



Project Preface

<i>Project name:</i>	Calculation package for retaining wall
----------------------	--

<i>Client name:</i>	Philip Harris (architect) Indigo 3D Design
---------------------	---

<u><i>Construction site address:</i></u>	
<i>House no, Street:</i>	12 Nibloe Terrace, Penydarren,
<i>City/Town:</i>	Merthyr Tydfi
<i>Postcode:</i>	CF47 9RX

<i>Document prepared by:</i>	Marcin Krawucki BSc (Hons) MICE ICE Membership: 92007313
------------------------------	--

<i>Address:</i>	50 Quarry Row, Merthyr Tydfil, CF47 8PS
-----------------	---

<i>Date of preparation:</i>	14/06/2022
-----------------------------	------------

<i>Job reference number:</i>	AUX119
------------------------------	--------



Project:	Calculation package for retaining wall		
Address:	12 Nibloe Terrace, Penydarren, Merthyr Tydfi		
Job No.	AUX119	Sheet	1
Date:	14/06/2022	Rev.	C1

Design content

1 Introduction

1.1 Instructions

In accordance with instructions received from the client I have carried out a Structural calculations for the retaining wall for the new extension

1.2 Brief

I have been requested to carry out a Structural calculation for the retaining wall in the house at:

**12 Nibloe Terrace, Penydarren,
Merthyr Tydfi
CF47 9RX**

The extension is a two storey extension with pitch roof.

2 Construction works

All the construction works must be done by experienced builder or contractor.
As there is no ground investigation I use the worst case $GBP=100kN/m^2$. The maximum step in the ground levels along the longer extension wall is 1350mm and 1600mm at the back of the extension. Therefore the calculations were made to include the max. heights for both cases. The reinforcement of the retaining wall base and the grouted cavity should be as per attached drawing. The concrete should be min. C30 with the cover of 30mm in the grouted cavity and 50mm in the base. All the reinforcement should be min. 460B grade. The masonry of the retaining wall should be made of the 7.3N concrete blocks in M4 mortar. The base of the side retaining wall should be connected with the strip foundation of the extension to give enough resistance for sliding. In the design I allowed for the DL and LL of the extension to act on the grouted retaining wall. The loadings acting on the retaining wall are as per the loadings on the long wall of the extension.

Retaining wall finish will be render

If the builder/contractor has any queries regarding the above-mentioned works during the installation process, please contact me.

Marcin Krawucki
BSc (Hons) MICE
ICE Membership: 92007313



Project:	Calculation package for retaining wall		
Address:	12 Nibloe Terrace, Penydarren, Merthyr Tydfi		
Job No.	AUX119	Sheet	1
Date:	14/06/2022	Rev.	C1

Calculation for: Loadings on long wall

Loadings on the beam:

Dead load:

PITCH ROOF - No

					Slope			
Concrete tiles	0.75	kN/m ²	on slope	45	1.061	kN/m ²	on plan	
Battens+felt	0.05	kN/m ²	on slope	45	0.071	kN/m ²	on plan	
Insulation					0.10	kN/m ²	on plan	
Ceiling					0.15	kN/m ²	on plan	
Rafters self weight					0.10	kN/m ²	on plan	
Pitch roof total					1.48	kN/m²		

Flat roof/Lower roof

0.75 kN/m²

SLAB

				Qty of floors				
First floor	0.75	kN/m ²	x	1	=	0.75	kN/m ²	
partitions	0.50	kN/m ²	x	1	=	0.50	kN/m ²	
SLAB Total						1.25	kN/m²	

Wall above retaining wall

				Height	Thickness			
Cavity	20	kN/m ³	x	6.4	m	x	0.2	m
							25.60	kN/m
								2 skins

Imposed load

Residential	1.50	kN/m ²	x	1		1.50	kN/m²	
Snow						0.43	kN/m²	
Wind (down)	1.10	kN/m ²				1.10	kN/m²	
Wind (uplift)	1.60	kN/m ²				1.60	kN/m²	

	Joists	Roof	Flat roof
Room 1 joists length (L3):	3.300 m	0.000 m	0.000 m
Room 2 joists length (L4):	0.000 m	0.000 m	0.000 m

UDL loading on the raft edge

Dead G _k								
Pitchroof	0.00	kN/m ²	x	(0.000 m + 0.000 m)/	2 =	0.00	kN/m	
Flat roof	0.75	kN/m ²	x	(0.000 m + 0.000 m)/	2 =	0.00	kN/m	
Floor slab	1.25	kN/m ²	x	(3.300 m + 0.000 m)/	2 =	2.06	kN/m	
Wall					=	25.60	kN/m	
Imposed								
Residential	1.50	kN/m ²	x	(3.300 m + 0.000 m)/	2 =	2.48	kN/m	
Snow	0.43	kN/m ²	x	(0.000 m + 0.000 m)/	2 =	0.00	kN/m	
Wind (down)	1.10	kN/m ²	x	(0.000 m + 0.000 m)/	2 =	0.00	kN/m	
Wind (uplift)	1.60	kN/m ²	x	(0.000 m + 0.000 m)/	2 =	0.00	kN/m	
						G_k=	27.66	kN/m,
						Q_k=	2.48	kN/m

Inner leaf loading: DL = 14.9 kN/m LL= 2.48 kN/m

Outer leaf loading: DL = 12.8 kN/m

Retaining wall finish will be render

Auxilium Structural Engineering

and CAD Services

2 Gwynnes Close

Merthyr Tydfil CF48 3AJ

T: 07465819500

Cloud 6b55b

Job Ref : AUX119

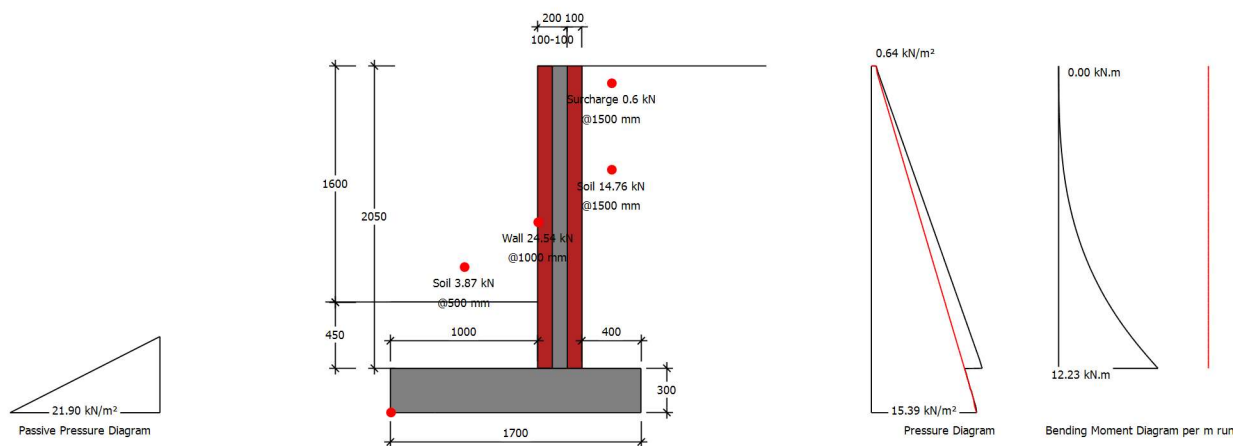
Sheet : /

Made by : MK

Date : 14 June 2022 / Ver. 2022.05.12

Checked :

