ROUTE RECONNAISSANCE

Distances will be expressed in **metric** dimensions on at reports

Critical Features

The following features must be considered:

- Road width slopes, and curves.
- Bridges fords, tunnels ferries, underpasses, swim sites, and other traffic restricting features.
- Obstacles and NBC contaminated areas
- Slide areas
- Drainage
- Other natural and man made features, such as wooded, built up, and possible dispersion areas

Classification

See Table 5-1 and Figure 5-1

Table 5-1. Route widths

FLOW POSSIBILITIES	WIDTH FOR WHEELED VEHICLES	WIDTH FOR TRACKED VEHICLES
Isolated vehicles of appropriate width only and in one direction only	At least 3 5M (11.5 ft)	At least 4M (13 ft)
Generally one way only: no overtaking or passing in opposite direction	3 5M to 5 5M (11 5 ft to 18 ft)	4M to 6M (13 ft to 19.5 ft)
Single flow	5 5M to 7 3M (18 ft to 24 ft)	6M to 8M (19.5 ft to 26 ft)
Double flow	Over 7 3M (24 ft)	Over 8M (26 ft)

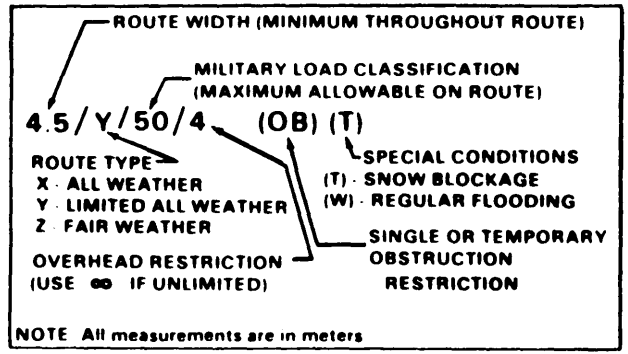


Figure 5-1. Route classification formula

Slopes and Radius Computation

See Figures 5-2 and 5-3 (page 5-2)

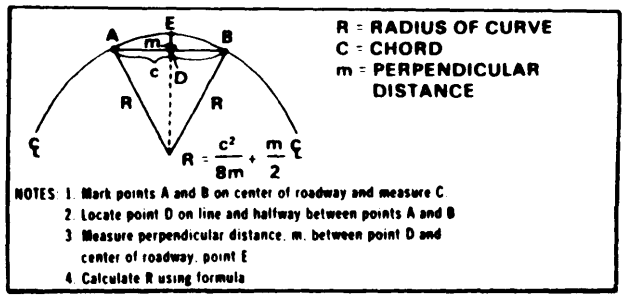


Figure 5-2. Radius of curvature calculation

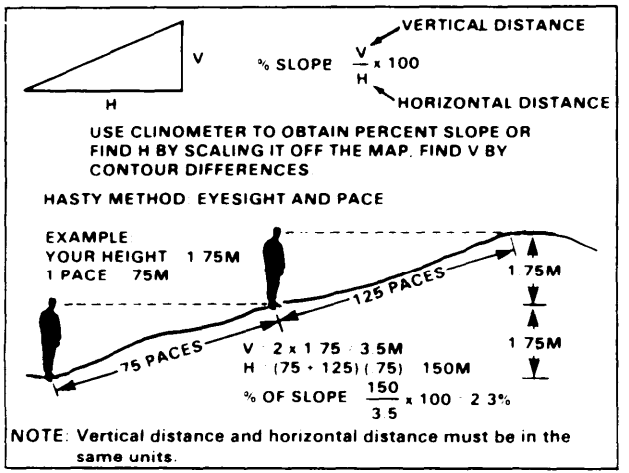


Figure 5-3. Slope computation (road gradient)

Obstruction (OB)

The obstructions are any factors which restrict type, amount, or sped of traffic flow. Whenever (OB) appears in the route formula, the exact nature must be shown on the overlay. The most common obstruction are—

- Overhead clearance less than 4.3 meters (14 feet).
- Width below minimum standard prescribed for the type of traffic in Table 5-1.
- Slopes of 7 percent or greater and curves with 25-meter (82 foot) radius or less (Refer to the end of this chapter for overlay symbols and details).
- Fords ferries and all tunnels that do not meet the criteria in Table 5-1 or the minimum overhead clearance is less than 4.3 meters (14 feet).

Report and Overlay

The report consists of an overlay specific features reconnaissance reports (bridge, ford, or road), and any other supplementary overlays reports, or sketches to support the route report. Figure 5-4 shows an example of a route reconnaissance overlay. (Refer to the end of this chapter for the appropriate symbols used on the overlay.)

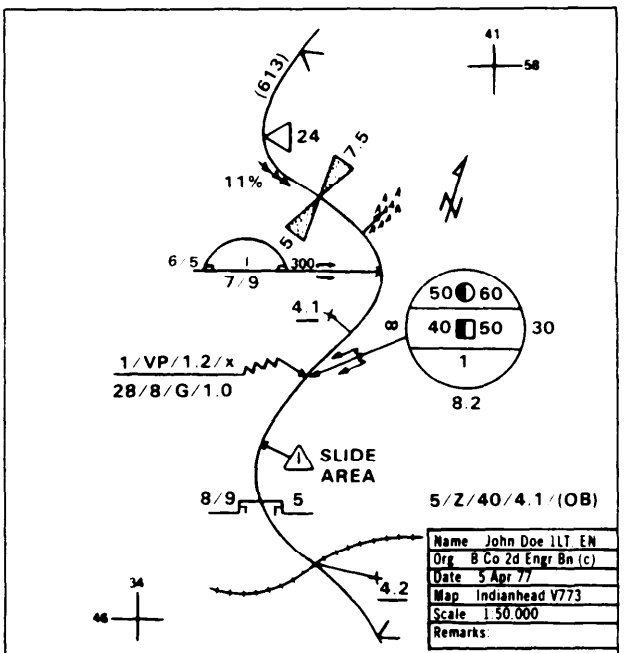


Figure 5-4. Route reconnaissance overlay

ROAD RECONNAISSANCE

Classification

Road classification is expressed in a standardized sequence prefix (A - no limiting characteristics or B some limiting characteristics), limiting characteristics (Table 5.2), traveled way width/traveled way plus shoulder width road surface material (Table 5.3), road length enclosed in parentheses, obstructions, and special conditions (Figure 5-1).

Table 5-2. Road limiting characteristics and symbols

LIMITING CHARACTERISTICS	SYMBOL
Curves (radius 25 meters (82 feet) or less)	c
Gradients (seven percent or greater)	g
Drainage (inadequate ditches, culverts)	d
Foundation (unstable)	f
Surface condition (bumby, rutted, or potholed)	s
Camber or superelevation (excessive crown)	j
Unknown characteristics (used with other above symbols enclosed in parenthesis) Example: (c?) = unknown radius	?

All reports will be submitted in **metric** measurements

Table 5-3. Road surface materials and symbols

SURFACE MATERIAL	SYMBOL
Concrete	k
Bituminous or asphaltic concrete (bituminous plant mix)	kb
Bituminous surface treatment on natural earth, stabilized soil sand-clay, or other select material	nb
Used when type of bituminous construction cannot be determined	b
Bituminous surface on paving brick, or stone	pb
Bitumen-penetrated macadam, water-bound macadam with superficial asphalt or tar cover	rb
Pavement, brick, or stone	p
Water-bound macadam, crushed rock, or coral	r
Gravel	g
Natural earth, stabilized soil, sand-clay, shell, cinders, disintegrated granite, or other select material	n
Various other types not mentioned above (indicate length when this symbol is used)	v

EXAMPLE. Bcgd(f?)s 3.2/4.8 nb (4.3 km) (OB) (T). Road has limits of sharp curves, steep grades, bad drainage, unknown foundation, and rough surface; the traveled way width is 3.2 meters, combined width and shoulders is 4.8 meters. Surface material is bituminous surface treatment on natural earth stabilized soil, sand-clay, or other selected material. The road is 4. 3 kilometers long, contains obstructions, and is subject to snow blockage.

