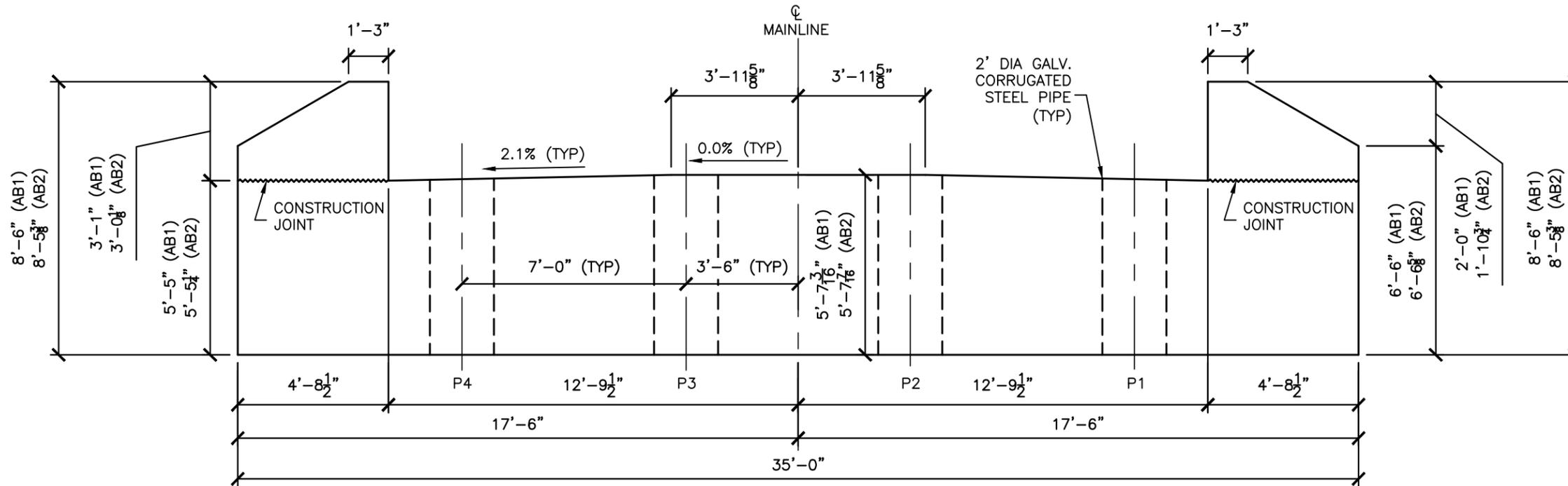


TYPICAL ABUTMENT PLAN

SCALE: 1/4"=1'-0"



TYPICAL ABUTMENT ELEVATION

SCALE: 1/4"=1'-0"

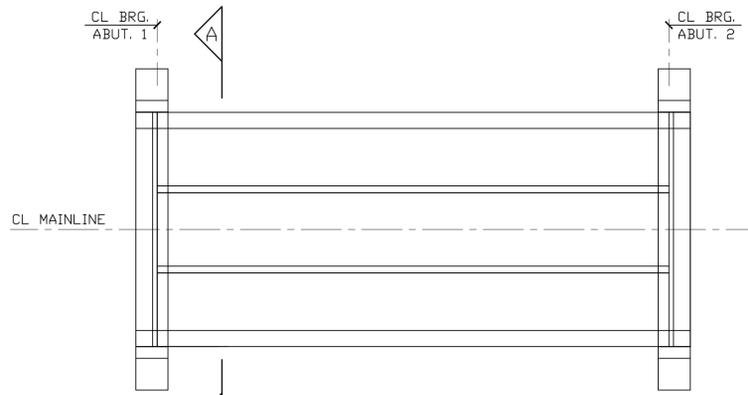
Vermont Agency of Transportation
RECEIVED
 CK'D BY JW/GW/CG/GD/GL OK'D BY JS
 May 22, 2015
 RESUBMIT YES Rejected
 BY KH DATE 5-29-2015

1

PREPARED BY: KFM
 CHECKED BY: TRF
 DATE: 05/20/15

CAMBRIDGE BRO 1448(39)
 Abutments #1 and #2
 Cambridge, VT

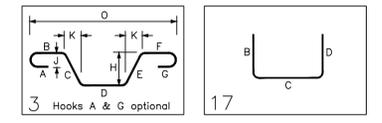
T. R. FELLOWS
 NH
 ENGINEERING
 CIVIL - STRUCTURAL
 PO BOX 56
 ROCHESTER, VT 05767
 TEL: 802.316.7853
 FAX: 802.316.5151
 trf@myairpoint.net
 134 COUNTY ROAD
 P.O. BOX 428 03608
 WALPOLE, NH
 TEL/FAX: 603.756.4811
 trf@myairpoint.net



DECK PLAN
CONTRACT DWG. REF. 16

- LIST 1 (F.F.) (2 THUS)**
- 3 #6 X 8'-0" (Z) F.F.
 - 1 #6 X 7'-10" (Z) F.F.
 - 1 #6 X 7'-7" (Z) F.F.
 - 1 #6 X 7'-3" (Z) F.F.
 - 1 #6 X 7'-0" (Z) F.F.
 - 1 #6 X 6'-8" (Z) F.F.
 - 1 #6 X 6'-5" (Z) F.F.
 - 1 #6 X 6'-1" (Z) F.F.
- LIST 2 (N.F.) (2 THUS)**
- 2 #5 X 8'-0" (Z) N.F.
 - 1 #5 X 7'-10" (Z) N.F.
 - 1 #5 X 7'-3" (Z) N.F.
 - 1 #5 X 6'-8" (Z) N.F.
 - 1 #5 X 6'-1" (Z) N.F.
- LIST 3 (F.F.) (2 THUS)**
- 3x1 #5 X 4'-2" (Z) F.F.
 - 1 #5 X 3'-8" (Z) F.F.
 - 1 #5 X 2'-9" (Z) F.F.
 - 1 #5 X 1'-11" (Z) F.F.
- LIST 4 (N.F.) (2 THUS)**
- 1 #5 X 4'-2" (Z) N.F.
 - 1 #5 X 3'-8" (Z) N.F.
 - 1 #5 X 1'-11" (Z) N.F.

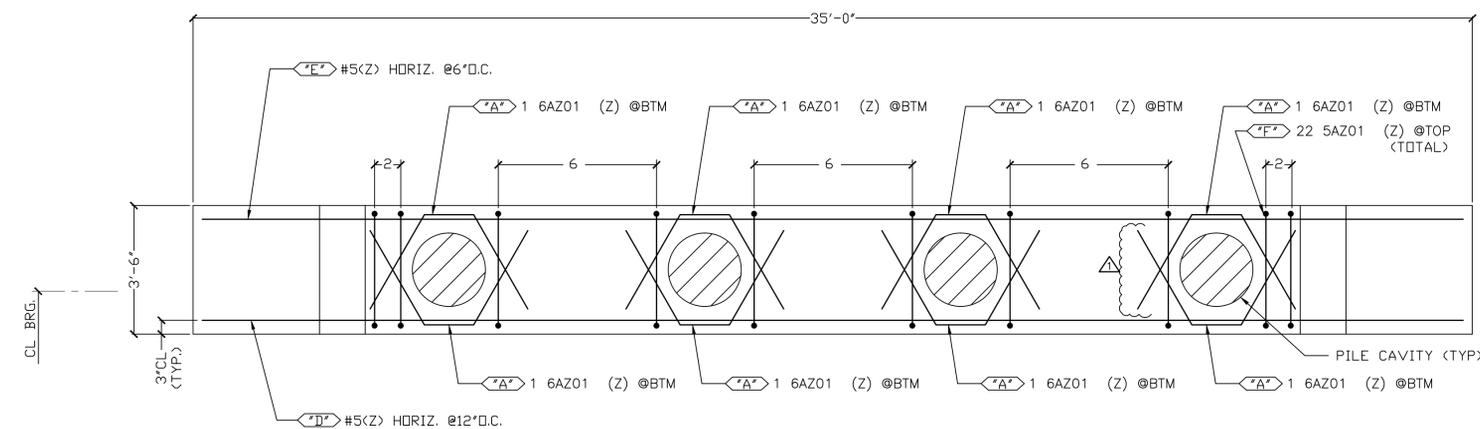
Release Number:		BAR LIST														
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
5AZ01	46	#5	8'-8"	17			2'-10"	3'-0"	2'-10"							
5AZ02	4	#5	4'-9"	3			0'-11"	3'-10"					1'-11"		3'-4"	4'-3"
6AZ01	8	#6	7'-5 1/2"	3			2'-11 1/4"	1'-6"	2'-11 1/4"				2'-7"		1'-6"	4'-6"



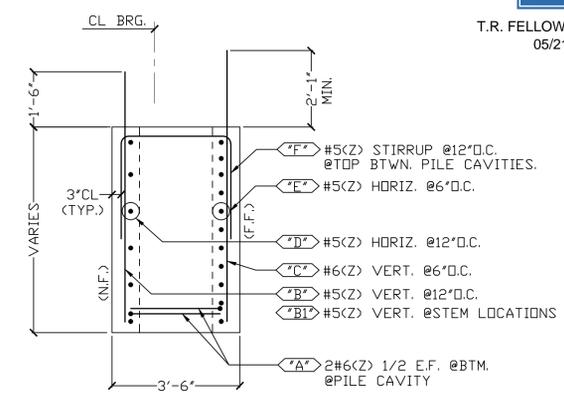
Vermont Agency of Transportation
RECEIVED
CK'D BY JW/GW/CG/GD/OL OK'D BY JS
May 22, 2015
RESUBMIT YES Rejected
BY KH DATE 5-29-2015

LIFTING POINT LOCATIONS & ANCHORS - BY OTHERS/G.C.
4 #7 SHEAR BAR FOR WIRE ANCHORS
4 #7 X 4'-0" (Z) TOTAL

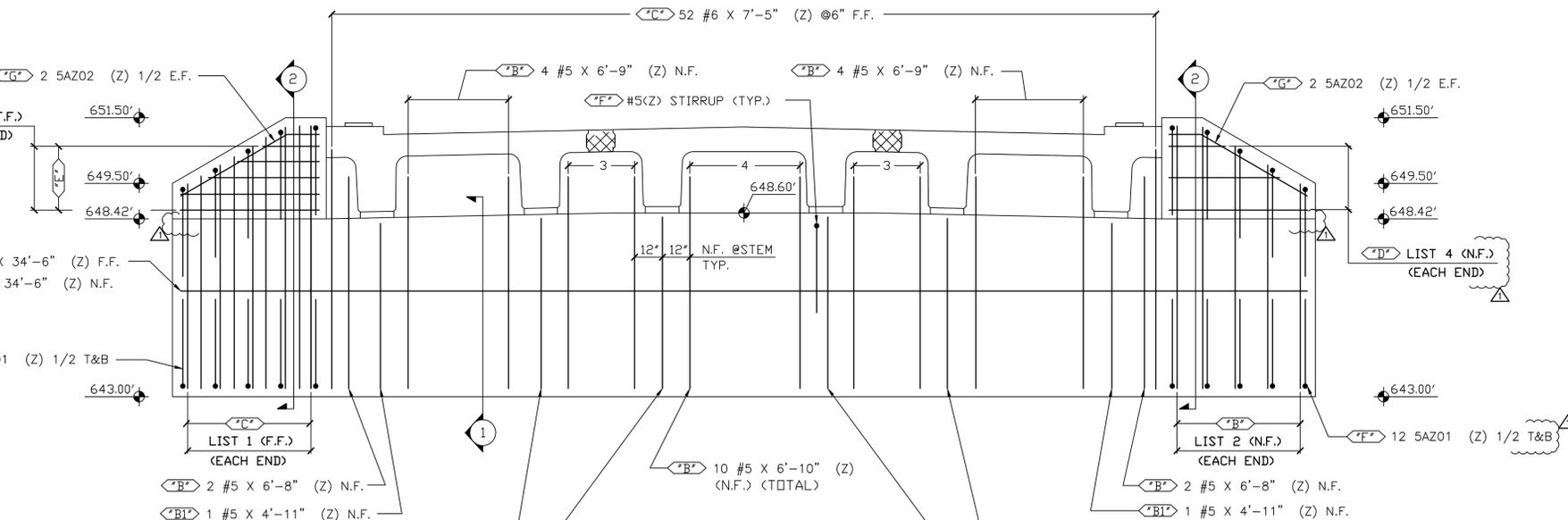
BAR MARKS MAY CHANGE, DUE TO REVISIONS



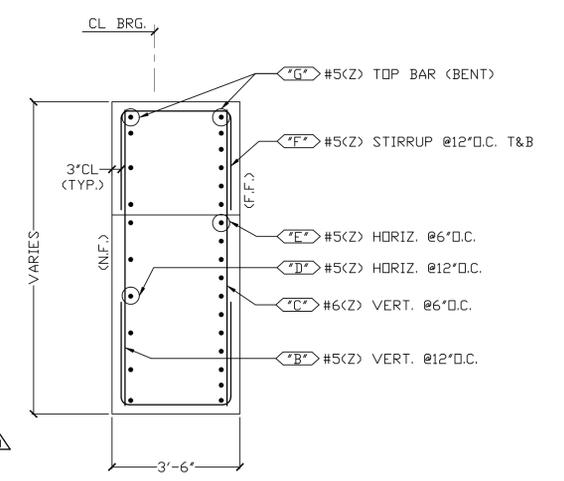
ABUTMENT #1 PLAN
(VERTICALS NOT SHOWN FOR CLARITY)
CONTRACT DWG. REF. 20



SECTION 1
(REIN. @ BRIDGE SEAT)
CONTRACT DWG. REF. 20



ABUTMENT #1 - ELEVATION A-A
(PILE CAVITIES NOT SHOWN FOR CLARITY)
CONTRACT DWG. REF. 20



SECTION 2
(REIN. @ CHEEK WALL)
CONTRACT DWG. REF. 20

APPROVED
T.R. FELLOWS ENGINEERING
05/21/2015

FOR APPROVAL

LEGEND:
CONT.-CONTINUOUS
TRANS.-TRANSVERSE
DWLS.-DOWELS
VERTS.-VERTICAL
HORIZ.-HORIZONTAL
T&B -TOP & BOTTOM
I.F.-INNER FACE
O.F.-OUTER FACE
E.E.-EACH END
E.F.-EACH FACE
N.F.-NEAR FACE
F.F.-FAR FACE
E.W.-EACH WAY
D.C.-DN CENTER
L.W.-LONG WAY
S.W.-SHORT WAY

LAP CHART

#5, #6	2'-7" (U.N.)
--------	--------------

ALL REINF. BARS LEVEL II - DUAL COATED

ELEVATIONS & DIMENSIONS SHOWN ON THIS DWG. ARE FOR REINF. DETAILING PURPOSES ONLY AND ARE NOT INTENDED FOR DIMENSIONAL CONSTRUCTION.

DUAL COATED REINF. BARS ASTM A615 GRADE 60, MARKED (Z)

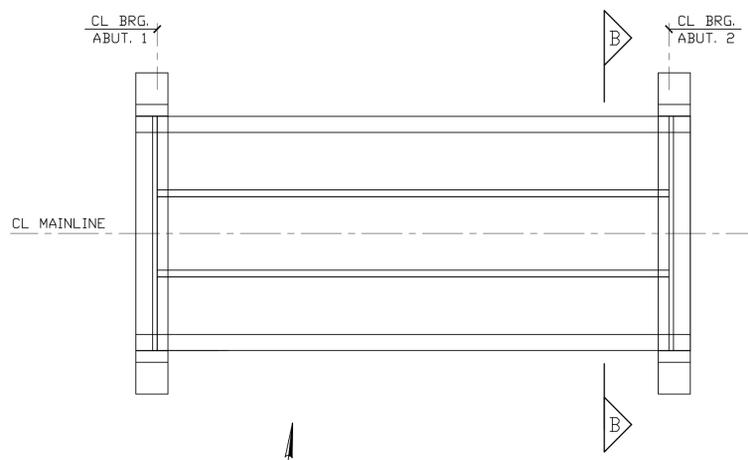
VERIFICATION OF UNCLEAR INFORMATION MAY BE REQUESTED ON THIS DRAWING. SHOULD VERIFICATION BE LEFT UN-ADDRESSED IT WILL REMAIN AS SHOWN AND ASSUME TO BE CORRECT.

DATE	REV.#	SENT FOR
5/21/15		REVISED PER APPROVAL
1/29/15		FOR APPROVAL

DIMENSION FABRICATORS INC.
2000 7TH STREET
SCOTIA, N.Y. 12580
PH: (518) 374-1936
FAX: (518) 374-4830
www.dimensionfabricators.com

STRUCTURE: VTAOT CAMBRIDGE BRO 1448(39)
LOCATION: CAMBRIDGE, VERMONT
ARCHITECT:
ENGINEER:
CUSTOMER: BLOW & COTE, INC.

