



NEWSUBSTANCE

PROJECT: 2328 CWT – Citylink Walking Route

INSTALLATION REFERENCE CWT_009_LARGE M

CLIENT: Oak View Group

DOCUMENT: Design Summary Planning

Information compiled by

NEWSUBSTANCE LTD.

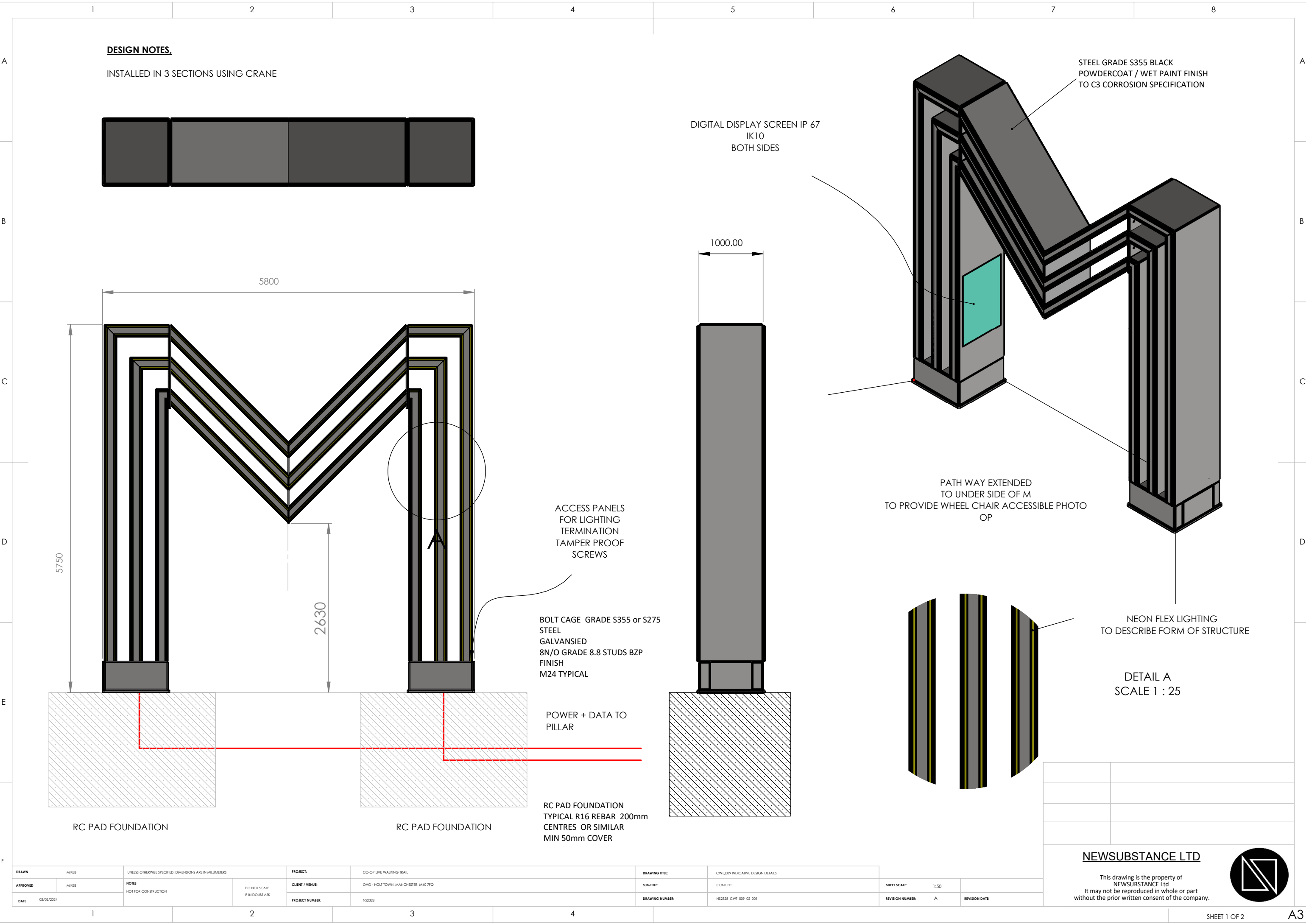
Greensand Foundry,

99 Water Lane,

Leeds

LS11 5QN, UK

Summary of Scheme

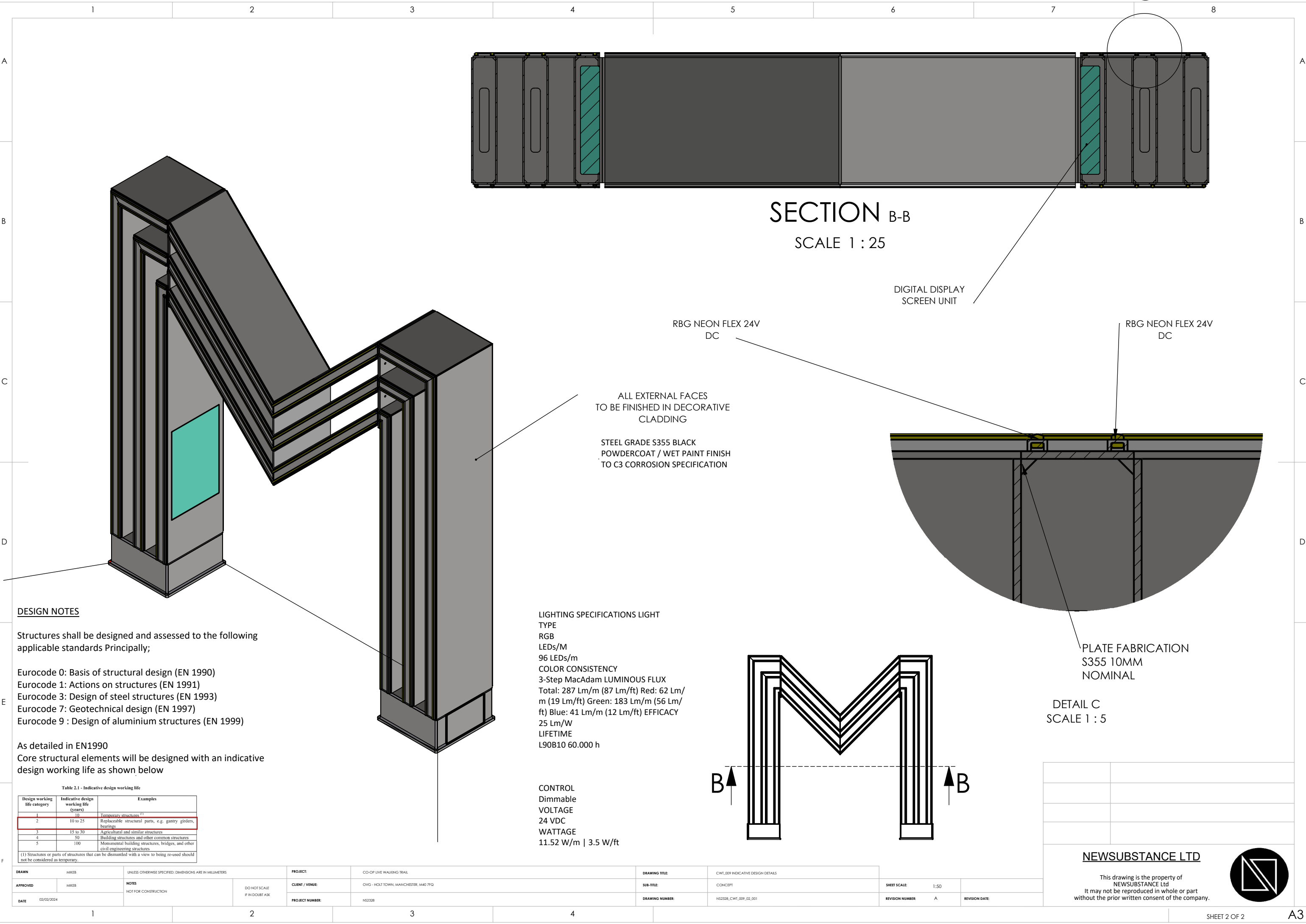


DRAWN	MIKES	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		PROJECT:	CO-OP LIVE WALKING TRAIL	DRAWING TITLE:	CWT_009 INDICATIVE DESIGN DETAILS		
APPROVED	MIKES	NOTES	DO NOT SCALE IF IN DOUBT ASK	CLIENT / VENUE:	OVG - HOLT TOWN, MANCHESTER, M40 7YQ	SUB-TITLE:	CONCEPT	SHEET SCALE:	1:50
DATE	02/02/2024	NOT FOR CONSTRUCTION		PROJECT NUMBER:	NS2328	DRAWING NUMBER:	NS2328_CWT_009_02_001	REVISION NUMBER:	A
								REVISION DATE:	

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DESIGN NOTES

Structures shall be designed and assessed to the following applicable standards Principally;

- Eurocode 0: Basis of structural design (EN 1990)
- Eurocode 1: Actions on structures (EN 1991)
- Eurocode 3: Design of steel structures (EN 1993)
- Eurocode 7: Geotechnical design (EN 1997)
- Eurocode 9 : Design of aluminium structures (EN 1999)

As detailed in EN1990
Core structural elements will be designed with an indicative design working life as shown below

Table 2.1 - Indicative design working life		
Design working life category	Indicative design working life (years)	Examples
1	10	Temporary structures (1)
2	10 to 25	Replaceable structural parts, e.g. gantry girders, bearings
3	15 to 30	Agricultural and similar structures
4	50	Building structures and other common structures
5	100	Monumental building structures, bridges, and other civil engineering structures
(1) Structures or parts of structures that can be dismantled with a view to being re-used should not be considered as temporary.		

DRAWN	MIKEB	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	PROJECT:	CO-OP LIVE WALKING TRAIL	DRAWING TITLE:	CWT_009 INDICATIVE DESIGN DETAILS
APPROVED	MIKEB	NOTES	CLIENT / VENUE:	OWG - HOLT TOWN, MANCHESTER, M40 7YQ	SUB-TITLE:	CONCEPT
DATE	02/02/2024	NOT FOR CONSTRUCTION	PROJECT NUMBER:	NS2328	DRAWING NUMBER:	NS2328_CWT_009_02_001
					SHEET SCALE:	1:50
					REVISION NUMBER:	A
					REVISION DATE:	

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Summary of Reaction Loads at Foundation



COO0424 – Co-op Live Sculptures

Analysis Models – Base Reactions

Rev. 01

Date: 16/02/2024

INTRODUCTION

This document provides screenshots of each of the analysis models created by Stage One, showing the unfactored base reactions for each of the loadcases considered.

The base supports shown are as per Stage One's own modelling assumptions. They do not represent the final positions of the embedment bolts. The base support reactions provided in this summary report are purely for the use of the client structural engineer to carry out their own assessment of the foundations required.

