

**Existing Sanitary Sewer Calculations**  
**Logan Township - BDC Conversion to FDC**  
**HAMMER #19220**

**Existing Analysis**

**Demand Estimates per N.J.A.C. 7:14A-23.3**

Type of Establishment	Measurement Units	# Units	Gallons Per Day/Unit	Gallons Per Day (GPD)
		(A)	(B)	(A)*(B)
Studio	# Dwelling	0	150	0
1 Bedroom	# Dwelling	0	150	0
2 Bedroom	# Dwelling	0	225	0
3 Bedroom	# Dwelling	0	300	0
Total	#Dwelling	0		0
Office	(SF)	13,014	0.1	1,301
Warehouse	Employee	30	25	750
<b>TOTAL FLOW (gpd) (Q<sub>demand</sub>)</b>				<b>2,051</b>
<b>TOTAL FLOW (cfs) (Q<sub>demand</sub>)</b>				<b>0.003</b>

**Mannings Formula**

$$Q = (1.49/n)(A)(R^{2/3})(S^{1/2})$$

A = area of flowing

$$= 0.5 \pi r^2$$

R = hydraulic radius of pipe

$$= A / P$$

= D / 4 for pipe flowing at one-half or full depth

r = radius of pipe

P = wetted perimeter of pipe

$$= 2\pi r$$

S = slope of pipe

$$\pi = 3.141593$$

- analyze half-full flow condition

Typical Mannings "n" values	
RCP	0.013
<b>PVC</b>	<b>0.01</b>
CM	0.024
VC	0.014
Cast Iron	0.013
DIP	0.011
Brick	0.016

PIPE	Length	n	S	Pipe Dia.		A	P	R	V <sub>pipe</sub>	Q <sub>pipe</sub>	Q <sub>pipe</sub>
	(ft)		(ft./ft.)	(in.)	(ft.)	(SF)	(ft.)	(ft.)	(fps)	(cfs)	(MGD)
8" PVC	100	0.010	0.003	8	0.67	0.17	1.05	0.17	2.47	0.43	0.28
		0.012	0.0006	30	2.50	2.45	3.93	0.63	2.22	5.45	3.53

**Conclusions**

In all cases, Q <sub>pipe</sub> > 2xQ <sub>demand</sub>	TRUE
In all cases, V <sub>pipe</sub> > 2.0 fps	TRUE
<b>Therefore, Design is ADEQUATE</b>	

**Proposed Sanitary Sewer Calculations**  
**Logan Township - BDC Conversion to FDC**  
**HAMMER #19220**

**Proposed Analysis**

**Demand Estimates per N.J.A.C. 7:14A-23.3**

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		(A)	(B)	(A)*(B)
Studio	# Dwelling	0	150	0
1 Bedroom	# Dwelling	0	150	0
2 Bedroom	# Dwelling	0	225	0
3 Bedroom	# Dwelling	0	300	0
Total	#Dwelling	0		0
Office	(SF)	13,014	0.1	1,301
Warehouse	Employee	60	25	1,500
<b>TOTAL FLOW (gpd) (Q<sub>demand</sub>)</b>				<b>2,801</b>
<b>TOTAL FLOW (cfs) (Q<sub>demand</sub>)</b>				<b>0.004</b>

**Mannings Formula**

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