

# EXCALIBER CONCRETE BLOCK RETAINING WALL SPECIFICATIONS

## FOR ESTIMATING PURPOSES ONLY

RETAINED SOIL ONLY					
REINFORCEMENT SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	CONCRETE BLOCK PIER CTS (m)	
	0.19	0.4	400	2.0	
	0.38	0.4	400	2.0	
1-N20	0.57	0.6	400	2.0	
1-N20	0.76	0.8	400	2.0	
2-N20	0.95	1.0	400	2.0	
2-N20	1.14	1.2	400	2.0	
2-N20	1.33	1.4	400	2.0	
2-N20	1.52	1.6	400	2.0	
REINFORCEMENT SECTION SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	CONCRETE BLOCK PIER CTS (m)	
100UC14	1.71	1.8	400	2.0	
100UC14	1.90	2.0	400	2.0	
RETAINED SOIL + FENCE LOADS					
REINFORCEMENT SECTION SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	CONCRETE BLOCK PIER CTS (m)	
100UC14	0.76	1.4	400	2.0	
100UC14	0.95	1.6	400	2.0	

## FOR ESTIMATING PURPOSES ONLY

RETAINED SOIL + 5kPa SURCHARGE LOADS					
REINFORCEMENT SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	CONCRETE BLOCK PIER CTS (m)	
	0.19	0.4	400	2.0	
	0.38	0.4	400	2.0	
1-N20	0.57	0.6	400	2.0	
1-N20	0.76	0.8	400	2.0	
1-N20	0.95	1.0	400	2.0	
2-N20	1.14	1.2	400	2.0	
100UC14	1.33	1.4	400	2.0	
RETAINED SOIL + FENCE + 5kPa SURCHARGE LOADS					
REINFORCEMENT SECTION SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	CONCRETE BLOCK PIER CTS (m)	
100UC14	0.76	1.4	400	2.0	
100UC14	0.95	1.6	400	2.0	

## SUBGRADE DESCRIPTIONS

SOILS	POOR	POOR SOIL SUBGRADE CAN BE IDENTIFIED AS SAND, SANDY LOAM, CONTROLLED AND UNCONTROLLED FILL AND ORGANIC MATERIAL SUCH AS TOPSOIL. THE UNDRAINED STRENGTH CAN BE IN THE RANGES OF VERY SOFT TO FIRM, WHERE A FINGER CAN BE PUSHED INTO THE SOIL WITH LITTLE EFFORT THROUGH TO ABOUT 25MM.
	GOOD	GOOD SOIL SUBGRADES CAN BE IDENTIFIED AS CLAY AND GRAVELLY CLAYS. THE UNDRAINED STRENGTH CAN BE IN THE RANGES OF VERY STIFF TO HARD, WHERE THE SURFACE OF THE SOIL CAN BE INDENTED WITH THUMB PRESSURE BUT NOT PENETRATED.
ROCK	POOR	POOR ROCK SUBGRADE CAN BE DEFINED AS A MATERIAL WHICH IS WEATHERED TO SUCH AN EXTENT THAT IT HAS SOIL PROPERTIES. FOR EXAMPLE, IT EITHER DISINTEGRATES OR CAN BE MOULDED IN WATER AND APPEARS DISCOLOURED USUALLY BY IRON STAINING, ALTHOUGH THE ROCK FABRIC IS STILL VISIBLE. THE STRENGTH GRADE CAN BE CLASSIFIED IN THE RANGES OF VERY LOW TO MEDIUM STRENGTH. HAND SAMPLES CAN BE SCORED WITH A KNIFE INCLUDING SAMPLES BEING BROKEN BY HAND WITH DIFFICULTY OR BY A PICK WITH A SINGLE FIRM BLOW.
	GOOD	GOOD ROCK SUBGRADE CAN BE DEFINED AS A MATERIAL WHERE THE COLOUR AND TEXTURE OF THE ROCK IS SLIGHTLY BLEACHED ALTHOUGH RECOGNISABLE. THE STRENGTH GRADE CAN BE CLASSIFIED IN THE RANGES OF HIGH TO EXTREMELY HIGH WHERE A SPECIMEN REQUIRES MANY BLOWS TO BREAK AND ROCK RINGS UNDER IMPACT OF GEOLOGICAL PICK OR HAMMER. THE ROCK CANNOT BE SCRATCHED WITH A KNIFE.

PIER SPECIFICATION		SURCHARGE NOTE	
CONCRETE STRENGTH: (F'c AT 28 DAYS)	N32	RETAINING WALL SUBJECTED TO SURCHARGE LOADS TO BE DESIGNED BY ENGINEER. REFER DESCRIPTION OF SURCHARGE LOADS ON SHEET 02.	
MAX SLUMP:	100		
MAX SIZE AGGREGATE	20		
WATER SERVICE NOTE		WIND LOAD NOTE	
RETAINING WALL ADJACENT TO SEWER OR STORMWATER EASEMENTS SHALL BE PLACED IN STRICT ACCORDANCE WITH THE LOCAL AUTHORITY AND LEGISLATIVE REQUIREMENTS.		DESIGNED BASED ON MAX. N2 CLASS WIND LOADS	

## SURCHARGE DESCRIPTION

WHEN CONSTRUCTING A RETAINING WALL WITHIN CLOSE PROXIMITY TO AN EXISTING BUILT ELEMENT, ADDITIONAL DESIGN CONSIDERATIONS MAY BE REQUIRED. SURCHARGE LOADS COMPRISE OF, BUT ARE NOT LIMITED TO THE FOLLOWING EXAMPLES:

- DRIVEWAYS
- DWELLINGS
- BUILDINGS
- SWIMMING POOLS
- RAINWATER TANKS
- TANKS/UNDERGROUND STRUCTURES


PLEASE CONTACT ENGINEER FOR SITE SPECIFIC DESIGN

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Structural Engineers • Surveying & Geotechnical

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APPROVED BY:  
  
GERVASE PURICH  
FIEAust, C.P.Eng., NER, BPB, RPEQ

CLIENT REF:  
-  
DATE:  
15/06/21  
DRAWN:  
S.J./D.N.  
SCALE:

FOR:  
EXCALIBER CONCRETE PRODUCTS

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Quality concrete sleepers locally manufactured