The loadcases considered include the structure self-weight (SW), superimposed dead load (cladding, finishes etc.), Live loading (persons, maintenance), Live Snow loading and Wind Loading.

The wind loading has been considered for the most onerous plan directions upon the structures. Note that the reactions shown will be subjected to load reversal for opposing wind cases, and hence should be considered in the foundation designs.

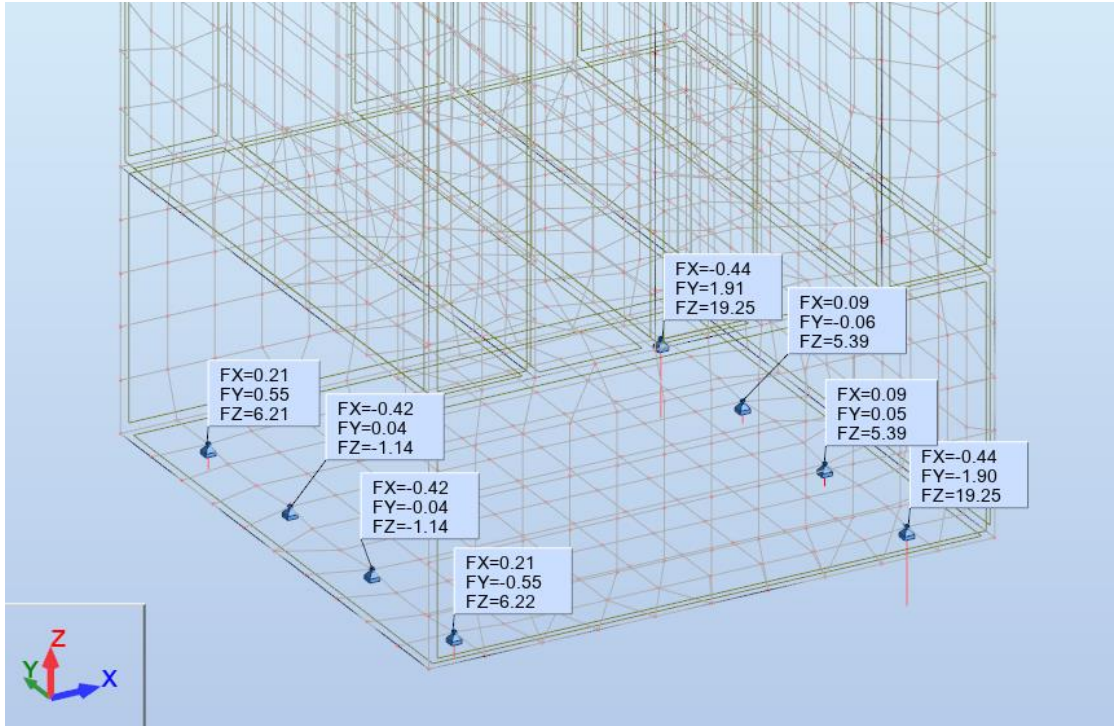
Forces shown are for FX, FY and FZ directions.

Moments shown are for MX, MY and MZ directions.

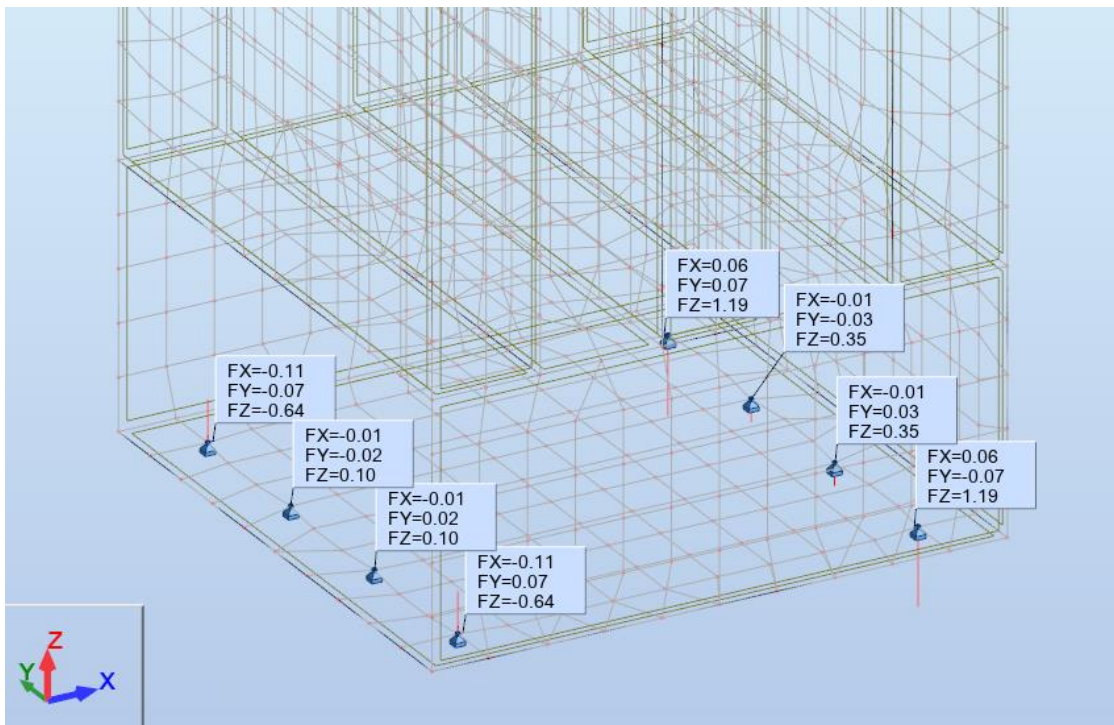
LETTER M

SYMMETRICAL BASES

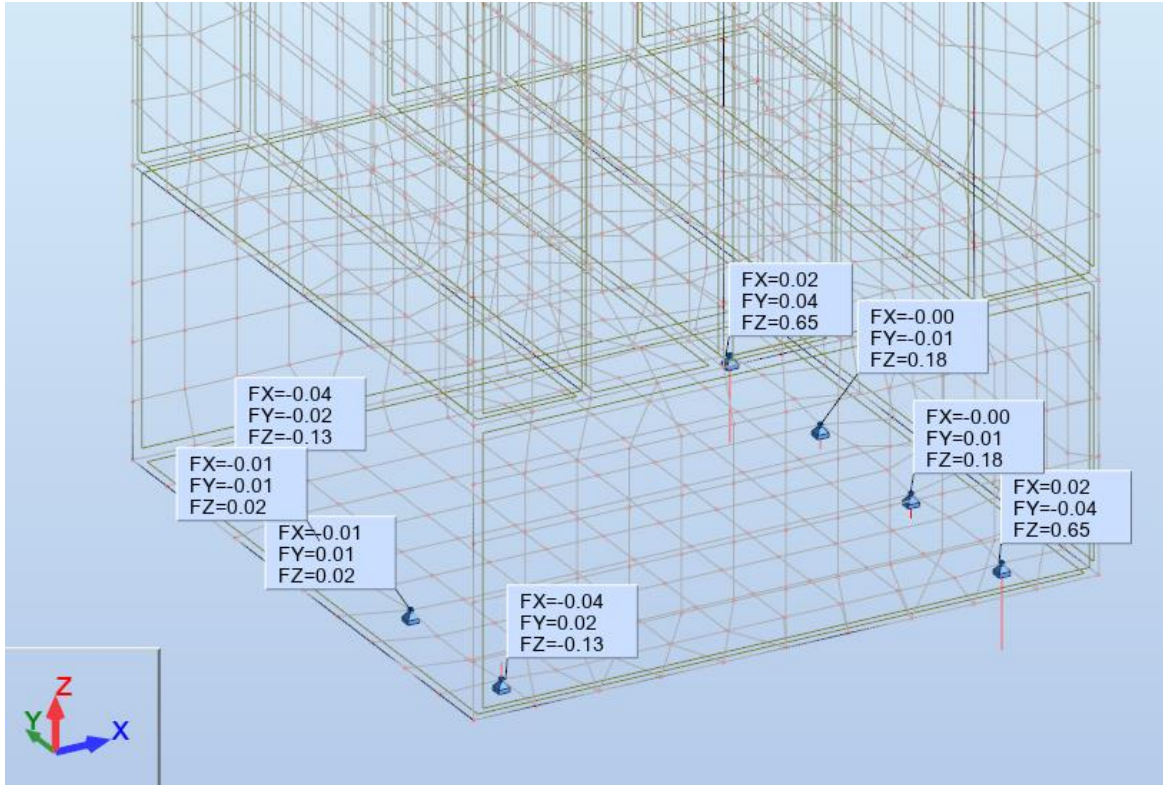
Self-Weight (SW)



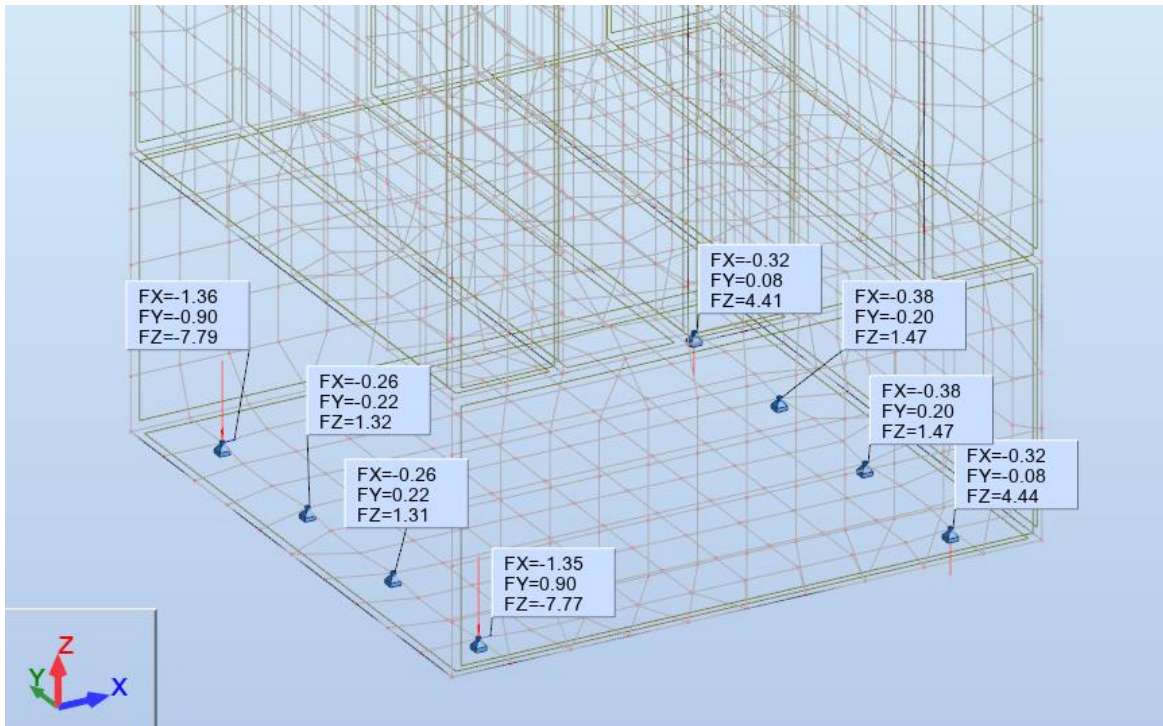
Live Load (Persons)



