



FEMA

DAP9524.2

DISASTER ASSISTANCE POLICY

I. TITLE: **Landslides and Slope Failures Related to Public Facilities**

II. DATE:

III. PURPOSE:

This policy determines the eligibility of funding for the repair of public and private nonprofit facilities affected by landslides and slope failures. This policy provides criteria to determine the eligibility of work to stabilize slopes that fail during an event that resulted in a Presidentially-declared emergency or major disaster.

IV. SCOPE AND AUDIENCE:

The policy is applicable to all major disasters and emergencies declared on or after the date of publication of this policy. It is intended for personnel involved in the administration of the Public Assistance Program.

V. AUTHORITY:

Sections 403, Essential Assistance, and 406, Repair, Restoration, and Replacement of Damaged Facilities, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U.S.C. 5121-5206, and Title 44 Code of Federal Regulations (CFR) Part 206, Federal Disaster Assistance.

VI. BACKGROUND:

Earthquakes, heavy rains, floods, and volcanic activity may destabilize or weaken earthen slopes, causing them to fail. Slope failure can result in rock falls, debris flows, or landslides that deposit material at the base of a slope and damage improved property or threaten public health and safety. The term "landslide" describes a variety of processes that result in the perceptible downward and outward movement (e.g., falling, toppling, sliding, spreading, flowing) of soil, rock, and vegetation under gravitational influence. The geologic history of an area directly determines or contributes to the conditions that lead to slope failure. Slope failure may be attributed to weaknesses in the composition or structure of the rock or soil, seismic activity, heavy rain, snowmelt, changes in groundwater level, or volcanic activity. Improperly or poorly conceived construction projects can also cause slope failure by increasing slope angle, decreasing the slope's toe or lateral support, or loading the head of an existing or potential landslide.



FEMA

DISASTER ASSISTANCE POLICY

DAP9524.2

Slopes that have failed can be expected to experience future slope failures as a result of the same geologic, geomorphic, and hydrologic conditions that caused past and present failures. However, the absence of a past event in a specific area does not preclude future slope failures. While physical measures can attempt to control and stabilize failed slopes to protect public health and safety and improved property, it is not possible or feasible to prevent all slope movements.

VII. POLICY:

A. Definitions

1. Debris Flow refers to rapid mass movement in which loose soils, rocks, and organic matter combine with entrained air and water to form slurry that flows downslope.
2. Immediate Threat is defined in 44 CFR §206.221(c), *Definitions, Immediate Threat*, as the threat of additional damage or destruction from an event with a 20 percent chance of occurrence per year.
3. Integral Ground refers to natural or improved ground upon which an eligible facility is located and which is essential to support the structural integrity and utility of the facility.
4. Landslide refers to the downward and outward movement of slope-forming materials including soil, artificial fill, or a combination of these materials.
5. Natural Ground refers to unimproved ground existing at its original location of formation or deposition that has not been reworked, mechanically altered, constructed, or improved. Natural ground may constitute part of the integral ground supporting a facility. (See Attachment A, Figures 1 and 2.)
6. Slope failure refers to limited ground movement, tens of feet high and up to several hundred feet long, which transports earthen debris downhill by sliding, rolling, falling, or slumping.



FEMA

DISASTER ASSISTANCE POLICY

DAP9524.2

B. Eligible

1. Section 403, Essential Assistance (42 U.S.C. 5170b)

a) Pursuant to 44 CFR §206.225(a)(3), Emergency Work, General, FEMA may fund emergency protective measures to stabilize slopes that failed as a direct result of a Presidentially declared disaster if the measure is (1) necessary to remove an immediate threat to life, public health and safety, or improved property and (2) cost effective. Emergency protective measures should be the least costly option necessary to alleviate the threat and should be consistent with sound engineering practice.

b) Following a Presidentially declared disaster, FEMA may fund site inspections and limited geotechnical assessments to determine if the failed slope poses an immediate threat to public health and safety, or to improved property.

c) Emergency protective measures to stabilize slopes damaged by a disaster may be eligible work. However, the work must be the least costly option and limited to measures that eliminate an immediate threat to life, public health and safety, or a threat of significant additional damage to improved public or private property as defined in 44 CFR §206.225(a)(3), Emergency Work, General. Note: Applicants must complete emergency work within six months of the declaration. Examples of eligible emergency protective measures include but are not limited to:

- i. Temporary drainage measures;
- ii. Temporary ground protection to better stabilize the mass (e.g., riprap, sheeting);
- iii. Partial excavation at the head of a sliding mass to reduce driving force;
- iv. Backfilling or buttressing at the toe of a sliding mass (e.g., gabions, rock toes, cribwalls, binwalls, soldier pile walls);
- v. Installation of barriers to redirect the debris flow; and
- vi. Temporary relocation of a facility's function.



