



# MANCHESTER CITY COUNCIL

**Manchester City Council  
Ashton Canal Bridge  
New Islington, Manchester**

**VOLUME 1  
SPECIFICATION**



|              |                       |
|--------------|-----------------------|
| PREPARED BY: | Wilde Consultants Ltd |
| DATE:        | June 2023             |
| WILDE REF:   | 651-279-SPEC          |
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## **REPORT ISSUE CONTROL SHEET**

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| <u>P7</u> | July 2023    | FOR TENDER<br>(Updated for Landscape Architect's comments ) | H Goulbourn          | J Hughes   | M Goble<br>CEng MICE    |

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## **PREAMBLE TO THE SPECIFICATION**

1. The Specification referred to in the Tender shall be the 'Specification for Highway Works', published by the Stationery Office (formerly HMSO) as Volume 1 of the Manual of Contract Documents for Highway Works, as modified and extended by the following:
  - a. Appendix 0/1: Contract specific Additional, Substitute and Cancelled Clauses, Tables and Figures;
  - b. Appendix 0/2: Contract specific minor alterations to existing Clauses, Tables and Figures;
  - c. Appendix 0/3: Contract specific Numbered Appendices;
  - d. Appendix 0/4: Contains a list of the relevant drawings;
  - e. Appendix 0/5: Special National Alterations of the Overseeing Organisation of Scotland, Wales or Northern Ireland.
2. The relevant publication date of each page of the Specification for Highway Works is given in the Schedule of Pages and Relevant Publication Dates.
3. An Additional Clause as indicated by a suffix 'A' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. An Additional Clause as indicated by a suffix 'AR' in Appendix 0/1 is a contract specific alteration.
4. A Substitute Clause, as indicated by the suffix 'S' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. A Substitute Clause as indicated by a suffix 'SR' in Appendix 0/1 is a contract specific alteration.
5. A Cancelled Clause as indicated by a suffix 'C' in Appendix 0/5 is an alteration originating from the Overseeing Organisation of Scotland, Wales or Northern Ireland. A Cancelled Clause indicated by a suffix 'CR' in Appendix 0/1 is a contract specific alteration.
6. In so far as any of the contract specific Numbered Appendices may conflict or be inconsistent with any provision of the Specification for Highway Works the Numbered Appendices shall always prevail. Additionally, Numbered Appendices 0/1 and 0/2 shall take precedence over Numbered Appendix 0/5.
7. Any reference in the Contract to a Clause number or contract specific Appendix shall be deemed to refer to the corresponding Substitute Clause number or contract specific Appendix listed in Appendix 0/1, 0/2 or 0/5.
8. Where a Clause is altered any original Table/Figure referred to in the Clause shall apply unless the Table/Figure is also altered. Where a Table/Figure is altered any reference in a Clause to the original Table/Figure shall apply to the altered Table/Figure.
9. Where a Clause in the Specification relates to work goods or materials which are not required for the Works it shall be deemed not to apply.
10. Any Appendix referred to in the Specification which is not used shall be deemed not to apply.
11. Where a Clause in the Specification is prefixed by an # this indicates that this particular Clause has a substitute National Alteration for one or more of the

Overseeing Organisations of Scotland, Wales or Northern Ireland. Substitute or additional National Clauses shall be used within countries to which they specifically apply, and they are deemed to replace corresponding Clauses in the main text of the Specification as appropriate. The substitute National Clauses are located at the end of the relevant Series together with the additional National Clauses of the Overseeing Organisations.

12. Other than where references to the Overseeing Organisation are made in the context of the Overseeing Organisation granting statutory or type approvals, the roles and functions of the Overseeing Organisation shall be undertaken by the Project Manager.
13. Where the Specification requires the provision of documentation to the Overseeing Organisation for statutory or type approval such documentation shall be provided to the Project Manager.
14. If the Specification is used in conjunction with a Contract under which the Contractor is responsible for the design of any part of the Permanent Works, the delegation of the roles and functions of the Overseeing Organisation as stated in paragraph 12 above shall be further amended as follows:
  - a. If any agreement, consent or approval required to be obtained from the Overseeing Organisation impacts on the health and safety of the general public, the environment or any property or equipment not owned or operated by the Contractor, such agreement, consent, approval shall be obtained from Employer's Project Manager.
  - b. Where the Specification provides for the Overseeing Organisation to require a test, waive the requirement for a test or alter testing frequency, the party to whom the Overseeing Organisation's roles and functions have been ascribed by paragraph 12 above shall exercise such decisions in accordance with the Secretary of State's requirements stated in the Contract.
15. Where Standards and other documents are incorporated into the Contract by reference the respective edition used shall be that which is current on the Contract Reference Document unless otherwise stated in the Specification.

**APPENDIX 0/1**

**CONTRACT-SPECIFIC ADDITIONAL, SUBSTITUTE AND CANCELLED  
CLAUSES, TABLES AND FIGURES INCLUDED IN THE CONTRACT**

ADDITIONAL Clauses, Tables and Figures

1. None

**APPENDIX 0/2**

**CONTRACT-SPECIFIC MINOR ALTERATIONS TO EXISTING CLAUSES AND  
TABLES INCLUDED IN THE CONTRACT**

| <u>Clause No.</u> | <u>Alternations to be made</u> |
|-------------------|--------------------------------|
|-------------------|--------------------------------|

|      |      |
|------|------|
| None | None |
|------|------|

## **APPENDIX 0/3**

### **LIST OF NUMBERED APPENDICES**

Appendix 0/3 comprises two lists, A and B, of Numbered Appendices as follows:

**List 'A'** is a complete list of the Numbered Appendices referred to in the Specification for Highway Works with those not adopted marked 'Not Used'.

**List 'B'** is a list of the Contract-Specific Numbered Appendices devised for the Contract with those not adopted are marked 'Not Used'.

**APPENDIX 0/3**

**LIST OF NUMBERED APPENDICES**

| <b><u>LIST A</u></b>     |                            |                                                                                                                     |
|--------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b><u>Volume No.</u></b> | <b><u>Appendix No.</u></b> | <b><u>Title</u></b>                                                                                                 |
|                          |                            | <b><u>Introduction</u></b>                                                                                          |
| 1                        | 0/ 1                       | Contract Specific Additional, Substitute and Cancelled Clauses, Tables and Figures Included in the Contract         |
| 1                        | 0/ 2                       | Contract Specific Minor Alterations to Existing Clauses, Tables and Figures included in the Contract                |
| 1                        | 0/ 3                       | List of Numbered Appendices                                                                                         |
| 1                        | 0/ 4                       | List of Drawings Included in the Contract                                                                           |
| Not Used                 | 0/ 5                       | Special National Alterations of the Overseeing Organisation of Scotland/Wales/Northern Ireland<br><br>Preliminaries |
| 1                        | 1/ 1                       | Temporary Accommodation and Equipment for the Overseeing Organisation                                               |
| Not Used                 | 1/ 2                       | Vehicles for the Overseeing Organisation                                                                            |
| Not Used                 | 1/ 3                       | Communication System for the Overseeing Organisation                                                                |
| 1                        | 1/ 4                       | Working and Fabrication Drawings                                                                                    |
| 1                        | 1/ 5                       | Testing to be Carried out by the Contractor                                                                         |
| Not Used                 | 1/ 6                       | Supply and Delivery of Samples to the Overseeing Organisation                                                       |
| 1                        | 1/ 7                       | Site Extent and Limitations on Use                                                                                  |
| 1                        | 1/ 8                       | Operatives for the Overseeing Organisation                                                                          |
| 1                        | 1/ 9                       | Control of Noise and Vibration                                                                                      |
| 1                        | 1/10                       | Structures to be Designed by the Contractor                                                                         |
| 1                        | 1/11                       | Structural Elements and Other Features to be Designed by the Contractor                                             |
| 1                        | 1/12                       | Setting Out and Existing Ground Levels                                                                              |

| <b>LIST A</b>     |                     |                                                                                                                                       |
|-------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <u>Volume No.</u> | <u>Appendix No.</u> | <u>Title</u>                                                                                                                          |
| 1                 | 1/13                | Programme of Works                                                                                                                    |
| Not Used          | 1/14                | Payment Application                                                                                                                   |
| 1                 | 1/15                | Accommodation Works                                                                                                                   |
| 1                 | 1/16                | Privately and Publicly Owned Services and Supplies                                                                                    |
| 1                 | 1/17                | Traffic Safety and Management                                                                                                         |
| Not Used          | 1/18                | Temporary Diversions of Traffic                                                                                                       |
| Not Used          | 1/19                | Routeing of Vehicles                                                                                                                  |
| Not Used          | 1/20                | Recovery Vehicles for Breakdowns                                                                                                      |
| Not Used          | 1/21                | Information Boards                                                                                                                    |
| Not Used          | 1/22                | Progress Photographs                                                                                                                  |
| 1                 | 1/23                | Risks To Health and Safety from materials and Substances                                                                              |
| Not Used          | 1/24                | Quality Management System                                                                                                             |
| Not Used          | 1/25                | Temporary Closed-Circuit Television (CCTV) System for the Monitoring of Traffic                                                       |
| Not Used          | 1/26                | Temporary Automatic Speed Camera System For The Enforcement Of Mandatory Speed Limits At Roadworks (TASCAR)                           |
| Not Used          | 1/27                | Temporary Automatic Speed Camera System For The Enforcement Of Mandatory Speed Limits At Roadworks (Tascar) - Particular Requirements |
|                   |                     | Site Clearance                                                                                                                        |
| 1                 | 2/ 1                | List of Buildings etc. to be Demolished                                                                                               |
| Not Used          | 2/ 2                | Filling of Trenches and Pipes                                                                                                         |
| Not Used          | 2/ 3                | Retention of Material Arising from Site Clearance                                                                                     |
| Not Used          | 2/ 4                | Explosives and Blasting                                                                                                               |
| Not Used          | 2/ 5                | Hazardous Material                                                                                                                    |
|                   |                     | Fencing                                                                                                                               |

| <b>LIST A</b>     |                     |                                                                                     |
|-------------------|---------------------|-------------------------------------------------------------------------------------|
| <u>Volume No.</u> | <u>Appendix No.</u> | <u>Title</u>                                                                        |
| 1                 | 3/ 1                | Fences, Gates and Stiles                                                            |
|                   |                     | Road Restraint Systems (Vehicle and Pedestrian)                                     |
| Not Used          | 4/ 1                | Road Restraint Systems (Vehicle and Pedestrian)                                     |
| 1                 | 4/ 2                | Pedestrian Guardrails                                                               |
|                   |                     | Drainage and Service Ducts                                                          |
| 1                 | 5/ 1                | Drainage Requirements                                                               |
| Not Used          | 5/ 2                | Service Duct Requirements                                                           |
| Not Used          | 5/ 3                | Surface Water Channels and Drainage Blocks                                          |
| Not Used          | 5/ 4                | Fin Drains and Narrow Filter Drains                                                 |
| Not Used          | 5/ 5                | Combined Drainage and Kerb Systems                                                  |
| Not Used          | 5/ 6                | Linear Drainage Channel Systems                                                     |
| Not Used          | 5/ 7                | Thermoplastics Structural Wall Pipes And Fittings                                   |
|                   |                     | Earthworks                                                                          |
| 1                 | 6/ 1                | Requirements for Acceptability and Testing etc. of Earthworks Materials             |
| Not Used          | 6/ 2                | Requirements for Dealing with Class U2 Unacceptable Material                        |
| Not Used          | 6/ 3                | Requirements for Excavation, Deposition, Compaction (Other than Dynamic Compaction) |
| Not Used          | 6/ 4                | Requirements for Class 3 Material                                                   |
| Not Used          | 6/ 5                | Geotextiles Used to Separate Earthworks Materials                                   |
| Not Used          | 6/ 6                | Fill to Structures and Fill Above Structural Foundations                            |
| Not Used          | 6/ 7                | Sub-formation and Capping and Preparation and Surface Treatment of Formation        |
| Not Used          | 6/ 8                | Topsoiling                                                                          |
| Not Used          | 6/ 9                | Earthwork Environmental Bunds, Landscape Areas, Strengthened Embankments            |

| <b><u>LIST A</u></b>     |                            |                                                                                                              |
|--------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------|
| <b><u>Volume No.</u></b> | <b><u>Appendix No.</u></b> | <b><u>Title</u></b>                                                                                          |
| Not Used                 | 6/10                       | Ground Anchorages, Crib Walling and Gabions                                                                  |
| Not Used                 | 6/11                       | Swallow Holes and Other Naturally Occurring Cavities and Disused Mine Workings                               |
| Not Used                 | 6/12                       | Instrumentation and Monitoring                                                                               |
| Not Used                 | 6/13                       | Ground Improvement                                                                                           |
|                          |                            | Pavements                                                                                                    |
| Not Used                 | 7/ 1                       | Permitted Pavement Options                                                                                   |
| Not Used                 | 7/ 2                       | Excavation, Trimming and Reinstatement of Existing Surfaces                                                  |
| Not Used                 | 7/ 3                       | Surface Dressing Sheets 1, 2 & 3                                                                             |
| Not Used                 | 7/ 4                       | Bond Coats, Tack Coats and Other Bituminous Sprays                                                           |
| Not Used                 | 7/ 5                       | In Situ Recycling: The Remix and Repave Process                                                              |
| Not Used                 | 7/ 6                       | Breaking Up or Perforation of Existing Pavements                                                             |
| Not Used                 | 7/ 7                       | Slurry Surfacing Incorporating Microsurfacing (Sheets 1, 2 and 3)                                            |
| Not Used                 | 7/ 8                       | Not Used                                                                                                     |
| Not Used                 | 7/ 9                       | Cold-Milling (Planing) Of Bituminous Bound Flexible Pavement                                                 |
| Not Used                 | 7/10                       | Not Used                                                                                                     |
| Not Used                 | 7/11                       | Overband And Inlaid Crack Sealing Systems                                                                    |
| Not Used                 | 7/12                       | Arrester Beds                                                                                                |
| Not Used                 | 7/13                       | Saw-Cut And Seal Bituminous Overlays On Existing Jointed Concrete Pavements                                  |
| Not Used                 | 7/14                       | Preparation Of Jointed Concrete Pavements Prior To Overlaying And Saw-Cut And Seal Of The Bituminous Overlay |
| Not Used                 | 7/15                       | Saw-Cut, Crack And Seat Existing Jointed Reinforced Concrete Pavements                                       |

| <b>LIST A</b>     |                     |                                                                                        |
|-------------------|---------------------|----------------------------------------------------------------------------------------|
| <u>Volume No.</u> | <u>Appendix No.</u> | <u>Title</u>                                                                           |
| Not Used          | 7/16                | Cracking And Seating Of Existing Jointed Unreinforced Concrete Pavements And CBM bases |
| Not Used          | 7/17                | Cracking Plant And Equipment Progress-Record                                           |
| Not Used          | 7/18                | Site Specific Details And Requirements For Cold Recycled Bitumen Bound Material        |
| Not Used          | 7/19                | Site Specific Details And Requirements For Recycled Cement Bound Material              |
| Not Used          | 7/20                | Site Specific Details And Requirements For Inducing Cracks                             |
| Not Used          | 7/21                | Surface Dressing - Recipe Specification                                                |
| Not Used          | 7/22                | Repairs To Potholes                                                                    |
|                   |                     | Road Pavements -Concrete and Cement Bound Materials                                    |
| Not Used          | 10/ 1               | Plant and Equipment for the Construction of Exposed Aggregate Surface                  |
|                   |                     | Kerbs, Footways And Paved Areas                                                        |
| 1                 | 11/ 1               | Kerbs, Footways and Paved Areas                                                        |
| 1                 | 11/ 2               | Access Steps                                                                           |
|                   |                     | Traffic Signs and Road Markings                                                        |
| Not Used          | 12/ 1               | Traffic Signs : General                                                                |
| Not Used          | 12/ 2               | Traffic Signs : Marker Posts                                                           |
| Not Used          | 12/ 3               | Traffic Signs and Road Markings                                                        |
| Not Used          | 12/ 4               | Traffic Signs : Cones, Cylinders, FTDs and Other Traffic Delineators                   |
| Not Used          | 12/ 5               | Traffic Signs : Traffic Signals                                                        |
| Not Used          | 12/ 6               | Traffic Signs : Special Sign Requirements on Gantries                                  |
|                   |                     | Road Lighting Columns , Brackets and CCTV Masts                                        |
| Not Used          | 13/ 1               | Lighting Columns and Brackets                                                          |
| Not Used          | 13/ 2               | Column and Bracket Data Sheets 1 and 2                                                 |

| <b>LIST A</b>     |                     |                                                                                                                   |
|-------------------|---------------------|-------------------------------------------------------------------------------------------------------------------|
| <u>Volume No.</u> | <u>Appendix No.</u> | <u>Title</u>                                                                                                      |
| Not Used          | 13/ 3               | Instruction for Completion of Lighting Column and Bracket Data Sheets                                             |
| Not Used          | 13/ 4               | Information to be Provided When Specifying CCTV Masts                                                             |
| Not Used          | 13/ 5               | (Specification for Highway Works) Typical CCTV Mast Data                                                          |
| Not Used          | 13/ 6               | Instructions For Completion Of CCTV Mast Data Sheets                                                              |
| Not Used          | 13/ 7               | Information to be Prepared When specifying Cantilever Masts                                                       |
| Not Used          | 13/ 8               | (Specification for Highway Works) Typical Cantilever Masts Data Sheets 1 and 2                                    |
| Not Used          | 13/ 9               | Instructions for Completion of Cantilever Masts Data Sheets                                                       |
|                   |                     | Electrical Work for Road Lighting and Traffic Signs                                                               |
| Not Used          | 14/ 1               | Site Records                                                                                                      |
| Not Used          | 14/ 2               | Location of Lighting Units and Feeder Pillars                                                                     |
| 1                 | 14/ 3               | Temporary Lighting                                                                                                |
| 1                 | 14/ 4               | Electrical Equipment for Road Lighting                                                                            |
| Not Used          | 14/ 5               | Electrical Equipment for Traffic Signs                                                                            |
|                   |                     | Motorway Communications                                                                                           |
| Not Used          | 15/ 1               | Motorway Communications                                                                                           |
| Not Used          | 15/ 2               | Cable and Duct Requirements                                                                                       |
|                   |                     | Piling and Embedded Retaining Walls                                                                               |
| 1                 | 16/ 1               | General Requirements for Piling and Embedded Retaining Walls                                                      |
| Not Used          | 16/ 2               | Precast Reinforced and Pre-stressed Concrete Piles and Precast Reinforced Concrete Segmental Piles                |
| Not Used          | 16/ 3               | Bored Cast-in-place Piles                                                                                         |
| Not Used          | 16/ 4               | Bored Piles Constructed Using Continuous Flight Augers and Concrete or Grout Injection through Hollow Auger Stems |
| Not Used          | 16/ 5               | Driven Cast-in-Place Piles                                                                                        |

