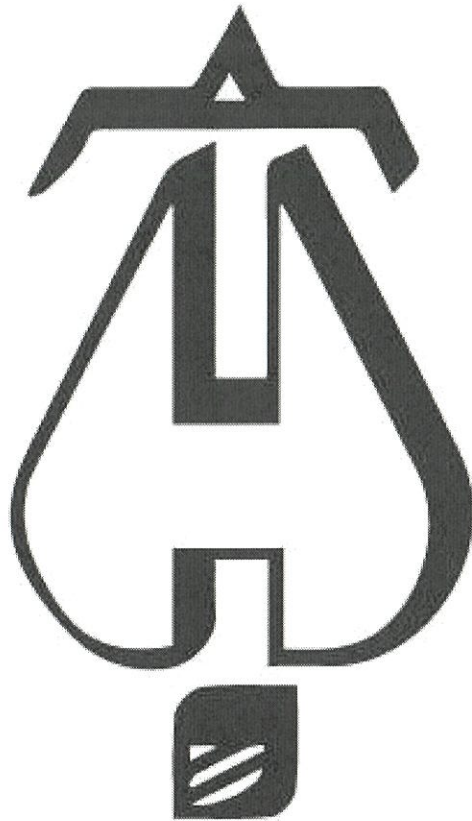




## Hydraulic Calculations by HydraCALC

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

Job Name : BLDG B ALT K22 SYS 3  
Drawing : HIGH PILED STORAGE  
Location : NY312 & PUGSLEY RD, BREWSTER, NY 10509  
Remote Area : SYSTEM 3  
Contract : 5031092  
Data File : Lincoln Equities - BLDG B ALTERNATE SYS 3 K22 8.23.23.WXF



Hydraulic Design Information Sheet

Name - BLDG B ALT K22 SYS 3 Date - 8.23.23  
Location - NY312 & PUGSLEY RD, BREWSTER, NY 10509  
Building - HIGH PILED STORAGE System No. - SYSTEM 3  
Contractor - SA COMUNALE Contract No. - 5031092  
Calculated By - JUSTIN BEOUGHIER Drawing No. - PG.5  
Construction: ( ) Combustible (X) Non-Combustible Ceiling Height - 45'-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

E  
M Number of ESFR Sprinklers - 12 System Type Sprinkler/Nozzle  
End Head Pressure (PSI) - 40 (X) Wet Make RELIABLE  
D ESFR K-Factor - 22.4 ( ) Dry Model P22  
E Elevation at Highest Outlet - 43'-10 1/2 ( ) Deluge Size 1"  
S Hose Allowance - Inside - 100 ( ) Preaction K-Factor 22.4  
I Rack Sprinkler Allowance - NA ( ) Other Temp.Rat.165  
G Hose Allowance - Outside - 150

N  
Note

Calculation Flow Required - 1956.63 Press Required - 124.325  
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  
P 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 R ( ) Double Row ( ) Slave Pallet ( ) Solid Shelf ( ) Non  
T A ( ) Mult. Row ( ) Open Shelf  
O C

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

E Horizontal Barriers Provided:

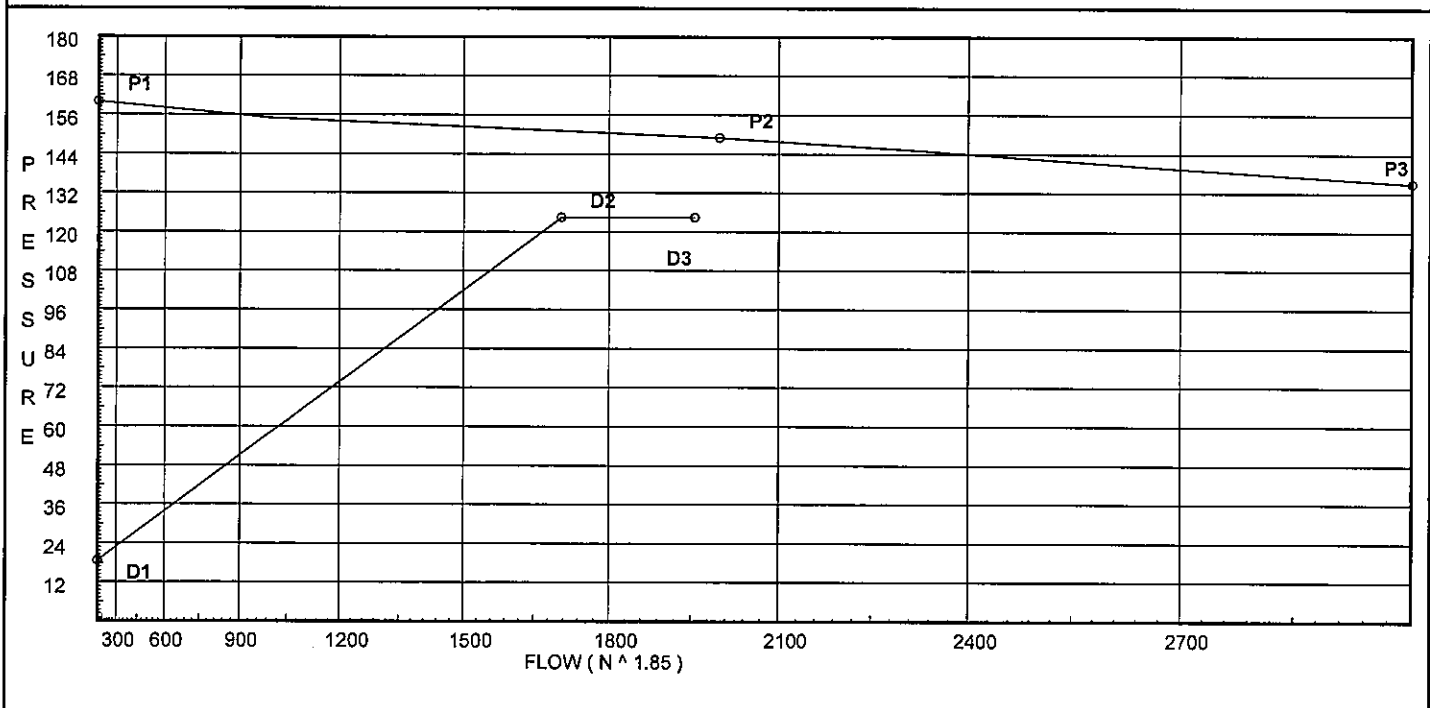
# Water Supply Curve C

Hydratec Incorporated  
BLDG B ALT K22 SYS 3

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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 : 18.623  
D2 - System Flow : 1706.64  
D2 - System Pressure : 124.325  
Hose ( Demand ) : 250  
D3 - System Demand : 1956.64  
Safety Margin : 25.004



## Fittings Used Summary

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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 | 0     | 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  
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## 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 |                          |             | 149.33                    | 1956.64             | 124.325                  |

