National Asset Delivery
Technical Surveys and Testing

Works Information for 603427 - M5 River Tone MP 206/0 Deck Refurbishment – Trial Holes

CONTENTS AMENDMENT SHEET

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1 DESCRIPTION OF THE WORKS

1.1 Project objectives

1.1.1 The principle objective of this project is to undertake trial holes on the structure at the locations shown on drawings HE603427-KIER-VGN-M5_BR_1855-SK-CB-0101. The purpose of the trial holes is to expose the bridge deck concrete within the carriageway to determine its condition. The main driver for this is that previous trial hole logs show that the concrete is in poor condition in the Lane 1 wheel tracks next to the joints. Additional trial holes are required to try to establish a better assessment of whether these previously identified defects are localised around the joint or extend further over the area of the bridge deck.

1.1.2 Although previous survey showed that surfacing material was not containing tar material, PAK testing of the surfacing should be completed as part of the trial holes investigation. and if a result is positive then further samples should be taken to allow a full PAH analysis to be completed as stated in the specification (section 6).

1.1.3 The specification that applies to the *works* is included in Section 6

1.2 Scope of works

1.2.1 The *works* to be provided under this contract are:

(1) The objectives of the survey are to be achieved by excavating a number of trial holes on the northbound and southbound carriageway within the Lane 1 wheel track as shown on drawing HE603427-KIER-VGN-M5_BR_1855-SK-CB-0101. Initially, the surfacing material should be removed so that the waterproofing material can be examined. If the waterproofing is damaged and de-bonded then it should also be removed so that the condition of the concrete can be examined further. If the waterproofing is in good condition it should be noted on the logs with pictures taken to support the findings. Any evidence of the concrete cracking should also be noted on the logs with pictures to support the findings. The information to be provided whenever possible, should include width, depth length of cracks, condition of the concrete (e.g. loose, solid, …). See more details in section 1.3.

(2) Depth measurements should be taken in each of the trial holes and measurements to a fixed point (kerb, parapet edge beam, etc.) should be taken so the trial hole locations can be accurately mapped on scheme drawings transversally and longitudinally.

(3) External and internal dimensions of the existing kerb drainage units on the northbound and southbound carriageway should be measured as outlined in section 6. Note, this will require the contractor to lift the lids on the drainage units. The number of specialist units should also be provided including rodding units, expansion units, outlets etc.

(4) There are a number of services in the area including:

i. Motorway Communication cables located in the Southbound carriageway verge

Note, the successful survey contractor should consult with the Principal Contractor of the M5 Queue detection Scheme during mobilisation to determine if any new services have been installed or existing STATS slewed/relocated as part of the works but not yet noted on the STATS returns.

For details of current services refer to drawing HE603427-KIER-SBR-M5_BR_1855-DR-CB-010003

(5) PAK testing should be completed as per the details in Section 6 – Specification for works.

(6) As the proposed trial holes are being completed in the Lane 1 wheel track the contractor is to ensure that on completion all trial holes are infilled and compacted properly before the TM is removed. Trial holes should be infilled with HRA material brought to site in a hot box as it is to be trafficked.

1.3 Deliverables

1.3.1 The *Contractor* is required to produce the following deliverables:

(1) The contractor is to provide detailed description and geometrical dimensions of the trial pits and the location to a suitable hard reference point (barrier, parapet edge beam, etc.) with photos to support findings as detailed in section 6 – specification.

(2) A general comment on the condition of the waterproofing should be logged.

(3) If the waterproofing material has de-bonded from the concrete on the deck it should be removed so the concrete condition can be noted. The contractor should:

i. Make reference to the general condition (Good, fair, poor, etc.) with additional suitable comments if suitable (solid, loose, hollow etc.)

ii. Measure the location and position of any large cracking or delamination. Measurement of cracks to include number, length, width, and depth if possible.

iii. Identify any reinforcement that is protruding/showing and reference location with measurements

iv. Take photos (file to include description of location) to show general condition and any identified defects.