Approved :

MasterKey : Retaining Wall Design to BS 8002 : 1994, BS EN 1996-1-1:2005+A1:2012 and BS 8110 : 1997**Basic RC Retaining Wall****Reinforced Masonry Cavity Filled Retaining Wall with Reinforced Concrete Base****Summary of Design Data**

EC6 National Annex

Notes

Material Densities (kN/m³)

Concrete grade and steel covers (mm)

Reinforcement design

Surcharge and Water Table

Unplanned excavation depth

† The Engineer must satisfy him/herself to the reinforcement detailing requirements of the relevant codes of practice

UK

All dimensions are in mm and all forces are per metre run

Soil 18.00, Concrete 24.00, Masonry 20.00

fcu 30 N/mm², Cavity inner cover 30, Cavity outer cover 60, Base cover 50

fy 460 N/mm², fyb 460 N/mm² designed to BS 8110: 1997

Surcharge 1.50 kN/m², Fully drained

Front of wall 235 mm

Soil Properties

Bearing pressure

Back Soil Friction and Cohesion

Base Friction and Cohesion

Front Soil Friction and Cohesion

Premissable service pressure @ front 100.00 kN/m², @ back 100.00 kN/m²

 $\alpha = \text{Atn}(\text{Tan}(28)/1.2) = 23.9^\circ$ $\delta = \text{Atn}(0.75 \times \text{Tan}(\text{Atn}(\text{Tan}(28)/1.2))) = 18.38^\circ$ $\phi = \text{Atn}(\text{Tan}(28)/1.2) = 23.9^\circ$ **Loading Cases**G_{Soil}- Soil Self Weight, G_{Wall}- Wall & Base Self Weight, F_{VHeel}- Vertical Loads over Heel,P_a- Active Earth Pressure, P_{surcharge}- Earth pressure from surcharge, P_p- Passive Earth Pressure

Case 1: Geotechnical Design

1.00 G_{Soil}+1.00 G_{Wall}+1.00 F_{VHeel}+1.00 P_a+1.00 P_{surcharge}+1.00 P_p

Case 2: Structural Ultimate Design

1.40 G_{Soil}+1.40 G_{Wall}+1.60 F_{VHeel}+1.00 P_a+1.00 P_{surcharge}+1.00 P_p**Geotechnical Design****Wall Stability - Virtual Back Pressure**

Case 1 Overturning/Stabilising

15.306/49.524

0.309

OK

Wall Sliding - Virtual Back PressureF_x/(R_{XFriction}+ R_{XPassive})

18.861/(14.546+5.648)

0.934

OK

Soil Pressure

Virtual Back (No uplift)

Max(31.948/100, 19.546/100) kN/m²

0.319

OK

Wall Back (No uplift)

Max(35.815/100, 15.680/100) kN/m²

0.358

OK

Retaining wall finish will be render

Auxilium Structural Engineering

Cloud 6b55b

and CAD Services

2 Gwynnes Close

Merthyr Tydfil CF48 3AJ

T: 07465819500

Job Ref : AUX119

Sheet : /

Made by : MK

Date : 14 June 2022 / Ver. 2022.05.12

Checked :

Approved :

Structural Design**Outer Leaf Details**

Partial Safety Factor (γ_{mc}/γ_{mf})	Units Category I. Execution Control Class 2	2.7/2.7	Table NA.1
Material	Concrete blocks, $\gamma=20$ kN/m ³		
Units and Mortar Strength	7.3 N/mm ² , Mortar designation M4/(iii)		
Blocks Ratio	Unit height=215, Least horizontal dimensions=100	2.15	
Compressive Strength (f_k)	Group 1	4.57 N/mm ²	Table NA.6

Inner Leaf Details

Partial Safety Factor (γ_{mc}/γ_{mf})	Units Category I. Execution Control Class 2	2.7/2.7	Table NA.1
Material	Concrete blocks, $\gamma=20$ kN/m ³		
Units and Mortar Strength	7.3 N/mm ² , Mortar designation M4/(iii)		
Blocks Ratio	Unit height=215, Least horizontal dimensions=100	2.15	
Compressive Strength (f_k)	Group 1	4.57 N/mm ²	Table NA.6

Wall Design (Inner Steel)

Critical Section	Critical @ 1 mm from base, Case 2		
Steel Provided (Cover)	Dist. B10@200 (30 mm in cavity)		
	Main B10@200 (30 mm in cavity)	393 mm ²	OK
Leverarm $z=fn(d,b,As,f_y,f_k)$	165 mm, 1000 mm, 393 mm ² , 460 N/mm ² , 4.6 N/mm ²	119 mm	
$M_r=fn(above,\gamma_{mf},\gamma_{ms})$	2.70, 1.15	18.4 kN.m	
Moment Capacity Check (M/Mr)	M 12.2 kN.m, Mr 18.4 kN.m	0.663	OK
Shear Capacity Check	F 16.3 kN, f_{tk} 0.262 N/mm ² , Fvr 17.3 kN	0.94	OK

Base Top Steel Design

Steel Provided (Cover)	Main B10@200 (50 mm) Dist. B10@200 (60 mm)	393 mm ²	OK
Compression Steel Provided (Cover)	Main B10@200 (50 mm) Dist. B10@200 (60 mm)	393 mm ²	
Leverarm $z=fn(d,b,As,f_y,F_{cu})$	245 mm, 1000 mm, 393 mm ² , 460 N/mm ² , 30 N/mm ²	233 mm	
$M_r=fn(above,As',d',x,x/d)$	393 mm ² , 55 mm, 14 mm, 0.06	39.9 kN.m	
Moment Capacity Check (M/Mr)	M 3.5 kN.m, Mr 39.9 kN.m	0.087	OK
Shear Capacity Check	F 14.2 kN, vc 0.412 N/mm ² , Fvr 101.0 kN	0.14	OK

Base Bottom Steel Design

Steel Provided (Cover)	Main B10@200 (50 mm) Dist. B10@200 (60 mm)	393 mm ²	OK
Compression Steel Provided (Cover)	Main B10@200 (50 mm) Dist. B10@200 (60 mm)	393 mm ²	
Leverarm $z=fn(d,b,As,f_y,F_{cu})$	245 mm, 1000 mm, 393 mm ² , 460 N/mm ² , 30 N/mm ²	233 mm	
$M_r=fn(above,As',d',x,x/d)$	393 mm ² , 55 mm, 14 mm, 0.06	39.9 kN.m	
Moment Capacity Check (M/Mr)	M 12.8 kN.m, Mr 39.9 kN.m	0.320	OK
Shear Capacity Check	F 19.9 kN, vc 0.412 N/mm ² , Fvr 101.0 kN	0.20	OK

Retaining wall finish will be render

Job Ref : AUX119
Sheet : /
Made by : MK
Date : 15 June 2022 / Ver. 2022.05.12
Checked :
Approved :

7

END OF BAR LIST FOR THIS SCHEDULE		
This schedule complies with BS 8666:2005.	* Specified in multiples of 5 mm.	+ Specified in multiples of 25 mm.

