STATIC EQUIVALENT LOADING: 918 STYLE BACKSTOP

CEILING SUSPENDED, STATIONARY, WALL 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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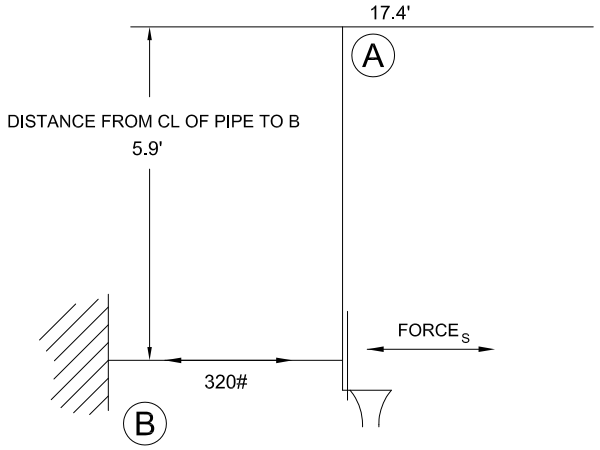
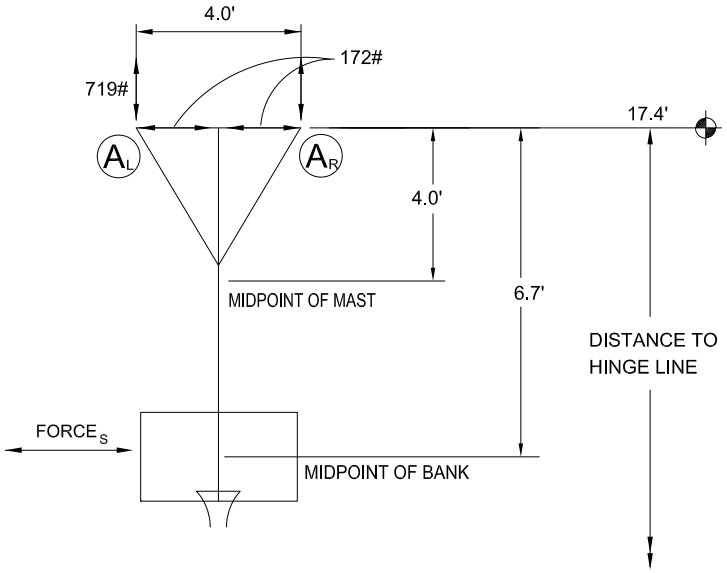


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 506 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 491 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	1234 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 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)	=	588 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	1892 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 719 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^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 172 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 320 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REARBRACE X 2}}$

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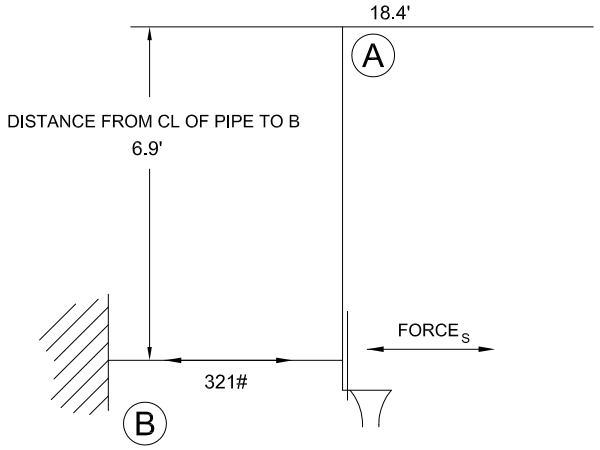
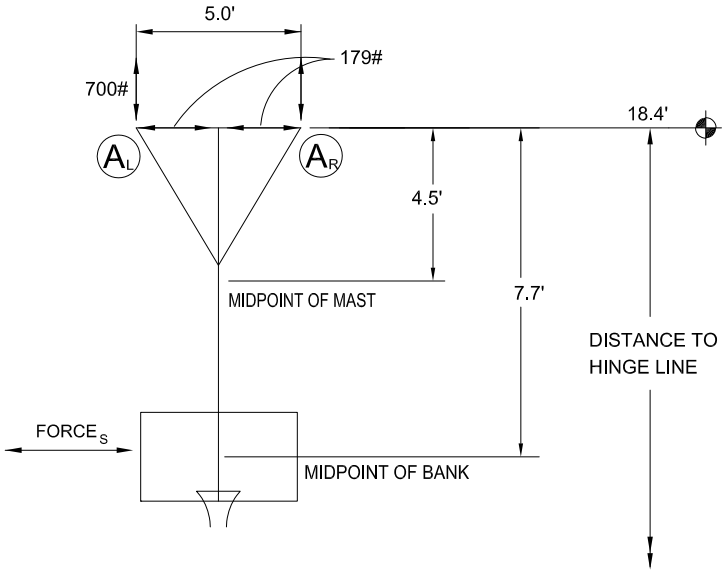


