DESIGN NOTES:

1. REFER TO EUROCOMP DESIGN CODE TABLE 4.13 FOR THE FIBRE REINFORCED PLASTIC/ POLYMER (FRP) CHARACTERISTIC MATERIAL PROPERTIES ASSUMED. THE POSTS ARE TO BE MANUFACTURED USING E-GLASS ROVING AND POLYESTER PULTRUSION.
2. A LATERAL SERVICEABILITY DEFLECTION OF L/120mm MAX. IS ADOPTED TO GOVERN THE POST AND SLEEPER SECTIONS DESIGN FOR THIS EXAMPLE CALCULATION.
3. DESIGNER TO DETERMINE THE LIMITING DEFLECTION FOR ANY PROJECT SITE-SPECIFIC RETAINING WALL SYSTEM DESIGN.
4. SINGLE LAYER FRP SLEEPERS ARE ADOPTED IN THIS DESIGN EXAMPLE.
5. BUILDER/CONTRACTOR TO SUBMIT LOAD-DEFLECTION TESTING RESULTS AND DIMENSIONAL CHECKS OF FRP ELEMENTS FOR REVIEW AND CERTIFICATION OF A REGISTERED ENGINEER PRIOR TO CONSTRUCTION.
6. ALL PIERS ARE ASSUMED TO MOVE AT LEAST 0.01H DUE TO ACTIVE SOIL PRESSURE BEING MOBILISED.
7. ALL CONCRETE PIERS SHALL BE GRADE N32, WITH 100mm STANDARD SLUMP AND 10mm MAX. AGGREGATE.
8. SURCHARGE LOADING AND FOUNDATION SOIL PROPERTIES ADOPTED ARE ASSUMPTION ONLY. THIS NEEDS TO BE CONFIRMED BY SOIL LABORATORY TEST AND GEOTECHNICAL INVESTIGATION.
9. NO CONSTRUCTION ACTIVITY IS ALLOWED WITHIN THE 1.5m ZONE OF INFLUENCE FROM THE WALL. ALLOWABLE CONSTRUCTION TOLERANCE DURING INSTALLATION IS +/- 5mm.
10. MANUFACTURERS TO PROVIDE RELEVANT TESTING CERTIFICATES CARRIED OUT IN AUSTRALIA APPROVED LABORATORY NATA AGENCY AS WELL AS STRUCTURAL CAPACITY CERTIFICATION BY A QUALIFIED REGISTERED ENGINEER.
11. DRAINAGE FILTER MUST BE DESIGNED BASED OF PERMEABILITY BY STORMWATER ENGINEER.
12. ANY RETAINING WALL DESIGN ABOVE 800mm IN HEIGHT MUST HAVE AN RPEQ DESIGN CERTIFICATION AS PER NATIONAL CONSTRUCTION CODE.
13. THIS DESIGN EXAMPLE RETAINING WALL IS FOR CIVIL ONLY AND IT MUST NOT FORM PART OF A BUILDING IN ANY MEANS.

EXAMPLE DESIGN PARAMETERS ADOPTED

DESIGN PARAMETER	VALUE	DESCRIPTION	UNIT
SURCHARGE, q	5.0	SURCHARGE (LIVE LOAD)	kPa, kN/m^2
EFFECTIVE INTERNAL FRICTION ANGLE, ϕ	25	EFFECTIVE INTERNAL FRICTION ANGLE OF SOIL AS PER AS 4678	DEGREES
REDUCTION FACTOR FOR tan(ϕ ')	0.85	SOIL REDUCTION FACTOR AS PER AS 4678	UNITLESS
EFFECTIVE COHESION OF RETAINED SOIL, c'	0	CHARACTERISTIC EFFFECTIVE COHESION OF SOIL AS PER AS 4678	kPa, kN/m^2
EFFECTIVE COHESION OF FOUNDATION SOIL, c'	5	CHARACTERISTIC EFFFECTIVE COHESION OF SOIL AS PER AS 4678	kPa, kN/m^2
REDUCTION FACTOR FOR c'	0.7	APPARENT COHESION REDUCTION FACTOR FOR IN-SITU MATERIAL	UNITLESS
RETAINED SOIL UNIT WEIGHT	19	BULK UNIT WEIGHT OF THE FILL BEHIND THE WALL	kN/m^3
FOUNDATION SOIL UNIT WEIGHT	18	BULK UNIT WEIGHT OF FOUNDATION SOIL	kN/m^3
LOAD FACTOR FOR SURCHARGE	1.5	ULTIMATE LIMIT STATE	UNITLESS
HEIGHT OF WATER TABLE	N/A	HYDROSTATIC PRESSURE HEAD	m
Hf, FENCE HEIGHT	1.8	FENCE	m
Pw, WIND PRESSURE	0.75	DESIGN SERVICE WIND PRESSURE	kPa, kN/m^2

NOTE: PARAMETERS ADOPTED IN TABLE ABOVE IS FOR TYPICAL EXAMPLE. CONTRACTOR/BUILDER TO CONFIRM WITH THE DESIGN ENGINEER FOR FURTHER CLARIFICATION ON DIFFERENT SOIL TYPE PARAMETERS.

