National Asset Delivery

Technical Surveys and Testing

Works Information for

565232 – Post Tensioning Special Inspection A1/492.10 – River Coquet Bridge

CONTENTS AMENDMENT SHEET

Amend. No.	Revision No.	Amendments	Initials	Date
0	0	Original version issued with tender	LY	17/11/20

TABLE OF CONTENTS

LIST OF ANNEXES

1 DESCRIPTION OF THE WORKS

1.1 Project objectives

The principle objective of this project is to undertake a PTSI site investigation at River Coquet Bridge in accordance with CS 465 (Formerly BD 54/15) and the recommendation of “River Coquet BD 54/15 Risk Review & Risk Assessment Report carried out by WSP”

The previous PTSI Phase 3 Site Investigation is considered inadequate due to:
- An insufficient number of duct and tendon exposures being carried out.
- Corrosion testing was not undertaken.
- Incomplete testing of grout samples.
- Incomplete testing of concrete samples.
- The condition of the transverse post-tensioning was not investigated.
- The condition of end anchorages was not investigated.

Significant defects, including cracking, delamination and spalling of concrete; rust staining and water staining to the segmental box girders have been reported following recent Principal and General Inspections.

Based on the review of the existing reports, it has been identified that further investigations should be undertaken to determine with confidence the current condition of the structure’s post-tensioning system, reinforcement and concrete in selected locations of the post-tensioned box girder; and the risk of deterioration in the future.

1.1.1 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. To Undertake a PTSI Site Investigations, Comprising:
   It is proposed to undertake 36 No. duct and tendon exposures in total; 21 No. internally to the top and bottom slabs, 12 No. over construction joints internally and 3 No. externally to the deck soffits. It is proposed to undertake 21 No. end anchorage exposures in total; 11 No. to intermediate anchors internally, 2 No. to abutment anchors and 8 No. to pier diaphragm anchors.
   to determine:
   • The condition of the longitudinal ducts and tendons at critical sections and in areas of deterioration.
   • The condition of the end anchorages.
   • The condition of the grout (samples for cement, chloride ion and sulphate contents and the presence of voids at a representative number of locations)

2. Comprehensive testing should be undertaken at all DTE and EAE locations. The testing should include cover and half-cell potential surveys, resistivity and carbonation measurements and the removal of concrete samples for laboratory testing to determine cement, sulphate and alkali contents and chloride ion concentrations. Comprehensive testing of the grout should be carried out to include chloride ion content, sulphate and cement content.

3. Intrusive investigations of the reinforcement should be undertaken at test areas around the DTE and EAE locations if the site test results indicate a high risk of corrosion activity.

4. The contractor is hereby informed that Highways England are planning to carry out a principal Inspection of the River Coquet Bridge at the same time as the PTSI, subject to agreement by both parties. Highways England will bear the costs for provision of Traffic management and will provide an Underbridge unit that can be used by the contractor in executing their works.

1.3 Deliverables

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

1. A PTSI site investigation report shall be provided in accordance with CS 465 Management of post-Tensioned Concrete Bridges
2. Submission of “Structural Review Form” if significant deterioration found

2 EXISTING INFORMATION

2.1.1 **River Coquet BD 54/15 Risk Review & Risk Assessment Report carried out by WSP, includes:**

- Table 6 – Proposed Duct and Tendon exposures, Anchorage exposures and Corrosion test areas
- Figure 6 – Proposed test area locations Span 1
- Figure 7 – Proposed test area locations Span 2
- Figure 8 – proposed test area location Span 3
- Figure 3 – Referencing System

2.1.2 **Principal Inspection Report 2014**

2.1.3 **General Inspection Report 2018**

2.1.4 **Structure Report**

2.1.5 The Drawings listed below apply to this contract. Refer to the site information for details of existing site conditions including ground conditions, limitation on access, position of existing structures etc.

Drawing Number	Title	Revision / Date
534/C/01	Location and site plan	
534/C/02	General Arrangement	
534/C/03	Box girder geometry sheet 1	
534/C/04	Box girder geometry sheet 2	
534/C/05	Site investigation	
534/C/06	Superstructure construction sequence	
534/C/07	Bridge articulation, general arrangement of bearings and details of bearing types X and Y	
534/C/08	Details of bearing types A, B, C, D, E, F & Z	
534/C/12	North pier RC details	
534/C/121	General arrangement	
534/C/122	Plan and longitudinal section CH 2710-3120	
534/C/123	Drainage outfall on south bank of river Coquet	
534/C/124	Drainage plan CH 2710-3120	
534/C/125	Drainage longitudinal sections, verge drains CH 2710-3120	
534/C/126	Drainage schedule and catchpit details	
534/C/127	Drainage details – bedding factors 1	
534/C/128	Drainage details – bedding factors 2	

