

FORMIT SERVICES PTY LTD

ULTRA TWIN SKIN TOP LIFT

Lifting Certification

4 November 2016

Rev No. 0

J5495-C01.DOCX

Revision	Issue Date	Revision Details
0	4/11/2016	Issued for certification

Author: Zane Rendell BE(Civil)(Hons) GradIEAust
Structural / Civil Engineer

Signed:



Reviewed By: Nicholas Diemar BE(Civil)(Hons) MIEAust
CPEng NPER RPEQ
Lead Structural / Civil Engineer

Signed:



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1. INTRODUCTION

In accordance with your request to provide lifting certification of Ultra Twin Skin Top Lift portable toilet, we submit the following information.

2. ENGINEER

Zane Rendell BE(Civil)(Hons) GradIEAust
Graduate Structural / Civil Engineer

3. SUPERVISING ENGINEER

Nicholas Diemar BE(Civil)(Hons) MIEAust CPEng NPER RPEQ
Lead Structural / Civil Engineer

4. GENERAL

This document should be read in conjunction with Izzat drawings listed below in Table 1, and drawings provided by Formit listed below in Table 2.

Table 1: Izzat Drawings

Drawing Number	Revision	Title
J5495 – SK-01	0	LIFTING FRAME ARRANGEMENT

Table 2: Formit Drawings

Drawing Number	Revision	Title
1002015	H	RC7582 – FSMS-TS40 – Frame,Top,Galv Profile Details
1002019	E	RC7544 – FSMS-TS28G – Skid,Base,Ultra Profile Details
001 FORM 05 13	-	FORMIT 2012 LIFT ROD 2.1
FMT104	A	FMT104 01 LIFTING LUG

5. DESIGN BASIS

Our office was engaged to provide a Lifting certification for Ultra Twin Skin Top Lift portable Toilet. This certification applies to both the Ultra Twin Top Lift waste tank arrangement and the Sewer Connect arrangement of the portable toilet.

The Ultra Twin Top Lift is to be lifted by top only, as per the Izzat lifting frame arrangement drawing listed in Table 1, and as set out in allowable lifting regimes below:

- Using four lifting lugs and a spreader frame with four vertical slings.
- Using four lifting lugs and a spreader beam with a minimum sling angle 60 degrees from horizontal.
- Using four lifting lugs with 4 slings to a single central lifting point. Minimum sling angle 60 degrees from horizontal.

The adequacy of spreaders, slings and lifting devices are the responsibility of others.

All design loads are as determined by Australian Standards and information provided by Formit.

All design work was carried out in accordance with the following standards;

- AS/NZS 1170.0 General principles
- AS/NZS 1170.1 Permanent, imposed and other actions
- AS1418.1 – 2002 Cranes, hoists and winches – General requirements
- AS4100 – 1998 Steel Structures

Ultimate limit states design factors used in design are as follows:

- Permanent load factor of 1.2
- Imposed load factor of 1.5
- Dynamic factor of 1.5

6. DEFINED CRITERIA

Rational engineering judgement has been used to decide which components require checking with design certification calculations. Most suitable design check methods are as determined by Izzat Consulting Engineers.

7. DESIGN LOADINGS

The following design loads as provided by Formit were considered, in addition to other loading criteria as required by the Australian Standards;

The design loading for the lifting frame of the Ultra Twin Skin Top Lift is as follows:

- Dry Weight of toilet – 140kg
- Fresh Water Tank when full – 110 litres
- Waste Water Tank when full – 390 litres
- Maximum mass lifted – 639 kg

Ultimate factored lifting loads for the purpose of lifting devices design is as follows:

- Load per lug = 344 kg (3.38 kN) vertical
- Total lifting load = 1377 kg (13.51 kN) vertical

N.B. Design of lifting devices should consider the possibility of uneven loading.

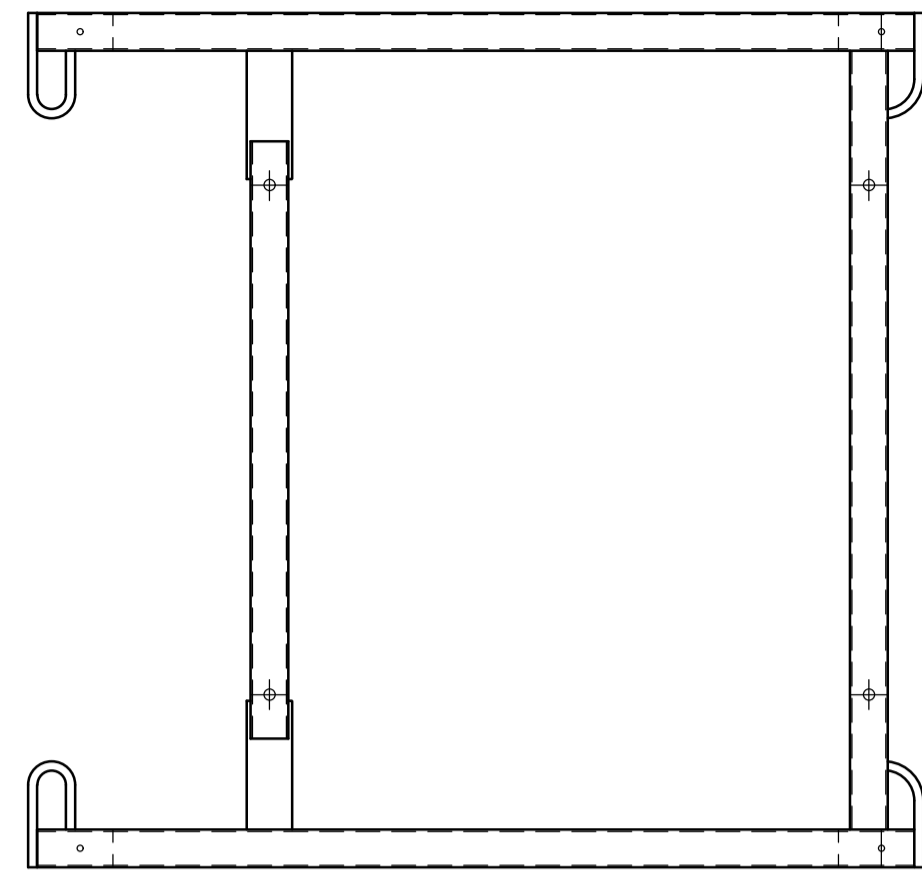
8. STATEMENTS & DISCLAIMERS

We confirm that the Ultra Twin Skin Top Lift frame as detailed in the drawings noted in Table 1 (above), is structurally satisfactory for the Load Limits noted in Section 7 above, provided the following are adhered to;