## 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             | 45.0             |                  | 66.01                   |                          |              |
| 1               | 45.0             |                  | 66.35                   |                          |              |
| 2               | 45.0             |                  | 66.43                   |                          |              |
| 3               | 45.0             |                  | 66.51                   |                          |              |
| 4               | 45.0             |                  | 66.58                   |                          |              |
| R14             | 45.0             |                  | 66.0                    |                          |              |
| 5               | 45.0             |                  | 66.33                   |                          |              |
| 6               | 45.0             |                  | 66.41                   |                          |              |
| 7               | 45.0             |                  | 66.49                   |                          |              |
| 8               | 45.0             |                  | 66.56                   |                          |              |
| R15             | 45.0             |                  | 65.93                   |                          |              |
| 9               | 45.0             |                  | 66.28                   |                          |              |
| 10              | 45.0             |                  | 66.37                   |                          |              |
| 11              | 45.0             |                  | 66.45                   |                          |              |
| 12              | 45.0             |                  | 66.52                   |                          |              |
| R16             | 45.0             |                  | 66.06                   |                          |              |
| R17             | 45.0             |                  | 58.64                   |                          |              |
| H1              | 45.0             | 22.4             | 40.56                   | 142.66                   |              |
| H2              | 45.0             | 22.4             | 40.0                    | 141.67                   |              |
| H3              | 45.0             | 22.4             | 40.0                    | 141.67                   |              |
| H4              | 45.0             | 22.4             | 40.47                   | 142.49                   |              |
| R18             | 45.0             |                  | 58.64                   |                          |              |
| H5              | 45.0             | 22.4             | 40.59                   | 142.71                   |              |
| H6              | 45.0             | 22.4             | 40.03                   | 141.72                   |              |
| H7              | 45.0             | 22.4             | 40.03                   | 141.72                   |              |
| H8              | 45.0             | 22.4             | 40.5                    | 142.55                   |              |
| R19             | 45.0             |                  | 58.76                   |                          |              |
| H9              | 45.0             | 22.4             | 40.69                   | 142.89                   |              |
| H10             | 45.0             | 22.4             | 40.13                   | 141.91                   |              |
| H11             | 45.0             | 22.4             | 40.13                   | 141.91                   |              |
| H12             | 45.0             | 22.4             | 40.6                    | 142.74                   |              |
| R20             | 45.0             |                  | 66.19                   |                          |              |
| R21             | 45.0             |                  | 66.62                   |                          |              |
| R22             | 45.0             |                  | 66.97                   |                          |              |
| R23             | 45.0             |                  | 67.25                   |                          |              |
| R24             | 45.0             |                  | 67.46                   |                          |              |
| R25             | 45.0             |                  | 67.62                   |                          |              |
| R26             | 45.0             |                  | 67.74                   |                          |              |
| R27             | 45.0             |                  | 67.83                   |                          |              |

# Flow Summary - NFPA

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## NODE ANALYSIS (cont.)

| Node Tag | Elevation | Node Type | Pressure<br>at Node | Discharge<br>at Node | Notes |
|----------|-----------|-----------|---------------------|----------------------|-------|
| 13       | 45.0      |           | 65.7                |                      |       |
| 14       | 45.0      |           | 65.68               |                      |       |
| 15       | 45.0      |           | 65.61               |                      |       |
| 16       | 45.0      |           | 65.45               |                      |       |
| 17       | 45.0      |           | 65.2                |                      |       |
| 18       | 45.0      |           | 65.19               |                      |       |
| 19       | 45.0      |           | 65.31               |                      |       |
| 20       | 45.0      |           | 65.85               |                      |       |
| 21       | 45.0      |           | 66.29               |                      |       |
| 22       | 45.0      |           | 66.63               |                      |       |
| 23       | 45.0      |           | 66.88               |                      |       |
| 24       | 45.0      |           | 67.06               |                      |       |
| 25       | 45.0      |           | 67.17               |                      |       |
| 26       | 45.0      |           | 67.22               |                      |       |
| 27       | 45.0      |           | 67.24               |                      |       |
| 28       | 45.0      |           | 68.13               |                      |       |
| 29       | 45.0      |           | 68.13               |                      |       |
| 30       | 45.0      |           | 68.14               |                      |       |
| 31       | 45.0      |           | 68.17               |                      |       |
| 32       | 45.0      |           | 68.2                |                      |       |
| 33       | 45.0      |           | 68.31               |                      |       |
| 34       | 45.0      |           | 68.53               |                      |       |
| 35       | 45.0      |           | 68.9                |                      |       |
| 36       | 45.0      |           | 69.3                |                      |       |
| 37       | 45.0      |           | 69.73               |                      |       |
| 38       | 45.0      |           | 70.2                |                      |       |
| 39       | 45.0      |           | 70.7                |                      |       |
| 40       | 45.0      |           | 71.25               |                      |       |
| 41       | 45.0      |           | 71.85               |                      |       |
| 42       | 45.0      |           | 72.5                |                      |       |
| FMJ      | 45.0      |           | 73.76               |                      |       |
| TR1      | 45.0      |           | 80.67               |                      |       |
| BR1      | 2.0       |           | 101.99              | 100.0                |       |
| FLG      | 2.0       |           | 102.15              |                      |       |
| UG7      | -5.0      |           | 110.5               |                      |       |
| UG8      | -5.0      |           | 112.99              |                      |       |
| UG9      | -5.0      |           | 115.49              |                      |       |
| UG10     | -5.0      |           | 120.73              |                      |       |
| UG11     | -5.0      |           | 121.99              |                      |       |
| NL       | -5.0      |           | 122.17              |                      |       |
| UG12     | -5.0      |           | 122.59              |                      |       |
| UG13     | -5.0      |           | 120.81              |                      |       |
| UG14     | -5.0      |           | 117.7               |                      |       |
| UG15     | -5.0      |           | 111.02              | 150.0                |       |
| UG16     | -5.0      |           | 107.44              |                      |       |
| UG6      | -5.0      |           | 126.04              |                      |       |
| PUMP     | 2.0       |           | 123.32              |                      |       |
| PO       | 2.0       |           | 124.32              |                      |       |

