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National Standards

#### **ABSTRACT**

These national standards are designed to guide local joint apprenticeship and training committees in establishing local apprenticeship programs to train individuals seeking to become skilled in the cement masonry, amphalt, and composition trade. Covered in the individual sections are the following topics: provisions of the apprenticeship standards (definitions, duties of the local joint committee, qualifications for apprenticeship, terms of apprenticeship and related instruction, apprenticeship agreements, ratios of apprentices to journeymen, apprentice wages, credit for previous experience, apprentice coordinators, employer responsibilities to apprentices; responsibilities of apprentices, hours of work, accident prevention, adjusting differences, and certificates of completion); joint training funds; and federal laws and regulations affecting the employment of apprentices. Appendixes to the guide contain a work experience and training schedule, sources of related instructional materials, forms for use in apprenticeship recordkeeping, sample apprenticeship agreements, addresses of regional offices of the Bureau of Apprenticeship and Training, and a list of state and territorial apprenticeship agencies. (MN)



# National Apprenticeship Standards for Cement Masonry, Asphalt, and Composition Trade

U.S. Department of Labor W. J. Usery, Jr., Secretary **Employment and Training Administration** William H. Kolborg Assistant Secretary for Employment and Training Bureau of Apprenticeship and Training Revised 1976

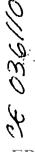


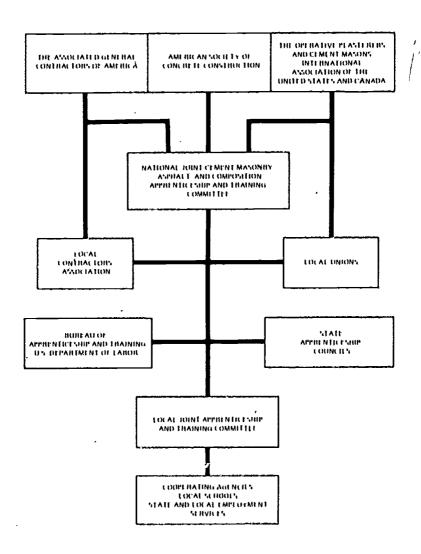
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WASHINGTON DE 2020



National Joint Coment Masonry, Amphalt and Composition Apprenticemble and Training Committee

The revised national apprenticeship and training standards, which were developed as a quide for your local joint apprenticeship and training committees in establishing local apprenticeship programs, have been registered by the Europe of Apprenticeship and Training, U. S. Department of Labor.

Your continued cooperation in establishing national standards that will encourage the development of local programs, consistent with basic Bureau requirements and equal employment opportunity regulations, should bring credit to your industry.

Please be assured of the continued assistance of my staff in all matters of apprenticeship and training at the national and local levels,

Bincorely,

nual c. Munchy

Administrator Bureau of Apprenticeship and Training





#### THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA

THAT I MATERIAL

TO GENERAL CONTRACTORS

Apprenticeship training has long been acknowledged as the answer to the construction industry's ever growing demand for skilled craftsunen. General contractors must recognize this as a primary tesponsibility to their industry and take an affirmative and progressive role in the promotion of sound apprenticeship training programs.

These revised standards will serve as a model around which local apprenticeship Itaining programs must be established. They were developed through the cooperative efforts of the National Joint Cement Masonry, Asphalt, and Composition Apprenticeship and Fraining Committee and the Federal Intern of Apprenticeship and Training.

This Association recommends and encourages its membership, to become leaders in the establishment of these very vital programs. We want to assure you of our desire to provide sny and all assistance required to accomplish this task.

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## OPERATIVE PLASTERERS' SING CEMENT MASONS' INTERNATIONAL ASSOCIATION of the UNITED STATES and CANADA

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TO: Local Unions in the Coment Masonry, Asphalt and Composition Industries

It is a source of real pleasure for me to join with the Associated General Contractors of America, Inc., American Society of Concrete Construction and the U.S. Department of Labor's Eureau of Apprenticeship is announcing the availability of the revised Entimed Apprenticeship and Training Standards for the Coment Masonry, Asphalt and Composition Industries.

The Operative Plasterers' and Cameat Masons' International Association has long recognised its responsibility in seeing that computent craftmen are available for the Coment Masonry, Asphalt and Composition Industries; therefore, the promotion of apprenticeship and training certainly carries a high priority.

While the revised standards set forth in this bookist are recommended policies and procedures for apprenticeship training, I strongly recommend that contractors and labor, joint apprenticeship committees and others souncemed with the development of competent craftmen make full use of these revised standards in setting up, conducting and improving local apprenticeship programs.

Praternally yours,

Joseph T. Fower General President

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#### AMERICAN SOCIETY # CONCRETE CONSTRUCTION

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SIO DEMPSTER STREET . DES PLAINES, ILLINOIS SOOIS . PHONES: 312 296-727

TO MEMBERS OF American Society of Concrete Construction

The American Society of Concrete Construction is very concerned in the continuance of manpower development and apprenticeship training programs because of a great need to further educate in this field.

Concrete, today, is the "King of Construction Materials"
-- the most widely used construction material. Concrete
holds the greatest promise for improved quality and economy
in today's construction challenges.

Concrete requires expert handling. Its fast advancing technology has caused a serious shortage of skilled workers to fill the need. Upgrading present concrete masons and training young people in this field are very important to the construction industry. Standards for training must be maintained and promoted to a higher degree.

We are prevailing on the decision-making people in Government so they fully understand the importance of this training program.