Software produced by www.MasterSeries.com © Civil and Structural Computer Services Limited.

Auxilium Structural Engineering

Cloud 6b55b

and CAD Services

2 Gwynnes Close

Merthyr Tydfil CF48 3AJ

T: 07465819500

Job Ref : AUX119**Sheet** : /**Made by** : MK**Date** : 15 June 2022 / Ver. 2022.05.12**Checked** :**Approved** :

Drawing no.

Schedule

Sheet

Rev

Weights of bars on all sheets of this schedule, in tonnes.

Grade & diameter	No. bars	Straight bars	Bent bars (except links)	Links (61, 78, 79, 82)	Total tonnes
B10	126	0.098	0.037	0.000	0.135
Total bars	126			Total Weight	0.135

Weights of bars on all sheets of this schedule, in tonnes.

Element	No. bars	Straight bars	Bent bars (except links)	Links (61, 78, 79, 82)	Total tonnes
Retaining Wall	126	0.098	0.037	0.000	0.135
Total bars	126			Total Weight	0.135

Retaining wall finish will be render

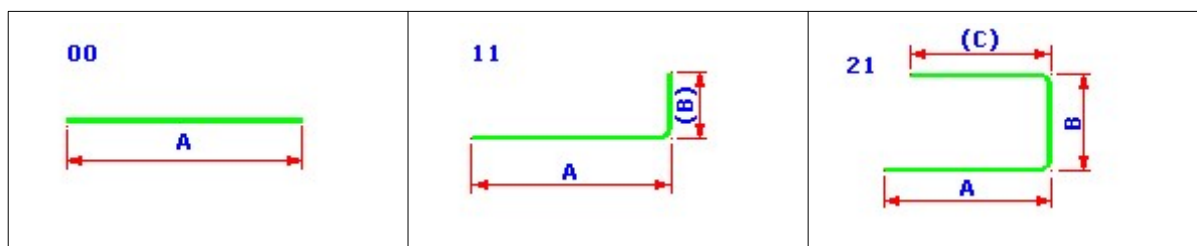
This schedule complies with BS 8666:2005. * Specified in multiples of 5 mm. + Specified in multiples of 25 mm.

Auxilium Structural Engineering

Cloud 6b55b

and CAD Services
2 Gwynnes Close
Merthyr Tydfil CF48 3AJ
T: 07465819500

Job Ref : AUX119
Sheet : /
Made by : MK
Date : 15 June 2022 / Ver. 2022.05.12
Checked :
Approved :

Used Bar Shapes to BS8666

Retaining wall finish will be render

Auxilium Structural Engineering

and CAD Services

2 Gwynnes Close

Merthyr Tydfil CF48 3AJ

T: 07465819500

Cloud 6b55b

E:auxilium.cadservices@gmail.com

Job Ref : AUX119

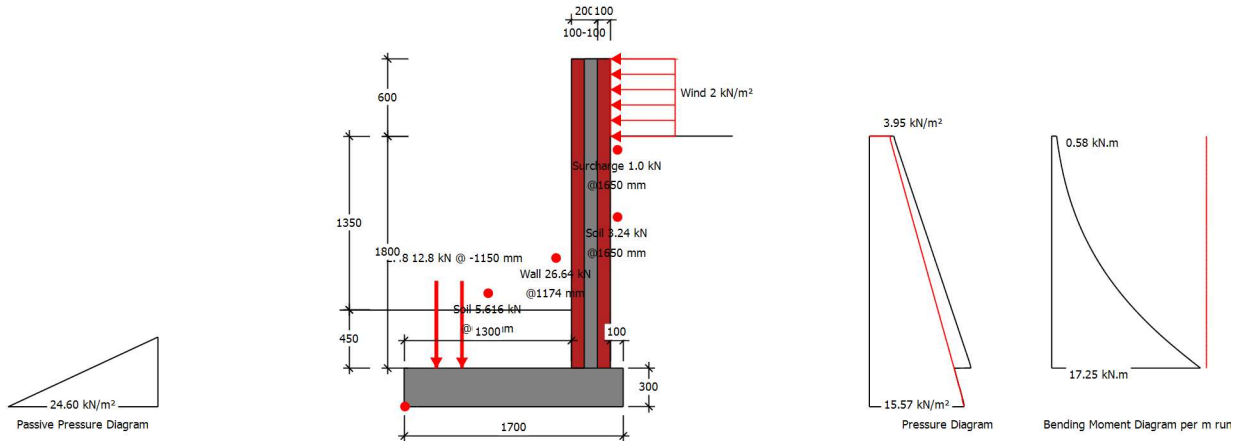
Sheet : /

Made by : MK

Date : 14 June 2022 / Ver. 2022.05.12

Checked :

Approved :

MasterKey : Retaining Wall Design to BS 8002 : 1994, BS EN 1996-1-1:2005+A1:2012 and BS 8110 : 1997**Basic RC Retaining Wall****Reinforced Masonry Cavity Filled Retaining Wall with Reinforced Concrete Base****Summary of Design Data**

EC6 National Annex

Notes

Material Densities (kN/m³)

Concrete grade

Concrete covers (mm)

Reinforcement design

Surcharge and Water Table

Unplanned excavation depth

† The Engineer must satisfy him/herself to the reinforcement detailing requirements of the relevant codes of practice

UK

All dimensions are in mm and all forces are per metre run

Soil 18.00, Concrete 24.00, Masonry 20.00

f_{cu} 30 N/mm², Permissible tensile stress 0.250 N/mm²

Cavity inner cover 30 mm, Cavity outer cover 60 mm, Base cover 50 mm

f_y 500 N/mm², f_{yb} 500 N/mm² designed to BS 8110: 1997Surcharge 10.00 kN/m², Fully drained

Front of wall 210 mm

Additional Loads

Vertical Line Loads

14.9 kN/m @ X -1350 mm and Y 1800 mm - Load type Dead

2.48 kN/m @ X -1350 mm and Y 1800 mm - Load type Live

12.8 kN/m @ X -1150 mm and Y 1800 mm - Load type Dead

† Dimensions

Ties, line loads and partial loads are measured from the inner top edge of the wall

Soil Properties

Bearing pressure

Premissable service pressure @ front 100.00 kN/m², @ back 100.00 kN/m²

Back Soil Friction and Cohesion

 $\alpha = \text{Atn}(\text{Tan}(30)/1.2) = 25.69^\circ$

Base Friction and Cohesion

 $\delta = \text{Atn}(0.75 \times \text{Tan}(\text{Atn}(\text{Tan}(30)/1.2))) = 19.84^\circ$

Front Soil Friction and Cohesion

 $\phi = \text{Atn}(\text{Tan}(30)/1.2) = 25.69^\circ$ **Loading Cases**G_{Soil}- Soil Self Weight, G_{Wall}- Wall & Base Self Weight, F_{VHeel}- Vertical Loads over Heel,P_a- Active Earth Pressure, P_{surcharge}- Earth pressure from surcharge, P_p- Passive Earth Pressure

