



JSM Group

Duct Installation Works North Hyde Gardens. Bridge 200C (66kv)

Proposed work details & JSM power division case studies

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Introduction

JSM have been requested to excavate four excavations 2.0 x 3.0 x 2.0 to enable core drills to take place 6 per excavation to enable 125mm Ducts to be installed as part of the Project Union Contract, as this forms part off the route that will bring the connection from NG substation to P.O.C at the old Vodaphone site comprising of 4 no 66kv circuits. Hewson Consulting, who are carrying out the loading capability survey of the North Hyde Gardens bridge have confirmed that routing the cable under the bridge would have a lesser impact on the overall load bearing capability of the bridge.

DISCUSSION

Hewson have confirmed core drilling each of the diaphragms and installing a 160mm duct (180mm Core drills) to re distribute the weight, is deemed to have a very low negative impact on the overall structure of the bridge.

Core drilling will be undertaken from Road side through the abutments within all four holes within the carriageway under traffic management (T.BC) one side of carriageway at a time with plastic sheeting attached to the underside of the wall against Bridge abutment wall and shaped into a cone which will carry any liquid into a Haz bag to capture any seepage and stop any contamination of the canal. (This will be for all four drill locations) Works area on North abutment wall require 1 metre of the Towpath to be fenced off and still leave access to pedestrians although Cyclist will be asked to dismount through area affected under the bridge structure. Southern site there is no Towpath access to pedestrian/Cyclist.

A working platform will be used to drill the diaphragms with a water waste filtration system. Any slurry waste will be removed in Hazard bags and disposed of accordingly. The working platform will be positioned to allow barge access (Standard width for narrowboat is 2.09 meters) to pass and will have a tug that will move in evenings and during the day if required to allow access for wider barges as this also keeps the towpath and canal open at all times.

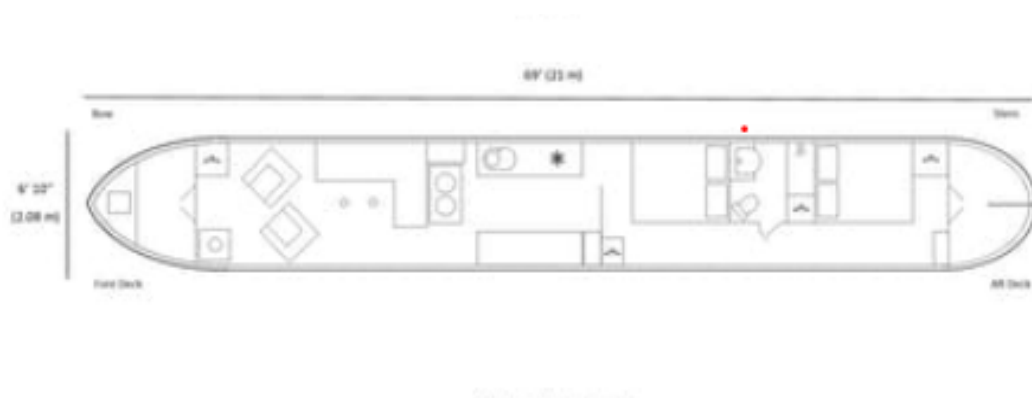
Once the drilling through the diaphragms has taken place then the hangers will be drilled and chem fixed into place every 2m and ducts installed by sleeving from one end of the bridge and continuously fed through to the other end of the bridge. During this process the cleats/clamps will be placed around duct to take part of the weight. Ducts will be sealed in using expanding foam within the Core drills.

Typical Working Platform and longboat – image 1 and typical canal boat image 2

Image 1



Image 2



Core drill method Drill Methodology

STITCH DRILL

- Smaller Drill is fixed to Surface
- Larger number of smaller holes creates the shape
- Continual drilling then creates the Opening to install all three ducts within the structure



CORE DRILL

- Larger singular drill
- Singular Drill per Duct through structure



Core drill slurry management

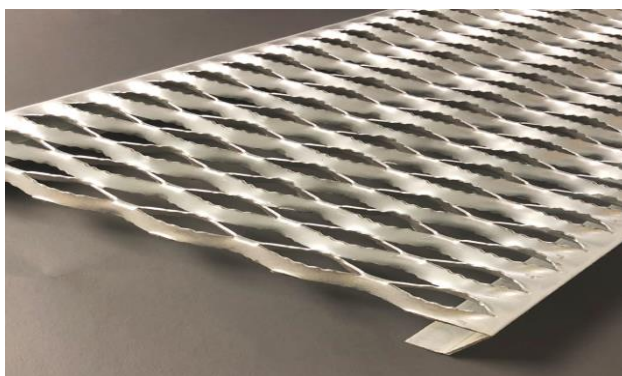
A single unit for the supply of cooling water as well as the collection and filtration of wastewater from diamond drilling systems

- Filling volume: 14 l
- Supplied water volume per filling: 100 l
- Flow rate: 2 l/min



Protection to ducts and cable to stop impact from towpath

Steel Galvanised safety Grating will cover void to stop access to ducts once installed and become tamper proof as will be fixed in place using a clamp system in centre of each piece to lock in place.



Suspended hangers under bridge structure

Uni Strut P2631T projecting angle secured to horizontal Uni Strut section 500mm long secured to concrete upstand using 4no. 10 chemical anchor bolts with minimum depth of embedment 100mm

