Strol™

SureWall™

Design & Strength Document

G 001 002
April 2022
Version 1

ENHANCING TOMORROW | STROL.CO.NZ

SureWall

Design Life

ABOUT

SureWall posts can be designed for up to 100-year design life in many cases. The design life of the SureWall posts is dependent on the conditions they are installed in and the loads on the post, as any corrosion over time will reduce the structural capacity.

See attached a clip from the British Standard BS8006 for design life information of steel components in soil reinforcement applications. For a 50-year design life the posts can be expected to lose approximately 0.6 mm total thickness due to corrosion. The design engineer will need to take this structural loss into account in the design of the wall.

3.2.1.2 Corrosion allowance

The non-structural sacrificial thickness on each surface of steel elements exposed to corrosion of class 6I, 6J, 7C, and 7D fills should be as listed in Table 4. For other fills a separate evaluation should be made.

It is recommended that all metallic components buried in soil, i.e. reinforcing elements, connections, facing lugs and where applicable the facing units, should be of electrolytically compatible material. Where this is not possible, electrical insulation of durability equal to the service life of the structure should be provided between different metallic components.

Table 3 **Minimum properties of some different types of steel reinforcement**

Type of steel reinforcement	Maximum thickness to which stresses apply	Tensile strength σ_t	Shear strength σ_q	Bearing strength σ_{bc}
	mm	N/mm^2	N/mm^2	N/mm^2
Carbon steel to BS EN 10025-2:2004 S 235 JR	16	360	215	360
Carbon steel to BS EN 10025-2:2004 S 275 JR	16	410	245	410
Carbon steel to BS EN 10025-2:2004 S 355 JR	16	470	280	470
Carbon steel rod to BS 4449:2005 and BS EN 10080:2005 grade B500	40 diameter	525	315	525

Table 4 **Sacrificial thickness to be allowed on each surface exposed to corrosion**

Design service life	Reinforcement material	Sacrificial thickness mm	
years		Land based structure (out of water)	Fresh water structure
5	B	0.25	0.25
	G	0	0
10	B	0.35	0.4
	G	0	0
50	B	1.15	1.55
	G	0.3	0.55
60	B	1.35	1.68
	G	0.38	0.63
70	G	0.45	0.7
120	G	0.75	1.0

Key
B black steel (ungalvanized)
G galvanized steel

NOTE 1 Linear interpolation may be used for intermediate service lives.

NOTE 2 These values apply to steels embedded in fills conforming to Table 2 of this standard and Table B.1 of BS EN 14475:2006.

NOTE 3 Sites of special aggressiveness are to be assessed by specific study.

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TEST REPORT No.: INZ58069-01

Client:	Cirtex Industries Ltd
Order No.:	PO35055
Sample Description:	2100mm Steel Joiner Post
Identification:	SWJ2100
Material Specification:	Not specified
Tested in accordance with:	Client instruction

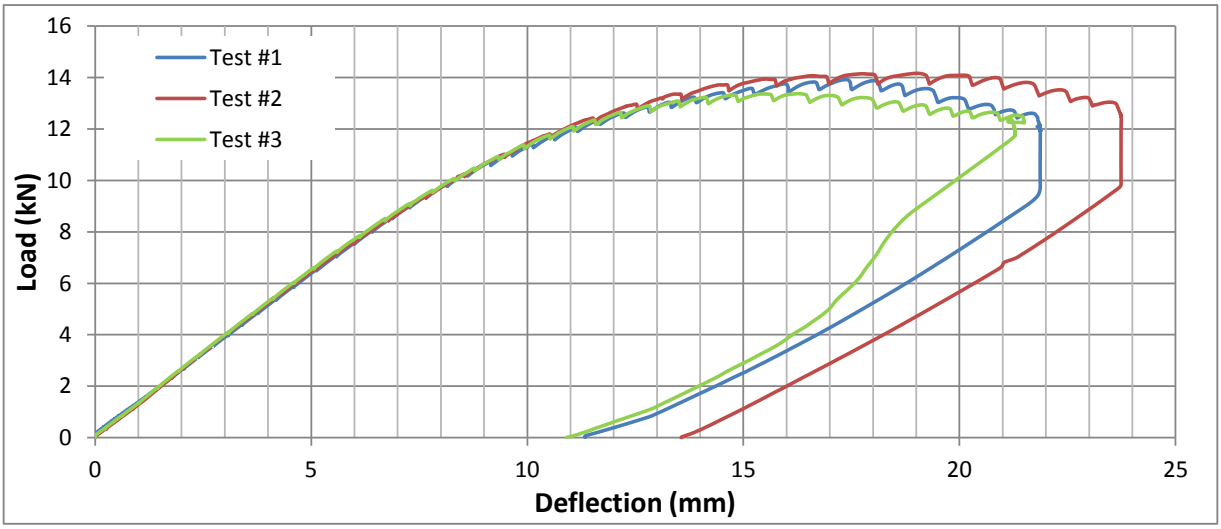
Test: Cantilevered bend test of steel joiner post measuring load versus deflection.