# Final Calculations : Hazen-Williams

Hydratec Incorporated  
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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt       | Nom<br>Act | Fitting<br>or<br>Equiv<br>Len | Pipe<br>Ftngs<br>Total    | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf         | ***** | Notes            | ***** |
|----------------------|----------------|-----------|----------------|------------|-------------------------------|---------------------------|----------------|------------------------|-------|------------------|-------|
| R13<br>to<br>1       | 45<br>45       |           | 87.17<br>87.17 | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 42.333<br>0.0<br>42.333   | 120<br>0.0079  | 66.013<br>0.0<br>0.335 |       | Vel = 3.35       |       |
| 1<br>to<br>2         | 45<br>45       |           | 0.0<br>87.17   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 10.000<br>0.0<br>10.000   | 120<br>0.0080  | 66.348<br>0.0<br>0.080 |       | Vel = 3.35       |       |
| 2<br>to<br>3         | 45<br>45       |           | 0.0<br>87.17   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 10.000<br>0.0<br>10.000   | 120<br>0.0079  | 66.428<br>0.0<br>0.079 |       | Vel = 3.35       |       |
| 3<br>to<br>4         | 45<br>45       |           | 0.0<br>87.17   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 8.708<br>0.0<br>8.708     | 120<br>0.0079  | 66.507<br>0.0<br>0.069 |       | Vel = 3.35       |       |
| 4<br>to<br>R28       | 45<br>45       |           | 0.0<br>87.17   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 157.208<br>0.0<br>157.208 | 120<br>0.0079  | 66.576<br>0.0<br>1.246 |       | Vel = 3.35       |       |
| R28                  |                |           | 0.0<br>87.17   |            |                               |                           |                | 67.822                 |       | K Factor = 10.58 |       |
| R14<br>to<br>5       | 45<br>45       |           | 87.62<br>87.62 | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 42.333<br>0.0<br>42.333   | 120<br>0.0080  | 65.995<br>0.0<br>0.339 |       | Vel = 3.37       |       |
| 5<br>to<br>6         | 45<br>45       |           | 0.0<br>87.62   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 10.000<br>0.0<br>10.000   | 120<br>0.0080  | 66.334<br>0.0<br>0.080 |       | Vel = 3.37       |       |
| 6<br>to<br>7         | 45<br>45       |           | 0.0<br>87.62   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 10.000<br>0.0<br>10.000   | 120<br>0.0080  | 66.414<br>0.0<br>0.080 |       | Vel = 3.37       |       |
| 7<br>to<br>8         | 45<br>45       |           | 0.0<br>87.62   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 8.708<br>0.0<br>8.708     | 120<br>0.0080  | 66.494<br>0.0<br>0.070 |       | Vel = 3.37       |       |
| 8<br>to<br>R29       | 45<br>45       |           | 0.0<br>87.62   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 157.208<br>0.0<br>157.208 | 120<br>0.0080  | 66.564<br>0.0<br>1.257 |       | Vel = 3.37       |       |
| R29                  |                |           | 0.0<br>87.62   |            |                               |                           |                | 67.821                 |       | K Factor = 10.64 |       |
| R15<br>to<br>9       | 45<br>45       |           | 89.23<br>89.23 | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 42.333<br>0.0<br>42.333   | 120<br>0.0083  | 65.933<br>0.0<br>0.350 |       | Vel = 3.43       |       |
| 9<br>to<br>10        | 45<br>45       |           | 0.0<br>89.23   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 10.000<br>0.0<br>10.000   | 120<br>0.0083  | 66.283<br>0.0<br>0.083 |       | Vel = 3.43       |       |
| 10<br>to<br>11       | 45<br>45       |           | 0.0<br>89.23   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 10.000<br>0.0<br>10.000   | 120<br>0.0082  | 66.366<br>0.0<br>0.082 |       | Vel = 3.43       |       |
| 11<br>to<br>12       | 45<br>45       |           | 0.0<br>89.23   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 8.708<br>0.0<br>8.708     | 120<br>0.0083  | 66.448<br>0.0<br>0.072 |       | Vel = 3.43       |       |
| 12<br>to<br>R30      | 45<br>45       |           | 0.0<br>89.23   | 3<br>3.26  | 0.0<br>0.0<br>0.0             | 157.208<br>0.0<br>157.208 | 120<br>0.0083  | 66.520<br>0.0<br>1.301 |       | Vel = 3.43       |       |

# Final Calculations : Hazen-Williams

Hydratec Incorporated  
BLDG B ALT K22 SYS 3

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt      | Nom<br>Act | Fitting<br>or<br>Eqiv | Len               | Pipe<br>Ftngs<br>Total    | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf           | ***** | Notes            | ***** |
|----------------------|----------------|-----------|---------------|------------|-----------------------|-------------------|---------------------------|----------------|--------------------------|-------|------------------|-------|
| R30                  |                |           | 0.0<br>89.23  |            |                       |                   |                           |                | 67.821                   |       | K Factor = 10.83 |       |
| R16<br>to<br>R31     | 45<br>45       |           | 78.99         | 3          |                       | 0.0<br>0.0<br>0.0 | 226.958<br>0.0<br>226.958 | 120<br>0.0066  | 66.060<br>0.0<br>1.498   |       | Vel = 3.04       |       |
| R31                  |                |           | 0.0<br>78.99  |            |                       |                   |                           |                | 67.558                   |       | K Factor = 9.61  |       |
| R17<br>to<br>H1      | 45<br>45       |           | -286.14       | 2.5        |                       | 0.0<br>0.0<br>0.0 | 89.750<br>0.0<br>89.750   | 120<br>-0.2014 | 58.641<br>0.0<br>-18.079 |       | Vel = 16.83      |       |
| H1<br>to<br>H2       | 45<br>45       | 22.40     | 142.66        | 2.5        |                       | 0.0<br>0.0<br>0.0 | 10.000<br>0.0<br>10.000   | 120<br>-0.0562 | 40.562<br>0.0<br>-0.562  |       | Vel = 8.44       |       |
| H2<br>to<br>H3       | 45<br>45       | 22.40     | 141.67        | 2.5        |                       | 0.0<br>0.0<br>0.0 | 10.000<br>0.0<br>10.000   | 120<br>0       | 40.000<br>0.0<br>0.0     |       | Vel = 0.11       |       |
| H3<br>to<br>H4       | 45<br>45       | 22.40     | 141.67        | 2.5        |                       | 0.0<br>0.0<br>0.0 | 8.708<br>0.0<br>8.708     | 120<br>0.0535  | 40.000<br>0.0<br>0.466   |       | Vel = 8.23       |       |
| H4<br>to<br>R32      | 45<br>45       | 22.40     | 142.49        | 2.5        |                       | 0.0<br>0.0<br>0.0 | 108.500<br>0.0<br>108.500 | 120<br>0.1965  | 40.466<br>0.0<br>21.323  |       | Vel = 16.61      |       |
| R32                  |                |           | 0.0<br>282.35 |            |                       |                   |                           |                | 61.789                   |       | K Factor = 35.92 |       |
| R18<br>to<br>H5      | 45<br>45       |           | -285.92       | 2.5        |                       | 0.0<br>0.0<br>0.0 | 89.750<br>0.0<br>89.750   | 120<br>-0.2011 | 58.641<br>0.0<br>-18.052 |       | Vel = 16.82      |       |
| H5<br>to<br>H6       | 45<br>45       | 22.40     | 142.71        | 2.5        |                       | 0.0<br>0.0<br>0.0 | 10.000<br>0.0<br>10.000   | 120<br>-0.0560 | 40.589<br>0.0<br>-0.560  |       | Vel = 8.43       |       |
| H6<br>to<br>H7       | 45<br>45       | 22.40     | 141.72        | 2.5        |                       | 0.0<br>0.0<br>0.0 | 10.000<br>0.0<br>10.000   | 120<br>0       | 40.029<br>0.0<br>0.0     |       | Vel = 0.09       |       |
| H7<br>to<br>H8       | 45<br>45       | 22.40     | 141.73        | 2.5        |                       | 0.0<br>0.0<br>0.0 | 8.708<br>0.0<br>8.708     | 120<br>0.0539  | 40.029<br>0.0<br>0.469   |       | Vel = 8.25       |       |
| H8<br>to<br>R33      | 45<br>45       | 22.40     | 142.55        | 2.5        |                       | 0.0<br>0.0<br>0.0 | 108.500<br>0.0<br>108.500 | 120<br>0.1971  | 40.498<br>0.0<br>21.383  |       | Vel = 16.64      |       |
| R33                  |                |           | 0.0<br>282.79 |            |                       |                   |                           |                | 61.881                   |       | K Factor = 35.95 |       |
| R19<br>to<br>H9      | 45<br>45       |           | -286.03       | 2.5        |                       | 0.0<br>0.0<br>0.0 | 89.750<br>0.0<br>89.750   | 120<br>-0.2013 | 58.758<br>0.0<br>-18.066 |       | Vel = 16.83      |       |
| H9<br>to<br>H10      | 45<br>45       | 22.40     | 142.89        | 2.5        |                       | 0.0<br>0.0<br>0.0 | 10.000<br>0.0<br>10.000   | 120<br>-0.0559 | 40.692<br>0.0<br>-0.559  |       | Vel = 8.42       |       |

