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TRANSMITTAL

TO: Jennifer Fitch, PE Project Manager Vermont Agency of Transportation	DATE	PROJECT NO.
	7/24/2014	Brookfield BRF FLBR (2)

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

COPIES	NUMBER	DESCRIPTION	CODE
1		Deck Panel Erection Plan - Rev 1	H

CODE:

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

BY: Paul J. Miller

David Skidmore PE
Castleton VT
802 353 4120

July 22, 2014

Re: Construction Engineering for Wright Construction Company Mt Holly VT
regarding installation of nail laminated deck panels
Project: Brookfield Floating Bridge
VTrans Project BRF FLBR(2)

To Whom It May Concern:

Following the review of and comments on the submittal of Construction Engineering dated 6/30/14, I enclose new and completely revised information for consideration.

1. Regarding the comments made by the reviewers:

A. The note that 'panels with unintentional camber... shall have concave side installed upward"

We apparently misread the camber specification, and now understand the design intent is to fabricate and install the panels flat (no camber). The calculations done for handling the panels indicate the panels are flexible, and while handling them there will be noticeable deflections, when set on a flat surface the panels will lay flat.

B. The note that "installation of deck panels needs to conform to note 38 plan sheet 7 0f 70. The requirement is to ensure uniform loading of the floats and to ensure uniform joint openeings between the deck panels at raft ends"

Because of the design of the panels with a shiplap edge joint, and the requirement for an elastomeric pad on the bearing surfaces, the panels must be installed sequentially, by setting in final position. The elastomeric pad will not allow sliding the panel edge under a previously installed panel.

The third sentence of Note 38 seems to require setting at least 5 (or perhaps all 9) panels on a float, before bolting may commence. That means the installation crew would have to work on or over 4 or more unsecured deck panels, trusting only the 'stickyness' of the elastomeric pad to keep the deck panels 'in-place'. This would be an unsafe condition for the installation workers, and potentially the bridge components.

I believe that the stated goal to "ensure uniform joint openings between deck panels at raft joints can be reasonably accomplished by have the contractor make detailed measurements of the panels at fabrication, and to determine the in-place dimension (along the bridge) of each section (joint to joint) of decking before beginning installation. Using that determined in-place dimension and it's variation (if any) from the design dimension, the contractor would vary the beginning layout point so that the installed (9) panels end up centered between the joints in the floats.

The design does not have conflicts if the panels are a little long, as the panel sleepers are spaced so as not to conflict with the float splice plates.

I therefore request that the third sentence of note 38 sheet 7 of 70 be changed to "Panels may be set in their permanent position on the floats and may be bolted to the

Project: Brookfield Floating Bridge
VTrans Project BRF FLBR(2)

float promptly, so long as the fabricated set of panels on each float is installed centered between the float joints (+/- 1")"

C. In the engineering section, the note suggesting that with moisture content, and treatment timber density would be closer to 45- 50 PCF.
All calculations have been redone, using 47.5 PCF timber density.

D. Request for data sheet on equipment to be used for installation...
Additional data on proposed installation forklift, now included in calculation package. Forklift with load is less than 24K total weight.

E. Note on DWG 2 of 3 asking if "concern of panel slipping off supports during erection process?"
The design shows a nylon ratchet strap securing the two load hangers together. This is intended to assure that the load hangers cannot spread, and remain at the ends of the deck panel, even as it deflects. By calculation even with 1.8" vertical deflection, the end wise movement is less than 1/64" at each end. In my judgement, there should be little or no concern for the panel slipping off the 1 ½" bearing surface.

F. Note on DWG 2 of 3 stating "need to account for angle thickness and inner fillet"
Additional details of the support shelf angle are in this revised package, more clearly showing the assembly.

G. Notes by Construction Section VTrans requesting lifting device and rigging be designed and detailed.
Additional details of device and rigging are included in this package.

H. Note by Construction Section VTrans suggesting a plan to locate installation equipment...
The written Erection Plan more carefully spells out the sequence, of installation, and I trust clearly answers where the machine may and will be during this sequential process.

2. The attached information provides information associated with the safe handling, placement and installation of the nail laminated wood floor panels of the float bridge and it's approaches. The calculations show that the contractor can use safe, reasonable methods handling the panels, and such handling will not impose stresses on the panels or bridge, that might compromise the integrity of the panels or of the bridge.

3. Sequence, (short and sweet), see erection plan and engineering calculations for complete and detailed information.
Fabricate panels in contractor's shop, Mt Holly VT, stockpile.

Project: Brookfield Floating Bridge
VTrans Project BRF FLBR(2)

Load and transport panels to jobsite
Handling of panels will be with a forklift with suitable length forks
Set/install panels sequentially from west end of bridge proceeding east.
Panels handled during setting with a lifting device, suspended from an extending boom forklift, traveling on already installed deck panels, as work progresses across the bridge.

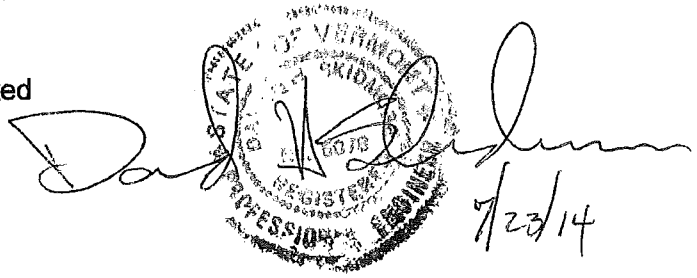
4. Documents enclosed, All part of Revision 1:

Erection Plan, Narrative	7/22	3 pg
Calculations:		
Panel Weight	7/15	1 pg
Panel Handling w/forklift	7/15	3 pg
Panel when handled w/lift device	7/15	2 pg
Panel Lift Device	7/15	4 pg
Lifted Weight, panel and lift device	7/15	1 pg
Vehicle Weight, panel and lift device	7/22	1 pg
Drawings:		
Panel lift device, overall elevation	7/17	1 of 6
Detail A, elevation	7/17	2 of 6
Detail B, end elevation	7/17	3 of 6
Detail C, detail of hangers	7/17	4 of 6
Detail D, elevation of shelf angle	7/17	5 of 6
Details E + F, sections of shelf angle	7/17	6 of 6

Reference information:
6 ft fork extensions
Hook plate
These are manufactured items, and may not be exactly what the contractor uses for this work. All manufacturer instructions must be followed.

Reference is made to the Project Design Drawings and specifications by State of Vermont and T Y Lin International for details of the intended finished structure and components.

Respectfully submitted



7/23/14

David Skidmore PE

Erection Plan for Nail Laminated Timber Deck Panels
Brookfield BRF FLBR(2)
Brookfield, VT

Revision 1
July 22, 2014

Work to be executed by Wright Construction
Mt Holly VT, Subcontractor for this portion of the work.

Narrative of the work and sequence related to fabrication, transportation, installation and quality control of the deck panels.