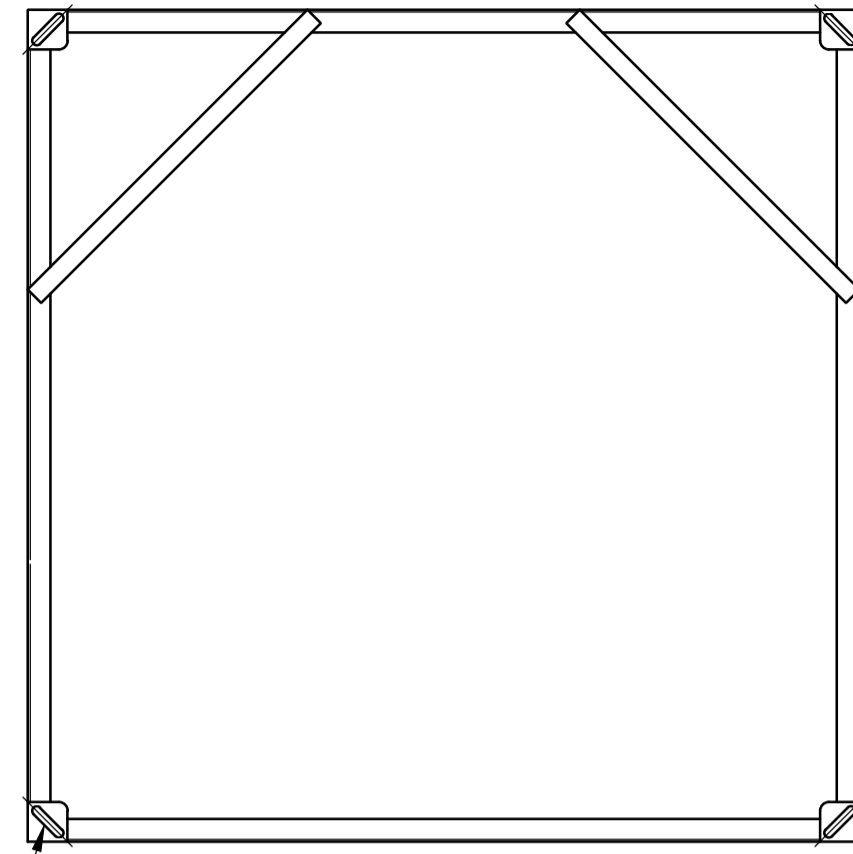
- Allowable lifting regimes as follows:
 - Using four lifting lugs and a spreader frame with four vertical slings.
 - Using four lifting lugs and a spreader beam with a minimum sling angle 60 degrees from horizontal.
 - Using four lifting lugs with 4 slings to a single central lifting point. Minimum sling angle 60 degrees from horizontal.
- The structure is inspected every 12 months (maximum), or as otherwise required to ensure no structural damage is evident.
- The certificate is applicable only if the structures are not affected by heat, adverse chemicals, excessive vibrations or other external factors unknown and not noted to the certifying engineer.

- All items constructed are in accordance with the drawings & specifications as referenced by this certificate.
- All construction and materials is in accordance with Australian Standards, particularly AS4100 Clause 2.2.
- All welding is a minimum of 6mm GP continuous fillet welds all around, UNO.
- No modifications shall be made, which would significantly increase the mass, alter the stability or affect the design strength of the structure.

