

STRUCTURAL DESIGN CERTIFICATE

Project details

STA Project Reference: CE173766-G

Project Description: Prime Concrete Developments Standard Concrete Sleeper Range

Compliance

I can verify that STA Consulting Engineers has carried out a structural design for items described as concrete sleepers for use in sleeper retaining walls and certify that these parts of the design comply with the following Australian Standards and Building Regulations;

AS1170.0:2002, AS 1170.1:2002, AS 1170.2:2011, AS 3600:2009, AS 4678:2002

Note: STA's Design and certification will exclude any items not listed above and all comments and assumptions listed below should be considered by a suitably qualified person.

Design Assumptions

Sleepers

- 200mm high x 75mm wide
- 40MPa Concrete
- 2no. N12 or 3no. N12 500MPa bars in each sleeper centrally placed (min 30mm cover)
- Up to B1 exposure classification as per AS3600:2009 (i.e. greater than 1km to breaking surf)
- Sleepers to be installed following 28 day period from pour date. Weekly concrete strength tests undertaken ensuring consistent quality of concrete mix.

Backfill

- Maximum 5 degrees back slope
- Maximum 5kPa surcharge
- Soil types considered
 - Soft clay (Cohesive)
 - Gravel / Sand - loose (non-cohesive)
- Backfill should not be of highly or extremely reactive clay material.
- Suitable drainage to be designed and installed by suitably qualified persons (Evaluation of potential hydrostatic pressure behind wall to be undertaken)

General Assumptions

- Structure classification B as per AS4678:2002 (Where failure would result in moderate damage and loss of services)
- Design life = 60 years
- Wall to be installed with back slope of 1 in 15 from vertical

- No structures including other retaining walls to be above wall, within zone of influence of sleeper wall. Maximum surcharge considered in design = 5kPa

Comments

- STA recommends all walls have specific geotechnical advice provided to ensure site conditions fall within limitations of this document
- This certification is to be used in conjunction with a retaining wall design carried out by suitably qualified person. This certificate does not eliminate the need for this person to undertake a site specific assessment to ensure the site conditions fall within limitations noted above and to ensure compliance with any local authority requirements.
- Design of footings and steel/concrete posts are not included in the scope of this certification and should be sized to suit height of wall and site specific soil and load conditions. As noted above to be carried out by suitably qualified person.
- Concrete sleepers are heavy and care should be taken by installer to ensure they are lifted into place in a safe manner. Temporary shoring of excavations may be required and should be well considered by contractor.
- Regular monitoring and maintenance program should be specified by retaining wall design engineer to ensure design life is met.

Design Tables

Wall Height	Cohesive (Soft Clay)				Non-cohesive (Sand & Gravel - Loose)			
	Length (m)				Length (m)			
	1.2	1.6	2.0	2.4	1.2	1.6	2.0	2.4
200								
400								
600								
800								
1000								
1200								
1400								
1600								
1800								
2000								
2200								
2400								
2600								
2800								
3000								
3200								
3400								

	2R-Single
	3R-Single
	2R-Double
	3R-Double
	Cannot use any sleeper

Notes:

2R = 2 x N12 reinforcing bars,

3R = 3 x N12 reinforcing bars,

Double = 1 sleeper behind each other (total depth = 150mm)



Head Office

241 Milton Road Milton QLD 4064
PO Box 2629, Toowong QLD 4066

Tel. 07 3071 7444

If you require any further information please do not hesitate to contact the undersigned.

Signed:

Date: 24/02/2019

Grant Rosbrook

BE (Civil), MIEAust CPEng, RPEQ 10567, 63695ES (NT), NSW BPB 2510, NER

Chief Engineer