Western Road Bridge

Determination of Assessment Capacity In The Absence of Records





Scheme Details

- Existing reinforced concrete portal no record drawings available, only inspection records.
- Portal of 1930's construction.
- Carries single carriageway over Grand Union Canal
- Commission covered; inspection, investigations, record drawing production, and assessment works.
- Total value circa £66,300 comprising:
 - i) Planning, project management, consents, & environmental surveys £6,500
 - ii) Inspection (incl. topographical survey & pontoon) £6,000
 - iii) Intrusive investigations and laboratory testing £20,000
 - iv) Trial pits and reinstatement £15,300
 - v) Drawing production £3,500
 - vi) Assessment works £15,000
- Project delivered within 9 months of contract award









| Canal & River Trust | | |
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| FORM 1: NOTIFICATION FORM | | |
| Name of Project: Name of Promoter: | | |
| Address of Third Party: | | |
| Third Party's Agent: Address of Agent: | | |
| Contact name: | | |
| Contacts telephone No.: | | |
| Location of the Works: Grid Reference: | | |
| Description of the Works: | + | |
| | | |
| Approximate value of the works: NB: The Cost undertaking should be signed for a sum equal to 5% of the value of the works or 25,000 – | | |
| whichever is greater Planned start date on site: | | |
| Planned start date on site: | _ | |
| FORM 2: COST UNDERTAKING | | |
| To be completed on Promoter's headed pages and sum to the Works Engineer (Insert Waterway Address) | | |
| Darr Sire | | |
| (reset Scheme Title) COSTS UNDERTAKING | | |
| December and the State State of the control of the control of the State of the State of State | The | |
| [Insert name of Third Perty] is proposing to [describe works] affecting the interests of the Trust at [location], requirement to cover the costs of the Trust is acknowledged as follows: | | |
| implements come the code of the Tout is absorbed, and discuss. In oversite that of your proceeding is registrated in the Tout is supported and indicated, giving whiteless, supported and indicated giving whiteless, supported and indicated giving whiteless and the temperature of | and and a the | |
| 2. This surdensiting will apply whether or not the prepared proceeds to a legisty finding Context provided playing the event that the Total unreasonably eightbase from the negatiations in respect of the Context in inclusival scheme we are mady, able and willing to proceed forthwith to a legisty binding Context on terms that have been as between the context of t | that rices stilled | |
| This undertaking is given on the basis that fees in relation to this matter shall be charged at the rates set out in Code (but shall in no consumbances without before discussions with on exceed the sum of £5000 (plus Value A Teas and disclaraments). | filed | |
| Our Parchase Order Navider in: | | |
| 4. If by Jesset agreed discuss Coming has present according to appear or pursued to undertaking has been rise or all the day has been a undertaking to pay; a reason | abbie. | |
| AGREEMENT OF INCENSITY FOR ENTITY OVER THE TRUST I PROPERTY IN consistential of pay generally, agents, says your be operand of the Cause and Sheer Trust ("the Trust") on the con- generation of the Cause and Sheer Trust ("the Trust") on the con- payment of the Cause and Cause | and of the | |
| by the Trust; | | |
| FORM 4: PERMIT FOR SITE ACCESS | | |
| Canal & River Trust | | |
| Fruit Contact: Site Insultion | \neg | |
| Scope and details of works: Additional special conditions: | 7 | |
| Contract details: | _ | |
| Contractor name: | _ | |
| | = | |
| Working hours/days | _ | |
| Documentation: | | |
| You have been issued with / provided the following documentation and license that place safety and | | |
| operation requirements.on.you. Linkss. fully discussed with the Trust.contect.above.you are required to correpty with them, as well as all study bry and other interested puriles requirements. | | |
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| — — — — — — — — — — — — — — — — — — — | | |
| Approval | | |
| For Canal & River Trust For contractor | \neg | |
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| Oute Print Name Societion | = | |
| In case of emergency please call 0800 47 999 47 | _ | |
| IN ASSEST OF STREET, S | | |
| | | |
| Ted Party Works' Code of Practice: Part 3: Forms April 2017 | 9 | |