Live Load (Snow)

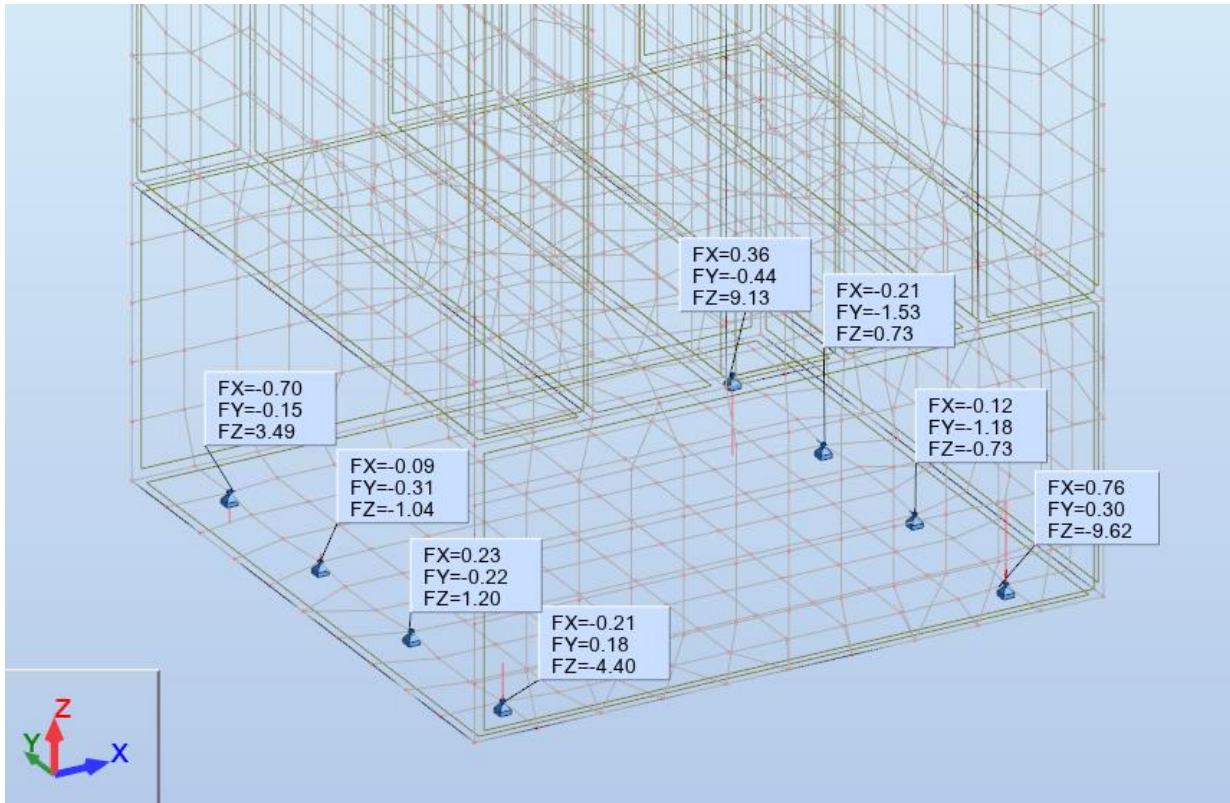


Wind +X Direction





Wind +Y Direction



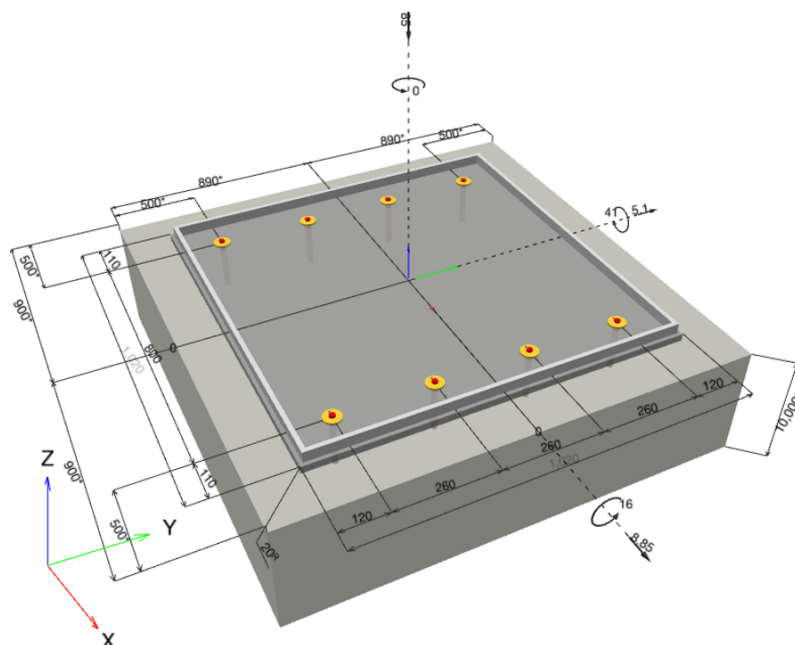
Specifier's comments:

1 Input data

Anchor type and size:	HIT-HY 200-A V3 + HIT-Z 100 Years M16	 
Return period (service life in years):	100	
Item number:	2018417 HIT-Z M16x175 (insert) / 2378171 HIT-HY 200-A V3 (mortar)	
Hilti Filling Set or any suitable annular gap filling solution		
Effective embedment depth:	$h_{ef,act} = 120.0 \text{ mm}$ ($h_{ef,limit} = - \text{ mm}$)	
Material:	DIN EN ISO 4042	
Approval No.:	ETA 19/0632	
Issued I Valid:	08/06/2023 -	
Proof:	SOFA based on EN 1992-4, Mechanical	
Stand-off installation:	$e_b = 0.0 \text{ mm}$ (no stand-off); $t = 20.0 \text{ mm}$	
Baseplate ^R :	$l_x \times l_y \times t = 1,020.0 \text{ mm} \times 1,020.0 \text{ mm} \times 20.0 \text{ mm}$; (Recommended plate thickness: not calculated)	
Profile:	Square hollow, ; $(L \times W \times T) = 1,000.0 \text{ mm} \times 1,000.0 \text{ mm} \times 12.0 \text{ mm}$	
Base material:	cracked concrete, Custom, $f_{c,cyl} = 32.00 \text{ N/mm}^2$; $h = 10,000.0 \text{ mm}$, Temp. short/long: 0/0 °C, User-defined partial material safety factor $\gamma_c = 1.500$	
Installation:	hammer drilled hole, Installation condition: Dry	
Reinforcement:	No reinforcement or Reinforcement spacing $\geq 150 \text{ mm}$ (any $\emptyset$) or $\geq 100 \text{ mm}$ ($\emptyset \leq 10 \text{ mm}$) no longitudinal edge reinforcement	

^R - The anchor calculation is based on a rigid baseplate assumption.

Geometry [mm] & Loading [kN, kNm]





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Company:		Page:	2
Address:		Specifier:	
Phone I Fax:		E-Mail:	
Design:	LETTER M	Date:	29/02/2024
Fastening Point:			

1.1 Load combination

Case	Description	Forces [kN] / Moments [kNm]	Seismic	Fire	Max. Util. Anchor [%]
1	Combination 1	N = -85.000; V _x = 8.850; V _y = 5.100; M _x = 16.000; M _y = 41.000; M _z = 0.000;	no	no	9

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Company:		Page:	3
Address:		Specifier:	
Phone Fax:		E-Mail:	
Design:	LETTER M	Date:	29/02/2024
Fastening Point:			

2 Proof I Utilisation (Governing Cases)

Loading	Proof	Design values [kN]		Utilization	Status
		Load	Capacity	β_N / β_V [%]	
Tension	Concrete Breakout failure	7.519	101.239	8 / -	OK
Shear	Concrete edge failure in direction x+	9.210	114.884	- / 9	OK

Loading	β_N	β_V	α	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.074	0.080	1.500	5	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!



