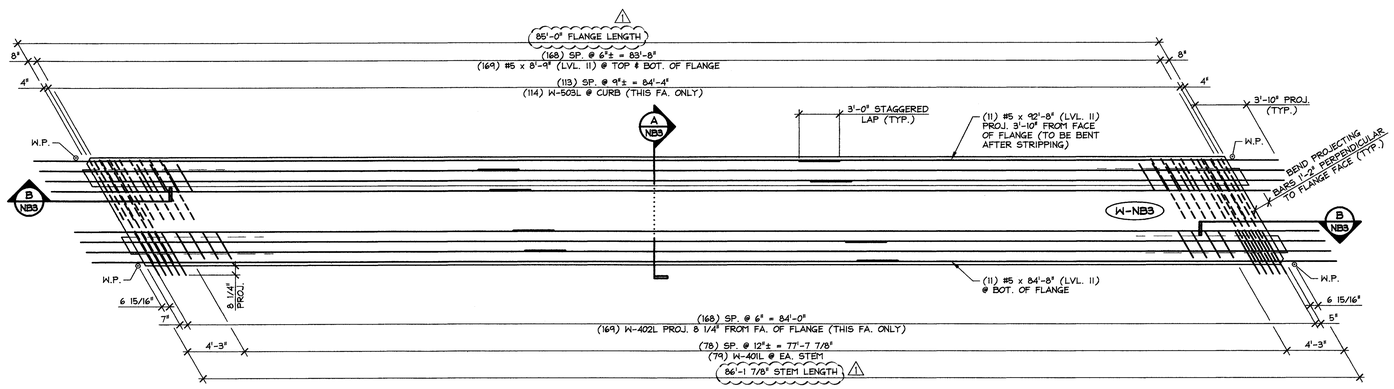


1 NB2 DIMENSIONAL PLAN VIEW IN FORM

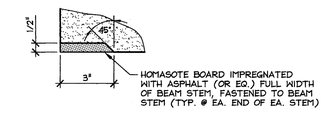
3/16" = 1'-0"



2 NB3 REINFORCING PLAN VIEW IN FORM

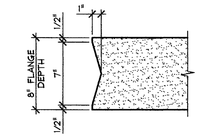
ALL DIMENSIONS INDICATED ARE PARALLEL OR PERPENDICULAR TO ℄ OF STEMS (U.N.O.)

3/16" = 1'-0"



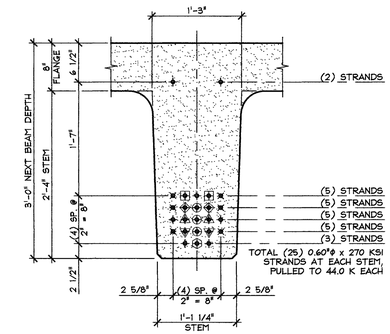
DETAIL - "A"

3" = 1'-0"



DETAIL - "B"

1 1/2" = 1'-0"

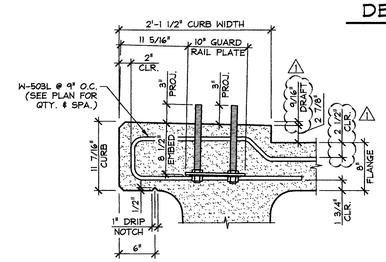


DETAIL - "C" (STEM STRAND PATTERN)

1" = 1'-0"

PRESTRESSING NOTATIONS

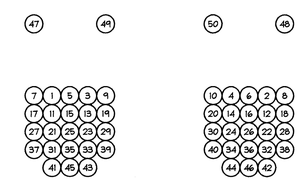
- ✦ DENOTES STRAIGHT STRANDS TO BE CUT FLUSH WITH EA. END OF EA. STEM
- ✖ DENOTES STRAIGHT STRANDS TO PROJECT 1'-6" FROM EA. END OF EA. STEM
- ⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 6" FROM EA. END OF EA. STEM
- ⊞ DENOTES STRAIGHT STRANDS TO BE DEBONDED 10'-0" FROM EA. END OF EA. STEM
- ◈ DENOTES STRAIGHT STRANDS TO BE DEBONDED 14'-0" FROM EA. END OF EA. STEM
- ◬ DENOTES STRAIGHT STRANDS TO BE DEBONDED 16'-0" FROM EA. END OF EA. STEM
- ◥ DENOTES STRAIGHT STRANDS TO BE DEBONDED 18'-0" FROM EA. END OF EA. STEM
- ⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 20'-0" FROM EA. END OF EA. STEM



C NB3 CURB & GUARD RAIL ANCHOR PLATE SECTION

TYP. BEAM REINF. NOT SHOWN FOR CLARITY

1" = 1'-0"



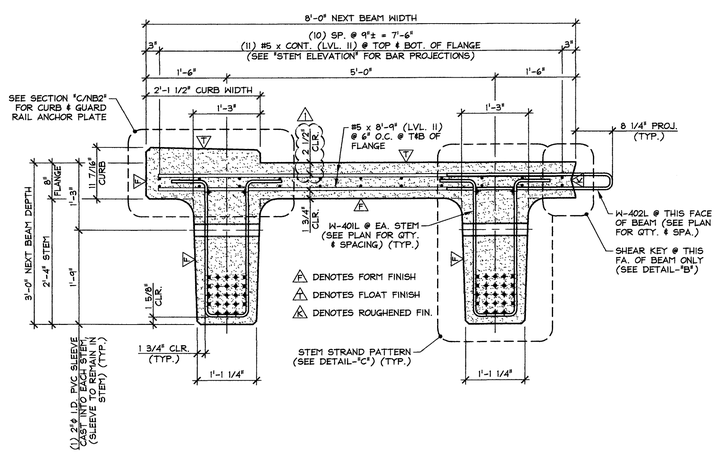
DETENSIONING SCHEDULE

N.T.S.