Recording

Road reconnaissance data is recorded on DA Form 1248 (Road Reconnaissance Report) as shown in Figures 5-5 and 5-6

ROAD RECONNAISSANCE REPORT

29 Aug 84

TO: Cdr, ATTN: S-2, 21st Engr Bn

FROM: DOE, JOHN, ILT, Co A 522nd Eng

MAP: Ft Belvoir Special | 1:50,000 | AMS V733 Sheet 5561 IV | 291430E AUG 84

SECTION I - GENERAL ROAD INFORMATION

3. ROAD GRID REFERENCE: FROM UT 122864 TO UT 097999

4. ROAD MARKING (Civilian or Military number of road): Virginia Route 617

5. LENGTH OF ROAD (Miles or kilometers, specify): 16 Km

6. WIDTH OF ROADWAY (Feet or meters, specify): 6.7m to 9.3m

8. WEATHER DURING RECONNAISSANCE (Include last rainfall, if known): FAIR - Temp 79° Last Rainfall - 15 Aug. 84

7. RECONNAISSANCE: DATE 29 Aug 84; TIME 0615

SECTION II - DETAILED ROAD INFORMATION (When circumstances permit more detailed information will be shown in an overlay or on the mileage chart on the reverse side of this form. Standard symbols will be used.)

9. ALINEMENT (Check one ONLY)

- (1) FLAT GRADIENTS AND EASY CURVES
- (2) STEEP GRADIENTS (Excess of 7 in 100)
- (3) SHARP CURVES (Radius less than 100 feet or 30 meters)
- ✓ (4) STEEP GRADIENTS AND SHARP CURVES

10. DRAINAGE (Check one ONLY)

- (1) ADEQUATE DITCHES, CROWN, CAMBER AND ADEQUATE CULVERTS IN GOOD CONDITION
- ✓ (2) INADEQUATE DITCHES, CROWN, CAMBER OR CULVERTS OR CULVERTS OR DITCHES ARE BLOCKED OR OTHER WISE IN POOR CONDITION

11. FOUNDATION (Check one ONLY)

- ✓ (1) STABILIZED COMPACT MATERIAL OF GOOD QUALITY
- (2) UNSTABLE, LOOSE OR EASILY DISPLACED MATERIAL

12. SURFACE DESCRIPTION (Complete Items 12a and b)

a. THE SURFACE IS (Check one ONLY)

- ✓ (1) FREE OF POTHOLES, BUMPS OR RUTS LIKELY TO REDUCE CONVOY SPEED
- (2) BUMPY, RUTTED OR POTHOLED TO AN EXTENT LIKELY TO REDUCE CONVOY SPEED

b. TYPE OF SURFACE (Check one ONLY)

- (1) CONCRETE
- (2) BITUMINOUS (Specify type where known): ✓ Asphalt
- (3) BRICK (Paved)
- (4) STONE (Paved)
- (5) CRUSHED ROCK OR CORAL
- (6) WATERBOUND MACADAM
- (7) GRAVEL
- (8) LIGHTLY METALLED
- (9) NATURAL OR STABILIZED SOIL, SAND, CLAY, SHELL, CINDERS, DISINTEGRATED GRANITE OR OTHER SELECTED MATERIAL
- (10) OTHER (Describe)

SECTION III - OBSTRUCTIONS (List in the columns below particulars of the following obstructions which affect the traffic capacity of a road. If information of any factor cannot be ascertained, insert "NOT KNOWN")

(a) Overhead obstructions, less than [illegible] feet or [illegible] meters, such as tunnels, bridges, overhead wires and overhanging buildings
(b) Reductions in road widths which limit the traffic capacity, such as culverts, narrow bridges, archways, and buildings
(c) Excessive gradients (Above 7 in 100)
(d) Curves less than [illegible] in radius
(e) Fords 82.5m (25mRL)

SERIAL NUMBER a	PARTICULARS b	GRID REFERENCE c	REMARKS d
	Steep Grade - 8%	UT119872	200m long
	Sharp Curve	UT112877	Radius 21m
	Constriction	UT112878	6.7m wide, 300m long
	Constriction	UT105896	7m wide, 100m long
	Built up Area	UT094856	7.3m wide 2000 Long

DA FORM 1248

Figure 5-5 Road reconnaissance report (front)

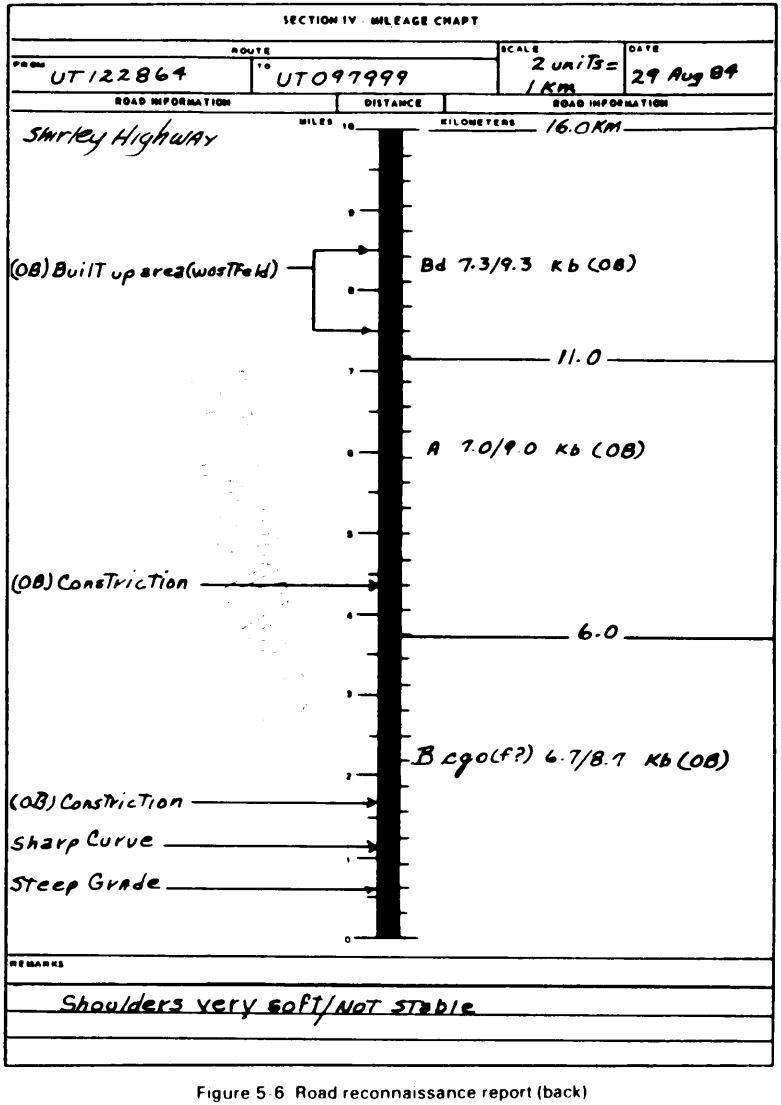


Figure 5-6 Road reconnaissance report (back)

Hasty

To make an immediate crossing use Tables 5-4 and 5-5 to determine a hasty bridge classification When a bridge shows any sign of damage or if a permanent classification is desired, a qualified engineer should determine the allowable load classification using TM 5 312.