DRAWN	DATE	AMENDMENT	REV
A.C.	25.08.22	2.0m & 2.365m SLEEPERS ADDED	A
S.J.	17/03/23	TABLES & DETAILS REVISED	B

JOB No:  
**CS2320**

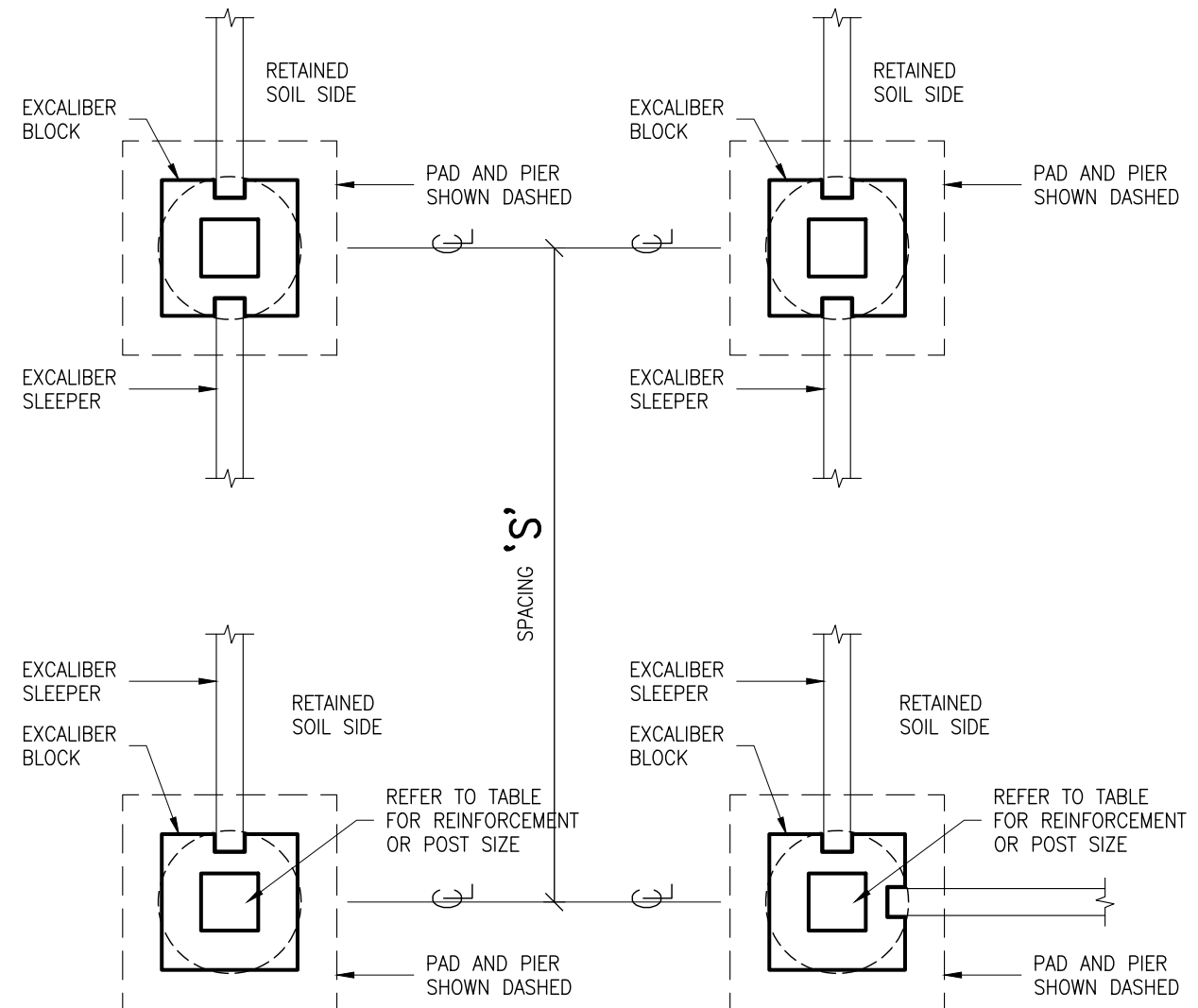
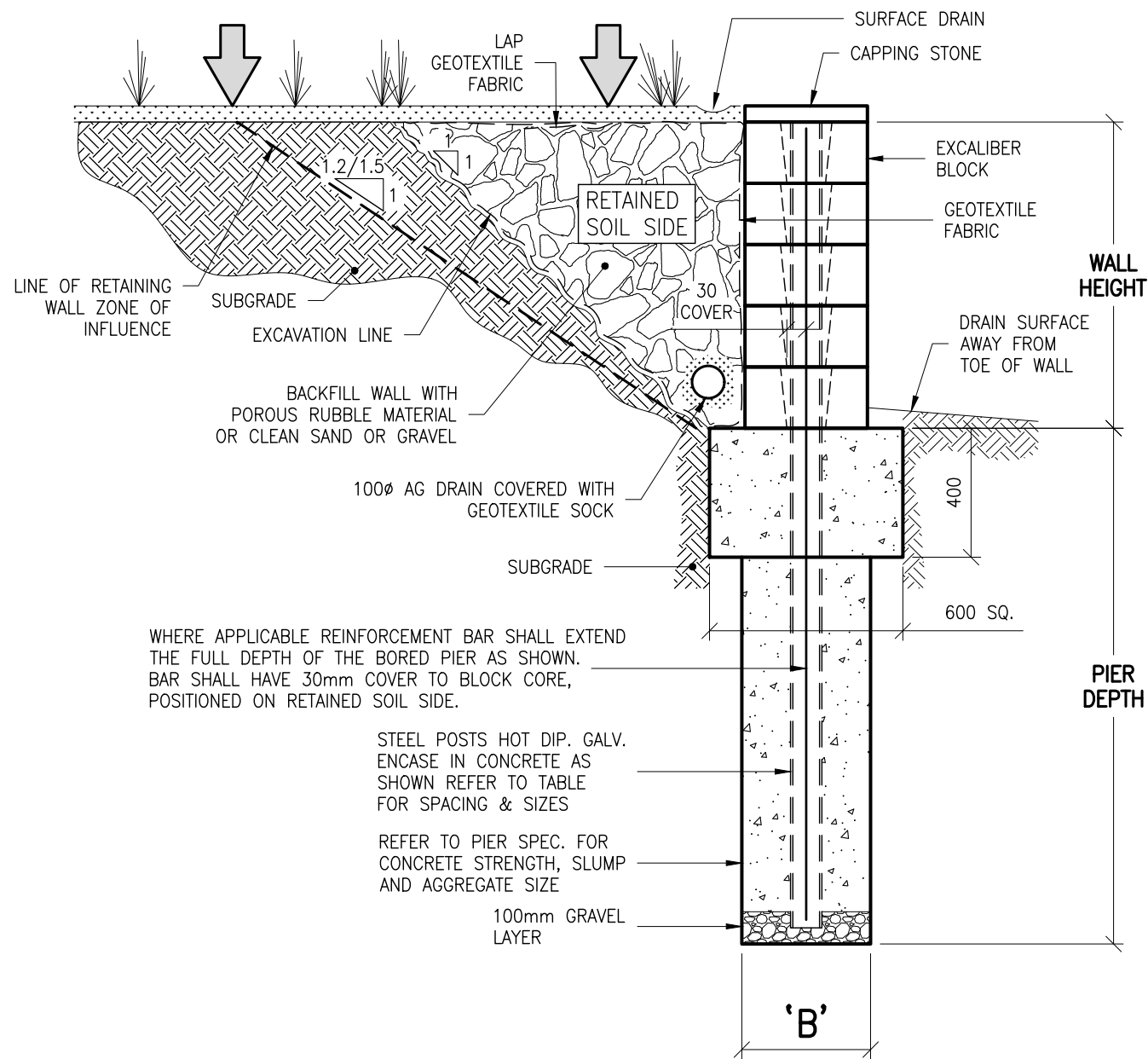
ISSUE:  
**B**

SHEET No:  
**01 of 11**

# EXCALIBER CONCRETE BLOCK RETAINING WALL SPECIFICATIONS

**COREFILL GROUT:**  
 CORE FILLING GROUT:  $f'_c = 32\text{MPa}$   
 10 MAX AGGREGATE  
 120 SLUMP

**NOTE:**  
 NO SURCHARGE LOAD BEHIND WALL  
 FOR EXTENT OF ZONE OF INFLUENCE



**TYPICAL BLOCK SECTIONS**

**WALLS THAT ARE 2 BLOCKS HIGH MAX. CAN BE BUILT OFF ROAD BASE.**

**EXCALIBER BLOCK RETAINING WALL DETAIL**

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15/06/21

DRAWN:

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SCALE:

1:20

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EXCALIBER CONCRETE PRODUCTS

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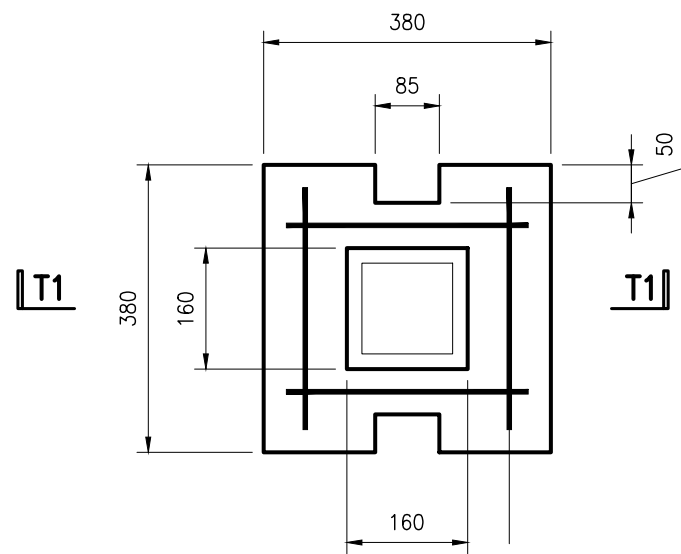


DRAWN	DATE	AMENDMENT	REV	JOB No:	ISSUE:
A.C.	25.08.22	2.0m & 2.365m SLEEPERS ADDED	A	CS2320	B
S.J.	17/03/23	TABLES & DETAILS REVISED	B		
				SHEET No:	02 of 11

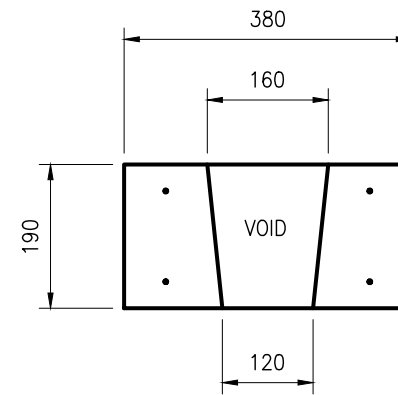
# EXCALIBER CONCRETE BLOCK RETAINING WALL SPECIFICATIONS

## SPECIFICATION NOTES

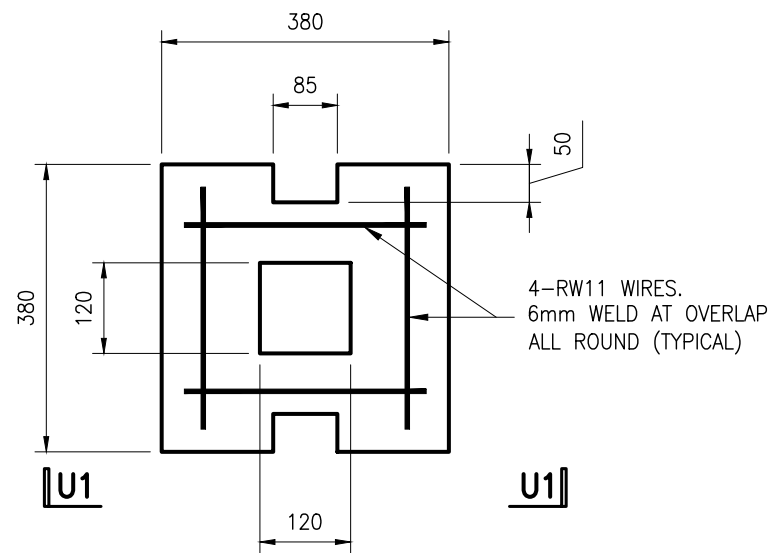
- SLEEPER CONCRETE STRENGTH TO BE N32 MINIMUM.
- SLEEPER TO BE CAST IN STRICT ACCORDANCE WITH AS 3600.
- SLEEPERS TO BE EMBEDDED A MINIMUM OF 35mm EACH END
- SURCHARGE LOADS TO BE LIMITED TO 5kPa
- FINISHED SURFACE BEHIND WALL NOT TO EXCEED 1:10 VERTICAL:HORIZONTAL
- NO HYDROSTATIC WATER PRESSURE BEHIND WALL
- MINIMUM RETAINED SOIL PARAMETERS OF BULK DENSITY = 19kN/m<sup>3</sup>
- MINIMUM ANGLE OF REPOSE TO BE 30°
- MAXIMUM WALL HEIGHT OF 1.60m



