

Additional Private Rack Space Proposal

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Rack Issues & Recommendations

- Issues:

1. Inadequate private rack space to meet current demand – 5 people on current rack waiting list (1 deferred)
 - Can impact private boat owner retention/limit acquisition of new private boat owners
 - Increases usage of club shells – more important as membership increases
 - Reduces revenue (\$150 less for logbook versus private rack)
2. Some issues/complaints about force required and binding/friction on rigging with some hanging racks

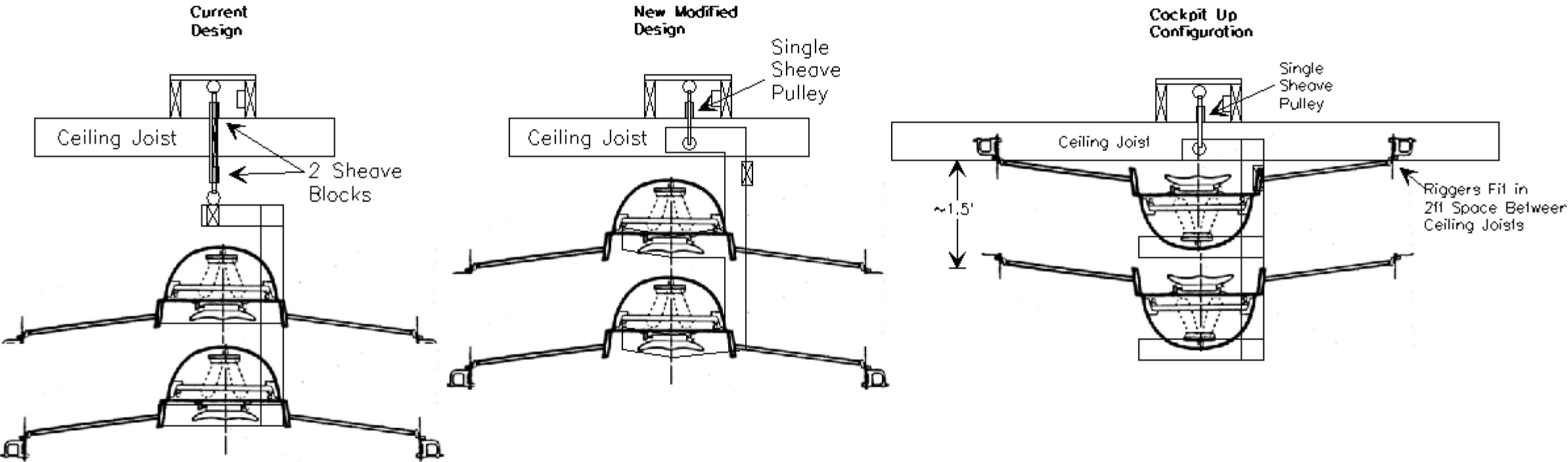
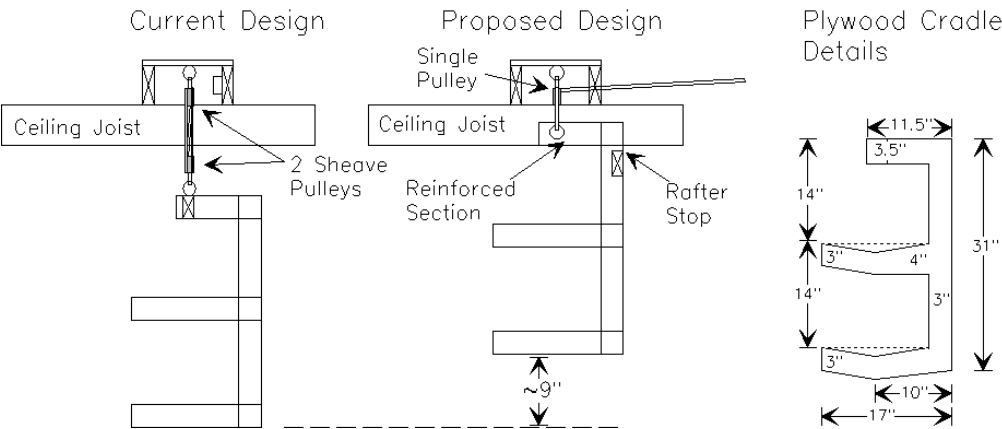
- Recommendations:

- Increase hanging rack and usable wall rack space
- Use modified hanging rack cradle and rigging design for new double racks
- Add new double rack to middle bay and convert single racks in middle bay to modified double rack/rigging design
- Modify hanging double rack in 1st/street side bay near computer to allow slot 6 to be actively used
- Minor adjustments to some existing hanging rack positioning to accommodate above items and improve clearance
- Include concept for rack space provision beyond current waiting list

