STATIC EQUIVALENT LOADING: 951 STYLE BACKSTOP

CEILING SUSPENDED, TRACK & 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:

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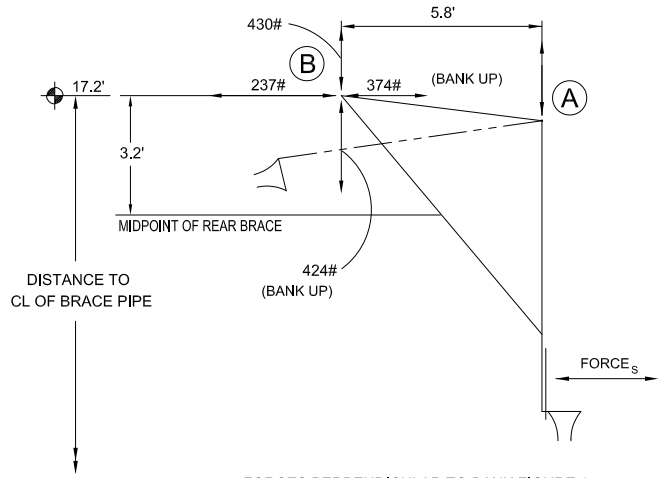
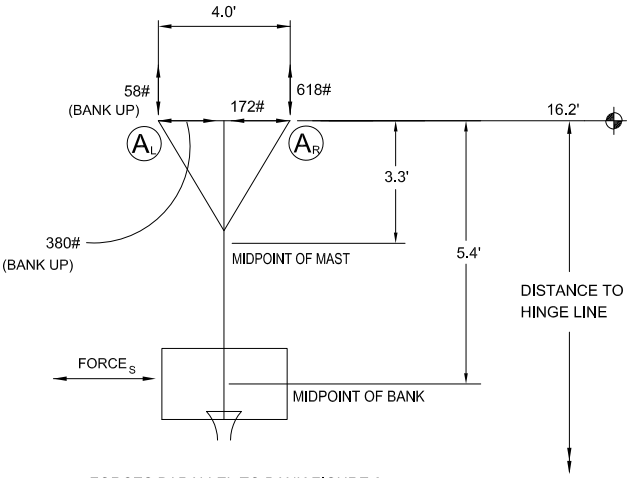


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 491 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = $477\ \text{lbs}\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = $50\ \text{lbs}\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + 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)	=	998 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	27 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	60 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	200 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	462 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	1520 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: $618\ \text{lbs} = \frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: $172\ \text{lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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: $430\ \text{lbs} = \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: $237\ \text{lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: $374\ \text{lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

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: $58\ \text{lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A FROM SEISMIC PARALLEL TO BANK: $380\ \text{lbs} = \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

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: $424\ \text{lbs} = \text{HOIST CABLE TENSION} + \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY}$

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: $374\ \text{lbs} = \text{HOIST CABLE TENSION}$

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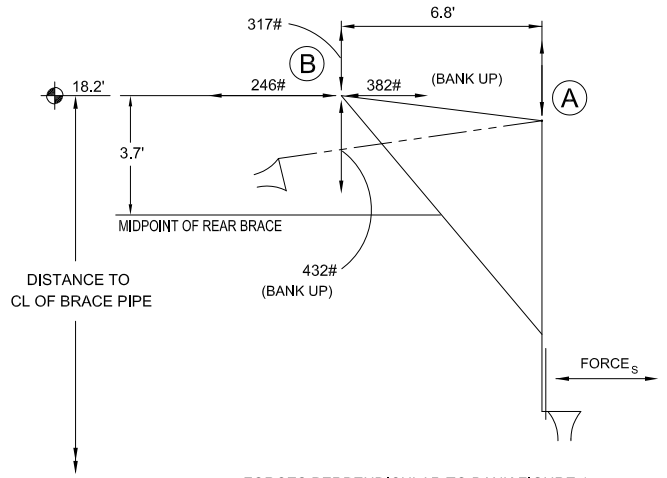
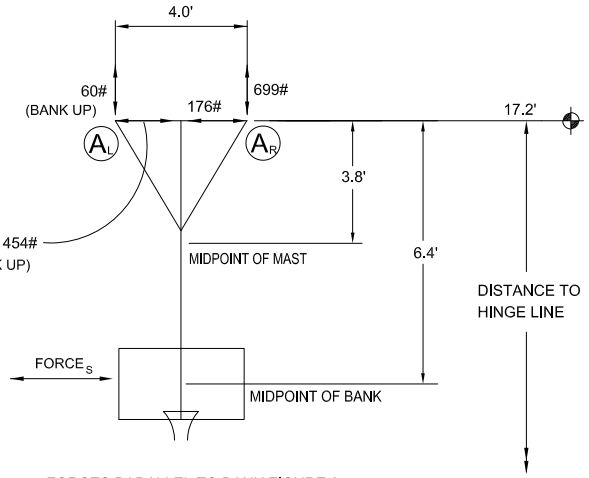


