



CCS Constructors Inc.

Supply & Erect Structural Steel and Precast
Crane Service Rigging Pile Driving Heavy Hauling



Erection Plan for Precast Concrete NEXT BEAMS and abutments Brighton, VT ER STP 034-3(25)

June 22, 2013

General Requirements:

The erection shall not be performed during windy or heavy rain conditions. A Grove GMK5275 truck crane and Grove TMS900E truck crane will be used for the erection.

The units shall be picked from the locations and lifting apparatus shown in the J.P. Carrara & Sons Inc. shop drawings, and shall be installed according to the manufacturer's requirements and project specifications. Each Next Beam unit is to be picked from (4) locations. See below for rigging sizes, which are minimum; slightly larger rigging is permissible.

The maximum permissible crane radius for unloading and setting the Next Beam units is shown on layout drawing, and shall not be exceeded.

The Grove GMK 5275 shall setup with 169700 lbs counterweights. The Grove TMS900E crane shall set up with all manufacturers' counterweights. See the attached layout drawing for crane setup location information and additional requirements. The sub-base beneath the cranes shall be firmly compacted structural backfill. The GMK5275 shall setup outriggers on 5 ft square steel plates.

Cranes shall have operators in them at all times while lifting NEXT beams (beams shall not be left supported by cranes during breaks or over night). Next beams shall not be left supported on the shoring when the site is unattended (overnight).

Abutment and Wing Wall Placement:

Abutment 2 precast abutment erection will be done using a Grove GMK 5275 crane with 90300 lbs counterweight sitting behind (east of) the abutment. Trucks carrying the precast units will approach from the east. The maximum crane radius shall be 45'. The maximum abutment piece pick weight is 68,000 lbs.

Sequence:

138 Munson Avenue Morrisville, VT 05661
802-888-7701 fax 802-888-4746



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Set B-AB 3.
Set B-AB 4.
Set B-WW1.

Unload B-WW 2 and place on the ground to be set using a CAT 325C L excavator (with bucket removed) in order to maintain minimum clearance from the overhead power line.

Abutment 1 precast abutment erection will be done using the Grove 5275 crane with 90300 lbs counterweights, sitting west of abutment 2. Trucks with precast units are to approach from the west. The maximum crane radius shall be 45'. The maximum pick weight is 68,020 lbs. The setting sequence and procedure are to be the same as used at Abutment 2.

Approach Slab Placement:

All approach slabs will be set using a Link Belt 50 Ton rough terrain crane, set up on outriggers fully extended. The maximum crane radius shall be 30'. The maximum approach slab pick weight is 27,000lbs. The crane will be located behind each abutment, with delivery of the slabs coming from the west at abutment 1 and the east at abutment 2.

NEXT BEAM Rigging:

GMK5275, single crane pick:

- Four (4) 90 Kip round slings x 40' long from crane hook
- To (4) 50 Ton link splices with (8) 35 Ton screw type shackles
- To (4) 53 Kip round slings x 25' or 40' long
(for forming 65' to 80' long rigging, spanning from the crane hook to the Next Beam lifter pick points)
- To (4) 25 Ton Shackles to attach to Next Beam lifters (by NEXT beam manufacturer)

2-crane picks (rigging listed for 1 crane):

- Two (2) 90 Kip or 53 Kip round slings x 40' long from crane hook
- To (4) 25 Ton Shackles to attach to Next Beam lifters (by NEXT beam manufacturer)



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NEXT BEAM Shoring:

Shoring shall be set on firmly compacted and level structural fill. Shoring is to be supported by a pair of 6" thick 15' by 6' reinforced precast concrete slabs (doubled up) and two 4'x4'x2' solid concrete blocks (2' dimension vertical). **Alternatively, 4'x4'x3' solid concrete blocks may be used (3' dimension vertical, 4,000 psi concrete minimum).** See the layout drawing for positioning requirements. Up to 5 rows (maximum, 3 rows or 1 row may be used) of continuous hardwood cribbing, 6x8 minimum (wider dimension horizontal) placed tightly together in an alternating direction stacking pattern, are to be placed on top of the solid concrete blocks. Cribbing shall begin and end with 9' minimum length pieces sitting directly on top of the blocks and directly below the NEXT beams, running north/south. Cribbing shall encompass the full 4 ft width of the supporting concrete blocks. The top of the shoring shall be sufficient elevation to prevent the NEXT Beam units from tipping (nearly level, 8" maximum slope over length of beam and as limited by **project specifications and the manufacturer's requirements**), and shall provide full bearing contact for engaging all pieces of cribbing across the width of the shoring support.

NEXT BEAM Erection sequence:

Precast NEXT beam delivery trucks will approach from the east.

1. The truck carrying Beam B-NB1 is to back up to Abutment 2 in the Beam B-NB2 (south) alignment (lane). The GMK 5275 crane is to hook onto the lifting eyes at the west end of the beam, and lift the beam and turn as the truck backs up, allowing the end of the beam to be set on shoring, located shown on the layout drawing. The GMK5275 is to set the beam unit end onto the cribbing, un-hook, and re-hook to the four lifting eyes (at both ends of the beam for picking the entire beam). The beam will be set down on the abutments in the Beam B-NB3 location. The GMK5275 is to unhook, and both the GMK5275 and TMS900E are to hook onto each end for performing a 2-crane pick (the GMK 5275 is to re-hook onto the east end of the beam, and the TMS900E is to hook onto the west end of the beam). The two cranes will set the beam in the final position.
2. The above procedure is to be repeated for Beam B-NB 2 north.
3. Beam B-NB3 is to be backed up, set onto the cribbing, and picked with the GMK5275 as performed on the above two beams. The GMK 5275 shall set Beam B-NB-3 directly (as a single crane pick) in the final position.



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4. Beam B-NB 2 south is to be backed up, set onto the cribbing, and picked with the GMK5275 as performed on the previous beams. The cribbing is to be removed (may be done using the Grove TMS900E crane sitting behind abutment 1), before the GMK5275 sets Beam B-NB 2 south in the final position. While the cribbing is being removed, the GMK5275 is to hold the beam within a 30 ft radius, close to the ground.



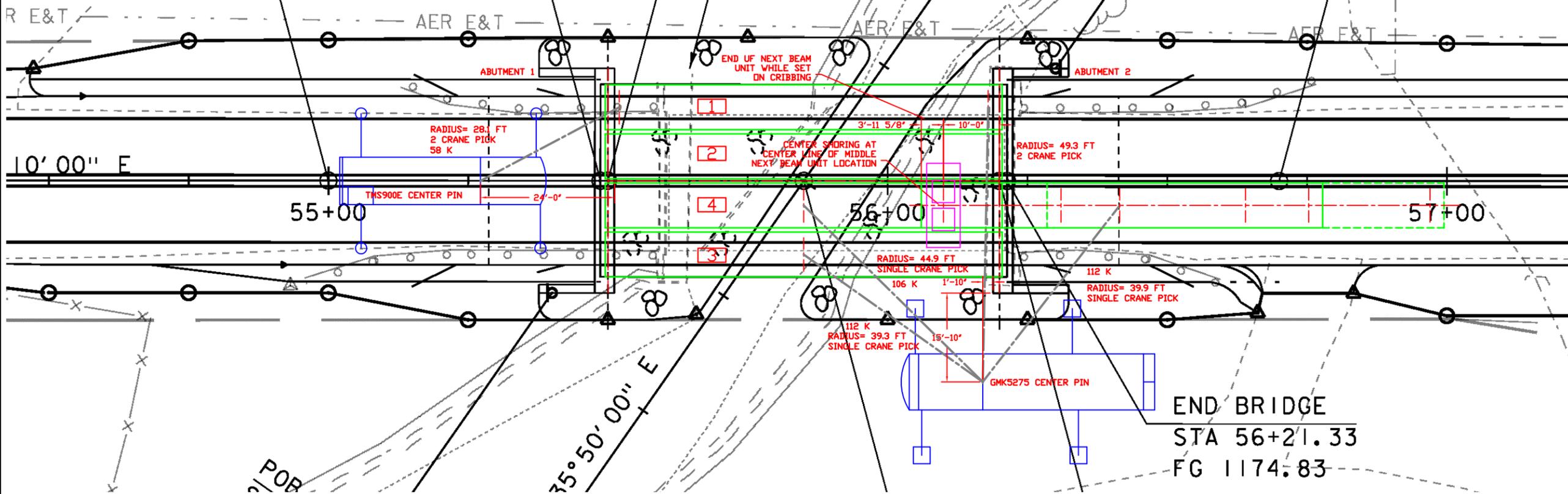
Andrew D. White, P.E.
June 22, 2013

BEGIN PROJECT
STA 55+00.00

STONE FILL,
TYPE III
(TYP)