Deliberate

In order to accurately classify a bridge or prepare a bridge for demolition a detailed reconnaissance must be accomplished . Use DA Form 1249(Bridge Reconnaissance Report), Table 5-6, and Figures 5-7 through 5-13 to record the needed data. Table 5-6 may be used as a guide for developing a line-number report format for voice or digital transmission of bridge data. The obtained information is used in conjunction with TM 5-312 for classification.

Table 5-5. Minimum bridge criteria

BRIDGE CLASSIFICATION	MINIMUM WIDTH BETWEEN CURBS ONE LANE M (FT)	TWO LANE M (FT)
4-12	2.75 (9)	5.50 (18)
13-30	3.35 (11)	5.50 (18)
31-60	4.00 (13)	7.30 (24)
61-100	4.50 (15)	8.20 (27)
101-150	5.0 (17)	9.8 (32)
	MINIMUM OVERHEAD CLEARANCE M (FT)	
All classes	4.5 (15)	

Table 5-4. Hasty bridge classification

PRIVATE ROAD					STATE OR COUNTY ROAD						US OR INTERSTATE HIGHWAY
PRIME USERS					RESTRICTIONS						
CARS	FARM	TRUCKS			NONE		LOAD WEIGHT	WIDTH		AXLE LOAD	
(4)	(16)	Axles			Bridge Date		MLC= max load limit up to 30 tons	Less than 6 ft	6 ft to 8 ft	8 ft to 10 ft	MLC= Axle Load X 2.5
		2	3	4/5	Pre-1960	Post-1960					
		(20)	(24)	(30)	(30)	(30) (min) Use correlation curves for higher class		(8)	(16)	(24)	

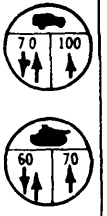


Table 5-6. Dimensions required on the seven basic bridges

DIMENSIONS REQUIRED TO COMPLETE FRONT SIDE OF DA 1249								
NUMBER ON FIGURE	DIMENSION DATA	SIMPLE STRINGER (FIGURE 5-7)	SLAB (FIGURE 5-8)	T-BEAM (FIGURE 5-8)	TRUSs (FIGURE 5-9)	GIRDER (FIGURE 5-10)	ARCH (FIGURE 5-11)	SUSPENSION (FIGURE 5-12)
1	Overall length	x	x	x	x	x	x	x
2	Number of spans	x	x	x	x	x	x	x
2	Length of spans	x	x	x	x	x	x	x
2a	Panel length				x			x
3	Height above streambed	x	x	x	x	x	x	x
3a	Height above estimated normal water level	x	x	x	x	x	x	x
4	Traveled way width	x	x	x	x	x	x	x
5	Overhead clearance				x			x
6	Horizontal clearance	x	x	x	x	x	x	x

THIS TABLE SHOWS THE MEASUREMENTS REQUIRED TO REPORT THE SEVEN BASIC TYPES Of BRIDGES. FIGURES 5-7 THROUGH 5-15 SHOW WHERE TO TAKE THESE MEASUREMENTS.

Table 5-6. Dimensions required on the seven basic bridges (continued)

DIMENSIONS REQUIRED TO COMPLETE BACK OF DA 1249												
LETTER DESIGNATION	CAPACITY [a] DIMENSION DATA	SIMPLE STRINGER (FIGURE 5-7)					SLAB (FIGURE 5-8)	T-BEAM (FIGURE 5-8)	TRUSS (FIGURE 5-9)	GIRDER (FIGURE 5-10)	ARCH (FIGURE 5-11)	SUSPENSION (FIGURE 5-12)
		TIMBER		STEEL								
		RECTANGLE	LOG	I-BEAM	CHANNEL	RAIL						
a	Thickness of wearing surface			x			x	x	x	x	x	x
b	Thickness of flooring, deck, or depth of fill at crown			x			x	x	x	x	x	x
c	Distance, c-to-c, between T-beams, stringers, or floor beams	x	x	x	x	x		x	x	x	x	x
d	Number of T-beams or stringers	x	x	x	x	x		x	x	x		x
e	Depth of each T-beam or stringer	x	(b)	x	x	x		x	x	x		x
f	Width of each T-beam or stringer	x		(c)	(c)	(c)		x	x	x		x
g	Thickness of web of I beams, WF-beams, channels, or rails			x	x	x			x	x		x
h	Sag of cable											x
i	Number of each size of cable											x
j	Thickness of arch ring										x	
k	Rise of arch										x	
l	Diameter of each size of cable											x
m	Depth of plate girder									x		
n	Width of flange plates									x		
o	Thickness of flange plates									x		
p	Number of flange plates									x		
q	Depth of flange angle									x		
r	Width of flange angle									x		
s	Thickness of flange angle									x		
t	Depth of web plate									x		
u	Thickness of web plate									x		
v	Average thickness of flange			x								
w	Depth of cover										x	