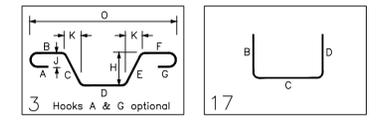
DRAWN BY: KRIS J DATE: 1/23/15 OFI #: 9127
DRAWING COVERS: WEST ABUTMENT #1 DRAWING #: A



DECK PLAN
CONTRACT DWG. REF. 16

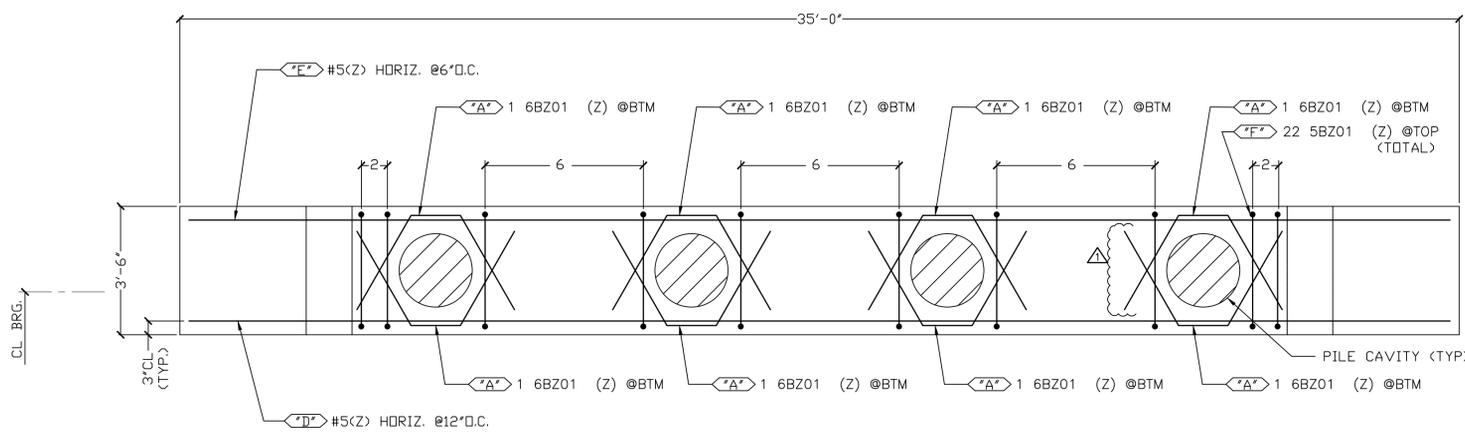
- LIST 1 (F.F.) (2 THUS)**
- 3 #6 X 7'-11" (Z) F.F.
 - 1 #6 X 7'-10" (Z) F.F.
 - 1 #6 X 7'-6" (Z) F.F.
 - 1 #6 X 7'-3" (Z) F.F.
 - 1 #6 X 7'-0" (Z) F.F.
 - 1 #6 X 6'-9" (Z) F.F.
 - 1 #6 X 6'-5" (Z) F.F.
 - 1 #6 X 6'-2" (Z) F.F.
- LIST 2 (N.F.) (2 THUS)**
- 2 #5 X 7'-11" (Z) N.F.
 - 1 #5 X 7'-10" (Z) N.F.
 - 1 #5 X 7'-3" (Z) N.F.
 - 1 #5 X 6'-9" (Z) N.F.
 - 1 #5 X 6'-2" (Z) N.F.
- LIST 3 (F.F.) (2 THUS)**
- 3x1 #5 X 4'-2" (Z) F.F.
 - 1 #5 X 3'-8" (Z) F.F.
 - 1 #5 X 2'-9" (Z) F.F.
 - 1 #5 X 1'-10" (Z) F.F.
- LIST 4 (N.F.) (2 THUS)**
- 1 #5 X 4'-2" (Z) N.F.
 - 1 #5 X 3'-8" (Z) N.F.
 - 1 #5 X 1'-10" (Z) N.F.

Release Number:					BAR LIST											
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
5BZ01	46	#5	8'-8"	17		2'-10"	3'-0"	2'-10"								
5BZ02	4	#5	4'-7 1/2"	3		0'-11"	3'-8 1/2"					1'-9 1/2"		3'-3 1/2"	4'-2 1/2"	
6BZ01	8	#6	7'-5 1/2"	3			2'-11 1/2"	1'-6"	2'-11 1/2"			2'-7"		1'-6"	4'-6"	

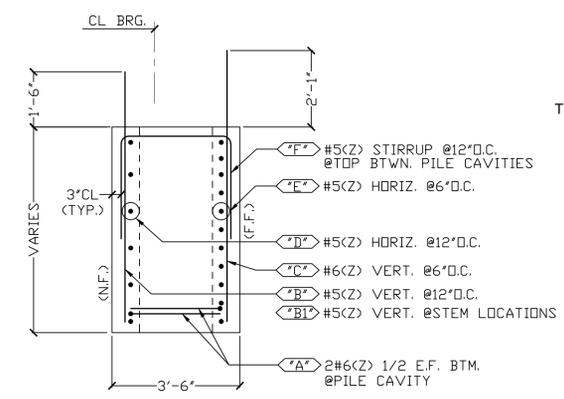


LIFTING POINT LOCATIONS & ANCHORS - BY OTHERS/G.C.
4 #7 SHEAR BAR FOR WIRE ANCHORS
4 #7 X 4'-0" (Z) TOTAL

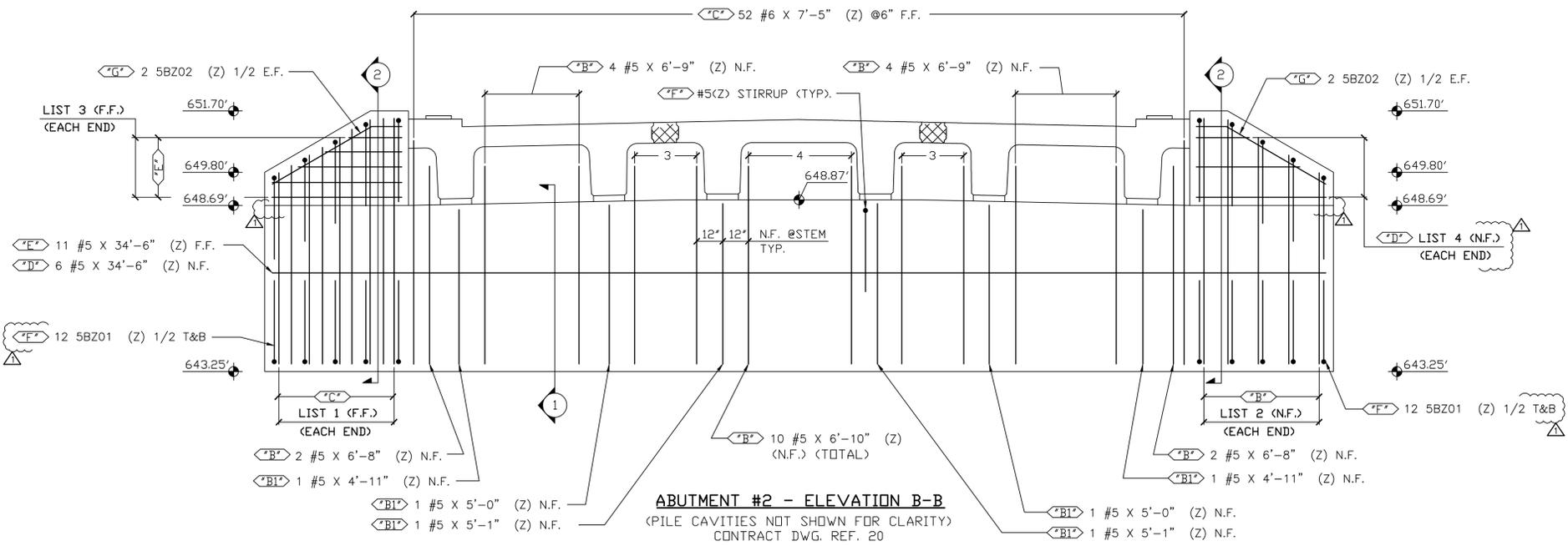
Vermont Agency of Transportation
RECEIVED
CK'D BY JW/GW/GD/DGL OK'D BY JS
May 22, 2015
RESUBMIT YES Rejected
BY KH DATE 5-29-2015



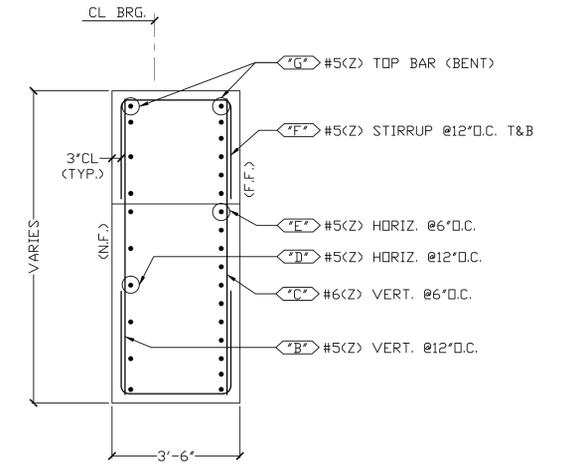
ABUTMENT #2 PLAN
(VERTICALS NOT SHOWN FOR CLARITY)
CONTRACT DWG. REF. 20



SECTION 1
(REINF. @ BRIDGE SEAT)
CONTRACT DWG. REF. 20



ABUTMENT #2 - ELEVATION B-B
(PILE CAVITIES NOT SHOWN FOR CLARITY)
CONTRACT DWG. REF. 20



SECTION 2
(REINF. @ CHEEK WALL)
CONTRACT DWG. REF. 20

APPROVED
T.R. FELLOWS ENGINEERING
05/21/2015

FOR APPROVAL

LAP CHART	
#5, #6	2'-7" (U.N.)

**ALL REINF. BARS
LEVEL II - DUAL COATED**

ELEVATIONS & DIMENSIONS SHOWN ON THIS DWG. ARE FOR REINF. DETAILING PURPOSES ONLY AND ARE NOT INTENDED FOR DIMENSIONAL CONSTRUCTION.

DUAL COATED REINF. BARS ASTM A615 GRADE 60, MARKED (Z)

VERIFICATION OF UNCLEAR INFORMATION MAY BE REQUESTED ON THIS DRAWING. SHOULD VERIFICATION BE LEFT UN-ADDRESSED IT WILL REMAIN AS SHOWN AND ASSUME TO BE CORRECT.

6			
5			
4			
3			
2	5/21/15	REVIS	REVISED PER APPROVAL
1	1/29/15	FOR	FOR APPROVAL
DATE	REV.#	SENT FOR	
2000 7TH STREET SCOTIA, N.Y. 13202 PH: (518) 374-1936 FAX: (518) 374-4830 www.dimensionfabricators.com			
STRUCTURE	VTAOT CAMBRIDGE BRO 1448(39)		
LOCATION	CAMBRIDGE, VERMONT		
ARCHITECT			
ENGINEER			
CUSTOMER	BLOW & COTE, INC.		
DRAWN BY	DATE	OFF #	
KRIS J	1/23/15	9127	
DRAWING COVERS		DRAWING #	
EAST ABUTMENT #2		B	

needs agg properties and dates tested Submittal (b)(3)

should be precast label

did not supply chemical/physical cementitious properties Submittal (b)(4)

2011?

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIAL AND RESEARCH SECTION - STRUCTURAL
STRUCTURAL CONCRETE MIX DESIGN SHEET

Concrete class: Silica fume
Additional Description _____
Ready Mix Supplier: HARRISON REDI-MIX, GEORGIA, VT
Designed By: Todd Nelson
Design strength: 5000 PSI
Mix Design Style: Conventional
Agg weight - SSD or Dry: SSD

Agency Use Only	
Mix ID	SC00-me-0
Mix Design #	
Approved by	
Approved Date	
Spec Book Year	2013

Mix designs are valid for a 12 month period from date of approval or unless there is a change in material, material property or design parameter.

Cement:	701.02	Source: CIMENT QUEBEC - ST BASILE, QUEBEC	Brand Name: _____	Specific Gravity	3.150	488	lb/cy	2.48	cf
Cement Type III:	701.04	Source: _____	Brand Name: _____	Specific Gravity	_____	_____	lb/cy	0.00	cf
Blended Cement:	701.06	Source: _____	Brand Name: _____	Specific Gravity	_____	_____	lb/cy	0.00	cf
Cement with Slag:	701.07	Source: _____	Brand Name: _____	Specific Gravity	_____	_____	lb/cy	0.00	cf
Pozzolan:	725.03(a)	Source: _____	Brand Name: _____	Specific Gravity	_____	_____	lb/cy	0.00	cf
Fly Ash:	725.03(a)	Source: HEADWATERS RESOURCES - BRAYTON POINT, MA	Brand Name: _____	Specific Gravity	2.360	132	lb/cy	0.90	cf
Silica Fume:	725.03(b)	Source: BASF CONSTRUCTION CHEMICALS - CHICAGO, IL	Brand Name: Rheomac SF 100	Specific Gravity	2.200	40	lb/cy	0.29	cf
Slag:	725.03(c)	Source: _____	Brand Name: _____	Specific Gravity	_____	_____	lb/cy	0.00	cf
Water						35	gals	292.08	lb/cy
Air Content Target						7.0	%		4.68
Coarse Aggregate 3/8"	704.02A	Source: _____	Absorption _____	Specific Gravity	_____	_____	lb/cy	0.00	cf
Coarse Aggregate 3/4"	704.02B	Source: RAINVILLE QUARRY - GEORGIA, VT	Absorption 0.20	Specific Gravity	2.750	1650	lb/cy	9.62	cf
Coarse Aggregate 1 1/2"	704.02C	Source: _____	Absorption _____	Specific Gravity	_____	_____	lb/cy	0.00	cf
Fine Aggregate:	704.01	Source: AIRPORT SAND AND FILL - HIGHGATE, VT	Absorption 1.30	Specific Gravity	2.720	1212	lb/cy	7.14	cf
				Fineness Modulus	2.72				
Air Entrainment Admixture	725.02(b)	Source: MASTER BUILDERS INC - MESQUITE, TX	Brand Name: Micro Air	Specific Gravity	_____	2	oz/cy		
Retarder Admixture:	725.02(c)	Source: MASTER BUILDERS INC - MESQUITE, TX	Brand Name: Pozzolith 100 XR	Specific Gravity	_____	2	oz/cwt		
High Range Water Reducer Admixture:	725.02(h)	Source: MASTER BUILDERS INC - MESQUITE, TX	Brand Name: Glenium 7500	Specific Gravity	_____	8	oz/cwt		
Other Admixtures:		Source: _____		Specific Gravity	_____			0.00	cf
		Brand Name: _____		Specific Gravity	_____			0.00	cf
		Source: _____		Specific Gravity	_____			0.00	cf
		Brand Name: _____		Specific Gravity	_____			0.00	cf
		Source: _____		Specific Gravity	_____			0.00	cf
		Brand Name: _____		Specific Gravity	_____			0.00	cf
				TOTAL	52.030	3814.1	lb	27.00	cf

Maximum Water/Cementitious Ratio 0.44
Maximum Water (gal/cy) 34.8
Slump Min/Max (inch) _____ min _____ max
Air Content Min/Max (%) 5.0 min 9.0 max
Design Unit Wt. (lb/cf) 141.26

Notes:

no lab data supplied of mix properties Submittal (b)(6)

Quality Control Procedures

Blow & Cote QC Control Manager: Marc Cote*

1. A pre-production meeting shall be held a minimum of seven calendar days prior to the beginning of concrete placement. The pre-production meeting will be attended by the Project Superintendent, QC Control Manager, the Concrete Producer's QC, the Resident Engineer, the Project Manager and the Composite Materials Engineer.
2. VTrans will retain their responsibilities for Quality Acceptance testing.
3. Four extra cylinder sets per concrete placement shall be taken for early strength breaks or confirmation strength breaks.
4. All inside form dimensions, rebar spacing and clearances shall be reviewed and documented on the pre-pour inspection sheet (see page 10) by the Project Superintendent, the QC Control Manager and the resident engineer before casting is commenced.
5. Before forms are erected the contractor will inspect all form work for damage or residual concrete. Any deficiency in the form material shall be corrected prior to being incorporated into the form work. Forming shall conform to 2011 Standard Specification 541.09.
6. Forms shall be coated with form oil as needed prior to installing rebar. Caution will be taken not to over-oil the forms so no oil gets on the rebar. Oiled forms will be wet before concrete placement. Any wood forms or oil that may discolor the concrete will not be used.
7. Concrete tolerance to be +/- 1/4"; Reinforcing steel placement tolerances to be +/- 1/4" for cover and clearance and 1" for spacing of bars; Horizontal clearances shall be 3" top and bottom with vertical clearance of 3" both faces. Support material to maintain clearance will be stainless steel, epoxy, plastic coated galvanized steel or plastic.
8. All precast will be inspected by both the contractor and resident engineer and documented on the post-pour inspection sheet (see page 11). Any minor repairs and honey combing or rubbing necessary will be completed using a sand and Portland slurry from the same source as the concrete. Any major repairs will be repaired with a vertical or overhead patch from the approved products list.
9. The date of manufacture, the production lot number, and the piece mark shall be clearly marked on each individual piece of precast concrete. The mark shall be in a location that will not be visible in the finished product.
10. Todd Nelson of Harrison Redi-Mix will be responsible for the QA for supplying the concrete to the project. See page 4 of this submittal for the approved mix design by Harrison Redi-Mix. Harrison to run aggregate gradations prior to producing aggregate. Harrison will test concrete on project before placing it into forms to verify compliance to specifications. Should modifications need to be made in the field to comply with specifications, it will be done at this point (i.e. air content is low, more air entraining agent will be added as needed).

*Marc Cote's previous experience in this area:

1. Bristol BRO 1445(32): Cast-in-place abutments and deck
2. Fairground Road Bridge, Northfield, VT: Cast-in-place abutments, overlay.

I don't think this would be good as it it harder than the epoxy coating and would damage it

define dimensions of minor and major. 540.07 for minor 6" in diameter and less than an 1". anything over major and cause for rejection

how??

QC? we are doing QA right?

retested to confirm?

Contractor Fabricated Precast Concrete Notes

1. Concrete abutment minimum compressive strength: 5,000 psi at 28 days
2. Only construction joints in abutments are between cheek walls and bridge seat, therefore no post-tensioning is required. All reinforcing will be tied and in place prior to placement of concrete below bridge seat. Construction joints will be constructed in accordance with VAOT Standard Spec 501.13.
3. All concrete to be supplied by Harrison Redi-Mix.
4. See page 4 of this submittal for the 5000 psi mix design by Harrison Redi-Mix
5. Concrete abutment bridge seats will have textured surface raked finish roughened to $\frac{1}{4}$ " amplitude except area under bearing pads shall be troweled smooth to the proposed slope.
6. Tops of wingwalls to have smooth float finish.
7. All exposed concrete edges shall be chamfered $\frac{3}{4}$ ".
8. All lifting devices embedded in concrete shall be galvanized.
9. Abutments to be wet cured with forms in place per Table 501.17A "curing concrete components". The forms will be removed after 7 day cylinder breaks show a minimum design strength of 3000 psi. The precast structure will not be handled and lifted until the cure period and the required 28 day design strength has been attained as demonstrated by field cured cylinder breaks.

