T. Buck Construction, Inc.

249 Merrow Road, Auburn, Maine 04210-8319
(207) 783-6223 * (FAX) 783-3970

PRECAST CONCRETE ERECTION PLAN

Vermont Agency of Transportation

Bridge Replacement in town of Burke, VT
BRF 0269(13)

Submitted: April 22, 2015
REVISED: 5/11/15

Vermont Agency of Transportation

Reviewed by: Ron Gray

Date: 05/22/2015

- [x] CONFORMING
- [ ] CONFORMING AS NOTED
- [ ] NON-CONFORMING - RESUBMIT

Introduction

This project involves the removal of bridge 13 and portions of its abutments and foundation. Bridge 13 will be replaced with a precast structure, spanning 56 Feet over Dish Mill Brook, on new footings along the same alignment. Bridge 13 is located in the town of Burke, on VT Route 114, approximately .47 miles easterly of the Lyndon/Burke Town line. The width of the bridge will be increased to 36 feet – 10 inches.

The purpose of this plan is to describe T Buck Construction's intensions on setting the individual pieces of precast concrete to construct a new NEXT beam style bridge.

Details on Site

While the site is small in size, the major point of contention will be the relocated power lines. The new location of the lines allows the crane work to be completed but the new location of the lines will need to be focused on and great care will be taken when setting up the cranes to ensure compliance with all laws and safety regulations.

The area around the piles will be excavated to the specified elevation minus about 6" we plan to use stone dust or some other material that is easily compactable and easy to fine grade to dial in the elevation to set the abutment pieces on.

Once the abutment pieces are set and filled with rapid set, crane mats will be placed behind the abutments leaving approximately 6" of space to ensure no lateral pressure is applied to the abutments when setting the NEXT beams. The next beams tie into the abutment and rapid set concrete is used to create the integral design.

The approach slabs will be set at grade once the 'back wall' forms are stripped and everything is backfilled and fine graded to the specified elevation.

Details on Precast

Precast Abutment(s):
BU – AB1 = 35.19 tons (70,380 lbs)
BU – AB2 = 38.17 tons (36,340 lbs)
BU – AB3 = 29.43 tons (58,860 lbs)
BU – AB4 = 35.82 tons (71,640 lbs)

Precast NEXT Beams:
BU – NB1 = 47.52 tons (95,040 lbs)
BU – NB2 = 41.34 tons (82,680 lbs) (2 total)
BU – NB3 = 43.11 tons (86,220 lbs)

Precast Approach Slabs:
BU – AS1 = 12.09 tons (24,180 lbs) (2 total)
BU – AS2 = 12.09 tons (24,180 lbs) (2 total)
BU – AS3 = 13.45 tons (26,900 lbs)
BU – AS4 = 14.07 tons (28,140 lbs)
BU – AS5 = 12.45 tons (24,900 lbs)
BU – AS6 = 12.15 tons (24,300 lbs)

The approved shop drawings can be seen at the end of this plan.

Details on Crane(s)

The crane(s) that will set all the pieces are owned and operated by Keeley Crane Services out of Portland Maine.

To set abutments (all 4 pieces)
    Crane will be Grove GMK5275 with 90,300 lbs of counterweight
To set NEXT beams (all 4 beams)
    Crane on abutment 1 will be Grove GMK5275 with 169,700 lbs of counterweight
    Crane on abutment 2 will be Grove GMK5115 with 57,500 lbs of counterweight
To set approach slabs (all 8 pieces)
    Crane will be Grove GMK5115 with 28,400 lbs of counterweight

A brochure on the crane(s) can be found at the end of this plan.

Details on Rigging

PRECAST ABUTMENTS:
The lifting points on the abutments are separated by 15 feet along the top of each section. We will use endless slings that are at least 40' long connected directly to the crane block and then to a shackle at the abutment.

The sling angle will be approximately 80 degrees from horizontal

NEXT BEAMS:
We will use 60' slings rated for 60,000 lbs each that connect directly to the crane block and then to shackles at the lifting eyes located at 4 points (2 at each end of the beam).

The sling angle will be at least 60 degrees from horizontal.

APPRAOCH SLABS:
The lifting points for each approach slab section are located near the corners of the slab. We intend on using 40' endless slings connected to the crane block and to a special lifting device that grabs the 'nelson' type lifting device as shown on the approved shop drawings.

Data for all shackles and rigging can be seen at the end of this plan.

Summary of Information

ABUTMENTS	
Crane Make & Model	GROVE GMK5275
Heaviest piece of precast weight (BU-AB4)	71,640 lbs
Rigging Weight (assumed)	3,000 lbs
Maximum Total Weight	74,640 lbs
Maximum Working Radius	40 FT
Counterweight	90,300
Outrigger Spread	26’ 7”
Boom Length	59.1 FT
Crane Capacity at Specified Radius	102 kips (73%)
NEXT BEAMS (during unloading)	
Crane Make & Model	GROVE GMK5275
Heaviest piece of precast weight (BU-NB1)	95,040 lbs
Rigging Weight (assumed)	4,000 lbs
Maximum Total Weight	99,040 lbs
Maximum Working Radius	45 FT
Counterweight	169,700
Outrigger Spread	26’ 7”
Boom Length	74.3 FT
Crane Capacity at Specified Radius	106 kips (93%)
NEXT BEAMS (during 2 crane setting in place)	
Crane(s) Make & Model	GROVE GMK5275 / GMK5115
Heaviest piece of precast weight (BU-NB1)	95,040 lbs
Rigging Weight (assumed)	4,000 lbs / 3,000 lbs
Maximum Total Weight	51,520 lbs / 50,520 lbs
Maximum Working Radius	30 FT
Counterweight	169,700 lbs / 57,500 lbs
Outrigger Spread	26’ 7”
Boom Length	74.3 FT / 52.2 FT
Crane Capacity at Specified Radius	157 kips (33%) / 75 kips (67%)
APPROACH SLABS	
Crane Make & Model	GROVE GMK5115
Heaviest piece of precast weight (BU-AS4)	28,140 lbs
Rigging Weight (assumed)	3,000 lbs
Maximum Total Weight	31,140 lbs
Maximum Working Radius	45 FT
Counterweight	28,400 lbs
Outrigger Spread	26’ 7”
Boom Length	66 FT
Crane Capacity at Specified Radius	47 kips (66%)

General Sequence / Procedure

Day 1

1) Setup crane on abutment 2 side
2) Set both abutment pieces
3) Breakdown crane and move to other side
4) Commence placing rapid set in abutment 2 cavities
5) Setup crane on abutment 1 side
6) Set both abutment pieces
7) Commence placing rapid set in abutment 1 cavities

Day 2

1) Post tension both abutments
2) Set crane mats behind both abutments and backfill against them

Day 3

1) Setup both cranes as close to bridge as possible
2) Deliver and set all 4 NEXT beams
    a. Crane A1 picks off trailer and swings beam across river. Set beam down on both abutments.
    b. Re-Rig beams into two crane pick configuration
    c. Set beam in specified location
3) Commence forming and placing rapid set at ends and between pieces

Day 4

1) place and cure rapid set at both ends
2) remove crane mats from behind abutments

Day 5

1) strip forms on both ends
2) backfill both abutments to approach slab elevation

Day 6

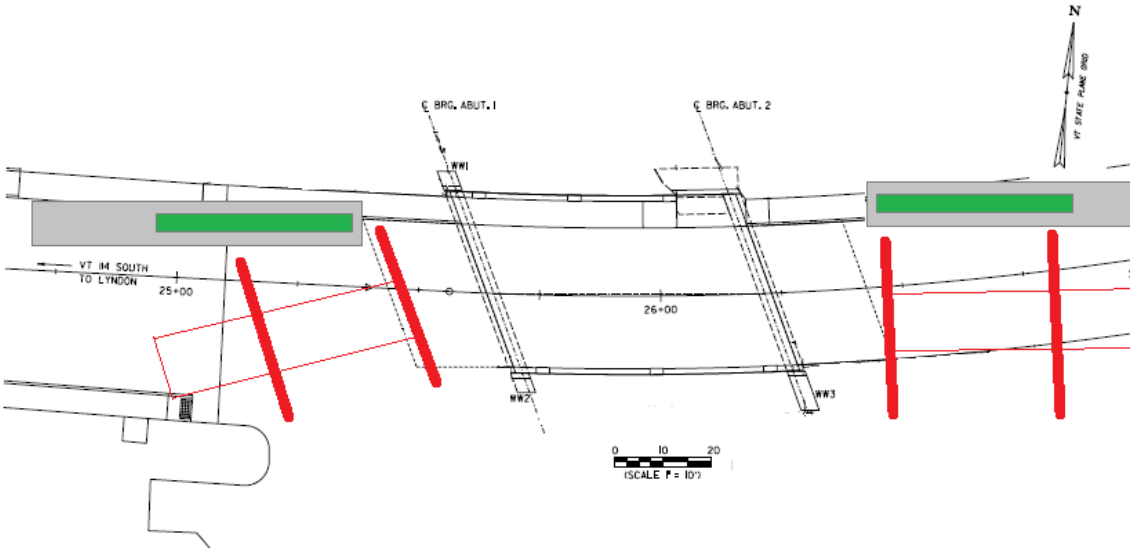
1) finish backfill and fine grade for approach slabs

Day 7

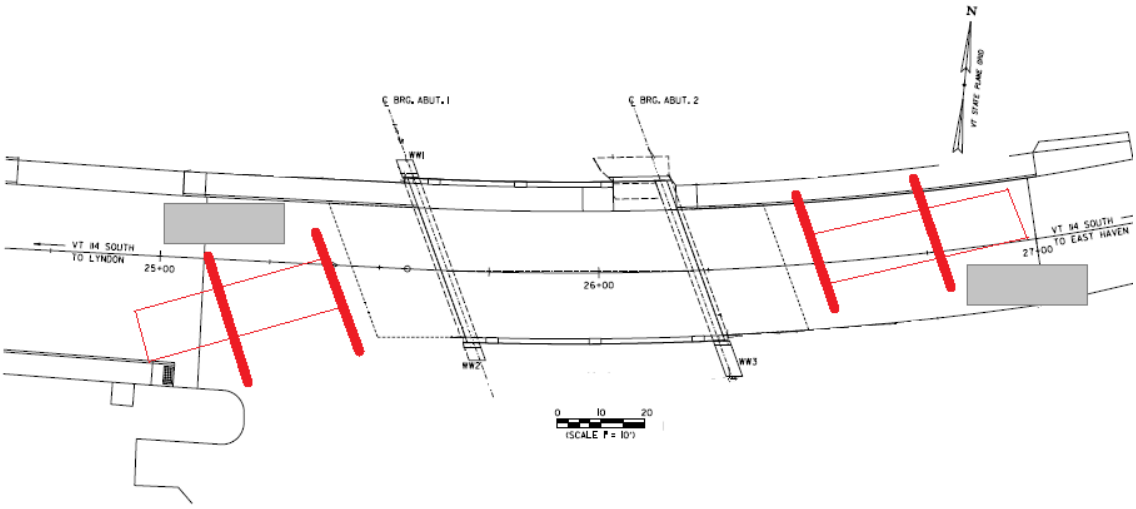
1) setup crane and set abutment 2 approach slab pieces
2) breakdown crane and move to other side
3) commence placing rapid set between pieces
4) setup crane and set abutment 1 approach slab pieces
5) commence placing rapid set between pieces

APPENDIX A

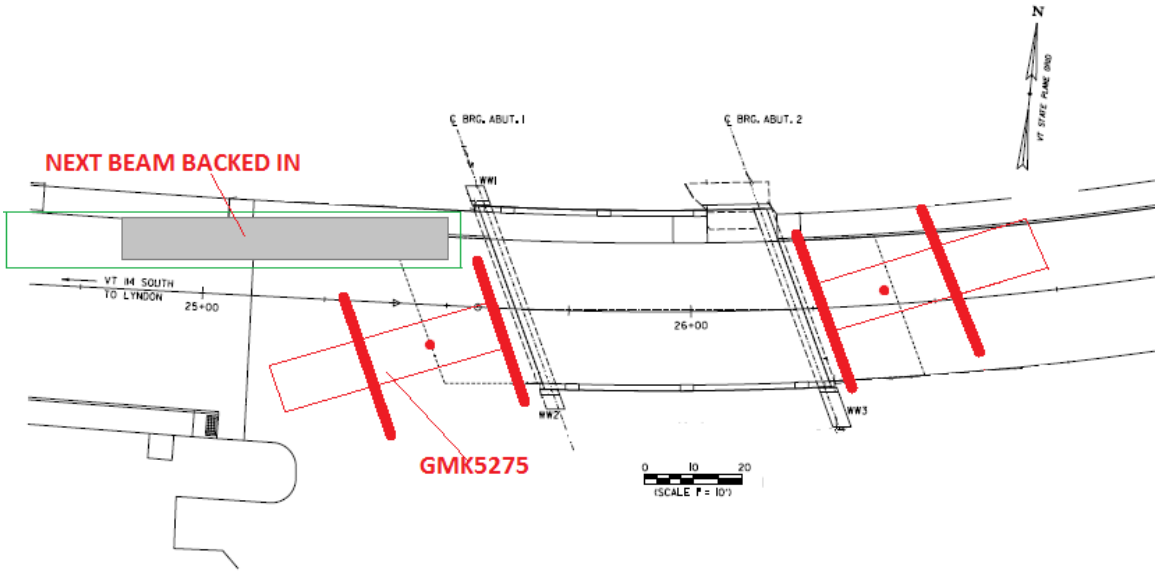
Sketch(s) of Site



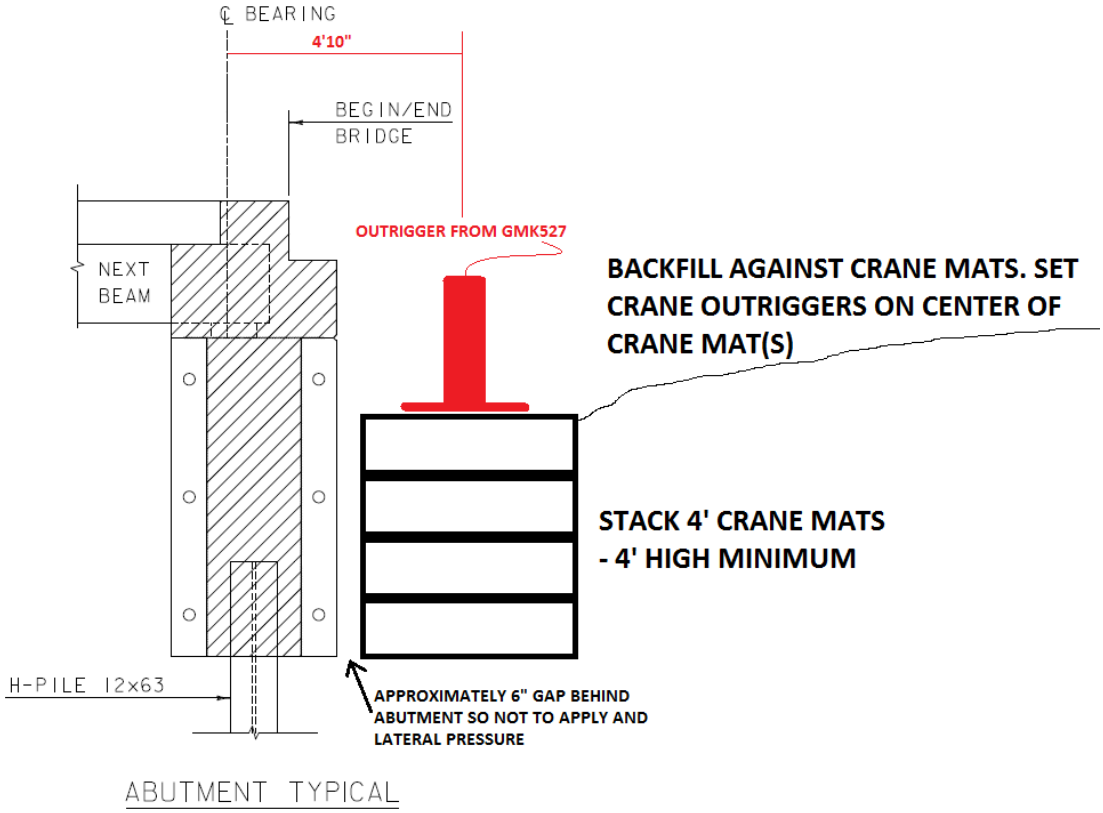
Basic configuration to set abutment pieces



Basic configuration to set approach slab pieces



Basic configuration to set NEXT beams



APPENDIX B

Rigging Information

SCREW PIN

G-209 S-209

Screw pin anchor shackles meet the requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class 2.

Load Rated

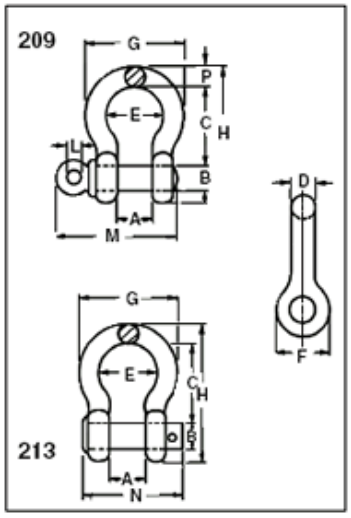
- Working Load limit permanently shown on every shackle.
- Forged—Quenched and Tempered, with alloy pins.
- Capacities 1/3 thru 55 tons.
- Look for the red pin . . . the mark of genuine Crosby quality.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certification available when requested at the time of order.
- Hot Dip galvanized or Self Colored.
- Fatigue rated.

ROUND PIN

G-213 S-213

Round pin anchor shackles meet the requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class 1.

Nominal Size (in.)	Working Load Limit* (tons)	Stock No.				Weight Each (lbs.)	
		G-209 Galv.	S-209 S.C.	G-213 Galv.	S-213 S.C.	G-209 S-209	G-213 S-213
3/16	†1/3	1018357	—	—	—	.06	—
1/4	1/2	1018375	1018384	1018017	1018026	.10	.13
5/16	3/4	1018393	1018400	1018035	1018044	.19	.18
3/8	1	1018419	1018428	1018053	1018062	.31	.29
7/16	1 1/2	1018437	1018446	1018071	1018080	.38	.38
1/2	2	1018455	1018464	1018099	1018106	.72	.71
5/8	3 1/4	1018473	1018482	1018115	1018124	1.37	1.50
3/4	4 3/4	1018491	1018507	1018133	1018142	2.35	2.32
7/8	6 1/2	1018516	1018525	1018151	1018160	3.62	3.49
1	8 1/2	1018534	1018543	1018179	1018188	5.03	5.00
1 1/8	9 1/2	1018552	1018561	1018197	1018204	7.41	6.97
1 1/4	12	1018570	1018589	1018213	1018222	9.50	9.75
1 3/8	13 1/2	1018598	1018605	1018231	1018240	13.53	13.25
1 1/2	17	1018614	1018623	1018259	1018268	17.20	17.25
1 3/4	25	1018632	1018641	1018277	1018286	27.78	29.46
2	35	1018650	1018669	1018295	1018302	45.00	45.75
2 1/2	†55	1018678	1018687	—	—	85.75	—



Nominal Size (in.)	Working Load Limit* (tons)	Dimensions (in.)												Tolerance +/−	
		A	B	C	D	E	F	G	H	L	M	N	P	C	A
3/16	†1/3	.38	.25	.88	.19	.60	.56	.98	1.47	.16	1.12	—	.19	.06	.06
1/4	1/2	.47	.31	1.13	.25	.78	.61	1.28	1.84	.19	1.38	1.34	.25	.06	.06
5/16	3/4	.53	.38	1.22	.31	.84	.75	1.47	2.09	.22	1.66	1.59	.31	.06	.06
3/8	1	.66	.44	1.44	.38	1.03	.91	1.78	2.49	.25	2.03	1.88	.38	.13	.06
7/16	1 1/2	.75	.50	1.69	.44	1.16	1.06	2.03	2.91	.31	2.38	2.13	.44	.13	.06
1/2	2	.81	.63	1.88	.50	1.31	1.19	2.31	3.28	.38	2.69	2.38	.50	.13	.06
5/8	3 1/4	1.06	.75	2.38	.63	1.69	1.50	2.94	4.19	.44	3.34	2.91	.69	.13	.06
3/4	4 3/4	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	3.44	.81	.25	.06
7/8	6 1/2	1.44	1.00	3.31	.88	2.28	2.09	4.03	5.83	.50	4.50	3.81	.97	.25	.06
1	8 1/2	1.69	1.13	3.75	1.00	2.69	2.38	4.69	6.56	.56	5.07	4.53	1.06	.25	.06
1 1/8	9 1/2	1.81	1.25	4.25	1.16	2.91	2.69	5.16	7.47	.63	5.59	5.13	1.25	.25	.06
1 1/4	12	2.03	1.38	4.69	1.29	3.25	3.00	5.75	8.25	.69	6.16	5.50	1.38	.25	.06
1 3/8	13 1/2	2.25	1.50	5.25	1.42	3.63	3.31	6.38	9.16	.75	6.84	6.13	1.50	.25	.13
1 1/2	17	2.38	1.63	5.75	1.54	3.88	3.63	6.88	10.00	.81	7.35	6.50	1.62	.25	.13
1 3/4	25	2.88	2.00	7.00	1.84	5.00	4.19	8.86	12.34	1.00	9.08	7.75	2.25	.25	.13
2	35	3.25	2.25	7.75	2.08	5.75	4.81	9.97	13.68	1.22	10.34	8.75	2.40	.25	.13
2 1/2	†55	4.13	2.75	10.50	2.71	7.25	5.69	12.87	17.84	1.38	13.00	—	3.13	.25	.25

† Furnished in screw pin only.

* NOTE: Maximum Proof Load is 2.0 times the Working Load Limit. Minimum Ultimate Strength is 6 times the Working Load Limit.

SINGLE-PATH ROUND SLINGS

		RATED CAPACITIES (LBS.)				
CODE	COLOR	VERTICAL	CHOKER	BASKET	WIDTH	Approx. Weight lbs. per ft.
SP300	Purple	3,000	2,400	6,000	2"	.30
SP450	Black	4,500	3,600	9,000	2"	.45
SP600	Green	6,000	4,800	12,000	2"	.48
SP900	Yellow	9,000	7,200	18,000	2"	.70
SP1200	Gray	12,000	9,600	24,000	3"	.90
SP1400	Red	14,000	11,200	28,000	3"	.95
SP1700	Brown	17,000	13,600	34,000	3"	1.20
SP2200	Blue	22,000	17,600	44,000	3"	1.40
SP2600	Orange	26,000	20,800	52,000	4"	1.70
SP3200	Orange	32,000	25,600	64,000	4"	1.90
SP5000	Orange	50,000	40,000	100,000	5"	2.70
SP6000	Orange	60,000	48,000	120,000	5"	3.00

Sling cover color can change to meet customer specifications. **DO NOT EXCEED RATED CAPACITY.**

LIFTING FIBERS – Endless loops of polyester load bearing yarn

COVER – Polyester color cover
Aramid outer covers also available for heat protection

LABEL – Plastic or leather available - Private labeling also

CAPACITIES – 3000 pounds to 60,000 pounds vertical rated capacity

DESIGN FACTOR – 5 to 1

COLORS – Wide variety available (including BLACK for stage rigging)

CONFIGURATIONS – Roundsling or eye-and-eye

APPLICATIONS – Vertical, basket or choker

INSPECTION – Slings should be examined throughout their length for abrasion, cuts, heat damage, fitting distortion or damage, and tag legibility. Abrasion, heat damage, or cuts to the cover may indicate a loss of strength to the load core. If any doubts are held by the inspector, the sling should be taken out of service. Slings removed from service that are not capable of repair shall be destroyed and rendered completely unfit for future use.

Sling can fail if damaged, misused or overloaded. Inspect before use. Damaged sling shall not be used. Use only if trained. Do not exceed rated capacity. Protect sling from being cut by load edges, corners, protrusions and abrasive surfaces. Avoid exposure to acid, alkali and temperature over 180°F. DEATH or INJURY can occur from improper use or maintenance.

WARNING

APPENDIX C

Crane Brochure(s)

Grove Manitowoc National Crane Potain

Grove GMK5275

Product Guide

Features

- 13,3 m - 68 m (44 ft - 223 ft) seven-section full power MEGAFORM™ boom with TWIN-LOCK™ pinning
- 12 m - 21 m (39 ft - 69 ft) hydraulic offset bi-fold swingaway
- 2 x 8 m (26 ft) intermediate lattice inserts
- 77 t (169,700 lb) counterweight with hydraulic removal system
- MEGATRAK™ independent hydro-pneumatic suspension

Features

MEGATRAK™

The MEGATRAK™ suspension system is the best off road driveline available on the market today. The system's versatility and performance allows the GMK5275 to operate as a true all-terrain crane. The MEGATRAK™ independent suspension and all-wheel steer system allows wheels to remain on the ground at all times so stresses and weight are not continually transferred between axles. MEGATRAK™ provides true ground clearance where others just raise the chassis.

Other benefits of the MEGATRAK™ system are:

- A reliable suspension system
- Excellent job site maneuverability with all-wheel steering
- Commonality among almost all models
- A driveline that remains aligned at all times
- A steering linkage system that is protected against damage
- Constant tire contact for equal tire wear
- Reduced maintenance

TWIN-LOCK™

Boom pinning mechanism automatically pins the sections in position using two horizontal pins.

ECOS

Electronic Crane Operating System - ECOS enables control of the entire crane's principle operations. Simple programming eases lift planning and a supply of essential information allows full concentration on the lift itself.

EKS 5

The EKS 5 monitors the lifting conditions of the crane at all times and provides a full graphic display, rear lighting, graphic of boom telescoping percentage, and load charts.

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Specifications
North American version

Superstructure

Boom

13,3 m - 68 m (44 ft - 223 ft) 7-section, full power MEGAFORM™ boom with TWIN-LOCK™ Pinning.

Maximum tip height: 71 m (233 ft).

Boom nose

Eight nylatron sheaves, mounted on heavy duty tapered roller bearings with removable pin-type rope guards. Quick reeve boom nose. Removable auxiliary boom nose with removable pin type rope guard.

Boom elevation

Single lift cylinder with safety valve provides boom angle from -1.5° to +83°.

*Hydraulic offsettable lattice extension

12 m - 21 m (39 ft – 69 ft) bi-fold lattice swingaway extension, hydraulically offsettable and luffing under load, 5°- 40°.
Maximum tip height: 92 m (302 ft)

*Lattice inserts

2 x 8 m (26 ft) inserts for use with lattice swingaway extension to increase length to 29 m (95 ft) or 37 m (121 ft)
Maximum tip height: 108 m (354 ft)

Load moment and anti-two block system

Load moment and anti-two block system with audio/visual warning and control lever lockout provides electronic display of boom angle, length, radius, tip height, relative load moment, maximum permissible load, load indication and warning of impending two-block condition.

Cab

All aluminum constructed cab with acoustical lining, hydraulic tilted to 20°. Includes tinted safety glass, adjustable operator's seat, opening windows at side and rear, hinged windshield with wiper, sun visor and window shade. Other features include hot water heater/defroster, armrest integrated crane controls and ergonomically arranged instrumentation.

Swing

3 planetary gear boxes with fixed displacement axial piston motors. Infinitely variable to 1.3 rpm. Free swing or hydrostatically engaged brake controlled by swing lever. Swing brake selected by foot operated switch.

Counterweight

77 t (169,700 lb) consisting of various sections with hydraulic installation/removal system controlled from the superstructure cab.

Engine

Cummins QSB6.7, 6 cylinder

Horsepower: 164 kW (220 bhp) at 2200 rpm

Torque: 949 Nm (700 ft/lb) at 1500 rpm

Engine emissions: EPA/CARB/EUROMOT (off road)

Fuel tank capacity

230 L (61 gal)

Electrical system

3 phase alternator: 28V/80A

2 batteries: 12V/170Ah

Hydraulic system

3 (three) separate circuits, 1 (one) axial piston variable displacement pump (load sensing) with electronic power limiting control for crane functions and 1 (one) double gear pump for slewing. Thermostatically controlled oil coolers keep oil at optimum operating temperature.

Hydraulic tank capacity: 915 L (242 gal)

Denotes optional equipment

Superstructure continued

Hoist

Main and auxiliary hoist are powered by axial piston motor with planetary gear and brake. "Thumb-thumper" hoist drum rotation indicator alerts operator of hoist movement.

	Main	Auxiliary
Rope length:	290 m (951 ft)	290 m (951 ft)
Rope diameter:	22 mm	22 mm
Line speed:	125 m/min (410 fpm)	125 m/min (410 fpm)
Line pull:	93.5 kN (21,020 lb)	93.5 kN (21,020 lb)

*Optional equipment

- Work lights, mounted on boom base section
- Boom mounted aircraft warning light
- Radio/CD player for superstructure cab
- Stainless steel exhaust system with spark arrestor
- Air conditioning
- Hook blocks/headache ball
- Engine independent diesel cab heater, with engine pre-heater. Includes 24 hour timer.
- Additional cab mounted work light
- Strobe light
- Working range limiter
- Data logger
- 360° NYC swing lock
- 2,0 m (6.6 ft) side stowed heavy duty jib with 19 t (41,900 lb) maximum capacity using two parts of line, offset 0° and 25°
- 2,3 m (7.5 ft) side stowed heavy duty jib with 38 t (83,000 lb) maximum capacity using four parts of line, offset 8° and 30°
- EKS5 Light semi-graphic display in lieu of standard EKS5

Carrier

Chassis

Box type, torsion resistant frame is fabricated from high strength steel.

Outrigger system

Four hydraulic two stage outrigger beams with vertical cylinders and outrigger pads, 600 mm (23.6 in) square . Outrigger can be set in 5 positions:

Full: 8,1 m (26.6 ft)

Partial: 6,8 m (22.4 ft)

Partial: 5,6 m (18.4 ft)

Partial: 4,4 m (14.4 ft)

Retracted: 2,7 m (9.0 ft)

Independent horizontal and vertical movement controlled from each side of carrier and the superstructure cab. Electronic crane level indicators. Hydraulic disconnect for all outrigger beams.

Transmission

Allison automatic 4000 SP, 6 speeds forward, 1 reverse

2 speed transfer case

Drive/steer

10x6x10

Axles

1st axle line – steer

2nd axle line – steer/(optional drive)

3rd axle line – drive/steer (permanent drive with 10x6, disconnects for highway with 10x8)

4th axle line – drive/steer (connects for all wheel steer)

5th axle line – drive/steer

Drive axles with planetary hub reduction and center mounted gearing. Standard inter-axle and cross axle differential locks.

Suspension

Grove exclusive MEGATRAK™ suspension. Independent hydro-pneumatic system acting on all wheels with hydraulic lockout. Suspension can be raised 160 mm (6.3 in) or lowered 120 mm (4.7 in), both longitudinally and transversely. Features an automatic leveling system for highway travel.

Specifications
North American version

Carrier continued

Tires

10 tires, 16.00R25 (Vehicle width – 3,0 m [9.8 ft])

Steering

Dual circuit, hydraulic power assisted steering system. Transfer case mounted, ground driven emergency steering pump. Axles 1, 2, 3 and 5 steer on highway. Separate steering (steer by wire) of the 4th and 5th axles for all wheel and crab steering, controlled by an electronic rocker switch.

Engine

Cummins QSX15, 6 cylinder

Horsepower: 399 kW (535 bhp) at 2100 rpm

Torque: 2539 Nm (1873 ft/lb) at 1400 rpm

Engine emissions: EPA /CARB/EUROMOT (off road)

Standard compression brake, disconnected when hydraulic transmission retarder is optioned

Fuel tank capacity

397 L (105 gal)

Brakes

Service brakes: pneumatic dual circuit acting on all wheels.

Parking brake: pneumatically operated spring loaded brake acting on axle lines 2, 3, 4 and 5.

Air dryer.

Cab

Two-man, aluminum construction with the following features: safety glass, driver seat with pneumatic suspension, engine-dependent hot water heater, power windows, heated rear view mirrors, complete instrumentation and driving controls.

Electrical system

24V system with three phase alternator, 28V/100A

2 batteries, 12V/170 Ah

Maximum speed

85 km/h (53 mph)

Gradeability (theoretical)

50% - 14.00 tires

45% - 16.00/20.5 tires

Miscellaneous standard equipment

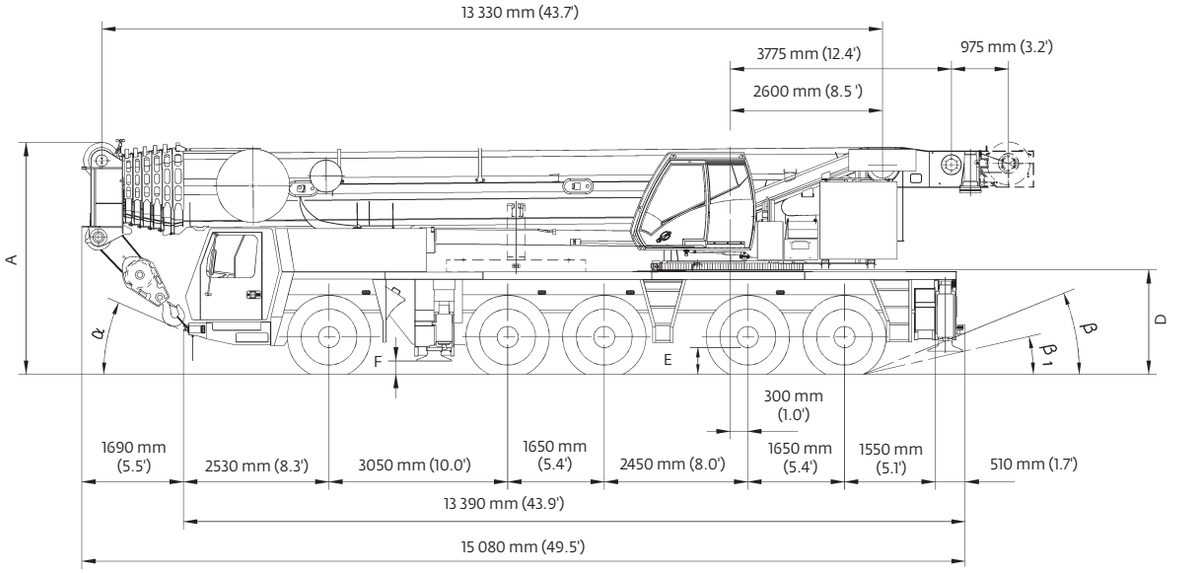
Work light; tool kit; fire extinguishers; auxiliary boom nose; radio/CD player in carrier cab, heated rear view mirrors, wind speed indicator.

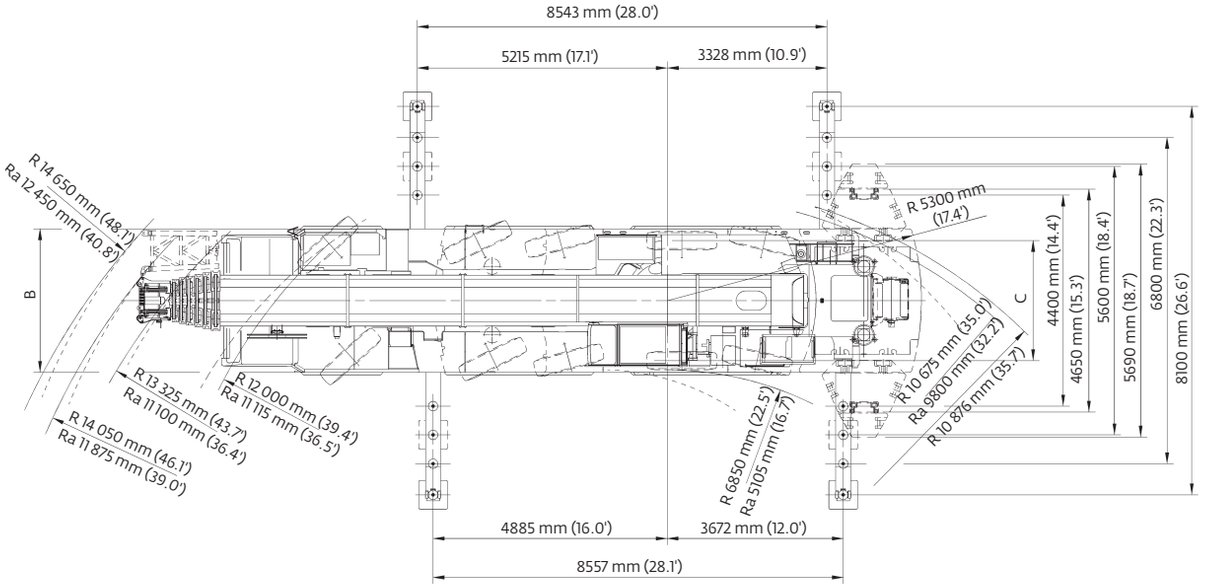
*Optional equipment

- Stainless steel exhaust system with spark arrestor
- Air conditioning
- 14.00R25 tires (vehicle width. 3 m [9.8 ft])
- 20.5R25 tires (vehicle width. 3,1 m [10.2 ft])
- 10x8x10 drive/steer
- Transmission retarder (in lieu of engine compression brake)
- Engine independent diesel cab heater, with engine pre-heater. Includes 24 hour timer.
- Strobe light
- Work lights for outriggers
- Spare tire and wheel with carry bracket
- Rear mounted stowage box
- Outrigger pad load indicator
- Trailer hitch
- Steel outrigger pads

Denotes optional equipment

Dimensions
North American version



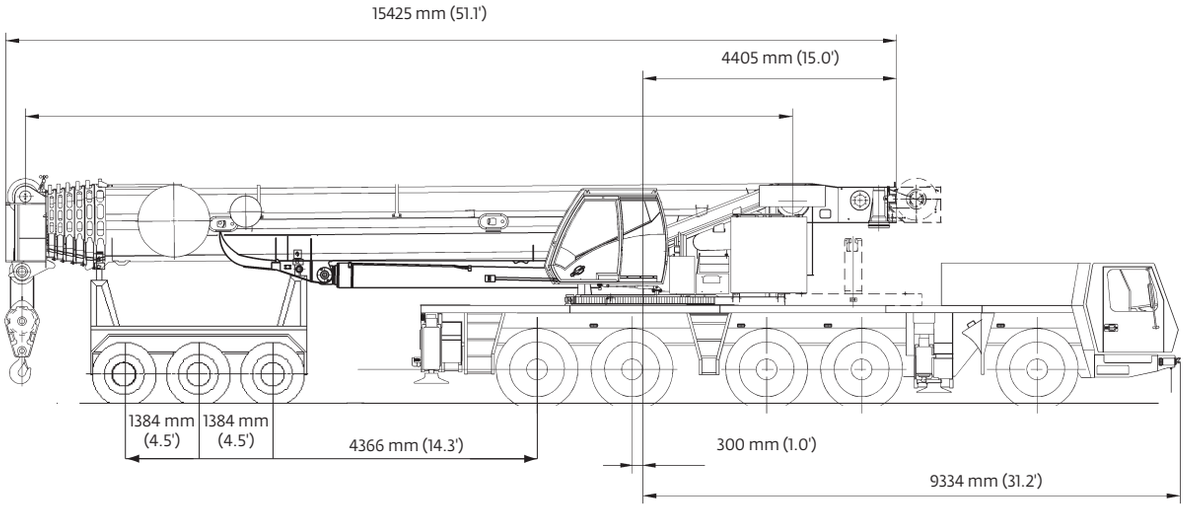


Tires	A	A *130 mm (0.4')	B	C	D	E	F	α	β	β 1
14.00 R25	3950 mm (13')	3820 mm (12.5')	2990 mm (9.8')	2570 mm (8.4')	1780 mm (5.8')	400 mm (1.3')	228 mm (0.7')	23°	22°	13°
16.00 R25	4000 mm (13.1')	3870 mm (12.7')	3000 mm (9.8')	2510 mm (8.2')	1830 mm (6.0')	450 mm (1.5')	258 mm (0.8')	25°	24°	15°
20.5 R25	4000 mm (13.1')	3870 mm (12.7')	3000 mm (9.8')	2530 mm (8.3')	1830 mm (6.0')	450 mm (1.5')	258 mm (0.8')	25°	24°	15°

Ra = Radius all wheels steered
*Lowered

Weights
North American version

Trailing boom



Basic weights - kg (lb)	Axles 1-3		Axles 4 and 5		Dolly		Total	
GMK 5275 Cummins power with: 20.5R25 tires, 10x8x10 drive/steer, 11 m - 18m (36 ft - 59 ft) hydraulic luffing swingaway, 2nd oil cooler, outrigger pads, auxiliary hoist, driver and tanks filled, 3 axle boom dolly (4309 kg / 9400 lb)	30 877	(68,072)	18 123	(39,954)	20 079	(44,267)	69 079	(152,293)
Additions:								
5000 kg (11 000 lb) section pinned to superstructure (special counterweight version)	4845	(10,681)	155	(342)	0	(0)	5000	(11,023)
11 000 kg (24,250 lb) base section stowed on carrier	10 660	(23,501)	340	(750)	0	(0)	11 000	(24,251)
Removals:								
Brackets for hydraulic swingaway incl. hose reel	- 9	(-20)	- 4	(-9)	- 257	(-567)	- 270	(-595)
11 m - 18 m (36 ft - 59 ft) hydraulic swingaway	- 360	(-794)	- 161	(-355)	-1489	(-3283)	-2010	(-4431)
Front outriggers	-2165	(-4773)	275	(606)	0	(0)	-1890	(-4167)
Rear outriggers	1031	(2273)	-3371	(-7432)	0	(0)	-2340	(-5159)
Front and rear outrigger floats	- 70	(-154)	- 130	(-287)	0	(0)	- 200	(-441)
Substitutions:								
10x6x10 drive/steer	- 319	(-703)	- 36	(-79)	0	(0)	- 355	(-783)
14.00R25 tires	- 612	(-1349)	- 408	(-899)	0	(0)	-1020	(-2249)
16.00R25 tires	- 252	(-556)	- 168	(-370)	0	(0)	- 420	(-926)

Boom over front

Basic Weights - kg (lb)	Axles 1 - 3		Axles 4 and 5		Total	
Cummins power, 16.00R25 tires, 10x6x10 drive/steer, 2nd oil cooler, outrigger pads, driver and tanks filled	37 809	(83,355)	22 126	(48,779)	59 935	(132,134)
Additions:						
10x8x10 drive/steer	319	(703)	36	(79)	355	(783)
Spare wheel 14.00 R25 XGC steel rim with stowage	- 124	(-273)	384	(847)	260	(573)
Spare wheel 16.00 R25 XGC steel rim with stowage	- 153	(-337)	473	(1043)	320	(705)
Spare wheel 20.5 R25 XGC steel rim with stowage	- 173	(-381)	535	(1179)	362	(798)
Brackets for hydraulic swingaway	91	(201)	- 11	(-24)	80	(176)
Hose reel + parts for hydraulic swingaway	327	(721)	- 137	(-302)	190	(419)
11 m - 18 m (36 ft - 59 ft) hydraulic swingaway	2295	(5060)	- 285	(-628)	2010	(4431)
Auxiliary hoist	-1154	(-2544)	2894	(6380)	1 740	(3836)
11 000 kg (24,250 lb) base plate stowed on carrier	10 611	(23,393)	339	(747)	10 950	(24,141)
5000 kg (11,000 lb) slab fixed to turntable (special counterweight version)	-2748	(-6058)	7728	(17,037)	4980	(10,979)
Substitutions:						
14.00R25 tires	- 360	(-794)	- 240	(-529)	- 600	(-1323)
20.5R25 tires	252	(556)	168	(370)	420	(926)
Removals:						
Boom assembly w/o lift cylinder	-19 776	(-43,599)	-1359	(-2996)	-21 135	(-46,595)
Front outriggers	-2187	(-4822)	277	(611)	-1910	(-4211)
Rear outriggers	1022	(2253)	-3342	(-7368)	-2320	(-5115)
Front and rear outrigger floats	- 70	(-154)	- 130	(-287)	- 200	(-441)

Superstructure

Boom

13,3 m - 68 m (44 ft - 223 ft) 7-section, full power MEGAFORM™ boom with TWINLOCK™ Pinning.