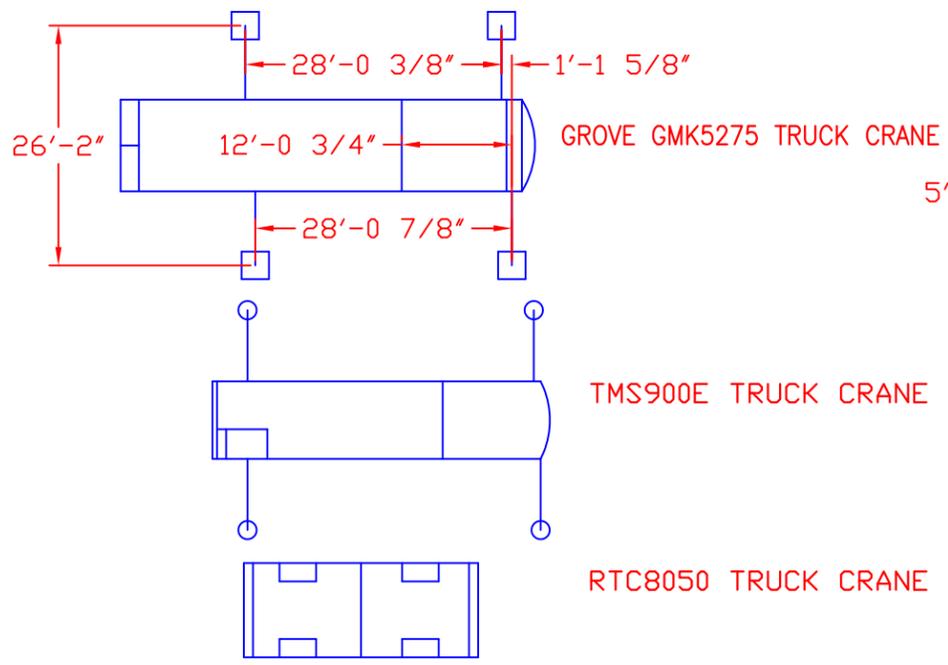
END PROJECT
STA 56+70.00

PROJECT NORTH



Andrew White

ANDREW D. WHITE
6/16/13



LEGEND

- INDICATES SEQUENCE OF SETTING
- 2 LAYERS 6" REINFORCED CONCRETE SLABS SUPPORTING (2) 4'X4'X2' CONC. BLOCKS CONCENTRICITY LOCATED ON SLABS, AS SHOWN

NOTES:

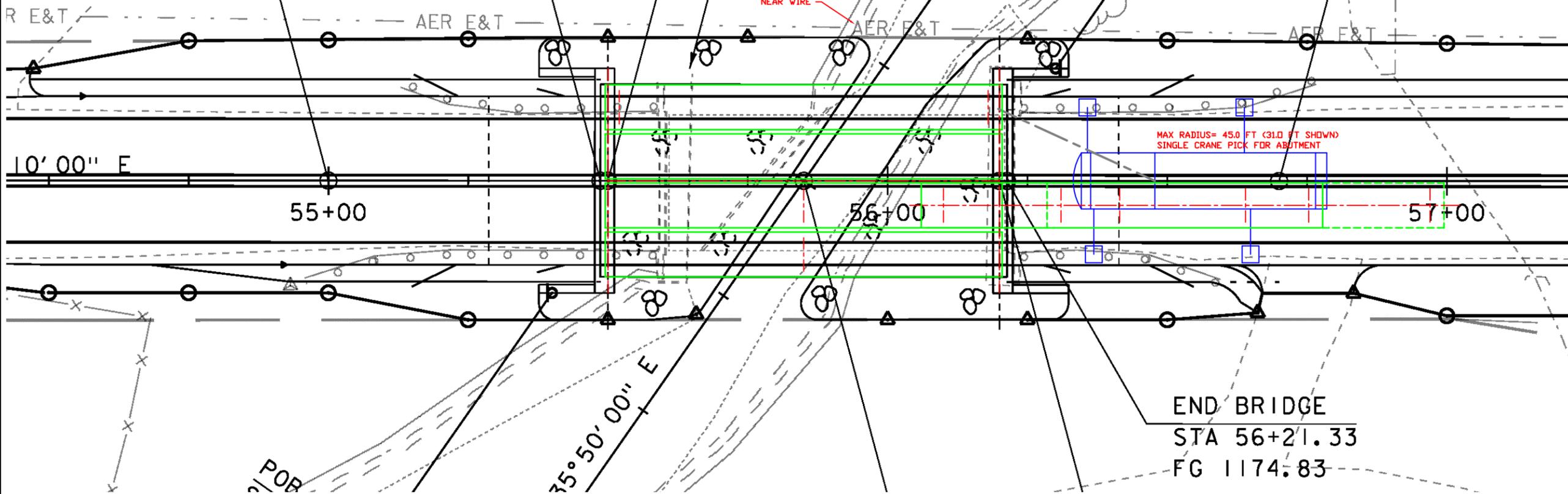
- PICK WEIGHTS INCLUDE 5.0K CRANE BLOCK AT 5275, 3.5K CRANE BLOCK AT TMS900E, 0.5K LOAD LINE, 1.0K RIGGING.
- CRANE RADII ARE SHOWN NEXT TO BOOM LAYOUTS. DO NOT EXCEED WITHOUT CAPACITY VERIFICATION.
- ROAD ELEVATION MAY BE EXCAVATED TO ALLOW FOR UNITS TO SIT LEVEL ON SHORING AND TRUCK.

| | | | |
|--|--------------------------|--------------|---------------------------------|
| CCS CONSTRUCTORS, INC 138 MUNSON AVE. MORRISVILLE, VT 05661 PH. 802-888-7701 FX. 802-888-4746 | PROJECT NAME BRIGHTON | | PROJECT NO. ER STP 034-3(25) |
| | CRANE LAYOUT | | DRAWING NO. 1 |
| | SCALE 1"=20' | DATE 6/16/13 | |

BEGIN PROJECT
STA 55+00.00

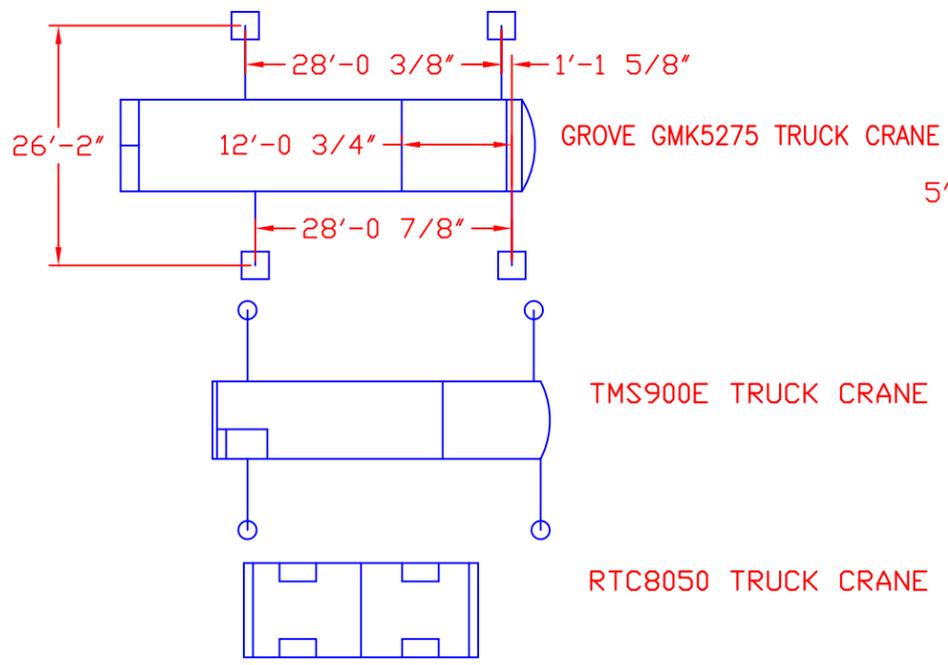
STONE FILL,
TYPE III
(TYP)

