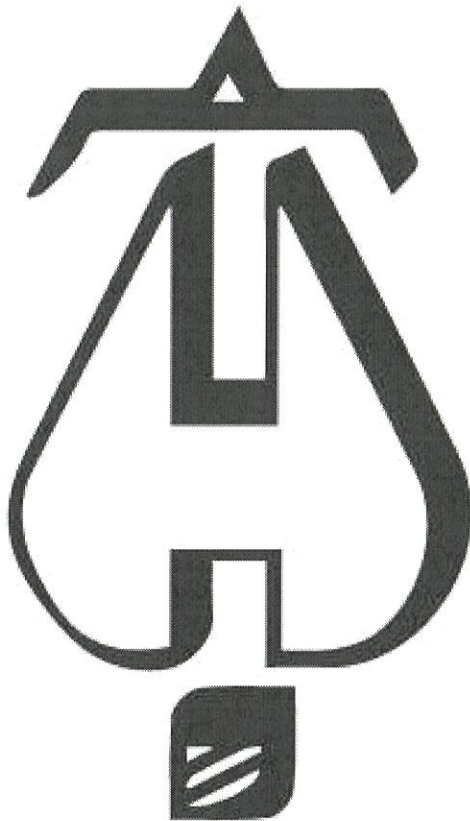




Hydraulic Calculations by HydraCALC

Hydratec Incorporated
64 Haverhill Road
Route 111
Windham, NH 03087
603-434-0502

Job Name : LINCOLN EQUITIES SOUTHEAST
Drawing : HIGH PILED STORAGE
Location : NY312 & PUGSLEY RD, BREWSTER, NY 10509
Remote Area : SYSTEM 5
Contract : 5031092
Data File : Lincoln Equities - BLDG A SYS 5 K25 8.23.23.WXF



Hydraulic Design Information Sheet

Name - LINCOLN EQUITIES SOUTHEAST Date - 8.23.23
Location - NY312 & PUGSLEY RD, BREWSTER, NY 10509
Building - HIGH PILED STORAGE System No. - SYSTEM 5
Contractor - SA COMUNALE Contract No. - 5031092
Calculated By - JUSTIN BEOUGHER Drawing No. - PG.7
Construction: () Combustible (X) Non-Combustible Ceiling Height - 44'-6
Occupancy - ESFR

S (X) NFPA 13 () Lt. Haz. Ord.Haz.Gp. () 1 () 2 () 3 () Ex.Haz.
Y () Figure Curve

S Other

T Specific Ruling

Made By

Date

M	Number of ESFR Sprinklers	- 12	System Type	Sprinkler/Nozzle
	End Head Pressure (PSI)	- 45	(X) Wet	Make TYCO
D	ESFR K-Factor	- 25.2	() Dry	Model ESFR-25
E	Elevation at Highest Outlet	- 45'-4½	() Deluge	Size 1"
S	Hose Allowance - Inside	- 100	() Preaction	K-Factor 25.2
I	Rack Sprinkler Allowance	- NA	() Other	Temp.Rat.165
G	Hose Allowance - Outside	- 150		

N Note

Calculation Flow Required - 2291.53 Press Required - 130.586
Summary C-Factor Used: 120 Overhead 150 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test -		Cap. -
T	Time of Test -	Rated Cap.- 2000	Elev.-
E	Static Press -	@ Press - 149	
R	Residual Press -	Elev. - 2	Well
	Flow -		Proof Flow
S	Elevation -		

U Location - PUMP

P WATER STORAGE TANK

L Source of Information -

Y

C	Commodity GROUP A	CARTONED UNEXP.	Class 1-4	Location
O	Storage Ht. 40 FT		Area	Aisle W.
M	Storage Method:	Solid Piled	%	Palletized % Rack
M	() Single Row	() Conven. Pallet	() Auto. Storage	() Encap.
S	() Double Row	() Slave Pallet	() Solid Shelf	() Non
T	() Mult. Row		() Open Shelf	

R	K	Flue Spacing	Clearance:Storage to Ceiling
A		Longitudinal	Transverse

G Horizontal Barriers Provided:

E

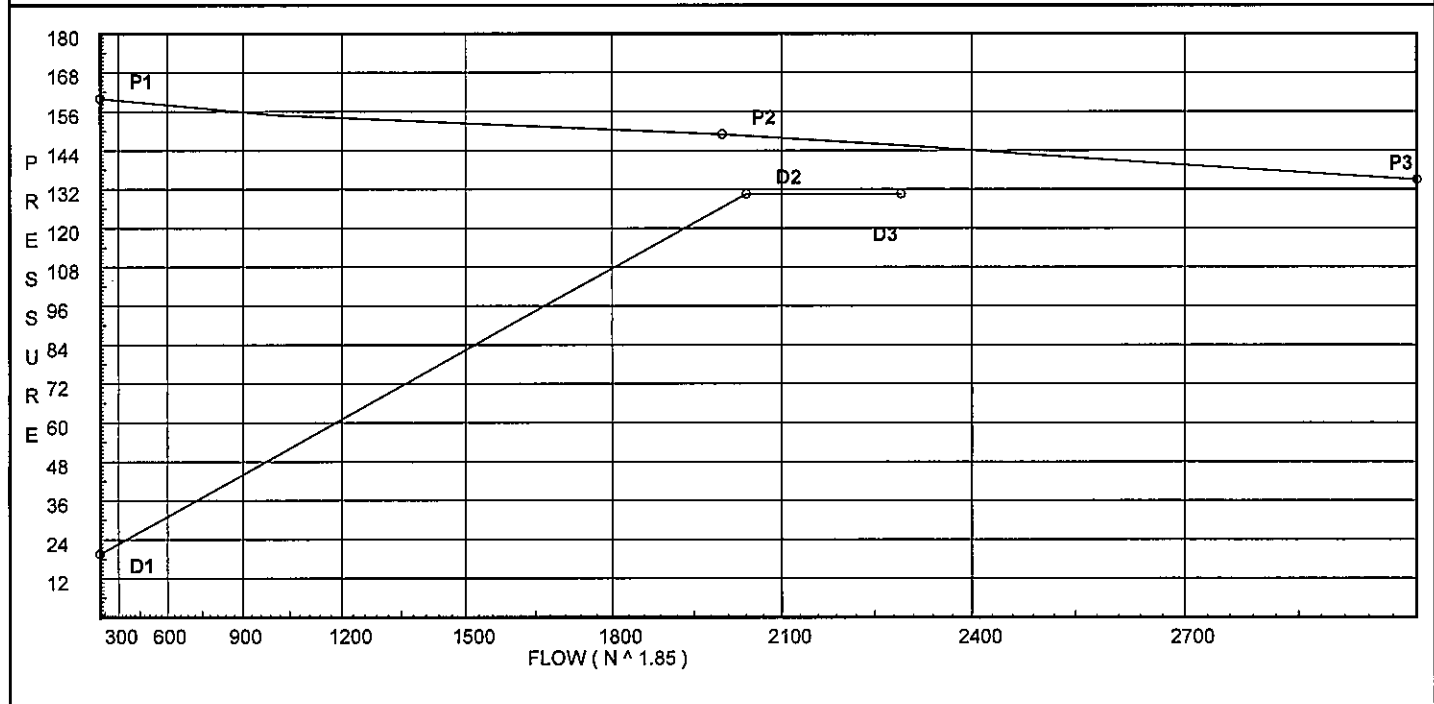
Water Supply Curve C

Hydratec Incorporated
LINCOLN EQUITIES SOUTHEAST

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Date 8.23.23

Pump Data:
P1 - Pump Churn Pressure : 160
P2 - Pump Rated Pressure : 149
P2 - Pump Rated Flow : 2000
P3 - Pump Pressure @ Max Flow : 135
P3 - Pump Max Flow : 3000

Demand:
D1 - Elevation : 19.490
D2 - System Flow : 2041.54
D2 - System Pressure : 130.586
Hose (Demand) : 250
D3 - System Demand : 2291.54
Safety Margin : 14.941



Fittings Used Summary

Hydratec Incorporated
LINCOLN EQUITIES SOUTHEAST

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Fitting Legend		1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
Abbrev.	Name																				
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	10	12	9	10	12	19	21	0	0	0	0	0
F	NFPA 13 45° Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90° Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
V	90° Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	4.5	5.1	0	0	0	0	0
X	90° Tee-Branch Firelock 002	0	0	0	0	0	8.5	10.8	13	0	16	21	25	33	9.3	11	0	0	0	0	0

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

Hydratec Incorporated
LINCOLN EQUITIES SOUTHEASTPage 4
Date 8.23.23**SUPPLY ANALYSIS**

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
PO	See Information on Pump Curve			145.527	2291.54	130.586

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>
R13	47.0		57.93		
1	47.0	25.2	45.82	170.57	
2	47.0	25.2	45.0	169.05	
3	47.0	25.2	45.0	169.05	
4	47.0	25.2	45.71	170.37	
R14	47.0		58.12		
5	47.0	25.2	45.93	170.78	
6	47.0	25.2	45.11	169.25	
7	47.0	25.2	45.1	169.24	
8	47.0	25.2	45.81	170.56	
R15	47.0		58.81		
9	47.0	25.2	46.34	171.54	
10	47.0	25.2	45.48	169.95	
11	47.0	25.2	45.48	169.95	
12	47.0	25.2	46.17	171.23	
R16	47.0		71.13		
R17	47.0		72.52		
R18	47.0		73.7		
R19	47.0		74.7		
R20	47.0		75.55		
R21	47.0		76.2		
R22	47.0		76.87		
R23	47.0		77.47		
R24	47.0		78.02		
R25	47.0		78.51		
R26	47.0		78.95		
R27	47.0		79.33		
R28	47.0		79.67		
R29	47.0		79.98		
R30	47.0		80.25		
R31	47.0		80.47		
R32	47.0		80.66		
R33	47.0		80.81		
R34	47.0		80.94		
R35	47.0		67.51		
R36	47.0		67.56		
R37	47.0		67.75		
R38	47.0		75.55		
R39	47.0		76.04		

Flow Summary - NFPA

Hydratec Incorporated
LINCOLN EQUITIES SOUTHEAST

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Date 8.23.23

NODE ANALYSIS (cont.)

