



CITF Training Solutions

JANUARY 2017

SPECIAL EDITION

CITF: Curriculum Development. In 2004 the Carpenters International Training Fund (CITF) began to publish manuals and instructor guides to provide an effective learning and teaching experience for UBC members. Featuring well-illustrated concepts, processes, procedures, and real-world hands on tasks, these materials thoroughly prepare UBC members for 21st century jobs. The expertise of UBC members both in the field and in the classroom is at the core of the instructional programs. Committees of these Subject Matter Experts have created the content, researched the illustrations, prepared the shop activities, and reviewed all materials for technical accuracy.

CITF Manuals and Instructor Guides: Integrated Learning. Integral to the instruction is an emphasis on safety, productivity, professionalism, and responsibility toward the environment. Safety, Productivity, Trade, and Green Tips appear throughout each of the manuals. They emphasize the need to work productively, maintain safety at all times, become more efficient, and use green practices. The manuals are designed with visual learners in mind: well-controlled reading level, Self Checks to test understanding, the use of full color throughout, and a generous illustration program consisting of on-the-job photos and detailed technical drawings.

Reviews at the end of each chapter and a final objective test match the measurable objectives that begin each chapter. Job Sheets and Evaluations guide learners through simulated job tasks so that they can practice what has been learned in the classroom and what is done on the job. Finally, the manuals work in an integrated way with the instructor guides. PowerPoint presentations and accompanying Instructor Notes in each instructor guide enable the instructor to reinforce, explain, and add to the content of the manuals. New products, technologies, and developments related to the trades have been included in the materials so that UBC members remain competitive in the workforce.

The Build-a-Book Experience Online. CITF's intention, through the structure and content of these materials, is to give Training Directors the flexibility to respond to local employment and contractor needs. The flexibility of the materials is enhanced by CITF's Build-a-Book program. Through this program, Training Directors may easily create materials to suit customized curriculums. Using the tables of contents and descriptions of each manual found online or in the Training Solutions catalog, Directors may choose chapters from any of the manuals. Chapters combined in this way, along with covers customized for the local Center, provide courses tailored for local needs.

Contractors, owners, and members of curriculum advisory boards who want to experience the Build-a-Book process may log on to www.carpenters.org. Neither log-ins nor passwords are required for this introductory experience. View the video and/or try out the build-a-book ordering process. Select "Training and Skills" from the menu at the top of the home page for www.carpenters.org. Then select "Custom and Specialized Training." This page will give you the option to watch a video or try a demo of building a book. Click whichever you wish.

It is CITF's hope that instructors and participants benefit in greater ways from the training experience by using its materials—all of which are based on sound instructional design and an understanding of customer needs. Training Directors or their authorized representatives, and authorized persons from local programs, may order through faxed purchases or online.



Build-a-Book: Designing Your Own Manual. Because training needs vary greatly, CITF materials are available in a customized format. The customization ensures that you are able to meet the specific needs of your members and contractors. Chapters may be chosen from any published manual to create a manual tailored to the workshop you wish to offer. The cover of the manual may also be customized. The title you have chosen for your customized workshop and the name of your training center may be displayed. An instructor guide, including printed PowerPoint® slides, accompanying notes, Job Sheets, and related testing materials will automatically be created to reflect your choice of manual content. A customized Resource CD will also be provided. Please note that the books in the Career Connections series, CITF's four-year high school program, are also available in Build-a-Book.

Ordering Information. Information about how to order all CITF materials as well as how you can build a customized manual, and allow your customers and other interested parties to experience building a customized manual, is contained below.

The CITF Build-a-Book Experience Online. The www.carpenters.org website provides two ways to experience the Build-a-Book process. Log-ins and passwords are not required for this introductory experience. This will allow you to easily provide access to contractors, owners, and others so that you can display the versatility and capabilities of your training center. To view the video and/or try out the build-a-book ordering process for yourself or for your customers, select “Training and Skills” from the menu at the top of the home page at www.carpenters.org. Then select “Custom & Specialized Training.” This page will give you the option to watch a video or try a demo of building a book. Click whichever you wish.

Create a Custom
Build-A-Book

Ordering CITF Materials Online. To order online at www.carpenters.org, a password is required. Use the Registration Form on the last page of this catalog to get your password. If the Form is missing, please contact the International Training Center at 702-938-1111 and request a CITF Training Solutions Registration Form. Once you have received your password, log on to www.carpenters.org. On the home page, select “Training and Skills” from the menu at the top of the page. Then select “Custom & Specialized Training.” This page will give you the option to type in your password and proceed to the “CITF Training Solutions” page where you will follow the directions for ordering. All materials including Build-a-Book customizations may be ordered here. This is also the part of the web site to order those CITF manuals that deal with topics not addressed in the new curriculum. The list of these materials is shown in the “Technical Training Materials Supplement” in this catalog.



Ordering CITF Materials: Purchase Orders. Training Directors, their authorized representatives, and other authorized persons from local training centers may order all CITF manuals and instructor guides using faxed purchase orders, including for materials shown in the “Technical Training Materials Supplement” in this catalog.

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*Look for the
starred new items!*

WHAT'S COMING

CARPENTRY

Panelized Systems

Participant Manual, March 2017

Instructor Guide, June 2017

FLOOR LAYERS

INSTALL: Substrate Preparation

Participant Manual, Summer 2017

Instructor Guide, Summer 2017

Resilient Flooring 2

Instructor Guide, March 2017

GENERAL SKILLS

Confined Space, Revision 1

Participant Manual, March 2017

Instructor Guide, March 2017

ICRA: Best Practices in Health Care Construction, Revision 1

Participant Manual, December 2017

Instructor Guide, TBD

Scaffolding 1

Participant Manual, September 2017

Instructor Guide, December 2017

Scaffolding 2

Participant Manual, September 2017

Instructor Guide, December 2017

Print Reading, 2nd Edition

Participant Manual, December 2017

INTERIOR SYSTEMS

Acoustical Ceilings, 2nd Edition

Participant Manual, July 2017

Instructor Guide, October 2017

MILLWRIGHTING

Compressors

Participant Manual, January 2017

Instructor Guide, April 2017

Gas Turbine Qualification

Instructor Guide, February 2017

Shaft Alignment 2

Instructor Guide, February 2017

Pump Repair Technician 2

Participant Manual, August 2017

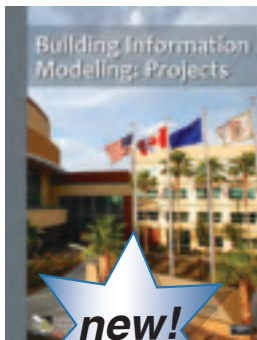
Instructor Guide, November 2017



ACCESSIBILITY: ADA AND BARRIER-FREE CONSTRUCTION This manual introduces the Americans with Disabilities Act (ADA) and explains how it applies to the work done by UBC members. The manual covers reading prints used to build or modify a building, identifies ADA symbols used in the prints, identifies components used in ADA-compliant construction, and the various construction methods and materials used to make buildings ADA compliant. Accessible routes, signage, doors, and door hardware are also discussed as are issues that affect accessibility and compliance in restrooms, locker rooms, pools, and special events in existing facilities. Guidelines for new construction, existing buildings, historical buildings, private residences, and commercial buildings are all addressed in this manual which emphasizes safety and is illustrated with prints, drawings, and photos.



BUILDING INFORMATION MODELING (BIM) 1: CONCEPTS This manual presents the principles of Building Information Modeling (BIM). The BIM process provides an electronic means to create and use 3D digital models of architectural designs and construction details. Journeymen can use their knowledge earlier in the building process by getting involved in the construction and refinement of 3D models on computers. Apprentices, while learning their trade from the journeymen and classroom training, can also learn how BIM technology affects their job. Using BIM, foremen can plan their daily work activities within the context of a 3D building model and easily retrieve information such as quantities, production rates, and material tracking data. Superintendents can analyze constructability issues using a 3D building model instead of 2D paper drawings. The BIM process also helps the various other trades to collaborate and communicate more effectively. Chapter 1 of this workshop introduces BIM and explains how it applies to UBC members on the jobsite. The use of BIM in the construction trade is described, along with the role of the UBC member in the BIM process. Chapter 2 describes the tools and technology that support development and distribution of BIM information. Examples of how BIM is used at the jobsite are presented in Chapter 3.



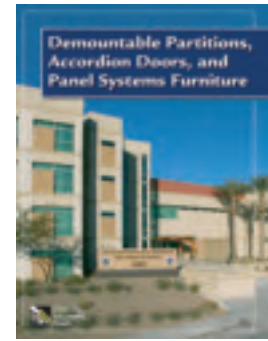
BUILDING INFORMATION MODELING: PROJECTS This workshop builds on the BIM Concepts workshop and is focused on the basic software operations and functions of the major digital tools including SketchUp®, Autodesk®, Revit®, and Navisworks®. Participants learn to use BIM tools to increase efficiency in areas such as jobsite planning and coordinating trades on a project. Viewing models, identifying specific components and navigating in a 3D workspace are also covered. Extracting information such as measurements and details from 3D models is presented as is related construction technologies for bim-based projects.



DECKS AND WALLS This manual will familiarize the UBC member with different types of framing material, framing fasteners, and hardware. The advantages and disadvantages of natural wood and wood products are discussed. Skills required for print reading, estimating materials, and creating a lumber order and cut list are presented. UBC members learn to frame a wood foundation; lay out, frame, and stand a wood-framed wall; frame several types of wood ceilings; and construct a wood deck. Throughout the manual safety precautions and procedures are emphasized.

DEMOUNTABLE PARTITIONS, ACCORDION DOORS, AND PANEL SYSTEMS FURNITURE

This is a comprehensive treatment of demountable office partitions, accordion doors, and panel systems furniture: uses, advantages and disadvantages, installation procedures. The manual also presents detailed information on job planning, including advice on how to work in an occupied building. Components, fasteners, adhesives, and equipment required for installation are described. Reading prints, performing layout, and installation procedures are thoroughly covered. Hazards and necessary accident prevention measures are emphasized.



EXTERIOR WALL COVERINGS The Exterior Wall Coverings manual presents the origins and evolution of exterior wall coverings. Various substrate materials, fasteners, trims, and accessories used with exterior wall coverings are discussed, as are the various types and installation of weather-resistant barriers. One chapter covers the components and installation of an EIFS. During this workshop, UBC members will learn how to install weather-resistant barriers and exterior doors and trim as well as a variety of exterior wall coverings including wood, fiber cement, vinyl, metal, and mortarless masonry siding. Procedures are well illustrated. Safety hazards and methods of prevention are fully covered throughout the Manual.



