STATIC EQUIVALENT LOADING: 949 STYLE BACKSTOP

CEILING SUSPENDED, FORWARD FOLD, FRONT BRACED

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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:

18' Attachment Height	23' Attachment Height	28' Attachment Height
19' Attachment Height	24' Attachment Height	29' Attachment Height
20' Attachment Height	25' Attachment Height	30' Attachment Height
21' Attachment Height	26' Attachment Height	31' Attachment Height
22' Attachment Height	27' Attachment Height	32' Attachment Height

STATIC EQUIVALENT LOADING SHEET

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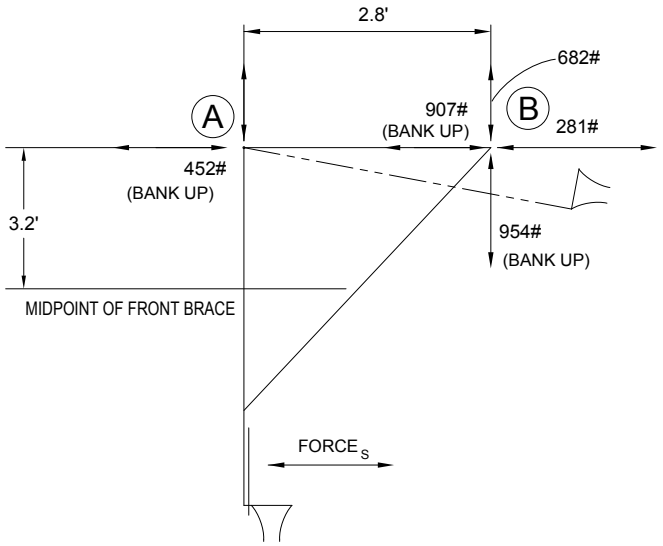
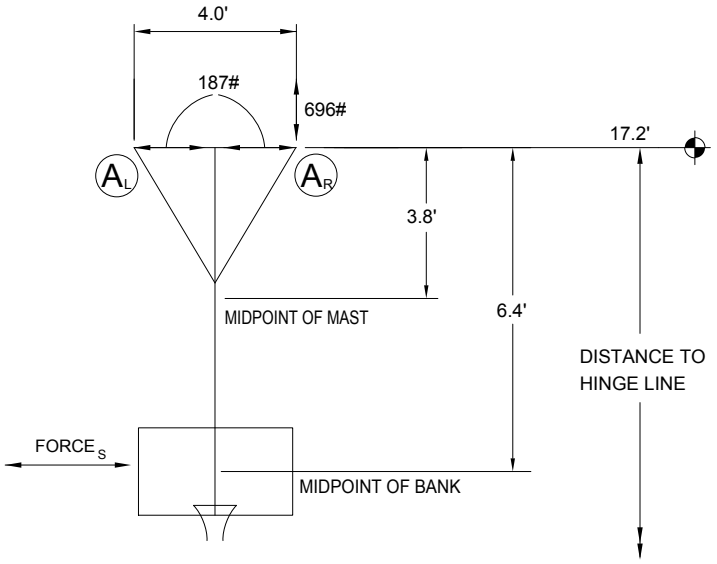
1/7/2015



FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 534 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 487 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 47 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	22 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	50 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	1808 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: 696 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: 187 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: 682 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 281 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 907 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: -186 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: 452 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 954 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 907 lbs = HOIST CABLE TENSION

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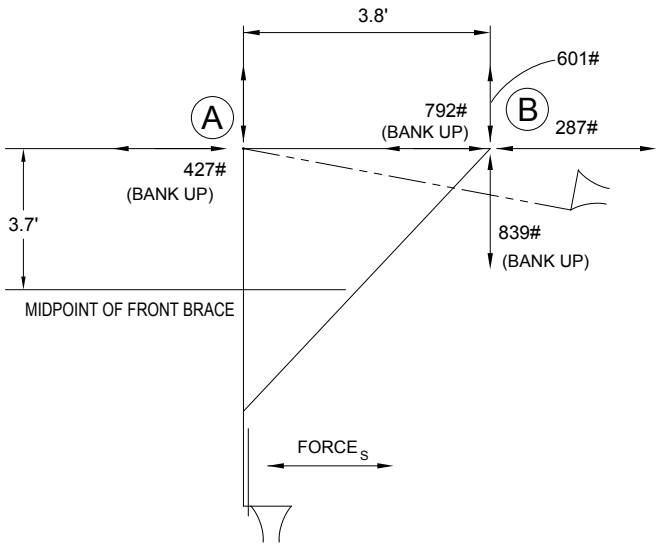
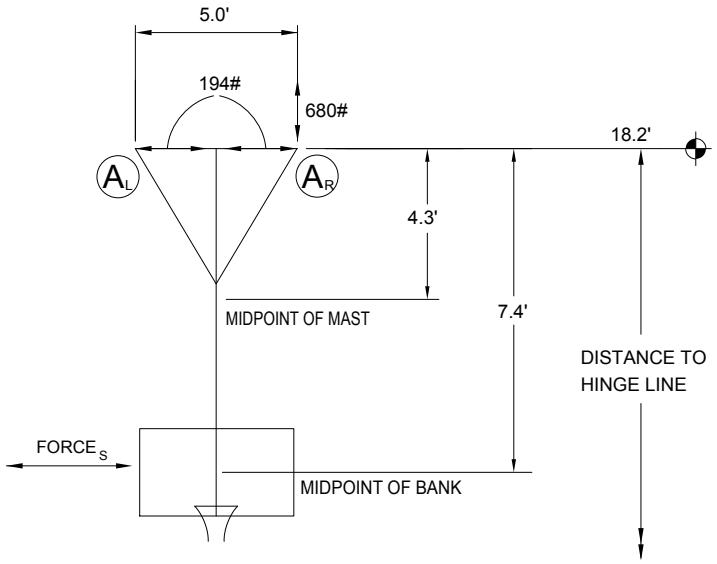


