

Drainage Pipe and Vent System

D-PIPE OVERVIEW

The Elite Software D-PIPE Program quickly calculates optimal pipe and vent sizes for sanitary building drain systems with a virtually unlimited number of pipe sections. Existing drainage systems can also be analyzed because D-Pipe allows the designer to fix the size of any and all pipe sections. Besides sizing reports, D-Pipe can also print a complete bill of materials showing both labor and material costs. Branch, sewer, and stack pipes along with branch and stack vents are automatically sized in accordance with the UPC or IPC code. D-Pipe also has provision for sizing pipes using codes different from standard. In fact, you can define and maintain as many sizing code files as necessary. D-Pipe is very easy to use as it contains built-in data concerning fixtures, pipe materials, and pipe fittings. D-Pipe does allow the user to maintain various material files, and each material file can contain up to 96 different fixtures, unlimited pipe fittings, and 60 material types.

PROGRAM INPUT

The D-PIPE program uses Windows full screen editing features that provide a simple "fill in the blank" data entry procedure. All input data is checked at the time of entry so that no improper data can be entered. All data is saved to disk as it is entered. D-PIPE requires two types of data: general project data and pipe section data. The general project data includes the project name, the name of the designer, the client, the date, available water pressure at the main, and the pressure drop through water meter. The pipe data requires that each pipe section must be defined as having a beginning and ending node along with the pipe type and length. A pipe can be a branch, stack, sewer, branch vent, or stack vent. In addition, the type and quantity of fittings and fixtures that exist on each pipe section must be specified. There is also provision for equipment such as dishwashers, heaters, and backflow preventers. Optional pipe input data includes provision for specifying a maximum allowed pressure drop and a maximum allowed velocity. These constraints along with an allowable pipe size range may be changed from pipe to pipe. Once all the pipe sections, fittings, and fixtures have been entered the water drainage system is ready for calculation.

D-PIPE FEATURES

- Calculates optimal drainage pipe and vent sizes
- Follows methodology described in the ASPE Databook
- Sizes pipe according to UPC and IPC code requirements
- Provisions for sizing in accordance with all local codes
- Prints bill of materials with material and labor costs
- Prints pipe network data in Explorer tree format
- Built-in pipe, fitting, and drainage fixture data
- Links to 32-bit Autodesk Building Systems 2006 to 2007 and 32-bit AutoCAD MEP 2008 to 2012
- Allows for all types of pipe materials
- Fitting and fixture data can be edited by the designer
- Allows multiple pipe, fitting, and fixture library files
- Instantaneous input error checking
- Provides comprehensive and concise reports
- **No Annual Fees and No Copy Protection Hassles!**

CALCULATION METHOD

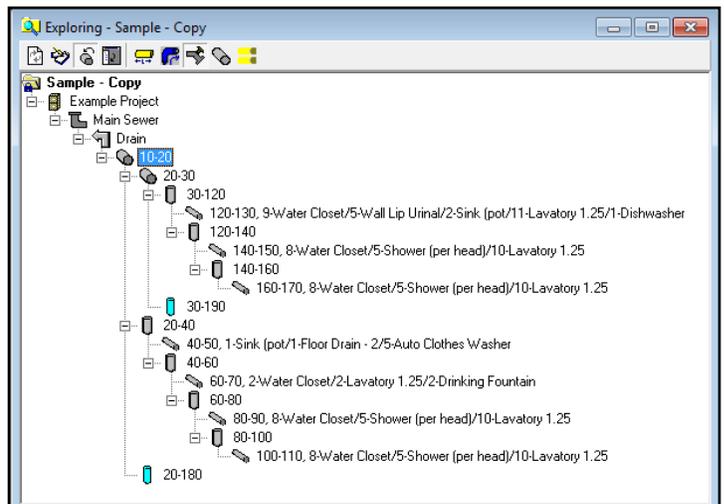
The D-PIPE Program follows the methodology described in the American Society of Plumbing Engineers (ASPE) Databook and the Uniform Plumbing Code published by International Association of Plumbing and Mechanical Officials, and International Plumbing Code published by Building Officials & Code Administrators International, Inc. As new building codes emerge, D-Pipe allows you to easily change the sizing tables. All results computed by the program can be easily verified by hand to be in accordance with ASPE and IPC/UPC code requirements. The user manual gives detailed information on the methodology and exact equations used so that it is easy to manually verify all program results.

SYSTEM REQUIREMENTS

D-PIPE is a Windows program and will run on any computer with Windows XP or higher, including Windows 10.

