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NATO STANDARD

ATP-3.12.1.10

**LAND FORCES COMBAT ENGINEER
MESSAGES, REPORTS AND RETURNS**

Edition A, Version 1

Final Draft
MONTH YEAR



NORTH ATLANTIC TREATY ORGANIZATION

ALLIED TACTICAL PUBLICATION

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[Date]

1. The enclosed Allied Tactical Publication ATP-3.12.1.10, Edition A, Version 1, LAND FORCES COMBAT ENGINEER MESSAGES, REPORTS AND RETURNS, which has been approved by the nations in the Military Committee Land Standardization Board, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 2430.
2. ATP-3.12.1.10, Edition A, Version 1, is effective upon receipt and supersedes AEngrP-2(B), which shall be destroyed in accordance with the local procedure for the destruction of documents.
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Director, NATO Standardization Office

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CHAPTER 1 INTRODUCTION AND GUIDANCE ON USE

1.1. INTRODUCTION

1. This introduction should be read by the user of ATP-3.12.1.10 before attempting to send messages using the provided format.
2. The purpose of this chapter is to:
 - a. Provide background to the development and scope of ATP-3.12.1.10;
 - b. Describe the outline contents of the other chapters;
 - c. Provide general instructions on completing message formats;
 - d. Draw attention of the users to the requirement for change control procedures.

1.2. PURPOSE

ATP-3.12.1.10 holds all necessary information in regards to the engineer messages, reports and returns (MRR) in the land domain. Although not all the engineer MRR are held in this publication, it does reference to the other publications where the combat engineer MRR can be found.

1.3. SCOPE

1. ATP-3.12.1.10 is the definitive source of NATO agreed Engineer Structured Messages (SMs).
2. The use of Engineer SMs as contained in this catalogue is mandatory for all NATO forces exchanging character-oriented messages.

1.4. BACKGROUND

1. On request of the Senior Land Information Exchange Requirements Panel (SLIERP), MILENG WG tasked the IER Panel to review AEngrP-02(B). As the publication hadn't been reviewed since 2004 a lot of the messages were outdated and the format used, the Message Text Format (MTF), didn't fit the operational needs anymore.

2. The custodian (MILENG COE) organized a workshop and conducted reviews of the messages during several MILENG WG's where some important decisions were taken in regards to the review of AEngrP-02(B):
 - a. The new format to be used is the SM-format;
 - b. The messages should satisfy all levels of command;
 - c. All existing engineer MTF-messages will only be held in APP-11. They will all be retained but the possibility to retire some of the MTF's must be discussed.
3. Under custodianship of the MILENG COE the IER's were drafted and together with the support of the SLIERP the SMs were created. The IER's were reviewed and agreed upon by the IERP, by NATO and the nations.

1.5. FUTURE NATO/NATIONAL C2 TOOLS

1. Future NATO C2 Tools (e.g. ESS) should support reporting using the MTF (if still used) and SM-format. This will enable updating the data held within databases (e.g. infrastructure, bridges, obstacles, ...) which is displayed on the Recognised Military Engineering Picture (RMILENGP), using the information from the various reports.
2. Nations should also integrate the NATO engineer reports in their C2 tools and procedures so that their units are familiar with the use of these and thus promote interoperability with NATO and other nations.

1.6. DESCRIPTION OF ATP-3.12.1.10

1. Chapter 1 – Introduction and guidance on use. Provides an overview of the publication, its structure, layout and content; provides general instructions on the use of MRR and where to find them.
2. Chapter 2 – SM instructions. Provides instructions for the use of the SMs which are held in this publication. All engineer SMs can also be found in this chapter.
3. Annex A – Engineer Message Text Format (MTF) List Summary. Provides an overview of the Engineer MTF messages which can be found in APP-11.
4. Annex B – Engineer Structured Messages (SM) List Summary. Provides an overview of the Engineer SMs which can be found in this publication.
5. Annex C – Related STANAGs and other documents. Provides an overview of related STANAG's and other documents

6. Annex D – Graphic Presentation of Particular Information on Roads and Road structures.
7. Annex E – Presentation of Tables
8. Annex F – Guidance for Military Geographic Information (MGI) on Roads and Road Structures

Note: Annex D, E and F were copied from the cancelled STANAG 2253 IGEO (Edition 5) – MGD – Roads and Road Structures. MILENG WG deemed it necessary to have this information in a promulgated STANAG as a lot of the nations still use the content of the STANAG. It was decided to add these Annexes to this STANAG as some of the graphics and codes can also be used when filling in an MRR. In a later stage the decision might be taken to add these annexes as an SRD (Standard Related Document) or to create again a separate STANAG.

1.7. GENERAL INSTRUCTIONS

1.7.1. APP-11

APP-11 is the official repository for all approved formatted, selected structured messages and voice templates with supporting instructions and data tables. A message format is an agreed character-oriented data exchange specification. According to APP-11 there are 4 types of message formats:

1. **Message Text Format (MTF).** MTFs are formatted in accordance with the rules of ADatP-3 and are designed to be unambiguous and concise in a form that is man-readable and computer processable. The information to be transmitted in an MTF message is sequentially ordered and the format must be adhered to.
2. **Structured Message Text (SM).** A text-based message format composed of paragraphs ordered in a specific sequence, each paragraph characterized by an identifier and containing information in free form. It is designed to facilitate manual data entry rather than be processed by automated communication and information systems.
3. **Voice Message Template (VMT).** A VMT is a format for voice transmission, normally based on the information content of an equivalent MTF or SM. It is comprised of a list of headings against which the user adds relevant information.
4. **Non-Compliant Message.** A Non-Compliant Message is one that has been identified as the authoritative source of other messages that are defined in other publications used by NATO forces that do not conform to the rules in ADatP-3.

1.7.2. Engineer MRR

Depending on the format, the engineer MRR can be found in APP-11, ATP-105 and in this publication. Some specific procedures (e.g. mine laying) are described in separate STANAGs with specific reports. More details on the specific STANAGs can be found in Annex C.

1. **Message Text Format.** The Engineer MTF's can be found in APP-11. A message list summary of the engineer MTF-messages in APP-11, including a brief description of the purpose and usage of each message, report and return, is included in Annex A.
2. **Structured Message.** All Engineer SMs are held in this publication. A message list summary of the SMs, including a brief description of the purpose of each message is included at Annex B. Further details on how to read and use SMs can be found in Chapter 2.
3. **OBSREP (Obstacle Report).** Although the OBSREP is a Structured Message it is not held in this publication but in ATP-105. Reason for this is that the OBSREP is an All Arms message. Nevertheless, the MILENG community is responsible to keep the message up to date and therefore the operational sponsor is the MILENG WG.

1.7.3. Engineer MTF

As already explained, the official repository for Engineer MTF is APP-11. APP-11 holds all the information on how to read, decode, write and use an MTF-message. But some specific details in regards to the engineer MTF, which are not in APP-11, will be explained here below.

1. **Message sections.** The Engineer MTF's have been grouped into sections. These sections can also be found in Annex A.
 - a. Section 1 - Engineer messages below brigade level, within engineer units.
 - b. Section 2 – Engineer messages Brigade/Division/Corps.
 - c. Section 3 – Engineer related all-arms messages.
 - d. Section 4 – Engineer messages above Corps level.
2. **Usage.** Only the purpose of each of the messages has been copied into APP-11, not the usage. As it might be interesting to have some more details on the circumstances in which some messages are mostly used or by which events they are triggered, a column has been added to the list in Annex A to explain the usage.

1.8. CONFIGURATION MANAGEMENT

1. The Operational Sponsor for ATP-3.12.1.10 is the Military Engineering Working Group (MILENG WG) which is under the authority of the Military Committee Land Standardisation Board. The MILENG COE holds custodianship for ATP-3.12.1.10 and for executing document maintenance.
2. Requests for changes, amendments or additions to ATP-3.12.1.10 are to be passed by national delegates to the MILENG Working Group. These in turn will be passed to the Custodian for consideration at the next MILENG WG and will be discussed in the Information Exchange Requirements Panel (IERP).
3. Editorial changes (typing error, spelling, ...) to the messages itself can be done without having to wait for the official review cycle (3 years). Changes to the content of messages has to follow the official review cycle. Nevertheless, proposals can be presented by delegates during every MILENG WG. The changes will be presented to the IERP and after consideration the Panel chair will present them to the Plenary for approval. Once approved the custodian will get in contact with the SLIERP (LOWG) in order to formalize the change immediately if it is an editorial change. If it is not a mere editorial change, the custodian will record the agreed change and implement it during the 3-year review.

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CHAPTER 2 STRUCTURED MESSAGE INSTRUCTIONS**2.1. INTRODUCTION****2.1.1. Purpose**

Chapter 2 provides detailed instructions on the use of the engineer SMs and how they should be completed. It also holds the templates of all the SMs.

2.1.2 Aim and Objectives

The use of SMs in command and control systems has the following objectives:

1. Enable interoperability by providing consistency of information exchange.
2. Reduce the risk of ambiguity and misunderstanding.
3. Ensure that messages include essential and consistent information in accordance with agreed NATO doctrine, tactics, techniques and procedures.
4. Reduce the time and effort involved in the drafting, reading and manual handling of messages.

2.1.3 Format

These messages enable users to populate a template with data and transmit or receive via communication systems. The messages are all in MS Excel format. The messages are designed to be used on any platform that can support MS Excel and contain no macros or programming ensuring that they will not impact on security clamps applied to most military systems.

2.2. STRUCTURED MESSAGE USER GUIDE**2.2.1. Excel-file**

Within the excel-file there are three sheets.

1. The first sheet, which has the short title of the message, is used to enter the data.
2. The second sheet is called 'SM' (Structured Message) and assembles the data input from the first sheet into a coherent message that can be cut and pasted into another communication medium such as a Chat window or Email.