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 553 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 506 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 47 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	22 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	57 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2134 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: 680 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: 194 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: 601 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 287 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 792 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: -119 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: 427 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 839 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 792 lbs = HOIST CABLE TENSION

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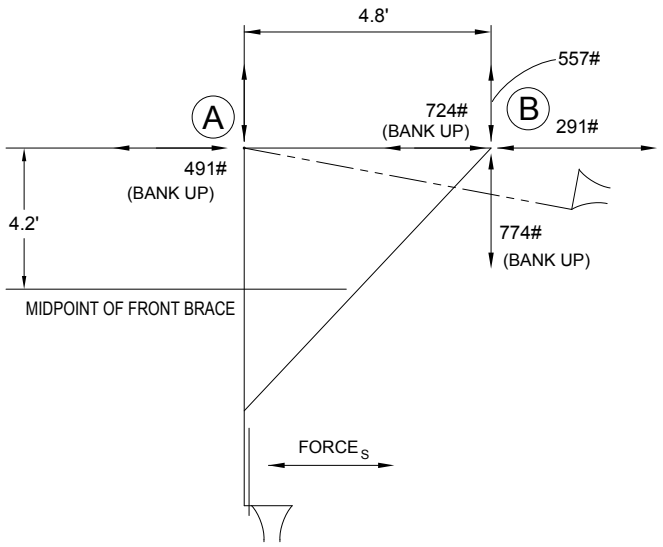
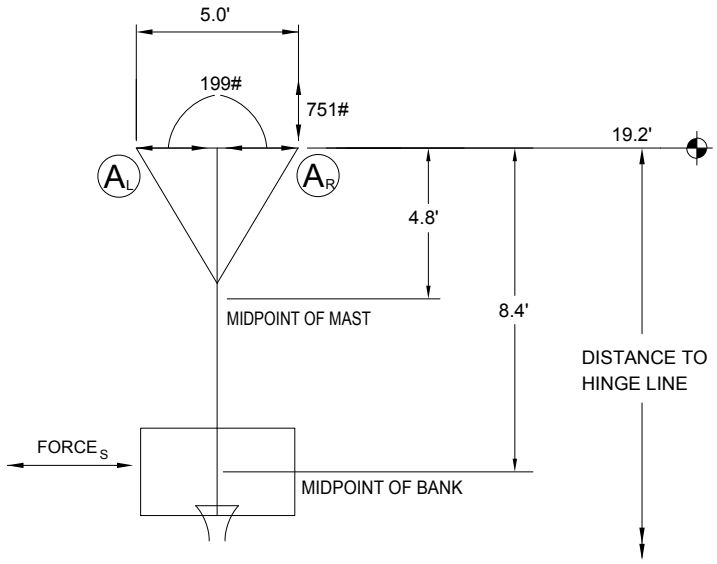


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 569 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 519 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 50 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	28 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	83 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2457 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: 751 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: 199 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: 557 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 291 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 724 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: -78 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: 491 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 774 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 724 lbs = HOIST CABLE TENSION

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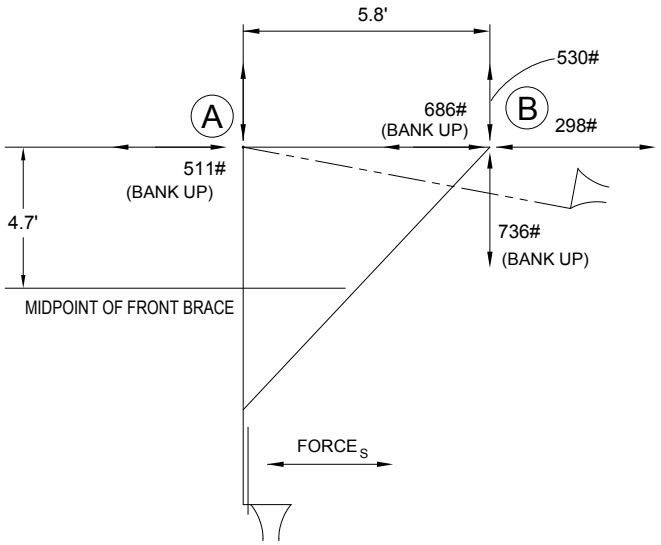
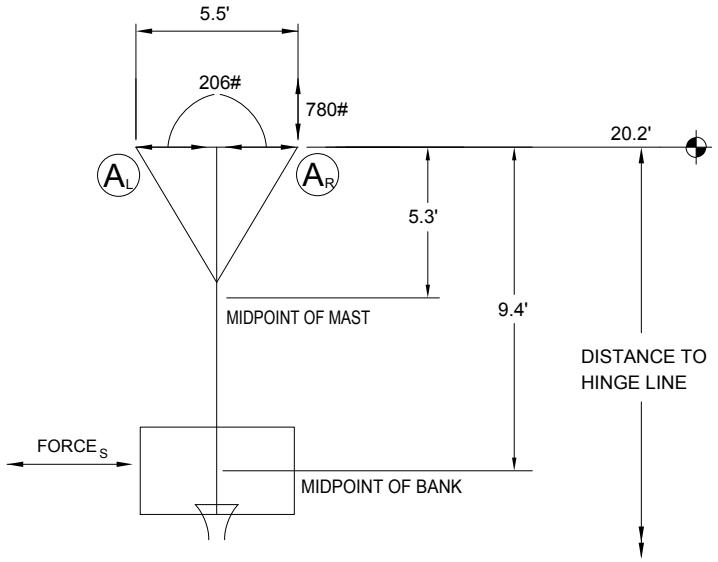