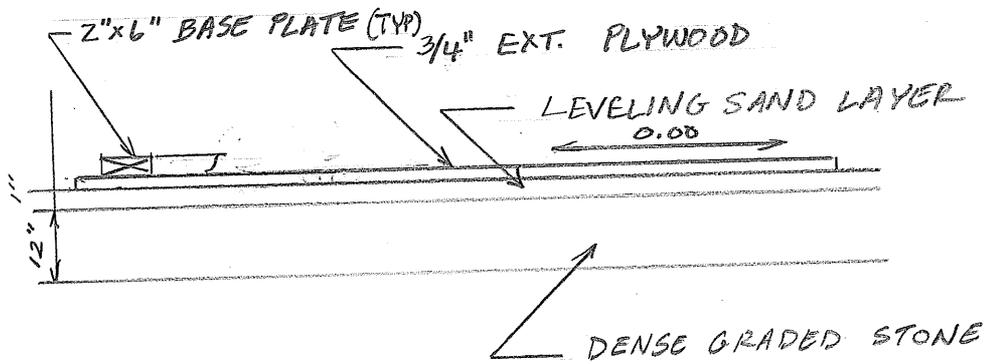
1"x1"

buy America?

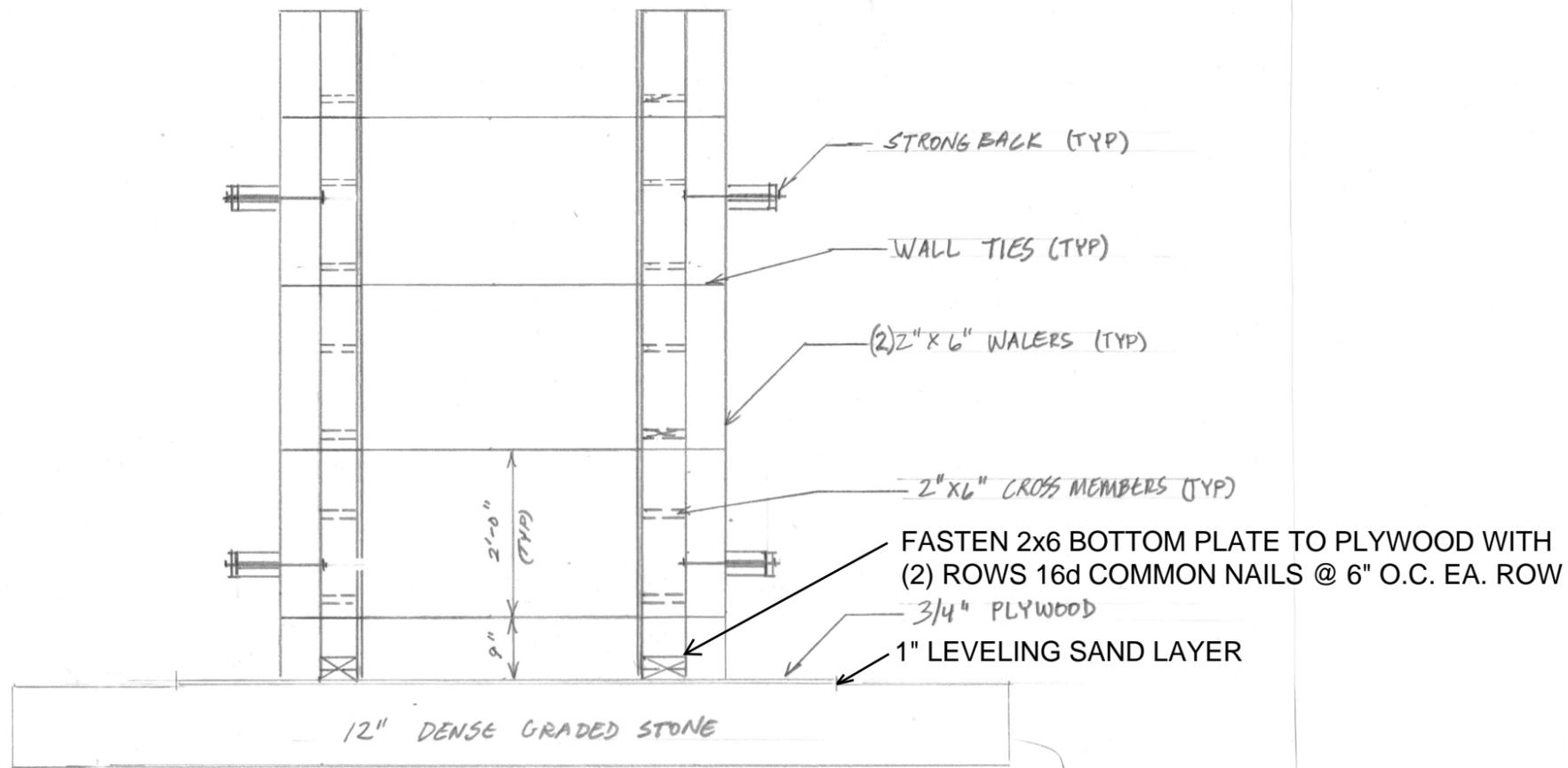
Form Construction Notes

(Refer to page 9, Precast Form Details, for additional information)

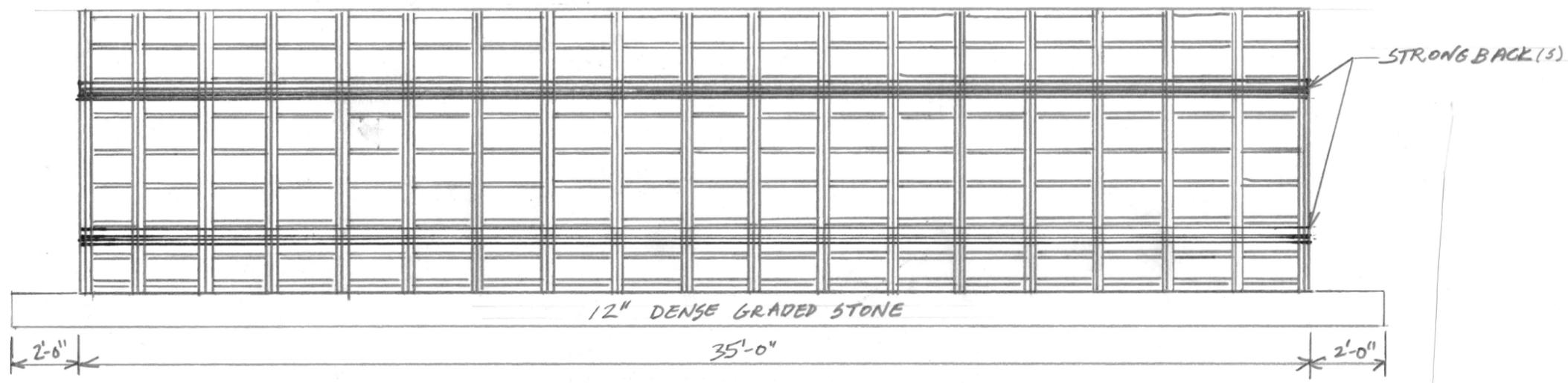
- Level 8' x 40' area and compact native soil to construct abutments. Add 12" of compacted, dense graded stone with a ± 1 " shim layer of sand above and compact to a finished level surface.
- Lay down $\frac{3}{4}$ " x 8' x 40' area of exterior plywood as a base to build abutments on. Attach 2"x6" plate to the $\frac{3}{4}$ " plywood floor to maintain the correct exterior dimensions at the base of the abutment vertical forms. 2"x6" plate shall be fastened to plywood floor with (2) rows 16d common nails @ 6" o.c. each row, or equivalent.
- The exterior forms are $\frac{3}{4}$ " exterior plywood with 2"x6" backers at 12" on center as shown on Page 9, Precast Form Details.
- (2)-2x6 walers @ 24" on center will be installed outboard of the 2"x6" backers on the form and be bolted thru to the wall ties inside the form to hold the assembly together.
- Strong backs will be installed approximately 18" and 6'-0" above the base. Strong backs to be made of (2)-2"x6" bolted to the walers to keep forms in alignment.
- 2x4 and 2x6 diagonal braces and kicker supports will be installed as required to hold the forms plumb.
- All rebar, pipes, lifting devices will be installed prior to building the second side of the form which will mirror the first side. The ends will be closed in last with $\frac{3}{4}$ " plywood and similar backer, waler, and strong back construction as the long sides. Chamfer strips will be installed as needed to grade.
- Placement and curing of concrete in abutment forms as described above will be in accordance with State of Vermont Standard Specifications for Construction 2011 Edition, Subsection 501.10. All concrete will be placed in daylight and not in any adverse weather conditions.
- 1" form tie breakback per 501.09(f) will be achieved using Dayton/Richmond B-3 Screw-On Coil Ties with Dayton/Richmond B-30 Screw-On Plastic Cones (see pages 10-11).
- Vertical and horizontal spacing of forms ties shall be 24" o.c. maximum. First (lowest) row of form ties shall be 9" above the plywood floor as shown on page 9.



ABUTMENT CONST. PAD SECTION
NO SCALE



TYPICAL FORM SECTION
 1/2" = 1'-0"

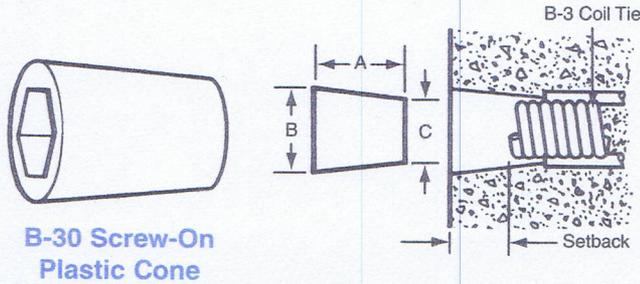


TYPICAL FORM ELEVATION
 1/4" = 1'-0"

BLOW & COTE, INC.	
CAMBRIDGE BRO 1448(39)	
PRECAST FORM DETAILS	
SCALE: AS SHOWN	Page 9 of 37
	2 FEB 15

B-30 Screw-On Plastic Cones

Dayton Richmond Screw-On Plastic Cones are designed to thread onto the protruding coil of a B-3 Screw-On Coil Tie. Use a B-15 Cone Removal Wrench to back the cone off the tie and out of the concrete. B-30 plastic cones are normally reusable.



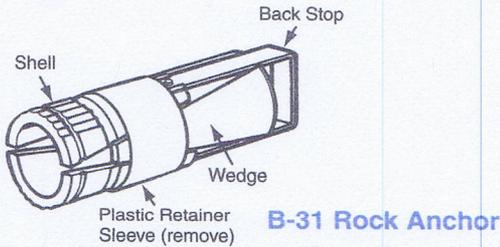
Bolt Dia.	Setback	A	B	C
1/2"	1"	1-3/8"	1-1/4"	1"
1/2"	1-1/2"	1-7/8"	1-1/4"	1"
1/2"	2"	2-3/8"	1-1/4"	1"
3/4"	1"	1-1/2"	1-5/8"	1-7/16"
3/4"	2"	2-1/2"	1-3/4"	1-7/16"
1"	2"	2-1/2"	2-1/8"	1-13/16"
1-1/4"	2"	2-1/2"	2-3/8"	2-1/8"

Warning: Cones are to be used for spreader action only and are not designed for scaffold bracket or other accessory loads.

B-31 Rock Anchor

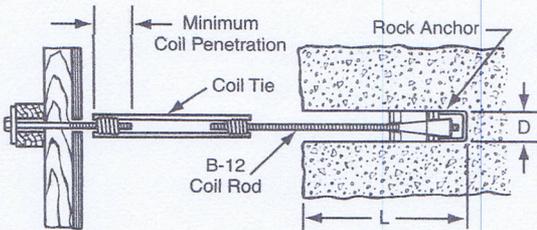
Dayton Richmond B-31 Rock Anchor is a preassembled unit tapped with 1/2", 3/4" or 1" diameter coil thread. NC thread is available on special order. Rock anchors used in sound rock or concrete allows one-sided forming of walls or similar applications to be completed quickly and economically.

The rock anchor is threaded onto the coil rod until the rod hits the backstop of the anchor. The plastic retaining sleeve is removed and the rock anchor/coil rod assembly is placed into the bore hole. The assembly is installed so that the anchor backstop "bottoms" in the bore hole. Tightening the coil rod will draw the anchor wedges forward to expand the anchor's shell. Care should be taken to not overtighten the anchor.



Coil Rod Diameter	Minimum Hole Depth "L" *	Required Hole Diameter "D"	Safe Working Load Tension (lbs.) **
1/2"	6"	1-3/8"	4,500
3/4"	8"	1-5/8"	9,000
1"	10"	1-3/4"	18,000

SWL provides a factor of safety of approximately 2 to 1.



***NOTE:** It is extremely important to drill the proper size bore hole for the appropriate rock anchor. Avoid "dog leg" or "rifled" holes, they will hinder anchor installation. It is also important to avoid letting the drill dwell at the bottom of the hole. This can cause an enlargement at the bottom of the hole and result in a loss of anchorage strength.

The bore hole for the rock anchor must be drilled perpendicular to the exposed bearing surface. The load carrying capacity of the rock anchor is greatly reduced when there is an angle between the nut on the coil rod and the bearing surface.

The B-31 Rock Anchor is not a reusable device. After the rock anchor has been set and the forming completed, do not attempt to reuse the rock anchor.

To Order:

Specify: (1) quantity, (2) name, (3) coil rod diameter.

Example:

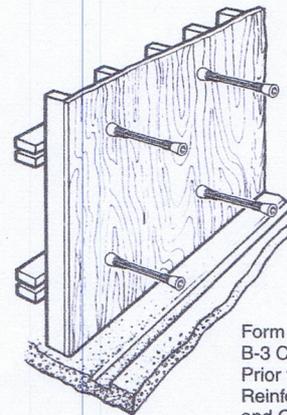
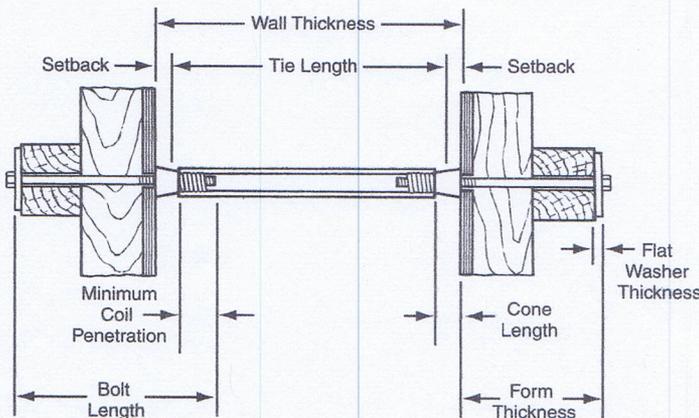
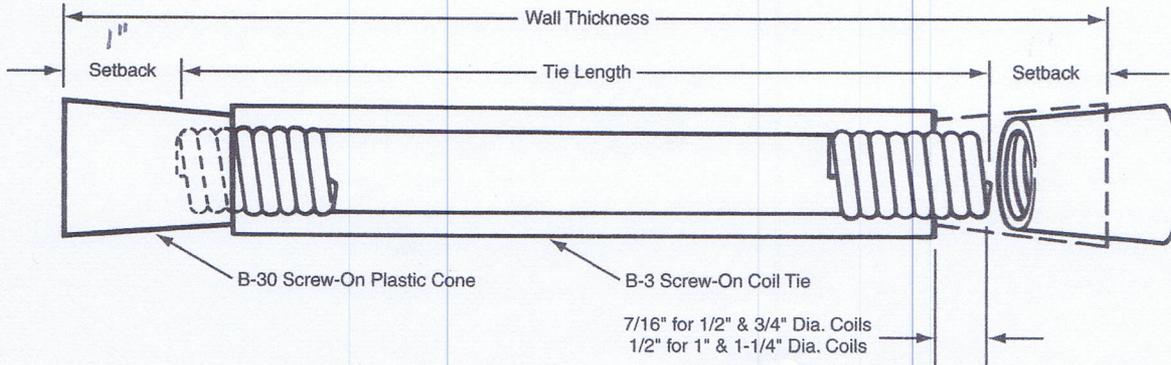
600 pcs. B-31 Rock Anchor, 1/2" coil thread.

****WARNING:** For safe construction practice, the most critical factor to consider is the actual anchorage capacity provided by the rock strata or concrete in which the rock anchor is to be installed. Correct hole depth and actual rock anchor capacity must always be determined by field tests before placing rock anchors into general use on a project.

B-3 Screw-On Coil Tie

Dayton Richmond Screw-On Coil Tie is designed with longer coils that extend beyond the end of the struts. Plastic cones screw onto the projections to provide a positive setback and act as a fixed internal form spreader.

To determine proper screw-on coil tie length, subtract the required total setback (both sides) from the wall thickness.



Form Panel Showing B-3 Coil Ties in Place Prior to Installation of Reinforcing Steel and Closure Form.

B-3 Screw-On Coil Tie Selection Chart			
Type	Bolt Diameter	Number of Strut Wires	Safe Working Load Tension (lbs.)
B-3 Standard	1/2"	2	4,500
B-3 Heavy	1/2"	2	6,750
B-3 Standard	3/4"	2	6,750
B-3 Heavy	3/4"	2	9,000
B-3 Standard	1"	2	13,500
B-3 Standard	1"	4	18,000
B-3 Standard	1-1/4"	4	27,000

To Order:
Specify: (1) quantity, (2) name, (3) safe working load, (4) bolt diameter, (5) tie length, (6) wall thickness, (7) setback.

Example:
1,500 pcs. B-3 Screw-On Coil Tie, 6,750 lbs. SWL, 1/2" diameter, 22 long for a 24" wall, 1" setback.

CHECK CAPACITY:
DETERMINE MAX TENSION PER TIE:
 $T = yh \times \text{horizontal spacing} \times \text{vertical spacing}$
 $T = 150 \text{ pcf} \times 5.67 \text{ ft} \times 2 \text{ ft} \times 2 \text{ ft}$
 $T = 3402 \text{ lbs} < 4500 \text{ lbs OK}$

SWL provides a factor of safety of approximately 2 to 1.
Warning: See Page 3.6 for minimum bolt length.

