

# BUILDING CONTRACTOR MANUALS

The names of the .pdf (Adobe Acrobat) files containing subcourses/manuals on this CD can be found in the “Table of Contents” (which also contains the links to detailed descriptions). In order to open a specific manual please note the name of the corresponding file, click “Open File”, select your CD-ROM drive (if it does not get selected automatically), and then double click that file.

The following will make browsing this CD and reading/printing manuals on it much simpler:

- You can always exit the full screen mode by pressing the “ESC” button.
- Clicking the “Bookmark” or “Thumbnails” tab in each subcourse will allow fast transition between screens.

If the links below do not work (which is likely to happen if you are not using a recent version of Adobe Acrobat Reader) you can either install the Reader (the installation file is included on this CD), or quit this screen and open subcourses using a different .pdf viewer.

PLANET-E-TECH

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[View Description](#) **NAVEDTRA 14045** ▷ BUILDER ADVANCED (376 pp)

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**TM 5-818-7** ▷ FOUNDATIONS IN EXPANSIVE SOILS (95 pp)

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**EN0113** ▷ CONSTRUCTION PRINT READING (500 pp)

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**NAVEDTRA 14026** ▷ CONSTRUCTION ELECTRICIAN BASIC (346 pp)

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**TI 811-16** ▷ LIGHTING DESIGN (46 pp)

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**EN0562** ▷ PAINTING I (225 pp)

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**MIL-HDBK-1025-10** ▷ SAFETY OF ELECTRICAL TRANSMISSION AND  
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# BUILDER 3 & 2, VOLUME 01 : NAVEDTRA 14043

**Description:** The major topics addressed in this book include construction administration and safety; drawings specifications; woodworking tools, materials and methods of woodworking; fiber line, wire rope, and scaffolding; leveling and grading; concrete; placing concrete; masonry; and planning, estimating and scheduling.

**Contents:**

- Chapter 1. Construction Administration and Safety
- Chapter 2. Drawings and Specifications
- Chapter 3. Woodworking Tools, Materials, and Methods
- Chapter 4. Fiber Line, Wire Rope, and Scaffolding
- Chapter 5. Leveling and Grading
- Chapter 6. Concrete
- Chapter 7. Working with Concrete
- Chapter 8. Masonry
- Chapter 9. Planning, Estimating, and Scheduling
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# BUILDER 3 & 2, VOLUME 02 : NAVEDTRA 14044

**Description:** The topics covered include floor and wall construction; roof framing; exterior and interior finishing; plastering, stuccoing, and ceramic tile; paints and preservatives; advanced base field structures; and heavy construction.

**Contents:** • Chapter 1. Light Floor and Wall Framing • Chapter 2. Roof Framing • Chapter 3. Roof Construction and Trim Carpentry • Chapter 4. Exterior Finish of Walls • Chapter 5. Interior Finish of Walls and Ceilings • Chapter 6. Interior Finish of Floors, Stairs, Doors, and Trim • Chapter 7. Plastering, Stuccoing, and Ceramic Tile • Chapter 8. Structural Coatings and Preservatives • Chapter 9. Advanced Base Field Structures and Embarkation • Chapter 10. Heavy Construction • APPENDIX I. Glossary • APPENDIX II. References • INDEX

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# BUILDER ADVANCED : NAVEDTRA 14045

**Description:** Builders inspect and maintain existing structures and plan and construct new permanent and field structures. This course covers technical administration, planning, estimating, scheduling, project planning, concrete, masonry, and heavy construction, shop organization, millworking, quality control, maintenance inspections, Advanced Base Functional Components Field Structures, and K-spans.