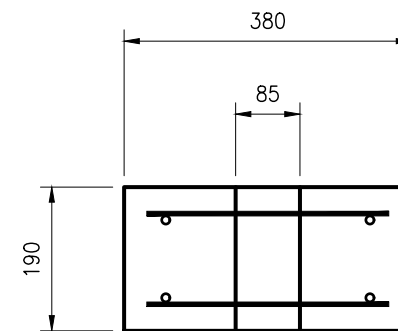
**TOP PLAN**



**SECTION T1-T1**



**UNDERSIDE PLAN**



**ELEVATION U1**

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SCALE:

1:10

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S.J.	17/03/23	TABLES & DETAILS REVISED	B

JOB No:	ISSUE:
CS2320	B
SHEET No:	
03 of 11	

# EXCALIBER CONCRETE SLEEPER RETAINING WALL SPECIFICATIONS - 1.55m POST SPACING

FOR ESTIMATING PURPOSES ONLY – NO SURCHARGE

	RETAINED SOIL ONLY					RETAINED SOIL + FENCE LOADS					CONCRETE SLEEPER SPAN & ROWS REQUIRED
	SECTION SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	POST CTS (m)	SECTION SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	POST CTS (m)	2-N12
POOR SOILS (100 KPa)	100UC15 100 PFC	0.8	0.8	450	1.55	100UC15 100 PFC	0.8	1.5	450	1.55	1 ROW OF 1555 SLEEPER
		1.0	1.0	450			1.0	1.7	450		
		1.2	1.0	450			1.2	1.9	450		
		1.4	1.3	450			1.4	2.1	450		
	150UC23 200UB18 150 PFC	1.6	1.6	450		150UC23 200UB18 150 PFC	1.6	2.3	450		
		1.8	2.0	450			1.8	2.5	450		
		2.0	2.4	450			2.0	2.8	450		
GOOD SOILS (200 KPa)	100UC15 100 PFC	0.8	0.8	300	1.55	100UC15 100 PFC	0.8	1.2	400	1.55	1 ROW OF 1555 SLEEPER
		1.0	1.0	300			1.0	1.3	400		
		1.2	1.2	300			1.2	1.4	400		
		1.4	1.2	300			1.4	1.6	450		
	150UC23 200UB18 150 PFC	1.6	1.2	400		150UC23 200UB18 150 PFC	1.6	1.6	450		
		1.8	1.5	400			1.8	1.9	450		
		2.0	1.8	400			2.0	2.1	450		
POOR ROCK (400 KPa)	100UC15 100 PFC	0.8	0.4	300	1.55	100UC15 100 PFC	0.8	1.1	300	1.55	1 ROW OF 1555 SLEEPER
		1.0	0.6	300			1.0	1.2	300		
		1.2	0.7	300			1.2	1.3	300		
		1.4	0.9	300			1.4	1.4	300		
	150UC23 200UB18 150 PFC	1.6	1.0	400		150UC23 200UB18 150 PFC	1.6	1.4	400		
		1.8	1.2	400			1.8	1.5	400		
		2.0	1.3	400			2.0	1.7	400		
GOOD ROCK (600 KPa)	100UC15 100 PFC	0.8	0.4	300	1.55	100UC15 100 PFC	0.8	0.9	300	1.55	1 ROW OF 1555 SLEEPER
		1.0	0.5	300			1.0	0.9	300		
		1.2	0.6	300			1.2	1.0	300		
		1.4	0.7	300			1.4	1.2	300		
	150UC23 200UB18 150 PFC	1.6	0.9	300		150UC23 200UB18 150 PFC	1.6	1.2	400		
		1.8	1.1	300			1.8	1.2	400		
		2.0	1.3	300			2.0	1.4	400		

100 PFC TO BE USED AT END OF WALL AND AT CORNER & CHANGE IN DIRECTION JUNCTIONS.

## SUBGRADE DESCRIPTIONS

SOILS	POOR	GOOD
ROCK	POOR	GOOD

POOR SOIL SUBGRADE CAN BE IDENTIFIED AS SAND, SANDY LOAM, CONTROLLED AND UNCONTROLLED FILL AND ORGANIC MATERIAL SUCH AS TOPSOIL. THE UNDRAINED STRENGTH CAN BE IN THE RANGES OF VERY SOFT TO FIRM, WHERE A FINGER CAN BE PUSHED INTO THE SOIL WITH LITTLE EFFORT THROUGH TO ABOUT 25MM.

GOOD SOIL SUBGRADES CAN BE IDENTIFIED AS CLAY AND GRAVELLY CLAYS. THE UNDRAINED STRENGTH CAN BE IN THE RANGES OF VERY STIFF TO HARD, WHERE THE SURFACE OF THE SOIL CAN BE INDENTED WITH THUMB PRESSURE BUT NOT PENETRATED.

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## PIER SPECIFICATION

CONCRETE STRENGTH: (F <sub>c</sub> AT 28 DAYS)	N20
MAX SLUMP:	100
MAX SIZE AGGREGATE	20

## SURCHARGE NOTE

RETAINING WALL SUBJECTED TO SURCHARGE LOADS TO BE DESIGNED BY ENGINEER. REFER DESCRIPTION OF SURCHARGE LOADS BELOW.

## WATER SERVICE NOTE

RETAINING WALL ADJACENT TO SEWER OR STORMWATER EASEMENTS SHALL BE PLACED IN STRICT ACCORDANCE WITH THE LOCAL AUTHORITY AND LEGISLATIVE REQUIREMENTS.

## WIND LOAD NOTE

DESIGNED BASED ON MAX. N2 CLASS WIND LOADS

## SURCHARGE DESCRIPTION

WHEN CONSTRUCTING A RETAINING WALL WITHIN CLOSE PROXIMITY TO AN EXISTING BUILT ELEMENT, ADDITIONAL DESIGN CONSIDERATIONS MAY BE REQUIRED. SURCHARGE LOADS COMPRISE OF, BUT ARE NOT LIMITED TO THE FOLLOWING EXAMPLES:

- DRIVEWAYS
- DWELLINGS
- BUILDINGS
- SWIMMING POOLS
- RAINWATER TANKS
- TANKS/UNDERGROUND STRUCTURES

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S.J./D.N.

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A.C.	25.08.22	2.0m & 2.365m SLEEPERS ADDED	A	CS2320	B
S.J.	17/03/23	TABLES & DETAILS REVISED	B		
				SHEET No:	04 of 11



# EXCALIBER CONCRETE SLEEPER RETAINING WALL SPECIFICATIONS - 2.0m POST SPACING

## FOR ESTIMATING PURPOSES ONLY – NO SURCHARGE

FOR ESTIMATING PURPOSES ONLY – NO SURCHARGE												
RETAINED SOIL ONLY					RETAINED SOIL + FENCE LOADS					CONCRETE SLEEPER SPAN & ROWS REQUIRED		
SECTION SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	POST CTS (m)	SECTION SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	POST CTS (m)	2-N12	3-N12	
POOR SOILS (100 KPa)	100UC15 100 PFC	0.8	0.8	450	2.0	100UC15 100 PFC	0.8	2.2	450	2.0	1 ROW OF 2000 SLEEPER	1 ROW OF 2000 SLEEPER
		1.0	1.2	450			1.0	2.3	450			
		1.2	1.2	450			1.2	2.5	450			
		1.4	1.5	450			1.4	2.7	450			
	200UB22 200 PFC	1.6	1.9	450	2.0	200UB22 200 PFC	1.6	3.1	450	2.0	2 ROWS OF 2000 SLEEPER	
		1.8	2.3	450			1.8	3.4	450			
		2.0	2.8	450			2.0	3.8	450			
GOOD SOILS (200 KPa)	100UC15 100 PFC	0.8	0.8	300	2.0	100UC15 100 PFC	0.8	1.3	450	2.0	1 ROW OF 2000 SLEEPER	1 ROW OF 2000 SLEEPER
		1.0	1.0	300			1.0	1.4	450			
		1.2	1.1	300			1.2	1.5	450			
		1.4	1.4	300			1.4	1.7	450			
	200UB22 200 PFC	1.6	1.4	400	2.0	200UB22 200 PFC	1.6	1.9	450	2.0	2 ROWS OF 2000 SLEEPER	
		1.8	1.7	400			1.8	2.1	450			
		2.0	2.0	400			2.0	2.4	450			
POOR ROCK (400 KPa)	100UC15 100 PFC	0.8	0.6	300	2.0	100UC15 100 PFC	0.8	1.2	300	2.0	1 ROW OF 2000 SLEEPER	1 ROW OF 2000 SLEEPER
		1.0	0.6	300			1.0	1.3	300			
		1.2	0.8	300			1.2	1.5	300			
		1.4	1.0	300			1.4	1.7	300			
	200UB22 200 PFC	1.6	1.1	400	2.0	200UB22 200 PFC	1.6	1.7	400	2.0	2 ROWS OF 2000 SLEEPER	
		1.8	1.3	400			1.8	1.8	400			
		2.0	1.5	400			2.0	2.0	400			
GOOD ROCK (600 KPa)	100UC15 100 PFC	0.8	0.4	300	2.0	100UC15 100 PFC	0.8	1.0	300	2.0	1 ROW OF 2000 SLEEPER	1 ROW OF 2000 SLEEPER
		1.0	0.6	300			1.0	1.1	300			
		1.2	0.7	300			1.2	1.2	300			
		1.4	0.8	300			1.4	1.3	300			
	200UB22 200 PFC	1.6	1.0	300	2.0	200UB22 200 PFC	1.6	1.3	400	2.0	2 ROWS OF 2000 SLEEPER	
		1.8	1.2	300			1.8	1.4	400			
		2.0	1.4	300			2.0	1.5	400			

100 PFC TO BE USED AT END OF WALL AND AT CORNER & CHANGE IN DIRECTION JUNCTIONS.

## SUBGRADE DESCRIPTIONS

SOILS	POOR	GOOD
ROCK	POOR	GOOD

POOR SOIL SUBGRADE CAN BE IDENTIFIED AS SAND, SANDY LOAM, CONTROLLED AND UNCONTROLLED FILL AND ORGANIC MATERIAL SUCH AS TOPSOIL. THE UNDRAINED STRENGTH CAN BE IN THE RANGES OF VERY SOFT TO FIRM, WHERE A FINGER CAN BE PUSHED INTO THE SOIL WITH LITTLE EFFORT THROUGH TO ABOUT 25MM.

