VOLUME 8

1967

National Safety Congress

TRANSACTIONS

CONSTRUCTION INDUSTRY and PUBLIC EMPLOYEE

NATIONAL SAFETY COUNCIL
425 North Michigan Avenue
Chicago, Illinois 60611

SCF-ALLF-02835

SC-ALL-12791

55th ANNUAL NATIONAL SAFETY CONGRESS

Papers Delivered in the

CONSTRUCTION AND PUBLIC EMPLOYEES SESSIONS

Five Years of Future Dates for the National Safety Congress..... 4

CONSTRUCTION SESSIONS

Report of Year's Activities.....*Earl W. Wheeler* 5
Protection Against Trench Failures.....*William C. Land* 6
Safe Use of Explosives in Construction.....*M. M. Champion* 10
What's Wrong With Construction Safety in the United States . *Harry M. Philo* 13
Vibration Measurement in Construction.....*Paul C. Hosking* 15
How Owner and General Contractor Coordinate Safety on Multi-Contractor Jobs.....*Thomas J. Reynolds* 19
Occupational Health in the Construction Industry.....*Fred Ottoboni* 21
How To Foresee Tragic Accidents by Use of the High Potential Accident-Prone Situation Hazard Control Method.....*William W. Allison* 26

PUBLIC EMPLOYEE SESSIONS

Safety in the Fire Service.....*John R. Travell* 31
Ideas Regarding Safety in a Police Department.....*Maj. Adam Klimkowski* 34
Pinpointing the Problem Through Electronic Data Processing *Calvin V. Pelto* 35
The Protection of Work Crews on High-Speed Expressways . *Melvin G. Lyell* 37
Rotary Mower Guarding.....*Warren I. Hanson* 38
Hazards Encountered by the Highway Engineer, Technician, and Inspector At Construction Sites and at Material Plants.....*E. D. Sulno* 39
Upgrading a Highway Safety Program at a Minimum Expense . *Mark Markson* 42
Responsibilities of the Highway District Engineer to Employees' Safety *J. H. Phillips* 44
Prevention and Control of Asphalt Heating Kettle Fires.....*John M. Fries* 49
Can the Cardiac Be Safely Employed for Highway Work? . *Harvey M. Kuester* 50
The Phenomenon of Automobile Tire Hydroplaning.....*Adolph Fram* 52
Power Mower Safety and Vegtation Control.....*Luther A. Tippery* 54
Officers of the Construction Section 1967-68..... 59
Officers of the Public Employee Section 1967-68..... 62
Other Volumes in the 1967 National Safety Congress Transactions . . Back Cover

Weekly safety meetings are also held by the craft union stewards, and designated committees from these meetings in turn meet with plant protection and safety department personnel of the Burns Harbor plant to further assist in the compliance by all contractors toward the desired goal of maximum safe working conditions.

Periodically, the business agents for the crafts make safety tours of the construction areas with members of the construction and safety departments pointing out various constructive improvements to further improve the program.

Considerable time is spent working with the A.F.L. craft union safety representative to insure a mutual understanding that, for a safety program to be effective, requires the cooperation of both management and labor. Without the complete sincere support of the unions toward a sound safety program, frequently only "lip service" for safety exists with no meaningful action resulting.

Compliance and cooperation on this project has been excellent. Only infrequently have actions, other than firm reminders, been required to bring the safety program back into line. The aid of the purchasing department is enlisted when the most severe corrective actions have been necessary and this procedure has been most effective.

Our program is not unlike other programs in the construction industry, having the common denominator of planning, motivation, communication, and follow through accompanied with dedicated hard work on the part of each individual on the site. We attempt to implement our program with enthusiasm and a directness of purpose eliminating "lip service" and the attitude "we will look at the problem later".

OCCUPATIONAL HEALTH IN THE CONSTRUCTION INDUSTRY

By FRED OTTOBONI

Senior Industrial Hygiene Engr., Bureau of Occupational Health, California State Dept. of Public Health, Berkeley, Calif.

