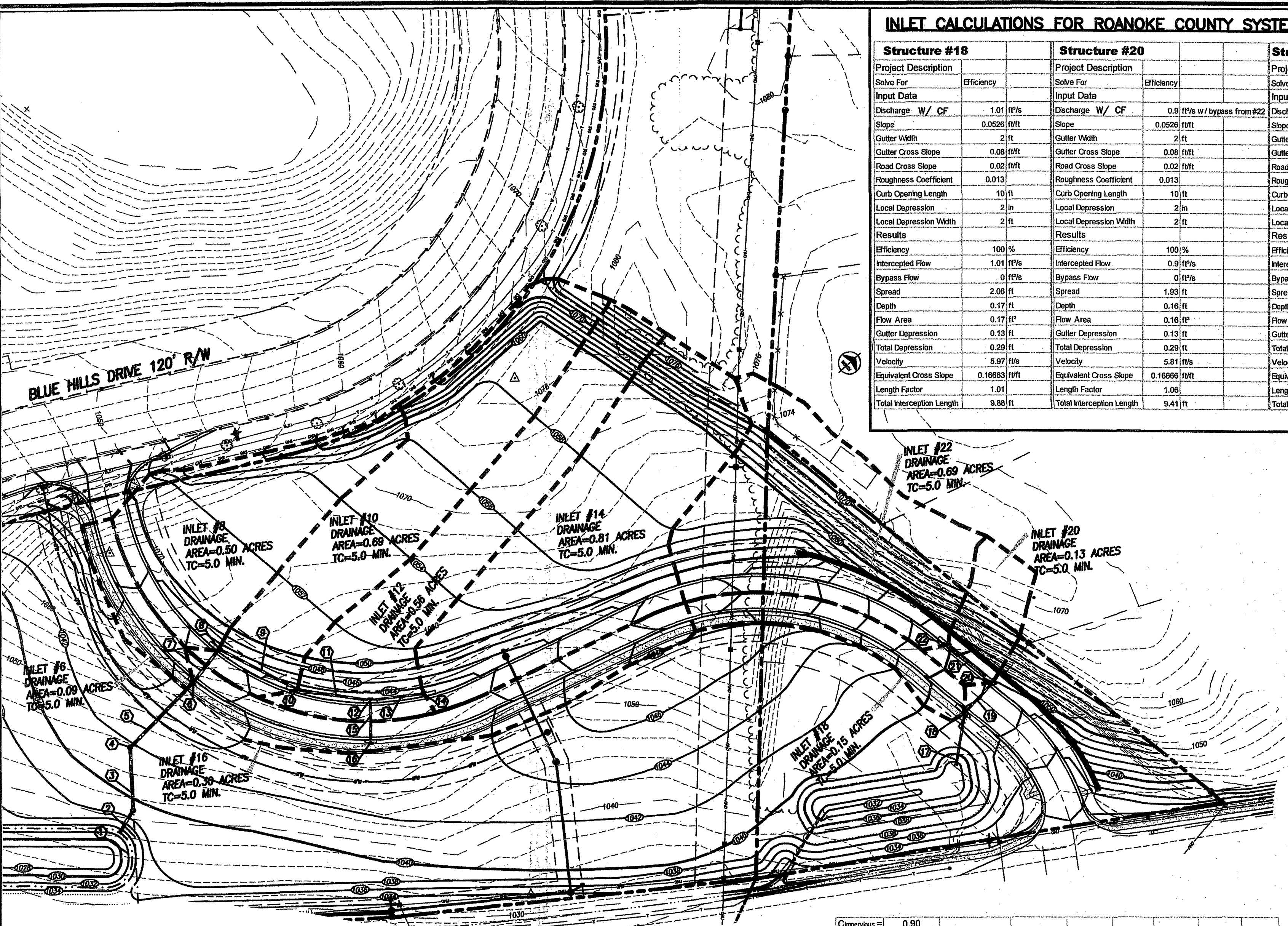




DRAINAGE MAP
SCALE: 1"=60'

