

APPENDIX G
CALCULATIONS

A-1 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00180	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	158.00	ft
Discharge	5555.78	ft ³ /s

Results

Normal Depth	5.82	ft
Flow Area	1021.81	ft ²
Wetted Perimeter	194.83	ft
Hydraulic Radius	5.24	ft
Top Width	192.94	ft
Critical Depth	3.30	ft
Critical Slope	0.01232	ft/ft
Velocity	5.44	ft/s
Velocity Head	0.46	ft
Specific Energy	6.28	ft
Froude Number	0.42	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.82	ft
Critical Depth	3.30	ft
Channel Slope	0.00180	ft/ft

A-1 (Seg 2) - Q50

GVF Output Data

Critical Slope 0.01232 ft/ft

A-1 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00040	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	258.00	ft
Discharge	5343.10	ft ³ /s

Results

Normal Depth	6.70	ft
Flow Area	1863.69	ft ²
Wetted Perimeter	300.38	ft
Hydraulic Radius	6.20	ft
Top Width	298.21	ft
Critical Depth	2.35	ft
Critical Slope	0.01360	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	6.83	ft
Froude Number	0.20	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.70	ft
Critical Depth	2.35	ft
Channel Slope	0.00040	ft/ft

A-1 (Seg 3) - Q50

GVF Output Data

Critical Slope 0.01360 ft/ft

A-1 (Seg 8) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00360	ft/ft
Diameter	8.00	ft
Discharge	563.16	ft ³ /s

Results

Normal Depth	6.79	ft
Flow Area	45.47	ft ²
Wetted Perimeter	18.74	ft
Hydraulic Radius	2.43	ft
Top Width	5.74	ft
Critical Depth	6.05	ft
Percent Full	84.9	%
Critical Slope	0.00450	ft/ft
Velocity	12.38	ft/s
Velocity Head	2.38	ft
Specific Energy	9.17	ft
Froude Number	0.78	
Maximum Discharge	588.64	ft ³ /s
Discharge Full	547.22	ft ³ /s
Slope Full	0.00381	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	84.86	%
Downstream Velocity	Infinity	ft/s

A-1 (Seg 8) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.79	ft
Critical Depth	6.05	ft
Channel Slope	0.00360	ft/ft
Critical Slope	0.00450	ft/ft

A-1 (Seg 8) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00360	ft/ft
Diameter	9.00	ft
Discharge	695.60	ft ³ /s

Results

Normal Depth	6.86	ft
Flow Area	52.01	ft ²
Wetted Perimeter	19.10	ft
Hydraulic Radius	2.72	ft
Top Width	7.67	ft
Critical Depth	6.53	ft
Percent Full	76.2	%
Critical Slope	0.00404	ft/ft
Velocity	13.37	ft/s
Velocity Head	2.78	ft
Specific Energy	9.64	ft
Froude Number	0.91	
Maximum Discharge	805.86	ft ³ /s
Discharge Full	749.15	ft ³ /s
Slope Full	0.00310	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.20	%
Downstream Velocity	Infinity	ft/s

A-1 (Seg 8) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.86	ft
Critical Depth	6.53	ft
Channel Slope	0.00360	ft/ft
Critical Slope	0.00404	ft/ft

A-1 (Seg 9) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01080	ft/ft
Diameter	6.50	ft
Discharge	532.80	ft ³ /s

Results

Normal Depth	5.20	ft
Flow Area	28.47	ft ²
Wetted Perimeter	14.40	ft
Hydraulic Radius	1.98	ft
Top Width	5.20	ft
Critical Depth	5.94	ft
Percent Full	80.0	%
Critical Slope	0.00900	ft/ft
Velocity	18.71	ft/s
Velocity Head	5.44	ft
Specific Energy	10.64	ft
Froude Number	1.41	
Maximum Discharge	586.06	ft ³ /s
Discharge Full	544.82	ft ³ /s
Slope Full	0.01033	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	80.04	%
Downstream Velocity	Infinity	ft/s

A-1 (Seg 9) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.20	ft
Critical Depth	5.94	ft
Channel Slope	0.01080	ft/ft
Critical Slope	0.00900	ft/ft

A-1 (Seg 9) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01080	ft/ft
Diameter	7.00	ft
Discharge	660.85	ft ³ /s

Results

Normal Depth	5.71	ft
Flow Area	33.60	ft ²
Wetted Perimeter	15.78	ft
Hydraulic Radius	2.13	ft
Top Width	5.43	ft
Critical Depth	6.45	ft
Percent Full	81.6	%
Critical Slope	0.00928	ft/ft
Velocity	19.67	ft/s
Velocity Head	6.01	ft
Specific Energy	11.72	ft
Froude Number	1.39	
Maximum Discharge	714.12	ft ³ /s
Discharge Full	663.86	ft ³ /s
Slope Full	0.01070	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.55	%
Downstream Velocity	Infinity	ft/s

A-1 (Seg 9) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.71	ft
Critical Depth	6.45	ft
Channel Slope	0.01080	ft/ft
Critical Slope	0.00928	ft/ft

A-1 (Seg 10) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01340	ft/ft
Diameter	6.00	ft
Discharge	466.16	ft ³ /s

Results

Normal Depth	4.67	ft
Flow Area	23.63	ft ²
Wetted Perimeter	12.97	ft
Hydraulic Radius	1.82	ft
Top Width	4.98	ft
Critical Depth	5.58	ft
Percent Full	77.9	%
Critical Slope	0.01048	ft/ft
Velocity	19.73	ft/s
Velocity Head	6.05	ft
Specific Energy	10.72	ft
Froude Number	1.60	
Maximum Discharge	527.33	ft ³ /s
Discharge Full	490.22	ft ³ /s
Slope Full	0.01212	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.88	%
Downstream Velocity	Infinity	ft/s

A-1 (Seg 10) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.67	ft
Critical Depth	5.58	ft
Channel Slope	0.01340	ft/ft
Critical Slope	0.01048	ft/ft

A-1 (Seg 10) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01340	ft/ft
Diameter	7.00	ft
Discharge	586.03	ft ³ /s

Results

Normal Depth	4.70	ft
Flow Area	27.50	ft ²
Wetted Perimeter	13.45	ft
Hydraulic Radius	2.04	ft
Top Width	6.57	ft
Critical Depth	6.22	ft
Percent Full	67.2	%
Critical Slope	0.00750	ft/ft
Velocity	21.31	ft/s
Velocity Head	7.06	ft
Specific Energy	11.76	ft
Froude Number	1.84	
Maximum Discharge	795.44	ft ³ /s
Discharge Full	739.46	ft ³ /s
Slope Full	0.00842	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.20	%
Downstream Velocity	Infinity	ft/s

A-1 (Seg 10) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.70	ft
Critical Depth	6.22	ft
Channel Slope	0.01340	ft/ft
Critical Slope	0.00750	ft/ft

A-2 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00120	ft/ft
Bottom Width	12.00	ft
Discharge	617.15	ft ³ /s

Results

Normal Depth	6.54	ft
Flow Area	78.46	ft ²
Wetted Perimeter	25.08	ft
Hydraulic Radius	3.13	ft
Top Width	12.00	ft
Critical Depth	4.35	ft
Critical Slope	0.00362	ft/ft
Velocity	7.87	ft/s
Velocity Head	0.96	ft
Specific Energy	7.50	ft
Froude Number	0.54	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.54	ft
Critical Depth	4.35	ft
Channel Slope	0.00120	ft/ft
Critical Slope	0.00362	ft/ft

A-2 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00100	ft/ft
Bottom Width	12.00	ft
Discharge	609.68	ft ³ /s

Results

Normal Depth	6.94	ft
Flow Area	83.33	ft ²
Wetted Perimeter	25.89	ft
Hydraulic Radius	3.22	ft
Top Width	12.00	ft
Critical Depth	4.31	ft
Critical Slope	0.00361	ft/ft
Velocity	7.32	ft/s
Velocity Head	0.83	ft
Specific Energy	7.78	ft
Froude Number	0.49	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.94	ft
Critical Depth	4.31	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00361	ft/ft

A-2 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00210	ft/ft
Bottom Width	12.00	ft
Discharge	808.50	ft ³ /s

Results

Normal Depth	6.49	ft
Flow Area	77.89	ft ²
Wetted Perimeter	24.98	ft
Hydraulic Radius	3.12	ft
Top Width	12.00	ft
Critical Depth	5.21	ft
Critical Slope	0.00379	ft/ft
Velocity	10.38	ft/s
Velocity Head	1.67	ft
Specific Energy	8.17	ft
Froude Number	0.72	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.49	ft
Critical Depth	5.21	ft
Channel Slope	0.00210	ft/ft
Critical Slope	0.00379	ft/ft

A-2 (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00100	ft/ft
Bottom Width	12.00	ft
Discharge	664.72	ft ³ /s

Results

Normal Depth	7.42	ft
Flow Area	89.04	ft ²
Wetted Perimeter	26.84	ft
Hydraulic Radius	3.32	ft
Top Width	12.00	ft
Critical Depth	4.57	ft
Critical Slope	0.00366	ft/ft
Velocity	7.47	ft/s
Velocity Head	0.87	ft
Specific Energy	8.29	ft
Froude Number	0.48	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	7.42	ft
Critical Depth	4.57	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00366	ft/ft

A-2 (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00260	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	38.00	ft
Discharge	1226.52	ft ³ /s

Results

Normal Depth	2.79	ft
Flow Area	129.21	ft ²
Wetted Perimeter	55.63	ft
Hydraulic Radius	2.32	ft
Top Width	54.72	ft
Critical Depth	2.94	ft
Critical Slope	0.00216	ft/ft
Velocity	9.49	ft/s
Velocity Head	1.40	ft
Specific Energy	4.19	ft
Froude Number	1.09	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.79	ft
Critical Depth	2.94	ft
Channel Slope	0.00260	ft/ft

A-2 (Seg 5) - Q50

GVF Output Data

Critical Slope 0.00216 ft/ft

A-2 (Seg 6) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00100	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	38.00	ft
Discharge	1226.52	ft ³ /s

Results

Normal Depth	3.65	ft
Flow Area	178.66	ft ²
Wetted Perimeter	61.08	ft
Hydraulic Radius	2.92	ft
Top Width	59.90	ft
Critical Depth	2.94	ft
Critical Slope	0.00216	ft/ft
Velocity	6.87	ft/s
Velocity Head	0.73	ft
Specific Energy	4.38	ft
Froude Number	0.70	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.65	ft
Critical Depth	2.94	ft
Channel Slope	0.00100	ft/ft

A-2 (Seg 6) - Q50

GVF Output Data

Critical Slope 0.00216 ft/ft

A-3 - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00420	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	18.00	ft
Discharge	1328.40	ft ³ /s

Results

Normal Depth	3.60	ft
Flow Area	103.66	ft ²
Wetted Perimeter	40.77	ft
Hydraulic Radius	2.54	ft
Top Width	39.60	ft
Critical Depth	4.33	ft
Critical Slope	0.00205	ft/ft
Velocity	12.81	ft/s
Velocity Head	2.55	ft
Specific Energy	6.15	ft
Froude Number	1.40	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.60	ft
Critical Depth	4.33	ft
Channel Slope	0.00420	ft/ft

A-3 - Q50

GVF Output Data

Critical Slope 0.00205 ft/ft

A-4 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00190	ft/ft
Diameter	9.50	ft
Discharge	606.05	ft ³ /s

Results

Normal Depth	7.50	ft
Flow Area	59.99	ft ²
Wetted Perimeter	20.78	ft
Hydraulic Radius	2.89	ft
Top Width	7.75	ft
Critical Depth	5.99	ft
Percent Full	78.9	%
Critical Slope	0.00336	ft/ft
Velocity	10.10	ft/s
Velocity Head	1.59	ft
Specific Energy	9.08	ft
Froude Number	0.64	
Maximum Discharge	676.24	ft ³ /s
Discharge Full	628.65	ft ³ /s
Slope Full	0.00177	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.91	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	7.50	ft
Critical Depth	5.99	ft
Channel Slope	0.00190	ft/ft
Critical Slope	0.00336	ft/ft

A-4 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00190	ft/ft
Diameter	10.00	ft
Discharge	769.00	ft ³ /s

Results

Normal Depth	9.02	ft
Flow Area	74.59	ft ²
Wetted Perimeter	25.06	ft
Hydraulic Radius	2.98	ft
Top Width	5.94	ft
Critical Depth	6.68	ft
Percent Full	90.2	%
Critical Slope	0.00350	ft/ft
Velocity	10.31	ft/s
Velocity Head	1.65	ft
Specific Energy	10.67	ft
Froude Number	0.51	
Maximum Discharge	775.36	ft ³ /s
Discharge Full	720.80	ft ³ /s
Slope Full	0.00216	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	90.23	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	9.02	ft
Critical Depth	6.68	ft
Channel Slope	0.00190	ft/ft
Critical Slope	0.00350	ft/ft

A-4 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	5.50	ft
Discharge	182.32	ft ³ /s

Results

Normal Depth	4.47	ft
Flow Area	20.66	ft ²
Wetted Perimeter	12.34	ft
Hydraulic Radius	1.67	ft
Top Width	4.30	ft
Critical Depth	3.78	ft
Percent Full	81.2	%
Critical Slope	0.00442	ft/ft
Velocity	8.82	ft/s
Velocity Head	1.21	ft
Specific Energy	5.68	ft
Froude Number	0.71	
Maximum Discharge	197.84	ft ³ /s
Discharge Full	183.92	ft ³ /s
Slope Full	0.00295	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.19	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.47	ft
Critical Depth	3.78	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00442	ft/ft

A-4 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	6.00	ft
Discharge	235.34	ft ³ /s

Results

Normal Depth	5.00	ft
Flow Area	25.18	ft ²
Wetted Perimeter	13.81	ft
Hydraulic Radius	1.82	ft
Top Width	4.47	ft
Critical Depth	4.20	ft
Percent Full	83.3	%
Critical Slope	0.00440	ft/ft
Velocity	9.35	ft/s
Velocity Head	1.36	ft
Specific Energy	6.36	ft
Froude Number	0.69	
Maximum Discharge	249.51	ft ³ /s
Discharge Full	231.95	ft ³ /s
Slope Full	0.00309	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	83.35	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.00	ft
Critical Depth	4.20	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00440	ft/ft

A-4 (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00240	ft/ft
Diameter	5.50	ft
Discharge	171.11	ft ³ /s

Results

Normal Depth	4.74	ft
Flow Area	21.76	ft ²
Wetted Perimeter	13.08	ft
Hydraulic Radius	1.66	ft
Top Width	3.80	ft
Critical Depth	3.66	ft
Percent Full	86.1	%
Critical Slope	0.00425	ft/ft
Velocity	7.86	ft/s
Velocity Head	0.96	ft
Specific Energy	5.70	ft
Froude Number	0.58	
Maximum Discharge	176.96	ft ³ /s
Discharge Full	164.50	ft ³ /s
Slope Full	0.00260	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	86.13	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.74	ft
Critical Depth	3.66	ft
Channel Slope	0.00240	ft/ft
Critical Slope	0.00425	ft/ft

A-4 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00240	ft/ft
Diameter	6.00	ft
Discharge	222.41	ft ³ /s

Results

Normal Depth	5.49	ft
Flow Area	27.13	ft ²
Wetted Perimeter	15.31	ft
Hydraulic Radius	1.77	ft
Top Width	3.33	ft
Critical Depth	4.08	ft
Percent Full	91.6	%
Critical Slope	0.00424	ft/ft
Velocity	8.20	ft/s
Velocity Head	1.04	ft
Specific Energy	6.54	ft
Froude Number	0.51	
Maximum Discharge	223.17	ft ³ /s
Discharge Full	207.46	ft ³ /s
Slope Full	0.00276	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	91.56	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.49	ft
Critical Depth	4.08	ft
Channel Slope	0.00240	ft/ft
Critical Slope	0.00424	ft/ft

A-4 (Seg 4) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00390	ft/ft
Diameter	4.50	ft
Discharge	131.78	ft ³ /s

Results

Normal Depth	4.14	ft
Flow Area	15.30	ft ²
Wetted Perimeter	11.55	ft
Hydraulic Radius	1.33	ft
Top Width	2.45	ft
Critical Depth	3.38	ft
Percent Full	91.9	%
Critical Slope	0.00539	ft/ft
Velocity	8.61	ft/s
Velocity Head	1.15	ft
Specific Energy	5.29	ft
Froude Number	0.61	
Maximum Discharge	132.10	ft ³ /s
Discharge Full	122.80	ft ³ /s
Slope Full	0.00449	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	91.94	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 4) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.14	ft
Critical Depth	3.38	ft
Channel Slope	0.00390	ft/ft
Critical Slope	0.00539	ft/ft

A-4 (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00390	ft/ft
Diameter	5.50	ft
Discharge	175.18	ft ³ /s

Results

Normal Depth	3.84	ft
Flow Area	17.73	ft ²
Wetted Perimeter	10.89	ft
Hydraulic Radius	1.63	ft
Top Width	5.05	ft
Critical Depth	3.70	ft
Percent Full	69.9	%
Critical Slope	0.00431	ft/ft
Velocity	9.88	ft/s
Velocity Head	1.52	ft
Specific Energy	5.36	ft
Froude Number	0.93	
Maximum Discharge	225.58	ft ³ /s
Discharge Full	209.70	ft ³ /s
Slope Full	0.00272	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	69.88	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 4) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.84	ft
Critical Depth	3.70	ft
Channel Slope	0.00390	ft/ft
Critical Slope	0.00431	ft/ft

A-4 (Seg 5) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00390	ft/ft
Diameter	4.50	ft
Discharge	121.84	ft ³ /s

Results

Normal Depth	3.66	ft
Flow Area	13.84	ft ²
Wetted Perimeter	10.11	ft
Hydraulic Radius	1.37	ft
Top Width	3.51	ft
Critical Depth	3.25	ft
Percent Full	81.3	%
Critical Slope	0.00506	ft/ft
Velocity	8.80	ft/s
Velocity Head	1.20	ft
Specific Energy	4.86	ft
Froude Number	0.78	
Maximum Discharge	132.10	ft ³ /s
Discharge Full	122.80	ft ³ /s
Slope Full	0.00384	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.27	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 5) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.66	ft
Critical Depth	3.25	ft
Channel Slope	0.00390	ft/ft
Critical Slope	0.00506	ft/ft

A-4 (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00380	ft/ft
Diameter	5.00	ft
Discharge	161.97	ft ³ /s

Results

Normal Depth	4.14	ft
Flow Area	17.38	ft ²
Wetted Perimeter	11.43	ft
Hydraulic Radius	1.52	ft
Top Width	3.77	ft
Critical Depth	3.65	ft
Percent Full	82.8	%
Critical Slope	0.00496	ft/ft
Velocity	9.32	ft/s
Velocity Head	1.35	ft
Specific Energy	5.49	ft
Froude Number	0.77	
Maximum Discharge	172.69	ft ³ /s
Discharge Full	160.54	ft ³ /s
Slope Full	0.00387	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	82.79	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 5) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.14	ft
Critical Depth	3.65	ft
Channel Slope	0.00380	ft/ft
Critical Slope	0.00496	ft/ft

A-4 (Seg 6) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00320	ft/ft
Diameter	3.50	ft
Discharge	60.51	ft ³ /s

Results

Normal Depth	3.13	ft
Flow Area	9.08	ft ²
Wetted Perimeter	8.69	ft
Hydraulic Radius	1.05	ft
Top Width	2.15	ft
Critical Depth	2.44	ft
Percent Full	89.5	%
Critical Slope	0.00523	ft/ft
Velocity	6.66	ft/s
Velocity Head	0.69	ft
Specific Energy	3.82	ft
Froude Number	0.57	
Maximum Discharge	61.22	ft ³ /s
Discharge Full	56.91	ft ³ /s
Slope Full	0.00362	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	89.50	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 6) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.13	ft
Critical Depth	2.44	ft
Channel Slope	0.00320	ft/ft
Critical Slope	0.00523	ft/ft

A-4 (Seg 6) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00320	ft/ft
Diameter	4.00	ft
Discharge	80.44	ft ³ /s

Results

Normal Depth	3.24	ft
Flow Area	10.91	ft ²
Wetted Perimeter	8.97	ft
Hydraulic Radius	1.22	ft
Top Width	3.13	ft
Critical Depth	2.72	ft
Percent Full	81.1	%
Critical Slope	0.00485	ft/ft
Velocity	7.37	ft/s
Velocity Head	0.84	ft
Specific Energy	4.09	ft
Froude Number	0.70	
Maximum Discharge	87.40	ft ³ /s
Discharge Full	81.25	ft ³ /s
Slope Full	0.00314	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.07	%
Downstream Velocity	Infinity	ft/s

A-4 (Seg 6) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.24	ft
Critical Depth	2.72	ft
Channel Slope	0.00320	ft/ft
Critical Slope	0.00485	ft/ft

A-4A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	7.50	ft
Discharge	232.75	ft ³ /s

Results

Normal Depth	5.89	ft
Flow Area	37.19	ft ²
Wetted Perimeter	16.32	ft
Hydraulic Radius	2.28	ft
Top Width	6.17	ft
Critical Depth	3.91	ft
Percent Full	78.5	%
Critical Slope	0.00320	ft/ft
Velocity	6.26	ft/s
Velocity Head	0.61	ft
Specific Energy	6.49	ft
Froude Number	0.45	
Maximum Discharge	261.19	ft ³ /s
Discharge Full	242.81	ft ³ /s
Slope Full	0.00092	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.47	%
Downstream Velocity	Infinity	ft/s

A-4A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.89	ft
Critical Depth	3.91	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00320	ft/ft

A-4A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	8.00	ft
Discharge	266.45	ft ³ /s

Results

Normal Depth	6.07	ft
Flow Area	40.91	ft ²
Wetted Perimeter	16.91	ft
Hydraulic Radius	2.42	ft
Top Width	6.85	ft
Critical Depth	4.11	ft
Percent Full	75.9	%
Critical Slope	0.00311	ft/ft
Velocity	6.51	ft/s
Velocity Head	0.66	ft
Specific Energy	6.73	ft
Froude Number	0.47	
Maximum Discharge	310.24	ft ³ /s
Discharge Full	288.41	ft ³ /s
Slope Full	0.00085	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.86	%
Downstream Velocity	Infinity	ft/s

A-4A - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.07	ft
Critical Depth	4.11	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00311	ft/ft

A-4B - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	4.00	ft
Discharge	42.86	ft ³ /s

Results

Normal Depth	3.09	ft
Flow Area	10.43	ft ²
Wetted Perimeter	8.60	ft
Hydraulic Radius	1.21	ft
Top Width	3.35	ft
Critical Depth	1.96	ft
Percent Full	77.3	%
Critical Slope	0.00383	ft/ft
Velocity	4.11	ft/s
Velocity Head	0.26	ft
Specific Energy	3.36	ft
Froude Number	0.41	
Maximum Discharge	48.86	ft ³ /s
Discharge Full	45.42	ft ³ /s
Slope Full	0.00089	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.32	%
Downstream Velocity	Infinity	ft/s

A-4B - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.09	ft
Critical Depth	1.96	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00383	ft/ft

A-4B - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	4.50	ft
Discharge	49.47	ft ³ /s

Results

Normal Depth	3.03	ft
Flow Area	11.40	ft ²
Wetted Perimeter	8.67	ft
Hydraulic Radius	1.32	ft
Top Width	4.22	ft
Critical Depth	2.03	ft
Percent Full	67.4	%
Critical Slope	0.00359	ft/ft
Velocity	4.34	ft/s
Velocity Head	0.29	ft
Specific Energy	3.32	ft
Froude Number	0.47	
Maximum Discharge	66.89	ft ³ /s
Discharge Full	62.18	ft ³ /s
Slope Full	0.00063	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.38	%
Downstream Velocity	Infinity	ft/s

A-4B - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.03	ft
Critical Depth	2.03	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00359	ft/ft

A-4C - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	4.00	ft
Discharge	42.00	ft ³ /s

Results

Normal Depth	3.04	ft
Flow Area	10.24	ft ²
Wetted Perimeter	8.46	ft
Hydraulic Radius	1.21	ft
Top Width	3.42	ft
Critical Depth	1.94	ft
Percent Full	75.9	%
Critical Slope	0.00382	ft/ft
Velocity	4.10	ft/s
Velocity Head	0.26	ft
Specific Energy	3.30	ft
Froude Number	0.42	
Maximum Discharge	48.86	ft ³ /s
Discharge Full	45.42	ft ³ /s
Slope Full	0.00086	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.92	%
Downstream Velocity	Infinity	ft/s

A-4C - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.04	ft
Critical Depth	1.94	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00382	ft/ft

A-4C - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	4.00	ft
Discharge	48.48	ft ³ /s

Results

Normal Depth	3.61	ft
Flow Area	11.94	ft ²
Wetted Perimeter	10.04	ft
Hydraulic Radius	1.19	ft
Top Width	2.36	ft
Critical Depth	2.09	ft
Percent Full	90.3	%
Critical Slope	0.00394	ft/ft
Velocity	4.06	ft/s
Velocity Head	0.26	ft
Specific Energy	3.87	ft
Froude Number	0.32	
Maximum Discharge	48.86	ft ³ /s
Discharge Full	45.42	ft ³ /s
Slope Full	0.00114	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	90.33	%
Downstream Velocity	Infinity	ft/s

A-4C - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.61	ft
Critical Depth	2.09	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00394	ft/ft

A-4D - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.00	ft
Discharge	21.02	ft ³ /s

Results

Normal Depth	2.45	ft
Flow Area	6.18	ft ²
Wetted Perimeter	6.77	ft
Hydraulic Radius	0.91	ft
Top Width	2.32	ft
Critical Depth	1.47	ft
Percent Full	81.7	%
Critical Slope	0.00423	ft/ft
Velocity	3.40	ft/s
Velocity Head	0.18	ft
Specific Energy	2.63	ft
Froude Number	0.37	
Maximum Discharge	22.69	ft ³ /s
Discharge Full	21.09	ft ³ /s
Slope Full	0.00099	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.67	%
Downstream Velocity	Infinity	ft/s

A-4D - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.45	ft
Critical Depth	1.47	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00423	ft/ft

A-4D - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.50	ft
Discharge	26.09	ft ³ /s

Results

Normal Depth	2.41	ft
Flow Area	7.07	ft ²
Wetted Perimeter	6.86	ft
Hydraulic Radius	1.03	ft
Top Width	3.24	ft
Critical Depth	1.57	ft
Percent Full	68.9	%
Critical Slope	0.00389	ft/ft
Velocity	3.69	ft/s
Velocity Head	0.21	ft
Specific Energy	2.62	ft
Froude Number	0.44	
Maximum Discharge	34.22	ft ³ /s
Discharge Full	31.81	ft ³ /s
Slope Full	0.00067	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.91	%
Downstream Velocity	Infinity	ft/s

A-4D - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.41	ft
Critical Depth	1.57	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00389	ft/ft

A-4E - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	9.35	ft ³ /s

Results

Normal Depth	1.57	ft
Flow Area	3.25	ft ²
Wetted Perimeter	4.58	ft
Hydraulic Radius	0.71	ft
Top Width	2.42	ft
Critical Depth	1.02	ft
Percent Full	62.9	%
Critical Slope	0.00425	ft/ft
Velocity	2.88	ft/s
Velocity Head	0.13	ft
Specific Energy	1.70	ft
Froude Number	0.44	
Maximum Discharge	13.95	ft ³ /s
Discharge Full	12.97	ft ³ /s
Slope Full	0.00052	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.88	%
Downstream Velocity	Infinity	ft/s

A-4E - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.02	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

A-4E - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	12.43	ft ³ /s

Results

Normal Depth	1.96	ft
Flow Area	4.13	ft ²
Wetted Perimeter	5.44	ft
Hydraulic Radius	0.76	ft
Top Width	2.06	ft
Critical Depth	1.18	ft
Percent Full	78.5	%
Critical Slope	0.00443	ft/ft
Velocity	3.01	ft/s
Velocity Head	0.14	ft
Specific Energy	2.10	ft
Froude Number	0.37	
Maximum Discharge	13.95	ft ³ /s
Discharge Full	12.97	ft ³ /s
Slope Full	0.00092	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.45	%
Downstream Velocity	Infinity	ft/s

A-4E - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.96	ft
Critical Depth	1.18	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00443	ft/ft

A-4F - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	4.50	ft
Discharge	57.14	ft ³ /s

Results

Normal Depth	3.40	ft
Flow Area	12.88	ft ²
Wetted Perimeter	9.48	ft
Hydraulic Radius	1.36	ft
Top Width	3.87	ft
Critical Depth	2.19	ft
Percent Full	75.5	%
Critical Slope	0.00368	ft/ft
Velocity	4.44	ft/s
Velocity Head	0.31	ft
Specific Energy	3.70	ft
Froude Number	0.43	
Maximum Discharge	66.89	ft ³ /s
Discharge Full	62.18	ft ³ /s
Slope Full	0.00084	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.50	%
Downstream Velocity	Infinity	ft/s

A-4F - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.40	ft
Critical Depth	2.19	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00368	ft/ft

A-4F - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	5.00	ft
Discharge	75.96	ft ³ /s

Results

Normal Depth	3.79	ft
Flow Area	15.96	ft ²
Wetted Perimeter	10.56	ft
Hydraulic Radius	1.51	ft
Top Width	4.29	ft
Critical Depth	2.46	ft
Percent Full	75.7	%
Critical Slope	0.00357	ft/ft
Velocity	4.76	ft/s
Velocity Head	0.35	ft
Specific Energy	4.14	ft
Froude Number	0.43	
Maximum Discharge	88.59	ft ³ /s
Discharge Full	82.35	ft ³ /s
Slope Full	0.00085	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.75	%
Downstream Velocity	Infinity	ft/s

A-4F - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.79	ft
Critical Depth	2.46	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00357	ft/ft

A-5 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00100	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	388.00	ft
Discharge	12805.80	ft ³ /s

Results

Normal Depth	6.77	ft
Flow Area	2763.03	ft ²
Wetted Perimeter	430.80	ft
Hydraulic Radius	6.41	ft
Top Width	428.60	ft
Critical Depth	3.21	ft
Critical Slope	0.01224	ft/ft
Velocity	4.63	ft/s
Velocity Head	0.33	ft
Specific Energy	7.10	ft
Froude Number	0.32	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.77	ft
Critical Depth	3.21	ft
Channel Slope	0.00100	ft/ft