See also: Engineering calculations and sketches and
Design (Contract) Documents by TYLin International

Prepared by: David Skidmore PE
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Panel Fabrication:

1. Fabrication of panels shall be done in Wright's Shop in Mount Holly, VT.
2. Panels shall be fabricated on a flat/ level surface of spaced timbers, that provide support at a maximum spacing of 5 ft.
3. Moisture content of wood will be verified and recorded at the time of fabrication.
4. Assembled panel dimension (width of panel / length along bridge) shall be recorded.
5. Contractor shall (using the fabricated panel dimensions) assign each panel to a set (one set of panels for each float, (or ramp)) and determine the 'in place' total length along the bridge for each set.
6. When fabricated, panels shall be stored, undercover (tarps), on timber blocking at least 6" off the ground.
7. Handling of panels in the yard (and onsite before installation) shall be with a forklift with forks (or fork extensions) that are not less than 6" as long as the panel is wide, (ie min 66 inch fork for handling 72 inch panel).
8. and with forks spread at least 48". (See Engineering)
9. Transportation of panels to jobsite shall be on flatbed trailer, blocked so panels remain in a flat condition.

Panel Erection:

1. Panel installation will begin after the FRP floats, and glue laminated timber ramps are fully installed, complete with steel bracing.
2. Panels will be installed beginning from the west abutment (proceeding progressively across the bridge).
3. Panels will be handled during installation with a lifting device suspended from a extending boom forklift. (See Engineering)
4. Contractor shall layout west edge of first panel, based on the set dimensions variation from the design dimensions, to assure that the installed set of panels are centered in the space allotted.
5. Ramp panels shall be permanently secured (lag screws) promptly upon being set in place, before the setting of an additional panel.

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Narrative of the work and sequence related to fabrication, transportation, installation and quality control of the deck panels.

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6. After setting the first panel and before setting of the third panel on the ramp, the contractor shall install the abutment to ramp-roadway assembly (sheet 51 of 70), to allow the forklift to travel over the gap from the abutment to the first deck panel. (Note: forklift can reach over first panel to set second panel without wheels passing over the abutment to ramp joint.)
7. Additional panels shall be set: Forklift shall travel on the previously set panels, only along the centerline of the bridge. Forklift wheels shall not travel east of the joint onto the last panel set (and fastened) while setting the leading edge panel. (ie Forklift shall reach across one panel while setting the leading edge panel)
8. Contractor shall layout starting (west) edge of first panel on the (next) float, based on the 'set' dimensions variation from the design dimensions, to assure that the installed set of panels are centered in the space allotted.
9. Following completion of the ramp deck panel installation: first and second panels may be placed on the (next) float.
10. After setting the first panel and before setting of the third panel on the float, the contractor shall install the ramp to float-roadway assembly (sheet 51 of 70), to allow the forklift to travel over the gap from the abutment to the first deck panel. (Note: forklift can reach over first panel to set second panel without wheels passing over the ramp to float joint.)
11. Deck panels on float shall be bolted to floats promptly after panel is set in place. Before placement of an additional panel. (This is contrary to note 38 plan sheet 7 of 70) but is necessary for safety of the installation crew and machinery. Concerns about centering the deck panels on the float along the bridge, are addressed by pre-established as-fabricated dimensions, identification of panels in 'sets" and proper layout of the starting line for setting the panels.
12. Additional seven panels shall be set on this float: Forklift shall travel on the previously set and fastened panels, only along the centerline of the bridge. Forklift wheels shall not travel east of the joint onto the last panel set (and fastened) while setting the leading edge panel. (ie Forklift shall reach across one panel while setting the leading edge panel)

Work to be executed by Wright Construction
Mt Holly VT, Subcontractor for this portion of the work.

Narrative of the work and sequence related to fabrication, transportation, installation and quality control of the deck panels.

See also: Engineering calculations and sketches and
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13. Following completion of the first float's deck panel installation: first and second panels may be placed on the next float.
14. After setting the first panel and before setting of the third panel on the next easterly float, the contractor shall install the "steel cover plate(s)' portion of detail over the 'raft field splices (on sheet 46 of 70), to allow the forklift to travel over the floor panel gap over the raft field splices. (Note: forklift can reach over first panel to set second panel without wheels passing over the gap over the raft field splices).
15. Repeat steps 8 through 14 to install floor panels across all floats across the span of the bridge.
16. Then repeat installation steps for installing ramp deck panels and ramp/ float and ramp/ abutment assemblies.
17. Installation of curbing, sidewalk and railings on a float or ramp section may proceed once all floor deck panels are installed and fastened on any individual float section (50 ft) or ramp section.
18. Runner plank may be installed on the ramp sections once the ramp deck panels are fully installed, or later.
19. Runner plank installation on the Floats shall not occur until all floats are fully decked.

END.

BROOFIELD TOWER — REV 1

FLOOR PANEL HANDLING — 7/15

PANEL WEIGHT

SOUTHERN PINE

MOISTURE CONTENT — USE 47.5 pcf

PENTA TREATMENT

		CF
LAREM PANEL	5½" x 6' x 28'-4"	64.15
SHIPLAP	2x 1½ x 2¾ x 28'-4"	1.34
10" SLEEPERS	2x 1½ x 9¼ x 6'	1.16
6" SLEEPERS	3x 1½ x 5½ x 6'	1.03
		67.69 CF

67.69 x 47.5 = 3215

+ 10% 320

3535 lbs PANEL WEIGHT LAREM PANEL

BROOKFIELD TOWNSHIP — TRAV 1
FLOOR PANEL HANDLING — 7/15
HANDLING w/ FORKLIFT (STEP, STOCK PILE ETC)

BENDING AT FACE OF FORKS
TOTAL WEIGHT 3535 lbs
PER FOOT 3535 / 23.33 = 152 PLF

M $152 \times 9.67 \times \frac{9.67}{2}$ = 7106 FT lbs / PANEL

PANELS ASSEMBLED OF SETS OF BUTT JOINTED 2x6 LAMINATIONS, 3 PIECES PER SET, 16 SETS
BUTT JOINT CANNOT TRANSFER MOMENT STRESSES
1 of 3 PIECES IS JOINTED AT CENTER - DISREGARD THIS PIECE FOR STRUCTURE
OTHER 2 PIECES HAVE 11' LAP JOINT w/ NAILS 12" oc

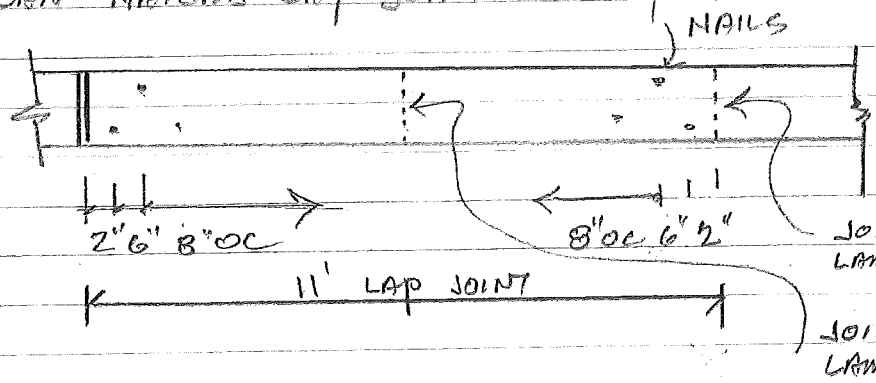
M (PER SET) $\frac{7106}{16}$ = 444 FT lbs / SET
WEIGHT PER FOOT PER SET $\frac{152}{16}$ = 9.5 lbs / FT / SET

PENETRATION 4" - 1½" = 2½" > 2.11 ok

REV 1
7/15

BROOKFIELD BRIDGE
FLOOR PANEL
HANDLING W/ FORKLIFT

CAN NAILED LAP JOINT CARRY MOMENT?