Maximum tip height: 71 m (233 ft)

Boom nose

Eight nylatron sheaves, mounted on heavy duty tapered roller bearings with removable pin-type rope guards. Quick reeve boom nose. Removable auxiliary boom nose with removable pin type rope guard.

Boom elevation

Single lift cylinder with safety valve provides boom angle from -1.5° to +83°.

*Hydraulic offsettable lattice extension

12 m - 21 m (39 ft – 69 ft) bi-fold lattice swingaway extension, hydraulically offsettable and luffing under load, 5°- 40°.

Maximum tip height: 92 m (302 ft)

*Lattice inserts

2 x 8 m (26 ft) inserts for use with lattice swingaway extension to increase length to 29 m (95 ft) or 37 m (121 ft)

Maximum tip height: 108 m (354 ft)

Load moment and anti-two block system

Load moment and anti-two block system with audio/visual warning and control lever lockout provides electronic display of boom angle, length, radius, tip height, relative load moment, maximum permissible load, load indication and warning of impending two-block condition.

Cab

All aluminum constructed cab with acoustical lining, hydraulic tilted to 20°. Includes tinted safety glass, adjustable operator's seat, opening windows at side and rear, hinged windshield with wiper, sun visor and window shade. Other features include diesel heater/defroster, armrest integrated crane controls and ergonomically arranged instrumentation.

Swing

3 planetary gear boxes with fixed displacement axial piston motors. Infinitely variable to 1.3 rpm. Free swing or hydrostatically engaged brake controlled by swing lever. Swing brake selected by foot operated switch.

Counterweight

77 t (169,700 lb) consisting of various sections with hydraulic installation/removal system controlled from the superstructure cab.

Engine

Mercedes OM 906 LA, 6 cylinder

Horsepower: 170 kW (228 bhp) at 2200 rpm

Torque: 810 Nm (597 ft/lb) at 1200 rpm

Engine emissions: EPA/CARB/EUROMOT (off road)

Fuel tank capacity

Supplied from chassis fuel tank.

Electrical system

3 phase alternator: 28V/80A

2 batteries: 12V/170Ah

Hydraulic system

2 separate circuits, 1 axial piston variable displacement pump (load sensing) with electronic power limiting control for crane functions and 1 double gear pump for slewing. Thermostatically controlled oil coolers keep oil at optimum operating temperature.

Hydraulic tank capacity: 915 L (242 gal)

Specifications
European version

Superstructure continued

Hoist

Main and auxiliary hoist are powered by axial piston motor with planetary gear and brake. "Thumb-thumper" hoist drum rotation indicator alerts operator of hoist movement.

	Main	Auxiliary
Rope length:	290 m (951 ft)	290 m (951 ft)
Rope diameter:	22 mm	22 mm
Line speed:	125 m/min (410 fpm)	125 m/min (410 fpm)
Line pull:	93.5 kN (21,020 lb)	93.5 kN (21,020 lb)

*Optional equipment

- Work lights, mounted on boom base section
- Boom mounted aircraft warning light
- Radio/CD player for superstructure cab
- Stainless steel exhaust system with spark arrestor
- Air conditioning
- Hook blocks/headache ball
- Engine independent diesel cab heater, with engine pre-heater. Includes 24 hour timer.
- Additional cab mounted work light
- Strobe light
- Working range limiter
- Data logger
- 360° NYC swing lock
- 2,0 m (6.6 ft) side stowed heavy duty jib with 19 t (41,900 lb) maximum capacity using two parts of line, offset 0° and 25°
- 2,3 m (7.5 ft) side stowed heavy duty jib with 38 t (83,000 lb) maximum capacity using four parts of line, offset 8° and 30°
- EKS5 Light semi-graphic display in lieu of standard EKS5

Carrier

Chassis

Box type, torsion resistant frame is fabricated from high strength steel.

Outrigger system

Four hydraulic two stage outrigger beams with vertical cylinders and outrigger pads, 600 mm (23.6 in) square. Outrigger can be set in 5 positions:

Full:	8,1 m (26.6 ft)
Partial:	6,8 m (22.3 ft)
Partial:	5,6 m (18.4 ft)
Partial:	4,4 m (14.4 ft)
Retracted:	2,7 m (9.0 ft)

Independent horizontal and vertical movement controlled from each side of carrier and the superstructure cab. Electronic crane level indicators. Hydraulic disconnect for all outrigger beams

Transmission

Allison automatic 4000 SP, 6 speeds forward, 1 reverse

2 speed transfer case

Drive/steer

10 x 6 x 10

Axles

1st axle line – steer

2nd axle line – steer/(optional drive)

3rd axle line – drive/steer (permanent drive with 10 x 6, disconnects for highway with 10 x 8)

4th axle line – drive/steer (connects for all wheel steer)

5th axle line – drive/steer

Drive axles with planetary hub reduction and center mounted gearing. Standard inter-axle and cross axle differential locks.

Suspension

Grove exclusive MEGATRAK™ suspension. Independent hydro-pneumatic system acting on all wheels with hydraulic lockout. Suspension can be raised 160 mm (6.3 in) or lowered 120 mm (4.7 in), both longitudinally and transversely. Features an automatic leveling system for highway travel.

Denotes optional equipment

Carrier continued

Tires

10 tires, 16.00R25 (Vehicle width – 3,0 m [9.8 ft])

Steering

Dual circuit, hydraulic power assisted steering system. Transfer case mounted, ground driven emergency steering pump. Axles 1, 2, 3 and 5 steer on highway. Separate steering (steer by wire) of the 4th and 5th axles for all wheel and crab steering, controlled by an electronic rocker switch.

Engine

Mercedes OM 502 LA, 8 cylinder

Horsepower: 420 kW (563 bhp) at 1800 rpm

Torque: 2700 Nm (1991 ft/lb) at 1200 rpm

Engine emissions: EPA/CARB/EUROMOT (off road)

Fuel tank capacity

515 L (136 gal). Supplies superstructure and carrier engines.

Brakes

Service brakes: pneumatic dual circuit acting on all wheels.

Parking brake: pneumatically operated spring loaded brake acting on axle lines 2, 3, 4 and 5.

Air dryer

Cab

Two-man, aluminum construction with the following features: safety glass, driver seat with pneumatic suspension, engine-dependent hot water heater, power windows, heated rear view mirrors, complete instrumentation and driving controls.

Electrical system

24V system with three phase alternator, 28V/100A

2 batteries, 12V/170 Ah

Maximum speed

85 km/h (53 mph)

Gradeability (theoretical)

50% - 14.00 tires

45% - 16.00/20.5 tires

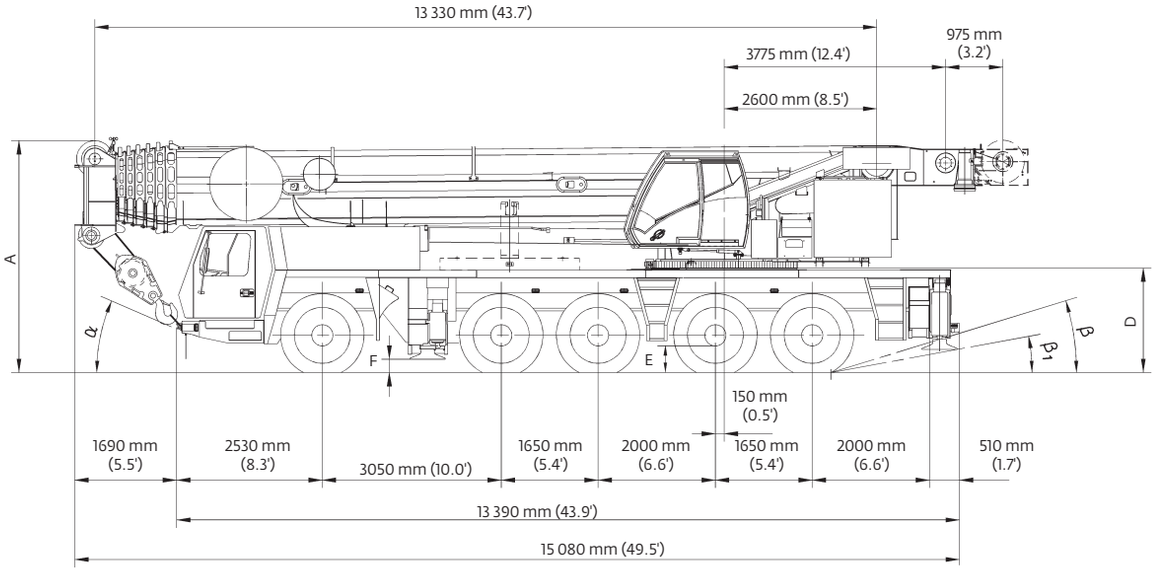
Miscellaneous standard equipment

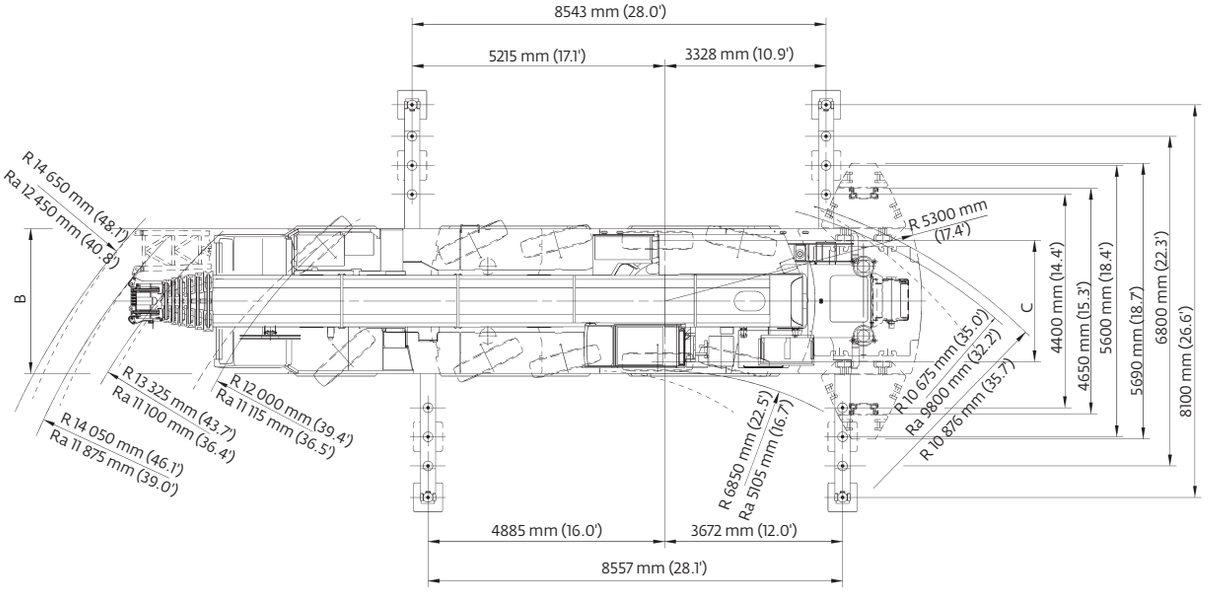
Work light; tool kit; fire extinguishers; auxiliary boom nose; radio /CD player in carrier cab, heated rear view mirrors, wind speed indicator.

*Optional equipment

- Stainless steel exhaust system with spark arrestor
- Air conditioning
- 14.00R25 tires (vehicle width. 3 m [9.8 ft])
- 20.5R25 tires (vehicle width. 3,1 m [10.2 ft])
- 10x8x10 drive/steer
- Transmission retarder (in lieu of engine compression brake)
- Engine independent diesel cab heater, with engine pre-heater. Includes 24 hour timer.
- Strobe light
- Work lights for outriggers
- Spare tire and wheel with carry bracket
- Rear mounted stowage box
- Outrigger pad load indicator
- Trailer hitch
- Steel outrigger pads

Dimensions
European version



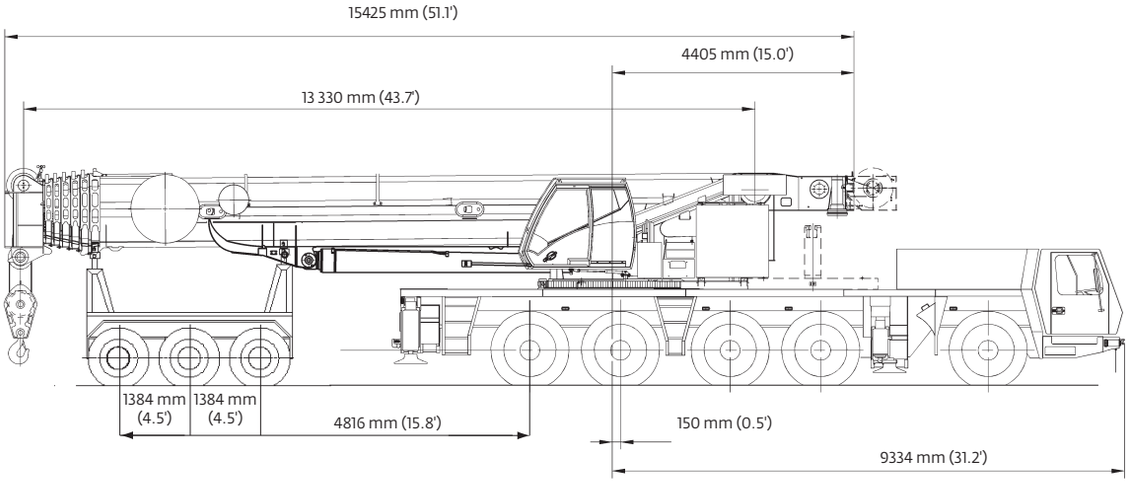


Tires	A	A *130 mm (0.4')	B	C	D	E	F	α	β	β 1
14.00 R25	3950 mm (13')	3820 mm (12.5')	2990 mm (9.8')	2570 mm (8.4')	1780 mm (5.8')	400 mm (1.3')	228 mm (0.7')	23°	15°	10°
16.00 R25	4000 mm (13.1')	3870 mm (12.7')	3000 mm (9.8')	2510 mm (8.2')	1830 mm (6.0')	450 mm (1.5')	258 mm (0.8')	25°	17°	12°
20.5 R25	4000 mm (13.1')	3870 mm (12.7')	3000 mm (9.8')	2530 mm (8.3')	1830 mm (6.0')	450 mm (1.5')	258 mm (0.8')	25°	17°	12°

Ra = Radius all wheels steered
*Lowered

Weights
European version

Trailing boom

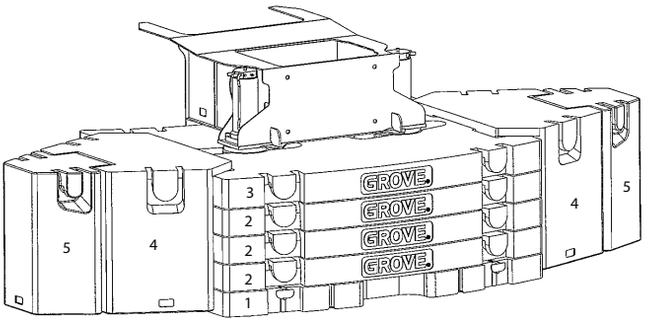


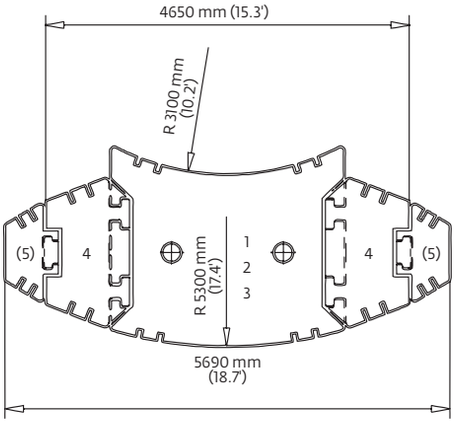
Basic weights - kg (lb)	Axles 1-3		Axles 4 and 5		Dolly		Total	
GMK 5275 Mercedes power with: 20.5R25 tires, 10x8x10 drive/steer, 11 m-18m (36-59 ft) hydraulic luffing swingaway, 2nd oil cooler, outrigger pads, auxiliary hoist, driver and tanks filled, 3 axle boom dolly (4309 kg / 9400 lb)	27 881	(61,467)	20 119	(44,355)	20 079	(44,267)	68 079	(150,089)
Additions:								
5000 kg (11 000 lb) section pinned to superstructure (special counterweight version)	4831	(10,651)	169	(373)	0	(0)	5000	(11,023)
11 000 kg (24,250 lb) base section stowed on carrier	10 629	(23,433)	371	(818)	0	(0)	11 000	(24,251)
Removals:								
Brackets for hydraulic swingaway incl. hose reel	- 8	(-18)	- 4	(-9)	- 257	(-567)	- 270	(-595)
11 m - 18 m (36 ft - 59 ft) hydraulic swingaway	- 345	(-761)	- 176	(-388)	-1489	(-3283)	-2010	(-4431)
Front outriggers	-2190	(-4828)	300	(661)	0	(0)	-1890	(-4167)
Rear outriggers	1338	(2950)	-3678	(-8109)	0	(0)	-2340	(-5159)
Front and rear outrigger floats	- 59	(-130)	- 141	(-311)	0	(0)	- 200	(-441)
Substitutions:								
10x6x10 drive/steer	- 316	(-697)	- 39	(-86)	0	(0)	- 355	(-783)
14.00R25 tires	- 612	(-1349)	- 408	(-899)	0	(0)	-1020	(-2249)
16.00R25 tires	- 252	(-556)	- 168	(-370)	0	(0)	- 420	(-926)

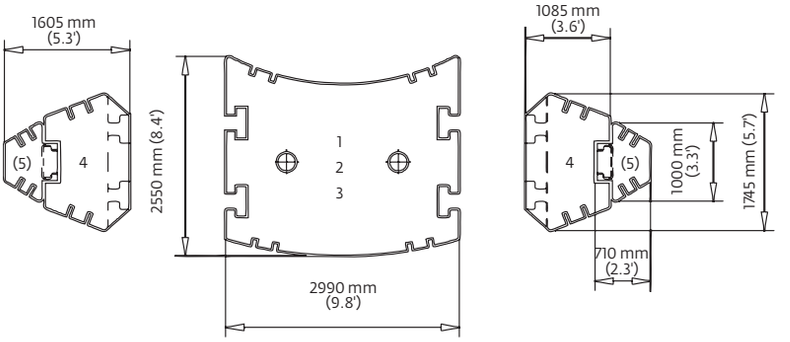
Boom over front

Basic weights - kg (lb)	Axles 1 - 3		Axles 4 and 5		Total	
Mercedes power, 16.00R25 tires, 10x6x10 drive/steer, 2nd oil cooler, outrigger pads, driver and tanks filled	34 340	(75,707)	24 645	(54,333)	58 985	(130,040)
Additions:						
10x8x10 drive/steer	316	(697)	39	(86)	355	(783)
Spare wheel 14.00 R25 XGC steel rim with stowage	- 186	(-410)	446	(983)	260	(573)
Spare wheel 16.00 R25 XGC steel rim with stowage	- 229	(-505)	549	(1210)	320	(705)
Spare wheel 20.5 R25 XGC steel rim with stowage	- 259	(-571)	621	(1369)	362	(798)
Brackets for hydraulic swingaway	92	(203)	- 12	(-26)	80	(176)
Hose reel + parts for hydraulic swingaway	339	(747)	- 149	(-328)	190	(419)
11 m - 18 m (36 ft - 59 ft) hydraulic swingaway	2321	(5117)	- 311	(-686)	2010	(4431)
Auxiliary hoist	-1417	(-3124)	3157	(6960)	1740	(3836)
11 000 kg (24,250 lb) base plate stowed on carrier	10 581	(23,327)	369	(814)	10 950	(24,141)
5000 kg (11,000 lb) slab fixed to turntable (special counterweight version)	-3452	(-7610)	8432	(18,589)	4980	(10,979)
Substitutions:						
14.00R25 tires	- 360	(-794)	- 240	(-529)	- 600	(-1323)
20.5R25 tires	252	(556)	168	(370)	420	(926)
Removals:						
Boom assembly w/o lift cylinder	-19 612	(-43,237)	-1523	(-3358)	-21 135	(-46,595)
Front outriggers	-2213	(-4879)	303	(668)	-1910	(-4211)
Rear outriggers	1326	(2923)	-3646	(-8038)	-2320	(-5115)
Front and rear outrigger floats	- 59	(-130)	- 141	(-311)	- 200	(-441)

Counterweight





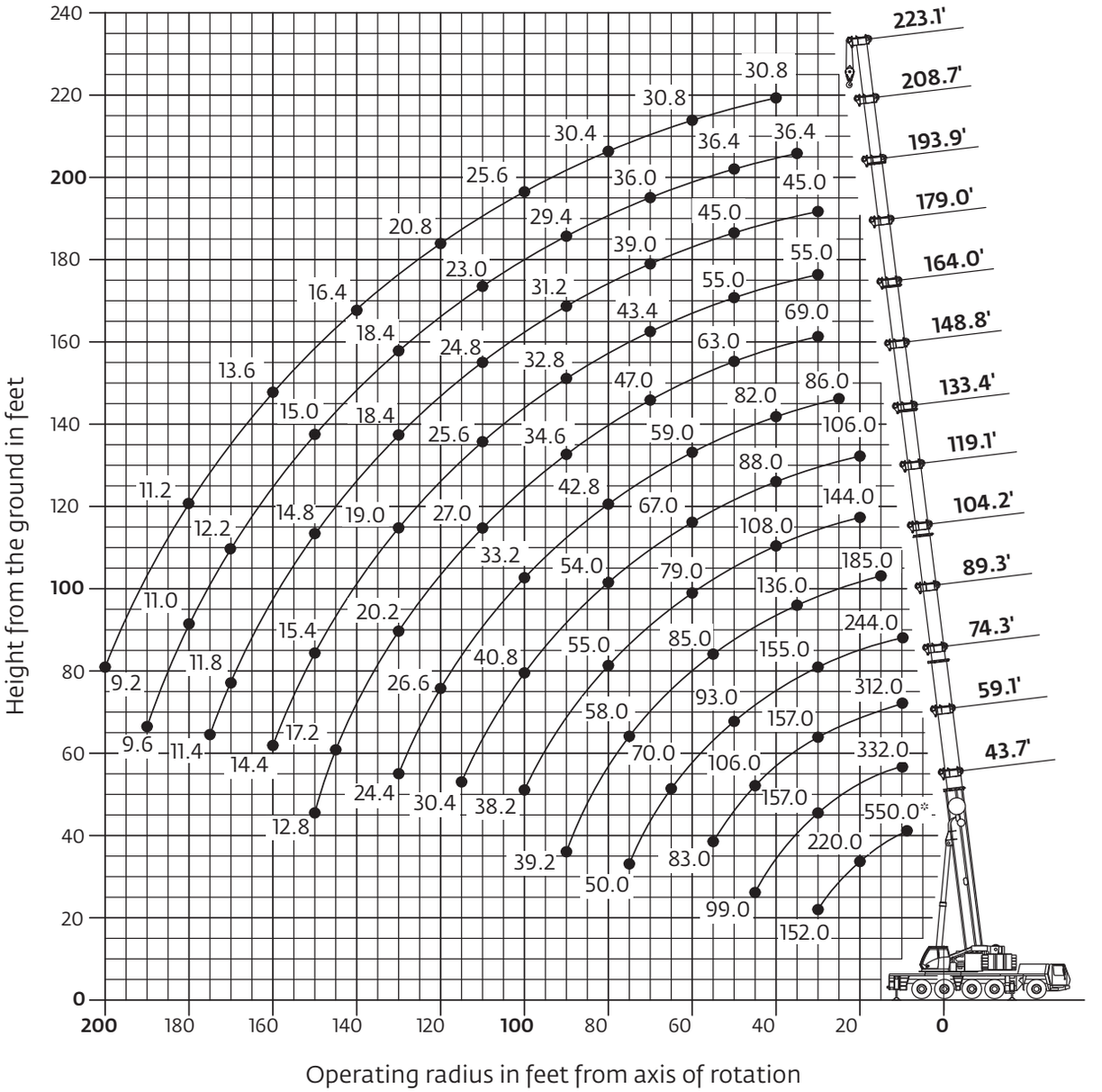


Counterweight Configuration kg (lb)

	1 (Baseplate)	2 (Stackable)	3 (Stackable)	4 (Wing)	5 (Wing)
	11 000 (24,200)	10 000 (22,046)	10 000 (22,046)	10 000 (22,046)	3000 (6600)
11 000 (24,200)	•				
21 000 (46,200)	•	•			
31 000 (68,300)	•	X2			
41 000 (90,300)	•	X3			
51 000 (112,400)	•	X3	•		
71 000 (156,500)	•	X3	•	X2	
77 000 (169,700)	•	X3	•	X2	X2

Working range

44 ft - 223 ft main boom



Hook heights shown in the working diagram do not consider loaded boom deflection.

Hook block	H
200 ton, 9 sheave	12.0 ft (3650 mm)
160 ton, 7 sheave	12.0 ft (3650 mm)
125 ton, 5 sheave	10.8 ft (3300 mm)
80 ton, 3 sheave	10.8 ft (3300 mm)
32 ton, 1 sheave	10.5 ft (3200 mm)
12 ton, single line headache ball	8.0 ft (2450 mm)

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane

Load charts

Main boom

13,3 m - 68 m (44 ft - 223 ft) | 77 000 kg (169,700 lb) | 26 ft 7 in spread (100%) | 360°

Pounds x 1000

Feet	43.7'	59.1'	74.3'	89.3'	104.2'	119.1'	133.4'	148.8'	164.0'	179.0'	193.9'	208.7'	223.1'
8	*550.0												
10	346.0	332.0	312.0	244.0									
15	272.0	270.0	260.0	242.0	185.0								
20	220.0	222.0	215.0	212.0	182.0	144.0	106.0						
25	184.0	185.0	181.0	181.0	166.0	140.0	106.0	86.0					
30	152.0	157.0	157.0	155.0	151.0	129.0	105.0	86.0	69.0	55.0	45.0		
35		136.0	136.0	135.0	136.0	118.0	96.0	86.0	69.0	55.0	45.0	36.4	
40		121.0	119.0	118.0	120.0	108.0	88.0	82.0	69.0	55.0	45.0	36.4	30.8
45		99.0	106.0	104.0	106.0	99.0	81.0	75.0	68.0	55.0	45.0	36.4	30.8
50			95.0	93.0	95.0	92.0	76.0	70.0	63.0	55.0	45.0	36.4	30.8
55			83.0	84.0	85.0	85.0	72.0	64.0	59.0	52.0	45.0	36.4	30.8
60				76.0	77.0	79.0	67.0	59.0	54.0	49.0	44.0	36.4	30.8
65				70.0	70.0	72.0	63.0	54.0	50.0	46.0	41.2	36.4	30.8
70				63.0	64.0	66.0	60.0	50.0	47.0	43.4	39.0	36.0	30.8
75				50.0	58.0	61.0	57.0	46.0	43.0	40.4	36.8	34.4	30.8
80					53.0	55.0	54.0	42.8	39.6	37.6	34.8	32.6	30.4
85					49.0	51.0	51.0	40.2	37.2	35.2	33.0	31.0	29.2
90					39.2	46.0	48.0	37.6	34.6	32.8	31.2	29.4	28.0
95						42.4	44.0	35.2	32.4	30.8	29.4	28.0	26.8
100						38.2	40.8	33.2	30.4	28.8	27.8	26.4	25.6
105							37.6	31.4	28.8	27.2	26.4	24.8	24.4
110							34.8	29.6	27.0	25.6	24.8	23.0	23.2
115							30.4	28.0	25.2	23.8	23.0	21.4	22.0
120								26.6	23.2	21.8	21.2	20.4	20.8
125								25.2	21.4	20.0	19.4	19.4	19.4
130								24.4	20.2	19.0	18.4	18.4	18.0
135									19.2	18.0	17.4	17.4	17.2
140									18.2	17.0	16.4	16.6	16.4
145									17.2	16.0	15.6	15.8	15.6
150									12.8	15.4	14.8	15.0	15.0
155										14.8	14.0	14.2	14.2
160										14.4	13.2	13.4	13.6
165											12.6	12.8	13.0
170											11.8	12.2	12.4
175											11.4	11.6	11.8
180												11.0	11.2
185												10.6	10.6
190												9.6	10.2
195													9.6
200													9.2

** Over the rear with special equipment*

Loads greater than 297,000 lb/335,000 lb can only be lifted with additional/special equipment.

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13,3 m - 68 m (44 ft - 223 ft) | 51 000 kg (112,400 lb) | 26 ft 7 in spread (100%) | 360°

Pounds x 1000

Feet	43.7'	59.1'	74.3'	89.3'	104.2'	119.1'	133.4'	148.8'	164.0'	179.0'	193.9'	208.7'	223.1'
10	336.0	332.0	312.0	244.0									
15	262.0	260.0	258.0	242.0	185.0								
20	210.0	211.0	208.0	210.0	182.0	144.0	106.0						
25	176.0	177.0	176.0	175.0	166.0	140.0	106.0	86.0					
30	149.0	150.0	150.0	148.0	150.0	129.0	105.0	86.0	69.0	55.0	45.0		
35		132.0	130.0	127.0	124.0	118.0	96.0	86.0	69.0	55.0	45.0	36.4	
40		114.0	111.0	110.0	103.0	102.0	88.0	82.0	69.0	55.0	45.0	36.4	30.8
45		98.0	95.0	94.0	90.0	88.0	81.0	75.0	68.0	55.0	45.0	36.4	30.8
50			83.0	82.0	81.0	76.0	76.0	70.0	63.0	55.0	45.0	36.4	30.8
55			72.0	71.0	72.0	67.0	68.0	64.0	59.0	52.0	45.0	36.4	30.8
60				62.0	64.0	62.0	60.0	57.0	54.0	49.0	44.0	36.4	30.8
65				57.0	56.0	58.0	54.0	50.0	49.0	46.0	41.2	36.4	30.8
70				51.0	50.0	52.0	49.0	45.0	43.8	43.2	39.0	36.0	30.8
75				46.0	45.0	47.0	44.0	40.8	39.6	39.0	36.8	34.4	30.8
80					41.6	42.0	40.0	37.0	35.8	35.4	34.8	32.6	30.4
85					39.2	38.2	36.0	34.2	32.4	32.0	32.0	31.0	29.2
90					35.8	34.6	32.6	32.8	29.4	29.2	29.2	29.4	28.0
95						31.4	29.4	31.4	26.8	26.6	26.6	27.4	26.8
100						28.8	26.8	28.6	24.4	24.4	24.4	25.0	25.6
105							25.2	26.0	22.2	22.8	22.2	23.0	23.6
110							24.2	23.8	20.0	21.2	20.4	21.2	21.8
115							23.4	21.8	18.4	20.2	19.0	19.4	20.2
120								20.0	17.8	19.4	18.0	18.6	18.6
125								18.4	17.0	18.4	17.2	17.6	17.2
130								16.8	16.2	17.8	16.4	16.6	15.8
135									15.6	16.8	15.8	15.8	14.6
140									15.0	15.4	15.0	14.8	13.4
145										14.4	14.2	13.6	12.4
150										13.2	13.2	12.6	11.2
155										12.2	12.2	11.4	10.2
160										11.4	11.2	10.6	9.2
165											10.6	9.6	8.4
170											9.8	8.8	7.6
175											9.2	8.0	6.8
180												7.2	6.0
185												6.6	5.2
190												6.0	4.6
195													4.0
200													3.4

13,3 m - 68 m (44 ft - 223 ft) | 41 000 kg (90,300 lb) | 26 ft 7 in spread (100%) | 360°

Pounds x 1000

Feet	43.7'	59.1'	74.3'	89.3'	104.2'	119.1'	133.4'	148.8'	164.0'	179.0'	193.9'	208.7'	223.1'
10	332.0	328.0	312.0	244.0									
15	256.0	256.0	254.0	242.0	185.0								
20	207.0	208.0	206.0	206.0	182.0	144.0	106.0						
25	172.0	173.0	173.0	171.0	166.0	140.0	106.0	86.0					
30	146.0	149.0	146.0	138.0	131.0	128.0	105.0	86.0	69.0	55.0	45.0		
35		124.0	117.0	114.0	110.0	105.0	96.0	86.0	69.0	55.0	45.0	36.4	
40		102.0	101.0	95.0	94.0	88.0	87.0	82.0	69.0	55.0	45.0	36.4	30.8
45		84.0	85.0	81.0	80.0	76.0	75.0	71.0	68.0	55.0	45.0	36.4	30.8
50			72.0	72.0	70.0	70.0	65.0	61.0	59.0	55.0	45.0	36.4	30.8
55			64.0	64.0	61.0	62.0	57.0	54.0	52.0	51.0	45.0	36.4	30.8
60				55.0	56.0	55.0	51.0	47.0	46.0	45.0	44.0	36.4	30.8
65				49.0	51.0	49.0	45.0	42.0	40.6	40.0	39.6	36.4	30.8
70				43.6	45.0	44.0	40.6	39.8	36.2	35.6	35.4	36.0	30.8
75				38.4	40.6	39.4	36.4	37.6	32.4	32.0	31.8	32.4	30.8
80					36.6	35.4	33.0	34.0	29.0	29.4	29.2	30.2	29.8
85					33.0	31.6	30.0	31.0	26.4	28.2	27.8	28.6	27.0
90					29.8	28.6	28.6	28.4	25.0	27.0	26.2	26.6	24.6
95						25.8	27.4	25.6	23.2	25.6	24.6	24.4	22.4
100						23.4	25.2	23.2	21.2	24.0	23.0	22.4	20.4
105							22.8	21.0	20.4	22.2	20.8	20.6	18.6
110							21.0	19.0	19.4	20.4	19.8	18.8	17.0
115							19.2	17.2	18.4	18.6	18.4	17.4	15.6
120								16.0	17.8	17.0	17.0	16.0	14.2
125								15.2	17.0	15.8	16.0	14.6	13.0
130								14.6	15.8	15.0	14.6	13.4	11.8
135									14.6	14.2	13.4	12.2	10.6
140									13.4	13.0	12.2	11.2	9.6
145										12.0	11.2	10.0	8.8
150										11.0	10.2	9.0	7.8
155										10.2	9.2	8.2	7.0
160										9.4	8.4	7.4	6.0
165											7.6	6.6	5.2
170											7.0	5.8	4.6
175											6.2	5.2	3.8
180												4.4	3.2
185												3.8	
190												3.2	

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Load charts
Main boom

13,3 m - 68 m (44 ft - 223 ft) | 21 000 kg (46,200 lb) | 26 ft 7 in spread (100%) | 360°

Pounds x 1000

Feet	43.7'	59.1'	74.3'	89.3'	104.2'	119.1'	133.4'	148.8'	164.0'	179.0'	193.9'	208.7'	223.1'
10	320.0	318.0	312.0	244.0									
15	248.0	248.0	246.0	242.0	185.0								
20	199.0	200.0	187.0	175.0	158.0	144.0	106.0						
25	154.0	148.0	138.0	128.0	123.0	113.0	106.0	86.0					
30	114.0	111.0	105.0	103.0	96.0	94.0	87.0	81.0	69.0	55.0	45.0		
35		90.0	87.0	83.0	82.0	77.0	71.0	66.0	63.0	55.0	45.0	36.4	
40		72.0	72.0	68.0	68.0	64.0	59.0	59.0	52.0	51.0	45.0	36.4	30.8
45		58.0	60.0	61.0	58.0	54.0	50.0	51.0	43.8	43.0	42.0	36.4	30.8
50			50.0	52.0	50.0	47.0	45.0	43.4	39.2	40.6	39.6	36.0	30.8
55			45.0	46.0	43.2	40.2	41.2	37.4	36.8	37.4	36.6	34.0	30.8
60				39.2	37.8	36.0	36.0	32.6	34.6	34.0	32.2	29.8	27.4
65				33.8	33.2	33.8	31.8	30.6	31.4	30.2	28.4	26.2	24.0
70				29.4	29.0	30.6	28.2	29.0	28.4	26.8	25.2	23.2	21.0
75				22.8	25.4	27.4	25.0	27.0	25.4	24.0	22.4	20.4	18.4
80					22.2	24.2	23.2	24.4	23.0	21.4	20.0	18.2	16.2
85					22.0	21.4	20.8	22.0	20.6	19.2	17.8	16.0	14.2
90					19.6	19.0	19.4	20.0	18.6	17.2	16.0	14.2	12.4
95						17.4	18.4	18.0	16.8	15.6	14.2	12.6	10.8
100						16.6	16.4	16.2	15.2	14.0	12.6	11.0	9.2
105							14.8	14.6	13.8	12.6	11.2	9.8	8.0
110							13.4	13.0	12.4	11.2	10.0	8.4	6.8
115							12.0	11.6	11.0	10.0	8.8	7.4	5.6
120								10.4	9.8	9.0	7.8	6.4	4.6
125								9.4	8.6	8.0	6.8	5.4	3.8
130								8.4	7.6	7.0	6.0	4.6	2.8
135									6.8	6.0	5.2	3.8	
140									6.0	5.2	4.4	3.0	
145										4.4	3.6		
150										3.6	2.8		
155										3.0			

13,3 m - 68 m (44 ft - 223 ft) | 0 kg (0 lb) | 26 ft 7 in spread (100%) | 360°

Pounds x 1000

Feet	43.7'	59.1'	74.3'	89.3'	104.2'	119.1'	133.4'	148.8'	164.0'	177.6'	192.6'
10	308.0	308.0	286.0	232.0							
15	222.0	185.0	160.0	144.0	125.0						
20	122.0	114.0	105.0	100.0	90.0	79.0	76.0				
25	81.0	80.0	77.0	72.0	65.0	63.0	57.0	56.0			
30	56.0	58.0	57.0	54.0	53.0	49.0	48.0	45.0	41.2	37.6	34.4
35		44.0	44.0	44.0	42.4	41.2	38.8	36.4	33.4	30.6	28.0
40		34.2	35.6	36.0	35.0	33.8	32.0	30.0	27.6	25.2	22.8
45		27.4	28.8	29.6	29.0	28.0	26.6	25.0	23.0	20.8	18.8
50			23.8	24.8	24.2	23.6	22.4	21.0	19.2	17.2	15.4
55			19.8	20.8	20.4	20.0	19.0	17.8	16.2	14.4	12.8
60				17.6	17.4	17.0	16.2	15.0	13.6	12.0	10.4
65				15.0	14.8	14.6	13.8	12.8	11.4	9.8	8.4
70				12.6	12.6	12.4	11.8	10.8	9.4	8.0	6.8
75				5.8	10.8	10.6	10.0	9.2	7.8	6.6	5.2
80					9.2	9.0	8.4	7.6	6.4	5.2	4.0
85					7.6	7.8	7.2	6.4	5.2	4.0	2.8
90					6.2	6.6	6.0	5.2	4.0	2.8	
95						5.4	4.8	4.2	3.0		
100						4.4	4.0	3.2			
105							3.2				

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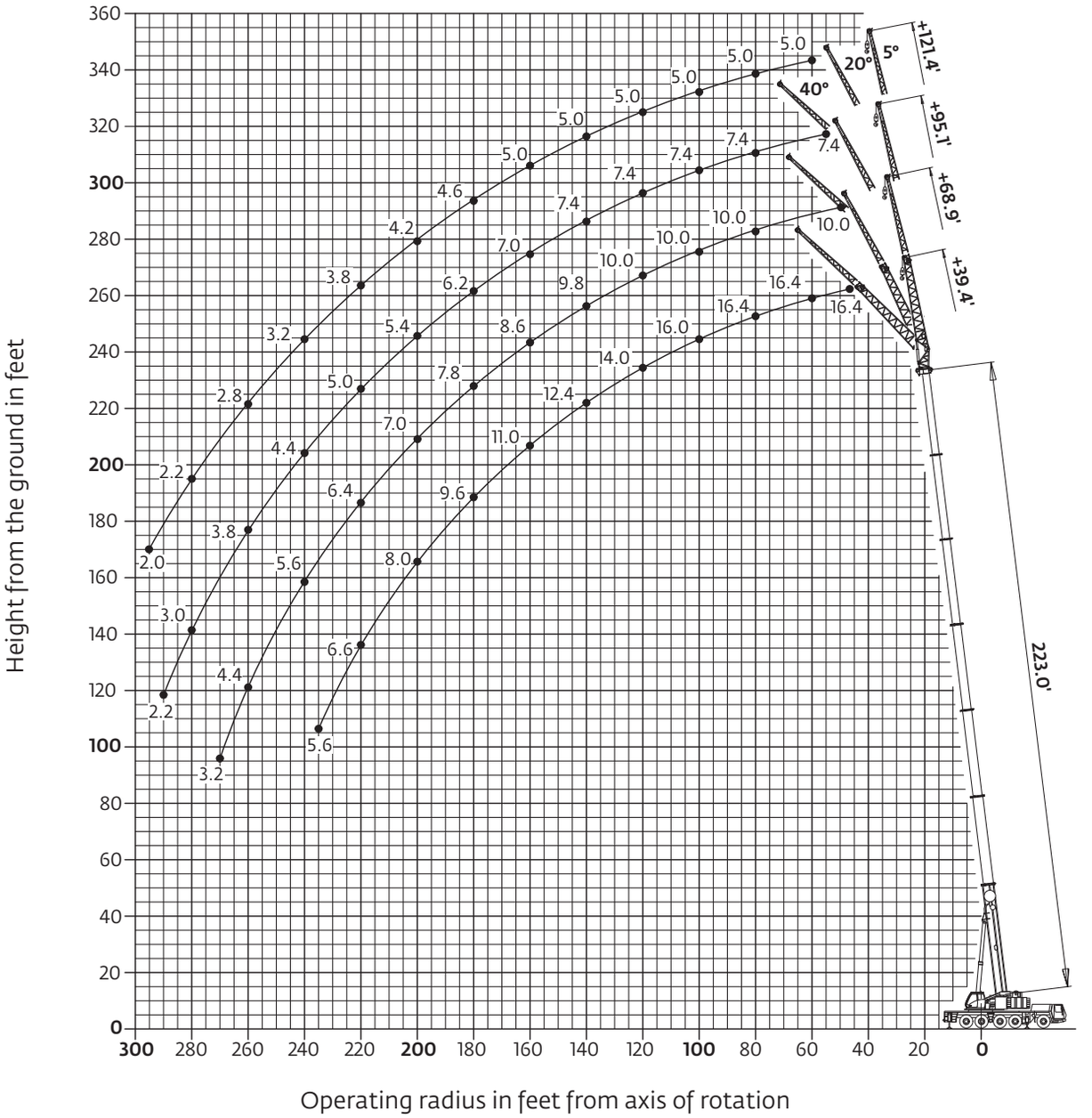
Working range

223 ft main boom with 39 ft and 69 ft swingaway



Hook heights shown in the working diagram do not consider loaded boom deflection.