Suggested Modifications to Hanging Rack/Rigging Design

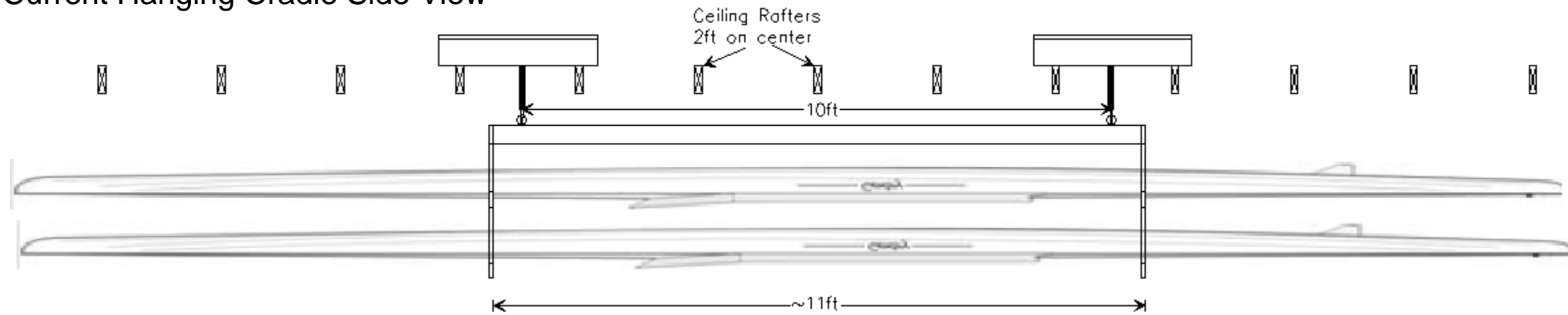
- Modify cradle and rigging to allow racks/boats to be closer to ceiling
 - Leave 14" boat to boat pitch in double rack cradle unchanged. It could also be reduced slightly without meaningful usability impact
- Reduce tackle requirements & cost
 - Move block & tackle from 2 parallel sets on verticals from boat hanger to 1 set on ceiling lateral or wall vertical
 - Parallel sets don't increase mechanical advantage – but do reduce weight on individual lines by 50%
 - Make sure working load of line chosen for rigging can support full weight of double cradle with boats with good margin
- Increase mechanical advantage on double racks from 4:1 to 6:1
 - Use triple sheave blocks (6:1) instead of double sheave blocks (4:1)
 - Less force required ... but more line to be pulled for same movement
 - For example, with a 90 lb cradle required pulling force goes from 22.5 lbs (4:1) to 15 lbs (6:1)
- Improve alignment to reduce effort/friction/binding/wear
 - Triple sheave block – with proper reeving – will reduce effort and improve rigging alignment & reduce friction/binding (Force is centered on block versus offset with double block)
 - Use swivels if/as required for better rigging alignment