FEMA

DISASTER ASSISTANCE POLICY

DAP9524.2

2. Section 407, Debris Removal (42 U.S.C. 5173)

a) Pursuant to 44 CFR §206.224, Debris Removal, removal of debris resulting from landslides and slope failures is eligible work when necessary to eliminate immediate threats to life, public health and safety or significant additional damage to improved public or private property, or to ensure the economic recovery of the affected community.

b) Removal of debris flow from public rights-of-way is eligible work, as is removal of debris flow from private property when it poses an immediate threat (applicant must demonstrate legal responsibility to remove debris from private property).

3. Section 406, Repair, Restoration, and Replacement of Damaged Facilities (42 U.S.C. 5172)

FEMA must determine the stability of a facility's site before it can approve funding to repair or restore an eligible facility and its integral ground:

a) If the site is stable, FEMA will fund the permanent repair or restoration of an eligible facility, and its integral ground.

b) If the site is unstable, FEMA will fund the permanent repair or restoration of an eligible facility, and its integral ground, if the instability is a direct result of the declared disaster (i.e., there is no history of instability), and the work to stabilize the site is cost-effective. The applicant must demonstrate that the proposed project is cost effective.

c) Pursuant to 44 CFR §206.226(g), *Relocation*, FEMA may approve the permanent relocation of a facility if it determines that the facility is and will be subject to repetitive heavy damage. FEMA will make this determination on a case-by-case basis. If the site will likely fail again, FEMA may determine that it is not wise to restore the eligible facility in its original location. If FEMA approves permanent relocation of a facility, land acquisition and ancillary facilities such as roads and utilities, in addition to work normally eligible, as part of a facility reconstruction, and demolition and removal of the old facility are eligible.

d) Pursuant to 44 CFR §206.203(d)(2), *Federal Grant Assistance, Funding Options, Alternate Projects*, an applicant may request an alternate project if the repair, restoration, or replacement of a facility is not feasible due to soil instability. (See Attachment A, Figure 3). Additional guidance is available in Disaster Assistance Policy 9525.13, *Alternate Projects*.



FEMA

DAP9524.2

DISASTER ASSISTANCE POLICY

C. Ineligible

1. Slope stabilization of natural ground that is not integral to an eligible facility's function is ineligible. (See Attachment A, Figure 2).
2. Permanent repair or restoration of natural ground is ineligible.
3. Permanent repair or restoration of a facility, and its integral ground, that is located on historically unstable ground (i.e., the instability was not caused by the declared disaster, or the slope failed in a previous disaster) is ineligible.

VIII. RESPONSIBLE OFFICE: Disaster Assistance Directorate (Public Assistance Division)

IX. SUPERSESSION: This policy supersedes Recovery Policy 9524.2, *Landslides and Slope Failures*, dated May 23, 2006.

X. REVIEW DATE: This policy does not automatically expire, but will be reviewed 3 years from the date of publication.

James A. Walke
Acting Assistant Administrator
Disaster Assistance Directorate



FEMA

DISASTER ASSISTANCE POLICY

DAP9524.2

Attachment A

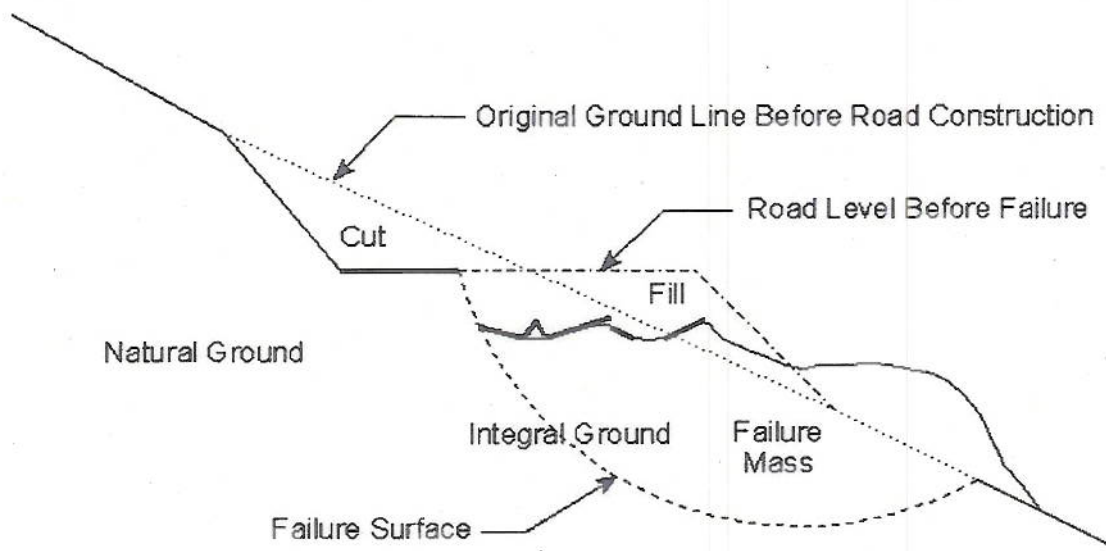


Figure 1: Slope failure in a typical cut-and-fill road section. Restoration of integral ground is a necessary component of work required to repair the road, and would involve excavation slightly beyond the limits of the failure surface.



