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Title 3—The President

EXECUTIVE ORDER 11690

Delegation of Certain Functions to the Executive Director of the Domestic Council

By virtue of the authority vested in me by the Constitution and statutes of the United States, Part II of Reorganization Plan No. 2 of 1970, and as President of the United States, it is ordered as follows:

SECTION 1. *Functions of the Executive Director of the Domestic Council.* In addition to the functions heretofore assigned, the Executive Director of the Domestic Council shall assist the President with respect to intergovernmental relations generally. In addition, he shall:

(1) serve as the coordinator for the prompt handling and solution of Federal-State-local problems brought to the attention of the President or Vice President by executive and legislative officers of State and local governments;

(2) identify and report to the President on recurring intergovernmental problems of a Federal interdepartmental and interprogram nature;

(3) explore and report to the President on ways and means of strengthening the headquarters and interagency relationships of Federal field offices as they relate to intergovernmental activities;

(4) maintain continuing liaison with intergovernmental units in Federal departments and agencies; and

(5) review procedures utilized by Federal executive agencies for affording State and local officials an opportunity to confer and comment on Federal assistance programs and other intergovernmental issues, and propose methods of strengthening such procedures.

SEC. 2. *Administrative Arrangements.* (a) All Federal departments, agencies, and interagency councils and committees having an impact on intergovernmental relations, and all Federal Executive Boards, shall extend full cooperation and assistance to the Director in carrying out his responsibilities under this order. The Director shall, upon request, assist all Federal departments and agencies with problems that may arise between them and the executive agencies or elected officials of State and local governments.

(b) The head of each Federal department and agency shall designate an appropriate official with broad general experience in his department

or agency to serve, upon request of the Director, as a point of contact in carrying out Federal-State-local liaison activities under this order.

SEC. 3. *Construction.* Nothing in this order shall be construed as subjecting any department, establishment, or other instrumentality of the executive branch of the Federal Government or the head thereof, or any function vested by law in or assigned pursuant to law, to any such agency or head, to the authority of any other such agency or head or as abrogating, modifying, or restricting any such function in any manner.

SEC. 4. *Revocation.* Executive Order No. 11455 of February 14, 1969, entitled "Establishing an Office of Intergovernmental Relations", is hereby revoked.

SEC. 5. *Records, Property, Personnel, and Funds.* The records, property, personnel, and unexpended balances, available or to be made available, of appropriations, allocations, and other funds of the Office of Intergovernmental Relations are hereby transferred to the Domestic Council.

SEC. 6. *Effective Date.* This Order shall be effective thirty days after this date.



THE WHITE HOUSE,
December 14, 1972.

[FR Doc.72-21748 Filed 12-14-72; 3:40 pm]

NOTE: For the text of a Presidential statement dated December 14, 1972, and issued in connection with E.O. 11690, above, see Weekly Comp. of Pres. Docs., Vol. 8, No. 51, issue of December 18, 1972.

Rules and Regulations

Title 6—ECONOMIC STABILIZATION

Chapter III—Price Commission

PART 300—PRICE STABILIZATION

Base Price of New Property and New Services

The purpose of this amendment is to republish § 300.409 of the Price Commission's regulations in its entirety, modifying the definitions of new property and new services and the methods by which their base prices are to be established.

The definitions provided under the current § 300.409(a) are combined in the new paragraph (a)(1). This combined definition differs from the previous provisions in the following respects. Present § 300.409(a) provides that a property or service could be treated as a new property or service only if, among other requirements, it had not been "offered for sale or lease" during a 1-year period preceding the date on which it is now offered for sale. New paragraph (a)(1) provides that the property or service must not have been actually sold or leased during the 1-year period immediately preceding the date on which it is now offered for sale or lease. This modification brings this section into conformity with the definitions of "sale" and "transaction" used elsewhere in Price Commission regulations and rulings. It will also insure that a seller of a "new" property or service is not bound to an artificial price level at which no transactions were consummated but at which a mere offer of sale was made.

In addition, the combined definition in new paragraph (a)(1) eliminates the confusion inherent in the current § 300.409(a) which provides that a property or service may be considered to be a new property or new service if the property or service (1) "meets the requirements of the first three sentences of paragraph (b) of this section and was not offered for sale or lease by the person at any time during the 1-year period immediately preceding the date on which it is offered for sale or lease;" or, (2) "was not offered for sale or lease in the same or substantially similar form" at any time during the 1-year period immediately preceding the date on which it is offered for sale or lease. New paragraph (a)(1) provides that a property or service may be considered to be a new property or service if that property or service was not sold by the person in the same or substantially similar form at any time during the 1-year period immediately preceding the date on which it is offered for sale or lease, and that property or service is substantially different in purpose, function, quality, or technology, or the use of that property or service effects a substantially different result from any other property or service currently being sold or leased by the person or sold or leased by the person during the 1-year period immediately preceding the date on which it is offered for sale or lease.

New paragraph (a)(2) allows certain additional properties and services to be treated as new properties or new services. It provides that the offeror of a property or service may consider that property or service "new" if he is offering it to a market (i.e. group of purchasers) to whom he did not sell or lease it during the 1-year period immediately preceding the date on which he is now offering it for sale and lease. The various groups of purchasers which are considered to be distinct markets for the purpose of this regulation are specified in new paragraph (a)(2) and consist of wholesalers, retailers, consumers, manufacturers, and service organizations. If, for example, a manufacturer sold his product only to wholesalers during the preceding 1-year period, and now intends to offer this product to retailers, he may consider that product as a new property for purposes of determining a base price as to the new market or group of purchasers (i.e. retailers). This provision is intended to avoid market disruptions which could occur if such a seller were compelled to treat the pricing of this product the same regardless of the market or group of purchasers to whom it is to be sold.

New provisions prescribing the four methods by which a base price may be determined for a new property or service are set forth in paragraph (b) of the revised § 300.409. Separate methods are specifically tailored for use by: (1) Manufacturers or service organizations; and (2) retailers or wholesalers. Alternatives are also provided for determining a base price if the specific provisions do not apply to a given situation.

Paragraph (b)(1) provides that a manufacturer or service organization may determine a base price on a ndew property or service by applying a net operating profit markup to the total allowable unit cost of the new property or service. This provision presents two material modifications to the current regulations. Under the new provisions, the markup to be applied to the cost of the property or service is "net operating profit markup" as opposed to the previous "customary initial percentage markup." This new markup is defined within the section for clarification. In addition, the costs to which this markup is to be applied have been expanded. Currently, the markup is to be applied only to the "direct unit or net invoice cost" of the new property or new service. Under the terms of the new paragraph (b)(2), the markup is to be applied to the "total allowable unit costs" of the property or service. This provision is intended to avoid any inequity which may have existed under the previous provisions. Previously, a person was authorized to determine a base price by the application of a customary initial markup to the direct unit cost of an item or by a computation based on the average prices received in transactions by persons selling comparable property or services in the same marketing area. A person using the customary initial percentage markup alternative was unable to recover certain allowable indirect costs whereas, in many cases, the "average prices" computation would include direct and indirect costs incurred by the seller. In such a case, the person pricing his new property or service by this second alternative method could make use of indirect costs, while the person applying a customary initial percentage markup to cost was able to use only direct unit costs.

Paragraph (b)(2) provides that a retailer or wholesaler may determine the base price of a new property or service by applying the customary initial percentage markup set forth in that subparagraph to the total allowable unit costs of the property or service.

Paragraph (b)(3) provides a method of determining base prices if the person offering the property or service did not offer a similar property or service during the freeze base period. This provision continues the method contained in the prior section (c)(2) in that the base price shall be the average price received in a substantial number of current transactions by persons selling or leasing comparable property or services in the same marketing area. A new provision is added, however, to make it clear that the current transactions must be with the same market (i.e., group of purchasers) as those with whom the seller or lessor of the new property or service will be dealing in the future.

A new paragraph (b)(4) is provided in this amendment to be used by the seller or lessor of the new property or new service only if the other pricing methods cannot be used in the determination of a base price for the property or service. This subparagraph provides that if the property or service is not reasonably comparable to any being sold or leased in current transactions with the same market, or is not reasonably comparable to any sold or leased by anyone in the same marketing area at any previous time, the present offeror of the property or service may use any pricing practice which he customarily used during the freeze base period. If the person did not

sell or lease any property or service before August 15, 1971, he may use the prevailing pricing method used by others in comparable business dealing with the same market. This provision is intended for use by a person who is offering a unique new product or service, or by a person who has recently begun his business. In the latter case, all the products produced and services provided by the person would be new property or new services as to that person.

Paragraph (c) of revised § 300.409 places a new and material limitation upon the use of this section by requiring that once a base price is established for a property or service it cannot be treated as a new property or service in its same market merely because of a change in ownership or control of the original offering firm. This provision is added to avoid confusion in the determination of base prices in cases of corporate or other reorganization. In such cases, the current offeror is required to maintain the base price previously determined for that property or service if it is offered to the same market.

Because the purpose of this amendment is to provide immediate guidance and information as to price stabilization rules, it is hereby found that notice and public procedure thereon is impracticable and that good cause exists for making them effective less than 30 days after publication.

(Economic Stabilization Act of 1970, as amended, Public Law 91-379, 84 Stat. 799; Public Law 91-558, 84 Stat. 1468; Public Law 92-8, 85 Stat. 13; Public Law 92-15, 85 Stat. 38; Economic Stabilization Act Amendments of 1971, Public Law 92-210; Executive Order No. 11640, 37 F.R. 1213, January 27, 1972; Cost of Living Council Order No. 4, 36 F.R. 20202, October 16, 1971)

In consideration of the foregoing, Part 300 of Title 6 of the Code of Federal Regulations is amended as set forth herein, effective December 18, 1972.

Issued in Washington, D.C., on December 12, 1972.

C. JACKSON GRAYSON, JR.,
Chairman, Price Commission.

Section 300.409 is amended to read:

§ 300.409 New property and new services.

(a) *General—New item.* (1) A property or service is a new property or new service if—

(i) The offering person did not sell or lease it in the same or substantially similar form at any time during the 1-year period immediately preceding the first date on which he offers it for sale or lease. (A change in appearance, arrangement, or combination does not create a new property or service. Ordinarily, a change in fashion, style, form, or packaging does not create a new property or service. In the case of personal property for lease, a permanent improvement or betterment made to the property, as a part thereof, to increase value or to restore it makes it a new property for purposes of a lease if the cost of the improvement or betterment is greater than $100 and at least as much as 3 month's rent for the property); and

(ii) It is substantially different in purpose, function, quality, or technology, or its use or service effects a substantially different result from any other property or service which the offering person currently sells or leases or sold or leased at any time during the 1-year period immediately preceding the first date on which he offers it for sale or lease.

(2) New market: A property or service which the offering person has previously sold or leased is a new property or a new service with respect to its offer or sale to any market to which he did not sell or lease it at any time during the 1-year period immediately preceding the first date on which he offers it for sale or lease. For the purposes of this section, a "market" is one or more members of any one of the following groups: wholesalers; retailers; consumers; manufacturers; or service organizations.

(b) *Base price determination.* A person offering a new property or a new service shall determine its base price as follows:

(1) *Net operating profit markup—Manufacturer or service organization.* A manufacturer or service organization shall apply the net operating profit markup it received on the most nearly similar property or service it sold or leased to the same market during the freeze base period to the total allowable unit costs of the new property or service. For the purposes of this subparagraph, "net operating profit markup" means the ratio which the selling price bears to the total allowable unit costs of the property or service.

(2) *Customary initial percentage markup—Retailer or wholesaler.* A retailer or wholesaler shall apply the customary initial percentage markup it received on the most nearly similar property or service it sold to the same market during the freeze base period to the total allowable unit costs of the new property.

(3) *Average price of comparable property or services.* If the person did not offer a similar property or service for sale or lease to a particular market during the freeze base period, the base price for sales or leases to that market shall be the average price received in a substantial number of current transactions in that market by other persons selling or leasing comparable property or services in the same marketing area.

(4) *Customary pricing practice.* If none of the methods provided in subparagraphs (1) through (3) of this paragraph can be used and the new property or new service is not reasonably comparable to any property or service previously sold or leased by any person within the same marketing area or being sold or leased by the person concerned in current transactions in the same market, he may use any customary pricing practice he used during the freeze base period, or, if the person did not sell or lease any property or service before August 15, 1971, he may use any other pricing practice commonly used by other persons engaging in comparable business with the same market.

(c) *Base prices determined by predecessor entities.* If a legal entity or a component of a legal entity determines a base price for a product or service which it sells or leases to a particular market and the entity or component is acquired by another person, the property or service does not become a new property or new service with respect to the same market. The base price of the property or service with respect to that market remains the base price determined for it by the predecessor entity or component.

[FR Doc.72-21633 Filed 12-13-72;10:20 am]

Rulings—Internal Revenue Service, Department of the Treasury

[Pay Board Ruling 1972-124]

WAGE PROGRESSION SCHEDULES

Pay Board Ruling

Facts. Corporation A has two appropriate employee units each of which contains less than 1,000 employees. On December 1, 1970, substantially similar 2-year-collective-bargaining agreements were signed for the units which contained wage progression schedules for the 18 job classifications in the two bargaining units. Each classification has a different starting rate and different progression increases which range from $0.10/hour to $0.30/hour. Within each classification there are five annual increments equal in dollar amounts occurring on the employee's anniversary for work performed in the classification.

In the first unit, corporation A and the union negotiate a general wage increase of 4.5 percent in a successor contract effective December 1, 1972, which increase will be chargeable to the general wage and salary standard. This increase will apply equally to each classification and to each step within the classification. In addition, the parties negotiate an additional step for each of the nine classifications within the unit. This step is equal in amount to the first step increases in the respective classifications. A reasonable estimate shows that 40 employees will attain the new sixth step during the control year.

In the second unit, corporation A and the union negotiate, in addition to a 4.5 percent wage increase which will be chargeable, new progression schedules for the nine classifications in the appropriate employee unit. These new schedules contain the same number of steps (5), but increase by greater than 4.5 percent the increments between steps.

Issues. (1) Are the increases which will accrue to the 40 employees who will attain the sixth step during the control year chargeable against the 5.5 percent standards? Are any other progression increases chargeable?

(2) What portion, if any, of the new progression increases are chargeable?

Ruling. With respect to the first issue the increases received by the 40 employees who will benefit by the new sixth step in the progression schedule during the control year are chargeable. These increases were not provided in a contract in effect on November 14, 1971, or continued without change in a successor contract and thus are not, under the terms of Economic Stabilization Regulations, § 201.60(c), 37 F.R. 24977 (1972) excludible from adjustment computations.

Those progression increases which other employees will receive during the control year below the new sixth step are excluded from adjustment computations since they are continuations of progression increases in effect on November 14, 1971, and continued without change in a successor contract.

As to the second issue only that portion of the progression increases occurring during the control year which are equal to the progression increments contained in the contract in effect on November 14, 1971, are excluded from adjustment computations. The portion in excess of the increments in effect on November 14, 1971, is chargeable against the standard. The employer must project the increases which will occur during the control year by reason of length of service in job classifications and include the excess over the November 14, 1971, progression increases in his computation adjustment.

This ruling has been approved by the General Counsel of the Pay Board.

Dated: December 13, 1972.

LEE H. HENKEL, JR.,
Chief Counsel,
Internal Revenue Service.

Approved: December 13, 1972.

SAMUEL R. PIERCE, JR.,
General Counsel,
Department of the Treasury.

[FR Doc.72-21686 Filed 12-15-72;8:45 am]

Title 7—AGRICULTURE

Chapter VII—Agricultural Stabilization and Conservation Service (Agricultural Adjustment), Department of Agriculture

SUBCHAPTER A—AGRICULTURAL CONSERVATION PROGRAMS

[Amdt. 4]

PART 701—NATIONAL RURAL ENVIRONMENTAL ASSISTANCE PROGRAM FOR 1971 AND SUBSEQUENT YEARS

Miscellaneous Amendments

Correction

In F.R. Doc. 72-21061 appearing at page 25996 of the issue for Thursday, December 7, 1972, the following changes should be made:

1. The fifth line in the middle column of page 25996, reading "sions to include title as an eligible meas-", should read "sions) to include tile as an eligible meas-".

2. The text of § 701.82 designated as paragraph (a), should be undesignated.

SUBCHAPTER B—FARM MARKETING QUOTAS AND ACREAGE ALLOTMENTS

[Amdt. 1]

PART 724—FIRE-CURED, DARK AIR-CURED, VIRGINIA SUN-CURED, CIGAR-BINDER (TYPES 51 AND 52), CIGAR-FILLER AND BINDER (TYPES 42, 43, 44, 53, 54, AND 55) TOBACCO

Subpart—Tobacco Allotment and Marketing Quota Regulations, 1972–73 and Subsequent Marketing Years

On pages 21950 through 21956 of the FEDERAL REGISTER of October 17, 1972, there was published a notice of proposed rule making to issue amendments to regulations for establishing farm acreage allotments and farm marketing quotas, lease and transfer of farm acreage allotments, release and reapportionment, the identification of marketings of tobacco and the records and reports incident thereto for Fire-cured, Dark air-cured, Virginia sun-cured, Cigar-binder (types 51 and 52) and Cigar-filler and binder (types 42, 43, 44, 53, 54, and 55) tobacco for the 1972–73 and subsequent years.

Interested persons were given 15 days after publication of such notice in which to submit written data, views, and recommendations with respect to the proposed regulations. The data, views, and recommendations which were submitted pursuant to the notice were duly considered within the limits of the Agricultural Adjustment Act of 1938, as amended.

One comment received in response to the proposed regulations on use of DDT and TDE on tobacco stated that the proposed rules assume the continuing legality of the use of DDT and TDE on tobacco and pointed out that there are no valid registrations for the use of these pesticides on tobacco. The regulation does not condone the use of DDT or TDE on tobacco. It is addressed solely to enabling the Department to determine whether DDT or TDE has been used on tobacco in order to enforce the provisions of the price support regulations (7 CFR Part 1464) prohibiting price support on tobacco on which these pesticides have been used.

Since farmers are now in the process of preparing their tobacco crop for marketing, it is essential that these regulations be made effective at the earliest possible date. Accordingly, this document is being made effective upon the date of its publication in the FEDERAL REGISTER (12–16–72).

The proposed amendment to the regulations is hereby adopted with the addition of effective date and authority clauses.

Signed at Washington, D.C., on December 8, 1972.

GLENN A. WEIR,
Acting Administrator, Agricultural Stabilization and Conservation Service.

1. Section 724.57 is amended to read as follows:

§ 724.57 Determination of preliminary acreage allotments and tobacco history acreage for old farms.

(a) *Determination of preliminary acreage allotments*—(1) *Farms with history acreage in base period.* A preliminary farm acreage allotment shall be determined for each farm which has tobacco history acreage, as defined and explained in paragraph (b) of this section, in the base period, except that no preliminary farm acreage allotment shall be established in the current year under any one of the following conditions: (i) A new farm allotment was established in any prior year but was canceled for such year and the farm had no other tobacco history acreage during the base period; (ii) an allotment was pooled under Part 719 of this chapter but was canceled; or (iii) the county committee determines that the farm has been retired from agricultural production and the farm was not or could not have been acquired under right of eminent domain by the acquiring person or agency. This subdivision (iii) shall not preclude the determination of a preliminary acreage allotment for an old farm returned to agricultural production if the allotment for the retired land was not allocated to other land contained in the farm of which the retired land was a part, or for a farm for which an acreage allotment may be determined under the provisions of § 724.67(a).

(2) *Preliminary farm acreage allotments.* The preliminary farm acreage allotment for the current year for a farm which qualifies for a preliminary farm acreage allotment under subparagraph (1) of this paragraph shall be the same as the basic allotment for the preceding year: *Provided,* That if the tobacco history acreage for the farm in the immediately preceding year was not as much as 75 percent of the basic allotment, the preliminary acreage allotment shall be the simple average of the sum of the basic allotment and history acreage for the preceding year.

(b) *Determination of tobacco history acreage.* Tobacco history acreage shall be determined for each farm for which a tobacco farm acreage allotment has been established for the current year.

(1) *Farm acreage allotment fully preserved.* The farm acreage allotment is fully preserved as tobacco history acreage for any year if: (i) In such year or

either of the two immediately preceding years the sum of (*a*) the final tobacco acreage (including failed acreage and acreage prevented from being planted because of a natural disaster) as determined under Part 718 of this chapter, (*b*) the acreage leased and transferred from the farm, (*c*) the acreage regarded as planted under the conservation practices determined pursuant to Part 719 of this chapter, and (*d*) the acreage temporarily released to the State committee under the provisions of § 724.72, was as much as 75 percent of the basic allotment after any reduction for violation, or (ii) the farm consists of federally owned land for which a restrictive lease is in effect prohibiting the production of tobacco; or (iii) in such year or either of the two immediately preceding years the farm acreage allotment was in the eminent domain pool.

(2) *Computed history acreage.* If the farm acreage allotment is not fully preserved as tobacco history acreage under subparagraph (1) of this paragraph, the tobacco history acreage shall be the sum of the acreage (not to exceed the farm acreage allotment) as follows:

(i) Final tobacco acreage (including failed acreage and acreage prevented from being planted because of a natural disaster) as determined under Part 718 of this chapter.

(ii) Acreage regarded as planted under the conservation programs and conservation practices determined pursuant to Part 719 of this chapter.

(iii) Acreage temporarily released to the State committee under the provisions of § 724.72.

(iv) Acreage leased and transferred from the farm.

(v) Acreage reduced for violation of the regulations of this part.

2. In § 724.60, the first sentence of paragraph (b) and paragraph (c) are revised to read as follows:

§ 724.60 Corrections of errors and adjusting inequities in acreage allotments for old farms.

* * * * *

(b) *Basis for adjustment.* Acreage increases to adjust inequities in acreage allotments shall be made on the basis of the past farm acreage and past farm acreage allotments of tobacco, making due allowances for failed acreage and acreage prevented from being planted because of a natural disaster as determined under Part 718 of this chapter; land, labor and equipment available for the production of tobacco; crop rotation practices; and the soil and other physical factors affecting the production of tobacco. * * *

(c) *Farms under long-term land use programs.* The allotment for a farm under a long-term land use program agreement shall be given the same consideration under this section as the allotment for any other old farm.

* * * * *

3. Section 724.62 is amended to read as follows:

§ 724.62 Determination of acreage allotments for new farms.

The acreage allotment, other than an allotment made under § 724.67(a), for a new farm shall be that acreage which the county committee, with approval of the State committee, determines is fair and reasonable for the farm, taking into consideration the past tobacco experience of the farm operator, the land, labor, and equipment available for the production of tobacco; crop rotation practices; and the soil and other physical factors affecting the production of tobacco: *Provided,* That, the acreage allotment so determined shall not exceed 50 percent (75 percent for Cigar-binder and Cigar-filler and Binder tobacco) of the average of the acreage allotments established for two or more but not more than five old farms which are similar with respect to land, labor, and equipment available for the production of tobacco, crop rotation practices, and the soil and other physical factors affecting the production of tobacco: *And provided further,* That, if the areage planted to tobacco on a new tobacco farm is less than 75 percent of the tobacco acreage allotment otherwise established for the farm pursuant to this section, such allotment shall be automatically reduced to the sum of the tobacco planted acreage and the prevented planted tobacco acreage as determined under Part 718 of this chapter for the farm.

(a) *Written application.* The farm operator must file an application for a new farm allotment at the office of the county committee where the farm is administratively located on or before February 15 of the year for which the new farm allotment is requested.

(b) *Eligibility requirements for operator.* A new farm allotment may be established if each of the following conditions is met:

(1) *Owner and operator of the farm.* The operator shall be the sole owner of the farm. For the purpose of applying this subparagraph (1) a person who owns only part of a farm cannot be considered the owner of the farm except that both husband and wife shall be considered the owner and operator of a farm which they jointly own. For Cigar-binder and Cigar-filler and Binder tobacco, the operator need not own the farm.

(2) *Interest in another farm.* The farm operator shall not own or operate any other farm in the United States for which a tobacco allotment or quota is established for the current year.

(3) *Availability of equipment and facilities.* The operator must own, or have readily available, adequate equipment and any other facilities of production necessary to the production of tobacco on the farm.

(4) *Income requirement (except cigar tobacco).* The operator must expect to obtain during the current year more than 50 percent of his income from the production of agricultural commodities or products.

(i) *Computing operator's income.* The following shall be considered in computing operator's income:

(*a*) *Income from farming.* Income from farming shall include the estimated return from home gardens, livestock and livestock products, poultry, or other agricultural products produced for home consumption or other use on the farm(s). The estimated return from the production of the requested new farm allotment shall not be included.

(*b*) *Income from nonfarming.* Nonfarming income shall include but shall not be limited to salaries, commissions, pensions, social security payments, and unemployment compensations.

(*c*) *Spouse's income.* The spouse's farm and nonfarm income shall be used in the computation.

(ii) *Operator a partnership.* If the operator is a partnership, each partner must expect to obtain more than 50 percent of his current year income from farming.

(iii) *Operator a corporation.* If the operator is a corporation, it must have no other major corporate purpose other than ownership or operation of the farm(s). Farming must provide its officers and general manager with more than 50 percent of their expected income. Salaries and dividends from the corporation shall be considered as income from farming.

(iv) *Special provision for low-income farmers (except cigar tobacco).* The county committee may waive the income provisions in this section provided they determine that the farm operator's income, from both farm and nonfarm sources, is so low that it will not provide a reasonable standard of living for the operator and his family, and a State committee representative approves such action. In waiving the income provisions the county committee must exercise good judgment to see that their determination is reasonable in the light of all pertinent factors, and that this special provision is made applicable only to those who qualify. In making their determination, the county committee shall consider such factors as size and type of farming operations, estimated net worth, estimated gross family income, estimated family off-farm income, number of dependents, and other factors affecting the individual's ability to provide a reasonable standard of living for himself and his family.

(5) *Experience*—(i) *Fire-cured, Dark air-cured, and Virginia Sun-cured.* Operator must have had experience in producing, harvesting, and marketing the kind of tobacco requested. Such experience must have been gained: by being a sharecropper, tenant, or farm operator (bona fide tobacco production experience gained by a person as a member of a partnership shall be accepted as experience gained in meeting this requirement) during at least 2 of the 5 years immediately preceding the year for which the new farm allotment is requested. If the operator was in the armed

services during the 5-year period, the period shall be extended 1 year for each year of military service during the 5 years. The experience must have been gained on a farm having a tobacco allotment for such years for the kind of tobacco requested in the application.

(ii) *Cigar-binder and Cigar-filler and Binder.* Operator shall have had experience in any prior year in the production of tobacco as a farm owner, farm operator, sharecropper, tenant, warehand, or laborer on a farm which produced the kind of tobacco for which an allotment is requested in the application.

(c) *Eligibility requirements for the farm.* A new farm allotment may be established if each of the following conditions is met:

(1) *Current allotment or quota.* The farm must not have on the date of approval of a new farm acreage allotment an allotment or quota for any kind of tobacco.

(2) *Available land, type of soil, and topography.* The available land, type of soil, and topography of the land on the farm must be suitable for tobacco production. Also continuous production of tobacco must not result in an undue erosion hazard.

(3) *Entire allotment permanently transferred by sale or owner.* A farm which includes land from which the entire farm allotment for Fire-cured, Dark air-cured, or Virginia Sun-cured tobacco is transferred by sale or by owner to another farm owned or controlled by him, under § 724.70, shall not be eligible for a new farm tobacco allotment for the kind transferred during the 5 years following the year in which such transfer is made.

(4) *Entire allotment permanently released.* A farm which includes land from which the entire tobacco allotment was permanently released shall not be eligible for a new farm allotment for a period of 5 years beginning with the year the release was effective.

(5) *Entire allotment designated by owner where farm reconstituted.* A farm which includes land which has no tobacco allotment because the owner did not designate a tobacco allotment for such land when the parent farm was reconstituted pursuant to Part 719 of this chapter shall not be eligible for a new farm tobacco allotment for a period of 5 years beginning with the year in which the reconstitution became effective.

(6) *Eminent domain acquisition.* A farm which includes land acquired by an agency having the right of eminent domain for which the entire tobacco allotment was pooled pursuant to Part 719 of this chapter, which is subsequently returned to agricultural production, shall not be eligible for a new farm allotment for a period of 5 years from the date the former owner was displaced.

(7) *Downward adjustment.* The acreage allotment established as provided in this section for each kind of tobacco shall be subject to such downward adjustment as is necessary to bring such allotments in line with the total acreage available for allotment to all new farms.

(8) *False information.* Any new farm acreage allotment which was determined by the county committee on the basis of incomplete or inaccurate information knowingly furnished by the applicant shall be canceled by the county committee as of the date the allotment was established. When incomplete or inaccurate information was unknowingly furnished by the applicant, the allotment shall be canceled effective for the current crop year except where the provisions of § 724.65(d) apply.

(9) *Eligibility for released acreage for Cigar-binder and Cigar-filler and Binder tobacco.* Any new farm allotment established under this section may also be considered by the county committee to receive additional acreage from the acreage released to the State committee under § 724.72.

4. In § 724.67 the section heading and paragraph (a) and the first and second sentences of paragraph (b) are revised to read as follows:

§ 724.67 Release and reapportionment of allotments determined for farms acquired by an agency having the right of eminent domain, or shifted from production of Cigar-binder (types 51 and 52) tobacco and Cigar-filler and Binder (types 42, 43, 44, 53, 54, and 55) tobacco to production of shade-grown Cigar-leaf (type 61) wrapper tobacco.

(a) The determination of allotments for farms acquired by an agency having the right of eminent domain, the transfer of such allotments to a pool, and the reapportionment from the pool shall be administered as provided in Part 719 of this chapter. The normal yield for each farm to which a reapportionment is made shall be determined as provided in § 724.59 for determining normal yields for old farms.

(b) The displaced owner of a farm may, not later than the final release date established by the State committee for the current year, release in writing to the county committee for the current year all or part of the acreage for the farm in a pool under Part 719 of this chapter for reapportionment for the current year by the county committee to other farms in the county having allotments for the same kind of tobacco. The county committee may reapportion, not later than 30 days after the final date established by the State committee for requesting reapportioned acreage for the current year, the released acreage or any part thereof to other farms in the county on the basis of the past farm acreage and past farm acreage allotments for the same kind of tobacco; land, labor, equipment available for the production of such kind of tobacco; crop rotation practices; and soil and other physical factors affecting the production of such kind of tobacco. * * *

* * * * *

5. In § 724.69, paragraph (c)(1) and paragraph (q)(2) are revised and a new paragraph (t) is added to read as follows:

§ 724.69 Lease and transfer of tobacco acreage allotment—Cigar-Binder (Types 51 and 52) and Cigar-filler and Binder (Types 42, 43, 44, and 53) tobacco.

* * * * *

(c) *Filing and approval of transfer agreement—(1) Filing transfer agreement.* The lease and transfer of any allotment or any part thereof from the farm for which the allotment was established to another tobacco farm shall not become effective until a copy of the transfer agreement, determined by the county committee to be in compliance with the provisions of this section, is filed with the county committee not later than the final filing date for the current year established by the State committee, except that a lease shall be effective if the county committee, with the approval of a State committee representative, finds that the producer was prevented from timely filing the transfer agreement due to reasons beyond his control. The county committee may redelegate authority to approve leasing agreements to the county executive director. The filing of a properly executed Form ASCS–375, Record of Transfer of Allotment or Quota, will be considered to meet the requirements of this subparagraph (1).

* * * * *

(q) *Cancellation, dissolution, or revision of transfer.* * * *

(2) *Dissolution or revision.* A transfer agreement may be dissolved or minor revisions made where a request by all parties to the agreement is made in writing to the county committees. Such written notification shall be filed prior to planting the tobacco. A late filed request to dissolve or revise the transfer may be effective for the current year if the county committee with approval of a State committee representative determines that the producer was prevented from timely filing for reasons beyond his control.

* * * * *

(t) *Federally owned land.* No transfer under this section shall be made from any land owned by the United States, or any agency or instrumentality wholly owned by the United States, except that the transfer may be approved in cases where the land is leased back with uninterrupted possession to the former owner after acquisition under right of eminent domain. For such transfers, the Government agency or instrumentality is not required to sign the record of transfer.

6. Section 724.70 is amended by revising the section heading, paragraph (b), the paragraph heading and subparagraph (1) of paragraph (m), the proviso of the second sentence of paragraph (s), and the heading and text of subparagraph (2) of paragraph (v), and adding a new paragraph (x) to read as follows:

§ 724.70 Transfer of Fire-cured, Dark air-cured, and Virginia Sun-cured tobacco allotments by lease, sale, or by owner under section 318 of the act.

* * * * *

(b) *Time for filing records of transfer.* For a transfer to be effective in the current year, a Form ASCS–375, Record of Transfer of Allotment or Quota, shall be filed with the county committee no later than the final date for filing records of transfer established by the State committee for the current year. The State committee may authorize the acceptance of a late-filed ASCS–375 in cases where the county committee determines that the late filing resulted from reason(s) beyond the producer's control.

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(m) *Farms under long-term land use programs.* (1) (i) Temporary transfer of an allotment to or from a farm covered by a long-term land use program agreement shall not be approved if the transferring or receiving farm has the allotment crop base for a kind of tobacco designated under such program agreement; (ii) permanent transfer by sale or by owner of an allotment may be approved for any farm under a CAP or CCP agreement.

* * * * *

(s) *Farm in violation.* * * * *Provided,* That, if the transfer was by lease, the allotment reduction for such farm shall be delayed until the following year.

* * * * *

(v) *Cancellation, dissolution, or revision of transfer.* * * *

(2) *Dissolution or revision.* A transfer agreement may be dissolved or minor revisions made where a request by all parties to the agreement is made in writing to the county committee. Such written notification shall be filed prior to planting the tobacco. A late-filed request to dissolve or revise the transfer may be effective for the current year if the county committee with approval of a State committee representative determines that the producer was prevented from timely filing for reason(s) beyond his control.

* * * * *

(x) *Federally owned land.* No transfer under this section shall be made from any land owned by the United States, or any agency or instrumentality wholly owned by the United States, except that the transfer may be approved in cases where the land is leased back with uninterrupted possession to the former owner after acquisition under right of eminent domain. For such transfers, the Government agency or instrumentality is not required to sign the record of transfer.

7. Section 724.72 is revised to read as follows:

§ 724.72 Release and reapportionment of old farm acreage allotments for Cigar-binder (types 51 and 52) and Cigar-filler and Binder (types 42, 43, 44, 53, 54, and 55) tobacco.

(a) *Annual or permanent release of acreage allotments to State committee.* Except as provided in this paragraph, all or any part of a farm acreage allotment on which Cigar-binder (types 51 and 52) or Cigar-filler and Binder (types 42, 43, 44, 53, 54, and 55) tobacco will not be produced and which the operator of the farm voluntarily releases on an annual basis, or both the owner and operator voluntarily releases on a permanent basis, in writing to the State committee by not later than the final date for filing releases established by the State committee for the current year shall be deducted from the allotment of such farm.

(1) For the farm voluntarily releasing tobacco farm acreage allotment on an annual basis, such acreage will be considered as having been planted on the releasing farm for the purpose of establishing allotments for subsequent years. For the farm receiving such annual released acreage such acreage shall not be taken into account in establishing future allotments for the farm. The tobacco history acreage for a farm releasing on a permanent basis shall be adjusted downward to reflect the acreage permanently released.

(2) Acreage allotments shall not be released either annually or permanently (i) from a farm owned by the Federal Government or any agency thereof if there is in effect a lease or operating agreement prohibiting the production of Cigar-binder (Types 51 and 52) or Cigar-filler and Binder (Types 42, 43, 44, 53, 54 and 55) tobacco, (ii) from the eminent domain allotment pool if an application for transfer from the pool has been filed in accordance with Part 719 of this chapter, (iii) from new farms, or (iv) from a farm covered by a whole farm Conservation Reserve Contract, by a whole farm Cropland Conservation Program agreement entered into in 1966 and 1967, or by a Cropland Adjustment Program agreement.

(b) *Reapportionment or released acreage allotment.* The acreage voluntarily released on an annual or permanent basis for the current year may be reapportioned by the State committee to any farm in any county in the State. In addition, a farm receiving a new farm allotment may be considered for an increase as set forth in § 724.62(h). The State committee shall select the counties to which the released acreage will be reapportioned. The county committee shall select the farms to which the released acreage will be reapportioned. The State committee shall keep records on both an annual and permanent basis of the source of acreage released. Any acreage released for the current year on an annual basis which is not reapportioned by the State committee in the current year shall not be available for use in any subsequent year. Any acreage released for the current year on a permanent basis which is not reapportioned by the State committee in the current year may be reapportioned in the following year. The county committee for the county receiving released acreage may reapportion the tobacco allotment acreage on an annual or permanent basis to other farms in the county in amounts determined by the county committee to be fair and reasonable on the basis of land, labor, and equipment available for production of Cigar-binder (types 51 and 52) or Cigar-filler and Binder (types 42, 43, 44, 53, 54, and 55) tobacco; crop rotation practices; and the soil and other physical factors affecting the production of tobacco. Released acreage should not be reapportioned on a temporary or permanent basis to any farm unless there is assurance from the operator to the county committee that the released acreage being received will be produced. Allotment reapportioned to a farm on an annual basis can only be used by the receiving farm for increased production during the current year. Allotment reapportioned to a farm on a permanent basis shall be added to the current year allotment if the farm has an allotment or serve to establish an allotment for a farm that does not currently have one. A farm shall be eligible to receive reapportionment of released acreage on either or both an annual or permanent basis only if a written request is filed by the farm owner or operator at the office of the county committee not later than the final date for filing such requests established by the State committee for the current year.

8. Section 724.73 is added to read as follows:

§ 724.73 Final date for filing record of transfer, release, filing request for reapportioned acreage, and reapportionment.

The State committee shall establish a final date for filing records of transfers, releasing acreage allotments to the county and State committees and for filing requests to receive reapportioned acreage allotment from the county committee for the current year. Such date(s) shall be for the entire State or for areas consisting of one or more counties in the State taking into consideration normal planting dates within the State. The dates will be determined and announced by regulations in Part 731 to be issued under this chapter.

9. Section 724.86 is amended by adding a sentence immediately preceding paragraph (a) of the section and revising paragraph (h) to read as follows:

§ 724.86 Identification of marketings, excluding cigar tobacco.

Each auction and nonauction marketing of producer tobacco from a farm in a quota area shall be identified by a marketing card, MQ–76 or MQ–77, issued for

the farm unless an AMS certification shows it to be nonquota tobacco.

* * * * *

(h) *Separate display on auction warehouse floor.* Any warehouseman upon whose floor more than one kind of tobacco is offered for sale at public auction shall for each different kind of tobacco:

(1) Display it in separate areas on the auction warehouse floor.

(2) Identify each basket by a distinguishably different basket ticket clearly showing the kind of tobacco.

(3) Make and keep records that will insure a separate accounting and reporting of each of such kinds of tobacco (quota or nonquota) sold at auction over the warehouse floor.

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10. Section 724.88 is amended by adding paragraph (d) to read as follows:

§ 724.88 Rate of penalty.

* * * * *

(d)(1) *1971–72 average market price.* The average market price for the kinds of tobacco listed below as determined by the Crop Reporting Board, Statistical Reporting Service, U.S. Department of Agriculture, for the 1971–72 marketing year was:

AVERAGE MARKET PRICE

Kinds of tobacco:	Cents per pound
Fire-cured (type 21)	54.8
Fire-cured (types 22, 23, 24)	60.8
Dark air-cured	47.1
Virginia Sun-cured	54.1
Cigar-filler and Binder (types 42, 43, 44, 53, 54, and 55)	53.1
Cigar-binder (types 51 and 52)	65.5

(2) *1972–73 rate of penalty per pound.* The penalty rate per pound for the kinds of tobacco listed below upon marketings of excess tobacco subject to marketing quotas during the 1972–73 marketing year shall be:

RATE OF PENALTY

Kinds of tobacco:	Cents per pound
Fire-cured (type 21)	41
Fire-cured (types 22, 23, 24)	46
Dark air-cured	35
Virginia Sun-cured	41
Cigar-filler and Binder (types 42, 43, 44, 53, 54, and 55)	40
Cigar-binder (types 51 and 52)	[1]

[1] Quotas terminated for 1972 crop.

11. Section 724.90 is amended by revising the first sentence of the section and the second sentence of paragraph (d) to read as follows:

§ 724.90 Penalties considered to be due from warehousemen, dealers, buyers and others excluding the producer.

Any marketing of tobacco from a farm in a quota tobacco producing area under any one of the following conditions shall be considered to be a marketing of excess tobacco (unless prior to the marketing of such tobacco an AMS inspection certificate is obtained showing that the tobacco offered for sale is a kind of tobacco not subject to marketing quotas).

* * * * *

(d) *Leaf account tobacco.* * * * The actual quantity of floor sweepings which the State executive director determines has been properly identified as floor sweepings and sold and reported as such by the warehouseman shall be considered acceptable proof that such marketings are not marketings of excess tobacco if the amount thereof for the warehouse does not exceed the floor sweepings for the season determined by multiplying the limitation set forth in § 724.51(j) by total first sales at auction for Fire-cured, Dark Air-cured and Virginia Sun-cured tobacco.

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§ 724.95 [Amended]

12. Section 724.95(f) is amended by revising the phrase "not later than 30 days" following the fourth comma of the first sentence to read "not later than 20 days."

13. In § 724.96, a general statement at the beginning of the section, new subparagraphs (7) and (8) of paragraph (a), a new sentence at the beginning of paragraph (b), and a new paragraph (j) are added, and paragraphs (a)(3), (a)(6), and (g)(13) are revised to read as follows:

§ 724.96 Warehouseman's records and reports.

Each warehouse shall keep the records and make the reports separately for each kind of tobacco (quota or nonquota) as provided in this section.

(a) *Record of marketings.* * * *

(3) *Buyers corrections account.* Each warehouseman shall keep such records including negative adjustment invoices as will enable him to furnish the State ASCS office on Form MQ–71, the total pounds of the debits (for returned baskets, short baskets and short weights of tobacco) and credits (for long baskets and long weights of tobacco) to the Buyers Corrections Account. Where the warehouseman returns to the seller tobacco debited to the Buyers Corrections Account, the warehouseman shall prepare an adjustment invoice to the seller. This invoice shall be the basis for a credit entry for the warehouse in the Buyers Corrections Account and a corresponding purchase (debit entry) in the case of a dealer on his MQ–79, Dealer's Record. Any balancing figure reflected on the warehouseman's summary of bill-outs shall not be included in the Buyers Corrections Account.

* * * * *

(6) *Labeling tobacco sale bill for resale tobacco.* In the case of resales, each sale bill shall show resale and: (i) For dealers, the name of the dealer making each resale; and (ii) for the warehouse, the name of the warehouse and either "floor sweepings" or "leaf account" tobacco.

(7) *Filing sale bills.* At the end of each sale day, the tobacco sale bills shall be sorted and filed by numerical order by sale dates, and basket tickets shall be filed in an orderly manner by sale dates or by numerical order.

(8) *Nonquota tobacco or quota tobacco of a different kind.* Should tobacco be presented for sale that is represented to be nonquota tobacco or there is question as to what kind of quota tobacco is being offered, an inspection shall be obtained from the Agricultural Marketing Service (AMS) of this Department after the tobacco is weighed and in line for sale. If an AMS inspection shows that a basket or lot of tobacco is of a different kind than that identified by the basket ticket after it is weighed in and a sale bill prepared, such tobacco shall be deleted from the original sale bill and a revised sale bill prepared.

