SLOPE RATING FORM – SITE INFORMATION

ITALICIZED DATA CATEGORIES REQUIRED FOR FULL RATING

Management Area:			**Date:**
Hazard Type (select all that apply within one of the categories):	**Rockfall** Planar | Wedge | Toppling | Raveling/Undermining | Rock Avalanche | Indeterminate Rock Failures | Differential Erosion	**Landslide** Above, Below, or Across Route Translational | Rotational | Debris Flow | Shallow Slump | Erosional Failure	
Road/Trail No.: ◯ Trail ◯ Road	**Road/Trail Class:**	**Rater:**	
Beginning Mile Marker:	**Ending Marker:**	**Side:**	**Weather:**
Begin Coord.: Lat. (xx.xxxxx): Long. (-xxx.xxxxx):	**End Coord.: Lat. (xx.xxxxx): Long. (-xxx.xxxxx):**	**Datum:**	***AADT:***
Length of Affected Road/Trail (ft):	***Slope Height (rock) /Axial Length (slide) (ft):***	**Slope Angle (°):**	
Sight Distance (ft):	***Usable Roadway/Trail Width (ft):***	***Speed Limit (mph):***	
Ditch Width (ft): RANGE ROCKFALL	**Ditch Depth (ft):** RANGE ROCKFALL	**Ditch Slope (H:V):** RANGE ROCKFALL	***Blk Size (ft)/Volume (cy):*** ROCKFALL
Annual Rainfall (in): RANGE	**Sole Access Route □ Yes □ No**	**Fixes Present □ Yes □ No**	**Photo # Range:**

Comments:

PRELIMINARY RATING

Category Rating	3	9	27	81	Score
A. Landslide – Roadway Width Affected	0-5 Percent	6-25 Percent	26-50 Percent	51-100 Percent	
B. Landslide – Slide/Erosion Effects	Visible crack or slight deposit of material / minor erosion	1 inch offset, or 6-inch deposit of material / major erosion will affect travel in < 5 yrs	2-inch offset or 12-inch deposit/ mod. erosion impacting travel annually	4-inch offset or 24-inch deposit/ severe erosion impacting travel consistently	
C. Landslide – Roadway Length Affected	25 ft	100 ft	225 ft	400 ft	CALC
D. Rockfall – Ditch Effectiveness (consider launch features)	Good	Moderate	Limited	No Catchment	
E. Rockfall – Rockfall History	Few Falls	Occasional Falls	Many Falls	Constant Falls	
F. Rockfall – Block Size or Volume per Event	1 ft or 3 yd^3	2 ft or 6 yd^3	3 ft or 9 yd^3	4 ft or 12 yd^3	CALC
G. All – Impact on Use	Full use continues with minor delay	Partial use remains Use modification required, short (3 mi/30 min.) detour available	Use is blocked – long (>30 min) detour available or less than 1 day closure	Use is blocked – no detour available or closure longer than 1 week	
H. All – AADT / Usage / Economic or Recreational Importance (highest rating applies)	50 Rarely Used Insignificant economic / rec. importance	200 Occasionally used Minor economic / rec. importance	450 Frequently used Moderate economic / rec. importance	800 Constantly used Significant economic / rec. importance	CALC FOR AADT ONLY
				LANDSLIDES TOTAL (A+B+C+G+H)	CALC
				ROCKFALL TOTAL (D+E+F+G+H)	CALC

Preliminary Rating Good (15-21 pts) | Fair (22-161 pts) | Poor (>161 pts)

Sites rated as **Fair** or **Poor** receive detailed evaluation (complete back page)