Current and Modified Hanging Shell Cradle Design

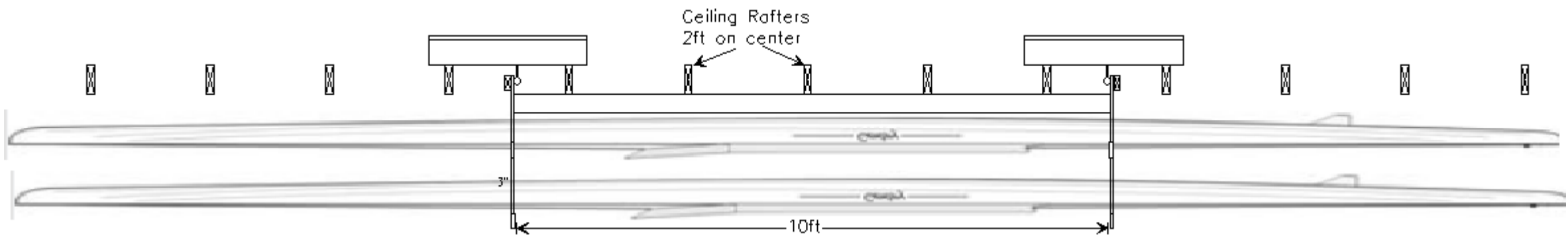


Current and New Cradle/Rigging Design – Side View

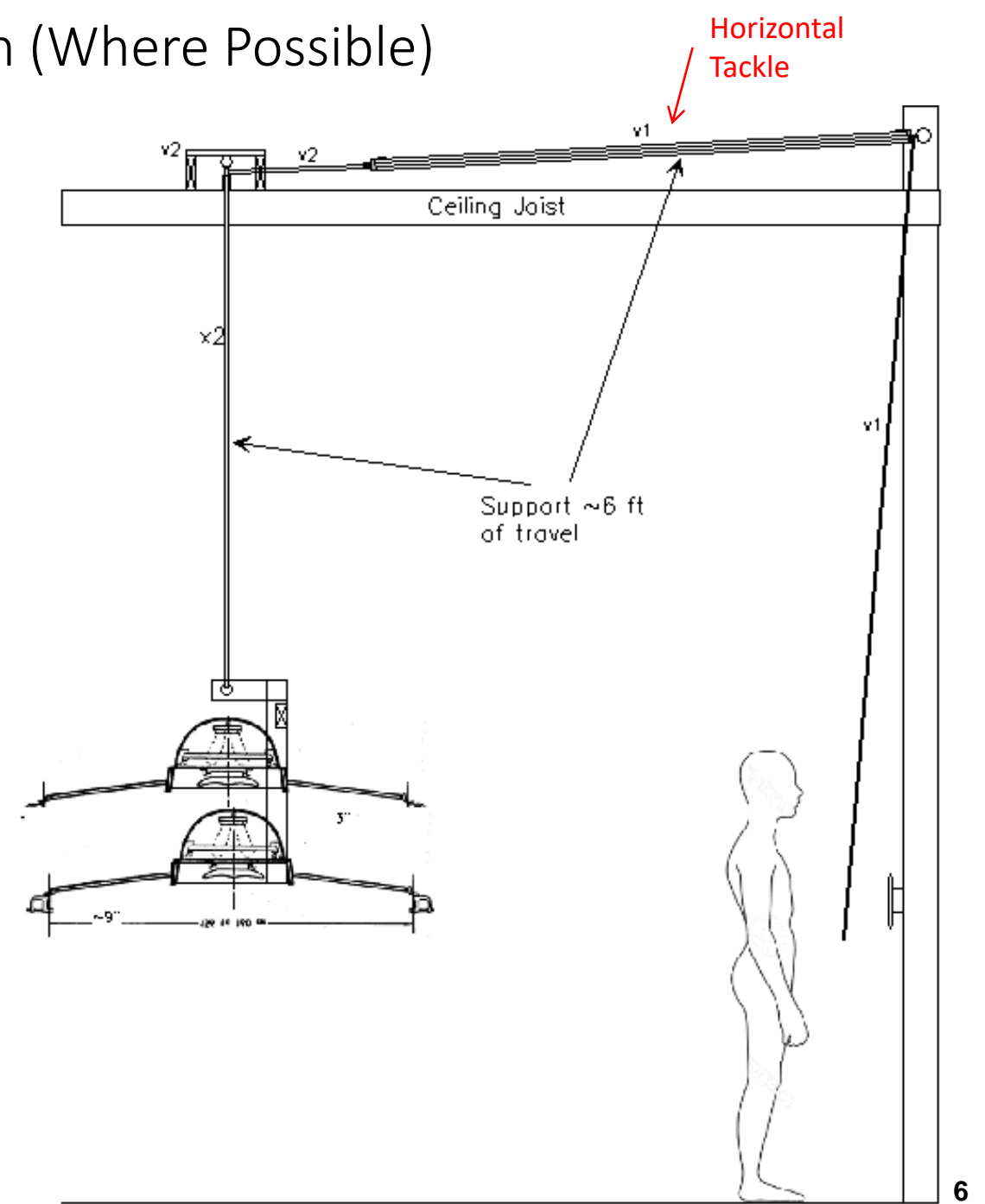
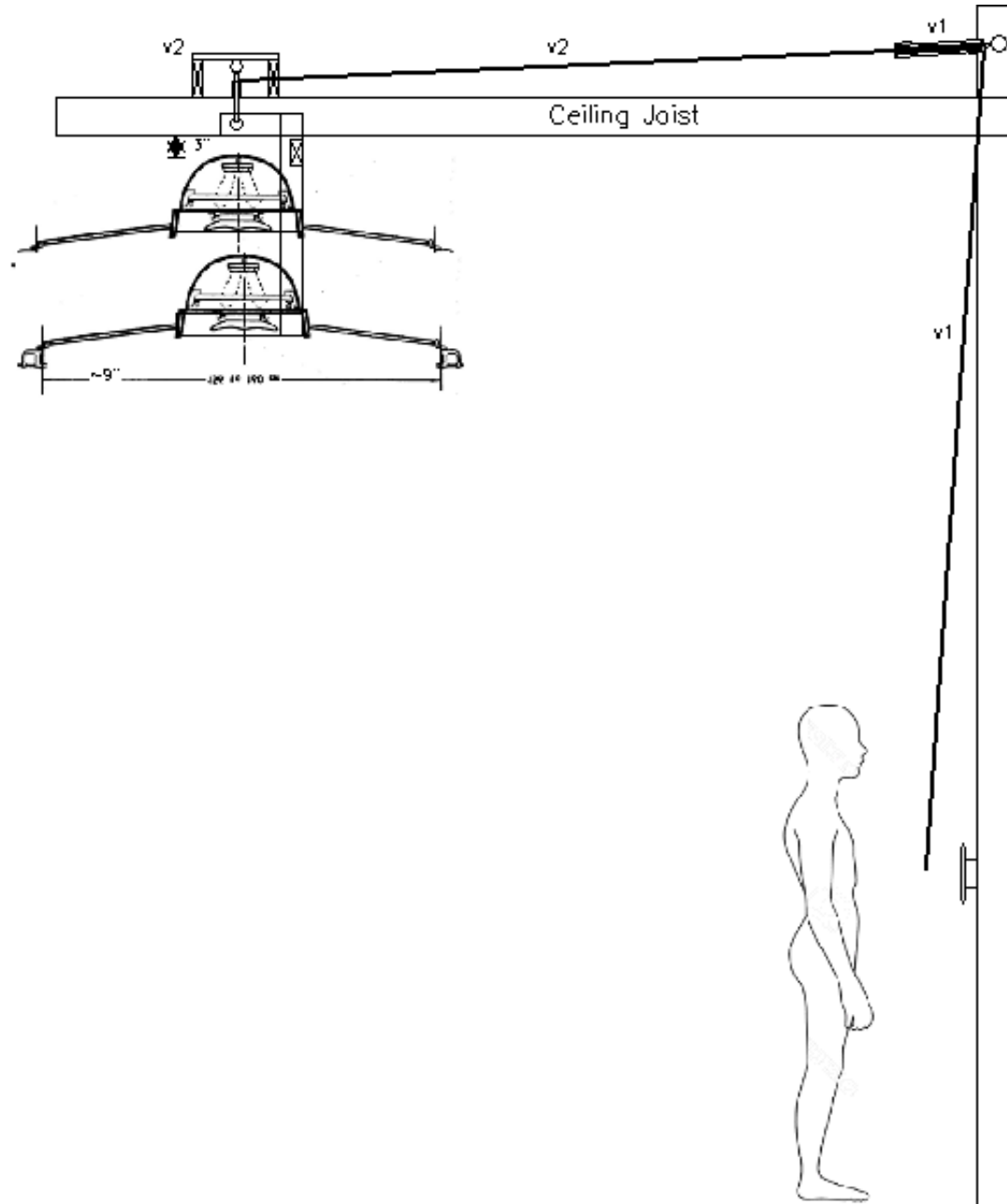
Current Hanging Cradle Side View



