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## **NON-ENGINEERED DOMESTIC WATER PIPE SIZING**

The purpose of this Information Bulletin is to provide a domestic water distribution sizing method for systems having 2" or smaller supply.

This method is in accordance with the method identified in Section 610.4 of the Los Angeles Plumbing Code. When following this sizing method, Mechanical Plan Check is not required, unless it is for systems with 2" building supply.

Note: A plumbing permit is required even when Mechanical Plan Check review is not.

For information on sizing per method identified in Section 610.5 and Appendix A of the Los Angeles Plumbing Code, please reference Information Bulletin P/PC 2023-009.

This bulletin includes the following:

1. The telephone numbers from the Department of Water and Power needed to obtain the minimum and maximum daily service pressure in areas within the City of Los Angeles. (See pages 2 through 3).
2. Sizing form with steps to aid in designing simple domestic water systems. (See pages 4 and 5).
3. Sizing tables for Copper Type L, CPVC and PEX. (See pages 6 to 8).

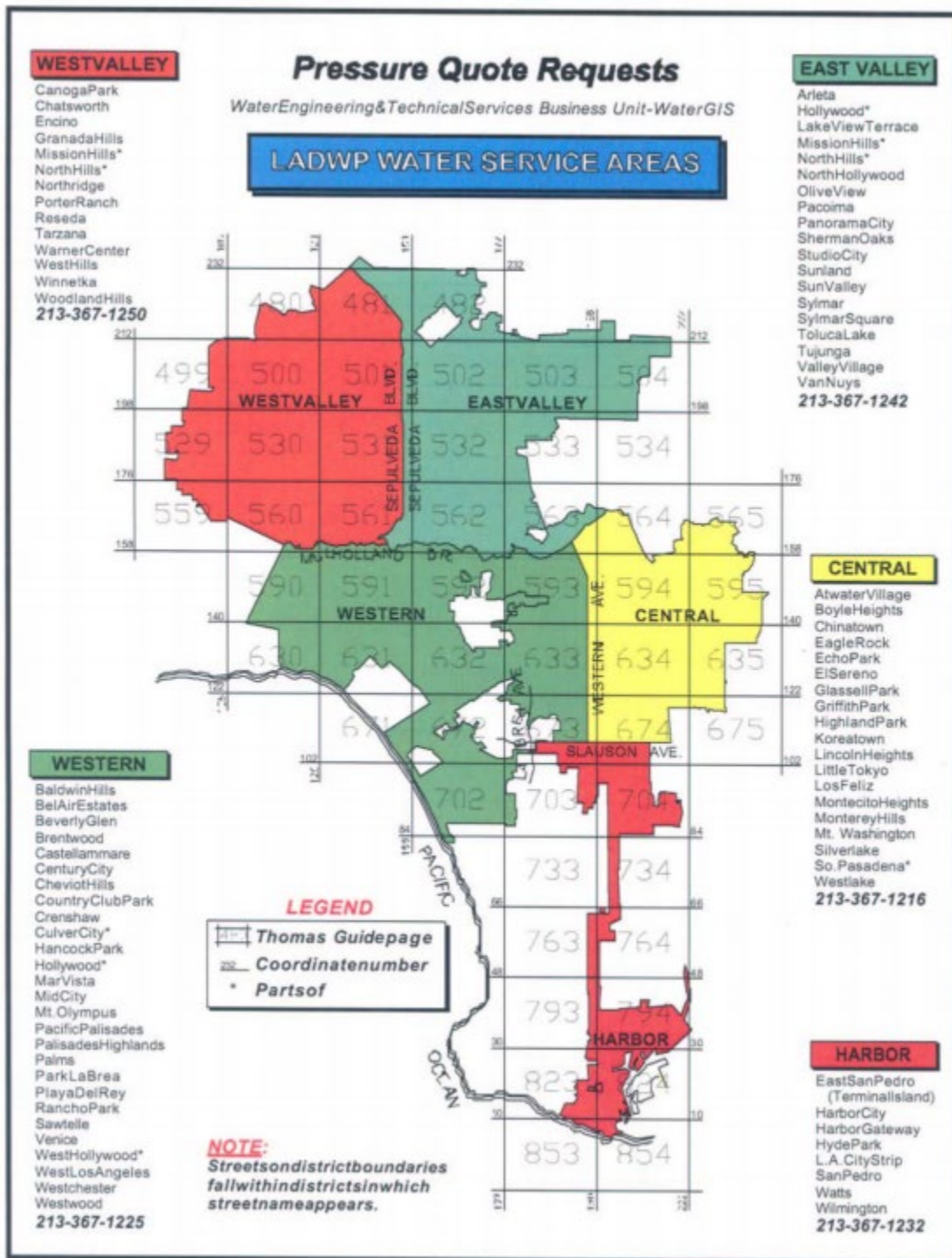
The attached sizing tables provide designers with information consistent with that used by Mechanical Plan Check Engineers during the plan review process. This information shall also be available to the Plumbing Inspector during inspection(s).

