STATIC EQUIVALENT LOADING: 923 STYLE BACKSTOP

CEILING SUSPENDED, BACKWARD FOLD, REAR BRACED

INTRODUCTION

The following pages show the estimated reaction forces of a backstop- up to the point of structure that is custom designed for each individual project. Custom-designed structure may add overall weight to the assembly, but normally distributes these reaction forces to the building attachment points.

Final reaction magnitude and locations cannot be determined until the backstop is engineered, but this document is meant to serve as a worst-case guide for your project. The reaction forces are based on the weight of the backstop (including the heaviest backboard, height adjuster, etc) and a 0.7 Seismic Factor.

CLICK ON YOUR ATTACHMENT HEIGHT BELOW:

16' Attachment Height
17' Attachment Height
18' Attachment Height
19' Attachment Height
20' Attachment Height
21' Attachment Height
22' Attachment Height
23' Attachment Height
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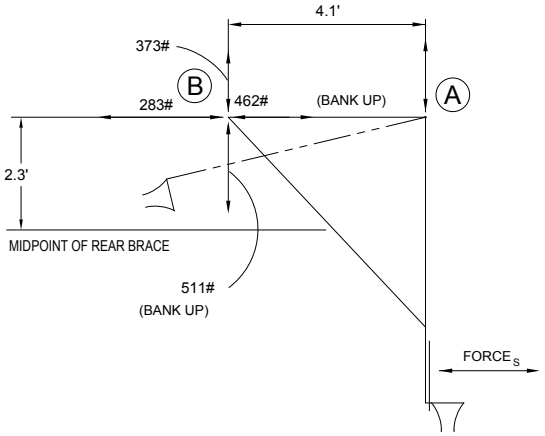
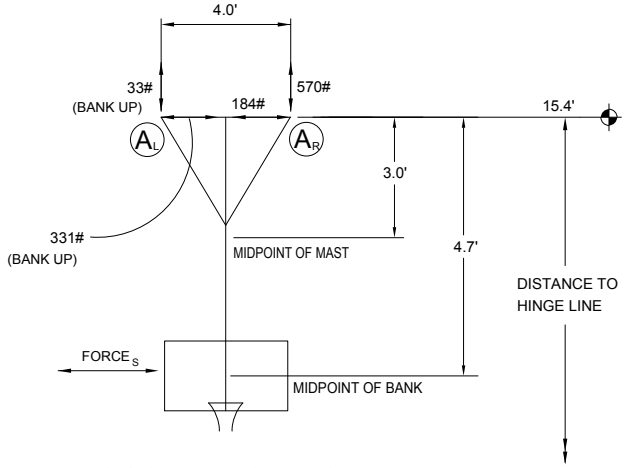


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 527 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 478 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 50 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	864 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	27 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	44 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	200 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	415 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	1324 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 570 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 184 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 373 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 283 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 462 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 33 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK 331 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 511 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 462 lbs = HOIST CABLE TENSION

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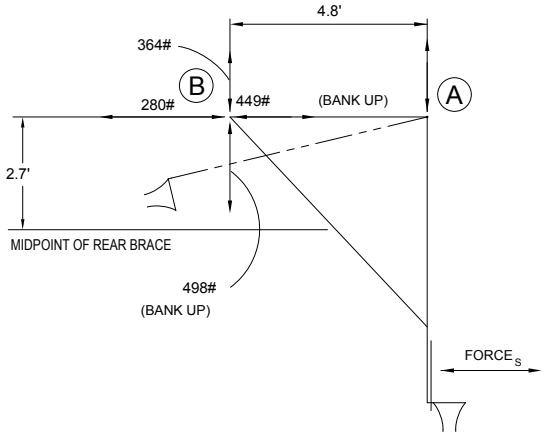
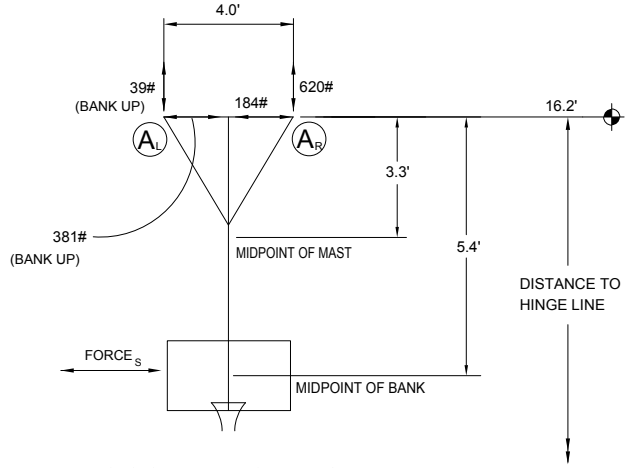