3. The third sheet is called 'VMTPRINT' (Voice Message Template/Print version) and is actually the VMT version of the message which is usable as the printable version of the message as the help texts and drop-down lists are written in full.

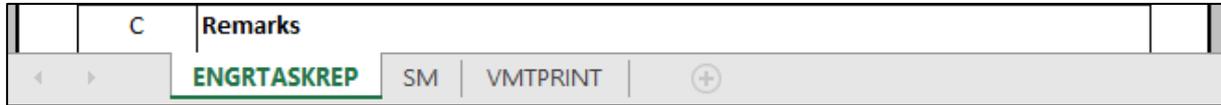


Figure 1: SM Excel sheets

2.2.2. Structure

Every message has three big parts: the header, main body (the actual message) and the purpose statement.

1. The **header** is identical for every structured message and holds the general information which defines the message (sender, DTG, Classification, ...). The cells which have a bold border are mandatory to complete. Changes to the template of the header need to be presented to the SLIERP (LOWG) for approval.

2. The **main body** holds all the information which is specific for that message. Every line where data needs to be filled in has a serial. The message can be divided into sections in order to structure it and make it easier for the user to read. Every section has a title and is identified by a letter (A, B, C, ...). Within the section there can be different liners which are identified by the section letter followed by a number (A1, A2, A3, ...). If a section has no liners then it is just identified by its letter.

3. At the bottom of the message is the **purpose statement** so that the user is reminded of what the purpose of the message is.

4. Using this methodology enables us to also send the message via voice as every liner has an identifier which is specific for that message. The structured message format hasn't been designed to be transmitted via voice but it is possible although be it not ideal. The VMT version which is included in the third sheet is designed to be transmitted via voice.

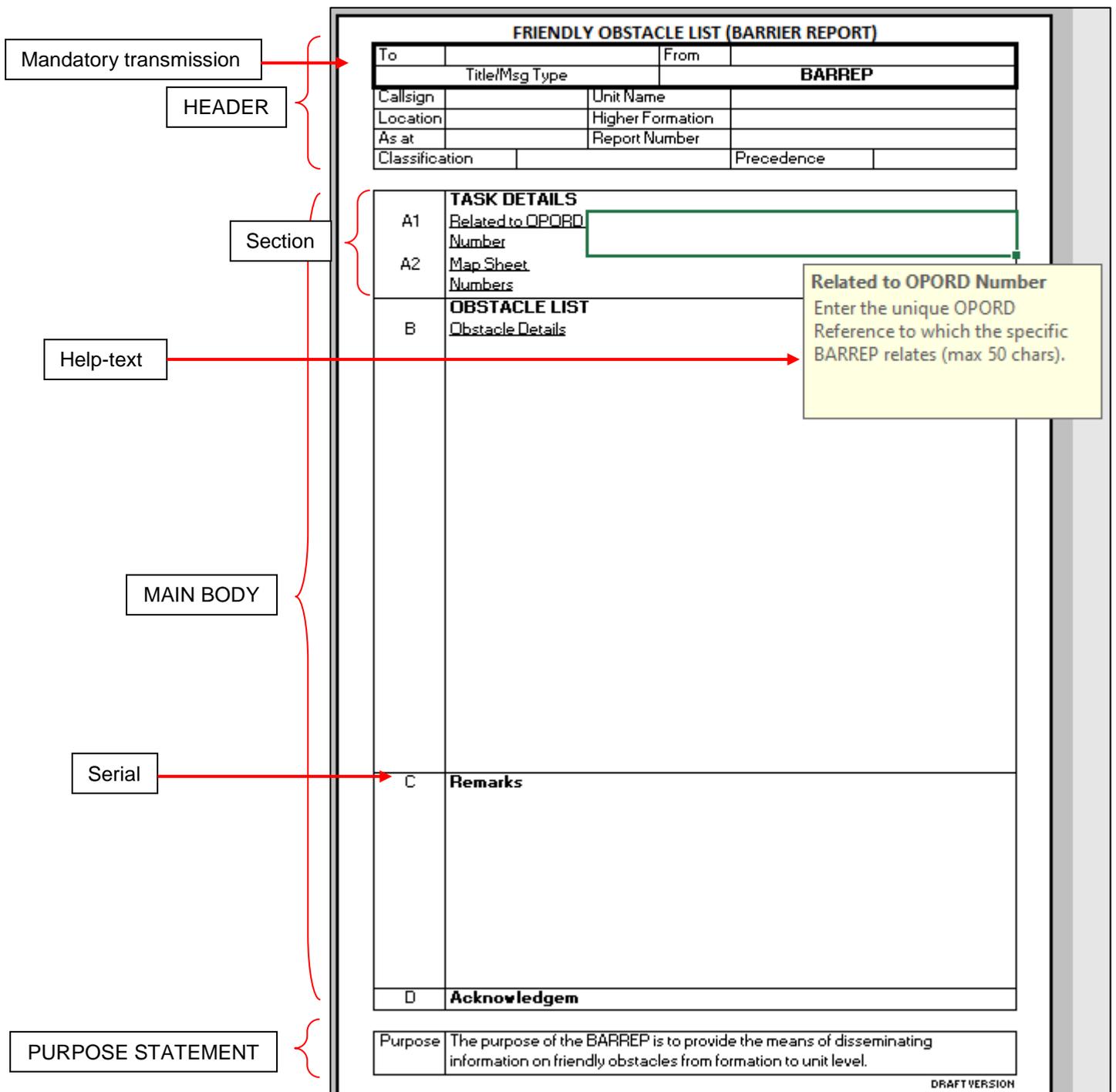


Figure 2: Structured Message

2.2.3. Entering data

1. As already explained above, the first sheet is used to complete the message. Using the tab-key the user is able to move between fields, data is entered like in a standard excel-file.

2. Each field has its own help text which appears when you select the cell where the data has to be entered. Data can be typed in and may be limited to a number of characters, which are specified in the help text.

3. When you want to enter the same information in one textbox but on multiple items, use a slash (/) between data elements and a double slash (//) between items. When no data is available use 'X'. For example, when entering multiple obstacles in the Barrier Report use a slash between the data elements of the same obstacle and double slash between obstacles. Instead of a double slash a new line could also be started.

a. Obstacle 1:

- i. Minefield (MF) number B10
- ii. Obstacle Zone/Belt: A1
- iii. Co-ordinates: 32UPV7982803230
- iv. Mine type: Antitank (T)
- v. Obstacle Status: Prepared for Execution (IMP)
- vi. DTG start & finish: 241000BMAY22-151000BJUN22

b. Obstacle 2:

- i. Barbed wire obstacle (WO)
- ii. No number or zone/belt
- iii. Co-ordinates: 32UPV8007603186
- iv. No mines (N)
- v. Obstacle Status: Executed (EXE)
- vi. No DTG

Filled in in the structured message this would be:

```
MF/B10/A1/32UPV7982803230/T/IMP/241000BMAY22-151000BJUN22//WO/X/X/  
32UPV8007603186/N/EXE/X
```

Or

```
MF/B10/A1/32UPV7982803230/T/IMP/241000BMAY22-151000BJUN22  
WO/X/X/ 32UPV8007603186/N/EXE/X
```

2.2.4. Drop Downs

Some Structured Messages have drop down lists. These can be used using the mouse or for ease of use by pressing the 'Alt' key and 'Down Arrow' key at the same time. The user can then use the 'Up' and 'Down Arrow' keys to select a value from the list and the 'Return' key to commit the value.

2.2.5. Printable version

The printable version is actually the VMT of the message. In the printable version the help text is typed out below the title of every line so the message can be printed out and filled in by hand. If there are any drop-down lists to be used in the message, these will be added below the message. The printable versions are also included in this publication, below you can find an example.

GENERAL ENGINEER SUPPORT RECCE REPORT			
To		From	
Title/Msg Type		ENGRGSRECCEREP	
Callsign		Unit Name	
Location		Higher Formation	
As at		Report Number	
Classification		Precedence	
TASK DETAILS			
A1	<u>Task Serial Number</u> <i>Give a unique task identifier number.</i>		
A2	<u>Map Sheet Numbers</u> <i>Give the map sheet numbers relevant to the message.</i>		
A3	<u>DTG Recce Completed</u> <i>Give the date time group at which the reconnaissance was completed.</i>		
A4	<u>General Engineer Support Mission</u> <i>Indicate the mission from the list below:</i> Construct (A) Maintain (B) Repair (C) Provide (D) Improve (E)		
A5	<u>General Engineer Support Task</u> <i>Indicate the type of support task by selecting from the list at the end of this message.</i>		
A6	<u>Degree of Permanency</u> <i>Indicate the degree of permanency from the list below:</i> Emergency (01) Temporary (02) Permanent (03)		

Figure 3: Printable version (Voice Message)

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ANNEX A Engineer Message Text Format (MTF) List Summary
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This list gives an overview of the engineer messages in the MTF-format for which the MILENG WG is the operational sponsor. The actual messages can be found in APP-11. Message numbers in bold are the main messages of that message group.

