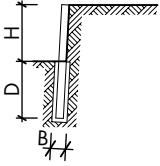
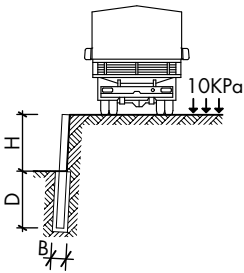
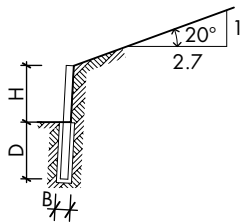


Level backfill, no surcharge


| H (m) | SED (mm) | UniLog Ø (mm) | Min. B (mm) | Min. D (m) | Standard TTT Pole Length (m) | SG8 RS Rails |
|-------|----------|---------------|-------------|------------|------------------------------|--------------|
| 0.8 | 150 | 160 | 300 | 0.8 | 1.8 | 150x50 |
| 1.0 | 150 | 160 | 300 | 1.0 | 2.4 | 150x50 |
| 1.2 | 150 | 160 | 300/350 | 1.2 | 2.4 | 150x50 |
| 1.4 | 175 | 185 | 350/400 | 1.4 | 3.0 | 150x50 |
| 1.6 | 200 | 210 | 400 | 1.6 | 3.6 | 150x75 |
| 1.8 | 225 | 255 | 400 | 1.8 | 3.6 | 150x75 |
| 2.0 | 250 | 275 | 450 | 2.0 | 4.2 | 150x75 |
| 2.2 | 275 | 300 | 450 | 2.2 | 4.8 | 150x75 |
| 2.4 | 300 | | 500 | 2.4 | 4.8 | 150x75 |
| 2.6 | 325 | | 500 | 2.6 | 5.4 | 150x75 |
| 2.8 | 350 | | 500 | 2.8 | 6.0 | 150x75 |
| 3.0 | 375 | | 600 | 3.1 | 7.0 | 150x75 |
| 3.2 | 400 | | 600 | 3.5 | 7.0 | 150x75 |

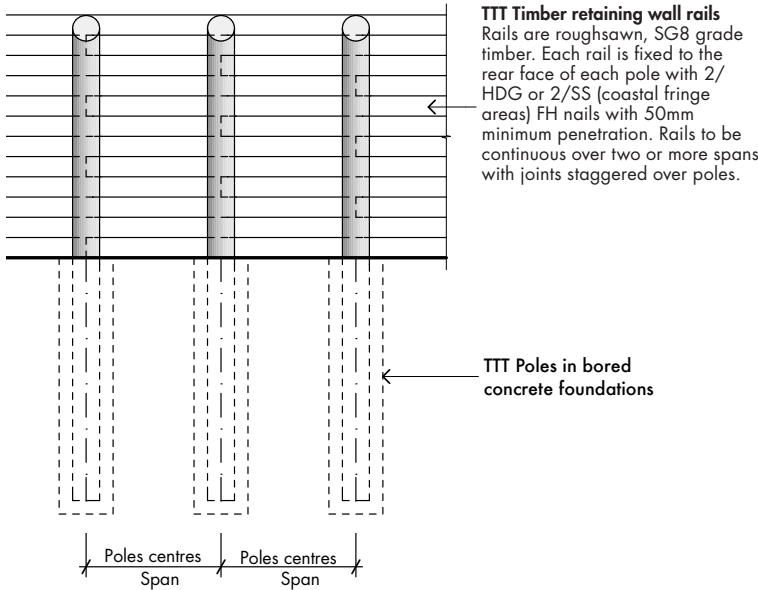
10 kPa surcharge


| H(m) | SED(mm) | UniLog Ø(mm) | Min. B(mm) | Min. D(m) | Standard TTT Pole Length (m) | SG8 RS Rails |
|------|---------|--------------|------------|-----------|------------------------------|--------------|
| 0.8 | 175 | 185 | 350 | 1.0 | 1.8 | 150x50 |
| 1.0 | 200 | 210 | 400 | 1.2 | 2.4 | 150x75 |
| 1.2 | 225 | 230 | 400 | 1.4 | 3.0 | 150x75 |
| 1.4 | 225 | 255 | 400 | 1.6 | 3.0 | 150x75 |
| 1.6 | 250 | 275 | 450 | 1.8 | 3.6 | 150x75 |
| 1.8 | 275 | 300 | 450 | 2.1 | 4.2 | 150x75 |
| 2.0 | 300 | | 500 | 2.4 | 4.8 | 150x75 |
| 2.2 | 325 | | 500 | 2.7 | 5.4 | 150x75 |
| 2.4 | 350 | | 500 | 3.0 | 5.4 | 150x75 |
| 2.6 | 375 | | 600 | 3.3 | 6.0 | 150x75 |
| 2.8 | 400 | | 600 | 3.6 | 7.0 | 150x75 |