Occupational health in the construction industry is a subject that has not yet received any real interest or attention in the United States. Articles appear from time to time in the American literature on a specific health hazard, such as lung cancer in asbestos insulators, or lead poisoning in painters. Other than a few papers originating in California, where a start has been made on the heat, noise, and dust problems of heavy equipment operators, almost nothing seems to have been written on the present health status of the individual crafts or on the overall health problems or needs of the industry.

This lack of interest and work is significant. Either there are no problems in the industry worthy of mention, or there is an appalling lack of some vital ingredient which is necessary for stimulating the growth of a systematic interest in the health of more than four million American workers.

First, let's define "occupational health". The term has been so loosely used over the last few years that intelligent discussion of the subject has been difficult. Some people interpret it to mean everything from a cut finger to the social well-being of the craftsman's family. For our purposes here, however, occupational health means the prevention of work-caused disease and disability by control of the work environment, an area where both labor and management have a clear responsibility for observation, discussion, and hazard control. This definition acquires particular meaning when one realizes that the majority of occupational diseases are not curable; they are only preventable.

Five conclusions have emerged from our studies of occupational health problems in the construction industry. We feel they are fundamental, if progress is to be made. They are the result of nearly five years of observations in California. They dramatically reveal the lack of interest, the lack of programs and the lack of action that beset the industry. It is recognized that the immediate demand of

pressing safety problems in the industry may, in part, be responsible for submerging any concerted interest in health problems. While no attempt is made here to detract from the important responsibility for accident prevention in the industry, it is time that programs in work-induced disease prevention begin to receive the attention they deserve. High accident frequencies cannot, by any stretch of the imagination, justify a lack of interest in healthy working conditions.

Our first conclusion—there is a basic need to recognize that construction workers are now suffering job-induced diseases and that new diseases will emerge with advancing technology.

To the casual observer or even a member of the industry itself, it is reasonable to believe that occupationally-induced diseases in construction work are not a problem. The crafts have long histories of working outdoors in the fresh air with hammers, shovels, and other tools which have in the past traditionally presented safety problems, but not health problems.

A look at the Federal or State health statistics appear to support this concept: not because there is a lack of problems, but because neither the Federal government nor the states—with the possible exception of California—keep any statistics on the subject. When no disease is reported, it is natural to conclude that none exists. However, what appears as no problem is, in reality, no information on the problem.

Experience in California supports this conclusion. In recent years, physician's reports of occupational diseases among construction workers have been coming into the State Health Department at approximately twice the average rate for all California workers. Since 1949, when recording began in California, this rate has been continuously among the three highest of all the major industries. The diseases involve the skin, the lungs, systemic poisonings, hearing loss—essentially the whole range of illnesses normally believed to lie in the exclusive province of factory workers.

Field investigations suggest that more is to come. For example, an estimate based on hearing tests conducted at construction sites by fully-qualified audiologists indicates that some 20,000 heavy equipment operators now working in the state have permanent noise-induced hearing loss. The trend toward larger, faster, and more powerful equipment, designed without consideration for the long-term health of the operator, is expected to intensify this hearing loss problem. It also is expected to introduce silicosis for the first time as a disease of the operators of dozers, power shovels, and front-end loaders.

The equipment operator is not alone in facing these health hazards. The recent replacement of the plasterer's conventional trowel with a spray nozzle has introduced serious hearing loss problems insofar as the plaster guns that we have measured are concerned. Further, the gun application of asbestos-containing fireproof coatings continues without control and without concern. Yet, data coming in regularly from studies of men working around asbestos dust leave very little doubt that the gun operator and other craftsmen in the area are being subjected to the risk of asbestosis and lung cancer.

There are many more examples. Plastic adhesive and surfacing materials have made life an itchy nightmare for the tile setter and the cement mason. It is important to realize that much of this skin disease is accompanied by a permanent allergy to the epoxy resin hardener used in the process. The slightest further exposure to the hardener brings on a repeat case of the itch and the man is permanently disabled for any further work with the plastic.