HEAVY TIMBER FRAMING All aspects of heavy timber framing construction are covered in this manual, including print reading, tools, materials, types and uses of engineered lumber, and joinery. Explanations and procedures are given for the construction of each section of a frame, starting with floors and moving on to walls and roofs. Step-by-step procedures are presented throughout the manual. A separate chapter on safety covers job hazards and preventive measures specific to heavy timber framing. Numerous illustrations are provided throughout the manual.

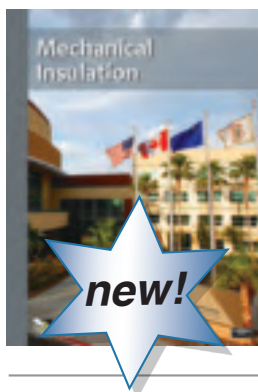


INTERIOR FINISHES 1 This manual describes the various materials used in interior finishes along with the hand and power tools required. Basic skills are given, such as sharpening chisels; scribing and fitting material; and locating framing members and backing. Participants will learn how to install a variety of interior doors as well as how to construct and install a job-built door frame and a variety of specialty doors. The layout and installation of a variety of finish wall coverings and ceiling treatments are also covered. Safety precautions are included throughout as are step-by-step illustrations of procedures.





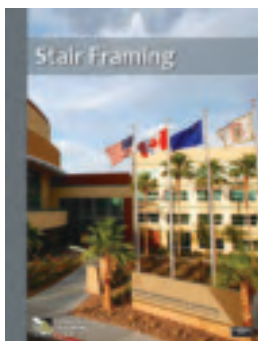
INTERIOR FINISHES 2 This second manual emphasizes cabinets, countertops, and stairways. The components of various types of cabinets are described, including face frame, frameless, upper cabinets with a peninsula, and base cabinets with an island. Installation and refacing skills are taught. Countertops are dealt with and procedures for installing a plastic laminate countertop are included. The components, purposes, and installation procedures of stairways are detailed. Procedures are given for the installation of standing trim including case joinery, door casing, and window trim. Instructions are also given for installing a variety of running trim including baseboards, chair rails, and cornices. The manual concludes with the layout and installation of wall coverings, and various types of ceiling treatments are described.



MECHANICAL INSULATION This manual provides the knowledge and procedures necessary to safely remove and install insulation used to control the thermal and acoustic effects of mechanical systems. A wide range of insulation materials, facings, and accessory products are discussed with their applications, advantages and disadvantages, and related safety concerns. Coverings and finish materials are described and their uses discussed, along with the procedures for their fabrication and attachment. In addition, the hand tools, power tools, and machine tools used during the installation process are described. The critical planning process for insulation removal and installation is described and a related hands-on project is included. Organizations regulating safety in the U.S. and Canada are presented and a chapter on safety details both hazards and safety procedures and precautions.

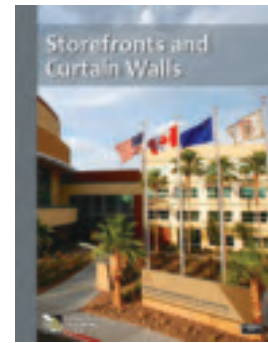


ROOF FRAMING This manual focuses on the methods and procedures used to lay out and assemble a variety of roofs. Procedures include conventional and truss roof framing methods, and equal sloped gable and hip roofs. Complex framing methods are discussed, including unequal sloped roofs. Valley and valley jack rafters used in unequal slope intersecting roofs with and without projection are described. Calculating rafter length, rafter layout and selecting and using proper materials and tools are covered. Full-scale drawings and mathematical calculations are demonstrated in examples and procedures. Roof framing plans are presented for each type of roof covered, along with guidelines for creating and interpreting the plans and making scale drawings. Safety is emphasized throughout, with special attention paid to fall protection related to working from scaffolds and ladders.



STAIR FRAMING This manual is designed to prepare UBC members to lay out, cut, and install stairs in many different configurations. Common stair components, different designs and styles of stairs, and terminology are presented first. Participants receive a review of math formulas needed in stair construction and will learn about and practice the layout and fabrication of an open stringer, closed stringer, and a cleated stair. Stairs with landings, landings as resting places, and landings used to change stair direction are all covered. Creating the full-size drawing used to create winders is presented, as is the procedure for assembling a three-step winder. As a conclusion to the manual, special construction considerations UBC members might encounter on the jobsite, including stairwell openings, unlevel surfaces, split-level residences, the need to create additional headroom, curved or geometric stairs, and more. Detailed procedures and all safety precautions are presented throughout the manual.

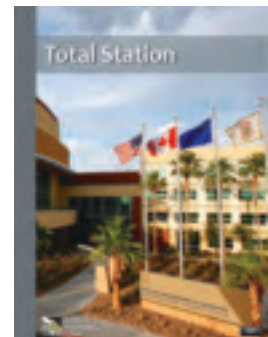
STOREFRONTS AND CURTAIN WALLS This manual covers all phases of storefronts and curtain walls in a variety of structures, including retail stores and businesses. Beginning with planning and including caulking and glazing, the manual presents components, prints, and schedules. Components for both stick built and screw spline systems are discussed. Procedures for glazing in a daylight opening are included. Door hardware is thoroughly described. Participants will gain skills for installing various doors. Throughout the manual safety precautions and practices are emphasized.



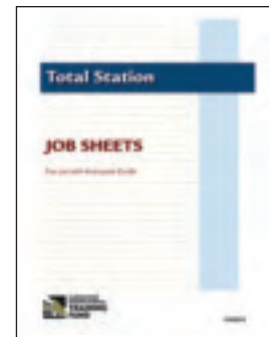
STRUCTURAL INSULATED PANEL SYSTEMS This manual contains thorough presentations of types and sizes of structural insulated panels as well as accessory materials. The environmental, structural, and productivity advantages are presented. Job planning, tools and materials, and factory and field fabrication are also discussed. The manual covers wall plate, wall panel, roof panel, and hybrid connections. The HVAC, electrical, and plumbing requirements are discussed along with moisture control and exterior and interior finishes. Relevant procedures, safety factors, and plentiful illustrations are also included.



TOTAL STATION This manual covers instruction for both Total Station I and advanced instruction and applications for Total Station II. Participants will learn how to set up, configure, and operate a total station with accuracy and precision from several points. The ways to mathematically calculate the points to be laid out are presented, as are the ways to mathematically verify the accuracy of the total station layout. The manual discusses how to analyze a project, troubleshoot layout inaccuracies, and lay out and label a network of control.



TOTAL STATION JOB SHEETS The Job Sheets to accompany Total Station provide essential hands-on experience to accompany each chapter of the Manual. Because there are many makes and models of equipment, the Job Sheets provide experience with a variety of the leading makes and models. Since the last portion of the manual deals with advanced instruction on Total Station, there are sufficient Job Sheets to give participants reinforcing experience in advanced Total Station skills. The four-color illustrations are generous throughout and duplicate the screens on equipment exactly as participants see them. 498 pages, 3-hole punched, easy tear-off pads.



CARPENTRY, *cont.*



TRADE SHOW INSTALLATION AND DISMANTLING This manual provides the procedures and safety precautions for trade shows and special events. Tool requirements, freight tracking and handling, and the inspection of powered vehicles are covered. Participants will learn about booth configurations, dimensions and sections of exhibit floors, and how to identify these elements on floor plans. The steps for installing and removing carpet, furniture, and accessories are presented. Procedures are given for pipe and drape, skirting and bunting, signage, and graphics. System and custom exhibits are also covered as well as directions for making field repairs. Safety is emphasized throughout and photos and drawings generously illustrate concepts and procedures.



TRADE SHOW RIGGING This manual presents the special rigging procedures and inspection techniques that apply to trade shows. The required tools, hardware, and equipment and their uses are described. The different types of slings, methods of choosing slings, electric chain hoists, attaching the load to a hoist, and the use of various trusses are explained along with relevant procedures. One chapter deals with the motorized and mechanical equipment used to move items. Procedures and safety requirements are presented for the assembly and rigging of masking banners, and signs. Safety issues and preventive measures both indoors and outdoors are emphasized.

CONCRETE

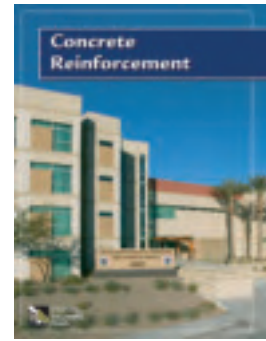


BRIDGE FORMWORK This manual presents the slab, box beam, and box girder types of concrete bridges—their major design features and the major construction techniques involved in building these structures. Also discussed in this manual are concrete properties; the importance of steel reinforcement in structural concrete; the fundamentals of mixing, placing, and curing concrete; the basics of prestressed and post-tensioned concrete; and information on several concrete tests. Participants in this workshop will also learn to identify safe practices for working on both land and over water.

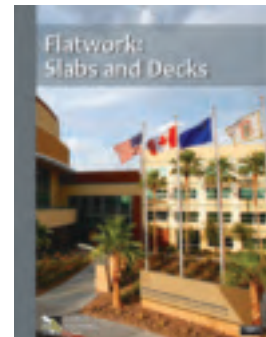


BUILDING LAYOUT This manual covers general procedures, basic skills, and the necessary tools and materials needed to lay out a building. The architectural lines and symbols shown on site plan prints which are necessary to facilitate layout are also discussed. The manual includes such topics as: building footprint and site layout; layout for excavation; footings, pile, caissons, and piers; anchor bolts, embedments, and blockouts; slab on grade; elevator and stair core; and other topics related to building layout.

CONCRETE REINFORCEMENT This manual thoroughly explains the process of reinforcing concrete using steel bars, fibers, and fiber-reinforced polymer. New technology, just recently used in reinforcing concrete, is also explained. The manual first provides an overview of forces acting upon concrete so that the participant understands the need for reinforcement. A review of print reading is then provided, specifically discussing the interpretation of the schedules dealing with reinforcement material. The manual then presents in detail the installation process. Numerous photographs and drawings illustrate materials and installation processes. Safety precautions and procedures are emphasized throughout.



FLATWORK: SLABS AND DECKS This manual covers the construction processes involved in building the formwork for both slabs and decks. The manual begins with excavating and preparing the ground for slab formwork and proceeds to erecting towers high above the ground to support deck formwork. Detailed descriptions of the most common methods for constructing both slab and deck forms are provided, along with opportunities for practicing several basic form building tasks. Safe practices for everything done both in the workshop and on the job are emphasized.



