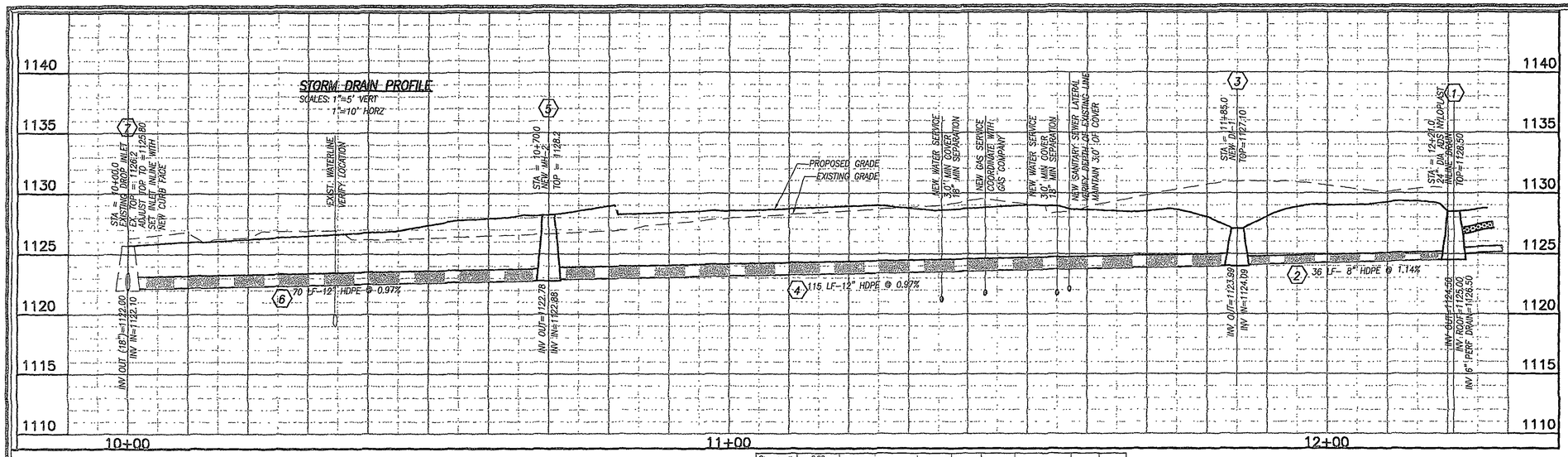
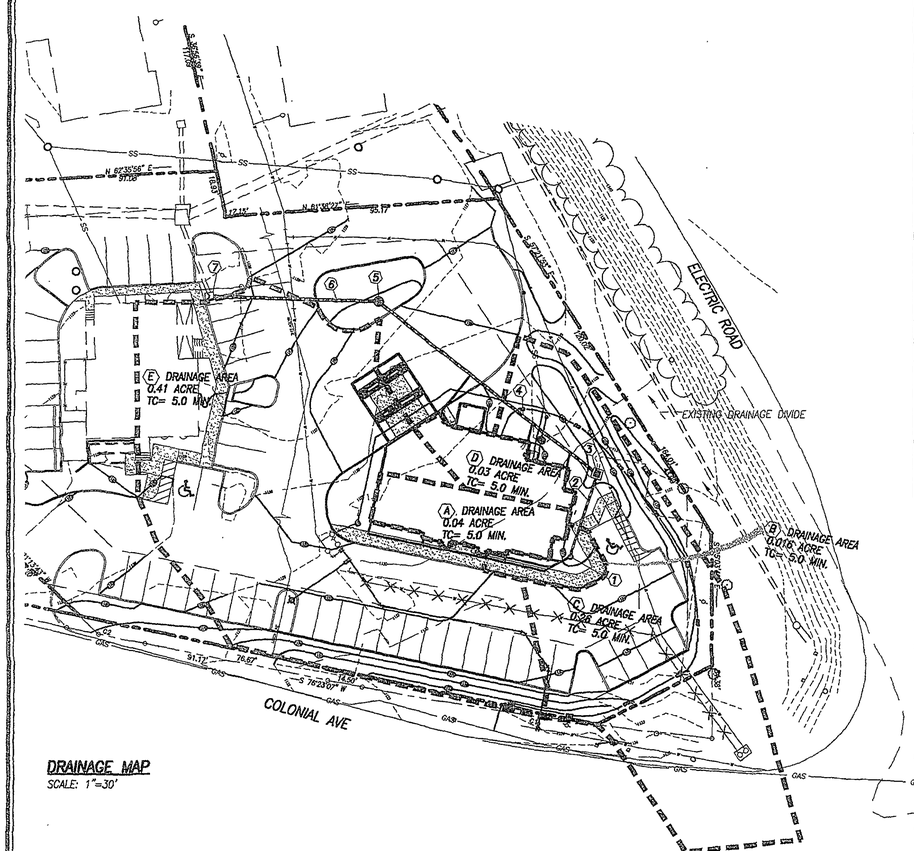


Cwpervious =	0.90							
Cimpervious =	0.95							
tz =	4.39							
to =	6.04	(Based on Tc = 5 min.)						
Inlets =	4.00							
DA	Aimpervious	Apervious	Atotal	Cweighted	Qp	Q10	Qinlets	
A	0.030	0.000	0.030	0.900	0.119		0.108	Roof Collector Pipe
B	0.008	0.008	0.016	0.625	0.044		0.040	ADS Nyloplast Inlet
C	0.090	0.170	0.260	0.540	0.617		0.562	DI-1
D	0.030	0.000	0.030	0.900	0.119		0.108	Roof Collector Pipe
E	0.340	0.070	0.410	0.808	1.451	1.996	1.322	Existing Inlet & Pipe
		0.22 CFS total flow to pipe 2						
		1.23 CFS total flow to pipes 4 & 6						
		3.23 CFS total flow to existing 18" RCP						