Load charts

Hydraulic offsettable swingaway

Intermediate angle and loads for luffing

68 m (223 ft) | 12-21-29-37 m (39-69-95-121 ft) | 77 000 kg (169,700 lb) | 26 ft 7 in spread (100%) | 360˚

Pounds x 1000

	223' + 39.4'			223' + 68.9'			223' + 95.1'			223' + 121.4'		
	5°	5° - 20°	20° - 40°	5°	5° - 20°	20° - 40°	5°	5° - 20°	20° - 40°	5°	5° - 20°	20° - 40°
Radius						X 1000 lb						
45	16.4											
50	16.4	16.4		10.0								
55	16.4	16.4		10.0			7.4					
60	16.4	16.4	16.4	10.0			7.4			5.0		
65	16.4	16.4	16.4	10.0			7.4			5.0		
70	16.4	16.4	16.4	10.0	10.0		7.4			5.0		
75	16.4	16.4	16.4	10.0	10.0		7.4	7.4		5.0		
80	16.4	16.4	16.4	10.0	10.0		7.4	7.4		5.0	5.0	
85	16.4	16.4	16.0	10.0	10.0		7.4	7.4		5.0	5.0	
90	16.4	16.2	15.6	10.0	10.0	9.4	7.4	7.4		5.0	5.0	
95	16.4	15.8	15.2	10.0	10.0	9.4	7.4	7.4	7.2	5.0	5.0	4.0
100	16.0	15.2	14.8	10.0	10.0	9.2	7.4	7.4	7.2	5.0	5.0	4.0
105	15.6	14.8	14.4	10.0	10.0	9.2	7.4	7.4	7.2	5.0	5.0	4.0
110	15.0	14.4	14.0	10.0	10.0	9.2	7.4	7.4	7.2	5.0	5.0	4.0
115	14.4	13.8	13.6	10.0	10.0	9.0	7.4	7.4	7.2	5.0	5.0	4.0
120	14.0	13.4	13.2	10.0	10.0	9.0	7.4	7.4	7.2	5.0	5.0	4.0
125	13.6	13.0	12.8	10.0	10.0	9.0	7.4	7.4	7.2	5.0	5.0	4.0
130	13.2	12.6	12.4	10.0	9.8	8.8	7.4	7.4	7.2	5.0	5.0	4.0
135	12.8	12.2	12.2	10.0	9.6	8.8	7.4	7.4	7.2	5.0	5.0	4.0
140	12.4	12.0	11.8	9.8	9.4	8.8	7.4	7.2	7.0	5.0	5.0	4.0
145	12.0	11.6	11.4	9.4	9.0	8.6	7.4	7.2	7.0	5.0	5.0	4.0
150	11.6	11.2	11.2	9.2	8.8	8.6	7.4	7.0	6.8	5.0	4.8	4.0
155	11.2	11.0	11.0	9.0	8.6	8.4	7.2	6.8	6.6	5.0	4.8	4.0
160	11.0	10.6	10.6	8.6	8.4	8.2	7.0	6.6	6.6	5.0	4.8	4.0
165	10.6	10.4	10.4	8.4	8.2	8.0	6.8	6.6	6.4	4.8	4.8	4.0
170	10.2	10.2	10.2	8.2	8.0	8.0	6.6	6.4	6.2	4.8	4.6	4.0
175	9.8	9.8	10.0	8.0	7.8	7.8	6.4	6.2	6.2	4.8	4.6	4.0
180	9.6	9.6	9.6	7.8	7.6	7.6	6.2	6.0	6.0	4.6	4.6	4.0
185	9.2	9.2	9.4	7.6	7.4	7.4	6.0	5.8	5.8	4.6	4.4	4.0
190	8.8	8.8	9.0	7.4	7.2	7.2	5.8	5.6	5.8	4.4	4.4	4.0
195	8.2	8.4	8.6	7.2	7.0	7.0	5.6	5.6	5.6	4.2	4.2	4.0
200	8.0	8.0		7.0	6.8	6.8	5.4	5.4	5.4	4.2	4.0	4.0
205	7.6	7.8		6.8	6.6	6.8	5.2	5.2	5.4	4.0	4.0	4.0
210	7.2	7.4		6.6	6.4	6.6	5.0	5.0	5.2	3.8	3.8	4.0
215	6.8	7.0		6.4	6.4	6.4	5.0	5.0	5.0	3.6	3.8	3.8
220	6.4	6.6		6.2	6.2	6.4	4.8	4.8	5.0	3.6	3.6	3.8
225	6.2	6.2		6.0	6.0	6.2	4.6	4.6	4.8	3.4	3.4	3.6
230	5.8	6.0		5.8	6.0		4.6	4.6	4.6	3.2	3.4	3.6
235	5.4	5.6		5.6	5.8		4.4	4.4	4.6	3.2	3.2	3.4
240				5.2	5.6		4.2	4.2	4.4	3.0	3.2	3.2
245				5.0	5.2		4.2	4.2	4.2	3.0	3.0	3.2
250				4.8	5.0		4.0	4.0		2.8	2.8	3.0
255				4.4	4.6		3.8	4.0		2.8	2.8	3.0
260				4.2	4.4		3.8	3.8		2.6	2.6	2.8
265				4.0	4.0		3.6	3.6		2.6	2.6	2.8
270				3.2			3.4	3.6		2.4	2.4	
275							3.2	3.4		2.4	2.4	
280							3.0	3.0		2.2	2.2	
285							2.6	2.6		2.2	2.2	
290							2.2	2.2		2.0	2.2	
295										2.0	2.0	

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Intermediate angle and loads for luffing

68 m (223 ft)	12-21-29-37 m (39-69-95-121 ft)	51 000 kg (112,400 lb)	26 ft 7 in spread (100%)	360°

Pounds x 1000

	223' + 39.4'			223' + 68.9'			223' + 95.1'			223' + 121.4'		
	5°	5° - 20°	20° - 40°	5°	5° - 20°	20° - 40°	5°	5° - 20°	20° - 40°	5°	5° - 20°	20° - 40°
Radius						X 1000 lb						
45	16.4											
50	16.4	16.4		10.0								
55	16.4	16.4		10.0			7.4					
60	16.4	16.4	16.4	10.0			7.4			5.0		
65	16.4	16.4	16.4	10.0			7.4			5.0		
70	16.4	16.4	16.4	10.0	10.0		7.4			5.0		
75	16.4	16.4	16.4	10.0	10.0		7.4	7.4		5.0		
80	16.4	16.4	16.4	10.0	10.0		7.4	7.4		5.0	5.0	
85	16.4	16.4	16.0	10.0	10.0		7.4	7.4		5.0	5.0	
90	16.4	16.2	15.6	10.0	10.0	9.4	7.4	7.4		5.0	5.0	
95	16.4	15.8	15.2	10.0	10.0	9.4	7.4	7.4	7.2	5.0	5.0	4.0
100	16.0	15.2	14.8	10.0	10.0	9.2	7.4	7.4	7.2	5.0	5.0	4.0
105	15.6	14.8	14.4	10.0	10.0	9.2	7.4	7.4	7.2	5.0	5.0	4.0
110	15.0	14.4	14.0	10.0	10.0	9.2	7.4	7.4	7.2	5.0	5.0	4.0
115	14.4	13.8	13.6	10.0	10.0	9.0	7.4	7.4	7.2	5.0	5.0	4.0
120	14.0	13.4	13.2	10.0	10.0	9.0	7.4	7.4	7.2	5.0	5.0	4.0
125	13.6	13.0	12.8	10.0	10.0	9.0	7.4	7.4	7.2	5.0	5.0	4.0
130	13.2	12.6	12.4	10.0	9.8	8.8	7.4	7.4	7.2	5.0	5.0	4.0
135	12.8	12.2	12.2	10.0	9.6	8.8	7.4	7.4	7.2	5.0	5.0	4.0
140	12.4	12.0	11.8	9.8	9.4	8.8	7.4	7.2	7.0	5.0	5.0	4.0
145	12.0	11.6	11.4	9.4	9.0	8.6	7.4	7.2	7.0	5.0	5.0	4.0
150	11.2	11.2	11.2	9.2	8.8	8.6	7.4	7.0	6.8	5.0	4.8	4.0
155	10.2	10.2	10.8	9.0	8.6	8.4	7.2	6.8	6.6	5.0	4.8	4.0
160	9.4	9.4	10.0	8.6	8.4	8.2	7.0	6.6	6.6	5.0	4.8	4.0
165	8.6	8.6	9.2	8.4	8.2	8.0	6.8	6.6	6.4	4.8	4.8	4.0
170	7.8	7.8	8.4	8.2	8.0	8.0	6.6	6.4	6.2	4.8	4.6	4.0
175	7.0	7.0	7.6	8.0	7.8	7.8	6.4	6.2	6.2	4.8	4.6	4.0
180	6.4	6.4	6.8	7.2	7.2	7.6	6.2	6.0	6.0	4.6	4.6	4.0
185	5.6	5.6	6.0	6.6	6.6	7.4	6.0	5.8	5.8	4.6	4.4	4.0
190	5.0	5.0	5.4	6.0	6.0	6.8	5.8	5.6	5.8	4.4	4.4	4.0
195	4.4	4.4	4.8	5.4	5.4	6.2	5.4	5.4	5.6	4.2	4.2	4.0
200	3.8	3.8		4.8	4.8	5.6	4.8	4.8	5.4	4.2	4.0	4.0
205	3.2	3.2		4.4	4.4	5.0	4.2	4.2	5.0	4.0	4.0	4.0
210	2.6	2.6		3.8	3.8	4.4	3.8	3.8	4.4	3.6	3.6	4.0
215	2.2	2.2		3.2	3.2	3.8	3.2	3.2	4.0	3.2	3.2	3.8
220				2.8	2.8	3.4	2.8	2.8	3.4	2.6	2.6	3.4
225				2.2	2.2	2.8	2.4	2.4	3.0	2.2	2.2	3.0
230							2.0	2.0	2.6			2.4
235									2.2			2.0

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Load charts

Hydraulic offsettable swingaway

Intermediate angle and loads for luffing

68 m (223 ft)	12-21-29-37 m (39-69-95-121 ft)	41 000 kg (90,300 lb)	26 ft 7 in spread (100%)	360°

Pounds (thousands)

	223' + 39.4'			223' + 68.9'			223' + 95.1'			223' + 121.4'		
	5°	5° - 20°	20° - 40°	5°	5° - 20°	20° - 40°	5°	5° - 20°	20° - 40°	5°	5° - 20°	20° - 40°
Radius						X 1000 lb						
45	16.4											
50	16.4	16.4		10.0								
55	16.4	16.4		10.0			7.4					
60	16.4	16.4	16.4	10.0			7.4			5.0		
65	16.4	16.4	16.4	10.0			7.4			5.0		
70	16.4	16.4	16.4	10.0	10.0		7.4			5.0		
75	16.4	16.4	16.4	10.0	10.0		7.4	7.4		5.0		
80	16.4	16.4	16.4	10.0	10.0		7.4	7.4		5.0	5.0	
85	16.4	16.4	16.0	10.0	10.0		7.4	7.4		5.0	5.0	
90	16.4	16.2	15.6	10.0	10.0	9.4	7.4	7.4		5.0	5.0	
95	16.4	15.8	15.2	10.0	10.0	9.4	7.4	7.4	7.2	5.0	5.0	4.0
100	16.0	15.2	14.8	10.0	10.0	9.2	7.4	7.4	7.2	5.0	5.0	4.0
105	15.6	14.8	14.4	10.0	10.0	9.2	7.4	7.4	7.2	5.0	5.0	4.0
110	15.0	14.4	14.0	10.0	10.0	9.2	7.4	7.4	7.2	5.0	5.0	4.0
115	14.4	13.8	13.6	10.0	10.0	9.0	7.4	7.4	7.2	5.0	5.0	4.0
120	13.8	13.4	13.2	10.0	10.0	9.0	7.4	7.4	7.2	5.0	5.0	4.0
125	12.6	12.6	12.8	10.0	10.0	9.0	7.4	7.4	7.2	5.0	5.0	4.0
130	11.6	11.6	12.4	10.0	9.8	8.8	7.4	7.4	7.2	5.0	5.0	4.0
135	10.4	10.4	11.2	10.0	9.6	8.8	7.4	7.4	7.2	5.0	5.0	4.0
140	9.4	9.4	10.2	9.8	9.4	8.8	7.4	7.2	7.0	5.0	5.0	4.0
145	8.6	8.6	9.2	9.4	9.0	8.6	7.4	7.2	7.0	5.0	5.0	4.0
150	7.6	7.6	8.4	8.6	8.6	8.6	7.4	7.0	6.8	5.0	4.8	4.0
155	6.8	6.8	7.4	7.8	7.8	8.4	7.2	6.8	6.6	5.0	4.8	4.0
160	6.0	6.0	6.6	7.0	7.0	8.2	6.8	6.6	6.6	5.0	4.8	4.0
165	5.4	5.4	6.0	6.2	6.2	7.4	6.2	6.2	6.4	4.8	4.8	4.0
170	4.8	4.8	5.2	5.6	5.6	6.6	5.4	5.4	6.2	4.8	4.6	4.0
175	4.0	4.0	4.6	5.0	5.0	6.0	4.8	4.8	6.0	4.6	4.6	4.0
180	3.4	3.4	4.0	4.4	4.4	5.4	4.2	4.2	5.2	4.0	4.0	4.0
185	2.8	2.8	3.4	3.8	3.8	4.6	3.6	3.6	4.6	3.6	3.6	4.0
190	2.4	2.4	2.8	3.2	3.2	4.0	3.2	3.2	4.0	3.0	3.0	4.0
195			2.2	2.8	2.8	3.6	2.6	2.6	3.6	2.6	2.6	3.4
200				2.2	2.2	3.0	2.2	2.2	3.0	2.0	2.0	2.8
205						2.4			2.4			2.4
210						2.0			2.0			2.0

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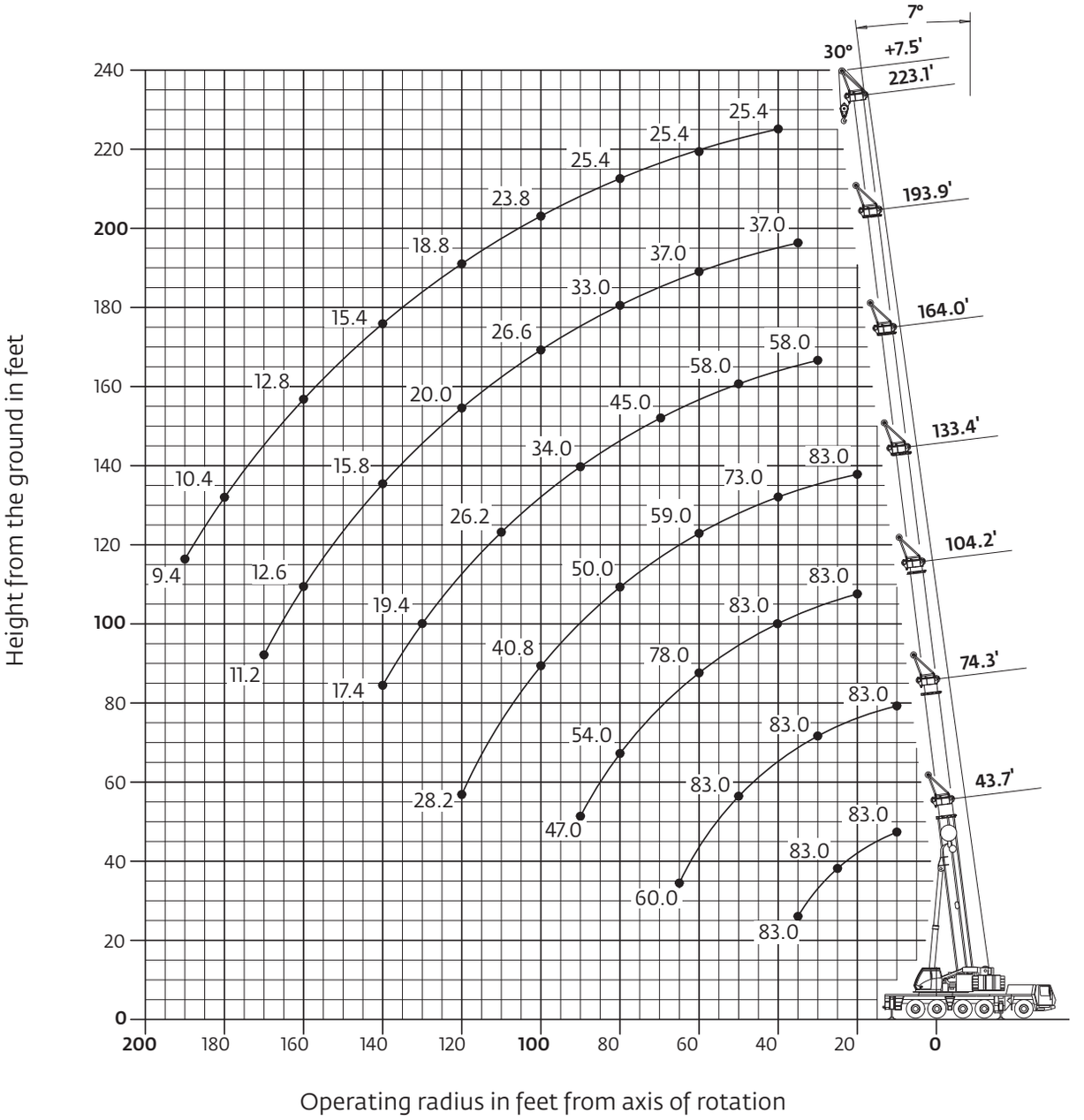
Working range

Heavy duty jib 6.6 ft



Hook heights shown in the working diagram do not consider loaded boom deflection.

Load charts

Heavy duty jib

Fixed angle

13,3 m-68 m (44 ft-223 ft) | 2,3 m (7.5 ft) | 77 000 kg (169,700 lb) | 26 ft 7 in spread (100%) | 360°

Pounds (thousands)

	43.7' + 7.5'		74.3' + 7.5'		104.2' + 7.5'		133.4' + 7.5'		164.0' + 7.5'		193.9' + 7.5'		223.1' + 7.5'	
	8°	30°	8°	30°	8°	30°	8°	30°	8°	30°	8°	30°	8°	30°
Radius														
10.0		83.0		83.0										
15.0		83.0		83.0										
20.0		83.0		83.0		83.0		83.0						
25.0		83.0		83.0		83.0		83.0						
30.0	83.0	83.0		83.0		83.0		81.0		58.0				
35.0	83.0	83.0		83.0		83.0		77.0		58.0		37.0		
40.0				83.0		83.0		73.0		58.0		37.0		25.4
45.0				83.0		83.0		69.0		58.0		37.0		25.4
50.0			83.0	83.0		83.0		65.0		58.0		37.0		25.4
55.0			83.0	83.0		83.0		62.0		55.0		37.0		25.4
60.0			74.0			78.0		59.0		52.0		37.0		25.4
65.0			60.0			71.0		57.0		49.0		37.0		25.4
70.0						65.0		54.0		45.0		36.6		25.4
75.0					59.0	59.0		52.0		42.2		34.8		25.4
80.0					54.0	54.0		50.0		38.8		33.0		25.4
85.0					51.0	51.0		47.0		36.2		31.2		25.4
90.0					45.0	47.0		46.0		34.0		29.8		25.4
95.0							44.0	43.4		31.8		28.2		24.6
100.0							40.6	40.8		29.6		26.6		23.8
105.0							37.4	37.6		27.8		24.8		22.4
110.0							34.4	34.6		26.2		23.0		21.0
115.0							31.8	32.0		24.6		21.2		19.6
120.0							28.2			22.6		20.0		18.8
125.0										20.6		18.8		17.8
130.0										19.4		17.8		17.0
135.0										18.4		16.8		16.2
140.0										17.4		15.8		15.4
145.0												15.0		14.6
150.0												14.0		14.0
155.0												13.4		13.4
160.0												12.6		12.8
165.0												11.8		12.2
170.0												11.2		11.6
175.0														11.0
180.0														10.4
185.0														10.0
190.0														9.4

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Fixed angle

13,3 m-68 m (44 ft-223 ft) | 2,3 m (7.5 ft) | 51 000 kg (112,400 lb) | 26 ft 7 in spread (100%) | 360°

Pounds (thousands)

	43.7' + 7.5'		74.3' + 7.5'		104.2' + 7.5'		133.4' + 7.5'		164.0' + 7.5'		193.9' + 7.5'		223.1' + 7.5'	
	8°	30°	8°	30°	8°	30°	8°	30°	8°	30°	8°	30°	8°	30°
Radius														
10.0		83.0		83.0										
15.0		83.0		83.0										
20.0		83.0		83.0		83.0		83.0						
25.0		83.0		83.0		83.0		83.0						
30.0	83.0	83.0		83.0		83.0		81.0		58.0				
35.0	83.0	83.0		83.0		83.0		77.0		58.0		37.0		
40.0				83.0		83.0		73.0		58.0		37.0		25.4
45.0				83.0		83.0		69.0		58.0		37.0		25.4
50.0			78.0	79.0		81.0		65.0		58.0		37.0		25.4
55.0			67.0	68.0		72.0		62.0		55.0		37.0		25.4
60.0			57.0			64.0		59.0		52.0		37.0		25.4
65.0			52.0			57.0		54.0		48.0		37.0		25.4
70.0						51.0		48.0		43.4		36.6		25.4
75.0					45.0	45.0		43.6		39.2		34.8		25.4
80.0					40.0	40.6		39.6		35.4		33.0		25.4
85.0					36.0	36.4		36.2		32.0		31.2		25.4
90.0					32.4	32.8		32.8		29.0		28.8		25.4
95.0							29.2	29.6		26.4		26.2		24.6
100.0							26.4	26.8		24.0		23.8		23.8
105.0							24.0	24.2		21.8		21.8		22.4
110.0							22.2	22.0		19.8		19.8		20.8
115.0							20.8	20.4		17.8		18.2		19.2
120.0							20.0			16.0		17.0		17.6
125.0										14.4		16.2		16.2
130.0										12.8		15.4		14.8
135.0										12.0		14.6		13.6
140.0										11.4		14.0		12.6
145.0												13.4		11.4
150.0												12.4		10.4
155.0												11.4		9.4
160.0												10.4		8.4
165.0												9.8		7.6
170.0												9.0		6.8
175.0														6.0
180.0														5.2
185.0														4.4
190.0														3.8

Symbols glossary

Axles

Boom

Boom elevation

Boom extension

Boom length

Boom nose

Brakes

Cab

Counterweight

Drive

Electrical system

Engine

Extension

Frame

Fuel tank capacity

Outriggers

Grade

Heavy duty jib

Hoist

Hookblock

Hydraulic system

Lights

Oil

Outrigger controls

Gear

Radius

Rotation

Speed

Steering

Suspension

Swing

Tires

Transmission

Notes

Grove Manitowoc National Crane Potain

Regional headquarters

Manitowoc - Americas
Manitowoc, Wisconsin, USA
Tel: +1 920 684 6621
Fax: +1 920 683 6277

Shady Grove, Pennsylvania, USA
Tel: +1 717 597 8121
Fax: +1 717 597 4062

Manitowoc - Europe, Middle East & Africa
Ecully, France
Tel: +33 (0)4 72 18 20 20
Fax: +33 (0)4 72 18 20 00

Manitowoc - Asia Pacific
Shanghai, China
Tel: +86 21 6457 0066
Fax: +86 21 6457 4955

Regional offices

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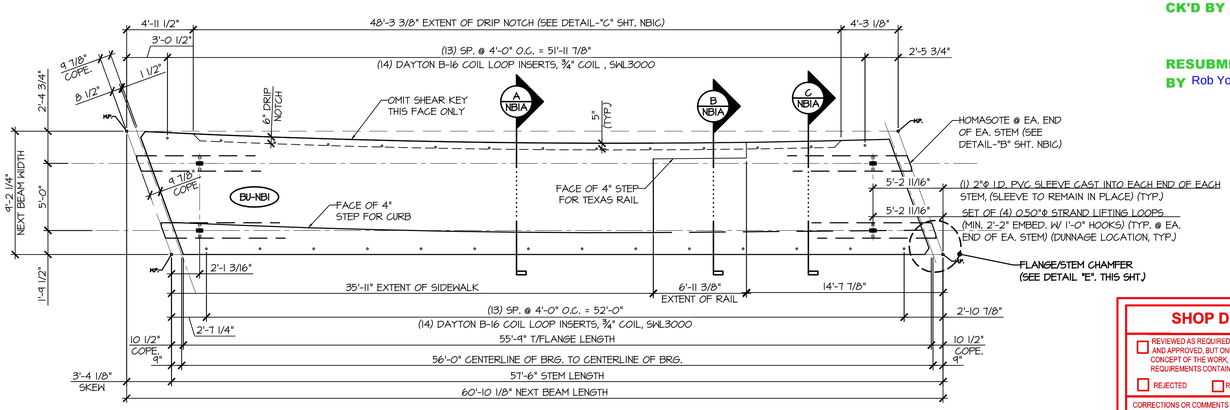
APPENDIX D

Approved Shop Drawings

Vermont Agency of Transportation
RECEIVED
Butte Flange Closure Pour Inserts_STAMPED_FLATTENED.pdf

CK'D BY _____ OK'D BY Rob Young
May 1, 2015
RESUBMIT No Approved
BY Rob Young DATE 05/04/2015



1 NBIA DIMENSIONAL PLAN VIEW IN FORM
3/16" = 1'-0"
- SEE DETAIL "1/NBIB" FOR SIDEWALK, DRIVEWAY & RAILING LAYOUT & REINFORCEMENT DETAILS
- SEE DETAIL "2/NBIB" FOR CURVED FLANGE LAYOUT

SHOP DRAWING REVIEW

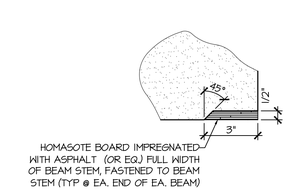
☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☒ APPROVED AS NOTED

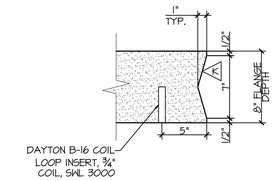
CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCEWITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPOINSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-5223

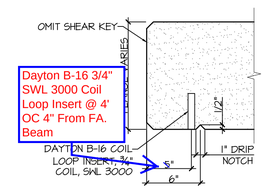
Job Number: 120121
Reviewed by: SRB
Date: 05/03/2015



DETAIL - "B"
3" = 1'-0"



DETAIL - "C"
1 ½" = 1'-0"



DETAIL - "D"
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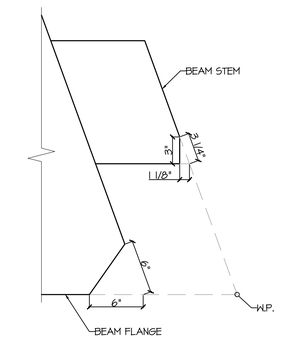

DETAIL - "E"
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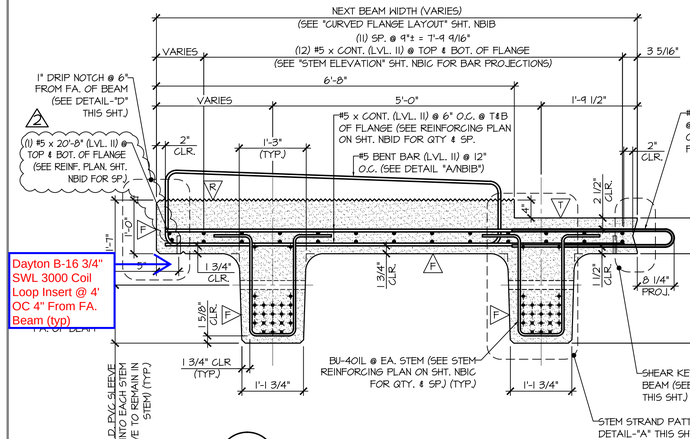
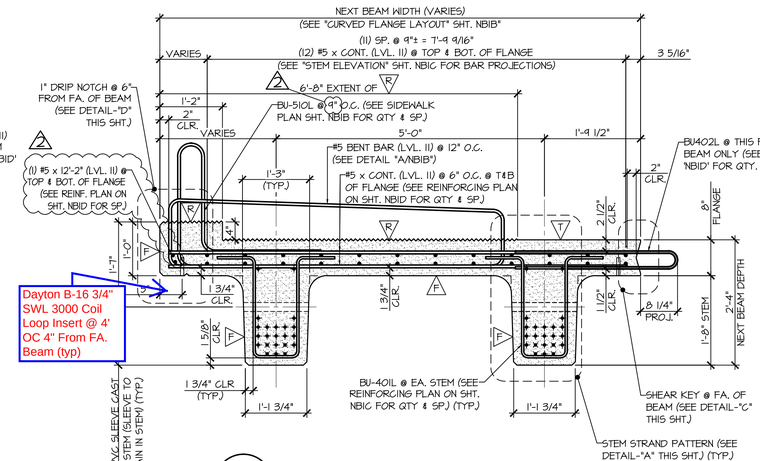
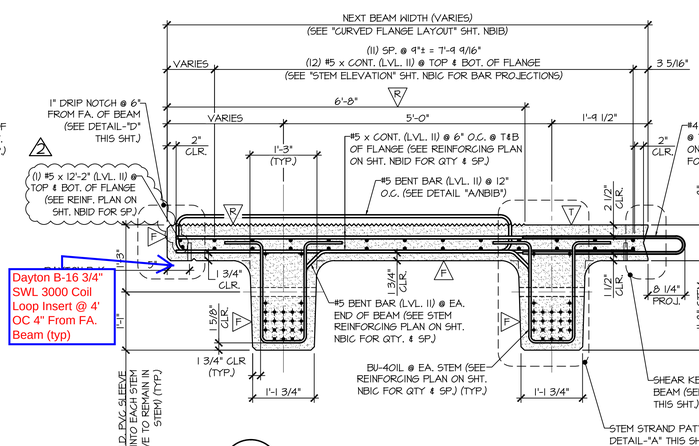


A NBIA DIMENSIONAL & REINFORCING SECTION
¾" = 1'-0"
- SEE SHEET NBIC FOR END BLOCK REINFORCING DETAILS

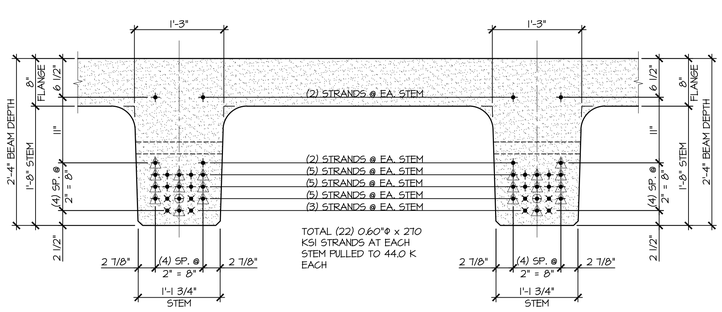


B NBIA DIMENSIONAL & REINFORCING SECTION
¾" = 1'-0"
- SEE SHEET NBIC FOR END BLOCK REINFORCING DETAILS



C NBIA DIMENSIONAL & REINFORCING SECTION
¾" = 1'-0"
- SEE SHEET NBIC FOR END BLOCK REINFORCING DETAILS

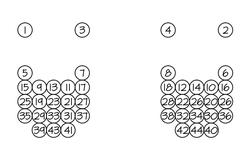
F DENOTES FORM FINISH
T DENOTES SMOOTH SCREED FINISH
K DENOTES ROUGHENED FINISH (⅛" AMPLITUDE)
R DENOTES ROUGHENED FINISH (¼" RAKE)



DETAIL - "A" (STEM STRAND PATTERN)
1" = 1'-0"

PRESTRESSING NOTATIONS

+ DENOTES STRAIGHT STRAND TO BE CUT FLUSH WITH EA. END OF EA. STEM
× DENOTES STRAIGHT STRAND TO EXTEND 2'-0" FROM EA. END OF EA. STEM
⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 2'-0" FROM EA. END OF EA. STEM
⊥ DENOTES STRAIGHT STRANDS TO BE DEBONDED 0'-6" FROM EA. END OF EA. STEM



DETENSIONING SCHEDULE
N.T.S.

MARK: BU-NBI	QTY.: 1	WT: 47.52 T	VOL: 23.47 CY

APPROVAL STAMP:

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

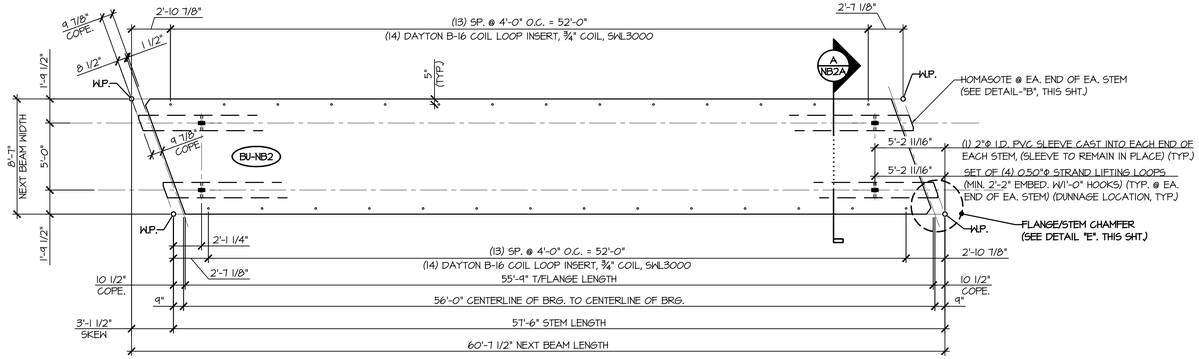
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRESTRESSED NEXT BEAM DETAILS

DATE:	MAR. 26, 2015
SCALE:	NOTED
CHKD:	DFTM: JDK
JOB NO:	23454-015
DWG. NO:	NBIA



1 NB2A DIMENSIONAL PLAN VIEW IN FORM

3/16" = 1'-0"

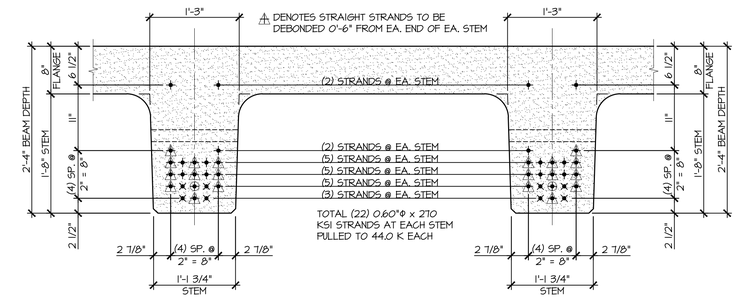
PRESTRESSING NOTATIONS

+ DENOTES STRAIGHT STRAND TO BE CUT FLUSH WITH EA. END OF EA. STEM

× DENOTES STRAIGHT STRAND TO EXTEND 2'-0" FROM EA. END OF EA. STEM

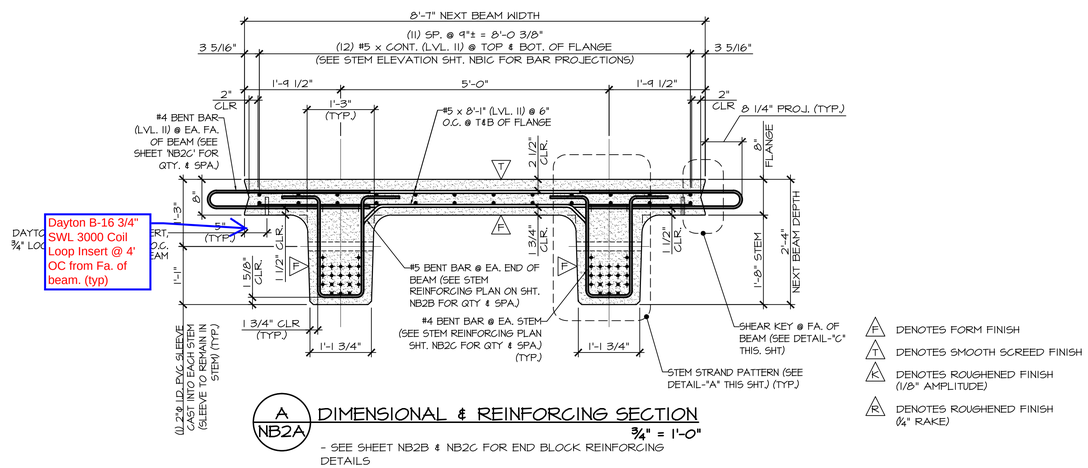
⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 2'-0" FROM EA. END OF EA. STEM

△ DENOTES STRAIGHT STRANDS TO BE DEBONDED 0'-6" FROM EA. END OF EA. STEM



DETAIL - "A" (STEM STRAND PATTERN)

1" = 1'-0"



A NB2A DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"

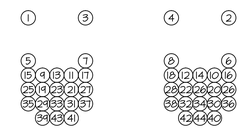
- SEE SHEET NB2B & NB2C FOR END BLOCK REINFORCING DETAILS

F DENOTES FORM FINISH

T DENOTES SMOOTH SCREED FINISH

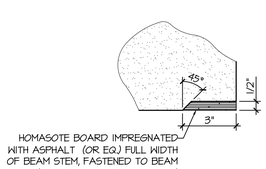
K DENOTES ROUGHENED FINISH (1/8" AMPLITUDE)

R DENOTES ROUGHENED FINISH (1/4" RAKE)



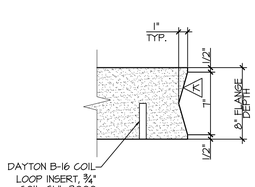
DETENSIONING SCHEDULE

N.T.S.



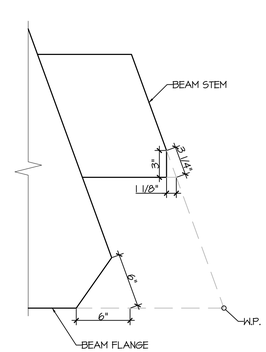
DETAIL - "B"

3" = 1'-0"



DETAIL - "C"

1 ½" = 1'-0"



DETAIL - "E"

1 ½" = 1'-0"

Vermont Agency of Transportation
RECEIVED
CK'D BY ____ OK'D BY Rob Young
May 1, 2015
RESUBMIT No
BY Rob Young
Approved
DATE 05/04/2015

MARK: BU-NB2	QTY.: 2	WT: 41.34 T	VOL: 20.42 CY

APPROVAL STAMP:

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

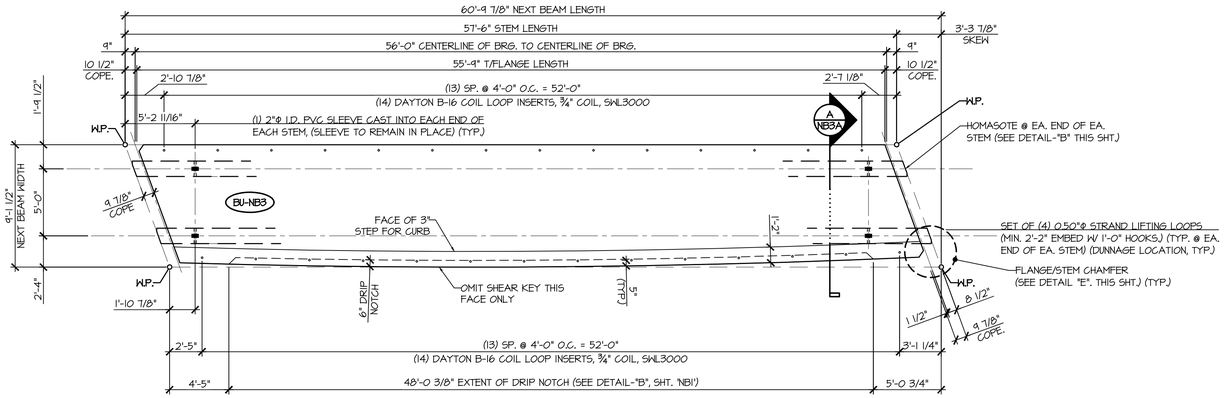
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

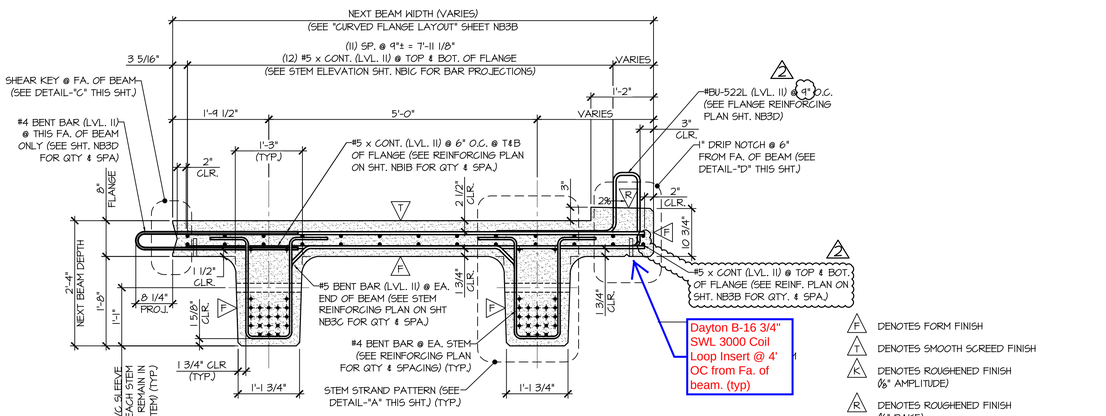
PRESTRESSED NEXT BEAM DETAILS

DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: NB2A



1 NB3A DIMENSIONAL PLAN VIEW IN FORM

3/16" = 1'-0"



A NB3A DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"

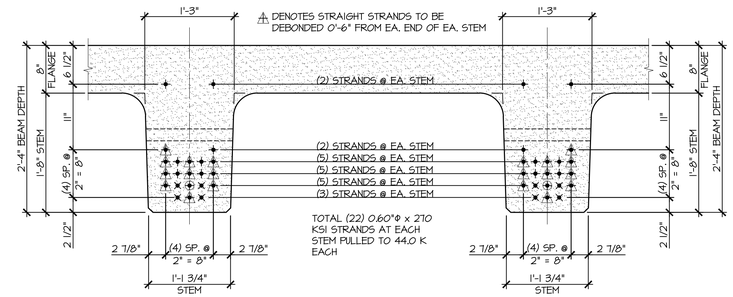
PRESTRESSING NOTATIONS

+ DENOTES STRAIGHT STRAND TO BE CUT FLUSH WITH EA. END OF EA. STEM

× DENOTES STRAIGHT STRAND TO EXTEND 2'-0" FROM EA. END OF EA. STEM

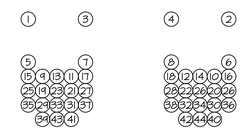
⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 2'-0" FROM EA. END OF EA. STEM

⚠ DENOTES STRAIGHT STRANDS TO BE DEBONDED 0'-6" FROM EA. END OF EA. STEM



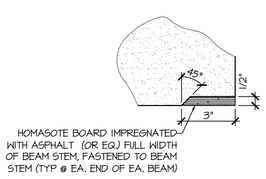
DETAIL - "A" (STEM STRAND PATTERN)

1" = 1'-0"



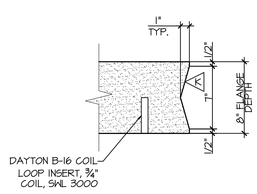
DETENSIONING SCHEDULE

N.T.S.



