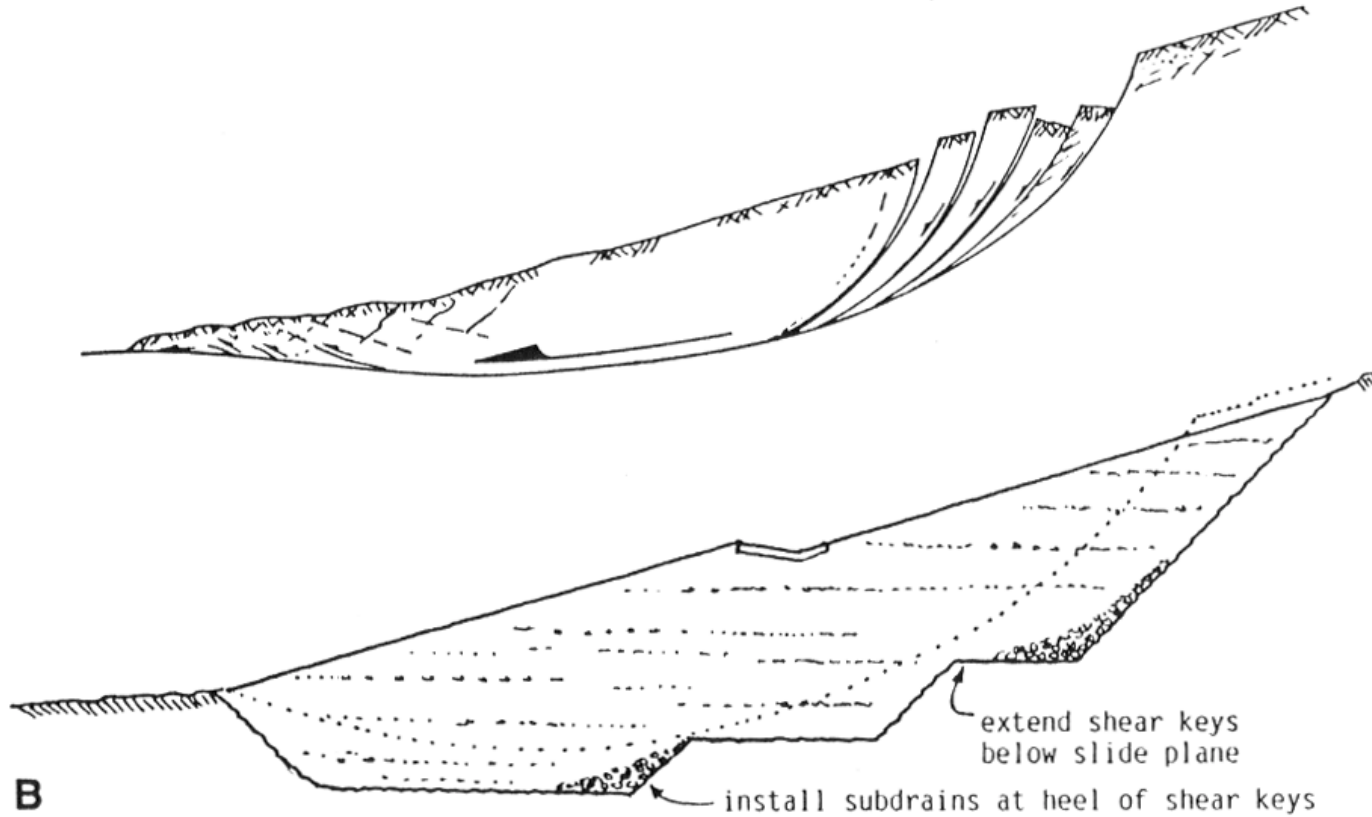
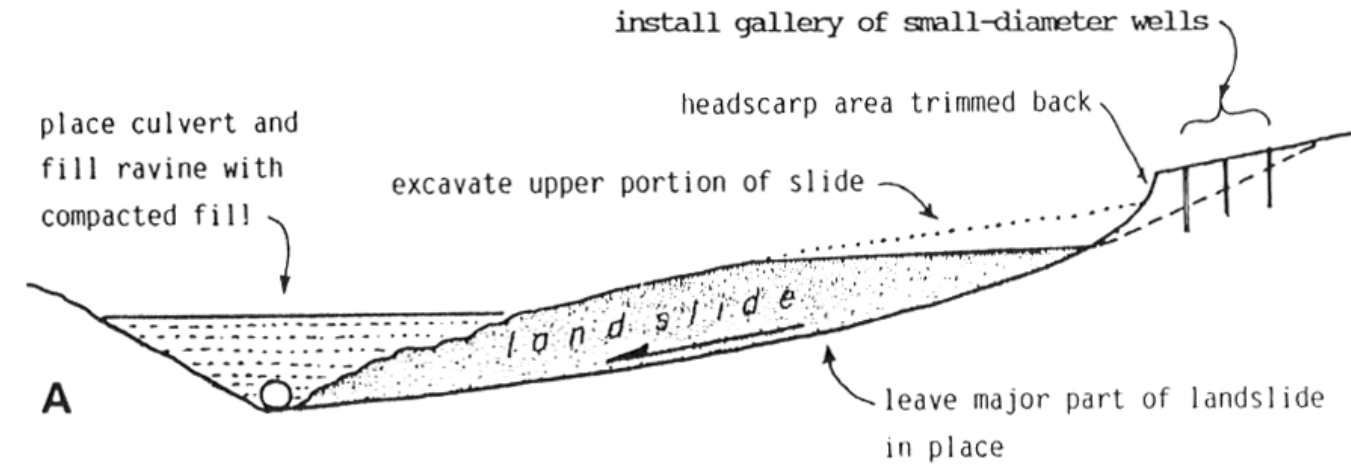


Recent development in landslide mitigation techniques.

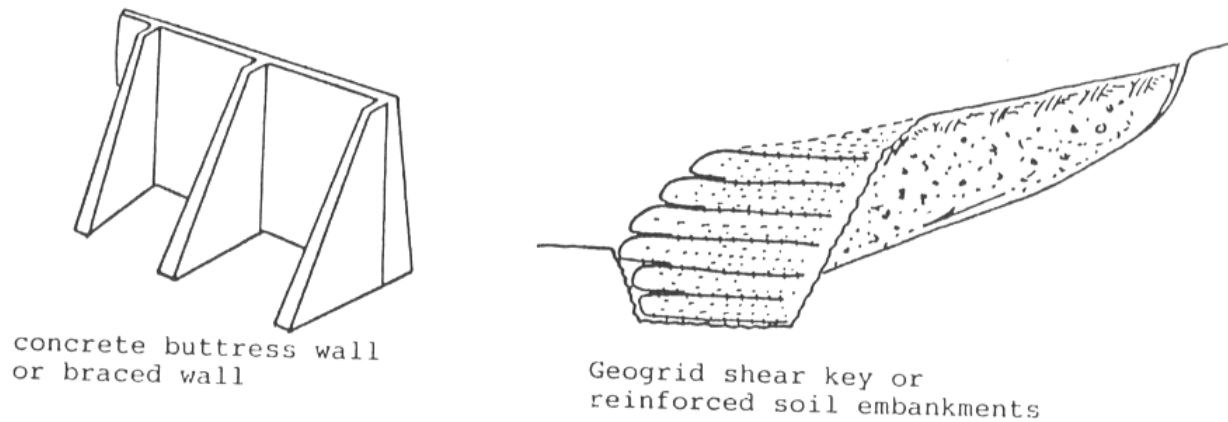
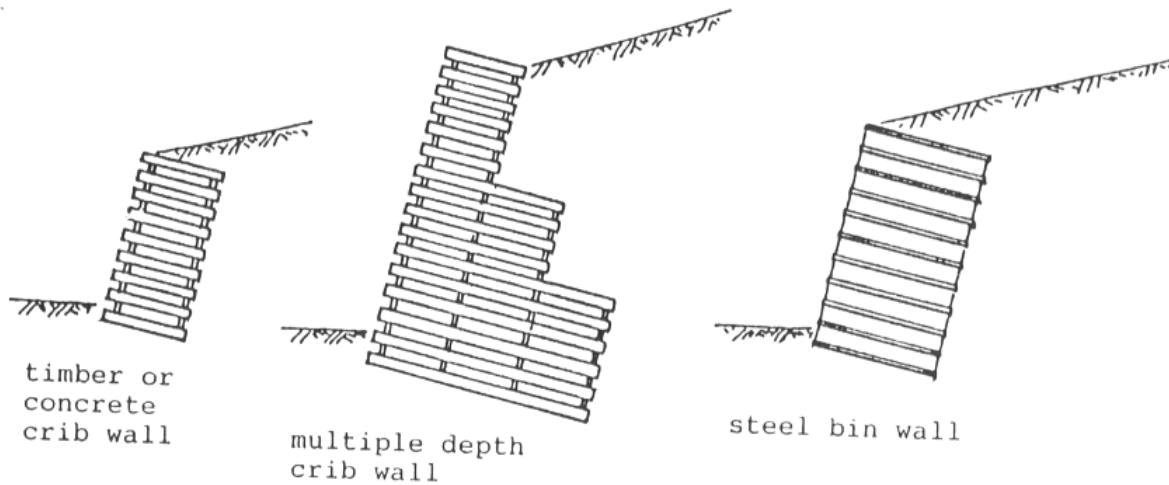
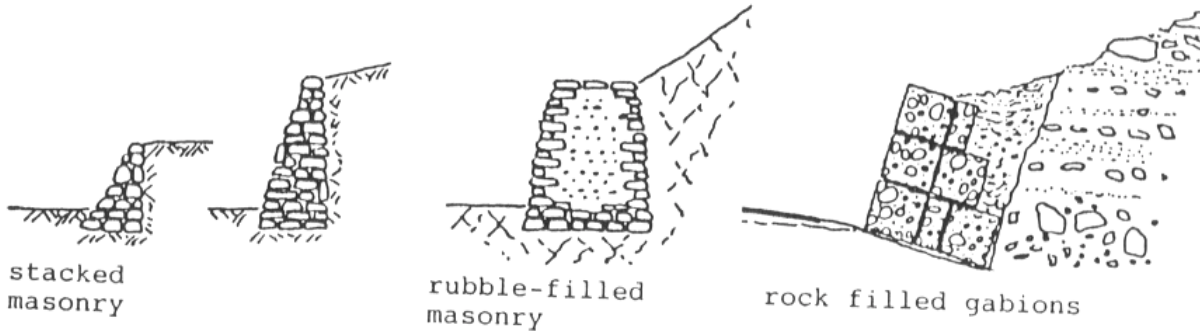
Rogers, J.D., 1992. Recent developments in landslide mitigation techniques.
In Slosson, J.E., Keene, A.G. and Johnson, J.A., eds., Landslides/
Landslide Mitigation: Boulder, Colorado, Geological Society of America
Reviews in Engineering Geology, Volume IX, p. 95-118.