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes
R40	47.0		76.53		
R41	47.0		77.03		
R42	47.0		77.53		
R43	47.0		78.12		
R44	47.0		78.64		
R45	47.0		79.17		
R46	47.0		79.71		
R47	47.0		80.27		
R48	47.0		80.84		
R49	47.0		81.42		
R50	47.0		82.02		
R51	47.0		82.68		
R52	47.0		83.4		
R53	47.0		84.14		
R54	47.0		84.93		
R55	47.0		85.75		
R56	47.0		86.62		
13	47.0		67.13		
14	47.0		67.37		
15	47.0		68.27		
16	47.0		70.19		
17	47.0		71.78		
18	47.0		73.1		
19	47.0		74.21		
20	47.0		75.13		
21	47.0		75.9		
22	47.0		76.59		
23	47.0		77.21		
24	47.0		77.75		
25	47.0		78.23		
26	47.0		78.65		
27	47.0		79.01		
28	47.0		79.3		
29	47.0		79.55		
30	47.0		79.76		
31	47.0		79.9		
32	47.0		79.99		
33	47.0		80.04		
35	47.0		76.08		
36	47.0		76.12		
37	47.0		76.24		
38	47.0		76.49		
39	47.0		76.79		
40	47.0		77.13		
41	47.0		77.52		
42	47.0		77.95		
43	47.0		78.42		
44	47.0		78.92		
45	47.0		79.43		

Flow Summary - NFPA

Hydratec Incorporated
LINCOLN EQUITIES SOUTHEAST

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Date 8.23.23

NODE ANALYSIS (cont.)

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>
46	47.0		79.98		
47	47.0		80.54		
48	47.0		81.13		
49	47.0		81.75		
50	47.0		82.39		
51	47.0		83.1		
52	47.0		83.89		
53	47.0		84.72		
54	47.0		85.59		
55	47.0		86.52		
56	47.0		87.5		
FMJ	47.0		89.12		
TR2	47.0		95.11		
BR2	2.0		117.96	100.0	
FLG	2.0		118.5		
UG1	-5.0		125.98		
UG2	-5.0		126.81		
UG3	-5.0		127.7		
UG4	-5.0		124.68	150.0	
UG5	-5.0		124.68		
UG6	-5.0		131.85		
PUMP	2.0		129.24		
PO	2.0		130.59		

Final Calculations : Hazen-Williams

Hydratec Incorporated
LINCOLN EQUITIES SOUTHEAST

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Date 8.23.23

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
R13 to 1	47 47		-345.94 -345.94	2.5 2.635		0.0 0.0 0.0	42.333 0.0 42.333	120 -0.2862	57.930 0.0 -12.114		Vel = 20.35	
1 to 2	47 47	25.20	170.57 -175.37	2.5 2.635		0.0 0.0 0.0	10.000 0.0 10.000	120 -0.0814	45.816 0.0 -0.814		Vel = 10.32	
2 to 3	47 47	25.20	169.05 -6.32	2.5 2.635		0.0 0.0 0.0	10.000 0.0 10.000	120 -0.0002	45.002 0.0 -0.002		Vel = 0.37	
3 to 4	47 47	25.20	169.05 162.73	2.5 2.635		0.0 0.0 0.0	10.000 0.0 10.000	120 0.0709	45.000 0.0 0.709		Vel = 9.57	
4 to R35	47 47	25.20	170.37 333.1	2.5 2.635		0.0 0.0 0.0	81.708 0.0 81.708	120 0.2668	45.709 0.0 21.801		Vel = 19.60	
R35			0.0 333.10						67.510		K Factor = 40.54	
R14 to 5	47 47		-347.12 -347.12	2.5 2.635		0.0 0.0 0.0	42.333 0.0 42.333	120 -0.2880	58.120 0.0 -12.191		Vel = 20.42	
5 to 6	47 47	25.20	170.78 -176.34	2.5 2.635		0.0 0.0 0.0	10.000 0.0 10.000	120 -0.0823	45.929 0.0 -0.823		Vel = 10.37	
6 to 7	47 47	25.20	169.24 -7.1	2.5 2.635		0.0 0.0 0.0	10.000 0.0 10.000	120 -0.0002	45.106 0.0 -0.002		Vel = 0.42	
7 to 8	47 47	25.20	169.25 162.15	2.5 2.635		0.0 0.0 0.0	10.000 0.0 10.000	120 0.0705	45.104 0.0 0.705		Vel = 9.54	
8 to R36	47 47	25.20	170.56 332.71	2.5 2.635		0.0 0.0 0.0	81.708 0.0 81.708	120 0.2662	45.809 0.0 21.753		Vel = 19.57	
R36			0.0 332.71						67.562		K Factor = 40.48	
R15 to 9	47 47		-351.39 -351.39	2.5 2.635		0.0 0.0 0.0	42.333 0.0 42.333	120 -0.2945	58.806 0.0 -12.469		Vel = 20.67	
9 to 10	47 47	25.20	171.54 -179.85	2.5 2.635		0.0 0.0 0.0	10.000 0.0 10.000	120 -0.0853	46.337 0.0 -0.853		Vel = 10.58	
10 to 11	47 47	25.20	169.96 -9.89	2.5 2.635		0.0 0.0 0.0	10.000 0.0 10.000	120 -0.0004	45.484 0.0 -0.004		Vel = 0.58	
11 to 12	47 47	25.20	169.94 160.05	2.5 2.635		0.0 0.0 0.0	10.000 0.0 10.000	120 0.0688	45.480 0.0 0.688		Vel = 9.42	
12 to R37	47 47	25.20	171.23 331.28	2.5 2.635		0.0 0.0 0.0	81.708 0.0 81.708	120 0.2641	46.168 0.0 21.580		Vel = 19.49	

