

HY-8 Energy Dissipation Report

External Energy Dissipator

Parameter	Value	Units
Select Culvert and Flow		
Crossing	DP10 Circular	
Culvert	60" CSP	
Flow	129.00	cfs
Culvert Data		
Culvert Width (including multiple barrels)	5.0	ft
Culvert Height	5.0	ft
Outlet Depth	3.28	ft
Outlet Velocity	9.46	ft/s
Froude Number	0.92	
Tailwater Depth	3.31	ft
Tailwater Velocity	1.78	ft/s
Tailwater Slope (SO)	0.0052	
External Dissipator Data		
External Dissipator Category	Streambed Level Structures	
External Dissipator Type	Riprap Basin	
Restrictions		
Froude Number	<3	
Input Data		
Condition to be used to Compute Basin Outlet Velocity	Envelope Curve	
D50 of the Riprap Mixture		
Note:	Minimum HS/D50 = 2 is Obtained if D50 = 0.352 ft	
D50 of the Riprap Mixture	0.352	ft
DMax of the Riprap Mixture	0.750	ft
Results		
Brink Depth	3.278	ft
Brink Velocity	9.455	ft/s
Depth (YE)	2.612	ft
Riprap Thickness	1.125	ft
Riprap Foreslope	1.5000	ft
Check HS/D50		
Note:	OK if HS/D50 > 2.0	
HS/D50	2.002	
HS/D50 Check	HS/D50 is OK	
Check HS/D50		
Note:	OK if $0.1 < D50/YE < 0.7$	
Check D50/YE	0.135	
D50/YE Check	D50/YE is OK	
Basin Length (LB)	20.000	ft
Basin Width	18.333	ft
Apron Length	5.000	ft
Pool Length	15.000	ft
Pool Depth (HS)	0.705	ft
TW/YE	1.267	
Tailwater Depth (TW)	3.308	ft
Average Velocity with TW	1.563	ft/s

Critical Depth (Yc)	1.107	ft
Average Velocity with Yc	5.669	ft/s
Downstream Riprap for High TW		
Distance: 1 LB		
Velocity	8.326	ft/s
Size	0.452	ft
Distance: 2 LB		
Velocity	5.787	ft/s
Size	0.218	ft
Distance: 3 LB		
Velocity	3.982	ft/s
Size	0.103	ft
Distance: 4 LB		
Velocity	2.980	ft/s
Size	0.058	ft