

# Draft MCD for SIKULIAQ A-Frame

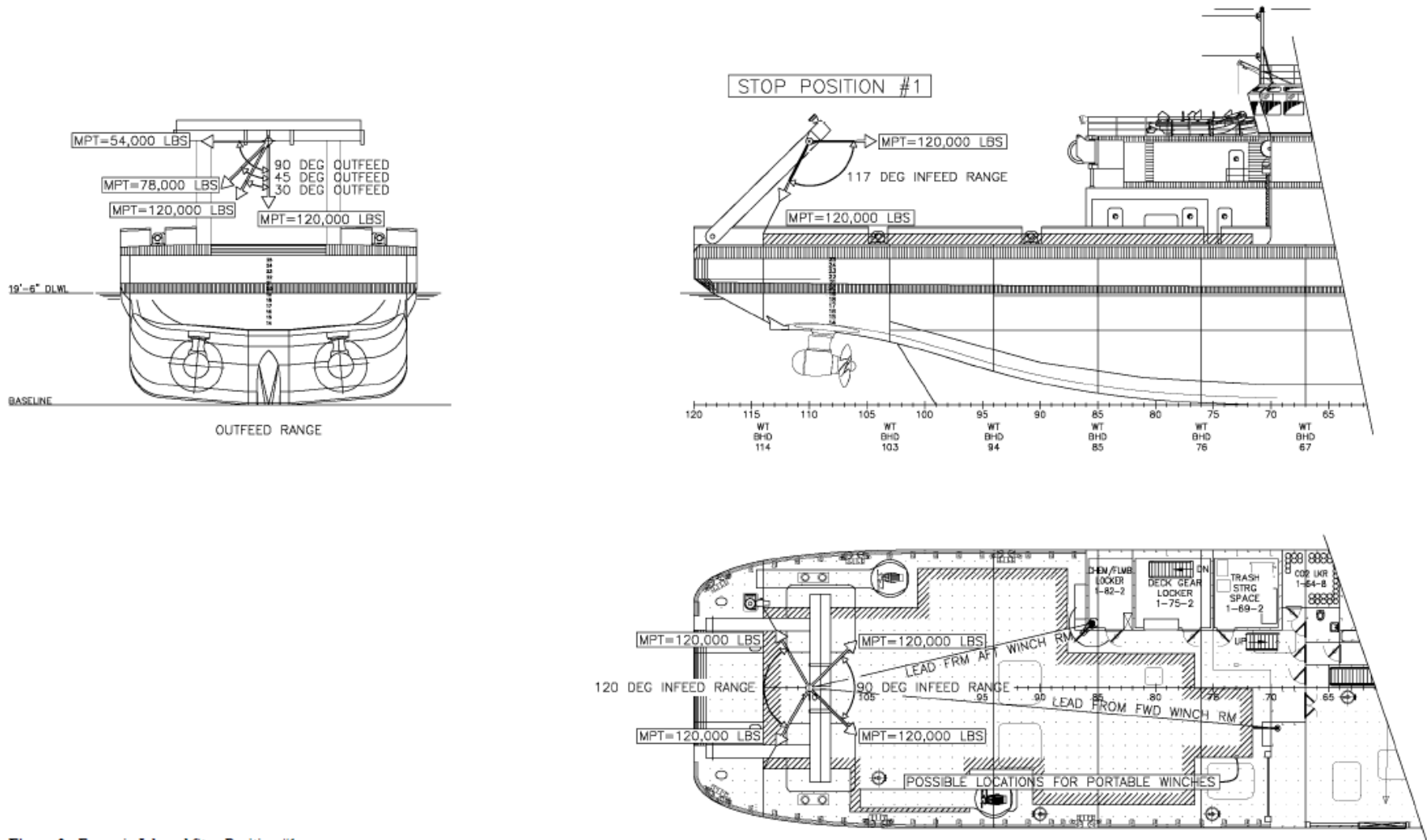