MARK: W-NB3	QTY.: 1	WT.: 73.38 T	VOL.: 36.24 cy

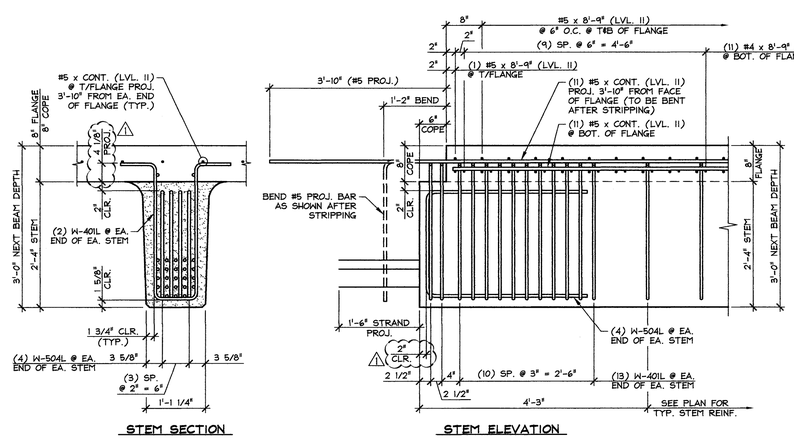
MATERIAL LIST / NEXT BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	W-401L	#4 BENT BAR (LEVEL II, DUAL COATED)	210
2	W-402L	#4 BENT BAR (LEVEL II, DUAL COATED)	169
3		#4 x 8'-9" (LEVEL II, DUAL COATED)	22
4			
5	W-503L	#5 BENT BAR (LEVEL II, DUAL COATED)	114
6	W-504L	#5 BENT BAR (LEVEL II, DUAL COATED)	16
7		#5 x 8'-9" (LEVEL II, DUAL COATED)	340
8		#5 x 92'-8" (W/ (1) 2'-6" STAGGERED LAP) (LVL. II, DUAL COATED)	11
9		#5 x 84'-8" (W/ (1) 2'-6" STAGGERED LAP) (LVL. II, DUAL COATED)	11
10			
11			
12			
13		GUARD RAIL ANCHOR PLATE (GALV.) (SUPPLIED BY OTHERS)	10
14		SET OF (4) 0.60"ϕ x 270 KSI STRAND LIFTING LOOPS	4
15			



A NB3 DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"



B NB3 END BLOCK STEM REINFORCING DETAILS

3/4" = 1'-0"

1-16-14 REVISED AS NOTED

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

PRESTRESSED NEXT BEAM DETAILS

DATE: DEC. 18, 2013
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23413-013
DWG. NO: NB3

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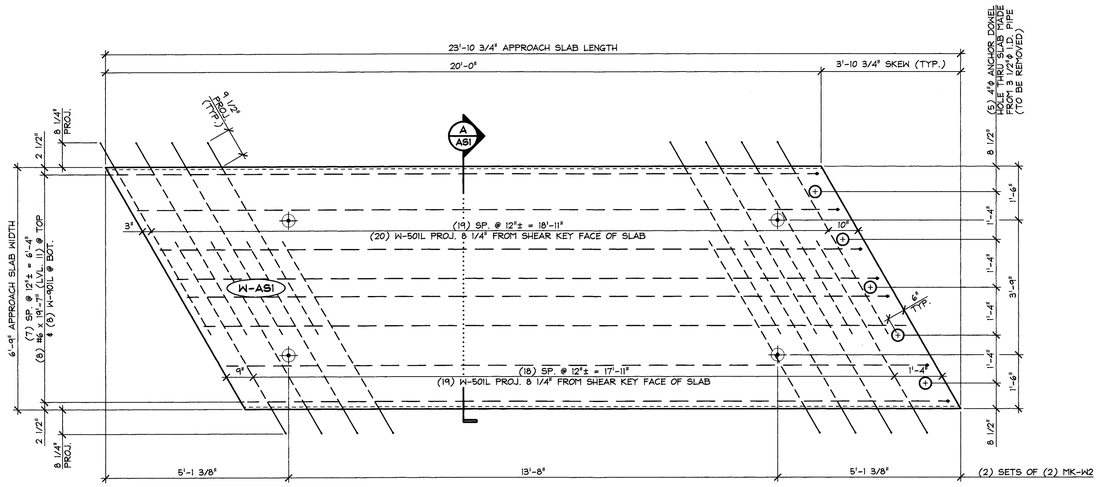
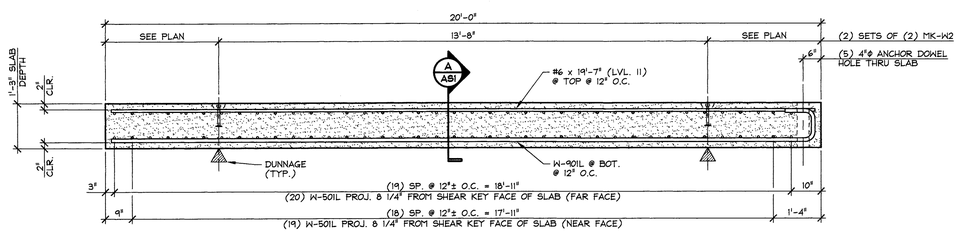


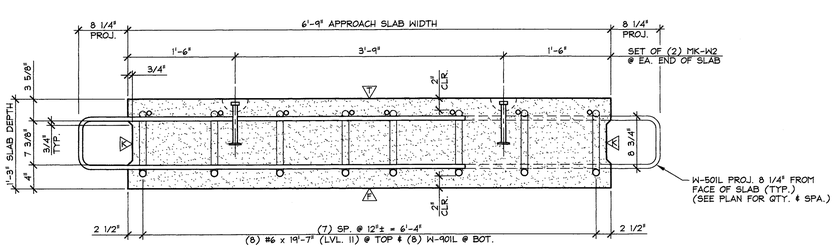
1/AS1 PLAN VIEW IN FORM

1/2" = 1'-0"



2/AS1 LONGITUDINAL SECTION

1/2" = 1'-0"



A/AS1 APPROACH SLAB SECTION

1" = 1'-0"

△F DENOTES FORM FINISH
△T DENOTES FLOAT FINISH
△R DENOTES ROUGHENED FINISH

MARK: W-AS1	QTY.: 4	WT.: 12.46 T	VOL.: 6.16 cy
MARK: -	QTY.: -	WT.: -	VOL.: -

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY./SLAB W-AS1	QTY./SLAB -
1	W-501L	#5 BENT BAR (LEVEL II, DUAL COATED)	39	
2				
3		#6 x 19'-7" (LEVEL II, DUAL COATED)	8	
4				
5	W-901L	#9 BENT BAR (LEVEL II, DUAL COATED)	8	
6				
7				
8	MK-W2	4T x 7 1/8" SWIFT LIFT LIFTER	4	
9				
10				

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

PRECAST APPROACH SLAB DETAILS

DATE: DEC. 18, 2013
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23413-013
DWG. NO: AS1

