

Britannia Bridge Lintel Support Project Method Statement

Britannia Bridge Lintel Support Project has been issued a Band 1 Marine Licence from Natural Resources Wales; ref CML2048 and is classed as a 'low risk' activity.

General 'low risk' criteria

To qualify as a Band 1 application, the activity should be low potential impact, and low risk. We believe that the Britannia Bridge Lintel Support work:

- will not have a negative impact on protected or sensitive areas, species or resources
- does not occur in an area used for military defence purposes
- does not occur in an area hosting cables or pipelines
- will not generate unacceptable levels of noise
- will not cause detrimental effects in combination with other activities
- will not have a significant impact on the environment
- will not pose a navigational hazard or a danger to others

The Marine Licensing (Application Fees) (Wales) Regulations 2017 refers to 'any activity of a similar minor nature'. The suitability of other activities is dependent on the nature and scale of the activity, and the environmental sensitivity of the area in which the activity will take place. A more comprehensive list of activities that may be considered under a Band 1 licence application includes the following:

Minor construction and repairs

- Scaffolding/access towers to facilitate the maintenance of existing structures. Note - any licence or exemption requirements for the maintenance activity must also be considered.

Our work will involve the use of scaffolding and access towers to maintain the existing bridge structure.

- Minor maintenance including repairing, replacing or reasonably improving within the original design envelope, bolts, flaps, valves, cathodic protection, access covers, grills, joints, decking on a pier or pontoon, health and safety equipment or other ancillary equipment attached to existing structures. Note - This does not include fundamental alterations to the use of a structure. Repairs must be within the existing boundaries of the structure or assets being maintained.

The addition of the FRP beams will be within the existing boundary of the bridge towers.

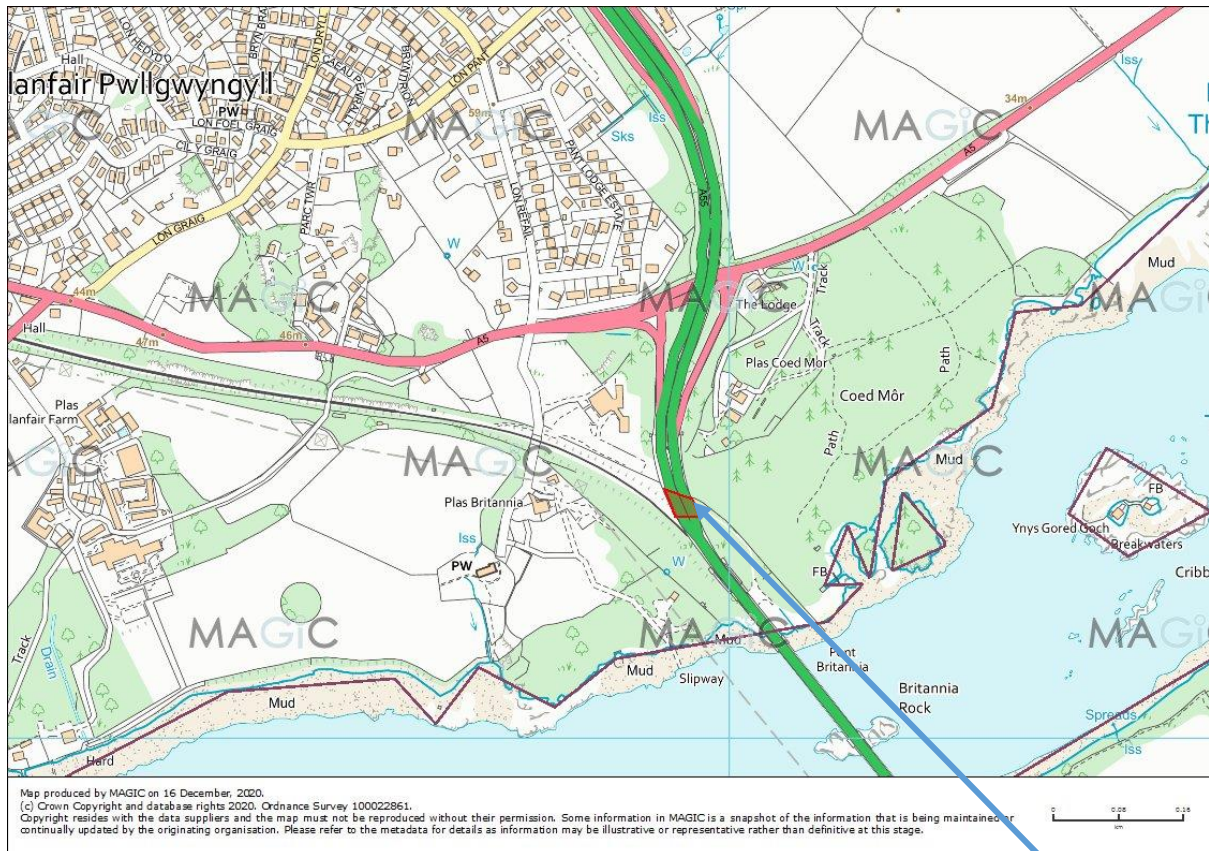
- Replacing render or concrete, including resurfacing slipways. Note - repair to coast protection structures, such as sea walls cannot be considered a band 1 activity.