A-5 (Seg 1) - Q50

GVF Output Data

Critical Slope 0.01224 ft/ft

A-5 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00160	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	278.00	ft
Discharge	11558.80	ft ³ /s

Results

Normal Depth	6.72	ft
Flow Area	2004.99	ft ²
Wetted Perimeter	320.53	ft
Hydraulic Radius	6.26	ft
Top Width	318.35	ft
Critical Depth	3.72	ft
Critical Slope	0.01173	ft/ft
Velocity	5.77	ft/s
Velocity Head	0.52	ft
Specific Energy	7.24	ft
Froude Number	0.40	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.72	ft
Critical Depth	3.72	ft
Channel Slope	0.00160	ft/ft

A-5 (Seg 2) - Q50

GVF Output Data

Critical Slope 0.01173 ft/ft

A-5 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00180	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	278.00	ft
Discharge	11431.83	ft ³ /s

Results

Normal Depth	6.45	ft
Flow Area	1918.41	ft ²
Wetted Perimeter	318.80	ft
Hydraulic Radius	6.02	ft
Top Width	316.71	ft
Critical Depth	3.70	ft
Critical Slope	0.01175	ft/ft
Velocity	5.96	ft/s
Velocity Head	0.55	ft
Specific Energy	7.00	ft
Froude Number	0.43	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.45	ft
Critical Depth	3.70	ft
Channel Slope	0.00180	ft/ft

A-5 (Seg 3) - Q50

GVF Output Data

Critical Slope 0.01175 ft/ft

A-5A (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00600	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	18.00	ft
Discharge	1466.66	ft ³ /s

Results

Normal Depth	5.50	ft
Flow Area	189.96	ft ²
Wetted Perimeter	52.81	ft
Hydraulic Radius	3.60	ft
Top Width	51.03	ft
Critical Depth	4.57	ft
Critical Slope	0.01266	ft/ft
Velocity	7.72	ft/s
Velocity Head	0.93	ft
Specific Energy	6.43	ft
Froude Number	0.71	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.50	ft
Critical Depth	4.57	ft
Channel Slope	0.00600	ft/ft

A-5A (Seg 2) - Q50

GVF Output Data

Critical Slope 0.01266 ft/ft

A-5A (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00400	ft/ft
Bottom Width	12.00	ft
Discharge	1398.88	ft ³ /s

Results

Normal Depth	7.72	ft
Flow Area	92.61	ft ²
Wetted Perimeter	27.43	ft
Hydraulic Radius	3.38	ft
Top Width	12.00	ft
Critical Depth	7.50	ft
Critical Slope	0.00430	ft/ft
Velocity	15.11	ft/s
Velocity Head	3.55	ft
Specific Energy	11.26	ft
Froude Number	0.96	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	7.72	ft
Critical Depth	7.50	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00430	ft/ft

A-5A (Seg 4) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	6.50	ft
Discharge	196.03	ft ³ /s

Results

Normal Depth	5.14	ft
Flow Area	28.12	ft ²
Wetted Perimeter	14.23	ft
Hydraulic Radius	1.98	ft
Top Width	5.29	ft
Critical Depth	3.73	ft
Percent Full	79.0	%
Critical Slope	0.00355	ft/ft
Velocity	6.97	ft/s
Velocity Head	0.76	ft
Specific Energy	5.89	ft
Froude Number	0.53	
Maximum Discharge	218.41	ft ³ /s
Discharge Full	203.04	ft ³ /s
Slope Full	0.00140	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	79.02	%
Downstream Velocity	Infinity	ft/s

A-5A (Seg 4) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.14	ft
Critical Depth	3.73	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00355	ft/ft

A-5A (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	7.00	ft
Discharge	237.82	ft ³ /s

Results

Normal Depth	5.51	ft
Flow Area	32.48	ft ²
Wetted Perimeter	15.27	ft
Hydraulic Radius	2.13	ft
Top Width	5.73	ft
Critical Depth	4.04	ft
Percent Full	78.7	%
Critical Slope	0.00347	ft/ft
Velocity	7.32	ft/s
Velocity Head	0.83	ft
Specific Energy	6.34	ft
Froude Number	0.54	
Maximum Discharge	266.14	ft ³ /s
Discharge Full	247.41	ft ³ /s
Slope Full	0.00139	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.68	%
Downstream Velocity	Infinity	ft/s

A-5A (Seg 4) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.51	ft
Critical Depth	4.04	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00347	ft/ft

A-5A (Seg 5) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01120	ft/ft
Diameter	4.00	ft
Discharge	128.76	ft ³ /s

Results

Normal Depth	2.83	ft
Flow Area	9.49	ft ²
Wetted Perimeter	7.98	ft
Hydraulic Radius	1.19	ft
Top Width	3.64	ft
Critical Depth	3.40	ft
Percent Full	70.6	%
Critical Slope	0.00757	ft/ft
Velocity	13.57	ft/s
Velocity Head	2.86	ft
Specific Energy	5.69	ft
Froude Number	1.48	
Maximum Discharge	163.52	ft ³ /s
Discharge Full	152.01	ft ³ /s
Slope Full	0.00804	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	70.63	%
Downstream Velocity	Infinity	ft/s

A-5A (Seg 5) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.83	ft
Critical Depth	3.40	ft
Channel Slope	0.01120	ft/ft
Critical Slope	0.00757	ft/ft

A-5A (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01120	ft/ft
Diameter	4.00	ft
Discharge	155.85	ft ³ /s

Results

Normal Depth	3.38	ft
Flow Area	11.32	ft ²
Wetted Perimeter	9.32	ft
Hydraulic Radius	1.21	ft
Top Width	2.90	ft
Critical Depth	3.64	ft
Percent Full	84.4	%
Critical Slope	0.01028	ft/ft
Velocity	13.77	ft/s
Velocity Head	2.95	ft
Specific Energy	6.32	ft
Froude Number	1.23	
Maximum Discharge	163.52	ft ³ /s
Discharge Full	152.01	ft ³ /s
Slope Full	0.01177	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	84.44	%
Downstream Velocity	Infinity	ft/s

A-5A (Seg 5) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.38	ft
Critical Depth	3.64	ft
Channel Slope	0.01120	ft/ft
Critical Slope	0.01028	ft/ft

A-5B (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00800	ft/ft
Diameter	6.00	ft
Discharge	358.65	ft ³ /s

Results

Normal Depth	4.65	ft
Flow Area	23.53	ft ²
Wetted Perimeter	12.93	ft
Hydraulic Radius	1.82	ft
Top Width	5.01	ft
Critical Depth	5.12	ft
Percent Full	77.6	%
Critical Slope	0.00672	ft/ft
Velocity	15.24	ft/s
Velocity Head	3.61	ft
Specific Energy	8.26	ft
Froude Number	1.24	
Maximum Discharge	407.45	ft ³ /s
Discharge Full	378.78	ft ³ /s
Slope Full	0.00717	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.56	%
Downstream Velocity	Infinity	ft/s

A-5B (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.65	ft
Critical Depth	5.12	ft
Channel Slope	0.00800	ft/ft
Critical Slope	0.00672	ft/ft

A-5B (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00960	ft/ft
Diameter	5.50	ft
Discharge	344.59	ft ³ /s

Results

Normal Depth	4.79	ft
Flow Area	21.95	ft ²
Wetted Perimeter	13.23	ft
Hydraulic Radius	1.66	ft
Top Width	3.69	ft
Critical Depth	5.00	ft
Percent Full	87.0	%
Critical Slope	0.00920	ft/ft
Velocity	15.70	ft/s
Velocity Head	3.83	ft
Specific Energy	8.62	ft
Froude Number	1.14	
Maximum Discharge	353.91	ft ³ /s
Discharge Full	329.01	ft ³ /s
Slope Full	0.01053	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	87.04	%
Downstream Velocity	Infinity	ft/s

A-5B (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.79	ft
Critical Depth	5.00	ft
Channel Slope	0.00960	ft/ft
Critical Slope	0.00920	ft/ft

A-5B (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01470	ft/ft
Diameter	5.00	ft
Discharge	328.50	ft ³ /s

Results

Normal Depth	4.31	ft
Flow Area	17.99	ft ²
Wetted Perimeter	11.89	ft
Hydraulic Radius	1.51	ft
Top Width	3.45	ft
Critical Depth	4.76	ft
Percent Full	86.2	%
Critical Slope	0.01379	ft/ft
Velocity	18.26	ft/s
Velocity Head	5.18	ft
Specific Energy	9.49	ft
Froude Number	1.41	
Maximum Discharge	339.66	ft ³ /s
Discharge Full	315.75	ft ³ /s
Slope Full	0.01591	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	86.15	%
Downstream Velocity	Infinity	ft/s

A-5B (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.31	ft
Critical Depth	4.76	ft
Channel Slope	0.01470	ft/ft
Critical Slope	0.01379	ft/ft

A-5C (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00270	ft/ft
Diameter	6.50	ft
Discharge	263.39	ft ³ /s

Results

Normal Depth	5.14	ft
Flow Area	28.16	ft ²
Wetted Perimeter	14.25	ft
Hydraulic Radius	1.98	ft
Top Width	5.28	ft
Critical Depth	4.35	ft
Percent Full	79.1	%
Critical Slope	0.00406	ft/ft
Velocity	9.35	ft/s
Velocity Head	1.36	ft
Specific Energy	6.50	ft
Froude Number	0.71	
Maximum Discharge	293.03	ft ³ /s
Discharge Full	272.41	ft ³ /s
Slope Full	0.00252	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	79.13	%
Downstream Velocity	Infinity	ft/s

A-5C (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.14	ft
Critical Depth	4.35	ft
Channel Slope	0.00270	ft/ft
Critical Slope	0.00406	ft/ft

A-5C (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00270	ft/ft
Diameter	7.00	ft
Discharge	315.09	ft ³ /s

Results

Normal Depth	5.44	ft
Flow Area	32.10	ft ²
Wetted Perimeter	15.11	ft
Hydraulic Radius	2.12	ft
Top Width	5.82	ft
Critical Depth	4.67	ft
Percent Full	77.7	%
Critical Slope	0.00394	ft/ft
Velocity	9.81	ft/s
Velocity Head	1.50	ft
Specific Energy	6.94	ft
Froude Number	0.74	
Maximum Discharge	357.06	ft ³ /s
Discharge Full	331.93	ft ³ /s
Slope Full	0.00243	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.75	%
Downstream Velocity	Infinity	ft/s

A-5C (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.44	ft
Critical Depth	4.67	ft
Channel Slope	0.00270	ft/ft
Critical Slope	0.00394	ft/ft

A-5C (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00270	ft/ft
Diameter	7.00	ft
Discharge	179.00	ft ³ /s

Results

Normal Depth	3.66	ft
Flow Area	20.37	ft ²
Wetted Perimeter	11.32	ft
Hydraulic Radius	1.80	ft
Top Width	6.99	ft
Critical Depth	3.48	ft
Percent Full	52.3	%
Critical Slope	0.00320	ft/ft
Velocity	8.79	ft/s
Velocity Head	1.20	ft
Specific Energy	4.86	ft
Froude Number	0.91	
Maximum Discharge	357.06	ft ³ /s
Discharge Full	331.93	ft ³ /s
Slope Full	0.00079	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	52.30	%
Downstream Velocity	Infinity	ft/s

A-5C (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.66	ft
Critical Depth	3.48	ft
Channel Slope	0.00270	ft/ft
Critical Slope	0.00320	ft/ft

A-5C (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00270	ft/ft
Diameter	6.00	ft
Discharge	215.00	ft ³ /s

Results

Normal Depth	4.80	ft
Flow Area	24.24	ft ²
Wetted Perimeter	13.28	ft
Hydraulic Radius	1.83	ft
Top Width	4.80	ft
Critical Depth	4.01	ft
Percent Full	80.0	%
Critical Slope	0.00416	ft/ft
Velocity	8.87	ft/s
Velocity Head	1.22	ft
Specific Energy	6.02	ft
Froude Number	0.70	
Maximum Discharge	236.71	ft ³ /s
Discharge Full	220.05	ft ³ /s
Slope Full	0.00258	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	79.97	%
Downstream Velocity	Infinity	ft/s

A-5C (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.80	ft
Critical Depth	4.01	ft
Channel Slope	0.00270	ft/ft
Critical Slope	0.00416	ft/ft

A-6 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00190	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	98.00	ft
Discharge	4936.86	ft ³ /s

Results

Normal Depth	6.94	ft
Flow Area	825.08	ft ²
Wetted Perimeter	141.91	ft
Hydraulic Radius	5.81	ft
Top Width	139.66	ft
Critical Depth	4.11	ft
Critical Slope	0.01172	ft/ft
Velocity	5.98	ft/s
Velocity Head	0.56	ft
Specific Energy	7.50	ft
Froude Number	0.43	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.94	ft
Critical Depth	4.11	ft
Channel Slope	0.00190	ft/ft

A-6 (Seg 1) - Q50

GVF Output Data

Critical Slope 0.01172 ft/ft

A-6 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00160	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	98.00	ft
Discharge	4659.65	ft ³ /s

Results

Normal Depth	7.06	ft
Flow Area	840.80	ft ²
Wetted Perimeter	142.62	ft
Hydraulic Radius	5.90	ft
Top Width	140.33	ft
Critical Depth	3.96	ft
Critical Slope	0.01184	ft/ft
Velocity	5.54	ft/s
Velocity Head	0.48	ft
Specific Energy	7.53	ft
Froude Number	0.40	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	7.06	ft
Critical Depth	3.96	ft
Channel Slope	0.00160	ft/ft

A-6 (Seg 2) - Q50

GVF Output Data

Critical Slope 0.01184 ft/ft

A-6A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	9.00	ft
Discharge	419.66	ft ³ /s

Results

Normal Depth	8.05	ft
Flow Area	60.03	ft ²
Wetted Perimeter	22.31	ft
Hydraulic Radius	2.69	ft
Top Width	5.53	ft
Critical Depth	5.03	ft
Percent Full	89.4	%
Critical Slope	0.00313	ft/ft
Velocity	6.99	ft/s
Velocity Head	0.76	ft
Specific Energy	8.81	ft
Froude Number	0.37	
Maximum Discharge	424.73	ft ³ /s
Discharge Full	394.83	ft ³ /s
Slope Full	0.00113	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	89.43	%
Downstream Velocity	Infinity	ft/s

A-6A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	8.05	ft
Critical Depth	5.03	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00313	ft/ft

A-6A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	7.50	ft
Discharge	243.26	ft ³ /s

Results

Normal Depth	6.16	ft
Flow Area	38.83	ft ²
Wetted Perimeter	17.02	ft
Hydraulic Radius	2.28	ft
Top Width	5.75	ft
Critical Depth	4.00	ft
Percent Full	82.1	%
Critical Slope	0.00324	ft/ft
Velocity	6.27	ft/s
Velocity Head	0.61	ft
Specific Energy	6.77	ft
Froude Number	0.42	
Maximum Discharge	261.19	ft ³ /s
Discharge Full	242.81	ft ³ /s
Slope Full	0.00100	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	82.13	%
Downstream Velocity	Infinity	ft/s

A-6A - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.16	ft
Critical Depth	4.00	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00324	ft/ft

A-7 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	9.00	ft
Discharge	419.66	ft ³ /s

Results

Normal Depth	8.05	ft
Flow Area	60.03	ft ²
Wetted Perimeter	22.31	ft
Hydraulic Radius	2.69	ft
Top Width	5.53	ft
Critical Depth	5.03	ft
Percent Full	89.4	%
Critical Slope	0.00313	ft/ft
Velocity	6.99	ft/s
Velocity Head	0.76	ft
Specific Energy	8.81	ft
Froude Number	0.37	
Maximum Discharge	424.73	ft ³ /s
Discharge Full	394.83	ft ³ /s
Slope Full	0.00113	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	89.43	%
Downstream Velocity	Infinity	ft/s

A-7 (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	8.05	ft
Critical Depth	5.03	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00313	ft/ft

A-7 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	10.00	ft
Discharge	511.60	ft ³ /s

Results

Normal Depth	8.01	ft
Flow Area	67.42	ft ²
Wetted Perimeter	22.16	ft
Hydraulic Radius	3.04	ft
Top Width	7.99	ft
Critical Depth	5.40	ft
Percent Full	80.1	%
Critical Slope	0.00296	ft/ft
Velocity	7.59	ft/s
Velocity Head	0.89	ft
Specific Energy	8.90	ft
Froude Number	0.46	
Maximum Discharge	562.51	ft ³ /s
Discharge Full	522.92	ft ³ /s
Slope Full	0.00096	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	80.07	%
Downstream Velocity	Infinity	ft/s

A-7 (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	8.01	ft
Critical Depth	5.40	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00296	ft/ft

A-7 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	7.50	ft
Discharge	348.90	ft ³ /s

Results

Normal Depth	6.26	ft
Flow Area	39.41	ft ²
Wetted Perimeter	17.29	ft
Hydraulic Radius	2.28	ft
Top Width	5.57	ft
Critical Depth	4.83	ft
Percent Full	83.5	%
Critical Slope	0.00371	ft/ft
Velocity	8.85	ft/s
Velocity Head	1.22	ft
Specific Energy	7.48	ft
Froude Number	0.59	
Maximum Discharge	369.38	ft ³ /s
Discharge Full	343.38	ft ³ /s
Slope Full	0.00206	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	83.49	%
Downstream Velocity	Infinity	ft/s

A-7 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.26	ft
Critical Depth	4.83	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00371	ft/ft

A-7 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	8.00	ft
Discharge	428.19	ft ³ /s

Results

Normal Depth	6.99	ft
Flow Area	46.59	ft ²
Wetted Perimeter	19.32	ft
Hydraulic Radius	2.41	ft
Top Width	5.31	ft
Critical Depth	5.27	ft
Percent Full	87.4	%
Critical Slope	0.00371	ft/ft
Velocity	9.19	ft/s
Velocity Head	1.31	ft
Specific Energy	8.30	ft
Froude Number	0.55	
Maximum Discharge	438.75	ft ³ /s
Discharge Full	407.87	ft ³ /s
Slope Full	0.00220	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	87.37	%
Downstream Velocity	Infinity	ft/s

A-7 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.99	ft
Critical Depth	5.27	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00371	ft/ft

A-8 - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00770	ft/ft
Diameter	5.50	ft
Discharge	295.00	ft ³ /s

Results

Normal Depth	4.51	ft
Flow Area	20.87	ft ²
Wetted Perimeter	12.47	ft
Hydraulic Radius	1.67	ft
Top Width	4.22	ft
Critical Depth	4.73	ft
Percent Full	82.1	%
Critical Slope	0.00714	ft/ft
Velocity	14.14	ft/s
Velocity Head	3.11	ft
Specific Energy	7.62	ft
Froude Number	1.12	
Maximum Discharge	316.96	ft ³ /s
Discharge Full	294.66	ft ³ /s
Slope Full	0.00772	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	82.07	%
Downstream Velocity	Infinity	ft/s

A-8 - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.51	ft
Critical Depth	4.73	ft
Channel Slope	0.00770	ft/ft
Critical Slope	0.00714	ft/ft

A-8 - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00770	ft/ft
Diameter	6.00	ft
Discharge	356.00	ft ³ /s

Results

Normal Depth	4.71	ft
Flow Area	23.79	ft ²
Wetted Perimeter	13.05	ft
Hydraulic Radius	1.82	ft
Top Width	4.94	ft
Critical Depth	5.10	ft
Percent Full	78.4	%
Critical Slope	0.00665	ft/ft
Velocity	14.96	ft/s
Velocity Head	3.48	ft
Specific Energy	8.19	ft
Froude Number	1.20	
Maximum Discharge	399.74	ft ³ /s
Discharge Full	371.61	ft ³ /s
Slope Full	0.00707	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.43	%
Downstream Velocity	Infinity	ft/s

A-8 - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.71	ft
Critical Depth	5.10	ft
Channel Slope	0.00770	ft/ft
Critical Slope	0.00665	ft/ft

A-9 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00100	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	178.00	ft
Discharge	6108.73	ft ³ /s

Results

Normal Depth	6.84	ft
Flow Area	1357.59	ft ²
Wetted Perimeter	221.25	ft
Hydraulic Radius	6.14	ft
Top Width	219.03	ft
Critical Depth	3.26	ft
Critical Slope	0.01233	ft/ft
Velocity	4.50	ft/s
Velocity Head	0.31	ft
Specific Energy	7.15	ft
Froude Number	0.32	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.84	ft
Critical Depth	3.26	ft
Channel Slope	0.00100	ft/ft

A-9 (Seg 1) - Q50

GVF Output Data

Critical Slope 0.01233 ft/ft

A-9 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00100	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	98.00	ft
Discharge	3198.97	ft ³ /s

Results

Normal Depth	6.51	ft
Flow Area	765.02	ft ²
Wetted Perimeter	139.17	ft
Hydraulic Radius	5.50	ft
Top Width	137.06	ft
Critical Depth	3.11	ft
Critical Slope	0.01272	ft/ft
Velocity	4.18	ft/s
Velocity Head	0.27	ft
Specific Energy	6.78	ft
Froude Number	0.31	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.51	ft
Critical Depth	3.11	ft
Channel Slope	0.00100	ft/ft

A-9 (Seg 2) - Q50

GVF Output Data

Critical Slope 0.01272 ft/ft

A-9 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.01450	ft/ft
Bottom Width	12.00	ft
Discharge	2802.60	ft ³ /s

Results

Normal Depth	8.03	ft
Flow Area	96.34	ft ²
Wetted Perimeter	28.06	ft
Hydraulic Radius	3.43	ft
Top Width	12.00	ft
Critical Depth	11.92	ft
Critical Slope	0.00538	ft/ft
Velocity	29.09	ft/s
Velocity Head	13.15	ft
Specific Energy	21.18	ft
Froude Number	1.81	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	8.03	ft
Critical Depth	11.92	ft
Channel Slope	0.01450	ft/ft
Critical Slope	0.00538	ft/ft

A-9 (Seg 4) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01400	ft/ft
Diameter	5.50	ft
Discharge	350.45	ft ³ /s

Results

Normal Depth	4.01	ft
Flow Area	18.57	ft ²
Wetted Perimeter	11.26	ft
Hydraulic Radius	1.65	ft
Top Width	4.89	ft
Critical Depth	5.03	ft
Percent Full	72.9	%
Critical Slope	0.00949	ft/ft
Velocity	18.88	ft/s
Velocity Head	5.54	ft
Specific Energy	9.55	ft
Froude Number	1.71	
Maximum Discharge	427.39	ft ³ /s
Discharge Full	397.31	ft ³ /s
Slope Full	0.01089	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	72.94	%
Downstream Velocity	Infinity	ft/s

A-9 (Seg 4) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.01	ft
Critical Depth	5.03	ft
Channel Slope	0.01400	ft/ft
Critical Slope	0.00949	ft/ft

A-9 (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01400	ft/ft
Diameter	6.00	ft
Discharge	433.01	ft ³ /s

Results

Normal Depth	4.30	ft
Flow Area	21.71	ft ²
Wetted Perimeter	12.12	ft
Hydraulic Radius	1.79	ft
Top Width	5.40	ft
Critical Depth	5.47	ft
Percent Full	71.7	%
Critical Slope	0.00912	ft/ft
Velocity	19.94	ft/s
Velocity Head	6.18	ft
Specific Energy	10.49	ft
Froude Number	1.75	
Maximum Discharge	539.01	ft ³ /s
Discharge Full	501.07	ft ³ /s
Slope Full	0.01045	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	71.75	%
Downstream Velocity	Infinity	ft/s

A-9 (Seg 4) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.30	ft
Critical Depth	5.47	ft
Channel Slope	0.01400	ft/ft
Critical Slope	0.00912	ft/ft

A-9 (Seg 5) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.04210	ft/ft
Diameter	4.00	ft
Discharge	259.77	ft ³ /s

Results

Normal Depth	2.92	ft
Flow Area	9.81	ft ²
Wetted Perimeter	8.19	ft
Hydraulic Radius	1.20	ft
Top Width	3.56	ft
Critical Depth	3.94	ft
Percent Full	72.9	%
Critical Slope	0.02974	ft/ft
Velocity	26.47	ft/s
Velocity Head	10.89	ft
Specific Energy	13.80	ft
Froude Number	2.81	
Maximum Discharge	317.03	ft ³ /s
Discharge Full	294.72	ft ³ /s
Slope Full	0.03271	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	72.90	%
Downstream Velocity	Infinity	ft/s

A-9 (Seg 5) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.92	ft
Critical Depth	3.94	ft
Channel Slope	0.04210	ft/ft
Critical Slope	0.02974	ft/ft

A-9 (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.04210	ft/ft
Diameter	4.50	ft
Discharge	320.98	ft ³ /s

Results

Normal Depth	3.03	ft
Flow Area	11.40	ft ²
Wetted Perimeter	8.67	ft
Hydraulic Radius	1.32	ft
Top Width	4.22	ft
Critical Depth	4.41	ft
Percent Full	67.4	%
Critical Slope	0.02390	ft/ft
Velocity	28.16	ft/s
Velocity Head	12.32	ft
Specific Energy	15.35	ft
Froude Number	3.02	
Maximum Discharge	434.01	ft ³ /s
Discharge Full	403.47	ft ³ /s
Slope Full	0.02665	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.38	%
Downstream Velocity	Infinity	ft/s

A-9 (Seg 5) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.03	ft
Critical Depth	4.41	ft
Channel Slope	0.04210	ft/ft
Critical Slope	0.02390	ft/ft

A-9A (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00290	ft/ft
Bottom Width	12.00	ft
Discharge	1035.05	ft ³ /s

Results

Normal Depth	6.93	ft
Flow Area	83.13	ft ²
Wetted Perimeter	25.85	ft
Hydraulic Radius	3.22	ft
Top Width	12.00	ft
Critical Depth	6.14	ft
Critical Slope	0.00399	ft/ft
Velocity	12.45	ft/s
Velocity Head	2.41	ft
Specific Energy	9.34	ft
Froude Number	0.83	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.93	ft
Critical Depth	6.14	ft
Channel Slope	0.00290	ft/ft
Critical Slope	0.00399	ft/ft

A-9A (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00400	ft/ft
Diameter	9.50	ft
Discharge	851.29	ft ³ /s

Results

Normal Depth	7.27	ft
Flow Area	58.22	ft ²
Wetted Perimeter	20.24	ft
Hydraulic Radius	2.88	ft
Top Width	8.05	ft
Critical Depth	7.12	ft
Percent Full	76.5	%
Critical Slope	0.00419	ft/ft
Velocity	14.62	ft/s
Velocity Head	3.32	ft
Specific Energy	10.59	ft
Froude Number	0.96	
Maximum Discharge	981.19	ft ³ /s
Discharge Full	912.14	ft ³ /s
Slope Full	0.00348	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.55	%
Downstream Velocity	Infinity	ft/s

A-9A (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	7.27	ft
Critical Depth	7.12	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00419	ft/ft

A-9A (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00400	ft/ft
Diameter	10.00	ft
Discharge	1014.47	ft ³ /s

Results

Normal Depth	7.94	ft
Flow Area	66.86	ft ²
Wetted Perimeter	21.99	ft
Hydraulic Radius	3.04	ft
Top Width	8.09	ft
Critical Depth	7.67	ft
Percent Full	79.4	%
Critical Slope	0.00430	ft/ft
Velocity	15.17	ft/s
Velocity Head	3.58	ft
Specific Energy	11.52	ft
Froude Number	0.93	
Maximum Discharge	1125.02	ft ³ /s
Discharge Full	1045.84	ft ³ /s
Slope Full	0.00376	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	79.39	%
Downstream Velocity	Infinity	ft/s

A-9A (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	7.94	ft
Critical Depth	7.67	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00430	ft/ft

A-9A (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00880	ft/ft
Diameter	8.00	ft
Discharge	785.29	ft ³ /s

Results

Normal Depth	6.03	ft
Flow Area	40.67	ft ²
Wetted Perimeter	16.83	ft
Hydraulic Radius	2.42	ft
Top Width	6.89	ft
Critical Depth	7.00	ft
Percent Full	75.4	%
Critical Slope	0.00672	ft/ft
Velocity	19.31	ft/s
Velocity Head	5.79	ft
Specific Energy	11.83	ft
Froude Number	1.40	
Maximum Discharge	920.33	ft ³ /s
Discharge Full	855.56	ft ³ /s
Slope Full	0.00741	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.43	%
Downstream Velocity	Infinity	ft/s

A-9A (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.03	ft
Critical Depth	7.00	ft
Channel Slope	0.00880	ft/ft
Critical Slope	0.00672	ft/ft

A-9A (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00880	ft/ft
Diameter	8.50	ft
Discharge	935.47	ft ³ /s

Results

Normal Depth	6.49	ft
Flow Area	46.47	ft ²
Wetted Perimeter	18.06	ft
Hydraulic Radius	2.57	ft
Top Width	7.23	ft
Critical Depth	7.50	ft
Percent Full	76.3	%
Critical Slope	0.00683	ft/ft
Velocity	20.13	ft/s
Velocity Head	6.30	ft
Specific Energy	12.78	ft
Froude Number	1.40	
Maximum Discharge	1081.82	ft ³ /s
Discharge Full	1005.68	ft ³ /s
Slope Full	0.00761	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.32	%
Downstream Velocity	Infinity	ft/s

A-9A (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.49	ft
Critical Depth	7.50	ft
Channel Slope	0.00880	ft/ft
Critical Slope	0.00683	ft/ft

A-9A (Seg 4) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01510	ft/ft
Diameter	6.00	ft
Discharge	559.42	ft ³ /s

Results

Normal Depth	5.57	ft
Flow Area	27.38	ft ²
Wetted Perimeter	15.60	ft
Hydraulic Radius	1.75	ft
Top Width	3.09	ft
Critical Depth	5.78	ft
Percent Full	92.9	%
Critical Slope	0.01525	ft/ft
Velocity	20.43	ft/s
Velocity Head	6.49	ft
Specific Energy	12.06	ft
Froude Number	1.21	
Maximum Discharge	559.78	ft ³ /s
Discharge Full	520.39	ft ³ /s
Slope Full	0.01745	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	92.86	%
Downstream Velocity	Infinity	ft/s

A-9A (Seg 4) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.57	ft
Critical Depth	5.78	ft
Channel Slope	0.01510	ft/ft
Critical Slope	0.01525	ft/ft

A-9A (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01510	ft/ft
Diameter	6.50	ft
Discharge	666.52	ft ³ /s