Sincerely.

AMERICAN SOCIETY OF CONCRETE CONSTRUCTION

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#### **PREFACE**

The cement masonry, asphalt, and composition trade, through long practical experience and the skill and versatility of its craft workers, has developed high standards of accomplishment. To maintain this quality, contractors and unions alike recognize the importance of a sound, uniform, and comprehensive program of apprentice training.

Out of this mutual interest, the National Joint Cement Masonry, Asphalt, and Composition Apprenticeship and Training Committee was established to formulate national standards of apprenticeship. This committee is composed of an equal number of representatives of the Associated General Contractors of America, the Operative Plasterers' and Cement Masons' International Association (OP&CMIA) of the United States and Canada, and the American Society of Concrete Construction. It is a permanent committee which functions as an advisory and policymaking body in the interest of stimulating apprenticeship activity and promoting uniformity of training practices throughout the United States

The national standards of apprenticeship set forth on the following pages were formulated with the assistance of the Bureau of Apprenticeship and Training. They encompass the fundamental requirements for effective apprenticeship programs and outline the training methods and practices which have proved to be most successful in training cement mason apprentices.

It is hoped that contractors and labor representatives in every locality will make full use of these up-to-date national standards as a guide in establishing local committees and areawide apprenticeship programs. The success and expansion of the national apprenticeship and training program will depend largely upon the initiative and cooperation of participating groups and individuals.

Detailed information on procedures for instituting a training program for cement masons may be obtained from the Associated General Contractors of America, the Operative Plasterers' and Cement Masons' International Association of the United States and Canada, the American Society of Concrete Construction, State apprenticeship agencies, or the nearest regional office of the Ireau of Apprenticeship and Training.

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#### CONTENTS

	Page
PREFACE	, VI
PROVISIONS OF STANDARDS	, 1
1 Definitions	. 1
2 The Local Joint Committee	. 1
3 Duties of the Local Joint Committee	2
4. Qualifications for Apprenticeship	. 3
5 Term of Apprenticeship and Related Instruction	4
Apprenticeship Agreement     Ratio of Apprentices to Journeymen	4
8 Apprentice Wages	. 5
9 Credit for Previous Experience	5 5
10 Coordinator of Apprentices	5
11 Employer Responsibility to Apprentices	5
12 Flesponsibilities of Apprentices	6
13. Hours of Work for Apprentices	. 6
14 Acadent Prevention	6
15 Adjusting Differences 16 Certificate of Completion	7
JOINT TRAINING FUNDS	7
	8
1 Legality of Training Funds	8
2 Tax-Exempt Status of the Trust	8
FEDERAL LAWS AND REGULATIONS AFFECTING THE EMPLOYMENT OF APPRENTICES.	9
APPENDIX A WORK EXPERIENCE AND TRAINING	11
APPENDIX B: SOURCES OF RELATED INSTRUCTION MATERIALS	16
APPENDIX C APPRENTICESHIP RECORDKEEPING	17
APPRENTICESHIP AGREEMENTS	••
1 Between Apprentice and Employer	19
2 Between Apprentice and Joint Apprenticeship Committee	20
REGIONAL OFFICES, BUREAU OF APPRENTICESHIP AND TRAINING	21
STATE AND TERRITORIAL APPRENTICESHIP AGENCIES	22



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#### PROVISIONS OF STANDARDS

#### 1. Definitions

Cement mason apprentice shall mean a person;

- a. Who is at least 17 years of age;
- b. Who is engaged in learning a trade covered by these landards; and
- c. Who is covered by a written agreement (herein called an "apprenticeship agreement") with the local joint apprenticeship and training committee, acting as agent of the employer and employees, or by an agreement with the employer.

Registration agency shall mean a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training; or, if no such recognized agency exists in the State, it shall mean the Bureau of Apprenticeship and Training, U.S. Department of Labor.<sup>1</sup>

#### 2. The Local Joint Committee

The local joint apprenticeship and training committee shall be composed equally of two or more members representing employers and two or more members representing employees. Members shall be selected by the groups they represent. The committee shall select, from its members, a chairperson and a secretary who shall retain voting privileges. In the event of a tie vote, the committee may select an impartial person to sit on the committee and, after a full and fair hearing, cast the deciding vote. The committee shall meet once each month or on call of the chairperson.

Consultants, such as those from the apprenticeship agencies and vocational schools, may be requested to sit with the joint committee in an advisory capacity.

The local joint committee shall exercise control over all apprentice training matters within its jurisdiction. Committees are urged, however, to cooperate and exchange information with other local committees in the interest of establishing uniformity of cement mason apprenticeship programs.

<sup>\*</sup>Local application of these national standards in States having recognized apprenticeship councils may require adaptation to meet the standards of apprenticeship in such States. The little of the Bureau of Apprenticeship and Training and the State apprenticeship agencies 2 available to advise on such standards.

Where Iccal unions refuse or neglect to provide for the training or placing of registered apprentices, the General Executive Board of the OP&CMIA may authorize provision for such training and/or placing and, further, authorize the transfer of registered apprentices into areas where none are available or where the local union refuses to accept transfers without sufficient cause.

#### 3. Duties of the Local Joint Committee

The local joint apprenticeship and training committee shall prepare local apprenticeship standards and establish an apprenticeship and training system in conformity with the basic recommended standards of the Bureau of Apprenticeship and Training, and the National Apprenticeship and Training Standards for the Cement Masonry, Asphalt, and Composition Trade. The local committee shall also regulate, supervise, and control all matters relating to apprenticeship and training for cement masons within the jurisdiction of the sponsoring groups. Copies of local registered standards should be submitted to the National Joint Apprenticeship and Training Committee and, where applicable, to the International Union and the Associated General Contractors of America after final approval by the local contractors and union.