Case 1: Geotechnical Design

1.00 G_{Soil}+1.00 G_{Wall}+1.00 F_{VHeel}+1.00 P_a+1.00 P_{surcharge}+1.00 P_p

Case 2: Structural Ultimate Design

1.40 G_{Soil}+1.40 G_{Wall}+1.60 F_{VHeel}+1.00 P_a+1.00 P_{surcharge}+1.00 P_p**Geotechnical Design****Wall Stability - Virtual Back Pressure**

Case 1 Overturning/Stabilising

16.371/49.155

0.333

OK

Wall Sliding - Virtual Back PressureF_X/(R_{XFriction}+ R_{XPassive})

19.904/(24.060+5.455)

0.674

OK

Soil Pressure

Virtual Back

90.403/100 kN/m², Length under pressure 1.475 m

0.904

OK

Wall Back

96.242/100 kN/m², Length under pressure 1.386 m

0.962

OK

Auxilium Structural Engineering

Cloud 6b55b

and CAD Services

2 Gwynnes Close

Merthyr Tydfil CF48 3AJ

T: 07465819500

Job Ref : AUX119

Sheet : /

Made by : MK

Date : 14 June 2022 / Ver. 2022.05.12

Checked :

Approved :

Structural Design**Outer Leaf Details**

Partial Safety Factor (γ_{mc}/γ_{mf})	Units Category II. Execution Control Class 2	3/2.7	Table NA.1
Material	Concrete blocks, $\gamma=20$ kN/m ³		
Units and Mortar Strength	7.3 N/mm ² , Mortar designation M12/(i)		
Blocks Ratio	Unit height=215, Least horizontal dimensions=102.5	2.10	
Compressive Strength (f_k)	Group 1	5.48 N/mm ²	Table NA.6

Inner Leaf Details

Partial Safety Factor (γ_{mc}/γ_{mf})	Units Category II Execution Control Class 2	3/2.7	Table NA.1
Material	Concrete blocks, $\gamma=20$ kN/m ³		
Units and Mortar Strength	7.3 N/mm ² , Mortar designation M12/(i)		
Blocks Ratio	Unit height=215, Least horizontal dimensions=102.5	2.10	
Compressive Strength (f_k)	Group 1	5.48 N/mm ²	Table NA.6

Wall Design (Inner Steel)

Critical Section	Critical @ 0 mm from base. Case 2		
Steel Provided (Cover)	Dist. H10@300 (30 mm in cavity)		
	Main H10@250 (30 mm in cavity)	314 mm ²	OK
Leverarm $z=fn(d,b,As,f_y,f_k)$	165 mm, 1000 mm, 314 mm ² , 500 N/mm ² , 5.5 N/mm ²	131 mm	
$Mr=fn(above,\gamma_{mf},\gamma_{ms})$	2.70, 1.15	17.9 kN.m	
Moment Capacity Check (M/Mr)	M 17.2 kN.m, Mr 17.9 kN.m	0.962	OK
Shear Capacity Check	F 19.2 kN, f_{tk} 0.437 N/mm ² , Fvr 28.8 kN	0.67	OK

Base Top Steel Design

Steel Provided (Cover)	Main H10@200 (50 mm) Dist. H10@200 (60 mm)	393 mm ²	OK
Compression Steel Provided (Cover)	Main H10@200 (50 mm) Dist. H10@200 (60 mm)	393 mm ²	
Leverarm $z=fn(d,b,As,f_y,F_{cu})$	245 mm, 1000 mm, 393 mm ² , 500 N/mm ² , 30 N/mm ²	233 mm	
$Mr=fn(above,As',d',x,x/d)$	393 mm ² , 55 mm, 14 mm, 0.06	39.8 kN.m	
Moment Capacity Check (M/Mr)	M 1.4 kN.m, Mr 39.8 kN.m	0.036	OK
Shear Capacity Check	F 14.5 kN, vc 0.412 N/mm ² , Fvr 101.0 kN	0.14	OK

Base Bottom Steel Design

Steel Provided (Cover)	Main H10@200 (50 mm) Dist. H10@200 (60 mm)	393 mm ²	OK
Compression Steel Provided (Cover)	Main H10@200 (50 mm) Dist. H10@200 (60 mm)	393 mm ²	
Leverarm $z=fn(d,b,As,f_y,F_{cu})$	245 mm, 1000 mm, 393 mm ² , 500 N/mm ² , 30 N/mm ²	233 mm	
$Mr=fn(above,As',d',x,x/d)$	393 mm ² , 55 mm, 14 mm, 0.06	39.8 kN.m	
Moment Capacity Check (M/Mr)	M 20.3 kN.m, Mr 39.8 kN.m	0.509	OK
Shear Capacity Check	F 26.8 kN, vc 0.412 N/mm ² , Fvr 101.0 kN	0.26	OK

Retaining wall finish will be render

Job Ref : AUX119
Sheet : /
Made by : MK
Date : 14 June 2022 / Ver. 2022.05.12
Checked :
Approved :

--	--

END OF BAR LIST FOR THIS SCHEDULE		
This schedule complies with BS 8666:2005.	* Specified in multiples of 5 mm.	+ Specified in multiples of 25 mm.

Software produced by www.MasterSeries.com © Civil and Structural Computer Services Limited.

Auxilium Structural Engineering

Cloud 6b55b

and CAD Services

2 Gwynnes Close

Merthyr Tydfil CF48 3AJ

T: 07465819500

Job Ref : AUX119**Sheet** : /**Made by** : MK**Date** : 14 June 2022 / Ver. 2022.05.12**Checked** :**Approved** :

Drawing no.

Schedule

Sheet

Rev

Weights of bars on all sheets of this schedule, in tonnes.

Grade & diameter	No. bars	Straight bars	Bent bars (except links)	Links (61, 78, 79, 82)	Total tonnes
H10	124	0.142	0.070	0.000	0.212
Total bars	124			Total Weight	0.212

Weights of bars on all sheets of this schedule, in tonnes.

Element	No. bars	Straight bars	Bent bars (except links)	Links (61, 78, 79, 82)	Total tonnes
Retaining Wall	124	0.142	0.070	0.000	0.212
Total bars	124			Total Weight	0.212