SLOPE RATING FORM – DETAILED SLOPE HAZARD RATING								
Category Rating					**3**	**9**	**27**	**81**	**Score**
I. All – Slope Drainage					Slope appears dry or well drained; surface runoff well controlled	Intermittent water on slope; mod. well drained; or surface runoff moderately controlled	Water usually on slope; poorly drained; or surface runoff poorly controlled	Water always on slope; very poorly drained; or surface water runoff control not present	
J. All – Annual Rainfall					0-10”	10-30”	30-60”	60”+	
K. All – Slope Height (rockfall) / Axial length of slide (landslide)					25 ft	50 ft	75 ft	100 ft	CALC
Select One Unstable Slope Type	**Landslides/ Erosion (add A, B, C)**	**L. Thaw Stability (cold climates)**			Unfrozen/Thaw Stable	Slightly Thaw Unstable	Moderately Thaw Unstable	Highly Thaw Unstable	
		M. Instability-Related Maint. Frequency			Every 10 years	Every 5 years	Every 2 years	Every year	
		N. Movement History			Minor movement or sporadic creep	Up to 1 inch annually or steady annual creep	Up to 3 inches per event, one event per year	>3” per event, >6” annually, more than 1 event per year (includes all debris flows)	
	Rockfalls (add D, E, F)	**O. Rockfall-Related Maint. Frequency**			Normal, scheduled maintenance	Patrols after every storm event	Routine seasonal patrols	Year-round patrols	
		Geologic Character	**Case 1**	**P. Structural Condition**	Favorable	Random	Adverse Discontinuous	Adverse Continuous	
				Q. Rock Friction	Rough/ Irregular	Undulating	Planar	Clay infilled/ Slickensided	
			Case 2	**R. Structural Condition**	Few differential erosion features	Occasional differential erosion features	Many differential erosion features	Major differential erosion features	
				S. Diff. in Erosion Rates	Small difference	Moderate difference	Large difference	Extreme difference	
T. LANDSLIDE HAZARD TOTAL (A+B+C+I+J+K+L+M+N)									CALC
U. ROCKFALL HAZARD TOTAL (D+E+F+I+J+K+O+(greatest of P+Q or R+S))									CALC
DETAILED RISK RATING									
V. Route Width or Trail Width					36 ft 14 ft	28 ft 10 ft	20 ft 6 ft	12 ft 2 ft	CALC
W. Human Exposure Factor					12.5% of the time	25% of the time	37.5% of the time	50% of the time	CALC if AADT avail
X. % of Decision Sight Distance (Judge avoidance ability on trails)					Adequate, 100% of low design value	Moderate, 80% of low design value	Limited, 60% of low design value	Very Limited, 40% of low design value	CALC for roads
Y. Right of Way (R/W) Impacts (If Left Unattended)					No R/W implications	Minor effects beyond R/W	Private property, no structures affected	Structures, roads, RR, utilities, or Parks affected	
Z. Environmental/Cultural Impacts if Left Unattended					None/No potential to cause effects	Likely to effect/No hist. prop. affected	Likely to adversely affect/Finding of no adverse effect	Current adverse effects/Adverse effect	
AA. Maintenance Complexity					Routine effort/In-House	In-House Maint./ Special project	Specialized equip./contract	Complex/Dangerous effort/location/ contract	
BB. Event Cost					$0-2k	$2-25k	$25-100k	>$100k	
CC. RISK TOTALS: (G+H+V+W+X+Y+Z+AA+BB)									CALC
TOTAL USMP SCORE: LANDSLIDES (T+CC) OR ROCKFALL (U+CC)									CALC
Total USMP Score Good (< 200 pts) | Fair (200 - 400 pts) | Poor (> 400 pts)									

For the directly measurable categories, use the following formulas to **calculate the exponent value (x) for the scoring formula $y = 3^x$**. This will allow the calculation of a precise score for the category measurement and development of category scoring tables.

C. Length of roadway affected exponent:

$$x = \sqrt{\frac{length\ affected}{25}}$$

F. Block size or the volume exponent formula:

$$block\ size\ x = block\ size$$
$$volume\ x = \left(\frac{yds^3}{3}\right)$$

H. AADT exponent formula:

$$x = \sqrt{\frac{AADT}{50}}$$

K. Slope height/axial slide length exponent formula:

$$x = \frac{slope\ height}{25}$$

V. Width exponent formula:

$$x = \frac{44 - Road\ width\ (ft)}{8} \text{ for vehicles, } or\ x = \frac{18 - Trail\ width\ (ft)}{4} \text{ for trail traffic}$$

W. Human exposure factor exponent formula for roads and trails:

$$x = \frac{\left(\frac{\frac{AADT}{24} \times slope\ length\ (miles) \times 100}{speed\ limit\ or\ walking\ speed}\right)}{12.5}$$

X. Percent decision sight exponent formula:

$$x = \frac{120 - \left(\frac{measured\ sight\ distance}{AASHTO\ decision\ sight\ distance} \times 100\right)}{20}$$