NZBC Clause B1 Structure - Design

Bespoke Service – Curv-E Track Wall System Design

Project number:	23110609-01A
Company name:	Steel Rollformed Products
Date:	16/11/2023

Victoria Park Market, Unit 72B, 210 Victoria Street,
Auckland 1010, New Zealand.

p: +64 9 216 7104
e: info@teambrevity.com

Building Code Clause(s) B1

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance on use of Producer Statements (formerly page 2) is available at www.engineeringnz.org)

ISSUED BY: Brevity
(Design Firm)

TO: Steel Rollformed Products
(Owner/Developer)

TO BE SUPPLIED TO: Territorial Authority
(Building Consent Authority)

IN RESPECT OF: Curv-E Track Wall System
(Description of Building Work)

AT: Various
(Address)

Town/City:..... **LOT**..... **DP**..... **SO**.....
(Address)

We have been engaged by the owner/developer referred to above to provide:

Design Consultancy

(Extent of Engagement)

services in respect of the requirements of Clause(s) B1 of the Building Code for:

☐ All or ■ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

■ Compliance Documents issued by the Ministry of Business, Innovation & Employment B1/VM1 or
(verification method/acceptable solution)

☐ Alternative solution as per the attached schedule.....

The proposed building work covered by this producer statement is described on the drawings titled:
SRP-92mm Steel Stud Typical Wall System with Curv-E-Track, Head and Base Track Details and numbered 23110609-01;
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:
(i) Site verification of the following design assumptions .....
(ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 ☐ CM2 ■ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☐ as per agreement with owner/developer (Architectural)

I, Matt Bishop (Name of Design Professional) am: ■ CPEng 243276 # ☐ Reg Arch ..... #

I am a member of: ■ Engineering New Zealand ☐ NZIA and hold the following qualifications: BE (Hons)
The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.
The Design Firm is a member of ACENZ: ■

SIGNED BY Matt Bishop (Name of Design Professional) (Signature) Matt Bishop

ON BEHALF OF Brevity (Design Firm) Date 17 NOVEMBER 2023

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.

Contents

Document Revision History

Rev	Date	Revision details	Author	Approved
A	16/11/2023	For Release	DB	MB

info@teambrevity.com www.teambrevity.com

1. Overview

Brevity has been engaged to provide Chartered Engineer's Report for fixing detail for the Curv-E Track Wall System. This report details the engineering design criteria and records key decisions and outcomes as per New Zealand Standards. It outlines design loading, assumptions, material properties and design standards. This report also defines the calculation procedure and checking principles to be followed, providing a clear explanation of the full design.

This PS1 covers the strength and fixing detail to different types of base materials for the Curv-E Track and Nogging Track.

This report has been prepared by Brevity on the specific instructions of our client. It is solely for our client's use for the purpose for which it is intended in accordance with the agreed scope of work. Any use or reliance by any person contrary to the above, to which Brevity has not given its prior written consent, is at that person's risk.