FOOTING FORMS This manual describes the tools, materials, and procedures for locating, laying out, and forming footings. The manual emphasizes the critical aspects of location and layout for installing footing properly. Further, the manual presents the skills necessary to ensure that the footings are at the correct elevations and built to the proper dimensions. Different types of footing are compared and related to their appropriate applications.



FORM HARDWARE This manual provides the UBC Member with the information and skills necessary to recognize, select, and install form hardware. Detailed descriptions and illustrations of a variety of hardware devices reinforce learning. Comparisons and contrasts of different pieces of hardware illustrate which ones are best suited for specific applications. Hands-on practice using some of this hardware prepares UBC Members for the use of form hardware on the jobsite.





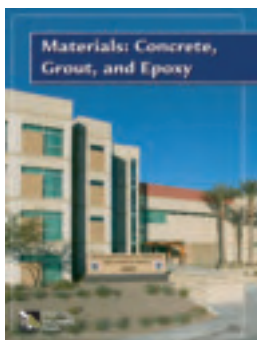
GANG FORMS AND SLIPFORMS This manual covers the uses and applications of both slipforms and gang forms as well as their proper installation. Stripping techniques for gang forms are also explained. Because slipforming is a specialized type of concrete construction requiring additional skills and understanding beyond standard formwork, the unusual demands of slipforming are thoroughly covered. Safety practices and procedures related to the construction of gang forms and slipforms are emphasized.



INSULATING CONCRETE FORMS This manual deals with an increasingly popular type of residential and commercial construction, Insulating Concrete Forms (ICFs). The major objective of the workshop is to ensure that participants are prepared to construct the exterior walls, decks, and sloped roofs of ICFs safely and properly. The manual covers the selection and ordering of materials and procedures for laying out and constructing ICF walls, decks, and sloped roofs, as well as procedures for helping to fill the forms with steel reinforcement and concrete. Participants are shown how to perform construction tasks according to design specifications and applicable building codes. Safe work practices are emphasized throughout the Manual. Procedures are thoroughly illustrated.



INTRODUCTION TO FORMWORK This manual presents many of the basic and most important aspects of concrete formwork, including formwork materials, form hardware, and formwork safety practices. UBC members will learn how to fabricate simple wall forms for a footing form and a foundation wall form in a safe and efficient way.

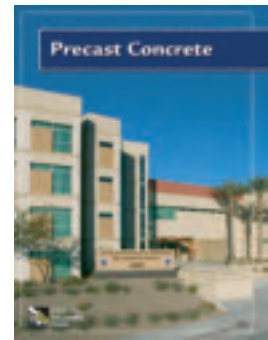


MATERIALS: CONCRETE, GROUT, AND EPOXY This manual presents the various ways that different types of concrete, cementitious grouts, and epoxy grouts are used. Participants learn the ingredients, equipment used, and the correct procedures to prepare and place these materials. The factors that affect placement and curing of these materials are also discussed. Safe practices are emphasized throughout the manual. Numerous illustrations accompany the presentation of content and all procedures.

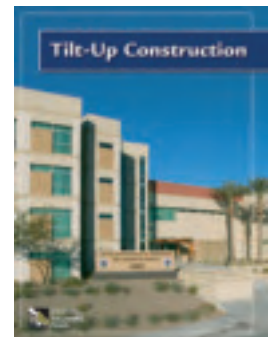
PIERS, COLUMNS, AND PILE CAPS This manual presents the specific uses of these commonly used vertical supports when used separately and in situations where they may be used together. Forming methods for piers, pile caps, and columns are presented in detail, and pile and pier cap mathematics is presented with a specific treatment of how to calculate perimeter, circumference, surface area, and volume. All safety considerations are covered throughout the manual. Trade, Safety, and Productivity Tips are presented as these relate to the topics. Plentiful illustrations help to clarify the text presentation.



PRECAST CONCRETE In this manual UBC members will learn about casting, precast history, on-site and off-site forming, and architectural and structural concrete. The procedures typically used when working with precast concrete are given. Transportation and handling are covered as well as grouting. Safety procedures are presented.



TILT-UP CONSTRUCTION This manual begins with an overview of tilt-up construction, including types of casting surfaces, bond-breaking agents, and types of panels. It covers concrete placement and transferring concrete from the truck into forms. Participants will learn how to estimate the amount of concrete necessary for casting floor slabs and panel elements as well as the importance of accuracy in performing concrete placement, vibration, and striking. Pre-tilt procedures are presented, emphasizing the importance of lifting and bracing in the panel-setting process. Connection methods are covered, specifying several kinds of structural connections for use between panels. Emphasis is given to safely and effectively removing temporary bracing and to bracing and sealing joints.



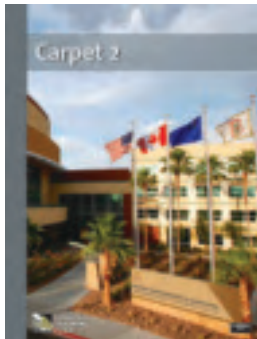
WALL AND STAIR FORMS Different forming systems and the components of wall, pilaster, and column forms are discussed in this manual. The basic principles of erecting and dismantling forms are also described. Advantages and disadvantages of each system are presented. Safety procedures related to wall and stair forms are emphasized throughout.



FLOOR LAYING



CARPET 1 This manual presents a wide variety of carpet and carpet cushion and describes the tools needed for carpet and cushion installation and explains how the tools are used. It also introduces the recognized standards floor layers must meet when laying out, cutting, and installing carpet. Carpet transitions, layout, and procedures for common seam-cutting methods are also discussed. Well-illustrated, detailed procedures for layout, carpet installation, and transitions are presented along with the history and development of the carpet industry.



CARPET 2 Participants in this workshop will learn to properly and safely install carpet using a variety of methods, including stretch-in, direct glue, and double glue. Cove carpeting, carpet base, patterned carpet, and vinyl-backed carpet tile are included. Effective sewing methods, such as push, pull, staggered, and offset are described and illustrated. Proper installation of tack strip and cushioning are included in the manual. Installation on a variety of stair configurations is covered, including floating stair, pie-shaped and winder stairs, stairs with balusters, and bullnose stairs with a birdcage. The tools required for installation are described: power stretchers, seaming tools, steamers, binding machines and wall trimmers. This manual also covers all safety precautions and procedures for ensuring safety related to carpet installation.



RESILIENT FLOORING 1 The floor layer is prepared through this manual to lay out and install many types of resilient flooring. The manual begins with an identification of the basic types of resilient flooring and shows how to safely use and maintain resilient flooring hand and power tools. Wall base, specialty wall base, and wall base corners are described and participants learn how to prepare and install wall base. The preparations and layout for square and diagonal tile are given. Participants are taught how to lay out, install, and seam sheet flooring, including rotogravure sheet flooring. How to install and seam linoleum is also presented. The critical steps of procedures are generously illustrated. Safety practices and precautions are emphasized.



RESILIENT FLOORING 2 While the Resilient Flooring 1 Workshop described types of resilient flooring and explained how they are installed on flat floors or along the base of walls as transitional molding, this Resilient 2 manual explains how the seams of some resilient flooring can be sealed and completed using heat welding. The manual also presents procedures for laying out and installing flash cove, installing resilient flooring on stairs, and also how to use it as an easily maintained wall covering. Additional chapters explain how to create and install decorative insets such as an elliptical star and how to repair damaged resilient flooring. ADA requirements are covered where these are applicable. All safety precautions and procedures are emphasized throughout. Procedures are generously illustrated.

STANDARD SKILLS FOR FLOOR LAYERS PART 1 AND PART 2

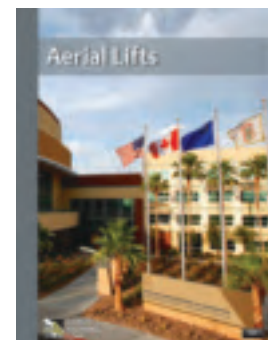
This introductory manual to the floor laying trade is sold only as a set. Part 1 deals with employability skills needed for success; the full range of job tasks required of the floor layer; and the equipment and products used in various tasks. The proper handling and storage of floor coverings are described as are all necessary safety precautions and practices. Participants learn about the proper techniques for substrate preparation and cleaning; proper trowel use; and the various adhesives and their correct application.

Part 2 deals fully with moisture: testing procedures and the proper setup, conduct, and evaluation of moisture and pH testing procedures. All the necessary principles and procedures for layout, including measurement, determining border widths, and erecting perpendicular lines are covered. Participants learn about pattern types and pattern matching. They also gain skill in selecting and installing the appropriate transitions. Making scale drawings and reading prints are covered. Both manuals emphasize safety, treat the tools needed for the trade, and are generously illustrated.



GENERAL SKILLS

AERIAL LIFTS This manual begins with an in-depth coverage of safety issues and guidelines and includes an overview of the styles and types of aerial lifts and their uses. This first chapter is followed by coverage of scissor lifts, boom-supported aerial lift work platforms, manually-propelled aerial lift work platforms, vehicle-mounted elevating and rotating aerial devices, vehicle-mounted bridge inspection and maintenance devices, and mast-climbing work platforms. Operator requirements, inspection procedures, and the specific limitations and capabilities of specific types of aerial lifts are also discussed.



AWARENESS: GREEN BUILDING This is a brief introductory manual intended for a four- to six-hour awareness workshop. The manual defines and describes green building, lists the requirements of green building, and presents information on green practices in the construction and other trades. The benefits of green building to the environment are presented along with the impact on the environment of typical traditional construction. Important issues surrounding green building are also discussed. Finally, information is given on the US and Canadian organizations that provide guidelines and/or certification for green building. A film, "The Greening of Southie," accompanies the Instructor's Guide. The film describes the construction of a residential green building in South Boston and shows the implementation of green practices from workers' perspectives.



GENERAL SKILLS, *cont.*



AWARENESS: HAZARDOUS MATERIAL, LEAD, ASBESTOS, SILICA, AND MOLD This manual deals with the definitions, locations, specific hazards, legal protections, and preventive measures involved in dealing with hazardous materials. Separate chapters discuss the hazards and precautions involved in working with or around lead, asbestos, silica and silica dust, and mold. Participants who complete this workshop should be able to identify hazardous materials, know how to use the MSDS to locate hazardous materials on the jobsite, recognize the potential effects on health of hazardous materials, and demonstrate the proper selection and use of Personal Protective Equipment in environments where hazardous materials are present.