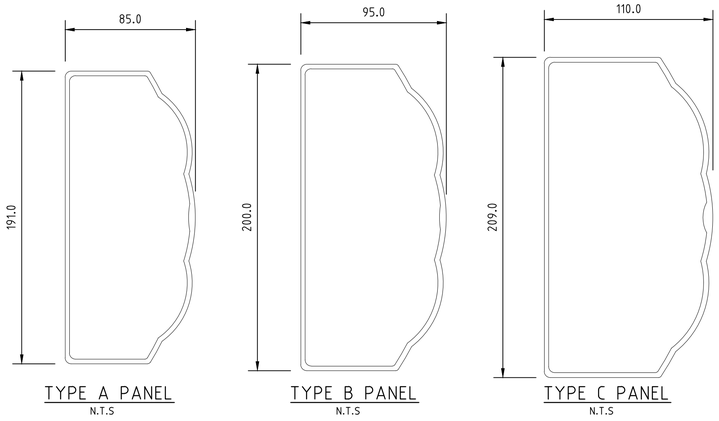
TABLE A DESIGN SPECIFICATION OF FIBRE REINFORCED PLASTIC (FRP) COMPOSITES WITHOUT 1.8m FENCE

POST/ WALL HEIGHT 'H'	SPAN OF SLEEPERS 'S' (MAX.)	FRP POST SIZE	POST SPACING (C/C)	CONCRETE PIER DETAILS	
				DIAMETER 'D'	PIER DEPTH 'L'
0.21m TO 0.40m	1970mm	100CFT	2000mm	450mm	0.70m
0.41m TO 0.60m	1970mm	100CFT	2000mm	450mm	1.00m
0.61m TO 0.8m	1970mm	100CFT	2000mm	450mm	1.40m
0.81m TO 1.00m	1970mm	100CFT	2000mm	450mm	1.70m

TABLE B DESIGN SPECIFICATION OF FIBRE REINFORCED PLASTIC (FRP) COMPOSITES WITH 1.8m FENCE

POST/ WALL HEIGHT 'H'	SPAN OF SLEEPERS 'S' (MAX.)	FRP POST SIZE	POST SPACING (C/C)	CONCRETE PIER DETAILS	
				DIAMETER 'D'	PIER DEPTH 'L'
0.21m TO 0.40m	1970mm	100CFT	2000mm	450mm	0.90m
0.41m TO 0.60m	1970mm	100CFT	2000mm	450mm	1.20m
0.61m TO 0.8m	1970mm	100CFT	2000mm	450mm	1.50m
0.81m TO 1.00m	1970mm	100CFT	2000mm	450mm	1.80m