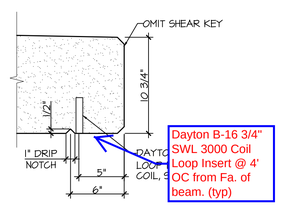
DETAIL - "B"

3" = 1'-0"



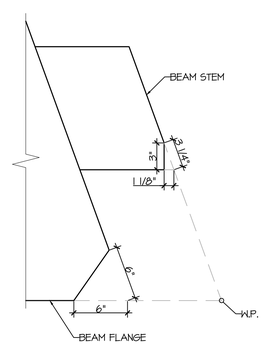
DETAIL - "C"

1½" = 1'-0"



DETAIL - "D"

1½" = 1'-0"



DETAIL - "E"

1½" = 1'-0"

Vermont Agency of Transportation
RECEIVED
CK'D BY ____ OK'D BY Rob Young
May 1, 2015
RESUBMIT No
BY Rob Young
Approved
DATE 05/04/2015

MARK: BU-NB3	QTY.: 1	WT: 43.11 T	VOL: 21.29 CY

APPROVAL STAMP:	J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	T. BUCK CONSTRUCTION, INC. CONTRACTOR AUBURN, MAINE
	STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF CALEDONIA	DATE: MAR. 26, 2015 SCALE: NOTED
	TOWN OF BURKE VERMONT ROUTE 114 BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)	CHKD: DFTM: JDK JOB NO: 23454-015
	PRESTRESSED NEXT BEAM DETAILS	DWG. NO: NB3A

LETTER OF TRANSMITTAL

TRANSMITTAL # 4

J.P. CARRARA & SONS, INC.
2464 CASE ST
MIDDLEBURY, VT 05753
T: 802.388.6363
F: 802.388.9010

DATE:	4.6.15	**JOB #**	23454-014
ATTN:	Brian Emmons/T.Buck Construction Inc.		
RE:	Burke, VT BRF 0269 (13)		

We are sending you:

Shop Drawings	x	Change Order		Copy of Letter	
Plans		Attached	X	Separate Cover	
Prints		Specifications		(Via)	
Samples		Other:			

Copies	*Date*	*Qty.*	*Description*
1	4.6.15	1	Shop Drawings (Rev 2) Submitted for Approval

These are transmitted as checked below:

For approval	x	Approved as submitted		Submit	x
For your use		Approved as noted		Resubmit	
As requested		Returned /Notation		Return	
For review		Loaned Prints/Returned		Other	

Remarks:

Please see attached Burke shop drawings for approval.

Please consider an expeditious review of components requiring LVL II reinforcement (Dual Coated / Z Bar) as there is currently a one month production lead time on Zbar/Rebar products.

Specification subsections 510.04(b)(7) and 540.04(b)(7) allow for the use of the previously submitted mixes in lieu of submitting additional mix designs. **Previously approved mix designs are being resubmitted as requested for Burke precast concrete components and demonstrate updated aggregate properties with NO OTHER CHANGES TO PREVIOUSLY SUBMITTED/CURRENTLY APPROVED MIX DESIGNS.**

Copy to:

Signed:

Joe Gallese-PM

If enclosures are not as noted, please notify us immediately.

ABUTMENT & APPROACH SLAB GENERAL NOTES

1. MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 5,000 PSI.
2. MIN. CONCRETE STRENGTH AT STRIPPING SHALL BE 4,000 PSI (UNLESS NOTED OTHERWISE).
3. REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) LEVEL II (DUAL COATED) (ASTM A-1055) OR LEVEL I (EPOXY) STEEL), (AS NOTED ON SHOP DRAWINGS).
4. THE TOP OF PRECAST CONCRETE UNITS SHALL RECEIVE A SMOOTH FLOAT FINISH (UNLESS NOTED OTHERWISE).
5. SHEAR KEY SURFACES SHALL BE SAND BLASTED CLEAN. REINFORCING STEEL PROJECTING FROM APPROACH SLABS WILL BE COVERED DURING SAND BLASTING SO THAT COATING IS NOT DAMAGED.
6. APPROACH SLABS SHALL BE HANDLED AND ERECTED USING THE LIFTING INSERTS ONLY. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. APPROACH SLABS SHALL BE STORED & TRANSPORTED WITH TIMBER SUPPORTS AT 5th POINTS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
7. ABUTMENTS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. THE PINS OF THE SHACKLES SHALL BE PLACED THROUGH THE LIFTING LOOPS. SEE DETAIL, SHEET C1. VERTICAL FORCES ONLY SHALL BE APPLIED TO THE LIFTING LOOPS. ABUTMENTS SHALL BE STORED & TRANSPORTED WITH TIMBER SUPPORTS AT 5th POINTS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
   ONCE ABUTMENTS HAVE BEEN ERECTED, CUT LIFTING LOOPS AT RECESS, EPOXY PAINT AND PATCH AS REQUIRED (BY OTHERS).
8. MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. P510.02 AND P510.05 RESPECTIVELY.

   DESIGN MIX:

   APPROACH SLABS: J.P.C. BRIDGE MIX #445M5CC

   ABUTMENTS: J.P.C. BRIDGE MIX #445M5CC
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 POLY WILL BE PLACED OVER THE UNIT. NATURAL CURE WITH NO EXTERNAL HEAT APPLIED. CURING SHALL CONTINUE UNTIL STRIPPING STRENGTH HAS BEEN ACHIEVED.

SHEAR KEY SURFACES SHALL HAVE 1/8" COARSE AGGREGATE EXPOSED WITH A PROFILE SIMILAR TO ICRI ROUGHNESS PLAQUE CSP #7 COPYRIGHT 1997.

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"Ø 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 COATED WITH TWO PART EPOXY PAINT SYSTEM.
7. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
8. THE TOP OF BEAMS SHALL RECEIVE A SMOOTH SCREED (UNLESS NOTED OTHERWISE).
9. SHEAR KEY SURFACES SHALL BE SAND BLASTED TO 1/8" AMPLITUDE. 2
10. BEAMS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL AND VERTICAL FORCES ARE APPLIED TO EACH OF THE TWO LIFTING LOOPS AT EACH END OF THE BEAM. THE PINS OF THE SHACKLES SHALL BE PLACED THROUGH THE LIFTING LOOPS. SEE DETAIL, THIS SHEET. BEAMS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS. TIMBER SUPPORTS SHALL BE PLACED WITHIN CLOSE PROXIMITY TO THE SHIPPING SLEEVE LOCATION AS SHOWN BELOW, 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.

    NEXT BEAM MIX #430M WITH 5 GALLONS OF CORROSION INHIBITOR
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. CONTRACTOR SHALL PROVIDE APPROPRIATE FIELD 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. 2

DRAWING INDEX

SHT. #	DRAWING TITLE	REV. #	REV. DATE
C1	COVER SHEET	2	04-03-15
F1	PRECAST ABUTMENT APPROACH SLAB & NEXT BEAM LAYOUT	2	04-03-15
F2	PRECAST ABUTMENT # 1 ELEVATION & SECTIONS	2	04-03-15
F3	PRECAST ABUTMENT # 2 ELEVATION	2	04-03-15
F4	TRANSVERSE SECTIONS & DETAILS	2	04-03-15
		2	
AB1	PRECAST ABUTMENT PLANS & SECTION	2	04-03-15
AB2	PRECAST ABUTMENT # 1 DETAILS	2	04-03-15
AB3	PRECAST ABUTMENT # 2 DETAILS	2	04-03-15
AB4	PRECAST ABUTMENT # 3 DETAILS	2	04-03-15
AB5	PRECAST ABUTMENT # 4 DETAILS	2	04-03-15
AS1	PRECAST APPROACH SLAB DETAILS	2	04-03-15
AS2	PRECAST APPROACH SLAB DETAILS	2	04-03-15
AS3	PRECAST APPROACH SLAB DETAILS	2	04-03-15
NB1A	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
NB1B	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
NB1C	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
NB1D	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
NB2A	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
NB2B	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
NB2C	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
NB3A	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
NB3B	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
NB3C	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
NB3D	PRESTRESSED NEXT BEAM DETAILS	2	04-03-15
M1	MATERIALS LIST	2	04-03-15
M2	MATERIALS LIST	2	04-03-15
M3	MATERIALS LIST	2	04-03-15

DESIGN LIVE LOAD: HL-93

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.60"Ø x 270 KSI
AREA: 0.217 IN^2
TENSION: 44,000 LB. EACH STRAND
GRIP-TO-GRIP: 252'-0" = 252.00'
Es = 28,500,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

EXAMPLE:

$$\Delta = \frac{PL}{AE} = \frac{(44{,}000 - 3{,}000) \times 252.00 \times 12}{0.217 \times 28{,}500{,}000} = 20.04"$$

THEREFORE: (TOLERANCES ± 5%)

Δ UPPER LIMIT = 1.05 x 20.04" = 21.05" = 21"
Δ LOWER LIMIT = 0.95 x 20.04" = 19.04" = 19"

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

$$\Delta P = \frac{0.5 \times 41{,}000}{20.04'} = 1{,}023 \text{ LBS.}$$

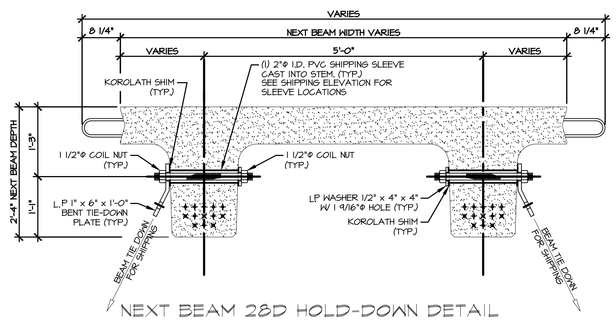
TOTAL TENSIONING FORCE = 44,000 + 1,023 = 45,023 LBS.

ADDITIONALLY, INCREASED ELONGATION AND THE CORRESPONDING FORCE DUE TO FORM SHORTENING SHALL BE ACCOUNTED FOR IN THE CALCULATIONS USED FOR CONSTRUCTION PER PROVISION PCI MNL 116 5.3.1.3.

STRAND TENSIONING PROCEDURE:

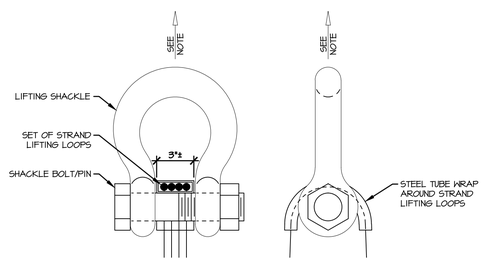
1. PULL EACH STRAND INITIALLY TO 3,000* LBS. AND MARK STRAND.
2. THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,023* LBS. AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 19"* AND 21"*.

   * NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.
3. STRANDS IN BOTTOM TWO ROWS SHALL BE RE-PULLED TO VERIFY SHORTENING EFFECT OF SELF STRESSING BED. RE-PULL FORCE SHALL NOT INCLUDE OVER-PULL FOR SHORTENING.



NEXT BEAM 28D HOLD-DOWN DETAIL FOR SHIPPING

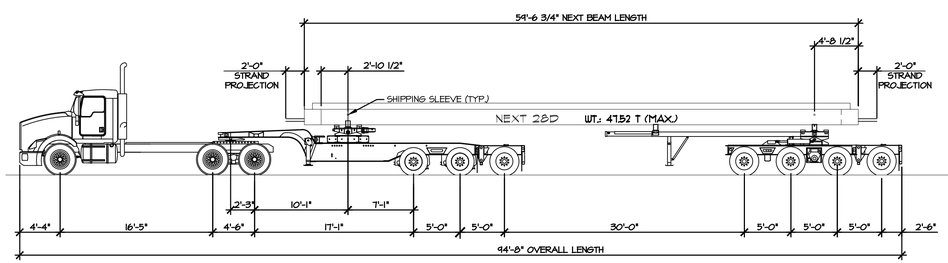
3/4" = 1'-0"



NOTE: BEAMS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL AND VERTICAL 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.

2 01-22-15 REVISED

Vermont Agency of Transportation
RECEIVED
CK'D BY _____ OK'D BY _____
April 6, 2015
RESUBMIT No _____ Approved AsNoted
BY Rob Young DATE 04/13/2015

SHOP DRAWING REVIEW

☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☒ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCEWITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPOINSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS: SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION: COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES: AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

APPROVAL STAMP:

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

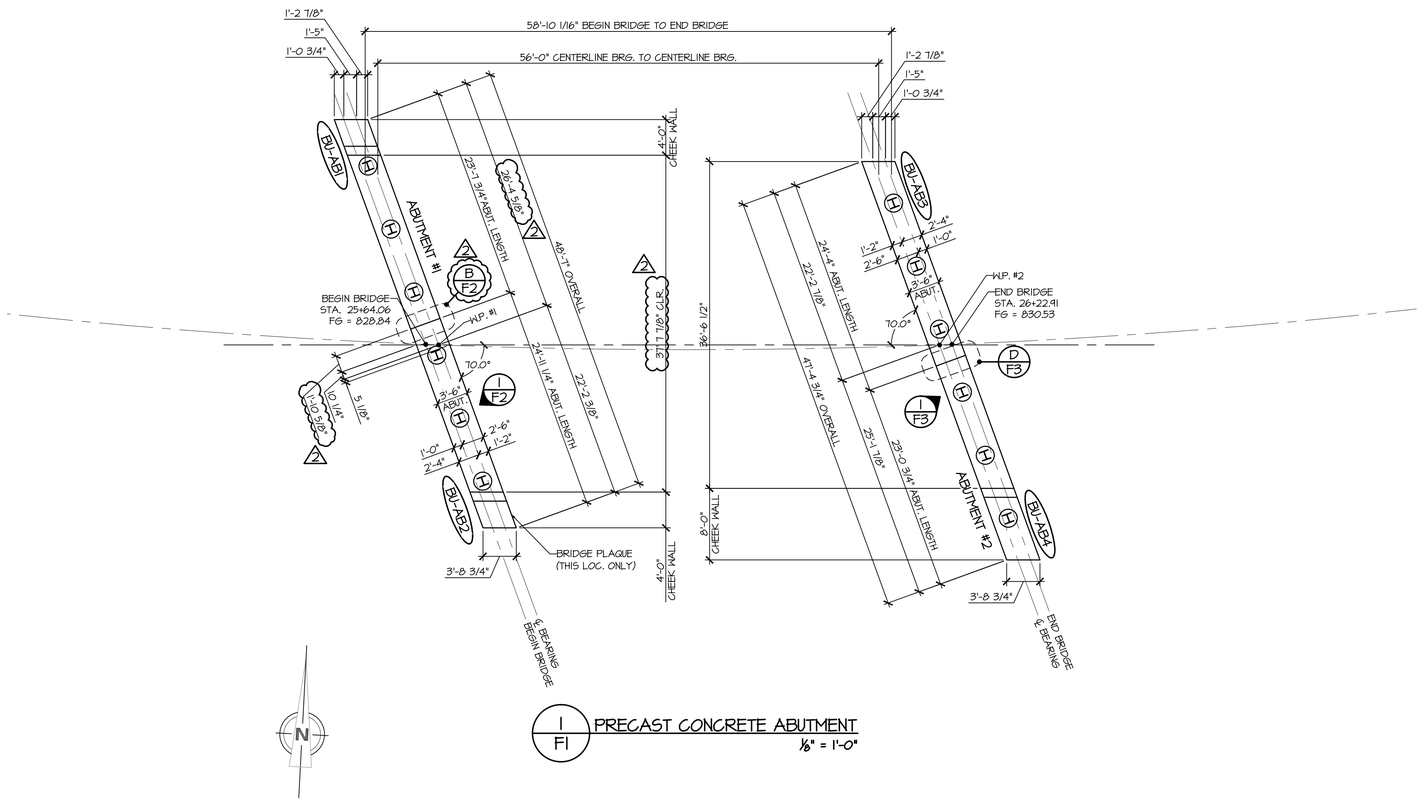
T. BUCK CONSTRUCTION, INC
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

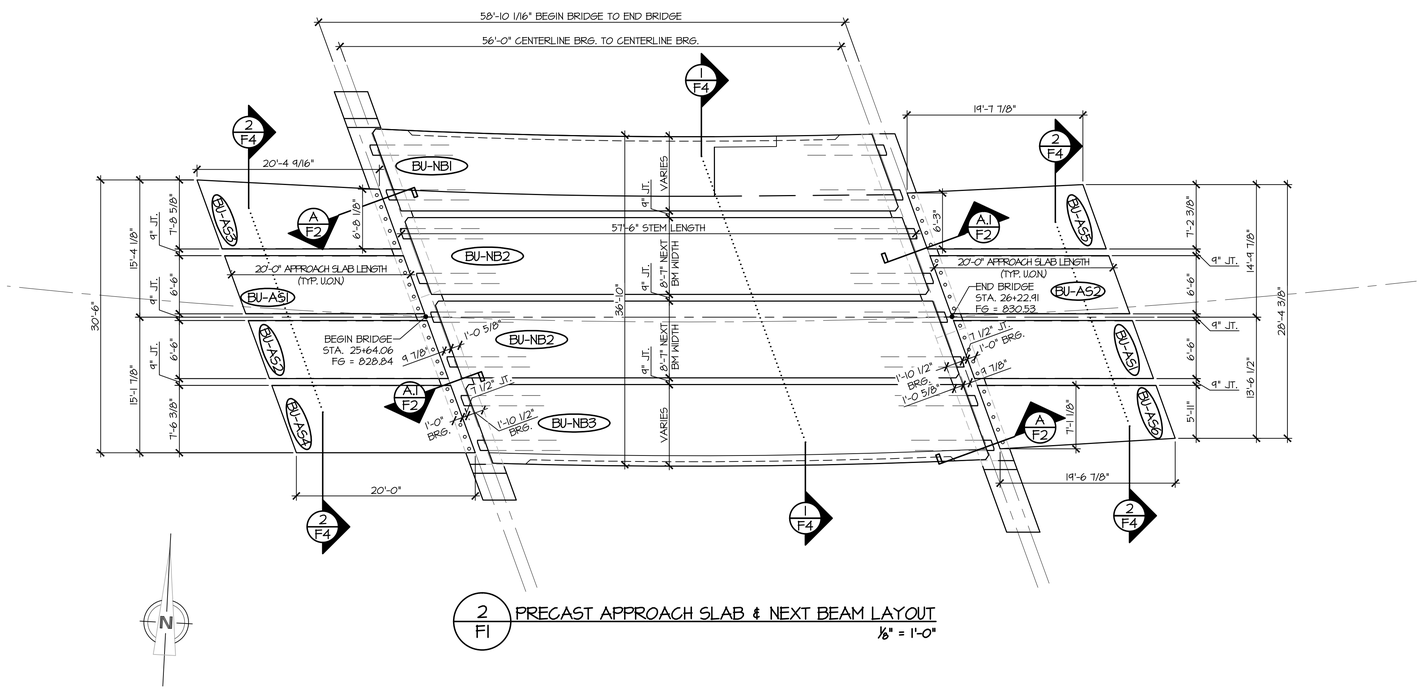
TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

COVER SHEET

DATE: MAR 26, 2015
SCALE: NOTED
CHKD: -- DFTM: JDK
JOB NO: 23454-015
DWG. NO: C1



1/F1 PRECAST CONCRETE ABUTMENT
1/8" = 1'-0"



2/F1 PRECAST APPROACH SLAB & NEXT BEAM LAYOUT
1/8" = 1'-0"

Vermont Agency of Transportation
RECEIVED
CK'D BY ____ OK'D BY ____
April 6, 2015
RESUBMIT No ____ Approved AsNoted
BY Rob Young DATE 04/13/2015

SHOP DRAWING REVIEW

☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

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CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

APPROVAL STAMP:

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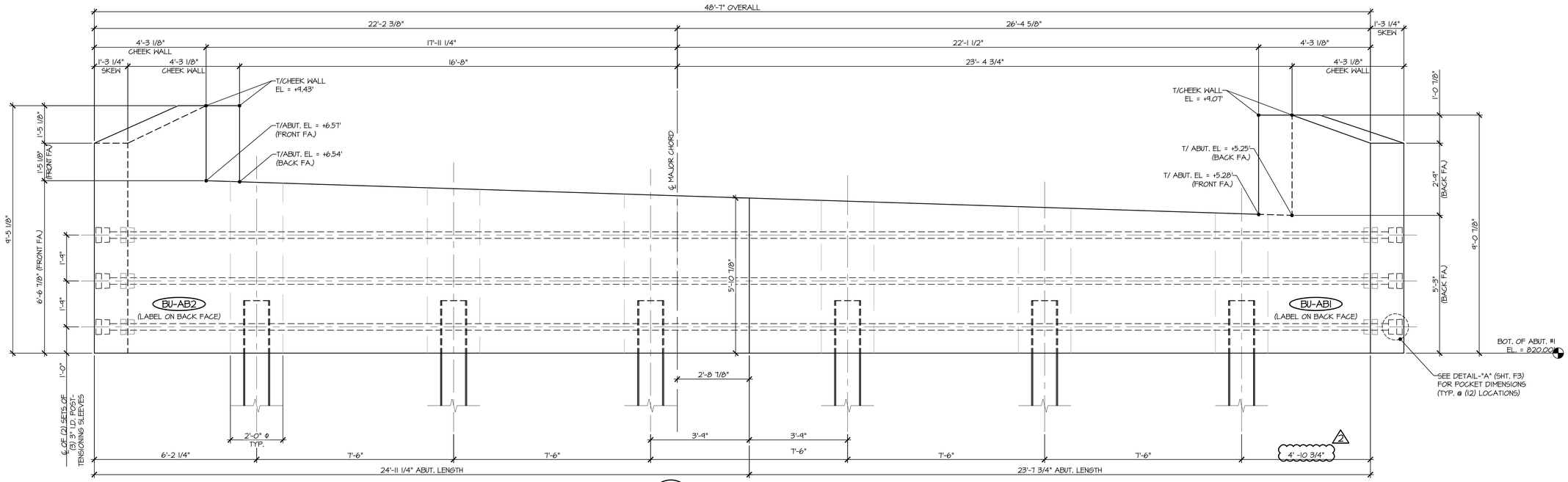
COUNTY OF CALEDONIA

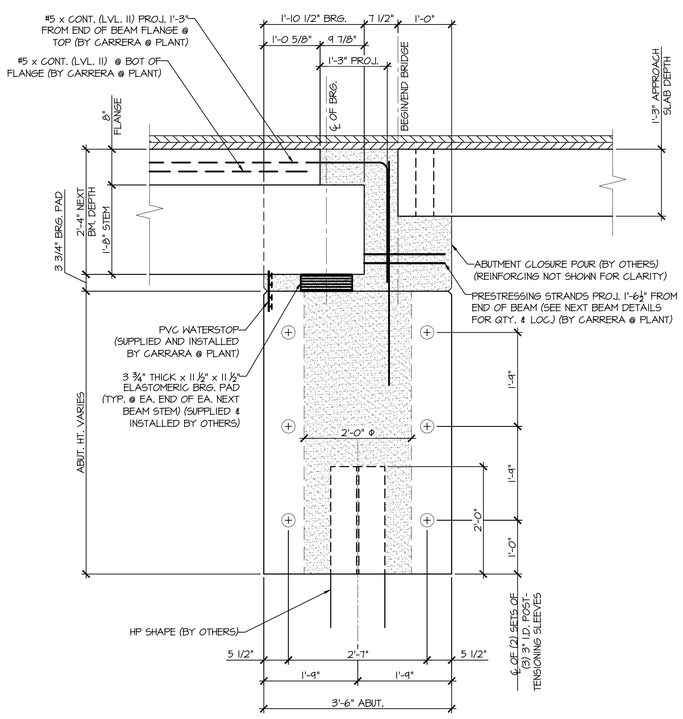
TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRECAST ABUTMENT
APPROACH SLAB & NEXT BEAM LAYOUT

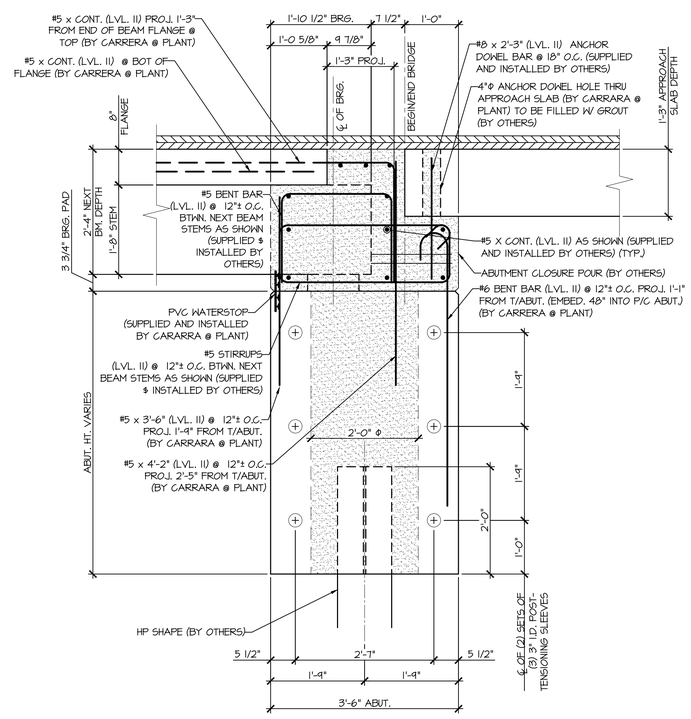
DATE:	MAR. 26, 2015
SCALE:	NOTED
CHKD:	DFTM: JDK
JOB NO:	23454-015
DWG. NO:	F1



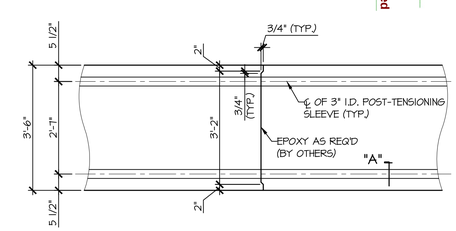
1 / F2 ABUTMENT #1 ELEVATION
½" = 1'-0"



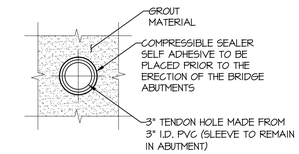
A / F2 BEARING SECTION
¾" = 1'-0"
NEXT BEAM STEM BEARING



A.1 / F2 BEARING SECTION
¾" = 1'-0"
BETWEEN NEXT BEAM STEM BEARING



B / F2 MATCH CAST SECTION @ P.T. SLEEVE
½" = 1'-0"



SECTION - "A"
1½" = 1'-0"

Vermont Agency of Transportation
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CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

APPROVAL STAMP:

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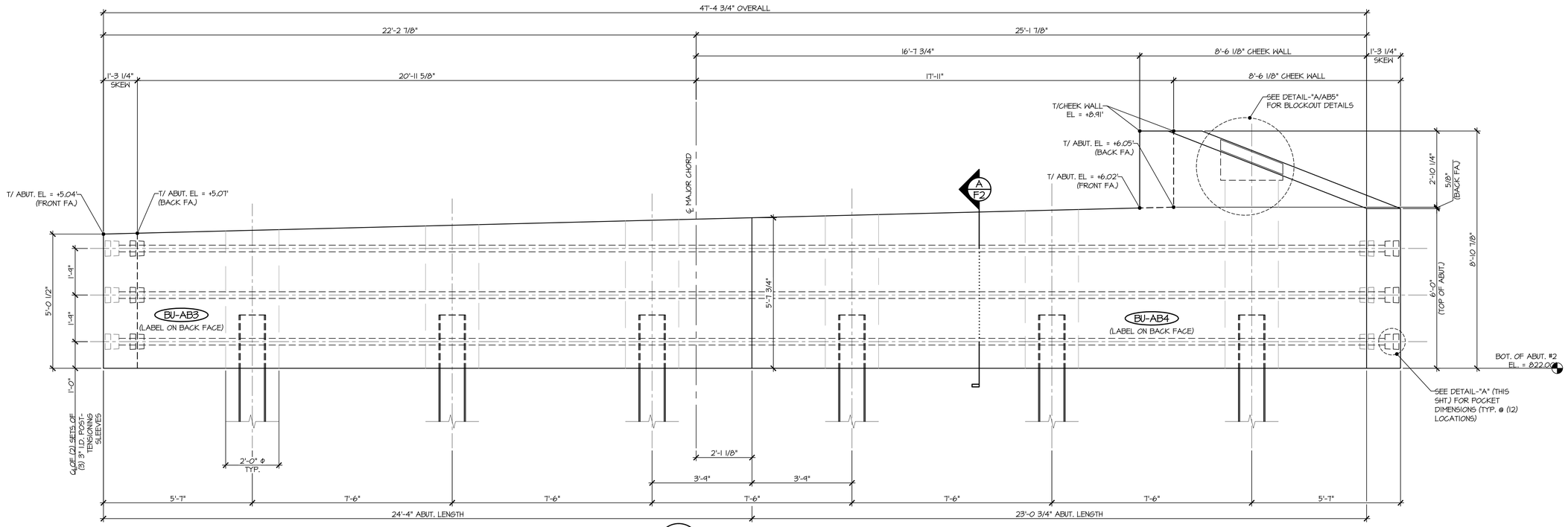
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

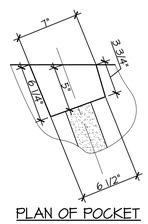
PRECAST ABUTMENT # 1
ELEVATION & SECTIONS

DATE:	MAR. 26, 2015
SCALE:	NOTED
CHKD:	DFTM: JDK
JOB NO:	23454-015
DWG. NO:	F2

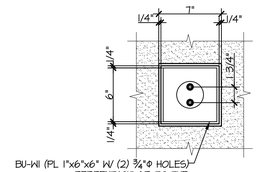


1 / F3 ABUTMENT 2 ELEVATION

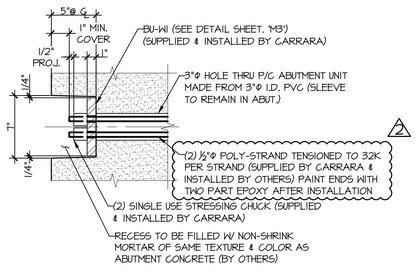
½" = 1'-0"



PLAN OF POCKET



ABUTMENT ELEVATION



SECTION AT CENTERLINE

DETAIL - "A"

1½" = 1'-0"

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TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRECAST ABUTMENT # 2 ELEVATION

DATE:	MAR. 26, 2015
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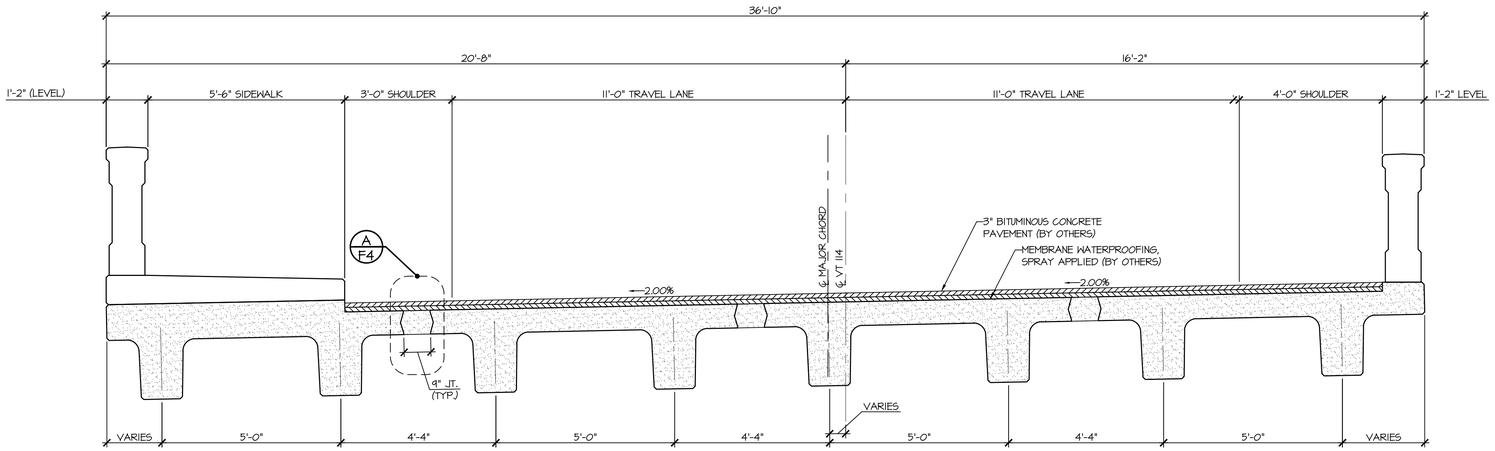
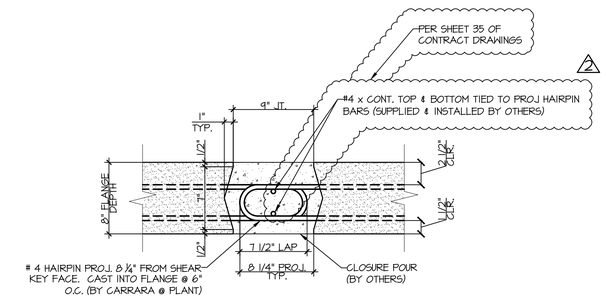
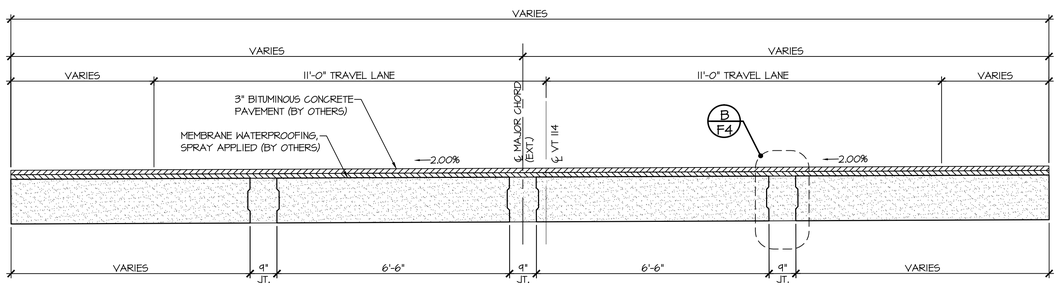
CHKD:	DFTM: JDK
JOB NO:	23454-015
DWG. NO:	F3



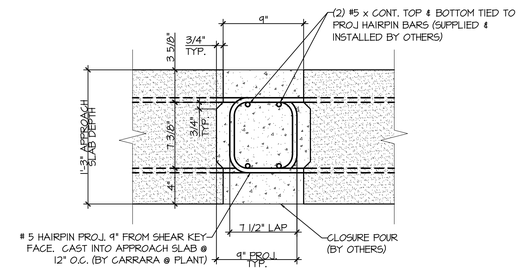
1 / F4 NEXT BEAM TRANSVERSE SECTION
½" = 1'-0"



A / F4 NEXT BEAM CLOSURE POUR
1½" = 1'-0"



2 / F4 APPROACH SLAB TRANSVERSE SECTION
½" = 1'-0"



B / F4 APPROACH SLAB CLOSURE POUR
1½" = 1'-0"

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TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

TRANSVERSE SECTIONS & DETAILS

DATE:	MAR. 26, 2015
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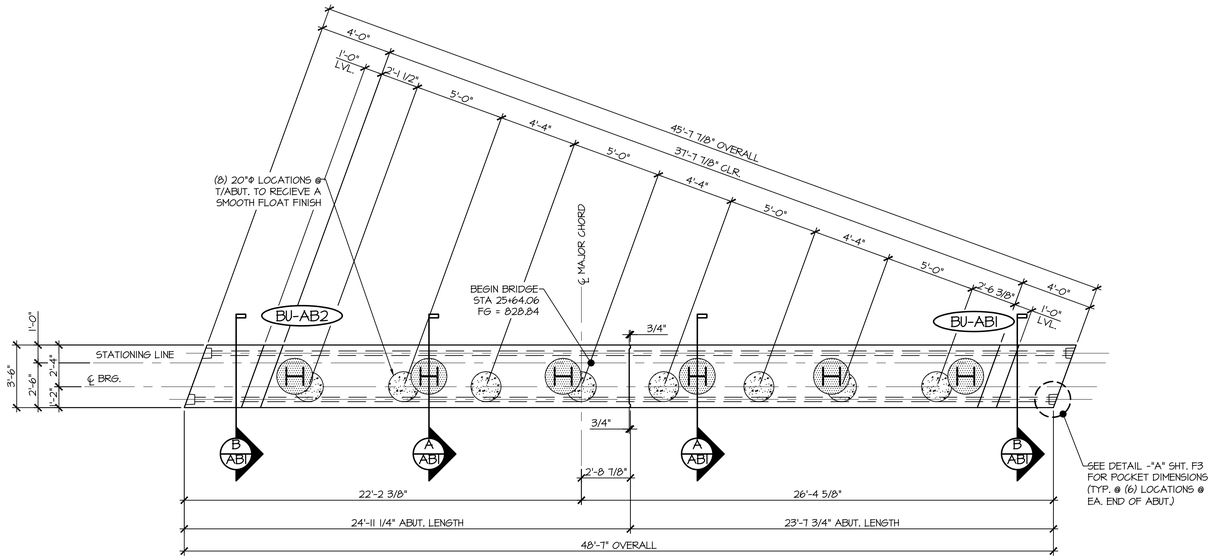
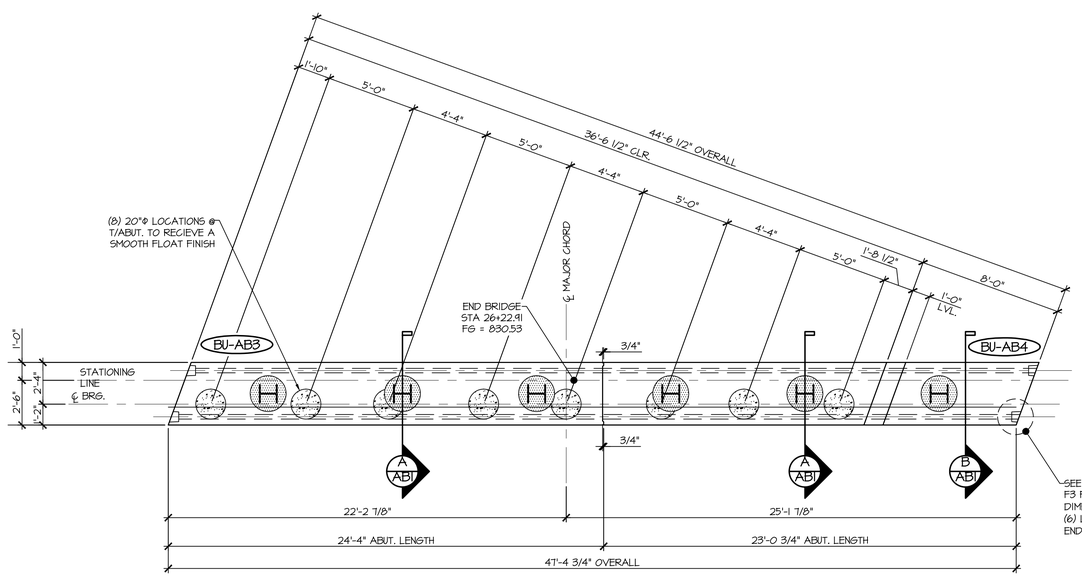
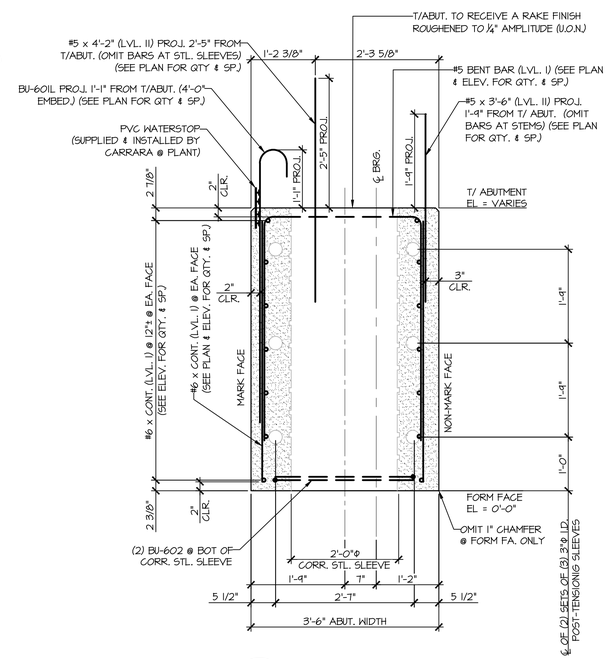
JOB NO:	23454-015
DWG. NO:	F4



