

21/10/2025

## RE: STRUCTURAL ENGINEERING CERTIFICATE

### 1. Structure

Ezzy Fit FRP composite sleeper for retaining wall. Class 10b structure under the Building Code of Australia.

1.6m, 2.0m and 2.4m long, respectively; 60mm wide and 200mm deep hole section; 2.5mm wall thickness.

### 2. Description of aspect/s certified

1.6m long sleeper: maximum working horizontal pressure resistance 1.5kPa; can be used for up to 5m high retaining wall with or without soil reinforcement.

2.0m long sleeper: maximum working horizontal pressure resistance 1.8kPa; can be used for up to 3m high retaining wall with or without soil reinforcement.

2.4m long sleeper: maximum working horizontal pressure resistance 2.3kPa; can be used for up to 1.0m high retaining wall with or without soil reinforcement.

The sleepers can be used under 5kPa vertical design live load (subject to the site condition as below).

The site condition below must be taken into account when to design retaining wall with the sleepers:

- Soil property;
- Wind load;
- Earthquake load;
- Top surcharge load;
- Retained earth pressure;
- Ground water pressure;
- The distance of building to the retaining wall;
- The distance of construction zone to the retaining wall.

### 3. Basis of certification

AS1170.0-2002 (R2016) Structural Design Actions-General Principles;

AS1170.1-2002 (R2016) Permanent Imposed & Other Actions;  
AS1170.2-2002 Wind loads;  
AS1170.4-2007 Earthquake Actions;  
AS4678-2002 Earth Retaining Structures.

#### **4. Reference documentation**

Ezzy Fit Sleep Drawings;

This certificate must work with the relevant Building Regulation form (e.g. Form 15 in QLD) for a given site location. The composite material property is recommended to be confirmed for real jobs.

The certificate supersedes the ones issued on 15/11/2023, 1/12/2023 and 22/1/2024.

Bin Wang



MIEAust | CPEng | NER (2915503)

26/02/2024

## RE: STRUCTURAL ENGINEERING CERTIFICATE

### 1. Structure

Ezzy Fit FRP composite post for retaining wall. Class 10b structure under the Building Code of Australia.

Post dimension and shape:

- 100x100x6 H
- 100x100x6 U
- 100x100x10 H
- 100x100x10 U

### 2. Description of aspect/s certified

- 100x100x6 H and 100x100x6 U shaped posts:
  - ✓ 1m high above the ground. The maximum spacing of the posts is 2.0m subject up to 5kPa surcharge live load.
  - ✓ 1m high above the ground. The maximum spacing of the posts is 2.4m subject up to 3kPa surcharge live load.
- 100x100x10 H and 100x100x10 U shaped posts:
  - ✓ 2m high above the ground. The maximum spacing of the posts is 1.6m subject up to 5kPa surcharge live load.
  - ✓ 2m high above the ground. The maximum spacing of the posts is 2.0m subject up to 3kPa surcharge live load.
  - ✓ 1m high above the ground. The maximum spacing of the posts is 2.4m subject up to 5kPa surcharge live load.

The posts are recommended to have an angle which is a 1 in 10 slop.

The site condition below must be taken into account when to design the post of retaining wall:

- Soil property;
- Wind load;
- Earthquake load;
- Top surcharge load;
- Retained earth pressure;

- Ground water pressure;
- The post footing design with the embedment requirement;
- The distance of building to the retaining wall;
- The distance of construction zone to the retaining wall.

### **3. Basis of certification**

AS1170.0-2002 (R2016) Structural Design Actions-General Principles;  
AS1170.1-2002 (R2016) Permanent Imposed & Other Actions;  
AS1170.2-2002 Wind loads;  
AS1170.4-2007 Earthquake Actions;  
AS4678-2002 Earth Retaining Structures;  
AS2870-2011 Residential slabs and footings.

### **4. Reference documentation**

Ezzy Fit Post Drawings;

This certificate must work with the relevant Building Regulation form (e.g. Form 15 in QLD) for a given site location.

