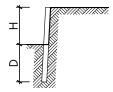


### TTT TECHNICAL GUIDELINE RW003ND

# Timber retaining wall summaries for driven poles using driven normal density poles @ 0.9m centres

## Level backfill, no surcharge - normal density poles



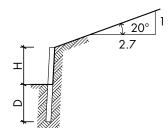
H (m)	SED (mm)	UniLog Ø (mm)	Min. D (m)	Standard TTT Pole Length (m)	SG8 RS Rails	SG6 RS Rails
0.8	150	155	1.0	1.8	150×50	150x50
1.0	150	155	1.2	2.4	150×50	150x50
1.2	150	155	1.4	3.0	150x50	150x50
1.4	175	180	1.6	3.6	150×50	150x50
1.6	200	200	1.8	3.6	150x50	150x50
1.8	225		2.0	4.2	150x50	150x75
2.0	250		2.2	4.2	150×50	150x75

# 10KPa

# 10 kPa surcharge – normal density poles

H(m)	SED(mm)	UniLog Ø(mm)	Min. D(m)	Standard TTT Pole Length (m)	SG8 RS Rails	SG6 RS Rails
0.8	150	155	1.4	2.4	150x50	150x50
1.0	175	180	1.6	3.0	150x50	150x50
1.2	200	200	1.8	3.0	150x50	150x75
1.4	225		2.0	3.6	150x50	150x75
1.6	250		2.2	4.2	150x50	150x75

# Sloping backfill - 1V: 2.7H (min.) - normal density poles



H(m)	SED(mm)	UniLog Ø(mm)	Min. D(m)	Standard TTT Pole Length (m)	SG8 RS Rails	SG6 RS Rails
0.8	150	155	1.2	2.4	150x50	150x50
1.0	150	155	1.4	2.4	150x50	150x50
1.2	175	180	1.6	3.0	150x50	150x75
1.4	200	200	1.8	3.6	150x50	150x75
1.6	225		2.0	3.6	150x50	150x75
1.8	250		2.2	4.2	150x50	150x75

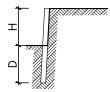
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### TTT TECHNICAL GUIDELINE RW003HD

# Timber retaining wall summaries for driven poles using driven high density poles @ 0.9m centres

## Level backfill, no surcharge - high density poles



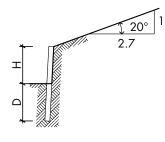
H(m)	SED(mm)	Min. D(m)	Standard TTT Pole Length (m)	SG8 RS Rails	SG6 RS Rails
0.8	150	1.0	1.8	150×50	150x50
1.0	150	1.2	2.4	150×50	150x50
1.2	150	1.4	3.0	150×50	150x50
1.4	150	1.6	3.6	150×50	150x50
1.6	175	1.8	3.6	150×50	150x50
1.8	200	2.0	4.2	150×50	150x75
2.0	225	2.2	4.2	150×50	150x75
2.2	250	2.4	4.8	150×50	150x75

# T IOKPO

# 10 kPa surcharge – high density poles

H(m)	SED(mm)	Min. D(m)	Standard TTT Pole Length (m)	SG8 RS Rails	SG6 RS Rails
0.8	150	1.4	2.4	150x50	150x50
1.0	150	1.6	3.0	150x50	150x50
1.2	175	1.8	3.0	150x50	150x75
1.4	200	2.0	3.6	150x50	150x75
1.6	225	2.2	4.2	150x50	150x75
1.8	250	2.4	4.2	150x50	150x75

# Sloping backfill - 1V: 2.7H (min.) - high density poles



H(m)	SED(mm)	Min. D(m)	Standard TTT Pole Length (m)	SG8 RS Rails	SG6 RS Rails
0.8	150	1.2	2.4	150x50	150x50
1	150	1.4	2.4	150x50	150x50
1.2	150	1.6	3.0	150×50	150x75
1.4	175	1.8	3.6	150×50	150x75
1.6	200	2.0	3.6	150×50	150x75
1.8	225	2.2	4.2	150×50	150x75
2.0	225	2.4	4.8	150×50	150x75
2.2	250	2.6	5.4	150×50	150×75