Results

Normal Depth	5.56	ft
Flow Area	30.20	ft ²
Wetted Perimeter	15.34	ft
Hydraulic Radius	1.97	ft
Top Width	4.58	ft
Critical Depth	6.24	ft
Percent Full	85.5	%
Critical Slope	0.01408	ft/ft
Velocity	22.07	ft/s
Velocity Head	7.57	ft
Specific Energy	13.12	ft
Froude Number	1.52	
Maximum Discharge	692.98	ft ³ /s
Discharge Full	644.21	ft ³ /s
Slope Full	0.01616	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	85.47	%
Downstream Velocity	Infinity	ft/s

A-9A (Seg 4) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.56	ft
Critical Depth	6.24	ft
Channel Slope	0.01510	ft/ft
Critical Slope	0.01408	ft/ft

A-9A (Seg 5) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.03330	ft/ft
Diameter	5.50	ft
Discharge	522.20	ft ³ /s

Results

Normal Depth	3.90	ft
Flow Area	18.03	ft ²
Wetted Perimeter	11.02	ft
Hydraulic Radius	1.64	ft
Top Width	4.99	ft
Critical Depth	5.39	ft
Percent Full	71.0	%
Critical Slope	0.02164	ft/ft
Velocity	28.96	ft/s
Velocity Head	13.04	ft
Specific Energy	16.94	ft
Froude Number	2.69	
Maximum Discharge	659.15	ft ³ /s
Discharge Full	612.76	ft ³ /s
Slope Full	0.02418	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	70.97	%
Downstream Velocity	Infinity	ft/s

A-9A (Seg 5) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.90	ft
Critical Depth	5.39	ft
Channel Slope	0.03330	ft/ft
Critical Slope	0.02164	ft/ft

A-9A (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.03330	ft/ft
Diameter	5.50	ft
Discharge	622.00	ft ³ /s

Results

Normal Depth	4.59	ft
Flow Area	21.17	ft ²
Wetted Perimeter	12.66	ft
Hydraulic Radius	1.67	ft
Top Width	4.09	ft
Critical Depth	5.44	ft
Percent Full	83.4	%
Critical Slope	0.03157	ft/ft
Velocity	29.38	ft/s
Velocity Head	13.42	ft
Specific Energy	18.00	ft
Froude Number	2.28	
Maximum Discharge	659.15	ft ³ /s
Discharge Full	612.76	ft ³ /s
Slope Full	0.03431	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	83.39	%
Downstream Velocity	Infinity	ft/s

A-9A (Seg 5) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.59	ft
Critical Depth	5.44	ft
Channel Slope	0.03330	ft/ft
Critical Slope	0.03157	ft/ft

A-9B - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	7.50	ft
Discharge	225.87	ft ³ /s

Results

Normal Depth	5.72	ft
Flow Area	36.18	ft ²
Wetted Perimeter	15.94	ft
Hydraulic Radius	2.27	ft
Top Width	6.38	ft
Critical Depth	3.85	ft
Percent Full	76.3	%
Critical Slope	0.00317	ft/ft
Velocity	6.24	ft/s
Velocity Head	0.61	ft
Specific Energy	6.33	ft
Froude Number	0.46	
Maximum Discharge	261.19	ft ³ /s
Discharge Full	242.81	ft ³ /s
Slope Full	0.00087	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.32	%
Downstream Velocity	Infinity	ft/s

A-9B - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.72	ft
Critical Depth	3.85	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00317	ft/ft

A-9B - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	8.00	ft
Discharge	268.95	ft ³ /s

Results

Normal Depth	6.12	ft
Flow Area	41.26	ft ²
Wetted Perimeter	17.03	ft
Hydraulic Radius	2.42	ft
Top Width	6.78	ft
Critical Depth	4.13	ft
Percent Full	76.5	%
Critical Slope	0.00312	ft/ft
Velocity	6.52	ft/s
Velocity Head	0.66	ft
Specific Energy	6.78	ft
Froude Number	0.47	
Maximum Discharge	310.24	ft ³ /s
Discharge Full	288.41	ft ³ /s
Slope Full	0.00087	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.49	%
Downstream Velocity	Infinity	ft/s

A-9B - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.12	ft
Critical Depth	4.13	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00312	ft/ft

A-9C (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00300	ft/ft
Bottom Width	12.00	ft
Discharge	1326.00	ft ³ /s

Results

Normal Depth	8.28	ft
Flow Area	99.35	ft ²
Wetted Perimeter	28.56	ft
Hydraulic Radius	3.48	ft
Top Width	12.00	ft
Critical Depth	7.24	ft
Critical Slope	0.00424	ft/ft
Velocity	13.35	ft/s
Velocity Head	2.77	ft
Specific Energy	11.05	ft
Froude Number	0.82	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	8.28	ft
Critical Depth	7.24	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00424	ft/ft

A-9C (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00510	ft/ft
Diameter	5.50	ft
Discharge	211.84	ft ³ /s

Results

Normal Depth	4.02	ft
Flow Area	18.59	ft ²
Wetted Perimeter	11.27	ft
Hydraulic Radius	1.65	ft
Top Width	4.88	ft
Critical Depth	4.07	ft
Percent Full	73.0	%
Critical Slope	0.00493	ft/ft
Velocity	11.39	ft/s
Velocity Head	2.02	ft
Specific Energy	6.03	ft
Froude Number	1.03	
Maximum Discharge	257.96	ft ³ /s
Discharge Full	239.80	ft ³ /s
Slope Full	0.00398	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	73.03	%
Downstream Velocity	Infinity	ft/s

A-9C (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.02	ft
Critical Depth	4.07	ft
Channel Slope	0.00510	ft/ft
Critical Slope	0.00493	ft/ft

A-9C (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00510	ft/ft
Diameter	5.50	ft
Discharge	255.96	ft ³ /s

Results

Normal Depth	4.97	ft
Flow Area	22.58	ft ²
Wetted Perimeter	13.80	ft
Hydraulic Radius	1.64	ft
Top Width	3.25	ft
Critical Depth	4.46	ft
Percent Full	90.3	%
Critical Slope	0.00593	ft/ft
Velocity	11.33	ft/s
Velocity Head	2.00	ft
Specific Energy	6.96	ft
Froude Number	0.76	
Maximum Discharge	257.96	ft ³ /s
Discharge Full	239.80	ft ³ /s
Slope Full	0.00581	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	90.34	%
Downstream Velocity	Infinity	ft/s

A-9C (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.97	ft
Critical Depth	4.46	ft
Channel Slope	0.00510	ft/ft
Critical Slope	0.00593	ft/ft

A-9C (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00403	ft/ft
Diameter	5.00	ft
Discharge	177.84	ft ³ /s

Results

Normal Depth	4.68	ft
Flow Area	19.12	ft ²
Wetted Perimeter	13.17	ft
Hydraulic Radius	1.45	ft
Top Width	2.43	ft
Critical Depth	3.82	ft
Percent Full	93.7	%
Critical Slope	0.00537	ft/ft
Velocity	9.30	ft/s
Velocity Head	1.34	ft
Specific Energy	6.03	ft
Froude Number	0.58	
Maximum Discharge	177.84	ft ³ /s
Discharge Full	165.33	ft ³ /s
Slope Full	0.00466	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	93.69	%
Downstream Velocity	Infinity	ft/s

A-9C (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.68	ft
Critical Depth	3.82	ft
Channel Slope	0.00403	ft/ft
Critical Slope	0.00537	ft/ft

A-9C (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00400	ft/ft
Diameter	5.50	ft
Discharge	215.96	ft ³ /s

Results

Normal Depth	4.60	ft
Flow Area	21.21	ft ²
Wetted Perimeter	12.69	ft
Hydraulic Radius	1.67	ft
Top Width	4.08	ft
Critical Depth	4.11	ft
Percent Full	83.6	%
Critical Slope	0.00501	ft/ft
Velocity	10.18	ft/s
Velocity Head	1.61	ft
Specific Energy	6.21	ft
Froude Number	0.79	
Maximum Discharge	228.45	ft ³ /s
Discharge Full	212.37	ft ³ /s
Slope Full	0.00414	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	83.58	%
Downstream Velocity	Infinity	ft/s

A-9C (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.60	ft
Critical Depth	4.11	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00501	ft/ft

A-9C (Seg 4) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	6.00	ft
Discharge	132.97	ft ³ /s

Results

Normal Depth	4.88	ft
Flow Area	24.62	ft ²
Wetted Perimeter	13.49	ft
Hydraulic Radius	1.83	ft
Top Width	4.68	ft
Critical Depth	3.12	ft
Percent Full	81.3	%
Critical Slope	0.00344	ft/ft
Velocity	5.40	ft/s
Velocity Head	0.45	ft
Specific Energy	5.33	ft
Froude Number	0.41	
Maximum Discharge	144.06	ft ³ /s
Discharge Full	133.92	ft ³ /s
Slope Full	0.00099	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.32	%
Downstream Velocity	Infinity	ft/s

A-9C (Seg 4) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.88	ft
Critical Depth	3.12	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00344	ft/ft

A-9C (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	6.50	ft
Discharge	162.65	ft ³ /s

Results

Normal Depth	5.22	ft
Flow Area	28.56	ft ²
Wetted Perimeter	14.44	ft
Hydraulic Radius	1.98	ft
Top Width	5.17	ft
Critical Depth	3.39	ft
Percent Full	80.3	%
Critical Slope	0.00335	ft/ft
Velocity	5.69	ft/s
Velocity Head	0.50	ft
Specific Energy	5.72	ft
Froude Number	0.43	
Maximum Discharge	178.33	ft ³ /s
Discharge Full	165.78	ft ³ /s
Slope Full	0.00096	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	80.30	%
Downstream Velocity	Infinity	ft/s

A-9C (Seg 4) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.22	ft
Critical Depth	3.39	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00335	ft/ft

A-9C (Seg 5) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01120	ft/ft
Diameter	3.50	ft
Discharge	96.00	ft ³ /s

Results

Normal Depth	2.60	ft
Flow Area	7.66	ft ²
Wetted Perimeter	7.27	ft
Hydraulic Radius	1.05	ft
Top Width	3.06	ft
Critical Depth	3.02	ft
Percent Full	74.3	%
Critical Slope	0.00839	ft/ft
Velocity	12.53	ft/s
Velocity Head	2.44	ft
Specific Energy	5.04	ft
Froude Number	1.40	
Maximum Discharge	114.53	ft ³ /s
Discharge Full	106.47	ft ³ /s
Slope Full	0.00911	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	74.28	%
Downstream Velocity	Infinity	ft/s

A-9C (Seg 5) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.60	ft
Critical Depth	3.02	ft
Channel Slope	0.01120	ft/ft
Critical Slope	0.00839	ft/ft

A-9C (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01120	ft/ft
Diameter	4.00	ft
Discharge	119.00	ft ³ /s

Results

Normal Depth	2.66	ft
Flow Area	8.89	ft ²
Wetted Perimeter	7.64	ft
Hydraulic Radius	1.16	ft
Top Width	3.77	ft
Critical Depth	3.29	ft
Percent Full	66.6	%
Critical Slope	0.00683	ft/ft
Velocity	13.39	ft/s
Velocity Head	2.78	ft
Specific Energy	5.45	ft
Froude Number	1.54	
Maximum Discharge	163.52	ft ³ /s
Discharge Full	152.01	ft ³ /s
Slope Full	0.00686	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	66.60	%
Downstream Velocity	Infinity	ft/s

A-9C (Seg 5) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.66	ft
Critical Depth	3.29	ft
Channel Slope	0.01120	ft/ft
Critical Slope	0.00683	ft/ft

A-9D (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	7.00	ft
Discharge	373.56	ft ³ /s

Results

Normal Depth	6.33	ft
Flow Area	36.60	ft ²
Wetted Perimeter	17.58	ft
Hydraulic Radius	2.08	ft
Top Width	4.12	ft
Critical Depth	5.10	ft
Percent Full	90.4	%
Critical Slope	0.00442	ft/ft
Velocity	10.21	ft/s
Velocity Head	1.62	ft
Specific Energy	7.95	ft
Froude Number	0.60	
Maximum Discharge	376.37	ft ³ /s
Discharge Full	349.88	ft ³ /s
Slope Full	0.00342	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	90.41	%
Downstream Velocity	Infinity	ft/s

A-9D (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.33	ft
Critical Depth	5.10	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00442	ft/ft

A-9D (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01960	ft/ft
Diameter	5.00	ft
Discharge	308.00	ft ³ /s

Results

Normal Depth	3.52	ft
Flow Area	14.79	ft ²
Wetted Perimeter	9.96	ft
Hydraulic Radius	1.48	ft
Top Width	4.56	ft
Critical Depth	4.70	ft
Percent Full	70.5	%
Critical Slope	0.01209	ft/ft
Velocity	20.82	ft/s
Velocity Head	6.74	ft
Specific Energy	10.26	ft
Froude Number	2.04	
Maximum Discharge	392.20	ft ³ /s
Discharge Full	364.60	ft ³ /s
Slope Full	0.01399	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	70.48	%
Downstream Velocity	Infinity	ft/s

A-9D (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.52	ft
Critical Depth	4.70	ft
Channel Slope	0.01960	ft/ft
Critical Slope	0.01209	ft/ft

A-9D (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01960	ft/ft
Diameter	5.00	ft
Discharge	373.00	ft ³ /s

Results

Normal Depth	4.21	ft
Flow Area	17.64	ft ²
Wetted Perimeter	11.62	ft
Hydraulic Radius	1.52	ft
Top Width	3.65	ft
Critical Depth	4.85	ft
Percent Full	84.2	%
Critical Slope	0.01806	ft/ft
Velocity	21.14	ft/s
Velocity Head	6.94	ft
Specific Energy	11.16	ft
Froude Number	1.69	
Maximum Discharge	392.20	ft ³ /s
Discharge Full	364.60	ft ³ /s
Slope Full	0.02051	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	84.20	%
Downstream Velocity	Infinity	ft/s

A-9D (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.21	ft
Critical Depth	4.85	ft
Channel Slope	0.01960	ft/ft
Critical Slope	0.01806	ft/ft

A-9E - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01200	ft/ft
Diameter	2.50	ft
Discharge	48.14	ft ³ /s

Results

Normal Depth	2.28	ft
Flow Area	4.70	ft ²
Wetted Perimeter	6.36	ft
Hydraulic Radius	0.74	ft
Top Width	1.40	ft
Critical Depth	2.27	ft
Percent Full	91.4	%
Critical Slope	0.01203	ft/ft
Velocity	10.23	ft/s
Velocity Head	1.63	ft
Specific Energy	3.91	ft
Froude Number	0.99	
Maximum Discharge	48.33	ft ³ /s
Discharge Full	44.93	ft ³ /s
Slope Full	0.01378	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	91.38	%
Downstream Velocity	Infinity	ft/s

A-9E - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.28	ft
Critical Depth	2.27	ft
Channel Slope	0.01200	ft/ft
Critical Slope	0.01203	ft/ft

A-9E - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01200	ft/ft
Diameter	3.00	ft
Discharge	59.49	ft ³ /s

Results

Normal Depth	2.06	ft
Flow Area	5.16	ft ²
Wetted Perimeter	5.85	ft
Hydraulic Radius	0.88	ft
Top Width	2.79	ft
Critical Depth	2.49	ft
Percent Full	68.5	%
Critical Slope	0.00777	ft/ft
Velocity	11.52	ft/s
Velocity Head	2.06	ft
Specific Energy	4.12	ft
Froude Number	1.49	
Maximum Discharge	78.59	ft ³ /s
Discharge Full	73.06	ft ³ /s
Slope Full	0.00796	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.55	%
Downstream Velocity	Infinity	ft/s

A-9E - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.06	ft
Critical Depth	2.49	ft
Channel Slope	0.01200	ft/ft
Critical Slope	0.00777	ft/ft

A-10 - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01140	ft/ft
Diameter	5.50	ft
Discharge	356.21	ft ³ /s

Results

Normal Depth	4.48	ft
Flow Area	20.70	ft ²
Wetted Perimeter	12.37	ft
Hydraulic Radius	1.67	ft
Top Width	4.28	ft
Critical Depth	5.05	ft
Percent Full	81.4	%
Critical Slope	0.00978	ft/ft
Velocity	17.20	ft/s
Velocity Head	4.60	ft
Specific Energy	9.08	ft
Froude Number	1.38	
Maximum Discharge	385.67	ft ³ /s
Discharge Full	358.53	ft ³ /s
Slope Full	0.01125	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.38	%
Downstream Velocity	Infinity	ft/s

A-10 - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.48	ft
Critical Depth	5.05	ft
Channel Slope	0.01140	ft/ft
Critical Slope	0.00978	ft/ft

A-11 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.01360	ft/ft
Bottom Width	8.00	ft
Discharge	996.00	ft ³ /s

Results

Normal Depth	5.69	ft
Flow Area	45.53	ft ²
Wetted Perimeter	19.38	ft
Hydraulic Radius	2.35	ft
Top Width	8.00	ft
Critical Depth	7.84	ft
Critical Slope	0.00611	ft/ft
Velocity	21.87	ft/s
Velocity Head	7.44	ft
Specific Energy	13.13	ft
Froude Number	1.62	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.69	ft
Critical Depth	7.84	ft
Channel Slope	0.01360	ft/ft
Critical Slope	0.00611	ft/ft

A-11 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00490	ft/ft
Diameter	3.50	ft
Discharge	55.09	ft ³ /s

Results

Normal Depth	2.33	ft
Flow Area	6.80	ft ²
Wetted Perimeter	6.68	ft
Hydraulic Radius	1.02	ft
Top Width	3.30	ft
Critical Depth	2.32	ft
Percent Full	66.6	%
Critical Slope	0.00494	ft/ft
Velocity	8.10	ft/s
Velocity Head	1.02	ft
Specific Energy	3.35	ft
Froude Number	0.99	
Maximum Discharge	75.75	ft ³ /s
Discharge Full	70.42	ft ³ /s
Slope Full	0.00300	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	66.57	%
Downstream Velocity	Infinity	ft/s

A-11 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.33	ft
Critical Depth	2.32	ft
Channel Slope	0.00490	ft/ft
Critical Slope	0.00494	ft/ft

A-11 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00490	ft/ft
Diameter	3.50	ft
Discharge	71.74	ft ³ /s

Results

Normal Depth	2.93	ft
Flow Area	8.61	ft ²
Wetted Perimeter	8.09	ft
Hydraulic Radius	1.06	ft
Top Width	2.58	ft
Critical Depth	2.65	ft
Percent Full	83.8	%
Critical Slope	0.00596	ft/ft
Velocity	8.34	ft/s
Velocity Head	1.08	ft
Specific Energy	4.01	ft
Froude Number	0.80	
Maximum Discharge	75.75	ft ³ /s
Discharge Full	70.42	ft ³ /s
Slope Full	0.00508	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	83.76	%
Downstream Velocity	Infinity	ft/s

A-11 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.93	ft
Critical Depth	2.65	ft
Channel Slope	0.00490	ft/ft
Critical Slope	0.00596	ft/ft

A-11A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01280	ft/ft
Diameter	3.50	ft
Discharge	92.33	ft ³ /s

Results

Normal Depth	2.39	ft
Flow Area	7.01	ft ²
Wetted Perimeter	6.81	ft
Hydraulic Radius	1.03	ft
Top Width	3.26	ft
Critical Depth	2.97	ft
Percent Full	68.4	%
Critical Slope	0.00793	ft/ft
Velocity	13.18	ft/s
Velocity Head	2.70	ft
Specific Energy	5.09	ft
Froude Number	1.58	
Maximum Discharge	122.44	ft ³ /s
Discharge Full	113.82	ft ³ /s
Slope Full	0.00842	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.35	%
Downstream Velocity	Infinity	ft/s

A-11A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.39	ft
Critical Depth	2.97	ft
Channel Slope	0.01280	ft/ft
Critical Slope	0.00793	ft/ft

A-11A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01280	ft/ft
Diameter	3.50	ft
Discharge	114.03	ft ³ /s

Results

Normal Depth	2.87	ft
Flow Area	8.46	ft ²
Wetted Perimeter	7.94	ft
Hydraulic Radius	1.06	ft
Top Width	2.68	ft
Critical Depth	3.20	ft
Percent Full	82.1	%
Critical Slope	0.01118	ft/ft
Velocity	13.49	ft/s
Velocity Head	2.83	ft
Specific Energy	5.70	ft
Froude Number	1.34	
Maximum Discharge	122.44	ft ³ /s
Discharge Full	113.82	ft ³ /s
Slope Full	0.01285	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	82.13	%
Downstream Velocity	Infinity	ft/s

A-11A - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.87	ft
Critical Depth	3.20	ft
Channel Slope	0.01280	ft/ft
Critical Slope	0.01118	ft/ft

A-11B - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01220	ft/ft
Diameter	3.50	ft
Discharge	94.90	ft ³ /s

Results

Normal Depth	2.49	ft
Flow Area	7.31	ft ²
Wetted Perimeter	7.02	ft
Hydraulic Radius	1.04	ft
Top Width	3.17	ft
Critical Depth	3.01	ft
Percent Full	71.1	%
Critical Slope	0.00825	ft/ft
Velocity	12.97	ft/s
Velocity Head	2.62	ft
Specific Energy	5.10	ft
Froude Number	1.51	
Maximum Discharge	119.53	ft ³ /s
Discharge Full	111.12	ft ³ /s
Slope Full	0.00890	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	71.08	%
Downstream Velocity	Infinity	ft/s

A-11B - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.49	ft
Critical Depth	3.01	ft
Channel Slope	0.01220	ft/ft
Critical Slope	0.00825	ft/ft

A-11B - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01220	ft/ft
Diameter	3.50	ft
Discharge	109.88	ft ³ /s

Results

Normal Depth	2.83	ft
Flow Area	8.35	ft ²
Wetted Perimeter	7.84	ft
Hydraulic Radius	1.07	ft
Top Width	2.75	ft
Critical Depth	3.17	ft
Percent Full	81.0	%
Critical Slope	0.01045	ft/ft
Velocity	13.17	ft/s
Velocity Head	2.69	ft
Specific Energy	5.53	ft
Froude Number	1.33	
Maximum Discharge	119.53	ft ³ /s
Discharge Full	111.12	ft ³ /s
Slope Full	0.01193	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	80.97	%
Downstream Velocity	Infinity	ft/s

A-11B - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.83	ft
Critical Depth	3.17	ft
Channel Slope	0.01220	ft/ft
Critical Slope	0.01045	ft/ft

B-2 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00100	ft/ft
Bottom Width	9.00	ft
Discharge	175.50	ft ³ /s

Results

Normal Depth	3.64	ft
Flow Area	32.79	ft ²
Wetted Perimeter	16.29	ft
Hydraulic Radius	2.01	ft
Top Width	9.00	ft
Critical Depth	2.28	ft
Critical Slope	0.00375	ft/ft
Velocity	5.35	ft/s
Velocity Head	0.45	ft
Specific Energy	4.09	ft
Froude Number	0.49	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.64	ft
Critical Depth	2.28	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00375	ft/ft

B-2 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	6.00	ft
Discharge	90.00	ft ³ /s

Results

Normal Depth	3.60	ft
Flow Area	17.72	ft ²
Wetted Perimeter	10.63	ft
Hydraulic Radius	1.67	ft
Top Width	5.88	ft
Critical Depth	2.55	ft
Percent Full	60.0	%
Critical Slope	0.00321	ft/ft
Velocity	5.08	ft/s
Velocity Head	0.40	ft
Specific Energy	4.00	ft
Froude Number	0.52	
Maximum Discharge	144.06	ft ³ /s
Discharge Full	133.92	ft ³ /s
Slope Full	0.00045	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	60.01	%
Downstream Velocity	Infinity	ft/s

B-2 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.60	ft
Critical Depth	2.55	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00321	ft/ft

B-2 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	6.00	ft
Discharge	102.00	ft ³ /s

Results

Normal Depth	3.92	ft
Flow Area	19.56	ft ²
Wetted Perimeter	11.29	ft
Hydraulic Radius	1.73	ft
Top Width	5.71	ft
Critical Depth	2.72	ft
Percent Full	65.3	%
Critical Slope	0.00326	ft/ft
Velocity	5.21	ft/s
Velocity Head	0.42	ft
Specific Energy	4.34	ft
Froude Number	0.50	
Maximum Discharge	144.06	ft ³ /s
Discharge Full	133.92	ft ³ /s
Slope Full	0.00058	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	65.31	%
Downstream Velocity	Infinity	ft/s

B-2 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.92	ft
Critical Depth	2.72	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00326	ft/ft

B-2A (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00330	ft/ft
Bottom Width	6.50	ft
Discharge	120.00	ft ³ /s

Results

Normal Depth	2.43	ft
Flow Area	15.80	ft ²
Wetted Perimeter	11.36	ft
Hydraulic Radius	1.39	ft
Top Width	6.50	ft
Critical Depth	2.20	ft
Critical Slope	0.00437	ft/ft
Velocity	7.60	ft/s
Velocity Head	0.90	ft
Specific Energy	3.33	ft
Froude Number	0.86	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.43	ft
Critical Depth	2.20	ft
Channel Slope	0.00330	ft/ft
Critical Slope	0.00437	ft/ft

B-2A (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00750	ft/ft
Diameter	3.50	ft
Discharge	58.31	ft ³ /s

Results

Normal Depth	2.09	ft
Flow Area	6.01	ft ²
Wetted Perimeter	6.19	ft
Hydraulic Radius	0.97	ft
Top Width	3.43	ft
Critical Depth	2.39	ft
Percent Full	59.9	%
Critical Slope	0.00511	ft/ft
Velocity	9.70	ft/s
Velocity Head	1.46	ft
Specific Energy	3.56	ft
Froude Number	1.29	
Maximum Discharge	93.72	ft ³ /s
Discharge Full	87.13	ft ³ /s
Slope Full	0.00336	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	59.85	%
Downstream Velocity	Infinity	ft/s

B-2A (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.09	ft
Critical Depth	2.39	ft
Channel Slope	0.00750	ft/ft
Critical Slope	0.00511	ft/ft

B-2A (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00750	ft/ft
Diameter	3.50	ft
Discharge	66.01	ft ³ /s

Results

Normal Depth	2.28	ft
Flow Area	6.63	ft ²
Wetted Perimeter	6.57	ft
Hydraulic Radius	1.01	ft
Top Width	3.34	ft
Critical Depth	2.55	ft
Percent Full	65.1	%
Critical Slope	0.00556	ft/ft
Velocity	9.96	ft/s
Velocity Head	1.54	ft
Specific Energy	3.82	ft
Froude Number	1.25	
Maximum Discharge	93.72	ft ³ /s
Discharge Full	87.13	ft ³ /s
Slope Full	0.00431	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	65.07	%
Downstream Velocity	Infinity	ft/s

B-2A (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.28	ft
Critical Depth	2.55	ft
Channel Slope	0.00750	ft/ft
Critical Slope	0.00556	ft/ft

B-3 - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	5.00	ft
Discharge	128.00	ft ³ /s

Results

Normal Depth	3.07	ft
Flow Area	12.63	ft ²
Wetted Perimeter	9.00	ft
Hydraulic Radius	1.40	ft
Top Width	4.87	ft
Critical Depth	3.24	ft
Percent Full	61.4	%
Critical Slope	0.00427	ft/ft
Velocity	10.13	ft/s
Velocity Head	1.60	ft
Specific Energy	4.66	ft
Froude Number	1.11	
Maximum Discharge	198.09	ft ³ /s
Discharge Full	184.15	ft ³ /s
Slope Full	0.00242	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	61.36	%
Downstream Velocity	Infinity	ft/s

B-3 - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.07	ft
Critical Depth	3.24	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00427	ft/ft

B-3 - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	5.00	ft
Discharge	148.00	ft ³ /s

Results

Normal Depth	3.39	ft
Flow Area	14.19	ft ²
Wetted Perimeter	9.68	ft
Hydraulic Radius	1.47	ft
Top Width	4.67	ft
Critical Depth	3.49	ft
Percent Full	67.9	%
Critical Slope	0.00465	ft/ft
Velocity	10.43	ft/s
Velocity Head	1.69	ft
Specific Energy	5.08	ft
Froude Number	1.05	
Maximum Discharge	198.09	ft ³ /s
Discharge Full	184.15	ft ³ /s
Slope Full	0.00323	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.89	%
Downstream Velocity	Infinity	ft/s

B-3 - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.39	ft
Critical Depth	3.49	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00465	ft/ft

B-3A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00450	ft/ft
Diameter	2.50	ft
Discharge	24.09	ft ³ /s

Results

Normal Depth	1.81	ft
Flow Area	3.81	ft ²
Wetted Perimeter	5.09	ft
Hydraulic Radius	0.75	ft
Top Width	2.23	ft
Critical Depth	1.67	ft
Percent Full	72.5	%
Critical Slope	0.00557	ft/ft
Velocity	6.32	ft/s
Velocity Head	0.62	ft
Specific Energy	2.43	ft
Froude Number	0.85	
Maximum Discharge	29.60	ft ³ /s
Discharge Full	27.51	ft ³ /s
Slope Full	0.00345	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	72.51	%
Downstream Velocity	Infinity	ft/s

B-3A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.81	ft
Critical Depth	1.67	ft
Channel Slope	0.00450	ft/ft
Critical Slope	0.00557	ft/ft

B-3A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00450	ft/ft
Diameter	2.50	ft
Discharge	27.85	ft ³ /s

Results

Normal Depth	2.08	ft
Flow Area	4.36	ft ²
Wetted Perimeter	5.74	ft
Hydraulic Radius	0.76	ft
Top Width	1.87	ft
Critical Depth	1.80	ft
Percent Full	83.1	%
Critical Slope	0.00612	ft/ft
Velocity	6.39	ft/s
Velocity Head	0.63	ft
Specific Energy	2.71	ft
Froude Number	0.74	
Maximum Discharge	29.60	ft ³ /s
Discharge Full	27.51	ft ³ /s
Slope Full	0.00461	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	83.11	%
Downstream Velocity	Infinity	ft/s

B-3A - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.08	ft
Critical Depth	1.80	ft
Channel Slope	0.00450	ft/ft
Critical Slope	0.00612	ft/ft

B-4 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00190	ft/ft
Bottom Width	10.00	ft
Discharge	73.00	ft ³ /s

Results

Normal Depth	1.46	ft
Flow Area	14.56	ft ²
Wetted Perimeter	12.91	ft
Hydraulic Radius	1.13	ft
Top Width	10.00	ft
Critical Depth	1.18	ft
Critical Slope	0.00358	ft/ft
Velocity	5.01	ft/s
Velocity Head	0.39	ft
Specific Energy	1.85	ft
Froude Number	0.73	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.46	ft
Critical Depth	1.18	ft
Channel Slope	0.00190	ft/ft
Critical Slope	0.00358	ft/ft