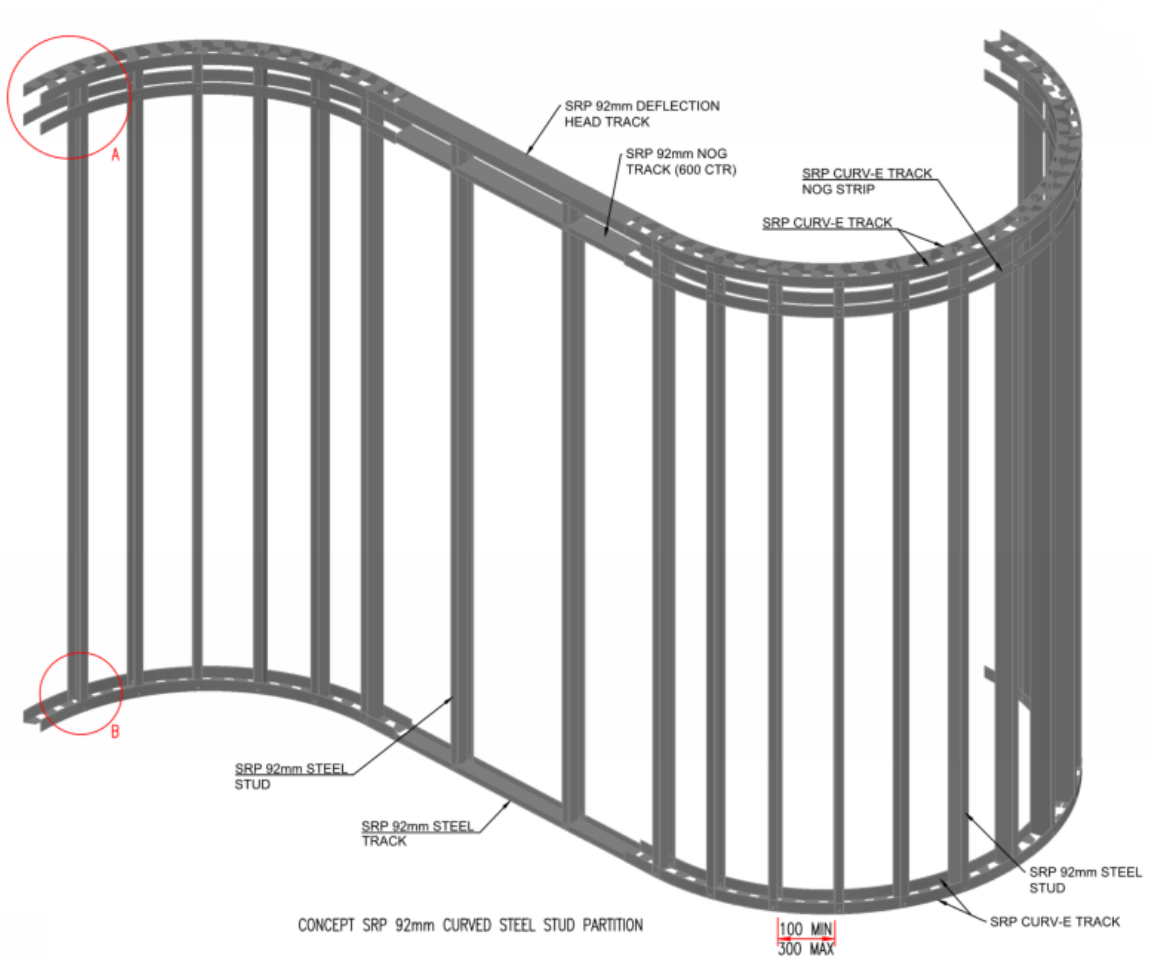


Figure 1 - General View of a typical Steel Rollformed Products Curv-E Track Wall System System

2. Design Methodology

Clause B1 Compliance Method

In accordance with the New Zealand Building Code Section B1, as an alternative solution to VM1, the engineering system was checked to the following loading standards:

- AS/NZS 1170.0:2002 - General Principles
- AS/NZS 1170.2:2021 - Wind Actions
- NZS 1170.5:2004 - Earthquake Actions

Combinations of actions for strength have been assessed in accordance with AS/NZS 1170.0 Section 4.2.2.

Specified materials have been validated to the following standards:

- AS/NZS 4600:2018 - Cold-Formed Steel Structures.
- NZS 3603:1993 - Timber Structures.

In the case of seismic anchors, specified post-installed concrete anchors shall be tested to either of the following standards when installed in structural concrete elements designed to NZS 3101:2006:

- ACI 355.2:2007
- ETAG 001: Annex E

Powder actuated (shot fired) fasteners shall not be used in concrete for seismic installation.

3. Design Loading

The following maximum allowable loads are determined for the Curv-E Track. Note that these loads are the same as the maximum allowable loads for a standard 92x1.15BMT head track so that they are interchangeable.

Line load (N/mm)	Load per anchor @270mm spacing (N)
4.68	1210

4. Fixing Design

The following anchors are suitable for securing the Curv-E Track at 270 mm centers:

- GFC Structa6 M6 anchors with minimum 40mm embedment depth.
- 14G wood screws into timber with minimum 30 mm embedment depth.
- For partial height walls a 32 mm profiled plywood headplate can be used with 14G wood screws with minimum 30 mm embedment depth. Tracklok or Deflok braces can then be used to brace the wall at spacings to be determined by an engineer.

