MetroWest

Portishead Branch Line (MetroWest Phase 1)

TR040011

Applicant: North Somerset District Council
6.25, Environmental Statement, Volume 4, Appendix 17.1, Flood Risk Assessment, Part 15 of 17
Appendix O Part 2 of 3, Portishead station, Trinity Road footbridge and Avon Road bridge drainage details
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, regulation 5(2)(a)
Planning Act 2008

Author: CH2M

Please note some of the information shown on plans presented in the following documents has changed, as follows:

Trinity Footbridge, Form F001 (W1097B-ARP-FRM-ECV-000012)

Some of the information shown on the following plan has been updated:-

S051 Trinity Footbridge Proposed General Arrangement Plan Sheet 1- Drawing No. W1097B-ARP-DRG-EST-051101. Please see DCO Document 2.15 for the updated plan.

Trinity Footbridge F001 Addendum (W1097B-ARP-FRM-ECV-000024)

Some of the information shown on the following plans has been updated:-

S051 Trinity Footbridge Proposed Landscaping General Arrangement Sheets 1 and 2- Drawing No's. W1097B-ARP-DRG-ECV-051101-2. Please see DCO Document 2.16 for the updated plan.

S051 Trinity Footbridge Proposed General Arrangement Plans Sheet 1- Drawing No. W1097B-ARP-DRG-EST-051101. Please see DCO Document 2.15 for the updated plan.

S051 Trinity Footbridge Proposed General Arrangement Plans Sheet 2- Drawing No. W1097B-ARP-DRG-EST-051102. Please see DCO Document 2.8.3 for the updated plan.

Avon Road Underbridge, Form F001 (W1097B-ARP-FRM-ECV-000016)

Some of the information shown on the following plans has been updated:-

Avon Road Underbridge General Arrangement Proposed Sheets 1 Drawing No. W1097B-ARP-DRG-EST-007201. Please see DCO Document 2.22 for the updated plan.

Notice

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Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by Jacobs for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested. Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work. This work has been undertaken in accordance with the quality management system of Jacobs.

Document history

Project	Portishead Branch Line (MetroWest Phase 1) Development Consent Order Scheme
Planning Inspectorate Scheme Reference	TR040011
Volume and Application Document Reference	6, 6.25
Document title	Environmental Statement, Volume 4, Appendix 17.1, Flood Risk Assessment, Part 15 of 17 Appendix O Part 2 of 3, Portishead station, Trinity Road footbridge and Avon Road bridge drainage details
Regulation Number	Regulation 5(2)(a)
Applicant	North Somerset District Council
Lead Author	RB at CH2M

Version	Date	Status of Version
Rev: 01	12/11/19	Application Issue

Network Rail

MetroWest Phase 1

Approval In Principle (Form F001): Portishead Station Civils Design

W1097B-ARP-FRM-ECV-000015

A02 | 12 January 2018

Job number 243952-00

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ARUP

1.7.10 Fire protection

The platform/concourse structure will have an inherent fire resistance of 30 minutes. Fire protection to the reinforced concrete elements will be achieved by specifying minimum element thicknesses and cover to the reinforcement and prestressing strands. It is not anticipated that the fire condition will require greater cover than that required for durability.

Parts of the steelwork supporting fire rated partitions will be fire rated for 30 minutes. The system will be determined based on architectural considerations.

1.7.11 Design standards

The structure and foundations will be designed in accordance with the Eurocodes using the UK National Annexes and NCCI documents and all applicable Network Rail standards.

1.8 Drainage

A new surface water drainage system is proposed to capture storm water runoff from the canopy and platform areas and a separate foul system has been designed to carry foul water away from the building itself.

1.8.1 Surface water drainage

1.8.1.1 Design parameters

The following parameters apply for the station surface water drainage:

Return Period: Due to the sensitivity of the site (sited within Flood Zone 2/3), the drainage has been designed for a 1 in 100 year storm event with an additional allowance (+30%) to account for climate change;

Methods for estimating run-off: The Rational Method (Q=CiA) has been used to calculate peak flows entering the system for the storm event discussed above. Rainfall intensity (i) and Runoff coefficient (C) have been taken conservatively as 80mm/hr and 1.0 respectively.

1.8.1.2 Proposals

Surface water drainage proposals are outlined in full the listed in the drawings in Appendix A1.1.4

It is proposed to drain the canopy via a downpipe arrangement (as noted above) and convey flows to a Type-B manhole in the maintenance area. From this manhole, a 450mm Ø perforated collector drain will extend along the entire length of the maintenance area at self-cleansing gradient to collect flows from the exposed portion of the platform (designed with a back-fall of 1 in 40 to drain directly onto the maintenance walking route), the maintenance route itself and adjacent access path.

The perforated collector drain will connect to the proposed track drainage via a manhole at Ch 18101m before continuing to the proposed outfall, 'The Cut.' Refer to W1097B-ARP-FRM-EDR-000001 (Drainage Form A: Approval in Principle) report for further details of the outfall.

A shallow channel drain (M100D No. 0100 ACO or similar approved) is proposed for platform cleaning reasons only along the western section of the platform (under the canopy). It should be noted that this ACO drain has been sized to meet constraints imposed by the platform structure; the channel can deal with 1.5l/s for a 60m run and may be prone to blockage due to its small size.

1.8.1.3 Maintenance

It is proposed that all of the station surface water drainage, including the collector drain, will be maintained by the buildings RAM up to the manhole at Ch. 18101m to which the track drainage connects.

An increased maintenance regime is recommended for the platform ACO drain.

1.8.2 Foul drainage

1.8.2.1 Design parameters

The following parameters apply for the station foul water drainage:

Methods for estimating peak flows: The Discharge Unit Method ($Q = k_{DU}\sqrt{\Sigma n_{DU}}$) has been used to determine an anticipated peak foul flows of 6 l/s. A frequency factor (k_{DU}) of 1 has been used to conservatively estimate discharge for a 'congested' frequency of use.

Self-cleansing regime: All 100mm Ø lateral drains are designed at a minimum gradient of 1:80, and 150mm Ø pipes laid at 1:150 as per Sewers for Adoption (7th Edition).

1.8.2.2 Proposals

Foul water drainage proposals are outlined in full the listed in the drawings in Appendix A1.1.4

Based on information from the MEP layouts, sub-base foul drainage has been designed to collect flows from internal Soil Vent Pipes (SVPs) and gullies in line with Sewers for Adoption (7th Edition) guidance.

The foul drainage design is to be adopted by CH2M Hill outside of the building.

1.8.2.3 Maintenance

It is proposed that all of the foul drainage within the station will be maintained by the TOC and/or buildings RAM.

NR/L3/CIV/030	Issue 3	Platform Components and Prefabricated Construction Systems
GI/GN7616	Issue 2	Guidance on Interface between Station Platforms, Track and Trains
GI/RT7016	Issue 5	Interface between Station Platforms, Track and Trains
DfT Code of Practice	Version 4	Design Standards for Accessible Railway Stations
BLDG-SP80-002		Station Design Principles for Network Rail
W1097B-ARP-FRM-EDR-000001	1	Drainage Report: Approval in Principle

A1.6 Any Other Relevant Information

Arup's design boundary is the edge of the Network Rail Boundary and is marked on the location plan drawing (W1097B-ARP-DRG-EST-101101). Outside of this boundary is being designed by CH2M who we have coordinated these designs with.

A1.7 Special Access Arrangements/Requirements for Examination, Inspection, Repair, Renewal or Removal

A1.7.1 Platform

Access to the voids under the platform is to be via the mesh panels at the rear of the platform. The Network Rail maintenance walk route behind the platform allows access to the underside of the open section of the platform for inspection. The covered section in front of the building can only be accessed for inspection and maintenance from the front edge of the platform, requiring a possession. Due to the time period between structural inspections this was deemed to be acceptable and could be done out of operating hours.

A1.7.2 Drainage

Access points for inspection and maintenance have been provided throughout the drainage network at suitable intervals. These have been positioned to avoid the

need to close access routes during maintenance operations where possible. All equipment has been placed adjacent to trafficked areas where possible so that access is provided for maintenance activities.

The drainage components, their purposes, impact of damages or poor maintenance and the suggested maintenance regime are outlined below in the following format:

- Component description and purpose;
- Factors damaging the hydraulic performance of components;
- Results of damage or poor maintenance to the hydraulic performance of components;

Suggested maintenance regime.

A1.7.3 Linear Drains and Gullies

- The proposed platforms will be drained by linear drains.
- Blockage of the linear drains and gullies will reduce the capacity of the drainage network. Blockages are usually increased if the gratings on the gullies and linear drains are removed or damaged by unforeseen loading actions and acts of vandalism. Damaged or removed gratings to the units also pose a safety risk to the public and should therefore be replaced immediately.
- Reduced capacity of the drainage units will significantly increase the risk of localised flooding as flows seek alternative flow paths. Standing water created by blocked linear drains and gullies can reduce the design life of the pavement below it.
- Gullies and linear drains should generally be inspected every 4 months and cleaned out on a regular basis. The visual inspections should record locations where siltation is prevalent and additional care and removal should be undertaken as required at these locations.

A1.8 Checking Category

The Design of the Permanent Works is to be checked in accordance with:-

- Category I of NR/L3/CIV/003
- Network Rail Drainage Manual NR/L3/CIV/003
- Building Regulations 2002 Approved Document H (including 2010 amendments);

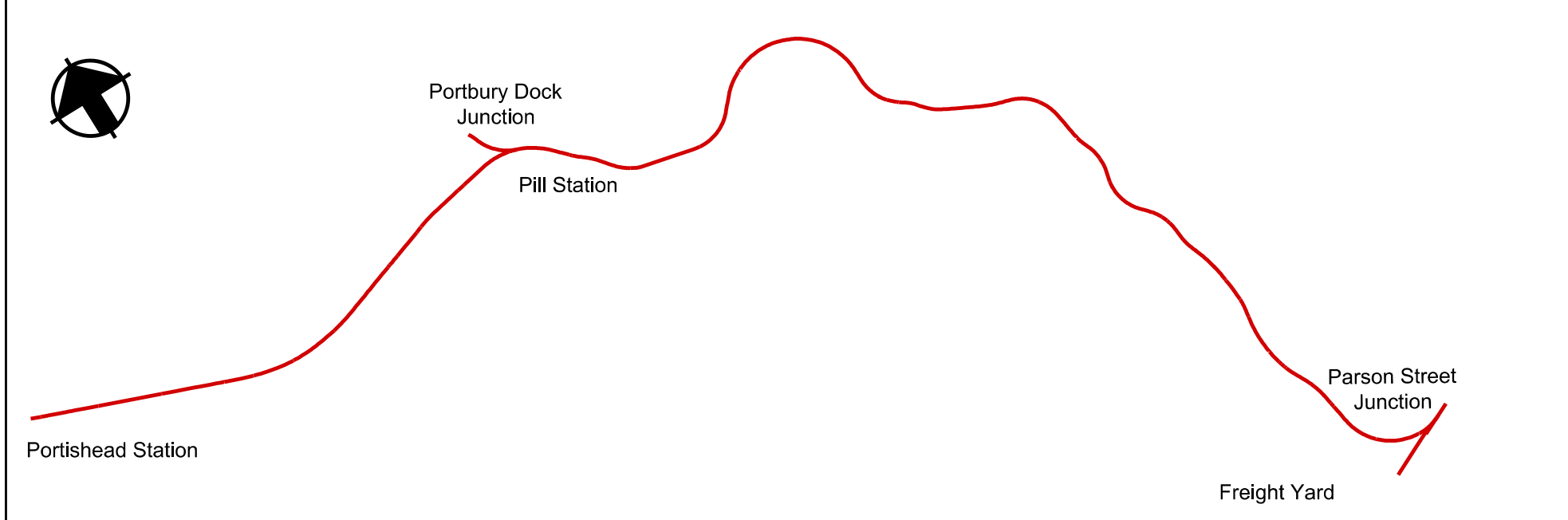
W1097B-ARP-DRG-EDR-000601

Legend/Notes

1. ALL LEVELS AND DIMENSIONS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.
2. DO NOT SCALE FROM THIS DRAWING, ONLY FIGURED DIMENSIONS AND LEVELS TO BE USED.
3. THE LOCATIONS OF EXISTING SERVICES SHOWN ON THIS DRAWING HAVE BEEN COMPILED FROM BURIED SERVICE INFORMATION PROVIDED BYNETWORK RAIL, ACCURACY CAN NOT BE GUARANTEED.
4. CHAINAGE DATUM IS 4000.000M AT THE 120M 40CH MILE POST. REGULAR CHAINAGE MARKERS PRESENTED ON LAYOUT DRAWINGS ARE MEASURE ALONG THE PROPOSED UP PORTBURY/PORTBURY SINGLE CENTRELINE.
5. THIS DRAWING IS BASED UPON TOPOGRAPHICAL SURVEY PROVIDED BY SEVERN PARTNERSHIP ON 19TH SEPTEMBER 2015.
6. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE LOCATION AND DEPTH OF ALL EXISTING SERVICES, MAINS AND CABLES PRIOR TO CONSTRUCTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY SUPPORTS AND/OR RESTRICTIONS ON SEQUENCE OF CONSTRUCTION. CONSTRUCTION METHODOLOGY TO BE DETERMINED BY CONTRACTOR AND IDENTIFIED IN RELEVANT METHOD STATEMENTS.
8. FOR FORMATION DESIGN REFER TO TRACK BED DESIGN REPORT.
9. FORMATION TO BE LAID WITH FALL AS INDICATED ON RELEVANT CROSS SECTIONS.
10. CATCHPITS AND UTX CHAMBERS TO BE MINIMUM 1410MM FROM NEAREST RUNNING EDGE WHERE PRACTICAL.
11. PERFORATED PIPES ARE TO ONLY BE PERFORATED ON THE TOP HALF.
12. FURTHER DETAILS OF MANHOLES AND CATCHPITS, INCLUDING COORDAINATES ARE GIVEN ON THE MANHOLE SCHEDULES.
13. ALL EXISTING CATCHPITS AND PIPES SHOULD BE FOUND AND LOCATIONS IDENTIFIED. ALL EXISTING DRAINAGE THAT IS TO BE MADE REDUNDANT MUST BE RECOVERED (REMOVED) WHERE PRACTICABLE.
14. EXISTING CULVERTS MUST BE STRUCTURALLY ASSESSED AND RETAINED / REPLACED AS NECESSARY
15. NEW HEADWALLS AND INLETS SHOULD BE BACKFILLED TO ENSURE GROUND BEHIND IS LEVEL TO THE TOP OF THE HEADWALL STRUCTURES
16. ALL COVER LEVELS ARE SET AT HIGHEST RAIL LEVEL TO MAINTAIN VISIBILITY AND ACCESS, UNLESS OTHERWISE SPECIFIED.
17. DRAINAGE CONSENTS HAVE NOT BEEN GRANTED. TO BE PURSUED DURING DETAILED DESIGN STAGE.