The original approach to landslide repair was to buttress toe areas in combination with limited removal of the upslope area, trimming back the headscarp, and installing wells to draw down the watertable.

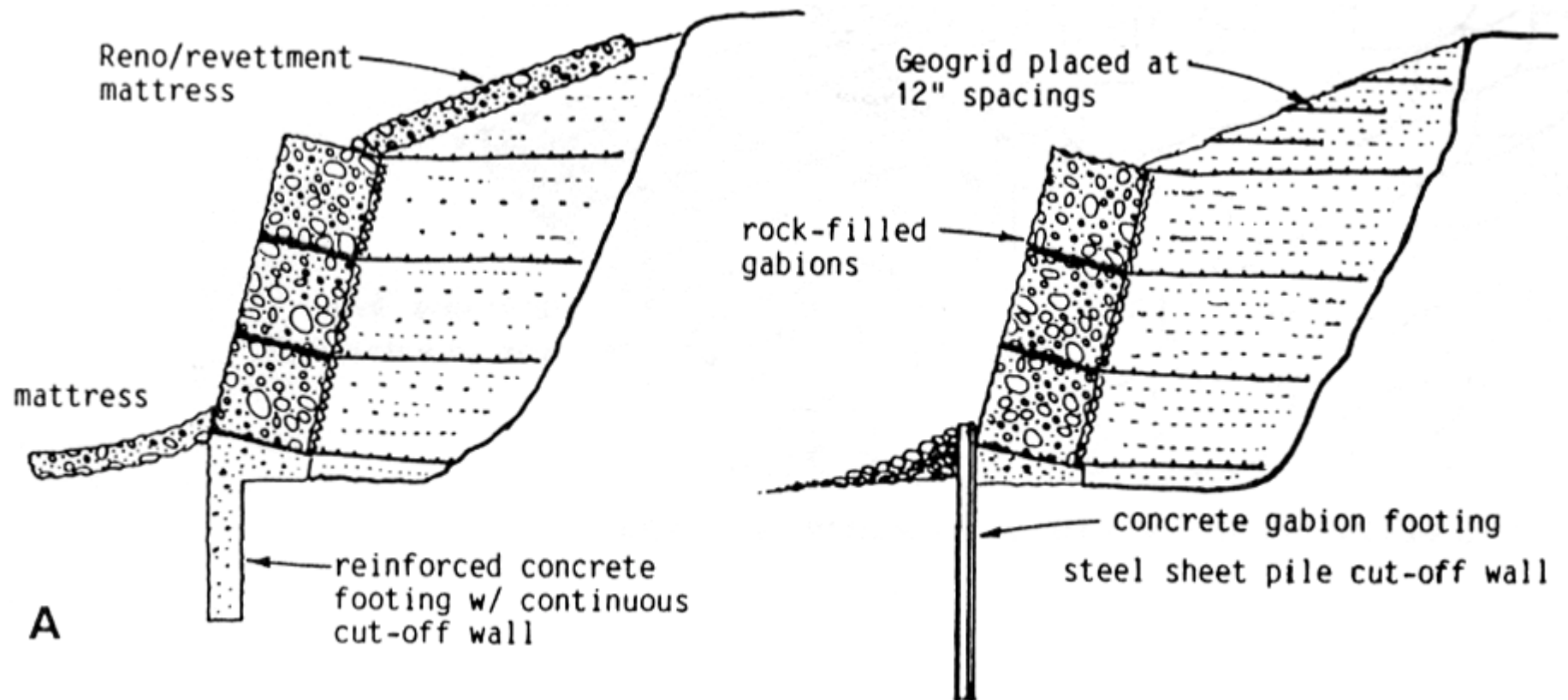
(from Rogers, J.D., 1992)

WALL RETENTION



Various types of gravity retention structures. Such structures depend on their sheer mass as a resisting force to the load imposed by a hillside.

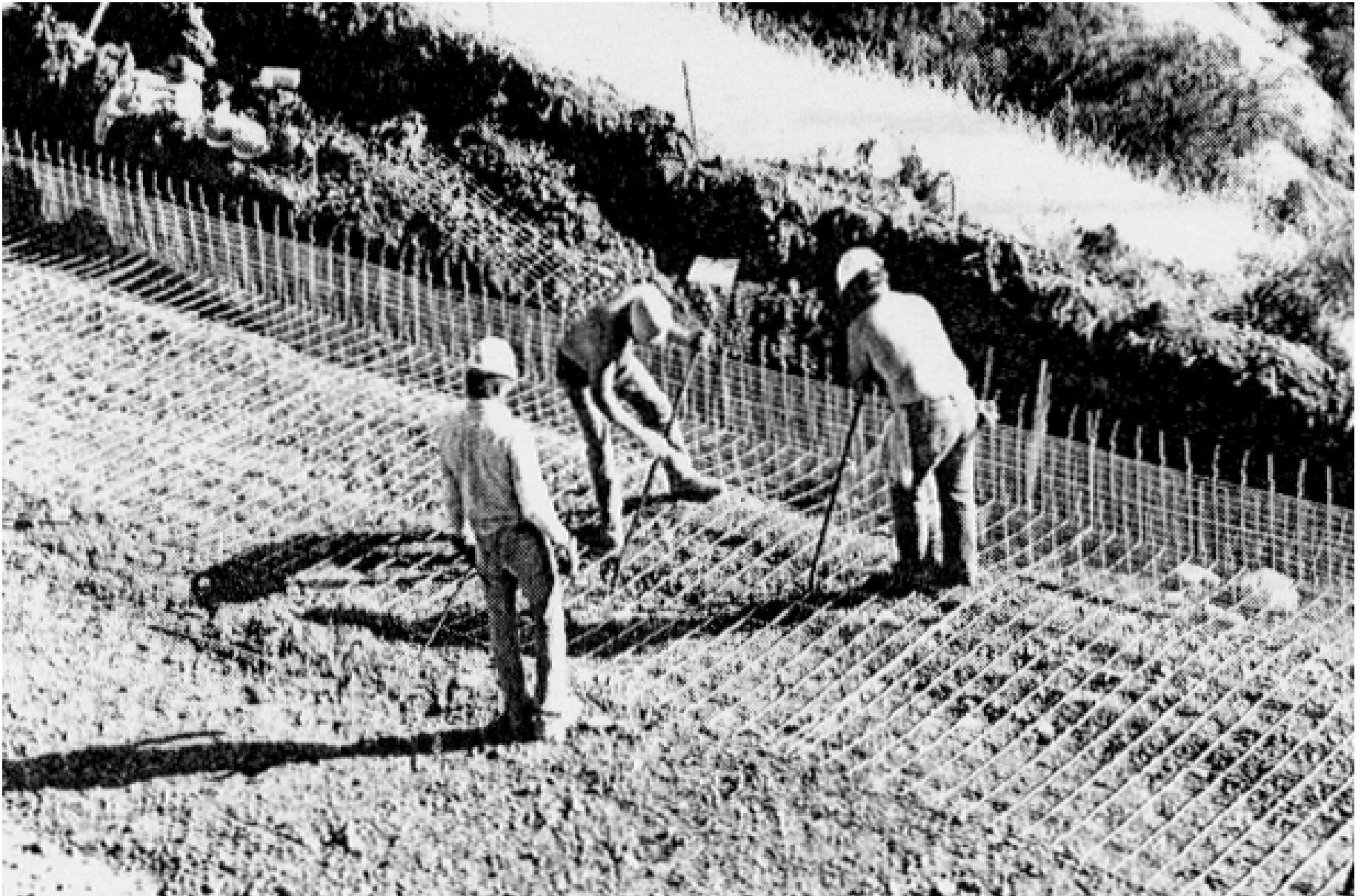
(from Rogers, J.D., 1992)



Using geosynthetics to strengthen slope conditions.

(from Rogers, J.D., 1992)

GEOSYNTHETICS



Using geosynthetics to strengthen slope conditions.