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt         | Nom<br>Act   | Fitting<br>or<br>Equiv<br>Len | Pipe<br>Ftngs<br>Total    | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf          | ***** | Notes            | ***** |
|----------------------|----------------|-----------|------------------|--------------|-------------------------------|---------------------------|----------------|-------------------------|-------|------------------|-------|
| H10<br>to<br>H11     | 45<br>45       | 22.40     | 141.91<br>-1.23  | 2.5<br>2.635 | 0.0<br>0.0<br>0.0             | 10.000<br>0.0<br>10.000   | 120<br>0       | 40.133<br>0.0<br>0.0    |       | Vel = 0.07       |       |
| H11<br>to<br>H12     | 45<br>45       | 22.40     | 141.90<br>140.67 | 2.5<br>2.635 | 0.0<br>0.0<br>0.0             | 8.708<br>0.0<br>8.708     | 120<br>0.0542  | 40.133<br>0.0<br>0.472  |       | Vel = 8.28       |       |
| H12<br>to<br>R34     | 45<br>45       | 22.40     | 142.74<br>283.41 | 2.5<br>2.635 | 0.0<br>0.0<br>0.0             | 108.500<br>0.0<br>108.500 | 120<br>0.1979  | 40.605<br>0.0<br>21.471 |       | Vel = 16.67      |       |
| R34                  |                |           | 0.0<br>283.41    |              |                               |                           |                | 62.076                  |       | K Factor = 35.97 |       |
| R20<br>to<br>R35     | 45<br>45       |           | 57.73<br>57.73   | 2.5<br>2.635 | 0.0<br>0.0<br>0.0             | 226.958<br>0.0<br>226.958 | 120<br>0.0104  | 66.191<br>0.0<br>2.367  |       | Vel = 3.40       |       |
| R35                  |                |           | 0.0<br>57.73     |              |                               |                           |                | 68.558                  |       | K Factor = 6.97  |       |
| R21<br>to<br>R36     | 45<br>45       |           | 57.35<br>57.35   | 2.5<br>2.635 | 0.0<br>0.0<br>0.0             | 226.958<br>0.0<br>226.958 | 120<br>0.0103  | 66.622<br>0.0<br>2.338  |       | Vel = 3.37       |       |
| R36                  |                |           | 0.0<br>57.35     |              |                               |                           |                | 68.960                  |       | K Factor = 6.91  |       |
| R22<br>to<br>R37     | 45<br>45       |           | 58.29<br>58.29   | 2.5<br>2.635 | 0.0<br>0.0<br>0.0             | 226.958<br>0.0<br>226.958 | 120<br>0.0106  | 66.972<br>0.0<br>2.409  |       | Vel = 3.43       |       |
| R37                  |                |           | 0.0<br>58.29     |              |                               |                           |                | 69.381                  |       | K Factor = 7.00  |       |
| R23<br>to<br>R38     | 45<br>45       |           | 60.44<br>60.44   | 2.5<br>2.635 | 0.0<br>0.0<br>0.0             | 226.958<br>0.0<br>226.958 | 120<br>0.0114  | 67.250<br>0.0<br>2.576  |       | Vel = 3.56       |       |
| R38                  |                |           | 0.0<br>60.44     |              |                               |                           |                | 69.826                  |       | K Factor = 7.23  |       |
| R24<br>to<br>R39     | 45<br>45       |           | 63.63<br>63.63   | 2.5<br>2.635 | 0.0<br>0.0<br>0.0             | 226.958<br>0.0<br>226.958 | 120<br>0.0125  | 67.464<br>0.0<br>2.832  |       | Vel = 3.74       |       |
| R39                  |                |           | 0.0<br>63.63     |              |                               |                           |                | 70.296                  |       | K Factor = 7.59  |       |
| R25<br>to<br>R40     | 45<br>45       |           | 67.67<br>67.67   | 2.5<br>2.635 | 0.0<br>0.0<br>0.0             | 226.958<br>0.0<br>226.958 | 120<br>0.0140  | 67.623<br>0.0<br>3.175  |       | Vel = 3.98       |       |
| R40                  |                |           | 0.0<br>67.67     |              |                               |                           |                | 70.798                  |       | K Factor = 8.04  |       |
| R26<br>to<br>R41     | 45<br>45       |           | 72.38<br>72.38   | 2.5<br>2.635 | 0.0<br>0.0<br>0.0             | 226.958<br>0.0<br>226.958 | 120<br>0.0158  | 67.739<br>0.0<br>3.595  |       | Vel = 4.26       |       |
| R41                  |                |           | 0.0<br>72.38     |              |                               |                           |                | 71.334                  |       | K Factor = 8.57  |       |

