Test Report - Commercial in Confidence
B0004 Bailey Streetscene Ltd Protect Seat

Test Laboratory	**HORIBA MIRA Ltd**
Date of Report	**29/03/2023**
Client	**Centre for the Protection of National Infrastructure (CPNI)**
Test Item	**Bench seat with core posts**
Date of Test	**22/02/2023**
Test Number	**B0004**
Report Number	**1227092-004-012-01**
Test Type	**Vehicle Impact**
Product Rating	**IWA14-1:2013 Barrier V/2500[N1G]/48/90:0.0**
Number of Pages	**42**

Prepared By:

Dave Johnstone

Consultant - HSPI Test Centre

Approved By:

Rachael Kennedy

Head of HSPI Test Centre

Date: 29th March 2023

UKAS TESTING 1105

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Contents

1 Introduction

1.1 Test laboratory

Name	HORIBA MIRA Limited
Address	Watling Street, Nuneaton, Warwickshire, CV10 0TU. United Kingdom
Telephone number	+44 (0)24 7635 5000
Facsimile number	+44 (0)24 7635 8000
Internet address	http://www.horiba-mira.com
Test site location	At above address.
Accrediting body	United Kingdom Accreditation Service 21-47 High Street, Feltham, Middlesex. TW13 4UN
Accreditation details	HORIBA MIRA is designated as UKAS testing laboratory 1105, with approval dated 31 July 1992, subsequently renewed periodically, for details of the latest approval, and schedule of accreditation see: http://www.ukas.org/testing/lab_detail.asp?lab_id=826

1.2 Product Manufacturer

Name	Bailey Streetscene Ltd
Address	London Road, Adlington, Macclesfield, SK10 4NL
Internet address / email	https://www.baileystreetscene.co.uk/ john.fairbrother@bsfg.co.uk
Type	Barrier
Model No	Protect Seat

1.3 Client

Name	Centre for the Protection of National Infrastructure (CPNI)
Address	PPSD - HVM
Internet address / email	https://www.cpni.gov.uk/
Additional information	Purchase order: 7097047
	Client Engineer: n/a

1.4 Test Area

The test was carried out on the Highway Safety & Protection of Infrastructure (HSPI) Test Area adjacent to the HORIBA MIRA Ltd Vehicle Proving Ground.
The test area was generally flat with a gradient not exceeding 2.5 %. It had a level hardened paved surface and was kept as clear of dust, debris, standing water, ice and snow at the time of the test, as was practicably possible.
Vehicle propulsion was by use of a computer controlled electric drum winch with guidance to the impact point by means of a tensioned wire system attached to the front wheel of the test vehicle. Both towing and guidance systems were detached approximately 3m prior to contact with the test article.

1.5 Test Procedure

Item	Requirement
Test Specification	IWA14-1:2013
Target Speed (km/h)	48.0 +3.0 /-1.0
Target Impact Angle (deg)	90.0 ±2.0
Target test vehicle mass (kg)	2500 ±75
Product Classification	B-Foundation/Passive/Barrier
Target Impact Energy (kJ)	222.2

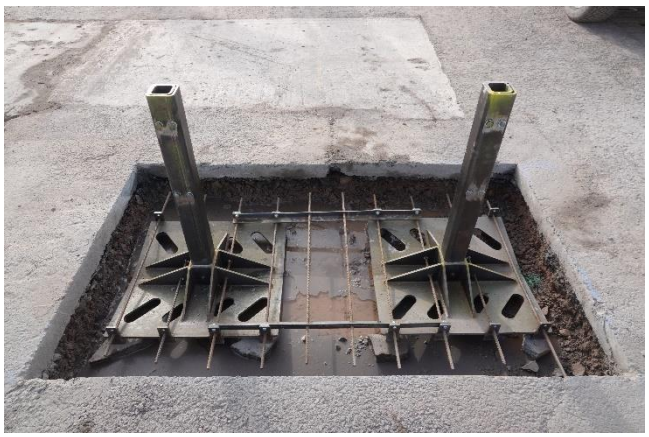
2 Test Set-up

2.1 Product Description

The tested item was a Protect Seat manufactured by Bailey Street Furniture Group and installed by Trueline Midlands Ltd.

This consisted of a dual core base assembly, 2No. Core posts and a bench seat. The base assembly was formed from 2No. individual base units joined together using 2No. 1033mm long, 40x40x5mm thick angled section, attached using 8No. M10x25mm Hex head bolts. Each core unit consisted of 1No. base plate, 750x750x10mm. At the front and rear of each base plate 8No. 10mm thick were welded connector brackets through which reinforcing bars were slotted, and the linking sections bolted. The top face of each base plate contained 4No. 10mm thick interlocking gussets, forming a square locating socket to the centre. The core posts were each constructed from 100x100x8mm SHS 1010mm long outer and 1No. 80x80x8mm SHS 1010mm long inner posts, giving a post height of 783mm above running surface once installed. The outer and inner posts were welded together at the top and bottom along two sides. The posts were located within the base sockets and fully welded, with 1No. 16mm pin passed front to back through the posts and socket and fully welded. The bench seat steel support legs were fabricated from 4mm thick steel plates, forming the leg profile. The bench seat was constructed from 10No. Sapele Hardwood timber slats measuring 1800mm long and varying in width. The timber slats were retained to one another using 2No. 6mm thick and 1No. 3mm thick steel straps and attached to the wood using screws. To either end of the bench seat were steel armrests. The bench seat upright had a height of 826 mm above running surface. The installed was arranged such that the vehicle impacted from the backrest side of the bench.

2.2 Foundation/Installation Description



The foundation consisted of an excavation 2350x1300mm and 280mm deep. The core base frames were assembled and fitted with 10No. 12mm diameter reinforcing bars positioned longitudinally. The assembled unit was positioned within the excavation on packers to allow concrete to flow under. RC32/40 concrete, CEM1, 10mm aggregate was poured within the core posts and surrounding the base frames, finishing 80mm below ground level. The bench seat steel support legs were positioned over the core posts and secured using 4No. M12x30mm bolts per leg. The foundation was brought up to the existing running surface with 80mm of Tarmac. The Bench seat was positioned and secured to each horizontal bracket using 2No. M12x30mm bolts per bracket.

2.3 Concrete Crush Test Results

Item	Information / Measurement
Date Foundation Cast	13/02/2023 (9 days before test date)
Concrete compressive crush test results for 150mm sample (MPa). Compressive testing carried out at CTS at Doncaster UKAS Accredited Lab No. 4161 to EN12390-3: 2019 and EN12390-7: 2019.	
7-day	36.1
Test day	36.3

2.4 Test Vehicle Description

Item	Information / Measurement
Vehicle Make and Model	Toyota Hilux
Registration Mark and VIN	LR14BXF / AHTFR22G106081306
Engine	Diesel
Gearbox	Manual
Body Type	Crew Cab Pick-up
Delivery Mass (kg)	2041
Test Mass (kg)	2525
Ballast (kg), Steel ballast, chains and ratchets	462
Test Equipment (kg), GPS, DAS, Towing & guidance	54
Components removed (kg) Rear lower seat, spare wheel	32

Test Vehicle condition	Test vehicle acquired with valid current MOT certificate. The roadworthiness of the following items was checked prior to test: Tyres and wheels, Suspension, Wheel Alignment, Bodywork, Brakes and Chassis. The engine was running for the test.

3 Test Results

3.1 General

Item	Information / Measurement
Test Number	B0004
Test Date	22/02/2023
Impact Angle (deg)	89.6
Angle measurement method	V-Box GPS
Impact alignment (mm)	52 Right
Impacted height (mm)	480
Impact velocity (km/h)	49.4
Velocity measurement method	V-Box GPS
Impact energy (kJ)	237.3
Vehicle penetration - dynamic (m)	0.0
Vehicle penetration - static (m)	0.0
Clear gap >1200mm at 600mm above ground?	No
Debris ejected?	0.0
Vehicle immobilised?	Yes
Vehicle restrained or deflected?	Restrained

3.2 Test Sequence Description

The target impact point was the centreline of the vehicle aligned to the centre of the rear face of the bench seat. The initial contact with the bench was made by the bumper which deformed. The bench seat began to detach and was forced forwards while breaking apart. The vehicle continued forwards with the bench seat support legs passing through and under the front body structure. The vehicle steering linkages and wishbones contacted the support legs/inner cores and deformed rearwards. The front RH wheel/tyre contacted the rear of the inner wheel arche and front floor, the LH wheel/tyre twisted as it contacted the rear of the inner wheel arch and front floor. The front of the vehicle structure deformed fractionally forwards and towards the ground from the A-pillar area forwards. The vehicle halted and some minor dynamic lift to the front of the test item foundation occurred. The vehicle lifted predominately to the rear and began to partially rebound. The vehicle returned fully to ground with the front remaining trapped and entangled with the seat support legs/inner cores.

3.3 Ambient Conditions*

Item	Measure
Rainfall (mm)+	2.8
Temperature (°C)	7.1

+ From midnight to time of test
*Weather records are not UKAS accredited

3.4 System Damage Description

The bench seat was detached fully from the bench support legs, leaving only the timber straps remaining attached to the legs. The bench support legs remained attached to the core units with some minor distortion, scrape and gouge marks visible. The inner core units remained intact with only minor bending in the impact direction, the LH core had movement of 8.9°, the RH core had movement of 13.6°. The foundation had no major damage visible and only minor movement of 0.4° in the impact direction. The detached wooden bench slats and steel armrests continued forwards forming a small debris field of lightweight detached seat elements. The furthest piece of debris was an armrest with a mass of 3.0kg, coming to rest X 41.9m Y-1.5m. There was no major debris ejected.

3.5 Vehicle Damage Description

The vehicle SRS was deployed, and damage was sustained to the front slam panel including lower inner wing structures. The engine remained running with only a minor coolant leak. The vehicle had damage and distortion to the steering and front suspension components. The LH steering link was detached along with the lower LH wishbone front mounting. The vehicle was attempted to be driven, both forwards and backwards but was unable to be disengaged from the product with the rear wheels spinning and losing traction.

The vehicle was fully disabled.

3.5.1 Assessment of Vehicle

Item	
Vehicle engine running post-test	Yes
Vehicle engine stopped during test but able to re-start	n/a
Vehicle able to move forwards/backwards post-test	No
Vehicle able to disengage from test item	No
Vehicle able to manoeuvre	No

3.6 Assessment of Occupant Injury*

Assessment of Occupant Injury was not required for this test.

4 Assessment of Performance Requirement

Item	
Vehicle prevented from advancing beyond VSB Datum	Yes
Vehicle redirected and kept on the non-protected side of the VSB	No
Vehicle brought to a halt beyond VSB Datum	No
Vehicle damaged, unable to progress under own power	N/A
Vehicle entangled with test item and unable to progress	N/A
Vehicle trapped/lifted and unable to progress	N/A

5 Conclusions

The Bailey Streetscene Ltd Protect Seat was assessed according to IWA14-1:2013 and achieved the following classifications:

Product Classification	B-Foundation/Passive/Barrier
Performance Rating	IWA14-1:2013 Barrier V/2500[N1G]/48/90:0.0

6 General Comments and Disclaimers

The installation of the product was the responsibility of the product manufacturer or their representative.

The test results in this report relate only to the product tested.

This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Opinions, interpretations, and meteorological information included in this report are not part of the UKAS accreditation and are marked thus *.

7 Side Views from High-Speed Videos

8 Overhead Views from High-Speed Videos

9 Post Impact Product and Vehicle Images

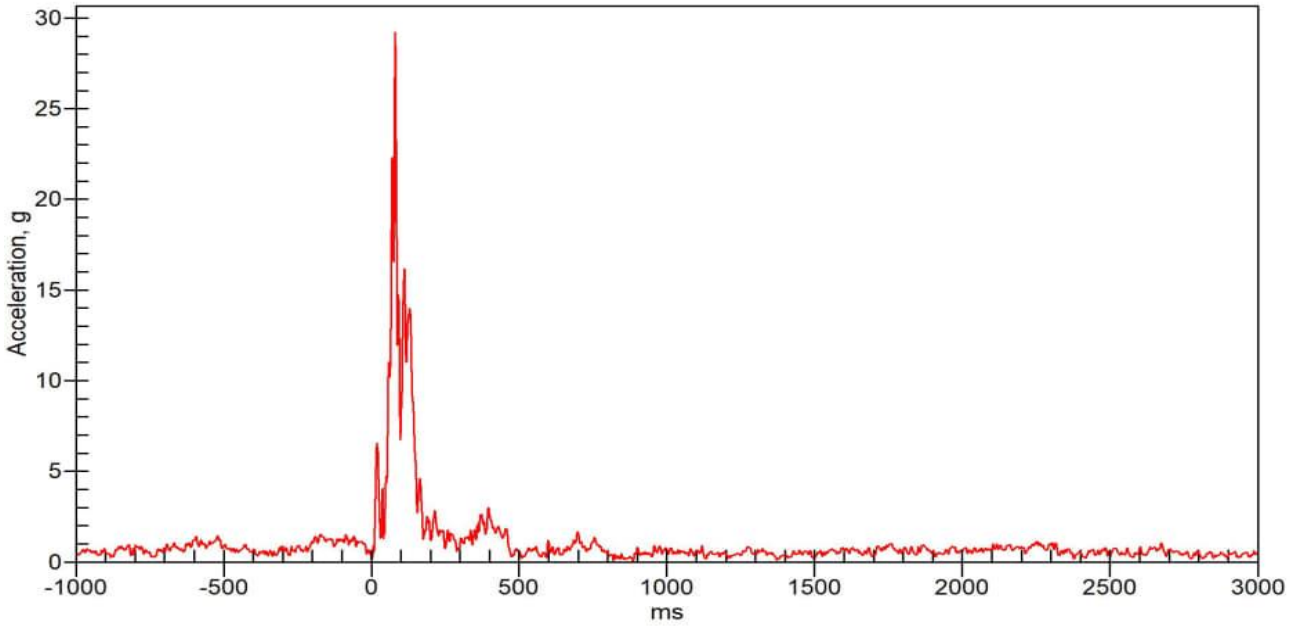
10 Data Plots from Vehicle Transducers

Test Number: B0004
Project: 1227092-004-012

Legislation: IWA14-1:2013
Test Type: HVM-Barrier
Test Date: 2023-02-22

Vehicle 1: Vehicle CofG resultant

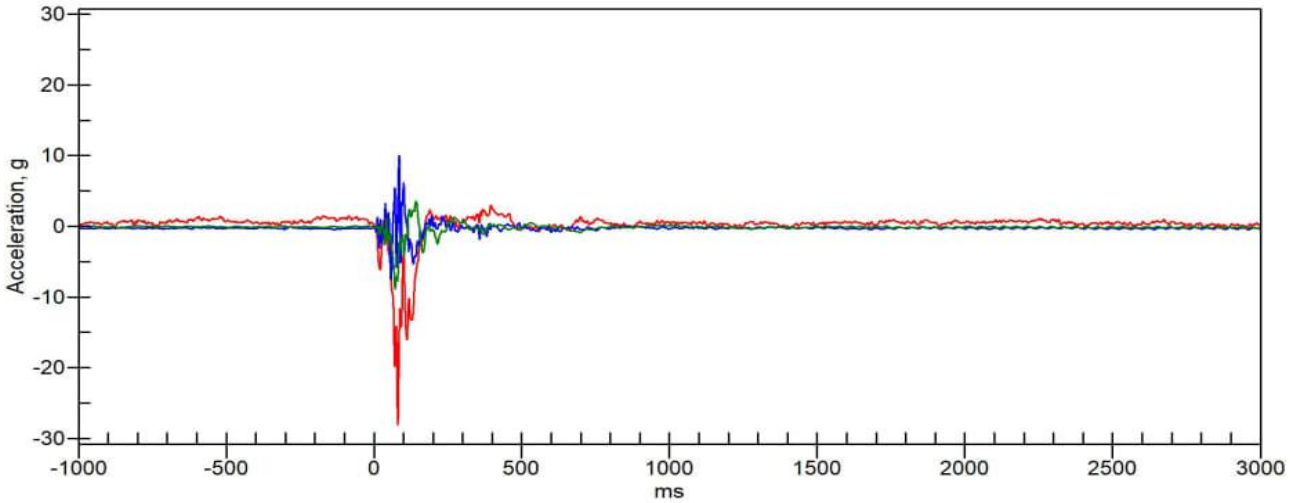
Resultant Acceleration



15VEHCCG0000ACRD
Max: 29g at 80.30ms

Component Accelerations

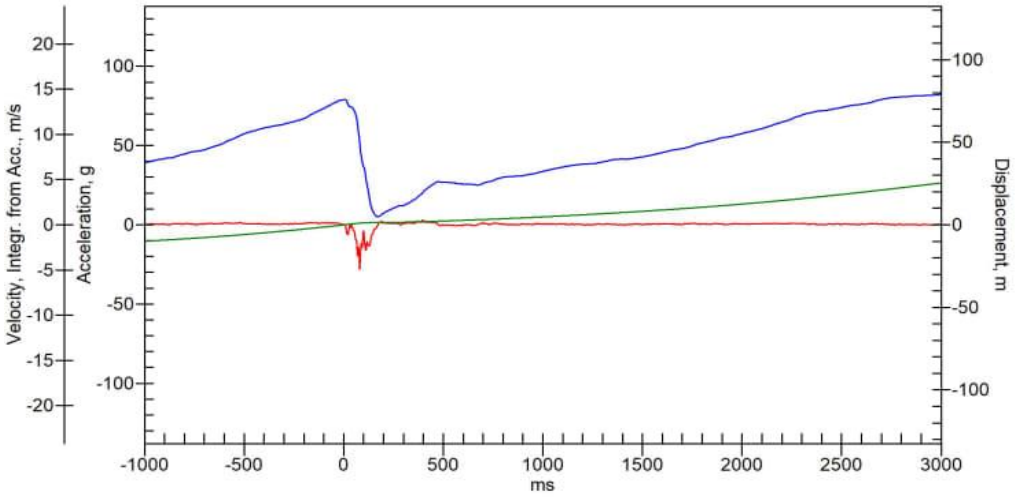
Max: 2.988g at 395.90ms, Min: -28g at 80.30ms 15VEHCCG0000ACXD
Max: 10g at 85.00ms, Min: -7.489g at 56.90ms 15VEHCCG0000ACYD
Max: 3.548g at 142.60ms, Min: -8.927g at 71.20ms 15VEHCCG0000ACZD



Test Number: B0004
Project: 1227092-004-012

Legislation: IWA14-1:2013
Test Type: HVM-Barrier
Test Date: 2023-02-22

Vehicle 1: Vehicle CofG components



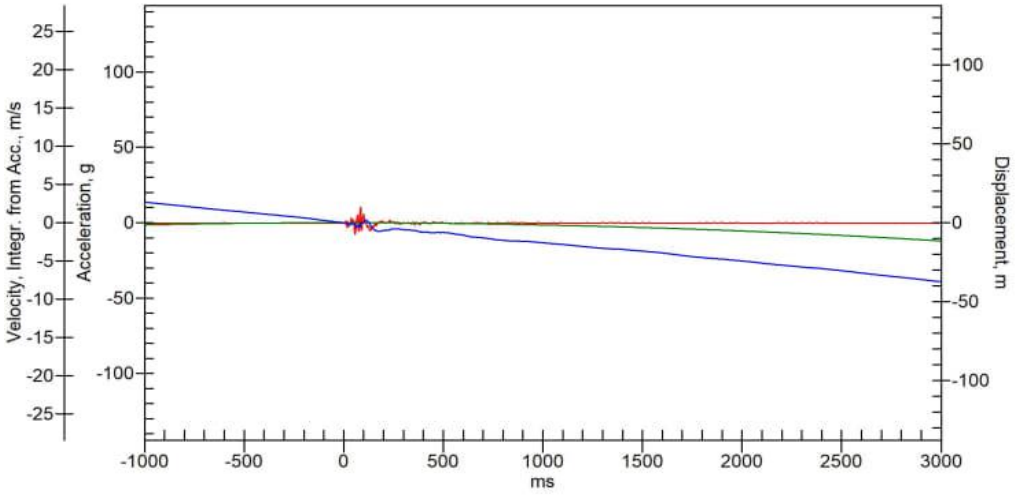
X-axis

QNo:
CAC: 2000

Acceleration
15VEHCCG0000ACXD
Max: 2.988g at 395.90ms
Min: -28g at 80.30ms

Velocity, Integr. from Acc.
15VEHCCG0000VAXD
Max: 20.64m/s at 5020.00ms
Min: -22.04m/s at -5000.00ms