INLET CALCULATIONS FOR ROANOKE COUNTY SYSTEM USING Q25

Structure #18				Structure #20				Structure #22			
Project Description		Solve For		Project Description		Solve For		Project Description		Solve For	
Input Data		Input Data		Input Data		Input Data		Input Data		Input Data	
Discharge W/ CF	1.01 ft/s	Discharge W/ CF	0.8 ft/s w/ bypass from #22	Discharge W/ CF	2.99 ft/s	Discharge W/ CF	0.0526 ft/s	Discharge W/ CF	2.99 ft/s	Discharge W/ CF	0.0526 ft/s
Slope	0.0526 ft/ft	Slope	0.0526 ft/ft	Slope	0.0526 ft/ft	Slope	0.0526 ft/ft	Slope	0.0526 ft/ft	Slope	0.0526 ft/ft
Gutter Width	2 ft	Gutter Width	2 ft	Gutter Width	2 ft	Gutter Width	2 ft	Gutter Width	2 ft	Gutter Width	2 ft
Gutter Cross Slope	0.08 ft/ft	Gutter Cross Slope	0.08 ft/ft	Gutter Cross Slope	0.08 ft/ft	Gutter Cross Slope	0.08 ft/ft	Gutter Cross Slope	0.08 ft/ft	Gutter Cross Slope	0.08 ft/ft
Road Cross Slope	0.02 ft/ft	Road Cross Slope	0.02 ft/ft	Road Cross Slope	0.02 ft/ft	Road Cross Slope	0.02 ft/ft	Road Cross Slope	0.02 ft/ft	Road Cross Slope	0.02 ft/ft
Roughness Coefficient	0.013	Roughness Coefficient	0.013	Roughness Coefficient	0.013	Roughness Coefficient	0.013	Roughness Coefficient	0.013	Roughness Coefficient	0.013
Curb Opening Length	10 ft	Curb Opening Length	10 ft	Curb Opening Length	10 ft	Curb Opening Length	10 ft	Curb Opening Length	10 ft	Curb Opening Length	10 ft
Local Depression	2 in	Local Depression	2 in	Local Depression	2 in	Local Depression	2 in	Local Depression	2 in	Local Depression	2 in
Local Depression Width	2 ft	Local Depression Width	2 ft	Local Depression Width	2 ft	Local Depression Width	2 ft	Local Depression Width	2 ft	Local Depression Width	2 ft
Results		Results		Results		Results		Results		Results	
Efficiency	100 %	Efficiency	100 %	Efficiency	80.37 %	Efficiency	80.37 %	Efficiency	80.37 %	Efficiency	80.37 %
Intercepted Flow	1.01 ft/s	Intercepted Flow	0.9 ft/s	Intercepted Flow	2.38 ft/s	Intercepted Flow	2.38 ft/s	Intercepted Flow	2.38 ft/s	Intercepted Flow	2.38 ft/s
Bypass Flow	0 ft/s	Bypass Flow	0 ft/s	Bypass Flow	0.58 ft/s	Bypass Flow	0.58 ft/s	Bypass Flow	0.58 ft/s	Bypass Flow	0.58 ft/s
Spread	2.06 ft	Spread	1.93 ft	Spread	5.49 ft	Spread	5.49 ft	Spread	5.49 ft	Spread	5.49 ft
Depth	0.17 ft	Depth	0.16 ft	Depth	0.24 ft	Depth	0.24 ft	Depth	0.24 ft	Depth	0.24 ft
Flow Area	0.17 ft²	Flow Area	0.16 ft²	Flow Area	0.44 ft²	Flow Area	0.44 ft²	Flow Area	0.44 ft²	Flow Area	0.44 ft²
Gutter Depression	0.13 ft	Gutter Depression	0.13 ft	Gutter Depression	0.13 ft	Gutter Depression	0.13 ft	Gutter Depression	0.13 ft	Gutter Depression	0.13 ft
Total Depression	0.29 ft	Total Depression	0.29 ft	Total Depression	0.29 ft	Total Depression	0.29 ft	Total Depression	0.29 ft	Total Depression	0.29 ft
Velocity	5.97 ft/s	Velocity	5.81 ft/s	Velocity	6.88 ft/s	Velocity	6.88 ft/s	Velocity	6.88 ft/s	Velocity	6.88 ft/s
Equivalent Cross Slope	0.16663 ft/ft	Equivalent Cross Slope	0.16663 ft/ft	Equivalent Cross Slope	0.14504 ft/ft	Equivalent Cross Slope	0.14504 ft/ft	Equivalent Cross Slope	0.14504 ft/ft	Equivalent Cross Slope	0.14504 ft/ft
Length Factor	1.01	Length Factor	1.06	Length Factor	0.6	Length Factor	0.6	Length Factor	0.6	Length Factor	0.6
Total Interception Length	9.88 ft	Total Interception Length	9.41 ft	Total Interception Length	16.8 ft	Total Interception Length	16.8 ft	Total Interception Length	16.8 ft	Total Interception Length	16.8 ft