**Contents:** ● Chapter 1. Technical Administration ● Chapter 2. Planning, Estimating, and Scheduling  
● Chapter 3. Concrete Construction ● Chapter 4. Masonry Construction ● Chapter 5. Shop Organization and Millworking ● Chapter 6. Quality Control ● Chapter 7. Maintenance Inspections  
● Chapter 8. Heavy Construction ● Chapter 9. Advanced Base Functional Components and Field Structures ● APPENDIX I. Math Tables ● APPENDIX II. References ● INDEX

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# CARPENTRY I : EN5155

**Description:** This course is designed to give you practical knowledge of basic carpentry. You will learn to read, understand, and interpret construction prints (also called working drawings); to identify, use, and requisition building materials; and to care for and use hand tools and power machinery.

**Contents:** ● Subcourse Overview ● Lesson 1: Construction Prints and Building Materials ○ Part A: Construction Prints for Buildings ○ Part B: Bill of Materials (BOMs) ○ Part C: Building Materials ○ Practice Exercise ● Lesson 2: Tools and Equipment ○ Part A: Care and Use of Hand Tools ○ Part B: Care and Use of Power Machinery ○ Practice Exercise ● Appendix A: List of Acronyms ● Appendix B: Recommended Reading List

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# CARPENTRY II : EN5156

**Description:** The Carpentry II subcourse will provide you with enough knowledge to construct floor systems, stairs, wall systems (including the installation of windows and door), and roof systems of wooden structures.

**Contents:**

- Subcourse Overview
- Lesson 1: Floor Construction
  - Part A: Floor Framing
  - Part B: Subflooring
  - Part C: Finish Flooring
  - Practice Exercise
- Lesson 2: Wall-System and Stairway Construction
  - Part A: Framing Members
  - Part B: Wall Sheathing
  - Part C: Moldings
  - Part D: Stairs
  - Practice Exercise
- Lesson 3: Roof Construction
  - Part A: Roof Types
  - Part B: Framing Members
  - Part C: Roof-Covering Material
  - Practice Exercise
- APPENDIX A: List of Acronyms
- APPENDIX B: Recommended Reading List

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# CARPENTRY : FM 5-426

**Description:** This manual is intended for use as a training guide and reference text for engineer personnel responsible for planning and executing theater of operations (TO) construction. It provides techniques and procedures for frame construction, preparation and use of bills of materials (BOMs), building layout, forming for concrete slabs and foundations, framing and finish carpentry, roof framing and coverings, bridge and wharf construction, and the materials used for these operations.

**Contents:** ● Chapter 1. - Construction Drawings ● Chapter 2. - Construction Planning and Materials  
● Chapter 3. - Bills of Materials ● Chapter 4. - Building Layout and Foundation ● Chapter 5. - Forms for Concrete  
● Chapter 6. - Rough Framing ● Chapter 7. - Roof Systems and Coverings ● Chapter 8. - Doors and Windows  
● Chapter 9. - Finish Carpentry ● Chapter 10. - Nonstandard Fixed Bridge  
● Chapter 11. - Timber-Pile Wharves ● Appendix A. - Conversion Tables ● Appendix B. Carpentry Abbreviations and Symbols  
● Appendix C. - Manpower Estimates ● Appendix D. - General Information ● Glossary ● References ● Index

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# CONCRETE AND MASONRY (PART I: CONCRETE) : FM 5-428

**Description:** This Field Manual (FM) is primarily a training guide and reference text for engineer personnel using concrete and masonry materials in field construction. Part One covers the physical characteristics, properties, and ingredients of concrete; mixtures, design and construction of forms; and with reinforced concrete and field construction procedures.

