

# Walls Detailing

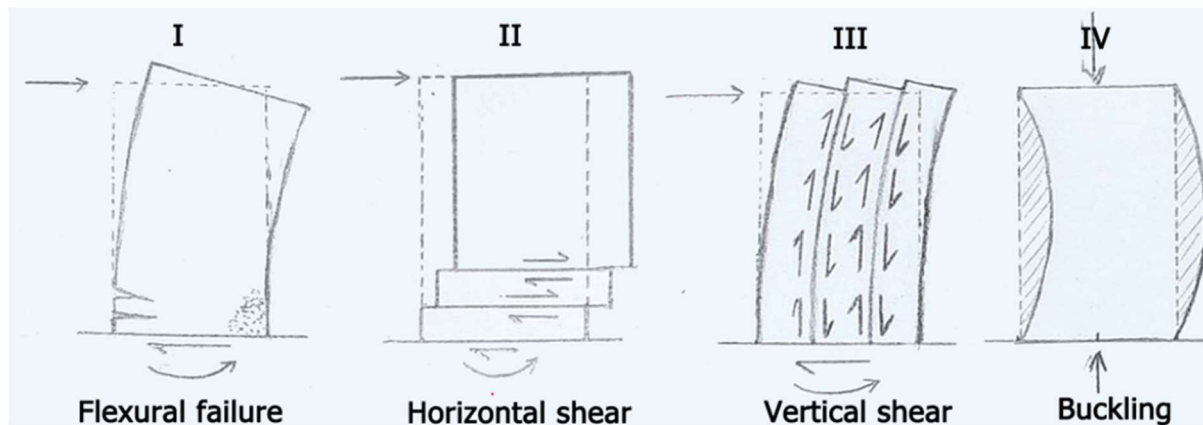
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Chapter 3  
Section

**3.4**

# Introduction

- The details in this section is applicable for vertical loadbearing wall in addition to shear wall that are subjected to horizontal in plain and out of plan loads. Previous loading can produce axial, bending and shear stress and may cause wall to buckle.
- Vertical member shall be designed as wall when length/width of cross section exceeds 4



Flexural failure

Horizontal shear

Vertical shear

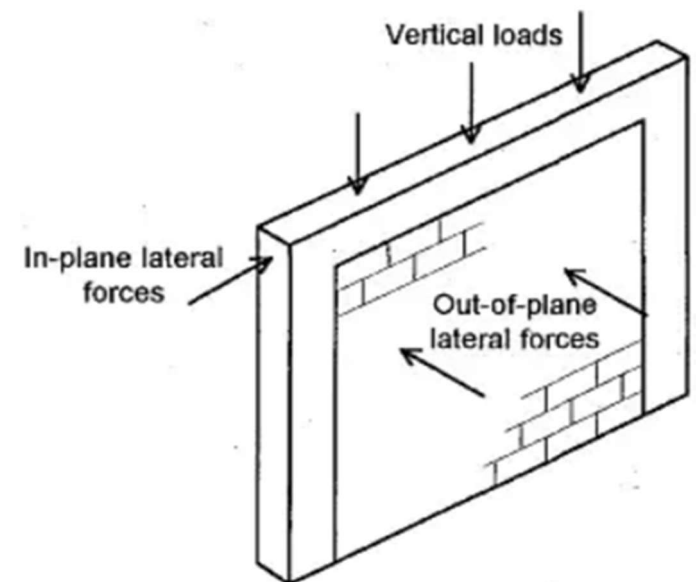
Buckling

Vertical reinf.

Vertical reinf.

Horizontal reinf.

Wall dimensions



Bearing and sheer  
walls

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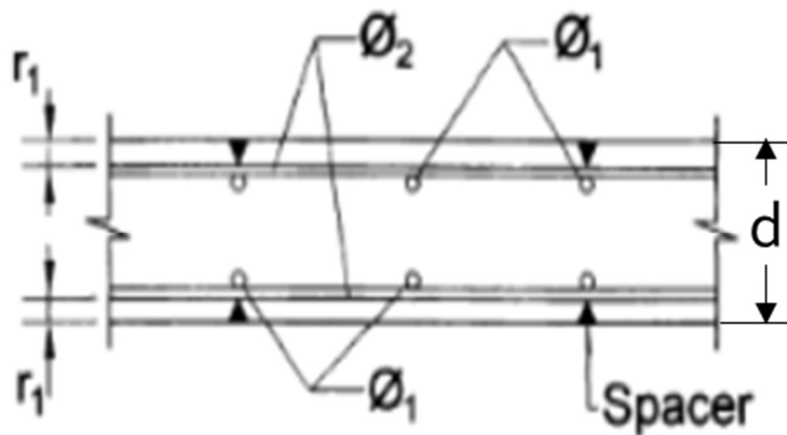
# Design and detailing requirements