** SETBACKS ARE FILLED WITH A 3 PARTS SAND TO 1 PART CEMENT MIXTURE FROM ABUTMENT CONCRETE PRODUCER.*

PRE-POUR CHECKLIST

PRODUCT: _____ Job No. _____

Casting Date	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Form Condition							
Form Cleanliness							
Form Joints							
Release Agent/Retarder							
Design Length (ft/in)							
Set-Up Length (ft/in)							
Design Width (ft/in)							
Set-Up Width (ft/in)							
Design Depth (ft/in)							
Set-Up Depth (ft/in)							
Blockouts							
Squareness							
End and Edge Details							
Reinforcing Steel							
Size of Reinforcement							
Spacing							
Rustification							
Plates and Inserts							
Lifting Devices							
Top Finish (wet)							

REMARKS: _____

QC Supervisor _____ Date _____ Inspector _____

Post-Pour Inspections

A post-pour inspection checklist provides a systematic way to identify and communicate quality problems as they occur and to identify any trends. After stripping a tank from its form, inspect the tank for conformance with the fabrication drawings. Clearly label all products with the date of manufacturing and mark these in accordance with ASTM C1227, "Standard Specification for Precast Concrete Septic Tanks."

ABUTMENT

REFERENCE AN APPROPRIATE SPECIFICATION

POST-POUR CHECKLIST

PRODUCT: _____ Job No. _____

Casting Date: _____	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Inspection Date: _____							
Mark Number							
Stripping Strength							
Top Finish							
Bottom Finish							
Surface Texture							
As Cast Length (ft/in)							
As Cast Width (ft/in)							
As Cast Depth (ft/in)							
Cracks or Spalls							
Squareness							
Chamfers							
Honeycomb / Grout Leak							
Bowing							
Exposed Reinforcement							
Exposed Chairs							
Plates and Inserts							
Chamfer & Radius Quality							
Openings / Blockouts							
Lifting Devices							

REMARKS: _____

QC Supervisor _____ Date _____ Inspector _____

Calculate precast abutment weight:

→ Assume reinforced concrete wt = 150 lb/ft^3
↙ area of Abutment face (from CAD)

$$\rightarrow \text{Gross Volume} = 214.72 \text{ ft}^2 \times 3.5 \text{ ft} = 751.52 \text{ ft}^3$$

$$\rightarrow \text{Volume Voids @ Piles} = 4 (\pi \times (1 \text{ ft})^2) (5.5 \text{ ft}) = 69.12 \text{ ft}^3$$

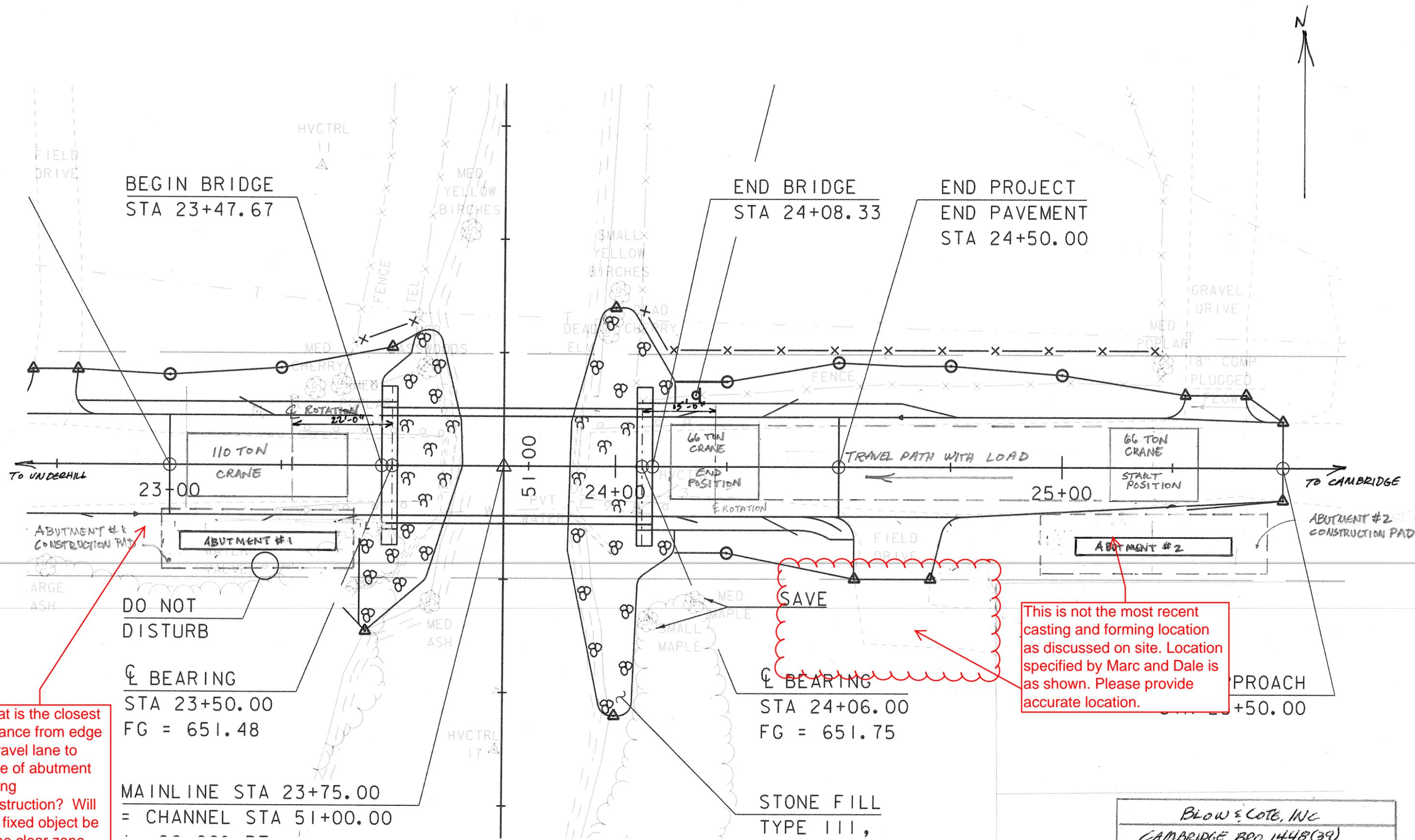
$$\begin{aligned} \rightarrow \text{Net Volume} &= 751.52 \text{ ft}^3 - 69.12 \text{ ft}^3 \\ &= 682.4 \text{ ft}^3 \end{aligned}$$

$$\rightarrow \text{Net Weight} = 682.4 \text{ ft}^3 \times 150 \text{ lb/ft}^3$$

$$= 102360.7 \text{ lbs}$$

$$W = 51.2 \text{ tons}$$

$$W = 51.2 \text{ tons} \times \frac{2000 \text{ lbs}}{\text{ton}} = 102,400 \text{ lbs}$$



What is the closest distance from edge of travel lane to edge of abutment during construction? Will this fixed object be in the clear zone and require protection?

This is not the most recent casting and forming location as discussed on site. Location specified by Marc and Dale is as shown. Please provide accurate location.

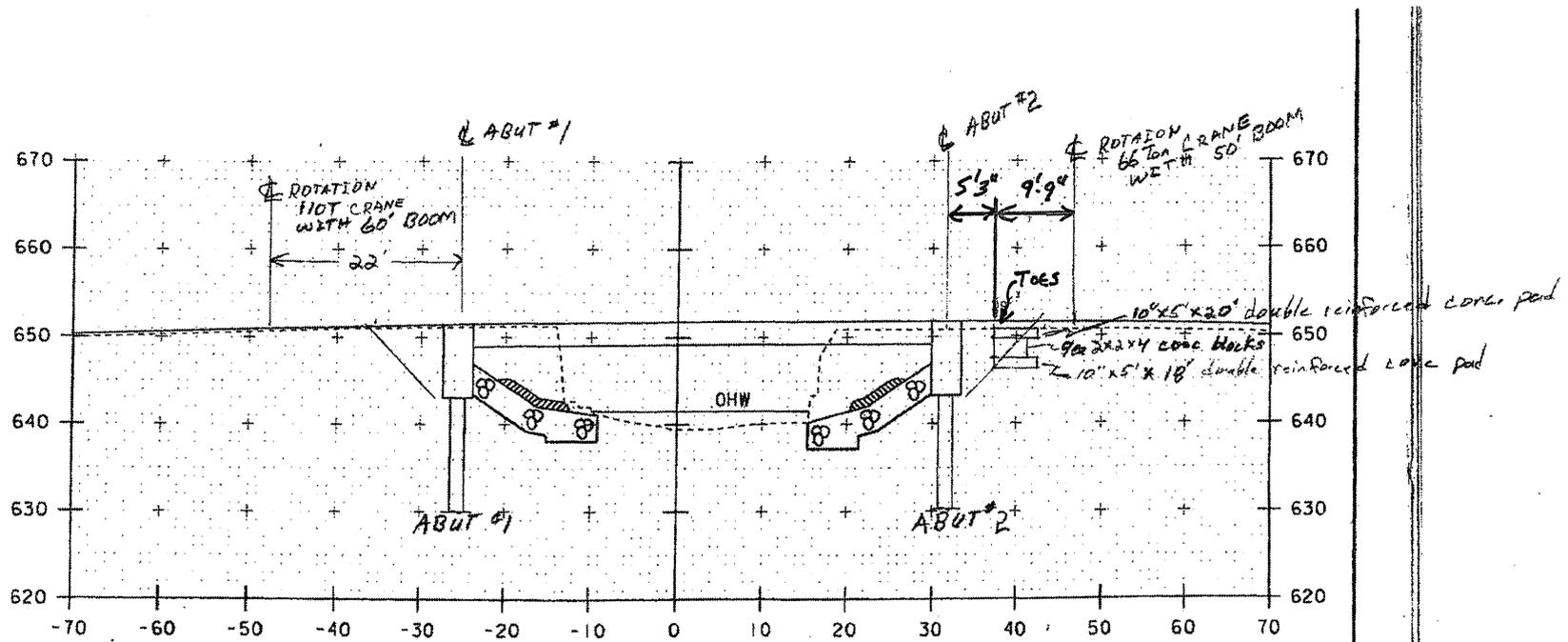
DO NOT DISTURB
 CL BEARING
 STA 23+50.00
 FG = 651.48

CL BEARING
 STA 24+06.00
 FG = 651.75

MAINLINE STA 23+75.00
 = CHANNEL STA 51+00.00

STONE FILL
 TYPE III,

BLOW & COTE, INC
 CAMBRIDGE BRD 1448(39)
 ABUTMENT 1 & 2 LIFT
 PLAN VIEW



51+00

OVERALL ABUTMENT LIFT ELEVATION

PROJECT NAME:	CAMBRIDGE
PROJECT NUMBER:	BRO 1448(39)

BLOW & COTE, INC.
 815 VT RTE 15E
 MORRISVILLE, VT 05661

Abutment #1 Lifting Equipment and Sequence:

110T Truck Crane with 60' of boom, 22' lift radius and 7/8" Lift Cable rigged with 8 Part Line and rigged as follows:

Qty	Rigging Item	Weight Each (lbs)	Weight Total (lbs)	Working Load Capacity (Each, lbs)	Required Load (Each, lbs)	Check**
1	6 Sheave 110 ton hook block	3,500	3,500	220,000	103,956	OK
2	14' 36 ton 2" cable sling	225	450	126,000*	103,506	OK
2	30 ton 1 3/4" lifting shackle	30	60	60,000	51,723	OK
2	HCLW 44 ton Tilt-Up block	320	640	88,000	51,403	OK
2	24' 42 ton 1 1/2" cable sling	155	310	84,000	51,248	OK
4	17 ton lifting shackle	16	64	34,000	25,600	OK
4	WRA 160 Wire Rope Anchor	8	32	35,950	25,600	OK

* total capacity for 2-leg bridle 60 degree sling

**check that Required Load < Working Load Capacity

1. Crane will be set up with centerline of machine within 22' of Abutment #1.
2. Crane to lift Abutment #1 and swing 90 degrees to position Abutment #1 over rear of crane and lower it into position over piles #1-#4.
3. Crane will be moved away from the construction area.

Abutment #2 Lifting Equipment and Sequence:

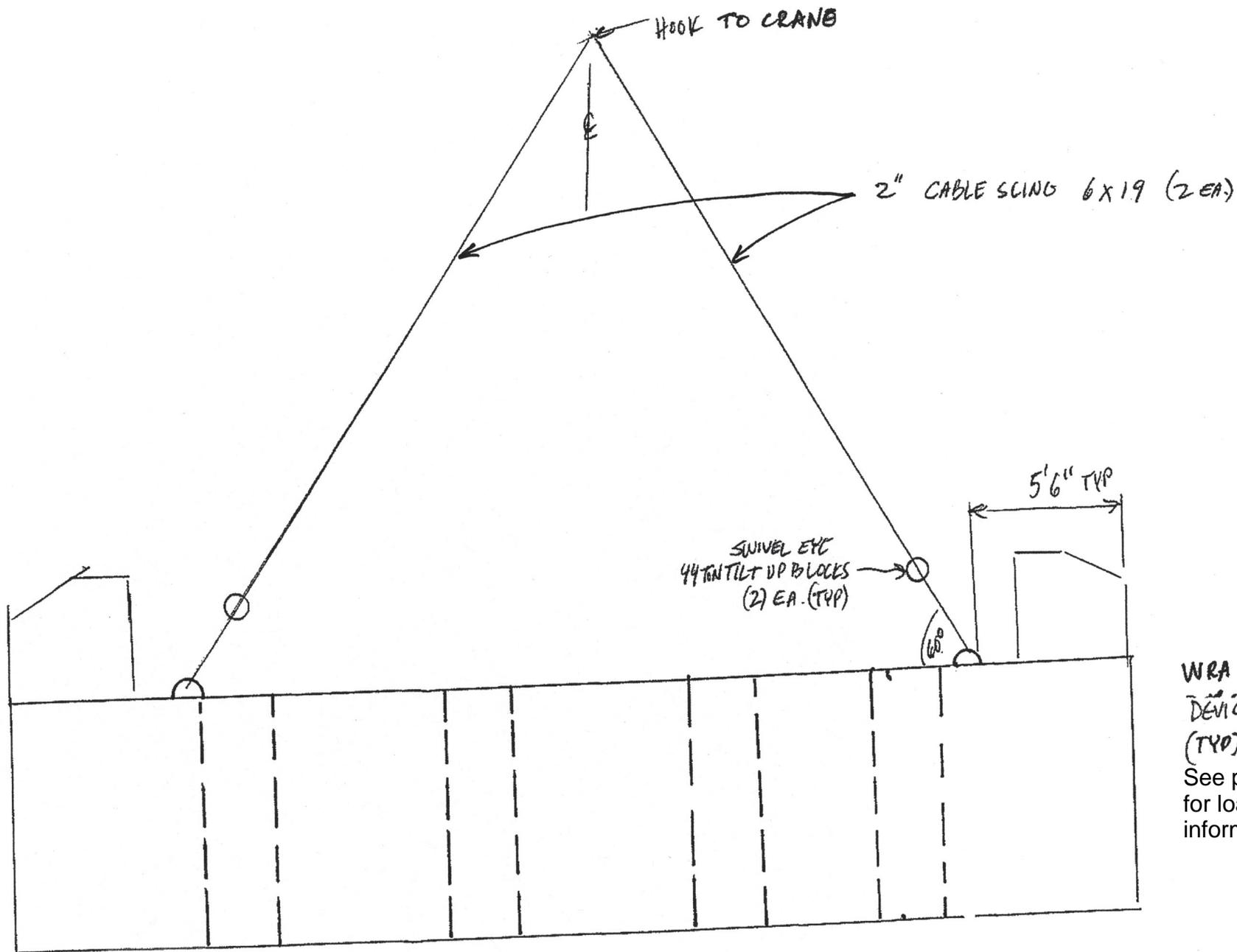
66 Ton Sumitomo LS 120 RHDS Crane with 50' of boom, 15' lift radius and 1" Lift Cable rigged with 6 Part Line and rigged as follows:

Qty	Rigging Item	Weight Each (lbs)	Weight Total (lbs)	Working Load Capacity (Each, lbs)	Required Load (Each, lbs)	Check**
1	3 Sheave 60 ton hook block	3,500	3,500	120,000	103,956	OK
2	14' 36 ton 2" cable sling	225	450	126,000*	103,506	OK
2	30 ton 1 3/4" lifting shackle	30	60	60,000	51,723	OK
2	HCLW 44 ton Tilt-Up block	320	640	88,000	51,403	OK
2	24' 42 ton 1 1/2" cable sling	155	310	84,000	51,248	OK
4	17 ton lifting shackle	16	64	34,000	25,600	OK
4	WRA 160 Wire Rope Anchor	8	32	35,950	25,600	OK

* total capacity for 2-leg bridle 60 degree sling

**check that Required Load < Working Load Capacity

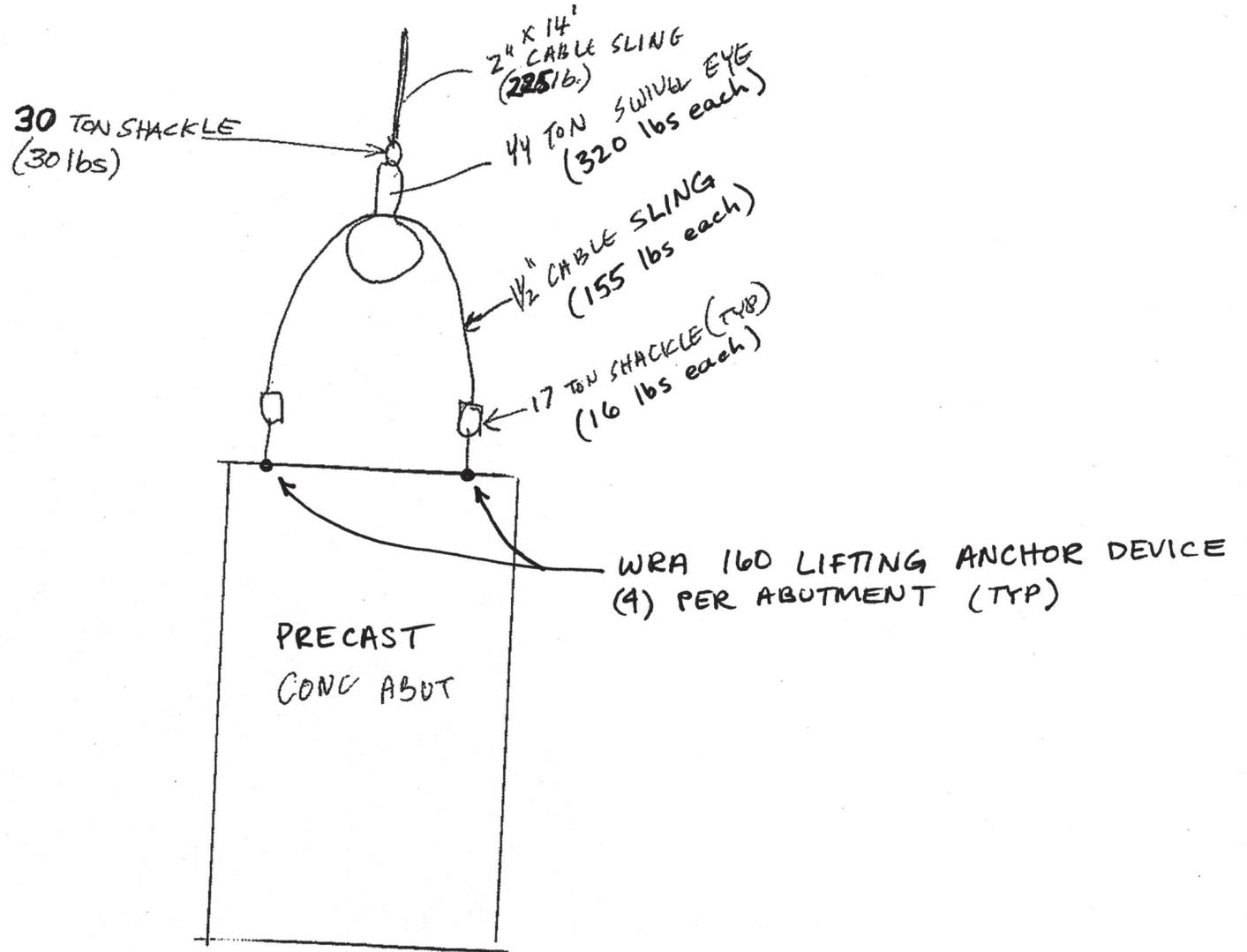
1. Crane will be positioned and leveled on pad built behind Abutment #2 with centerline of machine within 15' of Abutment #2.
2. Crane to lift Abutment #2 and swing 90 degrees.
3. Crane to travel forward towards Abutment #2 final location with precast abutment positioned over the "toes" of the crawler and suspended 1' above ground.
4. Once the crane has reached position on the concrete pads the precast abutment will be lowered into position over piles #5-#8.
5. Crane will be moved away from the construction area.



