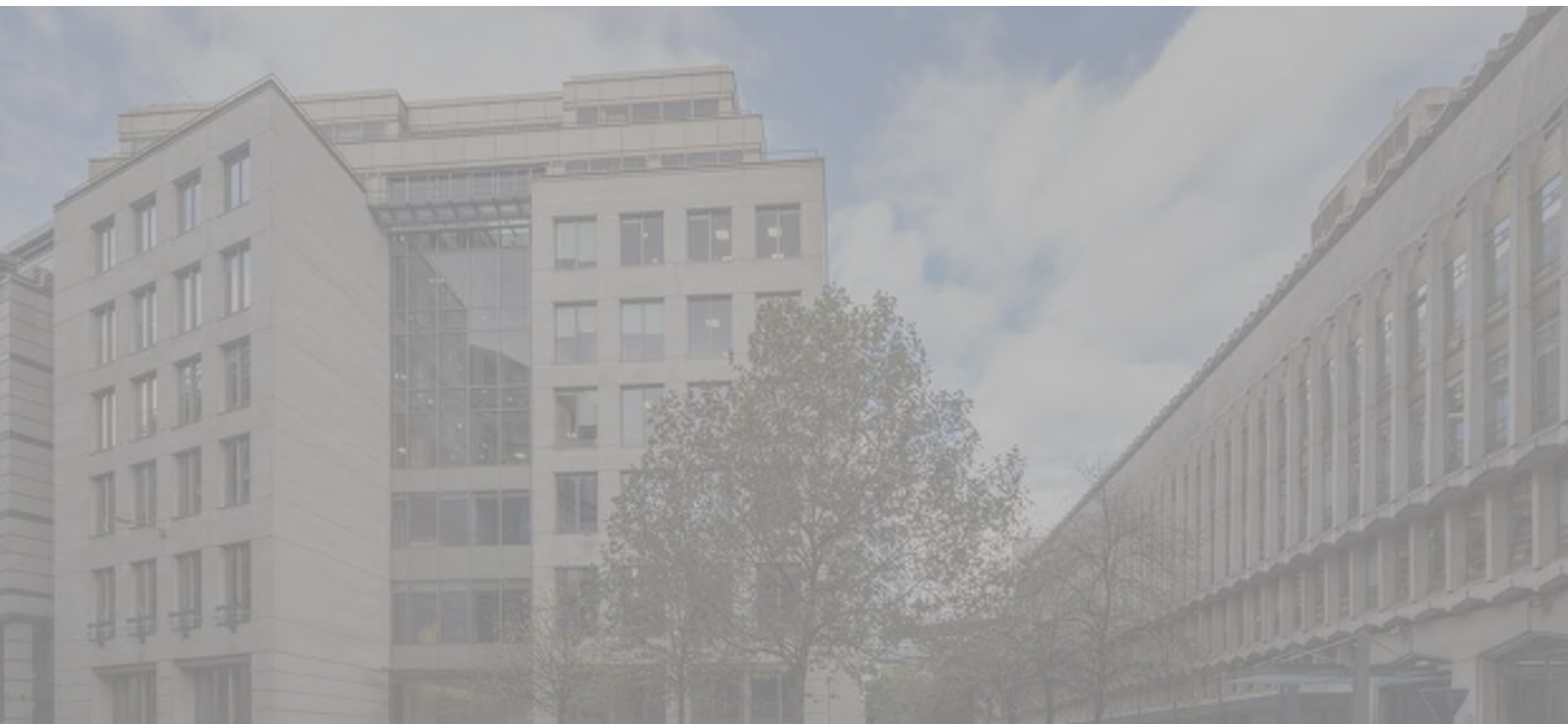




Merthyr Interchange Link

Stage 3 Report Appendix Document
MIL-ESA-XX-XX-RP-A-000013

Index

1.0	DOCUMENT CONTROL.....	2
1.1	DOCUMENT REVISIONS	2
1.2	DISCLAIMER.....	2
2.0	BUILDING SERVICES.....	3
2.1	SCOPE OF WORKS	3
3.0	DRAINAGE.....	4
3.1	EXISTING SITE.....	4
3.1.1	Site Location	4
3.1.2	Topography	4
3.1.3	Existing Drainage	4
3.1.4	Run-off Rates.....	4
3.2	PROPOSED SURFACE WATER DRAINAGE	5
3.2.1	Design Standards & Methods.....	5
3.2.2	Proposed Drainage.....	5
3.3	SUMMARY OF PROPOSALS.....	6
3.3.1	Summary	6
4.0	HIGHWAYS.....	8
4.1	SCHEME ALIGNMENT	8
5.0	STRUCTURES.....	23
5.1	STRUCTURAL ENGINEERING RATIONALE – HIGHWAY STRUCTURES.....	23
5.1.1	Existing Ground Conditions.....	23
5.1.2	Earthworks.....	23
5.1.3	Structural Form	23
6.0	LIGHTING.....	30
6.1	SCOPE OF WORKS	30
7.0	DESIGN OUT CRIME OFFICER (DOCO) REPORT.....	33
8.0	ECOLOGY TECHNICAL NOTE.....	43
9.0	ROAD SAFETY AUDIT (RSA).....	47
10.0	ARCHITECTS DRAWINGS.....	62
11.0	FLOOD CONSEQUENCE ASSESSMENT (FCA).....	90

1.0 Document Control

Project Number	UK-70121420-001
Project Title	Merthyr Interchange Link
Client Name	MTCBC
Document Name	Stage 3 Report Appendix Document
Document Number	MIL-ESA-XX-XX-RP-A-000013
File Name	Stage 3 Report Appendix Document
Date of Revision	05/12/2024
Revision	P01
Status	S2 – Suitable for Information
Classification	

1.1 Document Revisions

Revision	Amendments	Issue Date	Auth/ Chk/ App
P01	First Issue	05/12/2024	CJ / EB / MT

1.2 Disclaimer

General Disclaimer

WSP UK Limited makes no warranties or guarantees, actual or implied, in relation to this report, or the ultimate commercial, technical, economic, or financial effect on the project to which it relates, and bears no responsibility or liability related to its use other than as set out in the contract under which it was supplied.

2.0 Building Services

2.1 Scope of Works

Since RIBA Stage 2, the client has taken direct responsibility for the substation works by appointing the DNO to carry out the relocation of the HV/LV substation and the disconnection and removal of utilities to the demolished units. The public realm lighting scope has been reassigned to Highways (Section 6 of this report) with the relocation of the BT pole to be confirmed at Stage 4.

The DNO has been appointed to carry out the following scope of works:

- Relocation of the HV/LV DNO substation
- Disconnection and removal of Utilities connections to demolished units
- Diversion of utilities to support the public realm installation

3.0 Drainage

3.1 Existing Site

3.1.1 Site Location

The site is situated off High Street, Merthyr Tydfil (central grid reference: SO049059) within land presently occupied by 3 no. retail units (Red Cross, Peacocks & Monique's) that are to be demolished as a part of the. A short section of Masonic Street also falls within the site extents. The site is bound by the Merthyr Tydfil rail station to the east, High Street to the west, and retail units to the north and south (to be retained).

An NRW main river, the River Taff, is located approximately 200m to the west of the site.

3.1.2 Topography

A topographical survey of Masonic Street and the surrounding area of the development (majority of the development area itself comprised retail units at the time of survey) was undertaken by Alpine Land Surveyors Ltd. in February 2021 and is summarised below. Masonic Street generally grades from north to south (towards to the junction with High Street) with levels varying between circa 168.5m AOD & 167.8m AOD within the vicinity of the site boundary. The carriageway is generally superelevated, falling from east to west.

To the west of the development, High Street generally grades from north to south, with levels varying between circa 167.6m AOD & 167.3m AOD within the vicinity of the site boundary.

Immediately following demolition of the existing retail units within the site extents, additional topographical (ground investigation) survey shall be undertaken of this area.

3.1.3 Existing Drainage

A CCTV survey of existing drainage (surface water & combined sewers) within the vicinity of the site was undertaken by Alpine Land Surveyors Ltd in October 2021 and supplemented by an additional area of survey by Wales Environmental in March 2024. The results of these surveys are interpreted below (in combination with information ascertained site walkovers & third-party asset plans).

Masonic Street is drained by several gullies, all of which outfall into a DCWW combined sewer that appears to ultimately outfall into a large brick arch combined sewer that runs along the High Street.

Similarly, the High Street is drained by a series of gullies that all discharge into the large DCWW brick arch combined sewer that runs from north south along the same street.

To confirm the outfall points for the roof water runoff from the existing retail units that are proposed to be demolished, a site survey was undertaken with a DCWW representative present in August 2024. Drain dye was utilised to establish connections, and it was proven that all roof water from these buildings' discharges into the DCWW combined sewer network, as observed by a DCWW officer.

3.1.4 Run-off Rates

The development area comprises entirely brownfield areas, however, in the interest of reducing the impact on downstream receptors (particularly on combined sewers) the decision has been taken to discharge at greenfield runoff rate for an equivalent area. Greenfield runoff rates shall be assessed by using IH124 methodology and discharge rates off-site will be restricted for all events up to an including the in 1 in 100-year (plus 40% climate change allowance) return period.

3.2 Proposed Surface Water Drainage

3.2.1 Design Standards & Methods

The proposed drainage strategy for the development conforms with latest best practices of the 'The SuDS Manual' (CIRIA C753, 2015) and any local guidance provided by; the Sustainable Drainage Approval Body (SAB) and Natural Resources Wales (NRW).

The surface water drainage proposals outlined in this report have been designed so that they are suitable to be taken forward to a subsequent design stage.

3.2.2 Proposed Drainage

The proposed drainage system serving the development comprises two main areas that form one integral drainage network: Masonic Street, and the public realm area.

Masonic Street is proposed to be drained by a series of gullies and linear drainage channels (at pedestrian crossing points) that discharge into gravity drainage networks conveying runoff towards one of two bioretention areas where surface water run-off will receive treatment. Each bioretention area will be restricted by a flow control chamber (to maximise storage within the filter media) prior to tying into the wider network serving the public realm area.

The public realm area is proposed to be drained at source by porous surfacing (porous resin or similar) and a series of perforated underdrains, conveying runoff towards a flow control chamber prior to outfalling into an existing DCWW combined sewer chamber at greenfield runoff rate. Treatment of surface water will be achieved via percolation of runoff through the porous surfacing filter media, and storage will be achieved (for both the public realm and Masonic Street runoff) primarily through use of below ground geocellular crates (in combination with storage achieved within bioretention area and porous surfacing filter media). Tree pits are proposed within the public realm area that will be installed integrally with the porous surfacing and tie into the below ground drainage network.

A canopied area of the public realm (to the rear and siding of Monique's) is proposed to be drained by linear drainage channels, that will outfall either into one of the bioretention areas, or directly into the downstream network.

As outlined in Section 3.1.3, the entirety of the section of Masonic Street within the site boundary, and the existing buildings that are to be demolished, discharge surface water runoff into the existing DCWW combined sewer. Despite this, the preference for the proposed drainage network serving the development was to discharge via a more sustainable receptor (i.e. infiltration, discharge to a surface water body, or discharge to a surface water sewer).

Due to the nature of the site and the likely presence of made ground and/or basements, it is assumed at this stage that infiltration will be unviable as a method of surface water discharge for this development. Following demolition of the existing retail units, a ground investigation shall be undertaken to confirm this, and infiltration testing undertaken if appropriate based on existing conditions/contamination.

The nearest surface water body to the development is the NRW main river, the River Taff, located approximately 200m to the west. As this is a significant distance through an urbanised town centre, this method is also considered unviable for surface water discharge.

Similarly, the nearest surface water sewer that was identified as a part of the CCTV survey undertaken for the development was a network located on the opposite side of Masonic Street that was too shallow to be able to physically tie into.

As such, with a lack of viable alternatives, the decision has been taken to discharge into the DCWW combined sewer as per the existing scenario. However, to provide significant betterment on the existing scenario, discharge rates will be restricted to greenfield runoff rates rather than brownfield for all events up to and including the 1 in 100-year (plus 40% climate change allowance) return period.

Hydraulic modelling for the proposed drainage network serving the development shall be undertaken using Causeway Flow software at a subsequent design stage to demonstrate sufficient capacity within the system for all events up to and including the 1 in 100-year return period (plus 40% climate change allowance) with no flooding.

Relevant approvals (S106) shall be sought from DCWW for works affecting their assets.

3.3 Summary of Proposals

3.3.1 Summary

The proposed development entails the introduction of a new public realm space between Masonic Street and High Street where existing retail units are to be demolished (Peacocks, British Red Cross & the rear of Monique's).

An outline surface water drainage proposal has been described within this drainage statement that entails a sustainable drainage system comprising gullies, linear drainage channels, bioretention areas, tree pits and porous surfacing that ultimately discharges into an existing DCWW combined sewer. Relevant approvals will be obtained from DCWW for any works affecting their assets.

The proposed development will restrict surface water discharge rates off site to greenfield runoff rates for all events up to and including the 1 in 100-year (plus 40% climate change allowance) event so as not to increase flood risk off-site.

As well as restricting surface water discharge rates off site, the proposed development will achieve multiple sustainable drainage benefits by providing interception, treating surface water and adding amenity and biodiversity value to the local community.

As such, the outline surface water drainage proposals for Merthyr Tydfil Interchange Link should be considered acceptable to support a planning application for the development and be used as a basis to inform subsequent design of the proposed surface water drainage for the site.

4.0 Highways

4.1 Scheme Alignment

A number of different alignments were assessed, with key considerations being the crossing point from the existing station into the proposed public realm area, and the retention of the existing properties.

The proposed alignment replicates the existing road geometry at the tie-ins at the start and end of Masonic Street due to the topography constraints. Where possible the alignment has been widened to the west to introduce a footway on the eastern side of the carriageway.

Masonic Street is a no through road, the proposed carriageway is 5.0m wide with additional widening at the bend to facilitate large vehicles, the carriageway width varies from 5.0m to 4.6m wide at both the northern and southern end where it ties into the existing carriageway. The proposed standard cross-section comprises a 5.0m wide carriageway with a 2.0m wide footway on both sides. Based on the guidance document DfT Manual for Streets, the majority of the realigned carriageway should allow for a Heavy Goods Vehicle and a standard car to pass side by side. However, the results of the swept path analysis show this applies to straight sections of road only. It is therefore anticipated that vehicles will give way to each other where the geometry does not allow for two vehicles to pass (i.e. on bends) which would be the same as the existing situation.

It should be noted that the volume of traffic entering/ exiting Masonic Street is very low and is limited to a few business owners and daily deliveries which would be travelling at low speeds and users would be familiar with the site constraints. Heron Foods is the only business that uses articulated vehicles for deliveries, all other businesses are serviced from the front (High Street).

The proposed vertical alignment is no worse than existing, on the southwest the vertical gradient is circa. 3.6% where it ties-in with existing adjacent to The Don's. It then increases too circa. 7.7% as it heads northeast adjacent to Merthyr Conservative Club as it approaches the existing steps to the Rail Station. The road then changes direction and heads north where the gradient reduces to circa. 0.65% adjacent to the existing masonry retaining wall.

A 2.0m wide footway has been proposed on the western side of Masonic Street from the rear of Sunflower Café heading in a northern direction to the rear of Moniques. The longitudinal gradient of the proposed footway is 7.8% which replicates the existing carriageway gradient, the gradient steepens locally at the intersection between Masonic Street and the existing access road to the rear of Sunflower Café where it increases too approx. 9.2%. The crossfall gradient of the footway is typically 2.5% except at the tie-in at the access road where it steepens up to approx. 7% to tie in with existing levels (this will be revisited at detailed design with a view to improving the crossfall gradient).

The existing footway directly in front of the steps on the eastern side of the carriageway heading southwest has been widened to 2.0m and has been extended further north to cater for the new crossing point which links the train station to the proposed public realm. The existing longitudinal gradient varies however at the steepest section it is approx. 8.4% and the cross-section at the steepest point is 4.7%. A raised table is proposed at the crossing location on Masonic Street to facilitate NMU's.

- Notes:
- Do not scale from this drawing.
 - This drawing is only to be used for the specific purpose stated in the title.
 - For associated cross sections, reference is to be made to 70120884-RED-61-XX-DR-C-0103, and 70120884-RED-61-XX-DR-C-0104.

- Plan Key:
- Alignment MC01
 - Major contours at interval of 0.25m
 - Minor contours at interval of 0.05m
 - Proposed Wall

- Long-Section Key:
- Proposed Ground
 - Existing Ground

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDOUS RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

-  1. Stability of existing buildings during excavation, contractor should not exceed 5m working bays
- 2. Shallow services in vicinity of proposed works, contractor to take extra care when excavating

For further details refer to the T446 Design Risk Management Schedule.
IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

© Crown copyright and database rights 2016 Ordnance Survey 1000025302
© Hawlfraint y Goron a hawliau cronfa ddata 2016 Arolwg Ordnans 1000025302

P02	MH	CCR	CCR	Walls updated	23/11/2024
P01	MH	CCR	CCR	First issue	11/11/2024
Rev	Drawn	Checked	Approved	Description	Date

Purpose of Issue

S2 - Issued For Information

Classification

Public

Client

**Merthyr Tydfil
County Borough Council**

Project

Merthyr Tydfil Interchange Link

Drawing

**Masonic Street
Proposed Contour Plan and
Long-Section**

Scale @ A1	Drawn	Checked	Approved
As shown	GPL	MH	CCR

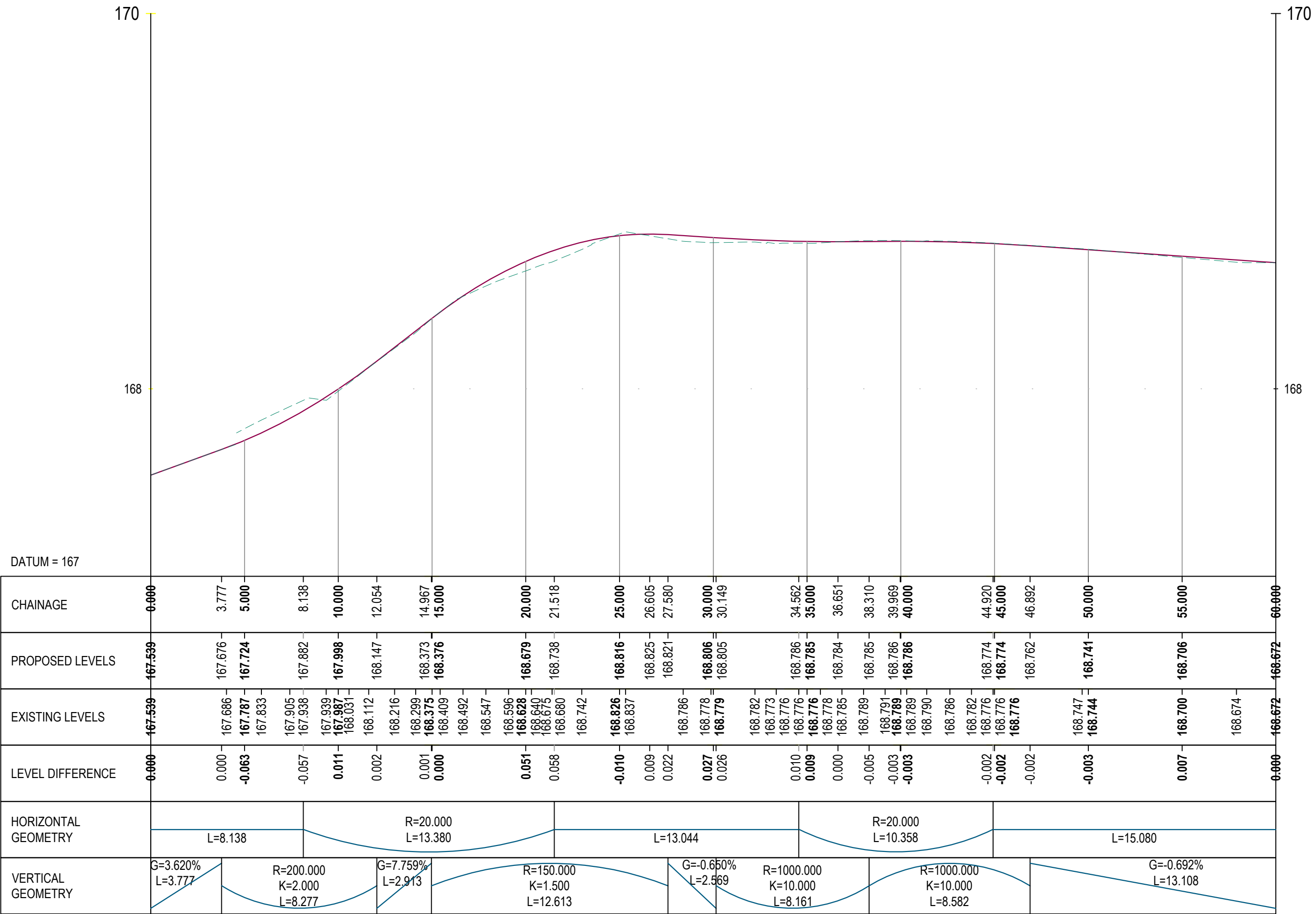
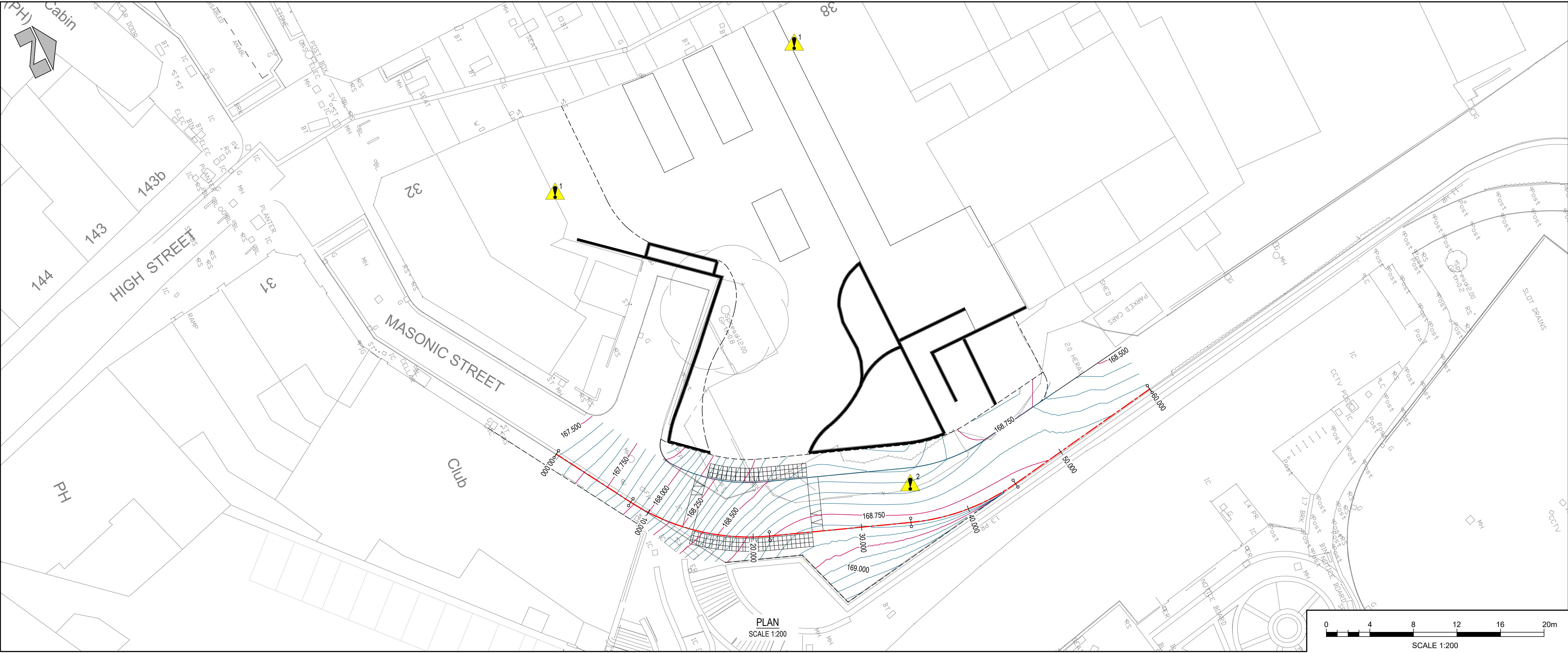
Project No.	Date
70120884	November 2024

Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
70120884-RED-61-XX-DR-C-0102	P02

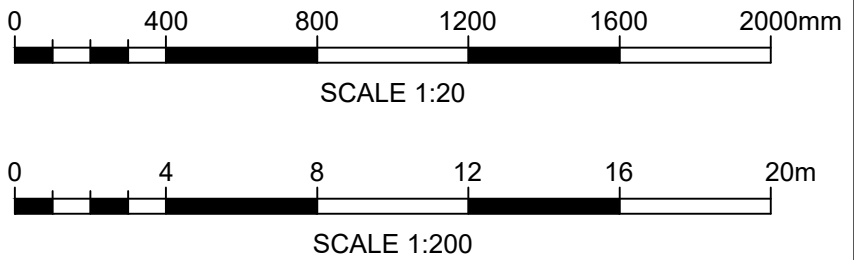


REDSTART

Quest House, St Mellons Business Park, Fortran Road,
St Mellons, Cardiff, CF3 0EY
www.redstartwales.com



ALIGNMENT MC01 - LONGITUDINAL SECTION
SCALE: H 1:200, V 1:20



Notes:

- Do not scale from this drawing.
- This drawing is only to be used for the specific purpose stated in the title.
- For cross sections refer to drawing 70120884-RED-61-XX-DR-C-0104.

Key:

- Alignment MC01
- Major contours at interval of 0.25m
- Minor contours at interval of 0.05m
- Cross Section Location
- Proposed wall

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

1. Stability of existing buildings during excavation, contractor should not exceed 5m working bays

2. Shallow services in vicinity of proposed works, contractor to take extra care when excavating

For further details refer to the T446 Design Risk Management Schedule.

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

© Crown copyright and database rights 2016 Ordnance Survey 1000025302
© Hawfrant y Goron a hawliau cronfa ddata 2016 Arolwg Ordnans 1000025302

P02	MH	CCR	CCR	Walls updated	22/11/2024
P01	MH	CCR	CCR	First Issue	11/11/2024
Rev	Drawn	Checked	Approved	Description	Date

Purpose of Issue

S2 - Issued For Information

Classification

Public

Client

**Merthyr Tydfil
County Borough Council**

Project

Merthyr Tydfil Interchange Link

Drawing

**Masonic Street
Cross-Section
Location Plan**

Scale @ A1	Drawn	Checked	Approved
1:200	GPL	MH	CCR

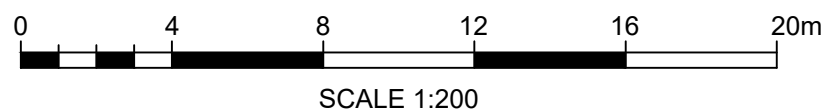
Project No.	Date
70120884	November 2024

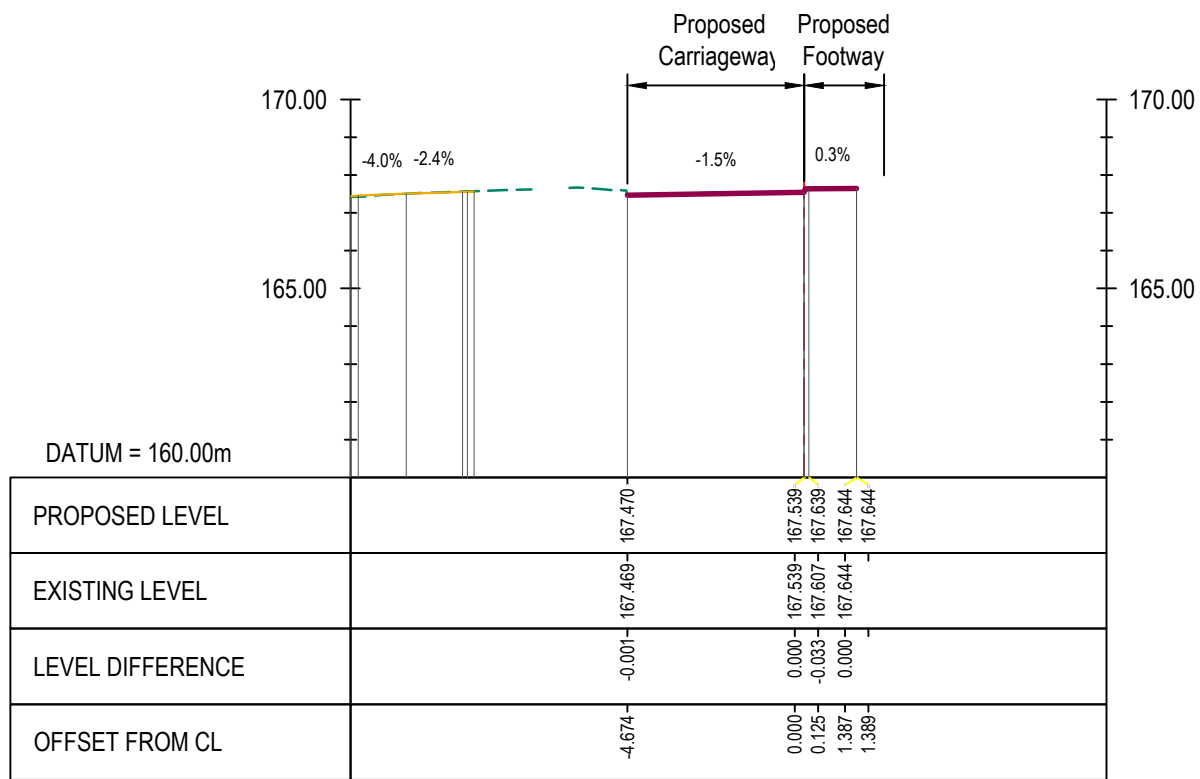
Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
70120884-RED-61-XX-DR-C-0103	P02



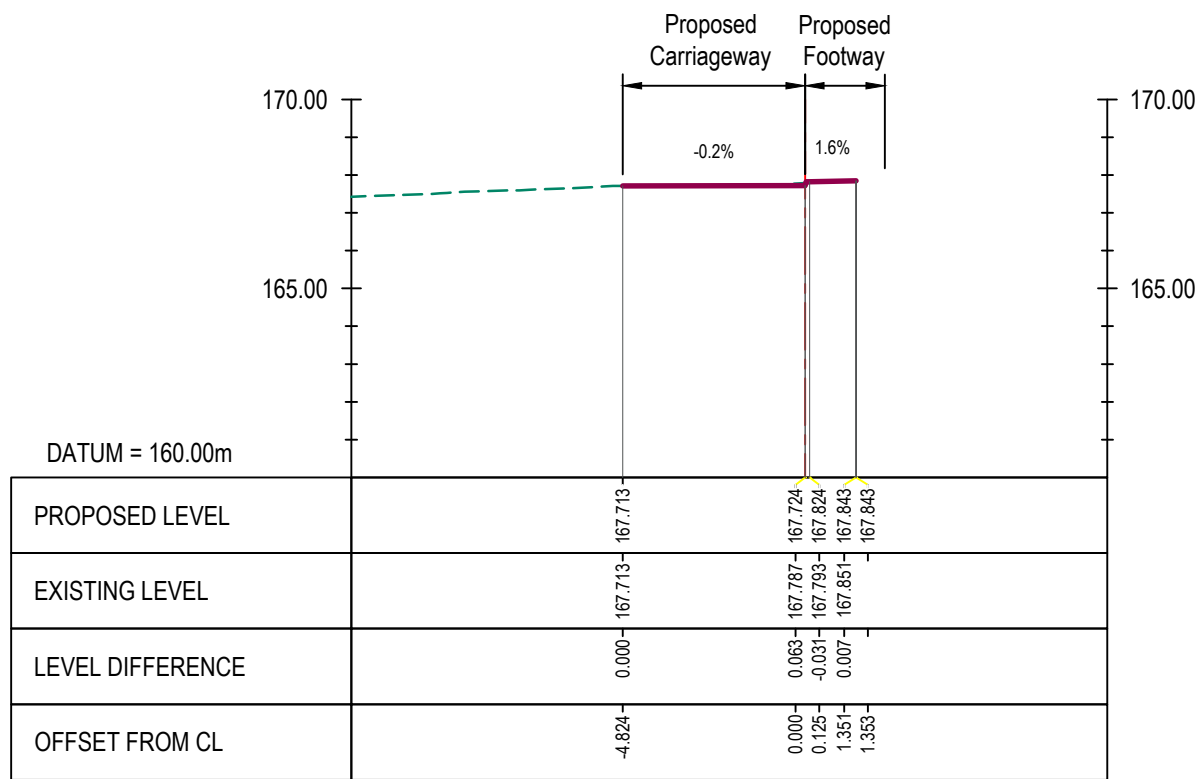
REDSTART

Quest House, St Mellons Business Park, Fortran Road,
St Mellons, Cardiff, CF3 0EY
www.redstartwales.com

