

# CONCRETE RETAINING BLOCK WALLS

FAILSAFE BUILDING MEASUREMENTS



## MOST COMMON CAUSES FOR THE FAILURE OF CONCRETE RETAINING BLOCK WALLS



- 1 The wall featured in 1 was built 5° steeper than it should have been.
- The drainage system installed behind and above the wall was not adequate.
  - The cement stabilised backfill behind the wall was not properly mixed.
  - Trench excavations were carried out along the toe of the wall.
  - Limited bearing capacity and excessive settlement C.



- 2 No stormwater drainage system installed above Wall 2.
- External stability was not taken into account (J)
  - Insufficient constructed mass (blocks too small).

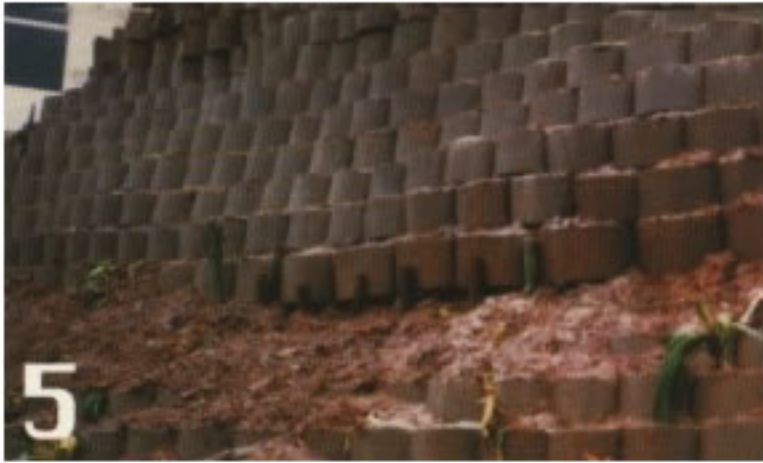


- 3 The drainage system installed behind and above Wall 3 was not adequate.
- Subsequently settlement of the backfill occurred.
  - Proper connection was not maintained between the blocks and reinforcing fabrics.
  - Bulging resulted (H)



- 4 Wall 4 shows signs of inadequate cut-off drainage and incorrect stability calculations, with excessive settlement and limited bearing capacity in the top section C.
- The angle of construction in the bottom section of the wall is incorrect, resulting in overturning (B).

## MOST COMMON CAUSES FOR THE FAILURE OF CONCRETE RETAINING BLOCK WALLS



- 5 The drainage system behind and above the wall is not adequate.
- Saturated founding conditions were also a major factor.



- 6 The 9 m high erosion control installation failed because of water seepage through the low strength, fractured and highly weathered rock which caused a deep seated failure of the slope.