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 527 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 478 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 50 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	1004 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	27 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	51 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	200 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	468 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	1523 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 620 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 184 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 364 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 280 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 449 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 39 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 381 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 498 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 449 lbs = HOIST CABLE TENSION

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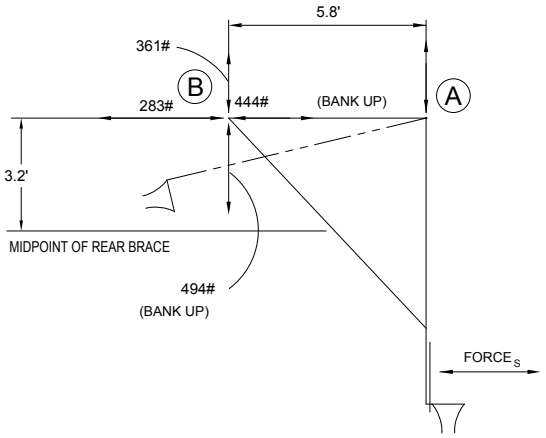
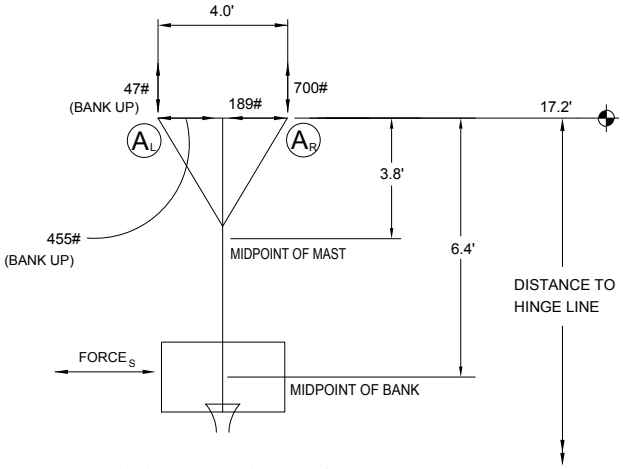


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 539 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 490 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 50 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	1189 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	27 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	61 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	212 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	570 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	1820 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 700 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 189 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 361 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 283 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 444 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 47 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 455 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 494 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 444 lbs = HOIST CABLE TENSION

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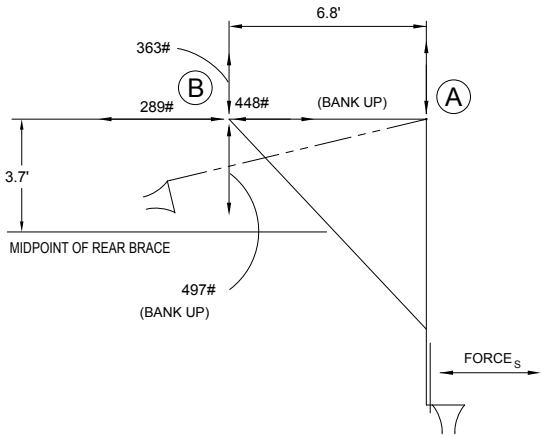
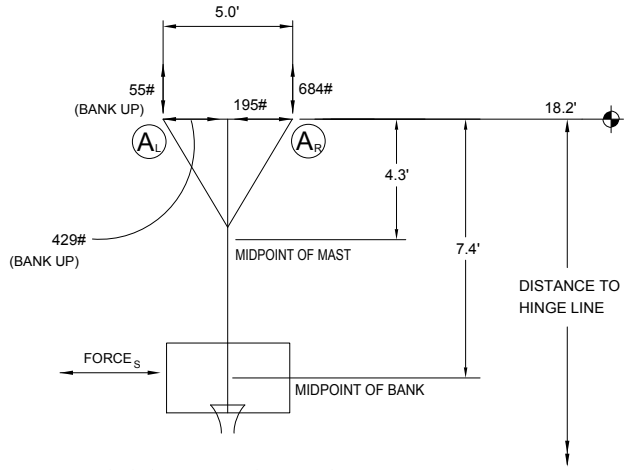


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 558 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 509 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 50 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	1373 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	27 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	70 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	231 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	703 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2147 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 684 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 195 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 363 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 289 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 448 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 55 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK 429 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 497 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 448 lbs = HOIST CABLE TENSION