(b) *Identification of producer sales of tobacco.* The warehouseman shall not weigh in any producer tobacco for sale unless a marketing card (MQ–76 or MQ–77) is furnished the weighman or the tobacco is represented to be a nonquota kind which is required to be displayed in a separate area on the warehouse floor under § 724.86(h). * * *

* * * * *

(g) *Daily report of auction warehouse business.* * * *

(13) At the end of the season, each warehouseman shall: (i) Report on his final MQ–80 for the season the quantity of leaf account tobacco and floor sweepings, if any, on hand and its location, (ii) permits its inspection by a representative of ASCS, and (iii) provide for the weighing of such tobacco (to be witnessed by ASCS) and furnish to ASCS at that time a certification as to the actual weight of such tobacco. After the weight of such tobacco has been obtained as provided in subdivision (iii) of this subparagraph, it shall be considered as the official weight for comparing purchases and resales for the purpose of determining the amount of penalty, if penalty is due. Separate data shall be reported for floor sweeping tobacco.

* * * * *

(j) *Maintaining copies of bill-out invoices to purchaser or daily summary journal sheet to reflect daily transactions.* For each marketing year, the warehouseman shall maintain copies of the bill-out invoice to the purchaser by grades showing the pounds purchased. In lieu of this requirement, the warehouseman may prepare and maintain for each sale day on a current basis a daily summary journal sheet to reflect for each purchaser (including warehouse leaf account or other similar account) pounds and dollar amounts for:

(1) Tobacco originally billed to the purchaser.

(2) Mathematical billing errors and corrections (added and deducted) from purchaser's adjustment invoices.

(3) Short (deducted) and long (added) weights from purchaser's adjustment invoices.

(4) Short (deducted) and long (added) baskets from purchaser's adjustment invoices.

(5) Net tobacco received and paid for by purchaser.

14. Section 724.97 is amended by revising the general statement at the beginning of the section, the first sentence of paragraph (c), and paragraph (e) and (f) to read as follows:

§ 724.97 Dealer's record and reports, excluding Cigar tobacco buyers.

Each dealer, except as provided in § 724.98, or any other person as provided in paragraph (e) of this section, shall keep by kinds of tobacco the records and make the reports separately for each kind (quota and nonquota) of tobacco as provided by this section. Adjustment invoices, including the adjustment invoices for any sale day for which there is no adjustment to be made, required to be furnished to an auction warehouse shall be identified by the warehouse identification number (if applicable) and the reporting dealer's identification number (if applicable) as well as the names of the warehouse and dealers involved in the transaction.

* * * * *

(c) *Nonauction sale (country purchase) to a dealer.* Each purchase of tobacco by a dealer from a producer from from a quota producing area other than through an auction sale, including farm scrap tobacco obtained from grading tobacco for farmers or as a result of furnishing curing space or stripping space, shall be identified by an MQ–76 or MQ–77 (including a sale memo from the marketing card) issued for the farm on which the tobacco was produced (unless prior to purchase as AMS inspection certificate is obtained showing that the tobacco offered for sale is of a kind of tobacco not subject to marketing quotas). * * *

* * * * *

(e) *Daily report to warehouseman for buyers' corrections account.* Notwithstanding the provisions of § 724.98, reports shall be made as follows:

(1) Any dealer, buyer, or any other person receiving tobacco from or through a warehouseman at an auction sale or otherwise, which is not invoiced to him or which is incorrectly invoiced to him by the warehouseman, shall furnish to the warehouseman on a daily sales basis an adjustment invoice or buyers settlement sheet.

(2) Each dealer who purchases tobacco on a warehouse floor for any sale day in which there is no adjustment required in the account as shown on the warehouse bill-out invoice for that sale day, shall file a negative report with the warehouseman for that sale day.

(3) Such reports as required under subparagraph (1) and (2) of this paragraph shall be furnished daily, if practicable (otherwise, they shall be furnished at the end of each week), and shall show the identification number of the purchasing dealer (if applicable) and the identification number of the warehouse (if applicable), where the purchase was made.

(f) *Final report for season.* Not later than April 1, each dealer who bought, or sold or had tobacco available for marketing during the current year, shall for each kind of tobacco: (1) Show the word "final" on his final report, MQ–79, for the season, (2) report on such final MQ–79 for the season the quantity of tobacco on hand and its location, (3) permit its inspection by a representative of ASCS, and (4) provide for weighing of such tobacco (to be witnessed by ASCS) and furnish to ASCS at that time a certification as to the actual weight of such tobacco. After the weight of such tobacco has been determined as provided in subparagraph (4) of this paragraph, it shall be considered as the official weight for comparing purchases and resales for the purpose of determining the amount of penalty, if penalty is due.

15. The first sentence in § 724.98 is amended to read as follows:

§ 724.98 Dealers exempt from regular records and reports, excluding cigar tobacco buyers.

Any dealer or buyer who acquires tobacco only at an auction sale and resells, in the form in which tobacco ordinarily is sold by farmers, 5 percent or less of any such tobacco shall not be subject to the provisions of § 724.97 except as provided in paragraph (e) of § 724.97: *Provided*, That, where deemed necessary, the Director, Commodity Stabilization Division, or the State committee may require a report of all tobacco purchased by the dealer without regard to the 5-percent exemption. * * *

16. Section 724.104 is amended by adding in paragraph (a) the language "warehouse bill-out invoices or daily summary journal sheets," immediately following the language "documents," and in paragraph (b) a second sentence to read as follows:

§ 724.104 Examination of records and reports.

(a) *Examination.* * * * warehouse bill-out invoices or daily summary journal sheet, * * *

(b) *Orderly retention of records.* * * * In lieu of filing by sale dates, basket tickets may be filed in orderly manner by numerical order.

17. Section 724.110 is amended by revising paragraphs (d) through (f) and adding paragraphs (g) through (i) to read as follows:

§ 724.110 Determination of use of DDT and TDE.

* * * * *

(d) *Producers right to recertify.* Any producer on a farm shall have the right to recertify on MQ–38 to the use or nonuse of DDT or TDE if the recertification is filed with the county committee prior to the time any tobacco has been marketed from the farm or a request has been made to collect a sample of cured leaves.

(e) *Collection of samples for chemical analysis.* Samples shall be collected from selected producer tobacco crops during weigh-in at the auction warehouse. Samples shall also be collected on any farm where the county committee has reason to believe the producer used DDT or TDE on the tobacco and the producer certified to nonuse of DDT or TDE on the crop.

(f) *Producer refusal to permit sampling.* If a producer or producer representative refuses to permit the sampling of a tobacco crop, all tobacco of such crop produced on the farm shall be considered by the county committee to have been treated with DDT or TDE.

(g) *Chemical analyzation of samples.* Each sample shall be analyzed for residues of DDT, TDE and their metabolites.

(h) *Notice to farm operator.* A written notice shall be furnished to the operator of each farm where the county committee determines that tobacco, after being transplanted in the field or after being harvested from a farm, was treated with DDT or TDE. Such determination by the county committee shall be based on (1) the certification on MQ–38, or (2) failure to file MQ–38, or (3) refusal to permit sampling, or (4) chemical analysis showing total DDT–TDE residue to be greater than or equal to 3.0 parts per million. The notice to the farm operator shall constitute notice to all persons who, as owner, operator, landlord, tenant, or sharecropper, are interested in the tobacco being grown on the farm.

(i) *Producer's right to appeal.* Any producer on a farm who believes that the DDT–TDE determination for the farm by the county committee is not correct may file an appeal with the county committee asking for reconsideration of such determination. The request for appeal and facts constituting a basis for such reconsideration must be submitted in writing and postmarked or delivered to the county committee within 7 days after the date of mailing of the notice of such determination. The request for appeal must be signed by the person making the appeal. If the appellant believes that the county committee's determination of such appeal is not correct, he may appeal to the State committee within 7 days after the date of mailing of the notice of the decision of the county committee. The decision of the State committee shall be final.

(Secs. 313, 314, 316, 318, 373, 375, 378, 52 Stat. 47, as amended, 48, as amended, 75 Stat., 316, as amended, 81 Stat. 120, as amended, 52 Stat. 65, as amended, 66, as amended, 72 Stat. 995, as amended; 7 U.S.C. 1313, 1314, 1314b, 1314d, 1373, 1375, 1378)

Effective date: Date of publication in the FEDERAL REGISTER (12–16–72).

[FR Doc.72–21654 Filed 12–15–72;8:47 am]

Chapter IX—Agricultural Marketing Service (Marketing Agreements and Orders; Fruits, Vegetables, Nuts), Department of Agriculture

[Lemon Reg. 564]

PART 910—LEMONS GROWN IN CALIFORNIA AND ARIZONA

Limitation of Handling

§ 910.864 Lemon Regulation 564.

(a) *Findings.* (1) Pursuant to the marketing agreement, as amended, and

Order No. 910, as amended (7 CFR Part 910; 36 F.R. 9061), regulating the handling of lemons grown in California and Arizona, effective under the applicable provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601–674), and upon the basis of the recommendations and information submitted by the Lemon Administrative Committee, established under the said amended marketing agreement and order, and upon other available information, it is hereby found that the limitation of handling of such lemons, as hereinafter provided, will tend to effectuate the declared policy of the act.

(2) It is hereby further found that it is impractible and contrary to the public interest to give preliminary notice, engage in public rule making procedure, and postpone the effective date of this section until 30 days after publication hereof in the FEDERAL REGISTER (5 U.S.C. 553) because the time intervening between the date when information upon which this section is based became available and the time when this section must become effective in order to effectuate the declared policy of the act is insufficient, and a reasonable time is permitted, under the circumstances, for preparation for such effective time; and good cause exists for making the provisions hereof effective as hereinafter set forth. The committee held an open meeting during the current week, after giving due notice thereof, to consider supply and market conditions for lemons and the need for regulation; interested persons were afforded an opportunity to submit information and views at this meeting; the recommendation and supporting information for regulation during the period specified herein were promptly submitted to the Department after such meeting was held; the provisions of this section, including its effective time, are identical with the aforesaid recommendation of the committee, and information concerning such provisions and effective time has been disseminated among handlers of such lemons; it is necessary, in order to effectuate the declared policy of the act, to make this section effective during the period herein specified; and compliance with this section will not require any special preparation on the part of persons subject hereto which cannot be completed on or before the effective date hereof. Such committee meeting was held on December 12, 1972.

(b) *Order.* (1) The quantity of lemons grown in California and Arizona which may be handled during the period December 17 through December 23, 1972, is hereby fixed at 210,000 cartons.

(2) As used in this section, "handled," and "carton(s)" have the same meaning as when used in the said amended marketing agreement and order.

(Secs. 1–19, 48 Stat. 31, as amended; 7 U.S.C. 601–674)

Dated: December 13, 1972.

PAUL A. NICHOLSON,
Deputy Director, Fruit and Vegetable Division, Agricultural Marketing Service.

[FR Doc.72-21707 Filed 12-15-72;8:51 am]

PART 932—OLIVES GROWN IN CALIFORNIA

Subpart—Rules and Regulations

SPECIAL PURCHASE SHIPMENTS

Notice is hereby given of the approval of amendment, as hereinafter set forth, of § 932.155 *Special purpose shipments* of the rules and regulations (Subpart—Rules and Regulations; 7 CFR 932.108–932.161; 37 F.R. 17459, 17818), currently effective pursuant to the applicable provisions of the marketing agreement, as amended, and Order No. 932, as amended (7 CFR Part 932), regulating the handling of olives grown in California. This is a regulatory program effective under the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601–674).

The amendment of said rules and regulations was unanimously recommended by the Olive Administrative Committee, established under said marketing agreement and order as the agency to administer the terms and provisions thereof.

The order provisions in paragraph (b) of § 932.55 *Exception* permit the Secretary to relieve from any or all requirements under this part the handling of olives for such specified purposes as the committee, with the approval of the Secretary, may prescribe. Pursuant to the foregoing, the amendment of § 932.155 adds provisions permitting handlers to use processed olives in the production of "segmented style" and "broken slice style" of canned ripe olives for institutional markets.

The "broken slice style" would be comprised of identifiable segments amounting to less than three-fourths of the original slices that were broken during slicing and could include whole slices and end slices. The "segmented style" would be produced by cutting pitted olives lengthwise into five or more approximately equal parts (usually six) instead of four as is done to produce quartered olives. These two new styles must be produced from processed olives of a quality which, if used in the production of canned pitted ripe olives, would result in packaged olives meeting: (1) The specifications of U.S. grade C for pitted style, and (2) the current order requirements as to minimum permissible sizes for olives for limited use (37 F.R. 17459).

The amendment reflects the committees desire to afford olive handlers an opportunity to produce two new styles of olives for which considerable demand has been indicated by food manufacturers. With reference to the "segmented style," the supply of relatively small size olives for use in the production of quartered olives is insufficient to the demand. By cutting larger olives lengthwise into more than four pieces (usually six) the resulting segments will approximate the size of the quarters produced from relatively small olives. With reference to the "broken slice style," it will augment an insufficent supply of sliced style and provide an outlet for slices broken during slicing that could otherwise be salvaged only through further processing in the form of chopping or mincing. The requirement that the two styles be produced from at least U.S. grade C pitted olives is the same as the current requirement pertaining to the production of quartered olives. Olives packed as whole, whole pitted, or broken pitted style must meet the requirements of U.S. grade C and U.S. grade B as to character. Because of the limited and developmental purpose of the amendment it would, by its own provisions, permit the production and packaging of the broken slice style only through the balance of the current crop year which ends on August 31, 1973.

It is hereby found that amendment of said rules and regulations as hereinafter set forth is in accordance with the provisions of the marketing agreement and order and will tend to effectuate the declared policy of the Agricultural Marketing Agreement Act of 1937, as amended.

The provisions of paragraph (d) of § 932.155 are revised and a new paragraph (e) is added thereto to read as follows:

§ 932.155 Special purpose shipments.

* * * * *

(d) Processed olives which, if used in the production of canned pitted ripe olives would result in packaged olives meeting: (1) The specifications of U.S. grade C for pitted style of canned ripe olives (§ 52.3754(c) of the U.S. standards for grades of canned ripe olives; §§ 52.3751–52.3766 of this title); and (2) the applicable minimum size requirements in effect for olives for limited use pursuant to § 932.52(a)(3), may be used in the production of canned ripe olives of the quartered style, as specified in § 52.3753(d) of this title, or the segmented style (segmented style olives means olives that meet the requirements of the aforesaid standards for quartered style except that the pitted olives shall each have been cut lengthwise into more than four approximately equal parts).

(e) Processed olives which, if used in the production of canned pitted ripe olives would result in packaged olives meeting the grade and size requirements specified for such style in paragraph (d) of this section may be used in the production of broken slice style (broken slice means an identifiable segment comprising less than three-fourths of a slice that was broken during slicing) that consists of broken slices and may include slices and end slices: *Provided*, That broken slice style shall meet U.S. grade C requirements as to color, character, and defects (other than unlimited broken slices or end slices) for sliced style as defined in § 52.3753(e) of the U.S. standards for grades of canned ripe olives; §§ 52.3751–52.3766 of this

title: *Provided further,* That broken slice style may only be produced and packaged prior to September 1, 1973, and shall be packed in No. 10 size cans or larger containers.

It is hereby further found that it is impracticable, unnecessary, and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective date of this amendment until 30 days after publication in the FEDERAL REGISTER (5 U.S.C. 553) in that: (1) The handling of olives is now in progress and to be of maximum benefit the provisions of this amendment should be effective upon the date hereinafter specified, (2) the effective date hereof will not require of handlers any preparation that cannot be completed prior thereto, (3) this amendment was unanimously recommended by members of the Olive Administrative Committee, and (4) this amendment relieves restrictions, through August 31, 1973, on the handling of California olives by authorizing the production of two additional styles of canned ripe olives.

(Secs. 1–19, 48 Stat. 31, as amended; 7 U.S.C. 601–674)

Dated December 12, 1972, to become effective December 12, 1972.

CHARLES R. BRADER,
Acting Deputy Director, Fruit and Vegetable Division, Agricultural Marketing Service.

[FR Doc.72-21652 Filed 12-15-72;8:46 am]

Chapter XIV—Commodity Credit Corporation, Department of Agriculture

SUBCHAPTER B—LOANS, PURCHASES, AND OTHER OPERATIONS

PART 1464—TOBACCO

Subpart A—Tobacco Loan Program

1972 CROP—CIGAR TOBACCO, ADVANCE SCHEDULE

On November 15, 1972, there was published in the FEDERAL REGISTER (37 F.R. 24189) a notice of proposed rule making setting forth the proposed price support advance rates for 1972 crop cigar tobacco. Interested parties were given the opportunity to submit within 20 days data, views, and recommendations regarding the proposed advance rates.

No unfavorable comments have been received, and the proposed advance rates are hereby adopted and are set forth below. The material previously appearing under the section numbers shown below remain applicable to the crops to which each refers.

(Sec. 4, 62 Stat. 1070, as amended, sec. 5, 62 Stat. 1072, secs. 101, 106, 401, 403, 63 Stat. 1051, as amended, 1054, 74 Stat. 6; 7 U.S.C. 1441, 1445, 1421, 1423, 15 U.S.C. 714b, 714c)

Effective date: Date of filing with the Office of the Federal Register.

Signed at Washington, D.C., on December 11, 1972.

GLENN A. WEIR,
Acting Executive Vice President, Commodity Credit Corporation.

§ 1464.22 1972 crop—Ohio filler tobacco, types 42–44, advance schedule.[1]

Grade	Advance Rate
(Dollars per hundred pounds, farm sales weight)	
Crop run (stripped together):	
X1	38.50
X2	35.50
X3	32.50
X4	29.00
Nondescript:	
N	20.00

§ 1464.23 1972 crop—Connecticut Valley broadleaf tobacco, type 51, advance schedule.[2]

Grade	Advance rate
(Dollars per hundred pounds, farm sales weight)	
Binders:	
B1	72
B2	64
B3	55
B4	45
B5	40
Nonbinders:	
X1	34

§ 1464.24 1972 crop—Connecticut Valley Havana seed tobacco, type 52, advance schedule.[3]

Grade	Advance rate
(Dollars per hundred pounds, farm sales weight)	
Binders:	
B1	67
B2	59
B3	52
B4	44
B5	40
Nonbinders:	
X1	34

§ 1464.25 1972 crop—New York and Pennsylvania Havana seed tobacco, type 53, and Southern Wisconsin tobacco, type 54, advance schedule.[4]

Grade	Advance rate
(Dollars per hundred pounds, farm sales weight)	
Crop-run:	
X1	42.50
X2	38.00
X3	31.50
Farm fillers:	
Y1	29.00
Y2	27.00
Y3	25.00
Nondescript:	
N1	25.00
N2	19.00

[1] The cooperative association through which price support is made available is authorized to deduct from the amount paid the grower 50 cents per hundred pounds to apply against receiving and overhead costs. Only the original producer is eligible to receive advances. No advance is authorized for tobacco designated "No-G" (no grade).

[2] The cooperative association through which price support is made available is authorized to deduct from the amount paid the grower $1 per hundred pounds to apply against receiving and overhead costs. Only the original producer is eligible to receive advances. No advance is authorized for tobacco graded "N1" (first quality nondescript), "N2" (second quality nondescript) or "S" (scrap), or designated "No-G" (no grade).

[3] The cooperative association through which price support is made available is authorized to deduct from the amount paid the grower $1 per hundred pounds to apply against receiving and overhead costs. Only the original producer is eligible to receive advances. No advance is authorized for tobacco (second quality nondescript) or "S" (scrap), or designated "No-G" (no grade).

§ 1464.26 1972 crop—Northern Wisconsin tobacco, type 55, advance schedule.[1]

Grade	Advance rate
(Dollars per hundred pounds, farm sales weight)	
Binders:	
B1	60.00
B2	55.00
B3	47.00
Strippers:	
C1	43.50
C2	39.00
C3	32.00
Crop-run:	
X1	43.00
X2	37.00
X3	29.00
Farm fillers:	
Y1	33.00
Y2	30.00
Y3	28.00
Nondescript:	
N1	23.00
N2	18.00

§ 1464.27 1972 crop—Puerto Rican tobacco, type 46, advance schedule.[2]

Grade	Advance rate
(Dollars per hundred pounds, farm sales weight)	
Price Block I (C1F and C1P)	44.50
Price Block II (X1F, X1P and X1S)	38.00
Price Block III (X2T, X2F, X2P and X2S)	27.50
Price Block IV (N)	14.00

[FR Doc.72-21653 Filed 12-15-72;8:46 am]

Title 14—AERONAUTICS AND SPACE

Chapter I—Federal Aviation Administration, Department of Transportation

[Docket No. 72-CE-26-AD; Amdt. 39-1576]

PART 39—AIRWORTHINESS DIRECTIVES

Beech 99 Series Airplanes

A proposal to amend Part 39 of the Federal Aviation Regulations to include

[1] The cooperative association through which price support is made available is authorized to deduct from the amount paid the grower 50 cents per hundred pounds to apply against receiving and overhead costs. Only the original producer is eligible to receive advances. No advance is authorized for tobacco designated "No-G" (no grade).

[2] The cooperative associations through which price support is made available to growers are authorized to deduct $1 per hundred pounds from the advances to growers to apply against overhead and handling costs. Tobacco is eligible for advance only if consigned by the original producer. No advance is authorized for tobacco graded "S" (scrap) or designated "No-G" (no grade), graded "N1" (first quality nondescript), "N2"

[4] The cooperative association through which price support is made available is authorized to deduct from the amount paid the grower 50 cents per hundred pounds to apply against receiving and overhead costs. Only the original producer is eligible to receive advances. No advance is authorized for tobacco designated "No-G" (no grade).

an airworthiness directive (AD) applicable to Beech 99 series airplanes was published in the FEDERAL REGISTER on August 26, 1972 (37 F.R. 17423). The proposed AD would require the installation of an additional latching feature on the nose baggage door as provided in Beech Kit No. 99-4019S to reduce the possibility of the nose baggage door opening in flight.

Interested persons have been afforded an opportunity to participate in the making of the amendment. Four comments were received, two of which agreed with the proposal. One commentator, while agreeing with the need for an AD, requested that it be expanded to provide for the installation of a baggage/cargo restraint system as an optional method of compliance. The FAA finds merit in this suggestion and the AD will be modified accordingly. The fourth commentator was concerned that while Beech Kit No. 99-4019S would cure one problem it would also cause another. In explanation he advised that the kit had been installed in an airplane but the cam lock fastener grommet retainer wore out allowing the fastener to separate from the bracket in flight and damage the propeller. Subsequent agency investigation and contact with the commentator disclosed that his concern was ill founded in that the latch which wore out was not the one contained in Beech Kit No. 99-4019S, but rather had been fabricated by an operator and installed on his airplane.

It is also necessary to change the lead-in clause as set forth in the original proposal to provide for alternate methods of compliance.

Although this amendment modifies the original proposal, it is in part relieving in nature, provides clarification and is in the interest of safety. Accordingly, further notice and public procedure hereon are unnecessary.

In consideration of the foregoing and pursuant to the authority delegated to me by the Administrator 14 CFR 11.89 (31 F.R. 13697), § 39.13 of Part 39 of the Federal Aviation Regulations is amended by adding the following new AD.

BEECH. Applies to 99 series (Serial Nos. U-1 thru U-148) airplanes.

Compliance: Required as indicated, unless already accomplished.

To reduce the possibility that baggage or cargo in the nose compartment might become a hazard by shifting, accomplish either paragraph A or paragraph B within 200 hours' time in service after the effective date of this AD:

(A) Install an additional latch on the nose compartment door as provided in Beech Kit No. 99-4019S or any FAA-approved equivalent, or

(B) Install a baggage/cargo restraint system in accordance with data approved by the Chief, Engineering and Manufacturing Branch, FAA, Central Region.

This amendment becomes effective December 21, 1972.

(Sec. 313(a), 601, 603, Federal Aviation Act of 1958, 49 U.S.C. 1354(a), 1421, 1423; sec. 6(c), Department of Transportation Act, 49 U.S.C. 1655(c))

Issued in Kansas City, Mo., on December 6, 1972.

CHESTER W. WELLS,
Acting Director, Central Region.

[FR Doc.72-21642 Filed 12-15-72;8:46 am]

[Airspace Docket No. 72-SW-65]

PART 71—DESIGNATION OF FEDERAL AIRWAYS, AREA LOW ROUTES, CONTROLLED AIRSPACE, AND REPORTING POINTS

Designation of Alternate Airway

On October 27, 1972, a notice of proposed rule making (NPRM) was published in the FEDERAL REGISTER (37 F.R. 22990) stating that the Federal Aviation Administration (FAA) was considering an amendment to Part 71 of the Federal Aviation Regulations that would establish a north alternate VOR Federal Airway No. 76 between Llano, Tex., and Austin, Tex.

Interested persons were afforded an opportunity to participate in the proposed rule making through the submission of comments. All comments received were favorable.

In consideration of the foregoing, Part 71 of the Federal Aviation Regulations is amended, effective 0901 G.m.t., February 1, 1973, as hereinafter set forth.

In § 71.123 (37 F.R. 2009, 18715, 23329) Victor Airway No. 76 is amended as follows:

In V76 "Austin 279° radials; Industry, Tex.," is deleted and "Austin 279° radials; and also a north alternate via INT Llano 096° and Austin 314° radials; Industry, Tex.," is substituted therefor.

(Sec. 307(a), Federal Aviation Act of 1958, 49 U.S.C. 1348(a); sec. 6(c), Department of Transportation Act, 49 U.S.C. 1655(c))

Issued in Washington, D.C., on December 11, 1972.

H. B. HELSTROM,
Chief, Airspace and Air Traffic Rules Division.

[FR Doc.72-21643 Filed 12-15-72;8:46 am]

Chapter II—Civil Aeronautics Board

SUBCHAPTER B—PROCEDURAL REGULATIONS

[Regulaton PR-133; Amdt. 302-16]

PART 302—RULES OF PRACTICE IN ECONOMIC PROCEEDINGS

Confidential Treatment of Documents Regarding Compromise of Civil Penalties

Adopted by the Civil Aeronautics Board at its office in Washington, D.C., on the 12th day of December 1972.

Subpart H of Part 302 of the Procedural Regulations (14 CFR 302.800, et seq.) sets forth the procedures to be followed for the compromise of civil penalties for violations charged under section 901 of the Act. Acceptance by the Board of an offer of compromise submitted by a respondent constitutes a full settlement of civil penalties for all violations charged under section 901. There is no obligation on the part of the respondent to submit any offer of compromise. Conversely, if the Board declines to accept respondent's compromise offer, it may proceed to collect the statutory civil penalties by court action pursuant to section 903(b) of the Act.

Utilization of these informal compromise procedures has proven to be extremely valuable as an enforcement technique and the Board accordingly has determined that respondents should be encouraged to make compromise offers in these proceedings.

Our long-standing practice in these matters reflects a policy determination that disclosure, during the pendency of a compromise proceeding under Subpart H, of any documents submitted by a respondent at any stage thereof, would tend to deter respondents from seeking to compromise civil penalties and would thus be contrary to the public interest in compromise and settlement of disputes, since the submission of documents by respondent is generally made in the course of negotiations leading to compromise. On the other hand, there is a countervailing policy against drawing a curtain of secrecy around the disposition of enforcement proceedings instituted by a government agency. Thus, it would be desirable to strike a balance between the policy favoring settlements and the policy favoring disclosure, similar to that which we have heretofore achieved in connection with offers of settlement in enforcement actions, where we have provided for temporary limited confidentiality. (Rule 215(b), 14 CFR 302.215(b).)

Considering the frequently sensitive nature of documents submitted by respondents in civil penalty proceedings under Subpart H, disclosure of such documents pending termination of such proceedings, against respondent's wishes, would tend to deter respondents from making offers of compromise. We find that, where a respondent in a Subpart H civil penalty proceeding makes a timely request that confidentiality be accorded to any document which he submits in the course of the proceeding, a disclosure of any such document, pending the termination of the proceeding, would adversely affect the interests of the respondent and is not required in the interest of the public.

We are therefore amending Subpart H, to provide that any document submitted to the Board by a respondent in the course of a civil penalty proceeding hereunder will be withheld from public disclosure until the date on which the Board terminates the proceeding, by accepting an offer of compromise or otherwise, provided that the respondent requests such confidential treatment when the document is submitted. If the respondent believes that further withholding is necessary in order to obviate any adverse effect upon his interests, it will be incumbent upon him to request such further withholding from public disclosure

as he deems necessary. Such request, to be filed not later than the time the document is submitted to the Board, must of course comply with the requirements of Rule 39(d) of the Board's rules of practice in economic proceedings relating to identification of information sought to be withheld and must provide reasons legally sufficient to support withholding under Section 1104 of the Act. The Board will act upon such request for continuing confidentiality when it accepts the offer of compromise or otherwise terminates the proceeding.

Since this amendment is procedural in nature, the Board finds that notice and public procedure hereon are not necessary, and that the amendment should be effective immediately.

Accordingly, the Civil Aeronautics Board hereby amends Subpart H of Part 302 of its procedural regulations (14 CFR Part 302), effective December 12, 1972, as follows:

1. Amend the table of contents by adding a new § 302.807a to read as follows:

Sec.
302.807a Confidentiality of documents submitted in civil penalty proceedings.

2. Add a new § 302.807a to read as follows:

§ 302.807a Confidentiality of documents submitted in civil penalty proceedings.

Any document submitted to the Board by a respondent in a civil penalty proceeding instituted pursuant to this Subpart H shall be automatically withheld from public disclosure until the date on which the Board terminates the civil penalty proceeding, by acceptance of an offer of compromise or otherwise, if a request to withhold such document is made by the respondent no later than the time when such document is submitted to the Board. If respondent believes that further withholding, beyond the date on which the civil penalty proceeding shall be terminated, is necessary in order to obviate any adverse effect upon his interests, respondent must request further withholding from public disclosure. Such request, which must also be filed no later than the time the affected document is submitted to the Board, must comply with the requirements of Rule 39(d) of this part relating to identification of the information sought to be withheld and must provide reasons legally sufficient to support withholding the information under section 1104 of the Act. The Board will dispose of this request at the time it terminates the civil penalty proceeding, by acceptance of the offer of compromise or otherwise.

(Secs. 204(a) and 1104 of the Federal Aviation Act of 1958, as amended, 72 Stat. 743, 797; 49 U.S.C. 1324, 1504)

By the Civil Aeronautics Board.

[SEAL] HARRY J. ZINK,
Secretary.

[FR Doc.72-21637 Filed 12-15-72;8:45 am]

Title 21—FOOD AND DRUGS

Chapter I—Food and Drug Administration, Department of Health, Education, and Welfare

SUBCHAPTER C—DRUGS

PART 135c—NEW ANIMAL DRUGS IN ORAL DOSAGE FORMS

Aminopropazine Fumarate, Neomycin Sulfate Tablets, Veterinary

The Commissioner of Food and Drugs has evaluated a supplemental new animal drug application (13-181V) filed by Jensen-Salsbery Laboratories, Division of Richardson-Merrell, Inc., Kansas City, Mo. 64141, proposing revised labeling for the safe and effective use of aminopropazine fumarate, neomycin sulfate tablets, veterinary, for the control of bacterial diarrhea in dogs. The supplemental application is approved.

Therefore, pursuant to provisions of the Federal Food, Drug, and Cosmetic Act (sec. 512(i), 82 Stat. 347; 21 U.S.C. 360b(i)) and under authority delegated to the Commissioner (21 CFR 2.120), Part 135c is amended by adding the following new section:

§ 135c.87 Aminopropazine fumarate, neomycin sulfate tablets, veterinary.

(a) *Specifications.* The drug is in tablet form. Each tablet contains both aminopropazine fumarate equivalent to 25 milligrams of aminopropazine base and neomycin sulfate equivalent to 50 milligrams of neomycin base.

(b) *Sponsor.* See code No. 062 in § 135.501(c) of this chapter.

(c) *Conditions of use.* (1) The drug is used in dogs to control bacterial diarrhea caused by organisms susceptible to neomycin and to reduce smooth muscle contractions.

(2) It is administered at a dosage level of one to two tablets per 10 pounds of body weight twice daily for 3 days.

(3) Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Effective date. This order shall be effective upon publication in the FEDERAL REGISTER (12-16-72).

(Sec. 512(i), 82 Stat. 347; 21 U.S.C. 360b(i))

Dated: December 8, 1972.

C. D. VAN HOUWELING,
Director, Bureau of Veterinary Medicine.

[FR Doc.72-21678 Filed 12-15-72;8:49 am]

Title 32—NATIONAL DEFENSE

Chapter VII—Department of the Air Force

SUBCHAPTER E—SECURITY

PART 850—SAFEGUARDING CLASSIFIED INFORMATION

Part 850, Subchapter E, Chapter VII of Title 32 of the Code of Federal Regulations is hereby deleted. The regulation on which it was based has been replaced by a Department of Defense regulation (37 F.R. 15655, August 3, 1972).

(10 U.S.C. 8012)

By Order of the Secretary of the Air Force.

JOHN W. FAHRNEY,
Colonel, USAF, Chief, Legislative Division, Office of The Judge Advocate General.

[FR Doc.72-21636 Filed 12-15-72;8:45 am]

SUBCHAPTER K—MILITARY TRAINING AND SCHOOLS

PART 908—MEDICAL, DENTAL, AND VETERINARY EDUCATION PROGRAM FOR AIR FORCE OFFICERS

Part 908, Subchapter K of Chapter VII of Title 32 of the Code of Federal Regulations is revised to read as follows:

Sec.
908.1 Purpose.
908.2 Who may apply for sponsorship.
908.3 General requirements.
908.4 How to apply for sponsorship.
908.5 Responsibilities.
908.6 Eligibility criteria for sponsorship.

AUTHORITY: The provisions of this Part 908 issued under 10 U.S.C. 8012.

§ 908.1 Purpose.

(a) This part explains how a military member or civilian highly motivated toward an Air Force career in medicine (includes osteopathy), dentistry, or veterinary medicine may participate in advanced training that qualifies him as a physician, dentist, or veterinarian. It also outlines responsibilities and eligibility requirements and tells how to apply for such sponsorship.

(b) Part 806 of this chapter states the basic polices and instructions governing the disclosure of records and tells members of the public what they must do to inspect or obtain copies of the material referenced herein.

§ 908.2 Who may apply for sponsorship.

Any military member (active or inactive) or civilian who meets the criteria of § 908.6 and has been recommended by the dean of his undergraduate school may apply for sponsorship at an accredited school for the time normally required to earn an M.D., D.O., D.D.S., D.M.D., or D.V.M. degree from the school.

§ 908.3 General requirements.

A participant in this education program:

(a) Must agree to accept appointment or reappointment in the Reserve of the Air Force, Medical Service Corps (MSC); or in the case of Regular Air Force officers, a promotion list transfer to the MSC for the duration of his school training. Upon successful completion, must accept reappointment or promotion list transfer to the appropriate corps (Medical (MC), Dental (DC), or Veterinary (VC)) when the degree is received.

(b) Is on active duty while attending school and is entitled to pay and allowances for his grade.

(c) Incurs an active duty service commitment (ADSC) (Part 888c of Subchapter I of this chapter) of three times the length of the course. For example, a student attending for 4 years a school which has an academic year of 9 months would incur an ADSC of three times the length of the course (36 months) or 108 months. Fulfillment of the ADSC incurred commences on the day the individual received his M.D., D.O., D.D.S., D.M.D., or D.V.M. degree.

(d) Will be fulfilling any ADSC previously incurred for:

(1) Acceptance of an Air Force commission.

(2) Attendance at a service academy (U.S. Air Force Academy, U.S. Military Academy, or U.S. Naval Academy).

(3) Participation in a Reserve Officer Training Corps program.

(e) Who is eliminated or withdrawn from training before completion of the first year, will incur an ADSC of 3 years from date of elimination or withdrawal. After the first year, elimination or withdrawal results in an ADSC of 3 years plus 3 months for each month of training received after the first year (Part 888c of Subchapter I of this chapter). Situations of students eliminated or withdrawn from training leading to a degree will be reviewed by AFMPC/SGSS and AFMPC/DPMR and, when appropriate, the officer will be transferred to the line of the Air Force.

§ 908.4 How to apply for sponsorship.

Applicants who have been accepted by or who have applied to medical/osteopathic, dental, or veterinary schools may submit a request directly to AFMPC/SGSS, Randolph Air Force Base, Tex. 78148, for an application kit.

§ 908.5 Responsibilities.

(a) *AFMPC.* (1) Makes selections through an education committee. This committee includes in its consideration for selection, career motivation, scholastic standing, and military aptitude. The committee will also consider Medical College Admission Test (MCAT) scores for medical school applicants.

(2) Notifies and appoints or effects promotion list transfer, as appropriate, to the Medical Service Corps for those selected.

(3) Notifies individuals who were not selected for sponsorship.

(4) Reassigns any participant eliminated from training to appropriate duties to complete any unfulfilled ADSC incurred as a result of obtaining his commission or of participation in this education program. Officers who were transferred from the line of the Air Force to the Medical Service Corps will usually be returned to the line of the Air Force for assignment.

(5) Reappoints or effects promotion list transfer, as appropriate, to either the MC, DC, or VC when a student graduates from school.

(b) *Air University.* Air University, through the Commandant, Air Force Institute of Technology (AFIT), will:

(1) Plan and manage academic tours as instructed by AFMPC.

(2) Negotiate and contract with schools for the education authorized by this part. The contract must include payments for all tuition and fees (excluding refundable deposits) listed in the selected school's official catalog. In addition, AFIT will defray associated educational expenses for books, equipment, supplies, and thesis preparation as follows:

(i) Books and materials as required, not to exceed a total of $600, the annual apportionment of which will be determined by AFIT.

(ii) Equipment and supplies that the school requires all students to possess.

(iii) Doctoral dissertation (when required of students), $50.

(iv) Reimbursement of fees for examinations administered by the National Board of Medical Examiners or the State Board of Medical Examiners when such examinations are required by the institution in which enrolled as a prerequisite to graduation.

(3) Provide normal administrative support to each student.

(4) Assign student officers to Air Force medical, dental, or veterinary activities for appropriate duties during summer months and other extended elective periods during the school year. Normally, medical and dental students are assigned to Air Force teaching hospitals.

(5) Notify AFMPC/SGSS any time a student's progress is less than satisfactory as reflected by grades received from the school concerned (paragraph (c) of this section).

(6) Request grades from the school concerned when they have not been received in a reasonable length of time after the end of the grading period.

(7) Notify AFMPC/SGSS any time a student has been eliminated from training.

(c) *Student.* (1) Will forward directly to AFIT/CIM, Wright-Patterson Air Force Base, Ohio 45433, at the end of each grading period a copy of his grades, or if the school does not divulge grades to students, ask the school to send a progress report. Local conditions will dictate the method of requesting the school to forward grades to AFIT. In any case, it is the responsibility of the student to request the school to comply with this subparagraph.

(2) Will turn in all nonexpendable supplies and equipment used during attendance at his school to the base medical materiel officer at his first permanent duty station.

(3) May apply for participation in the Dental Intern Program, if he is a dental student. Application kits may be requested from AFMPC/SGSS during the early part of the student's senior year.

(4) Must participate in an Air Force sponsored graduate medical education program, if he is a medical/osteopathic student. Application kits for the program will be sent directly to the student by AFMPC/SGSS about September 1 of the student's senior year.

(5) Must certify, in writing or on a form furnished by AFIT, within 30 days following reassignment from AFIT, that sums received under the provisions of paragraph (b)(2) (i), (ii), and (iii) of this section were in fact expended for the items or services for which the sums were received. Such certification is made a part of the student's AFIT academic folder. If expenditures are less than the sums received, appropriate reimbursement action will be taken.

§ 908.6 Eligibility criteria for sponsorship.

Rule	A If applicant is—	B And will be less than 29 years of age upon entry into medical, dental, osteopathic, or veterinary school (note 3) and is not a conscientious objector	C And has proof of acceptance by an accredited professional school (note 1) and has been recommended by the dean of his undergraduate school	D Then he may apply for sponsorship under the program (note 4).
1	A regular or reserve officer in grade of captain (note 3) or below; if rated, see note 2.	X	X	X
2	A potential AFROTC graduate	X	X	X
3	A reserve or active duty enlisted man.	X	X	X
4	A civilian having received a BS degree or within 6 months of completion of undergraduate school.	X	X	X

NOTES: 1. The letter of acceptance may be contingent upon completion of specified courses prior to entrance into professional school.

2. Rated officers are eligible if they have completed or will have completed their active duty service commitment for flying training (undergraduate pilot training, undergraduate navigator training, or undergraduate helicopter training) at time of entry into medical, dental, or veterinary school. If applicable, individuals should forward a request for permanent suspension from flying status with their application. Reason for requesting suspension should be contingent on their acceptance for participation in the Medical, Dental, or Veterinary Education Program.

3. Waivers will not be granted for age or grade.

4. Medical and dental applications should be submitted in December, January, or February. Veterinary applications should be submitted in March, April, or May.

By Order of the Secretary of the Air Force.

JOHN W. FAHRNEY,
Colonel, USAF,
Chief, Legislative Division,
Office of The Judge Advocate General.

[FR Doc.72-21634 Filed 12-15-72;8:45 am]

Title 24—HOUSING AND URBAN DEVELOPMENT

Chapter X—Federal Insurance Administration, Department of Housing and Urban Development

SUBCHAPTER B—NATIONAL FLOOD INSURANCE PROGRAM

PART 1914—AREAS ELIGIBLE FOR THE SALE OF INSURANCE

Status of Participating Communities

Section 1914.4 of Part 1914 of Subchapter B of Chapter X of Title 24 of the Code of Federal Regulations is amended by adding in alphabetical sequence a new entry to the table. In this entry, a complete chronology of effective dates appears for each listed community. Each date appearing in the last column of the table is followed by a designation which indicates whether the date signifies the effective date of the authorization of the sale of flood insurance in the area under the emergency or the regular flood insurance program. The entry reads as follows:

§ 1914.4 Status of participating communities.

* * * * * * *

State	County	Location	Map No.	State map repository	Local map repository	Effective date of authorization of sale of flood insurance for area
* * *	* * *	* * *	* * *	* * *	* * *	* * *
Connecticut	Hartford	Glastonbury, Town of.				Dec. 15, 1972. Emergency.
Florida	Indian River	Vero Beach, City of.				Do.
Illinois	Cook	Flossmoor, Village of.				Do.
Do.	do.	Wheeling, Village of.				Do.
Massachusetts	Norfolk	Weymouth, Town of.				Do.
Michigan	St. Clair	Algonac, City of.				Do.
Do.	Oakland	Farmington, City of.				Do.
New Jersey	Somerset	Manville, Borough of.				Do.
Pennsylvania	Bucks	Bensalem, Township of.				Do.
Do.	Schuylkill	Port Clinton, Borough of.				Do.
Do.	Luzerne	Schickshinny, Borough of.				Do.
Virginia	Prince William	Unincorporated areas.				Do.
Wisconsin	Marathon	Mosinee, City of.	I 55 073 3200 01	Department of Natural Resources, Post Office Box, Madison, WI 53701. Wisconsin Insurance Department, 212 North Bassett St., Madison, WI 53703.	Office of Clerk, City of Mosinee, Mosinee, Wis. 54455.	May 7, 1971. Emergency. Dec. 15, 1972. Regular.
Do.	Pepin	Unincorporated areas.	I 55 091 0000 01 through I 55 091 0000 04	do.	Office of County Zoning Administrator, County Courthouse, Durand, Wis. 54736.	Apr. 9, 1971. Emergency. Dec. 15, 1972. Regular.