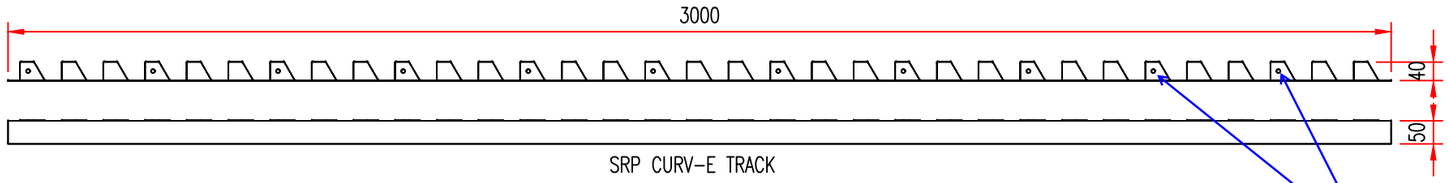
5. Our Contact Details

Engineer's contact details for this report

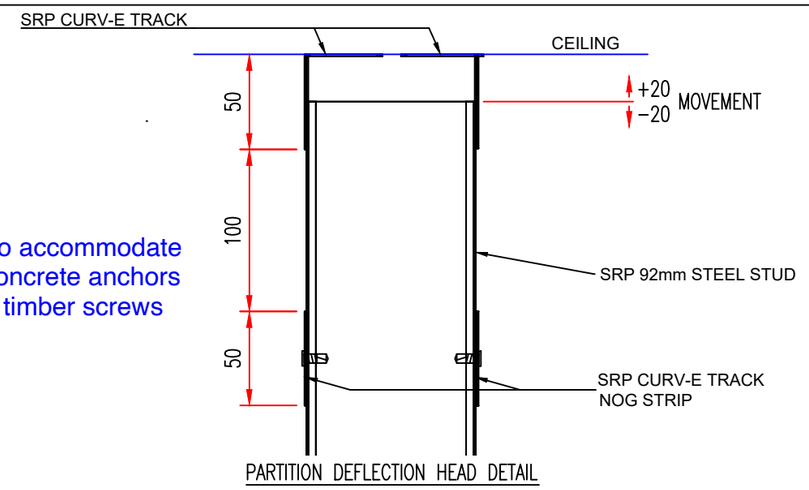
Contact	Contact details
This report was prepared by	Daniel Bulbring
Email	engineering@teambrevity.com

