CCS Constructors LLC

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

Erection Plan for Precast Concrete Abutments and Wing walls
Stowe Bridge BRF 0235 (11)
3/9/2015

Procedure

The erection will be performed utilizing a 275-ton hydraulic Grove **GMK 5275**; the crane will be outfitted with two loads (46,200 lbs) of the manufacturer's supplied counterweights, and are to be setup as shown on the layout drawing, drawing No. 1. The erection shall not be performed during windy conditions.

Rigging sizes shown are minimums; larger rigging is permissible. Crane radii will vary from 30 ft. to 45 ft. and are shown on layout drawing No. 1 and shall not be exceeded without crane capacity verification. The **GMK5275** is to be used to pick and set all the precast. It shall be outfitted with 40'-1 1/4" min. diameter cable or equivalent straps as shown in SK-1 – SK-3.

All trucks carrying Precast will need to be backed close enough to get all pieces within 30ft of the cranes center pin. All precast concrete will be placed on firm level compacted material. All pieces will be picked and set directly from the truck, no precast will be set on the ground. All grouting of precast will begin as soon as the first connection is made.

Erection Plan Drawing Schedule:

Drawing No. 1 Crane and precast layout
Sketch SK-1- SK-3 Rigging for precast
Sketch SK-4 Wing Wall support

STEP #1: Set Precast Abutment on North End

The first piece to be set will be AB2N this piece weights 80,126 lbs. and is the larger of the two pieces that make-up abutment 2. The **GMK 5275** is to pick and set the piece using the rigging described above and shown in SK-1. The piece will be picked directly from the truck and set in place. Once AB2N is in place the second part of abutment 2 (AB2S = 53,774 lbs.) will be placed in the same manor. Post tensioning will begin as soon as the second section of abutment 2 has been set.

STEP #2: Set Wing walls on North End

Due to the fact that the wing walls are tapered we will be using a waste block and strut to hold the piece vertical and a chain come along to hold it tight to the abutment. Once the grout is cured both will be removed to allow for backfill, please see SK-4. The first wing wall placed will be WW-4, grouting of the sleeves will begin directly after the piece is set. The process will be the same for wing

wall WW-3. After both abutments and walls are set the crane will break down and move around to the south end of the bridge.

STEP #3: Set Precast Abutment on South End

The first piece to be set for abutment 1 will be AB1N this piece weights 84,926 lbs. and is the larger of the two pieces that make-up abutment 1. The **GMK 5275** is to pick and set the piece using the rigging described above and shown in SK-1. The piece will be picked directly from the truck and set in place. Once AB1N is in place the second part of abutment 1 (AB1S = 62,374 lbs.) will be placed in the same manor. Post tensioning will begin as soon as the second section of abutment 1 has been set.

STEP #4: Set Wing walls on South End

The wing walls on the south end will be set the same way the North end was WW-2 will go first and followed by WW-1. The same bracing will be used for WW-2 as was used for WW-3 & WW-4 (per SK-4) Once the walls are in place the crane will remain on site to set the steel beams. After the steel is installed the crane will once again be moved back to the north end to set the retaining wall.

STEP #5: Set Retaining Wall North End

The retaining wall arrive on the site in one piece, once the crane is set up, the piece will be backed down the road to the crane. Rigging for the retaining wall will be per SK-3. Once the wall is place the crane will leave the site.

BEGIN PROJECT/BRIDGE
STA 3+47.22

℄ BEARING #1
STA 3+48.00
FG = 712.18'

℄ BEARING #3
STA 4+78.00
FG = 714.78'

END BRIDGE/PROJECT
STA 4+78.78

VT STATE PLANE GRID N

PAVED DITCH

CONCRETE WALL

4 MB

#3

WOOD DECK

WW-1

CGMP STONE WALL

DI

GV

35' +/-

AB1S
75° ASKEW
(TYP)

VT 108 STA 4+00 =
CHANNEL STA 11+00
DELTA ANGLE 75°

4+00

11+25

10+75

10+50

12" INSULATED WATER LINE

WW-37

#20

GRANITE BLOCK WALL

AB2S

AB2N

35' +/-

RETAINING WALL

WSO

WW2

WW-2

CONCRETE WALL

6'W X 7.5'H CONC. BOX

STONE FILL, TYPE III

MHS

LITTLE RIVER

WW-4

STONE FILL, TYPE III

IP

PAVED PARKING LOT

GROVE GMK 5275
MAX RADIUS 35'
WITH 84,926 lbs

GROVE GMK 5275
MAX RADIUS 35'
WITH 84,926 lbs

PLAN

SCALE 1" = 10'-0"
10 0 10

BOX BEAM GUARD RAIL (PAINTED BROWN) (LT/RT)