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 503 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)	=	1183 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	27 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	70 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	212 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	564 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	1817 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: 699 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: 176 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: 317 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: 246 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: 382 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: 60 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: 454 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: 432 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: 382 lbs = HOIST CABLE TENSION

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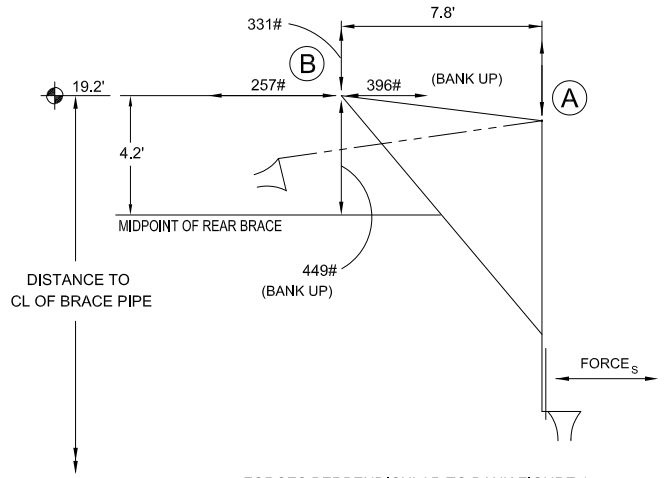
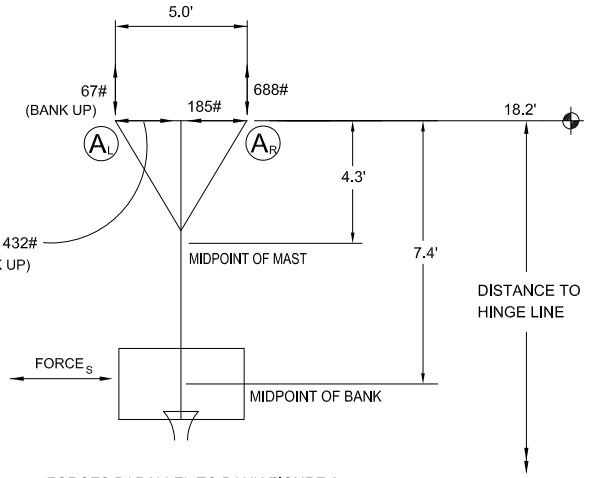


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 529 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = $512 \text{ lbs} \left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = $53 \text{ lbs} \left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + 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)	=	1367 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	34 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	100 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	231 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	695 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2162 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: $688 \text{ lbs} = \frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: $185 \text{ lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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: $331 \text{ lbs} = \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: $257 \text{ lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: $396 \text{ lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

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: $67 \text{ lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A FROM SEISMIC PARALLEL TO BANK: $432 \text{ lbs} = \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

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: $449 \text{ lbs} = \text{HOIST CABLE TENSION} + \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY}$

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: $396 \text{ lbs} = \text{HOIST CABLE TENSION}$

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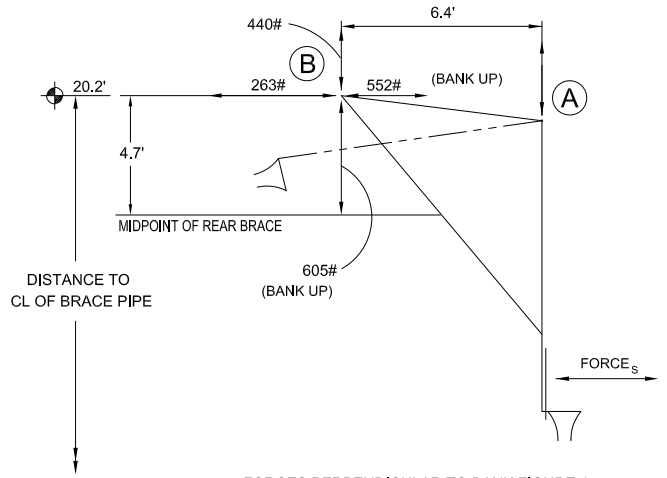
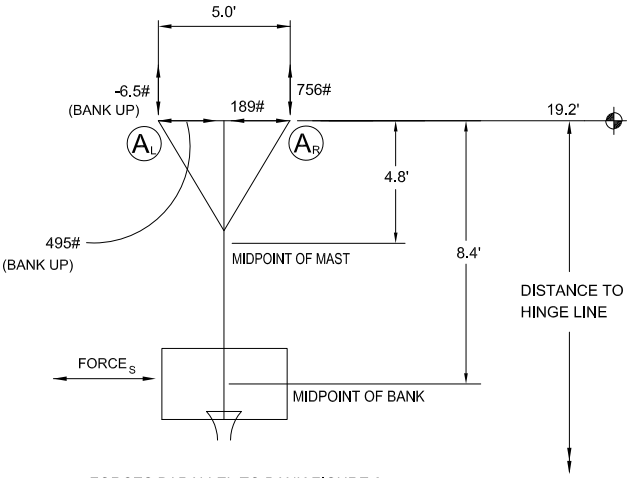


