The 'PIPING GUIDE' .....

- Discusses in detail the design and drafting of piping systems
- Describes pipe, piping components most commonly used, valves, and equipment
- Presents charts, tables, and examples for daily reference
- Provides a design reference for companies and consultants
- Supplements existing company standards, information, and methods
- Serves as an instructional aid

PART I - TEXT: explains .....

- Techniques of piping design
- Assembling of piping from components, and methods for connecting to equipment
- Office organization, and methods to translate concepts into finished designs from which plants are built
- Terms and abbreviations concerned with piping

PART II - TABLES: provide .....

- Frequently needed data and information, arranged for quick reference
- Factors for establishing widths of pipeways
- Spacing between pipes, with and without flanges, and for 'jumpovers' and 'rununders'
- Principal dimensions and weights for pipe fittings, flanges, valves, structural steel, etc.
- Conversion for customary and metric units
- Direct-reading metric conversion tables for dimensions

and .....

- A metric supplement with principal dimensional data in millimeters

For PART II, turn to the back cover

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THE 'PIPING GUIDE'

FOR THE DESIGN AND DRAFTING OF INDUSTRIAL PIPING SYSTEMS

David R. Sherwood
Member, American Society of Mechanical Engineers
Member, Institution of Production Engineers (UK)

Dennis J. Whistance BS, MS

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Due to economic conditions, demand, manufacturing philosophy, business mergers and acquisitions, the availability of items from manufacturers may change, and components obtained from domestic suppliers may not be of domestic origin. Discussion of products does not necessarily imply endorsement.

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ABBREVIATIONS ARE GIVEN IN CHAPTER 8.

THE 'PIPING GUIDE'

FOR THE DESIGN AND DRAFTING OF INDUSTRIAL PIPING SYSTEMS

PART II

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Part II tables produced by Carmelita E. Bautista

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Tables P-1 present calculated data as a guide only. Spans are for pipe arranged in pipeways with the following assumptions: Bare pipe - continuous straight run with welded joints and two or more straight spans at each end.

SPANS - calculated with lines full of water and a maximum bending stress of 4 000 PSI

SAG - (deflection) calculated with lines empty (drained condition)

The following factors were not considered in calculating spans for these tables: Concentrated mechanical loads from flanges, valves, strainers, filters, and other inline equipment - weights of connecting branch lines - torsional loading from thermal movement - sudden reaction from lines(s) discharging contents - vibration - flattening effect of weight of contents in larger liquid filled lines - weight of insulation and pipe covering - weight of ice and snow - wind loads - seismic shock - reduction in wall thickness of pipe from threading or grooving.

DESIGN PRESSURE - calculated per ANSI B31.1 using allowable stress value of 9 000 PSI for seamless carbon steel pipe

BURSTING PRESSURE is approximate, calculated on yield strength of 30 000 PSI

API = American Petroleum Institute's standard 5L, for 'Line pipe'. API pipe sizes; manufacturers' weights: Double-extra-strong (XXS), Extra-strong (XS), and Standard (STD), are included with schedule numbers in standard ANSI B36.10M. Also refer to 2.1.3