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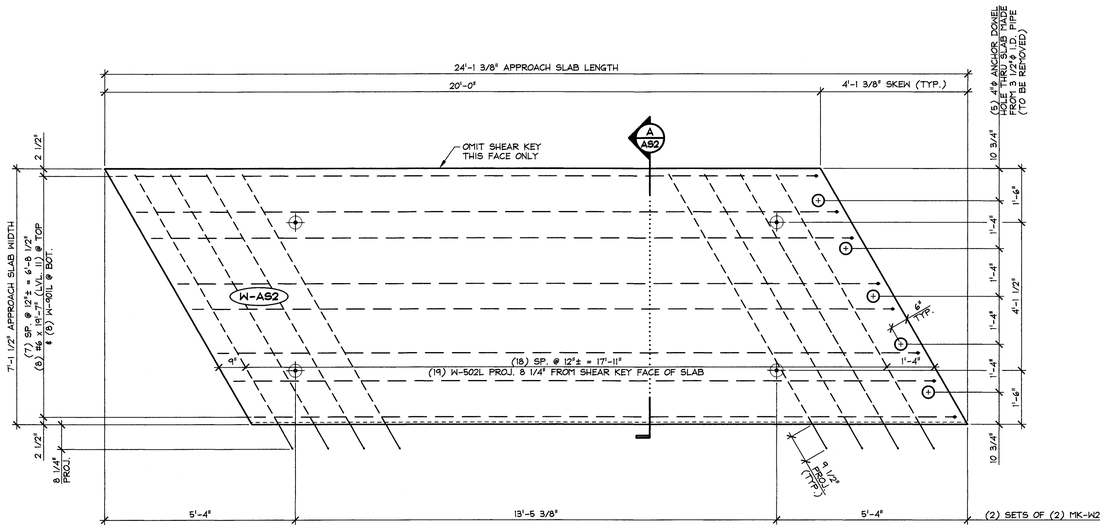
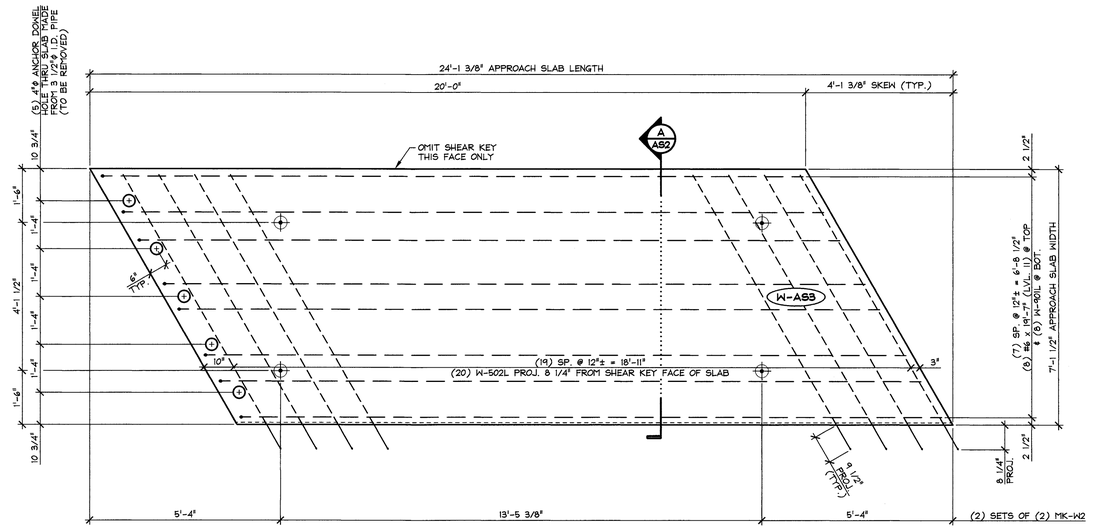
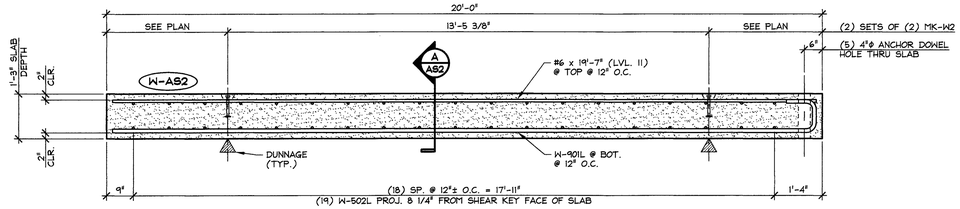


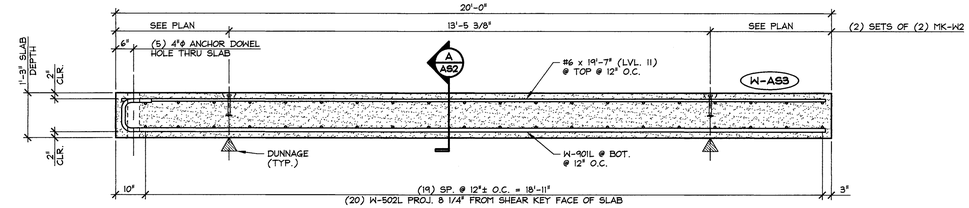
1 AS2 PLAN VIEW IN FORM
1/2" = 1'-0"



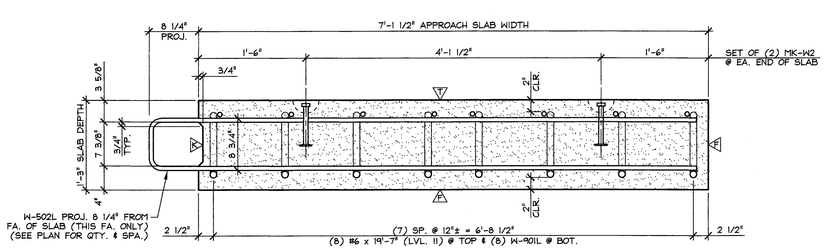
3 AS2 PLAN VIEW IN FORM
1/2" = 1'-0"



2 AS2 LONGITUDIAL SECTION
1/2" = 1'-0"



4 AS2 LONGITUDIAL SECTION
1/2" = 1'-0"



A AS2 APPROACH SLAB SECTION
1" = 1'-0"

A DENOTES FORM FINISH
A DENOTES FLOAT FINISH
A DENOTES ROUGHENED FINISH

MARK: W-AS2	QTY.: 2	WT.: 13.26 T	VOL.: 6.55 cy		
MARK: W-AS3	QTY.: 2	WT.: 13.26 T	VOL.: 6.55 cy		

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY./SLAB W-AS2	QTY./SLAB W-AS3
1	W-502L	#5 BENT BAR (LEVEL II, DUAL COATED)	19	20
2				
3		#6 x 19'-7" (LEVEL II, DUAL COATED)	8	8
4				
5	W-901L	#9 BENT BAR (LEVEL II, DUAL COATED)	8	8
6				
7				
8	MK-W2	4T x 7 1/8" SWIFT LIFT LIFTER	4	4
9				
10				