Specifically, the committee shall:

a. Determine the need for new apprentices within its jurisdiction, with due consideration to present and future employment needs of the trade, and the number of employers who can provide training consistent with the requirements of the system.

b. Establish minimum standards of education and experi-

ence required of apprenticeship applicants.

 Receive and pass on all applications for apprenticeship and maintain a record of the action taken on each application.

d. Require that each apprentice be covered by a written agreement, preferably with the joint committee.

e. Examine the records of all apprentices and maintain a complete roster of such apprentices.

f. Require the apprentice to appear before the committee, at such times as it may elect, for examination as to progress in school, diligence in work, and ability to learn. The committee may advance any apprentice who shows outstanding ability by placing the apprentice in an advanced wage and training period.



- g. Provide for a period of probation during which the apprentice's aptitude for the trade will be determined by the committee
- h. Register each apprentice with the appropriate registration agency
- Inform contractors engaged in federally financed construction projects that under Federal regulations, apprentices employed on such projects must be bona fide apprentices, duly indentured to and being trained under registered apprenticeship and training programs. (See Federal Laws and Regulations Affecting the Employment of Apprentices.)
- Consult and cooperate with public and private agencies interested in apprehiticiship and education
- k Publicize the apprenticeship program in order to gain public interest and support
- Arrange for related instruction for apprentices in cooperation with the local board of education
- m Determine the quality and quantity of training and on-thejob experience which apprentices must have, and be reasonably responsible for their meeting these requirements.
- n Assure that apprentices are receiving the required related technical instruction and diversified on-the-job training.
- Determine that participating employers have the facilities to provide training consistent with the requirements of the program
- p Conduct final examination of apprentices to establish their status as journeymen in the trade
- q Prepare and submit all reports concerning its apprenticeship program that may be required by local. State, or Federal agencies, the National Committee, and the respective national organizations
- Notify the appropriate registration agency of all changes in status, terminations, and cancellations of apprenticeship agreements
- s Supervise the enforcement of all provisions of the standards

#### 4. Qualifications for Apprenticeship

Applicants for apprentice training shall be at least 17 years of ade (Local joint apprenticeship committees shall have the authorto give special consideration to eligible veterans and to other

special cases.) Applicants must be physically able to do the work required of the trade and meet such other entrance qualifications as may be established by the local joint committee. Preemployment physical examination of each applicant may be required. The local programs shall state specifically the minimum qualifications for apprenticeship and exceptions to same.

The recruitment, selection, employment, and training of apprentices during their apprenticeship shall be without discrimination because of race, color, religion, national origin, or sex. The sponsor will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required under title 29 of the Code of Federal Regulations (CFR), part 30, as amended.

All programs of apprenticeship registered with the Bureau of Apprenticeship and Training on and after January 17, 1964, must include acceptable apprentice selection standards and procedures and a nondiscrimination pledge consistent with the regulation.

In addition, each local joint apprenticeship committee will be required to develop and adopt an affirmative action plan, which must include goals and ametables, where applicable, in accordance with the requirements of title 29, CFR, part 30, as amended.

#### 5. Term of Apprenticeship and Related Instruction

No applicant for membership as a journeyman under one of the full primary classifications shall be initiated into any local union unless and until the applicant has completed a term of apprenticeship in the trade. Apprentices must serve 2 years (not less than 4,000 hours) of on-the-job training and related instruction, exclusive of overtime hours on the job.

#### 6. Apprenticeship Agreement<sup>2</sup>

Each apprentice shall be covered by a written apprenticeship agreement with the local joint committee, acting as agent of the employer, or an agreement between the apprentice and the employer and approved by the local joint committee. All apprentices shall be registered with the appropriate registration agency.

Each apprenticeship agreement shall contain a statement making the terms and conditions of the local apprenticeship standards a part of the agreement. For this reason, every appren-

<sup>&</sup>lt;sup>2</sup> Some State apprenticeship agencies require the use of their own apprenticeship agreement forms. In such instances, the agreement forms may be obtained from the staff of the State agency or the Bureau of Apprenticeship and Training.

tice and employer will be required to read the local standards before signing the agreement.

### 7. Ratio of Apprentices to Journeymen

The ratio of apprentices to journeymen shall be established by the local joint apprenticeship committee, based on surveys of work opportunities and the availability of skilled craft workers. These surveys should take into consideration such factors as expected increase or decrease in construction volume; loss to the trade through death, retirement, etc.; and effects of technological change. The local program shall state the ratio of apprentices to journeymen. (The National Committee suggests a ratio of 1 apprentice per 5 journeymen.)

#### 8. Apprentice Wages

A wage schedule fcr apprentices shall be included in the local standards and shall be established on the basis of a progressive percentage of the journeyman cement mason's wage rate. Preferably, the apprentice wage rate will advance at 6-month intervals.

### 9. Credit for Previous Experience

Apprenticeship applicants who have had previous experience in the trade or who have had related instruction may be granted advanced standing on the basis of demonstrated ability and knowledge. When the local committee grants advanced standing to the apprentice, the apprentice shall be paid the rate of the new period.

