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[REDACTED]

6 November 2017

E-mail address: [REDACTED]

Dear [REDACTED],

Thank you for your email of 18 October in which you requested the following information:

1. *What information, instructions, specifications, etc. does the army hold on building fords*
2. *What is the specification for the tests that the army specify for the "fordability" of vehicles.*
3. *What instructions are army engineers given regarding building road fords.*
4. *What instructions are army troops given regarding fording rivers.*
5. *What historic information (and particularly the references for books held in libraries) does the British army hold on the historic instructions for building a ford (or more generally for building roads)*

I am treating your correspondence as a request for information under the Freedom of Information Act (FOIA) 2000.

A search for the information has now been completed within the Ministry of Defence, and I can confirm that some of the information in scope of your request is held and is attached. Information requested in question three has been withheld under section 21 of the FOIA – information reasonably accessible to the applicant. However, under section 16 of the Act – advice and assistance – a link to the information has been provided. No information is held in relation to question five but again under section 16 of the Act, some suggestions as to where information may be found has been provided.

If you have any queries regarding the content of this letter, please contact this office in the first instance. Following this, if you wish to complain about the handling of your request, or the content of this response, you can request an independent internal review by contacting the Information Rights Compliance team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail [CIO-FOI-IR@mod.uk](mailto:CIO-FOI-IR@mod.uk)). Please note that any request for an internal review should be made within 40 working days of the date of this response.

If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner's Office,

Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website at <https://ico.org.uk/>.

Yours sincerely,



Disclosure and Litigation Leader

## INFORMATIO PROVIDED FOR FOI2017/10156

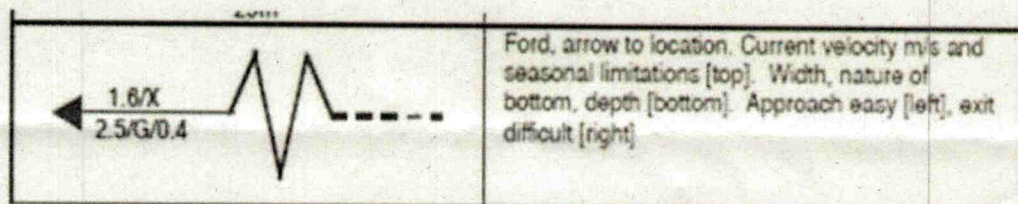
1. What information, instructions, specifications, etc. does the army hold on building fords

Royal Engineers will normally only reinforce an existing ford by placing an expedient matting (Class 30, Class 60 or Mammoth Matting) to improve the ground bearing ratio (a cone penetrometer is used to measure the Californian Bearing Ratio (CBR) of the approaches and bed of a ford). The preferred option would be to over-bridge using current in service bridging (Medium Girder Overbridge, Heavy Girder Overbridge, Medium Girder Bridge, Royal Engineers Bridging System, , No.10, No. 12 or – Automated Bridge Launching System) or to build a non-equipment bridge or create a culvert. There are a number of parameters that a Combat Engineer will consider when assessing a ford for fordability:

- i. Width.
- ii. Depth
- iii. Velocity of flow
- iv. Identify the approaches and exits
- v. Identify Seasonal Limitations
- vi. Identify the nature of the materials for approach, bed and exit and measure the CBR for all.

An example is given below:

The Symbol for a Ford can be seen below and represents a 1.6m/s flow / All Weather



Route / 2.5m wide / With a Gravel bed / 0.4 m deep / with an all-weather exit left and fair weather exit

The deliberate act of designing a permanent ford as part of a new road for example would fall to the Military Plant Foreman and Professionally Qualified Engineer, who would design the ford to current Euro Codes. The most common approach would be to avoid a ford and install a culvert, however where this is not feasible due to limiting factors, e.g. ground conditions or shallow depth then the most common practice is to design an 'Irish Bridge' of mass or reinforced concrete. More detailed site and ground investigations would need to be conducted by a Military Engineer Class 1 Construction Materials Technician to obtain the data required to conduct the design, this may include drilling of boreholes to obtain samples for further testing.

2. What is the specification for the tests that the army specify for the "fordability" of vehicles.

This information is exempt under section 21 of the FOIA – information reasonably accessible to the applicant. However, under section 16 of the Act – advice and assistance - copy of Defence Standard 00-006 – Fording and Floatation Requirements for combat and Support Ground Vehicles can be found in the following link:

<https://sts.defencegateway.mod.uk/Login.aspx?ReturnUrl=%2f%3fwa%3dwsignin1.0%26wtrrealm%3dhttp%253a%252f%252fssso.defencegateway.mod.uk%252fadfs%252fservices%252ftrust%26wctx%3d45be2db6-a8f2-43c2-b0c9-af22ce136bb4%26wct%3d2017-11-01T15%253a05%253a53Z&wa=wsignin1.0&wtrealm=http%3a%2f%2fssso.defencegateway>

[mod.uk%2fads%2fservices%2ftrust&wctx=45be2db6-a8f2-43c2-b0c9-af22ce136bb4&wct=2017-11-01T15%3a05%3a53Z](http://mod.uk%2fads%2fservices%2ftrust&wctx=45be2db6-a8f2-43c2-b0c9-af22ce136bb4&wct=2017-11-01T15%3a05%3a53Z)

You will need to create a username and password to access the documents.

3. What instructions are army engineers given regarding building road fords.

See answer to question one.

4. *What instructions are army troops given regarding fording rivers.*

The following is an extract from Army General Administrative Instructions, Volume 1, Chapter 18:

**Vehicles Fording or Swimming Wet Gaps**

*18.059. UK military vehicles are only capable of shallow fording wet gaps 1.0 - 1.5m deep, depending on the vehicle.*

*18.060. The basic principles for fording or swimming any military vehicle are:*

- a. The river flow is to be ascertained by the Safety Officer to ensure that it does not exceed vehicle limitations.*
- b. A vehicle recovery plan is to be prepared.*
- c. A pollution control plan is to be prepared.*
- d. Each vehicle is to ford with a commander in addition to the driver.*
- e. All vehicle crew hatches are to be open and doors unlocked.*
- f. Crews are not to be strapped in or to wear Watermanship Safety Equipment that would impede their escape from the vehicle.*
- g. All personnel are to be briefed to avoid revolving tracks and wheels should they have to enter the water in the event of an emergency evacuation.*

5. What historic information (and particularly the references for books held in libraries) does the British Army hold on the historic instructions for building a ford (or more generally for building roads)?

The MOD does not hold this information as historical material (pre-1980s) surviving information will already be available in the public domain as it will have been reviewed and transferred to other archives. However, under section 16 of the FOIA – advice and assistance – there are a number of potential sources that may hold information you require. May I suggest, therefore, you contact the following organisations:

1. The National Archives - WO and DEFE classes - <http://www.nationalarchives.gov.uk/>
2. The British Library - I believe copies of a lot of pre-WW2 Army pamphlets and publications were lodged at the British Library but this arrangement did not continue long after 1939 - <https://www.bl.uk/>
3. The India Office Records at British Library - A lot of relevant material from India is only located here. <https://www.bl.uk/collection-guides/india-office-records>
4. National Army Museum - may have copies of historic doctrine and publications - <https://www.nam.ac.uk/>
5. Kings College London have a collection of doctrine publications details are here: <http://www.kingscollections.org/catalogues/lhcma/collection/b/xb85-001>
6. The Royal Engineer Museum [www.re-museum.co.uk/contact-us/](http://www.re-museum.co.uk/contact-us/)
7. The Institution of Royal Engineers [secretary@instre.org](mailto:secretary@instre.org)