(4) As part of the material excavated for the trial pits, PAK testing shall be undertaken on the excavated material. If positive, additional samples should be taken so a PAH analysis can be carried out in a laboratory.

(5) The contractor should also check external and internal dimensions of the existing kerb drainage units on the northbound and southbound carriageway should be measured as outlined in section 6. Note, this will require the contract to lift the lids on the drainage units. The number of specialist units should also be provided including rodding units, expansion units, outlets etc.

2 EXISTING INFORMATION

2.1.1 Bridge Deck

(1) As shown on the as-built drawings, the deck is a multicellular post-tensioned deck varying in depth longitudinally. The position of the post tension cables vary along the length of the bridge and are nearer to the surface at the piers and end of the deck. The contractor shall not remove structural concrete as part of these investigation works and is not to use heavy breaker/plants for excavations.

2.1.2 Expected depths of excavation

(1) Previously completed trial holes on the bridge deck suggests that depths of surfacing vary between 60-90mm (at the bridge joint upstands) and between 100-120mm (on the bridge deck).

2.1.3 Anticipated existing services

(1) Motorway Communication cables located in the Southbound carriageway verge

For details of current services refer to drawing HE603427-KIER-SBR-M5_BR_1855-DR-CB-010003

2.1.4 Asbestos

An asbestos management survey was completed on the Central Reserve in 2016 by Lucion (REF 140901).

The initial AAP was then complied on 6th June 2017 with a further Asbestos Management survey being completed 7th June 2017 by Lucion (REF 192510).

The waterproofing material was sampled during previous asbestos surveys and tested negative.

1 of the 4 expansion joints caulking material has been tested and was a non-ACM. The other joints should be treated as a presumed ACM until further testing is carried out. This is proposed as part of this package of works (see Asbestos Works Information for further details).

During excavations, if any Asbestos Containing Materials that have not previously been identified are found, all works shall stop immediately, and the area is to be isolated from the workforce. The contractor must implement the necessary emergency response procedures in line with the company policy.

2.1.5 Tar

Tar is not expected to be present as samples have been previously taken on both carriageways and tested negative for the presence of Tar. However, PAK testing is to be undertaken the excavated material as part of these trial holes. If this test shows positive results for tar, further samples shall be taken for a PAH laboratory analysis

Please note that additional samples shall be taken if different types of material are identified across the carriageway during the survey works.

2.1.6 **The Drawings listed below apply to this contract**

Existing As-builts – 1998 Deck Refurbishment and Abutment Inspection Gallery construction

Drawing Number	Title
BP10335.013-0101B	GENERAL ARRANGEMENT
BP10335.013-0103A	DETAILS OF CONSTRUCTION PHASES 2 OF 2
BP10335.013-0104A	PARTIAL DEMOLITION AND EXCAVATION DETAILS
BP10335.013-0105A	DECK REFURBISHMENT AND PARTIAL DEMOLITION DETAILS
BP10335.013-0106A	DETAILS OF PIER PARTIAL DEMOLITION
BP10335.013-0108A	NORTH AND SOUTH ABUTMENT OUTLINE DETAILS
BP10335.013-0109A	BUTTRESS REINFORCEMENT DETAILS
BP10335.013-0110A	ABUTMENT REINFORCEMENT DETAILS 1 OF 2
BP10335.013-0111A	ABUTMENT REINFORCEMENT DETAILS 2 OF 2
BP10335.013-012B	ABUTMENT BEARING DETAILS
BP10335.013-0113B	DRAINAGE DETAILS
BP10335.013-0114A	MISCELLANEOUS DETAILS

Relevant Historical As-Built

Drawing Number	Title
405/203/B15/10/8	Post Tensioning Details

Scheme Drawings

Drawing Number	Title	Revision
HE603427-KIER-SBR-M5_BR_1855-DR-CB-010001	Location Plan	C1
HE603427-KIER-SBR-M5_BR_1855-DR-CB-010003	Statutory Undertakers Plan	C1

HE603427-KIER-VGN-M5_BR_1855-SK-CB-0101	Trial Hole Locations and Asbestos Testing	C1

3 CONSTRAINTS ON HOW THE CONTRACTOR PROVIDES THE WORKS

3.1 General

3.1.1 The *Contractor* Provides the Works in such manner as to minimise the risk of damage or disturbance to or destruction of third party property.