Track Legend

Design		Survey	
New track to be installed	(red line)	Weld	WT/WD/WFB/SW/TW
New alignment of existing track to be slued	(blue line)	Insulated rail joint 4-hole/6-hole	IJ/4 IJ6
Track Tie in	(black line)	Rail joint	J/JT/OJ
Existing track to be removed	(green dashed line)	Crossing nose (no. indicates angle)	CN/N
Original position of modified track	(black dashed line)	Switch	PTS
Existing track to be retained/unchanged	(black line)	Concrete sleeper	SC/CS/SLC
Existing track drainage to be removed	(green symbol)	Last long bearer	SLL
Existing track drainage to remain	(blue symbol)	Steel sleeper	SLM
Proposed Track drainage (Perforated pipe)	(cyan dashed symbol)	Wood sleeper	WS/SLT
Proposed Track drainage (Carrier pipe)	(cyan symbol)	Adjustment switch	ADJ/BRS/JTA
Proposed continuous position of safety	(orange double line)	Mile Post/Mile Marker	MP/MM
Proposed Fence line	(black dash line)	Catchpit	CP
Tangent point and hand of curve	(symbol)	Under track crossing	UTX
Cant/Cant defficiency	C/D	Locations of Whitebeam trees provided by Network Rail. Environmental mitigations provided by others.	X
Rate of change of cant / cant deficiency	RCC/RCD		



Permanent Way Sheet Plan

EXISTING UTILITIES LEGEND

DESCRIPTION	EXISTING
WATER MAIN	W
FOUL SEWER	F1
RISING MAIN	FR
SURFACE WATER SEWER	S
HIGH VOLTAGE ELECTRICITY - BELOW GROUND	HV
LOW VOLTAGE ELECTRICITY - BELOW GROUND	LV
HIGH VOLTAGE ELECTRICITY - ABOVE GROUND	HV
LOW VOLTAGE ELECTRICITY - ABOVE GROUND	LV
GPSS PIPELINE	
LOW PRESSURE GAS MAIN	LP
MEDIUM PRESSURE GAS MAIN	IP
HIGH PRESSURE GAS MAIN	HP
BT CABLE - BELOW GROUND	T1
BT CABLE - ABOVE GROUND	T1
CABLE & WIRELESS	T2
VIRGIN MEDIA CABLE - BELOW GROUND	T3

Rev	Date	Description of Revisions	Drawn	Chkd	Appr
A01	17/12/15	ISSUED FOR FORM A	KS	RS	SW
A02	09/11/16	ISSUED FOR FORM A	KS	RS	SW
A03	10/11/17	ISSUED FOR IDC	KS	RS	SW
A04	12/01/18	ISSUED FOR FORM A	KS	RS	SW

Status: FOR FORM A REVIEW
Suitability: S3

NetworkRail

Contractor(s)

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Project: METROWEST PHASE 1

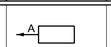
Drawing Title:
PORTISHEAD STATION DRAINAGE CATCHMENT 6 GENERAL ARRANGEMENT

Designed	E KAFFAS	Signed	[signature]	Date	12/01/18
Drawn	K SHELTON	Signed	[signature]	Date	12/01/18
Checked	R SNELL	Signed	[signature]	Date	12/01/18
Approved	S WHEAT	Signed	[signature]	Date	12/01/18

Scale(s): 1:200
ELR & Mileage: POD 129MI 17CH
Alternative Reference:
Sheet: 4 of 4
Drawing Number: W1097B-ARP-DRG-EDR-000601
Revision: A04

Sheet Size A1+7 594 x 2311

Drawing Number
W1097B-ARP-DRG-EDR-000611

MANHOLE			PIPES					COVER				GENERAL		
REFERENCE	TYPE	EXTERNAL SIZE	CONFIGURATION	INVERT LEVEL	SDR RATE	PIPE DIA.	REFERENCE	TYPE	REFERENCE	SIZE	COVER LEVEL	LOCATION	DETAILS	COMMENTS
PM_6_1	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1270 X 735		A - 107.126	A - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'STDASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/100856 OR SIMILAR APPROVED	1270 X 735	108.004	X = 409913.660 Y = 286708.883	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
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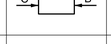
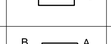
PM_6_3	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1270 X 735		A - 106.826 B - 106.826	A - SDR17 B - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'STDASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/100856 OR SIMILAR APPROVED	1270 X 735	108.072	X = 409857.689 Y = 286730.500	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
PM_6_4	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1270 X 735		A - 106.477 B - 106.488 C - 106.488	A - SDR11 B - SDR17 C - SDR17	A - 290MM B - 279MM C - 279MM	DEMCO A - TERRALINE B - TERRADRAIN C - TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'STDASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/100856 OR SIMILAR APPROVED	1270 X 735	108.099	X = 409826.655 Y = 286742.504	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
PM_6_5	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1270 X 735		A - 107.222	A - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'STDASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/100856 OR SIMILAR APPROVED	1270 X 735	108.100	X = 409689.791 Y = 286795.388	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
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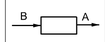
PM_6_7	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1035 X 575		A - 106.922 B - 106.922	A - SDR17 B - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'NARASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/101352 OR SIMILAR APPROVED	1035 X 575	108.100	X = 409745.758 Y = 286773.762	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
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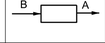
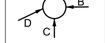
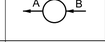
PM_6_9	AQUA STANDARD CONCRETE CATCHPIT AND STANDARD CONCRETE FRAMES OR SIMILAR APPROVED	1035 X 575		A - 106.622 B - 106.622	A - SDR17 B - SDR17	A - 279MM B - 279MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	AQUA ASHFORD OR SIMILAR APPROVED	REF: 'NARASH38-LLB' GRP ANTI-VANDAL LID WITH 'L' BRACKET (38MM) PADS CODE 0057/101352 OR SIMILAR APPROVED	1035 X 575	108.103	X = 409801.725 Y = 286752.135	PRODUCT: DETAIL 001 INSTALLATION: DETAIL 003	
CTP_6_10	TYPE B CATCHPIT	1500Ø		A - 106.274 B - 106.274 C - 106.413 D - 107.258	A - SDR17 B - SDR17 C - SDR11 D - SDR17	A - 443MM B - 443MM C - 290MM D - 279MM	DEMCO A -TERRADRAIN B - TERRALINE C - TERRALINE D - TERRALINE OR SIMILAR APPROVED	B125 / C250	-	600 X 600	108.103	X = 409381.112 Y = 286754.532	DETAIL 009	
PM_6_11	TYPE B MANHOLE	1350Ø		A - 106.478 B - 106.478	A - SDR17 B - SDR17	A - 443MM B - 443MM	DEMCO TERRADRAIN OR SIMILAR APPROVED	B125 / C250	-	600 X 600		X = 409878.715 Y = 286734.585	DETAIL 008	
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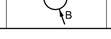
PM_6_13	TYPE B MANHOLE	1350Ø		A - 106.195 B - 106.195	A - SDR17 B - SDR17	A - 443MM B - 443MM	DEMCO TERRALINE OR SIMILAR APPROVED	B125 / C250	-	600 X 600	107.134	X = 409834.338 Y = 286775.932	DETAIL 008	

Legend/Notes

1. ALL LEVELS AND DIMENSIONS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.
2. DO NOT SCALE FROM THIS DRAWING, ONLY FIGURED DIMENSIONS AND LEVELS TO BE USED.
3. THE LOCATIONS OF EXISTING SERVICES SHOWN ON THIS DRAWING HAVE BEEN COMPILED FROM BURIED SERVICE INFORMATION PROVIDED BYNETWORK RAIL, ACCURACY CAN NOT BE GUARANTEED.
4. CHAINAGE DATUM IS 4000.000M AT THE 120M 40CH MILE POST. REGULAR CHAINAGE MARKERS PRESENTED ON LAYOUT DRAWINGS ARE MEASURE ALONG THE PROPOSED UP PORTBURY/PORTBURY SINGLE CENTRELINE.
5. THIS DRAWING IS BASED UPON TOPOGRAPHICAL SURVEY PROVIDED BY SEVERN PARTNERSHIP ON 19TH SEPTEMBER 2015.
6. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE LOCATION AND DEPTH OF ALL EXISTING SERVICES, MAINS AND CABLES PRIOR TO CONSTRUCTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY SUPPORTS AND/OR RESTRICTIONS ON SEQUENCE OF CONSTRUCTION. CONSTRUCTION METHODOLOGY TO BE DETERMINED BY CONTRACTOR AND IDENTIFIED IN RELEVANT METHOD STATEMENTS.
8. FOR FORMATION DESIGN REFER TO TRACK BED DESIGN REPORT.
9. FORMATION TO BE LAID WITH FALL AS INDICATED ON RELEVANT CROSS SECTIONS.
10. CATCHPITS AND UTX CHAMBERS TO BE MINIMUM 1410MM FROM NEAREST RUNNING EDGE WHERE PRACTICAL.
11. PERFORATED PIPES ARE TO ONLY BE PERFORATED ON THE TOP HALF.
12. FURTHER DETAILS OF MANHOLES AND CATCHPITS, INCLUDING COORDAINATES ARE GIVEN ON THE MANHOLE SCHEDULES.
13. ALL EXISTING CATCHPITS AND PIPES SHOULD BE FOUND AND LOCATIONS IDENTIFIED. ALL EXISTING DRAINAGE THAT IS TO BE MADE REDUNDANT MUST BE RECOVERED (REMOVED) WHERE PRACTICABLE.
14. EXISTING CULVERTS MUST BE STRUCTURALLY ASSESSED AND RETAINED / REPLACED AS NECESSARY
15. NEW HEADWALLS AND INLETS SHOULD BE BACKFILLED TO ENSURE GROUND BEHIND IS LEVEL TO THE TOP OF THE HEADWALL STRUCTURES
16. ALL COVER LEVELS ARE SET AT HIGHEST RAIL LEVEL TO MAINTAIN VISIBILITY AND ACCESS, UNLESS OTHERWISE SPECIFIED.
17. DRAINAGE CONSENTS HAVE NOT BEEN GRANTED. TO BE PURSUED DURING DETAILED DESIGN STAGE.

Rev	Date	Description of Revisions	Drawn	Chkd	Appr
A01	17/12/15	ISSUED FOR FORM A	KS	RS	SW
A02	12/01/18	ISSUED FOR FORM A	KS	RS	SW

Status: FOR FORM A REVIEW
Suitability: S3

Contractor(s)

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63 St Thomas Street
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www.arup.com

Project: METROWEST PHASE 1

Drawing Title:
PORTISHEAD STATION
TRACK DRAINAGE
CATCHMENT 6
MANHOLE SCHEDULE

Designed	E KAFFAS	Signed	Date 12/01/18
Drawn	K SHELTON	Signed	Date 12/01/18
Checked	R SNELL	Signed	Date 12/01/18
Approved	S WHEAT	Signed	Date 12/01/18

Scale(s): NTS
ELR & Mileage: POD 129MI 17CH
Alternative Reference
Sheet: 3 of 3
Drawing Number: W1097B-ARP-DRG-EDR-000611
Revision: A02

Sheet Size A1 594 x 841

Network Rail

MetroWest Phase 1

Trinity Footbridge, Form F001

W1097B-ARP-FRM-ECV-000012

A01 | 4 December 2015

ELR: POD

Chainage: 129m 06ch

Job number 243952-00

Ove Arup & Partners Ltd
8th Floor St. James's Buildings
Oxford Street
Manchester M1 6EL
United Kingdom
www.arup.com

ARUP

W1097B-ARP-FRM-ECV-000012: Approval in Principle

Issue No	A01
Issue Date	4 December 2015

Structure No

Project Title	MetroWest Phase 1		
Project No	Network Rail: 140569 Arup: 243952-00		
PRS Reference No			
Location	Portishead, Bristol		
ELR(s)	POD	**Mileage**	129m 06ch
OS Grid Ref	ST 347706, 176315	**Structure Nos**	S051

Part 1: Details

1.1 Proposed Works

MetroWest Phase 1 proposes to reopen the redundant Portishead Line with a half hourly passenger train service and a new station at Portishead (among others).