Any drill holes created will be repaired.

- Installation of ladders.

Use of Haki stairs as part of scaffold design.

Britannia Bridge, A55, Bangor, Gwynedd



Compound location
 OSGR: SH539713

One of the bridge towers
 New FRP beams to be installed below soffit of masonry lintels on each tower (3No.)

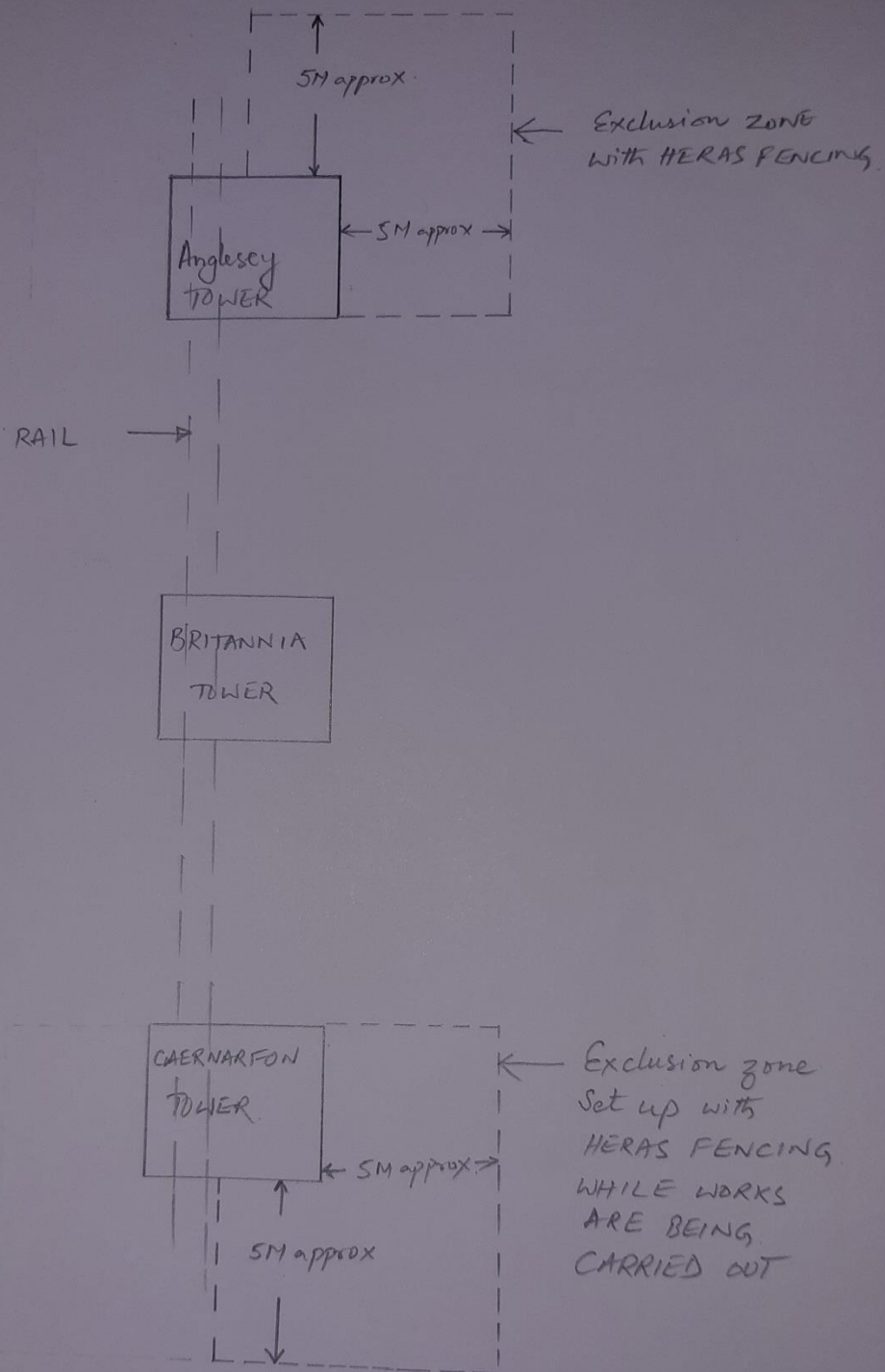


The image above shows the route to the Anglesey side foreshore that we will utilise to set up an exclusion zone beneath the tower.

Note: it is the same access route out from the compound, but instead of turning right under the A55 up on to the service road, you follow the route around and to the foreshore.

The sketch on the next page indicates the area of exclusion zone that will need to be in place underneath Anglesey and Caernarfon Towers, due to working at height.

The exclusion zones are approximately 25m² and will be demarcated with Heras fence panels.



BRITANNIA BRIDGE LINTEL SUPPORTS.