NAILS MIN 4" LONG MIN .19" ROOT DIAMETER

ALLOWABLE LOAD ON 20d NAIL

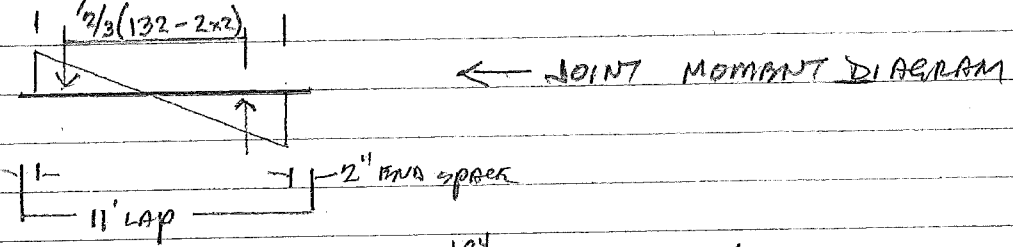
GROUP II (SP) 11 DIAMETER PENETRATION 2.11" REQ'D

LATERAL DESIGN VALUE 139 lbs/NAIL

USE NORMAL LOAD DURATION 1.0

LOAD MODIFICATION FOR MOISTURE CONTENT WET .75

∴ SWL/NAIL 139 x .75 = 104 lbs/NAIL



NAILS ARE 8"OC TYP → $\frac{104}{8}$ = 13 lbs/INCH MAX NAIL CAPACITY

TOTAL FORCE = $\frac{13 \times (132-4)}{2}$ = 416 lbs

$M_{(LAP)}$ $\frac{416 \times \frac{2}{3}(132-4)}{12}$ = 2958 FT lbs

$M_{(SRT,\ PG\ 1)}$ 444 FT lbs

NAIL JOINT OK

REV 1
7/15

BROOKFIELD BRIDGE
FLOOR PANEL
HANDLING W/ FORKLIFT

BENDING IN WOOD - CONSIDER ONLY ONE 2x6 IN EACH SIDE 'EFFECTIVE'

M (CALC pg 1) 444 FT lbs

$S_{x\ 2x6}$ $\frac{1\frac{1}{2} \times 6\frac{1}{2}^2}{6}$ = 7.56 IN^3

$f_b = \frac{444 \times 12}{7.56} = 705$ psi $F_{b\ allow}$ 1450 psi ok

DEFLECTION AT ENDS

$$\frac{Wc}{24 E I L}\left[3c^2(c+2l) - l^3\right]$$

CALC PER SIDE

$W = 9.5 \times 23.33 = 222$ lbs
c 9'-8" → 116 IN
l 48 IN
E 1.7×10^6
I $\frac{1.5 \times 5.5^3}{12}$ 20.8 IN^3
L 23'-4" → 280 IN

$$\Delta = \frac{222\ 116}{24\ 1.7\ 10^6\ 20.8\ 280}\left[3 \cdot 116^2(116+2\cdot 48) - 48^3\right]$$

$\Delta = .915"$

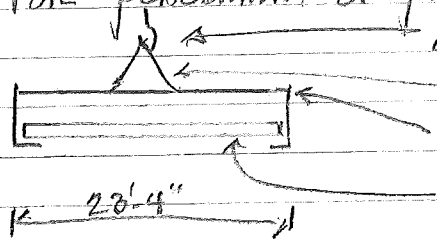
1" DEFLECTION AT TIPS NOT OF CONCERN.

∴ HANDLING PANELS WITH A FORKLIFT IS SAFE, IF:
FORKS MUST BE SPREAD 48" OUT TO OUT, MIN.
FORKS MUST BE AS LONG AS PANEL IS WIDE ± 6" - NOMINAL 6' LONG FORKS
FORK (PAIR) RATED CAPACITY MIN 2 TON (4000 lbs)
FORKLIFT CAPACITY AT LOAD CENTER MUST EXCEED 3600 lbs

BROOKFIELDS BRIDGE — REV 1

PANEL WHEN HANDLED W/ LIFT DEVICE — 7/15

FOR PLACEMENT OF PANELS ON FLOAT etc



PANEL SUPPORTED AT ENDS DURING LIFTING

DESIGN OF BRIDGE HAS PANELS OVERHANGING FLOATS BY 2"

DEVICE TO SUPPORT PANEL ON 1½" EACH END

BEARING: TOTAL PANEL WEIGHT 3535 lbs

REACTION EACH END 1768 lbs

DEVICE 68" LONG (ASSUMED)

BEARING AREA $68 \times 1.5" = 102\ in^2$

BEARING STRESS $\frac{1768}{102} = 17.3$ psi OK

PANEL BENDING TOTAL PANEL, SIMPLE SPAN

$\frac{WL}{8} = \frac{3535 \quad 23.33}{8} = 10,309$ FT lbs

BENDING PER 'SET' OF 3 2x6's $\frac{10\,309}{16} = 644$ FT lbs

BECAUSE OF JOINTS IN 2x6 CONSIDER ONLY

1 of 3 2x6's 'EFFECTIVE'

$f_b = \frac{644 \times 12}{7.66} = 1022$ psi $\quad F_b = 1400$ psi OK (WOOD STRESS)

NAILED LAP JOINT (AS CALC ON pg 2 OF 'HANDLING W/ FORKLIFT)

$M_{app} = 295$ FT lbs

IS SMALLER THAN 644 FT lbs — NAILED JOINT OK.

BROOKFIELD BRIDGE — REV 1
PANEL WHEN HANDLED W/ LIFT DEVICE — 7/15

CRACK DEFLECTION — SIMPLE SPAN

$\Delta = \frac{5 w l^4}{384 E I}$

$\frac{5 \cdot .8 \cdot 280^4}{384 \cdot 1.7 \cdot 10^6 \cdot 20.8}$

Δ 1.8 IN

CONSIDER ONE SET ONE 2x6 'EFFECTIVE'
w = 9.5 PLF → .8 lbs/INCH
l = 23.34" → 280"
E 1.7 x 10^6
I 20.8 IN^4

THAT'S 1/155

DK

DEFLECTION WILL BE NOTICEABLE BUT WOOD IS FLEXIABLE.

INSTALLERS WILL HAVE TO ALIGN PANEL WITH ENDS 2" ± ABOVE THE FLOATS, SHOULD NOT BE AN ISSUE.