Trinity Primary School is located adjacent to the proposed Portishead Station. The school is currently unofficially accessed from the south via a footpath crossing the redundant tracks at grade. This route is to be removed as part of the proposed works and replaced with a new footbridge.

The new footbridge will follow the principle of a standard Network Rail non-stations footbridge (NR/CIV/SD/400 series). It shall be a bespoke design as the clear width will be increased from 2.0m to 2.5m and bridge parapet height amended to 1.85m. The approach footpaths and adjacent areas are to be landscaped as part of the architectural master plan.

1.2 Assets affected (See Appendix A)

This design submission relates to the design of the following new or altered assets:

Description of Asset	Proposed Works
Footbridge	A new 2.5m wide bespoke footbridge is proposed based on the principles of a standard Network Rail non-stations footbridge NR/CIV/SD/400 series. The bridge parapet height shall be amended to 1.85m for future OLE provision.
Foundations	Piled foundations are required below the structural supports.
Existing culverts	One of the piled foundations clashes with an existing culvert, so a piled slab is proposed, to span over the culvert, on to which the access ramps will found. This is intended to isolate the culvert from bridge loading. Consultation with NSIDB is to take place in the next phase.
Drainage	The bridge drainage shall outfall through spitter pipes as per the SDD.
Lighting	Lighting is proposed along the access ramps, stairs, main span and approach footpaths. Refer to the M&E F001 W1097B-ARP-FRM-EPT-000002 submission for details.

Description of Asset	Proposed Works
Existing drainage ditches	It is proposed to infill the existing ditches North of the bridge between the proposed station and Trinity School. This forms part of the architectural landscaping masterplan. The infill ditch will be replaced by a perforated pipe connecting the existing ditches with the Cut Gordano outfall.
Landscaped grassed mounds	Architectural landscaping is proposed around the bridge structure.

Drawing Number
W1097B-ARP-DRG-EST-051101

PROPOSED DRAINAGE OUTFALL REFER TO DRAWING W1097B-ARP-DRG-EDR-000601

SOLID DRAINAGE PIPE

EXACT LOCATION OF SERVICES TO BE VERIFIED PRIOR TO DETAILED DESIGN. ANY VARIATION FROM THAT SHOWN MAY REQUIRE EITHER ALTERATIONS TO PROPOSED BRIDGE LAYOUT OR SERVICES DIVERSION

RISING MAIN UTILITY

EXISTING FENCE

FOR LIGHTING PROPOSAL SEE W1097B-ARP-DRG-EPT-051101

PORTISHEAD STATION

PERFORATED DRAINAGE PIPE

DITCH ALONG THE BRIDGE TO BE INFILLED BETWEEN PORTISHEAD STATION AND THE SCHOOL BOUNDARY. REFER TO DRAWING W1097B-ARP-DRG-ECV-051101

PROPOSED NETWORK RAIL PALADINE FENCE

CPT 3

CPT 4

CPT 5

BHT 2

CPT 6

CPT 7

PORTISHEAD

PORTBURY SINGLE

BRISTOL

TANSY LANE

FOR LANDSCAPE AND FOOTPATH DETAILS REFER TO DRAWING W1097B-ARP-DRG-ECV-051101

FOR LIGHTING PROPOSAL SEE W1097B-ARP-DRG-EPT-051101

TRINITY PRIMARY SCHOOL

CONTRACTOR TO CONSIDER PHASING WITH EARTHWORK RAMP

EXACT LOCATION OF SERVICES TO BE VERIFIED PRIOR TO DETAILED DESIGN. ANY VARIATION FROM THAT SHOWN MAY REQUIRE SERVICE DIVERSION OR CHANGES TO THE PROPOSED DESIGN

27588

EARTHWORK RAMP

26236

STRUCTURAL RAMP

16265

9337

16168

EXISTING FENCE

PROPOSED NETWORK RAIL PALADINE FENCE

PROPOSED BURIED PILED SLAB TO SPAN CULVERT TO SUPPORT RAMP COLUMNS. DETAILS TBC FOLLOWING CONSULTATION WITH THE ASSET OWNER AND DETAILED SURVEY OF LOCATION AND CONDITION

AMENDED STRINGER ACCESS STAIRS BASED ON NR/CIV/SD/441

20021

QUAYS AVENUE

9889

72577

AMENDED ACCESS RAMP WITH 1:15 GRADIENT BASED ON NR/CIV/SD/445

T1

SURVEY REQUIRED TO IDENTIFY LOCATION, FORM AND CONDITION OF CULVERT PRIOR TO DETAILED DESIGN

FOR PAVING DETAIL REFER TO DRAWING W1097B-ARP-DRG-ECV-051101

ROYAL PORTBURY DOCK

PORTISHEAD

PILL

S051 TRINITY FOOTBRIDGE

BRISTOL TM

PARSON STREET JUNCTION

BEDMINSTER STN

PLAN

SCALE 1:200

KEY

- = CORDUROY TACTILE PAVING STRIP
- = NR LAND OWNERSHIP EXISTING BOUNDARY
- = BOREHOLE TEST
- = CONE PENETRATION TEST
- = TIMBER POST AND RAIL FENCE 1.2 METRES HIGH
- = TIMBER FENCE - SILVA TIMBER, WESTERN RED CEDAR SLATTED SCREENS (MAX. HEIGHT 2 METRES)
- = NETWORK RAIL PALADINE FENCE GREEN POWDER COATED
- = DRAINAGE OUTFALL BASED ON NR/CIV/SD/402 AND 432

LEGEND/NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS STATED OTHERWISE.
2. ALL LEVELS ARE IN METRES ABOVE SNAKE GRID RBEPP12 (ORDNANCE DATUM + 100 METRES).
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTS.
4. THIS DRAWING IS BASED ON TOPOGRAPHICAL AND LIDAR SURVEYS UNDERTAKEN BY SEVERN PARTNERSHIP LTD. IN 2015.
5. THE PROPOSED RAIL ALIGNMENT IS SUBJECT TO VARIATION.
6. THE BRIDGE IS PROPOSED TO BE PAINTED HOLLY GREEN (SUBJECT TO COUNCIL APPROVAL)
7. AMENDED STAIR, RAMP AND FOOTBRIDGE TO BE DESIGNED TO 2.5m FROM 2m CLEARENCE AND AMENDED BRIDGE PARAPET HEIGHT TO BE DESIGNED TO 1.85m.

Utilities Legend

Description	Existing
Water Main	W
Foul Sewer	FS
Rising Main	FSL
Sewer Surface	
High Voltage Electricity - Below Ground	HV
Low Voltage Electricity - Below Ground	LV
High Voltage Electricity - Above Ground	HV
Low Voltage Electricity - Above Ground	LV
GPSS pipeline	
Low Pressure Gas Main	LP
Medium Pressure Gas Main	IP
High Pressure Gas Main	HP
BT Cable - Below Ground	T1
BT Cable - Above Ground	T1
Cable & Wireless	T2
Virgin Media Cable - Below Ground	T3

ELEVATION 1

SCALE 1:100

C BEARING STIFFENER

C BEARING STIFFENER

10909

AMENDED NETWORK RAIL FOOTBRIDGE BASED ON NR/CIV/SD/400 SERIES. SEE NOTE 7

113.565

4500 MIN.

4500 MIN.

5535 MIN (+TOLERANCE)

PROPOSED LANDSCAPING SEE W1097B-ARP-DRG-ECV-051101

DRAINAGE OUTFALL BASED ON NR/CIV/SD 402 AND 432.

108.025

108.000

106.500

PROPOSED PORTBURY SINGLE

EXISTING TRACK REMOVED

FLATTEN GROUND TO PROPOSED EXCAVATED LEVEL (106.500)

PROPOSED PALADINE FENCE

INFILL DITCH BETWEEN STATION AND SCHOOL BOUNDARY

BURIED SERVICES SHOWN INDICATIVELY

PROPOSED SILVA TIMBER, WESTERN RED CEDAR SLATTED SCREENS

CULVERT SHOWN INDICATIVELY

PROPOSED DRAINAGE OUTFALL REFER TO DRAWING W1097B-ARP-DRG-EDR-000601

DITCH INFILL TO BE COMPACTED CLASS 1A GRANULAR FILL OR SIMILAR APPROVED. ALL TOPSOIL AND SOFT ORGANIC MATERIAL TO BE REMOVED PRIOR TO BACK FILL

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 RISKS AND INFORMATION.

1. CONTRACTOR TO CONSIDER THE HIGH WATER TABLE IN THE PREPARATION OF METHOD STATEMENTS.
2. EARTHWORK RAMP SETTLEMENT WILL CONTINUE DURING OPERATION OF THE BRIDGE RESULTING IN A STEP FORMING BETWEEN THE EARTHWORK AND STRUCTURAL RAMP. ONGOING MAINTENANCE WILL BE REQUIRED TO REMOVE THE STEP.
3. BURIED SERVICES ARE PRESENT ACROSS THE SITE. THE PRECISE POSITIONS OF THESE ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY DETAILED DESIGN.
4. ELEVATED LEVELS OF CONTAMINANTS, INTRAVENOUS NEEDLES AND OTHER HAZARDOUS SUBSTANCES MAY BE PRESENT ON SITE.
5. THERE IS LIMITED TOPOGRAPHIC SURVEY AVAILABLE AT THIS SITE AND THE FORM 001 DESIGN IS BASED ON INTERPRETATION OF LIDAR DATA. FULL TOPOGRAPHIC SURVEY REQUIRED PRIOR TO ANY CONSTRUCTION WORKS COMMENCING.

FOR INFORMATION RELATING TO USE, CLEANING AND MAINTENANCE SEE THE HEALTH AND SAFETY FILE. ALL WORKS ARE TO BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING - WHERE APPROPRIATE - TO AN APPROVED METHOD STATEMENT.

Rev	Date	Description of Revisions	Drawn	Chkd	Appr
A01	04/12/15	ISSUED FOR FORM F001	MF	JA	CW

Status: FOR FORM 001 REVIEW — Suitability: S3

Contractor(s)

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Project: METROWEST PHASE 1

Drawing Title: S051 TRINITY FOOTBRIDGE PROPOSED GENERAL ARRANGEMENT

Designed	ALEX KOUTSOUKI	Signed	Date 04/12/15
Drawn	MATT FRY	Signed	Date 04/12/15
Checked	JONATHAN AYLWIN	Signed	Date 04/12/15
Approved	CHRIS WOODMAN	Signed	Date 04/12/15

Scale(s): As Shown — ELR & Milleage: POD 129m 06ch

Alternative Reference — Sheet: 1 of 2

Drawing Number: W1097B-ARP-DRG-EST-051101 — Revision: A01

Network Rail

MetroWest Phase 1

Trinity Footbridge F001 Addendum

W1097B-ARP-FRM-ECV-000024

A01 | 8 February 2019

ELR: POD

Chainage: 129m 06ch

Job number 243952

Ove Arup & Partners Ltd
63 St Thomas Street
Bristol BS1 6JZ
United Kingdom
www.arup.com

ARUP

Document verification

ARUP

Job title		MetroWest Phase 1			**Job number** 243952
Document title		Trinity Footbridge F001 Addendum			**File reference**
Document ref		W1097B-ARP-FRM-ECV-000024			
Revision	**Date**	**Filename**	Form001 Addendum.docx		
A01	08 Feb 2019	**Description**	For NR approval		
			Prepared by	Checked by	Approved by
		Name	Chris Woodman	Laura Millar	Rob Snell
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document verification with document	✓

Contents

Appendices

Part 1: Details

1.1 Form 001

A Form 001 (ref: W1097B-ARP-FRM-ECV-000012) for the proposed Trinity footbridge was submitted on 22/12/15 and approved on 04/03/16

An instruction was received from Network Rail in January 2019 to produce an addendum to the Form 001, in line with the following changes:

1. Remove the flight of steps at the north east corner associated with access to the school.
2. Landscaping modifications in line with the council drawings provided.

1.1 Updated Drawings

The following updated drawings are provided in Appendix A:

- W1097B-ARP-DRG-ECV-051101_A02_S051 Trinity Footbridge Proposed Landscaping General Arrangement
- W1097B-ARP-DRG-ECV-051102_A02_ S051 Trinity Footbridge Proposed Landscaping General Arrangement
- W1097B-ARP-DRG-EST-051101_A02_ S051 Trinity Footbridge Proposed General Arrangement
- W1097B-ARP-DRG-EST-051102_A02_ S051 Trinity Footbridge Proposed General Arrangement

1.2 Notes

The following should be noted:

1. The changes documented in this addendum do not materially change the principles as set out in the approved Form 1.
2. It is assumed the standards freeze is as per the original Form 001 date. No review against updated standards has been carried out.
3. The CDM/CSM risks documented are not significantly changed by these amendments and the associated risk registers have therefore not been amended.
4. As requested by Network Rail the associated bridge and bridge approach lighting design has not been updated to suit the revised proposals.