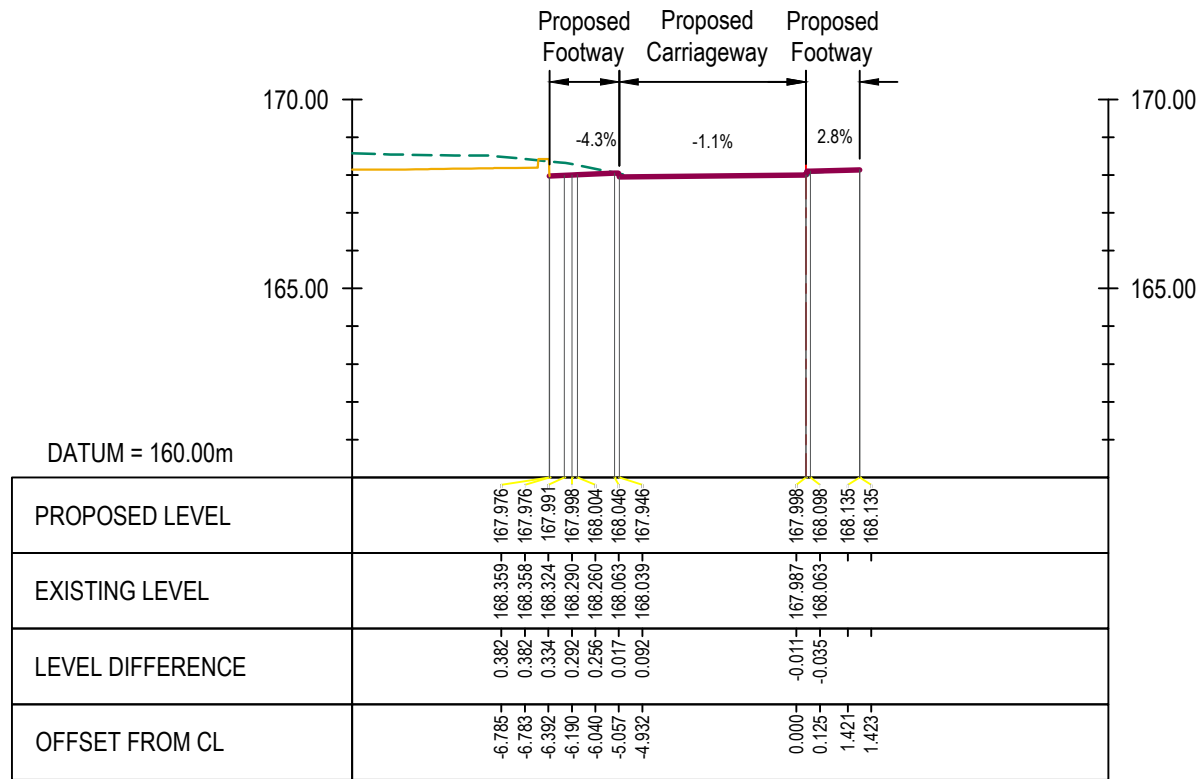




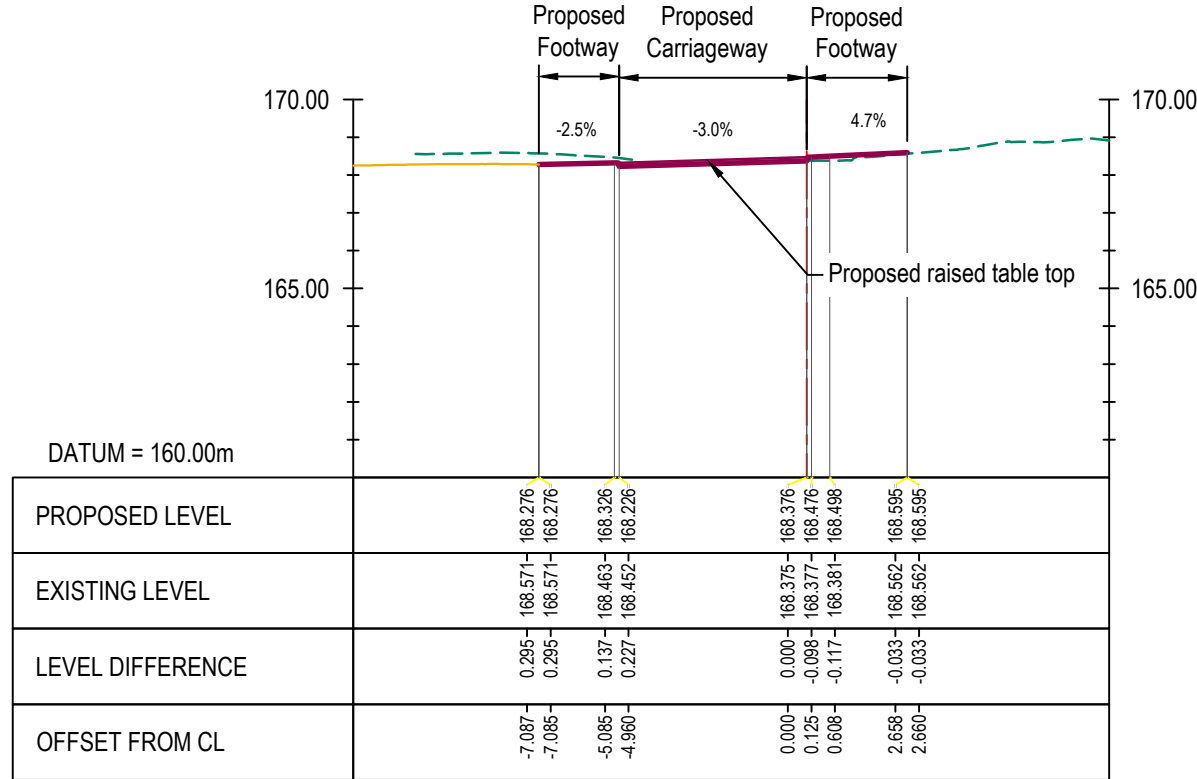
CH 0.000
SCALE 1:200



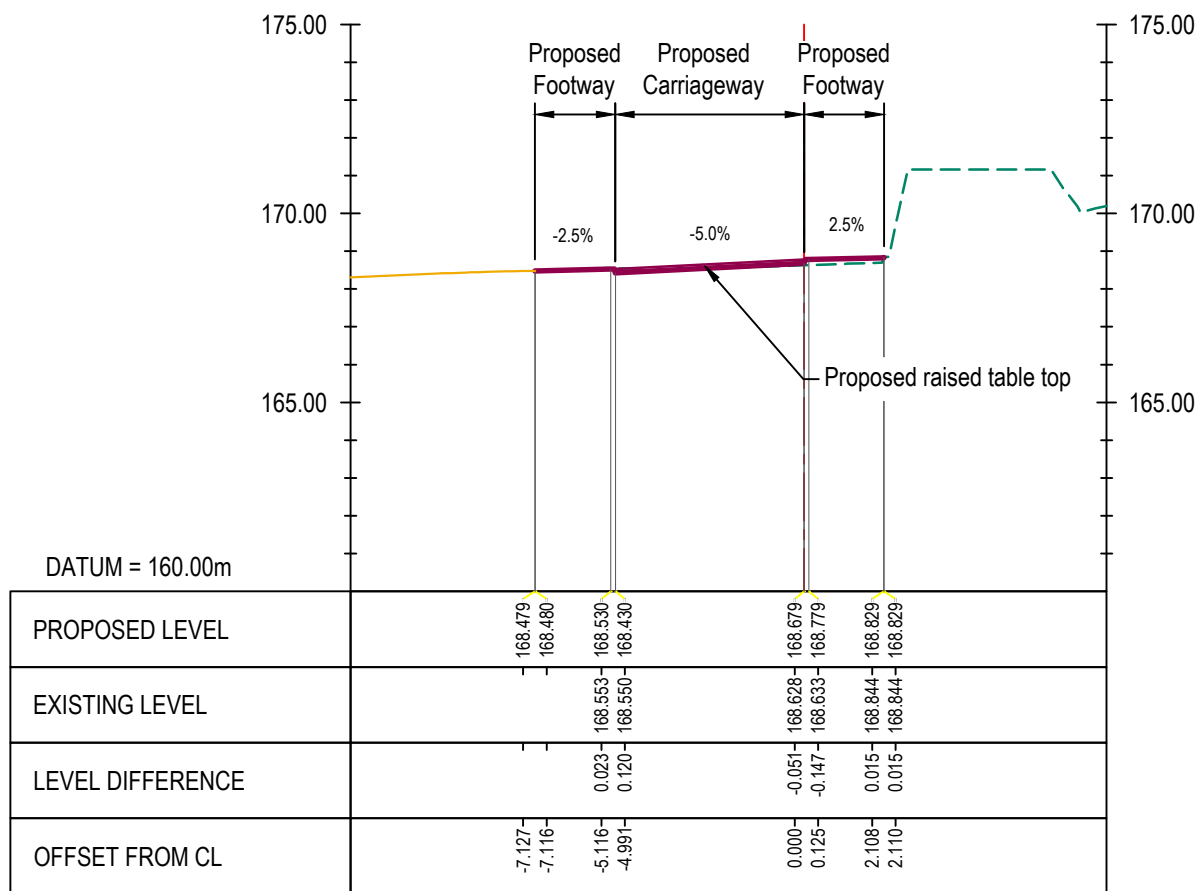
CH 5.000
SCALE 1:200



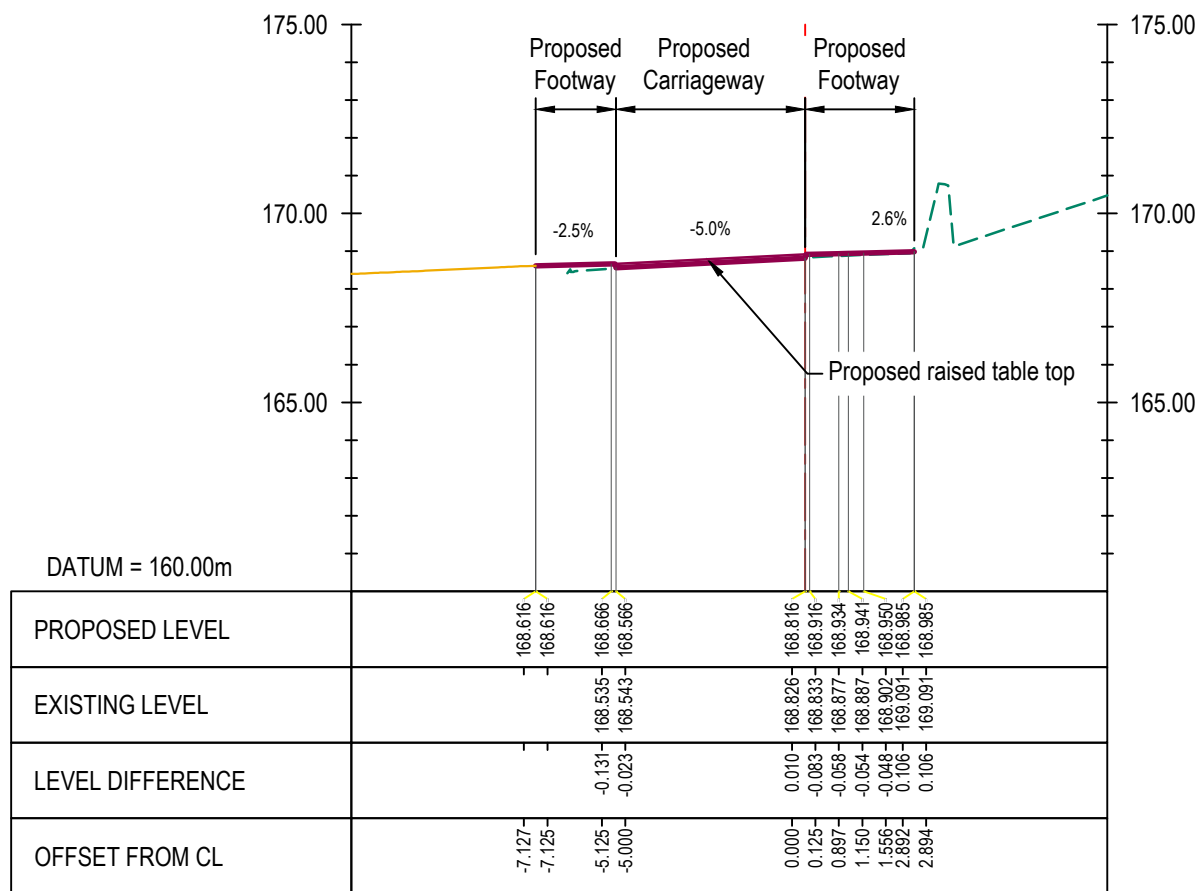
CH 10.000
SCALE 1:200



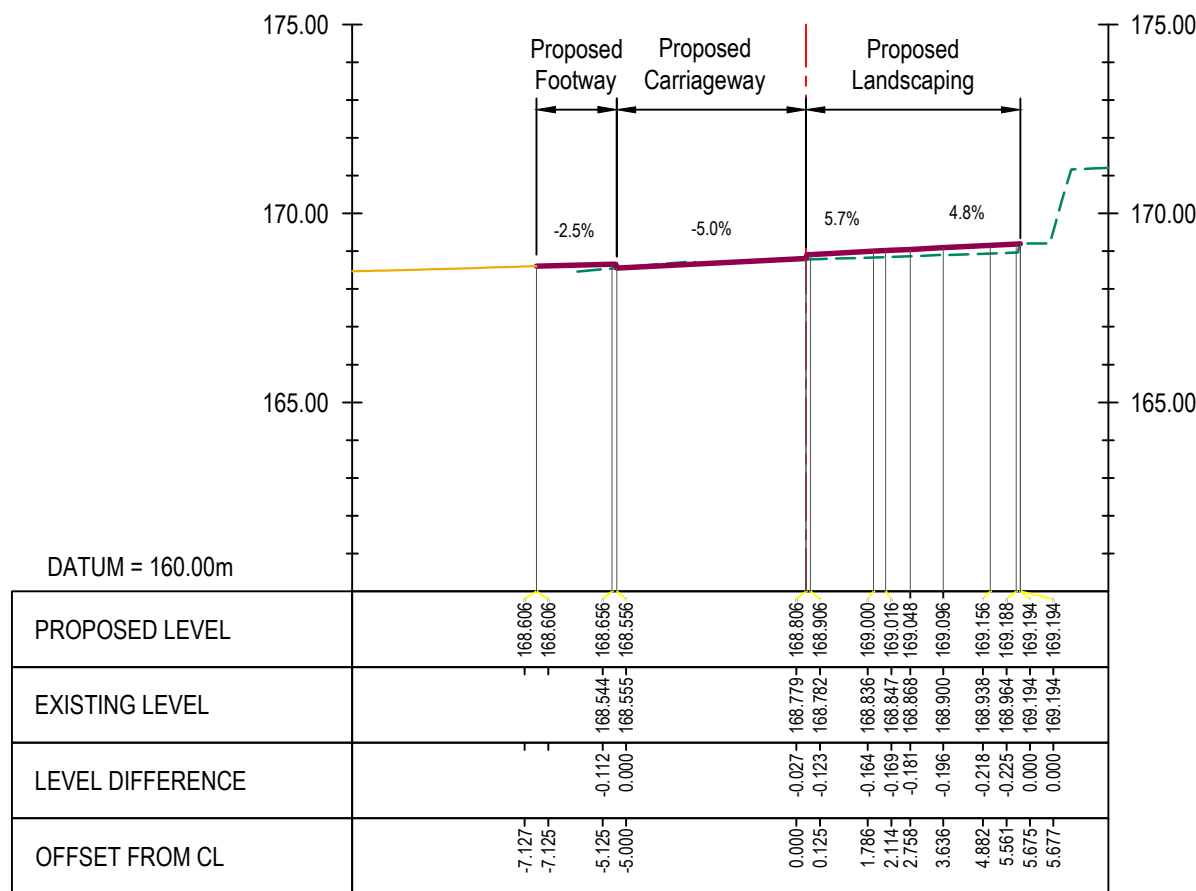
CH 15.000
SCALE 1:200



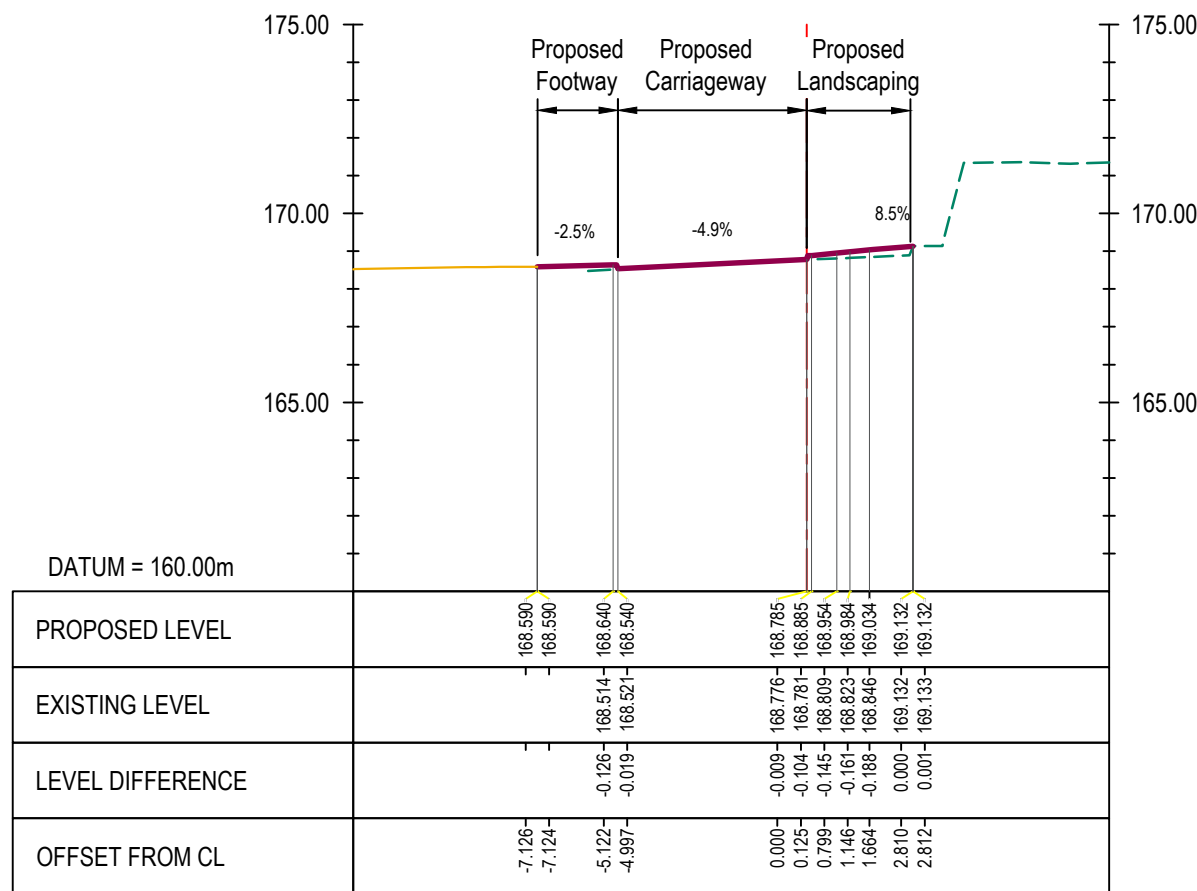
CH 20.000
SCALE 1:200



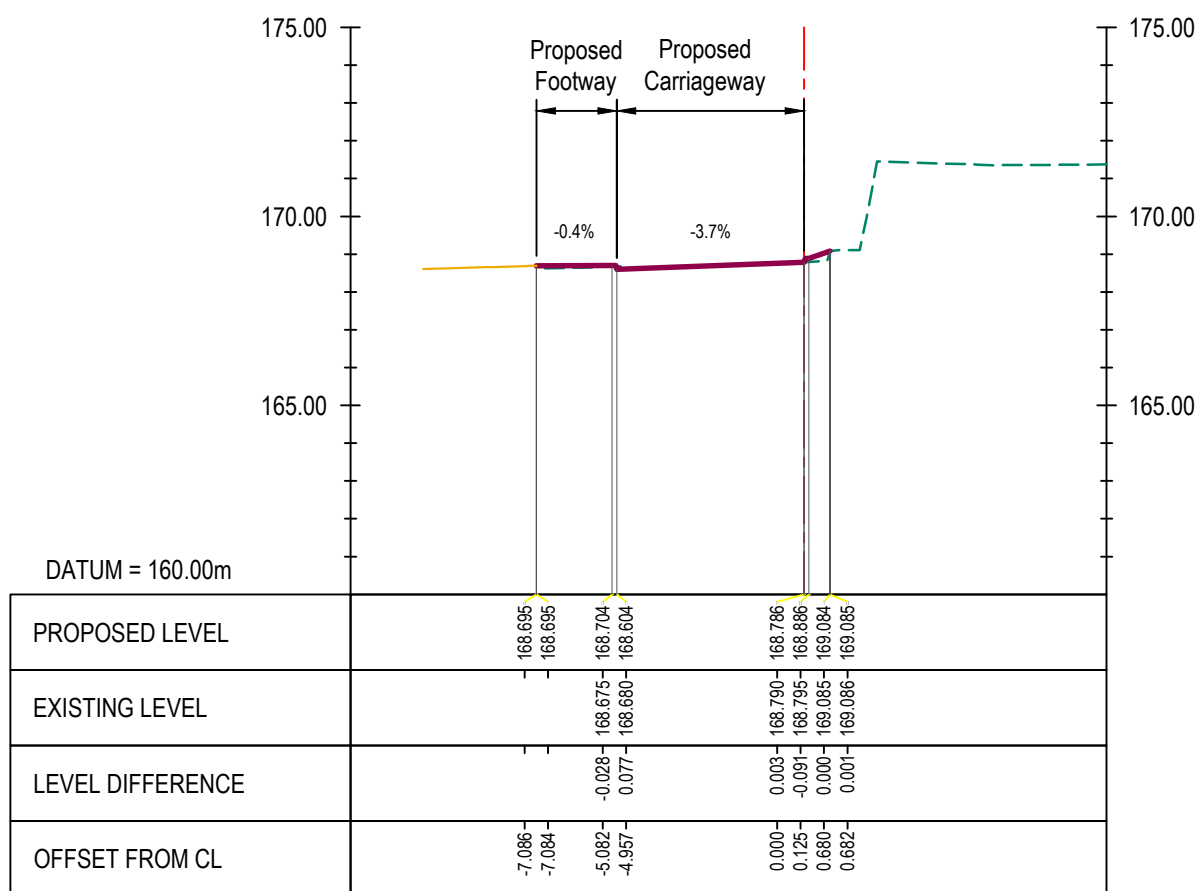
CH 25.000
SCALE 1:200



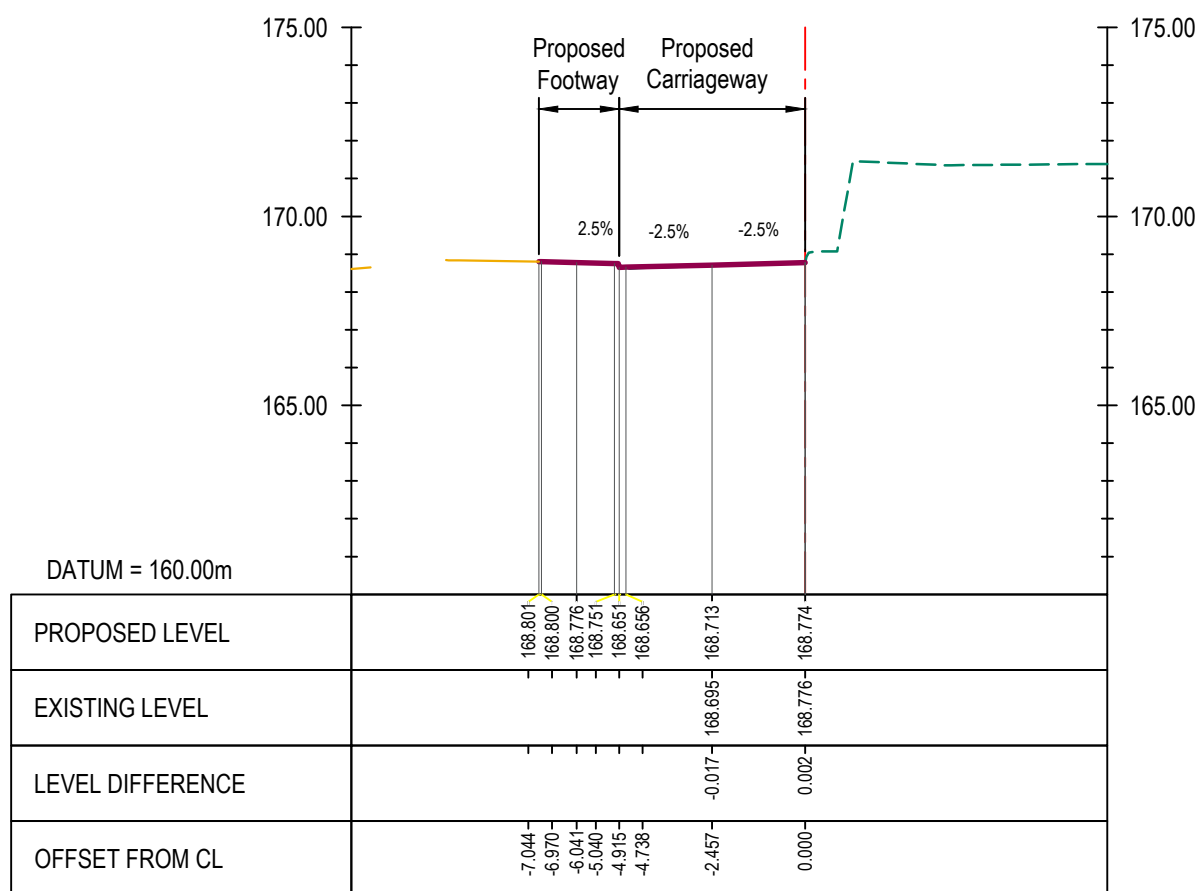
CH 30.000
SCALE 1:200



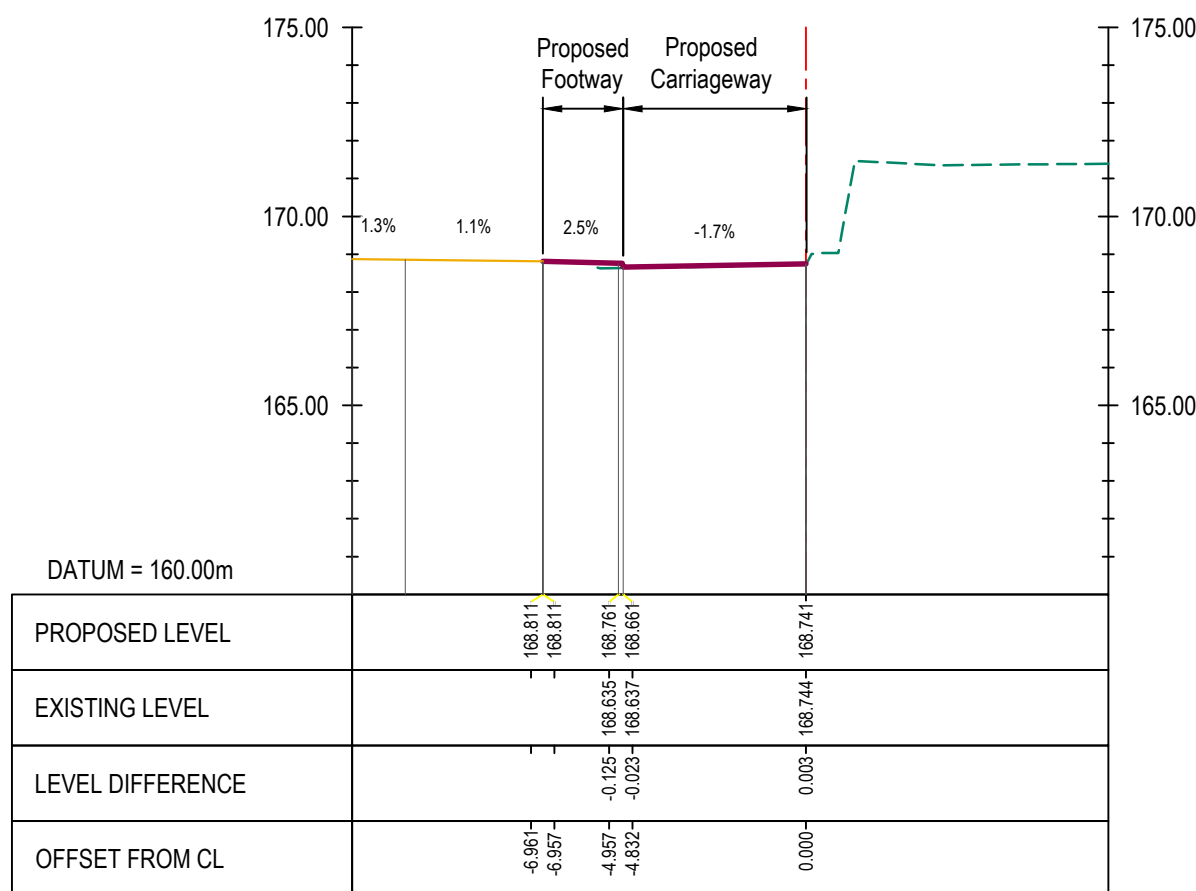
CH 35.000
SCALE 1:200



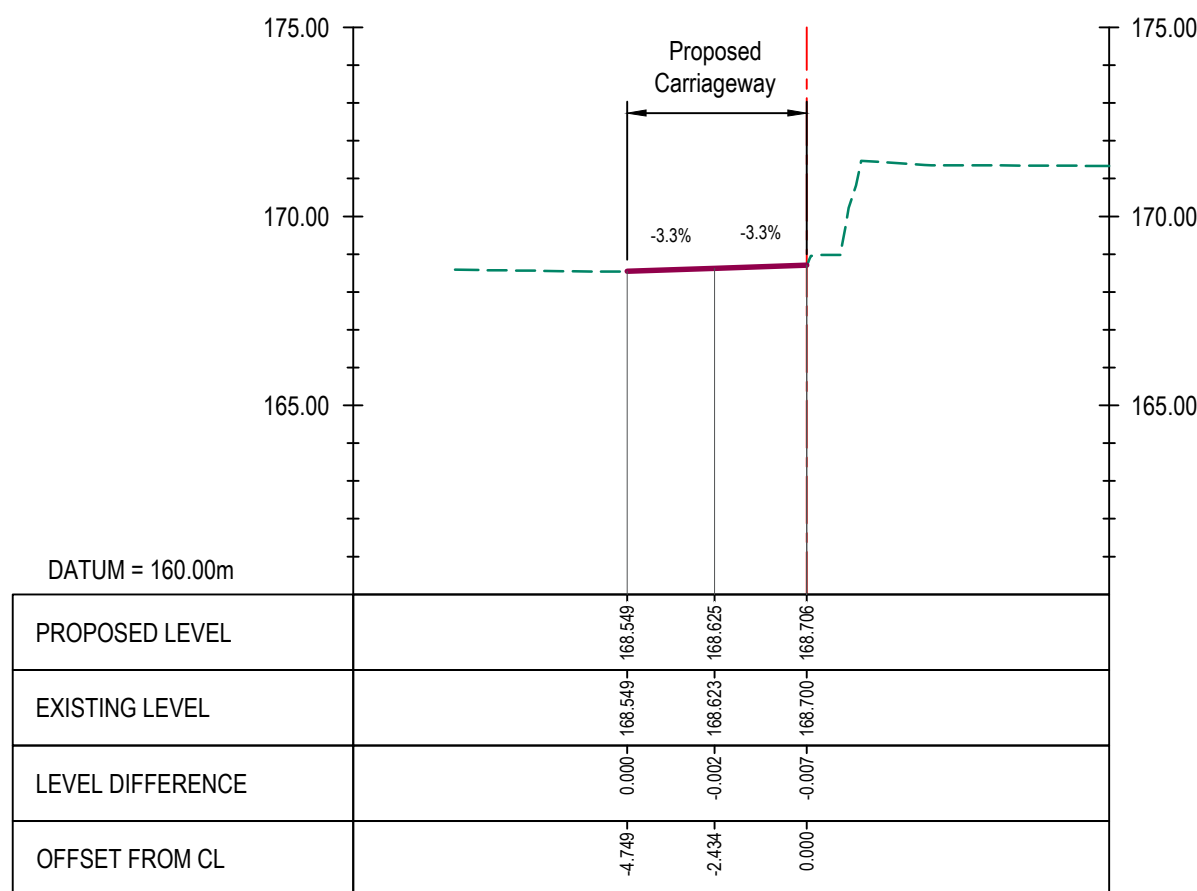
CH 40.000
SCALE 1:200



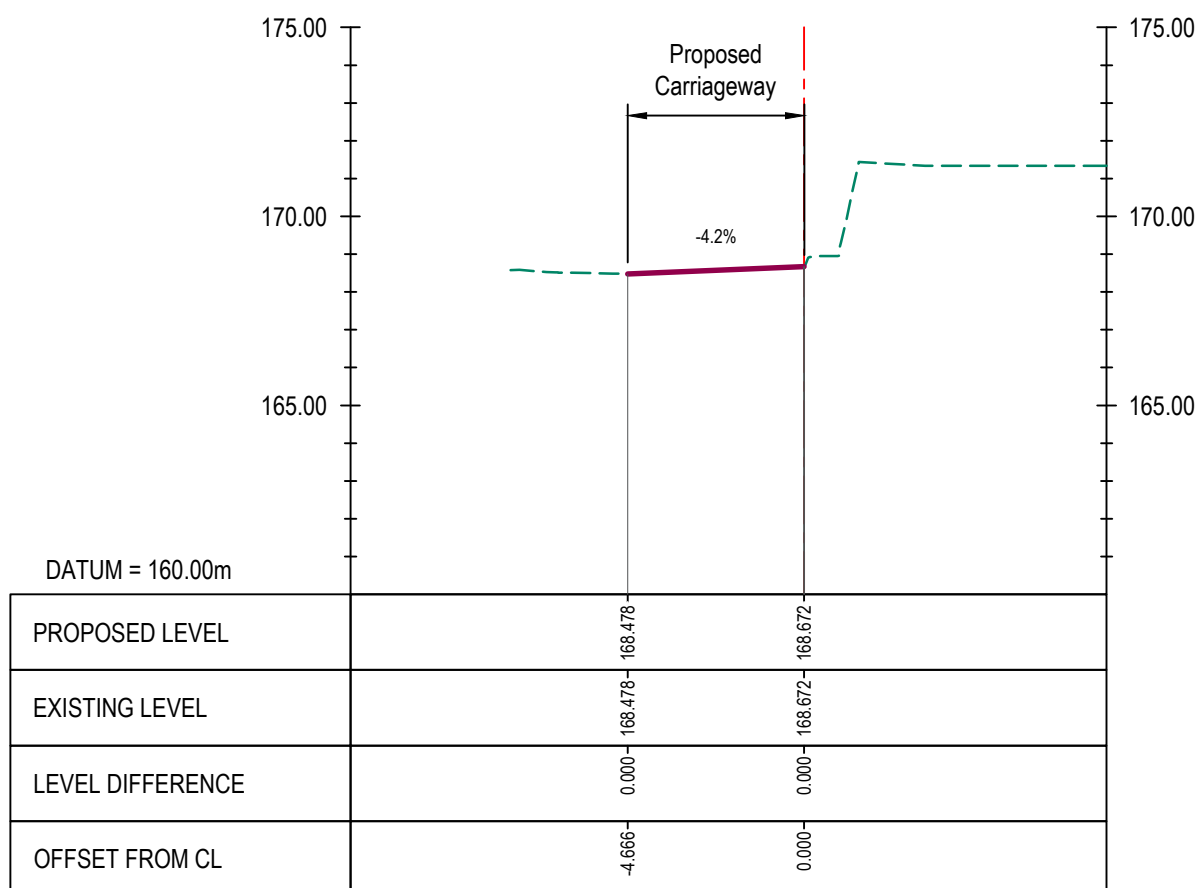
CH 45.000
SCALE 1:200



CH 50.000
SCALE 1:200



CH 55.000
SCALE 1:200



CH 60.000
SCALE 1:200

Notes:

- Do not scale from this drawing.
- This drawing is only to be used for the specific purpose stated in the title.
- For cross sections location plan refer to drawing 70120884-RED-61-XX-DR-C-00103.
- For the public realm cross sections refer to drawings 70120884-RED-61-XX-DR-C-0105 & 70120884-RED-61-XX-DR-C-0106.