(National Flood Insurance Act of 1968 (title XIII of the Housing and Urban Development Act of 1968), effective Jan. 28, 1969 (33 F.R. 17804, Nov. 28, 1968), as amended (secs. 408–410, Public Law 91–152, Dec. 24, 1969), 42 U.S.C. 4001–4127; and Secretary's delegation of authority to Federal Insurance Administrator, 34 F.R. 2680, Feb. 27, 1969)

Issued: December 11, 1972.

GEORGE K. BERNSTEIN,
Federal Insurance Administrator.

[FR Doc.72-21593 Filed 12-15-72;8:48 am]

PART 1915—IDENTIFICATION OF SPECIAL HAZARD AREAS

List of Communities With Special Hazard Areas

Section 1915.3 is amended by adding in alphabetical sequence a new entry to the table, which entry reads as follows:

§ 1915.3 List of communities with special hazard areas.

* * * * * * *

State	County	Location	Map No.	State map repository	Local map repository	Effective date of identification of areas which have special flood hazards
* * *	* * *	* * *	* * *	* * *	* * *	* * *
Pennsylvania	Northumberland	Milton, Borough of.	H 42 097 5330 02	Department of Community Affairs, Commonwealth of Pennsylvania, Harrisburg, Pa. 17120. Pennsylvania Insurance Department, 108 Finance Bldg., Harrisburg, Pa. 17120.	Municipal Bldg., 28 North Front St., Milton, PA 17847.	Apr. 9, 1971.
Wisconsin	Marathon	Mosinee, City of.	H 55 073 3200 01	Department of Natural Resources, Post Office Box, Madison, Wis. 53701. Wisconsin Insurance Department, 212 North Bassett St., Madison, WI 53703.	Office of Clerk, City of Mosinee, Mosinee, Wis. 54455.	May 7, 1971.
Do.	Pepin	Unincorporated areas.	H 55 091 0000 01 through H 55 091 0000 04	do.	Office of County Zoning Administrator, County Courthouse, Durand, Wis. 54736.	Apr. 9, 1971.

(National Flood Insurance Act of 1968 (title XIII of the Housing and Urban Development Act of 1968), effective Jan. 28, 1969 (33 F.R. 17804, Nov. 28, 1968), as amended (secs. 408–410, Public Law 91–152, Dec. 24, 1969), 42 U.S.C. 4001–4127; and Secretary's delegation of authority to Federal Insurance Administrator, 34 F.R. 2680, Feb. 27, 1969)

Issued: December 11, 1972.

GEORGE K. BERNSTEIN,
Federal Insurance Administrator.

[FR Doc.72-21594 Filed 12-15-72;8:48 am]

Title 32A—NATIONAL DEFENSE, APPENDIX

Chapter X—Office of Oil and Gas, Department of the Interior

[Oil Import Reg. 1 (Rev. 5), Amdt. 48]

OI REG. 1—OIL IMPORT REGULATION

Oil Import Appeals Board

In order to provide for any immediate supply dislocations the Director, Office of Emergency Preparedness, with the advice of the Oil Policy Committee, has determined that additional quantities of oil should be made available to the Oil Import Appeals Board for allocations in Districts I–IV. Because of the urgent requirement to alleviate any existing supply dislocations prior to the expiration of the calendar year, it is not considered necessary to give notice of proposed rule making respecting this amendment, and it shall become effective immediately.

HOLLIS M. DOLE,
Assistant Secretary of the Interior.

I concur: December 14, 1972.

G. A. LINCOLN,
Director, Office of Emergency Preparedness.

Paragraph (e) of section 21 of Oil Import Regulation 1 (Revision 5), as amended to read as follows:

Sec. 21 Appeals.

* * * * *

(e) For the allocation period January 1, 1972, through December 31, 1972, 40,000 barrels per day of imports into Districts I–IV of crude oil and unfinished oils (including Canadian imports as defined in section 1A of Proclamation 3279, as amended) and finished products and 5,000 barrels per day of imports into District V of crude oil, unfinished oils, and finished products are made available to the Oil Import Appeals Board.

[FR Doc.72-21732 Filed 12-14-72;3:13 pm]

Title 40—PROTECTION OF ENVIRONMENT

Chapter I—Environmental Protection Agency

SUBCHAPTER E—PESTICIDES PROGRAMS

PART 180—TOLERANCES AND EXEMPTIONS FROM TOLERANCES FOR PESTICIDE CHEMICALS IN OR ON RAW AGRICULTURAL COMMODITIES

Benomyl

Correction

In F.R. Doc. 72-20978 appearing at page 26009 of the issue for Thursday, December 7, 1972, in the ninth line, an open parenthesis should appear before the word "butyl-".

Proposed Rule Making

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Food and Drug Administration

[21 CFR Part 191]

BANNED HAZARDOUS SUBSTANCES

Repurchase Procedures

A notice was published in the FEDERAL REGISTER of December 19, 1970 (35 F.R. 19275), proposing § 191.202 to implement section 15 of the Federal Hazardous Substances Act regarding the repurchase of banned hazardous substances.

The comments received in response to the proposal raised numerous and varying issues. The Commissioner of Food and Drugs concludes that these issues cannot be resolved by publication of a final order based upon the original proposal, that the proposal of December 19, 1970, should be withdrawn, and that a substantially revised proposal should issue as set forth below.

Therefore, pursuant to provisions of the Federal Hazardous Substances Act (sec. 15, 83 Stat. 189–90; 15 U.S.C. 1274), and under authority delegated to him (21 CFR 2.120), the Commissioner proposes that a new section be added to Part 191 as follows:

§ 191.202 Repurchase of banned hazardous substances.

(a) *Scope.* This section establishes the procedures under which a banned hazardous article or substance which is required to be repurchased under section 15 of the act shall be repurchased.

(b) *Definitions.* For the purposes of this section:

(1) The term "manufacturer" includes any person who manufactures or imports an article or substance for distribution or sale in the United States or any territory thereof, except that in the case of an article or substance distributed or sold under a name other than that of the actual manufacturer of the article or substance, the manufacturer is the person under whose name the article or substance is distributed or sold.

(2) The term "distributor" includes any person who sells an article or substance at wholesale.

(3) The term "dealer" includes any person who sells an article or substance at retail.

(4) The term "person" includes individual, partnership, corporation, and association.

(5) The term "purchase price" means the amount of money paid to acquire an article or substance, including all taxes, but excluding transportation or shipping costs and finance, interest, or service charges.

(c) *Dealers.* (1) In the case of a person who purchases an article or substance from a dealer, and who returns it to that dealer with documentary proof of the purchase price, the dealer shall refund the purchase price paid and reimburse the purchaser for any reasonable and necessary transportation charges incurred in its return. As used in this paragraph, "transportation charges" means the cost incurred by any reasonable method of returning the article or substance to the dealer, including personal conveyance or shipment.

(2) In the case of a person without documentary proof of the purchase price seeking repurchase from a dealer who sells or has sold that article or substance, the dealer shall reimburse that person the average price said dealer paid for such article or substance and reimburse him for any reasonable and necessary transportation charges incurred in its return.

(d) *Distributors.* The distributor of the article or substance shall repurchase it from the person to whom the distributor sold it and shall:

(1) Refund that person the purchase price paid for the article or substance;

(2) If that person has repurchased such article or substance pursuant to paragraph (c) of this section, reimburse such person for any reasonable and necessary transportation charges paid in accordance with that paragraph for the return of the article or substance in connection with its repurchase; and

(3) If the distributor requires the return of the article or substance in connection with the distributor's repurchase of it in accordance with this paragraph, reimburse that person for any reasonable and necessary expenses incurred in returning it to the distributor.

(e) *Manufacturers.* (1) The manufacturer of the article or substance shall repurchase it from the person to whom the manufacturer sold it and shall:

(i) Refund that person the purchase price paid for the article or substance;

(ii) Reimburse that person for any reasonable and necessary transportation charges and expenses paid by such person in connection with repurchase pursuant to paragraph (c) or (d) of this section; and

(iii) If the manufacturer requires the return of the article or substance in connection with the manufacturer's repurchase of it in accordance with this paragraph, reimburse that person for any reasonable and necessary expenses incurred in returning it to the manufacturer.

(2) Where a person, because of lack of proof of the purchase price or for other reasons, seeks to obtain repurchase directly from a manufacturer, the manufacturer of the article or substance shall repurchase it from such person, paying him the average price at which the manufacturer sold it, and shall reimburse him for any reasonable and necessary expenses incurred in returning it to the manufacturer.

(f) *Notice of banned article or substance subject to repurchase.* (1) The manufacturer of an article or substance subject to repurchase shall notify each distributor, dealer, and other person to whom the manufacturer sold such product that it is a banned hazardous substance subject to repurchase under the act. Such notice shall identify the article or substance involved, including model number or other distinguishing characteristics, set forth the nature of the hazards associated with the use of the product, provide instructions for return or other disposition of the product, and advise that any distributor or dealer who receives the notice is required to provide further notice as specified in this paragraph. A distributor upon receiving such notice shall in the same manner similarly notify each distributor, dealer, and other person to whom he sold such article or substance.

(2) Dealer notification:

(i) A dealer who sells or has sold a banned article or substance at a retail establishment shall, upon notification that such product is a banned hazardous substance, immediately prepare and prominently display a list containing identification of the banned product including the model number or other distinguishing characteristics, the name and address of the manufacturer, and the nature of the hazards associated with the use of the product. Each such banned article or substance shall be maintained on the list for a period of not less than 120 days from the date the dealer received such notification. The list shall be considered to be prominently displayed if it is available for inspection at a convenient location in the store, to which the public has access without having to obtain the permission or assistance of a store employee, and if a sign posted in accordance with the provisions of subdivision (ii) of this subparagraph clearly indicates the location of the list.

(ii) The dealer, upon receiving such notification, shall immediately prepare and prominently display a "Notice of Refund Procedures for Banned Articles or Substances" as follows. This notice shall be posted on each floor of each such establishment where items similar to the banned product are displayed or sold. Each such notice, which shall be not less than 22 by 28 inches in size, shall be printed in a color contrasting with the background, and shall be so displayed for a period of not less than 120 days from the date the dealer received the latest such notification.

NOTICE OF REFUND PROCEDURES FOR BANNED ARTICLES OR SUBSTANCES

In accordance with the Federal Hazardous Substances Act, this store has available a list of articles and substances that have been sold in this store and that have recently been declared banned hazardous substances by the Food and Drug Administration.

This list contains identification of the banned product including the model number or other distinguishing characteristics, the name and address of the manufacturer, and the nature of the hazards associated with the use of the product. These products should not be used.

If you have proof of purchase, return the banned product to the retail dealer who sold it to you and receive a full refund of the price you paid and any reasonable and necessary costs incurred in returning the product.

If you do not have proof of purchase, or if you cannot return the product to the retail dealer who sold it to you, return it to the manufacturer or to any retail dealer who sells or has sold such product. You will receive from the retail dealer the average price that retail dealer paid for the product, or from the manufacturer the average price at which the manufacturer sold the product, and any reasonable and necessary expenses incurred in returning the product.

The list of banned articles and substances is available for inspection at: (describe central location where available.)

(3) In the case of a banned article or substance sold at retail other than in a retail establishment, the dealer, upon notification that the product is a banned hazardous substance, shall publicize a clear and conspicuous "Notice of Banned Hazardous Substance," as follows, in a manner reasonably calculated to reach as many purchasers of the banned product as possible.

NOTICE OF BANNED HAZARDOUS SUBSTANCE

(Insert identification of banned product, including model number or other distinguishing characteristics and name and address of manufacturer.)

The Food and Drug Administration has declared this product a banned hazardous substance because (insert nature of the hazards associated with the use of the product).

This product should not be used.

By returning this product in the following manner, all or part of your purchase price will be refunded to you.

If you have proof of purchase price, return the banned product to the retail dealer who sold it to you and receive a full refund of the price you paid and any reasonable and necessary costs incurred in returning the banned product.

If you do not have proof of purchase price or if you cannot return the banned product to the retail dealer who sold it to you, return it to the manufacturer or to a retail dealer who sells or has sold such product. You will receive from the retail dealer the average price that retail dealer paid for the banned product, or from the manufacturer the average price at which the manufacturer sold the banned product, and any reasonable and necessary expenses incurred in returning the banned product.

(Date)

(4) The notice provisions of this paragraph are not mutually exclusive.

Interested persons may, within 60 days after publication hereof in the FEDERAL REGISTER, file with the Hearing Clerk, Department of Health, Education, and Welfare, Room 6-88, 5600 Fishers Lane, Rockville, Md. 20852, written comments (preferably in quintuplicate) regarding this proposal. Comments may be accompanied by a memorandum or brief in support thereof. Received comments may be seen in the above office during working hours, Monday through Friday.

Dated: December 13, 1972.

CHARLES C. EDWARDS,
Commissioner of Food and Drugs.

[FR Doc.72-21682 Filed 12-15-72;8:49 am]

[21 CFR Part 295]

CHILD PROTECTION PACKAGING STANDARDS

Proposed Informed Consent Amendment to Special Packaging Protocol

Section 295.10 of the regulations promulgated under the Poison Prevention Packaging Act of 1970 prescribes the protocol for testing "special packaging" as defined in section 2(4) of the act.

The Commissioner recognizes that test participants may be exposed to the possibility of harm as a consequence of participation as a test subject. For example, the test procedure permits children to use their teeth, thereby exposing their teeth and gums to harm. Child participants who open packaging may be exposed to aspiration injury from small parts or laceration injury from breakage of the container. In addition, parents should be made aware of the remote possibility that child participants may develop the ability to open "special packaging" which could result in subsequent injury at a later date.

In order to safeguard the rights and welfare of subjects involved in the test, the Commissioner concludes that the protocol should be amended to add a written informed consent requirement that will provide subjects with an adequate and appropriate awareness of the risks involved.

Therefore, pursuant to provisions of the Poison Prevention Packaging Act (secs. 2(4), 3, 5, 84 Stat. 1670-1672; 15 U.S.C. 1471(4), 1472, 1474) and under authority delegated to him (21 CFR 2.120), the Commissioner proposes that a new subparagraph (6) be added to § 295.10(a) as follows:

§ 295.10 Testing procedure for special packaging.

(a) * * *

(6) Informed written consent shall be obtained from each adult participant and from a parent or legal guardian of each child participant prior to the subject's participation in the test. The consent is invalid unless the person giving it has first received, in writing, a fair explanation of the procedures to be followed during the testing, a description of the attendant risks, an offer to answer any inquires concerning the test procedure, and an assurance that the consent can be withdrawn and participation in the test discontinued at any time. In addition, the consent is invalid if it contains any exculpatory language concerning legal rights. The signed informed consent form, or a copy thereof, shall be maintained by the manufacturer of the special packaging for a minimum of 3 years.

Interested persons may, within 60 days after publication hereof in the FEDERAL REGISTER, file with the Hearing Clerk, Department of Health, Education, and Welfare, Room 6-88, 5600 Fishers Lane, Rockville, Md. 20852, written comments (preferably in quintuplicate) regarding this proposal. Comments may be accompanied by a memorandum or brief in support thereof. Received comments may be seen in the above office during working hours, Monday through Friday.

Dated: December 12, 1972.

SAM D. FINE,
Associate Commissioner for Compliance.

[FR Doc.72-21680 Filed 12-15-72;8:49 am]

DEPARTMENT OF TRANSPORTATION

Coast Guard

[33 CFR Part 117]

[CGD 72-241P]

WABASH RIVER, ILL.

Proposed Drawbridge Operation Regulations

The Coast Guard is considering amending the regulations for the drawbridges across the Wabash River between Illinois and Indiana to require that the draws open on signal if at least 72 hours' notice is given. They are presently required to open on signal if at least 24 hours' notice is given. The reason for this consideration is the fact that at present there is no commercial navigation at this time and recreational navigation is limited to vessels which can pass under the closed draws. The regulations governing the operations of the drawbridges across the White River are revoked because these drawbridges have been rebuilt as fixed bridges.

Interested persons may participate in this proposed rule making by submitting written data, views, or arguments to the Commander (oan), Second Coast Guard District, Federal Building, 1520 Market Street, St. Louis, MO 63103.

Each person submitting comments should include his name and address, identify the bridge, and give reasons for any recommended change in the proposal. Copies of all written communications received will be available for examination by interested persons at the office of the Commander, Second Coast Guard District.

The Commander, Second Coast Guard District, will forward any comments received before January 23, 1973, with his recommendations to the Chief, Office of Marine Environment and Systems, who will evaluate all communications received and take final action on this proposal. The proposed regulations may be changed in the light of comments received.

In consideration of the foregoing, it is proposed that Part 117 of Title 33 of the Code of Federal Regulations, be amended by revising subparagraph (6) of paragraph (g) of § 117.560 to read as follows:

§ 117.560 Mississippi River and its tributaries and outlets; bridges where constant attendance of draw tenders is not required.

* * * * *

(g) * * *

(6) Wabash River, Ill. and Ind.; all drawbridges. The draws of these bridges shall open on signal if at least 72 hours' notice is given.

* * * * *

(Sec. 5, 28 Stat. 362, as amended, sec. 6(g)(2), 80 Stat. 937; 33 U.S.C. 499, 49 U.S.C. 1655 (g)(2); 49 CFR 1.46(c)(5), 33 CFR 1.05-1 (c)(4))

Dated: December 12, 1972.

J. D. McCann,
Acting Chief, Office of Marine Environment and Systems.

[FR Doc.72-21650 Filed 12-15-72;8:46 am]

Federal Aviation Administration

[14 CFR Part 71]

[Airspace Docket No. 72-WE-47]

CONTROL ZONE

Proposed Designation

The Federal Aviation Administration is considering an amendment to Part 71 of the Federal Aviation Regulations that would establish a new transition area at Gila Bend, Ariz.

Interested persons may participate in the proposed rule making by submitting such written data, views, or arguments as they may desire. Communications should be submitted in triplicate to the Chief, Airspace and Procedures Branch, Federal Aviation Administration, 5651 West Manchester Boulevard, Post Office Box 92007, Worldway Postal Center, Los Angeles, CA 90009. All communications received within 30 days after publication of this notice in the Federal Register will be considered before action is taken on the proposed amendment. No public hearing is contemplated at this time, but arrangements for informal conferences with Federal Aviation Administration officials may be made by contacting the Regional Air Traffic Division Chief. Any data, views, or arguments presented during such conferences must also be submitted in writing in accordance with this notice in order to become part of the record for consideration. The proposal contained in this notice may be changed in the light of comments received.

A public docket will be available for examination by interested persons in the office of the Regional Counsel, Federal Aviation Administration, 5651 West Manchester Boulevard, Los Angeles, CA 90045.

It is proposed to establish a new transition area floored at 5,500 feet m.s.l. This additional controlled airspace is required so that air traffic control services may be provided for Luke AFB aircraft while operating within and recovering from the restricted area complex, south of Gila Bend while operating below 14,500 feet m.s.l.

In consideration of the foregoing, the FAA proposes the following airspace action.

In § 71.181 (37 F.R. 2143) the following transition area is added:

GILA BEND, ARIZ.

That airspace extending upward from 5,500 m.s.l. bounded on the north and northeast by the south and southwest edges of V-66, on the east by longitude 111°45'00" W., on the south by latitude 32°27'00" N., and on the west by longitude 113°35'00" W.

This amended is proposed under the authority of section 307(a) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1348 (a)), and of section 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).

Issued in Los Angeles, Calif., on December 4, 1972.

Robert O. Blanchard,
Acting Director, Western Region.

[FR Doc.72-21644 Filed 12-15-72;8:46 am]

[14 CFR Part 73]

[Airspace Docket No. 72-SO-113]

RESTRICTED AREAS

Proposed Designation

Correction

In F.R. Doc. 72-20962 appearing at page 26046 of the issue for Thursday, December 7, 1972, the following changes should be made in the descriptions of the restricted areas:

1. In Area "G" the first number of the fifth line, reading "46'", should read "56'".

2. In Area "H" the designation in the ninth line, reading "34°50'35''", should read, "34°59'35''".

CIVIL AERONAUTICS BOARD

[14 CFR Part 241]

[Docket No. 23166; EDR-196C]

CREDIT LIMITATION FOR CERTIFICATED ROUTE AIR CARRIERS

Termination of Proposed Rule Making

DECEMBER 12, 1972.

By advance notice of proposed rule making, EDR-196, dated February 25, 1971, 36 F.R. 4627, the Board stated that it was considering a proposal to regulate the extension of credit by certificated route air carriers to all classes of their customers. The draft rule would have barred the extension of credit by a certificated route air carrier to any customer for more than $1,000 or for longer than 60 days, unless the carrier and the customer enter into a written agreement which would, in accordance with standards established by the carrier and published in its filed tariffs, provide reasonable assurance that the indebtedness would be fully paid on its due date. The draft rule would also have provided for an annual report to be filed by each such carrier, setting forth the amount and age of each customer's outstanding indebtedness.

A principal comment was received from the Airline Finance and Accounting Conference of Air Transport Association (ATA), on behalf of all trunkline carriers, eight local service carriers, and one foreign air carrier, with supplemental comments filed by three trunkline carriers. In addition, comments were filed by the Flying Tiger Line, Inc. (Flying Tiger), Univac Division of Sperry Rand Corp., Hawaii Air Cargo Shippers Association, Inc., and by the State of California and its Public Utilities Commission (California PUC). All of the comments, except those of Flying Tiger and California PUC, opposed the entire draft rule, and Flying Tiger opposed it in part.

Upon its consideration of those comments, the Board withdrew the proposal described in its advance notice, and proposed a substitute rule which would have required only the filing of annual reports as to customer indebtedness but would have applied to all certificated air carriers, including supplementals. (EDR-196B, dated April 5, 1972, 37 F.R. 7216.) The proposed report would have consisted of a schedule (Schedule B-16 of Form 41, a copy of which was attached to the notice) setting forth a list of every individual account receivable which, as of the end of the preceding calendar year: (1) Had a principal balance in excess of $10,000 which had been outstanding for 60 days or more; or (2) having a principal balance of more than $1,000, had been directly expensed or charged to a reserve as uncollectible.

Comments in opposition to EDR-196B have been received from ATA and from Seaboard World Airlines, Inc. (Seaboard). Both parties oppose the proposed rule on the principal grounds that the rule is not necessary at the present time and thus places an unjustified burden on the carriers. Trans International Airlines, Inc. (TIA), although not opposed to the proposed rule, has filed a comment requesting that the report be limited to U.S.A.R. Account No. 1240, Accounts Receivable-General Traffic.

We have now determined, for the following reasons, to terminate this proceeding.

At the outset, it should be noted that subsequent to our issuance of the supplemental notice proposing an annual credit report rule (EDR-196B, supra), we adopted a new rule, pursuant to section 401 of the Federal Election Campaign Act of 1971, restricting the extension of unsecured credit by all air carriers to political candidates (Part 374a,

set forth in SPR-53, adopted May 3, 1972, 37 F.R. 9386). This intervening rule, which specifically restricts the extension of unsecured credit by air carriers in connection with air transportation for political purposes, effectively treats one of the major sources of the problem of credit abuse which underlay the instant proceedings. Part 374a thus largely obviates the need for adopting a credit rule which would apply generally to all classes of customers of air carriers.

Moreover, recent staff reviews have given us grounds to conclude tentatively that the remaining major source of credit abuse in the air transportation industry is found in the extension of unsecured credit by air carriers to air freight forwarders. Accordingly, we are issuing, contemporaneously herewith, notice of proposed rule making[1] to amend Part 241 (Uniform System of Accounts and Reports for Certificated Air Carriers) so as to deal specifically with that particular problem. The proposed rule, as discussed in the explanatory statement thereto, would require route air carriers to file monthly reports as to the amounts due from domestic air freight forwarders, international air freight forwarders and certain foreign air freight forwarders.

Consistent with our above described actions, we have concluded that specific regulations in particular major problem areas involving the extension of credit by certificated air carriers are preferable to, and supplant the need for, a general rule imposing an annual report requirement on all certificated air carriers with respect to all classes of the shipping and traveling public.

Upon consideration of the foregoing, reflecting our substantial doubts as to the advisability of adopting the rule proposed by EDR-196B, with or without modification, we have determined, as indicated above, to withdraw the proposed amendment to Part 241.

Accordingly, the Board hereby terminates the rule making proceeding in this docket.

(Sec. 204(a) of the Federal Aviation Act of 1958, as amended; 72 Stat. 743; 49 U.S.C. 1324)

By the Civil Aeronautics Board.

[SEAL] HARRY J. ZINK,
Secretary.

[FR Doc.72-21638 Filed 12-15-72;8:45 am]

[14 CFR Part 241]

[Docket No. 24999; EDR-238]

RECEIVABLES DUE FROM AIR FREIGHT FORWARDERS, INTERNATIONAL AIR FREIGHT FORWARDERS, AND FOREIGN AIR FREIGHT FORWARDERS

Proposed Schedule B-15

DECEMBER 12, 1972.

Notice is hereby given that the Civil Aeronautics Board has under consideration a proposed amendment of Part 241 of the Economic Regulations (14 CFR Part 241) which would require route air carriers to report monthly the amounts due from air freight forwarders, international air freight forwarders, and foreign indirect air carriers of property only which hold a section 402 permit (foreign air freight forwarders), and an aging of these amounts, on a new Schedule B-15 of the CAB Form 41 report. The principal features of the proposed rule are set forth in the attached explanatory statement, and the proposed amendment is set out in the proposed rule. The amendment is proposed under the authority of sections 204(a) and 407 of the Federal Aviation Act of 1958, as amended, 72 Stat. 743 and 766; 49 U.S.C. 1324 and 1377.

Interested persons may participate in the proposed rule making through submission of twelve (12) copies of written data, views, or arguments pertaining thereto, addressed to the Docket Section, Civil Aeronautics Board, Washington, D.C. 20428. All relevant material received on or before January 15, 1973, will be considered before taking final action on the proposed rule. Copies of such communications will be available for examination by interested persons in the Docket Section of the Board, Room 712, Universal Building, 1825 Connecticut Avenue NW., Washington, DC, upon receipt thereof.

By the Civil Aeronautics Board.

[SEAL] HARRY J. ZINK,
Secretary.

EXPLANATORY STATEMENT

A recent review of the major air carriers by the Board's audit staff disclosed that a large percentage of receivables from air freight forwarders recorded on the carriers' books was more than 30 days old. Specifically, of the total $28,658,000 outstanding air freight forwarder receivables, $13,525,000 (47 percent) was more than 30 days old. By carrier, the percentages of overdue to total ranged from a low of 10 percent for one carrier to a high of 80 percent for another. These credit practices are in clear violation of the carriers' tariff Rule 58, CAB No. 96, issued by Air Tariff Publishers, Inc., agent, which provides that, as a general rule, when credit terms are extended, billing must be made within 10 days and payment must be received within 10 days of billing.

The Board is concerned that these improper credit practices are resulting in bad debt losses to air carriers and consequently increasing cost of services to the traveling and shipping public. In this connection, it was found that two air freight forwarders currently in bankruptcy owed carriers a total of $1,727,000 and $495,000, respectively. It is believed that little, if any, recovery will be experienced in these cases.

In light of its concern, the Board proposes herein to monitor the carriers' compliance with their tariffs by requiring all route air carriers to report monthly the amounts due from air freight forwarders, international air freight forwarders, and foreign air freight forwarders, and the age of these amounts. The vehicle for reporting would be a new Schedule B-15 of CAB Form 41 (attached hereto as Appendix A)[1] which would be required to be filed 30 days after the end of the reporting month. Reporting on Schedule B-15 would apply only to receivables of $5,000 or more per forwarder, as recorded on the carrier's books on the last day of the reporting month. The cutoff of $5,000 is proposed since it is felt that any losses under this amount would have only a minimal financial impact on most of the carriers. Consistent with our treatment of all other Form 41 reports, it is the Board's intention to make Schedule B-15 available to the public.

In the course of the Board's audit staff survey discussed above, many carriers expressed the opinion that due to billing procedures, the 10-day billing provision of the tariff is unrealistic, in that it does not allow sufficient time to process bills that originate at field stations and flow through the central office for auditing and billing. The carriers further stated that they cannot force payment on the air freight forwarders, and that their only alternative is to put a delinquent air freight forwarder on a "cash only" basis. Finally, it appeared to be the consensus of the carriers that they should not be required to press an air freight forwarder for receivables which are only a few months overdue, where experience indicates that payment will eventually be made, lest they lose the air freight forwarder as a customer.

Notwithstanding the foregoing, it is the Board's intention to vigorously enforce compliance with the tariff rules by following up violations with appropriate enforcement action. To the extent that any carrier believes that its tariff rules are unrealistic, it is incumbent upon that carrier to file such changes as it deems necessary, and we shall in due course determine the lawfulness of such changes.

The Board tentatively believes that a rule regulating the extension of credit to forwarders would be useful because such a large percentage of a forwarder's overall expenses is comprised of the cost of air transportation. Thus, if a forwarder is in arrears in his indebtedness to air carriers in substantial amounts for extended periods of time, it may well be indicative of his insolvency and possible imminent bankruptcy. Indeed, as stated above, we have already found instances where the receipt of large amounts of credit from air carriers has been a principal factor in bringing about the insolvency and eventual bankruptcy of air freight forwarders and international air freight forwarders. For that reason alone, the Board feels that a direct air carrier should not permit a large amount of receivables from a forwarder

[1] EDR-238, Docket 24999.

[1] Filed as part of the original document.

to remain outstanding for an extended period of time.

The proposed reports would cover extensions of credit to all air freight forwarders, including those which are international or foreign. On the other hand, the proposed rule would apply only to certificated route carriers, since supplemental air carriers do not appear to extend credit to their customers.

PROPOSED RULE

It is proposed to amend Part 241 of the Economic Regulations (14 CFR Part 241) as follows:

1. By amending section 22—General reporting instructions as follows:

A. Add new Schedule B–15 to the list in paragraph (a) titled "List of Schedules in CAB Form 41 Report" as follows:

LIST OF SCHEDULES IN CAB FORM 41 REPORT

Schedule No.	Schedule title	Filing	
		Frequency	Postmark interval (days)
* * *	* * *	* * *	* * *
B–14	Summary of Property Obtained Under Long-Term Leases	do	
B–15	Receivables Due from Freight Forwarders	Monthly	
B–41	Investments Held by, or for the Account of, Respondent	Annually	
* * *	* * *	* * *	* * *

B. Add new Schedule B–15 to the list in paragraph (a) titled "Due Dates of Schedules in CAB Form 41 Report" as follows:

DUE DATES OF SCHEDULES IN CAB FORM 41 REPORT

Due Date [1]	*Schedule Number*
Jan. 30	B–1, B–15, P–1(a), T–1, T–2, T–3, T–7, T–41
* * *	* * *
Mar. 1	B–1, B–15, P–1(a), T–1, T–7
Mar. 30	B–1, B–9, B–15, B–41, B–42, B–43, B–44, B–46, P–1(a), P–41, G–41, G–42, G–43, G–44, T–1, T–7
Apr. 30	B–1, B–15, P–1(a), T–1, T–2, T–3, T–7
* * *	* * *
May 30	B–1, B–15, P–1(a), T–1, T–7
June 30	B–1, B–15, P–1(a), T–1, T–7
July 30	B–1, B–15, P–1(a), T–1, T–2, T–3, T–7
* * *	* * *
Aug. 30	B–1, B–15, P–1(a), T–1, T–7
Sept. 30	B–1, B–15, P–1(a), T–1, T–2, T–3, T–7
Oct. 30	B–1, B–15, P–1(a), T–1, T–7, T–41
* * *	* * *
Nov. 30	B–1, B–15, P–1(a), T–1, T–7
Dec. 30	B–1, B–15, P–1(a), T–1, T–7

[1] Due dates falling on a Saturday, Sunday, or national holiday will become effective the first following working day.

2. By amending section 23—Certification and balance sheet elements by inserting, following the instructions prescribed for Schedule B–14, the following:

Schedule B–15 Receivables Due From Air Freight Forwarders, International Air Freight Forwarders and Foreign Air Freight Forwarders

(a) This schedule shall be filed by each route air carrier.

(b) A complete report shall be made on this schedule for the overall or system operations conducted by the air carrier.

(c) Column (1) shall reflect the name of each air freight forwarder (as defined in Part 296 of this subchapter), international air freight forwarder (as defined in Part 297 of this subchapter), and foreign air freight forwarder (i.e., a foreign indirect air carrier of property only holding a section 402 permit), to whom credit has been extended by the reporting carrier in an amount which was recorded on the carrier's books as a receivable of $5,000 or more on the last day of the reporting month (whether or not payment thereof is overdue).

(d) Column (2) shall reflect for each forwarder listed in column (1) the exact amount of such receivable, as recorded on the carrier's books on the last day of the reporting month.

(e) Columns (3) through (6) shall reflect the portions, if any, of the amount reported in column (2) which had been receivable for a period of less than 30 days, for a period of 30 to 60 days; for a period of 61 to 90 days; and for a period of more than 90 days, respectively.

* * * * *

[FR Doc.72–21639 Filed 12–15–72;8:45 am]

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 180]

METHOMYL

Proposed Tolerance for Pesticide Chemicals in or on Raw Agricultural Commodities

Dr. C. C. Compton, Coordinator, Interregional Research Project No. 4, State Agricultural Experiment Station, Rutgers University, New Brunswick, N.J. 08903, on behalf of the IR–4 Technical Committee and the Agricultural Experiment Stations of Indiana and Oregon submitted a petition (PP 3E1303), proposing establishment of a tolerance for residues of the insecticide methomyl (*S*-methyl *N*-[(methylcarbamoyl)oxy]thioacetimidate) in or on the raw agricultural commodity mint hay at 2 parts per million.

Based on consideration given the data submitted in the petition and other relevant material, it is concluded that:

1. The insecticide is useful for the purpose for which the tolerance is proposed.

2. There is no reasonable expectation of residues in eggs, meat, milk, or poultry, and § 18.6(a)(3) applies.

3. The proposed tolerance will protect the public health.

Therefore, pursuant to provisions of the Federal Food, Drug, and Cosmetic Act (sec. 408(e), 68 Stat. 514; 21 U.S.C. 346a(e)), the authority transferred to the Administrator of the Environmental Protection Agency (35 F.R. 15623), and the authority delegated by the Administrator to the Deputy Assistant Administrator for Pesticides Programs (36 F.R. 9038), it is proposed that § 180.253 be amended by revising the paragraph "2 parts per million * * *", as follows:

§ 180.253 Methomyl; tolerances for residues.

* * * * *

Two parts per million in or on beans (succulent), grapefruit, lemons, mint hay, oranges, and tangerines.

* * * * *

Any person who has registered or submitted an application for the registration of an economic poison under the Federal Insecticide, Fungicide, and Rodenticide Act containing any of the ingredients listed herein may request, within 30 days after publication hereof in the FEDERAL REGISTER, that this proposal be referred to an advisory committee in accordance with section 408(e) of the act.

Interested persons may, within 30 days after publication hereof in the FEDERAL REGISTER, file with the Hearing Clerk, Environmental Protection Agency, Room 3902A, Fourth and M Streets SW., Waterside Mall, Washington, D.C. 20460, written comments (preferably in quintuplicate) regarding this proposal. Comments may be accompanied by a memorandum or brief in support thereof. All written submissions made pursuant to this proposal will be made available for public inspection at the Office of the Hearing Clerk.

Dated: December 11, 1972.

EDWIN L. JOHNSON,
Acting Deputy Assistant Administrator for Pesticides Programs.

[FR Doc.72–21673 Filed 12–15–72;8:48 am]

[40 CFR Part 180]

MONURON

Proposed Revocation of Tolerance for Pesticide Chemicals in or on Raw Agricultural Commodities

In accordance with provisions of the Federal Food, Drug, and Cosmetic Act

(21 U.S.C. 346a) tolerances were established for residues of the herbicide monuron (3-(*p*-chlorophenyl)-1,1-dimethylurea) in or on the raw agricultural commodities asparagus at 7 parts per million and avocados, citrus citron, cottonseed, grapefruit, grapes, kumquats, lemons, limes, onions (dry bulb only), oranges, pineapple, spinach, sugarcane, and tangerines at 1 part per million (§ 180.108).

The above tolerances were established on the basis of toxicity studies which were conducted in 1952 and which do not meet current requirements. Monuron was placed in the first priority group for additional testing by the Technical Panel for Carcinogenesis of the Report of the Commission of the Secretary of Health, Education, and Welfare on Pesticides and Their Relationship to Environmental Health (December 1969, p. 473). A Russian publication ("The Carcinogenic Action of the Herbicide Monuron," Vaprosy onkologii, vol. 16, pp. 51–53 (1970)) claims that monuron is carcinogenic in both rats and mice.

Based upon the above information and on the initiative of the Administrator, it is concluded that there is a reasonable basis to propose revocation of the established tolerances for residues of monuron.

Therefore, pursuant to provisions of the Federal Food, Drug, and Cosmetic Act (sec. 408 (e), (m), 68 Stat. 514, 517; 21 U.S.C. 346a (e), (m)), under authority transferred to the Administrator of the Environmental Protection Agency (35 F.R. 15623), and delegated by him to the Deputy Assistant Administrator for Pesticides Programs (36 F.R. 9038), it is proposed that Part 180 be amended by deleting § 180.108 *Monuron; tolerances for residues.*

Any person who has registered or submitted an application for the registration of an economic poison under the Federal Insecticide, Fungicide, and Rodenticide Act containing any of the ingredients listed herein may request, within 30 days after publication hereof in the FEDERAL REGISTER, that this proposal be referred to an advisory committee in accordance with section 408(e) of the act.

Interested persons may, within 30 days after publication hereof in the FEDERAL REGISTER, file with the Hearing Clerk, Environmental Protection Agency, Room 3902A, Fourth and M Streets SW., Waterside Mall, Washington, D.C. 20460, written comments (preferably in quintuplicate) regarding this proposal. Comments may be accompanied by a memorandum or brief in support thereof. All written submissions made pursuant to this proposal will be made available for public inspection at the office of the Hearing Clerk.

Dated: December 11, 1972.

EDWIN L. JOHNSON,
Acting Deputy Assistant Administrator for Pesticides Programs.

[FR Doc.72-21674 Filed 12-15-72;8:48 am]

FEDERAL HOME LOAN BANK BOARD

[12 CFR Part 545]

[No. 72-1375]

FEDERAL SAVINGS AND LOAN SYSTEM

Service Corporation Joint Ventures

NOVEMBER 22, 1972.

Under § 545.9-1 of the rules and regulations for the Federal Savings and Loan System (12 CFR 545.9-1), a service corporation in which a Federal savings and loan association may invest must apply to the Board for permission to engage in a joint venture with other persons in approved activities. In light of a General Counsel's opinion concluding that a service corporation may not engage in joint ventures of a "perpetual" nature, the Federal Home Loan Bank Board considers it advisable to provide that service corporation joint ventures must be limited to a single undertaking or series of related undertakings with limited duration. However, it would continue to permit a service corporation to use the corporate form for its joint ventures. Accordingly, it is proposed to amend paragraph (k) of said § 545.9-1 to read as set forth below.

Interested persons are invited to submit written data, views, and arguments to the Office of the Secretary, Federal Home Loan Bank Board, 101 Indiana Avenue NW., Washington, DC 20552, by January 19, 1973, as to whether this proposal should be adopted, rejected, or modified. Written material submitted will be available for public inspection at the above address unless confidential treatment is requested or the material would not be made available to the public or otherwise disclosed under § 505.6 of the general regulations of the Federal Home Loan Bank Board (12 CFR 505.6).

§ 545.9-1 Service corporation.

* * * * *

(k) *Definition of "joint venture."* The term "joint venture" as used in this section means any joint undertaking, with one or more persons or legal entities in any form, which is limited to a single undertaking or series of related undertakings with limited duration. A "joint venture" may take the form of a joint tenancy, tenancy in common, partnership, or investment in a corporation other than a wholly owned subsidiary.

(Sec. 5, 48 Stat. 132, as amended; 12 U.S.C. 1464. Reorg. Plan No. 3 of 1947, 12 F.R. 4981, 3 CFR, 1943-48 Comp., p. 1071)

By the Federal Home Loan Bank Board.

[SEAL] JACK CARTER,
Secretary.

[FR Doc.72-21687 Filed 12-15-72;8:49 am]

[12 CFR Parts 561, 563, 570]

[No. 72-1376]

FEDERAL SAVINGS AND LOAN INSURANCE CORPORATION

Service Corporation Subsidiaries of Insured Institutions

NOVEMBER 22, 1972.

Under § 545.9-1 of the rules and regulations for the Federal Savings and Loan System (12 CFR 545.9-1), a Federal savings and loan association is permitted to invest in a subsidiary corporation known as a service corporation. Under various provisions of State law, other insured institutions are permitted to invest in similar subsidiary corporations. Such subsidiaries are permitted, under both Federal and State law, to engage in certain activities which the parent insured institution may not engage in directly, because of the risk involved. However, a number of regulations of the Federal Home Loan Bank Board which impose certain limitations and requirements on all insured institutions do not presently apply to the service corporations of these institutions. In light of certain abuses which have come to the Board's attention, the Board considers it advisable to amend its regulations relating to operations of insured institutions to make certain limitations and requirements also applicable to service corporation subsidiaries. Accordingly, the Board proposes to amend Parts 561, 563, and 570 of the rules and regulations for insurance of accounts as set forth below.

Part 561 would be amended by adding definitions of the terms "affiliate," "service corporation," and "service corporation affiliate."

Part 563 would be amended to make applicable to "service corporations" and "service corporation affiliates" the present regulatory provisions in the following areas:

1. Limitations on loans to one borrower (§ 563.9-3).
2. Management and financial policies (§ 563.17(a)).
3. Requirements relating to examinations, audits, appraisals, and maintenance of records (§ 563.17-1).
4. Reevaluation of assets and adjustments (§ 563.17-2).
5. Reporting requirements (§§ 563.18 and 563.18-1).
6. Accounting principles and procedures (§ 563.23-3).

In addition, the Board proposes to set forth guidelines, for both insured institutions and service corporations, with respect to compensation of officers, directors, and employees (§ 563.17(b) and surety bond coverage (§ 563.19).

New regulatory requirements would be added with respect to separateness of service corporation operations (§ 563.36 (a)), limited liability for service corporation debt (§ 563.36(b)), and use of salvage power to assist service corporation (§ 563.37).

Part 570 would be amended by the addition of a statement of policy setting

forth guidelines relating to the requirements of § 563.36(a) concerning separateness of service corporation operations.

Interested persons are invited to submit written data, views, and arguments to the Office of the Secretary, Federal Home Loan Bank Board, 101 Indiana Avenue NW., Washington, DC 20552, by January 19, 1973, as to whether this proposal should be adopted, rejected, or modified. Written material submitted will be available for public inspection at the above address unless confidential treatment is requested or the material would not be made available to the public or otherwise disclosed under § 505.6 of the general regulations of the Federal Home Loan Bank Board (12 CFR 505.6).