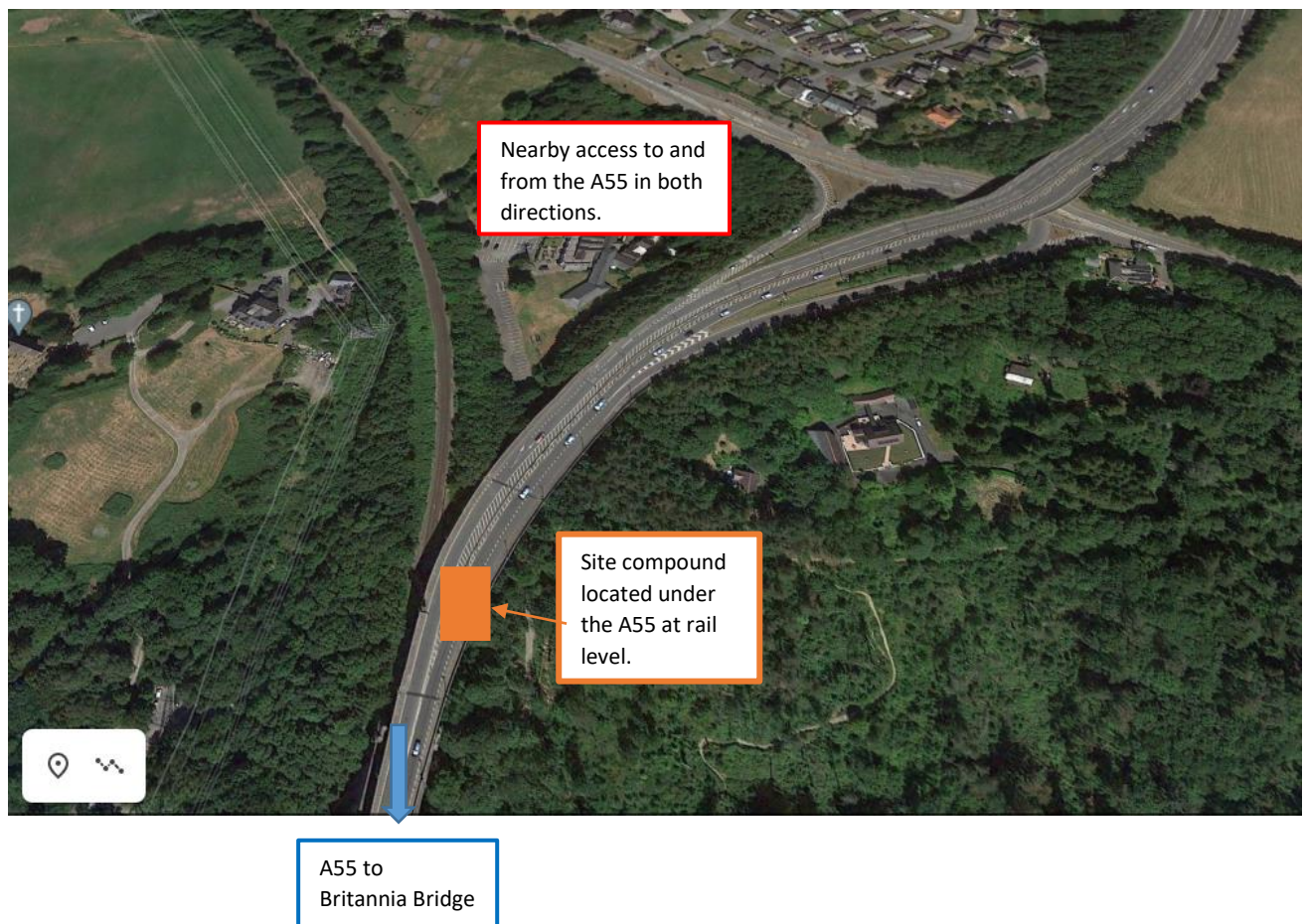
SK/VJ/29/01/21

The works will consist of the following:

1. Compound set up
2. Pull out testing to test to validate that the main working anchors are suitable for use in the base material.
3. Traffic Management on the A55 (to install scaffold crash deck per tower)
4. Scaffold installation to each of the towers on the bridge from the service road level.
5. Level and dimensional survey - to finalise the lengths required on the FRP beams.
6. A trial shift - to ensure the suitability of the lintel supports are as anticipated.
7. Installation of Anchors
8. Installation of brackets and FRP beams