CONFINED SPACE Revision 1 This manual describes the characteristics of confined space and the requirements for a permit-required confined space program. The types of atmospheric hazards are described along with the ways confined spaces can be ventilated, the time requirements for proper ventilation, and the procedures for monitoring air quality. Safety precautions, practices, and protective equipment are all described as are the procedures for using them. Advantages and disadvantages are presented of various types of Personal Protective Equipment. The importance of effective communications equipment is emphasized. Applying the knowledge contained in this workshop will help UBC members to safely work in confined spaces.



CONSTRUCTION FALL PROTECTION Revision 1, Aug. 2007, the Construction Fall Protection manual addresses safety requirements when working from an elevated area. UBC members need to become aware of the fall hazards around them and know how to make the entire work site safer for everyone. The workshop covers types of fall hazards, types of fall protection, hazards on both commercial and residential sites, and fall hazards from stairs, ladders, scaffolds, aerial lifts, and steel erection. It also includes how to make the work site safe, and how to use, inspect, and maintain Personal Protective Equipment. The manual also deals with the impact of the federal regulations, effective June 16, 2011, that apply to residential construction.



ERGONOMICS This manual addresses ergonomics, which is the study of the workplace, tools and equipment, and the effects of these factors on a person's body. UBC team members must educate themselves on how to work safely and protect their bodies from short-term and long-term injuries. This manual teaches the UBC member to work smart. The manual presents simple changes in work procedures that can increase productivity and help the UBC member to avoid injury in the process.

HAZARD COMMUNICATION AND CHEMICAL SAFETY This manual is a revision of the UBC manual, Material Safety Data Sheets. The focus in this revision is broader: chemical hazards and safety precautions are thoroughly discussed along with hazard recognition and chemical hazard protection. The importance of communicating information about hazards and making information available to all workers is emphasized throughout. Reading labels and understanding OSHA's revision of the MSDS, now known as the Safety Data Sheet (SDS), are also thoroughly explained. This manual replaces GS0009M, MSDS, which is being phased out.

- Resource Item GS0020H: OSHA 3491 Quick Card, Hazard Communication Standard Pictogram, with OSHA 3492 Quick Card, Hazard Communication Standard Labels; OSHA 3493 Quick Card, Hazard Communication Safety Data Sheets; OSHA 3678 Quick Card, Comparison of NFPA 704 and HazCom 2012 Labels, laminated wallet cards participant handout.
- Resource Item GS0020P, Hazard Communication Standard: Pictograms and Hazards Poster, 36" x 48"



HAZARD COMMUNICATION AND CHEMICAL SAFETY 2012 UPDATE

This manual consists of two chapters, "Labels and Other Forms of Warning" and "Safety Data Sheets." These chapters capture all of OSHA's changes to the MSDS. Any UBC members who have been trained to read and use the Material Safety Data Sheets (MSDSs) must now receive upgraded training to read and understand the new Safety Data Sheets. These two chapters are also available to UBC members at the carpenters.org website.

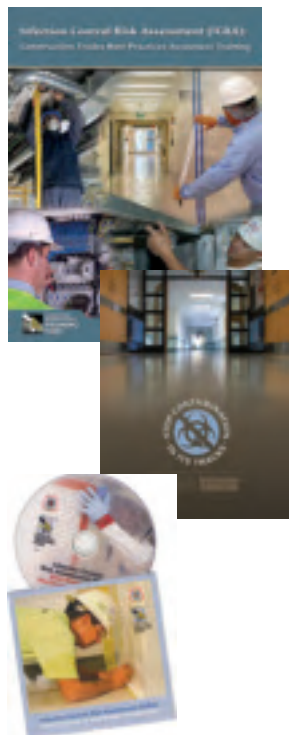




INFECTION CONTROL RISK ASSESSMENT (ICRA): BEST PRACTICES IN HEALTH-CARE FACILITIES

This manual promotes the importance of infection control and outlines protection methods and safe work practices for those who perform construction work in these facilities. The focus in the content is on renovations and additions to existing occupied buildings. New construction is not included. Various types of hazardous materials are identified along with information on how to recognize such hazards, the ways such materials invade the body, and methods to control and minimize exposure. The unique construction challenges of healthcare environments are presented. The manual also deals with administrative controls in such facilities and the regulatory agencies for such facilities. The importance of controlling contaminants, guidelines, precautions, and infection control methods are discussed along with descriptions of the specific information on determining risk levels and how all of these challenges relate to construction within the facility. Finally, the manual gives specific information on mold, the ways to control and contain a work area, and methods of remediation. Business agents may order these items through their nearest training center.

- Outreach Item *Infection Control Risk Assessment (ICRA): Best Practices in Health-Care Construction*, GS0019A: A new ICRA focused outreach brochure for both UBC and other construction trades training programs.
- Outreach Item *Infection Control Risk Assessment (ICRA): Best Practices in Health-Care Construction*, GS0019D: A new ICRA focused outreach video for both UBC and other construction trades training programs. (replaces GS0017D & GS0017H)
- Classroom Item *Infection Control Risk Assessment (ICRA): Best Practices in Health-Care Construction Poster Set*, GS0017P: Forms, Charts & Tables for classroom use. Set of 10 posters, 9 @ 28" x 32", 1 @ 28" x 36"



INFECTION CONTROL RISK ASSESSMENT (ICRA): CONSTRUCTION TRADES BEST PRACTICES AWARENESS TRAINING

This manual is designed for a one-day workshop for hospital personnel and construction professionals, including professionals in trades other than those covered by the UBC. (The companion manual, ICRA: Best Practices in Health-Care Construction is designed for UBC members.). ICRA: Construction Trades... presents an awareness chapter covering aspects of the unique environment of an occupied health-care facility, professionalism, and regulatory agencies and organizations. Administrative controls governing risk evaluation, necessary documentation, and fire control are covered next. Critical information on contaminants and the chain of infection, keeping workers and patients safe, and remediating mold is also presented. The importance of clear and appropriate communication among trades and with the management of the facility is covered and work practice procedures used in a health-care facility are described. The responsibilities of the Infection Control Risk Assessment (ICRA) team are thoroughly described. Understanding and completing the ICRA Form is also discussed in detail. Safety precautions and procedures are emphasized throughout the manual.

- Outreach Item *Infection Control Risk Assessment (ICRA): Best Practices in Health-Care Construction*, GS0019A: A new ICRA focused outreach brochure for both UBC and other construction trades training programs.
- Outreach Item *Infection Control Risk Assessment (ICRA): Best Practices in Health-Care Construction*, GS0019D: A new ICRA focused outreach video for both UBC and other construction trades training programs. (replaces GS0017D & GS0017H)

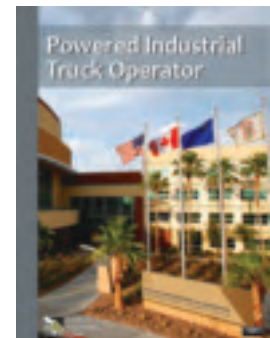
LEVELING AND LAYOUT INSTRUMENTS This manual is designed to provide the UBC member with the skills needed to set up and use leveling and layout instruments—from the water level through laser level and theodolite. Handling and maintaining the instruments, as well as the tripods, is also covered. Instructions are provided through step-by-step procedures and accompanying exercises. The manual begins with the necessary review of the math required to convert measurements and use the equipment effectively.



MATH FOR THE TRADES This manual is a basic treatment of trade math beginning with general math, fractions, and decimals. Measurement and measurement tools, layout, area measure, and volume measure are all explained in detail with numerous exercises. Additional exercises for practice and remediation are contained on the CD accompanying the Instructor Guide. A special effort has been made to set exercises in the context of real life technical work tasks.



POWERED INDUSTRIAL TRUCK OPERATOR This manual introduces many kinds of lift trucks—their components and applications. The text focuses on industrial lift trucks and rough terrain lift trucks, highlighting unique features and explaining procedures for visual and operating inspections and maintenance. Participants will also learn safe operating procedures. The manual is extensively illustrated and emphasizes safety throughout.



PRINT READING In the Print Reading manual the UBC member is introduced to lines and symbols that an architect or designer creates. The manual encourages creative thinking so that the individual understands and is able to transfer what is on paper to a finished structure or project. The workshop includes: Introduction to Prints and Specifications; Types of Prints; Title Blocks; Line Identification, Dimensions and Measurements; Symbols and Abbreviations; Views; Elevations; and Governing Codes and Regulations.

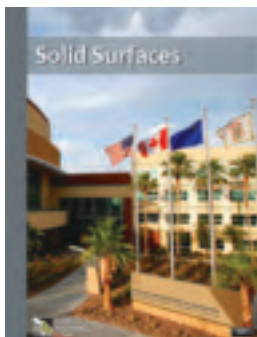




RIGGING This revised manual introduces and supports the hands-on portion of the Rigging and Signaling course. An introductory chapter on the history of rigging is followed by chapters on safety, wire rope, chain construction, slings, hardware, and knot-tying techniques. Rigging procedures are explained in four separate chapters that provide a thorough treatment of common hitch configurations, hardware and sling attachments, working with different types of cranes, and directing crane movements with voice and hand signals. Safety precautions and practices are presented throughout the book as they apply. The treatment of safety includes detailed information on properly inspecting and caring for rigging hardware and other rigging equipment. All material needed to teach the Rigging and Signaling Refresher is included in this manual. Drawings and photos illustrate all aspects of the equipment and procedures involved in rigging. Guidelines for instructional timeframes are included in the Instructor Guide Sequence of Instruction. PowerPoints for the Refresher are also shown separately in the Instructor Guide.



SCAFFOLDING ERECTION This manual provides clarification of the roles of a competent person and a qualified person and presents training requirements for erectors, dismantlers, and users. Information and guidance are given for calculating capacity and contributory leg loads. Criteria are given for all scaffold types as well as methods for platform construction. The manual includes assembly techniques for frame, tube and clamp, and systems scaffolds. Scaffold access and egress and safe use guidelines are discussed as well as fall protection and falling object protection. The manual emphasizes safety and is generously illustrated.

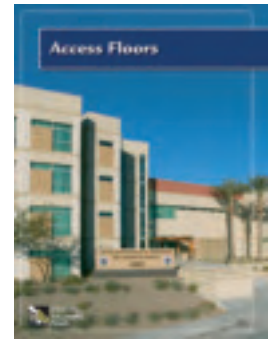


SOLID SURFACES The Solid Surfaces manual provides in-depth instruction in the technical aspects of working with solid surface material. Solid surface manufacturers require individuals that work with their product to be trained, and the information in this manual not only meets but also exceeds the requirements of the manufacturers. The manual includes an introduction to the material and the variety of millwork products that can be made with solid surface material, how to work and shape the material with the different tools and tooling, and how to maintain, repair, finish or refinish the solid surface material. Numerous photos and drawings reinforce the learning.