B-4 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00190	ft/ft
Bottom Width	10.00	ft
Discharge	83.00	ft ³ /s

Results

Normal Depth	1.59	ft
Flow Area	15.85	ft ²
Wetted Perimeter	13.17	ft
Hydraulic Radius	1.20	ft
Top Width	10.00	ft
Critical Depth	1.29	ft
Critical Slope	0.00356	ft/ft
Velocity	5.24	ft/s
Velocity Head	0.43	ft
Specific Energy	2.01	ft
Froude Number	0.73	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.59	ft
Critical Depth	1.29	ft
Channel Slope	0.00190	ft/ft
Critical Slope	0.00356	ft/ft

B-4 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00340	ft/ft
Bottom Width	6.00	ft
Discharge	50.85	ft ³ /s

Results

Normal Depth	1.41	ft
Flow Area	8.45	ft ²
Wetted Perimeter	8.82	ft
Hydraulic Radius	0.96	ft
Top Width	6.00	ft
Critical Depth	1.31	ft
Critical Slope	0.00423	ft/ft
Velocity	6.02	ft/s
Velocity Head	0.56	ft
Specific Energy	1.97	ft
Froude Number	0.89	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.41	ft
Critical Depth	1.31	ft
Channel Slope	0.00340	ft/ft
Critical Slope	0.00423	ft/ft

B-4 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00340	ft/ft
Bottom Width	6.00	ft
Discharge	57.82	ft ³ /s

Results

Normal Depth	1.54	ft
Flow Area	9.24	ft ²
Wetted Perimeter	9.08	ft
Hydraulic Radius	1.02	ft
Top Width	6.00	ft
Critical Depth	1.42	ft
Critical Slope	0.00426	ft/ft
Velocity	6.26	ft/s
Velocity Head	0.61	ft
Specific Energy	2.15	ft
Froude Number	0.89	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.54	ft
Critical Depth	1.42	ft
Channel Slope	0.00340	ft/ft
Critical Slope	0.00426	ft/ft

B-4 (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	5.50	ft
Discharge	28.51	ft ³ /s

Results

Normal Depth	1.46	ft
Flow Area	5.07	ft ²
Wetted Perimeter	5.96	ft
Hydraulic Radius	0.85	ft
Top Width	4.86	ft
Critical Depth	1.44	ft
Percent Full	26.6	%
Critical Slope	0.00319	ft/ft
Velocity	5.62	ft/s
Velocity Head	0.49	ft
Specific Energy	1.95	ft
Froude Number	0.97	
Maximum Discharge	197.84	ft ³ /s
Discharge Full	183.92	ft ³ /s
Slope Full	0.00007	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	26.61	%
Downstream Velocity	Infinity	ft/s

B-4 (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.46	ft
Critical Depth	1.44	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00319	ft/ft

B-4 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	5.50	ft
Discharge	32.41	ft ³ /s

Results

Normal Depth	1.56	ft
Flow Area	5.56	ft ²
Wetted Perimeter	6.18	ft
Hydraulic Radius	0.90	ft
Top Width	4.96	ft
Critical Depth	1.54	ft
Percent Full	28.4	%
Critical Slope	0.00318	ft/ft
Velocity	5.83	ft/s
Velocity Head	0.53	ft
Specific Energy	2.09	ft
Froude Number	0.97	
Maximum Discharge	197.84	ft ³ /s
Discharge Full	183.92	ft ³ /s
Slope Full	0.00009	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	28.41	%
Downstream Velocity	Infinity	ft/s

B-4 (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.56	ft
Critical Depth	1.54	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00318	ft/ft

B-4 (Seg 3)-2 - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00680	ft/ft
Diameter	3.00	ft
Discharge	6.12	ft ³ /s

Results

Normal Depth	0.68	ft
Flow Area	1.19	ft ²
Wetted Perimeter	2.97	ft
Hydraulic Radius	0.40	ft
Top Width	2.51	ft
Critical Depth	0.78	ft
Percent Full	22.5	%
Critical Slope	0.00391	ft/ft
Velocity	5.13	ft/s
Velocity Head	0.41	ft
Specific Energy	1.09	ft
Froude Number	1.31	
Maximum Discharge	59.16	ft ³ /s
Discharge Full	55.00	ft ³ /s
Slope Full	0.00008	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	22.52	%
Downstream Velocity	Infinity	ft/s

B-4 (Seg 3)-2 - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.68	ft
Critical Depth	0.78	ft
Channel Slope	0.00680	ft/ft
Critical Slope	0.00391	ft/ft

B-4 (Seg 3)-2 - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00680	ft/ft
Diameter	3.00	ft
Discharge	6.96	ft ³ /s

Results

Normal Depth	0.72	ft
Flow Area	1.31	ft ²
Wetted Perimeter	3.07	ft
Hydraulic Radius	0.43	ft
Top Width	2.56	ft
Critical Depth	0.83	ft
Percent Full	24.0	%
Critical Slope	0.00390	ft/ft
Velocity	5.33	ft/s
Velocity Head	0.44	ft
Specific Energy	1.16	ft
Froude Number	1.32	
Maximum Discharge	59.16	ft ³ /s
Discharge Full	55.00	ft ³ /s
Slope Full	0.00011	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	24.02	%
Downstream Velocity	Infinity	ft/s

B-4 (Seg 3)-2 - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.72	ft
Critical Depth	0.83	ft
Channel Slope	0.00680	ft/ft
Critical Slope	0.00390	ft/ft

B-4A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00810	ft/ft
Diameter	2.00	ft
Discharge	13.60	ft ³ /s

Results

Normal Depth	1.20	ft
Flow Area	1.96	ft ²
Wetted Perimeter	3.54	ft
Hydraulic Radius	0.55	ft
Top Width	1.96	ft
Critical Depth	1.33	ft
Percent Full	59.8	%
Critical Slope	0.00595	ft/ft
Velocity	6.94	ft/s
Velocity Head	0.75	ft
Specific Energy	1.94	ft
Froude Number	1.22	
Maximum Discharge	21.90	ft ³ /s
Discharge Full	20.36	ft ³ /s
Slope Full	0.00361	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	59.78	%
Downstream Velocity	Infinity	ft/s

B-4A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.20	ft
Critical Depth	1.33	ft
Channel Slope	0.00810	ft/ft
Critical Slope	0.00595	ft/ft

B-4A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00810	ft/ft
Diameter	2.00	ft
Discharge	15.47	ft ³ /s

Results

Normal Depth	1.30	ft
Flow Area	2.17	ft ²
Wetted Perimeter	3.76	ft
Hydraulic Radius	0.58	ft
Top Width	1.91	ft
Critical Depth	1.42	ft
Percent Full	65.2	%
Critical Slope	0.00645	ft/ft
Velocity	7.13	ft/s
Velocity Head	0.79	ft
Specific Energy	2.09	ft
Froude Number	1.18	
Maximum Discharge	21.90	ft ³ /s
Discharge Full	20.36	ft ³ /s
Slope Full	0.00468	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	65.22	%
Downstream Velocity	Infinity	ft/s

B-4A - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.30	ft
Critical Depth	1.42	ft
Channel Slope	0.00810	ft/ft
Critical Slope	0.00645	ft/ft

B-4B - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00680	ft/ft
Diameter	1.50	ft
Discharge	1.68	ft ³ /s

Results

Normal Depth	0.45	ft
Flow Area	0.44	ft ²
Wetted Perimeter	1.73	ft
Hydraulic Radius	0.26	ft
Top Width	1.37	ft
Critical Depth	0.49	ft
Percent Full	29.9	%
Critical Slope	0.00491	ft/ft
Velocity	3.79	ft/s
Velocity Head	0.22	ft
Specific Energy	0.67	ft
Froude Number	1.18	
Maximum Discharge	9.32	ft ³ /s
Discharge Full	8.66	ft ³ /s
Slope Full	0.00026	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	29.85	%
Downstream Velocity	Infinity	ft/s

B-4B - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.45	ft
Critical Depth	0.49	ft
Channel Slope	0.00680	ft/ft
Critical Slope	0.00491	ft/ft

B-4B - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00680	ft/ft
Diameter	1.50	ft
Discharge	1.91	ft ³ /s

Results

Normal Depth	0.48	ft
Flow Area	0.49	ft ²
Wetted Perimeter	1.80	ft
Hydraulic Radius	0.27	ft
Top Width	1.40	ft
Critical Depth	0.52	ft
Percent Full	31.9	%
Critical Slope	0.00493	ft/ft
Velocity	3.93	ft/s
Velocity Head	0.24	ft
Specific Energy	0.72	ft
Froude Number	1.18	
Maximum Discharge	9.32	ft ³ /s
Discharge Full	8.66	ft ³ /s
Slope Full	0.00033	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	31.91	%
Downstream Velocity	Infinity	ft/s

B-4B - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.48	ft
Critical Depth	0.52	ft
Channel Slope	0.00680	ft/ft
Critical Slope	0.00493	ft/ft

B-4C (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00820	ft/ft
Diameter	3.00	ft
Discharge	12.32	ft ³ /s

Results

Normal Depth	0.92	ft
Flow Area	1.84	ft ²
Wetted Perimeter	3.52	ft
Hydraulic Radius	0.52	ft
Top Width	2.77	ft
Critical Depth	1.11	ft
Percent Full	30.6	%
Critical Slope	0.00394	ft/ft
Velocity	6.71	ft/s
Velocity Head	0.70	ft
Specific Energy	1.62	ft
Froude Number	1.45	
Maximum Discharge	64.97	ft ³ /s
Discharge Full	60.39	ft ³ /s
Slope Full	0.00034	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	30.64	%
Downstream Velocity	Infinity	ft/s

B-4C (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.92	ft
Critical Depth	1.11	ft
Channel Slope	0.00820	ft/ft
Critical Slope	0.00394	ft/ft

B-4C (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00820	ft/ft
Diameter	3.00	ft
Discharge	14.01	ft ³ /s

Results

Normal Depth	0.98	ft
Flow Area	2.01	ft ²
Wetted Perimeter	3.66	ft
Hydraulic Radius	0.55	ft
Top Width	2.82	ft
Critical Depth	1.19	ft
Percent Full	32.8	%
Critical Slope	0.00398	ft/ft
Velocity	6.96	ft/s
Velocity Head	0.75	ft
Specific Energy	1.73	ft
Froude Number	1.45	
Maximum Discharge	64.97	ft ³ /s
Discharge Full	60.39	ft ³ /s
Slope Full	0.00044	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	32.76	%
Downstream Velocity	Infinity	ft/s

B-4C (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.98	ft
Critical Depth	1.19	ft
Channel Slope	0.00820	ft/ft
Critical Slope	0.00398	ft/ft

B-4C (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00210	ft/ft
Diameter	2.00	ft
Discharge	9.48	ft ³ /s

Results

Normal Depth	1.50	ft
Flow Area	2.53	ft ²
Wetted Perimeter	4.20	ft
Hydraulic Radius	0.60	ft
Top Width	1.73	ft
Critical Depth	1.10	ft
Percent Full	75.2	%
Critical Slope	0.00511	ft/ft
Velocity	3.74	ft/s
Velocity Head	0.22	ft
Specific Energy	1.72	ft
Froude Number	0.54	
Maximum Discharge	11.15	ft ³ /s
Discharge Full	10.37	ft ³ /s
Slope Full	0.00176	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.20	%
Downstream Velocity	Infinity	ft/s

B-4C (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.50	ft
Critical Depth	1.10	ft
Channel Slope	0.00210	ft/ft
Critical Slope	0.00511	ft/ft

B-4C (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00210	ft/ft
Diameter	2.00	ft
Discharge	10.78	ft ³ /s

Results

Normal Depth	1.72	ft
Flow Area	2.88	ft ²
Wetted Perimeter	4.75	ft
Hydraulic Radius	0.61	ft
Top Width	1.38	ft
Critical Depth	1.18	ft
Percent Full	86.1	%
Critical Slope	0.00534	ft/ft
Velocity	3.75	ft/s
Velocity Head	0.22	ft
Specific Energy	1.94	ft
Froude Number	0.46	
Maximum Discharge	11.15	ft ³ /s
Discharge Full	10.37	ft ³ /s
Slope Full	0.00227	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	86.09	%
Downstream Velocity	Infinity	ft/s

B-4C (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.72	ft
Critical Depth	1.18	ft
Channel Slope	0.00210	ft/ft
Critical Slope	0.00534	ft/ft

B-4C (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00310	ft/ft
Diameter	2.00	ft
Discharge	6.98	ft ³ /s

Results

Normal Depth	1.06	ft
Flow Area	1.70	ft ²
Wetted Perimeter	3.27	ft
Hydraulic Radius	0.52	ft
Top Width	2.00	ft
Critical Depth	0.94	ft
Percent Full	53.2	%
Critical Slope	0.00476	ft/ft
Velocity	4.11	ft/s
Velocity Head	0.26	ft
Specific Energy	1.33	ft
Froude Number	0.79	
Maximum Discharge	13.55	ft ³ /s
Discharge Full	12.59	ft ³ /s
Slope Full	0.00095	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	53.16	%
Downstream Velocity	Infinity	ft/s

B-4C (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.06	ft
Critical Depth	0.94	ft
Channel Slope	0.00310	ft/ft
Critical Slope	0.00476	ft/ft

B-4C (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00310	ft/ft
Diameter	2.00	ft
Discharge	7.94	ft ³ /s

Results

Normal Depth	1.15	ft
Flow Area	1.87	ft ²
Wetted Perimeter	3.45	ft
Hydraulic Radius	0.54	ft
Top Width	1.98	ft
Critical Depth	1.00	ft
Percent Full	57.6	%
Critical Slope	0.00488	ft/ft
Velocity	4.24	ft/s
Velocity Head	0.28	ft
Specific Energy	1.43	ft
Froude Number	0.77	
Maximum Discharge	13.55	ft ³ /s
Discharge Full	12.59	ft ³ /s
Slope Full	0.00123	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	57.60	%
Downstream Velocity	Infinity	ft/s

B-4C (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.15	ft
Critical Depth	1.00	ft
Channel Slope	0.00310	ft/ft
Critical Slope	0.00488	ft/ft

B-4D - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00710	ft/ft
Diameter	2.00	ft
Discharge	13.26	ft ³ /s

Results

Normal Depth	1.23	ft
Flow Area	2.02	ft ²
Wetted Perimeter	3.60	ft
Hydraulic Radius	0.56	ft
Top Width	1.95	ft
Critical Depth	1.31	ft
Percent Full	61.4	%
Critical Slope	0.00587	ft/ft
Velocity	6.56	ft/s
Velocity Head	0.67	ft
Specific Energy	1.90	ft
Froude Number	1.13	
Maximum Discharge	20.50	ft ³ /s
Discharge Full	19.06	ft ³ /s
Slope Full	0.00344	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	61.40	%
Downstream Velocity	Infinity	ft/s

B-4D - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.23	ft
Critical Depth	1.31	ft
Channel Slope	0.00710	ft/ft
Critical Slope	0.00587	ft/ft

B-4D - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00710	ft/ft
Diameter	2.00	ft
Discharge	15.07	ft ³ /s

Results

Normal Depth	1.34	ft
Flow Area	2.24	ft ²
Wetted Perimeter	3.84	ft
Hydraulic Radius	0.58	ft
Top Width	1.88	ft
Critical Depth	1.40	ft
Percent Full	67.1	%
Critical Slope	0.00634	ft/ft
Velocity	6.73	ft/s
Velocity Head	0.70	ft
Specific Energy	2.04	ft
Froude Number	1.09	
Maximum Discharge	20.50	ft ³ /s
Discharge Full	19.06	ft ³ /s
Slope Full	0.00444	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.08	%
Downstream Velocity	Infinity	ft/s

B-4D - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.34	ft
Critical Depth	1.40	ft
Channel Slope	0.00710	ft/ft
Critical Slope	0.00634	ft/ft

B-5 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00710	ft/ft
Bottom Width	21.00	ft
Discharge	4923.00	ft ³ /s

Results

Normal Depth	9.11	ft
Flow Area	191.37	ft ²
Wetted Perimeter	39.23	ft
Hydraulic Radius	4.88	ft
Top Width	21.00	ft
Critical Depth	11.95	ft
Critical Slope	0.00344	ft/ft
Velocity	25.73	ft/s
Velocity Head	10.28	ft
Specific Energy	19.40	ft
Froude Number	1.50	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	9.11	ft
Critical Depth	11.95	ft
Channel Slope	0.00710	ft/ft
Critical Slope	0.00344	ft/ft

B-5 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00710	ft/ft
Bottom Width	21.00	ft
Discharge	5767.50	ft ³ /s

Results

Normal Depth	10.25	ft
Flow Area	215.23	ft ²
Wetted Perimeter	41.50	ft
Hydraulic Radius	5.19	ft
Top Width	21.00	ft
Critical Depth	13.28	ft
Critical Slope	0.00359	ft/ft
Velocity	26.80	ft/s
Velocity Head	11.16	ft
Specific Energy	21.41	ft
Froude Number	1.48	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	10.25	ft
Critical Depth	13.28	ft
Channel Slope	0.00710	ft/ft
Critical Slope	0.00359	ft/ft

B-5 (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.01110	ft/ft
Bottom Width	15.50	ft
Discharge	4916.50	ft ³ /s

Results

Normal Depth	10.48	ft
Flow Area	162.39	ft ²
Wetted Perimeter	36.45	ft
Hydraulic Radius	4.45	ft
Top Width	15.50	ft
Critical Depth	14.62	ft
Critical Slope	0.00480	ft/ft
Velocity	30.28	ft/s
Velocity Head	14.24	ft
Specific Energy	24.72	ft
Froude Number	1.65	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	10.48	ft
Critical Depth	14.62	ft
Channel Slope	0.01110	ft/ft
Critical Slope	0.00480	ft/ft

B-5 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.01110	ft/ft
Bottom Width	15.50	ft
Discharge	5767.50	ft ³ /s

Results

Normal Depth	11.88	ft
Flow Area	184.09	ft ²
Wetted Perimeter	39.25	ft
Hydraulic Radius	4.69	ft
Top Width	15.50	ft
Critical Depth	16.27	ft
Critical Slope	0.00509	ft/ft
Velocity	31.33	ft/s
Velocity Head	15.25	ft
Specific Energy	27.13	ft
Froude Number	1.60	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	11.88	ft
Critical Depth	16.27	ft
Channel Slope	0.01110	ft/ft
Critical Slope	0.00509	ft/ft

B-5A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00450	ft/ft
Diameter	4.00	ft
Discharge	99.63	ft ³ /s

Results

Normal Depth	3.42	ft
Flow Area	11.43	ft ²
Wetted Perimeter	9.43	ft
Hydraulic Radius	1.21	ft
Top Width	2.83	ft
Critical Depth	3.02	ft
Percent Full	85.4	%
Critical Slope	0.00568	ft/ft
Velocity	8.72	ft/s
Velocity Head	1.18	ft
Specific Energy	4.60	ft
Froude Number	0.76	
Maximum Discharge	103.65	ft ³ /s
Discharge Full	96.35	ft ³ /s
Slope Full	0.00481	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	85.39	%
Downstream Velocity	Infinity	ft/s

B-5A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.42	ft
Critical Depth	3.02	ft
Channel Slope	0.00450	ft/ft
Critical Slope	0.00568	ft/ft

B-5A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00450	ft/ft
Bottom Width	4.50	ft
Discharge	112.67	ft ³ /s

Results

Normal Depth	2.98	ft
Flow Area	13.41	ft ²
Wetted Perimeter	10.46	ft
Hydraulic Radius	1.28	ft
Top Width	4.50	ft
Critical Depth	2.69	ft
Critical Slope	0.00586	ft/ft
Velocity	8.40	ft/s
Velocity Head	1.10	ft
Specific Energy	4.08	ft
Froude Number	0.86	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.98	ft
Critical Depth	2.69	ft
Channel Slope	0.00450	ft/ft
Critical Slope	0.00586	ft/ft

B-5B - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	6.00	ft
Discharge	200.00	ft ³ /s

Results

Normal Depth	5.30	ft
Flow Area	26.42	ft ²
Wetted Perimeter	14.66	ft
Hydraulic Radius	1.80	ft
Top Width	3.86	ft
Critical Depth	3.87	ft
Percent Full	88.3	%
Critical Slope	0.00400	ft/ft
Velocity	7.57	ft/s
Velocity Head	0.89	ft
Specific Energy	6.19	ft
Froude Number	0.51	
Maximum Discharge	203.73	ft ³ /s
Discharge Full	189.39	ft ³ /s
Slope Full	0.00223	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	88.28	%
Downstream Velocity	Infinity	ft/s

B-5B - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.30	ft
Critical Depth	3.87	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00400	ft/ft

B-5B - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00200	ft/ft
Bottom Width	6.50	ft
Discharge	232.00	ft ³ /s

Results

Normal Depth	4.83	ft
Flow Area	31.39	ft ²
Wetted Perimeter	16.16	ft
Hydraulic Radius	1.94	ft
Top Width	6.50	ft
Critical Depth	3.41	ft
Critical Slope	0.00494	ft/ft
Velocity	7.39	ft/s
Velocity Head	0.85	ft
Specific Energy	5.68	ft
Froude Number	0.59	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.83	ft
Critical Depth	3.41	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00494	ft/ft

B-5C - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.01270	ft/ft
Bottom Width	15.50	ft
Discharge	4843.50	ft ³ /s

Results

Normal Depth	9.83	ft
Flow Area	152.35	ft ²
Wetted Perimeter	35.16	ft
Hydraulic Radius	4.33	ft
Top Width	15.50	ft
Critical Depth	14.48	ft
Critical Slope	0.00478	ft/ft
Velocity	31.79	ft/s
Velocity Head	15.71	ft
Specific Energy	25.54	ft
Froude Number	1.79	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	9.83	ft
Critical Depth	14.48	ft
Channel Slope	0.01270	ft/ft
Critical Slope	0.00478	ft/ft

B-5C - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.01270	ft/ft
Bottom Width	15.50	ft
Discharge	5683.00	ft ³ /s

Results

Normal Depth	11.13	ft
Flow Area	172.55	ft ²
Wetted Perimeter	37.76	ft
Hydraulic Radius	4.57	ft
Top Width	15.50	ft
Critical Depth	16.11	ft
Critical Slope	0.00506	ft/ft
Velocity	32.94	ft/s
Velocity Head	16.86	ft
Specific Energy	27.99	ft
Froude Number	1.74	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	11.13	ft
Critical Depth	16.11	ft
Channel Slope	0.01270	ft/ft
Critical Slope	0.00506	ft/ft

B-5D - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00330	ft/ft
Diameter	4.50	ft
Discharge	73.89	ft ³ /s

Results

Normal Depth	2.65	ft
Flow Area	9.76	ft ²
Wetted Perimeter	7.88	ft
Hydraulic Radius	1.24	ft
Top Width	4.43	ft
Critical Depth	2.51	ft
Percent Full	59.0	%
Critical Slope	0.00393	ft/ft
Velocity	7.57	ft/s
Velocity Head	0.89	ft
Specific Energy	3.54	ft
Froude Number	0.90	
Maximum Discharge	121.51	ft ³ /s
Discharge Full	112.96	ft ³ /s
Slope Full	0.00141	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	58.96	%
Downstream Velocity	Infinity	ft/s

B-5D - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.65	ft
Critical Depth	2.51	ft
Channel Slope	0.00330	ft/ft
Critical Slope	0.00393	ft/ft

B-5D - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00330	ft/ft
Bottom Width	4.50	ft
Discharge	85.55	ft ³ /s

Results

Normal Depth	2.72	ft
Flow Area	12.22	ft ²
Wetted Perimeter	9.93	ft
Hydraulic Radius	1.23	ft
Top Width	4.50	ft
Critical Depth	2.24	ft
Critical Slope	0.00548	ft/ft
Velocity	7.00	ft/s
Velocity Head	0.76	ft
Specific Energy	3.48	ft
Froude Number	0.75	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.72	ft
Critical Depth	2.24	ft
Channel Slope	0.00330	ft/ft
Critical Slope	0.00548	ft/ft

C-1 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	9.50	ft
Discharge	453.13	ft ³ /s

Results

Normal Depth	7.73	ft
Flow Area	61.77	ft ²
Wetted Perimeter	21.37	ft
Hydraulic Radius	2.89	ft
Top Width	7.40	ft
Critical Depth	5.15	ft
Percent Full	81.4	%
Critical Slope	0.00302	ft/ft
Velocity	7.34	ft/s
Velocity Head	0.84	ft
Specific Energy	8.57	ft
Froude Number	0.45	
Maximum Discharge	490.60	ft ³ /s
Discharge Full	456.07	ft ³ /s
Slope Full	0.00099	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.38	%
Downstream Velocity	Infinity	ft/s

C-1 (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	7.73	ft
Critical Depth	5.15	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00302	ft/ft

C-1 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00100	ft/ft
Bottom Width	10.00	ft
Discharge	519.98	ft ³ /s

Results

Normal Depth	7.46	ft
Flow Area	74.59	ft ²
Wetted Perimeter	24.92	ft
Hydraulic Radius	2.99	ft
Top Width	10.00	ft
Critical Depth	4.38	ft
Critical Slope	0.00404	ft/ft
Velocity	6.97	ft/s
Velocity Head	0.76	ft
Specific Energy	8.21	ft
Froude Number	0.45	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	7.46	ft
Critical Depth	4.38	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00404	ft/ft

C-1 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	8.00	ft
Discharge	283.34	ft ³ /s

Results

Normal Depth	6.43	ft
Flow Area	43.32	ft ²
Wetted Perimeter	17.80	ft
Hydraulic Radius	2.43	ft
Top Width	6.35	ft
Critical Depth	4.25	ft
Percent Full	80.4	%
Critical Slope	0.00316	ft/ft
Velocity	6.54	ft/s
Velocity Head	0.66	ft
Specific Energy	7.10	ft
Froude Number	0.44	
Maximum Discharge	310.24	ft ³ /s
Discharge Full	288.41	ft ³ /s
Slope Full	0.00097	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	80.42	%
Downstream Velocity	Infinity	ft/s

C-1 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.43	ft
Critical Depth	4.25	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00316	ft/ft

C-1 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00100	ft/ft
Bottom Width	8.50	ft
Discharge	328.39	ft ³ /s

Results

Normal Depth	6.21	ft
Flow Area	52.79	ft ²
Wetted Perimeter	20.92	ft
Hydraulic Radius	2.52	ft
Top Width	8.50	ft
Critical Depth	3.59	ft
Critical Slope	0.00422	ft/ft
Velocity	6.22	ft/s
Velocity Head	0.60	ft
Specific Energy	6.81	ft
Froude Number	0.44	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.21	ft
Critical Depth	3.59	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00422	ft/ft

C-1A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	4.00	ft
Discharge	56.81	ft ³ /s

Results

Normal Depth	3.36	ft
Flow Area	11.27	ft ²
Wetted Perimeter	9.28	ft
Hydraulic Radius	1.22	ft
Top Width	2.93	ft
Critical Depth	2.27	ft
Percent Full	84.0	%
Critical Slope	0.00413	ft/ft
Velocity	5.04	ft/s
Velocity Head	0.39	ft
Specific Energy	3.76	ft
Froude Number	0.45	
Maximum Discharge	59.84	ft ³ /s
Discharge Full	55.63	ft ³ /s
Slope Full	0.00156	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	84.02	%
Downstream Velocity	Infinity	ft/s

C-1A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.36	ft
Critical Depth	2.27	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00413	ft/ft

C-1A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00150	ft/ft
Bottom Width	4.50	ft
Discharge	64.20	ft ³ /s

Results

Normal Depth	2.95	ft
Flow Area	13.27	ft ²
Wetted Perimeter	10.40	ft
Hydraulic Radius	1.28	ft
Top Width	4.50	ft
Critical Depth	1.85	ft
Critical Slope	0.00518	ft/ft
Velocity	4.84	ft/s
Velocity Head	0.36	ft
Specific Energy	3.31	ft
Froude Number	0.50	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.95	ft
Critical Depth	1.85	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00518	ft/ft

C-2 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00400	ft/ft
Diameter	5.50	ft
Discharge	183.86	ft ³ /s

Results

Normal Depth	3.95	ft
Flow Area	18.27	ft ²
Wetted Perimeter	11.13	ft
Hydraulic Radius	1.64	ft
Top Width	4.95	ft
Critical Depth	3.79	ft
Percent Full	71.9	%
Critical Slope	0.00444	ft/ft
Velocity	10.06	ft/s
Velocity Head	1.57	ft
Specific Energy	5.53	ft
Froude Number	0.92	
Maximum Discharge	228.45	ft ³ /s
Discharge Full	212.37	ft ³ /s
Slope Full	0.00300	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	71.85	%
Downstream Velocity	Infinity	ft/s

C-2 (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.95	ft
Critical Depth	3.79	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00444	ft/ft

C-2 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00400	ft/ft
Bottom Width	6.00	ft
Discharge	214.23	ft ³ /s

Results

Normal Depth	3.78	ft
Flow Area	22.66	ft ²
Wetted Perimeter	13.55	ft
Hydraulic Radius	1.67	ft
Top Width	6.00	ft
Critical Depth	3.41	ft
Critical Slope	0.00522	ft/ft
Velocity	9.46	ft/s
Velocity Head	1.39	ft
Specific Energy	5.17	ft
Froude Number	0.86	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.78	ft
Critical Depth	3.41	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00522	ft/ft

C-2 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00260	ft/ft
Diameter	3.50	ft
Discharge	48.64	ft ³ /s

Results

Normal Depth	2.72	ft
Flow Area	8.02	ft ²
Wetted Perimeter	7.55	ft
Hydraulic Radius	1.06	ft
Top Width	2.92	ft
Critical Depth	2.18	ft
Percent Full	77.7	%
Critical Slope	0.00463	ft/ft
Velocity	6.07	ft/s
Velocity Head	0.57	ft
Specific Energy	3.29	ft
Froude Number	0.64	
Maximum Discharge	55.18	ft ³ /s
Discharge Full	51.30	ft ³ /s
Slope Full	0.00234	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.67	%
Downstream Velocity	Infinity	ft/s

C-2 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.72	ft
Critical Depth	2.18	ft
Channel Slope	0.00260	ft/ft
Critical Slope	0.00463	ft/ft

C-2 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00260	ft/ft
Bottom Width	4.00	ft
Discharge	57.16	ft ³ /s