(from Rogers, J.D., 1992)

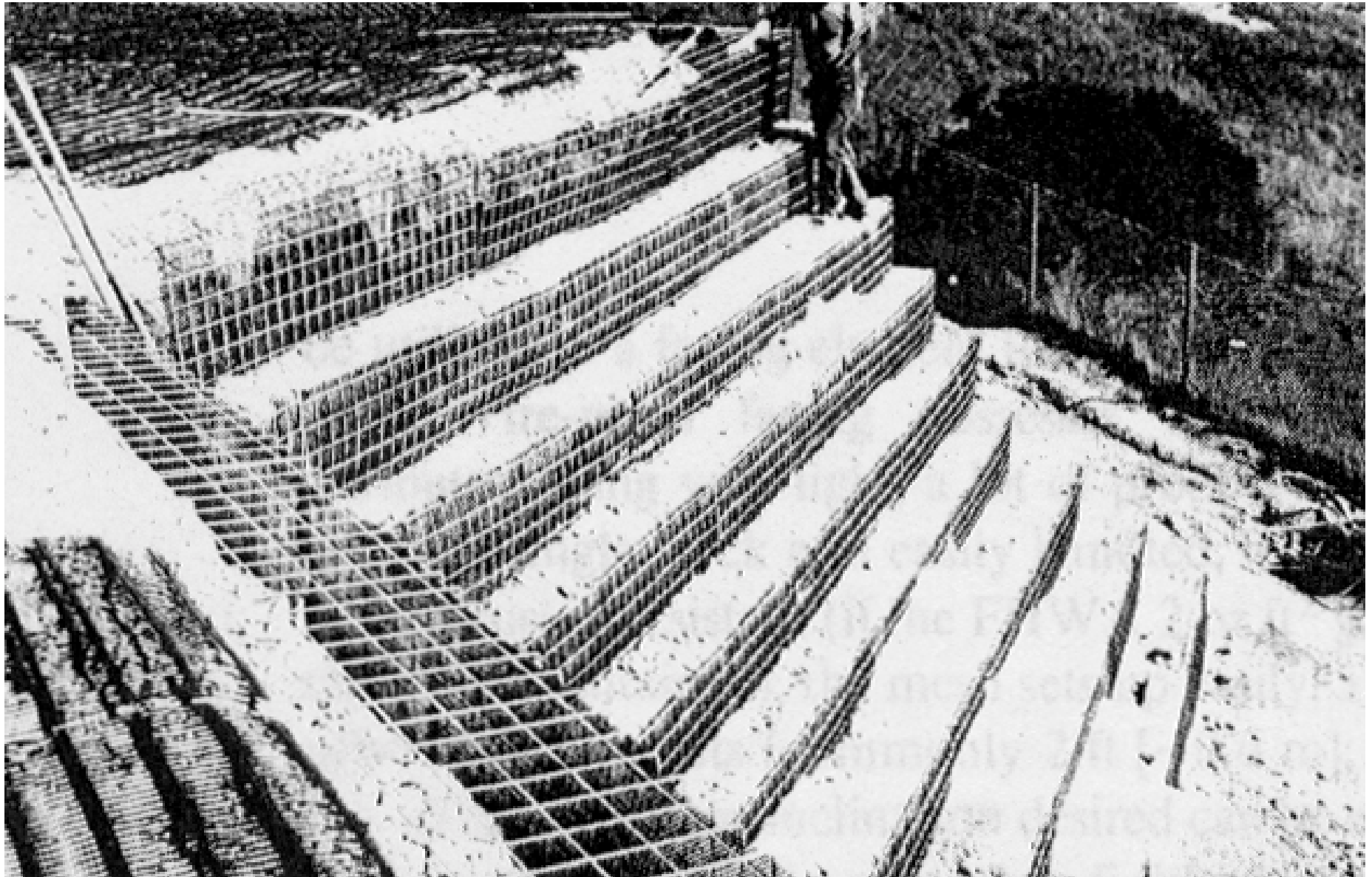
GEOSYNTHETICS



B Using geosynthetics to strengthen slope conditions.

(from Rogers, J.D., 1992)

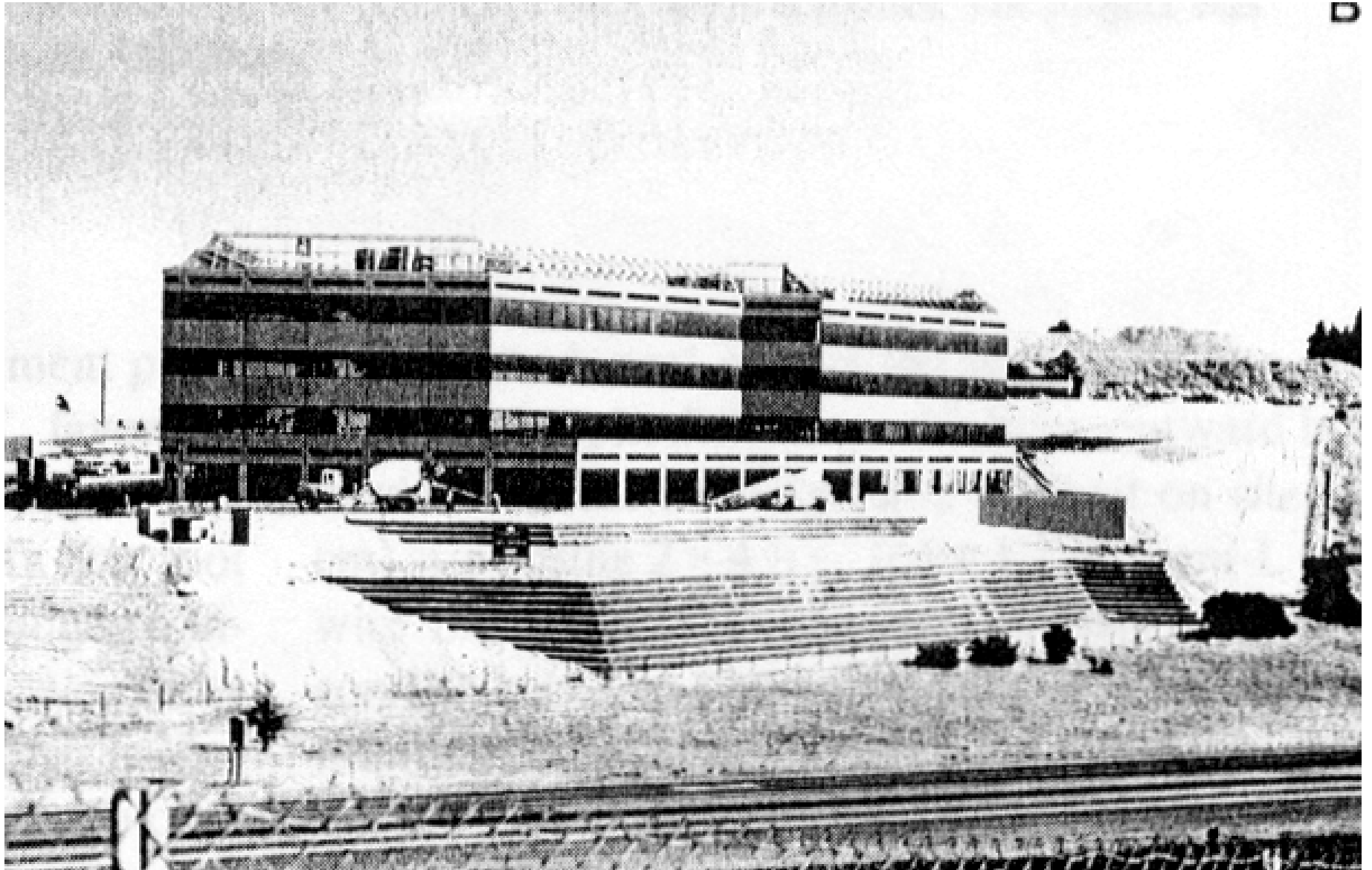
GEOSYNTHETICS



Using geosynthetics to strengthen slope conditions.

(from Rogers, J.D., 1992)

GEOSYNTHETICS

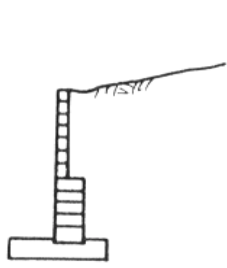


Using geosynthetics to strengthen slope conditions.

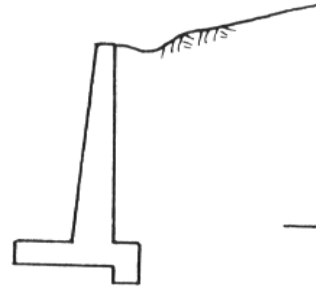
(from Rogers, J.D., 1992)

GEOSYNTHETICS

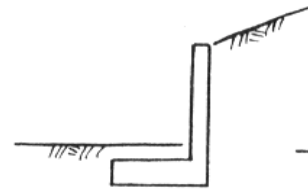
WALL RETENTION



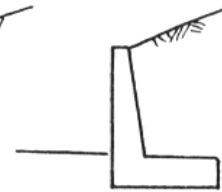
Masonry Block
or Speed Block



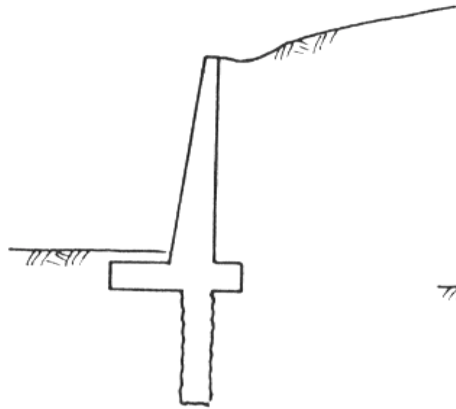
reinforced
concrete
cantilever



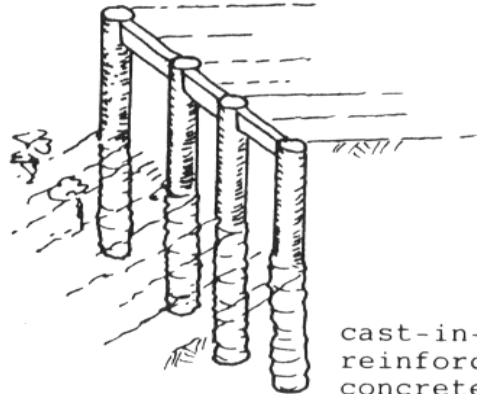
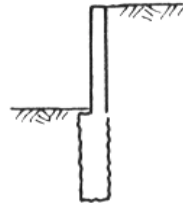
inside stem
wall