POSSIABLE MOVEMENT OF ENDS (EFFECTIVE LENGTH) DUE TO DEFLECTION

SOLVE FOR L

$L = \sqrt{140^2 - 1.8^2}$

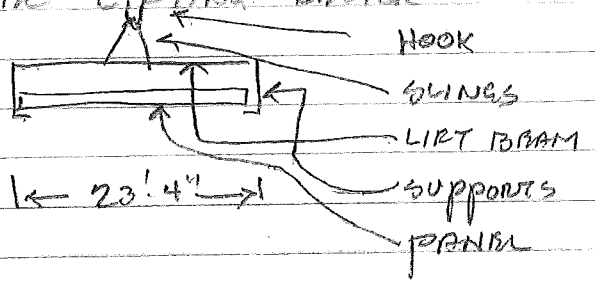
L = 139.99" VS STARTING 140"

ENDS MOVEMENT ± 1/64" .015

REV 1
7/15

BROOKFIELD BRIDGE

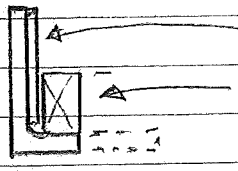
PANEL LIFTING DEVICE



PANEL WEIGHT (pg 1) 3535 lbs
LIFT DEVICE OF +25% 834 lbs
4370 lbs TO DEVICE

END REACTIONS
4370 ÷ 2 = 2185 lbs

END SUPPORTS 68" LONG



MIN THICKNESS OF STEEL -
ASSUME LOAD REACTION IS ON TIP OF ANGLE
BENDING AS PLATE TO BACK OF ANGLE
ASSUME 3/8" ANGLE FOR DIMENSIONS,

$M = 2185 \times 2.125'' = 971$ in lbs

Try 1/4" THICK 68" WIDE $S_x = \frac{68 \cdot .25^2}{6} = .708\ in^3$

$f_b = \frac{971}{.708} = 100$ psi

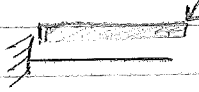
1/4" MIN THICKNESS ok FOR SHELF

BROOKFIELD BRIDGE
PANEL LIFTING DEVICE

REV 1
7/15

MINIMUM VERTICAL PLATE PORTION OF SUPPORT ANGLE

BENDING IF SUPPORTED AT CENTER AND LOAD SPREAD OVER 74"



$M = 29.5 \times \frac{74}{2} \times \frac{\frac{74}{2}}{2} = 20,193$ IN lbs

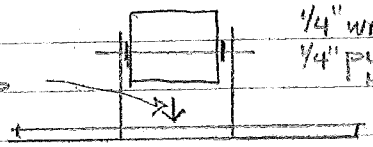
LIMIT f_b TO 10,000 psi S_x req'd $= \frac{20,193}{10,000} = 2.02$ IN^3

MIN THICKNESS w 6" VERTICAL PLATE $\frac{6\,S_x}{h^2} = \frac{6\,2.02}{6^2} = .337$ IN
6 x 1/4 IS COMPACT - (1-7B) 3/8 = .375

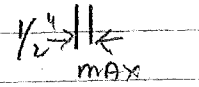
MIN THICKNESS w 5" VERTICAL PLATE $\frac{6\,S_x}{h^2} = \frac{6\,2.02}{5^2} = .485$
1/2" = .5

USE A 6 x ___ x 1/4 ANGLE ~15 lb/FT

HANGER ROD FOR SUPPORTS



CHECK 3/4" ϕ ROD IN BENDING



$M = \frac{2185+100}{2} \times 1/2" = 571$ IN lbs

S_x 7/8" ϕ $= \frac{\pi d^3}{32} = .0661$ IN^3

$f_b = \frac{571}{.066} = 8682$ psi ok < 10 KSI

7/8" ϕ ROD

BEARING AREA $.25 \times .875 = .219$ IN^2

LOAD $\frac{2185+100}{2} = 1143$ lbs

$f = \frac{1143}{.219} = 5220$ psi ok < 10 KSI

BROOKFIELD BRIDGE
PANEL LIFTING DEVICE

REV 1
7/15

LIFTING BEAM
ASSUME 10x10x1/4 TS

32.6 plf		2185	LOAD REACTION
5x 30.1		165	SHACKLES, ETC
	2350	2350	
BEAM 33 x 23.5 ÷ 2 =	388	388	
	2738	2738	

TOTAL LOAD TO SLINGS 5476 lbs

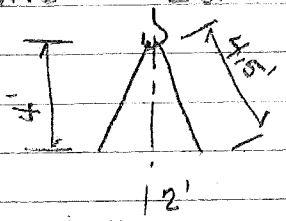
M END LOADS $2350 \times \frac{23.5}{2} = 27613$ FT lbs
M UNIFORM $\frac{33 \times 23.5^2}{8} = 2278$
29891 FT lbs

$f_b = \frac{29891 \times 12}{30.1} = 11916$ psi

BENDING OK
TS 10x10x1/4"

F_b TS $42 \times .6 = 25.200$ psi

SLINGS



LOAD PER LEG $\frac{5476}{4} = 1369$ lbs USING 2 BASKET SLINGS

TENSION / LEG $\frac{1369}{4} = \frac{T}{45} \rightarrow T = 1540$ lbs MIN SWL STRAIGHT PULL

MIN 5/16"ϕ 6x19 IPS MECHANICAL SPLICE EYE
SWL 1740 lbs STRAIGHT PULL
RIG AS BASKET SLING 10' LONG

PREFER 3/8"ϕ

BROOKFIELD BRIDGE — REV 1

PANEL LIFTING DEVICE — 7/15

SLINGS HORIZONTAL VECTOR — 45/4 = 2

$\frac{1369}{4} = \frac{h}{2}$ $h = 685$ lbs

INSTALL 3/4" ϕ ROD THRU TS TO HOLD SLING SPREAD

BEARING $.75 \times .25 = A = .1875$

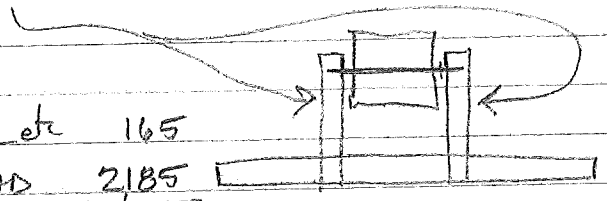
$f_{BEARING}$ $685 \div .1875 = 3653$ psi ok.

BENDING $685 \times \frac{1}{2}" = 343$ in lbs

Sx 3/4" ϕ $\frac{\pi d^3}{32} = .04$ in^3

$f_b = \frac{343}{.04} = 8575$ psi < 10 ksi ok

HANGERS FROM 7/8" ϕ ROD TO SHELF ANGLE



SHELF ANGLE etc 165

PANEL LOAD 2185

2350 lbs

MIN THICKNESS 1/4" (FROM CALCULATION OF 7/8" ϕ ROD)

MIN AREA @ F_T 10,000 $= \frac{2350}{10,000} = .235$ in^2

THATS 1/4" x 1" MUCH MORE WILL BE UTILIZED WHEN DETAILED

MIN WELD @ 600 lbs / INCH / 1/16 FILLET

ASSUME 3/16" WELD SIZE

$\frac{2350}{3 \times 600} = 1.3"$ OF 3/16" WELDS MIN

MORE WILL BE USED IN DETAILING.

REV 1

BROOKFIELD BRIDGE 7/15

PANEL HANDLING WITH DEVICE.