133'-7½" - BRIDGE BARRIER RAIL - HIGH PERFORMANCE CONCRETE CLASS A (NEAR SIDE)

133'-7½" - PAY LIMIT BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION (PAINTED BROWN) (FAR SIDE)

130'-0" ℄ BEARING #1 TO ℄ BEARING #2

BOX BEAM GUARD RAIL (PAINTED BROWN) (LT/RT)

PLANK RAIL (RT)
SEE TYPICAL SECTIONS FOR DETAILS

PLANK RAIL (RT)
SEE TYPICAL SECTIONS FOR DETAILS

730
720
710
700
690
680
670

Q100 EL=699.2

STONE FILL, TYPE III

STONE FILL, TYPE III

EXISTING GROUND

REMOVE EXISTING PIER TO EXISTING STREAM BED ELEVATION

730
720
710
700
690

ELEVATION

SCALE 1" = 10'-0"
10 0 10

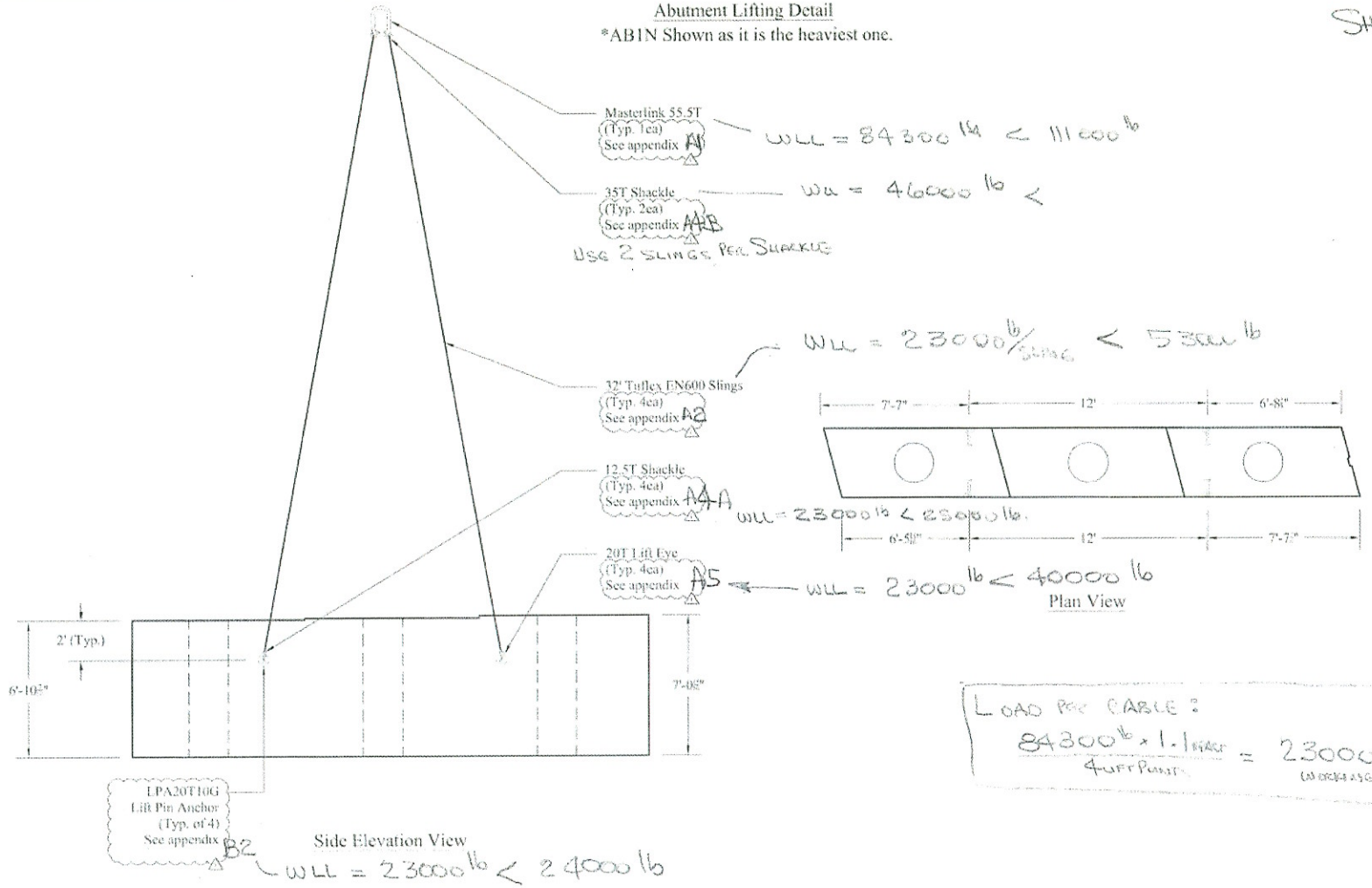
PROJECT NAME:	STOWE
PROJECT NUMBER:	BRF 0235 (11)
FILE NAME: s87e052pe.dgn	PLOT DATE: 28-JUL-2014
PROJECT LEADER: C. CARLSON	DRAWN BY: M. LONGSTREET
DESIGNED BY: D. PETERSON	CHECKED BY: J. LACROIX
PLAN & ELEVATION	SHEET 27 OF 64