Figure 2: Frame in Inboard Stop Position #1

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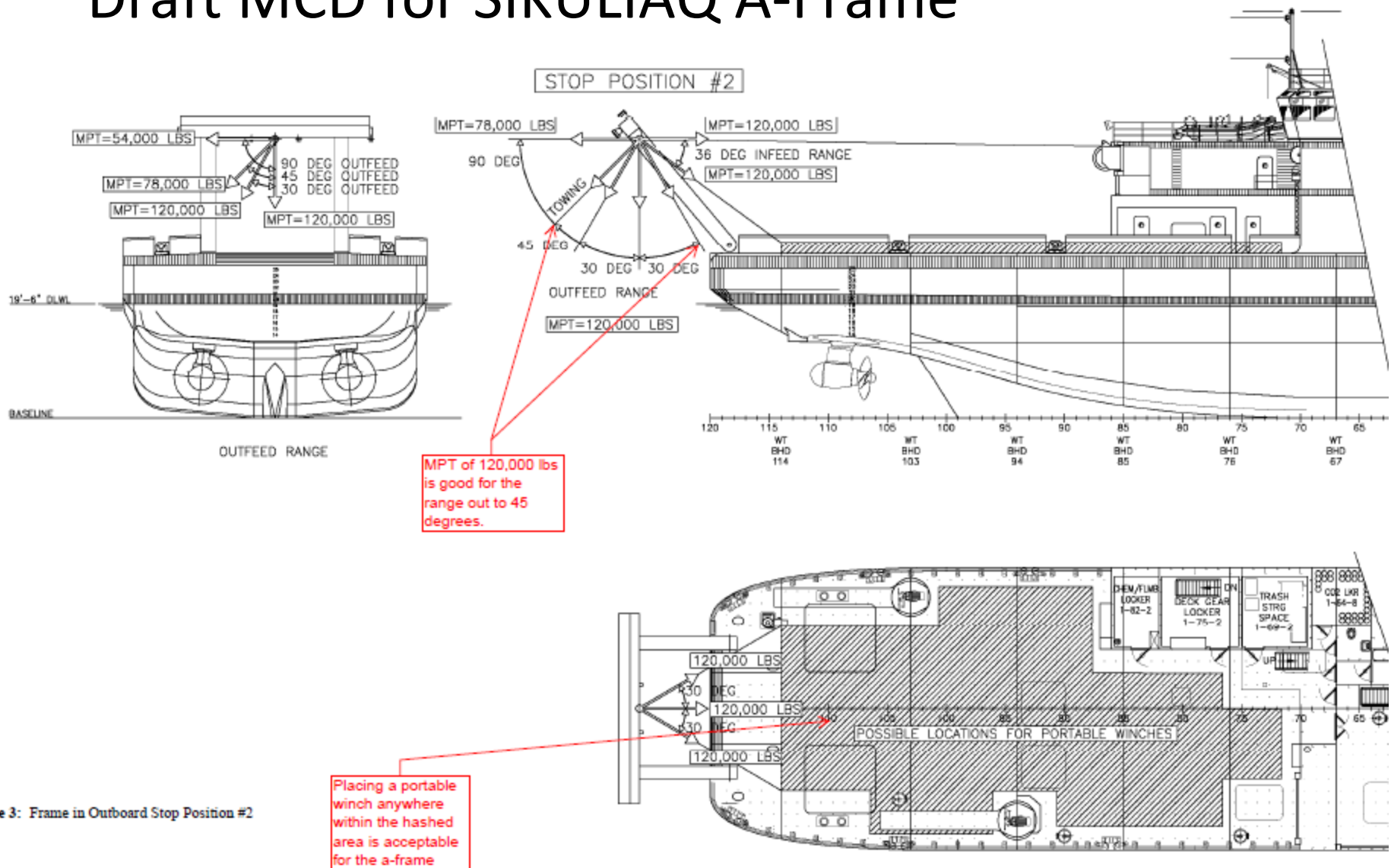
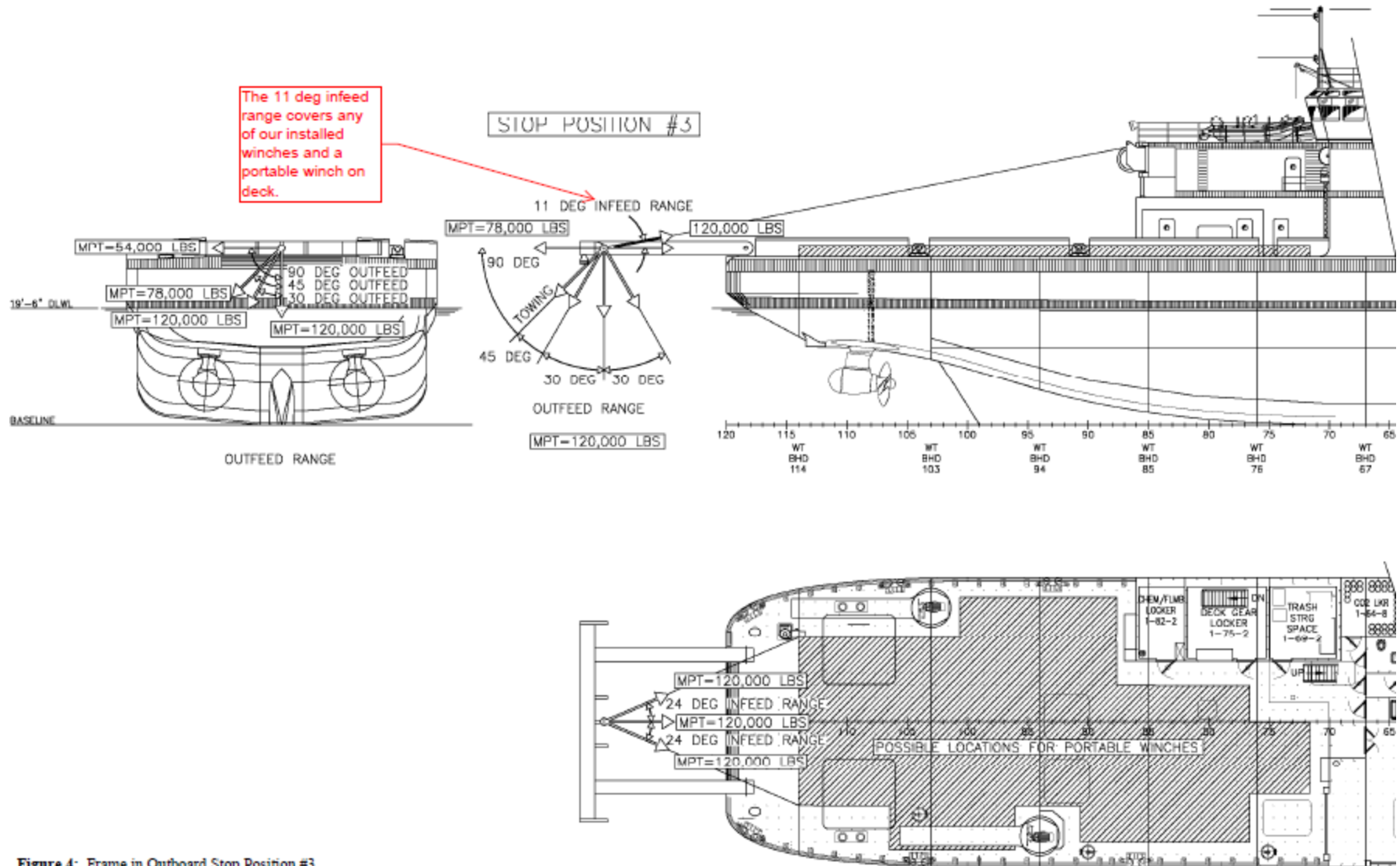