FORCES PERPENDICULAR TO BANK FIGURE 1



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

WEIGHT LOAD AT POINT "B" = $53 \text{ lbs} \left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + 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)	=	1552 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	34 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	112 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	241 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	810 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2474 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: $756 \text{ lbs} = \frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

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

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: $440 \text{ lbs} = \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: $263 \text{ lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

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

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: $-6.5 \text{ lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

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

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: $605 \text{ lbs} = \text{HOIST CABLE TENSION} + \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY}$

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

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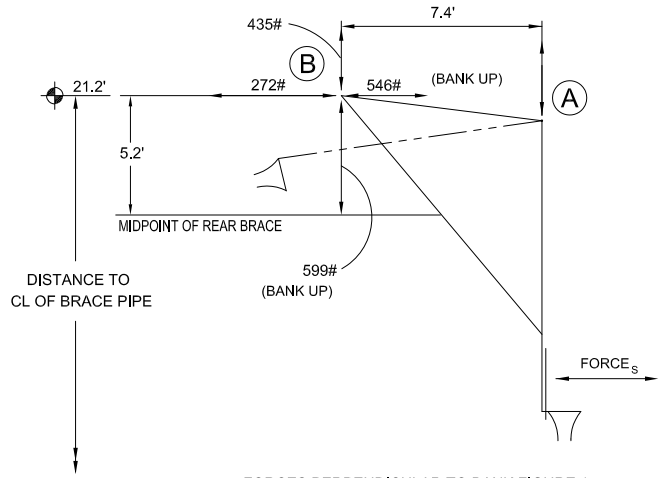
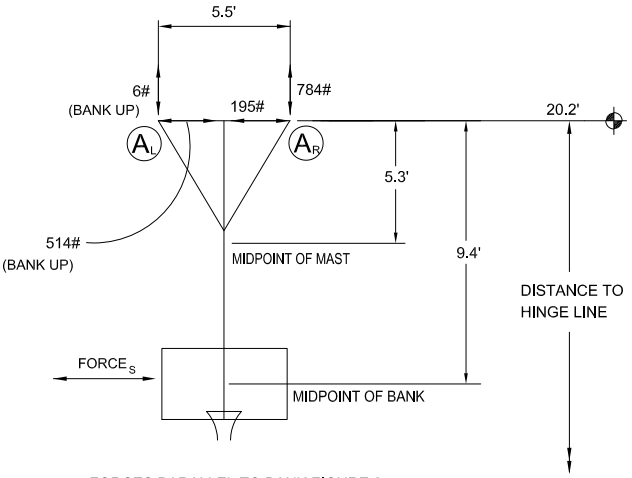


FORCES PERPENDICULAR TO BANK FIGURE 1



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

WEIGHT LOAD AT POINT "B" = $53 \text{ lbs} \left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + 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)	=	1737 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	34 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	124 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	260 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	965 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2826 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: $784 \text{ lbs} = \frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

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

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: $435 \text{ lbs} = \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: $272 \text{ lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: $546 \text{ lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

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: $6 \text{ lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

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

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: $599 \text{ lbs} = \text{HOIST CABLE TENSION} + \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY}$

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: $546 \text{ lbs} = \text{HOIST CABLE TENSION}$

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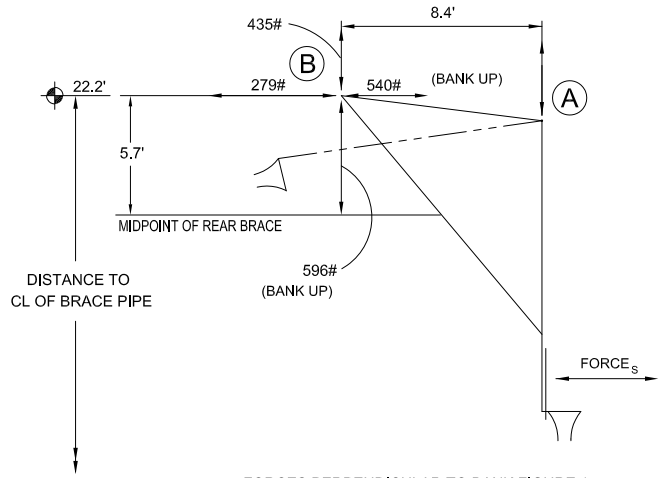
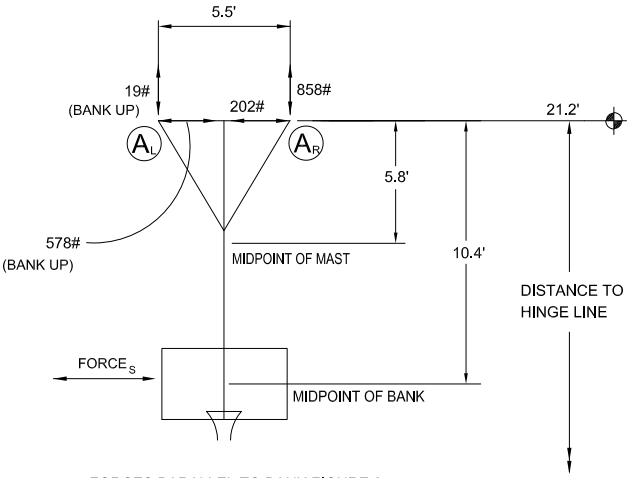