Auckland office

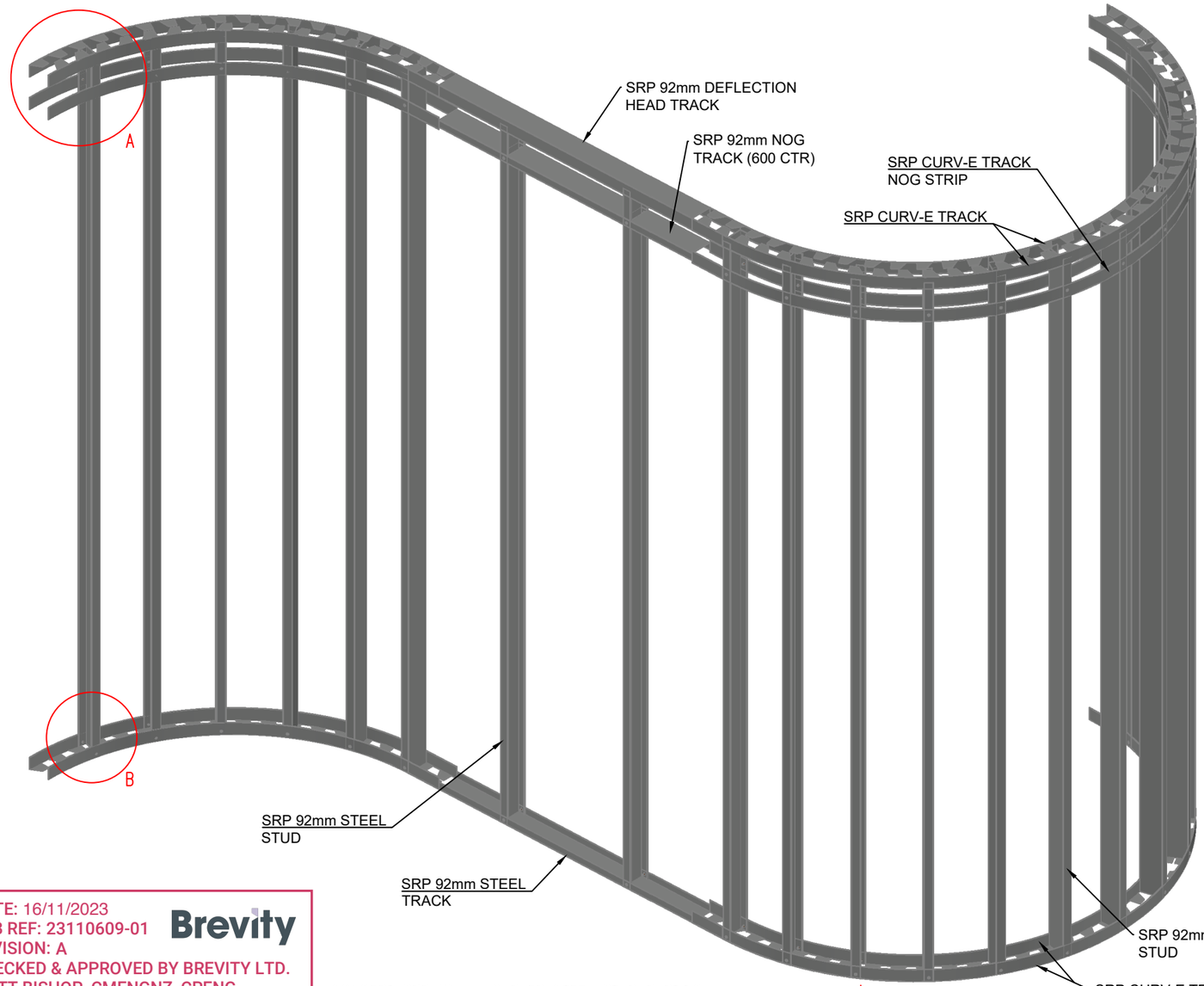
Contact	Contact details
Main office phone	+64 9 216 7104
Email for all enquiries	info@teambrevity.com
Mailing address	Victoria Park Market, Unit 72B, 210 Victoria Street, Auckland 1010, New Zealand.



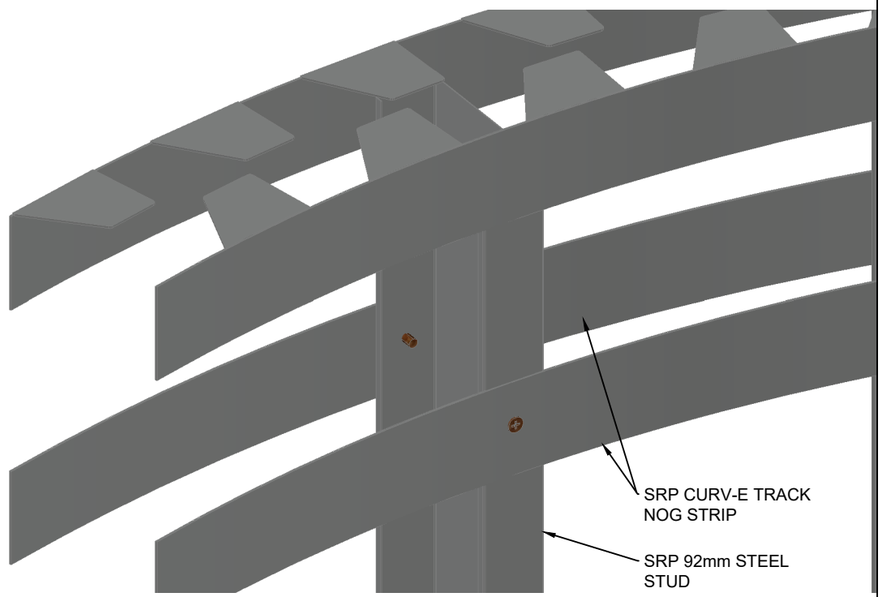
Holes to accommodate
6mm concrete anchors
or 14G timber screws