**Contents:**

- CHAPTER 1. GENERAL
  - S. I. Basic Consideration
  - S. II. Desirable Concrete Properties
- CHAPTER 2. CONCRETE COMPONENTS
  - S. I. Cements
  - S. II. Water
  - S. III. Aggregates
  - S. IV. Admixtures
- CHAPTER 3. PROPORTIONING CONCRETE MIXTURES
  - S. I. Method Considerations
  - S. II. Trial-Batch Method
  - S. III. Absolute-Volume Method
- CHAPTER 4. FORM DESIGN AND CONSTRUCTION
  - S. I. Principles
  - S. II. Design
  - S. III. Construction
  - S. IV. Joints and Anchors
- CHAPTER 5 CONSTRUCTION PROCEDURES
  - S. I. Reconnaissance
  - S. II. Site Preparation
  - S. III. Excavation
  - S. IV. Formwork
  - S. V. Mixing
  - S. VI. Handling and Transporting
  - S. VII. Placement
  - S. VIII. Finishing
  - S. IX. Curing
  - S. X. Temperature Effects
  - S. XI. Form Removal
  - S. XII. Repairing
- CHAPTER 6. REINFORCED-CONCRETE CONSTRUCTION
  - S. I. Development And Design
  - S. II. Structural Members
  - S. III. REINFORCING STEEL
  - S. IV. Precast Concrete

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# CONCRETE AND MASONRY (PART II: MASONRY) : FM 5-428

**Description:** This Field Manual (FM) is primarily a training guide and reference text for engineer personnel using concrete and masonry materials in field construction. The manual has two parts: Concrete (Part One) and Masonry (Part Two). Part Two addresses the mason's tools and equipment as well as the physical characteristics and properties of concrete blocks, bricks, and structural clay tiles. It further explains construction procedures and methods for these masonry units.

**Contents:** ● CHAPTER 7. BASIC EQUIPMENT AND COMPONENTS ○ Section I. Mason's Tools And Equipment ○ Section II. Mortar ○ Section III. Scaffolding ● CHAPTER 8. CONCRETE MASONRY ○ Section I. Characteristics of Concrete Block ○ Section II. Construction Procedures ○ Section III. Rubble ● Chapter 9. Brick and Tile Masonry ○ Section I. Characteristics of Brick ○ Section II. Bricklaying Methods ○ Section III. Brick Construction ○ Section IV. Reinforced brick masonry ○ Section V. Structural Clay-tile Masonry ● APPENDIX A. CONVERSION TABLE ● APPENDIX B. METHOD OF MAKING SLUMP TEST ● APPENDIX C. FIELD TEST FOR MOISTURE DEFORMATION ON SAND

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# MASONRY : EN5157

**Description:** This subcourse is designed to teach soldiers the basic information that is needed to construct concrete-block and brick walls. The information will assist you in the construction of different types of walls. As a carpenter or mason, you must be able to design and construct concrete-block and brick structures that are safe and structurally sound.

**Contents:**

- Subcourse Overview
- Lesson 1: Select Mortar Materials and Mix Mortar
  - Part A: Materials
  - Part B: Mortar Bond
  - Part C: Mortar Formulas
  - Part D: Mixing the Mortar
  - Practice Exercise
- Lesson 2: Construct a Concrete-Block Wall
  - Part A: Footings
  - Part B: Concrete Blocks
  - Part C: Planning the Concrete-Block Walls
  - Part D: First Course of Concrete Blocks
  - Part E: Control Joints
  - Part F: Laying Up the Corners
  - Part G: Laying the Concrete Blocks Between Corners
  - Part H: Tooling the Joints
  - Part I: Intersecting Walls
  - Part J: Anchor Bolts
  - Part K: Lintels, Sills, and Reinforcing Steel
  - Part L: Patching and Cleaning the Concrete-Block Walls
  - Practice Exercise
- Lesson 3: Construct a Brick Wall
  - Part A: Types and Characteristics of Bricks
  - Part B: Types of Brick Bonds
  - Part C: Mortar Joints
  - Part D: Finishing the Joints
  - Part E: Cutting the Bricks
  - Part F: Laying a Common Bond Brick Wall
  - Part G: Window and Door Openings
  - Part H: Lintels
  - Part I: Protecting the Brick Against Weathering
  - Part J: Reinforced Brick
  - Practice Exercise
- Appendix A: List of Common Acronyms
- Appendix B: Recommended Reading List

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# FRAME STRUCTURES : EN0069

**Description:** The objective of this subcourse is to provide you with the fundamentals of planning and supervising the construction of frame structures which comprise the basic type of building in a theater of operations. It will also orient you in the fundamentals of construction print reading. You will learn about building layout procedures; framing details of substructures, superstructures, and roofs; kinds and properties of timber; and planning and estimating material and labor requirements for frame construction. Emphasis is on simplified theater-of-operations construction. However, some details of conventional construction are also included for use as a general guide and for use in rehabilitation and repair of existing structures.