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 578 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = $561 \text{ lbs} \left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = $56 \text{ lbs} \left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + 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)	=	1922 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	40 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	160 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	270 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1096 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3178 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: $858 \text{ lbs} = \frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: $202 \text{ lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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: $435 \text{ lbs} = \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: $279 \text{ lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REAR BRACE X 2}}$

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: $540 \text{ lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

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: $19 \text{ lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A FROM SEISMIC PARALLEL TO BANK: $578 \text{ lbs} = \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

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: $596 \text{ lbs} = \text{HOIST CABLE TENSION} + \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY}$

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: $540 \text{ lbs} = \text{HOIST CABLE TENSION}$

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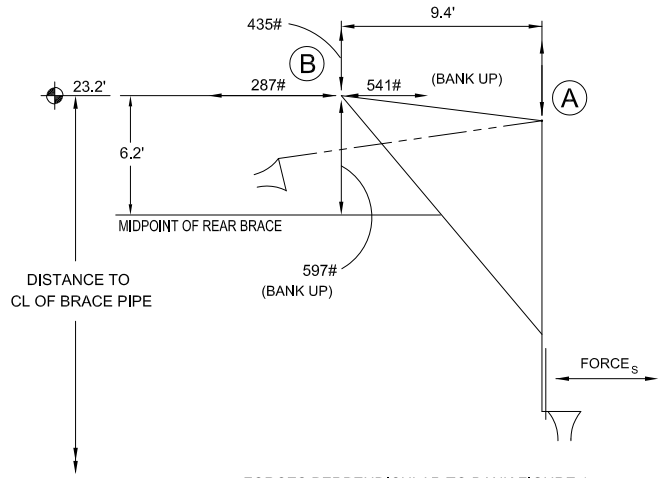
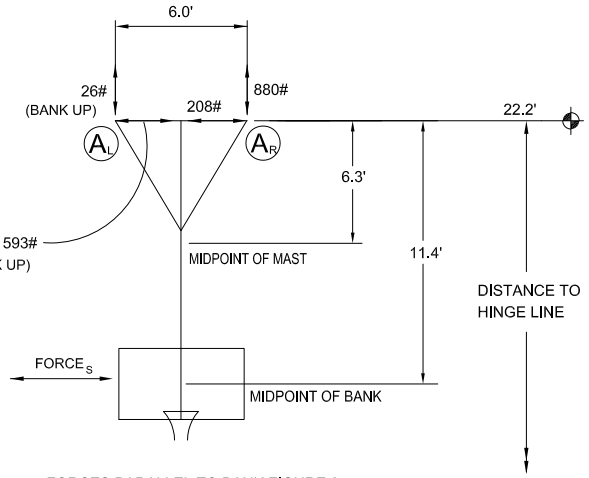


FORCES PERPENDICULAR TO BANK FIGURE 1



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" = 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)	=	2107 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	40 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	174 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	290 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1279 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3560 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 = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

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: 435 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: 287 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: 541 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: 26 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: 597 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: 541 lbs = HOIST CABLE TENSION

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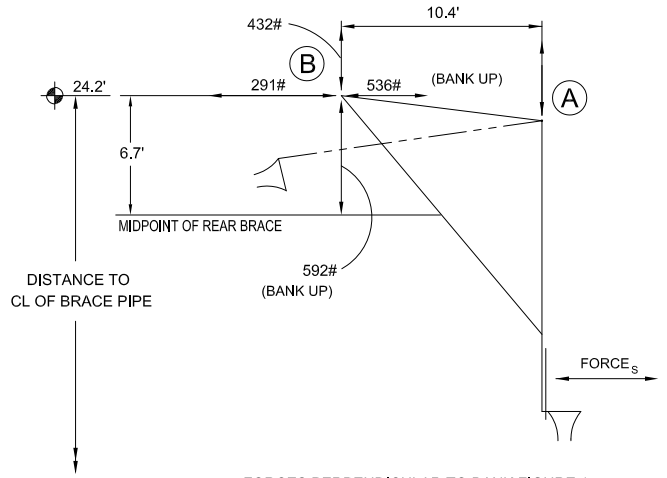
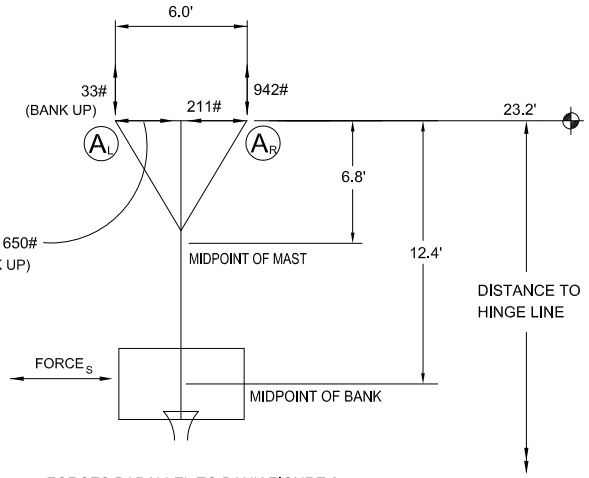


