TECHNICAL MANUAL

TRANSPORTABILITY GUIDANCE

APPLICATION OF BLOCKING, BRACING, AND TIEDOWN MATERIALS FOR RAIL TRANSPORT

This copy is a reprint which includes current pages from Changes 1 through 4.

HEADQUARTERS, DEPARTMENT OF THE ARMY
MAY 1978

TECHNICAL MANUAL
No. 55-2200-001-12

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 May 1978

TRANSPORTABILITY GUIDANCE APPLICATION OF BLOCKING, BRACING, AND TIEDOWN MATERIALS FOR RAIL TRANSPORT

TABLE OF CONTENTS

			Paragraph	Page
PREFACE				
Section	1	Purpose and Scope	1-1	1-1
	2	General	2-1	2-1
	3	AAR General Rules	3-1	3-1
	4	Rail Blocking and Bracing Material Data	4-1	4-1
	5	Introduction-Rail Movement Planning	5-1	5-1
		The Shipping Activity or Troop Unit	5-2	5-1
		The Installation Engineer Officer	5-3	5-1
		The Installation Transportation Officer (ITO)	5-4	5-1
		Ports and Ocean Terminals	5-5	5-2
		Discrepancies in Shipment	5-6	5-2
	6	Introduction	6-1	6-1
		Car Capacities	6-2	6-1
	7	Introduction-Car Loading	7-1	7-1
		Loading Principles	7-2	7-1
		AAR Loading Rules	7-3	7-1
		Car Inspection	7-4	7-2
		Unloading Cars	7-5	7-2
	8	Introduction-Loading Procedures for Open-Top Cars	8-1	8-1
		Ramps	8-2	8-1
		Materials	8-3	8-2
		Table of Organization and Equipment	8-4	8-2
		Impedimenta	8-5	8-2
		Vehicle Loading	8-6	8-3
		Tiedown Techniques	8-7	8-4
APPENDIX	A.	REFERENCES		A-1
APPENDIX	B.	DEFINITIONS		B-1
APPENDIX	C.	RAILCAR DESIGNATIONS		C-1
APPENDIX	D.	AAR GENERAL RULES SECTION 1		D-1
APPENDIX	E.	AAR LOADING RULE SECTION 6 (DOD)		E-1
APPENDIX	F.	AAR LOADING RULES SECTIONS 3 AND 4		F-1
APPENDIX	G.	SPECIAL-PURPOSE RAILCARS		G-1
APPENDIX	H.	DODX EQUIPMENT		H-1
APPENDIX	I.	ORDERING, LOADING, AND UNLOADING RAIL EQUIPMENT		I-1
APPENDIX	J.	CLEARANCE DIAGRAM		J-1
APPENDIX	K.	BLOCKING DETAILS		K-1
APPENDIX	L.	VERTICAL, LATERAL, AND LONGITUDINAL ANGLES OF RESTRAINTS		L-1
APPENDIX	M.	PROCEDURES FOR PREPARING SIDE BLOCKING		M-1
APPENDIX	N.	PROCEDURES FOR APPLYING THIMBLE TO STAKE POCKET		N-1
APPENDIX	O.	APPLICATION OF CHOCK BLOCK		O-1
APPENDIX	P.	APPLICATION OF CABLE CLIPS		P-1
APPENDIX	Q.	PROCEDURES FOR APPLYING WHEEL TIES		Q-1
APPENDIX	R.	PROCEDURES FOR CUTTING CHOCK BLOCK NO. 16		R-1
APPENDIX	S.	PROCEDURES FOR PROCESSING LOADING DRAWINGS AND SPECIFICATIONS		S-1
APPENDIX	T.	TEST LOADINGS AND TEST SHIPMENTS		T-1
APPENDIX	U.	PIGGYBACK SERVICE		U-1
APPENDIX	V.	COMPUTERIZED MOVEMENT PLANNING AND STATUS SYSTEM (COMPASS) RAIL BLOCKING AND BRACING MATERIAL DATA		V-1
APPENDIX	W.	DETAILED BILL OF MATERIAL		W-1
APPENDIX	X.	RAIL BLOCKING AND BRACING MATERIAL SUMMARY		X-1

*This publication supersedes TM 55-601, 11 August 1971.

			Paragraph	Page
APPENDIX	Y.	PROCEDURES FOR SECURING TIEDOWN DEVICES-140-TON DODX FLATCAR		Y-1
APPENDIX	Z.	STANAG 2152-LOADING RAMPS		Z-1
APPENDIX	AA.	STANAG 2173-REGULATIONS FOR THE SECURING OF MILITARY TRACKED AND WHEELED VEHICLES ON RAILWAY WAGONS		AA-1
APPENDIX	BB.	STANAG 2175-CLASSIFICATION AND DESIGNATION OF FLAT WAGONS SUITABLE FOR TRANSPORTING MILITARY EQUIPMENT		BB-1
APPENDIX	CC.	STANAG 2832-RESTRICTIONS FOR THE TRANSPORT OF MILITARY EQUIPMENT BY RAIL ON EUROPEAN RAILWAYS		CC-1
APPENDIX	DD.	STANAG 2890-REGULATIONS FOR SAFETY IN THE TRANSPORT OF AMMUNITION AND EXPLOSIVES BY MILITARY TRAIN		DD-1
APPENDIX	EE.	STANAG 2943-REGULATIONS FOR THE LATERAL OR END-ON LOADING AND UNLOADING OF WHEELED OR TRACKED MILITARY EQUIPMENT TRANSPORTED ON RAILWAY WAGONS		EE-1
ACRONYMS AND ABBREVIATIONS				Glossary-1
TERMS				Glossary-2

PREFACE

This manual provides procedures for load planning and general guidance for military and civilian personnel in loading, blocking, and bracing military equipment on railway cars. Its purpose is further described in Section 1-la. It was compiled using information described in Section 1-lb. Change 4 also adds information extracted from the following sources:

For operation within the North Atlantic Treaty Organization (NATO) countries, the appropriate NATO Standardization Agreements (STANAGs), as listed below, have been included.