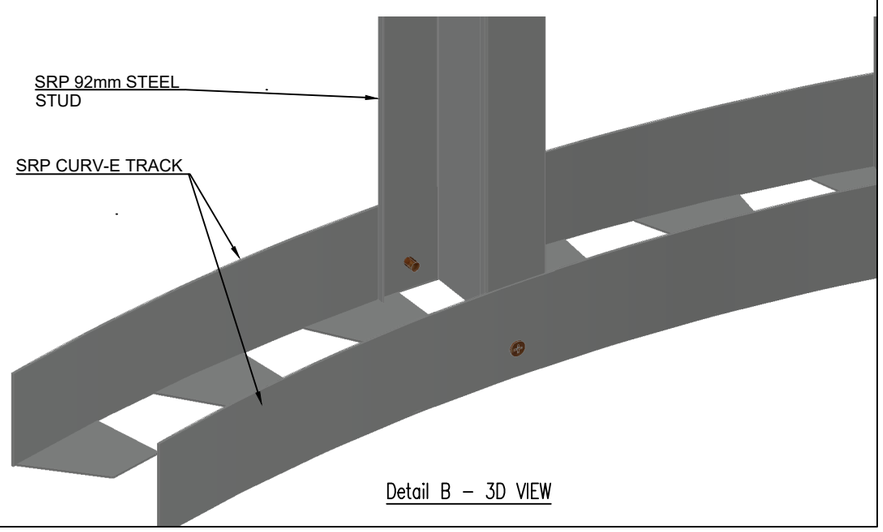
PARTITION DEFLECTION HEAD DETAIL



CONCEPT SRP 92mm CURVED STEEL STUD PARTITION



Detail A – 3D VIEW



Detail B – 3D VIEW

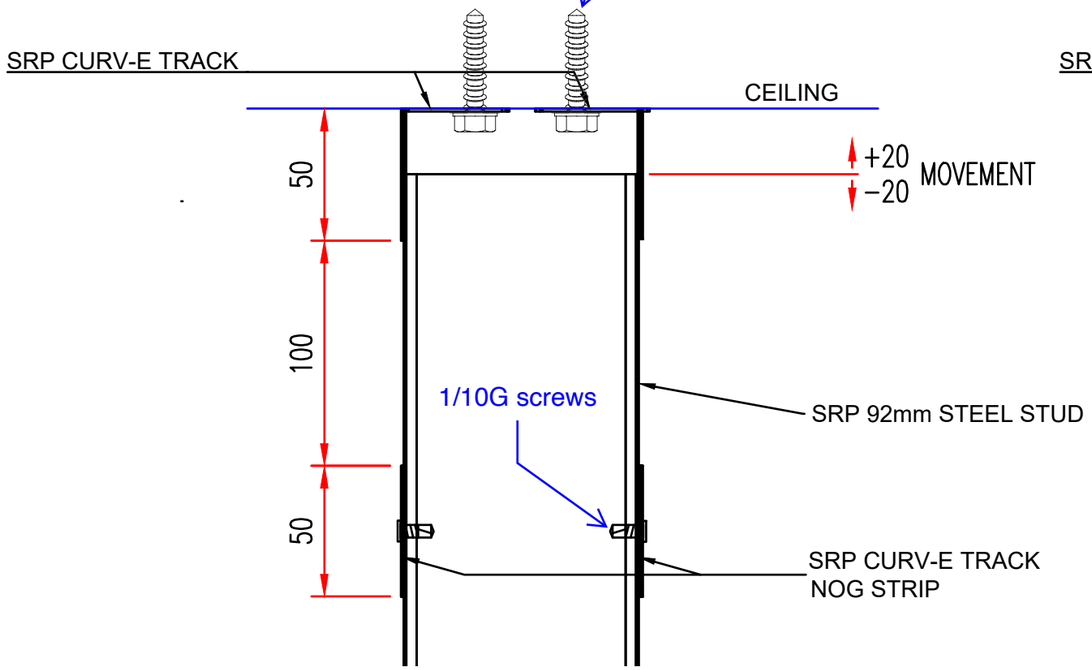
DATE: 16/11/2023
JOB REF: 23110609-01
REVISION: A
CHECKED & APPROVED BY BREVITY LTD.
MATT BISHOP, CMENGNZ, CPENG
#243276