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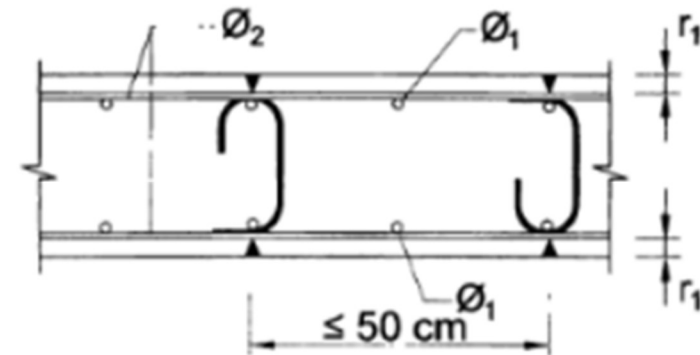
- For ease of pouring and to prevent segregation, the minimum recommended thickness is 15 cm. Nonetheless, particular care is required when pouring walls with thickness is less than 25 cm.
- Minimum bar spacing: 75mm (for bars 40mm size and greater: 100mm).
- Maximum spacing for Vertical and horizontal bars. The lesser of 3 times the wall thickness or 400mm.
- Reinforcement is fixed in two layers at right-angles to form a mat, normally one mat at each wall face, however it is permitted to provide one layer of reinforcement in thin walls (<250mm thick).

# Reinforcement Details

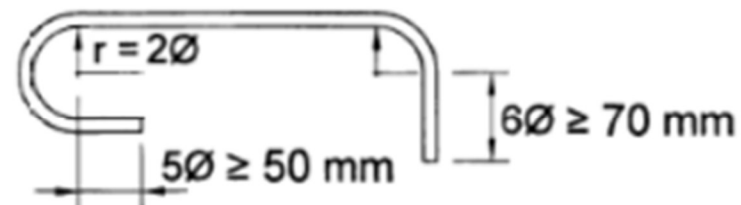
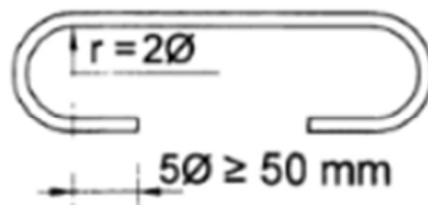
- **Horizontal sections.** These show the vertical and horizontal reinforcement, wall dimensions, cover in addition to crossties distribution when required by the design code.