APPENDIX A DRAWINGS

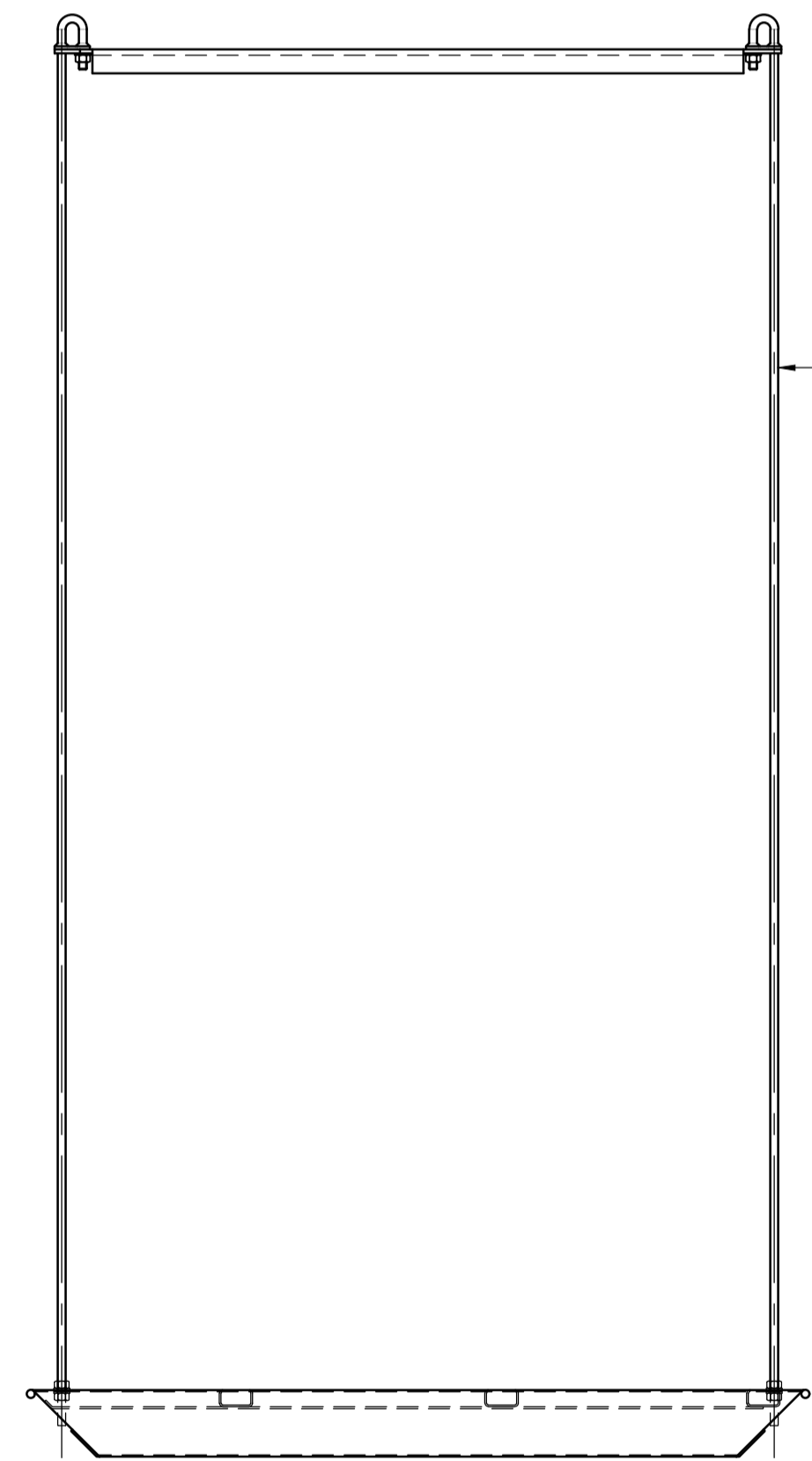


BASE FRAME PLAN
SCALE 1:10



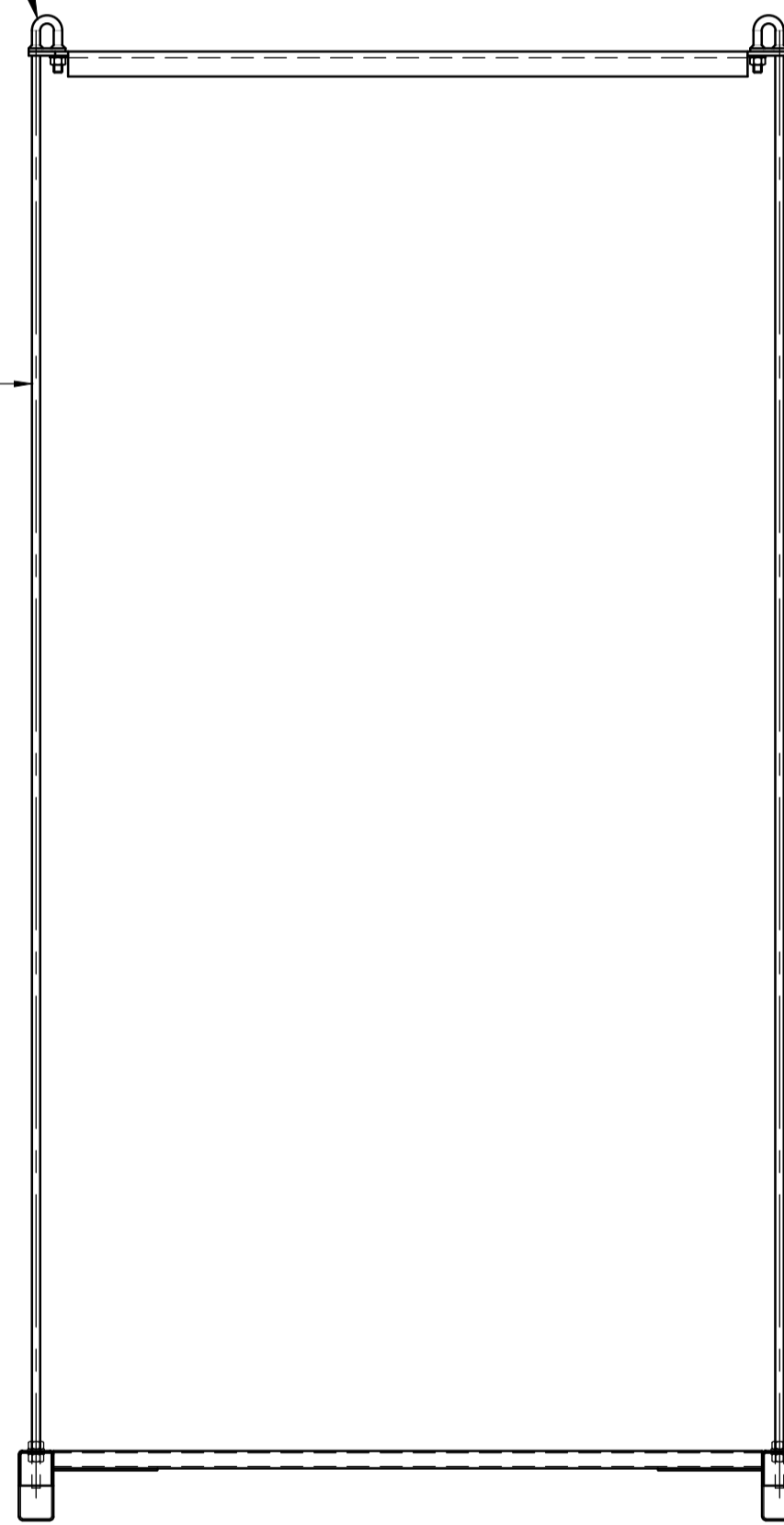
TOP FRAME PLAN
SCALE 1:10

LIFTING LUGS AS PER FORMIT DRAWING FMT 104 LUG DETAILS