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

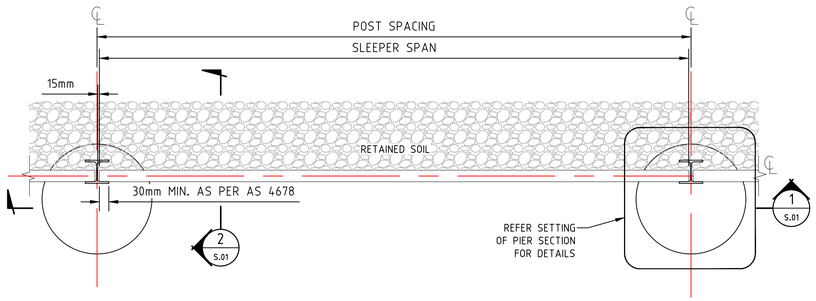


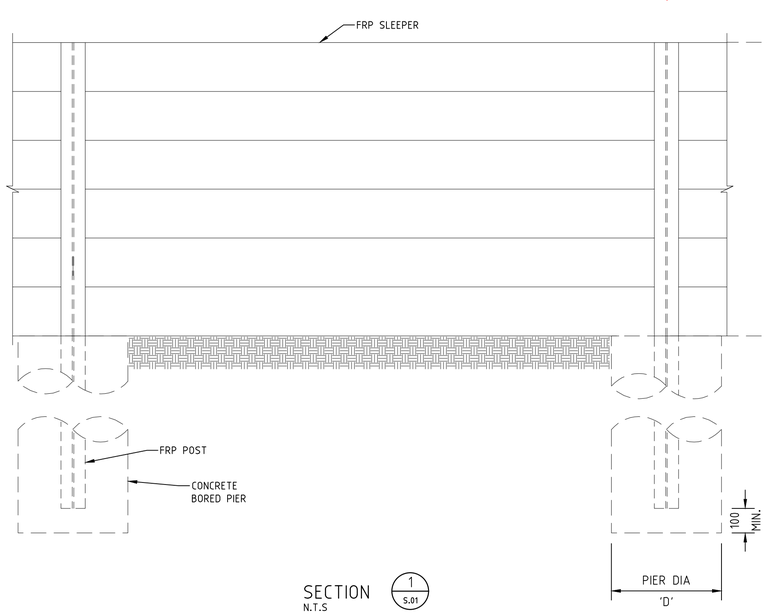
TYPE A PANEL N.T.S

TYPE B PANEL N.T.S

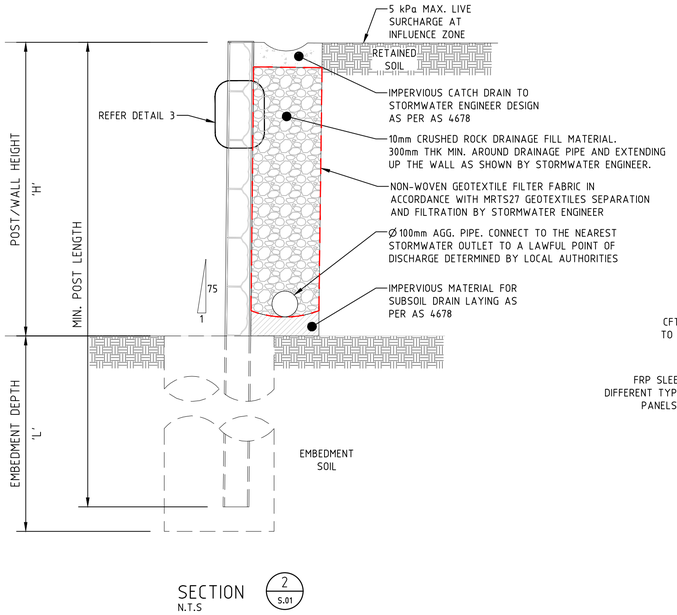
TYPE C PANEL N.T.S

TYPICAL FRP PANELS





SECTION 1 S.01 N.T.S



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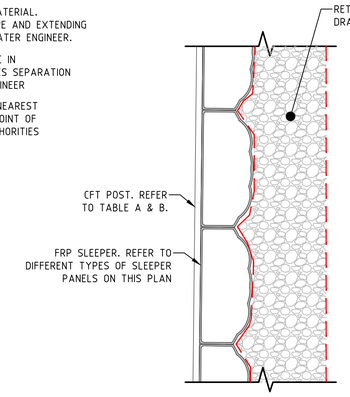

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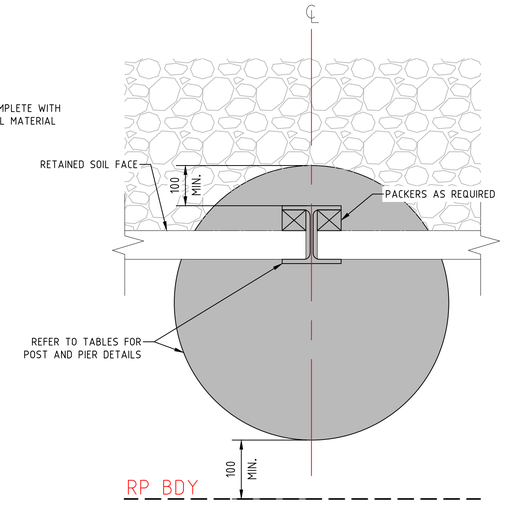

SETTING OF PIER SECTION N.T.S

CMT engineers
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REV	DATE	DESCRIPTION	DRAWN	AUTH
A	29.11.2022	FOR INFORMATION ONLY	KST	CMT
B	05.12.2022	FOR INFORMATION ONLY	KST	CMT
C	08.12.2022	UPDATED POST NAMING: UC TO CFT	KST	CMT

