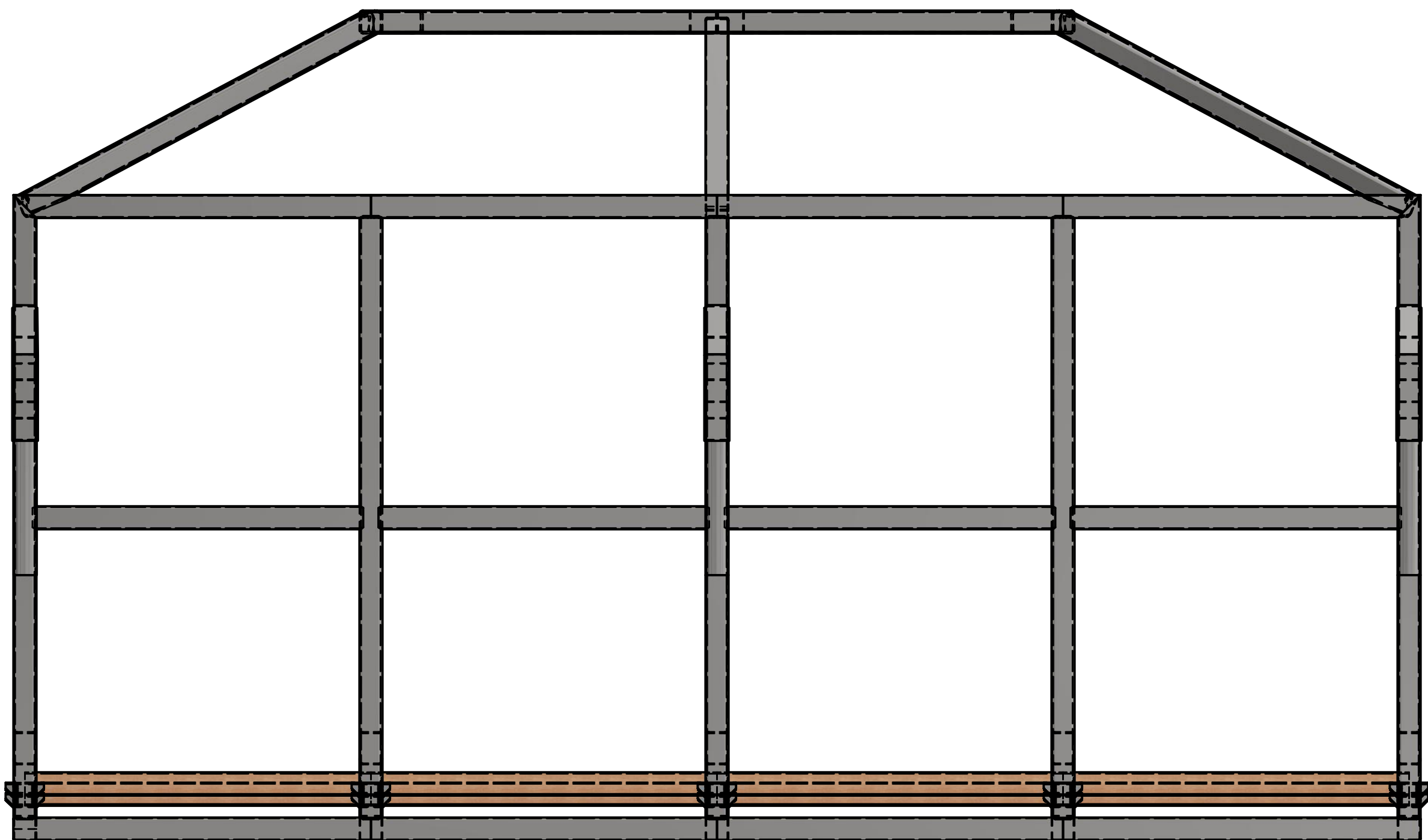
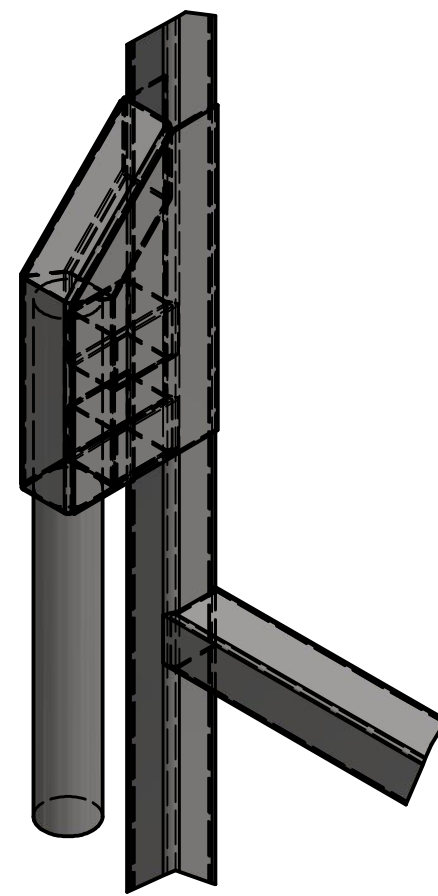


TOP VIEW  
SCALE 1/30

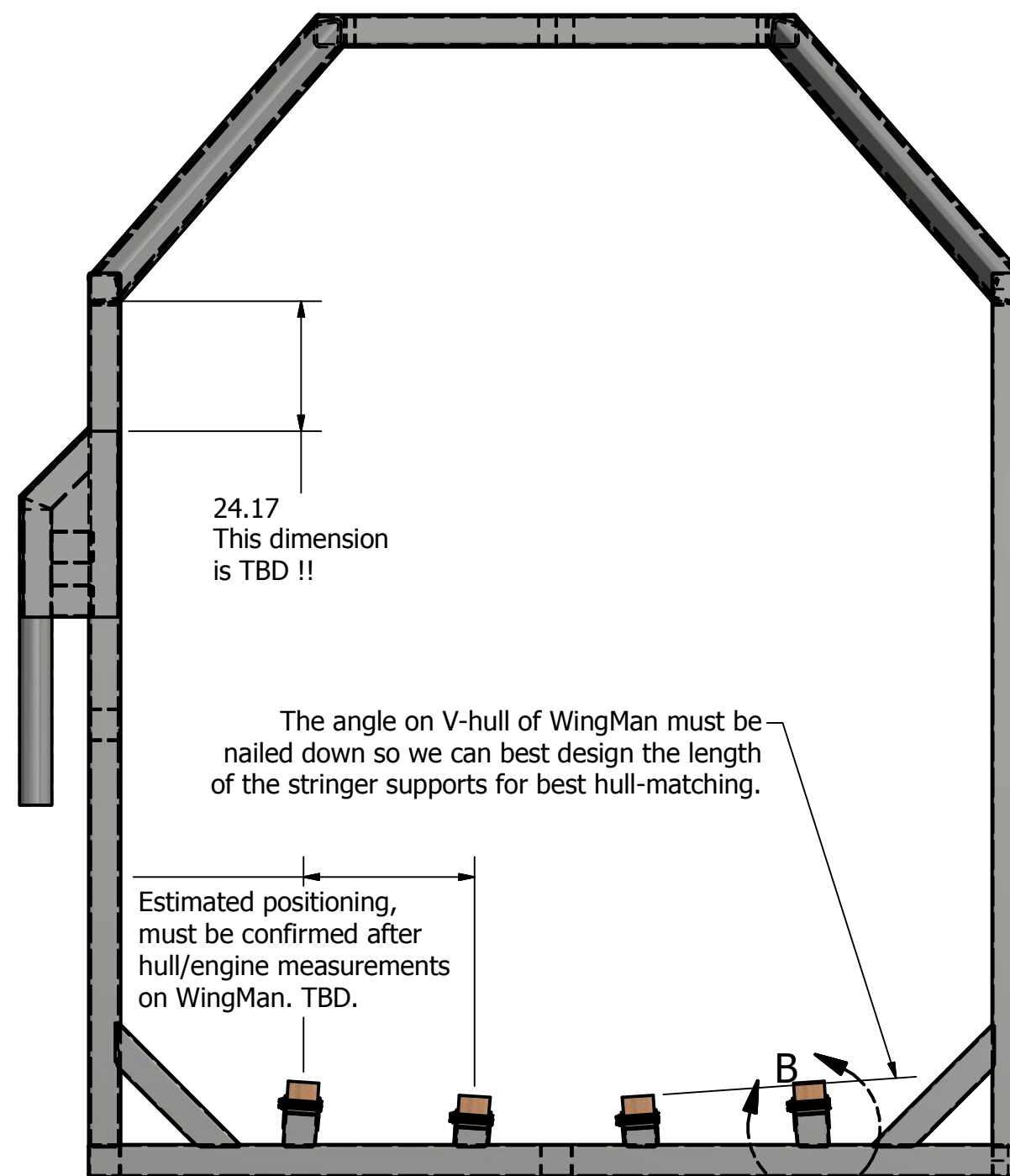
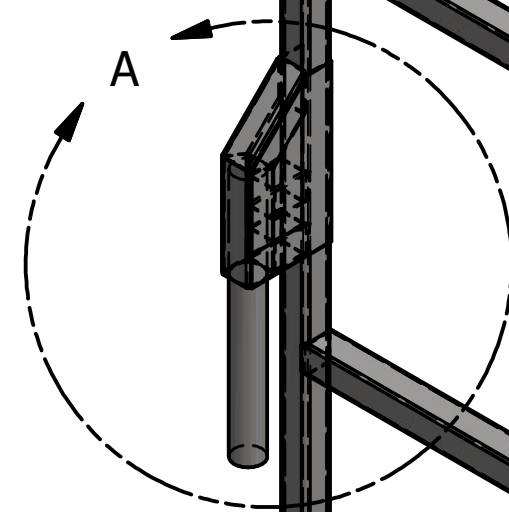


FRONT VIEW  
SCALE 1/30

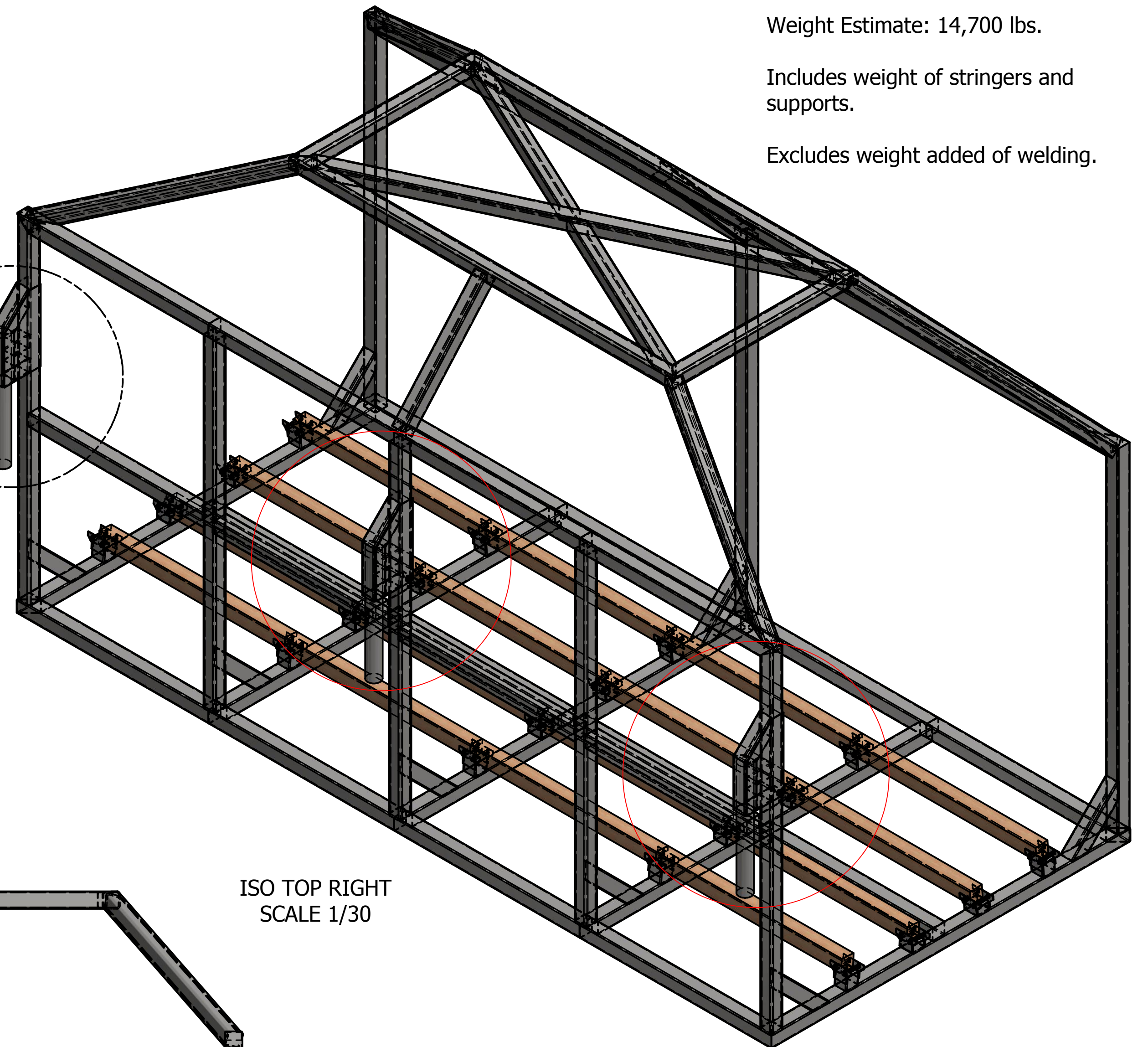


DETAIL A  
SCALE 0.06 : 1  
Qty: 3

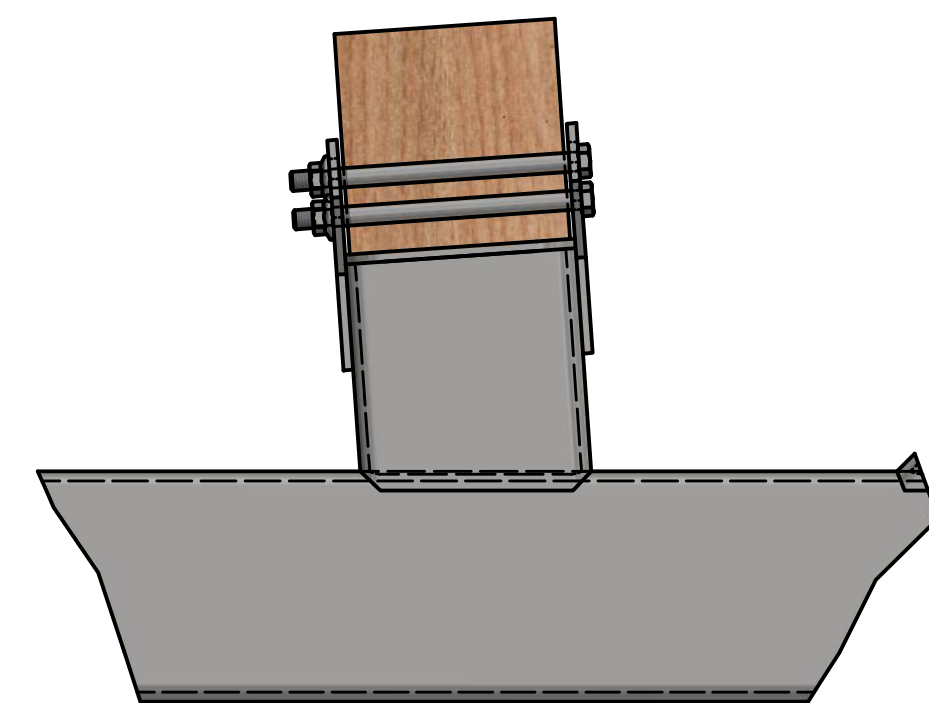
Note: Vertical placement of these pinning assemblies must be determined for proper alignment of cradle to RAMXV



RIGHT VIEW  
SCALE 1/30



ISO TOP RIGHT  
SCALE 1/30



DETAIL B  
SCALE 1 / 5

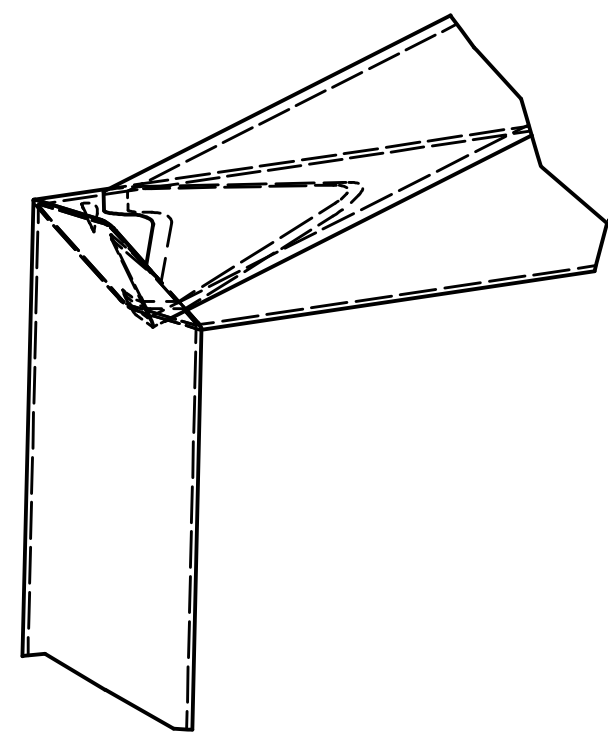
Weight Estimate: 14,700 lbs.  
Includes weight of stringers and supports.  
Excludes weight added of welding.