Part 2: Designer's Submission

I confirm that the criteria specified in **NR/L2/CIV/003** have been considered, and that the design is submitted for Approval in Principle on behalf of:

Ove Arup & Partners Ltd,

63 St Thomas Street,
Bristol,
BS1 6JZ

Signed		Title	CRE – Civil Engineering
Name (Print)	Chris Woodman	Date	08/02/2019

To be signed by the Contractor's Responsible Engineer appointed for the relevant Design phase.

Part 3: Project Engineer Comments

I have considered this submission for Approval in Principle and I am satisfied that this has adequately addressed the criteria specified in **NR/L2/CIV/003**, and confirm that the Design of the Permanent Works is to be checked in accordance with the Design Check Categories listed in Appendix A of **NR/L2/CIV/003**.

My comments on the submission are given below. Provided that these comments are addressed, I hereby give Approval in Principle to the proposals:

Project Engineer Comments

Signed		Title	
Name (Print)		Date	

To be signed by the Project Engineer (Building and Civil Engineering)

Signed		Title	
Name (Print)		Date	

To be signed by other responsible person, such as the Project Engineer (Building Services)

Part 4: Asset Manager's Approval

I have considered the submission and confirm that this is approved subject to the comments given below being addressed within the Detailed Design.

Comments by Asset Manager

Signed		Title	
Name (Print)		Date	

To be signed by the Asset Manager Structures

Signed		Title	
Name (Print)		Date	

To be signed by Asset Manager (Geotechnical)

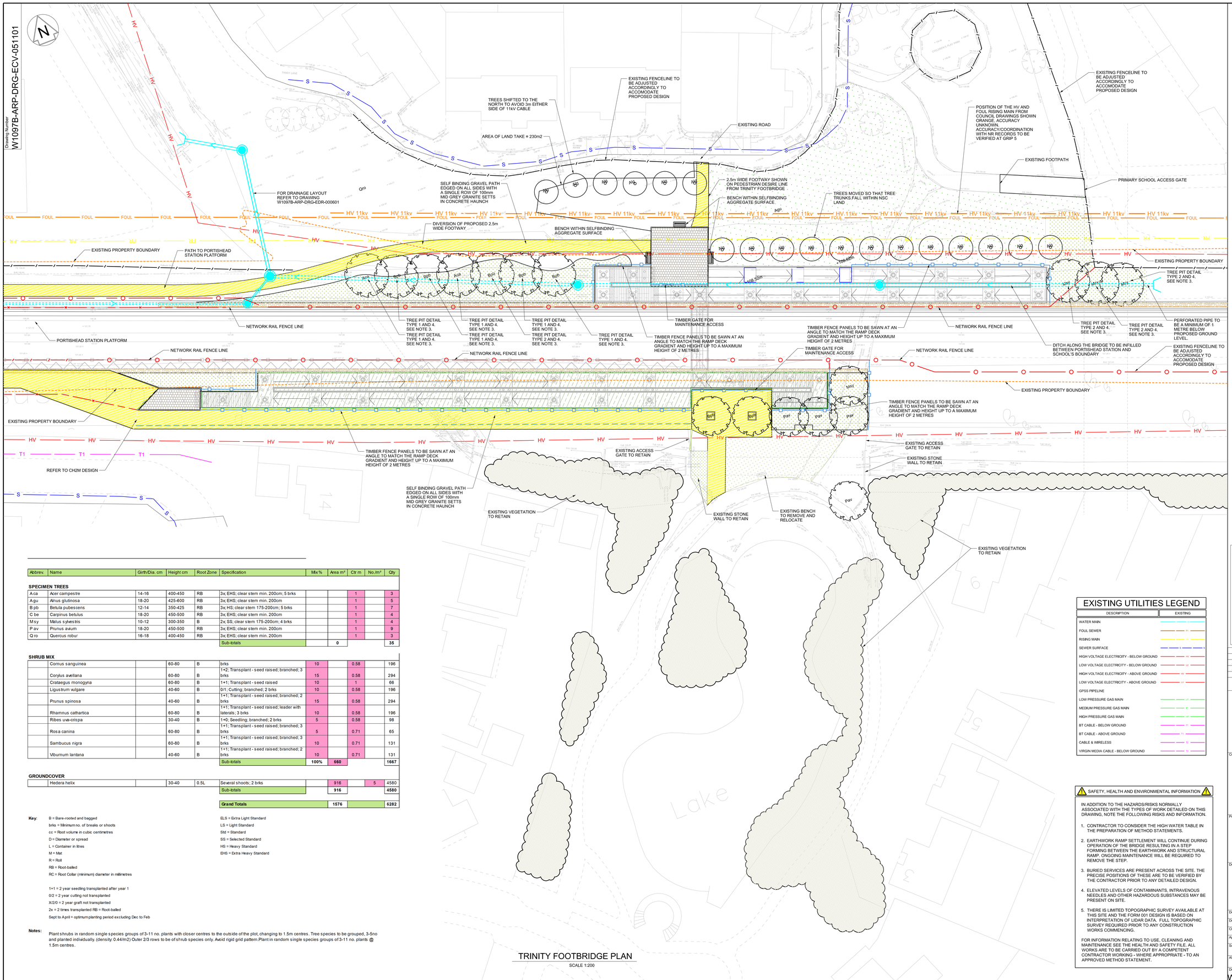
Signed		Title	
Name (Print)		Date	

To be signed by Asset Manager (Buildings)

Appendix A

Drawings

Drawing Number
W1097B-ARP-DRG-ECV-051101



TRINITY FOOTBRIDGE PLAN

SCALE 1:200

Abbrev.	Name	Girth/Dia. cm	Height cm	Root Zone	Specification	Mix %	Area m²	Ctr m	No./m²	Qty
SPECIMEN TREES										
A ca	Acer campestre	14-16	400-450	RB	3x; EHS; clear stem min. 200cm; 5 brks			1		3
A gu	Alnus glutinosa	18-20	425-600	RB	3x; EHS; clear stem min. 200cm			1		5
B pb	Betula pubescens	12-14	350-425	RB	3x; HS; clear stem 175-200cm; 5 brks			1		7
C be	Carpinus betulus	18-20	450-500	RB	3x; EHS; clear stem min. 200cm			1		4
M sy	Malus sylvestris	10-12	300-350	B	2x; SS; clear stem 175-200cm; 4 brks			1		4
P av	Prunus avium	18-20	450-500	RB	3x; EHS; clear stem min. 200cm			1		9
Q ro	Quercus robur	16-18	400-450	RB	3x; EHS; clear stem min. 200cm			1		3
					Sub-totals		0			35
SHRUB MIX										
	Cornus sanguinea		60-80	B	brks	10		0.58		196
	Corylus avellana		60-80	B	1+2; Transplant - seed raised; branched; 3 brks	15		0.58		294
	Crataegus monogyna		60-80	B	1+1; Transplant - seed raised	10		1		66
	Ligustrum vulgare		40-60	B	0/1; Cutting; branched; 2 brks	10		0.58		196
	Prunus spinosa		40-60	B	1+1; Transplant - seed raised; branched; 2 brks	15		0.58		294
	Rhamnus cathartica		60-80	B	1+1; Transplant - seed raised; leader with laterals; 3 brks	10		0.58		196
	Ribes uva-crispa		30-40	B	1+0; Seedling; branched; 2 brks	5		0.58		98
	Rosa canina		60-80	B	1+1; Transplant - seed raised; branched; 3 brks	5		0.71		65
	Sambucus nigra		60-80	B	1+1; Transplant - seed raised; branched; 3 brks	10		0.71		131
	Viburnum lantana		40-60	B	1+1; Transplant - seed raised; branched; 2 brks	10		0.71		131
					Sub-totals	100%	660			1667
GROUNDCOVER										
	Hedera helix		30-40	0.5L	Several shoots; 2 brks		916		5	4580
					Sub-totals		916			4580
					Grand Totals		**1576**			**6282**

Key:

B = Bare-rooted and bagged
brks = Minimum no. of breaks or shoots
cc = Root volume in cubic centimetres
D = Diameter or spread
L = Container in litres
M = Mat
R = Roll
RB = Root-balled
RC = Root Collar (minimum) diameter in millimetres

1+1 = 2 year seedling transplanted after year 1
0/2 = 2 year cutting not transplanted
X;2/0 = 2 year graft not transplanted
2x = 2 times transplanted RB = Root-balled
Sept to April = optimum planting period excluding Dec to Feb

ELS = Extra Light Standard
LS = Light Standard
Std = Standard
SS = Selected Standard
HS = Heavy Standard
EHS = Extra Heavy Standard

Notes:

Plant shrubs in random single species groups of 3-11 no. plants with closer centres to the outside of the plot, changing to 1.5m centres. Tree species to be grouped, 3-5no and planted individually. (density: 0.44/m2) Outer 2/3 rows to be of shrub species only. Avoid rigid grid pattern.Plant in random single species groups of 3-11 no. plants @ 1.5m centres.

Legend/Notes

LEGEND

EXISTING VEGETATION

PROPOSED:

- SPECIMEN TREE - SEE PLANTING SCHEDULE
- NATIVE SHRUB MIX - SEE PLANTING SCHEDULE
- GRASS MIX - GERMINAL AMENITY A19 SEED MIXTURE
- GROUND COVER - SEE PLANTING SCHEDULE
- LOOSE GRAVEL OR BALLAST
- SELFBINDING AGGREGATE BREEDON GOLDEN AMBER WITH SINGLE GRANITE SETT EDGE
- CONCRETE BLOCK PAVING - MARSHALLS MISTRAL PRIORA, HARVEST BUFF, RANDOM COURSE, WITH FLUSH CONSERVATION CHARCOAL KERB
- CONCRETE BLOCK PAVING - MARSHALLS MISTRAL PRIORA, SILVER GREY, RANDOM COURSE, WITH FLUSH CONSERVATION CHARCOAL KERB
- BENCH - OLLERTON M3 STAINLESS STEEL SEAT
- TIMBER POST AND RAIL FENCE 1.2 METRES HIGH
- TIMBER FENCE - SILVA TIMBER, WESTERN RED CEDAR SLATTED SCREENS (MAX. HEIGHT 2 METRES)
- NETWORK RAIL PALADINE FENCE GREEN POWDER COATED
- BOLLARDS - OLLERTON TIMBER BOLLARD WITH PYRAMID TOP
- TREE PIT WITH OLLERTON M3 STAINLESS STEEL GRILLE
- +108.8m CONTOUR LINE AND LEVEL (SEE NOTE 6)

1. FOR ENGINEERING WORKS AND MATERIALS SEE DRAWING W1097B-ARP-DRG-EST-051101 AND FOR LIGHTING PROPOSALS SEE DRAWING W1097B-ARP-DRG-EPT-051101
2. ALL PLANTING WORKS TO CONFORM WITH BS 4428, 1989 'GENERAL LANDSCAPE OPERATIONS'
3. FOR PLANTING DETAILS SEE DRAWING W1097B-ARP-DRG-ECV-051102
4. PROTECTION OF EXISTING VEGETATION TO BE IN ACCORDANCE WITH BS 5837, 2012 'TREES IN RELATION TO DESIGN, DEMOLITION AND CONSTRUCTION'.
5. ALL TOPSOIL STRIPPED FROM SITE TO BE RETAINED AND RE-USED ON SITE WITHIN PLANTING AREAS IN ACCORDANCE WITH BS 3882:2015.
6. EXACT LOCATION OF BURIED SERVICES TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO ANY LANDSCAPE WORKS.
7. ALL LEVELS ARE IN METRES ABOVE SNAKE GRID RBEPP12 (ORDNANCE DATUM + 100 METRES).
8. CONTRACTOR TO MAKE GOOD AS EXISTING ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES.
9. ALL HARD SURFACING AND STREET FURNITURE TO BE AS SPECIFIED OR SIMILAR AS APPROVED.

EXISTING UTILITIES LEGEND

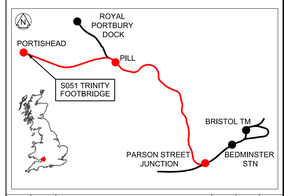
DESCRIPTION	EXISTING
WATER MAIN	W
FOUL SEWER	FS
RISING MAIN	FR
SEWER SURFACE	S
HIGH VOLTAGE ELECTRICITY - BELOW GROUND	HV
LOW VOLTAGE ELECTRICITY - BELOW GROUND	LV
HIGH VOLTAGE ELECTRICITY - ABOVE GROUND	HV
LOW VOLTAGE ELECTRICITY - ABOVE GROUND	LV
GPSS PIPELINE	
LOW PRESSURE GAS MAIN	LP
MEDIUM PRESSURE GAS MAIN	IP
HIGH PRESSURE GAS MAIN	HP
BT CABLE - BELOW GROUND	T1
BT CABLE - ABOVE GROUND	T1
CABLE & WIRELESS	T2
VIRGIN MEDIA CABLE - BELOW GROUND	T3

⚠ 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 RISKS AND INFORMATION.