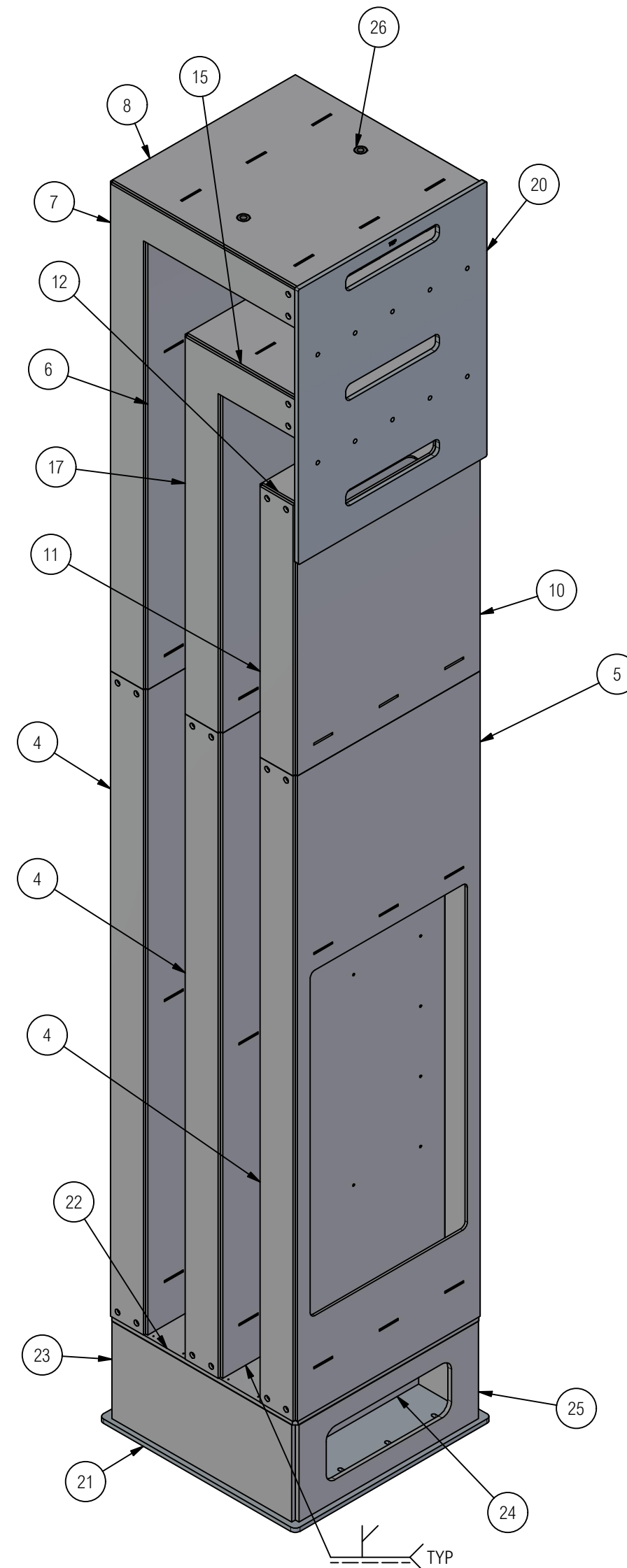
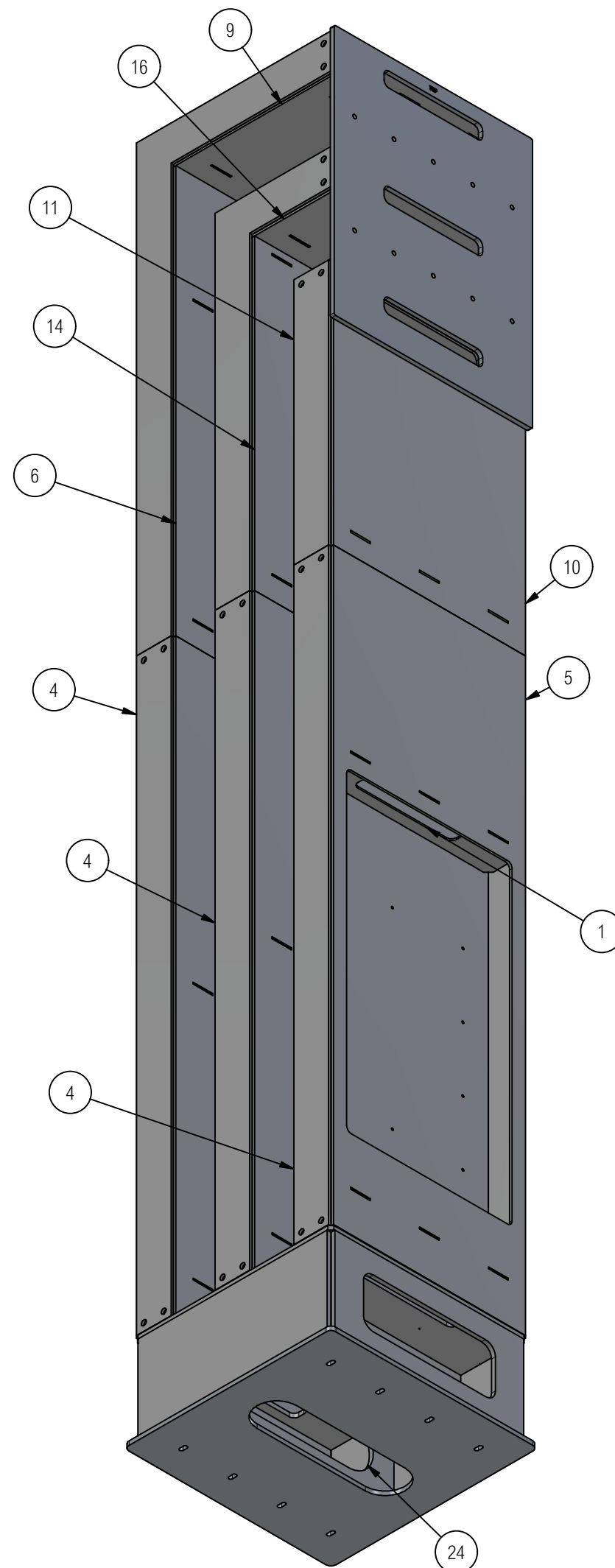
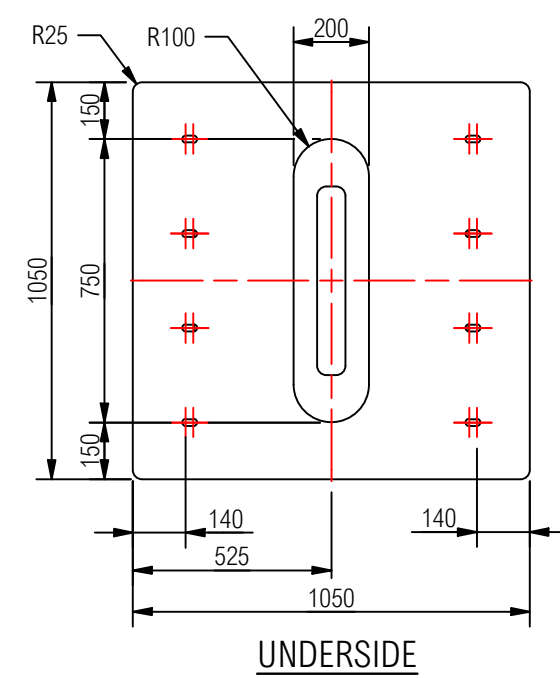
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Company:		Page:	4
Address:		Specifier:	
Phone I Fax:		E-Mail:	
Design:	LETTER M	Date:	29/02/2024
Fastening Point:			

4 Remarks; Your Cooperation Duties

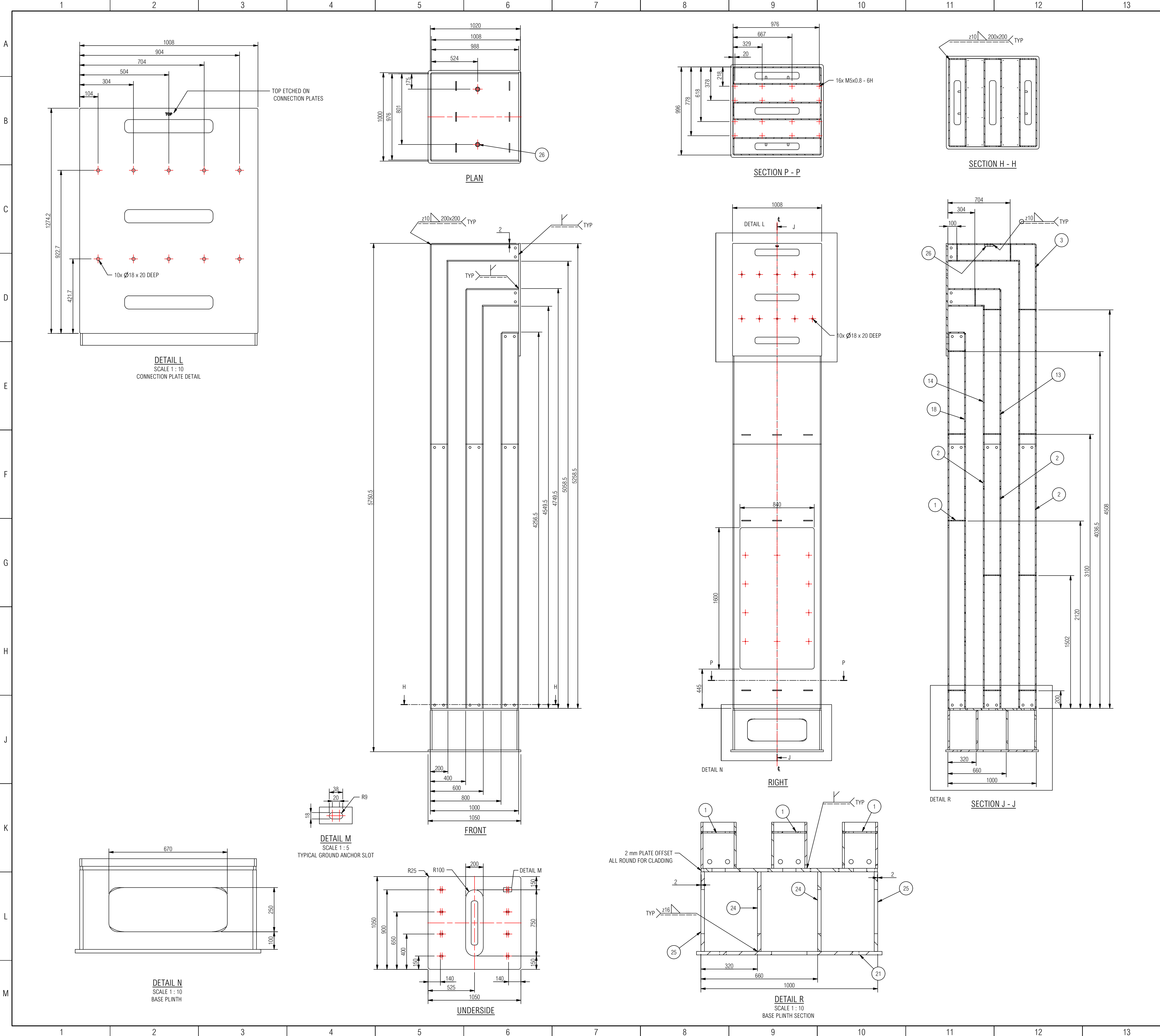
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Fabrication Drawings



CONSTRUCTOR			
BUILD PROCESS 1:	LASER PLATE	BUILD PROCESS 2:	METALWORK
BUILD PROCESS 3:	SUB-CONTRACT	BUILD PROCESS 4:	SUB-CONTRACT
BUILD PROCESS 5:		BUILD PROCESS 6:	
BUILD PROCESS 7:		BUILD PROCESS 8:	
MATERIAL:	MS PLATE WELDMENT	WEIGHT:	5124 kg
FINISH:	PAINT - C3 CORROSION PROTECTION - COLOUR TBC	FINISH QUALITY:	STANDARD