Wooden stringers are shown here supported by 6"x6"x1/4" square tube cut into short sections. It may be possible to improve the design / reduce the cost by replacing these with 6"x3"x1/4" angle iron. As there are qty:20 supports to allow parking of WingMan in either direction, it's a considerable amount of time to fabricate. It may be more cost effective to cut and weld angle iron vs square tube. Havine said that, it looks nice as all-tubular. TBD after discussion with Aries/MIF.

**NOT FOR BUILD  
FOR QUOTE**

DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the Crewboat WingMan		
MFG				
APPROVED				
		SIZE D	DWG NO Wingman Cradle	REV
		SCALE 1/30	SHEET 1 OF 15	





DETAIL C  
SCALE 1 / 9

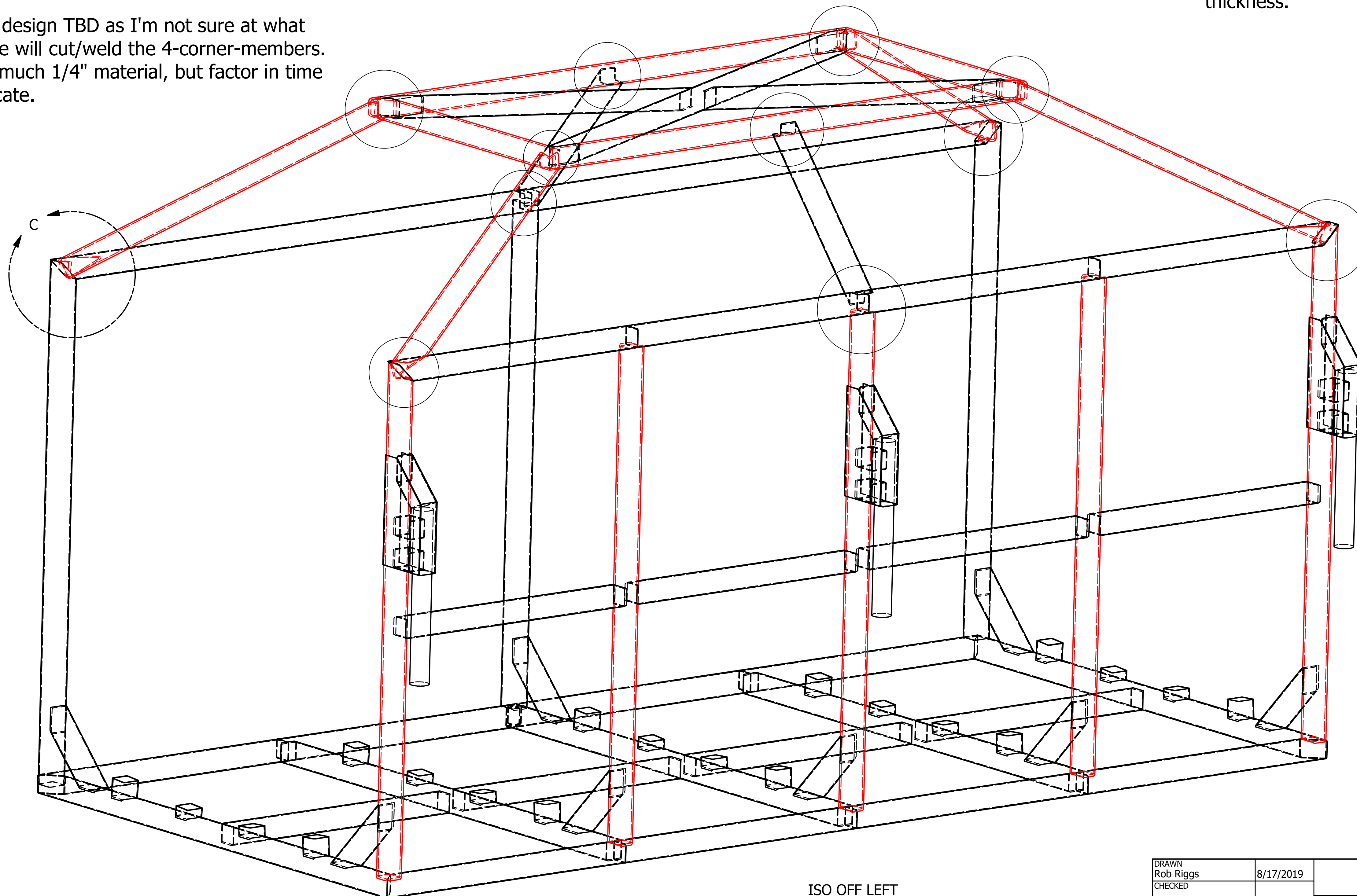
All 12 points of connection (6 on each side) between the upper cradle and lower will need to be strengthened with brackets.

Points are circled. More complicated cuts/welding.

Bracket design TBD as I'm not sure at what angle we will cut/weld the 4-corner-members. It's not much 1/4" material, but factor in time to fabricate.

Shown here without stringers. Qty: 13 square-tube members shown in red are 6"x6"x1/2" AISC Mild Steel.

The remaining members are 6"x6"x1/4" thickness.



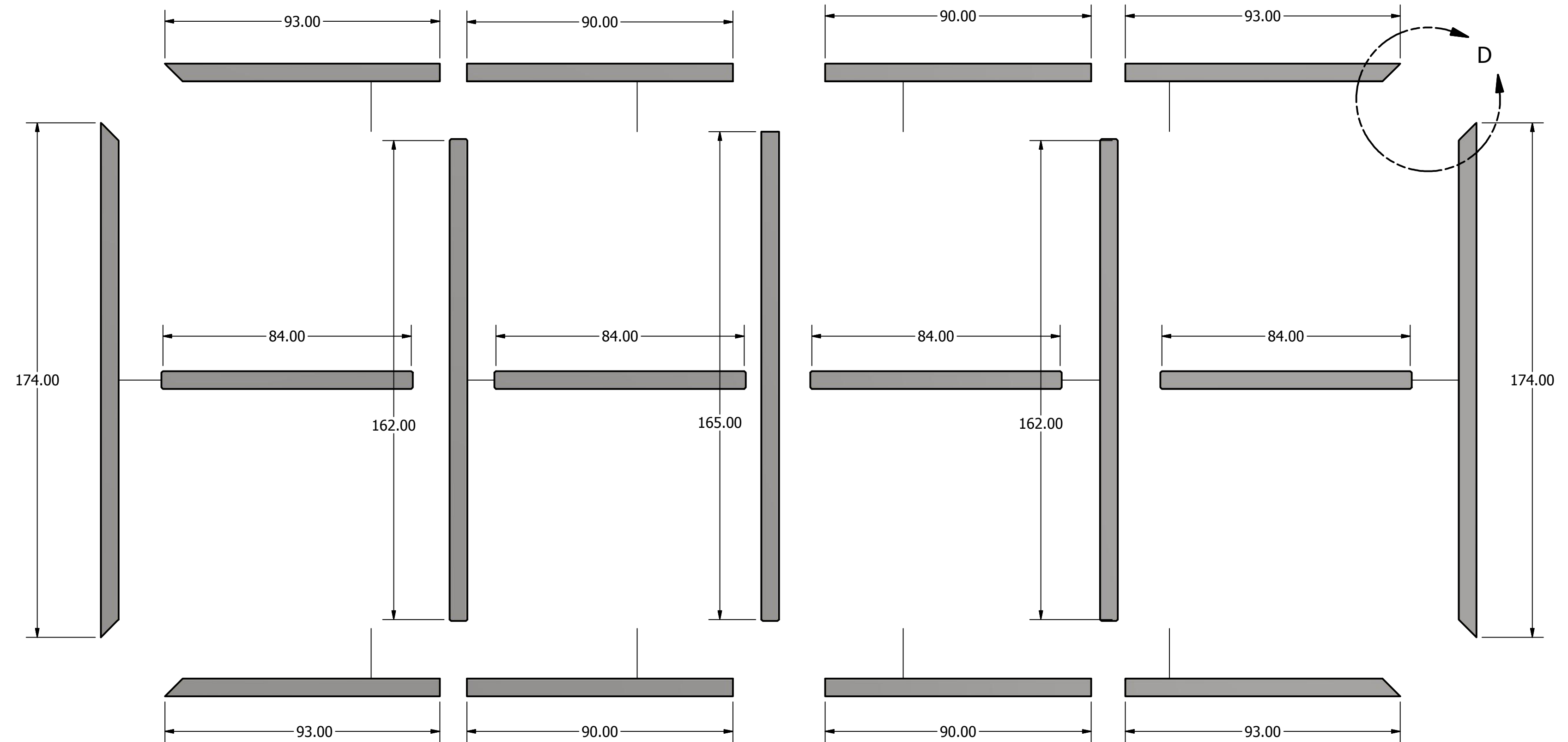
**NOT FOR BUILD**  
**FOR QUOTE**

ISO OFF LEFT  
SCALE 1/18

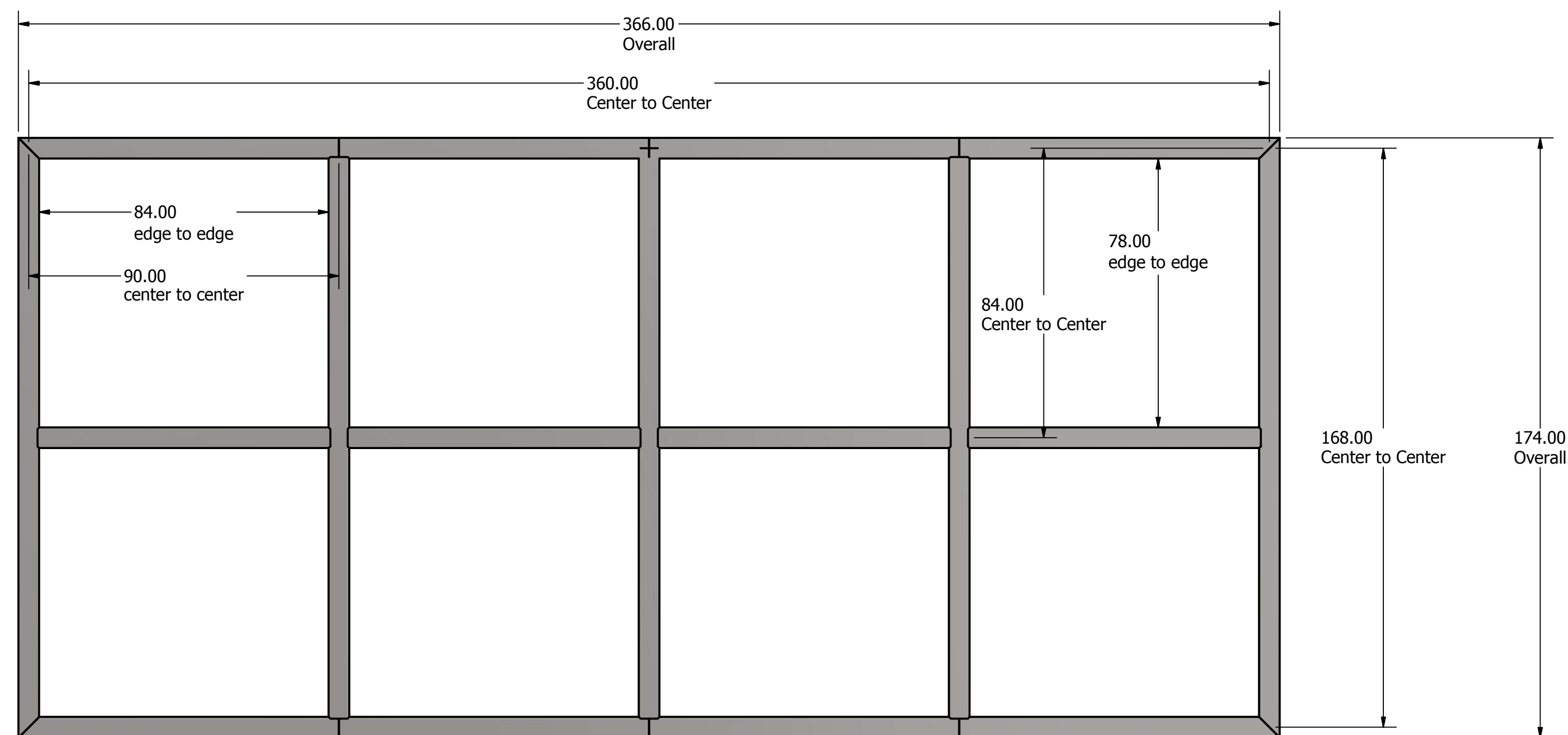
DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the		
MFG		Crewboat WingMan		
APPROVED		SIZE D	DWG NO Wingman Cradle	REV
SCALE 1/18		SHEET 2 OF 15		

All tube in this view is 6"x6"x1/4" AISC Mild Steel.