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

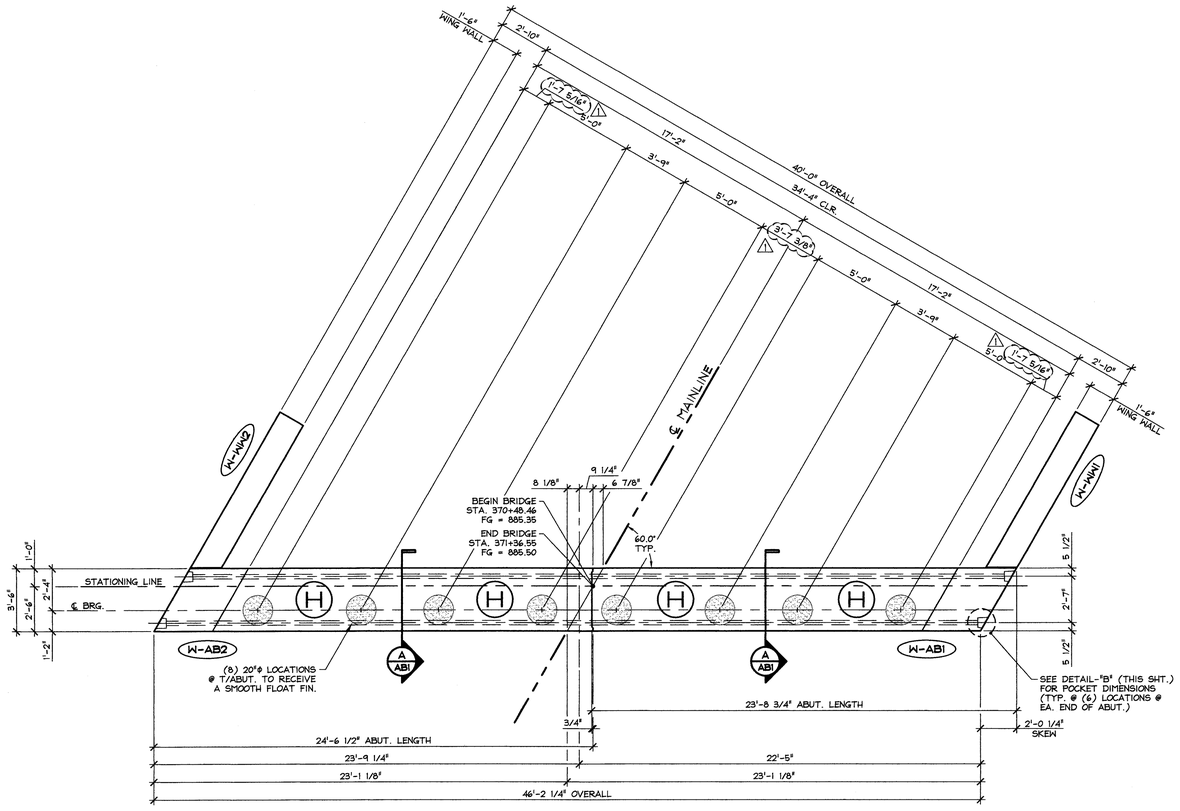
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

PRECAST APPROACH SLAB DETAILS

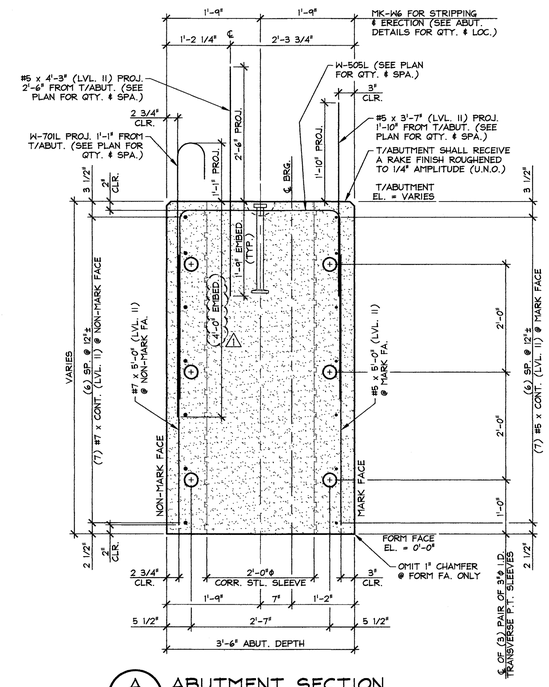
DATE: DEC. 18, 2013
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23413-013
DWG. NO: AS2

F:\VT-Bridges\23413-13 Barnard\23413-AS2.dwg, 12/18/2013 4:02:42 PM



1 / AB1 ABUTMENT ASSEMBLY PLAN

1/4" = 1'-0"

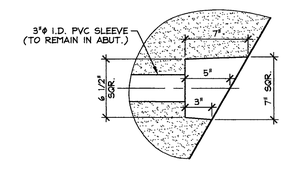


A / AB1 ABUTMENT SECTION

3/4" = 1'-0"

SHOP NOTE:

ALL EDGES OF ABUTMENT SHALL RECEIVE A 1" CHAMFER (U.N.O.)



DETAIL - "B"

1 1/2" = 1'-0"

⚠ 1-16-14 REVISED AS NOTED

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

PRECAST ABUTMENT
PLAN, SECTION & DETAILS

DATE:	DEC. 18, 2013
SCALE:	NOTED
CHKD: -	DFTM: B.L.
JOB NO:	23413-013
DWG. NO:	AB1

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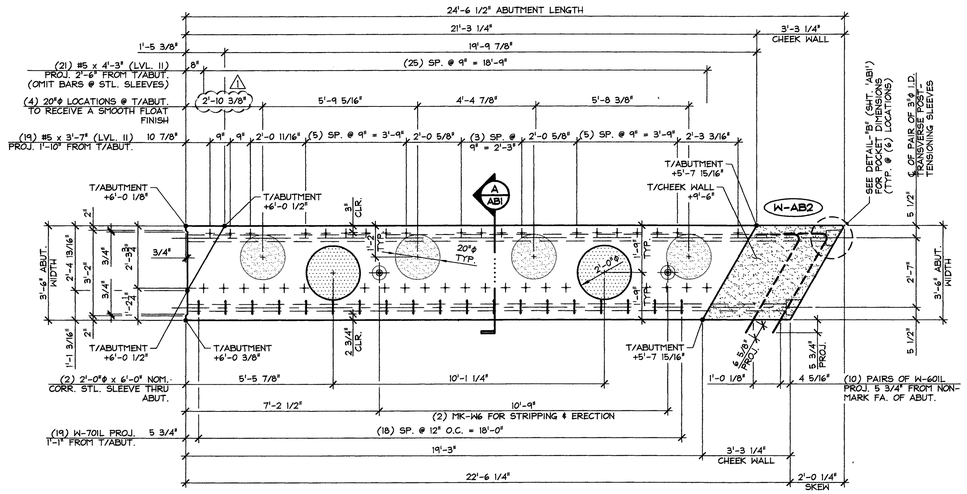
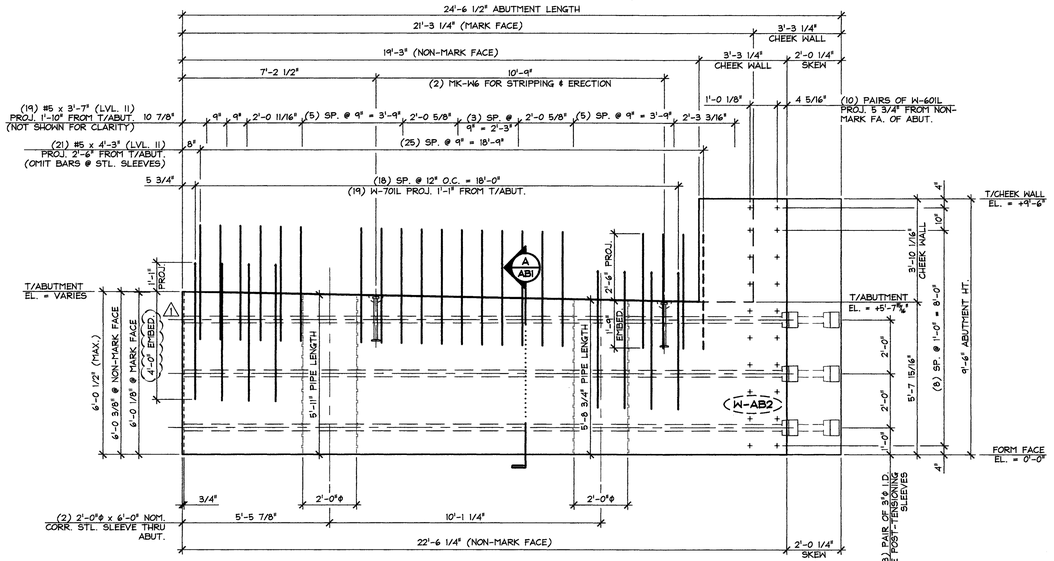


