

TABLE 3 Risk Matrix

		LIKELIHOOD OF FAILURE		
		LOW (FOS >1.1)	MEDIUM (FOS ~ 1.0 – 1.1)	HIGH (FOS ~ 1.0 OR LESS)
CONSEQUENCES	HIGH	Deep at Governor's Mansion (FOS = 1.3) Deep at O'Brien Building (FOS = 1.3) Deep at South Powerhouse (FOS = 1.4) Deep at North Powerhouse (FOS = 1.5) Deep at Greenhouse (FOS = 1.2) Deep at Soldier Pile Tieback Wall (FOS = 1.6) Deep at GA Building (FOS = 1.2)	Deep at edge of Pritchard Building (FOS = 1.1)	Shallow at South Powerhouse (FOS = 1.0) Shallow at Pritchard Building (FOS = 1.0) Shallow at Greenhouse (FOS = 1.0 to 1.1)
	MEDIUM	Deep at North Parking Area (FOS = 1.4) Shallow at Soldier Pile Tieback Wall (FOS = 1.3)	Shallow at North Powerhouse (FOS = 1.0 to 1.3)	Shallow at Governor's Mansion (FOS = 1.0) Shallow at North Parking Area (FOS = 1.0)
	LOW		Shallow at O'Brien Building (FOS = 1.1) Shallow on slopes west of GA Building (FOS = 1.1)	

Notes / Definitions

Consequences:

Low = public perceptions, maintenance requirements (by GA)

Medium = Local infrastructure (including local loss of service utilities, parking, etc.; cosmetic damage, outside maintenance, outside party involvement)

High = Extensive damage to buildings, campus infrastructure - large scale loss of utility service

Risk: Risk is a combination of the likelihood of failure and the resulting consequence of failure, should it occur

Color	Risk
Red	High
Orange	Medium – High
Yellow	Medium
Light Green	Medium – Low
Dark Green	Low

Types and Locations of Failures:

Shallow and Deep failures at slopes near Pritchard Building, O'Brien Building, Governor's Mansion, Powerhouse (North and South), Legislative Parking Area, Greenhouse, Soldier Pile and Tieback Wall, and GA Building

TABLE 6 Summary of High and Medium-High Risk Areas

Slope Location	Failure Type	Relative Risk	Applicable Alternatives	Comments
Pritchard Building	Shallow	High	Maintenance	Vegetation and stormwater maintenance on slope and surrounding areas.
			Instrumentation	Continued monitoring of inclinometer and groundwater monitoring device provides a long-term record of slope movements. Installation of survey monitoring points and additional inclinometers (in the surficial soils, partway down the slope) can provide an indication of slope movement before it is perceptible to human eye. Installation of additional groundwater monitoring devices further down the slope could provide beneficial information in the event of failure for application to other slope areas.
			MSE Slope or Wall	A reinforced slope or wall could be constructed at the top of the existing slope, near the Pritchard building. The construction would remove some of the existing surficial fill soils that are subject to failure and would likely temporarily close a walk area to the building. Surficial failures further down the slope may still occur.
			In-situ reinforcement	Would reduce the likelihood of surficial soil failure that that could impact the sidewalk behind Pritchard.
			Soldier Pile Wall	A structural soldier pile wall could be constructed at the sidewalk to maintain the existing site grades. As surficial failures occurred, wood lagging could be installed to retain the soil between the Pritchard building and the wall.
Pritchard Building	Deep	Medium-High	Instrumentation	Installation of survey monitoring points could provide additional information or an indication of slope movement before it is perceptible to human eye. Continued monitoring of the inclinometer installed behind the Pritchard Building provides a long-term record of slope movements.
			Soldier Pile/Tieback Wall	A structural soldier pile wall with tieback anchors could be constructed at the sidewalk to maintain the existing site grades while also improving stability against deep failures, which may impact the Pritchard building. Surficial failures would continue to occur down slope of the wall, but would be of little consequence as the Pritchard building and sidewalk would be supported.
Governor's Mansion	Shallow	Medium-High	Maintenance	Vegetation and stormwater maintenance on slope and surrounding areas.
			Instrumentation	Installation of survey monitoring points could provide additional information on an indication of slope movement before it is perceptible to human eye. Continued monitoring of the inclinometer installed behind the Mansion provides a long-term record of slope movements.
			MSE Slope or Wall	A reinforced slope or wall could be constructed at the top of the existing slope; this would require excavation and disturbance, which may not be acceptable to campus personnel.
			In-situ reinforcement	In-situ reinforcement (such as soil nails) could reduce the potential for surficial slope failures.
			Soldier Pile Wall	A structural soldier pile wall could be constructed at the sidewalk to maintain the existing site grades. As surficial failures occurred, wood lagging could be installed to retain the soil between the Pritchard building and the wall.

South Powerhouse	Shallow	High	Maintenance	Vegetation and stormwater maintenance on slope and surrounding areas. Maintenance or replacement of storm drain line on slope above plant would reduce likelihood of failure caused by line leaks or breaks
			Instrumentation	Installation of an inclinometer and groundwater-monitoring device would provide useful information. Survey monitoring points are also recommended. Aboveground utility lines could be instrumented with strain gages to monitor movement, which may result in damage before it is perceptible to the human eye.
			Grading	Re-grading of surficial soils will reduce the likelihood of surficial slope failures.
			In-situ reinforcement	Would reduce likelihood of surficial slope failures and would address risks to the diesel tank, utilities lines, and the Powerhouse Building.
			Soldier Pile/ Tieback Wall	A structural soldier pile wall would be installed at the bottom of the slope (behind the structures) designed with a catchment to intercept surficial slope failures and keep soil from hitting the Powerhouse and diesel tank. Surficial failures could still pose a risk to utility lines running to and from Powerhouse. Supplemental re-grading could be used to reduce likelihood of soil movement that would impact utility lines.
North Parking Area	Shallow	Medium-High	Maintenance	Vegetation and stormwater maintenance on slope and surrounding areas.
			Instrumentation	Installation of survey monitoring points and inclinometers can provide an indication of slope movement before it is perceptible to human eye. Installation of groundwater monitoring devices could provide beneficial information in the event of failure for application to other slope areas.
			Grading	Minor re-grading of surficial soils will reduce but not eliminate the potential for surficial slope failures. Relocation of utilities, which may be impacted by surficial slope failures, would reduce the consequences associated with the shallow failures.
			Soldier Pile Wall	A structural soldier pile wall could be constructed at the edge of the parking lot to maintain the existing site grades. The wall would protect utilities located near the top of the slope and maintain the parking lot grades. Surficial failures would continue to occur, but would be of little consequence as the Campus infrastructure would be supported. Removal of slide debris and the toe of the slope would still be required.
Greenhouse	Shallow	High	Maintenance	Vegetation and stormwater maintenance on slope and surrounding areas.
			Instrumentation	Continue monitoring the inclinometers at the Greenhouse. Installation of survey monitoring points can provide an indication of slope movement before it is perceptible to the human eye.
			Soldier Pile Wall	A structural soldier pile wall could be constructed at the top of the slope to maintain existing grades. Surficial failures would continue to occur, but would be of little consequence as the Campus infrastructure would be supported.