**1. Available Pressure**

Information regarding the minimum and maximum daily service pressure is obtained by calling or emailing the Los Angeles Department of Water and Power at the following numbers depending on where the service is located. See also the map on the next page for additional reference.

<b>WEST VALLEY (213) 367-1250</b> <b>dwpws.westvalley@ladwp.com</b>		<b>EAST VALLEY (213) 367-1242</b> <b>DWPWS.EastValley@ladwp.com</b>	
West of Sepulveda Blvd. North of Mulholland Dr.		East of Sepulveda Blvd. North of Mulholland Dr.	
Canoga Park Chatsworth Encino Granada Hills Mission Hills North Hills Northridge Porter Ranch Reseda	Tarzana Warner Center West Hills Winnetka  Woodland Hills	Arleta Hollywood Lake View Terrace Mission Hills North Hills Olive View Pacoima Panorama City Sherman Oaks	Studio City Sunland Sun Valley Sylmar Sylmar Square Toluca Lake Tujunga Valley Village Van Nuys
<b>WESTERN (213) 367-1225</b> <b>dwpws.western@ladwp.com</b>		<b>CENTRAL (213) 367-1216</b> <b>dwpws.central@ladwp.com</b>	
West of Western Ave. South of Mulholland Dr.		East of Western Ave. South of Mulholland Dr.	
Baldwin Hills Bel Air Estates Beverly Glen Brentwood Castellammare Century City Cheviot Hills Country Club Park Crenshaw Culver City Hancock Park Hollywood Hyde Park Mar Vista	Mid City Mt. Olympus Pacific Palisades Palisades Highlands Palms Park La Brea Playa Del Rey Rancho Park Sawtelle Venice West Hollywood West Los Angeles Westchester Westwood	Atwater Village Boyle Heights Chinatown Eagle Rock Echo Park El Sereno Glassel Park Griffith Park Highland Park Koreatown Lincoln Heights Little Tokyo Los Feliz Montecito Heights	Monterey Hills Mt. Washington Silverlake So. Pasadena Westlake
<b>HARBOR (213) 367-1232</b> <b>DWPWS.Harbor@ladwp.com</b>			
South of Slauson Ave			
East San Pedro (Terminal Island)	Harbor City Harbor Gateway	LA City Strip San Pedro	South Los Angeles Wilmington

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## 2. Steps & Sizing Form

- A. Contact DWP to obtain the minimum and maximum daily service pressure.
- B. With the pressures, the system will fall in one of three scenarios:
  - a. Both the minimum & maximum pressures exceed 80 psi
    - i. The pressure to use is 64psi, as this is 80% of the pressure regulator's set pressure of 80psi.
  - b. The maximum pressure exceeds 80 psi & the minimum pressure does not exceed 80 psi
    - i. The pressure to use is 80% of the minimum daily service pressure.
  - c. Both the maximum and minimum pressure do not exceed 80 psi
    - i. The pressure to use is the minimum daily service pressure.
- C. Measure the elevation difference between the water supply and the highest supply outlet.
  - a. The pressure loss to account for elevation is the elevation difference divided by two.
- D. Measure the longest length of piping run from the water meter through the water heater to the most remote outlet to determine the total developed length. This will determine which column to use for maximum allowable length in feet of piping on the tables from Section 3 of this Information Bulletin.
- E. The Residual Pressure is the pressure obtained from Step B minus the pressure obtained from Step C.
- F. Use the maximum allowable length measured in Step D and the Residual Pressure obtained in Step E to determine the maximum fixture units per pipe size as found in the "Pressure Range". Sizing tables for Copper Type L, CPVC and PEX are found in Section 3 of this Information Bulletin.