1. CONTRACTOR TO CONSIDER THE HIGH WATER TABLE IN THE PREPARATION OF METHOD STATEMENTS.
2. EARTHWORK RAMP SETTLEMENT WILL CONTINUE DURING OPERATION OF THE BRIDGE RESULTING IN A STEP FORMING BETWEEN THE EARTHWORK AND STRUCTURAL RAMP. ONGOING MAINTENANCE WILL BE REQUIRED TO REMOVE THE STEP.
3. BURIED SERVICES ARE PRESENT ACROSS THE SITE. THE PRECISE POSITIONS OF THESE ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY DETAILED DESIGN.
4. ELEVATED LEVELS OF CONTAMINANTS, INTRAVENOUS NEEDLES AND OTHER HAZARDOUS SUBSTANCES MAY BE PRESENT ON SITE.
5. THERE IS LIMITED TOPOGRAPHIC SURVEY AVAILABLE AT THIS SITE AND THE FORM 001 DESIGN IS BASED ON INTERPRETATION OF LIDAR DATA. FULL TOPOGRAPHIC SURVEY REQUIRED PRIOR TO ANY CONSTRUCTION WORKS COMMENCING.

FOR INFORMATION RELATING TO USE, CLEANING AND MAINTENANCE SEE THE HEALTH AND SAFETY FILE. ALL WORKS ARE TO BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING - WHERE APPROPRIATE - TO AN APPROVED METHOD STATEMENT.



Rev	Date	Description of Revisions	Drawn	Chkd	Appr
A01	04/12/15	ISSUED FOR FORM F001	NM	BO	CW
A02	30/01/19	ISSUED FOR FORM F001 ADDENDUM	LS	RS	CW

Status: FOR FORM 001 REVIEW — Suitability: S3

Contractor(s)

ARUP
63 St Thomas Street
Bristol BS1 6JZ
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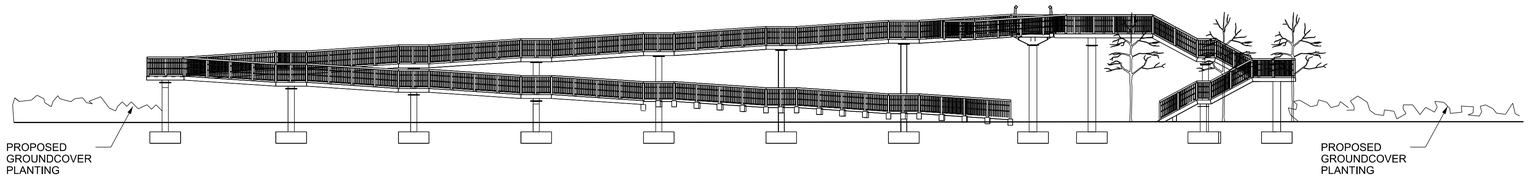
www.arup.com

Project: METROWEST PHASE 1

Drawing Title: S051 TRINITY FOOTBRIDGE PROPOSED LANDSCAPING GENERAL ARRANGEMENT

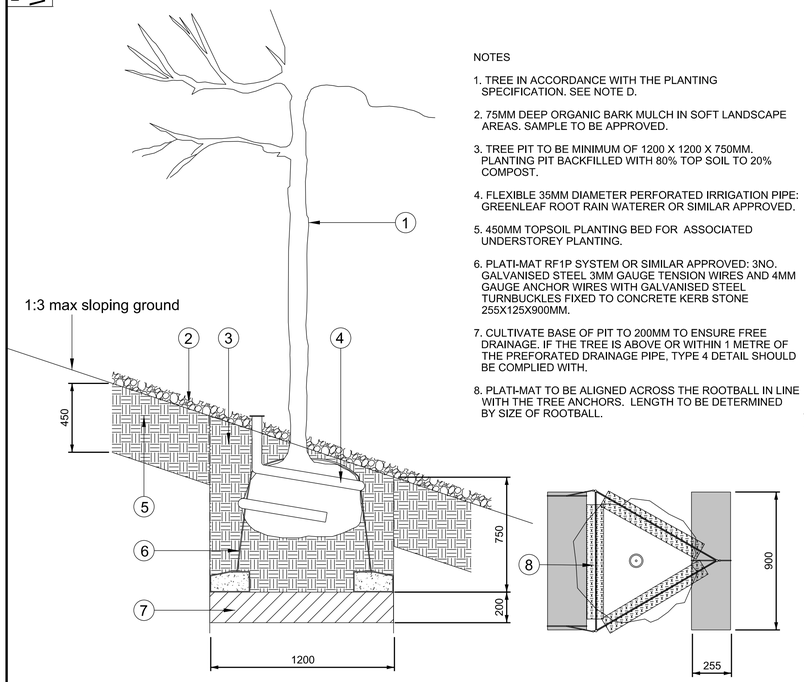
Designed	CHRIS WOODMAN	Signed	Date 30/01/19
Drawn	LUCIA SONEIRA	Signed	Date 30/01/19
Checked	ROB SNELL	Signed	Date 30/01/19
Approved	CHRIS WOODMAN	Signed	Date 30/01/19
Scale(s)	As Shown	ELR & Mileage	POD 129m 06ch
Alternative Reference		Sheet	1 of 2
Drawing Number	W1097B-ARP-DRG-ECV-051101	Revision	A02

Drawing Number
W1097B-ARP-DRG-ECV-051102



NORTH ELEVATION A

SCALE 1:200

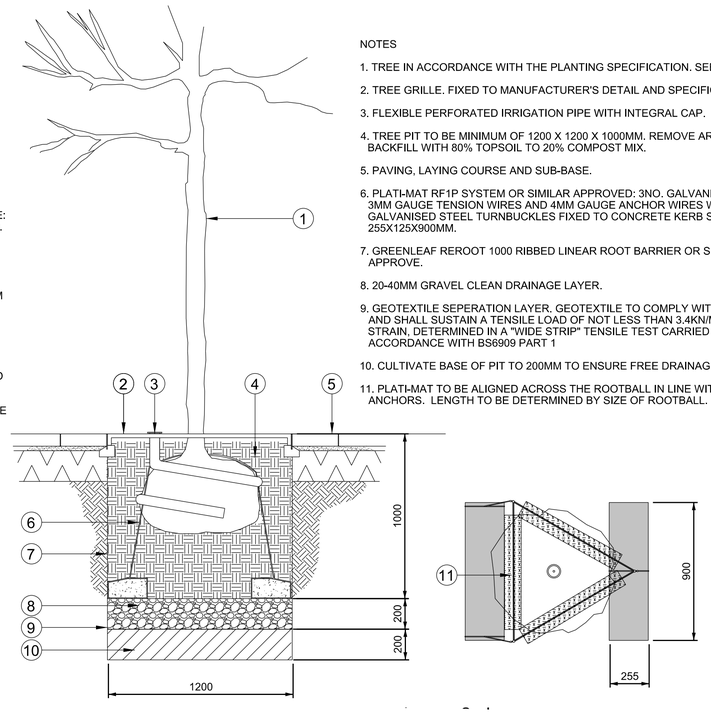


NOTES

1. TREE IN ACCORDANCE WITH THE PLANTING SPECIFICATION. SEE NOTE D.
2. 75MM DEEP ORGANIC BARK MULCH IN SOFT LANDSCAPE AREAS. SAMPLE TO BE APPROVED.
3. TREE PIT TO BE MINIMUM OF 1200 X 1200 X 750MM. PLANTING PIT BACKFILLED WITH 80% TOP SOIL TO 20% COMPOST.
4. FLEXIBLE 35MM DIAMETER PERFORATED IRRIGATION PIPE: GREENLEAF ROOT RAIN WATERER OR SIMILAR APPROVED.
5. 450MM TOPSOIL PLANTING BED FOR ASSOCIATED UNDERSTOREY PLANTING.
6. PLATI-MAT RF1P SYSTEM OR SIMILAR APPROVED: 3NO. GALVANISED STEEL 3MM GAUGE TENSION WIRES AND 4MM GAUGE ANCHOR WIRES WITH GALVANISED STEEL TURNBUCKLES FIXED TO CONCRETE KERB STONE 255X125X900MM.
7. CULTIVATE BASE OF PIT TO 200MM TO ENSURE FREE DRAINAGE. IF THE TREE IS ABOVE OR WITHIN 1 METRE OF THE PREFORATED DRAINAGE PIPE, TYPE 4 DETAIL SHOULD BE COMPLIED WITH.
8. PLATI-MAT TO BE ALIGNED ACROSS THE ROOTBALL IN LINE WITH THE TREE ANCHORS. LENGTH TO BE DETERMINED BY SIZE OF ROOTBALL.

DETAIL 1 - TREE IN SLOPING GROUND

SCALE 1:20

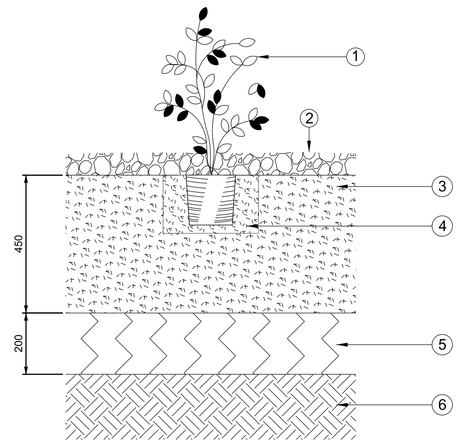


NOTES

1. TREE IN ACCORDANCE WITH THE PLANTING SPECIFICATION. SEE NOTE D.
2. TREE GRILLE. FIXED TO MANUFACTURER'S DETAIL AND SPECIFICATION.
3. FLEXIBLE PERFORATED IRRIGATION PIPE WITH INTEGRAL CAP.
4. TREE PIT TO BE MINIMUM OF 1200 X 1200 X 1000MM. REMOVE ARISINGS. BACKFILL WITH 80% TOPSOIL TO 20% COMPOST MIX.
5. PAVING, LAYING COURSE AND SUB-BASE.
6. PLATI-MAT RF1P SYSTEM OR SIMILAR APPROVED: 3NO. GALVANISED STEEL 3MM GAUGE TENSION WIRES AND 4MM GAUGE ANCHOR WIRES WITH GALVANISED STEEL TURNBUCKLES FIXED TO CONCRETE KERB STONE 255X125X900MM.
7. GREENLEAF REROOT 1000 RIBBED LINEAR ROOT BARRIER OR SIMILAR APPROVE.
8. 20-40MM GRAVEL CLEAN DRAINAGE LAYER.
9. GEOTEXTILE SEPERATION LAYER. GEOTEXTILE TO COMPLY WITH CLAUSE 609 AND SHALL SUSTAIN A TENSILE LOAD OF NOT LESS THAN 3.4KN/M AT 5% STRAIN. DETERMINED IN A "WIDE STRIP" TENSILE TEST CARRIED OUT ACCORDANCE WITH BS6909 PART 1
10. CULTIVATE BASE OF PIT TO 200MM TO ENSURE FREE DRAINAGE
11. PLATI-MAT TO BE ALIGNED ACROSS THE ROOTBALL IN LINE WITH THE TREE ANCHORS. LENGTH TO BE DETERMINED BY SIZE OF ROOTBALL.

DETAIL 3 - TREE IN HARD LANDSCAPE

SCALE 1:20

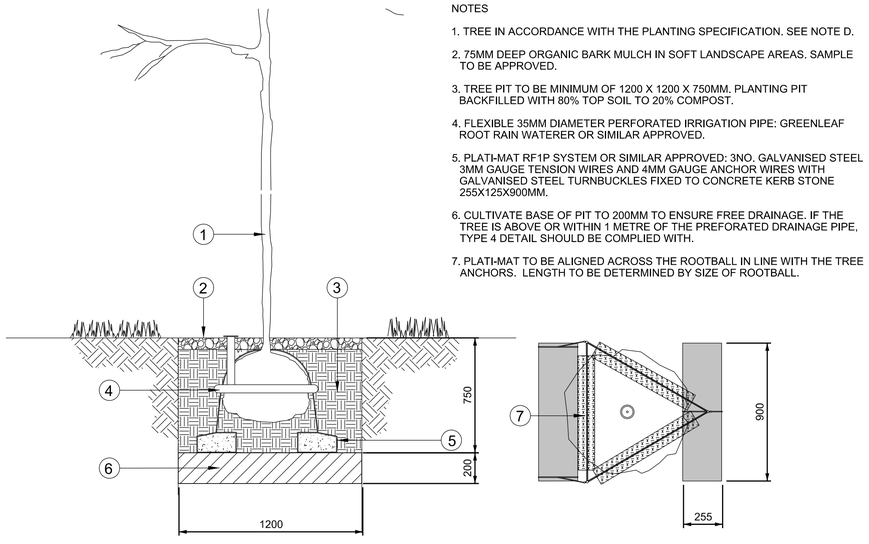


NOTES

1. ORNAMENTAL SHRUB OR GROUNDCOVER PLANT IN ACCORDANCE WITH THE PLANTING SCHEDULE. SEE NOTE D.
2. 75MM DEEP ORGANIC BARK MULCH IN SOFT LANDSCAPE AREAS. SAMPLE TO BE APPROVED.
3. 450MM TOPSOIL PLANTING BED.
4. PLANTING PITS TO BE 150 MM WIDER THAN THE ROOT SPREAD. THE SHRUBS SHALL BE SET IN THE HOLES SO THAT THE SOIL LEVEL, AFTER SETTLEMENT, WILL BE AT THE ORIGINAL ROOT COLLAR LEVEL ON THE STEM OF THE SHRUB. LOOSEN ROOTS AT BOTTOM OF COMPOST GENTLY WITH FINGERTIPS PRIOR TO PLANTING. THE HOLES SHALL BE BACKFILLED WITH 80% TOPSOIL TO 20% COMPOST, TO HALF THEIR DEPTH AND SHALL BE FIRMED BY TREADING. THE REMAINDER OF THE TOPSOIL SHALL THEN BE RETURNED AND AGAIN FIRMED BY TREADING.
5. EXISTING SUB GRADE TO BE RIPPED TO A DEPTH OF 200MM.
6. EXISTING SUB GRADE