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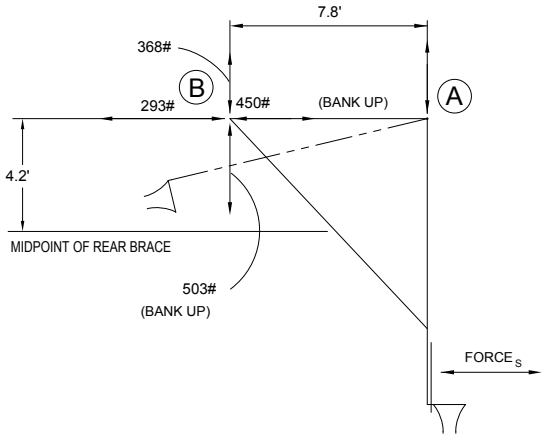
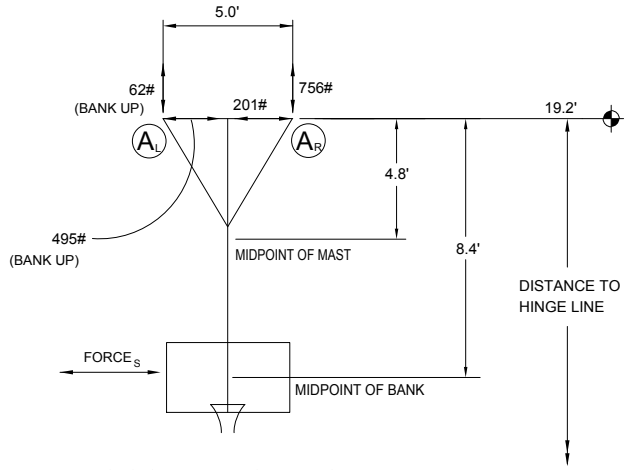


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 575 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 522 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 53 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	1558 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	34 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	100 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	241 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	816 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2475 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 756 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 201 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 368 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 293 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 450 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 62 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 495 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 503 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 450 lbs = HOIST CABLE TENSION

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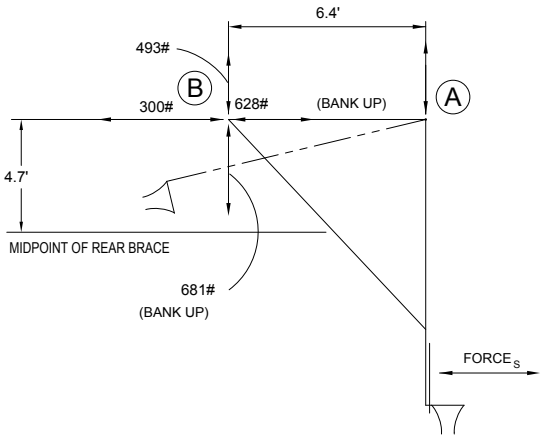
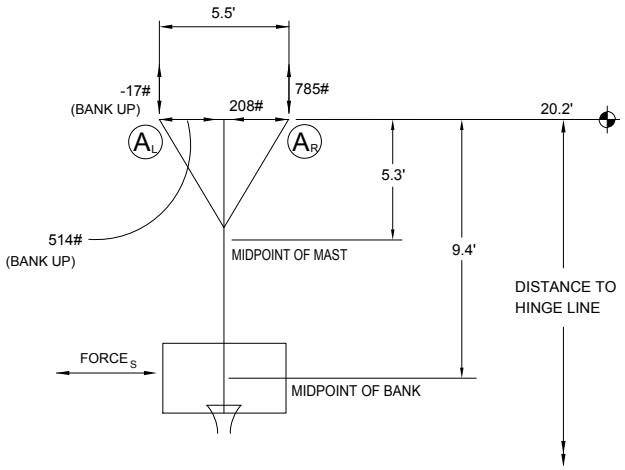


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 594 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 541 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 53 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	1743 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	34 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	112 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	260 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	974 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2829 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 785 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 208 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 493 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 300 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 628 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: -17 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK 514 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 681 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 628 lbs = HOIST CABLE TENSION