9. Traffic Management on the A55 (to remove scaffold crash deck per tower)
10. Scaffold removal from service road level.
11. Compound de-mobilisation.

1. Compound set up.

Our main site compound will be formed to the north of the bridge, located under the A55 at rail level. Access is via the NR access gate at Pentre Uchaf, Llanfair Pwllgwyngyll, Menai Bridge, Isle of Anglesey, Wales, LL61 6AD.



Full site access to the welfare and storage facilities within the compound will be available, this will be manned during the day. Also mobile welfare will be provided on site by a welfare van.

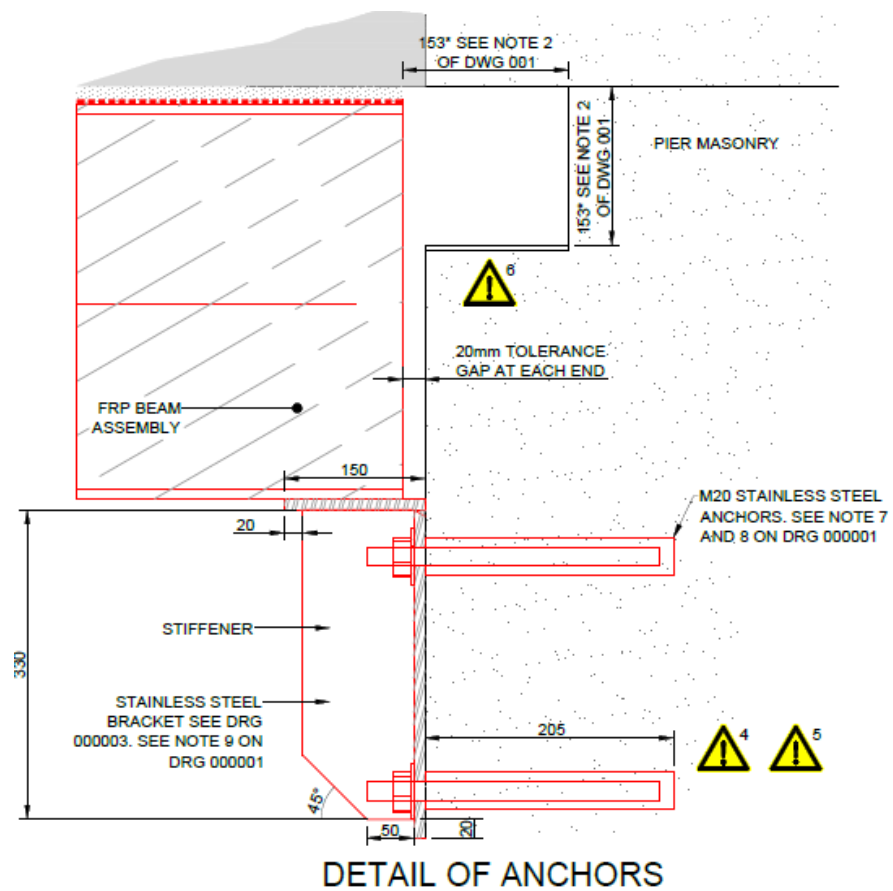
2. Pull out test to be completed track side.