DETAIL D  
SCALE 1 / 15  
Miter cut at 4 corners



EXPLOSION VIEW  
SCALE 1 / 30



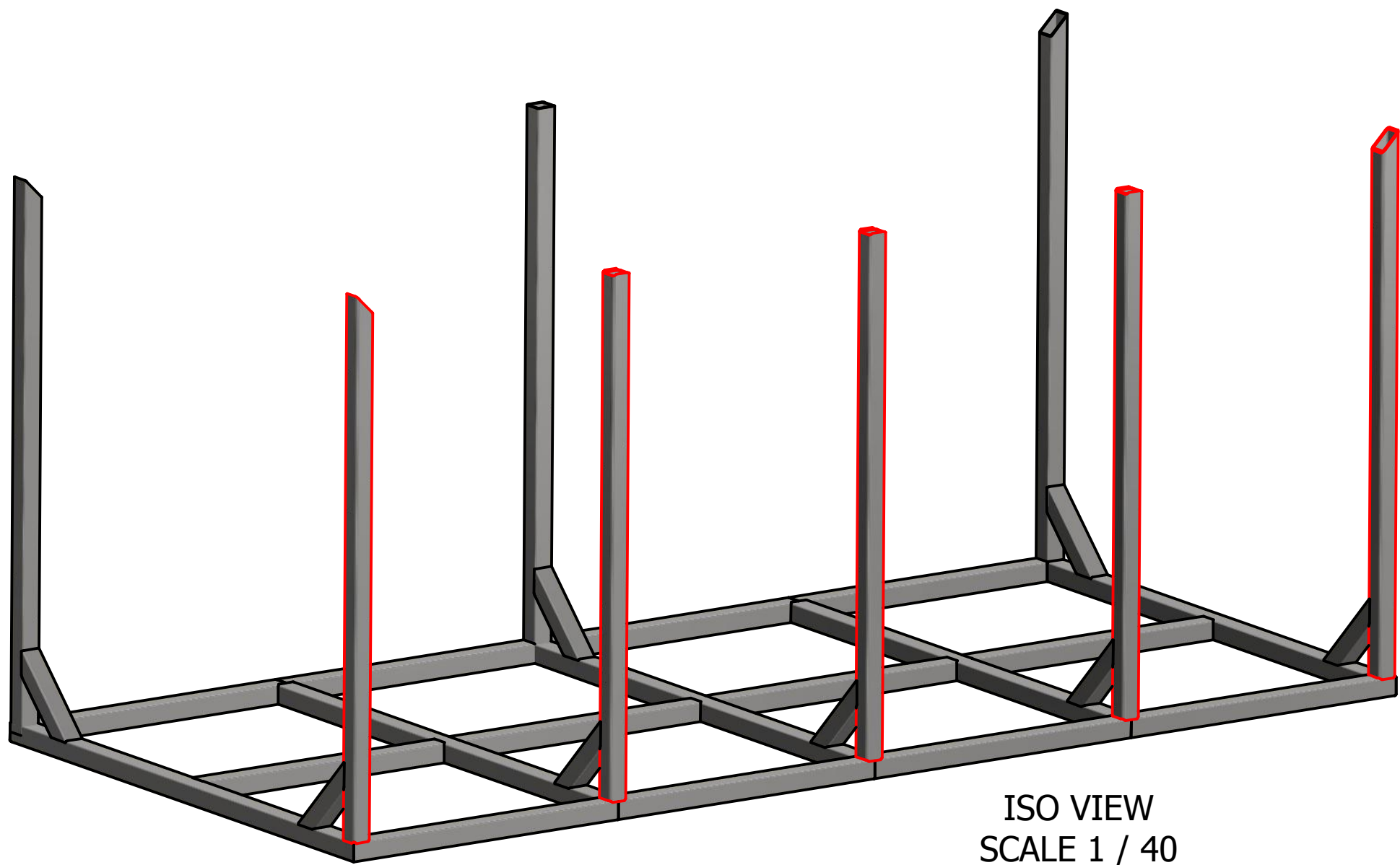
TOP VIEW  
SCALE 1 / 30

**NOT FOR BUILD**  
**FOR QUOTE**

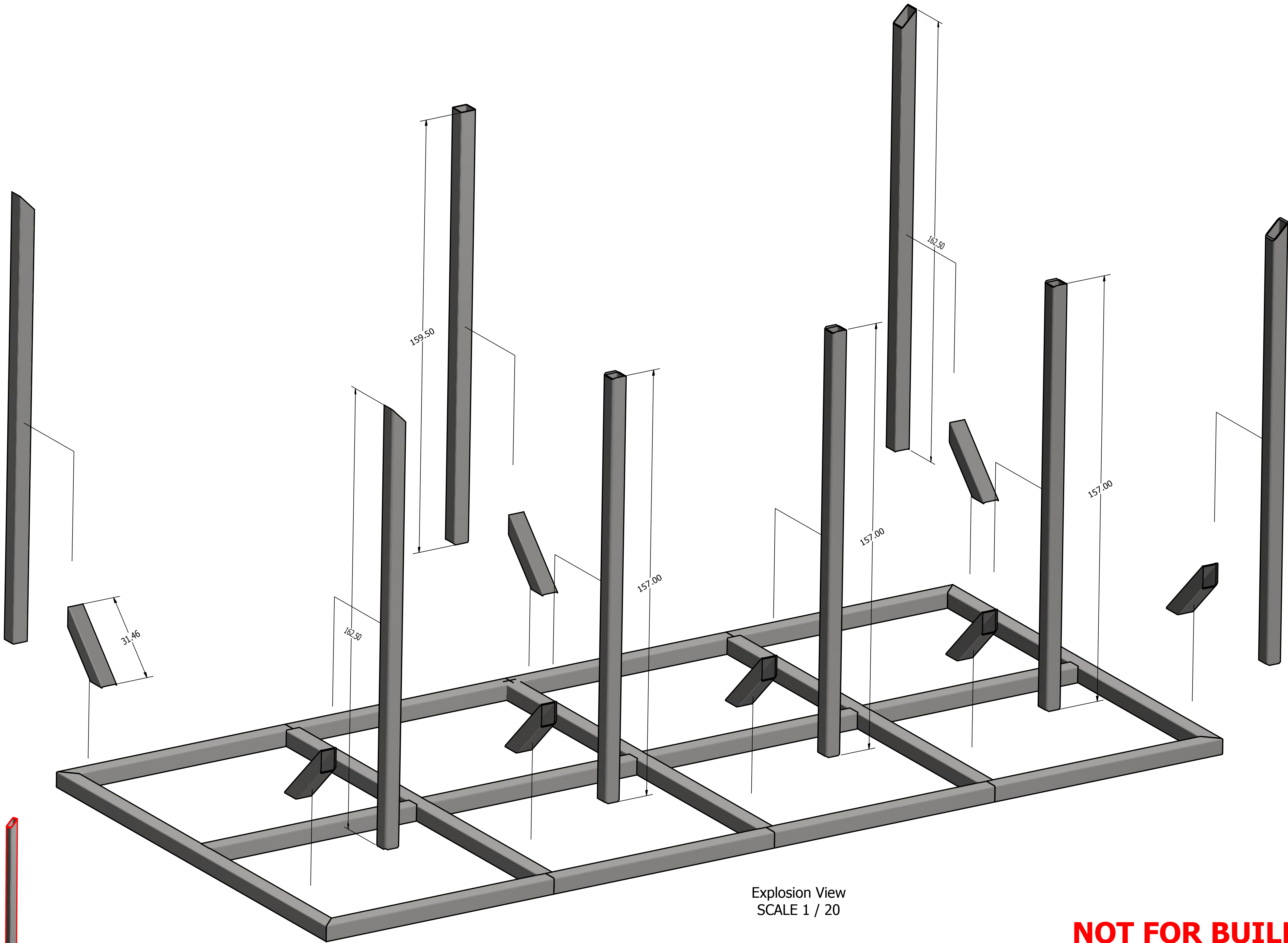
DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED				
QA		TITLE		
MFG		MIF Construction Drawings: Cradle for the Crewboat WingMan		
APPROVED		SIZE		DWG NO
		D		Wingman Cradle
		SCALE	1 / 30	SHEET 3 OF 15



Next, weld the upright to the base structure. The members shown in red are 1/2" thick. All remaining members are 1/4" thick.



ISO VIEW  
SCALE 1 / 40



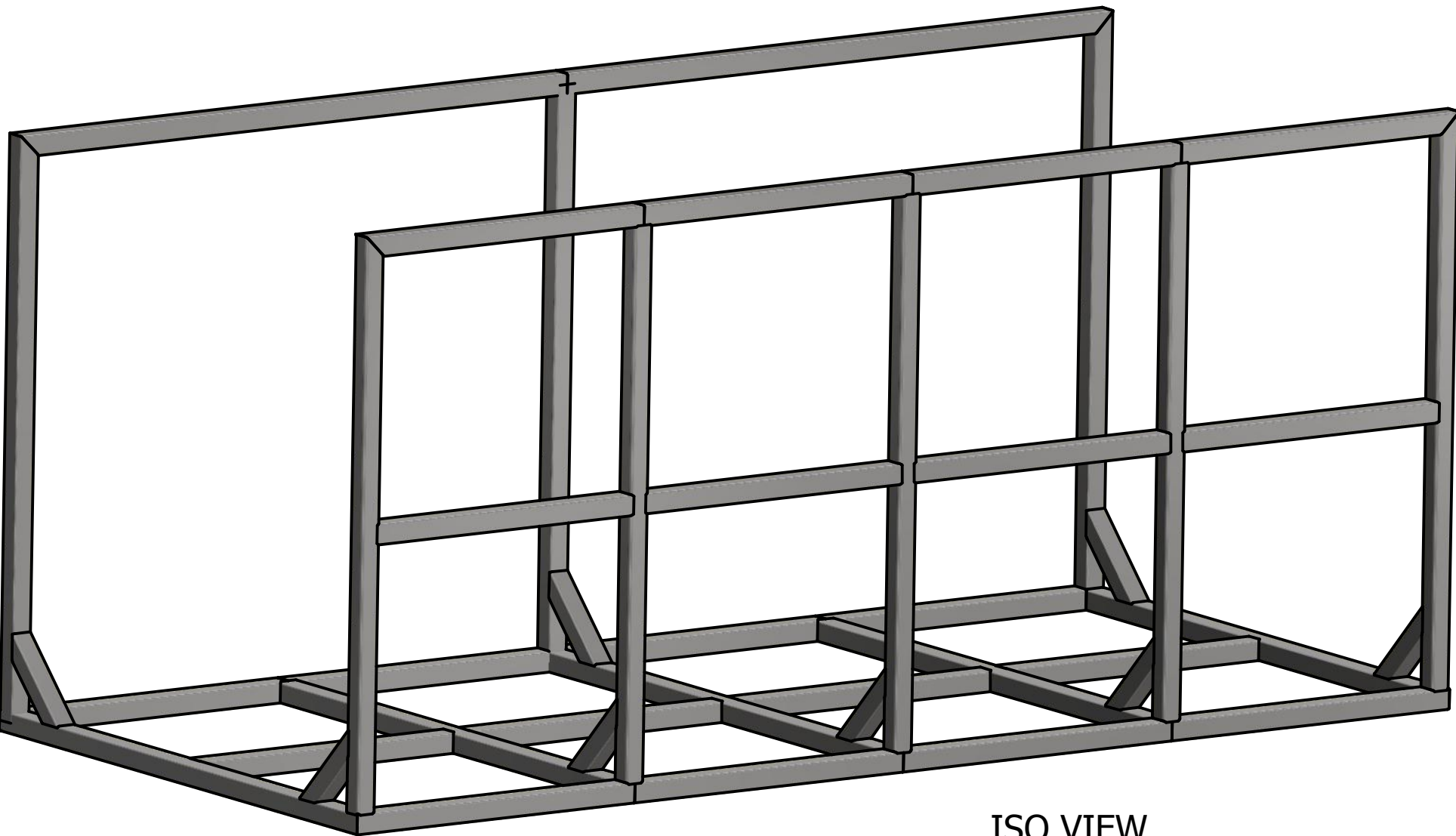
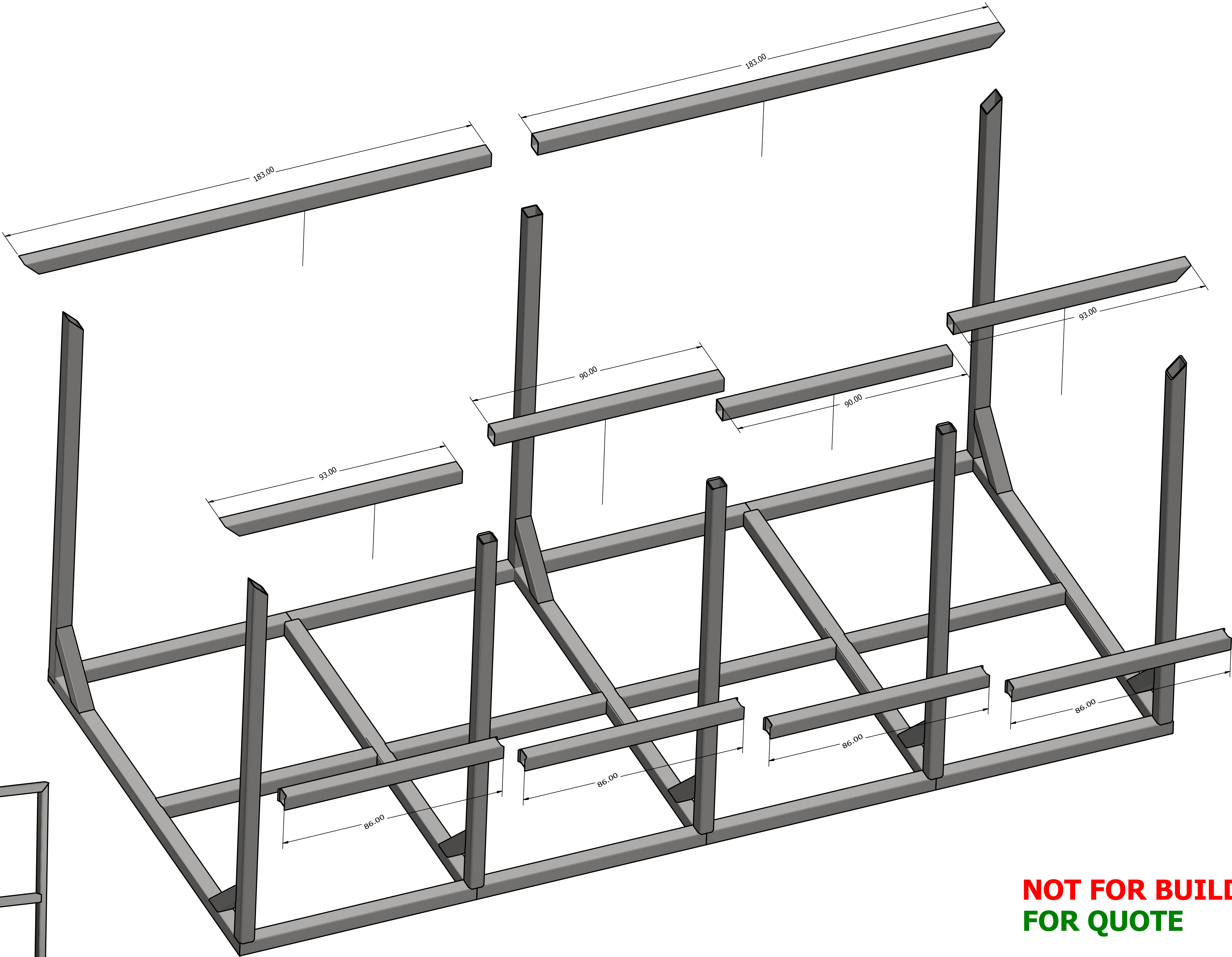
Explosion View  
SCALE 1 / 20

**NOT FOR BUILD**  
**FOR QUOTE**

DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the		
MFG		Crewboat WingMan		
APPROVED				
		SIZE D	DWG NO Wingman Cradle	REV
		SCALE 1 / 40	SHEET 4 OF 15	



Next, install the qty:10 horizontal stiffeners. These are all to be 6"x6"x1/4" AISC Mild Steel.