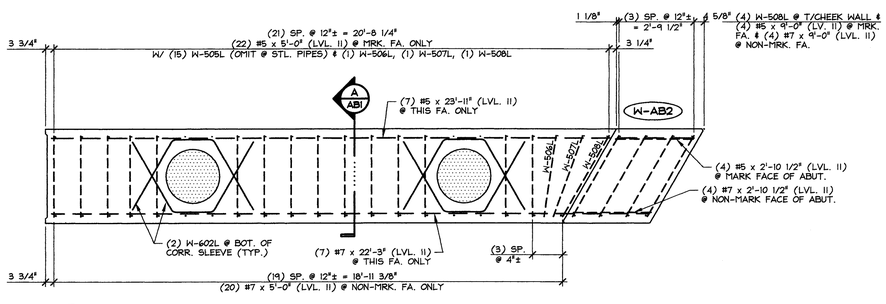
1 / AB2 ABUTMENT DIMENSIONAL PLAN VIEW IN FORM

3/8" = 1'-0"



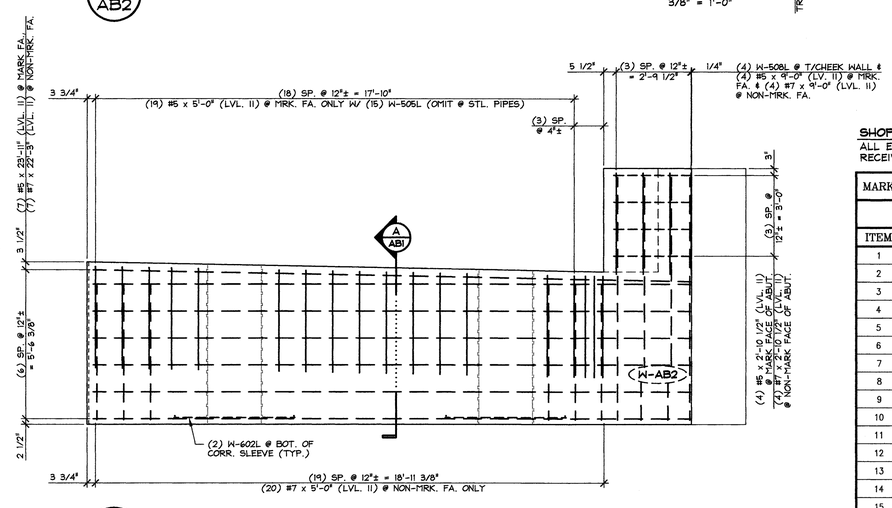
2 / AB2 ABUTMENT DIMENSIONAL NON-MARK FACE ELEVATION

3/8" = 1'-0"



3 / AB2 ABUTMENT REINFORCING PLAN VIEW IN FORM

3/8" = 1'-0"



4 / AB2 ABUTMENT REINFORCING NON-MARK FACE ELEVATION

3/8" = 1'-0"

SHOP NOTE:
ALL EDGES OF ABUTMENT SHALL RECEIVE A 1" CHAMFER (U.N.O.)

MARK: W-AB2	QTY.: 2	WT.: 36.44 T	VOL.: 18.0 cy

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	W-505L	#5 BENT BAR (LEVEL II, DUAL COATED)	15
2	W-506L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
3	W-507L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
4	W-508L	#5 BENT BAR (LEVEL II, DUAL COATED)	5
5		#5 x 3'-7" (LEVEL II, DUAL COATED)	19
6		#5 x 4'-3" (LEVEL II, DUAL COATED)	21
7		#5 x 5'-0" (LEVEL II, DUAL COATED)	22
8		#5 x 9'-0" (LEVEL II, DUAL COATED)	4
9		#5 x 23'-11" (LEVEL II, DUAL COATED)	7
10		#5 x 2'-10 1/2" (LEVEL II, DUAL COATED)	4
11			
12	W-601L	#6 BENT BAR (LEVEL II, DUAL COATED)	20
13	W-602L	#6 BENT BAR (LEVEL II, DUAL COATED)	4
14			
15	W-701L	#7 BENT BAR (LEVEL II, DUAL COATED)	19
16		#7 x 5'-0" (LEVEL II, DUAL COATED)	20
17		#7 x 9'-0" (LEVEL II, DUAL COATED)	4
18		#7 x 22'-3" (LEVEL II, DUAL COATED)	7
19		#7 x 2'-10 1/2" (LEVEL II, DUAL COATED)	4
20			
21		2'-0"ϕ x 5'-8 3/4" CORRUGATED STEEL PIPE (GALV.)	1
22		2'-0"ϕ x 5'-11" CORRUGATED STEEL PIPE (GALV.)	1
23	MK-W6	20T x 19 3/4" SWIFT LIFT LIFTER	2

△1 1-16-14 REVISED AS NOTED

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

PRECAST ABUTMENT DETAILS

DATE: DEC. 18, 2013
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23413-013
DWG. NO: AB2