WELDING AND CUTTING This manual starts with the history and development of welding. Emphasis is given throughout the manual to the hazards of welding and to the safety measures required to weld and cut without injury. Students also receive an introduction to the science of metallurgy. The major kinds of cutting are each discussed in separate chapters: oxy-fuel cutting, plasma arc cutting, and carbon arc gouging. Shielded metal, gas metal, flux cored, and gas tungsten arc welding are discussed in detail. The power sources used in each type of cutting or welding are explained. Electrode holders, guns, and torches and the proper ways to hold them and use them are also covered. Students will also learn how to recognize and read welding symbols.

ACCESS FLOORS This manual defines access floors and discusses how they are used. The manual also presents the materials used in an access floor, as well as the installation procedures from the layout to the finished floor. The manual addresses areas such as stair steps; handrails; ramps; obstructions; and specialty floor systems. Safety considerations are covered throughout the manual. Plentiful illustrations help to clarify the text presentation.



ACOUSTICAL CEILINGS The Acoustical Ceilings manual deals with the material, design, and code changes in the acoustical ceiling industry. The manual identifies common grid components in use, and how and where to find the print reading information needed to correctly lay out and install the ceiling. The latest codes and standards and regulating bodies are identified as are the proper installation methods for exposed and concealed grid ceilings. The addition of metal ceilings, open grid systems, and grid soffit framing as well as the latest installation techniques will improve the productivity of even the most experienced UBC ceiling installer.



ADVANCED METAL FRAMING This manual contains explanations and procedures for laying out and installing shaft walls and area separation walls. Print reading, job planning, and a metal framing review are included. The manual also presents the layout and framing of radius walls, including walls that form a simple arc; serpentine and elliptical angle walls; and low and freestanding walls. Safety considerations and cautions are presented throughout a generously illustrated text.

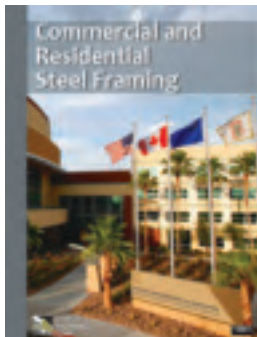


ARCHITECTURAL FINISHES This comprehensive manual begins with an explanation of glass fiber-reinforced products, including concrete, gypsum, and plastic. Other types of finishes addressed in the manual include foam; plastic trim and moldings; metals; and fiber reinforced plastic panels. Participants in the workshop will learn how to install each product and its particular advantages and disadvantages. Safety considerations are covered throughout the manual. Plentiful illustrations help to clarify the text presentation.





CLEANROOM CONSTRUCTION This manual addresses the highly controlled and regulated industry of cleanroom construction. The manual starts with an introduction and brief history of the cleanroom, including configuration and interior design. Contamination and the extreme effects even small amounts have on the cleanroom environment are addressed, as is the protocol associated with every stage of construction. Gowning and de-gowning procedures are also presented. Participants in the workshop will learn how to construct a cleanroom, including areas such as the ceiling grid; access floors; walls; windows; and doors. Safety considerations are covered throughout the manual. Plentiful illustrations help to clarify the text presentation.



COMMERCIAL AND RESIDENTIAL STEEL FRAMING This manual covers critical knowledge and skills required in correct framing using cold-formed steel: reading and understanding prints; mathematical formulas for calculating correct angles and lengths for cutting steel roof rafters; and proper layout techniques. Methods are also described for building a cold-formed steel floor frame, several types of steel-framed walls, and a steel-framed roof. Participants also learn the use of fasteners, banding, bridging, and stripping. Methods and procedures are generously illustrated. One entire chapter deals with safety; safety tips and precautions are emphasized throughout the manual.



DOORS AND HARDWARE This Doors and Hardware manual explores door types, frames, and hardware in depth so that UBC members learn the skills required to ensure that doors and hardware operate properly. There are also numerous tips and techniques that emphasize the importance of organization in the preparation, selection, and installation of doors and finish hardware. The manual begins with a thorough explanation and illustrations of prints and schedules and proceeds with instructions on how to identify and select the proper components for a door opening. The basic door swing and door schedules are covered as well as proper storage and handling techniques.



DRYWALL APPLICATIONS This manual covers basic drywall information, including the different types of drywall products and the proper techniques for delivering, handling, and storing drywall. The manual emphasizes the importance of safety precautions when hanging drywall, including using the correct PPE and the safe handling of power tools. The importance of job planning is emphasized, including gathering information, estimating materials, scheduling deliveries, and coordinating with other trades so that the project remains on time and within budget. The manual provides instruction to accurately prepare and install drywall panels; using the correct tools and methods for taking measurements; and completing all required cuts accurately. Also included are common installation methods for both steel and wood framing systems.

DRYWALL FINISHING This manual covers the tools and materials, procedures, and the types of finish used in drywall finishing. The tools covered include hand taping tools as well as automatic and mechanical taping tools and how they are used. Drywall finishing materials including joint compounds and trims are introduced. The trims include outside corner bead, inside corner bead, flex bead, bullnose corner bead, L-bead, J-bead, tear away bead, and archway corner bead. Also covered are material handling, trim application procedures, site preparation, compound application sequence, pre-fill, manual application procedures, spotting, coating, patching procedures, and clean up. The industry's five recommended levels of drywall finish and when each level is used are included in the manual. Texturing and sanding are also included.



FIRESTOP INSTALLATION This manual explains firestop systems and how they are used to control and contain a fire. The manual also discusses building codes and how they relate to firestop installation. The importance of planning for firestop in areas such as building joints, shafts, ducts, and penetrations is addressed, as are the code requirements and test ratings for these areas. The manual concludes with an explanation of how the various firestop products are used. Safety considerations are covered throughout the manual. Plentiful illustrations help to clarify the text presentation.



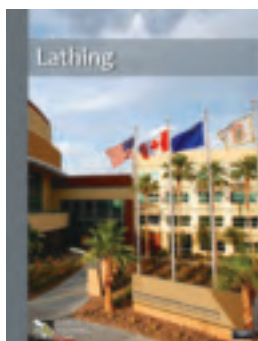
INTERIOR SYSTEMS LAYOUT Because interior systems layout jobs have become more complex in recent years, UBC members must understand and be able to apply the latest techniques in order to successfully lay out the more complex designs. This new manual leads to an understanding of how layout is the transference of the architect's vision, represented by lines on a print, to physical lines used to actually build. The manual covers the methods, materials, and tools used to do these complex interior layout projects. Effective instruction is given through classroom instruction, worksheets, hands-on demonstrations, and shop projects.



INTRODUCTION TO METAL FRAMING Construction of today's modern office buildings requires knowledge of the basic installation procedures for metal framing and drywall. The Introduction to Metal Framing manual introduces the materials, tools, and fasteners used to construct metal wall framing. It also provides instruction on print reading, site inspection, and estimating the materials, tools, and equipment needed to efficiently complete a job. Introduction to Metal Framing introduces the proper way to cut materials, install track and studs, and deals with specialized framing such as suspended ceilings, soffits, columns, shaft walls, furring and chase walls.



INTERIOR SYSTEMS, *cont.*



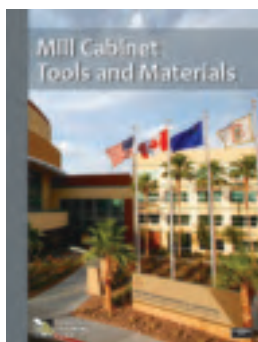
LATHING Revision 1 This manual is a comprehensive treatment of lathing. It includes information on and procedures for framing suspended ceilings, installing lathing trims, and installing lath on walls and ceilings. Curved ceilings and freeform lath are also presented. Information and procedures are well illustrated. Print reading required for lathing as well as safety considerations are also covered.



PLASTERING This manual explores the types of plaster used as well as their materials, proper handling and application, and safety concerns and procedures related to plastering. Fireproofing, which protects plaster and surrounding structures, is also addressed. Common substrates and how they are to be properly prepared are covered. Two chapters are devoted to the application of gypsum plaster and Portland cement plaster, offering step-by-step procedures from creating dots and screeds to applying the final coat. EIFS and stucco systems are presented in detail, including specific materials and procedures. Safety is emphasized and the manual has numerous drawings and photos to illustrate concepts, processes, and procedures.



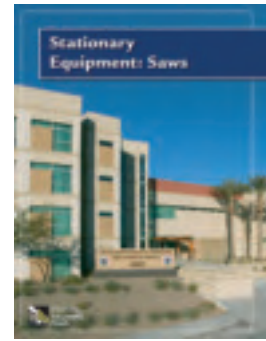
EXHIBIT CONSTRUCTION This manual covers all aspects of exhibit construction from planning the exhibit to building custom crates for shipping exhibit components. The tools and materials used in exhibit construction are described and illustrated along with explanations of how to read, interpret, and follow a shop drawing, and make a full-size layout for a custom exhibit. The hardware and blocking used for exhibit components are identified as are the hardware and mounting techniques used for graphic signage and product display. Workshop participants are given hands-on experience in laying out and building exhibit components such as headers, columns, and light boxes. Many illustrations of all kinds of exhibits and all stages of building are included. The aspects of safety related to exhibit construction are emphasized.



MILL CABINET TOOLS AND MATERIALS This manual introduces the mill cabinet craft, explaining how mill cabinet and furniture technology has evolved and describing the standards and grading used in cabinetmaking. Participants will learn the basic math required, how to use prints and shop drawings, and how to use common measuring and layout techniques as well as basic hand and power tools. The common types and grades of lumber are presented along with types of sheet goods and composite materials. Fasteners, hardware, adhesives, abrasives, and joints and finishes are also presented. Safety considerations and precautions are emphasized in this well-illustrated manual.

MILL CABINET

STATIONARY EQUIPMENT: SAWS This manual provides an introduction to the stationary equipment used to cut wood—how to set up, operate, and maintain a variety of stationary saws, such as table saws, radial arm saws, and band saws. Safety considerations, descriptions, and illustrations are provided and the basic types of cuts and joints made with these saws are also identified. After an introduction to the basic types of table saws and circular saw blades, Chapter 2 explains how to use the table saw, including procedures for making basic and specialty cuts. Chapter 3 introduces the sliding table saw, which is often used to cut wide work pieces, square up stock, and size large sheets of panel material. Chapter 4 discusses the radial arm saw. Chapter 5 introduces the sliding compound miter. Chapter 6 describes how the band saw is used to cut curves and irregular shapes, as well as make other types of cuts. Chapter 7 covers several saws including the straight-line rip saw, horizontal beam saw, and panel saw. All chapters provide procedures for using and maintaining the particular saw properly, safely, and efficiently.