Ditch Inlet In Sag - Structure #1		
Project Description		
Solve For	Spread	
Input Data		
Discharge	0.04	ft³/s
Left Side Slope	5	ft/ft (H:V)
Right Side Slope	5	ft/ft (H:V)
Bottom Width	2.5	ft
Grate Width	1.5	ft
Grate Length	1.5	ft
Local Depression	1	in
Local Depression Width	2.5	ft
Grate Type	P-50 mm (P-1-7/8")	
Clogging	50	%
Results		
Spread	2.5	ft
Depth	-0.06	ft
Wetted Perimeter	2.37	ft
Top Width	2.47	ft
Open Grate Area	1.01	ft²
Active Grate Weir Length	4.5	ft
Notes	ADS Nyloplast inline drain - connects 6" roof drain and 6" perforated trench drain - out to DI1	

Ditch Inlet In Sag - Structure #3		
Project Description		
Solve For	Spread	
Input Data		
Discharge	0.56	ft³/s
Left Side Slope	4	ft/ft (H:V)
Right Side Slope	4	ft/ft (H:V)
Bottom Width	5	ft
Grate Width	2.2	ft
Grate Length	2.2	ft
Local Depression	6	in
Local Depression Width	5	ft
Grate Type	P-50 mm (P-1-7/8")	
Clogging	50	%
Results		
Spread	5	ft
Depth	-0.41	ft
Wetted Perimeter	4.16	ft
Top Width	4.8	ft
Open Grate Area	2.18	ft²
Active Grate Weir Length	6.6	ft
Notes	VDOT DI1 - out to MH2	

Curb Inlet In Sag - Existing		
Project Description		
Solve For	Spread	
Input Data		
Discharge	1.32	ft³/s
Gutter Width	0	ft
Gutter Cross Slope	0	ft/ft
Road Cross Slope	0.05	ft/ft
Curb Opening Length	2.5	ft
Opening Height	0.45	ft
Curb Throat Type	Horizontal	
Local Depression	1	in
Local Depression Width	1	ft
Throat Incline Angle	90	degrees
Results		
Spread	5.22	ft
Depth	0.26	ft
Gutter Depression	0	ft
Total Depression	0.08	ft
Notes	Existing Inlet - lowering top	



DRAINAGE MAP
SCALE: 1"=30'

Pipe - 2		
Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Roughness Coefficient	0.012	
Channel Slope	0.014	ft/ft
Diameter	0.67	ft
Discharge	0.22	ft³/s
Results		
Normal Depth	0.17	ft
Flow Area	0.07	ft²
Wetted Perimeter	0.71	ft
Top Width	0.58	ft
Critical Depth	0.22	ft
Percent Full	25.3	%
Critical Slope	0.00547	ft/ft
Velocity	3.14	ft/s
Velocity Head	0.15	ft
Specific Energy	0.32	ft
Froude Number	1.6	
Maximum Discharge	1.69	ft³/s
Discharge Full	1.57	ft³/s
Slope Full	0.00028	ft/ft
Flow Type	SuperCritical	

Pipes - 4 & 6		
Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Roughness Coefficien	0.012	
Channel Slope	0.0097	ft/ft
Diameter	1	ft
Discharge	1.23	ft³/s
Results		
Normal Depth	0.39	ft
Flow Area	0.28	ft²
Wetted Perimeter	1.35	ft
Top Width	0.99	ft
Critical Depth	0.47	ft
Percent Full	39.1	%
Critical Slope	0.0051	ft/ft
Velocity	4.32	ft/s
Velocity Head	0.29	ft
Specific Energy	0.68	ft
Froude Number	1.41	
Maximum Discharge	4.09	ft³/s
Discharge Full	3.8	ft³/s
Slope Full	0.00102	ft/ft
Flow Type	SuperCritical	

Pipe - Existing 18"		
Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Roughness Coefficient	0.013	
Channel Slope	0.0323	ft/ft
Diameter	1.5	ft
Discharge	3.23	ft³/s
Results		
Normal Depth	0.42	ft
Flow Area	0.4	ft²
Wetted Perimeter	1.67	ft
Top Width	1.35	ft
Critical Depth	0.68	ft
Percent Full	28	%
Critical Slope	0.00518	ft/ft
Velocity	7.98	ft/s
Velocity Head	0.99	ft
Specific Energy	1.41	ft
Froude Number	2.57	
Maximum Discharge	20.31	ft³/s
Discharge Full	18.86	ft³/s
Slope Full	0.00095	ft/ft
Flow Type	SuperCritical	

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COMMONWEALTH OF VIRGINIA
JACK DURRELL ELLINWOOD
No. 001107
11/07/06
LANDSCAPE ARCHITECT

REVISION 1 COUNTY & VDOT COMMENTS BY JSH APPROVED JDE 12-19-2006

Drawn JSH	HOMETOWN BANK PHASE II PROFILE AND DRAINAGE CALCULATIONS	SCALE: AS SHO	
Designed JDE / JSH		NOVEMBER 7, 2	
Checked JDE	4227 COLONIAL AVENUE ROANOKE COUNTY, VIRGINIA	PROJECT: 060	
Approved JDE		12	