The letter "x" indicates that the dimension is required

[a] Capacity is computed by the use of formulas and data outlined in TM 5-312

[b] Diameter

[c] Width of flange

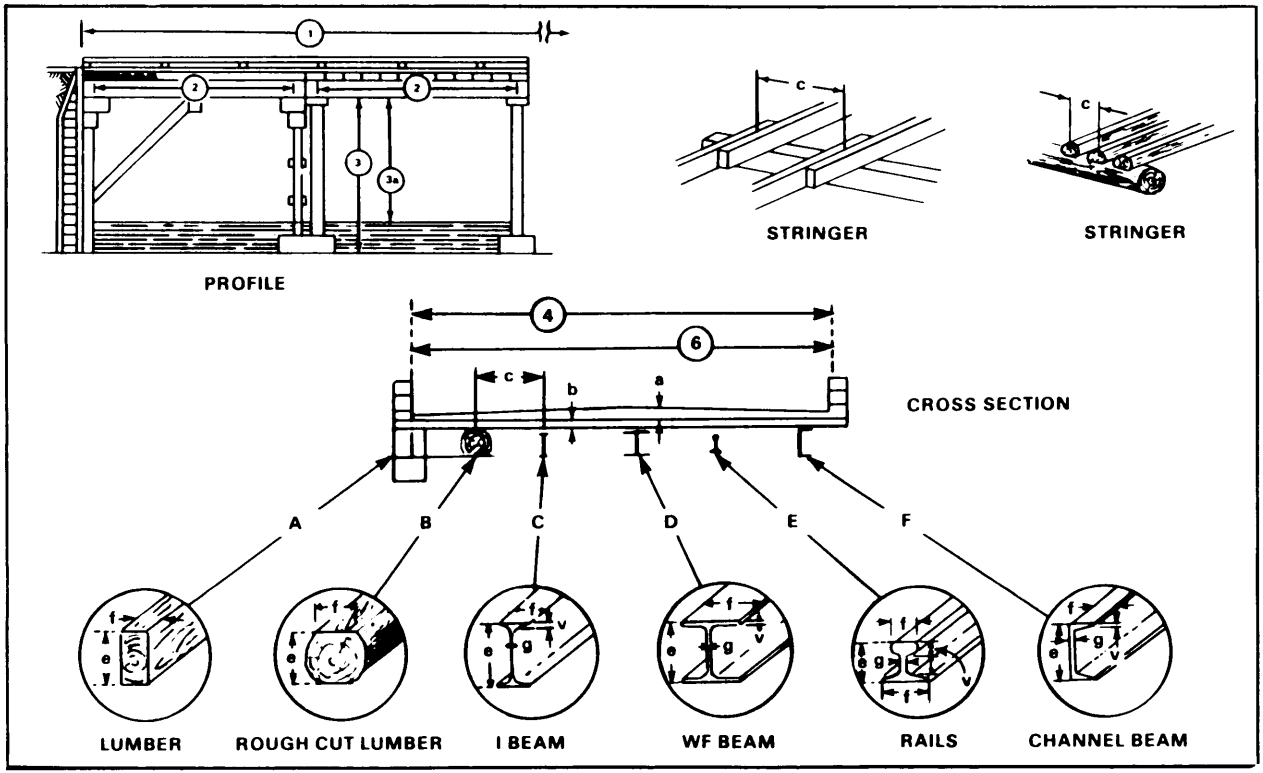


Figure 5-7. Dimensions required to report simple stringer bridges

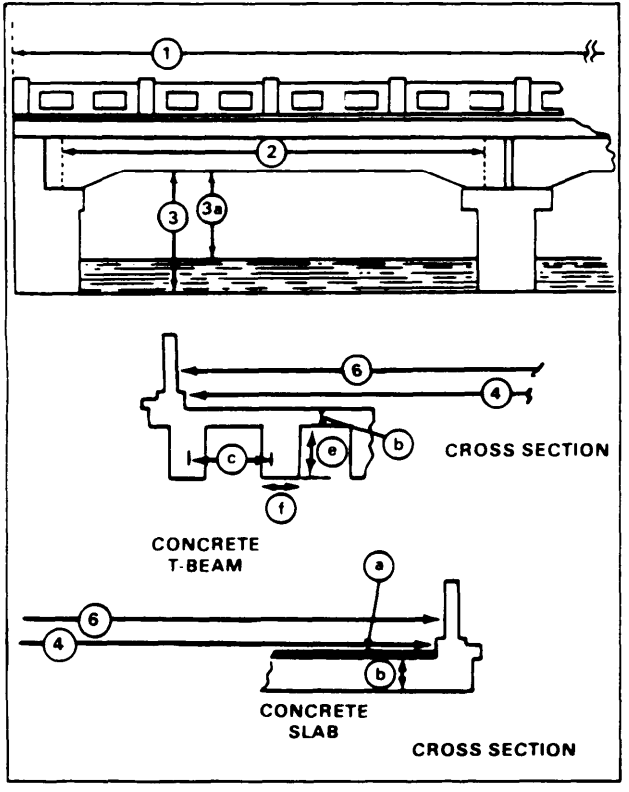


Figure 5-8. Dimensions required to report concrete bridges

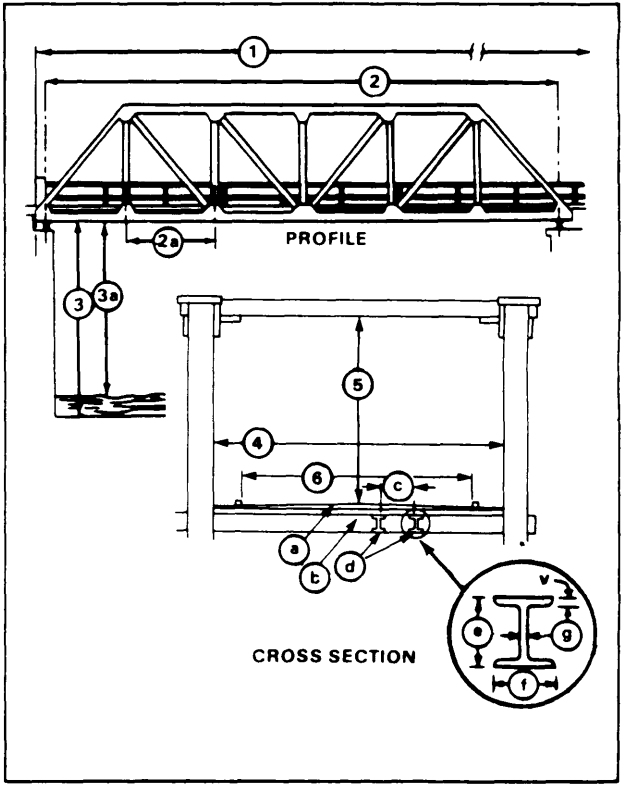


Figure 5-9. Dimensions required to report steel truss bridges

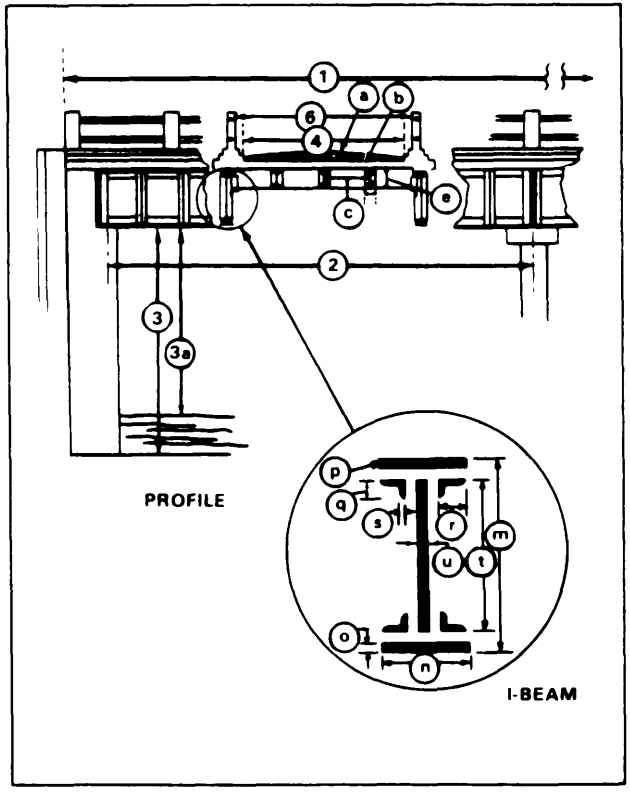


Figure 5-10. Dlmensions required to report plate girder bridges

