

Appendix B – Hydraulic Calculations

- Riprap Erosion Calculations

Date 07/09/24
By SS

Project Panda Express Eastern &
Bonanza

Riprap Lining Calculation Using HCDDM Equation 734 BR-1

Known:

V=	Velocity (ft/s)	<input type="text" value="7.26"/>
S =	Longitudinal Channel Slope (ft/ft)	<input type="text" value="0.0155"/>
Sg =	Specific Gravity of Rock (min=2.5)	<input type="text" value="2.65"/>

$$d_{50} = ((vel * S^{0.17}) / (3 * (Sg - 1)))^2$$

Solve For: $d_{50} =$ 6 inches \rightarrow **Use:** $d_{50} =$ inches

Thickness = 13 inches \rightarrow Thickness = inches

Known:

d50=	Riprap size (in)	<input type="text" value="6"/>
Sg=	Specific Gravity of Rock (typ=2.5)	<input type="text" value="2.65"/>
s=	Longitudinal Channel Slope (ft/ft)	<input type="text" value="0.0155"/>

$$V = 3 * (d_{50}^{0.5}) * (Sg - 1) / (s^{0.17})$$

Solve For: Velocity = fps