Another example involves today's welder. There was a time when very little except ordinary steel was found on a construction job. An unprotected welder could work with very little hazard from fumes. Alloys are changing this. For instance, inhalation of the fumes from manganese steel will produce an illness which closely resembles Parkinson's disease. Consider also that nickel, cadmium, vanadium, and some other metals are toxic by inhalation.

It is clear that the pick and shovel are gone, and along with them went the fresh air and the iron man. The construction industry has entered the era of machines and chemicals, and it should recognize this.

A second conclusion—it must be recognized that the methods which have been developed for the protection of the factory worker may not be feasible on a construction job.

Most of the occupational health literature and practically all of the preventive methods in use were developed with the factory

worker in mind. The factories presented the critical industrial health problems of the 19th and early 20th centuries and this is where the interest, the research, and the money has been invested. The emphasis today, although comparatively small, is still on the factory. As a result, the standard control methods available in all the textbooks, ventilation, isolation, enclosure, substitution, and personal protection, are organized to make practical and economical sense in a factory setting.

The factory hand works for the most part in a fixed location. Exposure is repetitive and predictable over a long period of time. Utilities are available and control methods can be designed, tested, and finally built-in as part of the company's long-term capital investment. It is not unusual to see a $20,000 ventilation system built into a plant to protect 10 or 15 welders.

But look at the welders on the construction job. In a lifetime, each will have done about as much work and generated as many fumes as a factory welder. However, the control system here is non-existent, because the control methods in the textbooks do not make practical or economic sense on a construction job.

Factory spray painting is done in a ventilated booth, according to the books. Since a booth would cost too much on a construction job, we scratch our heads and spray paint anyway.

Dust, noise, heat, and almost any health problem is controlled by cookbook methods in the factory. The cook book doesn't work for construction, so we live with the problems and hope they will go away.

It is now critically necessary that we accept the fact that a construction job is not the same as a factory job, and that the factory hazard-control cookbook—although free—is not applicable.

A third conclusion—we must begin to develop our own occupational health standards.

The golden era of occupational health in the United States ended in the mid-1950's. The movement which began in the 1930's and provided wide knowledge of industrial diseases and excellent textbooks is slowly dying. The Federal program is small and without legal authority. State programs not only have been declining in manpower, but show little interest in the construction industry. The traditional standard-setting agency for occupational health in the country, the American Conference of Governmental Industrial Hygienists, is dependent upon its dues-paying members for support. Its $13,000 yearly total budget will not cover more than a fraction of the country's problems, and that fraction will be factory-oriented.

On this basis, it is unlikely that the widely subsidized work that went into helping the industrialist to understand his problems and to custom-tailor his environmental control will be available to the construction industry. The facts are that the responsibility for providing a reasonably healthy place to work lies directly with construction labor, and construction management.

The need for environmental standards is growing with each day. Noise offers a fine example: Heavy equipment, trucks, compressors, chain saws, jackhammers, and a wide variety of power hand tools are producing hearing loss that is reaching scandalous proportions. There are choices. The individual contractor can hire an accoustics expert and modify these tools at his own expense. As another choice, he can attempt to stuff earplugs in his men, a method that will be of no practical value on a construction job, and one that will probably reduce productivity. A popular alternative is to do nothing and let the insurance companies worry about it.

The sensible solution is to collectively write a set of performance standards for power equipment. These can be written right now, from knowledge at hand, and would specify maximum allowable noise intensities at an appropriate given distance from the equipment. The tool manufacturers may have difficulties at first. But their engineering and research departments are available and in the best position to control hearing loss at the lowest possible cost.

Adequate labelling also must be considered. Very few of the materials capable of causing eye, skin, or lung problems such as plastics, paints, welding rods, fluxes, solvents, lubricants, etc., have useful warning labels when they reach the construction site. This has two negative effects, in addition to the potential for injury. First, even the interested men cannot find out how to protect themselves. And second, if the material does cause a problem, the men have no clear information that might be useful in selecting a less harmful product for the next job.

This is particularly dramatized by the experience of the cement masons, where labels are often so vague as to make it impossible for them to determine whether the surfacing material they are expected to apply on a particular job is a dermatitis-causing epoxy, a bronchospasm-causing urethane, or a relatively safe polyester.