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## PIER SPECIFICATION

CONCRETE STRENGTH: (F <sub>c</sub> AT 28 DAYS)	N20
MAX SLUMP:	100
MAX SIZE AGGREGATE	20

## SURCHARGE NOTE

RETAINING WALL SUBJECTED TO SURCHARGE LOADS TO BE DESIGNED BY ENGINEER. REFER DESCRIPTION OF SURCHARGE LOADS BELOW.

## WATER SERVICE NOTE

RETAINING WALL ADJACENT TO SEWER OR STORMWATER EASEMENTS SHALL BE PLACED IN STRICT ACCORDANCE WITH THE LOCAL AUTHORITY AND LEGISLATIVE REQUIREMENTS.

## WIND LOAD NOTE

DESIGNED BASED ON MAX. N2 CLASS WIND LOADS

## SURCHARGE DESCRIPTION

WHEN CONSTRUCTING A RETAINING WALL WITHIN CLOSE PROXIMITY TO AN EXISTING BUILT ELEMENT, ADDITIONAL DESIGN CONSIDERATIONS MAY BE REQUIRED. SURCHARGE LOADS COMPRISE OF, BUT ARE NOT LIMITED TO THE FOLLOWING EXAMPLES:

- DRIVEWAYS
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- SWIMMING POOLS
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- TANKS/UNDERGROUND STRUCTURES

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APPROVED BY:

GERVASE PURICH  
FIEAust, C.P.Eng., NER, BPB, RPEQ

CLIENT REF:

DATE:  
15/06/21

DRAWN:  
S.J./D.N.

SCALE:

FOR:

EXCALIBER CONCRETE PRODUCTS

Concrete Sleepers Online  
Quality concrete sleepers locally manufactured



DRAWN	DATE	AMENDMENT	REV	JOB No:	ISSUE:
A.C.	25.08.22	2.0m & 2.365m SLEEPERS ADDED	A	CS2320	B
S.J.	17/03/23	TABLES & DETAILS REVISED	B		
SHEET No:				05 of 11	

# EXCALIBER CONCRETE SLEEPER RETAINING WALL SPECIFICATIONS - 2.365m POST SPACING

FOR ESTIMATING PURPOSES ONLY – NO SURCHARGE											
RETAINED SOIL ONLY					RETAINED SOIL + FENCE LOADS					CONCRETE SLEEPER SPAN & ROWS REQUIRED	
SECTION SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	POST CTS (m)	SECTION SIZE	WALL HEIGHT (m)	PIER DEPTH (m)	PIER Ø (mm)	POST CTS (m)	3-N12	
POOR SOILS (100 KPa)	100UC15 100 PFC	0.8	0.8	450	2.0	100UC15 100 PFC	0.8	2.6	450	2.0	1 ROW OF 2365 SLEEPER
		1.0	1.0	450				1.0	2.8		
GOOD SOILS (200 KPa)	100UC15 100 PFC	0.8	0.8	300	2.0	100UC15 100 PFC	0.8	1.6	450	2.0	1 ROW OF 2365 SLEEPER
		1.0	1.0	300				1.0	1.8		
POOR ROCK (400 KPa)	100UC15 100 PFC	0.8	0.6	300	2.0	100UC15 100 PFC	0.8	1.4	300	2.0	1 ROW OF 2365 SLEEPER
		1.0	0.8	300				1.0	1.5		
GOOD ROCK (600 KPa)	100UC15 100 PFC	0.8	0.4	300	2.0	100UC15 100 PFC	0.8	1.1	300	2.0	1 ROW OF 2365 SLEEPER
		1.0	0.6	300				1.0	1.2		

100 PFC TO BE USED AT END OF WALL AND AT CORNER & CHANGE IN DIRECTION JUNCTIONS.

## SUBGRADE DESCRIPTIONS

SOILS	POOR	POOR SOIL SUBGRADE CAN BE IDENTIFIED AS SAND, SANDY LOAM, CONTROLLED AND UNCONTROLLED FILL AND ORGANIC MATERIAL SUCH AS TOPSOIL. THE UNDRAINED STRENGTH CAN BE IN THE RANGES OF VERY SOFT TO FIRM, WHERE A FINGER CAN BE PUSHED INTO THE SOIL WITH LITTLE EFFORT THROUGH TO ABOUT 25MM.
	GOOD	GOOD SOIL SUBGRADES CAN BE IDENTIFIED AS CLAY AND GRAVELLY CLAYS. THE UNDRAINED STRENGTH CAN BE IN THE RANGES OF VERY STIFF TO HARD, WHERE THE SURFACE OF THE SOIL CAN BE INDENTED WITH THUMB PRESSURE BUT NOT PENETRATED.
ROCK	POOR	POOR ROCK SUBGRADE CAN BE DEFINED AS A MATERIAL WHICH IS WEATHERED TO SUCH AN EXTENT THAT IT HAS SOIL PROPERTIES. FOR EXAMPLE, IT EITHER DISINTEGRATES OR CAN BE MOULDED IN WATER AND APPEARS DISCOLOURED USUALLY BY IRON STAINING, ALTHOUGH THE ROCK FABRIC IS STILL VISIBLE. THE STRENGTH GRADE CAN BE CLASSIFIED IN THE RANGES OF VERY LOW TO MEDIUM STRENGTH. HAND SAMPLES CAN BE SCORED WITH A KNIFE INCLUDING SAMPLES BEING BROKEN BY HAND WITH DIFFICULTY OR BY A PICK WITH A SINGLE FIRM BLOW.
	GOOD	GOOD ROCK SUBGRADE CAN BE DEFINED AS A MATERIAL WHERE THE COLOUR AND TEXTURE OF THE ROCK IS SLIGHTLY BLEACHED ALTHOUGH RECOGNISABLE. THE STRENGTH GRADE CAN BE CLASSIFIED IN THE RANGES OF HIGH TO EXTREMELY HIGH WHERE A SPECIMEN REQUIRES MANY BLOWS TO BREAK AND ROCK RINGS UNDER IMPACT OF GEOLOGICAL PICK OR HAMMER. THE ROCK CANNOT BE SCRATCHED WITH A KNIFE.

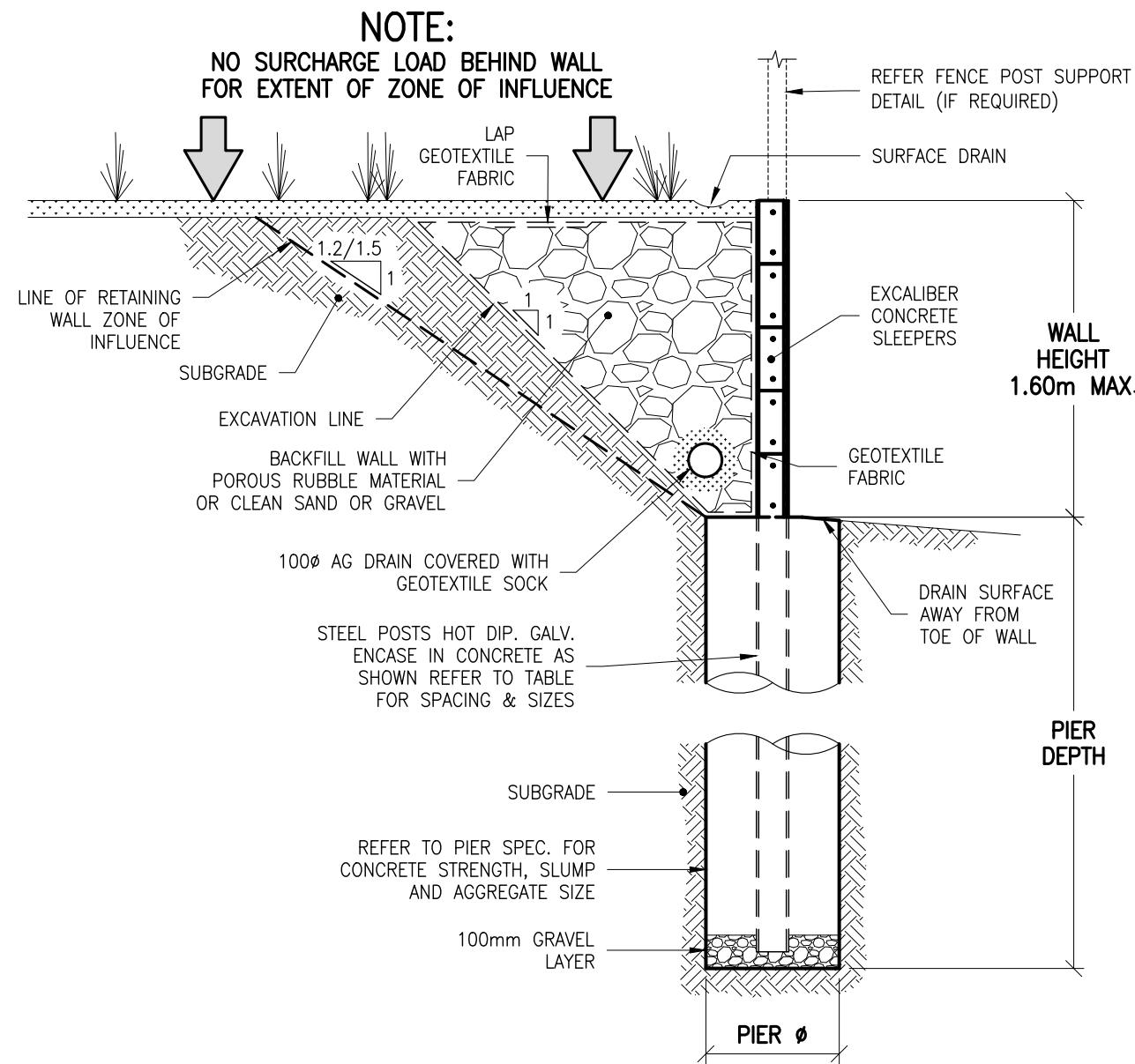
PIER SPECIFICATION		SURCHARGE NOTE	
CONCRETE STRENGTH: (F <sub>c</sub> AT 28 DAYS)	N20	RETAINING WALL SUBJECTED TO SURCHARGE LOADS TO BE DESIGNED BY ENGINEER. REFER DESCRIPTION OF SURCHARGE LOADS BELOW.	
MAX SLUMP:	100		
MAX SIZE AGGREGATE	20		
WATER SERVICE NOTE		WIND LOAD NOTE	
RETAINING WALL ADJACENT TO SEWER OR STORMWATER EASEMENTS SHALL BE PLACED IN STRICT ACCORDANCE WITH THE LOCAL AUTHORITY AND LEGISLATIVE REQUIREMENTS.		DESIGNED BASED ON MAX. N2 CLASS WIND LOADS	