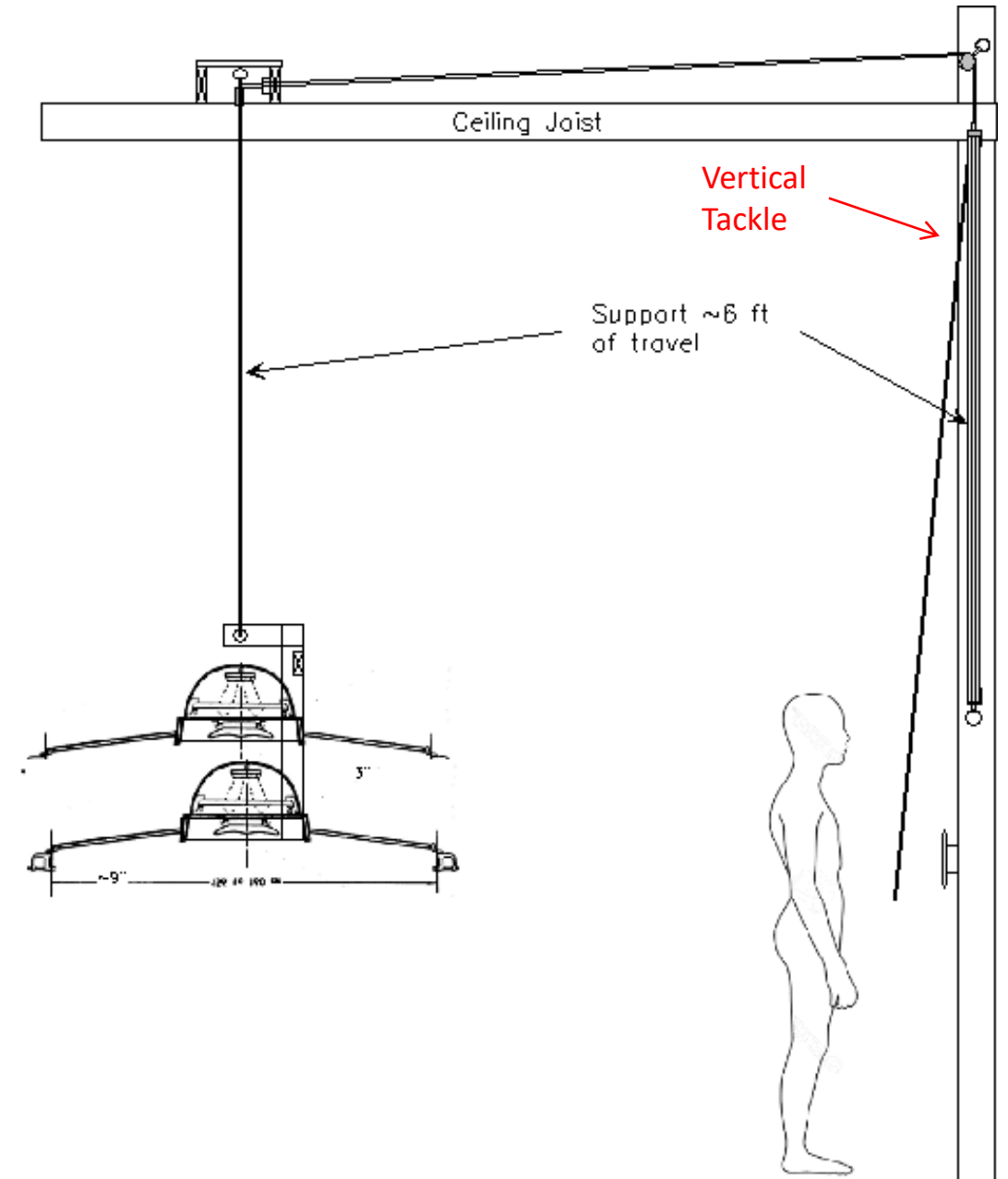
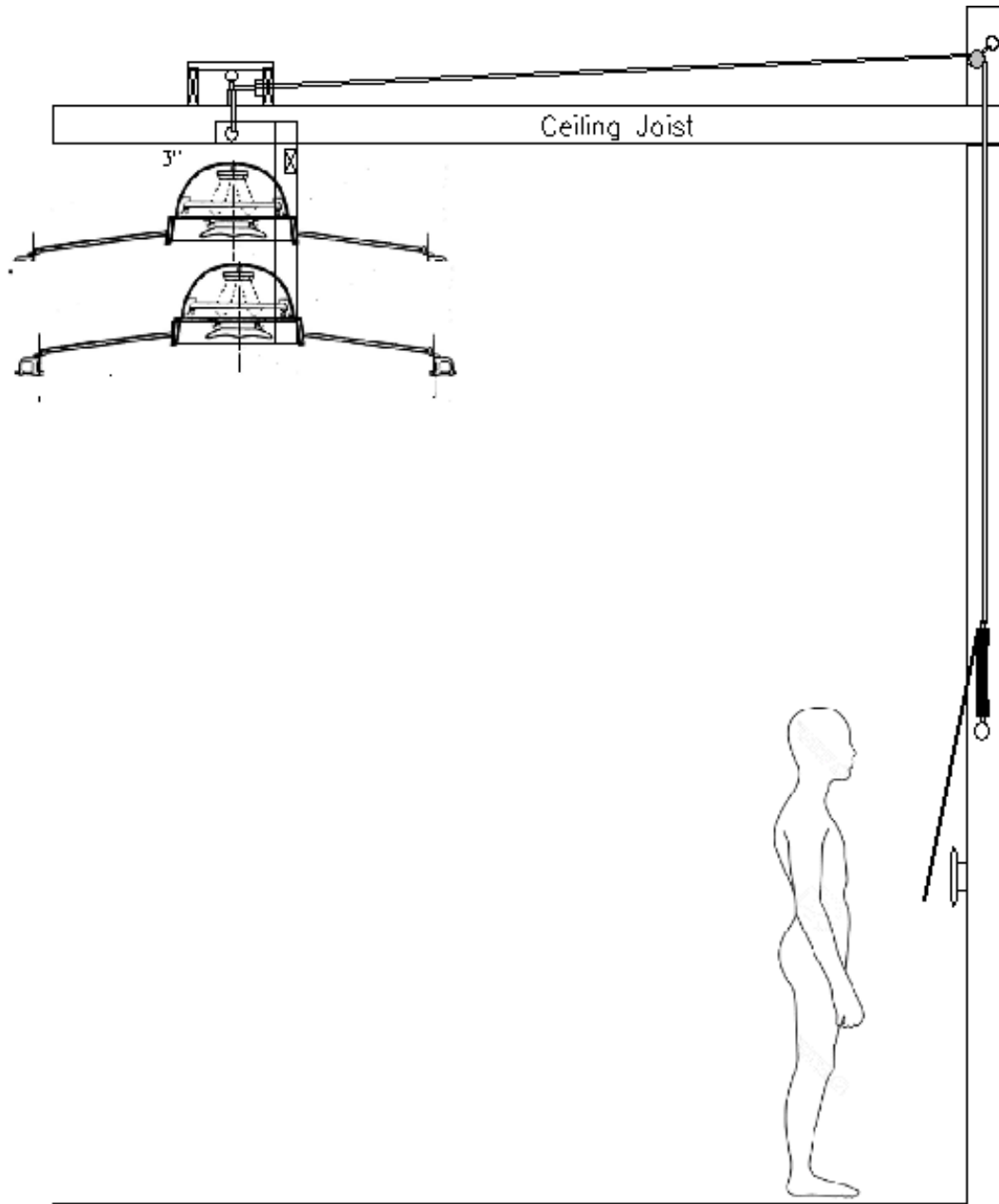
New/Modified Hanging Cradle Side View