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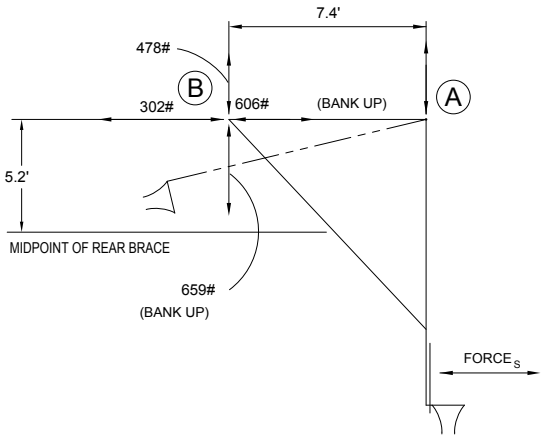
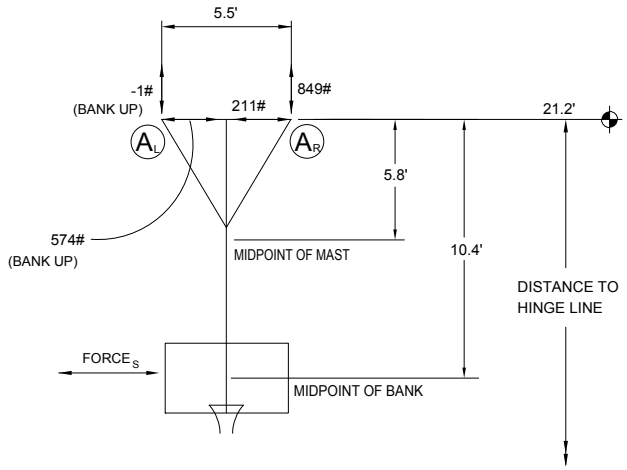


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 604 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 551 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 53 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	1928 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	34 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	124 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	270 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1103 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3155 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 849 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 211 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 478 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 302 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 606 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: -1 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 574 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 659 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 606 lbs = HOIST CABLE TENSION

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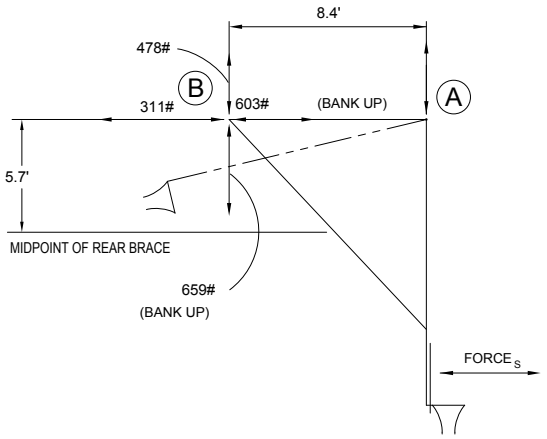
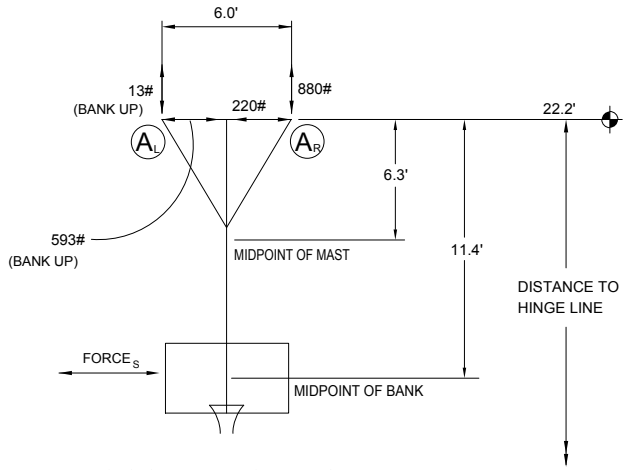


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 630 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 574 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 56 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	2113 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	40 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	160 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	290 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1287 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3559 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 880 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 220 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 478 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 311 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 603 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 13 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 593 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 659 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 603 lbs = HOIST CABLE TENSION

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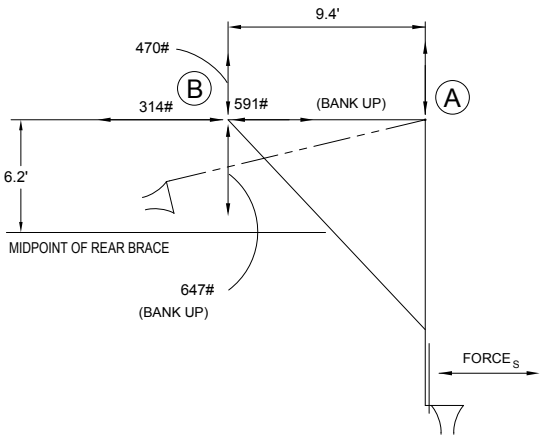
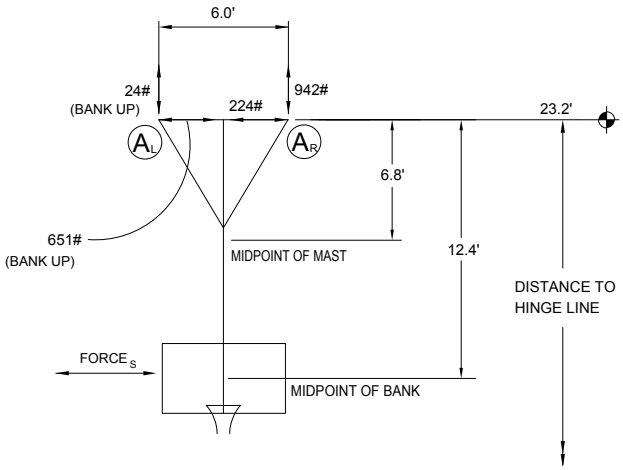