Planning Works (Key Activities)

| Planning Activity | Purpose |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reconnaissance visit and environmental survey | To determine: Structure type and outline. Preliminary geometric survey (plant access). Site constraints (services, canal, highway). Identification of key stakeholders. Launch site for pontoon and supporting rigid inflatable boat. Determine preliminary traffic management requirements |
| Consents / Licences | Canal trust consent: i) Form 1 – Notification ii) Form 2 – Cost Undertaking iii) Form 3 – Indemnity (to be completed by test house / consultant) iv) Form 4 – Permit for site access |
| | Application requires: COSHH Assessments Tow Path diversion (if applicable) Details of utilities affected Copies of insurances Drawings / Plans / Maps Copies of other consents Works programmes EIA or other environmental assessment |
| | Application periods: 3 months (navigation unaffected) 12 months (navigation prevented) 5 months achieved on Western Road |







Planning Works (Key Activities)

| Planning Activity | Purpose |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Utilities Enquiries / Meetings | C2 Service Returns (10 working days statutory, 20 days achieved). Site meetings regarding investigation locations & service protections. Key reference are MCHW standards SA10/05 and SA11/05 which provide process guidance and standard letters |
| Traffic Regulation Order / Streetworks Licence | Traffic Management (TM) design Application to local highway authority (cost £500 to £3,000) Process can take up to three months if both traffic regulation order and streetworks licence are required. |
| Other | Consider whether an environmental review / scoping is required. Asbestos surveys, is a management survey required? Asbestos WATCH-IT areas include: i) Concrete (fibres released during drilling) ii) Bearing shelf drainage channel liners iii) Drainage downpipes iv) Service pipe wrapping Consider embedded forces and elements (pre-stressing and post tensioning cables) |



Site Access

- Modular pontoon sourced from Pontoonworks.
- Pontoon maneuvered using a Rigid Inflatable Boat (RIB). Maneuverability maintained navigation on canal.
- Tethers used to anchors in tow path to hold position of pontoon during drilling.
- Launching site to be identified as part of preliminary works
- Signage used for visibility to canal users.
- Lookout additionally stationed on raft.

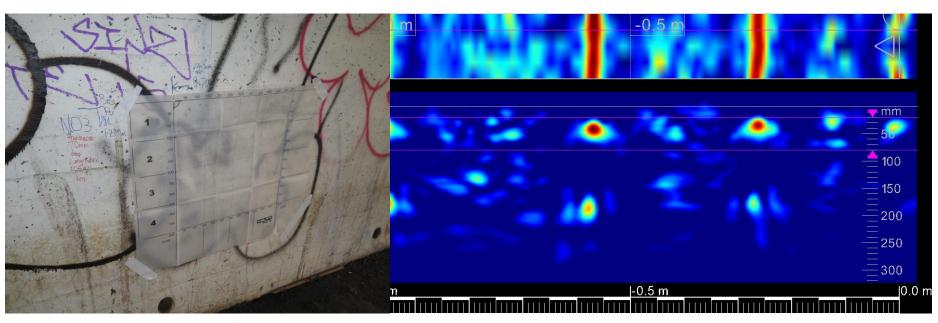




Non Intrusive Investigations

- Principal Inspection to DMRB Standard BD63/07 including full geometrical survey to support the assessment, and delamination (Hammer-tap) survey.
- Reinforcement scanning / mapping Hilti PS1000 unit





Unit accuracies: Position +/- 10mm

Depth +/- 10mm where cover <100mm (+/- 15% > 100mm)

Requires minimum distance of 40mm between adjacent bars

300mm maximum effective depth



Non Intrusive Works

- Topographic Surveys Traditional techniques, scanning, mobile mapping
- Surveys to supplement geomerty survey and provide key levels.