New Rigging Layout – Horizontal Tackle Option (Where Possible)



New Rigging Layout – Vertical Tackle Option (where required)



Proposed Steps

- Seek Equipment committee input and board input/approval. If approved – UML/Kate approval required ?
- Implementation Steps:
 - 1) Build/install new prototype test rack on middle bay near overhead door and Joe/Andy's hanging rack
make any design adjustments based on installation and initial use
 - This will provide 2 additional active use spaces (2 total new)
 - 2) Replace one of the single hanging 'storage' rack In middle bay near computer end boathouse door with new double rack design and reposition for active use of ~26' shells
 - This will provide 2 additional active use spaces and eliminate 1 storage space (4 total new)

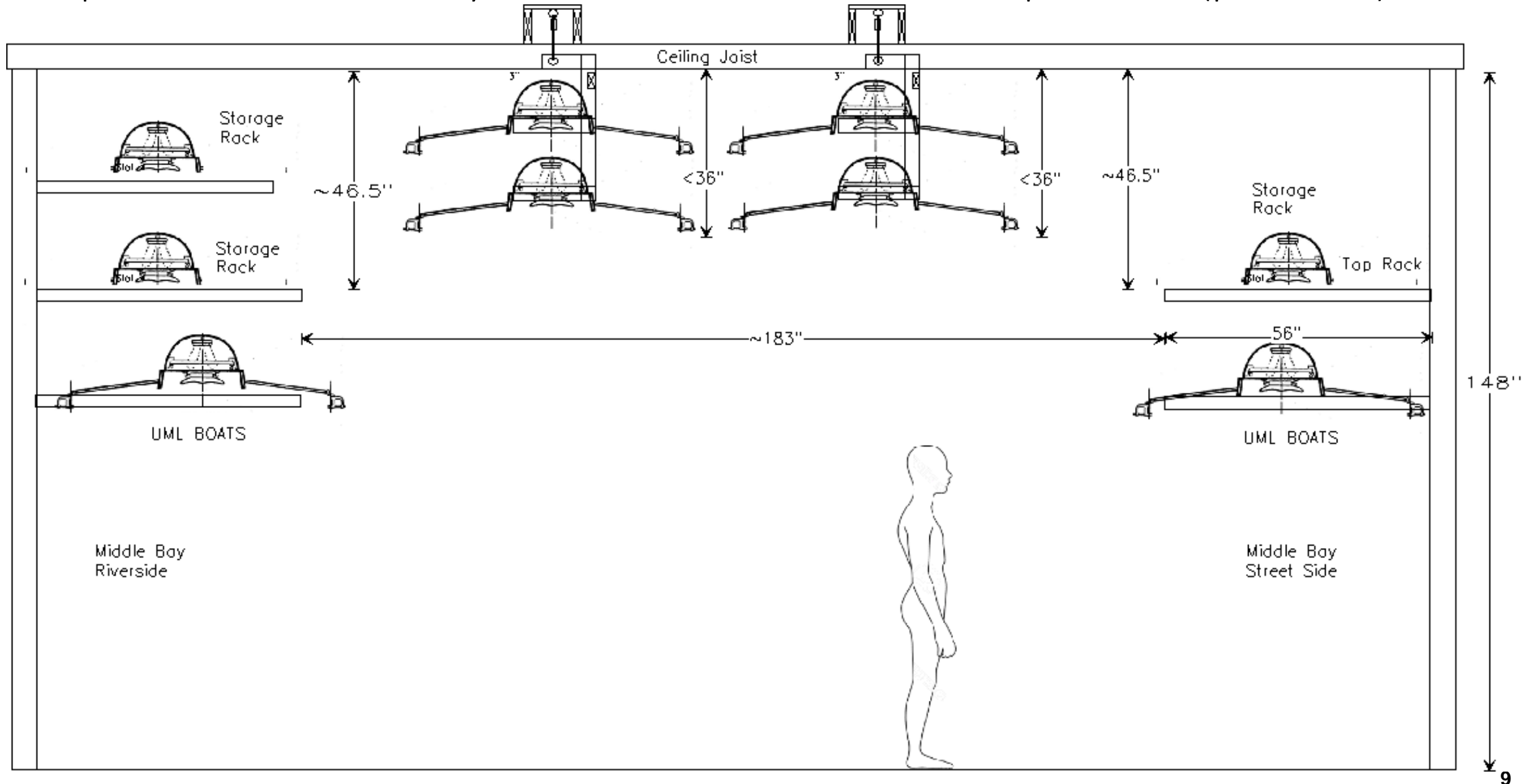
Above changes will clear current rack waiting list. If new requests are created for rack waiting list do following in order as needed:

- 3) Replace other single hanging rack In middle bay near computer end boathouse door with new design double rack and reposition
 - This will provide 1 additional active use space (5 total new)
- 4) Modify hanging rack in 1st bay, streetside near computer. This will allow wall rack position 6 to be accessible for active use instead of its current storage designation
 - This will create 1 additional active use space (6 total new)