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 588 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 538 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 50 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	28 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	92 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2809 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: 780 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: 206 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: 530 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 298 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 686 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: -49 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: 511 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 736 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 686 lbs = HOIST CABLE TENSION

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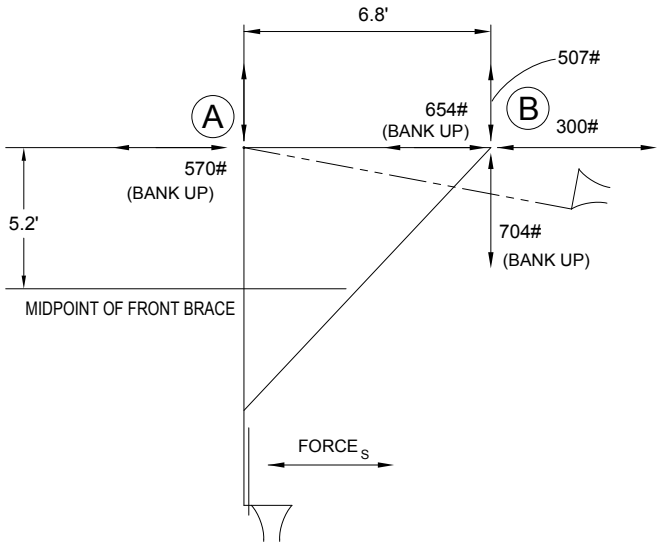
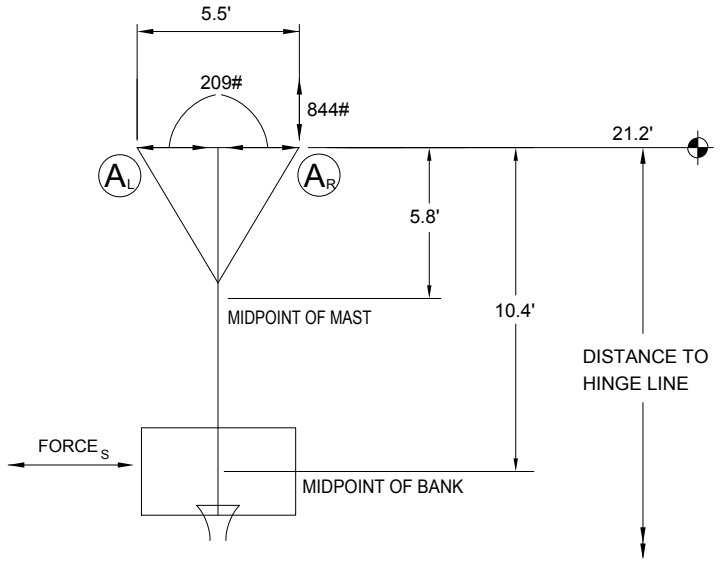


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 598 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 548 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 50 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	28 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	102 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3133 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: 844 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: 209 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: 507 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + 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 = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 654 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: -28 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: 570 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 704 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 654 lbs = HOIST CABLE TENSION

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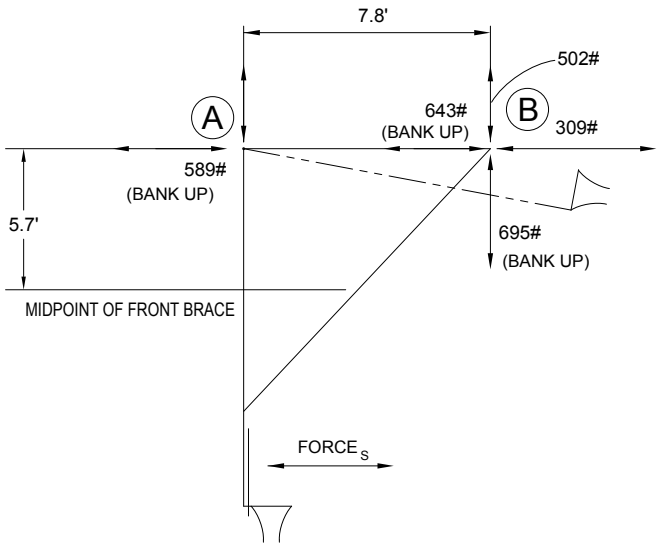
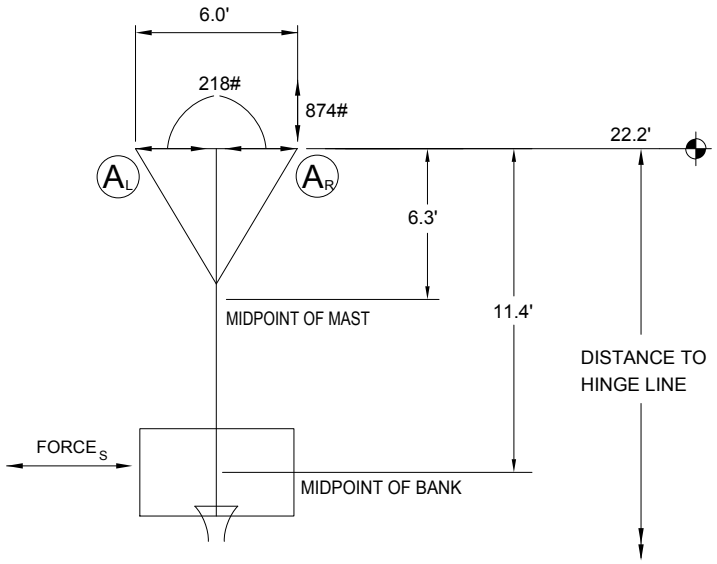