PIPE DATA: DIMENSIONS & STRESS PARAMETERS — TABLES P-1

NPS (inch)	PIPING CODES and MANUFACTURERS' WEIGHTS	DIMENSIONS O.D. (in.)	I.D. (in.)	Wall (in.)	WEIGHTS Empty (lb/ft)	Waterfilled (lb/ft)	AREAS External (in^2/ft)	Internal (in^2/ft)	Flow (in^2)	Metal (in^2)	Moment of Inertia (in^4)	Section Modulus (in^3)	Radius of Gyration (in.)	Continuous Spans Span (ft)	Sag (in.)	Code Pressures Design (kPSI)	Bursting (kPSI)
.375	SCH 40 STD API	.6750	.4930	.0910	.5690	.6516	25.45	18.59	.1909	.1670	.0073	.0216	.2090	11.5	.213	1.75	5.84
	SCH 80 XS API	.6750	.4230	.1260	.7406	.8015	25.45	15.95	.1405	.2173	.0086	.0255	.1991	11.3	.217	2.89	9.63
.500	SCH 40 STD API	.8400	.6220	.1090	.8531	.9847	31.67	23.45	.3039	.2503	.0171	.0407	.2613	12.9	.212	1.83	6.10
	SCH 80 XS API	.8400	.5460	.1470	1.091	1.192	31.67	20.58	.2341	.3200	.0201	.0478	.2505	12.7	.217	2.82	9.41
	SCH 160	.8400	.4640	.1880	1.312	1.386	31.67	17.49	.1691	.3851	.0222	.0528	.2399	12.3	.213	3.99	13.3
	XXS API	.8400	.2520	.2940	1.719	1.740	31.67	9.500	.0499	.5043	.0242	.0577	.2192	11.5	.194	7.56	25.2
.750	SCH 40 STD API	1.050	.8240	.1130	1.134	1.365	39.58	31.06	.5333	.3326	.0370	.0705	.3337	14.4	.203	1.33	4.42
	SCH 80 XS API	1.050	.7420	.1540	1.477	1.665	39.58	27.97	.4324	.4335	.0448	.0853	.3214	14.3	.215	2.14	7.13
	SCH 160	1.050	.6120	.2190	1.948	2.076	39.58	23.07	.2942	.5717	.0528	.1005	.3038	13.9	.215	3.55	11.8
	XXS API	1.050	.4340	.3080	2.447	2.511	39.58	16.36	.1479	.7180	.0579	.1103	.2840	13.3	.203	5.77	19.2
1.00	SCH 40 STD API	1.315	1.049	.1330	1.683	2.057	49.57	39.55	.8643	.4939	.0873	.1328	.4205	16.1	.199	1.27	4.24
	SCH 80 XS API	1.315	.9570	.1790	2.177	2.489	49.57	36.08	.7193	.6388	.1056	.1606	.4066	16.1	.213	2.00	6.66
	SCH 160	1.315	.8150	.2500	2.851	3.077	49.57	30.72	.5217	.8364	.1251	.1903	.3868	15.7	.216	3.21	10.7
	XXS API	1.315	.5990	.3580	3.668	3.790	49.57	22.58	.2818	1.076	.1405	.2136	.3613	15.0	.206	5.29	17.6
1.25	SCH 40 STD API	1.660	1.380	.1400	2.278	2.926	62.58	52.02	1.496	.6685	.1947	.2346	.5397	17.9	.187	1.02	3.40
	SCH 80 XS API	1.660	1.278	.1910	3.004	3.560	62.58	48.18	1.283	.8815	.2418	.2913	.5237	18.1	.207	1.64	5.47
	SCH 160	1.660	1.160	.2500	3.774	4.232	62.58	43.73	1.057	1.107	.2839	.3420	.5063	18.0	.216	2.40	8.00
	XXS API	1.660	.8960	.3820	5.227	5.500	62.58	33.78	.6305	1.534	.3411	.4110	.4716	17.3	.212	4.29	14.3
1.50	SCH 40 STD API	1.900	1.610	.1450	2.725	3.606	71.63	60.70	2.036	.7995	.3099	.3262	.6226	19.0	.179	.938	3.13
	SCH 80 XS API	1.900	1.500	.2000	3.640	4.405	71.63	56.55	1.767	1.068	.3912	.4118	.6052	19.3	.202	1.52	5.06
	SCH 160	1.900	1.338	.2810	4.871	5.480	71.63	50.44	1.406	1.429	.4824	.5078	.5810	19.3	.215	2.42	8.08
	XXS API	1.900	1.100	.4000	6.424	6.835	71.63	41.47	.9503	1.885	.5678	.5977	.5489	18.7	.215	3.89	13.0
2.00	SCH 40 STD API	2.375	2.067	.1540	3.662	5.115	89.54	77.92	3.356	1.075	.6657	.5606	.7871	20.9	.164	.736	2.45
	SCH 80 XS API	2.375	1.939	.2180	5.034	6.313	89.54	73.10	2.953	1.477	.8679	.7309	.7665	21.5	.193	1.26	4.22
	API	2.375	1.875	.2500	5.688	6.884	89.54	70.69	2.761	1.669	.9551	.8043	.7565	21.6	.202	1.54	5.13
	SCH 160	2.375	1.687	.3440	7.480	8.448	89.54	63.60	2.235	2.195	1.164	.9804	.7283	21.5	.215	2.38	7.93
	XXS	2.375	1.503	.4360	9.051	9.820	89.54	56.66	1.774	2.656	1.311	1.104	.7027	21.2	.217	3.26	10.9