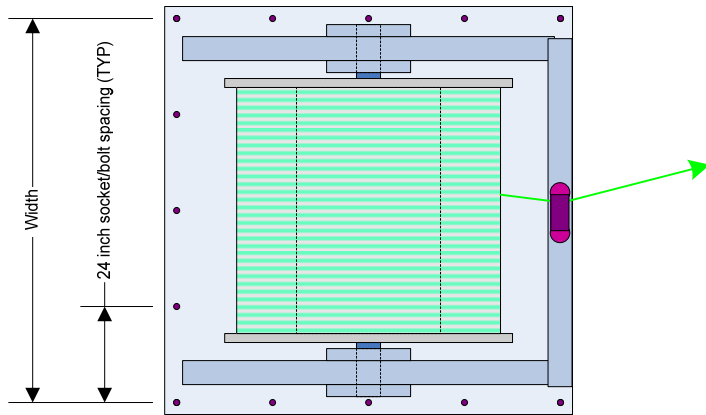
Figure 3: Frame in Outboard Stop Position #2

# Draft MCD for SIKULIAQ A-Frame

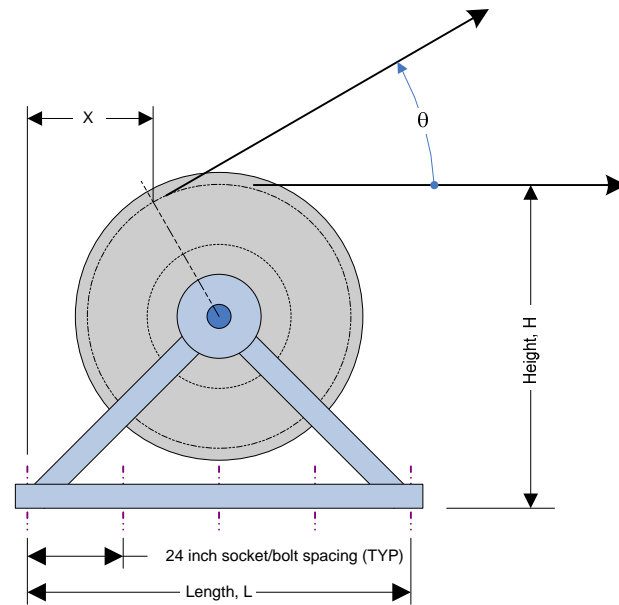
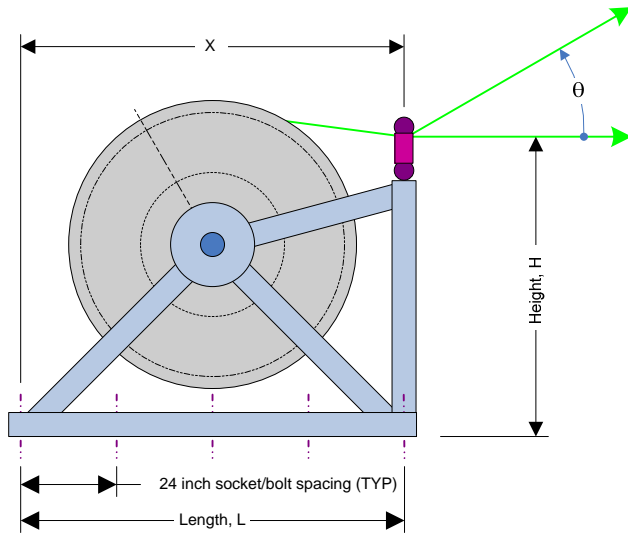


The 11 deg infeed range covers any of our installed winches and a portable winch on deck.