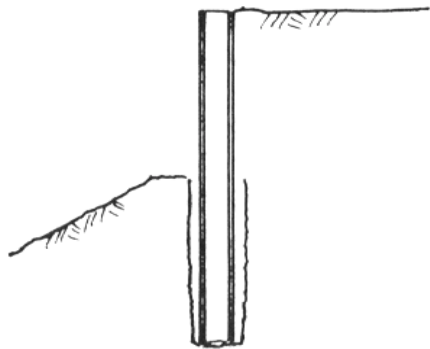
reverse stem
wall



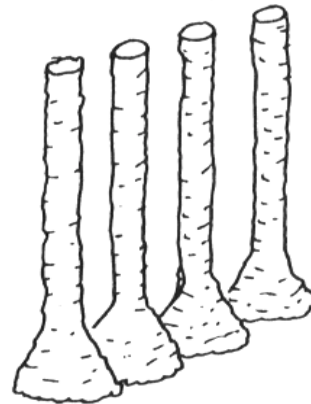
pier supported reinforced
concrete walls



cast-in-place
reinforced
concrete piers
with inter-
connecting
grade beam



steel H-pile wall

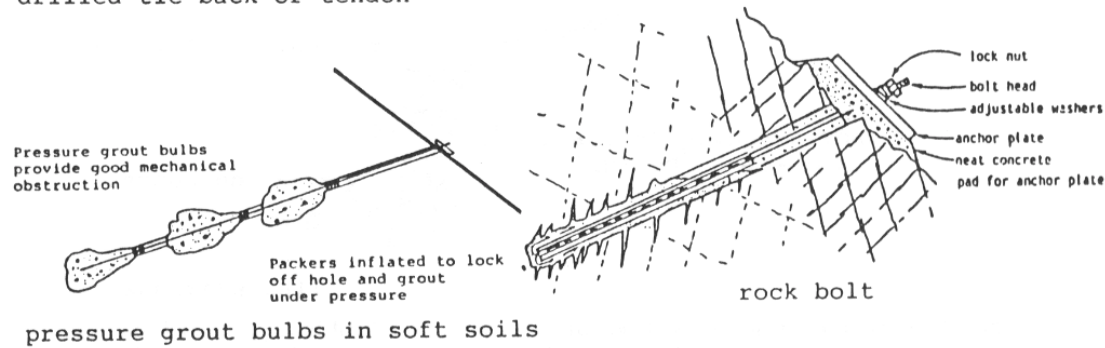
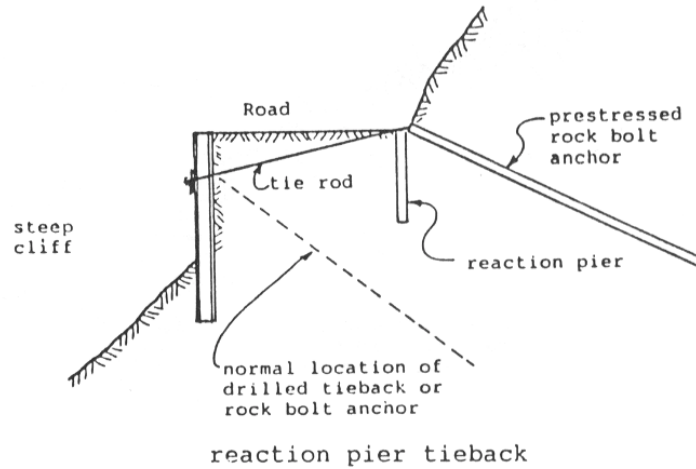
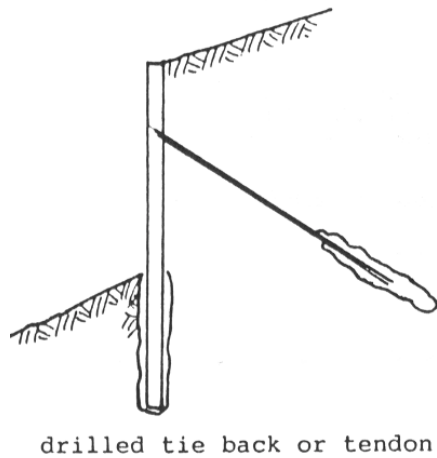
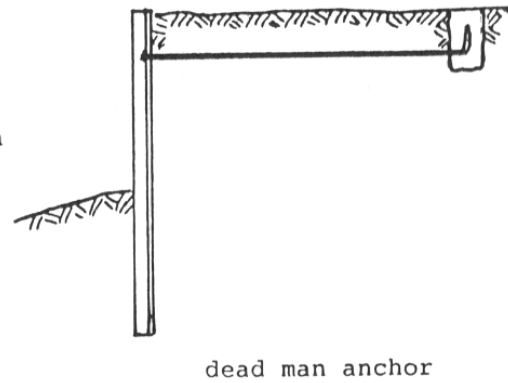
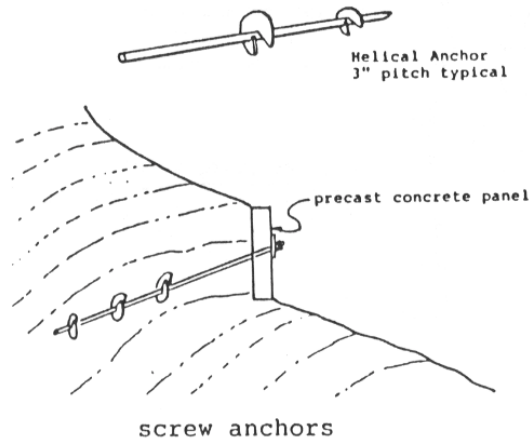


cast-in-place
caissons with
interconnecting
underream cones

Various types of
cantilever retention
structures for use in
stiff soils and soft rock.

(from Rogers, J.D.,
1992)

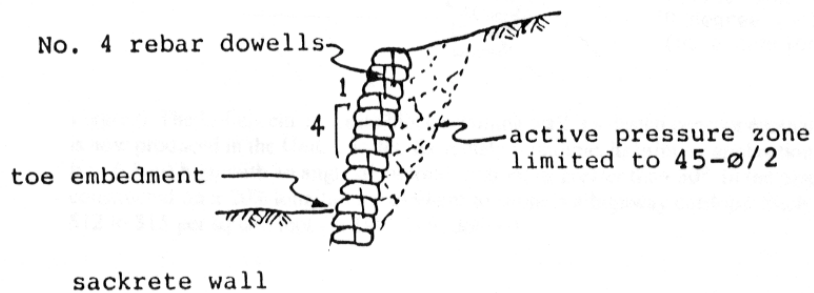
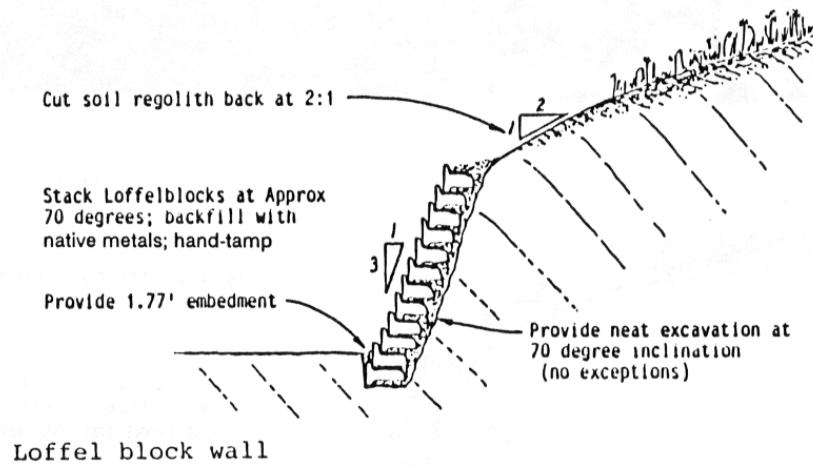
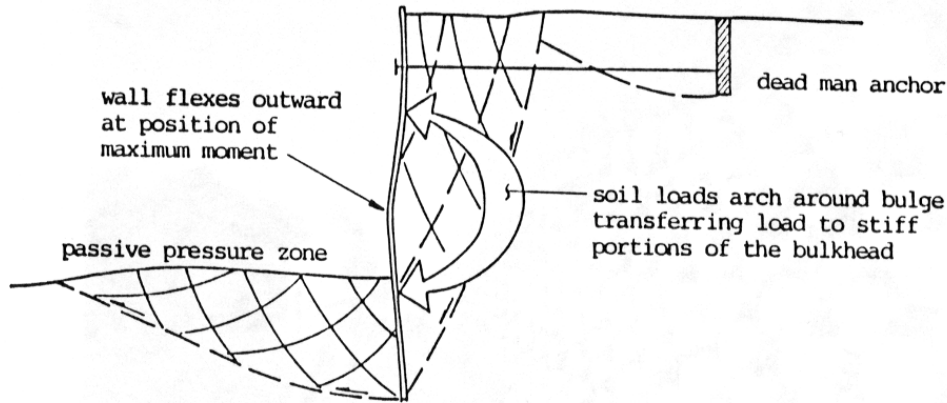
WALL RETENTION



Various types of retained structures – those employing tension elements.