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 525 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 510 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	1419 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	81 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	231 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	723 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2223 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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

BANK
DOWN

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

R^A_{HOR} HORIZONTAL REACTION AT POINT A: 179 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

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

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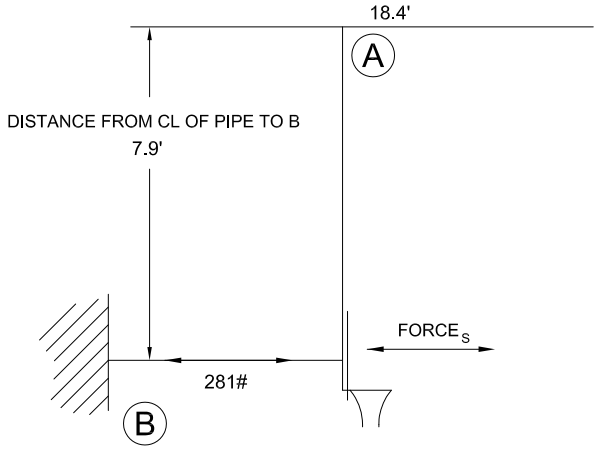
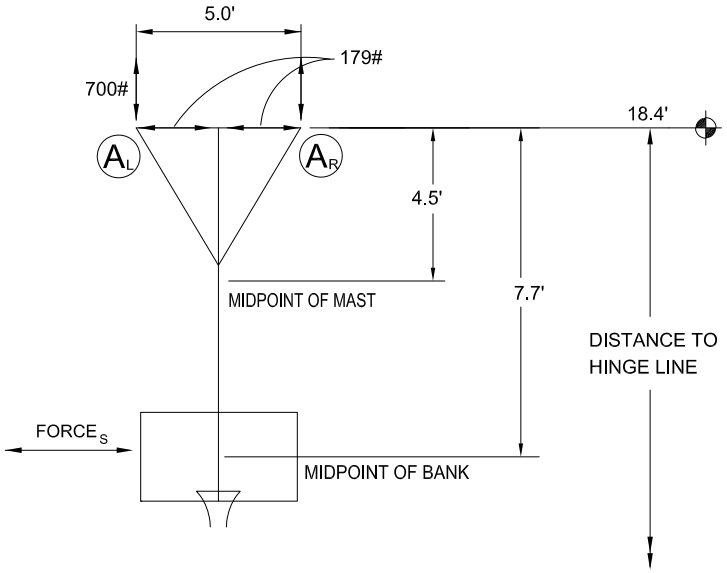


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 525 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 510 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	1419 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	81 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	231 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	723 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2223 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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

BANK
DOWN

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

R^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 179 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

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

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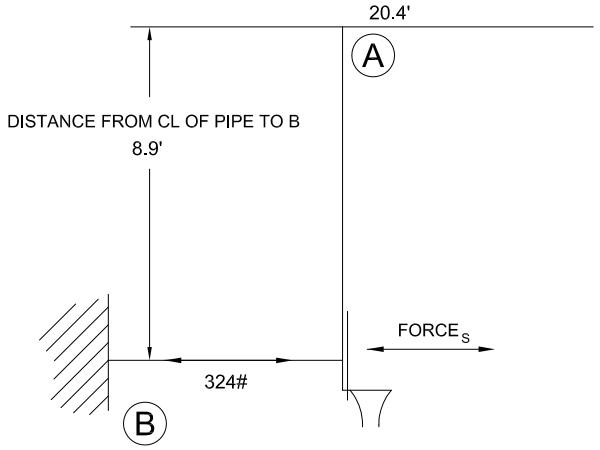
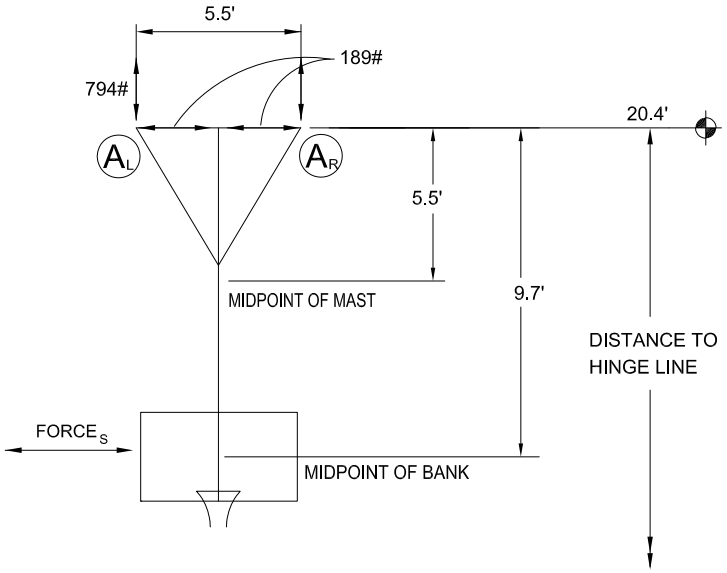