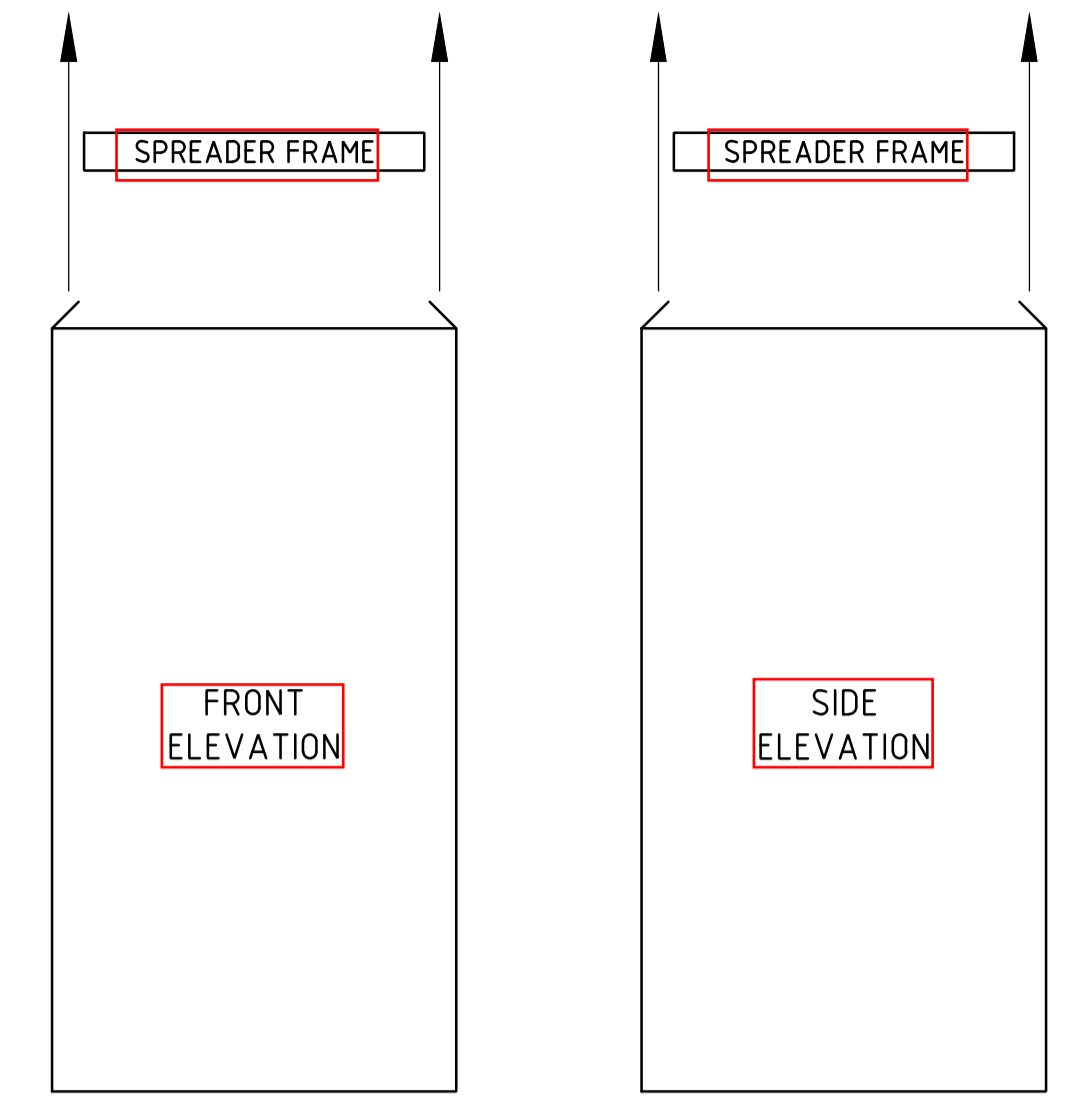
SIDE ELEVATION
SCALE 1:10

4/Ø8 316 SS LIFTING RODS

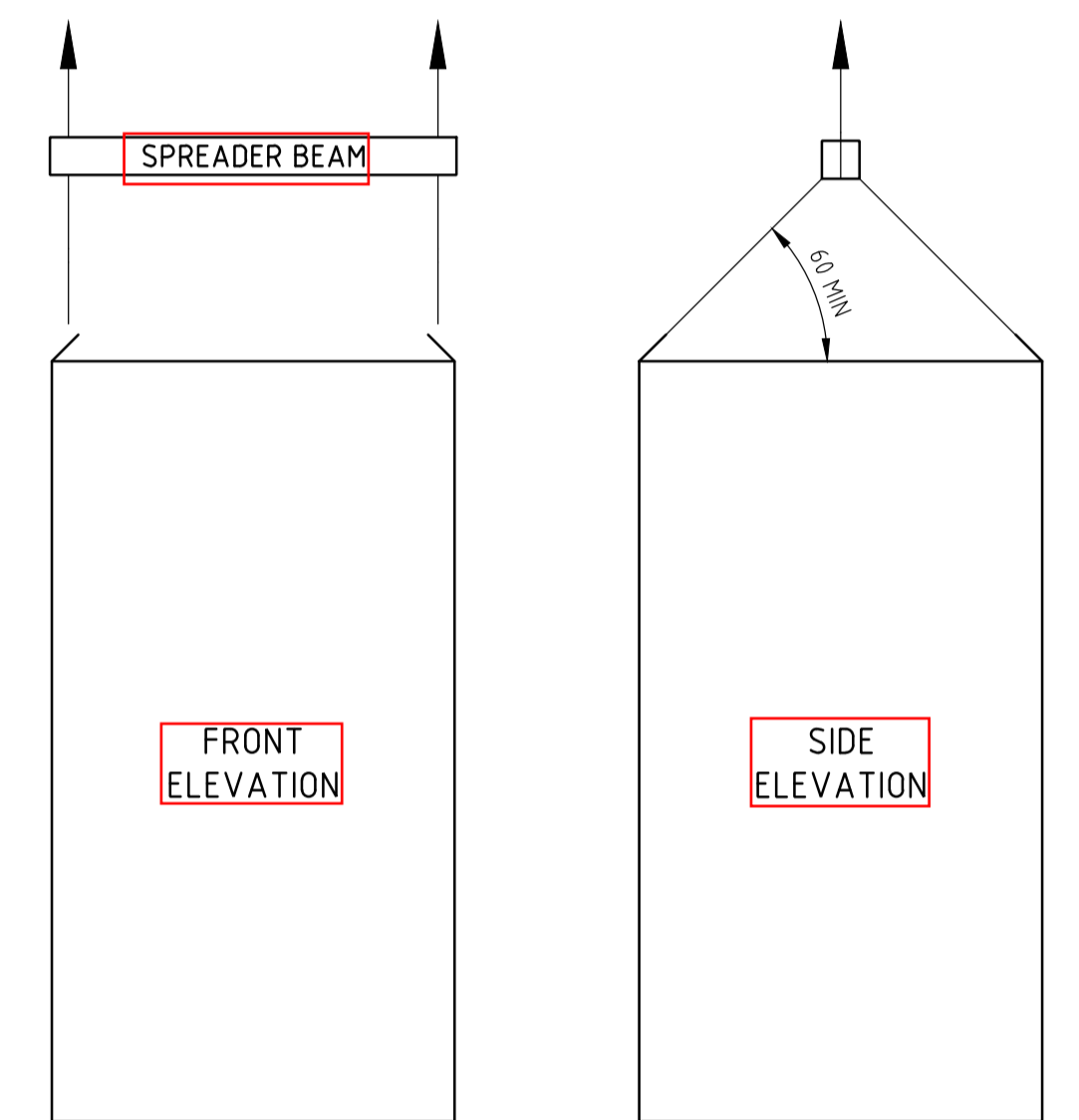


FRONT ELEVATION
SCALE 1:10

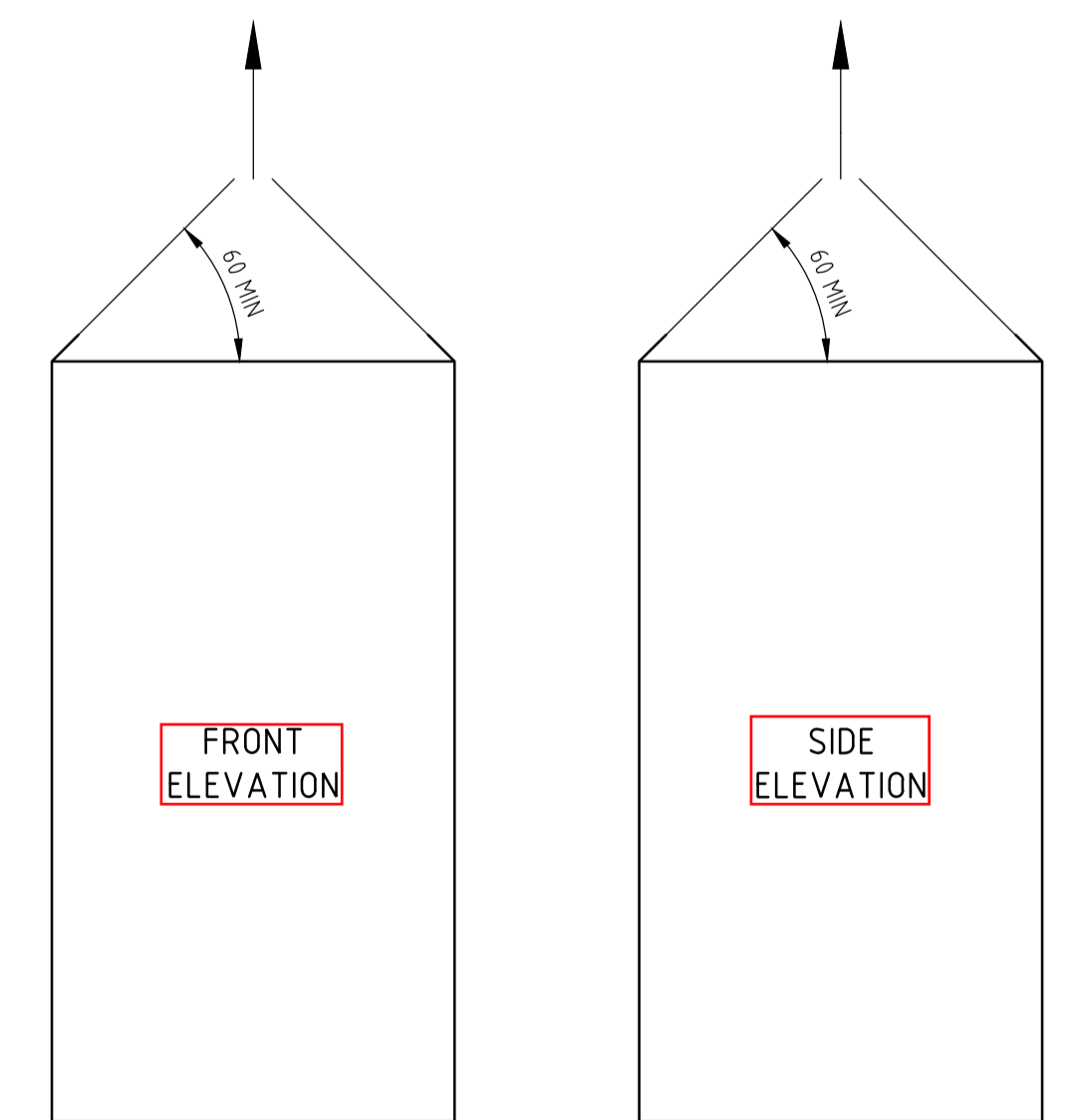
- NOTES:**
- REFER TO BVCI DRAWING 1002015 REV H FOR TOP FRAME DETAILS
 - REFER TO BVCI DRAWING 1002019 REV E FOR BASE FRAME DETAILS
 - REFER TO FORMIT DRAWING 001 FORM 05 13 FOR LIFTING ROD DETAILS.
 - REFER TO FORMIT DRAWING FMT 104 LUG DETAILS