| <b>LIST A</b>     |                     |                                                                |
|-------------------|---------------------|----------------------------------------------------------------|
| <u>Volume No.</u> | <u>Appendix No.</u> | <u>Title</u>                                                   |
| Not Used          | 16/ 6               | Steel Bearing Piles                                            |
| Not Used          | 16/ 7               | Reduction of Friction on Piles                                 |
| 1                 | 16/ 8               | Non-Destructive Methods for Testing of Piles                   |
| 1                 | 16/ 9               | Static Load Testing of Piles                                   |
| Not Used          | 16/10               | Diaphragm Walls                                                |
| Not Used          | 16/11               | Hard/Hard Secant Pile Walls                                    |
| Not Used          | 16/12               | Hard/Soft Secant Pile Walls                                    |
| Not Used          | 16/13               | Contiguous Bored Pile Walls                                    |
| Not Used          | 16/14               | King Post Walls                                                |
| Not Used          | 16/15               | Steel Sheet Piles                                              |
| Not Used          | 16/16               | Integrity Testing of Wall Elements                             |
| Not Used          | 16/17               | Instrumentation for Piles and Embedded Walls                   |
| Not Used          | 16/18               | Support Fluid                                                  |
|                   |                     | Structural Concrete                                            |
| 1                 | 17/ 1               | Schedule for the Specification of Designed Concrete            |
| 1                 | 17/ 2               | Concrete – Surface Protection Systems                          |
| 1                 | 17/ 3               | Concrete – Surface Finishes                                    |
| 1                 | 17/ 4               | Concrete – General                                             |
| Not Used          | 17/ 5               | Buried Concrete                                                |
| Not Used          | 17/ 6               | Grouting and Duct Systems for Post-Tensioned Tendons           |
| 1                 | 17/ 7               | Precast Concrete Products                                      |
| Not Used          | 17/ 8               | Post-installed Anchors and Reinforcing Bar Connections (03/20) |
|                   |                     | Steelwork for Structures                                       |
| 1                 | 18/ 1               | Requirements for Structural Steelwork                          |

| <b>LIST A</b>     |                     |                                                                                                 |
|-------------------|---------------------|-------------------------------------------------------------------------------------------------|
| <u>Volume No.</u> | <u>Appendix No.</u> | <u>Title</u>                                                                                    |
|                   |                     | Protection of Steelwork Against Corrosion                                                       |
| 1                 | 19/ 1               | Form HA/P1 (New Works) Paint System Sheet                                                       |
| Not Used          | 19/ 2               | Requirements for Other Works                                                                    |
| Not Used          | 19/ 3               | Form HA/P3 Paint Data Sheet                                                                     |
| Not Used          | 19/ 4               | Form HA/P3 Paint Sample Dispatch List, Sheet 1 and 2                                            |
| Not Used          | 19/ 5               | General Requirements                                                                            |
|                   |                     | Waterproofing for Structures                                                                    |
| 1                 | 20/ 1               | Waterproofing for Concrete Structures                                                           |
|                   |                     | Bridge Bearings                                                                                 |
| 1                 | 21/ 1               | Bridge Bearing Schedule                                                                         |
|                   |                     | Parapets                                                                                        |
| Not Used          | 22/ 1               | Parapet Schedule                                                                                |
|                   |                     | Bridge Expansion Joints and Sealing of Gaps                                                     |
| 1                 | 23/ 1               | Bridge Deck Expansion Joint Schedule                                                            |
| Not Used          | 23/ 2               | Sealing of Gaps Schedule (Other Than in Bridge Deck Expansion Joints)                           |
|                   |                     | Brickwork, Blockwork and Stonework                                                              |
| Not Used          | 24/ 1               | Brickwork, Blockwork and Stonework                                                              |
|                   |                     | Special Structures                                                                              |
| Not Used          | 25/ 1               | Requirements for Corrugated Steel Buried Structures                                             |
| Not Used          | 25/ 2               | Requirements for Reinforced Soil and Anchored Earth Structures                                  |
| Not Used          | 25/ 3               | Requirements for Pocket -Type and Grouted Cavity Reinforced Brickwork Retaining Wall Structures |
| Not Used          | 25/ 4               | Environmental Barriers                                                                          |
| Not Used          | 25/ 5               | Requirements For Buried Rigid Pipes For Drainage Structures                                     |

| <b>LIST A</b>     |                     |                                                                                         |
|-------------------|---------------------|-----------------------------------------------------------------------------------------|
| <u>Volume No.</u> | <u>Appendix No.</u> | <u>Title</u>                                                                            |
|                   |                     | Miscellaneous                                                                           |
| 1                 | 26/ 1               | Ancillary Concrete                                                                      |
| 1                 | 26/ 2               | Bedding Mortar                                                                          |
| Not Used          | 26/ 3               | Cored Thermoplastic Node Markers                                                        |
|                   |                     | Landscape and Ecology                                                                   |
| 1                 | 30/ 1               | General                                                                                 |
| Not Used          | 30/ 2               | Weed Control                                                                            |
| Not Used          | 30/ 3               | Control of Rabbits and Deer                                                             |
| Not Used          | 30/ 4               | Ground Preparation                                                                      |
| Not Used          | 30/ 5               | Grass Seeding, Wildflower Seeding and Turfing                                           |
| Not Used          | 30/ 6               | Planting sheets 1 and 2                                                                 |
| Not Used          | 30/ 7               | Grass, Bulbs and Wildflower Maintenance                                                 |
| Not Used          | 30/ 8               | Watering                                                                                |
| Not Used          | 30/ 9               | Establishment Maintenance for Planting                                                  |
| Not Used          | 30/10               | Maintenance of Established Trees and Shrubs                                             |
| Not Used          | 30/11               | Management of Waterbodies                                                               |
| Not Used          | 30/12               | Special Ecology Measures                                                                |
|                   |                     | Maintenance Painting of Steelwork                                                       |
| Not Used          | 50/ 1               | (Specification for Highway Works) From HA/P1 (Maintenance) Paint System Sheet           |
| Not Used          | 50/ 2               | Requirements for Other Work                                                             |
| Not Used          | 50/ 3               | (Specification for Highway Works) From HA/P2 Paint Data Sheet                           |
| Not Used          | 50/ 4               | (Specification for Highway Works) From HA/P3 Paint Sample Despatch List: Sheets 1 and 2 |
| Not Used          | 50/ 5               | General Requirements                                                                    |

| <b><u>LIST A</u></b>     |                            |                                                |
|--------------------------|----------------------------|------------------------------------------------|
| <b><u>Volume No.</u></b> | <b><u>Appendix No.</u></b> | <b><u>Title</u></b>                            |
|                          |                            | Concrete Repairs                               |
| Not Used                 | 57/ 1                      | Repair Product – Requirements                  |
| Not Used                 | 57/ 2                      | Requirements for Reinforcement                 |
| Not Used                 | 57/ 3                      | Execution of Concrete Repairs                  |
| Not Used                 | 57/ 4                      | Sprayed Concrete                               |
| Not Used                 | 57/ 5                      | Concrete Injection                             |
| Not Used                 | 57/ 6                      | Contractor Investigation of Concrete Condition |
| Not Used                 | 57/ 7                      | Requirements for Galvanic Anodes               |
| Not Used                 | 90/ 1                      | CCTV Survey of Highway Drainage Systems        |

**LIST 'B' (Contract Specific Numbered Appendices Devised for the Contract)**

| <u>Volume<br/>No.</u> | <u>Appendix<br/>No</u> | <u>Title</u> | <u>Compiler</u> |
|-----------------------|------------------------|--------------|-----------------|
| N/A                   | N/A                    | N/A          | N/A             |

**APPENDIX 0/4**

**LIST OF DRAWINGS INCLUDED IN THE CONTRACT**

| <b>Project Specific Drawings</b> |                              |
|----------------------------------|------------------------------|
| <b>Drawing Number</b>            | <b>Title</b>                 |
| 651-279-001                      | Existing General Arrangement |
| 651-279-002                      | Land Ownership               |
| 651-279-003                      | Existing Services            |
| 651-279-004                      | Site Clearance               |
| 651-279-006                      | Proposed Site Investigation  |
| 651-279-010                      | Proposed General Arrangement |
| 651-279-011                      | Proposed Bridge Layout       |
| 651-279-012                      | Bridge Details               |
| 651-279-013                      | Piling Layout                |
| 651-279-014                      | Pile Caps 1                  |
| 651-279-015                      | Pile Caps 2                  |
| 651-279-016                      | Abutments                    |
| 651-279-017                      | West Approach Ramp           |
| 651-279-018                      | West Approach Ramp Details   |
| 651-279-019                      | East Approach Ramp           |
| 651-279-020                      | Mooring Steps                |
| 651-279-021                      | Parapet Details              |
| 651-279-022                      | Drainage Details             |
| 651-279-023                      | Accommodation Works          |
| 651-279-024                      | South Retaining Walls        |
| 651-279-025                      | Planters                     |
| 651-279-030                      | RC Details North Abutment    |

| Project Specific Drawings |                           |
|---------------------------|---------------------------|
| Drawing Number            | Title                     |
| 651-279-031               | RC Details South Abutment |
| 651-279-032               | RC Details Ramp 1 and 2   |
| 651-279-033               | RC Details Ramp 3         |
| 651-279-034               | RC Details Ramp 4         |
| 651-279-035               | RC Details Ramp 5         |
| 651-279-036               | RC Steps                  |
| 651-279-037               | RC Retaining Walls        |

| <b>Architects Drawings – Hawkins Brown</b> |                                                                                           |
|--------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Drawing Number</b>                      | <b>Title</b>                                                                              |
| ICB-HBA-00-00-DR-A-24-0400                 | General Arrangement Plan - Sections                                                       |
| ICB-HBA-00-00-DR-A-24-0401                 | Step Wall Section – Existing Northern Step Wall                                           |
| ICB-HBA-00-00-DR-A-24-0402                 | Step Wall Section – Existing Southern Step Wall                                           |
| ICB-HBA-00-00-DR-A-24-0403                 | Ramp Section - Northeast Ramp                                                             |
| ICB-HBA-00-00-DR-A-24-0404                 | Bridge Section - Section                                                                  |
| ICB-HBA-00-00-DR-A-34-0100                 | Balustrade Types Allocation Plan                                                          |
| ICB-HBA-00-00-DR-A-34-0400                 | Handrail Detail 01 - Feature Balustrade Typical handrail section & lighting               |
| ICB-HBA-00-00-DR-A-34-0401                 | Handrail Detail 02 - Fixing to concrete ramp wall                                         |
| ICB-HBA-00-00-DR-A-34-0402                 | Handrail Detail - Feature Balustrade junction with guardrail to docking area steps        |
| ICB-HBA-00-00-DR-A-34-0403                 | Handrail Detail - Feature Balustrade handrail ends on NW ramp                             |
| ICB-HBA-00-00-DR-A-34-0404                 | Handrail Detail - Feature Balustrade handrail ends on SE ramp                             |
| ICB-HBA-00-00-DR-A-34-0405                 | Handrail Detail - Feature Balustrade to existing lock wall                                |
| ICB-HBA-00-00-DR-A-34-0406                 | Railing Detail - Rimini Fences to South Abutment                                          |
| ICB-HBA-00-00-DR-A-34-0407                 | Railing Detail - Rimini Fences to Existing Bridge                                         |
| ICB-HBA-00-00-DR-A-34-0409                 | Balustrade Detail 01a – Cross section of proposed feature balustrade design to lock wall. |
| ICB-HBA-00-00-DR-A-34-0410                 | Balustrade Detail 01a - Cross section of proposed Feature Balustrade design to Ramp       |
| ICB-HBA-00-00-DR-A-34-0411                 | Balustrade Detail 01b - Cross section of proposed Feature Balustrade design to Bridge     |
| ICB-HBA-00-00-DR-A-34-0412                 | Balustrade Detail 02a - Cross section of proposed docking landing guardings               |
| ICB-HBA-00-00-DR-A-34-0413                 | Balustrade Detail 02b - Cross section of proposed docking stair                           |

| Architects Drawings – Hawkins Brown |                                                                                                 |
|-------------------------------------|-------------------------------------------------------------------------------------------------|
| Drawing Number                      | Title                                                                                           |
| ICB-HBA-00-00-DR-A-34-0414          | Feature Balustrade BAL 01a to ramp areas - typical details                                      |
| ICB-HBA-00-00-DR-A-34-0415          | Feature Balustrade BAL 01b to bridge areas - typical details                                    |
| ICB-HBA-00-00-DR-A-34-0416          | Balustrade BAL 02 to mooring area steps - typical details                                       |
| ICB-HBA-00-00-DR-A-34-0417          | Balustrade BAL 02 to stair landing areas - typical details                                      |
| ICB-HBA-00-00-DR-A-34-0418          | General Arrangement - Stair to mooring area                                                     |
| ICB-HBA-00-00-DR-A-34-0419          | Plan Detail of Typical wired balustrade arrangement through baseplate                           |
| ICB-HBA-00-00-DR-A-42-0100          | Bridge & Ramp Concrete Relief - Extent & Scope                                                  |
| ICB-HBA-00-00-DR-A-42-0400          | Bridge & Ramp Concrete Relief Detail                                                            |
| ICB-HBA-00-00-DR-A-43-0100          | Landscape GA - Finishes at bridge and ramp                                                      |
| ICB-HBA-00-00-DR-A-43-0101          | Landscape GA - Finishes at canal towpath level                                                  |
| ICB-HBA-00-00-DR-A-43-0102          | Landscape GA - Proposed NE planter detail                                                       |
| ICB-HBA-00-00-DR-A-43-0103          | Landscape GA - Proposed SE planter detail                                                       |
| ICB-HBA-00-00-DR-A-43-0104          | Typical landscape finishes type                                                                 |
| ICB-HBA-00-00-DR-A-43-0400          | Deck Detail 01 - Proposed surface finish to RC Ramp inc. interface with Balustrade & Drain      |
| ICB-HBA-00-00-DR-A-43-0401          | Deck Detail 02 - Proposed surface finish to Steel Bridge inc. interface with Balustrade & Drain |

| Lighting Designer Drawings – Studio Dekka |                                                      |
|-------------------------------------------|------------------------------------------------------|
| Drawing Number                            | Title                                                |
| 1226-ACB-PR-DR-001                        | Proposed Lighting Layout Bridge & Ramp level         |
| 1226-ACB-PR-DR-002                        | Proposed Lighting Layout Canal Towpath level         |
| 1226-ACB-PR-SH-001                        | Schedule of Public Realm Lighting Equipment          |
| 2202-101_201_ElectricalLayout1of2         | Electrical Requirements Ramp and Bridge Level 1 of 2 |
| 2202-101_202_ElectricalLayout2of2         | Electrical Requirements Ramp and Bridge Level 2 of 2 |

| Landscape Designer Drawings – Planit |                               |
|--------------------------------------|-------------------------------|
| Drawing Number                       | Title                         |
| ICB-PLA-00-00-DR-L-0001              | General Arrangement           |
| ICB-PLA-00-00-DR-L-2000              | Tree Retention / Removal Plan |
| ICB-PLA-00-00-DR-L-2001              | Planting Plan and Schedule    |
| ICB-PLA-00-00-DR-L-6000              | Planter Details               |

| Third Party Reference – Survey Information |                                            |
|--------------------------------------------|--------------------------------------------|
| <u>Drawing Number</u>                      | Description                                |
| 42497NGUG-01                               | Ground Penetrating Radar Survey            |
| 10461_005                                  | Topographical Survey (DWG Format Provided) |

**APPENDIX 1/1: accommodation**

**TEMPORARY ACCOMMODATION AND EQUIPMENT FOR THE OVERSEEING ORGANISATION**

**Principal Offices for the Overseeing Organisation**

The principal offices for the Overseeing Organisation are to include:

1. Car parking suitable for 2 Vehicles shall be provided adjacent to the Overseeing Organisation's office for the sole use of the Overseeing Organisation's staff.
2. The parking area will provide an even hard-standing surface free from standing water and be connected to the offices by a paved footpath. The car park and access shall be kept clean and clear of dirt and mud.
3. A ramp suitable for mobility impaired access at a maximum of 1/12 slope should be constructed at the main entrance with handrails.
4. The office shall be divided internally to provide the floor areas indicated below to the satisfaction of the Overseeing Organisation. The external dimensions of the buildings and accommodation shall be in accordance with the requirements of this Clause but the Contractor may, if approved by the Overseeing Organisation, increase these dimensions to suit particular types of sectional buildings he proposes to erect.
5. All offices shall be interconnected, such that access can be gained to each individual unit without passing through another.
6. All floors to be covered with heavy duty vinyl or other approved material.
7. Cylinder night locks to be fitted to all internal and external doors of the Overseeing Organisation's offices. Three keys shall be provided for each lock.
8. All windows to be fitted with anti-vandal grilles/ shutters.
9. The Contractor shall arrange for the daily cleaning of all offices, passageways etc., throughout the duration of the works and any specified retention during the maintenance period, and for the provision of an adequate supply of toilet soap, washing up liquid, hand cleaner, towels, toilet rolls, dusters and cleaning materials.