DEMONSTRATION VERSION

If you would like to evaluate D-Pipe in further detail, you can **download free of charge** a functional demo of D-PIPE from Elite Software's website, www.elitesoft.com



Pipe Output Data						
Pipe	Pipe	Pipe	Pipe Fittings	Pipe Fixtures	Size	
Begin Node	Len	Material - Type	Quantity/Description	Quantity/Description	Max	Min
End Node	Slope	Segment DFU	Quantity/Description	Quantity/Description	Actual	Actual
Seg Type	WC	Cumulative DFU	Quantity/Description	Quantity/Description		
10	40.0	Cast Iron	1 - Combination		18.000	
20	1/8	0.00	Wye and 1/8 bend		1.500	
Sewer	43.0	422.00	1 - Wye		6.000	
House Drain			1 - Cleanout - Floor			
20	25.0	Cast Iron	1 - Wye		18.000	
30	1/8	0.00	1 - Long Radius 90° Elbow		1.500	
Sewer	25.0	241.00	1 - Cleanout - Floor		5.000	
S.Wing Drain						
20	5.0	Cast Iron	1 - Sanitary Tee		18.000	
40	N/A	0.00			1.500	
Stack	18.0	181.00			4.000	
Basement - North						
20	55.0	Cast Iron	1 - Sanitary Tee		18.000	
180	N/A	0.00			1.500	
Stack Vent	N/A	0.00			2.500	
North Wing						
30	15.0	Cast Iron	1 - Sanitary Tee		18.000	
120	N/A	0.00			1.500	
Stack	25.0	241.00			5.000	
Floor1 - South						
30	55.0	Cast Iron	1 - Sanitary Tee		18.000	
190	N/A	0.00			1.500	
Stack Vent	N/A	0.00			3.000	
South Wing						
40	20.0	Cast Iron		1 - Sink (pot, scullery)	18.000	
50	1/8	20.00		1 - Floor Drain - 2	1.500	
Branch	0.0	20.00		5 - Auto Clothes Washer	3.000	
Basement - North						
40	10.0	Cast Iron	1 - Sanitary Tee		18.000	
60	N/A	0.00			1.500	
Stack	18.0	161.00			4.000	
Floor1 - North						
60	20.0	Cast Iron		2 - Water Closet, Public	18.000	
70	1/8	15.00		2 - Lavatory 1.25	1.500	
Branch	2.0	15.00		2 - Drinking Fountain	3.000	
Floor1 - North						
60	15.0	Cast Iron	1 - Sanitary Tee		18.000	
80	N/A	0.00			1.500	
Stack	16.0	146.00			4.000	
Floor2 - North						
80	20.0	Cast Iron		8 - Water Closet, Public	18.000	
90	1/8	73.00		5 - Shower (per head), Group	1.500	
Branch	8.0	73.00		10 - Lavatory 1.25	4.000	
Floor2 - North						

General Project Data Input	
General Project Information	
Project file name:	C:\Users\Bill Smith\Documents\Elite Software\D-Pipe 2
Project title:	Projects\Sample - Copy.dpw
Designed by:	Your Name
Project date:	10-15-02
Project comment:	Expected completion by mid-2003
Client name:	Housing, Inc.
Client address:	1234 Main St
Client city:	Houston, TX 77082
Client phone:	713-555-5555
Client fax:	713-555-5556
Client email:	john@housinginc.com
Client website:	http://www.housinginc.com
Client comment:	Serves metro area
Company name:	Your Company Name
Company representative:	Bob Jones
Company address:	5678 Vine St
Company city:	Fort Worth, TX 76101
Company phone:	817-555-5557
Company fax:	817-555-5558
Company email:	yourname@yourcompany.com
Company website:	http://www.yourcompany.com
Default Pipe Material Type:	Cast Iron
Default Pipe Segment Type:	Branch
Default Pipe Beginning Node Height (ft):	0
Default Pipe Ending Node Height (ft):	0
Default Pipe Length (ft):	20
Default Minimum Pipe Diameter (in):	1.5
Default Maximum Pipe Diameter (in):	18
System Drain Node:	10
Fixture Database File:	Standard
Code Sizing Database File:	IPC
Height of Top of Building Drain (ft):	0.5
Height of Bottom of Building Drain (ft):	-3
Height of Building Slab (ft):	0
Height of Main Sewer (ft):	-5
Minimum Underground Size (in):	3
Minimum Building Drain Size (in):	3