PROJECT:
FIBRE REINFORCED POLYMER (FRP) RETAINING WALL

DRAWING TITLE:
DESIGN EXAMPLE FOR 1.97M LONG FRP SLEEPER DETAILS & 100MM FRP POST

PROJECT NUMBER/SHEET: C21-178 S.01 **REVISION:** C

DESIGN NOTES:

1. REFER TO EUROCOMP DESIGN CODE TABLE 4.13 FOR THE FIBRE REINFORCED PLASTIC/ POLYMER (FRP) CHARACTERISTIC MATERIAL PROPERTIES ASSUMED. THE POSTS ARE TO BE MANUFACTURED USING E-GLASS ROVING AND POLYESTER PULTRUSION.
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EXAMPLE DESIGN PARAMETERS ADOPTED

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REDUCTION FACTOR FOR tan(ϕ ')	0.85	SOIL REDUCTION FACTOR AS PER AS 4678	UNITLESS
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REDUCTION FACTOR FOR c'	0.7	APPARENT COHESION REDUCTION FACTOR FOR IN-SITU MATERIAL	UNITLESS
RETAINED SOIL UNIT WEIGHT	19	BULK UNIT WEIGHT OF THE FILL BEHIND THE WALL	kN/m^3
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LOAD FACTOR FOR SURCHARGE	1.5	ULTIMATE LIMIT STATE	UNITLESS
HEIGHT OF WATER TABLE	N/A	HYDROSTATIC PRESSURE HEAD	m
Hf, FENCE HEIGHT	1.8	FENCE	m
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TABLE A DESIGN SPECIFICATION OF FIBRE REINFORCED PLASTIC (FRP) COMPOSITES WITHOUT 1.8m FENCE

POST/ WALL HEIGHT 'H'	SPAN OF SLEEPERS 'S' (MAX.)	FRP POST SIZE	POST SPACING (C/C)	CONCRETE PIER DETAILS	
				DIAMETER 'D'	PIER DEPTH 'L'
0.21m TO 0.40m	1970mm	125CFT	2000mm	450mm	0.70m
0.41m TO 0.60m	1970mm	125CFT	2000mm	450mm	1.00m
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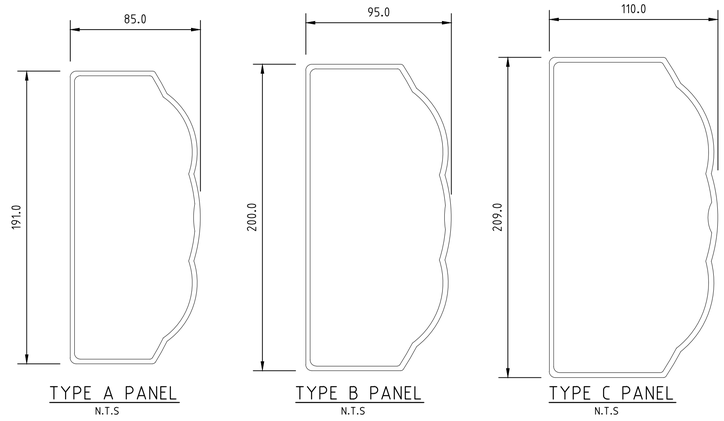
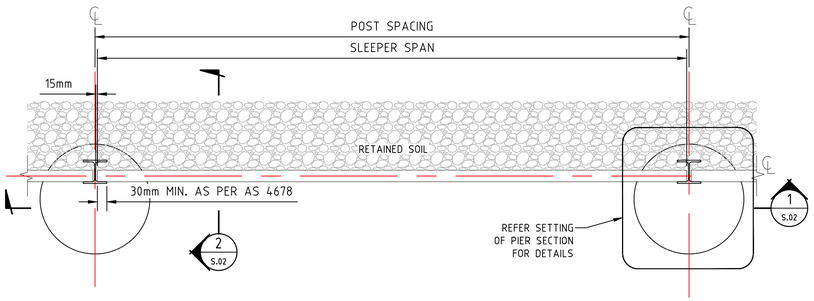
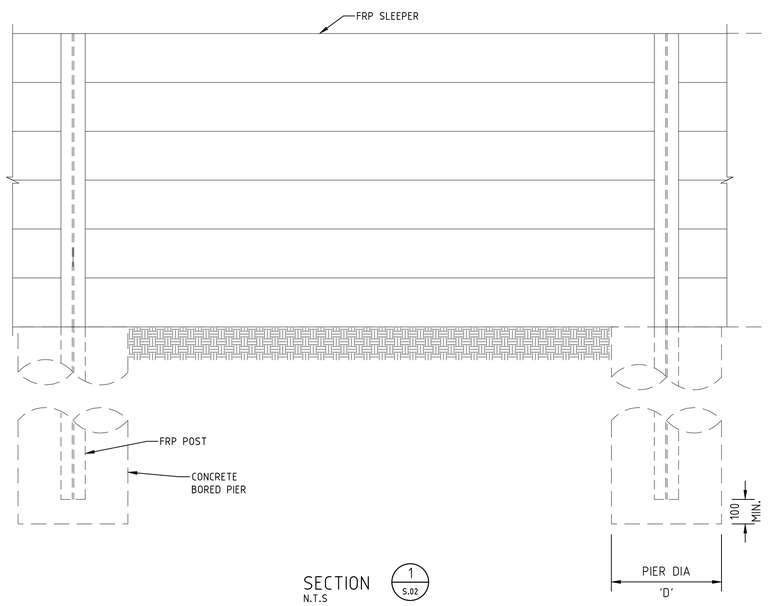