The noise and label problems are straightforward. They follow the textbook closely. Others may not be so simple because of the mobile nature of construction work. Solutions to these will require imagination and money. Ideas from the space program are sure to be useful and we expect to see exploitation of the controlled individual environment in the form of air-supplied suits for plasterers, cement masons, and welders; and air-conditioned, noise-and dust-tight capsules for heavy equipment operators. Standards, once set, can make these easily accessible at mass-produced costs.

The logical approach is to accept the responsibility and begin to develop some standards that can be put into contracts and equipment purchase orders; otherwise the industry faces attrition of skilled manpower, higher compensation costs, hazard pay, and if the problem gets bad enough, the inevitable application of the ill-fitting industrial cookbook to these construction jobs.

A fourth conclusion—records and statistics must be kept.

I repeat, health information on working men is scarce. This is particularly so in the construction industry because even the information that is obvious in a factory is clouded by the nature of construction work.

A factory is a relatively permanent environment. Jobs acquire reputations: they smell; old timers get lung disease; this or that chemical will make you sick if you inhale it. This is epidemiology in its most primitive form, done without the help of the professionals or the government. Nevertheless, it is very effective in discovering diseases and developing control methods.

Contrast this with a construction job. The office is often a house trailer and a single craft is not likely to be on a given job for more than a year. Who now is going to do the epidemiology? Work-induced health damage suffered by a craft during the course of a single project very easily passes without notice. It is not until a series of such projects —and years—have passed that disability is marked enough to prevent further employment. At this point, cause-effect relationships are obscure. No single event can be held responsible, and the work force has a few less craftsmen. If by some chance the illness is recognized as work-induced, the last employer may be held responsible for the entire cost of compensation. This is no solution.

For example, earth mover operators have long suspected that somehow spinal problems are connected with their jobs. This may or may not be so; there are no statistics. It is hardly possible that all equipment operators are born with bad backs. It is most likely, however, that the vibration and bouncing on some types of seats on some types of equipment are causing spinal damage. Unless it is known, first, whether or not operators are truly suffering spinal problems and second, exactly which machines and what conditions are responsible for the problems, prevention of "back trouble" will be impossible.

With computers now available, it is feasible to record the pertinent details of every job, every illness, and every death for every man working in the construction industry. This should be done by every craft union, with the cost shared by the employer. Routine computer output will then tell us whether painters die young, or equipment operators get silicosis, or plasterers get emphysema, and whether the lung cancer that has been found in asbestos insulators is being controlled or not controlled.

A fifth conclusion—uniform, reasonable regulation must be insisted on.

Competition is very real in construction. In fact, it appears to be so fierce that it often is cited as the justification for poor health and bad safety practices. For instance, the question as to why water is not being used to control dust on a given haul road very often will bring the reply that this is highly commendable; however, "it was not included in the job estimate because the competition never includes such things, and in order to bid the job successfully it was necessary to dispense with the water wagons".

This is a standard answer for many problems. Its effect is to penalize the legitimate contractors and to make the natural growth of healthy working conditions next to impossible. This fanatic interest in cost-reduction seems to be eroding the few existing health standards accepted by the industry.

For example, everyone knows that a sandblaster should wear an airsupplied helmet.

This has been accepted without question for decades. Yet during the last year the writer has seen five construction jobs where sandblasters were working. They all religiously wore the proper helmets—but not one had an air-supply hose connected to the helmet! Apparently the air supply isn't being figured into the bids anymore, even though it is still in the law.

Diesel engines in underground construction are an example of long-term, legal erosion. Diesels were allowed underground only after long study and, finally, the setting of rigorous standards by the Bureau of Mines. These included specially designed engines, matching exhaust scrubbers, and ventilation rates based on numbers which accompanied the vehicle from the manufacturer. Competitive progress over the last 20 years has led to the erosion of standards and the acceptance of any diesel vehicle with a home-made scrubber, and ventilation rates based on air sampling methods that have not been proved reliable. The engineered and tested standards and safety factors prepared by the Bureau of Mines are being forgotten. Although a few contractors still use Bureau of Mines equipment, continuous pressure from the industry has eroded the minimum standard. One thing is certain: eroded standards, no matter how legal, neither increase profits nor make diesel exhaust better to smell nor safer to inhale.