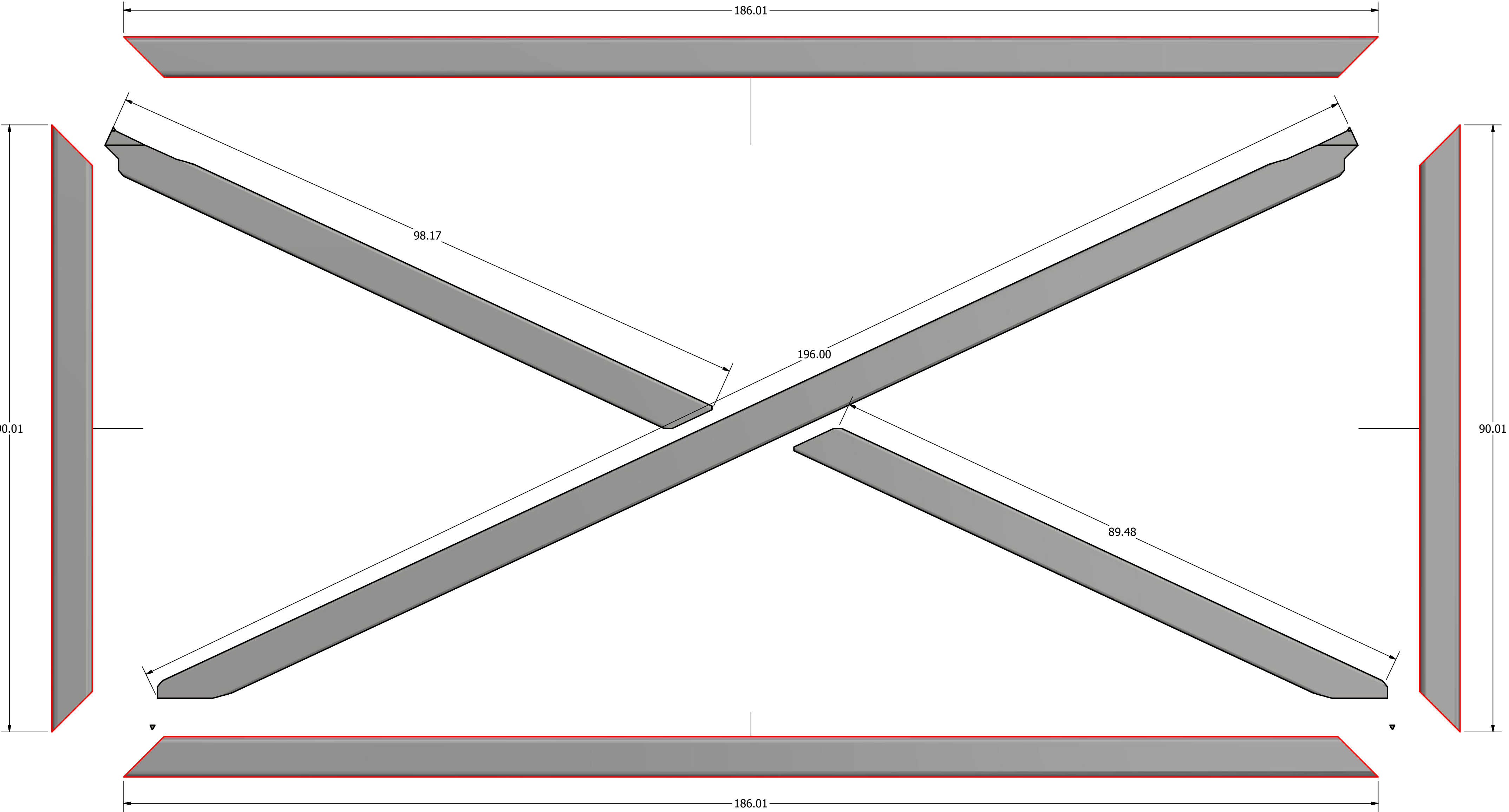


ISO VIEW  
SCALE 1 / 40

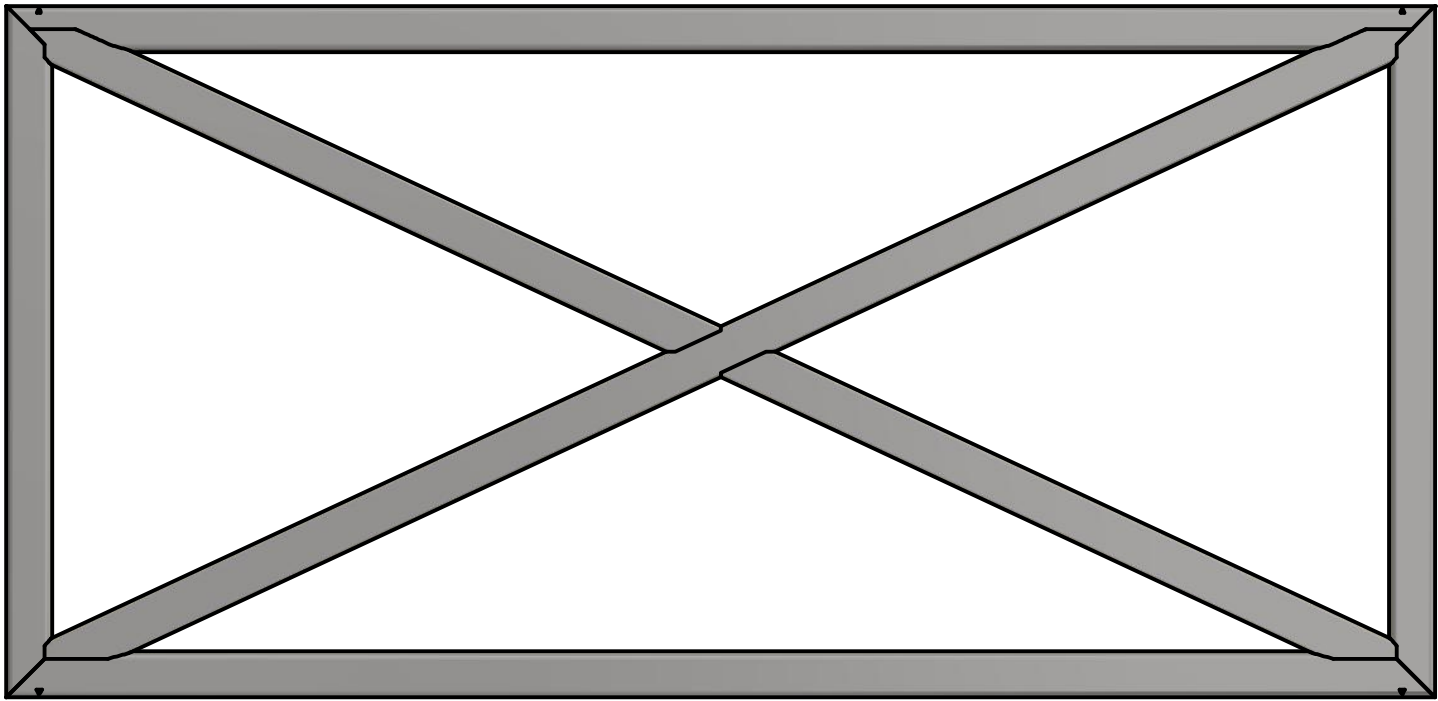
**NOT FOR BUILD**  
**FOR QUOTE**

DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the		
MFG		Crewboat WingMan		
APPROVED		SIZE	DWG NO	REV
		D	Wingman Cradle	
		SCALE	1 / 40	SHEET 5 OF 15

Next, fabricate the top of the cradle. The 4 members (shown in red) making the outer rectangle are to be 6"x6"x1/2" AISC Mild Steel. Other members to be 1/4" thick.



Explosion View  
SCALE 1 / 10

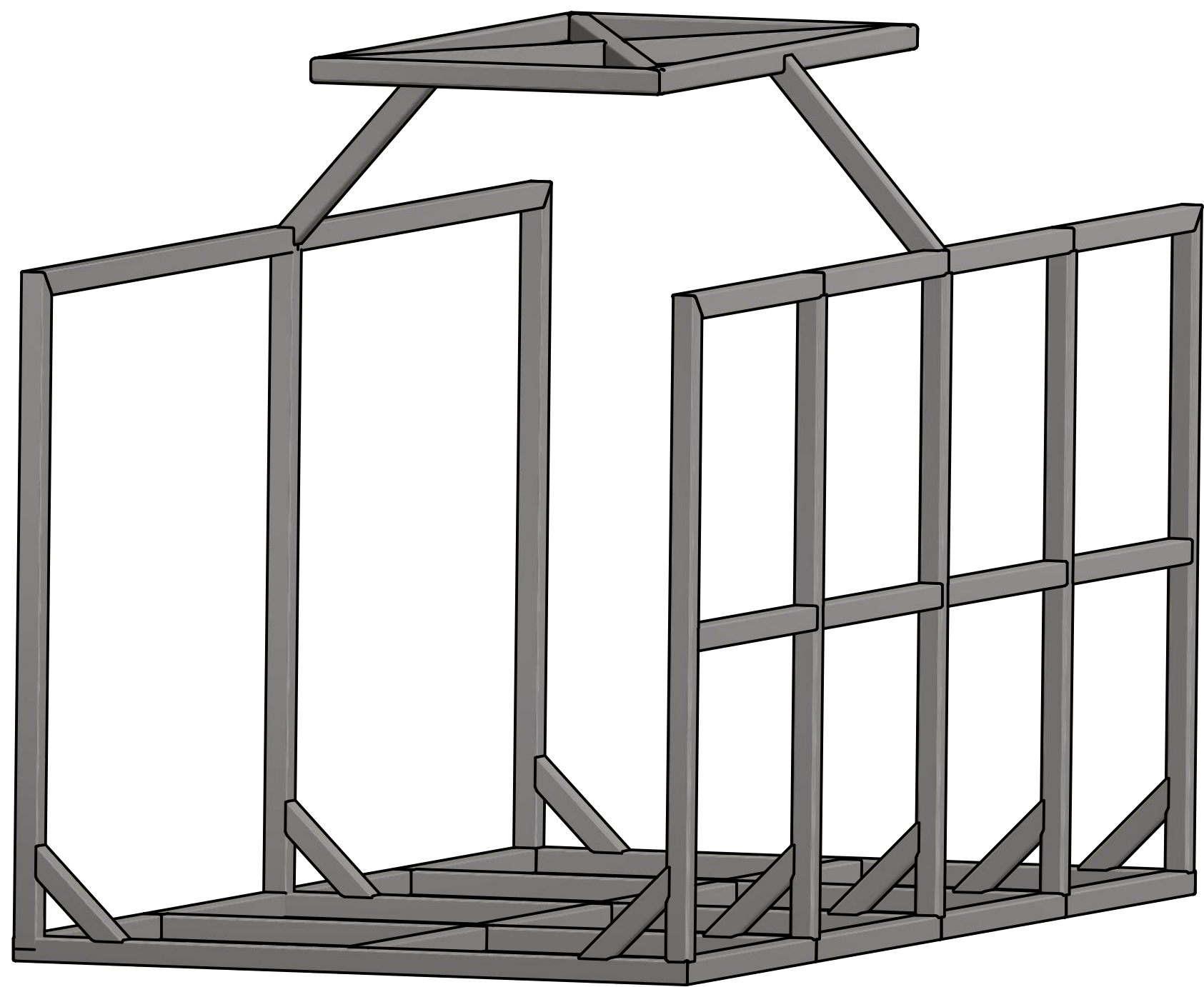


TOP VIEW  
SCALE 1 / 25

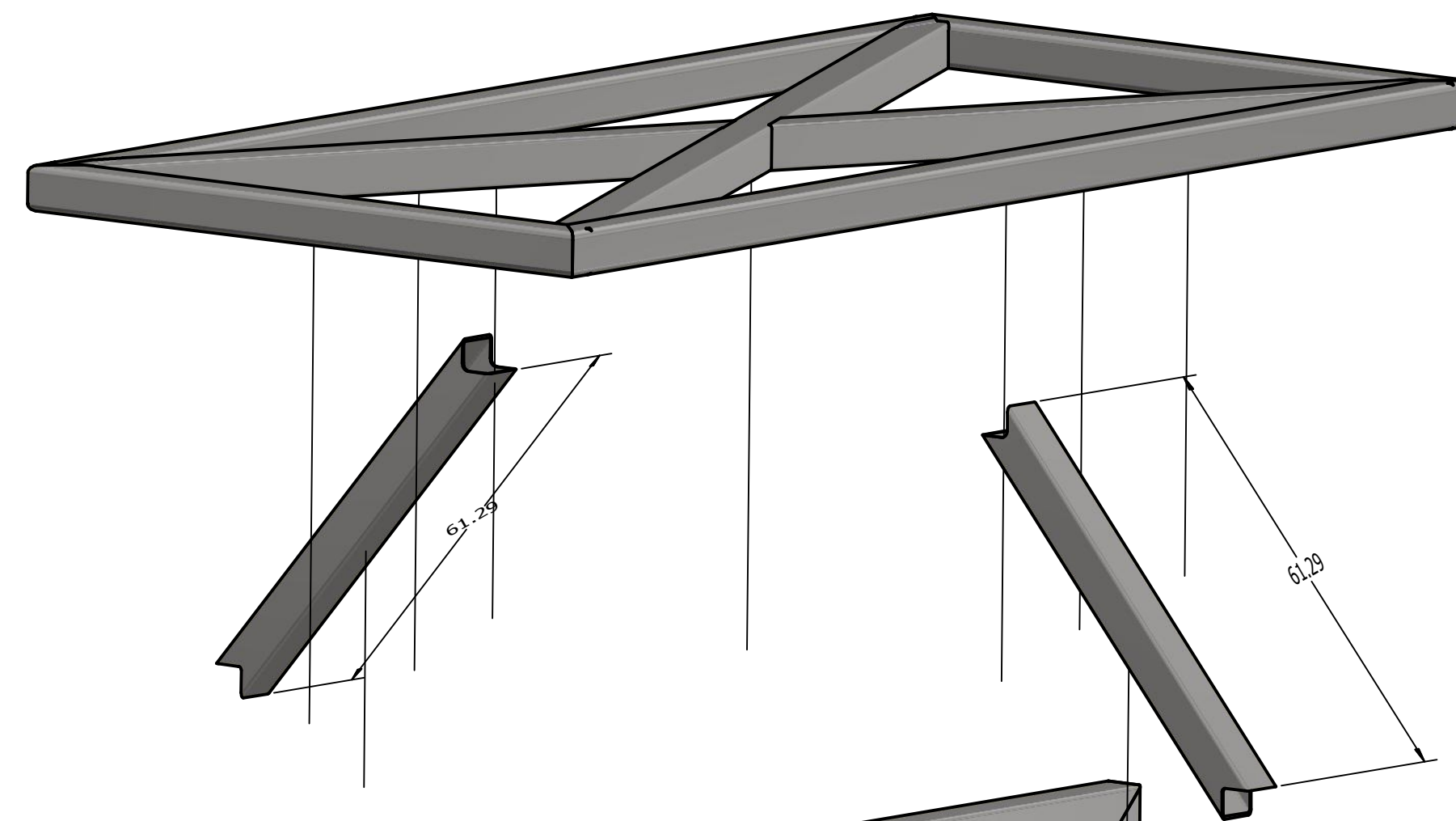
**NOT FOR BUILD**  
**FOR QUOTE**

DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the		
MFG		Crewboat WingMan		
APPROVED				
		SIZE D	DWG NO Wingman Cradle	REV
		SCALE 1 / 25	SHEET 6 OF 15	





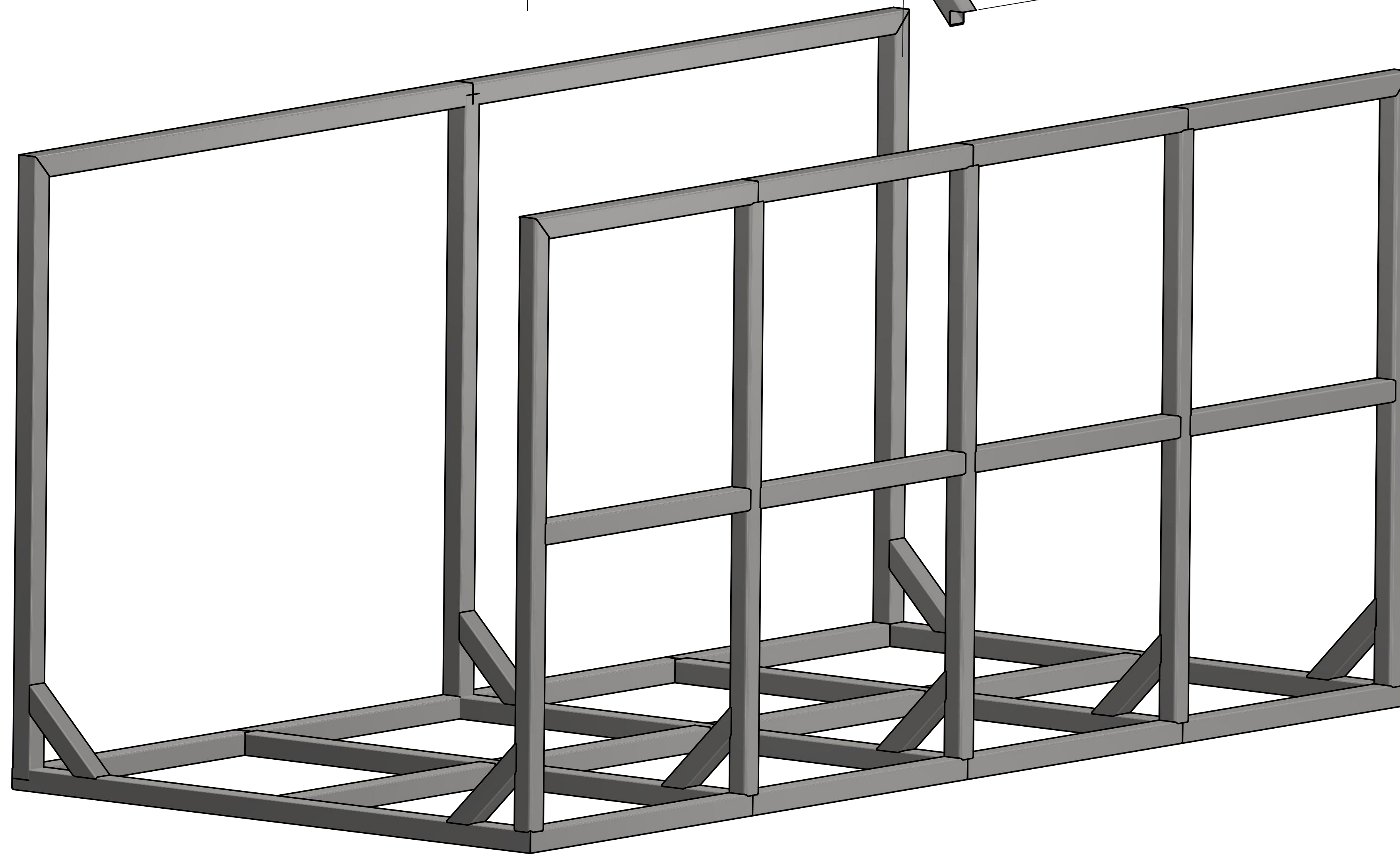
ISO VIEW  
SCALE 0.03 : 1



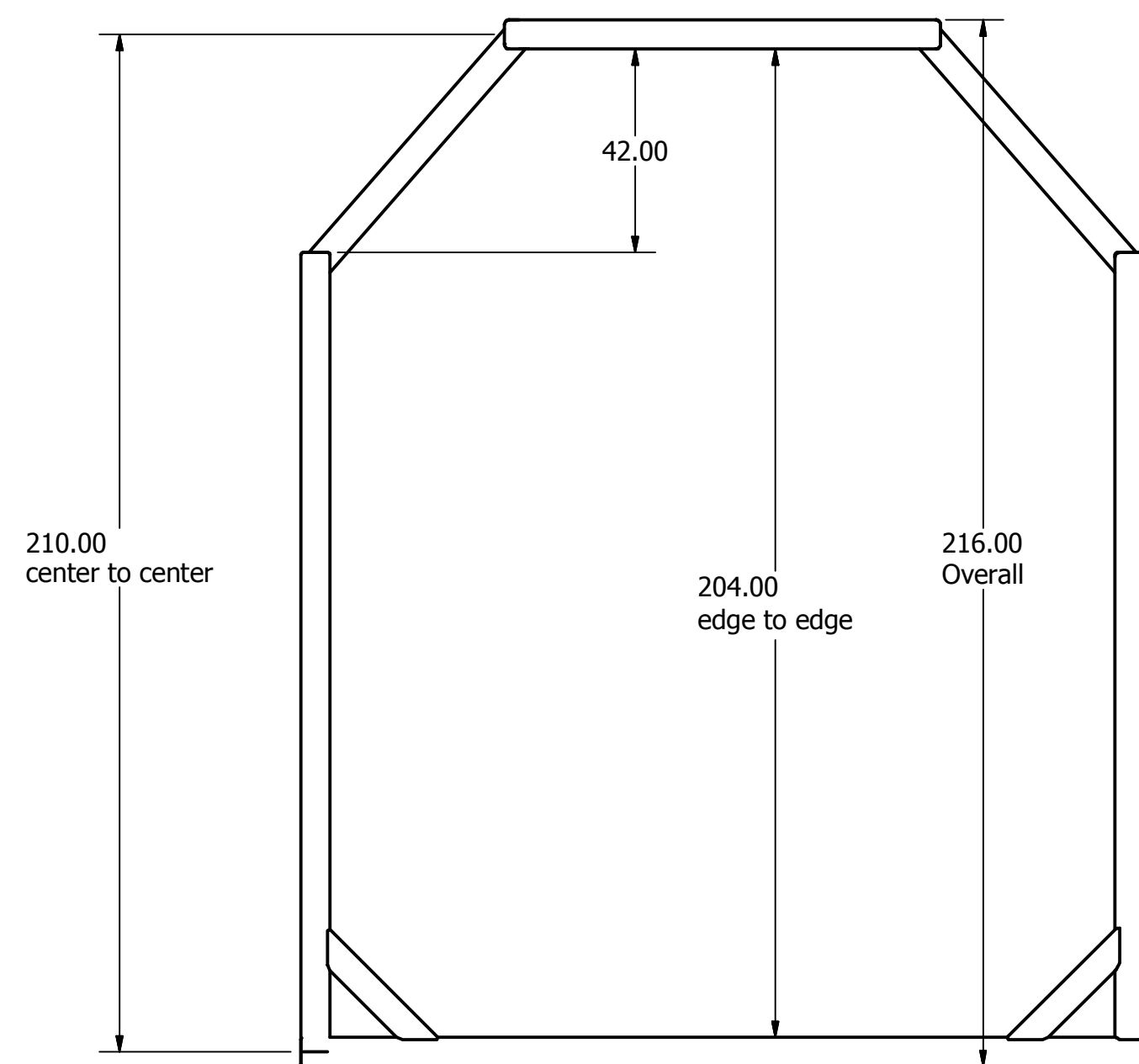
Next, position the bottom edge of the top of the cradle 42" above the top horizontal stiffener (as shown).