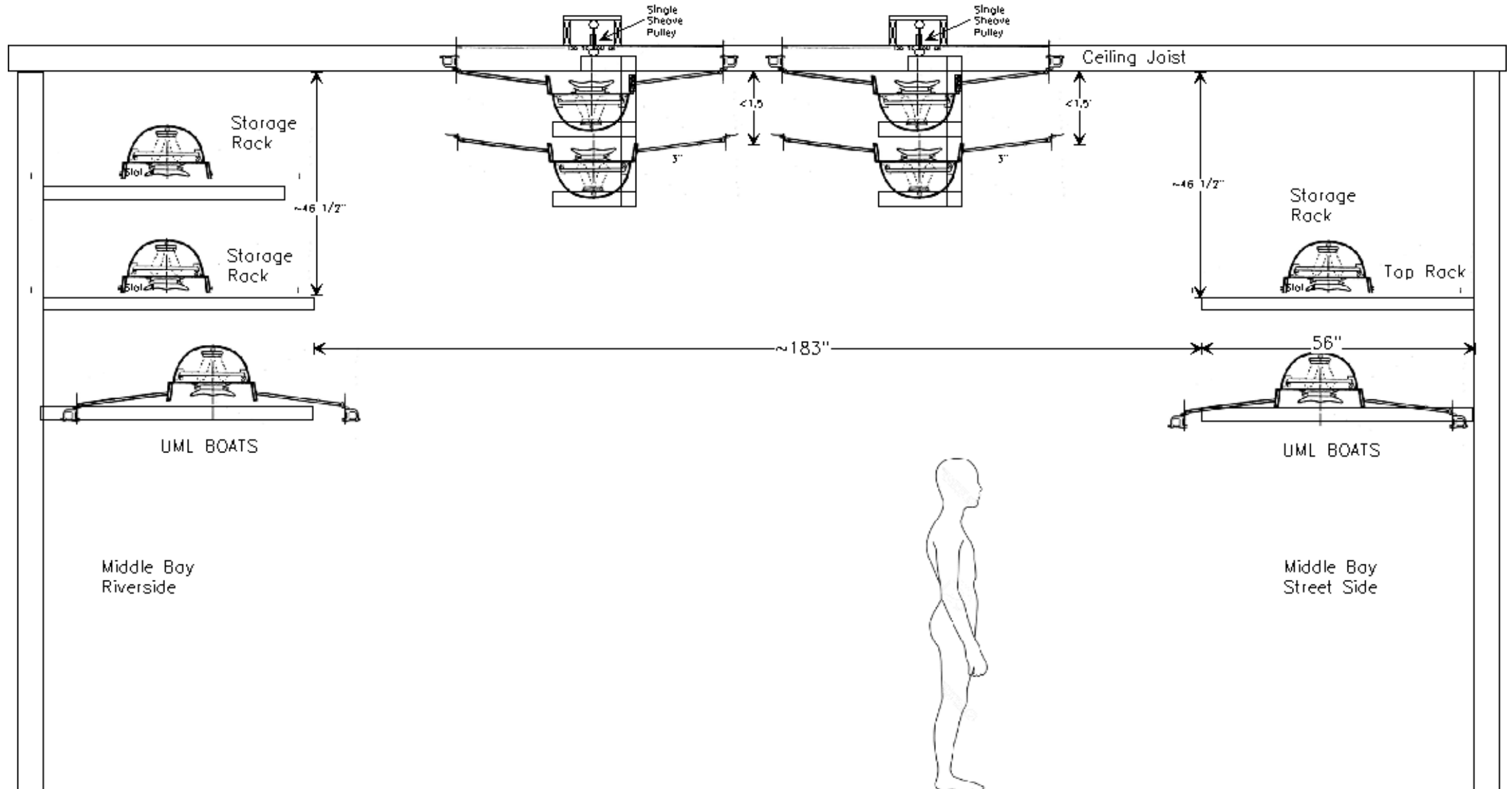
If further space is needed in the future it *may* be possible to consider the following consider converting other single hanging rack(s) in 1st bay to new double rack design and reposition. (Note: These may require cockpit up storage and rack re-positioning)

- This could create at least 1 additional active use space (7+ total new)