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt           | Nom<br>Act   | Fitting<br>or<br>Equiv | Len              | Pipe<br>Ftngs<br>Total | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf | ***** | Notes             | ***** |
|----------------------|----------------|-----------|--------------------|--------------|------------------------|------------------|------------------------|----------------|----------------|-------|-------------------|-------|
| R27<br>to<br>R42     | 45<br>45       |           | 77.58<br>77.58     | 2.5<br>2.635 |                        | 0.0<br>0.0       | 226.958<br>0.0         | 120<br>0.0180  | 67.826<br>0.0  |       |                   |       |
|                      |                |           | 0.0                |              |                        |                  |                        |                |                |       | Vel = 4.56        |       |
| R42                  |                |           | 77.58              |              |                        |                  |                        |                | 71.914         |       | K Factor = 9.15   |       |
| 13<br>to<br>R13      | 45<br>45       |           | 87.17<br>87.17     | 3<br>3.26    | X<br>T                 | 17.471<br>20.159 | 1.250<br>37.630        | 120<br>0.0079  | 65.705<br>0.0  |       |                   |       |
|                      |                |           | 0.0                |              |                        | 0.0              | 38.880                 |                | 0.308          |       | Vel = 3.35        |       |
| R13                  |                |           | 87.17              |              |                        |                  |                        |                | 66.013         |       | K Factor = 10.73  |       |
| 14<br>to<br>R14      | 45<br>45       |           | 87.62<br>87.62     | 3<br>3.26    | X<br>T                 | 17.471<br>20.159 | 1.250<br>37.630        | 120<br>0.0080  | 65.684<br>0.0  |       |                   |       |
|                      |                |           | 0.0                |              |                        | 0.0              | 38.880                 |                | 0.311          |       | Vel = 3.37        |       |
| R14                  |                |           | 87.62              |              |                        |                  |                        |                | 65.995         |       | K Factor = 10.79  |       |
| 15<br>to<br>R15      | 45<br>45       |           | 89.23<br>89.23     | 3<br>3.26    | X<br>T                 | 17.471<br>20.159 | 1.250<br>37.630        | 120<br>0.0083  | 65.611<br>0.0  |       |                   |       |
|                      |                |           | 0.0                |              |                        | 0.0              | 38.880                 |                | 0.322          |       | Vel = 3.43        |       |
| R15                  |                |           | 89.23              |              |                        |                  |                        |                | 65.933         |       | K Factor = 10.99  |       |
| 16<br>to<br>R16      | 45<br>45       |           | 78.99<br>78.99     | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474 | 1.250<br>31.301        | 120<br>0.0186  | 65.453<br>0.0  |       |                   |       |
|                      |                |           | 0.0                |              |                        | 0.0              | 32.551                 |                | 0.607          |       | Vel = 4.65        |       |
| R16                  |                |           | 78.99              |              |                        |                  |                        |                | 66.060         |       | K Factor = 9.72   |       |
| 17<br>to<br>R17      | 45<br>45       |           | -286.14<br>-286.14 | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474 | 1.250<br>31.301        | 120<br>-0.2014 | 65.198<br>0.0  |       |                   |       |
|                      |                |           | 0.0                |              |                        | 0.0              | 32.551                 |                | -6.557         |       | Vel = 16.83       |       |
| R17                  |                |           | -286.14            |              |                        |                  |                        |                | 58.641         |       | K Factor = -37.37 |       |
| 18<br>to<br>R18      | 45<br>45       |           | -285.92<br>-285.92 | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474 | 1.250<br>31.301        | 120<br>-0.2012 | 65.189<br>0.0  |       |                   |       |
|                      |                |           | 0.0                |              |                        | 0.0              | 32.551                 |                | -6.548         |       | Vel = 16.82       |       |
| R18                  |                |           | -285.92            |              |                        |                  |                        |                | 58.641         |       | K Factor = -37.34 |       |
| 19<br>to<br>R19      | 45<br>45       |           | -286.03<br>-286.03 | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474 | 1.250<br>31.301        | 120<br>-0.2013 | 65.310<br>0.0  |       |                   |       |
|                      |                |           | 0.0                |              |                        | 0.0              | 32.551                 |                | -6.552         |       | Vel = 16.83       |       |
| R19                  |                |           | -286.03            |              |                        |                  |                        |                | 58.758         |       | K Factor = -37.31 |       |
| 20<br>to<br>R20      | 45<br>45       |           | 57.73<br>57.73     | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474 | 1.250<br>31.301        | 120<br>0.0104  | 65.852<br>0.0  |       |                   |       |
|                      |                |           | 0.0                |              |                        | 0.0              | 32.551                 |                | 0.339          |       | Vel = 3.40        |       |
| R20                  |                |           | 57.73              |              |                        |                  |                        |                | 66.191         |       | K Factor = 7.10   |       |
| 21<br>to<br>R21      | 45<br>45       |           | 57.35<br>57.35     | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474 | 1.250<br>31.301        | 120<br>0.0103  | 66.287<br>0.0  |       |                   |       |
|                      |                |           | 0.0                |              |                        | 0.0              | 32.551                 |                | 0.335          |       | Vel = 3.37        |       |

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt         | Nom<br>Act   | Fitting<br>or<br>Eqiv | Len                     | Pipe<br>Ftns<br>Total     | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf          | ***** | Notes             | ***** |
|----------------------|----------------|-----------|------------------|--------------|-----------------------|-------------------------|---------------------------|----------------|-------------------------|-------|-------------------|-------|
| R21                  |                |           | 0.0<br>57.35     |              |                       |                         |                           |                | 66.622                  |       | K Factor = 7.03   |       |
| 22<br>to<br>R22      | 45<br>45       |           | 58.29<br>58.29   | 2.5<br>2.635 | X<br>T                | 14.827<br>16.474<br>0.0 | 1.250<br>31.301<br>32.551 | 120<br>0.0106  | 66.627<br>0.0<br>0.345  |       | Vel = 3.43        |       |
| R22                  |                |           | 0.0<br>58.29     |              |                       |                         |                           |                | 66.972                  |       | K Factor = 7.12   |       |
| 23<br>to<br>R23      | 45<br>45       |           | 60.44<br>60.44   | 2.5<br>2.635 | X<br>T                | 14.827<br>16.474<br>0.0 | 1.250<br>31.301<br>32.551 | 120<br>0.0113  | 66.881<br>0.0<br>0.369  |       | Vel = 3.56        |       |
| R23                  |                |           | 0.0<br>60.44     |              |                       |                         |                           |                | 67.250                  |       | K Factor = 7.37   |       |
| 24<br>to<br>R24      | 45<br>45       |           | 63.63<br>63.63   | 2.5<br>2.635 | X<br>T                | 14.827<br>16.474<br>0.0 | 1.250<br>31.301<br>32.551 | 120<br>0.0125  | 67.058<br>0.0<br>0.406  |       | Vel = 3.74        |       |
| R24                  |                |           | 0.0<br>63.63     |              |                       |                         |                           |                | 67.464                  |       | K Factor = 7.75   |       |
| 25<br>to<br>R25      | 45<br>45       |           | 67.67<br>67.67   | 2.5<br>2.635 | X<br>T                | 14.827<br>16.474<br>0.0 | 1.250<br>31.301<br>32.551 | 120<br>0.0140  | 67.168<br>0.0<br>0.455  |       | Vel = 3.98        |       |
| R25                  |                |           | 0.0<br>67.67     |              |                       |                         |                           |                | 67.623                  |       | K Factor = 8.23   |       |
| 26<br>to<br>R26      | 45<br>45       |           | 72.38<br>72.38   | 2.5<br>2.635 | X<br>T                | 14.827<br>16.474<br>0.0 | 1.250<br>31.301<br>32.551 | 120<br>0.0158  | 67.224<br>0.0<br>0.515  |       | Vel = 4.26        |       |
| R26                  |                |           | 0.0<br>72.38     |              |                       |                         |                           |                | 67.739                  |       | K Factor = 8.79   |       |
| 27<br>to<br>R27      | 45<br>45       |           | 77.58<br>77.58   | 2.5<br>2.635 | X<br>T                | 14.827<br>16.474<br>0.0 | 1.250<br>31.301<br>32.551 | 120<br>0.0180  | 67.240<br>0.0<br>0.586  |       | Vel = 4.56        |       |
| R27                  |                |           | 0.0<br>77.58     |              |                       |                         |                           |                | 67.826                  |       | K Factor = 9.42   |       |
| 28<br>to<br>R28      | 45<br>45       |           | -87.17<br>-87.17 | 3<br>3.26    | X<br>T                | 17.471<br>20.159<br>0.0 | 1.333<br>37.630<br>38.963 | 120<br>-0.0079 | 68.130<br>0.0<br>-0.308 |       | Vel = 3.35        |       |
| R28                  |                |           | 0.0<br>-87.17    |              |                       |                         |                           |                | 67.822                  |       | K Factor = -10.58 |       |
| 29<br>to<br>R29      | 45<br>45       |           | -87.62<br>-87.62 | 3<br>3.26    | X<br>T                | 17.471<br>20.159<br>0.0 | 1.333<br>37.630<br>38.963 | 120<br>-0.0080 | 68.133<br>0.0<br>-0.312 |       | Vel = 3.37        |       |
| R29                  |                |           | 0.0<br>-87.62    |              |                       |                         |                           |                | 67.821                  |       | K Factor = -10.64 |       |
| 30<br>to<br>R30      | 45<br>45       |           | -89.23<br>-89.23 | 3<br>3.26    | X<br>T                | 17.471<br>20.159<br>0.0 | 1.333<br>37.630<br>38.963 | 120<br>-0.0083 | 68.144<br>0.0<br>-0.323 |       | Vel = 3.43        |       |
|                      |                |           | 0.0              |              |                       |                         |                           |                |                         |       |                   |       |

