Designer Input
Designer Input w/ Suggested Formula
Calculated Value

Input Parameters	Input	Units	Comment
Peak Inflow During 10-year storm	4	ft^3/sec	
Top width of Parabolic Weir, W_{GCS}	8	ft	Min = 8-ft
Depth of Parabolic Weir, D_{GCS}	0.8	ft	Must be 1/10th or less of the weir width; Min = 0.8-ft
Slope in direction of flow, S	0.02	ft/ft	No more than 5% (cascade sections are required if > 5%)
Median cobble diameter, d_{50}	0.5	ft	Begin with 0.5-ft
Density of stone cobbles, γ_s	165	lb/ft^3	165 for sandstone; 172 for granite

Calculated Parameters	Input	Units	Comment
Depth of flow over weir/riffle channel associated with 10-year storm, d	0.55	ft	Max = 4-inches = 0.33-feet
Top width of flow in the cross section, w	6.6	ft	Calculated based on parabola geometry
Hydraulic radius of grade control structure, R_h	0.360	ft	Hydraulic Radius of a parabola
Manning's roughness coefficient, n	0.061		Calculated based on cobble size and depth of flow
Velocity of flow, V	1.75	ft/sec	Manning's Formula for velocity
Maximum Allowable Velocity	50.2	ft/sec	Isbash formula
Maximum Acceptable Flow	4.3	ft^3/sec	This must be greater than the 10-year peak flow entering the practice

Design Checks	Result
Maximum Velocity Check	Sufficient
0.25-ft Freeboard Check	Sufficient
10-year Flow Check	Sufficient

W_{GCS} (8 FT MIN)

D_{GCS}

2xd_{50}

SILICA COBBLES

FILTER FABRIC UNDER
SILICA COBBLES

D_{sand} (RIFFLE)

SAND/WOOD
CHIP MIX

FILTER FABRIC BETWEEN
SAND/WOOD CHIP LAYER
AND EXISTING GROUND

W_{sand} (4 FT MIN)