Method: The steel post was placed horizontally in SGS' test frame with 900mm of one end fixed allowing 1200mm to be cantilevered (Fig. 2). A gradual downward force was applied 1300mm from the end with deflection measured directly beneath until the ultimate load was attained.

Equipment – 10t hydraulic ram
5t load cell S40AC3 S/N 31169512
100mm displacement sensor 1-WA/100MM-T S/N 190710057

Results:

Test #	Ultimate Load (kN)	Deflection at Ultimate Load (mm)
1	13.9	17.4
2	14.2	19.0
3	13.4	16.3



Acceptance Criteria:	Report findings		
Tested by:	G. Schoutens	Date:	09-Feb-17
Checked by:	N. Woods	Date:	10-Feb-17

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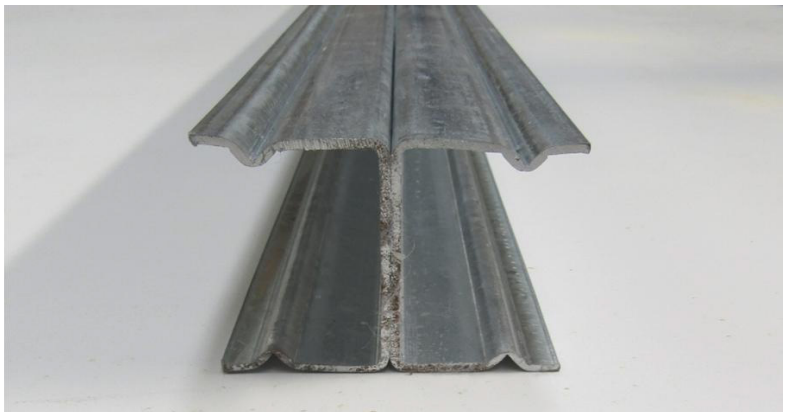

Figure 1 - Steel joiner post

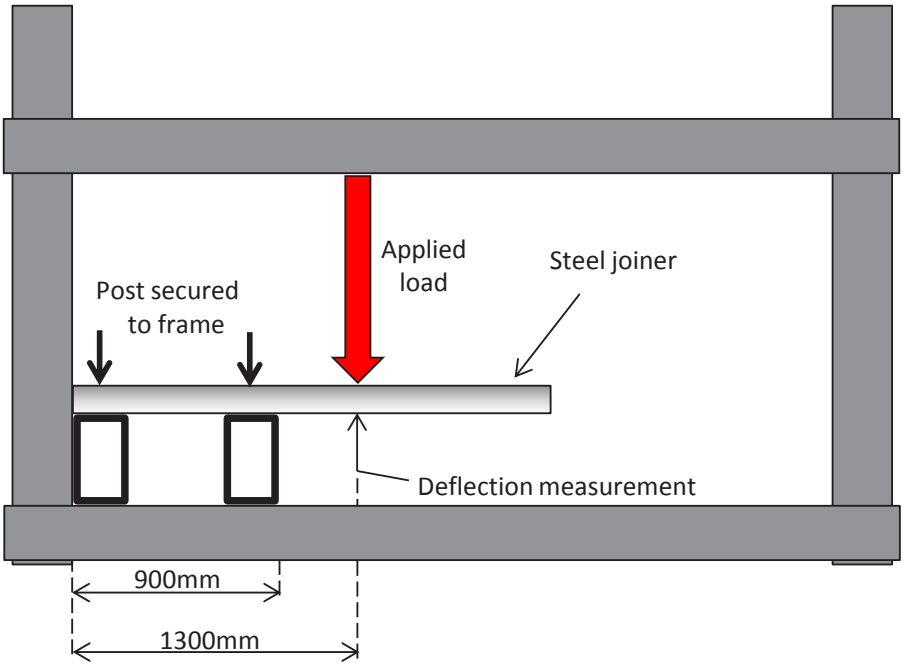

Figure 2 - Cantilever test setup

DISCLAIMER

Strol™

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