REVISION HISTORY					
	CLIENT: NEWSUBSTANCE LTD		PROJECT: CO-OP LIVE GANT M		
	GROUP: AA - MANUFACTURED ITEM				
	SUBGROUP: 01 - SIDES				
	DRAWING TYPE MF	DRAWN BY MD	PROJECTION 	DRAWING SIZE A1	DRAWING SCALE 1 : 20
	DRAWING TITLE: RIGHT SIDE				SHEET No. 1 / 3
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BILL OF MATERIALS					
ITEM	PART NUMBER	REV	DESCRIPTION	MATERIAL	CUT QTY
1	EMM0424-AA01-0011	A	RIB	MS PLATE S275 - 8 mm	YES 15
2	EMM0424-AA01-0002	B	SIDE PLATE	MS PLATE S275 - 12 mm	YES 4
3	EMM0424-AA01-0003	B	SIDE PLATE	MS PLATE S275 - 12 mm	YES 1
4	EMM0424-AA01-0004	B	FRONT PLATE	MS PLATE S275 - 12 mm	YES 6
5	EMM0424-AA01-0005	B	SIDE PLATE - SCREEN HOUSING	MS PLATE S275 - 12 mm	YES 1
6	EMM0424-AA01-0006	B	SIDE PLATE	MS PLATE S275 - 12 mm	YES 1
7	EMM0424-AA01-0007	B	FRONT PLATE	MS PLATE S275 - 12 mm	YES 2
8	EMM0424-AA01-0008	A	TOP PLATE	MS PLATE S275 - 12 mm	YES 1
9	EMM0424-AA01-0009	A	UNDERSIDE PLATE	MS PLATE S275 - 12 mm	YES 1
10	EMM0424-AA01-0012	B	SIDE PLATE	MS PLATE S275 - 12 mm	YES 1
11	EMM0424-AA01-0013	B	FRONT PLATE	MS PLATE S275 - 12 mm	YES 2
12	EMM0424-AA01-0014	B	TOP PLATE	MS PLATE S275 - 12 mm	YES 1
13	EMM0424-AA01-0015	B	SIDE PLATE	MS PLATE S275 - 12 mm	YES 1
14	EMM0424-AA01-0016	B	SIDE PLATE	MS PLATE S275 - 12 mm	YES 1
15	EMM0424-AA01-0017	A	TOP PLATE	MS PLATE S275 - 12 mm	YES 1
16	EMM0424-AA01-0018	A	UNDERSIDE PLATE	MS PLATE S275 - 12 mm	YES 1
17	EMM0424-AA01-0019	B	FRONT PLATE	MS PLATE S275 - 12 mm	YES 2
18	EMM0424-AA01-0020	B	SIDE PLATE	MS PLATE S275 - 12 mm	YES 1
19	EMM0424-AA01-0039	B	SIDE PLATE - TV MOUNT	MS PLATE S275 - 12 mm	YES 1
20	EMM0424-AA01-0010	A	CONNECTION PLATE	MS PLATE S275 - 20 mm	YES 1
21	EMM0424-AA03-0002	A	BASE PLATE	MS PLATE S275 - 20 mm	YES 1
22	EMM0424-AA03-0003	A	PLINTH TOP	MS PLATE S275 - 20 mm	YES 1
23	EMM0424-AA03-0004	A	PLINTH WALL	MS PLATE S275 - 20 mm	YES 2
24	EMM0424-AA03-0005	A	PLINTH INTERNAL SUPPORT	MS PLATE S275 - 20 mm	YES 2
25	EMM0424-AA03-0006	A	PLINTH WALL - ACCESS	MS PLATE S275 - 20 mm	YES 2
26	EMM0424-AA02-0014	B	LIFTING BOSS	MILD STEEL EN38 - 140 mm	NO 2

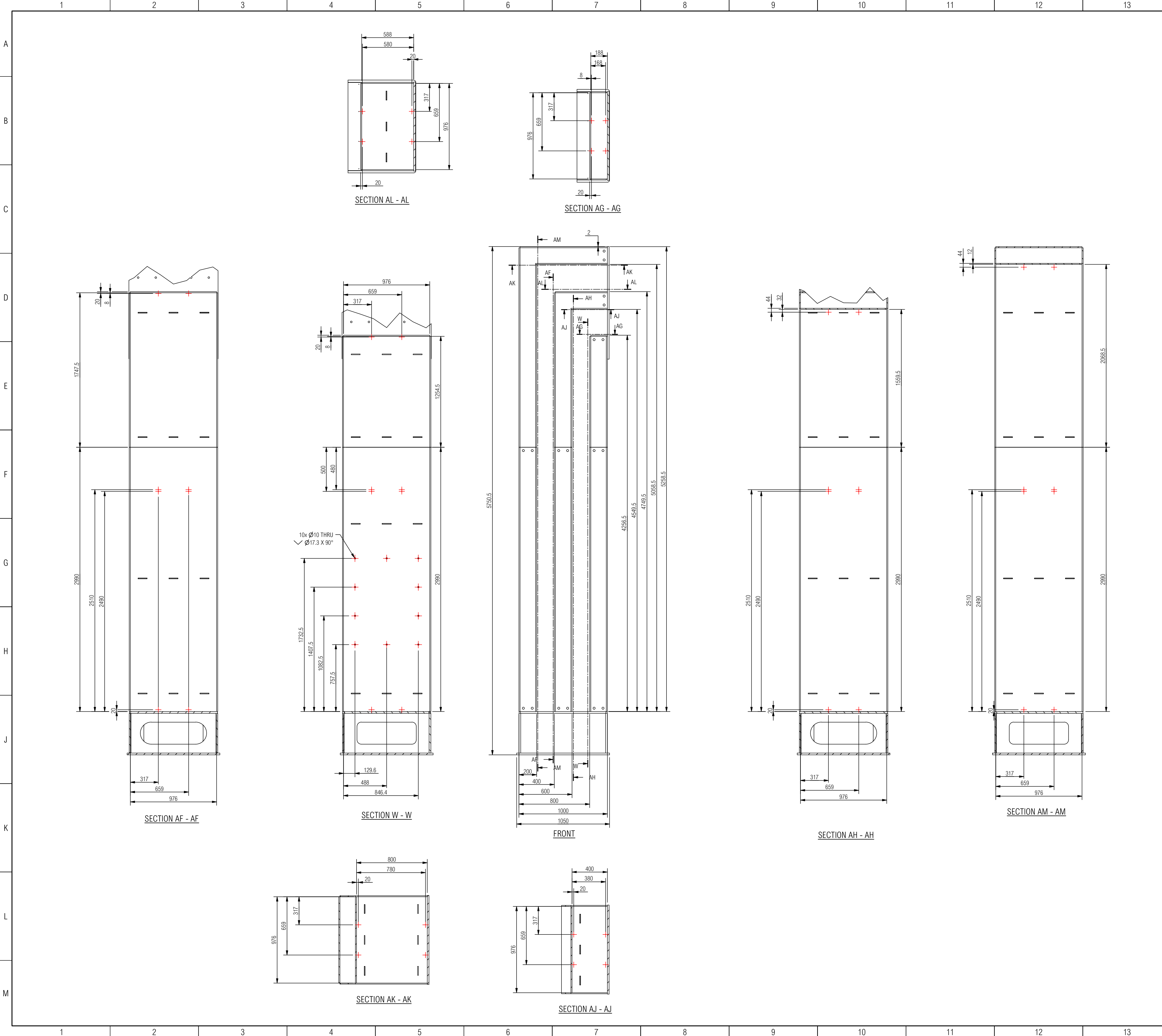
- GENERAL NOTES**
- IF IN DOUBT - ASK!
 - ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
 - ALL LINEAR DIMENSIONS TO BE ± 1 mm UNLESS STATED OTHERWISE.
 - ALL HOLE DIMENSIONS TO BE ± 0.25 mm UNLESS STATED OTHERWISE.
 - USE WELD PROCEDURES WP01 TO WP18 WHERE APPLICABLE.
 - THIS PROJECT IS CE MARKED - WELD TESTING REQUIRED - SUB-CONTRACT PROCESS IN CONSTRUCTOR BOX.
 - PART(S) REQUIRE COUNTERSUNK AND TAPPED HOLES.
 - SECOND SUB-CONTRACT PROCESS IS FOR PAINT PROCESS - SYSTEM TBC

SHEET 1 : VIEWS AND OVERALL DIMS
SHEET 2 : FABRICATION DETAIL
SHEET 3 : CLADDING HOLE POSITIONS

CONSTRUCTOR			
BUILD PROCESS 1: LASER PLATE	BUILD PROCESS 2: METALWORK	BUILD No:	
BUILD PROCESS 3: SUB-CONTRACT	BUILD PROCESS 4: SUB-CONTRACT	3 - 4	
BUILD PROCESS 5:	BUILD PROCESS 6:		
BUILD PROCESS 7:	BUILD PROCESS 8:	BUILD QTY:	
MATERIAL: MS PLATE WELDMENT		WEIGHT: 5124 kg	2
FINISH: PAINT - C3 CORROSION PROTECTION - COLOUR TBC		FINISH QUALITY: STANDARD	

B	SHEET SIZES CHANGED TO FIT LASER PLATE - SEE BOM		MD	24/02/2024
A.1	ISSUED FOR MANUFACTURING		DRN	DATE
REV	DESCRIPTION			

REVISION HISTORY					
	CLIENT: NEWSUBSTANCE LTD		PROJECT: CO-OP LIVE GIANT M		
	GROUP: AA - MANUFACTURED ITEM				
	SUBGROUP: 01 - SIDES				
	DRAWING TYPE MF	DRAWN BY MD	PROJECTION 	DRAWING SCALE A1	DRAWING SCALE 1 : 20
	DRAWING TITLE: RIGHT SIDE				SHEET No: 2 / 3
DRAWING NUMBER: EMM0424-AA01-0001		REVISION: B,1			
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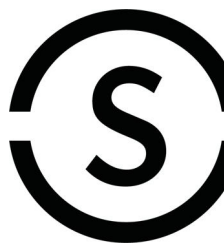
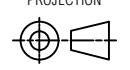
BILL OF MATERIALS					
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14	EMM0424-AA01-0016	B	SIDE PLATE	MS PLATE S275 - 12 mm	YES 1
15	EMM0424-AA01-0017	A	TOP PLATE	MS PLATE S275 - 12 mm	YES 1
16	EMM0424-AA01-0018	A	UNDERSIDE PLATE	MS PLATE S275 - 12 mm	YES 1
17	EMM0424-AA01-0019	B	FRONT PLATE	MS PLATE S275 - 12 mm	YES 2
18	EMM0424-AA01-0020	B	SIDE PLATE	MS PLATE S275 - 12 mm	YES 1
19	EMM0424-AA01-0039	B	SIDE PLATE - TV MOUNT	MS PLATE S275 - 12 mm	YES 1
20	EMM0424-AA01-0010	A	CONNECTION PLATE	MS PLATE S275 - 20 mm	YES 1
21	EMM0424-AA03-0002	A	BASE PLATE	MS PLATE S275 - 20 mm	YES 1
22	EMM0424-AA03-0003	A	PLINTH TOP	MS PLATE S275 - 20 mm	YES 1
23	EMM0424-AA03-0004	A	PLINTH WALL	MS PLATE S275 - 20 mm	YES 2
24	EMM0424-AA03-0005	A	PLINTH INTERNAL SUPPORT	MS PLATE S275 - 20 mm	YES 2
25	EMM0424-AA03-0006	A	PLINTH WALL - ACCESS	MS PLATE S275 - 20 mm	YES 2
26	EMM0424-AA02-0014	B	LIFTING BOSS	MILD STEEL EN38 - 140 mm	NO 2

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SHEET 1 : VIEWS AND OVERALL DIMS
SHEET 2 : FABRICATION DETAIL
SHEET 3 : CLADDING HOLE POSITIONS