Retaining wall finish will be render

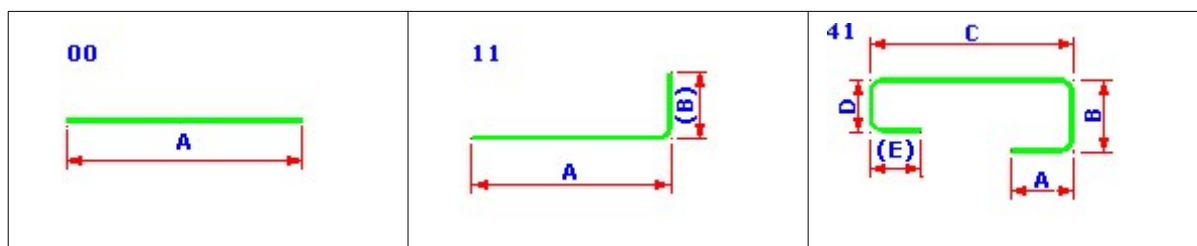
Auxilium Structural Engineering

and CAD Services
2 Gwynnes Close
Merthyr Tydfil CF48 3AJ
T: 07465819500

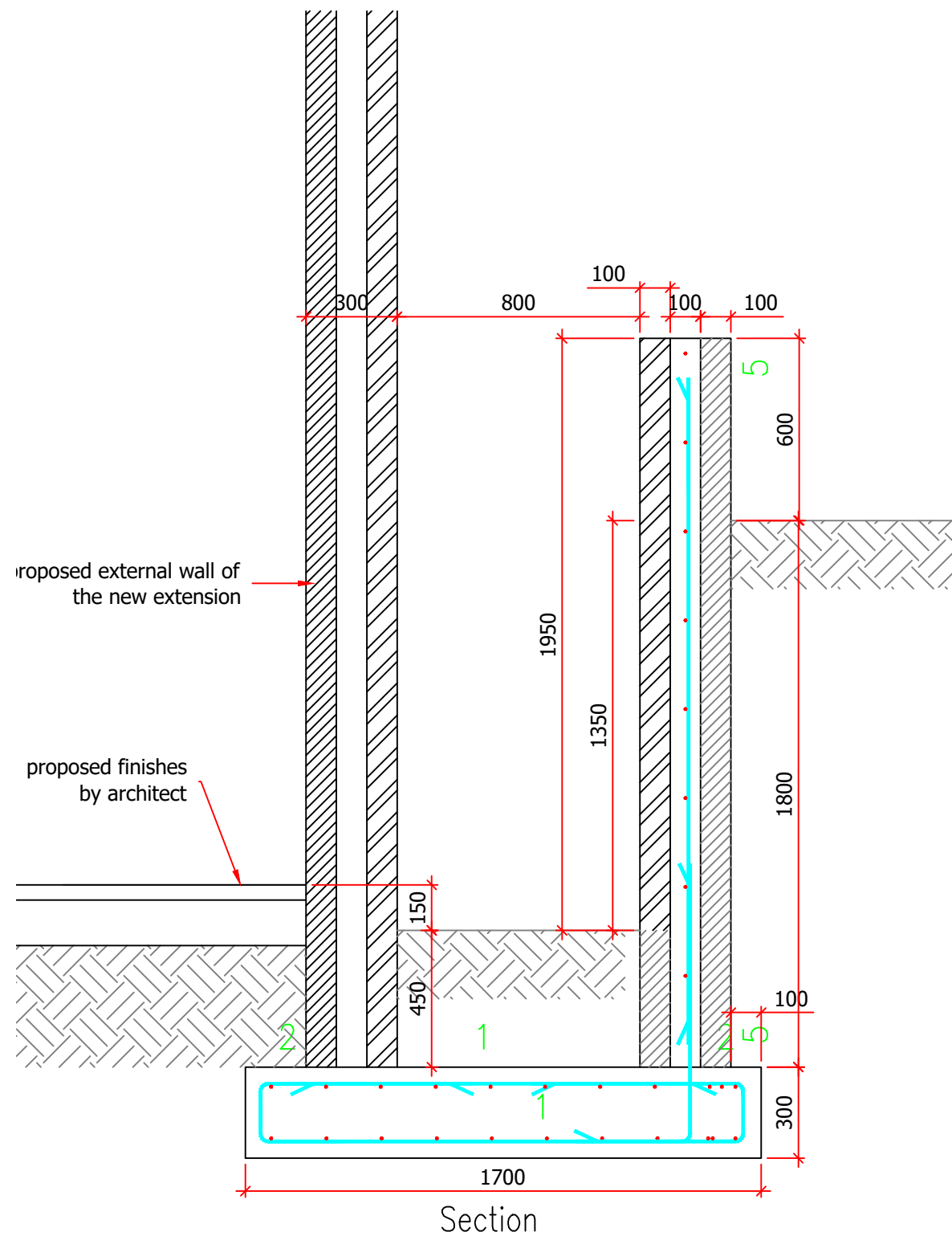
Cloud 6b55b

Job Ref : AUX119
Sheet : /
Made by : MK
Date : 14 June 2022 / Ver. 2022.05.12
Checked :
Approved :