Displacement
15VEHCCG0000DSXD
Max: 125.40m at 1E04ms
Min: -14.94m at -2170.00ms



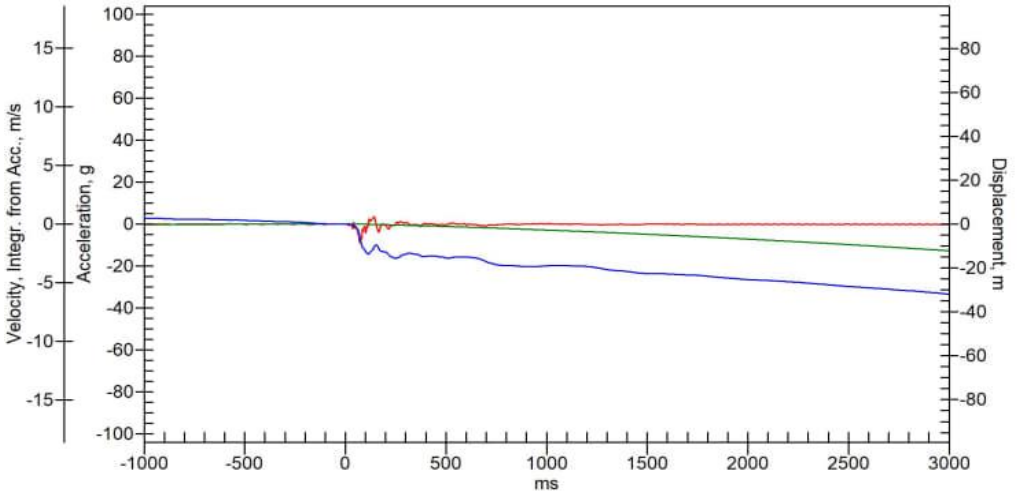
Y-axis

QNo:
CAC: 2000

Acceleration
15VEHCCG0000ACYD
Max: 10g at 85.00ms
Min: -7.489g at 56.90ms

Velocity, Integr. from Acc.
15VEHCCG0000VAYD
Max: 13.83m/s at -5000.00ms
Min: -26.42m/s at 1E04ms

Displacement
15VEHCCG0000DSYD
Max: 0.00m at 0.00ms
Min: -131.10m at 1E04ms



Z-axis

QNo:
CAC: 2000

Acceleration
15VEHCCG0000ACZD
Max: 3.548g at 142.60ms
Min: -8.927g at 71.20ms

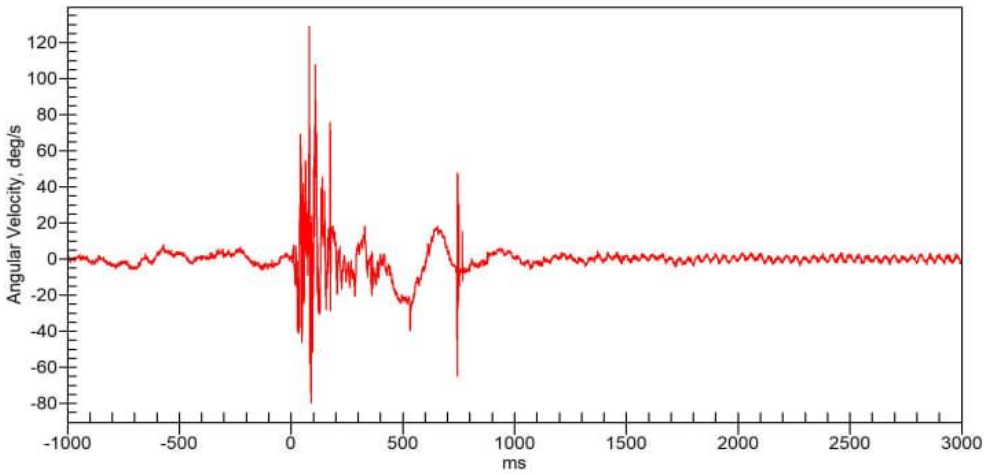
Velocity, Integr. from Acc.
15VEHCCG0000VAZD
Max: 2.11m/s at -5000.00ms
Min: -17.63m/s at 1E04ms

Displacement
15VEHCCG0000DSZD
Max: 0.00m at -50.00ms
Min: -94.61m at 1E04ms

Test Number: B0004
Project: 1227092-004-012

Legislation: IWA14-1:2013
Test Type: HVM-Barrier
Test Date: 2023-02-22

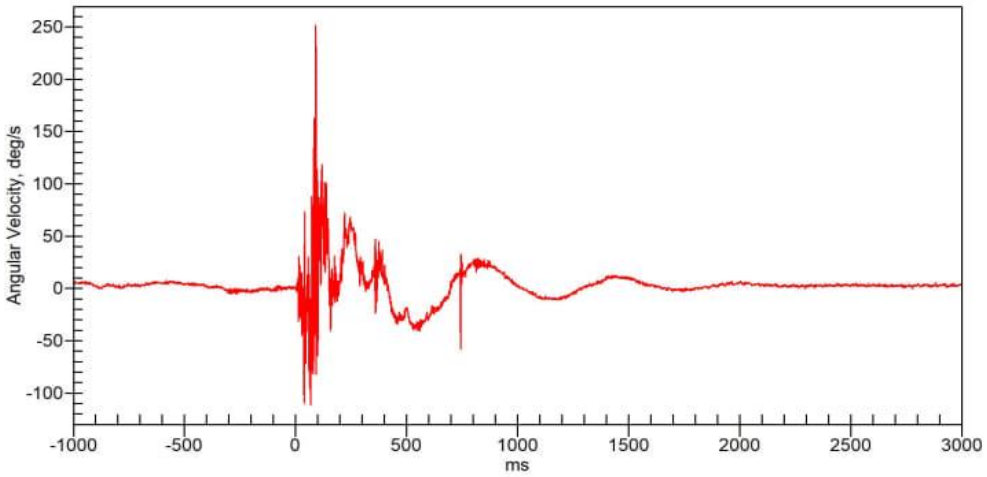
Vehicle 1: Vehicle CofG angular velocities



B0004 : Vehicle CG Roll (CFC180)

QNo:
CAC: 600

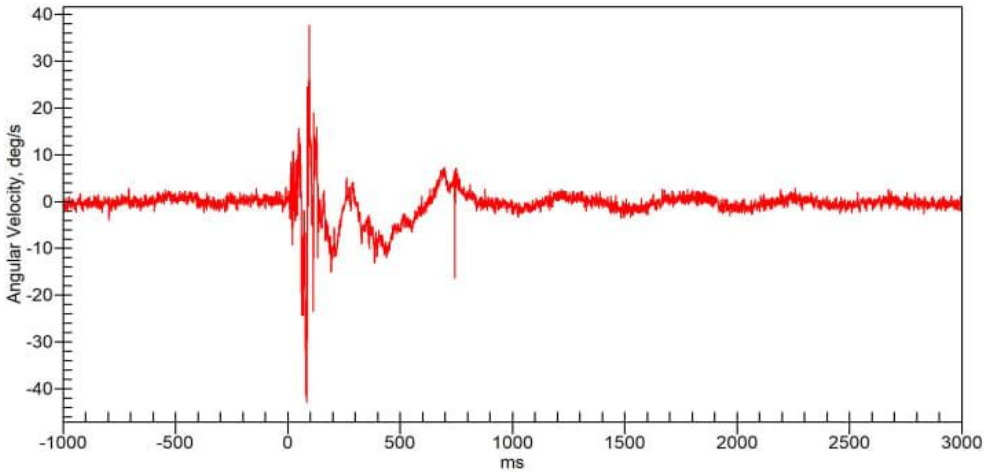
15VEHCCG0000AVXC
Max: 129deg/s at 80.00ms
Min: -80deg/s at 90.00ms



B0004 : Vehicle CG Pitch (CFC180)

QNo:
CAC: 600

15VEHCCG0000AVYC
Max: 251deg/s at 90.00ms
Min: -112deg/s at 70.00ms



B0004 : Vehicle CG Yaw (CFC180)

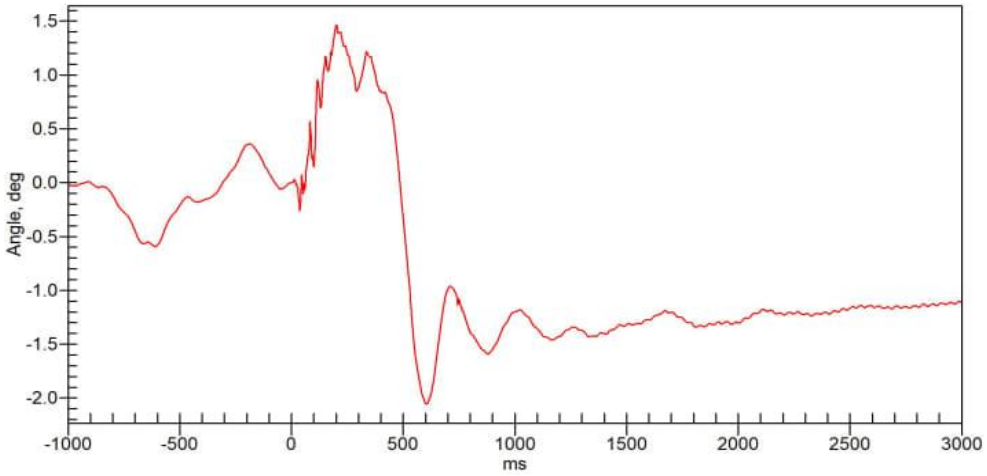
QNo:
CAC: 600

15VEHCCG0000AVZC
Max: 38deg/s at 100.00ms
Min: -43deg/s at 90.00ms

Test Number: B0004
Project: 1227092-004-012

Legislation: IWA14-1:2013
Test Type: HVM-Barrier
Test Date: 2023-02-22

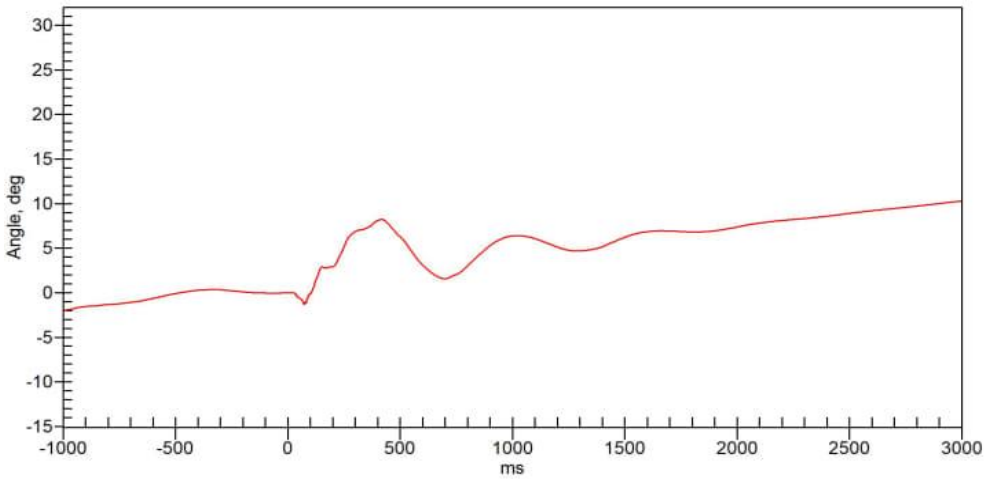
Vehicle 1: Vehicle CofG angles



Vehicle CG Roll Angle

QNo:
CAC: 600

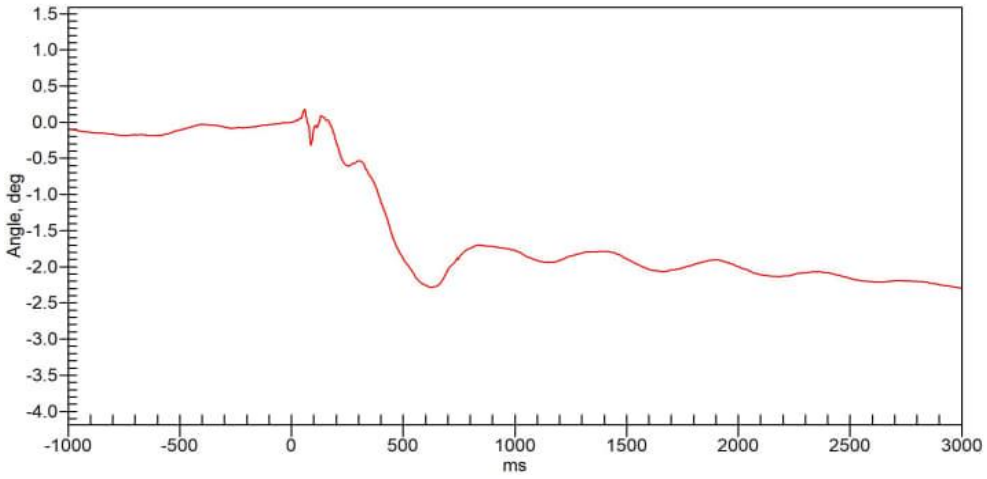
15VEHCCG0000ANXC
Max: 1.47deg at 200.00ms
Min: -2.06deg at 600.00ms



Vehicle CG Pitch Angle

QNo:
CAC: 600

15VEHCCG0000ANYC
Max: 29.90deg at 1E04ms
Min: -12.95deg at -5000.00ms



Vehicle CG Yaw Angle

QNo:
CAC: 600

15VEHCCG0000ANZC
Max: 1.33deg at -4940.00ms
Min: -3.92deg at 1E04ms

Executive Summary

Manufacturer Details

Company Name	Bailey Streetscene Ltd
Company Address	London Road, Adlington, Macclesfield, SK10 4NL
Contact Name	John Fairbrother
Contact Email	john.fairbrother@bsfg.co.uk

Test Item Details

Item Reference	Protect Seat
Item Description	Bench seat with HVM Cores
Depth/thickness (mm) "X"	595 (Bench seat and legs) 100 (Inner core posts)
Width (mm) "Y"	1800 (Bench seat) 1200 (Centre to centre of core posts) 100 (Core posts)
Height (mm) "Z"	828 (Bench seat back)
Material thickness (mm)	8 (Outer core posts) 8 (Inner core posts) 4 (Bench support legs)
Foundation type	Depth <0.5m
Foundation depth (mm)	280 (excavation) 200 (foundation thickness) 80 (Tarmac finisher)
Installation Date	16/02/2023
Concrete strength (Mpa)	36.3

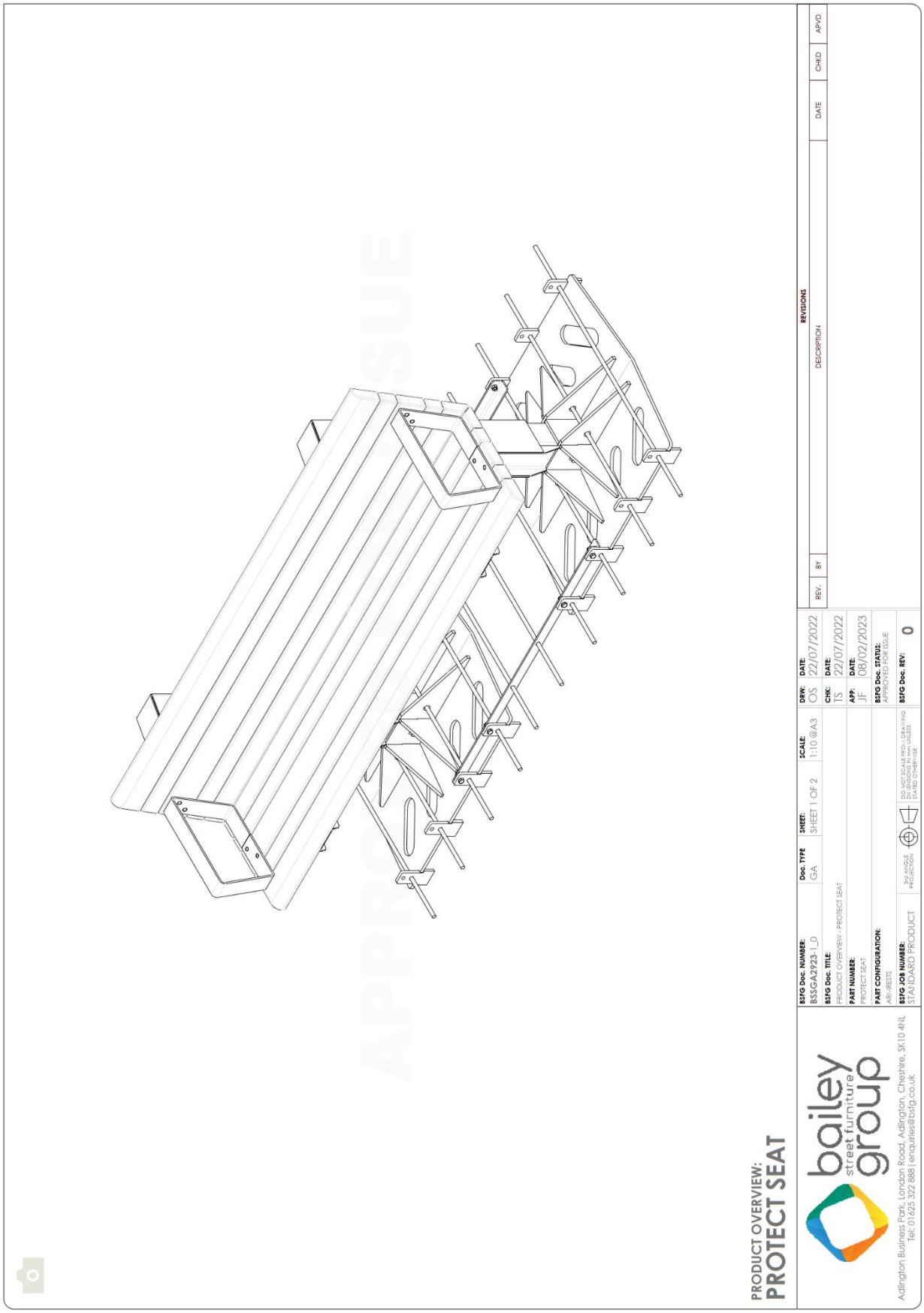
Test Parameters

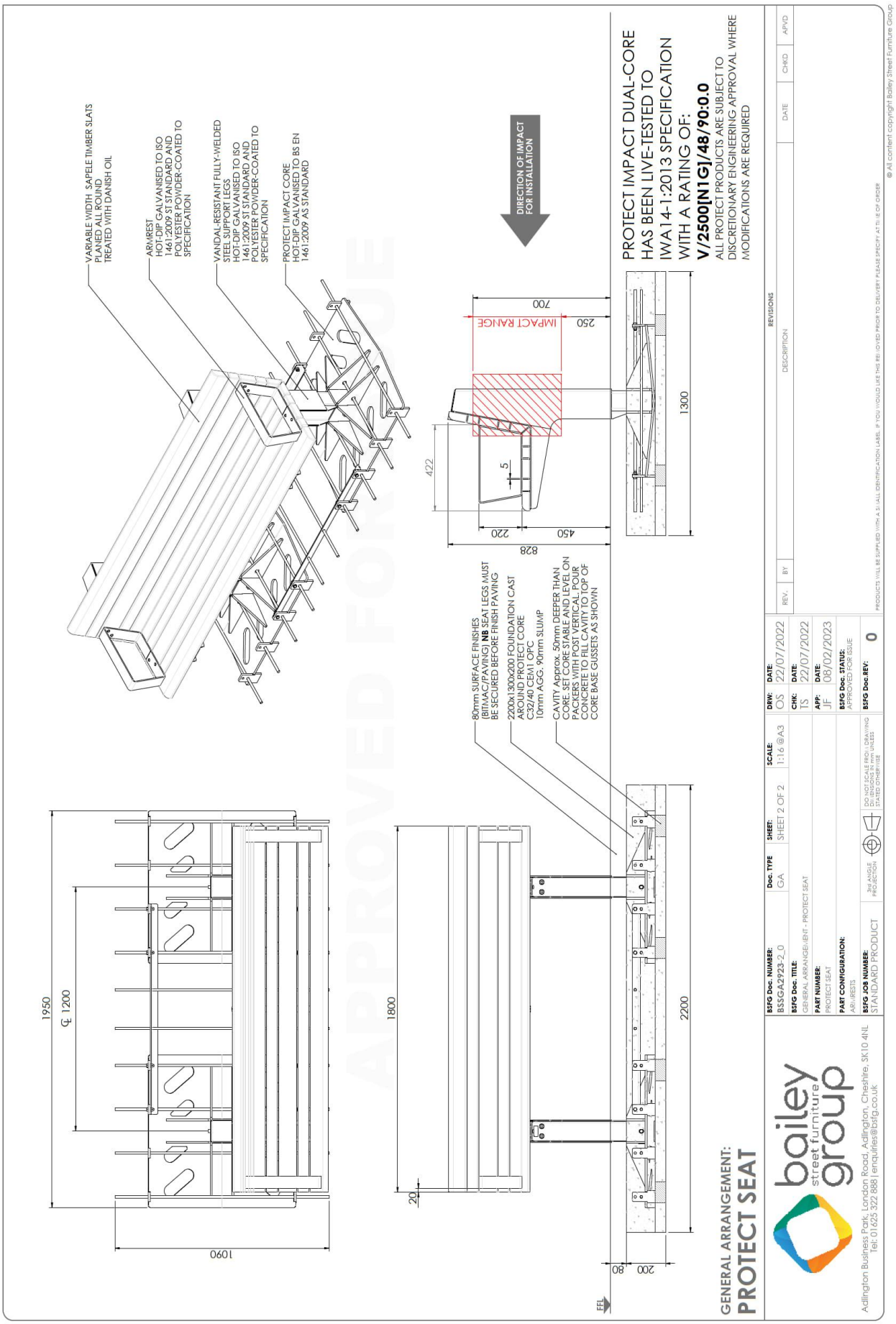
	Requirement	Measured Value
Test Vehicle category	N1G	N1G
Test Mass (kg)	2500 ±75	2525
Impact Speed (km/h)	48 +3/-1	49.4
Impact Angle (deg)	90 ±2	89.6
Alignment (mm)	0 ±300	52 Right
Vehicle penetration – dynamic (m)	-	0.0
Vehicle penetration – static (m)	-	0.0
Major Debris ejection distance (m)	-	0.0
Vehicle disabled?	-	Yes
Follow-on vehicle encroachment possible?	-	No
Follow-on pedestrian encroachment possible?	-	Not assessed