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 554 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 539 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	1788 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	102 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	260 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	996 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	2886 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 794 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^A_{HOR} HORIZONTAL REACTION AT POINT A: 189 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

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

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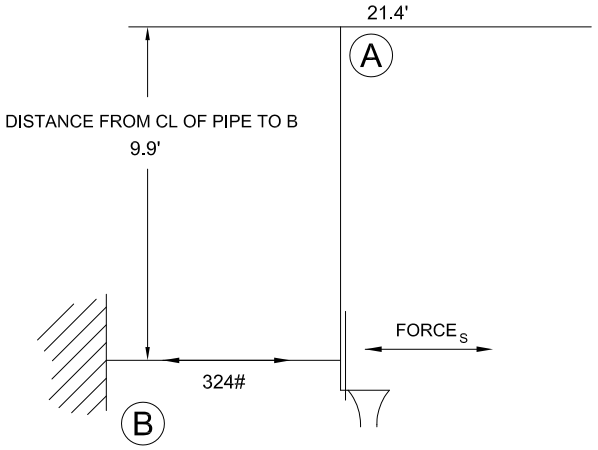
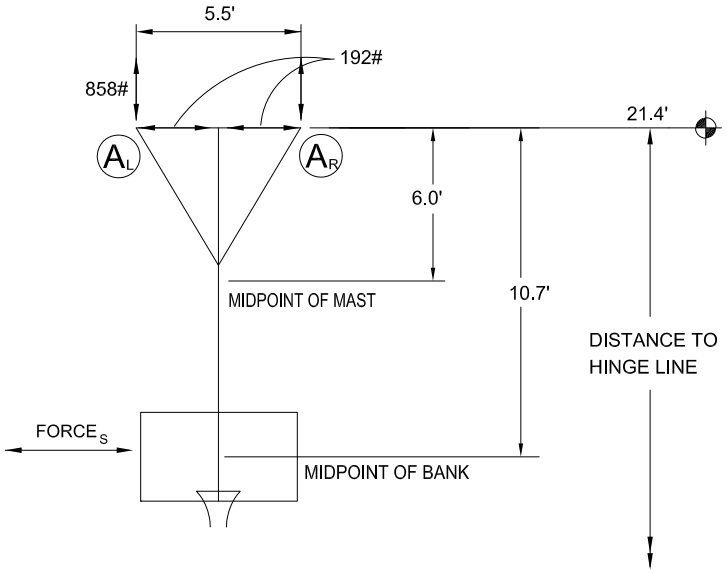


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 564 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 549 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	1973 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	112 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	270 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1126 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3211 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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 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^A_{HOR} HORIZONTAL REACTION AT POINT A: 192 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

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

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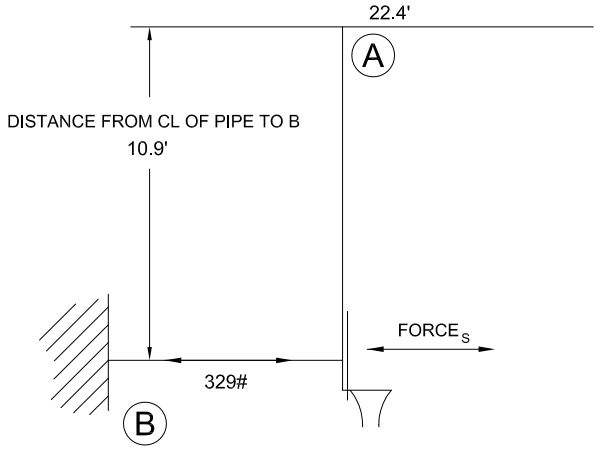
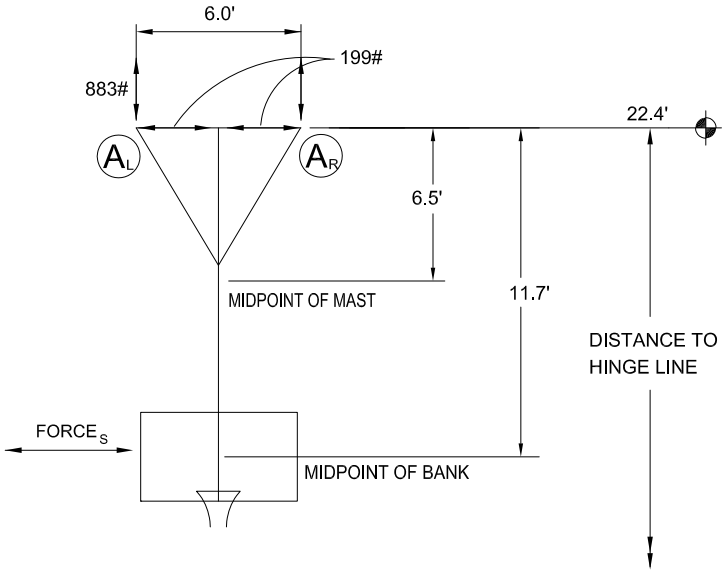