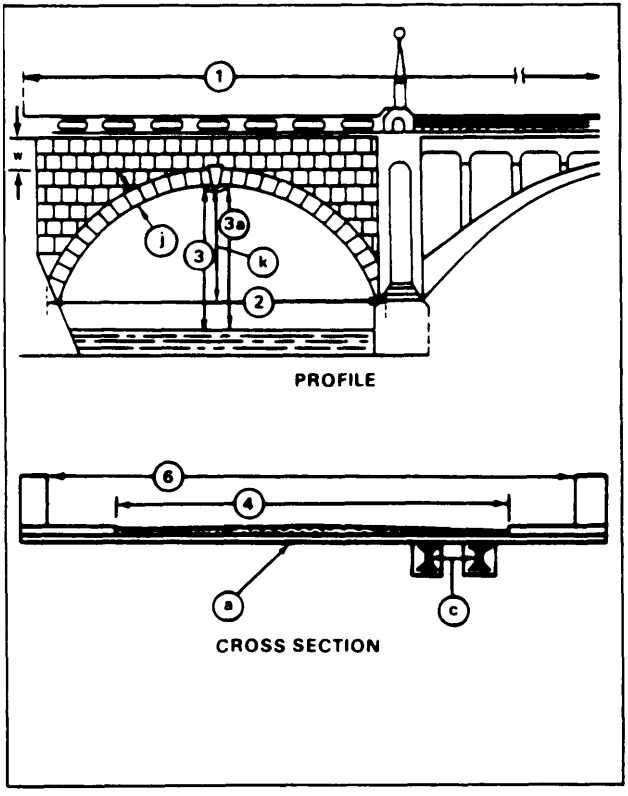


Figure 5-11. Dimensions required to report arch bridges

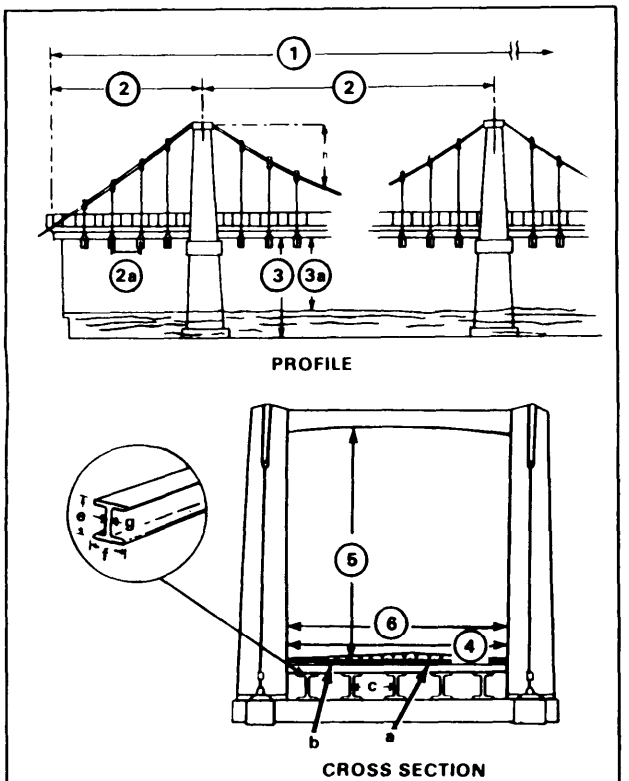


Figure 5-12. Dimensions required to report suspension bridges

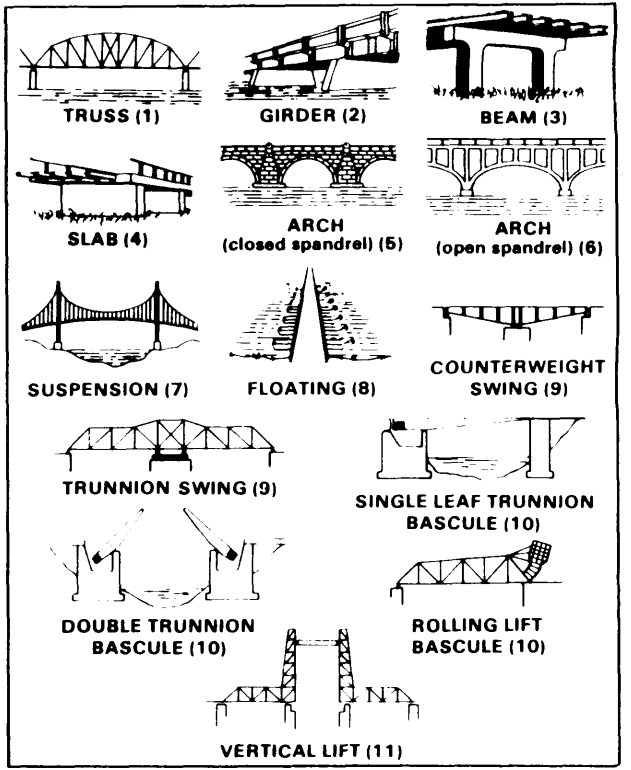
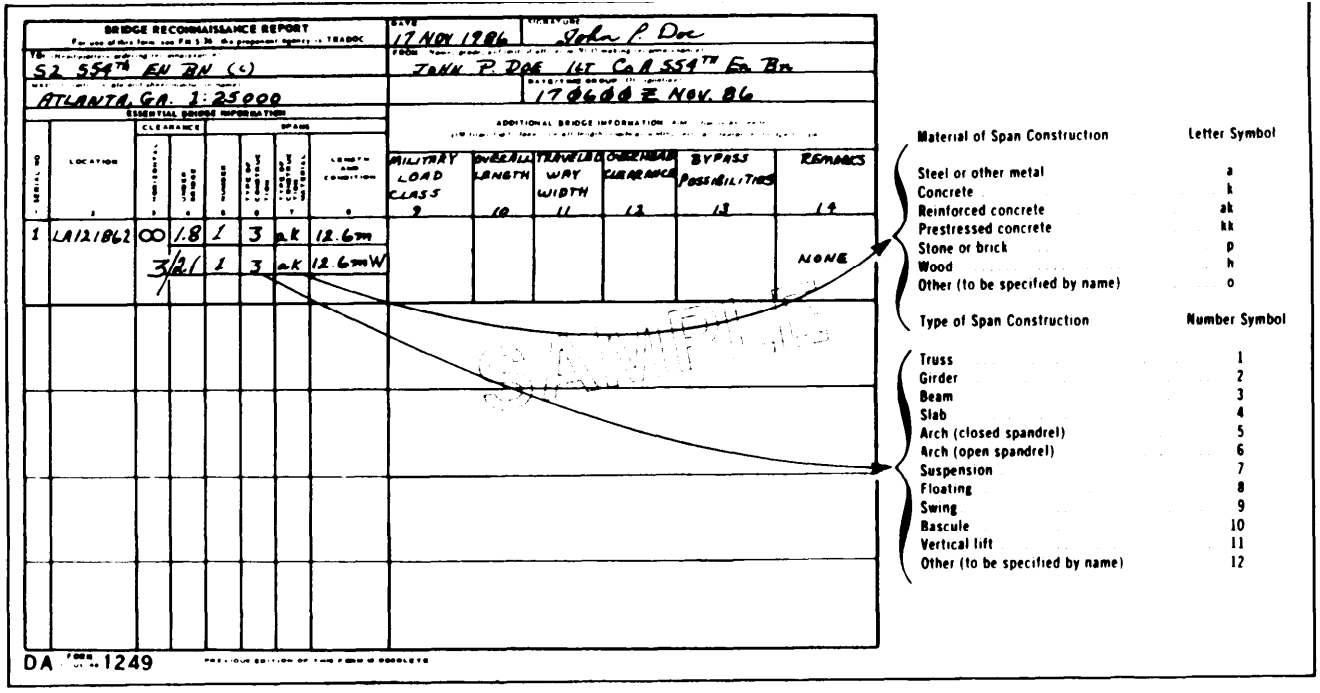


Figure 5-13. Span types and construction material used for completing DA Form 1249

Report

To send bridge reconnaissance information, complete a DA Form 1249 (Figures 5-14 and 5-15, page 5-14). Use Table 5-6 (pages 5-7 and 5-8) to ensure that all requirements are covered.