Performance Classification – Vehicle Impact

Performance classification	IWA14-1:2013 Barrier V/2500[N1G]/48/90:0.0
Product Classification	B-Foundation/Passive/Barrier

Appendix 1 Test Item Drawings and Details




VARIABLE WIDTH SAPELE TIMBER SLATS PLANED ALL ROUND TREATED WITH DANISH OIL
ARMREST HOT-DIP GALVANISED TO ISO 1461:2009 ST STANDARD AND POLYESTER POWDER-COATED TO SPECIFICATION
VANDAL-RESISTANT FULLY-WELDED STEEL SUPPORT LEGS HOT-DIP GALVANISED TO ISO 1461:2009 ST STANDARD AND POLYESTER POWDER-COATED TO SPECIFICATION
PROTECT IMPACT CORE HOT-DIP GALVANISED TO BS EN 1461:2009 AS STANDARD
DIRECTION OF IMPACT FOR INSTALLATION
PROTECT IMPACT DUAL-CORE HAS BEEN LIVE-TESTED TO IWA14-1:2013 SPECIFICATION WITH A RATING OF:
V/2500[N1G]/48/90:0.0
ALL PROTECT PRODUCTS ARE SUBJECT TO DISCRETIONARY ENGINEERING APPROVAL WHERE MODIFICATIONS ARE REQUIRED
80mm SURFACE FINISHES (BITMAC/PAVING) NB SEAT LEGS MUST BE SECURED BEFORE FINISH PAVING
2200x1300x200 FOUNDATION CAST AROUND PROTECT CORE C32/40 CEM1 OPC 10mm AGG, 90mm SLUMP
CAVITY Approx. 50mm DEEPER THAN CORE. SET CORE STABLE AND LEVEL ON PACKERS WITH POST VERTICAL. POUR CONCRETE TO FILL CAVITY TO TOP OF CORE BASE GUSSETS AS SHOWN
IMPACT RANGE
700
250
422
5
220
450
828
1300
1950
1200
1090
1800
20
2200
80
200
FFL
GENERAL ARRANGEMENT:
PROTECT SEAT
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk
BSFG Doc. NUMBER: BSSGA2923-2_0
Doc. TYPE: GA
SHEET: SHEET 2 OF 2
SCALE: 1:16 @A3
BSFG Doc. TITLE: GENERAL ARRANGEMENT - PROTECT SEAT
PART NUMBER: PROTECT SEAT
PART CONFIGURATION: ARMRESTS
BSFG JOB NUMBER: STANDARD PRODUCT
3rd ANGLE PROJECTION
DO NOT SCALE FROM DRAWING DIMENSIONS ARE IN MILLIMETRES STATED OTHERWISE
DRW: OS DATE: 22/07/2022
CHK: TS DATE: 22/07/2022
APP: JF DATE: 08/02/2023
BSFG Doc. STATUS: APPROVED FOR ISSUE
BSFG Doc. REV: 0
REVISIONS
REV. BY DESCRIPTION DATE CHKD APP'D
PRODUCTS WILL BE SUPPLIED WITH A SILVER IDENTIFICATION LABEL. IF YOU WOULD LIKE THIS REMOVED PRIOR TO DELIVERY PLEASE SPECIFY AT TIME OF ORDER
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WELD INFORMATION:

- ALL STEELWORK AS STANDARD 5mm FILLET, BUTT WELD 6mm FULL PENETRATION (AS BELOW)
- ANY MATERIAL OVER 3mm USE 6mm FILLET WELDS
- ANY MATERIAL OVER 10mm USE 8mm FILLET WELDS
- ALL FULLY WELDED UNLESS STATED OTHERWISE
- BUTT WELDS ON MATERIAL OVER 6mm TO BE 'V' OUT TO A MINIMUM 4mm DEEP AT 60° (AS BELOW)

TOLERANCING:
UNLESS OTHERWISE STATED

- CUTTING TOLERANCES +0 -2mm
- HOLE TOLERANCES ±0.3mm

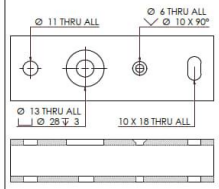
PROFILE CUTTING INFORMATION:
GUIDANCE IS AT MANUFACTURER'S DISCRETION. ANY MAJOR CHANGES SHOULD BE COMMUNICATED TO BAILEY STREET FURNITURE GROUP PRIOR TO COMMENCING WORK

- ALL PROFILES IN STAINLESS STEEL UP TO 5mm TO BE FIBER LASER CUT
- ALL OTHER NON REFLECTIVE METALS TO BE FIBER OR CO2 LASER CUT
- DO NOT USE PLASMA CUTTING ON PROFILES UNLESS SPECIFIED

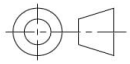
TOLERANCING:
ALL PROFILE CUTTING MUST BE WITHIN CUTTING MACHINE TOLERANCES AS PRESCRIBED BY THE EQUIPMENT MANUFACTURER

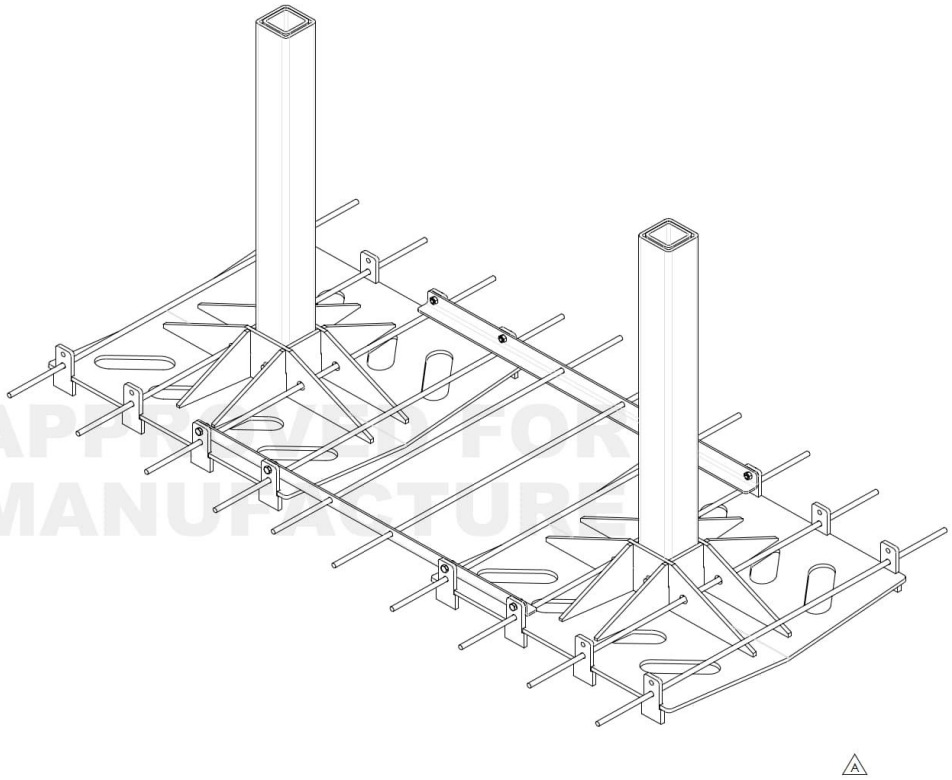
DRAWING NOTATION & SYMBOLS USED:
HOLES:
⌀ = DIAMETER, ALWAYS IN mm UNLESS SPECIFIED OTHERWISE
↧ = DEPTH TO WHICH HOLE SHOULD BE DRILLED
⌵ = COUNTERSINK (*FOLLOWED BY DIMENSIONS*)
⌴ = COUNTERBORE OR CLEARANCE HOLE (*FOLLOWED BY DIMENSIONS*)

example



ALL DRAWING VIEWS IN THIRD ANGLE PROJECTION





NB:
WHILE EVERY POSSIBLE ATTEMPT HAS BEEN MADE TO ACCURATELY ANNOTATE AND TOTAL -UP ALL CONSTITUENT PARTS IN A BILL OF MATERIALS, IT IS ADVISED THAT THE APPOINTED MANUFACTURER VALIDATES THE INFORMATION PROVIDED PRIOR TO FABRICATION. ANY DISCREPANICES **MUST** BE REPORTED TO BAILEY STREET FURNITURE GROUP BEFORE COMMENCING WORK.

PROTECT DUAL-CORE - DUAL-CORE

PRODUCT OVERVIEW

bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk

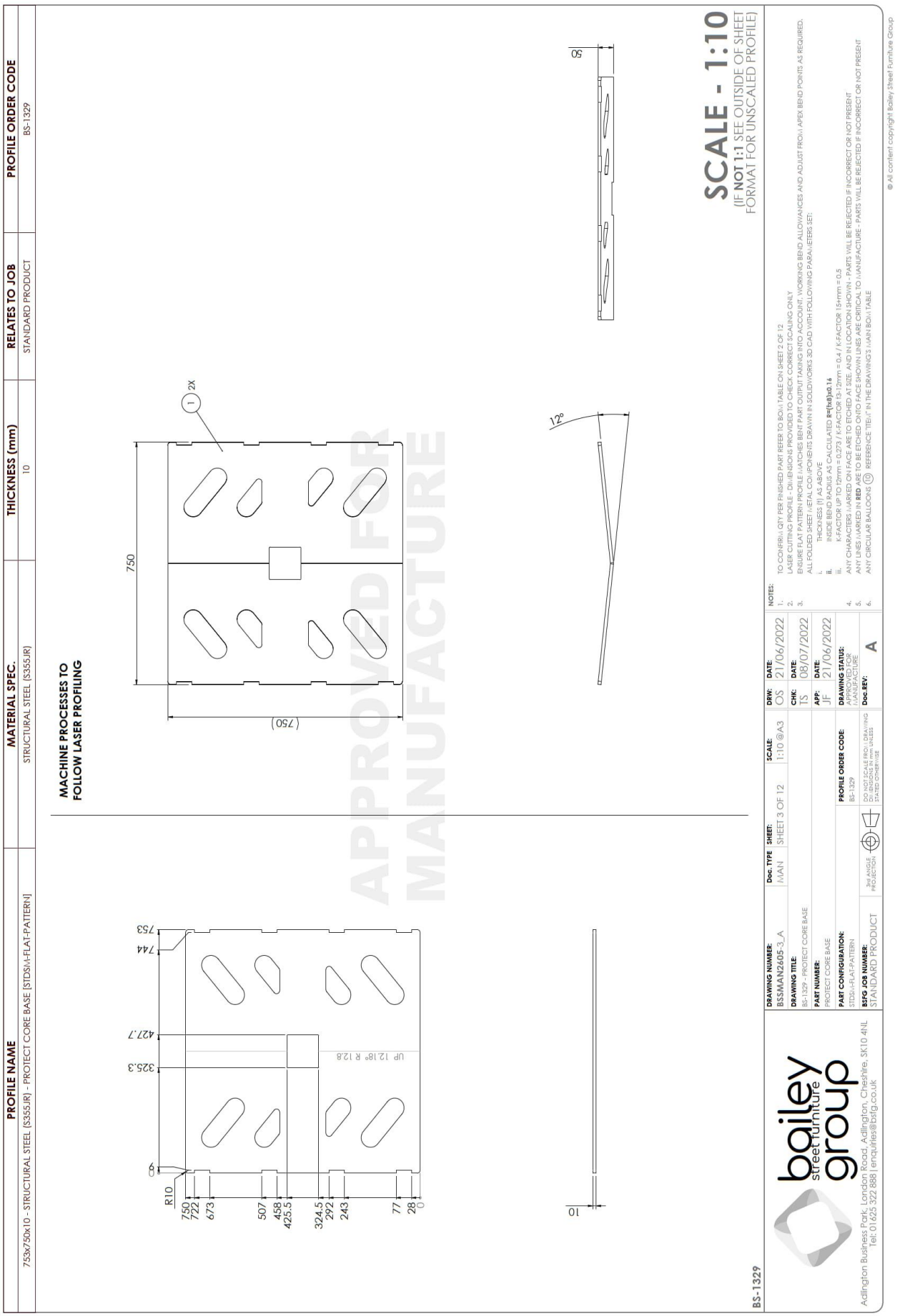
DRAWING NUMBER:	Doc. TYPE	SHEET:	SCALE:
BSSMAN2605-1_A	MAN	SHEET 1 OF 12	1:10 @A3

DRAWING TITLE: PRODUCT OVERVIEW - PROTECT DUAL-CORE
PART NUMBER: PROTECT DUAL-CORE
PART CONFIGURATION: DUAL-CORE
BSFG JOB NUMBER: STANDARD PRODUCT
3rd ANGLE PROJECTION
DO NOT SCALE FROM DRAWING. DIMENSIONS IN mm UNLESS STATED OTHERWISE