#### 10. Coordinator of Apprentices

Local joint committees should give consideration to employing a full-time apprentice coordinator to administer the local program. Experience has proved the need for and value of a coordinator if maximum benefits are to be derived from the program.

### 11. Employer Responsibility to Apprentices

The employer shall be responsible for the training of apprentices. With the advice and assistance of the local joint committee, the employer shall be responsible for the apprentices' work experience on the job, and the recording of same on record forms provided for that purpose.



#### 12. Responsibilities of Apprentices

The local joint apprenticeship committee shall impress upon all apprentices that by signing the apprenticeship agreement they have voluntarily agreed to abide by the provisions of the local standards. The local committee shall further inform the apprentices of their responsibilities and obligations as follows:

- a. To perform diligently and faithfully the work of the trade and other pertinent duties as assigned by the employer in accordance with the provisions of the local standards.
- b. To respect and protect the property and equipment of the employer and abide by the working rules and regulations of the employer and the local joint committee.
- c. To attend regularly and complete satisfactorily the required hours of instruction in subjects related to the trade, as provided under the local standards.
- d. To maintain such records of work experience and training as may be required by the local joint committee.
- e. To develop safe working habits and conduct themselves in such manner as to assure their own safety and that of their coworkers.
- f. To work for the employer to whom the individual is assigned.
- g. To conduct themselves at all times in a creditable, ethical, and moral manner, realizing that much time, money, and effort are being spent to afford them an opportunity to become skilled craft workers.

#### 13. Hours of Work for Apprentices

The working conditions for apprentices shall be the same as those for journeymen in the trade and shall be in conformity with State and Federal laws. Apprentices shall not be allowed to work overtime if it interferes with their attendance at related instruction classes.

#### 14. Accident Prevention

Apprentices shall be advised of the great need for preventing accidents and shall be given instruction in safe construction methods. Apprentices shall also be advised of their rights and responsibilities for safe working conditions under the Federal Occupational Safety and Health Act and similar State laws. Apprentices should be taught that accident prevention is largely a matter of



education, vigilance, and cooperation, and that they should strive at all times to conduct themselves and handle their work in such a manner as to insure their safety and that of their coworkers.

#### 15. Adjusting Differences

In cases of dispute between the employer and the apprentice, either party has the right and privilege of appeal to the local joint committee for action and adjustment of such matters as come within these standards. The local committee shall hear all parties and make such adjustments as it may consider necessary.

#### 16. Certificate of Completion

Immediately after apprentices pass their journeyman examinations, they shall be furnished with a certificate attesting to the satisfactory completion of the apprenticeship and their status as journeymen. Certificates of completion are available from the registration agency upon request by the local joint committee.



#### **JOINT TRAINING FUNDS**

#### 1. Legality of Training Funds

Training funds for use in defraying the cost of apprenticeship or other training programs to which employers contribute are authorized under the Labor-Management Reporting and Disclosure Act of 1959, which amends section 302 of the Labor-Management Relations Act of 1947. Such funds must be established in the form of a trust; the trustees must be equally representative of employers and employees (this may be the joint apprenticeship committee); and the basis on which payments to the trust are to be made must be detailed in written agreement with the employer, including provision for an annual audit of the trust. Those persons (trustees) responsible for the custody or control of the trust funds must be bonded.

Where a trust is established, a clause should be included in the trust agreement stating (1) that the trusteeship is a nonprofit organization; (2) that no part of the net earnings will inure to any private individual or member; and (3) how the accrued moneys and other assets will be disposed in the event of dissolution of the trust. (They can be apportioned to those who paid into the fund, or donated to a charitable or educational organization or to the labor organization.)

#### 2. Tax-Exempt Status of the Trust

Training trust funds are considered to be tax-exempt by the Internal Revenue Service under section 501(c)5 of the Internal Revenue Code of 1954. To obtain this exemption, the trustees must file Form 1024 with the appropriate district director of Internal Revenue. In submitting Form 1024, include with it a copy of the trust agreement and apprenticeship program. After the tax-exempt status of the trust has been determined, each year thereafter the trustees shall make a return on Form 990 in order to maintain this exemption.

Employer contributions to the training trust fund are deductible as ordinary and necessary expenses in the conduct of their business under section 162(a) of the Internal Revenue Code.



## FEDERAL LAWS AND REGULATIONS AFFECTING THE EMPLOYMENT OF APPRENTICES

Wage and Hour Regulations (Ruling Concerning Payment for Time Spent by Apprentices in Related Instruction).—The Fair Labor Standards Act requires that each employee not specifically exempted, who is engaged in interstate commerce or in the production of goods for such commerce, receive the statutory minimum wage; and that no employee (including an apprentice) may be employed for more than 40 hours a week without receiving at least time and one-half of the employee's regular rate of pay for the overtime hours.

As an enforcement policy, time spent in an organized program or related supplemental instruction by apprentices working under bona fide apprenticeship programs may be excluded from working time if the following criteria are met: (1) The apprentice is employed under a written apprenticeship agreement or program which substantially meets the basic standards of the Bureau of Apprenticeship and Training, U.S. Department of Labor; and (2) such time does not involve production work or performance of the apprentice's regular duties. If the above criteria are met, the time spent in such related supplemental training shall not be counted as hours worked unless the written agreement specifically provides that it is hours worked. The mere payment or agreement to pay for time spent in related instruction does not constitute an agreement that such time is hours worked.