Results

Normal Depth	2.47	ft
Flow Area	9.88	ft ²
Wetted Perimeter	8.94	ft
Hydraulic Radius	1.11	ft
Top Width	4.00	ft
Critical Depth	1.85	ft
Critical Slope	0.00557	ft/ft
Velocity	5.79	ft/s
Velocity Head	0.52	ft
Specific Energy	2.99	ft
Froude Number	0.65	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.47	ft
Critical Depth	1.85	ft
Channel Slope	0.00260	ft/ft
Critical Slope	0.00557	ft/ft

C-2A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00140	ft/ft
Diameter	5.00	ft
Discharge	96.92	ft ³ /s

Results

Normal Depth	4.07	ft
Flow Area	17.13	ft ²
Wetted Perimeter	11.26	ft
Hydraulic Radius	1.52	ft
Top Width	3.89	ft
Critical Depth	2.80	ft
Percent Full	81.5	%
Critical Slope	0.00381	ft/ft
Velocity	5.66	ft/s
Velocity Head	0.50	ft
Specific Energy	4.57	ft
Froude Number	0.48	
Maximum Discharge	104.82	ft ³ /s
Discharge Full	97.44	ft ³ /s
Slope Full	0.00139	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.47	%
Downstream Velocity	Infinity	ft/s

C-2A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.07	ft
Critical Depth	2.80	ft
Channel Slope	0.00140	ft/ft
Critical Slope	0.00381	ft/ft

C-2A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00140	ft/ft
Bottom Width	5.50	ft
Discharge	112.53	ft ³ /s

Results

Normal Depth	3.78	ft
Flow Area	20.78	ft ²
Wetted Perimeter	13.06	ft
Hydraulic Radius	1.59	ft
Top Width	5.50	ft
Critical Depth	2.35	ft
Critical Slope	0.00490	ft/ft
Velocity	5.41	ft/s
Velocity Head	0.46	ft
Specific Energy	4.23	ft
Froude Number	0.49	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.78	ft
Critical Depth	2.35	ft
Channel Slope	0.00140	ft/ft
Critical Slope	0.00490	ft/ft

D-1 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00120	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	58.00	ft
Discharge	1760.09	ft ³ /s

Results

Normal Depth	5.76	ft
Flow Area	433.33	ft ²
Wetted Perimeter	94.41	ft
Hydraulic Radius	4.59	ft
Top Width	92.54	ft
Critical Depth	2.90	ft
Critical Slope	0.01325	ft/ft
Velocity	4.06	ft/s
Velocity Head	0.26	ft
Specific Energy	6.01	ft
Froude Number	0.33	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.76	ft
Critical Depth	2.90	ft
Channel Slope	0.00120	ft/ft

D-1 (Seg 1) - Q50

GVF Output Data

Critical Slope 0.01325 ft/ft

D-1 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00150	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	38.00	ft
Discharge	1647.27	ft ³ /s

Results

Normal Depth	6.33	ft
Flow Area	360.92	ft ²
Wetted Perimeter	78.05	ft
Hydraulic Radius	4.62	ft
Top Width	75.99	ft
Critical Depth	3.52	ft
Critical Slope	0.01286	ft/ft
Velocity	4.56	ft/s
Velocity Head	0.32	ft
Specific Energy	6.66	ft
Froude Number	0.37	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.33	ft
Critical Depth	3.52	ft
Channel Slope	0.00150	ft/ft

D-1 (Seg 2) - Q50

GVF Output Data

Critical Slope 0.01286 ft/ft

D-1A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00290	ft/ft
Diameter	2.50	ft
Discharge	21.17	ft ³ /s

Results

Normal Depth	1.96	ft
Flow Area	4.13	ft ²
Wetted Perimeter	5.44	ft
Hydraulic Radius	0.76	ft
Top Width	2.06	ft
Critical Depth	1.56	ft
Percent Full	78.5	%
Critical Slope	0.00521	ft/ft
Velocity	5.12	ft/s
Velocity Head	0.41	ft
Specific Energy	2.37	ft
Froude Number	0.64	
Maximum Discharge	23.76	ft ³ /s
Discharge Full	22.09	ft ³ /s
Slope Full	0.00266	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.46	%
Downstream Velocity	Infinity	ft/s

D-1A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.96	ft
Critical Depth	1.56	ft
Channel Slope	0.00290	ft/ft
Critical Slope	0.00521	ft/ft

D-1A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00290	ft/ft
Bottom Width	3.00	ft
Discharge	24.06	ft ³ /s

Results

Normal Depth	1.65	ft
Flow Area	4.95	ft ²
Wetted Perimeter	6.30	ft
Hydraulic Radius	0.79	ft
Top Width	3.00	ft
Critical Depth	1.26	ft
Critical Slope	0.00596	ft/ft
Velocity	4.87	ft/s
Velocity Head	0.37	ft
Specific Energy	2.02	ft
Froude Number	0.67	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.65	ft
Critical Depth	1.26	ft
Channel Slope	0.00290	ft/ft
Critical Slope	0.00596	ft/ft

D-2 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00200	ft/ft
Bottom Width	14.00	ft
Discharge	498.88	ft ³ /s

Results

Normal Depth	4.02	ft
Flow Area	56.27	ft ²
Wetted Perimeter	22.04	ft
Hydraulic Radius	2.55	ft
Top Width	14.00	ft
Critical Depth	3.40	ft
Critical Slope	0.00322	ft/ft
Velocity	8.87	ft/s
Velocity Head	1.22	ft
Specific Energy	5.24	ft
Froude Number	0.78	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.02	ft
Critical Depth	3.40	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00322	ft/ft

D-2 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00200	ft/ft
Bottom Width	14.00	ft
Discharge	570.52	ft ³ /s

Results

Normal Depth	4.42	ft
Flow Area	61.86	ft ²
Wetted Perimeter	22.84	ft
Hydraulic Radius	2.71	ft
Top Width	14.00	ft
Critical Depth	3.72	ft
Critical Slope	0.00325	ft/ft
Velocity	9.22	ft/s
Velocity Head	1.32	ft
Specific Energy	5.74	ft
Froude Number	0.77	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.42	ft
Critical Depth	3.72	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00325	ft/ft

D-2 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00370	ft/ft
Diameter	6.00	ft
Discharge	272.81	ft ³ /s

Results

Normal Depth	5.33	ft
Flow Area	26.53	ft ²
Wetted Perimeter	14.75	ft
Hydraulic Radius	1.80	ft
Top Width	3.79	ft
Critical Depth	4.52	ft
Percent Full	88.8	%
Critical Slope	0.00493	ft/ft
Velocity	10.28	ft/s
Velocity Head	1.64	ft
Specific Energy	6.97	ft
Froude Number	0.69	
Maximum Discharge	277.10	ft ³ /s
Discharge Full	257.60	ft ³ /s
Slope Full	0.00415	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	88.76	%
Downstream Velocity	Infinity	ft/s

D-2 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.33	ft
Critical Depth	4.52	ft
Channel Slope	0.00370	ft/ft
Critical Slope	0.00493	ft/ft

D-2 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00370	ft/ft
Diameter	6.50	ft
Discharge	311.98	ft ³ /s

Results

Normal Depth	5.20	ft
Flow Area	28.48	ft ²
Wetted Perimeter	14.40	ft
Hydraulic Radius	1.98	ft
Top Width	5.19	ft
Critical Depth	4.74	ft
Percent Full	80.1	%
Critical Slope	0.00455	ft/ft
Velocity	10.95	ft/s
Velocity Head	1.86	ft
Specific Energy	7.07	ft
Froude Number	0.82	
Maximum Discharge	343.03	ft ³ /s
Discharge Full	318.89	ft ³ /s
Slope Full	0.00354	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	80.07	%
Downstream Velocity	Infinity	ft/s

D-2 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.20	ft
Critical Depth	4.74	ft
Channel Slope	0.00370	ft/ft
Critical Slope	0.00455	ft/ft

D-2A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	5.50	ft
Discharge	116.14	ft ³ /s

Results

Normal Depth	4.05	ft
Flow Area	18.77	ft ²
Wetted Perimeter	11.35	ft
Hydraulic Radius	1.65	ft
Top Width	4.84	ft
Critical Depth	2.99	ft
Percent Full	73.7	%
Critical Slope	0.00362	ft/ft
Velocity	6.19	ft/s
Velocity Head	0.60	ft
Specific Energy	4.65	ft
Froude Number	0.55	
Maximum Discharge	139.90	ft ³ /s
Discharge Full	130.05	ft ³ /s
Slope Full	0.00120	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	73.69	%
Downstream Velocity	Infinity	ft/s

D-2A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.05	ft
Critical Depth	2.99	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00362	ft/ft

D-2A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	5.50	ft
Discharge	132.82	ft ³ /s

Results

Normal Depth	4.62	ft
Flow Area	21.31	ft ²
Wetted Perimeter	12.76	ft
Hydraulic Radius	1.67	ft
Top Width	4.03	ft
Critical Depth	3.21	ft
Percent Full	84.0	%
Critical Slope	0.00379	ft/ft
Velocity	6.23	ft/s
Velocity Head	0.60	ft
Specific Energy	5.22	ft
Froude Number	0.48	
Maximum Discharge	139.90	ft ³ /s
Discharge Full	130.05	ft ³ /s
Slope Full	0.00156	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	84.02	%
Downstream Velocity	Infinity	ft/s

D-2A - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.62	ft
Critical Depth	3.21	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00379	ft/ft

D-3 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00200	ft/ft
Bottom Width	14.00	ft
Discharge	311.04	ft ³ /s

Results

Normal Depth	2.90	ft
Flow Area	40.60	ft ²
Wetted Perimeter	19.80	ft
Hydraulic Radius	2.05	ft
Top Width	14.00	ft
Critical Depth	2.48	ft
Critical Slope	0.00316	ft/ft
Velocity	7.66	ft/s
Velocity Head	0.91	ft
Specific Energy	3.81	ft
Froude Number	0.79	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.90	ft
Critical Depth	2.48	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00316	ft/ft

D-3 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00200	ft/ft
Bottom Width	14.00	ft
Discharge	360.94	ft ³ /s

Results

Normal Depth	3.21	ft
Flow Area	44.94	ft ²
Wetted Perimeter	20.42	ft
Hydraulic Radius	2.20	ft
Top Width	14.00	ft
Critical Depth	2.74	ft
Critical Slope	0.00317	ft/ft
Velocity	8.03	ft/s
Velocity Head	1.00	ft
Specific Energy	4.21	ft
Froude Number	0.79	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.21	ft
Critical Depth	2.74	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00317	ft/ft

D-3 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	5.00	ft
Discharge	131.48	ft ³ /s

Results

Normal Depth	3.79	ft
Flow Area	15.95	ft ²
Wetted Perimeter	10.55	ft
Hydraulic Radius	1.51	ft
Top Width	4.29	ft
Critical Depth	3.28	ft
Percent Full	75.7	%
Critical Slope	0.00433	ft/ft
Velocity	8.24	ft/s
Velocity Head	1.06	ft
Specific Energy	4.84	ft
Froude Number	0.75	
Maximum Discharge	153.44	ft ³ /s
Discharge Full	142.64	ft ³ /s
Slope Full	0.00255	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.71	%
Downstream Velocity	Infinity	ft/s

D-3 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.79	ft
Critical Depth	3.28	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00433	ft/ft

D-3 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	5.00	ft
Discharge	152.98	ft ³ /s

Results

Normal Depth	4.59	ft
Flow Area	18.86	ft ²
Wetted Perimeter	12.79	ft
Hydraulic Radius	1.47	ft
Top Width	2.76	ft
Critical Depth	3.55	ft
Percent Full	91.7	%
Critical Slope	0.00476	ft/ft
Velocity	8.11	ft/s
Velocity Head	1.02	ft
Specific Energy	5.61	ft
Froude Number	0.55	
Maximum Discharge	153.44	ft ³ /s
Discharge Full	142.64	ft ³ /s
Slope Full	0.00345	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	91.71	%
Downstream Velocity	Infinity	ft/s

D-3 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.59	ft
Critical Depth	3.55	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00476	ft/ft

D-3 (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	4.00	ft
Discharge	83.82	ft ³ /s

Results

Normal Depth	3.60	ft
Flow Area	11.91	ft ²
Wetted Perimeter	9.98	ft
Hydraulic Radius	1.19	ft
Top Width	2.41	ft
Critical Depth	2.77	ft
Percent Full	89.9	%
Critical Slope	0.00497	ft/ft
Velocity	7.04	ft/s
Velocity Head	0.77	ft
Specific Energy	4.37	ft
Froude Number	0.56	
Maximum Discharge	84.63	ft ³ /s
Discharge Full	78.67	ft ³ /s
Slope Full	0.00341	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	89.92	%
Downstream Velocity	Infinity	ft/s

D-3 (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.60	ft
Critical Depth	2.77	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00497	ft/ft

D-3 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	4.50	ft
Discharge	97.52	ft ³ /s

Results

Normal Depth	3.35	ft
Flow Area	12.72	ft ²
Wetted Perimeter	9.38	ft
Hydraulic Radius	1.36	ft
Top Width	3.92	ft
Critical Depth	2.90	ft
Percent Full	74.5	%
Critical Slope	0.00440	ft/ft
Velocity	7.67	ft/s
Velocity Head	0.91	ft
Specific Energy	4.27	ft
Froude Number	0.75	
Maximum Discharge	115.86	ft ³ /s
Discharge Full	107.70	ft ³ /s
Slope Full	0.00246	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	74.55	%
Downstream Velocity	Infinity	ft/s

D-3 (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.35	ft
Critical Depth	2.90	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00440	ft/ft

D-3 (Seg 4) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	3.00	ft
Discharge	44.82	ft ³ /s

Results

Normal Depth	2.34	ft
Flow Area	5.90	ft ²
Wetted Perimeter	6.48	ft
Hydraulic Radius	0.91	ft
Top Width	2.49	ft
Critical Depth	2.18	ft
Percent Full	77.8	%
Critical Slope	0.00585	ft/ft
Velocity	7.59	ft/s
Velocity Head	0.90	ft
Specific Energy	3.23	ft
Froude Number	0.87	
Maximum Discharge	50.73	ft ³ /s
Discharge Full	47.16	ft ³ /s
Slope Full	0.00452	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.83	%
Downstream Velocity	Infinity	ft/s

D-3 (Seg 4) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.34	ft
Critical Depth	2.18	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00585	ft/ft

D-3 (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	3.50	ft
Discharge	52.15	ft ³ /s

Results

Normal Depth	2.23	ft
Flow Area	6.46	ft ²
Wetted Perimeter	6.46	ft
Hydraulic Radius	1.00	ft
Top Width	3.37	ft
Critical Depth	2.26	ft
Percent Full	63.6	%
Critical Slope	0.00479	ft/ft
Velocity	8.08	ft/s
Velocity Head	1.01	ft
Specific Energy	3.24	ft
Froude Number	1.03	
Maximum Discharge	76.52	ft ³ /s
Discharge Full	71.14	ft ³ /s
Slope Full	0.00269	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	63.60	%
Downstream Velocity	Infinity	ft/s

D-3 (Seg 4) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.23	ft
Critical Depth	2.26	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00479	ft/ft

D-3 (Seg 5) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00460	ft/ft
Diameter	3.00	ft
Discharge	35.98	ft ³ /s

Results

Normal Depth	2.02	ft
Flow Area	5.07	ft ²
Wetted Perimeter	5.78	ft
Hydraulic Radius	0.88	ft
Top Width	2.81	ft
Critical Depth	1.95	ft
Percent Full	67.4	%
Critical Slope	0.00508	ft/ft
Velocity	7.10	ft/s
Velocity Head	0.78	ft
Specific Energy	2.81	ft
Froude Number	0.93	
Maximum Discharge	48.66	ft ³ /s
Discharge Full	45.23	ft ³ /s
Slope Full	0.00291	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.38	%
Downstream Velocity	Infinity	ft/s

D-3 (Seg 5) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.02	ft
Critical Depth	1.95	ft
Channel Slope	0.00460	ft/ft
Critical Slope	0.00508	ft/ft

D-3 (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00460	ft/ft
Diameter	3.00	ft
Discharge	41.86	ft ³ /s

Results

Normal Depth	2.28	ft
Flow Area	5.76	ft ²
Wetted Perimeter	6.35	ft
Hydraulic Radius	0.91	ft
Top Width	2.56	ft
Critical Depth	2.11	ft
Percent Full	76.0	%
Critical Slope	0.00557	ft/ft
Velocity	7.27	ft/s
Velocity Head	0.82	ft
Specific Energy	3.10	ft
Froude Number	0.85	
Maximum Discharge	48.66	ft ³ /s
Discharge Full	45.23	ft ³ /s
Slope Full	0.00394	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.97	%
Downstream Velocity	Infinity	ft/s

D-3 (Seg 5) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.28	ft
Critical Depth	2.11	ft
Channel Slope	0.00460	ft/ft
Critical Slope	0.00557	ft/ft

D-3A (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00600	ft/ft
Diameter	4.00	ft
Discharge	103.50	ft ³ /s

Results

Normal Depth	3.05	ft
Flow Area	10.29	ft ²
Wetted Perimeter	8.50	ft
Hydraulic Radius	1.21	ft
Top Width	3.40	ft
Critical Depth	3.08	ft
Percent Full	76.3	%
Critical Slope	0.00588	ft/ft
Velocity	10.06	ft/s
Velocity Head	1.57	ft
Specific Energy	4.62	ft
Froude Number	1.02	
Maximum Discharge	119.68	ft ³ /s
Discharge Full	111.26	ft ³ /s
Slope Full	0.00519	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.33	%
Downstream Velocity	Infinity	ft/s

D-3A (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.05	ft
Critical Depth	3.08	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00588	ft/ft

D-3A (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00600	ft/ft
Diameter	4.00	ft
Discharge	115.78	ft ³ /s

Results

Normal Depth	3.45	ft
Flow Area	11.52	ft ²
Wetted Perimeter	9.52	ft
Hydraulic Radius	1.21	ft
Top Width	2.76	ft
Critical Depth	3.25	ft
Percent Full	86.2	%
Critical Slope	0.00662	ft/ft
Velocity	10.05	ft/s
Velocity Head	1.57	ft
Specific Energy	5.02	ft
Froude Number	0.87	
Maximum Discharge	119.68	ft ³ /s
Discharge Full	111.26	ft ³ /s
Slope Full	0.00650	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	86.18	%
Downstream Velocity	Infinity	ft/s

D-3A (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.45	ft
Critical Depth	3.25	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00662	ft/ft

D-3A (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00360	ft/ft
Diameter	3.50	ft
Discharge	51.81	ft ³ /s

Results

Normal Depth	2.50	ft
Flow Area	7.35	ft ²
Wetted Perimeter	7.04	ft
Hydraulic Radius	1.04	ft
Top Width	3.16	ft
Critical Depth	2.25	ft
Percent Full	71.4	%
Critical Slope	0.00478	ft/ft
Velocity	7.05	ft/s
Velocity Head	0.77	ft
Specific Energy	3.27	ft
Froude Number	0.82	
Maximum Discharge	64.93	ft ³ /s
Discharge Full	60.36	ft ³ /s
Slope Full	0.00265	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	71.36	%
Downstream Velocity	Infinity	ft/s

D-3A (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.50	ft
Critical Depth	2.25	ft
Channel Slope	0.00360	ft/ft
Critical Slope	0.00478	ft/ft

D-3A (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00360	ft/ft
Diameter	3.50	ft
Discharge	57.95	ft ³ /s

Results

Normal Depth	2.75	ft
Flow Area	8.11	ft ²
Wetted Perimeter	7.63	ft
Hydraulic Radius	1.06	ft
Top Width	2.87	ft
Critical Depth	2.38	ft
Percent Full	78.6	%
Critical Slope	0.00509	ft/ft
Velocity	7.14	ft/s
Velocity Head	0.79	ft
Specific Energy	3.54	ft
Froude Number	0.75	
Maximum Discharge	64.93	ft ³ /s
Discharge Full	60.36	ft ³ /s
Slope Full	0.00332	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.59	%
Downstream Velocity	Infinity	ft/s

D-3A (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.75	ft
Critical Depth	2.38	ft
Channel Slope	0.00360	ft/ft
Critical Slope	0.00509	ft/ft

D-3B - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01150	ft/ft
Diameter	2.00	ft
Discharge	19.58	ft ³ /s

Results

Normal Depth	1.36	ft
Flow Area	2.28	ft ²
Wetted Perimeter	3.88	ft
Hydraulic Radius	0.59	ft
Top Width	1.86	ft
Critical Depth	1.59	ft
Percent Full	68.1	%
Critical Slope	0.00793	ft/ft
Velocity	8.59	ft/s
Velocity Head	1.15	ft
Specific Energy	2.51	ft
Froude Number	1.37	
Maximum Discharge	26.10	ft ³ /s
Discharge Full	24.26	ft ³ /s
Slope Full	0.00749	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.10	%
Downstream Velocity	Infinity	ft/s

D-3B - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.36	ft
Critical Depth	1.59	ft
Channel Slope	0.01150	ft/ft
Critical Slope	0.00793	ft/ft

D-3B - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01150	ft/ft
Diameter	2.00	ft
Discharge	22.78	ft ³ /s

Results

Normal Depth	1.54	ft
Flow Area	2.59	ft ²
Wetted Perimeter	4.28	ft
Hydraulic Radius	0.61	ft
Top Width	1.68	ft
Critical Depth	1.70	ft
Percent Full	77.0	%
Critical Slope	0.00955	ft/ft
Velocity	8.78	ft/s
Velocity Head	1.20	ft
Specific Energy	2.74	ft
Froude Number	1.25	
Maximum Discharge	26.10	ft ³ /s
Discharge Full	24.26	ft ³ /s
Slope Full	0.01014	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.98	%
Downstream Velocity	Infinity	ft/s

D-3B - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.54	ft
Critical Depth	1.70	ft
Channel Slope	0.01150	ft/ft
Critical Slope	0.00955	ft/ft

D-4 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00250	ft/ft
Diameter	6.50	ft
Discharge	268.46	ft ³ /s

Results

Normal Depth	5.48	ft
Flow Area	29.86	ft ²
Wetted Perimeter	15.13	ft
Hydraulic Radius	1.97	ft
Top Width	4.73	ft
Critical Depth	4.40	ft
Percent Full	84.3	%
Critical Slope	0.00410	ft/ft
Velocity	8.99	ft/s
Velocity Head	1.26	ft
Specific Energy	6.74	ft
Froude Number	0.63	
Maximum Discharge	281.97	ft ³ /s
Discharge Full	262.12	ft ³ /s
Slope Full	0.00262	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	84.32	%
Downstream Velocity	Infinity	ft/s

D-4 (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.48	ft
Critical Depth	4.40	ft
Channel Slope	0.00250	ft/ft
Critical Slope	0.00410	ft/ft

D-4 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00250	ft/ft
Diameter	7.00	ft
Discharge	307.27	ft ³ /s

Results

Normal Depth	5.51	ft
Flow Area	32.51	ft ²
Wetted Perimeter	15.28	ft
Hydraulic Radius	2.13	ft
Top Width	5.73	ft
Critical Depth	4.61	ft
Percent Full	78.7	%
Critical Slope	0.00389	ft/ft
Velocity	9.45	ft/s
Velocity Head	1.39	ft
Specific Energy	6.90	ft
Froude Number	0.70	
Maximum Discharge	343.58	ft ³ /s
Discharge Full	319.40	ft ³ /s
Slope Full	0.00231	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.74	%
Downstream Velocity	Infinity	ft/s

D-4 (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.51	ft
Critical Depth	4.61	ft
Channel Slope	0.00250	ft/ft
Critical Slope	0.00389	ft/ft

D-4 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00880	ft/ft
Diameter	5.50	ft
Discharge	158.58	ft ³ /s

Results

Normal Depth	2.76	ft
Flow Area	11.94	ft ²
Wetted Perimeter	8.66	ft
Hydraulic Radius	1.38	ft
Top Width	5.50	ft
Critical Depth	3.52	ft
Percent Full	50.2	%
Critical Slope	0.00409	ft/ft
Velocity	13.28	ft/s
Velocity Head	2.74	ft
Specific Energy	5.50	ft
Froude Number	1.59	
Maximum Discharge	338.85	ft ³ /s
Discharge Full	315.00	ft ³ /s
Slope Full	0.00223	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.20	%
Downstream Velocity	Infinity	ft/s

D-4 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.76	ft
Critical Depth	3.52	ft
Channel Slope	0.00880	ft/ft
Critical Slope	0.00409	ft/ft

D-4 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00880	ft/ft
Diameter	5.50	ft
Discharge	179.42	ft ³ /s

Results

Normal Depth	2.97	ft
Flow Area	13.11	ft ²
Wetted Perimeter	9.09	ft
Hydraulic Radius	1.44	ft
Top Width	5.48	ft
Critical Depth	3.75	ft
Percent Full	54.1	%
Critical Slope	0.00438	ft/ft
Velocity	13.69	ft/s
Velocity Head	2.91	ft
Specific Energy	5.89	ft
Froude Number	1.56	
Maximum Discharge	338.85	ft ³ /s
Discharge Full	315.00	ft ³ /s
Slope Full	0.00285	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	54.07	%
Downstream Velocity	Infinity	ft/s

D-4 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.97	ft
Critical Depth	3.75	ft
Channel Slope	0.00880	ft/ft
Critical Slope	0.00438	ft/ft

D-4 (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00830	ft/ft
Diameter	4.00	ft
Discharge	113.29	ft ³ /s

Results

Normal Depth	2.87	ft
Flow Area	9.66	ft ²
Wetted Perimeter	8.09	ft
Hydraulic Radius	1.19	ft
Top Width	3.60	ft
Critical Depth	3.21	ft
Percent Full	71.9	%
Critical Slope	0.00645	ft/ft
Velocity	11.72	ft/s
Velocity Head	2.14	ft
Specific Energy	5.01	ft
Froude Number	1.26	
Maximum Discharge	140.76	ft ³ /s
Discharge Full	130.86	ft ³ /s
Slope Full	0.00622	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	71.85	%
Downstream Velocity	Infinity	ft/s

D-4 (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.87	ft
Critical Depth	3.21	ft
Channel Slope	0.00830	ft/ft
Critical Slope	0.00645	ft/ft

D-4 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00830	ft/ft
Diameter	4.00	ft
Discharge	126.72	ft ³ /s

Results

Normal Depth	3.17	ft
Flow Area	10.68	ft ²
Wetted Perimeter	8.78	ft
Hydraulic Radius	1.22	ft
Top Width	3.24	ft
Critical Depth	3.38	ft
Percent Full	79.3	%
Critical Slope	0.00741	ft/ft
Velocity	11.86	ft/s
Velocity Head	2.19	ft
Specific Energy	5.36	ft
Froude Number	1.15	
Maximum Discharge	140.76	ft ³ /s
Discharge Full	130.86	ft ³ /s
Slope Full	0.00778	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	79.25	%
Downstream Velocity	Infinity	ft/s

D-4 (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.17	ft
Critical Depth	3.38	ft
Channel Slope	0.00830	ft/ft
Critical Slope	0.00741	ft/ft

D-4 (Seg 4) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00910	ft/ft
Diameter	4.00	ft
Discharge	108.85	ft ³ /s

Results

Normal Depth	2.69	ft
Flow Area	9.00	ft ²
Wetted Perimeter	7.70	ft
Hydraulic Radius	1.17	ft
Top Width	3.75	ft
Critical Depth	3.16	ft
Percent Full	67.3	%
Critical Slope	0.00618	ft/ft
Velocity	12.10	ft/s
Velocity Head	2.27	ft
Specific Energy	4.97	ft
Froude Number	1.38	
Maximum Discharge	147.39	ft ³ /s
Discharge Full	137.02	ft ³ /s
Slope Full	0.00574	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.31	%
Downstream Velocity	Infinity	ft/s

D-4 (Seg 4) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.69	ft
Critical Depth	3.16	ft
Channel Slope	0.00910	ft/ft
Critical Slope	0.00618	ft/ft

D-4 (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00910	ft/ft
Diameter	4.00	ft
Discharge	121.76	ft ³ /s

Results

Normal Depth	2.94	ft
Flow Area	9.88	ft ²
Wetted Perimeter	8.23	ft
Hydraulic Radius	1.20	ft
Top Width	3.54	ft
Critical Depth	3.32	ft
Percent Full	73.4	%
Critical Slope	0.00703	ft/ft
Velocity	12.32	ft/s
Velocity Head	2.36	ft
Specific Energy	5.29	ft
Froude Number	1.30	
Maximum Discharge	147.39	ft ³ /s
Discharge Full	137.02	ft ³ /s
Slope Full	0.00719	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	73.39	%
Downstream Velocity	Infinity	ft/s

D-4 (Seg 4) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.94	ft
Critical Depth	3.32	ft
Channel Slope	0.00910	ft/ft
Critical Slope	0.00703	ft/ft

D-4 (Seg 5) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00950	ft/ft
Diameter	3.00	ft
Discharge	45.24	ft ³ /s

Results

Normal Depth	1.84	ft
Flow Area	4.55	ft ²
Wetted Perimeter	5.40	ft
Hydraulic Radius	0.84	ft
Top Width	2.92	ft
Critical Depth	2.19	ft
Percent Full	61.4	%
Critical Slope	0.00589	ft/ft
Velocity	9.94	ft/s
Velocity Head	1.53	ft
Specific Energy	3.38	ft
Froude Number	1.40	
Maximum Discharge	69.93	ft ³ /s
Discharge Full	65.01	ft ³ /s
Slope Full	0.00460	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	61.42	%
Downstream Velocity	Infinity	ft/s

D-4 (Seg 5) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.84	ft
Critical Depth	2.19	ft
Channel Slope	0.00950	ft/ft
Critical Slope	0.00589	ft/ft

D-4 (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00950	ft/ft
Diameter	3.00	ft
Discharge	50.61	ft ³ /s

Results

Normal Depth	1.99	ft
Flow Area	4.98	ft ²
Wetted Perimeter	5.71	ft
Hydraulic Radius	0.87	ft
Top Width	2.84	ft
Critical Depth	2.32	ft
Percent Full	66.3	%
Critical Slope	0.00649	ft/ft
Velocity	10.17	ft/s
Velocity Head	1.61	ft
Specific Energy	3.60	ft
Froude Number	1.35	
Maximum Discharge	69.93	ft ³ /s
Discharge Full	65.01	ft ³ /s
Slope Full	0.00576	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	66.34	%
Downstream Velocity	Infinity	ft/s