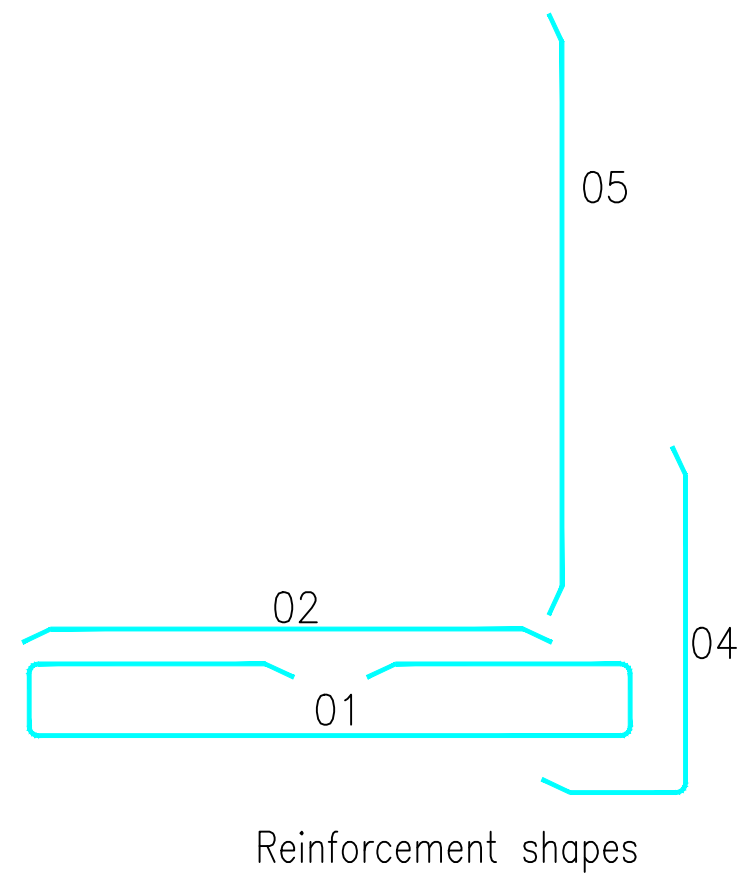
Used Bar Shapes to BS8666



Retaining wall finish will be render

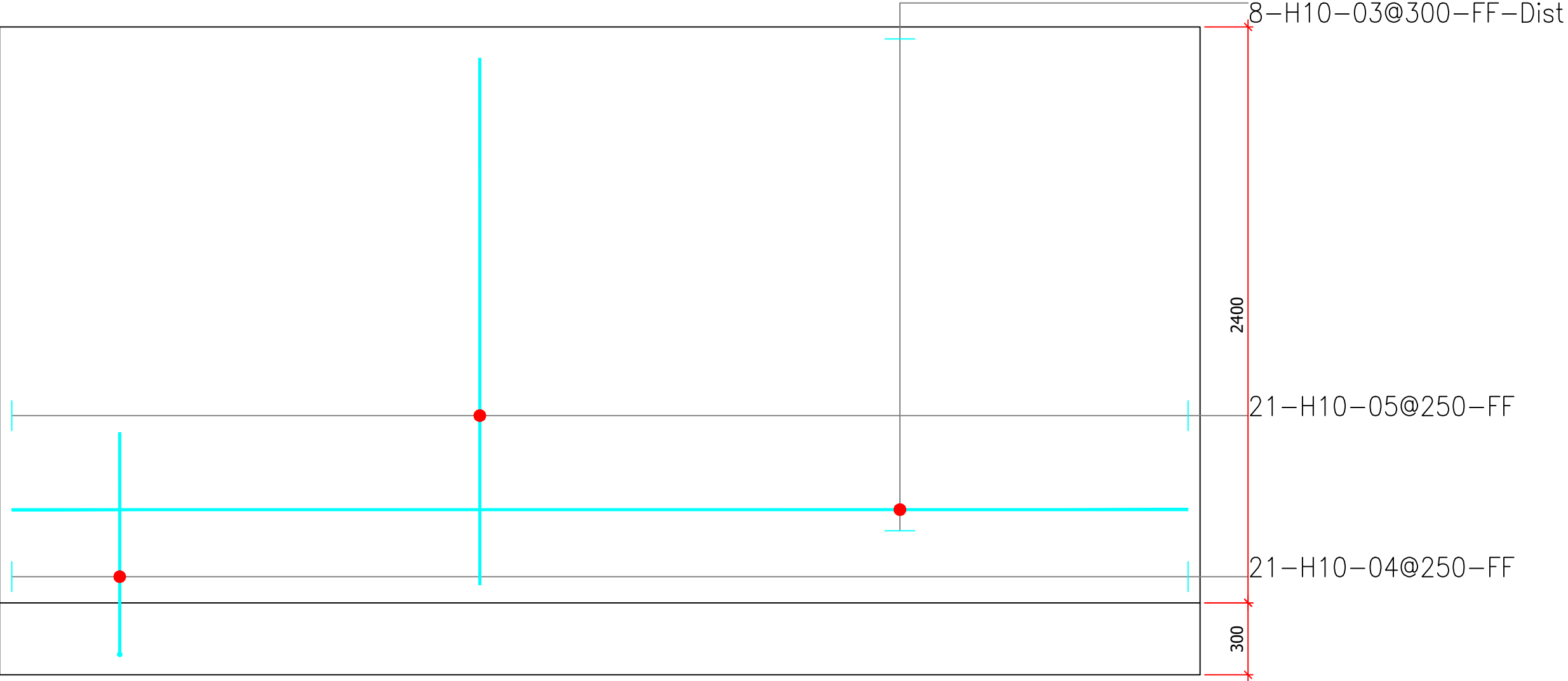


Retaining wall finish will be render

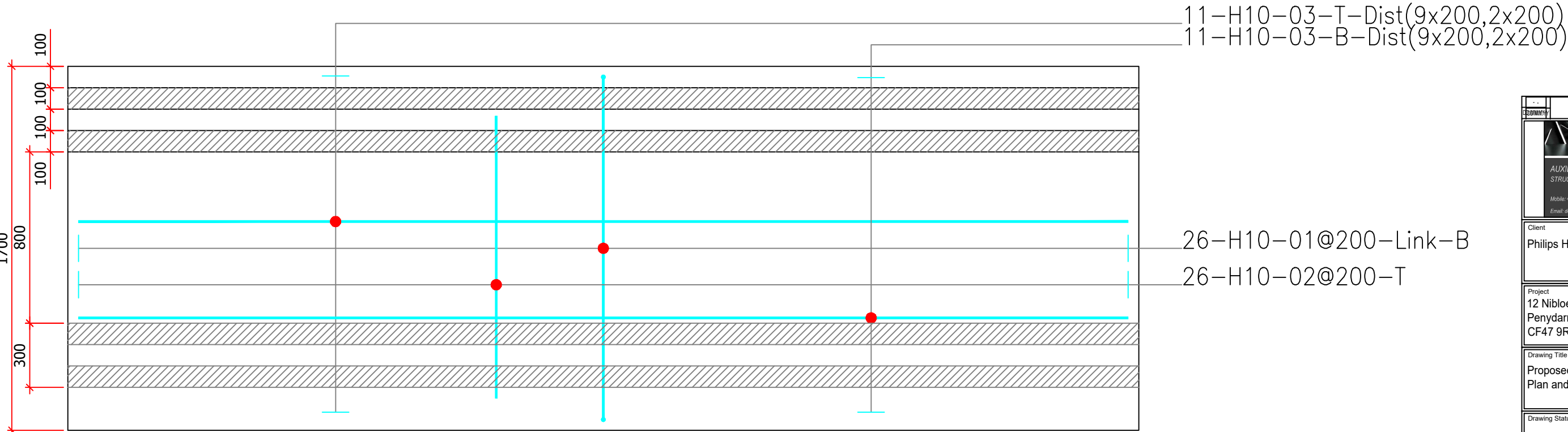


- NOTES:
1. ALL DIMENSIONS IN mm UNLESS NOTED OTHERWISE.
 2. DO NOT SCALE FROM THIS DRAWING.
 3. ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCING WORKS
- RETAINING WALL SPECIFICATION:
- Concrete grade C30
 - Reinforcement: as per bar schedule
 - Slab thickness: 300mm
 - compacted hardcore thickness: 200mm
 - cover to top reinforcement: 30mm
 - cover to the bottom and sides: 50mm
 - GBP assumed 100kN/m2

..	COMMENTS	By
COMMENTS	COMMENTS	Check
Client Philips Harris (architect)		
Project 12 Nibloe Terrace, Penydarren, Merthyr Tydfil CF47 9RX		
Drawing Title Proposed side retaining wall Section and reinforcement		
Drawing Status For Construction		
Drawn By: MK	Date: 14/06/22	Checked By: Date:
Original Size A3	Scale 1:50	Issue Date 14/06/2022
Project Number AUX.119-	Drawing Number 001	Revision C1