Final Calculations : Hazen-Williams

Hydratec Incorporated
LINCOLN EQUITIES SOUTHEAST

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
R37			0.0 331.28					67.748		K Factor = 40.25	
R16 to R38	47 47		100.73 100.73	2.5 2.635	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0292	71.126 0.0 4.422		Vel = 5.93	
R38			0.0 100.73					75.548		K Factor = 11.59	
R17 to R39	47 47		89.00 89.0	2.5 2.635	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0232	72.523 0.0 3.517		Vel = 5.24	
R39			0.0 89.00					76.040		K Factor = 10.21	
R18 to R40	47 47		79.14 79.14	2.5 2.635	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0187	73.701 0.0 2.830		Vel = 4.66	
R40			0.0 79.14					76.531		K Factor = 9.05	
R19 to R41	47 47		71.21 71.21	2.5 2.635	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0154	74.699 0.0 2.328		Vel = 4.19	
R41			0.0 71.21					77.027		K Factor = 8.11	
R20 to R42	47 47		65.26 65.26	2.5 2.635	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0131	75.551 0.0 1.981		Vel = 3.84	
R42			0.0 65.26					77.532		K Factor = 7.41	
R21 to R43	47 47		37.89 37.89	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0127	76.202 0.0 1.921		Vel = 3.33	
R43			0.0 37.89					78.123		K Factor = 4.29	
R22 to R44	47 47		36.28 36.28	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0117	76.869 0.0 1.772		Vel = 3.19	
R44			0.0 36.28					78.641		K Factor = 4.09	
R23 to R45	47 47		35.45 35.45	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0112	77.473 0.0 1.697		Vel = 3.11	
R45			0.0 35.45					79.170		K Factor = 3.98	
R24 to R46	47 47		35.41 35.41	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0112	78.018 0.0 1.694		Vel = 3.11	
			0.0								

Final Calculations : Hazen-Williams

Hydratec Incorporated
LINCOLN EQUITIES SOUTHEAST

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Date 8.23.23

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
R46			35.41					79.712		K Factor = 3.97	
R25 to R47	47 47		36.13 36.13	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0116	78.508 0.0 1.759		Vel = 3.17	
R47			0.0 36.13					80.267		K Factor = 4.03	
R26 to R48	47 47		37.57 37.57	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0125	78.945 0.0 1.891		Vel = 3.30	
R48			0.0 37.57					80.836		K Factor = 4.18	
R27 to R49	47 47		39.64 39.64	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0138	79.332 0.0 2.088		Vel = 3.48	
R49			0.0 39.64					81.420		K Factor = 4.39	
R28 to R50	47 47		42.29 42.29	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0155	79.670 0.0 2.352		Vel = 3.71	
R50			0.0 42.29					82.022		K Factor = 4.67	
R29 to R51	47 47		45.59 45.59	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0179	79.976 0.0 2.704		Vel = 4.00	
R51			0.0 45.59					82.680		K Factor = 5.01	
R30 to R52	47 47		49.50 49.5	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0208	80.248 0.0 3.149		Vel = 4.35	
R52			0.0 49.50					83.397		K Factor = 5.42	
R31 to R53	47 47		53.78 53.78	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0242	80.473 0.0 3.671		Vel = 4.72	
R53			0.0 53.78					84.144		K Factor = 5.86	
R32 to R54	47 47		58.35 58.35	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0282	80.657 0.0 4.269		Vel = 5.12	
R54			0.0 58.35					84.926		K Factor = 6.33	
R33 to R55	47 47		63.15 63.15	2 2.157	0.0 0.0 0.0	151.458 0.0 151.458	120 0.0326	80.808 0.0 4.940		Vel = 5.54	
R55			0.0 63.15					85.748		K Factor = 6.82	