D-4 (Seg 5) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.99	ft
Critical Depth	2.32	ft
Channel Slope	0.00950	ft/ft
Critical Slope	0.00649	ft/ft

D-4A (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	148.39	ft
Discharge	5.50	ft ³ /s

Results

Normal Depth	0.32	ft
Flow Area	2.99	ft ²
Wetted Perimeter	13.87	ft
Hydraulic Radius	0.22	ft
Top Width	13.85	ft
Critical Depth	0.27	ft
Percent Full	0.2	%
Critical Slope	0.00435	ft/ft
Velocity	1.84	ft/s
Velocity Head	0.05	ft
Specific Energy	0.38	ft
Froude Number	0.70	
Maximum Discharge	1057765.10	ft ³ /s
Discharge Full	983321.86	ft ³ /s
Slope Full	0.00000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	0.22	%
Downstream Velocity	Infinity	ft/s

D-4A (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.32	ft
Critical Depth	0.27	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00435	ft/ft

D-4A (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00200	ft/ft
Diameter	6.00	ft
Discharge	165.99	ft ³ /s

Results

Normal Depth	4.35	ft
Flow Area	21.98	ft ²
Wetted Perimeter	12.23	ft
Hydraulic Radius	1.80	ft
Top Width	5.35	ft
Critical Depth	3.51	ft
Percent Full	72.6	%
Critical Slope	0.00369	ft/ft
Velocity	7.55	ft/s
Velocity Head	0.89	ft
Specific Energy	5.24	ft
Froude Number	0.66	
Maximum Discharge	203.73	ft ³ /s
Discharge Full	189.39	ft ³ /s
Slope Full	0.00154	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	72.57	%
Downstream Velocity	Infinity	ft/s

D-4A (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.35	ft
Critical Depth	3.51	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00369	ft/ft

D-4A (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	3.50	ft
Discharge	74.05	ft ³ /s

Results

Normal Depth	3.02	ft
Flow Area	8.82	ft ²
Wetted Perimeter	8.33	ft
Hydraulic Radius	1.06	ft
Top Width	2.41	ft
Critical Depth	2.69	ft
Percent Full	86.2	%
Critical Slope	0.00614	ft/ft
Velocity	8.39	ft/s
Velocity Head	1.10	ft
Specific Energy	4.11	ft
Froude Number	0.77	
Maximum Discharge	76.52	ft ³ /s
Discharge Full	71.14	ft ³ /s
Slope Full	0.00542	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	86.22	%
Downstream Velocity	Infinity	ft/s

D-4A (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.02	ft
Critical Depth	2.69	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00614	ft/ft

D-4A (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	4.00	ft
Discharge	82.83	ft ³ /s

Results

Normal Depth	2.75	ft
Flow Area	9.19	ft ²
Wetted Perimeter	7.81	ft
Hydraulic Radius	1.18	ft
Top Width	3.71	ft
Critical Depth	2.76	ft
Percent Full	68.6	%
Critical Slope	0.00494	ft/ft
Velocity	9.01	ft/s
Velocity Head	1.26	ft
Specific Energy	4.01	ft
Froude Number	1.01	
Maximum Discharge	109.25	ft ³ /s
Discharge Full	101.57	ft ³ /s
Slope Full	0.00333	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.63	%
Downstream Velocity	Infinity	ft/s

D-4A (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.75	ft
Critical Depth	2.76	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00494	ft/ft

D-4A (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00810	ft/ft
Diameter	2.50	ft
Discharge	36.49	ft ³ /s

Results

Normal Depth	2.02	ft
Flow Area	4.26	ft ²
Wetted Perimeter	5.60	ft
Hydraulic Radius	0.76	ft
Top Width	1.96	ft
Critical Depth	2.05	ft
Percent Full	80.9	%
Critical Slope	0.00793	ft/ft
Velocity	8.57	ft/s
Velocity Head	1.14	ft
Specific Energy	3.17	ft
Froude Number	1.03	
Maximum Discharge	39.71	ft ³ /s
Discharge Full	36.91	ft ³ /s
Slope Full	0.00792	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	80.94	%
Downstream Velocity	Infinity	ft/s

D-4A (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.02	ft
Critical Depth	2.05	ft
Channel Slope	0.00810	ft/ft
Critical Slope	0.00793	ft/ft

D-4A (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00810	ft/ft
Diameter	3.00	ft
Discharge	40.81	ft ³ /s

Results

Normal Depth	1.81	ft
Flow Area	4.47	ft ²
Wetted Perimeter	5.35	ft
Hydraulic Radius	0.84	ft
Top Width	2.93	ft
Critical Depth	2.08	ft
Percent Full	60.5	%
Critical Slope	0.00547	ft/ft
Velocity	9.13	ft/s
Velocity Head	1.30	ft
Specific Energy	3.11	ft
Froude Number	1.30	
Maximum Discharge	64.57	ft ³ /s
Discharge Full	60.03	ft ³ /s
Slope Full	0.00374	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	60.47	%
Downstream Velocity	Infinity	ft/s

D-4A (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.81	ft
Critical Depth	2.08	ft
Channel Slope	0.00810	ft/ft
Critical Slope	0.00547	ft/ft

D-4B - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00880	ft/ft
Diameter	2.50	ft
Discharge	33.03	ft ³ /s

Results

Normal Depth	1.78	ft
Flow Area	3.75	ft ²
Wetted Perimeter	5.03	ft
Hydraulic Radius	0.75	ft
Top Width	2.26	ft
Critical Depth	1.96	ft
Percent Full	71.4	%
Critical Slope	0.00710	ft/ft
Velocity	8.81	ft/s
Velocity Head	1.21	ft
Specific Energy	2.99	ft
Froude Number	1.21	
Maximum Discharge	41.39	ft ³ /s
Discharge Full	38.48	ft ³ /s
Slope Full	0.00649	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	71.37	%
Downstream Velocity	Infinity	ft/s

D-4B - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.78	ft
Critical Depth	1.96	ft
Channel Slope	0.00880	ft/ft
Critical Slope	0.00710	ft/ft

D-4B - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00880	ft/ft
Diameter	2.50	ft
Discharge	36.95	ft ³ /s

Results

Normal Depth	1.97	ft
Flow Area	4.14	ft ²
Wetted Perimeter	5.45	ft
Hydraulic Radius	0.76	ft
Top Width	2.05	ft
Critical Depth	2.06	ft
Percent Full	78.6	%
Critical Slope	0.00805	ft/ft
Velocity	8.93	ft/s
Velocity Head	1.24	ft
Specific Energy	3.20	ft
Froude Number	1.11	
Maximum Discharge	41.39	ft ³ /s
Discharge Full	38.48	ft ³ /s
Slope Full	0.00812	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.61	%
Downstream Velocity	Infinity	ft/s

D-4B - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.97	ft
Critical Depth	2.06	ft
Channel Slope	0.00880	ft/ft
Critical Slope	0.00805	ft/ft

D-4C (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	4.50	ft
Discharge	113.83	ft ³ /s

Results

Normal Depth	3.98	ft
Flow Area	14.88	ft ²
Wetted Perimeter	11.01	ft
Hydraulic Radius	1.35	ft
Top Width	2.88	ft
Critical Depth	3.14	ft
Percent Full	88.4	%
Critical Slope	0.00482	ft/ft
Velocity	7.65	ft/s
Velocity Head	0.91	ft
Specific Energy	4.89	ft
Froude Number	0.59	
Maximum Discharge	115.86	ft ³ /s
Discharge Full	107.70	ft ³ /s
Slope Full	0.00335	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	88.41	%
Downstream Velocity	Infinity	ft/s

D-4C (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.98	ft
Critical Depth	3.14	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00482	ft/ft

D-4C (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	5.00	ft
Discharge	133.63	ft ³ /s

Results

Normal Depth	3.84	ft
Flow Area	16.18	ft ²
Wetted Perimeter	10.68	ft
Hydraulic Radius	1.51	ft
Top Width	4.22	ft
Critical Depth	3.31	ft
Percent Full	76.8	%
Critical Slope	0.00437	ft/ft
Velocity	8.26	ft/s
Velocity Head	1.06	ft
Specific Energy	4.90	ft
Froude Number	0.74	
Maximum Discharge	153.44	ft ³ /s
Discharge Full	142.64	ft ³ /s
Slope Full	0.00263	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.81	%
Downstream Velocity	Infinity	ft/s

D-4C (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.84	ft
Critical Depth	3.31	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00437	ft/ft

D-4C (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00450	ft/ft
Diameter	4.00	ft
Discharge	81.52	ft ³ /s

Results

Normal Depth	2.82	ft
Flow Area	9.48	ft ²
Wetted Perimeter	7.98	ft
Hydraulic Radius	1.19	ft
Top Width	3.65	ft
Critical Depth	2.74	ft
Percent Full	70.6	%
Critical Slope	0.00489	ft/ft
Velocity	8.60	ft/s
Velocity Head	1.15	ft
Specific Energy	3.97	ft
Froude Number	0.94	
Maximum Discharge	103.65	ft ³ /s
Discharge Full	96.35	ft ³ /s
Slope Full	0.00322	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	70.56	%
Downstream Velocity	Infinity	ft/s

D-4C (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.82	ft
Critical Depth	2.74	ft
Channel Slope	0.00450	ft/ft
Critical Slope	0.00489	ft/ft

D-4C (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00450	ft/ft
Diameter	4.00	ft
Discharge	95.70	ft ³ /s

Results

Normal Depth	3.25	ft
Flow Area	10.95	ft ²
Wetted Perimeter	8.99	ft
Hydraulic Radius	1.22	ft
Top Width	3.12	ft
Critical Depth	2.97	ft
Percent Full	81.4	%
Critical Slope	0.00548	ft/ft
Velocity	8.74	ft/s
Velocity Head	1.19	ft
Specific Energy	4.44	ft
Froude Number	0.82	
Maximum Discharge	103.65	ft ³ /s
Discharge Full	96.35	ft ³ /s
Slope Full	0.00444	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.36	%
Downstream Velocity	Infinity	ft/s

D-4C (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.25	ft
Critical Depth	2.97	ft
Channel Slope	0.00450	ft/ft
Critical Slope	0.00548	ft/ft

D-4C (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00430	ft/ft
Diameter	3.50	ft
Discharge	58.65	ft ³ /s

Results

Normal Depth	2.57	ft
Flow Area	7.57	ft ²
Wetted Perimeter	7.20	ft
Hydraulic Radius	1.05	ft
Top Width	3.09	ft
Critical Depth	2.40	ft
Percent Full	73.4	%
Critical Slope	0.00512	ft/ft
Velocity	7.75	ft/s
Velocity Head	0.93	ft
Specific Energy	3.50	ft
Froude Number	0.87	
Maximum Discharge	70.97	ft ³ /s
Discharge Full	65.97	ft ³ /s
Slope Full	0.00340	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	73.41	%
Downstream Velocity	Infinity	ft/s

D-4C (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.57	ft
Critical Depth	2.40	ft
Channel Slope	0.00430	ft/ft
Critical Slope	0.00512	ft/ft

D-4C (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00430	ft/ft
Diameter	3.50	ft
Discharge	68.84	ft ³ /s

Results

Normal Depth	3.03	ft
Flow Area	8.85	ft ²
Wetted Perimeter	8.37	ft
Hydraulic Radius	1.06	ft
Top Width	2.39	ft
Critical Depth	2.60	ft
Percent Full	86.5	%
Critical Slope	0.00576	ft/ft
Velocity	7.78	ft/s
Velocity Head	0.94	ft
Specific Energy	3.97	ft
Froude Number	0.71	
Maximum Discharge	70.97	ft ³ /s
Discharge Full	65.97	ft ³ /s
Slope Full	0.00468	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	86.54	%
Downstream Velocity	Infinity	ft/s

D-4C (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.03	ft
Critical Depth	2.60	ft
Channel Slope	0.00430	ft/ft
Critical Slope	0.00576	ft/ft

D-4D (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	4.50	ft
Discharge	86.34	ft ³ /s

Results

Normal Depth	3.05	ft
Flow Area	11.47	ft ²
Wetted Perimeter	8.70	ft
Hydraulic Radius	1.32	ft
Top Width	4.21	ft
Critical Depth	2.72	ft
Percent Full	67.8	%
Critical Slope	0.00416	ft/ft
Velocity	7.53	ft/s
Velocity Head	0.88	ft
Specific Energy	3.93	ft
Froude Number	0.80	
Maximum Discharge	115.86	ft ³ /s
Discharge Full	107.70	ft ³ /s
Slope Full	0.00193	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.76	%
Downstream Velocity	Infinity	ft/s

D-4D (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.05	ft
Critical Depth	2.72	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00416	ft/ft

D-4D (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00300	ft/ft
Diameter	4.50	ft
Discharge	101.35	ft ³ /s

Results

Normal Depth	3.47	ft
Flow Area	13.16	ft ²
Wetted Perimeter	9.65	ft
Hydraulic Radius	1.36	ft
Top Width	3.78	ft
Critical Depth	2.96	ft
Percent Full	77.1	%
Critical Slope	0.00449	ft/ft
Velocity	7.70	ft/s
Velocity Head	0.92	ft
Specific Energy	4.39	ft
Froude Number	0.73	
Maximum Discharge	115.86	ft ³ /s
Discharge Full	107.70	ft ³ /s
Slope Full	0.00266	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.13	%
Downstream Velocity	Infinity	ft/s

D-4D (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.47	ft
Critical Depth	2.96	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00449	ft/ft

D-4D (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	3.00	ft
Discharge	45.45	ft ³ /s

Results

Normal Depth	2.37	ft
Flow Area	5.98	ft ²
Wetted Perimeter	6.56	ft
Hydraulic Radius	0.91	ft
Top Width	2.45	ft
Critical Depth	2.20	ft
Percent Full	78.9	%
Critical Slope	0.00591	ft/ft
Velocity	7.60	ft/s
Velocity Head	0.90	ft
Specific Energy	3.26	ft
Froude Number	0.86	
Maximum Discharge	50.73	ft ³ /s
Discharge Full	47.16	ft ³ /s
Slope Full	0.00464	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.88	%
Downstream Velocity	Infinity	ft/s

D-4D (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.37	ft
Critical Depth	2.20	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00591	ft/ft

D-4D (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	3.50	ft
Discharge	53.36	ft ³ /s

Results

Normal Depth	2.26	ft
Flow Area	6.58	ft ²
Wetted Perimeter	6.54	ft
Hydraulic Radius	1.01	ft
Top Width	3.35	ft
Critical Depth	2.29	ft
Percent Full	64.6	%
Critical Slope	0.00485	ft/ft
Velocity	8.11	ft/s
Velocity Head	1.02	ft
Specific Energy	3.29	ft
Froude Number	1.02	
Maximum Discharge	76.52	ft ³ /s
Discharge Full	71.14	ft ³ /s
Slope Full	0.00281	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	64.62	%
Downstream Velocity	Infinity	ft/s

D-4D (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.26	ft
Critical Depth	2.29	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00485	ft/ft

D-4E - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00750	ft/ft
Diameter	2.00	ft
Discharge	17.30	ft ³ /s

Results

Normal Depth	1.46	ft
Flow Area	2.46	ft ²
Wetted Perimeter	4.10	ft
Hydraulic Radius	0.60	ft
Top Width	1.78	ft
Critical Depth	1.50	ft
Percent Full	73.0	%
Critical Slope	0.00704	ft/ft
Velocity	7.04	ft/s
Velocity Head	0.77	ft
Specific Energy	2.23	ft
Froude Number	1.05	
Maximum Discharge	21.07	ft ³ /s
Discharge Full	19.59	ft ³ /s
Slope Full	0.00585	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	73.01	%
Downstream Velocity	Infinity	ft/s

D-4E - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.46	ft
Critical Depth	1.50	ft
Channel Slope	0.00750	ft/ft
Critical Slope	0.00704	ft/ft

D-4E - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00750	ft/ft
Diameter	2.00	ft
Discharge	20.31	ft ³ /s

Results

Normal Depth	1.71	ft
Flow Area	2.87	ft ²
Wetted Perimeter	4.73	ft
Hydraulic Radius	0.61	ft
Top Width	1.40	ft
Critical Depth	1.62	ft
Percent Full	85.7	%
Critical Slope	0.00826	ft/ft
Velocity	7.08	ft/s
Velocity Head	0.78	ft
Specific Energy	2.49	ft
Froude Number	0.87	
Maximum Discharge	21.07	ft ³ /s
Discharge Full	19.59	ft ³ /s
Slope Full	0.00806	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	85.73	%
Downstream Velocity	Infinity	ft/s

D-4E - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.71	ft
Critical Depth	1.62	ft
Channel Slope	0.00750	ft/ft
Critical Slope	0.00826	ft/ft

D-4F - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	5.00	ft
Discharge	67.22	ft ³ /s

Results

Normal Depth	3.43	ft
Flow Area	14.37	ft ²
Wetted Perimeter	9.77	ft
Hydraulic Radius	1.47	ft
Top Width	4.64	ft
Critical Depth	2.31	ft
Percent Full	68.7	%
Critical Slope	0.00349	ft/ft
Velocity	4.68	ft/s
Velocity Head	0.34	ft
Specific Energy	3.77	ft
Froude Number	0.47	
Maximum Discharge	88.59	ft ³ /s
Discharge Full	82.35	ft ³ /s
Slope Full	0.00067	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.67	%
Downstream Velocity	Infinity	ft/s

D-4F - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.43	ft
Critical Depth	2.31	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00349	ft/ft

D-4F - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	5.00	ft
Discharge	75.52	ft ³ /s

Results

Normal Depth	3.77	ft
Flow Area	15.88	ft ²
Wetted Perimeter	10.51	ft
Hydraulic Radius	1.51	ft
Top Width	4.31	ft
Critical Depth	2.46	ft
Percent Full	75.4	%
Critical Slope	0.00357	ft/ft
Velocity	4.76	ft/s
Velocity Head	0.35	ft
Specific Energy	4.12	ft
Froude Number	0.44	
Maximum Discharge	88.59	ft ³ /s
Discharge Full	82.35	ft ³ /s
Slope Full	0.00084	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.37	%
Downstream Velocity	Infinity	ft/s

D-4F - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.77	ft
Critical Depth	2.46	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00357	ft/ft

D-4G - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	7.00	ft
Discharge	235.89	ft ³ /s

Results

Normal Depth	5.47	ft
Flow Area	32.24	ft ²
Wetted Perimeter	15.17	ft
Hydraulic Radius	2.13	ft
Top Width	5.79	ft
Critical Depth	4.02	ft
Percent Full	78.1	%
Critical Slope	0.00346	ft/ft
Velocity	7.32	ft/s
Velocity Head	0.83	ft
Specific Energy	6.30	ft
Froude Number	0.55	
Maximum Discharge	266.14	ft ³ /s
Discharge Full	247.41	ft ³ /s
Slope Full	0.00136	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.07	%
Downstream Velocity	Infinity	ft/s

D-4G - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.47	ft
Critical Depth	4.02	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00346	ft/ft

D-4G - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	7.00	ft
Discharge	265.09	ft ³ /s

Results

Normal Depth	6.40	ft
Flow Area	36.88	ft ²
Wetted Perimeter	17.82	ft
Hydraulic Radius	2.07	ft
Top Width	3.93	ft
Critical Depth	4.27	ft
Percent Full	91.4	%
Critical Slope	0.00362	ft/ft
Velocity	7.19	ft/s
Velocity Head	0.80	ft
Specific Energy	7.20	ft
Froude Number	0.41	
Maximum Discharge	266.14	ft ³ /s
Discharge Full	247.41	ft ³ /s
Slope Full	0.00172	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	91.39	%
Downstream Velocity	Infinity	ft/s

D-4G - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.40	ft
Critical Depth	4.27	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00362	ft/ft

D-4H - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00900	ft/ft
Diameter	5.00	ft
Discharge	229.00	ft ³ /s

Results

Normal Depth	3.80	ft
Flow Area	16.03	ft ²
Wetted Perimeter	10.60	ft
Hydraulic Radius	1.51	ft
Top Width	4.27	ft
Critical Depth	4.28	ft
Percent Full	76.1	%
Critical Slope	0.00721	ft/ft
Velocity	14.29	ft/s
Velocity Head	3.17	ft
Specific Energy	6.98	ft
Froude Number	1.30	
Maximum Discharge	265.77	ft ³ /s
Discharge Full	247.06	ft ³ /s
Slope Full	0.00773	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.08	%
Downstream Velocity	Infinity	ft/s

D-4H - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.80	ft
Critical Depth	4.28	ft
Channel Slope	0.00900	ft/ft
Critical Slope	0.00721	ft/ft

D-4H - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00900	ft/ft
Diameter	5.00	ft
Discharge	257.00	ft ³ /s

Results

Normal Depth	4.31	ft
Flow Area	17.99	ft ²
Wetted Perimeter	11.89	ft
Hydraulic Radius	1.51	ft
Top Width	3.46	ft
Critical Depth	4.47	ft
Percent Full	86.1	%
Critical Slope	0.00863	ft/ft
Velocity	14.29	ft/s
Velocity Head	3.17	ft
Specific Energy	7.48	ft
Froude Number	1.10	
Maximum Discharge	265.77	ft ³ /s
Discharge Full	247.06	ft ³ /s
Slope Full	0.00974	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	86.13	%
Downstream Velocity	Infinity	ft/s

D-4H - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.31	ft
Critical Depth	4.47	ft
Channel Slope	0.00900	ft/ft
Critical Slope	0.00863	ft/ft

D-4I (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00420	ft/ft
Diameter	3.50	ft
Discharge	56.93	ft ³ /s

Results

Normal Depth	2.53	ft
Flow Area	7.45	ft ²
Wetted Perimeter	7.12	ft
Hydraulic Radius	1.05	ft
Top Width	3.13	ft
Critical Depth	2.36	ft
Percent Full	72.3	%
Critical Slope	0.00503	ft/ft
Velocity	7.64	ft/s
Velocity Head	0.91	ft
Specific Energy	3.44	ft
Froude Number	0.87	
Maximum Discharge	70.13	ft ³ /s
Discharge Full	65.20	ft ³ /s
Slope Full	0.00320	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	72.35	%
Downstream Velocity	Infinity	ft/s

D-4I (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.53	ft
Critical Depth	2.36	ft
Channel Slope	0.00420	ft/ft
Critical Slope	0.00503	ft/ft

D-4I (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00420	ft/ft
Diameter	3.50	ft
Discharge	63.89	ft ³ /s

Results

Normal Depth	2.81	ft
Flow Area	8.27	ft ²
Wetted Perimeter	7.77	ft
Hydraulic Radius	1.06	ft
Top Width	2.79	ft
Critical Depth	2.51	ft
Percent Full	80.2	%
Critical Slope	0.00543	ft/ft
Velocity	7.72	ft/s
Velocity Head	0.93	ft
Specific Energy	3.73	ft
Froude Number	0.79	
Maximum Discharge	70.13	ft ³ /s
Discharge Full	65.20	ft ³ /s
Slope Full	0.00403	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	80.21	%
Downstream Velocity	Infinity	ft/s

D-4I (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.81	ft
Critical Depth	2.51	ft
Channel Slope	0.00420	ft/ft
Critical Slope	0.00543	ft/ft

D-4I (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00420	ft/ft
Diameter	3.00	ft
Discharge	30.81	ft ³ /s

Results

Normal Depth	1.87	ft
Flow Area	4.64	ft ²
Wetted Perimeter	5.46	ft
Hydraulic Radius	0.85	ft
Top Width	2.91	ft
Critical Depth	1.80	ft
Percent Full	62.4	%
Critical Slope	0.00473	ft/ft
Velocity	6.64	ft/s
Velocity Head	0.69	ft
Specific Energy	2.56	ft
Froude Number	0.93	
Maximum Discharge	46.50	ft ³ /s
Discharge Full	43.22	ft ³ /s
Slope Full	0.00213	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	62.40	%
Downstream Velocity	Infinity	ft/s

D-4I (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.87	ft
Critical Depth	1.80	ft
Channel Slope	0.00420	ft/ft
Critical Slope	0.00473	ft/ft

D-4I (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00420	ft/ft
Diameter	3.00	ft
Discharge	34.57	ft ³ /s

Results

Normal Depth	2.03	ft
Flow Area	5.09	ft ²
Wetted Perimeter	5.79	ft
Hydraulic Radius	0.88	ft
Top Width	2.81	ft
Critical Depth	1.91	ft
Percent Full	67.6	%
Critical Slope	0.00498	ft/ft
Velocity	6.79	ft/s
Velocity Head	0.72	ft
Specific Energy	2.75	ft
Froude Number	0.89	
Maximum Discharge	46.50	ft ³ /s
Discharge Full	43.22	ft ³ /s
Slope Full	0.00269	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	67.65	%
Downstream Velocity	Infinity	ft/s

D-4I (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.03	ft
Critical Depth	1.91	ft
Channel Slope	0.00420	ft/ft
Critical Slope	0.00498	ft/ft

D-4J - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	1.00	ft
Discharge	0.77	ft ³ /s

Results

Normal Depth	0.38	ft
Flow Area	0.27	ft ²
Wetted Perimeter	1.33	ft
Hydraulic Radius	0.21	ft
Top Width	0.97	ft
Critical Depth	0.37	ft
Percent Full	37.9	%
Critical Slope	0.00568	ft/ft
Velocity	2.82	ft/s
Velocity Head	0.12	ft
Specific Energy	0.50	ft
Froude Number	0.94	
Maximum Discharge	2.71	ft ³ /s
Discharge Full	2.52	ft ³ /s
Slope Full	0.00047	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	37.92	%
Downstream Velocity	Infinity	ft/s

D-4J - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.38	ft
Critical Depth	0.37	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00568	ft/ft

D-4J - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	1.50	ft
Discharge	0.90	ft ³ /s

Results

Normal Depth	0.35	ft
Flow Area	0.32	ft ²
Wetted Perimeter	1.52	ft
Hydraulic Radius	0.21	ft
Top Width	1.27	ft
Critical Depth	0.35	ft
Percent Full	23.5	%
Critical Slope	0.00496	ft/ft
Velocity	2.84	ft/s
Velocity Head	0.13	ft
Specific Energy	0.48	ft
Froude Number	1.00	
Maximum Discharge	7.99	ft ³ /s
Discharge Full	7.43	ft ³ /s
Slope Full	0.00007	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	23.50	%
Downstream Velocity	Infinity	ft/s

D-4J - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.35	ft
Critical Depth	0.35	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00496	ft/ft

E-1 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	8.50	ft
Discharge	399.66	ft ³ /s

Results

Normal Depth	6.70	ft
Flow Area	47.96	ft ²
Wetted Perimeter	18.57	ft
Hydraulic Radius	2.58	ft
Top Width	6.95	ft
Critical Depth	4.99	ft
Percent Full	78.8	%
Critical Slope	0.00329	ft/ft
Velocity	8.33	ft/s
Velocity Head	1.08	ft
Specific Energy	7.78	ft
Froude Number	0.56	
Maximum Discharge	446.64	ft ³ /s
Discharge Full	415.21	ft ³ /s
Slope Full	0.00139	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.79	%
Downstream Velocity	Infinity	ft/s

E-1 (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.70	ft
Critical Depth	4.99	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00329	ft/ft

E-1 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	9.00	ft
Discharge	468.98	ft ³ /s

Results

Normal Depth	7.14	ft
Flow Area	54.15	ft ²
Wetted Perimeter	19.79	ft
Hydraulic Radius	2.74	ft
Top Width	7.28	ft
Critical Depth	5.33	ft
Percent Full	79.4	%
Critical Slope	0.00325	ft/ft
Velocity	8.66	ft/s
Velocity Head	1.17	ft
Specific Energy	8.31	ft
Froude Number	0.56	
Maximum Discharge	520.18	ft ³ /s
Discharge Full	483.57	ft ³ /s
Slope Full	0.00141	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	79.37	%
Downstream Velocity	Infinity	ft/s

E-1 (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	7.14	ft
Critical Depth	5.33	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00325	ft/ft

E-1 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00240	ft/ft
Diameter	8.50	ft
Discharge	394.13	ft ³ /s

Results

Normal Depth	5.49	ft
Flow Area	38.80	ft ²
Wetted Perimeter	15.88	ft
Hydraulic Radius	2.44	ft
Top Width	8.13	ft
Critical Depth	4.95	ft
Percent Full	64.6	%
Critical Slope	0.00328	ft/ft
Velocity	10.16	ft/s
Velocity Head	1.60	ft
Specific Energy	7.10	ft
Froude Number	0.82	
Maximum Discharge	564.96	ft ³ /s
Discharge Full	525.20	ft ³ /s
Slope Full	0.00135	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	64.64	%
Downstream Velocity	Infinity	ft/s

E-1 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.49	ft
Critical Depth	4.95	ft
Channel Slope	0.00240	ft/ft
Critical Slope	0.00328	ft/ft

E-1 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00240	ft/ft
Diameter	9.00	ft
Discharge	460.40	ft ³ /s

Results

Normal Depth	5.83	ft
Flow Area	43.60	ft ²
Wetted Perimeter	16.84	ft
Hydraulic Radius	2.59	ft
Top Width	8.60	ft
Critical Depth	5.28	ft
Percent Full	64.8	%
Critical Slope	0.00323	ft/ft
Velocity	10.56	ft/s
Velocity Head	1.73	ft
Specific Energy	7.56	ft
Froude Number	0.83	
Maximum Discharge	657.98	ft ³ /s
Discharge Full	611.67	ft ³ /s
Slope Full	0.00136	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	64.78	%
Downstream Velocity	Infinity	ft/s

E-1 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.83	ft
Critical Depth	5.28	ft
Channel Slope	0.00240	ft/ft
Critical Slope	0.00323	ft/ft

E-1 (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00740	ft/ft
Diameter	5.00	ft
Discharge	234.05	ft ³ /s

Results

Normal Depth	4.33	ft
Flow Area	18.08	ft ²
Wetted Perimeter	11.97	ft
Hydraulic Radius	1.51	ft
Top Width	3.40	ft
Critical Depth	4.32	ft
Percent Full	86.7	%
Critical Slope	0.00744	ft/ft
Velocity	12.94	ft/s
Velocity Head	2.60	ft
Specific Energy	6.94	ft
Froude Number	0.99	
Maximum Discharge	240.99	ft ³ /s
Discharge Full	224.03	ft ³ /s
Slope Full	0.00808	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	86.70	%
Downstream Velocity	Infinity	ft/s

E-1 (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.33	ft
Critical Depth	4.32	ft
Channel Slope	0.00740	ft/ft
Critical Slope	0.00744	ft/ft