LIFTED WEIGHT PANEL + LIFT DEVICE

LOAD PANEL	3535
DEVICE TOMAN 33x24'	792
MISC ANGLES + SLINGS	273
TOTAL LOAD	4600 lbs

MIN SAFE CAPACITY

GRADALL 534D9-45 TELEHANDLER
CAPACITY 5000 lbs TO ABOUT
17' IN FRONT OF MACHINE

GRADALL 534C-6 TELEHANDLER
CAPACITY 5000 lbs TO ABOUT
13' IN FRONT OF MACHINE

USE MANUFACTURED HOOK PLATE ON
FORKS FOR ATTACHING CABLE SLINGS
TO FORK LIFT

BROOKFIELD BRIDGE NEW - REV 1

FLOOR PANEL HANDLING 7/22

VEHICLE WEIGHT W/ PANEL + LIFT DEVICE

FORKLIFT FOR INSTALLATION ON BRIDGE

GRADALL 534C-6

LOAD CHART SHOWS LOAD CAPACITY OF
5,000 lbs TO 13' IN FRONT OF MACHINE
CALCULATED LOAD 4600 lbs

MACHINE HAS CAPACITY
AT SUITABLE REACH

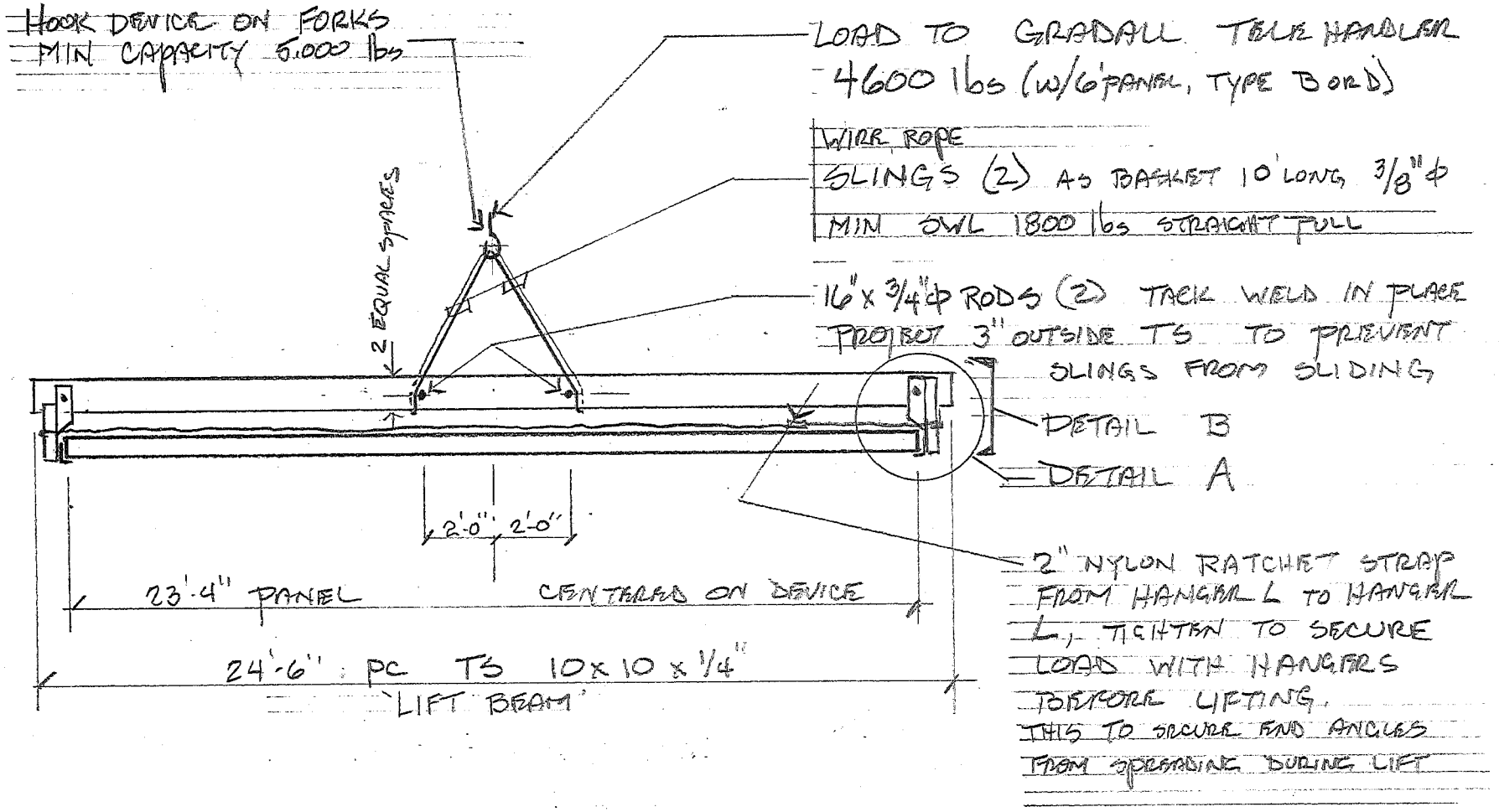
MACHINE AS WEIGHED AT PUBLIC TRUCK
SCALE BY WRIGHT CONSTRUCTION 5/29/14

18,070 lbs

LOAD (6' PANEL + LIFT DEVICE) 4,600 lbs

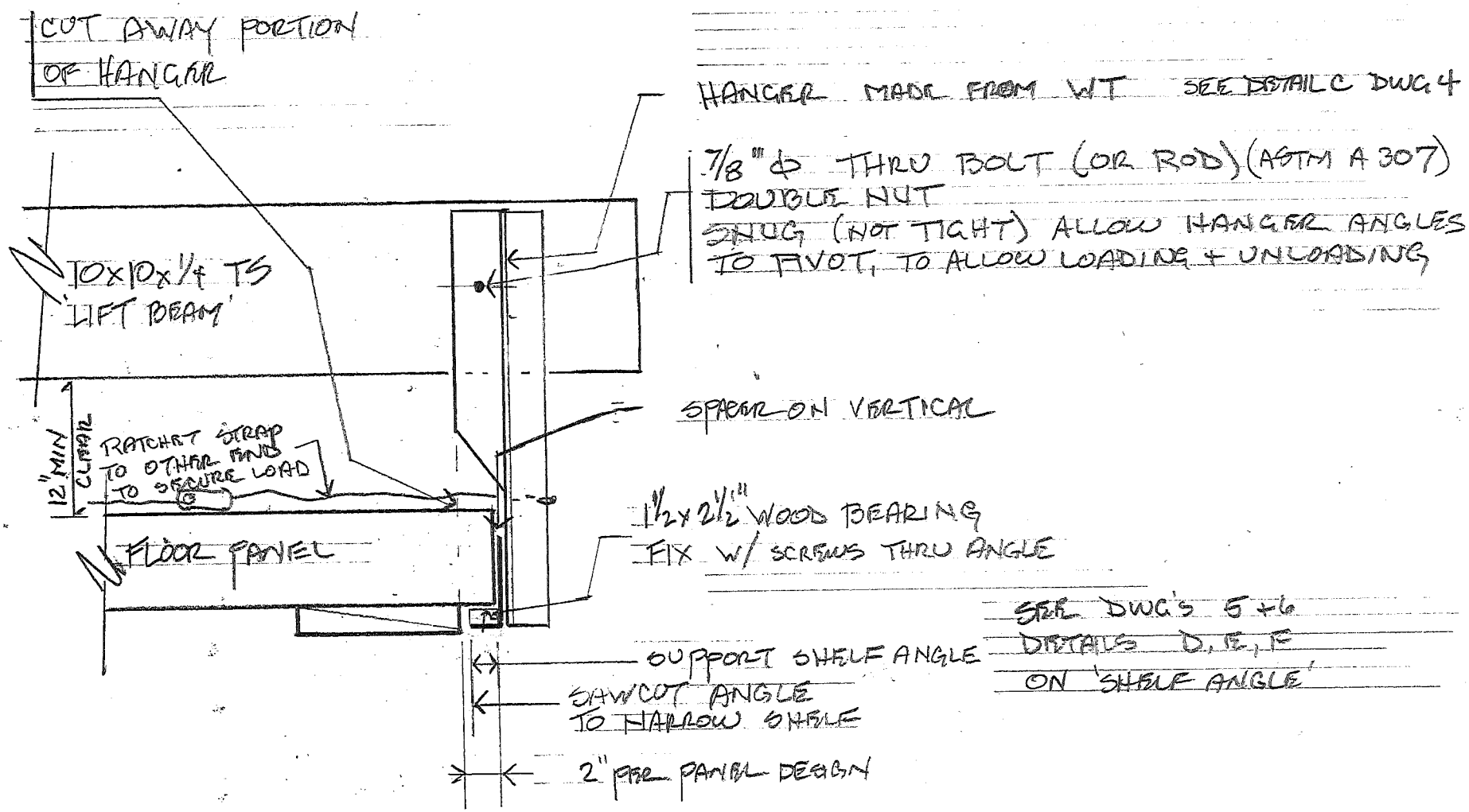
TOTAL VEHICLE WEIGHT 22,670 lbs

THIS IS LESS THAN H12 DESIGN LOADING
OF 24,000 lbs.



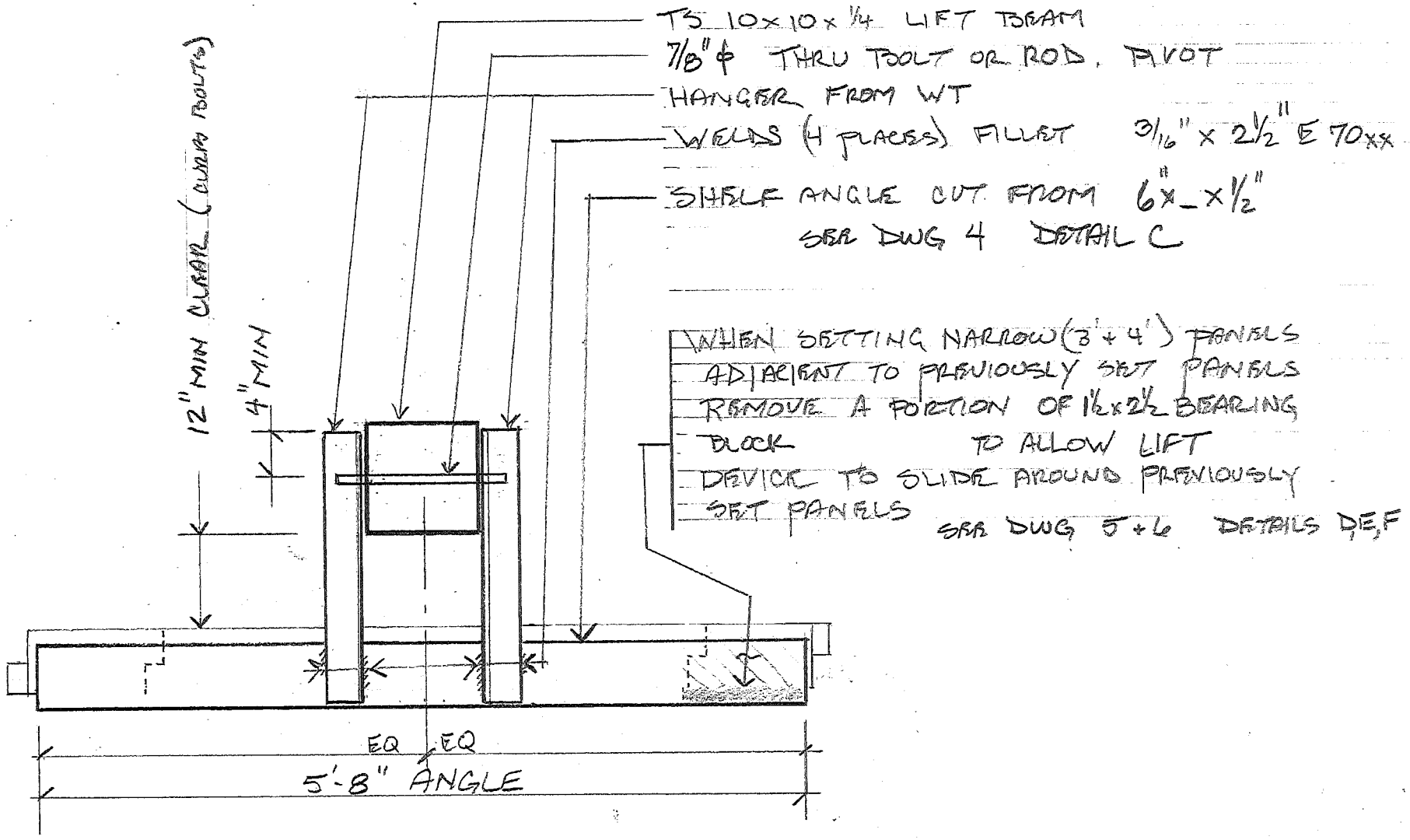
Floor Panel Lifting Device
Overall Elevation
Scale 1/4" = 1' 0" +-
For: Wright Construction Company
Mount Holly VT 802 259 2094

Brookfield Floating Bridge Project
DWG 1 of 6
Revision 1 7/17/14
By: David Skidmore PE
Castleton VT 802 353 4120