Fixtures	Quantity	X	Fixture Unit Value	Totals	Assign to W/H
Toilets, Flush Tank			2.5		
Lav or Hand Sink			1		
Bathtubs			4		
Showers			2		
Kitchen Sink			1.5		
Dishwasher, domestic			1.5		
Clotheswasher			4		
Laundry Sink			1.5		
Drinking Fountain			0.5		
Bar Sink			Public---2.0 Private---1.0		
Mop Sink			Public---3.0 Private---1.5		
2 or 3-Compartment Sink			4 per faucet		
Shampoo Bowl			2		
Prep Sink			2		
Commercial Dishwasher			4		
Hose Bibbs			2.5 for first one, 1 for each additional		
Lawn Sprinklers			1		
Coffee, Tea, Ice, etc.			0.5		
Flushometer Valve- Toilet	1		40		
Flushometer Valve- Toilet	2		40 + 30 = 70		
Flushometer Valve- Toilet	3		40 + 30 + 20 = 90		
Flushometer Valve- Toilet	4		40 + 30 + 20 + 15 = 105		
Flushometer Valve- Toilet	Over 4		10 FOR EACH ADDITIONAL		
Flushometer Valve- Urinal	1		20		
Flushometer Valve- Urinal	2		20 + 15 = 35		
Flushometer Valve- Urinal	3		20 + 15 + 10 = 45		
Flushometer Valve- Urinal	4		20 + 15 + 10 + 8 = 53		
Flushometer Valve- Urinal	Over 4		5 FOR EACH ADDITIONAL		
Total Fixture Unit Count of all Fixtures ----->					
Developed Length ----- (Most remote Cold or Hot outlet from water meter)			Pressure -----High                      psi ----- Low                      psi		
Fixture Units per Pipe Size			<ul style="list-style-type: none"> <li>• <b>If both High &amp; Low Exceeds 80 psi</b> -----&gt; Set Pressure Regulator at *80psi. Pressure Regulating Setting -----&gt; *80psi X 0.8 = 64 psi</li> </ul>		
1/2" ----			<ul style="list-style-type: none"> <li>• <b>If High exceeds 80 psi &amp; Low does not exceed 80 psi</b> Assign Low Here -----&gt;                      psi X 0.8 =                      psi</li> </ul>		
3/4" ----			<ul style="list-style-type: none"> <li>• <b>If Both High &amp; Low do not exceed 80 psi</b> No Pressure Regulator required Assign Low Here -----&gt;                      psi</li> </ul>		
1" ----			<b>Highest water supply outlet above water meter</b> ft ÷ 2 =                      psi		
1 1/4" --			Loss of Pressure – Subtract from above psi -----		
1 1/2" --			<b>Residual Pressure</b> ----->                      psi		
2" ----					
Water Meter Size -->			Water Service Size -->		

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### 3. Sizing Tables

The following tables are for Copper Type L, CPVC and PEX piping, accordingly. The allowed fixture units per size depends on the residual pressure obtained by the sizing form in Section 2 of this Information Bulletin, water meter size and total developed length.