**Contents:** ● Lesson 1. Construction Print Reading - Building Layout and Substructures. ● Lesson 2. Superstructures - Framing. ● Lesson 3. Roofing-Finishing Details. ● Lesson 4. Materials Estimating. ● Lesson 5. Construction Methods and Standards - Planning Estimates.

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# SOILS AND GEOLOGY PROCEDURES FOR FOUNDATION DESIGN OF BUILDINGS AND OTHER STRUCTURES : TM 5-818-1

**Description:** This manual presents guidance for selecting and designing foundations and associated features for buildings, retaining structures, and machinery. Foundations for hydraulic structures are not included. Foundation design differs considerably from design of other elements of a structure because of the interaction between the structure and the supporting medium (soil and/or rock).

**Contents:** • Contents • Chapter 1 Introduction • Chapter 2 Identification and Classification of Soil and Rock • Chapter 3 Engineering Properties of Soil and Rock • Chapter 4 Field Explorations • Chapter 5 Settlement Analysis • Chapter 6 Bearing-Capacity Analysis • Chapter 7 Dewatering and Groundwater Control • Chapter 8 Slope Stability Analysis • Chapter 9 Selection of Foundation Type • Chapter 10 Spread Footings and Mat Foundations • Chapter 11 Deep Foundations Including Drilled Piers • Chapter 12 Pile Foundations • Chapter 13 Foundations on Expansive Soils • Chapter 14 Retaining Walls and Excavation Support Systems • Chapter 15 Foundations on Fill and Backfilling • Chapter 16 Stabilization of Subgrade Soils • Chapter 17 Design for Equipment Vibrations and Seismic Loadings • Chapter 18 Foundations in Areas of Significant Frost Penetration • Appendix A  
References

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# FOUNDATIONS IN EXPANSIVE SOILS : TM 5-818-7

**Description:** This manual presents guidance for selecting economical foundations on expansive soil to minimize structural distress to within tolerable levels and guidance for minimizing problems that may occur in structures on expansive soils.

**Contents:** ● INTRODUCTION ● RECOGNITION OF PROBLEM AREAS ○ Site selection ○ Hazard maps ● FIELD EXPLORATION ○ Scope ○ Surface examination ○ Subsurface exploration ○ Groundwater ● LABORATORY INVESTIGATIONS ○ Identification of swelling soils ○ Testing procedures ● METHODOLOGY FOR PREDICTION OF VOLUME CHANGES ○ Application of heave predictions ○ Factors influencing heave ○ Direction of soil movement ○ Potential total vertical heave ○ Potential differential heave ○ Heave with time ● DESIGN OF FOUNDATIONS ○ Basic considerations ○ Shallow individual or continuous footings ○ Reinforced slab-on-grade foundations ○ Deep foundations ● MINIMIZATION OF FOUNDATION MOVEMENT ○ Preparation for construction ○ Drainage techniques ○ Stabilization techniques ● CONSTRUCTION TECHNIQUES AND INSPECTION ○ Minimization of foundation problems from construction ○ Stiffened slab foundations ○ Drilled shaft foundations ● REMEDIAL PROCEDURES ○ Basic considerations ○ Evaluation of information ○ Stiffened slab foundations ○ Drilled shaft foundations ● Characterization Of Swell Behavior From Soil Suction ● Frame And Wall Construction Details

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# CONSTRUCTION PRINT READING : EN0113

**Description:** Construction print reading is a key skill for technical students. Fortunately, a formal education is not essential for achieving proficiency in this important subject; the study of correspondence courses such as this can provide the essential skills.