1. It is proposed to amend Part 561 by adding new §§ 561.24, 561.25, and 561.26 thereto to read as follows:

§ 561.24 Affiliate.

An "affiliate" of an insured institution, unless otherwise defined, includes any corporation, business trust, association, or other similar organization—

(a) Of which an insured institution, directly or indirectly, owns or controls either a majority of the voting shares or more than 50 percent of the number of shares voted for the election of its directors, trustees, or other persons exercising similar functions at the preceding election, or controls in any manner the election of a majority of its directors, trustees, or other persons exercising similar functions; or

(b) Of which control is held, directly or indirectly, through stock ownership or in any other manner, by the shareholders of an insured institution who own or control either a majority of the shares of such insured institution or more than 50 percent of the number of shares voted for the election of directors of such insured institution at the preceding election, or by trustees for the benefit of the shareholders of any such insured institution; or

(c) Of which a majority of its directors, trustees, or other persons exercising similar functions are directors of any one insured institution.

§ 561.25 Service corporation.

A "service corporation" of an insured institution is any corporation, any of the capital stock of which is owned by the insured institution, which engages, directly or indirectly, in any activities similar to activities which may be engaged in by a service corporation in which a Federal savings and loan association may invest under § 545.9–1 of this chapter.

§ 561.26 Service corporation affiliate.

A "service corporation affiliate" of an insured institution is any service corporation which is an affiliate of an insured institution.

2. It is proposed to amend Part 563 by revising paragraphs (b) and (c) of § 563.9–3, § 563.17, paragraphs (a), (b), and (c)(6) of § 563.17–1, paragraphs (b), (c), and (d) of § 563.17–2, § 563.18, paragraphs (f) and (h) of § 563.18–1, paragraph (d) of § 563.19, and § 563.23–3 and by adding new §§ 563.36 and 563.37 to read as follows:

§ 563.9–3 Loans to one borrower.

* * * * *

(b) *Limitations.* No insured institution shall have outstanding any loan on the security of real estate to one borrower, as defined in paragraph (a) of this section, if the sum of: (1) The amount of such loan and (2) the total balances of all outstanding loans on the security of real estate owed to such institution and its service corporation affiliates by such borrower exceeds an amount equal to 10 percent of such institution's withdrawable accounts or an amount equal to the sum of such institution's net worth, whichever amount is less: *Provided,* That, notwithstanding any other limitation of this sentence, any such loan may be made if the sum of subparagraphs (1) and (2) of this paragraph does not exceed $100,000 or if such loan is secured by a first lien on low-rent housing.

(c) *Determination by institution; maintenance of records.* If an insured institution or service corporation affiliate thereof makes a loan to any one borrower, as defined in paragraph (a) of this section, in an amount which, when added to the total balances of all outstanding loans on the security of real estate owed to such institution and its service corporation affiliates by such borrower, exceeds $100,000, the records of such institution or its service corporation affiliate with respect to such loan shall include documentation showing that such loan was made within the limitations of paragraph (b) of this section; for the purpose of such documentation such institution or service corporation affiliate may require, and may accept in good faith, a certification by the borrower identifying the persons, entities, and interests described in the definition of one borrower in paragraph (a) of this section.

§ 563.17 Management and financial policies.

(a) For the protection of its insured members and other insured institutions, each insured institution and service corporation thereof shall maintain safe and sound management and shall pursue financial policies that are safe and consistent with economical home financing and the purposes of insurance of accounts and are appropriate to their respective types of operations; in implementing this regulation the Corporation will take into consideration that service corporations may be authorized to engage in activities which involve a higher degree of risk than do activities permitted to insured institutions.

(b) Compensation to officers, directors, and employees of each insured institution and its service corporations shall not be in excess of that which is reasonable and commensurate with their duties and responsibilities.

§ 563.17–1 Examinations and audits; appraisals; establishment and maintenance of records.

(a) *Examinations and audits.* (1) Each insured institution and affiliate thereof shall be examined periodically, and may be examined at any time, by the Corporation, with appraisals when deemed advisable, in accordance with general policies from time to time established by the Board. The cost, as computed by the Corporation, of any examination made by it, including office analysis thereof, overhead, per diem, travel expense, and other supervision by the Board, shall be paid by the institution examined, except that in the case of a service corporation affiliate of a Federal savings and loan association such cost shall be paid by such affiliate.

(2) Each insured institution and service corporation thereof shall be audited at least once in each calendar year by auditors and in a manner satisfactory to the Corporation in accordance with general policies from time to time established by the Board. The Corporation may at any time make, or cause to be made, an audit of an insured institution or service corporation thereof, with appraisals when deemed advisable. An insured institution and each of its service corporations shall promptly file with the Corporation, through the Board's Chief Examiner of the Federal Home Loan Bank District in which the home office of such institution is located, a copy of the report of each audit, other than audits made by the Corporation, made pursuant to this subparagraph (2). The cost of any audit made pursuant to this subparagraph (2) shall be paid by the insured institution or service corporation audited.

(b) *Appraisals.* (1) Unless otherwise ordered by the Board, appraisal of real estate by the Corporation in connection with any examination or audit of an insured institution, affiliate, or service corporation shall be made by an appraiser, or by appraisers, selected by the Board's Chief Examiner of the Federal Home Loan Bank District in which such institution is located. The cost of such appraisal shall promptly be paid by such insured institution, affiliate, or service corporation direct to such appraiser or appraisers upon receipt by the institution, affiliate, or service corporation of a statement of such cost as approved by such Chief Examiner. A copy of the report of each appraisal made by the Corporation pursuant to any of the foregoing provisions of this section shall be furnished to the insured institution within a reasonable time, not to exceed 90 days, following the completion of such appraisals and the filing of a report thereof by the appraiser, or appraisers, with such Chief Examiner.

(2) The Corporation may obtain at any time, at its expense, such appraisals of any of the assets, including the security therefor, of an insured institution, affiliate, or service corporation as the corporation deems appropriate.

(c) *Establishment and maintenance of records.* To enable the Corporation to examine insured institutions and affiliates, and audit insured institutions, affiliates, and service corporations, pursuant to the provisions of paragraph (a) of this section, each insured institution, affiliate, and service corporation shall establish and maintain such accounting and other records as will provide an accurate and complete record of all business transacted by it, and the documents, files and other material or property comprising said records shall at all times be available for such examination and audit, wherever any of said records, documents, files, material or property may be. Without any limitation on the generality of the foregoing sentence and without modification of any other requirement with respect to the establishment and maintenance of records to which such institution is subject, each insured institution shall establish and maintain the following records:

* * * * *

(6) *Other records.* Each insured institution and service corporation thereof shall establish and maintain such other records as are required by statute or by any other regulation to which such institution or service corporation is subject.

* * * * *

§ 563.17–2 Reevaluation of assets; adjustment of book value; adjustment charges.

* * * * *

(b) *By examiners.* In connection with each examination of an insured institution or service corporation affiliate, the Board's examiner shall make such reevaluation of such institution's or service corporation affiliate's assets (exclusive of insured or guaranteed loans) as he deems advisable or necessary. Any such reevaluation of real estate shall be based on an appraisal as provided by § 563.17–1, except that reevalulation of parcels of real estate that are similar in all essential respects may be based on an appraisal of one or more of such parcels.

(c) *Adjustment of book value.* If the reevaluation of assets, pursuant to paragraph (b) of this section, or otherwise as ordered by the Corporation, discloses that any asset of an insured institution or service corporation is over-valued on its books (exclusive of over-valuation due to fluctuations in value which are caused by changes in market interest rates), such institution or service corporation shall, at the direction of the Supervisory Agent, make an adjustment of the book value of such asset; unless otherwise directed by the Supervisory Agent, such institution shall make such adjustment by establishing and maintaining a specific reserve in an amount equal to the over-valuation.

(d) *Adjustment charges.* Adjustment of the book value of an asset by an insured institution or service corporation pursuant to any provision of this section may be made by charge against such institution's or service corporation's earnings for the period in which such charge is made, or against surplus, undivided profits, or reserves established for the sole purpose of absorbing losses. Any recovery of any portion of any amount previously charged against reserves established for the sole purpose of absorbing losses shall be credited to such reserves; such credit shall be in addition to all other required credits to such reserves. Any recovery of any portion of any amount previously charged against earnings shall be credited to earnings for the period in which such recovery is effected. For the purposes of this paragraph (d), any charge against a specific reserve established pursuant to any provision of this section shall be deemed to be a recovery on an asset the book value of which was previously adjusted unless such charge is made for the purpose of concurrently writing down the book value of such asset.

§ 563.18 Reports to the Corporation.

(a) *Periodic reports.* Each insured institution shall make such periodic reports of its affairs as may be prescribed by the Corporation on forms prescribed by the Corporation. Within 30 days following the date as of which any such report is made, the original and one copy thereof shall be forwarded to the Supervisory Agent for the Federal Home Loan Bank district in which the institution's home office is located. An insured institution which files the reports required by § 523.15 of this chapter thereby meets the requirements of the first two sentences of this section. Within 10 days following the last business day of each month, each insured institution shall make a report of such month's activities on forms prescribed by the Corporation. Each service corporation of an insured institution shall make such reports of its affairs, in such manner as may be prescribed by the Corporation on forms prescribed by the Corporation. The original and one copy of each such report shall be forwarded to the Corporation, Washington, D.C. 20552, and one copy shall be forwarded to the Federal Home Loan Bank of which the institution is a member.

(b) *Reports of loss.* Whenever an insured institution or service corporation thereof suffers a loss due to dishonesty of a director, officer, attorney, agent, or employee, or whenever a deductible amount specified in a bond is increased above the permissible deductible amount specified in the table in paragraph (b) of § 563.19, such insured institution or service corporation shall report promptly the facts concerning such loss or increase in writing to the Board's Chief Examiner for the Federal Home Loan Bank district in which the home office of such institution is located.

§ 563.18–1 Reports of change in control; other reports; form and filing of such reports.

* * * * *

(f) *Other reports.* The Corporation may also require insured institutions, service corporations, and individuals or other persons who have or have had any connection with the management of an insured institution or service corporation, including any present or former officers, directors, or controlling stockholders, to provide such periodic or other reports of disclosures as the Corporation may determine to be necessary or appropriate for the protection of investors or the Corporation.

* * * * *

(h) *Penalty for failure to report.* For the willful failure of any institution, service corporation, or person to submit, within the time prescribed by the Corporation, any report or disclosure required under this section, such institution, service corporation, or person shall be subject to a civil penalty of not more than $500 (which penalty shall be cumulative to any other remedies) for each day that such failure continues, which penalty the Corporation may recover by suit or otherwise for its own use. The Corporation in its discretion may, at any time before collection of such penalty (whether before or after the bringing of any action or other legal proceedings, the obtaining of any judgment or other recovery, or the issuance or levy of any execution or other legal process therefor), compromise or remit in whole or in part any such penalty.

* * * * *

§ 563.19 Bonds for directors, officers, employees, and agents; form of and amount of bonds.

* * * * *

(d) A service corporation of an insured institution shall maintain such bond coverage as may be appropriate considering the nature of its activities and the practice of other corporations engaged in similar activities.

§ 563.23–3 Accounting principles and procedures.

For purposes of examination by and reports to the Corporation and of compliance with this subchapter, each insured institution and service corporation shall:

(a) Prepare its financial statements and reports to the Corporation on the basis of generally accepted accounting principals;

(b) Prepare and maintain such books and records as will support its financial statements and reports to the Corporation and readily permit reconciliation of such statements and reports with its books and records; and

(c) Employ such specific principles or procedures on particular accounting or reporting matters as the Corporation may require by regulation or otherwise.

§ 563.36 Operation of service corporations; limited liability of insured institution for debt of service corporation.

(a) *General.* Each insured institution and service corporation thereof shall be

operated in a manner which demonstrates to the public the separate corporate existence of the service corporation and the insured institution. Regulations of the Corporation which apply both to insured institutions and service corporations shall not be construed as requiring operation of an insured institution and its service corporations as a single entity.

(b) *Service corporation debt.* Every instrument evidencing borrowing by a service corporation shall indicate that its parent insured institution is not liable, or in the case of a service corporation owned by more than one insured institution, that none of its parent insured institutions is liable, except that no such statement is required if the loan is guaranteed by a parent insured institution and the total amount of such guaranteed loan, together with all other guaranteed loans, direct loans, and direct investment by the insured institution in its service corporations, does not exceed the maximum investment permitted by law or regulation.

§ 563.37 Salvage power of insured institution to assist service corporation.

(a) *Salvage power and investment authority.* No insured institution, in the exercise of its salvage power or otherwise, shall, without the prior approval of the Corporation, make any contribution, loan, or guarantee of a loan made by any other person to its service corporation, or invest in its service corporation or assume any of its liabilities, if such contribution, loan, investment, guarantee, or assumption of liability, together with all guaranteed loans, direct loans, contributions and direct investment by the insured institution in its service corporations, would exceed the maximum investment permitted by law or regulation.

(b) *Applications for approval.* Each application by an insured institution to the Corporation for its approval to make any such contribution, loan, investment, guarantee, or assumption of liability shall establish, to the satisfaction of the Corporation, in a written statement, that the action it proposes is for the protection of the insured institution's investment and is consistent with safe, sound, and economical home financing. The application must describe and discuss alternative solutions to the service corporation's financial problem, including solutions which do not involve increased investment by the insured institution, and contain such other information as the Corporation may require. In the case of a State-chartered insured institution, such application shall be accompanied by an opinion of counsel that the proposed action is within the authority of the insured institution. Every contribution, loan, investment, guarantee, or assumption of liability made pursuant to approval by the Corporation under this section shall comply with the terms and conditions of such approval.

3. It is proposed to amend Part 570 by adding a new § 570.10 thereto as follows:

§ 570.10 Separate corporate existence of a service corporation.

(a) *General.* If an insured institution and its service corporation fail to maintain their separate corporate existence, a court, for equitable reasons in an extreme situation, might hold the institution liable for the obligations of its service corporation. To insure judicial recognition of the separate corporate existence of service corporations, the institution and its service corporations should operate so that: (1) Their respective business transactions, accounts, and records are not intermingled, (2) the formalities of separate corporate procedures for each corporation are observed, (3) each corporation is adequately financed as a separate unit in the light of normal obligations reasonably foreseeable in a business of its size and character, (4) the respective enterprises are held out to the public as separate enterprises, and (5) one corporation does not dominate another to the extent that the latter is treated as a mere department of the former. In recommending such operating practices, the Board is not suggesting that a failure to follow one or more or all of such practices by an institution and its service corporation should cause a court to ignore the separate corporate existence of the service corporation.

(b) *Operation of service corporations.* Section 563.36(a) of this subchapter requires that an insured institution and its service corporations be operated in a manner which demonstrates their separate corporate existence. Failure to assure corporate separateness could result in serious risk to the insured institution and to the Corporation. In monitoring compliance with § 563.36(a), the Corporation will look for tributes of corporate separateness such as those contained in subsection (a) of this section.

(Secs. 402, 403, 407, 48 Stat. 1256, 1257, 1260, as amended; 12 U.S.C. 1725, 1726, 1730. Reorg. Plan No. 3 of 1947, 12 F.R. 4981, 3 CFR, 1943–48 Comp., p. 1071)

By the Federal Home Loan Bank Board.

[SEAL] JACK CARTER, *Secretary.*

[FR Doc.72-21688 Filed 12-15-72;8:49 am]

Notices

DEPARTMENT OF THE TREASURY

Bureau of Customs

POLYMERIZED CHLOROBUTADIENE, COMMONLY KNOWN AS POLYCHLOROPRENE RUBBER FROM JAPAN

Antidumping Proceeding Notice

On November 14, 1972, information was received in proper form pursuant to §§ 153.26 and 153.27, Customs regulations (19 CFR 153.26, 153.27), indicating a possibility that polymerized chlorobutadiene, commonly known as polychloroprene rubber, from Japan is being, or is likely to be, sold at less than fair value within the meaning of the Antidumping Act, 1921, as amended (19 U.S.C. 160 et seq.).

There is evidence on record concerning injury to or likelihood of injury to or prevention of establishment of an industry in the United States.

Having conducted a summary investigation as required by § 153.29 of the Customs regulations (19 CFR 153.29) and having determined as a result thereof that there are grounds for so doing, the Bureau of Customs is instituting an inquiry to verify the information submitted and to obtain the facts necessary to enable the Secretary of the Treasury to reach a determination as to the fact or likelihood of sales at less than fair value.

A summary of information received from all sources is as follows:

The information received tends to indicate that the prices of the merchandise sold for exportation to the United States are less than the prices for home consumption.

This notice is published pursuant to § 153.30 of the Customs regulations (19 CFR 153.30).

[SEAL] EDWIN F. RAINS,
Acting Commissioner of Customs.

Approved: December 13, 1972.

EUGENE T. ROSSIDES,
Assistant Secretary of the Treasury.

[FR Doc.72-21730 Filed 12-15-72;8:51 am]

Office of the Secretary

PERMANENT MAGNETS OF ALNICO OR CERAMIC MATERIAL FROM JAPAN

Notice of Tentative Negative Determination

DECEMBER 12, 1972.

Information was received on May 9, 1972, that permanent magnets of alnico or ceramic material from Japan were being sold at less than fair value within the meaning of the Antidumping Act, 1921, as amended (19 U.S.C. 160 et seq.) (referred to in this notice as "the Act"). This information was the subject of an "Antidumping Proceeding Notice" which was published in the FEDERAL REGISTER of June 8, 1972, on page 11487.

I hereby make a tentative determination that permanent magnets of alnico or ceramic material from Japan are not being, nor are likely to be, sold at less than fair value within the meaning of section 201(a) of the Act (19 U.S.C. 160 (a)).

Statement of reasons on which this tentative determination is based. The investigation revealed that the proper basis of comparison for fair value purposes is between purchase price or exporter's sales price, as applicable, and the adjusted home market price of similar merchandise.

Purchase price was calculated on the basis of the delivered-to-customer price with a deduction for inland freight.

Exporter's sales price was calculated by deducting from the resale price to unrelated purchasers in the United States transportation charges in Japan, ocean freight and insurance, United States duty, brokerage charges, United States inland freight, storage charges, commissions, and selling expenses, as appropriate.

Adjusted home market price was calculated on the basis of a delivered price with deductions for inland freight. Adjustments were made for applicable interest costs and for differences in the merchandise and packing.

Comparisons of purchase price or exporter's sales price, as applicable, with the adjusted home market price indicated that the adjusted home market price was not higher than either purchase price or exporter's sales price.

In accordance with § 153.33(b), Customs Regulations (19 CFR 153.33(b)), interested parties may present written views or arguments, or request in writing, that the Secretary of the Treasury afford an opportunity to present oral views.

Any requests that the Secretary of the Treasury afford an opportunity to present oral views should be addressed to the Commissioner of Customs, 2100 K Street NW., Washington, DC 20226, in time to be received by his office not later than 10 calendar days from the date of publication of this notice in the FEDERAL REGISTER.

Any written views or arguments should likewise be addressed to the Commissioner of Customs in time to be received by his office not later than 30 days from the date of publication of this notice in the FEDERAL REGISTER.

This tentative determination and the statement of reasons therefor are published pursuant to § 153.33 of the Customs regulations (19 CFR 153.33).

[SEAL] EUGENE T. ROSSIDES,
Assistant Secretary of the Treasury.

[FR Doc.72-21655 Filed 12-15-72;8:47 am]

DEPARTMENT OF THE INTERIOR

Bureau of Mines

[Bureau of Mines Manual]

CHIEF, DIVISION OF HELIUM, ET AL.

Redelegation of Authority Regarding Helium Act Amendments

The following redelegation is a portion of the Bureau of Mines Manual and the numbering system is that of the Manual. Redelegation of authorities issued August 20, 1968 (33 F.R. 11787) and November 11, 1959 (24 F.R. 9220), respectively, are revised to read as follows:

Part 215.4.1. *Delegation of Authority—Helium Act.* Pursuant to the authority vested in the Director, Bureau of Mines to exercise the authority conferred upon the Secretary of the Interior by sections 2, 3, 4, and 6 of the Helium Act Amendments of 1960 (Public Law 86-777; 50 U.S.C. 167, 167a, 167b, 167d), the following authorities are redelegated to the positions shown.

A. *To Execute Contracts for Sale of Helium and Rental of Shipping Containers.* Authority to execute and administer contracts pertaining to the sale and distribution of helium and rental of shipping containers in accordance with regulations promulgated by the Secretary of the Interior, prescribed relevant policies, and administrative instructions.

(1) Chief, Division of Helium.

(2) General Manager, Helium Operations.

(3) Chief, Branch of Administration, Helium Operations.

(4) Chief, Section of Procurement, Property, and Office Services, Branch of Administration, Helium Operations.

C. *To Issue and Approve Grazing Leases.* Authority to issue and approve leases, in accordance with established contracting procedures, to the surface of lands for grazing or other purposes when the same may be done without interfering with the production or storage of helium

(1) Chief, Division of Helium.
(2) General Manager, Helium Operations.

These authorities may not be redelegated.

Dated: December 7, 1972.

ELBURT F. OSBORN,
Director, Bureau of Mines.

[FR Doc.72-21672 Filed 12-15-72;8:48 am]

Office of the Secretary

[DES 72-116]

PROPOSED WILDERNESS AREA, SEMIDI NATIONAL WILDLIFE REFUGE, ALASKA

Notice of Availability of Draft Environmental Impact Statement

Pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969, Public Law 91-190, the Department of the Interior has prepared a draft environmental statement for a proposed wilderness area, located in Third Judicial Division, Alaska, and invites written comments within 45 days of this notice.

Under this proposal, 256,422 acres, of Semidi National Wildlife Refuge would be designated as wilderness within the National Wilderness Preservation System. The statement examines the environmental impacts of the proposed designation.

Copies of the draft statement are available for inspection at the following locations:

Bureau of Sport Fisheries and Wildlife, 6917 Seward Highway, Anchorage, AK 99502.
Bureau of Sport Fisheries and Wildlife, Office of Environmental Quality, Department of the Interior, Room 2246, 18th and C Streets, Washington, D.C. 20240.

Single copies may be obtained by writing the Chief, Office of Environmental Quality, Bureau of Sport Fisheries and Wildlife, Washington, D.C. 20240. Please refer to the statement number above.

Dated: December 8, 1972.

W. W. LYONS,
Deputy Assistant Secretary, Program Policy.

[FR Doc.72-21641 Filed 12-15-72;8:45 am]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Food and Drug Administration

OVER-THE-COUNTER DRUG PRODUCTS CONTAINING ANTIMICROBIAL INGREDIENTS FOR TREATMENT OR PROPHYLAXIS OF SPECIFIC DISORDERS

Safety and Efficacy Review; Request for Data and Information

The FDA is undertaking a review of all over-the-counter (OTC) drug products currently marketed in the United States, to determine that these OTC products are safe and effective for their labeled indications. This review will utilize expert panels working with FDA personnel.

A notice outlining procedures for this review was published in the FEDERAL REGISTER of May 11, 1972 (37 F.R. 9464).

To facilitate this review and a determination as to whether an OTC drug for human use is generally recognized as safe and effective and not misbranded under its recommended conditions of use, and to provide all interested persons an opportunity to present for the consideration of the reviewing experts the best data and information available to support the stated claims for all dosage forms containing antimicrobial agents for treatment or prophylaxis of specific disorders such as seborrhea, dandruff, acne, athletes foot, vaginitis, and otitis externa (swimmer's ear), the administration invites submission of data, published and unpublished, and other information pertinent to all active ingredients utilized in such preparations.

A notice was published in the FEDERAL REGISTER, April 4, 1972 (37 F.R. 6775), replacing a notice published January 7, 1972 (37 F.R. 235) inviting submission of data by interested parties on antimicrobial ingredients used in over-the-counter products. That notice excluded, but reserved for later consideration, OTC drugs containing antimicrobial agents offered for treatment or prophylaxis of specific disorders. Applicable data submitted in response to the January 7, 1972 or April 4, 1972 notices should be referenced but not submitted again.

FDA is aware that the following active ingredients are used in such products:

Coal Tars.
Sulfur.
Resorcinol.
Salicylic Acid.
Zinc Oxide.
Zinc Sulfate.
p-Chloro-m-Xylenol.
Boric Acid.
Thymol.
Menthol.
Benzoyl Peroxide.
Iodophors.
Quaternary Ammonium Salts.
8-Quinolinols.
Selenium Sulfide.
Zinc Pyrithione.
Alkyl Isoquinolinium Bromide.
Polyoxyethylene Ethers.
Phenols and Substituted Phenols.
Bismuth Crystal Violet.
Undecylenic Acid.
Undecylenate Salts.
Benzoic Acid.
Dichlorophene.
Triacetin (Glyceryl Triacetate).
Eucalyptol.
Tolnaftate.
Chlorohydroxyquinoline.
Sodium Propionate.
Thimerosal.

FDA has conducted a literature search on the following from the above list: salicylic acid, iodophors, quaternary ammonium salts, phenols and substituted phenols. FDA's Literature search covered the United States of America literature and other leading English language literature published since 1950 from the following sources:

Medlars (NLM and SUNY).
FDA Clinical Experience Abstracts.
Quarterly Cumulative Index Medicus.
Current List of Medical Literature.
Index Medicus.
JAMA Subject Index.
DeHaen Drugs in Use.
RINGDOC.
VETDOC.
International Pharmaceutical Abstracts.
Excerpta Medica.
Abstracts of World Medicine.
Biological Abstracts.
Chemical Abstracts.

The bibliography of the literature search is available to interested persons.

Interested persons are also invited to submit data on any other active antimicrobial agents used in the treatment or prophylaxis of specific disorders such as seborrhea, dandruff, acne, athletes foot, vaginitis, and otitis externa (swimmer's ear).

To be considered, eight copies of the data and/or views must be submitted, preferably bound, indexed, and on standard size paper (approximately 8½ by 11 inches). All submissions must be in the format described below:

OTC DRUG REVIEW INFORMATION

I. Label(s) and all labeling (preferably mounted and filed with the other data—facsimile labeling is acceptable in lieu of actual container labeling).

II. A statement setting forth the quantities of active ingredients of the drug.

III. Animal safety data.
A. Individual active components.
1. Controlled studies.
2. Partially controlled or uncontrolled studies.
B. Combinations of the individual active components.
1. Controlled studies.
2. Partially controlled or uncontrolled studies.
C. Finished drug product.
1. Controlled studies.
2. Partially controlled or uncontrolled studies.

IV. Human safety data.
A. Individual active components.
1. Controlled studies.
2. Partially controlled or uncontrolled studies.
3. Documented case reports.
4. Pertinent marketing experiences that may influence a determination as to the safety of each individual active component.
5. Pertinent medical and scientific literature.
B. Combinations of the individual active components.
1. Controlled studies.
2. Partially controlled or uncontrolled studies.
3. Documented case reports.
4. Pertinent marketing experiences that may influence a determination as to the safety of combinations of the individual active components.
5. Pertinent medical and scientific literature.
C. Finished drug product.
1. Controlled studies.
2. Partially controlled or uncontrolled studies.
3. Documented case reports.
4. Pertinent marketing experiences that may influence a determination as to the safety of the finished drug product.
5. Pertinent medical and scientific literature.

V. Efficacy data.
A. Individual active components.
1. Controlled studies.
2. Partially controlled or uncontrolled studies.
3. Documented case reports.
4. Pertinent marketing experiences that may influence a determination on the efficacy of each individual active component.
5. Pertinent medical and scientific literature.
B. Combinations of the individual active components.
1. Controlled studies.
2. Partially controlled or uncontrolled studies.
3. Documented case reports.
4. Pertinent marketing experiences that may influence a determination on the

efficacy of combinations of the individual active components.

5. Pertinent medical and scientific literature.

C. Finished drug product.

1. Controlled studies.

2. Partially controlled or uncontrolled studies.

3. Documented case reports.

4. Pertinent marketing experiences that may influence a determination on the efficacy of the finished drug product.

5. Pertinent medical and scientific literature.

VI. A summary of the data and views setting forth the medical rationale and purpose (or lack thereof) for the drug and its ingredients and the scientific basis (or lack thereof) for the conclusion that the drug and its ingredients have been proven safe and effective for the intended use. If there is an absence of controlled studies in the material submitted, an explanation as to why such studies are not considered necessary must be included.

VII. If the submission is by a manufacturer, a statement signed by the person responsible for such submission, that to the best of his knowledge it includes unfavorable information, as well as any favorable information, known to him pertinent to an evaluation of the safety, effectiveness, and labeling of such a product. Thus, if any type of scientific data is submitted, a balanced submission of favorable and unfavorable data must be submitted. The same would be true of any other pertinent data or information submitted, such as consumer surveys or marketing results.

In order to avoid duplication, interested persons should not include in their submissions published literature listed in the FDA literature search. An abstract of all such literature will be provided to the panel. Upon request the panel will be provided with the complete article. Interested persons may, of course, refer to such literature in their submissions by citation.

Submissions or requests for copies of the bibliography of the FDA literature search should be forwarded to:

Food and Drug Administration, Bureau of Drugs, OTC Drug Products Evaluation Staff (BD–109), 5600 Fishers Lane, Rockville, MD 20852.

Submission of data must be within 60 days from date of this publication.

Dated: December 11, 1972.

(Federal Food, Drug, and Cosmetic Act, sec. 701; 21 U.S.C. 371)

SAM D. FINE,
Associate Commissioner for Compliance.

[FR Doc.72–21681 Filed 12–15–72;8:49 am]

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Office of Interstate Land Sales Registration

[Docket No. N–72–130; Administrative Division File No. Z–119]

CANOE LAKE CORP. ET AL.

Notice of Hearing

Notice is hereby given that:

1. Canoe Lake Corp., its officers and agents, hereinafter referred to as "Respondent," being subject to the provisions of the Interstate Land Sales Full Disclosure Act (Public Law 90–448) (15 U.S.C. 1701 et seq.), received a notice of proceedings and opportunity for hearing dated October 20, 1970, which was sent to the developer pursuant to 15 U.S.C. 1706(d) and 24 CFR 1710.45(b)(1) informing the developer of information obtained by the Office of Interstate Land Sales Registration showing that a change had occurred which affected material facts in the developer's statement of record for Harbor Oaks Unit I, and the failure of the developer to amend the pertinent sections of the statement of record and property report.

2. The Respondent filed an answer which was received November 13, 1972, in answer to the allegations of the notice of proceedings and opportunity for a hearing.

3. In said answer the Respondent requested a hearing on the allegations contained in the notice of proceedings and opportunity for a hearing.

4. Therefore, pursuant to the provisions of 15 U.S.C. 1706(d) and 24 CFR 1720.160(b): *It is hereby ordered*, That a public hearing for the purpose of taking evidence on the questions set forth in the notice of proceedings and opportunity for hearing will be held before David Knight in Room 7233, Department of HUD Building, 451 Seventh Street SW., Washington, DC., on January 4, 1973, at 10 a.m.

The following time and procedure is applicable to such hearing: All affidavits and a list of all witnesses are requested to be filed with the Hearing Clerk, HUD Building, Room 10150, Washington, D.C. 20410, on or before December 29, 1972.

5. The Respondent is hereby notified that failure to appear at the above-scheduled hearing shall be deemed a default and the proceeding shall be determined against Respondent, the allegations of which shall be deemed to be true, and an order suspending the statement of record, herein identified, shall be issued pursuant to 24 CFR 1710.45(b)(1).

This notice shall be served upon the Respondent forthwith pursuant to 24 CFR 1720.440.

By the Secretary, George Romney, Secretary of Housing and Urban Development.

GEORGE K. BERNSTEIN,
Interstate Land Sales Administrator.

[FR Doc.72–21692 Filed 12–15–72;8:50 am]

DEPARTMENT OF TRANSPORTATION

Coast Guard

[CGD 72–242 PH]

PROPOSED BRIDGE ACROSS DOCTORS PASS WATERWAY, NAPLES, FLA.

Notice of Public Hearing

Notice is hereby given that the Commandant has authorized a public hearing to be held by the Commander, Seventh Coast Guard District at 7 p.m., January 25, 1973, in the Naples High School auditorium, 1100 22d Avenue North, Naples, FL.

The purpose of the hearing is to consider the application from the Florida Department of Transportation, Tallahassee, Fla., for a permit to construct a fixed highway bridge over Doctors Pass Waterway.

The plans submitted by the applicant are for a fixed four-lane-highway bridge to replace an existing two-lane fixed bridge. The proposed new bridge to replace an existing 2-lane fixed bridge. The proposed new bridge will provide navigation with a vertical clearance of 9.88 feet above mean high water and 11.78 feet above mean low water with a horizontal clearance of 40 feet. The proposed new bridge provides the same vertical and horizontal clearances as the existing bridge.

All interested persons may present data, views, and comments orally or in writing at the public hearing concerning the impact of the proposed bridge on present and prospective navigation on the waterway and the environment. The environment issues include but are not limited to the impact of the bridge on recreational areas, wildlife and waterfowl refuges, public parks, and historical sites.

The hearing will be informal. A Coast Guard representative, who will preside at the hearing, will make a brief opening statement describing the proposed bridge and announce the procedures to be followed at the hearing.

Each person who wishes to make an oral statement should notify the Commander (oan), Seventh Coast Guard District, 51 Southwest First Avenue, Miami, FL 33130, by January 8, 1973. Such notification should include the approximate time required to make the presentation. A transcript will be made of the hearing and may be purchased by the public.

Interested persons who are unable to attend this hearing may also participate in the consideration of the bridge permit application by submitting their comments in writing to the Commander (oan), Seventh Coast Guard District. Each comment should give reasons for any objections or proposed changes and the name and address of the person or organization submitting the comment. Copies of all written communications will be available for examination by interested persons at the offices of the Commander, Seventh Coast Guard District.

All comments received before February 15, 1973, will be considered before final action is taken on the proposed bridge permit application. After the time set for the submission of comments, the Commander, Seventh Coast Guard District, will forward the record, including all written comments and his recommendations to the Commandant, U.S. Coast Guard, Washington, D.C. 20590. The Commandant will make the final determination on the bridge permit.

(Section 502, 60 Stat. 847, as amended, sec. 4(f), 6(g)(6)(c), 80 Stat. 933 as amended;

33 U.S.C. 525, 49 U.S.C. 1653(f), 1655(g)(C); 40 CFR 7.46(c)(10))

Dated: December 12, 1972.

J. D. McCann,
Acting Chief, Office of Marine Environment and Systems.

[FR Doc.72-21606 Filed 12-15-72;8:45 am]

Federal Railroad Administration

[FRA-Pet-No. 73]

FORE RIVER RAILROAD CORP.

Notice of Petition for Hours of Service Exemption

December 12, 1972.

The Fore River Railroad Corp. has petitioned the Federal Railroad Administration pursuant to 45 U.S.C. 64a(e) for an exemption, with respect to certain employees, from the Hours of Service Act, 45 U.S.C. 61, 62, 63, and 64.

Interested persons are invited to participate by submitting written data, views, or comments. Communications should identify the docket number and should be submitted in triplicate to the Docket Clerk, Office of Chief Counsel, Federal Railroad Administration, Attention: Docket FRA-Pet-No. 73, 400 Seventh Street SW., Washington, DC 20590. Communications received before January 15, 1973, will be considered by the Federal Railroad Administrator before taking final action. All comments received will be available for examination by interested persons at any time during regular working hours in Room 5428, Nassif Building, 400 Seventh Street SW., Washington, DC.

Eeward F. Conway, Jr.,
Acting Assistant Chief Counsel for Safety Regulation.

[FR Doc.72-21645 Filed 12-15-72;8:46 am]

CIVIL AERONAUTICS BOARD

[Docket No. 25001; Order 72-12-46]

EXECAIRE AVIATION LTD. ET AL.

Statement of Tentative Findings and Conclusions and Order To Show Cause

Adopted by the Civil Aeronautics Board at its office in Washington, D.C., on the 12th day of December 1972.

On several occasions and most recently in Quebecair (Order 70-8-67, approved August 14, 1970) the Board expressed its concern about the charter policies of the Canadian Government and their restrictive effect on the operation of charters by American carriers in the Canada-United States market. These restrictive policies remain in effect despite the maintenance by the United States of a liberal policy toward Canadian charter carriers that has aimed at encouraging relaxation of the restrictive Canadian regulations.

A particular disappointment is that the Canadian government continues to apply a "primary rights" or "right of first refusal" policy with respect to charter flights to the United States (see SOR/72-145, Canada Gazette, Part II, Vol. 106 Extra, May 5, 1972, Schedule A). Under this policy U.S. carriers can operate such flights only if no Canadian charter carrier chooses to exercise its right of first refusal, and Canadian charter carriers can at their option operate charter flights from Canada to the United States that were initially contracted for by U.S. carriers. Furthermore, the fact that Canadian charter carriers can and have exercised the right of first refusal against U.S. carriers with respect to Canada-originating charters discourages Canadian chartering organizations from contracting with U.S. carriers. The United States does not impose a similar policy against Canadian carriers.

It is apparent that Canada's primary rights charter policy diverts traffic and revenues to Canadian charter carriers that might otherwise be available to U.S. carriers, and precludes U.S. carriers from any fair opportunity to compete for traffic in the Canada-United States market.

In view of the continuance of Canada's primary rights policy and the detrimental effect that policy has upon U.S. carriers, the Board believes that corrective action is now necessary and that the Board should be in a position to assure that U.S. carriers are afforded fair opportunity to participate in the Canada-United States charter market.

Thirteen Canadian air carriers, which are the primary beneficiaries of Canada's right-of-first-refusal policy for charters to the United States, hold permits from the Board authorizing certain charter-only foreign air transportation between various points in Canada and the United States.[1] Each of their permits is subject to a condition providing that "The Board, by order or regulation and without hearing, may require advance approval of individual charter trips * * * if it finds such action to be required in the public interest." As the Board noted in Trans-Air (Order E-25695, approved September 18, 1967) and in Millardair (Order E-26077, approved December 4, 1967) (see also Quebecair, supra) one of the primary reasons for reserving the right to require advance approval of individual charter trips was the Board's concern with the Canadian Government's first-refusal policy.

In view of the foregoing, we tentatively find and conclude that the public interest requires the Board to invoke the above-mentioned condition in the permits of 13 Canadian charter carriers. Accordingly, we have determined to direct these 13 Canadian charter carriers to show cause why they should not be required to obtain advance approval from the Board for each passenger charter flight (except inclusive tour charters) between Canada and the United States, and each planeload property charter flight between Canada and the United States, that the Canadian charter carrier has obtained through the exercise of the right of first refusal against a certificated U.S. air carrier authorized by the Board to engage in foreign air transportation between Canada and the United States.[2] We tentatively conclude that these Canadian charter carriers should neither directly nor indirectly operate pursuant to their foreign air carrier permits any aircraft in passenger (except inclusive tour) or planeload property charter services between Canada and the United States on flights which have been obtained through the exercise of the right of first refusal against a certificated U.S. air carrier authorized by the Board to operate between Canada and the United States for which required advance Board approval has not been obtained.

We also tentatively conclude that such requests for advance approval shall be filed with the Director, Bureau of Operating Rights, within 2 days after the Canadian carrier has exercised the right of first refusal against an American air carrier, but in no event should the request for advance Board approval be submitted less than 7 days prior to the proposed operation of the particular flight for which approval is requested. In addition, the request for advance Board approval should be accompanied by an application containing all information requested in CAB Form 433 (the application form for issuance of a Statement of Authorization pursuant to Part

[1] Execaire Aviation Limited, Order 69-6-67, approved June 12, 1969; Great Lakes Airlines, Ltd., Order 68-12-123, approved Dec. 20, 1968; Great Northen Airways, Ltd., Order E-25816, approved Oct. 10, 1967; International Jet Air, Ltd., Order 70-1-47, effective Jan. 9, 1970; Midwest Airlines, Ltd., Order 70-1-46, effective Jan. 9, 1970; Millardair, Ltd., Order E-26077, approved Dec. 4, 1967; Nordair Ltee-Nordair, Ltd., Order 68-12-124, approved Dec. 20, 1968; North Canada Air, Ltd., c.o.b. NORCANAIR, Order 70-5-37, approved May 7, 1970; Ontario Central Airlines, Ltd., Order 71-8-123, approved Aug. 27, 1971; Pacific Western Airlines, Ltd., Order 69-4-84, approved Apr. 17, 1969; Quebecair, Order 70-8-67, approved Aug. 14, 1970; TransAir, Ltd., Order E-25695, approved Sept. 18, 1967; and Wardair Canada, Ltd., Order E-26137, approved Dec. 16, 1967.

[2] Three other Canadian charter carriers also hold permits from the Board for certain Canada-United States charter authority. One of these carriers, Harrison Airways, Ltd., is specifically precluded by condition (5) in its permit (Order 70-11-52, approved Nov. 6, 1970), from exercising any primary rights (rights of first refusal) against any U.S. carrier. The other carriers, Chinook Flying Service, Ltd. and Mackenzie Air, Ltd., apparently cannot exercise the right of first refusal against a U.S. carrier since the facts available to the Board indicate that the Canadian Government does not apply its primary-rights policy to carriers operating aircraft with a maximum gross take-off weight of 18,000 pounds or less, and Chinook's and Mackenzie's permits from the Board (Orders 72-6-114, approved June 23, 1972, and 72-10-23, approved Oct. 6, 1972) limit their aircraft to a maximum gross take-off weight of 12,500 pounds for propeller aircraft and 18,000 pounds for turbo-jet aircraft. Accordingly, we see no need to apply this order to these carriers at the present time.

212 of the Board's economic regulations) and also should include the name of the American air carrier whose flight the Canadian charter carrier is preempting pursuant to Canada's primary-rights policy.

Accordingly, it is ordered, That:

1. All interested persons are directed to show cause why the Board should not issue an order which would make final the tentative findings and conclusions herein and which would require Execaire Aviation, Ltd.; Great Lakes Airlines, Ltd.; Great Northern Airways, Ltd.; International Jet Air, Ltd.; Midwest Airlines, Ltd.; Millardair, Ltd.; Nordair Ltee-Nordair, Ltd.; North Canada Air, Ltd., c.o.b. NORCANAIR; Ontario Central Airlines, Ltd.; Pacific Western Airlines, Ltd.; Quebecair; TransAir, Ltd.; and Wardair Canada, Ltd., to obtain advance Board approval of each passenger (except inclusive tour) and planeload property charter flight between Canada and the United States which was obtained by the Canadian carrier through the exercise of Canada's primary-rights policy (right of first refusal) against a certificated U.S. carrier authorized by the Board to engage in foreign air transportation between the United States and Canada, subject to the procedures for obtaining advance Board approval set forth herein.

2. Any interested persons having objection to the issuance of an order making final any of the tentative findings and conclusions set forth herein shall, within 20 days of service of this order, file with the Board a statement of objections together with a summary of testimony, statistical data, and other evidence expected to be relied upon to support the stated objections.[3]

3. If timely and properly supported objections are filed, full consideration will be accorded the matters and issues raised by the objections before further action is taken by the Board.

4. In the event no objections are filed, all further procedural steps will be deemed to have been waived and the Board may proceed to enter an order in accordance with the tentative findings and conclusions set forth herein.

