GENERAL NOTES

G1 ALL CONSTRUCTION IN ACCORDANCE WITH CAPITAL CONCRETE SLEEPERS INSTRUCTIONS, THESE DRAWINGS, AS4678:2002 AND TO THE BUILDING CODE OF AUSTRALIA. VOLUME 2 FOR GENERAL CONDITIONS AND/OR AS APPROPRIATE VOLUME 1 OR 2 FOR WORKMANSHIP & MATERIALS.

G2 DURING CONSTRUCTION, THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED.

G3 ALL DIMENSIONS ARE IN MILLIMETERS, UNO.

G4 WALLS OVER 1.0m HIGH SHOULD BE CONSTRUCTED BY A BUILDER, CONTRACTOR, PROFESSIONAL INSTALLER OR QUALIFIED INSTALLER WITH EXPERIENCE IN THIS TYPE OF WORK AND WHO HAS READ & UNDERSTOOD THESE DRAWINGS.

G5 THE STRUCTURAL WORK SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR THE FOLLOWING LOADS IN ACCORDANCE WITH AS1170:2002;

- ACTIVE EARTH PRESSURE IN COHESIVE SOIL (NOT SAND) Ka = 0.3, DENSITY ρ = 20kN/m^3, COHESION c = 20kN/m^2, UNDRAINED SHEAR STRENGTH c_u = 25kN/m^2, BEARING STRENGTH 200kPa WORKING. WHERE SOIL CONDITIONS VARY, CONTACT AN ENGINEER. SITE SPECIFIC CONDITIONS SHALL BE CONFIRMED BY A SUITABLY QUALIFIED PERSON IN ACCORDANCE WITH ABOVE CONDITIONS PRIOR TO CONSTRUCTION.

HAS NOT BEEN DESIGNED FOR;

- EARTHQUAKE LOADS.

G6 LIVE LOAD SURCHARGES AS BELOW;

- 0kPa LIVE LOAD SURCHARGE ALLOWANCE. AS REFERENCED IN THE TABLES ON CCS02.

  a. USED FOR RETAINING WALLS SUPPORTING EARTH PRESSURE ONLY WITH NO ADDITIONAL LOADING.
  b. WALLS SHALL NOT SUPPORT NEIGHBORING PROPERTY WITHIN 1H:1V OR TO BCA, EITHER PRIVATE OR PUBLIC.
  c. DESIGN NOT SUITABLE FOR COMMERCIAL USE.

- 5kPa LIVE LOAD SURCHARGE ALLOWANCE. AS REFERENCED IN THE TABLES ON CCS02.

  a. USED FOR RETAINING WALLS SUPPORTING EARTH PRESSURE AND RESIDENTIAL / LIGHT COMMERCIAL VEHICLE DRIVEWAY IN ACCORDANCE WITH AS1170.1:2002.
  b. USED WHERE SUPPORTING NEIGHBOURING PROPERTY BUT NOT BUILDING STRUCTURES, EITHER PRIVATE OR PUBLIC WITH UP TO MAX 5kPa SURCHARGE ALLOWANCE. THE PROPERTY OWNER / BUILDER IS RESPONSIBLE TO IDENTIFY ANY LOAD CONDITIONS WHICH MAY BE HIGHER THAN EFFECTIVE 5kPa SURCHARGE AND SEEK ENGINEERING ADVICE ACCORDINGLY.

G7 THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDER GROUND SERVICES PRIOR TO EXCAVATION.

G8 HANDRAILS AT THE TOP OF RETAINING WALLS MAY BE REQUIRED FOR SAFETY AND/OR BY REGULATIONS. THE PROPERTY OWNER / BUILDER IS RESPONSIBLE TO CHECK. WHERE REQUIRED, AND INSTALL ACCORDING TO BCA REQUIREMENTS.

G9 RETAINING WALL DESIGNED FOR EXPOSURE CLASSIFICATION A1, A2 & B1 TO AS3600:2018.

G10 RETAINING WALL SHALL NOT BE USED IN AGGRESSIVE SOILS, E.G SULFATE RICH SOILS, SALINE SOILS OR WITHIN 1km OF COASTLINE.

G11 RETAINING WALL SHALL NOT BE USED IN A FLOOD HAZARD AREA.

G12 RETAINING WALL SHALL NOT BE USED WHERE GROUND SNOWLOAD > 2kPa.

