

Submittal Requirements - Fuel Gas Pipe Sizing

2025 California Plumbing Code, Chapter 12 Fuel Piping

Please provide the following information on your plan:

- Show the size and length of each section of pipe, both existing (E) and new (N). Remember to count vertical and horizontal distance.
- Show all appliances, existing (E) and new (N) that will be connected to the gas line. Label each appliance and the Btu rating (**see sample below**).
- Show whether the new gas line will connect directly to the existing (E) meter or at a point along the existing line creating a new branch. If the line is connected directly to the existing meter, you need to show only the new piping on your drawing.

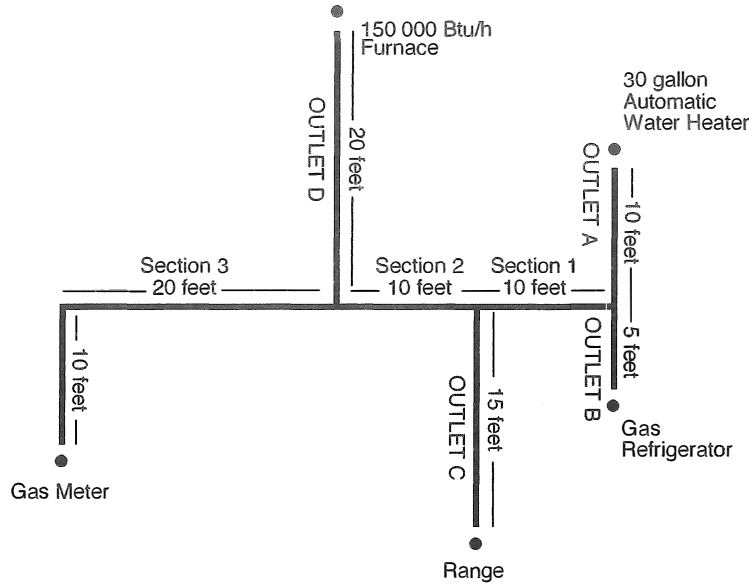
1208.3 Sizing of Gas Piping Systems. Gas piping systems shall be of such size and so installed as to provide a supply of gas sufficient to meet the maximum demand and supply gas to each appliance inlet at not less than the minimum supply pressure required by the appliance. [NFPA 54:5.3.1]

1213.3 Test Pressure. This inspection shall include an air, CO₂, or nitrogen pressure test, at which time the gas piping shall stand a pressure of not less than 10 psi (69 kPa) gauge pressure. Test pressures shall be held for a length of time satisfactory to the Authority Having Jurisdiction but in no case less than 15 minutes with no perceptible drop in pressure. For welded piping, and for piping carrying gas at pressures in excess of 14 inches water column pressure (3.5 kPa), the test pressure shall be not less than 60 psi (414 kPa) and shall be continued for a length of time satisfactory to the Authority Having Jurisdiction, but in no case for less than 30 minutes. For CSST carrying gas at pressures in excess of 14 inches water column (3.5 kPa) pressure, the test pressure shall be not less than 30 psi (207 kPa) for 30 minutes. These tests shall be made using air, CO₂, or nitrogen pressure and shall be made in the presence of the Authority Having Jurisdiction. Necessary apparatus for conducting tests shall be furnished by the permit holder. Test gauges used in conducting tests shall be in accordance with Section 318.0.

1212.9 Sediment Trap. Where a sediment trap is not incorporated as a part of the appliance, a sediment trap shall be installed downstream of the appliance shutoff valve as close to the inlet of the appliance as practical at the time of appliance installation. The sediment trap shall be either a tee fitting with a capped (3" minimum length) nipple in the bottom outlet, or another device recognized as an effective sediment trap. Illuminating appliances, gas ranges, clothes dryers, decorative appliances for installation in vented fireplaces, gas fireplaces, and outdoor cooking appliances shall not be required to be so equipped. [NFPA 54:9.6.8]

FIGURE 1215.1.1
EXAMPLE ILLUSTRATING USE OF TABLE 1208.3.1 AND TABLE 1215.2(1)

Problem: Determine the required pipe size of each section and outlet of the piping system shown in Figure 1215.1.1. Gas to be used has a specific gravity of 0.60 and 1100 British thermal units (Btu) per cubic foot (0.0114 kW•h/L), delivered at 8 inch water column (2.0 kPa) pressure.