Key:

- Alignment MC01
- Proposed Access Road
- Proposed Public Realm
- Existing Ground

P02	MH	CCR	CCR	Walls updated	23/11/2024
P01	MH	CCR	CCR	First Issue	11/11/2024
Rev	Drawn	Checked	Approved	Description	Date

Purpose of Issue

S2 - Issued For Information

Classification

Public

Client

Merthyr Tydfil
County Borough Council

Project

Merthyr Tydfil Interchange Link

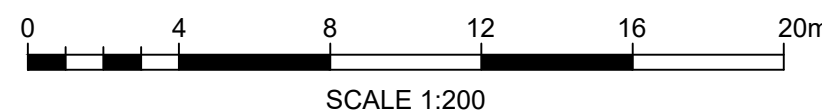
Drawing

Masonic Street
Cross Section

Scale @ A1	Drawn	Checked	Approved
1:200	GPL	MH	CCR

Project No.	Date
70120884	November 2024

Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
70120884-RED-61-XX-DR-C-0104	P02



SCALE 1:200

- Notes:
- Do not scale from this drawing.
 - This drawing is only to be used for the specific purpose stated in the title.
 - For cross sections refer to drawing 70120884-RED-61-XX-DR-C-0106.

- Key:
- Alignment MC02
 - Major contours at interval of 0.25m
 - Minor contours at interval of 0.05m
 - Cross Section Location
 - Proposed wall

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

- 1. Stability of existing buildings during excavation, contractor should not exceed 5m working bays
- 2. Shallow services in vicinity of proposed works, contractor to take extra care when excavating

For further details refer to the T446 Design Risk Management Schedule. IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE TO AN APPROVED METHOD STATEMENT.

© Crown copyright and database rights 2016 Ordnance Survey 1000025302
© Hawlfraint y Goron a hawliau cronfa ddata 2016 Arolwg Ordnans 1000025302

P02	MH	CCR	CCR	Walls updated	22/11/2024
P01	MH	CCR	CCR	First Issue	11/11/2024
Rev	Drawn	Checked	Approved	Description	Date

Purpose of Issue

S2 - Issued For Information

Classification

Public

Client

**Merthyr Tydfil
County Borough Council**

Project

Merthyr Tydfil Interchange Link

Drawing

**Public Realm
Cross-Section
Location Plan**

Scale @ A1	Drawn	Checked	Approved
1:200	GPL	MH	CCR

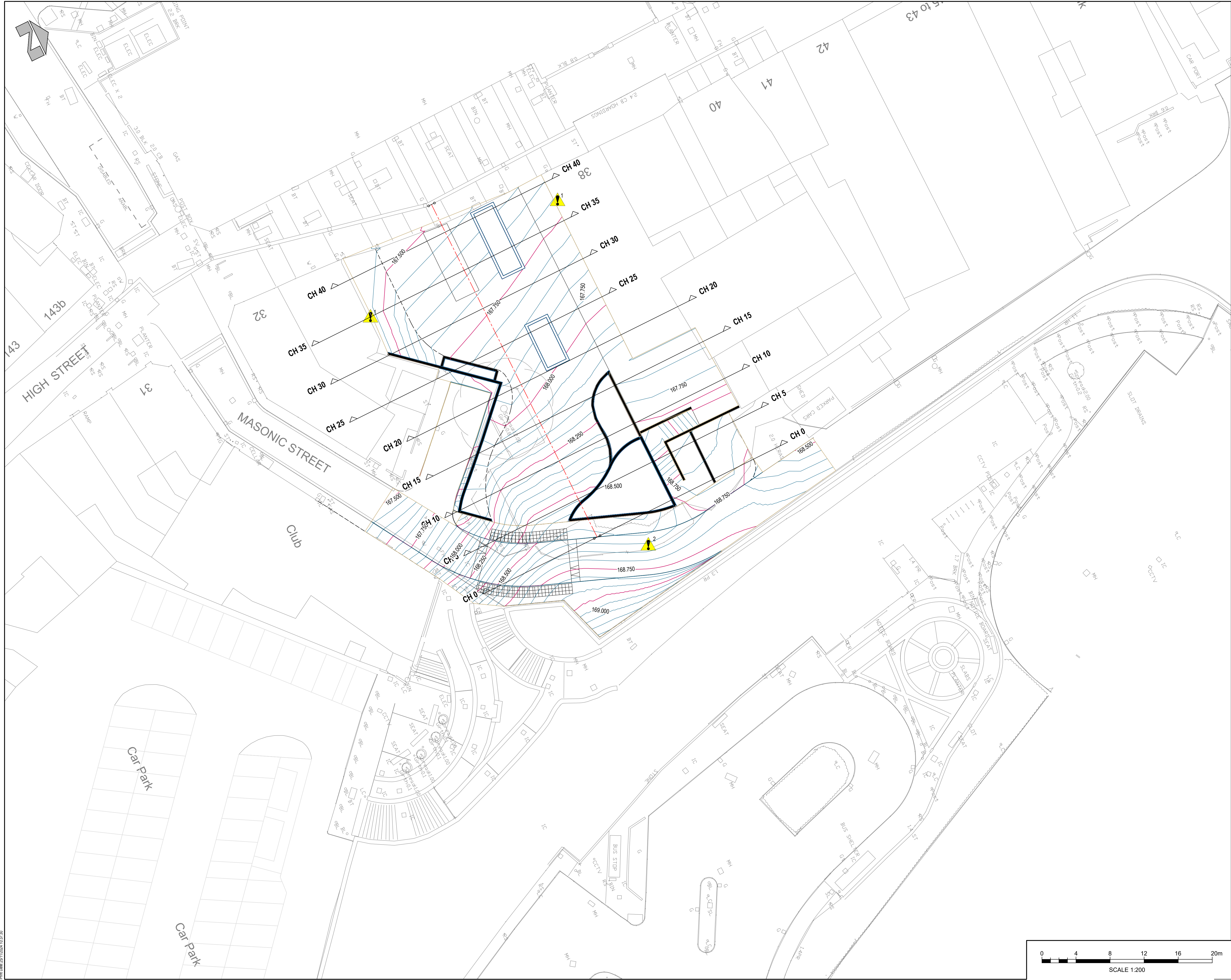
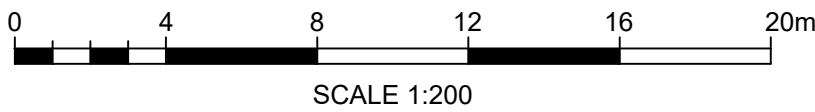
Project No.	Date
70120884	November 2024

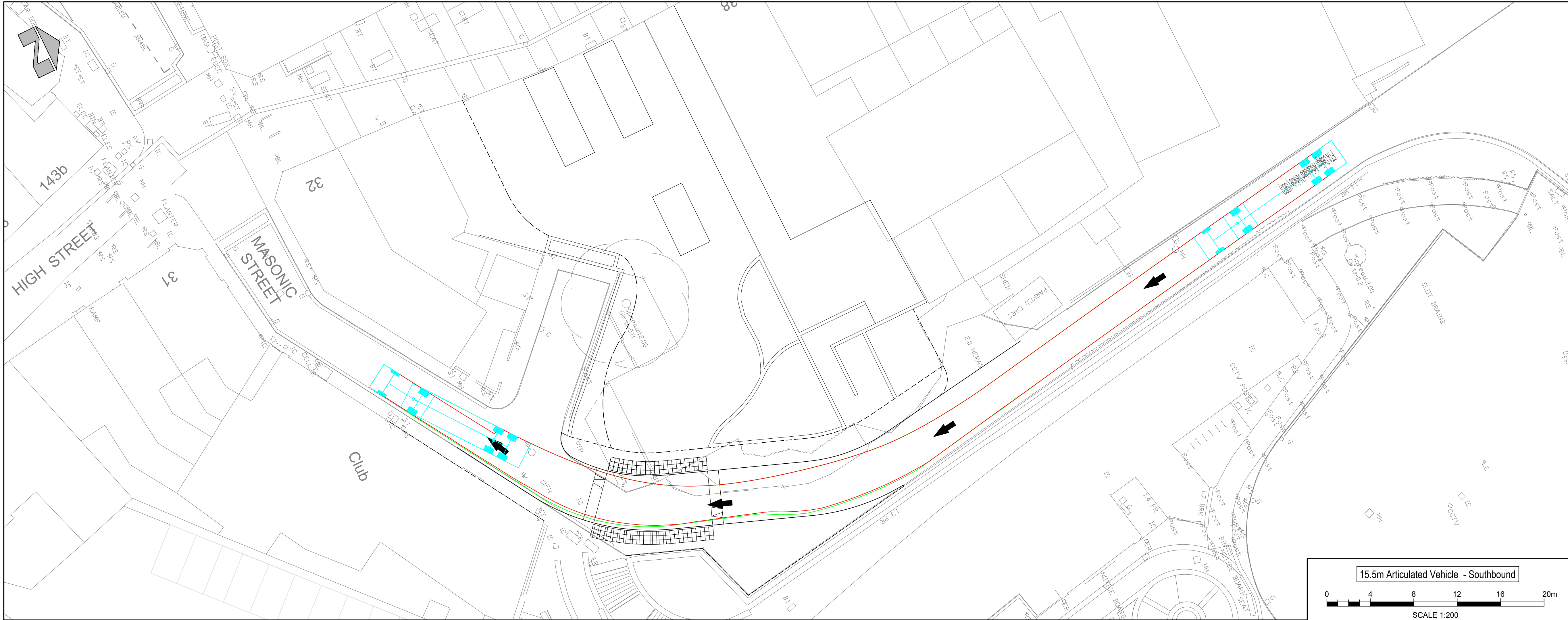
Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	revision
70120884-RED-61-XX-DR-C-0105	P02



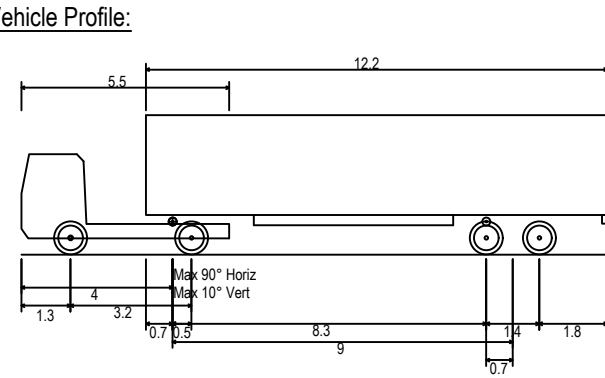
REDSTART

Quest House, St Mellons Business Park, Fortran Road,
St Mellons, Cardiff, CF3 0EY
www.redstartwales.com



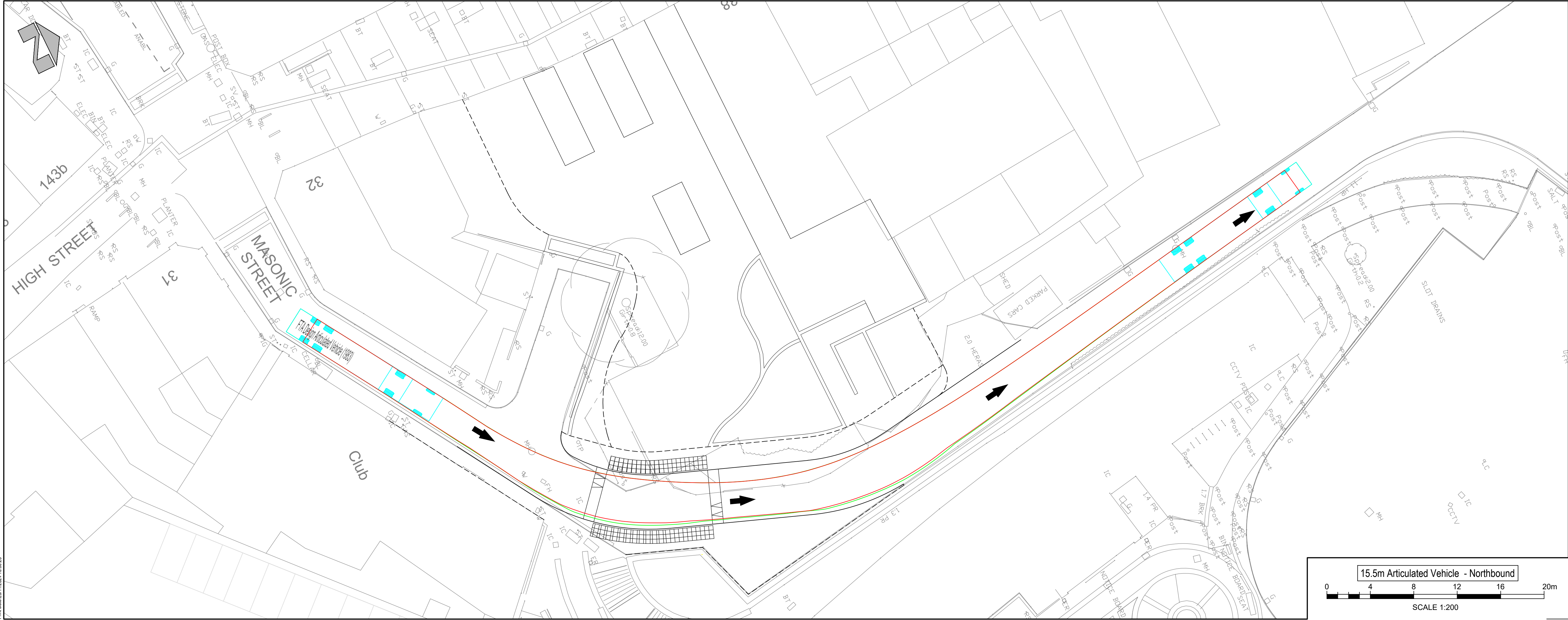


- Notes:
1. Do not scale from this drawing.
 2. This drawing is only to be used for the specific purpose stated in the title.



FTA Design Articulated Vehicle (1983)

Overall Length	15.500m
Overall Width	2.500m
Overall Body Height	3.695m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	6.750m



© Crown copyright and database rights 2016 Ordnance Survey 1000025302
© Hawlfraint y Goron a hawliau cronfa ddata 2016 Arolwg Ordnans 1000025302

P01	MH	CCR	CCR	First Issue	11/11/2024
Rev	Drawn	Chkd	Appd	Description	Date

Purpose of Issue

S2 - Issued For Information

Classification

Public

Client

**Merthyr Tydfil
County Borough Council**

Project

Merthyr Tydfil Interchange Link

Drawing

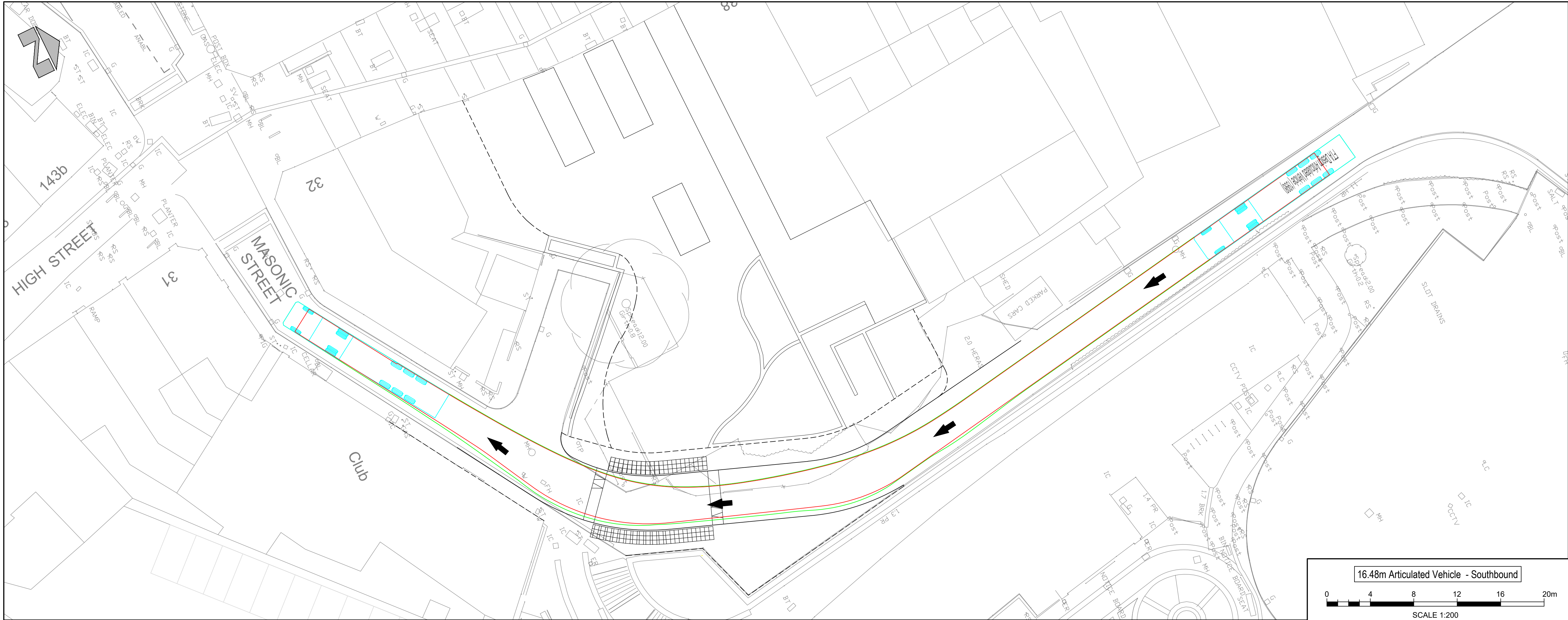
**Masonic Street
Swept Path Analysis
15.5m Articulated Vehicle**

Scale @ A1	Drawn	Checked	Approved
1:200	GPL	MH	CCR

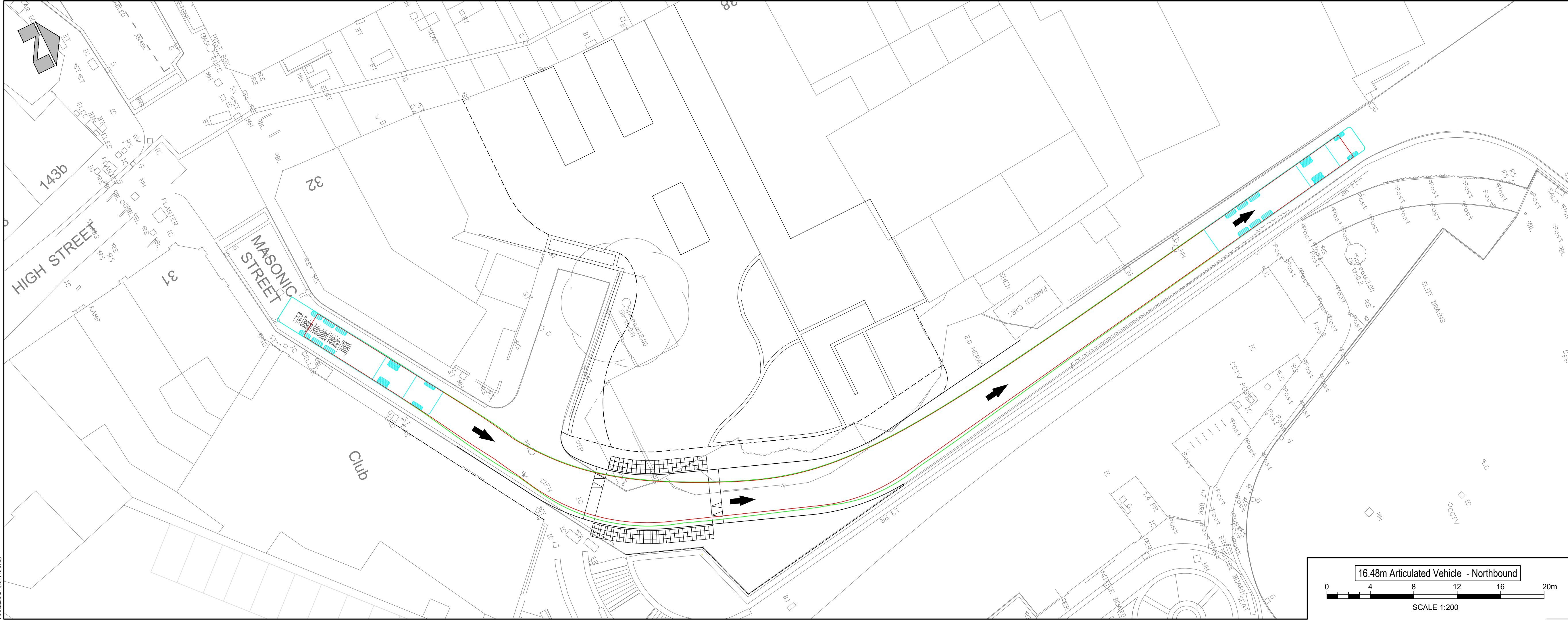
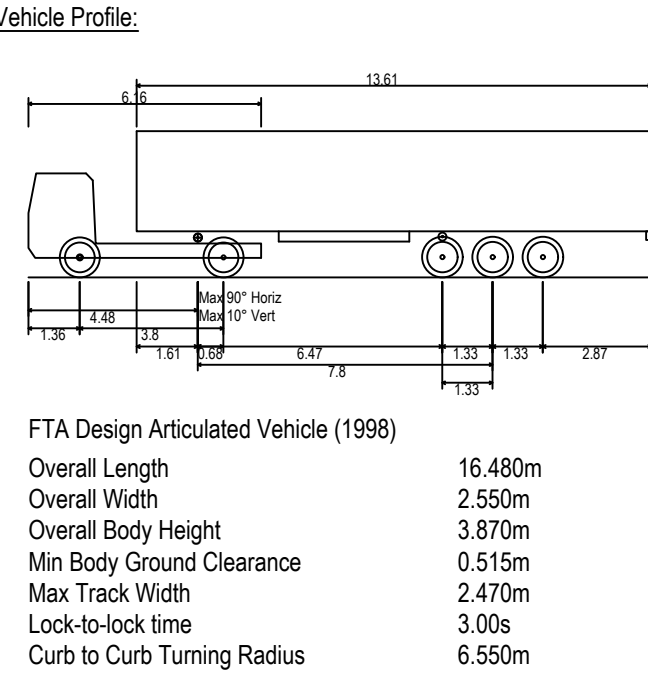
Project No.	Date
70120884	November 2024

Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
70120884-RED-61-XX-DR-C-0107	P01





- Notes:
1. Do not scale from this drawing.
 2. This drawing is only to be used for the specific purpose stated in the title.