**Contents:** • Lesson 1: Principles and Methods • Lesson 2: Architectural Drawings • Lesson 3: Utilities Drawings • Lesson 4: Heating, Air-Conditioning, and Refrigeration Drawings • Lesson 5: Bills of Materials • Appendix A: Symbols • Appendix B: Conversion Tables • Appendix C: Extract TM 5-704

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# CONSTRUCTION ELECTRICIAN BASIC : NAVEDTRA 14026

**Description:** The major topics in this training manual are construction support activities, drawings and specifications, power generation and distribution, interior wiring, lighting and communication, and electrical appliances, test equipment, motors, and generators.

**Contents:** ● 1. Construction Support ● 2. Drawings and Specifications ● 3. Power Generation  
● 4. Power Distribution ● 5. Interior Wiring ● 6. Communications and Lighting ● 7. Electrical  
Appliances, Test Equipment, Motors, and Generators ● APPENDIX ○ I. Glossary ○ II. Metric  
Conversion Tables ○ III. Formulas ○ IV. Hand Signals ○ V. References ● INDEX

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# LIGHTING DESIGN : TI 811-16

**Description:** This document is to be used as a design tool for lighting layouts. The rules of thumb provided are general guidelines; specific manufacturers' data should always be consulted. In addition to easily measured quantities such as light levels, the more qualitative aspects of lighting are covered and should be given consideration.

**Contents:** • Introduction • Review of Background Information ◦ A. Terminology ◦ B. Lamps ◦ C. Fixtures ◦ D. Ballast/Transformers ◦ E. Daylight • Design Guidelines ◦ A. Spatial Organization and Subjective Impressions ◦ B. Energy Conservation and Lighting Power Allowance ◦ C. Life Cycle Cost Analysis ◦ D. Controls ◦ E. Energy Policy Act ◦ F. Lument Method Calculation ◦ G. Point Calculation ◦ H. Lighting Fixture Schedule • Design Applications ◦ A. Administrative Areas ◦ B. Warehouse Areas ◦ C. Unaccompanied Personnel Housing ◦ D. Exterior ◦ E. Specialty Spaces

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# PAINTING I : EN0562

**Description:** This subcourse begins with a review of those aspects of safety practice that are of continuous importance to you, the painter. This is followed by instruction on the selection and mixing of paints, the operation and maintenance of paint equipment, and the proper storage of paint supplies. In addition, a lesson is devoted to the identification of metals and to the methods employed to detect and prevent corrosion.

**Contents:** ● Subcourse Overview ● Lesson 1: Safety ○ Part A: General Hazards ○ Part B: Accident, Fire, and Health Hazards ● Lesson 2: Protective-Coating Materials ○ Part A: Purpose, Composition, and Types of Protective-Coating Materials ○ Part B: Mixing and Preparing Protective Coatings ○ Part C: Preparing the Surface ○ Part D: Selecting Exterior and Interior Protective Coatings ○ Part E: Maintaining Protective Coatings ● Lesson 3: Protective-Coating Equipment ○ Part A: Surface-Preparation Equipment ○ Part B: Application Equipment ○ Part C: Traffic-Marking Machines ○ Part D: Sign-Making Equipment ● Lesson 4: Ladders, Scaffolds, and Hoisting Equipment ○ Part A: Ladders ○ Part B: Scaffolds ○ Part C: Hoisting Equipment ● Lesson 5: Metal Corrosion and Identification ○ Part A: Corrosion ○ Part B: Metal Identification ● Appendix A: List of Common Acronyms ● Appendix B: Recommended Reading List ● Appendix C: Conversion Factors ● Appendix D: Paint and Cleaning Solvents ● Appendix E: Material Safety Data Sheet

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# LANDSCAPE DESIGN AND PLANTING CRITERIA : TM 5-803-13

**Description:** This manual provides planting design guidelines for preserving and improving the quality of the visual environment on military installations; prescribes standard practices and techniques for planting and initial care of plant materials; and includes guidance for the selection and establishment of turf. The criteria and guidelines contained in this manual apply to Army and Air Force installations in the continental United States. Planting design guidance in this manual is generally applicable for all installations. However, each installation should develop planting plans tailored to the specific landscape project. In addition to general design guidance, this manual describes planting techniques and methods for the successful establishment of plants. Factors which are critical in the selection of turfgrass are discussed; these include site evaluation, proposed use of the site and required maintenance.