The competitive inducement to save money by shaving health and safety costs need not continue. Good applicable standards, as they are developed under our third conclusion noted above, can be made a part of all construction contracts and all labor management contracts. In this way, healthy working conditions will be officially recognized as a legitimate cost of doing business, and the toll will be paid in dollars by the buyer of services rather than in the health and longevity of the craftsmen who provide them.

The construction industry has a host of hidden and pressing occupational health problems, with more to come. For the short term future, government rescue does not seem possible and a serious and planned effort by management and labor is badly needed.

The construction industry has enjoyed and become addicted to the privileges of hard work and fresh air. Change is always difficult. But one way or another, like it or not, the technology that we are using to change the face of the earth will, in the long run, change us also.

OFFICERS OF THE

CONSTRUCTION SECTION

NATIONAL SAFETY COUNCIL 1967-68

General Chairman—•T. S. McKOSKY, Supervisor of Toolhouses, Bethlehem Steel Corp., Bethlehem, Pa.

Vice-General Chairman—•W. G. BRYSON, Safety Director, Tidewater Construction Corp., Norfolk, Va.

General Secretary—†•FREDERICK H. DEEG, Mgr., Accident & Fire Prevention Dept., American Mutual Insurance Alliance, Chicago, Ill.

Assistant General Secretary—•FRED A. HORNSBY, Jr., Product Line Manager, Mine Safety Appliances Co., Pittsburgh, Pa.

DIVISIONS

Building—•BRONSON A. COLE, (Chairman), Safety Engineer, Engineering & Construction Div., Koppers Co., Inc., Pittsburgh, Pa.; CHARLES F. SPARRELL, (Vice-Chairman), Assistant Chief Engineer, Liberty Mutual Insurance Co., Chicago, Ill.; RALPH ADAMS, Safety Engineer, Miller Davis Co., Melrose Park, Ill.; RALPH W. ARMSTRONG, Supervising Engineer, Engineering Div., The Travelers Insurance Co., Hartford, Conn.; †JOHN D. BONHAM, Supervising Engineer, Joyce & Co., Chicago, Ill.; CHARLES W. BORDEN, Jr., Manager of Safety, Coco Corp., Chicago, Ill.; HENRY V. CARVILL, Safety Director & Insurance Manager, Henry C. Beck Company, Dallas, Texas; PAUL H. CONNELLEY, United Brotherhood of Carpenters & Joiners of America, Washington, D. C.; WARREN C. HARGREAVES, Safety Director, Fruin-Colnon Contracting Co., St. Louis, Mo.; H. F. HUBER, Safety Director, Beacon Construction Co., Boston, Mass.; NORBERT J. HYNEK, Safety Director, Associated General Contractors of Greater Milwaukee, Milwaukee, Wis.; FREDERICK M. LIVINGSTON, Jr., Safety Director, Turner Construction Company, New York, N. Y.; ROBERT D. McCALL, Manager of Accident Prevention, Construction Industry Advancement Program, Pittsburgh, Pa.; HUGH J. McRAE, Asst. Secy. Building Construction Employers' Assn., Chicago, Ill.; FRANCIS L. OTTO, Construction Specialist, Office of Occupational Safety, Bureau of Labor Standards, U. S. Department of Labor, Washington, D. C.; ALFRED L. PERINI, Jr., Safety Dir., Perini Corp., Framingham, Mass.; RICHARD E. SCHROEDER, Director, Home Office Engineering Services, American Mutual Liability Insurance Co., Wakefield, Mass.; DONALD W. STILWELL, Jr., Safety Supervisor, The Ceco Corp., Chicago, Ill.; GENE WASSERMAN, Safety Director, Wexler Construction Company, Inc., Newton Highlands, Mass.; †•ROBERT A. WENDELL, Chief, Safety Office, U. S. Army Engineer Division, South Atlantic, Atlanta, Ga.; JACK WILKINSON, Director, Education, Welfare & Safety, Laborers' International Union of North America-AFL-CIO, Washington, D. C.; ERWIN N. ZINER, Project Manager, George B. H. Macomber Co., (Allston Station) Boston, Mass.