Cut and install the two members shown to support the cradle top in position.

61.29" is CAD estimate. Cut and notch to fit.



Explosion View  
SCALE 1 / 20



210.00  
center to center

204.00  
edge to edge

216.00  
Overall

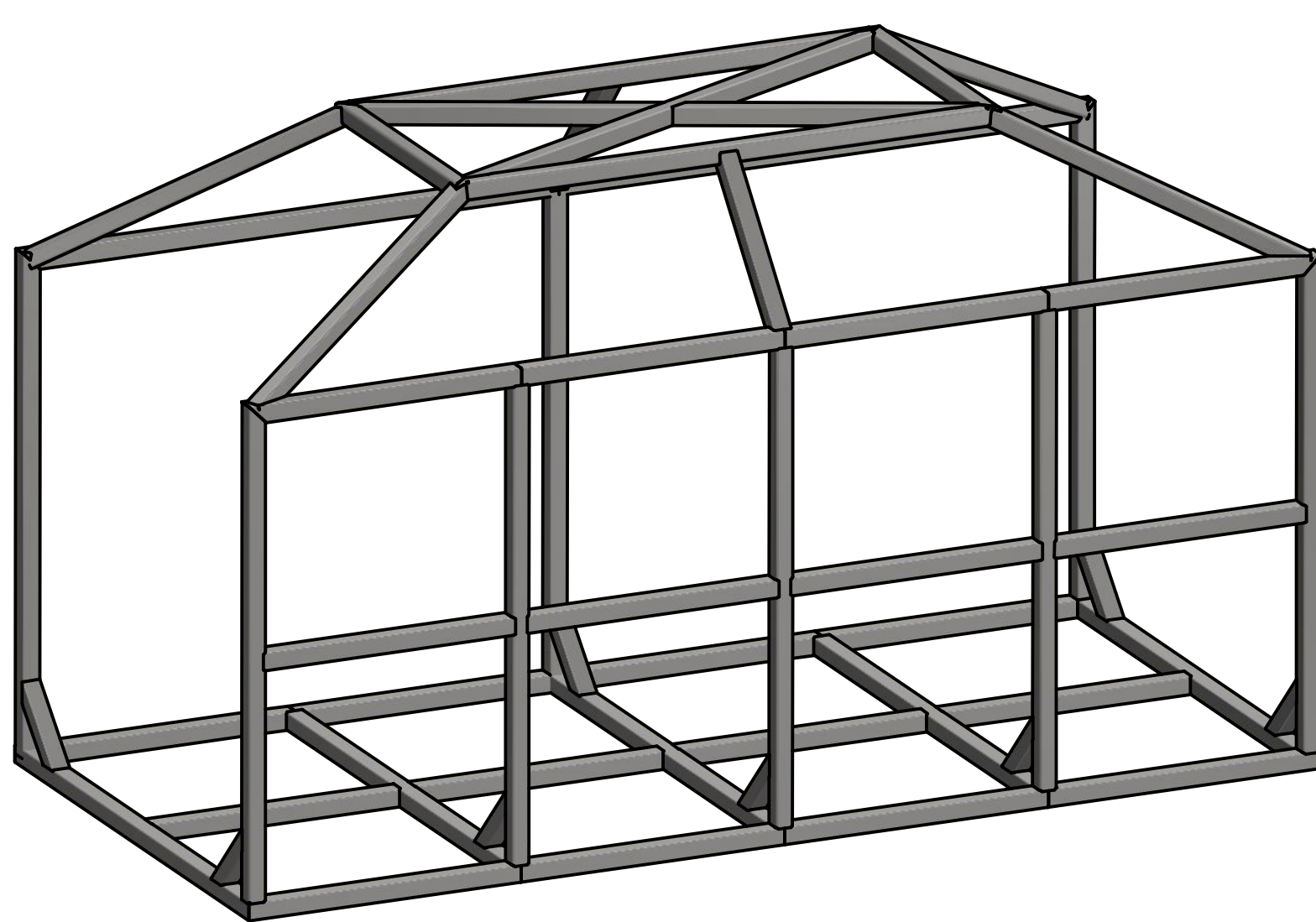
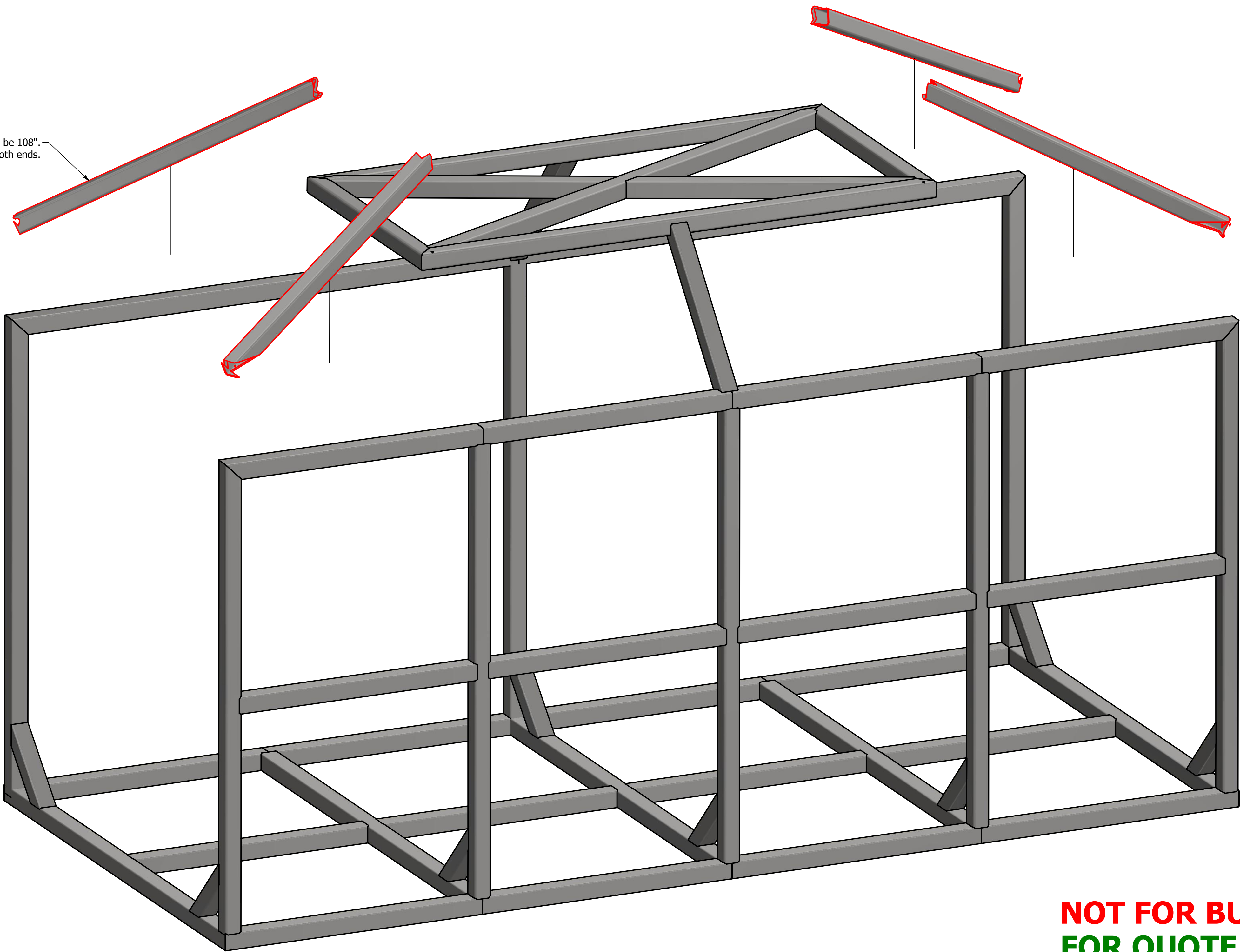
**NOT FOR BUILD  
FOR QUOTE**

DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the Crewboat WingMan		
MFG				
APPROVED				
		SIZE D	DWG NO Wingman Cradle	REV
		SCALE 0.03 : 1	SHEET 7 OF 15	



Next, cut to fit the 4 corner members shown in red. These will be the most difficult due to change in X,Y, and Z axis. These 4 members are to be 6"x6"x1/2" AISC Mild Steel.

Calculated in CAD to be 108".  
Cut and notch to fit both ends.



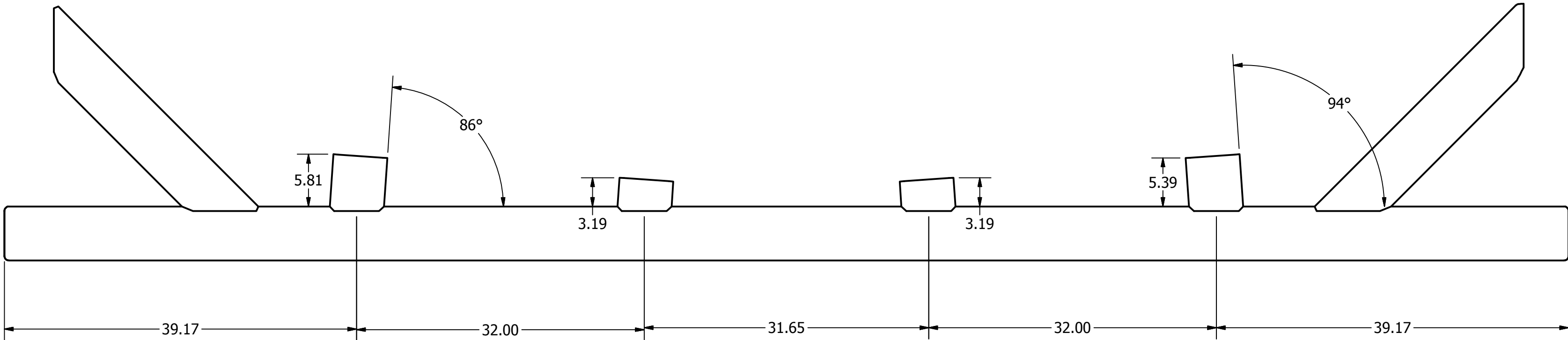
**NOT FOR BUILD**  
**FOR QUOTE**

DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the		
MFG		Crewboat WingMan		
APPROVED				
		SIZE D	DWG NO Wingman Cradle	REV
		SCALE 1 / 50	SHEET 8 OF 15	

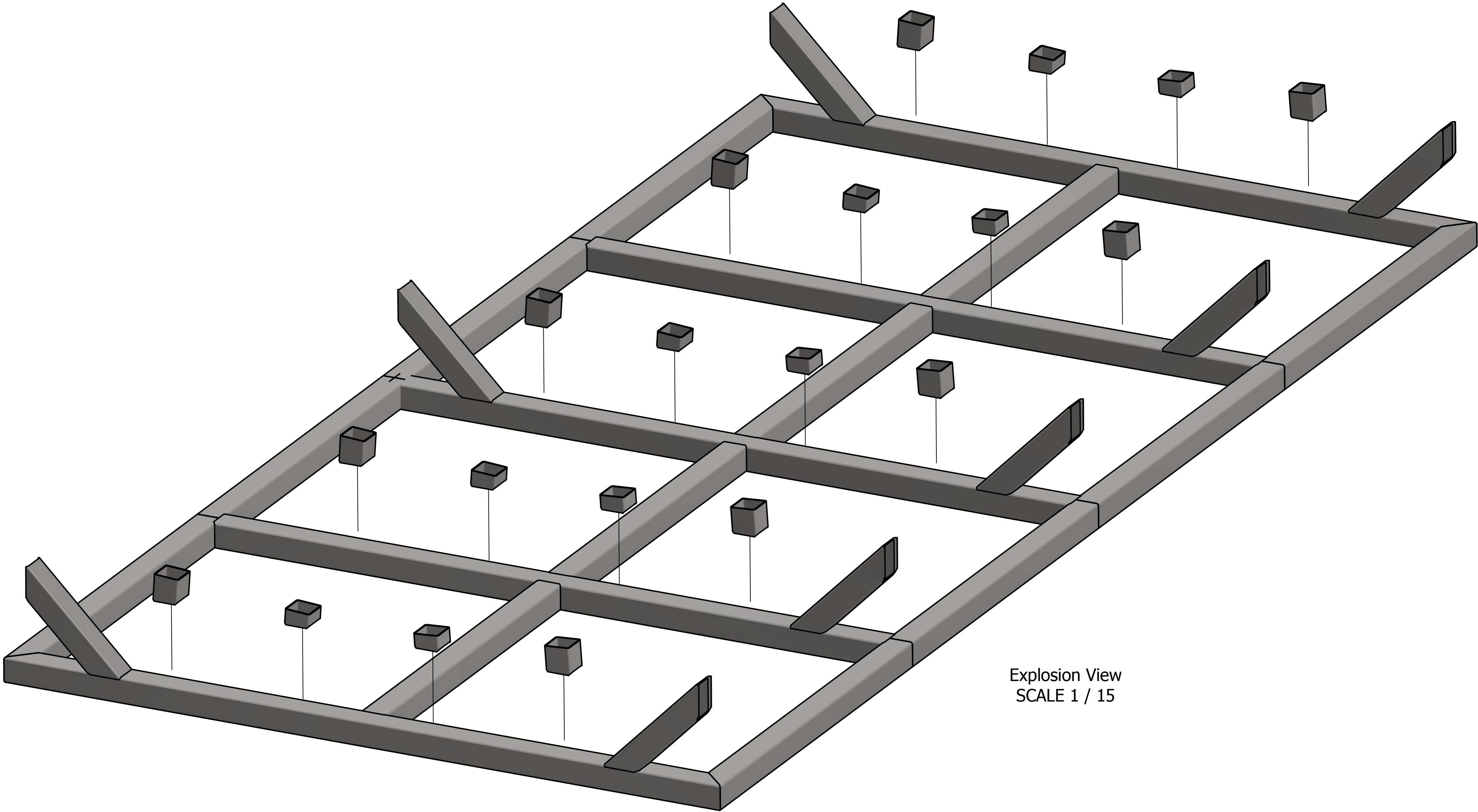


Next, add the supports for the stringers. Shown here as square tube, but options to replace with angle iron. TBD.

Note: All dimensions in this view are CAD estimates. Actual dimensions for fabrication can be provided after we determine V-angle of WingMan hull, as well as spacing on Wingman engines to avoid interference.