Front Elevation



Plan View

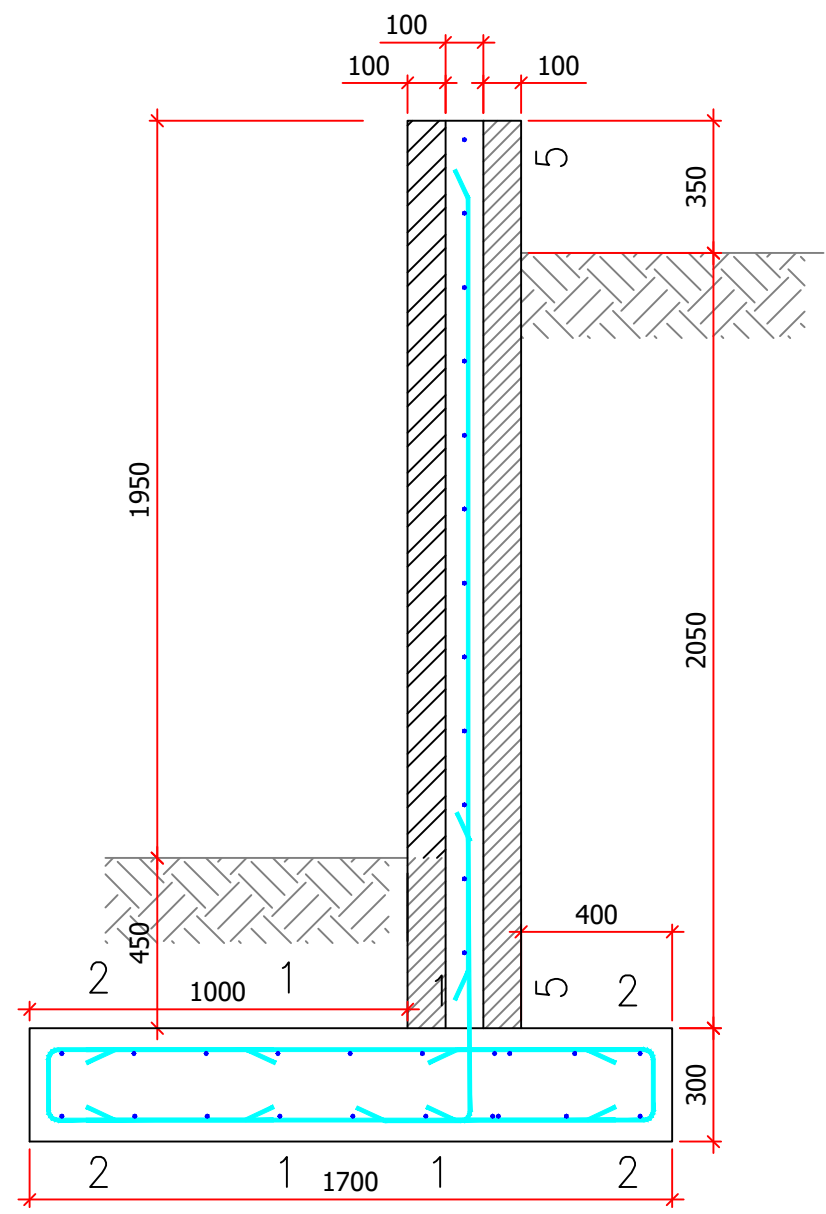
NOTES:

- ALL DIMENSIONS IN mm UNLESS NOTED OTHERWISE.
- DO NOT SCALE FROM THIS DRAWING.
- ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCING WORKS

RETAINING WALL SPECIFICATION:

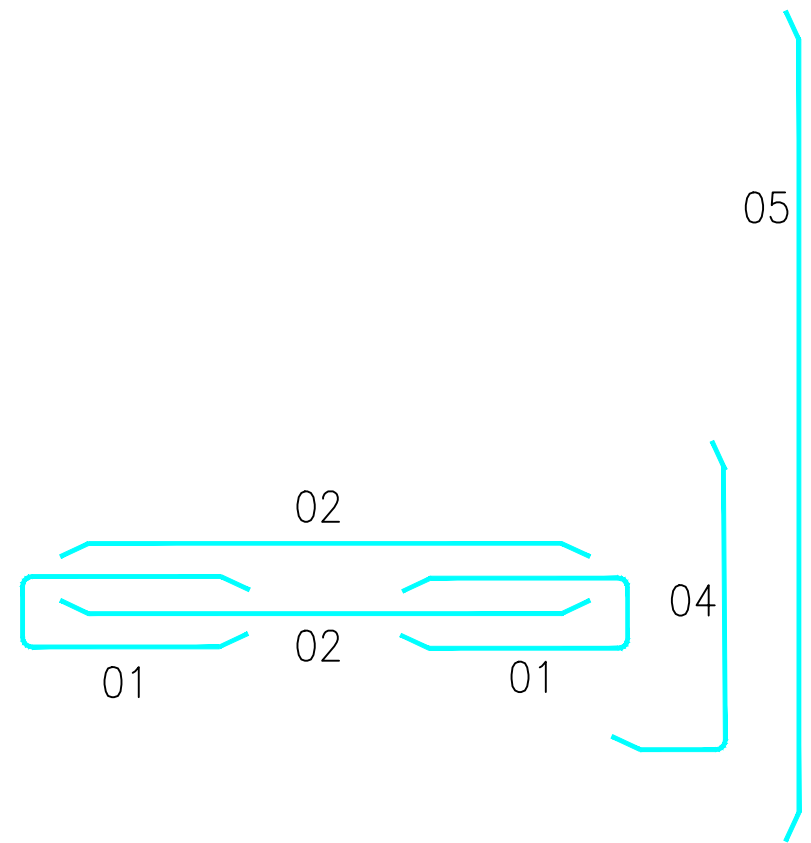
- Concrete grade C30
- Reinforcement: as per bar schedule
- Slab thickness: 300mm
- compacted hardcore thickness: 200mm
- cover to top reinforcement: 30mm
- cover to the bottom and sides: 50mm
- GBP assumed 100kN/m2

...	COMMENTS	BY:
...	COMMENTS	CHK:
		
Client Philips Harris (architect)		
Project 12 Nibloe Terrace, Penydarren, Merthyr Tydfil CF47 9RX		
Drawing Title Proposed side retaining wall Plan and elevation		
Drawing Status For Construction		
Drawn By: MK	Date: 14/06/22	Checked By:
Original Size A3	Scale 1:50	Issue Date 14/06/2022
Project Number AUX.119-	Drawing Number 002	Revision C1