534/C/129	Cross sections CH 2720-2860	
534/C/13	South pier RC details	
534/C/130	Cross sections CH 2880-3020	
534/C/131	Diversion of footpath in front of north abutment of river coquet bridge	
534/C/134	Public utilities apparatus	
534/C/135	Setting out plan	
534/C/136	Land reference plan	
534/C/137	Accommodation works plan	
534/C/14	South abutment GA	
534/C/15	Joint details between south abutment and end of bridge, construction joint details for north and south abutments	
534/C/16	South abutment RC details	
534/C/17	North abutment GA	
534/C/18	North abutment RC details sheet 1	
534/C/19	North abutment RC details sheet 2	
534/C/20	Earthworks details to piers and abutments	
534/C/201	South pier bore holes	
534/C/202	South abutment apron slab	
534/C/203	Kerb bedding details	
534/C/204	Details of cover to access holes through soffit of deck	
534/C/205	Revised coping unit details	
534/C/21	Web and coping unit	
534/C/22	Web units general arrangement and reinforcement details – standard units	
534/C/23	Web units general arrangement and reinforcement details – special units	
534/C/24	Web units typical reinforcement details for all units	
534/C/25	Coping units general arrangement and reinforcement	
534/C/31	Diaphragms general arrangement	
534/C/32	South diaphragm RC details	
534/C/33	North diaphragm RC details	
534/C/34	Pier diaphragms post-tensioning details and reinforcement details	
534/C/35	RC details of central diaphragms	
534/C/36	Steelwork details at centre joint	
534/C/37	General arrangement and RC details of web pilasters above temporary prop and tie down	

	temporary works supports between GLS 13-14, 55-56 and 60-61	
534/C/39	Top slab post-tensioning arrangement and reinforcement sheet 1	
534/C/40	Top slab post-tensioning arrangement and reinforcement sheet 2	
534/C/41	Top slab post-tensioning arrangement and reinforcement sheet 3	
534/C/42	Top slab post-tensioning arrangement and reinforcement sheet 4	
534/C/43	Top slab post-tensioning arrangement and reinforcement sheet 5	
534/C/44	Top slab post-tensioning arrangement and reinforcement sheet 6	
534/C/45	Bottom slab post-tensioning arrangement and reinforcement sheet 1	
534/C/46	Bottom slab post-tensioning arrangement and reinforcement sheet 2	
534/C/47	Bottom slab post-tensioning arrangement and reinforcement sheet 3	
534/C/48	Bottom slab post-tensioning arrangement and reinforcement sheet 4	
534/C/49	Bottom slab post-tensioning arrangement and reinforcement sheet 5	
534/C/50	Sections at construction joints showing post-tensioning arrangement and reinforcement sheet 1	
534/C/51	Sections at construction joints showing post-tensioning arrangement and reinforcement sheet 2	
534/C/52	Sections at construction joints showing post-tensioning arrangement and reinforcement sheet 3	
534/C/53	Sections at construction joints showing post-tensioning arrangement and reinforcement sheet 4	
534/C/54	Sections at construction joints showing post-tensioning arrangement and reinforcement sheet 5	
534/C/55	Sections at construction joints showing post-tensioning	

	arrangement and reinforcement sheet 6	
534/C/56	Sections at construction joints showing post-tensioning arrangement and reinforcement sheet 7	
534/C/57	Sections at construction joints showing post-tensioning arrangement and reinforcement sheet 8	
534/C/58	Top slab typical RC details	
534/C/59	Top slab reinforcement sections sheet 1	
534/C/60	Top slab reinforcement sections sheet 2	
534/C/61	Bottom slab – RC details for a typical bay	
534/C/62	Bottom slab – RC details at anchorage ribs and typical dimensional section	
534/C/63	Bottom slab reinforcement sections	
534/C/64	Bottom slab reinforcement detail 1	
534/C/65	Macalloy bar tendon anchorage details	
534/C/71	Footway and deck waterproofing details and drip groove detail	
534/C/73	Expansion joint sheet 1	
534/C/74	Expansion joint sheet 2	
534/C/75	Parapet details	
534/C/76	Safety fence	
534/C/79	South abutment rock anchors, pedestrian guard rail and gulley pot	
534/C/80	Details of river training works	
534/C/81	Superstructure drainage	
534/C/83	Drainage details at north pier	
534/C/85	Drainage pipe schedule	
534/C/99	Practical concrete and grout tests	
A1/492.10/061401293/001	Details of existing expansion joint	
A1/492.10/071401883/201	Details of proposed drainage improvements	
B/T1/18FEL01	Modification to drainage at north abutment	
B/T1/18FEL01	Supplementary soil survey	
B/T1/18FEL01/92	General arrangement of internal temporary scaffold	

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 shall be

- Night Shift: 20:00 to 06:00
- Day Shift: 09:30 to 15:30

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 can be found in document "CDM PCI - River Coquet – PTSI".

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.

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.

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:

(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* 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) Traffic management to be provided by CHC (M&R); site access will be briefed via CHC during works induction prior to site works commencing.

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

(1) The Welfare facilities will be provided by CHC

(2) Underbridge Unit will be provided by CHC

6 SPECIFICATION FOR THE WORKS

6.1.1 The *Contractor* shall undertake the works in accordance with:

6.1.2 DMRB – CS 465 Management of Post-Tensioned Concrete Bridges

6.1.3 DMRB – CS 462 Repair and management of Deteriorated Concrete Highway Structures

6.1.4 Reports are to be submitted in digital format upon completion of site investigations.