G13 RETAINING WALL SHALL NOT BE USED IN CERTAIN REACTIVE SOIL TYPES, HIGHLY (H) OR EXTREMELY (E) OR PROBLEM (P) SITES TO AS2870:2011.

G14 STRUCTURE HAS BEEN DESIGNED WITH A 20 YEAR DESIGN LIFE. OWNER, BUILDER OR CONTRACTOR TO ENSURE DESIGN LIFE IS ADEQUATE FOR THE PROJECT.

G15 FILL IS TO BE GRANULAR NON-CLAYEY AND COMPACTED IN 150mm LAYERS. COMPACTION SHALL BE PERFORMED SUCH THAT MIN 95-98% DENSITY CAN BE ACHIEVED WITHOUT DAMAGING OR DISLODGING THE WALL, ADJACENT STRUCTURES OR REINFORCEMENT.

CONCRETE NOTES

C1 CONCRETE SLEEPERS SHALL BE MIN 40MPa TO AS3600:2018

C2 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600:2018.

C3 CONCRETE FOR FOOTINGS SHALL BE MIN N25 (25MPa) TO AS3600:2018 EXCEPT FOR EXPOSURE CLASSIFICATION 'B1' FOR WHICH N32 CONCRETE SHALL BE USED.

C4 LONG TERM DESIGN PRESSURE WILL CAUSE THE SLEEPERS TO HAVE SOME CRACKING.

C5 ANY CUT ENDS OF SLEEPERS SHALL BE COATED WITH EPOXY (EPIREZ 133 OR SIMILAR).

REINFORCEMENT NOTES

R1 REINFORCEMENT SHALL BE SUPPLIED, FABRICATED AND PLACED TO AS3600:2018 AND IS GENERALLY DESIGNATED TO AS1100 PART 501.

R2 REINFORCEMENT SHALL BE GRADE 500N TO AS1302.

R3 REINFORCING LAPS SHALL NOT BE USED

R4 CLEAR COVER TO REINFORCEMENT FOR CONCRETE SLEEPERS SHALL BE 30mm (MIN 20mm MAX 40mm) AND INTENSELY VIBRATED TO AS 3600:2018 CLAUSE 4.10.3.3. VIBRATED CASTING BED IS CONSIDERED TO BE INTENSE COMPACTION TO AS 3600:2018.

R5 TOLERANCE ON SLEEPER REINFORCEMENT PLACEMENT ±10mm MAINTAINING min REQUIRED COVER.

R6 CLEAR COVER TO FOOTING REINFORCEMENT SHALL BE MIN 50mm GENERALLY.

STEELWORK NOTES

S1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS4100 AND AS1554.

S2 ALL STEEL SHALL BE IN ACCORDANCE WITH AS3679 FOR HOT ROLLED STRUCTURAL SECTIONS GRADE 300 WITH MINIMUM YIELD STRENGTH f_y=305MPa AND SUPPLIED BY CAPITAL CONCRETE SLEEPERS.

S3 SECTIONS ARE DESIGNATED AS FOLLOWS: UB - UNIVERSAL BEAM & UC - UNIVERSAL COLUMN

S4 CORROSION PROTECTION FOR STEELWORK SHALL BE HOT DIP GALVANIZED TO AS2312 WITH MINIMUM COATING THICKNESS OF 70µm.

THIS DRAWING MUST BE READ IN CONJUNCTION WITH DRAWING CCS02

No.	AMENDMENT	APPRV.	DATE
-	FIRST ISSUE		16/05/2024

CLIENT: CAPITAL CONCRETE SLEEPERS

PROJECT: CONCRETE SLEEPER RETAINING WALL - STANDARD DESIGN-

DRAWING TITLE: **GENERAL AND STRUCTURAL NOTES**

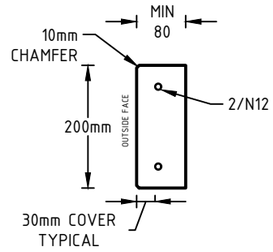
DRAWING No.: **CCS01**

REV: -

HOW TO SELECT POSTS AND FOOTINGS

STEP 1) CHOOSE APPROPRIATE SURCHARGE (0kPa OR 5kPa) AS PER NOTE G6 ON DRAWING CCS01.
STEP 2) FROM THE CORRESPONDING TABLE BELOW, FIND THE APPROPRIATE WALL HEIGHT (eg 1m).
STEP 3) SELECT THE DESIRED SLEEPER LENGTH AND POST SPACING (eg 1.22m).
STEP 4) FROM COLUMN A IDENTIFY IF 1x OR 2x LAYERS OF SLEEPERS ARE NEEDED AT THE DEPTH.
STEP 5) FROM COLUMN B IDENTIFY THE POSTS NEEDED, AND FROM COLUMN C IDENTIFY THE LENGTH.
STEP 6) FROM COLUMN D IDENTIFY THE FOOTING SIZE AND DEPTH REQUIRED.