Thru NPS 10, wall thicknesses for SCH 40S and SCH 80S stainless steel pipes are the same as for SCH 40 and SCH 80 carbon steel pipes

PIPE DATA — TABLES P-1

NPS (inch)	PIPING CODES and MANUFACTURERS' WEIGHTS	DIMENSIONS O.D. (in.)	I.D. (in.)	Wall (in.)	WEIGHTS Empty (lb/ft)	Waterfilled (lb/ft)	AREAS External (in^2/ft)	Internal (in^2/ft)	Flow (in^2)	Metal (in^2)	Moment of Inertia (in^4)	Section Modulus (in^3)	Radius of Gyration (in.)	Continuous Spans Span (ft)	Sag (in.)	Code Pressures Design (kPSI)	Bursting (kPSI)
2.50	SCH 40 STD API	2.875	2.469	.2030	5.807	7.881	108.4	93.08	4.788	1.704	1.530	1.064	.9474	23.2	.172	.865	2.88
	SCH 80 XS API	2.875	2.323	.2760	7.680	9.515	108.4	87.58	4.238	2.254	1.924	1.339	.9241	23.7	.196	1.37	4.56
	SCH 160	2.875	2.125	.3750	10.04	11.57	108.4	80.11	3.547	2.945	2.353	1.637	.8938	23.8	.212	2.09	6.96
	XXS API	2.875	1.771	.5520	13.73	14.80	108.4	66.77	2.463	4.028	2.871	1.997	.8442	23.2	.216	3.49	11.6
3.00	API	3.500	3.250	.1250	4.517	8.109	131.9	122.5	8.296	1.325	1.890	1.080	1.194	23.1	.105	.286	.955
	API	3.500	3.188	.1560	5.585	9.042	131.9	120.2	7.982	1.639	2.296	1.312	1.184	24.1	.127	.451	1.50
	API	3.500	3.124	.1880	6.666	9.986	131.9	117.8	7.665	1.956	2.691	1.538	1.173	24.8	.146	.624	2.08
	SCH 40 STD API	3.500	3.068	.2160	7.595	10.80	131.9	115.7	7.393	2.228	3.017	1.724	1.164	25.3	.159	.777	2.59
	API	3.500	3.000	.2500	8.699	11.76	131.9	113.1	7.069	2.553	3.390	1.937	1.152	25.7	.173	.965	3.22
	API	3.500	2.938	.2810	9.684	12.62	131.9	110.8	6.779	2.842	3.709	2.119	1.142	25.9	.183	1.14	3.80
	SCH 80 XS API	3.500	2.900	.3000	10.28	13.14	131.9	109.3	6.605	3.016	3.894	2.225	1.136	26.0	.188	1.25	4.16
	SCH 160	3.500	2.624	.4380	14.36	16.70	131.9	98.92	5.408	4.213	5.039	2.879	1.094	26.3	.210	2.07	6.89
	XXS API	3.500	2.300	.6000	18.63	20.43	131.9	86.71	4.155	5.466	5.993	3.424	1.047	25.9	.217	3.10	10.3
4	API	4.500	4.250	.1250	5.855	12.00	169.6	160.2	14.19	1.718	4.114	1.828	1.547	24.7	.082	.141	.470
	API	4.500	4.188	.1560	7.255	13.22	169.6	157.9	13.78	2.129	5.028	2.235	1.537	26.0	.102	.267	.890
	API	4.500	4.124	.1880	8.679	14.46	169.6	155.5	13.36	2.547	5.930	2.636	1.526	27.0	.121	.399	1.33
	API	4.500	4.062	.2190	10.04	15.65	169.6	153.1	12.96	2.945	6.765	3.007	1.516	27.7	.136	.528	1.76
	SCH 40 STD API	4.500	4.026	.2370	10.82	16.33	169.6	151.8	12.73	3.174	7.233	3.214	1.510	28.1	.144	.604	2.01
	API	4.500	4.000	.2500	11.38	16.82	169.6	150.8	12.57	3.338	7.563	3.361	1.505	28.3	.149	.659	2.20
	API	4.500	3.938	.2810	12.69	17.97	169.6	148.5	12.18	3.724	8.324	3.699	1.495	28.7	.161	.791	2.64
	API	4.500	3.876	.3120	13.99	19.10	169.6	146.1	11.80	4.105	9.050	4.022	1.485	29.0	.170	.924	3.08
	SCH 80 XS API	4.500	3.826	.3370	15.02	20.00	169.6	144.2	11.50	4.407	9.610	4.271	1.477	29.2	.177	1.03	3.44
	SCH 160 API	4.500	3.438	.5310	22.56	26.58	169.6	129.6	9.283	6.621	13.27	5.898	1.416	29.8	.208	1.91	6.38