STATIONARY EQUIPMENT: SURFACING AND SANDING This manual gives detailed instructions on how to set up, operate, and maintain jointers, planers, edge and surface sanders. A brief descriptive overview, safety considerations, and descriptions of the components of each machine are presented. Techniques for smoothing and finishing wood surfaces are described. Hands-on practice is provided in procedures that detail set up, use, and maintenance of the equipment.



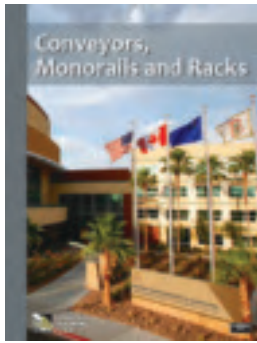
MILLWRIGHTING

ADVANCED WELDING TECHNIQUES This manual builds from basic welding skills already mastered. The material included covers welding hazards, PPE, and safety, welding symbols, welding processes, and assembly procedures. Electrodes, fluxes, shielding gases and their uses are also discussed. Various welding certifications are required in the field, so this manual is designed to resemble actual field welding tests. Discussions on various forms used to indicate welding specifications, procedures and standards have been included. Cutting with oxyfuel, plasma arc and air arc gouging are also covered.



COMPRESSORS This manual provides an in-depth understanding of various types of compressors. It emphasizes and describes safety procedures, standard practices, and the importance of inspection, maintenance, troubleshooting, and repair. Participants learn the principles of compressor operation; assembly and disassembly procedures are covered. Several different measurement techniques are given to ensure that the equipment operates within acceptable tolerances. Reassembly tasks and final internal inspection tasks necessary to return the compressor to service are also presented.

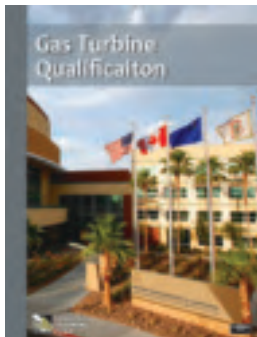




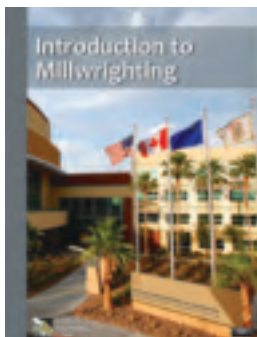
CONVEYORS, MONORAILS AND RACKS This manual introduces the various types of conveyors, monorails, and racks, identifies the various types and styles of equipment and their applications, and presents the safety issues and precautions involved in working with conveyors, monorails, and racks. Although conveyors differ in type, style, and function, they are designed and constructed from a standard set of components which each have a specific function. This workshop provides definitions and descriptions of these components, as well as showing participants how to perform various layout and installation tasks. The various types of manual and automated loading systems are described and participants learn how to perform associated layout and installation tasks. The manual is generously illustrated and all procedures have specific performance steps.



GAS TURBINES: FAMILIARIZATION This manual is designed to be taught in a workshop preceding the hands-on workshop taught at the ITC. The manual covers standard practices including safety and assembly and disassembly. The necessary inspections are detailed. Turbine installation processes are explained, including: planning, preparation of the foundation, how to set the alignment and elevation, and grouting procedures. Precision tools and their use are covered as are the common procedures for bolting. Torque and load and their relationships, how the load affects the bolting process, and tensioning procedures are detailed. Illustrations are generous. This workshop fully prepares participants with the knowledge necessary to take the hands-on portion of gas turbine.



GAS TURBINE QUALIFICATION Participants engage in a simulated gas turbine major inspection. The manual presents currently acceptable and recognized methods of performing the tasks described. However, the workshop material—operational tasks, sequence, and procedures—is not designed to cover every application that may be found on the job. As in all other CITF manuals, safety precautions and practices are given primary emphasis.



INTRODUCTION TO MILLWRIGHTING This manual provides millwrights with a set of basic skills, including safety precautions such as those required when working around powerful machinery. The proper operation and maintenance of various hand, power, and precision tools are also covered. Because millwrights work with both English and metric measurements, the ability to convert measurements is critical and the basic math formulas are presented here, including those required to calculate precise measurements for such tasks as aligning equipment, placing components, and determining if parts are functioning properly. The characteristics and types of fasteners and materials commonly used in millwrighting tasks are described. Lockout/tagout procedures and responsibilities are thoroughly explained. The job duties and employability skills expected of UBC millwrights and descriptions of the industries in which millwrights work are also included.

MACHINERY INSTALLATION This manual begins with site management and layout for machinery installation, including taking precise machine locations from prints. Layout tools and equipment and the proper procedures for establishing and marking the location are then discussed. Site preparation is thoroughly covered. Finally, procedures for pre-operational tasks before and during setup are presented. Preventive maintenance, along with all safety requirements, is emphasized. Processes and procedures are illustrated throughout.



MECHANICAL POWER TRANSMISSION SYSTEMS This manual explains how mechanical power transmissions work, details applications of the systems, and identifies parts and functions of the systems: for example, shafts, keys and keyways, friction and anti-friction bearings, couplings, sprockets, chains, pulleys and belt systems, gears, and brake and clutch systems. Factors that affect the life of components are presented as well as methods of repair. Participants learn the installation, maintenance, removal, and lubrication requirements of all the components of mechanical power transmission systems. Safety precautions are presented throughout the manual, which is generously illustrated.



PAPER MACHINES This manual provides a comprehensive overview of the papermaking process and introduces the most important mechanical systems involved in each phase of that process. The initial chapters explain how paper is made, identify the ingredients that go into modern paper products, and offer a quick history of the papermaking process. Each of the remaining chapters focuses on a single system in the paper mill, explaining its purpose, listing its key components, and discussing the UBC Millwright's role in keeping the system running. Participants learn the safety precautions and installation and maintenance procedures involved in the paper making process.



PUMP REPAIR TECHNICIAN I This manual helps prepare the UBC millwright to remove, assemble, and disassemble pumps. Participants successfully completing the workshop should be able to demonstrate the purpose, removal, and installation of compression packing; describe how mechanical seals work; explain how to remove, disassemble, and reassemble the pump with and without the pump case; perform as-found visual inspections and pump checks; show how to lay out and cut a gasket; and demonstrate how to read a seal print and install a mechanical seal with and without the print. The explanations and procedures are generously illustrated. Safety is emphasized throughout. IG with CD, Pending.





READING MECHANICAL PRINTS This manual details how to read a mechanical print; introduces the types of prints the millwright is likely to encounter; and gives instruction on the information provided on a print and how to use that information effectively. The manual proceeds from the basic lines, symbols, and abbreviations through the way features on an object are shown to dimensions, measurements, sketching, and welding symbols. Print reading exercises are provided and a generous number of illustrations help the learning.



MECHANICAL PRINT SET Contains 18 full-size, 22" x 34" prints, including 8 conveyor, 8 monorail, and 2 schematics. Accompanies activities in Reading Mechanical Prints but the set may be used to supplement instruction in other workshops, such as Conveyors and Monorails.

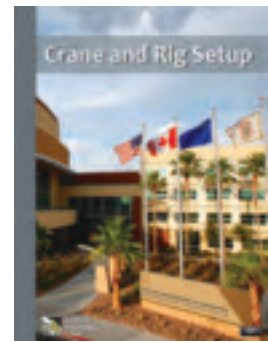


SHAFT ALIGNMENT 1 This manual provides the knowledge necessary to accurately align the shafts of two interconnected machines. Several types of alignment methods are presented, along with detailed procedures, examples, and all related safety precautions and procedures. Participants will learn to align shafts using the straightedge and feeler gage method as well as the rim and face method. Detailed information is given on how to use rate of change and ratio to calculate shim corrections. Procedures are given for checking for soft foot and for performing pre-alignment checks.



SHAFT ALIGNMENT 2 This manual presents thermal growth and ways to prevent or correct its effects. Participants will learn how to properly mount dial indicators for the reverse alignment method; how to compensate for bracket sag; how to determine shim changes using graphs and how to make shim changes and horizontal movements to correct misalignment. Laser-based alignment systems are presented along with proper mounting techniques. Special applications are also discussed, including using a jackshaft, aligning sprockets and pulleys, and aligning Cardan shafts. All hazards associated with this work are presented and safety precautions are emphasized.

CRANE AND RIG SETUP This manual introduces many different types of cranes and explains their differences and various applications. Planning for a pile driving project and preparing the site for crane setup are also covered. Participants will learn the specific procedures for assembling three commonly used cranes and installing common pile driving accessories. The manual contains many photos and drawings to illustrate concepts and procedures. Safety procedures are emphasized throughout the Manual.



EARTH STRATA AND RETAINING STRUCTURES This manual first covers the knowledge about soil mechanics necessary to an understanding of what type of foundation is suitable for the soil conditions at a jobsite. Soil stabilization, in particular, is emphasized. The uses of retaining walls are explained. Finally, an introduction to falsework is given, including applications and the basics of erecting falsework. Safety precautions and procedures are emphasized throughout.

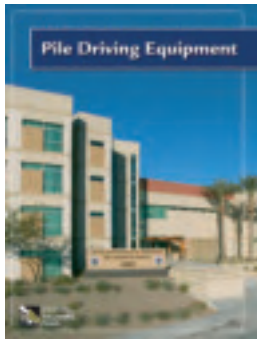


EXCLUSION AND RETENTION STRUCTURES This manual deals with the preparation and building of exclusion and retention structures and deals in depth with cofferdams, bulkheads, and tieback walls. Participants will learn how to build a template and set it in position. The hardware, materials, and equipment used to build these structures are presented as well as specific steps for building cofferdams, bulkheads, and tieback walls. Throughout the manual safety practices are discussed and all step-by-step instructions are generously illustrated.



INTRODUCTION TO PILE DRIVING This manual is a foundation text, beginning with the role each member plays in the pile driving crew. The manual goes on to address those skills most valued by employers as well as what the apprentice pile driver needs to know to function effectively as part of the crew. The tools and equipment used in pile driving are identified and defined. The crane and the rig are thoroughly described along with their workings, maintenance, and assembly. Separate chapters address all the types of pile installed either into the ground or used to create marine structures. The voice and hand signals used on the job site are presented. The safe use and maintenance of tools and equipment are emphasized throughout the manual.