Equal Employment Opportunity Legislation and Regulations.—The Civil Rights Act of 1964, title VII. prohibits discrimination in all phases of employment, including apprenticeship, because of race, color, religion, sex, or national origin. It applies to employers; employment agencies; labor organizations; joint apprenticeship committees; and, under the 1972 amendments, Federal agencies.

Detailed information regarding application of title VII of the Civil Rights Act may be obtained from the regional offices of the Equal Employment Opportunity Commission.

Information on title 29, Code of Federal Regulations, part 30, as amended, may be obtained from the Bureau of Apprenticeship and Training, U.S. Department of Labor, or State apprenticeship agencies.



NOTE: It is suggested that all local joint committees contact their State agencies for applicable laws affecting apprenticeship, with special attention to latest revisions.

Wage Determination Regulations (Federally Financed and Assisted Construction).—The Secretary of Labor, through the Office of the Wage and Hour Administrator of the U.S. Department of Labor, predetermines the prevailing wages for construction mechanics and laborers employed on Federal or federally assisted construction projects. (Details of these regulations will be found in part 1 and part 5, title 29, subtitle A. Code of Federal Regulations, covering labor standards provisions applicable to public contracts.)

Local joint apprenticeship committees should advise all contractors participating in the local apprenticeship program that, in case they are awarded a contract for a federally financed or assisted construction project, their apprentices must be employed under a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Buerau of Apprenticeship and Training. U.S. Department of Labor; or, if no such recognized agency exists in the State, with the Bureau of Apprenticeship and Training. U.S. Department of Labor. Participating contractors shall further be advised that apprentices so employed must be individually registered with the appropriate registration agency.

The contratcor must present written evidence of such registration, including evidence of the established ratios and wage rates applicable in the project area, to the contracting officer for acceptance.

Veterans Readjustment Legislation (Public Law 90-77, 90th Congress).—A veteran of at least 181 days of continuous active duty, any part of which occurred after January 31, 1955, or a veteran who was released from active duty after January 31, 1955, for a service-connected disability, is eligible to pursue on a full-ti-ne basis an approved program of apprenticeship and receive a monthly training assistance allowance.

The apprenticeship program must meet the standards of the Bureau of Apprenticeship and Training, U.S. Department of Labor, and be approved by the appropriate State veterans approving agency.

Under the provisions of the veterans readjustment legislation. oint apprenticeship committees may be recognized as training establishments.

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## APPENDIX A WORK EXPERIENCE AND TRAINING

#### Work-Experience Schedule

This schedule is an example of the type of on-the-job training considered necessary to develop a skilled worker in the cement masonry trade. It may be adapted to local conditions within the limits of basic knowledge required of the trade. Following are the major divisions of the trade:

Fundamentals	Hours . 2,000	Years 1
tíes	2.000	1
	4.000	2

#### 1. First Year (2,000 Hours)—Fundamentals

- a. Setting screeds to line
- b. Tamping and rodding of concrete
- c. Use of float and trowel
- d. Use of edgers and jointers
- e. Chipping of concrete
- f. Patching of concrete
- g. Rubbing and brushing of concrete
- h. Establishing grade lines and heights
- i. Setting expansion joints
- j. Setting curb and gutter screeds
- Finishing of curbs. gutters, sidewalks, driveways, garage and basement floors, and wash paves
- I. Setting screeds for floors where topcoating is used
- m. Finishing of foundations, walls, and ceilings (patching, rubbing, and brushing)
- n. Application of driers and/or operation of vacuum mats
- o. Use of machines
- p. Safety

## 2. Second Year (2,000 Hours)—Advanced Fundamentals and Specialties

a. Layout of joints in special designs (square, diagonal, etc.)

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b. Forming valleys and summits



- Layout of risers and treads C.
- Pouring and finishing steps plan, or with nosing or overhang
- Base, plain and coved, flush and projecting
- Bush hammering and acid wash of concrete
- g. Pointing around steel sash encased in concrete
- Copings, porches, patios, etc. h.
- Window sills, thresholds, plinth blocks, etc.
- Heavy duty floors į.
- k. Use of colors
- Magnesite and composition installations
- m. Asphalt and mastic installations
- Gunite n.
- o. Waterproofing
- p. Renovation of concrete
- g. Architectural and ornamental concrete
- Safety

#### Related Classroom Instruction Schedule for Cement Mason **Apprentices**

The material included in this course is of such a nature that it will provide the technical knowledge and trade information necessary for the advancement of the apprentice in the trade. Safety instruction should be included in the course, with stress on personal health and protection against occupational hazards and diseases.

#### First Year (144 Hours)

- Related mathematics
  - (1) Arithmetical processes
  - (2) Lines, angles, areas, and volumes
  - (3) Fractions, decimals, ratio, and proportion
  - Weights and measures (4)
  - Mathematics used in cement masonry work (5)
- Plan reading and freehand sketching
  - (1) Blueprint reading and sketching
  - (2) Freehand sketching
- c. Estimating
  - (1) Estimating from construction plans
  - (2) Determining quantities
- Related science
  - (1)Physical and chemical properties of materials 12



- (2) Characteristics of materials
  - (a) Sand
  - (b) Stone
  - (c) Cement
    - (1) tilt-up
    - (2) pre-stress
  - Concrete mortars (d)
  - (e) Plaster
  - (f) Lime
  - (g) Colors and pigments
  - (h) Cutting and grinding machines
  - (i) Waterproofing compounds
  - Accelerators and retarders (i)
  - (k) Chlorides
- Trade theory
  - (1) Layout and construction
  - (2) Pointing and calking
  - (3) Waterproofing
  - (4) Use of composition
- Industry history
  - History and principles of successful industrial and labor relations
  - (2) Citizenship
- g. Safety and hygiene