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 603 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

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

WEIGHT LOAD AT POINT "B" = $56\text{ lbs}\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + 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)	=	2291 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	40 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	188 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	299 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1423 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3902 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: $942\text{ lbs} = \frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

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

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: $432\text{ lbs} = \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

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

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: $536\text{ lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

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: $33\text{ lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A FROM SEISMIC PARALLEL TO BANK: $650\text{ lbs} = \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

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: $592\text{ lbs} = \text{HOIST CABLE TENSION} + \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY}$

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: $536\text{ lbs} = \text{HOIST CABLE TENSION}$

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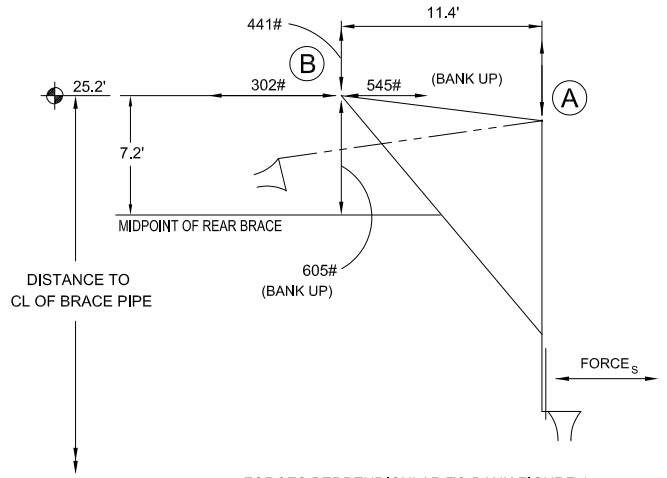
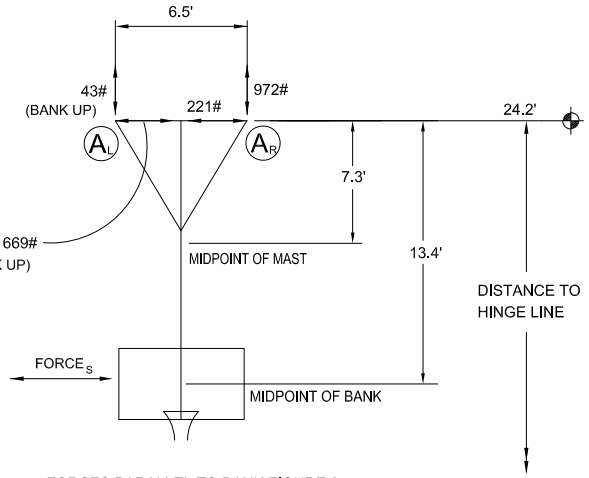


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 631 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = $607 \text{ lbs} \left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "B" = $60 \text{ lbs} \left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + 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)	=	2476 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	47 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	237 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	320 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1635 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	4348 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: $972 \text{ lbs} = \frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: $221 \text{ lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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: $441 \text{ lbs} = \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

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

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: $545 \text{ lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

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: $43 \text{ lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A FROM SEISMIC PARALLEL TO BANK: $669 \text{ lbs} = \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

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: $605 \text{ lbs} = \text{HOIST CABLE TENSION} + \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY}$

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: $545 \text{ lbs} = \text{HOIST CABLE TENSION}$