CONSTRUCTOR			
BUILD PROCESS 1: LASER PLATE	BUILD PROCESS 2: METALWORK	BUILD No:	
BUILD PROCESS 3: SUB-CONTRACT	BUILD PROCESS 4: SUB-CONTRACT	3 - 4	
BUILD PROCESS 5:	BUILD PROCESS 6:	BUILD QTY:	
BUILD PROCESS 7:	BUILD PROCESS 8:	2	
MATERIAL: MS PLATE WELDMENT		WEIGHT: 5124 kg	
FINISH: PAINT - C3 CORROSION PROTECTION - COLOUR TBC		FINISH QUALITY: STANDARD	

B	SHEET SIZES CHANGED TO FIT LASER PLATE - SEE BOM			
A.1	ISSUED FOR MANUFACTURING		MD	24/02/2024
REV	DESCRIPTION	DRN	DATE	

REVISION HISTORY					
	CLIENT: NEWSUBSTANCE LTD		PROJECT: CO-OP LIVE GIANT M		
	GROUP: AA - MANUFACTURED ITEM				
	SUBGROUP: 01 - SIDES				
	DRAWING TYPE MF	DRAWN BY MD	PROJECTION 	DRAWING SIZE A1	DRAWING SCALE 1 : 20
	DRAWING TITLE: RIGHT SIDE				SHEET No: 3 / 3
DRAWING NUMBER: EMM0424-AA01-0001		REVISION B,1			
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Structural Member Utilisation



COO0424 – Co-op Live Sculptures

Analysis Models – Member Utilisations

Rev. 01

Date: 14/03/2024

INTRODUCTION

This document summarises the design check output for each analysis model created by Stage One. For each sculpture it highlights the utilisation ratio of each steel member, with regards to its strength capacity, and the maximum stresses induced from applied loading combinations. All loading combinations and design checks are in adherence to the following codes;

- BS EN 1990 Eurocode 0 – Basis of Structural Design
- BS EN 1991 Eurocode 1 – Actions on Structures
- BS EN 1993-1:2005/NA:2008 Eurocode 3 – Design of Steel Structures

Frames have been checked for all anticipated live loads, snow loads and wind loading.

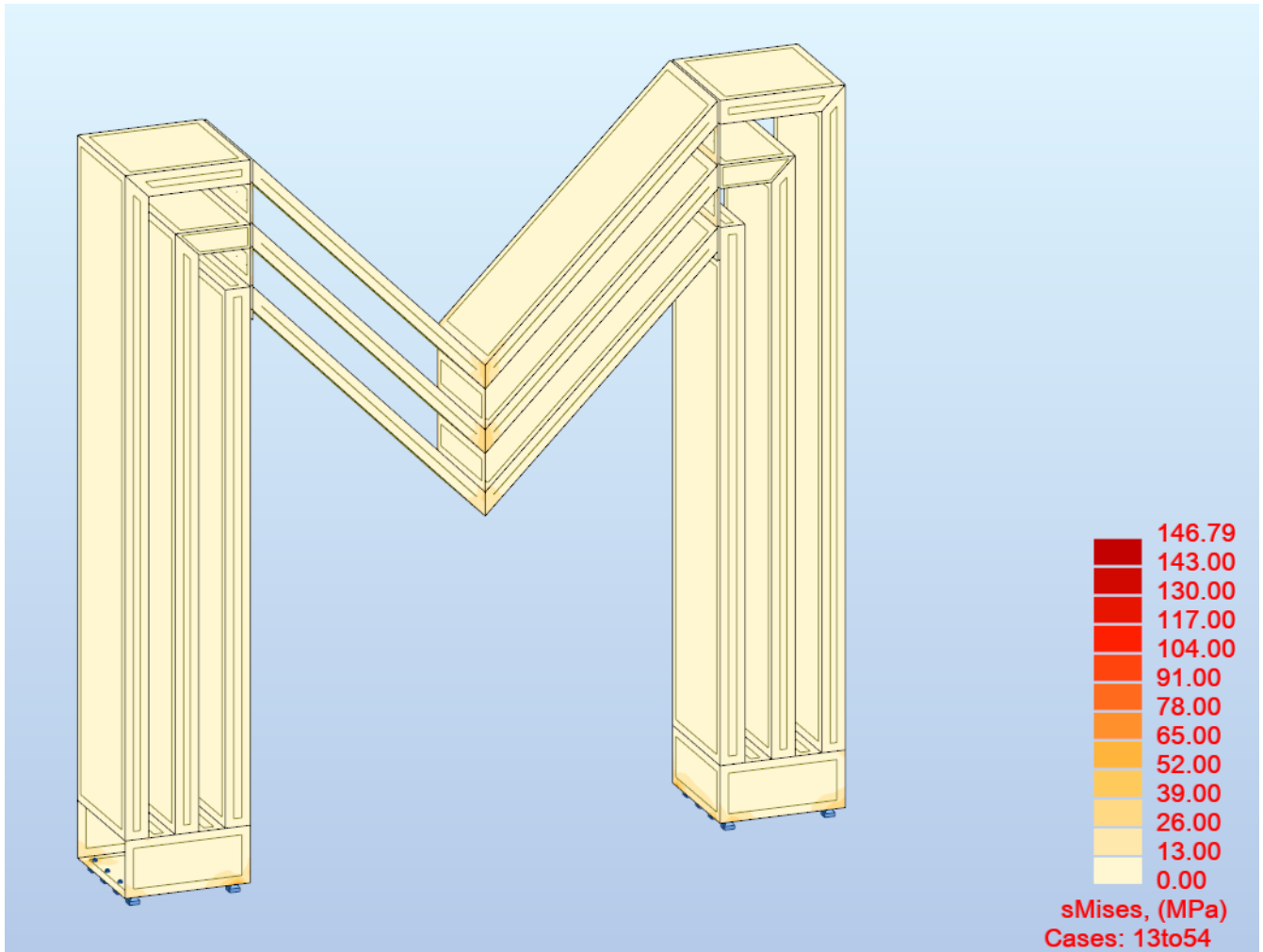
Wind loading has been derived locally to the installation sites of each sculpture. This has been found to be a maximum design wind speed of 28.8 m/s.

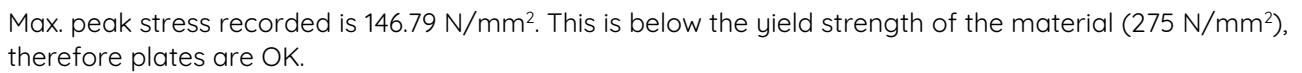
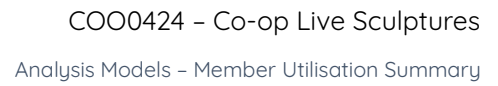
All members and steel plate elements have been found to pass strength checks and comply with Eurocode parameters. Stage One can state they are safe and robust for their intended use. The full structural design reports are to issued at a later date.



LETTER M

Using Autodesk Robot FEA, the model has been run for the worst-case loading combination to obtain visual stress maps. These indicate how stressed the materials are.





Foundation Design Schematic

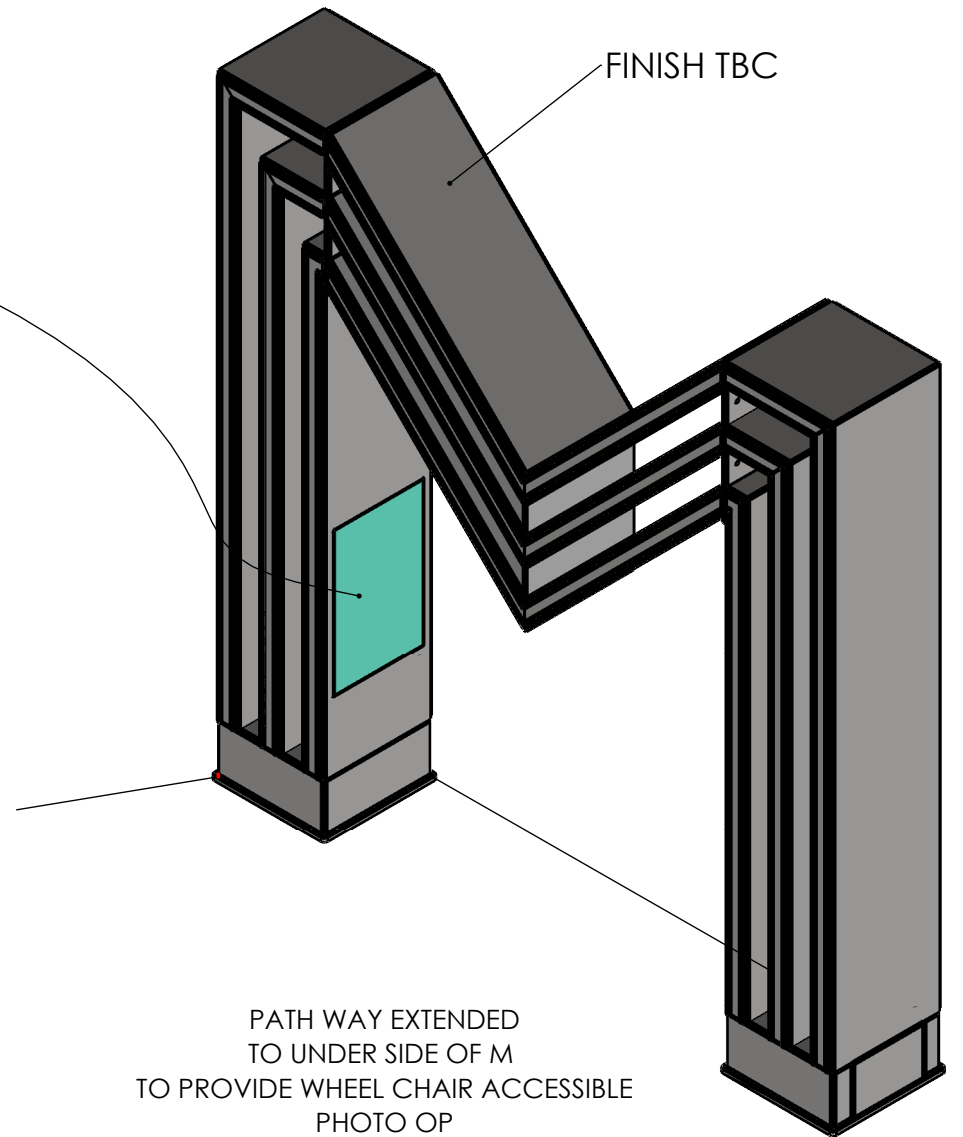
DESIGN NOTES.