Intrusive Works

Intrusive workscope included:

-) 3 No. topside trial pits (to determine deck and abutment details / profiles)
- ii) 1 No. canal side (to determine spread footing detail)
- iii) 10 No. concrete cores (from deck, deck beams, haunch, abutment, & foundation), 75mm diameter cores (> minimum of 3.5 H_{aqq} minimum for testing)
- iv) 7 No rebar samples to determine yield testing.
- v) Backfill recovery and sampling
- vi) Plate bearing tests at abutment founding level
- vii) Laboratory testing by WSP's UKAS accredited laboratory.









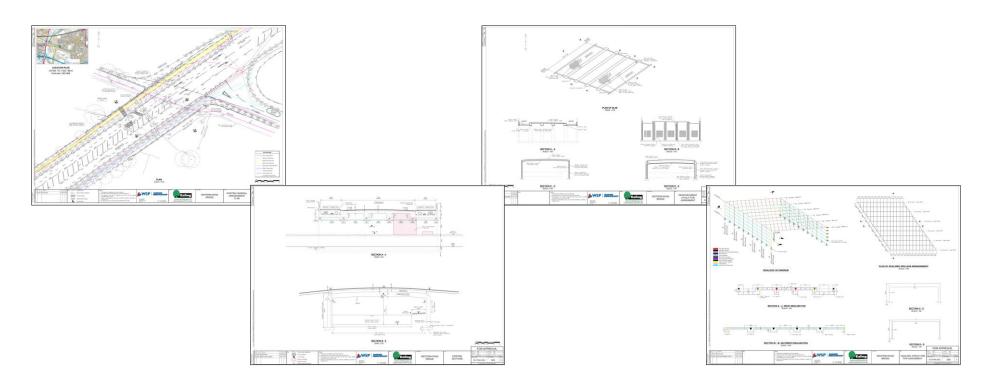






Interpretation Of Results

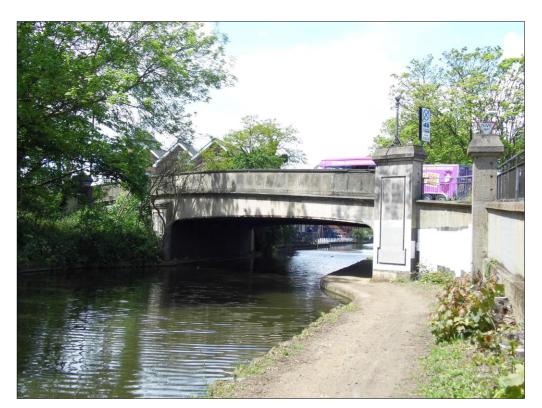
- Number of activities include:
 - i) Interpretation of rebar scan plots to determine rebar details and covers
 - ii) Calculation of worst credible strength of concrete using EN 12504-1 (as required by clause 2.10 of DMRB Standard BD44/15) and on basis of concrete laboratory tests.
 - iii) Calculation of worst credible strength of reinforcement using BS EN ISO 6892-1:2016, using yield testing results.
 - iv) Laboratory tests of backfill to determine design parameters for backfill.
 - v) Translation into record drawings for structure to permit assessment.





Conclusions

- Relatively simple intrusive and non-intrusive techniques can be used to determine construction details in the event of as-built records not being available.
- Cost of such works is comparatively small when compared to other measures including; load testing, strengthening or reconstruction.
- Information can be sourced relatively quickly and simply with short timeframes where third party consent procedures permit.







Useful Links

Canal and River Trust Applications

https://canalrivertrust.org.uk/business-and-trade/undertaking-works-onour-property-and-our-code-of-practice

DMRB Standards and Mannual of Contract documents for Highway Works (MCHW)

http://www.standardsforhighways.co.uk/ha/standards/

Pontoon Works

http://pontoonworks.co.uk/listed-bridge-repairs/

WSP

http://www.wsp-pb.com/en/WSP-UK/ Kevin Drain (speaker) - kevin.drain@wsp.com / 01483 528 768



Thank you!

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