**Table 3.1 Sizing Table for Copper Type L**

**FIXTURE UNIT TABLE FOR DETERMINING WATER PIPE AND METER SIZES**

METER AND STREET SERVICE (inches)	BUILDING SUPPLY AND BRANCHES (inches)	MAXIMUM ALLOWABLE LENGTH (feet)													
		40	60	80	100	150	200	250	300	400	500	600	700	800	900
<b>PRESSURE RANGE – 30 to 45 psi<sup>1</sup></b>															
¾	½ <sup>2</sup>	6	5	4	3	2	1	1	0	0	0	0	0	0	0
¾	¾	16	16	14	12	9	6	5	4	4	3	2	2	2	1
¾	1	29	25	23	21	17	15	13	12	10	8	6	6	6	6
1	1	36	31	27	25	20	17	15	13	12	10	8	6	6	6
¾	1¼	36	33	31	28	24	23	21	19	17	16	13	12	12	11
1	1¼	54	47	42	38	32	28	25	23	19	17	14	12	12	11
1½	1¼	78	68	57	48	38	32	28	25	21	18	15	12	12	11
1	1½	85	84	79	65	56	48	43	38	32	28	26	22	21	20
1½	1½	150	124	105	91	70	57	49	45	36	31	26	23	21	20
2	1½	151	129	129	110	80	64	53	46	38	32	27	23	21	20
1	2	85	85	85	85	85	85	82	80	66	61	57	52	49	46
1½	2	220	205	190	176	155	138	127	120	104	85	70	61	57	54
2	2	370	327	292	265	217	185	164	147	124	96	70	61	57	54
2	2½	445	418	390	370	330	300	280	265	240	220	198	175	158	143
<b>PRESSURE RANGE – 46 to 60 psi<sup>1</sup></b>															
¾	½ <sup>2</sup>	7	7	6	5	4	3	2	2	1	1	1	0	0	0
¾	¾	20	20	19	17	14	11	9	8	6	5	4	4	3	3
¾	1	39	39	36	33	28	23	21	19	17	14	12	10	9	8
1	1	39	39	39	36	30	25	23	20	18	15	12	10	9	8
¾	1¼	39	39	39	39	39	39	34	32	27	25	22	19	19	17
1	1¼	78	78	76	67	52	44	39	36	30	27	24	20	19	17
1½	1¼	78	78	78	78	66	52	44	39	33	29	24	20	19	17
1	1½	85	85	85	85	85	85	80	67	55	49	41	37	34	32
1½	1½	151	151	151	151	128	105	90	78	62	52	42	38	35	32
2	1½	151	151	151	151	150	117	98	84	67	55	42	38	35	32
1	2	85	85	85	85	85	85	85	85	85	85	85	85	85	83
1½	2	370	370	340	318	272	240	220	198	170	150	135	123	110	102
2	2	370	370	370	370	368	318	280	250	205	165	142	123	110	102
2	2½	654	640	610	580	535	500	470	440	400	365	335	315	285	267
<b>PRESSURE RANGE – Over 60 psi<sup>1</sup></b>															
¾	½ <sup>2</sup>	7	7	7	6	5	4	3	3	2	1	1	1	1	0
¾	¾	20	20	20	20	17	13	11	10	8	7	6	6	5	4
¾	1	39	39	39	39	35	30	27	24	21	17	14	13	12	11
1	1	39	39	39	39	38	32	29	26	22	18	14	13	12	11
¾	1¼	39	39	39	39	39	39	39	39	34	28	26	25	23	22
1	1¼	78	78	78	78	74	62	53	47	39	31	26	25	23	22
1½	1¼	78	78	78	78	78	74	65	54	43	34	26	25	23	22
1	1½	85	85	85	85	85	85	85	85	81	64	51	48	46	43
1½	1½	151	151	151	151	151	151	130	113	88	73	51	51	46	43
2	1½	151	151	151	151	151	151	142	122	98	82	64	51	46	43
1	2	85	85	85	85	85	85	85	85	85	85	85	85	85	85
1½	2	370	370	370	370	360	335	305	282	244	212	187	172	153	141
2	2	370	370	370	370	370	370	370	340	288	245	204	172	153	141
2	2½	654	654	654	654	654	650	610	570	510	460	430	404	380	356

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm, 1 pound-force per square inch = 6.8947 kPa

Notes:

<sup>1</sup> Available static pressure after head loss.

<sup>2</sup> Building supply, not less than ¾ of an inch (20 mm) nominal size.