E-1 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00740	ft/ft
Diameter	5.50	ft
Discharge	275.06	ft ³ /s

Results

Normal Depth	4.29	ft
Flow Area	19.88	ft ²
Wetted Perimeter	11.91	ft
Hydraulic Radius	1.67	ft
Top Width	4.56	ft
Critical Depth	4.60	ft
Percent Full	78.0	%
Critical Slope	0.00648	ft/ft
Velocity	13.84	ft/s
Velocity Head	2.98	ft
Specific Energy	7.26	ft
Froude Number	1.17	
Maximum Discharge	310.73	ft ³ /s
Discharge Full	288.86	ft ³ /s
Slope Full	0.00671	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.98	%
Downstream Velocity	Infinity	ft/s

E-1 (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.29	ft
Critical Depth	4.60	ft
Channel Slope	0.00740	ft/ft
Critical Slope	0.00648	ft/ft

E-1 (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00730	ft/ft
Diameter	4.50	ft
Discharge	149.48	ft ³ /s

Results

Normal Depth	3.31	ft
Flow Area	12.52	ft ²
Wetted Perimeter	9.27	ft
Hydraulic Radius	1.35	ft
Top Width	3.97	ft
Critical Depth	3.59	ft
Percent Full	73.5	%
Critical Slope	0.00609	ft/ft
Velocity	11.94	ft/s
Velocity Head	2.21	ft
Specific Energy	5.52	ft
Froude Number	1.19	
Maximum Discharge	180.73	ft ³ /s
Discharge Full	168.01	ft ³ /s
Slope Full	0.00578	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	73.46	%
Downstream Velocity	Infinity	ft/s

E-1 (Seg 4) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.31	ft
Critical Depth	3.59	ft
Channel Slope	0.00730	ft/ft
Critical Slope	0.00609	ft/ft

E-1 (Seg 5) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00660	ft/ft
Diameter	3.50	ft
Discharge	60.61	ft ³ /s

Results

Normal Depth	2.24	ft
Flow Area	6.52	ft ²
Wetted Perimeter	6.50	ft
Hydraulic Radius	1.00	ft
Top Width	3.36	ft
Critical Depth	2.44	ft
Percent Full	64.1	%
Critical Slope	0.00523	ft/ft
Velocity	9.30	ft/s
Velocity Head	1.34	ft
Specific Energy	3.59	ft
Froude Number	1.18	
Maximum Discharge	87.92	ft ³ /s
Discharge Full	81.73	ft ³ /s
Slope Full	0.00363	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	64.11	%
Downstream Velocity	Infinity	ft/s

E-1 (Seg 5) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.24	ft
Critical Depth	2.44	ft
Channel Slope	0.00660	ft/ft
Critical Slope	0.00523	ft/ft

E-1 (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00660	ft/ft
Diameter	3.50	ft
Discharge	71.23	ft ³ /s

Results

Normal Depth	2.53	ft
Flow Area	7.44	ft ²
Wetted Perimeter	7.11	ft
Hydraulic Radius	1.05	ft
Top Width	3.13	ft
Critical Depth	2.64	ft
Percent Full	72.2	%
Critical Slope	0.00593	ft/ft
Velocity	9.57	ft/s
Velocity Head	1.42	ft
Specific Energy	3.95	ft
Froude Number	1.10	
Maximum Discharge	87.92	ft ³ /s
Discharge Full	81.73	ft ³ /s
Slope Full	0.00501	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	72.24	%
Downstream Velocity	Infinity	ft/s

E-1 (Seg 5) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.53	ft
Critical Depth	2.64	ft
Channel Slope	0.00660	ft/ft
Critical Slope	0.00593	ft/ft

E-2 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00110	ft/ft
Diameter	8.00	ft
Discharge	301.66	ft ³ /s

Results

Normal Depth	6.54	ft
Flow Area	43.97	ft ²
Wetted Perimeter	18.06	ft
Hydraulic Radius	2.43	ft
Top Width	6.18	ft
Critical Depth	4.39	ft
Percent Full	81.7	%
Critical Slope	0.00322	ft/ft
Velocity	6.86	ft/s
Velocity Head	0.73	ft
Specific Energy	7.27	ft
Froude Number	0.45	
Maximum Discharge	325.39	ft ³ /s
Discharge Full	302.49	ft ³ /s
Slope Full	0.00109	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.72	%
Downstream Velocity	Infinity	ft/s

E-2 (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.54	ft
Critical Depth	4.39	ft
Channel Slope	0.00110	ft/ft
Critical Slope	0.00322	ft/ft

E-2 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00740	ft/ft
Diameter	8.00	ft
Discharge	270.82	ft ³ /s

Results

Normal Depth	3.24	ft
Flow Area	19.11	ft ²
Wetted Perimeter	11.04	ft
Hydraulic Radius	1.73	ft
Top Width	7.86	ft
Critical Depth	4.15	ft
Percent Full	40.5	%
Critical Slope	0.00312	ft/ft
Velocity	14.17	ft/s
Velocity Head	3.12	ft
Specific Energy	6.36	ft
Froude Number	1.60	
Maximum Discharge	843.95	ft ³ /s
Discharge Full	784.56	ft ³ /s
Slope Full	0.00088	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	40.53	%
Downstream Velocity	Infinity	ft/s

E-2 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.24	ft
Critical Depth	4.15	ft
Channel Slope	0.00740	ft/ft
Critical Slope	0.00312	ft/ft

E-2 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00570	ft/ft
Diameter	5.50	ft
Discharge	240.11	ft ³ /s

Results

Normal Depth	4.27	ft
Flow Area	19.78	ft ²
Wetted Perimeter	11.85	ft
Hydraulic Radius	1.67	ft
Top Width	4.59	ft
Critical Depth	4.33	ft
Percent Full	77.6	%
Critical Slope	0.00553	ft/ft
Velocity	12.14	ft/s
Velocity Head	2.29	ft
Specific Energy	6.56	ft
Froude Number	1.03	
Maximum Discharge	272.71	ft ³ /s
Discharge Full	253.52	ft ³ /s
Slope Full	0.00511	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.58	%
Downstream Velocity	Infinity	ft/s

E-2 (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.27	ft
Critical Depth	4.33	ft
Channel Slope	0.00570	ft/ft
Critical Slope	0.00553	ft/ft

F-1 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00240	ft/ft
Diameter	10.00	ft
Discharge	788.89	ft ³ /s

Results

Normal Depth	7.97	ft
Flow Area	67.11	ft ²
Wetted Perimeter	22.07	ft
Hydraulic Radius	3.04	ft
Top Width	8.05	ft
Critical Depth	6.77	ft
Percent Full	79.7	%
Critical Slope	0.00356	ft/ft
Velocity	11.75	ft/s
Velocity Head	2.15	ft
Specific Energy	10.12	ft
Froude Number	0.72	
Maximum Discharge	871.43	ft ³ /s
Discharge Full	810.10	ft ³ /s
Slope Full	0.00228	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	79.69	%
Downstream Velocity	Infinity	ft/s

F-1 (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	7.97	ft
Critical Depth	6.77	ft
Channel Slope	0.00240	ft/ft
Critical Slope	0.00356	ft/ft

F-1 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00450	ft/ft
Diameter	8.50	ft
Discharge	742.39	ft ³ /s

Results

Normal Depth	7.24	ft
Flow Area	51.51	ft ²
Wetted Perimeter	19.99	ft
Hydraulic Radius	2.58	ft
Top Width	6.04	ft
Critical Depth	6.82	ft
Percent Full	85.2	%
Critical Slope	0.00500	ft/ft
Velocity	14.41	ft/s
Velocity Head	3.23	ft
Specific Energy	10.47	ft
Froude Number	0.87	
Maximum Discharge	773.60	ft ³ /s
Discharge Full	719.16	ft ³ /s
Slope Full	0.00480	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	85.21	%
Downstream Velocity	Infinity	ft/s

F-1 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	7.24	ft
Critical Depth	6.82	ft
Channel Slope	0.00450	ft/ft
Critical Slope	0.00500	ft/ft

F-1 (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00660	ft/ft
Diameter	9.50	ft
Discharge	1214.46	ft ³ /s

Results

Normal Depth	8.14	ft
Flow Area	64.66	ft ²
Wetted Perimeter	22.47	ft
Hydraulic Radius	2.88	ft
Top Width	6.65	ft
Critical Depth	8.33	ft
Percent Full	85.7	%
Critical Slope	0.00641	ft/ft
Velocity	18.78	ft/s
Velocity Head	5.48	ft
Specific Energy	13.62	ft
Froude Number	1.06	
Maximum Discharge	1260.37	ft ³ /s
Discharge Full	1171.66	ft ³ /s
Slope Full	0.00709	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	85.69	%
Downstream Velocity	Infinity	ft/s

F-1 (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	8.14	ft
Critical Depth	8.33	ft
Channel Slope	0.00660	ft/ft
Critical Slope	0.00641	ft/ft

F-1 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00660	ft/ft
Diameter	8.00	ft
Discharge	697.29	ft ³ /s

Results

Normal Depth	6.17	ft
Flow Area	41.60	ft ²
Wetted Perimeter	17.15	ft
Hydraulic Radius	2.43	ft
Top Width	6.72	ft
Critical Depth	6.67	ft
Percent Full	77.1	%
Critical Slope	0.00567	ft/ft
Velocity	16.76	ft/s
Velocity Head	4.37	ft
Specific Energy	10.54	ft
Froude Number	1.19	
Maximum Discharge	797.03	ft ³ /s
Discharge Full	740.94	ft ³ /s
Slope Full	0.00585	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.13	%
Downstream Velocity	Infinity	ft/s

F-1 (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.17	ft
Critical Depth	6.67	ft
Channel Slope	0.00660	ft/ft
Critical Slope	0.00567	ft/ft

F-1 (Seg 4) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00570	ft/ft
Diameter	9.50	ft
Discharge	1136.87	ft ³ /s

Results

Normal Depth	8.23	ft
Flow Area	65.23	ft ²
Wetted Perimeter	22.73	ft
Hydraulic Radius	2.87	ft
Top Width	6.47	ft
Critical Depth	8.12	ft
Percent Full	86.6	%
Critical Slope	0.00580	ft/ft
Velocity	17.43	ft/s
Velocity Head	4.72	ft
Specific Energy	12.95	ft
Froude Number	0.97	
Maximum Discharge	1171.28	ft ³ /s
Discharge Full	1088.85	ft ³ /s
Slope Full	0.00621	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	86.62	%
Downstream Velocity	Infinity	ft/s

F-1 (Seg 4) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	8.23	ft
Critical Depth	8.12	ft
Channel Slope	0.00570	ft/ft
Critical Slope	0.00580	ft/ft

F-1 (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00570	ft/ft
Diameter	8.00	ft
Discharge	651.07	ft ³ /s

Results

Normal Depth	6.20	ft
Flow Area	41.78	ft ²
Wetted Perimeter	17.22	ft
Hydraulic Radius	2.43	ft
Top Width	6.69	ft
Critical Depth	6.48	ft
Percent Full	77.5	%
Critical Slope	0.00522	ft/ft
Velocity	15.58	ft/s
Velocity Head	3.77	ft
Specific Energy	9.97	ft
Froude Number	1.10	
Maximum Discharge	740.69	ft ³ /s
Discharge Full	688.57	ft ³ /s
Slope Full	0.00510	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.46	%
Downstream Velocity	Infinity	ft/s

F-1 (Seg 4) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.20	ft
Critical Depth	6.48	ft
Channel Slope	0.00570	ft/ft
Critical Slope	0.00522	ft/ft

F-1A (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	5.00	ft
Discharge	94.61	ft ³ /s

Results

Normal Depth	3.84	ft
Flow Area	16.20	ft ²
Wetted Perimeter	10.69	ft
Hydraulic Radius	1.52	ft
Top Width	4.21	ft
Critical Depth	2.77	ft
Percent Full	76.9	%
Critical Slope	0.00378	ft/ft
Velocity	5.84	ft/s
Velocity Head	0.53	ft
Specific Energy	4.37	ft
Froude Number	0.53	
Maximum Discharge	108.50	ft ³ /s
Discharge Full	100.86	ft ³ /s
Slope Full	0.00132	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.90	%
Downstream Velocity	Infinity	ft/s

F-1A (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.84	ft
Critical Depth	2.77	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00378	ft/ft

F-1A (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Diameter	5.50	ft
Discharge	113.71	ft ³ /s

Results

Normal Depth	3.98	ft
Flow Area	18.43	ft ²
Wetted Perimeter	11.20	ft
Hydraulic Radius	1.65	ft
Top Width	4.92	ft
Critical Depth	2.96	ft
Percent Full	72.4	%
Critical Slope	0.00360	ft/ft
Velocity	6.17	ft/s
Velocity Head	0.59	ft
Specific Energy	4.58	ft
Froude Number	0.56	
Maximum Discharge	139.90	ft ³ /s
Discharge Full	130.05	ft ³ /s
Slope Full	0.00115	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	72.42	%
Downstream Velocity	Infinity	ft/s

F-1A (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.98	ft
Critical Depth	2.96	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00360	ft/ft

F-1A (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00320	ft/ft
Diameter	3.50	ft
Discharge	51.98	ft ³ /s

Results

Normal Depth	2.63	ft
Flow Area	7.75	ft ²
Wetted Perimeter	7.34	ft
Hydraulic Radius	1.06	ft
Top Width	3.03	ft
Critical Depth	2.25	ft
Percent Full	75.1	%
Critical Slope	0.00479	ft/ft
Velocity	6.71	ft/s
Velocity Head	0.70	ft
Specific Energy	3.33	ft
Froude Number	0.74	
Maximum Discharge	61.22	ft ³ /s
Discharge Full	56.91	ft ³ /s
Slope Full	0.00267	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.11	%
Downstream Velocity	Infinity	ft/s

F-1A (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.63	ft
Critical Depth	2.25	ft
Channel Slope	0.00320	ft/ft
Critical Slope	0.00479	ft/ft

F-1A (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00320	ft/ft
Diameter	4.00	ft
Discharge	62.89	ft ³ /s

Results

Normal Depth	2.64	ft
Flow Area	8.81	ft ²
Wetted Perimeter	7.59	ft
Hydraulic Radius	1.16	ft
Top Width	3.79	ft
Critical Depth	2.39	ft
Percent Full	66.1	%
Critical Slope	0.00429	ft/ft
Velocity	7.14	ft/s
Velocity Head	0.79	ft
Specific Energy	3.43	ft
Froude Number	0.83	
Maximum Discharge	87.40	ft ³ /s
Discharge Full	81.25	ft ³ /s
Slope Full	0.00192	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	66.06	%
Downstream Velocity	Infinity	ft/s

F-1A (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.64	ft
Critical Depth	2.39	ft
Channel Slope	0.00320	ft/ft
Critical Slope	0.00429	ft/ft

F-2A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.00	ft
Discharge	21.52	ft ³ /s

Results

Normal Depth	2.52	ft
Flow Area	6.33	ft ²
Wetted Perimeter	6.95	ft
Hydraulic Radius	0.91	ft
Top Width	2.20	ft
Critical Depth	1.49	ft
Percent Full	83.9	%
Critical Slope	0.00425	ft/ft
Velocity	3.40	ft/s
Velocity Head	0.18	ft
Specific Energy	2.70	ft
Froude Number	0.35	
Maximum Discharge	22.69	ft ³ /s
Discharge Full	21.09	ft ³ /s
Slope Full	0.00104	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	83.93	%
Downstream Velocity	Infinity	ft/s

F-2A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.52	ft
Critical Depth	1.49	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00425	ft/ft

F-2A - Q100

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.50	ft
Discharge	25.63	ft ³ /s

Results

Normal Depth	2.38	ft
Flow Area	6.97	ft ²
Wetted Perimeter	6.79	ft
Hydraulic Radius	1.03	ft
Top Width	3.27	ft
Critical Depth	1.56	ft
Percent Full	68.0	%
Critical Slope	0.00388	ft/ft
Velocity	3.68	ft/s
Velocity Head	0.21	ft
Specific Energy	2.59	ft
Froude Number	0.44	
Maximum Discharge	34.22	ft ³ /s
Discharge Full	31.81	ft ³ /s
Slope Full	0.00065	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.01	%
Downstream Velocity	Infinity	ft/s

F-2A - Q100

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.38	ft
Critical Depth	1.56	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00388	ft/ft

G-1 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00400	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	78.00	ft
Discharge	5533.00	ft ³ /s

Results

Normal Depth	6.74	ft
Flow Area	662.19	ft ²
Wetted Perimeter	120.64	ft
Hydraulic Radius	5.49	ft
Top Width	118.45	ft
Critical Depth	5.03	ft
Critical Slope	0.01117	ft/ft
Velocity	8.36	ft/s
Velocity Head	1.08	ft
Specific Energy	7.83	ft
Froude Number	0.62	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.74	ft
Critical Depth	5.03	ft
Channel Slope	0.00400	ft/ft

G-1 (Seg 1) - Q50

GVF Output Data

Critical Slope 0.01117 ft/ft

G-1 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00430	ft/ft
Diameter	7.00	ft
Discharge	417.08	ft ³ /s

Results

Normal Depth	5.71	ft
Flow Area	33.61	ft ²
Wetted Perimeter	15.78	ft
Hydraulic Radius	2.13	ft
Top Width	5.43	ft
Critical Depth	5.38	ft
Percent Full	81.6	%
Critical Slope	0.00485	ft/ft
Velocity	12.41	ft/s
Velocity Head	2.39	ft
Specific Energy	8.10	ft
Froude Number	0.88	
Maximum Discharge	450.60	ft ³ /s
Discharge Full	418.89	ft ³ /s
Slope Full	0.00426	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.57	%
Downstream Velocity	Infinity	ft/s

G-1 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.71	ft
Critical Depth	5.38	ft
Channel Slope	0.00430	ft/ft
Critical Slope	0.00485	ft/ft

G-1 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00430	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	43.00	ft
Discharge	477.85	ft ³ /s

Results

Normal Depth	2.22	ft
Flow Area	110.48	ft ²
Wetted Perimeter	57.07	ft
Hydraulic Radius	1.94	ft
Top Width	56.35	ft
Critical Depth	1.51	ft
Critical Slope	0.01624	ft/ft
Velocity	4.33	ft/s
Velocity Head	0.29	ft
Specific Energy	2.51	ft
Froude Number	0.54	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.22	ft
Critical Depth	1.51	ft
Channel Slope	0.00430	ft/ft

G-1 (Seg 2) - Q50

GVF Output Data

Critical Slope 0.01624 ft/ft

G-1 (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00390	ft/ft
Diameter	7.00	ft
Discharge	393.02	ft ³ /s

Results

Normal Depth	5.65	ft
Flow Area	33.26	ft ²
Wetted Perimeter	15.62	ft
Hydraulic Radius	2.13	ft
Top Width	5.53	ft
Critical Depth	5.22	ft
Percent Full	80.7	%
Critical Slope	0.00460	ft/ft
Velocity	11.82	ft/s
Velocity Head	2.17	ft
Specific Energy	7.82	ft
Froude Number	0.85	
Maximum Discharge	429.13	ft ³ /s
Discharge Full	398.93	ft ³ /s
Slope Full	0.00379	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	80.65	%
Downstream Velocity	Infinity	ft/s

G-1 (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	5.65	ft
Critical Depth	5.22	ft
Channel Slope	0.00390	ft/ft
Critical Slope	0.00460	ft/ft

G-1 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00390	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	43.00	ft
Discharge	448.50	ft ³ /s

Results

Normal Depth	2.21	ft
Flow Area	109.44	ft ²
Wetted Perimeter	56.95	ft
Hydraulic Radius	1.92	ft
Top Width	56.23	ft
Critical Depth	1.45	ft
Critical Slope	0.01644	ft/ft
Velocity	4.10	ft/s
Velocity Head	0.26	ft
Specific Energy	2.47	ft
Froude Number	0.52	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.21	ft
Critical Depth	1.45	ft
Channel Slope	0.00390	ft/ft

G-1 (Seg 3) - Q50

GVF Output Data

Critical Slope 0.01644 ft/ft

G-1 (Seg 4) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00270	ft/ft
Diameter	7.00	ft
Discharge	352.48	ft ³ /s

Results

Normal Depth	6.25	ft
Flow Area	36.26	ft ²
Wetted Perimeter	17.32	ft
Hydraulic Radius	2.09	ft
Top Width	4.34	ft
Critical Depth	4.95	ft
Percent Full	89.3	%
Critical Slope	0.00423	ft/ft
Velocity	9.72	ft/s
Velocity Head	1.47	ft
Specific Energy	7.72	ft
Froude Number	0.59	
Maximum Discharge	357.06	ft ³ /s
Discharge Full	331.93	ft ³ /s
Slope Full	0.00304	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	89.26	%
Downstream Velocity	Infinity	ft/s

G-1 (Seg 4) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.25	ft
Critical Depth	4.95	ft
Channel Slope	0.00270	ft/ft
Critical Slope	0.00423	ft/ft

G-1 (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00270	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	43.00	ft
Discharge	399.04	ft ³ /s

Results

Normal Depth	2.29	ft
Flow Area	114.36	ft ²
Wetted Perimeter	57.50	ft
Hydraulic Radius	1.99	ft
Top Width	56.76	ft
Critical Depth	1.34	ft
Critical Slope	0.01681	ft/ft
Velocity	3.49	ft/s
Velocity Head	0.19	ft
Specific Energy	2.48	ft
Froude Number	0.43	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.29	ft
Critical Depth	1.34	ft
Channel Slope	0.00270	ft/ft

G-1 (Seg 4) - Q50

GVF Output Data

Critical Slope 0.01681 ft/ft

G-1A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00130	ft/ft
Diameter	3.50	ft
Discharge	32.19	ft ³ /s

Results

Normal Depth	2.57	ft
Flow Area	7.56	ft ²
Wetted Perimeter	7.19	ft
Hydraulic Radius	1.05	ft
Top Width	3.10	ft
Critical Depth	1.76	ft
Percent Full	73.3	%
Critical Slope	0.00405	ft/ft
Velocity	4.26	ft/s
Velocity Head	0.28	ft
Specific Energy	2.85	ft
Froude Number	0.48	
Maximum Discharge	39.02	ft ³ /s
Discharge Full	36.27	ft ³ /s
Slope Full	0.00102	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	73.30	%
Downstream Velocity	Infinity	ft/s

G-1A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.57	ft
Critical Depth	1.76	ft
Channel Slope	0.00130	ft/ft
Critical Slope	0.00405	ft/ft

G-1A (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00130	ft/ft
Diameter	3.50	ft
Discharge	32.19	ft ³ /s

Results

Normal Depth	2.57	ft
Flow Area	7.56	ft ²
Wetted Perimeter	7.19	ft
Hydraulic Radius	1.05	ft
Top Width	3.10	ft
Critical Depth	1.76	ft
Percent Full	73.3	%
Critical Slope	0.00405	ft/ft
Velocity	4.26	ft/s
Velocity Head	0.28	ft
Specific Energy	2.85	ft
Froude Number	0.48	
Maximum Discharge	39.02	ft ³ /s
Discharge Full	36.27	ft ³ /s
Slope Full	0.00102	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	73.30	%
Downstream Velocity	Infinity	ft/s

G-1A (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.57	ft
Critical Depth	1.76	ft
Channel Slope	0.00130	ft/ft
Critical Slope	0.00405	ft/ft

G-1A (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00130	ft/ft
Diameter	3.50	ft
Discharge	38.74	ft ³ /s

Results

Normal Depth	3.17	ft
Flow Area	9.15	ft ²
Wetted Perimeter	8.80	ft
Hydraulic Radius	1.04	ft
Top Width	2.05	ft
Critical Depth	1.93	ft
Percent Full	90.5	%
Critical Slope	0.00425	ft/ft
Velocity	4.23	ft/s
Velocity Head	0.28	ft
Specific Energy	3.44	ft
Froude Number	0.35	
Maximum Discharge	39.02	ft ³ /s
Discharge Full	36.27	ft ³ /s
Slope Full	0.00148	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	90.48	%
Downstream Velocity	Infinity	ft/s

G-1A (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.17	ft
Critical Depth	1.93	ft
Channel Slope	0.00130	ft/ft
Critical Slope	0.00425	ft/ft

G-1A (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00130	ft/ft
Diameter	1.50	ft
Discharge	7.13	ft ³ /s

Results

Normal Depth	2.57	ft
Flow Area	7.56	ft ²
Wetted Perimeter	7.19	ft
Hydraulic Radius	1.05	ft
Top Width	3.10	ft
Critical Depth	1.76	ft
Percent Full	73.3	%
Critical Slope	0.00405	ft/ft
Velocity	4.26	ft/s
Velocity Head	0.28	ft
Specific Energy	2.85	ft
Froude Number	0.48	
Maximum Discharge	39.02	ft ³ /s
Discharge Full	36.27	ft ³ /s
Slope Full	0.00102	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	73.30	%
Downstream Velocity	Infinity	ft/s

G-1A (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.57	ft
Critical Depth	1.76	ft
Channel Slope	0.00130	ft/ft
Critical Slope	0.00405	ft/ft

G-1A (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00130	ft/ft
Diameter	2.00	ft
Discharge	8.61	ft ³ /s

Results

Normal Depth	1.76	ft
Flow Area	2.93	ft ²
Wetted Perimeter	4.88	ft
Hydraulic Radius	0.60	ft
Top Width	1.29	ft
Critical Depth	1.05	ft
Percent Full	88.2	%
Critical Slope	0.00498	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	1.90	ft
Froude Number	0.34	
Maximum Discharge	8.77	ft ³ /s
Discharge Full	8.16	ft ³ /s
Slope Full	0.00145	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	88.21	%
Downstream Velocity	Infinity	ft/s

G-1A (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.76	ft
Critical Depth	1.05	ft
Channel Slope	0.00130	ft/ft
Critical Slope	0.00498	ft/ft

G-2 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00220	ft/ft
Diameter	7.50	ft
Discharge	380.06	ft ³ /s

Results

Normal Depth	6.61	ft
Flow Area	41.24	ft ²
Wetted Perimeter	18.29	ft
Hydraulic Radius	2.25	ft
Top Width	4.84	ft
Critical Depth	5.05	ft
Percent Full	88.2	%
Critical Slope	0.00389	ft/ft
Velocity	9.22	ft/s
Velocity Head	1.32	ft
Specific Energy	7.93	ft
Froude Number	0.56	
Maximum Discharge	387.41	ft ³ /s
Discharge Full	360.14	ft ³ /s
Slope Full	0.00245	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	88.17	%
Downstream Velocity	Infinity	ft/s

G-2 (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.61	ft
Critical Depth	5.05	ft
Channel Slope	0.00220	ft/ft
Critical Slope	0.00389	ft/ft

G-2 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00220	ft/ft
Diameter	8.00	ft
Discharge	443.58	ft ³ /s

Results

Normal Depth	6.86	ft
Flow Area	45.87	ft ²
Wetted Perimeter	18.94	ft
Hydraulic Radius	2.42	ft
Top Width	5.59	ft
Critical Depth	5.36	ft
Percent Full	85.7	%
Critical Slope	0.00379	ft/ft
Velocity	9.67	ft/s
Velocity Head	1.45	ft
Specific Energy	8.31	ft
Froude Number	0.60	
Maximum Discharge	460.16	ft ³ /s
Discharge Full	427.78	ft ³ /s
Slope Full	0.00237	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	85.74	%
Downstream Velocity	Infinity	ft/s

G-2 (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.86	ft
Critical Depth	5.36	ft
Channel Slope	0.00220	ft/ft
Critical Slope	0.00379	ft/ft

G-2 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00140	ft/ft
Diameter	8.00	ft
Discharge	435.33	ft ³ /s

Results

Normal Depth	6.86	ft
Flow Area	45.87	ft ²
Wetted Perimeter	18.94	ft
Hydraulic Radius	2.42	ft
Top Width	5.59	ft
Critical Depth	5.36	ft
Percent Full	85.7	%
Critical Slope	0.00379	ft/ft
Velocity	9.67	ft/s
Velocity Head	1.45	ft
Specific Energy	8.31	ft
Froude Number	0.60	
Maximum Discharge	460.16	ft ³ /s
Discharge Full	427.78	ft ³ /s
Slope Full	0.00237	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	85.74	%
Downstream Velocity	Infinity	ft/s

G-2 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.86	ft
Critical Depth	5.36	ft
Channel Slope	0.00140	ft/ft
Critical Slope	0.00379	ft/ft

G-2 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00450	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	43.00	ft
Discharge	351.91	ft ³ /s

Results

Normal Depth	1.84	ft
Flow Area	89.15	ft ²
Wetted Perimeter	54.62	ft
Hydraulic Radius	1.63	ft
Top Width	54.03	ft
Critical Depth	1.24	ft
Critical Slope	0.01723	ft/ft
Velocity	3.95	ft/s
Velocity Head	0.24	ft
Specific Energy	2.08	ft
Froude Number	0.54	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.84	ft
Critical Depth	1.24	ft
Channel Slope	0.00450	ft/ft

G-2 (Seg 3) - Q50

GVF Output Data

Critical Slope 0.01723 ft/ft

G-2 (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00480	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	43.00	ft
Discharge	300.84	ft ³ /s

Results

Normal Depth	1.65	ft
Flow Area	78.86	ft ²
Wetted Perimeter	53.41	ft
Hydraulic Radius	1.48	ft
Top Width	52.87	ft
Critical Depth	1.12	ft
Critical Slope	0.01777	ft/ft
Velocity	3.81	ft/s
Velocity Head	0.23	ft
Specific Energy	1.87	ft
Froude Number	0.55	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.65	ft
Critical Depth	1.12	ft
Channel Slope	0.00480	ft/ft

G-2 (Seg 4) - Q50

GVF Output Data

Critical Slope 0.01777 ft/ft

G-2 (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.01200	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	43.00	ft
Discharge	188.70	ft ³ /s

Results

Normal Depth	0.95	ft
Flow Area	43.76	ft ²
Wetted Perimeter	49.04	ft
Hydraulic Radius	0.89	ft
Top Width	48.73	ft
Critical Depth	0.83	ft
Critical Slope	0.01951	ft/ft
Velocity	4.31	ft/s
Velocity Head	0.29	ft
Specific Energy	1.24	ft
Froude Number	0.80	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.95	ft
Critical Depth	0.83	ft
Channel Slope	0.01200	ft/ft

H-1 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00470	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	108.00	ft
Discharge	7406.30	ft ³ /s