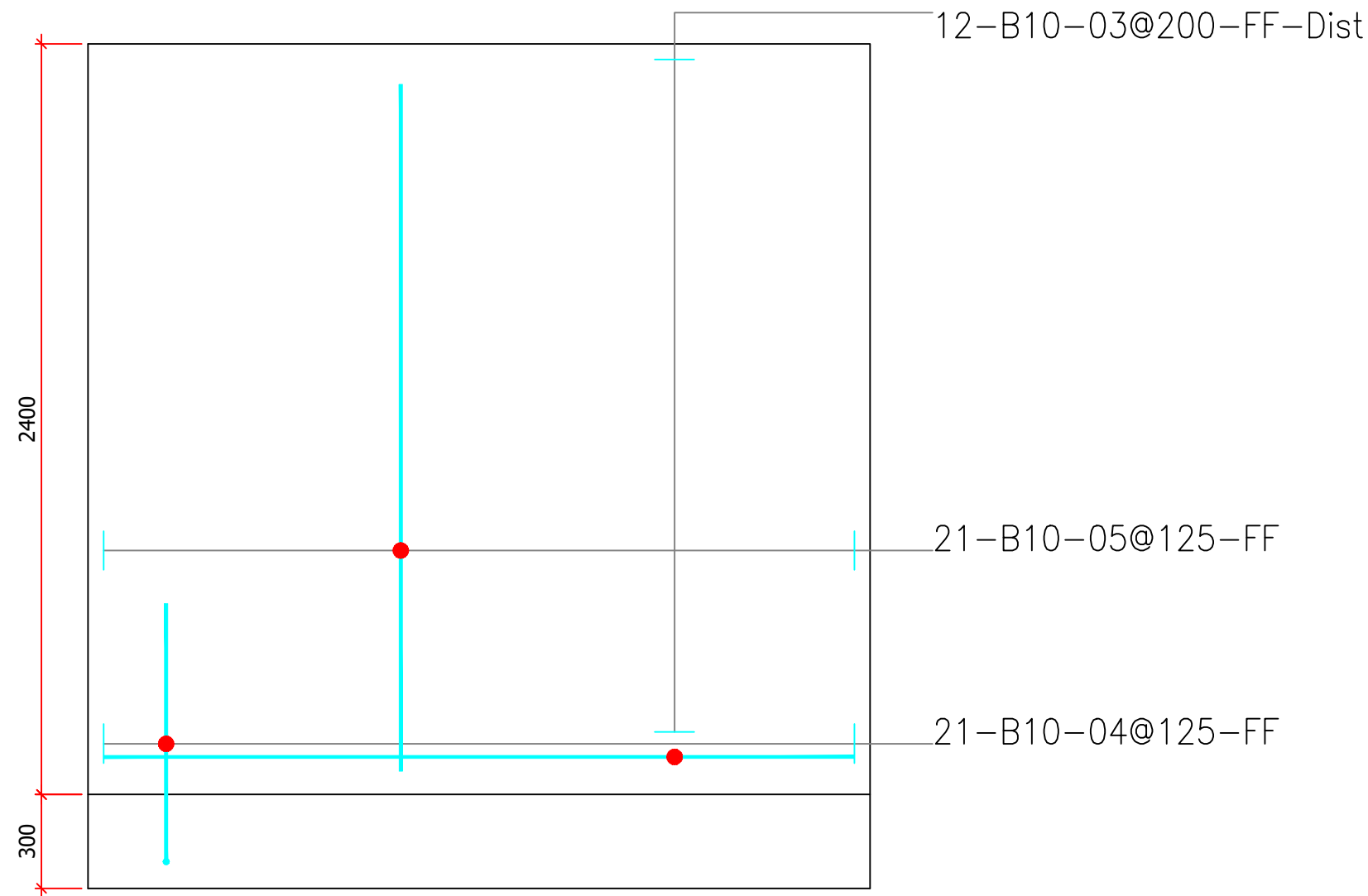
Section

Retaining wall finish will be render

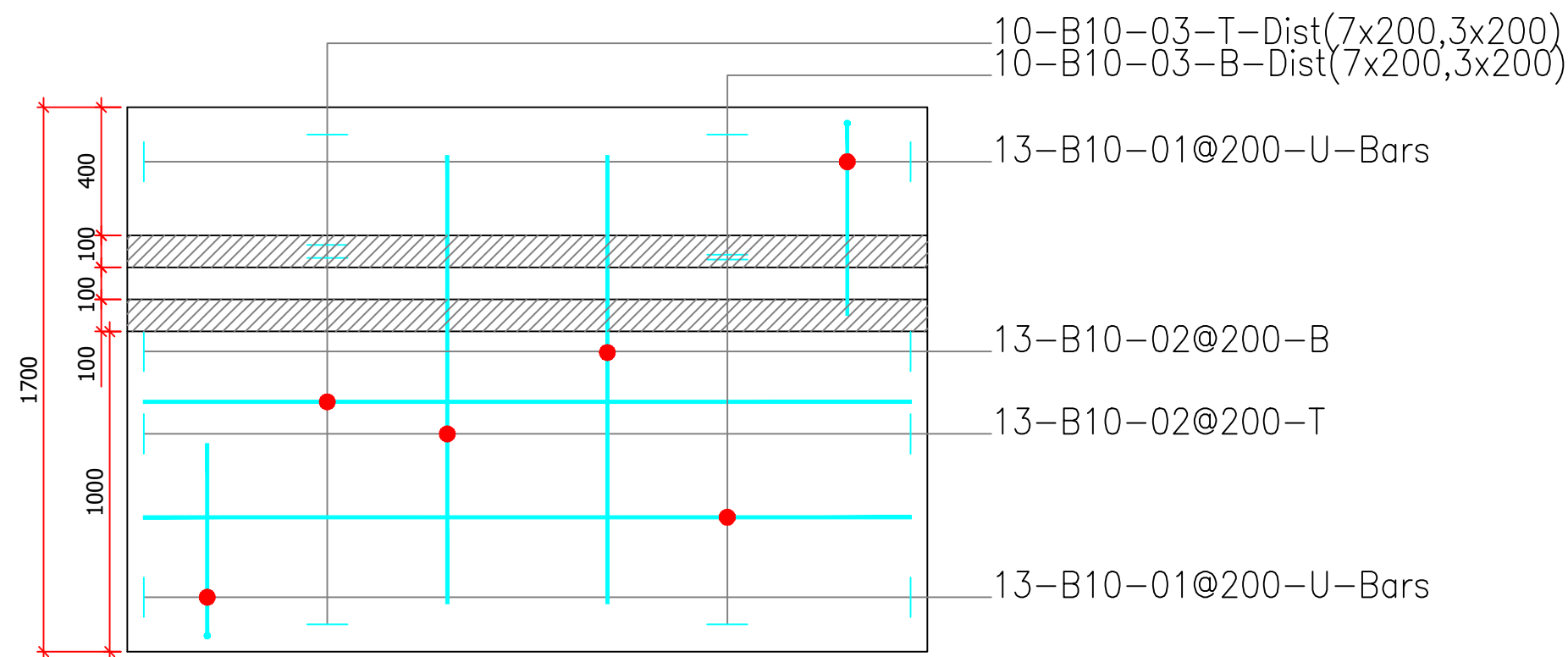


- NOTES:**
1. ALL DIMENSIONS IN mm UNLESS NOTED OTHERWISE.
 2. DO NOT SCALE FROM THIS DRAWING.
 3. ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCING WORKS
- RETAINING WALL SPECIFICATION:**
- Concrete grade C30
 - Reinforcement: as per bar schedule
 - Slab thickness: 300mm
 - compacted hardcore thickness: 200mm
 - cover to top reinforcement: 30mm
 - cover to the bottom and sides: 50mm
 - GBP assumed 100kN/m2

COMMENTS		BY:
COMMENTS		CHK:
 AUXILIUM STRUCTURAL ENGINEERING Mobile: +44 7465819500 Email: design@auxiliumse.com		
Client		
Philips Harris (architect)		
Project		
12 Nibloe Terrace, Penydarren, Merthyr Tydfil CF47 9RX		
Drawing Title		
Proposed rear retaining wall Section and reinforcement		
Drawing Status		
For Construction		
Drawn By:	Date:	Checked By:
MK	14/06/22	
Original Size	Scale	Issue Date
A3	1:50	14/06/2022
Project Number	Drawing Number	Revision
AUX.119-	003	C1



Front Elevation



Plan View

NOTES:

1. ALL DIMENSIONS IN mm UNLESS NOTED OTHERWISE.
2. DO NOT SCALE FROM THIS DRAWING.
3. ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCING WORKS

RETAINING WALL SPECIFICATION:

- Concrete grade C30
- Reinforcement: as per bar schedule
- Slab thickness: 300mm
- compacted hardcore thickness: 200mm
- cover to top reinforcement: 30mm
- cover to the bottom and sides: 50mm
- GBP assumed 100kN/m2

NO.	COMMENTS	BY
NO.	COMMENTS	CHK
		
Client Philips Harris (architect)		
Project 12 Nibloe Terrace, Penydarren, Merthyr Tydfil CF47 9RX		
Drawing Title Proposed rear retaining wall Plan and elevation		
Drawing Status For Construction		
Drawn By: MK	Date: 14/06/22	Checked By: Date:
Original Size A3	Scale 1:50	Issue Date 14/06/2022
Project Number AUX.119-	Drawing Number 004	Revision C1