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 639 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 583 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 56 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	2297 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	40 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	174 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	299 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1433 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3904 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 942 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 224 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 470 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 314 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 591 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 24 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 651 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 647 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 591 lbs = HOIST CABLE TENSION

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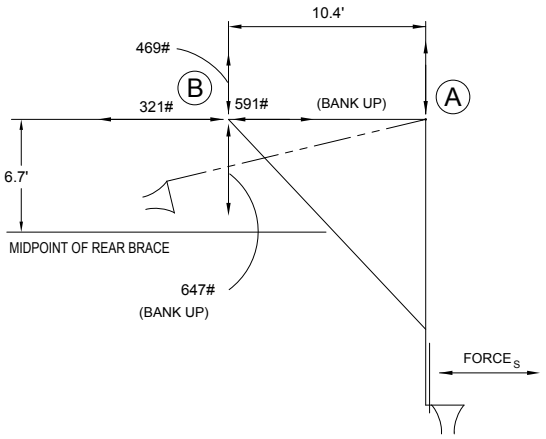
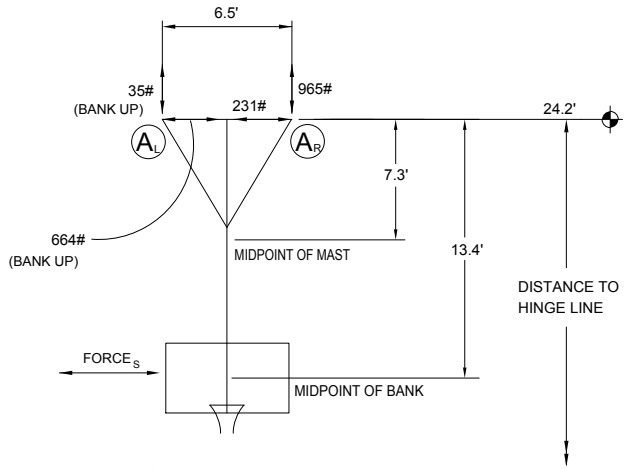


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 660 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 604 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 56 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	2482 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	40 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	188 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	320 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1643 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	4313 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 965 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 231 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 469 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 321 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 591 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 35 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 664 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 647 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 591 lbs = HOIST CABLE TENSION

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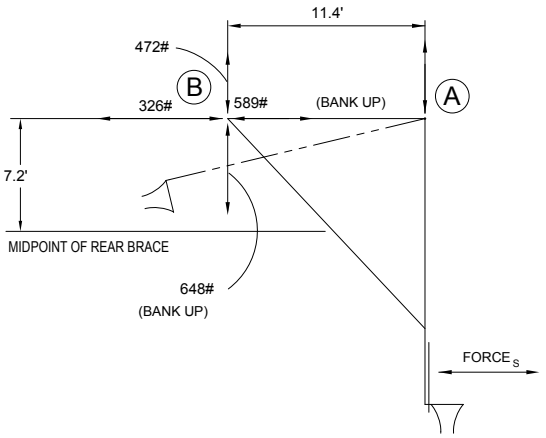
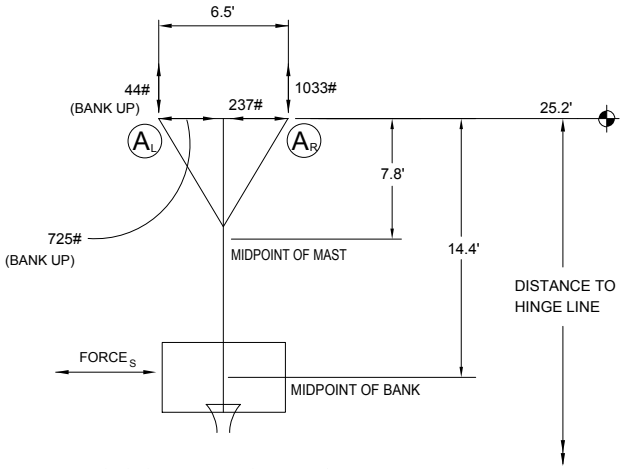