WRA 160 LIFTING
 DEVICE (4) PER ABUTMENT
 (TYP)
 See page 17, 35 and 36
 for load capacity
 information and check.

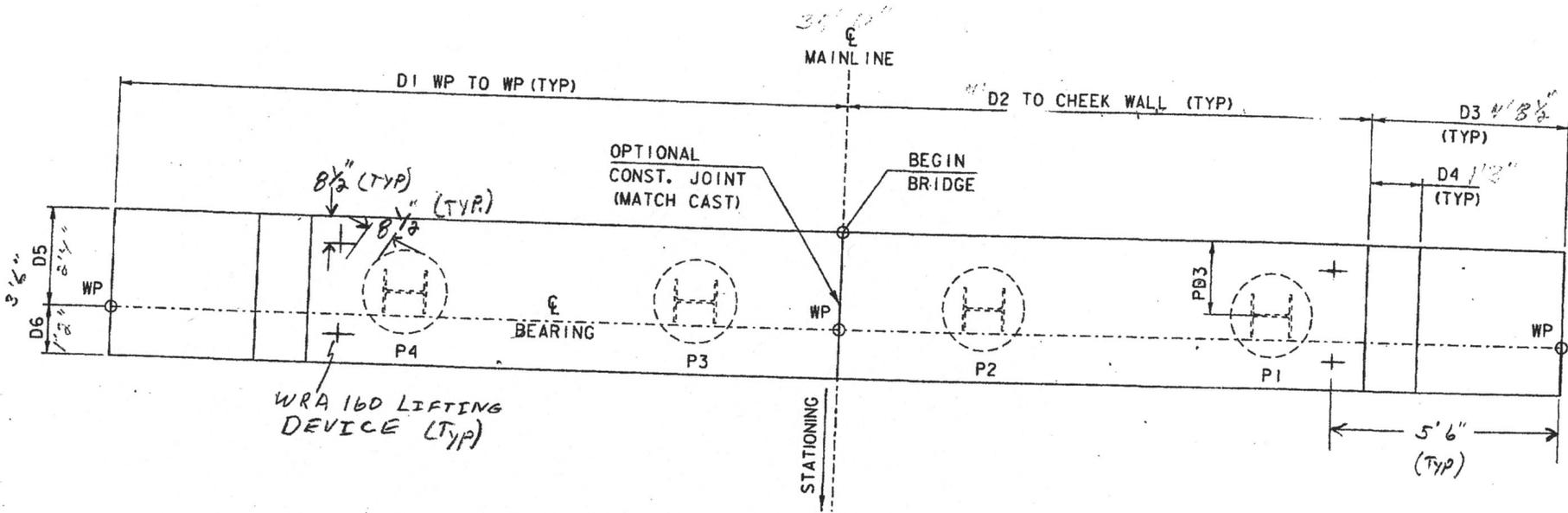
TYPICAL ABUTMENT LIFT DIAGRAM - SIDE VIEW

NO SCALE:



TYPICAL ABUTMENT LIFT DIAGRAM - END VIEW

Not to Scale



ABUTMENT WIRE ROPE LIFTING POINTS PLAN

SCALE 1/2" = 1'-0

BLOW & COTE, INC.
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 MORRISVILLE, VT 05661

CAMBRIDGE
 BRD 144B (39)

Abutment Lift Shear and Moment Diagrams (RISA output)

Member: **ABUTMENT**

Shape:

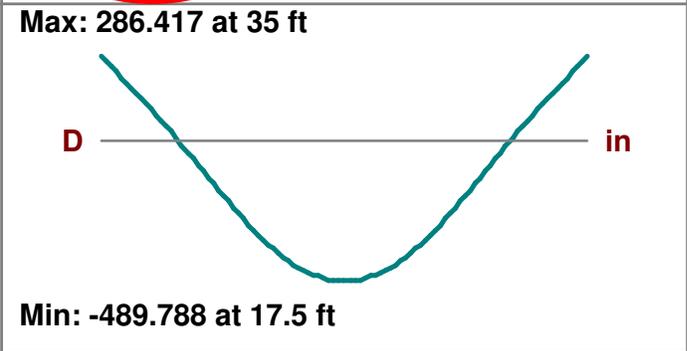
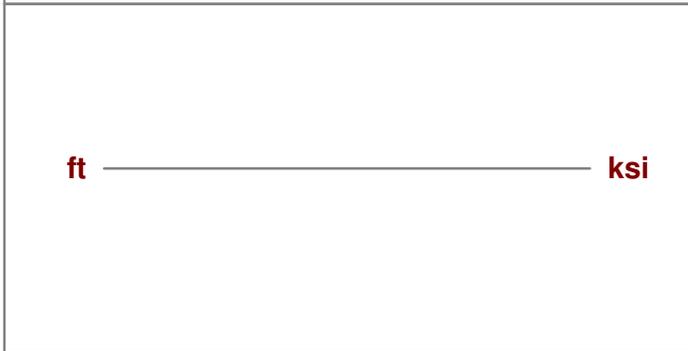
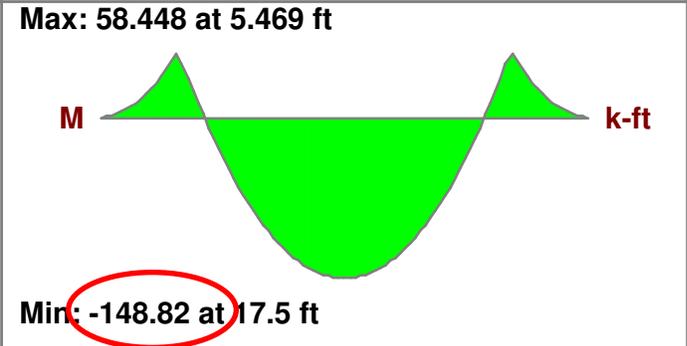
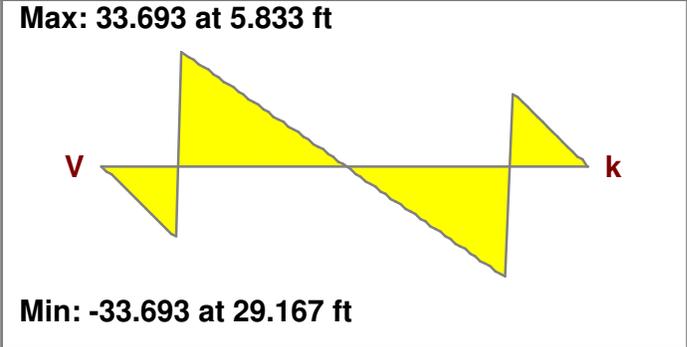
Length: **35 ft**

I Joint: **N1**

J Joint: **N4**

LC 1: **dead weight**

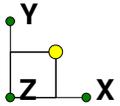
Max Code Check: **No Calc**



AISC ASD 9th Ed. Code Check

- **Steel code check not calculated** -

Max Defl Ratio **L/1**

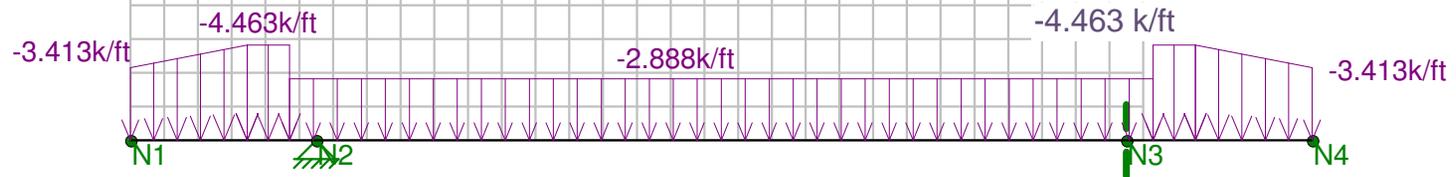


dead weight calculations:

$$6.5 \text{ ft} \times 3.5 \text{ ft} \times 150 \text{ pcf} = 3413 \text{ lb/ft}$$

$$8.5 \text{ ft} \times 3.5 \text{ ft} \times 150 \text{ pcf} = 4463 \text{ lb/ft}$$

$$5.5 \text{ ft} \times 3.5 \text{ ft} \times 150 \text{ pcf} = 2888 \text{ lb/ft}$$



Loads: BLC 1,
Results for LC 1, dead weight

Thayer R. Fellows

Kristin McCusker

ABUTMENT DEAD WEIGHT LOADING DIAGRAM

May 19, 2015

11:01 AM

Cambridge Abutments.r2d

Abutment Strength Check Calculations

T.R. Fellows Engineering - Reinforced Concrete Simple Beam Design

Reference: Reinforced Concrete Design, 2nd Edition, by Kenneth Leet

INPUT	value	units	description
fy	60000	psi	reinforcing steel yield stress
f'c	3000	psi	concrete compressive stress
d	58.0	in	effective depth to center of reinforcing bar(s)
M service	148820	lb-ft	applied bending moment due to service loads

conservative assumption
see note below regarding estimation of effective depth
see RISA analysis output, page 21

OUTPUT	value	units	description
M factored	208348	lb-ft	service load moment x 1.4 dead load factor
β	0.85	unitless	coefficient
ρ_b	0.02138	unitless	balanced reinforcing ratio
3/4 ρ_b	0.01604	unitless	3/4 balanced reinforcing ratio
ρ_{min}	0.00333	unitless	minimum einforcing ratio
ρ_{design}	0.00117	unitless	user input value (between ρ_{min} and 3/4 ρ_b)
a	1.59671	in	depth of compression stress block
au	4.44	unitless	coefficient
$\Phi M_n = M_u$	209612	lb-ft	required flexural strength, $\Phi=0.9$
$\Phi M_n = M_u$	209612	lb-ft	required flexural strength, $\Phi=0.9$, alternate calculation
As	0.81	sq in	area of reinforcing steel required

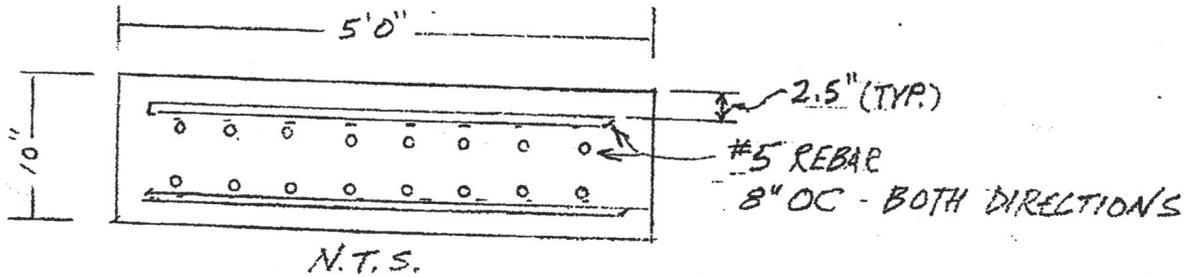
Leet reference page

see Leet pg 90, eqn 3.32
see Leet pg 98, eqn 3.47
see Leet pg 98, eqn 3.49
see Leet pg 95, eqn 3.43

see Leet pg 90, eqn 3.35 with ρ_{design}
see Leet pg 108, Table 3.4 with ρ_{design}
see Leet pg 100, eqn. 3.52 with ρ_{design}
see Leet pg 100, eqn. 3.56 with ρ_{design}
see Leet pg 108, Table 3.4 with $M_u @ \rho_{design}$

ONLY THE REQUIRED FLEXURAL STRENGTH REQUIRED IS STATED HERE. THE CAPACITY OF THE SECTION IS NOT STATED, AND IF THE COMPUTATIONS WERE TAKEN AT THE REDUCED SECTION (PILE CAVITY). THE PURPOSE OF THESE CALCULATIONS IS TO DETERMINE IF THE UNIT WILL BE DAMANGED DURING TRANSPORT / ERECTION. PLEASE PROVIDE APPLICABLE CALCULATIONS.

Lift will be done within limits of lift chart capacities with 50' of main boom, no jib. Two concrete distribution pads to be placed on existing surface to distribute load. Each pad is 5' wide X 18' long and 10" thick.



They will be placed perpendicular to the crane crawler tracks.

TYP. CONCRETE LOAD DISTRIBUTION PAD
Section & Notes

CONCRETE

BLOW & COTE, INC.
815 VT Rte 15E
MORRISVILLE, VT 05661
CAMBRIDGE
BRD 1448 (39)

T.R. FELLOWS ENGINEERING

134 County Road
Walpole, NH 03608
PO Box 56
Rochester, VT 05767

REGISTERED PROFESSIONAL ENGINEERS
CIVIL – STRUCTURAL

603.756.4811
trifel@myfairpoint.net
802.318.7853
krocket@mapleridgevt.com

Lifting Analysis for Bucyrus-Erie 110T Truck Crane:

According to page 14 of this submittal, the total weight of each abutment is 51.2 tons (102,400 lbs). Assuming balanced loading, the maximum load to be carried by the Bucyrus-Erie 110T Truck Crane is the sum of the following: the total weight of the abutment (102,400 lbs), one 6-sheave 110-ton hook block (3,500 lbs), (2) 36-ton 2” cable slings (450 lbs), (2) 30-ton 1-3/4” shackles (60 lbs), (2) HCLW 44 ton Tilt-Up blocks (640 lbs), (2) 24’ 42 ton 1-1/2” cable slings (310 lbs), (4) 17-ton shackles (64 lbs) and (4) WRA 160 Wire Rope Anchors (32 lbs). The maximum load to be carried by the crane is therefore:

$$102,400 \text{ lbs} + 3,500 \text{ lbs} + 640 \text{ lbs} + 310 \text{ lbs} + 450 \text{ lbs} + 60 \text{ lbs} + 64 \text{ lbs} + 32 \text{ lbs} = 107,500 \text{ lbs}$$

Unbalanced loading is not an issue in this lifting situation when checking the crane lift capacity because each abutment is lifted by only one crane. Each abutment will be picked in accordance with the Abutment 1 & 2 Lift Plan View (see page 15), the Overall Abutment Lift Elevation (see page 16), the Abutment Lift Equipment and Sequence Descriptions (see page 17), the Typical Abutment Lift Diagram – Side View (see page 18), the Typical Abutment Lift Diagram – End View (see page 19), and the Abutment Wire Rope Lifting Point Plan (see page 20).

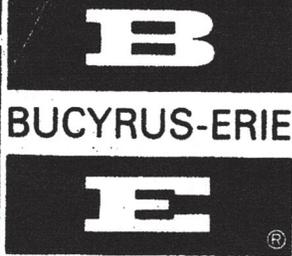
According to the attached lifting chart for the Bucyrus-Erie 110T Truck Crane (see page 27), with a 60 ft boom length, when the crane is positioned with maximum radius of load equal to 22 ft from centerline of machine, the lift capacity of the crane is 135,600 lbs. This safely exceeds the required capacity of 107,500 lbs. The outriggers must be set to achieve the required capacities.

During the lift, the crane will be supported on the (4) outriggers which will each bear on a 5’ x 5’ x 2” steel plate to distribute the outrigger load on the ground surface. The approximate uniform ground pressure exerted under the steel plates by the crane when loaded is as follows:

$$(107,500 \text{ lbs} + 135,800 \text{ lbs}) / (4 \times 5 \text{ ft} \times 5 \text{ ft}) = 2,433 \text{ psf}$$

2,433 psf is less than the allowable soil bearing pressure of 3,000 psf.