LIFTING CONFIGURATION METHOD 1



LIFTING CONFIGURATION METHOD 2



LIFTING CONFIGURATION METHOD 3

REV	DATE	AMENDMENT	BY	REV	DATE	AMENDMENT	BY
0	04/11/2016	CERTIFICATION ISSUE	R.E				

ISSUED FOR CONSTRUCTION

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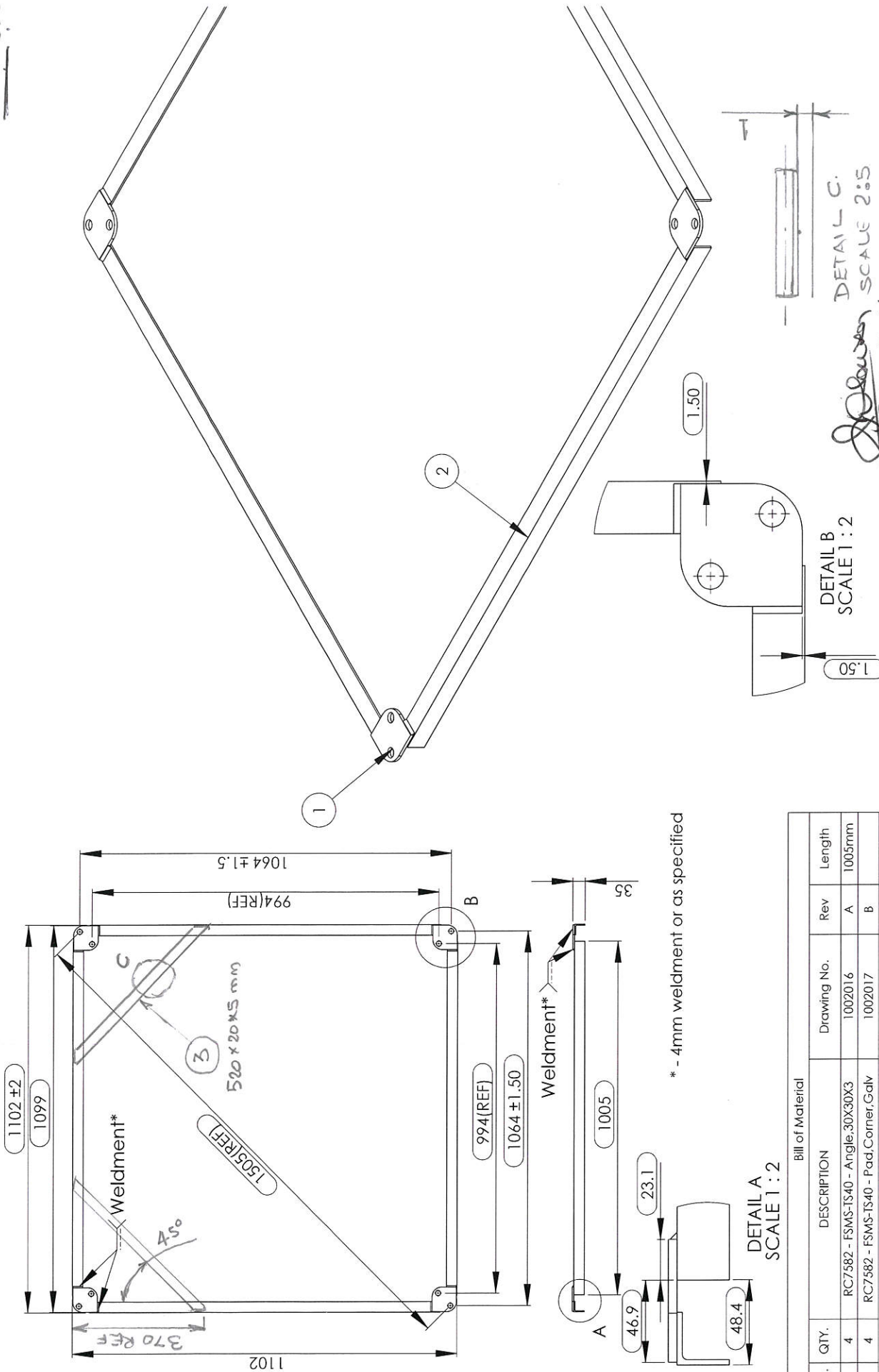
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IZZAT CONSULTING ENGINEERS PTY LTD
ABN: 55 404 552 725
Newcastle Office:
4, 56 Hudson Street,
Hamilton, NSW 2303
PO Box 988 Hamilton 2303
P: +61 2 4940 0090
F: +61 2 4940 0091
E: mail@izzat.com.au
W: www.izzat.com.au

PROJECT
ULTRA TWIN SKIN TOP LIFT
LIFTING CERTIFICATION

CLIENT
FORMIT SERVICES PTY. LTD.

DRAWING TITLE LIFTING FRAME ARRANGEMENT			
DESIGN I.Z.	DRAWN R.E	CHECKED N.D.	SCALE 1:10 UNO
DATE OCTOBER 2016	JOB NUMBER J5495	DRAWING NUMBER SK-01	REVISION A1 801x554 0