IN THE HIGHLIGHTED EXAMPLE BELOW, A 100UC14 POST IS NEEDED (1.8m LONG) WITH A SINGLE LAYER OF CONCRETE SLEEPERS AND A Ø300 FOOTING TO 0.85m DEPTH.



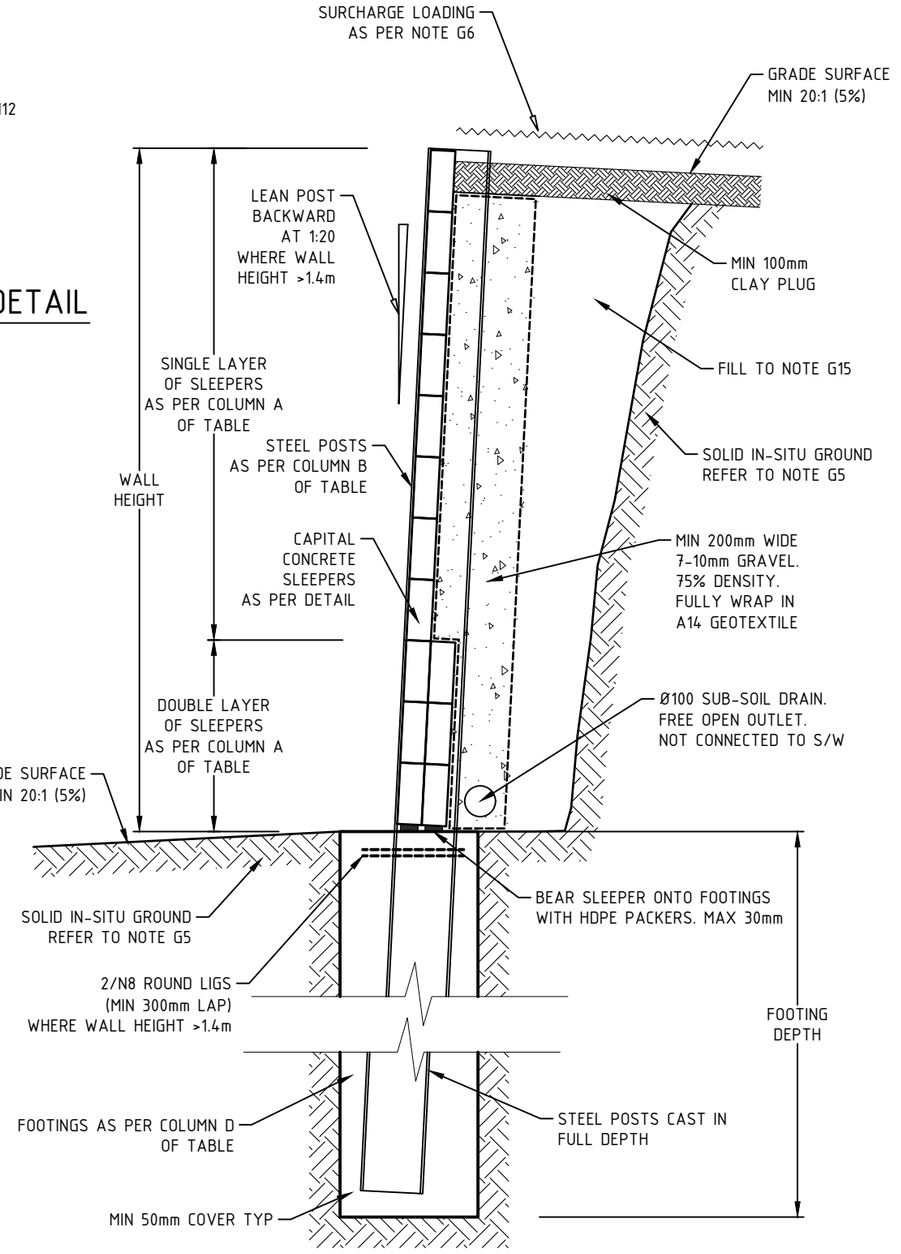
CONCRETE SLEEPER DETAIL
1:10 @ A3

0kPa

wall height (m)	Sleeper Length = 1.2m Post spacing = 1.22m				Sleeper Length = 1.5m Post spacing = 1.52m				Sleeper Length = 1.8m Post spacing = 1.82m				Sleeper Length = 2.0m Post spacing = 2.02m				Sleeper Length = 2.35m Post spacing = 2.37m			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
	no.	Post	Length	Footing	no.	Post	Length	Footing	no.	Post	Length	Footing	no.	Post	Length	Footing	no.	Post	Length	Footing
0.2	1	100UC14	0.7	Ø300 x 0.55	1	100UC14	0.7	Ø300 x 0.55	1	100UC14	0.7	Ø300 x 0.55	1	100UC14	0.7	Ø300 x 0.55	1	100UC14	0.7	Ø300 x 0.55
0.4	1	100UC14	0.9	Ø300 x 0.55	1	100UC14	0.9	Ø300 x 0.55	1	100UC14	1.0	Ø300 x 0.65	1	100UC14	1.0	Ø300 x 0.65	1	100UC14	1.0	Ø300 x 0.65
0.6	1	100UC14	1.2	Ø300 x 0.65	1	100UC14	1.2	Ø300 x 0.65	1	100UC14	1.3	Ø300 x 0.75	1	100UC14	1.4	Ø300 x 0.85	1	100UC14	1.5	Ø300 x 0.95
0.8	1	100UC14	1.5	Ø300 x 0.75	1	100UC14	1.5	Ø300 x 0.75	1	100UC14	1.3	Ø300 x 0.85	1	100UC14	1.7	Ø300 x 0.95	1	100UC14	1.9	Ø300 x 1.15
