

**ZONE 3 WITH AND WITHOUT ICE 80 MPH WIND**

TOWER HEIGHT (ft)	10' SPAN										15' SPAN										20' SPAN										25' SPAN										TOWER HEIGHT (ft)						
	TOWER PIPE		ANCHOR BOLTS		BASE PLATE	TRUSS		DESIGN LOADS			TOWER PIPE		ANCHOR BOLTS		BASE PLATE	TRUSS		DESIGN LOADS			TOWER PIPE		ANCHOR BOLTS		BASE PLATE	TRUSS		DESIGN LOADS			TOWER PIPE		ANCHOR BOLTS		BASE PLATE	TRUSS		DESIGN LOADS									
	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)		DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)		
14'	16	0.250	0.105	1 1/4	6	20 1/2"	24 x 1 1/4	0.2	3.59	16.19	49.87	16	0.250	0.235	1 3/8	8	20 3/4"	24 1/2 x 1 3/8	0.5	5.40	37.56	76.63	20	0.250	0.213	1 1/4	8	24 1/2"	28 x 1 1/4	0.7	7.43	69.08	107.16	20	0.281	0.308	1 1/2	8	25"	29 x 1 1/2	1.3	9.14	107.68	135.49	14'		
15'			0.120						3.61		53.42			0.270					0.6	5.41		81.91			0.244	1 1/4		24 1/2"	28 x 1 1/4	0.7	7.43		113.96			0.281	0.354				1.4	9.17		144.13	15'		
16'			0.137						3.62		57.00			0.308					0.6	5.43		87.23			0.278	1 3/8		24 3/4"	28 1/2 x 1 3/8	0.8	7.45		121.17			0.281	0.403				1.4	9.19		152.86	16'		
17'			0.154						3.64		60.59			0.347					0.7	5.45		92.57			0.314						0.8	7.47		128.42			0.281	0.455	1 1/2		25"	29 x 1 1/2	1.5	9.21		161.65	17'
18'			0.173						3.66		64.21			0.389					0.7	5.46		97.94			0.352						0.9	7.49		135.72			0.312	0.460	1 3/4	25 3/8"	29 3/4 x 1 5/8	1.5	9.23		170.51	18'	
19'			0.193						3.67		67.85			0.434					0.7	5.48		103.33			0.392	1 3/8		24 3/4"	28 1/2 x 1 3/8	0.9	7.51		143.06			0.312	0.513				1.5	9.25		179.43	19'		
20'			0.214						3.69		71.51			0.481					0.8	5.50		108.75			0.435	1 1/2		25"	29 x 1 1/2	1.0	7.53		150.43			0.312	0.568				1.6	9.27		188.39	20'		
21'			0.235						3.71		75.18		0.250	0.530						5.51		114.19			0.479						1.0	7.55		157.84			0.312	0.627				1.6	9.29		197.41	21'	
22'			0.258					0.2	3.73		78.88		0.281	0.521	1 3/8		20 3/4"	24 1/2 x 1 1/2		5.53		119.66			0.526					1.1	7.57		165.28			0.344	0.628				1.6	9.31		206.47	22'		
23'			0.282					0.3	3.74		82.59		0.281	0.569	1 1/2		21"	25 x 1 5/8		5.55		125.14		0.250	0.575					7.60		172.75			0.344	0.686				1.7	9.34		215.57	23'			
24'			0.308						3.76		86.33		0.281	0.620					5.56		130.65		0.281	0.560						7.62		180.26			0.344	0.747				1.8	9.36		224.71	24'			
25'			0.334						3.78		90.08		0.312	0.610					5.58		136.18		0.281	0.607	1 1/2		25"	29 x 1 5/8		7.64		187.79			0.375	0.748				1.8	9.38		233.89	25'			
26'			0.361						3.79		93.85		0.312	0.660					5.60		141.73		0.281	0.657	1 3/4		25 3/8"	29 3/4 x 1 5/8		7.66		195.35			0.375	0.809	1 3/4	25 3/8"	29 3/4 x 1 5/8	1.7	9.40		243.10	26'			
27'			0.389						3.81		97.64		0.312	0.711					5.62		147.30		0.310	0.640						7.68		202.94			0.375	0.872	2	25 3/4"	30 1/2 x 2	1.8	9.42		252.34	27'			
28'			0.419						3.83		101.44		0.344	0.699					5.63		152.89		0.310	0.688						7.70		210.55			0.406	0.870				1.8	9.44		261.62	28'			
29'			0.449						3.84		105.26		0.344	0.750					5.65		158.50		0.310	0.738						7.72		218.20			0.406	0.933				1.8	9.46		270.93	29'			
30'			0.481						3.86		109.11		0.344	0.802	1 1/2		21"	25 x 1 3/4		5.67		164.12		0.340	0.721					7.74		225.86			0.406	0.999				1.8	9.48		280.27	30'			
31'			0.513						3.88		112.96		0.375	0.791	1 3/4		21 1/2"	26 x 1 7/8		5.68		169.77		0.340	0.770					7.77		233.56			0.441	0.992				1.8	9.50		289.64	31'			
32'	16	0.250	0.547	1 1/4	8	20 1/2"	24 x 1 1/2	0.3	3.89	16.19	116.84	16	0.375	0.843	1 3/4	8	21 1/2"	26 x 1 7/8	0.8	5.70	37.56	175.43	20	0.340	0.821	1 3/4	8	25 3/8"	29 3/4 x 1 7/8	1.1	7.79	69.08	241.27	20	0.441	1.057	2	8	25 3/4"	30 1/2 x 2 1/4	1.8	9.53	107.68	299.04	32'		