Final Calculations : Hazen-Williams

Hydratec Incorporated
LINCOLN EQUITIES SOUTHEAST

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Date 8.23.23

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
R34 to R56	47 47		68.09 68.09	2 2.157		0.0 0.0 151.458	120 0.0375	80.937 0.0 5.679		Vel = 5.98	
R56			0.0 68.09					86.616		K Factor = 7.32	
R13 to 13	47 47		345.94 345.94	2.5 2.635	X T 14.827 16.474 0.0	0.833 31.301 32.134	120 0.2861	57.930 0.0 9.195		Vel = 20.35	
13			0.0 345.94					67.125		K Factor = 42.22	
R14 to 14	47 47		347.12 347.12	2.5 2.635	X T 14.827 16.474 0.0	0.833 31.301 32.134	120 0.2880	58.120 0.0 9.254		Vel = 20.42	
14			0.0 347.12					67.374		K Factor = 42.29	
R15 to 15	47 47		351.39 351.39	2.5 2.635	X T 14.827 16.474 0.0	0.833 31.301 32.134	120 0.2945	58.806 0.0 9.465		Vel = 20.67	
15			0.0 351.39					68.271		K Factor = 42.53	
R16 to 16	47 47		-100.73 -100.73	2.5 2.635	X T 14.827 16.474 0.0	0.833 31.301 32.134	120 -0.0292	71.126 0.0 -0.938		Vel = 5.93	
16			0.0 -100.73					70.188		K Factor = -12.02	
R17 to 17	47 47		-89.00 -89.0	2.5 2.635	X T 14.827 16.474 0.0	0.833 31.301 32.134	120 -0.0232	72.523 0.0 -0.746		Vel = 5.24	
17			0.0 -89.00					71.777		K Factor = -10.51	
R18 to 18	47 47		-79.14 -79.14	2.5 2.635	X T 14.827 16.474 0.0	0.833 31.301 32.134	120 -0.0187	73.701 0.0 -0.601		Vel = 4.66	
18			0.0 -79.14					73.100		K Factor = -9.26	
R19 to 19	47 47		-71.21 -71.21	2.5 2.635	X T 14.827 16.474 0.0	0.833 31.301 32.134	120 -0.0153	74.699 0.0 -0.493		Vel = 4.19	
19			0.0 -71.21					74.206		K Factor = -8.27	
R20 to 20	47 47		-65.26 -65.26	2.5 2.635	X T 14.827 16.474 0.0	0.833 31.301 32.134	120 -0.0131	75.551 0.0 -0.421		Vel = 3.84	
20			0.0 -65.26					75.130		K Factor = -7.53	
R21 to 21	47 47		-37.89 -37.89	2 2.157	X T 10.461 12.307 0.0	0.833 22.768 23.601	120 -0.0127	76.202 0.0 -0.299		Vel = 3.33	

Final Calculations : Hazen-Williams

Hydratec Incorporated
LINCOLN EQUITIES SOUTHEAST

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftns Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
21			0.0 -37.89						75.903		K Factor = -4.35	
R22 to 22	47 47		-36.28 -36.28	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 -0.0117	76.869 0.0 -0.276		Vel = 3.19	
22			0.0 -36.28						76.593		K Factor = -4.15	
R23 to 23	47 47		-35.45 -35.45	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 -0.0112	77.473 0.0 -0.265		Vel = 3.11	
23			0.0 -35.45						77.208		K Factor = -4.03	
R24 to 24	47 47		-35.41 -35.41	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 -0.0112	78.018 0.0 -0.264		Vel = 3.11	
24			0.0 -35.41						77.754		K Factor = -4.02	
R25 to 25	47 47		-36.13 -36.13	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 -0.0116	78.508 0.0 -0.274		Vel = 3.17	
25			0.0 -36.13						78.234		K Factor = -4.08	
R26 to 26	47 47		-37.57 -37.57	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 -0.0125	78.945 0.0 -0.294		Vel = 3.30	
26			0.0 -37.57						78.651		K Factor = -4.24	
R27 to 27	47 47		-39.64 -39.64	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 -0.0138	79.332 0.0 -0.325		Vel = 3.48	
27			0.0 -39.64						79.007		K Factor = -4.46	
R28 to 28	47 47		-42.29 -42.29	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 -0.0156	79.670 0.0 -0.367		Vel = 3.71	
28			0.0 -42.29						79.303		K Factor = -4.75	
R29 to 29	47 47		-45.59 -45.59	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 -0.0178	79.976 0.0 -0.421		Vel = 4.00	
29			0.0 -45.59						79.555		K Factor = -5.11	
R30 to 30	47 47		-49.50 -49.5	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 -0.0208	80.248 0.0 -0.491		Vel = 4.35	
			0.0									