PILE DRIVING EQUIPMENT The Pile Driving Equipment manual introduces the equipment central to construction projects. The manual begins with a thorough description of the types of cranes. The boom types and parts are then discussed. This is followed by a brief description of pile driving rigs. Pile driving accessories and their uses, care, and maintenance are highlighted. The manual concludes with a discussion of various pile driving hammers and their applications. Numerous photos and drawings illustrate pile driving equipment at work.



RIGGING TECHNIQUES FOR PILE DRIVERS This manual is a continuation of the 40-hour UBC Rigging and Signaling workshop and begins with a review of that core program. Hardware, rigging practices, inspection techniques, and common rigging calculations specific to working with pile are discussed. Also discussed in this manual is the importance of reading and understanding load charts; reeving techniques; how reeving creates a mechanical advantage; and the equipment used for reeving. The manual ends with procedures for various rigging techniques, including hand rigging, hand rigging with crane assist, and crane hoisting. Safety considerations are covered throughout the Manual. Plentiful illustrations help to clarify the text presentation.

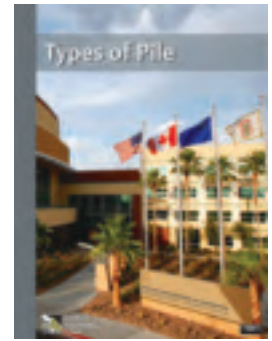


SEAMANSHIP FOR PILE DRIVERS This manual is designed to prepare the UBC pile driver to work in the marine environment. The various vessels used in marine construction are described, including those used to maneuver other vessels and those used as a working platform. Vessel propulsion systems and the different types of motors used in marine construction vessels are explained. The manual addresses the navigational aids and rules used in the marine environment, explains how vessels communicate with other vessels, how to communicate when a vessel needs emergency assistance, and how to assist the dive tender when a dive operation is underway. Safety is explicitly presented throughout the manual along with rescue procedures.



TIMBER CONSTRUCTION The Timber Construction manual gives the UBC Member a working knowledge of the principles, practices, and equipment used in timber construction. The types and grades of timber, the species of trees used for timber, and the physical makeup and growth defects of trees are discussed. Timber damage and the types of timber preservative treatments are also illustrated and explained. Finally, fastening and joining timber and repair work and the procedures involved are presented. Safety, Productivity and Trade tips make real-world connections throughout the Manual.

TYPES OF PILE The Types of Pile manual provides an overview of those types of pile most commonly used in the construction industry: sheet pile, steel pile, concrete pile, cast-in-place pile, wood pile, and specialty pile, such as plastic and wick drains. The applications of each type of pile are described as well as the advantages and disadvantages of using each type of pile. Photos and illustrations of processes such as the auger process, complement the explanations.



CAREER CONNECTIONS

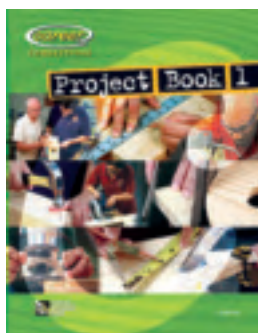
CAREER CONNECTIONS is a unique program designed for those preparing to be professional carpenters through training in pre-apprenticeship programs or through high school carpentry courses. Because the projects are derived from a skills matrix divided into basic, intermediate, and advanced skills, the instructor will find it easy to locate trainees at a particular skill level. At the core of the program is a book presenting decision making, goal setting, and employability skills. The program is unique because a team of UBC members with both teaching and field experience has designed the step-by-step project procedures and the skills matrix that defines where a student is on the spectrum from beginner to accomplished carpenter. All trainee materials are framed by specific goals. Each project has a list of the competencies the trainee must show in building the project; a materials list; and a student evaluation form to be completed by the instructor for each project.

Note: All Career Connections materials may be ordered only through CITF-trained Career Connections Outreach Specialists' authorized representatives at their respective training centers.



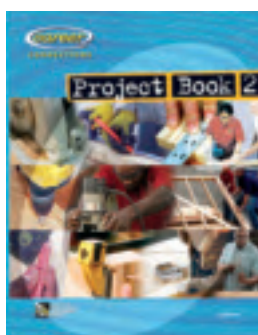
ONE TRADE, MANY CAREERS Covers self-evaluation; goal setting; employability skills; specific career information on those trades within the UBC; real-world-of-work descriptions of workers on the job; interviews and features that appeal to young adults. The Teacher Annotated Edition, CC00SSG, contains Lesson Plans, suggested time frames for teaching, and page-by-page tips for teaching and using additional resources. A Resources CD, CC00SSC, included with the Teacher Annotated Edition, contains Lesson Plans and additional material to assist in teaching the class. A ten-minute video, "One Trade, Many Crafts," CC0005D, produced by the UBC, is also included with the Teacher Annotated Edition, along with a Discussion Guide.

- Resource CD CC0TAEC, included with TAE
- One Trade, Many Crafts DVD CC0005D, included with TAE



PROJECT BOOK 1 Presents safety information and precautions, descriptions of tools and safe operating procedures, descriptions of materials and fasteners; contains 15 step-by-step projects that require basic skills including the tote box, step stool, CD rack, and storage chest. The Teacher Annotated Edition, CC0001G, contains Lesson Plans, suggested time frames for teaching, and page-by-page tips for teaching and using additional resources. A Resources CD, CC0001C, included with the Teacher Annotated Edition, contains all Lesson Plans, Grading Rubric for each project; Skills Matrix for all projects; Safety and Operation Checklists for evaluating student performance in the use of each tool.

- Resource CD CC0TAEC, included with TAE
- One Trade, Many Crafts DVD CC0005D, included with TAE



PROJECT BOOK 2 Reviews safety, tools, and materials information; contains 13 step-by-step projects that require intermediate skills including the octagonal picnic table, skateboard ramp, Adirondack chair, and shed with a gable roof. Teacher Annotated Edition, CC0002G, contains Lesson Plans, suggested time frames for teaching, and page-by-page tips for teaching and using additional resources. A Resources CD, CC0002C, included with the Teacher Annotated Edition, contains all Lesson Plans, Grading Rubric for each project; Skills Matrix for all projects; Safety and Operation Checklist for evaluating student performance in the use of each tool.

- Resource CD CC0TAEC, included with TAE
- One Trade, Many Crafts DVD CC0005D, included with TAE

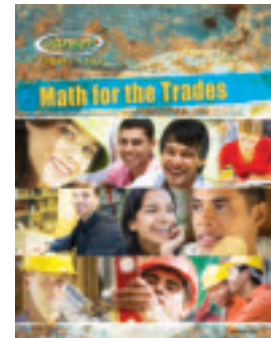
PROJECT BOOK 3: RESIDENTIAL CONSTRUCTION**PROJECT BOOK 3: COMMERCIAL CONSTRUCTION**

These project books develop advanced building skills. A safety chapter is included in each book. Reviews of tools, materials, and fasteners are included at the points students will need a review before building. Lead Up exercises are provided. Procedures included are determining the partition layout; marking door and window openings; installing top and bottom track; establishing plumb; constructing a header; building an interior wall system; making and installing a soffit; assembling an equal slope hip roof; calculating and laying out a hip rafter; hanging and finishing drywall; installing ceilings.

- Resource CD CC0TAEC, included with TAE
- One Trade, Many Crafts DVD CC0005D, included with TAE



CAREER CONNECTIONS: MATH FOR THE TRADES This manual makes up the math component of an effective high school trades curriculum. All of the math concepts are linked to real life situations in the world of construction work. This manual is a basic treatment of trade math beginning with general math, fractions, and decimals. Measurement and measurement tools, layout, area measure, and volume measure are all explained in detail with numerous exercises. Additional exercises for practice and remediation are contained on the CD accompanying the Instructor Guide. A special effort has been made to set exercises in the context of real life technical work tasks.

**CAREER CONNECTIONS: EXAMVIEW® ASSESSMENT QUESTION BANK**

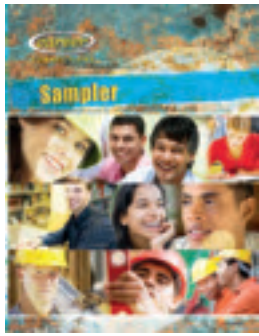
These ExamView® question banks accompany the Career Connections program and consist of 1600 objective questions. ExamView® Assessment Suite software is included. Types of questions include multiple choice; fill in the blank; true/false; and critical thinking. The test questions cover five books in the program: One Trade, Many Careers; Project Book 1; Project Book 2; Project Book 3: Commercial Construction; and Project Book 3: Residential Construction. Question banks are arranged in folders by book title. Teachers may use these questions to generate final assessment when students complete each book or throughout the class as tools for grading. All questions relate to objectives and/or procedures found in each of the books. The successful completion of any part or all of these assessments is not regarded as part of the requirement for a Certificate of Completion.



THE VIRTUAL SHOP Demonstration software in lifelike 3D for all projects in Project Books 1 and 2; also contains a tour of the shop pointing out hazards and providing instruction on safety; and a 3D tools presentation is also included.



CAREER CONNECTIONS, *cont*



OUTREACH SAMPLER Career Connections Outreach promotional publication, describing program and components in detail, with sample pages from Student Manuals, Teacher Annotated Editions, and more. The *Career Connections Sampler* has recently been updated to include excerpts from *Project Book 3: Residential Construction* and *Project Book 3: Commercial Construction* and *Math for the Trades* (pending, August 2014).



OUTREACH POSTERS Set of 3 outreach posters:

CCPOS1 = “Connecting to Your Future”

CCPOS2 = “Nailing It”

CCPOS3 = “Natural High.”



CARPENTERS: ONE TRADE, MANY CRAFTS A ten-minute video on DVD, produced by the UBC, provides an overview of the various crafts involved in the trade of carpentry. The video shows UBC members at work on the jobsite and is a useful and motivational introduction for pre-apprentices and apprentices. This DVD, normally provided with each Teacher Annotated Edition of the Career Connections books, can now be ordered separately as an Outreach item.



CITF BEST BET IN ANY TOWN Instructional Resources This publication contains descriptions of each component in the Career Connections program. A price list is included as well as explanations of CITF's Certificates of Completion. A page of directions for creating a build-a-book from Career Connections components is followed by a complete contact list of Outreach Specialists, arranged state by state and including Canada; the role of the Outreach Specialist is then explained.



