

BUILD AID

FREESTANDING MASONRY
BOUNDARY
WALLS -
COMPLIANCE AND
MAINTENANCE

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FREESTANDING MASONRY BOUNDARY WALLS – COMPLIANCE AND MAINTENANCE

Freestanding masonry boundary walls in South Africa are a significantly overlooked structural element within the construction industry. As such a large number are not designed and/or constructed in accordance with the National Building Regulations. This often means that the construction is left up to the building contractor where they may not know or even understand the regulations pertaining to the design and construction of these types of walls. As is often seen, a client will issue an instruction to build a wall as high as possible as inexpensively as possible with the primary loser being the structural integrity and durability of the wall. Further to this, when considering the fact that a client wants a wall at the lowest cost, they may not always appoint a competent contractor to execute the works, resulting in shortcuts and substandard building materials being used.

These under designed and/or poorly constructed walls inevitably experience accelerated deterioration as a result of the non-compliance which often leads to collapse failures. Further to this the client often

experiences additional financial damage as the walls are not insurable as a result of them not being compliant, and in a worst case the owner of the wall could face significant liability claims if a non-compliant wall causes harm to persons or even results in fatalities.

In order to ensure a freestanding boundary wall is compliant in terms of the National Building Regulations, it either has to be built in accordance with the “deemed to satisfy” rules of the **SANS 10400 – Application of the National Building Regulations - Part K**: Walls specifications, or be designed and certified by an engineer.

The following table is an extract from Table 17 of SANS 10400 Part K and gives the specifications and maximum dimensions of the most common brick units. If a freestanding masonry wall (such as a boundary wall or internal garden wall) is built to these specifications, it will be “deemed to satisfy” meaning that it will comply with the National Building Regulations.

Nominal wall thickness (T) mm	Height above ground (h) m	Nominal dimensions of piers (overall depth (D) x width (W)) mm	Maximum centre to centre spacing of pier (s) m
No Piers			
110	1.0	-	-
220	1.8	-	-
Z-shaped walls			
110	2.1	440 x 110	1.5
220	2.8	550 x 220	4.0
Piers projecting on one side			
110	1.9	550 x 330	2.0
220	2.3	660 x 440	3.2
Piers projecting on both sides			
110	1.6	440 x 440	2.2
220	2.1	660 x 440	3.2

The above dimensions must be read in accordance with Figure 18 from SANS 10400 Part K



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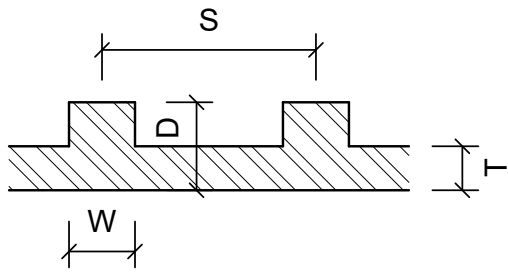
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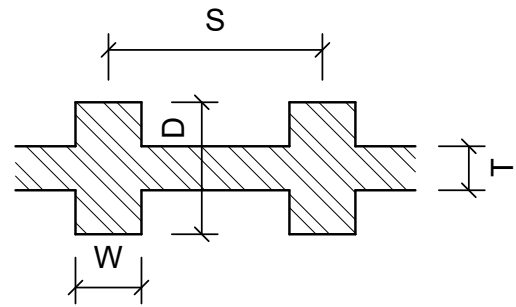




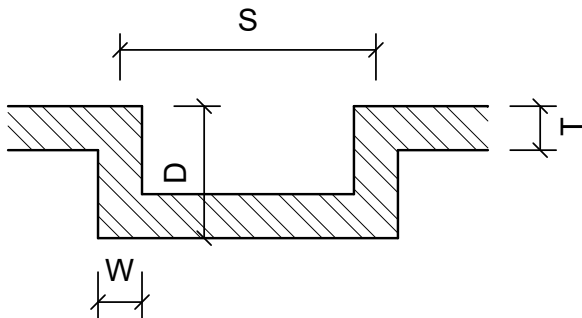
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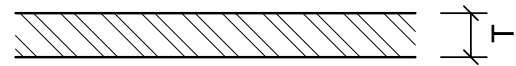
a) Piers projecting on one side only



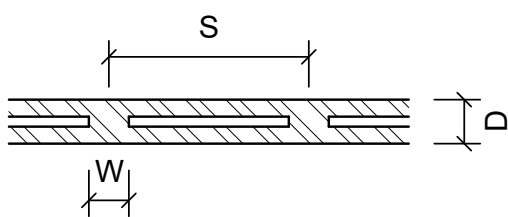
b) Piers projecting on both sides



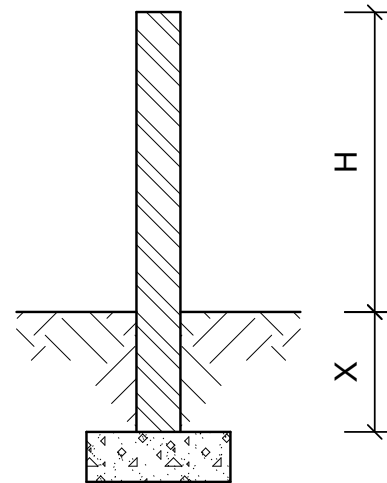
c) Z - Shaped walls



d) No piers



e) Diaphragm walls



f) Typical section through wall

- D = depth of pier
- H = maximum height of wall above ground level
- S = spacing of piers
- T = thickness of wall
- W = width of pier
- X = height of soil above strip footing

There are some additional construction considerations in order for a wall to comply with the "deemed to satisfy rules" noted in the table above:

- Installation of adequate foundations.
 - Any structure is only as good as the foundations it is built on. As such foundations need to account for the following:
 - Load being transmitted into the ground
 - Bearing capacity and material properties of the founding material
 - Adequate sizing of foundations (refer to SANS 10400 part H)
- Ensuring adequate mortar mixing
 - Sand, cement and water mixing ratios
 - No remixing of mortar once it has started to set
 - Mixing on a board to prevent contamination of mix with non-building sand or organic material such as grass or leaves
- The use of brickforce
 - Ensure that it is adequately installed so that none is exposed which will result in rusting.
 - Generally installed every 3 to 4 courses. (refer to SANS 2001-CM1)
- Installation of movement / expansion joints
 - All materials experience expansion and contraction with changes in moisture content and thermal changes.
 - As such suitable expansion joints need to be installed in all free standing brick walls as a spacing no greater than 10 m apart.

- Retaining walls
 - Retaining walls require special consideration and as such need to be designed and certified by a professional engineer.
 - Most insurance policies do not cover retaining walls unless designed and certified by a registered professional engineer.

Further planning Considerations include

- Planning permission and council approvals
 - Depending on the size of the wall, an application may need to be submitted for approval by the local council.
- Use of a reputable builder and preferably one registered with the NHBRC

Maintenance Considerations

All building structures degrade over time and as such require regular adequate maintenance in order to maintain their required level of serviceability. As such a maintenance program should be implemented on all boundary walls to ensure they do not degrade to a point where failure occurs. It must also be noted that failure as a result of degradation from lack of appropriate maintenance is not an insurable event. Maintenance related items include:

- Wall leaning over and cracks forming as a result of trees, shrubs and or roots
- Deterioration of building materials over time such as crumbling of mortar
- Wear and tear
- Water damage

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