**ZONE 3 WITH AND WITHOUT ICE 80 MPH WIND**

TOWER HEIGHT (ft)	30' SPAN										35' SPAN										40' SPAN										TOWER HEIGHT (ft)												
	TOWER PIPE		ANCHOR BOLTS		BASE PLATE	TRUSS		DESIGN LOADS			TOWER PIPE		ANCHOR BOLTS		BASE PLATE	TRUSS		DESIGN LOADS			TOWER PIPE		ANCHOR BOLTS		BASE PLATE	TRUSS		DESIGN LOADS															
	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)		SHEAR V (Kips)	TORSION T (K-ft)	MOMENT M (K-ft)	O.D. (in)	WALL THICK (in)	DEFL ΔH (in)	SIZE DIA (in)	NO.	BOLT CIR DIA	SIZE (in)	DEFL ΔV (in)	SHEAR V (Kips)
14'	24	0.250	0.289	1 1/2	8	29"	33 x 1 1/2	1.6	11.00	155.44	167.11	30	0.250	0.210	1 3/4	8	35 3/8"	39 3/4 x 1 1/2	1.5	12.87	211.58	202.48	30	0.280	0.260	1 3/4	8	35 3/8"	39 3/8 x 1 1/2	2.1	14.65	276.72	242.20	14'									
15'		0.250	0.331	1 1/2		29"	33 x 1 1/2	1.6	11.03		177.27			0.241					1.6	12.90		213.97			0.298	1 3/4		35 3/8"	39 3/8 x 1 1/2	2.2	14.68		254.69	15'									
16'		0.281	0.338	1 3/4		29 3/8"	33 3/4 x 1 1/2	1.6	11.05		187.54			0.275					1.6	12.93		225.63			0.339	1 3/4		35 3/8"	39 3/8 x 1 1/2	2.3	14.71		267.44	16'									
17'		0.381					33 3/4 x 1 1/2	1.7	11.08		197.93		0.250	0.310					1.7	12.97		237.46			0.383	2		35 3/4"	40 1/2 x 1 1/2	2.4	14.75		280.40	17'									
18'		0.428					33 3/4 x 1 1/2	1.8	11.10		208.40		0.281	0.310					1.7	13.00		249.43			0.429			40 1/2 x 1 5/8	2.5	14.78		293.56	18'										
19'		0.281	0.477				33 3/4 x 1 5/8		11.13		218.97			0.346					1.7	13.03		261.52		0.280	0.478				2.6	14.81		306.90	19'										
20'		0.312	0.477				33 3/4 x 1 5/8		11.15		229.60			0.383					1.8	13.06		273.72		0.312	0.478				2.6	14.84		320.39	20'										
21'		0.526					33 3/4 x 1 5/8	1.8	11.18		240.31			0.422					1.8	13.09		286.04			0.527			40 1/2 x 1 5/8	2.6	14.87		334.02	21'										
22'		0.577					33 3/4 x 1 3/4	1.9	11.20		251.08			0.463					1.9	13.12		298.44			0.578			40 1/2 x 1 3/4	2.7	14.90		347.79	22'										
23'		0.631					33 3/4 x 1 3/4	2.0	11.23		261.91		0.507	1 3/4		35 3/8"	39 3/4 x 1 1/2		2.0	13.16		310.94			0.632				2.8	14.94		361.67	23'										
24'		0.312	0.687	1 3/4		29 3/8"	33 3/4 x 1 3/4		11.25		272.80			0.552	2		35 3/4"	40 1/2 x 1 5/8		2.0	13.19		323.51			0.688			2.9	14.97		375.66	24'										
25'		0.344	0.679	2		29 3/4"	34 1/2 x 1 3/4		11.28		283.74			0.598					2.1	13.22		336.16		0.312	0.747				3.0	15.00		389.75	25'										
26'		0.735					34 1/2 x 2	2.0	11.30		294.73			0.647					2.2	13.25		348.89		0.340	0.736				40 1/2 x 2	3.0	15.03		403.94	26'									
27'		0.792						2.1	11.33		305.77			0.698					2.2	13.28		361.68			0.794	2		35 3/4"	40 1/2 x 2	3.0	15.06		418.22	27'									
28'		0.852						2.2	11.36		316.85		0.281	0.751					2.3	13.31		374.53			0.854	2 1/4		36"	41 x 2	3.1	15.09		432.57	28'									
29'		0.344	0.914						11.38		327.97		0.310	0.726					2.2	13.35		387.45			0.916				3.2	15.13		447.01	29'										
30'		0.375	0.901						11.41		339.13			0.777					2.2	13.38		400.42		0.340	0.980				3.0	15.16		461.52	30'										
31'		0.375	0.962					2.2	11.43		350.34			0.830					2.3	13.41		413.45		0.375	0.963				3.2	15.19		476.10	31'										
32																																											