#### Second Year (144 Hours)

- Related mathematics
  - Review of fundamentals
    - (a) Calculation of areas and volumes
    - Solution of formulas and equations
  - Mathematics used in cement masonry work
- b. Architectural drawing
  - (1) Use of drawing instruments
  - (2) Lettering standards
  - (3) Simple geometric construction
  - (4) Projection
  - (5) Freehand sketching
  - (6) Plan views and elevations
- Estimating
  - (1) Review of fundamentals
    - (a) Estimating from construction drawings
    - Determining quantities
  - Preparing buying specifications



- (3) Preparing bids
- d. Building codes and legislation
  - (1) State, city, and other building codes
  - (2) Labor legislation
- e. Trade practice
  - (1) Layout and construction
  - (2) Construction of bases, steps, and corners
  - (3) Preparation of special cement mixtures
  - (4) Mixing waterproofing compounds
- f. Films and visual aids
- g. Safety and hygiene

## Third Year (Optional)—Work Experience and Related Classroom Instruction

The third year of apprenticeship training is optional, depending on local autonomy, and therefore will emphasize supervisor training.

#### 1. On-the-job Supervisor Training (2,000 Hours)

- a. Establishing grade lines and heights
- b. Setting screeds to line
- c. Setting expansion joints
- d. Setting curb and gutter screeds
- e. Finishing of curbs. gutters. sidewalks. driveways, garages, basement floors, and wash paves.
- f. Finishing of foundations, walls, ceilings (patching, rubbing, and brushing)
- g. Use of machines
- h. Layout of joints in special designs (square, diagonal, etc.)
- i. Use of colors
- Architectural and ornamental concrete
- k. Blueprint reading
- Estimating
- m. Planning and scheduling
- n. Surveying
- o. Safety

#### 2. Related Instruction (144 Hours)

a. Related mathematics

- 23
- (1) Calculation of areas and volumes
- (2) Solution of formulas and equations



- b. Surveying and blueprint reading
  - (1) Surveying of construction
  - (2) Layout of construction lines
  - (3) Blueprint reading and sketching
- c. Estimating
  - (1) Estimating from construction drawings
  - (2) Determining quantities
  - (3) Preparing buying specifications
  - (4) Preparing bids
- d. Materials for concrete
  - (1) Cement
  - (2) Aggregates
  - (3) Water
- e. Principles of quality concrete
  - (1) Placing and consolidating concrete
  - (2) Jointing and crack control
  - (3) Hot- and cold-weather concreting
  - (4) Finishing and curing concrete flatwork
- f. Decorative concrete
  - (1) Architectural and ornamental concrete
  - (2) Exposed aggregate finishes
  - (3) Bushhammering
  - (4) Colored concrete
- g. Leadership training
  - (1) Job costs and their importance
  - (2) Human relations in supervision
  - (3) Equipment maintenance
- (4) Public relations
- h. Communication skills
- Films and visual aids
- j. Safety and hygiene



## APPENDIX B SOURCES OF RELATED INSTRUCTION MATERIALS

Related instruction for apprentices should be taught by persons who are thoroughly competent in the theory, practices, and skills of the cement masonry trade, and who recognize the value of good teaching techniques.

The local joint apprenticeship and training committee should consult local public vocational school authorities for assistance in locating suitable text material and teaching aids to fit local needs.

The U.S. Department of Health. Education. and Welfare, Office of Education, Division of Technical and Vocational Education, Service Branch, Curriculum Program Section, Washington, D.C. 20202, periodically publishes a price list of cement masonry instruction materials available from public education agencies in the various States, copies of which are available without charge, upon request. Requests for information concerning the availability of the materials listed in this publication should be made to the office of the superintendent of public schools in the cities concerned.

School authorities frequently can offer information concerning the adaptability of commercially published textbooks to local apprentice training programs.



## APPENDIX C APPRENTICESHIP RECORDKEEPING 3

It is essential that a current, accurate, and complete record be kept of each apprentice, showing work progress, attendance at related instruction, and joint apprenticeship committee actions. A number of different types of recordkeeping systems are in use in different areas. Some systems include a variety of forms for daily, weekly, and monthly records, as well as a final master chart summarizing pertinent data recorded during the entire term of apprenticeship.

Reproduced at the end of this appendix is a sample form that the National Committee recommends for use by local joint apprenticeship committees so that a uniform system can be put into effect. Such a system will assure that information regarding an apprentice will be available to send from one area to another upon request.

The application for apprenticeship and the apprenticeship master record should be tied together by use of the social security number, thus furnishing a positive means of identification should the apprentice move to a different area and joint apprenticeship committee.

<sup>&</sup>lt;sup>3</sup> Sample forms and recordkeeping systems may be obtained from the Associated General Contractors of America the Operative Plasterers and Cement Masons International Association of the United States and Canada, the American Society of Concrete Construction, or the Bureau of Apprenticeship and Training, U.S. Department of Labor

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#### CEMENT MASONRY TRADE-ist Year Apprenticeship: Job fundamentals, including safety instruction APPRENTICE ADDRESS CITY EMPLOYER ADDRESS CITY Period Covered Signature: Title: Beginning Ending (EMPLOYER OR FOREMAN VERIFY AND SIGN ABOVE) A я C D E F G H Total hours required. Application Setting Tamping Use of Rubbing of driers screeds to and rod Use of float On-lob On-lob Hours of Related inedgers Chipping Patching and brush. and/or hours comgrade related inlir.e ding of struction and trowe and of concrete | of concrete ing of operation Dicted rating struction concrete grade fointers concrete of vacuum rating mats Hours brought forward. Monday \_\_\_\_\_ Tuesday Wednesday Thursday \_\_\_\_\_\_ Friday. Saturday ... Sunday \_\_\_\_\_\_ Monday.... Tuesday Wednesday Thursday..... Friday Saturday Sunday Total hours Grand total.....