3.1.2 The *Contractor* complies with the constraints and meets with the requirements outlined in Appendix 1.

3.1.3 The *Contractor* submits information detailing how the *Contractor* will provide the Works to the *Employer* prior to the *works* commencing. This information will include any lifting plans, risk assessments, method statements, the *Contractor's* staff training information and any other relevant Health and Safety requirements.

3.2 Working hours & site specific constraints

3.2.1 The *Contractor's* working hours for site works are anticipated to be 21:00-05:00, working under a series of lane closures with a temporary speed limit of 50mph. The anticipated working hours are dependent on the carriageway traffic counts.

3.2.2 **Work Constraints**

(1) Trial holes conducted previously on the structure have shown that the concrete deck is in poor condition in places. As such, care should be taken whilst any excavation works are completed. All excavations should be dug by hand using mechanical hand tools (i.e. a small breaker). The contractor should ensure that the holes are regularly cleaned out whilst breaking is carried out to ensure that no further concrete is damaged.

(2) The contractor is to be aware of the presence of post-tension cables in River Tone bridge deck as mentioned in 2.1.1 and as shown on as-built drawing. The contractor shall develop a suitable method of works and is not to remove any structural concrete as part of these survey works. No heavy breaker or plants shall be used for excavations.

(3) The concrete deck is made of reinforced lightweight concrete which is cast over the top of polystyrene void formers and reinforced in some locations. At no point should any concrete be removed from the bridge deck (under the waterproofing material) as part of the works.

(4) Whilst the proposed works are confined to the bridge decks, the contractor should be aware that there is record and evidence to suggest that under the bridge is a hot spot for anti-social behaviour and drug paraphernalia. Operatives should be briefed on this as part of the site induction.

(5) The off-slip for junction 25 is located shortly after River Tone (the 100 yard marker is located at the end of the bridge). The closure of this off-slip will need to be considered when planning the series of lane closures and, if required, should be closed during the works.

3.3 Health, Safety and Environment & Risk Management

Health and Safety requirements

3.3.1 In Providing the Works the *Contractor* meets the requirements of Annex 2 of the supplementary constraints in relation to health and safety duties.

3.3.2 When implemented, the *Contractor* shall comply with the requirements of Highways England's safety passport scheme and ensure that all of his employees, and any of his subcontractor's, are registered in accordance with the implementation of the scheme.

3.3.3 For details of the CDM duty holders, refer to the pre-construction information which is included as part of the TST package.

3.3.4 Before commencing the construction phase of the *works*, the *Contractor* confirms to the *Employer* that adequate welfare facilities are in place. Where the facilities detailed in section 5 are not deemed adequate, the *Contractor* provides all necessary facilities to Provide the Works and to comply with the minimum requirements set out in HSE guidance document L153.

Environmental requirements

3.3.5 In Providing the Works the *Contractor* meets the requirements of Annex 2 of the supplementary constraints in relation to environmental duties.

(1) Vegetation within the footprint of the surveys has the potential to support dormice and nesting birds (depending on the time of year the survey works are carried out). The *Employer* will advise on possible restrictions/constraints once a date is confirmed and clearance levels have been specified.

(2) The area beneath the bridge is utilised as a foraging ground and commuting route by bat species. Any task lighting used for night working should be focused on the works area only and not allowed to spill onto the surrounding habitat, in particular the river corridor beneath the bridge.

Risk Management

3.3.6 The *Contractor* identifies, manages and mitigates risks in accordance with the principles of ISO31000.

3.3.7 The *Contractor* submits a risk register, which captures all risks associated with the delivery of the *works* including those identified by the *Employer*, with his tender and maintains it for the contract period.

The contractor should refer to the Pre-construction information and Design Hazard Checklist and Risk Reduction Schedule provided as part of the TST package.