Heavy—•DAN C. CHRISTIE, (Chairman), President, The Christie Co., Sacramento, Calif.; JAMES R. MILOR (Vice Chairman), Safety Manager, H. K. Ferguson Co., Cleveland, Ohio; †•GEORGE E. ARO, Safety Engineer, United Engineers and Constructors, Inc., Philadelphia, Pa.; JOHN BARKER, Safety Supervisor, The Ralph M. Parsons Co., Los Angeles, Calif.; CARLYLE F. BUNN, Chief, Safety Branch, U. S. Army Engineer District Kansas City, Kansas City, Mo.; C. M. CAHILL, Safety Engineer, Massman Construction Co., Kansas City, Mo.; FRED S. CAMERON, Safety Supervisor, Ebasco Services, Inc., New York, N. Y.; JACK CHAMBERS, Al Johnson Construction Co., Minneapolis, Minn.; WAYNE L. CHRISTENSEN, Insurance Manager & Safety Director, The Rust Engineering Co., Pittsburgh, Pa.; JACK R. DUNCAN, Director of Industrial Relations, Tainer Bros. Contracting Co., Phoenix, Ariz.; †NEIL E. GARBER, Consultant, Hinsdale, Ill.; W. E. HARGROVE, Safety Engr., Engineering Design and Construction, Tennessee Valley Authority, Knoxville, Tenn.; W. M. HOXLE, Chief, Safety Office, U. S. Army Engineer Div., New England, Waltham, Mass.; D. F. HUDDLESTON, Senior Accident Prevention Officer, The Hydro-Electric Power Commission of Ontario, Toronto, Ont., Canada.; JOSEPH F.

HUNTMAN, Construction Specialist, Employers Mutuals of Wausau, River Forest, Ill.; CLAYTON C. KILPATRICK, Safety Engineering Supervisor, Port of New York Authority, World Trade Center, New York, N. Y.; A. R. KLASHAK, Manager of Safety, Humkin-Conkey Construction Co., Cleveland, Ohio; HOWARD S. LATHAM, Chief Safety Engineer, Bureau of Reclamation, Denver, Colo.; DALE MARR, Vice Pres., Safety Director, Operating Engrs., Local Union 3, San Francisco, Calif.; ROBERT J. MASSMAN, Safety Engineer, Massman Construction Co., Kansas City, Mo.; C. RUSSELL MATTSON, Manager, Accident Prevention, Dravo Corporation, Pittsburgh, Pa.; WILLIAM B. MURPHY, Chief Safety Office, Chief of Engineers, Department of the Army, Washington, D. C.; CHARLES R. NELSON, Safety Supervisor, Stone & Webster Engineering Corporation, Boston, Mass.; J. R. O'NEILL, Safety Supvr., The Fluor Corp. Ltd., Los Angeles, Calif.; ERIC L. PEDLEY, Pedley-Knowles & Co., San Francisco, Calif.; CLUFF A. PETERSON, Director of Safety, Vinnell Corp., Alhambra, Calif.; FRANK ROBERTS, Industrial Relations Manager, Dravo Corp., Bellevue, Wash.; ARTHUR L. SCHMUHL, Director, Safety and Training Division, The Associated General Contractors of America, Inc., Washington, D. C.; THOMAS J. SEYMOUR, Safety Engineer, Tennessee Valley Authority, Knoxville, Tenn.; LEE D. TRACY, Director, Loss Control, Ingram Corp., New Orleans, La.; JACOB J. VEATCH, Chief, Safety Office U. S. Army Engineers Division, Missouri River, Omaha, Neb.; O. C. WAKEFIELD, Chief, Safety Office, St. Paul District, Corps of Engineers, U. S. Army, St. Paul, Minn.; †*EARL W. WHEELER, Safety Engineer, Naval Facilities Engineering Command, Navy Department, Washington, D. C.; KENNETH A. WHITE, Chief, Safety Office, Chicago District Corps of Engineers, Chicago, Ill.; JEROME J. WILLIAMS, Director of Safety, Morrison-Knudsen Co., Inc., Boise, Idaho; JAMES R. YORK, Safety Engineer, Garden B. Hall, Inc., Danville, Calif.

