



TEDDINGTON & HAM HYDRO PLANNING APPLICATION

21 – Outline Construction Methodology

Introduction

This construction methodology is intended to give an overview of the approach that will be taken to build the superstructure and install the mechanical equipment of the new hydro scheme on the Teddington Weir under licence from the Environment Agency. Detailed method statements will be prepared during the construction phase considering risks and safe working practices once the detailed design has been completed.

Access to site

Waterborne construction techniques will be utilised wherever possible to access the site during the construction period. This will involve the use of floating pontoons and equipment on both the upstream and downstream sides of the weir. Personnel access will be gained via the south bank EA river access off Riverside Drive or other means depending on the outcome of negotiations. The majority of materials will be removed and delivered via the river having been loaded onto pontoons at a nearby wharf.

Site set up and welfare

Site welfare, including canteen, drying room, toilets and showers will be provided for the operatives working on the scheme. This will be located on a floating pontoon on the downstream side of the works adjacent to the working area. Fresh water will be delivered to this set up and effluent removed and disposed of under waste regulations licence.

Construction Sequence

Mobilisation of a floating pontoon working platform with knuckle boom crane will take place upstream of the weir at the contractor's yard. This will be floated to the weir and will drive the temporary works coffer dam sheet piles cutting off flow across the weir. This unit will drive foundation piles for the gantry beam which is to be erected over the work site. Once these piles have been driven satisfactorily the pontoon will be dismantled and moved through the lock to the downstream side of the weir and the sheet piles will be completed to form an isolated section of the river. This will be pumped out to form a dry-dock working area. The downstream foundation piles for the gantry crane will be driven and the portal frame for the gantry erected before demobilisation of this working pontoon. Screening will be erected around the portal frame in order to suppress dust and noise from the site and to screen the construction works from the public.

Demolition of the existing weir structure will then take place with the removal of the old structure via barges to a waste depot. The new reinforced concrete structure will be constructed using traditional form and pour techniques requiring delivery of wet concrete to the site. This build will occur in stages over a number of weeks, beginning with the



foundation and finishing with the several walls to the structure. The total amount of concrete in the build is expected to be in the order of 500m³ (approx 80 concrete lorries), subject to final design. Dry materials will be delivered by barge.

Upon completion of the concrete structure the mechanical screws will be installed and connected. These will be delivered by barge to the site and loaded into position using the gantry crane. The electrical housing will be constructed and metal works such as walkways and handrails fitted.

Once the final connections have been made and all dry testing carried out the temporary gantry crane and coffer dam will be removed and the turbines will become operational.

The contractor will be required to operate an accredited OSHAS 18001 Health & Safety Management System with a dedicated Health & Safety Department to oversee the operation of this system, ensuring that the contractor's site complies with health and safety procedures, meets current legislation, is well advised and that best practice is shared. There will be a dedicated Environment Agency project Safety Officer, well-versed in the EA's requirements, expectations and procedures. This safety officer will be overseeing this project and will visit the site to offer health & safety advice as well as to monitor and audit compliance with the Project Health & Safety Plan.

The contractors' compound for the contract will comprise an office unit, toilet and washing facilities, as well as a storage container. First Aid Kits, Spill Kits, Life Buoys and Life Lines will be held on site.

On this project the contractor would mitigate initially identified health & safety hazards, including (but not limited to):-

- Slips and trips – especially from wet surfaces near watercourses, algae or weed on concrete lined watercourses, low branches and roots, debris in the watercourse. (mitigated by correct footwear and vigilance)
- Falls from heights, from river banks of structure walls (mitigated by harnesses, etc)
- Risks of waterborne diseases – e.g. Weil's disease from rats or cattle, (mitigated by gloves, and appropriate clothing)
- Infections from sewage or other pollutants discharged into the watercourse, (mitigated by gloves, and appropriate clothing)
- Drowning or injury from working in 1.0m deep water (mitigated by appropriate Risk Assessment, life jackets, harnesses and other appropriate means)
- Drowning or injury from high water levels or high flows, (mitigated by monitoring weather forecast, emergency egress plans, life-jackets, etc)

On this project the contractor would mitigate initially identified environmental risks, including (but not limited to):

- Silt pollution from working in the watercourses (mitigated by silt-mats, booms and other silt control measures).
- Spread of vegetation matter down watercourse, (mitigated by use of booms)



- Oil spill or hydraulic leaks from refuelling or operation of plant (mitigated by controlled re-fuelling points, use of bio-degradable hydraulic oils, spill kits, etc)
- Presence of water voles or other protected flora and fauna (mitigated by pre-works inspection and vigilance and agreed working methods)
- Damage to trees or bushes or river bank vegetation (mitigated by protective measures, etc)
- Presence of unwanted/invasive species – Japanese Knotweed, Giant Hogweed, Himalayan Balsam, Pennywort, etc (mitigated by pre-work inspection, agreed control measures to prevent spread)
- Noise /vibration (mitigated by correct, modern, well serviced and silenced plant and ear/hand protection)

Other risks we have identified that could affect this project include (but are not limited to) :-

- Delays due to inclement weather
- Delays due to inability to access certain sites – e.g. waterlogged conditions, presence of anglers, parked vehicles, etc.

The contractor's Method Statements will address these risks and contain the measure that will be implemented to mitigate them.

The contractor's Environment Management Department will produce a Project Environment Plan for these works. This will contain the legislation, company procedures, EAP and any other environmental requirements that must be addressed. It will also contain an Environmental Risk Register that will identify the principal risks and the mitigation measures to be taken to manage these risks. A Project Emergency Plan will also be produced to set out what has to happen should an incident take place.

Amongst the environmental measures the contractor will take on this project :-

- Use of bio-degradable hydraulic oil where possible on major items of plant being used adjacent to or over water
- Drip trays beneath all static plant
- Sites of oiling and refuelling points to be located away from rivers, surface water sewers or other watercourses
- Timber to be from FSC or other approved sustainable sources
- Spill kits to be kept on site, with the use of booms where practical

A detailed programme will be produced that will indicate the proposed sequence of works. Detailed method statements and risk assessments will be produced prior to carrying out any hazardous task; these will be submitted for approval and inclusion in the Construction Phase Health and Safety Plan.

Stephen Jarvis, Managing Director – Teddington and Ham Hydro Cooperative Limited
London, 1st September, 2014





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