**Fittings and Furnishings of Accommodation** (all to be new). Provide and fix:

(Items marked (R) to be retained by the Overseeing Organisation)

**Porch Main Entrance and Passageway** (Minimum Area 3 m<sup>2</sup>)

- 1 No. Sign 'Manchester City Council Project Manager's Office' in engraved plastic (letters to be 75mm high) to be mounted on external face of building.
- 1 No. No Smoking sign to be mounted on external face of entry door.

**Office No.1** (Minimum Area 25m<sup>2</sup>)

- 2 No. Kneehole desk 1.8 m x 900 mm with locking drawers (complete with 2 keys)
- 2 No. Chair (armchair type)
- 6 No. Chairs (meeting room type)
- 2 No. Table 2.250 m x 750 mm

- 1 No. Lockable 4 drawer steel filing cabinets (complete with 2 keys)
- 1 No. Steel Security Cabinet with Padlock (For the Storage of Equipment)
- 2 Lin Metres 300 mm x 25 mm shelving
- 1 No. Security / CCTV
- 4 No. Hat and Coat Hooks
- 1 No. Wastepaper basket
- 1 No. First Aid box
- 1 No. Meeting Room
- 1 No. Storage Facility
- 1 No. Sign in boards
- 2 No. Parking spaces
- 1 No. Utilities, e.g. water and power

List of Office Equipment (all to be new)

- 1 No. Wireless internet connection
- 1 No. First Aid Cabinet
- 1 No. Sanitation
- 1 No. True meter measuring wheel

Quantity of stationary items to the sum of £50

List of Clothing and Equipment

- (R) 2 No. Yellow (Gortex/ Dritex/ Breathable type) waterproof road safety jackets conforming with EN 471 Class3 complete with warm pile lining, gloves and over-trousers (EN 471 Class 1)
- (R) 2 No. Safety Helmets kitemarked to EN 397 with chin straps
- (R) 2 No. Pairs of rubber knee boots conforming with EN 345 200 joules with steel midsoles
- (R) 2 No. Pairs of heavy duty seaboot stockings
- (R) 2 No. Pairs of safety boots conforming with EN 345 200 joules with steel midsoles
- (R) 2 No. Pairs of safety goggles to B.S. 2092.1
- (R) 4 No. Yellow high visibility sleeved safety waistcoats conforming with EN 471 Class 3
- (R) 4 No. Pair of EAR defenders
- (R) 4 No. Pairs of woollen thermal gloves

**Prior to ordering office equipment, the Contractor should check with the Overseeing Organisation for any amendments, additions or deletions of the listed items.**

## **APPENDIX 1/4**

### **WORKING AND FABRICATION DRAWINGS**

1. Contractor to design traffic management and provide drawings for;
  - a. Pedestrian diversion to maintain access during towpath closure during ramp construction
  - b. Pedestrian diversion to maintain access between existing lock and New Islington Metro station during safety critical activities when the access route will need to be closed.

Drawings shall be submitted to Manchester City Council for approval 6 weeks prior to the commencement of works. The contractor should also take into account of any lead times required for TTROs (if required by the contractor).

Note: Contractor shall design the diversion to maintain accessibility throughout the construction period. The contractor shall submit their proposals to MCC 6 weeks prior to implementation of the diversion.

2. Fabrication drawings shall be produced by the steel fabricator and supplied to the Principal Designer and the TAA for comment. Minimum period for submission of the drawings is 4 weeks prior to commencement of works. This allowance includes 2 weeks for review and comment and 2 weeks for amendments.
3. Piling Layout drawings and piling design may be modified by the contractor's preferred piling designer. Piling layout drawings shall be submitted to the Principal Designer and TAA 4 weeks prior to the commencement of works. This allowance includes 2 weeks for review and comment and 2 weeks for amendments.
4. The contractor shall design the detail for the mooring ring installation at the mooring area. Refer to drawing 651-279-010. The mooring ring fixings shall be submitted to the Principal Designer and TAA 4 weeks prior to the commencement of works. This allowance includes 2 weeks for review and comment and 2 weeks for amendments.

## APPENDIX 1/5

### TESTING TO BE CARRIED OUT BY THE CONTRACTOR

#### Special Contract Specific Site Testing and Monitoring

1. The contractor shall ensure any imported soil to be sampled or tested by a qualified / approved soil scientist who will need to send an interpretive soil report confirming compliance with BS 3882:2007.
  - a. Topsoil pH must be in the 6 – 7.5 range.
  - b. The Landscape Architect must give their approval for both the supply and distribution of all site won and imported as dug (natural topside) topsoil required for the project in order to provide the best possible conditions for the long term health, growth and vigour of all soft landscaping.
2. The contractor shall undertake an inspection on the bywash before and after the construction of the south abutment to identify if any damage to the bywash has occurred.
3. The contractor shall monitor the condition of the bywash before and after construction activities which cause vibration or have the potential to impose loads onto the bywash structure. Also see appendix 1/9 for limitations on vibrations.
4. Where any damage to the bywash is found during construction, the contractor shall stop all construction activities adjacent to the bywash and inform a Canal and Rivers Trust Representative.
5. The contractor shall undertake a trial pit survey on the by-wash structure. The trial pit shall determine;
  - a. The material surround of the bywash pipe.
  - b. External diameter of the bywash pipe.
6. Due to the close proximity of the proposed pile and foundation construction to the CHIPS building basement car park, the contractor shall undertake the following survey and monitoring works;
  - a. Before Piling works - Condition survey of the CHIPS building basement car park walls, ceilings and fixtures at all basement elements within 10m of the planned piling works. Identifying any existing defects including, but not limited to, cracks, corrosion, spalling, water staining etc.
  - b. Before Piling works - Condition survey of the CHIPS building façade including windows, doors and ancillaries within 10m of the planned piling works. The survey should identify any existing defects including, but not limited to; any loose fixtures, damaged panels, spalling and corrosion etc
  - c. Appropriate monitoring to be undertaken by the contractor during the piling works for the CHIPS building Façade and basement car park.
  - d. After piling works – As with points 5a and 5b above, a follow up survey shall be undertaken to confirm the works have not damaged the CHIPS building asset during the bridge foundation works.
7. A report for the condition survey undertaken before and after the piling works shall be produced and delivered to MCC for their records. The report shall contain as a minimum the following information;

- a. Photographs of the main elements including close up photographs of any defects found during the condition survey.
- b. A tabulated defect schedule to accompany the photographs.
- c. Defect sketches for each of the main elements identifying the location, size and type of defect.
- d. Weather conditions on the date of the condition survey.

| <u>Clause</u> | <u>Work, Goods or Material</u>         | <u>Test</u>                                                                                                                                                                   | <u>Frequency of Testing</u>                                                                                              | <u>Test Certificate</u>     | <u>Comments</u>                               |
|---------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------|
| Series 600    |                                        |                                                                                                                                                                               |                                                                                                                          |                             |                                               |
| 5B            | Imported Topsoiling                    | Any imported soil to be sampled or tested by a qualified / approved soil scientist who will need to send an interpretive soil report confirming compliance with BS 3882:2007. | Each batch                                                                                                               | As required in BS 3882:2007 | General purpose grade complying with BS 3882. |
| Series 1600   |                                        |                                                                                                                                                                               |                                                                                                                          |                             |                                               |
| 1608<br>1616  | Integrity testing<br>Dynamic Load test | Integrity testing shall be undertaken by either impulse method, Sonic Echo, frequency response or transient dynamic steady state vibration method or sonic loggin method      | Integrity testing to be undertaken on each pile.<br><br>Dynamic Load Tests to be undertaken on one pile on each pile cap |                             |                                               |
| 1609          | Static load testing of piles           | To be proposed by the contractor.                                                                                                                                             | To be undertaken on preliminary pile at a suitable location.                                                             |                             | Refer to Appendix 16/9.                       |

| Clause                  | Work, Goods or Material              | Test                                                                | Frequency of Testing                                                                                     | Test Certificate   | Comments                      |
|-------------------------|--------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------|-------------------------------|
| Series 1700             |                                      |                                                                     |                                                                                                          |                    |                               |
| 1707                    | Hardened concrete – Identity Testing | Cube strength (N) – as described in contract specific Appendix 17/4 | Reinforced concrete-two cubes from 24 m <sup>3</sup> or 4 batches whichever represents the lesser volume | Required           |                               |
|                         |                                      |                                                                     | Mass concrete-two cubes from 50 m <sup>3</sup> or 50 batches whichever represents the lesser volume      |                    |                               |
|                         |                                      |                                                                     | Additional cubes for special purposes                                                                    |                    |                               |
|                         |                                      | Density                                                             | Each Batch                                                                                               |                    |                               |
|                         | Fresh concrete – Identity Testing    | Consistence (slump or flow) (N)                                     | Each batch                                                                                               | Required           |                               |
|                         |                                      | Air content                                                         | Each batch                                                                                               |                    |                               |
|                         |                                      | Density                                                             | Each Batch                                                                                               |                    |                               |
|                         |                                      | Water/cement ratio                                                  |                                                                                                          |                    |                               |
| Clause                  | Work, Goods or Material              | Test                                                                | Frequency of Testing                                                                                     | Test Certificate   | Comments                      |
| Series 1700 (continued) |                                      |                                                                     |                                                                                                          |                    |                               |
| 1712                    | Reinforcement                        |                                                                     |                                                                                                          |                    | Product certification scheme. |
|                         | Steel bars                           |                                                                     |                                                                                                          | Required (BS 4449) |                               |
|                         | Steel wire                           |                                                                     |                                                                                                          | Required (BS 4482) |                               |
|                         | Steel fabric                         |                                                                     |                                                                                                          | Required (BS 4483) |                               |
|                         | Stainless steel                      |                                                                     |                                                                                                          | Required (BS 6744) |                               |

| Clause                  | Work, Goods or Material                             | Test                                                                | Frequency of Testing                                       | Test Certificate                     | Comments                                                                                                                                                                                          |
|-------------------------|-----------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Series 1700 (continued) |                                                     |                                                                     |                                                            |                                      |                                                                                                                                                                                                   |
| 1713                    | Fabricated reinforcement                            |                                                                     |                                                            | Required (BS 8666)                   | Certification that fabricated reinforcement complies with the routine inspection/testing requirements of BS 8666 is required if the fabrication is not covered by a product certification scheme. |
| 1716                    | Reinforcement jointing systems                      | Permanent elongation characteristic strength (Manufacturer's tests) |                                                            | Required for each type of connection | Product acceptance scheme or equivalent applies                                                                                                                                                   |
| 1727                    | Inspection and testing of structures and components | Inspection of Surface finishes                                      | All concrete surfaces with architectural recessed finishes |                                      | Refer to Appendix 17/4                                                                                                                                                                            |

| Clause      | Work, Goods or Material                                                                                        | Test                                                                                                       | Frequency of Testing                                                       | Test Certificate                                 | Comments                                                                                                                                                                                                         |
|-------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Series 1800 |                                                                                                                |                                                                                                            |                                                                            |                                                  |                                                                                                                                                                                                                  |
| 1805        | 1805.2 Metallic products listed in BS EN 1090-2:2018 Table 1                                                   | As require by the relevant product standard                                                                | As require by the relevant product standard                                | Required according to BS EN 1090-2:2018, Table 1 | Structural steels, welding consumables, structural bolting assemblies. Refer to BE EN 1090-2 Table 1 for document requirements.                                                                                  |
|             | 1805.3.4 Special properties of constituent products                                                            | Testing to identify internal discontinuities or cracks in zones to be welded as specified in Appendix 18/1 | As required in Appendix 18/1                                               |                                                  | Refer to product specific testing requirements in the Appendix of this document.                                                                                                                                 |
| 1806        | 1806.4.4 Check of the capability of cutting processes that are likely to produce local hardness                | Testing in accordance with BS EN ISO 6507                                                                  | As required according to BS EN 1090-2:2018, 6.4.4                          |                                                  | Results to be reported in accordance with the relevant standard.                                                                                                                                                 |
|             | 1806.5.4 d) Check of the hardness and geometry of hollow section components subject to bending by cold forming | Check of the hardness, testing in accordance with BS EN ISO 6507                                           | As required according to BS EN 1090-2:2018, 6.5.4 i)                       |                                                  |                                                                                                                                                                                                                  |
| 1807        | 1807.3 (2) Qualification of welding procedures and welding personnel for an Exceptional Welding Process        | Tests specified in BS EN ISO 15613 and BS EN ISO 15614-1                                                   | As required according to BS EN ISO 15613 and BS EN ISO 15614-1             |                                                  | Results to be reported in accordance with BS EN ISO 15613 and BS EN ISO 15614-1                                                                                                                                  |
|             | 1807.4.1.2 Qualification of welding procedures (Processes 111, 114, 12, 13 and 14)                             | Tests specified in BS EN ISO 15614-1 or BS EN ISO 15613                                                    | As required in BS EN ISO 15614-1 or BS EN ISO 15613                        |                                                  | Results to be reported in accordance with BS EN ISO 15614-1 or BS EN ISO 15613                                                                                                                                   |
|             | 1807.4.1.2 (3 Qualification of welding procedures for joints with restricted access                            | Tests specified in BS EN ISO 15613                                                                         | As required in BS EN ISO 15613                                             |                                                  | Results to be reported in accordance with BS EN ISO 15613                                                                                                                                                        |
|             | 1807.4.1.3 Qualification of welding procedures for other welding processes                                     | Tests specified in standards listed in BS EN 1090-2:2008+A1:2011, Table 13                                 | As required in the standards listed in BS EN 1090-2:2008+A1:2011, Table 13 |                                                  | Results to be reported in accordance with the standards listed in BS EN 1090-2:2008+A1:2011, Table 13.<br><br>Note the requirement in BS EN 1090-2:2008+A1:2011, 7.5.12 relating to stud weld procedure testing. |
|             | 1807.4.1.4 Validity of welding                                                                                 | Additional tests specified in BS EN                                                                        | As required in BS EN 1090-2:2008+                                          |                                                  | Results to be reported in accordance with BS EN                                                                                                                                                                  |

|                         |                                                                                                                                                                  |                  |  |             |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--|-------------|
| procedure qualification | 1090-2:2008+<br>A1:2011, 7.4.1.4 for<br>a welding<br>qualified in<br>accordance with<br>EN ISO 15614-1,<br>which is<br>by a welding<br>that has not been<br>used | A1:2011, 7.4.1.4 |  | ISO 15614-1 |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--|-------------|

| Clause                  | Work, Goods or Material                                                                                             | Test                                                                                                             | Frequency of Testing                                                                       | Test Certificate                                                                        | Comments                                                                                                  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Series 1800 (continued) |                                                                                                                     |                                                                                                                  |                                                                                            |                                                                                         |                                                                                                           |
|                         | 1807.4.1.4 (1) Validity of welding procedure qualification                                                          | Welding production test in accordance with the qualification standard for the process concerned                  | As required                                                                                |                                                                                         | Results to be reported in accordance with the qualification standard for the process concerned            |
|                         | 1807.4.2 Qualification of welders and welding operators                                                             | Tests specified in BS EN ISO 9606-1 (welders) or BS EN ISO 14732 (welding operators)                             | As required according to BS EN ISO 9606-1 (welders) or BS EN ISO 14732 (welding operators) | Required according to BS EN ISO 9606-1 (welders) or BS EN ISO 14732 (welding operators) | Certificate to be in accordance with BS EN ISO 9606-1, Annex A or BS EN ISO 14732, Annex C as appropriate |
|                         | 1807.4.2 Qualification of welders of hollow section branch connection with angles less than 60°                     | Specific qualification test. Tests specified in BS EN 287-1.                                                     | As required                                                                                |                                                                                         |                                                                                                           |
|                         | 1807.4.2 (1) Qualification of welders of joints with restricted access                                              | Specific qualification test. Tests specified in BS EN ISO 9606-1                                                 | As required according to BS EN ISO 9606-1                                                  | Required according to BS EN ISO 9606-1                                                  | Certificate to be in accordance with BS EN ISO 9606-1, Annex A                                            |
|                         | 1807.5.1.1 Verification that joint preparation in steel grades higher than S460 are free from cracks                | Testing in accordance with BS EN ISO 3452 (penetrant) or BS EN 17638 (magnetic particle)                         | As required                                                                                |                                                                                         |                                                                                                           |
|                         | 1807.5.1.1 (1) Qualification of welding procedures where prefabrication primers are to be left on the fusion faces. | Tests specified in BS EN ISO 15614-1 or BS EN ISO 15613 using such prefabrication primers                        | As required in BS EN ISO 15614-1 or BS EN ISO 15613                                        |                                                                                         | Results to be reported in accordance with BS EN ISO 15614-1 or BS EN ISO 15613                            |
|                         | 1807.5.4 (1) Welding of joints in hollow sections, full penetration butt welds with restricted access               | Pre-production weld test conforming to BS EN ISO 15613.                                                          | As required                                                                                |                                                                                         |                                                                                                           |
|                         | 1807.5.6 (1) Verification of ground surface are free of cracks following removal of temporary welded attachments    | Testing in accordance with BS EN 17638 (magnetic particle)                                                       | As required                                                                                |                                                                                         |                                                                                                           |
|                         | 1807.5.9.2 (1) Verification of the absence of surface cracking in continuity welds in permanent steel backing       | Testing as required by 1807.5.6 in accordance with BS EN ISO 3452 (penetrant) or BS EN 17638 (magnetic particle) | As required                                                                                |                                                                                         |                                                                                                           |
|                         | 1807.5.18 Welding of bridge decks                                                                                   | Production tests in accordance with BS EN 1090-2:2008+A1:2011, 12.4.4 c)                                         | As required                                                                                |                                                                                         |                                                                                                           |