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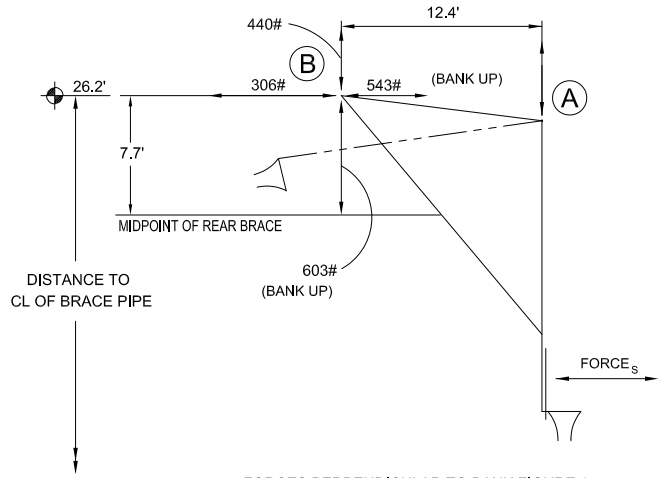
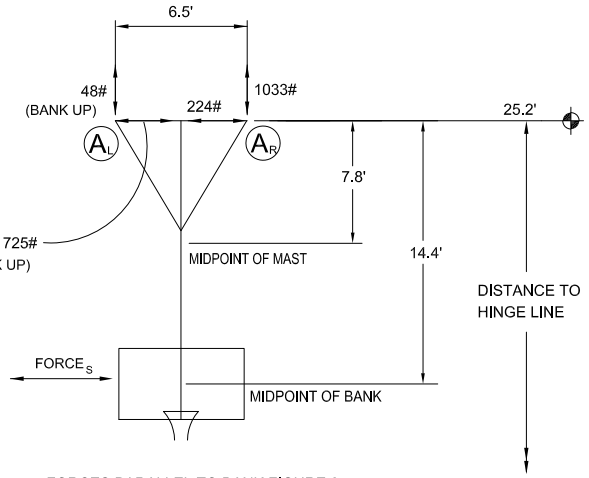


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 640 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)	=	2661 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	47 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	253 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	329 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1796 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 = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

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: 440 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: 306 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: 543 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: 48 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: 603 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: 543 lbs = HOIST CABLE TENSION

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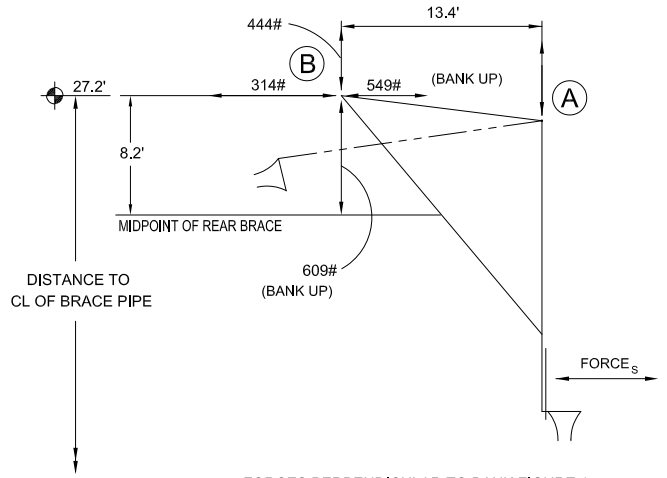
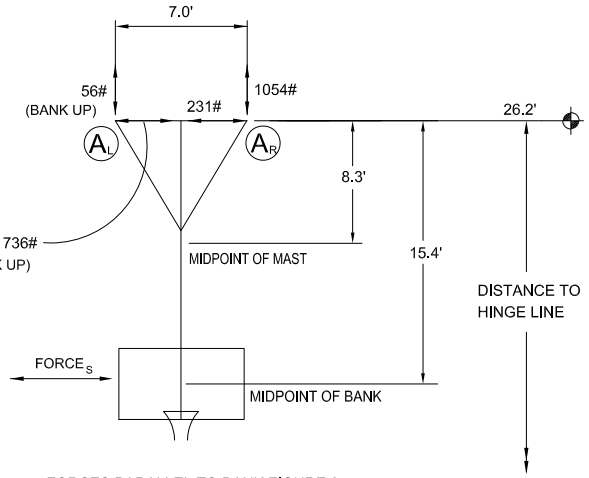


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 661 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

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

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

+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)	=	2846 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	47 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	270 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	350 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2033 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	5149 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: $1054 \text{ lbs} = \frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)_R}$

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

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: $444 \text{ lbs} = \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS (A-B)}}$

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

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC WITH BANK UP

HOIST CABLE TENSION AT POINT B: $549 \text{ lbs} = \frac{\text{SUM OF THE MOMENTS}}{\text{SEISMIC FACTOR X DISTANCE FROM A TO B}}$

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: $56 \text{ lbs} = \frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A FROM SEISMIC PARALLEL TO BANK: $736 \text{ lbs} = \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE FROM } A_L \text{ TO } A_R}$

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: $609 \text{ lbs} = \text{HOIST CABLE TENSION} + \frac{\text{WEIGHT OF REAR BRACE}}{\text{2 SUPPORTS}} + \text{WEIGHT OF PULLEY}$

$R^{B\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT B: $549 \text{ lbs} = \text{HOIST CABLE TENSION}$