DETAIL A
SCALE 1:2

DETAIL B
SCALE 1:2

DETAIL C
SCALE 2:5

Signature
13.10.2016

* - 4mm weldment or as specified

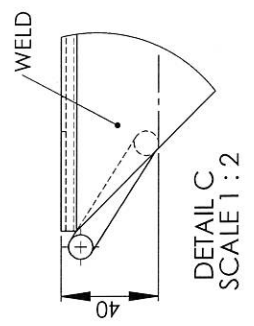
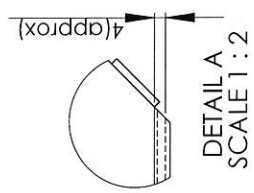
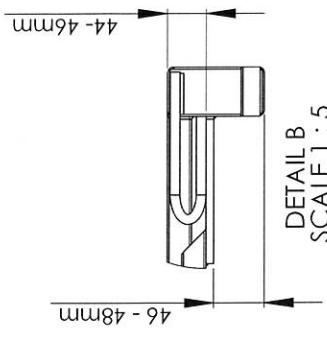
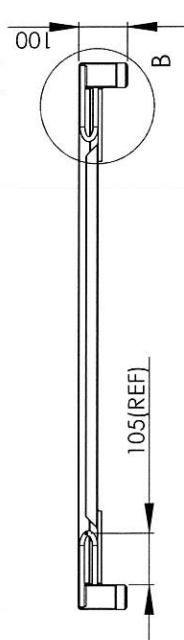
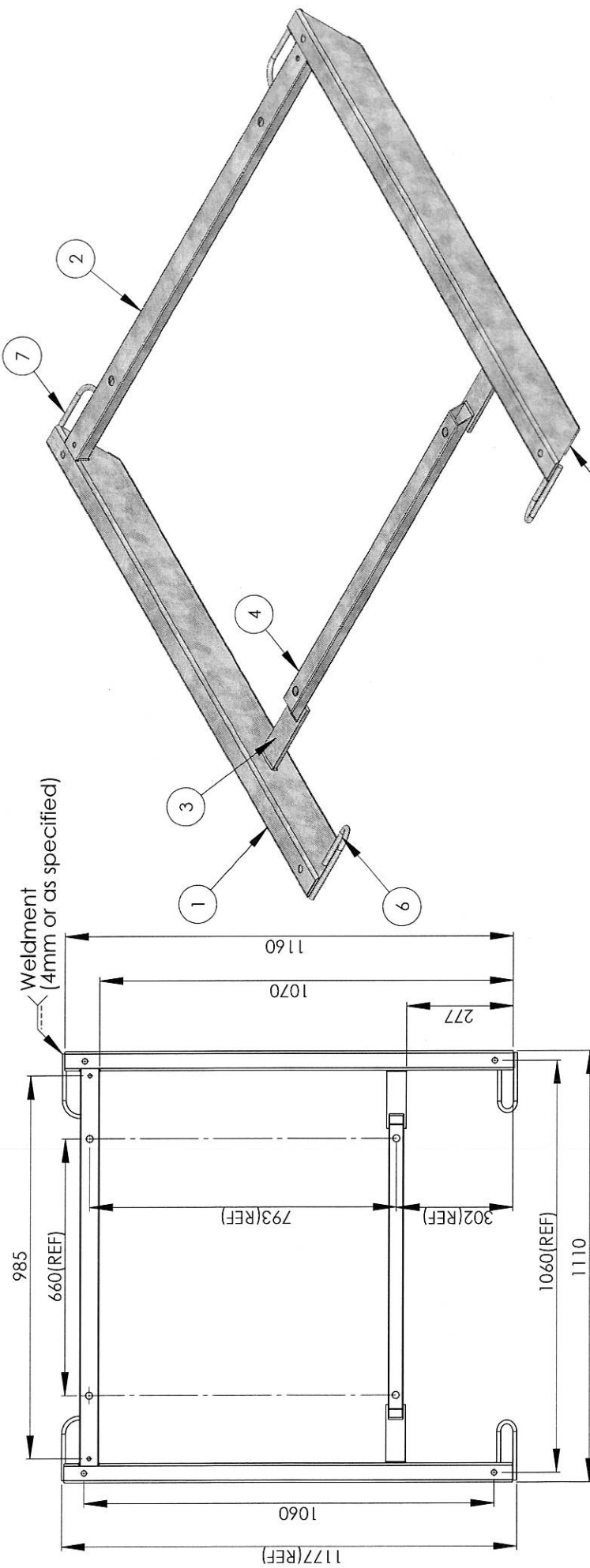
ITEM NO.	QTY.	DESCRIPTION	Drawing No.	Rev	Length
1	4	RC7582 - FSMS-TS40 - Angle, 30X30X3	1002016	A	1005mm
2	4	RC7582 - FSMS-TS40 - Pad, Corner, Galv	1002017	B	
3	2	Support Torsion	1002018	B	520mm

Copyright : BVCI Group Pty Ltd - 29/03/10
 Commercial in confidence
 Made from - Mild Steel Weight - 7.9kg
 Remove - All sharp edges and burrs Surface finish - Hot Dipped Galvanized
 Number off - 1. per Assembly

Issue	DATE	ISSUE DESCRIPTION	BY	CHECKED
H	29/03/10	Dimensions revised for manufacturing	AK	CA

BVCI GROUP
 Builders, Vendors, Concrete, Industries, PVT. LTD.
 Head Office - Carrington Road, Balaclava, Victoria 3103
 Ph: (03) 9556 6741 Fax: (03) 9509 1118
 Email: info@bvci.com.au Web: www.bvci.com.au

Part of Formit - Toilet - Top Frame
 Part No. 1002015 RC7582 - FSMS-TS40 - Frame, Top, Galv
 Description: Profile Details
 Scale: 1:10 Drawing No: 1002015 H



ITEM NO.	QTY.	DESCRIPTION	Drawing No.	Rev
1	2	RC7544 - FSMS-TS28G - Skid,Base,RHS,100X50X2	1002020	D
2	1	RC7544 - FSMS-TS28G - Beam,RHS,50X25X2.5	1002021	B
3	2	RC7544 - FSMS-TS28G - Support,Flatbar,150X50X8	1002023	A
4	1	RC7544 - FSMS-TS28G - Beam,RHS,38X25X2	1002022	B
5	4	RC7544 - FSMS-TS28G - Pad,Skid,Flatbar	1002026	A
6	2	RC7544 - FSMS-TS28G - Hook,Lifting,Long	1002024	E
7	2	RC7544 - FSMS-TS28G - Hook,Lifting,Short	1002025	E