| Clause                  | Work, Goods or Material                                                         | Test                                                                                      | Frequency of Testing                             | Test Certificate | Comments                                                |
|-------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------|------------------|---------------------------------------------------------|
| Series 1800 (continued) |                                                                                 |                                                                                           |                                                  |                  |                                                         |
|                         | 1808.5.4 (2) k value check for the combined method                              | Test in accordance with BS EN 1090-2:2008+A1:2011, Annex H                                | Daily                                            |                  |                                                         |
|                         | 1808.5.5 (1) Preload check for HRC method                                       | Test in accordance with BS EN 1090-2:2008+A1:2011, Annex H                                | Each assembly lot                                |                  |                                                         |
|                         | 1808.9 Use of special fasteners and fastening methods                           | Procedure tests for special fasteners and fastening methods as specified in Appendix 18/1 | As required in Appendix 18/1                     |                  |                                                         |
| 1812                    | 1812.2.1 (1) Specific testing of constituent products not covered by standards. | Tests as specified in Appendix 18/1                                                       | As required in Appendix 18/1                     |                  |                                                         |
|                         | 1812.2.1 (3) Mechanical fasteners                                               | Suitability testing as specified in 1812.2.1 (3)                                          | As required in 1812.2.1 (3)                      |                  | Results to be reported in accordance with 1812.2.1 (3). |
|                         | 1812.4.1 Inspection before and during welding                                   | None destructive testing methods selected in accordance with BS EN 12062                  | As required in BS EN 1090-2:2008+A1:2011, 12.4.1 |                  |                                                         |

| Clause                  | Work, Goods or Material                            | Test                                                                                                                                                                                                                   | Frequency of Testing                                | Test Certificate | Comments |
|-------------------------|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------|----------|
| Series 1800 (continued) |                                                    |                                                                                                                                                                                                                        |                                                     |                  |          |
|                         | 1812.4.2.2 Type testing of welded joints           | Supplementary non-destructive testing determined by the manufacturer, according to the nature of the work in normal production. See 1812.4.2.2.<br><br>Non-destructive testing to confirm quality level B is achieved. | As required in BS EN 1090-2:2008+ A1:2011, 12.4.2.2 |                  |          |
|                         | 1812.4.2.3 Routine inspection and testing of welds | Surface nondestructive testing<br><br>following visual inspection using method specified in BS EN 1090-2:2018, 12.4.2.3                                                                                                | As required                                         |                  |          |

| <u>Clause</u>  | <u>Work, Goods or Material</u>                  | <u>Test</u>                                                                           | <u>Frequency of Testing</u>                                                 | <u>Test Certificate</u> | <u>Comments</u>                                                                                    |
|----------------|-------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------------------------------------|
| Series 1900    |                                                 |                                                                                       |                                                                             |                         |                                                                                                    |
| 1912<br>1912SE | Paints - 'A' and 'B' samples                    | Provision of samples for 'A' and 'B' sample tests                                     |                                                                             |                         | Samples selected in accordance with Clauses 1912 and 1912SE                                        |
|                | Paints - 'A' and 'B' samples                    | Specific gravity                                                                      | As required by rate of 'A' and 'B' sampling                                 |                         | See NG 1912, 3; Appendix 19/4, Note 4; Appendix 19/4SE, Note 4; NG 1912.3NI, 3 and Appendix 19/4NI |
|                | Paints - 'A' and 'B' samples                    | Colour match                                                                          | As required by rate of 'A' and 'B' sampling                                 |                         | See NG 1912, 3 and NG 1912NI, 3                                                                    |
| 1914           | Coating system minimum film thicknesses         | Minimum dry film thickness measurements. In accordance with BS EN ISO 2808, BS3900-C5 | Required – representative testing                                           |                         |                                                                                                    |
|                | Coating system adhesion                         | Pull off adhesion test in accordance with ASTM D4541 – Type III                       | Required – representative testing                                           |                         |                                                                                                    |
|                | Coating system defects                          | Visual assessment supplemented by appropriate testing                                 | Required                                                                    |                         |                                                                                                    |
|                | Coating system defects – pin-holing or porosity | Low or high voltage detectors in accordance with ASTM G62-07                          | Required – representative testing excluding corners, bolted joints or welds |                         |                                                                                                    |
| Series 2000    |                                                 |                                                                                       |                                                                             |                         |                                                                                                    |
| 2003           | Permitted waterproofing systems                 | As required - See NG 2003                                                             |                                                                             |                         | Product Acceptance Scheme or equivalent applies                                                    |
| 2004           | Cut back bitumen                                | Tests specified in BS 3690: Part 1                                                    | 1 per source                                                                |                         | Sampling to comply with BS 3690: Part 1                                                            |

| <u>Clause</u>      | <u>Work, Goods or Material</u> | <u>Test</u>                                              | <u>Frequency of Testing</u>                    | <u>Test Certificate</u> | <u>Comments</u>                                                                                               |
|--------------------|--------------------------------|----------------------------------------------------------|------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------|
| <u>Series 2100</u> |                                |                                                          |                                                |                         |                                                                                                               |
| 2101               | Bridge bearings                |                                                          |                                                |                         |                                                                                                               |
|                    | Elastomeric bearings           | Compressive test                                         | As required in contract specific Appendix 21/1 |                         | Use test methods given in BS EN 1337-3 section 4.3.3 and Annex H, or state in contract specific Appendix 21/1 |
|                    |                                | Stiffness test                                           |                                                |                         |                                                                                                               |
|                    |                                | Shear stiffness test                                     |                                                |                         |                                                                                                               |
|                    |                                | Other tests specified in contract specific Appendix 21/1 |                                                |                         | None                                                                                                          |

| <u>Clause</u>      | <u>Work, Goods or Material</u> | <u>Test</u>                            | <u>Frequency of Testing</u> | <u>Test Certificate</u> | <u>Comments</u>                                          |
|--------------------|--------------------------------|----------------------------------------|-----------------------------|-------------------------|----------------------------------------------------------|
| <u>Series 2600</u> |                                |                                        |                             |                         |                                                          |
| 2601               | Bedding mortar materials       |                                        |                             | Required for each batch | Certification in accordance with Clause 2601 is required |
|                    | Bedding mortar                 | Flow cone test                         | Each batch                  |                         | Laboratory tests                                         |
|                    |                                | Flow between glass plates              |                             |                         |                                                          |
|                    |                                | Compressive strength                   |                             |                         |                                                          |
|                    |                                | Expansion test                         |                             |                         |                                                          |
|                    |                                | Water absorption                       |                             |                         |                                                          |
|                    |                                | Elastic stability                      | 1 per source                |                         |                                                          |
|                    |                                | Flow cone test<br>Compressive strength | Each load                   |                         | Site control tests                                       |

**Notes:**

- Although the frequency of testing has been completed in Table 1/5, additional requirements may be identified and incorporated into subsequent revisions of this document.
- Unless otherwise stated in Table 1/5 all sampling and testing in this Appendix shall be carried out by the Contractor.
- Tests comparable to those specified in this Appendix will be necessary for any equivalent work, goods or materials proposed by the Contractor.
- For earthwork materials UKAS accredited laboratory sampling and test report or certificate is required. For all other sections (N) indicates that a UKAS or equivalent accredited laboratory sampling and test report or certificate is required.
- Contamination testing shall be to the MCERTS accreditation.
- Testing of the existing subgrade CBR shall be undertaken as detailed in Appendix 6/7.
- Unless otherwise shown in the relevant Appendix, tests for work, goods or materials as scheduled under any one clause is required for all such work, goods or materials in the Works.
- Cube strength tests are not required for concrete complying with Clause 2602.

## **APPENDIX 1/7**

### **SITE EXTENTS AND LIMITATIONS ON USE**

#### General

1. Refer to contract specific drawings for site extents. N.B these site extents exclude the pedestrian diversion routes which shall be designed and determined by the Contractor. Suggested routes can be found within the contract specific pre-construction information pack.

#### Canal Lock Gates

2. Boaters are to be allowed to use locks for duration of works with the exception of the safety critical activities outlined in the Schedule of Constraints in Appendix 1/13.

## APPENDIX 1/8

### OPERATIVES FOR THE OVERSEEING ORGANISATION

| <u>Operatives Required</u>                   | <u>Duties &amp; Skills</u>                             | <u>No.</u>         | <u>Period Required</u>                                       |
|----------------------------------------------|--------------------------------------------------------|--------------------|--------------------------------------------------------------|
| Canal and Rivers Trust (CRT) Representative* | Asset protection (of lock and accompanying structures) | As required by CRT | During construction activities which may impact CRT's assets |

*\*Although CRT are not part of the overseeing organisation, it is within their interest to protect their assets at the site. As the Asset owner, they are best placed in understanding what is acceptable methods of construction around their asset.*

1. Known Construction Activities which require CRT representative;
  - a. Construction of south abutment due to proximity of by-wash.
  - b. Construction of south planter supporting structure.
  - c. Casting of any concrete adjacent to lock structure (inspection of permanent formwork protecting lock).
2. It is the Principal Contractor's responsibility to liaise with CRT to confirm if any additional activities within their proposed construction methodology requires a site representative to be present.

## APPENDIX 1/9

### CONTROL OF NOISE AND VIBRATION

#### Canal and Rivers Trust Vibration Requirements

1. Any construction activities which cause vibration shall adhere to the limitations below:
  - a. Ground vibration is usually measured in terms of Peak Particle Velocity (PPV) with units in mm/s. The PPV refers to the movement within the ground of molecular particles and not surface movement. Primary guidance is given in three British Standards. These are BS:7385 Parts 1 and 2, BS:5228-2:2009+A1:2014 and BS:6472 Evaluation of Human Exposure to Vibration in Buildings. The first two focus on potential damage to structures with BS6472 being used for assessing the nuisance impact.
  - b. Vibration monitoring is usually measured in three axes; lateral, transverse and vertical. The sum of the three axes is known as the resultant level although the British Standards as detailed above make use of the maximum single reading in one of the planes rather than the resultant level in an assessment process. The potential for damage to be caused will depend on both the PPV and the frequency at which it occurs. For intermittent vibration, in order to prevent possible damage, a ppv level of not greater than 15mm/s is desirable. To avoid damage if piling is being carried out as a continuous action, ppv levels should be below 7.5mm/s.

## **APPENDIX 1/10**

### **PERMANENT WORKS TO BE DESIGNED BY THE CONTRACTOR**

1. The contractor shall undertake the design of the permanent piles supporting the ramp and abutment structures. Refer to contract specific drawings listed in Appendix 0/4.
2. The contractor shall be responsible for the design of the transverse beams to longitudinal steel beam connections on the steel deck.
3. The contractor shall be responsible for the bearing fixing connection design.
4. The contractor shall be responsible for the design of the deck plate and parapet welds.

## **APPENDIX 1/11**

### **TEMPORARY WORKS TO BE DESIGNED BY THE CONTRACTOR**

1. The contractor shall undertake the design of the following temporary works items:
  - a. Piling mats
  - b. Crane mats
  - c. Formwork for permanent concrete elements
  - d. Haulage Road required for access from Munday Street
2. In addition to the items listed above, the contractor shall identify and design any other temporary works within their chosen construction methodology.

## **APPENDIX 1/12**

### **SETTING OUT AND EXISTING GROUND LEVELS**

1. Refer to scope.

## APPENDIX 1/13

### PROGRAMME OF WORKS

1. The Contractor shall provide the programme showing appropriate level of detail to each stage of the works and all activities and restraints, each of which shall be given a short title. All events shall be numbered and annotated with earliest and latest event dates.

#### Schedule of constraints

2. The adjacent lock shall remain open to boaters throughout the duration of the works, with the exception of the safety critical activities which shall have a movement restriction in place. (Refer to 3 and 4 below)
  - a. Lifting of bridge deck onto abutments.
  - b. Any other foreseeable construction activities which will require the movement of boat users to be restricted through the site.
3. No closures of the canal are planned for the project. The Principal Contractor shall utilise movement restrictions on boaters during safety critical activities. Movement restrictions shall generally be no longer than 30 minutes every 4 hours, however it is understood that some activities may require more time than this. Principal Contractor shall liaise with CRT and MCC regarding movement restrictions which are required for their chosen construction methodology. Also see 4 below.
4. It is understood that the canal lock adjacent to the proposed site generally has times of heightened traffic during mornings. The Principal Contractor may wish to avoid scheduling safety critical activities during these busy periods such as evenings/nights.
  - a. No traffic data on lock usage exists, the Principal Contractor may wish to undertake monitoring of boaters traffic running through the lock to determine the low usage times.
5. The Principal Contractor shall also liaise with the Pollard Street development and identify if there are any construction activities which would have an impact on the Ashton Canal Bridge programme of works.
  - a. Note – The adjacent Pollard Street development is likely to have a shared access road with the proposed Ashton Canal bridge site.
6. Vibration constraints, refer to appendix 1/9.
7. The site is situated adjacent to a residential building. Works will be subject to noise and light restrictions. The Principal Contractor shall liaise with MCC on what level of noise and light disturbances
8. New Islington Metrolink Station shall remain operational throughout the duration of the works. The Principal Contractor shall liaise with TfGM on their works proposal.
  - a. Access to the site is likely to be via Munday Street. The access route therefore crosses the Metrolink line. The contractor shall consider restricted height imposed by the OLE level when considering the plant and construction methodology.
9. The Principal Contractor shall take note of the restricted access routes to the towpath area when considering their construction methodology.

10. CRT has a towpath weight limit of 1.5 tonnes for plant within 1.5m of the canal wall. The contractor shall seek permission from Canal and Rivers Trust on positioning any plant within 1.5m of the canal wall.
11. Lampwick Way (the canal side path between Lampwick Street and the site) is supported by the CHIPS building basement car park. All vehicles utilising this route shall be limited to 4.5T gross vehicle weight.

## **APPENDIX 1/15**

### **ACCOMMODATION WORKS**

1. The site space between the New Islington Metrolink Station and the existing canal lock is available for the Ashton Canal Bridge construction site. Refer to contractor specific drawing 651-279-023 for details.
2. The contractor shall determine the layout of their site. The site layout shall take into account of the following;
  - a. Phase 1 of the adjacent Electric Park development is expected to be undertaken at the same time as the Ashton Canal Bridge construction. Although there is not expected to be any conflict in terms of compound/construction site space, the haulage road for both sites is likely to be shared. Refer to preconstruction information pack Appendix I for details on the adjacent development.
  - b. Access between the Metrolink station and the canal lock shall be maintained during the works. Diversions for safety critical works can be put in place, refer to section 3.3 of the Preconstruction information pack.

## APPENDIX 1/16

### PRIVATELY AND PUBLICLY OWNED SERVICES AND SUPPLIES

#### Existing Services

1. C2 Service search found the following services to be present within the canal towpath.
  - a. Empty cable ducts (Installed by Vodafone, confirmed to be empty on site). There is noted to be 2 X 90mm DIA Telecomms ducts with 3 X subducts present.
  - b. Low Voltage Cable (MCC Owned)
  - c. Additionally, a disused Openreach telephone pole (no cables or wires present) was identified at the proposed south abutment location.

The depth and location of the services were also identified with a GPR survey undertaken on the towpath.

2. C3/C4 Diversions
  - a. There is no requirement to divert or replace the existing empty ducts previously installed by Vodafone. Refer to the preconstruction information pack.
  - b. The Principal Contractor shall liaise with MCC and the lighting designer as the current proposal is to utilise the low voltage cable for the lighting on the bridge.
  - c. Openreach has noted that the disused telephone pole will be recovered prior to the site works. Principal Contractor shall liaise with Openreach to confirm details. Refer to contacts within the preconstruction information pack.
3. A Canal by-wash is also present on the south bank of the lock. Refer to Designers Risk Register and Contract Specific drawing 651-279-002

## **APPENDIX 1/17**

### **TRAFFIC SAFETY AND MANAGEMENT**

1. Contractor is responsible for the traffic management and safety over the structure. The contractor shall erect, maintain and dismantle all traffic management proposed for the scheme.
2. The contractor shall maintain lock and canal access for boaters throughout the works with the exception of safety critical activities. Refer to Appendix 1/13.
3. It is envisaged that pedestrian routes through the site will be diverted;
  - a. Around the CHIPS building;
  - b. Via Great Ancoats Street ;
  - c. Via Carruthers Street
4. All proposed traffic management works will be subject to the approval of Canal and Rivers Trust, Manchester City Council and the Police. A minimum of 6 weeks notice is to be given before any changes are programmed. The Contractor will be required to submit proposals on drawings and re-submit amended copies as necessary. The Manchester City Council Project Manager will retain the authorised drawings.
5. The Contractor shall not commence any work, which affects towpath or lock bridge until all diversionary signs and measures required by the works are fully operational.
6. All signage shall be erected in accordance with Chapter 8 of the Traffic Signs Manual.
7. The Contractor is responsible for liaising with the Principal Contractor for the CHIPS building façade refurbishment works when designing their traffic management plans. The contractor should take into account of any scaffolding and traffic management which these works have put in place.

## APPENDIX 1/23

### RISKS TO HEALTH AND SAFETY

1. Access to the proposed site compound location has a height constraint imposed by the Metrolink overhead line equipment (OLE) on Munday Street.
2. All construction activities shall comply with the following limitations when undertaking works close to the lock, canal wall and canal by-wash;
  - a. Plant and construction loads shall be limited to 1.5 tonnes within 1.5m of the canal wall and bywash.
  - b. Vibration from construction activities shall be limited to the limits set out in Appendix 1/9.
3. Monitoring of the canal bywash will be required to ensure there is no damage to the asset as a result of the construction activities at the south abutment location.
4. Watertightness of the canal lock is provided by a puddle clay backing with a minimum depth of 500mm. Where excavation of this clay backing is required as part of the construction works, the contractor shall consider the water egress from the canal within their methodology and shall consult with Canal and Rivers Trust on their methodology. Where the water loss to the canal due to the works is thought to be at an unacceptable rate, the contractor shall employ temporary waterproofing measures to mitigate excessive water loss to the canal.
5. An archaeological watching brief will be in place for the excavation works at the south abutment. Refer to preconstruction information pack for details.
6. Access to the lock for boaters will be maintained throughout the construction phase. Construction activities may pose a risk to boaters using the lock. The Contractor may impose limited movement restrictions on boaters for safety critical activities. Refer to Appendix 1/13 for details.