Message Number	TITLE	SHORT TITLE	PURPOSE OF MESSAGE	USAGE OF MESSAGE
ENGINEER MESSAGES BELOW BRIGADE LEVEL – WITHIN ENGINEER UNITS (LEVEL 1)				
E102A	Engineer Task Status Report	ENGTASKREP	To disseminate information relating to the progress of task reconnaissance or task execution.	This report is always related to assigned task serial numbers and allows for multiple tasks to be reported on. The recipient of the message is expected to be aware of the task details.
E103A	Engineer Materiel Request and Release	ENGMATREQREL	To standardise the method for disseminating information relating to the request and release of engineer materiel.	This message is principally for use at engineer battalion and below.
E104A	Engineer Unit Status Report	ENGSTATREP	To disseminate information relating to the reporting of sub-unit status to engineer battalion level.	The message contains fields for reporting sub-unit effectiveness and critical or major equipment. The message is sent in accordance with timings laid down in SOPs.
E110A	Route Reconnaissance Order	ROUTERECCEORD	To disseminates information relating to the ordering and reporting of route reconnaissance tasks at battalion level and below.	Invariably this set of messages will be used in reaction to receipt of an ENGRRECCEORD (E201) message from corps or divisional HQ.
E110B	Route Reconnaissance Report	ROUTERECCEREP		
E111A	Road, Bridge and Tunnel Recce Order	RBTRRECCEORD	To disseminate information relating to the ordering,	The trigger for these reports will be the selection of a route based on E110

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E111B	Road, Bridge and Tunnel Recce Report	RBTRECCEREP	reporting and execution of a specific repair, technical reconnaissance or maintenance task along a section of a route.	reconnaissance reports.
E111C	Road, Bridge and Tunnel Repair Execution Order	RBTMaintORD		
E111D	Road, Bridge and Tunnel Repair Completion Report	RBTMaintREP		
E112A	Crossing Site Recce Order	GAPRECCEORD	To disseminate information relating to gap crossing sites.	The messages are for use at battalion level and below and should be used for recce and task execution orders and reports.
E112B	Crossing Site Recce Report	GAPRECCEREP		
E112C	Crossing Site Execution Order	GAPORD		
E112D	Crossing Site Completion Report	GAPREP		
E113A	Minefield Breaching/Clearing Recce Order	MINCLRRECCEORD	To disseminate information relating to the breaching and clearing of minefields by friendly forces.	The messages are to be used for ordering and reporting on the reconnaissance of future deliberate minefield breaches, and for task execution and completion reports.
E113B	Minefield Breaching/Clearing Recce Report	MINCLRRECCEREP		
E113C	Minefield Breaching/Clearing Execution Order	MINCLRORD		
E113D	Minefield Breaching/Clearing Completion Report	MINCLRREP		
E120A	Obstacle Recce Order	OBSRECCEORD	To disseminate information relating to existing friendly and enemy obstacles and future friendly obstacles.	The messages are general purpose messages which cover all types of obstacles. The message should not be used to report on:
E120B	Obstacle Recce Report	OBSRECCEREP		

E120C	Obstacle Execution Order	OBSEXORD		a. Friendly Bridge Demolitions (<i>use the E212 and E302 group of messages</i>) b. Friendly minelaying operations (<i>use the E122 group of messages</i>) c. Breaching or clearing minefields (<i>use the E113 group of messages</i>)
E120D	Obstacle Execution Report	OBSEXREP		
E121A	Bridge Demolition Recce Order	BRDMLRECCEORD	To disseminate information relating to preliminary and reserved demolitions.	Reconnaissance messages (BRDMLRECCEORD and BRDMLRECCEREP) are to be used for the recce of preliminary and reserved demolitions.
E121B	Bridge Demolition Recce Report	BRDMLRECCREP		
E121C	Bridge Demolition Execution Order	BRDMLORD		The execution order (BRDMLORD) is to be used for PRELIMINARY DEMOLITIONS ONLY . The execution of reserved demolitions is covered in the All Arms message (E302 - DMLORD).
E121D	Bridge Demolition Completion Report	BRDMLREP		All bridge demolition completion reports are to use the BRDMLREP message.
E122A	Minefield Laying Recce Order	MINLAYRECCEORD	To disseminate information relating to minefields laid by friendly engineer troops.	The minefield completion report does not replace the minefield record, which will be one of the enclosures to the report. The messages are to be used in conjunction with the all-arms scatterable mine messages (E301) where appropriate.
E122B	Minefield Laying Recce Report	MINLAYRECCEREP		
E122C	Minefield Execution Order	MINLAYORD		
E122D	Minefield Completion Report	MINLAYREP		
E130A	Survivability Recce Order	SURRECCEORD	To disseminate information relating to survivability tasks.	The messages are used for all survivability and protection tasks. Survivability tasks include digging, revetment, camouflage, hardening of buildings and deception.
E130B	Survivability Recce Report	SURRECCEREP		
E130C	Survivability Execution Order	SURORD		

E130D	Survivability Completion Report	SURREP		
E140A	General Engineer Support Recce Order	ENGGSRECCEORD	To disseminate information relating to all general engineer support tasks, or tasks which do not fall under the category of mobility, counter-mobility or survivability.	The messages are particularly suited for use in peace support operations in overseas theatres.
E140B	General Engineer Support Recce Report	ENGGSRECCEREP		
E140C	General Engineer Support Execution Order	ENGGSORD		
E140D	General Engineer Support Completion Report	ENGGSREP		

Message Number	TITLE	SHORT TITLE	PURPOSE OF MESSAGE	USAGE OF MESSAGE
ENGINEER MESSAGES - BRIGADE TO CORPS (LEVEL 2)				
E201A	Engineer Recce Order	ENGRRECCEORD	To disseminate information relating to the reconnaissance of mobility, counter-mobility and general engineer support tasks.	The messages are for use at corps and division HQ down to brigade level. Receipt of an E201A at unit level from formation HQ will trigger a series of reconnaissance tasks using the battalion level messages. A typical E201 will order the reconnaissance of 5 possible crossings over a stretch of river for a divisional crossing operation. Key information is passed back to the formation HQ using E201B, which will be accompanied by copies of the reconnaissance reports as enclosures.
E201B	Engineer Recce Report	ENGRRECCEREP		
E202A	Engineer Annex to the Operation Order	ENGOPO	This message includes all the essential information required in the Engineer Annex to a formation Operation Order.	The Engineer Annex will only contain information which is not included in the main Operation Order.
E203A	Engineer Report	ENGREP	To disseminate information relating to task progress and unit combat effectiveness from brigade level up to corps level.	
E204A	Engineer Unit Status Report	ENGRDATAREP	To disseminate effective unit and asset details from brigade to corps level.	The message is designed to provide detailed information about the number of effective units by type, generic equipment types in terms of availability, and committed and uncommitted major items of materiel.
E140A	General Engineer Support Recce Order	ENGGSSRECCEORD	See previous page	See previous page
E140B	General	ENGGSSRECCEREP		

	Engineer Support Recce Report			
E140C	General Engineer Support Execution Order	ENGGSORD		
E140D	General Engineer Support Completion Report	ENGGSREP		

Message Number	TITLE	SHORT TITLE	PURPOSE OF MESSAGE	USAGE OF MESSAGE
ENGINEER RELATED ALL-ARMS MESSAGES				
E301A	Scatterable Minefield Request	SCATMINREQ	To disseminate information relating to friendly scatterable mine activity.	This all-arms message is suitable as a Level 1 and 2 message ¹ . It may be used for requesting, ordering, warning, reporting and recording scatterable minefield missions.
E301B	Scatterable Minefield Order	SCATMINORD		
E301C	Scatterable Minefield Warning	SCATMINWARN		
E301D	Scatterable Minefield Report	SCATMINREP		
E301E	Scatterable Minefield Record	SCATMINREC		
E302A	Reserved Demolition Order	DMLORD	To disseminate information relating to the execution of a reserved demolition	This all-arms message is based exactly on STANAG 2017. Most nations already have their own versions of STANAG 2017 on pre-printed forms. Although existing forms can still be used, this format has been designed for eventual use in an automatic system. Note that reconnaissance for the reserved demolition is carried out by engineers using the E121 group of messages. The demolition completion report is completed by the demolition firing party commander using message E121D (BRDMLREP).

¹ Level 1: below Bde level. Level 2: Bde to Corps level.

E303A	Obstacle Report	OBSREP	To allow All Arms to report obstacles encountered	This all-arms message is for use at unit level to report the encountering of obstacles. This report is passed up to formation level where the impact of the obstacle on future intentions is assessed. If in a vital area engineer reconnaissance will be tasked, reporting back using the following messages: E112 - Gap Crossing Messages E113 - Minefield Breaching and Clearing Messages E120 - Obstacle Messages
E304A	Resources Intelligence Report	ENGRRESREP	To disseminate resources related information	This all-arms message is for use at unit level, normally by reconnaissance units. The identification of resources which may be of future use frequently forms part of intelligence collection plans. Reports should be passed up the G2 chain.
E305A	Friendly Obstacle List (Barrier Report)	BARREP	To disseminate information on friendly obstacles from formation to unit level	This all-arms message enables formation HQs to pass information on current and planned obstacles in the own force barrier plan, down to unit level.
E306A	Intent to Lay Minefield Report	INTTOLAY	To disseminate information relating to a tactical commander's intent to lay a minefield.	This all-arms message normally, but not exclusively, relates to protective minefields.
E307A	Engineer Spot Report	ENGRSPOTREP	The purpose of this message is to supplement the information in the last ENGRSITREP, less information on barriers and main obstacles. It should include any events that are of sufficient operational importance that they demand transmission outside of the normal reporting cycle.	This all-arms message is for use to report any incidents or events of particular engineer interest such as: the destruction of vital targets; the destruction or capture of important targets; damage to Main Supply Routes (MSRs); closure or opening of a bridge or road; mine/UXO accident or incident; arrival of reinforcing engineer units

				and significant shortages of resources such as manpower or bridging. Engineer reconnaissance may be tasked as a result.
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Message Number	TITLE	SHORT TITLE	PURPOSE OF MESSAGE	USAGE OF MESSAGE
ENGINEER MESSAGES ABOVE CORPS LEVEL (LEVEL 3)				
E401A	Engineer Situation Report	ENGRSITREP	To report the status of the engineer force structure, engineer operations planned and in progress, as well as the engineer logistic status above Corps level.	The ENGRSITREP has been developed to allow Component Commander's (CC) Headquarters to give the CJ Chief Engr a broad overview of the status of the engineer force structure, engineer operations planned and in progress, as well as the engineer logistics. The message is sent in accordance with timings laid down in SOPs. This message may be used below CC HQ.