Pipe Output Data (cont'd)						
Pipe	Pipe	Pipe	Pipe Fittings	Pipe Fixtures	Size	
Begin Node	Len	Material - Type	Quantity/Description	Quantity/Description	Max	Min
End Node	Slope	Segment DFU	Quantity/Description	Quantity/Description	Actual	Actual
Seg Type	WC	Cumulative DFU	Quantity/Description	Quantity/Description		
80	15.0	Cast Iron	1 - Sanitary Tee		18.000	
100	N/A	0.00			1.500	
Stack	8.0	73.00			4.000	
Floor3 - North						
100	20.0	Cast Iron		8 - Water Closet, Public	18.000	
110	1/8	73.00		5 - Shower (per head), Group	1.500	
Branch	8.0	73.00		10 - Lavatory 1.25	4.000	
Floor3 - North						
120	35.0	Cast Iron		9 - Water Closet, Public	18.000	
130	1/8	95.00		5 - Wall Lip Urinal	1.500	
Branch	9.0	95.00		2 - Sink (pot, scullery)	4.000	
Floor1 - Rec Rm				11 - Lavatory 1.25		
				1 - Dishwasher, Commercial		
120	15.0	Cast Iron	1 - Sanitary Tee		18.000	
140	N/A	0.00			1.500	
Stack	16.0	146.00			4.000	
Floor1 - South						
140	20.0	Cast Iron		8 - Water Closet, Public	18.000	
150	1/8	73.00		5 - Shower (per head), Group	1.500	
Branch	8.0	73.00		10 - Lavatory 1.25	4.000	
Floor2 - South						
140	15.0	Cast Iron	1 - Sanitary Tee		18.000	
160	N/A	0.00			1.500	
Stack	8.0	73.00			4.000	
Floor2 - South						
160	20.0	Cast Iron		8 - Water Closet, Public	18.000	
170	1/8	73.00		5 - Shower (per head), Group	1.500	
Branch	8.0	73.00		10 - Lavatory 1.25	4.000	
Floor3 - South						

Pipe Network Elevation Summary ---

Height of Top of Building Drain:	0.5 ft
Height of Building Slab:	0.0 ft
Height of Bottom of Building Drain:	-3.0 ft
Height of Main Sewer:	-5.0 ft
Building Invert Elevation (user defined):	3.0 ft
Total Drop of Sewer Segments:	0.7 ft
Building Invert Elevation (calculated):	0.2 ft
Drop of Longest Continuous Sewer:	0.7 ft

Pipe Material - Cast Iron										
Size	Qty	Length	Qty	Length	Qty	Length	Qty	Length	Tot Len	\$ Costs
2.5	1	55							55	\$5,098.50
3	1	55	2	20				95	\$9,348.00	
4	1	5	1	10	4	15	4	20	155	\$18,119.50
4	1	35							35	\$4,091.50
5	1	25	1	15					40	\$5,240.00
6	1	40							40	\$6,800.00
Material:										\$20,382.50
Labor:										\$28,315.00
Total:										\$48,697.50

Fittings										
Fitting Type	Fitting Qty	Out Size	In Size	In Size	Fitting Qty	Out Size	In Size	In Size	Fitting Qty	Fitting Costs
Combination Wye and 1/8 bend	1	6	5	4						\$810.00
Wye	1	5	5	3						\$620.00
Cleanout - Floor	1	6	2.5	2.5						\$740.00
Long Radius 90° Elbow	1	5	5							\$1,210.00
Sanitary Tee	1	6	6							\$1,290.00
	1	5	5							\$234.00
	2	4	3	4	4	4	4	4	4	\$3,015.00
	1	5	4	4						\$620.00
Material:										\$3,582.00
Labor:										\$4,957.00
Total:										\$8,539.00

Fixtures					
Fixture Type or Fixture Group	Type of Occupancy and/or Control	Fixture Cost	Labor Costs	Fixture Qty	Fixture Costs
Sink (pot, scullery)		\$100.00	\$65.00	3	\$495.00
Floor Drain - 2		\$12.50	\$10.50	1	\$23.00
Auto Clothes Washer		\$238.45	\$66.00	5	\$1,522.25
Water Closet, Public		\$150.00	\$52.00	43	\$8,686.00
Lavatory 1.25		\$89.00	\$47.00	53	\$7,208.00
Drinking Fountain		\$150.00	\$42.00	2	\$384.00
Shower (per head), Group		\$400.00	\$35.00	20	\$8,700.00
Wall Lip Urinal		\$150.00	\$75.00	5	\$1,125.00
Dishwasher, Commercial		\$650.45	\$230.50	1	\$880.95
Material:		\$22,372.20	\$6,652.00	Total:	\$29,024.20

Totals	
Total Cost for Materials:	\$46,336.70
Total Cost for Labor:	\$39,924.00
Total Cost for Project:	\$86,260.70