DETAIL 5 - SHRUB PLANTING

SCALE 1:10

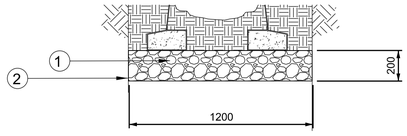


NOTES

1. TREE IN ACCORDANCE WITH THE PLANTING SPECIFICATION. SEE NOTE D.
2. 75MM DEEP ORGANIC BARK MULCH IN SOFT LANDSCAPE AREAS. SAMPLE TO BE APPROVED.
3. TREE PIT TO BE MINIMUM OF 1200 X 1200 X 750MM. PLANTING PIT BACKFILLED WITH 80% TOP SOIL TO 20% COMPOST.
4. FLEXIBLE 35MM DIAMETER PERFORATED IRRIGATION PIPE: GREENLEAF ROOT RAIN WATERER OR SIMILAR APPROVED.
5. PLATI-MAT RF1P SYSTEM OR SIMILAR APPROVED: 3NO. GALVANISED STEEL 3MM GAUGE TENSION WIRES AND 4MM GAUGE ANCHOR WIRES WITH GALVANISED STEEL TURNBUCKLES FIXED TO CONCRETE KERB STONE 255X125X900MM.
6. CULTIVATE BASE OF PIT TO 200MM TO ENSURE FREE DRAINAGE. IF THE TREE IS ABOVE OR WITHIN 1 METRE OF THE PREFORATED DRAINAGE PIPE, TYPE 4 DETAIL SHOULD BE COMPLIED WITH.
7. PLATI-MAT TO BE ALIGNED ACROSS THE ROOTBALL IN LINE WITH THE TREE ANCHORS. LENGTH TO BE DETERMINED BY SIZE OF ROOTBALL.

DETAIL 2 - TREE IN LEVELLED SOFT LANDSCAPE

SCALE 1:20

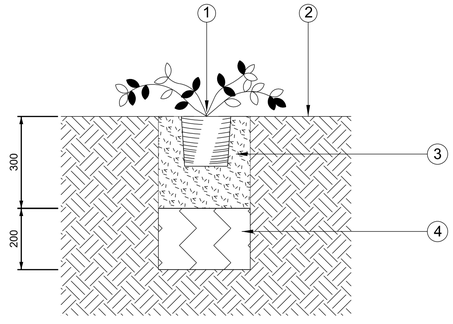


NOTES

1. 20-40MM GRAVEL CLEAN DRAINAGE LAYER.
2. GEOTEXTILE SEPERATION LAYER. GEOTEXTILE TO COMPLY WITH CLAUSE 609 AND SHALL SUSTAIN A TENSILE LOAD OF NOT LESS THAN 3.4KN/M AT 5% STRAIN. DETERMINED IN A "WIDE STRIP" TENSILE TEST CARRIED OUT ACCORDANCE WITH BS6909 PART 1

DETAIL 4 - TREE OVER PERFORATED DRAINAGE PIPE

SCALE 1:20



NOTES

1. GROUNDCOVER OR HERBACEOUS PLANT IN ACCORDANCE WITH THE PLANTING SCHEDULE. SEE NOTE D.
2. EXISTING SOIL/VEGETATED AREAS.
3. PLANTING PITS TO BE DUG INTO EXISTING SOIL 150MM WIDER THAN THE ROOT SPREAD AND 300MM DEEP. THE PLANTS SHALL BE SET IN THE HOLES SO THAT THE SOIL LEVEL, AFTER SETTLEMENT, WILL BE AT THE ORIGINAL ROOT COLLAR LEVEL ON THE STEM OF THE SHRUB. LOOSEN ROOTS AT BOTTOM OF COMPOST GENTLY WITH FINGERTIPS PRIOR TO PLANTING. THE HOLES SHALL BE BACKFILLED WITH 80% TOPSOIL TO 20% COMPOST TO HALF THEIR DEPTH AND SHALL BE FIRMED BY TREADING. THE REMAINDER OF THE TOPSOIL SHALL THEN BE RETURNED AND AGAIN FIRMED BY TREADING.
4. EXISTING SUB GRADE TO BE RIPPED TO A DEPTH OF 200MM.

DETAIL 6 - GROUND COVER PLANTING

SCALE 1:10

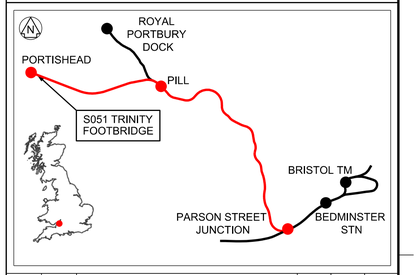
Legend/Notes

A. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS STATED OTHERWISE.

B. ALL LEVELS ARE IN METRES ABOVE SNAKE GRID RBEPP12 (ORDNANCE DATUM + 100 METRES).

C. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTS.

D. REFER TO DRAWING W1097B-ARP-DRG-ECV-051102 FOR PLANTING PLAN AND SCHEDULE.



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A01	04/12/15	ISSUED FOR FORM F001	NM	BO	CW
A02	30/01/19	ISSUED FOR FORM F001 ADDENDUM	LS	RS	CW

Status: FOR FORM 001 REVIEW — Suitability: S3

NetworkRail

Contractor(s)

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Project: METROWEST PHASE 1

Drawing Title: S051 TRINITY FOOTBRIDGE PROPOSED LANDSCAPING GENERAL ARRANGEMENT

Designed	CHRIS WOODMAN	Signed	Date 30/01/19
Drawn	LUCIA SONEIRA	Signed	Date 30/01/19
Checked	ROB SNELL	Signed	Date 30/01/19
Approved	CHRIS WOODMAN	Signed	Date 30/01/19
Scale(s)	As Shown	ELR & Mileage	POD 129m 06ch
Alternative Reference		Sheet	2 of 2
Drawing Number	W1097B-ARP-DRG-ECV-051102	Revision	A02

Drawing Number W1097B-ARP-DRG-EST-051101

PROPOSED DRAINAGE OUTFALL REFER TO DRAWING W1097B-ARP-DRG-EDR-000601

SOLID DRAINAGE PIPE

EXACT LOCATION OF SERVICES TO BE VERIFIED PRIOR TO DETAILED DESIGN. ANY VARIATION FROM THAT SHOWN MAY REQUIRE EITHER ALTERATIONS TO PROPOSED BRIDGE LAYOUT OR SERVICES DIVERSION

TREES SHIFTED TO THE NORTH TO AVOID 3m EITHER SIDE OF 11kV CABLE

AREA OF LAND TAKE = 230m2

2.5m WIDE FOOTWAY SHOWN ON PEDESTRIAN DESIRE LINE FROM TRINITY FOOTBRIDGE

TREES MOVED SO THAT TREE TRUNKS FALL WITHIN NSC LAND

POSITION OF THE HV AND FOUL RISING MAIN FROM COUNCIL DRAWINGS SHOWN ORANGE, ACCURACY UNKNOWN. ACCURACY/COORDINATION WITH NR RECORDS TO BE VERIFIED AT GRIP 5

FOR LIGHTING PROPOSAL SEE W1097B-ARP-DRG-EPT-051101

EXISTING FOOTPATH

TRINITY PRIMARY SCHOOL

EXACT LOCATION OF SERVICES TO BE VERIFIED PRIOR TO DETAILED DESIGN. ANY VARIATION FROM THAT SHOWN MAY REQUIRE SERVICE DIVERSION OR CHANGES TO THE PROPOSED DESIGN

RISING MAIN UTILITY

DIVERSION OF PROPOSED 2.5m WIDE FOOTWAY

FOR LIGHTING PROPOSAL SEE W1097B-ARP-DRG-EPT-051101

EXISTING FENCE

26236

STRUCTURAL RAMP

16265

PORTISHEAD STATION

PERFORATED DRAINAGE PIPE

DITCH ALONG THE BRIDGE TO BE INFILLED BETWEEN PORTISHEAD STATION AND THE SCHOOL BOUNDARY. REFER TO DRAWING W1097B-ARP-DRG-ECV-051101

9337

16168

CPT 3 CPT 4 CPT 5 BHT 2 CPT 6 CPT 7

PROPOSED NETWORK RAIL PALADINE FENCE

PORTISHEAD PORTBURY SINGLE BRISTOL

PROPOSED BURIED PILED SLAB TO SPAN CULVERT TO SUPPORT RAMP COLUMNS. DETAILS TBC FOLLOWING CONSULTATION WITH THE ASSET OWNER AND DETAILED SURVEY OF LOCATION AND CONDITION

AMENDED STRINGER ACCESS STAIRS BASED ON NR/CIV/SD/441

20021

EXISTING FENCE

QUAYS AVENUE

9889

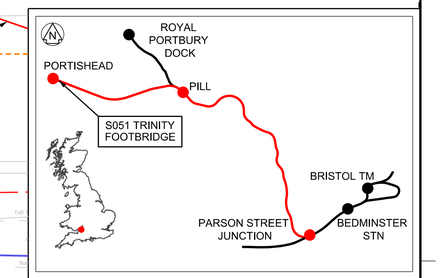
72577

AMENDED ACCESS RAMP WITH 1:15 GRADIENT BASED ON NR/CIV/SD/445

T1

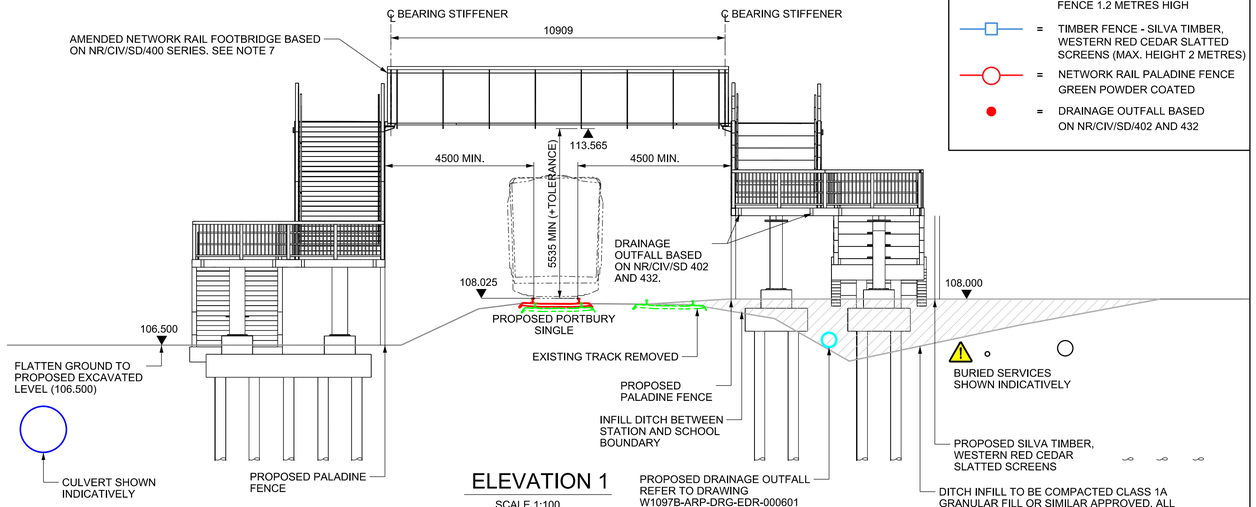
SURVEY REQUIRED TO IDENTIFY LOCATION, FORM AND CONDITION OF CULVERT PRIOR TO DETAILED DESIGN

FOR PAVING DETAIL REFER TO DRAWING W1097B-ARP-DRG-ECV-051101



PLAN

SCALE 1:200



ELEVATION 1

SCALE 1:100

KEY

- = CORDUROY TACTILE PAVING STRIP
- = NR LAND OWNERSHIP EXISTING BOUNDARY
- = BOREHOLE TEST
- = CONE PENETRATION TEST
- = TIMBER POST AND RAIL FENCE 1.2 METRES HIGH
- = TIMBER FENCE - SILVA TIMBER, WESTERN RED CEDAR SLATTED SCREENS (MAX. HEIGHT 2 METRES)
- = NETWORK RAIL PALADINE FENCE GREEN POWDER COATED
- = DRAINAGE OUTFALL BASED ON NR/CIV/SD/402 AND 432

LEGEND/NOTES

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6. THE BRIDGE IS PROPOSED TO BE PAINTED HOLLY GREEN (SUBJECT TO COUNCIL APPROVAL)
7. AMENDED STAIR, RAMP AND FOOTBRIDGE TO BE DESIGNED TO 2.5m FROM 2m CLEARENCE AND AMENDED BRIDGE PARAPET HEIGHT TO BE DESIGNED TO 1.85m.