DRW:	DATE:
OS	21/06/2022
CHK:	DATE:
TS	08/07/2022
APP:	DATE:
JF	21/06/2022

DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc.REV: A

REV.	BY	DESCRIPTION	DATE	CHKD	APVD
A	OS	ISSUED FOR PRODUCTION	06/06/2022	TS	JF


PROFILE NAME
753x750x10 - STRUCTURAL STEEL (S355JR) - PROTECT CORE BASE [STDSM-FLAT-PATTERN]
MATERIAL SPEC.
STRUCTURAL STEEL (S355JR)
THICKNESS (mm)
10
RELATES TO JOB
STANDARD PRODUCT
PROFILE ORDER CODE
BS-1329
MACHINE PROCESSES TO FOLLOW LASER PROFILING
APPROVED FOR MANUFACTURE
SCALE - 1:10
(IF NOT 1:1 SEE OUTSIDE OF SHEET FORMAT FOR UNSCALED PROFILE)
753
744
427.7
325.3
UP 12.18° R 12.8
9
R10
750
722
673
507
458
425.5
324.5
292
243
77
28
0
750
(750)
2X
1
10
50
12°
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 12
2. LASER CUTTING PROFILE - DIMENSIONS PROVIDED TO CHECK CORRECT SCALING ONLY
3. ENSURE FLAT PATTERN PROFILE MATCHES BENT PART OUTPUT TAKING INTO ACCOUNT, WORKING BEND ALLOWANCES AND ADJUST FROM APEX BEND POINTS AS REQUIRED.
ALL FOLDED SHEET METAL COMPONENTS DRAWN IN SOLIDWORKS 3D CAD WITH FOLLOWING PARAMETERS SET:
i. THICKNESS (t) AS ABOVE
ii. INSIDE BEND RADIUS AS CALCULATED r=(t×8)÷0.16
iii. K-FACTOR UP TO 12mm = 0.273 / K-FACTOR 13-12mm = 0.4 / K-FACTOR 15+mm = 0.5
4. ANY CHARACTERS MARKED ON FACE ARE TO ETCHED AT SIZE. AND IN LOCATION SHOWN - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
5. ANY LINES MARKED IN RED ARE TO BE ETCHED ONTO FACE SHOWN LINES ARE CRITICAL TO MANUFACTURE - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
6. ANY CIRCULAR BALLOONS (10) REFERENCE TIEM" IN THE DRAWINGS MAIN BOM TABLE
BS-1329
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01 625 322 888 | enquiries@bsfg.co.uk
DRAWING NUMBER: BSSMAN26605-3_A
DRAWING TITLE: BS-1329 - PROTECT CORE BASE
PART NUMBER: PROTECT CORE BASE
PART CONFIGURATION: STDSM-FLAT-PATTERN
BSFG JOB NUMBER: STANDARD PRODUCT
Doc. TYPE: MAN
SHEET: SHEET 3 OF 12
PROFILE ORDER CODE: BS-1329
3rd ANGLE PROJECTION
DO NOT SCALE PRINT. DRAWING TO BE USED FOR DIMENSIONS UNLESS STATED OTHERWISE
SCALE: 1:10 @A3
DRW: OS DATE: 21/06/2022
CHK: TS DATE: 08/07/2022
APP: JF DATE: 21/06/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc.REV: A
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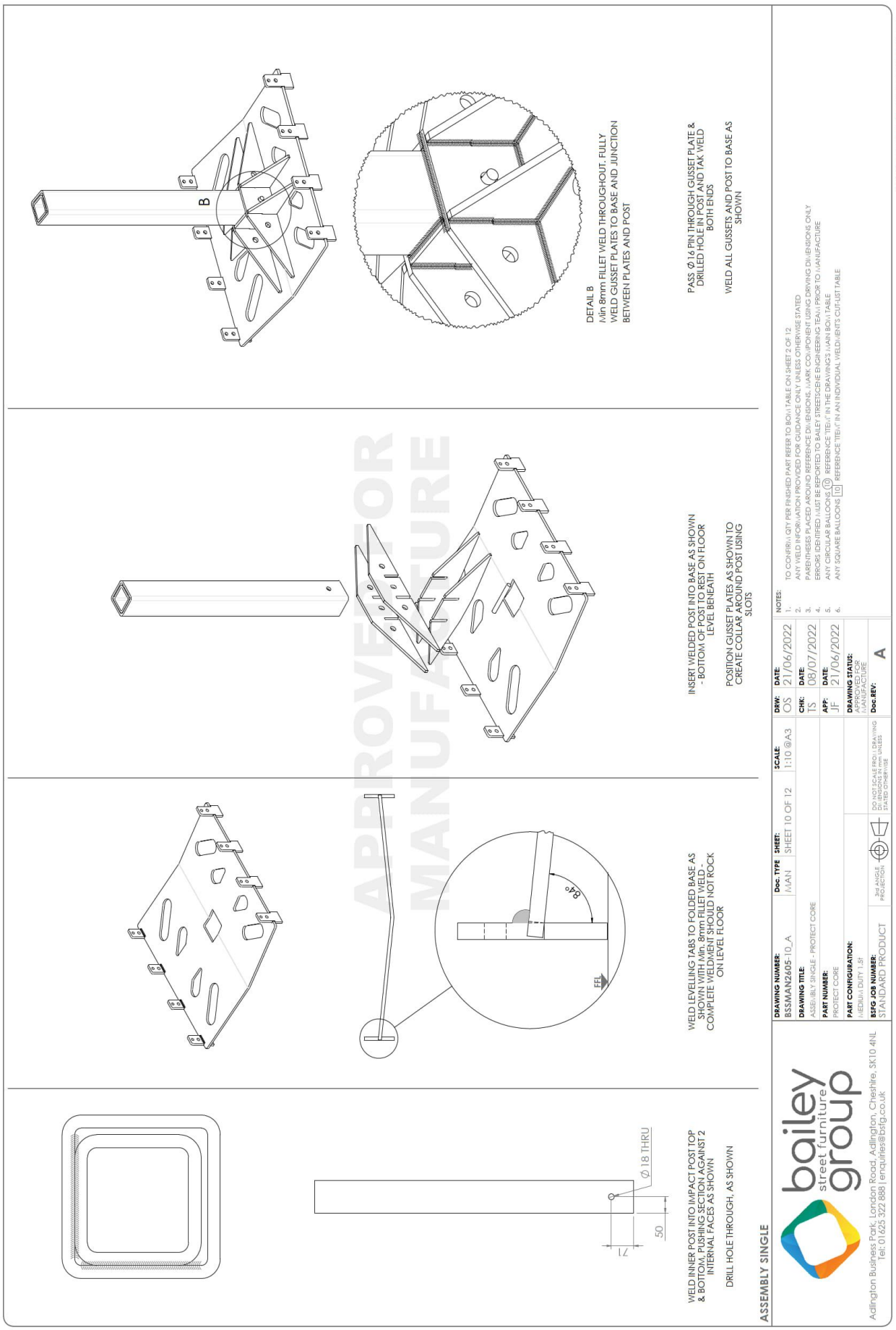
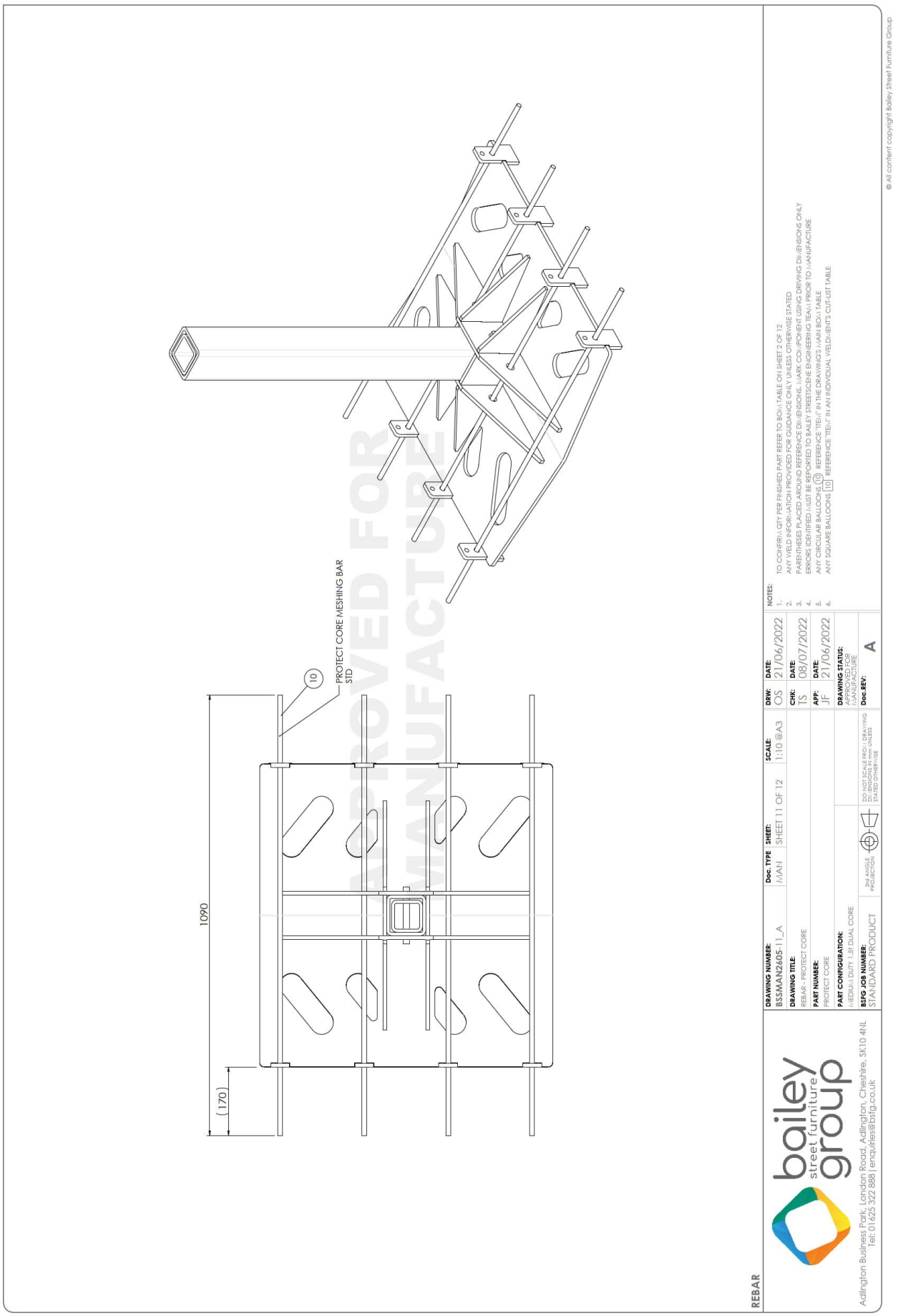

B
DETAIL B
Min 8mm FILLET WELD THROUGHOUT, FULLY WELD GUSSET PLATES TO BASE AND JUNCTION BETWEEN PLATES AND POST
PASS Ø16 PIN THROUGH GUSSET PLATE & DRILLED HOLE IN POST AND TAK WELD BOTH ENDS
WELD ALL GUSSETS AND POST TO BASE AS SHOWN
INSERT WELDED POST INTO BASE AS SHOWN - BOTTOM OF POST TO REST ON FLOOR LEVEL BENEATH
POSITION GUSSET PLATES AS SHOWN TO CREATE COLLAR AROUND POST USING SLOTS
WELD LEVELING TABS TO FOLDED BASE AS SHOWN WITH Min. 8mm FILLET WELD. COMPLETE WELDMENT SHOULD NOT ROCK ON LEVEL FLOOR
FFL
WELD INNER POST INTO IMPACT POST TOP & BOTTOM, PUSHING SECTION AGAINST 2 INTERNAL FACES AS SHOWN
DRILL HOLE THROUGH, AS SHOWN
Ø 18 THRU
50
71
ASSEMBLY SINGLE
APPROVED FOR MANUFACTURE
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01 625 322 888 | enquiries@bsfg.co.uk
DRAWING NUMBER: BSSMAN2605-10_A
DRAWING TITLE: ASSEMBLY SINGLE - PROTECT CORE
PART NUMBER: PROTECT CORE
PART CONFIGURATION: MEDIUM DUTY 1.5ft
BSFG JOB NUMBER: STANDARD PRODUCT
Doc. TYPE: MAN
SHEET: SHEET 10 OF 12
SCALE: 1:10 @A3
3rd ANGLE PROJECTION
DO NOT SCALE FROM DRAWING DIMENSIONS IN mm UNLESS STATED OTHERWISE
DRW: OS 21/06/2022
CHK: TS 08/07/2022
APP: JF 21/06/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc REV: A
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 12
2. ANY WELD INFORMATION PROVIDED FOR GUIDANCE ONLY UNLESS OTHERWISE STATED
3. PARENTHESES PLACED AROUND REFERENCE DIMENSIONS, MARK COMPONENT USING DRIVING DIMENSIONS ONLY
4. ERRORS IDENTIFIED MUST BE REPORTED TO BAILEY STREETSCENE ENGINEERING TEAM PRIOR TO MANUFACTURE
5. ANY CIRCULAR BALLOONS (10) REFERENCE "ITEM" IN THE DRAWINGS MAIN BOM TABLE
6. ANY SQUARE BALLOONS [10] REFERENCE "ITEM" IN AN INDIVIDUAL WELDMENTS CUT-LIST TABLE
© All content copyright Bailey Street Furniture Group


APPROVED FOR MANUFACTURE
PROTECT CORE MESHING BAR STD
10
1090
170
REBAR
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk
DRAWING NUMBER: BSSMAN2605-11_A
Doc. TYPE: MAN
SHEET: SHEET 11 OF 12
SCALE: 1:10 @A3
DRAWING TITLE: REBAR - PROTECT CORE
PART NUMBER: PROTECT CORE
PART CONFIGURATION: MEDIUM DUTY 1.5ft DUAL CORE
BSFG JOB NUMBER: STANDARD PRODUCT
3rd ANGLE PROJECTION
DO NOT SCALE FROM DRAWING DIMENSIONS IN mm UNLESS STATED OTHERWISE
DRW: OS DATE: 21/06/2022
CHK: TS DATE: 08/07/2022
APP: JF DATE: 21/06/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc.REV: A
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 12
2. ANY WELD INFORMATION PROVIDED FOR GUIDANCE ONLY UNLESS OTHERWISE STATED
3. PARENTHESES PLACED AROUND REFERENCE DIMENSIONS. MARK COMPONENT USING DRIVING DIMENSIONS ONLY
4. ERRORS IDENTIFIED MUST BE REPORTED TO BAILEY STREETSCENE ENGINEERING TEAM PRIOR TO MANUFACTURE
5. ANY CIRCULAR BALLOONS (10) REFERENCE 'ITEM' IN THE DRAWINGS MAIN BOM TABLE
6. ANY SQUARE BALLOONS [10] REFERENCE 'ITEM' IN AN INDIVIDUAL WELDMENTS CUT-LIST TABLE
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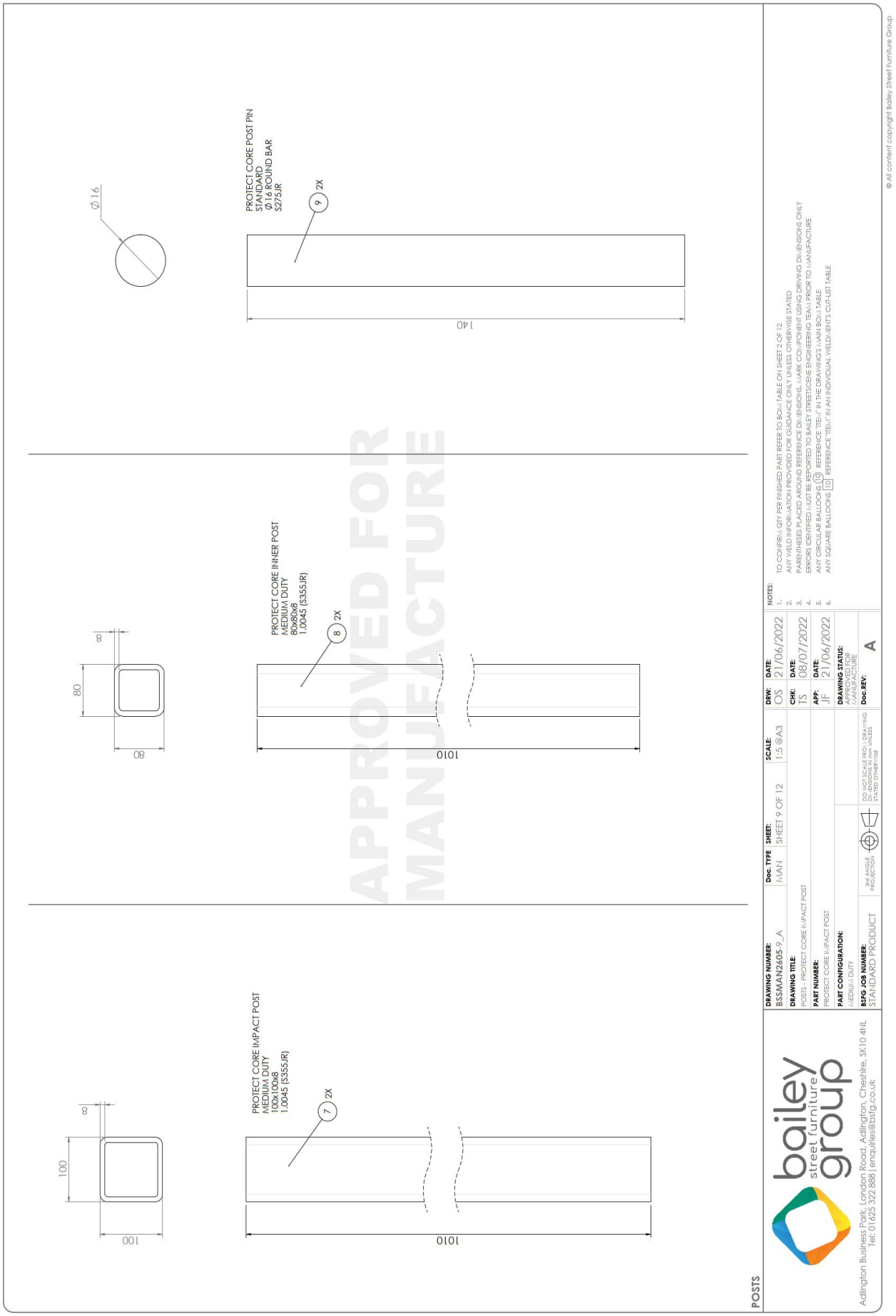
PROTECT CORE POST PIN
STANDARD
Ø16 ROUND BAR
S275JR
9 2X
Ø16
140
PROTECT CORE INNER POST
MEDIUM DUTY
80x80x8
1.0045 (S355JR)
8 2X
80
80
8
1010
PROTECT CORE IMPACT POST
MEDIUM DUTY
100x100x8
1.0045 (S355JR)
7 2X
100
100
8
1010
APPROVED FOR MANUFACTURE
POSTS
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 522 888 | enquiries@bsfg.co.uk
DRAWING NUMBER: BSSMAN2605-9_A
DRAWING TITLE: POSTS - PROTECT CORE IMPACT POST
PART NUMBER: PROTECT CORE IMPACT POST
PART CONFIGURATION: MEDIUM DUTY
BSFG JOB NUMBER: STANDARD PRODUCT
Doc. TYPE: MAN
SHEET: SHEET 9 OF 12
SCALE: 1:5 @A3
3rd ANGLE PROJECTION
DO NOT SCALE FROM DRAWING DIMENSIONS UNLESS STATED OTHERWISE
DRW: OS DATE: 21/06/2022
CHK: TS DATE: 08/07/2022
APP: JF DATE: 21/06/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc.REV: A
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 12
2. ANY WELD INFORMATION PROVIDED FOR GUIDANCE ONLY UNLESS OTHERWISE STATED
3. PARENTHESES PLACED AROUND REFERENCE DIMENSIONS. MARK COMPONENT USING DRIVING DIMENSIONS ONLY
4. ERRORS IDENTIFIED MUST BE REPORTED TO BAILEY STREETSCENE ENGINEERING TEAM PRIOR TO MANUFACTURE
5. ANY CIRCULAR BALLOONS (10) REFERENCE "ITEM" IN THE DRAWING'S MAIN BOM TABLE
6. ANY SQUARE BALLOONS [10] REFERENCE "ITEM" IN AN INDIVIDUAL WELDMENT'S CUT-LIST TABLE
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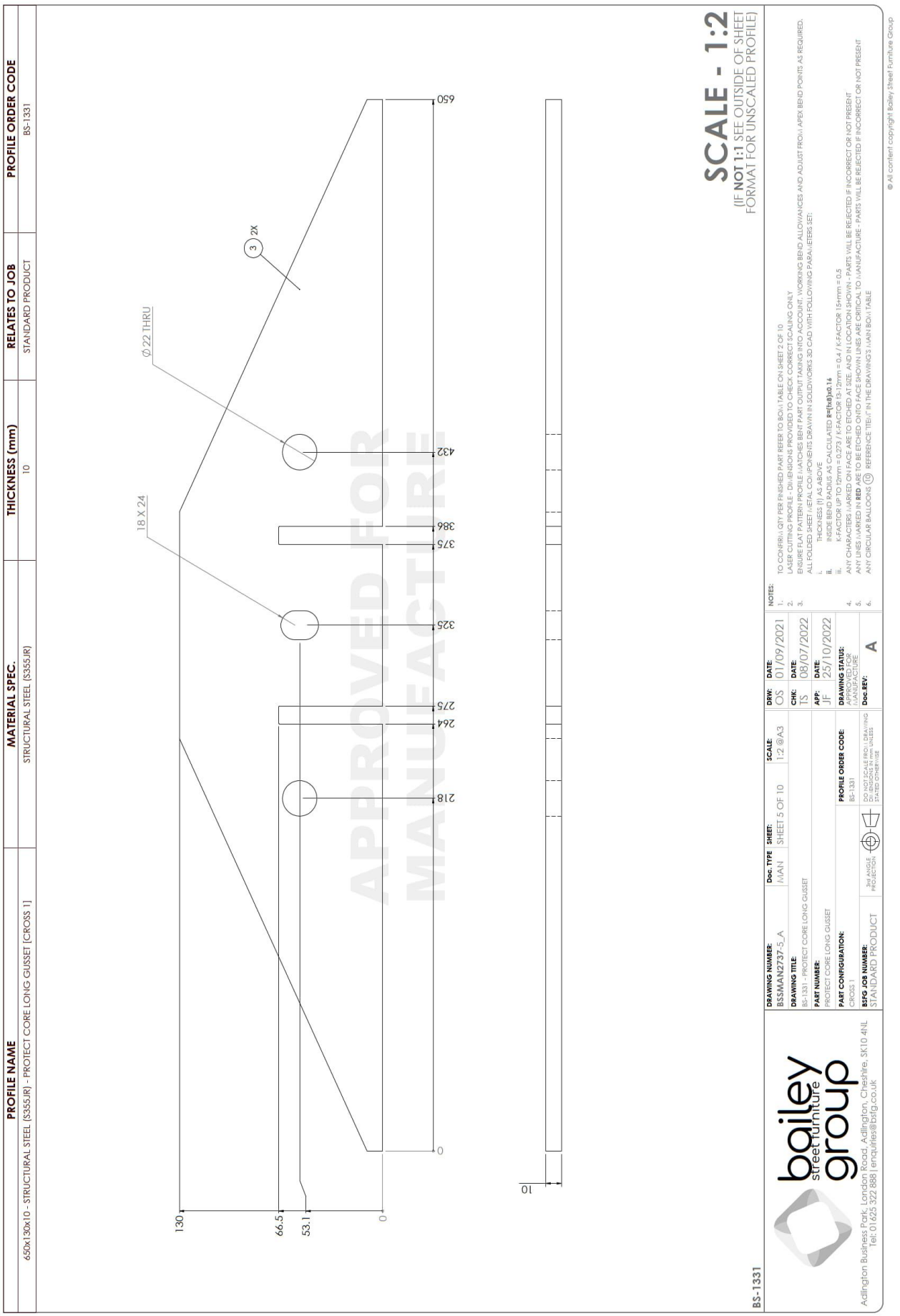