BRIDGE RECONNAISSANCE REPORT

TO: S2 554TH EN BN (C)

FROM: JOHN P. DOE 1LT CO A 554TH EN BN

DATE: 17 NOV 1986

SURVEYOR: John P. Doe

ATLANTA, GA. 1:25000

DATE/TIME GROUP OF INFORMATION: 17 0600 Z NOV 86

ESSENTIAL BRIDGE INFORMATION

B R I D G E N O.	LOCATION	CLEARANCE: HORIZONTAL	CLEARANCE: VERTICAL	SPANS: NUMBER	SPANS: TYPE OF CONSTRUCTION	SPANS: TYPE OF CONSTRUCTION	SPANS: LENGTH AND CONDITION
1	LA121862	∞	18	1	3	ak	12.6m
		3/21		1	3	ak	12.6mW

ADDITIONAL BRIDGE INFORMATION

MILITARY LOAD CLASS	OVERALL LENGTH	TRAVELED WAY WIDTH	OVERHEAD CLEARANCE	BYPASS POSSIBILITIES	REMARKS
9	10	11	12	13	14
					NONE

DA FORM 1249 PREVIOUS EDITION OF THIS FORM IS OBSOLETE

Material of Span Construction	Letter Symbol
Steel or other metal	a
Concrete	k
Reinforced concrete	ak
Prestressed concrete	kk
Stone or brick	p
Wood	h
Other (to be specified by name)	o

Type of Span Construction	Number Symbol
Truss	1
Girder	2
Beam	3
Slab	4
Arch (closed spandrel)	5
Arch (open spandrel)	6
Suspension	7
Floating	8
Swing	9
Bascule	10
Vertical lift	11
Other (to be specified by name)	12

Figure 5-14. Bridge reconnaissance report (front)

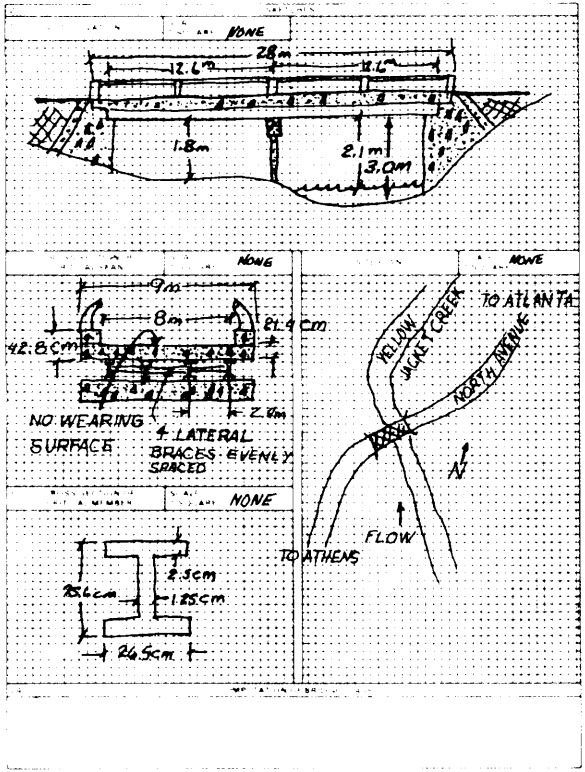
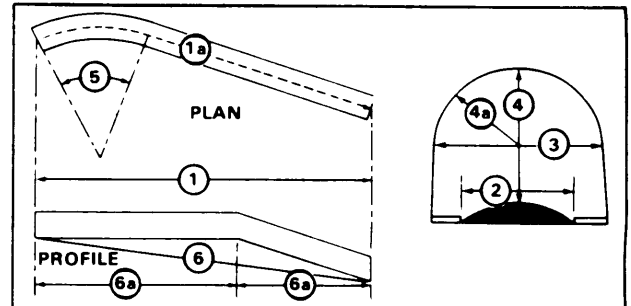


Figure 5-15. Bridge reconnaissance report (back)

TUNNEL RECONNAISSANCE

Refer to Table 5-1 (page 5-1) for roadway width requirements. Overhead clearances less than 43 meters are classified as obstructions. Complete the DA Form 1250 (Tunnel Reconnaissance Report) in accordance with the bridge reconnaissance report. Figure 5-16 shows a typical sketch of a tunnel with minimum required dimensions.



1 Portal-to-portal length of tunnel.
1a Centerline distance of tunnel.
2 Effective width of the traveled way, curb to curb.
3 Horizontal clearance (minimum width of the tunnel bore measured at least 4 feet above the traveled way).
4 Overhead clearance (minimum distance between the top of the traveled way and the lower edge of the tunnel ceiling or any obstruction below the ceiling such as trolley wires or electric light wires).
4a Rise of tunnel arch (radius of curved portion).
5 Radius of curvature of the traveled way either measured or estimated.
6 Gradient (percentage of rise of the traveled way between portals).
6a Change in gradient within the tunnel (percentage of rise each way from break of grade).

Figure 5-16. Typical tunnel sketch with required measurements

WATER-CROSSING RECONNAISSANCE

All water-crossing reconnaissance, such as swim, ford, raft, bridge, and ferry, include the following factors:

Road Network

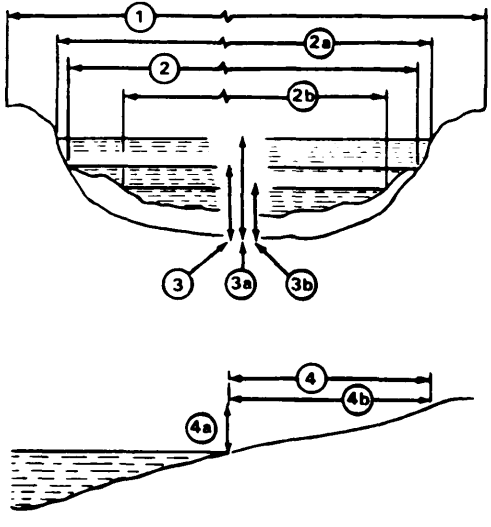
The road network should support the largest vehicles and have good drainage facilities.

Avenues To and From the River

The avenues should be straight for at least 150 meters, have a 10 percent maximum grade, have two lanes with a turnaround, and have all-weather surface whenever possible.

Riverbanks

The riverbanks should have stability, slope, and height as shown in Figure 5-17.



1. The width of streambed from bank to bank.
2. The actual width of the water, measured at normal stage (maximum width 2a and minimum width 2b are estimated, based on local observations or records of high water and low water).
3. The actual depth of the stream at normal water level.

3a. Estimated maximum water depth based on local observations or records.

3b. Estimated minimum water depth based on local observations (watermarks) or records.

4. The slope of the approaches is the slope of the stream banks through which the approach roads are cut.

$$\% \text{ Slope} = \frac{4a}{4b} \times 100$$

4a = Approach elevation.
4b = Approach distance.

Figure 5-17. River or stream measurements

Widths

Measure the widths by using a string or tape across the river scaled off the map, or as shown in Figure 5-18.

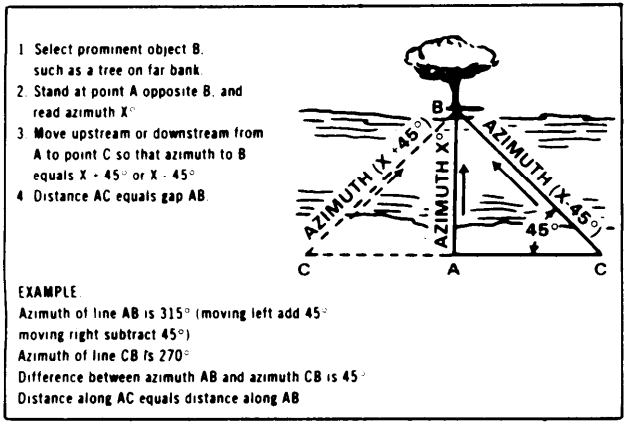


Figure 5-18. Measuring stream width with a compass

Depths

Record the depths every 3 meters by using a measured pole/rod or weighted ropes/strings.

Sites

Assembly areas and other needed areas should be spacious, provide good concealment, and have easy access routes.

Velocity

Measure the velocity by using the procedures in Figure 5-19.

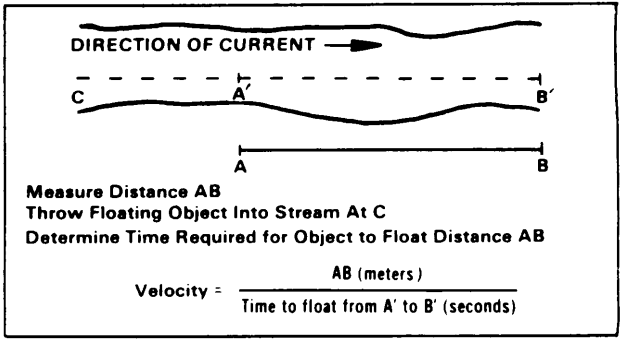


Figure 5-19. Measuring stream velocity

Obstructions

Some obstructions are sandbars, floating debris, and other water obstacles or restrictions.