SURCHARGE DESCRIPTION	
WHEN CONSTRUCTING A RETAINING WALL WITHIN CLOSE PROXIMITY TO AN EXISTING BUILT ELEMENT, ADDITIONAL DESIGN CONSIDERATIONS MAY BE REQUIRED. SURCHARGE LOADS COMPRISE OF, BUT ARE NOT LIMITED TO THE FOLLOWING EXAMPLES:	
<ul style="list-style-type: none"> <li>• DRIVEWAYS</li> <li>• DWELLINGS</li> <li>• BUILDINGS</li> </ul>	<ul style="list-style-type: none"> <li>• SWIMMING POOLS</li> <li>• RAINWATER TANKS</li> <li>• TANKS/UNDERGROUND STRUCTURES</li> </ul>

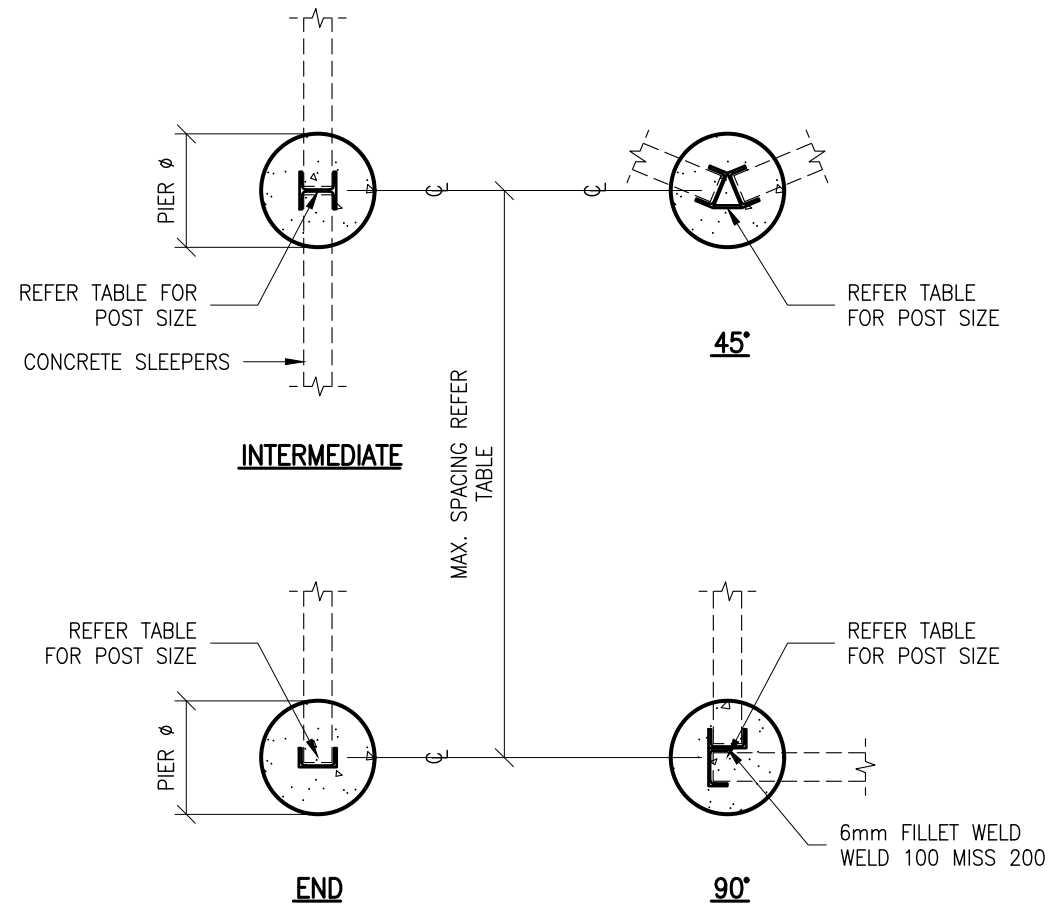
PLEASE CONTACT ENGINEER FOR SITE SPECIFIC DESIGN

 <p><b>RESIDENTIAL ENGINEERING</b> Structural Engineers • Surveying &amp; Geotechnical</p> <p>NSW Level 2, 73-75 Dunmore Street, WENTWORTHVILLE, NSW 2145 P +61 2 9896 5494 E admin@reseng.com.au Unit 8, 12 Jindolee Road, PORT MACQUARIE, NSW 2444 www.residentialengineering.com.au RESIDENTIAL ENGINEERING PTY LTD   ACN 612 898 629   ABN 26 612 898 629   TRADING AS RESIDENTIAL ENGINEERING</p>	<p>COPYRIGHT: THIS DRAWING REMAINS THE PROPERTY OF RESIDENTIAL ENGINEERING AND MAY NOT BE ALTERED IN ANY WAY WITHOUT RESIDENTIAL ENGINEERING WRITTEN CONSENT</p>	<p>APPROVED BY:</p>  <p>GERVASE PURICH FIEAust, C.P.Eng., NER, BPB, RPEQ</p>	<p>CLIENT REF: -</p> <p>DATE: 15/06/21</p> <p>DRAWN: S.J./D.N.</p> <p>SCALE:</p>	<p>FOR: EXCALIBER CONCRETE PRODUCTS</p> <p>Concrete Sleepers Online Quality concrete sleepers locally manufactured</p>		<table border="1"> <thead> <tr> <th>DRAWN</th> <th>DATE</th> <th>AMENDMENT</th> <th>REV</th> </tr> </thead> <tbody> <tr> <td>A.C.</td> <td>25.08.22</td> <td>2.0m &amp; 2.365m SLEEPERS ADDED</td> <td>A</td> </tr> <tr> <td>S.J.</td> <td>17/03/23</td> <td>TABLES &amp; DETAILS REVISED</td> <td>B</td> </tr> </tbody> </table>	DRAWN	DATE	AMENDMENT	REV	A.C.	25.08.22	2.0m & 2.365m SLEEPERS ADDED	A	S.J.	17/03/23	TABLES & DETAILS REVISED	B	<p>JOB No: CS2320</p> <p>ISSUE: B</p> <p>SHEET No: 06 of 11</p>
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# EXCALIBER CONCRETE SLEEPER RETAINING WALL SPECIFICATIONS - 1.60m MAX. HEIGHT