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 623 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 570 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 53 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	33 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	132 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3531 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: 874 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: 218 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: 502 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 309 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 643 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: -10 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: 589 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 695 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 643 lbs = HOIST CABLE TENSION

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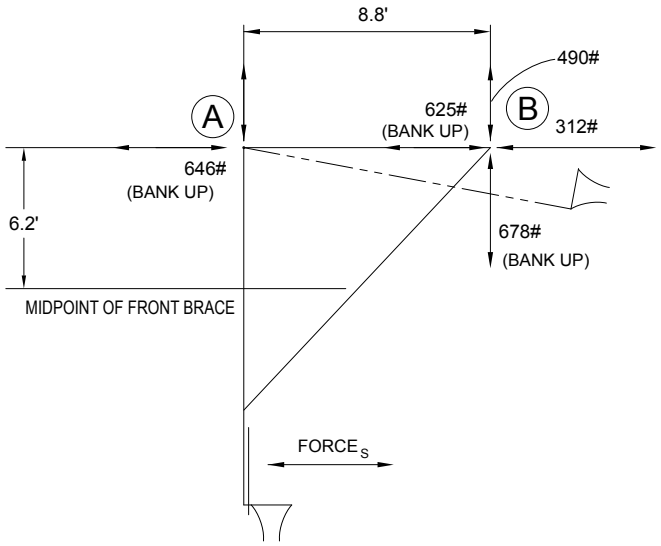
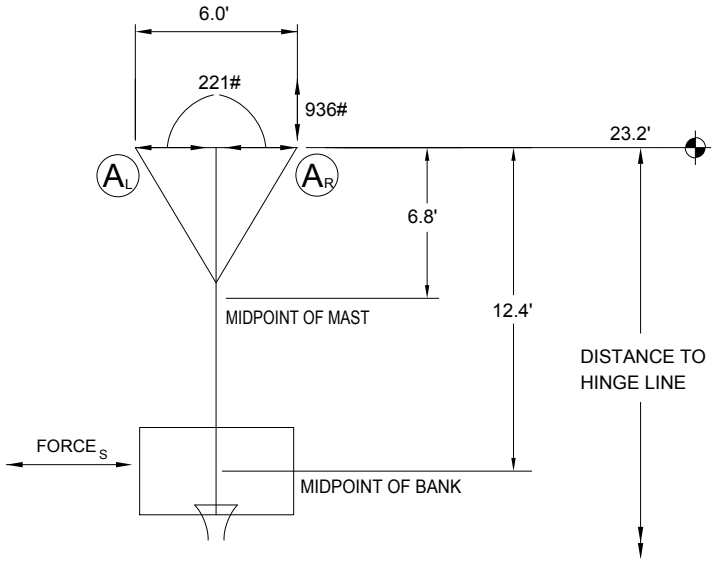


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 632 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 580 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 53 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	33 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	144 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3874 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: 936 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: 221 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: 490 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 312 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 625 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: 3 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: 646 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 678 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 625 lbs = HOIST CABLE TENSION

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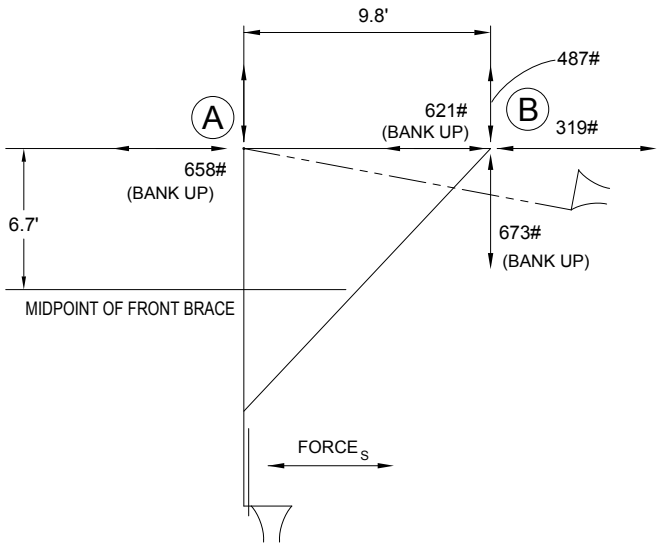
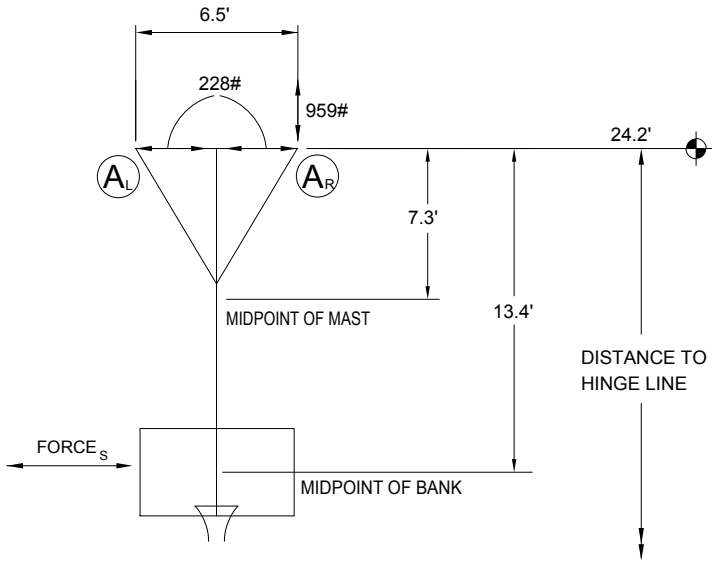