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 584 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 569 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	2158 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	123 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	290 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1312 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3592 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 883 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^A_{HOR} HORIZONTAL REACTION AT POINT A: 199 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

R^B_{HOR} HORIZONTAL REACTION AT POINT B: 329 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REARBRACE X 2}}$

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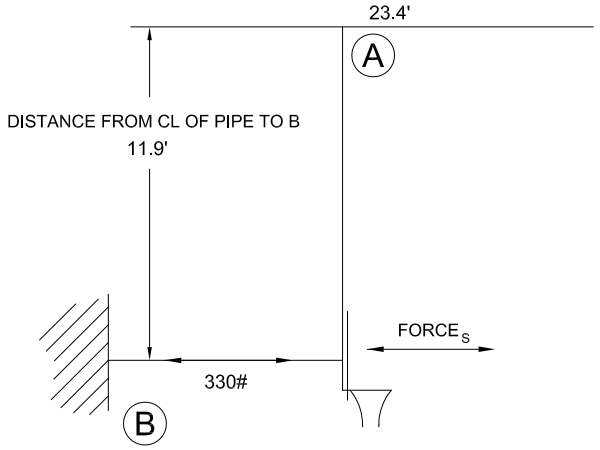
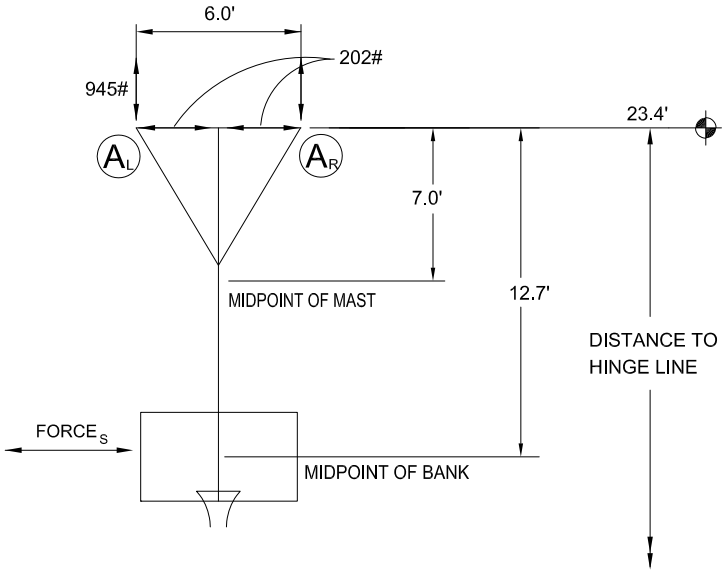


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 593 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 578 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	2343 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	133 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	299 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1458 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	3934 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 945 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^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 202 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 330 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REARBRACE X 2}}$

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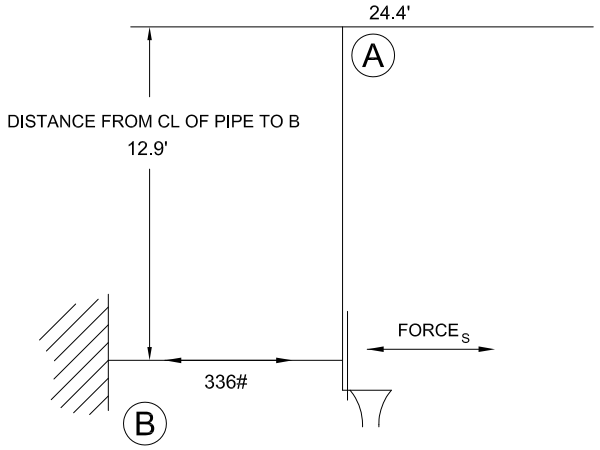
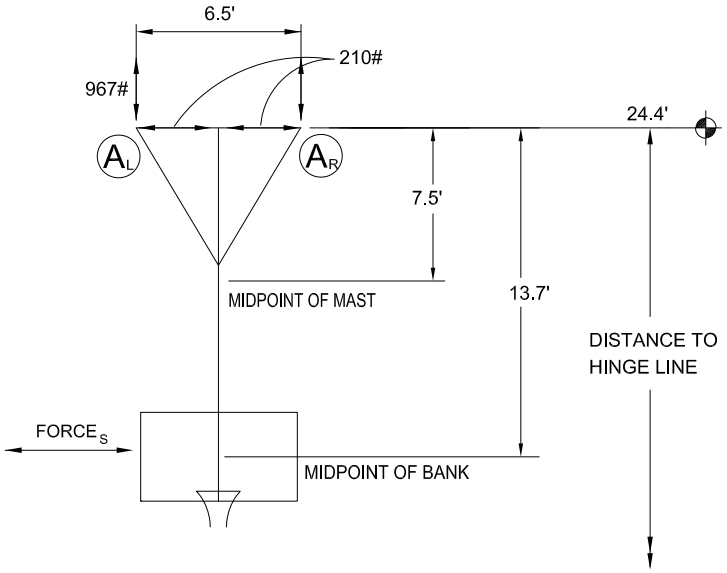