Horizontal section



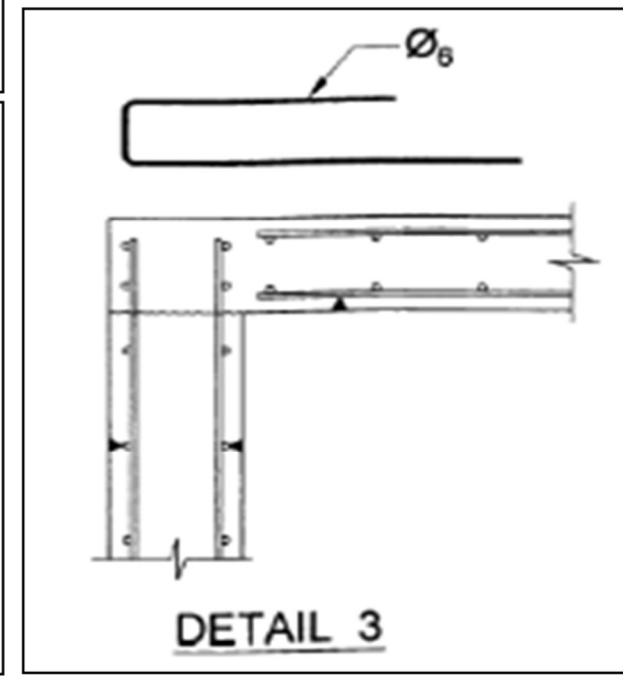
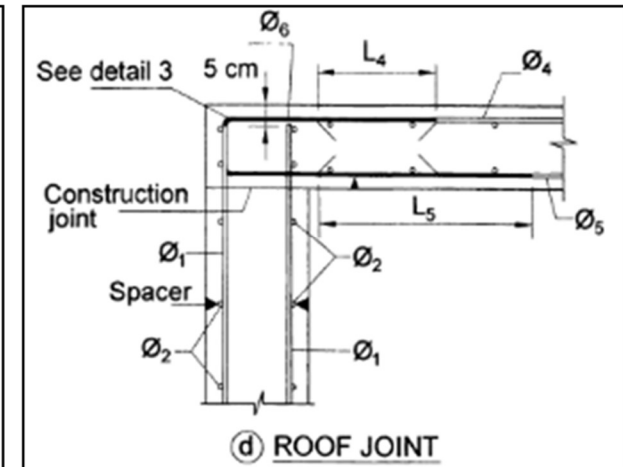
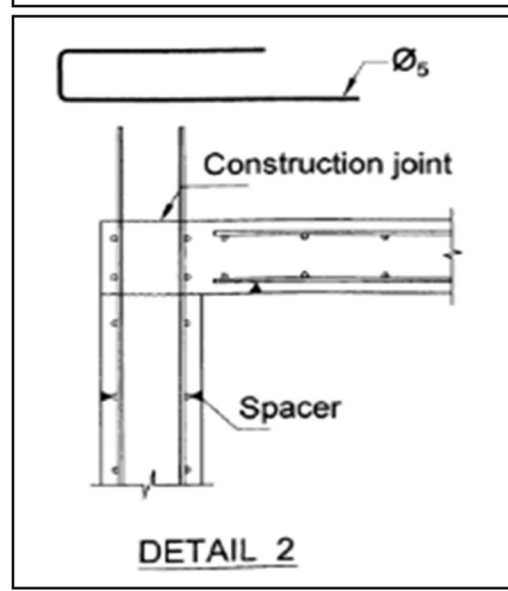
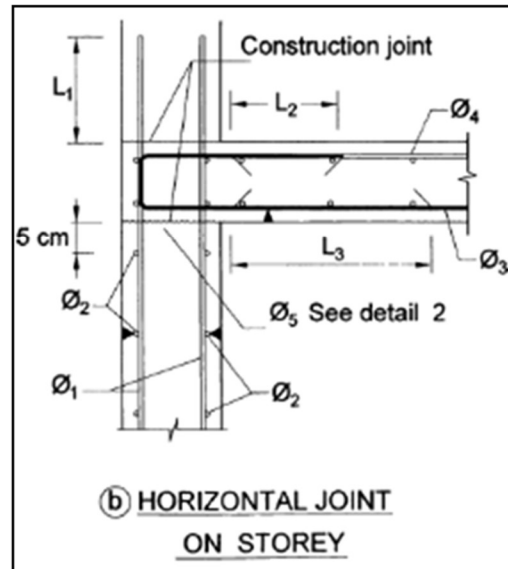
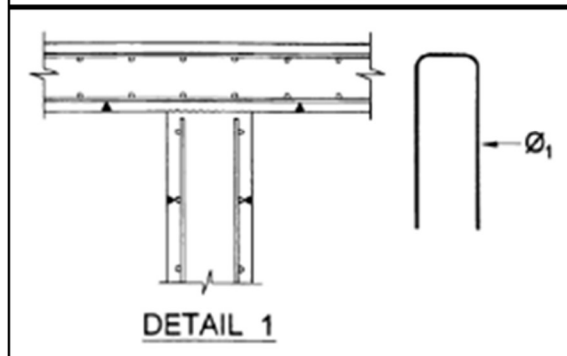
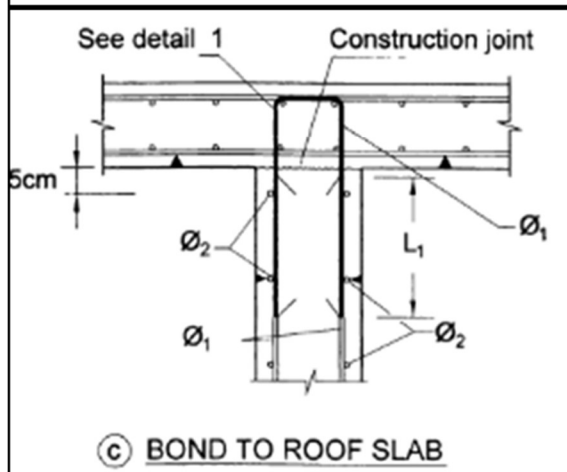
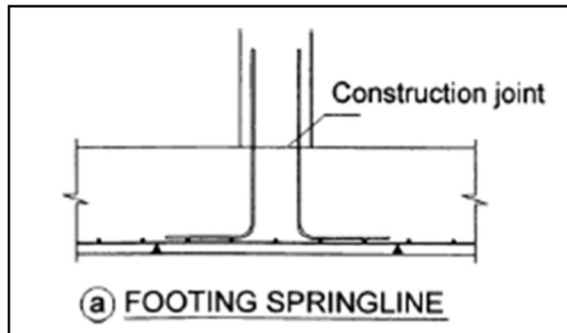
Horizontal section with ties



Ties details

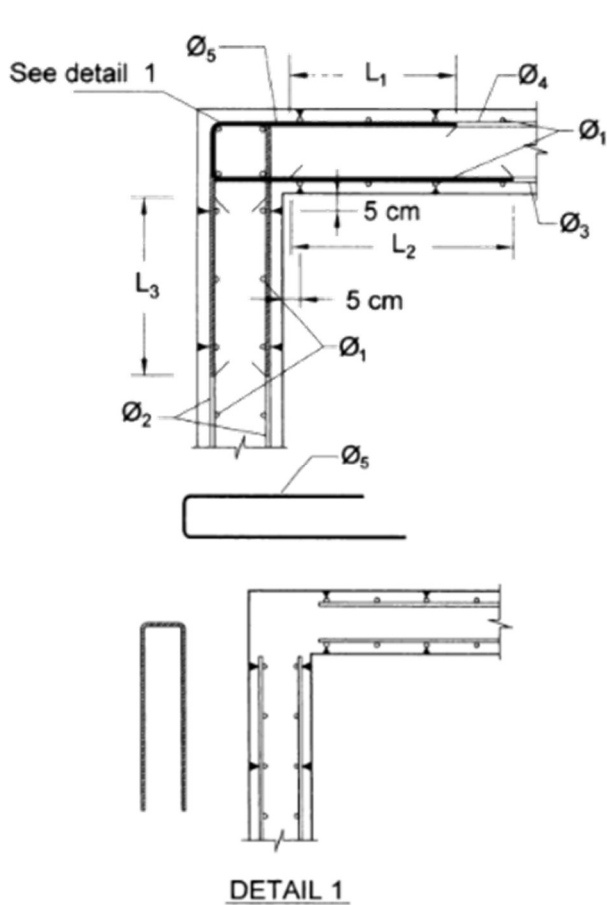
# Reinforcement Details

- Vertical sections. Vertical sections show the wall connection with slabs and footing