END PROJECT
STA 56+70.00



Andrew White

ANDREW D. WHITE
6/23/13



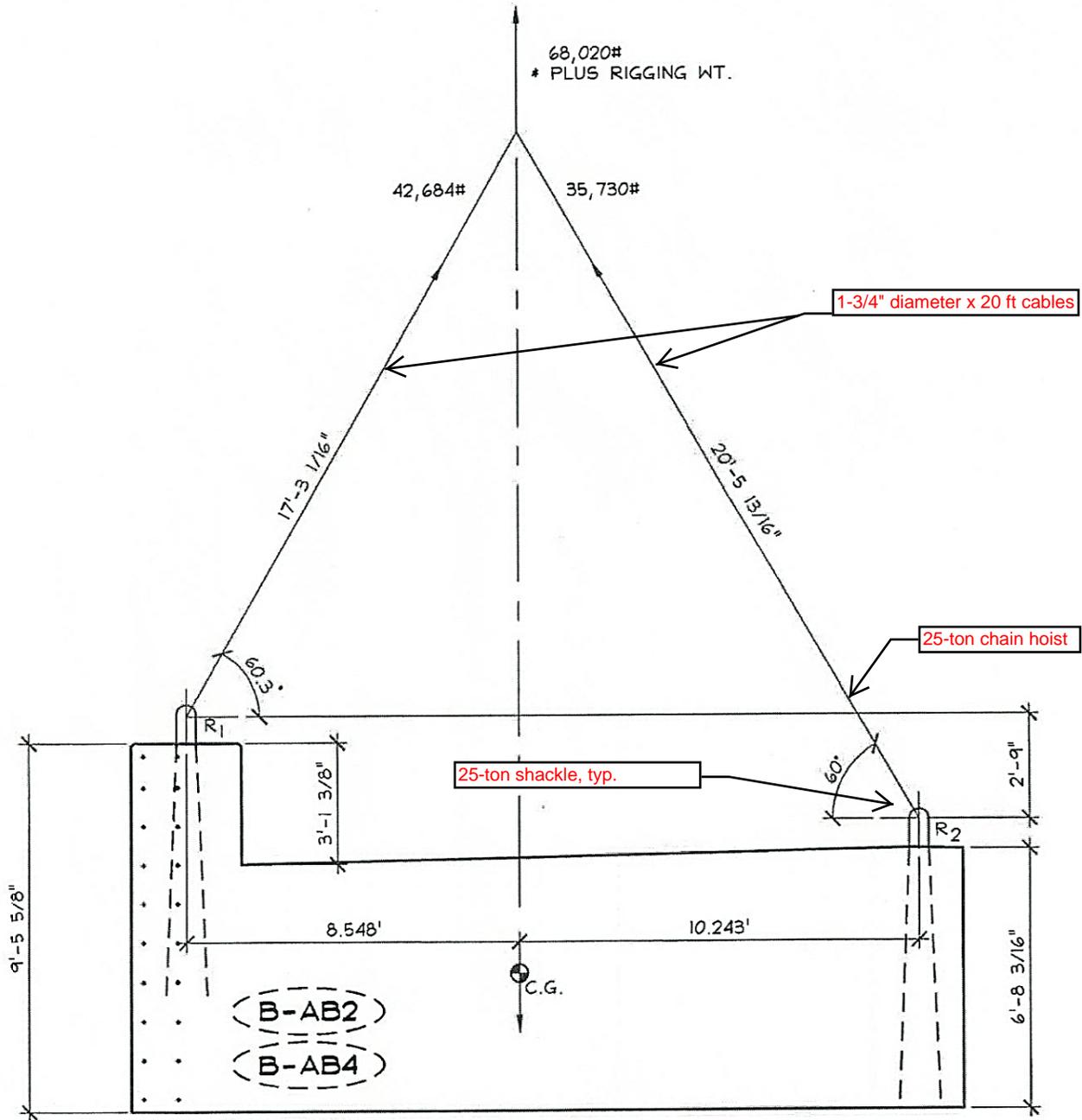
LEGEND

- INDICATES SEQUENCE OF SETTING
- 2 LAYERS 6" REINFORCED CONCRETE SLABS SUPPORTING (2) 4'X4'X2' CONC. BLOCKS CONCENTRICITY LOCATED ON SLABS, AS SHOWN

NOTES:

- 1) PICK WEIGHTS INCLUDE 5.0K CRANE BLOCK AT 5275, 3.5K CRANE BLOCK AT TMS900E, 0.5K LOAD LINE, 1.0K RIGGING.
- 2) CRANE RADII ARE SHOWN NEXT TO BOOM LAYOUTS. DO NOT EXCEED WITHOUT CAPACITY VERIFICATION.
- 3) ROAD ELEVATION MAY BE EXCAVATED TO ALLOW FOR UNITS TO SIT LEVEL ON SHORING AND TRUCK.

| | | | |
|--|--------------------------|--------------|---------------------------------|
| CCS CONSTRUCTORS, INC 138 MUNSON AVE. MORRISVILLE, VT 05661 PH. 802-888-7701 FX. 802-888-4746 | PROJECT NAME BRIGHTON | | PROJECT NO. ER STP 034-3(25) |
| | ABUTMENT CRANE LAYOUT | | DRAWING NO. 2 |
| | SCALE 1"=20' | DATE 6/23/13 | |



**RECOMMENDED RIGGING CONFIGURATION
FOR FIELD HANDLING**

J.P. CARRARA & SONS, INC.

Rt. 116, P.O. Box 1000
Middlebury, Vermont 05753
(802) 388-6361

TOWN OF BRIGHTON
ROUTE NO. VT 105

BRIGHTON, VERMONT

SCALE:

NOTED

DATE:

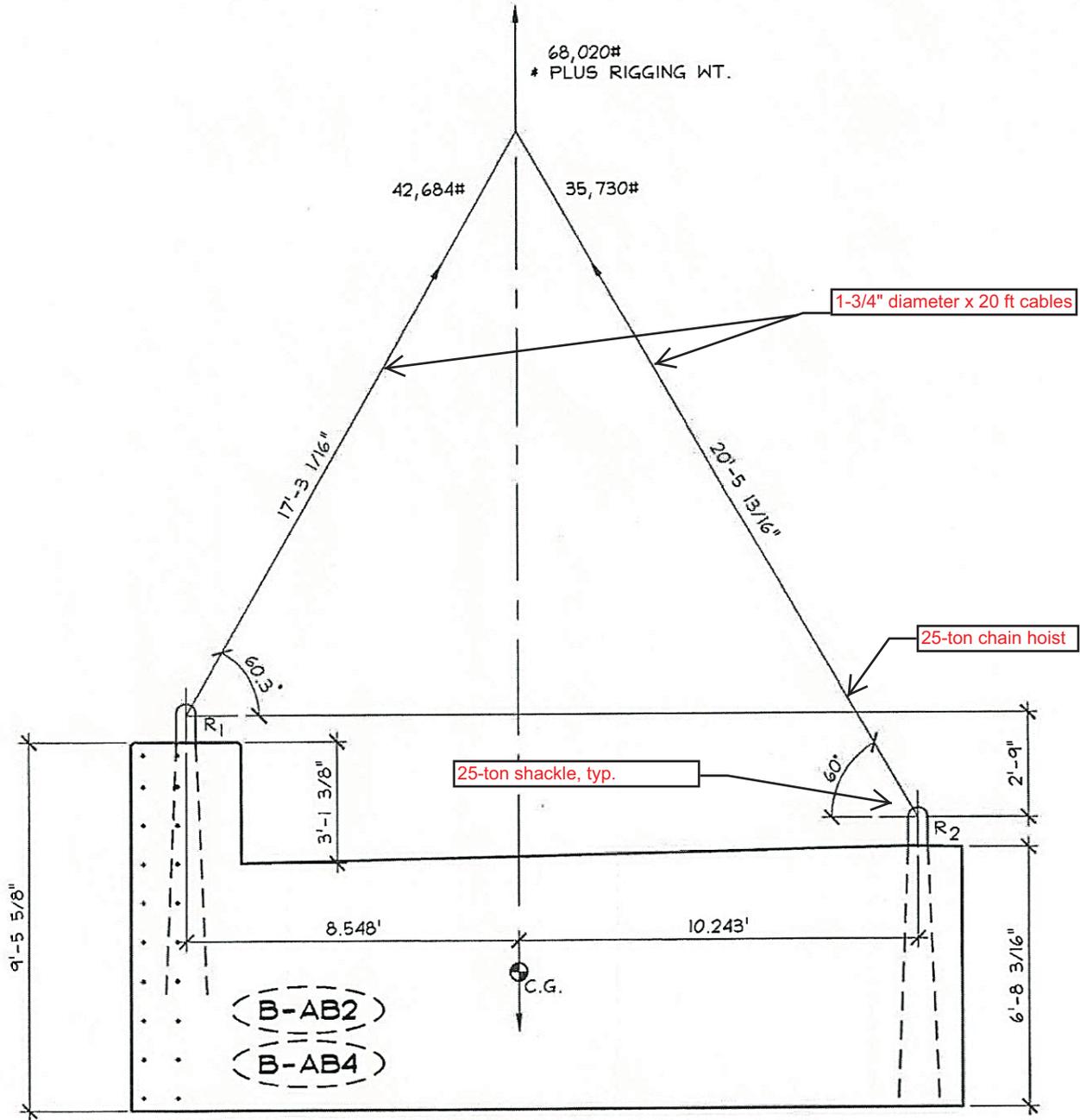
1/16/13

JOB #:

23384-12

SHEET #:

SK-2



**RECOMMENDED RIGGING CONFIGURATION
FOR FIELD HANDLING**

J.P. CARRARA & SONS, INC.

RI. 116, P.O. Box 1000
Middlebury, Vermont 05753
(802) 388-6361

TOWN OF BRIGHTON
ROUTE NO. VT 105

BRIGHTON, VERMONT

SCALE:

NOTED

DATE:

1/16/13

JOB #:

23384-12

SHEET #:

SK-2

GMK5275

**Main Boom
169,700 lb. Counterweight
Outriggers Fully Extended
360°**

| Radius | Boom Length | | | | | | | | | | | | Radius | |
|--------|-------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 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' |
| | x 1000 lb. | | | | | | | | | | | | | |
| 8 | *550.0 | | | | | | | | | | | | | 8 |
| 10 | 346.0 | 332.0 | 312.0 | 244.0 | | | | | | | | | | 10 |
| 15 | 272.0 | 270.0 | 260.0 | 242.0 | 185.0 | | | | | | | | | 15 |
| 20 | 220.0 | 222.0 | 215.0 | 212.0 | 182.0 | 144.0 | 106.0 | | | | | | | 20 |
| 25 | 184.0 | 185.0 | 181.0 | 181.0 | 166.0 | 140.0 | 106.0 | 86.0 | | | | | | 25 |
| 30 | 152.0 | 157.0 | 157.0 | 155.0 | 151.0 | 129.0 | 105.0 | 86.0 | 69.0 | 55.0 | 45.0 | | | 30 |
| 35 | | 136.0 | 136.0 | 135.0 | 136.0 | 118.0 | 96.0 | 86.0 | 69.0 | 55.0 | 45.0 | 36.4 | | 35 |
| 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 | 40 |
| 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 | 45 |
| 50 | | | 95.0 | 93.0 | 95.0 | 92.0 | 76.0 | 70.0 | 63.0 | 55.0 | 45.0 | 36.4 | 30.8 | 50 |
| 55 | | | 83.0 | 84.0 | 85.0 | 85.0 | 72.0 | 64.0 | 59.0 | 52.0 | 45.0 | 36.4 | 30.8 | 55 |
| 60 | | | | 76.0 | 77.0 | 79.0 | 67.0 | 59.0 | 54.0 | 49.0 | 44.0 | 36.4 | 30.8 | 60 |
| 65 | | | | 70.0 | 70.0 | 72.0 | 63.0 | 54.0 | 50.0 | 46.0 | 41.2 | 36.4 | 30.8 | 65 |
| 70 | | | | 63.0 | 64.0 | 66.0 | 60.0 | 50.0 | 47.0 | 43.4 | 39.0 | 36.0 | 30.8 | 70 |
| 75 | | | | 50.0 | 58.0 | 61.0 | 57.0 | 46.0 | 43.0 | 40.4 | 36.8 | 34.4 | 30.8 | 75 |
| 80 | | | | | 53.0 | 55.0 | 54.0 | 42.8 | 39.6 | 37.6 | 34.8 | 32.6 | 30.4 | 80 |
| 85 | | | | | 49.0 | 51.0 | 51.0 | 40.2 | 37.2 | 35.2 | 33.0 | 31.0 | 29.2 | 85 |
| 90 | | | | | 39.2 | 46.0 | 48.0 | 37.6 | 34.6 | 32.8 | 31.2 | 29.4 | 28.0 | 90 |
| 95 | | | | | | 42.4 | 44.0 | 35.2 | 32.4 | 30.8 | 29.4 | 28.0 | 26.8 | 95 |
| 100 | | | | | | 38.2 | 40.8 | 33.2 | 30.4 | 28.8 | 27.8 | 26.4 | 25.6 | 100 |
| 105 | | | | | | | 37.6 | 31.4 | 28.8 | 27.2 | 26.4 | 24.8 | 24.4 | 105 |
| 110 | | | | | | | 34.8 | 29.6 | 27.0 | 25.6 | 24.8 | 23.0 | 23.2 | 110 |
| 115 | | | | | | | 30.4 | 28.0 | 25.2 | 23.8 | 23.0 | 21.4 | 22.0 | 115 |
| 120 | | | | | | | | 26.6 | 23.2 | 21.8 | 21.2 | 20.4 | 20.8 | 120 |
| 125 | | | | | | | | 25.2 | 21.4 | 20.0 | 19.4 | 19.4 | 19.4 | 125 |
| 130 | | | | | | | | 24.4 | 20.2 | 19.0 | 18.4 | 18.4 | 18.0 | 130 |
| 135 | | | | | | | | | 19.2 | 18.0 | 17.4 | 17.4 | 17.2 | 135 |
| 140 | | | | | | | | | 18.2 | 17.0 | 16.4 | 16.6 | 16.4 | 140 |
| 145 | | | | | | | | | 17.2 | 16.0 | 15.6 | 15.8 | 15.6 | 145 |
| 150 | | | | | | | | | 12.8 | 15.4 | 14.8 | 15.0 | 15.0 | 150 |
| 155 | | | | | | | | | | 14.8 | 14.0 | 14.2 | 14.2 | 155 |
| 160 | | | | | | | | | | 14.4 | 13.2 | 13.4 | 13.6 | 160 |
| 165 | | | | | | | | | | | 12.6 | 12.8 | 13.0 | 165 |
| 170 | | | | | | | | | | | 11.8 | 12.2 | 12.4 | 170 |
| 175 | | | | | | | | | | | 11.4 | 11.6 | 11.8 | 175 |
| 180 | | | | | | | | | | | | 11.0 | 11.2 | 180 |
| 185 | | | | | | | | | | | | 10.6 | 10.6 | 185 |
| 190 | | | | | | | | | | | | 9.6 | 10.2 | 190 |
| 195 | | | | | | | | | | | | | 9.6 | 195 |
| 200 | | | | | | | | | | | | | 9.2 | 200 |

* Over the rear with special equipment
 Loads greater than 297,000 lb. can only be lifted with additional equipment
 Loads greater than 335,000 lb. can only be lifted with special equipment

**Main Boom
90,300 lb. Counterweight
Outriggers Fully Extended
360°**

| | | Boom Length | | | | | | | | | | | | |
|------------|-------|-------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Radius | 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' | Radius |
| x 1000 lb. | | | | | | | | | | | | | | |
| 10 | 332.0 | 328.0 | 312.0 | 244.0 | | | | | | | | | | 10 |
| 15 | 256.0 | 256.0 | 254.0 | 242.0 | 185.0 | | | | | | | | | 15 |
| 20 | 207.0 | 208.0 | 206.0 | 206.0 | 182.0 | 144.0 | 106.0 | | | | | | | 20 |
| 25 | 172.0 | 173.0 | 173.0 | 171.0 | 166.0 | 140.0 | 106.0 | 86.0 | | | | | | 25 |
| 30 | 146.0 | 149.0 | 146.0 | 138.0 | 131.0 | 128.0 | 105.0 | 86.0 | 69.0 | 55.0 | 45.0 | | | 30 |
| 35 | | 124.0 | 117.0 | 114.0 | 110.0 | 105.0 | 96.0 | 86.0 | 69.0 | 55.0 | 45.0 | 36.4 | | 35 |
| 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 | 40 |
| 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 | 45 |
| 50 | | | 72.0 | 72.0 | 70.0 | 70.0 | 65.0 | 61.0 | 59.0 | 55.0 | 45.0 | 36.4 | 30.8 | 50 |
| 55 | | | 64.0 | 64.0 | 61.0 | 62.0 | 57.0 | 54.0 | 52.0 | 51.0 | 45.0 | 36.4 | 30.8 | 55 |
| 60 | | | | 55.0 | 56.0 | 55.0 | 51.0 | 47.0 | 46.0 | 45.0 | 44.0 | 36.4 | 30.8 | 60 |
| 65 | | | | 49.0 | 51.0 | 49.0 | 45.0 | 42.0 | 40.6 | 40.0 | 39.6 | 36.4 | 30.8 | 65 |
| 70 | | | | 43.6 | 45.0 | 44.0 | 40.6 | 39.8 | 36.2 | 35.6 | 35.4 | 36.0 | 30.8 | 70 |
| 75 | | | | 38.4 | 40.6 | 39.4 | 36.4 | 37.6 | 32.4 | 32.0 | 31.8 | 32.4 | 30.8 | 75 |
| 80 | | | | | 36.6 | 35.4 | 33.0 | 34.0 | 29.0 | 29.4 | 29.2 | 30.2 | 29.8 | 80 |
| 85 | | | | | 33.0 | 31.6 | 30.0 | 31.0 | 26.4 | 28.2 | 27.8 | 28.6 | 27.0 | 85 |
| 90 | | | | | 29.8 | 28.6 | 28.6 | 28.4 | 25.0 | 27.0 | 26.2 | 26.6 | 24.6 | 90 |
| 95 | | | | | | 25.8 | 27.4 | 25.6 | 23.2 | 25.6 | 24.6 | 24.4 | 22.4 | 95 |
| 100 | | | | | | 23.4 | 25.2 | 23.2 | 21.2 | 24.0 | 23.0 | 22.4 | 20.4 | 100 |
| 105 | | | | | | | 22.8 | 21.0 | 20.4 | 22.2 | 20.8 | 20.6 | 18.6 | 105 |
| 110 | | | | | | | 21.0 | 19.0 | 19.4 | 20.4 | 19.8 | 18.8 | 17.0 | 110 |
| 115 | | | | | | | 19.2 | 17.2 | 18.4 | 18.6 | 18.4 | 17.4 | 15.6 | 115 |
| 120 | | | | | | | | 16.0 | 17.8 | 17.0 | 17.0 | 16.0 | 14.2 | 120 |
| 125 | | | | | | | | 15.2 | 17.0 | 15.8 | 16.0 | 14.6 | 13.0 | 125 |
| 130 | | | | | | | | 14.6 | 15.8 | 15.0 | 14.6 | 13.4 | 11.8 | 130 |
| 135 | | | | | | | | | 14.6 | 14.2 | 13.4 | 12.2 | 10.6 | 135 |
| 140 | | | | | | | | | 13.4 | 13.0 | 12.2 | 11.2 | 9.6 | 140 |
| 145 | | | | | | | | | | 12.0 | 11.2 | 10.0 | 8.8 | 145 |
| 150 | | | | | | | | | | 11.0 | 10.2 | 9.0 | 7.8 | 150 |
| 155 | | | | | | | | | | 10.2 | 9.2 | 8.2 | 7.0 | 155 |
| 160 | | | | | | | | | | 9.4 | 8.4 | 7.4 | 6.0 | 160 |
| 165 | | | | | | | | | | | 7.6 | 6.6 | 5.2 | 165 |
| 170 | | | | | | | | | | | 7.0 | 5.8 | 4.6 | 170 |
| 175 | | | | | | | | | | | 6.2 | 5.2 | 3.8 | 175 |
| 180 | | | | | | | | | | | | 4.4 | 3.2 | 180 |
| 185 | | | | | | | | | | | | 3.8 | | 185 |
| 190 | | | | | | | | | | | | 3.2 | | 190 |
| 195 | | | | | | | | | | | | | | 195 |
| 200 | | | | | | | | | | | | | | 200 |

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

load charts

37 - 142 ft
Fixed lengths

31,500 lbs

100%
24'-0"