**TYPICAL RETAINING WALL DETAIL - 1600 MAX. HEIGHT**  
SCALE 1:20

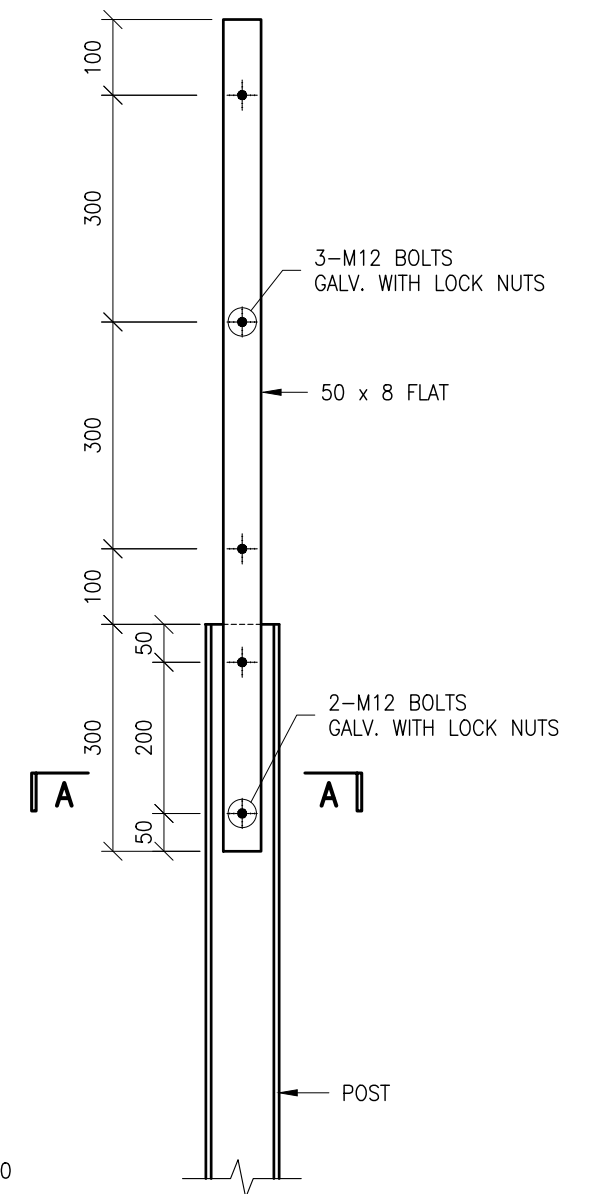


**TYPICAL POST DETAILS**

SCALE 1:20

**NOTE:**  
ALL STEELWORK, POSTS, PLATES, BOLTS, NUTS, AND WASHERS TO BE HOT DIP. GALV.

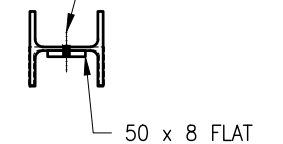
SURFACE DRAINAGE SHOULD BE PROVIDED AT THE TOP OF THE WALL WHERE THE CATCHMENT BEHIND THE WALL EXTENDS MORE THAN 6 METRES BEHIND THE WALL AND WHERE THE GROUND SLOPES TOWARDS THE WALL.



**FENCE POST DETAIL**

SCALE 1:10

M12 BOLTS GALV. WITH LOCK NUTS



**SECTION A-A**

100 PFC & 150 PFC SIMILAR  
SCALE 1:10

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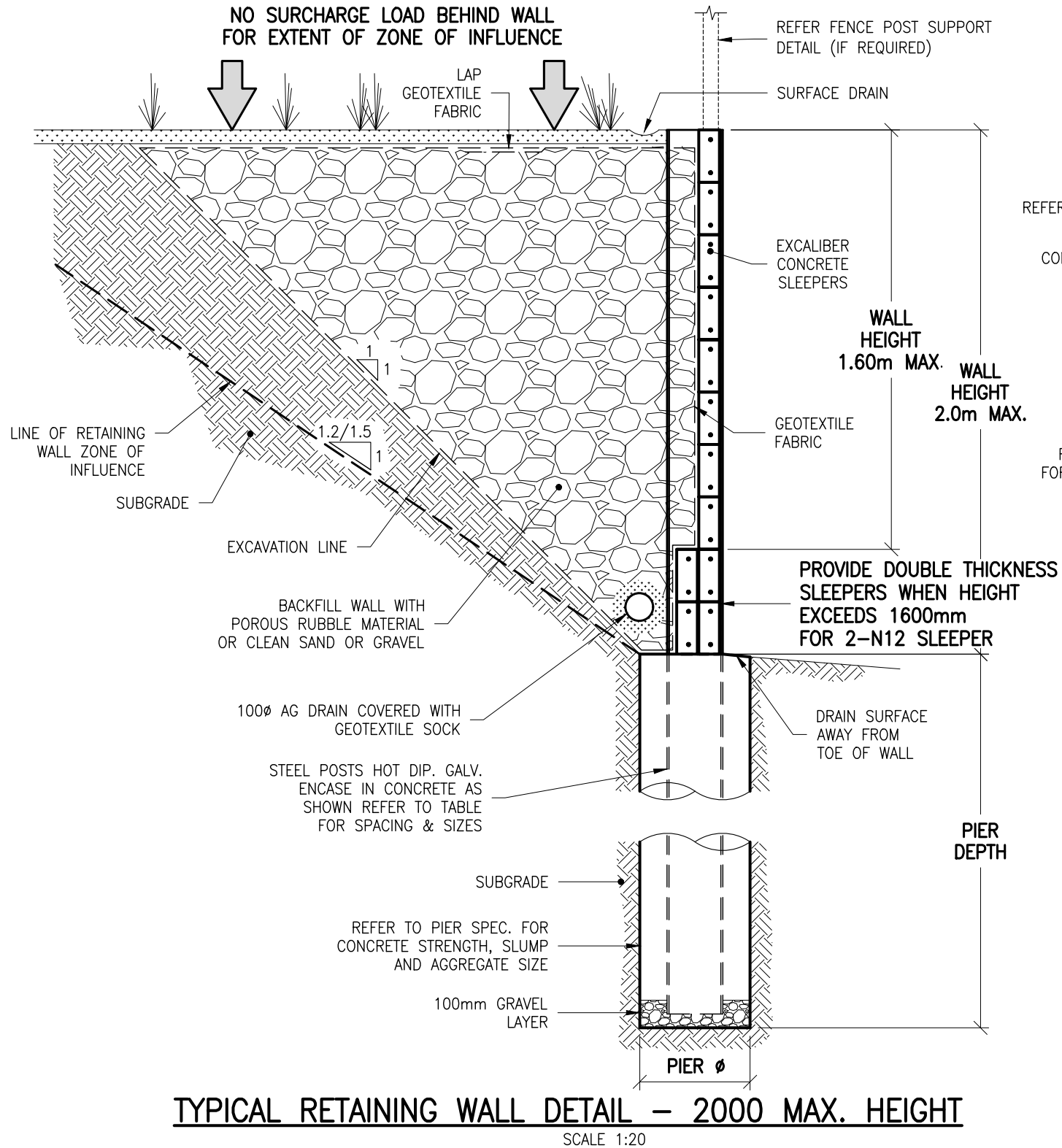
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07 of 11	

# EXCALIBER CONCRETE SLEEPER RETAINING WALL SPECIFICATIONS - 2.0m MAX. HEIGHT

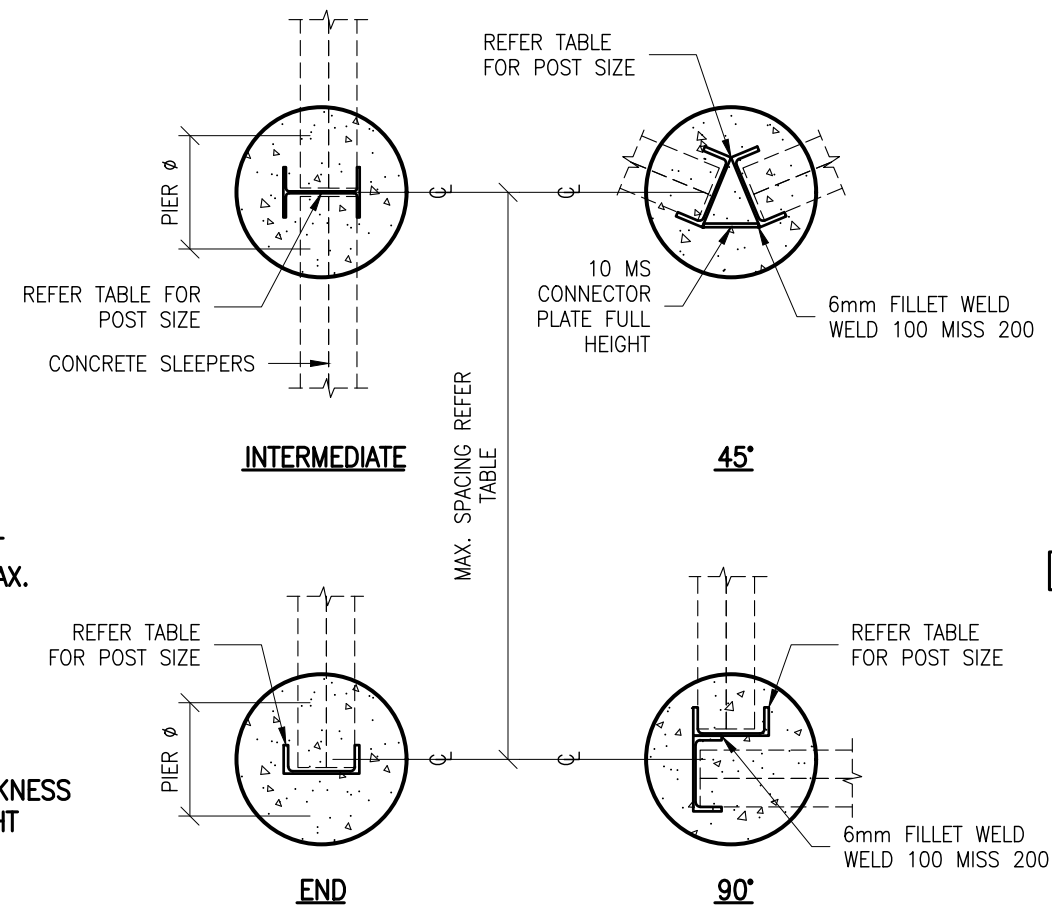
## NOTE:

NO SURCHARGE LOAD BEHIND WALL FOR EXTENT OF ZONE OF INFLUENCE



TYPICAL RETAINING WALL DETAIL - 2000 MAX. HEIGHT

SCALE 1:20



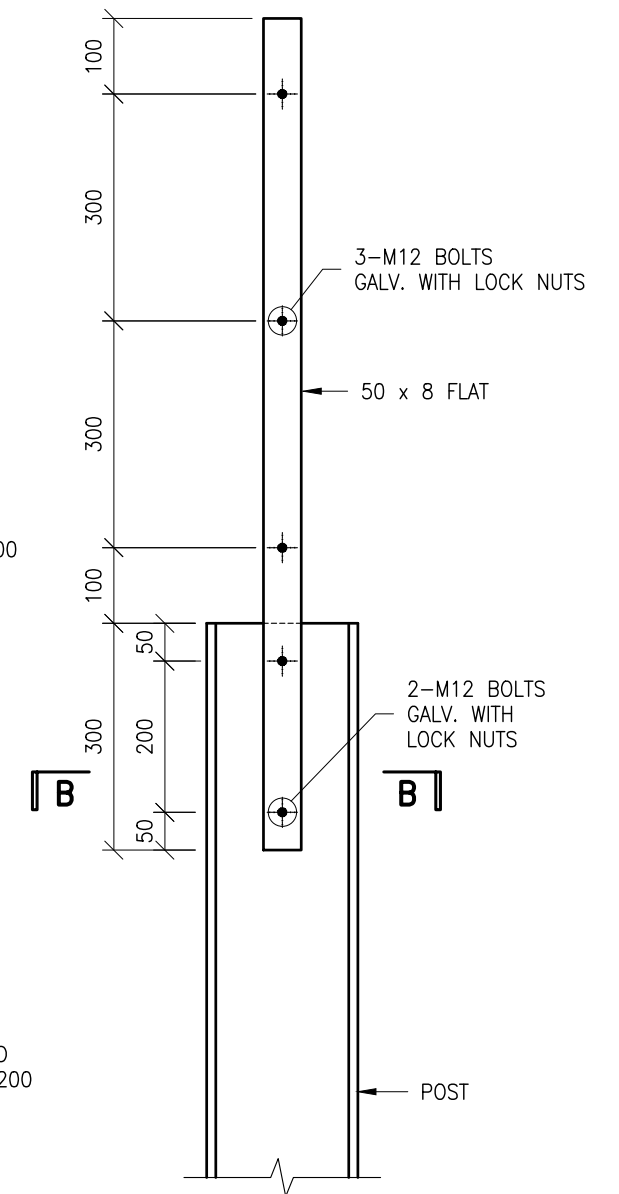
TYPICAL POST DETAILS

SCALE 1:20

## NOTE:

ALL STEELWORK, POSTS, PLATES, BOLTS, NUTS, AND WASHERS TO BE HOT DIP. GALV.

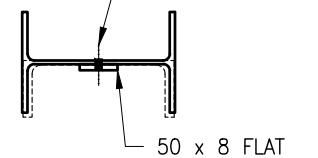
SURFACE DRAINAGE SHOULD BE PROVIDED AT THE TOP OF THE WALL WHERE THE CATCHMENT BEHIND THE WALL EXTENDS MORE THAN 6 METRES BEHIND THE WALL AND WHERE THE GROUND SLOPES TOWARDS THE WALL.



FENCE POST DETAIL

SCALE 1:10

M12 BOLTS GALV. WITH LOCK NUTS



SECTION B-B

100 PFC & 150 PFC SIMILAR  
SCALE 1:10

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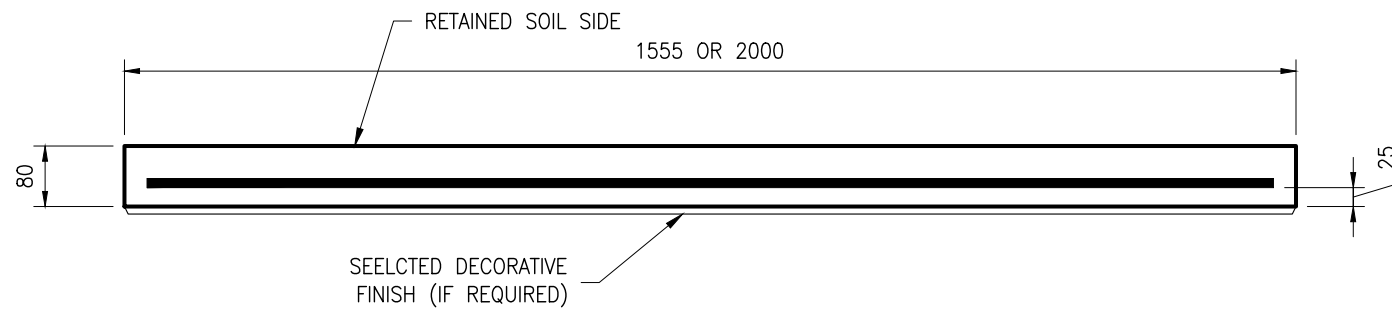
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				SHEET No:	08 of 11



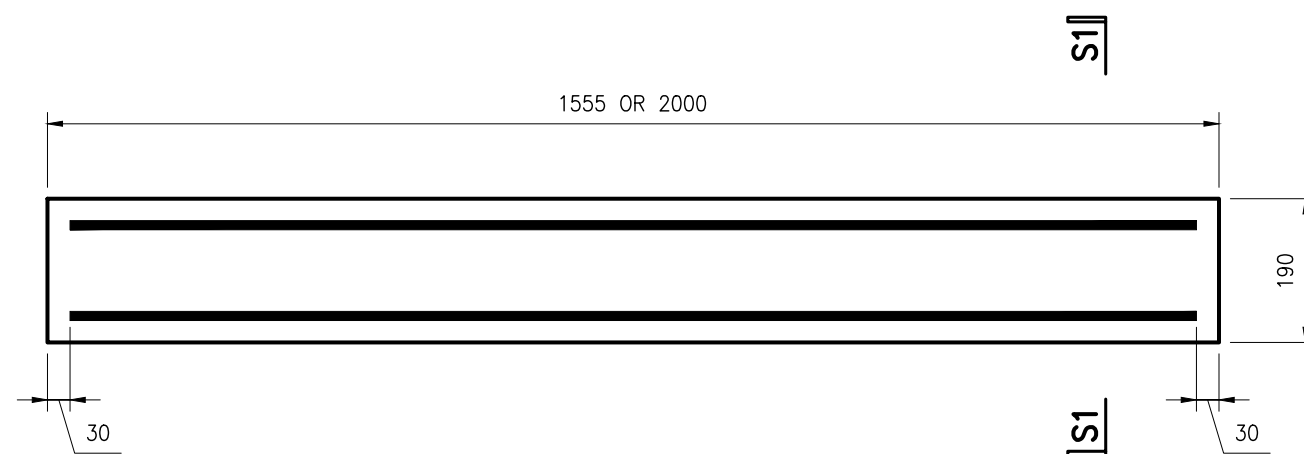
# EXCALIBER CONCRETE SLEEPER RETAINING WALL SPECIFICATIONS - 1555 & 2000 SLEEPER (2-N12 BARS)

## SPECIFICATION NOTES

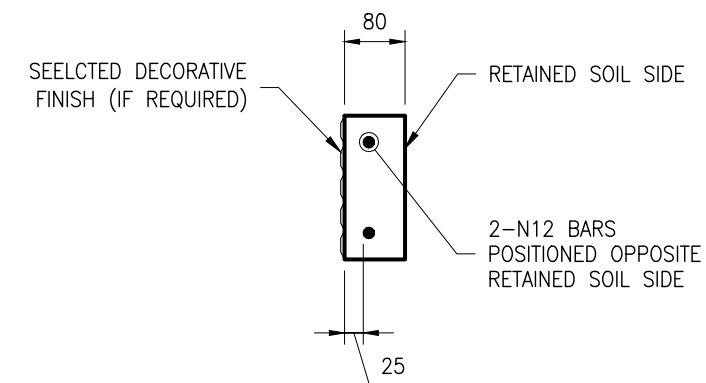
- SLEEPER CONCRETE STRENGTH TO BE N32 MINIMUM.
- SLEEPER TO BE CAST IN STRICT ACCORDANCE WITH AS 3600.
- SLEEPERS TO BE EMBEDDED A MINIMUM OF 35mm EACH END
- SURCHARGE LOADS TO BE LIMITED TO 5kPa
- FINISHED SURFACE BEHIND WALL NOT TO EXCEED 1:10 VERTICAL:HORIZONTAL
- NO HYDROSTATIC WATER PRESSURE BEHIND WALL
- MINIMUM RETAINED SOIL PARAMETERS OF BULK DENSITY = 19kN/m<sup>3</sup>
- MINIMUM ANGLE OF REPOSE TO BE 30°
- MAXIMUM WALL HEIGHT OF 2.0m FOR 1550 SLEEPER
- MAXIMUM WALL HEIGHT OF 1.6m FOR 2000 SLEEPER



**SINGLE SLEEPER PANEL PLAN**



**SINGLE SLEEPER PANEL ELEVATION**



**SECTION S1-S1**

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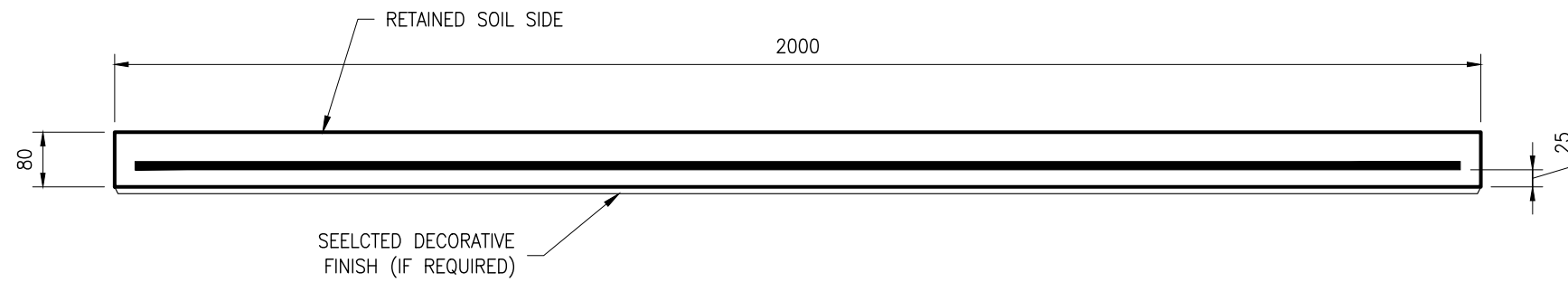