	XXS API	4.500	3.152	.6740	27.61	30.99	169.6	118.8	7.803	8.101	15.28	6.793	1.374	29.6	.216	2.61	8.69
6	API	6.625	6.249	.1880	12.96	26.24	249.8	235.6	30.67	3.802	19.71	5.950	2.277	30.1	.084	.214	.713
	API	6.625	6.187	.2190	15.02	28.04	249.8	233.2	30.06	4.407	22.63	6.833	2.266	31.2	.098	.300	1.00
	API	6.625	6.125	.2500	17.06	29.82	249.8	230.9	29.46	5.007	25.47	7.690	2.256	32.1	.111	.387	1.29
	SCH 40 STD API	6.625	6.065	.2800	19.02	31.53	249.8	228.6	28.89	5.581	28.14	8.496	2.245	32.8	.122	.472	1.57
	API	6.625	6.001	.3120	21.09	33.34	249.8	226.2	28.28	6.188	30.90	9.329	2.235	33.5	.133	.563	1.88
	API	6.625	5.937	.3440	23.13	35.12	249.8	223.8	27.68	6.788	33.57	10.14	2.224	34.0	.142	.654	2.18
	SCH 80 XS API	6.625	5.761	.4320	28.64	39.93	249.8	217.2	26.07	8.405	40.49	12.22	2.195	35.0	.165	.910	3.03
	SCH 120 API	6.625	5.501	.5620	36.48	46.77	249.8	207.4	23.77	10.70	49.61	14.98	2.153	35.8	.187	1.30	4.33
	SCH 160 API	6.625	5.187	.7190	45.46	54.61	249.8	195.5	21.13	13.34	59.03	17.82	2.104	36.1	.204	1.79	5.95
	XXS	6.625	4.897	.8640	53.29	61.45	249.8	184.6	18.83	15.64	66.33	20.02	2.060	36.1	.212	2.25	7.51
8	API	8.625	8.249	.1880	16.98	40.12	325.2	311.0	53.44	4.983	44.36	10.29	2.984	32.0	.062	.143	.476
	API	8.625	8.219	.2030	18.30	41.28	325.2	309.8	53.06	5.371	47.65	11.05	2.978	32.7	.068	.175	.582
	API	8.625	8.187	.2190	19.71	42.51	325.2	308.6	52.64	5.783	51.12	11.85	2.973	33.4	.074	.209	.695
	SCH 20 API	8.625	8.125	.2500	22.42	44.87	325.2	306.3	51.85	6.578	57.72	13.38	2.962	34.5	.086	.275	.915
	SCH 30 API	8.625	8.071	.2770	24.76	46.91	325.2	304.3	51.16	7.265	63.35	14.69	2.953	35.4	.095	.332	1.11
	API	8.625	8.001	.3120	27.77	49.54	325.2	301.6	50.28	8.148	70.49	16.34	2.941	36.3	.106	.408	1.36
	SCH 40 STD API	8.625	7.981	.3220	28.62	50.29	325.2	300.9	50.03	8.399	72.49	16.81	2.938	36.6	.110	.430	1.43
	API	8.625	7.937	.3440	30.50	51.92	325.2	299.2	49.48	8.949	76.85	17.82	2.930	37.1	.116	.477	1.59
	API	8.625	7.875	.3750	33.12	54.21	325.2	296.9	48.71	9.719	82.86	19.21	2.920	37.7	.125	.545	1.82
	SCH 60	8.625	7.813	.4060	35.73	56.49	325.2	294.5	47.94	10.48	88.74	20.58	2.909	38.2	.133	.613	2.04
	API	8.625	7.749	.4380	38.39	58.81	325.2	292.1	47.16	11.27	94.66	21.95	2.899	38.6	.140	.684	2.28
	SCH 80 XS API	8.625	7.625	.5000	43.50	63.27	325.2	287.5	45.66	12.76	105.7	24.51	2.878	39.4	.153	.822	2.74
	SCH 100	8.625	7.437	.5940	51.07	69.89	325.2	280.4	43.44	14.99	121.5	28.17	2.847	40.2	.170	1.03	3.45
	SCH 120 API	8.625	7.187	.7190	60.86	78.43	325.2	270.9	40.57	17.86	140.7	32.62	2.807	40.8	.186	1.32	4.41
	SCH 140 API	8.625	7.001	.8120	67.92	84.59	325.2	263.9	38.50	19.93	153.7	35.65	2.777	41.1	.195	1.54	5.14
	XXS API	8.625	6.875	.8750	72.60	88.68	325.2	259.2	37.12	21.30	162.0	37.56	2.757	41.2	.200	1.69	5.65
	SCH 160	8.625	6.813	.9060	74.88	90.66	325.2	256.8	36.46	21.97	165.9	38.47	2.748	41.2	.202	1.77	5.90