© Crown copyright and database rights 2016 Ordnance Survey 1000025302
© Hawlfraint y Goron a hawliau cronfa ddata 2016 Arolwg Ordnans 1000025302

P01	MH	CCR	CCR	First Issue	11/11/2024
Rev	Drawn	Chkd	Appd	Description	Date

Purpose of Issue

S2 - Issued For Information

Classification

Public

Client

**Merthyr Tydfil
County Borough Council**

Project

Merthyr Tydfil Interchange Link

Drawing

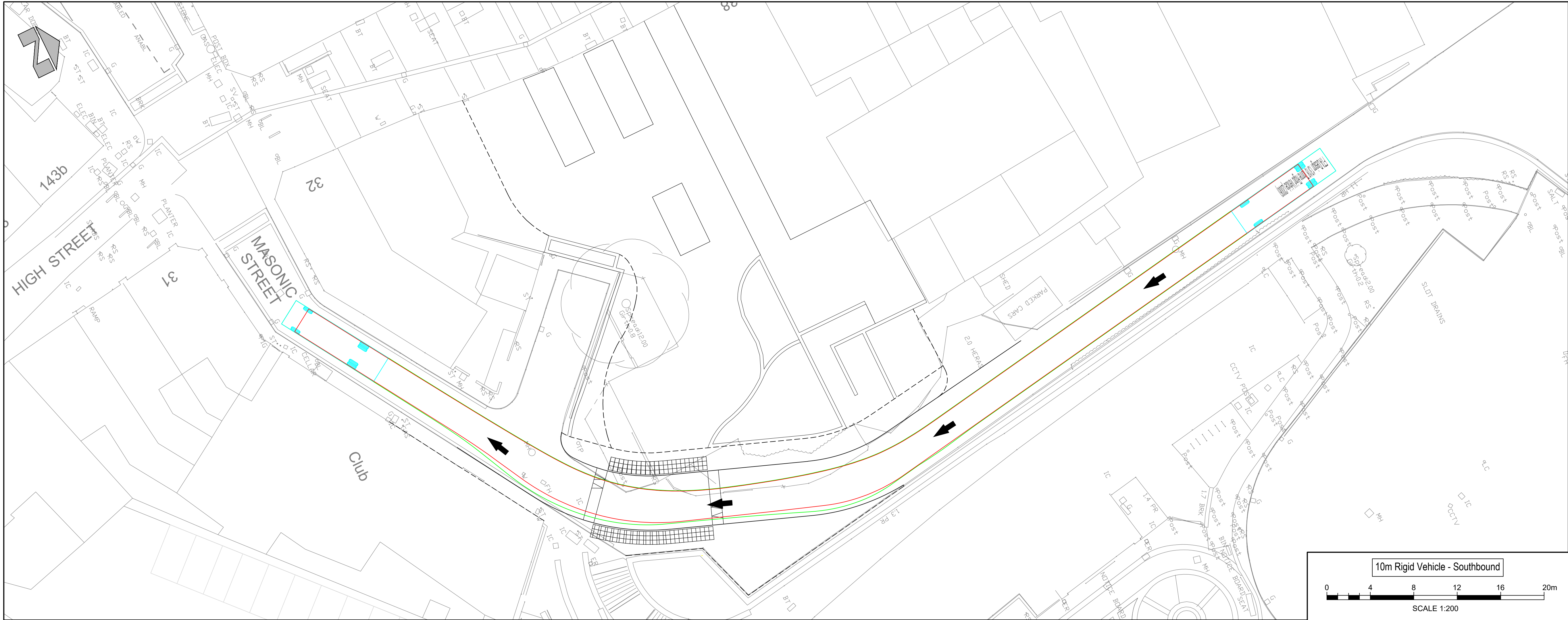
**Masonic Street
Swept Path Analysis
16.48m Articulated Vehicle**

Scale @ A1	Drawn	Checked	Approved
1:200	GPL	MH	CCR

Project No.	Date
70120884	November 2024

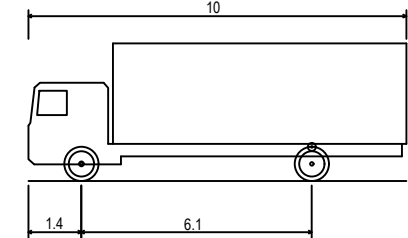
Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
70120884-RED-61-XX-DR-C-0108	P01





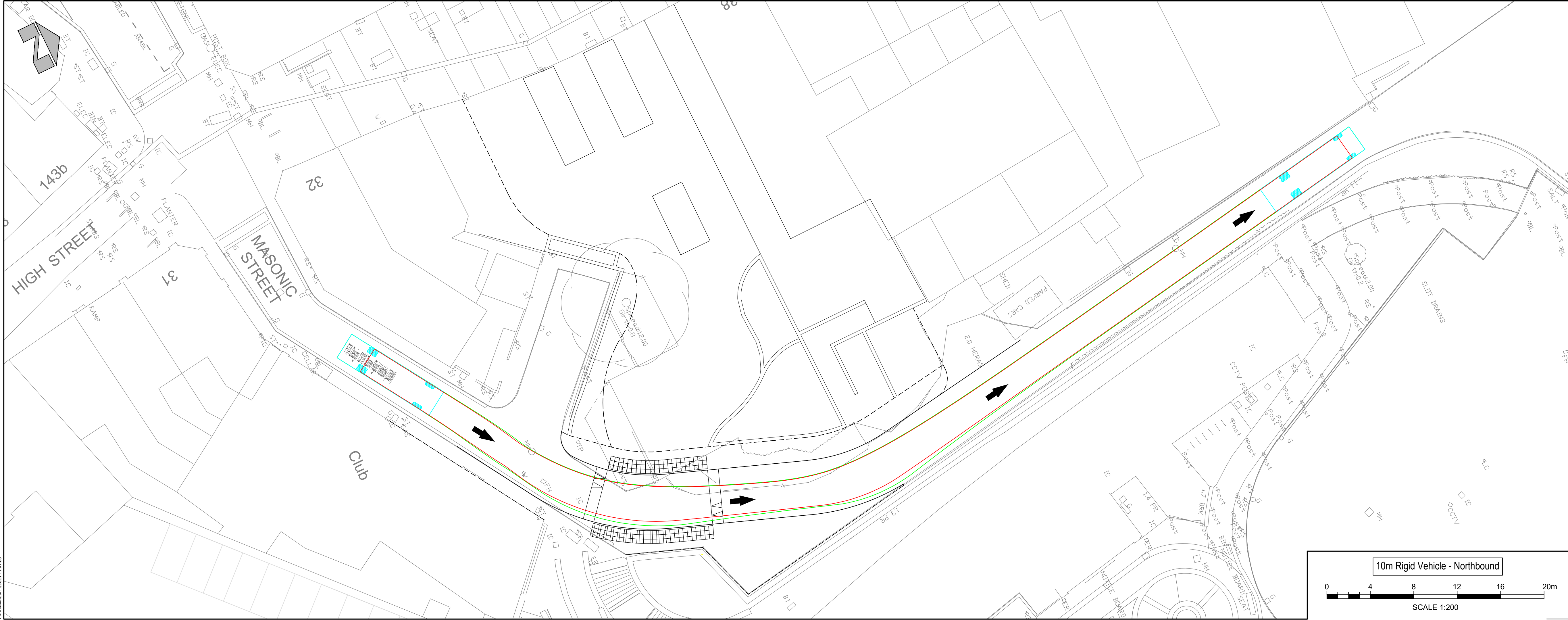
- Notes:
- Do not scale from this drawing.
 - This drawing is only to be used for the specific purpose stated in the title.

Vehicle Profile:



FTA Design 13/18 Tonne Rigid Vehicle (2006)

Overall Length	10.000m
Overall Width	2.550m
Overall Body Height	3.645m
Min Body Ground Clearance	0.440m
Track Width	2.470m
Lock-to-lock time	3.00s
Curb to Curb Turning Radius	11.000m



© Crown copyright and database rights 2016 Ordnance Survey 1000025302
© Hawflraint y Goron a hawliau cronfa ddata 2016 Arolwg Ordnans 1000025302

P01	MH	CCR	CCR	First Issue	11/11/2024
Rev	Drawn	Chk'd	App'd	Description	Date

Purpose of Issue

S2 - Issued For Information

Classification

Public

Client

**Merthyr Tydfil
County Borough Council**

Project

Merthyr Tydfil Interchange Link

Drawing

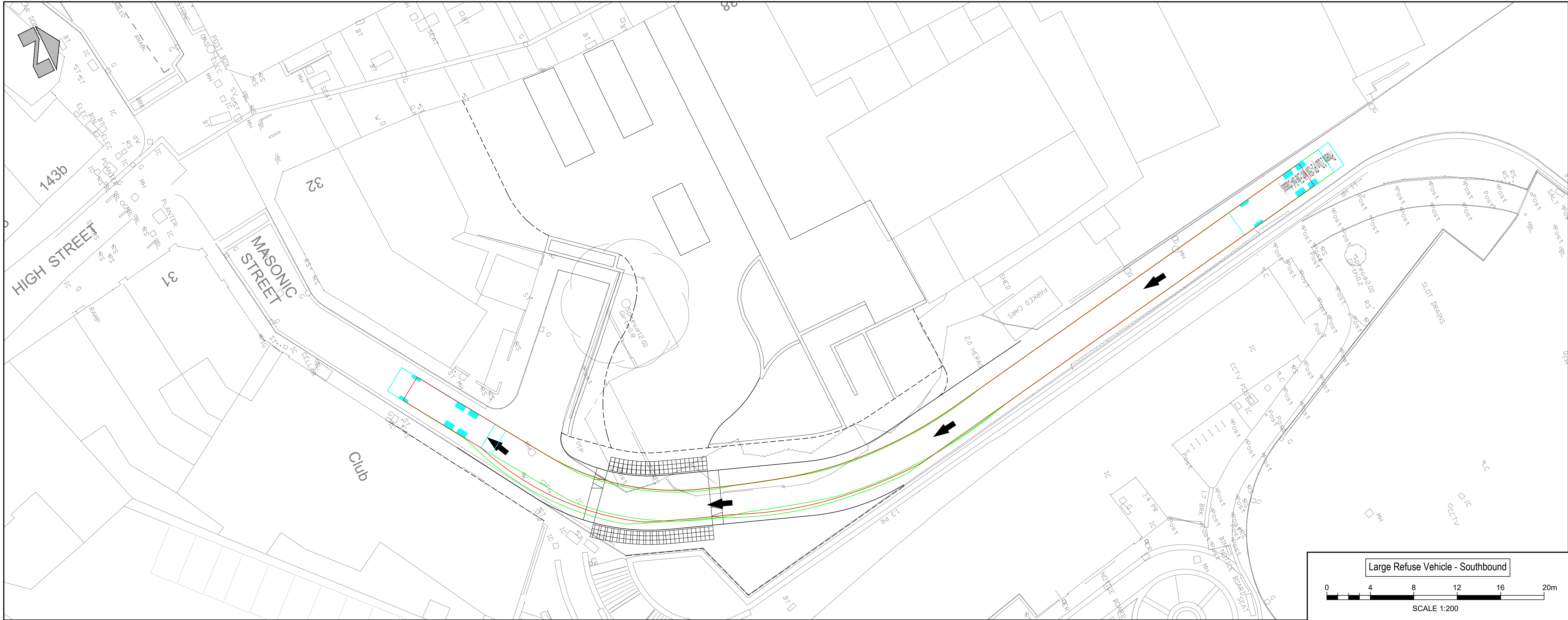
**Masonic Street
Swept Path Analysis
10m Rigid Vehicle**

Scale @ A1	Drawn	Checked	Approved
1:200	GPL	MH	CCR

Project No.	Date
70120884	November 2024

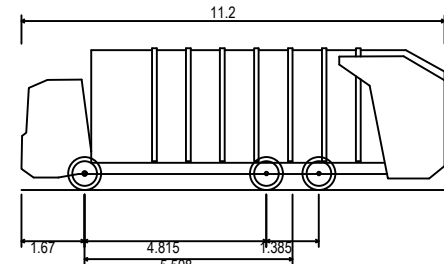
Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
70120884-RED-61-XX-DR-C-0109	P01





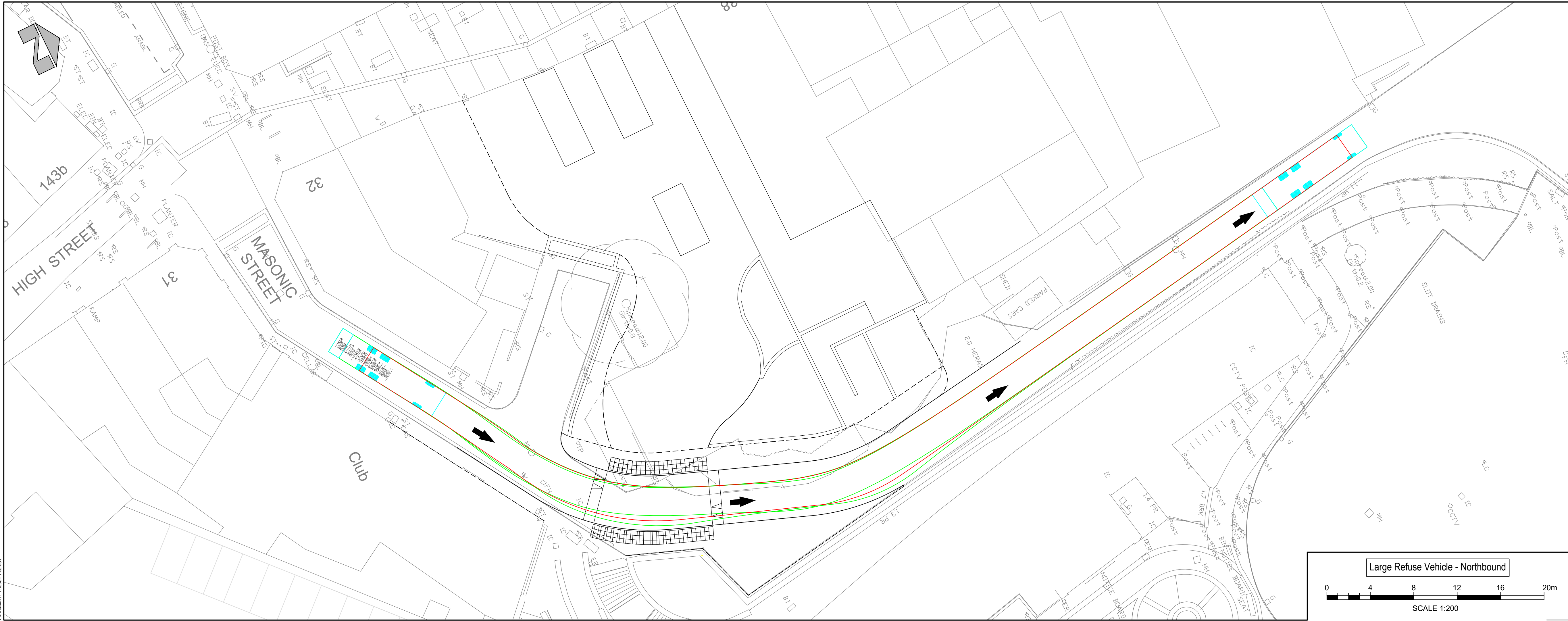
- Notes:
- Do not scale from this drawing.
 - This drawing is only to be used for the specific purpose stated in the title.

Vehicle Profile:



Phoenix 2 Duo (P2-15W with Elite 6x4 chassis)
Overall Length 11.200m
Overall Width 2.530m
Overall Body Height 3.751m
Min Body Ground Clearance 0.304m
Track Width 2.500m
Lock-to-lock time 4.00s
Curb to Curb Turning Radius 9.500m

Large Refuse Vehicle - Southbound
0 4 8 12 16 20m
SCALE 1:200



© Crown copyright and database rights 2016 Ordnance Survey 1000025302
© Hawlfraint y Goron a hawliau cronfa ddata 2016 Arolwg Ordnans 1000025302

Rev	Drawn	Chkd	App'd	Description	Date
-----	-------	------	-------	-------------	------

Purpose of Issue

S2 - Issued For Information

Classification

Confidential

Client

Merthyr Tydfil
County Borough Council

Project

Merthyr Tydfil Interchange Link

Drawing

Masonic Street

Swept Path Analysis

Large Refuse Vehicle

Scale @ A1 Drawn Checked Approved
1:200 GPL MH CCR

Project No. Date
70120884 November 2024

Drawing Identifier

Project - Originator - Zone - Level - File Type - Role - Number
70120884-RED-61-XX-DR-C-0110 P01

ISO19650 Compliant

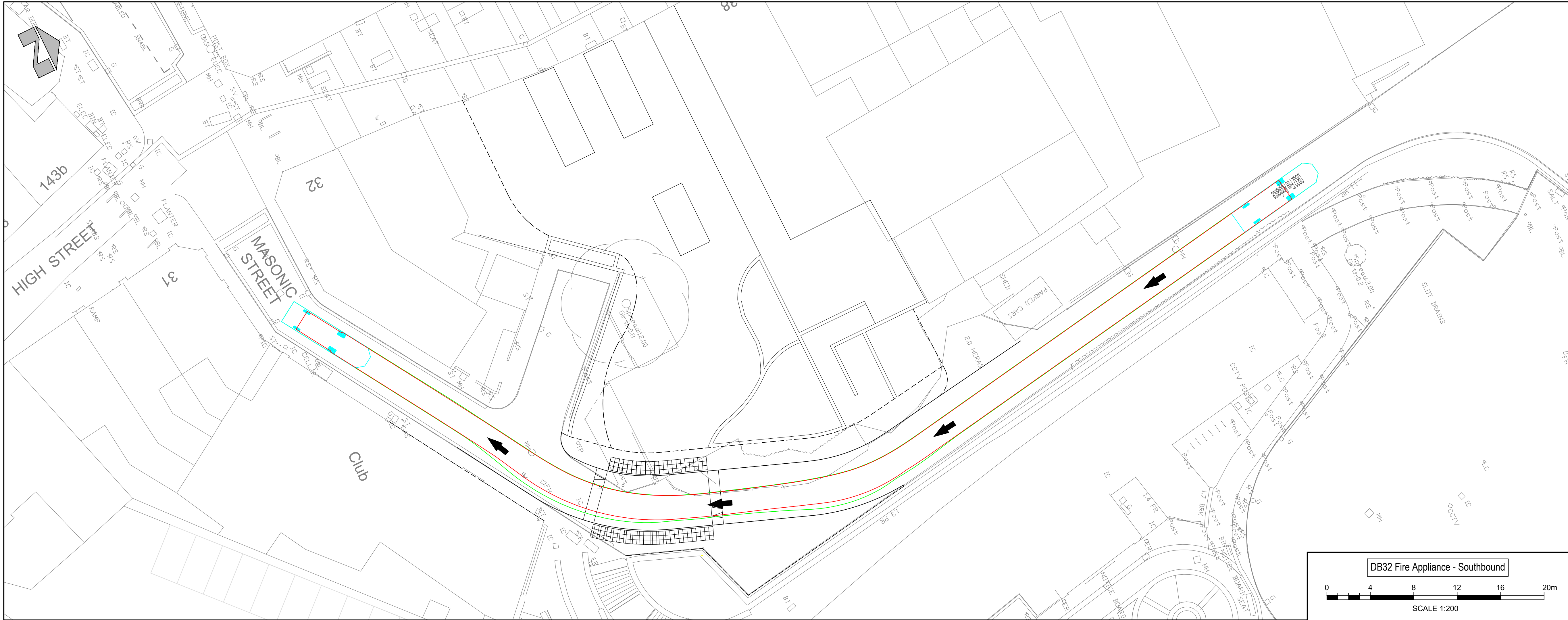
revision

REDSTART

Quest House, St Mellons Business Park, Fortran Road,
St Mellons, Cardiff, CF3 0EY