PIPE CALCULATIONS FOR ROANOKE COUNTY SYSTEM

Pipe #17				Pipe #19				Pipe #21			
Project Description		Solve For		Project Description		Solve For		Project Description		Solve For	
Input Data		Input Data		Input Data		Input Data		Input Data		Input Data	
Friction Method		Friction Method		Friction Method		Friction Method		Friction Method		Friction Method	
Solve For		Solve For		Solve For		Solve For		Solve For		Solve For	
Normal Depth		Normal Depth		Normal Depth		Normal Depth		Normal Depth		Normal Depth	
Input Data		Input Data		Input Data		Input Data		Input Data		Input Data	
Roughness Coefficient		Roughness Coefficient		Roughness Coefficient		Roughness Coefficient		Roughness Coefficient		Roughness Coefficient	
Channel Slope		Channel Slope		Channel Slope		Channel Slope		Channel Slope		Channel Slope	
Diameter		Diameter		Diameter		Diameter		Diameter		Diameter	
Discharge		Discharge		Discharge		Discharge		Discharge		Discharge	
Results		Results		Results		Results		Results		Results	
Normal Depth		Normal Depth		Normal Depth		Normal Depth		Normal Depth		Normal Depth	
Flow Area		Flow Area		Flow Area		Flow Area		Flow Area		Flow Area	
Wetted Perimeter		Wetted Perimeter		Wetted Perimeter		Wetted Perimeter		Wetted Perimeter		Wetted Perimeter	
Top Width		Top Width		Top Width		Top Width		Top Width		Top Width	
Critical Depth		Critical Depth		Critical Depth		Critical Depth		Critical Depth		Critical Depth	
Percent Full		Percent Full		Percent Full		Percent Full		Percent Full		Percent Full	
Critical Slope		Critical Slope		Critical Slope		Critical Slope		Critical Slope		Critical Slope	
Velocity		Velocity		Velocity		Velocity		Velocity		Velocity	
Flow Area		Flow Area		Flow Area		Flow Area		Flow Area		Flow Area	
Specific Energy		Specific Energy		Specific Energy		Specific Energy		Specific Energy		Specific Energy	
Froude Number		Froude Number		Froude Number		Froude Number		Froude Number		Froude Number	
Maximum Discharge		Maximum Discharge		Maximum Discharge		Maximum Discharge		Maximum Discharge		Maximum Discharge	
Discharge Full		Discharge Full		Discharge Full		Discharge Full		Discharge Full		Discharge Full	
Slope Full		Slope Full		Slope Full		Slope Full		Slope Full		Slope Full	