Preliminary Load Tests - Before the installation of the main working anchors into each of the three bridge towers, preliminary loads test shall be conducted. These tests are required to validate that the main working anchors are suitable for use in the base material concerned and to determine the allowable resistance.

Five preliminary tensile load tests are to be carried out at rail deck level of each of the three towers – Anglesey, Britannia and Caernarfon, in masonry that resembles the masonry at the level which the anchors are to be installed within the towers above the A55. The anchors are to be installed at low level to minimise working at height risks, and if possible, in less visible areas. If the tower masonry at the level of the lintel supports does not resemble that at rail deck level, the guidance of NR Project Engineer is to be sought. The maximum tensile load test (Ntest) shall be 44.2 kN.

All necessary safe systems will be in place in order to conduct these tests at rail level and a COSS/SWL1 will be utilised to safeguard the installation of the anchors and their testing conducted on a separate shift due to the curing times of the specified resin.

Preliminary load tests shall be in accordance with BS 8539 2012 clauses 9.1 to 9.5, Appendix B.2.3.1 and relevant appendices and Construction Fixings Association guidelines.



A total of 15 preliminary load tests shall be carried out to confirm the anchor selection. The tests are to be carried out on spare additional sleeved anchors that will be installed by the Contractor.

2. Establish Traffic Management.

AmcoGiffen will employ a traffic management subcontractor to provide an approved TMP in line with the already approved TTRO supplied by NR, during the installation of the scaffold crash deck.

A single lane road closure to be in place by night between 1900-0500 on the A55 as described on the approved TTRO.

A 30mph speed restriction will be in place on the open carriage in order to provide a safer worksite for the workforce.

3. Install scaffold arrangement.

Approved Temporary Works Design (TWD) and access arrangements to the location of works – Installation of scaffold access Haki stairs and crash deck from rail level. See enclosed document – (IW01234 – Scaffold Design).

Scaffold to be installed in conjunction with the approved TWD and Listed Building Consent. Considerations will be made to the wind loading and location of the scaffold.

Scaffold arrangements to be installed to Anglesey land tower, Britannia tower and Caernarfon land tower as per the required access in order to complete the remedial works as specified.

Scaffold to be erected by a competent and trained CIRS approved sub-contractor in accordance with the approved temporary works design (under BS5975:2008+A1:2011). Ensuring adequate fall prevention and rescue plans are in place.

Daily visual inspections bolstered by weekly scaffold detailed inspections to be maintained in accordance with HASAW 1974.

A PCP will be compiled in liaison with the wind monitoring system in place alongside the weather forecasts to provide a robust contingency plan should the thresholds be exceeded.

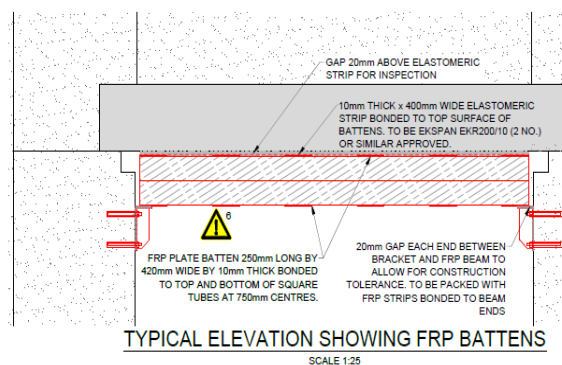
The prevailing wind conditions will be the limiting factor for using all plant on the deck and all work activities and we will ensure that no operations are undertaken once the wind speed rises above 22mph.

The staircase access will need to be secured to the existing stone work of the face of the tower, any fixings will be made good with suitable like for like mortar repairs.

4. Level and dimensional survey.

Validation surveys of Anglesey land tower, Britannia tower and Caernarfon land tower will be completed in advance of the trial shift to ensure that the specified drawings 164137-NRD-DRG-ECV-000001, 164137-NRD-DRG-ECV-000002 + 164137-NRD-DRG-ECV-000003 are accurate and true.