Brevity

STEEL ROLLFORMED PRODUCTS LTD
EST. 2007
MAKING WALLS & CEILINGS EASY

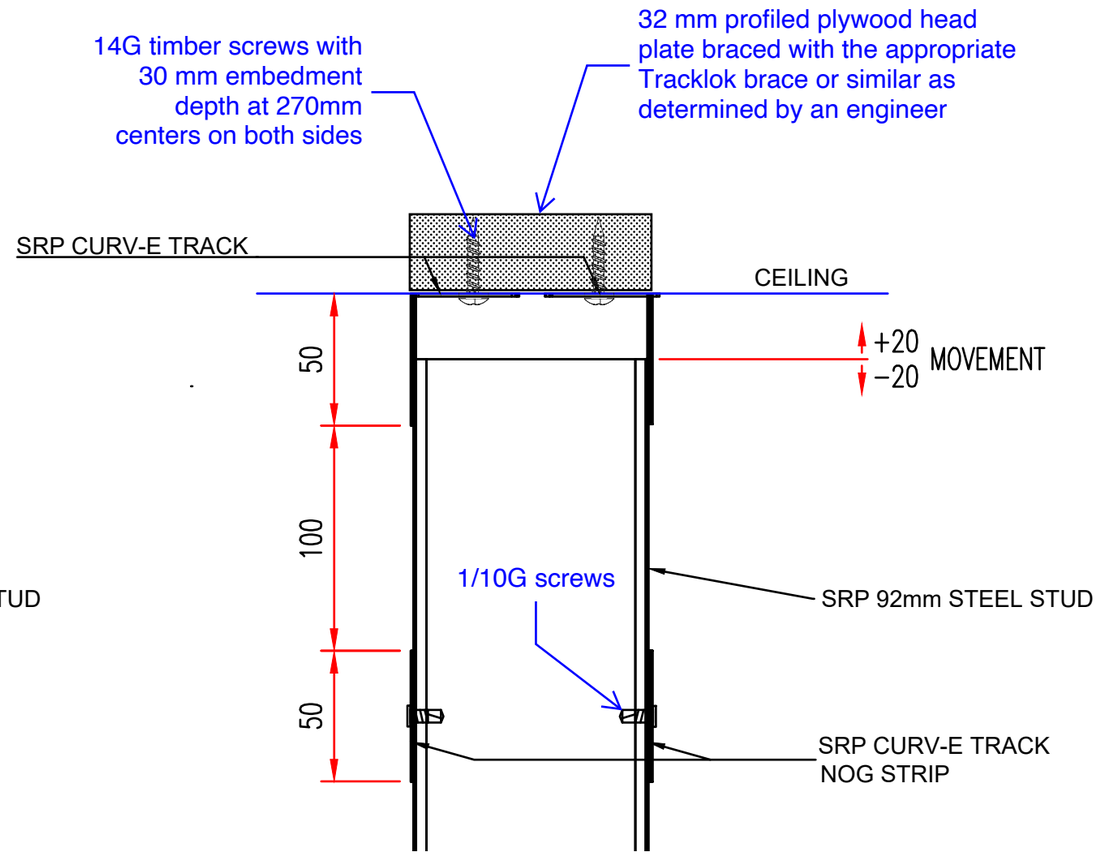
TEL: +649 579 0175
www.srpltd.co.nz

FIXINGS:
10g x 16mm FLAT TOP TEK SCREWS



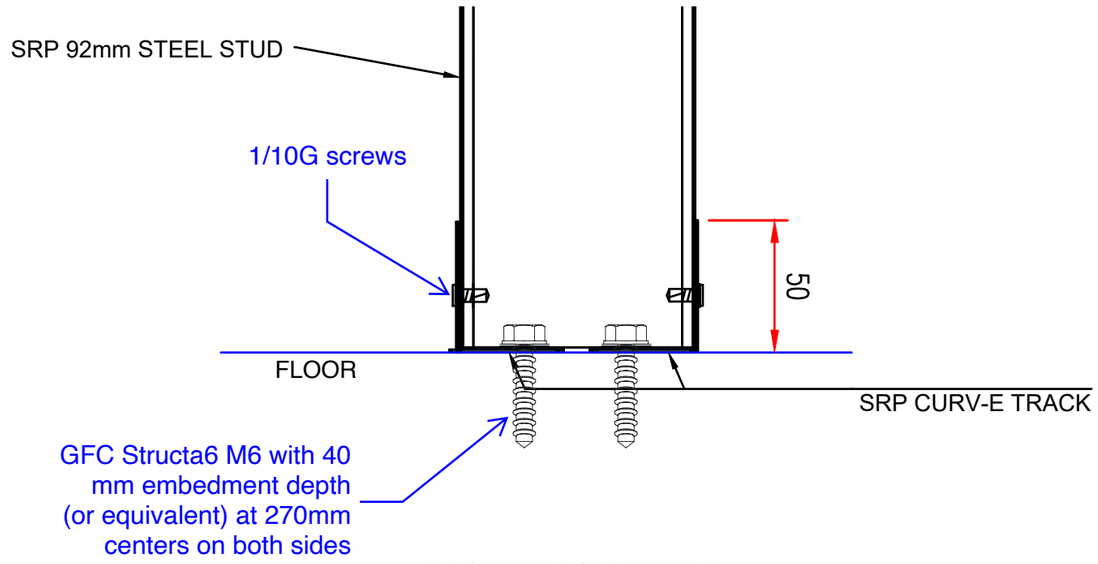
PARTITION DEFLECTION HEAD DETAIL

FULL HEIGHT



PARTITION DEFLECTION HEAD DETAIL

PARTIAL HEIGHT



BASE TRACK DETAIL

NOTES:

1. ANY CHANGES TO BE APPROVED BY BREVITY LTD.

2. REFER TO DESIGN FEATURES REPORT FOR FURTHER INFORMATION.

DESIGNER:

Brevity

Victoria Park Market,
Unit 72B,
210 Victoria Street West
Auckland 1010

+64 9 216 7104
www.teambrevity.com

Tolerances (unless specified)	1-100	<1000	>1000
	± 2	± 10	± 70

All dim. in mm

Rev	Description
A	FOR CONSENT

Designed	BREVITY LTD	16/11/23
Drawn	BREVITY LTD	16/11/23
Approved	BREVITY LTD	16/11/23

STEEL ROLLFORMED PRODUCTS
HEAD AND BASE TRACK DETAILS

Scale: Do not Scale

DRG No. 23110629-01

SHEET 1 of 1

Client:	Steel Rollformed Products
Job Title:	Curve-E Track Wall System
Job Number:	23110609-01
Issue Date:	16/11/2023
Job Revision:	A

Load on track from stud	1339.03125	N	*The thickness, offset distance is the same as standard tracks so will have the same bending stress minus the nominal curve*