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ANNEX B Engineer Structured Messages (SM) List Summary

This list gives an overview of the engineer messages in the SM-format for which the MILENG WG is the operational sponsor. The actual messages can be found in this publication except for the OBSREP which is in ATP-105.

MESSAGE GROUP	TITLE	SHORT TITLE	PURPOSE OF MESSAGE	USAGE OF MESSAGE
ENGINEER SITUATION REPORTS	Engineer Situation Report	ENGRSITREP	To report the status of the engineer force structure, engineer operations planned and in progress and engineer logistic status above Corps level	The ENGRSITREP has been developed to allow Component Commander's (CC) Headquarters to give the CJ Chief Engr a broad overview of the status of the engineer force structure, engineer operations planned and in progress, as well as the engineer logistics. The message is sent in accordance with timings laid down in SOPs. This message may be used below CC HQ.
	Engineer Task Status Report	ENGRTASKREP	The ENGTASKREP is used to report the progress on task reconnaissance or task execution.	This report is always related to an assigned task serial number and only allows for one task to be reported on. The recipient of the message is expected to be aware of the task details.
ENGINEER RESOURCES REPORTS	Engineer Materiel Request/Release Message	ENGRMATREQREL	To standardise the method for disseminating information relating to the request and release of engineer materiel	This message is principally for use at engineer battalion and below.
	Engineer Resources	ENGRRESREP	Provide the means for disseminating resources	This all-arms message is for use at unit level, normally by

	Report		related information.	reconnaissance units. The identification of resources which may be of future use frequently forms part of intelligence collections plans. Reports should be passed up the G2 chain.
ENGINEER CAPABILITY REPORTS	Engineer Data Report	ENGRDATAREP	The ENGRDATAREP is used to pass effective engineer unit and asset details to the higher echelon, most commonly from brigade to corps level.	This message provides detailed information about the number of effective units by type, generic equipment types in terms of availability and committed and uncommitted major items of materiel.
ENGINEER RECONNAISSANCE REPORTS	Bridge Demolition Reconnaissance Report	BRDMLRECCEREP	The BRDMLRECCEREP is used to report the results of a bridge demolition reconnaissance by friendly forces.	The BRDMLRECCEREP is used to report the recce of preliminary and reserved demolitions. Bridge demolition completion reports are to use the ENGRTASKREP message.
	Gap Recce Report	GAPRECCEREP	The GAPRECCEREP is used to disseminate the information relating to the reconnaissance of a gap crossing site.	This message is used at battalion level and below and follows after the reception of an order to execute a gap reconnaissance.
	General Engineering Support Reconnaissance Report	ENGRGSRECCEREP	The ENGRGSRECCEREP is used to report the execution of a reconnaissance of a General Engineer support task, or tasks which do not fall under the category of mobility, counter-mobility or survivability.	General Engineers support messages are particularly suited for use in peace support operations in overseas theatres. Mostly these messages will be used from Brigade to Corps-level.
	Minefield Breaching	MINCLRRECCEREP	This report is used to report a reconnaissance of a future	This report will be used below brigade level, within engineer units.

ENGINEER RECONNAISSANCE REPORTS	Clearing Reconnaissance Report		deliberate minefield breaching or clearing by friendly forces and will follow after receipt of an order to execute this reconnaissance.	
	Obstacle Reconnaissance Report	OBSRECCEREP	The purpose of this message is to report the reconnaissance of a friendly or enemy obstacles and future friendly obstacles.	This message is a general recce report which covers all types of obstacles. The message should not be used to report the recce of friendly bridge demolitions, friendly minelaying operations and breaching or clearing minefields.
	Road, Bridge and Tunnel Reconnaissance Report	RBTRECCEREP	The RBTRECCEREP is used to report a technical reconnaissance of a bridge, road or tunnel that is awaiting repair, construction, maintenance or just needs to be assessed. This report will follow after reception of an order to conduct such a Recce.	Trigger for the execution of such Recce's will be the selection of a route based on the ROUTERECCEREP. This report is used below brigade level, within engineer units.
	Route Reconnaissance Report	ROUTECCEREP	Provide means for disseminating information relating to the reporting of route reconnaissance tasks at battalion level and below	This message will be used in reaction to receipt of a Route Reconnaissance Order from Corps or Divisional HQ
	Survivability Reconnaissance Report	SURRECCEREP	This message is intended to report on a reconnaissance of a survivability task and will follow after receipt of an order to execute a survivability task reconnaissance.	This can be used for the recce of all survivability and protection tasks. Survivability tasks include digging, revetment, camouflage, hardening of buildings and deception.

ENGINEER RECONNAISSANCE REPORTS				
MINEFIELD/ SCATTERABLE MINE ACTIVITY REPORTS	Minefield Laying Reconnaissance Report	MINLAYRECCEREP	Used to report the results of a mine laying reconnaissance by friendly forces. For clarification: minefield is already laid.	This report will be filled in after reception of a Minefield Laying Recce Order and execution of the Recce.
	Scatterable Minefield Message	SCATMINMES	The purpose of this group of messages is to provide a format for disseminating information relating to friendly scatterable mine activity	Message designed to report the status of friendly scatterable mine activity across all echelons of forces. It may be used for requesting, ordering, warning, reporting and recording scatterable minefield missions.
BARRIER AND OBSTACLE ACTIVITIES	Barrier Report	BARREP	The purpose of this message is to provide the means of disseminating information on friendly obstacles from formation to unit level.	This all-arms message enables formation HQs to pass information on current and planned obstacles in the own force barrier plan, down to unit level.
	Reserved Demolition Order	DMLORD	The DMLORD message is used to disseminate information relating to the execution of a reserved demolition.	This all-arms message is based exactly on STANAG 2017. Most nations already have their own versions of STANAG 2017 on pre-printed forms. Although existing forms can still be used, this format has been designed for digital use. Note that reconnaissance for the reserved demolition is carried out by engineers using the BRDMLRECCEREP. The

				demolition completion report is completed by the demolition firing party commander using the ENGTASKREP.
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Engineer Structured Messages (ATP-105)		
TITLE	SHORT TITLE	PURPOSE OF MESSAGE
Obstacle Report	OBSREP	The OBSREP is an all arms report used to provide information on obstacles, both current and planned, natural, enemy or friendly built.

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ANNEX C Related STANAGs and other documents

1. Engineer Procedures

- a. Several engineer procedures have been standardised in STANAGs and these STANAGs sometimes contain standardized MRR which are specific to that engineer procedure and which are not part of STANAG 2430. In the table below, you can find an overview of the different STANAGs and the reports within these:

STANAG	TITLE	MRR
2017	Orders to the Demolition Guard Commander and Demolition Firing Party Commander (Non-Nuclear).	<ul style="list-style-type: none"> • DEMOLITION ORDER • Sample Receipt for Obstacle Handover/Takeover
2036	Land Mine Laying, Marking, Recording and Reporting Procedures.	MINEFIELD RECORD
2237	Obstacle Numbering	No MRR
2395	Deliberate Water Crossing Procedures	No MRR
2485	Countermine Operations in Land Warfare	MINE CLEARANCE RECORD
2989	Transfer of Barriers	No MRR, only check-lists and aids <ul style="list-style-type: none"> • Transfer Procedure Check List • Hand-Over Aid

- b. Accurate documentation and adherence to the agreed procedures are essential.

2. Other Publications

Other related STANAGs which are significant on the battlefield and linked to reporting are:

- a. ATP-45 (STANAG 2103) Warning and Reporting and Hazard Prediction of Chemical, Biological, Radiological and Nuclear Incidents (Operators Manual)
- b. AEODP-06 (STANAG 2221): Explosive Ordnance Disposal (EOD) Reports and Messages

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ANNEX D	Graphic presentation of particular information on roads and road structures
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The overprinted maps or overlays, at a scale of 1:250,000 or larger, will include:

- a. The Road Formula for each Sector of Road. To be overprinted along the alignment of the road. Specifications for the establishment of the road formula are given in Chapter 1 of this Annex.
- b. Bridge Symbols. As described in Chapter 2 of this Annex.
- c. Road Tunnel, Road Ferry and Ford Symbols. As described in Chapter 3 of this Annex.
- d. Other Road Characteristics. To be given by means of the symbols shown in Chapter 4 of this Annex.

CHAPTER 1 - ROAD FORMULA

1. The road formula expresses in the form of a combination of letters and figures the important characteristics of a section of road.
2. Characteristics are expressed in the following order:
 - a. Limiting factors.
 - b. Width of travelled way/overall width including shoulders.
 - c. Construction materials.
 - d. Length (not required when used on a map or overlay).
 - e. Obstructions if applicable.
3. The symbols used are as follows:
 - a. Limiting factors:
 - i. Letter A indicates that there are no limiting factors.
 - ii. Letter B indicates that there are one or more limiting factors. Letters to indicate what these are should be added as follows:

LIMITING FACTOR	EXPLANATION	SYMBOL
Sharp Curves	Sharp curves with radius less than 25 metres (measured from the middle of the road) and deflecting the direction more than 90 degrees (some slowing of convoy traffic). Curves with radius less than 25 metres and deflecting the direction more than 90 degrees will in addition be indicated as obstructions as required in paragraph 3.e. <u>Note:</u> In addition, the radius of all curves less than 45 metres will be shown in the appropriate symbol.	c
Steep Gradients	Steep gradients, 7 in 100 and above (some slowing of convoy traffic). Gradients in excess of 7 in 100 and excessive changes in gradients will, in addition, be indicated as obstructions as required in paragraph 3.e. <u>Note:</u> In addition, gradients will be classified in the following categories: 5-7 %, 7-10 %, 10-14 % and over 14 %.	g

Poor Drainage	Inadequate ditches, crown/camber, or culverts, culverts and ditches blocked or otherwise in poor condition.	d
Weak Foundation	Unstable, loose or easily displaced material.	f
Rough Surface	Bumpy, rutted or potholed to an extent likely to reduce convoy speeds.	s
Excessive Camber or Super-elevation	Falling away so sharply as to cause heavy vehicles to skid or drag towards the roadside.	j

- b. Width. The width of the road is expressed in metres by two figures separated by a stroke/slash, the former indicating the width of the travelled way, the latter the total width (travelled way and shoulders). Shoulders should only be shown when they are normally usable, or usable in an emergency. Where a dual carriage way road exists, the carriage ways being separated by only a fixed barrier, grass verge, or pavement, the width of each travelled way will be indicated together with the total width (travelled ways and shoulders), e.g. 10 + 12/88. If the carriage ways diverge they will be treated as two separate roads.