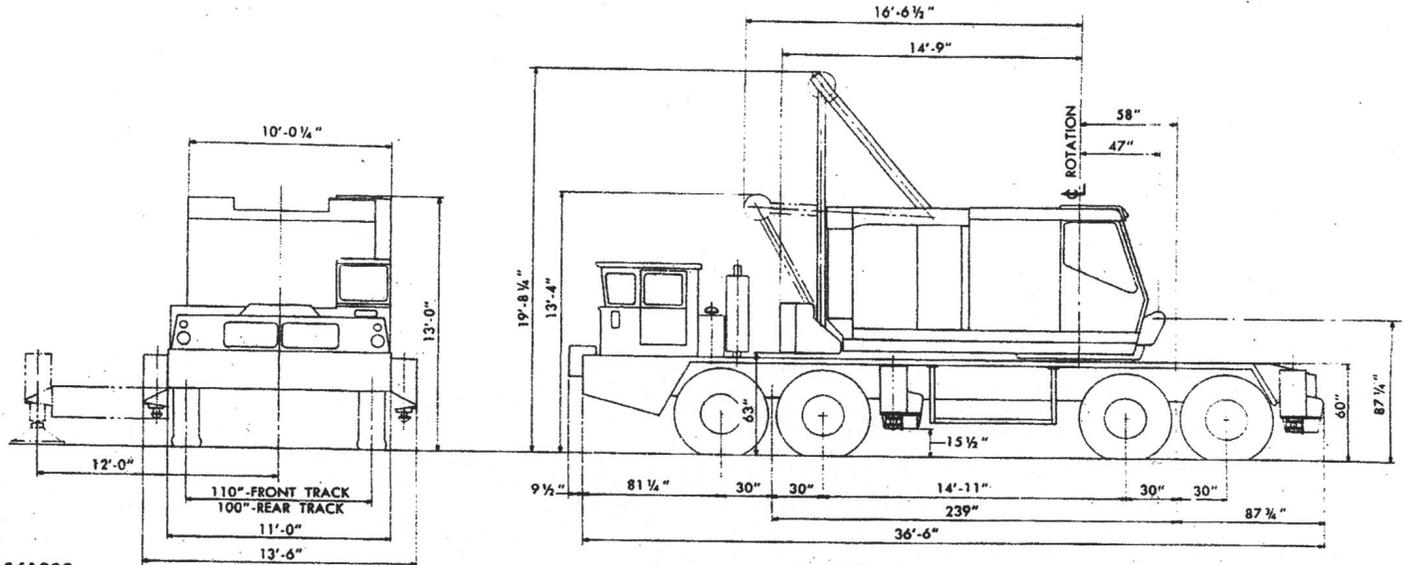
Care shall be taken to ensure that the crane is positioned on a firm, level, and uniform supporting surface per manufacturer’s recommendations.



110-T

110 TON TRUCK CRANE SPECIFICATIONS

☒ rotation to rear of CRANE 12' 2"



861099

CRANE

Front Shaft:
 Main hoist drum, smooth16 1/2 in. Pitch Diameter
 Hoist rope 3/4 in. or 7/8 in. Diameter
 Auxiliary hoist rope 3/4 in. or 7/8 in. Diameter
 Auxiliary hoist drum, smooth16 1/2 in. Pitch Diameter

Rear Shaft:
 Boom hoist drum, smooth15 in. Pitch Diameter
 Boom hoist rope 3/4 in. Diameter
 Third drum, smooth12 in. Pitch Diameter
 Third drum rope 5/8 in. Diameter

Boom point sheaves (6)18 in. Pitch Diameter
 7/8 in. diameter rope required for loads over 200,000 pounds.

LINE PULLS AND SPEEDS

Drum Pitch Diameter	1-Part Line		2-Part Line	
	Pull in Pounds	Speed (Feet/Minute)	Pull in Pounds	Speed (Feet/Minute)
16 1/2 in.	21,100	157	41,600	78.5

Swing Speed:
 Standard 2.25 revolutions/minute
 Micro-Swing 0.65 revolutions/minute

Speeds and line pulls based on engine with torque converter drive operating at full load speed of the output shaft. When torque converter is operating at full stall, line pulls are approximately 220 per cent of those shown in table.

WEIGHTS IN POUNDS

	Crane 40 Ft. Boom
Net weight domestic, approx.	130,150
Working weight, approx.	<u>135,800</u>
Export shipping weight, approx.	135,450
Ship option tons	139

Hook block included in working weight and export shipping weight for lifting crane, but not in domestic net weight.

POWER SPECIFICATIONS

Make - Model Type	Cummins N-855P Diesel
Type of drive	Torque Converter
Cylinders	6
Bore x stroke, inches	5 1/2 x 6
Displacement, cubic inches	855
H.P. net @ full load speed	149
Full load speed (R.P.M.)	2,000
Fuel tank capacity, gallons	75
Starting	Elec. - 12 volt
Altitude range, feet	0-9,000

BLOW & GOTE, INC.

815 VT Rte 15E
 MORRISVILLE, VT 05661

CAMBRIDGE
 RRD 1448(39)

110 TON TRUCK CRANE

MAXIMUM ALLOWABLE LOADS IN POUNDS — CRANE SERVICE

Boom Length In Feet	Radius In Feet	Boom Angle In Degrees	Boom Point Pin Height (Ft. -In.)	Outriggers Set Over Side or Rear	Without Outriggers On Tires		Boom Length In Feet	Radius In Feet	Boom Angle In Degrees	Boom Point Pin Height (Ft. -In.)	Outriggers Set Over Side or Rear	
					Over Side	Over Rear						
40	12	78	46-6	*220,000	96,900	139,700	150	35	78	154-0	65,600	
	16	74	45-9	*185,000	68,600	97,400		40	76	152-9	52,800	
	20	66	44-0	*149,000	45,900	64,600		50	72	150-0	37,200	
	25	58	41-3	118,900	34,100	47,900		60	68	146-6	28,200	
	30	49	37-6	86,700	26,900	37,800		70	64	142-0	22,200	
	35	39	22-6	67,900	22,100	31,100		80	60	136-6	18,000	
60	15	79	86-3	*180,000	67,900	97,000		90	55	130-0	14,900	
	20	74	85-0	*147,000	45,200	63,900		100	50	122-6	12,500	
	25	69	83-6	118,500	33,400	47,200		110	45	113-3	10,600	
	30	64	81-3	86,200	26,200	37,100		120	39	102-3	9,050	
	35	59	68-6	67,400	21,400	30,300		130	33	88-6	7,750	
	40	53	55-3	54,700	17,900	25,500		160	35	80	164-3	65,300
50	40	45-9	39,400	13,200	19,100	40			77	163-3	52,600	
80	20	78	96-9	*145,000	44,600	63,300	50		73	160-6	37,000	
	25	75	84-6	118,200	32,800	46,600	60		69	157-0	27,900	
	30	71	83-0	85,900	25,600	36,500	70		66	153-0	22,000	
	35	67	81-0	67,000	20,800	29,700	80		62	148-0	17,700	
	40	63	78-9	54,300	17,300	24,900	90		57	142-3	14,600	
	50	55	72-9	38,900	12,600	18,500	100		53	135-3	12,200	
90	60	45	64-2	29,900	9,550	14,300	110		48	127-0	10,300	
	70	34	52-3	24,000	7,550	11,500	120		43	117-6	8,750	
	20	80	96-9	*143,000	44,300	63,100	130		38	105-9	7,450	
	25	76	94-9	*117,200	32,500	46,300	170		40	78	173-6	52,400
	30	73	93-6	85,700	25,300	36,200			50	74	171-0	36,800
	40	66	89-9	54,100	17,000	24,600		60	71	167-9	27,700	
50	59	84-6	38,600	12,300	18,200	70		67	164-0	21,700		
60	51	77-9	29,600	9,250	14,100	80		63	159-3	17,500		
70	43	68-3	23,800	7,200	11,200	90		60	153-9	14,400		
100	80	32	56-3	19,600	5,650	9,150		100	56	147-6	11,900	
	25	78	105-0	*116,000	32,200	46,100		110	51	140-0	10,000	
	30	75	103-9	85,500	25,000	36,000		120	47	131-6	8,450	
	40	69	100-6	53,900	16,700	24,400		130	42	121-3	7,150	
	50	63	98-0	38,400	10,600	17,900		180	40	78	183-6	52,200
	60	56	90-0	29,400	7,950	13,800			50	75	180-3	36,500
70	49	82-3	23,500	6,100	11,000	60			72	178-3	27,400	
80	41	72-3	19,400	4,650	8,900	70	68		174-9	21,500		
90	31	56-3	16,300	3,700	7,300	80	65		170-6	17,200		
25	80	115-3	*115,000	31,900	45,700	90	61		165-3	14,100		
30	76	114-3	85,300	24,700	35,600	100	58		159-6	11,700		
40	71	111-3	53,600	16,400	24,000	110	54		152-6	9,800		
50	65	107-3	38,200	11,700	17,600	120	50		144-9	8,200		
60	59	102-0	29,100	8,650	13,500	130	46		136-9	6,900		
70	53	96-3	23,200	6,550	10,600	140	41		125-0	5,900		
80	46	86-9	19,100	5,000	8,550	190	40		79	193-9	51,900	
90	39	75-9	16,000	3,850	6,950		50		76	191-6	36,300	
100	29	60-9	13,600	2,900	5,650		60	73	188-9	27,100		
25	80	125-6	*114,000	31,600	45,500		70	70	185-6	21,200		
30	77	124-6	85,100	24,400	35,400		80	66	181-3	16,900		
40	73	121-9	53,400	16,100	23,800		90	63	176-9	13,800		
50	67	118-9	38,000	11,400	17,300		100	60	171-3	11,400		
60	62	113-3	28,900	8,400	13,200		110	56	165-0	9,450		
70	57	107-6	23,000	6,300	10,300		120	52	157-9	7,900		
80	51	100-0	18,800	4,750	8,300		130	48	149-6	6,600		
90	44	90-9	15,700	3,600	6,650		140	44	139-9	5,500		
100	37	79-3	13,300	2,650	5,400		200	50	77	201-9	36,100	
110	28	63-3	11,400	1,900	4,400			60	74	199-3	26,900	
30	78	134-6	84,900	24,100	35,100	70		71	196-0	20,900		
40	74	132-3	53,200	15,800	23,500	80		68	192-3	16,700		
50	69	128-9	37,700	11,100	17,000	90		65	187-9	13,600		
60	64	124-6	28,700	8,100	12,900	100		61	182-9	11,100		
70	59	119-3	22,800	6,000	10,000	110		58	176-9	9,250		
80	54	112-6	18,600	4,450	8,000	120		55	170-3	7,650		
90	49	104-0	15,500	3,300	6,400	130		51	162-6	6,350		
100	42	94-9	13,000	2,350	5,100	140		47	153-9	5,250		
110	35	82-6	11,100	1,600	4,100	210		50	77	212-3	35,800	
120	27	65-9	9,600	950	3,250			60	75	209-9	26,700	
30	79	144-9	84,700	23,900	34,800			70	72	206-6	20,700	
40	75	142-6	53,000	15,500	23,200		80	69	203-0	16,500		
50	71	139-6	37,500	10,800	16,800		90	66	198-9	13,300		
60	66	135-6	28,500	7,850	12,700		100	63	194-0	10,900		
70	62	130-9	22,500	5,750	9,800		110	60	188-6	8,950		
80	57	124-9	18,300	4,200	7,700		120	56	182-3	7,400		
90	52	117-9	15,200	3,000	6,100		130	53	175-3	6,050		
100	47	108-0	12,800	2,100	4,850		140	50	167-3	4,950		
110	41	98-9	10,900	1,350	3,850		220	50	78	222-3	35,600	
120	34	85-6	9,350	—	3,000			60	75	220-0	26,500	
130	26	68-3	8,050	—	2,250			70	73	217-0	20,500	
25	80	125-6	*114,000	31,600	45,500	80		70	213-9	16,200		
30	77	124-6	85,100	24,400	35,400	90		67	209-9	13,100		
40	73	121-9	53,400	16,100	23,800	100		64	206-3	10,600		
50	67	118-9	38,000	11,400	17,300	110		61	200-0	8,700		
60	62	113-3	28,900	8,400	13,200	120		58	194-3	7,150		
70	57	107-6	23,000	6,300	10,300	130		55	187-6	6,350		
80	51	100-0	18,800	4,750	8,300	140		52	180-3	4,700		
90	44	90-9	15,700	3,600	6,650	150		48	171-9	3,800		
100	37	79-3	13,300	2,650	5,400	160		45	162-3	2,950		
110	28	63-3	11,400	1,900	4,400							

The above ratings apply to machines that are level and standing on hard, level uniform supporting surfaces. Loads must be freely suspended. The radii specified are loaded radii. Ratings include blocks, hooks, slings or other equipment used in handling loads. Proper care must be exercised by the operator at all times to avoid shock or side loadings on the boom. Ratings apply only to machines having booms in first class condition built and recommended by Bucyrus-Erie Company.

†Entire machine supported on both outriggers with rear tires clear of ground.
*Indicates that maximum allowable load is limited by factors other than tipping.

INTERPOLATE: @ 22' RADIUS
 = 118500 lbs + 3/5 (147000 - 118500)
 = 135,600 LBS

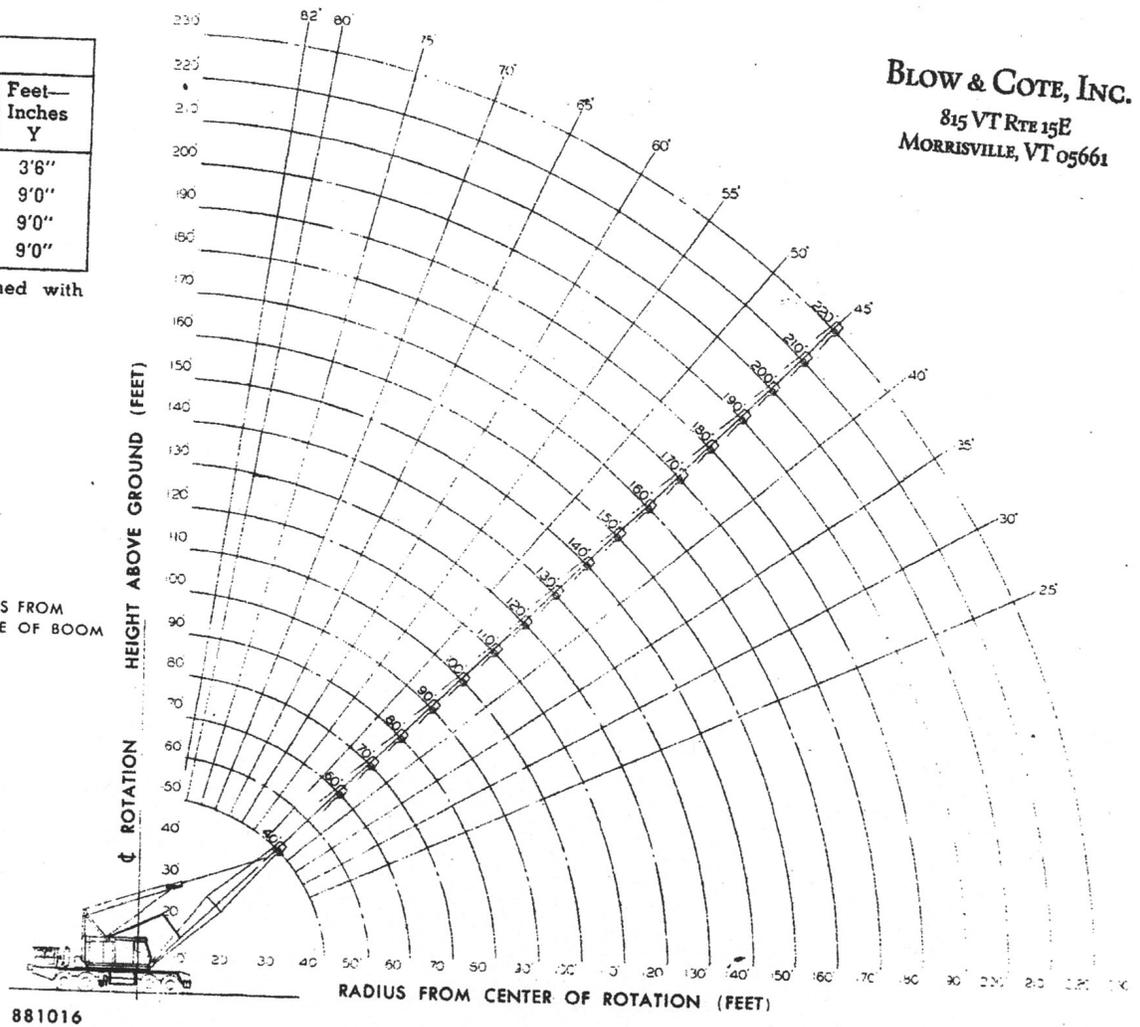
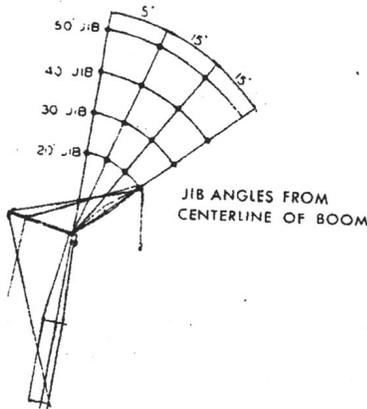
BLOW & COTE, INC.
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CAMBRIDGE
 BRD 1448 (39)

110 TON TRUCK CRANE

HOOK BLOCKS		
Capacity	No. Parts	Feet—Inches Y
8½ Ton	1	3'6"
25 Ton	2	9'0"
60 Ton	6	9'0"
110 Ton	12	9'0"

"Y" dimension determined with boom at 82°.



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881016

CRANE SERVICE

Loads shown in table are for general crane service with the machine on firm, level ground, with tire pressures not less than 105 psi. For prolonged highway travel, reduce this pressure to 95 psi. Suspension—14 part tackle with pendants. Intermediate suspension is required on booms 170' and longer. Maximum boom angle is 82°.

RECOMMENDED HOIST TACKLE

Loads Over	16,500	33,000	50,000	67,000	84,000	100,000
Part of Line	2	3	4	5	6	7
		117,000	134,000	151,000	168,000	184,000
		8	9	10	11	12*

*For loads over 200,000 lbs. use 7/8" hoist cable. Deduct weight of hook blocks, hooks and slings from listed loads.