## **APPENDIX 2/1**

### **SITE CLEARANCE**

1. Refer to site clearance drawing 651-279-004.

## **APPENDIX 3/1**

### **FENCING**

#### Temporary fencing around site

1. All temporary fencing shall be in accordance with series 300 of the SHW.
2. The Principal Contractor shall give consideration to how the site shall be made secure from access from pedestrians and boaters.

## **APPENDIX 4/2**

### **PEDESTRIAN GUARDRAILS**

#### General

1. Pedestrian guardrails shall be installed at locations indicated within the contract specific drawings.
2. The pedestrian guardrail shall be Rimini Fencing as specified by the Architect Hawkins Brown. Refer to appendix A for product specific specification.

## APPENDIX 5/1

### DRAINAGE AND SERVICE DUCTS

#### General

3. The drainage requirements are shown on the contract drawings listed in Appendix 0/4
4. Filter drains shall be constructed using perforated or slotted pipes with sealed joints. Perforations or slots are to be laid uppermost. Filter drains shall be Type H and backfilled with Type B and A/C in accordance with BS EN 13285 and BS EN 13242 respectively. Reference is made to HCD drawing F2.
5. Perforated filter drains shall have less than 1000mm<sup>2</sup> of holes per metre length of pipe. Perforations shall not reduce pipe stiffness by more than 5%. Circular perforations not greater than 10mm nor less than 3mm in diameter or rectangular slots not greater than 4mm nor less than 0.6mm in width.
6. Plastic pipes including thermoplastic solid wall pipes shall have ultimate pipe stiffness (STES) value in excess of 1400 N/m<sup>2</sup> when tested in accordance with BS 4962 and a resistance to impact complying with BS 4962.
7. All joints in surface water carrier pipes shall be watertight in accordance with sub-clause 504.3 of the SHW.
8. Concrete Surface water channels shall comply with series 1103 of the SHW.
9. Precast concrete channel blocks shall comply with BS EN 1340. The contractor shall provide produce declaration of performance certificates to the overseeing organisation.
10. Sump units or similar purposed products shall be utilised on the linear drainage outlets to reduce the amount of debris from entering the internal ramp drainage network. The drainage supplier shall determine the most appropriate layout and submit their proposal to the principal designer for approval.

#### Architectural Gratings for linear drainage

11. Linear drainage shall be ACO M100D or approved similar. Linear drainage channels shall be installed as indicated on drawing 651-279-021.
12. All linear drainage shall be fitted with Black ACO Hexdrain and Raindrain Heelguard Iron Grating ATec or approved similar. Any alternative proposals shall be approved by Hawkins Brown.
13. Proposed gratings shall comply with clause 507 of the MCHW.
14. The grating shall have a minimum pendulum test value (PTV) value of 60 or above.

## APPENDIX 6/1

### EARTHWORKS

#### Lightweight fill material for ramps

1. Ramp structures shall be filled with Lightweight Expanded Clay aggregates or approved similar.

#### Puddle Clay Canal Wall Backing Specification

2. Puddle clay backing typically forms the waterproofing layer to the canal wall. Where the puddle clay backing is required to be replaced, the replacement fill shall be in accordance with the CRT Puddle Clay Specification below:

#### General

3. Material to be used as puddle clay shall be naturally occurring homogeneous plastic material. It shall be free from deleterious matter such as sand, stones and organic material. The use of lime-stabilised clays shall not be allowed.

#### Properties

4. More than 65% of the natural material shall be finer than 0.06mm and more than 40% shall be finer than 0.002mm
5. The natural material shall be defined as firm clay in accordance with BS5930:1981 Table 8 ( $C_u$  40-75 kPa).
6. The natural material shall be defined as clay of intermediate to extremely high plasticity in accordance with BS5930:1981, figure 31 and the liquid limit shall not be less than 35%.
7. The coefficient of permeability ( $k$ ) of the remoulded material shall not be greater than  $10^{-9}$  m/s.
8. The remoulded material shall be defined as Non-dispersive (ND1) in accordance with BS1377:Part 5:1990, Table 2.

#### Identification

9. An indication of a material's suitability may be obtained from the following *empirical* tests, at the moisture content agreed for placement.

#### Tenacity Test

10. A 300mm long, 25mm diameter cylinder of clay is held vertically for 15 seconds so that at least 200mm is unsupported and in tension under its weight. If the cylinder breaks the clay will be rejected as unsuitable.

#### Pinch Test

11. A 75mm diameter ball of remoulded clay is squeezed into a 25mm thick flat disc. If any cracks appear the clay may be rejected as unsuitable.

#### Slaking Test

12. A 50mm diameter ball of remoulded clay is placed in a 600ml beaker and covered with water. If the ball disintegrates within 24 hours the clay may be rejected as unsuitable.

#### Permeability Test

13. A sample of remoulded clay shall be formed into a tray to hold 20 litres of water and the loss measured after 24 hours. This shall be compared with the water loss from a metal tray of the same surface area holding the same quantity of water. If the difference is greater than 1% the clay may be rejected.

#### Acceptance

14. A representative sample of the proposed clay material, not less than 10kg in weight together with appropriate tests results shall be supplied to the Engineering Manager for his acceptance not more than two weeks after acceptance of the Tender, and at least four weeks in advance of any proposed change in source or quality of the material.
15. Test results to BS1377 are required as follows:
- Grading
  - Liquid and Plastic Limits
  - Natural Moisture Content
  - Coefficient of Permeability of remoulded clay
  - Pinhole Dispersion of remoulded Clay
  - Compaction (2.5kg rammer)

#### Emplacement

16. The clay should be reworked in a stockpile on site and water added as necessary to destroy the original structure of the clay and produce a smooth plastic homogeneous puddle clay with a moisture content of a minimum of 1.3 times the plastic limit. Reworking of the clay should be carried out in such a manner as to prevent contamination.
17. The method of placing the clay shall be agreed by the Engineering Manager before work commences. Whatever means are adopted they shall produce a continuous homogeneous plastic mass of puddle clay effectively free from voids, laminations or imperfections which could affect its water retaining properties.
18. The clay shall be placed in horizontal layers not exceeding 150mm consolidated thickness and compacted by an approved method to an air void content not exceeding 5%.
19. Unless agreed otherwise with the Engineering Manager, the type of compaction plant and number of passes shall conform with the requirements of Clause 608 and Tables 6/1 and 6/4 for material Class 7C (selected wet cohesive material) of the DoT specification for Highway Works Part 2.
20. Before placing a further layer of puddle, the surface of the previous layer shall be cleansed of all slurry and surplus water and the surface prepared to ensure that the clay to be placed shall be integrated with that already placed. Preparation of surfaces between successive layers shall be formed by frequent non-continuous spade cuts into the upper surface of the clay to depth of 75mm.
21. Where clay puddle is to be joined with existing clay puddle, the existing clay shall be cut back and stepped to form a good key between the existing and new clay puddle over a distance to be agreed by the Engineering Manager, but not less than 1000mm. All trace of junction marks shall be wholly eliminated.

22. Precautions shall be taken to ensure any puddle clay awaiting placing, puddle clay which has been placed and any puddle clay in dry areas shall be kept continuously wet to prevent it drying out and covered by waterproof sheets to protect it from rain damage. Precautions shall be taken to prevent the material freezing.

## **APPENDIX 11/1**

### **KERBS, FOOTWAYS, CYCLEWAYS AND PAVED AREAS**

#### Precast Concrete Kerbs

1. Precast concrete kerbs shall be provided as edging to newly paved areas at the south abutment. Kerbs shall be bullnosed 914X150X50mm kerbs or approved similar and in accordance with the SHW. Kerbs shall be laid in concrete haunching.

#### Pedestrian footway/cycleway at South Abutment

2. The new pavement at the south abutment shall have the following build up;
  - a. Subgrade made up from Lightweight Expanded Clay Aggregate (LECA).
  - b. Subbase = 100mm
  - c. Surfacing = 50mm binder course, 20mm surface course.
3. The plan dimensions of the additional pavement shall be as per drawing

#### Tactile Corduroy Paving at top of mooring stairs steps

4. The Basalt stone tactile corduroy paving slab at the top of the mooring stairs shall be in accordance with the architect's specification in Appendix B of this specification. See drawing 651-279-020 and Architectural Work section 210131-Q25.

#### Mooring area paving

5. The Yorkstone Mooring area paving slabs shall be in accordance with the architect's specification in Appendix B of this specification. See 210131-Q25 Architectural Work section.

## **APPENDIX 11/2**

### **ACCESS STEPS**

1. Refer to drawing 651-279-020 and Specification Appendix 17/7.

## **APPENDIX 14/3**

### **TEMPORARY LIGHTING**

#### Temporary Lighting

1. Temporary lighting to be proposed by the Principal Contractor. Proposals to be submitted to MCC for approval.
2. Temporary lighting shall consider adjacent residential buildings when being designed.

## **APPENDIX 14/4**

### **ELECTRICAL EQUIPMENT FOR ROAD LIGHTING**

#### Architectural Bridge Lighting

1. For Architectural lighting specification and details, refer to lighting designer package produced by Studio Dekka..

## **APPENDIX 16/1**

### **GENERAL REQUIREMENTS FOR PILING AND EMBEDDED RETAINING WALLS**

1. Pile design shall be undertaken by the contractor.
2. Pile diameter of 300mm has been assumed for the design based on the access constraints to the ramp structure area
3. Refer to drawings 651-279-013 for the assumed pile layout.
4. Piles shall be designed and constructed in accordance with Eurocodes (EC), the Design Manual for Roads and Bridges (DMRB) Standards and specified in accordance with the specification for highway works (SHW).
5. The contractor shall undertake integrity testing and dynamic load testing of piles. Integrity testing shall be undertaken on each pile, dynamic load testing shall be undertaken on 1 pile per pile cap.
6. Preliminary piles shall be constructed at a suitable location determined by the piling contractor.

## **APPENDIX 16/8**

### **NON-DESTRUCTIVE METHODS FOR TESTING OF PILES**

1. Integrity testing and dynamic load testing shall be undertaken by either impulse method, Sonic Echo, frequency response or transient dynamic steady state vibration method or sonic logging method.
2. Integrity testing shall be undertaken on each pile.
3. Dynamic load testing shall be undertaken on each pile cap.

## **APPENDIX 16/9**

### **STATIC LOAD TESTING OF PILES**

1. The piling contractor shall undertake static load testing on preliminary piles
2. The piling contractor shall determine the design and construction of the load application system for the static load test.
3. The contractor shall give at least 48 hours' notice of the commencement of construction of any preliminary pile undergoing test loading
4. Static load testing shall be undertaken in accordance with the SHW.

## APPENDIX 17/1

### CONCRETE – SCHEDULE FOR THE SPECIFICATION OF DESIGNED CONCRETE

#### Structural requirements for designed concrete

1. The table below shows the structural and mix requirements for concrete. The location in the works for each mix are as listed below:
  - Pile caps for abutments, ramps and mooring steps - Mix A
  - Abutment and ramp side walls - Mix A
  - Mass concrete stairs and landing – Mix B

#### Structural Requirements for designated concrete

2. Ramp and stair landing slabs – PAV2
3. Concrete generally: to BS 8500 and BS EN 197-1

| <u>Requirement</u>                                                                                  | <u>Schedule</u>                                                 |                       |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------|
| <u>Designed Concrete Ref</u>                                                                        | <u>A</u>                                                        | <u>B</u>              |
| <u>Location in the Works</u>                                                                        | <u>Pile caps, Abutments, ramp structure and retaining walls</u> | <u>Mooring Stairs</u> |
| Intended Working Life of Structure                                                                  | 120 Years                                                       | 120 Years             |
| Nominal Cover to Reinforcement                                                                      | 50                                                              | 50                    |
| Applicable Exposure Classes (Excluding DC-class)                                                    | XC3/4, XD3, XF2                                                 | XC3/4, XD3, XF2       |
| DC-class (where appropriate)                                                                        | DC3                                                             | DC3                   |
| Compressive Strength Class of Concrete                                                              | C40/50                                                          | C35/45                |
| Minimum Cement Content (kg/m <sup>3</sup> )                                                         | 340                                                             | 340                   |
| Maximum Free Water/Cement Ratio                                                                     | 0.45                                                            | 0.45                  |
| Required Group or Type and Class of Cement or Combination (where a DC-class has not been specified) |                                                                 |                       |
| Maximum Aggregate Size, mm                                                                          | 20                                                              | 20                    |
| Chloride Content Class                                                                              | Cl 0.3                                                          | Cl 0.3                |
| For Lightweight Concrete, the Density Class or Target Density                                       | -                                                               | -                     |

| <b><u>Requirement</u></b>                                                    | <b><u>Schedule</u></b>                                                                                                                                                                                                                            |                              |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b><u>Designed Concrete Ref</u></b>                                          | <b><u>A</u></b>                                                                                                                                                                                                                                   | <b><u>B</u></b>              |
| <b><u>Location in the Works</u></b>                                          | <b><u>Pile caps, Abutments, ramp structure and retaining walls</u></b>                                                                                                                                                                            | <b><u>Mooring Stairs</u></b> |
| For Heavyweight Concrete, the Target Density                                 | -                                                                                                                                                                                                                                                 | -                            |
| Consistence Class                                                            | S4                                                                                                                                                                                                                                                | S4                           |
| Special Type or Class of Cement or Combination                               | Designation CIIC + SR (85%) to be used on all main structural concrete unless otherwise stated on drawings or by the engineer.<br><br><i>Alternative proposed cement combinations/classes shall be approved by MCC planning. See notes below*</i> |                              |
| Required Source/Special Type of Aggregate                                    | Frost resistant aggregates.                                                                                                                                                                                                                       |                              |
| Maximum Cement Content (kg/m <sup>3</sup> )                                  | 550                                                                                                                                                                                                                                               | 550                          |
| Required Admixture                                                           | Admixture to BS EN 934-2<br>Plastiment 190 - Sika<br>Viscoflow 1000 - Sika<br>ECO ACC - Sika                                                                                                                                                      |                              |
| Air Entrainment Required                                                     | No                                                                                                                                                                                                                                                | No                           |
| Minimum or Maximum Temperature of Fresh Concrete °C                          | Refer to SHW Clauses 1710.3, 1710.4, 1710.5, 1710.6 & 1710.7.                                                                                                                                                                                     |                              |
| (12/14) Sampling and Testing                                                 | Refer to Appendix 1/5 of the specification                                                                                                                                                                                                        |                              |
| (12/14) Requirements to Control Early Thermal Cracking or Other Requirements | Each constituent material shall be obtained from a single consistent source <sup>[3]</sup> .                                                                                                                                                      |                              |

\*Contractor to produce trial panels of architectural patterned profiled finish (PPF) concrete to project specification and with any additional requirements for surface finishing (such as etching and acid etching etc) as specified by MCC. Approval from MCC planning team to be obtained for final PPF design. Refer to Appendix 17/3 within this specification.

Additional Notes:

4. Frost resistant (limestone) aggregates conforming to BS EN 12620:2002+ A1:2008.
5. To limit early thermal cracking, the difference in temperature from hydration peak at the centre of a section and the surface of the concrete shall not exceed the following:

- For sections up to 500mm thick 43°C;
  - For sections exceeding 500mm thick 53°C.
6. For requirements of ancillary concrete and bedding mortar, refer to Appendix 26/1 and 26/2, respectively.

Pile concrete specification

7. Concrete to be used for piles shall be specified by the piling contractor.

Positions where internal ties are permitted (other than rebates) for Class F4 finishes

8. Internal ties will not be permitted other than in rebates for Class F4.

Locations where a regular pattern of formwork joints is necessary

9. None

Concrete requiring an architectural relief

10. An architectural vertical concrete relief is required on walls as indicated on the contract specific drawings and the architectural drawing package produced by Hawkins Brown.
11. The concrete finish shall be formed using a Reckli 1/172 SINUS 27/100 Formliner or similar approved. Where alternative product is proposed, the Contractor shall submit the alternative product for approval with Hawkins Brown. Also see Appendix 17/3 of this specification.

## **APPENDIX 17/2**

### **17/2: CONCRETE – SURFACE PROTECTION SYSTEMS**

1. All ramp and abutment walls to be sprayed with Graffix anti-vandalism coating or approved similar. Refer to Hawkins Brown supplied product specific specification within Appendix B of this document.

## APPENDIX 17/3

### CONCRETE – SURFACE FINISHES

#### Requirements for trial panels and approval of finish

1. Trial panels shall be undertaken in accordance with the Specification for Highway Works Clause 1708.1.
2. Contractor to liaise with their supply chain to develop trial panels for architectural concrete. The supply chain shall provide options for surface finishing to MCC Planning and Hawkins Brown.
3. Trial panels shall be produced in line with the Hawkins Brown proposal but shall include additional requirements for the surface finishing (such as etching and acid etching etc) to enable sign off of material condition by MCC Planning and Heritage. The Contractor and design team shall liaise with the MCC Planning Team on the additional finishing requirements.
4. The final Patterned profiled finish design shall be agreed with MCC Planning and Hawkins Brown.

#### Requirements for contract specific surface finishes

2. Surface finishes for concrete shall generally confirm to Series 1700 of the MCWH.
3. The architectural concrete finish shall be formed using a Reckli 1/172 SINUS 27/100 Formliner or similar approved. Where an alternative product is proposed, the Contractor shall submit the alternative product for approval with Hawkins Brown and MCC Planning.