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 653 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 600 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 53 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	33 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	155 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	4280 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: 959 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: 228 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: 487 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 319 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 621 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: 16 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: 658 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 673 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 621 lbs = HOIST CABLE TENSION

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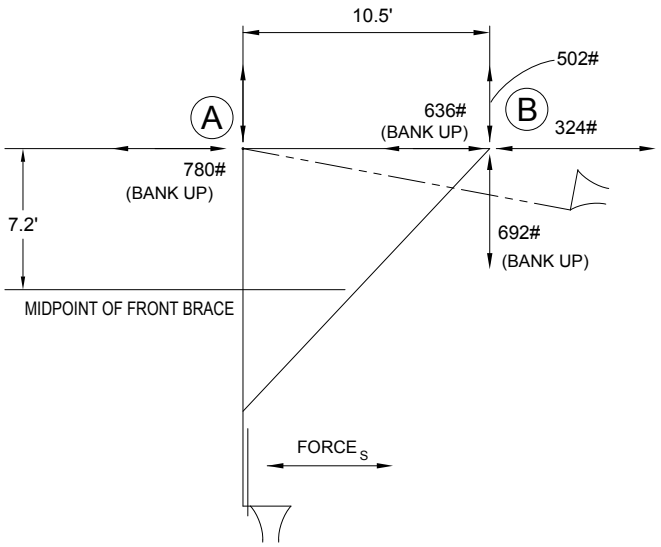
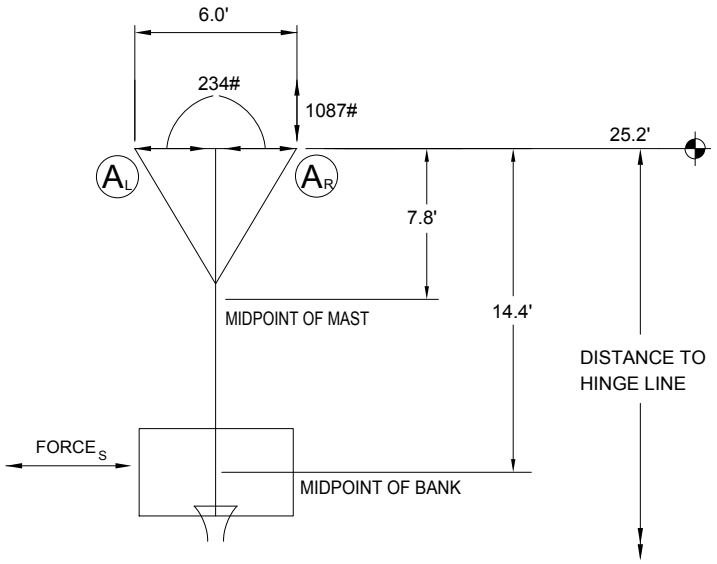


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 670 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 613 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 57 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	41 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	207 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	4680 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: 1087 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: 234 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: 502 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 324 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 636 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: 780 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 692 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 636 lbs = HOIST CABLE TENSION