1.0	1	100UC14	1.8	Ø300 x 0.85	1	100UC14	1.9	Ø300 x 0.95	1	100UC14	2.0	Ø300 x 1.05	1	100UC14	2.1	Ø300 x 1.15	1	100UC14	2.3	Ø300 x 1.35
1.2	1	100UC14	2.1	Ø300 x 0.95	1	100UC14	2.2	Ø300 x 1.05	1	100UC14	2.4	Ø300 x 1.25	1	100UC14	2.6	Ø300 x 1.45	1	100UC14	2.8	Ø300 x 1.65
1.4	1	100UC14	2.5	Ø300 x 1.15	1	100UC14	2.6	Ø300 x 1.25	1	100UC14	2.8	Ø300 x 1.45	1	100UC14	3.1	Ø300 x 1.75	1	100UC14	3.2	Ø300 x 1.85
1.6	1	100UC14	2.9	Ø300 x 1.35	1	100UC14	3.0	Ø300 x 1.45	1	100UC14	3.2	Ø300 x 1.65	1	200UB22	3.4	Ø450 x 1.85	2	200UB22	3.6	Ø450 x 2.05
1.8	1	100UC14	3.2	Ø300 x 1.45	1	200UB22	3.5	Ø450 x 1.75	1	200UB22	3.7	Ø450 x 1.95	1	200UB22	3.8	Ø450 x 2.05	2	200UB22	4.0	Ø450 x 2.25
2.0	1	200UB22	3.7	Ø450 x 1.75	1	200UB22	3.8	Ø450 x 1.85	1	200UB22	4.0	Ø450 x 2.05	2	200UB22	4.1	Ø450 x 2.15	2	200UB22	4.3	Ø450 x 2.35
2.2	1	200UB22	4.1	Ø450 x 1.95	1	200UB22	4.2	Ø450 x 2.05	2	200UB22	4.4	Ø450 x 2.25	2	200UB22	4.6	Ø450 x 2.45				
2.4	1	200UB22	4.5	Ø450 x 2.15	1	200UB22	4.7	Ø450 x 2.35	2	200UB22	4.8	Ø450 x 2.45	2	200UB22	5.1	Ø450 x 2.75				
2.6	1	200UB22	4.9	Ø450 x 2.35	2	200UB22	5.1	Ø450 x 2.55	2	200UB22	5.3	Ø450 x 2.75								
2.8	1	200UB22	5.3	Ø450 x 2.55	2	200UB22	5.6	Ø450 x 2.85												
3.0	2	200UB22	5.8	Ø450 x 2.85																