Results

Normal Depth	6.42	ft
Flow Area	816.93	ft ²
Wetted Perimeter	148.60	ft
Hydraulic Radius	5.50	ft
Top Width	146.52	ft
Critical Depth	5.02	ft
Critical Slope	0.01101	ft/ft
Velocity	9.07	ft/s
Velocity Head	1.28	ft
Specific Energy	7.70	ft
Froude Number	0.68	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.42	ft
Critical Depth	5.02	ft
Channel Slope	0.00470	ft/ft

H-1 (Seg 1) - Q50

GVF Output Data

Critical Slope 0.01101 ft/ft

H-1 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00420	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	108.00	ft
Discharge	7325.52	ft ³ /s

Results

Normal Depth	6.59	ft
Flow Area	841.86	ft ²
Wetted Perimeter	149.67	ft
Hydraulic Radius	5.62	ft
Top Width	147.53	ft
Critical Depth	4.98	ft
Critical Slope	0.01103	ft/ft
Velocity	8.70	ft/s
Velocity Head	1.18	ft
Specific Energy	7.77	ft
Froude Number	0.64	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.59	ft
Critical Depth	4.98	ft
Channel Slope	0.00420	ft/ft

H-1 (Seg 2) - Q50

GVF Output Data

Critical Slope 0.01103 ft/ft

H-1 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00380	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	108.00	ft
Discharge	7233.63	ft ³ /s

Results

Normal Depth	6.73	ft
Flow Area	863.06	ft ²
Wetted Perimeter	150.58	ft
Hydraulic Radius	5.73	ft
Top Width	148.39	ft
Critical Depth	4.94	ft
Critical Slope	0.01105	ft/ft
Velocity	8.38	ft/s
Velocity Head	1.09	ft
Specific Energy	7.82	ft
Froude Number	0.61	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.73	ft
Critical Depth	4.94	ft
Channel Slope	0.00380	ft/ft

H-1 (Seg 3) - Q50

GVF Output Data

Critical Slope 0.01105 ft/ft

H-2 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00250	ft/ft
Diameter	5.00	ft
Discharge	109.66	ft ³ /s

Results

Normal Depth	3.52	ft
Flow Area	14.75	ft ²
Wetted Perimeter	9.95	ft
Hydraulic Radius	1.48	ft
Top Width	4.57	ft
Critical Depth	2.99	ft
Percent Full	70.3	%
Critical Slope	0.00398	ft/ft
Velocity	7.43	ft/s
Velocity Head	0.86	ft
Specific Energy	4.37	ft
Froude Number	0.73	
Maximum Discharge	140.07	ft ³ /s
Discharge Full	130.21	ft ³ /s
Slope Full	0.00177	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	70.32	%
Downstream Velocity	Infinity	ft/s

H-2 (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.52	ft
Critical Depth	2.99	ft
Channel Slope	0.00250	ft/ft
Critical Slope	0.00398	ft/ft

H-2 (Seg 1) - Q50

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00250	ft/ft
Diameter	5.00	ft
Discharge	138.32	ft ³ /s

Results

Normal Depth	4.47	ft
Flow Area	18.51	ft ²
Wetted Perimeter	12.38	ft
Hydraulic Radius	1.50	ft
Top Width	3.09	ft
Critical Depth	3.37	ft
Percent Full	89.3	%
Critical Slope	0.00446	ft/ft
Velocity	7.47	ft/s
Velocity Head	0.87	ft
Specific Energy	5.33	ft
Froude Number	0.54	
Maximum Discharge	140.07	ft ³ /s
Discharge Full	130.21	ft ³ /s
Slope Full	0.00282	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	89.32	%
Downstream Velocity	Infinity	ft/s

H-2 (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.47	ft
Critical Depth	3.37	ft
Channel Slope	0.00250	ft/ft
Critical Slope	0.00446	ft/ft

H-2 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	5.00	ft
Discharge	79.32	ft ³ /s

Results

Normal Depth	3.94	ft
Flow Area	16.60	ft ²
Wetted Perimeter	10.93	ft
Hydraulic Radius	1.52	ft
Top Width	4.08	ft
Critical Depth	2.52	ft
Percent Full	78.8	%
Critical Slope	0.00360	ft/ft
Velocity	4.78	ft/s
Velocity Head	0.35	ft
Specific Energy	4.30	ft
Froude Number	0.42	
Maximum Discharge	88.59	ft ³ /s
Discharge Full	82.35	ft ³ /s
Slope Full	0.00093	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.83	%
Downstream Velocity	Infinity	ft/s

H-2 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.94	ft
Critical Depth	2.52	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00360	ft/ft

H-2 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	5.50	ft
Discharge	100.15	ft ³ /s

Results

Normal Depth	4.25	ft
Flow Area	19.70	ft ²
Wetted Perimeter	11.81	ft
Hydraulic Radius	1.67	ft
Top Width	4.61	ft
Critical Depth	2.77	ft
Percent Full	77.3	%
Critical Slope	0.00349	ft/ft
Velocity	5.08	ft/s
Velocity Head	0.40	ft
Specific Energy	4.65	ft
Froude Number	0.43	
Maximum Discharge	114.23	ft ³ /s
Discharge Full	106.19	ft ³ /s
Slope Full	0.00089	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	77.29	%
Downstream Velocity	Infinity	ft/s

H-2 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.25	ft
Critical Depth	2.77	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00349	ft/ft

H-2 (Seg 3) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00520	ft/ft
Diameter	2.00	ft
Discharge	15.64	ft ³ /s

Results

Normal Depth	1.57	ft
Flow Area	2.65	ft ²
Wetted Perimeter	4.35	ft
Hydraulic Radius	0.61	ft
Top Width	1.64	ft
Critical Depth	1.43	ft
Percent Full	78.5	%
Critical Slope	0.00650	ft/ft
Velocity	5.91	ft/s
Velocity Head	0.54	ft
Specific Energy	2.11	ft
Froude Number	0.82	
Maximum Discharge	17.55	ft ³ /s
Discharge Full	16.31	ft ³ /s
Slope Full	0.00478	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	78.49	%
Downstream Velocity	Infinity	ft/s

H-2 (Seg 3) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.57	ft
Critical Depth	1.43	ft
Channel Slope	0.00520	ft/ft
Critical Slope	0.00650	ft/ft

H-2 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00520	ft/ft
Diameter	2.50	ft
Discharge	19.79	ft ³ /s

Results

Normal Depth	1.50	ft
Flow Area	3.07	ft ²
Wetted Perimeter	4.42	ft
Hydraulic Radius	0.69	ft
Top Width	2.45	ft
Critical Depth	1.51	ft
Percent Full	59.8	%
Critical Slope	0.00506	ft/ft
Velocity	6.46	ft/s
Velocity Head	0.65	ft
Specific Energy	2.14	ft
Froude Number	1.02	
Maximum Discharge	31.82	ft ³ /s
Discharge Full	29.58	ft ³ /s
Slope Full	0.00233	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	59.85	%
Downstream Velocity	Infinity	ft/s

H-2 (Seg 3) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.50	ft
Critical Depth	1.51	ft
Channel Slope	0.00520	ft/ft
Critical Slope	0.00506	ft/ft

H-2A - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00430	ft/ft
Diameter	1.50	ft
Discharge	7.12	ft ³ /s

Results

Normal Depth	1.28	ft
Flow Area	1.61	ft ²
Wetted Perimeter	3.54	ft
Hydraulic Radius	0.45	ft
Top Width	1.06	ft
Critical Depth	1.03	ft
Percent Full	85.4	%
Critical Slope	0.00684	ft/ft
Velocity	4.43	ft/s
Velocity Head	0.31	ft
Specific Energy	1.59	ft
Froude Number	0.63	
Maximum Discharge	7.41	ft ³ /s
Discharge Full	6.89	ft ³ /s
Slope Full	0.00459	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	85.37	%
Downstream Velocity	Infinity	ft/s

H-2A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.28	ft
Critical Depth	1.03	ft
Channel Slope	0.00430	ft/ft
Critical Slope	0.00684	ft/ft

H-2A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00430	ft/ft
Diameter	2.00	ft
Discharge	8.96	ft ³ /s

Results

Normal Depth	1.12	ft
Flow Area	1.81	ft ²
Wetted Perimeter	3.38	ft
Hydraulic Radius	0.54	ft
Top Width	1.99	ft
Critical Depth	1.07	ft
Percent Full	56.1	%
Critical Slope	0.00503	ft/ft
Velocity	4.94	ft/s
Velocity Head	0.38	ft
Specific Energy	1.50	ft
Froude Number	0.91	
Maximum Discharge	15.96	ft ³ /s
Discharge Full	14.83	ft ³ /s
Slope Full	0.00157	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	56.06	%
Downstream Velocity	Infinity	ft/s

H-2A - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.12	ft
Critical Depth	1.07	ft
Channel Slope	0.00430	ft/ft
Critical Slope	0.00503	ft/ft

H-3 (Seg 1) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00160	ft/ft
Diameter	5.00	ft
Discharge	90.93	ft ³ /s

Results

Normal Depth	3.62	ft
Flow Area	15.21	ft ²
Wetted Perimeter	10.17	ft
Hydraulic Radius	1.50	ft
Top Width	4.47	ft
Critical Depth	2.71	ft
Percent Full	72.3	%
Critical Slope	0.00373	ft/ft
Velocity	5.98	ft/s
Velocity Head	0.56	ft
Specific Energy	4.17	ft
Froude Number	0.57	
Maximum Discharge	112.06	ft ³ /s
Discharge Full	104.17	ft ³ /s
Slope Full	0.00122	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	72.33	%
Downstream Velocity	Infinity	ft/s

H-3 (Seg 1) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.62	ft
Critical Depth	2.71	ft
Channel Slope	0.00160	ft/ft
Critical Slope	0.00373	ft/ft

H-3 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00160	ft/ft
Diameter	5.50	ft
Discharge	114.38	ft ³ /s

Results

Normal Depth	3.90	ft
Flow Area	18.02	ft ²
Wetted Perimeter	11.01	ft
Hydraulic Radius	1.64	ft
Top Width	5.00	ft
Critical Depth	2.97	ft
Percent Full	70.9	%
Critical Slope	0.00361	ft/ft
Velocity	6.35	ft/s
Velocity Head	0.63	ft
Specific Energy	4.53	ft
Froude Number	0.59	
Maximum Discharge	144.48	ft ³ /s
Discharge Full	134.32	ft ³ /s
Slope Full	0.00116	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	70.92	%
Downstream Velocity	Infinity	ft/s

H-3 (Seg 1) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.90	ft
Critical Depth	2.97	ft
Channel Slope	0.00160	ft/ft
Critical Slope	0.00361	ft/ft

H-3 (Seg 2) - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	5.00	ft
Discharge	75.96	ft ³ /s

Results

Normal Depth	3.79	ft
Flow Area	15.96	ft ²
Wetted Perimeter	10.56	ft
Hydraulic Radius	1.51	ft
Top Width	4.29	ft
Critical Depth	2.46	ft
Percent Full	75.7	%
Critical Slope	0.00357	ft/ft
Velocity	4.76	ft/s
Velocity Head	0.35	ft
Specific Energy	4.14	ft
Froude Number	0.43	
Maximum Discharge	88.59	ft ³ /s
Discharge Full	82.35	ft ³ /s
Slope Full	0.00085	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	75.75	%
Downstream Velocity	Infinity	ft/s

H-3 (Seg 2) - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.79	ft
Critical Depth	2.46	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00357	ft/ft

H-3 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	5.50	ft
Discharge	95.54	ft ³ /s

Results

Normal Depth	4.08	ft
Flow Area	18.89	ft ²
Wetted Perimeter	11.41	ft
Hydraulic Radius	1.66	ft
Top Width	4.82	ft
Critical Depth	2.70	ft
Percent Full	74.1	%
Critical Slope	0.00345	ft/ft
Velocity	5.06	ft/s
Velocity Head	0.40	ft
Specific Energy	4.48	ft
Froude Number	0.45	
Maximum Discharge	114.23	ft ³ /s
Discharge Full	106.19	ft ³ /s
Slope Full	0.00081	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	74.15	%
Downstream Velocity	Infinity	ft/s

H-3 (Seg 2) - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.08	ft
Critical Depth	2.70	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00345	ft/ft

H-4 - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00330	ft/ft
Bottom Width	15.00	ft
Discharge	752.57	ft ³ /s

Results

Normal Depth	4.24	ft
Flow Area	63.54	ft ²
Wetted Perimeter	23.47	ft
Hydraulic Radius	2.71	ft
Top Width	15.00	ft
Critical Depth	4.28	ft
Critical Slope	0.00321	ft/ft
Velocity	11.84	ft/s
Velocity Head	2.18	ft
Specific Energy	6.42	ft
Froude Number	1.01	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.24	ft
Critical Depth	4.28	ft
Channel Slope	0.00330	ft/ft
Critical Slope	0.00321	ft/ft

H-4 - Q50

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00330	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	43.00	ft
Discharge	853.84	ft ³ /s

Results

Normal Depth	3.35	ft
Flow Area	177.61	ft ²
Wetted Perimeter	64.18	ft
Hydraulic Radius	2.77	ft
Top Width	63.09	ft
Critical Depth	2.19	ft
Critical Slope	0.01458	ft/ft
Velocity	4.81	ft/s
Velocity Head	0.36	ft
Specific Energy	3.71	ft
Froude Number	0.51	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.35	ft
Critical Depth	2.19	ft
Channel Slope	0.00330	ft/ft

H-4 - Q50

GVF Output Data

Critical Slope 0.01458 ft/ft

I-1 (Seg 1) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00100	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	158.00	ft
Discharge	4796.62	ft ³ /s

Results

Normal Depth	6.35	ft
Flow Area	1123.54	ft ²
Wetted Perimeter	198.14	ft
Hydraulic Radius	5.67	ft
Top Width	196.08	ft
Critical Depth	3.00	ft
Critical Slope	0.01269	ft/ft
Velocity	4.27	ft/s
Velocity Head	0.28	ft
Specific Energy	6.63	ft
Froude Number	0.31	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.35	ft
Critical Depth	3.00	ft
Channel Slope	0.00100	ft/ft

I-1 (Seg 1) - Q50

GVF Output Data

Critical Slope 0.01269 ft/ft

I-1 (Seg 2) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00200	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	158.00	ft
Discharge	4780.06	ft ³ /s

Results

Normal Depth	5.17	ft
Flow Area	896.87	ft ²
Wetted Perimeter	190.69	ft
Hydraulic Radius	4.70	ft
Top Width	189.01	ft
Critical Depth	2.99	ft
Critical Slope	0.01270	ft/ft
Velocity	5.33	ft/s
Velocity Head	0.44	ft
Specific Energy	5.61	ft
Froude Number	0.43	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.17	ft
Critical Depth	2.99	ft
Channel Slope	0.00200	ft/ft

I-1 (Seg 2) - Q50

GVF Output Data

Critical Slope 0.01270 ft/ft

I-1 (Seg 3) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00160	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	158.00	ft
Discharge	4764.31	ft ³ /s

Results

Normal Depth	5.51	ft
Flow Area	961.35	ft ²
Wetted Perimeter	192.84	ft
Hydraulic Radius	4.99	ft
Top Width	191.05	ft
Critical Depth	2.99	ft
Critical Slope	0.01270	ft/ft
Velocity	4.96	ft/s
Velocity Head	0.38	ft
Specific Energy	5.89	ft
Froude Number	0.39	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.51	ft
Critical Depth	2.99	ft
Channel Slope	0.00160	ft/ft

I-1 (Seg 3) - Q50

GVF Output Data

Critical Slope 0.01270 ft/ft

I-1 (Seg 4) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00180	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	108.00	ft
Discharge	4743.70	ft ³ /s

Results

Normal Depth	6.55	ft
Flow Area	835.76	ft ²
Wetted Perimeter	149.41	ft
Hydraulic Radius	5.59	ft
Top Width	147.29	ft
Critical Depth	3.77	ft
Critical Slope	0.01196	ft/ft
Velocity	5.68	ft/s
Velocity Head	0.50	ft
Specific Energy	7.05	ft
Froude Number	0.42	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.55	ft
Critical Depth	3.77	ft
Channel Slope	0.00180	ft/ft

I-1 (Seg 4) - Q50

GVF Output Data

Critical Slope 0.01196 ft/ft

I-1 (Seg 5) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00150	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	108.00	ft
Discharge	4717.27	ft ³ /s

Results

Normal Depth	6.88	ft
Flow Area	884.70	ft ²
Wetted Perimeter	151.50	ft
Hydraulic Radius	5.84	ft
Top Width	149.27	ft
Critical Depth	3.76	ft
Critical Slope	0.01198	ft/ft
Velocity	5.33	ft/s
Velocity Head	0.44	ft
Specific Energy	7.32	ft
Froude Number	0.39	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.88	ft
Critical Depth	3.76	ft
Channel Slope	0.00150	ft/ft

I-1 (Seg 5) - Q50

GVF Output Data

Critical Slope 0.01198 ft/ft

I-1 (Seg 6) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00230	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	108.00	ft
Discharge	4681.71	ft ³ /s

Results

Normal Depth	6.06	ft
Flow Area	763.94	ft ²
Wetted Perimeter	146.30	ft
Hydraulic Radius	5.22	ft
Top Width	144.33	ft
Critical Depth	3.74	ft
Critical Slope	0.01199	ft/ft
Velocity	6.13	ft/s
Velocity Head	0.58	ft
Specific Energy	6.64	ft
Froude Number	0.47	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.06	ft
Critical Depth	3.74	ft
Channel Slope	0.00230	ft/ft

I-1 (Seg 6) - Q50

GVF Output Data

Critical Slope 0.01199 ft/ft

I-1 (Seg 7) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00230	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	108.00	ft
Discharge	4639.14	ft ³ /s

Results

Normal Depth	6.02	ft
Flow Area	759.35	ft ²
Wetted Perimeter	146.09	ft
Hydraulic Radius	5.20	ft
Top Width	144.14	ft
Critical Depth	3.72	ft
Critical Slope	0.01202	ft/ft
Velocity	6.11	ft/s
Velocity Head	0.58	ft
Specific Energy	6.60	ft
Froude Number	0.47	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.02	ft
Critical Depth	3.72	ft
Channel Slope	0.00230	ft/ft

I-1 (Seg 7) - Q50

GVF Output Data

Critical Slope 0.01202 ft/ft

I-1 (Seg 8) - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00310	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	108.00	ft
Discharge	4577.46	ft ³ /s

Results

Normal Depth	5.48	ft
Flow Area	682.27	ft ²
Wetted Perimeter	142.67	ft
Hydraulic Radius	4.78	ft
Top Width	140.89	ft
Critical Depth	3.69	ft
Critical Slope	0.01205	ft/ft
Velocity	6.71	ft/s
Velocity Head	0.70	ft
Specific Energy	6.18	ft
Froude Number	0.54	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.48	ft
Critical Depth	3.69	ft
Channel Slope	0.00310	ft/ft

I-1 (Seg 8) - Q50

GVF Output Data

Critical Slope 0.01205 ft/ft

I-1A - Q25

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	13.91	ft ³ /s

Results

Normal Depth	2.29	ft
Flow Area	4.71	ft ²
Wetted Perimeter	6.39	ft
Hydraulic Radius	0.74	ft
Top Width	1.38	ft
Critical Depth	1.26	ft
Percent Full	91.7	%
Critical Slope	0.00453	ft/ft
Velocity	2.95	ft/s
Velocity Head	0.14	ft
Specific Energy	2.43	ft
Froude Number	0.28	
Maximum Discharge	13.95	ft ³ /s
Discharge Full	12.97	ft ³ /s
Slope Full	0.00115	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	91.71	%
Downstream Velocity	Infinity	ft/s

I-1A - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.29	ft
Critical Depth	1.26	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00453	ft/ft

I-1A - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.00	ft
Discharge	16.57	ft ³ /s

Results

Normal Depth	2.00	ft
Flow Area	5.02	ft ²
Wetted Perimeter	5.74	ft
Hydraulic Radius	0.87	ft
Top Width	2.83	ft
Critical Depth	1.30	ft
Percent Full	66.8	%
Critical Slope	0.00406	ft/ft
Velocity	3.30	ft/s
Velocity Head	0.17	ft
Specific Energy	2.17	ft
Froude Number	0.44	
Maximum Discharge	22.69	ft ³ /s
Discharge Full	21.09	ft ³ /s
Slope Full	0.00062	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	66.78	%
Downstream Velocity	Infinity	ft/s

I-1A - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.00	ft
Critical Depth	1.30	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00406	ft/ft

I-1B - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	2.50	ft
Discharge	13.22	ft ³ /s

Results

Normal Depth	2.10	ft
Flow Area	4.39	ft ²
Wetted Perimeter	5.78	ft
Hydraulic Radius	0.76	ft
Top Width	1.84	ft
Critical Depth	1.22	ft
Percent Full	83.8	%
Critical Slope	0.00448	ft/ft
Velocity	3.01	ft/s
Velocity Head	0.14	ft
Specific Energy	2.24	ft
Froude Number	0.34	
Maximum Discharge	13.95	ft ³ /s
Discharge Full	12.97	ft ³ /s
Slope Full	0.00104	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	83.82	%
Downstream Velocity	Infinity	ft/s

I-1B - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.10	ft
Critical Depth	1.22	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00448	ft/ft

I-1B - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.00	ft
Discharge	15.74	ft ³ /s

Results

Normal Depth	1.93	ft
Flow Area	4.81	ft ²
Wetted Perimeter	5.59	ft
Hydraulic Radius	0.86	ft
Top Width	2.87	ft
Critical Depth	1.27	ft
Percent Full	64.4	%
Critical Slope	0.00403	ft/ft
Velocity	3.27	ft/s
Velocity Head	0.17	ft
Specific Energy	2.10	ft
Froude Number	0.45	
Maximum Discharge	22.69	ft ³ /s
Discharge Full	21.09	ft ³ /s
Slope Full	0.00056	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	64.39	%
Downstream Velocity	Infinity	ft/s

I-1B - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.93	ft
Critical Depth	1.27	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00403	ft/ft

I-1C - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.00	ft
Discharge	17.31	ft ³ /s

Results

Normal Depth	2.07	ft
Flow Area	5.20	ft ²
Wetted Perimeter	5.88	ft
Hydraulic Radius	0.88	ft
Top Width	2.78	ft
Critical Depth	1.33	ft
Percent Full	69.0	%
Critical Slope	0.00408	ft/ft
Velocity	3.33	ft/s
Velocity Head	0.17	ft
Specific Energy	2.24	ft
Froude Number	0.43	
Maximum Discharge	22.69	ft ³ /s
Discharge Full	21.09	ft ³ /s
Slope Full	0.00067	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	68.95	%
Downstream Velocity	Infinity	ft/s

I-1C - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.07	ft
Critical Depth	1.33	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00408	ft/ft

I-1C - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.00	ft
Discharge	20.61	ft ³ /s

Results

Normal Depth	2.40	ft
Flow Area	6.06	ft ²
Wetted Perimeter	6.64	ft
Hydraulic Radius	0.91	ft
Top Width	2.40	ft
Critical Depth	1.46	ft
Percent Full	80.0	%
Critical Slope	0.00421	ft/ft
Velocity	3.40	ft/s
Velocity Head	0.18	ft
Specific Energy	2.58	ft
Froude Number	0.38	
Maximum Discharge	22.69	ft ³ /s
Discharge Full	21.09	ft ³ /s
Slope Full	0.00095	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	79.98	%
Downstream Velocity	Infinity	ft/s

I-1C - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.40	ft
Critical Depth	1.46	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00421	ft/ft

I-1D - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.00	ft
Discharge	22.19	ft ³ /s

Results

Normal Depth	2.63	ft
Flow Area	6.57	ft ²
Wetted Perimeter	7.28	ft
Hydraulic Radius	0.90	ft
Top Width	1.97	ft
Critical Depth	1.52	ft
Percent Full	87.7	%
Critical Slope	0.00428	ft/ft
Velocity	3.38	ft/s
Velocity Head	0.18	ft
Specific Energy	2.81	ft
Froude Number	0.33	
Maximum Discharge	22.69	ft ³ /s
Discharge Full	21.09	ft ³ /s
Slope Full	0.00111	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	87.70	%
Downstream Velocity	Infinity	ft/s

I-1D - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.63	ft
Critical Depth	1.52	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00428	ft/ft

I-1D - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.50	ft
Discharge	26.43	ft ³ /s

Results

Normal Depth	2.44	ft
Flow Area	7.15	ft ²
Wetted Perimeter	6.91	ft
Hydraulic Radius	1.03	ft
Top Width	3.22	ft
Critical Depth	1.58	ft
Percent Full	69.6	%
Critical Slope	0.00390	ft/ft
Velocity	3.70	ft/s
Velocity Head	0.21	ft
Specific Energy	2.65	ft
Froude Number	0.44	
Maximum Discharge	34.22	ft ³ /s
Discharge Full	31.81	ft ³ /s
Slope Full	0.00069	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	69.59	%
Downstream Velocity	Infinity	ft/s

I-1D - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.44	ft
Critical Depth	1.58	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00390	ft/ft

I-1D - Q100

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.50	ft
Discharge	26.43	ft ³ /s

Results

Normal Depth	2.44	ft
Flow Area	7.15	ft ²
Wetted Perimeter	6.91	ft
Hydraulic Radius	1.03	ft
Top Width	3.22	ft
Critical Depth	1.58	ft
Percent Full	69.6	%
Critical Slope	0.00390	ft/ft
Velocity	3.70	ft/s
Velocity Head	0.21	ft
Specific Energy	2.65	ft
Froude Number	0.44	
Maximum Discharge	34.22	ft ³ /s
Discharge Full	31.81	ft ³ /s
Slope Full	0.00069	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	69.59	%
Downstream Velocity	Infinity	ft/s

I-1D - Q100

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.44	ft
Critical Depth	1.58	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00390	ft/ft

I-1E - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	3.50	ft
Discharge	29.86	ft ³ /s

Results

Normal Depth	2.69	ft
Flow Area	7.94	ft ²
Wetted Perimeter	7.49	ft
Hydraulic Radius	1.06	ft
Top Width	2.95	ft
Critical Depth	1.69	ft
Percent Full	76.9	%
Critical Slope	0.00399	ft/ft
Velocity	3.76	ft/s
Velocity Head	0.22	ft
Specific Energy	2.91	ft
Froude Number	0.40	
Maximum Discharge	34.22	ft ³ /s
Discharge Full	31.81	ft ³ /s
Slope Full	0.00088	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.94	%
Downstream Velocity	Infinity	ft/s

I-1E - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.69	ft
Critical Depth	1.69	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00399	ft/ft

I-1E - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	4.00	ft
Discharge	35.56	ft ³ /s

Results

Normal Depth	2.66	ft
Flow Area	8.89	ft ²
Wetted Perimeter	7.64	ft
Hydraulic Radius	1.16	ft
Top Width	3.77	ft
Critical Depth	1.78	ft
Percent Full	66.6	%
Critical Slope	0.00371	ft/ft
Velocity	4.00	ft/s
Velocity Head	0.25	ft
Specific Energy	2.91	ft
Froude Number	0.46	
Maximum Discharge	48.86	ft ³ /s
Discharge Full	45.42	ft ³ /s
Slope Full	0.00061	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	66.61	%
Downstream Velocity	Infinity	ft/s

I-1E - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.66	ft
Critical Depth	1.78	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00371	ft/ft

I-1F - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	4.00	ft
Discharge	35.74	ft ³ /s

Results

Normal Depth	2.67	ft
Flow Area	8.93	ft ²
Wetted Perimeter	7.66	ft
Hydraulic Radius	1.17	ft
Top Width	3.77	ft
Critical Depth	1.78	ft
Percent Full	66.8	%
Critical Slope	0.00371	ft/ft
Velocity	4.00	ft/s
Velocity Head	0.25	ft
Specific Energy	2.92	ft
Froude Number	0.46	
Maximum Discharge	48.86	ft ³ /s
Discharge Full	45.42	ft ³ /s
Slope Full	0.00062	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	66.85	%
Downstream Velocity	Infinity	ft/s

I-1F - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.67	ft
Critical Depth	1.78	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00371	ft/ft

I-1F - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	4.00	ft
Discharge	42.57	ft ³ /s

Results

Normal Depth	3.07	ft
Flow Area	10.36	ft ²
Wetted Perimeter	8.55	ft
Hydraulic Radius	1.21	ft
Top Width	3.37	ft
Critical Depth	1.95	ft
Percent Full	76.8	%
Critical Slope	0.00383	ft/ft
Velocity	4.11	ft/s
Velocity Head	0.26	ft
Specific Energy	3.34	ft
Froude Number	0.41	
Maximum Discharge	48.86	ft ³ /s
Discharge Full	45.42	ft ³ /s
Slope Full	0.00088	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	76.84	%
Downstream Velocity	Infinity	ft/s

I-1F - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.07	ft
Critical Depth	1.95	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00383	ft/ft

I-1G - Q25

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	4.50	ft
Discharge	51.79	ft ³ /s

Results

Normal Depth	3.14	ft
Flow Area	11.84	ft ²
Wetted Perimeter	8.89	ft
Hydraulic Radius	1.33	ft
Top Width	4.14	ft
Critical Depth	2.08	ft
Percent Full	69.7	%
Critical Slope	0.00361	ft/ft
Velocity	4.37	ft/s
Velocity Head	0.30	ft
Specific Energy	3.43	ft
Froude Number	0.46	
Maximum Discharge	66.89	ft ³ /s
Discharge Full	62.18	ft ³ /s
Slope Full	0.00069	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	69.72	%
Downstream Velocity	Infinity	ft/s

I-1G - Q25

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.14	ft
Critical Depth	2.08	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00361	ft/ft

I-1G - Q50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00100	ft/ft
Diameter	4.50	ft
Discharge	61.67	ft ³ /s

Results

Normal Depth	3.66	ft
Flow Area	13.84	ft ²
Wetted Perimeter	10.10	ft
Hydraulic Radius	1.37	ft
Top Width	3.51	ft
Critical Depth	2.28	ft
Percent Full	81.2	%
Critical Slope	0.00374	ft/ft
Velocity	4.46	ft/s
Velocity Head	0.31	ft
Specific Energy	3.96	ft
Froude Number	0.40	
Maximum Discharge	66.89	ft ³ /s
Discharge Full	62.18	ft ³ /s
Slope Full	0.00098	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	81.23	%
Downstream Velocity	Infinity	ft/s

I-1G - Q50

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	3.66	ft
Critical Depth	2.28	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00374	ft/ft