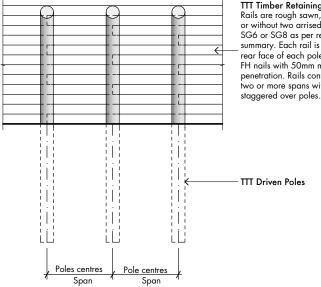
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#### TTT TECHNICAL GUIDELINE RW003

# Typical driven timber pole retaining wall construction details

#### Typical driven pole foundation construction details



TTT Timber Retaining Wall Rails Rails are rough sawn, available with or without two arrised edges, Grade SG6 or SG8 as per retaining wall summary. Each rail is fixed to the rear face of each pole with 2/HDG FH nails with 50mm minimum penetration. Rails continuous over two or more spans with joints

Typical front elevation

50 m. 20 or 3° E) H Minimum standard pole length required Level ground at base of wal Ξ wall summary. Δ

LED end of pole. Cut top of pole at an angle if not fixing a capping board and seal all cut surfaces with a copper naphthenate brush-on timber preservative.

Seal top with 150mm thick clay plug

TTT Timber Retaining Wall Rails Specify TTT RS Rails, Structural Grade SG6 or SG8, CCA Hazard Class H4 or H5, as per retaining wall summary. Each rail fixed to the rear face of each pole with 2/HDG FH nails with 50mm minimum penetration. Rails continuous over two or more spans with joints staggered over poles.

Retained ground

Excavate minimum 300mm behind retaining wall to allow sufficient room to fix rails and to place clean drainage metal between wall and excavation.

ø100mm Draincoil or similar drainage pipe with or without filter sock and laid with a fall to outflow over 50mm drainage metal.

TTT SED or UniLog Poles - driven Specify TTT Poles, CCA Hazard Class H5 or H6 (marine) as per retaining

Place poles at an angle of 1:20 or minimum 3° towards retained ground.

Place small end (SED) in the ground. Do not cut SED end of pole. Cut top end (LED) of pole only

#### Typical retaining wall section with driven poles

#### Timber Retaining Wall Notes:

#### 1) Soil Conditions

Poles shall be founded in stiff clay (undisturbed ground or certified

roies snail be rounded in stift clay (undisturbed ground or certifie 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.

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

#### 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 Pinus Radiata)

a) TTT Poles

TITT SED Poles (peeled, naturally tapered) are available as normal or high density poles with a minimum taper of 6mm/m as per NZS3605:2001 and treated to a minimum CCA Hazard Class H5 as per NZS 3640:2003.

UniLog Poles (machined, uniform diameter) are available as normal density poles and treated to a minimum CCA Hazard Class H5 as per NZS 3640:2003.

b) TTT Timber Retaining Rails

Timber rails are rough sawn and available with or without two edges arrised - Grade SG8 or SG6 as per NZS 3622:2004 and sized as per retaining wall summaries and treated to a minimum CCA Hazard Class H4 or H5 as per NZS 3640:2003. Rails to be continuous over a minimum of two spans.

#### 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

#### 6) Health and safety

Your safety is important when working with CCA treated timber.

- Carry out all cutting, sanding and so on outside.

  Wear a filter mask, gloves and goggles when cutting and sawing.

  Take particular care when the timber surface is wet or has crystalline chemical deposits on it.
- Clean up (timber scraps, sawdust) thoroughly afterwards.
- Dispose of waste to an approved (municipal) waste disposal area.
- Do not compost or mulch waste.
- Do not burn waste
- Wash your hands before eating, drinking or smoking.
- Wash exposed areas of your body after working with treated timber.
- Wash work clothes separately from other clothes.

#### 7) Disclaimer

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