

DESIGN PROCEDURE

- Step 1 Draw Layout or use graphic above, identify branch and outlets as individual points.
- Step 2 Determine BTU/hr demand at each Appliance. Convert the BTU demand to CF demand by dividing by 1100. (BTU Demand) (Use name plate rating or value in Table "A" which ever is larger.)
- Step 3 Calculate the gas demand at each branch in the main line. Starting with the furthest appliance from the meter, add up the demands as you work towards the meter.
- Step 4 Specify length of each segment
- Step 5 Calculate length from the gas meter to each branch and each appliance.
- Step 6 Look up the line size starting from the furthest point from the meter. The pipe size at any point shall not be smaller size than the largest pipe required for any branch or segment.

Appliance	Spa Heater	Appliance Name
BTU Demand	60,000	BTU Demand can be determined on the name plate or in Table "A"
CF Demand	54.5	Cubic feet of Gas per hour can be found by dividing BTU Demand by 1100
Total Length	110'	Length of gas pipe from meter to point under consideration
Branch Size	3/4"	Size determined from Table below

TABLE "A"
Minimum Demand of Typical Gas Appliances in BTU/HR

Appliance	BTU/HR
Barbecue (Residential)	50,000
Domestic Clothes Dryer	35,000
Domestic Gas Range	65,000
Domestic Recessed Oven Section	25,000
Domestic Recessed Top Burner Section	40,000
Fireplace Log Lighter (Residential)	25,000
Water Heater - 40 & 50 gallon	50,000
- 30 gallon	30,000

Size of Low Pressure Gas Piping (Table 12-3 C.P.C.)
Maximum Delivery Capacity of Cubic Feet of Gas Per Hour

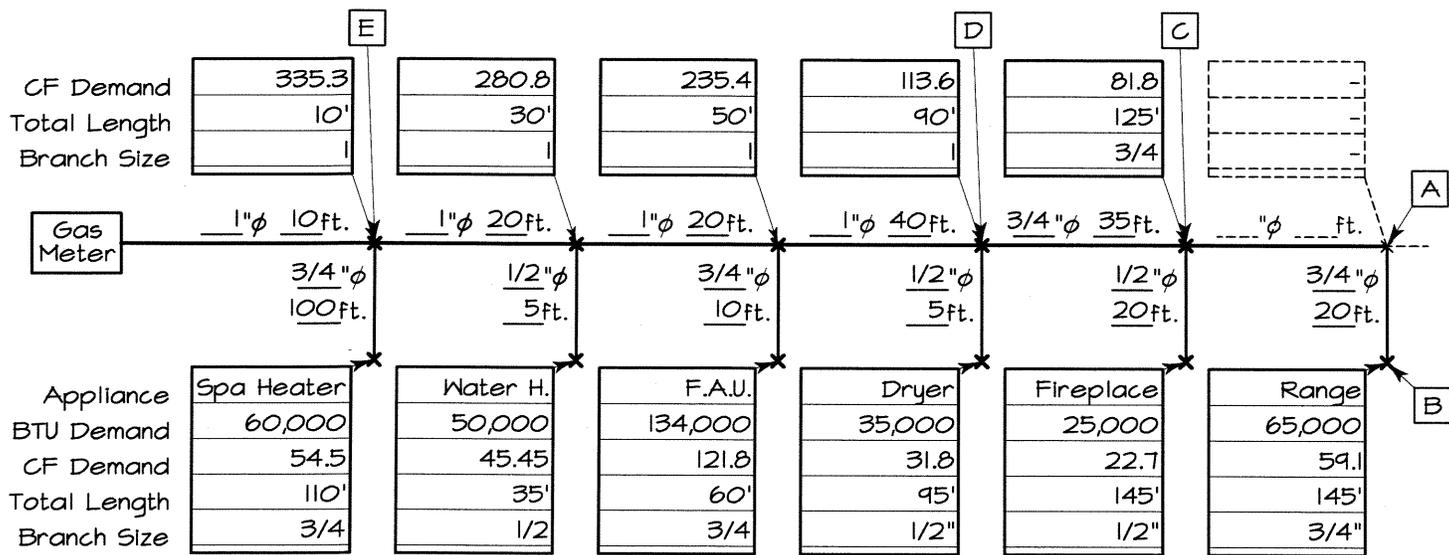
Pipe Size	Length in Feet												
	10	20	30	40	50	60	70	80	90	100	125	150	200
1/2"	174	119	96	82	73	66	61	56	53	50	44	40	34
3/4"	363	249	200	171	152	138	127	118	111	104	93	84	72
1"	684	470	377	323	286	259	239	222	208	197	174	158	135
1-1/4"	1404	965	775	663	588	532	490	456	428	404	358	324	278
1-1/2"	-	-	-	-	-	798	734	683	641	605	536	486	416
2"	-	-	-	-	-	-	-	-	1234	1165	1033	936	801

Note: If the distance from the appliance to the meter is between two columns, round to the longer run.
Example if Length is 62' use the 70' column



GAS PIPE SIZING WORKSHEET FOR THE HOME
HELP FOR THE HOMEOWNER
CITY OF SANTA PAULA, BUILDING AND SAFETY

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Date: 7/18/03 Sheet 1 of 2 P-5



EXAMPLE CALCULATION FOR VARIOUS POINTS

- Point A If additional appliances were provided the table would simply be extended, in this case the main line is simply a branch to the range.
- Point B Here the BTU Demand is found by taking the larger value of the name plate rating or the value shown in Table "A". Then convert BTU Demand to CF Demand.
 $CF\ Demand\ 59.1\ CF/Hr. = \frac{65,000}{1100}$ Total Length is 145' = 20' + 35' + 40' + 20' + 20' + 10'

To find the required branch size enter the table below rounding the distance from 145' to 150' and reading down the column until the capacity of the pipe exceeds the cf demand in this case 84 cf/hr exceeds 59.1 cf/hr therefore a 3/4" pipe will work for this branch. This is the minimum pipe size all the way to the meter.

Size of Low Pressure Gas Piping (Table 12-3 C.P.C.)
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- Point C To calculate the CF Demand add all the CF Demand that this branch serves. In this case it serves the range and fireplace. The distance is calculated as noted at point B above.
 $CD\ Demand\ 81.8 = 59.1 + 22.7$ Total Length is 125' = 35' + 40' + 20' + 20' + 10'
 Entering the table with the Length = 125 and CF Demand = 81.8 the minimum pipe size is 3/4"
- Point D $CD\ Demand\ 113.6 = 31.8 + 59.1 + 22.7$ Total Length is 90' = 40' + 20' + 20' + 10'
 Entering the table with the Length = 90' and a cf demand of 113.6 the minimum pipe size is 1", this pipe size must be maintained all the way back to the meter.
- Point E Calculate this point as shown above.
 $CD\ Demand\ 335.3 = 54.5 + 45.45 + 121.8 + 31.8 + 59.1 + 22.7$ Total Length is 10' = 10'
 Entering the table with the Length = 10' and CF Demand = 335.3 the minimum pipe size is 3/4" but because points up the line require a minimum of a 1" line a 1" line must be provided.

Note: Follow the instruction on page one, this sheets only illustrates specific examples. Errors in these calculations can be cause serious problems thus Building and Safety recommended that you hire a professional to assist you with your project.



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