Side View  
SCALE 1 / 10

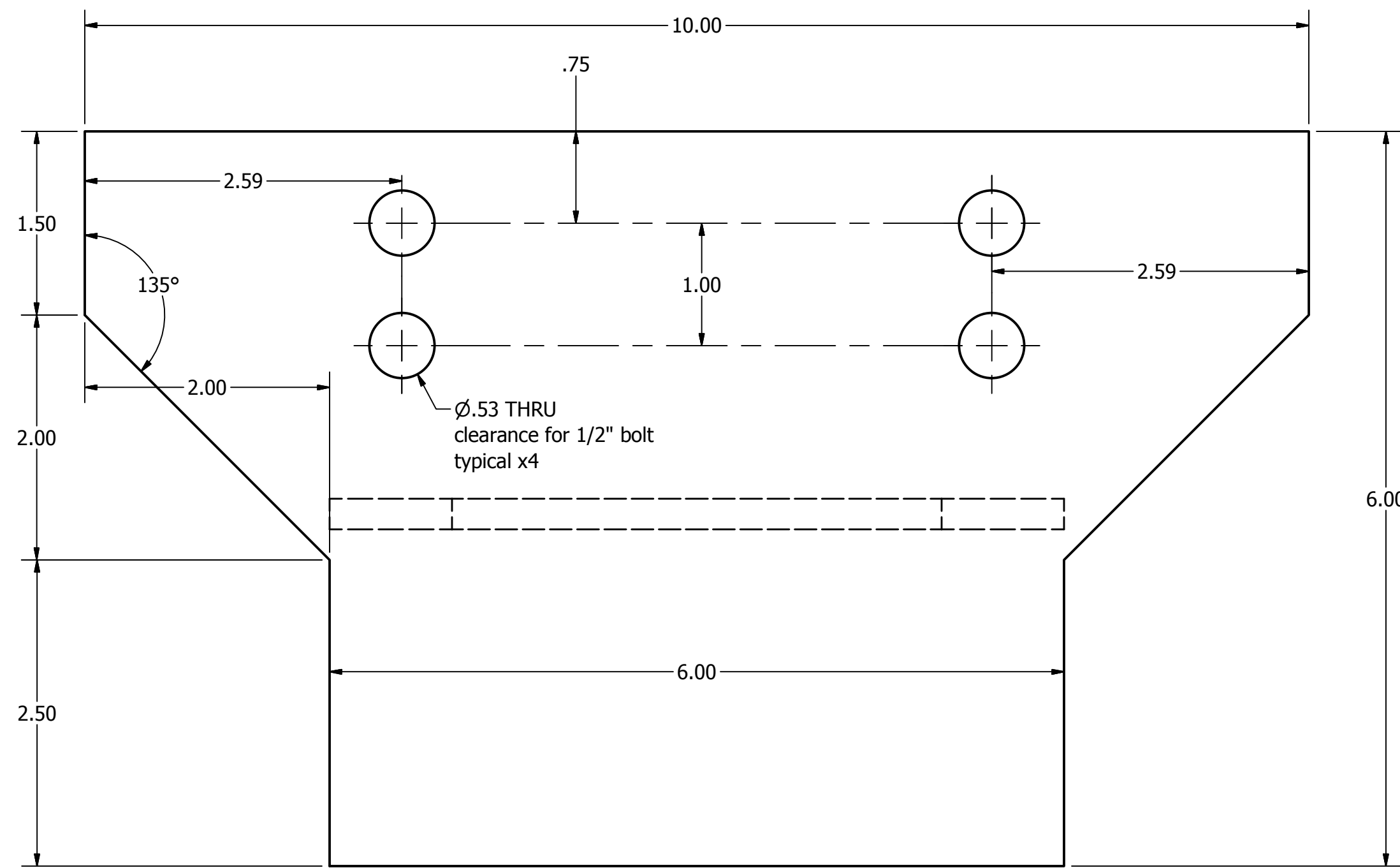


Explosion View  
SCALE 1 / 15

**NOT FOR BUILD**  
**FOR QUOTE**

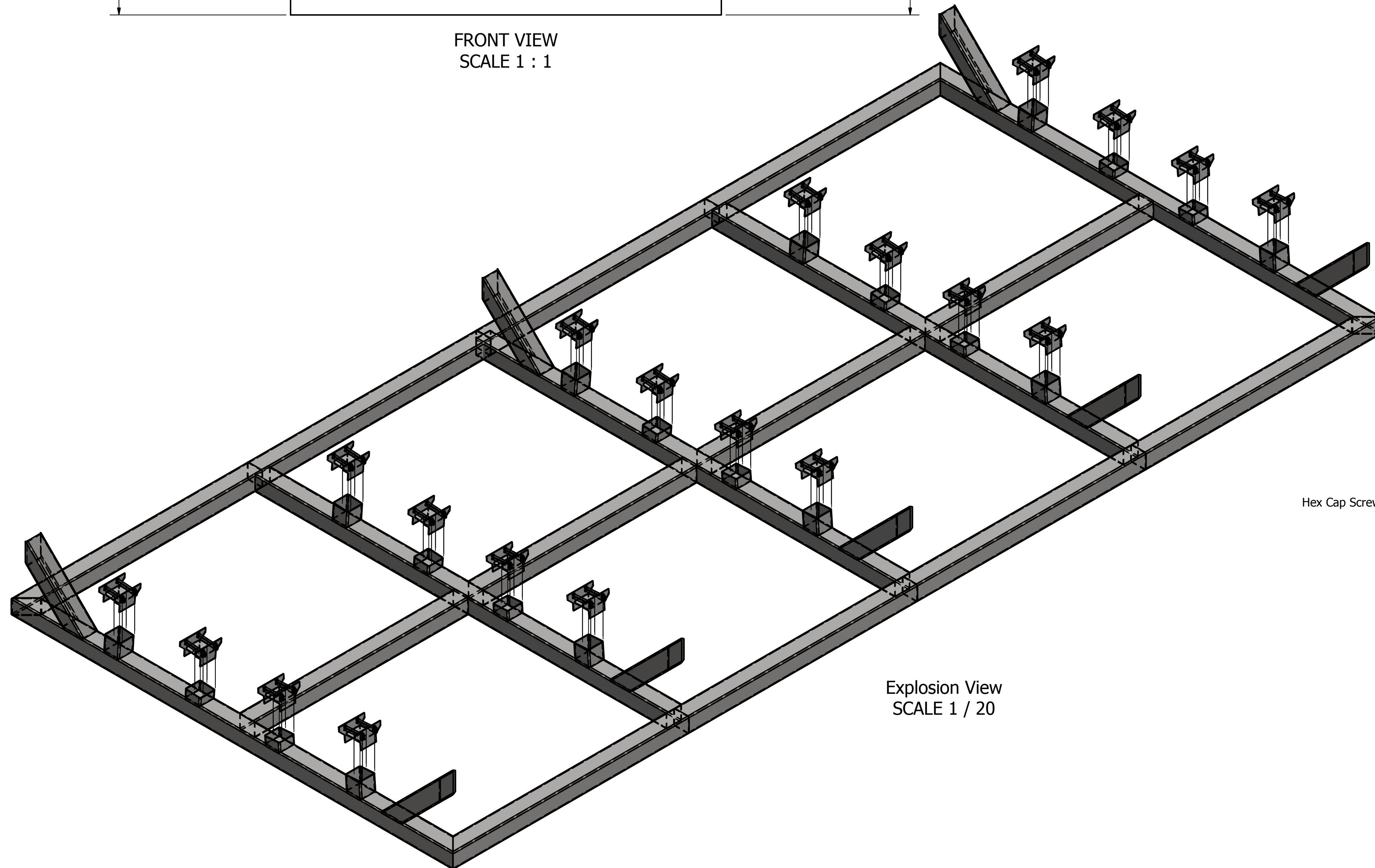
DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the		
MFG		Crewboat WingMan		
APPROVED		DWG NO		
		SIZE	DWG NO	REV
		D	Wingman Cradle	
		SCALE	1 / 10	SHEET 9 OF 15



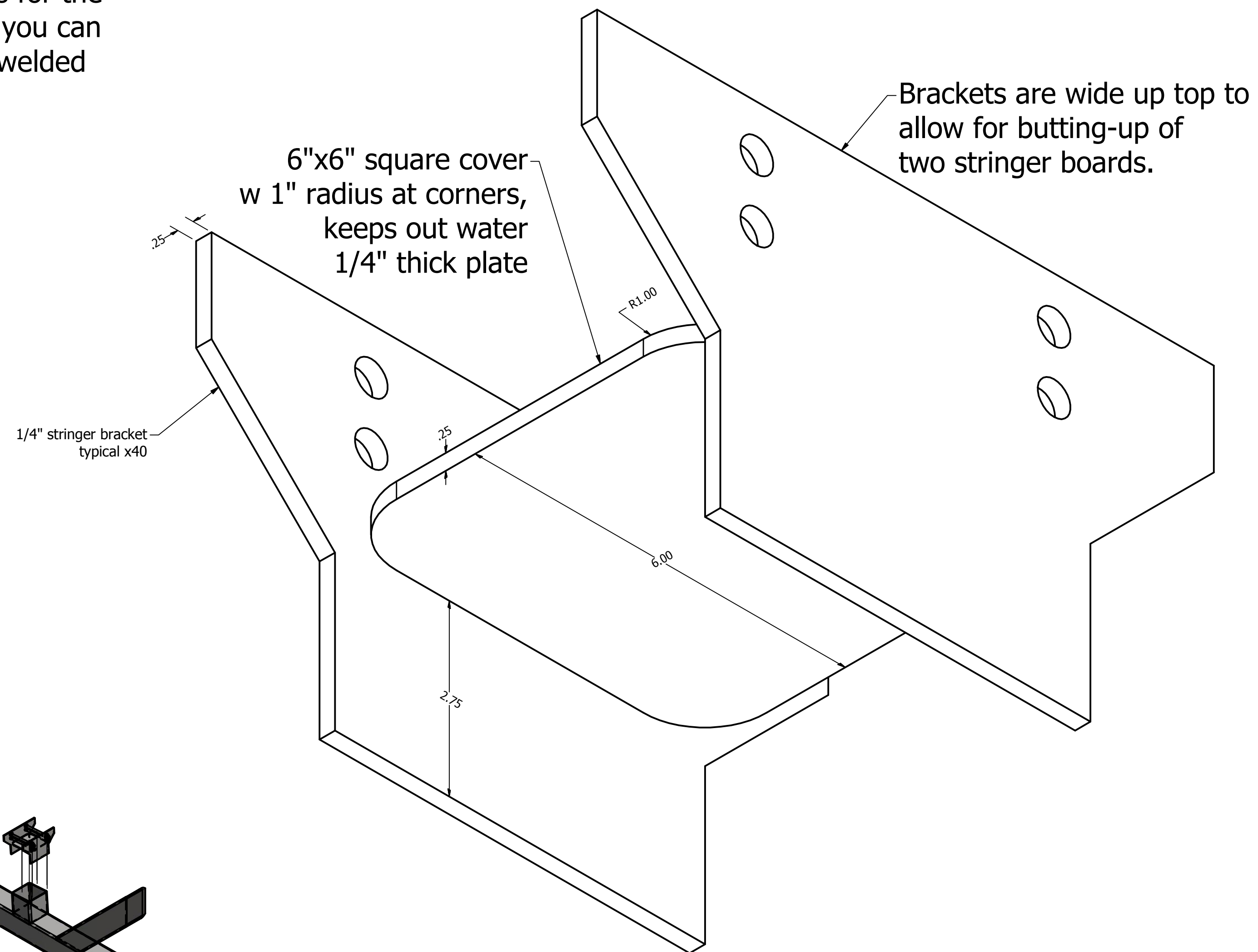


FRONT VIEW  
SCALE 1 : 1

Shown here are my thoughts for the bracket. Any similar bracket you can find should work well, keep welded area in mind for strength considerations.



Explosion View  
SCALE 1 / 20



Hex Cap Screw - Inch 1/2-13 UNC - 7.5  
typical x80

Large Hex Flange Nut - Inch (IFI) 10.5 - 13  
typical x80

**NOT FOR BUILD  
FOR QUOTE**

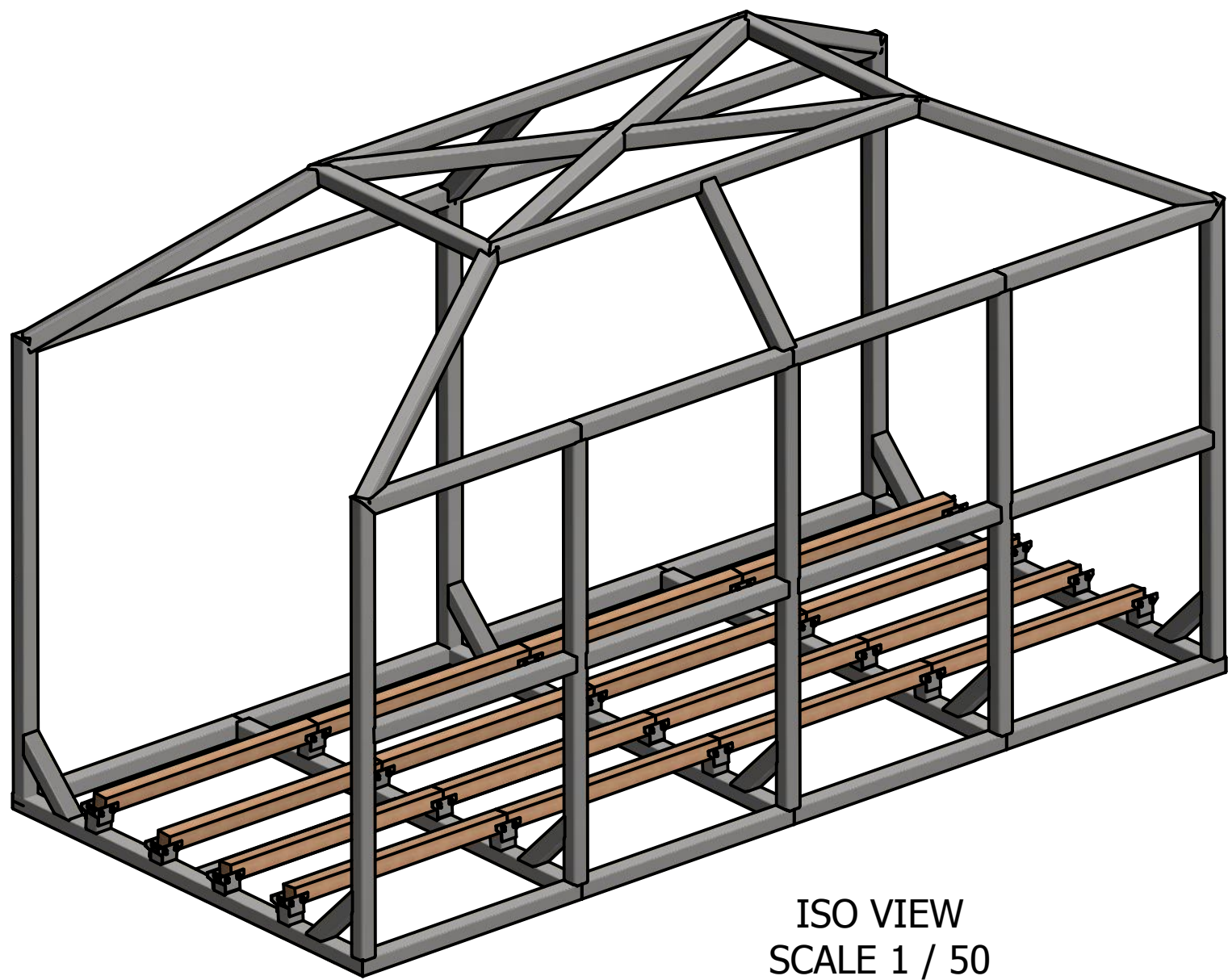
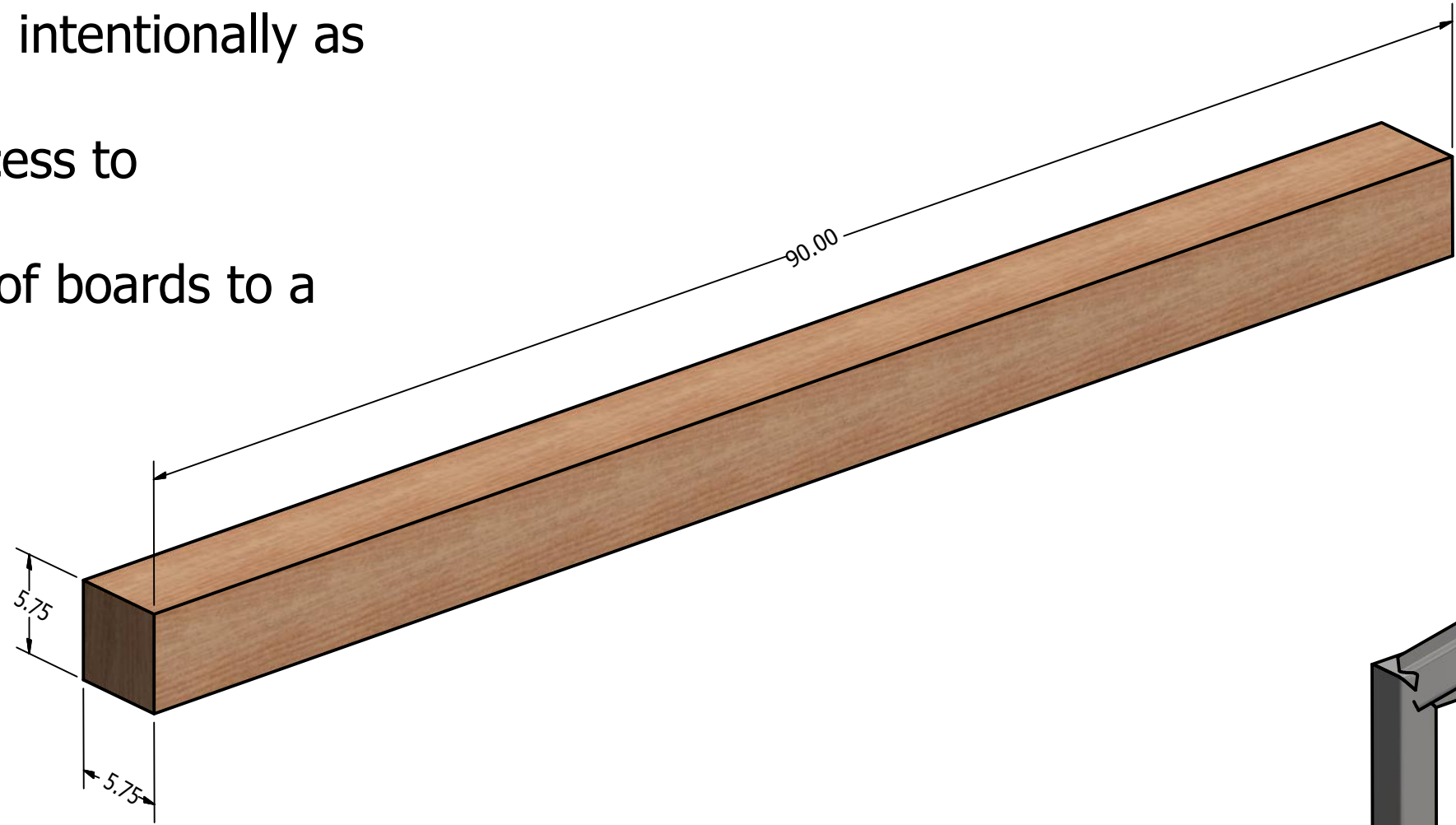
DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the		
MFG		Crewboat WingMan		
APPROVED		SIZE D	DWG NO Wingman Cradle	REV
SCALE 1 / 20		SHEET 10 OF 15		