A review of the survey data for the FRP beam dimensions and positioning of the support brackets will be completed and any variation reported back



the NR project team to agree any mitigation required.

Confirmation of the number of cracked lintels to be provided and revised alongside the works programme/NR project team.

Alongside this, the dimensions will be utilised to finalise the lengths required on the FRP beams. Subsequently the pre-manufactured FRP beams will be trimmed to the correct length in preparation for installation.

5. Trial shift(s)

As requested, a trial erection shall be completed prior to the commencement of the entirety of the works and the results shared with the NR project team to ensure the suitability of the lintel support are as anticipated.

All personnel involved in this work will undergo an AmcoGiffen site induction. The induction will cover an outline of the project objectives as well as identifying the main risks and hazards associated with the site. Inductions and briefings are to be communicated to the workforce from the AmcoGiffen compound facilities prior to commencing work or accessing the worksite. The site manager/supervisor must ensure a thorough breakdown of site tasks are included in their brief. Health, safety and environmental hazards/risks must also be identified and communicated with the workforce daily prior to any works commencing; a white board briefing is ideal and will be employed for this.

All persons MUST:

- ✓ Complete the daily site attendance register in full when accessing and leaving site.
- ✓ Carry out tools and plant pre start checks.
- ✓ Received Traffic Management Plan briefing and adhere to the information within at all times.
- ✓ Test safety provisions prior to commencement of works.
- ✓ Wear suitable PPE with special considerations made to its durability during high winds and adverse weather conditions.

Upon arrival at site, the use of a hoist will be enlisted as a means of access to the elevated scaffold working platform. Strict adherence to the maximum capacity with the hoist will be in place alongside an approved lifting plan. Working at Height permits will be in place with suitable fall restraints identified and tested prior to use. The prevailing wind conditions will be the limiting factor for using all plant on the deck and all work activities and we will ensure that no operations are undertaken once the wind speed rises above 22mph.

Work group to access the scaffold and alongside the use of 2 way radio and careful co-ordination with the slinger at ground level to transport the materials up to the elevated working/crash deck for installation utilising the integrated scaffold hoist.

The use of a genie hoist will be included for use during the installation of the FRP beams due to their excessive weight.

Installation sequence:

- a) PRE-DRILL BOLT HOLES FOR PERMANENT ANCHORS. (Shift 1)**
- b) INSTALL ANCHORS AND ALLOW TO CURE. (Shift 1)**



- c) LIFT BRACKETS AND INSTALL WITHOUT RESTRAINT ANGLES. (Shift 2).
- d) LIFT BEAMS AND SLIDE INTO PLACE USING GENIE HOIST (Shift 2).
- e) INSTALL BONDED PACKERS AT EACH BEAM END. (Shift 2)
- f) INSTALL RESTRAINT ANGLES AND HSFG BOLTS. (Shift 2)

6. *Installation of the Anchors.*

Upon successful completion of the trial shift, we will proceed to install the brackets in the first instance.

Traffic management to be set out and permission granted to access the bridge from TM co-ordinator. Upon arrival at site, the use of the “Haki” staircase will be enlisted as a means of access to the elevated scaffold working platform. The wind speed at the working location will be inspected and monitored throughout the shift and where the wind speed exceeds 22mph all works will be stopped and the scaffold will be made safe and evacuated.

Installation of the anchors will sequence as follows:

- I. Drill 30 holes, install M20 anchors with resin (cure) and install template - Anglesey tower. (Shift 1)
- II. Drill 30 holes, install M20 anchors with resin (cure) and install template - Anglesey tower. (Shift 2)
- III. Drill 30 holes, install M20 anchors with resin (cure) and install template - Anglesey tower. (Shift 3)
- IV. Drill 40 holes, install M20 anchors with resin (cure) and install template - Britannia tower. (Shift 4)
- V. Drill 40 holes, install M20 anchors with resin (cure) and install template - Britannia tower. (Shift 5)
- VI. Drill 40 holes, install M20 anchors with resin (cure) and install template - Britannia tower. (Shift 6)
- VII. Drill 47 holes, install M20 anchors with resin (cure) and install template Caernarfon tower (Shift 7)
- VIII. Drill 47 holes, install M20 anchors with resin (cure) and install template Caernarfon tower (Shift 8)
- IX. Drill 46 holes, install M20 anchors with resin (cure) and install template Caernarfon tower (Shift 9)

7. *Installation of Brackets and FRP beams.*

All personnel involved in this work will undergo an AmcoGiffen site induction. The induction will cover an outline of the project objectives as well as identifying the main risks and hazards associated with the site. Inductions and briefings are to be communicated to the workforce from the AmcoGiffen compound facilities prior to commencing work or accessing the worksite. The site manager/supervisor must ensure a thorough breakdown of site tasks are included in their brief. Health, safety and environmental hazards/risks must also be identified and communicated with the workforce daily prior to any works commencing; a white board briefing is ideal and will be employed for this.