360

Pounds

| Feet | 36.8 | 49.9 | 63.0 | 76.1 | 89.3 | 102.4 | 115.5 | 128.6 | 141.8 |
|------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| 8 | 180,000 | | | | | | | | |
| 10 | 155,000 | 136,000 | 129,000 | 123,000 | 81,000 | | | | |
| 15 | 116,000 | 112,000 | 105,000 | 99,000 | 81,000 | 59,000 | | | |
| 20 | 88,700 | 90,350 | 89,000 | 84,000 | 81,000 | 57,000 | 42,400 | 34,000 | |
| 25 | 69,950 | 72,200 | 72,400 | 71,150 | 71,000 | 51,000 | 42,400 | 34,000 | 26,600 |
| 30 | | 56,350 | 57,000 | 58,150 | 56,950 | 46,000 | 39,800 | 33,800 | 26,600 |
| 35 | | 46,600 | 47,550 | 47,400 | 46,200 | 41,600 | 35,800 | 32,000 | 26,600 |
| 40 | | | 39,750 | 39,600 | 38,450 | 36,200 | 32,200 | 29,400 | 26,600 |
| 45 | | | 33,550 | 33,500 | 32,600 | 33,600 | 29,400 | 27,000 | 24,800 |
| 50 | | | 28,300 | 28,300 | 29,400 | 28,600 | 26,600 | 24,800 | 22,800 |
| 55 | | | 24,250 | 24,250 | 25,350 | 24,600 | 24,800 | 22,800 | 21,200 |
| 60 | | | 22,000 | 22,000 | 22,150 | 21,450 | 21,750 | 20,300 | 19,800 |
| 65 | | | 19,550 | 19,550 | 19,400 | 19,400 | 19,100 | 18,800 | 18,200 |
| 70 | | | | 17,300 | 17,600 | 16,900 | 16,750 | 16,750 | 16,200 |
| 75 | | | | 15,400 | 15,750 | 15,200 | 14,900 | 14,900 | 14,350 |
| 80 | | | | | 14,100 | 13,750 | 13,350 | 13,350 | 12,750 |
| 85 | | | | | 12,700 | 12,350 | 11,950 | 11,950 | 11,400 |
| 90 | | | | | 11,500 | 11,150 | 10,850 | 10,850 | 10,300 |
| 95 | | | | | | 10,100 | 9,770 | 9,770 | 9,250 |
| 100 | | | | | | | 9,140 | 8,810 | 8,290 |
| 105 | | | | | | | | 7,950 | 7,430 |
| 110 | | | | | | | | 7,180 | 6,670 |
| 115 | | | | | | | | 6,480 | 5,980 |
| 120 | | | | | | | | | 5,340 |
| 125 | | | | | | | | | 4,760 |
| 130 | | | | | | | | | 4,230 |

* Requires special equipment

37 - 142 ft
Telescoping

31,500 lbs

100%
24'-0"

360

Pounds

| Feet | 36.8 - 49.9 | 49.9 - 63.0 | 63.0 - 76.1 | 76.1 - 89.3 | 89.3 - 102.4 | 102.4 - 115.5 | 115.5 - 128.6 | 128.6 - 141.8 |
|------|-------------|-------------|-------------|-------------|--------------|---------------|---------------|---------------|
| 10 | 74,000 | 68,000 | 63,000 | 62,000 | | | | |
| 15 | 72,000 | 65,000 | 60,000 | 57,000 | | | | |
| 20 | 70,000 | 63,000 | 57,000 | 52,000 | 50,000 | | | |
| 25 | 67,000 | 59,000 | 55,000 | 50,000 | 46,000 | 37,400 | 28,600 | |
| 30 | 55,000 | 55,000 | 53,000 | 48,000 | 41,600 | 34,000 | 28,600 | 22,400 |
| 35 | 45,000 | 46,000 | 47,400 | 48,000 | 37,800 | 31,000 | 27,400 | 20,800 |
| 40 | | 38,850 | 39,600 | 38,450 | 34,600 | 28,200 | 25,400 | 18,800 |
| 45 | | 33,200 | 33,500 | 32,600 | 31,800 | 26,000 | 23,200 | 16,800 |
| 50 | | 28,300 | 28,300 | 27,750 | 28,600 | 24,000 | 21,200 | 15,200 |
| 55 | | | 24,250 | 23,750 | 24,600 | 22,600 | 19,800 | 14,000 |
| 60 | | | 21,050 | 22,150 | 21,450 | 20,800 | 18,400 | 11,800 |
| 65 | | | 18,600 | 19,550 | 18,800 | 19,100 | 17,000 | 10,800 |
| 70 | | | | 17,300 | 16,650 | 16,900 | 16,000 | 10,200 |
| 75 | | | | 15,400 | 15,550 | 15,050 | 14,900 | 9,600 |
| 80 | | | | | 13,950 | 13,450 | 13,350 | 9,000 |
| 85 | | | | | 12,700 | 12,100 | 11,950 | 8,400 |
| 90 | | | | | 11,500 | 10,900 | 10,850 | 8,000 |
| 95 | | | | | | 9,850 | 9,770 | 7,600 |
| 100 | | | | | | 8,890 | 8,810 | 7,200 |
| 105 | | | | | | | 7,950 | 6,800 |
| 110 | | | | | | | 7,180 | 6,400 |
| 115 | | | | | | | 6,480 | 5,980 |
| 120 | | | | | | | | 5,340 |
| 125 | | | | | | | | 4,760 |
| 130 | | | | | | | | 4,230 |

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.

TMS 900E

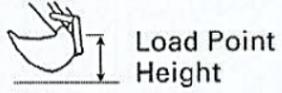
GROVE

Main Boom Lift Capacity Charts – Standard

| Fully Extended Outriggers – 360° Rotation (All Capacities Are Listed In Pounds) | | | | | | | | | | |
|--|------------------|--------|--------|---------|--------|--------|--------|--------|--------|----------------|
| Radius (ft) | Boom Length (ft) | | | | | | | | | Radius (ft) |
| | 35.5 | 40 | 50 | 60/60.3 | 70 | 80 | 90 | 100 | 110 | |
| 10 | 100,000 | 78,400 | 72,600 | | | | | | | 10 |
| 12 | 73,900 | 73,100 | 65,600 | 50,900 | 37,900 | | | | | 12 |
| 15 | 63,200 | 63,000 | 57,500 | 46,900 | 37,900 | 35,400 | | | | 15 |
| 20 | 50,300 | 50,100 | 47,600 | 39,200 | 37,900 | 34,700 | 28,900 | | | 20 |
| 25 | 39,000 | 38,900 | 38,500 | 37,900 | 37,900 | 34,200 | 28,200 | 24,000 | 19,500 | 25 |
| 30 | | 31,300 | 31,900 | 32,300 | 32,500 | 30,300 | 24,800 | 22,500 | 19,500 | 30 |
| 35 | | | 26,100 | 26,500 | 26,700 | 26,900 | 22,000 | 19,900 | 18,300 | 35 |
| 40 | | | 20,800 | 21,200 | 21,400 | 21,500 | 19,700 | 17,800 | 16,400 | 40 |
| 45 | | | | 17,100 | 17,300 | 17,400 | 17,500 | 15,900 | 14,600 | 45 |
| 50 | | | | 13,900 | 14,200 | 14,300 | 14,400 | 14,400 | 13,200 | 50 |
| 55 | | | | | 11,900 | 12,100 | 12,200 | 12,200 | 12,100 | 55 |
| 60 | | | | | 10,000 | 10,200 | 10,300 | 10,300 | 10,400 | 60 |
| 65 | | | | | | 8,600 | 8,700 | 8,800 | 8,900 | 65 |
| 70 | | | | | | 7,300 | 7,500 | 7,500 | 7,600 | 70 |
| 75 | | | | | | | 6,400 | 6,500 | 6,500 | 75 |
| 80 | | | | | | | 5,400 | 5,500 | 5,600 | 80 |
| 85 | | | | | | | | 4,700 | 4,800 | 85 |
| 90 | | | | | | | | 4,000 | 4,100 | 90 |
| 95 | | | | | | | | | 3,500 | 95 |
| 100 | | | | | | | | | 2,900 | 100 |

This information is not for crane operation. Operator must refer to the in-cab information for crane operation. Rated lifting capacities shown on fully extended outriggers do not exceed 85% of the tipping loads and on tires do not exceed 75% of the tipping loads.

Mass Boom Lift Capacities



Load Point Height



Load Radius Over Front



Load Radius Over Side



Load at Maximum Reach

M3.2C STICK – 3200 mm (10'6")
BUCKET – 1.1 m³ (1.5 yd³)

UNDERCARRIAGE – Long
SHOES – 800 mm (32") triple grouser

BOOM – 5550 mm (18'2")

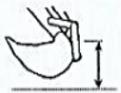
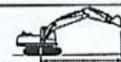
|  | 1.5 m (5.0 ft) | | 3.0 m (10.0 ft) | | 4.5 m (15.0 ft) | | 6.0 m (20.0 ft) | | 7.5 m (25.0 ft) | |  | | m ft | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|----------------|---------------|
| |  |  |  |  |  |  |  |  |  |  |  |  | | |
| 7.5 m 25.0 ft | kg lb | | | | | | | | | | | *2600 *5750 | *2600 *5750 | 8.39 27.20 |
| 6.0 m 20.0 ft | kg lb | | | | | | | | *5150 *10,500 | *5150 *10,500 | *2500 *5500 | *2500 *5500 | 9.32 30.41 | |
| 4.5 m 15.0 ft | kg lb | | | | | | *7550 *16,400 | 7450 16,000 | *6600 *13,850 | 5050 10,800 | *2500 *5500 | *2500 *5500 | 9.85 32.26 | |
| 3.0 m 10.0 ft | kg lb | | *17 400 *37,000 | *17 400 *37,000 | *11 250 *24,250 | *11 250 *24,250 | *8850 *19,200 | 7100 15,300 | 7400 15,800 | 4900 10,450 | *2600 *5700 | *2600 *5700 | 10.07 33.04 | |
| 1.5 m 5.0 ft | kg lb | | *7500 *17,850 | *7500 *17,850 | *14 000 *30,150 | 10 550 22,700 | *10 250 *22,150 | 6750 14,500 | 7200 15,400 | 4700 10,100 | *2800 *6150 | *2800 *6150 | 10.01 32.85 | |
| Ground Line | kg lb | | *8400 *19,300 | *8400 *19,300 | *15 600 *33,750 | 10 050 21,550 | 10 050 21,600 | 6450 13,900 | 7050 15,100 | 4550 9800 | *3150 *6900 | 3100 6800 | 9.65 31.67 | |
| -1.5 m -5.0 ft | kg lb | *7250 *16,200 | *7250 *16,200 | *12 500 *28,450 | *12 500 *28,450 | *15 900 *34,450 | 9850 21,100 | 9900 21,200 | 6300 13,550 | 6950 14,900 | 4500 9650 | *3700 *8150 | 3500 7650 | 8.97 29.38 |
| -3.0 m -10.0 ft | kg lb | *12 100 *27,150 | *12 100 *27,150 | *18 950 *43,150 | *18 950 *42,950 | *14 950 *32,250 | 9850 21,150 | 9900 21,250 | 6300 13,600 | | *4750 *10,500 | 4350 9650 | 7.85 25.62 | |
| -4.5 m -15.0 ft | kg lb | | *17 350 *37,100 | *17 350 *37,100 | *12 150 *25,900 | 10 100 21,750 | | | | | *8250 *18,100 | 6600 14,800 | 5.98 19.34 | |

* Limited by hydraulic capacity rather than tipping load. The above loads are in compliance with SAE hydraulic excavator lift capacity rating standard J1097. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity. Weight of all lifting accessories must be deducted from the above lifting capacities.