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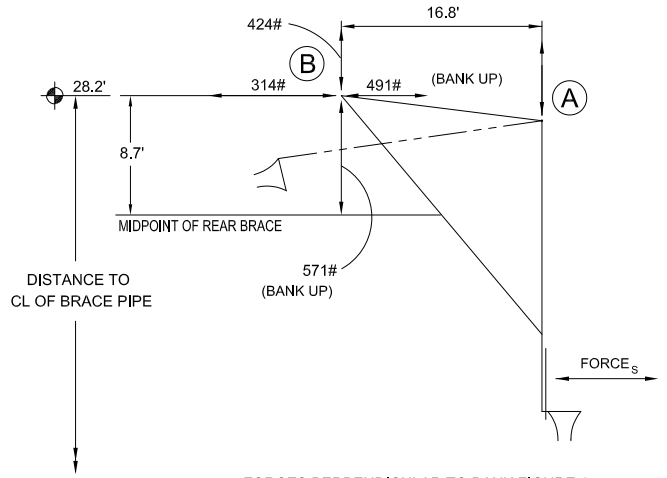
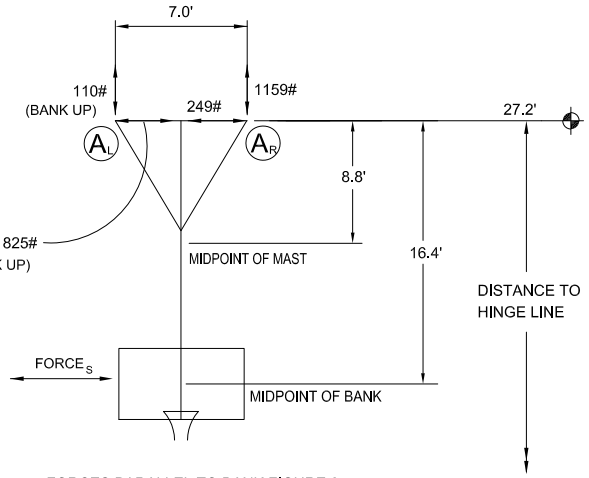


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 711 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 667 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)	264 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF BANK (DB)	=	3031 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	88 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	536 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	359 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2211 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	5778 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: 1159 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: 249 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: 424 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: 491 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: 110 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: 825 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: 571 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: 491 lbs = HOIST CABLE TENSION

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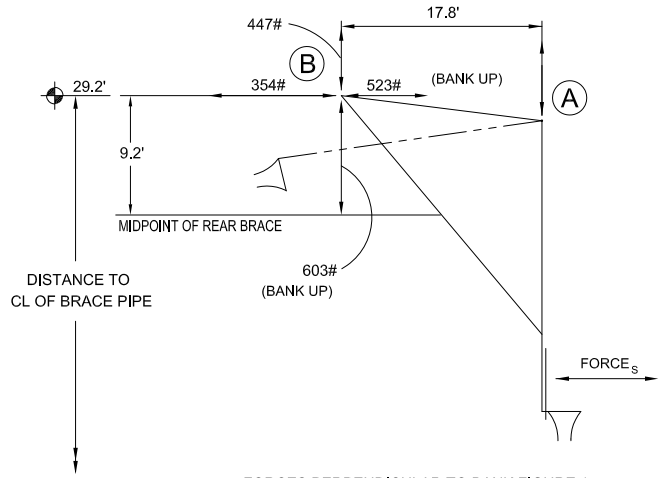
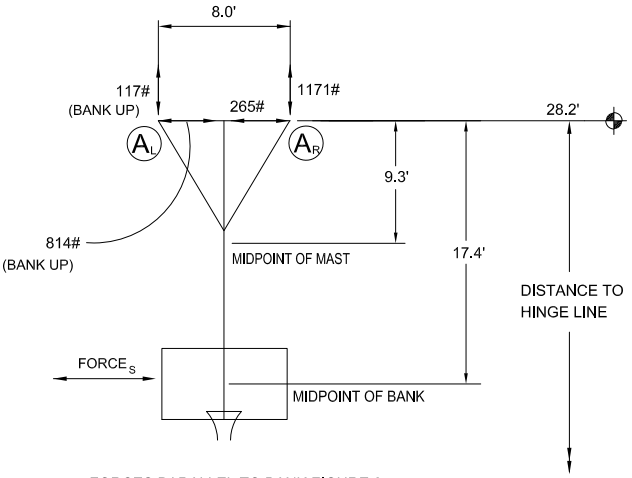


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 758 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)	=	3410 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	88 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	567 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	390lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2539 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	6516 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: 1171 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: 265 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: 447 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: 354 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: 523 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: 117 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: 814 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: 603 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: 523 lbs = HOIST CABLE TENSION