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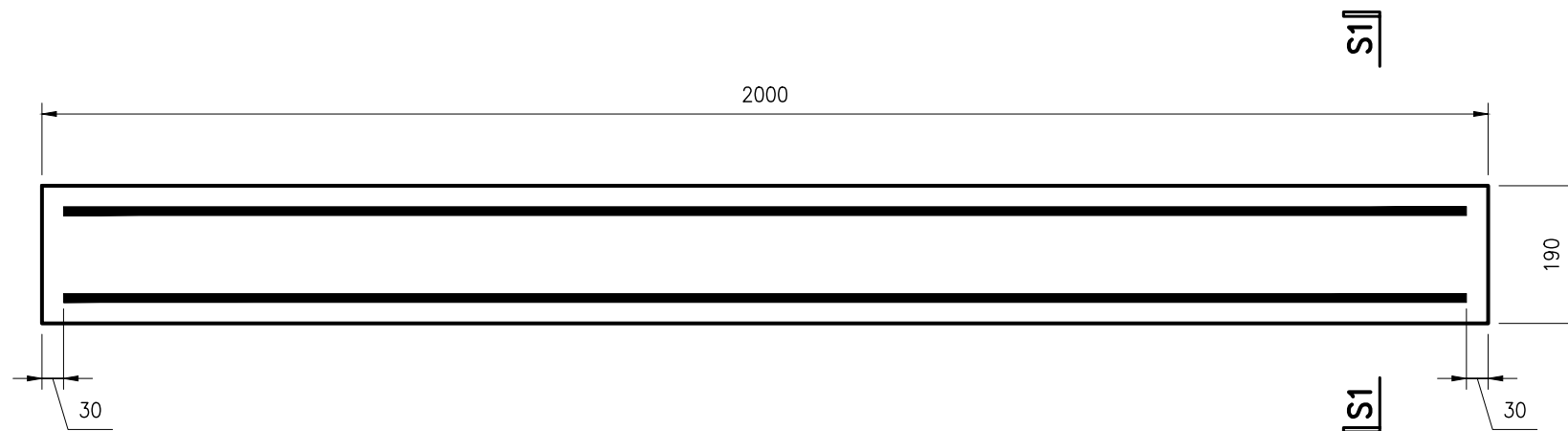
# EXCALIBER CONCRETE SLEEPER RETAINING WALL SPECIFICATIONS - 2000 SLEEPER (2-N12 BARS)

## SPECIFICATION NOTES

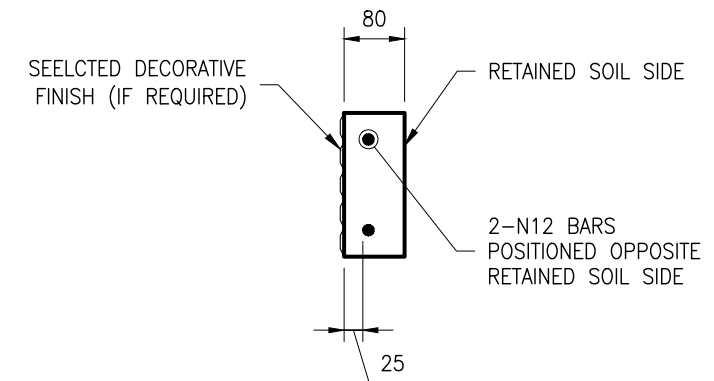
- SLEEPER CONCRETE STRENGTH TO BE N32 MINIMUM.
- SLEEPER TO BE CAST IN STRICT ACCORDANCE WITH AS 3600.
- SLEEPERS TO BE EMBEDDED A MINIMUM OF 35mm EACH END
- NO SURCHARGE LOADS
- FINISHED SURFACE BEHIND WALL NOT TO EXCEED 1:10 VERTICAL:HORIZONTAL
- NO HYDROSTATIC WATER PRESSURE BEHIND WALL
- MINIMUM RETAINED SOIL PARAMETERS OF BULK DENSITY = 19kN/m<sup>3</sup>
- MINIMUM ANGLE OF REPOSE TO BE 30°
- MAXIMUM WALL HEIGHT OF 1.6m



**SINGLE SLEEPER PANEL PLAN**



**SINGLE SLEEPER PANEL ELEVATION**



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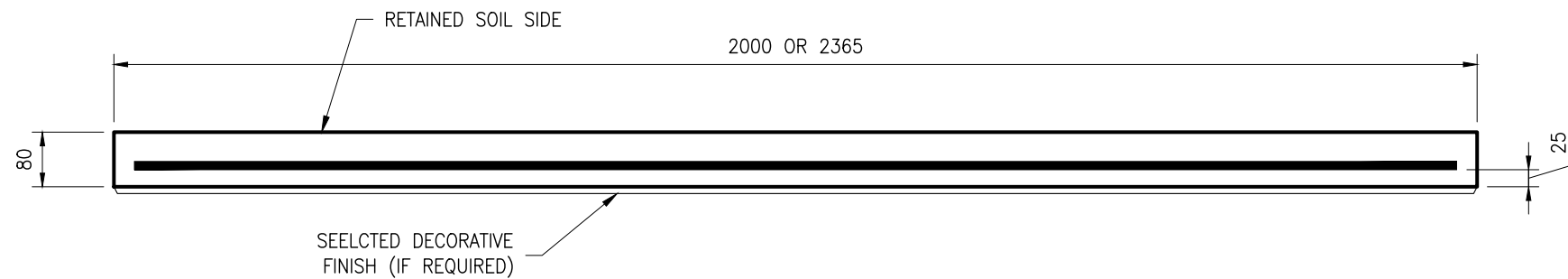


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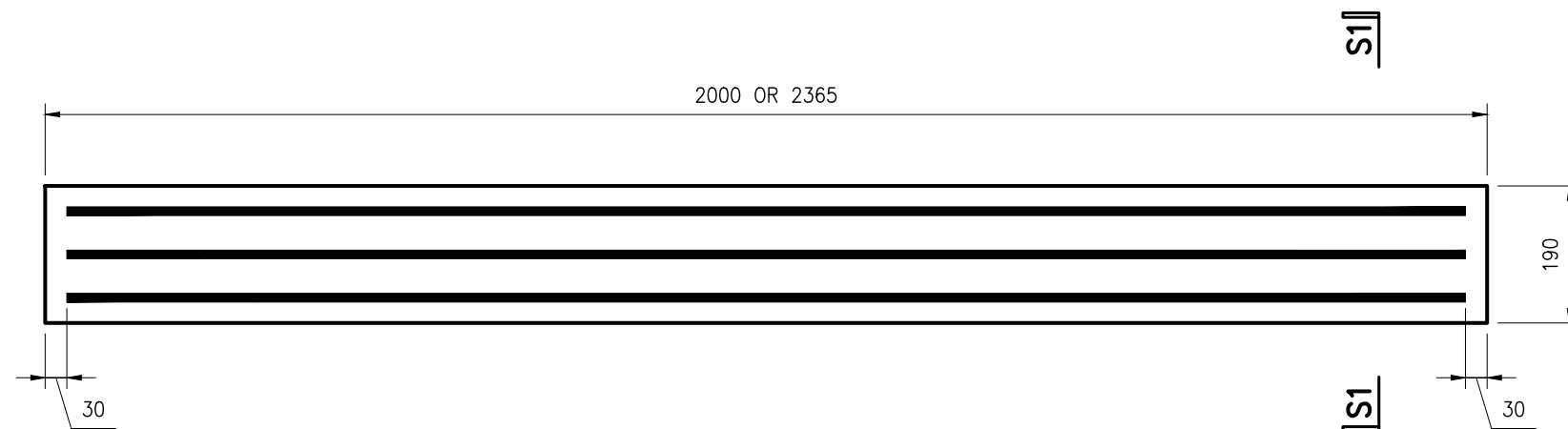
# EXCALIBER CONCRETE SLEEPER RETAINING WALL SPECIFICATIONS - 2000 & 2365 SLEEPER (3-N12 BARS)

## SPECIFICATION NOTES

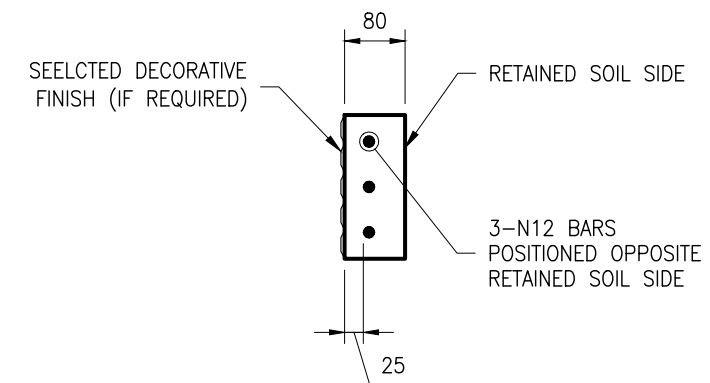
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- MINIMUM RETAINED SOIL PARAMETERS OF BULK DENSITY = 19kN/m<sup>3</sup>
- MINIMUM ANGLE OF REPOSE TO BE 30°
- MAXIMUM WALL HEIGHT OF 2.0m FOR 2000 SLEEPER
- MAXIMUM WALL HEIGHT OF 1.0m FOR 2365 SLEEPER



**SINGLE SLEEPER PANEL PLAN**



**SINGLE SLEEPER PANEL ELEVATION**



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