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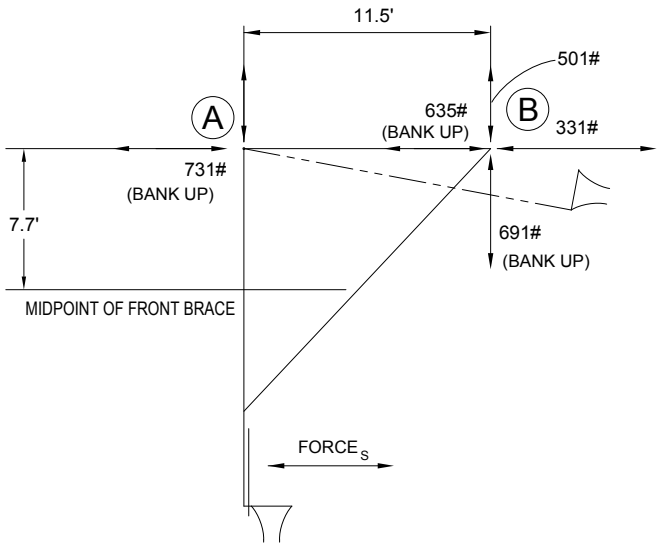
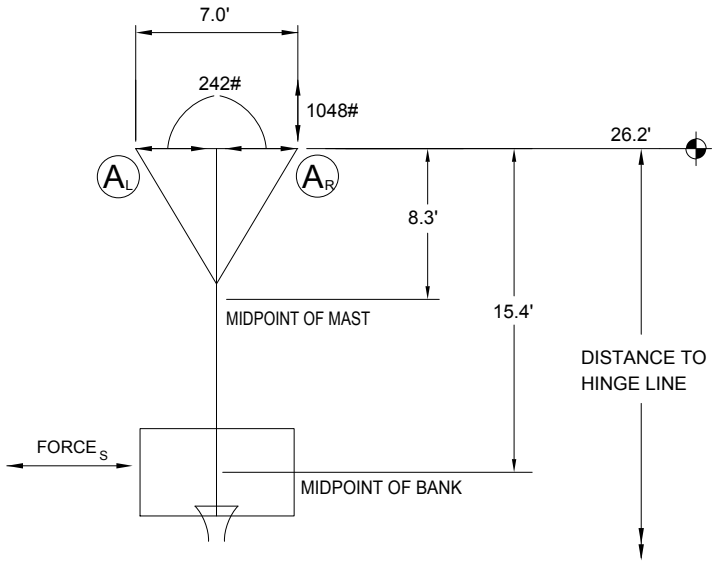


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 691 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 634 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 57 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	41 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	221 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	5115 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: 1048 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: 242 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: 501 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 331 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 635 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: 28 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: 731 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 691 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 635 lbs = HOIST CABLE TENSION

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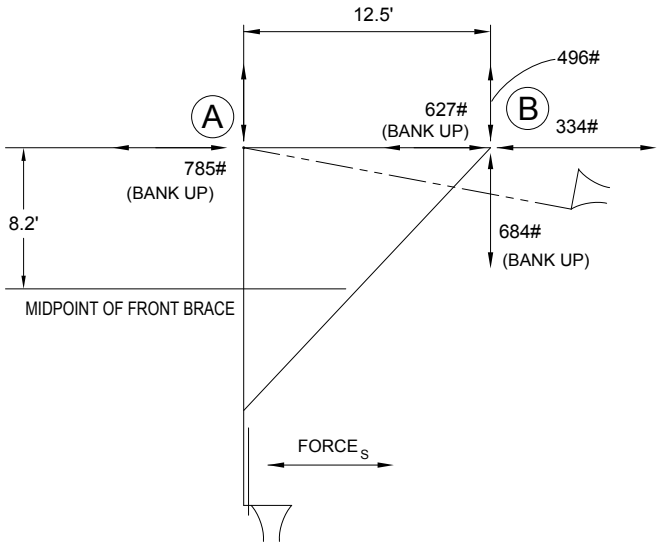
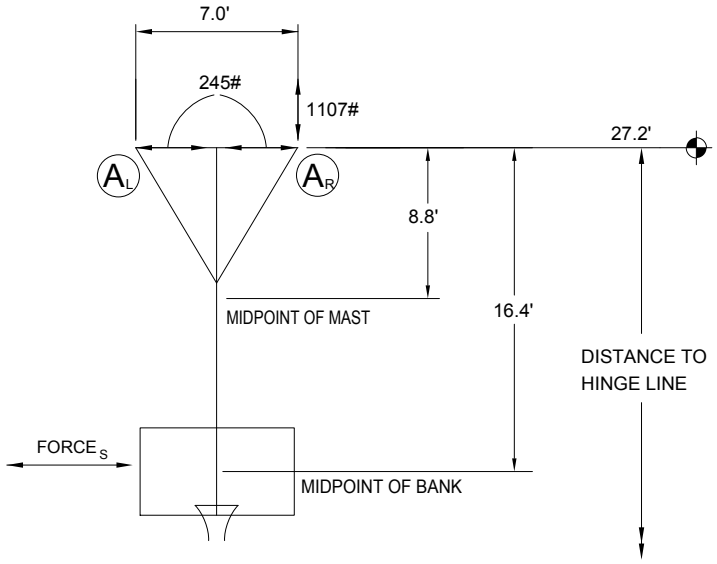


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 700 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 644 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 57 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	41 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	236 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	5494 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: 1107 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: 245 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: 496 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + 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 = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 627 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: 36 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 785 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 684 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 627 lbs = HOIST CABLE TENSION