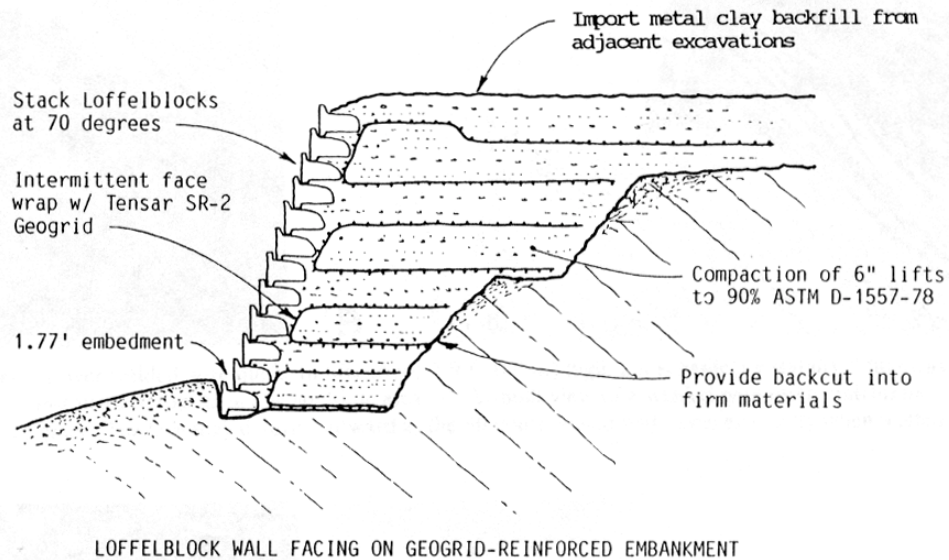
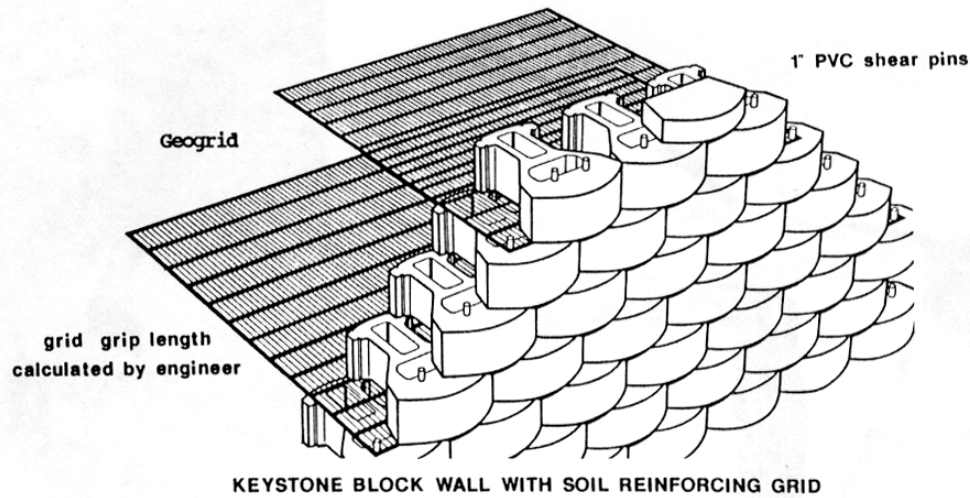
(from Rogers, J.D., 1992)

WALL RETENTION



Various types of flexible retention structures, or those that deflect in order to shed their imposed loads.

(from Rogers, J.D., 1992)



Using geosynthetics to strengthen slope conditions.

(from Rogers, J.D., 1992)

GEOSYNTHETICS

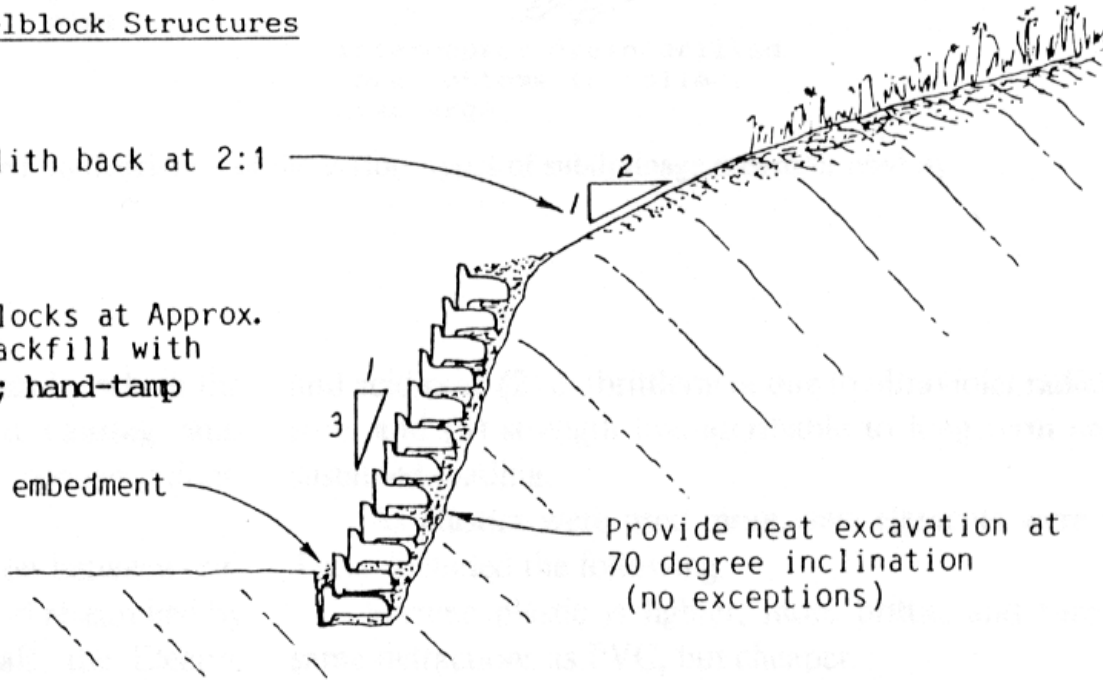
Loffelblock Structures

Cut soil regolith back at 2:1

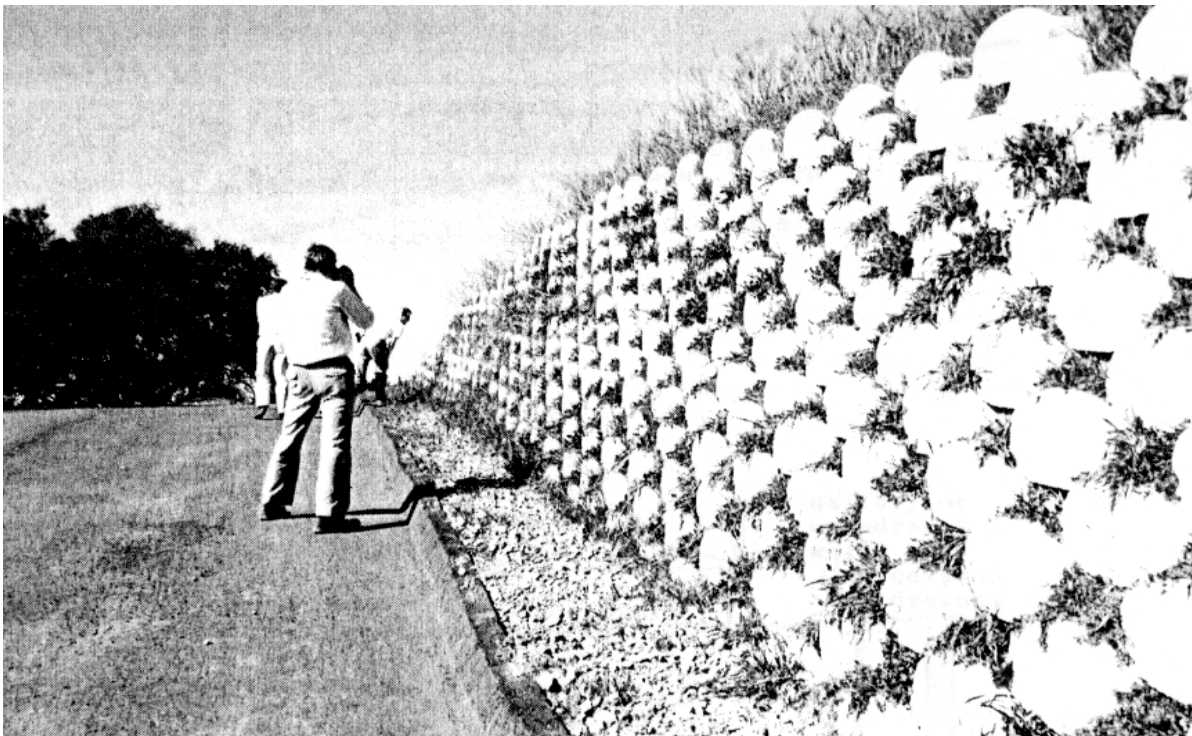
Stack Loffelblocks at Approx. 70 degrees; backfill with native metals; hand-tamp

Provide 1.77' embedment

Provide neat excavation at 70 degree inclination (no exceptions)