DRAWING NO. 1

SHEET 2

Abutment Lifting Detail

*ABIN Shown as it is the heaviest one.



Load per cable:
84300 lb × 1.1 impact / 4 Lift Points = 23000 lb/Lift Point (working load)

Weight: 84,300 lbs

CONTRACTORS VTSPE:	Rev.	Date	By	Description
	1	1/7/15	PMT	Changes per review

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #15163)

SUPERVISOR: M. WHEELER
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER:

PROJECT NAME: Stowe BRF 0235 (II)
PROJECT #: 0235 (II)
LOCATION: Stowe, VT

INSTALLER: CCS Construction, 138 Munson Ave, Morrisville, VT 05661, PH: 802-888-7701

FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495, Ph: (802) 658-0201

SD Ireland Precast Division

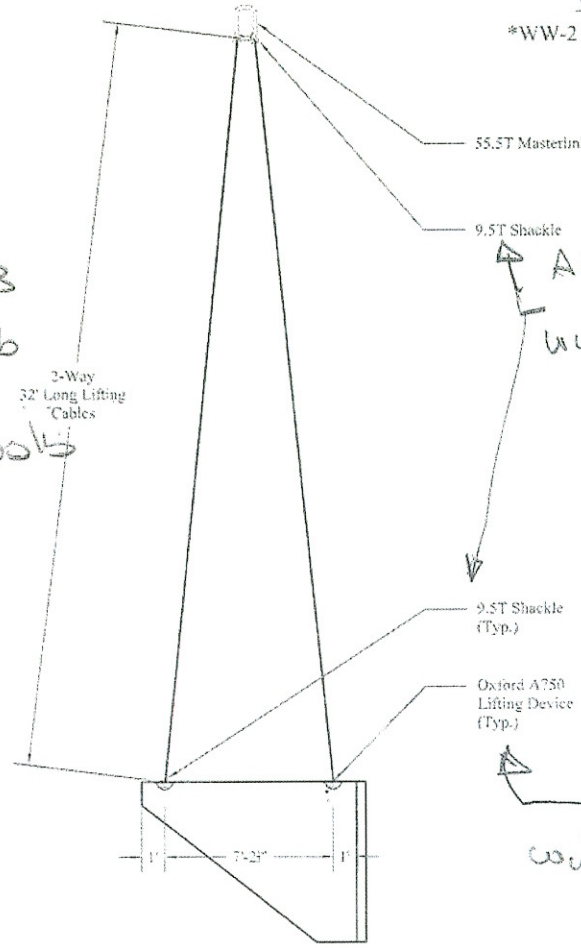
12/03/14 | Lifting | 1 of 3

SK-1

Wing Wall Lifting Detail

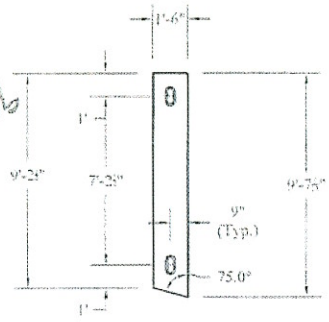
*WW-2 Shown as this is the heaviest one.