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 614 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 599 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	2528 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	144 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	320 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1670 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	4341 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 967 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^A_{HOR} HORIZONTAL REACTION AT POINT A: 210 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

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

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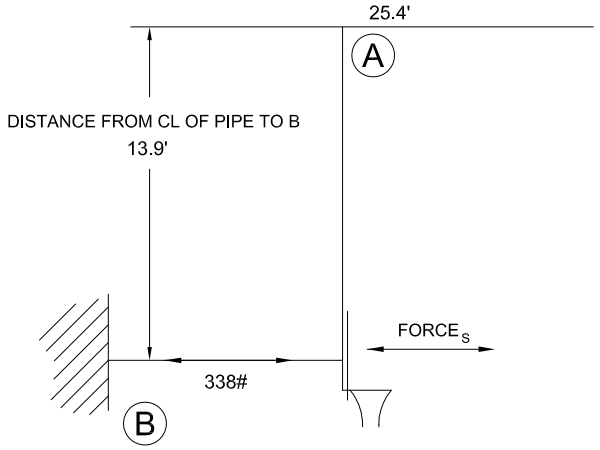
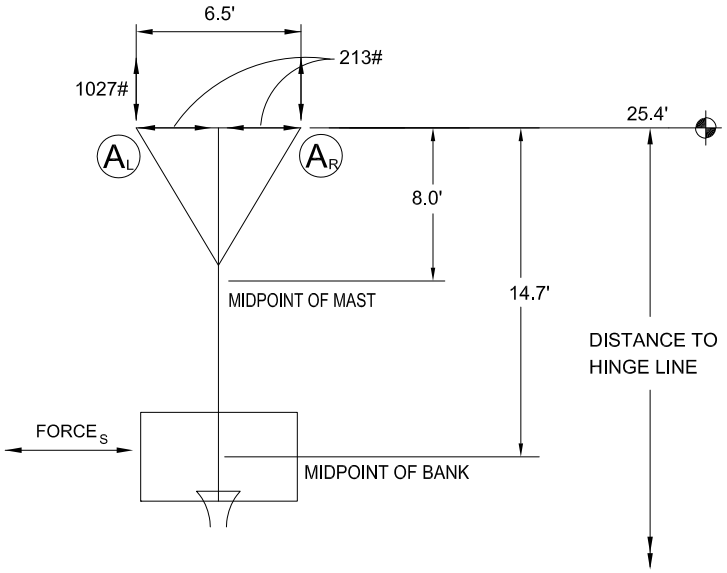


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

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

WEIGHT LOAD AT POINT "A" = 608 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	2712 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	154 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	329 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	1834 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	4700 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 1027 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: 213 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 338 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REARBRACE X 2}}$

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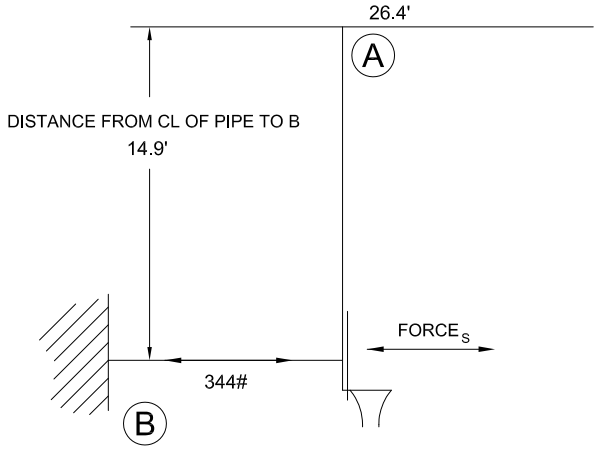
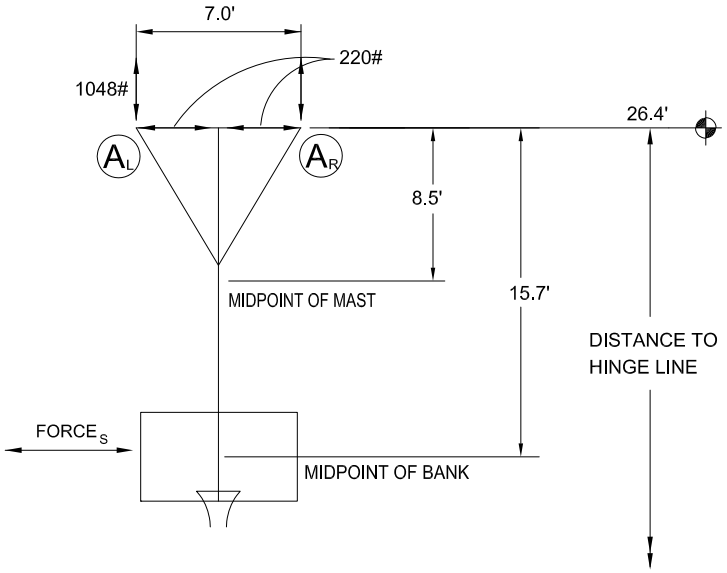