4 REQUIREMENTS FOR THE PROGRAMME

4.1.1 The *Contractor* submits programme to the *Employer* with his tender.

4.1.2 The *Contractor* Provides the Works taking into account the following programme constraints:

(i) the *starting date* and *completion date* and any post site works, reporting and review period

(ii) The services and other things provided by *Employer* (see Section 5)

4.1.3 The programme should be in the form of an activity and time related bar chart, produced as a result of a critical path analysis.

4.1.4 The programme should preferably be provided in either a PDF or MS Excel format and cover the full contract period including post site activities. Activities should be clearly defined and named, and the programme should detail the following:

- Adjacent site activities
- When information will be provided back to the *Employer*

(i) dates and times associated with the project, including the *starting date*, *completion date* & *Contractor's* planned completion, and any other dates or times that will specifically impact the delivery of the project

(ii) activities associated with delivering the project

4.1.5 The *Contractor* updates the programme every week. The *Contractor* submits an updated programme to the *Employer* upon request.

5 SERVICES AND OTHER THINGS PROVIDED BY THE *EMPLOYER*

5.1.1 The following temporary traffic management will be provided by the *Employer* to allow the *Contractor* to Provide the Works:

(1) A series of lane closures with a temporary speed limit of 50mph If works are being completed in the Hard shoulder/Lane 1 then Lane 2 should also be closed with Lane 3 open to traffic. If works are being completed in Lane 3 and the Central Reservation then Lane 2 should also be closed with traffic running in lane 1. A lane 3 closure should also be provided on the opposite carriageway when works are being completed in the Centre reservation.

(2) Traffic management requirements will be finalised during mobilisation with the successful contractor.

5.1.2 The other things that will be provided by the *Employer* are as follows:

(1) Welfare facilities will be provided by the principal contractor.

6 SPECIFICATION FOR THE WORKS

6.1.1 The *Contractor* shall undertake the works in accordance with:
MCHW Volume 5, Section 3, Part 4, Chapter 6 'Contract Documents for specialist activities – Ground Investigation – Specification – Pits and Trenches.

6.1.2 Trial Pits - The report should show the following information:

(1) The dates, location and size of the trial pits were taken;

(2) The depth of existing Statutory Services below carriageway level or from a suitable 'hard' reference.

(3) Comment on the weather conditions

(4) Comment on waterproofing condition

(5) Comment on the condition of the concrete deck (if waterproofing is de-bonded form the deck and can be removed. If not, the waterproofing material should not be removed).

(6) Comment on the condition of the concrete exposed below the waterproofing and details of any concrete defects (number of cracks, length, width, depth),, spalling, loose or details of any exposed reinforcement protruding through concrete (number of bars, diameter, length of exposed bar etc.)

(7) Photographs should also be provided supporting everything specified above. The photograph file shall be suitably named to be able to locate accurately its location.

(8) Contractor to produce a survey report (including photos) to clarify the findings of the trial holes, including suitable cross section drawings/sketches to reference for the design and construction.

6.1.3 Trial Pit Reinstatement

(1) As the proposed trial holes are to be completed in the Lane 1 wheel track, all reinstatement must be completed using HRA material.

(2) Prior to reinstatement the base of the trial pit should be clean of debris and a bitumen based sealant should be applied to all surfaces.

6.1.4 Tar Testing

(1) The contractor is to complete a PAK testing on excavated material from the trial holes. If the PAK tests are positive, then further samples should be taken for a PAH analysis to be completed. Results of the PAK testing shall be documented with photograph of the samples and clearly referenced to trial holes number and location.

6.1.5 Kerb Drainage Units

(1) As part of the surveys the external and internal dimensions of the kerb drainage units should be checked on both the Northbound and Southbound carriageway.

a. External dimensions should include length, width and height of the kerb face/ upstand

b. Internal dimensions should include the length, width and depth as well as the number of any specialist units (rodding units, expansion units, outlets, etc.).

c. The rating of the kerb units and any other markings should be noted.