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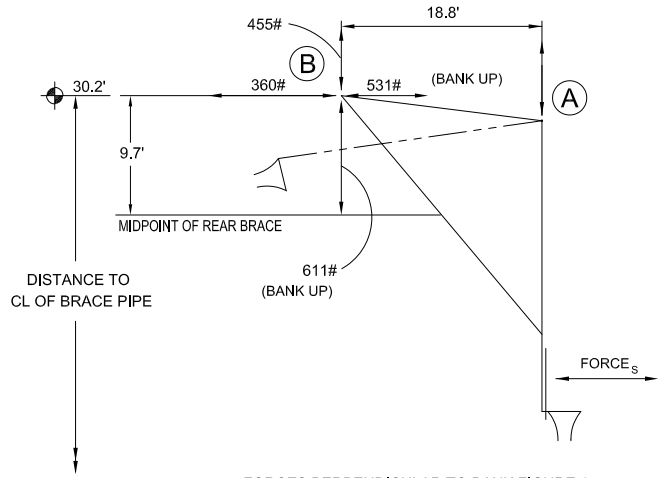
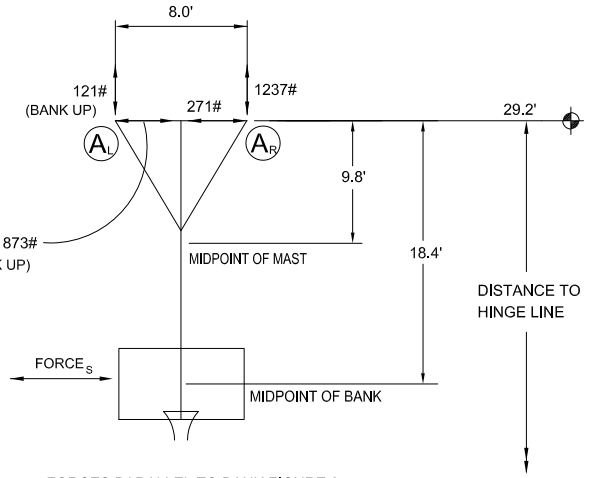


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 774 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 727 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)	=	3606 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	94 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	638 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	400 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2744 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	6988 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: 1237 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: 271 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: 455 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: 360 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: 531 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: 121lbs = $\frac{\text{BACKSTOP'S TOTAL WEIGHT LOAD - HOIST CABLE TENSION}}{\text{2 SUPPORTS}}$

$R^{A\text{-}BU}_{HOR}$ HORIZONTAL REACTION AT POINT A FROM SEISMIC PARALLEL TO BANK: 873 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: 611 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: 531 lbs = HOIST CABLE TENSION

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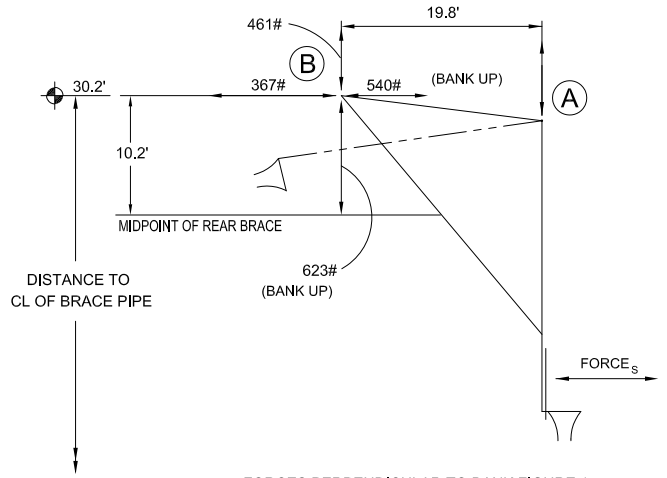
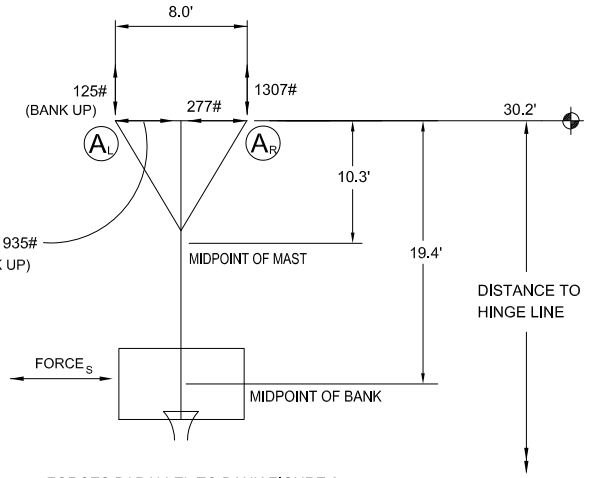


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS (WITH BANK DOWN)

BACKSTOP'S TOTAL WEIGHT LOAD = 791 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)	=	3802 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WFB)	94 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	671 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	417 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	3007 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	7480 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: 1307 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: 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: 461 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: 367 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: 540 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: 125 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: 935 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: 623 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: 540 lbs = HOIST CABLE TENSION

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