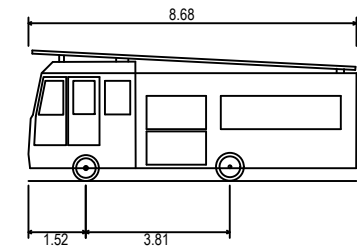
www.redstartwales.com

Large Refuse Vehicle - Northbound
0 4 8 12 16 20m
SCALE 1:200



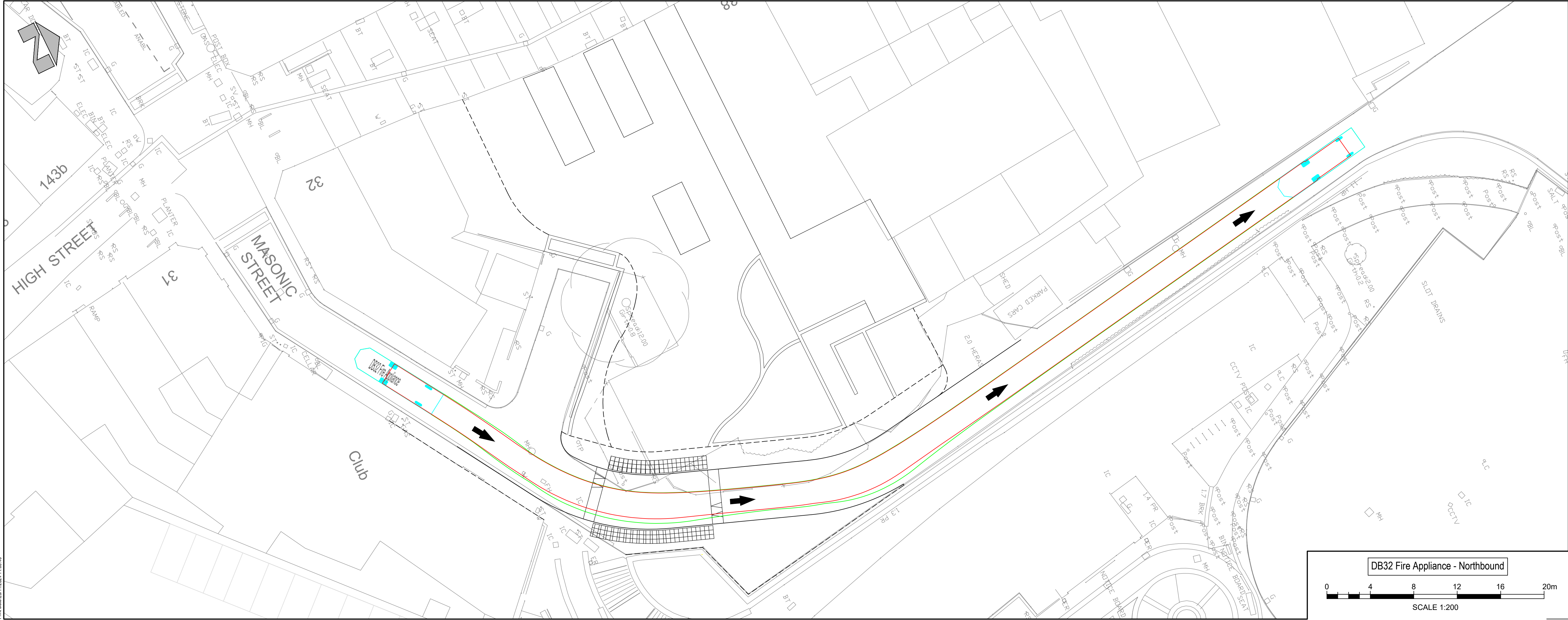
- Notes:
1. Do not scale from this drawing.
 2. This drawing is only to be used for the specific purpose stated in the title.

Vehicle Profile:



DB32 Fire Appliance

Overall Length	8.680m
Overall Width	2.180m
Overall Body Height	3.452m
Min Body Ground Clearance	0.337m
Max Track Width	2.121m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	7.910m



© Crown copyright and database rights 2016 Ordnance Survey 1000025302
© Hawflraint y Goron a hawliau cronfa ddata 2016 Arolwg Ordans 1000025302

P01	MH	CCR	CCR	First Issue	11/11/2024
Rev	Drawn	Checked	Approved	Description	Date

Purpose of Issue

S2 - Issued For Information

Classification

Public

Client

**Merthyr Tydfil
County Borough Council**

Project

Merthyr Tydfil Interchange Link

Drawing

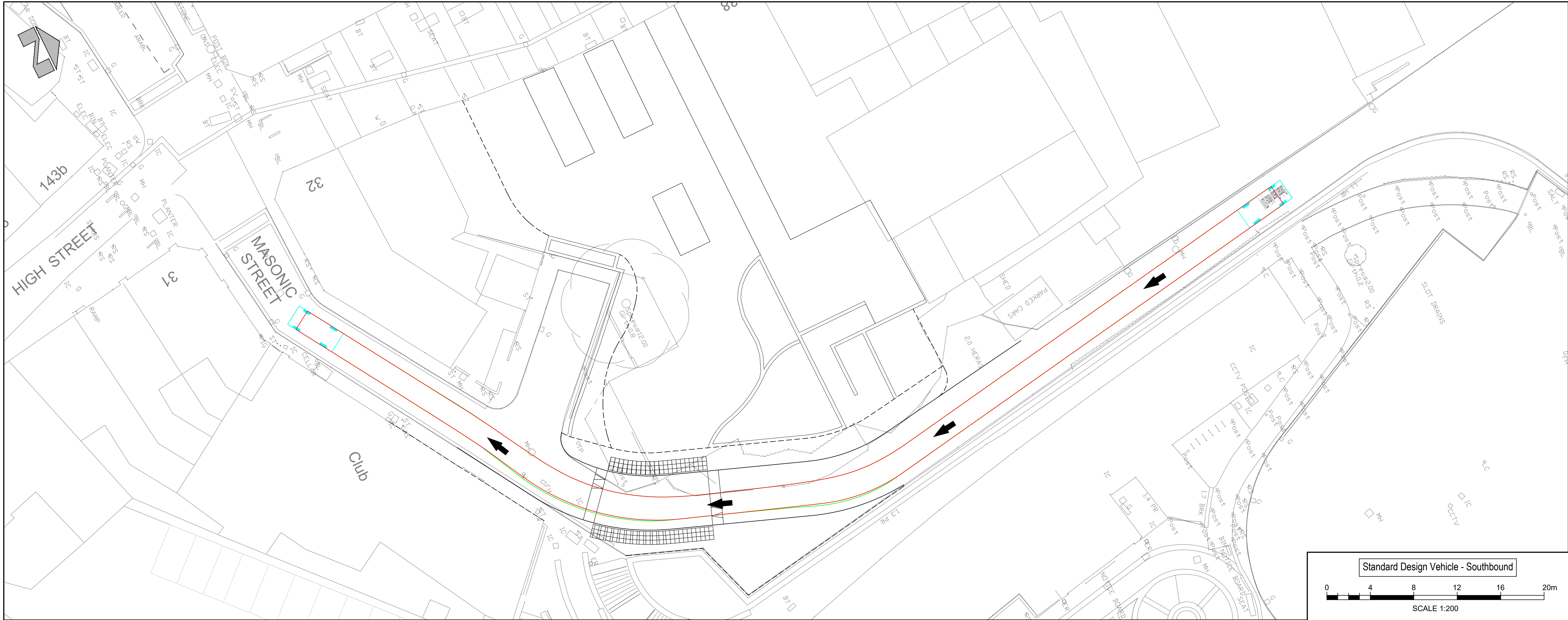
**Masonic Street
Swept Path Analysis
DB32 Fire Appliance**

Scale @ A1	Drawn	Checked	Approved
1:200	GPL	MH	CCR

Project No.	Date
70120884	November 2024

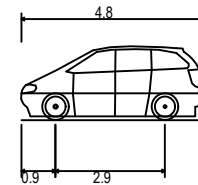
Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
70120884-RED-61-XX-DR-C-0111	P01





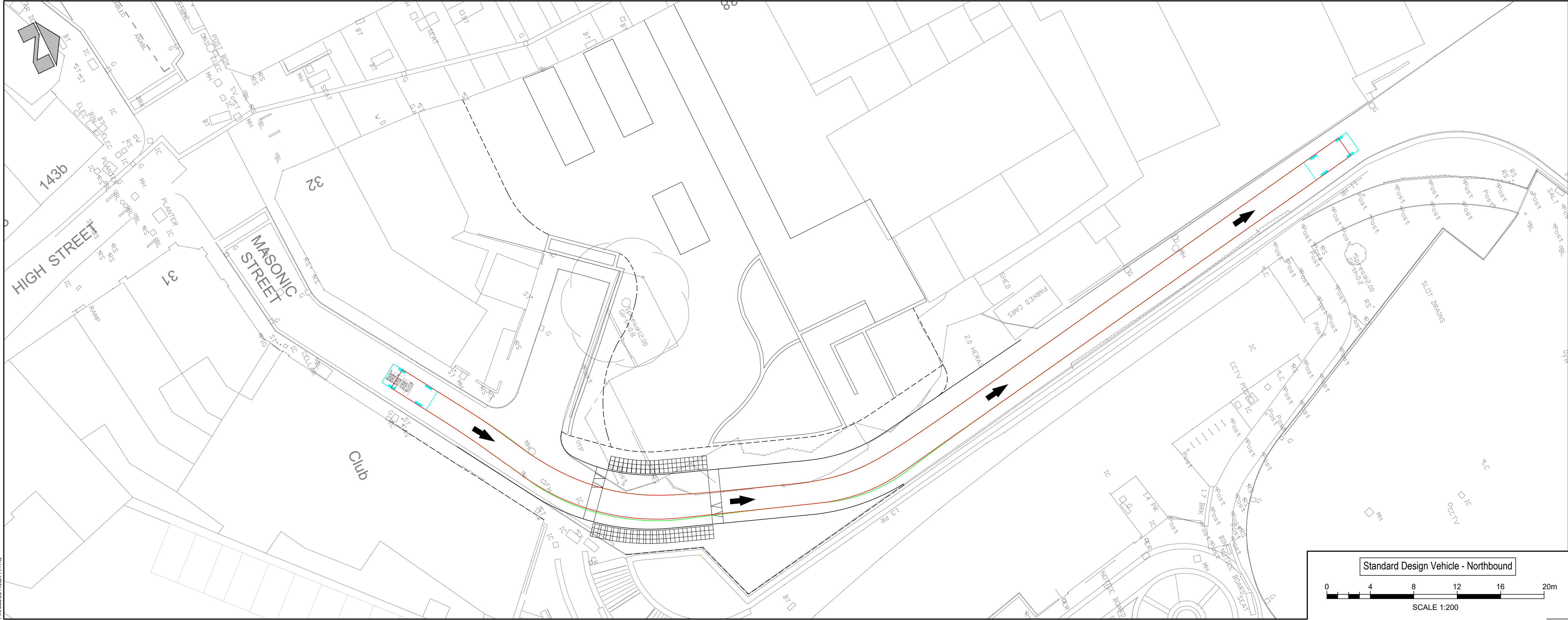
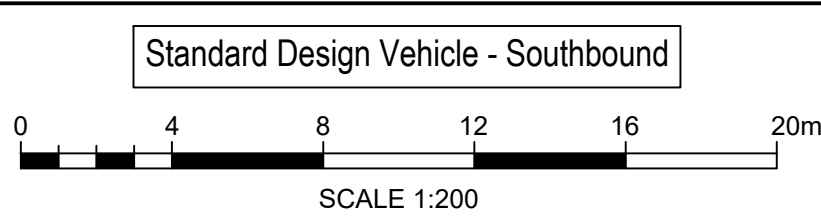
- Notes:
1. Do not scale from this drawing.
 2. This drawing is only to be used for the specific purpose stated in the title.

Vehicle Profile:



Standard Design Vehicle (SDV)

Overall Length	4.800m
Overall Width	2.000m
Overall Body Height	1.950m
Min Body Ground Clearance	0.100m
Track Width	2.000m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	6.000m



© Crown copyright and database rights 2016 Ordnance Survey 1000025302
© Hawflrant y Goron a hawliau cronfa ddata 2016 Arolwg Ordans 1000025302

P01	MH	CCR	CCR	First Issue	11/11/2024
Rev	Drawn	Checked	Approved	Description	Date

Purpose of Issue

S2 - Issued For Information

Classification

Public

Client

**Merthyr Tydfil
County Borough Council**

Project

Merthyr Tydfil Interchange Link

Drawing

**Masonic Street
Swept Path Analysis
Standard Design Vehicle**

Scale @ A1	Drawn	Checked	Approved
1:200	GPL	MH	CCR

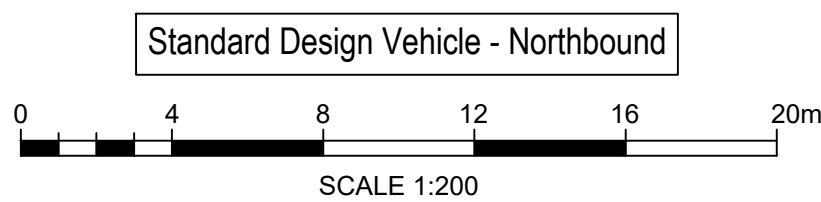
Project No.	Date
70120884	November 2024

Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
70120884-RED-61-XX-DR-C-0112	P01

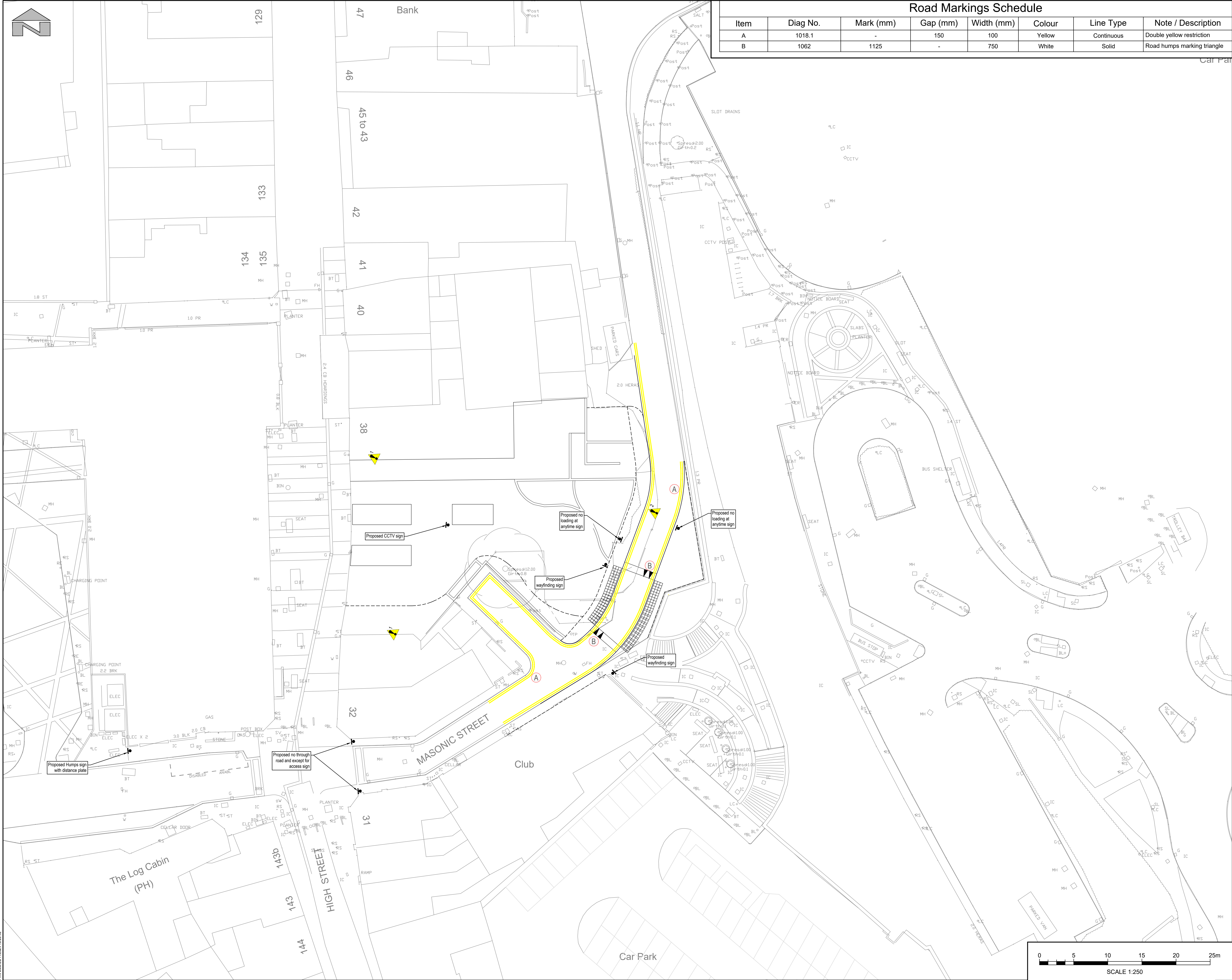


REDSTART

Quest House, St Mellons Business Park, Fortran Road,
St Mellons, Cardiff, CF3 0EY
www.redstartwales.com







Road Markings Schedule							
Item	Diag No.	Mark (mm)	Gap (mm)	Width (mm)	Colour	Line Type	Note / Description
A	1018.1	-	150	100	Yellow	Continuous	Double yellow restriction
B	1062	1125	-	750	White	Solid	Road humps marking triangle

- Notes:
- Do not scale from this drawing.
 - This drawing is only to be used for the specific purpose stated in the title.
 - All dimensions are in meters unless otherwise specified.
 - All traffic signs & road markings shall be in accordance with the Traffic Signs Regulations & General Directions.
 - Road markings shall be of thermoplastic material and may be screed or spray applied.
 - Road markings shall have a skid resistance level of not less than 55 SRV as specified in BS EN 1436 (Table 8 Class S3).
 - All road markings shall be reflectorised by the incorporation of solid glass beads within the mixture and the application of surface applied glass beads unless otherwise indicated.
 - Cold plastic methyl methacrylate paint (MMA) shall be used for the application of all road markings on natural stone or concrete. Prior to application the stone shall be sealed using a protective wear coat barrier as Prismo seal efficient (A1941M) or similar approved.
 - All new road markings to tie into existing.
 - Redundant or conflicting road markings to be removed. All removal of road markings affected by the proposals but not removed under surfacing operations shall be removed via hydroblast method.

- Key:
- New Road Markings Reference
 - Proposed sign

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

1. Stability of existing buildings during excavation, contractor should not exceed 5m working bays

2. Shallow services in vicinity of proposed works, contractor to take extra care when excavating

For further details refer to the T446 Design Risk Management Schedule.

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

© Crown copyright and database rights 2016 Ordnance Survey 1000025302
© Hawtreafrant y Goron a hawliau cronfa ddata 2016 Arolwg Ordans 1000025302

P01	MH	CCR	CCR	First Issue	11/11/2024
Rev	Drawn	Checked	Approved	Description	Date

Purpose of Issue

S2 - Issued For Information

Classification

Public

Client

**Merthyr Tydfil
County Borough Council**

Project

Merthyr Tydfil Interchange Link

Drawing

Traffic Signs & Road Markings

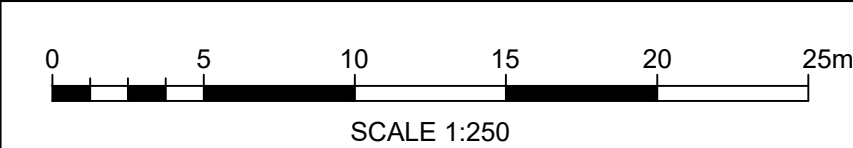
Scale @ A1	Drawn	Checked	Approved
1:250	GPL	MH	CCR

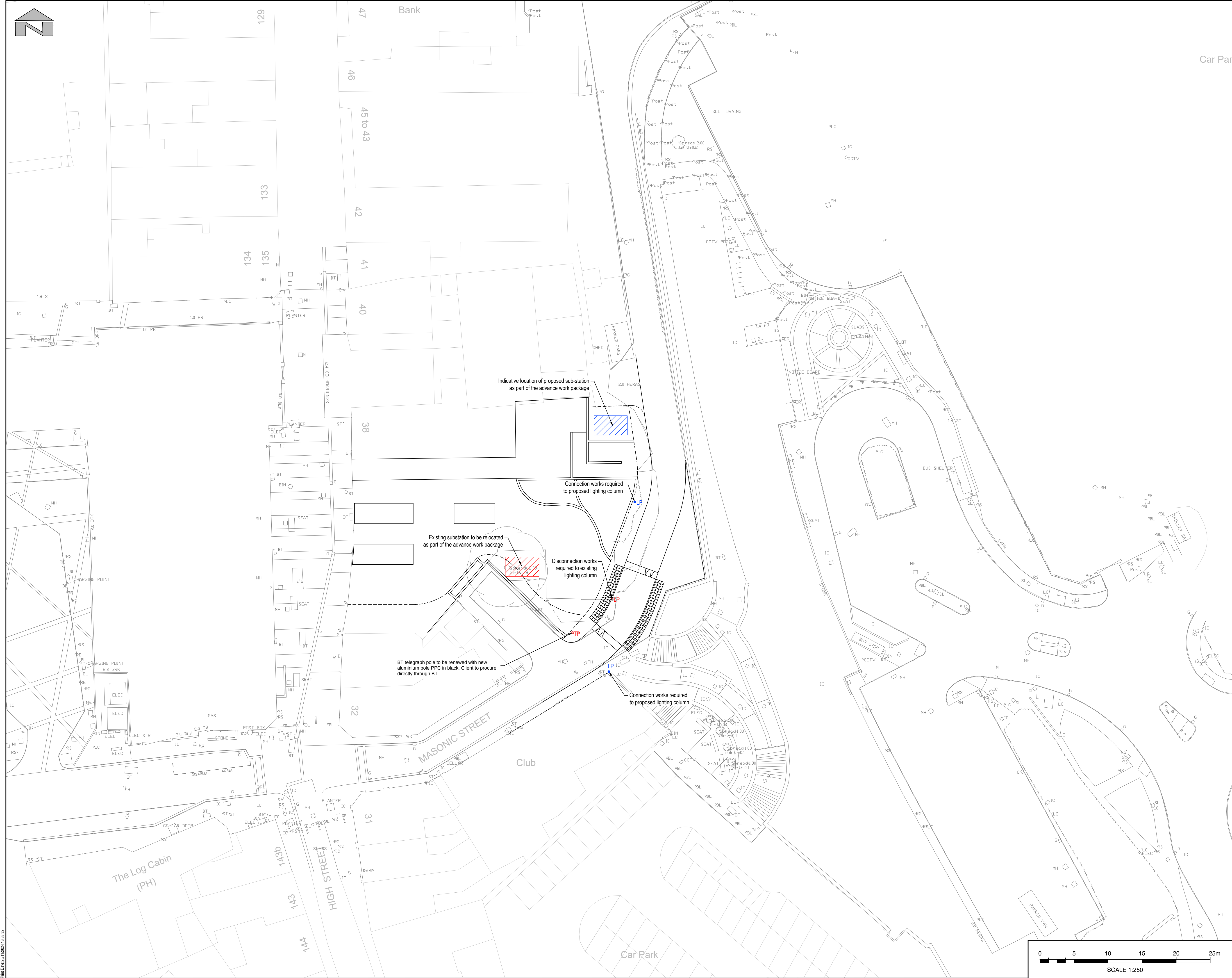
Project No.	Date
70120884	November 2024

Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
70120884-RED-61-XX-DR-C-1200	P01

REDSTART

Quest House, St Mellons Business Park, Fortran Road,
St Mellons, Cardiff, CF3 0EY
www.redstartwales.com





- Notes:
- Do not scale from this drawing.
 - This drawing is only to be used for the specific purpose stated in the title.
 - The information shown is a representational of the C2 returns from the service providers with known apparatus in the vicinity of the site. Contractor to make reference to original C2 returns within the site information.
 - It is the Contractors responsibility to locate exact position of apparatus by means necessary prior to commencing work in their vicinity, taking on board any safe working guidance from the service provider.