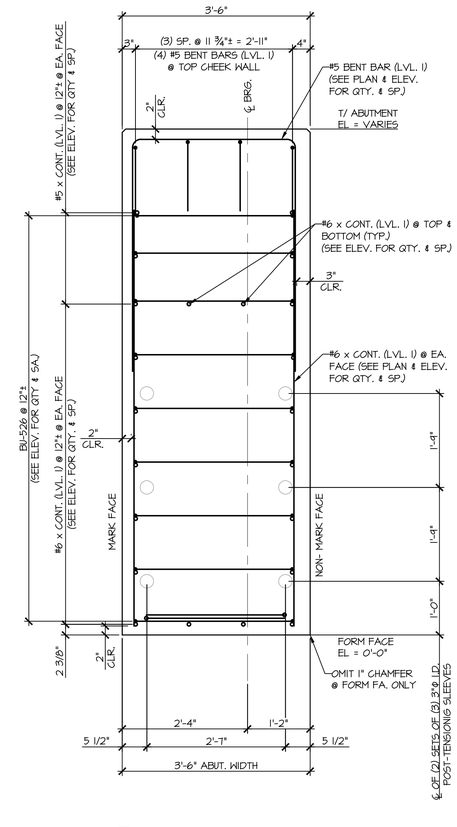
1 / ABI — ABUTMENT ASSEMBLY PLAN
1/4" = 1'-0"



2 / ABI — ABUTMENT ASSEMBLY PLAN
1/4" = 1'-0"



A / ABI — ABUTMENT SECTION
3/4" = 1'-0"



B / ABI — ABUTMENT SECTION
3/4" = 1'-0"

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BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRECAST ABUTMENT PLANS & SECTION

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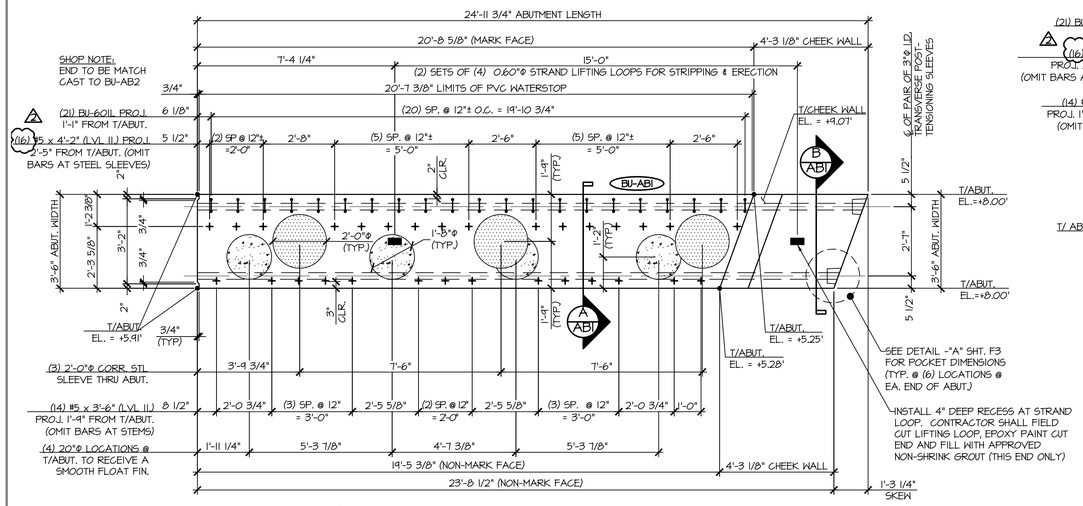
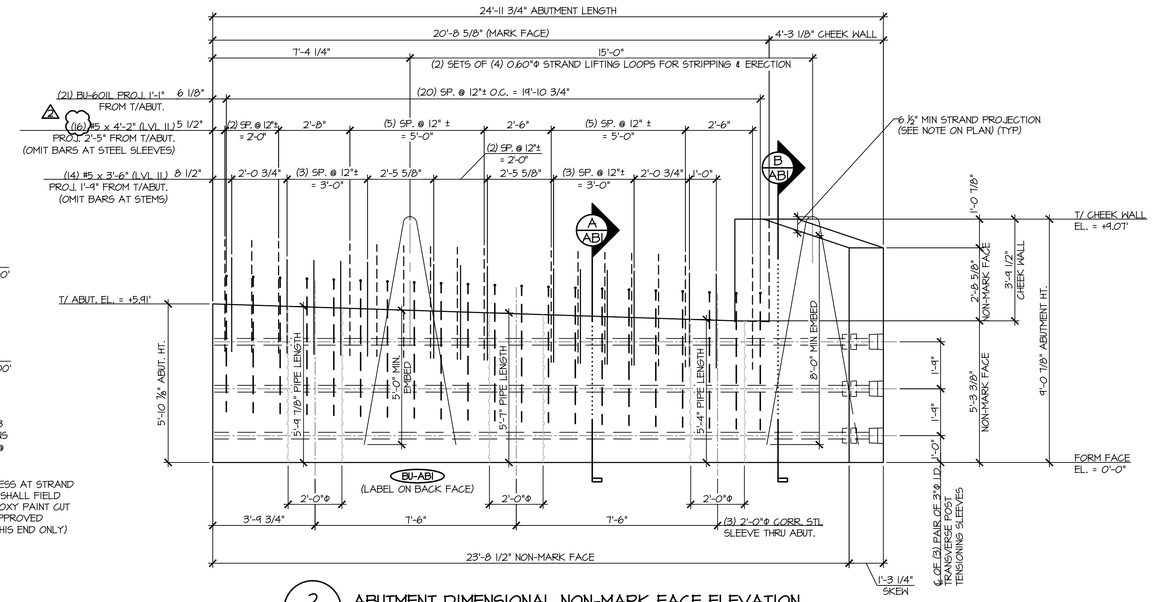


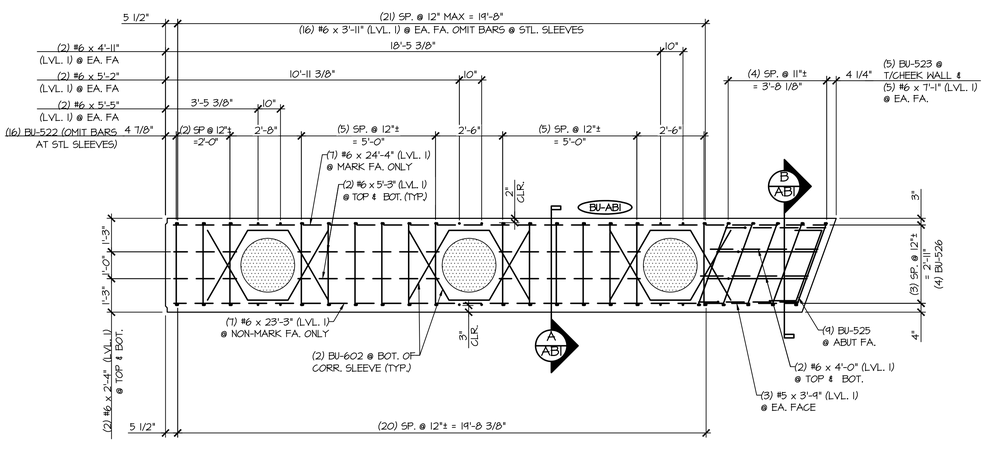
1 / AB2 ABUTMENT DIMENSIONAL PLAN VIEW IN FORM

3/8" = 1'-0"



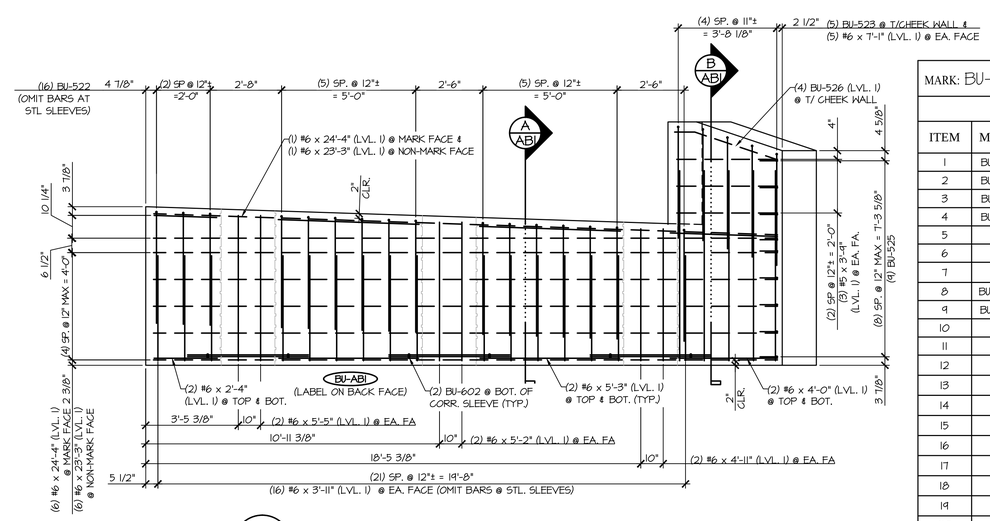
2 / AB2 ABUTMENT DIMENSIONAL NON-MARK FACE ELEVATION

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"

MARK: BU-AB1	QTY.: 1	WT: 35.19T	VOL: 17.38 CY

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	BU-522	#5 BENT BAR (LEVEL I)	16
2	BU-523	#5 BENT BAR (LEVEL I)	5
3	BU-525	#5 BENT BAR (LEVEL I)	9
4	BU-526	#5 BENT BAR (LEVEL I)	4
5		#5 X 3'-6" (LEVEL II, DUAL COATED)	14
6		#5 X 4'-2" (LEVEL II, DUAL COATED)	16
7		#5 x 3'-9" (LEVEL I)	6
8	BU-601L	#6 BENT BAR (LEVEL II, DUAL COATED)	21
9	BU-602	#6 BENT BAR (LEVEL I)	6
10		#6 x 2'-4" (LEVEL I)	4
11		#6 x 3'-11" (LEVEL I)	32
12		#6 X 4'-0" (LEVEL I)	4
13		#6 X 4'-11" (LEVEL I)	4
14		#6 X 5'-2" (LEVEL I)	4
15		#6 x 5'-3" (LEVEL I)	8
16		#6 x 5'-5" (LEVEL I)	4
17		#6 x 7'-1" (LEVEL I)	10
18		#6 x 23'-3" (LEVEL I)	7
19		#6 x 24'-4" (LEVEL I)	7
20		2'-0" x 5'-4" CORR. STL. PIPE (GALV.)	1
21		2'-0" x 5'-7" CORR. STL. PIPE (GALV.)	1
22		2'-0" x 5'-9 7/8" CORR. STL. PIPE (GALV.)	1
23		SET OF (4) 0.60"Φ x 270 KSI STRAND LIFTING LOOPS	2

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Vermont Agency of Transportation
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PRECAST ABUTMENT #1 DETAILS

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JOB NO: 23454-015
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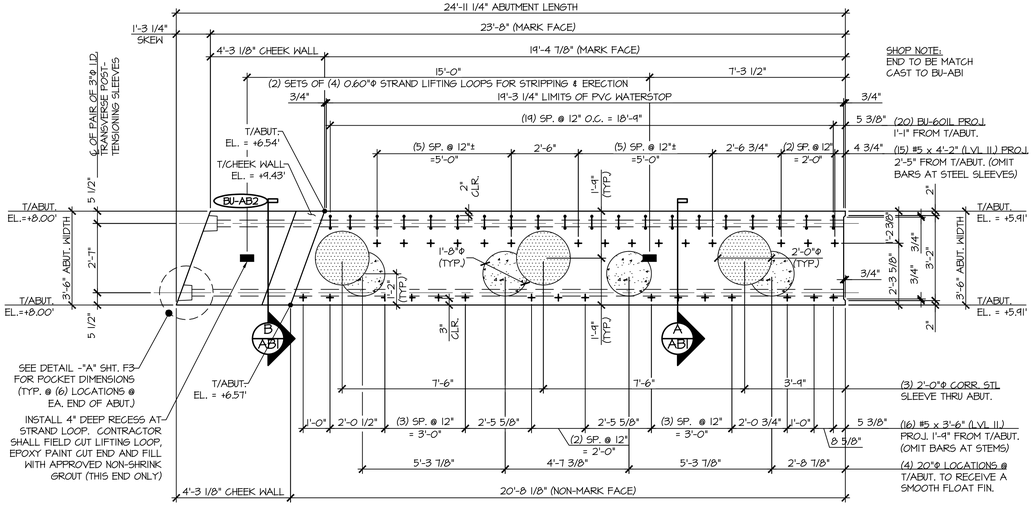
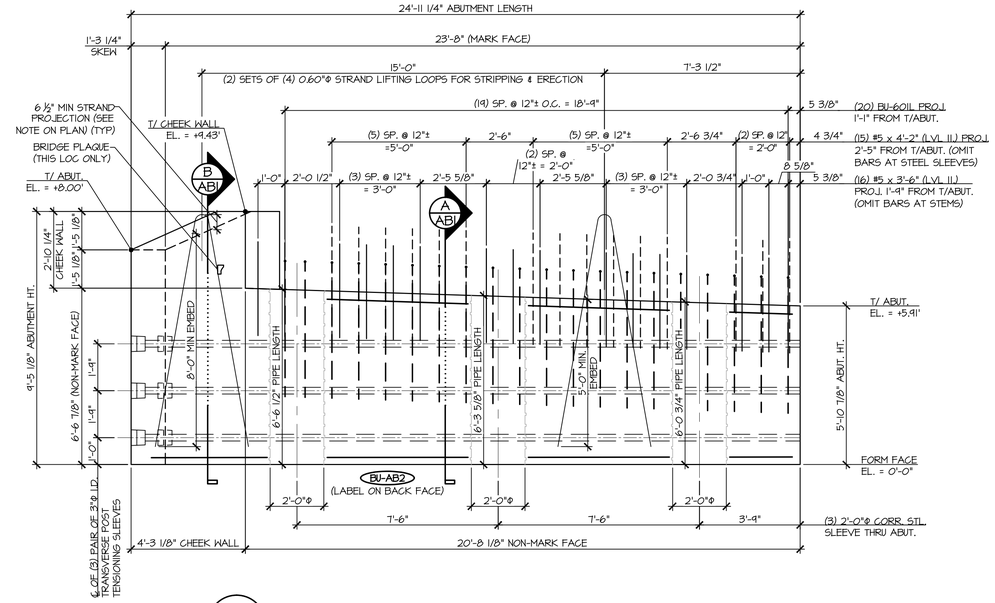


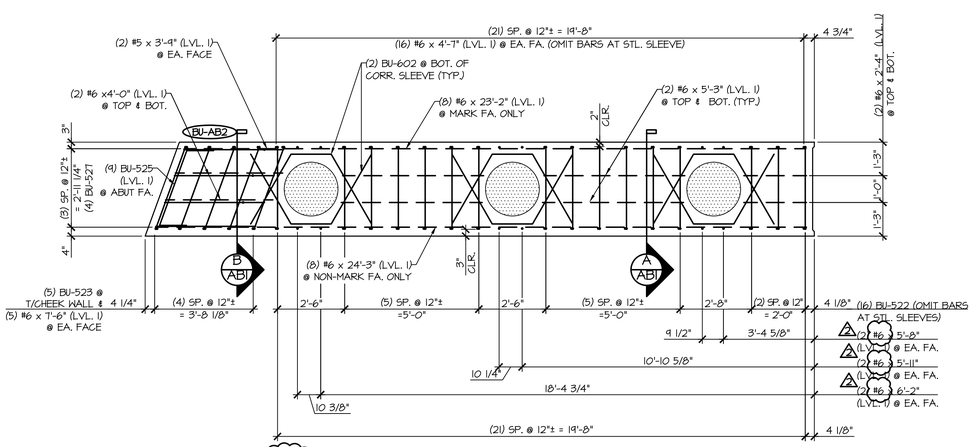
1 / AB3 ABUTMENT DIMENSIONAL PLAN VIEW IN FORM

3/8" = 1'-0"



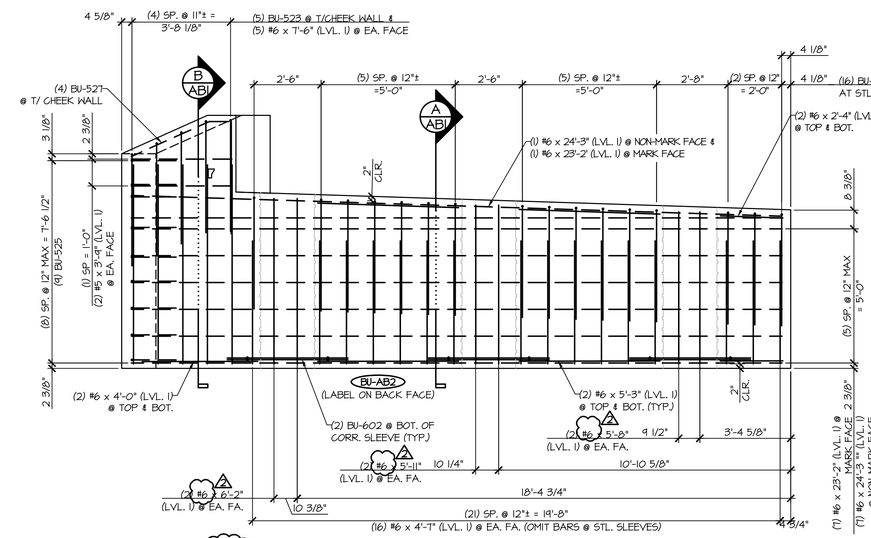
2 / AB3 ABUTMENT DIMENSIONAL NON-MARK FACE ELEVATION

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"

MARK: BU-AB2	QTY.: 1	WT: 38.17T	VOL: 18.85 CY

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	BU-522	#5 BENT BAR (LEVEL I)	16
2	BU-523	#5 BENT BAR (LEVEL I)	5
3	BU-525	#5 BENT BAR (LEVEL I)	9
4	BU-521	#5 BENT BAR (LEVEL I)	4
5		#5 X 3'-6" (LEVEL II, DUAL COATED)	16
6		#5 x 4'-2" (LEVEL II, DUAL COATED)	15
7		#5 x 3'-9" (LEVEL I)	4
8	BU-601L	#6 BENT BAR (LEVEL II, DUAL COATED)	20
9	BU-602	#6 BENT BAR (LEVEL I)	6
10		#6 x 2'-4" (LEVEL I)	4
11		#6 x 4'-0" (LEVEL I)	4
12		#6 X 4'-7" (LEVEL I)	32
13		#6 x 5'-3" (LEVEL I)	8
14		#6 x 5'-8" (LEVEL I)	4
15		#6 x 5'-11" (LEVEL I)	4
16		#6 x 6'-2" (LEVEL I)	4
17		#6 x 7'-6" (LEVEL I)	10
18		#6 x 23'-2" (LEVEL I)	8
19		#6 x 24'-3" (LEVEL I)	8
20		2'-0" x 6'-0 ¾" CORR. STL. PIPE (GALV.)	1
21		2'-0" x 6'-3 ⅝" CORR. STL. PIPE (GALV.)	1
22		2'-0" x 6'-6 ½" CORR. STL. PIPE (GALV.)	1
23		SET OF (4) 0.60"Φ x 270 KSI STRAND LIFTING LOOPS	2

Vermont Agency of Transportation
RECEIVED
CK'D BY
OK'D BY
April 6, 2015
RESUBMIT No.
Approved As Noted
BY Rob Young
DATE 04/13/2015

SHOP DRAWING REVIEW

☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

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CLD Consulting Engineers, 540 Commercial Street, Manchester, NH 03101, 603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

APPROVAL STAMP:

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

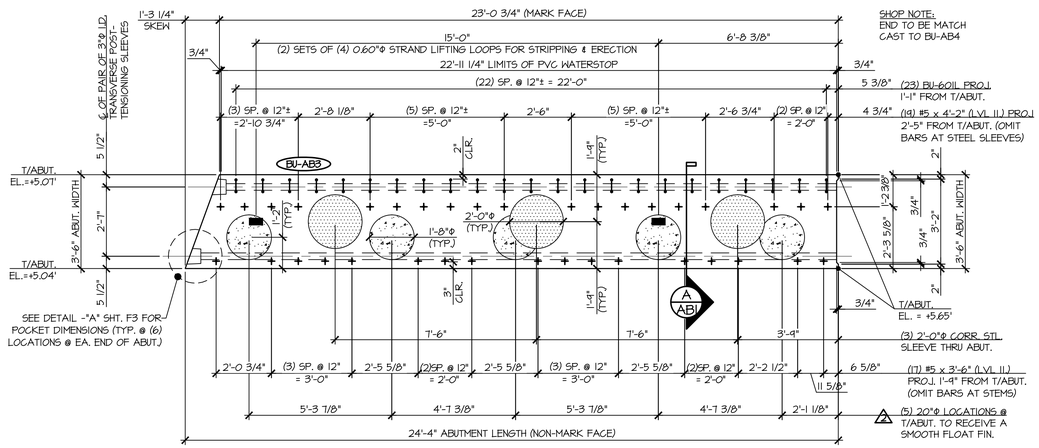
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

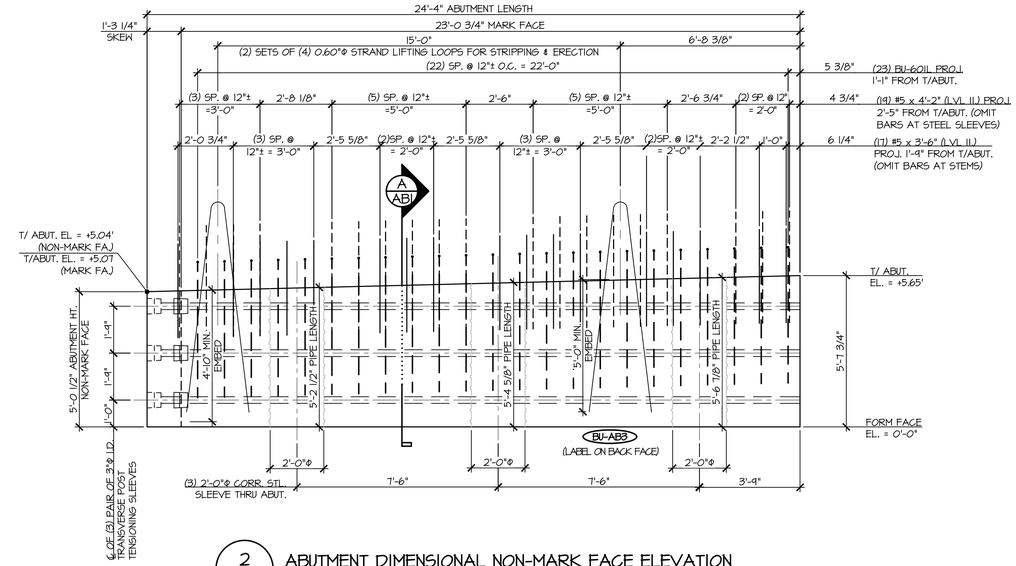
PRECAST ABUTMENT #2 DETAILS

DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: AB3



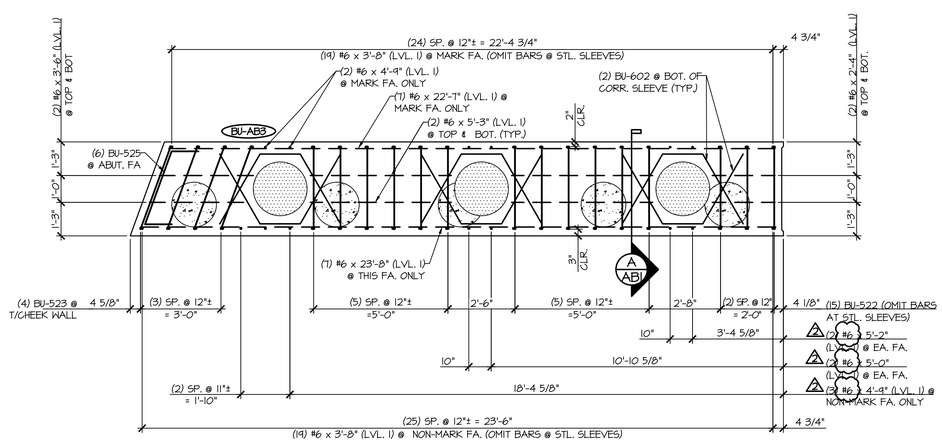
1 AB4 ABUTMENT DIMENSIONAL PLAN VIEW IN FORM

3/8" = 1'-0"



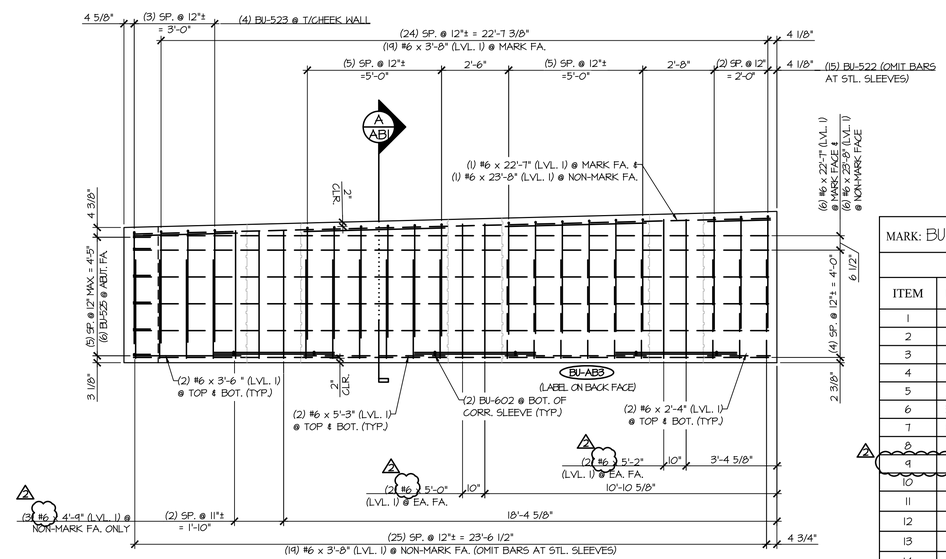
2 AB4 ABUTMENT DIMENSIONAL NON-MARK FACE ELEVATION

3/8" = 1'-0"



3 AB4 ABUTMENT REINFORCING PLAN VIEW IN FORM

3/8" = 1'-0"



4 AB4 ABUTMENT REINFORCING NON-MARK FACE ELEVATION

3/8" = 1'-0"

MARK: BU-AB3	QTY.: 1	WT: 29.43T	VOL: 14.53 CY

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	BU-522	#5 BENT BAR (LEVEL I)	15
2	BU-523	#5 BENT BAR (LEVEL I)	4
3	BU-525	#5 BENT BAR (LEVEL I)	6
4		#5 x 3'-6" (LEVEL II, DUAL COATED)	17
5		#5 x 4'-2" (LEVEL II, DUAL COATED)	19
6	BU-601L	#6 BENT BAR (LEVEL II, DUAL COATED)	23
7	BU-602	#6 BENT BAR (LEVEL I)	6
8		#6 x 2'-4" (LEVEL I)	4
9		#6 x 3'-6" (LEVEL I)	4
10		#6 x 3'-8" (LEVEL I)	38
11		#6 x 4'-4" (LEVEL I)	5
12		#6 x 5'-0" (LEVEL I)	4
13		#6 x 5'-2" (LEVEL I)	4
14		#6 x 5'-3" (LEVEL I)	8
15		#6 x 22'-7" (LEVEL I)	7
16		#6 x 23'-8" (LEVEL I)	7
17		2'-0" x 5'-2 1/2" CORR. STL. PIPE (GALV.)	1
18		2'-0" x 5'-4 5/8" CORR. STL. PIPE (GALV.)	1
19		2'-0" x 5'-6 7/8" CORR. STL. PIPE (GALV.)	1
20		SET OF (4) 0.60"Φ x 270 KSI STRAND LIFTING LOOPS	2

Vermont Agency of Transportation
RECEIVED
CK'D BY ____ OK'D BY ____
April 6, 2015
RESUBMIT No ____ Approved AsNoted
BY Rob Young DATE 04/13/2015

SHOP DRAWING REVIEW

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CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

APPROVAL STAMP:

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

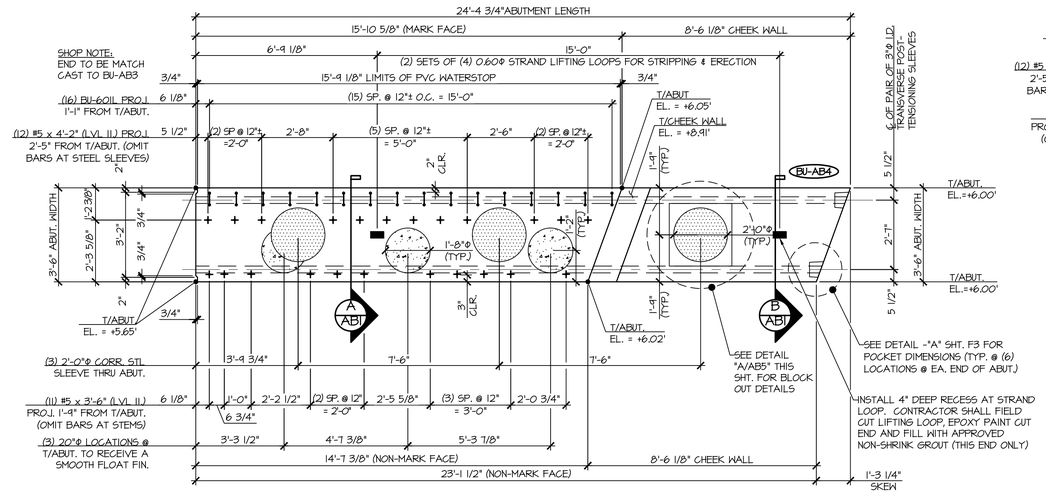
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

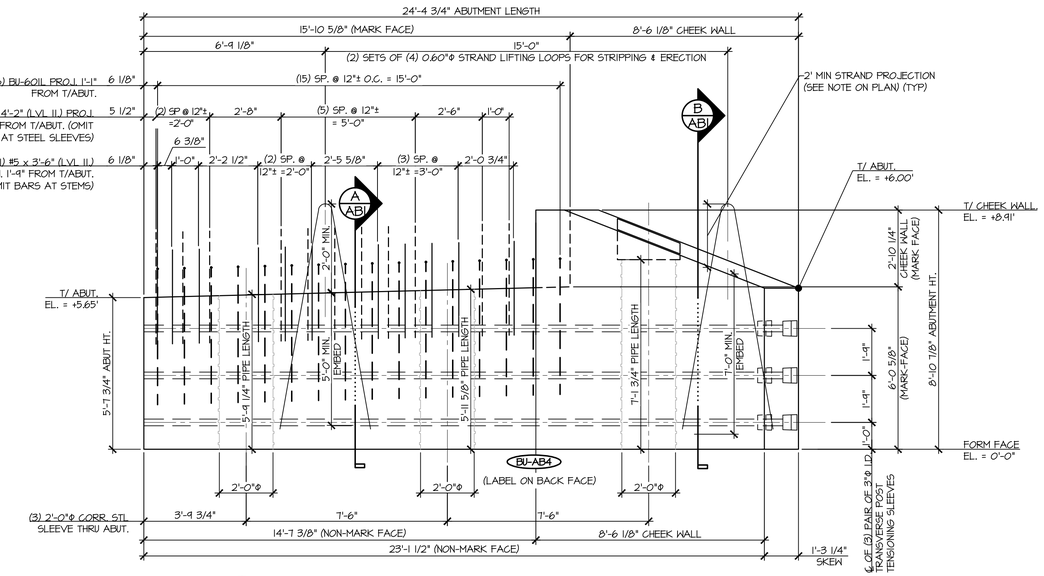
PRECAST ABUTMENT #3 DETAILS

DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: AB4

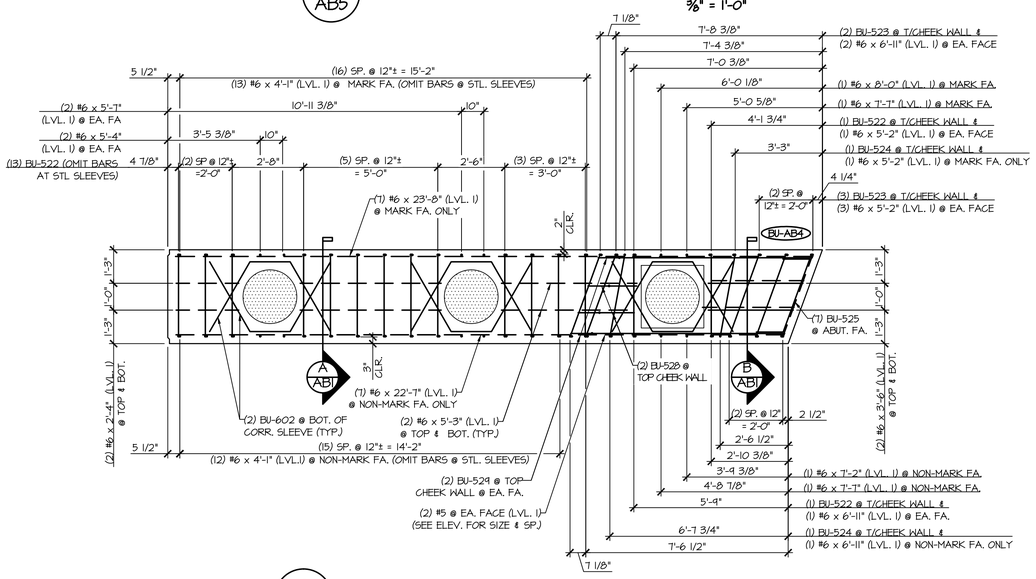


1 / AB5 ABUTMENT DIMENSIONAL PLAN VIEW IN FORM

3/8" = 1'-0"

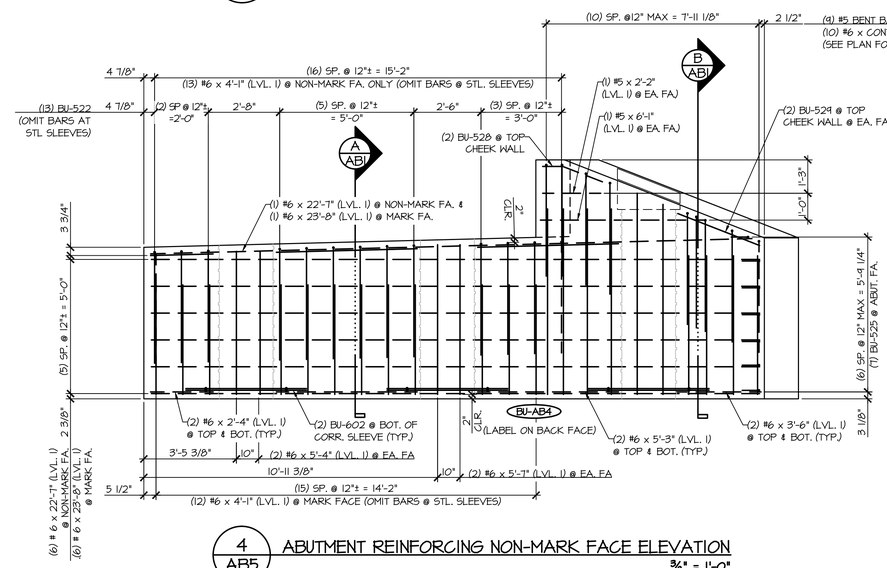


2 / AB5 ABUTMENT DIMENSIONAL NON-MARK FACE ELEVATION



3 / AB5 ABUTMENT REINFORCING PLAN VIEW IN FORM

3/8" = 1'-0"



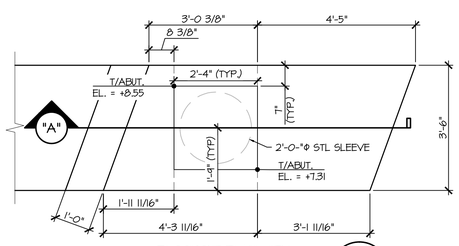
4 / AB5 ABUTMENT REINFORCING NON-MARK FACE ELEVATION

3/8" = 1'-0"

MARK: BU-AB4	QTY.: 1	WT: 35.82T	VOL: 17.69 CY

MATERIAL LIST / ABUTMENT

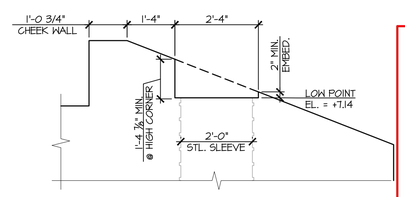
ITEM	MARK	DESCRIPTION	QTY.
1	BU-522	#5 BENT BAR (LEVEL I)	15
2	BU-523	#5 BENT BAR (LEVEL I)	5
3	BU-524	#5 BENT BAR (LEVEL I)	2
4	BU-525	#5 BENT BAR (LEVEL I)	7
5	BU-528	#5 BENT BAR (LEVEL I)	2
6	BU-529	#5 BENT BAR (LEVEL I)	2
7		#5 x 2'-2" (LEVEL I)	2
8		#5 X 3'-6" (LEVEL II, DUAL COATED)	11
9		#5 x 4'-2" (LEVEL II, DUAL COATED)	12
10		#5 x 6'-1" (LEVEL I)	2
11	BU-601L	#6 BENT BAR (LEVEL II, DUAL COATED)	16
12	BU-602	#6 BENT BAR (LEVEL I)	6
13		#6 x 2'-4" (LEVEL I)	4
14		#6 x 3'-6" (LEVEL I)	4
15		#6 x 4'-1" (LEVEL I)	25
16		#6 x 5'-2" (LEVEL I)	9
17		#6 x 5'-3" (LEVEL I)	8
18		#6 x 5'-4" (LEVEL I)	4
19		#6 x 5'-7" (LEVEL I)	4
20		#6 x 6'-11" (LEVEL I)	7
21		#6 x 7'-2" (LEVEL I)	1
22		#6 x 7'-7" (LEVEL I)	2
23		#6 x 8'-0" (LEVEL I)	1
24		#6 x 22'-7" (LEVEL I)	7
25		#6 x 23'-8" (LEVEL I)	7
26		2'-0" x 5'-9 1/4" CORR. STL. PIPE (GALV.)	1
27		2'-0" x 5'-11 5/8" CORR. STL. PIPE (GALV.)	1
28		2'-0" x 7'-1 3/4" CORR. STL. PIPE (GALV.)	1
29		SET OF 4 0.60"Φ x 270 KSI STRAND LIFTING LOOPS	2



BLOCKOUT PLAN VIEW

A / AB5 BLOCK OUT DETAILS

1/2" = 1'-0"



SECTION "A"

SHOP DRAWING REVIEW

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CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

APPROVAL STAMP:

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

T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

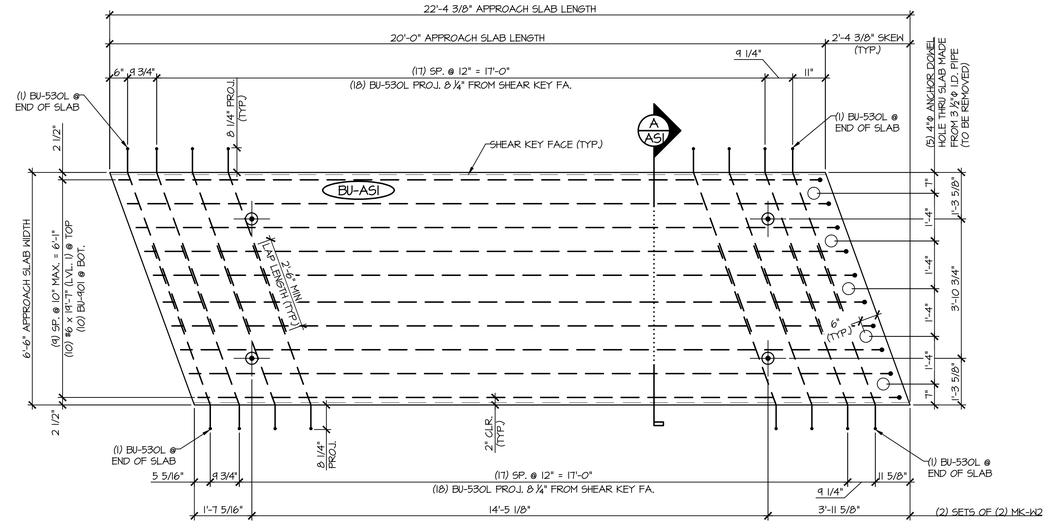
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