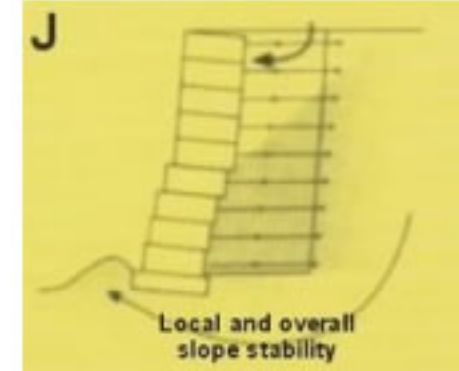
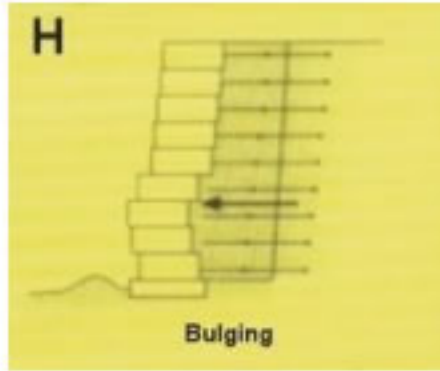
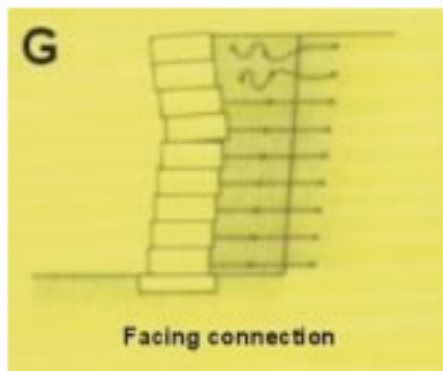
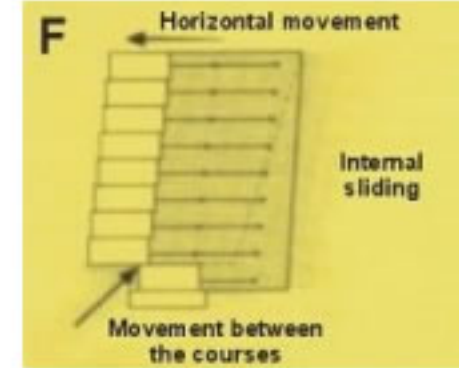
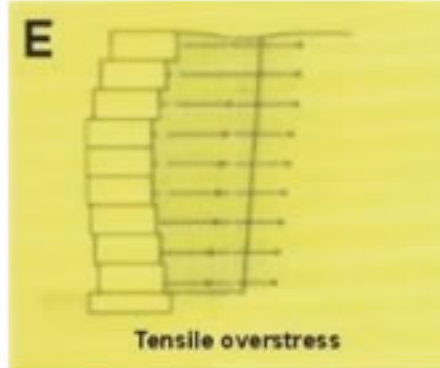
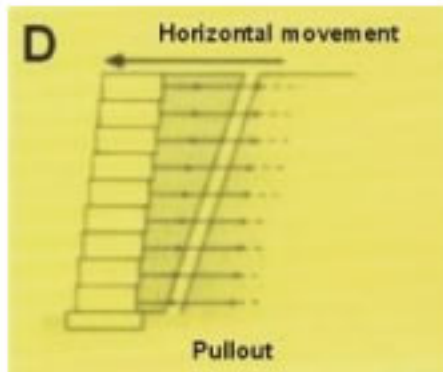
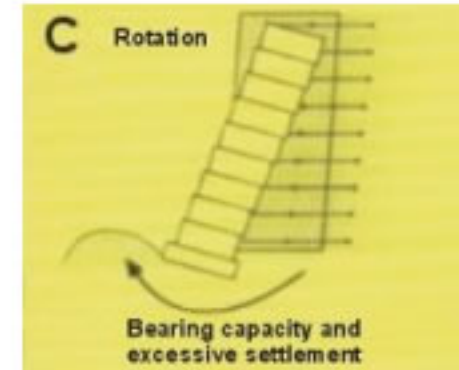
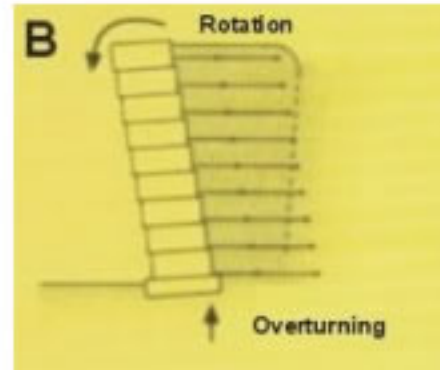
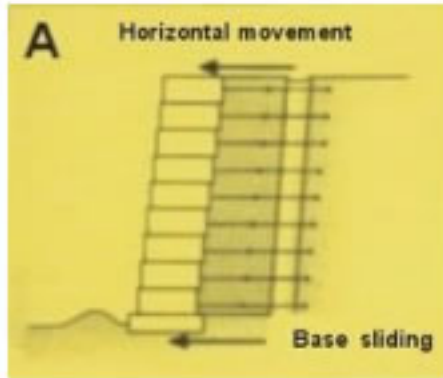
- 7 The design angle and the height of this wall are incorrect due to lack of professional input or supervision
- This resulted in horizontal movement, bulging and collapse.



- 8 Isolated cracked blocks do not indicate imminent failure. However, cracks appearing in diagonal rows across the face of wall or closely spaced in adjacent units are definite signs for concern.