5. Copies of this order shall be served upon the following: The Ambassador of Canada, Execaire Aviation, Ltd.; Great Lakes Airlines, Ltd.; Great Northern Airways, Ltd.; International Jet Air, Ltd.; Midwest Airlines, Ltd.; Millardair, Ltd.; Nordair Ltee-Nordair, Ltd.; North Canada Air, Ltd., c.o.b. NORCANAIR; Ontario Central Airlines, Ltd.; Pacific Western Airlines, Ltd.; Quebecair; TransAir, Ltd.; and Wardair Canada, Ltd.

This order will be published in the FEDERAL REGISTER.

By the Civil Aeronautics Board.

[SEAL] HARRY J. ZINK,
Secretary.

[FR Doc.72-21683 Filed 12-15-72;8:50 am]

[3] Since provision is made for a response to this order, petitions for reconsideration of this order will not be entertained.

[Docket No. 24897]

MILLARDAIR, LTD.

Notice of Postponement of Prehearing Conference and Hearing Regarding Foreign Air Carrier Permit Renewal, Canada-United States

Notice is hereby given that the prehearing conference and hearing in the above-entitled proceeding has been postponed from December 18, 1972 (37 F.R. 26358, December 9, 1972), to January 10, 1973, at 10 a.m. (local time) in Room 503, Universal Building, 1825 Connecticut Avenue NW., Washington, DC.

Dated at Washington, D.C., December 11, 1972.

[SEAL] FRANK M. WHITING,
Administrative Law Judge.

[FR Doc.72-21640 Filed 12-15-72;8:45 am]

ENVIRONMENTAL PROTECTION AGENCY

CIBA-GEIGY CORP.

Notice of Establishment of Temporary Tolerance

Ciba-Geigy Corp., Ardsley, N.Y. 10502, submitted a petition (PP 3G1295) requesting establishment of a temporary tolerance for negligible residues of the herbicide *N*-(cyclopropylmethyl)-α,α,α-trifluoro-2,6-dinitro-*N*-propyl-*p*-toluidine in or on soybeans at 0.1 part per million.

It has been determined that this temporary tolerance is safe and will protect the public health. It is therefore established on condition that the herbicide be used in accordance with the temporary permit which is being issued concurrently by the Environmental Protection Agency and which provides for distribution under the Ciba-Geigy Corp. name.

This temporary tolerance expires December 11, 1973.

This action is taken pursuant to provisions of the Federal Food, Drug, and Cosmetic Act (sec. 408(j), 68 Stat. 516; 21 U.S.C. 346a(j)), the authority transferred to the Administrator of the Environmental Protection Agency (35 F.R. 15623), and the authority delegated by the Administrator to the Deputy Assistant Administrator for Pesticides Programs (36 F.R. 9038).

Dated: December 11, 1972.

EDWIN L. JOHNSON,
Acting Deputy Assistant Administrator for Pesticides Programs.

[FR Doc.72-21675 Filed 12-15-72;8:48 am]

ORYZALIN

Notice of Extension of Temporary Tolerance

Elanco Products Co., Post Office Box 1750, Indianapolis, IN 46206, was granted a temporary tolerance (PP 2G1201) for negligible residues of the herbicide oryzalin (3,5-dinitro-*N*⁴,*N*⁴-dipropylsulfanilamide) in or on the raw agricultural commodity soybeans at 0.1 part per million on April 19, 1972 (notice was published in the FEDERAL REGISTER of April 25, 1972 (37 F.R. 8128)). This temporary tolerance expires April 19, 1973.

The firm has requested a 1-year extension to obtain additional experimental data. It is concluded that this extension of the temporary tolerance of 0.1 part per million for negligible residues of the herbicide in or on soybeans will protect the public health. It is therefore extended as requested on condition that the herbicide be used in accordance with the temporary permits being issued concurrently by the Environmental Protection Agency and which provide for distribution under the Elanco Products Co. name.

This extended temporary tolerance expires April 19, 1974.

This action is taken pursuant to provisions of the Federal Food, Drug, and Cosmetic Act (sec. 408(j), 68 Stat. 516; 21 U.S.C. 346a(j)), the authority transferred to the Administrator of the Environmental Protection Agency (35 F.R. 15623) and the authority delegated by the Administrator to the Deputy Assistant Administrator for Pesticides Programs (36 F.R. 9038).

Dated: December 11, 1972.

EDWIN L. JOHNSON,
Acting Deputy Assistant Administrator for Pesticides Programs.

[FR Doc.72-21676 Filed 12-15-72;8:48 am]

FEDERAL POWER COMMISSION

[Docket No. CI73-174]

AUSTER OIL & GAS, INC.

Notice of Petition To Amend

DECEMBER 12, 1972.

Take notice that on December 7, 1972, Auster Oil & Gas, Inc. (Petitioner), Post Office Box 3189, Lake Charles, LA 70601, filed in Docket No. CI73-174 a petition to amend the order issuing a certificate of public convenience and necessity pursuant to section 7(c) of the Natural Gas Act in said docket by authorizing the continuation of the sale of natural gas heretofore authorized in Docket No. CI72-284 to be made by Vermilion Land Corp., all as more fully set forth in the petition to amend which is on file with the Commission and open to public inspection.

Petitioner proposes to continue the sale of natural gas within the contemplation of § 2.70 of the Commission's

general policy and interpretations (18 CFR 2.70) from interests acquired in the Johnson Bayou Field, Cameron Parish, La., at the rate of 35 cents per Mcf at 15.025 p.s.i.a. Petitioner states that there is no change in its initially estimated sales volume of 3,500 Mcf of gas per month nor in the terms and conditions of its contract on file as its FPC gas rate schedule No. 1.

It appears reasonable and consistent with the public interest in this case to prescribe a period shorter than 15 days for the filing of protests and petitions to intervene. Therefore, any person desiring to be heard or to make any protest with reference to said petition to amend should on or before December 27, 1972, file with the Federal Power Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's rules.

KENNETH F. PLUMB,
Secretary.

[FR Doc.72-21646 Filed 12-15-72;8:46 am]

[Docket No. CI73-404]

CONTINENTAL OIL CO.

Notice of Application

DECEMBER 12, 1972.

Take notice that on December 4, 1972, Continental Oil Co. (Applicant), Post Office Box 2197, Houston, TX 77001, filed in Docket No. CI73-404 an application pursuant to section 7(c) of the Natural Gas Act for a certificate of public convenience and necessity authorizing the sale for resale and delivery gas in interstate commerce to Texas Eastern Transmission Corp. from the north Vienna area, Lavaca County, Tex., all as more fully set forth in the application which is on file with the Commission and open to public inspection.

Applicant states that it has commenced the sale of natural gas within the contemplation of § 157.29 of the regulations under the Natural Gas Act and that it proposes to continue said sales for 1 year from the end of the 60-day emergency period within the contemplation of § 2.70 of the Commission's general policy and interpretations (18 CFR 2.70). Applicant proposes to sell approximately 45,000 Mcf of gas per month at 35 cents per Mcf at 14.65 p.s.i.a.

It appears reasonable and consistent with the public interest in this case to prescribe a period shorter than 15 days for the filing of protests and petitions to intervene. Therefore, any person desiring to be heard or to make any protest with reference to said application should on or before December 26, 1972, file with the Federal Power Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's rules.

Take further notice that, pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Power Commission by sections 7 and 15 of the Natural Gas Act and the Commission's rules of practice and procedure, a hearing will be held without further notice before the Commission on this application if no petition to intervene is filed within the time required herein, if the Commission on its own review of the matter finds that a grant of the certificate is required by the public convenience and necessity. If a petition for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for Applicant to appear or be represented at the hearing.

KENNETH F. PLUMB,
Secretary.

[FR Doc.72-21647 Filed 12-15-72;8:46 am]

[Docket No. CI73-407]

GEORGE MITCHELL & ASSOCIATES, INC.

Notice of Application

DECEMBER 12, 1972.

Take notice that on December 8, 1972, George Mitchell & Associates, Inc. (Applicant), 3900 1 Shell Plaza, Houston, Tex. 77002, filed in Docket No. CI73-407 an application pursuant to section 7(c) of the Natural Gas Act for a certificate of public convenience and necessity authorizing the sale for resale and delivery of natural gas in interstate commerce to Natural Gas Pipeline Co. of America (Natural) from the Seven Oaks Hortense Area, Polk County, Tex., all as more fully set forth in the application which is on file with the Commission and open to public inspection.

Applicant proposes to sell approximately 69,000 Mcf of gas per month for 2 years commencing no later than February 10, 1973, at 45 cents per Mcf at 14.65 p.s.i.a. within the contemplation of § 2.70 of the Commission's general policy and interpretations (18 CFR 2.70).

It appears reasonable and consistent with the public interest in this case to prescribe a period shorter than 15 days for the filing of protests and petitions to intervene. Therefore, any person desiring to be heard or to make any protest with reference to said application should on or before December 26, 1972, file with the Federal Power Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's rules.

Take further notice that, pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Power Commission by sections 7 and 15 of the Natural Gas Act and the Commission's rules of practice and procedure, a hearing will be held without further notice before the Commission on this application if no petition to intervene is filed within the time required herein, if the Commission on its own review of the matter finds that a grant of the certificate is required by the public convenience and necessity. If a petition for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for Applicant to appear or be represented at the hearing.

KENNETH F. PLUMB,
Secretary.

[FR Doc.72-21648 Filed 12-15-72;8:46 am]

[Docket No. RP73-64]

SOUTHERN NATURAL GAS CO.

Notice of Revised Tariff Sheets, Proposing Purchased Gas Adjustment Clause and Change in Rate

DECEMBER 12, 1972.

Take notice that Southern Natural Gas Co. (Southern) on December 1, 1972, tendered for filing revised tariff sheets to its FPC Gas Tariff, Sixth Revised Volume No. 1, proposed to become effective on January 1, 1973. The rate filing is for the purpose of including a purchased gas adjustment provision (PGA clause) in its tariff, pursuant to § 154.38(d)(4) of the Commission's regulations under the Natural Gas Act and includes a rate change under the proposed PGA clause.

Southern states that as part of the cost of gas supply reflected in the filing, it has included in the base tariff rates all company-owned production from system-connected fields priced at area rates. As support for the rate change, Southern has included its cost of service study

utilized in its currently pending rate increase proceeding, in Docket No. RP72–91 et al., adjusted to reflect changes as of January 1, 1973. The rate change which results from these adjustments to its cost of purchased gas, is 0.162 cent per Mcf in each of Southern's commodity charges and one-part rates, and would result in an annual increase in jurisdictional revenues of $975,459.

Copies of the rate filing have been mailed to all jurisdictional customers and interested State commissions.

Any person desiring to be heard or to protest said application should file a petition to intervene or protest with the Federal Power Commission, 441 G Street NW., Washington, DC 20426, in accordance with §§ 1.8 and 1.10 of the Commission's rules of practice and procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 26, 1972. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this application are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc.72–21649 Filed 12–15–72;8:46 am]

[Docket No. E–7840]

DETROIT EDISON CO.

Notice of Proposed Changes in Rate and Charges

DECEMBER 14, 1972.

Take notice that the Detroit Edison Co. (Detroit Edison) on April 12, 1972, as supplemented on November 20, 1972, tendered for filing proposed changes in its FPC rate schedule No. 15. The filing, which consists of a letter agreement dated March 21, 1972, has the effect of forgiving certain additional charges which would otherwise have been payable by Consumers Power Co. (Consumers Power) or by Detroit Edison to Consumers Power, under circumstances where one of the parties fell below a minimum required reserve percentage.

In support of this filing the company states that the amendment is effective during the 1972 summer peak load season and the 1972–73 winter load season. Further, the amendment was agreed upon by the parties in view of the possibility of uncontrollable delays in licensing or obtaining requisite approvals to operate Consumers Power's Palisades No. 1 Unit or Detroit Edison's Monroe No. 2 Unit as planned.

By letter dated April 6, 1972, and incorporated within this filing, Consumers Power and Detroit Edison request that the Commission waive the notice requirements contained in § 35.3 of the Commission's regulations and permit the amendment to become effective on May 1, 1972, so as to conform to the definition of "summer peak load season" contained in Revision No. 1 of the definition of terms of the parties' pooling agreement.

Any person desiring to be heard or to protest said application should file a petition to intervene or protest with the Federal Power Commission, 441 G Street NW., Washington, DC 20426, in accordance with §§ 1.8 and 1.10 of the Commission's rules of practice and procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 27, 1972. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene.

KENNETH F. PLUMB,
Secretary.

[FR Doc.72–21725 Filed 12–15–72;8:51 am]

FEDERAL RESERVE SYSTEM

FIRST NATIONAL BANK IN DALLAS AND FIRST NATIONAL SECURITIES COMPANY IN DALLAS

Order Approving Retention of Banks

First National Bank in Dallas, Dallas, Tex., a bank holding company within the meaning of the Bank Holding Company Act,[1] has applied for the Board's approval under section 3(a)(3) of the Act (12 U.S.C. 1842(a)(3)) to retain 1,029 voting shares of Citizens State Bank of Irving, Irving, Tex. (Citizens Bank) and 743 voting shares of De Soto State Bank, De Soto, Tex. (De Soto Bank), acquired through rights offerings. Applicant states that the proposed acquisitions were made directly by applicant's trusteed affiliate, First National Securities Company in Dallas, Dallas, Tex. (First Securities).[2]

Notice of the applications, affording opportunity for interested persons to submit comments and views, has been given in accordance with section 3(b) of the Act. The time for filing comments and views has expired, and the Board has considered the applications and all comments received in light of the factors set forth in section 3(c) of the Act (12 U.S.C. 1842(c)).

Applicant is a bank and with its one subsidiary bank controls aggregate deposits of $1.52 billion, representing 5 percent of total commercial bank deposits in the State. Presently, applicant is the second largest banking organization in Texas and in the relevant market, which is the entire Dallas SMSA. (Banking data are as of June 30, 1972, adjusted to reflect holding company acquisitions and formations approved through October 31, 1972.[3]) Through its trusteed affiliate,[4] applicant now controls 17.14 percent of the shares of Citizens Bank ($4.5 million deposits) and 24.76 percent of the shares of De Soto Bank ($9.3 million deposits), two of the smaller banks in the Dallas banking market. The trusteed affiliate's percentage ownership in Citizens Bank and De Soto Bank remained unchanged before and after purchase of the additional shares. The acquisition of such shares involved neither an expansion of applicant nor an increase in the banking resources controlled by it. The Board concludes, therefore, that approval of the retention would eliminate neither existing nor potential competition nor would there by any adverse effects on any bank in the area.

The financial and managerial resources and further prospects of applicant, its subsidiary, and Citizens Bank and De Soto Bank are regarded as satisfactory and consistent with approval of the application. The convenience and needs of the area involved would not be affected by approval of applicant's proposal. It is the Board's judgment that the applications should be approved.

On the basis of the record, the applications are approved for the reasons summarized above.

By order of the Board of Governors,[5] effective December 11, 1972.

[SEAL] TYNAN SMITH,
Secretary of the Board.

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[1] Applicant has one subsidiary bank, Guaranty Bank, Dallas, Tex. (formerly South Oak Cliff Bank). The interest in Guaranty Bank was acquired in 1966 in satisfaction of a debt previously contracted.

[2] First Securities acquired 1,029 shares of stock in Citizens Bank on Jan. 28, 1971, and 743 shares of stock in De Soto Bank on Mar. 18, 1971, through exercising its preemptive rights to acquire additional shares. The registration statements of applicant and First Securities were not filed until June 21, 1971, and applicant states it was unaware that prior Board approval was required in order to exercise preemptive rights to acquire additional stock in Citizens Bank and De Soto Bank.

[3] On Nov. 30, 1972, the Board announced its approval of the formation of a new bank holding company, First International Bancshares, Inc., Dallas, Tex., through the acquisition of two banks, one of which is applicant.

[4] Applicant's trusteed affiliate controls more than 5 percent but less than 25 percent of each of 13 other Texas banks. The Board's action herein does not constitute a determination that any of the banks in which applicant's trusteed affiliate owns shares is or may become a subsidiary of applicant nor does the action herein indicate that the Board would in the future permit applicant to acquire directly or indirectly any additional shares of any of said banks. However, the determination herein does not preclude the Board from determining that applicant exercises a controlling influence over the management or policies of any of said banks within the meaning of section 2(a)(2)(C) of the Act.

[5] Voting for this action: Chairman Burns and Governors Robertson, Mitchell, Sheehan, and Bucher. Absent and not voting: Governors Daane and Brimmer.

[FR Doc.72–21667 Filed 12–15–72;8:48 am]

FRISCO-DILLON, INC.

Order Approving Formation of Bank Holding Company

Frisco-Dillon, Inc., Lincoln, Nebr., has applied for the Board's approval under section 3(a)(1) of the Bank Holding Company Act (12 U.S.C. 1842(a)(1)) of formation of a bank holding company through acquisition of 81.8 percent or more of the voting shares of Summit County Bank, Frisco, Colo. (Bank).

Notice of the application, affording opportunity for interested persons to submit comments and views, has been given in accordance with section 3(b) of the Act. The time for filing comments and views has expired, and the Board has considered the application and all comments received in light of the factors set forth in section 3(c) of the Act (12 U.S.C. 1842(c)).

Applicant is a nonoperating corporation formed for the express purpose of acquiring Bank ($4 million deposits). (All banking data are as of December 31, 1971.) The purpose of the proposed transaction is to convert individual to corporate ownership, and substantially equivalent offers to acquire the bank stock have been made to all shareholders. Since applicant has no present operations, it appears that consummation of this proposal would have no effect on existing or potential competition.

The financial condition and managerial resources of applicant are dependent upon these same conditions as they exist in Bank, and appear to be generally satisfactory, especially in view of recent improvements made in Bank's collection and internal security programs. Prospects for applicant and Bank appear favorable and considerations relating to banking factors are consistent with and lend some support toward approval of the application. Although the two market banks appear to adequately serve the banking needs of Summit County, proposed improvement in the operations of Bank under corporate structure, which will include longer banking hours and drive-up windows, should benefit the residents of the area. Considerations relating to the convenience and needs of the communities to be served are consistent with approval of the application. It is the Board's judgment that the proposed transaction is in the public interest and that the application should be approved.

On the basis of the record, the application is approved for the reasons summarized above. The transaction shall not be consummated (a) before the 30th calendar day following the effective date of this order or (b) later than 3 months after the effective date of this order, unless such period is extended for good cause by the Board, or by the Federal Reserve Bank of Kansas City pursuant to delegated authority.

By order of the Board of Governors,[1] effective, December 11, 1972.

[SEAL] TYNAN SMITH,
Secretary of the Board.

[FR Doc.72-21668 Filed 12-15-72;8:48 am]

LIBERTY NATIONAL CORP.

Proposed Retention of Liberty Financial Corp. and Liberty Mortgage Co.

Liberty National Corp., Oklahoma City, Okla., has applied (in two separate applications) pursuant to section 4(c)(8) of the Bank Holding Company Act (12 U.S.C. 1843(c)(8)) and section 225.4(b)(2) of the Board's regulation Y, for permission to retain voting shares of: (1) Liberty Financial Corp. and (2) Liberty Mortgage Co., both in Oklahoma City, Okla. Notice of the applications was published on September 21 and 18, 1972, respectively, in the Oklahoma City Times, a newspaper circulated in Oklahoma City, Okla.

Liberty Financial Corp., a wholly owned subsidiary of applicant was incorporated in December 1971. On December 21, 1971, Liberty Financial Corp. acquired from applicant's banking subsidiary, Liberty National Bank and Trust Co. of Oklahoma City, all of the outstanding shares of Home Mortgage & Investment Co., Liberty Property Management Co., and Liberty Real Estate Co. The shares of Home Mortgage & Investment Co., were originally acquired by applicant's banking subsidiary in March 1971 in accordance with section 4(c)(5) of the Act (12 U.S.C. 1843(c)(5)). Applicant states it undertook the December 21, 1971, transactions in the belief that neither the Bank Holding Company Act nor regulation Y required prior approval of such internal reorganizations. The applications seek Board approval of the December 21, 1971, transactions.

Applicant states that Liberty Financial Corp. would engage directly in the activities of: (1) Purchasing real estate loans from applicant's banking subsidiary, and (2) originating and servicing real estate oriented loans, including interim financing of commercial, industrial, and residential projects for its own account. In addition, Liberty Financial Corp. would own the shares of Liberty Mortgage Co., Liberty Real Estate Co., and Liberty Property Management Co. Applicant has not separately applied under section 4(c)(8) of the Act to retain its indirect ownership of Liberty Real Estate Co. and Liberty Property Management Co., as it is its view that such activities are otherwise exempt under sections 4(c)(1) and (2) of the Act (12 U.S.C. 1843(c)(1) and (2)) from the Act's general prohibition of engaging in nonbanking activities.

Applicant further states that Liberty Financial Corp. would engage indirectly through its ownership of Liberty Mortgage Co. in the activities of: (1) Originating, selling, and servicing real estate mortgages on residential and commercial property under agreement with various institutional lenders, and (2) offering to persons whose loans are being serviced by Liberty Mortgage Co. decreasing term life insurance and disability insurance, for both of which the mortgagee is a beneficiary.

The activities that Liberty Financial Corp. would engage in directly and those it would engage in indirectly through ownership of Liberty Mortgage Co. have been specified by the Board in § 225.4(a) of regulation Y as permissible for bank holding companies, subject to Board approval of individual proposals in accordance with the procedures of § 225.4(b).

Interested persons may express their views on the question whether consummation of the proposal can "reasonably be expected to produce benefits to the public, such as greater convenience, increased competition, or gains in efficiency, that outweigh possible adverse effects, such as undue concentration of resources, decreased or unfair competition, conflicts of interests, or unsound banking practices." Any request for a hearing on this question should be accompanied by a statement summarizing the evidence the person requesting the hearing proposes to submit or to elicit at the hearing and a statement of the reasons why this matter should not be resolved without a hearing.

The applications may be inspected at the offices of the Board of Governors or at the Federal Reserve Bank of Kansas City.

Any views or requests for hearing should be submitted in writing and received by the Secretary, Board of Governors of the Federal Reserve System, Washington, D.C. 20551, not later than January 8, 1973.

Board of Governors of the Federal Reserve System, December 11, 1972.

[SEAL] MICHAEL A. GREENSPAN,
Assistant Secretary of the Board.

[FR Doc.72-21669 Filed 12-15-72;8:48 am]

MANUFACTURERS HANOVER CORP.

Acquisition of Bank

Manufacturers Hanover Corp., Dover, Del., has applied for the Board's approval under section 3(a)(3) of the Bank Holding Company Act (12 U.S.C. 1842(a)(3)) to acquire 100 percent of the voting shares (less directors' qualifying shares) of State Bank of Ontario, Ontario, N.Y. The factors that are considered in acting on the application are set forth in

[1] Voting for this action: Chairman Burns and Governors Robertson, Mitchell, Sheehan, and Bucher. Absent and not voting: Governors Daane and Brimmer.

section 3(c) of the Act (12 U.S.C. 1842(c)).

The application may be inspected at the office of the Board of Governors or at the Federal Reserve Bank of New York. Any person wishing to comment on the application should submit his views in writing to the Secretary, Board of Governors of the Federal Reserve System, Washington, D.C. 20551, to be received not later than January 8, 1973.

Board of Governors of the Federal Reserve System, December 12, 1972.

[SEAL] MICHAEL A. GREENSPAN,
Assistant Secretary of the Board.

[FR Doc.72-21670 Filed 12-15-72;8:48 am]

SOUTHWEST FLORIDA BANKS, INC.

Formation of Bank Holding Company

Southwest Florida Banks, Inc., Fort Myers, Fla., has applied for the Board's approval under section 3(a)(1) of the Bank Holding Company Act (12 U.S.C. 1842(a)(1)) to become a bank holding company through acquisition of 80 percent or more of the voting shares of the First National Bank in Fort Myers, Fort Myers; Beach National Bank, Fort Myers Beach; East First National Bank, Fort Myers; National Bank of Sarasota, Sarasota; and National Bank Gulf Gate, Saratosa, all in Florida. The factors that are considered in acting on the application are set forth in section 3(c) of the Act (12 U.S.C. 1842(c)).

The application may be inspected at the office of the Board of Governors or at the Federal Reserve Bank of Atlanta. Any person wishing to comment on the application should submit his views in writing to the Secretary, Board of Governors of the Federal Reserve System, Washington, D.C. 20551, to be received not later than January 8, 1973.

Board of Governors of the Federal Reserve System, December 11, 1972.

[SEAL] MICHAEL A. GREENSPAN,
Assistant Secretary of the Board.

[FR Doc.72-21666 Filed 12-15-72;8:48 am]

TEXAS COMMERCE BANCSHARES, INC.

Order Approving Acquisition of Bank

Texas Commerce Bancshares, Inc., Houston, Tex., a bank holding company within the meaning of the Bank Holding Company Act, has applied for the Board's approval under section 3(a)(3) of the Act (12 U.S.C. 1842(a)(3)) to acquire 95 percent or more of the voting shares of the Citizens National Bank of Lubbock, Lubbock, Tex. (Citizens Bank).

Notice of the application, affording opportunity for interested persons to submit comments and views, has been given in accordance with section 3(b) of the Act. The time for filing comments and views has expired, and the Board has considered the application and all comments received in light of the factors set forth in section 3(c) of the Act (12 U.S.C. 1842(c)).

Applicant controls seven banks located in the Houston, Beaumont, and San Angelo, Tex., areas with aggregate deposits of $1.5 billion, representing 4.9 percent of total deposits of commercial banks in the State.[1] Applicant, the fourth largest banking organization in Texas, is the second largest banking organization in the Houston banking market with four subsidiary banks controlling approximately 17.9 percent of deposits of commercial banks in that market. In addition, applicant holds, through a subsidiary, between 20 and 24.9 percent of each of three other banks located in the Houston area. These three banks hold aggregate deposits of $77.2 million, representing 1.1 percent of the total deposits of commercial banks in the Houston area. (All banking data are as of December 31, 1971, and reflect holding company formations and acquisitions approved through October 31, 1972.) Acquisition of Citizens Bank would constitute applicant's initial entry into the Lubbock banking market and will not change applicant's ranking among banking organizations in the State.

Citizens Bank ($105.5 million of deposits) is the third largest of 10 banks in the Lubbock banking market and controls 19.2 percent of total deposits of commercial banks in that area.[2] Applicant's lead bank is located in Houston, Tex., approximately 500 miles southeast of Citizens Bank. Applicant's nearest banking subsidiaries will be located approximately 150 miles and 185 miles south, respectively, of Citizens Bank upon consummation of acquisition by applicant of American Bank of Commerce, Odessa, Tex., and San Angelo National Bank of San Angelo, San Angelo, Tex. It appears that no meaningful competition exists between any of applicant's present or approved future subsidiary banks and Citizens Bank; and, on the facts of record, in particular the distances involved and the Texas law prohibiting branch banking, consummation of the proposal herein is unlikely to foreclose any significant potential competition between Citizens Bank and any of applicant's subsidiary or satellite banks.

In view of applicant's intention to expand into major markets across the State, the present ratio of persons per banking office and bank deposits per capita in the Lubbock market would indicate conditions are attractive for entry de novo by applicant or through acquisition of a bank smaller than Citizens Bank. However, there are three bank charter applications now pending for new banks in the Lubbock area; and it appears unlikely that entry into the relevant market through acquisition of a smaller bank may be attempted in the foreseeable future. Moreover, acquisition of Citizens Bank by applicant should have a substantially more beneficial effect on competition among commercial banks in the Lubbock area than either of these alternative methods of entry. The proposed acquisition should enable Citizens Bank to reverse its declining role as a significant competitor among the largest banks in the market by permitting that bank to draw needed financial, technical and management resource strength from applicant. Citizens Bank's control of market area deposits has declined approximately 50 percent since 1950 when that bank was the largest bank in the Lubbock market. The Board concludes that consummation of the proposed transaction will not have an adverse effect on competition in any relevant area and may, in fact, serve to stimulate competition among commercial banks in the Lubbock banking market.

The financial condition and managerial resources of applicant and its subsidiary banks appear satisfactory and future prospects of all appear favorable. The financial condition and managerial resources of Citizens Bank have deteriorated in recent years. At the present time, Citizens Bank is experiencing capital, asset and loan loss problems together with a lack of stability and depth in managerial resources. As a subsidiary of applicant, Citizens Bank's prospects for future growth and service as a meaningful competitor in the Lubbock area would be significantly improved. Applicant has proposed a number of immediate steps to improve Citizens Bank's condition; including the restructuring of that bank's loan portfolio and investment account and the installation of additional experienced management personnel. An agreement between applicant and the two principal shareholders of Citizens Bank provides for the placing in escrow by these shareholders of funds sufficient to absorb any loan losses which may occur over the next 3 years on any loans outstanding since December 13, 1971.

The major banking needs of the residents of the Lubbock area appear to be adequately served at the present time by existing institutions. However, applicant's entry into the Lubbock area through acquisition of Citizens Bank should benefit customers for larger loans who are now required to go outside of the Lubbock area to satisfy their credit needs. In addition, applicant has stated its intention to make available through Citizens Bank expanded loan services for construction, real estate and mobile home financing, a wider range of trust services and specialized commercial and international banking services. To the extent such added services become available as

[1] On Nov. 2, 1972, the Board approved applicant's application to acquire Bank Plaza del Oro, N.A., Houston, Tex., a proposed new bank. On Nov. 28, 1972, the Board announced its approval of applicant's application to acquire American Bank of Commerce, Odessa, Tex. As a condition to the Board's approval of that application, applicant is required to divest, within 2 years, its interest in Permian Bank & Trust, Odessa, Tex., acquired as an incident to acquisition of American Bank.

[2] With respect to IPC deposits of less than $100,000, Citizens Bank ranks fourth among the 10 banks in the market, controlling 14.5 percent of those deposits in the Lubbock area.

a result of consummation of this proposal, considerations relating to the convenience and needs of the residents of the Lubbock area are consistent with and lend some weight toward approval of the application. It is the Board's judgment that consummation of the proposed transaction is in the public interest and the application should be approved.

On the basis of the record, the application is approved for the reasons summarized above. The transaction shall not be consummated: (a) Before the 30th calendar day following the effective date of this order or (b) later than 3 months after the effective date of this order, unless such period is extended for good cause by the Board, or by the Federal Reserve Bank of Dallas pursuant to delegated authority.

By order of the Board of Governors,[3] effective December 11, 1972.

[SEAL] TYNAN SMITH,
Secretary of the Board.

[FR Doc.72-21671 Filed 12-15-72;8:48 am]

SECURITIES AND EXCHANGE COMMISSION

[70-5213; 54-249]

AMERICAN ELECTRIC POWER COMPANY, INC., ET AL.

Notice of Proposed Plan and Request for Exemption From Competitive Bidding Requirements

DECEMBER 12, 1972.

Notice is hereby given that American Electric Power Company, Inc., 2 Broadway, New York, NY 10004 (AEP) a registered holding company, and two of its public utility subsidiary companies, Michigan Power Co., 100 South Main, Three Rivers, MI 49093 (MPC), and MacLane Gas Company (Gas Company), have filed with this Commission a Plan and an amendment thereto (Plan) pursuant to section 11(e) and other applicable sections of the Public Utility Holding Company Act of 1935 (Act) and rules promulgated thereunder regarding the following proposed transactions. All interested persons are referred to the amended Plan, which is summarized below, for a complete statement of the proposed transactions.

Pursuant to authorization of the Commission by order dated July 24, 1967 (Holding Company Act Release No. 15800), AEP acquired through a tender offer substantially all of the oustanding shares of common stock of MPC (then known as Michigan Gas & Electric Co.), a previously nonaffiliated company owning and operating a combination gas and electric utility business. Under terms of that order, AEP subsequently retired the publicly held minority interest in the common stock of MPC (Holding Company Act Release No. 16224, December 3, 1968). The acquisition of MPC was approved on condition that AEP divest the gas utility properties of MPC, and the order of July 24, 1967, authorized the sale of these properties to Michigan Gas Utilities Co. (MGU), a nonassociate gas utility company, the Commission reserving jurisdiction over the final disposition of said gas properties.

To facilitate divesture of the gas properties, the Commission, by order dated October 25, 1968 (Holding Company Act Release No. 16196), authorized AEP to create Gas Company, for the purpose of acquiring MPC's gas properties and to issue and sell its securities to AEP; the latter, in turn, was to sell Gas Company's securities to MGU. By letter dated August 21, 1969, however, AEP advised the Commission that the agreement with MGU had been canceled because of MGU's inability to procure the necessary financing. MPC then had outstanding 14,000 shares of 4.40 percent and 1,562 shares of 4.90 percent preferred stocks (the latter series has since been reduced to 1,312 shares). The voluntary redemption prices for these shares are $102 and $100 per share, respectively. The total funds required for such redemptions would be approximately $1.5 million

AEP has now filed a new Plan for the disposition of the gas properties of MPC. The plan is to be consummated in three steps, the first of which, Part I, is the subject of the present filing. Under Part I of the Plan, Gas Company will acquire the gas properties of MPC for a cash consideration (Gas Assets Purchase Price) which is estimated at approximately $25.1 million as at December 31, 1971; in addition, Gas Company will assume certain liabilities of MPC related to the gas properties. Gas Company will obtain the necessary cash by (a) the issuance and sale to AEP of $10 million face amount of its 270-day promissory notes, bearing interest of one-half of 1 percent per annum above the prime commercial loan rate charged from time to time by Manufacturers Hanover Trust Co., New York; and (b) amending its articles of incorporation to increase its authorized but unissued $1 par value common stock from 50,000 to 2 million shares, and the issuance and sale of 1 million shares thereof to AEP for a cash consideration equal to the difference between the Gas Assets Purchase Price and the face amount of the promissory notes.

The total price paid by AEP for its investment in MPC's common stock exceeded the underlying book value thereof, at the date of acquisition, by approximately $13.2 million, of which about $7.1 million has been allocated to the gas utility assets of the investment and the balance to the electric utility assets. The estimated price of $25.1 million to be paid for the gas assets by Gas Company to MPC includes the allocated $7.1 million portion of said total excess cost to AEP. Upon acquisition, Gas Company proposes to record the gas properties at "original cost," which excludes the $7.1 million excess acquisition cost, and such excess will be recorded by Gas Company in "Gas Plant Acquisition Adjustment" account and immediately written off against "Premium on Capital Stock" account. On a pro forma basis giving effect to the foregoing, Gas Company's capital structure will consist of approximately $8 million common stock and premium (represented by 1 million shares of $1 par value common stock) and $10 million promissory notes all held by AEP.

As of December 31, 1971, MPC had $5.05 million principal amount of first mortgage bonds outstanding. Under the terms of MPC's indenture and deed of trust dated June 1, 1946, MPC will deposit with the indenture trustee the cash received upon sale of the gas properties and, as permitted by the indenture, will withdraw the cash against the certification of available bondable property additions. MPC estimates that it will have available sufficient bondable property to permit withdrawal of all the deposited cash.

Pursuant to several prior orders of the Commission, AEP was authorized to make open account advances to MPC. The terms of these advances provided, among other things, that, unless otherwise authorized by the Commission, such advances will not be repaid prior to the retirement of MPC's outstanding preferred stocks.

When AEP had proposed the sale of the gas properties to MGU, it represented that MPC would redeem its outstanding preferred stock at the voluntary redemption prices (Holding Company Act Release No. 16196, p. 3, October 25, 1968). The Plan filed herein now states that AEP believes that the fair and reasonable prices to be paid for the retirement of the preferred stocks are substantially less than the voluntary redemption prices specified in MPC's article of incorporation. However, in order to avoid further delay in the disposition of the MPC gas properties, AEP proposes that any issues which have been, or may be, raised with respect to retirement of the MPC preferred stocks be deferred for further consideration.

The Plan proposes that upon receipt of the cash proceeds from the sale of the gas properties to Gas Company, MPC will repay the open account advances from AEP ($8.75 million at September 30, 1972). Most of the balance will be used to pay a dividend to AEP out of retained earnings. AEP undertakes that it will make available to MPC, to the extent required, funds sufficient to enable MPC to retire its preferred stocks, such preferred stocks are not retired prior to the payment of the open account advances from AEP.

AEP requests an exception from the competitive bidding requirements of Rule 50 under the Act for the sale of the common stock of Gas Company. It states that competitive bidding for this stock is not practicable, and that an exception

[3] Voting for this action: Chairman Burns and Governors Robertson, Mitchell, Sheehan, and Bucher. Absent and not voting: Governors Daane and Brimmer.

from the competitive bidding requirements will provide AEP with the necessary flexibility to negotiate with prospective purchasers.

Notice is further given that any interested person may, not later than January 18, 1973, request in writing that a hearing be held on such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said Plan which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail (airmail if the person being served is located more than 500 miles from the point of mailing) upon the applicants at the above-stated addresses, and proof of service (by affidavit or, in case of an attorney at law, by certificate) should be filed with the request. At any time after said date, the Plan as amended or as it may be further amended, may be approved in the manner provided in Rule 23 of the general rules and regulations promulgated under the Act or the Commission will take such action as circumstances may require. Persons who request a hearing or advice as to whether a hearing is ordered will receive notice of further developments in this matter, including the date of the hearing (if ordered) and any postponements thereof.

It is ordered, That the Secretary of the Commission shall serve notice of such Plan by mailing a copy of this notice to AEP and MPC, to the Federal Power Commission, and to the Michigan Public Service Commission; that AEP and MPC mail a copy of this notice to all holders of record of the outstanding shares of the preferred stock of MPC not later than December 28, 1972.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

[SEAL] RONALD F. HUNT,
Secretary.

[FR Doc. 72-21656 Filed 12-15-72;8:47 am]

[70-5283]

CENTRAL AND SOUTH WEST CORP. ET AL.

Notice of Proposed Amendment of Charter, Proposed Issue and Sale of Common Stock to Holding Company, and Issuance and Sale of Common Stock

DECEMBER 12, 1972.

Notice is hereby given that Central and South West Corp., 300 Delaware Avenue, Wilmington, DE 19899 (Central), a registered holding company, and its subsidiary companies, Central Power & Light Co. (C.P. & L.), Public Service Co. of Oklahoma (Pso), Southwestern Electric Power Co. (Swepco), and West Texas Utilities Co. (Wtu), have filed an application-declaration with this Commission pursuant to the Public Utility Holding Company Act of 1935 (Act), designating sections 6(a), 6(b), 7, 10, and 12(f) of the Act and Rules 43 and 50 thereunder as applicable to the proposed transactions. All interested persons are referred to the application-declaration, which is summarized below, for a complete statement of the proposed transactions.

Wtu proposes to amend its articles of incorporation to increase the par value of its 2,800,000 authorized (issued and unissued) shares of common stock from $15 per share to $22 per share and to transfer from earned surplus to the common stock capital account the sum of $17,325,000, the equivalent of $7 per share for each of the 2,475,000 shares of common stock ($15 par value) now outstanding. At September 30, 1972, the common stock capital and the earned surplus of Wtu amounted to $37,125,000 and $26,556,704, respectively. Giving effect to the proposed transfer, common stock capital would be increased to $54,450,000, and earned surplus would be reduced to $9,231,704. The transactions are proposed for the stated purpose of achieving a better balance in the capital accounts of the company. Each of the outstanding common shares having a par value of $15 will, after the proposed transactions, constitute a common share having a par value of $22. Central will own and acquire the 2,475,000 shares of common stock of the par value of $22 per share in lieu of the 2,475,000 shares of the par value of $15 per share presently held by it.

C.P. & L., Pso, and Swepco propose to issue and sell to Central, and Central proposes to acquire, for cash at the par value thereof, additional shares of the common stock of said companies as follows:

	Number of shares	Par value per share	Consideration
CP&L	800,000	$25	$20,000,000
PSO	1,250,000	12	15,000,000
SWEPCO	714,285	14	9,999,990
Total			44,999,990

It is stated that the proposed transactions will provide the subsidiary companies with additional funds to finance a portion of the cost of their construction programs and to pay all or part of short-term loans made by the subsidiary companies for that purpose. The construction expenditures of the subsidiary companies for 1973 are estimated as follows: C.P. & L.—$81,308,000, Pso—$60,941,000, and Swepco—$44,366,000.

Central proposes to issue and sell, pursuant to the competitive biding requirements of Rule 50 promulgated under the Act, up to 1,200,000 shares of its authorized and unissued common stock, par value $7 per share, at a price to be determined by the competitive bidding. Central intends that substantially all of the net proceeds from the sale of the common stock, estimated to aggregate approximately $60 million, will be applied by it to the payment of short-term borrowings (consisting of notes and commercial paper), including borrowings which may be incurred to provide funds for the purchase of the subsidiaries' shares, in the event that any of the subsidiaries' shares are purchased prior to sale of the Central common stock and to the purchase of any of the subsidiaries' shares as are not purchased prior to sale of the Central shares.

The fees and expenses in connection with the proposed transactions other than the issuance and sale of common stock by Central are estimated at $2,400. In addition, counsel for the companies estimate that $2,000 of their annual retainer is allocable to such transactions. Fees and expenses to be incurred by Central in connection with the proposed issuance and sale of common stock are estimated at $85,000, including accountants' fees of $9,000, counsel fees of $21,350, and charges, at cost, of the system service company of $2,500. It is stated that the Corporation Commission of the State of Oklahoma has jurisdiction over the issue and sale of common stock by Pso and that no other State commission and no Federal commission, other than this Commission, has jurisdiction over the proposed transactions.

Notice is further given that any interested person may, not later than December 28, 1972, request in writing that a hearing be held on such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said application-declaration which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail (airmail if the person being served is located more than 500 miles from the point of mailing) upon the applicants-declarants at the above-stated address, and proof of service (by affidavit or, in case of an attorney at law, by certificate) should be filed with the request. At any time after said date, the application-declaration, as filed or as it may be amended, may be granted and permitted to become effective as provided in Rule 23 of the general rules and regulations promulgated under the Act, or the Commission may grant exemption from such rules as provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive notice of further developments in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

[SEAL] RONALD F. HUNT,
Secretary.

[FR Doc.72-21657 Filed 12-15-72;8:47 am]

[70-5277]

EASTERN UTILITIES ASSOCIATES ET AL.

Notice of Proposed Issue and Sale of Notes by Holding Company and Subsidiary Companies to Banks and Open Account Advances by Holding Company to Subsidiary Companies

DECEMBER 12, 1972.

Notice is hereby given that Eastern Utilities Associates, Post Office Box 2333, Boston, Mass. 02107 (EUA), a registered holding company, and its four electric utility subsidiary companies, Blackstone Valley Electric Co. (Blackstone), Brockton Edison Co. (Brockton), Fall River Electric Light Co. (Fall River), and Montaup Electric Co. (Montaup), have filed an application-declaration and an amendment thereto with this Commission pursuant to the Public Utility Holding Company Act of 1935 (Act), designating sections 6(a)(1), 7, 12(b), and 12(f) of the Act and Rule 45(a) promulgated thereunder as applicable to the proposed transactions. All interested persons are referred to the amended application-declaration, which is summarized below, for a complete statement of the proposed transactions.