Highway—†*DONALD W. DODSON (Chairman), Manager, Engineering Dept., Aetna Casualty & Surety Co., Chicago, Ill.; EUGENE W. ROBBINS (Vice-Chairman), Managing Director, Contractors Division, American Road Builders' Association, Washington, D. C.; HOMER F. CLARK, Safety Officer, Department of Commerce, Bureau of Public Roads, Washington, D. C.; RAYMOND R. CROWE, Director of Safety, Western Pennsylvania Heavy & Highway Construction Industry Advancement Program Fund, Pittsburgh, Pa.; J. MONTGOMERY FARRAR, Director of Education & Training, Virginia Road Builders Assn., Richmond, Va.; LEONARD FREED, Ohio Contractors Assn., Columbus, Ohio; DAVE GABRIELSON, Safety Director, Johnson Bros. Constructors, Inc., Litchfield, Minn.; PHILIP A. HAVEY, Supt., Home Office Engineering, The Hartford Insurance Group, Hartford, Conn.; DALE R. MEDSKER, Dale Medsker & Associates, Inc., Atlanta, Ga.; WARREN R. MENDEL, Engineering and Grading Contractors Assn. of California, Los Angeles, Calif.; CHARLES R. NELSON, Safety Supervisor, Warren Bros. Co., Cambridge, Mass.; ROBERT O. NIMMO, Safety Director, Peter Kiewit Sons', Inc., Omaha, Nebr.; ROY H. OLSON, Safety Engineering Consultant, Michigan Mutual Liability Co., Lansing, Mich.; JAMES A. RAMSEY, Jr., Safety Director, Western Contracting Corp., Sioux City, Iowa; W. B. SALZMAN, Milburn Brothers, Inc., Mount Prospect, Ill.; ROBERT E. VERCIE, Asst. Mgr. Pacific Regional Engineering Dept., Fireman's Fund American Insurance Companies, San Francisco, Calif.

Home Building—†*†ROBERT L. MOORE (Chairman), Assistant Secretary, Lumbermans Mutual Casualty Co., Chicago, Ill.; NELSON B. NISSEN (Vice-Chairman), Chief Safety Engineer, Argonaut Insurance, Menlo Park, Calif.; FRANK R. DWYER, Mgr., Engineering Dept., Reliance Insurance Cos., San Francisco, Calif.; CLEMENT J. LUEPKE, Consultant, East St. Louis, Ill.; WM. P. YOUNGCLAUS, JR., Managing Director, The National Remodelers Association, New York, N. Y.

Specialty—*T. J. LASKOWSKI (Chairman), Safety & Claims Supervisor, Transit Insurance Administrators, San Francisco, Calif.; †MARTIN F. MULHALL (Vice-Chairman), Manager, Safety Engineering Dept., Fred S. James & Co., Chicago, Ill.; VINCENT D. AUBUCHON, Director, Field Safety, Nooter Corp., St. Louis, Mo.; C. A. BEANE, Asst. Sales Manager, Fibre Metal Products Co., Chester, Pa.; RAY L. BEKLER, Director of Legistrative Affairs, The Associated General Contractors of America, Inc., Salem, Ore.; RAYMOND W. BRANDT, Director Safety Services, O'Rourke & Company, Inc., Fort Wayne, Ind.; ARCHER W. BROWN, Chief Engr., American Hoist & Derrick Co., St. Paul, Minn.; ALAN F. BURCH, Safety Director, International Union of Operating Engineers, AFL-CIO, Washington, D. C.; FRED A. CAMPBELL, Insurance Manager, J. F. Pritchard & Co., Kansas City, Mo.; R. J. DOUGHERTY, Corporate Director of Safety, Stearns-Roger Corp., Denver, Colo.; BERNIE M. ENFIELD, Safety & Training Director, Chicago Bridge & Iron Co., Oak Brook, Ill.; †GERARD O. GRIFFIN, Manager, Hazard Control, Dravo Corp., Pittsburgh, Pa.;