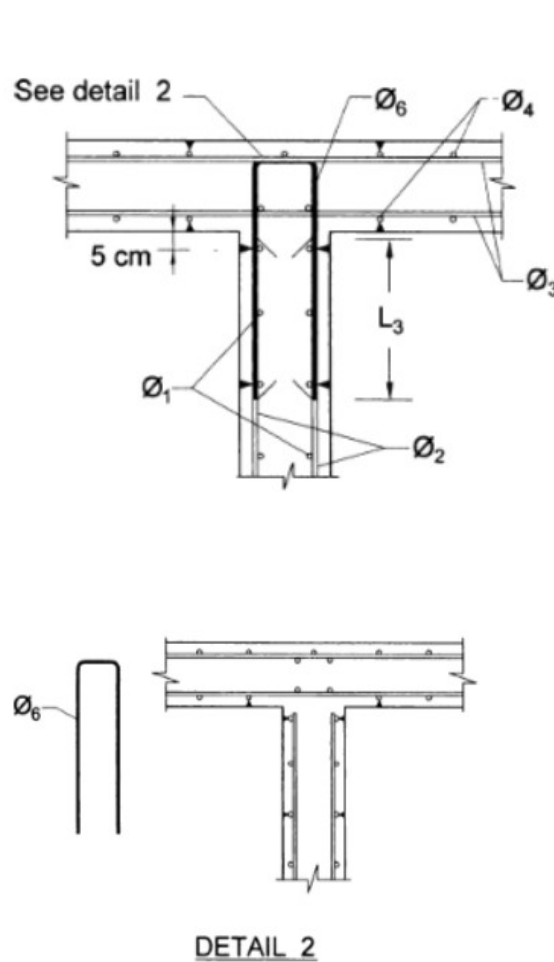


# Reinforcement Details

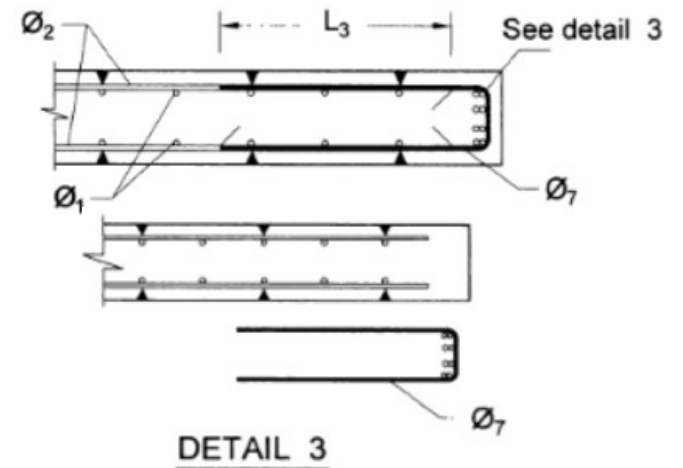
- Segments connections.** Sections that show the reinforcement details at connections to ensure wall integrity