INSTALLED IN 3 SECTIONS USING CRANE



DIGITAL DISPLAY SCREEN
IP 67
IK10
BOTH SIDES

FINISH TBC



PATH WAY EXTENDED
TO UNDER SIDE OF M
TO PROVIDE WHEEL CHAIR ACCESSIBLE
PHOTO OP

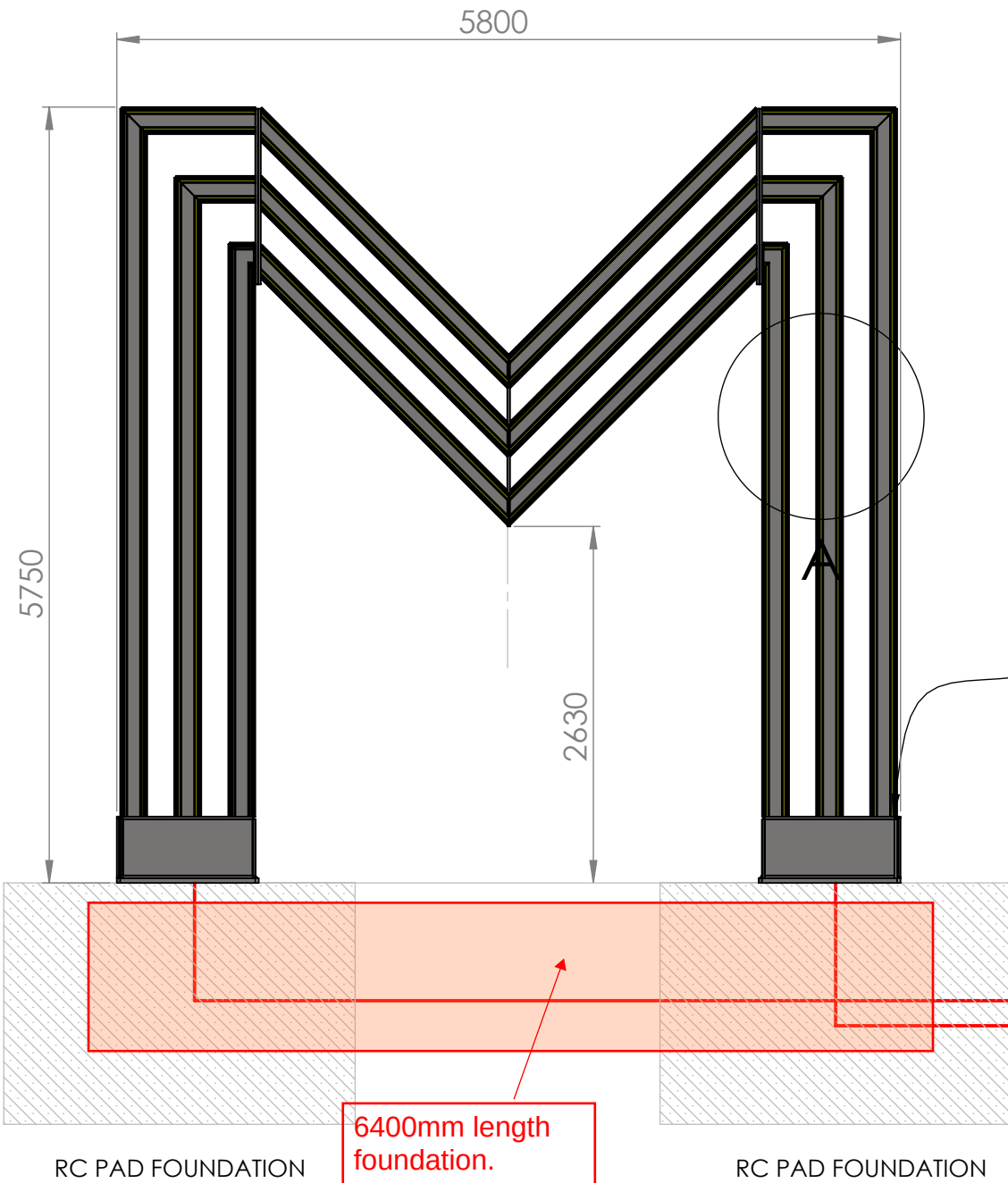
NEON FLEX LIGHTING
TO DESCRIBE FORM OF STRUCTURE

DETAIL A
SCALE 1 : 25

C32/40, 50mm cover,
2mx0.7m deep double pad
foundations

ACCESS PANELS
FOR LIGHTING
TERMINATION

POWER + DATA
TO PILLAR

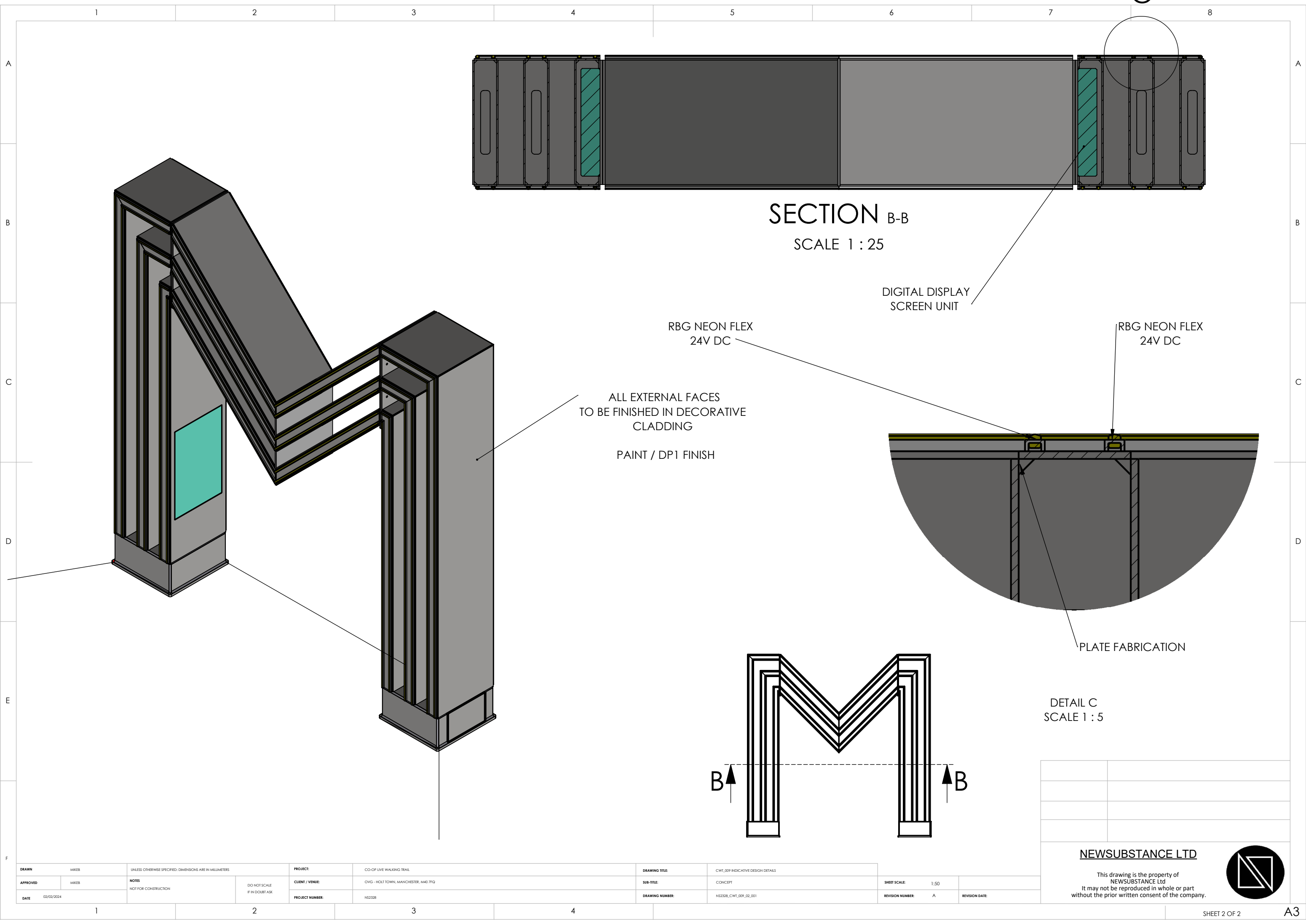


DRAWN	MIKES	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		PROJECT:	CO-OP LIVE WALKING TRAIL	DRAWING TITLE:	CWT_009 INDICATIVE DESIGN DETAILS		
APPROVED	MIKES	NOTES	DO NOT SCALE IF IN DOUBT ASK	CLIENT / VENUE:	OVG - HOLT TOWN, MANCHESTER, M40 7YQ	SUB-TITLE:	CONCEPT	SHEET SCALE:	1:50
DATE	02/02/2024	NOT FOR CONSTRUCTION		PROJECT NUMBER:	NS2328	DRAWING NUMBER:	NS2328_CWT_009_02_001	REVISION NUMBER:	A

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DRAWN	MIKEB	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		PROJECT:	CO-OP LIVE WALKING TRAIL	DRAWING TITLE:	CWT_009 INDICATIVE DESIGN DETAILS		
APPROVED	MIKEB	NOTES	DO NOT SCALE IF IN DOUBT ASK	CLIENT / VENUE:	OVG - HOLT TOWN, MANCHESTER, M40 7YQ	SUB-TITLE:	CONCEPT	SHEET SCALE:	1:50
DATE	02/02/2024	NOT FOR CONSTRUCTION		PROJECT NUMBER:	NS2328	DRAWING NUMBER:	NS2328_CWT_009_02_001	REVISION NUMBER:	A

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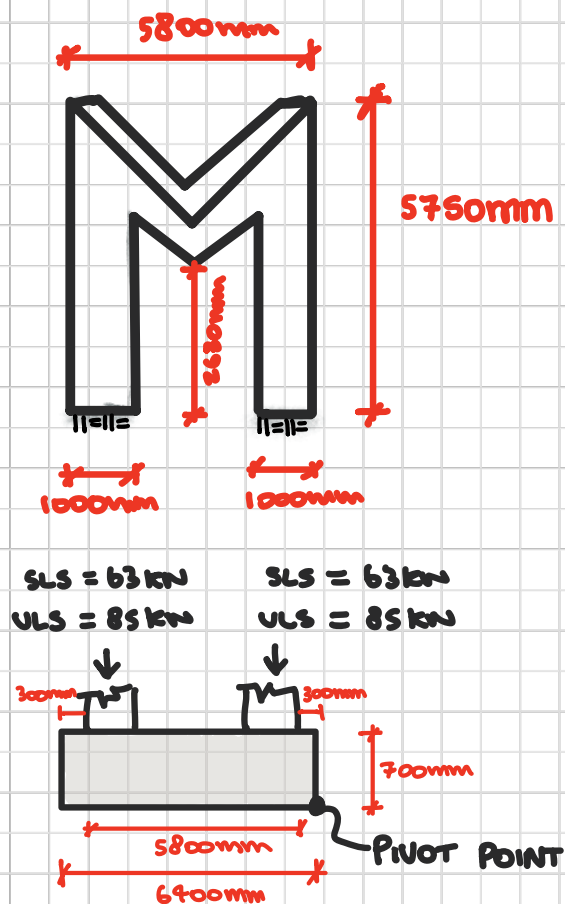
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Project:	COOP LIVE PATH : LETTER M	Sheet :	1	defined by design	(dp) ²
Calculation Title :	DESIGN CHECKS	Project No.:	240365		
		T.T	07/03/24		