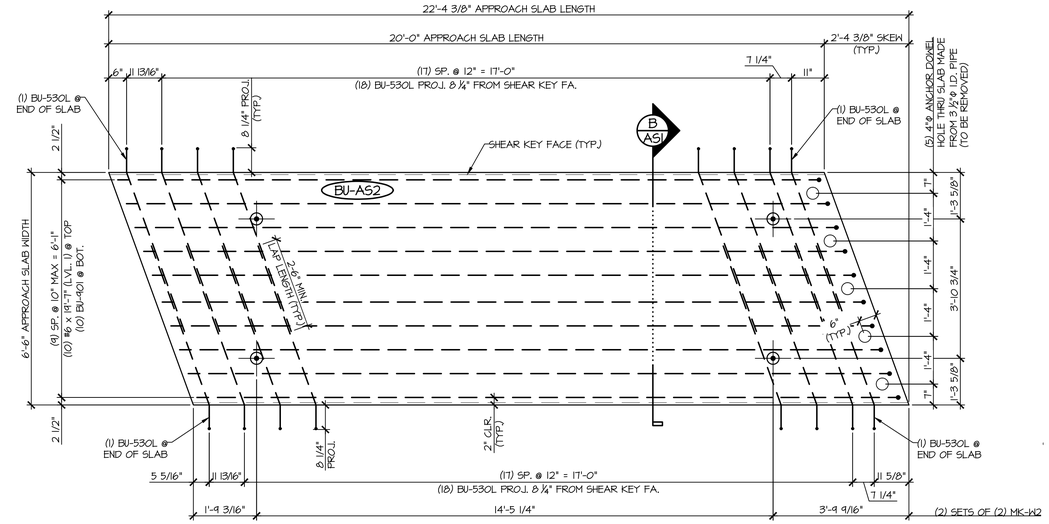
PRECAST ABUTMENT #4 DETAILS

DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: AB5

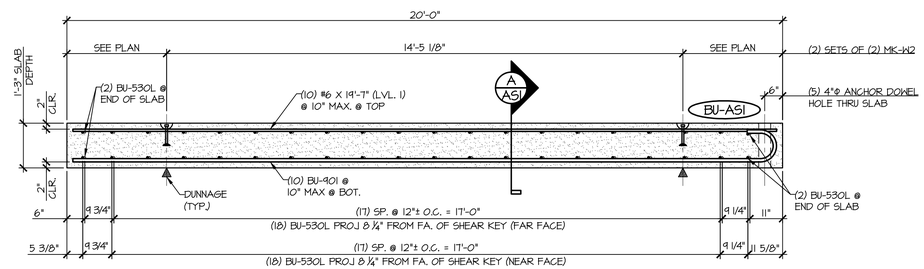
Vermont Agency of Transportation
RECEIVED
CK'D BY ____ OK'D BY ____
April 6, 2015
RESUBMIT No Approved AsNoted
BY Rob Young DATE 04/13/2015



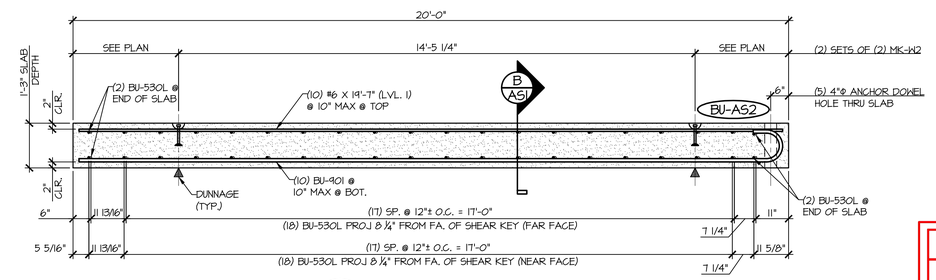
1 / A5.1 PLAN VIEW IN FORM
½" = 1'-0"



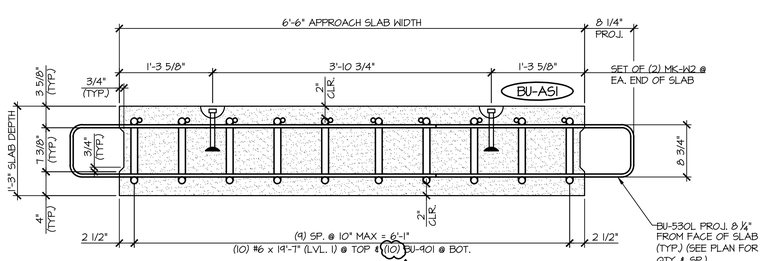
3 / A5.1 PLAN VIEW IN FORM
½" = 1'-0"



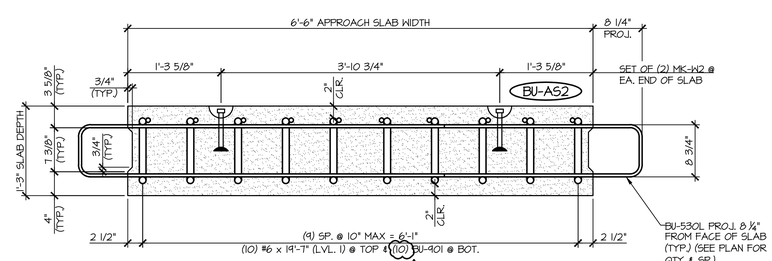
2 / A5.1 LONGITUDINAL SECTION
½" = 1'-0"



4 / A5.1 LONGITUDINAL SECTION
½" = 1'-0"



A / A5.1 APPROACH SLAB SECTION
1" = 1'-0"



A / A5.1 APPROACH SLAB SECTION
1" = 1'-0"

MARK: BU-AS1	QTY.: 2	WT: 12.09T	VOL: 5.97 CY

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY.
1	BU-530L	#5 BENT BAR (LEVEL II, DUAL COATED)	40
2		#6 x 19'-7" (LEVEL I)	10
3	BU-901	#9 BENT BAR (LEVEL I)	10
4	MK-W2	4T x 7 1/8" SWIFT LIFT LIFTER	4

MARK: BU-AS2	QTY.: 2	WT: 12.09T	VOL: 5.97 CY

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY.
1	BU-530L	#5 BENT BAR (LEVEL II, DUAL COATED)	40
2		#6 x 19'-7" (LEVEL I)	10
3	BU-901	#9 BENT BAR (LEVEL I)	10
4	MK-W2	4T x 7 1/8" SWIFT LIFT LIFTER	4

Vermont Agency of Transportation
RECEIVED
CK'D BY _____ OK'D BY _____
April 6, 2015
RESUBMIT No
Approved AsNoted
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DATE 04/13/2015

SHOP DRAWING REVIEW

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540 Commercial Street
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603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

APPROVAL STAMP:

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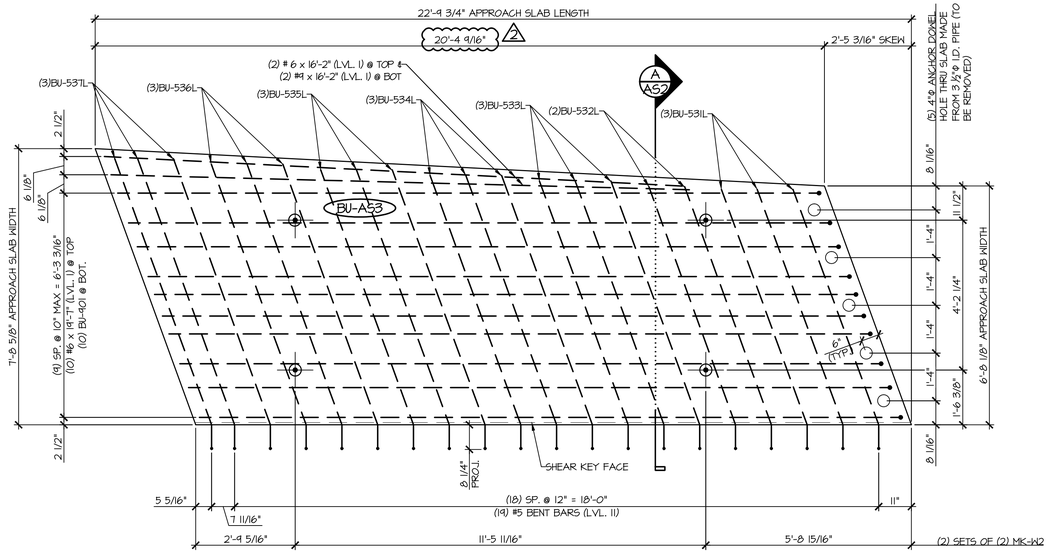
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

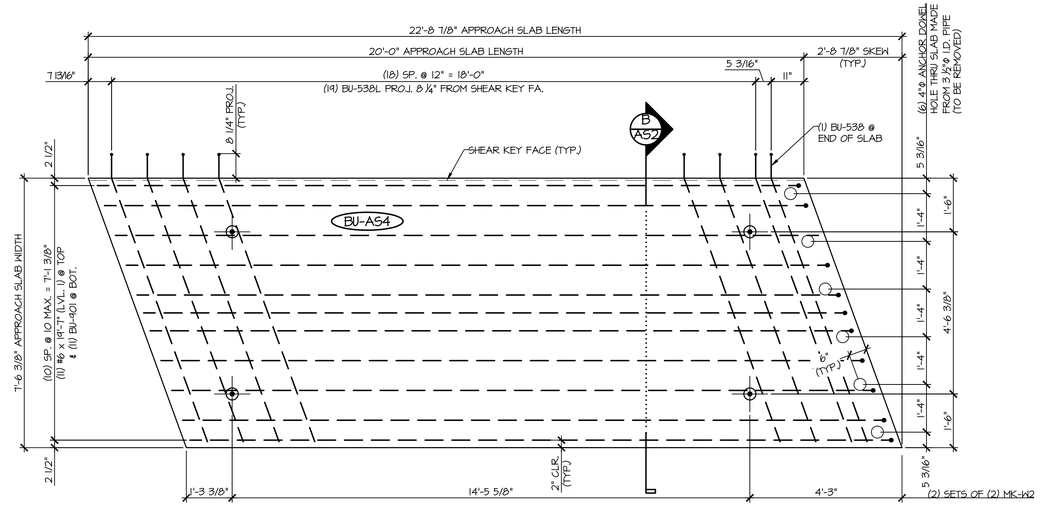
TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRECAST APPROACH SLAB DETAILS

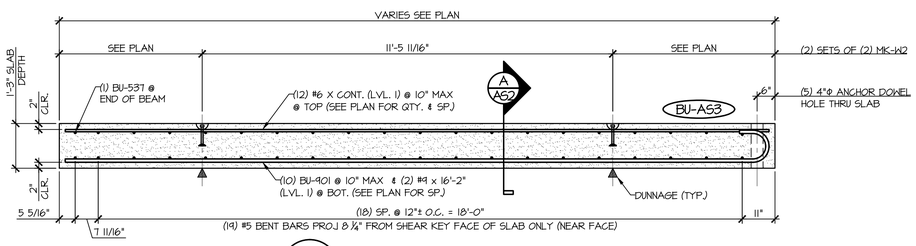
DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: A5.1



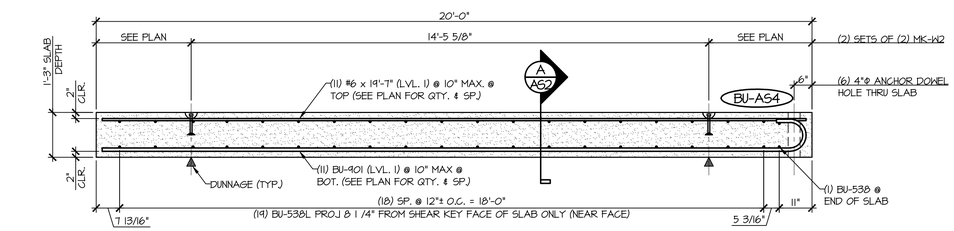
1 / AS2 PLAN VIEW IN FORM
½" = 1'-0"



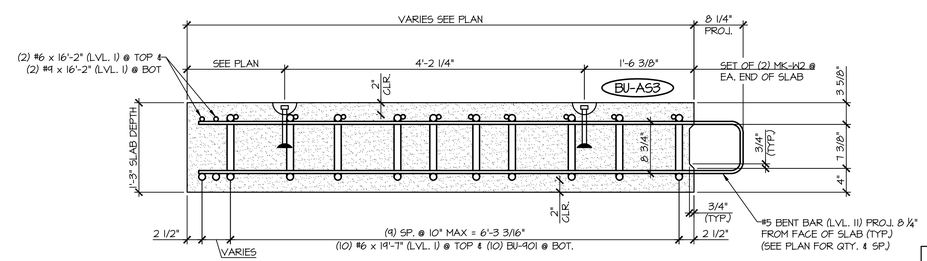
3 / AS2 PLAN VIEW IN FORM
½" = 1'-0"



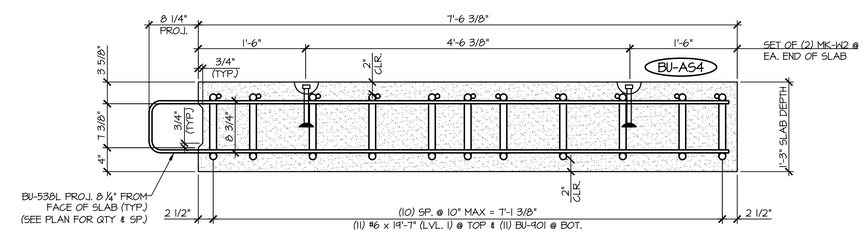
2 / AS2 LONGITUDINAL SECTION
½" = 1'-0"



4 / AS2 LONGITUDINAL SECTION
½" = 1'-0"



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



B / AS2 APPROACH SLAB SECTION
1" = 1'-0"

MARK: BU-AS3	QTY.: 1	WT: 13.45T	VOL: 6.64 CY

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY.
1	BU-531L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
2	BU-532L	#5 BENT BAR (LEVEL II, DUAL COATED)	2
3	BU-533L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
4	BU-534L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
5	BU-535L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
6	BU-536L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
7	BU-537L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
8		#6 x 19'-7" (LEVEL I)	10
9		#6 x 16'-2" (LEVEL I)	2
10	BU-901	#4 BENT BAR (LEVEL I)	10
11		#4 x 16'-2" (LEVEL I)	2
12	MK-W2	4T x 7 1/8" SWIFT LIFT LIFTER	4

MARK: BU-AS4	QTY.: 1	WT: 14.07T	VOL: 6.95 CY

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY.
1	BU-538	#5 BENT BAR (LEVEL II, DUAL COATED)	20
2		#6 x 19'-7" (LEVEL I)	11
3	BU-901	#4 BENT BAR (LEVEL I)	11
4	MK-W2	4T x 7 1/8" SWIFT LIFT LIFTER	4

SHOP DRAWING REVIEW

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CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-6223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

Vermont Agency of Transportation
RECEIVED
CK'D BY OK'D BY
April 6, 2015
RESUBMIT No. Approved As Noted
BY Rob Young DATE 04/13/2015

APPROVAL STAMP:

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

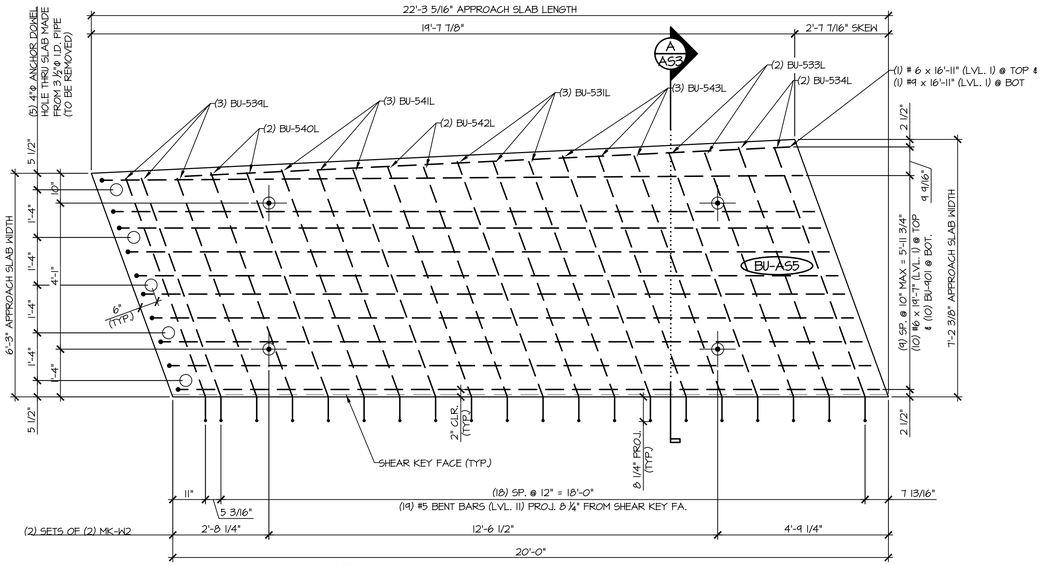
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

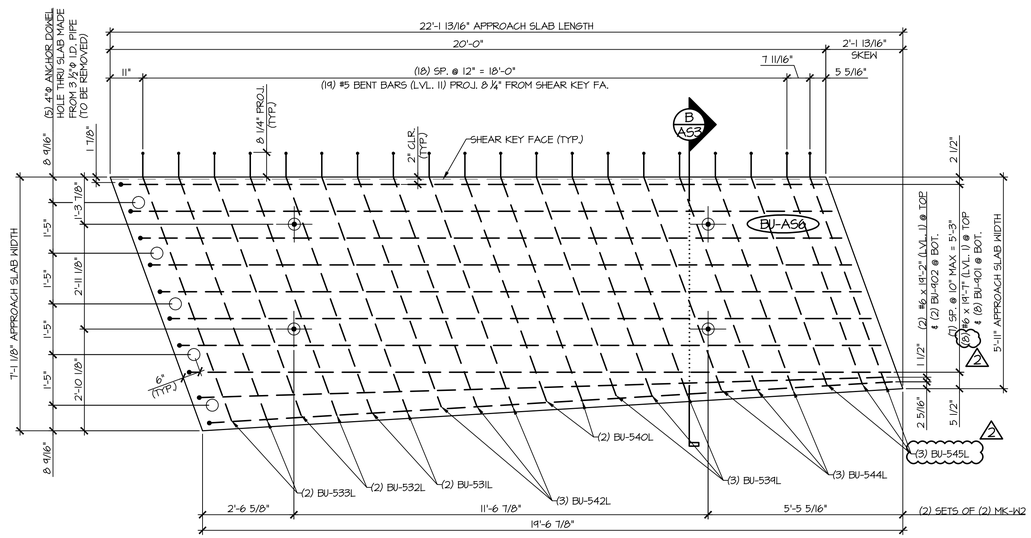
TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRECAST APPROACH SLAB DETAILS

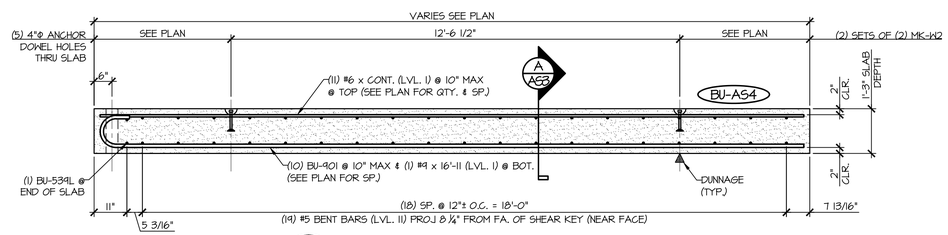
DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: AS2



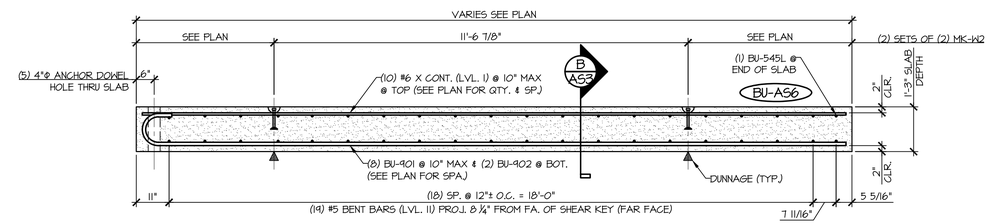
1 / AS3 PLAN VIEW IN FORM
½" = 1'-0"



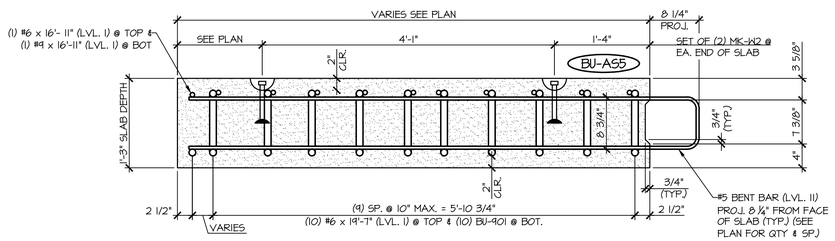
3 / AS3 PLAN VIEW IN FORM
½" = 1'-0"



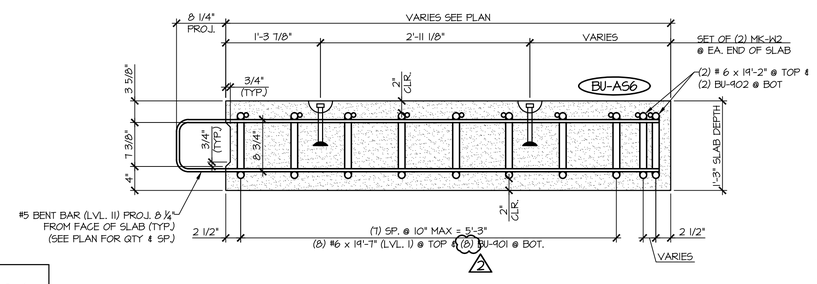
2 / AS3 LONGITUDINAL SECTION
½" = 1'-0"



4 / AS3 LONGITUDINAL SECTION
½" = 1'-0"



A / AS3 APPROACH SLAB SECTION
1" = 1'-0"



B / AS3 APPROACH SLAB SECTION
1" = 1'-0"

MARK: BU-AS6	QTY.: 1	WT: 12.15T	VOL: 6.00 CY

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY.
1	BU-531L	#5 BENT BAR (LEVEL II, DUAL COATED)	2
2	BU-532L	#5 BENT BAR (LEVEL II, DUAL COATED)	2
3	BU-533L	#5 BENT BAR (LEVEL II, DUAL COATED)	2
4	BU-534L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
5	BU-540L	#5 BENT BAR (LEVEL II, DUAL COATED)	2
6	BU-542L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
7	BU-544L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
8	BU-545L	#5 BENT BAR (LEVEL II, DUAL COATED) 2	3
9		#6 x 19'-2" (LEVEL 1)	2
10		#6 x 19'-7" (LEVEL 1)	8
11	BU-901	#4 BENT BAR (LEVEL 1)	8
12	BU-902	#4 BENT BAR (LEVEL 1)	2
14	MK-W2	4T x 7 1/8" SWIFT LIFT LIFTER	4

MARK: BU-AS5	QTY.: 1	WT: 12.56T	VOL: 6.20 CY

MATERIAL LIST / APPROACH SLAB

ITEM	MARK	DESCRIPTION	QTY.
1	BU-531L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
2	BU-533L	#5 BENT BAR (LEVEL II, DUAL COATED)	2
3	BU-534L	#5 BENT BAR (LEVEL II, DUAL COATED)	2
4	BU-534L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
5	BU-540L	#5 BENT BAR (LEVEL II, DUAL COATED)	2
6	BU-541L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
7	BU-542L	#5 BENT BAR (LEVEL II, DUAL COATED)	2
8	BU-543L	#5 BENT BAR (LEVEL II, DUAL COATED)	3
9		#6 x 16'-11" (LEVEL 1)	1
10		#6 x 19'-7" (LEVEL 1)	10
11	BU-901	#4 BENT BAR (LEVEL 1)	10
12		#4 x 16'-11" (LEVEL 1)	1
13	MK-W2	4T x 7 1/8" SWIFT LIFT LIFTER	4

Vermont Agency of Transportation
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RESUBMIT No Approved As Noted
BY Rob Young DATE 04132015

SHOP DRAWING REVIEW

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CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

APPROVAL STAMP:

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
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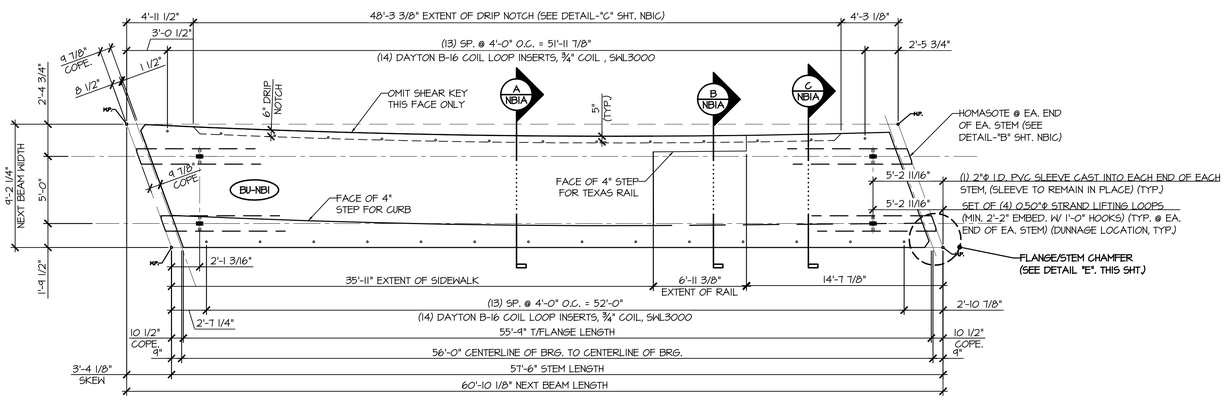
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRECAST APPROACH SLAB DETAILS

DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: AS3



1 / NBIA DIMENSIONAL PLAN VIEW IN FORM

3/16" = 1'-0"

- SEE DETAIL "1/NBIB" FOR SIDEWALK, DRIVEWAY & RAILING LAYOUT & REINFORCEMENT DETAILS
- SEE DETAIL "2/NBIB" FOR CURVED FLANGE LAYOUT

Vermont Agency of Transportation
RECEIVED
CK'D BY _____ OK'D BY _____
April 6, 2015
RESUBMIT No Approved AsNoted
BY Rob Young DATE 04/13/2015

SHOP DRAWING REVIEW

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CLD Consulting Engineers, 540 Commercial Street, Manchester, NH 03101, 603-668-8223
Job Number: 120121
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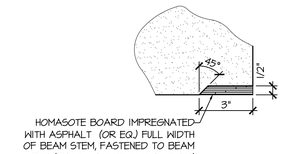
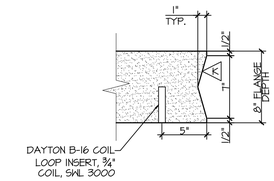
Date: 04/10/2015



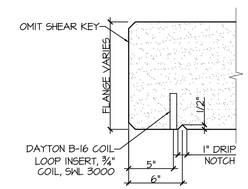
DETAIL - "B"

3" = 1'-0"



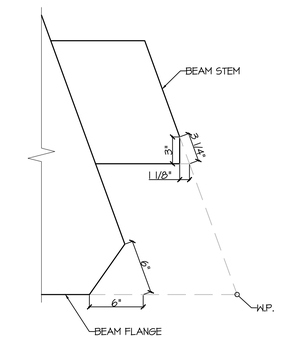
DETAIL - "C"

1½" = 1'-0"



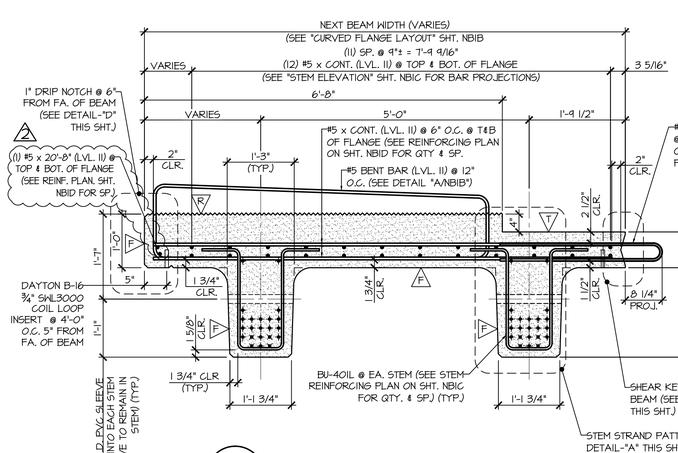
DETAIL - "D"

1½" = 1'-0"



DETAIL - "E"

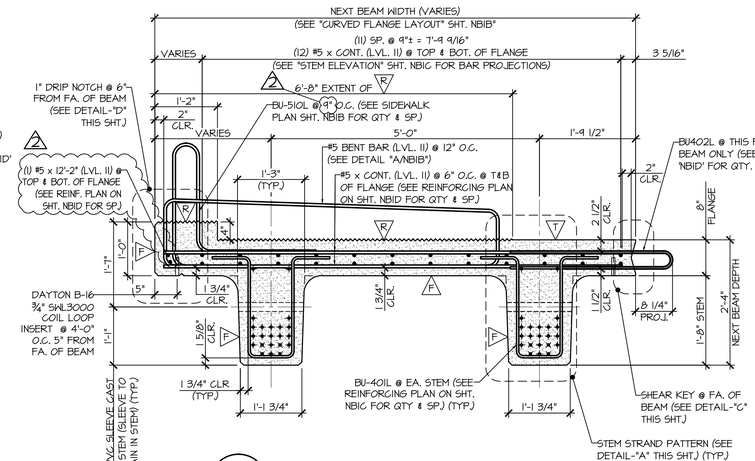
1½" = 1'-0"



A / NBIA DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"

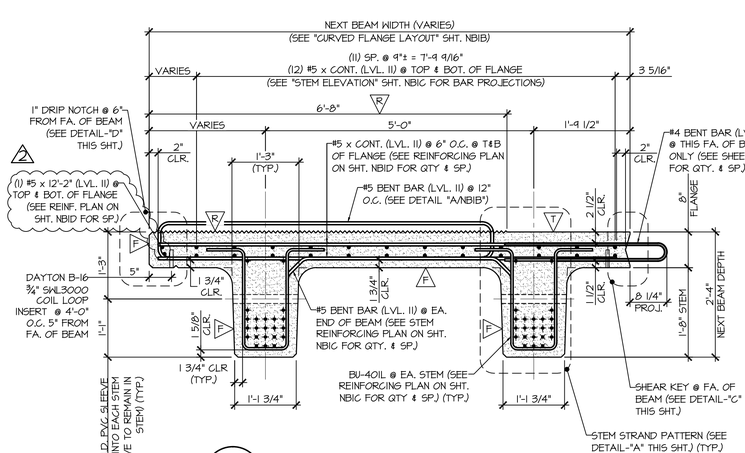
- SEE SHEET NBIC FOR END BLOCK REINFORCING DETAILS



B / NBIA DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"

- SEE SHEET NBIC FOR END BLOCK REINFORCING DETAILS



C / NBIA DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"

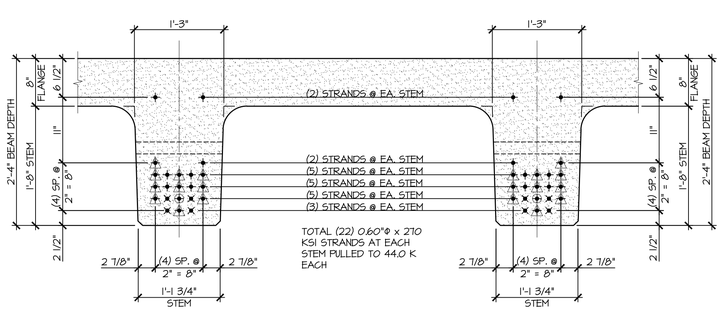
- SEE SHEET NBIC FOR END BLOCK REINFORCING DETAILS

F DENOTES FORM FINISH

T DENOTES SMOOTH SCREED FINISH

K DENOTES ROUGHENED FINISH (1/16" AMPLITUDE)

R DENOTES ROUGHENED FINISH (1/4" RAKE)



DETAIL - "A" (STEM STRAND PATTERN)

1" = 1'-0"

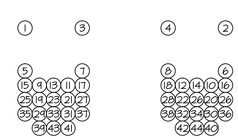
PRESTRESSING NOTATIONS

+ DENOTES STRAIGHT STRAND TO BE CUT FLUSH WITH EA. END OF EA. STEM

× DENOTES STRAIGHT STRAND TO EXTEND 2'-0" FROM EA. END OF EA. STEM

⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 2'-0" FROM EA. END OF EA. STEM

⊥ DENOTES STRAIGHT STRANDS TO BE DEBONDED 0'-6" FROM EA. END OF EA. STEM



DETENSIONING SCHEDULE

N.T.S.

MARK: BU-NBI	QTY.: 1	WT: 47.52 T	VOL: 23.47 CY

APPROVAL STAMP:

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

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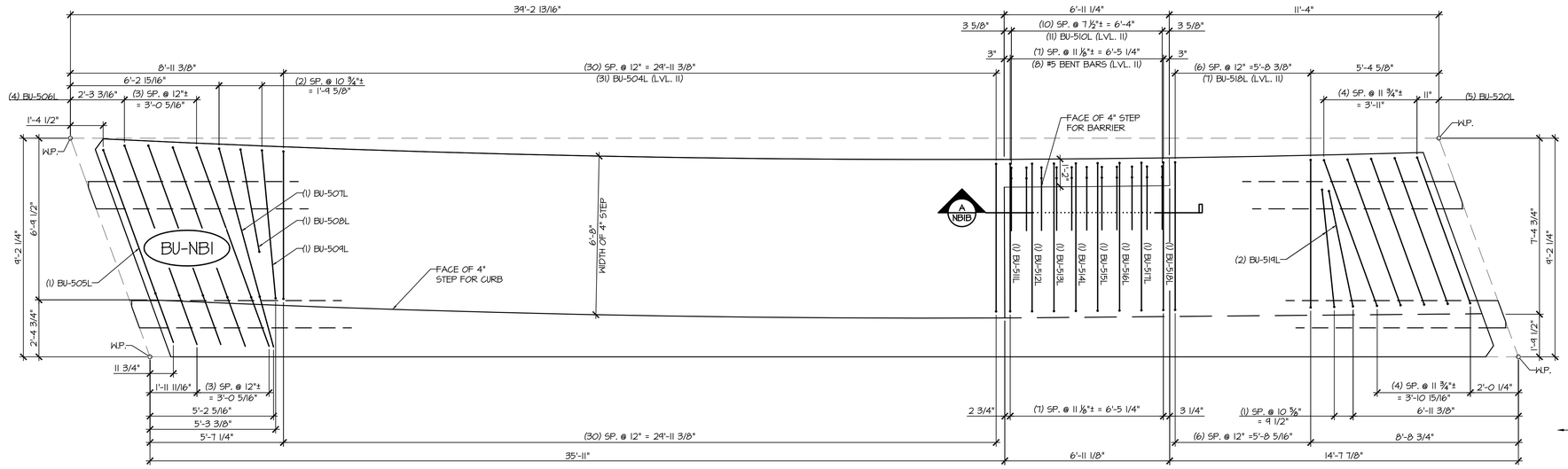
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRESTRESSED NEXT BEAM DETAILS

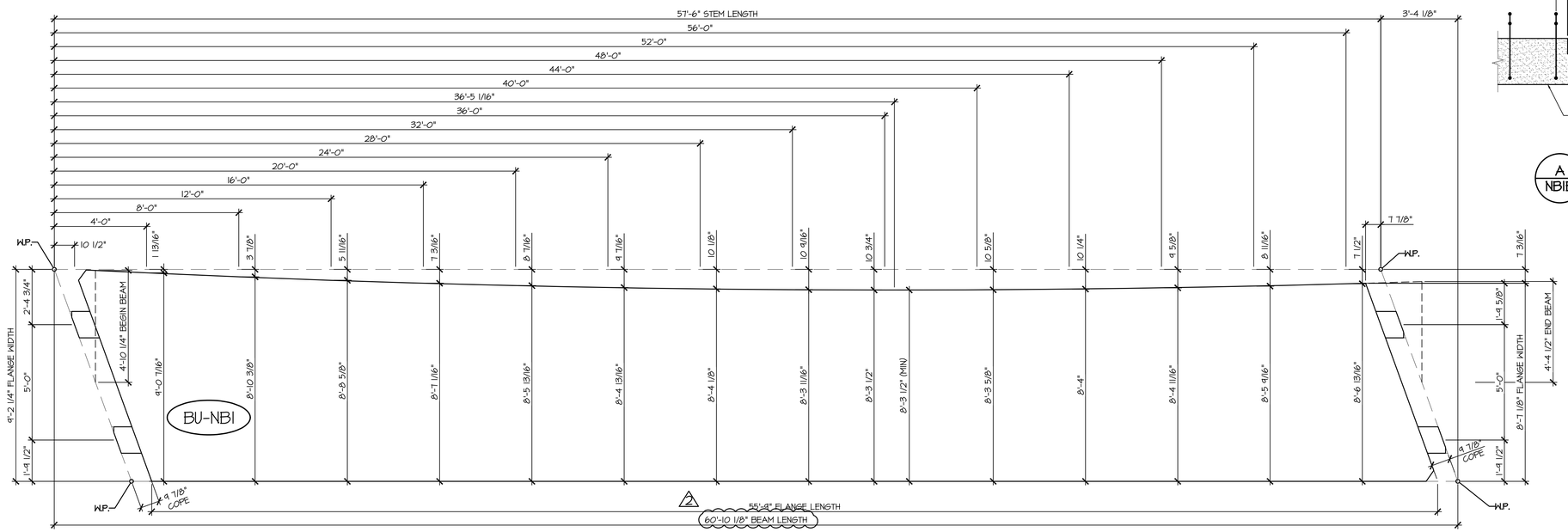
DATE:	MAR. 26, 2015
SCALE:	NOTED
CHKD:	DFTM: JDK
JOB NO:	23454-015
DWG. NO:	NBIA



1 NBIB — SIDEWALK REINFORCING PLAN VIEW IN FORM

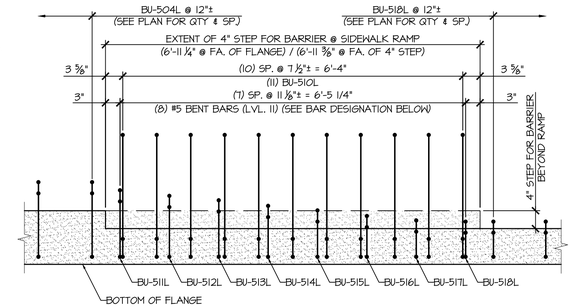
3/8" = 1'-0"

- SEE SHEET NBIC FOR STEM REINFORCING AT BEAM ENDS
- SEE SHEET NBID FOR FLANGE REINFORCING AT BEAM END



2 NBIB — CURVED FLANGE LAYOUT

3/8" = 1'-0"



A NBIB — SIDEWALK TRANSITION REINFORCING SECTION

3/4" = 1'-0"

SHOP DRAWING REVIEW

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Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

Vermont Agency of Transportation
RECEIVED
Aug 17 2015
Materials & Research

CK'D BY _____ OK'D BY _____

April 6, 2015

RESUBMIT No Approved AsNoted
BY Rob Young DATE 04/13/2015

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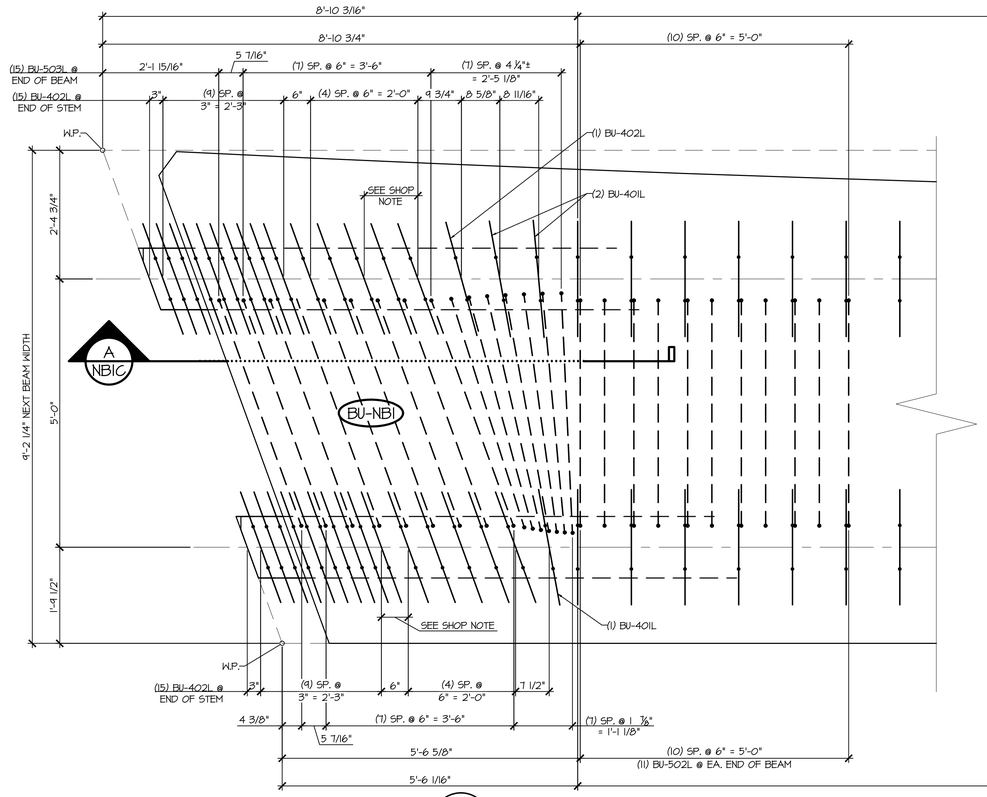
PRESTRESSED NEXT BEAM DETAILS

DWG. NO: NBIB

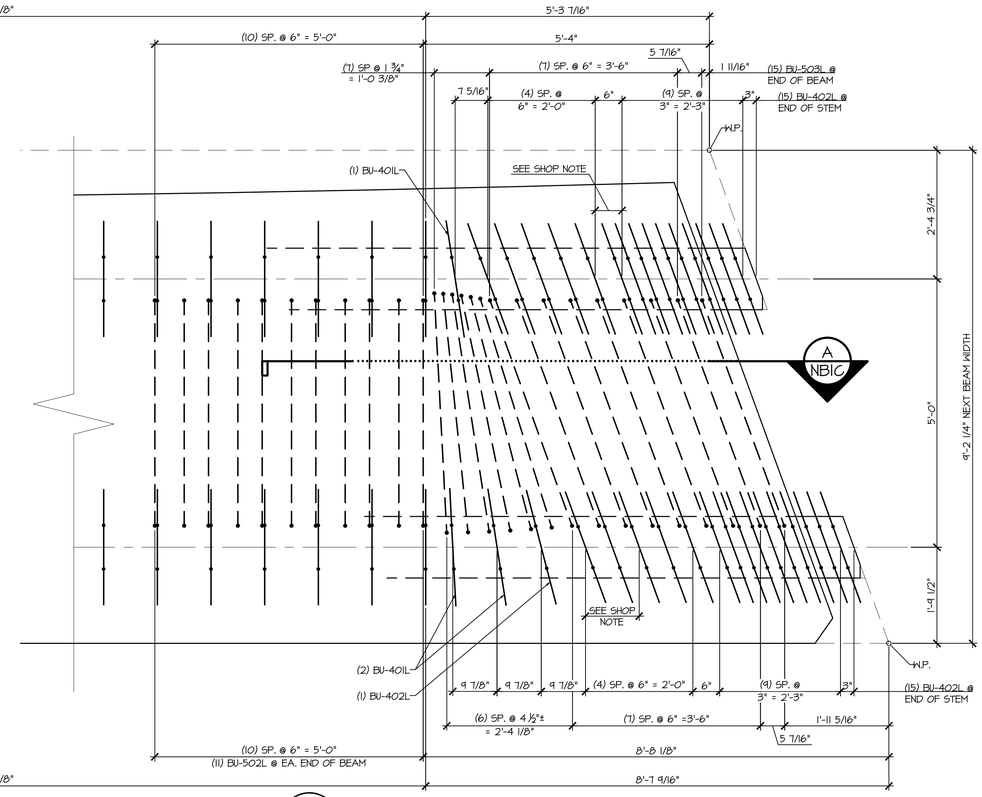


1 NBIC STEM REINFORCING PLAN VIEW IN FORM

3/4" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NBID FOR REINFORCING PLAN
- SEE SHEET NBIB FOR SIDEWALK REINFORCING PLAN
- SEE SHEET NBID FOR FLANGE REINFORCING AT BEAM END

