Unroe Engineering, Inc

Civil Engineering/Planning/Scientific Evaluations
PO Box 690942, Orlando, Florida 32869
Ph (407) 299-0650 <> Darcy@UnroeEngineering.com

RW Distribution Calculations

August 26, 2022

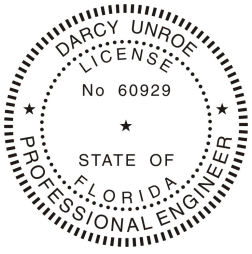
Project: Whispering Heights Subdivision

Narrative

The purpose of these calculations is to analyze the proposed Reclaimed water distribution system capacity under the peak flow conditions. The system will be considered with the a peak demand for lot irrigation of 7.5 gpm and a peak common area flow of 46.75 gpm. See flow calculations at the end of this report. The system will be capable of delivering a minimum pressure of 45 psi at peak demand.

Design Condition - Node Table

Label	Invert Elevation [ft]	Total Demand [gpm]	Pressure [psi]
IN-1	63.00	-426.90	100.00
IN-2	68.00	7.31	93.11
IN-3	84.00	75.56	76.33
IN-4	86.00	19.50	72.27
IN-5	**143.00**	**49.19**	**46.62**
IN-6	129.50	43.77	52.49
IN-7	121.50	34.13	56.05
IN-8	106.00	63.38	63.09
IN-9	90.00	104.81	71.36
IN-10	119.00	17.06	57.15
IN-11	103.50	12.19	64.20



Darcy Unroe
c=US, st=Florida, l=Orlando, o=Unroe Engineering, Inc., cn=Darcy Unroe, email=Darcy@unroeengineering.com
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Design Condition - Pipe Table

Label	Length [ft]	Pipe Diameter [in]	Friction Headloss Coeff.	Flow [gpm]	Velocity [ft/s]	Total Headloss [ft]
IN-1--IN-2	441.00	6	130	426.90	4.96	9.971
IN-2--IN-3	356.00	4	130	279.82	6.87	22.769
IN-3--IN-4	461.00	4	130	132.47	3.25	7.382
IN-4--IN-5	1081.00	4	130	44.23	1.09	2.269
IN-5--IN-6	1592.00	4	130	-4.96	0.12	0.058
IN-7--IN-8	293.00	4	130	-49.48	1.22	0.757
IN-8--IN-9	289.00	4	130	-106.75	2.62	3.102
IN-9--IN-2	1598.00	4	130	-139.77	3.43	28.262
IN-3--IN-9	1067.00	4	130	71.78	1.76	5.493
IN-11--IN-8	1070.00	4	130	6.12	0.15	0.058
IN-10--IN-6	328.00	4	130	27.04	0.66	0.277
IN-10--IN-11	291.00	4	130	-50.44	1.24	0.779
IN-6--IN-7	430.00	4	130	-21.69	0.53	0.241
IN-7--IN-10	621.00	4	130	-6.34	0.16	0.036
IN-11--IN-4	243.00	4	130	-68.75	1.69	1.155

Flow Calculation

Lot Irrigation design flow is based on a peak demand of 7.5 gpm per DU.
Per water restriction rules, odd & even # houses will use irrigation on different days.
We have also used a 0.65 demand factor to account for differing water usage
Therefor, for each Node run the peak lot irrigation demand is given by the following equation:

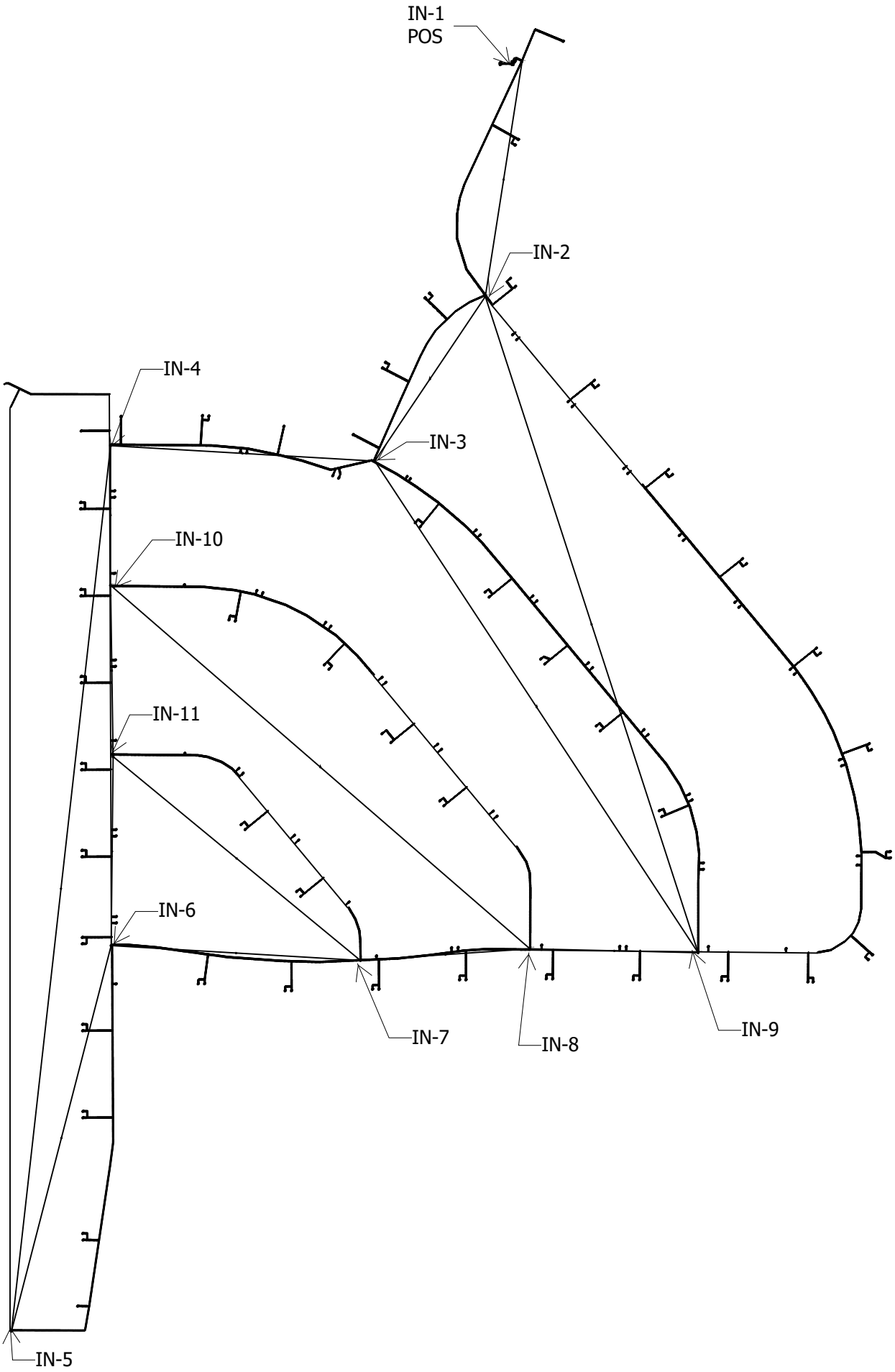
Lot Demand = # lots * 0.5 *0.65

Design Demand Table

Node	# Lots	Lot Demand (gpm)	Common Space Irrigation Demand (gpm)	Total Demand (gpm)
IN-1	0	0	0	0
IN-2	3	7.31	0	7.31
IN-3	31	75.56	0	75.56
IN-4	8	19.50	0	19.50
IN-5	1	2.44	46.75	49.19
IN-6	18	43.88	0	43.88
IN-7	14	34.13	0	34.13
IN-8	26	63.38	0	63.38
IN-9	43	104.81	0	104.81
IN-10	7	17.06	0	17.06
IN-11	5	12.19	0	12.19

Irrigation Pump System - Requirements

- An irrigation pump capable of delivering 427 gpm and 230 ft TDH.
- A pressure tank with 15 gal capacity (125 psi)


IN-1
POS
IN-2
IN-4
IN-3
IN-10
IN-11
IN-6
IN-7
IN-8
IN-9
IN-5