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 676 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 616 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 60 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	2667 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	47 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	237 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	329 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1806 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	4710 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 1033 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 237 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 472 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 326 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 589 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 44 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 725 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 648 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 589 lbs = HOIST CABLE TENSION

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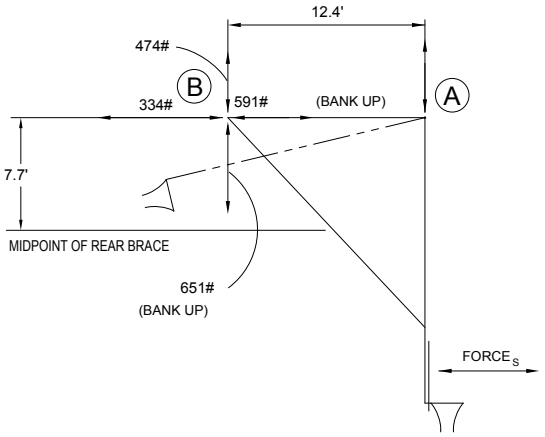
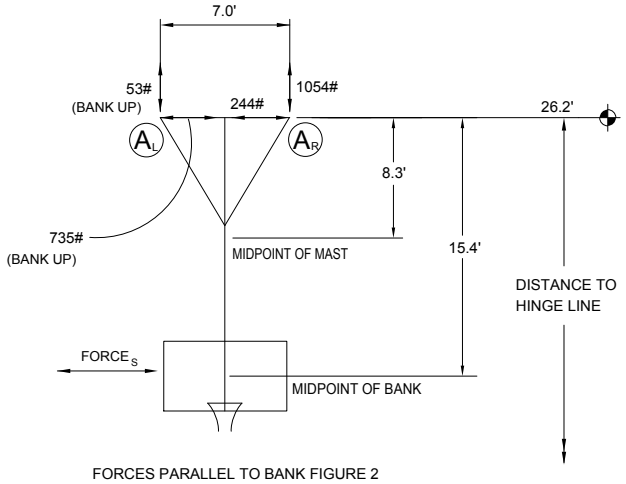


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 697 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 637 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 60 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	2852 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	47 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	254 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	350 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2042 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	5148 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 1054 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 244 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 474 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 334 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 591 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 53 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 735 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 651 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 591 lbs = HOIST CABLE TENSION

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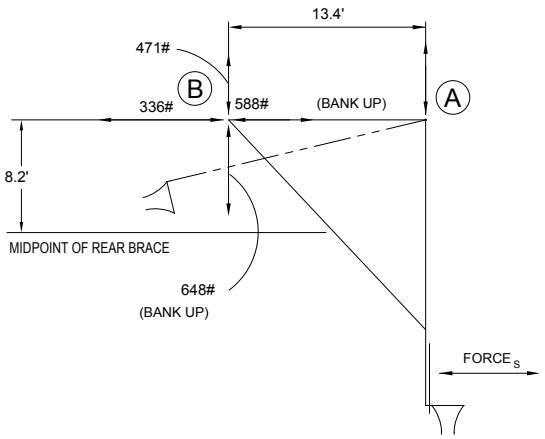
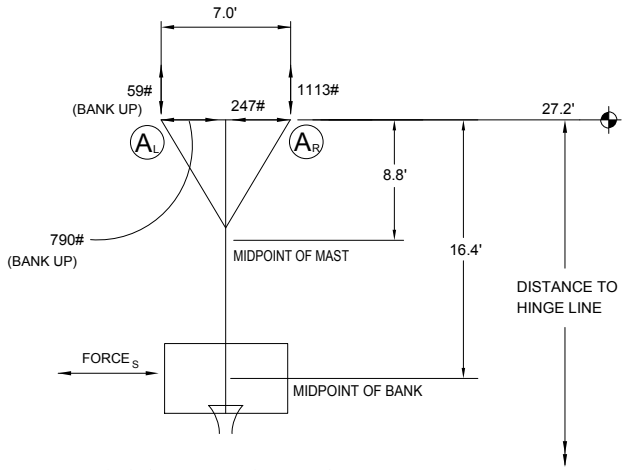


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 706 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 647 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 60 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	3037 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	47 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	270 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	359 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2222 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	5529 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 1113 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 247 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 471 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 336 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 588 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 59 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 790 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 648 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 588 lbs = HOIST CABLE TENSION