**Contents:** ● Table of Contents ● Chapter 1 - Introduction ● Chapter 2 - Landscape Design Guidelines ● Chapter 3 - Planting and Establishment of Trees, Shrubs, Ground Covers and Vines ● Chapter 4 - Establishment of Turf ● Appendix A - References ● Appendix B - Street Plantings ● Appendix C - Supplemental Turf Information ● Bibliography

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# UTILITIES I : EN0158

**Description:** As an engineer officer you may be assigned the job of directing some phase of utilities work. To do this efficiently, you must understand the broad, general phases of utilities operations. That is the purpose of this subcourse. It is planned to give you basic knowledge in utilities layout, installation, and operation.

**Contents:** • Introduction • Lesson 1: Organization and Functions of Utilities Engineer Service Teams • Lesson 2: Electric Power Systems • Lesson 3: Refrigeration Systems • Lesson 4: Water Supply and Distribution Systems • Lesson 5: Plumbing Installations and Bills of Materials • Lesson 6: Sewerage Systems • Lesson 7: Rehabilitation of Utilities

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## UTILITIES II : EN0389

**Description:** The material in this subcourse broadly covers the principles involved, and the methods and equipment employed, in the design, construction, and operation of electric power and distribution systems, water supply distribution systems, and sewage collection and treatment systems. Large semipermanent installations in a theater of operations such as depots, base hospitals, replacement depots, and the like require fairly extensive, complex utilities systems. The design, construction, rehabilitation (where necessary) and operation of these systems are responsibilities of engineer units. While this course will not make you an expert, it will furnish sufficient basic information to enable you to function as an engineer staff officer or commander in the communications zone of a theater of operations.

**Contents:** • Introduction • Lesson 1: Electric Power Systems • Lesson 2: Electrical Distribution Systems • Lesson 3: Water Distribution Systems • Lesson 4: Sewage Collection and Disposal

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# CONSTRUCTION SURVEYING : FM 5-233

**Description:** This manual is a guide for engineering personnel conducting surveys in support of military construction. In addition to mathematical considerations, this manual offers a comprehensive analysis of problems which are typical in military surveying. It may be used for both training and reference.

**Contents:** ● PREFACE ● CHAPTER 1 - SURVEY OBJECTIVES ● CHAPTER 2 - ROAD SURVEYING ○ Section I - Reconnaissance survey ○ Section II - Preliminary survey ○ Section III - Final location survey ○ Section IV - Construction layout survey ● CHAPTER 3 - CURVES ○ Section I - Simple horizontal curves ○ Section II - Obstacles to curve location ○ Section III - Compound and reverse curves ○ Section IV - Transition spirals ○ Section V - Vertical curves ● CHAPTER 4 - EARTHWORK ○ Section I - Planning of earthwork operations ○ Section II - Areas ○ Section III - Earth and rock excavation ● CHAPTER 5 - BRIDGE SURVEYING ○ Section I - Location ○ Section II - Bridge site layout ● CHAPTER 6 - SITE LAYOUT ○ Section I - Building layout ○ Section II - Utilities layout ● CHAPTER 7 - TRAVERSE ○ Section I - Selection of traverse ○ Section II - Field survey ○ Section III - Computations ● APPENDIX A - TABLES ● APPENDIX B - SAMPLE NOTES (CONSTRUCTION SURVEY) ● GLOSSARY ● REFERENCES

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# CHILDREN'S OUTDOOR PLAY AREAS : TM 5-803-11

**Description:** The manual provides guidelines and recommended site layouts for designing unsupervised outdoor play areas for children through age 15. Because of differing child safety and child development requirements, guidance is provided to meet the needs of three age groups: 6 weeks to 5 years; 5 to 9 years; and 9 to 15 years. Detailed design guidance is provided for designing three types of play areas: play lots serving children ages 6 weeks to 5 years or 5 to 9 years; neighborhood parks serving youth ages 9 to 15 years; and community parks serving all age groups.