Technical Training Materials

Supplement

Inventory Code	Title
10001A	Be A – Professional Cabinetmaker or Millworker (set of 100 only)
10002A	Be A – Professional Carpenter (set of 100 only)
10003A	Be A – Interior Systems Carpenter (set of 100 only)
10004A	Be A – Floor Covering Professional (set of 100 only)
10005A	Be A – Residential Carpenter (set of 100 only)
10006A	Be A – Professional Lather (set of 100 only)
10007A	Be A – Professional Pile Driver (set of 100 only)
10008A	Be A – Professional Millwright (set of 100 only)
20011B	Blueprint Plans A, B, C (15)
20015M	Framing Square
20032D	Concrete Forms Series (16 Videos on 3 DVDs, sets)
20088C	Ingersoll-Rand Door Hardware Certification
20088D	Ingersoll-Rand Door Hardware Videos (29 Video clips on 2 DVDs)
20089M	OSHA Scaffolding Regulations (Scaffold Safety OSHA Compliance Seminar (SAFWAY))
20090M	OSHA Scaffolding Regulations (Scaffold Safety OSHA Compliance Seminar (Spanish) (SAFWAY))
20097D	Solid Surface (2-DVD set, from Gibraltar, Surell, and Corian)
20102C	UBC Solid Surface Certification CD
20106D	Scaffold Erection Training Videos – (setof 3 DVDs)
20107D	Scaffold Erection Training Videos - Spanish - (setof 2 DVDs)
20120B	Plan "D" Excerpts For Total Stations
50020X	UBC/NWFA Wood Flooring Installation Certification IG (TTT Only)
50023C	INSTALL Assessment Certification Instructor CD
50024M	NWFA Installation Technical Chapter - Water and Wood
50025M	NWFA Installation Technical Chapter - Wood Species
50026M	NWFA Installation Technical Chapter - Grading and Packaging
50027M	NWFA Installation Technical Chapter - Sand and Finish
60001M	Cabinet Making (Unit 8)
60002M	Millwork - (Unit 9)
60004M	Mill-Cabinet Hand Tools
60007T	Cabinet Making - Final Test- (Unit 8)
60008T	Cabinet Making - Alternate Test- (Unit 8)
60009T	Mill Work - Final Test- (Unit 9)
60010T	Unit 9 -Alternate Test- Mill Work
60011G	Mill-Cabinet Materials (Instructors Answer Sheets)

↑ price increase
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TECHNICAL TRAINING MATERIALS SUPPLEMENT, *cont.*

Inventory Code	Title
60012G	Cabinet Making - Instructors Guide - (Unit 8)
60013M	Mill-Cabinet Material
60025C	Panel Processing (DRAFT)
60026C	Counter Tops (DRAFT)
70007M	Optical and Laser Alignment - (Unit 6)
70009M	Turbine/Generators And Reactors - (Unit 9)
70012M	Basic Vibration Analysis
70014M	Precision Optical Instruments: Basic Jig Transit
70015M	Precision Optical Instruments: Advanced Jig Transit
70017M	Machinery Alignment Procedures
70018M	Millwright Glossary
70038G	Millwright Instructor Manual - (Unit 1)
70043G	Optical & Laser Alignments - -Instructors Manual - (Unit 6)
70049G	Instructors Manual, Machinery Alignment Procedures
70065C	Basic Vibration Analysis - CD
70071X	Assessment of Motor Operated Valve Failures
70073P	Combustion Turbine Instructors Blueprint Large Color Poster
70078C	Machinery Alignment Procedures - CD
70082P	Westinghouse Combustion Turbine Posters (setof 4)
70083X	Machinery Alignment Procedures Train The Trainer Instructor's Guide
70084C	Motor Operated Valves - CD
70088X	Millwright Precision Optical Alignment - IG
70094B	GE Gas Frame 5 Print Set (Small – 11”x 17” – 2 sheets)
70095B	GE Gas Frame 5 Print Set (Large – 3’ x 4’ – 2 sheets)
70096X	Motor Operator Valves TTT Instructor's Guide
70097P	GE Gas Turbine Posters (setof 4)
70103C	Millwright Precision Optical Alignment - CD
70104X	Basic Vibration Analysis - Instructor's Guide
70108M	Steam Turbine Qualification Program Student Manual
70109G	Steam Turbine Qualification Program Instructor's Guide
70110C	Steam Turbine Qualification Program CD
80002B	Blueprint "Plan D" (40)
80003M	Blueprint "Plan D" Specifications
80029M	Stepping up to UBC Foreman (with Pocket Checklist, 80030H)
80056M	Photovoltaic: Design & Installation Manual (Barnes & Noble)
80057M	Photovoltaic Systems (Barnes & Noble)
80105M	CITC Facility Project Manual (Mechanical/Electrical Specs)
80107B	CITC Facility Print Set, Full Size

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TECHNICAL TRAINING MATERIALS SUPPLEMENT, *cont.*

Inventory Code	Title
80108B	CITC Facility Print Set, Half Size
80109M	CITC Facility Project Manual (Architectural Specs)
81018E/M	* Construction Master® Pro Bundle – Calculator & Workbook (<i>Now includes Armadillo Gear® Protective Hard Case and User Guide at no extra charge!</i>)
82001M	Financial Tools for the Trades: A Survival Guide for Apprentices
82001G	Financial Tools for the Trades: Trainer Tool Kit (Program Overview, Instructor's Manual, CD)
90003M	NIOSH Pocket Guides to Chemical Hazards and Other Databases (Softcover)
90004H	NFPA Hazard Recognition Cards
90005H	Glove Cards 'Protecting Your Hands'
90007M	29 CFR Part 1926
90009M	OSHA 29 CFR 1926 de Los Estándares de Construcción de OSHA – Spanish
90016M	29 CFR Part 1910
90031H	Ley (Spanish - An Act) [Occupational Safety & Health Act of 1970]
90032H	An Act [Occupational Safety & Health Act of 1970]
90047C	NIOSH Pocket Guide To Chemical Hazards And Other Databases CD
90065H	Stairways and Ladders (OSHA 3124 2003 Revised)
90078H	Heat Equation/Exhaustion Card (OSHA 3154 2002)
90079H	Heat Equation/Exhaustion Card (OSHA 3155 1998, Spanish) La Ecuación Del Calor
90080H	Cold Stress Equation/Frost Bite Card (OSHA 3156 1998)
90081H	Cold Stress Equation/Frost Bite Card (OSHA 3158 1999, Spanish) La Ecuación Del Frio
90127D-1&2	Assorted Safety Videos (Summit) on two DVDs (DVD-1 = 90021V, 90120V, 90119V, 91520V, 96033V, 90059V, 90042V, 90067V; DVD 2 = 90075V, 91255V, 92023V, 94564V, 95021V, 90048V, 90049V)
90602M	First Aid, CPR, and AED Student Manual (ECSI Product) 7 th Ed.
90604M	Blood Borne Pathogens Student Manual (ECSI Product) 6 th Ed.
90605M	First Aid and CPR Student Manual-Spanish (ECSI Product) 5 th Ed.
92005H	Permit-Required Confined Space Decision Flow Chart Cards
92014P	Confined Space Can Kill (Poster)
94719X	Millwright 16 Hr. Health & Safety Course Instructor's Guide (TTT only)
96001X	OSHA 500/502 Construction Safety & Health Manual - Part 1 (TTT only)
96003X	OSHA 500/502 Construction Safety & Health Manual - Part 2 (TTT only)
96004H	NIOSH Construction Workers: It's Not JUST DUST!...Prevent Silicosis [DHHS (NIOSH) Publication No. 97-101]
96005H	NIOSH ALERT Request For Assistance In Preventing Silicosis and Deaths in Construction Workers, May 1996 (NIOSH Publication No. 96-112)
96008C	OSHA 510 Topics (TTT only)
96028D	Hazard Awareness in Crane Operating Areas
96031H	Save Your Breath - Silicosis Awareness On The Construction Site
96505D	Assorted Safety Videos 2

↑ price increase
↓ price decrease



The first priority of the UBC is helping you, our members, develop the skills and productivity that make you the first choice of employers.

The UBC began developing the International Training Center in Las Vegas over 15 years ago. To date, over \$250 million has been invested in this facility to make available to you the finest state-of-the-art educational campus in the construction trades industry. Over one million square feet of classrooms, meeting and Shop space, dorm rooms, cafeteria and kitchen facilities, and administrative support areas are available to advance your skills and address the UBC's organizational needs.

In addition to the work done at the International Training Center, more than 1,500 full-time instructors and another 1,500 part time in over 200 training centers in North America provide UBC members with access to leading edge training that is the most comprehensive in our industry.

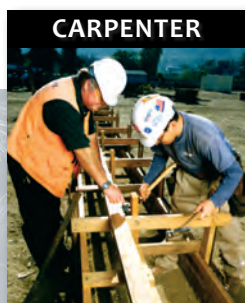
Ultimately, beyond all the training opportunities offered, it is your effort on the job—safety, safe practices, productivity, good attitude, professionalism, and pride—that determines your success as well as that of our contractors, and the UBC. By participating in these training programs, whether as an apprentice, journeyman, foreman, or superintendent you honor and continue a proud history of skill and craftsmanship. Your participation demonstrates your personal commitment to excellence.

We applaud that commitment and join you in meeting the challenges of a competitive environment that grows increasingly more challenging.



**UBC Headquarters
Washington, DC**

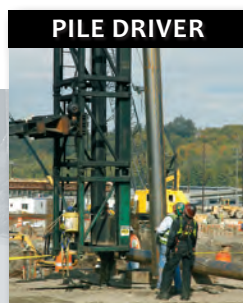
*Membership
in the UBC
offers you
these diverse
career choices:*



CARPENTER



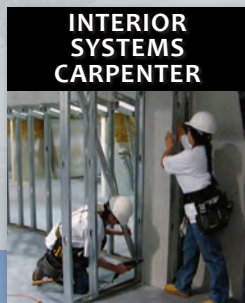
MILLWRIGHT



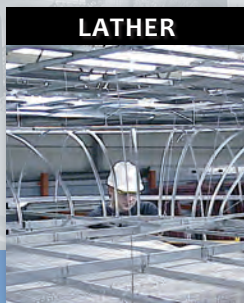
PILE DRIVER



**RESIDENTIAL
CARPENTER**



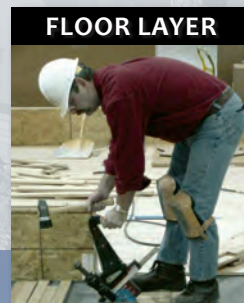
**INTERIOR
SYSTEMS
CARPENTER**



LATHER



**CABINET MAKER
MILL-CABINET**



FLOOR LAYER



**CARPENTERS
INTERNATIONAL
TRAINING
FUND**

212 Carpenters Union Way
Las Vegas, Nevada 89119

The Carpenters International Training Fund (CITF) is dedicated to job training and certification programs for UBC membership.



TSCS-01-17