EXISTING UTILITIES LEGEND

DESCRIPTION	EXISTING
WATER MAIN	W
FOUL SEWER	F1
RISING MAIN	F2
SEWER SURFACE	S S S
HIGH VOLTAGE ELECTRICITY - BELOW GROUND	HV
LOW VOLTAGE ELECTRICITY - BELOW GROUND	LV
HIGH VOLTAGE ELECTRICITY - ABOVE GROUND	HV
LOW VOLTAGE ELECTRICITY - ABOVE GROUND	LV
GPSS PIPELINE	
LOW PRESSURE GAS MAIN	LP
MEDIUM PRESSURE GAS MAIN	IP
HIGH PRESSURE GAS MAIN	HP
BT CABLE - BELOW GROUND	T1
BT CABLE - ABOVE GROUND	T1
CABLE & WIRELESS	T2
VIRGIN MEDIA CABLE - BELOW GROUND	T3

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 RISKS AND INFORMATION.

1. CONTRACTOR TO CONSIDER THE HIGH WATER TABLE IN THE PREPARATION OF METHOD STATEMENTS.
2. EARTHWORK RAMP SETTLEMENT WILL CONTINUE DURING OPERATION OF THE BRIDGE RESULTING IN A STEP FORMING BETWEEN THE EARTHWORK AND STRUCTURAL RAMP. ONGOING MAINTENANCE WILL BE REQUIRED TO REMOVE THE STEP.
3. BURIED SERVICES ARE PRESENT ACROSS THE SITE. THE PRECISE POSITIONS OF THESE ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY DETAILED DESIGN.
4. ELEVATED LEVELS OF CONTAMINANTS, INTRAVENOUS NEEDLES AND OTHER HAZARDOUS SUBSTANCES MAY BE PRESENT ON SITE.
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A01	04/12/15	ISSUED FOR FORM F001	MF	JA	CW
A02	30/01/19	ISSUED FOR FORM F001 ADDENDUM	LS	RS	CW

Status: FOR FORM 001 REVIEW — Suitability: S3

Contractor(s)

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Project: METROWEST PHASE 1

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Designed	CHRIS WOODMAN	Signed	Date 30/01/19
Drawn	LUCIA SONEIRA	Signed	Date 30/01/19
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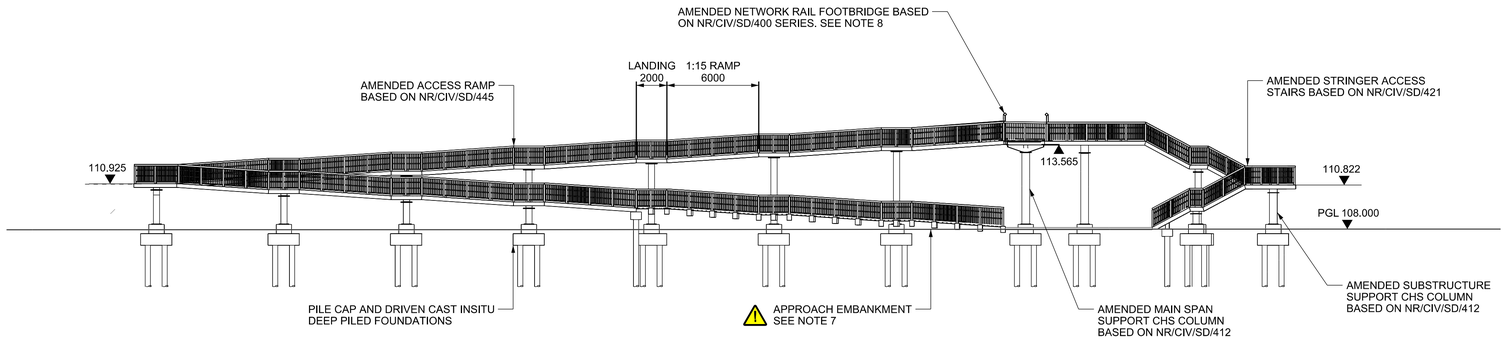
Scale(s): As Shown — ELR & Mileage: POD 129m 06ch

Alternative Reference — Sheet: 1 of 2

Drawing Number: W1097B-ARP-DRG-EST-051101 — Revision: A02

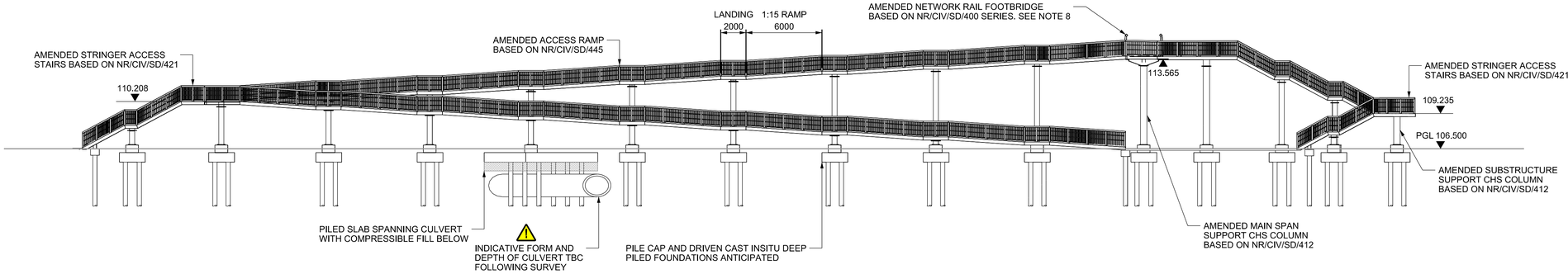
W1097B-ARP-FRM-ECV-000024 A01
W1097B-ARP-FRM-ECV-000024 | A01

Drawing Number
W1097B-ARP-DRG-EST-051102



NORTHERN ELEVATION A

SCALE 1:200



SOUTHERN ELEVATION B

SCALE 1:200

⚠ SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION ⚠

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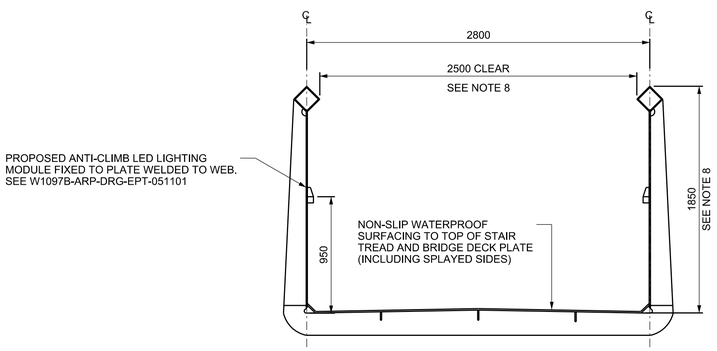
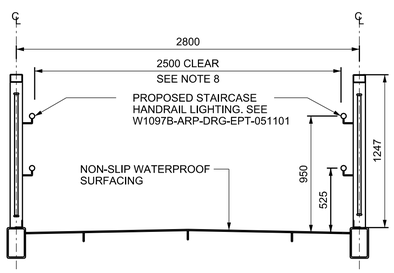


SECTION 2 - THROUGH BRIDGE DECK

SCALE 1:25

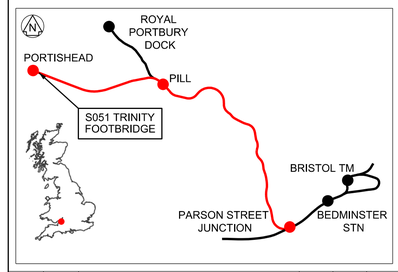


SECTION 3 - THROUGH RAMP

SCALE 1:25

Legend/Notes

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS STATED OTHERWISE.
2. ALL LEVELS ARE IN METRES ABOVE SNAKE GRID RBEPP12 (ORDNANCE DATUM + 100 METRES).
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTS.
4. THIS DRAWING IS BASED ON TOPOGRAPHICAL AND LIDAR SURVEYS UNDERTAKEN BY SEVERN PARTNERSHIP LTD. IN 2015.
5. THE PROPOSED RAIL ALIGNMENT IS SUBJECT TO VARIATION.
6. THE BRIDGE IS PROPOSED TO BE PAINTED HOLLY GREEN (SUBJECT TO COUNCIL APPROVAL)
7. APPROACH EMBANKMENT WILL SETTLE (POTENTIALLY UP TO 300mm). CONSTRUCTION PHASING AND METHODOLOGY SHOULD BE DESIGNED TO ENSURE THAT THE MAJORITY OF THIS MOVEMENT IS COMPLETE PRIOR TO CONSTRUCTION OF THE CONNECTING BRIDGE RAMPS. THIS COULD ENTAIL SURCHARGING FOR A PERIOD OF TIME PRIOR TO BRIDGE CONSTRUCTION (INSTALLATION OF BAND DRAINS COULD SPEED UP THIS PROCESS). NOTE THAT SOME ONGOING CREEP MOVEMENT WILL STILL OCCUR DURING THE STRUCTURES DESIGN LIFE.
8. AMENDED STAIR, RAMP AND FOOTBRIDGE TO BE DESIGNED TO 2.5m FROM 2m CLEARENCE AND AMENDED BRIDGE PARAPET HEIGHT TO BE DESIGNED TO 1.85m.



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Contractor(s)

ARUP
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Project: METROWEST PHASE 1

Drawing Title: S051 TRINITY FOOTBRIDGE PROPOSED GENERAL ARRANGEMENT

Designed	CHRIS WOODMAN	Signed	Date 30/01/19
Drawn	LUCIA SONEIRA	Signed	Date 30/01/19
Checked	ROB SNELL	Signed	Date 30/01/19
Approved	CHRIS WOODMAN	Signed	Date 30/01/19

Scale(s): As Shown
ELR & Mileage: POD 129m 06ch
Alternative Reference:
Sheet: 2 of 2
Drawing Number: W1097B-ARP-DRG-EST-051102
Revision: A02

Network Rail

MetroWest Phase 1

Avon Road Underbridge, Form F001

W1097B-ARP-FRM-ECV-000016

A01 | 12 January 2016

ELR: POD

Chainage: 126m 29ch

Job number 243952-00

Ove Arup & Partners Ltd
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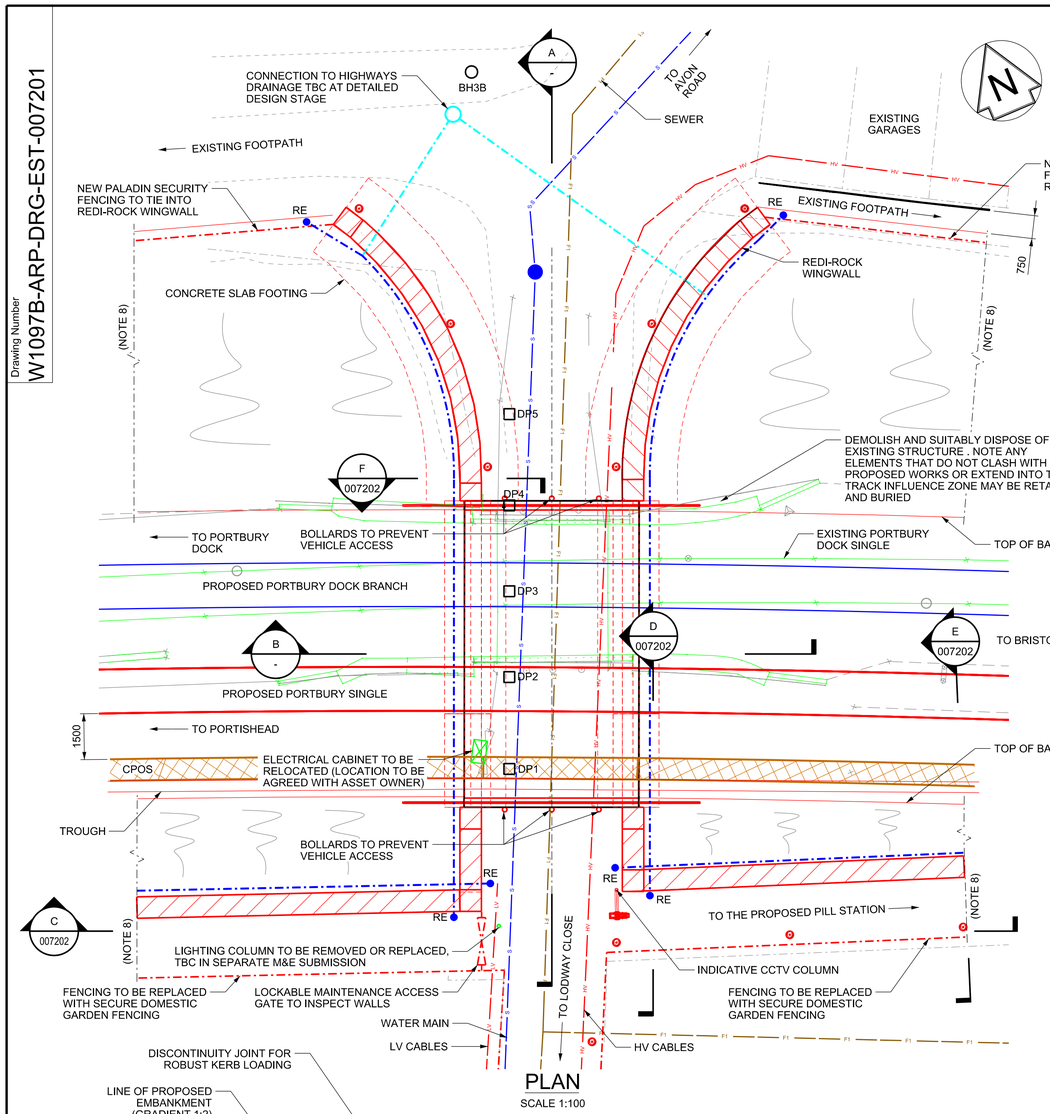
ARUP

Drawing Number
W1097B-ARP-DRG-EST-007201



PLAN
SCALE 1:100

LEGEND

- 200ø FULLY PERFORATED PIPE (1:300 MIN. FALL)
- 200ø PVC PIPE (NON-PERFORATED)
- RE — RODDING EYE
- INDICATIVE FOOTPATH LIGHTING (TBC IN SEPARATE M&E SUBMISSION)
- BH3B — BOREHOLE LOCATION. REFER TO FORM 001 FOR LOG DATA.
- DP(n) — DYNAMIC PIT LOCATION. REFER TO FORM 001 FOR LOG DATA.