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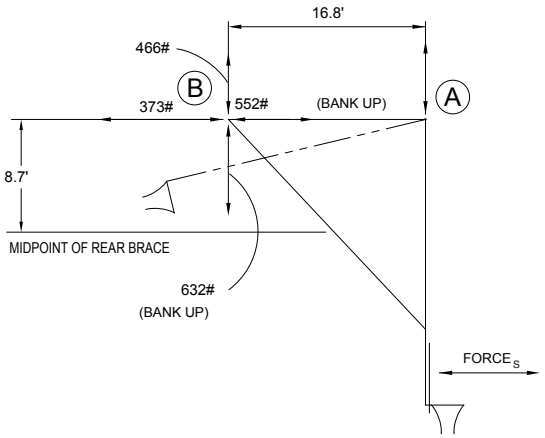
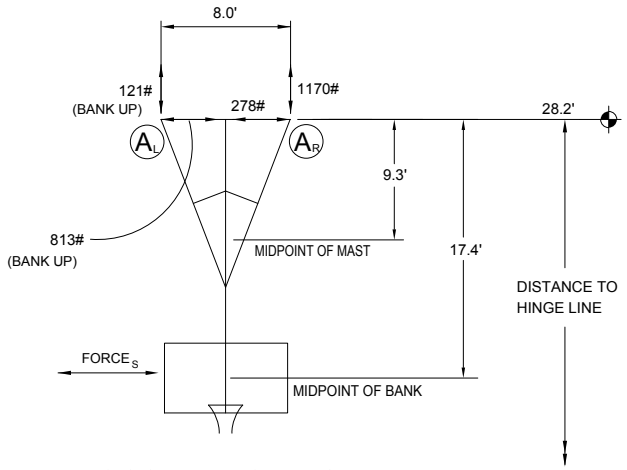


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 794 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 714 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 80 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	280 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	3417 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	88 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	537 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	390 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2551 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	6505 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 1170 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 278 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 466 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 373 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 552 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 121 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 813 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 632 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 552 lbs = HOIST CABLE TENSION

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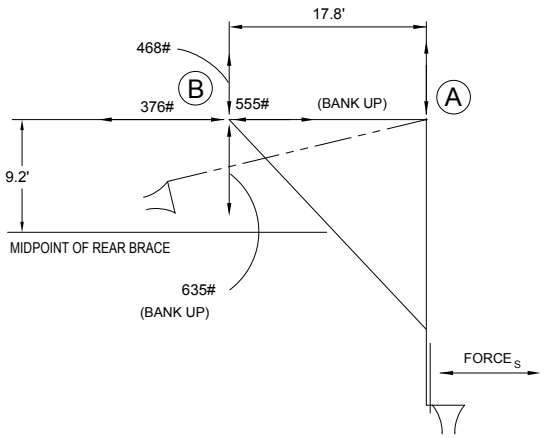
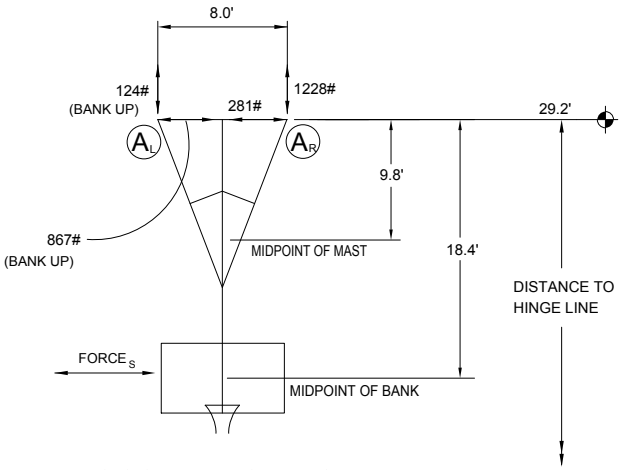


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 804 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 724 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 80 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	280 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	3613 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	88 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	568 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	400 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2752 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	6933 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 1228 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 281 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 468 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 376 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 555 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 124 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A FROM SEISMIC PARALLEL TO BANK: 867 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 635 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 555 lbs = HOIST CABLE TENSION