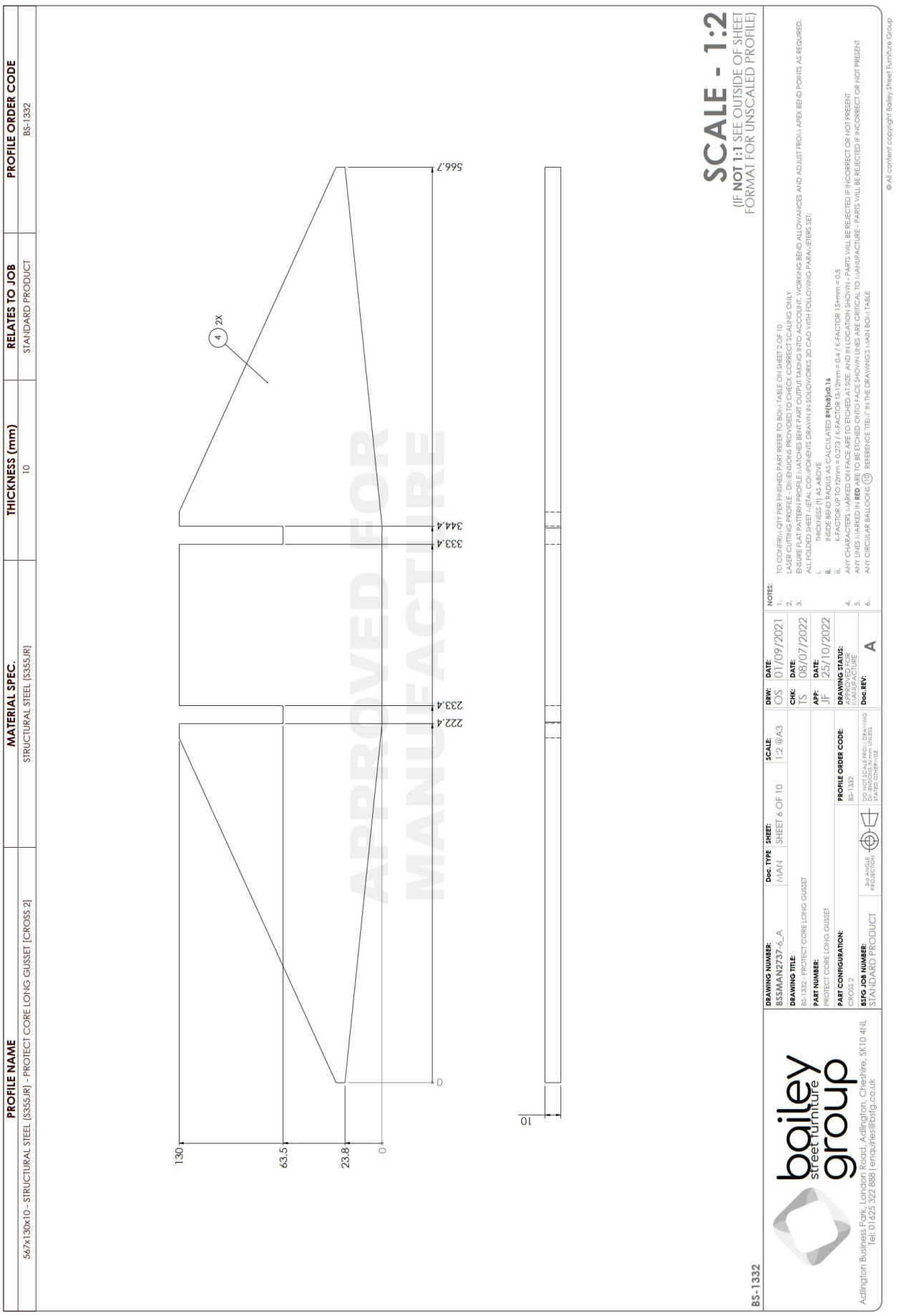
PROFILE NAME
567x130x10 - STRUCTURAL STEEL [S355JR] - PROTECT CORE LONG GUSSET [CROSS 2]
MATERIAL SPEC.
STRUCTURAL STEEL [S355JR]
THICKNESS (mm)
10
RELATES TO JOB
STANDARD PRODUCT
PROFILE ORDER CODE
BS-1332
SCALE - 1:2
(IF NOT 1:1 SEE OUTSIDE OF SHEET FORMAT FOR UNSCALED PROFILE)
APPROVED FOR MANUFACTURE
567.7
344.4
333.4
233.4
222.4
0
130
63.5
23.8
0
10
4 2X
BS-1332
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk
DRAWING NUMBER: BSSMAN27237-6_A
Doc. TYPE: MAN
SHEET: SHEET 6 OF 10
SCALE: 1:2 @A3
DRAWING TITLE: BS-1332 - PROTECT CORE LONG GUSSET
PART NUMBER: PROTECT CORE LONG GUSSET
PART CONFIGURATION: CROSS 2
PROFILE ORDER CODE: BS-1332
BSFG JOB NUMBER: STANDARD PRODUCT
DO NOT SCALE FROM DRAWING DIMENSIONS IN mm UNLESS STATED OTHERWISE
3RD ANGLE PROJECTION
DRW: OS 01/09/2021
CHK: TS 08/07/2022
APP: JF 23/10/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc.REV: A
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 10
2. LASER CUTTING PROFILE - DIMENSIONS PROVIDED TO CHECK CORRECT SCALING ONLY
3. ENSURE FLAT PATTERN PROFILE MATCHES BENT PART OUTPUT TAKING INTO ACCOUNT. WORKING BEND ALLOWANCES AND ADJUST FROM APEX BEND POINTS AS REQUIRED.
ALL FOLDED SHEET METAL COMPONENTS DRAWN IN SOLIDWORKS 3D CAD WITH FOLLOWING PARAMETERS SET:
i. THICKNESS (t) AS ABOVE
ii. INSIDE BEND RADIUS AS CALCULATED R=[(x.t)+0.1]
iii. K-FACTOR UP TO 12mm = 0.273 / K-FACTOR 13-12mm = 0.4 / K-FACTOR 15+mm = 0.5
4. ANY CHARACTERS MARKED ON FACE ARE TO ETCHED AT SIZE, AND IN LOCATION SHOWN - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
5. ANY LINES MARKED IN RED ARE TO BE ETCHED ONTO FACE SHOWN LINES ARE CRITICAL TO MANUFACTURE - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
6. ANY CIRCULAR BALLOONS (1) REFERENCE "ITEM" IN THE DRAWINGS MAIN BOM TABLE
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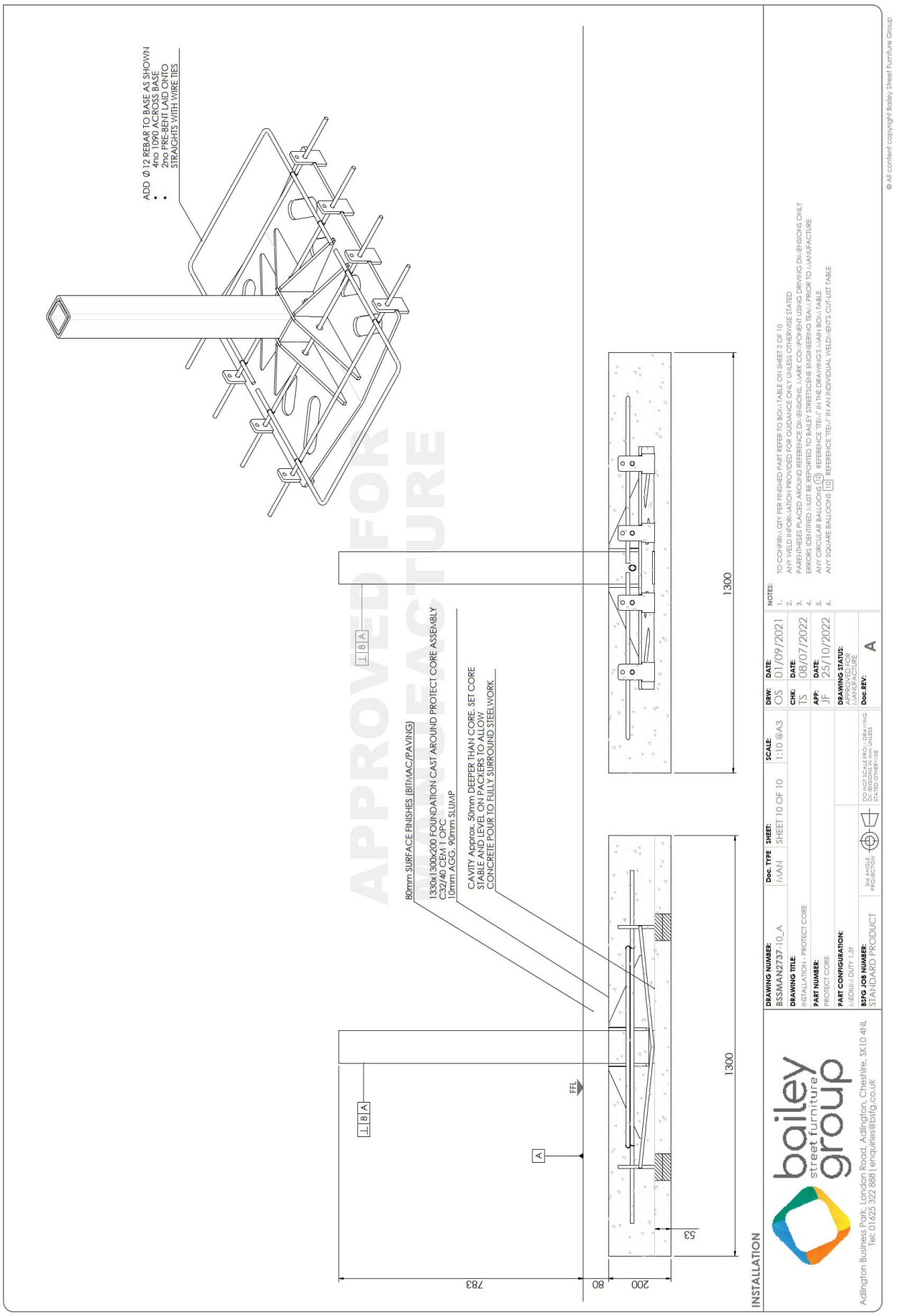

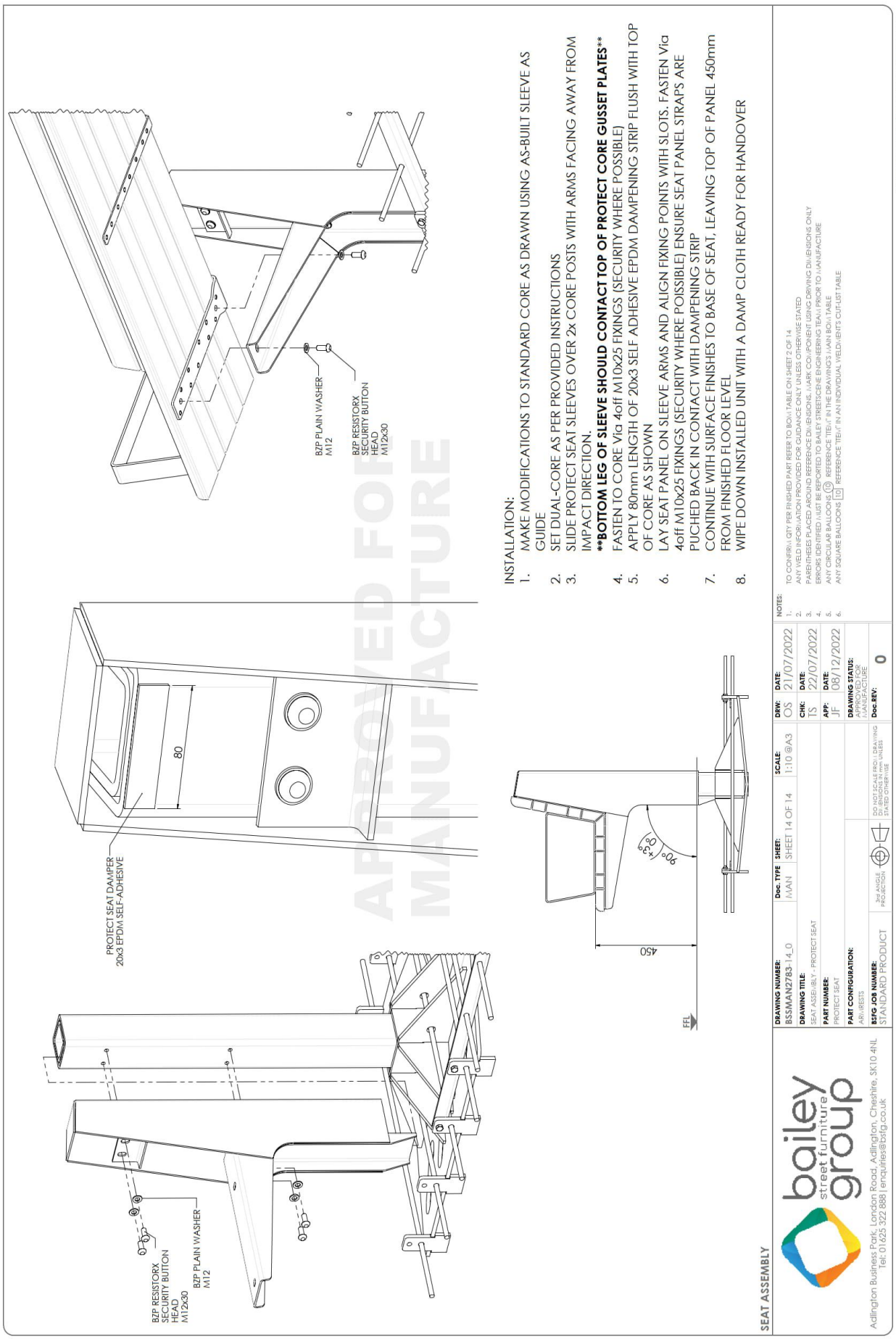
APPROVED FOR MANUFACTURE
INSTALLATION:
1. MAKE MODIFICATIONS TO STANDARD CORE AS DRAWN USING AS-BUILT SLEEVE AS GUIDE
2. SET DUAL-CORE AS PER PROVIDED INSTRUCTIONS
3. SLIDE PROTECT SEAT SLEEVES OVER 2x CORE POSTS WITH ARMS FACING AWAY FROM IMPACT DIRECTION.
BOTTOM LEG OF SLEEVE SHOULD CONTACT TOP OF PROTECT CORE GUSSET PLATES
4. FASTEN TO CORE Via 4off M10x25 FIXINGS (SECURITY WHERE POSSIBLE)
5. APPLY 80mm LENGTH OF 20x3 SELF ADHESIVE EPDM DAMPENING STRIP FLUSH WITH TOP OF CORE AS SHOWN
6. LAY SEAT PANEL ON SLEEVE ARMS AND ALIGN FIXING POINTS WITH SLOTS. FASTEN Via 4off M10x25 FIXINGS (SECURITY WHERE POISSIBLE) ENSURE SEAT PANEL STRAPS ARE PUCHED BACK IN CONTACT WITH DAMPENING STRIP
7. CONTINUE WITH SURFACE FINISHES TO BASE OF SEAT, LEAVING TOP OF PANEL 450mm FROM FINISHED FLOOR LEVEL
8. WIPE DOWN INSTALLED UNIT WITH A DAMP CLOTH READY FOR HANDOVER
B2P PLAIN WASHER M12
B2P RESISTORX SECURITY BUTTON HEAD M12x30
PROTECT SEAT DAMPER 20x3 EPDM SELF-ADHESIVE
80
450
FFL
90°
SEAT ASSEMBLY
DRAWING NUMBER: BSSMAN2783-14_0
Doc. TYPE: MAN
SHEET: SHEET 14 OF 14
SCALE: 1:10 @A3
DRAWING TITLE: SEAT ASSEMBLY - PROTECT SEAT
PART NUMBER: PROTECT SEAT
PART CONFIGURATION: ARMRESTS
BSFG JOB NUMBER: STANDARD PRODUCT
DRW: OS DATE: 21/07/2022
CHK: TS DATE: 22/07/2022
APP: JF DATE: 08/12/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc.REV: 0
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 14
2. ANY WELD INFORMATION PROVIDED FOR GUIDANCE ONLY UNLESS OTHERWISE STATED
3. PARENTHESES PLACED AROUND REFERENCE DIMENSIONS. MARK COMPONENT USING DRIVING DIMENSIONS ONLY
4. ERRORS IDENTIFIED MUST BE REPORTED TO BAILEY STREETSCENE ENGINEERING TEAM PRIOR TO MANUFACTURE
5. ANY CIRCULAR BALLOONS (10) REFERENCE "TEN" IN THE DRAWINGS MAIN BOM TABLE
6. ANY SQUARE BALLOONS [10] REFERENCE "TEN" IN AN INDIVIDUAL WELDMENTS CUT-LIST TABLE
DO NOT SCALE FROM DRAWING DIMENSIONS IN mm UNLESS STATED OTHERWISE
3rd ANGLE PROJECTION
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk
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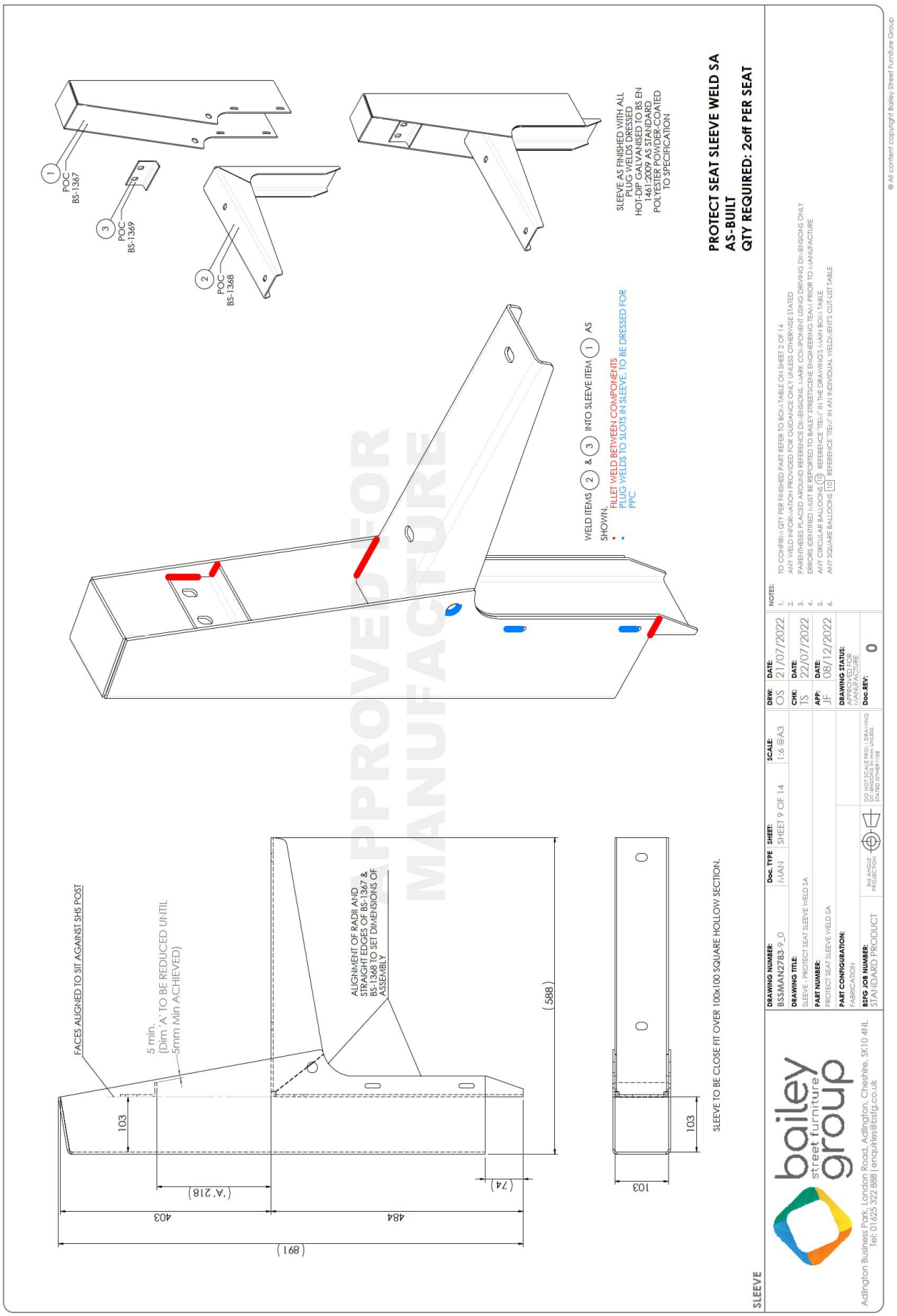