Bin Wang



MIEAust | CPEng | NER (2915503)





**Design Specifications:** This is a guide only, Please consult with your engineer.

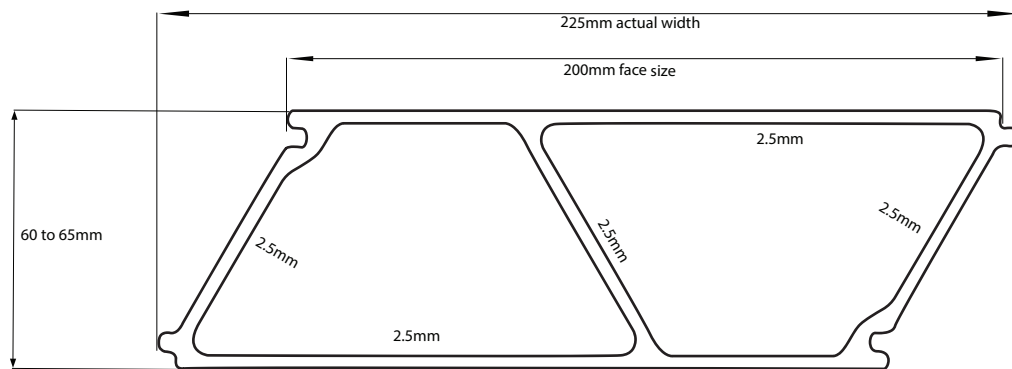
Wall Height	Footing Depth	Footing Width	Footing Spacing	Intermediate Post	End Post
200mm	200mm	350mm	2400mm	100 H Post 6mm	100 C Post 6mm
1000mm	1000mm	350mm	2400mm	100 H Post 6mm	100 C Post 6mm
1100mm	1100mm	450mm	2000mm	100 H Post 10 mm	100 C Post 10 mm
2000mm	2000mm	450mm	2000mm	100 H Post 10 mm	100 C Post 10 mm
2100mm	2100mm	450mm	2000mm	Steel Posts	Steel Posts
3100mm	3100mm	500mm	1600mm	Steel Posts	Steel Posts
5000mm	5000mm	550mm	1600mm	Steel Posts	Steel Posts



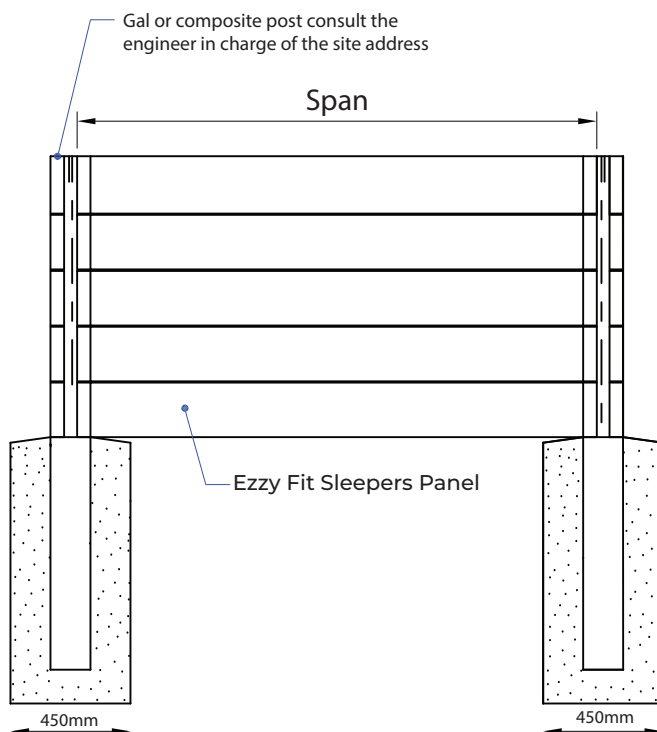
# SLEEPER DIMENSIONS

Ezzy Fit Sleepers Dimensions (mm)			Max Retaining Wall Height (mm)
Length	Width	Thickness	
1600	225x200 face	60 to 65mm	5000
2000	225x200 face	60 to 65mm	3000
2400	225x200 face	60 to 65mm	1000

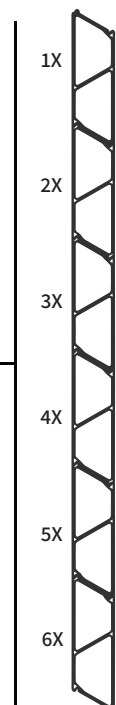
Consult with the engineer in charge of the job address.