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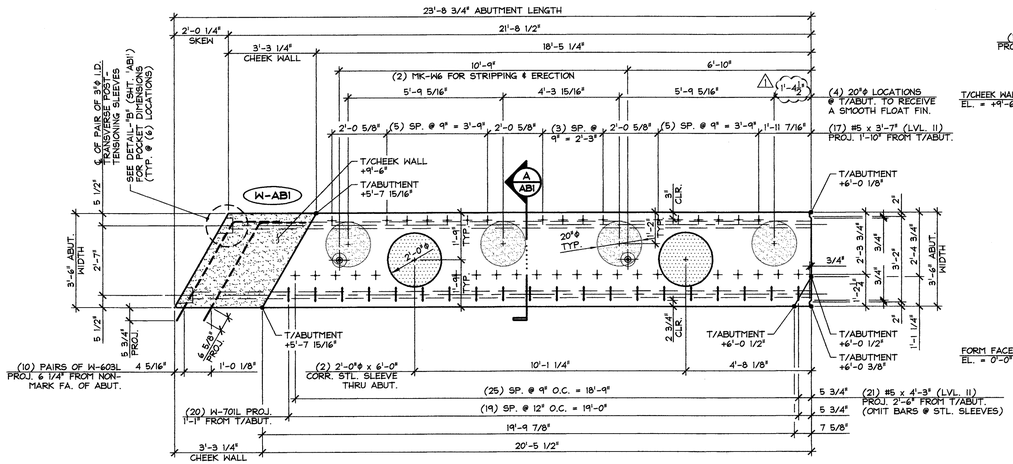
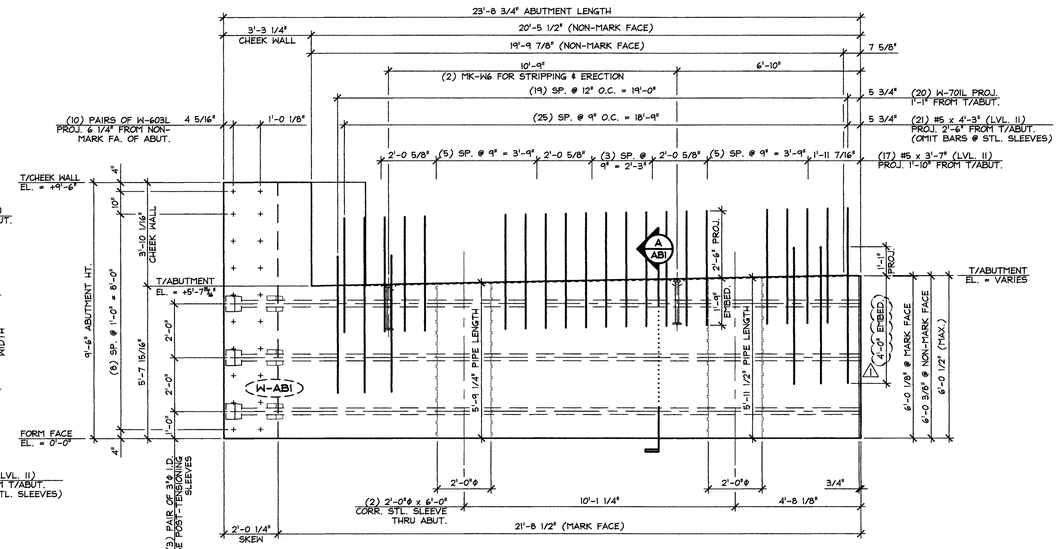


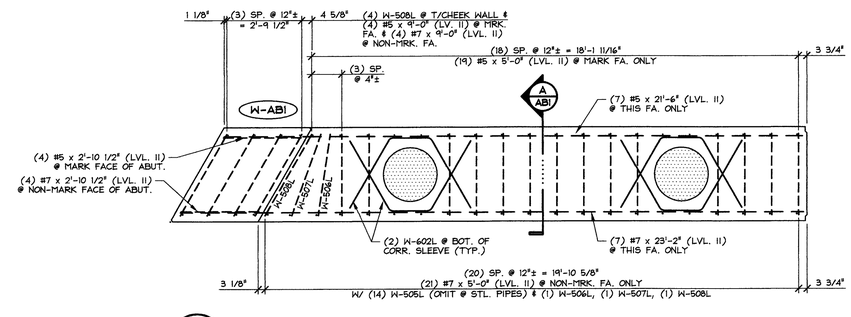
1 / AB3 ABUTMENT DIMENSIONAL PLAN VIEW IN FORM

3/8" = 1'-0"



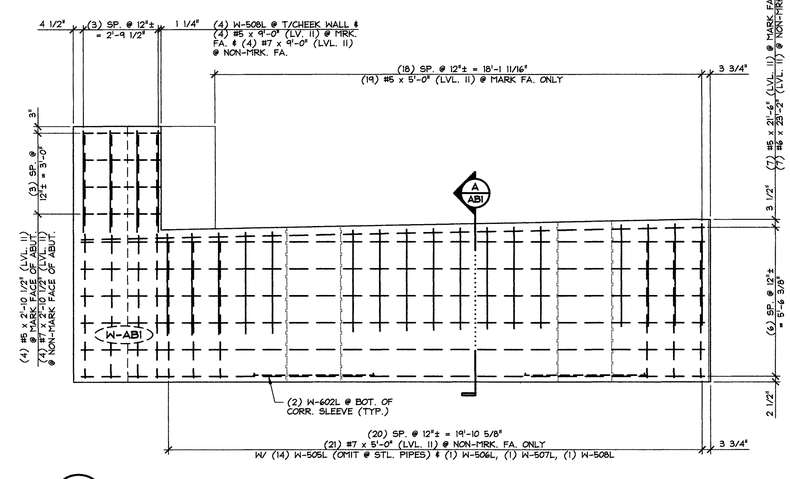
2 / AB3 ABUTMENT DIMENSIONAL NON-MARK FACE ELEVATION

3/8" = 1'-0"



3 / AB3 ABUTMENT REINFORCING PLAN VIEW IN FORM

3/8" = 1'-0"



4 / AB3 ABUTMENT REINFORCING NON-MARK FACE ELEVATION

3/8" = 1'-0"

SHOP NOTE:
ALL EDGES OF ABUTMENT SHALL RECEIVE A 1" CHAMFER (U.N.O.)

MARK: W-ABI	QTY.: 2	WT.: 35.25 T	VOL.: 17.41 cy

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	W-505L	#5 BENT BAR (LEVEL II, DUAL COATED)	14
2	W-506L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
3	W-507L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
4	W-508L	#5 BENT BAR (LEVEL II, DUAL COATED)	5
5		#5 x 2'-10 1/2" (LEVEL II, DUAL COATED)	4
6		#5 x 3'-7" (LEVEL II, DUAL COATED)	17
7		#5 x 4'-3" (LEVEL II, DUAL COATED)	21
8		#5 x 5'-0" (LEVEL II, DUAL COATED)	19
9		#5 x 9'-0" (LEVEL II, DUAL COATED)	4
10		#5 x 21'-6" (LEVEL II, DUAL COATED)	7
11			
12	W-602L	#6 BENT BAR (LEVEL II, DUAL COATED)	4
13	W-603L	#6 BENT BAR (LEVEL II, DUAL COATED)	20
14			
15	W-701L	#7 BENT BAR (LEVEL II, DUAL COATED)	20
16		#7 x 2'-10 1/2" (LEVEL II, DUAL COATED)	4
17		#7 x 5'-0" (LEVEL II, DUAL COATED)	21
18		#7 x 9'-0" (LEVEL II, DUAL COATED)	4
19		#7 x 23'-2" (LEVEL II, DUAL COATED)	7
20			
21		2'-0"ϕ x 5'-9 1/4" CORRUGATED STEEL PIPE (GALV.)	1
22		2'-0"ϕ x 5'-11 1/2" CORRUGATED STEEL PIPE (GALV.)	1
23	MK-W6	20T x 19 3/4" SWIFT LIFT LIFTER	2

⚠1 1-16-14 REVISED AS NOTED

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

PRECAST ABUTMENT DETAILS

DATE: DEC. 18, 2013
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23413-013
DWG. NO: AB3