Corner detail

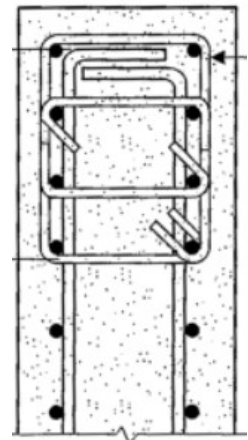


T connection detail



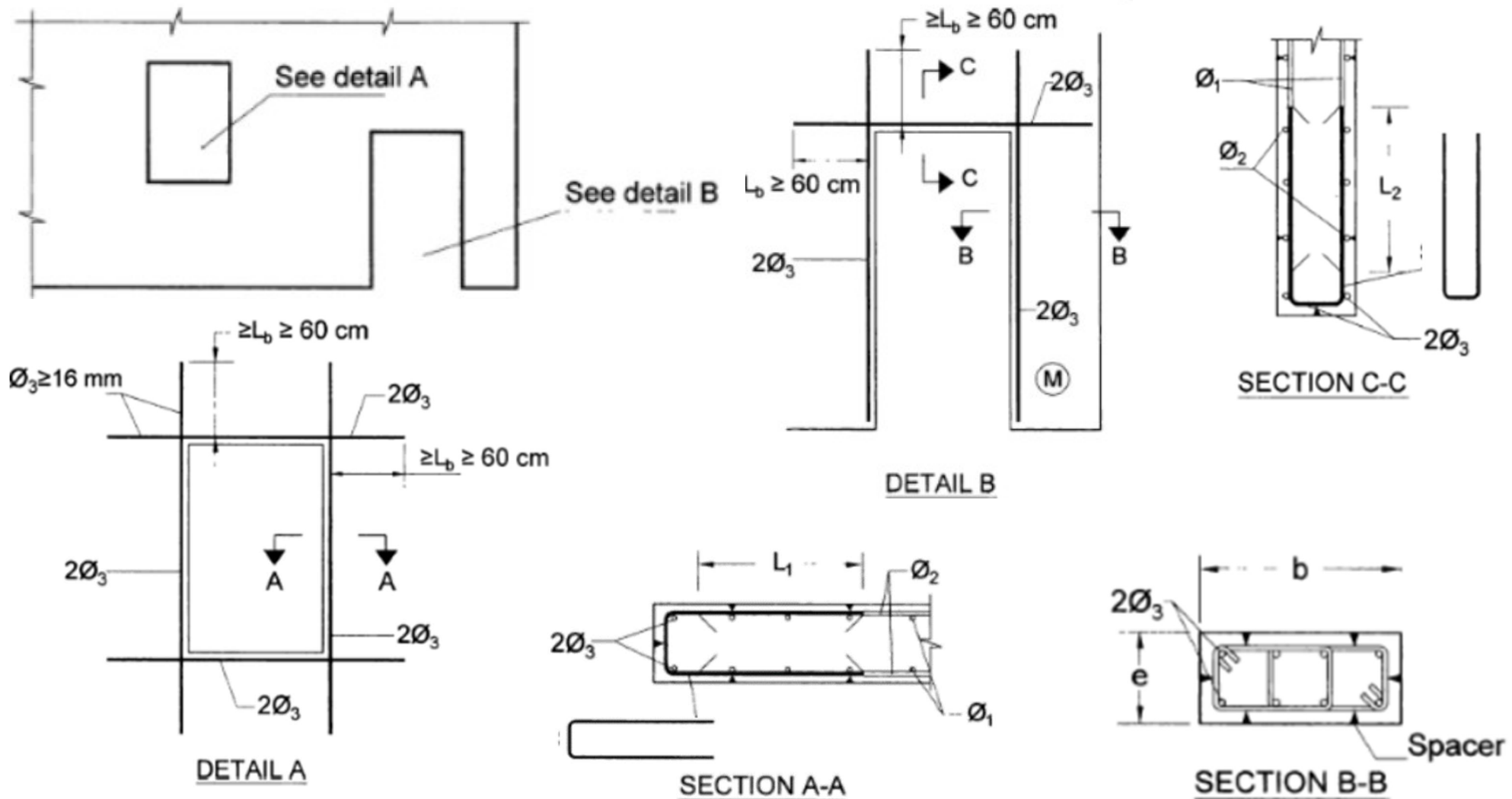
Edge detail in shear walls

Note that in walls designed for lateral loads, boundary elements as shown may be required.



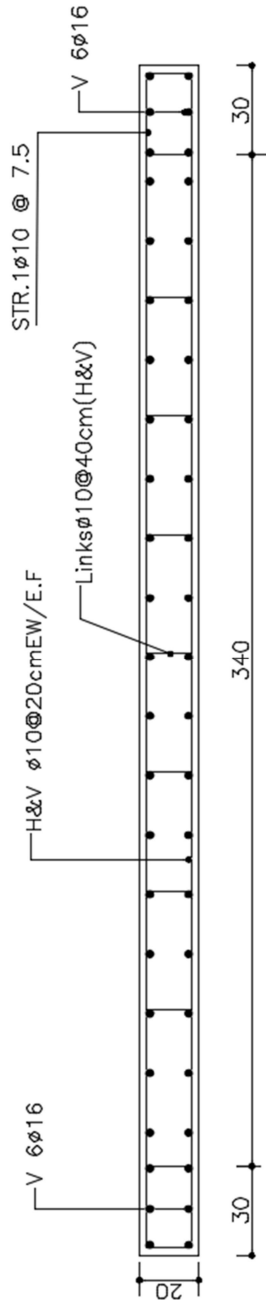
# Reinforcement Details

- **Detail of openings.** Reinforcement arrangement that aim to minimize the impact of stress concentration at the edges.