SHOP NOTE
- STIRRUP SPACING TO BE ADJUSTED TO ALLOW FOR 2" PVC SLEEVE

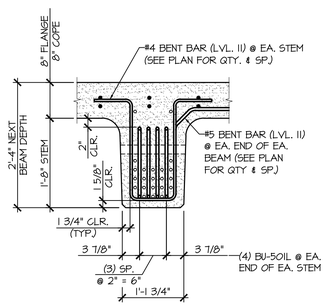


2 NBIC STEM REINFORCING PLAN VIEW IN FORM

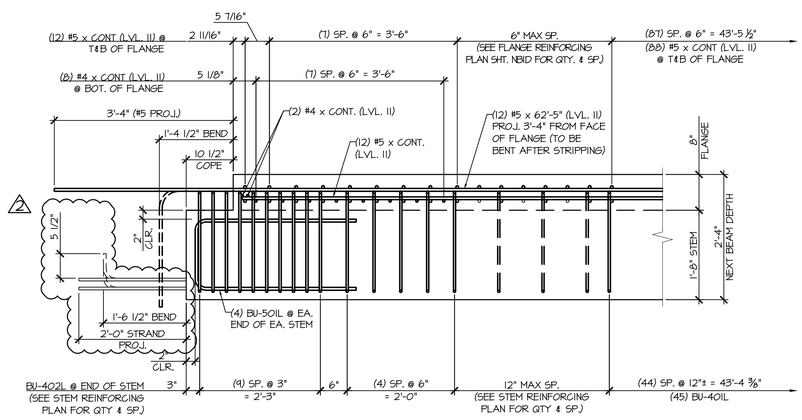
3/4" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NBID FOR REINFORCING PLAN
- SEE SHEET NBIB FOR SIDEWALK REINFORCING PLAN
- SEE SHEET NBID FOR FLANGE REINFORCING AT BEAM END

Vermont Agency of Transportation
RECEIVED
CK'D BY _____ OK'D BY _____
April 6, 2015
RESUBMIT No
Approved AsNoted
BY Rob Young
DATE 04/13/2015



STEM SECTION



STEM ELEVATION

A NBIC END BLOCK STEM REINFORCING DETAILS

3/4" = 1'-0"

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CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

APPROVAL STAMP:

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

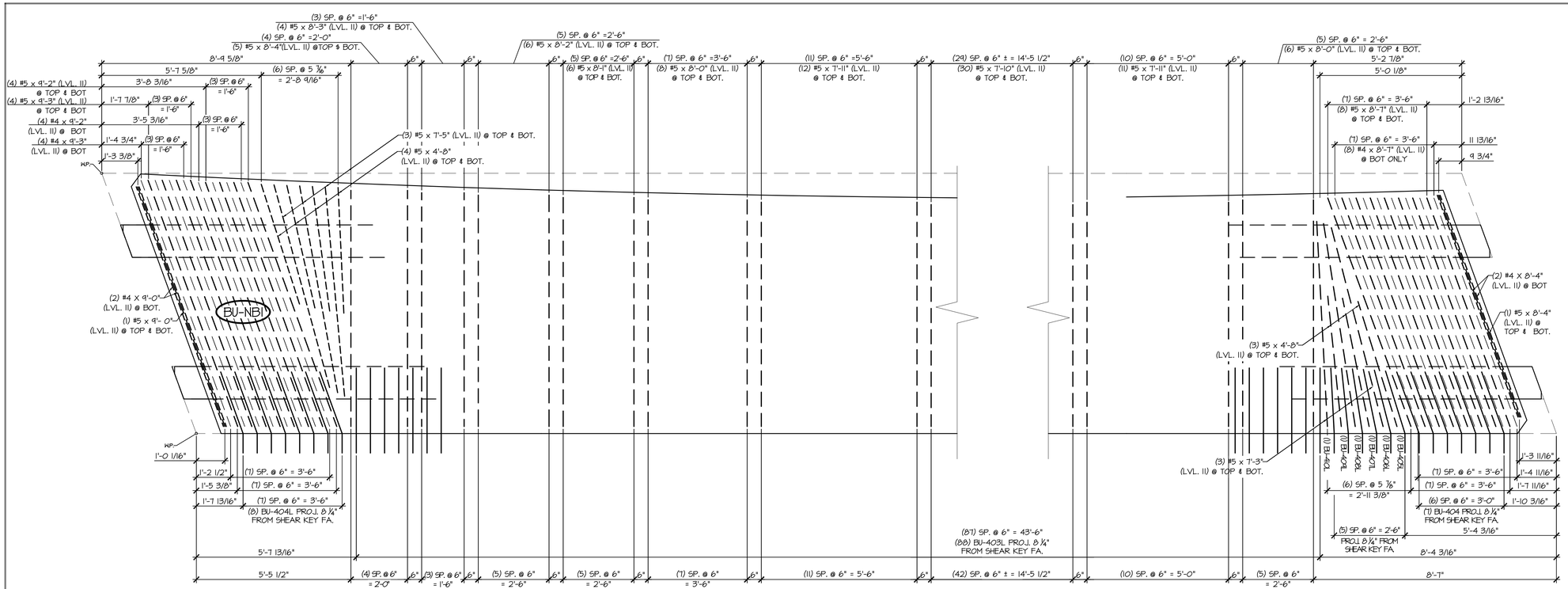
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRESTRESSED NEXT BEAM DETAILS

DATE:	MAR. 26, 2015
SCALE:	NOTED
CHKD:	DFTM: JDK
JOB NO:	23454-015
DWG. NO:	NBIC



1 NBID

FLANGE REINFORCING PLAN VIEW IN FORM

½" = 1'-0"

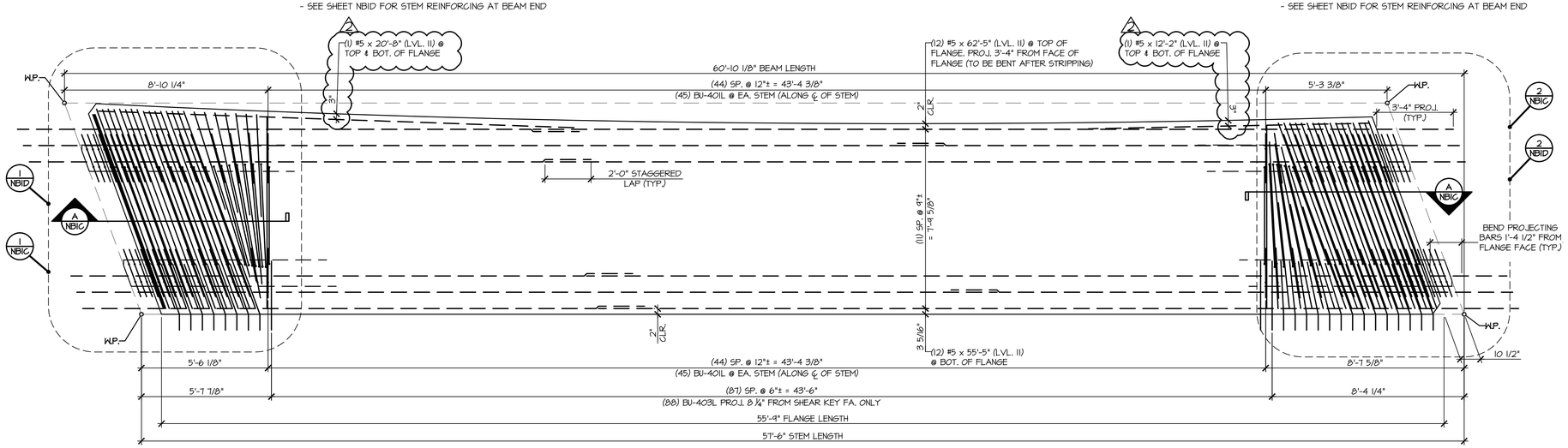
- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NB1B FOR SIDEWALK REINFORCING PLAN
- SEE SHEET NB1D FOR STEM REINFORCING AT BEAM END

2 NBID

FLANGE REINFORCING PLAN VIEW IN FORM

½" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NB1B FOR SIDEWALK REINFORCING PLAN
- SEE SHEET NB1D FOR STEM REINFORCING AT BEAM END



3 NBID

REINFORCING PLAN VIEW IN FORM

3/16" = 1'-0"

- SEE DETAIL "1/NB1B" FOR SIDEWALK, DRIVEWAY & RAILING LAYOUT & REINFORCEMENT DETAILS
- SEE SHT. "NB1C" FOR STEM REINFORCEMENT DETAILS
- SEE SHT. "NB1D" FOR FLANGE REINFORCEMENT DETAILS

Vermont Agency of Transportation
RECEIVED
CK'D BY _____ OK'D BY _____
April 6, 2015
RESUBMIT No
Approved AsNoted
BY Rob Young
DATE 04/13/2015

SHOP DRAWING REVIEW

☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

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Job Number: 120121
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Date: 04/10/2015

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COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

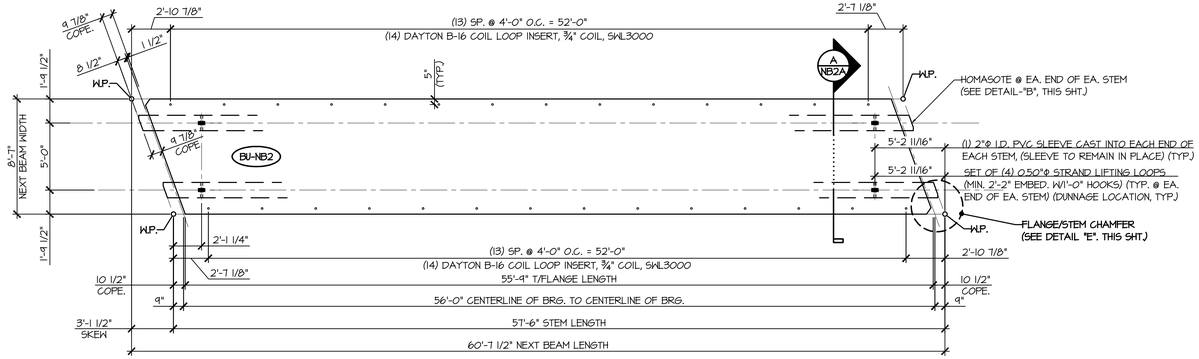
PRESTRESSED NEXT BEAM DETAILS

DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: NB1D

MARK: BU-NB1	QTY.: 1	WT: 47.52T	VOL: 23.47CY

MATERIAL LIST / ABUTMENT

ITEM	MARK	DESCRIPTION	QTY.
1	BU-401L	#4 BENT BAR (LEVEL II, DUAL COATED)	96
2	BU-402L	#4 BENT BAR (LEVEL II, DUAL COATED)	62
3	BU-403L	#4 BENT BAR (LEVEL II, DUAL COATED)	88
4	BU-404L	#4 BENT BAR (LEVEL II, DUAL COATED)	15
5	BU-405L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
6	BU-406L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
7	BU-407L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
8	BU-408L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
9	BU-409L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
10	BU-410L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
11		#4 x 8'-4" (LEVEL II, DUAL COATED)	2
12		#4 x 8'-7" (LEVEL II, DUAL COATED)	8
13		#4 x 9'-0" (LEVEL II DUAL COATED)	2
14		#4 x 9'-2" (LEVEL II, DUAL COATED)	4
15		#4 x 9'-3" (LEVEL II, DUAL COATED)	4
16	BU-501L	#5 BENT BAR (LEVEL II, DUAL COATED)	16
17	BU-502L	#5 BENT BAR (LEVEL II, DUAL COATED)	22
18	B-503L	#5 BENT BAR (LEVEL II, DUAL COATED)	30
19	BU-504L	#5 BENT BAR (LEVEL II, DUAL COATED)	31
20	BU-505L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
21	BU-506L	#5 BENT BAR (LEVEL II, DUAL COATED)	4
22	BU-507L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
23	BU-508L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
24	BU-509L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
25	BU-510L	#5 BENT BAR (LEVEL II, DUAL COATED)	11
26	BU-511L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
27	BU-512L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
28	BU-513L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
29	BU-514L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
30	BU-515L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
31	BU-516L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
32	BU-517L	#5 BENT BAR (LEVEL II, DUAL COATED)	1
33	BU-518L	#5 BENT BAR (LEVEL II, DUAL COATED)	8
34	BU-519L	#5 BENT BAR (LEVEL II, DUAL COATED)	2
35	BU-520L	#5 BENT BAR (LEVEL II, DUAL COATED)	5
36		#5 x 4'-8" (LEVEL II, DUAL COATED)	14
37		#5 x 7'-3" (LEVEL II, DUAL COATED)	6
38		#5 x 7'-5" (LEVEL II, DUAL COATED)	6
39		#5 x 7'-10" (LEVEL II, DUAL COATED)	60
40		#5 x 7'-11" (LEVEL II, DUAL COATED)	46
41		#5 x 8'-0" (LEVEL II, DUAL COATED)	28
42		#5 x 8'-1" (LEVEL II, DUAL COATED)	12
43		#5 x 8'-2" (LEVEL II, DUAL COATED)	12
44		#5 x 8'-3" (LEVEL II, DUAL COATED)	8
45		#5 x 8'-4" (LEVEL II, DUAL COATED)	12
46		#5 x 8'-7" (LEVEL II, DUAL COATED)	16
47		#5 x 9'-0" (LEVEL II, DUAL COATED)	2
48		#5 x 9'-2" (LEVEL II, DUAL COATED)	8
49		#5 x 9'-3" (LEVEL II, DUAL COATED)	8
50		#5 x 12'-2" (LEVEL II, DUAL COATED)	2
51		#5 x 20'-8" (LEVEL II, DUAL COATED)	2
52		#5 x 55'-5" (40'-0" + 11'-5" W (1) 2'-0" STAGGERED LAP) (LEVEL II, DUAL COATED)	12
53		#5 x 62'-5" (40'-0" + 24'-5" W (1) 2'-0" STAGGERED LAP) (LEVEL II, DUAL COATED)	12
54		SET OF (4) 0.50"Φ x 270 KSI STRAND LIFTING LOOPS	4
55		DAYTON B-16 COIL LOOP INSERTS, ¾" COIL, SWL 3000	28



1 NB2A DIMENSIONAL PLAN VIEW IN FORM

3/16" = 1'-0"

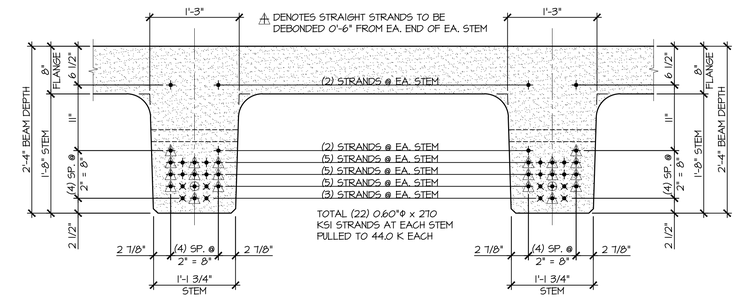
PRESTRESSING NOTATIONS

+ DENOTES STRAIGHT STRAND TO BE CUT FLUSH WITH EA. END OF EA. STEM

× DENOTES STRAIGHT STRAND TO EXTEND 2'-0" FROM EA. END OF EA. STEM

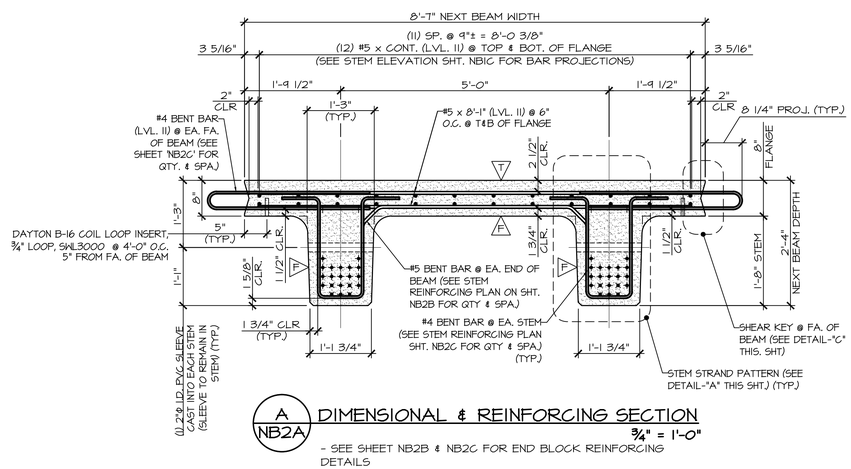
⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 2'-0" FROM EA. END OF EA. STEM

△ DENOTES STRAIGHT STRANDS TO BE DEBONDED 0'-6" FROM EA. END OF EA. STEM



DETAIL - "A" (STEM STRAND PATTERN)

1" = 1'-0"



A NB2A DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"

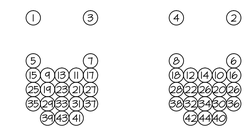
- SEE SHEET NB2B & NB2C FOR END BLOCK REINFORCING DETAILS

F DENOTES FORM FINISH

T DENOTES SMOOTH SCREED FINISH

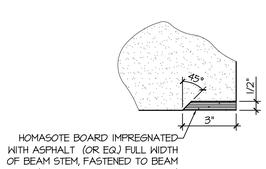
K DENOTES ROUGHENED FINISH (1/8" AMPLITUDE)

R DENOTES ROUGHENED FINISH (1/4" RAKE)



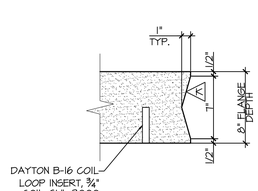
DETENSIONING SCHEDULE

N.T.S.



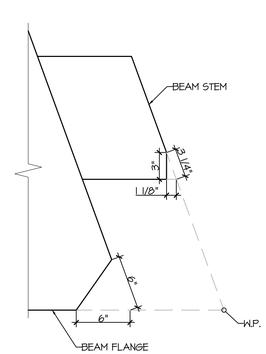
DETAIL - "B"

3" = 1'-0"



DETAIL - "C"

1 ½" = 1'-0"



DETAIL - "E"

1 ½" = 1'-0"

Vermont Agency of Transportation
RECEIVED
CK'D BY
OK'D BY
April 6, 2015
RESUBMIT No
Approved AsNoted
BY Rob Young
DATE 04/13/2015

SHOP DRAWING REVIEW

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CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

MARK: BU-NB2	QTY.: 2	WT: 41.34 T	VOL: 20.42 CY

APPROVAL STAMP:

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

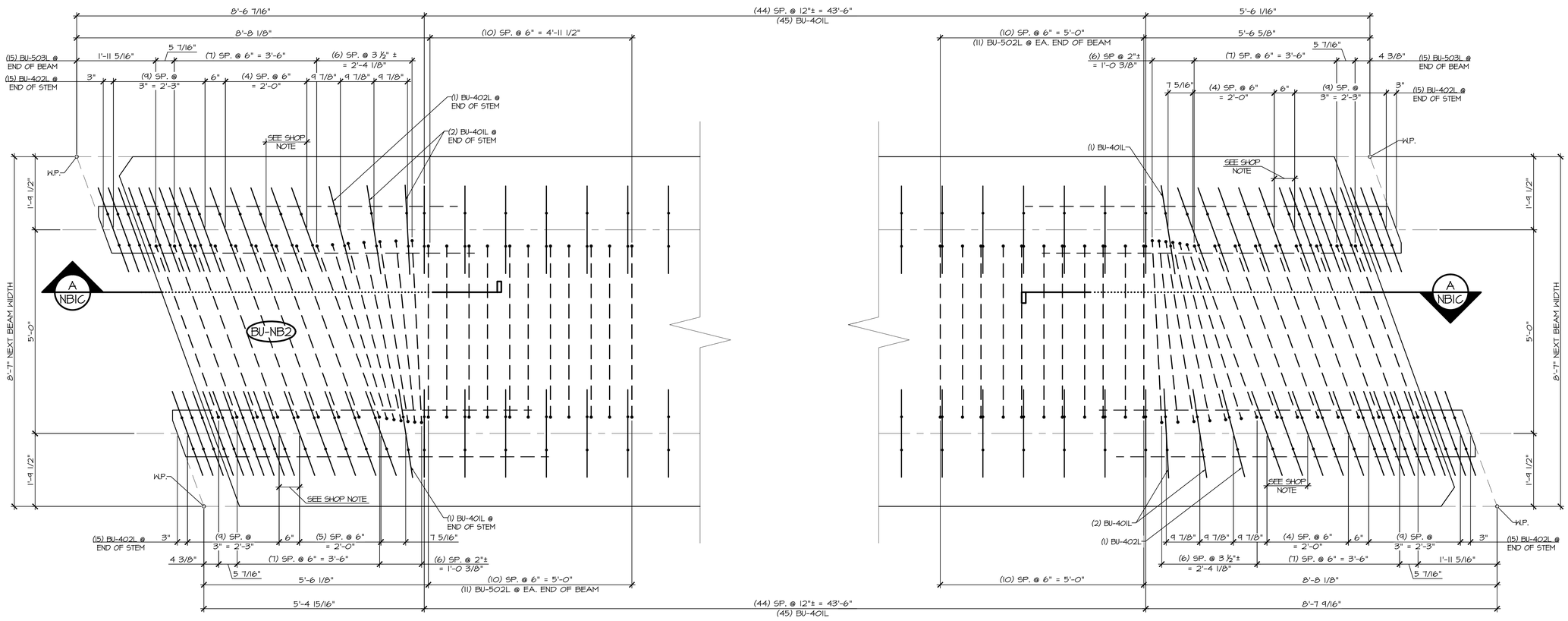
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRESTRESSED NEXT BEAM DETAILS

DATE:	MAR. 26, 2015
SCALE:	NOTED
CHKD:	DFTM: JDK
JOB NO:	23454-015
DWG. NO:	NB2A



1 NB2B STEM REINFORCING PLAN VIEW IN FORM

3/4" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NB2C FOR REINFORCING PLAN
- SEE SHEET NB2C FOR FLANGE REINFORCING AT BEAM END

SHOP NOTE
- STIRRUP SPACING TO BE ADJUSTED TO ALLOW FOR 2" PVC SLEEVE

2 NB2B STEM REINFORCING PLAN VIEW IN FORM

3/4" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NB2C FOR REINFORCING PLAN
- SEE SHEET NB2C FOR FLANGE REINFORCING AT BEAM END

Vermont Agency of Transportation
RECEIVED
CK'D BY ____ OK'D BY ____
April 6, 2015
RESUBMIT No ____ Approved As Noted
BY Rob Young DATE 04/13/2015

SHOP DRAWING REVIEW

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Job Number: 120121
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COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

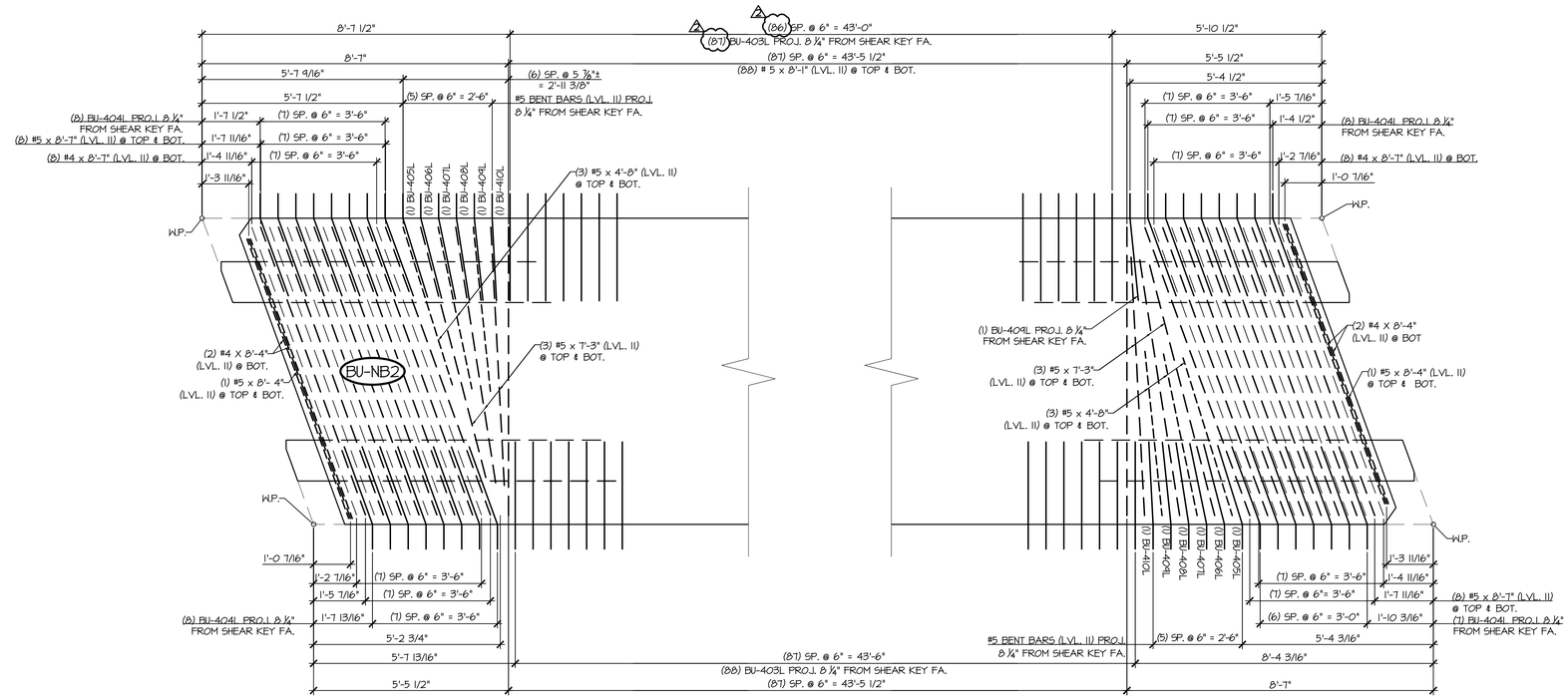
PRESTRESSED NEXT BEAM DETAILS

DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: NB2B

MARK: BU-NB2	QTY.: 2	WT: 41.34 T	VOL: 20.42 CY

MATERIAL LIST / NEXT BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	BU-401L	#4 BENT BAR (LEVEL II, DUAL COATED)	96
2	BU-402L	#4 BENT BAR (LEVEL II, DUAL COATED)	62
3	BU-403L	#4 BENT BAR (LEVEL II, DUAL COATED)	175
4	BU-404L	#4 BENT BAR (LEVEL II, DUAL COATED)	31
5	BU-405L	#4 BENT BAR (LEVEL II, DUAL COATED)	2
6	BU-406L	#4 BENT BAR (LEVEL II, DUAL COATED)	2
7	BU-407L	#4 BENT BAR (LEVEL II, DUAL COATED)	2
8	BU-408L	#4 BENT BAR (LEVEL II, DUAL COATED)	2
9	BU-409L	#4 BENT BAR (LEVEL II, DUAL COATED)	3
10	BU-410L	#4 BENT BAR (LEVEL II, DUAL COATED)	2
11		#4 x 8'-4" (LEVEL II, DUAL COATED)	4
12		#4 x 8'-7" (LEVEL II, DUAL COATED)	16
13	BU-501L	#5 BENT BAR (LEVEL II, DUAL COATED)	16
14	BU-502L	#5 BENT BAR (LEVEL II, DUAL COATED)	22
15	BU-503L	#5 BENT BAR (LEVEL II, DUAL COATED)	30
16		#5 x 4'-8" (LEVEL II, DUAL COATED)	12
17		#5 x 7'-3" (LEVEL II, DUAL COATED)	12
18		#5 x 8'-1" (LEVEL II, DUAL COATED)	176
19		#5 x 8'-4" (LEVEL II, DUAL COATED)	4
20		#5 x 8'-7" (LEVEL II, DUAL COATED)	32
21		#5 x 55'-5" (40'-0" + 17'-5" W/ (1) 2'-0" STAGGERED LAP) (LEVEL II, DUAL COATED)	12
22		#5 x 62'-5" (40'-0" + 24'-5" W/ (1) 2'-0" STAGGERED LAP) (LEVEL II, DUAL COATED)	12
23		SET OF (4) 0.50"Φ x 270 KSI STRAND LIFTING LOOPS	4
24		DAYTON B-16 COIL LOOP INERTS, ¾" COIL, SKIL 3000	28

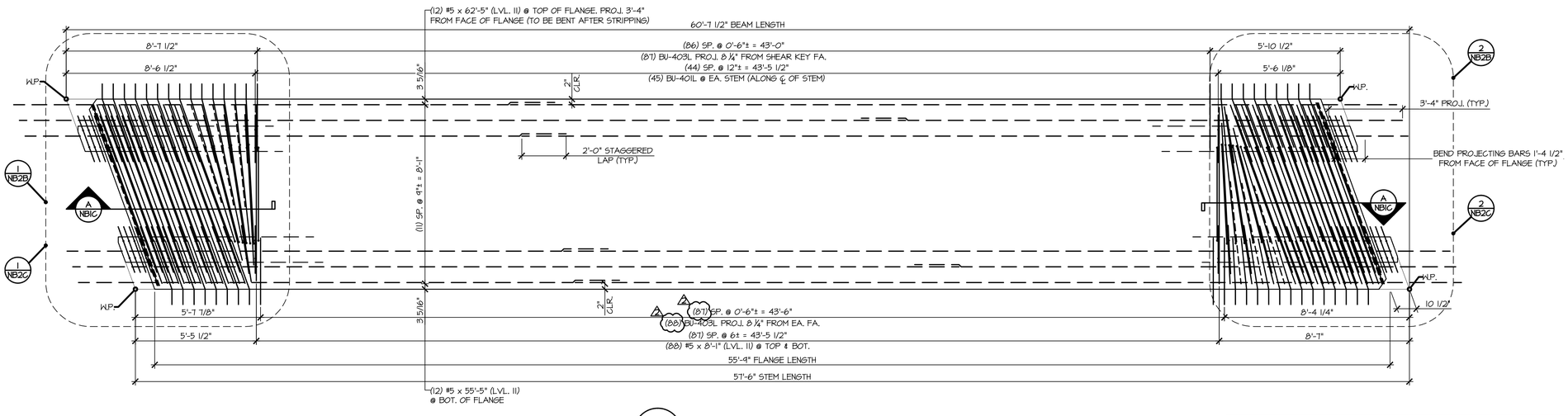


1 NB2C FLANGE REINFORCING PLAN VIEW IN FORM
½" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NB2B FOR STEM REINFORCING AT BEAM END

2 NB2C FLANGE REINFORCING PLAN VIEW IN FORM
½" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NB2B FOR STEM REINFORCING AT BEAM END



3 NB2C REINFORCING PLAN VIEW IN FORM
⅜" = 1'-0"

- SEE SHT. NB2B FOR STEM REINFORCEMENT AT BEAM ENDS
- SEE '1/NB2C' FOR FLANGE REINFORCEMENT AT BEAM ENDS

Vermont Agency of Transportation
RECEIVED
CK'D BY ____ OK'D BY ____
April 6, 2015
RESUBMIT No ____ Approved As Noted
BY Rob Young DATE 04/13/2015

SHOP DRAWING REVIEW

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BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

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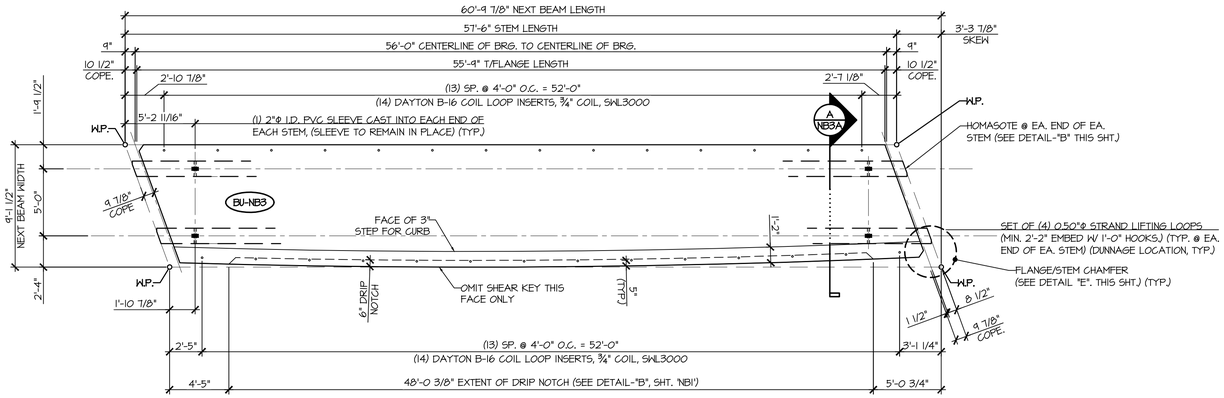
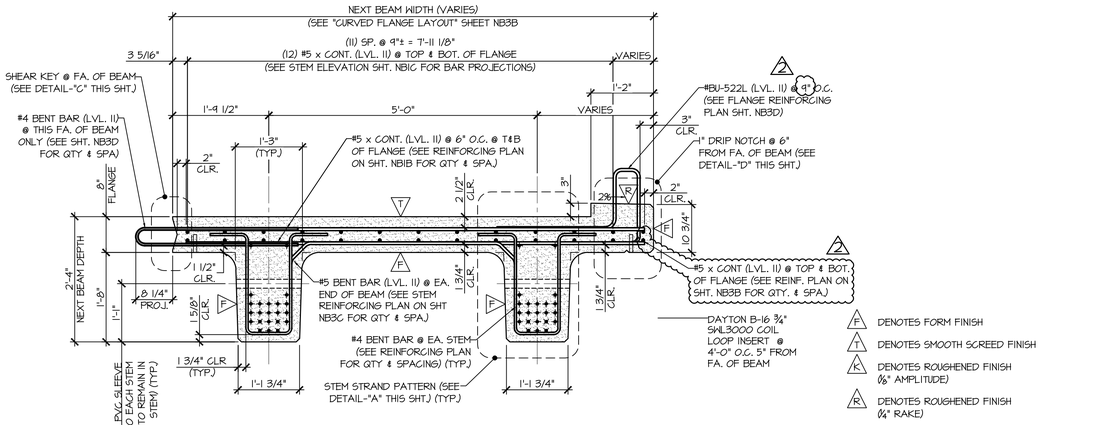
DATE:	MAR. 26, 2015
SCALE:	NOTED
CHKD:	DFTM: JDK
JOB NO:	23454-015
DWG. NO:	NB2C



1 NB3A DIMENSIONAL PLAN VIEW IN FORM

3/16" = 1'-0"



A NB3A DIMENSIONAL & REINFORCING SECTION

3/4" = 1'-0"

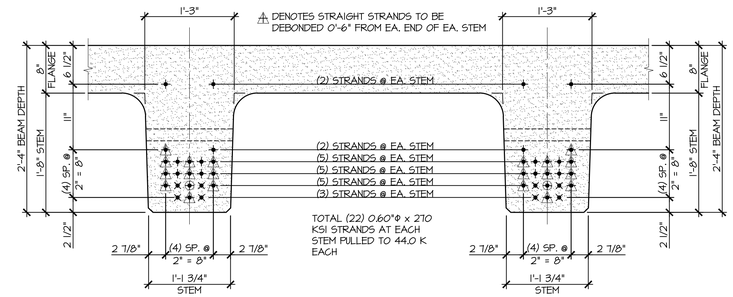
PRESTRESSING NOTATIONS

+ DENOTES STRAIGHT STRAND TO BE CUT FLUSH WITH EA. END OF EA. STEM

× DENOTES STRAIGHT STRAND TO EXTEND 2'-0" FROM EA. END OF EA. STEM

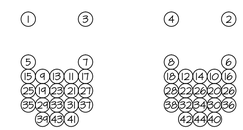
⊕ DENOTES STRAIGHT STRANDS TO BE DEBONDED 2'-0" FROM EA. END OF EA. STEM

⚠ DENOTES STRAIGHT STRANDS TO BE DEBONDED 0'-6" FROM EA. END OF EA. STEM



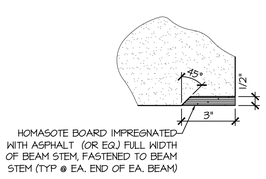
DETAIL - "A" (STEM STRAND PATTERN)

1" = 1'-0"



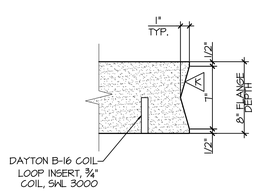
DETENSIONING SCHEDULE

N.T.S.