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt           | Nom<br>Act   | Fitting<br>or<br>Equiv | Len                     | Pipe<br>Ftngs<br>Total    | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf          | ***** | Notes             | ***** |
|----------------------|----------------|-----------|--------------------|--------------|------------------------|-------------------------|---------------------------|----------------|-------------------------|-------|-------------------|-------|
| R30                  |                |           | -89.23             |              |                        |                         |                           |                | 67.821                  |       | K Factor = -10.83 |       |
| 31<br>to<br>R31      | 45<br>45       |           | -78.99<br>-78.99   | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.0186 | 68.166<br>0.0<br>-0.608 |       | Vel = 4.65        |       |
| R31                  |                |           | 0.0<br>-78.99      |              |                        |                         |                           |                | 67.558                  |       | K Factor = -9.61  |       |
| 32<br>to<br>R32      | 45<br>45       |           | -282.35<br>-282.35 | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.1965 | 68.202<br>0.0<br>-6.413 |       | Vel = 16.61       |       |
| R32                  |                |           | 0.0<br>-282.35     |              |                        |                         |                           |                | 61.789                  |       | K Factor = -35.92 |       |
| 33<br>to<br>R33      | 45<br>45       |           | -282.79<br>-282.79 | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.1971 | 68.313<br>0.0<br>-6.432 |       | Vel = 16.64       |       |
| R33                  |                |           | 0.0<br>-282.79     |              |                        |                         |                           |                | 61.881                  |       | K Factor = -35.95 |       |
| 34<br>to<br>R34      | 45<br>45       |           | -283.41<br>-283.41 | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.1979 | 68.533<br>0.0<br>-6.457 |       | Vel = 16.67       |       |
| R34                  |                |           | 0.0<br>-283.41     |              |                        |                         |                           |                | 62.076                  |       | K Factor = -35.97 |       |
| 35<br>to<br>R35      | 45<br>45       |           | -57.73<br>-57.73   | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.0104 | 68.898<br>0.0<br>-0.340 |       | Vel = 3.40        |       |
| R35                  |                |           | 0.0<br>-57.73      |              |                        |                         |                           |                | 68.558                  |       | K Factor = -6.97  |       |
| 36<br>to<br>R36      | 45<br>45       |           | -57.35<br>-57.35   | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.0103 | 69.296<br>0.0<br>-0.336 |       | Vel = 3.37        |       |
| R36                  |                |           | 0.0<br>-57.35      |              |                        |                         |                           |                | 68.960                  |       | K Factor = -6.91  |       |
| 37<br>to<br>R37      | 45<br>45       |           | -58.29<br>-58.29   | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.0106 | 69.728<br>0.0<br>-0.347 |       | Vel = 3.43        |       |
| R37                  |                |           | 0.0<br>-58.29      |              |                        |                         |                           |                | 69.381                  |       | K Factor = -7.00  |       |
| 38<br>to<br>R38      | 45<br>45       |           | -60.44<br>-60.44   | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.0113 | 70.196<br>0.0<br>-0.370 |       | Vel = 3.56        |       |
| R38                  |                |           | 0.0<br>-60.44      |              |                        |                         |                           |                | 69.826                  |       | K Factor = -7.23  |       |
| 39<br>to<br>R39      | 45<br>45       |           | -63.63<br>-63.63   | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.0125 | 70.704<br>0.0<br>-0.408 |       | Vel = 3.74        |       |
| R39                  |                |           | 0.0<br>-63.63      |              |                        |                         |                           |                | 70.296                  |       | K Factor = -7.59  |       |