Figure 4: Frame in Outboard Stop Position #3



# SIKULIAQ Deck Loading For Portable Equipment



### *Part 1: Calculation of Minimum Number of Tensile Bolts for Horizontal Pull*

$$N_{\sigma_1} = 1 + INT \left\{ \frac{1}{C_{\sigma}} \left[ \frac{PH}{L} - \frac{W}{2} \right] \right\} = 1 + INT \left\{ \frac{1}{(\text{Line } 8)} \left[ \frac{(\text{Line } 7) \times (\text{Line } 3)}{(\text{Line } 1)} - \frac{(\text{Line } 5)}{2} \right] \right\}$$

### *Part 2: Calculation of Minimum Number of Tensile Bolts for Upwards Pull*

$$N_{\sigma_2} = 1 + INT \left\{ \frac{1}{C_{\sigma}} \left[ P \cos(\theta) \frac{H}{L} + P \sin(\theta) \frac{(L - X)}{L} - \frac{W}{2} \right] \right\}$$
$$= 1 + INT \left\{ \frac{1}{(\text{Line } 8)} \left[ (\text{Line } 7) \cos(\text{Line } 4) \frac{(\text{Line } 3)}{(\text{Line } 1)} + (\text{Line } 7) \sin(\text{Line } 4) \frac{(\text{Line } 1) - (\text{Line } 2)}{(\text{Line } 1)} - \frac{(\text{Line } 5)}{2} \right] \right\}$$