- c. Construction Materials. The following table shows the symbols to be used for representing road construction materials (columns 1 and 2). In addition column 3 gives the relation between the road construction material and the type of route as defined in AMovP-1, paragraph 402.3.

SYMBOL	MATERIAL	NORMAL ROAD TYPE
k	Concrete	Type (X): generally heavy duty
kb	Bituminous or asphaltic concrete. (bituminous plant mix)	Type (X): generally heavy duty
p	Paving brick or stone	Type (X) or Type (Y) generally heavy duty
pb	Bituminous surface on paving brick or stone	Type (X) or Type (Y) generally heavy duty
rb	Bitumen penetrated macadam, water-bound macadam with superficial asphalt or tar cover.	Type (X) or Type (Y) generally medium duty
r	Water-bound macadam, crushed rock	Type (Y): generally light duty
l	Gravel or lightly metalled	Type (Y): generally light duty
nb	Bituminous surface treatment on natural earth stabilized soil, sandclay or other select material	Type (Y) or (Z): generally light duty.
n	Natural earth, stabilized soil, sandclay, shell, cinders, disintegrated granite or other select material.	Type (Z): generally light duty.
v	Various other types not mentioned above (it is recommended that length be shown when this symbol is used).	To be classified X, Y or Z depending on the type of material used.

In addition to the symbols shown above, the symbol 'b' (bituminous surface) may be used alone when the type of bituminous construction cannot be determined.

- d. Length. The length of the section of the road is expressed in kilometres. The abbreviation 'km' for kilometres is used. The length of the section of the road may be shown in brackets at the end of the formula if desired.

e. Obstructions:

- i. Where obstructions which affect the traffic capacity occur along the road, the basic formula should be followed by (Ob). The nature and location of obstructions are not shown in the formula but are shown by means of symbols on maps or overlays (see Chapter 4 of this Annex).
- ii. The following will be considered as obstructions to be indicated by (Ob) in the road formula. Details of the obstruction and location will be indicated by symbols in accordance with Chapter 4.
 1. A. Overhead obstructions less than 4.30 metres overhead clearance, such as tunnels, bridges, overhead wires and overhanging buildings. Overhead clearance is the least distance between the travelled way surface and any obstruction vertically above it. When a vertical clearance permits single line traffic of greater than the minimum height defined above, this should be shown.

B. In areas where the standard overhead clearance is other than 4.30 metres this other figure is to be specified.
 2. Reductions in road widths which reduce the traffic capacity (see AMovP-1).
 3. Excessive gradients (7 in 100 and above) and excessive changes in gradients.
 4. Curves which probably cannot be negotiated by heavy vehicles with trailers (radius less than 25 metres and deflecting the direction more than 90 degrees).
- iii. Where snow blockage on a road is regular, recurrent and serious, the road formula will be followed by 'T'. Where flooding of a road is regular and sufficiently serious to impede traffic flow, the basic formula will be followed by '(W)'.

4. Examples. The following four examples of road formulae illustrate the use of, and the correct order in which symbols for the factors appear in the formula:

a. A 5.0/6.2 k

This describes a concrete road, 5.0 metres wide travelled way, 6.2 metres wide including shoulders, with no limiting factors.

b. Bgs 4/5 I (Ob)

This describes a gravel or lightly metalled road, 4 m wide travelled way, 5 m wide with shoulders, with steep gradients and rough surface and obstruction(s).

c. Bc (f ?) 3.2/4.8 p (4.3 km) (Ob) T

This describes a paving brick or stone road, 3.2 metres wide, 4.8 metres with shoulder with sharp curves and unknown foundation, 4.3 kilometres long, subject to snow blockage.

d. A 7 + 7/20 k

This describes a dual carriage way road. Each carriage way being 7 metres wide and with an overall width of 20 metres including shoulders. Concrete construction and no limiting factors.

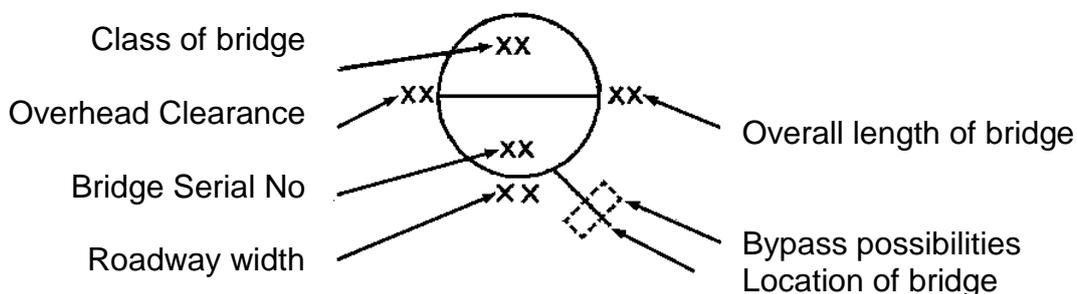
CHAPTER 2 – BRIDGE SYMBOLS

1. The following elements of bridge information will be given on overprinted maps or overlays:
 - a. Serial number of the bridge.
 - b. Location.
 - c. Military load classification.
 - d. Overall length.
 - e. Roadway width.
 - f. Overhead clearance.
 - g. Bridge bypasses.

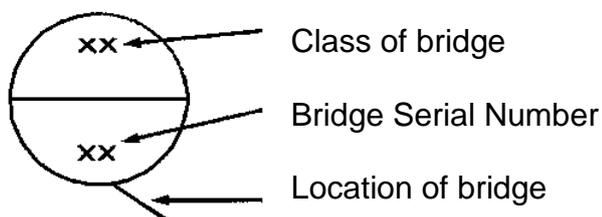
2. These elements will be recorded in the form of a bridge symbol. If the scale of the base map precludes the use of the full symbol an abbreviated bridge symbol may be used.

3. Bridge Symbol. The bridge symbol will be made up as follows:

a. Full symbol

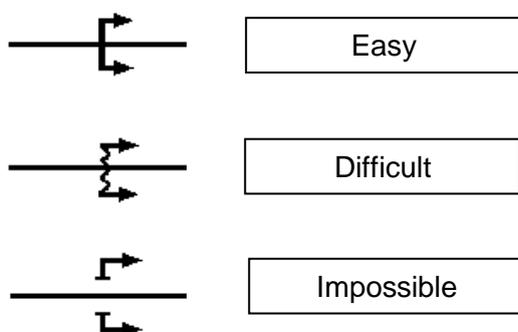


b. Abbreviated symbol



NOTES:

- A. Serial number of the bridge. Serial numbers are assigned in accordance with STANAG 2251 but must not be duplicated in an area covered by one map sheet. Reference must be made to the map sheet number and the bridge serial number when identifying a bridge.
- B. Military Load Classification. The military load classification of the bridge is determined in accordance with the provisions of STANAG 2021. In the case of two-way bridges, or in those instances where bridge classification indicates the need for a separate classification for the bridge for wheeled and tracked vehicles, the bridge classification will include the information prescribed for bridge markers in STANAG 2010. In the case of using abbreviated bridge-symbols, the class of the bridge must be underlined if road-way width or/and overhead clearance is/are less than the minimum required for the class of the bridge, as shown in STANAG 2021.
- C. Overall Length. The overall length of the bridge (the distance between the extreme points of the structure at the end walls/dams on the abutments measured along the bridge centre-line) is expressed in metres.
- D. Roadway Width. The minimum roadway width of travelled way (the clear distance between curbs/kerbs) is expressed in metres. Any roadway width less than the minimum required for the class of the bridge, as shown in STANAG 2021 will be underlined.
- E. Overhead Clearance. Overhead clearance (the least distance between the roadway surface and any obstruction vertically above it) is expressed in metres. Any overhead clearance less than the minimum required for the class of bridge, as shown in STANAG 2021, will be underlined. Unlimited overhead clearance will be indicated by the symbol "00".
- F. Bridge Bypasses. A bridge bypass is an alternative crossing within the immediate vicinity of a bridge site which does not require the construction of a new bridge or repair to the original bridge. Bridge bypasses are classified as "easy", "difficult" or "impossible". These conditions will be recorded in accordance with the symbols shown below:



The following paragraphs describe a set of conditions which may be used in classifying bridge bypasses:

a. Bypass **Easy**

The obstacle can be crossed within the immediate vicinity of the bridge by US 2.5 T truck (or NATO equivalent) without work to improve the bypass.

b. Bypass **Difficult**

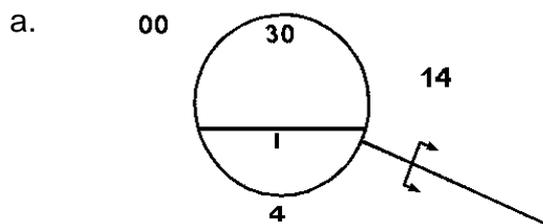
The obstacle can be crossed within the immediate vicinity of the bridge but some work will be necessary to prepare the bypass.

c. Bypass **Impossible**

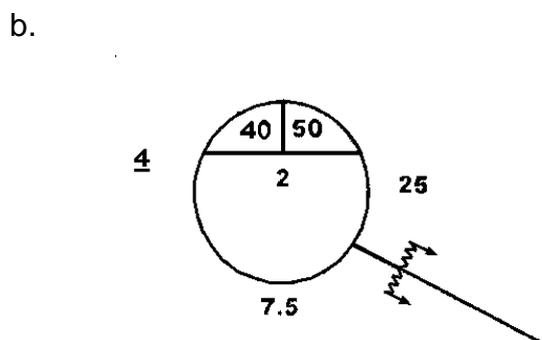
The obstacle can only be crossed by one of the following methods:

- a. Repair to existing bridge.
- b. Construction of a new bridge.
- c. Bridge detour. A bridge detour is an alternative route which crosses the obstacle some distance from the original site. It will normally follow existing roads.