Thru NPS 10, wall thicknesses for SCH 40S and SCH 80S stainless steel pipes are the same as for SCH 40 and SCH 80 carbon steel pipes

PIPE DATA

TABLES P-1

NPS (inch)	PIPING CODES and MANUFACTURERS' WEIGHTS		DIMENSIONS O.D. (in.)	I.D. (in.)	Wall (in.)	WEIGHTS Empty (lb/ft)	Waterfilled (lb/ft)	AREAS External (in^2/ft)	Internal (in^2/ft)	Flow (in^2)	Metal (in^2)	Moment of Inertia (in^4)	Section Modulus (in^3)	Radius of Gyration (in.)	Continuous Spans Span (ft)	Sag (in.)	Code Pressures Design (kPSI)	Bursting (kPSI)
10		API	10.75	10.37	.1880	21.26	57.86	405.3	391.1	84.52	6.238	87.02	16.19	3.735	33.5	.047	.098	.325
		API	10.75	10.34	.2030	22.92	59.31	405.3	390.0	84.04	6.726	93.56	17.41	3.730	34.3	.052	.123	.410
		API	10.75	10.31	.2190	24.69	60.86	405.3	388.8	83.52	7.245	100.5	18.69	3.724	35.1	.058	.150	.500
	SCH 20	API	10.75	10.25	.2500	28.10	63.84	405.3	386.4	82.52	8.247	113.7	21.16	3.713	36.4	.067	.203	.676
		API	10.75	10.19	.2790	31.28	66.61	405.3	384.2	81.58	9.178	125.9	23.42	3.703	37.5	.076	.252	.841
	SCH 30	API	10.75	10.14	.3070	34.33	69.27	405.3	382.1	80.69	10.07	137.4	25.57	3.694	38.4	.084	.300	1.00
		API	10.75	10.06	.3440	38.33	72.76	405.3	379.3	79.52	11.25	152.4	28.35	3.681	39.5	.095	.364	1.21
	SCH 40	STD API	10.75	10.02	.3650	40.58	74.73	405.3	377.7	78.85	11.91	160.7	29.90	3.674	40.0	.100	.400	1.33
		API	10.75	9.874	.4380	48.36	81.52	405.3	372.2	76.57	14.19	188.9	35.15	3.649	41.5	.118	.528	1.76
	SCH 60	XS API	10.75	9.750	.5000	54.87	87.20	405.3	367.6	74.66	16.10	212.0	39.43	3.628	42.5	.131	.637	2.12
	SCH 80		10.75	9.562	.5940	64.59	95.68	405.3	360.5	71.81	18.95	245.2	45.62	3.597	43.7	.149	.805	2.68
	SCH 100	API	10.75	9.312	.7190	77.22	106.7	405.3	351.1	68.10	22.66	286.4	53.29	3.556	44.7	.167	1.03	3.44
	SCH 120		10.75	9.062	.8440	89.51	117.4	405.3	341.6	64.50	26.27	324.5	60.38	3.515	45.3	.181	1.26	4.21
	SCH 140	XXS API	10.75	8.750	1.000	104.4	130.4	405.3	329.9	60.13	30.63	367.8	68.43	3.465	45.8	.194	1.56	5.19