APPRENTICE AND EMPLOYER	PRIVACY ACT STATEMENT The information required became is used for appropriate preparation and included purposes and may see the observed discovered by the opening of the information of the indesirgual dispersions.
CHECK APPROPRIATE BOX  Divisionment Veteran Color Veteran Community	Privacy Act 61 1974 - P L. 93.579

The employer and apprentice whose signatures appear below agree to these terms of apprenticeship.

The employer agrees to the nordiscriminatory selection and training of apprentices in accordance with the Equal Opportunity Standards stated in Section 30.3 of Title 29 Code of Federal Regulations, Part 59, and in accordance with the terms and conditions of the Wilmon of Approximal Standards; which are made a part of this agreement.

The apprentice agrees to be diligent and faithful in learning the trade in accordance with this agreement.

This AGREEMENT may be terminated as mutual consent of the puries, citing causeles, with nonfunition as it. If a stratum Agrica	TRAINING DATA	
NAME OF APPRENTICE (POP - 22.)	1/1000	Apprentication form
SIGNATURE OF APPRENTICE	Pribitionally Period	Credit for provious experi
ADDRESS Number Street City State 21t codes	Yesh remaining	Date apprenticeship begins
SIGNATURE OF PARENT OF GUARDIAN	TO BE COMPLETED BY	THE APPRENTICE
NAME OF EMPLOYER AND AGORESS C MANUA	Or 14 OF BINTH	
	SEX SON	lala Imala
APPROVED BY 30 NT APPRENTICESHIP COMMITTEE  HIGHATURE OF CHAIRPERSON OR SECRETARY  CATE	Courtestan/Morte   Courtestan/Morte   Courtestan/Morte   Courtestan   Courtestan	
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US DEPARTMENT OF LASOR & Employment and Training Administration	3	
Bureau of Apprenticeship and Training	PRIVA	CY ACT STATEMENT
APPRENTICESHIP AGREEMENT BETWEEN APPRENTICE AND JOINT APPRENTICESHIP COMMITTEE	The information requested becomes used for apprenticeship program statistical purposes and may not be otherwise disclosed without the express permission of the undersyned apprentice.	
CHECK APPROPRIATE BOX	Privacy /	Act of 1974 - P L. 93-579
3 Vietnamera Veteran G Other Veteran G Nenveteran		
THIS AGREEMENT, entered into this (date)	naiter referred to as	the COMMITTEE, and
as the GOVINDIAN.	,	LINING DATA
WITNESSETH THAT		M PROBATIONARY PERIOD
The Commutee agrees to be responsible for the selection, place ment, and training of said apprentice in the trade of		
as work is available, and in consideration said apprentice agrees diligently and faithfully to perform the work of said trade during	CREDIT (BT previous frade experience)	TERM REMAINING
the period of apprenticeship, in accordance with the regulations of the Committee. The apprenticeship standards referred to here	TO BE COMPLETED BY THE APPRENTICE	
in are hereby incorporated in and made a part of this agreement.  This AGREEMENT may be terminated by mutual consent of the signa- tury parties, upon proper notification to the registration agricy.		□ Maie □ Female
SIGNATURE OF APPRENTICE  ADDRESS (Number, Street, City, Stein, ZIF Code)	MACE/ C	Caucaran/White Negra/Black Oriental American Indian
SIGNATURE OF PARENT OR GUARDIAN	(Check one)	Spenish American
SIGNATURE OF JOINT APPRENTICESHIP COMMITTEE, CHAIRPERSON		Thermotion Not Available Not Elsewhere Classified
SIGNATURE OF JOINT APPRENTICESHIP COMMITTEE, SECRETARY	HIGHEST EBUCATION A-	Sth grade or less
NAME OF REGISTRATION AGENCY	LEVEL	9th grade or more 12th grade of more
SIGNATURE AND TITLE OF AUTHORIZED OFFICIAL	<u> </u>	DATE (Honfis Date Year)