JIBS

Use jibs for lifting crane service only. Allowable loads on main boom sheaves, with jib attached, must be reduced as follows:
 20 ft. jib.....1900 lbs. 40 ft. jib.....2500 lbs.
 30 ft. jib.....2100 lbs. 50 ft. jib.....3000 lbs.
 Maximum length of boom to which a jib may be attached is 200 feet.
 Maximum allowable jib loads are as follows:

Jib Offset* in Degrees	Jib Length			
	20-ft.	30-ft.	40-ft.	50-ft.
0	20,000	17,000	13,000	10,000
15	20,000	17,000	13,000	10,000
30	15,000	12,000	9,000	6,000
45	10,000	7,000	4,000	—

*Maximum offset (angular) from centerline of boom to centerline of jib.

The allowable load over the jib sheave, at any radius from the centerline of rotation of the machine, is the same load that may be lifted over the boom point sheave (without jib) with boom lowered to that radius, but not to exceed the loads in the jib table. For jib loads over 16,500 lbs., use 2-part line.

GENERAL

Maximum boom or boom-jib combinations that can be lifted off the ground unassisted are:

	With Outriggers		
	With Bumper Cwt.	Without Bumper Cwt.	Without Outriggers
Boom Over Side	210 ft.	200 ft.	130 ft.
Over Rear	220 ft.	210 ft.	140 ft.
Boom-Jib Over Side	190 ft. + 30 ft.	170 ft. + 50 ft.	100 ft. + 50 ft.
Over Rear	200 ft. + 50 ft.	180 ft. + 40 ft.	120 ft. + 50 ft.

The maximum boom-jib combination that can be lifted off the ground unassisted over the rear of the carrier with outriggers set and with a front bumper counterweight is 200' + 50'.

Maximum boom or boom-jib combination that can be carried in a lowered position and with A-frame in the lowered position is 110 ft. or 90 ft. plus a 30 ft. jib. With boom-jib combination in a horizontal position, clearance height over the jib mast is 17' 2".

MACHINE EQUIPMENT

Alloy steel tubular "Trigon" boom, 15,600 lbs. outside counterweight, 31" high and 27½" wide, distance between center of jacks with outriggers fully extended is 24' 0", 9,500 lb. front bumper counterweight is used for erection purposes only. Remove bumper counterweight when traveling.

T.R. FELLOWS ENGINEERING

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REGISTERED PROFESSIONAL ENGINEERS
CIVIL – STRUCTURAL

603.756.4811
trifel@myfairpoint.net
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Lifting Analysis for 66 Ton Sumitomo LS 120 RHD5 Crane

According to page 14 of this submittal, the total weight of each abutment is 51.2 tons (102,400 lbs). Assuming balanced loading, the maximum load to be carried by the LS 120 RHD5 crane is the sum of the following (see page 17): the total weight of the abutment (102,400 lbs), one 6-sheave 110-ton hook block (3,500 lbs), (2) 36-ton 2” cable slings (450 lbs), (2) 30-ton 1-3/4” shackles (60 lbs), (2) HCLW 44 ton Tilt-Up blocks (640 lbs), (2) 24’ 42 ton 1-1/2” cable slings (310 lbs), (4) 17-ton shackles (64 lbs) and (4) WRA 160 Wire Rope Anchors (32 lbs). The maximum load to be carried by the crane is therefore:

$$102,400 \text{ lbs} + 3,500 \text{ lbs} + 640 \text{ lbs} + 310 \text{ lbs} + 450 \text{ lbs} + 60 \text{ lbs} + 64 \text{ lbs} + 32 \text{ lbs} = 107,500 \text{ lbs}$$

Unbalanced loading is not an issue in this lifting situation when checking the crane lift capacity because each abutment is lifted by only one crane. Each abutment will be picked in accordance with the Abutment 1 & 2 Lift Plan View (see page 15), the Overall Abutment Lift Elevation (see page 16), the Abutment Lift Equipment and Sequence Descriptions (see page 17), the Typical Abutment Lift Diagram – Side View (see page 18), the Typical Abutment Lift Diagram – End View (see page 19), and the Abutment Wire Rope Lifting Point Plan (see page 20).

According to the attached lifting charts for the 66 Ton Sumitomo LS 120 RHD5 Crane (see page 30), with a 50 ft boom length, when the crane is positioned with maximum radius of load equal to 15 ft from centerline of machine, the lift capacity of the crane is 120,813 lbs. This safely exceeds the required capacity of 107,500 lbs.

The approximate uniform average pressure exerted by the crane tracks when loaded is as follows:

$$(140,000 \text{ lbs} + 107,500 \text{ lbs}) / (2 \times 16.9 \text{ ft} \times 2.6 \text{ ft}) = 2816 \text{ psf}$$

This pressure is averaged over the full area of the crane tracks. In order to reduce the ground pressure under the toe of the tracks during the lift, and to ensure the influence line extending at a 45 degree angle from the toe of the crane tracks remains behind the final abutment location (see page 16), (2)-5’x18’x10” thick reinforced concrete distribution pads (see page 24) will be placed under the toes of the tracks. Conservatively assuming the entire lifted load is transferred through the toe of the tracks to these distribution pads, this will reduce the average ground pressure to:

$$(140,000 \text{ lbs} + 107,500 \text{ lbs}) / (2 \times 5 \text{ ft} \times 18 \text{ ft}) = 1375 \text{ psf}$$

In fact, some of the load will still be transferred to the ground surface through the portion of the crane tracks bearing directly on the ground surface (not on the distribution pads), so the above ground pressure is conservative.

Care shall be taken to ensure that the crane is positioned on a firm, level, and uniform supporting surface per the manufacturer’s recommendations.

LS-120RHD-5

SN: LS120-0065

Boom Rated Load Table

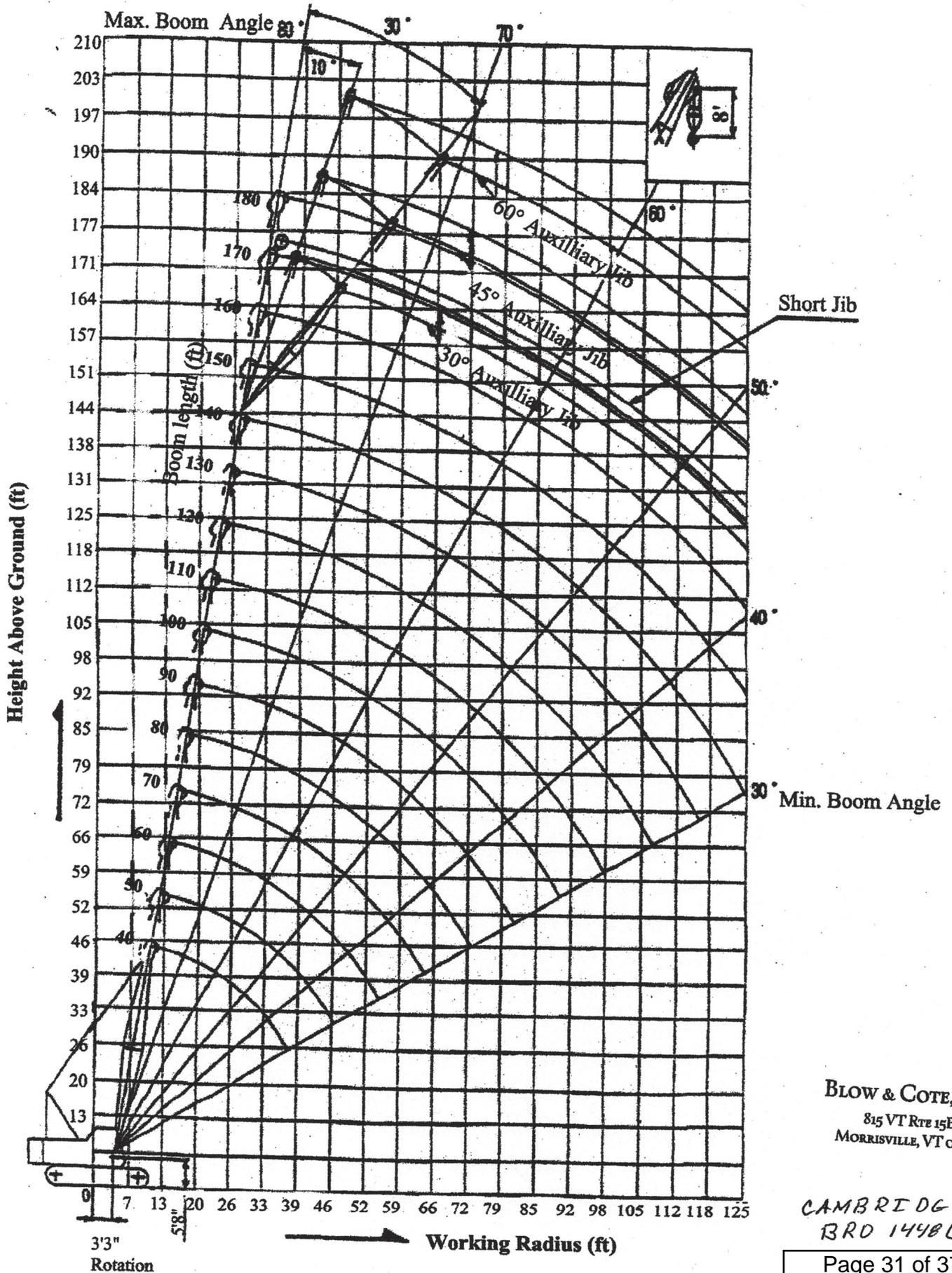
Boom Length (ft)	40		50		60		70		80		90		100	
	Load lbs	Angle deg	Load lbs	Angle deg	Load lbs	Angle deg	Load lbs	Angle deg	Load lbs	Angle deg	Load lbs	Angle deg	Load lbs	Angle deg
Working Radius (ft)														
12	132277	78.9												
13	132277	77.4	131175	80.0										
15	123018	75.0	120813	78.0										
16	102735	72.5	102295	76.1	102074	78.5								
18	87964	70.0	87744	74.1	87524	76.9	87303	78.8						
20	76941	67.4	76721	72.2	76500	75.2	76280	77.4	76059	79.0				
23	61289	62.2	61068	68.1	60848	71.9	60627	74.6	60407	76.6	59966	78.1	59745	79.3
26	50706	56.6	50486	64.0	50265	68.6	50045	71.8	49824	74.1	49604	75.9	49384	77.4
28	43211	50.7	42990	59.7	42770	65.2	42549	68.9	42329	71.7	42108	73.9	41888	75.4
33	37699	44.1	37479	55.1	37258	61.6	37038	66.0	36817	69.2	36597	71.6	36376	73.5
39	30424/25794	30.3	29321	45.1	29101	54.1	28881	59.9	28660	64.0	28440	67.1	28219	69.5
46			24030	32.8	23810	45.8	23589	53.4	23369	58.6	23149	62.4	22928	65.4
53					19842	36.0	19621	46.3	19401	52.9	19180	57.5	18960	61.2
59							16986	38.1	16755	46.6	16535	52.4	16314	56.8
66							15212/43211	30.3	14551	39.6	14110	46.9	13889	52.1
72									12566	31.4	12346	40.9	12125	47.1
79											10803	33.9	10582	41.7
85											9921/54895	30.1	9480	35.6
92													8378/60627	30.3
98														
105														
112														
118														
125														
Parts of Line	6		6		5		4		4		3		3	

- The rated loads shown in the table above are values that apply to a machine on a firm level and uniform supporting surface and that satisfy 2 conditions:
 (a) <78% of the tipping load and (b) front stability >= 1.15 x front stability prescribed by the mobile crane construction code.
- The load that can be lifted during operation is the value computed by subtracting the entire weight of the lifting attachments, such as a hook and a bucket, from the value listed in the table above (60-ton hook: 1.1tons; 20-ton hook: 0.64tons; 9-ton hook: 0.4 tons).
- When performing work, be sure to extend crawler to high mast.
- If the number of reevings is greater than the value in the table above, then the hook will not descend to the ground.
- When working with a clam shell excavator, a grab bucket, or a lifting magnet, the maximum boom length is 70ft.
- If a jib is fitted then the rated load of the main boom is the value computed by subtracting the offset load (fitted with hook for jib) in the table below from the value listed in the table above.
- The range of the length of the boom to which a jib can be mounted is 70 to 140ft.
- The range of the length of boom to which a short jib can be mounted is 40 to 170ft.
- The rated load of a short jib is the value computed by subtracting 441lbs from the rated load at the same working radius for the main boom, but the maximum rated 14,330lbs.

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Working Range Diagram LS-120RH-5



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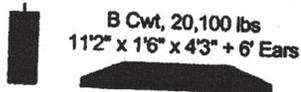
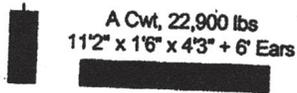
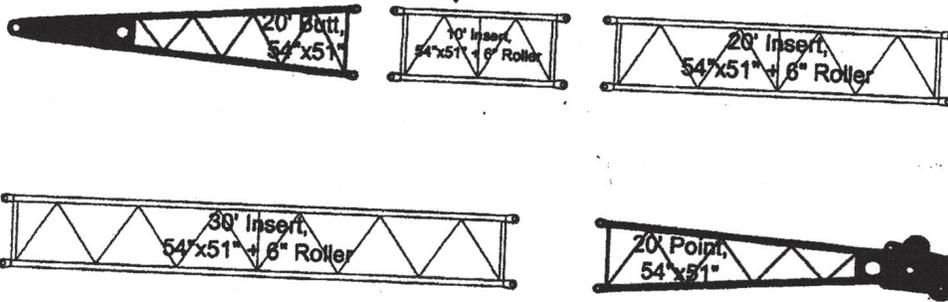
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LS-120RH-D

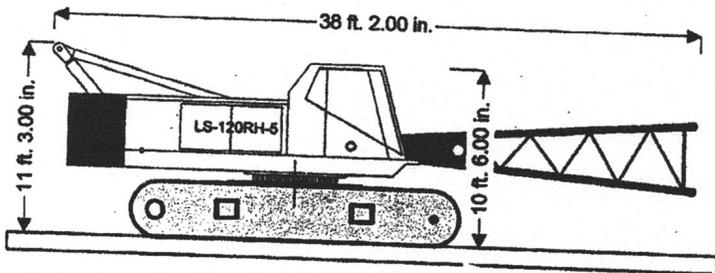
Main Boom

54"x51"

- 10' Inserts, 1
- 20' Inserts, 2
- 30' Inserts, 1
- 120' Total

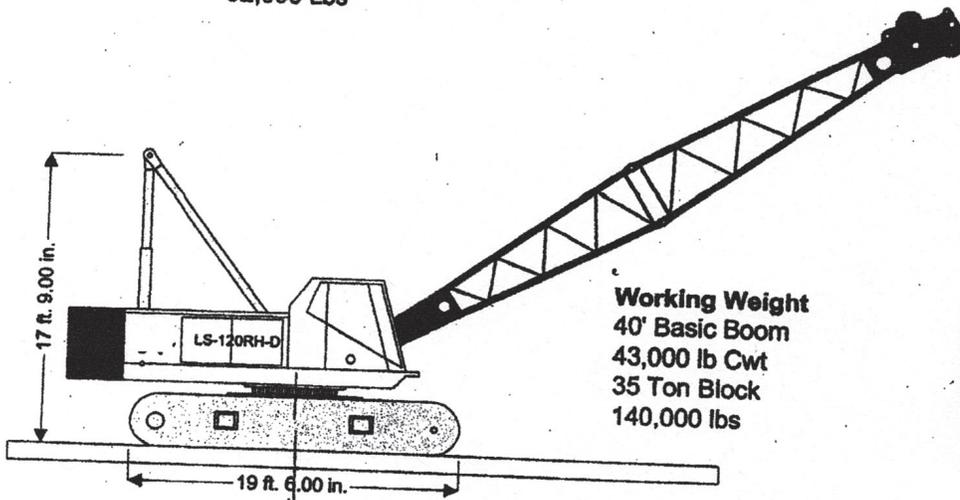
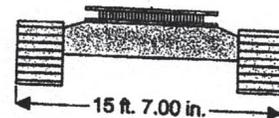


Front Mount Third Drum
1,265 lbs with Cable



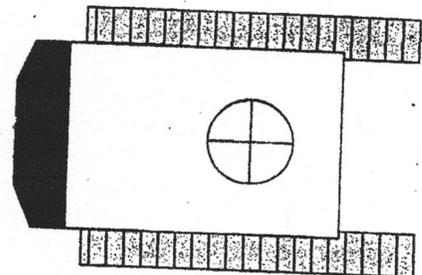
Transport Weight
20' Base Section
92,000 Lbs

Width Retracted 11' 6"
Width Extended 15' 7"
Length of Sideframe 19' 6"
Track Shoes 31"



Working Weight
40' Basic Boom
43,000 lb Cwt
35 Ton Block
140,000 lbs

ROTATION



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1-Part Slings

MECHANICAL SPLICE IWRC

2-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 lbs.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X36 CLASSIFICATION WIRE ROPE

ROPE DIA. (IN)	VERTICAL			60°			45°			30°		
	IPS	EIPS	EEIPS	IPS	EIPS	EEIPS	IPS	EIPS	EEIPS	IPS	EIPS	EEIPS
1/4	1.1	1.3	1.4	0.97	1.1	1.2	0.79	0.91	1.0	0.56	0.65	0.7
5/16	1.7	2.0	2.2	1.5	1.7	1.9	1.2	1.4	1.6	0.87	1.0	1.1
3/8	2.5	2.9	3.2	2.2	2.5	2.7	1.8	2.0	2.2	1.2	1.4	1.6
7/16	3.4	3.9	4.3	2.9	3.4	3.7	2.4	2.7	3.0	1.7	1.9	2.1
1/2	4.4	5.1	5.5	3.8	4.4	4.8	3.1	3.6	3.9	2.2	2.5	2.8
9/16	5.5	6.4	7.0	4.8	5.5	6.1	3.9	4.5	5.0	2.8	3.2	3.5
5/8	6.8	7.8	8.6	5.9	6.8	7.5	4.8	5.5	6.1	3.4	3.9	4.3
3/4	9.7	11	12	8.4	9.7	11	6.9	7.9	8.7	4.9	5.6	6.2
7/8	13	15	17	11	13	14	9.3	11	12	6.6	7.6	8.3
1	17	20	22	15	17	19	12	14	15	8.5	9.8	11
1 1/8	21	24		18	21		15	17		10	12	
1 1/4	26	30		22	26		18	21		13	15	
1 3/8	31	36		27	31		22	25		15	18	
1 1/2	37	42		32	37		26	30		18	21	
1 5/8	43	49		37	42		30	35		21	24	
1 3/4	49	57		43	49		35	40		25	28	
1 7/8	56	64		49	56		40	46		28	32	
2	64	73		55	63		45	52		32	37	
2 1/8	69	80		60	69		49	56		35	40	
2 1/4	77	89		67	77		55	63		39	44	
2 3/8	86	99		75	85		61	70		43	49	
2 1/2	94	109		82	94		67	77		47	54	
2 5/8	104	119		90	103		73	84		52	60	
2 3/4	113	130		98	113		80	92		57	65	
2 7/8	123	141		106	122		87	100		61	71	
3	133	153		115	133		94	108		67	77	
3 1/8	144	165		124	143		102	117		72	82	
3 1/4	154	177		134	153		109	125		77	89	
3 3/8	165	190		143	165		117	135		83	95	
3 1/2	177	203		153	176		125	144		88	102	