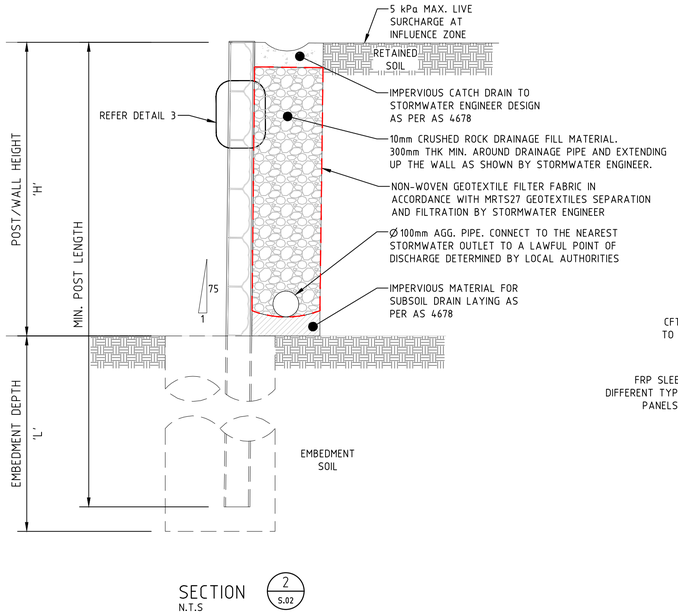
TYPE A PANEL N.T.S | TYPE B PANEL N.T.S | TYPE C PANEL N.T.S

TYPICAL FRP PANELS





SECTION 1 / 5.02 N.T.S



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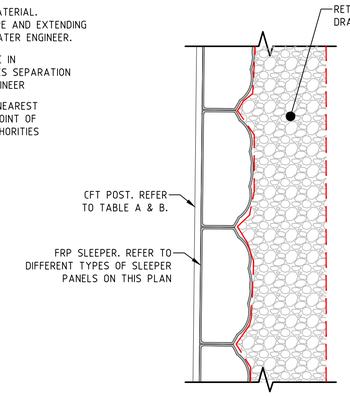

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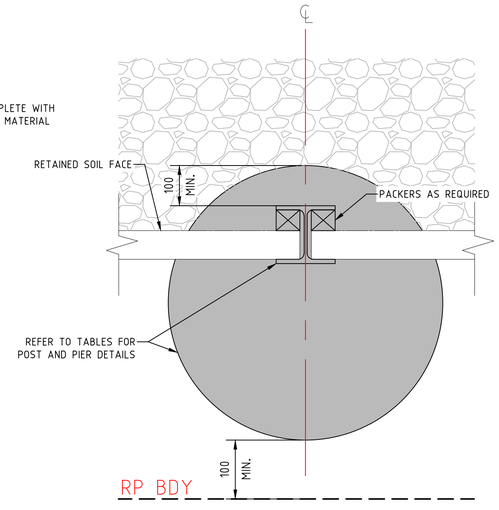

SETTING OF PIER SECTION N.T.S

CLIENT:

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C	08.12.2022	UPDATED POST NAMING: UC TO CFT	KST	CMT

PROJECT:

FIBRE REINFORCED POLYMER (FRP) RETAINING WALL

DRAWING TITLE:

DESIGN EXAMPLE FOR 1.97M LONG FRP SLEEPER DETAILS & 125MM FRP POST

PROJECT NUMBER/SHEET: C21-178 S.02

REVISION: C