During the period ending July 2, 1973, EUA, Blackstone, Brockton, Fall River, and Montaup propose to issue and sell short-term, unsecured promissory notes to banks, and, in the cases of Blackstone, Brockton, and Fall River to also receive open-account advances from EUA, in the maximum aggregate amounts to be outstanding at any one time as shown below:

(Thousands of dollars)

	EUA	Blackstone	Brockton	Fall River	Montaup
The Chase Manhattan Bank (N.A.), New York, N.Y.		$1,000	$1,500	$2,000	$5,000
Industrial National Bank of Rhode Island, Providence, R.I.		1,850			
Rhode Island Hospital Trust, National Bank, Providence, R.I.		1,850			
The First National Bank of Boston, Boston, Mass.	$7,400		1,450	5,200	6,000
State Street Bank and Trust Co., Boston, Mass.			1,450		3,500
The National Shawmut Bank of Boston, Boston, Mass.					7,000
Plymouth-Home National Bank, Brockton, Mass.			400		
First County National Bank, Brockton, Mass.			400		
B.M.C. Durfee Trust Co., Fall River, Mass.				650	
Fall River Trust Co., Fall River, Mass.				700	
Fall River National Bank, Fall River, Mass.				250	
Total from banks	7,400	4,700	5,200	8,800	21,500
From EUA		13,400	6,609	1,735	
Maximum amount of aggregate short-term borrowings from banks and advances from EUA to be outstanding at any one time	7,400	18,100	11,809	10,535	21,500

It is proposed that the borrowings of any company from any particular bank may at times be increased to twice the amount shown above in respect of that bank, provided that the aggregate bank borrowings of that company shall at no time exceed its total amount of bank borrowings set forth above.

The notes to banks will be dated as of the date of issuance, will mature no later than July 2, 1973, and will be prepayable in whole or in part without penalty. It is represented that some of the lending banks will require compensating balances and that others will not. With respect to notes for which compensating balances are required, the notes will bear interest at not in excess of the prime rate charged by the lending bank on the date of issuance. Assuming a 15 percent compensating balance and a prime rate of 5¾ percent per annum, the effective interest cost on such notes would be 6.765 percent per annum. Notes as to which no compensating balances are required will bear interest at the lending bank's prime rate plus an adjustment equivalent to an imputed 15 percent compensating balance requirement. Such adjusted interest rate would be 6.765 percent per annum, assuming a prime rate of 5¾ percent.

The advances by EUA to Blackstone and Brockton will be subordinated to the rights of the preferred stockholders of Blackstone and Brockton, respectively, to receive dividends and liquidation payments if, and so long as: (a) Preferred stock dividends are in arrears (or in the event of liquidation, the liquidation rights of preferred stockholders have not been satisfied) and (b) the sum of the advances from EUA, the notes payable to banks and all other securities representing unsecured debt, maturing in less than 10 years, exceeds 10 percent of the company's secured debt, capital stocks, premium and surplus. The advances will bear interest payable on April 2, 1973, and July 2, 1973, at the prime rate in effect at the First National Bank of Boston on those respective dates or the rate at which EUA is then borrowing from said bank, whichever is lower, except that to the extent advances which have been or are made hereunder from the proceeds of issuance by EUA of its 5-year unsecured promissory note (Holding Company Act Release No. 17085), such advances shall bear interest payable at the rate incurred by EUA on the 5-year note. Since the subsidiary companies are to maintain a 15 percent compensating balance with the First National Bank of Boston with regard to EUA's borrowings from said bank, the effective interest cost for the open account advances would be 6.765 percent per annum, assuming a prime rate of 5¾ percent.

It is stated that the proceeds from the proposed notes and advances will be used to meet cash requirements for construction, to provide funds for compensating balances with lending banks through July 2, 1973, and to pay outstanding short-term loans. On January 2, 1973, Blackstone, Fall River, and Montaup expect to have outstanding short-term loans of $15,200,000 (including $10,500,000 advance from EUA to Blackstone), $10,309,000 (including $5,509,000 advance from EUA to Brockton), $9,735,000 (including $1,735,000 advance from EUA to Fall River), and $12,500,000, respectively.

Blackstone, Brockton, or Fall River may prepay its notes to banks, in whole or in part, by the use of an advance from EUA, or may repay an advance from EUA with the proceeds of notes issued to banks. If the interest rate on a note issued to a bank for the purpose of obtaining funds to repay an advance from EUA shall exceed the rate on the advance being repaid, EUA shall reimburse or credit Blackstone, Brockton, or Fall River, as the case may be, for the added interest required for the term of the note so issued.

In the event of any permanent financing by any of the borrowing companies (with the exception of permanent financing by EUA the proceeds of which are applied to the payment or prepayment of its 5-year note), the net cash proceeds therefrom will be applied to the payment of its short-term note indebtedness or advances from EUA then outstanding, and the maximum amount of short-term note indebtedness and advances to be outstanding at any one time, as proposed herein, will be reduced by the amount of the proceeds of such permanent financing.

The application-declaration states that no State commission and no Federal commission, other than this Commission has jurisdiction over the proposed transactions. The fees and expenses to be incurred in connection with the proposed transactions are to be supplied by amendment.

Notice is further given that any interested person may, not later than December 28, 1972, request in writing that a hearing be held in respect of such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by the application-declaration which he desires to controvert; or he may request that he be notified should the Commission order a hearing in respect thereof. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail (airmail if the person being served is located more than 500 miles from the point of mailing) upon the applicants-declarants at the above-stated address, and proof of service (by affidavit or, in case of an attorney at law, be certificate) should be filed with the request. At any time after said date, the application-declaration, as amended or as it may be further

amended, may be granted and permitted to become effective as provided in Rule 23 of the general rules and regulations promulgated under the Act, or the Commission may grant exemption from such rules as provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive notice of further developments in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

[SEAL] RONALD F. HUNT,
Secretary.

[FR Doc.72-21659 Filed 12-15-72;8:47 am]

[File 500-1]

MANAGEMENT DYNAMICS, INC.

Order Suspending Trading

DECEMBER 8, 1972.

It appearing to the Securities and Exchange Commission that the summary suspension of trading in the common stock, $0.01 par value, and all other securities of Management Dynamics, Inc., being traded otherwise than on national securities exchange is required in the public interest and for the protection of investors;

It is ordered, Pursuant to section 15(c)(5) of the Securities Exchange Act of 1934, that trading in such securities otherwise than on a national securities exchange be summarily suspended, this order to be effective for the period from 2:45 p.m., e.s.t., on December 8, 1972, through December 17, 1972.

By the Commission.

[SEAL] RONALD F. HUNT,
Secretary.

[FR Doc.72-21664 Filed 12-15-72;8:47 am]

[812-3286]

NATIONAL INVESTORS CORP.

Notice of Filing of Application for an Order Exempting a Sale

DECEMBER 12, 1972.

Notice is hereby given that National Investors Corp., 65 Broadway, New York, NY 10006 (Applicant), a Maryland corporation registered under the Investment Company Act of 1940 (Act) as a diversified, open-end management investment company, has filed an application pursuant to section 6(c) of the Act for an order of the Commission granting exemptions from the provisions of section 22(d) of the Act to the extent necessary to permit Applicant to issue its redeemable securities without charging any sales load in exchange for the assets of Koch Acceptance Corp. (Koch). All interested persons are referred to the application on file with the Commission for a statement of the representations contained therein, which are summarized below.

Applicant represents that Koch, a Delaware corporation, has operated as a family private investment company since 1960, investing and reinvesting its assets in a diversified portfolio of securities. Substantially all of Koch's assets are in the form of investments in marketable securities, cash, and cash items. At the present time Koch has four shareholders, is a personal holding company for Federal income tax purposes, and is subject to Federal and Delaware corporate income taxes. Applicant asserts that Koch is excepted from the definition of an investment company by reason of section 3(c)(1) of the Act.

On September 21, 1972, Applicant and Koch entered into an Agreement and plan of reorganization (Agreement) whereby substantially all of the assets of Koch are to be transferred to Applicant in exchange for shares of Applicant's common stock. Pursuant to the Agreement, the number of Applicant's shares to be delivered to Koch shall be determined on the closing date as defined in the Agreement by dividing the aggregate value of the gross assets of Koch (subject to certain adjustments as set forth in the Agreement) to be transferred to Applicant by the net asset value per share of Applicant, both to be determined as of the valuation time, as defined in the Agreement.

The transaction is conditioned upon Koch's receipt of a ruling from the Internal Revenue Service that the exchange will be tax-free for Koch and its stockholders, so that for tax purposes, Applicant's cost-basis of the assets acquired from Koch will be the same as Koch's cost-basis, rather than the price actually paid by Applicant for the assets. The adjustment provided for in the Agreement is intended to compensate Applicant for any increase subsequent to the sale and exchange, in Applicant's potential taxes that is attributable to any difference between Applicant and Koch, prior to the transaction, in the proportions of their respective net assets represented by realized and unrealized gains.

As of September 21, 1972, the market value of the assets of Koch to be delivered to Applicant was approximately $371,729. Applicant intends to sell, soon after receipt, securities representing approximately 40.3 percent of the market value of such assets, but in no event will the value of the securities that have been acquired from Koch and that are to be sold soon after such acquisition represent more than 50 percent of the market value, on the closing date, of the assets received from Koch. The remainder of the assets will be retained in Applicant's portfolio. When the shares of Applicant are received by Koch, Koch will distribute such shares to its stockholders upon liquidation of Koch. Applicant has been advised that the stockholders of Koch have no present intention of redeeming any substantial number, or otherwise transferring any, of Applicant's shares following the proposed transaction.

Assuming that the closing under the Agreement had taken place on September 21, 1972, when the net asset value of Applicant's stock was $9.85 per share, 37,739 shares of Applicant would have been transferred to Koch, or approximately 0.036 percent of the number of Applicant's shares outstanding immediately after such transfer.

Applicant represents that no affiliation exists between Koch or its directors, officers, or stockholders, and Applicant or its directors or officers, and that the Agreement was negotiated at arms-length by the principals of Applicant and Koch.

Section 22(d) of the Act provides that registered open-end investment companies may sell their shares only at a current public offering price as described in the prospectus, which in the case of the Applicant includes a sales load which varies with the amount of securities purchased and owned. Section 6(c) of the Act permits the Commission, upon application, to exempt a transaction if it finds that such an exemption is necessary or appropriate in the public interest and consistent with the protection of investors and in purposes fairly intended by the policy and provisions of the Act.

Applicant represents that the exemption should be granted because the proposed transaction is in the interest of its shareholders since, among other things, it will result in an increase in Applicant's assets which will tend to reduce its per share expenses.

Notice is further given that any interested person may, not later than January 5, 1973, at 5:30 p.m. submit to the Commission in writing a request for a hearing on the matter accompanied by a statement as to the nature of his interest, the reason for such request, and the issues, if any, of fact or law proposed to be controverted, or he may request that he be notified if the Commission should order a hearing thereon. Any such communication should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request shall be served personally or by mail (airmail if the person being served is located more than 500 miles from the point of mailing) upon Applicant at the address stated above. Proof of such service (by affidavit, or in the case of an attorney at law, by certificate) shall be filed contemporaneously with the request. At any time after said date, as provided by Rule 0-5 of the rules and regulations promulgated under the Act, an order disposing of the application herein may be issued by the Commission upon the basis of the information stated in said application, unless an order for hearing upon said application shall be issued upon request or upon the Commission's own motion. Persons who request a hearing, or advice as to whether a hearing is ordered, will receive notice of further developments in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Investment Company Regulation, pursuant to delegated authority.

[SEAL] RONALD F. HUNT, *Secretary.*

[FR Doc.72-21661 Filed 12-15-72;8:47 am]

[70-5281]

NEW ENGLAND ELECTRIC SYSTEM ET AL.

Notice of Proposed Issue and Sale of Notes by Subsidiary Companies

DECEMBER 12, 1972.

Notice is hereby given that an application-declaration has been filed with this Commission pursuant to the Public Utility Holding Company Act of 1935 (Act) by New England Electric System, 20 Turnpike Road, Westborough, MA 01581 (NEES), a registered holding company, and certain of its subsidiary companies (the borrowing companies), namely, Granite State Electric Co. (Granite), Lawrence Gas Co. (Lawrence), Lynn Gas Co. (Lynn), Massachusetts Electric Co. (Mass Electric), Massachusetts Gas System (Mass Gas), Mystic Valley Gas Co. (Mystic Valley), The Narragansett Electric Co. (Narragansett), New England Power Co. (NEPCO), and North Shore Gas Co. (North Shore). NEES and the borrowing companies have designated sections 6(a), 7, 9(a), 10, and 12 of the Act and Rules 42, 43, and 50(a)(5) promulgated thereunder as applicable to the proposed transactions. All interested persons are referred to the application-declaration, which is summarized below, for a complete statement of the proposed transactions.

The borrowing companies propose to issue, from time to time through December 31, 1973, unsecured short-term promissory notes to banks, to dealers in commercial paper, and/or to NEES or Mass Gas. The aggregate amount of loans to the borrowing companies by NEES and Mass Gas to be outstanding at any one time will not exceed $60 million and $1,300,000, respectively. Borrowings by Mass Electric and NEPCO from banks and NEES in the proposed maximum amounts of $35 million and $104 million, respectively, will be reduced by the principal amount of any commercial paper at the time outstanding. The proceeds of the proposed borrowings are to be used by each borrowing company to pay its then outstanding notes payable to banks, dealers in commercial paper, and/or to NEES or Mass Gas at or prior to maturity thereof, and to provide new money for capital expenditures or reimburse its treasury therefor.

The proposed notes to banks and/or NEES or Mass Gas will bear interest at not in excess of the prime rate in effect at the time of issue. Said notes will mature in less than 1 year from the date of issue and in any event not later than March 29, 1974, and will be prepayable at any time, in whole or in part, without premium. The borrowing companies represent that they maintain sufficient operating balances to meet the lending banks' compensating balance requirements. If such balances were maintained solely to fulfill prevailing compensating balance requirements of about 15 percent to 20 percent, the effective interest cost to the borrowing companies would be approximately 6¾ percent to 7¼ percent per annum, based on the current prime rate of 5¾ percent.

The following table shows for each borrowing company the estimated maxium amount of notes to be outstanding with banks and/or with NEES or Mass Gas at any one time:

ESTIMATED MAXIMUM SHORT-TERM NOTES TO BE OUTSTANDING AT ANY ONE TIME

[000 omitted]

Borrowing company	To banks or NEES [a]	To banks [b]
Granite	[2] $8,300	
	[3] 100	
Lawrence		[2] $8,200
Lynn		[2] 7,350
Mass Electric	[2] 30,000	
	[6] 2,500	
	[7] 500	
	[8] 500	
	[9] 900	
	[10] 600	
Mystic Valley		[1] 18,300
NEPCO	[2] 104,000	
Narragansett	[2] 3,500	
	[4] 7,500	
	[5] 5,000	
North Shore		[1] 7,300

[a] Or commercial paper in the case of Mass Electric and NEPCO.
[b] Or Mass Gas in the case of Lynn in the aggregate amount of up to $1,300,000.
[1] First National City Bank, New York, N.Y.
[2] The First National Bank of Boston, Mass.
[3] National Bank of Lebanon, N.H.
[4] Industrial National Bank of Rhode Island, Providence, R.I.
[5] Rhode Island Hospital Trust National Bank, Providence, R.I.
[6] Worcester County National Bank, Worcester, Mass.
[7] Guaranty Bank and Trust Co., Worcester, Mass.
[8] The Mechanics National Bank, Worcester, Mass.
[10] Middlesex Bank, N.A., Everett, Mass.

The amounts shown above, indicating the amount each company may borrow from a particular bank, may be increased or decreased during the year, but at no time will the aggregate amount of short-term borrowings from all banks for each company exceed the authorization requested hereunder.

It is proposed that the borrowing companies may prepay their notes to NEES or Mass Gas, in whole or in part, with borrowings from banks or from sale of commercial paper, or that their borrowings from banks may be prepaid, in whole or in part, with borrowings from NEES, or from the sale of commercial paper. In the event of borrowings, for the purpose of prepaying notes to NEES or Mass Gas, from banks at a higher interest rate or the sale of commercial paper at a higher effective interest cost, NEES or Mass Gas will credit the borrowers for any excess interest from the date of issuance of the new notes or commercial paper to the normal maturity date of the notes to NEES or Mass Gas being prepaid. Conversely, in the event of borrowing from NEES to prepay notes to banks, the interest rate of notes issued to NEES will be the lower of (1) the interest rate on the notes being prepaid or (2) the prime interest rate then in effect, but with respect to (1) only to the maturity date of the notes so prepaid, and thereafter at the prime interest rate in effect at the time the new notes are issued.

Each of the borrowing companies proposes that if any permanent financing is done prior to the maturity of the indebtedness to be issued hereunder, except in the case of Mass Electric, Narragansett, and NEPCO, the maximum amount of note indebtedness proposed to be outstanding hereunder will be reduced by the amount of such proceeds, other than proceeds used for refunding purposes of such permanent financing. NEES has entered into agreements to sell all of the outstanding capital stock of Lawrence, Lynn, Mystic Valley, North Shore, and Mass LNG. Additionally, as part of these divestments, it is planned that Mass Gas will be liquidated. Upon completion of these divestments, the borrowing authority requested hereunder will terminate for each subsidiary company so divested.

In addition, Mass Electric and NEPCO propose to issue and sell commercial paper to Lehman Commercial Paper, Inc. (Lehman), and/or A. G. Becker & Co., Inc. (Becker), dealers in commercial paper. The commerical paper will be issued during the period through December 31, 1973, will have varying maturities of not more than 270 days after the date of issue (and in any event will mature on or prior to March 29, 1974), will be sold in varying denominations of not less than $50,000 and not more than $1 million, and will not by their terms be prepayable prior to maturity. Such notes will be issued and sold by Mass Electric and NEPCO directly to Lehman and/or Becker at a discount which will not exceed the discount rate prevailing at the date of issuance for commercial paper of comparable quality and like maturity. The effective interest cost will not exceed the effective interest cost prevailing at the date of issue for borrowings from The First National Bank of Boston (First National), except that, in order to obtain maximum flexibility, commercial paper may be issued with a maturity of not more than 90 days from the date of issue with an effective cost in excess of such effective interest cost from First National.

Lehman and Becker, as principals, will reoffer the commercial paper at a discount rate not more than one-eighth of 1 percent per annum less than the prevailing discount rate to the issuer. The notes will be reoffered by Lehman and Becker to not more than 100 of their respective customers whose names appear on nonpublic lists prepared in advance by Lehman and Becker. No additions will be made to such lists of customers which are composed of institutional investors. It is expected that such commercial paper will be held to maturity by the purchasers from the dealers, but, if any such purchaser wishes to resell prior to maturity, Lehman or Becker,

as the case may be, pursuant to an oral repurchase agreement will repurchase the paper for resale to others on said lists of customers.

Mass Electric and NEPCO request exception of the sale of their commercial paper notes from the competitive bidding requirement of Rule 50 pursuant to section (a)(5) thereof. It is also requested that the certificates of notification under Rule 24 regarding all of the proposed transactions be filed quarterly.

It is stated that there are no fees or commissions, other than a $2,000 filing fee, to be paid in connection with the proposed transactions and that incidental services in connection with the proposed transactions will be performed, at cost, by New England Power Service Co., an affiliated service company; such cost is estimated not to exceed $200 for each applicant-declarant, an aggregate of $2,000. Including their pro rata share of the filing fee, total expenses for each applicant-declarant will not exceed $400.

NEPCO has received and Granite has sought authorization from the New Hampshire Public Utilities Commission with respect to the notes proposed to be issued by NEPCO and Granite. It is stated that no other State commission and no Federal commission, other than this Commission, has jurisdiction over the proposed transactions.

Notice is further given that any interested person may, not later than January 2, 1973, request in writing that a hearing be held on such matter stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said application-declaration which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail (airmail if the person being served is located more than 500 miles from the point of mailing) upon New England Electric System at the above-stated address, and proof of service (by affidavit or, in case of an attorney at law, by certificate) should be filed with the request. At any time after said date, the application-declaration, as filed or as it may be amended, may be granted and permitted to become effective as provided in Rule 23 of the General Rules and Regulation promulgated under the Act, or the Commission may grant exemption from its rules under the Act as provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive notice of further developments in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

[SEAL] RONALD F. HUNT, *Secretary.*

[FR Doc.72-21660 Filed 12-15-72;8:47 am]

[File 500-1]

NOVA EQUITY VENTURES, INC.

Order Suspending Trading

DECEMBER 13, 1972.

It appearing to the Securities and Exchange Commission that the summary suspension of trading in the common stock, $0.01 par value, and all other securities of Nova Equity Ventures, Inc., being traded otherwise than on a national securities exchange is required in the public interest and for the protection of investors;

It is ordered, Pursuant to section 15(c)(5) of the Securities Exchange Act of 1934, that trading in such securities otherwise than on a national securities exchange be summarily suspended, this order to be effective for the period from December 14, 1972 through December 23, 1972.

By the Commission.

[SEAL] RONALD F. HUNT, *Secretary.*

[FR Doc.72-21663 Filed 12-15-72;8:47 am]

[812-3323]

PASCO, INC.

Notice of Filing of Application for Exemption

DECEMBER 12, 1972.

Notice is hereby given that Pasco, Inc., Delaware Trust Building, Ninth and Market Streets, Wilmington, Del. 19801 (Pasco) has filed an application pursuant to section 6(c) of the Investment Company Act of 1940 (Act) for an order of the Commission exempting from the provisions of sections 18(a), 18(c) and 13(a)(2) the consummation of financing arrangements in connection with the purchase from Atlantic Richfield Co. (ARCO) of certain properties (the Sinclair Properties) acquired by ARCO through the merger into ARCO of the Sinclair Oil Corp. All interested persons are referred to the application on file with the Commission for a statement of the representations made therein, which are summarized below.

Pasco is a Delaware corporation, and its capital stock is listed on the New York Stock Exchange and registered under the Securities Exchange Act of 1934. Since its organization and until June 30, 1967, Pasco was engaged principally in the business of exploring for, producing and selling sulphur. Substantially all such activities were carried on by Azufrera Panamericana S.A. de C.V. (Azufrera), a Mexican corporation which was a wholly owned subsidiary of Pasco. In 1967 Pasco sold 66 percent of its stock interest in Azufrera to Mexican interests. Pasco invested the proceeds of such sale in certificates of deposit and other cash items. As a result of these transactions Pasco fell within the definition of an investment company contained in section 3(a)(3) of the Act. On January 31, 1972, Pasco filed with the Commission a notification of registration on Form N-8A and, on May 1, 1972, it filed a registration statement on Form N-8B-1.

On September 6, 1972, Pasco sold to Nacional Financiera, S.A., financial agent for the Mexican Government, its remaining 34 percent stock interest in Azufrera for $9,950,000 cash (net of Mexican taxes) pursuant to an agreement which also provides that the Mexican Government will purchase prior to December 30, 1972, the $6 million principal amount of 8 percent bonds, due 1974, of Azufrera owned by Pasco at par plus accrued interest to the date of purchase.

At September 30, 1972, Pasco's assets totaled about $69,100,000, of which approximately $59,100,000 consisted of certificates of deposit and other cash items. Pasco anticipates being able to realize cash for the $6 million principal amount of Azufrera bonds before the year end.

On September 21, 1972, Pasco entered into a Letter of Intent for ARCO providing for the purchase by Pasco from ARCO of the Sinclair Properties for approximately $185 million. Pursuant to a final judgment, entered by the U.S. District Court for the Southern District of New York on August 28, 1970, ARCO was ordered to divest the properties which Pasco now desires to acquire. Such properties include oil-producing properties, an oil refinery and a crude oil gathering system (all of which are located in Wyoming), interests in two pipelines, and about 1,500 gasoline service stations (located in 14 States) which are either owned in fee or leased, together with inventory and receivables related to them. The Letter of Intent contemplates that a closing will be held as soon as possible and no later than the close of business on December 31, 1972, unless such date is extended by mutual agreement.

Upon consummation of the proposed purchase, Pasco's business will be that of an integrated oil company. Pasco, therefore, will no longer fall within the definition of an "investment company" under the Act and has filed an application requesting that the Commission, upon consummation of the proposed purchase, issue an order under section 8(f) of the 1940 Act declaring that Pasco has ceased to be an investment company. As stated in such application, Pasco's stockholders have authorized it to change the nature of its business so as to cease to be an investment company.

The aggregate purchase price of the Sinclair Properties is estimated by Pasco to be approximately $185 million. Pasco proposes to finance such purchase price in the following manner: (a) $80 million from a petroleum production payment loan (the "Production Payment Loan"); (b) $40 million from a revolving credit and term loan (the "Term Loan"); and (c) approximately $65 million from Pasco's certificates of deposit and other cash items. If Pasco should need funds in addition to its cash items, either to finance such purchase price or for working capital, it plans to borrow on a short-term basis not in excess of $10 million from a bank or banks.

Pasco and First National Bank of Chicago have entered into a commitment letter agreement, pursuant to which

First National Bank of Chicago is committed until January 1, 1973, to make the Production Payment Loan and the Term Loan. Pasco and the Chase Manhattan Bank have entered into a participation letter agreement which commits the Chase Manhattan Bank to a 50 percent participation in the Production Payment Loan and the Term Loan. An estimated $25 million of the Term Loan will be applied to the purchase by the two banks from ARCO of notes to be issued by Pasco to ARCO in payment for the inventory and receivables included in the Sinclair Properties, and the remaining balance, if any, may be added to Pasco's working capital. Consideration is being given to the possibility of amending certain terms of the commitment letter agreement and the participation letter agreement, but not to change the aggregate principal amount of the above financing arrangements or to increase the interest rates payable. The closing of the purchase of the Sinclair Properties and the above financing arrangements would necessarily occur simultaneously.

Although Pasco will cease to be an investment company as defined in the Act upon the purchase of the Sinclair Properties, the Commission's exemption of the proposed financing arrangements from certain provisions of the Act is required because at the time of consummation of the transactions, Pasco will still be registered under the Act.

Section 18(a) of the Act provides that it shall be unlawful for any registered closed-end company to issue any class of senior security, or to sell any such security of which it is the issuer, unless, if such class of senior security represents an indebtedness, immediately after such issuance or sale it will have an asset coverage of at least 300 per centum. In addition, a class of senior security representing indebtedness is required by section 18(a) to be protected by certain restrictions upon distributions by the issuer and by the right in certain circumstances to elect a majority of its Board of Directors.

The proposed senior securities referred to above will have an asset coverage of well under 300 percent and will not have the benefit of the additional protections required by section 18(a). Pasco believes that such protections are intended to benefit the holders of a publicly held class of debt securities which are the obligations of an investment company. Pasco's proposed financing arrangements do not involve public ownership of a class of debt securities, and Pasco itself will cease to be an investment company as soon as the financing is consummated. Accordingly, Pasco has requested that the Commission issue an order pursuant to section 6(c) of the Act exempting the proposed financing arrangements from the provisions of section 18(a).

Section 18(c) of the Act permits the issuance of only one class of senior security representing indebtedness, except for promissory notes issued in connection with borrowings. Although there may be some doubt, Pasco assumes that the Production Payment Loan will constitute a class of senior security representing indebtedness. Although the purchase from ARCO of the notes of Pasco referred to above is contemplated by the Term Loan (and is, therefore, Pasco alleges, essentially the same as a borrowing), their issuance to ARCO may constitute a technical violation of section 18(c). Accordingly, Pasco has requested that the Commission issue an order pursuant to section 6(c) exempting the proposed financing arrangements from the provisions of section 18(c).

Section 8(b)(1) of the 1940 Act requires that the registration statement of an investment company recite certain policies of the registrant, including its policy with respect to the borrowing of money and the issuance of senior securities. Section 13(a)(2) provides that no registered investment company shall borrow money or issue senior securities except in accordance with the policy contained in its registration statement, unless authorized by the vote of a majority of its outstanding voting securities. In its registration statement, Pasco stated, in effect, that it would not borrow money or issue senior securities evidencing such borrowing if such borrowing would result in the total indebtedness of Pasco for borrowed money immediately after such borrowing having an asset coverage of less than 300 per centum. Pasco alleges that it intended by such statement to reserve to itself the maximum freedom permitted by the Act to borrow money and did not intend to condition borrowings in excess of such limitation upon the favorable vote of its stockholders.

Studebaker-Worthington, Inc., which indirectly owns 52 percent of Pasco's outstanding stock, has informed Pasco that it approves the proposed financing arrangements and that its stock interest would be voted to authorize the financing arrangements if a meeting of stockholders were held. Accordingly, Pasco believes that holding a stockholders' meeting to authorize the proposed financing arrangements would be a mere formality which would require the unnecessary expenditure of a significant amount of money. Accordingly, Pasco has requested that the Commission issue an order pursuant to section 6(c) of the Act exempting the proposed financing arrangements from the provisions of section 13(a)(2).

Section 6(c) of the Act provides that the Commission, by order upon application, may conditionally or unconditionally exempt any person or transaction from any provision or provisions of the Act if and to the extent that such exemption is necessary or appropriate in the public interest and consistent with the protection of investors and the purposes fairly intended by the policy and provisions of the Act.

Notice is further given that any interested person may, not later than December 27, 1972, at 5:30 p.m., submit to the Commission in writing a request for a hearing on the matter accompanied by a statement as to the issues, if any, of fact or law proposed to be controverted, or he may request that he be notified if the Commission should order a hearing thereon. Any such communication should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request shall be served personally or by mail (airmail if the person being served is located more than 500 miles from the point of mailing) upon Pasco at the address stated above. Proof of such service (by affidavit or in case of an attorney at law, by certificate) shall be filed contemporaneously with the request. At any time after said date, as provided by Rule 0–5 of the rules and regulations promulgated under the Act, an order disposing of the application herein may be issued by the Commission upon the basis of the information stated in said application, unless an order for hearing upon said application shall be issued upon request or upon the Commission's own motion. Persons who request a hearing or advice as to whether a hearing is ordered will receive notice of further developments in this matter, including the date of the hearing (if ordered) and any postponements thereof.

By the Commission:

[SEAL] RONALD F. HUNT, *Secretary.*

[FR Doc.72-21658 Filed 12-15-72;8:47 am]

[File 500-1]

TIDAL MARINE INTERNATIONAL CORP.

Order Suspending Trading

DECEMBER 12, 1972.

It appearing to the Securities and Exchange Commission that the summary suspension of trading in the common stock, $0.05 par value, and all other securities of Tidal Marine International Corp. being traded otherwise than on a national securities exchange is required in the public interest and for the protection of investors;

It is ordered, Pursuant to section 15(c)(5) of the Securities Exchange Act of 1934, that trading in such securities otherwise than on a national securities exchange be summarily suspended, this order to be effective for the period from December 13, 1972, through December 22, 1972.

By the Commission.

[SEAL] RONALD F. HUNT, *Secretary.*

[FR Doc.72-21665 Filed 12-15-72;8:47 am]

[70-5247]

UTAH POWER & LIGHT CO.

Notice of Proposed Issue and Sale of Common Stock to Shareholders Pursuant to Dividend Reinvestment Plan

DECEMBER 12, 1972.

Notice is hereby given that Utah Power & Light Co., 1407 West North Temple

Street, Post Office Box 899, Salt Lake City, UT 84110 (Utah), an electric utility company and a registered holding company, has filed a declaration and amendments thereto with this Commission pursuant to the Public Utility Holding Company Act of 1935 (Act), designating sections 6(a) and 7 of the Act as applicable to the proposed transactions. All interested persons are referred to the amended declaration, which is summarized below, for a complete statement of the proposed transactions.

Utah proposes to issue and sell common stock to its common stockholders pursuant to a "Dividend Reinvestment and Stock Purchase Plan" (Plan), which will be administered by Zions First National Bank of Salt Lake City, Utah, a commercial banking institution, the "Trustee" appointed by Utah's board of directors. Under the Plan a holder of Utah common stock may elect to have his dividend automatically invested in additional common stock of Utah. Dividends to be so invested will also include dividends received on the shares held by the trustee for the participant's account. The price of the shares to be issued by Utah to the trustee will be determined by the closing price of Utah's common stock on the New York Stock Exchange on each dividend payment date. The shares purchased by the trustee will be held for the exclusive benefit of the participants in the Plan.

A participant may at any time withdraw full shares in his account under the Plan without terminating his participation in the Plan. Fractional share interests will be paid in cash, based on the closing market price on the day the withdrawal or termination request is received by Utah. A participating stockholder must affirmatively terminate his enrollment in the Plan to end his participation and he may do so at any time, effective as of the next dividend payment date, provided Utah receives written notification of termination prior to the next dividend record date.

If a participant ceases to be a record shareholder, Utah will endeavor to secure from him instructions regarding the disposition of the shares held for his account under the Plan. Should Utah be unable to obtain such instructions, it may, at its discretion, continue to reinvest the dividends on shares so held, until otherwise notified. A quarterly statement will be issued to each participating stockholder indicating the status of his stock interest in the Plan.

Each participant will pay a service charge to Utah of three (3) percent of the dividend received for investment, up to a maximum of two (2) dollars per account for each dividend. The service charge will be automatically deducted from each account, and may, after proper notice to each participant, be adjusted up or down to reflect changes in the cost of administering the Plan. The trustee will be paid a fee by Utah from funds received through the service charge. There will be no broker's commission charge to participants of the Plan.

The trustee will not vote any shares held by it under the Plan. Participants will receive a single proxy with respect to full shares which they own of record or under the Plan.

Utah proposes to offer initially 40,000 shares under the Plan. It proposes to apply annually for authorization to continue the Plan. Upon written notice to the participants of not less than 90 days, the Plan may be wholly or partially amended, modified or discontinued at any time by Utah's board of directors.

Utah has applied to the Public Service Commission of Wyoming and the Idaho Public Utilities Commission for requisite authority to effectuate the proposed transactions. It is represented that no other State commission and no Federal commission, other than this Commission, has jurisdiction over the proposed transactions. The fees and expenses to be incurred in connection with the proposed transactions are estimated at $13,000, including legal fees of $3,000, printing fees of $3,000, and accountants' fees of $2,500.

Notice is further given that any interested person may, not later than January 5, 1973, request in writing that a hearing be held on such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said declaration which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail (airmail if the person being served is located more than 500 miles from the point of mailing) upon the declarant at the above-stated address, and proof of service (by affidavit or, in case of an attorney at law, by certificate) should be filed with the request. At any time after said date, the declaration, as amended or as it may be further amended, may be permitted to become effective as provided in Rule 23 of the general rules and regulations promulgated under the Act, or the Commission may grant exemption from such rules as provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive notice of further developments, in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

[SEAL] RONALD F. HUNT, *Secretary.*

[FR Doc.72-21662 Filed 12-15-72;8:47 am]

INTERSTATE COMMERCE COMMISSION

[Notice 138]

ASSIGNMENT OF HEARINGS

DECEMBER 13, 1972.

Cases assigned for hearing, postponement, cancellation or oral argument appear below and will be published only once. This list contains prospective assignments only and does not include cases previously assigned hearing dates. The hearings will be on the issues as presently reflected in the Official Docket of the Commission. An attempt will be made to publish notices of cancellation of hearings as promptly as possible, but interested parties should take appropriate steps to insure that they are notified of cancellation or postponements of hearings in which they are interested. No amendments will be entertained after the date of this publication.

MC-106274 Sub. 17, Raeford Trucking Co., now being assigned hearing January 23, 1973 (3 days), at Raleigh, N.C., in a hearing room to be later designated.

MC 136678, Alabama-Tennessee Express, Inc., now being assigned hearing February 26, 1973 (1 week), at Birmingham, Ala., in a hearing room to be later designated.

MC 136917, Red Arrow Corp., now being assigned hearing February 26, 1973 (1 week), at Jefferson City, Mo., in a hearing room to be later designated.

MC 52587 Sub. 11, O.K. Motor Service, Inc., now being assigned hearing February 26, 1973 (1 week), at Madison, Wis., in a hearing room to be later designated.

MC 60066 Sub. 8, Bee Line Motor Freight, Inc., now being assigned hearing February 27, 1973 (3 days), at Lincoln, Nebr., in a hearing room to be later designated.

[SEAL] ROBERT L. OSWALD, *Secretary.*

[FR Doc.72-21684 Filed 12-15-72;8:49 am]

[Notice 184]

MOTOR CARRIER BOARD TRANSFER PROCEEDINGS

Synopses of orders entered by the Motor Carrier Board of the Commission pursuant to sections 212(b), 206(a), 211, 312(b), and 410(g) of the Interstate Commerce Act, and rules and regulations prescribed thereunder (49 CFR Part 1132), appear below:

Each application (except as otherwise specifically noted) filed after March 27, 1972, contains a statement by applicants that there will be no significant effect on the quality of the human environment resulting from approval of the application. As provided in the Commission's special rules of practice any interested person may file a petition seeking reconsideration of the following numbered proceedings within 20 days from the date of publication of this notice. Pursuant to section 17(8) of the

Interstate Commerce Act, the filing of such a petition will postpone the effective date of the order in that proceeding pending its disposition. The matters relied upon by petitioners must be specified in their petitions with particularity.

No. MC–FC–74029. By order of December 7, 1972, the Motor Carrier Board approved the transfer to McKenna Trucking Co., Inc., Irvington, N.J., of certificates Nos. MC–1068, MC–1068 (Sub-No. 2) and MC–1068 (Sub-No. 3), issued May 13, 1960, January 13, 1961, and June 18, 1963, to A. Knorr's Express, Inc., Irvington, N.J., authorizing the transportation of: General commodities, usual exceptions, and other specified commodities, between specified points in New Jersey, New York, and Maryland. Robert B. Pepper, practitioner, 168 Woodbridge Avenue, Highland Park, NJ 08904. George A. Olsen, practitioner, 69 Tonnelle Avenue, Jersey City, NJ 07306.

[SEAL] ROBERT L. OSWALD,
Secretary.

[FR Doc.72–21685 Filed 12–15–72;8:49 am]

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federal register

SATURDAY, DECEMBER 16, 1972
WASHINGTON, D.C.

Volume 37 ■ Number 243

PART II

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

■

Safety and Health Regulations for Construction

Title 29—LABOR

Chapter XVII—Occupational Safety and Health Administration, Department of Labor

PART 1926—SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

Pursuant to authority in section 107 of the Contract Work Hours and Safety Standards Act, as amended (83 Stat. 96; 40 U.S.C. 333), and in Secretary of Labor's Order No. 12–71 (36 F.R. 8754), Part 1926 of Title 29 of the Code of Federal Regulations is hereby revised to read as set forth below. This revision includes amendments published in the FEDERAL REGISTER and in effect as of November 23, 1972.[1] The purpose of the revision is (1) to publish fully in one place the present occupational safety and health standards contained therein in order to reflect many changes made during the current year and thereby to improve their usefulness and facilitate their enforcement; (2) to correct a number of typographical and clerical errors in the text of the standards; and (3) to publish indexes with the standards, which are intended to permit quicker access to pertinent standards.

Since this revision does not make any substantive changes in the standards, it is not necessary to provide notice of proposed rule making, opportunity for public participation therein, nor any delay in effective date. For the same reason, good cause is found for not following the regular procedure for rule making provided in 5 U.S.C. 553, and for making this revision effective immediately.

Signed at Washington, D.C. this 11 day of December 1972.

G. C. GUENTHER,
Assistant Secretary of Labor.

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Appendix I.

AUTHORITY: The provisions of this Part 1926 issued under sec. 1, 83 Stat. 96, 97, adding sec. 107 to Public Law 87-581, 76 Stat. 357; 40 U.S.C. 333.

Subpart A—General

§ 1926.1 Purpose and scope.

(a) This part sets forth the safety and health standards promulgated by the Secretary of Labor under section 107 of the Contract Work Hours and Safety Standards Act. The standards are published in Subpart C of this part and following subparts.

(b) Subpart B of this part contains statements of general policy and interpretations of section 107 of the Contract Work Hours and Safety Standards Act having general applicability.

§ 1926.2 Variances from safety and health standards.

(a) Variances from standards which are, or may be, published in this part may be granted under the same circumstances whereunder variances may be granted under section 6(b)(A) or 6(d) of the Williams-Steiger Occupational Safety and Health Act of 1970 (29 U.S.C. 65). The procedures for the granting of variances and for related relief under this part are those published in Part 1905 of this title.

(b) Any requests for variances under this section shall also be considered requests for variances under the Williams-Steiger Occupational Safety and Health Act of 1970, and any requests for variances under Williams-Steiger Occupational Safety and Health Act with respect to construction safety or health standards shall be considered to be also variances under the Construction Safety Act. Any variance from a construction safety or health standard which is contained in this part and which is incorporated by reference in Part 1910 of this title shall be deemed a variance from the standard under both the Construction Safety Act and the Williams-Steiger Occupational Safety and Health Act of 1970.

§ 1926.3 Inspections—right of entry.

(a) It shall be a condition of each contract which is subject to section 107 of the Contract Work Hours and Safety Standards Act that the Secretary of Labor or any authorized representative shall have a right of entry to any site of contract performance for the following purposes:

(1) To inspect or investigate the matter of compliance with the safety and health standards contained in Subpart C of this part and following subparts; and

(2) To carry out the duties of the Secretary under section 107(b) of the Act.

(b) For the purpose of carrying out his investigative duties under the Act, the Secretary of Labor may, by agreement, use with or without reimbursement the services, personnel, and facilities of any State or Federal agency. Any agreements with States under this section shall be similar to those provided for under the Walsh-Healey Public Contracts Act under 41 CFR Part 50-205.

§ 1926.4 Rules of practice for administrative adjudications for enforcement of safety and health standards.

(a) The rules of practice for administrative adjudications for the enforcement of the safety and health standards contained in Subpart C of this part and the following subparts shall be the same as those published in Part 6 of this title with respect to safety and health violations of the Service Contract Act of 1965 (69 Stat. 1035), except as provided in paragraph (b) of this section.

(b) In the case of debarment, the findings required by section 107(d) of the Act shall be made by the hearing examiner or the Assistant Secretary of Labor for Occupational Safety and Health, as the case may be. Whenever, as provided in section 107(d)(2), a contractor requests termination of debarment before the end of the 3-year period prescribed in that section, the request shall be filed in writing with the Assistant Secretary of Labor for Occupational Safety and Health who shall publish a notice in the FEDERAL REGISTER that the request has been received and afford interested persons an opportunity to be heard upon the request, and thereafter the provisions of Part 6 of this title shall apply with respect to prehearing conferences, hearings and related matters, and decisions and orders.

Subpart B—General Interpretations

§ 1926.10 Scope of subpart.

(a) This subpart contains the general rules of the Secretary of Labor interpreting and applying the construction safety and health provisions of section 107 of the Contract Work Hours and Safety Standards Act (83 Stat. 96). Section 107 requires as a condition of each contract which is entered into under legislation subject to Reorganization Plan Number 14 of 1950 (64 Stat. 1267), and which is for construction, alteration, and/or repair, including painting and decorating, that no contractor or subcontractor contracting for any part of the contract work shall require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety, as determined under construction safety and health standards promulgated by the Secretary by regulation.

§ 1926.11 Coverage under section 103 of the act distinguished.

(a) *Coverage under section 103.* It is important to note that the coverage of section 107 differs from that for the overtime requirements of the Contract Work Hours and Safety Standards Act. The application of the overtime requirements is governed by section 103, which, subject to specific exemptions, includes (1) Federal contracts requiring or involving the employment of laborers or mechanics (thus including, but not limited to, contracts for construction), and (2) contracts assisted in whole or in part by Federal loans, grants, or guarantees under any statute "providing wage standards for such work." The statutes "providing wage standards for such work" include statutes for construction which require the payment of minimum wages in accordance with prevailing wage findings by the Secretary of Labor in accordance with the Davis-Bacon Act. A provision to section 103 excludes from the overtime requirements work where the Federal assistance is only in the form of a loan guarantee or insurance.