From Appendix A1
WL = 9450 lb < 111000 lb



Appendix A3
WL = 9450 lb
< 19600 lb

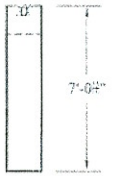
Appendix A4A
WL = 5200 lb < 19000 lb



Plan View

Load Per Cable
$\frac{9450 \times 1.1}{2} = 5200$ lb

Appendix B1
WL = 5200 lb < 10000 lb



Side Elevation View

Section View

Weight: 9,450 lbs

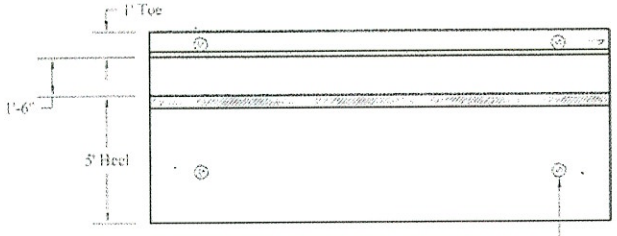
CONTRACTORS VISPE:	PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #15163)		INSTALLER: CCS Construction 138 Munson Ave Morrisville, VT 05661 Ph: 802-888-7701	FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201 SD Ireland Precast Division	
	SUPERVISOR: M. WHEELER DETAILER: I. ADAMS CHECKER: E. Barendse ENGINEER:	PROJECT NAME: Stowe BRF 0235 (II) PROJECT #: 0235 (II) LOCATION: Stowe, VT	12/03/14	Lifting	2 of 3