SLEEPER PANEL CROSS-SECTION

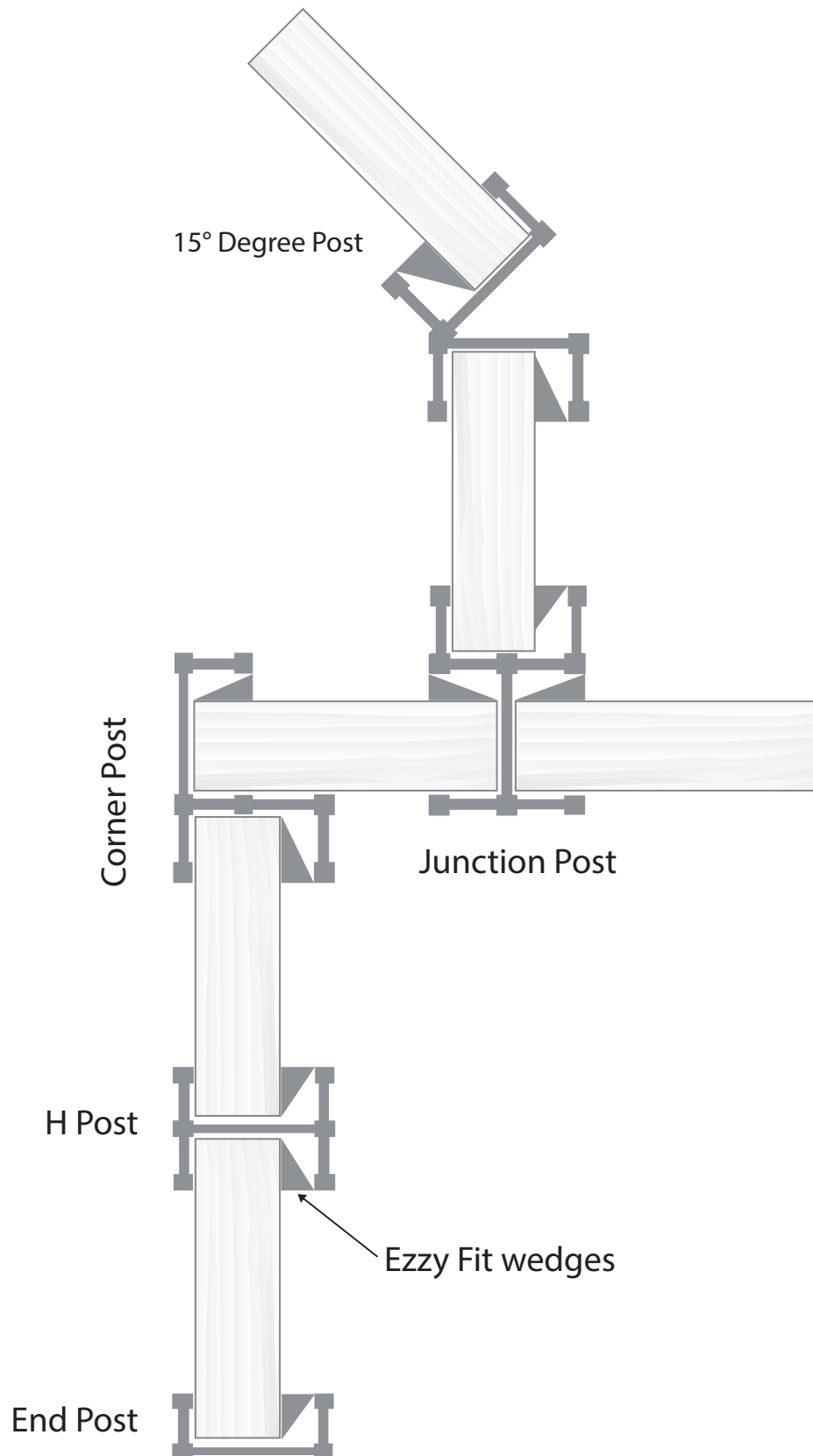


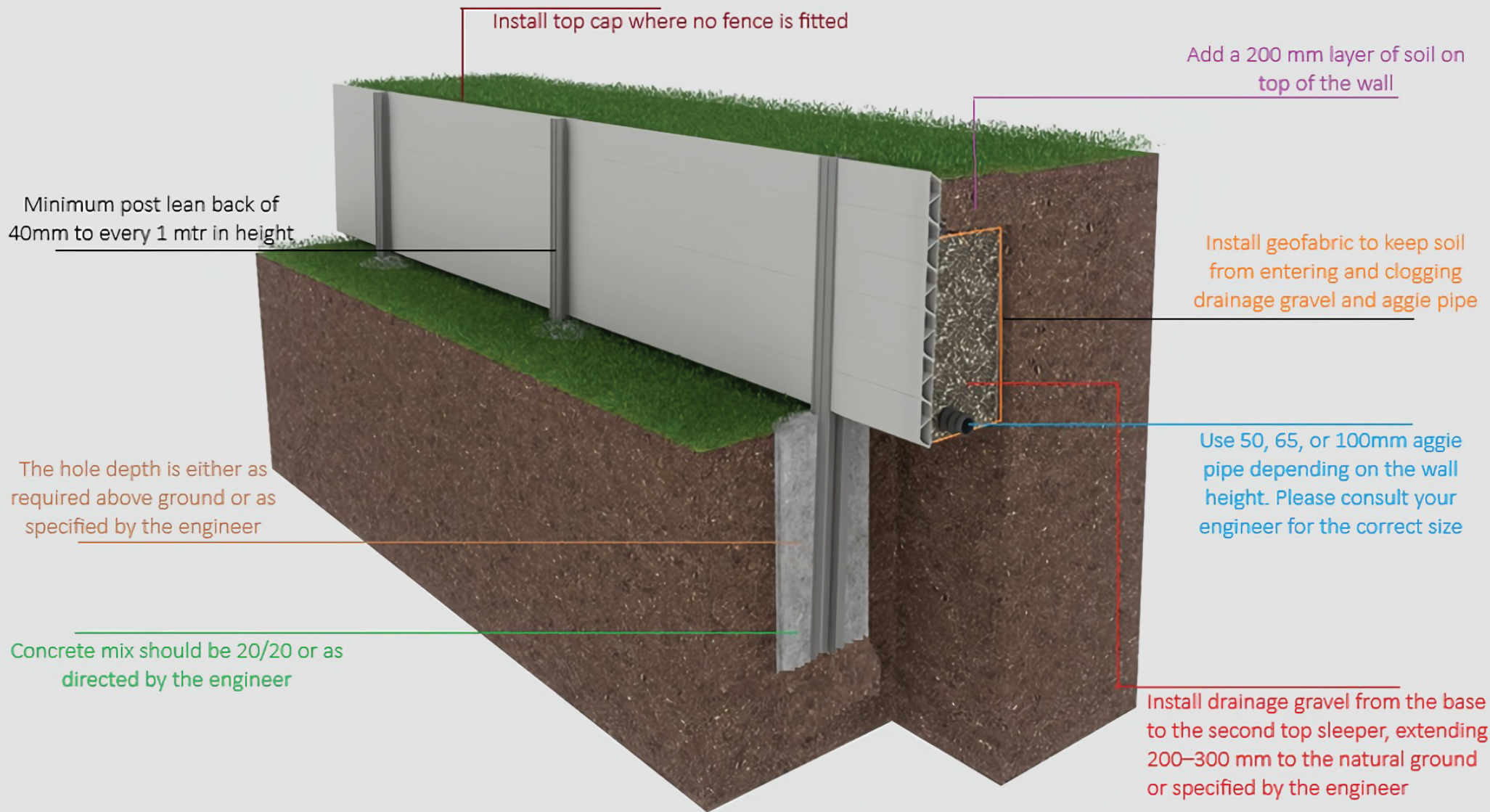
With Ezzy Fit you only need 5 sleepers to reach 1 Mtr in height. Thanks to our exceptional strength. Ezzy Fit retaining walls can be built up to 5 mtrs high.