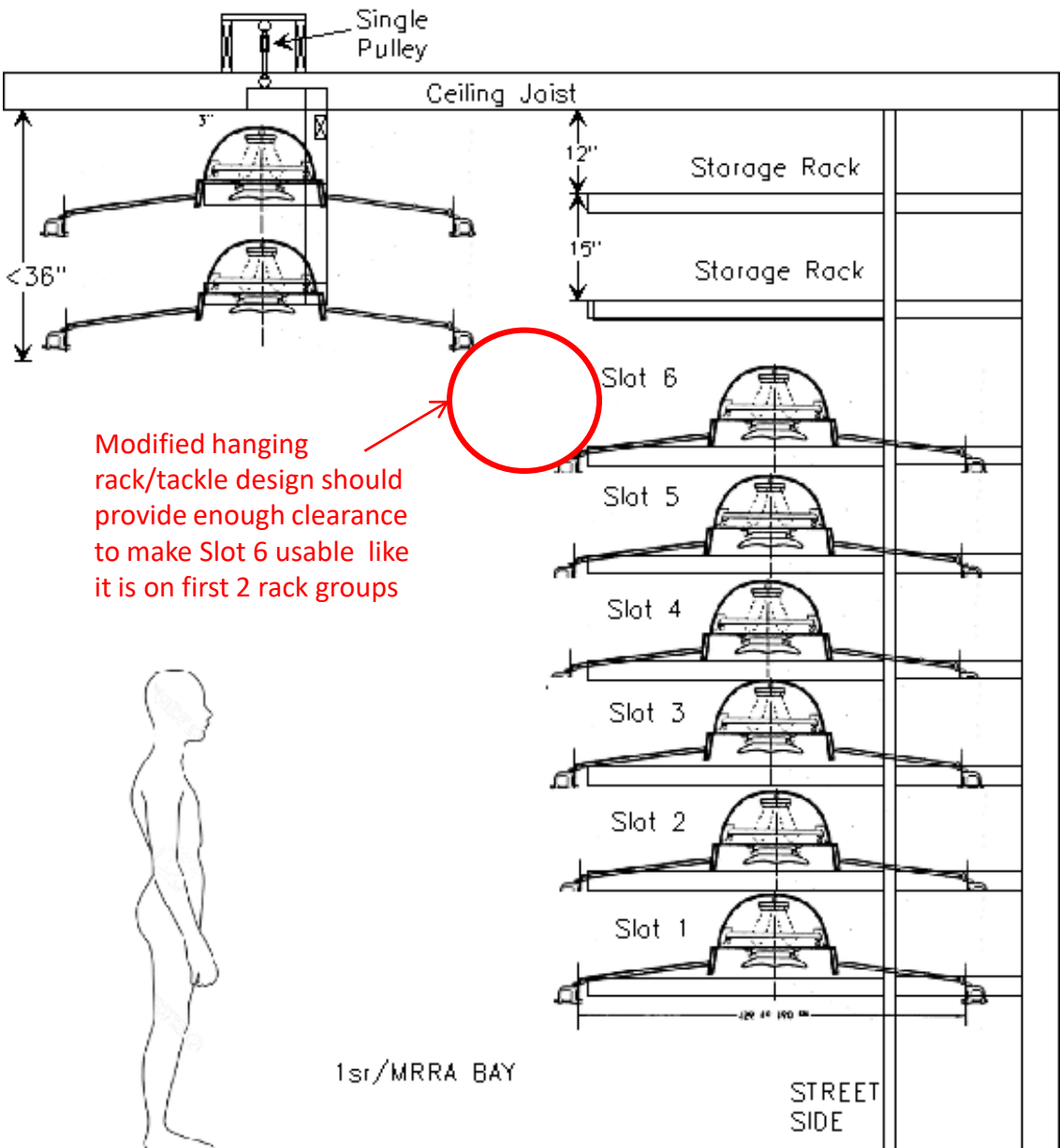
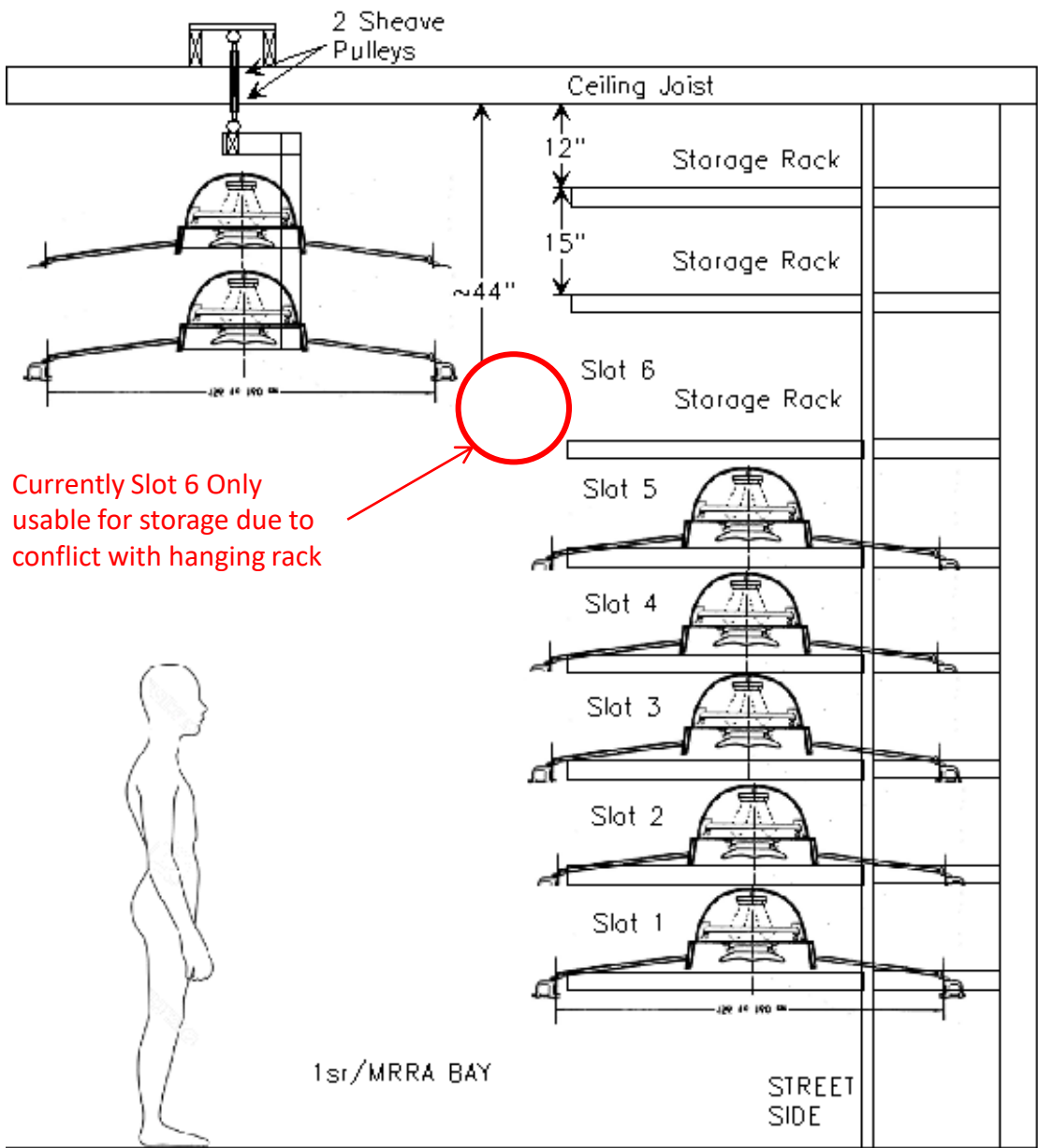
Steps 1, 2 & 3: Middle Bay with New Double Racks – Cockpit Down (preferred)



Steps 1, 2 & 3: Middle Bay with New Double Racks – Cockpit Up (If necessary)



Step 4: Allow Access to Rack Position 6 on 1st Bay Street Side Near Computer



Estimated Bill of Materials

- Current vs Modified design w/both rigging options
- Modifying 2 singles in center bay to 2 doubles will be cheaper with some rigging item re-use