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 644 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 629 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	2897 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	165 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	350 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2072 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	5134 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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 = $\frac{\text{WEIGHT LOAD AT POINT "A"}}{\text{2 SUPPORTS}} \pm \frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE BETWEEN SUPPORTS } (A_L\text{-}A)}$

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

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

BANK
DOWN

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 344 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REARBRACE X 2}}$

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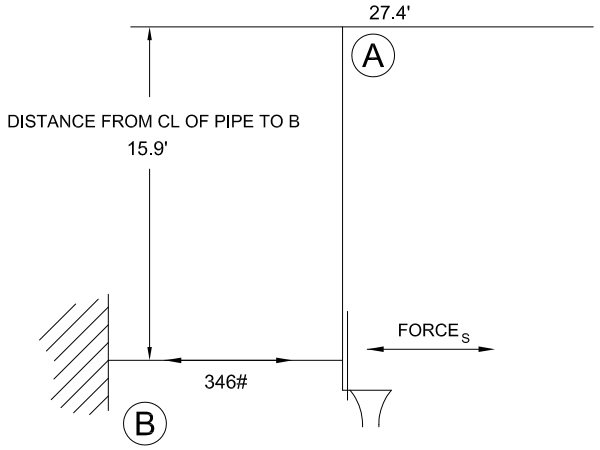
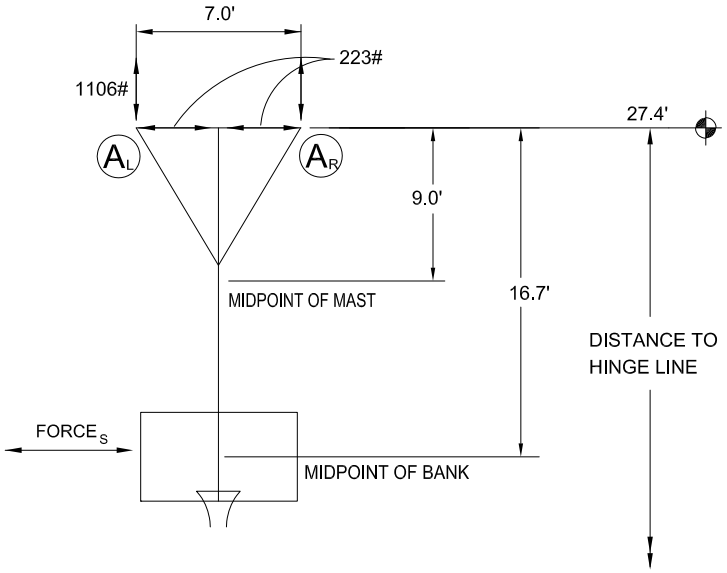


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

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

WEIGHT LOAD AT POINT "A" = 638 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	3082 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	175 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	359 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2253 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	5510 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 1106 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^A_{HOR} HORIZONTAL REACTION AT POINT A: 223 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

R^B_{HOR} HORIZONTAL REACTION AT POINT B: 346 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REARBRACE X 2}}$

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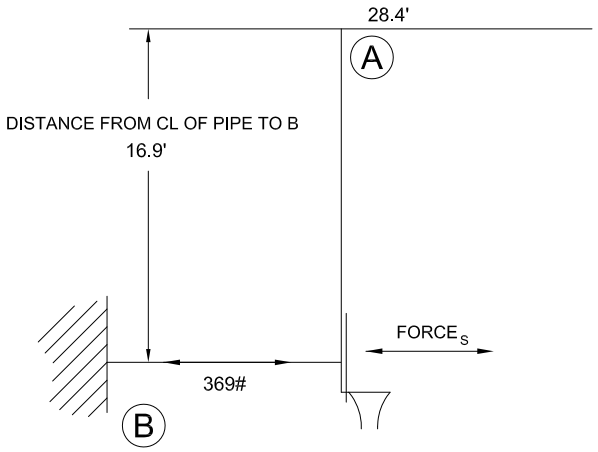
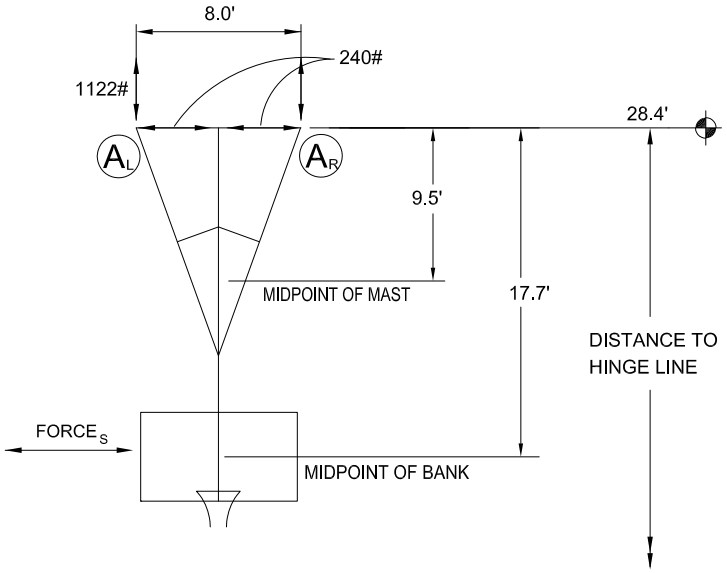