(b) *Coverage under section 107.* To be covered by section 107 of the Contract Work Hours and Safety Standards Act, a contract must be one which (1) is entered into under a statute that is subject to Reorganization Plan No. 14 of 1950 (64 Stat. 1267); and (2) is for "construction, alteration, and/or repair, including painting and decorating."

§ 1926.12 **Reorganization Plan No. 14 of 1950.**

(a) *General provisions.* Reorganization Plan No. 14 of 1950 relates to the prescribing by the Secretary of Labor of "appropriate standards, regulations, and procedures" with respect to the enforcement of labor standards under Federal and federally assisted contracts which are subject to various statutes subject to the Plan. The rules of the Secretary of Labor implementing the Plan are published in Part 5 of this title. Briefly, the statutes subject to the Plan include the Davis-Bacon Act, including its extension to Federal-aid highway legislation subject to 23 U.S.C. 113, and other statutes subject to the Plan by its original terms, statutes by which the Plan is expressly applied, such as the Contract Work Hours Standards Act by virtue of section 104(d) thereof.

(b) *The Plan.* (1) The statutes subject to Reorganization Plan No. 14 of 1950 are cited and briefly described in the remaining subparagraphs of this paragraph. These descriptions are general in nature and not intended to convey the full scope of the work to be performed under each statute. The individual statutes should be resorted to for a more detailed scope of the work.

(2) *Federal-Aid Highway Acts.* The provisions codified in 23 U.S.C. 113 apply to the initial construction, reconstruction, or improvement work performed by contractors or subcontractors on highway projects on the Federal-aid systems, the primary and secondary, as well as their extensions in urban areas, and the Interstate System, authorized under the highway laws providing for the expenditure of Federal funds upon the Federal-aid system. As cited in 41 Op. A.G. 488, 496, the Attorney General ruled that the Federal-Aid Highway Acts are subject to Reorganization Plan No. 14 of 1950.

(3) *National Housing Act (12 U.S.C. 1713, 1715a, 1715e, 1715k, 1715l(d) (3) and (4), 1715v, 1715w, 1715x, 1743, 1747, 1748, 1748h–2, 1750g, 1715l(h)(1), 1715z(j)(1), 1715z–1, 1715y(d), Subchapter 1x–A and 1x–B, 1715z–7).* This act covers construction which is financed with assistance by the Federal Government through programs of loan and mortgage insurance for the following purposes:

(i) Rental Housing—Section 1713 provides mortgage and insurance on rental housing of eight or more units and on mobile-home courts.

(ii) Section 1715a—Repealed.

(iii) Cooperative Housing—Section 1715e authorizes mortgage insurance on cooperative housing of five or more units as well as supplementary loans for improvement of repair or resale of memberships.

(iv) Urban Renewal Housing—Section 1715k provides mortgage insurance on single family or multifamily housing in approved urban renewal areas.

(v) Low or Moderate Income Housing—Section 1715L(d) (3) and (4) insures mortgages on low-cost single family or multifamily housing.

(vi) Housing for Elderly—Section 1715v provides mortgage insurance on rental housing for elderly or handicapped persons.

(vii) Nursing Homes—Section 1715w authorizes mortgage insurance on nursing home facilities and major equipment.

(viii) Experimental Housing—Section 1715x provides mortgage insurance on single family or multifamily housing with experimental design of materials.

(ix) War Housing Insurance—Section 1743 not active.

(x) Yield Insurance—Section 1747 insures investment returns on multifamily housing.

(xi) Armed Services Housing—Section 1748b to assist in relieving acute shortage and urgent need for family housing at or in areas adjacent to military installations.

(xii) Defense Housing for Impacted Areas—Section 1748h–2 provides mortgage insurance on single family or multifamily housing for sale or rent primarily to military or civilian personnel of the Armed Services, National Aeronautics and Space Administration, or Atomic Energy Commission.

(xiii) Defense Rental Housing—Section 1750g provides for mortgage insurance in critical defense housing areas.

(xiv) Rehabilitation—Section 1715L (h)(1) provides mortgage insurance for nonprofit organizations to finance the purchase and rehabilitation of deteriorating or substandard housing for subsequent resale to low-income home purchasers. There must be located on the property five or more single family dwellings of detached, semidetached, or row construction.

(xv) Homeowner Assistance—Section 1715Z(j)(1) authorizes mortgage insurance to nonprofit organizations or public bodies or agencies executed to finance sale of individual dwellings to lower income individuals or families. Also includes the rehabilitation of such housing if it is deteriorating or substandard for subsequent resale to lower income home purchasers.

(xvi) Rental Housing Assistance—Section 1715Z–1 authorizes mortgage insurance and interest reduction payments on behalf of owners of rental housing projects designed for occupancy by lower income families. Payments are also authorized for certain State or locally aided projects.

(xvii) Condominium Housing—Section 1715y(d) provides mortgage insurance on property purchased for the development of building sites. This includes waterlines and water supply installations, sewer lines and sewage disposal installations, steam, gas, and electrical lines and installations, roads, streets, curbs, gutters, sidewalks, storm drainage facilities, and other installations or work.

(xviii) Group Medical Practice Facilities—Subchapter LX–B authorizes mortgage insurance for the financing of construction and equipment, of facilities for group practice of medicine, optometry, or dentistry.

(xix) Nonprofit Hospitals—1715z–7 authorizes mortgage insurance to cover new and rehabilitated hospitals, including initial equipment.

(4) *Hospital Survey and Construction Act, as amended by the Hospital and Medical Facilities Amendments of 1964 (42 U.S.C. 291e).* The provisions of this Act cover construction contracts made by State or local authorities or private institutions under Federal grant-in-aid programs for the construction of hospitals and other medical facilities.

(5) *Federal Airport Act (49 U.S.C. 1114(b)).* The act provides grant-in-aid funds for airport construction limited to general site preparation runways, taxiways, aprons, lighting appurtenant thereto, and fire, rescue, and maintenance buildings. The act excludes construction intended for use as a public parking facility for passenger automobiles and the cost of construction of any part of an airport building except such of those buildings or parts of buildings to house facilities or activities directly related to the safety of persons at the airport.

(6) *Housing Act of 1949 (42 U.S.C. 1459).* Construction contracts awarded by local authorities financed with the assistance of loans and grants from the Federal Government. The construction programs are for slum clearance and urban renewal which includes rehabilitation grants, neighborhood development programs, neighborhood renewal plans, community renewal, demolition projects, and assistance for blighted areas. See the Housing Act of 1964, No. 21 below, concerning financial assistance for low-rent housing for domestic farm labor.

(7) *School Survey and Construction Act of 1950 (20 U.S.C. 636).* This act provides for a Federal grant-in-aid program to assist in the construction of schools in federally affected areas.

(8) *Defense Housing & Community Facilities & Services Act of 1951 (42 U.S.C. 1592i).* Inactive Program.

(9) *United States Housing Act of 1937 (42 U.S.C. 1416).* This statute covers the construction of low-rent public housing and slum clearance projects awarded by local authorities. These projects are financed with the assistance of loans and grants from the Federal Government. The slum clearance is the demolition and removal of buildings from any slum area to be used for a low-rent housing project.

(10) *Federal Civil Defense Act of 1950 (50 U.S.C. App. 2281).* This act provides for Federal assistance to the several States and their political subdivisions in the field of civil defense which includes procurement, construction, leasing, or renovating of materials and facilities.

(11) *Delaware River Basin Compact (sec. 15.1, 75 Stat. 714).* This joint resolution creates, by intergovernmental compact between the United States, Delaware, New Jersey, New York, and Pennsylvania, a regional agency for planning, conservation, utilization, development, management and control of the water and related sources of the Delaware River.

(12) *Cooperative Research Act (20 U.S.C. 332a(c)).* This act provides Federal grants to a university, college, or other appropriate public or nonprofit private agency or institution for part or all of the cost of constructing a facility for research or for research and related purposes. Research and related purposes means research, research training, surveys, or demonstrations in the field of

education, or the dissemination of information derived therefrom, or all of such activities, including (but without limitation) experimental schools, except that such term does not include research, research training, surveys, or demonstrations in the field of sectarian instruction or the dissemination of information derived therefrom. Construction includes new buildings, and the acquisition, expansion, remodeling, replacement, and alteration of existing buildings and the equipping of new buildings and existing buildings.

(13) *Health Professions Educational Assistance Act of 1963 (42 U.S.C. 292d (c)(4), 293a(c)(5))*. The provisions of this act provide for grants to assist public and nonprofit medical, dental, and similar schools for the construction, expansion, or renovation of teaching facilities.

(14) *Mental Retardation Facilities Construction Act (42 U.S.C. 295(a)(2)(D), 2662(5), 2675(a)(5))*. This act authorizes Federal financial assistance in the construction of centers for research on mental retardation and related aspects of human development, of university-affiliated facilities for the mentally retarded and of facilities for the mentally retarded.

(15) *Community Mental Health Centers Act (42 U.S.C. 2685(a)(5))*. This act authorizes Federal grants for the construction of public and other nonprofit community mental health centers.

(16) *Higher Education Facilities Act of 1963 (20 U.S.C. 753)*. This act authorizes the grant or loan of Federal funds to assist public and other nonprofit institutions of higher education in financing the construction, rehabilitation, or improvement of academic and related facilities in undergraduate and graduate schools.

(17) *Vocational Educational Act of 1963 (20 U.S.C. 35f)*. This act provides for Federal grants to the various States for construction of area vocational education school facilities.

(18) *Library Services and Construction Act (20 U.S.C. 355e(a)(4))*. This act provides for Federal assistance to the various States for the construction of public libraries.

(19) *Urban Mass Transportation Act of 1954 (49 U.S.C. 1609)*. This act provides for grants and loans to assist States and local public bodies and agencies thereof in financing the acquisition, construction, reconstruction, and improvement of facilities and equipment for use, by operation or lease or otherwise, in mass transportation service in urban areas and in coordinating such service with highway and other transportation in such areas.

(20) *Economic Opportunity Act of 1964 (42 U.S.C. 2947)*. This act covers construction which is financed with assistance of the Federal Government for the following purposes:

(i) Authorizes Federal assistance for construction of projects, buildings and works which will provide young men and women in rural and urban residential centers with education, vocational training, and useful work experience (Title I).

(ii) Authorizes financial assistance for construction work planned and carried out at the community level for antipoverty programs (Title II):

(*a*) Authorizes loans to low income rural families by assisting them to acquire or improve real estate or reduce encumbrances or erect improvements thereon, and to participate in cooperative associations and/or to finance nonagricultural enterprises which will enable such families to supplement their income (Title III);

(*b*) Authorizes loans to local cooperative associations furnishing essential processing, purchasing, or marketing services, supplies, or facilities predominantly to low-income rural families (Title III);

(c) Authorizes financial assistance to States, political subdivisions of States, public and nonprofit agencies, institutions, organizations, farm associations, or individuals in establishing housing, sanitation, education, and child day-care programs for migrants and other seasonally employed agricultural employees and their families (Title III).

(iii) Authorizes loans or guarantees loans to small businesses for construction work (Title IV).

(iv) Authorizes the payment of the cost of experimental, pilot, or demonstration projects to foster State programs providing construction work experience or training for unemployed fathers and needy people (Title V).

(21) *Housing Act of 1964 (42 U.S.C. 1486(f); 42 U.S.C. 1452b(e))*. Provides financial assistance for low-rent housing for domestic farm labor. The Act further provides for loans, through public or private agencies, where feasible, to owners or tenants of property in urban renewal areas to finance rehabilitation required to conform the property to applicable code requirements or carry out the objectives of the urban renewal plan for the area.

(22) *The Commercial Fisheries Research and Development Act of 1964 (16 U.S.C. 779e(b))*. This act authorizes financial assistance to State agencies for construction projects designed for the research and development of the commercial fisheries resources of the Nation.

(23) *The Nurse Training Act of 1964 (42 U.S.C. 296a(b)(5))*. This act provides for grants to assist in the construction of new facilities for collegiate, associate degree, and diploma schools of nursing, or replacement or rehabilitation of existing facilities of such schools.

(24) *Elementary and Secondary Education Act of 1965 (20 U.S.C. 241i, 848)*. The purpose of the act is to provide financial assistance to local educational agencies serving areas with concentrations of children from low-income families for construction in connection with the expansion or improvement of their educational programs.

(25) *Federal Water Pollution Control Act, as amended by the Water Quality Act of 1965 (3 U.S.C. 466e(g))*. Provides for financial assistance to States or municipalities for construction of facilities in connection with the prevention and control of water pollution. This includes projects that will control the discharge into any waters of untreated or inadequately treated sewage.

(26) *Appalachian Regional Development Act of 1965 (40 U.S.C. App. 402)*. Authorizes Federal assistance in the construction of an Appalachian development highway system; construction of multicounty demonstration health facilities, hospitals, regional health, diagnostic and treatment centers, and other facilities for health; seal and fill voids in abandoned mines and to rehabilitate strip mine areas; construction of school facilities for vocational education; and to assist in construction of sewage treatment works.

(27) *National Technical Institute for the Deaf Act (20 U.S.C. 684(b)(5))*. Provides for financial assistance for institutions of higher education for the establishment, construction, including equipment and operation, of a National Institution for the Deaf.

(28) *Housing Act of 1959 (12 U.S.C. 1701(q)(c)(3))*. This act authorizes loans to nonprofit corporations to be used for the construction of housing and related facilities for elderly families. Also, the provisions of the act provide for rehabilitation, alteration, conversion or improvement of existing structures which are otherwise inadequate for proposed dwellings used by such families.

(29) *College Housing Act of 1950, as amended (12 U.S.C. 1749a(f))*. This act provides for Federal loans to assist educational institutions in providing housing and other educational facilities for students and faculties.

(30) *Housing and Urban Development Act of 1965 (42 U.S.C. 1500c–3, 3107)*. This act provides for Federal assistance for the following purposes:

(i) Grants to States and local public bodies to assist in any construction work to be carried out under the open-space land and urban beautification provisions contained therein. It provides for parks and recreation areas, conservation of land and other natural resources, and historical and scenic purposes.

(ii) Grants to local public bodies and agencies to finance specific projects for basic public water facilities (including works for the storage, treatment, purification, and distribution of water), and for basic public sewer facilities (other than "treatment works" as defined in the Federal Water Pollution Control Act).

(iii) Grants to any local public body or agency to assist in financing neighborhood facilities. These facilities must be necessary for carrying out a program of health, recreational, social, or similar community service and located so as to be available for the use of the area's low or moderate income residents.

(31) *National Foundation on the Arts and the Humanities Act of 1965 (20 U.S.C. 954(k))*. The act establishes the "National Foundation on the Arts and

the Humanities" which may provide matching grants to groups (nonprofit organizations and State and other public organizations) and to individuals engaged in creative and performing arts for the entire range of artistic activity, including construction of necessary facilities.

(32) *Public Works and Economic Development Act of 1965 (42 U.S.C. 3222)*. This act provides for Federal assistance for the following purposes:

(i) Grants for the acquisition or development of land or improvements for public works or development facility usage in redevelopment areas. It authorizes loans to assist in financing the purchase or development of land for public works which will assist in the creation of long-term employment opportunities in the area.

(ii) Loans for the purchase or development of land and facilities (including machinery and equipment) for industrial or commercial usage within redevelopment areas; guarantee of loans for working capital made to private borrowers by private lending institutions in connection with direct loan projects; and to contract to pay to, or on behalf of, business entities locating in redevelopment areas, a portion of the interest costs which they incur in financing their expansions from private sources.

(iii) Loans and grants to create economic development centers within designated county economic development districts.

(33) *High-Speed Ground Transportation Study (40 U.S.C. 1636(b))*. This act provides for financial assistance for construction activities in connection with research and development of different forms of high-speed ground transportation and demonstration projects relating to intercity rail passenger service.

(34) *Heart Disease, Cancer and Stroke Amendments of 1965 (42 U.S.C. 299(b)(4))*. This act provides for grants to public or nonprofit private universities, medical schools, research institutions, hospitals, and other public and nonprofit agencies and institutions, or associations thereof to assist in construction and equipment of facilities in connection with research, training, demonstration of patient care, diagnostic and treatment related to heart disease, cancer, stroke, and other major diseases.

(35) *Mental Retardation Facilities and Community Mental Health Centers Construction Act Amendments of 1965 (20 U.S.C. 618(g))*. These provisions provide for grants to institutions of higher education for construction of facilities for research or for research and related purposes relating to education for mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, crippled, or other health impaired children who by reason thereof require special education.

(36) *Vocational Rehabilitation Act Amendments of 1965 (29 U.S.C. 41a(b)(4))*. This act authorizes grants to assist in meeting the costs of construction of public or other nonprofit workshops and rehabilitation facilities.

(37) *Clean Air and Solid Waste Disposal Acts (42 U.S.C. 3256)*. This act provides for financial assistance to public (Federal, State, interstate, or local) authorities, agencies, and institutions, private agencies and institutions, and individuals in the construction of facilities for solid-waste disposal. The term construction includes the installation of initial equipment.

(38) *Medical Library Assistance Act of 1965 (42 U.S.C. 280b–3(b)(3))*. This act provides for grants to public or private non-profit agencies or institutions for the cost of construction of medical library facilities.

(39) *Veterans Nursing Home Care Act (38 U.S.C. 5035(a)(8))*. The construction industry health and safety standards do not apply to this act since it is not subject to Reorganization Plan No. 14 of 1950.

(40) *National Capital Transportation Act of 1965 (40 U.S.C. 682(b)(4))*. This act provides for Federal assistance to the National Capital Transportation Agency for construction of a rail rapid transit system and related facilities for the Nation's Capital.

(41) *Alaska Centennial—1967 (80 Stat. 82)*. The program under this legislation has expired.

(42) *Model Secondary School for the Deaf Act (80 Stat. 1028)*. This act provides for funds to establish and operate, including construction and initial equipment of new buildings, expansion, remodeling, and alteration of existing buildings and equipment thereof, a model secondary school for the deaf to serve the residents of the District of Columbia and nearby States.

(43) *Allied Health Professions Personnel Training Act of 1966 (42 U.S.C. 295h(b)(2)(E))*. This act provides for grants to assist in the construction of new facilities for training centers for allied health professions, or replacement or rehabilitation of existing facilities for such centers.

(44) *Demonstration Cities and Metropolitan Development Act of 1966 (42 U.S.C. 3310; 12 U.S.C. 1715c; 42 U.S.C. 1416)*. This act provides for Federal assistance for the following purposes:

(i) Grants to assist in the construction, rehabilitation, alteration, or repair of residential property only if such residential property is designed for residential use for eight or more families to enable city demonstration agencies to carry out comprehensive city demonstration programs (42 U.S.C. 3310).

(ii) Amends the National Housing Act (12 U.S.C. 1715c) and the Housing Act of 1937 (42 U.S.C. 1416). See these acts for coverage.

(45) *Air Quality Act of 1967 (42 U.S.C. 1857j–3)*. This act provides for Federal assistance to public or nonprofit agencies, institutions, and organizations and to individuals, and contracts with public or private agencies, institutions, or persons for construction of research and development facilities and demonstration plants relating to the application of preventing or controlling discharges into the air of various types of pollutants.

(46) *Elementary and Secondary Education Amendments of 1967 (Title VII—Bilingual Education Act) (20 U.S.C. 880b–6)*. This act provides for Federal assistance to local educational agencies or to an institution of higher education applying jointly with a local educational agency for minor remodeling projects in connection with bilingual education programs to meet the special needs of children with limited English-speaking ability in the United States.

(47) *Vocational Rehabilitation Amendments of 1967 (29 U.S.C. 42a(c)(3))*. This act authorizes Federal assistance to any public or nonprofit private agency or organization for the construction of a center for vocational rehabilitation of handicapped individuals who are both deaf and blind which shall be known as the National Center for Deaf-Blind Youths and Adults. Construction includes new buildings and expansion, remodeling, alteration and renovation of existing buildings, and initial equipment of such new, newly acquired, expanded, remodeled, altered, or renovated buildings.

(48) *National Visitor Center Facilities Act of 1968 (40 U.S.C. 808)*. This act authorizes agreements and leases with the owner of property in the District of Columbia known as Union Station for the use of all or a part of such property for a national visitor center to be known as the National Visitor Center. The agreements and leases shall provide for such alterations of the Union Station Building as necessary to provide adequate facilities for visitors. They also provide for the construction of a parking facility, including necessary approaches and ramps.

(49) *Juvenile Delinquency Prevention and Control Act of 1968 (42 U.S.C. 3843)*. This act provides for Federal grants to State, county, municipal, or other public agency or combination thereof for the construction of facilities to be used in connection with rehabilitation services for the diagnosis, treatment, and rehabilitation of delinquent youths and youths in danger of becoming delinquent.

(50) *Housing and Urban Development Act of 1968 (including New Communities Act of 1968)(42 U.S.C. 3909)*. This act provides for Federal assistance for the following purposes:

(i) Guarantees, and commitments to guarantee, the bonds, debentures, notes, and other obligations issued by new community developers to help finance new community development projects.

(ii) Amends section 212(a) of the National Housing Act, adding section 236 for "Rental Housing for Lower Income Families" and section 242 "Mortgage Insurance for Nonprofit Hospitals" thereto.

(51) *Public Health Service Act Amendment (Alcoholic and Narcotic Addict Rehabilitation Amendments of 1968) (42 U.S.C. 2681, et seq.)*. This act provides for grants to a public and nonprofit private agency or organization for construction projects consisting of any facilities (including post-hospitalization treatment facilities for the prevention and treatment of alcoholism or treatment of narcotic addicts.)

(52) *Vocational Education Amendments of 1968 (20 U.S.C. 1246)*. This act provides for grants to States for the construction of area vocational education school facilities. The act further provides grants to public educational agencies, organizations, or institutions for construction of residential schools to provide vocational education for the purpose of demonstrating the feasibility and desirability of such schools. The act still further provides grants to State boards, to colleges and universities, to public educational agencies, organizations or institutions to reduce the cost of borrowing funds for the construction of residential schools and dormitories.

(53) *Postal Reorganization Act (39 U.S.C. 410(d)(2))*. This Act provides for construction, modification, alteration, repair, and other improvements of postal facilities located in leased buildings.

(54) *Airport and Airway Development Act of 1970 (Public Law 91–258, section 52(b)(7))*. This Act provides for Federal financial assistance to States and localities for the construction, improvement, or repair of public airports.

(55) (i) *Public Law 91–230*. This Act provides for federal financial assistance to institutions of higher learning for the construction of a National Center on Educational Media and Materials for the Handicapped. The program under this statute expires on July 1, 1971. Public Law 91–230, section 662(1).

(ii) *Education of the Handicapped Act (20 U.S.C. 12326, 1404(a))*. This Act provides for financial assistance to States for construction, expansion, remodeling, or alteration of facilities for the education of handicapped children at the preschool, elementary school, and secondary school levels.

(56) *Housing and Urban Development Act of 1970 (Public Law 91–609, section 707(b))*. This Act provides for grants to States and local public agencies to help finance the development of open-space or other land in urban areas for open-space uses. This Act becomes effective on July 1, 1971.

(57) *Developmental Disabilities Services and Facilities Construction Amendments of 1970 (Public Law 91–517, section 135(a)(5))*. This Act authorizes grants to States for construction of facilities for the provision of services to persons with developmental disabilities who are unable to pay for such services.

(58) *Rail Passenger Service Act of 1970 (Public Law 91–518, section 405(d))*. This statute provides that the National Railroad Passenger Corporation may construct physical facilities necessary to intercity rail passenger operations within the basic national rail passenger system designated by the Secretary of Transportation.

(c) *VA and FHA housing*. In the course of the legislative development of section 107, it was recognized that section 107 would not apply to housing construction for which insurance was issued by the Federal Housing Authority and Veterans' Administration for individual home ownership. Concerning construction under the National Housing Act, Reorganization Plan No. 14 of 1950 applies to construction which is subject to the minimum wage requirements of section 212(a) thereof (12 U.S.C. 1715c).

§ 1926.13 Interpretation of statutory terms.

(a) The terms "construction," "alteration," and "repair" used in section 107 of the Act are also used in section 1 of the Davis-Bacon Act (40 U.S.C. 276a), providing minimum wage protection on Federal construction contracts, and section 1 of the Miller Act (40 U.S.C. 270a), providing performance and payment bond protection on Federal construction contracts. Similarly, the terms "contractor" and "subcontractor" are used in those statutes, as well as in Copeland (Anti-Kickback) Act (40 U.S.C. 276c) and the Contract Work Hours and Safety Standards Act itself, which apply concurrently with the Miller Act and the Davis-Bacon Act on Federal construction contracts and also apply to most federally assisted construction contracts. The use of the same or identical terms in these statutes which apply concurrently with section 107 of the Act have considerable precedential value in ascertaining the coverage of section 107.

(b) It should be noted that section 1 of the Davis-Bacon Act limits minimum wage protection to laborers and mechanics "employed directly" upon the "site of the work." There is no comparable limitation in section 107 of the Act. Section 107 expressly requires as a self-executing condition of each covered contract that no contractor or subcontractor shall require "any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety" as these health and safety standards are applied in the rules of the Secretary of Labor.

(c) The term "subcontractor" under section 107 is considered to mean a person who agrees to perform any part of the labor or material requirements of a contract for construction, alteration or repair. Cf. MacEvoy Co. v. United States, 322 U.S. 102, 108–9 (1944). A person who undertakes to perform a portion of a contract involving the furnishing of supplies or materials will be considered a "subcontractor" under this part and section 107 if the work in question involves the performance of construction work and is to be performed: (1) Directly on or near the construction site, or (2) by the employer for the specific project on a customized basis. Thus, a supplier of materials which will become an integral part of the construction is a "subcontractor" if the supplier fabricates or assembles the goods or materials in question specifically for the construction project and the work involved may be said to be construction activity. If the goods or materials in question are ordinarily sold to other customers from regular inventory, the supplier is not a "subcontractor." Generally, the furnishing of prestressed concrete beams and prestressed structural steel would be considered manufacturing; therefore a supplier of such materials would not be considered a "subcontractor." An example of material supplied "for the specific project on a customized basis" as that phrase is used in this section would be ventilating ducts, fabricated in a shop away from the construction jobsite and specifically cut for the project according to design specifications. On the other hand, if a contractor buys standard size nails from a foundry, the foundry would not be a covered "subcontractor." Ordinarily a contract for the supplying of construction equipment to a contractor would not, in and of itself, be considered a "subcontractor" for purposes of this part.

§ 1926.14 Federal contract for "mixed" types of performance.

(a) It is the intent of the Congress to provide safety and health protection of Federal, federally financed, or federally assisted construction. See, for example, H. Report. No. 91–241, 91st Cong., first session, p. 1 (1969). Thus, it is clear that when a Federal contract calls for mixed types of performance, such as both manufacturing and construction, section 107 would apply to the construction. By its express terms, section 107 applies to a contract which is "for construction, alteration, and/or repair." Such a contract is not required to be exclusively for such services. The application of the section is not limited to contracts which permit an overall characterization as "construction contracts." The text of section 107 is not so limited.

(b) When the mixed types of performances include both construction and manufacturing, see also § 1926.15(b) concerning the relationship between the Walsh-Healey Public Contracts Act and section 107.

§ 1926.15 Relationship to the Service Contract Act; Walsh-Healey Public Contracts Act.

(a) A contract for "construction" is one for nonpersonal service. See, e.g., 41 CFR 1–1.208. Section 2(e) of the Service Contract Act of 1965 requires as a condition of every Federal contract (and bid specification therefor) exceeding $2,500, the "principal purpose" of which is to furnish services to the United States through the use of "service employees," that certain safety and health standards be met. See 29 CFR Part 1925, which contains the Department rules concerning these standards. Section 7 of the Service Contract Act provides that the Act shall not apply to "any contract of the United States or District of Columbia for construction, alteration, and/or repair, including painting and decorating of public buildings or public works." It is clear from the legislative history of section 107 that no gaps in coverage between the two statutes are intended.

(b) The Walsh-Healey Public Contracts Act requires that contracts entered into by any Federal agency for the manufacture or furnishing of materials, supplies, articles, and equipment in any amount exceeding $10,000 must contain,

among other provisions, a requirement that "no part of such contract will be performed nor will any of the materials, supplies, articles or equipment to be manufactured or furnished under said contract be manufactured or fabricated in any plants, factories, buildings, or surroundings or under working conditions which are unsanitary or hazardous or dangerous to the health and safety of employees engaged in the performance of said contract." The rules of the Secretary concerning these standards are published in 41 CFR Part 50–204, and express the Secretary of Labor's interpretation and application of section 1(e) of the Walsh-Healey Public Contracts Act to certain particular working conditions. None of the described working conditions are intended to deal with construction activities, although such activities may conceivably be a part of a contract which is subject to the Walsh-Healey Public Contracts Act. Nevertheless, such activities remain subject to the general statutory duty prescribed by section 1(e). Section 103(b) of the Contract Work Hours and Safety Standards Act provides, among other things, that the Act shall not apply to any work required to be done in accordance with the provisions of the Walsh-Healey Public Contracts Act.

§ 1926.16 Rules of construction.

(a) The prime contractor and any subcontractors may make their own arrangements with respect to obligations which might be more appropriately treated on a jobsite basis rather than individually. Thus, for example, the prime contractor and his subcontractors may wish to make an express agreement that the prime contractor or one of the subcontractors will provide all required first-aid or toilet facilities, thus relieving the subcontractors from the actual, but not any legal, responsibility (or, as the case may be, relieving the other subcontractors from this responsibility). In no case shall the prime contractor be relieved of overall responsibility for compliance with the requirements of this part for all work to be performed under the contract.

(b) By contracting for full performance of a contract subject to section 107 of the Act, the prime contractor assumes all obligations prescribed as employer obligations under the standards contained in this part, whether or not he subcontracts any part of the work.

(c) To the extent that a subcontractor of any tier agrees to perform any part of the contract, he also assumes responsibility for complying with the standards in this part with respect to that part. Thus, the prime contractor assumes the entire responsibility under the contract and the subcontractor assumes responsibility with respect to his portion of the work. With respect to subcontracted work, the prime contractor and any subcontractor or subcontractors shall be deemed to have joint responsibility.

(d) Where joint responsibility exists, both the prime contractor and his subcontractor or subcontractors, regardless of tier, shall be considered subject to the enforcement provisions of the Act.

Subpart C—General Safety and Health Provisions

§ 1926.20 General safety and health provisions.

(a) *Contractor requirements.* (1) Section 107 of the Act requires that it shall be a condition of each contract which is entered into under legislation subject to Reorganization Plan Number 14 of 1950 (64 Stat. 1267), as defined in § 1926.12, and is for construction, alteration, and/or repair, including painting and decorating, that no contractor or subcontractor for any part of the contract work shall require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety.

(b) *Accident prevention responsibilities.* (1) It shall be the responsibility of the employer to initiate and maintain such programs as may be necessary to comply with this part.

(2) Such programs shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons designated by the employers.

(3) The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirement of this part is prohibited. Such machine, tool, material, or equipment shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from its place of operation.

(4) The employer shall permit only those employees qualified by training or experience to operate equipment and machinery.

§ 1926.21 Safety training and education.

(a) *General requirements.* The Secretary shall, pursuant to section 107(f) of the Act, establish and supervise programs for the education and training of employers and employees in the recognition, avoidance and prevention of unsafe conditions in employments covered by the act.

(b) *Employer responsibility.* (1) The employer should avail himself of the safety and health training programs the Secretary provides.

(2) The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.

(3) Employees required to handle or use poisons, caustics, and other harmful substances shall be instructed regarding the safe handling and use, and be made aware of the potential hazards, personal hygiene, and personal protective measures required.

(4) In job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.

(5) Employees required to handle or use flammable liquids, gases, or toxic materials shall be instructed in the safe handling and use of these materials and made aware of the specific requirements contained in Subparts D, F, and other applicable subparts of this part.

(6) (i) All employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. The employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.

(ii) For purposes of subdivision (i) of this subparagraph, "confined or enclosed space" means any space having a limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined or enclosed spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than 4 feet in depth such as pits, tubs, vaults, and vessels.

§ 1926.22 Recording and reporting of injuries. [Reserved]

§ 1926.23 First aid and medical attention.

First aid services and provisions for medical care shall be made available by the employer for every employee covered by these regulations. Regulations prescribing specific requirements for first aid, medical attention, and emergency facilities are contained in Subpart D of this part.

§ 1926.24 Fire protection and prevention.

The employer shall be responsible for the development and maintenance of an effective fire protection and prevention program at the job site throughout all phases of the construction, repair, alteration, or demolition work. The employer shall ensure the availability of the fire protection and suppression equipment required by Subpart F of this part.

§ 1926.25 Housekeeping.

(a) During the course of construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.

(b) Combustible scrap and debris shall be removed at regular intervals during the course of construction. Safe means shall be provided to facilitate such removal.

(c) Containers shall be provided for the collection and separation of waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily, flammable, or hazardous wastes, such as caustics, acids, harmful

dusts, etc. shall be equipped with covers. Garbage and other waste shall be disposed of at frequent and regular intervals.

§ 1926.26 Illumination.

Construction areas, aisles, stairs, ramps, runways, corridors, offices, shops, and storage areas where work is in progress shall be lighted with either natural or artificial illumination. The minimum illumination requirements for work areas are contained in Subpart D of this part.

§ 1926.27 Sanitation.

Health and sanitation requirements for drinking water are contained in Subpart D of this part.

§ 1926.28 Personal protective equipment.

(a) The employer is responsible for requiring the wearing of appropriate personal protective equipment in all operations where there is an exposure to hazardous conditions or where this part indicates the need for using such equipment to reduce the hazards to the employees.

(b) Regulations governing the use, selection, and maintenance of personal protective and lifesaving equipment are described under Subpart E of this part.

§ 1926.29 Acceptable certifications.

(a) *Pressure vessels.* Current and valid certification by an insurance company or regulatory authority shall be deemed as acceptable evidence of safe installation, inspection, and testing of pressure vessels provided by the employer.

(b) *Boilers.* Boilers provided by the employer shall be deemed to be in compliance with the requirements of this part when evidence of current and valid certification by an insurance company or regulatory authority attesting to the safe installation, inspection, and testing is presented.

(c) *Other requirements.* Regulations prescribing specific requirements for other types of pressure vessels and similar equipment are contained in Subparts F and O of this part.

§ 1926.30 Shipbuilding and ship repairing.

(a) *General.* Shipbuilding, ship repairing, alterations, and maintenance performed on ships under Government contract, except naval ship construction, is work subject to the Act.

(b) *Applicable safety and health standards.* For the purpose of work carried out under this section, the safety and health regulations promulgated by the Secretary of Labor shall apply: Part 1915 of this title, Safety and Health Regulations for Ship Repairing, and Part 1916 of this title, Safety and Health Regulations for Shipbuilding.

§ 1926.31 Incorporation by reference.

(a) The specifications, standards and codes of agencies of the U.S. Government and organizations which are not agencies of the U.S. Government, to the extent they are legally incorporated by reference in this part, have the same force and effect as other standards in this part. The locations where these specifications, standards, and codes may be examined are as follows:

(1) Offices of the Occupational Safety and Health Administration, U.S. Department of Labor, Railway Labor Building, Washington, DC 20210.

(2) The Regional and Field Offices of the Occupational Safety and Health Administration which are listed in the U.S. Government Manual 1970–71, at page 324.

(b) Any changes in the specifications, standards and codes incorporated by reference in this part and an official historic file of such changes are available at the offices referred to in paragraph (a) of this section. All questions as to the applicability of such changes should also be referred to these offices.

§ 1926.32 Definitions.

The following definitions shall apply in the application of the regulations in this part:

(a) "Act" means section 107 of the Contract Work Hours and Safety Standards Act, commonly known as the Construction Safety Act (86 Stat. 96; 40 U.S.C. 333).

(b) "ANSI" means American National Standards Institute.

(c) "Approved" means sanctioned, endorsed, accredited, certified, or accepted as satisfactory by a duly constituted and nationally recognized authority or agency.

(d) "Authorized person" means a person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite.

(e) "Administration" means the Occupational Safety and Health Administration.

(f) "Competent person" means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

(g) "Defect" means any characteristic or condition which tends to weaken or reduce the strength of the tool, object, or structure of which it is a part.

(h) "Designated person" means "authorized person" as defined in paragraph (d) of this section.

(i) "Employee" means every laborer or mechanic under the Act regardless of the contractual relationship which may be alleged to exist between the laborer and mechanic and the contractor or subcontractor who engaged him. "Laborer and mechanic" are not defined in the Act, but the identical terms are used in the Davis-Bacon Act (40 U.S.C. 276a), which provides for minimum wage protection on Federal and federally assisted construction contracts. The use of the same term in a statute which often applies concurrently with section 107 of the Act has considerable precedential value in ascertaining the meaning of "laborer and mechanic" as used in the Act. "Laborer" generally means one who performs manual labor or who labors at an occupation requiring physical strength; "mechanic" generally means a worker skilled with tools. See 18 Comp. Gen. 341.

(j) "Employer" means contractor or subcontractor within the meaning of the Act and of this part.

(k) "Hazardous substance" means a substance which, by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful, is likely to cause death or injury.

(l) "Qualified" means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

(m) "Safety factor" means the ratio of the ultimate breaking strength of a member or piece of material or equipment to the actual working stress or safe load when in use.

(n) "Secretary" means the Secretary of Labor.

(o) "SAE" means Society of Automotive Engineers.

(p) "Shall" means mandatory.

(q) "Should" means recommended.

(r) "Suitable" means that which fits, and has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

Subpart D—Occupational Health and Environmental Controls

§ 1926.50 Medical services and first aid.

(a) The employer shall insure the availability of medical personnel for advice and consultation on matters of occupational health.

(b) Provisions shall be made prior to commencement of the project for prompt medical attention in case of serious injury.

(c) In the absence of an infirmary, clinic, hospital, or physician, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, a person who has a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite to render first aid.

(d) (1) First-aid supplies approved by the consulting physician shall be easily accessible when required.

(2) The first-aid kit shall consist of materials approved by the consulting physician in a weatherproof container with individual sealed packages for each type of item. The contents of the first-aid kit shall be checked by the employer before being sent out on each job and at least weekly on each job to ensure that the expended items are replaced.

(e) Proper equipment for prompt transportation of the injured person to a physician or hospital, or a communication system for contacting necessary ambulance service, shall be provided.

(f) The telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted.

§ 1926.51 Sanitation.

(a) *Potable water.* (1) An adequate supply of potable water shall be provided in all places of employment.

(2) Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap. Water shall not be dipped from containers.

(3) Any container used to distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose.

(4) The common drinking cup is prohibited.

(5) Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

(b) *Nonpotable water.* (1) Outlets for nonpotable water, such as water for industrial or firefighting purposes only, shall be identified by signs meeting the requirements of Subpart G of this part, to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes.

(2) There shall be no cross-connection, open or potential, between a system furnishing potable water and a system furnishing nonpotable water.

(c) *Toilets at construction jobsites.* (1) Toilets shall be provided for employees according to the following table:

TABLE D-1

Number of employees	*Minimum number of facilities*
20 or less	1.
20 or more	1 toilet seat and 1 urinal per 40 workers.
200 or more.	1 toilet seat and 1 urinal per 50 workers.

(2) Under temporary field conditions, provisions shall be made to assure not less than one toilet facility is available.

(3) Job sites, not provided with a sanitary sewer, shall be provided with one of the following toilet facilities unless prohibited by local codes:

(i) Privies (where their use will not contaminate ground or surface water);

(ii) Chemical toilets;

(iii) Recirculating toilets;

(iv) Combustion toilets.

(4) The requirements of this paragraph (c) for sanitation facilities shall not apply to mobile crews having transportation readily available to nearby toilet facilities.

(d) *Food handling.* All employees' food service facilities and operations shall meet the applicable laws, ordinances, and regulations of the jurisdictions in which they are located.

(e) *Temporary sleeping quarters.* When temporary sleeping quarters are provided, they shall be heated, ventilated, and lighted.

(f) *Washing facilities.* The employer shall provide adequate washing facilities for employees engaged in the application of paints, coating, herbicides, or insecticides, or in other operations where contaminants may be harmful to the employees. Such facilities shall be in near proximity to the worksite and shall be so equipped as to enable employees to remove such substances.

(g) [Revoked]

§ 1926.52 Occupational noise exposure.

(a) Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table D-2 of this section when measured on the A-scale of a standard sound level meter at slow response.

(b) When employees are subjected to sound levels exceeding those listed in Table D-2 of this section, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of the table, personal protective equipment as required in Subpart E, shall be provided and used to reduce sound levels within the levels of the table.

(c) If the variations in noise level involve maxima at intervals of 1 second or less, it is to be considered continuous.

(d) (1) In all cases where the sound levels exceed the values shown herein, a continuing, effective hearing conservation program shall be administered.

TABLE D-2—PERMISSIBLE NOISE EXPOSURES

Duration per day, hours:	*Sound level dBA slow response*
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

(2) (i) When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. Exposure to different levels for various periods of time shall be computed according to the formula set forth in subdivision (ii) of this subparagraph.

(ii)

$$F_e = \frac{T_1}{L_1} + \frac{T_2}{L_2} + \cdots + \frac{T_n}{L_n}$$

where:

F_e = The equivalent noise exposure factor.

T = The period of noise exposure at any essentially constant level.

L = The duration of the permissible noise exposure at the constant level (from Table D-2).

If the value of F_e exceeds unity (1) the exposure exceeds permissible levels.

(iii) A sample computation showing an application of the formula in subdivision (ii) of this paragraph is as follows. An employee is exposed at these levels for these periods:

110 dbA ¼ hour.
100 dbA ½ hour.
90 dbA 1½ hours.

$$F_e = \frac{\frac{1}{4}}{\frac{1}{2}} + \frac{\frac{1}{2}}{2} + \frac{1\frac{1}{2}}{8}$$

$F_e = 0.500 + 0.25 + 0.188$
$F_e = 0.938$

Since the value of F_e does not exceed unity, the exposure is within permissible limits.

(e) Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

§ 1926.53 Ionizing radiation.

(a) In construction and related activities involving the use of sources of ionizing radiation, the pertinent provisions of the Atomic Energy Commission's Standards for Protection Against Radiation (10 CFR Part 20), relating to protection against occupational radiation exposure, shall apply.

(b) Any activity which involves the use of radioactive materials or X-rays, whether or not under license from the Atomic Energy Commission, shall be performed by competent persons specially trained in the proper and safe operation of such equipment. In the case of materials used under Commission license, only persons actually licensed, or competent persons under direction and supervision of the licensee, shall perform such work.

§ 1926.54 Nonionizing radiation.

(a) Only qualified and trained employees shall be assigned to install, adjust, and operate laser equipment.

(b) Proof of qualification of the laser equipment operator shall be available and in possession of the operator at all times.

(c) Employees, when working in areas in which a potential exposure to direct or reflected laser light greater than 0.005 watts (5 milliwatts) exists, shall be provided with antilaser eye protection devices as specified in Subpart E of this part.

(d) Areas in which lasers are used shall be posted with standard laser warning placards.

(e) Beam shutters or caps shall be utilized, or the laser turned off, when laser transmission is not actually required. When the laser is left unattended for a substantial period of time, such as during lunch hour, overnight, or at change of shifts, the laser shall be turned off.