#	Item	Estimated	Current		Horizontal Tackle		Vertical Tackle		Comments
		Unit Cost	Qty	Extended	Qty	Extended	Qty	Extended	
1	Eye Bolt (For Plywood cradle and cradle hanger on rafters)	\$ 1.50	4	6	4	6	4	6	Possibly use swivel or swivel eye bolt for rigging alignment/reduce stress/directional binding
2	Eye Bolt nuts	\$ 0.50	4	2	4	2	4	2	
3	Eye Bolt Washers	\$ 0.50	8	4	8	4	8	4	
4	Eye screws	\$ 1.50	3	4.5	2	3	4	6	for mount stop &H to V pulley
5	Single Pulley Block (possibly use swivel shackle for better alignment)	\$ 25.00	2	50	2	50	4	100	Marine grade - Harken
6	Double Block	\$ 51.00	2	102	0	0	0	0	Marine grade - Harken
7	Double Block w/Becket	\$ 55.00	2	110	0	0	0	0	Marine grade - Harken
8	Triple Block	\$ 71.00	0	0	1	71	1	71	Marine grade - Harken
9	Triple Block w/Becket	\$ 75.00	0	0	1	75	1	75	Marine grade - Harken
10	Cleat	\$ 4.00	1	4	1	4	1	4	
11	Carabiner	\$ 1.50	1	1.5	1	1.5	1	1.5	For rope attachment to wall mount anchor
12	Rope - double braid? Polyester? 1/4"? 3/8"? - what do we have inventory on?	\$ 25.00	1	25	1	25	1	25	Re-use existing Supplies
13	3/4" Plywood for hangers (partial sheet)	\$ 50.00	0.16	8	0.16	8	0.16	8	6 per sheet
14	3/4" x6' Pipe Insulation for hanger padding	\$ 5.00	2	10	2	10	2	10	
15	Cloth Wrap for pipe insulation	\$ 5.00	1	5	1	5	1	5	Protect Insulation/boat and prevent sticking
16	2x4 x12'	\$ 7.00	1	7		0		0	
17	2x4 x10'	\$ 7.00		0	1	7	1	7	
18	2x6 x8'	\$ 8.00	2	16	2	16	2	16	For rafter mount
19	Misc/contingency	\$ 30.00	1	30	1	30	1	30	
20				0		0		0	
Estimated Total Cost				\$ 385.00		\$ 317.50		\$ 370.50	

Financial Impact

- For each active rack space created:
 - Minimum of additional \$150 in revenue per new rack space
 - \$425 Private Rack Space vs \$275 unrestricted logbook sculling
 - Additional \$450 if we bring in new private shell member
 - Reduced use of club shells
 - Increased availability & helps support a larger overall membership
 - Less wear and tear on club shells
- Financial Impact by phase:

Step	Description	# New Spaces	Cost	Incremental Revenue(1)	Comments
1	Add New Double Rack	2	~\$350	\$300	
2	Convert Single Storage Rack to Double Active Rack	2	<\$300	\$300	Cost TBD ... Re-use some existing rigging items
3	Convert Single Active Rack to Double Active Rack	1	<\$300	\$150	Cost TBD ... Re-use some existing rigging items
4	Modify Double Rack in Bay 1 to allow use of slot 6	<u>1</u>	<u><\$50</u>	<u>\$150</u>	If Re-use most rigging items and keep use of double block w/4:1 mech advantage
	TOTAL (If all 4 steps done)	6	<\$1000	\$900	

(1) Incremental over logbook sculling fee

New Layout w/Rack Addition Steps

NEW

= Proposed New Active Rack Space

1

=Step #

Rack	Manufacturer	Boat/Owner	Color	Weight	Skill	Rack	Manufacturer	Boat/Owner	Color	Weight	Skill	Rack	Manufacturer	Boat/Owner	Color	Weight	Skill
Space		Name		Range	Range	Space		Name		Range	Range	Space		Name		Range	Range
8	Storage	Lown				8	Storage					8	Storage				
7	Storage	Crouthamel				7	Storage					7	Storage	Feenan?			
6	Private	Crouthamel				6	Private	Springer				6	Storage	Hanging Rack Change - Move to Active Private - NEW			
5	Wintech	Wintech HW	White	HW	Advanced	5	Private	Wheatley				5	Private	Scammell			
4	Peinert	X25 Red	Red	LW	Intermediate	4	Fluid	Fluid	Black	MW	Advanced	4	Private	Romanowsky			
3	Wintech	Wint LW	White	LW	Intermediate	3	Fluid	Fluid HW	Gray	HW	Advanced	3	Private	Breiland			
2	Peinert	X25	Periwinkle	LW	Intermediate	2	Fluid	Fluid MW	Gray	MW	Advanced	2	Private	Lown			
1	Hudson	Hudson	Green	LW	Advanced	1	Peinert	P5	White	MW	Intermediate	1	Private	McCarthy			
Floor	Vespoli	Vespoli Matrix	White	HW	Intermediate	Floor	Vespoli	Wenger	Blue	HW	Intermediate	Floor	Vespoli	Wenger	Blue	HW	Intermediate
Street-side Hanging Racks																	
													Private	Masors	Use new design to support		
	Private	Semonian											Private	Landry	active use of wall rack #6		
							Private	Chapman									
	Private	Albert											Private	Jody Decarolis/Neskey(?)			
	Private	Bowen											Private	McGowan			
Center Hanging Racks																	
	Private	Hutchinson											Private	Johnson			
	Private	Bernard											Private	NEW			
type							Fluid	Fluid 2x	White	MW	Advanced						
	Private	NEW			1		Vespoli	Vesp 2-	Green	????	????		Storage?	Hutchinson	Change to Active Private - NEW		
	Private	NEW											Private	NEW			
Water-side Hanging Racks																	
													Swift	Swift 2x/2-	White	MW	Advanced
													Vespoli	Matrix 2x	Blue	HW	Intermediate
Outside Racks																	
6	Storage																
5	Private	Kuhn - Donated to LHS - AVAILABLE															
4	Peinert	P4	White	MW	Intermediate												
3	Peinert	Zephyr	White	All	Novice												
2	Peinert	Zephyr	White	All	Novice												
1	Peinert	Zephyr	White	All	Novice												
UML Trailer																	
							Vespoli - White/Blue 2x										
							Accomac - White 4x										

Next Steps

- Input and approval on plan and steps
- Need for UML/Kate approval?
- Initiate Step 1 - solicit volunteer(s) to help with installation
- Step 1 trial use & design modification if/as required
- Initiate subsequent step(s) as agreed upon
- Other ??