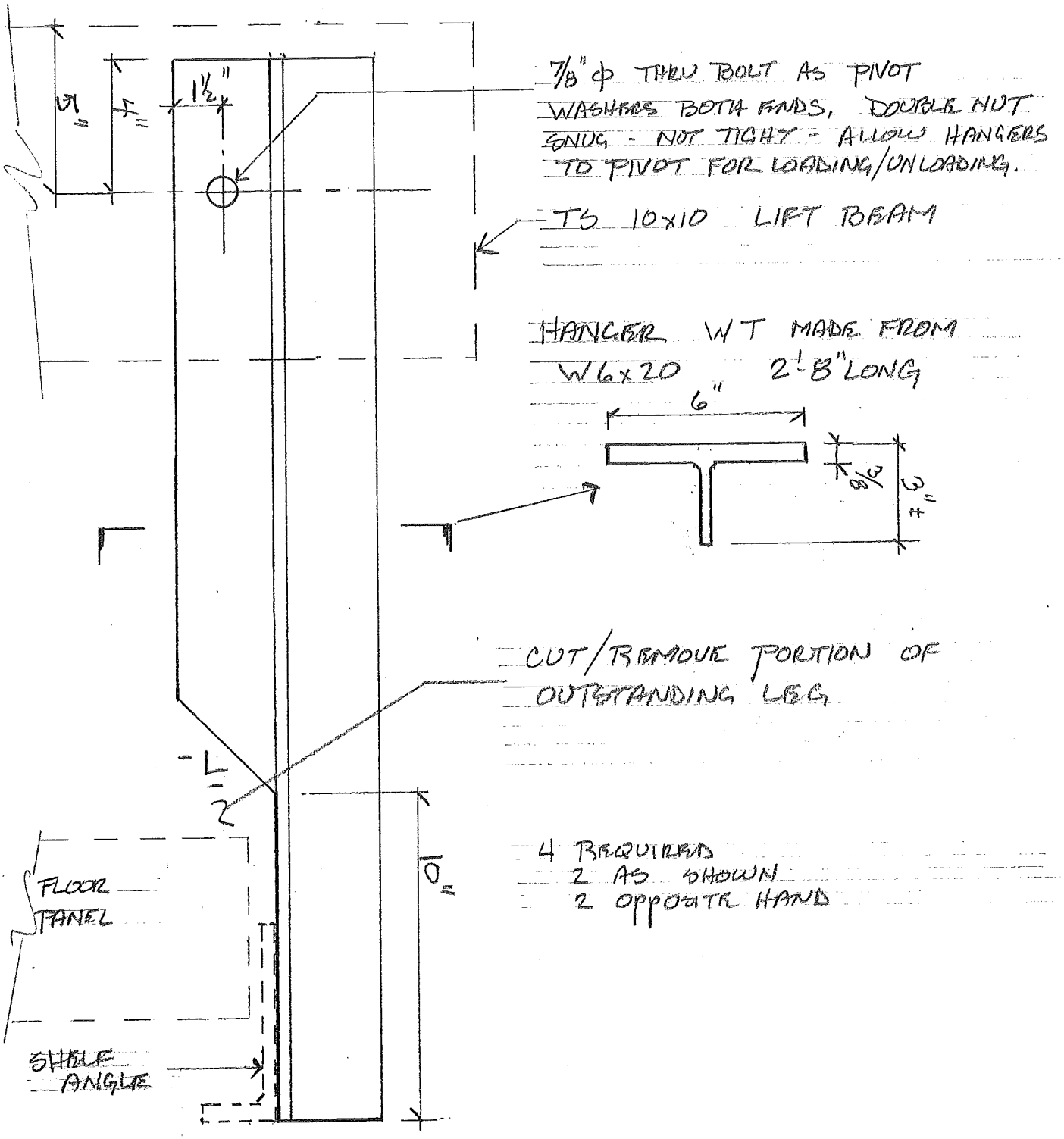
Floor Panel Lifting Device
Detail A Elevation
Scale 1 1/2" = 1' 0" +-
For: Wright Construction Company
Mount Holly VT 802 259 2094

Brookfield Floating Bridge Project
DWG 2 of 6
Revision 1 7/17/14
By: David Skidmore PE
Castleton VT 802 353 4120



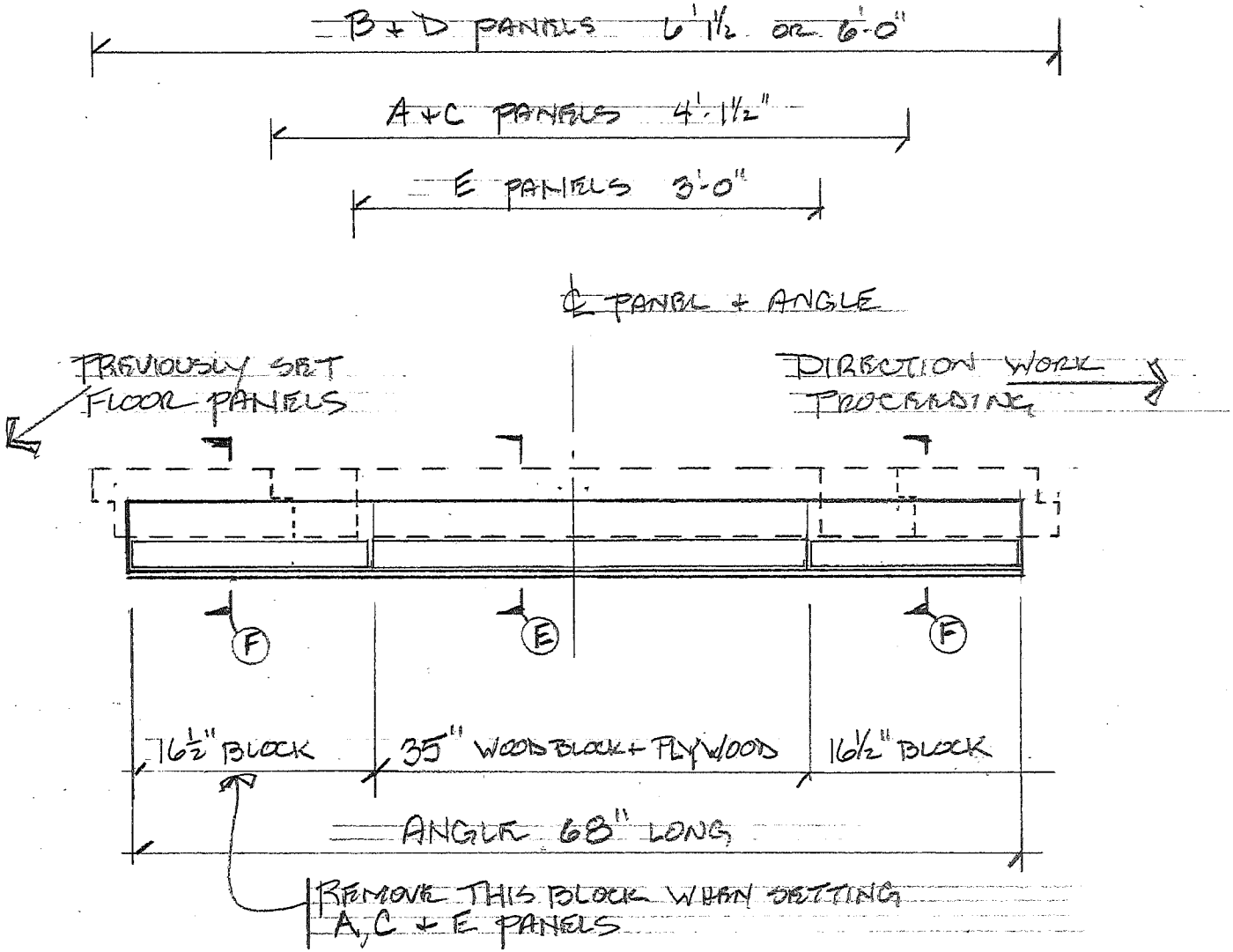
Floor Panel Lifting Device
Detail B End Elevation
Scale 1" = 1' 0" +-
For: Wright Construction Company
Mount Holly VT 802 259 2094

Brookfield Floating Bridge Project
DWG 3 of 6
Revision 1 7/17/14
By: David Skidmore PE
Castleton VT 802 353 4120