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25
RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAN NATURAL EYE WIDTH
OR LESS THAN THE NOMINAL SLING DIAMETER
RATED CAPACITIES BASED ON DESIGN FACTOR OF 5
HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED

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MECHANICAL SPLICE IWRC

VERTICAL, CHOKER OR VERTICAL BASKET

RATED CAPACITY IN TONS OF 2,000 lbs.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X36 CLASSIFICATION WIRE ROPE

ROPE DIAMETER (INCHES)	VERTICAL 			CHOKER 			VERTICAL BASKET 		
	IPS	EIPS	EEIPS	IPS	EIPS	EEIPS	IPS	EIPS	EEIPS
1/4	0.56	0.65	0.71	0.41	0.48	0.52	1.1	1.3	1.4
5/16	0.87	1.0	1.1	0.64	0.74	0.81	1.7	2.0	2.2
3/8	1.2	1.4	1.6	0.92	1.1	1.2	2.5	2.9	3.2
7/16	1.7	1.9	2.1	1.2	1.4	1.6	3.4	3.9	4.3
1/2	2.2	2.5	2.8	1.6	1.9	2.0	4.4	5.1	5.5
9/16	2.8	3.2	3.5	2.0	2.4	2.6	5.5	6.4	7.0
5/8	3.4	3.9	4.3	2.5	2.9	3.2	6.8	7.8	8.6
3/4	4.9	5.6	6.2	3.6	4.1	4.5	9.7	11	12
7/8	6.6	7.6	8.3	4.8	5.6	6.1	13	15	17
1	8.5	9.8	11	6.3	7.2	8.0	17	20	22
1 1/8	10	12		7.9	9.1		21	24	
1 1/4	13	15		10	11		26	30	
1 3/8	15	18		12	13		31	36	
1 1/2	18	21		14	16		37	42	
1 5/8	21	24		16	18		43	49	
1 3/4	25	28		19	21		49	57	
1 7/8	28	32		21	24		56	64	
2	32	37		24	28		64	73	
2 1/8	35	40		27	31		69	80	
2 1/4	39	44		30	35		77	89	
2 3/8	43	49		33	38		86	99	
2 1/2	47	54		37	42		94	109	
2 5/8	52	60		40	46		104	119	
2 3/4	57	65		44	51		113	130	
2 7/8	61	71		48	55		123	141	
3	67	77		52	60		133	153	
3 1/8	72	82		56	64		144	165	
3 1/4	77	89		60	69		154	177	
3 3/8	83	95		64	74		165	190	
3 1/2	88	102		69	79		177	203	

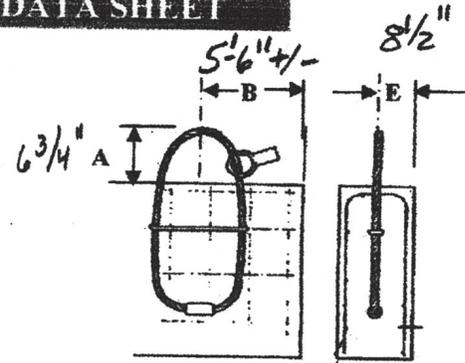
RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25
RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAN NATURAL EYE WIDTH
OR LESS THAN THE NOMINAL SLING DIAMETER
RATED CAPACITIES BASED ON DESIGN FACTOR OF 5
HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED

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MORRISVILLE, VT 05661
CAMBRIDGE
BRD 144B (39)

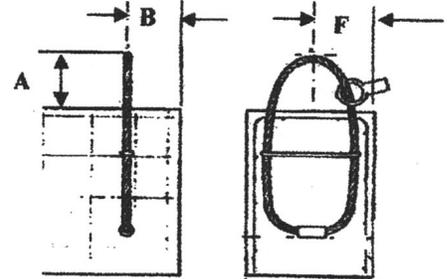
WIRE ROPE ANCHORS - DATA SHEET

Clearances - Projected Installation			Parallel Installation		Transverse Install'n	
Anchor Part No.	Suggested Projection A [in]	Min End Distance B [in]	Edge Dist. at 2,200 psi E ₂₂ [in]	Edge Dist. at 4,500 psi E ₄₅ [in]	Edge Dist. at 2,200 psi F ₂₂ [in]	Edge Dist. at 4,500 psi F ₄₅ [in]
WRA 008	2-3/8	10-1/2	1-1/2	1-1/4	2-5/8	2-5/8
WRA 012	2-1/2	12	1-3/4	1-1/2	2-3/4	2-3/4
WRA 016	2-3/4	13-3/4	2-3/8	1-3/4	3-3/8	3-3/8
WRA 020	3-1/8	16-1/2	2-3/4	2	3-1/2	3-1/2
WRA 025	3-3/8	17-3/4	3-1/8	2-1/8	3-5/8	3-5/8
WRA 038	4	19-1/2	4-3/8	3	4-3/8	4-3/8
WRA 050	4	20-1/2	5-3/4	4	5-3/4	4-3/8
WRA 063	4-1/2	22-3/4	6-1/4	4-3/8	6-1/4	5-3/8
WRA 080	5	25-1/2	7-7/8	5-1/2	7-7/8	5-1/2
WRA 099	5-1/2	28-3/4	8-3/4	6-1/8	8-3/4	6-1/8
WRA 120	6	31-3/4	11	7-5/8	11	7-5/8
WRA 160	6-3/4	36-1/2	12	8-1/2	12	8-1/2
WRA 180	7	41-3/4	13-3/8	9-3/8	13-3/8	9-3/8
WRA 250	8	47-1/2	14-3/4	10-1/2	14-3/4	10-1/2

NOTE: Minimum spacing between adjacent anchors = 2 x B
 Minimum panel thickness = 2 x E for parallel installation.
 Minimum panel thickness = 2 x F for transverse installation.



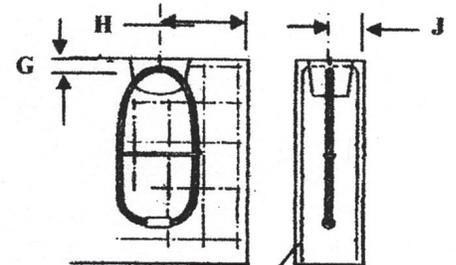
Projected and Parallel Installation



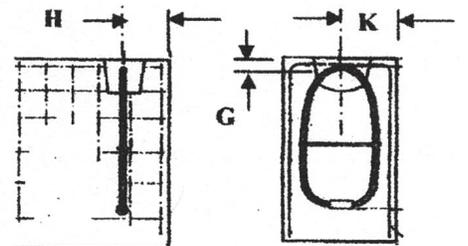
Projected and Transverse Installation

Clearances - Recessed Installation			Parallel Installation		Transverse Install'n	
Anchor Part No.	Depth below surface G [in]	Min End Distance H [in]	Edge Dist. at 2,200 psi J ₂₂ [in]	Edge Dist. at 4,500 psi J ₄₅ [in]	Edge Dist. at 2,200 psi K ₂₂ [in]	Edge Dist. at 4,500 psi K ₄₅ [in]
WRA 020	9/16	23-1/2	1-3/4	1-1/2	3-3/8	3-3/8
WRA 038	9/16	29	3-1/8	2-1/8	4	4
WRA 063	11/16	33-1/2	4-3/4	3-3/8	5-3/8	5-3/8
WRA 099	1/2	42-1/2	7	5	7	6
WRA 160	1/2	53	9-1/2	6-5/8	9-1/2	7-1/8
WRA 250	1/2	67	12	8-1/2	12	8-5/8

NOTE: Minimum spacing between adjacent anchors = 2 x H
 Minimum panel thickness = 2 x J for parallel installation.
 Minimum panel thickness = 2 x K for transverse installation.



Recessed and Parallel Installation



Recessed and Transverse Installation

(4) WRA 160 (2) EACH END PER ABUTMENT

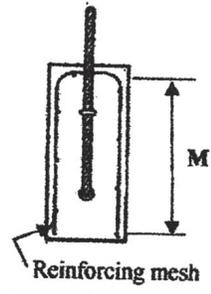
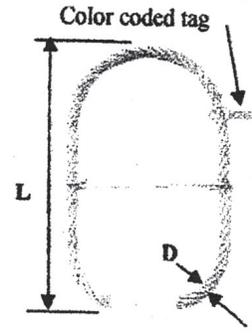
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 CAMBRIDGE
 BRD 1448 (39)

WRA Series WIRE ROPE ANCHORS

Manufactured from high-quality wire rope, with steel swage.

Dimensions & Load Capacities

Nominal System Capacity	Anchor Part No.	Color Code	Allowable Capacity T _A [lb]	Loop Length L [in]	Rope Diameter D [in]	Weight 100 pcs [lb]	Min. Reinf. Mesh	
							Depth M [in]	Area [in ² /ft]
0.8 T	WRA 008	White	1,800	8	0.236	18	12	0.062
1.2 T	WRA 012	Red	2,700	9	0.276	26	14	0.062
1.6 T	WRA 016	Pink	3,600	9-3/4	0.315	38	14	0.062
2 T	WRA 020	Lt green	4,500	11-3/4	0.354	60	17	0.089
2.5 T	WRA 025	Dark gray	5,600	12-3/4	0.394	66	20	0.089
3.8 T	WRA 038	Emerald	9,000	14-1/2	0.472	110	22	0.089
5 T	WRA 050	Lt yellow	11,700	15	0.551	181	22	0.089
6.3 T	WRA 063	Lt blue	14,150	16-3/4	0.630	242	24	0.089
8 T	WRA 080	Lt gray	18,000	18-7/8	0.709	353	27	0.104
10 T	WRA 099	Dark purple	22,450	21	0.787	463	31	0.104
12 T	WRA 120	Yellow	28,100	23-1/4	0.866	661	35	0.104
16 T	WRA 160	Lt purple	35,950	26-3/8	1.024	1,036	39	0.104
18 T	WRA 180	Yellow-grn	44,950	29-1/2	1.102	1,300	45	0.178
25 T	WRA 250	Lt brown	56,200	33-1/2	1.260	1,850	51	0.178

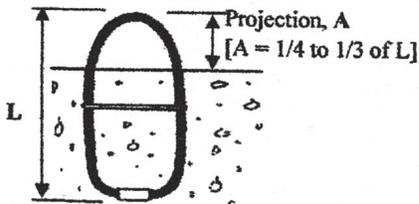


NOTE: Allowable Tension Capacity is based on a Safety Factor of 4:1 against wire rope breakage
 Allowable Tension Capacity is based on use in 2,200 psi normal weight concrete.
 No additional strength increase can be gained in higher strength concrete.
 Additional sizes available with capacities up to 220,000 lb [110 tons].

INSTALLATION METHODS

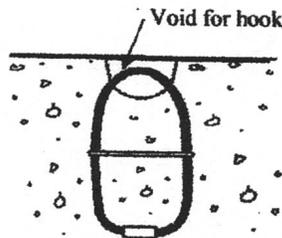
PROJECTED INSTALLATION

No extra reinforcement required
 See following page.

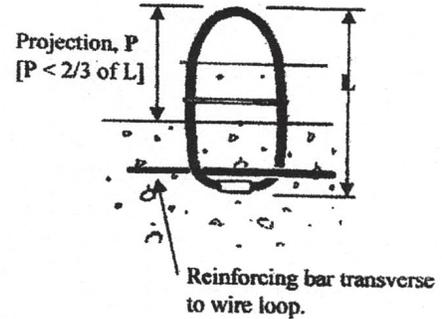


RECESSED INSTALLATION

No extra reinforcement required
 See following page.



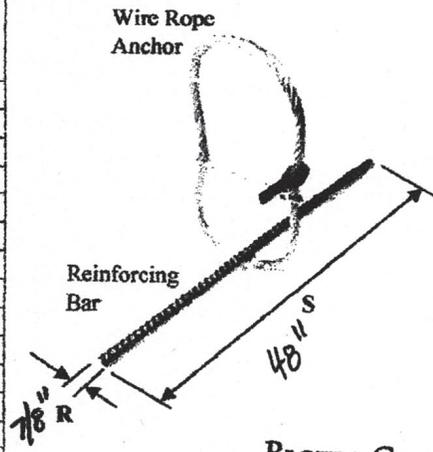
PROJECTED INSTALLATION WITH REINFORCEMENT



WBR Series SHEAR BARS

Use for reinforcement of Wire Rope Anchor

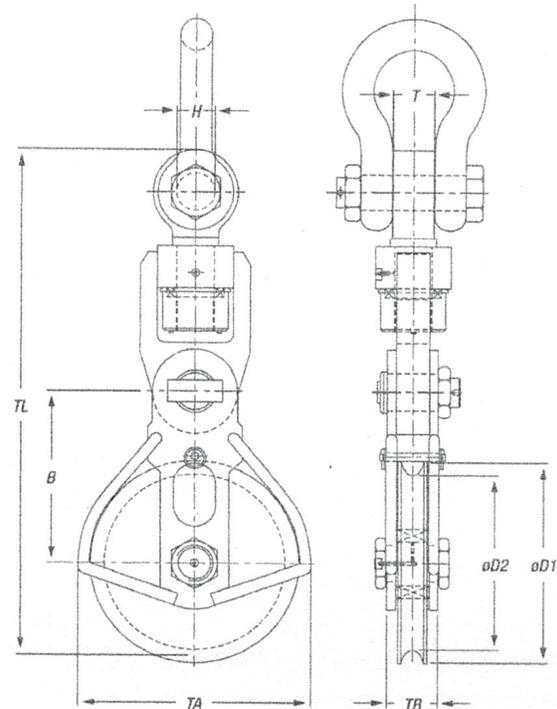
Nominal System Capacity	Anchor Part No.	Use with Wire Rope Part No.	Projection		Length S [in]	Weight 100 pcs [lb]
			P [in]	R [in]		
0.8 T	WBR 008	WRA 008	5	[#3] 7/16	13-3/4	68
1.2 T	WBR 012	WRA 012	5-1/2	[#3] 7/16	15-3/4	76
1.6 T	WBR 016	WRA 016	6	[#3] 7/16	17-3/4	84
2 T	WBR 020	WRA 020	7	[#4] 9/16	19-1/4	128
2.5 T	WBR 025	WRA 025	8	[#4] 9/16	21-1/2	144
3.8 T	WBR 040	WRA 038	9	[#5] 5/8	23	198
5 T	WBR 063	WRA 050	9-1/2	[#5] 5/8	27-1/2	238
6.3 T	WBR 063	WRA 063	10-1/2	[#5] 5/8	27-1/2	238
8 T	WBR 080	WRA 080	12	[#6] 3/4	33-1/2	450
10 T	WBR 125	WRA 099	13-1/2	[#6] 3/4	39-1/2	546
12 T	WBR 125	WRA 120	14-1/2	[#6] 3/4	39-1/2	546
16 T	No Part #	WRA 160	16-1/2	[#7] 7/8	48	818
18 T	No Part #	WRA 180	18-1/2	[#8] 1	54	1,156
25 T	No Part #	WRA 250	21	[#9] 1-1/8	60	1,700



BLOW & COTE, INC.

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HCLW Series Tilt-Up Blocks

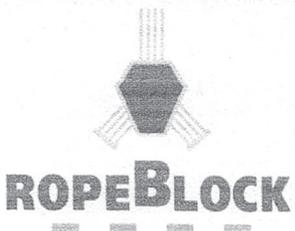


Swivel Eye

Stock Number	WLL (US Tons)	Wire Diameter (Inches)	Dimensions (Inches)								Weight (lbs)
			D1	D2	B	H	T	TA	TB	TL	
HCLW 355.32.1.27.S	30	1-1/8 - 1-1/4	16-9/16	14	14-3/4	1-3/4	2-1/4	18-3/4	4-7/16	39-1/8	265
HCLW 355.36.1.32.S	35	1-1/4 - 1-7/16	16-9/16	14	14-3/4	1-3/4	2-1/4	18-3/4	4-13/16	39-1/8	265
HCLW 430.38.1.32.S	35	1-1/4 - 1-1/2	19-1/2	16-15/16	16-5/16	1-3/4	2-1/4	21-11/16	4-7/8	42-3/16	290
HCLW 430.38.1.40.S	44	1-1/4 (1-1/2)	19-1/2	16-15/16	16-5/16	2-1/16	2-3/4	21-11/16	4-13/16	43-9/16	320
HCLW 520.44.1.55.S	60	1-3/4 - 2	23-7/8	20-1/2	19-1/8	2-13/16	3-15/16	25-5/8	4-7/8	51-13/16	465
HCLW 520.52.1.55.S	60	1-3/4 - 2	23-7/16	20-1/2	19-1/8	2-5/16	3-1/8	25-5/8	5-3/16	51-1/2	490
HCLW 630.58.1.81.S	89	1-3/4 - 2-1/4	27-15/16	24-13/16	22-5/8	3-9/16	3-15/16	30-9/16	6	73-1/4	882
HCLW 630.64.1.81.S	89	2-1/4 - 2-1/2	27-15/16	24-13/16	22-5/8	3-9/16	3-15/16	30-9/16	6	73-1/4	882

Minimum Ultimate Strength = 4 x WLL
 Models available up to 350 Ton Capacity
 Other wire rope sizes available on request
 Available with jaw end, hook, round or oblong swivel eye
 All blocks Proof Tested and supplied with Factory Certificates

www.associatedwirerope.com



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 sales@awrrinc.com