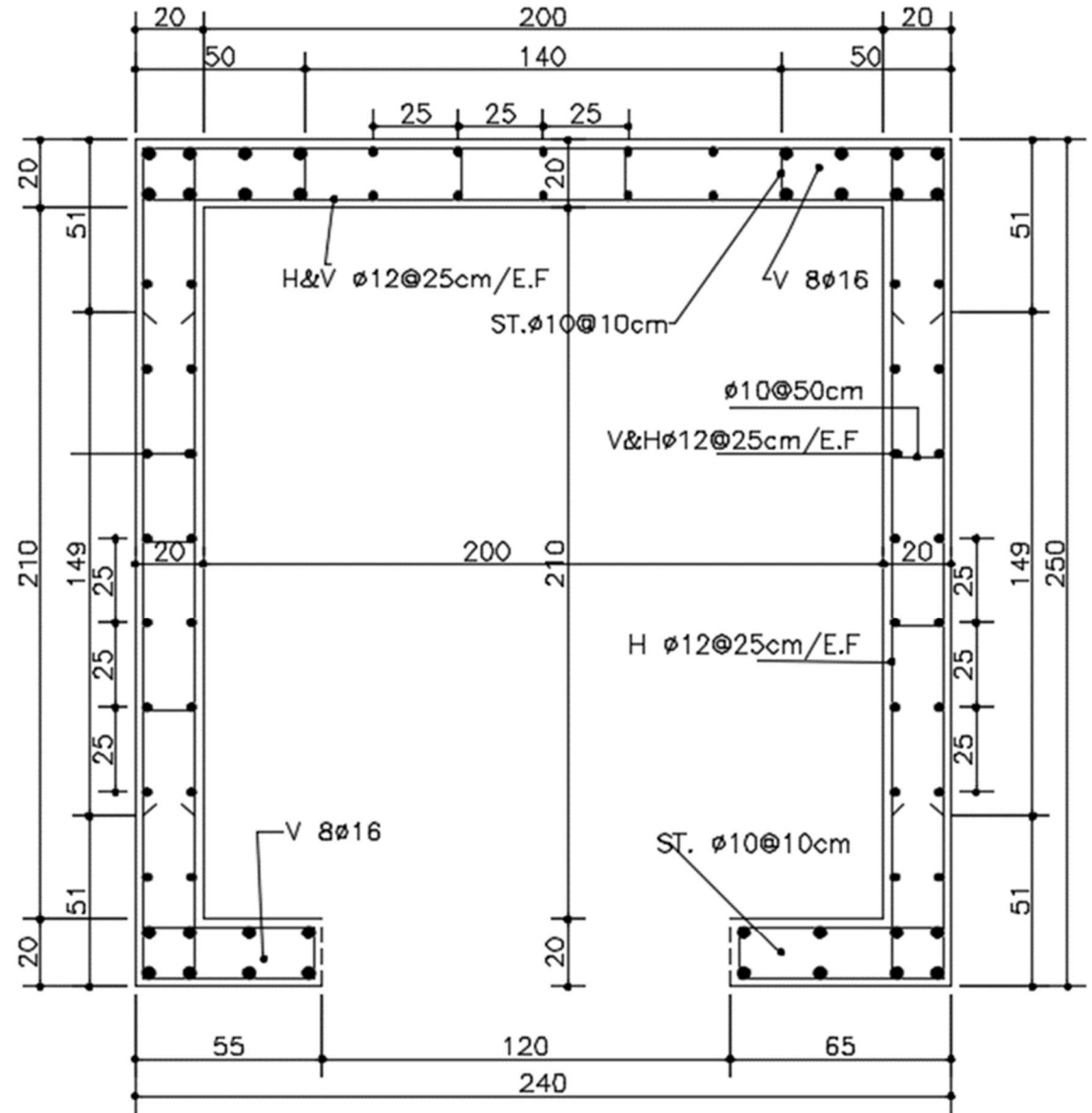


# Working drawings - Examples



**CROSS SECTION IN W8 (Ground & First)**

Scale 1:25



**WALL 9 DETAILS**

Scale 1:25

# Site Work Example



Basement walls

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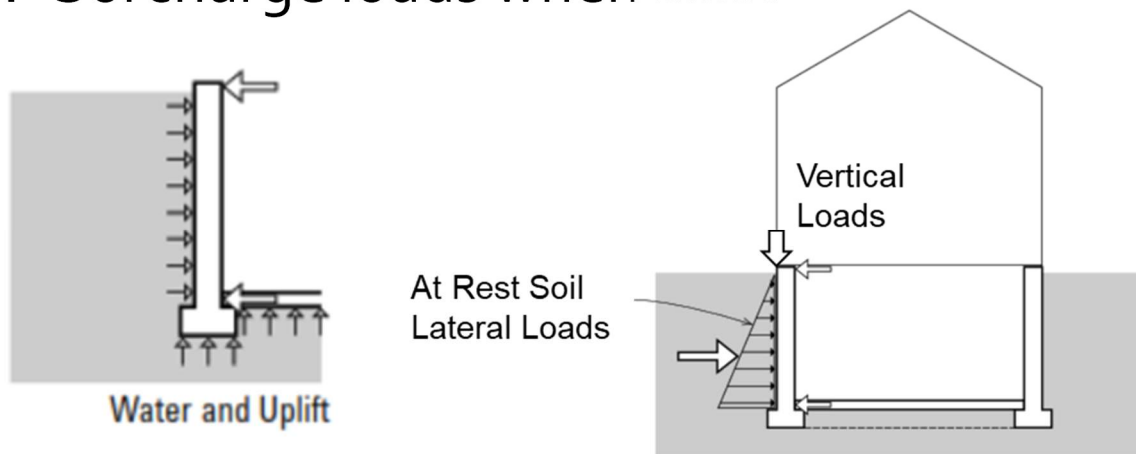
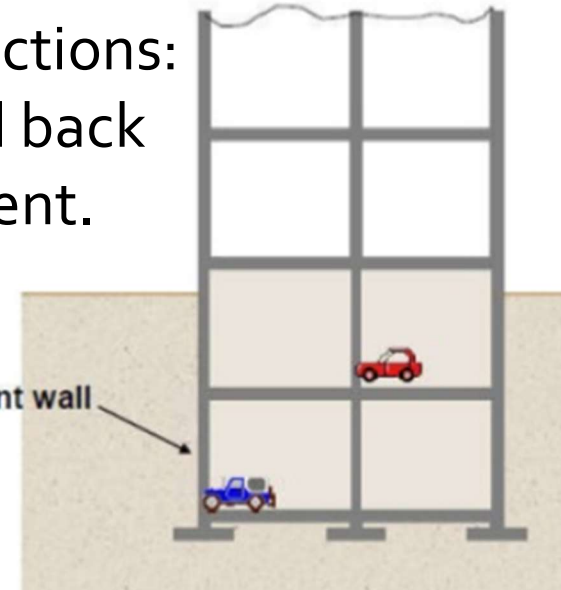
# Introduction