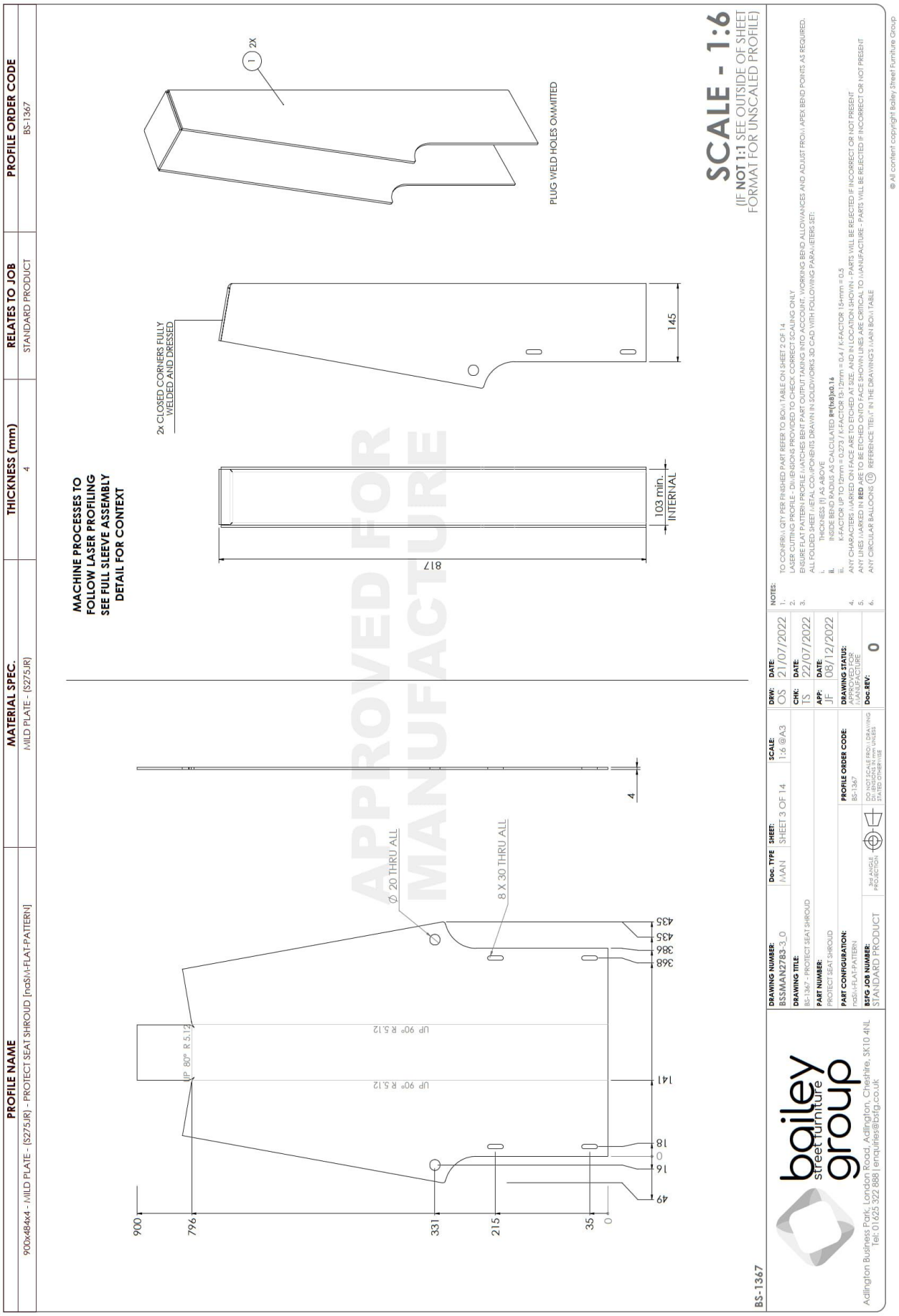
PROFILE NAME
900x484x4 - MILD PLATE - [S275JR] - PROTECT SEAT SHROUD [noSM-FLAT-PATTERN]
MATERIAL SPEC.
MILD PLATE - (S275JR)
THICKNESS (mm)
4
RELATES TO JOB
STANDARD PRODUCT
PROFILE ORDER CODE
BS-1367
MACHINE PROCESSES TO FOLLOW LASER PROFILING SEE FULL SLEEVE ASSEMBLY DETAIL FOR CONTEXT
2x CLOSED CORNERS FULLY WELDED AND DRESSED
PLUG WELD HOLES OMMITTED
2X
145
817
103 min. INTERNAL
APPROVED FOR MANUFACTURE
SCALE - 1:6
(IF NOT 1:1 SEE OUTSIDE OF SHEET FORMAT FOR UNSCALED PROFILE)
Ø 20 THRU ALL
8 X 30 THRU ALL
UP 80° R 5.12
UP 90° R 5.12
UP 90° R 5.12
900
796
331
215
35
0
49
16
18
0
141
368
386
435
435
4
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 14
2. LASER CUTTING PROFILE - DIMENSIONS PROVIDED TO CHECK CORRECT SCALING ONLY
3. ENSURE FLAT PATTERN PROFILE MATCHES BENT PART OUTPUT TAKING INTO ACCOUNT. WORKING BEND ALLOWANCES AND ADJUST FROM APEX BEND POINTS AS REQUIRED.
ALL FOLDED SHEET METAL COMPONENTS DRAWN IN SOLIDWORKS 3D CAD WITH FOLLOWING PARAMETERS SET:
i. THICKNESS (t) AS ABOVE
ii. INSIDE BEND RADIUS AS CALCULATED R=(t×8)×0.16
iii. K-FACTOR UP TO 12mm = 0.273 / K-FACTOR 13-12mm = 0.4 / K-FACTOR 15+mm = 0.5
4. ANY CHARACTERS MARKED ON FACE ARE TO ETCHED AT SIZE AND IN LOCATION SHOWN - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
5. ANY LINES MARKED IN RED ARE TO BE ETCHED ONTO FACE SHOWN LINES ARE CRITICAL TO MANUFACTURE - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
6. ANY CIRCULAR BALLOONS (1) REFERENCE TIEM NUMBER IN THE DRAWINGS MAIN BOM TABLE
BS-1367
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk
DRAWING NUMBER: BSSMAN2783-3_0
DRAWING TITLE: BS-1367 - PROTECT SEAT SHROUD
PART NUMBER: PROTECT SEAT SHROUD
PART CONFIGURATION: noSM-FLAT-PATTERN
BSFG JOB NUMBER: STANDARD PRODUCT
Doc. TYPE: MAN
SHEET: SHEET 3 OF 14
PROFILE ORDER CODE: BS-1367
3rd ANGLE PROJECTION
SCALE: 1:6 @A3
DO NOT SCALE FROM DRAWING DIMENSIONS IN mm UNLESS STATED OTHERWISE
DRW: OS DATE: 21/07/2022
CHK: TS DATE: 22/07/2022
APP: JF DATE: 08/12/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc-REV: 0
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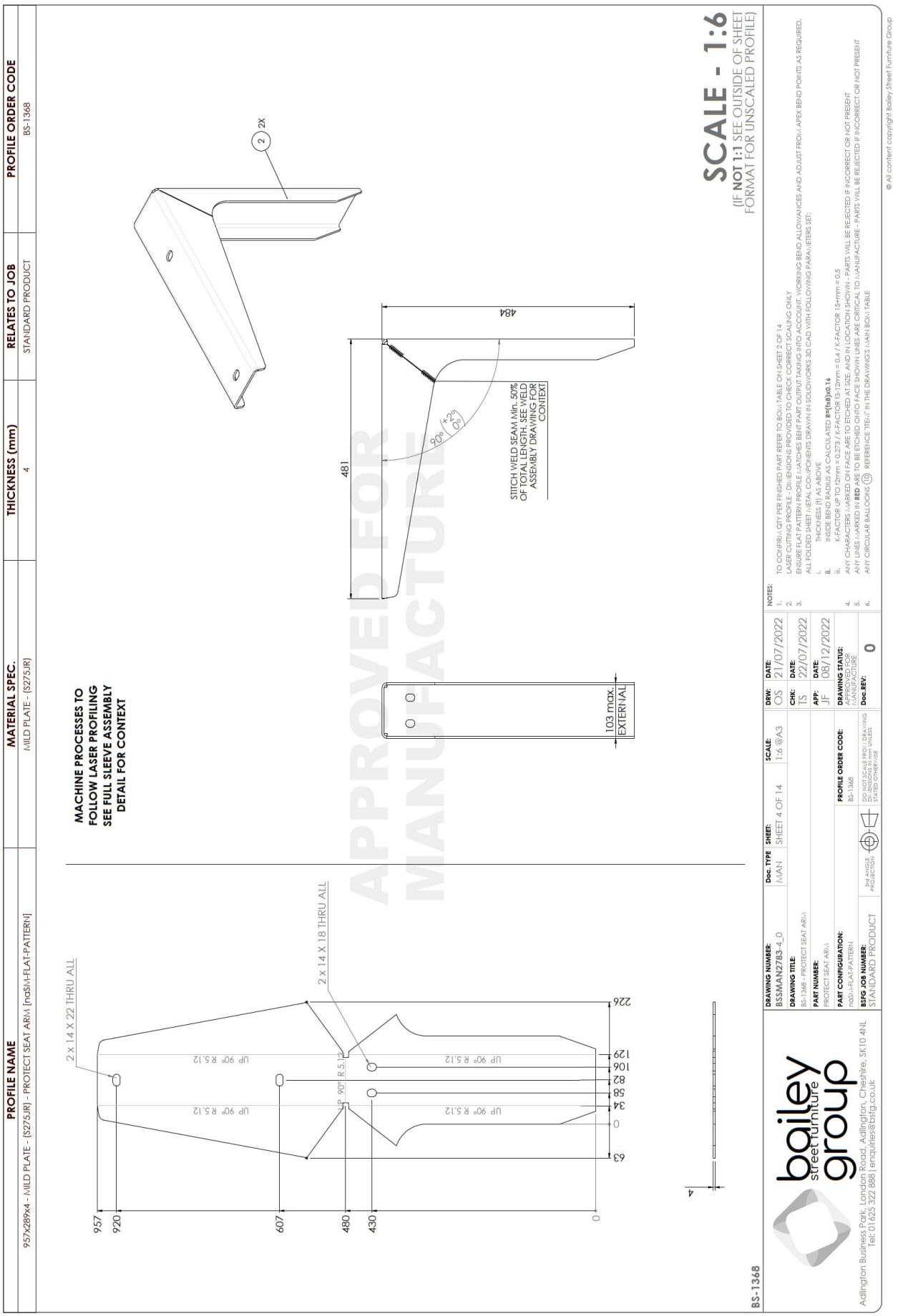
PROFILE NAME
957x289x4 - MILD PLATE - (S275JR) - PROTECT SEAT ARM [noSM-FLAT-PATTERN]
MATERIAL SPEC.
MILD PLATE - (S275JR)
THICKNESS (mm)
4
RELATES TO JOB
STANDARD PRODUCT
PROFILE ORDER CODE
BS-1368
MACHINE PROCESSES TO FOLLOW LASER PROFILING SEE FULL SLEEVE ASSEMBLY DETAIL FOR CONTEXT
2 x 14 X 22 THRU ALL
2 x 14 X 18 THRU ALL
UP 90° R 5.12
UP 90° R 5.12
UP 90° R 5.12
UP 90° R 5.12
957
920
607
480
430
0
63
0
34
58
82
106
129
226
4
2X
481
484
90° (+2° -0°)
STITCH WELD SEAM Min. 50% OF TOTAL LENGTH - SEE WELD ASSEMBLY DRAWING FOR CONTEXT
103 max. EXTERNAL
APPROVED FOR MANUFACTURE
SCALE - 1:6
(IF NOT 1:1 SEE OUTSIDE OF SHEET FORMAT FOR UNSCALED PROFILE)
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 14
2. LASER CUTTING PROFILE - DIMENSIONS PROVIDED TO CHECK CORRECT SCALING ONLY
3. ENSURE FLAT PATTERN PROFILE MATCHES BENT PART OUTPUT TAKING INTO ACCOUNT, WORKING BEND ALLOWANCES AND ADJUST FROM APEX BEND POINTS AS REQUIRED.
ALL FOLDED SHEET METAL COMPONENTS DRAWN IN SOLIDWORKS 3D CAD WITH FOLLOWING PARAMETERS SET:
i. THICKNESS (t) AS ABOVE
ii. INSIDE BEND RADIUS AS CALCULATED R=(t x k) ±0.1t
iii. K-FACTOR UP TO 12mm = 0.273 / K-FACTOR 13-12mm = 0.4 / K-FACTOR 15+mm = 0.5
4. ANY CHARACTERS MARKED ON FACE ARE TO ETCHED AT SIZE AND IN LOCATION SHOWN - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
5. ANY LINES MARKED IN RED ARE TO BE ETCHED ONTO FACE SHOWN LINES ARE CRITICAL TO MANUFACTURE - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
6. ANY CIRCULAR BALLOONS (1) REFERENCE TITEM IN THE DRAWINGS MAIN BOM TABLE
DRAWING NUMBER: BSSMAN27783-4_0
DRAWING TITLE: BS-1368 - PROTECT SEAT ARM
PART NUMBER: PROTECT SEAT ARM
PART CONFIGURATION: noSM-FLAT-PATTERN
BSFG JOB NUMBER: STANDARD PRODUCT
Doc. TYPE: MAN
SHEET: SHEET 4 OF 14
SCALE: 1:6 @A3
PROFILE ORDER CODE: BS-1368
3rd ANGLE PROJECTION
DO NOT SCALE PDF DRAWING DIMENSIONS IN mm UNLESS STATED OTHERWISE
DRW: OS 21/07/2022
CHK: TS 22/07/2022
APP: JF 08/12/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc.REV: 0
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk
BS-1368
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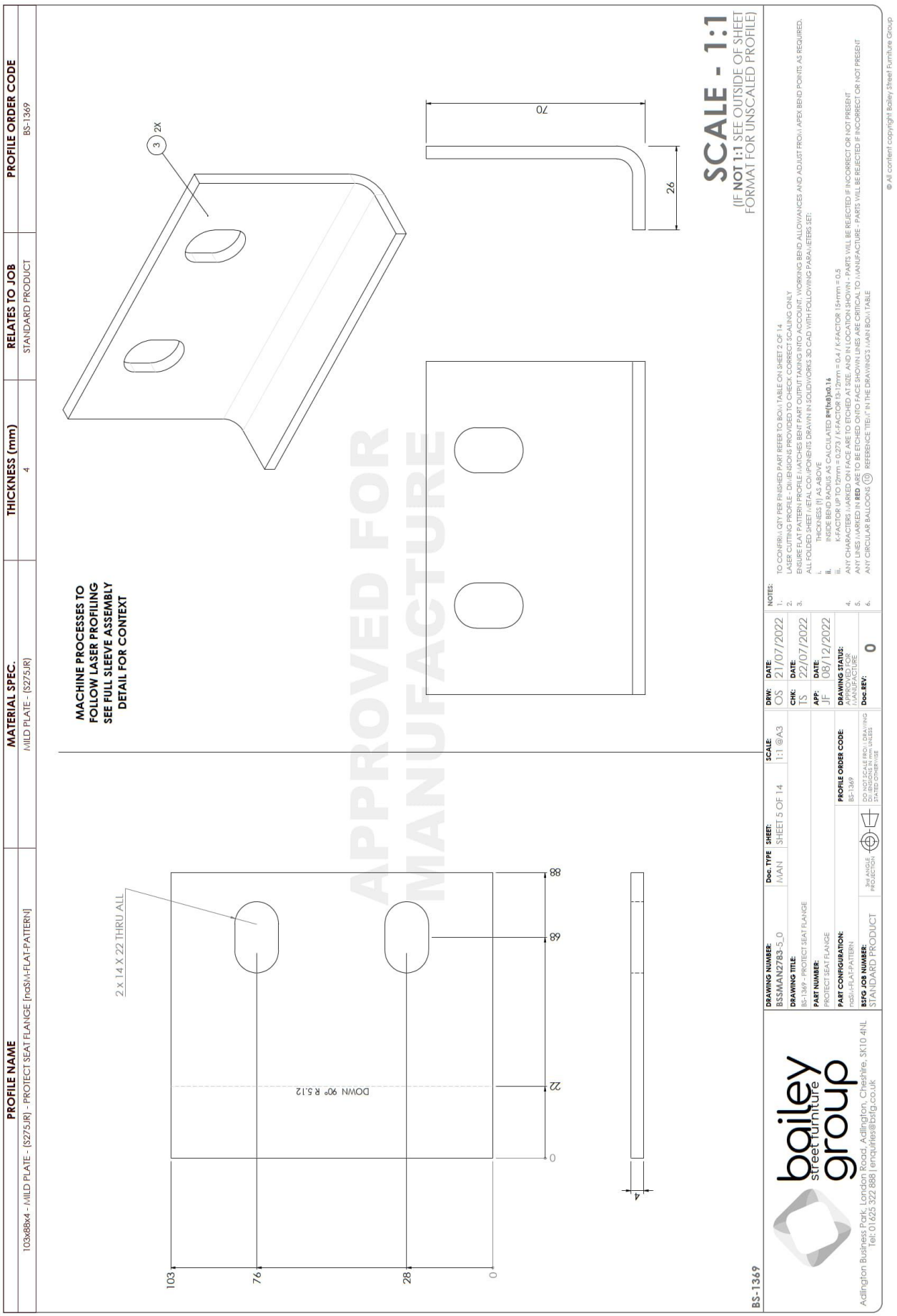
PROFILE NAME
103x88x4 - MILD PLATE - [S275JR] - PROTECT SEAT FLANGE [noSMAN-FLAT-PATTERN]
MATERIAL SPEC.
MILD PLATE - (S275JR)
THICKNESS (mm)
4
RELATES TO JOB
STANDARD PRODUCT
PROFILE ORDER CODE
BS-1369
MACHINE PROCESSES TO FOLLOW LASER PROFILING SEE FULL SLEEVE ASSEMBLY DETAIL FOR CONTEXT
APPROVED FOR MANUFACTURE
SCALE - 1:1
(IF NOT 1:1 SEE OUTSIDE OF SHEET FORMAT FOR UNSCALED PROFILE)
2 x 14 X 22 THRU ALL
DOWN 90° R 5.12
103
76
28
0
88
66
22
0
4
70
26
3 2X
BS-1369
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01 625 322 888 | enquiries@bsfg.co.uk
DRAWING NUMBER: BSSMAN22783-5_0
DRAWING TITLE: BS-1369 - PROTECT SEAT FLANGE
PART NUMBER: PROTECT SEAT FLANGE
PART CONFIGURATION: noSUM-FLAT-PATTERN
BSFG JOB NUMBER: STANDARD PRODUCT
Doc. TYPE: MAN
SHEET: SHEET 5 OF 14
3rd ANGLE PROJECTION
PROFILE ORDER CODE: BS-1369
DO NOT SCALE PRO. DRAWING DIMENSIONS UNLESS STATED OTHERWISE
SCALE: 1:1 @A3
DRW: OS DATE: 21/07/2022
CHK: TS DATE: 22/07/2022
APP: JF DATE: 08/12/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc.REV: 0
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 14
2. LASER CUTTING PROFILE - DIMENSIONS PROVIDED TO CHECK CORRECT SCALING ONLY
3. ENSURE FLAT PATTERN PROFILE MATCHES BENT PART OUTPUT TAKING INTO ACCOUNT. WORKING BEND ALLOWANCES AND ADJUST FROM APEX BEND POINTS AS REQUIRED.
ALL FOLDED SHEET METAL COMPONENTS DRAWN IN SOLIDWORKS 3D CAD WITH FOLLOWING PARAMETERS SET:
i. THICKNESS (t) AS ABOVE
ii. INSIDE BEND RADIUS AS CALCULATED R=(t×8)×0.16
iii. K-FACTOR UP TO 12mm = 0.273 / K-FACTOR 13-12mm = 0.4 / K-FACTOR 15+mm = 0.5
4. ANY CHARACTERS MARKED ON FACE ARE TO ETCHED AT SIZE AND IN LOCATION SHOWN - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
5. ANY LINES MARKED IN RED ARE TO BE ETCHED ONTO FACE SHOWN LINES ARE CRITICAL TO MANUFACTURE - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
6. ANY CIRCULAR BALLOONS (10) REFERENCE TIEM" IN THE DRAWINGS MAIN BOM TABLE
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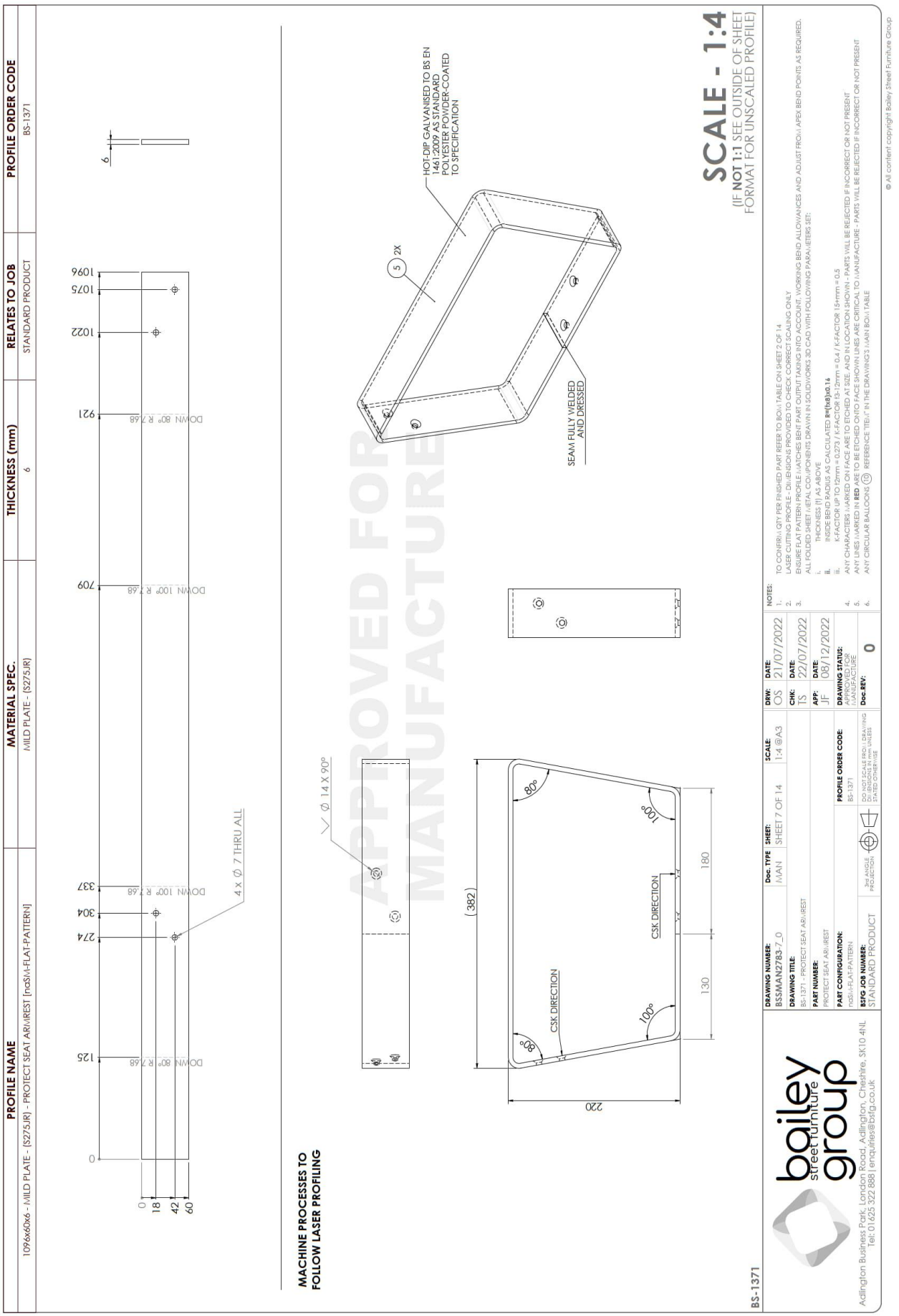
PROFILE NAME
1096x60x6 - MILD PLATE - [S275JR] - PROTECT SEAT ARMREST [noSM-FLAT-PATTERN]
MATERIAL SPEC.
MILD PLATE - (S275JR)
THICKNESS (mm)
6
RELATES TO JOB
STANDARD PRODUCT
PROFILE ORDER CODE
BS-1371
MACHINE PROCESSES TO FOLLOW LASER PROFILING
4 x Ø 7 THRU ALL
DOWN 80° R 7.68
DOWN 100° R 7.68
HOT-DIP GALVANISED TO BS EN 1461:2009 AS STANDARD POLYESTER POWDER-COATED TO SPECIFICATION
SEAM FULLY WELDED AND DRESSED
Ø 14 X 90°
CSK DIRECTION
APPROVED FOR MANUFACTURE
SCALE - 1:4
(IF NOT 1:1 SEE OUTSIDE OF SHEET FORMAT FOR UNSCALED PROFILE)
BS-1371
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk
DRAWING NUMBER: BSSMAN2783-7_0
DRAWING TITLE: BS-1371 - PROTECT SEAT ARMREST
PART NUMBER: PROTECT SEAT ARMREST
PART CONFIGURATION: noSM-FLAT-PATTERN
BSFG JOB NUMBER: STANDARD PRODUCT
Doc. TYPE: MAN
SHEET: SHEET 7 OF 14
SCALE: 1:4 @A3
PROFILE ORDER CODE: BS-1371
3rd ANGLE PROJECTION
DRW: OS 21/07/2022
CHK: TS 22/07/2022
APP: JF 08/12/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc REV: 0
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 14
2. LASER CUTTING PROFILE - DIMENSIONS PROVIDED TO CHECK CORRECT SCALING ONLY
3. ENSURE FLAT PATTERN PROFILE MATCHES BENT PART OUTPUT TAKING INTO ACCOUNT. WORKING BEND ALLOWANCES AND ADJUST FROM APEX BEND POINTS AS REQUIRED.
ALL FOLDED SHEET METAL COMPONENTS DRAWN IN SOLIDWORKS 3D CAD WITH FOLLOWING PARAMETERS SET:
i. THICKNESS [T] AS ABOVE
ii. INSIDE BEND RADIUS AS CALCULATED R=(kxB)x0.1x
iii. K-FACTOR UP TO 12mm = 0.273 / K-FACTOR 13-12mm = 0.4 / K-FACTOR 15+mm = 0.5
4. ANY CHARACTERS MARKED ON FACE ARE TO ETCHED AT SIZE AND IN LOCATION SHOWN - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
5. ANY LINES MARKED IN RED ARE TO BE ETCHED ONTO FACE SHOWN LINES ARE CRITICAL TO MANUFACTURE - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
6. ANY CIRCULAR BALLOONS REFERENCE ITEM IN THE DRAWINGS MAIN BOM TABLE
DO NOT SCALE FROM DRAWING DIM ORIGINS IN mm UNLESS STATED OTHERWISE
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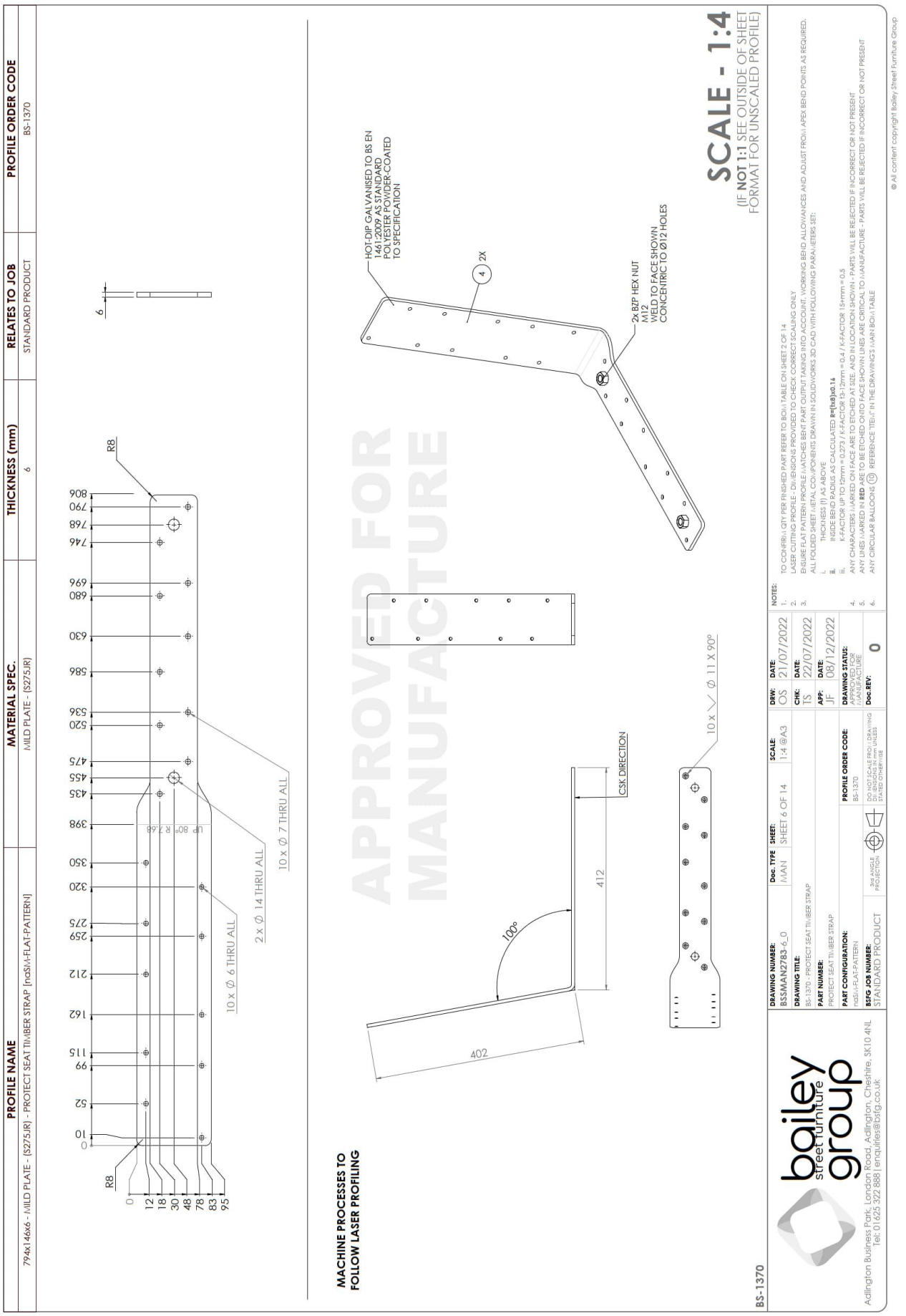
PROFILE NAME
794x146x6 - MILD PLATE - [S275JR] - PROTECT SEAT TIMBER STRAP [nasMAN-FLAT-PATTERN]
MATERIAL SPEC.
MILD PLATE - (S275JR)
THICKNESS (mm)
6
RELATES TO JOB
STANDARD PRODUCT
PROFILE ORDER CODE
BS-1370
MACHINE PROCESSES TO FOLLOW LASER PROFILING
APPROVED FOR MANUFACTURE
SCALE - 1:4
(IF NOT 1:1 SEE OUTSIDE OF SHEET FORMAT FOR UNSCALED PROFILE)
HOT-DIP GALVANISED TO BS EN 1461:2009 AS STANDARD POLYESTER POWDER-COATED TO SPECIFICATION
2x BZP HEX NUT M12 WELD TO FACE SHOWN CONCENTRIC TO Ø12 HOLES
2X
10 x Ø 7 THRU ALL
2 x Ø 14 THRU ALL
10 x Ø 6 THRU ALL
10 x ⌵ Ø 11 X 90°
CSK DIRECTION
100°
412
402
R8
BS-1370
DRAWING NUMBER: BSSMAN2783-6_0
DRAWING TITLE: BS-1370 - PROTECT SEAT TIMBER STRAP
PART NUMBER: PROTECT SEAT TIMBER STRAP
PART CONFIGURATION: nasMAN-FLAT-PATTERN
PROFILE ORDER CODE: BS-1370
BSFG JOB NUMBER: STANDARD PRODUCT
Doc. TYPE: MAN
SHEET: SHEET 6 OF 14
3rd ANGLE PROJECTION
SCALE: 1:4 @A3
DO NOT SCALE FROM DRAWING UNLESS STATED OTHERWISE
DRW: OS DATE: 21/07/2022
CHK: TS DATE: 22/07/2022
APP: JF DATE: 08/12/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc.REV: 0
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 14
2. LASER CUTTING PROFILE - DIMENSIONS PROVIDED TO CHECK CORRECT SCALING ONLY
3. ENSURE FLAT PATTERN PROFILE MATCHES BENT PART OUTPUT TAKING INTO ACCOUNT. WORKING BEND ALLOWANCES AND ADJUST FROM APEX BEND POINTS AS REQUIRED.
ALL FOLDED SHEET METAL COMPONENTS DRAWN IN SOLIDWORKS 3D CAD WITH FOLLOWING PARAMETERS SET:
i. THICKNESS (T) AS ABOVE
ii. INSIDE BEND RADIUS AS CALCULATED R=(t x) b0.14
iii. K-FACTOR UP TO 12mm = 0.273 / K-FACTOR 13-12mm = 0.4 / K-FACTOR 15+mm = 0.5
4. ANY CHARACTERS MARKED ON FACE ARE TO ETCHED AT SIZE, AND IN LOCATION SHOWN - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
5. ANY LINES MARKED IN RED ARE TO BE ETCHED ONTO FACE SHOWN LINES ARE CRITICAL TO MANUFACTURE - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
6. ANY CIRCULAR BALLOONS (10) REFERENCE ITEM IN THE DRAWINGS MAIN BOM TABLE
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk
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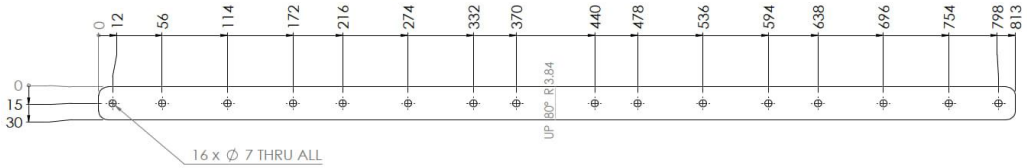
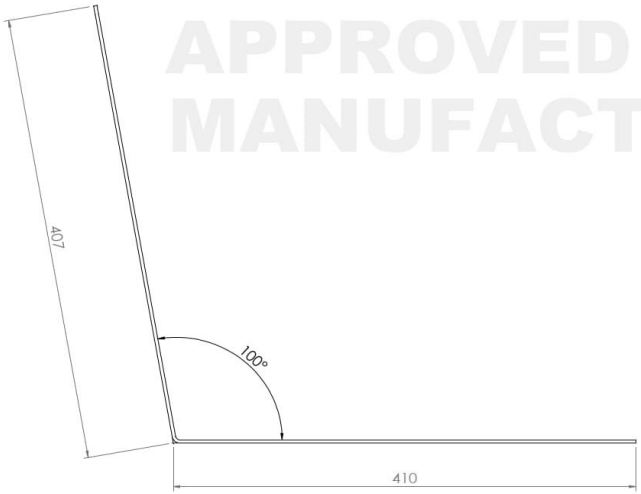
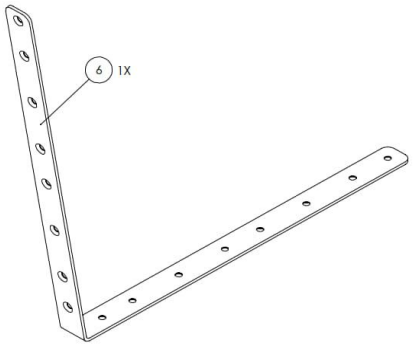
PROFILE NAME	MATERIAL SPEC.	THICKNESS (mm)	RELATES TO JOB	PROFILE ORDER CODE
813x30x3 - MILD PLATE - (S275JR) - PROTECT BRACING STRAP [SEAT STRAPSM-FLAT-PATTERN]	MILD PLATE - (S275JR)	3	STANDARD PRODUCT	BS-1372