Key

oTP	Existing BT Telegraph Pole
LP	Existing Light pole
LP	Proposed Light pole
Blue hatched box	Proposed Sub-Station
Red hatched box	Existing Sub-Station

P01	MH	CCR	CCR	First Issue	11/11/2024
Rev	Drawn	Chkd	Appd	Description	Date
Purpose of Issue					
S2 - Issued For Information					
Classification					
Public					
Client					
Merthyr Tydfil Counrty Borough Council					
Project					
Merthyr Tydfil Interchange Link					
Drawing					
Proposed Utility Works					
Scale @ A1		Drawn	Checked	Approved	
1:250		GPL	MH	CCR	
Project No.			Date		
70120884			November 2024		
Drawing Identifier					
Project - Originator - Zone - Level - File Type - Role - Number				ISO19650 Compliant	
70120884-RED-61-XX-DR-C-2700				revision P01	


REDSTART
Quest House, St Mellons Business Park, Fortran Road,
St Mellons, Cardiff, CF3 0EY
www.redstartwales.com

5.0 Structures

5.1 Structural Engineering Rationale – Highway Structures

5.1.1 Existing Ground Conditions

During following design stage for the new interchange link project, a geotechnical investigation will be required for the site, to help inform any substructure design for the actual public space structures. Future reporting will include, but will not necessarily be limited to, existing soil parameters, allowable bearing pressures, water table levels, contamination of the soil/ground and confirm suggested foundation solutions for the retaining wall.

Following the demolition of the existing structures, a detailed geotechnical investigation will be undertaken to help inform foundation design.

5.1.2 Earthworks

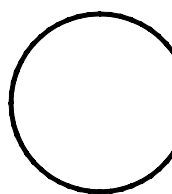
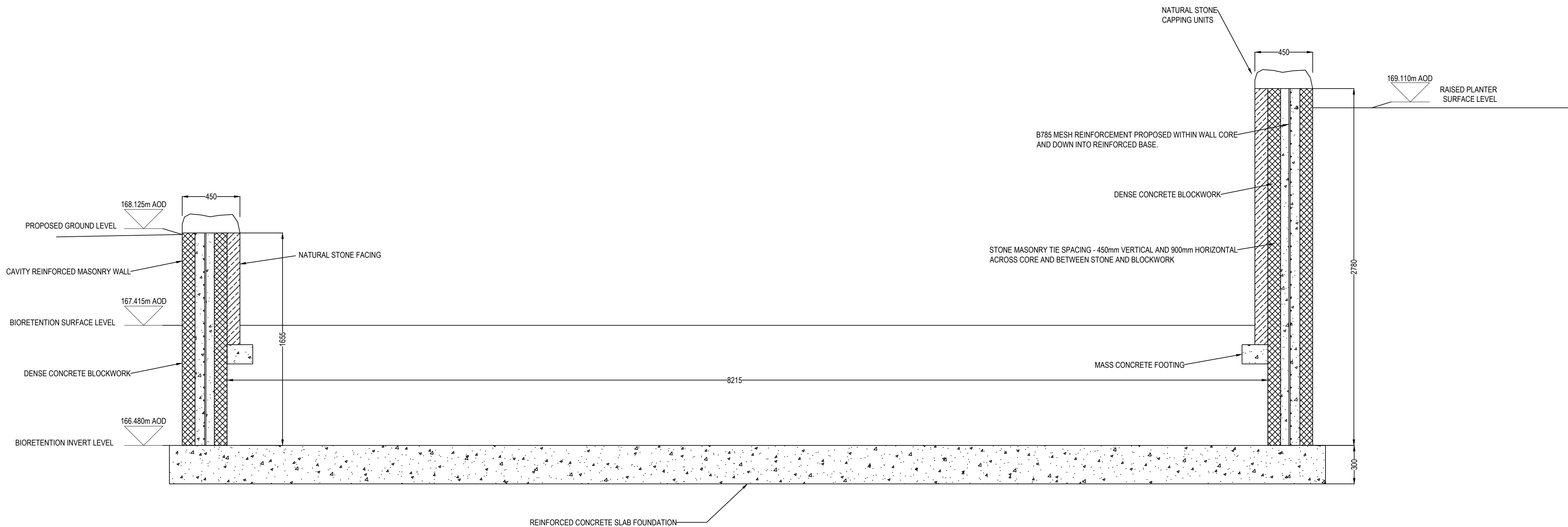
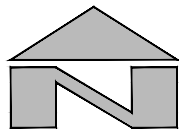
How the earthworks required to construct the retaining walls, bioretention tanks and raised planter walls influence existing structures, and the existing surrounding streets is set out below:

- Excavation for the southern bioretention area will be in close proximity to yard walls at the rear of the Sunflower Café. It will be necessary to demolish and reconstruct the walls locally to allow the construction of the bioretention area.
- Excavation for the southern boundary wall will be in close proximity to the existing turning head on Masonic Street. This will require reinstatement of the carriageway on the turning head allowing for working space to construct the wall.
- Excavation for the two rectangular raised planters will only have a limited effect on existing paving where the western edge of the western raised planter is in close proximity to High Street.
- Excavation for the walls around the curved triangular raised planter is away from the existing Masonic Street carriageway.
- Excavation for the northern bioretention area is not anticipated to affect surrounding structures or street furniture assuming that the Monique's site has been cleared.

5.1.3 Structural Form

The works incorporate the construction of relatively small retaining walls and retaining walls as part of bioretention tanks. The chosen form is to use cantilever walls constructed from a concrete masonry grouted-cavity construction with lightly reinforced concrete slab spread footings. For aesthetics, the walls are to be stone masonry faced where above ground with natural stone coping stones be used widely. Above ground it is intended to use the facing on either side of a concrete block freestanding wall. A consistent construction form has been applied to the public open space structures to aim for efficiency and quality in repetition of construction.

Due to the previous development of the site, and from information found in the previously commissioned geotechnical preliminary sources study report, it is expected that the site will be underlain by made ground. Structural fill or mass concrete fill may be required below some of the proposed structural foundations, to extend down into suitable bearing strata. Following receipt of site investigation, potential excavation requirements such as trench boxing/excavation battering can be confirmed.



North Bioretention Wall Build Ups
Scale 1:20 (Section Looking North)

NOTES

- DO NOT SCALE FROM THIS DRAWING.
- ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN MILLIMETRES ABOVE ORDNANCE DATUM
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND DOCUMENTS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

 No additional hazards / risks identified at this stage.

For further details on risks refer to the hazard logs

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

© Crown copyright and database rights Ordnance Survey 100023458
© Hawlfraint y Goron a hawliau cronfa ddata Arolwg Ordans 100023458

P02	DR	RT	RT	Amendments after architect comments	25/11/2024
P01	DR	RT	RT	For Coordination with Architects	11/11/2024
Rev	Drawn	Chkd	Appd	Description	Date

Purpose of Issue

S1 - For Coordination

Classification

Confidential

Client

Merthyr Tydfil
County Borough Council

Project

Merthyr Interchange Link

Drawing

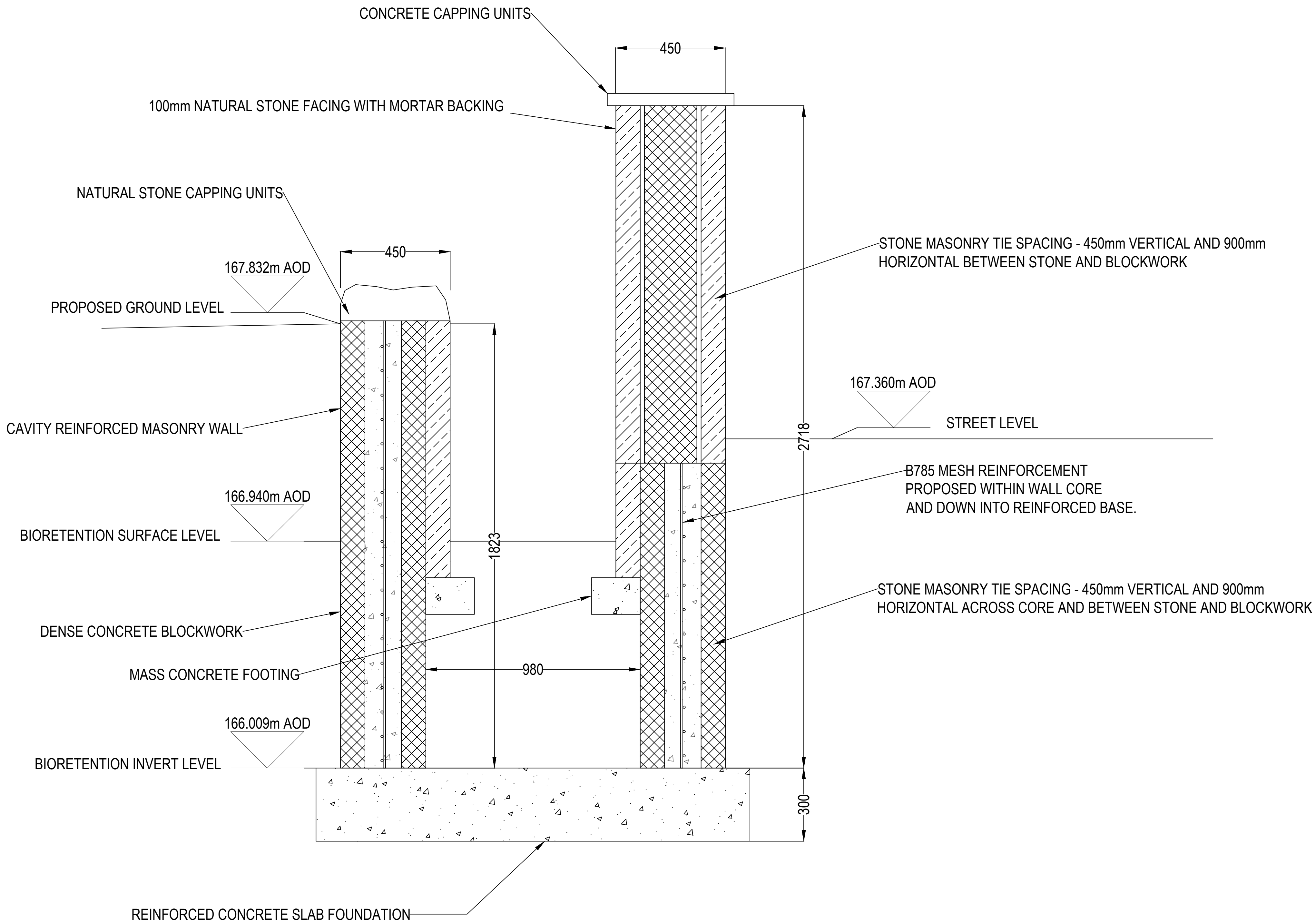
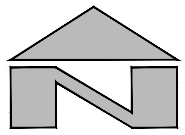
North Bioretention
Wall Build Ups

Scale @ A1	Drawn	Checked	Approved
As Shown	DR	RT	RT

Project No.	Date
70121420	November 2024

Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
MIL-RED-78-XX-SK-S-0001	P02





South Bioretention Wall Build Ups
Scale 1:10 (Section Looking North)

- NOTES
- DO NOT SCALE FROM THIS DRAWING.
 - ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN MILLIMETRES ABOVE ORDNANCE DATUM
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND DOCUMENTS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

 No additional hazards / risks identified at this stage.

For further details on risks refer to the hazard logs

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

© Crown copyright and database rights Ordnance Survey 100023458
© Hawlfraint y Goron a hawliau cronfa ddata Arolwg Ordans 100023458

P02	DR	RT	RT	Amendments after architect comments	25/11/2024
P01	DR	RT	RT	For Coordination with Architects	11/11/2024
Rev	Drawn	Checked	Approved	Description	Date

Purpose of Issue
S1 - For Coordination

Classification
Confidential

Client
**Merthyr Tydfil
County Borough Council**

Project
Merthyr Interchange Link

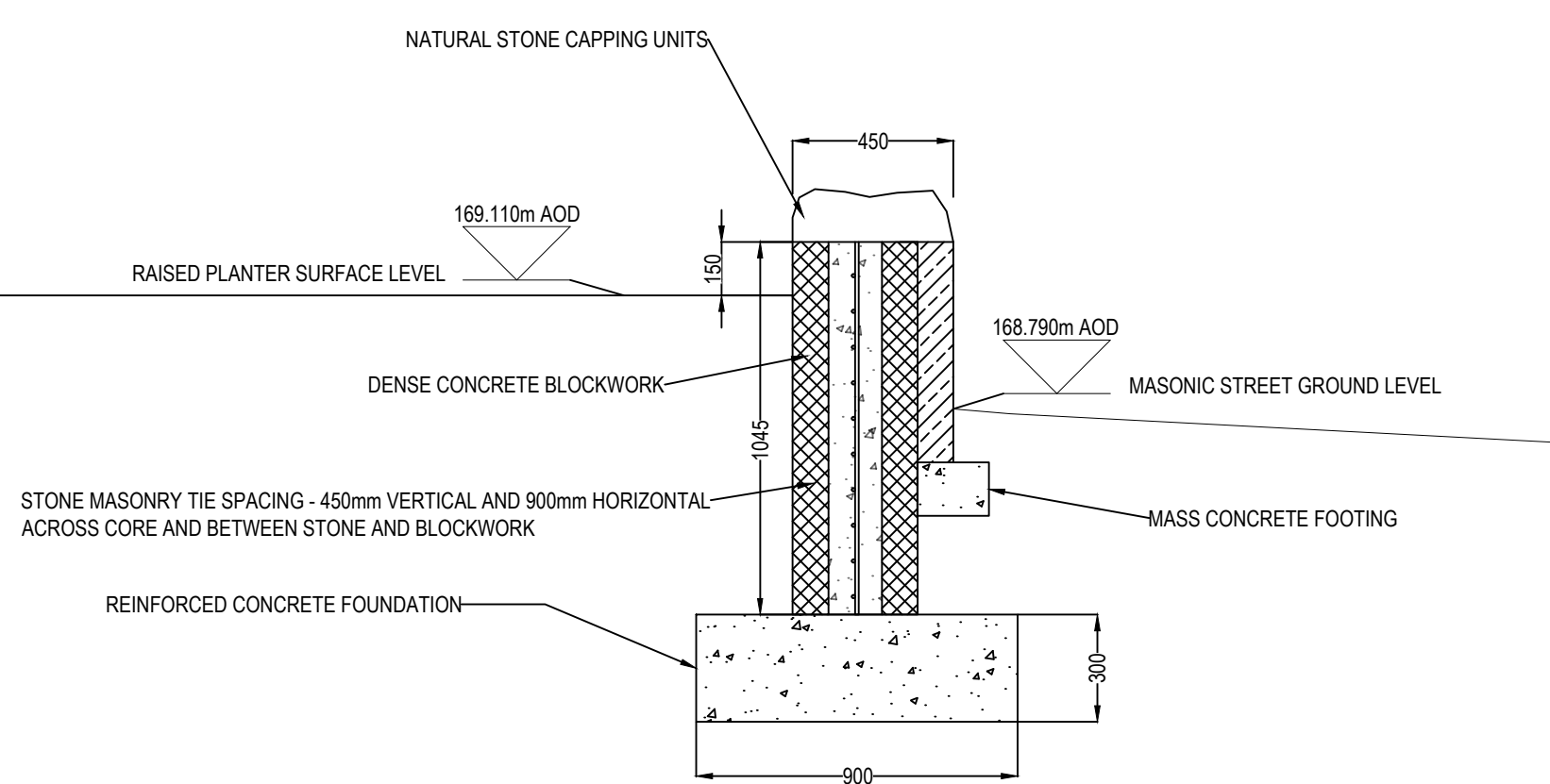
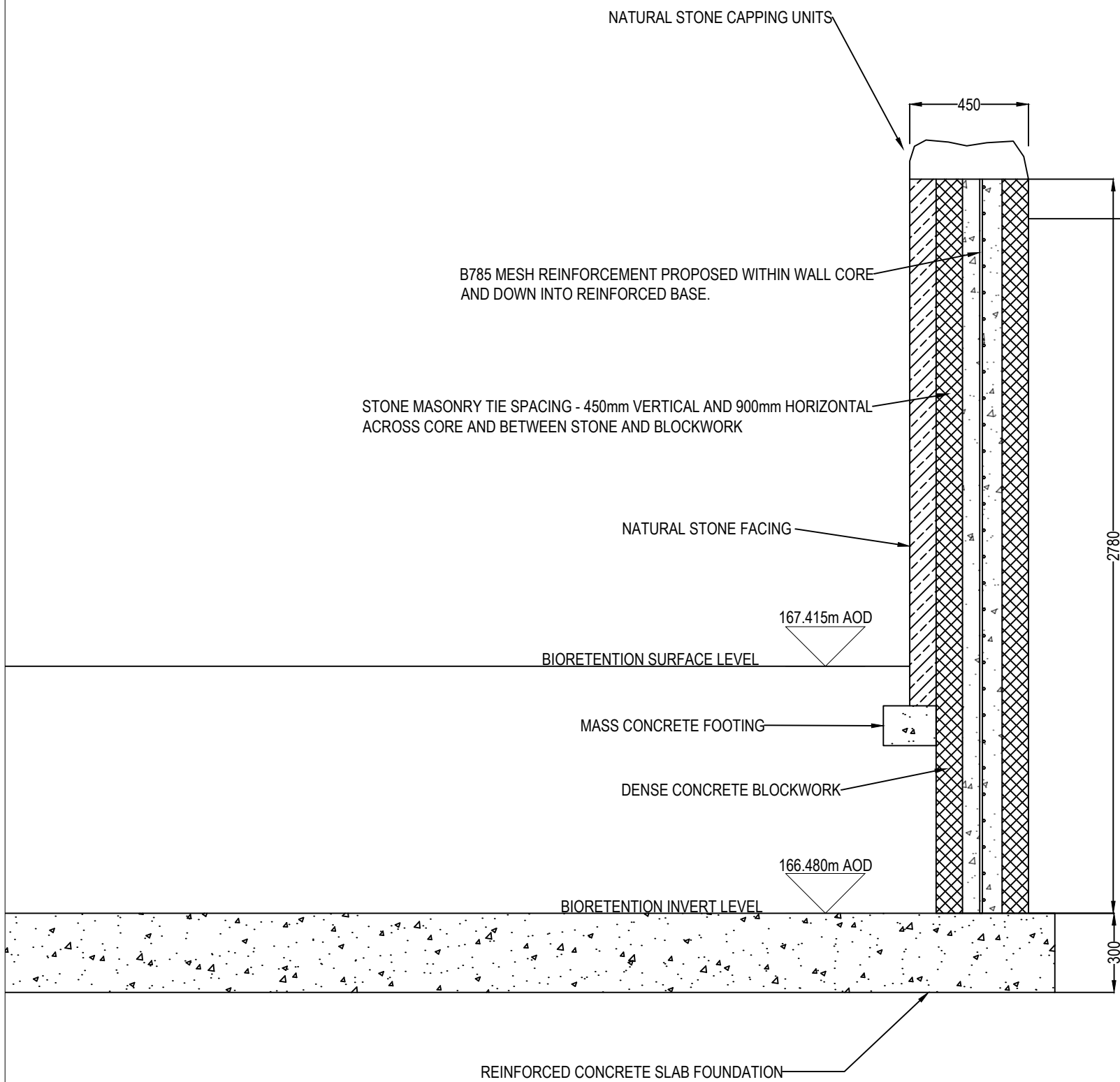
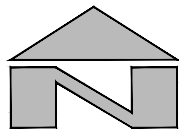
Drawing
**South Bioretention
Wall Build Ups**

Scale @ A1	Drawn	Checked	Approved
As Shown	DR	RT	RT

Project No.	Date
70121420	November 2024

Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
MIL-RED-78-XX-SK-S-0002	P02