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
30			-49.50						79.757		K Factor = -5.54	
R31 to 31	47 47		-53.78 -53.78	2 2.157	X T	10.461 12.307	0.833 22.768	120 -0.0242	80.473 0.0			
			0.0			0.0	23.601		-0.572		Vel = 4.72	
31			-53.78						79.901		K Factor = -6.02	
R32 to 32	47 47		-58.35 -58.35	2 2.157	X T	10.461 12.307	0.833 22.768	120 -0.0282	80.657 0.0			
			0.0			0.0	23.601		-0.665		Vel = 5.12	
32			-58.35						79.992		K Factor = -6.52	
R33 to 33	47 47		-63.15 -63.15	2 2.157	X T	10.461 12.307	0.833 22.768	120 -0.0326	80.808 0.0			
			0.0			0.0	23.601		-0.770		Vel = 5.54	
33			-63.15						80.038		K Factor = -7.06	
R34 to 34	47 47		-68.09 -68.09	2 2.157	X T	10.461 12.307	0.833 22.768	120 -0.0375	80.937 0.0			
			0.0			0.0	23.601		-0.885		Vel = 5.98	
34			-68.09						80.052		K Factor = -7.61	
R35 to 35	47 47		333.10 333.1	2.5 2.635	X T	14.827 16.474	0.833 31.301	120 0.2668	67.510 0.0			
			0.0			0.0	32.134		8.574		Vel = 19.60	
35			333.10						76.084		K Factor = 38.19	
R36 to 36	47 47		332.71 332.71	2.5 2.635	X T	14.827 16.474	0.833 31.301	120 0.2662	67.562 0.0			
			0.0			0.0	32.134		8.555		Vel = 19.57	
36			332.71						76.117		K Factor = 38.14	
R37 to 37	47 47		331.28 331.28	2.5 2.635	X T	14.827 16.474	0.833 31.301	120 0.2641	67.748 0.0			
			0.0			0.0	32.134		8.488		Vel = 19.49	
37			331.28						76.236		K Factor = 37.94	
R38 to 38	47 47		100.73 100.73	2.5 2.635	X T	14.827 16.474	0.833 31.301	120 0.0292	75.548 0.0			
			0.0			0.0	32.134		0.938		Vel = 5.93	
38			100.73						76.486		K Factor = 11.52	
R39 to 39	47 47		89.00 89.0	2.5 2.635	X T	14.827 16.474	0.833 31.301	120 0.0232	76.040 0.0			
			0.0			0.0	32.134		0.746		Vel = 5.24	
39			89.00						76.786		K Factor = 10.16	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
R40 to 40	47 47		79.14 79.14	2.5 2.635	X T	14.827 16.474 0.0	0.833 31.301 32.134	120 0.0187	76.531 0.0 0.600		Vel = 4.66	
40			0.0 79.14						77.131		K Factor = 9.01	
R41 to 41	47 47		71.21 71.21	2.5 2.635	X T	14.827 16.474 0.0	0.833 31.301 32.134	120 0.0154	77.027 0.0 0.494		Vel = 4.19	
41			0.0 71.21						77.521		K Factor = 8.09	
R42 to 42	47 47		65.26 65.26	2.5 2.635	X T	14.827 16.474 0.0	0.833 31.301 32.134	120 0.0131	77.532 0.0 0.420		Vel = 3.84	
42			0.0 65.26						77.952		K Factor = 7.39	
R43 to 43	47 47		37.89 37.89	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0127	78.123 0.0 0.299		Vel = 3.33	
43			0.0 37.89						78.422		K Factor = 4.28	
R44 to 44	47 47		36.28 36.28	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0117	78.641 0.0 0.276		Vel = 3.19	
44			0.0 36.28						78.917		K Factor = 4.08	
R45 to 45	47 47		35.45 35.45	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0112	79.170 0.0 0.265		Vel = 3.11	
45			0.0 35.45						79.435		K Factor = 3.98	
R46 to 46	47 47		35.41 35.41	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0112	79.712 0.0 0.264		Vel = 3.11	
46			0.0 35.41						79.976		K Factor = 3.96	
R47 to 47	47 47		36.13 36.13	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0116	80.267 0.0 0.274		Vel = 3.17	
47			0.0 36.13						80.541		K Factor = 4.03	
R48 to 48	47 47		37.57 37.57	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0125	80.836 0.0 0.294		Vel = 3.30	
48			0.0 37.57						81.130		K Factor = 4.17	
R49 to 49	47 47		39.64 39.64	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0138	81.420 0.0 0.326		Vel = 3.48	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
49			0.0 39.64						81.746		K Factor = 4.38	
R50 to 50	47 47		42.29 42.29	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0156	82.022 0.0 0.367		Vel = 3.71	
50			0.0 42.29						82.389		K Factor = 4.66	
R51 to 51	47 47		45.59 45.59	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0178	82.680 0.0 0.421		Vel = 4.00	
51			0.0 45.59						83.101		K Factor = 5.00	
R52 to 52	47 47		49.50 49.5	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0208	83.397 0.0 0.491		Vel = 4.35	
52			0.0 49.50						83.888		K Factor = 5.40	
R53 to 53	47 47		53.78 53.78	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0242	84.144 0.0 0.572		Vel = 4.72	
53			0.0 53.78						84.716		K Factor = 5.84	
R54 to 54	47 47		58.35 58.35	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0282	84.926 0.0 0.665		Vel = 5.12	
54			0.0 58.35						85.591		K Factor = 6.31	
R55 to 55	47 47		63.15 63.15	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0326	85.748 0.0 0.769		Vel = 5.54	
55			0.0 63.15						86.517		K Factor = 6.79	
R56 to 56	47 47		68.09 68.09	2 2.157	X T	10.461 12.307 0.0	0.833 22.768 23.601	120 0.0375	86.616 0.0 0.885		Vel = 5.98	
56			0.0 68.09						87.501		K Factor = 7.28	
13 to 14	47 47		345.94 345.94	4 4.26		0.0 0.0 0.0	9.000 0.0 9.000	120 0.0277	67.125 0.0 0.249		Vel = 7.79	
14 to 15	47 47		347.13 693.07	4 4.26		0.0 0.0 0.0	9.000 0.0 9.000	120 0.0997	67.374 0.0 0.897		Vel = 15.60	
15 to 16	47 47		351.38 1044.45	4 4.26		0.0 0.0 0.0	9.000 0.0 9.000	120 0.2130	68.271 0.0 1.917		Vel = 23.51	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
16 to 17	47 47		-100.73 943.72	4 4.26		0.0 0.0	9.000 0.0	120 0.1766	70.188 0.0			
										Vel = 21.24		
17 to 18	47 47		-88.99 854.73	4 4.26		0.0 0.0	9.000 0.0	120 0.1470	71.777 0.0			
										Vel = 19.24		
18 to 19	47 47		-79.15 775.58	4 4.26		0.0 0.0	9.000 0.0	120 0.1229	73.100 0.0			
										Vel = 17.46		
19 to 20	47 47		-71.20 704.38	4 4.26		0.0 0.0	9.000 0.0	120 0.1027	74.206 0.0			
										Vel = 15.86		
20 to 21	47 47		-65.26 639.12	4 4.26		0.0 0.0	9.000 0.0	120 0.0859	75.130 0.0			
										Vel = 14.39		
21 to 22	47 47		-37.90 601.22	4 4.26		0.0 0.0	9.000 0.0	120 0.0767	75.903 0.0			
										Vel = 13.53		
22 to 23	47 47		-36.27 564.95	4 4.26		0.0 0.0	9.000 0.0	120 0.0683	76.593 0.0			
										Vel = 12.72		
23 to 24	47 47		-35.45 529.5	4 4.26		0.0 0.0	9.000 0.0	120 0.0607	77.208 0.0			
										Vel = 11.92		
24 to 25	47 47		-35.41 494.09	4 4.26		0.0 0.0	9.000 0.0	120 0.0533	77.754 0.0			
										Vel = 11.12		
25 to 26	47 47		-36.13 457.96	4 4.26		0.0 0.0	9.000 0.0	120 0.0463	78.234 0.0			
										Vel = 10.31		
26 to 27	47 47		-37.57 420.39	4 4.26		0.0 0.0	9.000 0.0	120 0.0396	78.651 0.0			
										Vel = 9.46		
27 to 28	47 47		-39.64 380.75	4 4.26		0.0 0.0	9.000 0.0	120 0.0329	79.007 0.0			
										Vel = 8.57		
28 to 29	47 47		-42.29 338.46	4 4.26		0.0 0.0	9.500 0.0	120 0.0265	79.303 0.0			
										Vel = 7.62		
29 to 30	47 47		-45.59 292.87	4 4.26		0.0 0.0	10.000 0.0	120 0.0202	79.555 0.0			
										Vel = 6.59		
30 to 31	47 47		-49.50 243.37	4 4.26		0.0 0.0	10.000 0.0	120 0.0144	79.757 0.0			
										Vel = 5.48		
31 to 32	47 47		-53.78 189.59	4 4.26		0.0 0.0	10.000 0.0	120 0.0091	79.901 0.0			
										Vel = 4.27		