MACHINE PROCESSES TO FOLLOW LASER PROFILING





SCALE - 1:4

(IF **NOT 1:1** SEE OUTSIDE OF SHEET FORMAT FOR UNSCALED PROFILE)

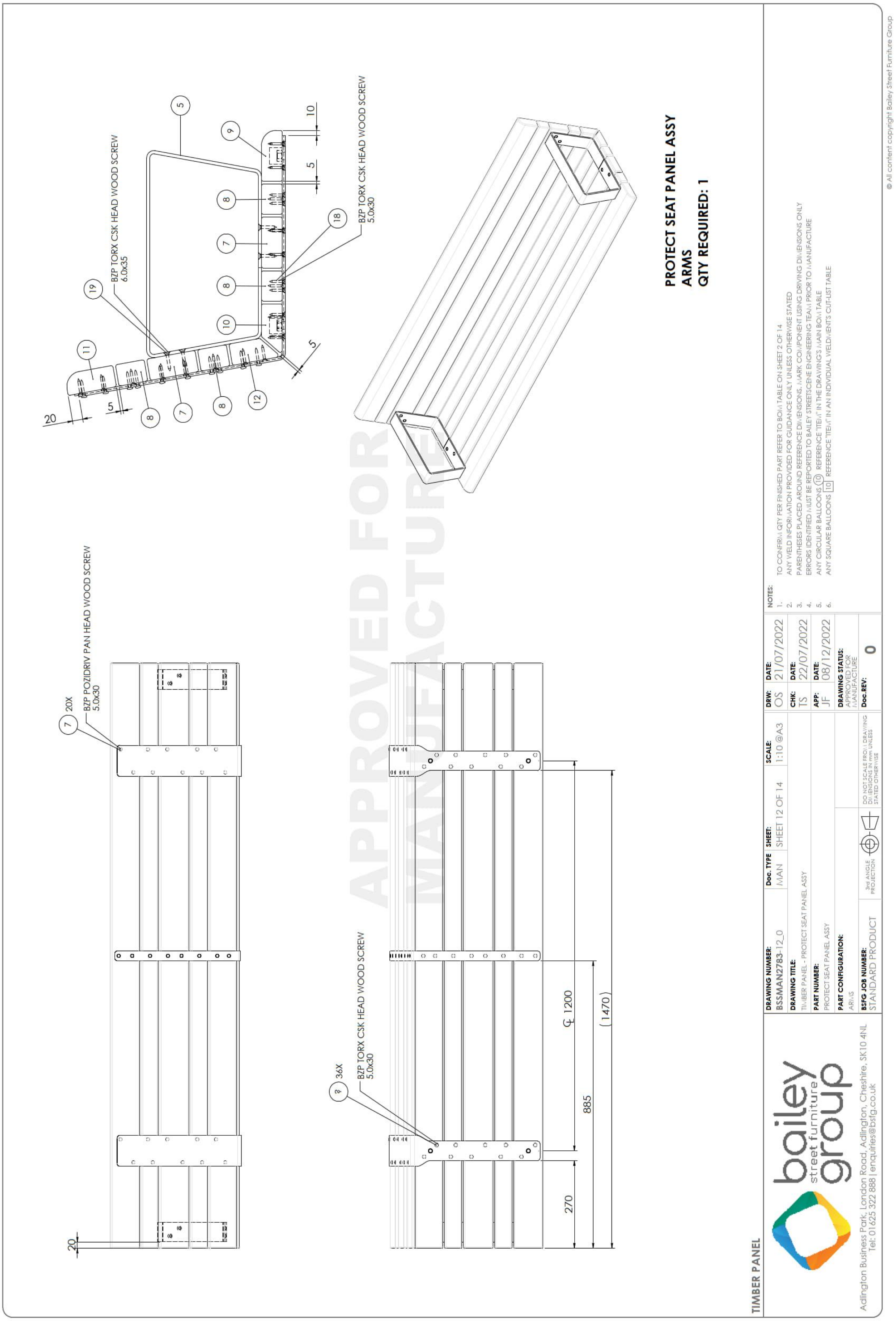
BS-1372

bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk

DRAWING NUMBER: BSSMAN2783-8_0	**Doc. TYPE** MAN	**SHEET:** SHEET 8 OF 14	**SCALE:** 1:4 @A3
DRAWING TITLE: BS-1372 - PROTECT BRACING STRAP			
PART NUMBER: PROTECT BRACING STRAP			
PART CONFIGURATION: SEAT STRAPSM-FLAT-PATTERN		**PROFILE ORDER CODE:** BS-1372	
BSFG JOB NUMBER: STANDARD PRODUCT	3rd ANGLE PROJECTION	DO NOT SCALE FROM DRAWING DIMENSIONS IN mm UNLESS STATED OTHERWISE	