FEMA

DISASTER ASSISTANCE POLICY

DAP9524.2

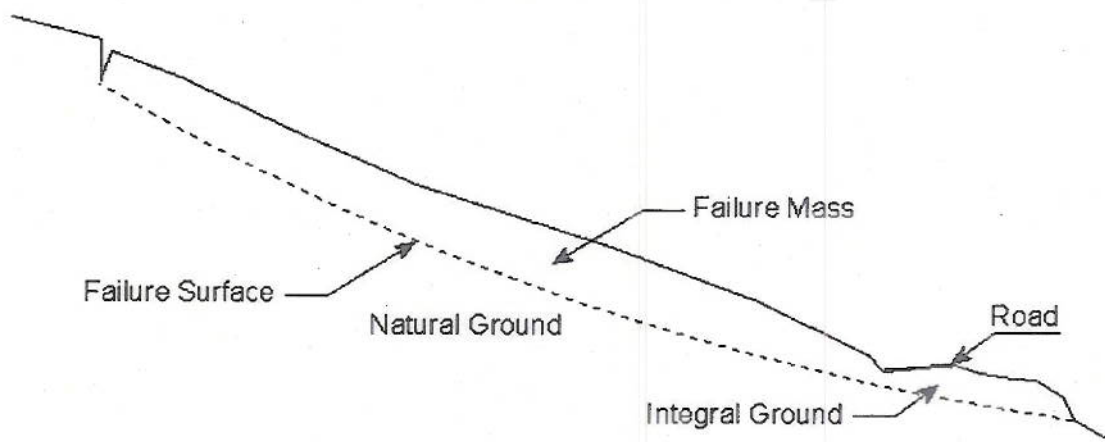


Figure 2: Failure of a large lateral extent of natural ground. The failure mass which threatens the road, an eligible facility, is primarily comprised of natural ground. The segment of natural ground integral to the support of the road is eligible for repair or restoration. The natural ground along the failed slope is not integral to the road's support and is subsequently ineligible for Public Assistance funding.



FEMA

DISASTER ASSISTANCE POLICY

DAP9524.2

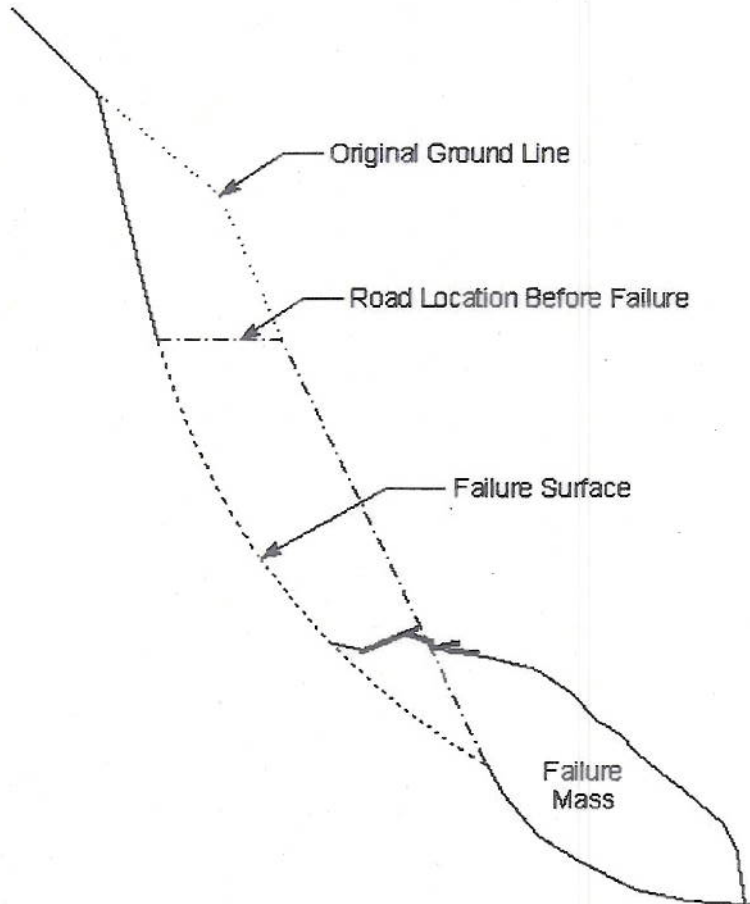


Figure 3: Special Considerations and Alternate Projects. This figure demonstrates a failure of a slope along a road constructed by excavating into a hillside. In this case, it may be more cost effective to pursue other options, such as an alternate project, under the Public Assistance Program.