Drainage

The drainage should be adequate.

Soil Stability

The seal should be adequate for anchoraging. Check the banks and river bottoms for stability.

FORD RECONNAISSANCE

Use Table 5-7 to determine trafficability. When DA Form 1251 (Ford Reconnaissance Report) is used for swim site, it must specify that the site is for swimming only.

Table 5-7. Trafficability of fords

TYPE OF TRAFFIC	SHALLOW FORDABLE DEPTH IN METERS (INCHES)	MINIMUM WIDTH IN METERS	MAXIMUM PERCENT OF SLOPE FOR APPROACHES [1]
Foot	1 (39)	1 (39 in) (single file) 2 (79 in) (columns of 2)	100% 1:1
Trucks and truck-drawn artillery	.75 (30)	3 6 (12 ft)	33% 1:3
Light tanks	1 (39)	4 2 (14 ft)	50% 1:2
Medium tanks [2]	1.05 (42)	4 2 (14 ft)	50% 1:2

[1] Based on hard. dry surface

[2] Depths up to 4.3 meters can be negotiated with deep water fording kit

ENGINEER RECONNAISSANCE

The engineer reconnaissance report consists of a completed DA Form 1711-R (Engineer Reconnaissance Report) and an engineer reconnaissance overlay (Figures 5-20 and 5-21 page 5-18). A reconnaissance checklist is provided in Table 5-8 When looking for water point locations select sites with running water if possible To determine the capacity of the water source in liters per minute use; the following formula:

Q = A x V 48.000

Where Q = Flow in liters per minute

A = Cross section of stream flow in square meters

V = Meters per second

48,000 = Conversion and correction factor

Check the color, odor, turbidity, and taste (do not drink) of water. Report any possible pollution such as human or industrial waste, dead fish, and so forth. Overlay symbols are shown on pages 5-19 through 5-21 and material facility equipment and service symbols are shown in Figure 5-22.

Table 5-8. Engineer reconnaissance checklist

- ☐ **ROADS.** Classify using symbols.
- ☐ **BRIDGES, FORDS, AND FERRIES.** Classify using symbols and include possible bypass for existing crossings.
- ☐ **OBSTACLES TO MOVEMENT.** Report natural and artificial obstacles including demolitions, mines, and booby traps.
- ☐ **TERRAIN.** Report general nature, ridge system, drainage system including fordability, forests, swamps, and areas suitable for mechanized operations.
- ☐ **ENGINEER MATERIALS.** Report road material, bridge timbers, lumber, steel, and explosives.
- ☐ **ENGINEER EQUIPMENT.** Record data on rock crushers, sawmills, garages, machine shops, blacksmith shops, or other facilities or equipment.
- ☐ **ERRORS AND OMISSIONS ON MAPS USED.**
- ☐ **WATER POINTS.** Recommend locations.
- ☐ **BARRIERS TO ENEMY MOVEMENT.** Describe natural, or artificial barriers and sites for construction of improvement (work estimates).
- ☐ **STREAMS.** Give a general description of width, depth, banks, approaches, character of bottom, navigability, and possible ways to cross.
- ☐ **DEFENSIVE POSITIONS.**
- ☐ **BIVOUAC AREAS.** Give data on entrances, soil, drainage, sanitation, and concealment.
- ☐ **PETROLEUM STORAGE AND EQUIPMENT.**
- ☐ **UTILITIES.** Report water, sewage, electricity, and gas utilities available.
- ☐ **PORTS.** Show wharves, sunken obstacles, cargo handling facilities, storage facilities, and transportation routes.
- ☐ **CONSTRUCTION SITES.** Report drainage, water supply, power source, earthwork, access, acreage, and soil conditions.
- ☐ **ANY OTHER INFORMATION OF IMPORTANCE.**

NOTE: Give work estimates as required.

ENGINEER RECONNAISSANCE REPORT | PAGE ONE OF 1 PAGES

TO: BN HQ ATTN S-?

FROM: CO - - ENG BN

FILE NO:

REPORT NO:

PARTY LEADER (Name, Grade, Unit): JOHN DOE, 2LT, CO - - ENGR BN

PLACE, HOLD, DATE: UTØØØØØØØØØ, DATE/TIME GROUP

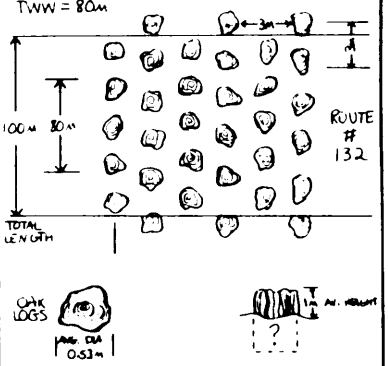
MAPS: MAP NAME, SHEET NUMBER EDITION NO

SCALE: 1:

DELIVER TO (Organization, Place, Hour and Date):

CdR - BN S - ?

KEY	OBJECT	TIME OBSERVED	WORK ESTIMATE	ADDITIONAL REMARKS AND SKETCH
⚠	⨯	ØØØØ	YES	UT ØØØØØØØØ - LOG POST OBSTACLE 59 LOGS @ 1.5 METERS CENTER TO CENTER OF ALL SIDES OBSTACLE NOT DEFENDED, BOOBY TRAP CHECK REVEALED NO BOOBY TRAPS BYPASS: IMPOSSIBLE TWW = 80m



Engineer Work Estimate On Other Side

TYPED NAME, GRADE, ORGANIZATION | SIGNATURE

DA Form 1711-R, May 85

Figure 5-20. Sample engineer reconnaissance report (front)

ENGINEER WORK ESTIMATE

LOCATION KEY	DESCRIPTION OF WORK	UNIT REQ'D	HOURS	EQUIPMENT TYPE	EQUIPMENT NO.	EQUIPMENT HOURS	MATERIALS TYPE	MATERIALS UNIT	MATERIALS QUANTITY
⚠	REMOVE LOG POST FROM ROUTE, 32	1 SQD	2	DEMO SET #1, D-7 DOZER	1	2	TNT	LBS	649
	PLACEMENT OF CHARGES (DUAL FIRING SYSTEM)						D-CORD	FT	1100
							NON ELECT CAP	EA	2
							TIME FUSE	FT	3
							M-2 FUSE LIGHTER	EA	2

D = (.053)(3937) = 20.8 INCHES

$Q = \frac{D^2}{40} = \frac{(20.8)^2}{40} = 10.8$ LBS

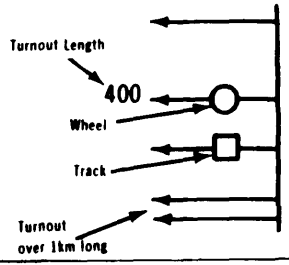
11' LOG = 649

RECONNAISSANCE REPORT ON OTHER SIDE

Figure 5-21. Sample engineer reconnaissance report (back)

OVERLAY SYMBOLS

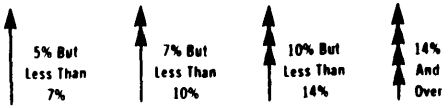
TURNOUTS



Arrows are drawn at location of turnout, pointing to the turnout direction.