CHARLES J. HART, Secretary, Codes & Standards Comm., National Electrical Contractors' Assn., Inc., Washington, D. C.; †ROBERT L. JENKINS, Consultant, Potomac, Md.; WARDIE W. KING, Chief, Safety Office, U. S. Army Engineer Division, North Pacific, Portland, Oregon; JOHN V. O'BRIEN, Safety Supv. & Labor Relations Repr., Bechtel Corporation, San Francisco, Calif.; HENRY T. PEREZ, Editor, Construction Methods & Equipment, New York, N. Y.; ALAN REED, Manager, Product Engineering, Daniel Woodhead Co., Chicago, Ill.; ROBERT C. RENFROE, Chairman of the Board, J. C. Renfroe & Sons, Inc., Jacksonville, Fla.; G. J. SAMSON, General Manager, Construction Safety Associations of Ontario, Toronto, Ontario, Canada; A. J. SCARDINO, Safety Director, Jahncke Service, New Orleans, La.; JOHN G. SELLERS, Safety Engineer, Combustion Engineering, Inc., Windsor, Conn.; HUNTER P. WHARTON, General President, International Union of Operating Engineers, Washington, D. C.; STEPHEN R. WHITED, Regional Sales Mgr., E. D. Bullard Co., Barrington, Ill.; VICTOR E. WHITEHOUSE, Director of Safety, International Brotherhood of Electrical Workers, Washington, D. C.; E. L. WILSON, General Supervisor of Safety, American Bridge Div., U. S. Steel Corp., Pittsburgh, Pa.

STANDING COMMITTEES

Program Committee—W. G. BRYSON, Coordinator; Co-Chairmen: C. F. SPARRELL (Building), LEE D. TRACY (Heavy), E. W. ROBBINS (Highway), M. F. MULHALL (Specialty).
Membership Committee—H. V. CARVILI (Chairman), B. A. COLE, DAN C. CHRISTIE, D. W. DODSON, T. J. LASKOWSKI, ROBERT L. MOORE.
Newsletter Committee—B. M. ENFIELD, Editor.
Health Committee—CLARE B. SCHWARTZ, R.N. (Chairman), Employers Mutuals of Wausau, River Forest, Ill.; EDWARD L. MCGREGOR, General Sales Manager, Uni/Flex Div., Medical Supply Co., Rockford, Ill.; ROBERT D. MULHALL, Manager, Western District, Welsh Manufacturing Co., Saratoga, Calif.; JANE T. SLOANE, R.N., Construction Nurse, G. K. Newberg Construction Co., Chicago, Ill.; JEAN R. WELSH, R.N., Construction Nurse, Hartnett-Shaw & Associates, Chicago, Ill.
Research Committee—P. A. HAVEY (Chairman).
Public Relations Committee—HUNTER P. WHARTON (Chairman).
Training Committee—ARTHUR L. SCHMUHL (Chairman).
Visual Aids Committee—R. J. DOUGHERTY (Chairman).
Standards Committee—DAN C. CHRISTIE (Chairman).
Special Projects Committee—WM. B. MURPHY (Chairman).
Off-the-Job Committee—PAUL H. CONNELLEY (Chairman).
Nominating Committee—E. W. WHEELER (Chairman), GEORGE E. ARO, FREDERICK H. DEEG, ROBERT L. MOORE, ROBERT A. WENDELL.
Honorary Life Members—R. J. BEHLEY, C. M. CAHILL.
Staff Representative—CHARLES J. POPKE, JR., National Safety Council, 425 N. Michigan Ave., Chicago, Illinois 60611.

†Past General Chairmen
•Administrative Committee
†Task Force