- **Function.** Concrete basement walls have two functions: To support the building vertical loads; and to hold back the pressure of soil against the side of the basement.

- **Wall Loads**

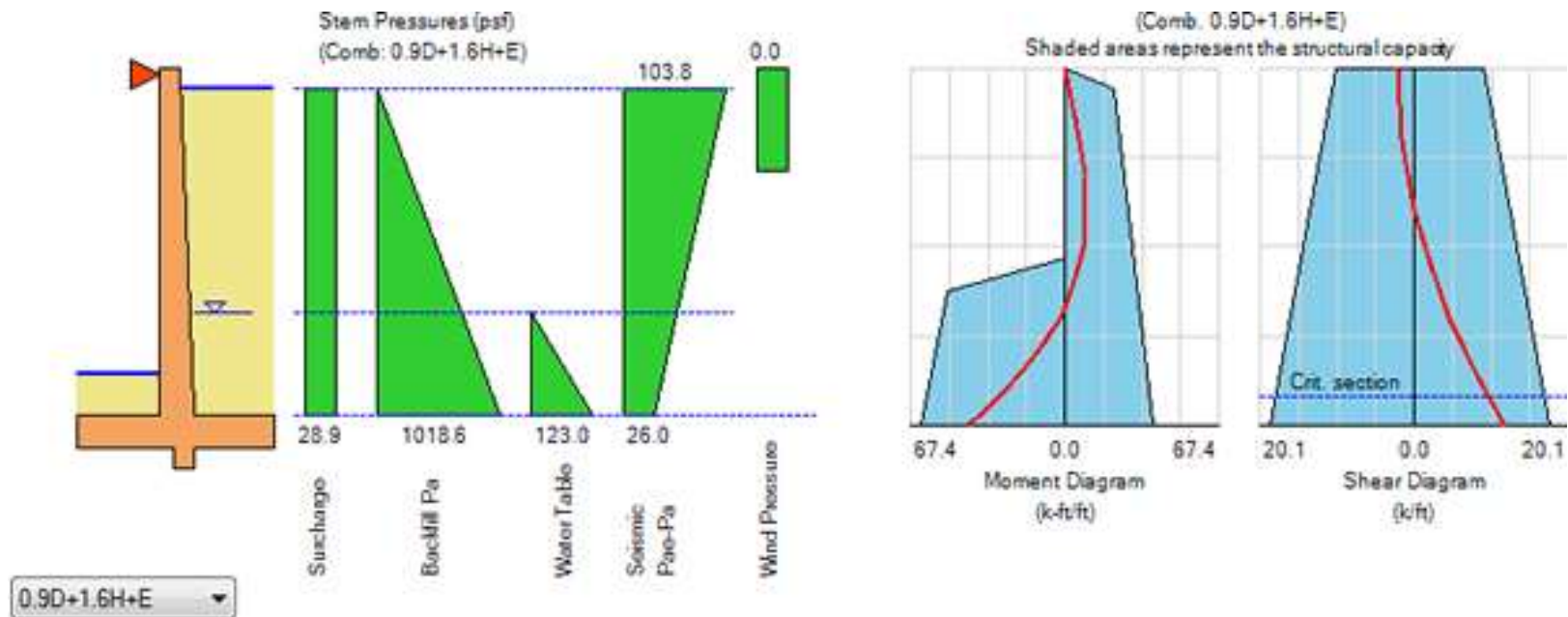
Basement walls are subjected to vertical loads from the building in addition to several out of plan loading such as:

1. Lateral loads imposed by soils behind the walls. (At Rest Soil Lateral Loads).
2. Water and uplift forces
3. Surcharge loads when exist