M2.5D STICK – 2500 mm (8'2")
BUCKET – 1.4 m³ (1.88 yd³)

UNDERCARRIAGE – Long
SHOES – 800 mm (32") triple grouser

BOOM – 5550 mm (18'2")

|  | 1.5 m (5.0 ft) | | 3.0 m (10.0 ft) | | 4.5 m (15.0 ft) | | 6.0 m (20.0 ft) | | 7.5 m (25.0 ft) | |  | | m ft | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|----------------|---------------|
| |  |  |  |  |  |  |  |  |  |  |  |  | | |
| 7.5 m 25.0 ft | kg lb | | | | | | | | | | | *3950 *8700 | *3950 *8700 | 7.34 23.72 |
| 6.0 m 20.0 ft | kg lb | | | | | | *7350 *16,000 | 7300 15,600 | | | *3800 *8300 | *3800 *8300 | 8.40 27.37 | |
| 4.5 m 15.0 ft | kg lb | | | | *9750 *21,450 | *9750 *21,450 | *8200 *17,800 | 7050 15,100 | *7150 *14,350 | 4700 10,050 | *3800 *8400 | 3450 7650 | 8.99 29.41 | |
| 3.0 m 10.0 ft | kg lb | | | | *12 400 *26,650 | 10 750 23,150 | *9400 *20,350 | 6750 14,450 | 7050 15,100 | 4550 9750 | *4000 *8800 | 3200 7050 | 9.22 30.26 | |
| 1.5 m 5.0 ft | kg lb | | | | *14 650 *31,600 | 10 000 21,500 | 10 000 21,450 | 6400 13,750 | 6900 14,750 | 4450 9500 | *4350 *9550 | 3150 6950 | 9.15 30.03 | |
| Ground Line | kg lb | | | | *15 600 *33,800 | 9600 20,650 | 9750 20,900 | 6150 13,250 | 6800 14,550 | 4350 9250 | *4950 *10,900 | 3400 7450 | 8.76 28.73 | |
| -1.5 m -5.0 ft | kg lb | *19,050 | *19,050 | *14 200 *32,350 | *14 200 *32,350 | *15 300 *33,100 | 9550 20,500 | 9650 20,700 | 6100 13,050 | | *6000 *13,200 | 3950 8700 | 7.99 26.17 | |
| -3.0 m -10.0 ft | kg lb | | | *19 100 *41,350 | *19 100 *41,350 | *13 600 *29,350 | 9700 20,800 | *9750 *20,800 | 6200 13 300 | | *5450 *11,750 | 5400 *11,750 | 6.71 21.83 | |
| -4.5 m -15.0 ft | kg lb | | | | *9400 *20,700 | *9400 *20,700 | | | | | *8350 *20,500 | *8350 *20,500 | 4.86 14.46 | |

* Limited by hydraulic capacity rather than tipping load. The above loads are in compliance with SAE hydraulic excavator lift capacity rating standard J1097. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity. Weight of all lifting accessories must be deducted from the above lifting capacities.

Eye & Eye-Flat EEF – Type 3

Eye & Eye-Twist EET – Type 4

Rated capacity in pounds

| Stock no. | Width (") | Ply | Vertical | Choker | BASKET HITCH | | | Nominal Eye Length L (") | Nominal Eye Width W (") | |
|-----------|--------------|-----|----------|--------|--------------|--------|--------|-----------------------------------|----------------------------------|-------|
| | | | | | | | | | | |
| -1-901 | 1 | 1 | 1,600 | 1,280 | 3,200 | 2,771 | 2,262 | 1,600 | 9 | 1 |
| -2-901 | 1 | 2 | 3,100 | 2,480 | 6,200 | 5,369 | 4,383 | 3,100 | 9 | 1 |
| -3-901 | 1 | 3 | 4,100 | 3,300 | 8,200 | 7,052 | 5,781 | 4,100 | 12 | 1 |
| -4-901 | 1 | 4 | 5,500 | 4,400 | 11,000 | 9,526 | 7,777 | 5,500 | 12 | 1 |
| -1-902 | 2 | 1 | 3,100 | 2,480 | 6,200 | 5,369 | 4,383 | 3,100 | 9 | 2 |
| -2-902 | 2 | 2 | 6,200 | 4,960 | 12,400 | 10,738 | 8,767 | 6,200 | 9 | 2 |
| -3-902 | 2 | 3 | 8,200 | 6,600 | 16,400 | 14,104 | 11,562 | 8,200 | 12 | 2 |
| -4-902 | 2 | 4 | 11,000 | 8,800 | 22,000 | 19,052 | 15,554 | 11,000 | 12 | 2 |
| -1-903 | 3 | 1 | 4,700 | 3,760 | 9,400 | 8,140 | 6,646 | 4,700 | 12 | 1 1/2 |
| -2-903 | 3 | 2 | 8,800 | 7,040 | 17,600 | 15,242 | 12,443 | 8,800 | 12 | 1 1/2 |
| -3-903 | 3 | 3 | 12,300 | 9,900 | 24,600 | 21,156 | 17,343 | 12,300 | 15 | 1 1/2 |
| -4-903 | 3 | 4 | 16,400 | 13,120 | 32,800 | 28,405 | 23,190 | 16,400 | 15 | 1 1/2 |
| -1-904 | 4 | 1 | 6,200 | 4,960 | 12,400 | 10,738 | 8,767 | 6,200 | 12 | 2 |
| -2-904 | 4 | 2 | 11,000 | 8,800 | 22,000 | 19,052 | 15,554 | 11,000 | 12 | 2 |
| -3-904 | 4 | 3 | 15,300 | 12,200 | 30,600 | 26,316 | 21,573 | 15,300 | 15 | 2 |
| -4-904 | 4 | 4 | 20,400 | 16,320 | 40,800 | 35,333 | 28,846 | 20,400 | 15 | 2 |
| -1-906 | 6 | 1 | 9,300 | 7,440 | 18,600 | 16,108 | 13,150 | 9,300 | 12 | 2 |
| -2-906 | 6 | 2 | 16,500 | 13,200 | 33,000 | 28,578 | 23,331 | 16,500 | 15 | 2 |
| -3-906 | 6 | 3 | 22,900 | 18,300 | 45,800 | 39,388 | 32,289 | 22,900 | 18 | 3 |
| -4-906 | 6 | 4 | 30,600 | 24,480 | 61,200 | 52,999 | 43,268 | 30,600 | 18 | 3 |
| -1-908 | 8 | 1 | 11,800 | 9,440 | 23,600 | 20,438 | 16,665 | 11,800 | 18 | 3 |
| -2-908 | 8 | 2 | 22,700 | 18,160 | 45,400 | 39,316 | 32,098 | 22,700 | 18 | 3 |
| -3-908 | 8 | 3 | 30,700 | 24,600 | 61,400 | 52,804 | 43,287 | 30,700 | 24 | 4 |
| -4-908 | 8 | 4 | 40,960 | 32,768 | 81,920 | 70,451 | 57,753 | 40,960 | 24 | 4 |
| -1-910 | 10 | 1 | 14,700 | 11,760 | 29,400 | 25,460 | 20,786 | 14,700 | 18 | 3 1/2 |
| -2-910 | 10 | 2 | 28,400 | 22,720 | 56,800 | 49,189 | 40,158 | 28,400 | 18 | 3 1/2 |
| -3-910 | 10 | 3 | 36,000 | 28,800 | 72,000 | 61,920 | 50,760 | 36,000 | 24 | 5 |
| -4-910 | 10 | 4 | 48,000 | 38,400 | 96,000 | 82,560 | 67,680 | 48,000 | 24 | 5 |
| -1-912 | 12 | 1 | 17,600 | 14,080 | 35,200 | 30,483 | 24,886 | 17,600 | 24 | 4 |
| -2-912 | 12 | 2 | 34,100 | 27,280 | 68,200 | 59,061 | 48,217 | 34,100 | 24 | 4 |
| -3-912 | 12 | 3 | 40,300 | 32,200 | 80,600 | 69,316 | 56,823 | 40,300 | 24 | 6 |
| -4-912 | 12 | 4 | 53,760 | 43,008 | 107,520 | 92,467 | 75,801 | 53,760 | 24 | 6 |

Lighter duty "60" capacities available upon request.

* Insert EEF prefix to indicate Type 3 and EET prefix to indicate Type 4.

See page 16 to see Types 3 and 4 light-duty slings.

Warning: Horizontal sling angles less than 30° shall not be used.