	SCH 160		10.75	8.500	1.125	115.9	140.5	405.3	320.4	56.75	34.02	399.3	74.29	3.426	46.0	.202	1.80	6.00
12			12.75	12.34	.2030	27.27	79.09	480.7	465.4	119.7	8.002	157.5	24.71	4.437	35.3	.042	.104	.345
		API	12.75	12.31	.2190	29.38	80.94	480.7	464.2	119.1	8.621	169.3	26.55	4.431	36.2	.046	.126	.421
	SCH 20	API	12.75	12.25	.2500	33.46	84.49	480.7	461.8	117.9	9.817	191.8	30.09	4.420	37.7	.055	.171	.569
		API	12.75	12.19	.2810	37.51	88.03	480.7	459.5	116.7	11.01	214.0	33.57	4.410	39.1	.063	.215	.717
		API	12.75	12.13	.3120	41.55	91.56	480.7	457.1	115.5	12.19	235.9	37.00	4.399	40.2	.071	.260	.866
	SCH 30	API	12.75	12.09	.3300	43.88	93.59	480.7	455.8	114.8	12.88	248.5	38.97	4.393	40.8	.076	.286	.953
		API	12.75	12.06	.3440	45.69	95.17	480.7	454.7	114.3	13.41	258.1	40.49	4.388	41.3	.080	.306	1.02
		STD API	12.75	12.00	.3750	49.69	98.66	480.7	452.4	113.1	14.58	279.3	43.82	4.377	42.1	.087	.351	1.17
	SCH 40	API	12.75	11.94	.4060	53.66	102.1	480.7	450.1	111.9	15.74	300.2	47.09	4.367	42.9	.094	.397	1.32
		API	12.75	11.87	.4380	57.74	105.7	480.7	447.6	110.7	16.94	321.4	50.42	4.356	43.7	.101	.443	1.48
		XS API	12.75	11.75	.5000	65.58	112.5	480.7	443.0	108.4	19.24	361.5	56.71	4.335	44.9	.114	.535	1.78
	SCH 60	API	12.75	11.63	.5620	73.34	119.3	480.7	438.3	106.2	21.52	400.4	62.81	4.314	45.9	.126	.627	2.09
		API	12.75	11.50	.6250	81.14	126.1	480.7	433.5	103.9	23.81	438.7	68.81	4.293	46.7	.137	.721	2.40
	SCH 80	API	12.75	11.37	.6880	88.85	132.8	480.7	428.8	101.6	26.07	475.7	74.62	4.271	47.4	.146	.816	2.72
		API	12.75	11.25	.7500	96.36	139.4	480.7	424.1	99.40	28.27	510.9	80.15	4.251	48.0	.155	.911	3.04
	SCH 100		12.75	11.06	.8440	107.6	149.2	480.7	417.0	96.11	31.57	562.2	88.19	4.220	48.6	.166	1.06	3.52
	SCH 120	XXS API	12.75	10.75	1.000	125.8	165.1	480.7	405.3	90.76	36.91	641.7	100.7	4.169	49.4	.181	1.30	4.33
	SCH 140	API	12.75	10.50	1.125	140.0	177.5	480.7	395.8	86.59	41.09	700.6	109.9	4.129	49.8	.190	1.50	4.99