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt          | Nom<br>Act   | Fitting<br>or<br>Equiv | Len                     | Pipe<br>Ftngs<br>Total    | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf          | ***** | Notes            | ***** |
|----------------------|----------------|-----------|-------------------|--------------|------------------------|-------------------------|---------------------------|----------------|-------------------------|-------|------------------|-------|
| 40<br>to<br>R40      | 45<br>45       |           | -67.67<br>-67.67  | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.0140 | 71.254<br>0.0<br>-0.456 |       | Vel = 3.98       |       |
| R40                  |                |           | 0.0<br>-67.67     |              |                        |                         |                           |                | 70.798                  |       | K Factor = -8.04 |       |
| 41<br>to<br>R41      | 45<br>45       |           | -72.38<br>-72.38  | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.0158 | 71.851<br>0.0<br>-0.517 |       | Vel = 4.26       |       |
| R41                  |                |           | 0.0<br>-72.38     |              |                        |                         |                           |                | 71.334                  |       | K Factor = -8.57 |       |
| 42<br>to<br>R42      | 45<br>45       |           | -77.58<br>-77.58  | 2.5<br>2.635 | X<br>T                 | 14.827<br>16.474<br>0.0 | 1.333<br>31.301<br>32.634 | 120<br>-0.0180 | 72.501<br>0.0<br>-0.587 |       | Vel = 4.56       |       |
| R42                  |                |           | 0.0<br>-77.58     |              |                        |                         |                           |                | 71.914                  |       | K Factor = -9.15 |       |
| 13<br>to<br>14       | 45<br>45       |           | -87.17<br>-87.17  | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>-0.0022 | 65.705<br>0.0<br>-0.021 |       | Vel = 1.96       |       |
| 14<br>to<br>15       | 45<br>45       |           | -87.62<br>-174.79 | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>-0.0078 | 65.684<br>0.0<br>-0.073 |       | Vel = 3.93       |       |
| 15<br>to<br>16       | 45<br>45       |           | -89.23<br>-264.02 | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>-0.0168 | 65.611<br>0.0<br>-0.158 |       | Vel = 5.94       |       |
| 16<br>to<br>17       | 45<br>45       |           | -78.99<br>-343.01 | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>-0.0271 | 65.453<br>0.0<br>-0.255 |       | Vel = 7.72       |       |
| 17<br>to<br>18       | 45<br>45       |           | 286.14<br>-56.87  | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>-0.0010 | 65.198<br>0.0<br>-0.009 |       | Vel = 1.28       |       |
| 18<br>to<br>19       | 45<br>45       |           | 285.92<br>229.05  | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>0.0128  | 65.189<br>0.0<br>0.121  |       | Vel = 5.16       |       |
| 19<br>to<br>20       | 45<br>45       |           | 286.03<br>515.08  | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>0.0576  | 65.310<br>0.0<br>0.542  |       | Vel = 11.59      |       |
| 20<br>to<br>21       | 45<br>45       |           | -57.74<br>457.34  | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>0.0462  | 65.852<br>0.0<br>0.435  |       | Vel = 10.29      |       |
| 21<br>to<br>22       | 45<br>45       |           | -57.34<br>400.0   | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>0.0361  | 66.287<br>0.0<br>0.340  |       | Vel = 9.00       |       |
| 22<br>to<br>23       | 45<br>45       |           | -58.30<br>341.7   | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>0.0270  | 66.627<br>0.0<br>0.254  |       | Vel = 7.69       |       |
| 23<br>to<br>24       | 45<br>45       |           | -60.44<br>281.26  | 4<br>4.26    |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417     | 120<br>0.0188  | 66.881<br>0.0<br>0.177  |       | Vel = 6.33       |       |

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt          | Nom<br>Act | Fitting<br>or<br>Equiv<br>Len | Pipe<br>Ftngs<br>Total | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf | *****      | Notes | ***** |
|----------------------|----------------|-----------|-------------------|------------|-------------------------------|------------------------|----------------|----------------|------------|-------|-------|
| 24<br>to<br>25       | 45<br>45       |           | -63.62<br>217.64  | 4<br>4.26  | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0117  | 67.058<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.110          | Vel =      | 4.90  |       |
| 25<br>to<br>26       | 45<br>45       |           | -67.68<br>149.96  | 4<br>4.26  | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0059  | 67.168<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.056          | Vel =      | 3.38  |       |
| 26<br>to<br>27       | 45<br>45       |           | -72.38<br>77.58   | 4<br>4.26  | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0017  | 67.224<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.016          | Vel =      | 1.75  |       |
| 27                   |                |           | 0.0<br>77.58      |            |                               |                        |                | 67.240         | K Factor = | 9.46  |       |
| 28<br>to<br>29       | 45<br>45       |           | 87.17<br>87.17    | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0003  | 68.130<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.003          | Vel =      | 0.88  |       |
| 29<br>to<br>30       | 45<br>45       |           | 87.62<br>174.79   | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0012  | 68.133<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.011          | Vel =      | 1.77  |       |
| 30<br>to<br>31       | 45<br>45       |           | 89.23<br>264.02   | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0023  | 68.144<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.022          | Vel =      | 2.67  |       |
| 31<br>to<br>32       | 45<br>45       |           | 78.99<br>343.01   | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0038  | 68.166<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.036          | Vel =      | 3.47  |       |
| 32<br>to<br>33       | 45<br>45       |           | 282.35<br>625.36  | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0118  | 68.202<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.111          | Vel =      | 6.32  |       |
| 33<br>to<br>34       | 45<br>45       |           | 282.79<br>908.15  | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0234  | 68.313<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.220          | Vel =      | 9.18  |       |
| 34<br>to<br>35       | 45<br>45       |           | 283.41<br>1191.56 | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0388  | 68.533<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.365          | Vel =      | 12.04 |       |
| 35<br>to<br>36       | 45<br>45       |           | 57.73<br>1249.29  | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0423  | 68.898<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.398          | Vel =      | 12.63 |       |
| 36<br>to<br>37       | 45<br>45       |           | 57.35<br>1306.64  | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0459  | 69.296<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.432          | Vel =      | 13.21 |       |
| 37<br>to<br>38       | 45<br>45       |           | 58.29<br>1364.93  | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0497  | 69.728<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.468          | Vel =      | 13.80 |       |
| 38<br>to<br>39       | 45<br>45       |           | 60.45<br>1425.38  | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0539  | 70.196<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.508          | Vel =      | 14.41 |       |
| 39<br>to<br>40       | 45<br>45       |           | 63.62<br>1489.0   | 6<br>6.357 | 0.0<br>0.0                    | 9.417<br>0.0           | 120<br>0.0584  | 70.704<br>0.0  |            |       |       |
|                      |                |           |                   |            | 0.0                           | 9.417                  |                | 0.550          | Vel =      | 15.05 |       |