Alternative product shall maintain the minimum cover to reinforcement or minimum anchorage edge distance requirements.

4. Refer to contract specific drawings for locations of vertical concrete relief finishes.
5. The surface of the concrete should be inspected for defects, for conformity with the Specification and, where appropriate, for comparison with approved sample finishes. Subject to the strength and durability of the concrete being unimpaired, the making good of surface defects may be permitted, but the standard of acceptance should be appropriate to the strength class and quality of the finish specified and should ensure satisfactory performance and durability. On permanently exposed surfaces great care is essential in selecting the mix proportions to ensure that the final colour of the faced area blends with the parent concrete in the finished structure.

#### RonaDeck Combined Surfacing and waterproofing surface finish.

6. Concrete with Binder: RonaDeck Resin Bonded Surfacing Resin. Refer to Appendix 20/1 for specification of Resin Bonded Waterproof surfacing product.
7. The application of the combined waterproofing and surfacing should comply with the following requirements:
8. Concrete should have a maximum relative humidity of 75% at the surface before RonaDeck Resin Bonded Surfacing is applied.
  - a. Prepare concrete to produce a lightly textured surface which is free from laitance, shot or grit blasting is preferred.

- b. Ensure that the concrete surface is dry and free from loose or friable materials and ensure that the deck surface is at least 3 degrees C above the dew point.
- c. Protect all surrounding areas from spillage/overflow of resin, preferably using duct tape to seal and use duct tape at termination points.
- d. If necessary, elevate the temperature in the area to at least 10 degrees C, to improve workability of the resin.
- e. When applying RonaDeck Resin Bonded Surfacing to concrete, bay joints and movement joint should be expressed in the surfacing. It must not be assumed that because a bay joint is closed during application, that it will remain closed. If a bay joint opens, even slightly, a crack in the surfacing may ensue.
- f. If the moisture content of the concrete is greater than 5% or 75%RH, apply RonaFloor Epoxy Primer MT (as items 8 to 10) and overcoat with resin bonded surfacing within the 16-24 hour overcoat window. If the concrete is sufficiently dry, proceed to item 11.
- g. Mix RonaFloor Epoxy Primer MT using a slow speed drill (< 450 RPM) fitted with an MR3 type paddle.
- h. Apply a single coat of RonaFloor Epoxy Primer MT to the freshly prepared steel deck at the rate of 3.5-4.5m<sup>2</sup> per kg approximately. Heavily textured substrates may require a higher usage rate.
- i. The primer must be protected until the RonaDeck Resin Bonded Surfacing is laid.
- j. Protect all kerbs, ironwork etc from spillage/overflow of resin, preferably using duct tape to seal, and use duct tape at termination points. Consider permanent protection of arises and expansion joints with steel angles or nosings
- k. Mix RonaDeck Resin Bonded Surfacing using a slow speed drill (< 450 RPM) fitted with an MR2 or MR3 type paddle, until the components are blended and the mix is free from streaks; immediately pour the mixed material onto the substrate, to prevent heating in the mixing vessel and to extend workable life.
- l. Evenly spread a layer of resin with a notched squeegee/ roller at the rate of 1.5kg/m<sup>2</sup>. Minimum application temperature is 5 degrees C or 3 degrees C above the dew point, whichever is greater. Maximum application temperature is 25 degrees C. Maximum air humidity is 60%.
- m. Fully blind the RonaDeck Resin Bonded Surfacing with 1-3mm RonaDeck Chinese Bauxite aggregate at the rate of 8kg/m<sup>2</sup> minimum. This must be done immediately after application of the resin, while the resin is still fluid.
- n. Remove all duct tape/protection before the resin gels.
- o. Allow the RonaDeck Resin Bonded Surfacing to cure, typically 2 hours at 20 degrees C. Excess aggregate may then be removed by sweeping or vacuuming. It may require several cycles of sweeping or vacuuming to fully remove loose aggregate. Typical traffic time at 20 degrees C is 4 hours.
- p. Do not apply RonaDeck Resin Bonded Surfacing if rain, fog, or high humidity is expected within its cure time or if the resin or aggregate has become damp.

9. Upon completion before trafficking, remove excess chippings.

Positions where internal ties are permitted (other than rebates) for Class F4 finishes.

10. Internal ties and embedded metal parts shall be positioned only in the vertical feature grooves or rebates unless otherwise agreed by the Project Manager. Holes shall be filled using a colour-matched non-shrink grout.

Locations where a regular pattern of formwork joints is unnecessary

11. Formwork joints for patterned finishes shall avoid visible sections of the concrete where possible or match locations of features.

Pile concrete requirements

12. Pile concrete requirements shall be determined by the pile designer.

## APPENDIX 17/4

### CONCRETE – GENERAL

#### General

1. Concrete requirements shall generally confirm to Series 1700 of the MCWH.
2. Test cubes taken for testing delayed strength development shall be stored under the same temperature conditions as the parent concrete. This will ensure similar strength development with the parent concrete; particularly where cold weather has slowed the concrete's strength development.
3. Construction joints shall confirm to the requirements of the SHW Series 1710

#### Pile Cap Concrete

4. All pile caps will be founded upon ST1 blinding concrete with a minimum depth of 75mm.

#### Cast-in Anchorage requirements

5. The ramp parapets shall be fixed to M12 SSR-175 cast-in single anchorages or approved similar.
6. The position of anchorages shall be determined by the steel fabricator undertaking the design of the parapet. Also see Appendix 19/1 for ramp parapet requirements.
7. Minimum spacing between anchorages shall be 140mm.
8. Tolerances for the positioning of cast-in anchorages shall be as defined below:
  - a. Longitudinal (parallel to the ramp path) -  $\pm 25\text{mm}$
  - b. Transverse (perpendicular to the path) -  $\pm 10\text{mm}$
  - c. Tolerance of pairs of anchors in relation to each other, in the Transverse direction (perpendicular to the path) -  $\pm 0\text{mm}$

#### Requirements for the inspection of concrete with architectural finishes

9. Careful attention to the mix of the concrete used to make good any defects should be undertaken. The colour and appearance of the repair concrete shall match the parent concrete.

## **APPENDIX 17/7**

### **CONCRETE – PRECAST CONCRETE PRODUCTS**

1. The stairs at the mooring area shall be constructed from precast concrete. The stairs shall be constructed as noted in drawing 651-279-020
2. Precast stairs shall have a nosing strip installed which is in accordance with the Architects specification. Refer to Appendix B for Product Specific Specification. Alternative nosing strips proposed by the contractor shall be sent to the Architect, Hawkins Brown, for approval.

## APPENDIX 18/1

### REQUIREMENTS FOR STRUCTURAL STEELWORK

|                                                      |                                                                                                                                                                                                                                       |                                                  |                                                                            |                               |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------|-------------------------------|
| <b><u>Contract Title:</u></b><br>Ashton Canal Bridge |                                                                                                                                                                                                                                       |                                                  | <b><u>Structure Reference:</u></b><br>Ashton Canal Bridge                  |                               |
| <b><u>Bridge Deck – All Steelwork</u></b>            |                                                                                                                                                                                                                                       |                                                  | Drawings and Documents that give related structural steelwork requirements |                               |
| <b>Series 1800 Clause Reference:</b>                 | <b>Additional Information Required</b>                                                                                                                                                                                                | <b>Not Applicable (Ticked if not applicable)</b> | <b>See Drawings Listed in Appendix 0/4</b>                                 | <b>See Appended Documents</b> |
| <b>1804 – Specifications and Documentation</b>       |                                                                                                                                                                                                                                       |                                                  |                                                                            |                               |
| <b>1804.1.1</b>                                      | <b>Execution Specification, General</b> – drawing numbers of all drawings in Appendix 0/4, and document references of all appended documents that give all the necessary requirements for the execution of the steelwork.             |                                                  | ✓                                                                          |                               |
| <b>1805 – Constituent Products</b>                   |                                                                                                                                                                                                                                       |                                                  |                                                                            |                               |
| <b>1805.1</b>                                        | <b>Constituent Products, General</b> – properties of products not covered by listed standards.                                                                                                                                        | ✓                                                |                                                                            |                               |
| <b>1805.3.1</b>                                      | <b>Structural Steel Products, General</b> – grades, qualities and, if appropriate, coating weights, finishes and any required options permitted by product standards for steel products.                                              |                                                  | ✓                                                                          |                               |
| <b>1805.3.3</b>                                      | <b>Surface conditions</b> – additional requirements related to special restrictions on either surface imperfections or repair of surface defects by grinding in accordance with BS EN 10163, or with BS EN 10088 for stainless steel. | ✓                                                |                                                                            |                               |
| <b>1805.3.3</b>                                      | <b>Surface conditions</b> – surface finish requirements for other products.                                                                                                                                                           |                                                  |                                                                            | ✓<br>[1], [2]                 |
| <b>1805.3.3</b>                                      | <b>Surface conditions</b> – where decorative or specialist surface finishes are required.                                                                                                                                             |                                                  |                                                                            | ✓<br>[1]                      |

| <b><u>Contract Title:</u></b><br><b>Ashton Canal Bridge</b> |                                                                                                                                                                                                  |                                                  | <b><u>Structure Reference:</u></b><br><b>Ashton Canal Bridge</b>                  |                               |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------|
| <b><u>Bridge Deck – All Steelwork</u></b>                   |                                                                                                                                                                                                  |                                                  | <b>Drawings and Documents that give related structural steelwork requirements</b> |                               |
| <b>Series 1800 Clause Reference:</b>                        | <b>Additional Information Required</b>                                                                                                                                                           | <b>Not Applicable (Ticked if not applicable)</b> | <b>See Drawings Listed in Appendix 0/4</b>                                        | <b>See Appended Documents</b> |
| <b>1805.3.4</b>                                             | <b>Special properties</b> – Additional requirements for special properties if relevant.                                                                                                          | ✓                                                |                                                                                   |                               |
| <b>1805.4</b>                                               | <b>Steel castings</b> – Grades, grade suffixes', finishes and options for steel castings.                                                                                                        | ✓                                                |                                                                                   |                               |
| <b>1805.6.3</b>                                             | <b>Structural bolting assemblies for non preloaded applications</b> – property classes of bolts and nuts, and surface finishes for structural bolting assemblies for non-preloaded applications. |                                                  | ✓                                                                                 |                               |
| <b>1805.6.3</b>                                             | <b>Structural bolting assemblies for non preloaded applications</b> – mechanical properties for large diameter bolting assemblies.                                                               | ✓                                                |                                                                                   |                               |
| <b>1805.6.3</b>                                             | <b>Structural bolting assemblies for non preloaded applications</b> – full details for the use of insulation kits.                                                                               | ✓                                                |                                                                                   |                               |
| <b>1805.6.4</b>                                             | <b>Structural bolting assemblies for preloading</b> – property classes of bolts and nuts and surface finishes for structural bolting assemblies for preloading.                                  | ✓                                                |                                                                                   |                               |
| <b>1805.6.4</b>                                             | <b>Structural bolting assemblies for preloading</b> – where stainless steel bolts can be used in preloaded applications.                                                                         | ✓                                                |                                                                                   |                               |
| <b>1805.6.7</b>                                             | <b>Foundation bolts</b> – where reinforcing steels may be used for foundation bolts together with the steel grade.                                                                               | ✓                                                |                                                                                   |                               |
| <b>1805.6.8</b>                                             | <b>Locking devices</b> – where locking devices are required.                                                                                                                                     | ✓                                                |                                                                                   |                               |
| <b>1805.6.8</b>                                             | <b>Locking devices</b> – if products other than those in the referred standards are to be used.                                                                                                  | ✓                                                |                                                                                   |                               |

|                                                             |                                                                                                                                                               |                                                  |                                                                                   |                               |
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| <b><u>Contract Title:</u></b><br><b>Ashton Canal Bridge</b> |                                                                                                                                                               |                                                  | <b><u>Structure Reference:</u></b><br><b>Ashton Canal Bridge</b>                  |                               |
| <b><u>Bridge Deck – All Steelwork</u></b>                   |                                                                                                                                                               |                                                  | <b>Drawings and Documents that give related structural steelwork requirements</b> |                               |
| <b>Series 1800 Clause Reference:</b>                        | <b>Additional Information Required</b>                                                                                                                        | <b>Not Applicable (Ticked if not applicable)</b> | <b>See Drawings Listed in Appendix 0/4</b>                                        | <b>See Appended Documents</b> |
| <b>1805.6.11</b>                                            | <b>Fasteners for thin gauge components</b> – mechanical fastener type for use in stressed skin applications.                                                  | ✓                                                |                                                                                   |                               |
| <b>1805.6.12</b>                                            | <b>Special fasteners</b> – special fastener not standardised in CEN or ISO standards, as well as any tests necessary.                                         | ✓                                                |                                                                                   |                               |
| <b>1805.9</b>                                               | <b>Grouting materials</b> – grouting materials to be used.                                                                                                    |                                                  | ✓<br>Also see Appendix 26/1                                                       |                               |
| <b>1805.10</b>                                              | <b>High strength cables, rods and terminations</b> – tensile strength grade and coating of wires                                                              | ✓                                                |                                                                                   |                               |
| <b>1805.10</b>                                              | <b>High strength cables, rods and terminations</b> – designation and class of strands.                                                                        | ✓                                                |                                                                                   |                               |
| <b>1805.10</b>                                              | <b>High strength cables, rods and terminations</b> – minimum breaking load and diameter of steel wire ropes and requirements related to corrosion protection. | ✓                                                |                                                                                   |                               |
| <b>1805.11</b>                                              | <b>Structural bearings</b> – Schedule of design requirements and acceptance tests.                                                                            |                                                  | ✓<br>Also see Appendix 21/1                                                       |                               |
| <b>1806 – Preparation and Assembly</b>                      |                                                                                                                                                               |                                                  |                                                                                   |                               |
| <b>1806.2</b>                                               | <b>Identification</b> – where soft or low stress stamps may not be used for stainless steel                                                                   | ✓                                                |                                                                                   |                               |
| <b>1806.2</b>                                               | <b>Identification</b> – zones where identification marks are not permitted or shall not be visible after completion.                                          | ✓                                                |                                                                                   |                               |
| <b>1806.4.4 (2)</b>                                         | <b>Hardness of free edge surfaces</b> – edge surfaces where the relaxation for machine                                                                        | ✓                                                |                                                                                   |                               |

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|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------|
| <b><u>Bridge Deck – All Steelwork</u></b>                   |                                                                                                                                                          |                                                  | <b>Drawings and Documents that give related structural steelwork requirements</b> |                               |
| <b>Series 1800 Clause Reference:</b>                        | <b>Additional Information Required</b>                                                                                                                   | <b>Not Applicable (Ticked if not applicable)</b> | <b>See Drawings Listed in Appendix 0/4</b>                                        | <b>See Appended Documents</b> |
|                                                             | plasma cutting described in 1806.4.4 (2), is not permitted.                                                                                              |                                                  |                                                                                   |                               |
| <b>1806.5.4 c)</b>                                          | <b>Cold forming</b> – minimum bending radii for stainless steels other than those to grades listed in 1806.5.4 b).                                       | ✓                                                |                                                                                   |                               |
| <b>1806.5.4 d)</b>                                          | <b>Cold forming</b> – protective membranes for cold formed thin gauge components.                                                                        | ✓                                                |                                                                                   |                               |
| <b>1806.6.1</b>                                             | <b>Dimensions of holes</b> – special dimensions for movement joints.                                                                                     | ✓                                                |                                                                                   |                               |
| <b>1806.6.1</b>                                             | <b>Dimensions of holes</b> – nominal hole diameter for hot rivets.                                                                                       | ✓                                                |                                                                                   |                               |
| <b>1806.6.1</b>                                             | <b>Dimensions of holes</b> – dimensions of countersinking.                                                                                               | ✓                                                |                                                                                   |                               |
| <b>1806.7 (1)</b>                                           | <b>Cut outs</b> – re-entrant corners where a smaller radius than that described in 1806.7 is permitted.                                                  | ✓                                                |                                                                                   |                               |
| <b>1806.8</b>                                               | <b>Full contact bearing surfaces</b> – where full contact bearing surfaces are required.                                                                 |                                                  | ✓                                                                                 |                               |
| <b>1806.9 (2)</b>                                           | <b>Connections for temporary components</b> – special requirements applying to connections for temporary components, including those related to fatigue. | ✓                                                |                                                                                   |                               |
| <b>1806.9 (3)</b>                                           | <b>Connections for temporary components</b> – where the removal or addition of permanent material or the introduction of permanent notches is permitted. | ✓                                                |                                                                                   |                               |
| <b>1806.10</b>                                              | <b>Assembly check</b> – if, and to what extent, trial assembly is to be used.                                                                            | ✓                                                |                                                                                   |                               |
| <b>1807 – Welding</b>                                       |                                                                                                                                                          |                                                  |                                                                                   |                               |