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Table 3.2 Sizing Table for CPVC

<b>FIXTURE UNIT TABLE FOR DETERMINING WATER CPVC TUBING SIZE</b>							
Meter Size, in	Nominal Pipe Size, in	MAXIMUM ALLOWABLE LENGTH (feet)					
		40	60	80	100	150	200
<b>PRESSURE RANGE- 30 TO 45 psi</b>							
1	½	1	1	0	0	0	0
1	¾	8	6	4	4	3	1
1	1	20	15	12	10	7	6
1	1 ¼	36	28	23	20	15	13
1	1 ½	60	54	42	36	26	21
<b>PRESSURE RANGE- 46 TO 60 psi</b>							
1	½	4	4	4	3	3	1
1	¾	12	12	12	12	10	8
1	1	21	21	21	21	21	20
1	1 ¼	36	36	36	36	36	36
1	1 ½	60	60	60	60	60	60
<b>PRESSURE RANGE- OVER 60 psi</b>							
1	½	4	4	4	4	4	3
1	¾	12	12	12	12	12	12
1	1	21	21	21	21	21	21
1	1 ¼	36	36	36	36	36	36
1	1 ½	60	60	60	60	60	60
<b>PRESSURE RANGE- 30 TO 45 psi</b>							
1 ½	½	0	0	0	0	0	0
1 ½	¾	6	4	3	3	1	1
1 ½	1	13	10	8	7	6	4
1 ½	1 ¼	26	20	16	15	12	8
1 ½	1 ½	49	36	28	24	20	16
<b>PRESSURE RANGE- 46 TO 60 psi</b>							
1 ½	½	4	4	4	3	3	1
1 ½	¾	12	12	12	12	10	8
1 ½	1	21	21	21	21	21	20
1 ½	1 ¼	36	36	36	36	36	36
1 ½	1 ½	60	60	60	60	60	60
<b>PRESSURE RANGE- OVER 60 psi</b>							
1 ½	½	4	4	4	4	4	3
1 ½	¾	12	12	12	12	12	12
1 ½	1	21	21	21	21	21	21
1 ½	1 ¼	36	36	36	36	36	36
1 ½	1 ½	60	60	60	60	60	60

**Table 3.3 Sizing Table for PEX**

**FIXTURE UNIT TABLE FOR DETERMINING WATER PEX TUBING SIZE**

Meter and Street Service (inches)	Building Supply and Branches (inches)	MAXIMUM ALLOWABLE LENGTH (feet)									
		40	60	80	100	150	200	250	300	400	500
<b>PRESSURE RANGE - 30 TO 45 psi</b>											
3/4	1/2	1	0	0	0	0	0	0	0	0	0
3/4	3/4	4	3	3	2	1	1	0	0	0	0
3/4	1	12	8	7	6	4	3	0	0	0	0
1	1	20	20	20	20	15	13	12	10	8	7
3/4	1-1/4	21	16	13	12	8	7	0	0	0	0
1	1-1/4	34	34	34	34	30	24	21	18	15	13
1	1-1/2	56	56	56	56	46	36	30	26	21	20
1-1/2	1-1/4	34	34	34	34	32	26	23	20	16	15
1-1/2	1-1/2	56	56	56	56	54	42	36	30	24	21
<b>PRESSURE RANGE - 46 TO 60 psi</b>											
3/4	1/2	4	4	4	3	3	2	1	1	1	1
3/4	3/4	12	12	12	12	8	7	6	6	4	4
3/4	1	20	20	20	20	20	16	15	13	10	8
1	1	20	20	20	20	20	20	20	16	15	12
3/4	1-1/4	34	34	34	34	34	32	28	24	20	18
1	1-1/4	34	34	34	34	34	34	34	32	24	23
1	1-1/2	56	56	56	56	56	56	56	56	46	39
1-1/2	1-1/4	34	34	34	34	34	34	34	34	28	23
1-1/2	1-1/2	56	56	56	56	56	56	56	56	49	42
<b>PRESSURE RANGE - Over 60 psi</b>											
3/4	1/2	4	4	4	4	4	3	3	2	2	1
3/4	3/4	12	12	12	12	12	12	10	8	7	6
3/4	1	20	20	20	20	20	20	20	20	16	13
1	1	20	20	20	20	20	20	20	20	18	16
3/4	1-1/4	34	34	34	34	34	34	34	34	30	26
1	1-1/4	34	34	34	34	34	34	34	34	34	30
1	1-1/2	56	56	56	56	56	56	56	56	56	56
1-1/2	1-1/4	34	34	34	34	34	34	34	34	34	32
1-1/2	1-1/2	56	56	56	56	56	56	56	56	56	56

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