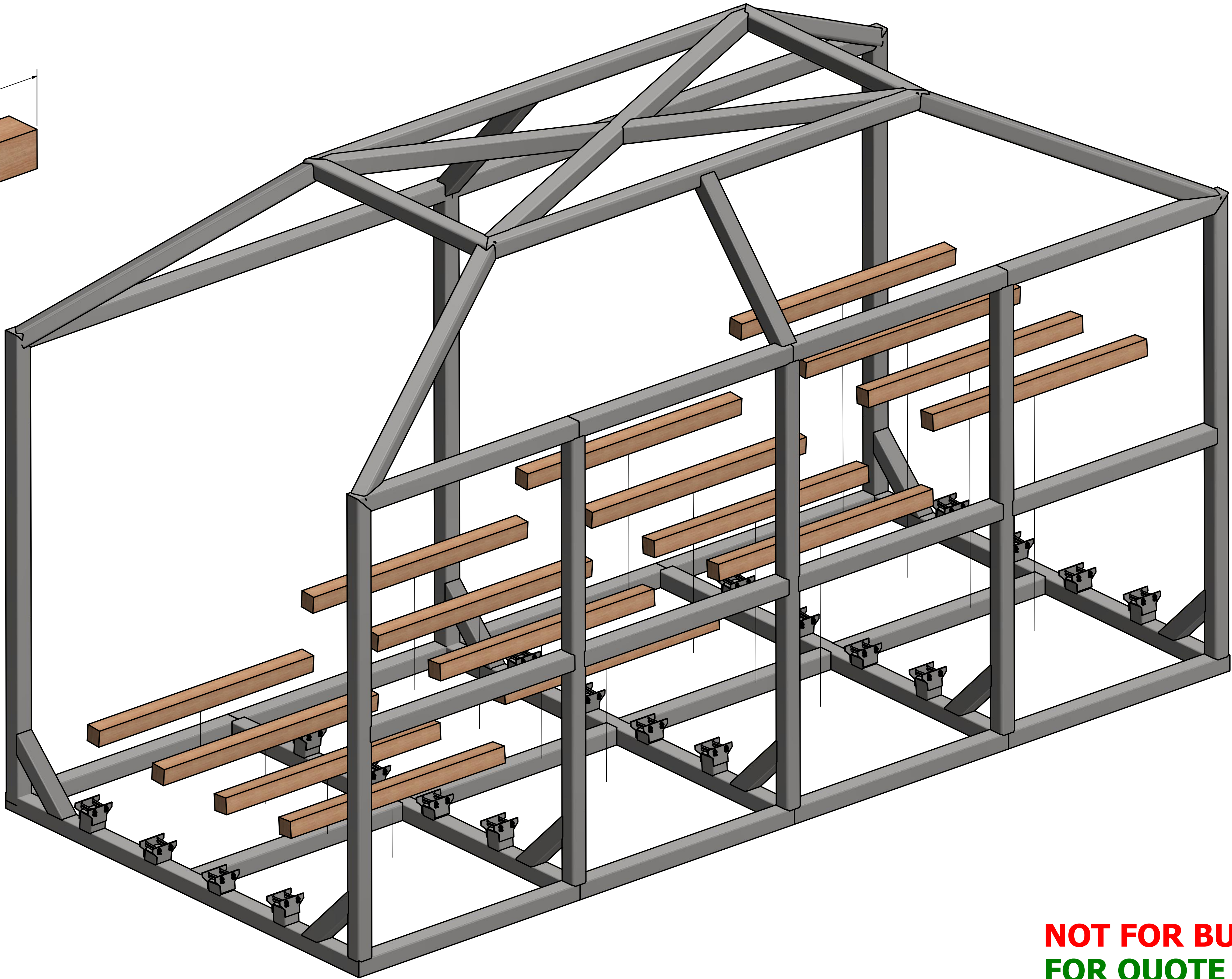
Qty:16 wood boards 6"x6" (shown with 5.75"x5.75" finishing cut.)

Aries to specify type of lumber to be used.

90" board length used intentionally as a shorter length to make for easier access to replacement timber, and to keep warpage of boards to a minimum.



ISO VIEW  
SCALE 1 / 50

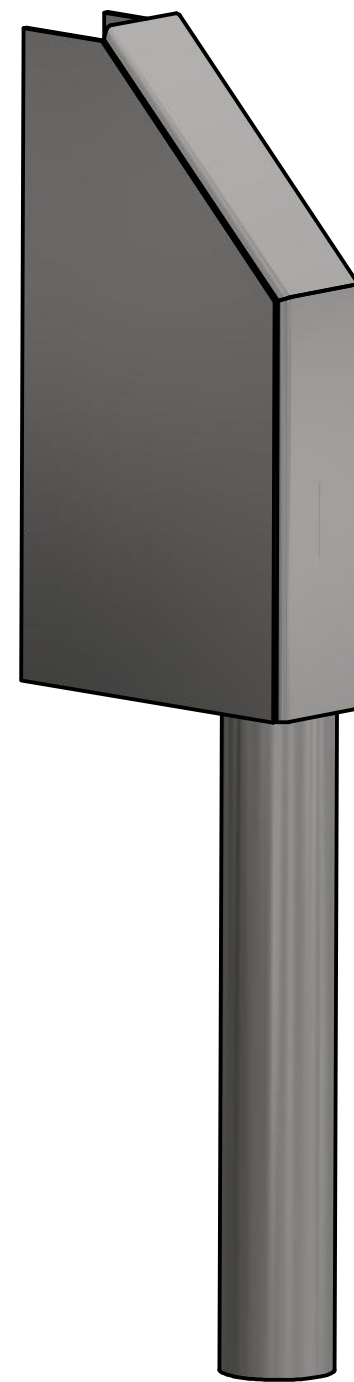


Explosion View  
SCALE 1 / 20

**NOT FOR BUILD**  
**FOR QUOTE**

DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the		
MFG		Crewboat WingMan		
APPROVED		SIZE D	DWG NO Wingman Cradle	REV
SCALE 1 / 50		SHEET 11 OF 15		

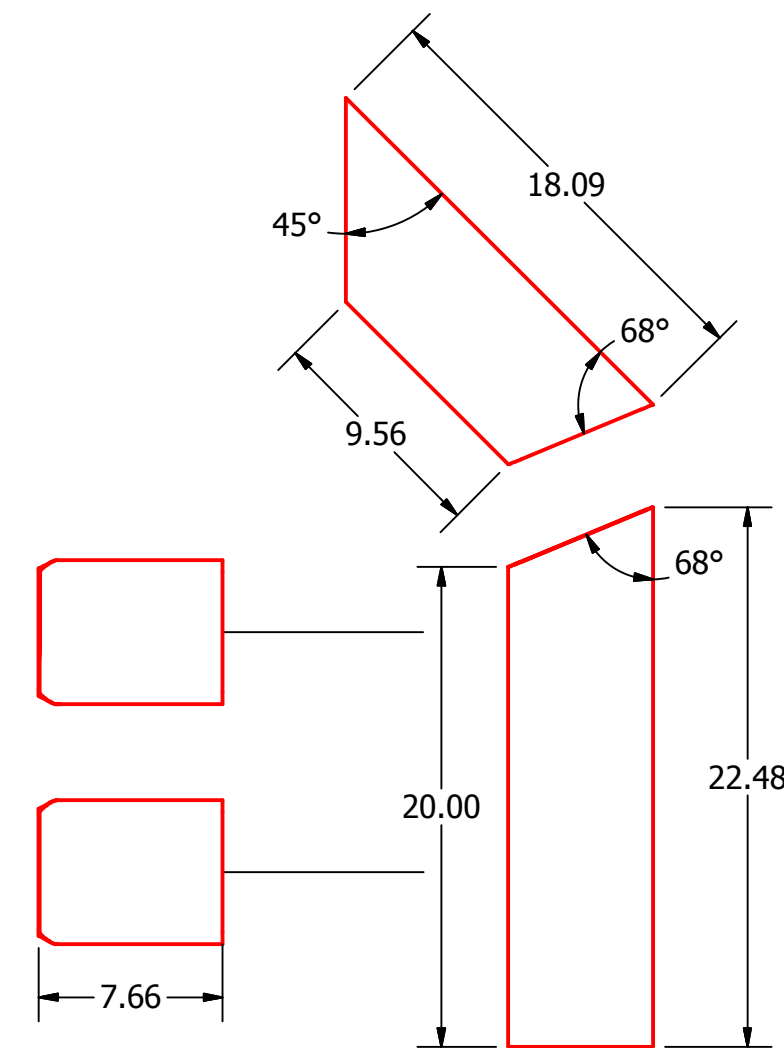




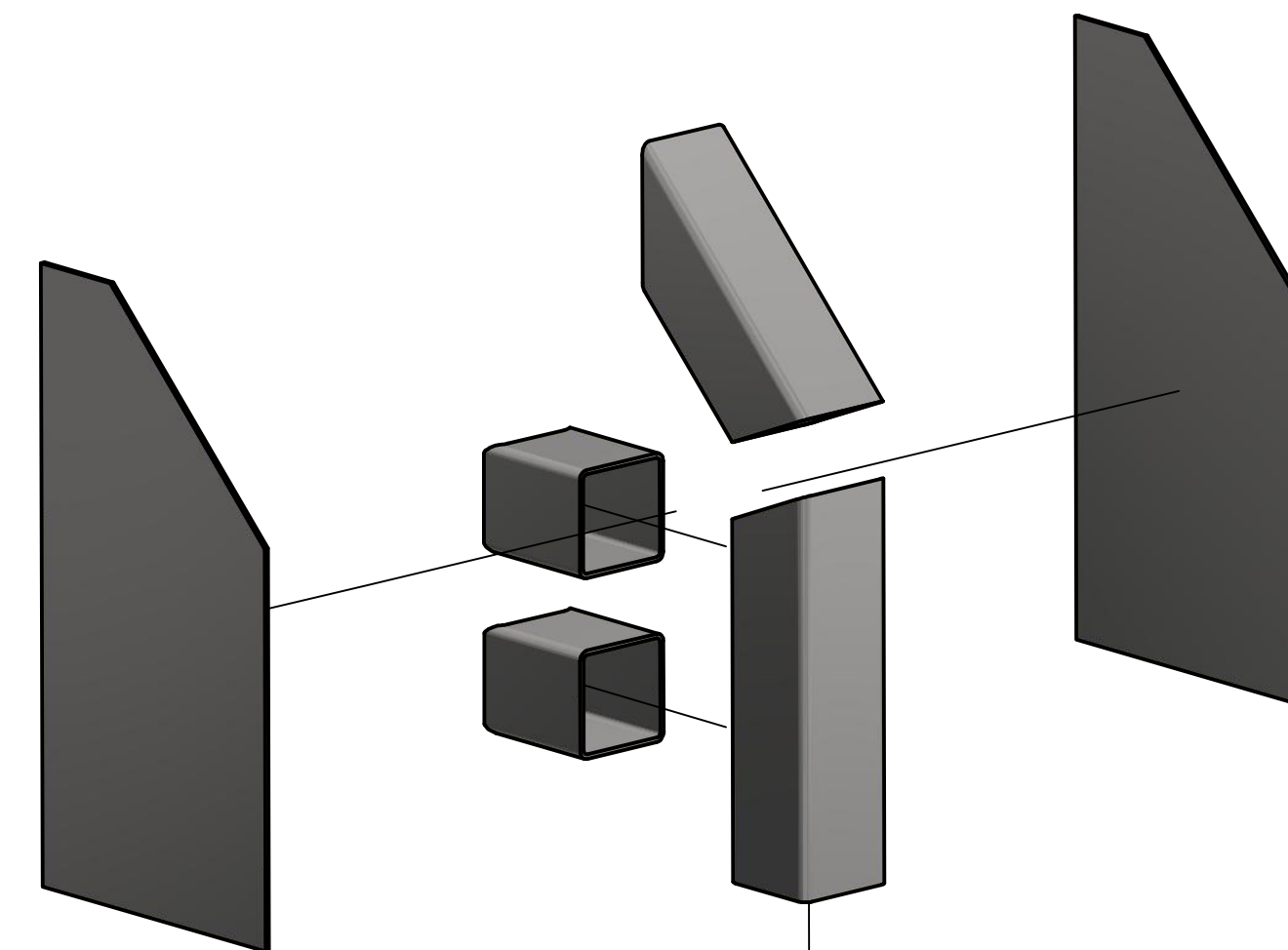
ISO VIEW  
SCALE 1 / 10

Pinning Assembly:

Tube in red is 6"x6"x1/2" AISC Mild Steel.



EXPLOSION VIEW  
SCALE 1 / 8



Explosion View  
SCALE 1 / 10

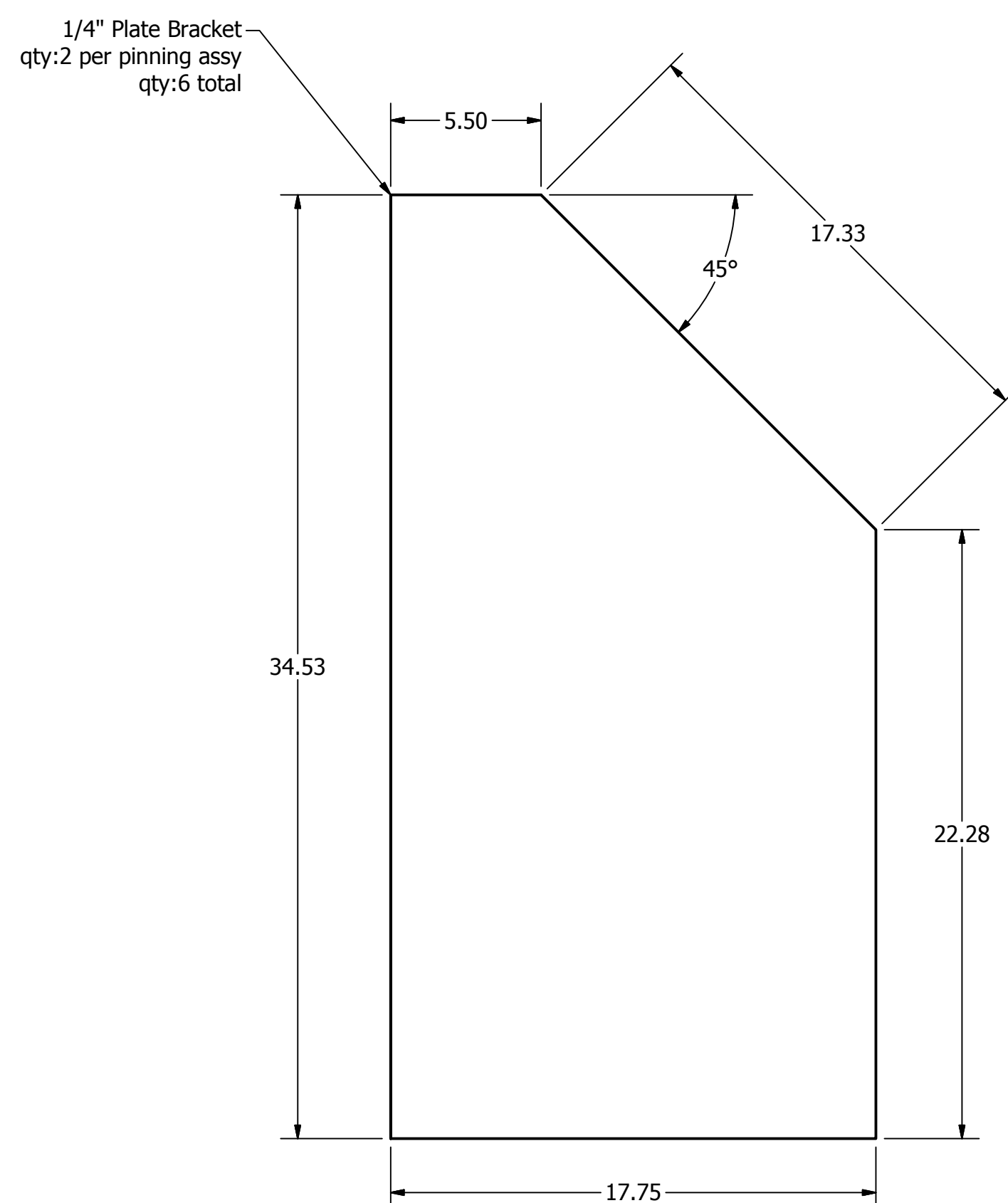
Shown here, a 6" O.D. steel round at 55" long. We need qty:3 of these.