This publication implements the following international agreements:

-2152, Loading Ramps.

-2173 (Edition 3), Regulations for the Securing of Military Tracked and Wheeled Vehicles on Railway Wagons.

-2175 (Edition 3), Classification and Designation of Flat Wagons Suitable for Transporting Military Equipment.

-2832, Restrictions for the Transport of Military Equipment by Rail on European Railways.

-2890, Regulations for Safety in the Transport of Military Ammunition and Explosives by Rail.

-2943, Regulations for the Lateral or End-on Loading and Unloading of Wheeled or Tracked Military Equipment Transported on Railway Wagons.

For operation in other theaters, the directives of the theater commander and the rules of the host nation railroad system must be consulted.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

The proponent of this publication is Director, Military Traffic Management Command Transportation Engineering Agency (MTMCTEA). Send comments and recommendations on DA Form 2028-2.

For sections 1 through 4 and appendixes A through Y:

Director
Military Traffic Management Command
Transportation Engineering Agency
ATTN: MTTE-TRA
720 Thimble Shoals Boulevard, Suite 130
Newport News, VA 23606-2574

For sections 5 through 8 and appendixes Z through EE:

Commandant
US Army Transportation School
ATTN: ATSP-TDL

Fort Eustis, VA 23604-5389

For section 1-1 and appendixes A through Y, address electrically transmitted messages to: DIR WMICTEA FT EUSTIS VA //MTE-TRM/. Telephone inquiries may be made by calling DSN 9274646 or commercial (804) 8784646. For sections 5-1 through 8-1, address messages to: CMDT USATSCH FT EUSTIS VA //ATSP-TDL//. Make telephone inquiries to DSN 927-6416, or (804) 878-6416.

1-1. Purpose and Scope

a. This manual provides basic loading rules and procedures for proper application of materials used in loading and securing military cargo in/on open top railcars.

b. Information contained in this manual is extracted from the Association of American Railroads (AAR) manual, *General Rules Governing the Loading (of Commodities on Open Top Cars and Trailers*, AR 55-355, Military Traffic Management Regulation, and other civilian and military publications, as shown in appendix A. More specifically the information contained herein pertains to railway equipment availability, to railcar designations and characteristics, and to procedures to be used in loading, blocking, and bracing as well as to rail impact and over the-road test procedures. The AAR loading rules that govern the loading of commodities in/on open top cars are obtainable from the Secretary, Mechanical Division, Association of American Railroads, 59 East Van Buren Street, Chicago, Illinois 60605.

c This manual is a user guide for the loading, blocking, and bracing of military equipment in/on open top railcars and for the Computerized Movement Planning and Status System (COMPASS) detail and summary listing of blocking and bracing material (BBM) requirements applicable to the loading of Army unit vehicles.

d. Users of this publication are encouraged to submit recommended changes and comments to improve it. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons will be provided for each comment to insure understanding and complete evaluation. Comments should be prepared on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to the Commander, Military Traffic Management Command Transportation Engineering Agency, ATTN: MTT-TRC, P.O. Box 6276, Newport News, Virginia 23606. Electrically transmitted comments should be sent to CDRMTMCTEA FT EUSTIS VA//MTT-TRC//.

2-1. General

a. The Association of American Railroads loading rules are formulated to provide safe and economical methods of loading railcars. The materials specified in these rules are the minimum required, based on many years of exacting studies and experiments. All of the general rules and requirements contained in the AAR open top loading manual for blocking and securing loads, outlined in AAR General Rules Section 1 (app D), are mandatory, unless otherwise provided in the individual loading figures in AAR Loading Rules Section 6 (app E), which pertains to the loading of Department of Defense (DOD) materials. Loading methods depicted in other sections, for instance, appendix F of the AAR manual, may be used for loading DOD material if an appropriate loading figure is not available in appendix E.

b. The AAR loading rules that govern the loading of various commodities on open top cars are primarily intended for the safe movement of the car and load from origin to destination. The AAR makes no provision to protect commodities from the elements or from other forms of damage. When additional protection from damage becomes necessary, this then becomes a matter to be decided between the shipper and receiver of the commodity.

c. When cars with steel in lieu of wood floors are furnished any floor blocking or metal anchor plate that is specified by a particular figure or rule to be nailed to the wood floor must be bolted rather than nailed to the steel floor.

d. All floor blocking applied to control lateral movement of the load on cars equipped with nailable steel flooring must extend to the sides of the car using backup blocking. On flatcars, backup blocking must extend to the stub stakes. This requirement does not apply to the composite or combination wood and steel type of nailable flooring.

e. When a sizeable number of vehicles are to be shipped, consideration should be given to using multilevel or single-deck flatcars with chain tiedowns. This type of equipment almost always reduces or eliminates the requirement for blocking and bracing, speeds up the tiedown process, and reduces the number of flatcars required for a large movement. See figures 87, 88, 88B, 300, 302, 303, and 304, appendix E. The advantages and cost savings possible through the use of special purpose cars (app G) should not be overlooked.