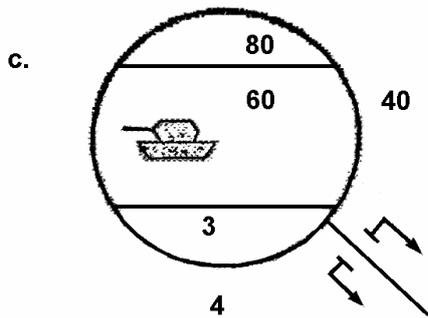
G. Examples:



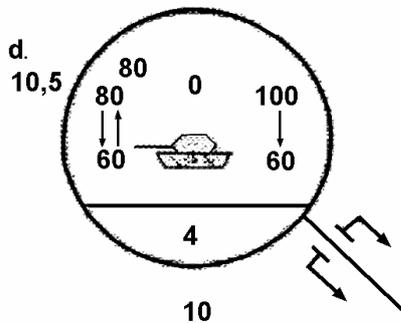
This symbol denotes a one-way bridge, Class 30, assigned Serial No. 1, with overall length of 14 metres, roadway width of 4 metres, unlimited overhead clearance and easy bypass conditions.



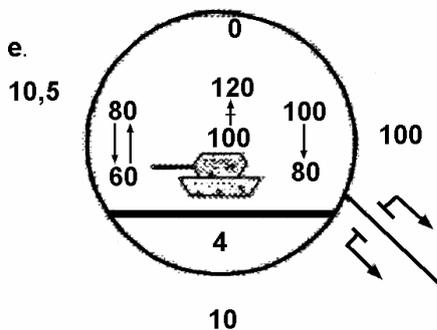
This symbol denotes a two-way bridge, Class 40 two way and Class 50 one way, assigned Serial No. 2 with overall length of 25 metres, roadway width of 7.5 metres, overhead clearance 4 metres and difficult bypass conditions. The overhead clearance of 4 metres is restrictive in this case (see STANAG 2021) and the dimension is, therefore, underlined.



This symbol denotes a one-way bridge assigned Serial No. 3 which is Class 80 for wheeled vehicles and Class 60 for tracked vehicles, with overall length of 40 metres, roadway width of 4 metres, overhead clearance unknown and impossible by-pass conditions. The roadway width of 4 metres is restrictive in this case (see STANAG 2021) and the dimension is, therefore, underlined.



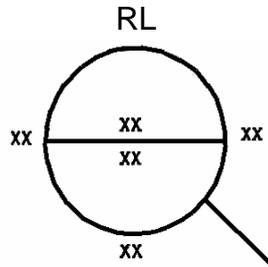
This symbol denotes a two-way bridge assigned Serial No. 4, which is Class 80 two way and Class 100 one way for wheeled vehicles, Class 60 two way and Class 80 one way for tracked vehicles, with overall length 100 metres, roadway width of 10 metres overhead clearance 10.5 metres and impossible by-pass conditions.



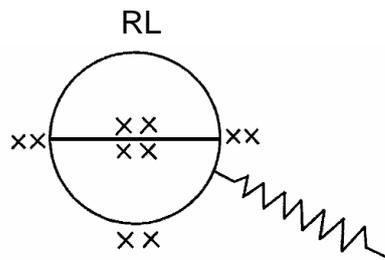
This symbol denotes a two-way bridge assigned Serial No. 4, which is Class 80 two way and Class 100 one way for wheeled vehicles. Class 60 two way and Class 80 one way for tracked vehicles and with a single vehicle one way maximum loading of Class 120 for wheeled vehicles and Class 100 for tracked vehicles. With overall length of 100 metres, roadway width of 10 metres, overhead clearance of 10.5 metres and impossible by-pass conditions. The alignment for single vehicles, one-way, maximum loading will either be displayed on a board at the bridge site or shown in the bridge list prepared for engineer officers.

H. Railway Bridges. Railway bridges which could in an emergency be used by road vehicles will be indicated using the following symbols.

- a. Use Easy. The work necessary to adapt the bridge for use by road vehicles would take less than four hours for 35 men with appropriate equipment.



- b. Use Difficult. The work necessary to adapt the bridge for use by road vehicles would take MORE than four hours for 35 men with appropriate equipment, but would take less than the building of a military bridge at this point.



CHAPTER 3 – ROAD TUNNELS, ROAD FERRIES AND FORDS

1. The following elements of information on tunnels, ferries and fords will be given on overprinted maps or overlays.

a. Road Tunnels

- i. Serial number
- ii. Location
- iii. Length
- iv. Width (including sidewalks if any)
- v. Overhead clearance
- vi. Bypass possibilities
- vii. Horizontal clearance

b. Road Ferries

- i. Serial number
- ii. Location
- iii. Type
- iv. Military load classification of the deck
- v. Dead weight capacity of each craft
- vi. Turn round time
- vii. Easy or difficult approach
- viii. Alternative prepared ferry sites

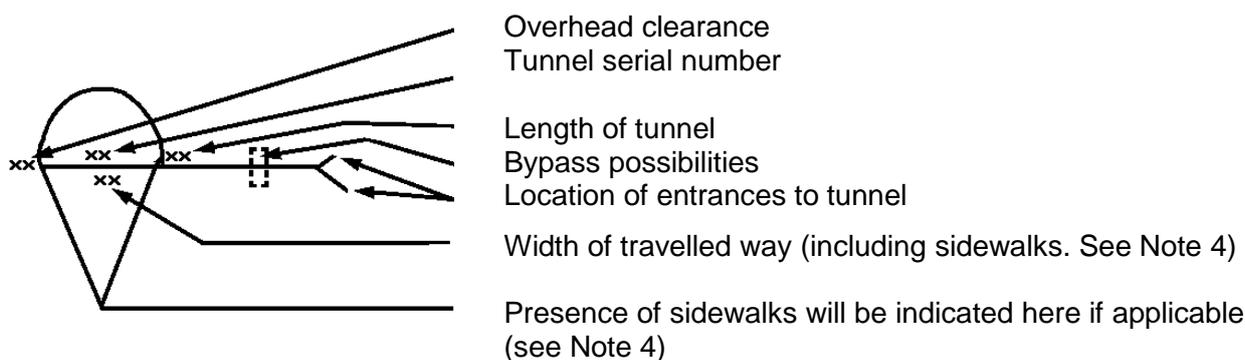
c. Fords

- i. Serial number
- ii. Location
- iii. Type
- iv. Length of crossing (in metres)
- v. Width of ford
- vi. Nature of bottom
- vii. Normal depth of water
- viii. Normal velocity of stream
- ix. Seasonal limiting factors
- x. Easy or difficult approaches

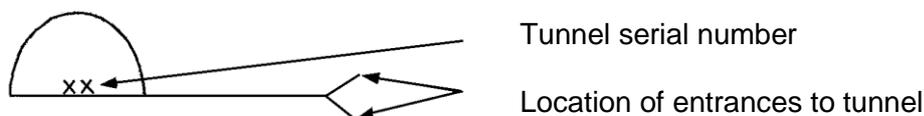
2. Symbols. The following symbols will be used to indicate the elements of information mentioned above. If the scale of the base map precludes the use of the full symbol an abbreviated symbol may be used.

a. Tunnels

i. Full symbol



ii. Abbreviated symbol

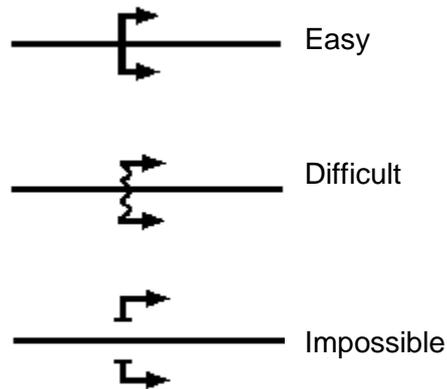


NOTES:

- A. Serial Number. Serial numbers are arbitrarily assigned, but must not be duplicated in an area covered by one map sheet. Reference must be made to the map sheet number and the tunnel serial number when identifying a tunnel.
- B. Location of entrance. For long tunnels, - more than 1 cm in scale of the map, - the line from the symbol will indicate both entrances.
- C. Length. Expressed in metres.
- D. Width. Expressed in metres. When there are sidewalks these will be indicated in the symbol as shown below and the width of the travelled way should be followed by "/" and the overall width including sidewalks.