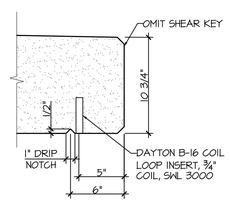
DETAIL - "B"

3" = 1'-0"



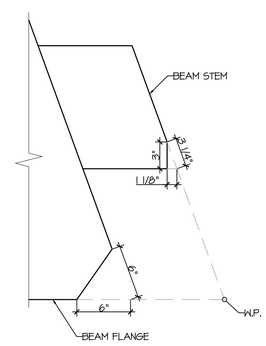
DETAIL - "C"

1½" = 1'-0"



DETAIL - "D"

1½" = 1'-0"



DETAIL - "E"

1½" = 1'-0"

Vermont Agency of Transportation
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RESUBMIT No
Approved AsNoted
BY Rob Young
DATE 04/13/2015

SHOP DRAWING REVIEW

☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

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CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

MARK: BU-NB3	QTY.: 1	WT: 43.11 T	VOL: 21.29 CY

APPROVAL STAMP:

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

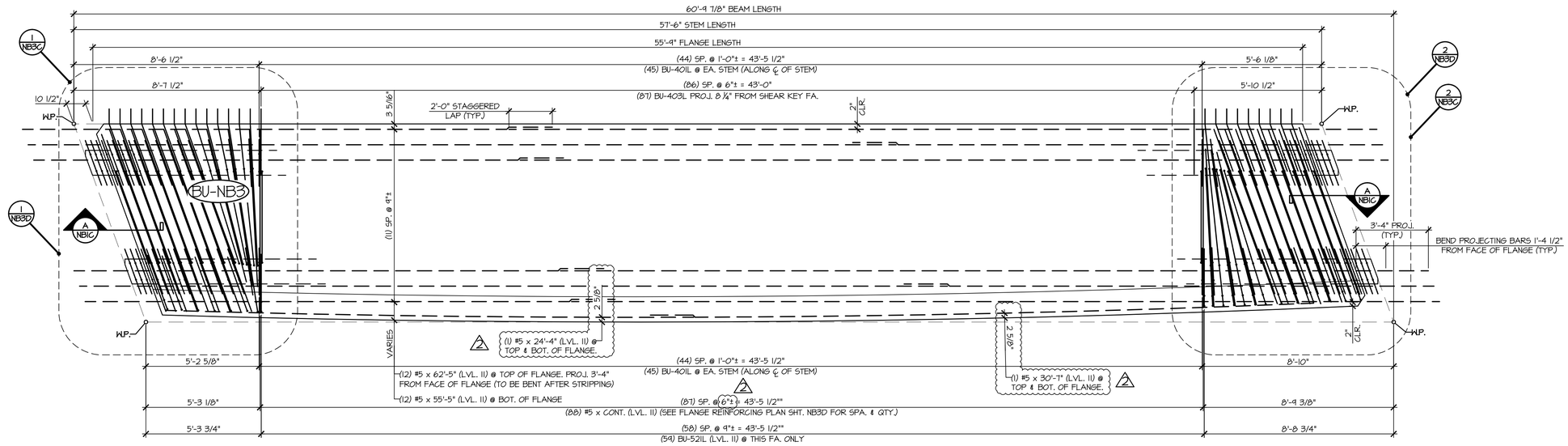
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRESTRESSED NEXT BEAM DETAILS

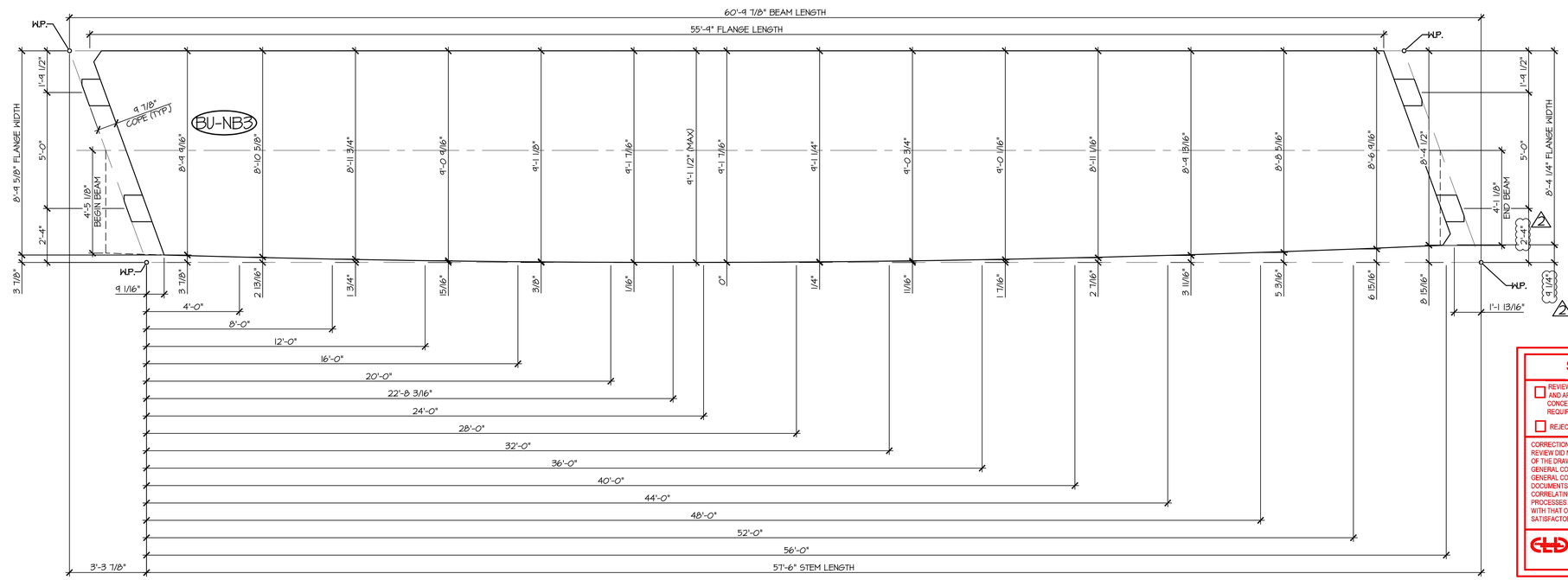
DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: NB3A



1/NB3B REINFORCING PLAN VIEW IN FORM

3/8" = 1'-0"

- SEE SHEET 'NB3C' FOR STEM REINFORCING AT BEAM ENDS
- SEE SHEET 'NB3D' FOR FLANGE & TEXAS RAIL REINFORCING AT BEAM END



2/NB3B CURVED FLANGE LAYOUT

3/8" = 1'-0"

Vermont Agency of Transportation
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SHOP DRAWING REVIEW

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540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
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T. BUCK CONSTRUCTION, INC.
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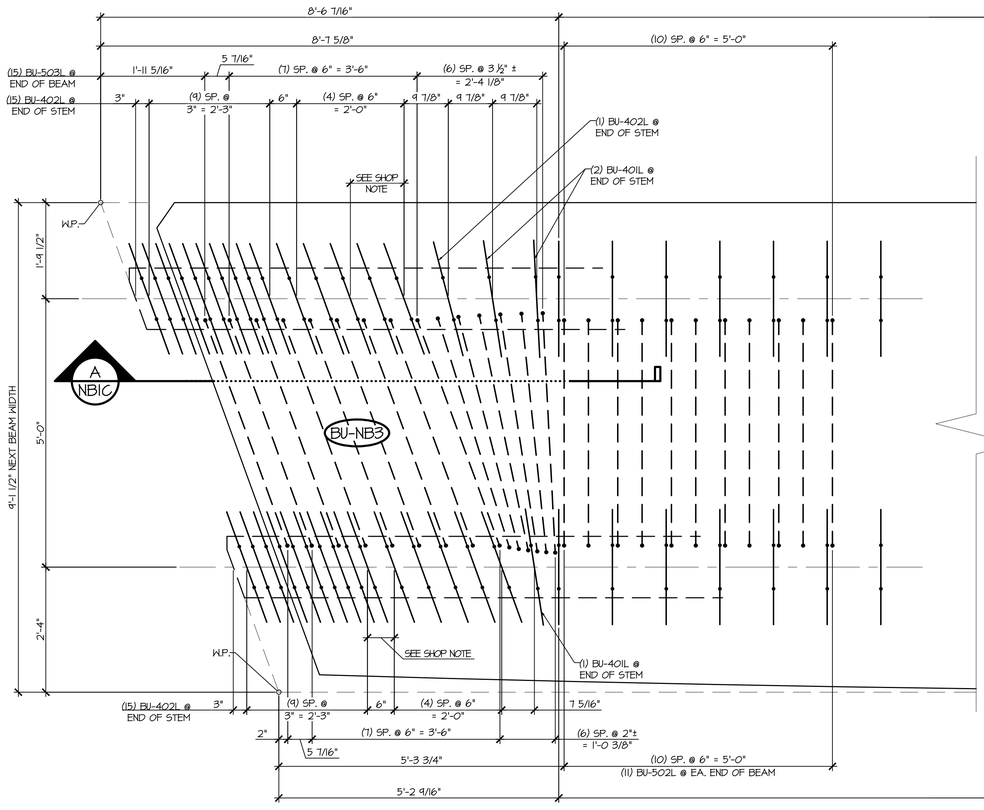
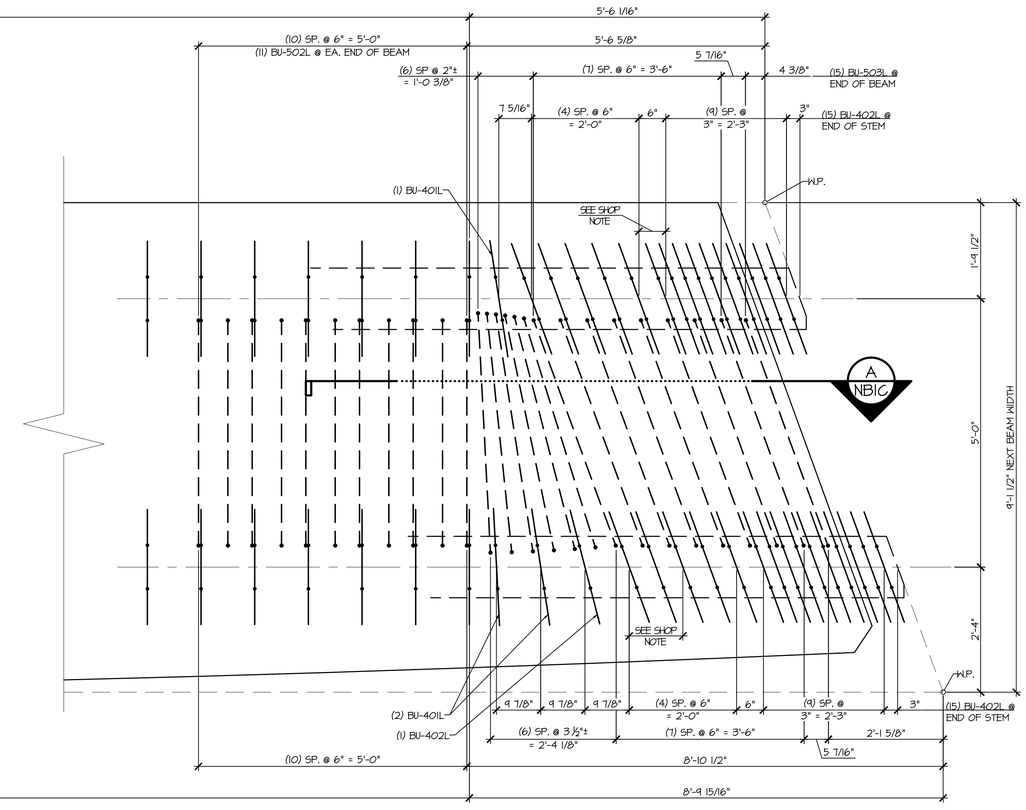
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

PRESTRESSED NEXT BEAM DETAILS

DATE: MAR. 26, 2015	
SCALE: NOTED	
CHKD:	DFTM: JDK
JOB NO: 23454-015	
DWG. NO: NB3B	





1 / NB3C STEM REINFORCING PLAN VIEW IN FORM

3/4" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NB3B FOR REINFORCING PLAN
- SEE SHEET NB3D FOR FLANGE REINFORCING AT BEAM END

SHOP NOTE
- STIRRUP SPACING TO BE ADJUSTED TO ALLOW FOR 2" PVC SLEEVE

2 / NB3C STEM REINFORCING PLAN VIEW IN FORM

3/4" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NB3B FOR REINFORCING PLAN
- SEE SHEET NB3D FOR FLANGE REINFORCING AT BEAM END

Vermont Agency of Transportation
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T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

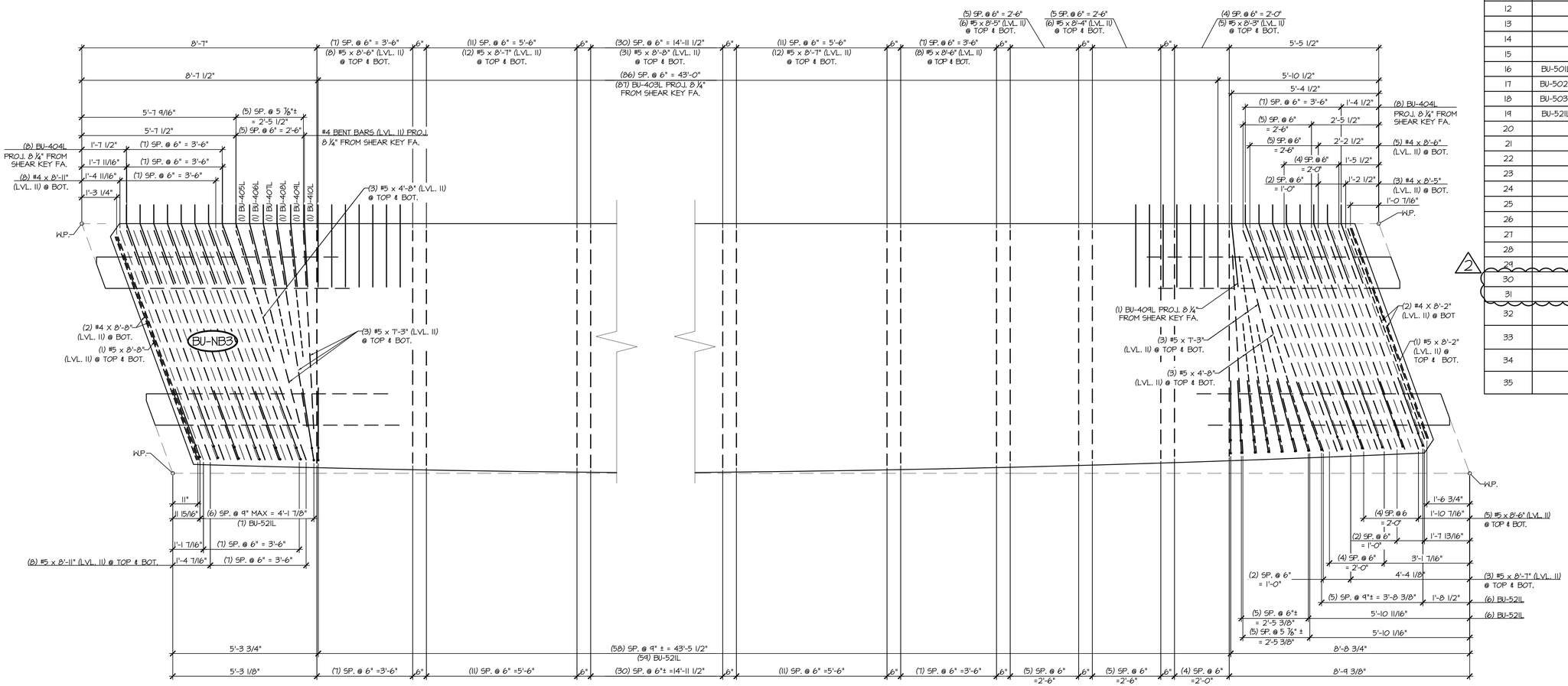
PRESTRESSED NEXT BEAM DETAILS

DATE:	MAR. 26, 2015
SCALE:	NOTED
CHKD:	DFTM: JDK
JOB NO:	23454-015
DWG. NO:	NB3C

MARK: BU-NB3	QTY.: 1	WT: 43.11T	VOL: 21.29 CY

MATERIAL LIST / NEXT BEAM

ITEM	MARK	DESCRIPTION	QTY.
1	BU-401L	#4 BENT BAR (LEVEL II, DUAL COATED)	96
2	BU-402L	#4 BENT BAR (LEVEL II, DUAL COATED)	62
3	BU-403L	#4 BENT BAR (LEVEL II, DUAL COATED)	87
4	BU-404L	#4 BENT BAR (LEVEL II, DUAL COATED)	16
5	BU-405L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
6	BU-406L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
7	BU-407L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
8	BU-408L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
9	BU-409L	#4 BENT BAR (LEVEL II, DUAL COATED)	2
10	BU-410L	#4 BENT BAR (LEVEL II, DUAL COATED)	1
11		#4 x 8'-2" (LEVEL II, DUAL COATED)	2
12		#4 x 8'-5" (LEVEL II, DUAL COATED)	3
13		#4 x 8'-6" (LEVEL II, DUAL COATED)	5
14		#4 x 8'-8" (LEVEL II, DUAL COATED)	2
15		#4 x 8'-11" (LEVEL II, DUAL COATED)	8
16	BU-501L	#5 BENT BAR (LEVEL II, DUAL COATED)	16
17	BU-502L	#5 BENT BAR (LEVEL II, DUAL COATED)	22
18	BU-503L	#5 BENT BAR (LEVEL II, DUAL COATED)	30
19	BU-521L	#5 BENT BAR (LEVEL II, DUAL COATED)	78
20		#5 x 4'-8" (LEVEL II, DUAL COATED)	12
21		#5 x 7'-3" (LEVEL II, DUAL COATED)	12
22		#5 x 8'-2" (LEVEL II, DUAL COATED)	2
23		#5 x 8'-3" (LEVEL II, DUAL COATED)	10
24		#5 x 8'-4" (LEVEL II, DUAL COATED)	12
25		#5 x 8'-5" (LEVEL II, DUAL COATED)	12
26		#5 x 8'-6" (LEVEL II, DUAL COATED)	42
27		#5 x 8'-7" (LEVEL II, DUAL COATED)	54
28		#5 x 8'-8" (LEVEL II, DUAL COATED)	64
29		#5 x 8'-11" (LEVEL II, DUAL COATED)	16
30		#5 x 24'-4" (LEVEL II, DUAL COATED)	2
31		#5 x 30'-7" (LEVEL II, DUAL COATED)	2
32		#5 x 55'-5" (40'-0" + 11'-5" W (I) 2'-0" STAGGERED LAP) (LEVEL II, DUAL COATED)	12
33		#5 x 62'-5" (40'-0" + 24'-5" W (I) 2'-0" STAGGERED LAP) (LEVEL II, DUAL COATED)	12
34		SET OF (4) 0.50"Φ x 270 KSI STRAND LIFTING LOOPS	4
35		DAYTON B-16 COIL LOOP INSERTS, ¾" COIL, SWL 3000	28



1 NB3D

FLANGE REINFORCING PLAN VIEW IN FORM

½" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NB3B FOR REINFORCING PLAN
- SEE SHEET NB3C FOR STEM REINFORCING AT BEAM END

2 NB3D

FLANGE REINFORCING PLAN VIEW IN FORM

½" = 1'-0"

- LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY
- SEE SHEET NB3B FOR REINFORCING PLAN
- SEE SHEET NB3C FOR STEM REINFORCING AT BEAM END

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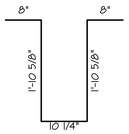
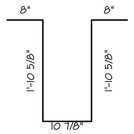
PRESTRESSED NEXT BEAM DETAILS

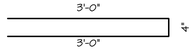
DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: NB3D



BU-401L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 2" Φ [50MM] PIN
(384) REQ'D.

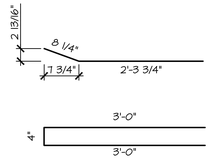


BU-402L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 2" Φ [50MM] PIN
(248) REQ'D.

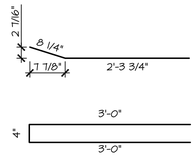


BU-403L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 3" Φ [75MM] PIN
(525) REQ'D.

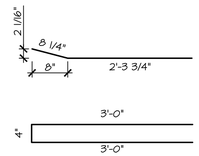
2



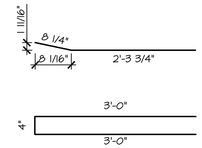
BU-404L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 3" Φ [75MM] PIN
(93) REQ'D.



BU-405L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 3" Φ [75MM] PIN
(6) REQ'D.



BU-406L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 3" Φ [75MM] PIN
(6) REQ'D.



BU-407L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 3" Φ [75MM] PIN
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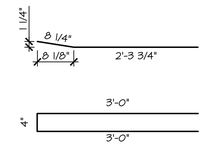
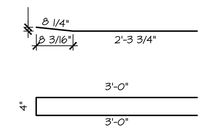
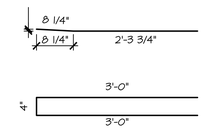


BU-408L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 3" Φ [75MM] PIN
(6) REQ'D.

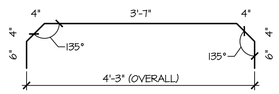


BU-409L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 3" Φ [50MM] PIN
(9) REQ'D.

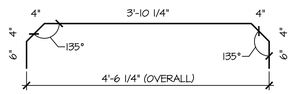


BU-410L
#4 BENT BAR
LEVEL II (DUAL COATED)
USE 3" Φ [50MM] PIN
(6) REQ'D.

BU-501L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(64) REQ'D.



BU-502L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(88) REQ'D.



BU-503L
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LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
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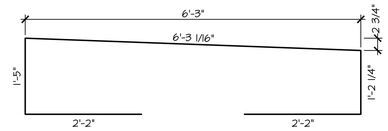
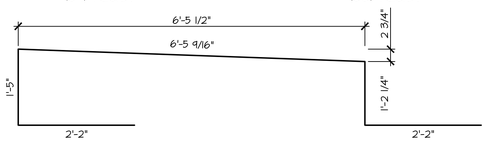
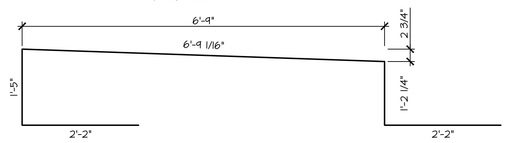


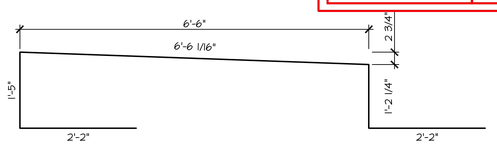
BU-504L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ [95MM] PIN
(31) REQ'D.



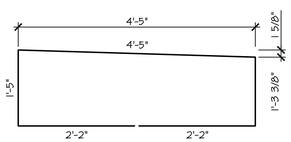
BU-505L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ [95MM] PIN
(1) REQ'D.



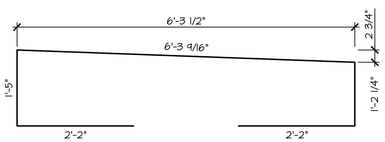
BU-506L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ [95MM] PIN
(4) REQ'D.



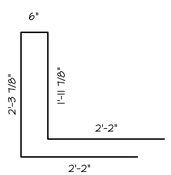
BU-507L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ [95MM] PIN
(1) REQ'D.



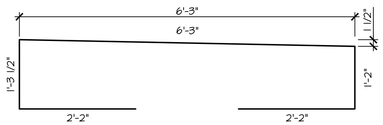
BU-508L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ [95MM] PIN
(1) REQ'D.



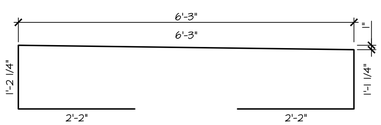
BU-509L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ [95MM] PIN
(1) REQ'D.



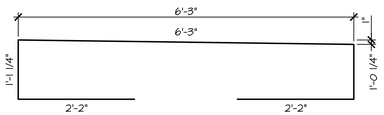
BU-510L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(11) REQ'D.



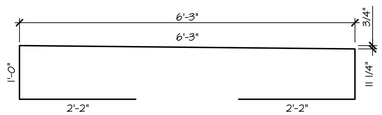
BU-511L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(1) REQ'D.



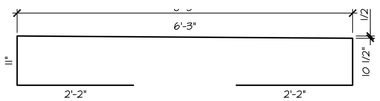
BU-512L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(1) REQ'D.



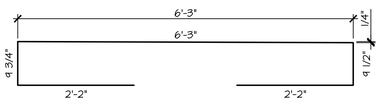
BU-513L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(1) REQ'D.



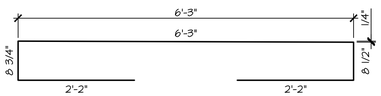
BU-514L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(1) REQ'D.



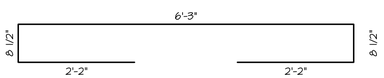
BU-515L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(1) REQ'D.



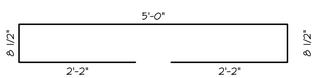
BU-516L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(1) REQ'D.



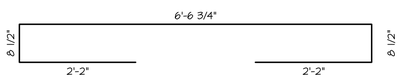
BU-517L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(1) REQ'D.



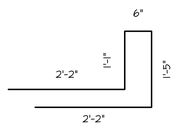
BU-518L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(8) REQ'D.



BU-519L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(2) REQ'D.



BU-520L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾" Φ [95MM] PIN
(5) REQ'D.



BU-521
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ [95MM] PIN
(78) REQ'D.

SHOP DRAWING REVIEW

☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☒ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCEWITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

Vermont Agency of Transportation
RECEIVED
Natural Resources Conservation, Flooding and Water

CK'D BY _____ OK'D BY _____
April 6, 2015
RESUBMIT No Approved AsNoted
BY Rob Young DATE 04/13/2015

MISCELLANEOUS MATERIALS

ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1		2	#4 x 8'-2" (LEVEL II, DUAL COATED)	
2		10	#4 x 8'-4" (LEVEL II, DUAL COATED)	
3		3	#4 x 8'-5" (LEVEL II, DUAL COATED)	
4		5	#4 x 8'-6" (LEVEL II, DUAL COATED)	
5		40	#4 x 8'-7" (LEVEL II, DUAL COATED)	
6		2	#4 x 8'-8" (LEVEL II, DUAL COATED)	
7		8	#4 x 8'-11" (LEVEL II, DUAL COATED)	
8		2	#4 x 9'-0" (LEVEL II, DUAL COATED)	
9		4	#4 x 9'-2" (LEVEL II, DUAL COATED)	
10		4	#4 x 9'-3" (LEVEL II, DUAL COATED)	
11		50	#5 x 4'-8" (LEVEL II, DUAL COATED)	
12		42	#5 x 7'-3" (LEVEL II, DUAL COATED)	
13		6	#5 x 7'-5" (LEVEL II, DUAL COATED)	
14		60	#5 x 7'-10" (LEVEL II, DUAL COATED)	
15		46	#5 x 7'-11" (LEVEL II, DUAL COATED)	
16		28	#5 x 8'-0" (LEVEL II, DUAL COATED)	
17		364	#5 x 8'-1" (LEVEL II, DUAL COATED)	
18		14	#5 x 8'-2" (LEVEL II, DUAL COATED)	
19		18	#5 x 8'-3" (LEVEL II, DUAL COATED)	
20		32	#5 x 8'-4" (LEVEL II, DUAL COATED)	
21		12	#5 x 8'-5" (LEVEL II, DUAL COATED)	
22		42	#5 x 8'-6" (LEVEL II, DUAL COATED)	
23		134	#5 x 8'-7" (LEVEL II, DUAL COATED)	
24		64	#5 x 8'-8" (LEVEL II, DUAL COATED)	
25		16	#5 x 8'-11" (LEVEL II, DUAL COATED)	
26		2	#5 x 9'-0" (LEVEL II, DUAL COATED)	
27		8	#5 x 9'-2" (LEVEL II, DUAL COATED)	
28		8	#5 x 9'-3" (LEVEL II, DUAL COATED)	
29		2	#5 x 12'-2" (LEVEL II, DUAL COATED)	
30		2	#5 x 20'-8" (LEVEL II, DUAL COATED)	
31		2	#5 x 24'-4" (LEVEL II, DUAL COATED)	
32		2	#5 x 30'-7" (LEVEL II, DUAL COATED)	
33		48	#5 x 55'-5" (40'-0" + 17'-5" W (1) 2'-0" STAGGERED LAP) (LEVEL II, DUAL COATED)	
34		48	#5 x 62'-5" (40'-0" + 24'-5" W (1) 2'-0" STAGGERED LAP (LEVEL II, DUAL COATED	
35		16	SET OF (4) 0.50"Φ x 270 KSI STRAND LIFTING LOOPS	
36		112	DAYTON B-16 COIL LOOP INSERTS, ¾" COIL, SWL 3000	

2

THE FOLLOWING BARS MARKS SHALL INCLUDE SAMPLE REBAR FOR TESTING:

BU-403L LEVEL II
525 + 1 FOR TESTING = 526

BU-501L LEVEL II
64 + 1 FOR TESTING = 65

PRECAST NEXT BEAMS

PRESTRESSED NEXT BEAMS

1" = 1'-0"

APPROVAL STAMP:

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

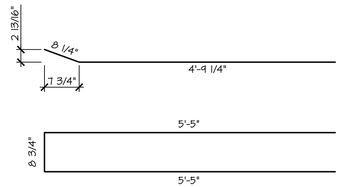
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

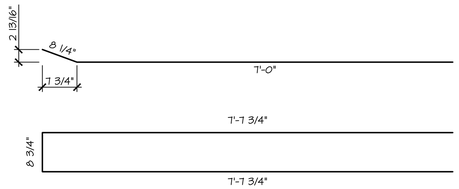
TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

MATERIALS LIST

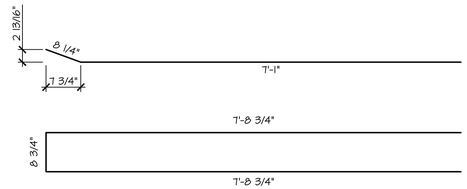
DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: M1



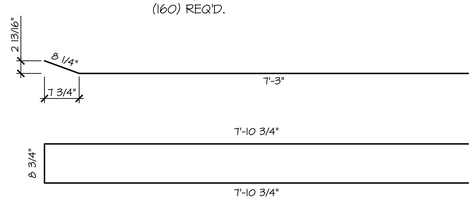
BU-530L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(160) REQ'D.



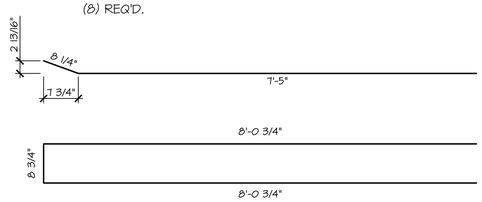
BU-531L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(8) REQ'D.



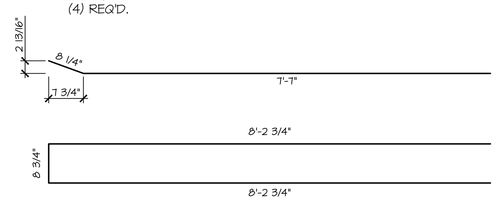
BU-532L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(4) REQ'D.



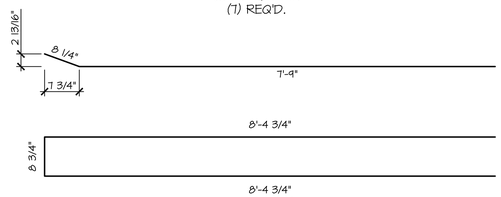
BU-533L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(1) REQ'D.



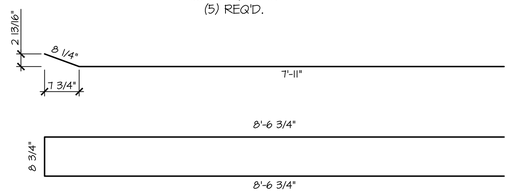
BU-534L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(5) REQ'D.



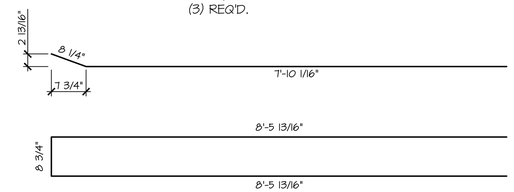
BU-535L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(3) REQ'D.



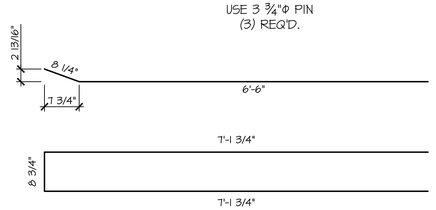
BU-536L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(3) REQ'D.



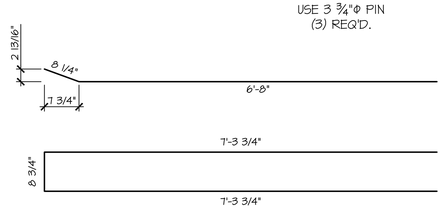
BU-537L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(3) REQ'D.



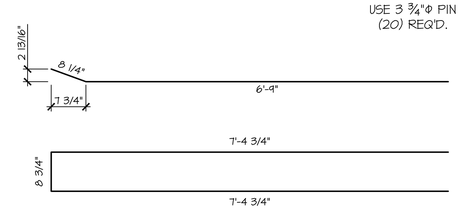
BU-538L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(20) REQ'D.



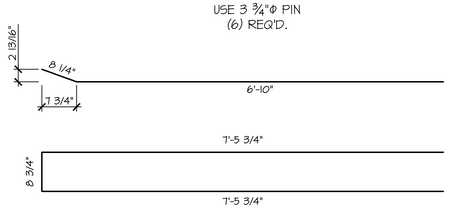
BU-539L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(6) REQ'D.



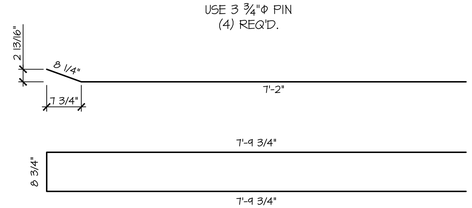
BU-540L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(4) REQ'D.



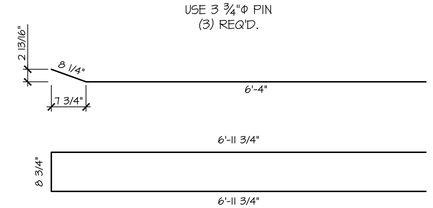
BU-541L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(3) REQ'D.



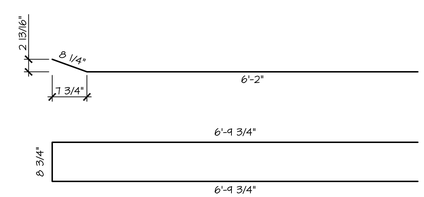
BU-542L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(5) REQ'D.



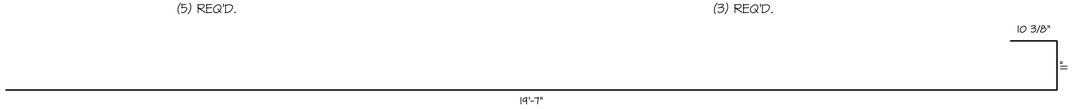
BU-543L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(3) REQ'D.



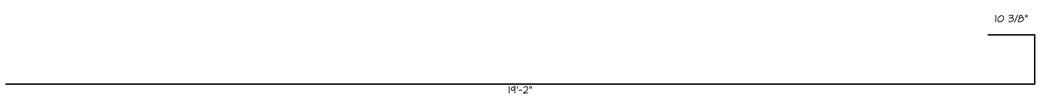
BU-544L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(3) REQ'D.



BU-545L
#5 BENT BAR
LEVEL II (DUAL COATED)
USE 3 ¾"Φ PIN
(3) REQ'D. 2



BU-901
#9 BENT BAR
LEVEL I (EPOXY COATED) 2
USE 6"Φ PIN
(79) REQ'D.



BU-902
#9 BENT BAR
LEVEL I (EPOXY COATED) 2
USE 6"Φ PIN
(2) REQ'D.

MISCELLANEOUS MATERIALS

ITEM	MARK	QTY	DESCRIPTION 2	REMARKS
1		2	#6 x 16'-2" (LEVEL I EPOXY COATED)	PRECAST APPROACH SLABS
2		1	#6 x 16'-11 (LEVEL I EPOXY COATED)	
3		2	#6 x 19'-2" (LEVEL I EPOXY COATED)	
4		79	#6 x 19'-7" (LEVEL I EPOXY COATED)	
5		2	#9 x 16'-2" (LEVEL I EPOXY COATED)	
6		1	#9 x 16'-11" (LEVEL I EPOXY COATED)	
7		32	4T x 7 1/8" SWIFT LIFT LIFTER, DOMESTIC ORIGIN	

2

Vermont Agency of Transportation
RECEIVED
CK'D BY _____ OK'D BY _____
April 6, 2015
RESUBMIT No Approved AsNoted
BY Rob Young DATE 04/13/2015

SHOP DRAWING REVIEW

☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☒ APPROVED AS NOTED

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CLD Consulting Engineers
540 Commercial Street
Manchester, NH 103101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

THE FOLLOWING BARS MARKS SHALL INCLUDE SAMPLE REBAR FOR TESTING:

BU-901 LEVEL I EPOXY
59 + 1 FOR TESTING = 60

#6 19'-7" STRAIGHT FOR LEVEL I EPOXY
79 + 1 FOR TESTING = 80

PRECAST APPROACH SLABS
1" = 1'-0"

APPROVAL STAMP:

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

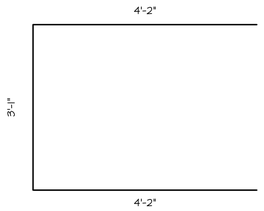
T. BUCK CONSTRUCTION, INC.
CONTRACTOR
AUBURN, MAINE

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF CALEDONIA

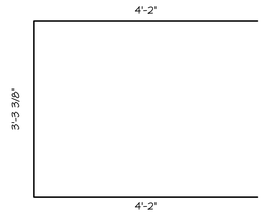
TOWN OF BURKE
VERMONT ROUTE 114
BRIDGE NO.: 13 PROJECT NO.: BRF 0269(13)

MATERIALS LIST

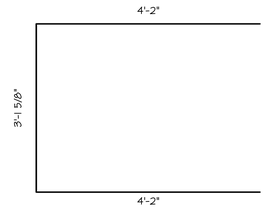
DATE: MAR. 26, 2015
SCALE: NOTED
CHKD: DFTM: JDK
JOB NO: 23454-015
DWG. NO: M2



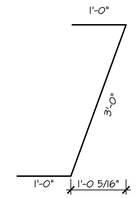
BU-522
#5 BENT BAR
LEVEL I (BLACK) 2
USE 3 ¾"Φ [95MM] PIN
(62) REQ'D. 2



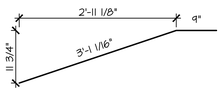
BU-523
#5 BENT BAR
LEVEL I (BLACK) 2
USE 3 ¾"Φ [95MM] PIN
(19) REQ'D.



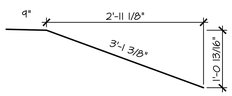
BU-524
#5 BENT BAR
LEVEL I (BLACK) 2
USE 3 ¾"Φ [95MM] PIN
(2) REQ'D.



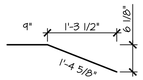
BU-525
#5 BENT BAR
LEVEL I (BLACK) 2
USE 3 ¾"Φ [95MM] PIN
(31) REQ'D.



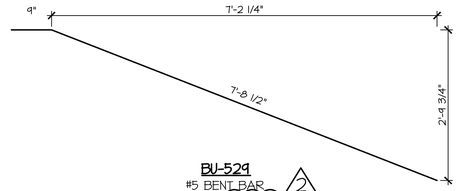
BU-526
#5 BENT BAR
LEVEL I (BLACK) 2
USE 3 ¾"Φ [95MM] PIN
(4) REQ'D.



BU-527
#5 BENT BAR
LEVEL I (BLACK) 2
USE 3 ¾"Φ [95MM] PIN
(4) REQ'D.



BU-528
#5 BENT BAR
LEVEL I (BLACK) 2
USE 3 ¾"Φ [95MM] PIN
(2) REQ'D.

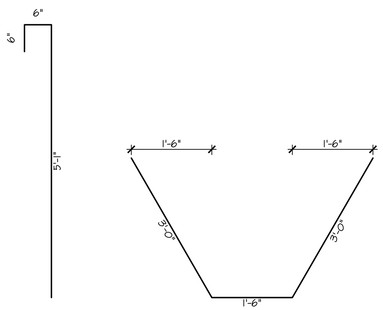


BU-529
#5 BENT BAR
LEVEL I (BLACK) 2
USE 3 ¾"Φ PIN
(2) REQ'D.

THE FOLLOWING BARS MARKS SHALL INCLUDE SAMPLE REBAR FOR TESTING:

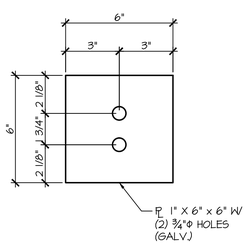
BU-602 BLACK LEVEL I
24 + 1 FOR TESTING = 25

BU-522 BLACK LEVEL 1
62 + 1 FOR TESTING = 63



BU-601L
#6 BENT BAR
LEVEL II (DUAL COATED)
USE 4 ½" Φ [115MM] PIN
(80) REQ'D.

BU-602
#6 BENT BAR
LEVEL I (BLACK) 2
USE 4 ½" Φ [115MM] PIN
(24) REQ'D.



BU-W1
3" = 1'-0"

PRECAST ABUTMENTS
1" = 1'-0"

MISCELLANEOUS MATERIALS

ITEM	MARK	QTY.	2 DESCRIPTION	REMARKS
1		2	#5 x 2'-2" (LEVEL I, BLACK)	
2		58	#5 x 3'-6" (LEVEL II, DUAL COATED)	
3		62	#5 x 4'-2" (LEVEL II, DUAL COATED)	
4		10	#5 x 3'-4" (LEVEL I, BLACK)	
5		2	#5 x 6'-1" (LEVEL I, BLACK)	
6		16	#6 x 2'-4" (LEVEL I, BLACK)	
7		8	#6 x 3'-6" (LEVEL I, BLACK)	
8		38	#6 x 3'-8" (LEVEL I, BLACK)	
9		32	#6 x 3'-11" (LEVEL I, BLACK)	
10		8	#6 x 4'-0" (LEVEL I, BLACK)	
11		25	#6 x 4'-1" (LEVEL I, BLACK)	
12		32	#6 x 4'-7" (LEVEL I, BLACK)	
13		5	#6 x 4'-4" (LEVEL I, BLACK)	
14		4	#6 x 4'-11" (LEVEL I, BLACK)	
15		4	#6 x 5'-0" (LEVEL I, BLACK)	
16		17	#6 x 5'-2" (LEVEL I, BLACK)	
17		32	#6 x 5'-3" (LEVEL I, BLACK)	
18		4	#6 x 5'-4" (LEVEL I, BLACK)	
19		4	#6 x 5'-5" (LEVEL I, BLACK)	
20		4	#6 x 5'-7" (LEVEL I, BLACK)	
21		4	#6 x 5'-8" (LEVEL I, BLACK)	
22		4	#6 x 5'-11" (LEVEL I, BLACK)	
23		4	#6 x 6'-2" (LEVEL I, BLACK)	
24		7	#6 x 6'-11" (LEVEL I, BLACK)	
25		10	#6 x 7'-1" (LEVEL I, BLACK)	
26		1	#6 x 7'-2" (LEVEL I, BLACK)	
27		10	#6 x 7'-6" (LEVEL I, BLACK)	
28		2	#6 x 7'-7" (LEVEL I, BLACK)	
29		1	#6 x 8'-0" (LEVEL I, BLACK)	
30		14	#6 x 22'-7" (LEVEL I, BLACK)	
31		8	#6 x 23'-2" (LEVEL I, BLACK)	
32		7	#6 x 23'-3" (LEVEL I, BLACK)	
33		14	#6 x 23'-8" (LEVEL I, BLACK)	
34		8	#6 x 24'-3" (LEVEL I, BLACK)	
35		7	#6 x 24'-4" (LEVEL I, BLACK)	
36		1	2'-0" x 5'-2 1/2" CORR. STL PIPE (GALV)	
37		1	2'-0" x 5'-4" CORR. STL PIPE (GALV)	
38		1	2'-0" x 5'-4 5/8" CORR. STL PIPE (GALV)	
39		1	2'-0" x 5'-6 7/8" CORR. STL PIPE (GALV)	
40		1	2'-0" x 5'-7" CORR. STL PIPE (GALV)	
41		1	2'-0" x 5'-9 1/4" CORR. STL PIPE (GALV)	
42		1	2'-0" x 5'-9 7/8" CORR. STL PIPE (GALV)	
43		1	2'-0" x 5'-11 5/8" CORR. STL PIPE (GALV)	
44		1	2'-0" x 6'-0 3/4" CORR. STL PIPE (GALV)	
45		1	2'-0" x 6'-3 5/8" CORR. STL PIPE (GALV)	
46		1	2'-0" x 6'-6 1/2" CORR. STL PIPE (GALV)	
47		1	2'-0" x 7'-1 3/4" CORR. STL PIPE (GALV)	
48		8	SET OF (4) 0.60"□ x 270 KSI STRAND LIFTING LOOPS	
49	BU-W1	24	PL 1" x 6" x 6" W/ (2) 3/4"□ HOLES (GALV)	FOR ERECTION
50		24	1/2"□ x 50' POLY-STRAND	FOR ERECTION
51		48	1/2"□ SINGLE USE STRESSING CHUCK	FOR ERECTION
52		12	COMPRESSIBLE SEALER SELF ADHESIVE	FOR ERECTION

PRECAST ABUTMENTS

Vermont Agency of Transportation
RECEIVED
Submitted drawings for review in accordance with "STANDARD SPECIFICATIONS FOR CONSTRUCTION"
CK'D BY _____ OK'D BY _____
April 6, 2015
RESUBMIT No Approved AsNoted
BY Rob Young DATE 04/13/2015

SHOP DRAWING REVIEW

☐ REVIEWED AS REQUIRED BY THE CONSTRUCTION CONTRACT DOCUMENTS AND APPROVED, BUT ONLY FOR CONFORMANCE TO THE DESIGN CONCEPT OF THE WORK, AND SUBJECT TO FURTHER LIMITATIONS AND REQUIREMENTS CONTAINED IN THE CONSTRUCTION CONTRACT DOCUMENTS.

☐ REJECTED ☐ REVISE AND RESUBMIT ☒ APPROVED AS NOTED

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING THIS REVIEW DID NOT RELIEVE CONTRACTOR FROM COMPLIANCEWITH REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPOINSIBLE FOR: CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.

CLD Consulting Engineers
540 Commercial Street
Manchester, NH 03101
603-668-8223

Job Number: 120121
Reviewed by: SRB
Date: 04/10/2015

APPROVAL STAMP:

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