Note: These are designed solid, but we have opportunity to reduce weight and cost here by using something non-solid. TBD.

We'll need to grind 4 flats on the pin in order to slide it up into the 6"x6" square tube. Weld in place.

This end, we need to chamfer the pin-end for better fit into sleeve.

Also, need to drill hole in the pin for a keeper w hasp.



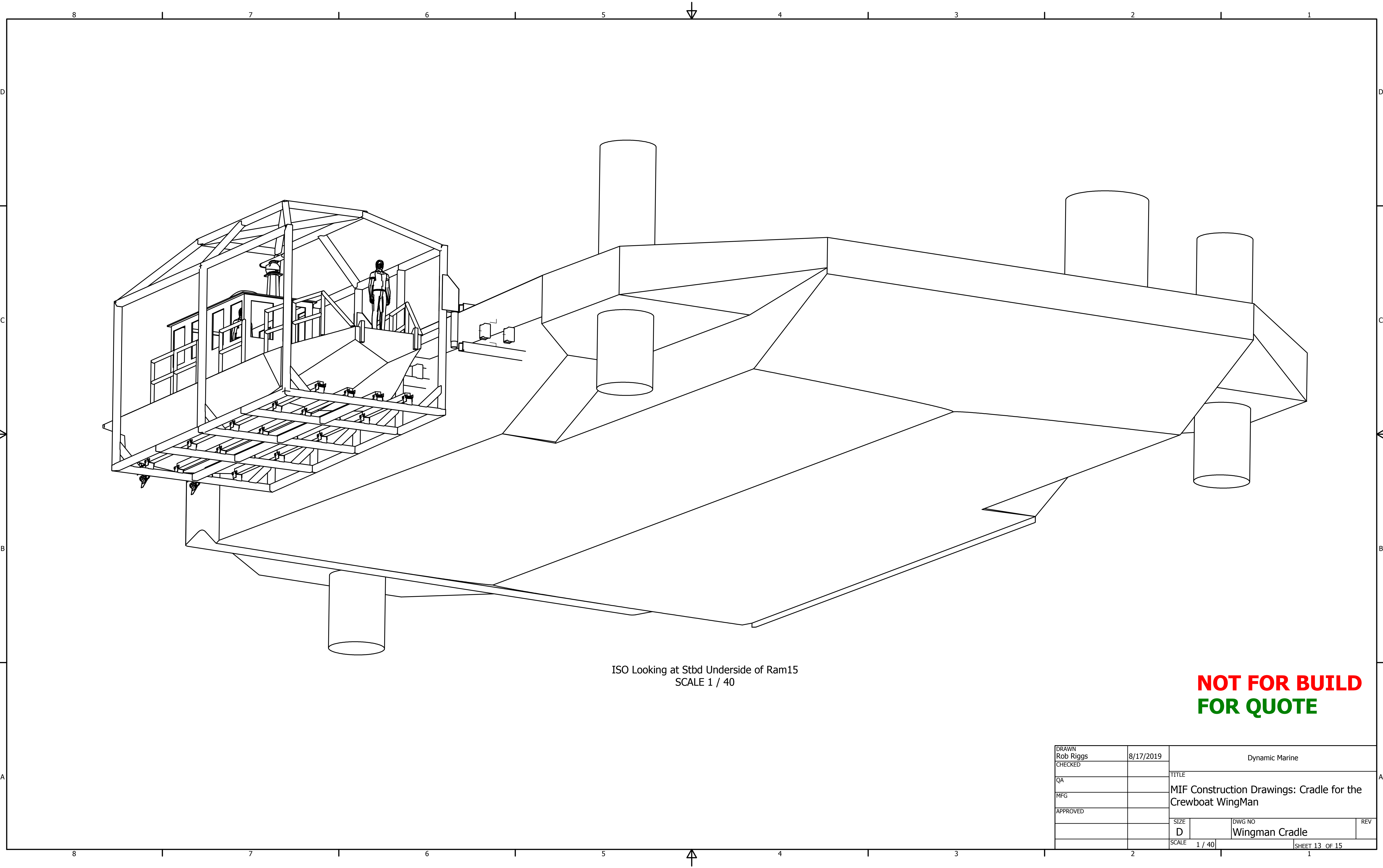
FRONT VIEW  
SCALE 1 / 5

Note: Pinning assemblies can be fabricated, but should not be welded to cradle until proper vertical positioning can be taken into account. WingMan hull must be in proper alignment to RamXV hull for desired launching/recovery.

**NOT FOR BUILD  
FOR QUOTE**

DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the Crewboat WingMan		
MFG				
APPROVED				
		SIZE D	DWG NO Wingman Cradle	REV
		SCALE 1 / 10	SHEET 12 OF 15	





ISO Looking at Stbd Underside of Ram15  
SCALE 1 / 40

**NOT FOR BUILD**  
**FOR QUOTE**

DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the Crewboat WingMan		
MFG				
APPROVED		SIZE D	DWG NO Wingman Cradle	REV
		SCALE 1 / 40	SHEET 13 OF 15	



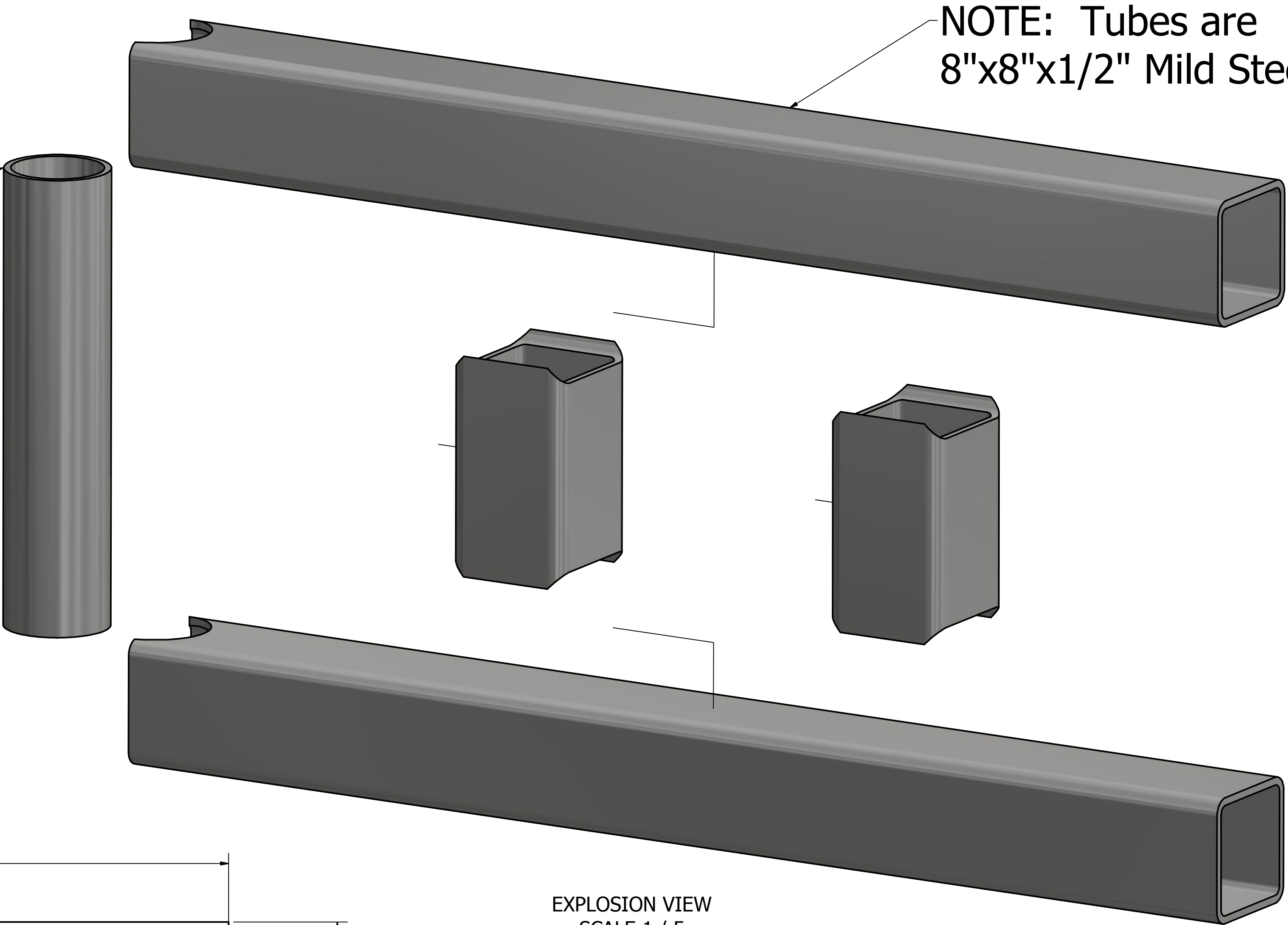
Sleeve Assembly:

Qty:3 on each side port/stbd.  
Qty:6 total.

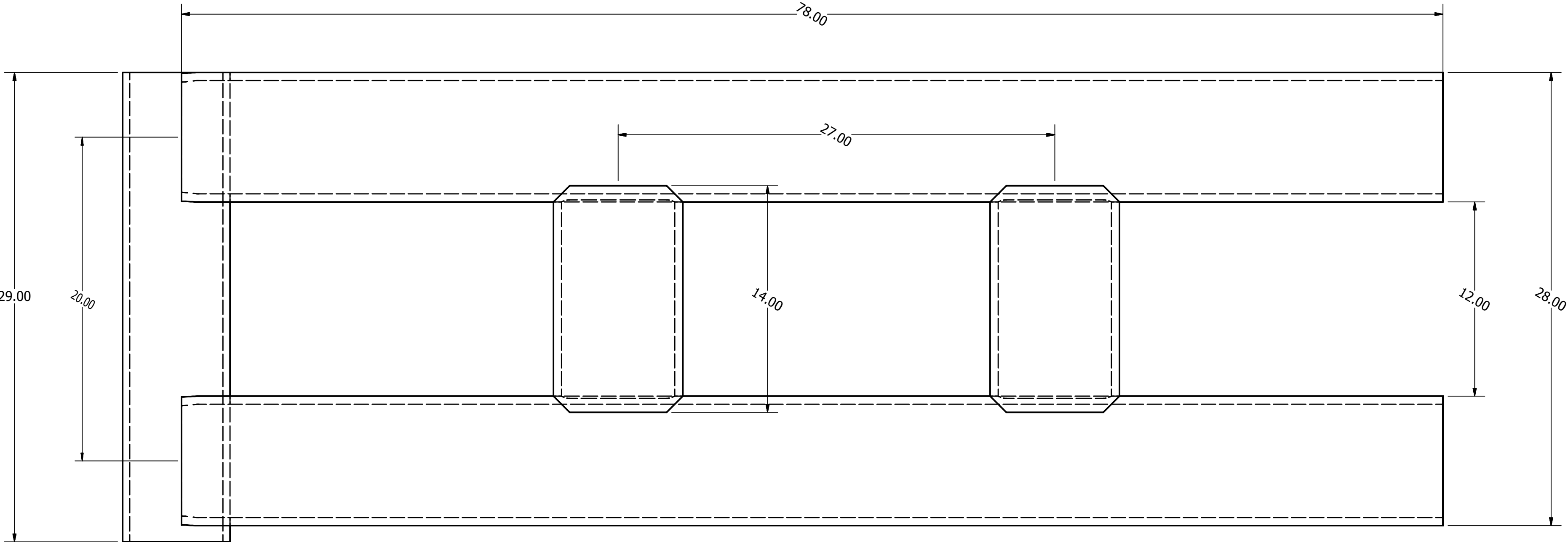
Designated as an ANSI 6" Steel Pipe, it has an O.D. of 6.63" and an I.D. of 5.77".  
We need to take measurements on whatever we order and confirm pin/sleeve fit.

Not detailed: We will need to turn-down the pin so that it fits with proper clearance into the sleeve. If turning a pin that big on a lathe is not a good option, we can think on other ways to best match the pin/sleeve connection. I'm feeling ok w 0.020" clearance all around between pin and sleeve.

**NOTE: All square tube in sleeve assemblies is to be 8"x8"x1/2" AISC Mild Steel**



EXPLOSION VIEW  
SCALE 1 / 5

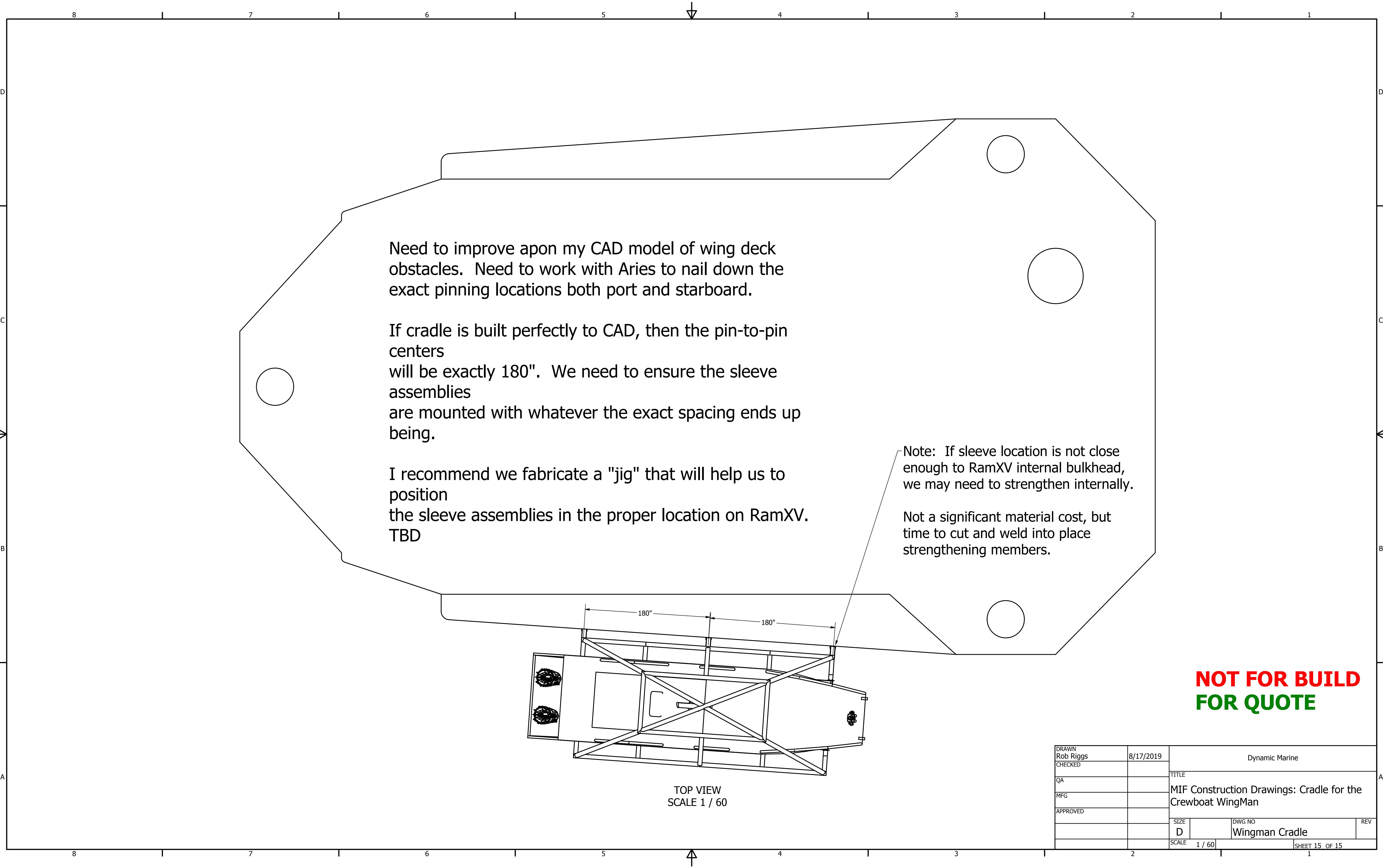


FRONT VIEW Sleeve Assembly  
SCALE 1/5

**NOT FOR BUILD  
FOR QUOTE**

DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the Crewboat WingMan		
MFG				
APPROVED				
SIZE D		DWG NO	Wingman Cradle	REV
SCALE 1 / 5		SHEET 14 OF 15		





DRAWN Rob Riggs	8/17/2019	Dynamic Marine		
CHECKED		TITLE		
QA		MIF Construction Drawings: Cradle for the Crewboat WingMan		
MFG				
APPROVED				
		SIZE D	DWG NO Wingman Cradle	REV
		SCALE 1 / 60	SHEET 15 OF 15	