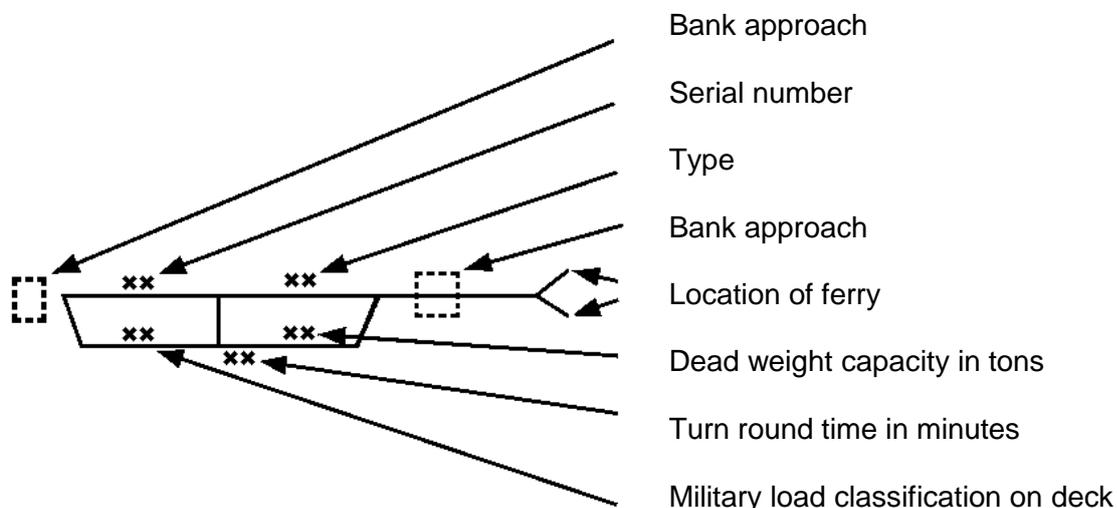


- E. Overhead clearance. Expressed in metres and indicating the minimum clear height over the road surface measured vertically from the extremities of the carriage way. When overhead clearance will permit, single line traffic of greater than the minimum height defined above, this should be shown, after the minimum value: e.g.3/4.2.
- F. Bypass possibilities. Bypass possibilities are expressed as easy, difficult or impossible. These expressions have the same meaning as that defined in Annex B, Appendix 2, paragraph 3, Note 6. They are recorded in accordance with the following symbols.

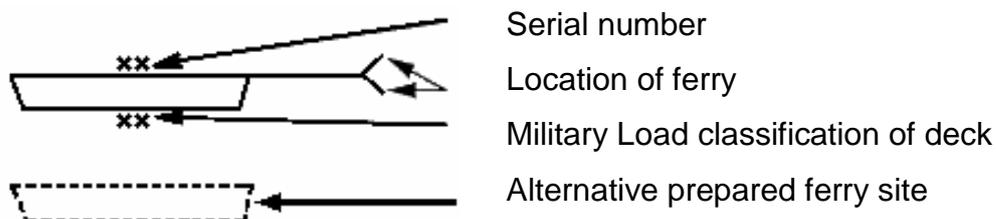


b. Ferries

i. Full symbol



ii. Abbreviated symbol

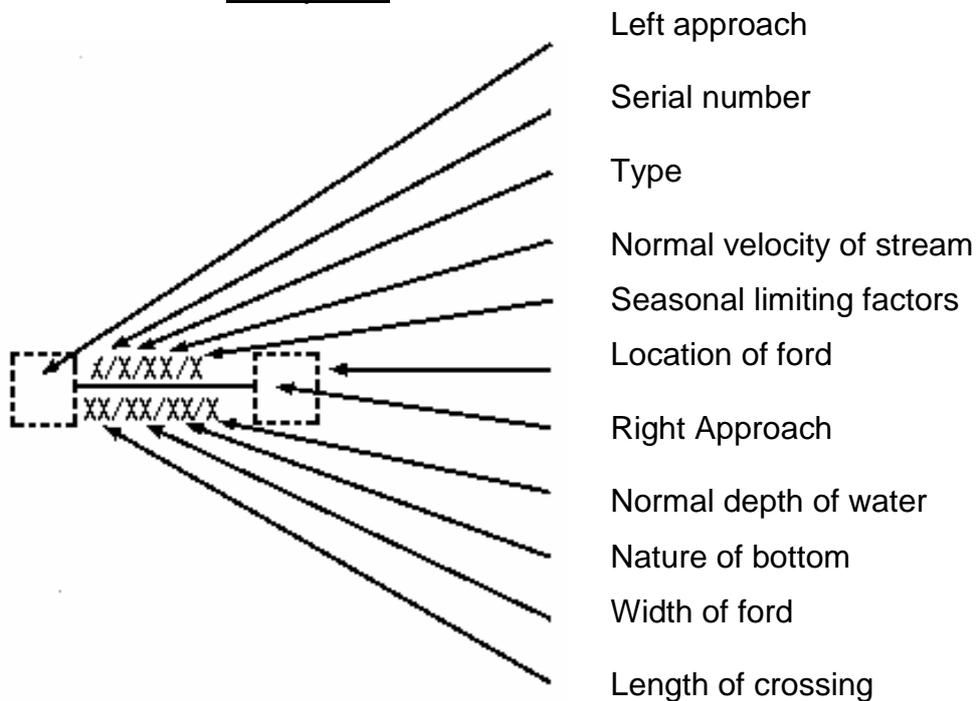


NOTES:

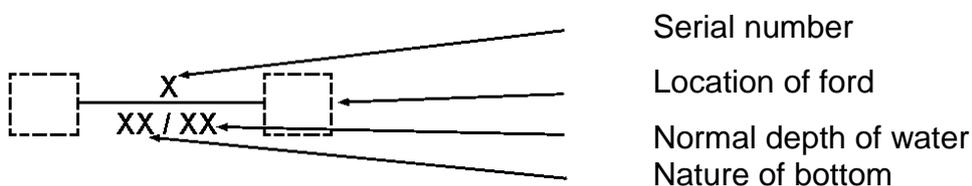
- A. Serial number. (As at A. above).
- B. Type. V - Vehicle Ferry.
P - Pedestrian Ferry.
- C. Military load classification. Determined in accordance with STANAG 2021.
- D. Approaches. No symbol is added if approaches are easy. Difficult approaches are indicated by the symbol  on appropriate side or sides of the ferry symbol.

c. Fords

i. Full symbol



ii. Abbreviated symbol



NOTES:

A. Serial number (As at A. above)

B. Type V - Vehicle Ford.
 P - Pedestrian Ford.

C. Nature of bottom. Shown by one of the following letters:

- M = Mud
- C = Clay
- S = Sand
- G = Gravel
- R = Rock
- P = Artificial Paving

D. Seasonal limiting factors. Shown by the letter:

X = without seasonal limitations (except for sudden flooding of very limited duration), or

Y = with seasonal limitation.

E. Approaches. As at D. above.

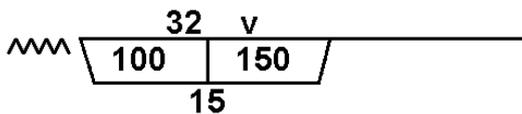
3. Examples

a.



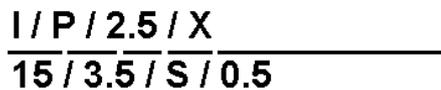
Road tunnel allotted serial number 21, 600 metres long, 5 metres wide travelled way with sidewalks making a total width of 9 metres, clearance over travelled way a minimum of 4 metres. Bypass impossible.

b.



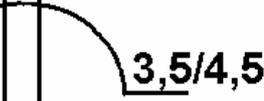
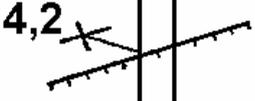
A vehicle ferry allotted serial number 32, with class 100 deck, a dead weight capacity of 150short tons, turn round time 15 minutes, difficult, left approach.

c.



A pedestrian ford allotted serial number 1, normal velocity of stream 2.5 metres per second. Without seasonal limitations, length of crossing 15 metres, 3.5 metres wide with sandy bottom normal depth of water 0.5 metres with easy approaches on both sides.

CHAPTER 4 – SYMBOLS FOR ROAD CHARACTERISTICS

<p>1. Sharp curve (figure indicates radius in metres) (see Note a.).</p>	<p>15 </p>
<p>2. Series of sharp curves (the figure to the right indicates the minimum radius of curves, that to the left the number of curves)</p>	<p>7/15 </p>
<p>3. Steep grade (arrows point uphill)(grade in percent) (length of arrow may show length of grade when scale allows)(see Note b.).</p>	<p>5-7%  7-10%  10-14%  > 14% </p>
<p>4. Constriction (the figure to the left indicates the width of the constriction; that to the right the total constricted length, both dimensions in metres).</p>	<p>4   120</p>
<p>5. Arch constriction (width to the left, overhead clearance to the right, in metres; both minimum and maximum overhead clearances, if different, will be given).</p>	<p>4   3,5/4,5</p>
<p>6. Underpass constriction (width to the left, height to the right, in metres).</p>	<p>5   4</p>
<p>7. Level crossing, the figure indicates height of the power line (if any) above the ground.</p>	<p>4,2 </p>

8. Cover (road lined with tress) (deciduous(left) - evergreen (right))	0 0 0 0	Λ Λ Λ Λ
9. Cover (woods) (deciduous (left) - evergreen (right)).	0 0 0 0 0 0 0 0 0 0 0 0 0	ΛΛΛ ΛΛ ΛΛΛ ΛΛ ΛΛΛ
10. Possibility of driving off road. The symbol may be amplified, if applicable, as follows:		
a. wheeled vehicles.	← 400 ← ○	
b. tracked vehicles (the figure indicates the length in metres of the stretch of road where driving off is possible).	400 ← □	
c. a length of road exceeding 1km where driving off is possible.	← ○ ← ○	
11. Critical point (to be numbered and described in a table or text).	◁ 3	
12. Limits of sector (having the same road formula).	∨ ∨	
NOTE: a. In addition the radius of all curves less than 45 metres will be shown in the appropriate symbol. b. In addition gradients will be classified in the following categories: 5-7%, 7-10%, 10-14% and over 14%.		

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ANNEX E Presentation of Tables
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CHAPTER 1 – BRIDGE INFORMATION TABLE

The following should be recorded:

- a. Serial number
- b. Location
- c. Horizontal clearance
- d. Under bridge clearance
- e. Number of spans
- f. Type of span construction and movement
- g. Material of span construction
- h. Span length and condition
- i. Military Load Classification, two-way traffic
- j. Military Load Classification, one-way traffic
- k. Military Load Classification, single vehicle, one-way, maximum load
- l. Overall length
- m. Roadway width
- n. Overhead clearance
- o. Bridge bypasses
- p. Remarks

STANAG 2021 gives more information and an example of the table with related notes.