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

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

WEIGHT LOAD AT POINT "A" = 685 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	3465 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	186 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	390 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2585 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	6235 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 1122 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^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 240 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

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

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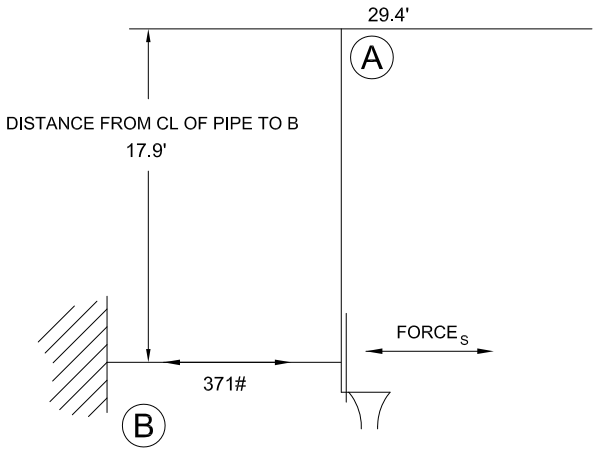
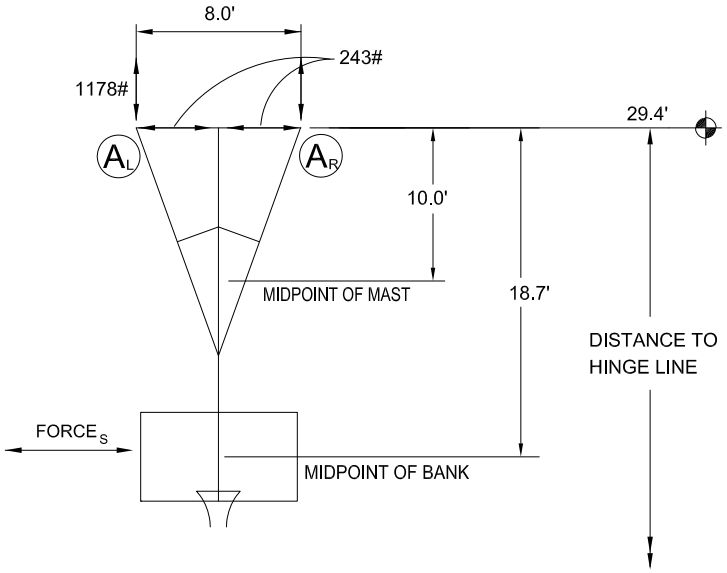


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 710 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 695 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	3661 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	196 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	400 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	2786 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	6643 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 1178 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^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 243 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 371 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REARBRACE X 2}}$

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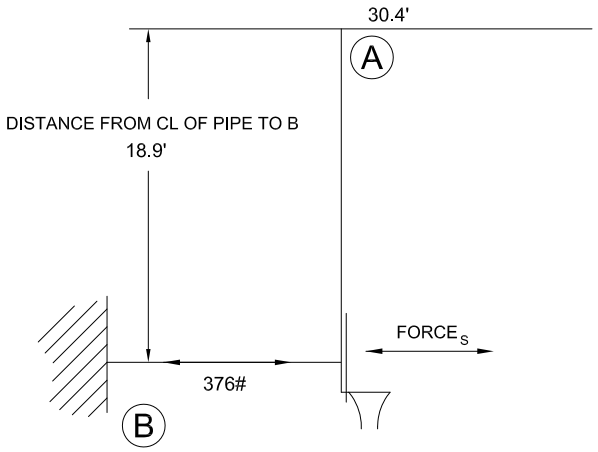
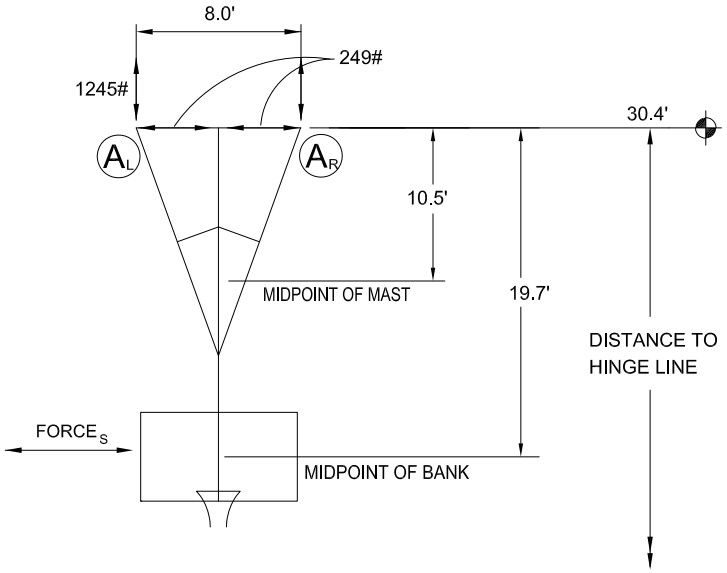