### *Part 3: Minimum Number of Tensile Bolts*

$N_{\sigma}$  is the larger of  $N_{\sigma_1}$  and  $N_{\sigma_2}$

### *Part 4: Minimum Number of Bolts for Shear*

$$N_{\tau} = \frac{P}{C_{\tau}} = \frac{(\text{Line } 7)}{(\text{Line } 9)}$$

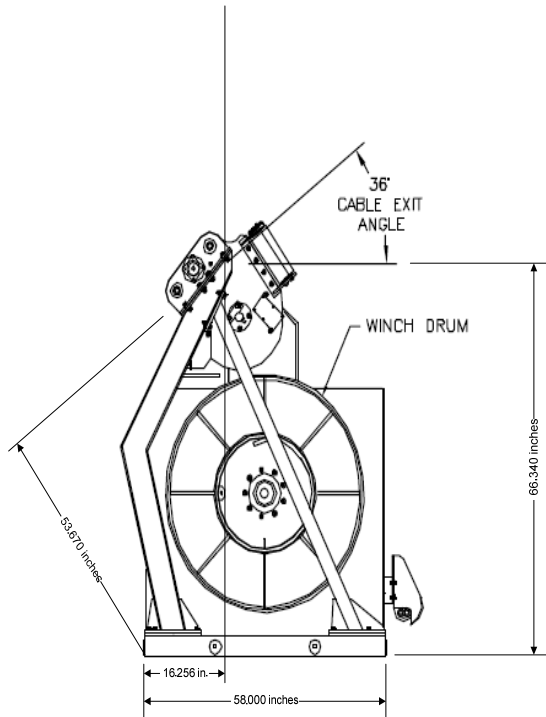
### *Part 5: Total Number of Bolts*

$N$  is the larger of  $N_{\sigma} + 2$  and  $N_{\tau}$

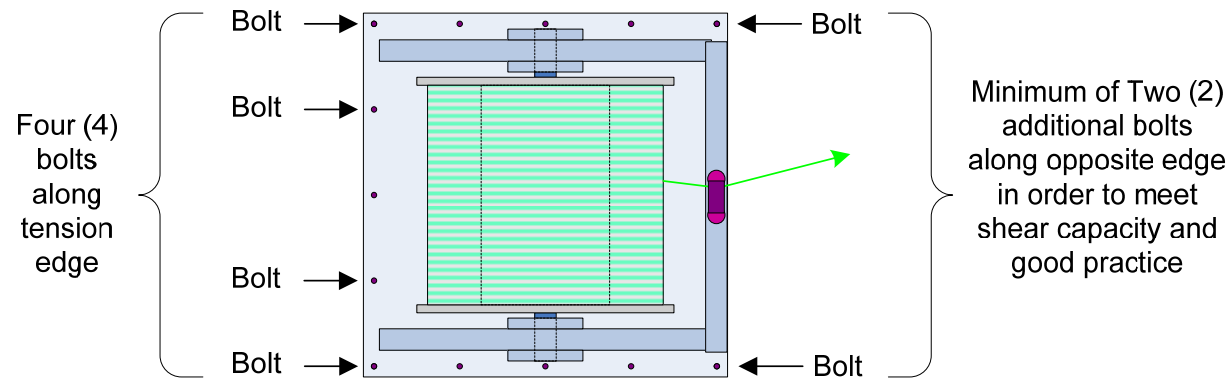
### *Part 6: Gross Deck Load Check*

## INPUT DATA (refer to Figure 2)

- ENTER LENGTH, L, in inches: ..... \_\_\_\_\_ inches (1)
- ENTER LONGITUDINAL POINT OF ACTION, X, in inches: ..... \_\_\_\_\_ inches (2)
- ENTER HEIGHT OF POINT OF ACTION, H, in inches: ..... \_\_\_\_\_ inches (3)
- ENTER MAXIMUM INCLINATION OF WIRE ROPE,  $\theta$  : ..... \_\_\_\_\_ degrees (4)
- ENTER WEIGHT OF WINCH without wire, W, in pounds: ..... \_\_\_\_\_ pounds (5)
- ENTER WIRE ROPE SPECIFICATION: \_\_\_\_\_
- ENTER MINIMUM BREAKING STRENGTH OF WIRE ROPE: ..... \_\_\_\_\_ pounds (6)
- ENTER MAXIMUM BREAKING STRENGTH  
OF WIRE ROPE (if known), OTHERWISE  
ENTER 1.25 X Minimum Breaking Strength from Line 6, P:..... \_\_\_\_\_ pounds (7)
- ENTER THE DESIGN TENSILE CAPACITY,  $C_{\sigma}$ , OF WINCH  
FOUNDATION BOLTS (must be 7,000 pounds or less)..... \_\_\_\_\_ pounds (8)
- ENTER THE DESIGN SHEAR CAPACITY,  $C_{\tau}$ , OF WINCH FOUNDATION  
BOLTS (should be  $0.577 \times$  design tensile capacity, or less) ..... \_\_\_\_\_ pounds (9)
- ENTER THE UNIT WEIGHT (in air) OF THE WIRE ROPE, ..... \_\_\_\_\_ lb/ft (10)
- ENTER THE LENGTH OF WIRE SPOOLED ON WINCH DRUM... \_\_\_\_\_ feet (11)
- ENTER THE WIDTH OF THE WINCH FOUNDATION..... \_\_\_\_\_ inches (12)



The example calculation determines the need for a minimum of four (4) tensile bolts and a total of six (6) bolts overall. An acceptable arrangement of these required bolts is illustrated below:



# MCD For a Shackle could be the manufacturer's spec sheet

## **Safety Type Grade S Bow Shackle**

Grade S Bow Shackle With Safety Pins AS2741 Forged Alloy

Hot Dipped Galvanized.

Body Forged Carbon Steel, and Pin Forged Alloy Steel.

Test load is 2.2 times Working Load Limit.

Ultimate Load is 6 times Working Load Limit

ITEM NO	SIZE	D mm	d mm	B mm	H mm	SWL t
SBSS013	13	13	16	21	48	2.00
SBSS016	16	16	19	27	61	3.20
SBSS019	19	19	22	32	72	4.70
SBSS022	22	22	25	37	84	6.50
SBSS025	25	25	29	43	95	8.50
SBSS029	29	29	32	46	108	9.50
SBSS032	32	32	35	52	119	12.00
SBSS035	35	35	38	57	133	13.50
SBSS038	38	38	41	60	146	17.00
SBSS044	44	44	51	73	178	25.00
SBSS051	51	51	57	83	197	35.00
SBSS063	63	63	70	105	267	55.00