SK-2

Retaining Wall Lifting Detail

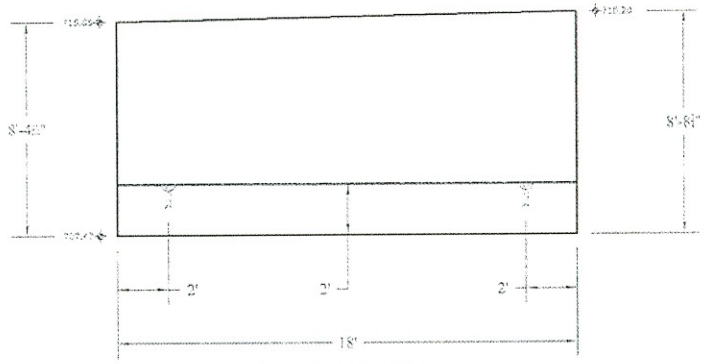
LOADER CASE

$\frac{65700\ lb \times 1.1}{4} = 18100\ lb$

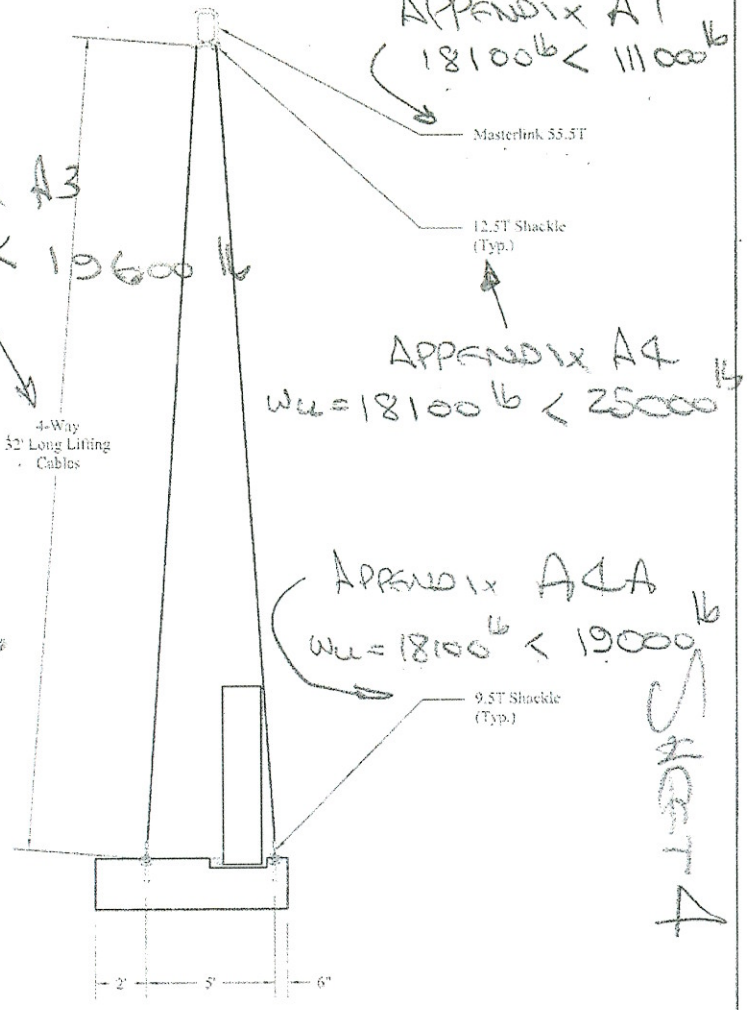


LPA20T10G Lifting Device (Typ. of 4)

Plan View



Side Elevation View



Section View

APPENDIX A1
$18100\ lb < 111000\ lb$

APPENDIX A3
$W_{LL} = 18100 < 19600\ lb$

APPENDIX A4
$W_{LL} = 18100\ lb < 25000\ lb$

APPENDIX B2
$W_{LL} = 18100\ lb < 18270\ lb$

APPENDIX A5
$W_{LL} = 18100\ lb < 200000\ lb$

APPENDIX A4A
$W_{LL} = 18100\ lb < 19000\ lb$

Weight: 65.700 lbs

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	SUPERVISOR: M. WHEELER DETAILER: I. ADAMS CHECKER: E. Barendse ENGINEER:	PROJECT NAME: Stowe BRF 0235 (II) PROJECT #: 0235 (II) LOCATION: Stowe, VT	12/03/14	Lifting	3 of 3

SK-3

Main Boom
46,200 lb. Counterweight
Outriggers Fully Extended
360°

Boom Length														
	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.													Radius
10	320.0	318.0	312.0	244.0										10
15	248.0	248.0	246.0	242.0	185.0									15
20	199.0	200.0	187.0	175.0	158.0	144.0	106.0							20
25	154.0	148.0	138.0	128.0	123.0	113.0	106.0	86.0						25
30	114.0	111.0	105.0	103.0	96.0	94.0	87.0	81.0	69.0	55.0	45.0			30
35		90.0	87.0	83.0	82.0	77.0	71.0	66.0	63.0	55.0	45.0	36.4		35
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	40
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	45
50			50.0	52.0	50.0	47.0	45.0	43.4	39.2	40.6	39.6	36.0	30.8	50
55			45.0	46.0	43.2	40.2	41.2	37.4	36.8	37.4	36.6	34.0	30.8	55
60				39.2	37.8	36.0	36.0	32.6	34.6	34.0	32.2	29.8	27.4	60
65				33.8	33.2	33.8	31.8	30.6	31.4	30.2	28.4	26.2	24.0	65
70				29.4	29.0	30.6	28.2	29.0	28.4	26.8	25.2	23.2	21.0	70
75				22.8	25.4	27.4	25.0	27.0	25.4	24.0	22.4	20.4	18.4	75
80					22.2	24.2	23.2	24.4	23.0	21.4	20.0	18.2	16.2	80
85					22.0	21.4	20.8	22.0	20.6	19.2	17.8	16.0	14.2	85
90					19.6	19.0	19.4	20.0	18.6	17.2	16.0	14.2	12.4	90
95						17.4	18.4	18.0	16.8	15.6	14.2	12.6	10.8	95
100						16.6	16.4	16.2	15.2	14.0	12.6	11.0	9.2	100
105							14.8	14.6	13.8	12.6	11.2	9.8	8.0	105
110							13.4	13.0	12.4	11.2	10.0	8.4	6.8	110
115							12.0	11.6	11.0	10.0	8.8	7.4	5.6	115
120								10.4	9.8	9.0	7.8	6.4	4.6	120
125								9.4	8.6	8.0	6.8	5.4	3.8	125
130								8.4	7.6	7.0	6.0	4.6	2.8	130
135									6.8	6.0	5.2	3.8		135
140									6.0	5.2	4.4	3.0		140
145										4.4	3.6			145
150										3.6	2.8			150
155										3.0				155
160														160

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