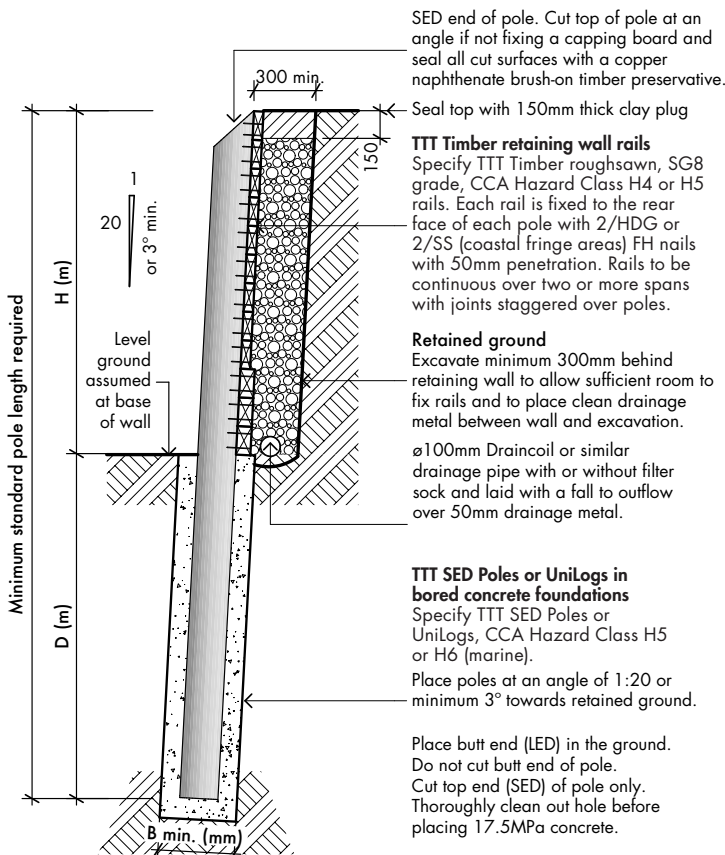
Sloping backfill – 1V : 2.7H (min.)


| H(m) | SED(mm) | UniLog Ø(mm) | Min.B(mm) | Min. D(m) | Standard TTT Pole Length (m) | SG8 RS Rails |
|------|---------|--------------|-----------|-----------|------------------------------|--------------|
| 0.8 | 150 | 160 | 300 | 0.8 | 1.8 | 150x50 |
| 1.0 | 150 | 160 | 300 | 1.0 | 2.4 | 150x50 |
| 1.2 | 175 | 185 | 350 | 1.2 | 2.4 | 150x75 |
| 1.4 | 200 | 210 | 400 | 1.4 | 3.0 | 150x75 |
| 1.6 | 225 | 255 | 400 | 1.6 | 3.6 | 150x75 |
| 1.8 | 250 | 275 | 450 | 1.8 | 3.6 | 150x75 |
| 2.0 | 275 | 300 | 450 | 2.1 | 4.2 | 150x75 |
| 2.2 | 300 | | 500 | 2.4 | 4.8 | 150x75 |
| 2.4 | 325 | | 500 | 2.7 | 5.4 | 150x75 |
| 2.6 | 350 | | 500 | 3.1 | 6.0 | 150x100 |
| 2.7 | 375 | | 600 | 3.2 | 6.0 | 150x100 |
| 2.8 | 400 | | 600 | 3.4 | 7.0 | 150x100 |

Typical bored concrete foundation construction details



Typical front elevation



Typical retaining wall section with bored concrete foundation

Timber Retaining Wall Notes:

- 1) Soil Conditions**
 Poles shall be founded in stiff clay (undisturbed ground or certified fill), with an ultimate bearing capacity of 300 kPa (i.e. 'good ground' as per NZS 3604:2011).
 For all other foundation conditions e.g. known unstable ground, sand, peat, soft clay or uncertified fill, or lower ground surface sloping away from wall, refer to a Chartered Professional Engineer for further advice.
- 2) Wall Design Loads**
 Wall designs allow for the following loading:
 a) Level backfill, no surcharge, level ground above the wall, with no allowance for additional surcharge loading on the ground above the wall.
 b) 10 kPa surcharge
 An additional uniformly distributed loading of up to 10 kPa (1 tonne/sq.m), applied to level ground above the wall. This loading allows for transient traffic loads, provided any wheel point loads are spread to simulate a 10 kPa uniformly distributed load.
 c) Sloping backfill, no surcharge
 (1V : 2.7H min.) Ground above the wall at a slope of 1 vertical to a minimum of 2.7 horizontal, i.e. at a maximum slope angle of 20 degrees.
- 3) Local Authority Requirements**
 Most retaining walls are likely to require a building consent (especially adjacent to boundaries).
 Check with your Local Authority for specific guidance prior to commencing work.
- 4) Timber Retaining Wall Material**
 New Zealand Radiata Pine
 a) TTT SED Poles, machine-peeled, naturally tapered (minimum 6mm/m), treated to CCA Hazard Class H5 or H6. Manufactured in accordance with NZS3605:2001 and NZS3640:2003.
 b) UniLog, machined, uniform diameter, treated to CCA Hazard Class H5 or H6. Manufactured in accordance with NZS3605:2001 and NZS3640:2003.
 c) TTT Timber retaining wall rails, roughsawn, stress-graded SG8 grade, treated to CCA Hazard Class H4 or H5. Manufactured in accordance with NZS3622:2004 and NZS3640:2003.
- 5) Cutting Pole Ends**
 Do not cut end of pole to be placed in the ground.
 Coat all cut pole tops with a brush-on copper naphthenate timber preservative.
- 6) Health and Safety**
 Your safety is important when working with or handling CCA treated timber products:
 - Wear gloves.
 - Carry out all cutting and sanding outside and wear an approved dust mask and goggles.
 - Clean up and dispose of all waste to an approved CCA waste facility.
 - Do not burn waste.
 - Do not compost or mulch waste.
 - Wash your hands thoroughly before eating, drinking, or smoking.
 - Wash exposed skin areas thoroughly.
 - Wash work clothes separately from other washing.
 - Store product on dunnage above ground in a well-ventilated place, away from naked flames and other sources of ignition.
- 7) Disclaimer**
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