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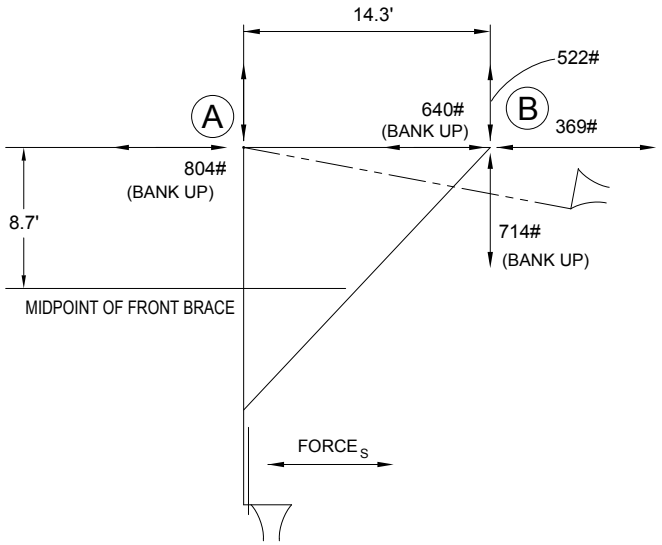
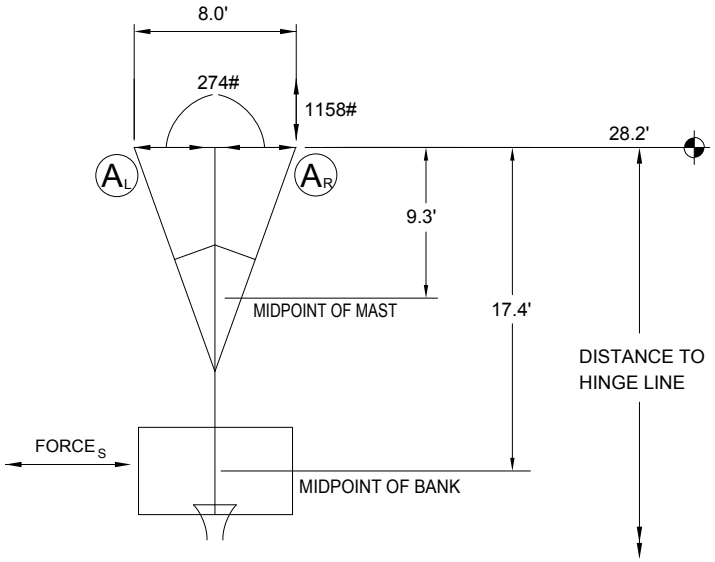


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 782 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 708 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 74 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	76 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	464 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	6432 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: 1158 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: 274 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: 522 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 369 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 640 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: 71 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: 804 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 714 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 640 lbs = HOIST CABLE TENSION

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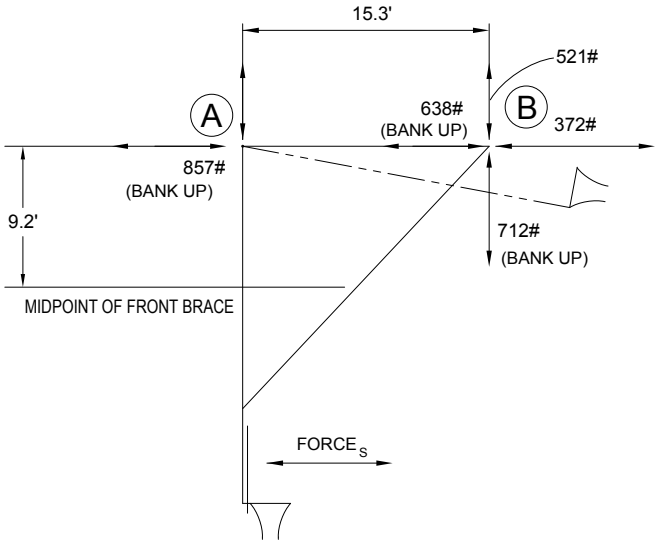
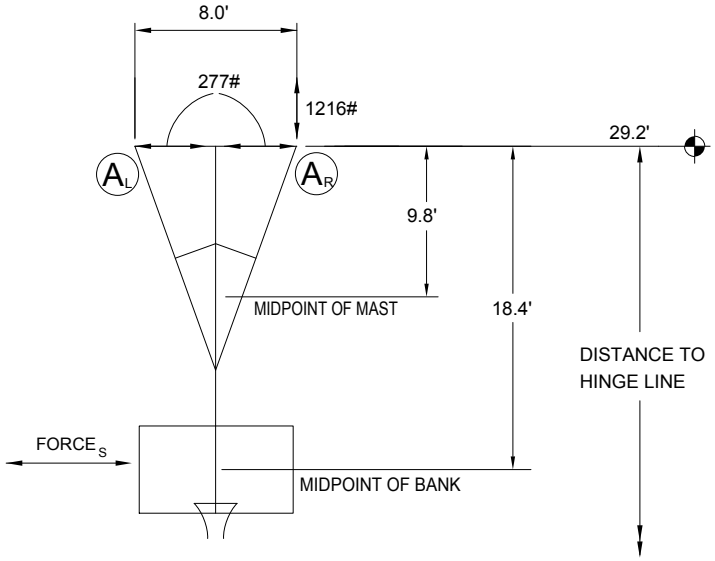


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 792 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 718 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 74 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	76 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	490 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	6855 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: 1216 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: 277 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: 521 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 372 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 638 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: 77 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: 857 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 712 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 638 lbs = HOIST CABLE TENSION