Specifications and rated capacity in pounds.

| Color Code | Stock number | Approx. body diameter inches | Approx. body wt./ft. pounds | | | | | |
|------------|--------------|------------------------------|-----------------------------|----------|--------|---------|---------|---------|
| | | | | Vertical | Choker | Basket | 60P | 45P |
| Purple | FG 0600 | 0.60 | 0.30 | 2,600 | 2,100 | 5,200 | 4,500 | 3,700 |
| Green | FG 0800 | 0.80 | 0.40 | 5,300 | 4,200 | 10,600 | 9,200 | 7,500 |
| Yellow | FG 1000 | 1.00 | 0.50 | 8,400 | 6,700 | 16,800 | 14,500 | 11,900 |
| Tan | FG 1200 | 1.20 | 0.60 | 10,600 | 8,500 | 21,200 | 18,400 | 15,000 |
| Red | FG 1300 | 1.30 | 0.80 | 13,200 | 10,600 | 26,400 | 22,900 | 18,700 |
| White | FG 1400 | 1.40 | 0.90 | 16,800 | 13,400 | 33,600 | 29,100 | 23,800 |
| Blue | FG 1550 | 1.55 | 1.20 | 21,200 | 17,000 | 42,400 | 36,700 | 30,000 |
| Orange | FG 1750 | 1.75 | 1.50 | 25,000 | 20,000 | 50,000 | 43,300 | 35,400 |
| Orange | FG 1950 | 1.95 | 2.00 | 31,000 | 24,800 | 62,000 | 53,700 | 43,800 |
| Black | FG 2350 | 2.35 | 2.80 | 40,000 | 32,000 | 80,000 | 69,300 | 56,600 |
| Black | FG 3150 | 3.15 | 3.60 | 53,000 | 42,400 | 106,000 | 91,800 | 74,900 |
| Black | FG 3950 | 3.95 | 4.60 | 66,000 | 52,800 | 132,000 | 114,300 | 93,300 |
| Black | FG 4800 | 4.80 | 5.80 | 90,000 | 72,000 | 180,000 | 155,900 | 127,300 |

Rated capacities are based on current proposal for B30.9-6.

Warning: Horizontal sling angles less than 30° shall not be used.

Match the color to your lifting needs.

The jackets of Flexi-grip slings are color-coded by rated capacity. Choose from nine different colors to fit the rated capacity you need for your lift (see chart). Each sling also features a durable identification tag to indicate its size, type and rated capacity for your convenience.

Flexi-grip options.

Flexi-grip slings are also available in three configurations:

- Endless-type slings that double the lifting legs in every application.
- Multi-leg bridles.
- Eye and eye slings formed by enclosing the body of an endless sling in a tubular jacket for extra protection and durability.

Moveable wear pads made with durable polyester buffer or leather are also available to help protect against lifting hooks and corners of loads.

Inspect your slings regularly.

Before each lift, visually inspect your Flexi-grip sling for any damage. Remove sling from service if you see:

- Missing or illegible identification tag.
- Melting, charring or weld spatter on any part of the sling.
- Holes, tears, cuts, embedded particles, abrasive wear or snags that expose the sling's core yarns.
- Broken or worn stitching in the cover that exposes the core yarns.
- Fittings that are damaged, stretched, cracked, pitted or distorted in any way.
- Knotting in the sling.
- Acid or alkali burns.
- Other visible damage that causes doubt as to the sling's strength.
- Loading a sling beyond its rated capacity.

How to order: Page 26

ABUTMENT & WING WALL GENERAL NOTES

- MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 5,000 PSI.
- MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 3,500 PSI.
- REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) EPOXY COATED.
- THE TOP OF ABUTMENTS SHALL RECEIVE A RAKE FINISH ROUGHENED TO 1/4" AMPLITUDE (UNLESS NOTED OTHERWISE).
- THE TOP OF WING WALLS SHALL RECEIVE A SMOOTH FLOAT FINISH (UNLESS NOTED OTHERWISE).
- SHEAR KEY SURFACES SHALL BE BLASTED CLEAN.
- PRECAST CONCRETE UNITS SHALL BE HANDLED AND ERECTED USING THE LIFTING INSERTS ONLY. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. NON-PRESTRESSED UNITS SHALL BE STORED & TRANSPORTED WITH TIMBER SUPPORTS AT 5th POINTS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
- MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. PS10.02 AND PS10.05 RESPECTIVELY.
DESIGN MIX:
WING WALLS: J.P.C. BRIDGE MIX #425M NO DCI
APPROACH SLABS: J.P.C. BRIDGE MIX #425M NO DCI
ABUTMENTS: J.P.C. BRIDGE MIX #445M
- QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
- CURING METHOD: AS SOON AS THE TOP OF PRECAST CONCRETE UNITS ARE FINISHED, A COVER OF RIGID INSULATION AND POLY WILL BE PLACED OVER THE UNIT. NATURAL CURE WITH NO EXTERNAL HEAT APPLIED.
- ABUTMENT POST-TENSIONING SEQUENCE:
 - ERECT PRECAST CONCRETE ABUTMENTS, AND POST-TENSION CENTER TENDON TO APPROXIMATELY 5,000 LBS.
 - GROUT SHEAR KEY.
 - ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI, POST-TENSION TENDONS TO 32,000 LBS.

NEXT BEAM GENERAL NOTES

- MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 10,000 PSI.
- MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 8,000 PSI.
- REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) EPOXY COATED.
- PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M203) AND SHALL CONSIST OF 0.60" x 270 KSI 7-WIRE LOW RELAXATION STRANDS.
- 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.)
- ENDS OF PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH END OF NEXT BEAM STEMS (UNLESS NOTED OTHERWISE) AND EPOXY PAINTED.
- ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
- THE TOP OF BEAMS SHALL RECEIVE A SMOOTH FLOAT FINISH (UNLESS NOTED OTHERWISE).
- SHEAR KEY SURFACES SHALL BE BLASTED CLEAN.
- BEAMS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL FORCES ARE APPLIED TO EACH OF THE TWO LIFTING LOOPS AT EACH END OF THE BEAM. THE PINS OF THE SHACKLES SHALL BE PLACED THROUGH THE LIFTING LOOPS. SEE DETAIL, THIS SHEET. BEAMS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS WITHIN 2'-0" OF THE BEAM ENDS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.
- MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. PS10.02 AND PS10.05 RESPECTIVELY.
DESIGN MIX: J.P.C. BRIDGE MIX #430M (5 GAL./CY DCI)
- QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
- 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°. 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.
- OWNER SHALL PROVIDE APPROPRIATE WATERPROOFING TO GROUTED SHEAR KEYS. J.P. CARRARA & SONS, INC. SHALL NOT BE HELD LIABLE FOR PROBLEMS ASSOCIATED WITH MOISTURE INFILTRATING GROUTED SHEAR KEYS.

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING
(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.60" x 270 KSI
AREA: 0.217 IN²
TENSION: 44,000 LB. EACH STRAND
GRIP-TO-GRIP: 252'-0" = 252.00'
Es = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

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

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

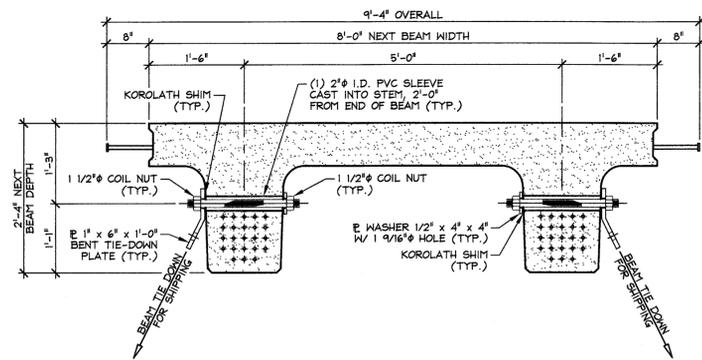
EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:
$$\Delta P = \frac{0.5 \times 41,000}{19.977} = 1,026 \text{ LBS.}$$

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

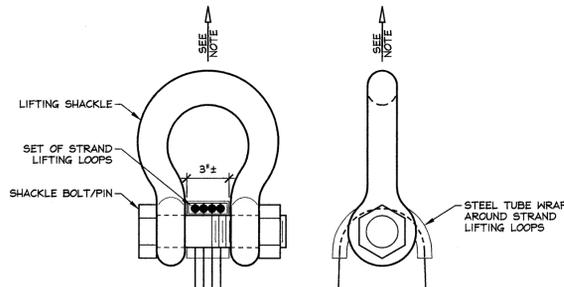
STRAND TENSIONING PROCEDURE:

- PULL EACH STRAND INITIALLY TO 3,000* LBS. AND MARK STRAND.
 - THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,026* LBS. AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 19* AND 21*.
- *NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.