Tab screw spacing	271	mm	*of the track adding some strength, so OK (see below). Note that the load is the same as the capacity for 92x1.15 BMT tracks.*
Load on each screw	1209.591563	N	*This load is based on the max allowable load on a 92x1.15 BMT track so they will be interchangeable.*
Anchor capacity	6000	N	*GFC Structa6 - M6 with min 40mm embedment depth*
Screw capacity	1553.333333	N	*14G timber screw with 45mm embedment depth*

Deflection Head Track (DHT) Summary

Type	1.15 BMT		DHT Type	alpha	25.4	
Φ	0.9		Safety factor for l	t	1.15	mm
Fu	330	MPa	DHT Strength (ul	e	20	mm
BMT	1.15	mm	DHT Gauge	Fy	270	MPa
f_b	424.3	MPa	Flange bending s	w	397.0524788	mm
df	6.00	mm	Anchor diameter	Pndt	1339.03125	N
C	3.00		Bearing factor	Load factor	1.047545042	
ΦVb	4.10	kN	Allowable bearin	Ref:AS/NZS 460		
Load factor	0.7778327249					

Bottom Track (BT) Summary

Type	1.15 BMT		Bottom Track type
Φ	0.9		Safety factor for bending
Fu	330	MPa	Bottom track strength (ultimate tensile)
BMT	1.15	mm	DHT Gauge
df	6.00	mm	Anchor Diameter
C	3.00		Bearing Factor
ΦVb	4.10	kN	Bearing capacity Ref: AS/NZS 4600 - Clause 5.3.4.1