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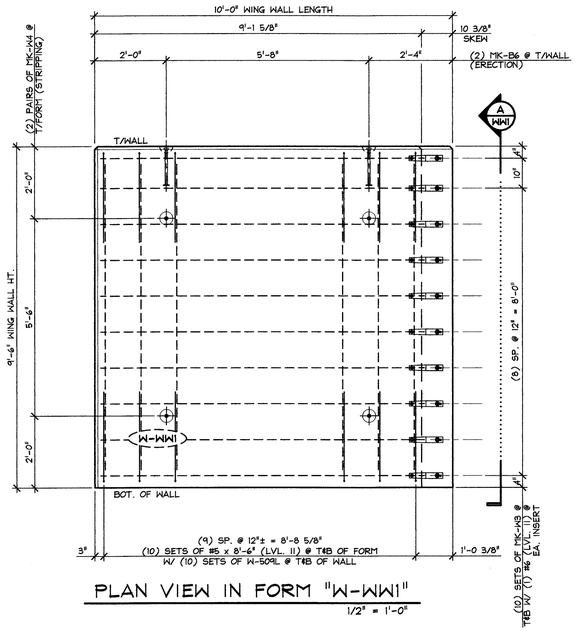
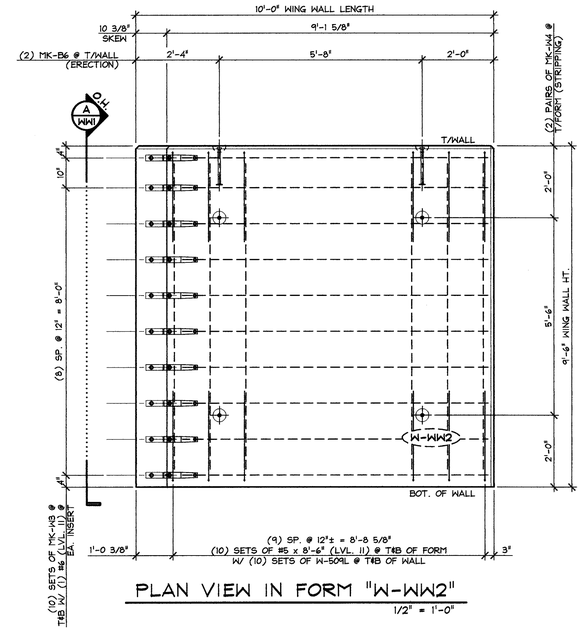


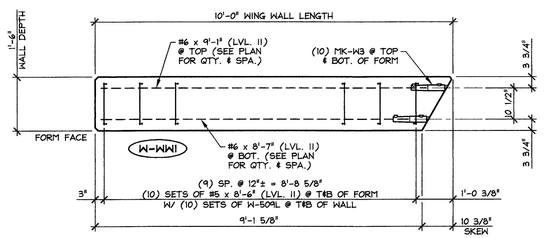
PLAN VIEW IN FORM "W-WW1"

1/2" = 1'-0"



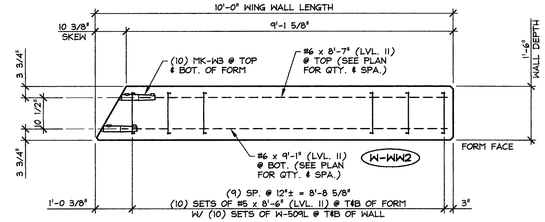
PLAN VIEW IN FORM "W-WW2"

1/2" = 1'-0"



WING WALL BOTTOM ELEVATION

1/2" = 1'-0"



WING WALL BOTTOM ELEVATION

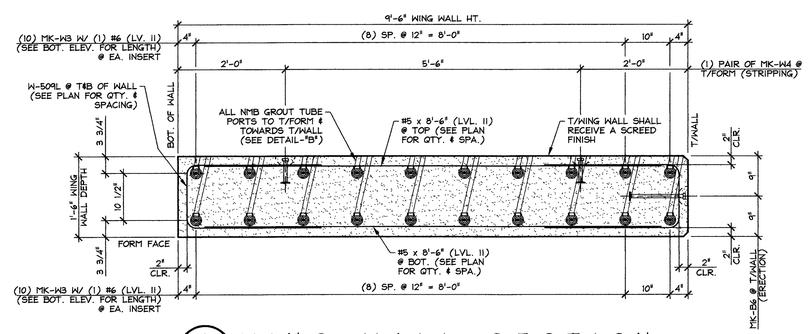
1/2" = 1'-0"

SHOP NOTE:
ALL EDGES OF WING WALLS, FORM FACE & T/WALL FACE, SHALL RECEIVE A 1" CHAMFER (UNLESS NOTED OTHERWISE)

MARK:	W-WW1	QTY.:	2	WT.:	10.22 T	VOL.:	5.05 cy
MARK:	W-WW2	QTY.:	2	WT.:	10.22 T	VOL.:	5.05 cy

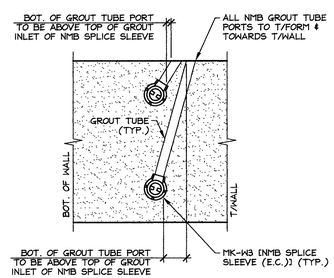
MATERIAL LIST / WING WALL

ITEM	MARK	DESCRIPTION	QTY./WING WALL W-WW1	QTY./WING WALL W-WW2
1	W-509L	#5 BENT BAR (LEVEL II, DUAL COATED)	20	20
2		#5 x 8'-6" (LEVEL II, DUAL COATED)	20	20
3				
4		#6 x 8'-7" (LEVEL II, DUAL COATED)	10	10
5		#6 x 9'-1" (LEVEL II, DUAL COATED) △1	10	10
6				
7	MK-H3	NMB SPLICE SLEEVE 6U-X(PG) (EPOXY COATED)	20	20
8	MK-H4	4T x 5 1/2" SWIFT LIFT LIFTER	4	4
9	MK-H5	8T x 13 3/8" SWIFT LIFT LIFTER	2	2
10				



A WW1 WING WALL SECTION

3/4" = 1'-0"



DETAIL - "B"

3/4" = 1'-0"

△1 1-16-14 REVISED AS NOTED

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

PRECAST WING WALL DETAILS

DATE: DEC. 18, 2013
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23413-013
DWG. NO: WW1

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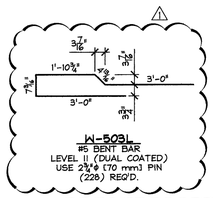
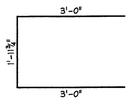
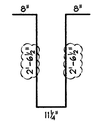


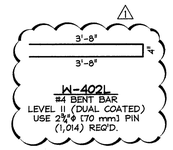
W-503L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"Φ (70 mm) PIN
(226) REQ'D.



W-504L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"Φ (70 mm) PIN
(64) REQ'D.

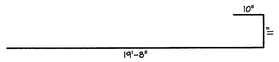


W-401L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 2"Φ (50 mm) PIN
(840) REQ'D.