5kPa

wall height (m)	Sleeper Length = 1.2m Post spacing = 1.22m				Sleeper Length = 1.5m Post spacing = 1.52m				Sleeper Length = 1.8m Post spacing = 1.82m				Sleeper Length = 2.0m Post spacing = 2.02m				Sleeper Length = 2.35m Post spacing = 2.37m			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
	no.	Post	Length	Footing	no.	Post	Length	Footing	no.	Post	Length	Footing	no.	Post	Length	Footing	no.	Post	Length	Footing
0.2	1	100UC14	0.7	Ø300 x 0.55	1	100UC14	0.7	Ø300 x 0.55	1	100UC14	0.8	Ø300 x 0.65	1	100UC14	0.8	Ø300 x 0.65	1	100UC14	0.8	Ø300 x 0.65
0.4	1	100UC14	1.0	Ø300 x 0.65	1	100UC14	1.1	Ø300 x 0.75	1	100UC14	1.2	Ø300 x 0.85	1	100UC14	1.2	Ø300 x 0.85	1	100UC14	1.3	Ø300 x 0.95
0.6	1	100UC14	1.4	Ø300 x 0.85	1	100UC14	1.6	Ø300 x 1.05	1	100UC14	1.6	Ø300 x 1.05	1	100UC14	1.7	Ø300 x 1.15	1	100UC14	1.8	Ø300 x 1.25
0.8	1	100UC14	1.8	Ø300 x 1.05	1	100UC14	1.9	Ø300 x 1.15	1	100UC14	2.0	Ø300 x 1.25	1	100UC14	2.0	Ø300 x 1.25	1	100UC14	2.1	Ø300 x 1.35
1.0	1	100UC14	2.2	Ø300 x 1.15	1	100UC14	2.2	Ø300 x 1.25	1	100UC14	2.3	Ø300 x 1.35	1	100UC14	2.4	Ø300 x 1.45	1	100UC14	2.6	Ø300 x 1.65
1.2	1	100UC14	2.4	Ø300 x 1.25	1	100UC14	2.6	Ø300 x 1.45	1	100UC14	2.7	Ø300 x 1.55	1	100UC14	2.9	Ø300 x 1.75	1	100UC14	3.0	Ø300 x 1.85
1.4	1	100UC14	2.8	Ø300 x 1.45	1	100UC14	3.0	Ø300 x 1.65	1	100UC14	3.1	Ø300 x 1.75	1	200UB22	3.2	Ø450 x 1.85	2	200UB22	3.6	Ø450 x 2.25
1.6	1	100UC14	3.2	Ø300 x 1.65	1	200UB22	3.4	Ø450 x 1.85	1	200UB22	3.5	Ø450 x 1.95	2	200UB22	3.6	Ø450 x 2.05	2	200UB22	4.0	Ø450 x 2.45
1.8	1	200UB22	3.9	Ø450 x 2.15	1	200UB22	3.8	Ø450 x 2.05	2	200UB22	4.0	Ø450 x 2.25	2	200UB22	4.1	Ø450 x 2.35	2	200UB22	4.4	Ø450 x 2.65
2.0	1	200UB22	4.3	Ø450 x 2.35	1	200UB22	4.3	Ø450 x 2.35	2	200UB22	4.4	Ø450 x 2.45	2	200UB22	4.5	Ø450 x 2.55				
2.2	1	200UB22	4.6	Ø450 x 2.45	2	200UB22	4.7	Ø450 x 2.55	2	200UB22	4.9	Ø450 x 2.75	2	200UB22	5.0	Ø450 x 2.85				
2.4	1	200UB22	4.9	Ø450 x 2.55	2	200UB22	5.1	Ø450 x 2.75	2	200UB22	5.4	Ø450 x 3.05								
2.6	1	200UB22	5.4	Ø450 x 2.85	2	200UB22	5.6	Ø450 x 3.05												
2.8	2	200UB22	5.8	Ø450 x 3.05	2															
3.0																				



TYPICAL WALL DETAIL
1:20 @ A3

THIS DRAWING MUST BE READ IN CONJUNCTION WITH DRAWING CCS01

No.	AMENDMENT	APPRV.	DATE
-	FIRST ISSUE		16/05/2024

CLIENT: CAPITAL CONCRETE SLEEPERS

PROJECT: CONCRETE SLEEPER RETAINING WALL - STANDARD DESIGN-

DRAWING TITLE: **RETAINING WALL TABLE & TYPICAL DETAIL**

DRAWING No.: **CCS02**

REV: -