Worksheet for Pond Outfall A-B				Worksheet for Pond Outfall B-BB			
Project Description		Solve For		Project Description		Solve For	
Input Data		Input Data		Input Data		Input Data	
Roughness Coefficient		Roughness Coefficient		Roughness Coefficient		Roughness Coefficient	
Channel Slope		Channel Slope		Channel Slope		Channel Slope	
Diameter		Diameter		Diameter		Diameter	
Discharge Q100		Discharge Q100		Discharge Q100		Discharge Q100	
Results		Results		Results		Results	
Normal Depth		Normal Depth		Normal Depth		Normal Depth	
Flow Area		Flow Area		Flow Area		Flow Area	
Wetted Perimeter		Wetted Perimeter		Wetted Perimeter		Wetted Perimeter	
Top Width		Top Width		Top Width		Top Width	
Critical Depth		Critical Depth		Critical Depth		Critical Depth	
Percent Full		Percent Full		Percent Full		Percent Full	
Critical Slope		Critical Slope		Critical Slope		Critical Slope	
Velocity		Velocity		Velocity		Velocity	
Flow Area		Flow Area		Flow Area		Flow Area	
Specific Energy		Specific Energy		Specific Energy		Specific Energy	
Froude Number		Froude Number		Froude Number		Froude Number	
Maximum Discharge		Maximum Discharge		Maximum Discharge		Maximum Discharge	
Discharge Full		Discharge Full		Discharge Full		Discharge Full	
Slope Full		Slope Full		Slope Full		Slope Full	

COUNTY			OUTLET										JUNCTION LOSS												INLET			
	SURFACE		WATER		Roughness coeff =0.13																				WATER			
	NUMBER		ELEVATION		Do	Qo	Lo	Sro	%	Ht	Vo	Hb	Qi	Vi	QVi	V ² 2g	Ht	ANGLE	K	Hb	Hi	Ht	Ht	Ht	Ht	FINAL	SURFACE	RIM
	NUMBER	ELEVATION	Do	Qo	Lo	%	Ht	Vo	Hb	Qi	Vi	QVi	V ² 2g	Ht	ANGLE	K	Hb	Hi	Ht	Ht	Ht	Ht	Ht	Ht	H	ELEVATION	ELEV.	ELEV.
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18	1036.18	15	4.36	43.51	0.46	0.20	4.81	0.09	3.35	4.37	14.64	0.30	0.10	45	0.47	0.14	0.33	0.43	0.22	0.41	1036.59	1038.04						
20	1036.59	15	3.35	35.00	0.27	0.09	4.37	0.07	2.93	9.17	26.87	1.31	0.46	90	0.70	0.91	1.45	1.88	0.94	1.03	1037.62	1038.04						
22	1037.62	15	2.93	47.99	0.21	0.10	9.17	0.33	2.93	9.17	26.87	1.31	0.46	0	0.00	0.00	0.78	1.02	0.51	0.61	1038.23	1040.57						
CITY	2	1034.60	24	13.50	22.14	0.36	0.08	12.66	0.62	13.50	8.81	118.94	1.21	0.42	35	0.38	0.46	1.50	N/A	0.75	0.83	1035.43	1038.90					
	4	1035.43	24	13.50	52.00	0.36	0.19	8.81	0.30	13.50	8.02	108.27	1.00	0.35	50	0.47	0.47	1.12	N/A	0.58	0.75	1036.18	1041.90					
	6	1036.18	24	13.50	74.32	0.36	0.26	8.02	0.25	13.01	7.92	103.04	0.97	0.34	0	0.00	0.00	0.59	0.77	0.38	0.65	1036.83	1045.33					
	8	1036.83	24	13.01	34.68	0.33	0.11	7.92	0.24	10.78	7.33	79.02	0.83	0.29	75	0.61	0.51	1.04	1.36	0.68	0.79	1037.62	1045.33					
	10	1037.62	18	10.78	72.39	1.05	0.76	7.33	0.21	7.75	6.14	47.59	0.59	0.20	25	0.22	0.13	0.54	0.70	0.35	1.12	1038.74	1043.31					
	12	1038.74	18	7.75	60.12	0.54	0.33	6.14	0.15	3.62	7.43	26.90	0.86	0.30	90	0.70	0.60	1.05	1.36	0.68	1.01	1039.75	1042.79					
	14	1039.75	15	3.62	44.24	0.31	0.14	7.43	0.21	3.62	1.00	3.62	0.02	0.01	0	0.00	0.00	0.22	0.29	0.14	0.28	1040.03	1043.07					
16	1040.03	15	1.63	34.90	0.06	0.02	7.43	0.23	1.63	1.00	1.63	0.02	0.01	90	0.70	0.01	0.24	0.32	0.16	0.18	1040.21	1042.79						