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
32 to 33	47 47		-58.35 131.24	4 4.26	0.0 0.0	10.000 0.0	120 0.0046	79.992 0.0			
					0.0	10.000		0.046	Vel =	2.95	
33 to 34	47 47		-63.15 68.09	4 4.26	0.0 0.0	10.000 0.0	120 0.0014	80.038 0.0			
					0.0	10.000		0.014	Vel =	1.53	
34			0.0 68.09					80.052	K Factor =	7.61	
35 to 36	47 47		333.10 333.1	6 6.357	0.0 0.0	9.000 0.0	120 0.0037	76.084 0.0			
					0.0	9.000		0.033	Vel =	3.37	
36 to 37	47 47		332.71 665.81	6 6.357	0.0 0.0	9.000 0.0	120 0.0132	76.117 0.0			
					0.0	9.000		0.119	Vel =	6.73	
37 to 38	47 47		331.27 997.08	6 6.357	0.0 0.0	9.000 0.0	120 0.0278	76.236 0.0			
					0.0	9.000		0.250	Vel =	10.08	
38 to 39	47 47		100.74 1097.82	6 6.357	0.0 0.0	9.000 0.0	120 0.0333	76.486 0.0			
					0.0	9.000		0.300	Vel =	11.10	
39 to 40	47 47		88.99 1186.81	6 6.357	0.0 0.0	9.000 0.0	120 0.0383	76.786 0.0			
					0.0	9.000		0.345	Vel =	12.00	
40 to 41	47 47		79.14 1265.95	6 6.357	0.0 0.0	9.000 0.0	120 0.0433	77.131 0.0			
					0.0	9.000		0.390	Vel =	12.80	
41 to 42	47 47		71.21 1337.16	6 6.357	0.0 0.0	9.000 0.0	120 0.0479	77.521 0.0			
					0.0	9.000		0.431	Vel =	13.52	
42 to 43	47 47		65.26 1402.42	6 6.357	0.0 0.0	9.000 0.0	120 0.0522	77.952 0.0			
					0.0	9.000		0.470	Vel =	14.18	
43 to 44	47 47		37.89 1440.31	6 6.357	0.0 0.0	9.000 0.0	120 0.0550	78.422 0.0			
					0.0	9.000		0.495	Vel =	14.56	
44 to 45	47 47		36.28 1476.59	6 6.357	0.0 0.0	9.000 0.0	120 0.0576	78.917 0.0			
					0.0	9.000		0.518	Vel =	14.93	
45 to 46	47 47		35.45 1512.04	6 6.357	0.0 0.0	9.000 0.0	120 0.0601	79.435 0.0			
					0.0	9.000		0.541	Vel =	15.28	
46 to 47	47 47		35.41 1547.45	6 6.357	0.0 0.0	9.000 0.0	120 0.0628	79.976 0.0			
					0.0	9.000		0.565	Vel =	15.64	
47 to 48	47 47		36.13 1583.58	6 6.357	0.0 0.0	9.000 0.0	120 0.0654	80.541 0.0			
					0.0	9.000		0.589	Vel =	16.01	