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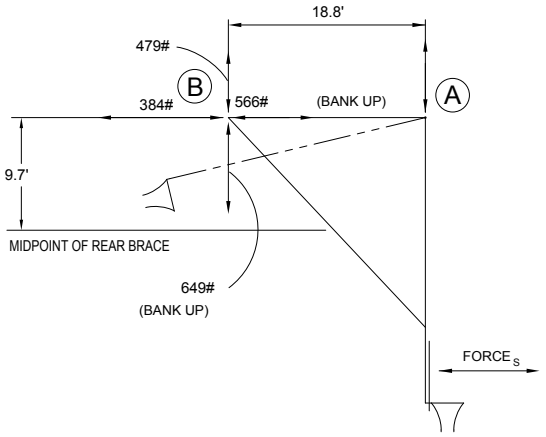
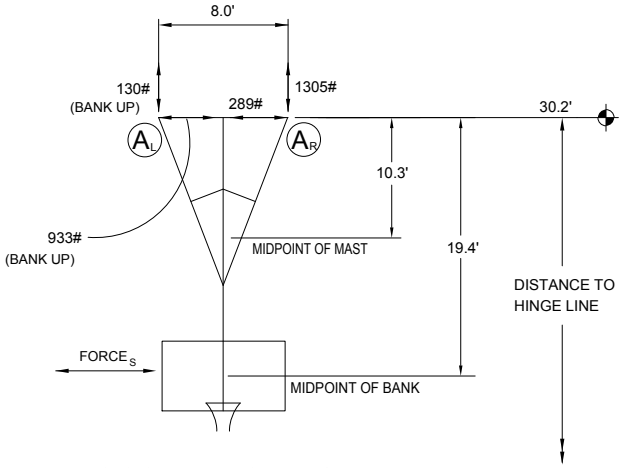


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 827 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 744 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 83 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	280 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	3809 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	94 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	639 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	417 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	3016 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	7464 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 1305 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 289 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 479 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 384 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 566 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 130 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A: FROM SEISMIC PARALLEL TO BANK: 933 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 649 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 566 lbs = HOIST CABLE TENSION

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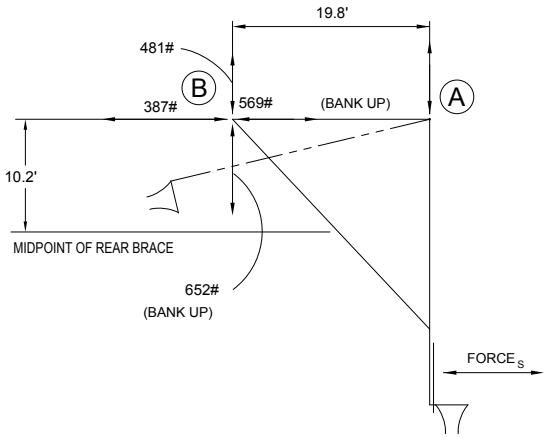
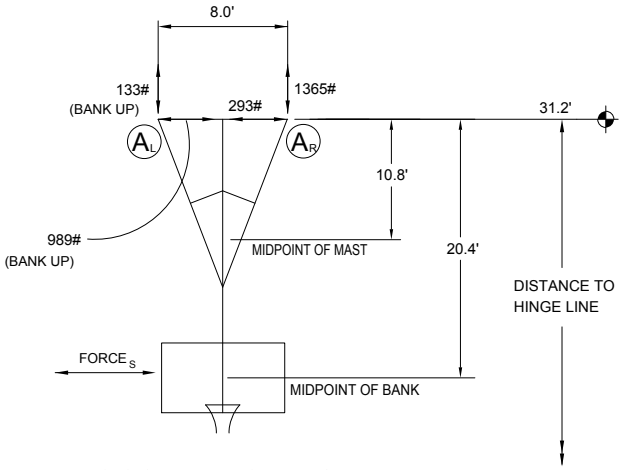


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 836 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 753 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 83 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF PULLEY

+PLEASE NOTE THESE ARE ESTIMATED WEIGHT LOADS FROM THE BACKSTOP MAST HANGERS TO THE FLOOR. THESE ESTIMATES DO NOT INCLUDE ANY SUPERSTRUCTURE WEIGHTS.

SEISMIC FACTORED MOMENTS AND SUM OF MOMENTS FOR BACKSTOP ELEMENTS

SEISMIC FACTOR = 0.7 (VARIES WITH SEISMIC ZONE, RIGIDITY OF SUPPORT & ROOM USE)

WEIGHT OF BANK (WB)	280 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	4005 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	94 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	672 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	426 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	3232 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	7909 ft.lbs	SUM OF THE MOMENTS = MB + MFB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK DOWN

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK DOWN

R^{A}_{VER} VERTICAL REACTIONS AT POINT A: 1365 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 293 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PERPENDICULAR TO BANK (FIG. 1)

BANK DOWN

R^{B}_{VER} VERTICAL REACTION AT POINT B: 481 lbs = $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 387 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: 569 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

REACTIONS AT HINGE LINE AT POINT A FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 2)

BANK UP

$R^{A\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT A: 133 lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A FROM SEISMIC PARALLEL TO BANK: 989 lbs = $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

REACTIONS AT HINGE LINE AT POINT B FROM WEIGHT LOADS AND SEISMIC PARALLEL TO BANK (FIG. 1)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 652 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 569 lbs = HOIST CABLE TENSION

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