All persons MUST:

- ✓ Complete the daily site attendance register in full when accessing and leaving site.
- ✓ Carry out tools and plant pre start checks.
- ✓ Received Traffic Management Plan briefing and adhere to the information within at all times.
- ✓ Test safety provisions prior to commencement of works.
- ✓ Wear suitable PPE with special considerations made to its durability during high winds and adverse weather conditions.

Traffic management to be set out and permission granted to access the bridge from TM co-ordinator. Materials required to be loaded to the trailer at the site compound using a telehandler. Tractor and trailer to transport the materials to the Anglesey land tower.

Upon arrival at site, the use of a Haki staircase will be enlisted as a means of access to the elevated scaffold working platform. Working at Height permits will be in place with suitable fall restraints identified and tested prior to use. The prevailing wind conditions will be the limiting factor for using all plant on the deck and all work activities and we will ensure that no operations are undertaken once the wind speed rises above 22mph.

Work group to access the scaffold and alongside the use of 2 way radio and careful co-ordination with the slinger at ground level to transport the materials up to the elevated working/crash deck for installation utilising the integrated scaffold hoist.

Installation sequence:

- ▶ Load out 4x beams to Anglesey land tower.
- ▶ Install 8x brackets and 4 x FRP beams using Genie hoist - Anglesey land tower.
- ▶ Load out 5x beams to Anglesey land tower.
- ▶ Install 10x brackets and 5 x FRP beams using Genie hoist - Anglesey land tower.
- ▶ Load out 6x beams to Britannia tower.
- ▶ Install 12x brackets and 6 x FRP beams using Genie hoist - Britannia tower.
- ▶ Load out 6x beams to Britannia tower.
- ▶ Install 12x brackets and 6 x FRP beams using Genie hoist - Britannia tower.
- ▶ Load out 7x beams to Caernarfon land tower.
- ▶ Install 14x brackets and 7 x FRP beams using Genie hoist - Caernarfon land tower.
- ▶ Load out 7x beams to Caernarfon land tower.
- ▶ Install 14x brackets and 7 x FRP beams using Genie hoist - Caernarfon land tower.

Timing of works:

- Compound set-up: 16-Feb-2021 to 17-Feb-2021 – 8am to 8pm

Resumption of works after suspension due to Peregrine Falcon presence

- Main Works: 27 Sept-2021 to 6- Dec-2021 - 24hrs (shift by night and day)
- Traffic management in place (nights) for crash deck installation:
Anglesey Tower: 14-Oct-2021 to 15-Oct-2021 & 12-Nov-2021 to 15-Nov-2021
Britannia Tower: 21-Oct-2021 to 27-Oct-2021 / 29-Oct-2021 to 1-Nov-2021 & 19-Nov-2021 to 22-Nov-2021
Caernarfon Tower: 3-Nov-2021 to 4-Nov-2021 & 25-Nov-2021 to 26-Nov-2021
- Traffic management in place for crash deck removal for all 3 towers:
29-Nov-2021 to 6-Dec-2021
- Demobilise and remove compound: 2-Dec-2021 to 6-Dec-2021

Plant and Equipment in use:

- Rotary hammer drill
- Scaffolding

- Fibre Reinforced Polymer Beams
- Stainless steel brackets and anchors
- Resin

Site Clearance and Demobilisation

On completion of the works all equipment, plant and materials will be demobilised from site, including all hired in plant.

Lane closures will be utilised to remove the scaffold crash deck and all materials will be loaded onto hi-ab waggons located within the traffic management. All temporary fixings points to the structure will be repairs and made good with agree repairs.

A litter sweep will be conducted at the site, removing any debris arising from the works. Finally, the site will be fully demobilised of small plant, materials and personnel.