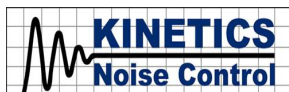


ANALYSIS OF BASE ANCHORED HARD CONNECTED PIPE RISER (DISTRIBUTED HYD LOAD CARRIED UP THE RISER)

SUITABLE FOR CONTRACTIVE SYSTEMS, DO NOT USE ON EXPANSIVE SYSTEMS



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Project: **BASE ANCHORED HARD CONNECTED (TYPE 5)**
Riser: **TYPICAL RISER**

3/12/2006

Note: Supports are assumed to be at floor level, if at ceiling level, identify as being on floor above

Expansion Coef **7.60E-05** in/ft/degF

Installed Temp **70**

Oper Temp **45**

Anchor Elevation **0** (If Anchored System)

Anchor Type **FX** (Fixed-FX or Floating FL)

Static Head **0** (Ft at top of pipe)

Water Supported **Y** (Y or N) Is water column weight supported by Riser?

Hyd Lift @ Top **Y** If an Intermediate Riser section with telescoping Coupling at top, Enter "N" otherwise enter "Y"

Liq or Gas Piping **L** (L or G) Is the pipe filled with water or gas?

Steam Pressure **0** (Enter a value only if steam pressure is present (psi))

Indicate Support locations with a "Y" and guide locations with a "G" in the Support Location Column. Restrained Spring isolators such as FRS are indicated with an "R" under "Support/Res"
+ Force loads are Tension, - Force loads are Compression (in pipe)
"- indicates no supports above this point

Floor (Ref)	Support Loc	Res	Floor Ht Ft	Floor Elev Ft	Pipe Size in	Local Pipe Wt (lb)	Local Liquid Wt (lb)	Init Support Pt Load From Pipe Wt (Lb)	Hyd Thrust Pipe Lift is + (lb)	Spring Rate Lb/in	Init Defl In	Init Supt Pt Force Lbs	Oper Sprg Defl or Disp + is Down in	Oper Supt Pt Load Lbs	Init Tens Pipe Force Lbs	Oper Tens Pipe Force Lbs	Initial Pipe Stress PSI	Combined Burst + Tens Oper Stress PSI
Roof				82				0	0			0		0	0	0		
10	-			82				0	217			0	0.16	0	0	0		
9	Y	R	10.00	72	8			571	0	1000	0.60	571	0.74	737	286	668	34	92
8			10.00	62	8			0	0			0		0	0	383	0	104
7	Y	R	10.00	52	8			571	0	1000	0.62	571	0.72	719	286	816	34	170
6			10.00	42	8			0	0			0		0	0	531	0	197
5	Y	R	10.00	32	8			690	621	1000	0.68	680	0.74	741	395	1606	47	301
4			10.00	22	10			0	0			0		0	-10	1202	1	371
3	Y	R	10.00	12	10			810	0	1500	0.81	810	0.83	1249	395	2046	33	450
2			10.00	2	10			0	0			0		0	-10	1641	1	495
1	A		2.00	0	10			81	-2796			91	0.00	1236	0	0	0	487
0				0				0	0			0		0	0	0		

Critical Buckling Load for piping -23254 lb

SAMPLE 8 STORY RISER WITH ANCHOR AT BASE AND VERTICALLY RESTRAINED ISOLATORS

NOTE THAT THERE IS NO LARGE CONCENTRATED FORCE AT THE ANCHOR ELEVATION IN SERVICE. HYDRAULIC LOADS ARE CARRIED UP THE RISER TO MULTIPLE ISOLATORS AT THE EXPENSE OF HIGHER TENSILE LOADS AND STRESSES IN THE PIPE ITSELF.

ANALYSIS OF TYPE 5 BASE ANCHORED HARD CONNECTED RISER

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