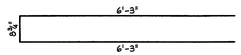


W-402L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"Φ (70 mm) PIN
(1,014) REQ'D.

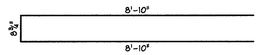
PRESTRESSED NEXT BEAMS



W-901L
#9 BENT BAR
LEVEL II (DUAL COATED)
USE 6"Φ PIN
(64) REQ'D.

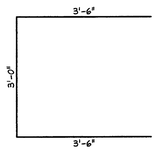


W-501L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"Φ (70 mm) PIN
(156) REQ'D.

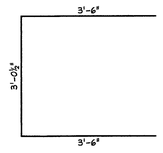


W-502L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"Φ (70 mm) PIN
(78) REQ'D.

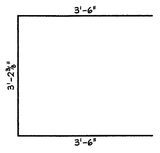
PRECAST APPROACH SLABS



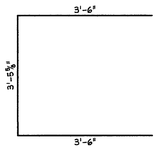
W-505L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"Φ (70 mm) PIN
(58) REQ'D.



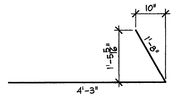
W-506L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"Φ (70 mm) PIN
(4) REQ'D.



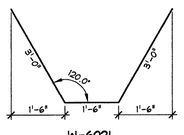
W-507L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"Φ (70 mm) PIN
(4) REQ'D.



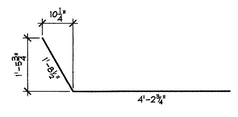
W-508L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"Φ (70 mm) PIN
(20) REQ'D.



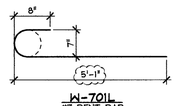
W-601L
#6 BENT BAR
LEVEL II (DUAL COATED)
USE 4"Φ (100 mm) PIN
(40) REQ'D.



W-602L
#6 BENT BAR
LEVEL II (DUAL COATED)
USE 4"Φ (100 mm) PIN
(16) REQ'D.

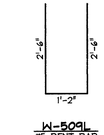


W-603L
#6 BENT BAR
LEVEL II (DUAL COATED)
USE 4"Φ (100 mm) PIN
(40) REQ'D.



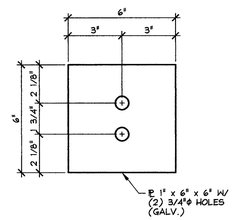
W-701L
#7 BENT BAR
LEVEL II (DUAL COATED)
USE 5"Φ PIN
(78) REQ'D.

PRECAST ABUTMENTS



W-509L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 2 3/4"Φ (70 mm) PIN
(80) REQ'D.

PRECAST WING WALLS



EM - W1
3" = 1'-0"

MISCELLANEOUS MATERIALS

ITEM	MARK	QTY.	DESCRIPTION	REMARKS	
1		88	#4 x 8'-9" (LEVEL II, DUAL COATED)		PRESTRESSED NEXT BEAMS
2					
3		1,360	#5 x 8'-9" (LEVEL II, DUAL COATED)		
4		44	#5 x 92'-8" (W/ (1) 2'-6" STAGGERED LAP) (LVL. II, DUAL COATED)		
5		44	#5 x 84'-8" (W/ (1) 2'-6" STAGGERED LAP) (LVL. II, DUAL COATED)		
6					
7					
8		20	GUARD RAIL ANCHOR PLATE (GALV.)	SUPPLIED BY OTHERS	
9		16	SET OF (4) 0.60"Φ x 270 KSI STRAND LIFTING LOOPS		
10					
11	MK-W2	32	4T x 7 1/8" SWIFT LIFT LIFTER		PRECAST APPROACH SLABS
12					
13		64	#6 x 19'-7" (LEVEL II, DUAL COATED)		
14					
15					
16					
17					
18					
19					
20					
21		72	#5 x 3'-7" (LEVEL II, DUAL COATED)		PRECAST ABUTMENTS
22		84	#5 x 4'-3" (LEVEL II, DUAL COATED)		
23		82	#5 x 5'-0" (LEVEL II, DUAL COATED)		
24		16	#5 x 9'-0" (LEVEL II, DUAL COATED)		
25		16	#5 x 2'-10 1/2" (LEVEL II, DUAL COATED)		
26		14	#5 x 21'-6" (LEVEL II, DUAL COATED)		
27		14	#5 x 23'-11" (LEVEL II, DUAL COATED)		
28					
29		82	#7 x 5'-0" (LEVEL II, DUAL COATED)		
30		16	#7 x 9'-0" (LEVEL II, DUAL COATED)		
31		16	#7 x 2'-10 1/2" (LEVEL II, DUAL COATED)		
32		14	#7 x 22'-3" (LEVEL II, DUAL COATED)		
33		14	#7 x 23'-2" (LEVEL II, DUAL COATED)		
34					
35		2	2'-0"Φ x 5'-11 1/2" CORRUGATED STEEL PIPE (GALV.)		
36		2	2'-0"Φ x 5'-11" CORRUGATED STEEL PIPE (GALV.)		
37		2	2'-0"Φ x 5'-9 1/4" CORRUGATED STEEL PIPE (GALV.)		
38		2	2'-0"Φ x 5'-8 3/4" CORRUGATED STEEL PIPE (GALV.)		
39	MK-W6	8	20T x 19 3/4" SWIFT LIFT LIFTER		
40					
41					
42	EM-W1	24	PL 1" x 6" x 6" W/ (2) 3/4"Φ HOLES (GALV.)	FOR ERECTION; SEE DETAIL THIS SHEET	
43		24	1/2"Φ x 49'-0" POLY-STRAND	FOR ERECTION	
44		48	1/2"Φ SINGLE USE STRESSING CHUCK	FOR ERECTION	
45		12	COMPRESSIBLE SEALER SELF ADHESIVE	FOR ERECTION	
46		80	#5 x 8'-6" (LEVEL II, DUAL COATED)		PRECAST WING WALLS
47					
48		40	#6 x 8'-7" (LEVEL II, DUAL COATED)		
49		40	#6 x 9'-1" (LEVEL II, DUAL COATED) △1		
50					
51	MK-W3	80	NMB SPLICE SLEEVE 7U-X(PG) (EPOXY COATED) W/ GROUT TUBES	GROUT TUBE LENGTH AS REQ'D.	
52	MK-W4	16	4T x 5 1/2" SWIFT LIFT LIFTER		
53	MK-W5	8	8T x 13 3/8" SWIFT LIFT LIFTER		
54					
55					

△1 1-16-14 REVISED AS NOTED

APPROVAL STAMP:

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

MILLER CONSTRUCTION, INC.
CONTRACTOR
BARNARD, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF BARNARD
VT ROUTE 12, MAJOR COLLECTOR
BRIDGE NO.: 25 PROJECT NO.: ER BRF 0241(39)

MATERIALS LIST

DATE: DEC. 18, 2013
SCALE: NOTED
CHKD: - DFTM: B.L.
JOB NO: 23413-013
DWG. NO: M1

F:\VT-Bridges\23413-13 Barnard\23413-M1.dwg, 1/16/2014 4:58:22 PM