⚠ SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION ⚠

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THIS TYPE OF WORK, SPECIAL ATTENTION SHOULD BE GIVEN TO:

i) AS DRAWN, THE NOMINAL WEIGHTS OF THE ABUTMENT, INTERNAL DECK AND EXTERNAL DECK UNITS = 11 TONNES EACH. TO BE CONFIRMED FOLLOWING DETAILED DESIGN.

ii) BURIED SERVICES ARE PRESENT ACROSS THE SITE. THE PRECISE POSITIONS OF THESE ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO DETAILED DESIGN. CONSULTATION WITH ASSET OWNERS IS TO BE UNDERTAKEN AT DETAILED DESIGN FOR PROTECTION OR DIVERSION REQUIREMENTS. THERE IS RESIDUAL RISK THAT ONEROUS REQUIREMENTS MAY SIGNIFICANTLY AFFECT THE PROPOSED WORKS.

iii) THERE IS LIMITED TOPOGRAPHIC SURVEY AVAILABLE AT THIS SITE AND THE FORM F001 DESIGN IS BASED ON INTEPRETATION OF LIDAR DATA. FULL TOPOGRAPHIC SURVEY IS REQUIRED PRIOR TO DETAILED DESIGN.

GENERAL NOTES

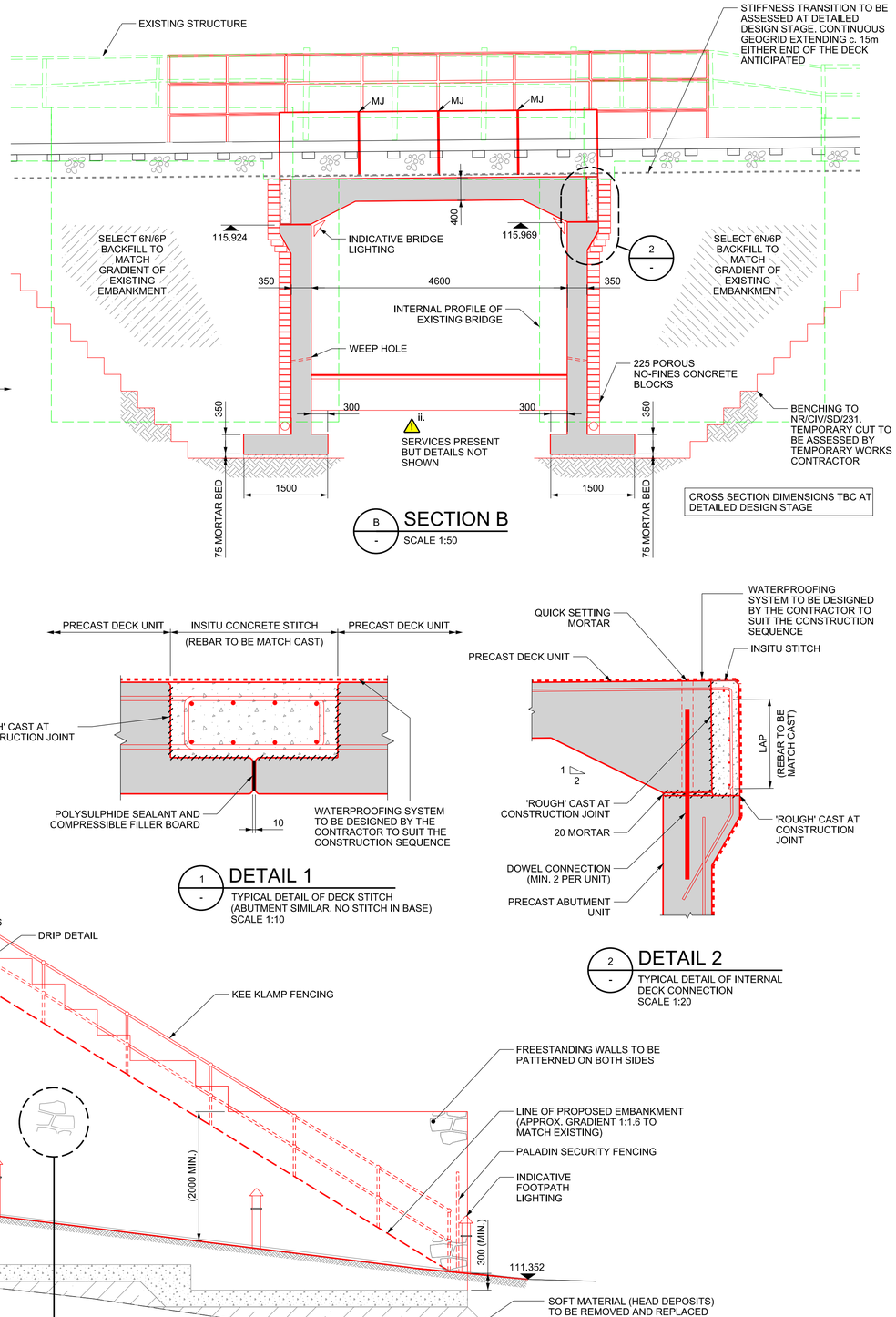
1. ALL DIMENSIONS ARE IN MILLIMETRES (MM).
2. ALL LEVELS ARE IN METRES ABOVE SNAKE GRID RBEPP12 (ORDNANCE DATUM + 100M).
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTS.
4. THIS DRAWING IS BASED ON TOPOGRAPHICAL AND LIDAR SURVEY UNDERTAKEN BY SEVERN PARTNERSHIP LTD. IN 2015.
5. THE TOPOGRAPHICAL MODEL IS BASED ON INTERPRETATION OF LIDAR DATA COLLECTED PRIOR TO VEGETATION CLEARANCE. THE EMBANKMENT SHOULD BE CLEARED OF ALL VEGETATION AND RE-SURVEYED PRIOR TO DETAILED DESIGN.
6. THIS DESIGN IS BASED ON GROUND CONDITIONS PRESENTED IN BH3B AND DP1-5 UNDERTAKEN AS PART OF THE 2015 GROUND INVESTIGATION.
7. THE ALTERNATIVE ACCESS TO PILL STATION AND ALL M&E DETAILS ARE COVERED WITHIN A SEPARATE SUBMISSION. ALL DETAILS SHOWN WITHIN THIS PACKAGE ARE INDICATIVE.
8. THIS SUBMISSION CONSIDERS ONLY 10m OF EMBANKMENT WORKS EITHER SIDE OF THE BRIDGE. EARTHWORKS BEYOND THIS EXTENT ARE CONSIDERED IN A SEPARATE SUBMISSION.

ASSUMED CONSTRUCTION SEQUENCE

STAGE 1: PRE-POSSESSION
1.1. UNDERTAKE SERVICE SEARCH AND PROTECT OR DIVERT IN ACCORDANCE WITH THE REQUIREMENTS OF THE STATUTORY UNDERTAKER. THIS INCLUDES DIVERTING THE ELECTRICAL CABINET.
1.2. INSTALL RETAINING WALLS PARALLEL TO TRACK.
1.3. INSTALL DRAINAGE AND BACKFILL.
1.4. PREPARE GROUND AND NORTHERN BASE SLAB FOR WINGWALLS EITHER SIDE OF EXISTING BRIDGE.

STAGE 2: DURING POSSESSION (2 WEEKS ANTICIPATED):
2.1. REMOVE TRACK AND EXCAVATE EMBANKMENT BEHIND THE EXISTING UNDERBRIDGE.
2.2. DEMOLISH THE EXISTING UNDERBRIDGE AND SUITABLY REMOVE.
2.3. INSTALL PRECAST CONCRETE UNITS AND STITCH TOGETHER.
2.4. INSTALL WINGWALLS AND TIE INTO RETAINING WALLS.
2.5. INSTALL WATERPROOFING SYSTEM AND BACK OF WALL DRAINAGE
2.6. BACKFILL STRUCTURE AND LAY PWAY.
2.7. INSTALL TRACK MONITORING (REQUIREMENTS TO BE DETERMINED AT NEXT GRIP STAGE).

STAGE 3: POST-POSSESSION
3.1. INSTALL FINISHES AND LIGHTING.

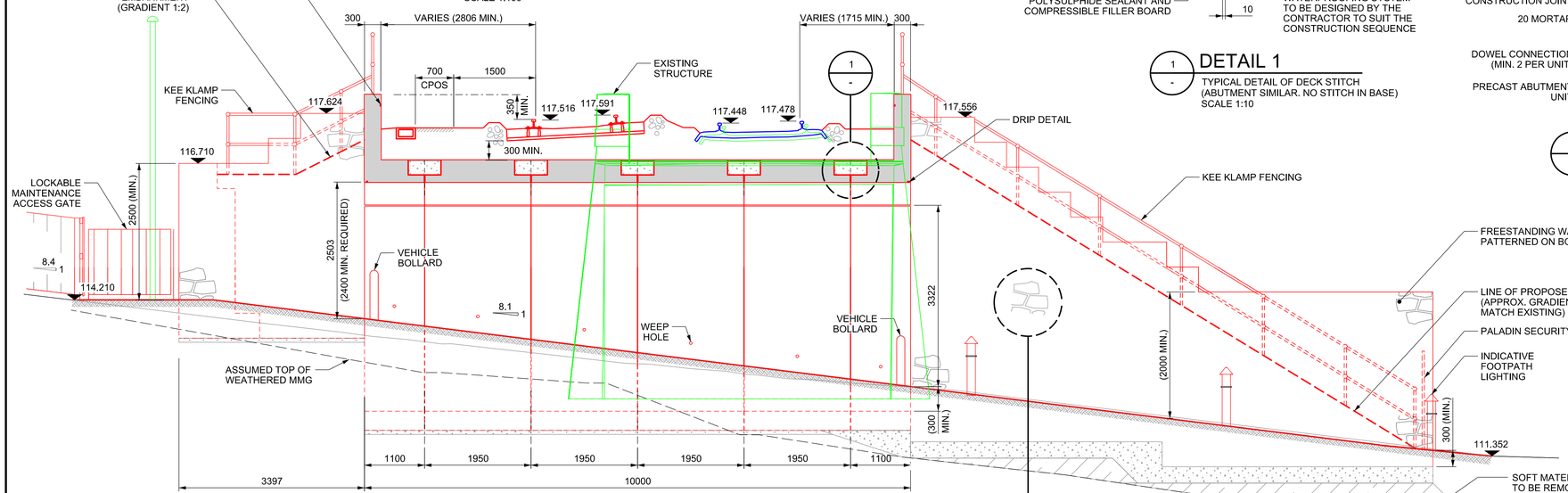


B
-
SECTION B
SCALE 1:50

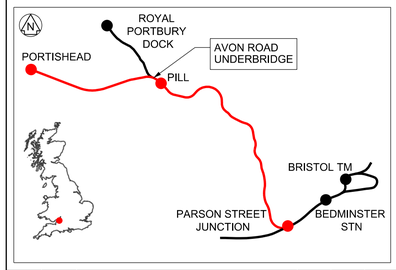
CROSS SECTION DIMENSIONS TBC AT DETAILED DESIGN STAGE

1
-
DETAIL 1
TYPICAL DETAIL OF DECK STITCH (ABUTMENT SIMILAR. NO STITCH IN BASE)
SCALE 1:10

2
-
DETAIL 2
TYPICAL DETAIL OF INTERNAL DECK CONNECTION
SCALE 1:20



A
-
SECTION A
SCALE 1:50



Rev	Date	Description of Revisions	Drawn	Chkd	Appr
A01	12.01.16	ISSUED FOR FORM F001	SJ	JA	CW

Status: FOR FORM 001 REVIEW
Suitability: S3

Contractor(s)

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Project
METROWEST PHASE 1

Drawing Title
S007 AVON ROAD UNDERBRIDGE GENERAL ARRANGEMENT PROPOSED SHEET 1

Designed	J.AYLWIN	Signed	Date 02.12.15
Drawn	S.JOHN	Signed	Date 02.12.15
Checked	J.AYLWIN	Signed	Date 12.01.16
Approved	C.WOODMAN	Signed	Date 12.01.16
Scale(s)	As Shown	ELR & Mileage	POD 126mi 29ch
Alternative Reference		Sheet	1 of 2
Drawing Number	W1097B-ARP-DRG-EST-007201	Revision	A01