Appendix B: List of Variables

$\underline{n}$ = the composite n-value for the total where:
$\underline{V}$ = average velocity
$\underline{R}$ = the composite hydraulic radius
γ = unit weight of water
γ_s = unit weight of riprap
γ_w = unit weight of water
Θ = Shield's parameter
v = kinematic viscosity of water - ft^2/sec
ρ_f = density of fluid
ρ_s = density of sediment particles
σ = the geometric standard deviation of the sediment mixture, where
τ = bed shear stress
τ_c = critical shear stress
A = area
A_i = cross-sectional area of panel i, $\Delta X\ D_i$
B = effective width of flow (width of portion of cross section which is transporting sediment
C = Chezy coefficient; also bed-material sediment concentration - in parts per million
C_B = bend correction for average velocity (V_{SS}/V_{AVE})
CH = channel
C_i = the panel Chezy roughness coefficient
C_S = Coefficient of incipient failure
C_T = coefficient for riprap thickness
C_V = vertical velocity coefficient
D = depth, ft; or local water depth; or effective depth of flow; or water depth
d_{30CR} = Critical d_{30} (i.e. minimum d_{30}) size for stable riprap
d_{50} = median grain size of bed material, mm, or the particle size for which 50% of the sediment mixture is finer.
d_{84} = the particle size, ft, for which 84% of the sediment mixture is finer (Data ...
d_e = effective particle size for the mixture
D_i = average depth in the panel i, ½ (A+B)
d_s = geometric mean of particles in size class i
EFD = Effective Depth of the cross section
EFW = Effective Width of the cross section
$f(X_1)$ = is the difference between the calculated depth for X_1 and the true depth, or between Qtrue and the calculated Q for X_1

$f(X_2)$ = is the difference between the calculated depth for X_2 and the true depth, or between Qtrue and calculated Q for X_2

F_B = bed factor

F_g = grain Froude number.

F_S = side factor

g = acceleration of gravity - ft/sec^2

G_{sf} = grain shape factor

Gs_i = transport rate for size class i

i = panel number

i_b = fraction of size class i in bed

k = number of panels

K = conveyance

K_1 = Correction for side slope steepness

LCB = left channel bank

LOB = Left overbank

n = Manning's n value

n_i = n-value in wet panel i

P_i = Wetted perimeter in wet panel i

Q = water discharge, cfs

R = hydraulic radius of the bed portion of the cross section, ft

RCB = right channel bank section

R_i = A_i / P_i

R_n = Reynolds number, 4RV/v

ROB = right overbank

S = slope; bed slope or energy slope

S_e = energy slope

S_f = Safety factor

s_s = specific gravity of sediment particles.

T = temperature of fluid

U_* = boundary shear velocity, $\sqrt{gRS}$

V = average flow velocity

V_{AVE} = average channel velocity

W = channel width, ft; or bottom width

X_1 = is the first trial value of Q, or of k_s

X_2 = is the second trial value of Q, or of k_s

X_3 = is the next trial value of Q, or of k_s

z = side slopes of the channel