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftns Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
48 to 49	47 47		37.57 1621.15	6 6.357		0.0 0.0 0.0	9.000 0.0 9.000	120 0.0684	81.130 0.0 0.616			
										Vel = 16.39		
49 to 50	47 47		39.64 1660.79	6 6.357		0.0 0.0 0.0	9.000 0.0 9.000	120 0.0714	81.746 0.0 0.643			
										Vel = 16.79		
50 to 51	47 47		42.29 1703.08	6 6.357		0.0 0.0 0.0	9.500 0.0 9.500	120 0.0749	82.389 0.0 0.712			
										Vel = 17.22		
51 to 52	47 47		45.59 1748.67	6 6.357		0.0 0.0 0.0	10.000 0.0 10.000	120 0.0787	83.101 0.0 0.787			
										Vel = 17.68		
52 to 53	47 47		49.50 1798.17	6 6.357		0.0 0.0 0.0	10.000 0.0 10.000	120 0.0828	83.888 0.0 0.828			
										Vel = 18.18		
53 to 54	47 47		53.78 1851.95	6 6.357		0.0 0.0 0.0	10.000 0.0 10.000	120 0.0875	84.716 0.0 0.875			
										Vel = 18.72		
54 to 55	47 47		58.35 1910.3	6 6.357		0.0 0.0 0.0	10.000 0.0 10.000	120 0.0926	85.591 0.0 0.926			
										Vel = 19.31		
55 to 56	47 47		63.15 1973.45	6 6.357		0.0 0.0 0.0	10.000 0.0 10.000	120 0.0984	86.517 0.0 0.984			
										Vel = 19.95		
56 to FMJ	47 47		68.09 2041.54	6 6.357	V	12.573 0.0 0.0	2.833 12.573 15.406	120 0.1048	87.501 0.0 1.615			
										Vel = 20.64		
FMJ			0.0 2041.54						89.116		K Factor = 216.26	
FMJ to TR2	47 47		2041.54 2041.54	8 8.249	V	15.269 0.0 0.0	188.333 15.269 203.602	120 0.0295	89.116 0.0 5.997			
										Vel = 12.26		
TR2 to BR2	47 2		0.0 2041.54	8 8.249	T	41.108 0.0 0.0	38.875 41.108 79.983	120 0.0295	95.113 20.490 2.356		** Fixed Loss = 1	
										Vel = 12.26		
BR2 to FLG	2 2	H100	100.00 2141.54	8 7.98	L	19.632 0.0 0.0	2.000 19.632 21.632	150 0.0250	117.959 0.0 0.541			
										Vel = 13.74		
FLG to UG4	2 -5		0.0 2141.54	8 7.98	L T	19.632 52.855 0.0	53.167 72.487 125.654	150 0.0250	118.500 3.032 3.145			
										Vel = 13.74		
UG4			0.0 2141.54						124.677		K Factor = 191.79	
UG1 to UG2	-5 -5		425.90 425.9	8 7.98	3F G	40.774 6.041 0.0	614.875 46.814 661.689	150 0.0013	125.975 0.0 0.835			
										Vel = 2.73		

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Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
UG2 to UG3	-5 -5		0.0 425.9	8 7.98	3F L T 2G	40.774 19.632 52.855 12.081	580.958 125.343 706.301	150 0.0013	126.810 0.0 0.891		Vel = 2.73	
UG3 to UG4	-5 -5		-2291.54 -1865.64	12 11.65	F G	17.441 8.05 0.0	958.917 25.490 984.407	150 -0.0031	127.701 0.0 -3.024		Vel = 5.62	
UG4 to UG5	-5 -5	H150	2291.54 425.9	12 11.65	G	8.05 0.0 0.0	16.167 8.049 24.216	150 0.0002	124.677 0.0 0.005		Vel = 1.28	
UG5 to UG1	-5 -5		0.0 425.9	8 7.98	5F 2G	67.957 12.081 0.0	945.542 80.039 1025.581	150 0.0013	124.682 0.0 1.293		Vel = 2.73	
UG1			0.0 425.90						125.975		K Factor = 37.95	
UG3 to UG6	-5 -5		2291.54 2291.54	12 11.65	6F 2G	104.647 16.1 0.0	801.750 120.747 922.497	150 0.0045	127.701 0.0 4.145		Vel = 6.90	
UG6 to PUMP	-5 2		0.0 2291.54	12 11.65	2L	48.299 0.0 0.0	45.500 48.298 93.798	150 0.0045	131.846 -3.032 0.422		Vel = 6.90	
PUMP to PO	2 2		0.0 2291.54	10 10.42	2V S B	10.89 66.551 22.99	15.000 100.431 115.431	120 0.0117	129.236 0.0 1.350		Vel = 8.62	
PO			0.0 2291.54						130.586		K Factor = 200.53	