| <b><u>Contract Title:</u></b><br><b>Ashton Canal Bridge</b> |                                                                                                                              |                                                  | <b><u>Structure Reference:</u></b><br><b>Ashton Canal Bridge</b>                  |                               |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------|
| <b><u>Bridge Deck – All Steelwork</u></b>                   |                                                                                                                              |                                                  | <b>Drawings and Documents that give related structural steelwork requirements</b> |                               |
| <b>Series 1800 Clause Reference:</b>                        | <b>Additional Information Required</b>                                                                                       | <b>Not Applicable (Ticked if not applicable)</b> | <b>See Drawings Listed in Appendix 0/4</b>                                        | <b>See Appended Documents</b> |
| <b>1807.1 (1)</b>                                           | <b>Welding Quality Requirements</b> – if the BS EN ISO 3834 quality requirements shall conform to the requirements for EXC2. | ✓                                                |                                                                                   |                               |
| <b>1807.5.6 (1)</b>                                         | <b>Temporary attachments</b> – areas where welding of temporary attachments is not permitted.                                | ✓                                                |                                                                                   |                               |
| <b>1807.5.6 (2)</b>                                         | <b>Temporary attachments</b> – use of temporary welded attachments.                                                          | ✓                                                |                                                                                   |                               |
| <b>1807.5.9.1</b>                                           | <b>Butt welds, general</b> – the location of butt welds used as splices.                                                     |                                                  | ✓<br>[3]                                                                          |                               |
| <b>1807.5.9.1</b>                                           | <b>Butt welds, general</b> – where a flush surface is required.                                                              | ✓                                                |                                                                                   |                               |
| <b>1807.5.9.2 (1)</b>                                       | <b>Single sided welds</b> – where the use of permanent steel backing is permitted.                                           | ✓                                                |                                                                                   |                               |
| <b>1807.5.13</b>                                            | <b>Slot and plug welds</b> – the dimensions of holes for slot and plug welds.                                                |                                                  | ✓<br>[3]                                                                          |                               |
| <b>1807.5.14.1</b>                                          | <b>Arc spot welds</b> – if weld washers are accepted for stainless steels.                                                   | ✓                                                |                                                                                   |                               |
| <b>1807.5.14.1</b>                                          | <b>Arc spot welds</b> – the minimum visible width of arc spot welds.                                                         | ✓                                                |                                                                                   |                               |
| <b>1807.5.15</b>                                            | <b>Other weld types</b> – requirements for other weld types.                                                                 |                                                  | ✓ - Fillet welds                                                                  |                               |
| <b>1807.5.17</b>                                            | <b>Execution of welding</b> – requirements for grinding and dressing of the surface of completed welds                       | ✓                                                |                                                                                   |                               |
| <b>1807.7.2</b>                                             | <b>Amendments to EN 1011-3 requirements</b> – the surface finish of the weld zones on stainless steels.                      | ✓                                                |                                                                                   |                               |

|                                                             |                                                                                                                                                                     |                                                              |                                                                                   |                                       |
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| <b><u>Contract Title:</u></b><br><b>Ashton Canal Bridge</b> |                                                                                                                                                                     |                                                              | <b><u>Structure Reference:</u></b><br><b>Ashton Canal Bridge</b>                  |                                       |
| <b><u>Bridge Deck – All Steelwork</u></b>                   |                                                                                                                                                                     |                                                              | <b>Drawings and Documents that give related structural steelwork requirements</b> |                                       |
| <b>Series<br/>1800<br/>Clause<br/>Reference:</b>            | <b>Additional Information Required</b>                                                                                                                              | <b>Not<br/>Applicable<br/>(Ticked if not<br/>applicable)</b> | <b>See Drawings<br/>Listed in<br/>Appendix 0/4</b>                                | <b>See<br/>Appended<br/>Documents</b> |
| <b>1807.7.3</b>                                             | <b>Welding dissimilar metals</b> – requirements for welding different stainless steels to each other or to other metallic materials.                                | ✓                                                            |                                                                                   |                                       |
| <b>1808 – Mechanical Fastening</b>                          |                                                                                                                                                                     |                                                              |                                                                                   |                                       |
| <b>1808.2.1</b>                                             | <b>Use of bolting assemblies, General</b> – where, in addition to tightening other measures or means are to be used to secure the nuts.                             |                                                              | ✓<br>[3]                                                                          |                                       |
| <b>1808.2.1<br/>(1)</b>                                     | <b>Welding of mechanical fasteners</b> – where welding of property class 4.6 nuts, bolts and washers is permitted.                                                  | ✓                                                            |                                                                                   |                                       |
| <b>1808.2.2</b>                                             | <b>Bolts</b> – minimum diameter of fasteners for thin gauge components and sheeting.                                                                                | ✓                                                            |                                                                                   |                                       |
| <b>1808.2.2</b>                                             | <b>Bolts</b> – dimensions of bolts in connection utilising the shear capacity of the unthreaded shank.                                                              | ✓                                                            |                                                                                   |                                       |
| <b>1808.2.4</b>                                             | <b>Washers</b> – dimensions and steel grade of plate washers to be used with slotted or oversized holes.                                                            | ✓                                                            |                                                                                   |                                       |
| <b>1808.2.4</b>                                             | <b>Washers</b> – dimensions and steel grade of taper washers.                                                                                                       | ✓                                                            |                                                                                   |                                       |
| <b>1808.3</b>                                               | <b>Tightening of non-preloaded bolts</b> – where full contact bearing is required (see 1806.8).                                                                     | ✓                                                            |                                                                                   |                                       |
| <b>1808.4</b>                                               | <b>Preparation of contact surfaces in slip resistant connections</b> – requirements related to contact surfaces in slip resistant connections for stainless steels. | ✓                                                            |                                                                                   |                                       |
| <b>1808.5.1<br/>(2)</b>                                     | <b>Cover Plates in Preloaded Joints</b> – measures permitted to limit the out-of-plane bending stiffness of cover plates.                                           | ✓                                                            |                                                                                   |                                       |

| <b><u>Contract Title:</u></b><br>Ashton Canal Bridge |                                                                                                                             |                                                              | <b><u>Structure Reference:</u></b><br>Ashton Canal Bridge                         |                                       |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------|
| <b><u>Bridge Deck – All Steelwork</u></b>            |                                                                                                                             |                                                              | <b>Drawings and Documents that give related structural steelwork requirements</b> |                                       |
| <b>Series<br/>1800<br/>Clause<br/>Reference:</b>     | <b>Additional Information Required</b>                                                                                      | <b>Not<br/>Applicable<br/>(Ticked if not<br/>applicable)</b> | <b>See Drawings<br/>Listed in<br/>Appendix 0/4</b>                                | <b>See<br/>Appended<br/>Documents</b> |
| <b>1808.5.1<br/>(6)</b>                              | <b>Tightening of preloaded bolts, General</b> – preloaded bolts that shall be tightened by the torque method.               | ✓                                                            |                                                                                   |                                       |
| <b>1808.7.2</b>                                      | <b>Installation of rivets</b> – where a flush surface of countersunk rivets is required.                                    | ✓                                                            |                                                                                   |                                       |
| <b>1808.7.3</b>                                      | <b>Acceptance criteria</b> – where outer faces of plies are required to be free of indentation by the riveting machine.     | ✓                                                            |                                                                                   |                                       |
| <b>1808.8.4</b>                                      | <b>Fastening side laps</b> – requirements for the side lap fasteners as structural fasteners in stressed skin applications. | ✓                                                            |                                                                                   |                                       |
| <b>1808.9</b>                                        | <b>Use of special fasteners and fastening methods</b> – requirements for procedure tests.                                   | ✓                                                            |                                                                                   |                                       |
| <b>1808.9</b>                                        | <b>Use of special fasteners and fastening methods</b> – requirements for use of hexagon injection bolts.                    | ✓                                                            |                                                                                   |                                       |
| <b>1809 – Erection</b>                               |                                                                                                                             |                                                              |                                                                                   |                                       |
| <b>1809.4.1(1)</b>                                   | <b>Reference system</b> – the reference temperature for setting out and measuring the steelwork if different from 15oC.     | ✓                                                            |                                                                                   |                                       |
| <b>1809.5.3</b>                                      | <b>Maintaining suitability of supports</b> – if compensation for settlement of supports is required.                        | ✓                                                            |                                                                                   |                                       |
| <b>1809.5.4</b>                                      | <b>Temporary supports</b> – where levelling nuts on foundation bolts under the base plate are required to be removed.       | ✓                                                            |                                                                                   |                                       |
| <b>1809.5.4</b>                                      | <b>Temporary supports</b> – where packings for bridges may be left in position.                                             | ✓                                                            |                                                                                   |                                       |
| <b>1809.5.5(1)</b>                                   | <b>Grouting and sealing</b> – requirements for the treatment of steelwork, bearings and concrete surfaces before grouting.  | ✓                                                            |                                                                                   |                                       |

|                                                      |                                                                                                                                                                                                                                          |                                                  |                                                                            |                               |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------|-------------------------------|
| <b><u>Contract Title:</u></b><br>Ashton Canal Bridge |                                                                                                                                                                                                                                          |                                                  | <b><u>Structure Reference:</u></b><br>Ashton Canal Bridge                  |                               |
| <b><u>Bridge Deck – All Steelwork</u></b>            |                                                                                                                                                                                                                                          |                                                  | Drawings and Documents that give related structural steelwork requirements |                               |
| <b>Series 1800 Clause Reference:</b>                 | <b>Additional Information Required</b>                                                                                                                                                                                                   | <b>Not Applicable (Ticked if not applicable)</b> | <b>See Drawings Listed in Appendix 0/4</b>                                 | <b>See Appended Documents</b> |
| 1809.5.5                                             | <b>Grouting and sealing</b> – the method of sealing the edges of a base plate if no grouting is needed.                                                                                                                                  | ✓                                                |                                                                            |                               |
| <b>1810 – Surface Treatment</b>                      |                                                                                                                                                                                                                                          |                                                  |                                                                            |                               |
| 1810.1 (5)                                           | <b>Surface treatment, General</b> – requirements for friction surfaces and class of treatment or tests required for surfaces in slip resistant connections                                                                               | ✓                                                |                                                                            |                               |
| 1810.1(7)                                            | <b>Surface treatment general</b> – the extent of surfaces that are affected by pre-loaded bolts in non-slip resistant connections.                                                                                                       | ✓                                                |                                                                            |                               |
| 1810.1 (8)                                           | <b>Preparation of fasteners</b> – if the lower embedded part of foundation bolts is required to be untreated.                                                                                                                            | ✓                                                |                                                                            |                               |
| 1810.1 (9)                                           | <b>Galvanizing</b> – Requirements for procedure qualification of the dipping process if hot dip galvanizing of components after manufacture is required.                                                                                 |                                                  |                                                                            | ✓<br>[4]                      |
| 1810.1 (10)                                          | <b>Galvanizing</b> – Requirements for the inspection, checking or qualification of the preparation to be carried out before subsequent overcoating, for galvanized components.                                                           |                                                  | ✓<br>[4]                                                                   |                               |
| 1810.2                                               | <b>Preparation of steel substrates</b> – Requirements for surface cleanliness of stainless steels.                                                                                                                                       | ✓                                                |                                                                            |                               |
| 1810.2 (1)                                           | <b>Preparation of steel substrates</b> – requirements for the preparation of surfaces to receive corrosion protection if they are to be different from those described in Series 1900 and/or BS EN ISO 8501-3:2007 preparation grade P3. | ✓                                                |                                                                            |                               |

| <b><u>Contract Title:</u></b><br><b>Ashton Canal Bridge</b> |                                                                                                                                                                  |                                                  | <b><u>Structure Reference:</u></b><br><b>Ashton Canal Bridge</b>                  |                               |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------|
| <b><u>Bridge Deck – All Steelwork</u></b>                   |                                                                                                                                                                  |                                                  | <b>Drawings and Documents that give related structural steelwork requirements</b> |                               |
| <b>Series 1800 Clause Reference:</b>                        | <b>Additional Information Required</b>                                                                                                                           | <b>Not Applicable (Ticked if not applicable)</b> | <b>See Drawings Listed in Appendix 0/4</b>                                        | <b>See Appended Documents</b> |
| <b>1810.3</b>                                               | <b>Weather resistant steels</b> – requirements for the surface treatment of non-weather resistant steels in contact with uncoated weather resistant steels.      | ✓                                                |                                                                                   |                               |
| <b>1810.5</b>                                               | <b>Galvanizing</b> – where enclosed spaces shall be sealed after galvanizing and, if so, with what sealant.                                                      | ✓                                                |                                                                                   |                               |
| <b>1810.6</b>                                               | <b>Sealing of spaces</b> – where weld imperfections permitted by the welding procedure specification require sealing by application of suitable filler material. | ✓                                                |                                                                                   |                               |
| <b>1810.6</b>                                               | <b>Sealing of spaces</b> – the method to be used for sealing the interface if mechanical fasteners penetrate the wall of sealed enclosed spaces.                 | ✓                                                |                                                                                   |                               |
| <b>1810.6 (2)</b>                                           | <b>Sealing of spaces</b> – internal spaces that are to be hermetically sealed.                                                                                   | ✓                                                |                                                                                   |                               |
| <b>1810.7</b>                                               | <b>Surfaces in contact with concrete</b> – specific requirements for coating surfaces in contact with concrete.                                                  | ✓                                                |                                                                                   |                               |
| <b>1810.9 (2)</b>                                           | <b>Repairs</b> of coatings to precoated constituent products – method and extent of repair after welding.                                                        | ✓                                                |                                                                                   |                               |
| <b>1810.10.2</b>                                            | <b>Cleaning of stainless steel components</b> – the method, level and extent of cleaning of stainless steels.                                                    | ✓                                                |                                                                                   |                               |
| <b>1811 – Geometrical Tolerances</b>                        |                                                                                                                                                                  |                                                  |                                                                                   |                               |
| <b>1811.1</b>                                               | <b>Tolerance types</b> – additional information related to special tolerances if these tolerances are specified.                                                 |                                                  | ✓                                                                                 |                               |
| <b>1811.3.3</b>                                             | <b>Alternative criteria</b> – where the specified alternative criteria for functional tolerances may be applied.                                                 | ✓                                                |                                                                                   |                               |

|                                                      |                                                                                                                                                                 |                                                  |                                                                            |                               |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------|-------------------------------|
| <b><u>Contract Title:</u></b><br>Ashton Canal Bridge |                                                                                                                                                                 |                                                  | <b><u>Structure Reference:</u></b><br>Ashton Canal Bridge                  |                               |
| <b><u>Bridge Deck – All Steelwork</u></b>            |                                                                                                                                                                 |                                                  | Drawings and Documents that give related structural steelwork requirements |                               |
| <b>Series 1800 Clause Reference:</b>                 | <b>Additional Information Required</b>                                                                                                                          | <b>Not Applicable (Ticked if not applicable)</b> | <b>See Drawings Listed in Appendix 0/4</b>                                 | <b>See Appended Documents</b> |
| <b>1812 – Inspection, Testing and Correction</b>     |                                                                                                                                                                 |                                                  |                                                                            |                               |
| <b>1812.2.1 (1)</b>                                  | <b>Constituent products</b> – specific testing requirements for the proprietary products.                                                                       |                                                  | ✓<br>[5]                                                                   |                               |
| <b>1812.5.1</b>                                      | <b>Inspection of non-preloaded bolted connections</b> – requirements for checking the installation of an insulation system.                                     | ✓                                                |                                                                            |                               |
| <b>1812.5.2.1</b>                                    | <b>Inspection of friction surfaces</b> – requirements for the inspection and testing of preloaded bolts used for stainless steels connections.                  | ✓                                                |                                                                            |                               |
| <b>1812.5.5.1</b>                                    | <b>Special fasteners and fastening methods, General</b> – requirements for the inspection of connections using special fasteners or special fastening methods.  | ✓                                                |                                                                            |                               |
| <b>1812.7.1 (1)</b>                                  | <b>Inspection of trial erection</b> – additional requirements for the inspection of a trial erection                                                            | ✓                                                |                                                                            |                               |
| <b>1812.7.3.4</b>                                    | <b>Location and frequency</b> – additional measurements, other than the position of components adjacent to site interconnection nodes.                          | ✓                                                |                                                                            |                               |
| <b>1812.7.3.4</b>                                    | <b>Location and frequency</b> – conditions other than under the self-weight of steelwork, under which positional measurements should be made.                   | ✓                                                |                                                                            |                               |
| <b>1812.7.3.6</b>                                    | <b>Definition of nonconformity</b> – envelope of permissible positions where significant movement of a structure is anticipated.                                | ✓                                                |                                                                            |                               |
| <b>1812.7.4</b>                                      | <b>Other acceptance tests</b> – specific requirements including tolerance range on the load, if components of a structure are to be erected to a specific load. | ✓                                                |                                                                            |                               |

[1] - See AkzoNobel PPC Specification for Hot Dipped Galvanised Steel. Relevant to All Powder Coated Steelwork in Appendix 18/1.

[2] – See Ronacrete surface preparation specification in 18/1 Appendix.

[3] – Steel fabricator to design specific elements identified within the contract specific drawings. Fabricator to determine and specify if clause applies and shall outline the requirements.

[4] – In accordance with SHW Series 1810, the parapet Fabricator shall sought expert advice in the specifying requirements for procedure qualification of the dipping process for components that are to be galvanized after manufacture. All steel elements shall be galvanised in accordance with Series 1800 of the SHW.

[5] – Cast-in anchorage connection for ramp parapets to be tested to product requirements.

Particular requirements for ramp and bridge parapets

1. Refer to the Hawkins Brown design package for the specific requirement for the architectural lighting on the bridge and parapet.
2. Refer to Hawkins Brown Design package for specific parapet geometry required for fabrication.

## **APPENDIX 19/1**

### **PROTECTION OF STEELWORK AGAINST CORROSION**

#### Steel Paintwork and Preparation

1. All steelwork shall be prepared in accordance with the guidance and standards within series 1900 of the MCHW. Surface preparation by blast cleaning, abrading, grinding and cleaning shall be in accordance with clause 1904 of the MCHW.
2. Superstructure steelwork, parapet and balustrade protective coating appearance shall be in accordance with the specification provided by Hawkins Brown. Refer to Hawkins Brown Specifications within the appendix of this document.
3. All steelwork shall be hot dipped galvanised prior to application of powder coating finish.
4. Powder coating to be applied in accordance with manufacturers requirements. Refer to appended specification in Appendix 18/1. Alternative powder coating systems proposed by the contractor to be approved by the Principal Designer.
5. All Steelwork to have rounded corners to improve durability of the paint system. Refer to 'steel edge detail' in drawing 651-279-012.

#### Resin bound waterproofing

6. Steel deck plate surfacing which will receive waterproof resin bonded surfacing shall be cleaned and prepared in accordance with Appendix 18/1.
7. The steel deck plates shall be protected with resin bonded gravel embedded surfacing with an architectural appearance.