ETA 6-111 Jan. 1976

## REGIONAL OFFICES BUREAU OF APPRENTICESHIP AND TRAINING

Location	St	ntes Served
Region I	Connecticut	New Hampshire
JFK Federal Bldg., Room 1001	Maine	Rhode Island
Government Center	Massachusetts	Vermont
Boston, Mass. 02203		- G-Wight
Region II	New Jersey	Puerto Rico
1515 Broadway, 37th Floor	New York	Virgin Islands
New York, N.Y. 10036		Virgin Islands
Ragion III	Delaware	Virginia
P.O. Box 8796	Maryland	West Virginia
Philadelphia, Pa. 19101	Pennsylvania	vvest viigitiia
Region IV	<b>A</b> labama	Mississippi
1371 Peachtree Street, NE., Room 700	Florida	North Carolina
Atlanta, Ga. 30309	Georgia	' South Carolina
	Kentucky	Tennessee
Region V	Illinois	Minnesota
300 South Wacker Drive, 13th Floor	Indiana	Ohio
Chicago, III. 60606	Michigan	Wisconsin
Region VI	Arkansas	Oklahoma
555 Gnffin Square Bldg.	Louisiana	Texas
Room 858	New Mexico	ICAGS
Griffin and Young Streets		
Dallas, Tex. 75202		
Region VII	Iowa	Missouri
Federal Office Bldg., Room 2107	Kansas	Nebraska
911 Walnut Street		*
Kansas City, Mo. 64106		
Region VIII	Colorado	South Dakota
Republic Bldg., Room 232-A	Montana	Utah
1612 Tremont Place	North Dakota	Wyoming
Denver, Colo. 80202		
Region IX	Anzona	Hawaii
450 Golden Gate Avenue, Room 9008	California	Nevada
P.O. Box 36017 San Francisco, Calif. 94102		
Region X		
8014 Federal Office Bldg.	Alaska	Oregon
909 First Avenue	Idaho	Washington



909 First Avenue Seattle, Wash. 98174

#### STATE AND TERRITORIAL APPRENTICESHIP **AGENCIES**

Apprentices Services Dept of Economic Security P O Box 6123 Phoenix Ariz 85005

Division of Apprent ceship Standards Department of Industrial Relations 455 Golden Gate Avenue P.O. Box 603 San Francisco Calif 94102

Colorado Apprenticeship Council 1177 Grant Street Denver Colo 80203

Apprentice Training Division Labor Department 200 Folly Brook Boulevard Wethersfield Conn 06109

Delaware State Apprenticeship and Training Council Department of Labor and Industry 618 North Union Street Wilmington Del 19805

District of Columbia Apprenticeship Council Room 1200 1100 Vermont Avenue NW Washington D.C. 20210

Bureau of Apprenticeship Florida Department of Commerce 1321 Executive Center Drive Tallahassee Fla 32301

Apprenticeship Division Department of Labor and Industrial Relations 825 M44am Street Honolulu Hawaii 96813

Apprenticeship Training Division<sup>5</sup> Kansas Apprenticeship Council Department of Labor 401 Tooeka Boulevard Topeka Kans 66603

Kentucky State Apprenticeship Council Capitol Plaza Tower 12th Floor Frankfort Ky 40601

Division of Apprenticeship Department of Labor 1001 Land and Natural Resources Bidg . Raleigh N.C. 27602 Baton Rouge La 70804

Maine Apprenticeship Council Department of Labor and Industry State Office Bldg . Augusta Maine 04330

Maryland Apprenticeship and Training Council Department of Labor and Industry 203 East Baltimore Street Baltimore Md 21202

Division of Apprentice Training Department of Labor and Industries State Office Bldg Government Center 100 Cambridge Street Boston Mass 02202

Division of Voluntary Apprenticeship Department of Labor and Industry Space Center Bldg 5th Floor 444 Lafayette Road St Paul Minn 55101

Montana State Apprenticeship Council Division of Labor Standards 1331 Helena Avenue Helena Mont 59601

Nevada Apprenticeship Council Department of Labor Capitol Bidg Carson City Nev 89701

New Hampshire Apprenticeship Councit Department of Labor 1 Pil'sbury Street Concord NH 03301

New Maxico Apprenticeship Council Labor and Industrial Commission 1010 National Bidg 505 Marguette NW Albuquerque N Mex 87101

Bureau of Apprentice Training Department of Labor The Campus Blog No 12 Albany NY 12226

Division of Apprenticeship Training Department of Labor

Ohio State Apprenticeship Council Department of Industrial Relations 2323 West Fifth Ave Room 2290 Columbus Onio 43216

Apprenticeship and Training Division State Office Bldg Room 466 1400 SW Fifth Street Portland Oreg 97201

Pennsylvania Apprenticeship and Training Council Department of Labor and Industry Labor and Industry Bidg Room 1547 Harrisburg Pa 17120

Apprenticeship Division Department of Labor 414 Barbosa Avenue Hato Rey PR 00917

Rhode Island Apprenticeship Council Department of Labor 235 Promenade Street Providence R1 02908

Utah Apprenticeship Council Industrial Commission 431 South Sixth East Room 225 Salt Lake City Utah 84102

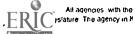
Vermont Apprenticeship Council Department of Industrial Relations State Office Bldg Montpelier Vt 05602

Division of Apprenticeship Training Department of Labor and Industry PO Box 1814 Ninth Street Office Bldg Room 334 Richmond Va 23214

Director of Apprenticeship and Training Department of Labor Christiansted St Croix VI 00820

Apprenticeship Division Washington State Department of Labor and Industries 318 East Fourth Avenue Olympia Wash 98504

Division of Apprenticeship and Training PO Box 2209 Madison, Wis 53701



All agencies, with the exception of Kansas, operate under apprenticeship and or training laws enacted by the istature. The agency in Kansas functions under executive order of the Governor

# United States Department of Labor

Bureau of Apprenticeship and Training

Certificate of Registration

Issued in recognition of the above apprenticostrip system, registered as part of the · Valuonal-Apprenticastrip Program in accordance with the standards recommended by the

Federal Committee on Apprenticeship



William & Kellong Hugh C. Murphy

# Certificate of Completion of Apprenticeship

Bureau of Apprenticeship and Training

This is to certify that

hus completed an upper leaship in the trade of

under sponsorship of

in accordance with the standards recommended by the "Feelered" Cammillee on Apprenticoship



Julian Hillon Tugg C. Marson