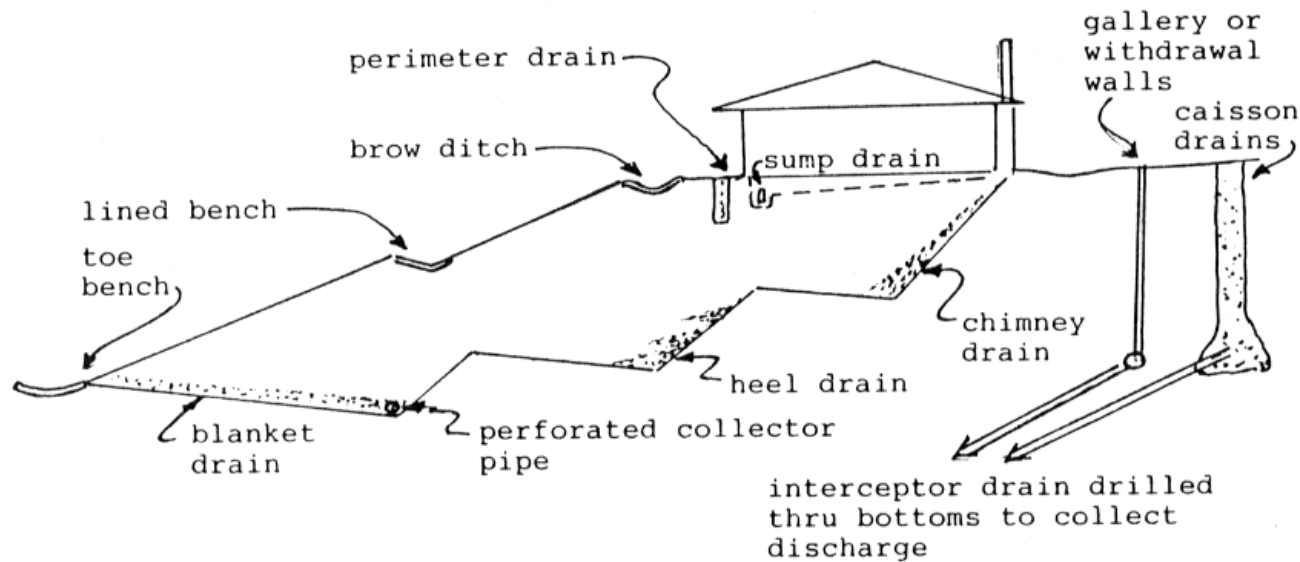
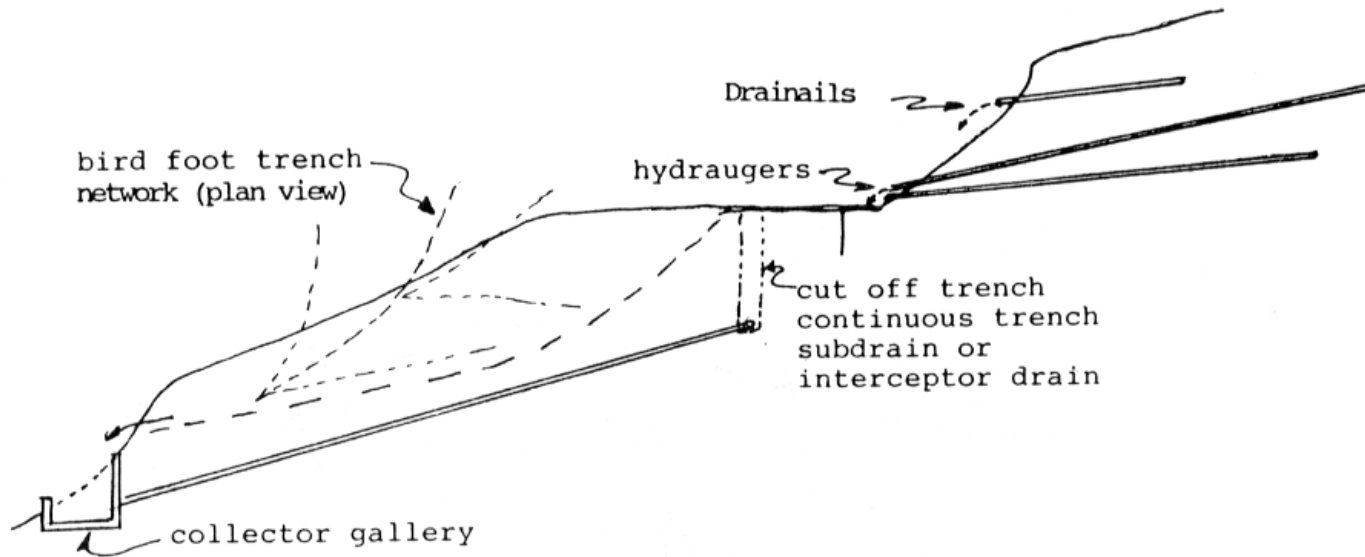
WALL RETENTION



Most effective for slopes under 22 ft high with an angle of internal friction greater than 30°.

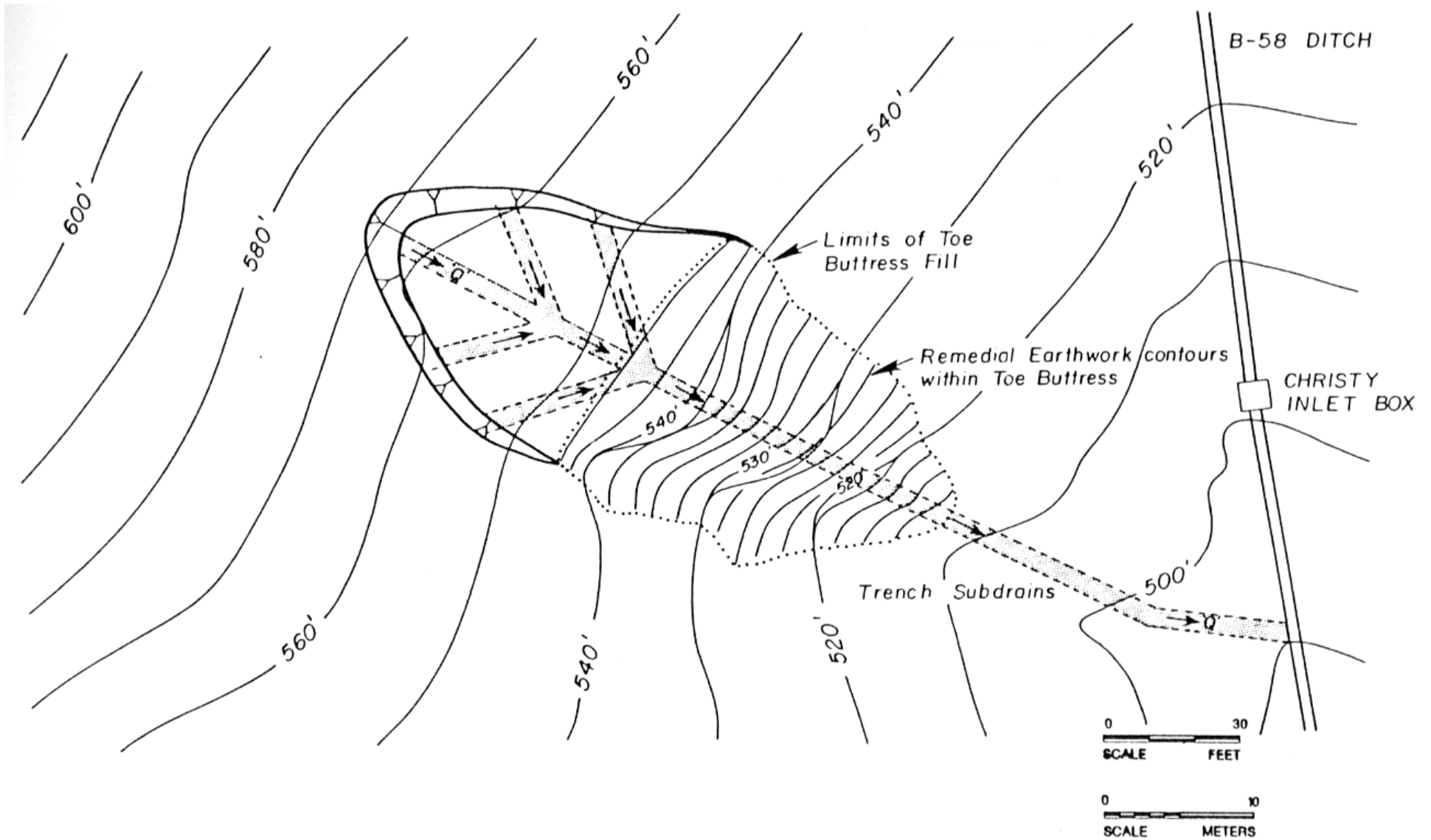
(from Rogers, J.D., 1992)

SLOPE DRAINAGE



Traditionally applied nomenclature of the various types of subdrainage measures used by most geotechnical practitioners.

(from Rogers, J.D., 1992)



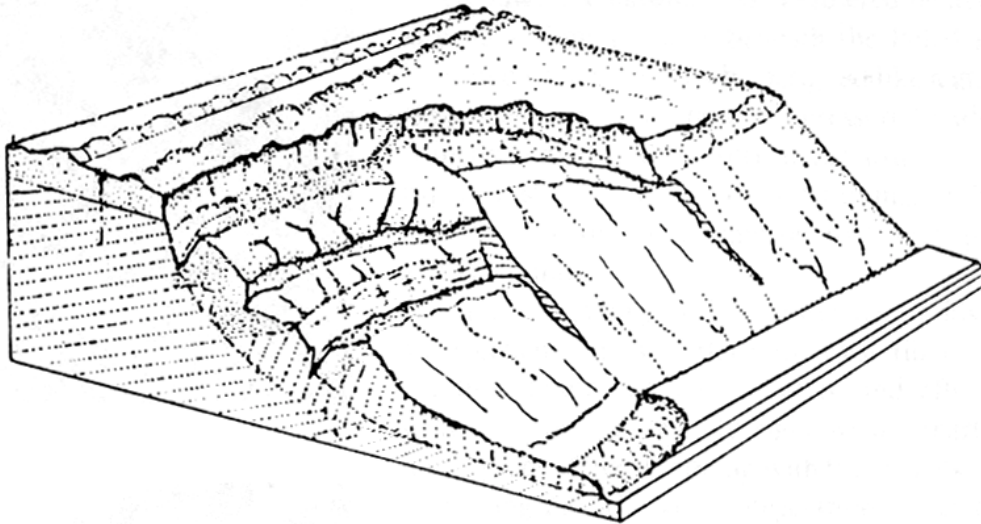
Plan view of birdfoot-style trench subdrain network.