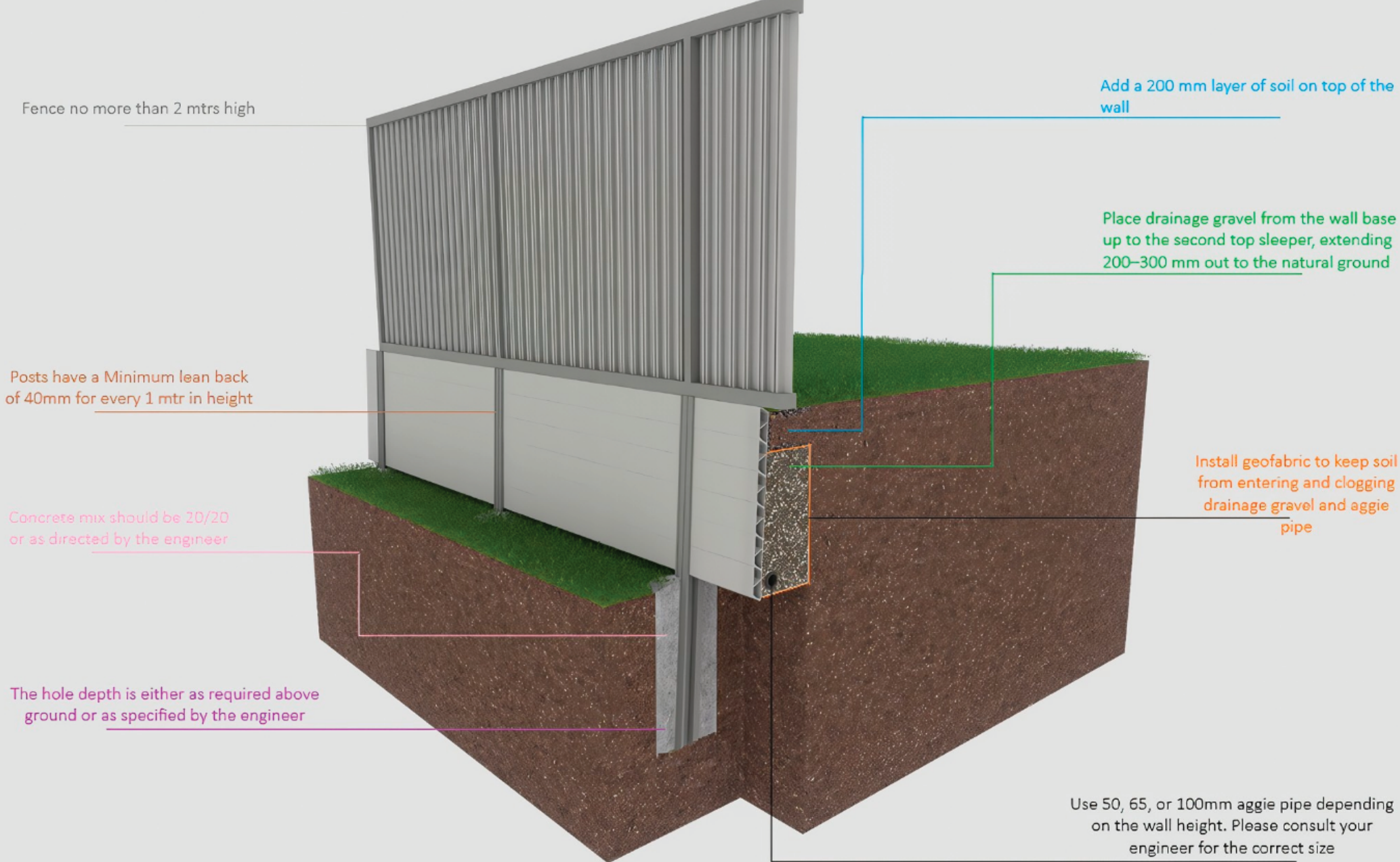
## DIFFERENT POST POSITIONS EXAMPLES





Ezzy Fit composite retaining walls are designed to comply with AS 4678 (Earth Retaining Structures) and AS 3600 (Concrete Structures) to ensure structural integrity and long-term performance. Walls must be constructed with free-draining gravel wrapped in geofabric to mitigate hydrostatic pressure and direct water to an outlet drain, and secured with Ezzy Fit composite C-posts (end posts) and H-posts (intermediate posts), engineered for corrosion resistance, strength, and minimal deflection. Posts must be embedded to the correct depth and spaced according to wall height and loading, with a backward lean of 40 mm per 1 m wall height. The surrounding ground should remain level, and surcharge loads above 5 kPa (e.g., vehicles or driveways) require site-specific engineering. Suitable foundation soil must provide a minimum bearing capacity of 75 kPa for dense sand or gravel and 150 kPa for stiff clay. Proper drainage and post installation are critical to prevent hydrostatic pressure build-up. Excavation or heavy machinery is prohibited within 1.5 m of the wall base or top, and retained slopes must not exceed 1:4 (~14°) unless engineered approval is obtained.





Ezzy Fit composite retaining walls are designed to comply with AS 4678 (Earth Retaining Structures) and AS 3600 (Concrete Structures) to ensure structural integrity and long-term performance. Walls must be constructed with free-draining gravel wrapped in geofabric to mitigate hydrostatic pressure and direct water to an outlet drain, and secured with Ezzy Fit composite C-posts (end posts) and H-posts (intermediate posts), engineered for corrosion resistance, strength, and minimal deflection. Posts must be embedded to the correct depth and spaced according to wall height and loading, with a backward lean of 40 mm per 1 m wall height. The surrounding ground should remain level, and surcharge loads above 5 kPa (e.g., vehicles or driveways) require site-specific engineering. Suitable foundation soil must provide a minimum bearing capacity of 75 kPa for dense sand or gravel and 150 kPa for stiff clay. Proper drainage and post installation are critical to prevent hydrostatic pressure build-up. Excavation or heavy machinery is prohibited within 1.5 m of the wall base or top, and retained slopes must not exceed 1:4 (~14°) unless engineered approval is obtained.