- NOTES
- DO NOT SCALE FROM THIS DRAWING.
 - ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN MILLIMETRES ABOVE ORDNANCE DATUM
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND DOCUMENTS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:	
No additional hazards / risks identified at this stage.	
For further details on risks refer to the hazard logs	
IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT	
© Crown copyright and database rights Ordnance Survey 100023458 © Hawlfraint y Goron a hawliau cronfa ddata Arolwg Ordnam 100023458	

P02	DR	RT	RT	Amendments after architect comments	25/11/2024
P01	DR	RT	RT	For Coordination with Architects	11/11/2024
Rev	Drawn	Chkd	Appd	Description	Date

Purpose of Issue
S1 - For Coordination

Classification
Confidential

Client
**Merthyr Tydfil
County Borough Council**

Project
Merthyr Interchange Link

Drawing
**Northeast Raised Planter
Wall Build Ups**

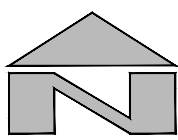
Scale @ A1	Drawn	Checked	Approved
As Shown	DR	RT	RT

Project No.	Date
70121420	November 2024

Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
MIL-RED-78-XX-SK-S-0003	P02

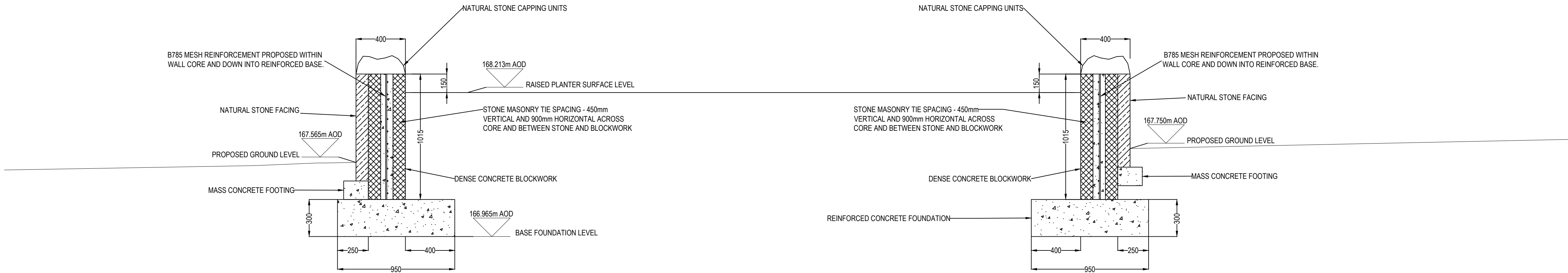


Northeast Planter Wall Build Up
Scale 1:20 (Section Looking North)

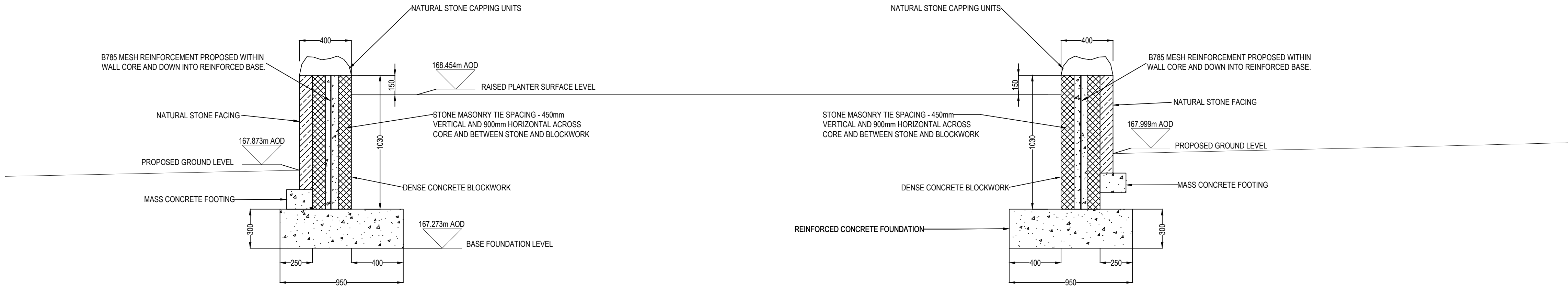
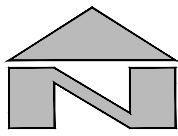


NOTES

- DO NOT SCALE FROM THIS DRAWING.
- ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN MILLIMETRES ABOVE ORDNANCE DATUM
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND DOCUMENTS.



West Raised Planter Wall Build Ups
Scale 1:20 (Section Looking North)



East Raised Planter Wall Build Ups
Scale 1:20 (Section Looking North)

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

 No additional hazards / risks identified at this stage.

For further details on risks refer to the hazard logs

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

© Crown copyright and database rights Ordnance Survey 100023458
© Hawlfraint y Goron a hawliau cronfa ddata Arolwg Ordnam 100023458

Rev	Drawn	Checked	App'd	Description	Date
P02	DR	RT	RT	Amendments after architect comments	25/11/2024
P01	DR	RT	RT	For Coordination with Architects	11/11/2024

Purpose of Issue
S1 - For Coordination

Classification
Confidential

Client
**Merthyr Tydfil
County Borough Council**

Project
Merthyr Interchange Link

Drawing
**Raised Planter
Wall Build Ups**

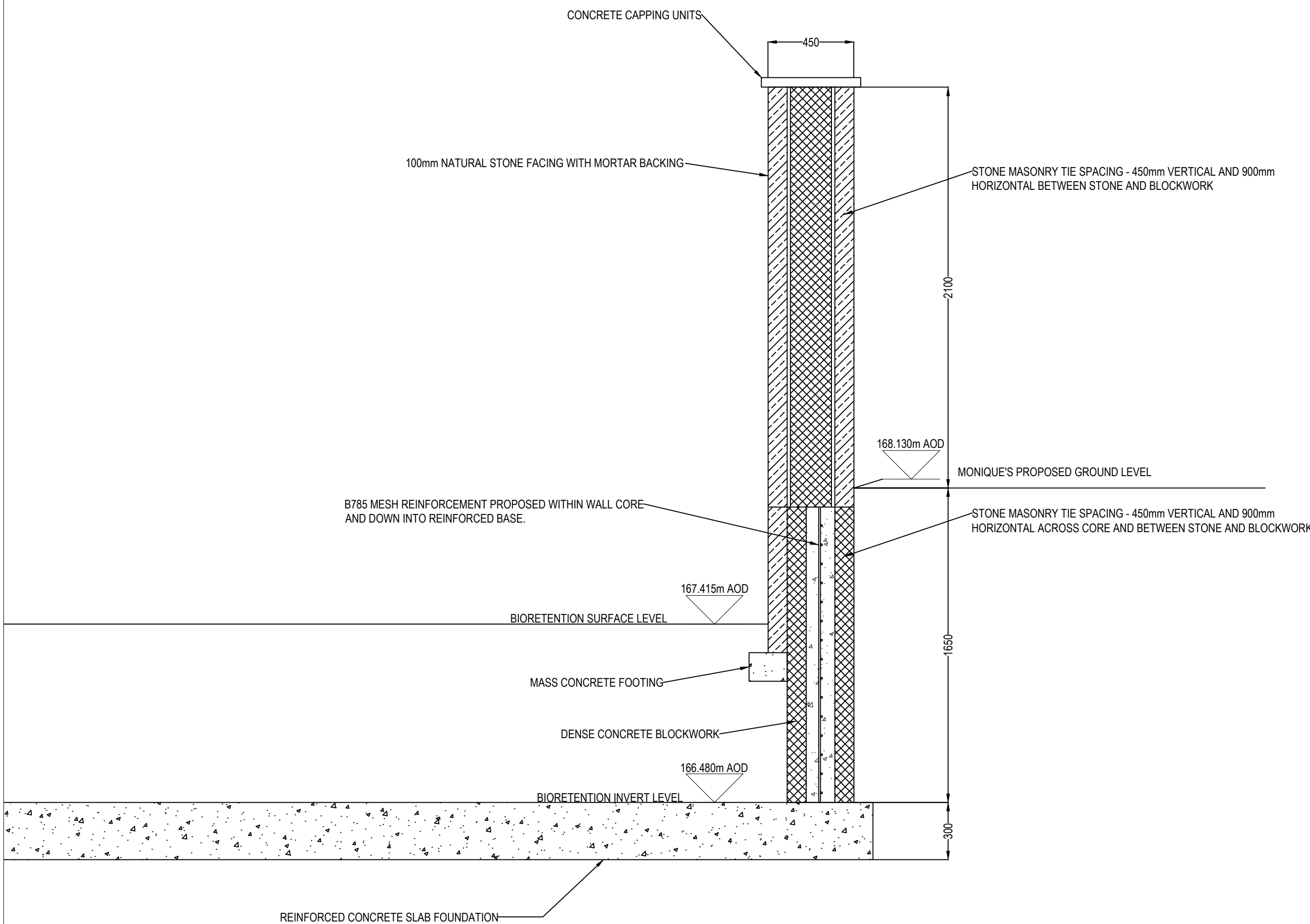
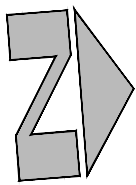
Scale @ A1	Drawn	Checked	Approved
As Shown	DR	RT	RT

Project No.	Date
70121420	November 2024

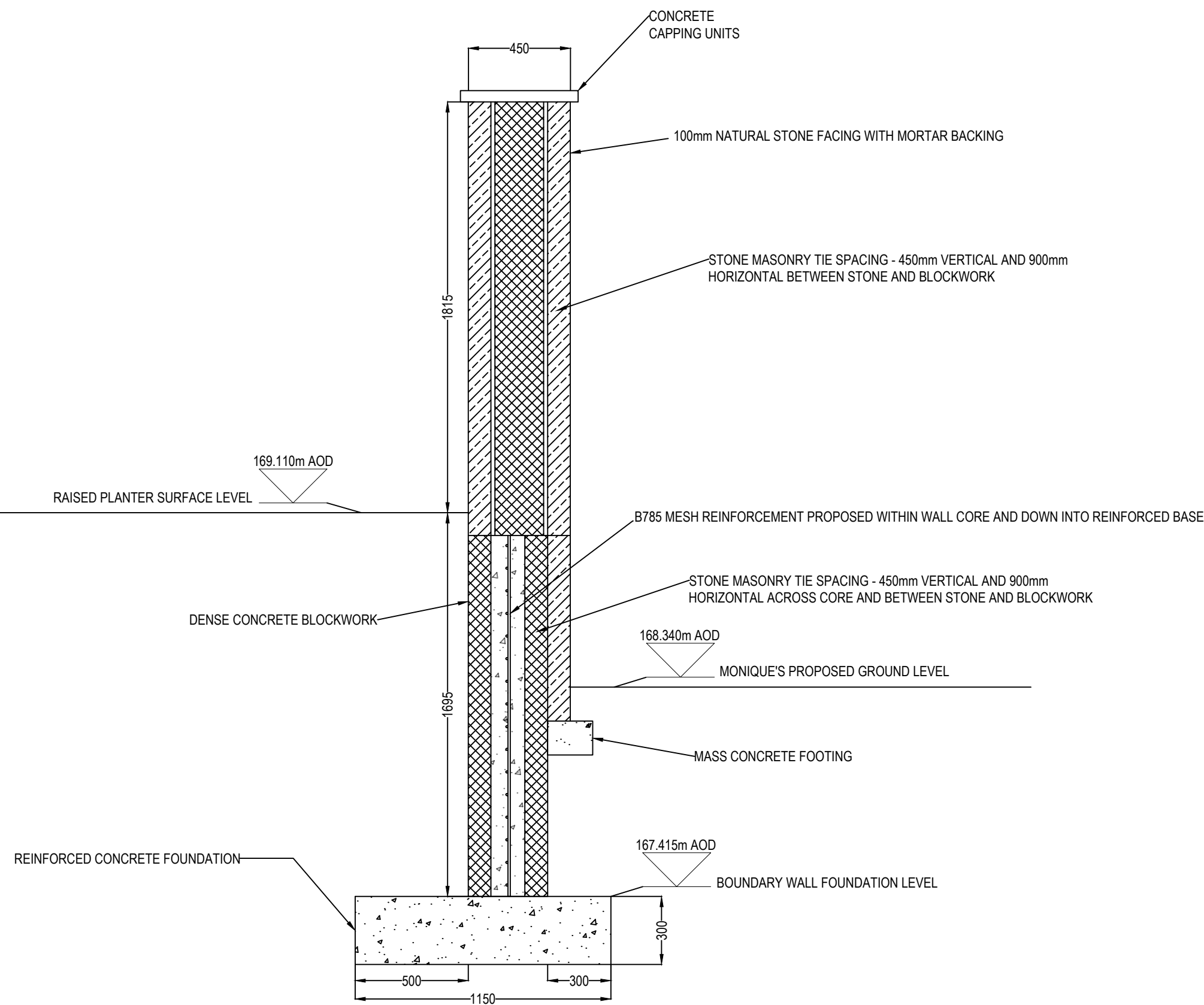
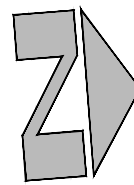
Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
MIL-RED-78-XX-SK-S-0004	P02



Quest House, St Mellons Business Park, Fortran Road,
St Mellons, Cardiff, CF3 0EY
www.redstartwales.com



West Boundary Wall Build Up
Scale 1:20 (Section Looking West)



East Boundary Wall Build Up
Scale 1:20 (Section Looking West)

- NOTES
- DO NOT SCALE FROM THIS DRAWING.
 - ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN MILLIMETRES ABOVE ORDNANCE DATUM
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND DOCUMENTS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

 No additional hazards / risks identified at this stage.

For further details on risks refer to the hazard logs

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

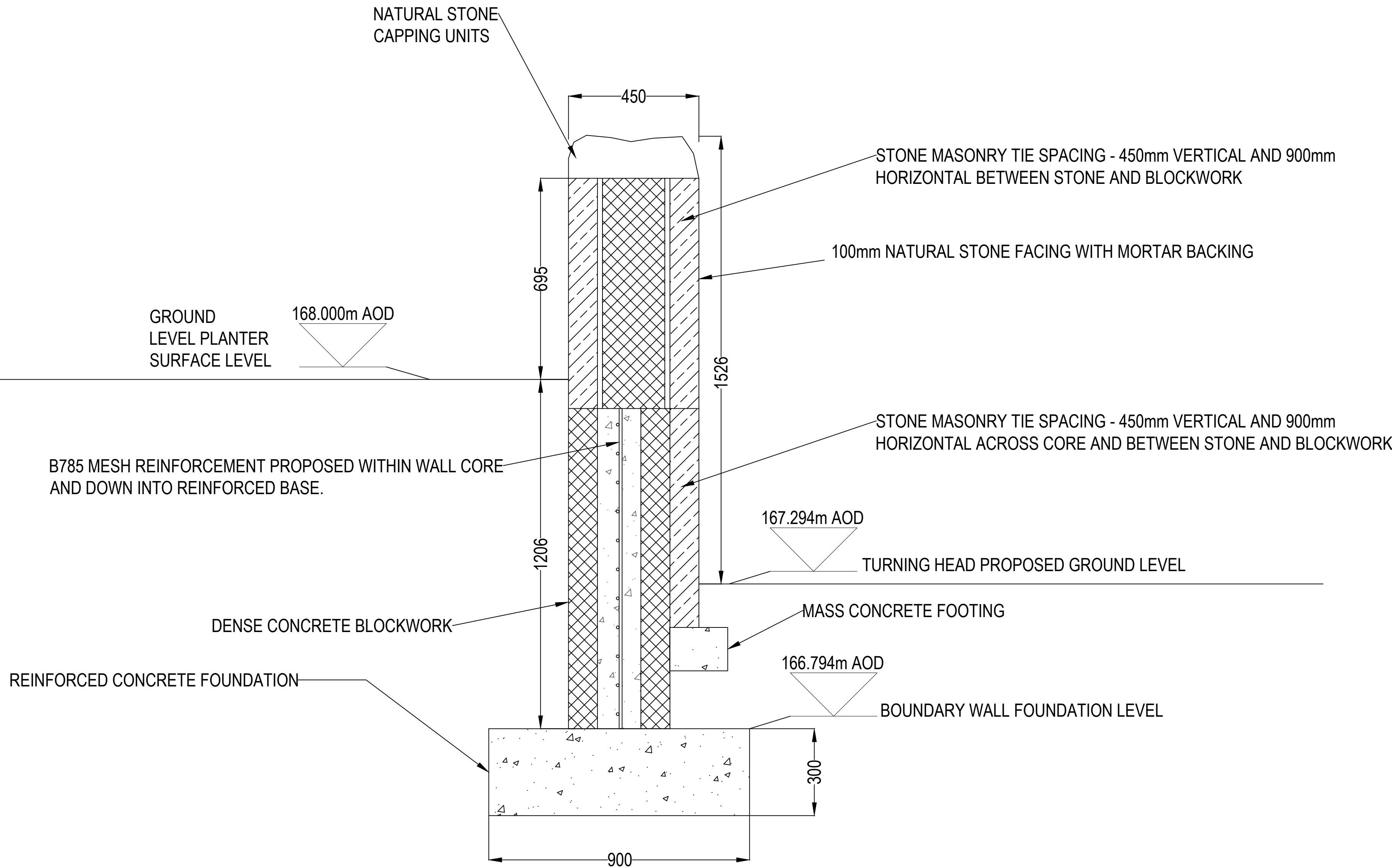
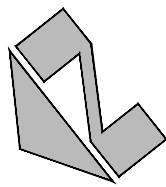
© Crown copyright and database rights Ordnance Survey 100023458
© Hawlfraint y Goron a hawliau cronfa ddata Arolwg Ordans 100023458

P01	DR	RT	RT	For Coordination with Architects	25/11/2024
Rev	Drawn	Chkd	App'd	Description	Date
Purpose of Issue					
S1 - For Coordination					
Classification					
Confidential					
Client					
Merthyr Tydfil County Borough Council					
Project					
Merthyr Interchange Link					

Drawing
Moniques Boundary
Wall Build Ups

Scale @ A1	Drawn	Checked	Approved
As Shown	DR	RT	RT
Project No.	Date		
70121420	November 2024		
Drawing Identifier	ISO19650 Compliant		
Project - Originator - Zone - Level - File Type - Role - Number	Revision		
MIL-RED-78-XX-SK-S-0005	P01		





Boundary Wall Build Up
Scale 1:10 (Section Looking East)

- NOTES
- DO NOT SCALE FROM THIS DRAWING.
 - ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN MILLIMETRES ABOVE ORDNANCE DATUM
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND DOCUMENTS.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:	
No additional hazards / risks identified at this stage.	
For further details on risks refer to the hazard logs	
IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT	
© Crown copyright and database rights Ordnance Survey 100023458 © Hawlfraint y Goron a hawliau cronfa ddata Arolwg Ordnam 100023458	

Rev	Drawn	DR	RT	RT	For Coordination with Architects	25/11/2024
Rev	Drawn	DR	RT	RT	Description	Date

Purpose of Issue

S1 - For Coordination

Classification

Confidential

Client

Merthyr Tydfil
County Borough Council

Project

Merthyr Interchange Link

Drawing

South Boundary
Wall Build Ups

Scale @ A1	Drawn	Checked	Approved
As Shown	DR	RT	RT

Project No.	Date
70121420	November 2024

Drawing Identifier	ISO19650 Compliant
Project - Originator - Zone - Level - File Type - Role - Number	Revision
MIL-RED-78-XX-SK-S-0006	P01



6.0 Lighting

6.1 Scope of Works

The lighting proposals consider the public realm area for pedestrians along with the street lighting on Masonic Street. The purpose of lighting is to ensure that pedestrian movements are safe, especially where there is the potential for conflict between vehicles and pedestrians. Lighting also has the ability to complement the appearance and tone of the public realm. For the purpose of functionality and safety, the lighting will satisfy the following considerations:

- Public realm will be designed to satisfy the British Standard for Road Lighting - BS 5489-1:2020 & BS EN 13201:2015, Class P2
- Masonic Street will be designed to satisfy BS 5489-1:2020 & BS EN 13201:2015, Class C4

The lighting will complement the architectural landscape, both in terms of the luminaire design and the column appearance, which will be finished in black.

The proposed luminaires are the Urbis Schreder Flexia Midi and Flexia Top illustrated below. The luminaires are Dark Sky Approved with no lightspill above the horizontal in accordance with ILP Guidance note for the reduction of obtrusive light (GN 01/21).



The light sources will utilise low energy LED technology, with warm white colour temperature (2700K) specified to satisfy ecological requirements (warm white being considered more appropriate for bats) in accordance with ILP/BCT Guidance Note GN08/23 - Bats and artificial lighting in the UK. The warm ambient light will also provide a welcoming night-time environment to visitors and complement the architectural appearance of the public realm.

The proposed CELtek central management System will allow remote dimming and switching of luminaires by MTCBC post construction.

Lighting units will be powered by a private cabling system and feeder pillar with a direct NGED service. The lighting proposals consider the public realm area for pedestrians along with the street lighting on Masonic Street. The purpose of lighting is to ensure that pedestrian movements are safe, especially where there is the potential for conflict between vehicles and pedestrians. Lighting also has the ability to complement the appearance and tone of the public realm. For the purpose of functionality and safety, the lighting will satisfy the following considerations:

- Public realm will be designed to satisfy the British Standard for Road Lighting - BS 5489-1:2020 & BS EN 13201:2015, Class P2
- Masonic Street will be designed to satisfy BS 5489-1:2020 & BS EN 13201:2015, Class C4

The lighting will complement the architectural landscape, both in terms of the luminaire design and the column appearance, which will be finished in black.

The proposed luminaires are the Urbis Schreder Flexia Midi and Flexia Top illustrated below. The luminaires are Dark Sky Approved with no lightspill above the horizontal in accordance with ILP Guidance note for the reduction of obtrusive light (GN 01/21).

The light sources will utilise low energy LED technology, with warm white colour temperature (2700K) specified to satisfy ecological requirements (warm white being considered more appropriate for bats) in accordance with ILP/BCT Guidance Note GN08/23 - Bats and artificial lighting in the UK. The warm ambient light will also provide a welcoming night-time environment to visitors and complement the architectural appearance of the public realm.

The proposed CELtek central management System will allow remote dimming and switching of luminaires by MTCBC post construction.

Lighting units will be powered by a private cabling system and feeder pillar with a direct NGED service.