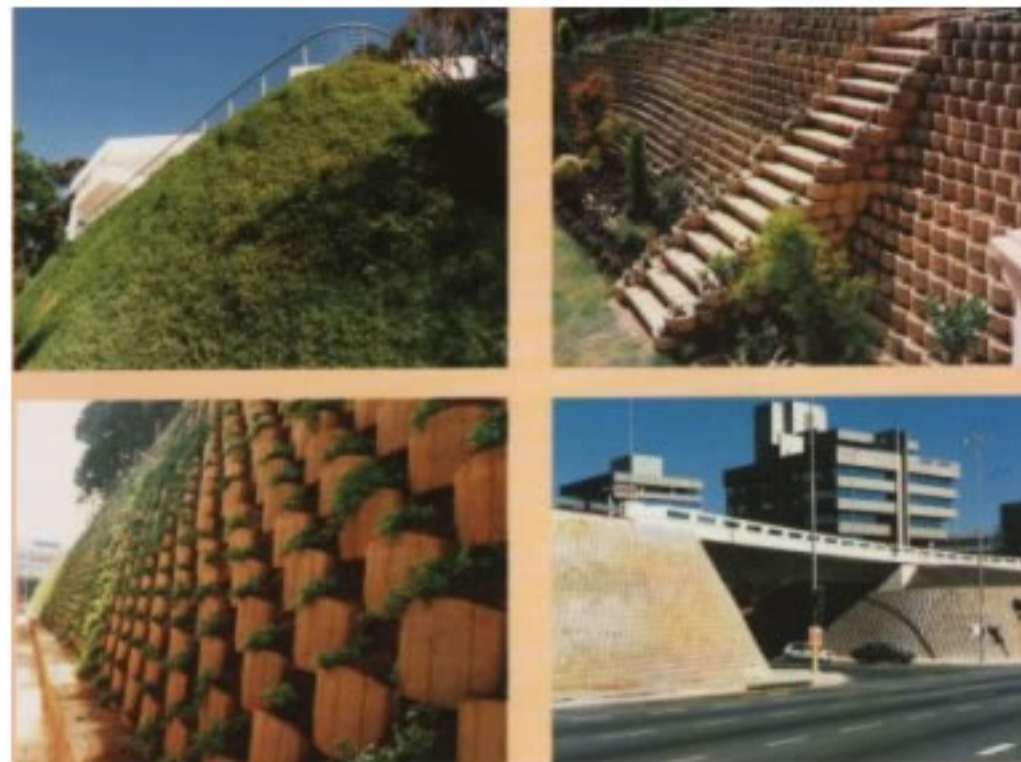
**Failure usually occur due to a combination of causes. However, in many instances, a primary cause of failure is followed by one or more secondary causes. Careful evaluation is necessary to determine the primary reason for failure**

# MOST COMMON CAUSES FOR THE FAILURE OF CONCRETE RETAINING BLOCK WALLS



## ECONOMIC & AESTHETIC SLOPE STABILITY

Not only do Concrete Retaining Block (CRB) walls provide the most economic system of retaining earth but, as the blocks are ideal containers for growing plants. CRB walls also contribute towards the greening of the environment. CRB come in a range of different styles and designs which can be used in a multitude of applications and, when correctly erected, will provide the ultimate slope stability. Here are just a few examples showing the versatility and effectiveness of CRB walls:



### Concrete Manufacturers Association - Concrete Retaining Block Walls Membership List - January 2000

Company Name	Area	Telephone
<b>Product Members</b>		
Concor Technicrete (Pty) Ltd	Johannesburg	(011) 495-2200
Concor Technicrete (Mpumalanga)	White River	(013) 758-1203
Concor Technicrete (Mpumalanga)	Trichardt	(017) 638-0666
Concor Technicrete (Mpumalanga)	Evander	(017) 689-2100
Concor Technicrete (Mpumalanga)	Witbank	(0136) 96-1153
Concor Technicrete (Free State)	Welkom	(057) 391-4200
Concor Technicrete (West)	Carletonville	(018) 781-6061
Concor Technicrete (Northern province)	Pietersburg	(015) 293-2631
Concor Technicrete (Gauteng)	Olifantsfontein	(011) 316-2341
Concor Technicrete (North West)	Klerksdorp	(018) 484-3089
Corobrik (Pty) Ltd	Durban North	(031) 560-3911
Corobrik (PMB)	Pietermaritzburg	(0331) 45-6231
Deranco Blocks (Pty) Ltd	Port Elizabeth	(041) 463-3338
Grinaker Precast (Pty) Ltd	Midrand	(021) 652-0000
Grinaker Precast (KZN) (Pty) Ltd	Durban	(031) 564-1304
Inca Masonry Products (Pty) Ltd	East London	(043) 745-1215
LokBlok	Margate	(039) 315-7420
Neat Contech	Kenton-On-Sea	(046) 648-1359
Vanstone	Pretoria	(012) 541-2056
Watson Tile & Concrete (Pty) Ltd	Brakpan	(011) 740-0910
<b>Contractor Members</b>		
BCT Construction cc	Johannesburg	(011) 462-4530
Earth Retaining Engineering Systems	Pretoria	(012) 253-0921
Friction Retaining Structures (Pty) Ltd	Johannesburg	(011) 622-2704
Kalode Construction (Pty) Ltd	Johannesburg	(011) 781-3814
<b>Consultant Members</b>		
Gre-vil Walls cc	Plettenberg Bay	(044) 573-3744
Terraforce (Pty) Ltd	Cape Town	(021) 465-1907
Wates, Meiring & Barnard	Halfway House	(011) 315-0316