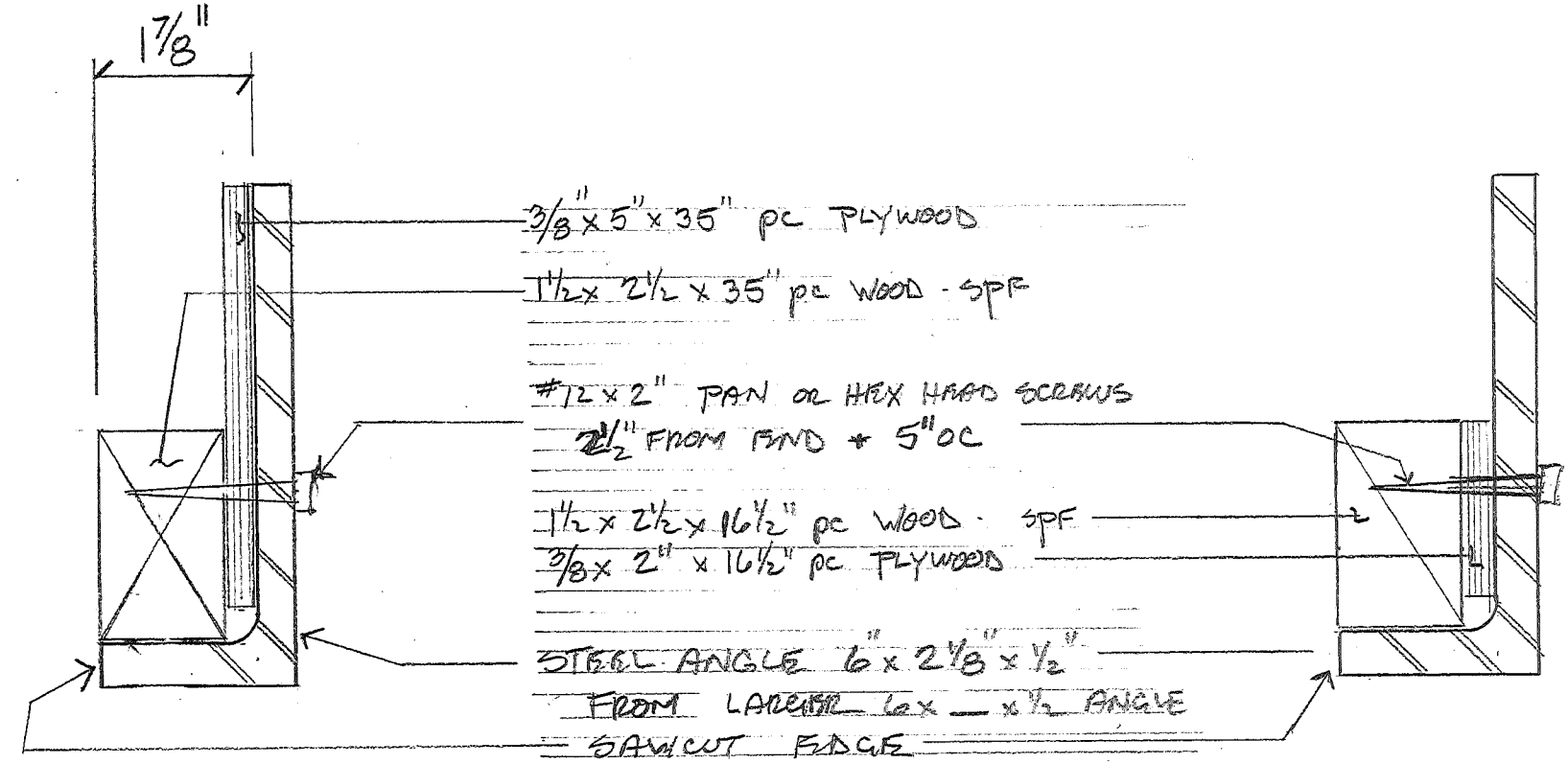
Floor Panel Lifting Device
Detail C Detail of Hangers
Scale 3" = 1' 0" +-
For: Wright Construction Company
Mount Holly VT 802 259 2094

Brookfield Floating Bridge Project
DWG 4 of 6
7/17/14
By: David Skidmore PE
Castleton VT 802 353 4120



Floor Panel Lifting Device
Detail D Elevation Detail of Shelf Angle
Scale 1" = 1' 0" +-
For: Wright Construction Company
Mount Holly VT 802 259 2094

Brookfield Floating Bridge Project
DWG 5 of 6
Revision 1 7/17/14
By: David Skidmore PE
Castleton VT 802 353 4120



DETAIL E

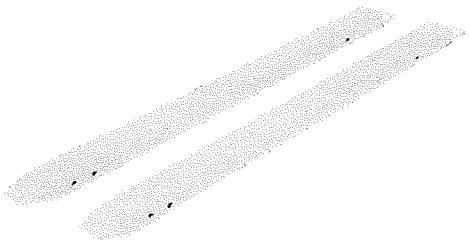
DETAIL F

Floor Panel Lifting Device
Details E + F Shelf Angle Sections
Scale 6" = 1' 0" +-
For: Wright Construction Company
Mount Holly VT 802 259 2094

Brookfield Floating Bridge Project
DWG 6 of 6
Revision 1 7/17/14
By: David Skidmore PE
Castleton VT 802 353 4120

NORTHERN® TOOL + EQUIPMENT

OR SIMILAR



Vestil Fork Extensions — Loop Style, 2-Pc. Set, 4000-Lb. Capacity, Model# FE-4-72

Item# 143536

Only $269.99

Guaranteed Low est Prices

Factory Shipped —
Estimated Delivery: 8 - 13 Business Days
Not Available in Stores

4.8 / 5

4 of 4 w ould recommend this product to a friend.

Product Summary

These Vestil fork extensions provide the extra support needed to lift long or large objects with a fork truck.

What's Included

(2) Fork Extensions

Key Specs

Item#	143536	**Fork Thickness (in.)**	2
Ship Weight	114.0 lbs	**Extension Width (in.)**	5 1/8
Load Capacity (lbs.)	4,000	**Fits Forks W x H (in.)**	4 x 2
Extension Length (in.)	72		

Features + Benefits

- Provides the extra support needed to lift long or large objects with a fork truck
- Welded steel construction with cast steel tips
- Standard Loop Style Operation: Insert loop at the tip of the fork and slide it up at a 45° angle, then lay it down over the existing fork
- Durable powder-coat yellow finish
- **OSHA regulations require that extensions are no more than 150% of the existing fork length (i.e.: on 48 in. existing forks, the fork extension should not exceed 72 in.)**

NORTHERN® TOOL + EQUIPMENT

OR SIMILAR

MIN 5,000 lb capacity for Brockhaus Bruder Farm Implement

Vestil Forklift Double-Fork Hook Plate — 6000-lb. Capacity, Model# LM-HP6-S

Item# 143545

Only $179.99

Guaranteed Lowest Prices

Factory Shipped —
Estimated Delivery: 8 - 13 Business Days
Not Available in Stores

5 / 5

2 of 2 would recommend this product to a friend.

Product Summary

This Vestil forklift double-fork hook plate helps you maximize safety while lifting a load using chains, cables or ropes. Safety chain and clasp are used to secure the Hook Plate to the fork truck, preventing it from sliding off the end of the forks.

What's Included

(1) Forklift double-fork hook plate

Features + Benefits

- Heavy-duty steel frame construction
- Swivel-type hooks are forged steel and include a safety latch of galvanized steel
- Galvanized steel construction
- 24 in. overall width, 6 in. height without hook
- OSHA approved

Key Specs

Item#	143545	**Load Capacity (lbs.)**	6,000
Ship Weight	27.0 lbs	**Fork Openings W x H (in.)**	6 1/4 x 1 3/4