

GENERAL TESTING NOTES:

- All sanitary sewer systems shall be constructed in accordance with contract and permit specifications.
- Section 2500 of Kansas City Metropolitan APWA Standard Specifications are amended as follows:

Section 2509 "Testing"

Add the following to Section 2509.4.c.(5) "When the pipe material is plastic, the low-pressure test shall conform to the testing procedure described in ASTM F1417-92, entitled *Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low Pressure Air* .

Delete the following sentence in Section 2509.5.d 'The testing shall be conducted after the final trench backfill' and replace with 'The testing shall be conducted not less than 30 days following the final trench backfill'.

Section 2510.9 "Manhole Testing"

Delete Section 2510.9.2 and 2510.9.3 and replace with the following:

2510.9.2. Utilizing the test procedure and equipment equivalent to that supplied by P.A. Glazier, Inc., P.O. Box 1002, Worcester, Massachusetts 01613, 1-800-822-6488, a vacuum of 10 inches of mercury shall be drawn, the vacuum pump shut off, all valves closed, and the time measured for the vacuum to drop to 9 inches. The manhole shall pass if the time is greater than 60 seconds for 48" diameter, 75 seconds for 60" diameter, and 90 seconds for 72" diameter.

- System testing shall be performed by the contractor.
- The Contractor shall give adequate notice to the City to allow the tests to be witnessed and verified by a City representative.
- The Contractor shall provide adequate documentation to verify the worthiness of all equipment to be used, as follows:

A. All mandrels shall be stamped by the manufacturer, with the appropriate size required, or the contractor shall provide proving rings which are stamped by the manufacturer, with the appropriate size required.

B. All pressure gauges and vacuum gauges shall have serial numbers shown and the Contractor shall provide documentation showing current certification for the gauges.

- Low-pressure line testing and manhole vacuum testing can be performed immediately following installation.
- Deflection testing will not be performed until after 30 days following final backfill and compaction.

MANHOLE TESTING:

Manhole Diameter and Time Required (Seconds)	
Manhole Diameter	Minimum Time (10" to 9")
48"	60
60"	75
72"	90

LOW-PRESSURE AIR TEST:

The pressure test gauge shall meet the following minimum specifications:

Size (diameter)	4-1/2 inches
Pressure Range	0-15 psi
Figure Intervals	1 psi increments
Minor Subdivisions	0.05 psi
Pressure Tube	Bourdon Tube or diaphragm
Accuracy	+/- 0.25% of maximum scale reading.
Dial	White coated aluminum with black lettering, 270° arc and mirror edge.
Pipe Connection	Low Male 1/2 inch N.P.T.

For acceptance each line shall exhibit less than a 1.0 psig drop from a beginning pressure of 3.50 psig for the durations indicated in the following table.

MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q=0.0015

Pipe Diameter (in.)	Minimum Time (min:sec)	Length For Minimum Time (ft.)	Time For Longer Length (sec.)	Specification Time for Length (L) Shown (min:sec)								
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft	
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24	
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48	
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38	
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	33:36	40:04	
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41	
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31	
24	22:40	99	13.674 L	22:47	34:11	43:34	56:58	68:22	79:46	91:10	102:33	
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48	
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15	
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53	
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46	

DEFLECTION TEST:

D and L Dimensions For 9 Arm Mandrel				
Nominal Diameter	L	D		
		SDR 35	SDR 26	SDR 21
8"	8"	7.52"	7.37"	7.41"
10"	10"	9.40"	9.21"	9.24"
12"	12"	11.19"	10.96"	10.96"
15"	15"	13.70"	13.42"	N/A
18"	18"	16.76"	N/A	N/A
21"	21"	19.74"	N/A	N/A
24"	24"	22.21"	N/A	N/A
27"	27"	25.03"	N/A	N/A

The Contractor shall insert and remove the mandrel at all connection points at each manhole.

Revisions	By


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PUBLIC WORKS DEPARTMENT
SANITARY SEWER DETAILS
SYSTEM TESTING REQUIREMENTS

GSS
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OF