Bill of Material

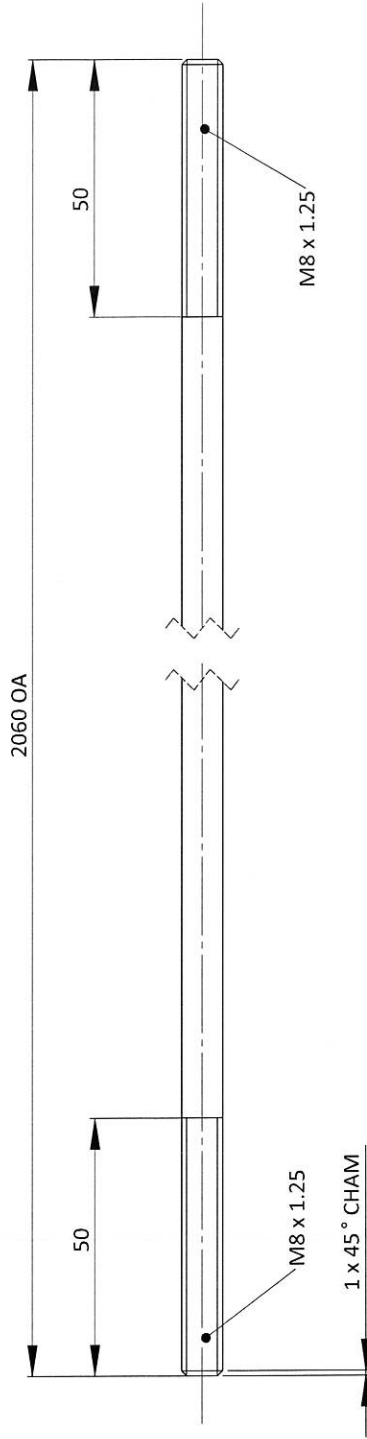
Part of: **Formit - Toilet - Base**
 Part No.: **1002019**
 Description: **RC7544 - FSMS-TS28G - Skid,Base,Ultra**
 Scale: **1:10**
 Drawing No.: **1002019 E**

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Issue	DATE	ISSUE DESCRIPTION	BY	CHECKED
E	28/09/09	New modification	AK	CA

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 Commercial In confidence
 Weight - 20kg
 Made from - MildSteel
 Remove - All sharp edges and burrs
 Surface finish - Hot Dipped Galvanized
 Number off - 1. per Assembly

CONFIRM OA LENGTH ON ASSEMBLY PRIOR TO PRODUCTION



NOTE:

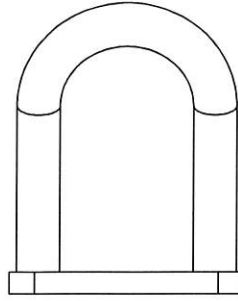
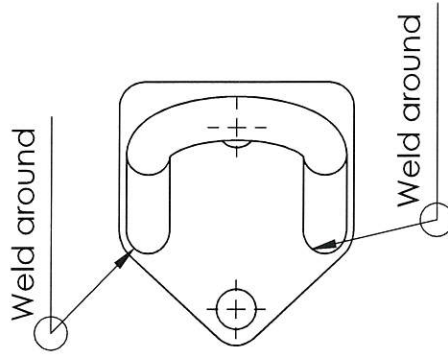
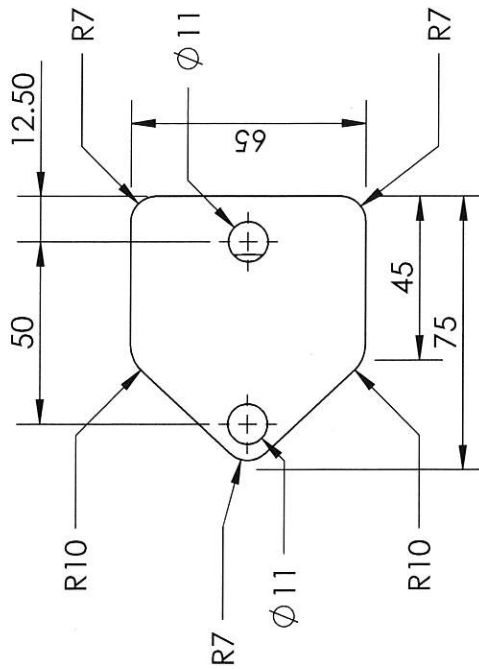
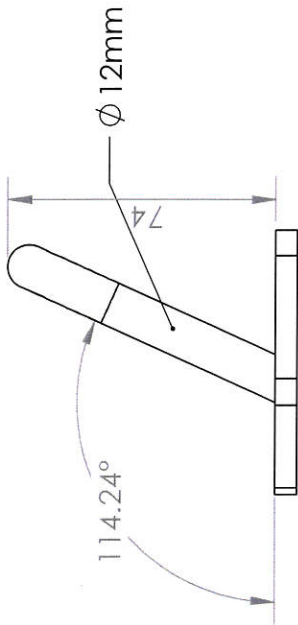
- ALL FINISHES AND COLOURS TO BE CONFIRMED WITH CLIENT BEFORE PRODUCTION
- PART SAMPLES AND ASSEMBLY TO BE APPROVED BEFORE PRODUCTION

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	FINISH: AS MACHINED - DEBURR ENDS	DEBURR AND BREAK SHARP EDGES
SURFACE FINISH:		
TOLERANCES:		
LINEAR: ANGULAR:	± 2	
DRAWN GKPD APPYD MFG CLA	NAME neo	SIGNATURE 07/05/13
		MATERIAL: Ø 8 316 STAINLESS STEEL
		WEIGHT:

DO NOT SCALE DRAWING	REVISION
neoindustrialdesign	02 4969 4913
TITLE: FORMIT 2012	
LIFT ROD 2.1	
DWG NO. 001 FORM 05 13	
SCALE:1:1	SHEET 01 OF 01

A3

FMT104 01 LIFTING LUG



Note: Steel with Galvanised finish. Likely load approx. 500kg

c Copyright: FORMIT Services Pty Ltd

MADE FROM: Galvanised Steel

WEIGHT:

Number of: 1, see Assembly

Reg PDF DO NOT SCALE DRAWINGS DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED

Issue DATE 27/07/2010 ISSUE DESCRIPTION SPECIFICATION SHEET

A4 Drawing Third Angle Projection

CHECKED BY P.C.



FORMIT SERVICES PL

Description: FMT104 01 LIFTING LUG

Part No:

Scale: 1:2 FMT104

A