

24 October 2023

Dear

Request for Information - ATISN 19001

Thank you for your request for information which I received on 18 September.

Your request

You have asked for the following information regarding the Menai Suspension Bridge:

[https://www.istructe.org/journal/volumes/volume-101-\(2023\)/issue-9/hanger-replacement-for-the-menai-suspension-bridge/](https://www.istructe.org/journal/volumes/volume-101-(2023)/issue-9/hanger-replacement-for-the-menai-suspension-bridge/)

1. Page 32 of the above article refers to "four hangers failed by fracture of the socket".

What was the value of each of the fracture loads?

2. Page 33 of the above article refers to "factors that might increase the likelihood of brittle fracture of hangers in service".

What are those factors?

Our Response

For question one, table 3 from COWI's Qualitative Review contains the following information (reproduced from the 1988 Gibb & Partner Report NMWTRA Ref ER106E).

	Top	Bottom
M45W	-	523 kN
M45E	600 kN	1026 kN
M10E	837 kN	807 / 837 kN*
M09W	508 kN	663 kN

Table 3 - Failure loads of 1988 hanger tests

* Socket M10E Bottom failed at 807kN but had previously sustained a load of 837kN.

For question two, the following factors increase the likelihood of brittle fracture:

- Toughness of the material
- Low Temperatures

- Tensile Stress
- High Loading Rates
- Grain Structure
- Crack Initiating Defects

Next steps

If you are dissatisfied with the Welsh Government's handling of your request, you can ask for an internal review within 40 working days of the date of this response. Requests for an internal review should be addressed to the Welsh Government's Freedom of Information Officer at:

Information Rights Unit, Welsh Government, Cathays Park, Cardiff, CF10 3NQ
or Email: Freedomofinformation@gov.wales. Please remember to quote the ATISN reference number above.

You also have the right to complain to the Information Commissioner. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. However, please note that the Commissioner will not normally investigate a complaint until it has been through our own internal review process.

The request you sent me contains personal information about you - for example, your name and email address. The Welsh Government will be the data processor for this information and, in accordance with the General Data Protection Regulation, it will be processed in order to fulfil our public task and meet our legal obligations under the Act to provide you with a response. We will only use this personal information to deal with your request and any matters which arise as a result of it. We will keep your personal information and all other information relating to your request for three years from the date on which your request is finally closed. Your personal information will then be disposed of securely.

Under data protection legislation, you have the right:

- to be informed of the personal data we hold about you and to access it
- to require us to rectify inaccuracies in that data
- to (in certain circumstances) object to or restrict processing
- for (in certain circumstances) your data to be 'erased'
- to (in certain circumstances) data portability
- to lodge a complaint with the Information Commissioner's Office (ICO) who is our independent regulator for data protection

For further information about the information which the Welsh Government holds and its use, or if you wish to exercise your rights under the GDPR, please see contact details below:

Data Protection Officer
Welsh Government
Cathays Park

CARDIFF
CF10 3NQ

Email: DataProtectionOfficer@gov.wales

Any information released under the Freedom of Information Act 2000 or Environmental Information Regulations 2004 will be listed in the Welsh Government's Disclosure Log (at <https://gov.wales/about/open-government/freedom-of-information/responses/?lang=en>).

Yours sincerely