Draft MCD for SIKULIAQ A-Frame

Figure 2: Frame in Inboard Stop Position #1
Draft MCD for SIKULIAQ A-Frame

Figure 3: Frame in Outboard Stop Position #2

- MPT of 120,000 lbs is good for the range out to 45 degrees.
- Placing a portable winch anywhere within the hashed area is acceptable for the a-frame.
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

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

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

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

\[ = 1 + \text{INT} \left\{ \frac{1}{(\text{Line } 8)} \left[ (\text{Line } 7) \cos(\text{Line } 4) \frac{(\text{Line } 3)}{(\text{Line } 1)} + (\text{Line } 7) \sin(\text{Line } 4) \frac{(\text{Line } 1) - (\text{Line } 2)}{(\text{Line } 1)} - \frac{(\text{Line } 5)}{2} \right] \right\} \]

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 \( \times \) 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:

Minimum of Two (2) additional bolts along opposite edge in order to meet shear capacity and good practice
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

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