SLOPE DRAINAGE

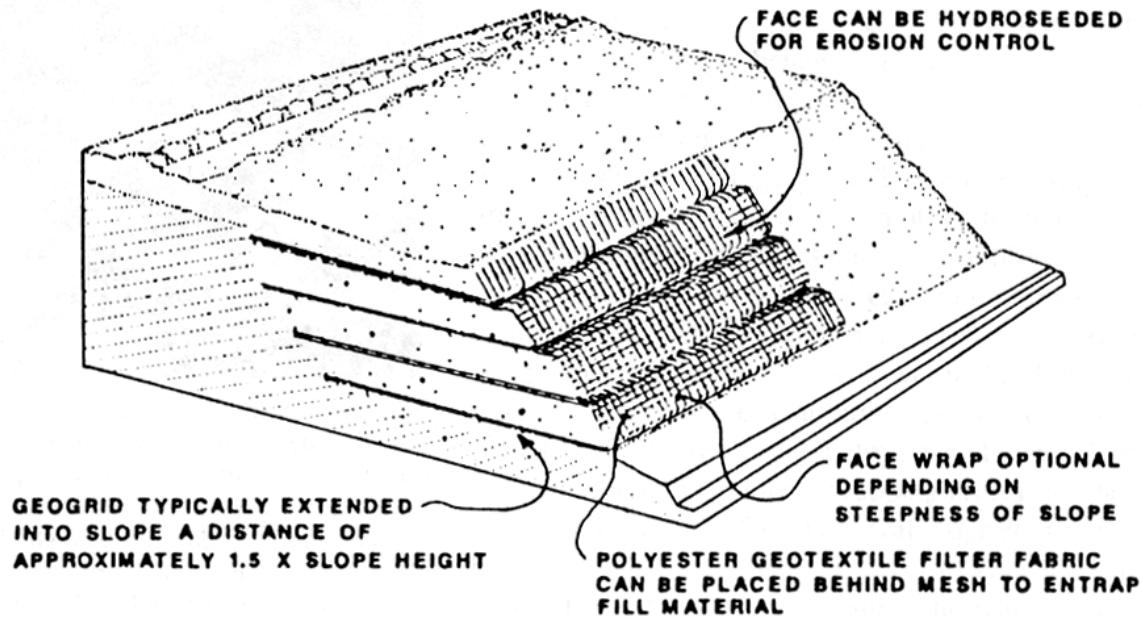
(from Rogers, J.D., 1992)

GEOSYNTHETICS

LANDSLIDE CONDITIONS PRIOR TO TENSAR GEOGRID REPAIR

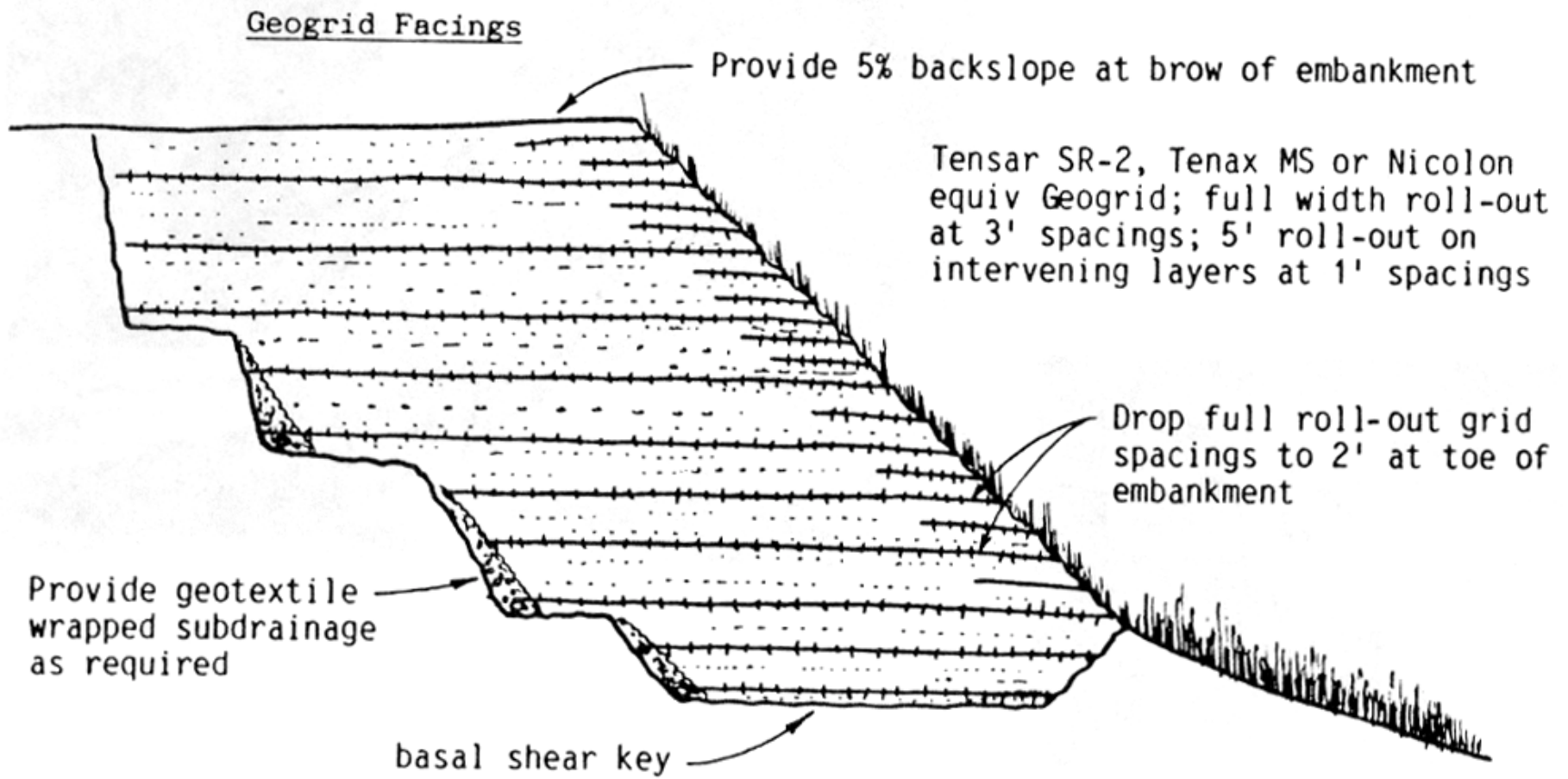


SLOPE REPAIRED WITH TENSAR GEOGRID



Using geosynthetics to strengthen slope conditions.

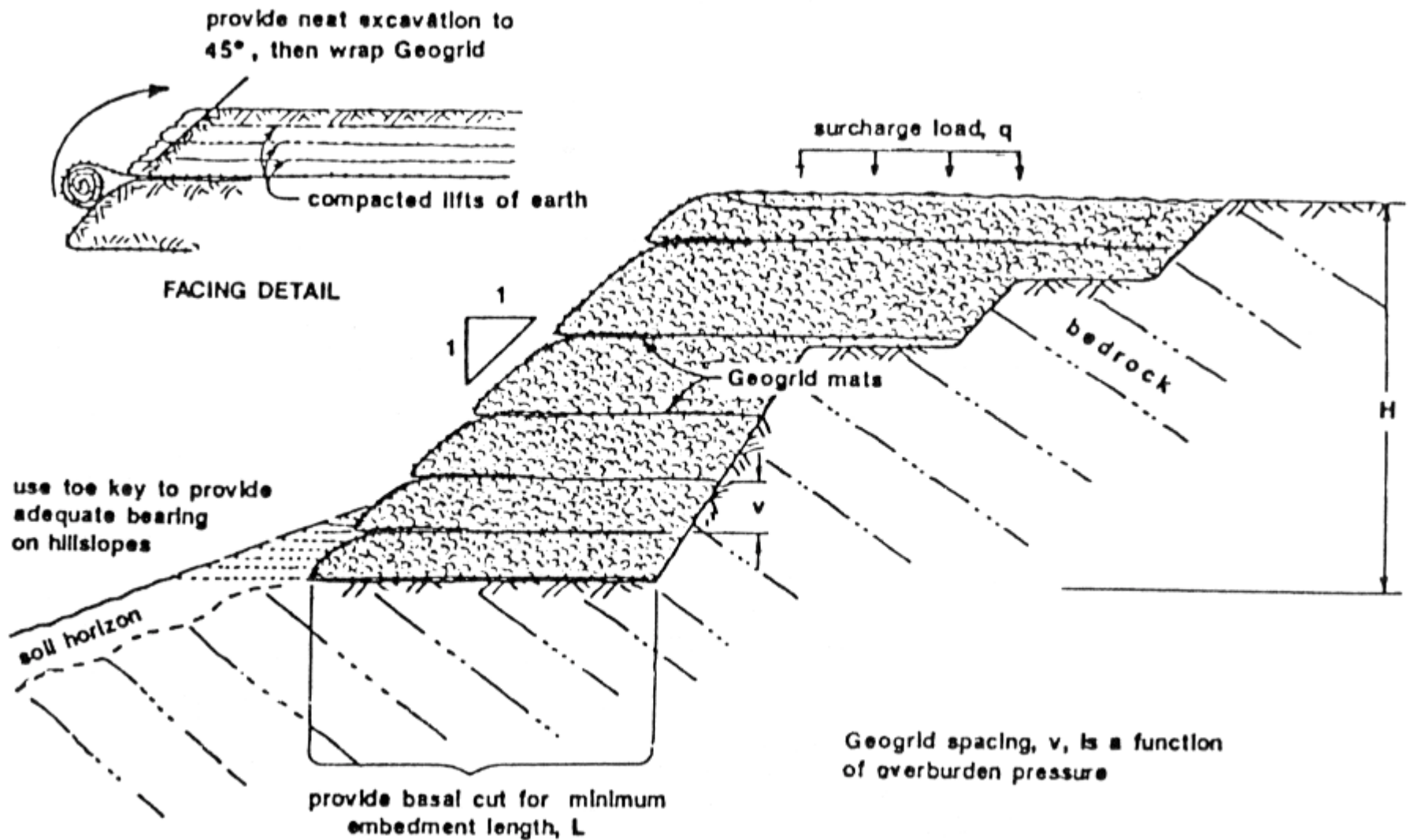
(from Rogers, J.D., 1992)



Using geosynthetics to strengthen slope conditions.

(from Rogers, J.D., 1992)

GEOSYNTHETICS



Using geosynthetics to strengthen slope conditions.