	SCH 160	API	12.75	10.13	1.312	160.7	195.5	480.7	381.7	80.53	47.14	781.1	122.5	4.070	50.1	.201	1.80	6.01
14		API	14.00	13.58	.2100	31.01	93.72	527.8	512.0	144.8	9.098	216.3	30.90	4.876	36.3	.039	.103	.344
		API	14.00	13.56	.2190	32.31	94.87	527.8	511.3	144.5	9.481	225.1	32.16	4.873	36.8	.041	.115	.383
	SCH 10	API	14.00	13.50	.2500	36.80	98.79	527.8	508.9	143.1	10.80	255.3	36.47	4.862	38.4	.049	.155	.518
		API	14.00	13.44	.2810	41.27	102.7	527.8	506.6	141.8	12.11	285.0	40.72	4.851	39.8	.057	.196	.653
	SCH 20	API	14.00	13.38	.3120	45.72	106.6	527.8	504.3	140.5	13.42	314.4	44.91	4.841	41.1	.064	.236	.788
		API	14.00	13.31	.3440	50.30	110.6	527.8	501.9	139.2	14.76	344.2	49.18	4.830	42.2	.072	.279	.928
	SCH 30	STD API	14.00	13.25	.3750	54.70	114.4	527.8	499.5	137.9	16.05	372.8	53.25	4.819	43.1	.079	.319	1.06
	SCH 40	API	14.00	13.12	.4380	63.60	122.2	527.8	494.8	135.3	18.66	429.5	61.36	4.797	44.8	.093	.403	1.34
		API	14.00	13.06	.4690	67.94	126.0	527.8	492.4	134.0	19.94	456.8	65.26	4.787	45.5	.099	.444	1.48
		XS API	14.00	13.00	.5000	72.27	129.7	527.8	490.1	132.7	21.21	483.8	69.11	4.776	46.2	.105	.486	1.62
	SCH 60		14.00	12.81	.5940	85.26	141.1	527.8	483.0	128.9	25.02	563.1	80.44	4.744	47.8	.122	.613	2.04
		API	14.00	12.75	.6250	89.50	144.8	527.8	480.7	127.7	26.26	588.5	84.08	4.734	48.2	.127	.655	2.18
	SCH 80	API	14.00	12.50	.7500	106.4	159.5	527.8	471.2	122.7	31.22	687.3	98.19	4.692	49.6	.146	.826	2.75
	SCH 100	API	14.00	12.12	.9380	131.2	181.2	527.8	457.1	115.4	38.49	825.1	117.9	4.630	51.0	.167	1.09	3.63
	SCH 120		14.00	11.81	1.094	151.2	198.6	527.8	445.3	109.6	44.36	930.2	132.9	4.579	51.7	.181	1.31	4.37
	SCH 140	API	14.00	11.50	1.250	170.6	215.6	527.8	433.5	103.9	50.07	1027	146.7	4.529	52.2	.191	1.54	5.13
	SCH 160		14.00	11.19	1.406	189.6	232.2	527.8	421.8	98.31	55.63	1117	159.5	4.480	52.4	.199	1.77	5.90

Thru NPS 10, wall thicknesses for SCH 40S and SCH 80S stainless steel pipes are the same as for SCH 40 and SCH 80 carbon steel pipes