LETTER M : SINGLE REACTION

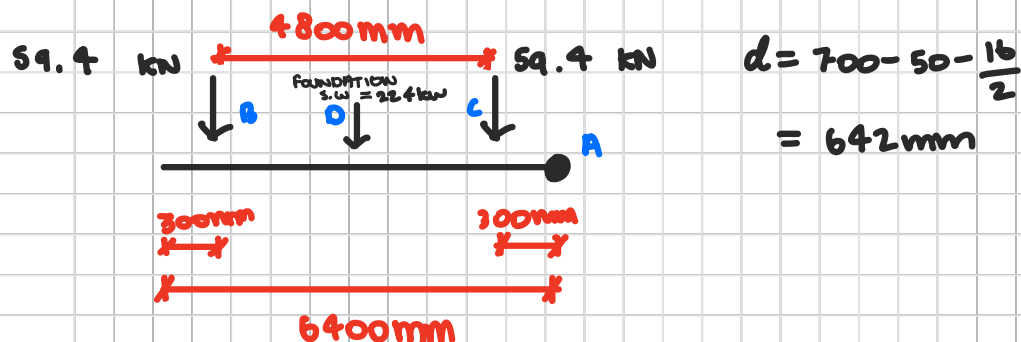
GRAVITY LOADS	ULS (2K+6K)
S.W = 59.43 kN	80.2 kN
L.L = 2.0 kN	3 kN
SNOW = 1.43 kN	2.1 kN
$\uparrow$ 63 kN	$\uparrow$ 85.3 kN

M _y (MOST ONEROUS)	ULS (2K+6K)
S.W M _y = -16.15 kNm	-24.80 kNm
L.L M _y = -1.92 kNm	-2.88 kNm
SNOW = -0.85 kNm	-1.30 kNm
WIND _x = -11.0 kNm	-16.5 kNm
Σ -30 kNm	Σ -43.3 kNm



$$\text{BASE S.W} = 25 \text{ kN/m}^3 \times 0.7 \text{ m} \times 6.4 \text{ m} \times 2 \text{ m} = 224 \text{ kN}$$

Project:	COOP LIVE PATH : LETTER M	Sheet :	2	defined by design	(dp) ²
Calculation Title :	DESIGN CHECKS	Project No.:	240365		
		T.T	07/03/24		

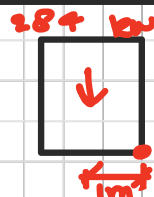


$$(+ \vee -) M_A = 59 \text{ kN} \times 5.1 \text{ m} + 59 \times 0.3 + 224 \times \frac{6.4}{2} = 1035 \text{ kNm}$$

OVERTURNING MOMENT = -43.3 kNm
RESTORING MOMENT = 1035 kNm

OK

MOMENTS OTHER DIRECTION



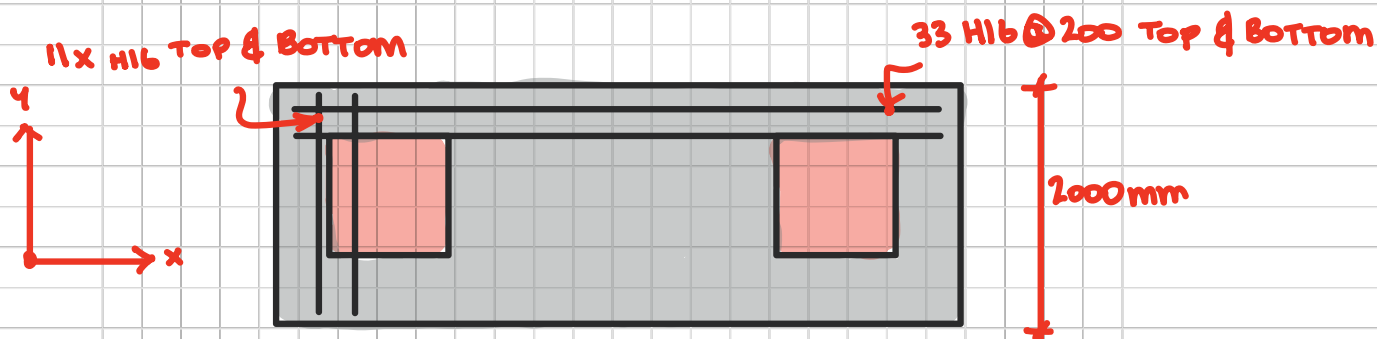
$$M_R = 284 \times 1 = 284 \text{ kNm} \quad \frac{284}{30} = 9.5$$

$$M_o = 30 \text{ kNm}$$

F.O.S

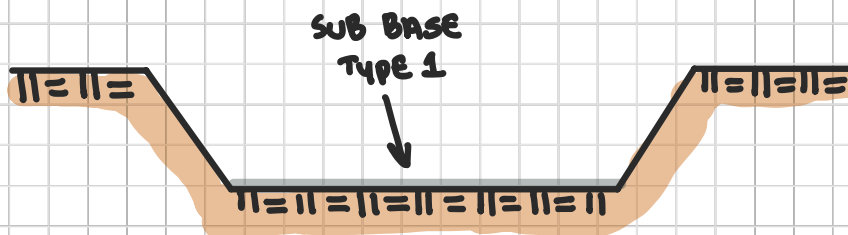
OK

∴ EXCEL SPREADSHEET PROVIDES REINFORCEMENT SPEC.



$$\text{BAR LENGTH X-AXIS} = 6400 - 50(2) - 16 = 6284 \text{ mm} \approx 6280 \text{ mm}$$

$$\text{BAR LENGTH Y-AXIS} = 2000 - 50(2) - 16 = 1884 \text{ mm} \approx 1880 \text{ mm}$$



∴ EXCAVATE AND LAY SUB-BASE TYPE 1
RETAINING WALLS MAY BE REQUIRED TO AVOID
SOIL RE-ENTERING EXCAVATION

Project		Spreadsheets to Eurocode 2				NG NEER & Partners		
Client	Location	Advisory Group Letter M Coop Live				Made by	Date	Page
				TT	07-Mar-24	290		
		PAD FOUNDATION DESIGN to EN 1992-1 : 2004		Checked	Revision	Job No		
Originated from TCC81.xlsm v4.11 on CD		© 2003 - 2024 TCC		DEP	-	R68		

MATERIALS

f_{ck} 32 MPa d_g 20 mm γ_c 1.5 concrete
 f_{yk} 500 MPa cover 50 mm γ_s 1.15 steel
Densities - Concrete, γ_{ck} 25 kN/m³ Soil, γ_k 20 kN/m³ Steel class H
Shear resistance angle, ϕ_k 30 degrees c'_k 0 kPa Overburden mm

Usage: Crowds

COLUMN REACTIONS kN, kNm *characteristic*

Column 1 (rhs)

	DEAD	IMPOSED	WIND
Axial	59.4	3.4	1.0
Mx			
My	16.2	3.0	11.0
Hx			
Hy			

Column 2 (lhs)

	DEAD	IMPOSED	WIND
Axial	59.4	3.4	1.0
Mx			
My	16.2	3.0	11.0
Hx			
Hy			

DIMENSIONS mm

BASE	COLUMN 1 (rhs)	COLUMN 2 (lhs)
L = 6400	h1 = 1000	h2 = 1000
B = 2000	b1 = 1000	b2 = 1000
depth H = 700		
$\sum ex = 0$	ex1 = 2400	ex2 = 2400
$\sum ey = 0$	ey1 =	ey2 = 0

STATUS #N/A

BEARING kPa

	Combo 1	Combo 2	
Max q_{Ed}	43.4	33.9	applied pressures
q_{Rd}	315.8	130.0	permitted pressures
$q_{EQP}/q_{Rd} \approx$	#N/A	#N/A	#N/A
bearing area	10.936	10.384	m ²

REINFORCEMENT

Btm Mxx - 1.2 kNm Myy - 15.0
b = 2000 mm b = 6400
d = 642 mm d = 626
As = 4 mm² As = 58

PROVIDE 11H16 @ 200 B1 & 32H16 @ 225 B2
As prov = 2212 mm² As prov = 6434

Top Mxx + 134.9 kNm Myy + 0.0
d = 644 mm d = 632
As = 507 mm² As = 0

PROVIDE 18H12 @ 125 T1 & 57H12 @ 125 T2
As,prov = 2036 mm² As,prov = 6447

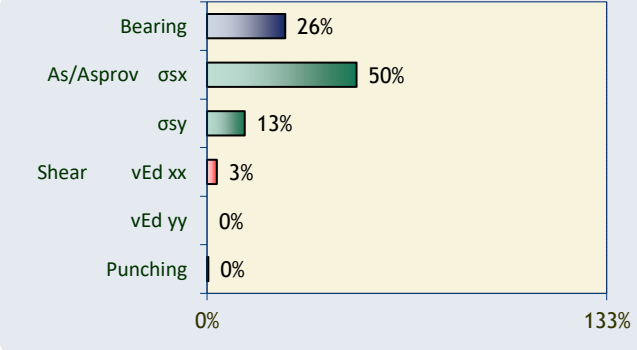
BEAM SHEAR

Vxx = 33.2 kN at d Vyy = 0.0
vEd = 0.013 N/mm² vEd = 0.000
or Vxx = 16.2 kN at 2d or Vyy = 0.0
vEd = 0.013 N/mm² vEd = 0.000
vRdc = 0.385 N/mm² vRdc = 0.388

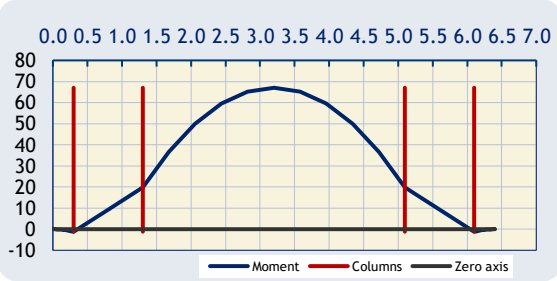
PUNCHING SHEAR

d ave = 634 mm u crit = 0 mm
As prov = 0.166 % vmax = 0.020 N/mm² at col face
vEd = 0.000 N/mm² vRdc = 0.386 N/mm²

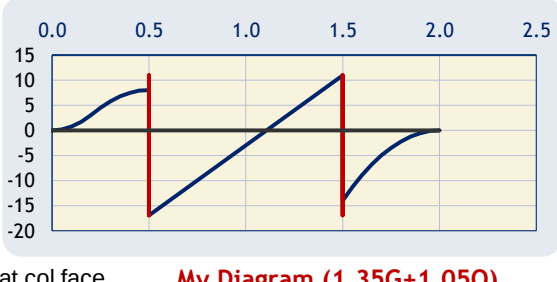
PLOT (to scale)



Efficiency



Mx Diagram (1.35G+1.05Q)



My Diagram (1.35G+1.05Q)