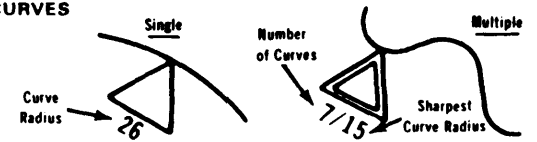
BYPASSES

GRADES



OBSTACLES

CURVES



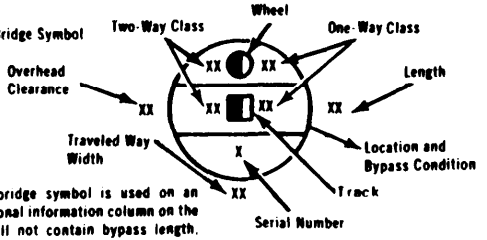
Sharp curve: Any curve with radius of 25 meters or less is an obstruction. All curves with radius less than 45 meters are reportable.

CRITICAL POINT

Number, in order, and describe on DA Form 1711-R.

BRIDGE

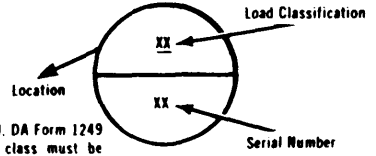
Full NATO Bridge Symbol



When full NATO bridge symbol is used on an overlay, the additional information column on the DA Form 1249 will not contain bypass length, traveled way width, or overhead clearance.

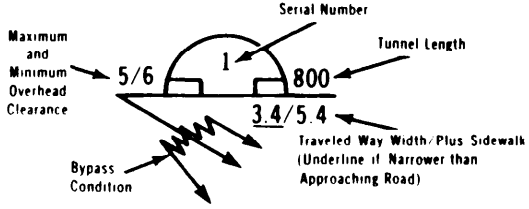
BRIDGE

Abbreviated Bridge Symbol

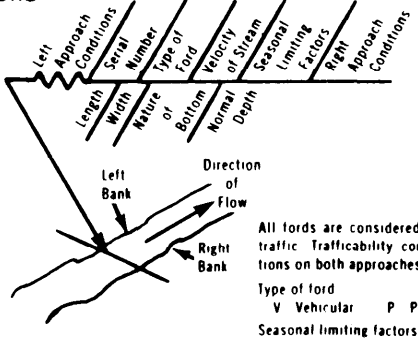


When abbreviated symbol is used, DA Form 1249 must be attached. Bridge load class must be underlined if traveled way width is below the standards on Table 5-5.

TUNNEL



FORD



All fords are considered as obstruction (OB) to traffic. Trafficability conditions indicate conditions on both approaches

Type of ford
V Vehicular P Pedestrian

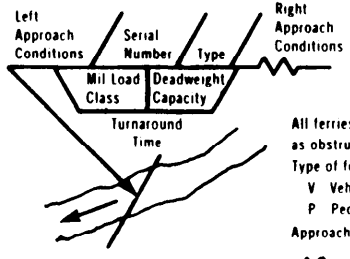
Seasonal limiting factors
X No seasonal limitation except for limited duration after sudden flooding
Y Significant seasonal limitations

Nature of bottom
M Mud C Clay S Sand
G Gravel R Rock P Artificial paving

Approach conditions
Difficult — Easy

NOTE. See Table 5-7 (page 5-17).

FERRY

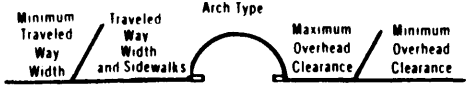


All ferries are considered as obstructions (OB) to traffic

Type of ferry
V Vehicular
P Pedestrian

Approach conditions
Difficult — Easy

UNDERPASS



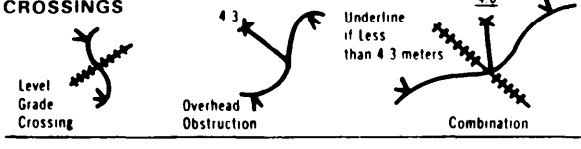
If traveled way width is narrower than width of road leading into tunnel, the number must be underlined

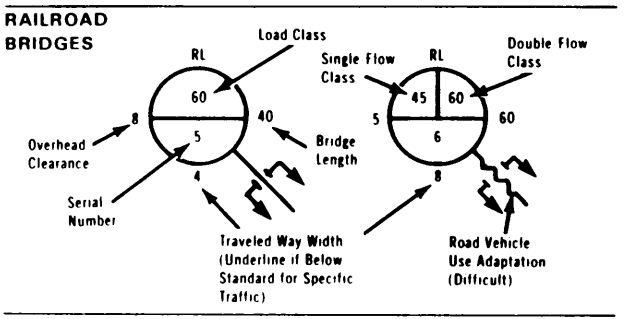
Symbol is drawn to show shape of structure. Show sidewalk when present. If clearance is less than 4.3 meters, it is an obstruction

CONSTRICTION

See Table 5.1 to determine if constriction is a traffic obstruction

RAILROAD CROSSINGS





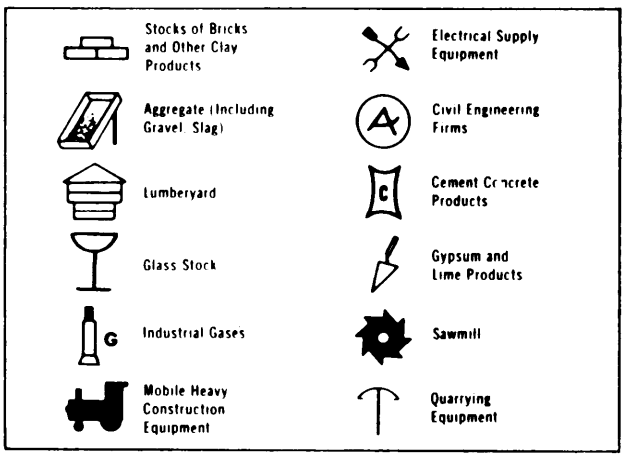


Figure 5-22. Material, facility equipment, and service symbols

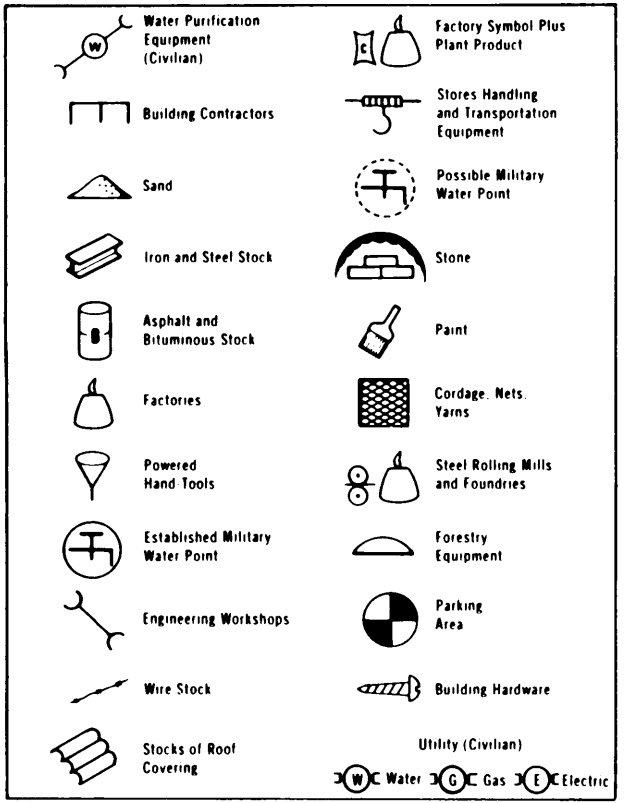


Figure 5-22. Material, facility equipment, and service symbols (continued)