

RETAINING WALLS

Retaining walls are structures built to increase the stability of a slope.

SLOPE STABILIZATION

Fill areas:

three forces act on filled areas

- | | | |
|---|------------------|--------------------------------------|
| 1 | Activating force | - in the form of soil weight |
| 2 | Resisting force | - cohesion of existing soil and fill |
| 3 | Lateral force | - horizontal movement |

Increase stability of slope

Reduce gradient of slope
Plant regeneration
Terracing Retaining walls
Improve drainage
Slope reinforcement - pinning, Geo-textile, netting
Control surface water

FUNCTIONS OF RETAINING WALLS

define boundary	- security, privacy
stabilize slopes	- land degradation, erosion
support structures	- buildings, table and chairs
containment	- soil, water etc
separation	- different areas, level changes
increase usable land	
aesthetics	

Design considerations for retaining walls

Site factors	- soil type, climate, slope stability, vegetation proximity, access, drainage
Appearance	- compatibility with surrounds; function of wall, workmanship, skill, material availability, maintenance
Costs	- available funds, material expensive, skilled labour, access, design life of wall
Materials	- range of materials, style of construction, aesthetics, cost
Construction methods	- type of construction, skilled labour, time limit on job, materials available

IMPORTANT POINTS

water must be drained

strong and durable foundation
required correct fill behind wall
angle of repose of soil
wall construction must be strong enough to oppose forces against it
approval may be required
seek engineering advice if in doubt
surcharge angle

Angle of repose - is the gradient of the slope at which soil settles naturally
Surcharge angle - is the angle between the slope of soil behind the wall and the horizontal

TYPES OF RETAINING WALLS

Brick
Block
Rock - veneer (pitch)
Dry stone
Boulder
Crib - concrete
Crib - wooden
Timber log - CCA, Bush log
Timber sleeper - CCA, old railway
Link wall systems - terrace block, diamond, inca, windsor
Formed concrete
Gabions
Mixed materials

FAILURE OF RETAINING WALLS

- 1 Breaks
- 2 Slides
- 3 Rotates
- 4 Weak construction - both wall and foundation
- 5 Water not drained behind wall
- 6 Poor materials

PROBLEM SOLVING

make wall construction stronger - increase material, type of material
increase foundation size
slope reinforcement - shear keys, pins, geo-textile
tie backs