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt            | Nom<br>Act  | Fitting<br>or<br>Equiv | Len                     | Pipe<br>Ftngs<br>Total        | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf            | *****       | Notes             | ***** |
|----------------------|----------------|-----------|---------------------|-------------|------------------------|-------------------------|-------------------------------|----------------|---------------------------|-------------|-------------------|-------|
| 40<br>to<br>41       | 45<br>45       |           | 67.67<br>1556.67    | 6<br>6.357  |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417         | 120<br>0.0634  | 71.254<br>0.0<br>0.597    |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 15.74 |                   |       |
| 41<br>to<br>42       | 45<br>45       |           | 72.39<br>1629.06    | 6<br>6.357  |                        | 0.0<br>0.0<br>0.0       | 9.417<br>0.0<br>9.417         | 120<br>0.0690  | 71.851<br>0.0<br>0.650    |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 16.47 |                   |       |
| 42<br>to<br>FMJ      | 45<br>45       |           | 77.58<br>1706.64    | 6<br>6.357  | V                      | 12.573<br>0.0<br>0.0    | 4.125<br>12.573<br>16.698     | 120<br>0.0752  | 72.501<br>0.0<br>1.256    |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 17.25 |                   |       |
| FMJ                  |                |           | 0.0<br>1706.64      |             |                        |                         |                               |                | 73.757                    |             | K Factor = 198.72 |       |
| FMJ<br>to<br>TR1     | 45<br>45       |           | 1706.64<br>1706.64  | 6<br>6.357  | 2V                     | 25.147<br>0.0<br>0.0    | 66.792<br>25.147<br>91.939    | 120<br>0.0752  | 73.757<br>0.0<br>6.915    |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 17.25 |                   |       |
| TR1<br>to<br>BR1     | 45<br>2        |           | 0.0<br>1706.64      | 8<br>8.249  | T                      | 41.108<br>0.0<br>0.0    | 38.875<br>41.108<br>79.983    | 120<br>0.0212  | 80.672<br>19.623<br>1.692 |             | ** Fixed Loss = 1 |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 10.25 |                   |       |
| BR1<br>to<br>FLG     | 2<br>2         | H100      | 100.00<br>1806.64   | 10<br>9.79  | L                      | 21.592<br>0.0<br>0.0    | 2.000<br>21.592<br>23.592     | 150<br>0.0067  | 101.987<br>0.0<br>0.159   |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 7.70  |                   |       |
| FLG<br>to<br>UG16    | 2<br>-5        |           | 0.0<br>1806.64      | 8<br>7.98   | L<br>T                 | 19.632<br>52.855<br>0.0 | 51.125<br>72.487<br>123.612   | 150<br>0.0183  | 102.146<br>3.032<br>2.258 |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 11.59 |                   |       |
| UG16                 |                |           | 0.0<br>1806.64      |             |                        |                         |                               |                | 107.436                   |             | K Factor = 174.30 |       |
| UG7<br>to<br>UG8     | -5<br>-5       |           | 904.53<br>904.53    | 8<br>7.98   | G                      | 6.041<br>0.0<br>0.0     | 483.333<br>6.040<br>489.373   | 150<br>0.0051  | 110.499<br>0.0<br>2.487   |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 5.80  |                   |       |
| UG8<br>to<br>UG9     | -5<br>-5       |           | 0.0<br>904.53       | 8<br>7.98   | G                      | 6.041<br>0.0<br>0.0     | 486.000<br>6.040<br>492.040   | 150<br>0.0051  | 112.986<br>0.0<br>2.500   |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 5.80  |                   |       |
| UG9<br>to<br>UG10    | -5<br>-5       |           | 0.0<br>904.53       | 8<br>7.98   | 6F<br>2G               | 81.548<br>12.081<br>0.0 | 937.542<br>93.630<br>1031.172 | 150<br>0.0051  | 115.486<br>0.0<br>5.240   |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 5.80  |                   |       |
| UG10<br>to<br>UG11   | -5<br>-5       |           | 0.0<br>904.53       | 8<br>7.98   | G                      | 6.041<br>0.0<br>0.0     | 242.917<br>6.040<br>248.957   | 150<br>0.0051  | 120.726<br>0.0<br>1.265   |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 5.80  |                   |       |
| UG11<br>to<br>NL     | -5<br>-5       |           | 0.0<br>904.53       | 12<br>11.65 | G                      | 8.05<br>0.0<br>0.0      | 213.250<br>8.049<br>221.299   | 150<br>0.0008  | 121.991<br>0.0<br>0.178   |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 2.72  |                   |       |
| NL<br>to<br>UG12     | -5<br>-5       |           | 0.0<br>904.53       | 12<br>11.65 | 2F                     | 34.882<br>0.0<br>0.0    | 489.875<br>34.883<br>524.758  | 150<br>0.0008  | 122.169<br>0.0<br>0.423   |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 2.72  |                   |       |
| UG12<br>to<br>UG13   | -5<br>-5       |           | -1956.63<br>-1052.1 | 8<br>7.98   | F<br>G                 | 13.591<br>6.041<br>0.0  | 245.208<br>19.632<br>264.840  | 150<br>-0.0067 | 122.592<br>0.0<br>-1.780  |             |                   |       |
|                      |                |           |                     |             |                        |                         |                               |                |                           | Vel = 6.75  |                   |       |

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| Node1<br>to<br>Node2 | Elev1<br>Elev2 | K<br>Fact | Qa<br>Qt           | Nom<br>Act  | Fitting<br>or<br>Equiv<br>Len | Pipe<br>Ftngs<br>Total                  | CFact<br>Pf/Ft | Pt<br>Pe<br>Pf             | ***** | Notes             | ***** |
|----------------------|----------------|-----------|--------------------|-------------|-------------------------------|-----------------------------------------|----------------|----------------------------|-------|-------------------|-------|
| UG13<br>to<br>UG14   | -5<br>-5       |           | 0.0<br>-1052.1     | 8<br>7.98   | G<br>G                        | 6.041<br>0.0<br>6.040<br>463.540        | 150<br>-0.0067 | 120.812<br>0.0<br>-3.115   |       | Vel = 6.75        |       |
| UG14<br>to<br>UG15   | -5<br>-5       |           | 0.0<br>-1052.1     | 8<br>7.98   | 2F<br>G                       | 27.183<br>6.041<br>33.222<br>993.222    | 150<br>-0.0067 | 117.697<br>0.0<br>-6.676   |       | Vel = 6.75        |       |
| UG15<br>to<br>UG16   | -5<br>-5       | H150      | 150.00<br>-902.1   | 8<br>7.98   | 4F<br>G                       | 54.365<br>6.041<br>60.405<br>708.988    | 150<br>-0.0051 | 111.021<br>0.0<br>-3.585   |       | Vel = 5.79        |       |
| UG16<br>to<br>UG7    | -5<br>-5       |           | 1806.63<br>904.53  | 8<br>7.98   | G<br>G                        | 6.041<br>0.0<br>6.040<br>602.707        | 150<br>0.0051  | 107.436<br>0.0<br>3.063    |       | Vel = 5.80        |       |
| UG7                  |                |           | 0.0<br>904.53      |             |                               |                                         |                | 110.499                    |       | K Factor = 86.05  |       |
| UG12<br>to<br>UG6    | -5<br>-5       |           | 1956.64<br>1956.64 | 12<br>11.65 | 6F<br>3G<br>T                 | 104.647<br>24.149<br>80.498<br>1026.336 | 150<br>0.0034  | 122.592<br>0.0<br>3.443    |       | Vel = 5.89        |       |
| UG6<br>to<br>PUMP    | -5<br>2        |           | 0.0<br>1956.64     | 12<br>11.65 | 2L<br>G                       | 48.299<br>0.0<br>48.298<br>93.798       | 150<br>0.0034  | 126.035<br>-3.032<br>0.315 |       | Vel = 5.89        |       |
| PUMP<br>to<br>PO     | 2<br>2         |           | 0.0<br>1956.64     | 10<br>10.42 | 2V<br>S<br>B                  | 10.89<br>66.551<br>22.99<br>115.431     | 120<br>0.0087  | 123.318<br>0.0<br>1.007    |       | Vel = 7.36        |       |
| PO                   |                |           | 0.0<br>1956.64     |             |                               |                                         |                | 124.325                    |       | K Factor = 175.48 |       |