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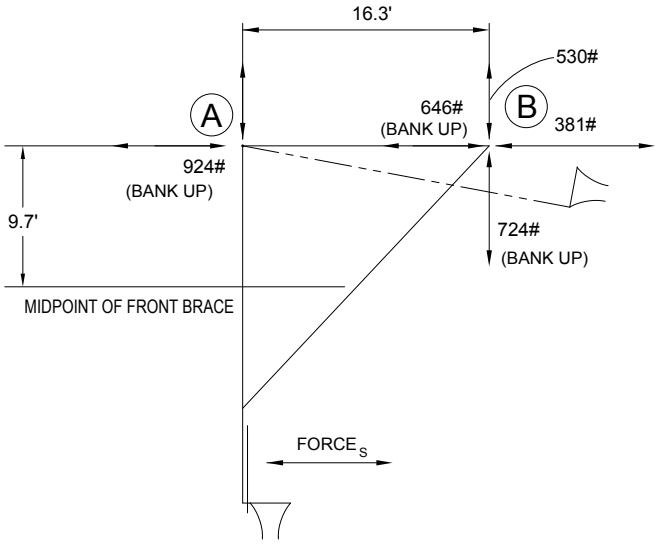
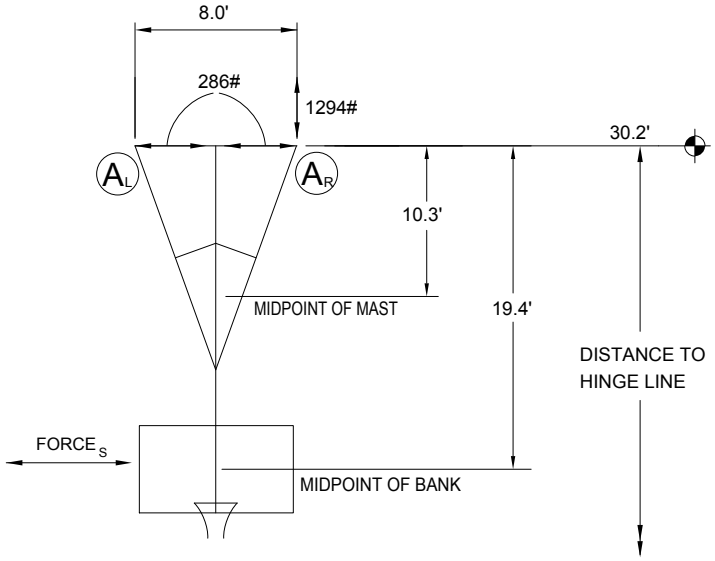


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 817 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 739 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 78 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	84 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	571 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	7396 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: 1294 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: 286 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: 530 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY $\pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 381 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 646 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: 85 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: 924 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 724 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 646 lbs = HOIST CABLE TENSION

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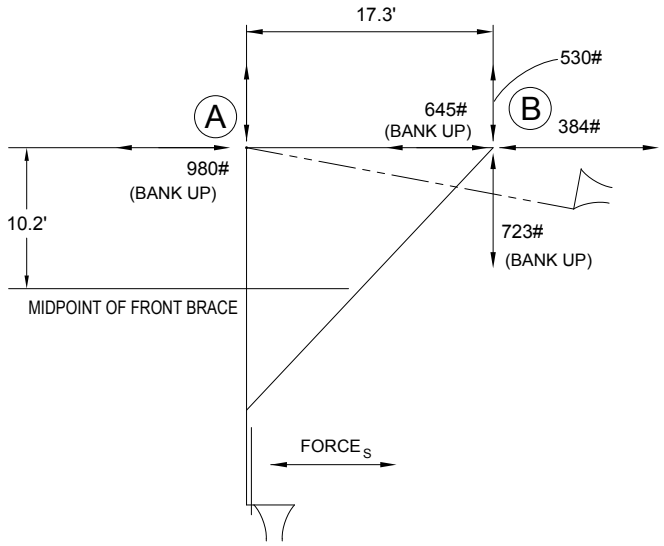
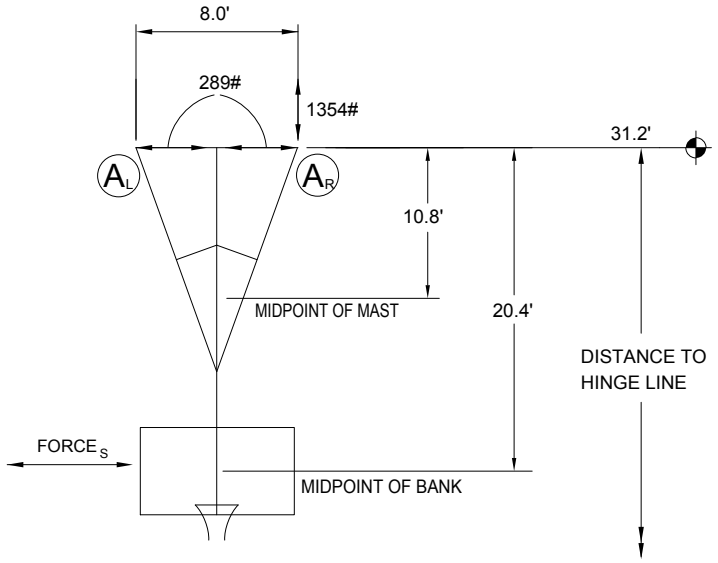


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 826 lbs (WEIGHT OF FRONT BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 748 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = 78 lbs $\left(\frac{\text{WEIGHT OF FRONT BRACE}}{2}\right)$ + 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 FRONT BRACE (WFB)	84 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF FRONT BRACE (DFB)	=	601 ft.lbs	SEISMIC MOMENT (MFB) (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 + WFB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	7838 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: 1354 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: 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: 530 lbs = $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + 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 = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF FRONT BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT C: 645 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: 90 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: 980 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. 2)

BANK UP

$R^{B\text{-}BU}_{VER}$ VERTICAL REACTION AT POINT B: 723 lbs = HOIST CABLE TENSION + $\frac{\text{WEIGHT OF FRONT BRACE}}{\text{2 SUPPORTS}}$ + WEIGHT OF PULLEY

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: 645 lbs = HOIST CABLE TENSION

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C	C	6/1/99

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