DRW: OS	**DATE:** 21/07/2022	
CHK: TS	**DATE:** 22/07/2022	
APP: JF	**DATE:** 08/12/2022	
DRAWING STATUS: APPROVED FOR MANUFACTURE		
Doc.REV: 0		

NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 14
2. LASER CUTTING PROFILE - DIMENSIONS PROVIDED TO CHECK CORRECT SCALING ONLY
3. ENSURE FLAT PATTERN PROFILE MATCHES BENT PART OUTPUT TAKING INTO ACCOUNT, WORKING BEND ALLOWANCES AND ADJUST FROM APEX BEND POINTS AS REQUIRED. ALL FOLDED SHEET METAL COMPONENTS DRAWN IN SOLIDWORKS 3D CAD WITH FOLLOWING PARAMETERS SET:
   i. THICKNESS (t) AS ABOVE
   ii. INSIDE BEND RADIUS AS CALCULATED **R=(1x8)x0.16**
   iii. K-FACTOR UP TO t2mm = 0.273 / K-FACTOR t3-12mm = 0.4 / K-FACTOR 15+mm = 0.5
4. ANY CHARACTERS MARKED ON FACE ARE TO ETCHED AT SIZE, AND IN LOCATION SHOWN - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
5. ANY LINES MARKED IN **RED** ARE TO BE ETCHED ONTO FACE SHOWN LINES ARE CRITICAL TO MANUFACTURE - PARTS WILL BE REJECTED IF INCORRECT OR NOT PRESENT
6. ANY CIRCULAR BALLOONS (10) REFERENCE "ITEM" IN THE DRAWING'S MAIN BOM TABLE


PROTECT SEAT PANEL ASSY
ARMS
QTY REQUIRED: 1
BZP TORX CSK HEAD WOOD SCREW 6.0x35
BZP TORX CSK HEAD WOOD SCREW 5.0x30
20X BZP POZIDRIV PAN HEAD WOOD SCREW 5.0x30
36X BZP TORX CSK HEAD WOOD SCREW 5.0x30
270
885
1200
(1470)
APPROVED FOR MANUFACTURE
NOTES:
1. TO CONFIRM QTY PER FINISHED PART REFER TO BOM TABLE ON SHEET 2 OF 14
2. ANY WELD INFORMATION PROVIDED FOR GUIDANCE ONLY UNLESS OTHERWISE STATED
3. PARENTHESES PLACED AROUND REFERENCE DIMENSIONS. MARK COMPONENT USING DRIVING DIMENSIONS ONLY
4. ERRORS IDENTIFIED MUST BE REPORTED TO BAILEY STREETSCENE ENGINEERING TEAM PRIOR TO MANUFACTURE
5. ANY CIRCULAR BALLOONS REFERENCE 'ITEM' IN THE DRAWING'S MAIN BOM TABLE
6. ANY SQUARE BALLOONS REFERENCE 'ITEM' IN AN INDIVIDUAL WELDMENT'S CUT-LIST TABLE
DRAWING NUMBER: BSSMAN2783-12_0
DRAWING TITLE: TIMBER PANEL - PROTECT SEAT PANEL ASSY
PART NUMBER: PROTECT SEAT PANEL ASSY
PART CONFIGURATION: ARMS
BSFG JOB NUMBER: STANDARD PRODUCT
Doc. TYPE: MAN
SHEET: SHEET 12 OF 14
SCALE: 1:10 @A3
DRW: OS DATE: 21/07/2022
CHK: TS DATE: 22/07/2022
APP: JF DATE: 08/12/2022
DRAWING STATUS: APPROVED FOR MANUFACTURE
Doc.REV: 0
3rd ANGLE PROJECTION
DO NOT SCALE FROM DRAWING
TIMBER PANEL
bailey street furniture group
Adlington Business Park, London Road, Adlington, Cheshire, SK10 4NL
Tel: 01625 322 888 | enquiries@bsfg.co.uk
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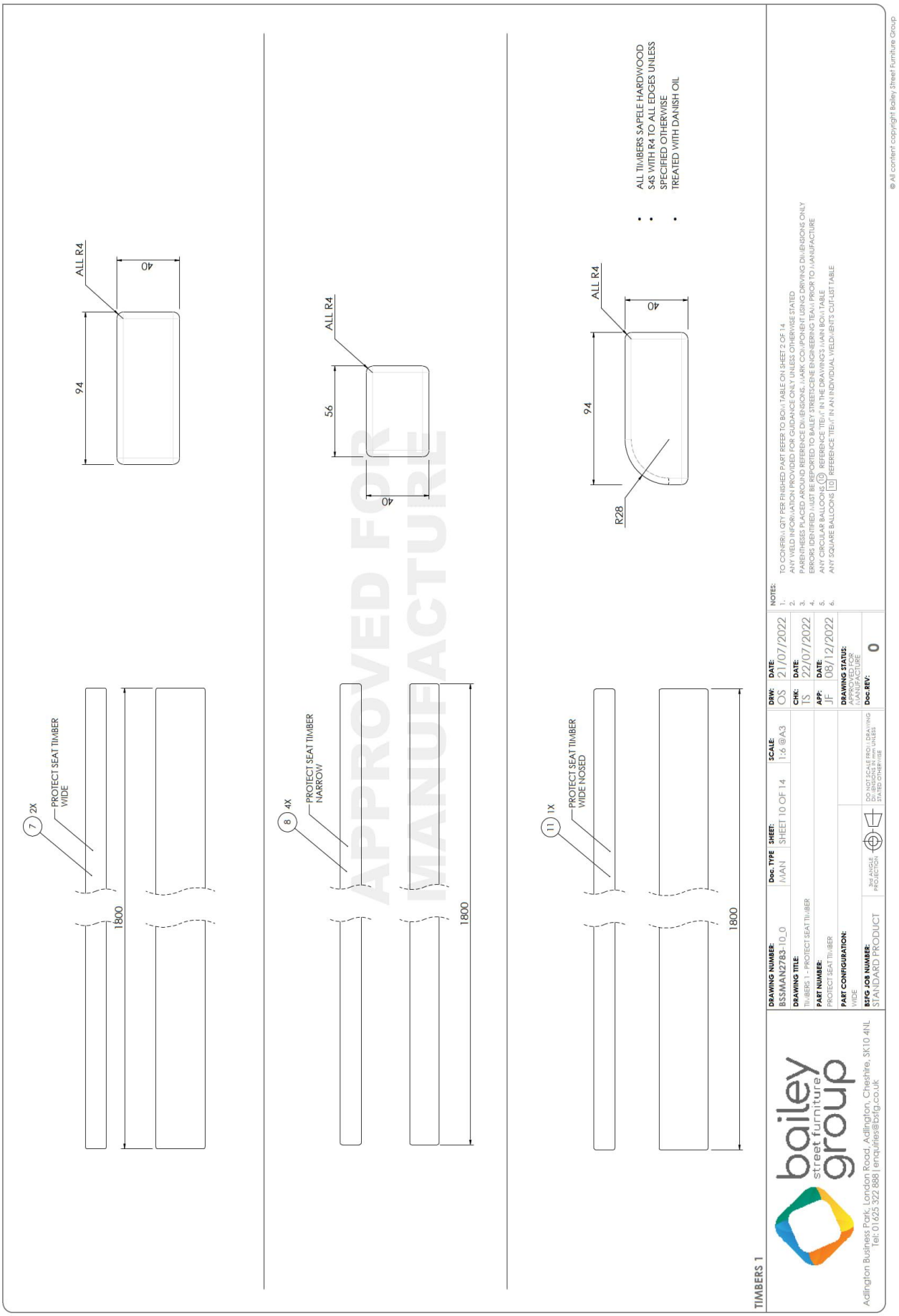
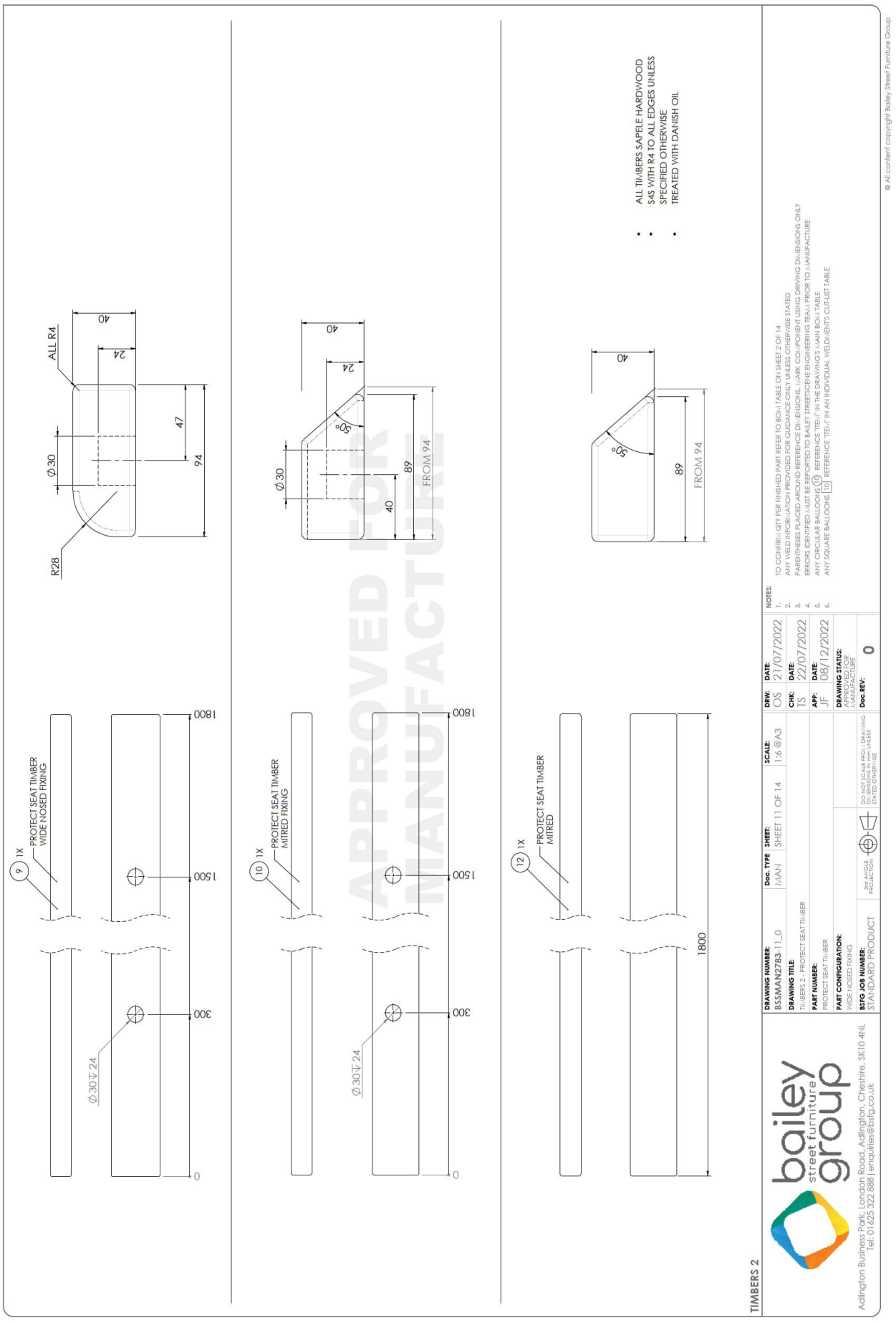
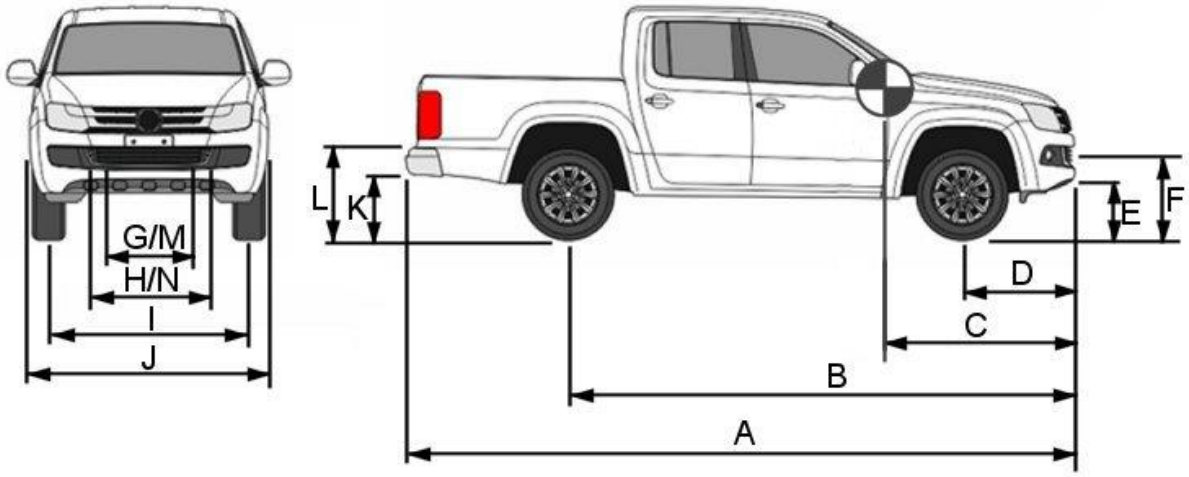




Appendix 2 Test Vehicle Details



Test Vehicle Details	
Vehicle classification	N1G
Vehicle Registration No.	LR14BXF
Vehicle Identity No (VIN)	AHTFR22G106081306
Unladen Mass (kg)	2041
Test Inertial Mass (kg)	2525
Ballast Mass (kg)	484
Number of axles x driven axle	1S +1
Tyre Size	205/80/16

Test Vehicle Measurements (mm)					
A	Vehicle overall length	5120	H	Distance between outside edges of chassis rail at front	840
B	Vehicle front to rearmost axle	3903	I	Front track width (tyre centres)	1510
C	Vehicle front to datum point	1252	J	Vehicle width (excluding mirrors)	1755
D	Vehicle front to front axle	785	K	Height from ground to bottom of chassis at rear	515
E	Height from ground to bottom of chassis at front	470	L	Height from ground to top of chassis at rear	610
F	Height from ground to top of chassis at front	565	M	Distance between inside edges of chassis rails at rear	720
G	Distance between inside edges of chassis rails at front	730	N	Distance between outside edges of chassis rails at rear	1150

Appendix 3 Calibration Information

Instrumentation

Location	QA No	CAC	Cal Due Date
Vehicle CG X	41633	2000g	16/05/2023
Vehicle CG Y	50563	2000g	17/08/2023
Vehicle CG Z	48399	2000g	17/08/2023
Vehicle CG Pitch	45216	600deg/sec	05/03/2023
Vehicle CG Roll	45217	600deg/sec	05/03/2023
Vehicle CG Yaw	45218	600deg/sec	05/03/2023
Vehicle CG X Backup	50993	2000g	23/01/2024
Vehicle CG Y Backup	50998	2000g	17/08/2023
Vehicle CG Z Backup	50989	2000g	09/06/2023
DTS Slice SPS00319	40612	n/a	14/03/2023

Other Tools

Item	QA No	Used for Measuring	Cal Due Date
Scales (LHF)	43060	Vehicle mass	27/09/2023
Scales (RHF)	43059	Vehicle mass	27/09/2023
Scales (LHR)	43058	Vehicle mass	27/09/2023
Scales (RHR)	43057	Vehicle mass	27/09/2023
Tape Measure	50126	Vehicle dimensions	20/05/2023
Tyre Pressure Gauge	44159	Tyre pressures	19/01/2024
Inclinometer	50522	Vehicle C of G	22/11/2023
C of G Loadcell	44810	Vehicle C of G	12/04/2023
Inclinometer	50521	Test item angles	12/09/2023
Tape Measure	48644	Test item dimensions	15/09/2023
Measuring Wheel	51632	Vehicle and debris position	09/11/2023

High Speed Cameras

Position	Camera QA No	Cal Due Date	Lens Type	Image Rate (pps)	X (m) to impact	Y (m) to impact	Z (m) to impact
OH Standard	41526	19/05/2023	12	500	-0.5	0	-12.4
OH Close	41525	19/05/2023	16	500	-0.3	0	-12.4
Side on	41528	19/05/2023	25	500	0	-20	-1.2
Downstream	41523	19/05/2023	Zoom	500	66	0	-1.2
Oblique	41527	19/05/2023	50	500	21	12	-1.2

Appendix 4 Test Sign-off Sheet

Test No:	B0004

Product Information & Documentation

In line with legislative requirements please ensure the following information is provided by completing and returning this form and supplying the requested accompanying documentation.

Client Details	
Company name:	Centre for the Protection of National Infrastructure (CPNI)
Company address:	PPSD - HVM
Contact name:	n/a
Contact tel:	n/a
Contact email:	n/a
Product Details	
Manufacturer:	Bailey Streetscene Ltd
Unique Product Name/Designation:-	Protect Seat
Prototype or Production sample:	Production
What orientation is required:	Impact to rear of Bench Seat
Test Details	
Legislation to be tested against:	IWA14-1:2013
Test Designation/speed class within	N1G - 4x4 Pick-up
Required Impact Speed(s):	48 +3 -1 km/h
Required Impact Angle(s):	90 +2 -2°
Required Test Vehicle:	N1G @ 2500 ±75kg

Please accompany this form with the following documentation. Please indicate below whether the documentation has been supplied, please also indicate if any information is not available or not applicable.

Product Documentation Supplied	
General Arrangement drawings (including tolerences and installation instructions):	X
Component drawings (including dimensions, tolerences and material specifications):	
Factory Sub-assembly drawings:	
Parts List:	
Material specification certificates:	
Operating Manual	
Other relevant information (disposal/recycling, safety instructions)	

Funding		Product	Install	Removal	Vehicle	Test	Report
Manufacturer		X	X	X			
Client:	CPNI				X	X	X
MIRA							

Test Sign-Off			
Please sign below Confirm that:-			
• The product and installation are to design intent and correct for test.			
• The target test parameters are correct.			
Comments/Agreed Deviations			
	Sign	**Print**	**Date**
On Behalf of Client:			22/02/2023
On Behalf of Manufacturer: (If applicable)		John Fairbrother	22/02/2023
On behalf of HORIBA MIRA Ltd		D Johnstone	22/02/2023

Appendix 5 Revision History

Report Number	Date	Comments	Sections Affected
1227092-004-012-01	29/03/2023	First Issue	n/a