(from Rogers, J.D., 1992)

GEOSYNTHETICS



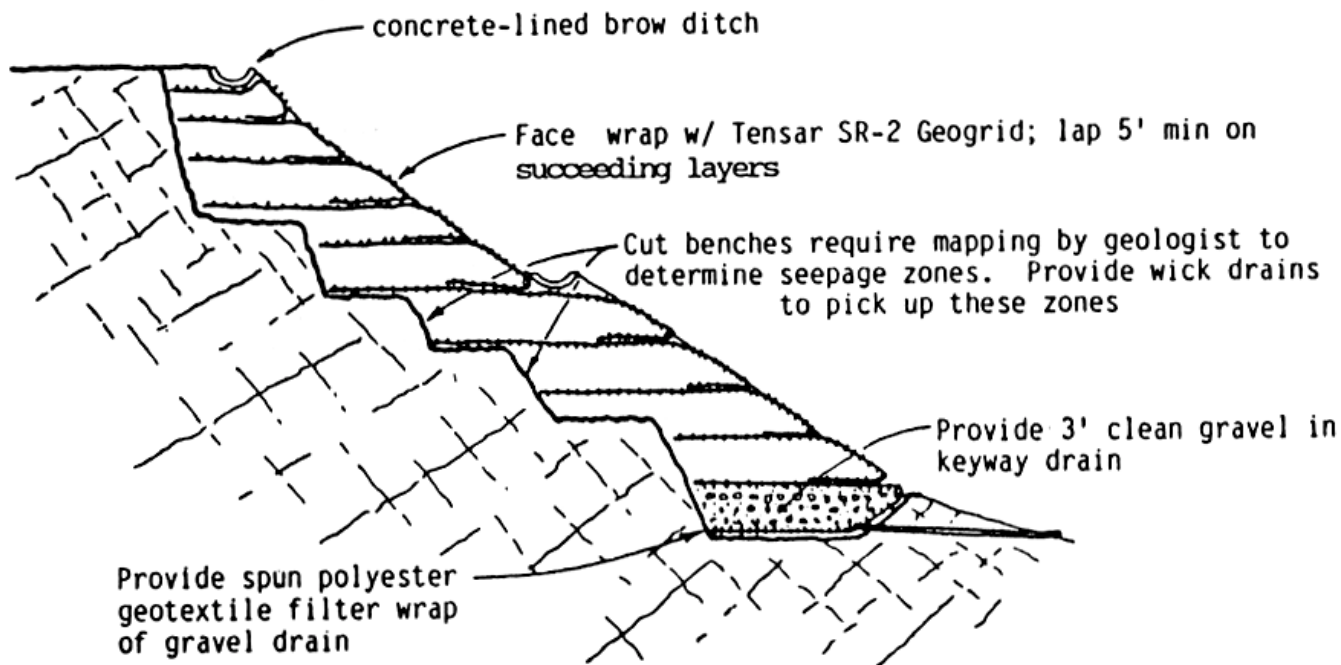
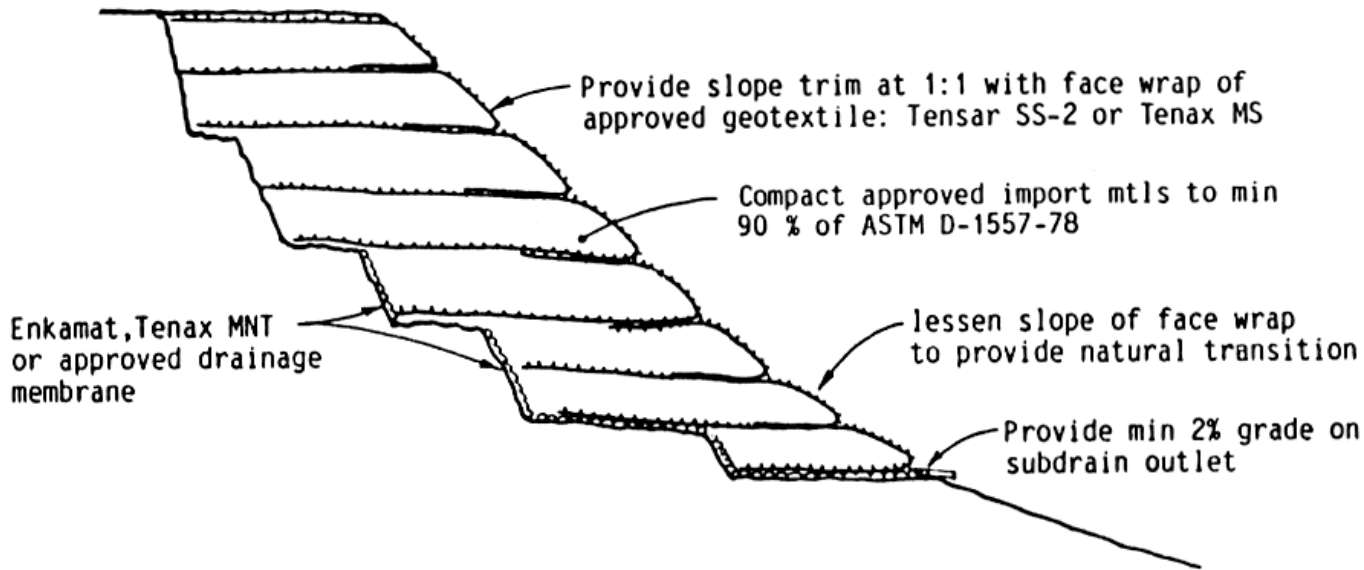
Using geosynthetics to strengthen slope conditions.

(from Rogers, J.D., 1992)

GEOSYNTHETICS

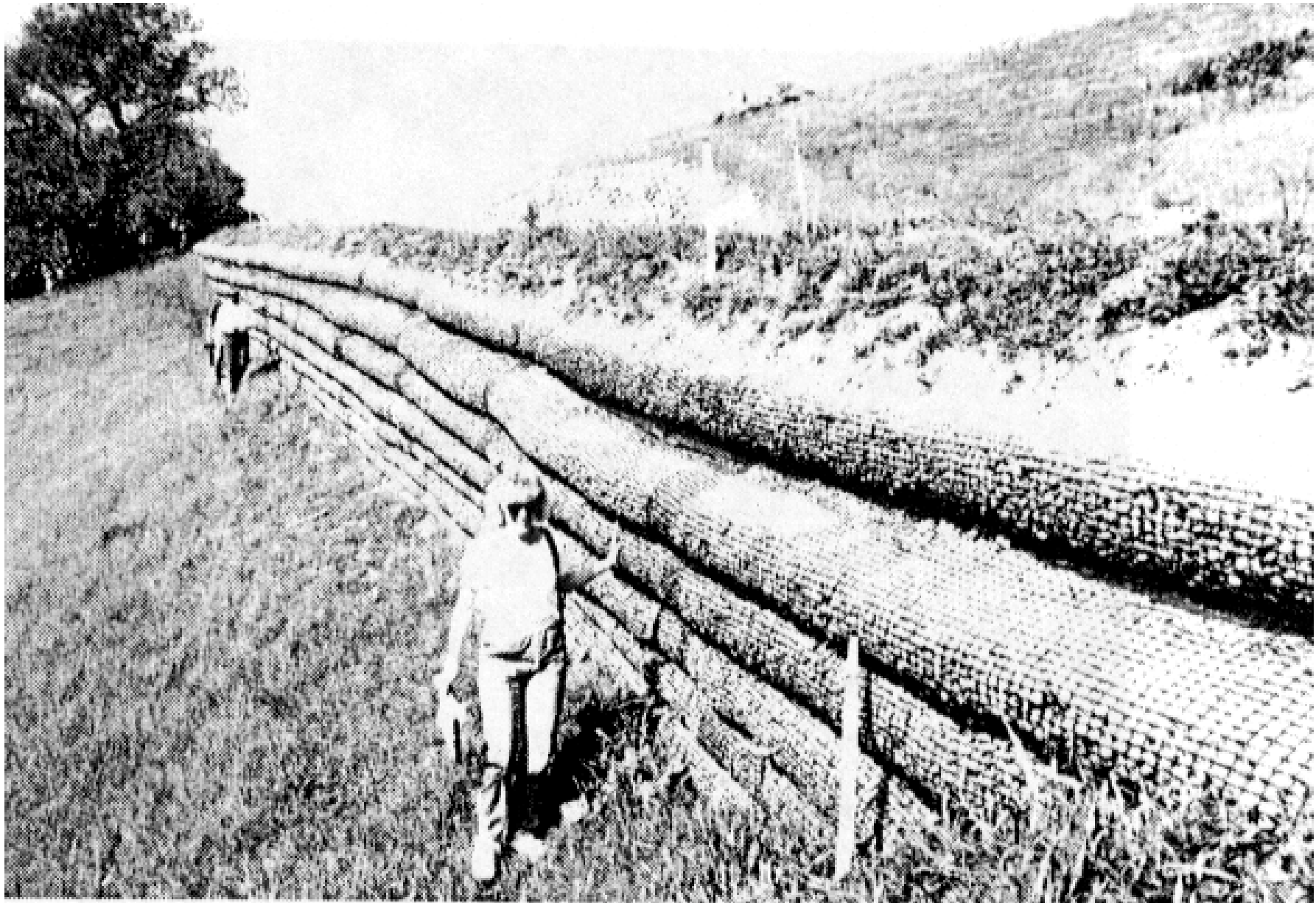
Geogrid Embankments - Soil

GEOSYNTHETICS



Using geosynthetics to strengthen slope conditions.

(from Rogers, J.D., 1992)



Using geosynthetics to strengthen slope conditions.

(from Rogers, J.D., 1992)

GEOSYNTHETICS

Reference

Rogers, J.D., 1992. Recent developments in landslide mitigation techniques. In Slosson, J.E., Keene, A.G. and Johnson, J.A., eds., Landslides/ Landslide Mitigation: Boulder, Colorado, Geological Society of America Reviews in Engineering Geology, Volume IX, p. 95-118.