**Contents:** ● Chapter 1 - Introduction ● Chapter 2 - Site Selection ● Chapter 3 - Site Analysis and User Needs Analysis ● Chapter 4 - The Design Criteria ● Chapter 5 - Play Area Relationships ● Chapter 6 - The Design Documents ● Chapter 7 - Child Safety Requirements for Outdoor Play Areas ● Chapter 8 - Accessibility ● Chapter 9 - Play Area Components ● Chapter 10 - Manufactured Play Equipment ● Chapter 11 - Play Area Surfacing ● Chapter 12 - Plant Materials ● Chapter 13 - Self-Help ● Appendix A - References ● Appendix B - Qualifying Firms ● Glossary ● Comments and Instructions

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# SAFETY OF ELECTRICAL TRANSMISSION AND DISTRIBUTION SYSTEMS : MIL-HDBK-1025-10

**Description:** This handbook is directed to the safety concerns of operators, electricians, and supervisors who perform and supervise operation and maintenance work on electrical transmission and distribution systems.

**Contents:** • Section 1 INTRODUCTION • Section 2 APPLICABLE DOCUMENTS • Section 3 DEFINITIONS • Section 4 GENERAL SAFETY PRACTICES • Section 5 WORK ON DE-ENERGIZED OR ENERGIZED LINE SAFETY REQUIREMENTS • Section 6 SUBSTATIONS AND SWITCHGEAR • Section 7 OVERHEAD LINES AND ASSOCIATED ELECTRICAL COMPONENTS • Section 8 UNDERGROUND CABLES, STRUCTURES, AND ASSOCIATED ELECTRICAL COMPONENTS • Section 9 SHORE-TO-SHIP ELECTRICAL POWER CONNECTIONS

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# TOOLS AND THEIR USES : NAVEDTRA 14256

**Description:** This manual provides information on the use and care of selected hand tools and measuring tools. It will explain the types and uses of a large number of tools, a practical application of a selected group of tools, safety requirements, general care, and limited repair. A user must have, choose, and use the correct tools in order to do the work quickly, accurately, and safely. Without the proper tools and knowledge of how to use them, the user wastes time, reduces efficiency, and may face injury.

**Contents:** • ○ Introduction ○ Safety and safety equipment ○ Reading measuring scales ○ Toolboxes  
○ Dividers ○ Calipers ○ Micrometers ○ Rules and steel tapes ○ Miscellaneous measuring tools ○ Levels  
○ Plumb bobs ○ Scribes ○ Squares ○ Surface, depth, and height gages ○ Ring and snap gages and gage blocks  
○ Miscellaneous measuring gages ○ Pliers and tongs ○ Vises ○ Clamps ○ Jacks ○ Hammers, mallets, and mauls  
○ Screwdrivers ○ Manual drills ○ Screw and tap extractors ○ Wrenches ○ Chisels  
○ Punches ○ Files ○ Grinders and sharpening stones ○ Scrapers ○ Awls ○ Bolt and cable cutters  
○ Glasscutters ○ Knives ○ Pipe cutting and threading tools ○ Tube cutting and flaring tools ○ Shears and nippers  
○ Taps and dies ○ Reamers ○ Benders ○ Pullers ○ Bars ○ Mattocks ○ Gasket cutters ○ Chopping tools  
○ Saws ○ Brushcutting tools ○ Timber handling tools ○ Climbing tools ○ Planes ○ Digging tools  
○ Electrical power tools ○ Miscellaneous tools ○ APPENDIX A References

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  - Construct a Floor System.pdf
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