#### Fixings

8. Fixings to generally conform with Appendix 18/1 and the SHW.
9. Bolt fixings for the ramp parapet SSR-175 Anchorage shall be stainless steel.
  - a. Note - Where an alternative anchorage is proposed, the Contractor shall check whether hot dipped galvanised fixings are suitable.
10. The lighting designer shall utilise hot dipped galvanised steel for the lighting fixtures to reduce the risk of bi-metallic corrosion when designing any fixtures for lighting to the deck. Lighting designer
11. Fixtures to main bridge steelwork shall be sent to the Principal Designer for approval.

#### Bird Slides for Pest prevention

1. Bird slopes to be provided on all bottom flanges to steelwork as per the contract specific drawings. All bird slide steelwork to be in accordance with structural steelwork specification.
2. Fabricator to make allowance for inspection of internal beams hidden by bird slopes. Fabricator shall confirm details with designer.
3. Fabricator to confirm lengths, position and details of the bird slope plates and welds. It is envisaged the slide plate will only require tac welds for installation.
4. Fabricator to confirm welding location and details for bird slopes.

## APPENDIX 20/1

### WATERPROOFING OF CONCRETE STRUCTURES

#### Waterproofing

1. All footway surfaces shall be covered with Ronadeck combined waterproofing and resin bonded surfacing with Chinese Bauxite 1-3mm gravel finish.
2. Specification provided by Hawkins Brown. Refer to Hawkins Brown appended specification in Appendix B of this document. Surfacing requirements;
  - a. Chippings: RonaDeck Chinese Bauxite 1-3mm surfacing aggregates
  - b. Depth of Surfacing over concrete elements – 6mm
  - c. Depth of Surfacing over steel deck plate – 6mm
  - d. Surfacing to be continuous over structures, no laps in the surfacing will be accepted.
  - e. Integrity of the combined surfacing and waterproofing shall be tested as per the requirements of Appendix 1/5.
  - f. At low temperatures RonaDeck Resin Bound Surfacing resin will not flow sufficiently to achieve a smooth finish and work should not proceed when air, material or substrate temperature is below 5°C.
  - g. Pedestrian traffic shall not be allowed within the specified curing time. The curing time varies depending on which resin grade (Winter or summer grade) is used and the ambient temperature. Reference should be made to the Appended product specific specification within this document.

#### Waterproofing of Buried concrete structures

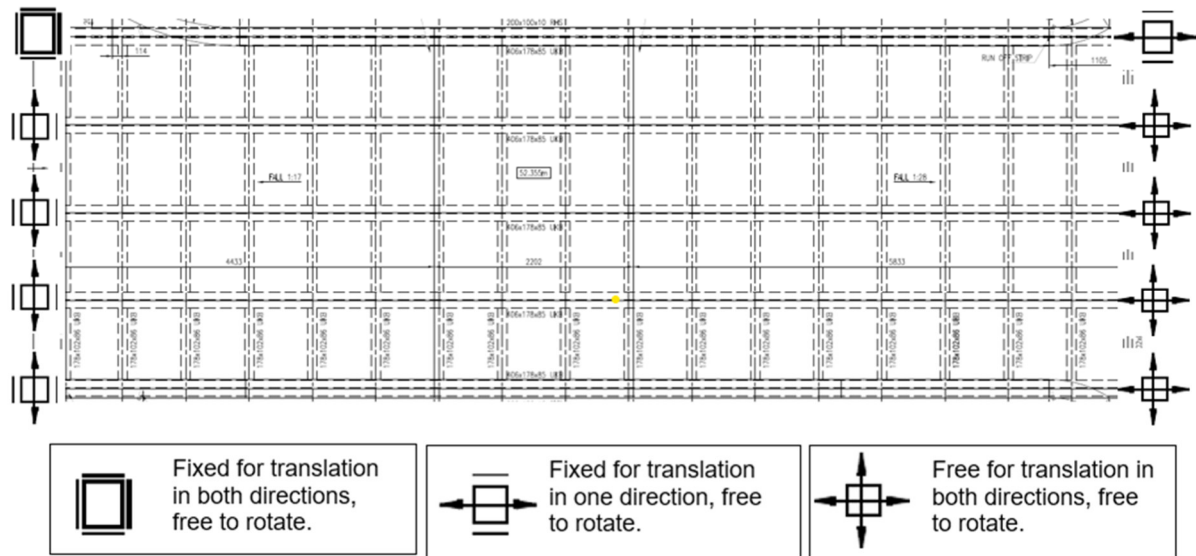
3. All buried concrete accessible after casting shall be painted with 2 coats of cut back bitumen which shall be hot applied at a rate of spread per coat of 0.6 litre/m<sup>2</sup>. The first coat shall be allowed to dry before the second coat is applied.
4. Cut back bitumen shall comply with BS 3690: Part 1 of viscosity grade 50 seconds.
5. A primer shall be applied to concrete surfaces which require cut back bitumen. Primer for sealing concrete surfaces prior to waterproofing shall be compatible with the selected tar or bitumen waterproofing material. The viscosity of the primer shall be such that it penetrates the concrete without forming a skin.

## APPENDIX 21/1

### BRIDGE BEARING SCHEDULE

#### Articulation Plan

The bridge shall be articulated as shown in the plan below. The following table shows the bearing specification for each type of bearing shown in the plan below. N.B The bearings which are fixed in one direction for the north and south abutments have been grouped for simplicity.



| Bearing Identification                                         |                            |               |                | F1 Free Bearings<br>(South Abutment) | G1 Guided bearings<br>(North Abutment) | FR1 Fixed for,<br>translation, free to rotate |    |
|----------------------------------------------------------------|----------------------------|---------------|----------------|--------------------------------------|----------------------------------------|-----------------------------------------------|----|
| Special Requirements                                           |                            |               |                | -                                    | -                                      | -                                             |    |
| Bearing Type (number in accordance with BS EN 1337-1, Table 1) |                            |               |                | 1.1                                  | 1.2                                    | 1.6                                           |    |
| Number off                                                     |                            |               |                | 4                                    | 5                                      | 1                                             |    |
| Seating Material                                               |                            | Upper Surface |                | Steel Plate                          | Steel Plate                            | Steel Plate                                   |    |
|                                                                |                            | Lower Surface |                | Epoxy Mortar                         | Epoxy Mortar                           | Epoxy Mortar                                  |    |
| Allowable average contact pressure (N/mm <sup>2</sup> )        |                            | Upper face    | Serviceability | 315                                  | 315                                    | 315                                           |    |
|                                                                |                            |               | Ultimate       |                                      |                                        |                                               |    |
|                                                                |                            | Lower face    | Serviceability | 50                                   | 50                                     | 50                                            |    |
|                                                                |                            |               | Ultimate       |                                      |                                        |                                               |    |
| Design Load effects (kN)                                       | Serviceability limit state |               | Vertical       | max.                                 | 38                                     | 38                                            | 38 |
|                                                                |                            |               |                | Permanent                            | 15                                     | 15                                            | 15 |
|                                                                |                            |               |                | min.                                 | 36                                     | 36                                            | 36 |
|                                                                |                            |               | Transverse     |                                      | 0                                      | 26                                            | 26 |
|                                                                |                            |               | Longitudinal   |                                      | 0                                      | 15                                            | 15 |
|                                                                | Ultimate limit state       |               | Vertical       | max.                                 | 45                                     | 45                                            | 45 |
|                                                                |                            |               |                | min.                                 | 42                                     | 42                                            | 42 |
|                                                                |                            |               | Transverse     |                                      | 0                                      | 44                                            | 44 |
|                                                                |                            |               | Longitudinal   |                                      | 0                                      | 20                                            | 20 |

| Bearing Identification                                                    |                                                                                      |                                                                        |              | F1 Free Bearings<br>(South Abutment) | G1 Guided bearings<br>(North Abutment) | FR1 Fixed for,<br>translation,<br>free to rotate |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------|--------------------------------------|----------------------------------------|--------------------------------------------------|
| Translation (mm)<br><br>Total movement across deck                        | Serviceability limit state                                                           | Irreversible                                                           | Transverse   |                                      |                                        |                                                  |
|                                                                           |                                                                                      |                                                                        | Longitudinal |                                      |                                        |                                                  |
|                                                                           |                                                                                      | Reversible                                                             | Transverse   | 5                                    | 0                                      | 0                                                |
|                                                                           |                                                                                      |                                                                        | Longitudinal | 13                                   | 13                                     | 0                                                |
|                                                                           | Ultimate limit state                                                                 | Irreversible                                                           | Transverse   |                                      |                                        |                                                  |
|                                                                           |                                                                                      |                                                                        | Longitudinal |                                      |                                        |                                                  |
|                                                                           |                                                                                      | Reversible                                                             | Transverse   |                                      |                                        |                                                  |
|                                                                           |                                                                                      |                                                                        | Longitudinal |                                      |                                        |                                                  |
| Rotation (Radians)<br>(State whether +ve or -ve rotation)                 | Serviceability limit state                                                           | Irreversible                                                           | Transverse   |                                      |                                        |                                                  |
|                                                                           |                                                                                      |                                                                        | Longitudinal |                                      |                                        |                                                  |
|                                                                           |                                                                                      | Reversible                                                             | Transverse   | 0                                    | 0                                      | 0                                                |
|                                                                           |                                                                                      |                                                                        | Longitudinal | +0.008                               | +0.008                                 | +0.008                                           |
|                                                                           | Maximum rate (radians/100kN)                                                         |                                                                        | Transverse   | *                                    | *                                      | *                                                |
|                                                                           |                                                                                      |                                                                        | Longitudinal | *                                    | *                                      | *                                                |
| Maximum bearing dimensions (mm)                                           | Upper surface                                                                        |                                                                        | Transverse   | 200                                  | 200                                    | 200                                              |
|                                                                           |                                                                                      |                                                                        | Longitudinal | 200                                  | 200                                    | 200                                              |
|                                                                           | Lower surface                                                                        |                                                                        | Transverse   | 240                                  | 240                                    | 240                                              |
|                                                                           |                                                                                      |                                                                        | Longitudinal | 240                                  | 240                                    | 240                                              |
|                                                                           | Overall height                                                                       |                                                                        |              | 120                                  | 120                                    | 120                                              |
|                                                                           | Tolerable movement of bearing under transient loads (mm), serviceability limit state |                                                                        |              | Vertical                             | *                                      | *                                                |
| Transverse                                                                |                                                                                      |                                                                        |              | 5                                    | 0                                      | 0                                                |
| Longitudinal                                                              |                                                                                      |                                                                        |              | 13                                   | 13                                     | 0                                                |
| Allowable resistance to translation under serviceability limit state (kN) |                                                                                      |                                                                        | Transverse   | 5                                    | 0                                      | 0                                                |
|                                                                           |                                                                                      |                                                                        | Longitudinal | 13                                   | 13                                     | 0                                                |
| Allowable resistance to rotation under serviceability limit state (kNm)   |                                                                                      |                                                                        | Transverse   | *                                    | *                                      | *                                                |
|                                                                           |                                                                                      |                                                                        | Longitudinal | *                                    | *                                      | *                                                |
| Type of fixing required                                                   |                                                                                      |                                                                        | Upper face   | Weld connection to steel beam        | Weld connection to steel beam          | Weld connection to steel beam                    |
|                                                                           |                                                                                      |                                                                        | Lower face   | Concrete plinth                      | Concrete plinth                        | Concrete plinth                                  |
| Maximum Vertical Stiffness of Bearing kN/mm                               |                                                                                      |                                                                        |              | *                                    | *                                      | *                                                |
| Number of complete bearings to be subjected to Acceptance Testing         | Bearings other than elastomeric bearings                                             | Combined vertical & horizontal load test at serviceability limit state |              |                                      |                                        |                                                  |
|                                                                           |                                                                                      | Combined vertical & horizontal load test at ultimate limit state       |              |                                      |                                        |                                                  |
|                                                                           | Laminated elastomeric bearings                                                       | Quick production test                                                  |              | 1                                    | 1                                      | 1                                                |
|                                                                           |                                                                                      | Compressive stiffness test                                             |              | 1                                    | 1                                      | 1                                                |
|                                                                           |                                                                                      | Shear stiffness test                                                   |              | 1                                    | 1                                      | 1                                                |

\*Product/Supplier Specified

## **APPENDIX 23/1**

### **BRIDGE EXPANSION JOINTS AND SEALING OF GAPS**

#### Bridge Expansion Joints

1. Bridge expansion joint shall consist of a bridging plate supported by the deck and concrete abutment. Bridging plate shall be fixed to the bridge deck and free to move for expansion and contraction at the supporting concrete abutment.
2. The supporting abutment shall have an unequal angle cast into the abutment below the bridging plate. The unequal angle shall have steel tangs at 300mm centres. The unequal angle shall be installed along the full length of the abutment to support the bridging plate at all locations.
3. The expansion gap within the concrete shall have a minimum width of 15mm between the deck plate and abutment and shall be filled with at least compressible filler material. Filler material shall be compatible with the combined surfacing and waterproofing system.
4. The combined surfacing and waterproofing shall be applied directly over the bridging plate and made continuous with the ramp surfacing up to the drainage channels off the structure.

#### Gaps between structural elements

5. Gaps between concrete elements shall be filled with a packer (i.e rubber insert or filler board material) and topped with a sealant. All seals shall, where practicable, be poured or fixed in one continuous length. The sealant shall be compatible with the packer material and combined waterproofing and surfacing system.

## **APPENDIX 26/1**

### Ancillary Concrete

1. Blinding concrete for concrete elements and concrete for back of wall drainage bedding shall be Class ST2.
2. Concrete slab on ramps to support the footways shall be PAV2.
3. Concrete for making good details at the ramp/bridge deck interfaces shall be PAV2 unless stated otherwise.

## **APPENDIX 26/2**

### **Bedding Mortar**

1. All bedding mortar shall have minimum compressive strengths in accordance with Clause 2601.1 of the Specification for Highway Works.
  - a. The thickness of the bedding mortar for bearings and the ramp balustrade shall be 10mm minimum and 30mm maximum.
2. For bedding mortar of bridge bearings, compressive strength testing shall be undertaken in accordance with Clause 2601.1 to ensure the bedding mortar has sufficient strength to resist forces outlined in the Bearing Schedule included in Appendix 21/1.

## **APPENDIX 30/1**

### **LANDSCAPE AND ECOLOGY**

#### Planters and landscaping requirements

1. Refer to landscape designer drawings and specification within Hawkins Brown design package.

## **APPENDIX A**

### CONTRACT SPECIFIC APPENDIX 18/1 APPENDED DOCUMENTS

**Appendix A - Contract Specific Appendix 18/1 Appended Documents**

| Document Title                                                                    | Date of Issue | Reference Number | Revision |
|-----------------------------------------------------------------------------------|---------------|------------------|----------|
| Hawkins Brown Specification for Powder Coatings                                   | 17/10/2022    | 210131-Z20       | P01      |
| Supplier Product Specification<br>AkzoNobel PPC Spec: Hot Dipped Galvanised Steel | 14/09/2022    | N/A              | N/A      |

## **APPENDIX B**

### **APPENDED PRODUCT SPECIFIC SPECIFICATION**

**Appendix B - Appended Product Specific Specification**

| <b>Document Title</b>                                                                                       | <b>Date of Issue</b> | <b>Reference Number</b> | <b>Revision</b> |
|-------------------------------------------------------------------------------------------------------------|----------------------|-------------------------|-----------------|
| Hawkins Brown Specification for Resin bound paving/ overlays<br><br>Ronadeck Steel work surface preparation | 19/10/2022           | 210131-Q23              | P02             |
| Supplier Technical Pamphlet<br><br>RECKLI PUR-Elastomer A60 (Anti-graffiti coating)                         | 19/10/2022           | N/A                     | N/A             |
| Supplier Material Specification for RECKLI Formliner                                                        | 19/10/2022           | N/A                     | N/A             |
| Supplier Material – Application guide RECKLI formliners                                                     | 19/10/2022           | N/A                     | N/A             |
| Supplier Technical Pamphlet<br><br>RECKLI Graffic Basic                                                     | 19/10/2022           | N/A                     | N/A             |
| Supplier Safety Data Sheet<br><br>RECKLI Graffic Basic                                                      | 19/10/2022           | N/A                     | N/A             |
| Hawkins Brown Specification for Bird and Vermin control systems                                             | 19/10/2022           | 210131-N16              | P01             |
| Hawkins Brown Specification for Yorkstone slabs and Tactile Corduroy Basalt stone slabs                     | 26/04/2023           | 210131-Q25              | P02             |
| Hawkins Brown Specification for Rimini Pedestrian Guardrail                                                 | 19/10/2022           | 210131-Q40              | P01             |
| Hawkins Brown Specification for Handrail – Unframed isolated trims/ skirtings/ sundry items                 | 19/10/2022           | 210131-P20              | P01             |
| Hawkins Brown Specification for Handrail – Purpose made joinery                                             | 19/10/2022           | 210131-Z10              | P01             |
| Hawkins Brown Specification for Handrail – Purpose made metalwork                                           | 19/10/2022           | 210131-Z11              | P01             |
| Supplier Data Sheet<br><br>AATi Type SN9/55–HDLT Anti-slip stair nosing                                     | 21/09/2020           | SN9/55                  | 4               |

## **APPENDIX C**

### APPENDED PRODUCT SPECIFIC SPECIFICATION FOR MAINTENANCE

Appendix C - Appended Product Specific Specification for maintenance

| Document Title                                             | Date of Issue | Reference Number | Revision |
|------------------------------------------------------------|---------------|------------------|----------|
| Supplier Technical Pamphlet<br>04199_Graffix_Basic_Cleaner | 19/10/2022    | 04199            | 12/16    |
| Supplier Safety Data Sheet<br>50400GB-en                   | 25/05/2021    | N/A              | 2.14     |