For SI units: 1 foot = 304.8 mm, 1 gallon = 3.785 L, 1000 British thermal units per hour = 0.293 kW, 1 cubic foot per hour = 0.0283 m³/h

Solution:

- (1) Maximum gas demand of Outlet A —
 32 cubic feet per hour (0.91 m³/h) (from Table 1208.3.1).
 Maximum gas demand of Outlet B —
 3 cubic feet per hour (0.08 m³/h) (from Table 1208.3.1).
 Maximum gas demand of Outlet C —
 59 cubic feet per hour (1.67 m³/h) (from Table 1208.3.1).
 Maximum gas demand of Outlet D —
 136 cubic feet per hour (3.85 m³/h) [150 000 Btu/hour (44 kW) divided by 1100 Btu per cubic foot (0.0114 kW•h/L)].
- (2) The length of pipe from the gas meter to the most remote outlet (Outlet A) is 60 feet (18 288 mm).
- (3) Using the length in feet column row marked 60 feet (18 288 mm) in Table 1215.2(1):
 Outlet A, supplying 32 cubic feet per hour (0.91 m³/h), requires ½ of an inch (15 mm) pipe.
 Section 1, supplying Outlets A and B, or 35 cubic feet per hour (0.99 m³/h) requires ½ of an inch (15 mm) pipe.
 Section 2, supplying Outlets A, B, and C, or 94 cubic feet per hour (2.66 m³/h) requires ¾ of an inch (20 mm) pipe.
 Section 3, supplying Outlets A, B, C, and D, or 230 cubic feet per hour (6.51 m³/h), requires 1 inch (25 mm) pipe.
- (4) Using the column marked 60 feet (18 288 mm) in Table 1215.2(1):
 Outlet B supplying 3 cubic feet per hour (0.08 m³/h), requires ½ of an inch (15 mm) pipe.
 Outlet C, supplying 59 cubic feet per hour (1.67 m³/h), requires ½ of an inch (15 mm) pipe.
- (5) Using the column marked 60 feet (18 288 mm) in Table 1215.2(1):
 Outlet D, supplying 136 cubic feet per hour (3.85 m³/h), requires ¾ of an inch (20 mm) pipe.

FUEL GAS PIPING

TABLE 1215.2(2)
SCHEDULE 40 METALLIC PIPE [NFPA 54: TABLE 6.2.1(c)]*

										GAS: NATURAL	
										INLET PRESSURE: LESS THAN 2 psi	
										PRESSURE DROP: 3.0 in. w.c.	
										SPECIFIC GRAVITY: 0.60	
INTENDED USE: INITIAL SUPPLY PRESSURE OF 8.0 IN. W.C. OR GREATER											
PIPE SIZE (inch)											
NOMINAL:	½	¾	1	1¼	1½	2	2½	3	4		
ACTUAL ID:	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026		
LENGTH (feet)	CAPACITY IN CUBIC FEET OF GAS PER HOUR										
10	454	949	1790	3670	5500	10 600	16 900	29 800	60 800		
20	312	652	1230	2520	3780	7280	11 600	20 500	41 800		
30	250	524	986	2030	3030	5840	9310	16 500	33 600		
40	214	448	844	1730	2600	5000	7970	14 100	28 700		
50	190	397	748	1540	2300	4430	7060	12 500	25 500		
60	172	360	678	1390	2090	4020	6400	11 300	23 100		
70	158	331	624	1280	1920	3690	5890	10 400	21 200		
80	147	308	580	1190	1790	3440	5480	9690	19 800		
90	138	289	544	1120	1670	3230	5140	9090	18 500		
100	131	273	514	1060	1580	3050	4860	8580	17 500		
125	116	242	456	936	1400	2700	4300	7610	15 500		
150	105	219	413	848	1270	2450	3900	6890	14 100		
175	96	202	380	780	1170	2250	3590	6340	12 900		
200	90	188	353	726	1090	2090	3340	5900	12 000		
250	80	166	313	643	964	1860	2960	5230	10 700		
300	72	151	284	583	873	1680	2680	4740	9660		
350	66	139	261	536	803	1550	2470	4360	8890		
400	62	129	243	499	747	1440	2290	4050	8270		
450	58	121	228	468	701	1350	2150	3800	7760		
500	55	114	215	442	662	1280	2030	3590	7330		
550	52	109	204	420	629	1210	1930	3410	6960		
600	50	104	195	400	600	1160	1840	3260	6640		
650	47	99	187	384	575	1110	1760	3120	6360		
700	46	95	179	368	552	1060	1690	3000	6110		
750	44	92	173	355	532	1020	1630	2890	5890		
800	42	89	167	343	514	989	1580	2790	5680		
850	41	86	162	332	497	957	1530	2700	5500		
900	40	83	157	322	482	928	1480	2610	5330		
950	39	81	152	312	468	901	1440	2540	5180		
1000	38	79	148	304	455	877	1400	2470	5040		
1100	36	75	141	289	432	833	1330	2350	4780		
1200	34	71	134	275	412	794	1270	2240	4560		
1300	33	68	128	264	395	761	1210	2140	4370		
1400	31	65	123	253	379	731	1160	2060	4200		
1500	30	63	119	244	366	704	1120	1980	4050		
1600	29	61	115	236	353	680	1080	1920	3910		
1700	28	59	111	228	342	658	1050	1850	3780		
1800	27	57	108	221	331	638	1020	1800	3670		
1900	27	56	105	215	322	619	987	1750	3560		
2000	26	54	102	209	313	602	960	1700	3460		

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm, 1 cubic foot per hour = 0.0283 m³/h, 1 pound-force per square inch = 6.8947 kPa, 1 inch water column = 0.249 kPa
* Table entries are rounded to 3 significant digits.