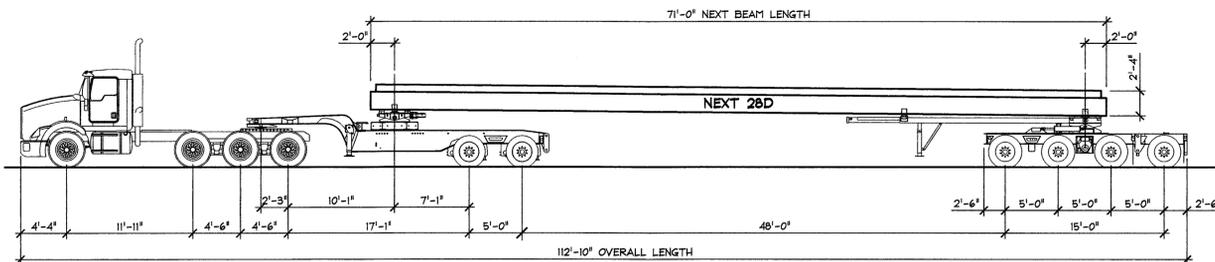
| DRAWING INDEX | | | |
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| SHT. # | DRAWING TITLE | REV. # | REV. DATE |
| C1 | COVER SHEET | | |
| F1 | SUPERSTRUCTURE PLANS | 1 | 12-10-12 |
| F2 | ABUTMENT ELEVATIONS | 1 | 12-10-12 |
| F3 | ABUTMENT DETAILS | | |
| F4 | TRANSVERSE SECTIONS & DETAILS | 1 | 12-10-12 |
| NB1 | PRESTRESSED NEXT BEAM DETAILS "B-NB2" | 1 | 12-10-12 |
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| NB3 | PRESTRESSED NEXT BEAM DETAILS "B-NB3" | 1 | 12-10-12 |
| AS1 | PRECAST APPROACH SLAB DETAILS "B-AS1" & "B-AS2" | | |
| AS2 | PRECAST APPROACH SLAB DETAILS "B-AS3" & "B-AS4" | | |
| AB1 | PRECAST ABUTMENT DETAILS "B-AB1" | 1 | 12-10-12 |
| AB2 | PRECAST ABUTMENT DETAILS "B-AB3" | 1 | 12-10-12 |
| AB3 | PRECAST ABUTMENT DETAILS "B-AB4" | 1 | 12-10-12 |
| AB4 | PRECAST ABUTMENT DETAILS "B-AB2" | 1 | 12-10-12 |
| WNI | PRECAST WING WALL DETAILS | 1 | 12-10-12 |
| MI | MATERIALS LIST | 1 | 12-10-12 |



NEXT BEAM 28D HOLD-DOWN DETAIL FOR SHIPPING
3/4" = 1'-0"



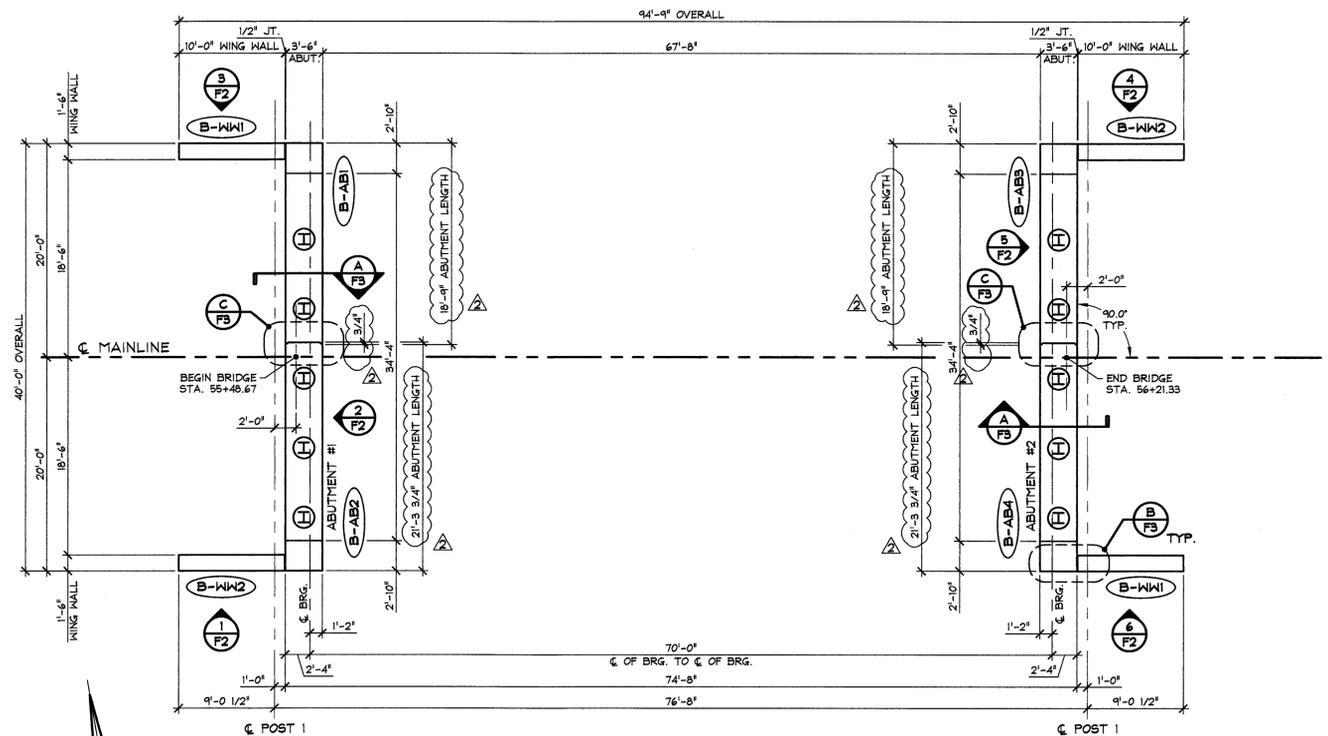
LIFTING SHACKLE DETAILS
N.T.S.



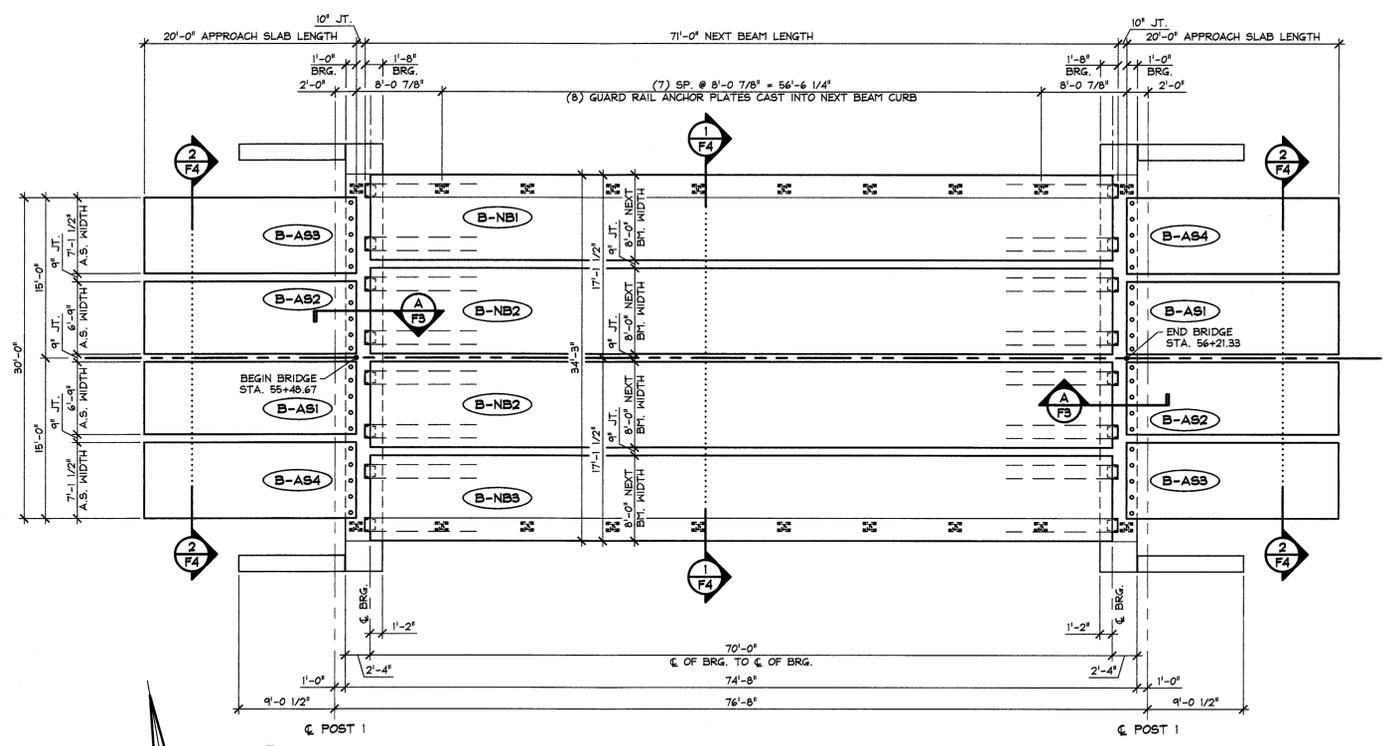
SHIPPING ELEVATION
N.T.S.

SUBMITTED
JAN 9 2013
J.P. CARRARA & SONS, INC.
MIDDLEBURY, VT 05753

| | | |
|-----------------|---|--|
| APPROVAL STAMP: | J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2464 CASE ST., MIDDLEBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010 | J.A. McDONALD, INC. CONTRACTOR LYNDON CENTER, VERMONT |
| | STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF ESSEX | DATE: OCT. 30, 2012 SCALE: NOTED |
| | TOWN OF BRIGHTON ROUTE NO. VT 105, MINOR ARTERIAL BRIDGE NO.: 84 PROJECT NO.: ER STP 034-3(25) | CHKD: B.C. DFTM: B.L. JOB NO: 23384-012 |
| | COVER SHEET | |



1 PRECAST CONCRETE ABUTMENT & WING WALL LAYOUT
 F1 1/8" = 1'-0"



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

- △ 1-3-13 REVISED AS NOTED
- △ 12-10-12 REVISE ABUTMENT #1 & WING WALL PIECE NUMBERS

SUBMITTED
 JAN 9 2013
 J.P. CARRARA & SONS, INC.
 MIDDLEBURY, VT 05753

| | | |
|--|--|--|
| APPROVAL STAMP: | J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer <small>2464 GSE STR., MIDDLEBURY, VERMONT 05753 Phone: (802)388-6361 Fax: (802)388-9010</small> | J.A. McDONALD, INC. CONTRACTOR LYNDON CENTER, VERMONT |
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| SUPERSTRUCTURE PLANS | | DWG. NO: F1 |