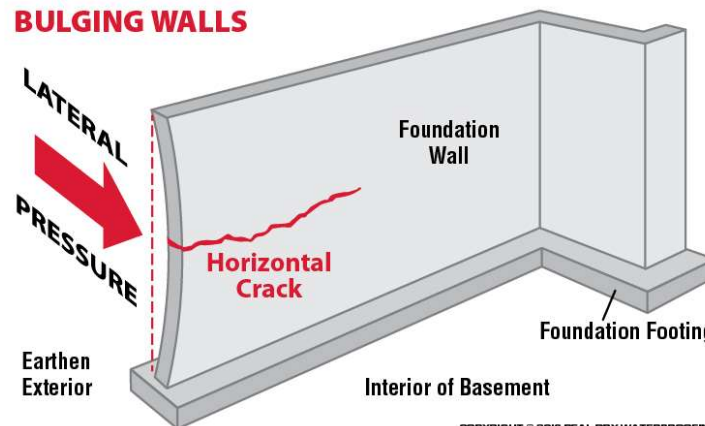


# Introduction

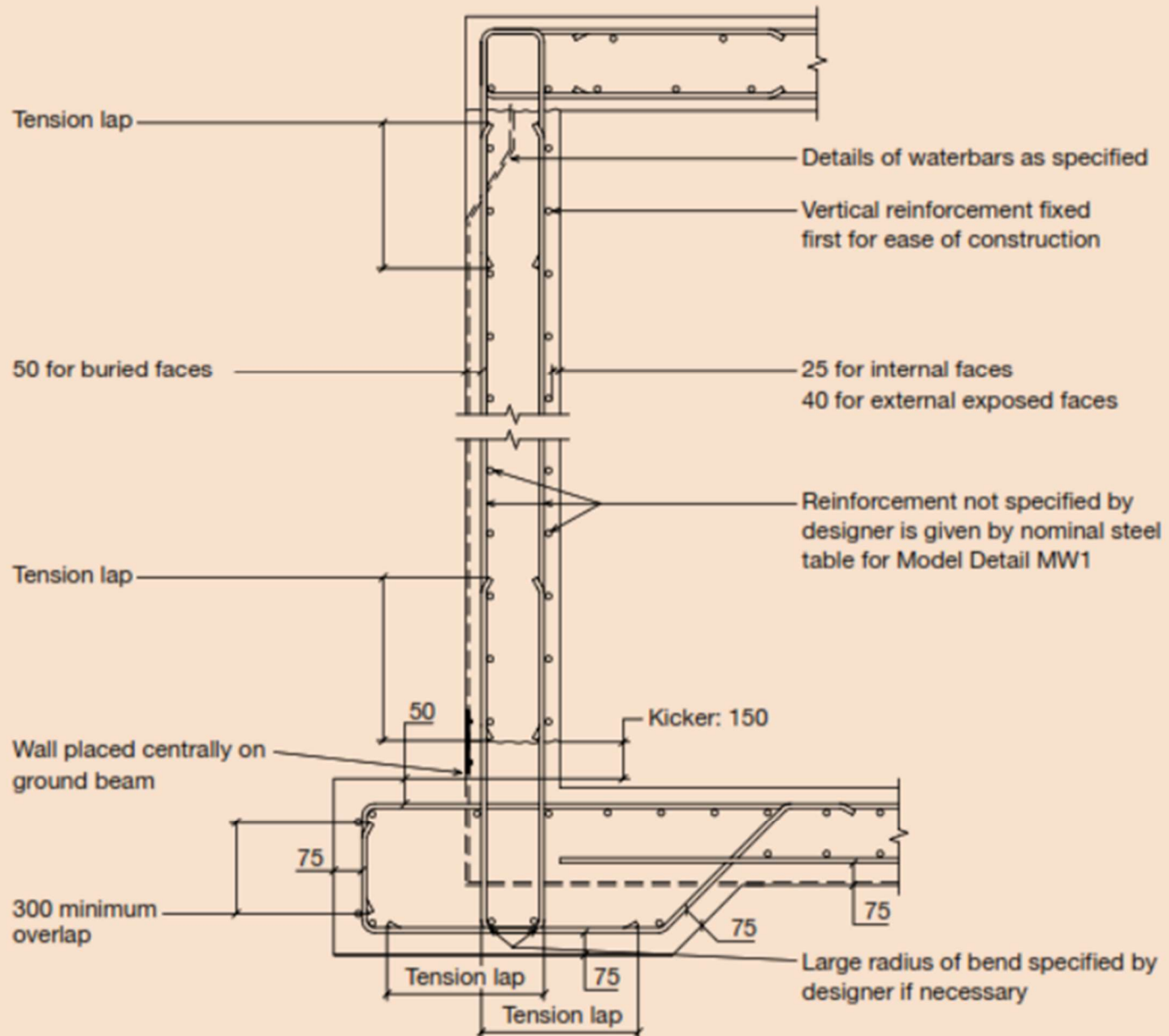
- **Design concept.** The wall is designed Like slab. Modeled as propped cantilever or simply supported at bottom and top.



## BULGING WALLS



# Reinforcement details



# Working drawing example