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 727 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 712 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	3857 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	207 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	417 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	3051 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	7115 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 1245 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 = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

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

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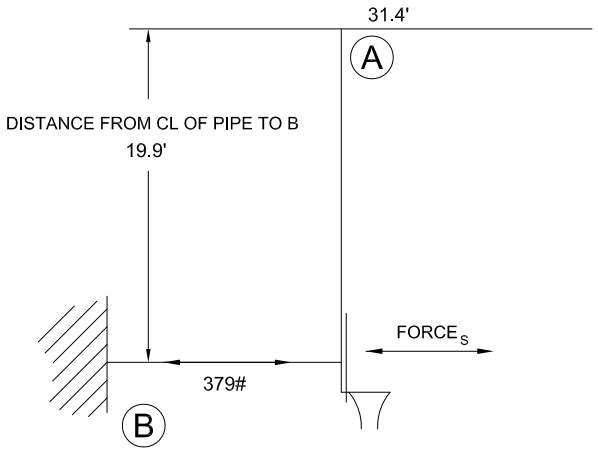
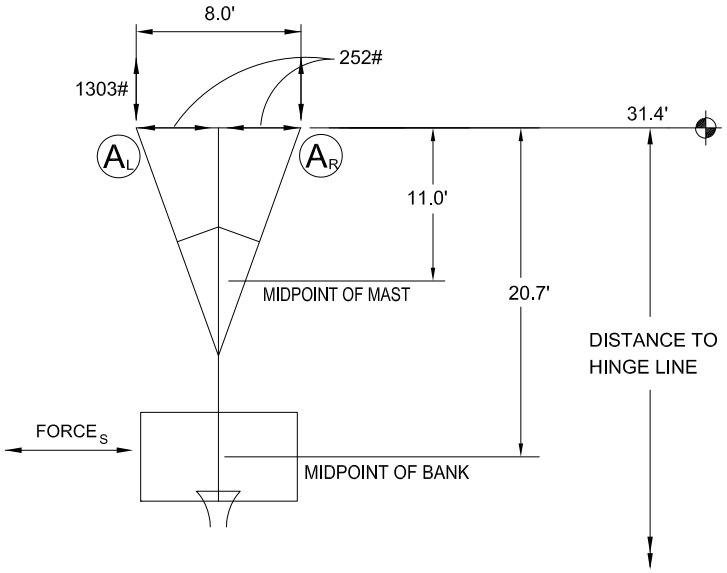


FORCES PERPENDICULAR TO BANK FIGURE 1



FORCES PARALLEL TO BANK FIGURE 2

WEIGHT LOAD CALCULATIONS

BACKSTOP'S TOTAL WEIGHT LOAD = 736 lbs (WEIGHT OF REAR BRACE + WEIGHT OF MAST + WEIGHT OF BANK

WEIGHT LOAD AT POINT "A" = 721 lbs $\left(\frac{\text{WEIGHT OF REAR BRACE}}{2}\right)$ + WEIGHT OF MAST ASSEMBLY

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)	=	4053 ft.lbs	SEISMIC MOMENT (MB) (FT.LBS.)
WEIGHT OF REAR BRACE (WRB)	30 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF REAR BRACE (DRB)	=	217 ft.lbs	SEISMIC MOMENT (MRB) (FT.LBS.)
WEIGHT OF MAST (WM)	426 lbs	X SEISMIC FACTOR X	DISTANCE TO MIDPOINT OF MAST (DM)	=	3269 ft.lbs	SEISMIC MOMENT (MM) (FT.LBS.)
WB + WRB + WM = BACKSTOP'S TOTAL WEIGHT LOAD				=	7539 ft.lbs	SUM OF THE MOMENTS = MB + MRB + MM

POINT REACTIONS FROM WEIGHT LOADS AND SEISMIC

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: 1303 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^{A}_{HOR} HORIZONTAL REACTION AT POINT A: 252 lbs = $\frac{\text{WEIGHT LOAD AT POINT "A" X SEISMIC FACTOR}}{\text{2 SUPPORTS}}$

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

BANK
DOWN

R^{B}_{HOR} HORIZONTAL REACTION AT POINT B: 379 lbs = $\frac{\text{SUM OF THE MOMENTS}}{\text{DISTANCE TO MIDPOINT OF REARBRACE X 2}}$

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