CHAPTER 2 – ROAD TUNNEL INFORMATION TABLE

The following should be recorded:

- a. Serial Number
- b. Location
- c. Type
- d. Length
- e. Width (including sidewalks if any)
- f. Overhead clearance
- g. Bypass possibilities
- h. Alignment
- i. Gradient
- j. Cross section
- k. Remarks

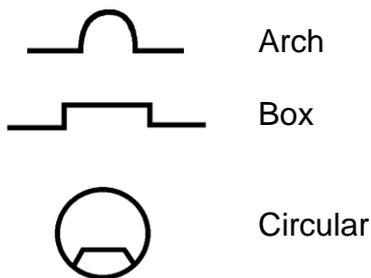
An example of the Road Tunnel Information Table and how it should be completed can be found here below.

Serial Number	Location	Type	Length	Width (including side walks if any)	Overhead Clearance	Bypass Possibilities	Alignment	Gradient	Cross Section	Remarks
a	b	c	d	e	f	g	h	i	j	k
5	AB 124678/127673	Natural	575	7/10	7/8.3	Difficult	Curved 300	2%	Ω	-

Notes on completion of table

- A. All dimensions to be given in metres
- B. Columns should be completed as follows:
 - a. Serial Number. Serial numbers are arbitrarily assigned, but must not be duplicated in an area covered by one map sheet. Reference must be made to the map sheet number and the tunnel serial number when identifying a tunnel.
 - b. Location. Military Grid Co-ordinates of the entrances and exits to the tunnel.

- c. Type. Tunnels will be defined as “Natural“ or “Artificial“. Natural tunnels consist of galleries dug into the ground. Artificial tunnels consist of cuttings conveniently covered.
- d. Length. From Portal to Portal.
- e. Width of the travelled way. The dimension should be followed by a stroke and a figure showing the total width when there is a side walk(s). The dimension of any travelled way less than that of the road outside should be underlined.
- f. Overhead clearance. The figure should indicate the minimum clear height above the road surface measured vertically from the extremities of the carriage way. In addition, a figure indicating the overhead clearance above central line should be shown, if different: e.g. 7/8.5
- g. Bypass Possibilities. Specify “Easy“, “Difficult“ or “Impossible“. These terms are defined in Annex D, Chapter 2, Note F.
- h. Alignment. State whether “straight“ or “curved“. If curved minimum
 - i. radius of curves will be given.
- j. Gradient. The value is to be shown as a percentage. If varying the gradient for each section should be given.
- k. Cross Section will be indicated as follows:



Others as appropriate.

- l. Remarks. Any other relevant information.

CHAPTER 3 – ROAD FERRY INFORMATION TABLE

The following should be recorded:

- a. Serial Number
- b. Location
- c. Type
- d. Number of craft
- e. Dead weight capacity of each craft
- f. Military load classification of the ramp and deck
- g. Exploitable length and width of the deck of the craft
- h. Average Length of crossing
- i. Average Turn round time
- j. Normal velocity of the stream and seasonal variations
- k. Easy or difficult approaches
- l. Alternative prepared ferry sites
- m. Remarks

Serial Number	Location	Type	Number of craft	Dead weight capacity of each craft	Military load classification of the ramp and deck	Exploitable length and width of the deck of the craft	Length of crossing	Turn round time	Normal velocity of the stream and seasonal variations	Easy or difficult approaches	Alternative prepared ferry sites	Remarks
a	b	c	d	e	f	g	h	i	j	k	l	m
3	CD 678456	V	2	150	60	30 x 8	250	15	2/3 March	Easy	-	-

Notes on completion of table

- A. Dimensions will be in metres and tons (short or long as appropriate). Times will be in minutes.
- B. Columns will be completed as follows. Those not mentioned are self-explanatory.
- a. Serial Number. See Chapter 2, Note B.a.
 - b. Location. Military grid co-ordinates of terminals.
 - c. Type
Vehicle ferries indicated by: - "V"
Pedestrian ferries indicated by: - "P"
 - d. Military Load Classification of Ramps and Deck.
Classification will be in accordance with STANAG 2021.
 - e. Normal Velocity of Stream and Seasonal Variations. In metres per second. Normal velocity will be given first followed by the maximum velocity that is expected and the month(s) in which maxima are most likely to occur.
 - f. Easy or Difficult Approaches. "Easy" or "Difficult" approaches will be indicated. The words will be given twice, the first referring to the left bank and the second to the right.
 - g. Alternative Prepared Sites. Grid co-ordinates of alternative prepared site(s) at which the ferry can operate.
 - h. Remarks. Other relevant information.

CHAPTER 4 – FORD INFORMATION TABLE

The following should be recorded:

- a. Serial Number
- b. Location
- c. Type
- d. Length of crossing
- e. Width of ford
- f. Normal depth of water
- g. Approaches
- h. Normal velocity of stream
- i. Seasonal limiting factors

To be used only when the abbreviated symbol is employed.

**ANNEX F Guidance for Military Geographic Information (MGI) on Roads
and Road Structures**

The following subjects are given as guidance for the production of MGI.

1. General Information:
 - a. Organization and Administration. National organization for the control and administration of roads.
 - b. Standards and Specifications. National standards and specifications for various types of roads and road structures; typical cross section dimensions; horizontal and vertical alignments; characteristics of road surfaces.
 - c. Construction, Maintenance and Repairs. Construction organization; special construction practices; availability of construction and maintenance material, equipment, labour etc.
2. Nature and Details of Obstacles Crossed by Road
3. Further Details of Bridges:
 - a. Abutments:
 - (1) Foundations
 - (2) Type and material of construction
 - (3) Bearing areas
 - b. Intermediate Supports:
 - (1) Foundation conditions
 - (2) Type and material of construction
 - (3) Bearing areas
 - (4) Height above ground or mean water level
 - (5) Horizontal clearance between supports at ground or mean water level
 - (6) Special design features i.e. ice breakers, etc.
 - (7) Critical dimensions needed for demolition and strength calculations

c. Bridge Structure:

- (1) Detailed description of type and material of construction to include:
 - (a) Wearing surface.
 - (b) Deck or flooring.
 - (c) Supporting members.
- (2) Critical dimensions (where applicable):
 - (a) Thickness of wearing surface.
 - (b) Thickness of flooring, deck or depth of fill at crown.
 - (c) Number, depth, and centre to centre distance of T-Beams or stringers.
 - (d) Thickness of web of I-Beams, Widened Flange Beam, Channels, or Rails.
 - (e) Depth of plate girders.
 - (f) Number, thickness and width of flange plates.
 - (g) Depth width and thickness of flange angle.
 - (h) Depth and thickness of web plate.
 - (i) Average thickness of flange.
 - (j) Thickness of arch ring.
 - (k) Rise of arch.
 - (l) Sag of cable.
 - (m) Number and diameter of each size of cable.
- (3) Engines and machinery, if any (for swing, lift, bascule, and retractile bridges).
- (4) Supply, utility or communication lines support by bridges.
- (5) Civilian load classes (System of classification to be specified).
- (6) Date of construction.
- (7) Critical dimensions needed for demolition and strength calculations.

d. Demolition Information:

- (1) Description of the nature of the demolition procedure planned to be used on the bridge including the expected effect.
- (2) Description of any prior preparations already completed.
- (3) Estimate of time, labour and material required to complete the demolition.

e. Sketches:

- (1) May, if possible, be used to show any information previously listed.
- (2) Should, if possible, include detailed engineer drawings of the bridge.
- (3) As a minimum should at least include dimensioned sketches as follows:
 - (a) Side elevation showing the general features of the bridges including the number of spans, piers and abutments and their type and material of construction; location of unusual features, such as damage or deteriorated parts; and a cross section of the crossing or obstacle.
 - (b) A cross section of the critical span (the span with the least load carrying capacity) showing sufficient details of construction to permit computation of its classification and of maintenance, reinforcement and destruction requirements.
 - (c) Cross sections of critical members showing sufficient dimensions to permit calculations of their strength.
 - (d) A site plan showing location of bridges; alignment of the bridge relative to approaches and obstacle crossed; location of unusual features such as damage or obstructions; the classification, dimensions and gradient of the approaches; the direction of flow of the stream, if any; and sufficient topographic detail to trace waterways and routes of possible fords.

- f. Photographs:
 - (1) Both ground and aerial are desirable.
 - (2) Minimum should include:
 - (a) Side view
 - (b) View from bridge roadway
 - (c) View of underside of deck from below

- g. Alternative Crossing Sites:
 - (1) Approaches
 - (2) Nature of crossing, i.e. ford, floating bridge, earth fill, etc.
 - (3) Estimates of time, labour and materials to make alternative crossing

- 4. Further Details of Tunnels:
 - a. Inside covering material
 - b. Nature and conditions of the travelled way and conditions of the tunnel
 - c. Overhead cover (height and nature of cover)
 - d. Ventilation (natural or mechanical)
 - e. Description of drainage system
 - f. Illumination
 - g. Enlargements (internal passing lanes, maintenance chambers etc)
 - h. Demolition chambers
 - i. Warnings and emergency equipment (alarm sirens, telephone booths, exit or escape shafts etc)
 - j. Others

5. Further Details of Ferries:

- a. Method of propulsion, fuel and personnel used to operate the craft
- b. Present condition of craft
- c. Vehicle capacity of each craft (state type of vehicle)
- d. Type and conditions of approach ramps
- e. Berthing aids
- f. Details of dolphins, gins and piles near ferry site providing slack water
- g. Prepared demolition chambers in approaches
- h. Others

6. Further Details of Fords:

- a. Factors restricting use of the ford (depth of water speed of current etc).
- b. Aids to crossing (ropes, markers etc
- c. Aquatic vegetation
- d. Others

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