(f) Only mechanical or electronic means shall be used as a detector for guiding the internal alignment of the laser.

(g) The laser beam shall not be directed at employees.

(h) When it is raining or snowing, or when there is dust or fog in the air, the operation of laser systems shall be prohibited where practicable; in any event, employees shall be kept out of range of the area of source and target during such weather conditions.

(i) Laser equipment shall bear a label to indicate maximum output.

(j) Employees shall not be exposed to light intensities above:

(1) Direct staring: 1 micro-watt per square centimeter;

(2) Incidental observing: 1 milliwatt per square centimeter;

(3) Diffused reflected light: 2½ watts per square centimeter.

(k) Laser unit in operation should be set up above the heads of the employees, when possible.

(1) Employees shall not be exposed to microwave power densities in excess of 10 milliwatts per square centimeter.

§ 1926.55 Gases, vapors, fumes, dusts, and mists.

(a) Exposure of employees to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the "Threshold Limit Values of Airborne Contaminants for 1970" of the American Conference of Governmental Industrial Hygienists, shall be avoided.

(b) To achieve compliance with paragraph (a) of this section, administrative or engineering controls must first be implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and technical measures used for this purpose must first be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with § 1926.103.

(c) Paragraphs (a) and (b) of this section do not apply to the exposure of employees to airborne asbestos dust. Whenever any employee is exposed to airborne asbestos dust, the requirements of § 1910.93a of this title shall apply.

§ 1926.56 Illumination.

(a) *General.* Construction areas, ramps, runways, corridors, offices, shops, and storage areas shall be lighted to not less than the minimum illumination intensities listed in Table D–3 while any work is in progress:

TABLE D–3—MINIMUM ILLUMINATION INTENSITIES IN FOOT-CANDLES

Foot-candles:	*Area or operation*
5	General construction area lighting.
3	General construction areas, concrete placement, excavation and waste areas, accessways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: warehouses, corridors, hallways, and exitways.
5	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading.)
10	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, barracks or living quarters, locker or dressing rooms, mess halls, and indoor toilets and workrooms).
30	First aid stations, infirmaries, and offices.

(b) *Other areas.* For areas or operations not covered above, refer to the American National Standard A11.1–1965, R1970, Practice for Industrial Lighting, for recommended values of illumination.

§ 1926.57 Ventilation.

(a) *General.* Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, their concentrations shall not exceed the limits specified in § 1926.55(a). When ventilation is used as an engineering control method, the system shall be installed and operated according to the requirements of this section.

(b) *Local exhaust ventilation.* Local exhaust ventilation when used as described in (a) shall be designed to prevent dispersion into the air of dusts, fumes, mists, vapors, and gases in concentrations causing harmful exposure. Such exhaust systems shall be so designed that dusts, fumes, mists, vapors, or gases are not drawn through the work area of employees.

(c) *Design and operation.* Exhaust fans, jets, ducts, hoods, separators, and all necessary appurtenances, including refuse receptacles, shall be so designed, constructed, maintained and operated as to ensure the required protection by maintaining a volume and velocity of exhaust air sufficient to gather dusts, fumes, vapors, or gases from said equipment or process, and to convey them to suitable points of safe disposal, thereby preventing their dispersion in harmful quantities into the atmosphere where employees work.

(d) *Duration of operations.* (1) The exhaust system shall be in operation continually during all operations which it is designed to serve. If the employee remains in the contaminated zone, the system shall continue to operate after the cessation of said operations, the length of time to depend upon the individual circumstances and effectiveness of the general ventilation system.

(2) Since dust capable of causing disability is, according to the best medical opinion, of microscopic size, tending to remain for hours in suspension in still air, it is essential that the exhaust system be continued in operation for a time after the work process or equipment served by the same shall have ceased, in order to ensure the removal of the harmful elements to the required extent. For the same reason, employees wearing respiratory equipment should not remove same immediately until the atmosphere seems clear.

(e) *Disposal of exhaust materials.* The air outlet from every dust separator, and the dusts, fumes, mists, vapors, or gases collected by an exhaust or ventilating system shall discharge to the outside atmosphere. Collecting systems which return air to work area may be used if concentrations which accumulate in the work area air do not result in harmful exposure to employees. Dust and refuse discharged from an exhaust system shall be disposed of in such a manner that it will not result in harmful exposure to employees.

Subpart E—Personal Protective and Life Saving Equipment

§ 1926.100 Head protection.

(a) Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets.

(b) Helmets for the protection of employees against impact and penetration of falling and flying objects shall meet the specifications contained in American National Standards Institute, Z89.1–1969, Safety Requirements for Industrial Head Protection.

(c) Helmets for the head protection of employees exposed to high voltage electrical shock and burns shall meet the specifications contained in American National Standards Institute, Z89.2–1971.

§ 1926.101 Hearing protection.

(a) Wherever it is not feasible to reduce the noise levels or duration of exposures to those specified in Table D–2, Permissible Noise Exposures, in § 1926.52, ear protective devices shall be provided and used.

(b) Ear protective devices inserted in the ear shall be fitted or determined individually by competent persons.

(c) Plain cotton is not an acceptable protective device.

§ 1926.102 Eye and face protection.

(a) *General.* (1) Employees shall be provided with eye and face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.

(2) Eye and face protection equipment required by this Part shall meet the requirements specified in American National Standards Institute, Z87.1–1968, Practice for Occupational and Educational Eye and Face Protection.

(3) Employees whose vision requires the use of corrective lenses in spectacles, when required by this regulation to wear eye protection, shall be protected by goggles or spectacles of one of the following types:

(i) Spectacles whose protective lenses provide optical correction;

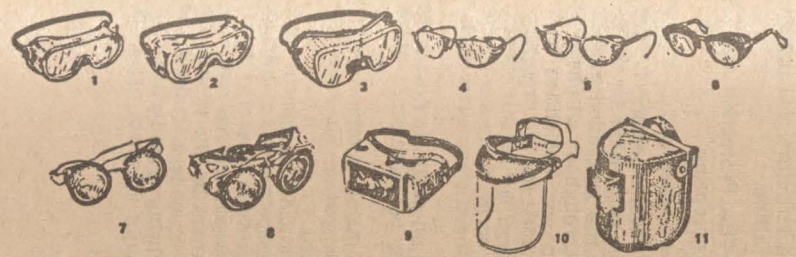
(ii) Goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles;

(iii) Goggles that incorporate corrective lenses mounted behind the protective lenses.

(4) Face and eye protection equipment shall be kept clean and in good repair. The use of this type equipment with structural or optical defects shall be prohibited.

(5) Table E–1 shall be used as a guide in the selection of face and eye protection for the hazards and operations noted.

TABLE E–1—EYE AND FACE PROTECTOR SELECTION GUIDE



1. GOGGLES, Flexible Fitting, Regular Ventilation
2. GOGGLES, Flexible Fitting, Hooded Ventilation
3. GOGGLES, Cushioned Fitting, Rigid Body
*4. SPECTACLES, Metal Frame, with Sideshields
*5. SPECTACLES, Plastic Frame, with Sideshields
*6. SPECTACLES, Metal-Plastic Frame, with Sideshields
** 7. WELDING GOGGLES, Eyecup Type, Tinted Lenses (Illustrated)
7A. CHIPPING GOGGLES, Eyecup Type, Clear Safety Lenses (Not Illustrated)
** 8. WELDING GOGGLES, Coverspec Type Tinted Lenses (Illustrated)
8A. CHIPPING GOGGLES, Coverspec Type, Clear Safety Lenses (Not Illustrated)
** 9. WELDING GOGGLES, Coverspec Type, Tinted Plate Lens
10. FACE SHIELD (Available with Plastic or Mesh Window)
**11. WELDING HELMETS

APPLICATIONS		
OPERATION	HAZARDS	RECOMMENDED PROTECTORS: Bold Type Numbers Signify Preferred Protection
ACETYLENE–BURNING ACETYLENE–CUTTING ACETYLENE–WELDING	SPARKS, HARMFUL RAYS, MOLTEN METAL, FLYING PARTICLES	7, 8, 9
CHEMICAL HANDLING	SPLASH, ACID BURNS, FUMES	2, 10 (For severe exposure add 10 over 2)
CHIPPING	FLYING PARTICLES	1, 3, 4, 5, 6, 7A, 8A
ELECTRIC (ARC) WELDING	SPARKS, INTENSE RAYS, MOLTEN METAL	9, 11 (11 in combination with 4, 5, 6, in tinted lenses, advisable)
FURNACE OPERATIONS	GLARE, HEAT, MOLTEN METAL	7, 8, 9 (For severe exposure add 10)
GRINDING–LIGHT	FLYING PARTICLES	1, 3, 4, 5, 6, 10
GRINDING–HEAVY	FLYING PARTICLES	1, 3, 7A, 8A (For severe exposure add 10)
LABORATORY	CHEMICAL SPLASH, GLASS BREAKAGE	2 (10 when in combination with 4, 5, 6)
MACHINING	FLYING PARTICLES	1, 3, 4, 5, 6, 10
MOLTEN METALS	HEAT, GLARE, SPARKS, SPLASH	7, 8 (10 in combination with 4, 5, 6, in tinted lenses)
SPOT WELDING	FLYING PARTICLES, SPARKS	1, 3, 4, 5, 6, 10

*Non-side shield spectacles are available for limited hazard use requiring only frontal protection.

**See Table E–2, in paragraph (b) of this section, Filter Lens Shade Numbers for Protection Against Radiant Energy.

(b) *Protection against radiant energy*—(1) *Selection of shade numbers for welding filter.* Table E–2 shall be used as a guide for the selection of the proper shade numbers of filter lenses or plates used in welding. Shades more dense than those listed may be used to suit the individual's needs.

TABLE E–2—FILTER LENS SHADE NUMBERS FOR PROTECTION AGAINST RADIANT ENERGY

Welding operation	*Shade number*
Shielded metal-arc welding 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	10
Gas-shielded arc welding (nonferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	11
Gas-shielded arc welding (ferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	12
Shielded metal-arc welding 3/16-, 7/32-, 1/4-inch diameter electrodes	12
5/16-, 3/8-inch diameter electrodes	14
Atomic hydrogen welding	10–14
Carbon-arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Gas welding (light), up to 1/8-inch	4 or 5
Gas welding (medium), 1/8-inch to 1/2-inch	5 or 6
Gas welding (heavy), over 1/2-inch	6 or 8

(2) *Laser protection.* (i) Employees whose occupation or assignment requires exposure to laser beams shall be furnished suitable laser safety goggles which will protect for the specific wavelength of the laser and be of optical density (O.D.) adequate for the energy involved. Table E–3 lists the maximum power or energy density for which adequate protection is afforded by glasses of optical densities from 5 through 8.

TABLE E–3—SELECTING LASER SAFETY GLASS

INTENSITY	ATTENUATION	
CW maximun power density (watts/cm²)	Optical density (O.D.)	Attenuation factor
10^{-2}	5	10^5
10^{-1}	6	10^6
1.0	7	10^7
10.0	8	10^8

Output levels falling between lines in this table shall require the higher optical density.

(ii) All protective goggles shall bear a label identifying the following data:

(*a*) The laser wavelengths for which use is intended;

(*b*) The optical density of those wavelengths;

(*c*) The visible light transmission.

§ 1926.103 Respiratory protection.

(a) *General.* (1) In emergencies, or when controls required by Subpart D of this part either fail or are inadequate to prevent harmful exposure to employees, appropriate respiratory protective devices shall be provided by the employer and shall be used.

(2) Respiratory protective devices shall be approved by the U.S. Bureau of Mines or acceptable to the U.S. Department of Labor for the specific contaminant to which the employee is exposed.

(b) *Respirator selection.* (1) The chemical and physical properties of the contaminant, as well as the toxicity and concentration of the hazardous material, shall be considered in selecting the proper respirators.

(2) The nature and extent of the hazard, work requirements, and conditions, as well as the limitations and characteristics of the available respirators, shall also be factors considered in making the proper selection.

(3) The following table lists the types of respirators required for protection in dangerous atmospheres:

TABLE E–4.—SELECTION OF RESPIRATORS

Hazard	Respirator (See Note)
Oxygen deficiency	Self-contained breathing apparatus. Hose mask with blower. Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Gas and vapor contaminants immediately dangerous to life and health.	Self-contained breathing apparatus. Hose mask with blower. Air-purifying, full facepiece respirator with chemical canister (gas mask). Self-rescue mouthpiece respirator (for escape only). Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Not immediately dangerous to life and health.	Air-line respirator. Hose mask without blower. Air-purifying, half-mask or mouthpiece respirator with chemical cartridge.

TABLE E–4. SELECTION OF RESPIRATORS—Continued

Hazard	Respirator (See Note)
Particulate contaminants immediately dangerous to life and health.	Self-contained breathing apparatus. Hose mask with blower. Air-purifying, full facepiece respirator with appropriate filter. Self-rescue mouthpiece respirator (for escape only). Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Not immediately dangerous to life and health.	Air-purifying, half-mask or mouthpiece respirator with filter pad or cartridge. Air-line respirator. Air-line abrasive-blasting respirator. Hose-mask without blower.
Combination gas, vapor, and particulate contaminants immediately dangerous to life and health.	Self-contained breathing apparatus. Hose mask with blower. Air-purifying, full facepiece respirator with chemical canister and appropriate filter (gas mask with filter). Self-rescue mouthpiece respirator (for escape only). Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Not immediately dangerous to life and health.	Air-line respirator. Hose mask without blower. Air-purifying, half-mask or mouthpiece respirator with chemical cartridge and appropriate filter.

NOTE: For the purpose of this part, "immediately dangerous to life and health" is defined as a condition that either poses an immediate threat to life and health or an immediate threat of severe exposure to contaminants, such as radioactive materials, which are likely to have adverse delayed effects on health.

(c) *Selection, issuance, use and care of respirators.* (1) Employees required to use respiratory protective equipment approved for use in atmospheres immediately dangerous to life shall be thoroughly trained in its use. Employees required to use other types of respiratory protective equipment shall be instructed in the use and limitations of such equipment.

(2) Respiratory protective equipment shall be inspected regularly and maintained in good condition. Gas mask canisters and chemical cartridges shall be replaced as necessary so as to provide complete protection. Mechanical filters shall be cleaned or replaced as necessary so as to avoid undue resistance to breathing.

(3) Respiratory protective equipment which has been previously used shall be cleaned and disinfected before it is issued by the employer to another employee. Emergency rescue equipment shall be cleaned and disinfected immediately after each use.

§ 1926.104 Safety belts, lifelines, and lanyards.

(a) Lifelines, safety belts, and lanyards shall be used only for employee safeguarding. Any lifeline, safety belt, or lanyard actually subjected to in-service loading, as distinguished from static load testing, shall be immediately removed from service and shall not be used again for employee safeguarding.

(b) Lifelines shall be secured above the point of operation to an anchorage or structural member capable of supporting a minimum dead weight of 5,400 pounds.

(c) Lifelines used on rock-scaling operations, or in areas where the lifeline may be subjected to cutting or abrasion, shall be a minimum of ⅞-inch wire core manila rope. For all other lifeline applications, a minimum of ¾-inch manila or equivalent, with a minimum breaking strength of 5,400 pounds, shall be used.

(d) Safety belt lanyard shall be a minimum of ½-inch nylon, or equivalent, with a maximum length to provide for a fall of no greater than 6 feet. The rope shall have a nominal breaking strength of 5,400 pounds.

(e) All safety belt and lanyard hardware shall be drop forged or pressed steel, cadmium plated in accordance with type 1, Class B plating specified in Federal Specification QQ–P–416. Surface shall be smooth and free of sharp edges.

(f) All safety belt and lanyard hardware, except rivets, shall be capable of withstanding a tensile loading of 4,000 pounds without cracking, breaking, or taking a permanent deformation.

§ 1926.105 Safety nets.

(a) Safety nets shall be provided when workplaces are more than 25 feet above the ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical.

(b) Where safety net protection is required by this part, operations shall not be undertaken until the net is in place and has been tested.

(c) (1) Nets shall extend 8 feet beyond the edge of the work surface where employees are exposed and shall be installed as close under the work surface as practical but in no case more than 25 feet below such work surface. Nets shall be hung with sufficient clearance to prevent user's contact with the surfaces or structures below. Such clearances shall be determined by impact load testing.

(2) It is intended that only one level of nets be required for bridge construction.

(d) The mesh size of nets shall not exceed 6 inches by 6 inches. All new nets shall meet accepted performance standards of 17,500 foot-pounds minimum impact resistance as determined and certified by the manufacturers, and shall bear a label of proof test. Edge ropes shall provide a minimum breaking strength of 5,000 pounds.

(e) Forged steel safety hooks or shackles shall be used to fasten the net to its supports.

(f) Connections between net panels shall develop the full strength of the net.

§ 1926.106 Working over or near water.

(a) Employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jacket or buoyant work vests.

(b) Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects which would alter their strength or buoyancy. Defective units shall not be used.

(c) Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.

(d) At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.

§ 1926.107 Definitions applicable to this subpart.

(a) "Contaminant" means any material which by reason of its action upon, within, or to a person is likely to cause physical harm.

(b) "Lanyard" means a rope, suitable for supporting one person. One end is fastened to a safety belt or harness and the other end is secured to a substantial object or a safety line.

(c) "Lifeline" means a rope, suitable for supporting one person, to which a lanyard or safety belt (or harness) is attached.

(d) "O.D." means optical density and refers to the light refractive characteristics of a lens.

(e) "Radiant energy" means energy that travels outward in all directions from its sources.

(f) "Safety belt" means a device, usually worn around the waist which, by reason of its attachment to a lanyard and lifeline or a structure, will prevent a worker from falling.

Subpart F—Fire Protection and Prevention

§ 1926.150 Fire protection.

(a) *General requirements.* (1) The employer shall be responsible for the development of a fire protection program to be followed throughout all phases of the construction and demolition work, and he shall provide for the firefighting equipment as specified in this subpart. As fire hazards occur, there shall be no delay in providing the necessary equipment.

(2) Access to all available firefighting equipment shall be maintained at all times.

(3) All firefighting equipment, provided by the employer, shall be conspicuously located.

(4) All firefighting equipment shall be periodically inspected and maintained in operating condition. Defective equipment shall be immediately replaced.

(5) As warranted by the project, the employer shall provide a trained and equipped firefighting organization (Fire Brigade) to assure adequate protection to life.

(b) *Water supply.* (1) A temporary or permanent water supply, of sufficient volume, duration, and pressure, required to properly operate the firefighting equipment shall be made available as soon as combustible materials accumulate.

(2) Where underground water mains are to be provided, they shall be installed, completed, and made available for use as soon as practicable.

(c) *Portable firefighting equipment—*(1) *Fire extinguishers and small hose lines.* (i) A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet of the protected building area, or major fraction thereof. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 100 feet.

(ii) One 55-gallon open drum of water with two fire pails may be substituted for a fire extinguisher having a 2A rating.

(iii) A ½-inch diameter garden-type hose line, not to exceed 100 feet in length and equipped with a nozzle, may be substituted for a 2A-rated fire extinguisher, provided it is capable of discharging a minimum of 5 gallons per minute with a minimum hose stream range of 30 feet horizontally. The garden-type hose lines shall be mounted on conventional racks or reels. The number and location of hose racks or reels shall be such that at least one hose stream can be applied to all points in the area.

(iv) One or more fire extinguishers, rated not less than 2A, shall be provided on each floor. In multistory buildings, at least one fire extinguisher shall be located adjacent to stairway.

(v) Extinguishers and water drums, subject to freezing, shall be protected from freezing.

(vi) A fire extinguisher, rated not less than 10B, shall be provided within 50 feet of wherever more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas are being used on the jobsite. This requirement does not apply to the integral fuel tanks of motor vehicles.

(vii) Carbon tetrachloride and other toxic vaporizing liquid fire extinguishers are prohibited.

(viii) Portable fire extinguishers shall be inspected periodically and maintained in accordance with Maintenance and Use of Portable Fire Extinguishers, NFPA No. 10A–1970.

(ix) Fire extinguishers which have been listed or approved by a nationally recognized testing laboratory, shall be used to meet the requirements of this subpart.

(x) Table F–1 may be used as a guide for selecting the appropriate portable fire extinguishers.

Table F-1 FIRE EXTINGUISHERS DATA

	WATER TYPE				FOAM	CARBON DIOXIDE	DRY CHEMICAL			
							SODIUM OR POTASSIUM BICARBONATE		MULTI-PURPOSE ABC	
	STORED PRESSURE	CARTRIDGE OPERATED	WATER PUMP TANK	SODA ACID	FOAM	12 LB	CARTRIDGE OPERATED	STORED PRESSURE	STORED PRESSURE	CARTRIDGE OPERATED
CLASS A FIRES — WOOD, PAPER, TRASH HAVING GLOWING EMBERS	YES	YES	YES	YES	YES	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	YES	YES
CLASS B FIRES — FLAMMABLE LIQUIDS, GASOLINE, OIL, PAINTS, GREASE, ETC.	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES
CLASS C FIRES — ELECTRICAL EQUIPMENT	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES
CLASS D FIRES — COMBUSTIBLE METALS	SPECIAL EXTINGUISHING AGENTS APPROVED BY RECOGNIZED TESTING LABORATORIES									
METHOD OF OPERATION	PULL PIN—SQUEEZE HANDLE	TURN UPSIDE DOWN AND BUMP	PUMP HANDLE	TURN UPSIDE DOWN	TURN UPSIDE DOWN	PULL PIN—SQUEEZE LEVER	RUPTURE CARTRIDGE—SQUEEZE LEVER	PULL PIN—SQUEEZE HANDLE	PULL PIN—SQUEEZE HANDLE	RUPTURE CARTRIDGE—SQUEEZE LEVER
RANGE	20'-40'	30'-40'	30'-40'	30'-40'	30'-40'	3'-8'	5'-20'	5'-20'	5'-20'	5'-20'
MAINTENANCE	CHECK AIR PRESSURE GAUGE MONTHLY	WEIGH GAS CARTRIDGE—ADD WATER IF REQUIRED ANNUALLY	DISCHARGE AND FILL WITH WATER ANNUALLY	DISCHARGE ANNUALLY —RECHARGE	DISCHARGE ANNUALLY —RECHARGE	WEIGH SEMI-ANNUALLY	CHECK PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	CHECK PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	CHECK PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	WEIGH GAS CARTRIDGE—CHECK CONDITION OF DRY CHEMICAL ANNUALLY

(2) *Fire hose and connections.* (i) One hundred feet, or less, of 1½-inch hose, with a nozzle capable of discharging water at 25 gallons or more per minute, may be substituted for a fire extinguisher rated not more than 2A in the designated area provided that the hose line can reach all points in the area.

(ii) If fire hose connections are not compatible with local firefighting equipment, the contractor shall provide adapters, or equivalent, to permit connections.

(iii) During demolition involving combustible materials, charged hose lines, supplied by hydrants, water tank trucks with pumps, or equivalent, shall be made available.

(d) *Fixed firefighting equipment—*(1) *Sprinkler protection.* (i) If the facility being constructed includes the installation of automatic sprinkler protection, the installation shall closely follow the construction and be placed in service as soon as applicable laws permit following completion of each story.

(ii) During demolition or alterations, existing automatic sprinkler installations shall be retained in service as long as reasonable. The operation of sprinkler control valves shall be permitted only by properly authorized persons. Modification of sprinkler systems to permit alterations or additional demolition should be expedited so that the automatic protection may be returned to service as quickly as possible. Sprinkler control valves shall be checked daily at close of work to ascertain that the protection is in service.

(2) *Standpipes.* In all structures in which standpipes are required, or where standpipes exist in structures being altered, they shall be brought up as soon as applicable laws permit, and shall be maintained as construction progresses in such a manner that they are always ready for fire protection use. The standpipes shall be provided with Siamese fire department connections on the outside of the structure, at the street level, which shall be conspicuously marked. There shall be at least one standard hose outlet at each floor.

(e) *Fire alarm devices.* (1) An alarm system, e.g., telephone system, siren, etc., shall be established by the employer whereby employees on the site and the local fire department can be alerted for an emergency.

(2) The alarm code and reporting instructions shall be conspicuously posted at phones and at employee entrances.

(f) *Fire cutoffs.* (1) Fire walls and exit stairways, required for the completed buildings, shall be given construction priority. Fire doors, with automatic closing devices, shall be hung on openings as soon as practicable.

(2) Fire cutoffs shall be retained in buildings undergoing alterations or demolition until operations necessitate their removal.

§ 1926.151 Fire prevention.

(a) *Ignition hazards.* (1) Electrical wiring and equipment for light, heat, or power purposes shall be installed in compliance with the requirements of the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of 1968), and the requirements of Subpart K of this part.

(2) Internal combustion engine powered equipment shall be so located that the exhausts are well away from combustible materials. When the exhausts are piped to outside the building under construction, a clearance of at least 6 inches shall be maintained between such piping and combustible material.

(3) Smoking shall be prohibited at or in the vicinity of operations which constitute a fire hazard, and shall be conspicuously posted: "No Smoking or Open Flame."

(4) Portable battery powered lighting equipment, used in connection with the storage, handling, or use of flammable gases or liquids, shall be of the type approved for the hazardous locations.

(5) The nozzle of air, inert gas, and steam lines or hoses, when used in the cleaning or ventilation of tanks and vessels that contain hazardous concentrations of flammable gases or vapors, shall be bonded to the tank or vessel shell. Bonding devices shall not be attached or detached in hazardous concentrations of flammable gases or vapors.

(b) *Temporary buildings.* (1) No temporary building shall be erected where it will adversely affect any means of exit.

(2) Temporary buildings, when located within another building or structure,

shall be of either noncombustible construction or of combustible construction having a fire resistance of not less than 1 hour.

(3) Temporary buildings, located other than inside another building and not used for the storage, handling, or use of flammable or combustible liquids, flammable gases, explosives, or blasting agents, or similar hazardous occupancies, shall be located at a distance of not less than 10 feet from another building or structure. Groups of temporary buildings, not exceeding 2,000 square feet in aggregate, shall, for the purposes of this part, be considered a single temporary building.

(c) *Open yard storage.* (1) Combustible materials shall be piled with due regard to the stability of piles and in no case higher than 20 feet.

(2) Driveways between and around combustible storage piles shall be at least 15 feet wide and maintained free from accumulation of rubbish, equipment, or other articles or materials. Driveways shall be so spaced that a maximum grid system unit of 50 feet by 150 feet is produced.

(3) The entire storage site shall be kept free from accumulation of unnecessary combustible materials. Weeds and grass shall be kept down and a regular procedure provided for the periodic cleanup of the entire area.

(4) When there is a danger of an underground fire, that land shall not be used for combustible or flammable storage.

(5) Method of piling shall be solid wherever possible and in orderly and regular piles. No combustible material shall be stored outdoors within 10 feet of a building or structure.

(6) Portable fire extinguishing equipment, suitable for the fire hazard involved, shall be provided at convenient, conspicuously accessible locations in the yard area. Portable fire extinguishers, rated not less than 2A, shall be placed so that maximum travel distance to the nearest unit shall not exceed 100 feet.

(d) *Indoor storage.* (1) Storage shall not obstruct, or adversely affect, means of exit.

(2) All materials shall be stored, handled, and piled with due regard to their fire characteristics.

(3) Noncompatible materials, which may create a fire hazard, shall be segregated by a barrier having a fire resistance of at least 1 hour.

(4) Material shall be piled to minimize the spread of fire internally and to permit convenient access for firefighting. Stable piling shall be maintained at all times. Aisle space shall be maintained to safely accommodate the widest vehicle that may be used within the building for firefighting purposes.

(5) Clearance of at least 36 inches shall be maintained between the top level of the stored material and the sprinkler deflectors.

(6) Clearance shall be maintained around lights and heating units to prevent ignition of combustible materials.

(7) A clearance of 24 inches shall be maintained around the path of travel of fire doors unless a barricade is provided, in which case no clearance is needed. Material shall not be stored within 36 inches of a fire door opening.

§ 1926.152 Flammable and combustible liquids.

(a) *General requirements.* (1) Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids. Approved metal safety cans shall be used for the handling and use of flammable liquids in quantities greater than one gallon, except that this shall not apply to those flammable liquid materials which are highly viscid (extremely hard to pour), which may be used and handled in original shipping containers. For quantities of one gallon or less, only the original container or approved metal safety cans shall be used for storage, use, and handling of flammable liquids.

(2) Flammable or combustible liquids shall not be stored in areas used for exits, stairways, or normally used for the safe passage of people.

(b) *Indoor storage of flammable and combustible liquids.* (1) No more than 25 gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet. For storage of liquefied petroleum gas, see § 1926.153.

(2) Quantities of flammable and combustible liquid in excess of 25 gallons shall be stored in an acceptable or approved cabinet meeting the following requirements:

(i) Acceptable wooden storage cabinets shall be constructed in the following manner, or equivalent: The bottom, sides, and top shall be constructed of an exterior grade of plywood at least 1 inch in thickness, which shall not break down or delaminate under standard fire test conditions. All joints shall be rabbeted and shall be fastened in two directions with flathead wood screws. When more than one door is used, there shall be a rabbeted overlap of not less than 1 inch. Steel hinges shall be mounted in such a manner as to not lose their holding capacity due to loosening or burning out of the screws when subjected to fire. Such cabinets shall be painted inside and out with fire retardant paint.

(ii) Approved metal storage cabinets will be acceptable.

(iii) Cabinets shall be labeled in conspicuous lettering, "Flammable—Keep Fire Away."

(3) Not more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one storage cabinet. Not more than three such cabinets may be located in a single storage area. Quantities in excess of this shall be stored in an inside storage room.

(4) (i) Inside storage rooms shall be constructed to meet the required fire-resistive rating for their use. Such construction shall comply with the test specifications set forth in Standard Methods of Fire Test of Building Construction and Material, NFPA 251–1969.

(ii) Where an automatic extinguishing system is provided, the system shall be designed and installed in an approved manner. Openings to other rooms or buildings shall be provided with noncombustible liquid-tight raised sills or ramps at least 4 inches in height, or the floor in the storage area shall be at least 4 inches below the surrounding floor. Openings shall be provided with approved self-closing fire doors. The room shall be liquid-tight where the walls join the floor. A permissible alternate to the sill or ramp is an open-grated trench, inside of the room, which drains to a safe location. Where other portions of the building or other buildings are exposed, windows shall be protected as set forth in the Standard for Fire Doors and Windows, NFPA No. 80–1970, for Class E or F openings. Wood of at least 1-inch nominal thickness may be used for shelving, racks, dunnage, scuffboards, floor overlay, and similar installations.

(iii) Materials which will react with water and create a fire hazard shall not be stored in the same room with flammable or combustible liquids.

(iv) Storage in inside storage rooms shall comply with Table F–2 following:

TABLE F–2

Fire protection provided	Fire resistance	Maximum size	Total allowable quantities gals./sq. ft./ floor area
Yes	2 hrs	500 sq. ft.	10
No	2 hrs	500 sq. ft.	4
Yes	1 hr	150 sq. ft.	5
No	1 hr	150 sq. ft.	2

NOTE: Fire protection system shall be sprinkler, water spray, carbon dioxide or other system approved by a nationally recognized testing laboratory for this purpose.

(v) Electrical wiring and equipment located in inside storage rooms shall be approved for Class 1, Division 1, Hazardous Locations. For definition of Class 1, Division 1, Hazardous Locations, see § 1926.404.

(vi) Every inside storage room shall be provided with either a gravity or a mechanical exhausting system. Such system shall commence not more than 12 inches above the floor and be designed to provide for a complete change of air within the room at least 6 times per hour. If a mechanical exhausting system is used, it shall be controlled by a switch located outside of the door. The ventilating equipment and any lighting fixtures shall be operated by the same switch. An electric pilot light shall be installed adjacent to the switch if flammable liquids are dispensed within the room. Where gravity ventilation is provided, the fresh air intake, as well as the exhausting outlet from the room, shall be on the exterior of the building in which the room is located.

(vii) In every inside storage room there shall be maintained one clear aisle at least 3 feet wide. Containers over 30 gallons capacity shall not be stacked one upon the other.

(viii) Flammable and combustible liquids in excess of that permitted in inside storage rooms shall be stored outside of buildings in accordance with paragraph (c) of this section.

(c) *Storage outside buildings.* (1) Storage of containers (not more than 60 gallons each) shall not exceed 1,100 gallons in any one pile or area. Piles or groups of containers shall be separated by a 5-foot clearance. Piles or groups of containers shall not be nearer than 20 feet to a building.

(2) Within 200 feet of each pile of containers, there shall be a 12-foot-wide access way to permit approach of fire control apparatus.

(3) The storage area shall be graded in a manner to divert possible spills away from buildings or other exposures, or shall be surrounded by a curb or earth dike at least 12 inches high. When curbs or dikes are used, provisions shall be made for draining off accumulations of ground or rain water, or spills of flammable or combustible liquids. Drains shall terminate at a safe location and shall be accessible to operation under fire conditions.

(4) Outdoor portable tank storage: (i) Portable tanks shall not be nearer than 20 feet from any building. Two or more portable tanks, grouped together, having a combined capacity in excess of 2,200 gallons, shall be separated by a 5-foot-clear area. Individual portable tanks exceeding 1,100 gallons shall be separated by a 5-foot-clear area.

(ii) Within 200 feet of each portable tank, there shall be a 12-foot-wide access way to permit approach of fire control apparatus.

(5) Storage areas shall be kept free of weeds, debris, and other combustible material not necessary to the storage.

(6) Portable tanks, not exceeding 660 gallons, shall be provided with emergency venting and other devices, as required by chapters III and IV of NFPA 30–1969, The Flammable and Combustible Liquids Code.

(7) Portable tanks, in excess of 660 gallons, shall have emergency venting and other devices, as required by chapters II and III of The Flammable and Combustible Liquids Code, NFPA 30–1969.

(d) *Fire control for flammable or combustible liquid storage.* (1) At least one portable fire extinguisher, having a rating of not less than 20–B units, shall be located outside of, but not more than 10 feet from, the door opening into any room used for storage of more than 60 gallons of flammable or combustible liquids.

(2) At least one portable fire extinguisher having a rating of not less than 20–B units shall be located not less than 25 feet, nor more than 75 feet, from any flammable liquid storage area located outside.

(3) When sprinklers are provided, they shall be installed in accordance with the Standard for the Installation of Sprinkler Systems, NFPA 13–1969.

(4) At least one portable fire extinguisher having a rating of not less than 20–B:C units shall be provided on all tank trucks or other vehicles used for transporting and/or dispensing flammable or combustible liquids.

(e) *Dispensing liquids.* (1) Areas in which flammable or combustible liquids are transferred at one time, in quantities greater than 5 gallons from one tank or container to another tank or container, shall be separated from other operations by 25-feet distance or by construction having a fire resistance of at least 1 hour. Drainage or other means shall be provided to control spills. Adequate natural or mechanical ventilation shall be provided to maintain the concentration of flammable vapor at or below 10 percent of the lower flammable limit.

(2) Transfer of flammable liquids from one container to another shall be done only when containers are electrically interconnected (bonded).

(3) Flammable or combustible liquids shall be drawn from or transferred into vessels, containers, or tanks within a building or outside only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container, or portable tanks, by gravity or pump, through an approved self-closing valve. Transferring by means of air pressure on the container or portable tanks is prohibited.

(4) The dispensing units shall be protected against collision damage.

(5) Dispensing devices and nozzles for flammable liquids shall be of an approved type.

(f) *Handling liquids at point of final use.* (1) Flammable liquids shall be kept in closed containers when not actually in use.

(2) Leakage or spillage of flammable or combustible liquids shall be disposed of promptly and safely.

(3) Flammable liquids may be used only where there are no open flames or other sources of ignition within 50 feet of the operation, unless conditions warrant greater clearance.

(g) *Service and refueling areas.* (1) Flammable or combustible liquids shall be stored in approved closed containers, in tanks located underground, or in aboveground portable tanks.

(2) The tank trucks shall comply with the requirements covered in the Standard for Tank Vehicles for Flammable and Combustible Liquids, NFPA No. 385–1966.

(3) The dispensing hose shall be an approved type.

(4) The dispensing nozzle shall be an approved automatic-closing type without a latch-open device.

(5) Underground tanks shall not be abandoned.

(6) Clearly identified and easily accessible switch(es) shall be provided at a location remote from dispensing devices to shut off the power to all dispensing devices in the event of an emergency.

(7) (i) Heating equipment of an approved type may be installed in the lubrication or service area where there is no dispensing or transferring of flammable liquids, provided the bottom of the heating unit is at least 18 inches above the floor and is protected from physical damage.

(ii) Heating equipment installed in lubrication or service areas, where flammable liquids are dispensed, shall be of an approved type for garages, and shall be installed at least 8 feet above the floor.

(8) There shall be no smoking or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, receiving or dispensing of flammable or combustible liquids.

(9) Conspicuous and legible signs prohibiting smoking shall be posted.

(10) The motors of all equipment being fueled shall be shut off during the fueling operation.

(11) Each service or fueling area shall be provided with at least one fire extinguisher having a rating of not less than 20–B:C located so that an extinguisher will be within 75 feet of each pump, dispenser, underground fill pipe opening, and lubrication or service area.

§ 1926.153 Liquefied petroleum gas (LP-Gas).

(a) *Approval of equipment and systems.* (1) Each system shall have containers, valves, connectors, manifold valve assemblies, and regulators of an approved type.

(2) All cylinders shall meet the Department of Transportation specification identification requirements published in 49 CFR Part 178, Shipping Container Specifications.

(b) *Welding on LP-Gas containers.* Welding is prohibited on containers.

(c) *Container valves and container accessories.* (1) Valves, fittings, and accessories connected directly to the container, including primary shut off valves, shall have a rated working pressure of at least 250 p.s.i.g. and shall be of material and design suitable for LP-Gas service.

(2) Connections to containers, except safety relief connections, liquid level gauging devices, and plugged openings, shall have shutoff valves located as close to the container as practicable.

(d) *Safety devices.* (1) Every container and every vaporizer shall be provided with one or more approved safety relief valves or devices. These valves shall be arranged to afford free vent to the outer air with discharge not less than 5 feet horizontally away from any opening into a building which is below such discharge.

(2) Shutoff valves shall not be installed between the safety relief device and the container, or the equipment or piping to which the safety relief device is connected, except that a shutoff valve may be used where the arrangement of this valve is such that full required capacity flow through the safety relief device is always afforded.

(3) Container safety relief devices and regulator relief vents shall be located not less than 5 feet in any direction from air openings into sealed combustion system appliances or mechanical ventilation air intakes.

(e) *Dispensing.* (1) Filling of fuel containers for trucks or motor vehicles from bulk storage containers shall be performed not less than 10 feet from the nearest masonry-walled building, or not less than 25 feet from the nearest building or other construction and, in any

event, not less than 25 feet from any building opening.

(2) Filling of portable containers or containers mounted on skids from storage containers shall be performed not less than 50 feet from the nearest building.

(f) *Requirements for appliances.* (1) LP-Gas consuming appliances shall be approved types.

(2) Any appliance that was originally manufactured for operation with a gaseous fuel other than LP-Gas, and is in good condition, may be used with LP-Gas only after it is properly converted, adapted, and tested for performance with LP-Gas before the appliance is placed in use.

(g) *Containers and regulating equipment installed outside of buildings or structures.* Containers shall be upright upon firm foundations or otherwise firmly secured. The possible effect on the outlet piping of settling shall be guarded against by a flexible connection or special fitting.

(h) *Containers and equipment used inside of buildings or structures.* (1) When operational requirements make portable use of containers necessary, and their location outside of buildings or structures is impracticable, containers and equipment shall be permitted to be used inside of buildings or structures in accordance with subparagraphs (2) through (11) of this paragraph.

(2) "Containers in use" means connected for use.

(3) Systems utilizing containers having a water capacity greater than 2½ pounds (nominal 1 pound LP-Gas capacity) shall be equipped with excess flow valves. Such excess flow valves shall be either integral with the container valves or in the connections to the container valve outlets.

(4) Regulators shall be either directly connected to the container valves or to manifolds connected to the container valves. The regulator shall be suitable for use with LP-Gas. Manifolds and fittings connecting containers to pressure regulator inlets shall be designed for at least 250 p.s.i.g. service pressure.

(5) Valves on containers having water capacity greater than 50 pounds (nominal 20 pounds LP-Gas capacity) shall be protected from damage while in use or storage.

(6) Aluminum piping or tubing shall not be used.

(7) Hose shall be designed for a working pressure of at least 250 p.s.i.g. Design, construction, and performance of hose, and hose connections shall have their suitability determined by listing by a nationally recognized testing agency. The hose length shall be as short as practicable. Hoses shall be long enough to permit compliance with spacing provisions of subparagraphs (1)–(13) of this paragraph, without kinking or straining, or causing hose to be so close to a burner as to be damaged by heat.

(8) Portable heaters, including salamanders, shall be equipped with an approved automatic device to shut off the flow of gas to the main burner, and pilot if used, in the event of flame failure. Such heaters, having inputs above 50,000 B.t.u. per hour, shall be equipped with either a pilot, which must be lighted and proved before the main burner can be turned on, or an electrical ignition system.

NOTE: The provisions of this subparagraph do not apply to portable heaters under 7,500 B.t.u. per hour input when used with containers having a maximum water capacity of 2½ pounds.

(9) Container valves, connectors, regulators, manifolds, piping, and tubing shall not be used as structural supports for heaters.

(10) Containers, regulating equipment, manifolds, pipe, tubing, and hose shall be located to minimize exposure to high temperatures or physical damage.

(11) Containers having a water capacity greater than 2½ pounds (nominal 1 pound LP-Gas capacity) connected for use shall stand on a firm and substantially level surface and, when necessary, shall be secured in an upright position.

(12) The maximum water capacity of individual containers shall be 245 pounds (nominal 100 pounds LP-Gas capacity).

(13) For temporary heating, heaters (other than integral heater-container units) shall be located at least 6 feet from any LP-Gas container. This shall not prohibit the use of heaters specifically designed for attachment to the container or to a supporting standard, provided they are designed and installed so as to prevent direct or radiant heat application from the heater onto the containers. Blower and radiant type heaters shall not be directed toward any LP-Gas container within 20 feet.

(14) If two or more heater-container units, of either the integral or nonintegral type, are located in an unpartitioned area on the same floor, the container or containers of each unit shall be separated from the container or containers of any other unit by at least 20 feet.

(15) When heaters are connected to containers for use in an unpartitioned area on the same floor, the total water capacity of containers, manifolded together for connection to a heater or heaters, shall not be greater than 735 pounds (nominal 300 pounds LP-Gas capacity). Such manifolds shall be separated by at least 20 feet.

(16) Storage of containers awaiting use shall be in accordance with paragraphs (j) and (k) of this section.

(i) *Multiple container systems.* (1) Valves in the assembly of multiple container systems shall be arranged so that replacement of containers can be made without shutting off the flow of gas in the system. This provision is not to be construed as requiring an automatic changeover device.

(2) Heaters shall be equipped with an approved regulator in the supply line between the fuel cylinder and the heater unit. Cylinder connectors shall be provided with an excess flow valve to minimize the flow of gas in the event the fuel line becomes ruptured.

(3) Regulators and low-pressure relief devices shall be rigidly attached to the cylinder valves, cylinders, supporting standards, the building walls, or otherwise rigidly secured, and shall be so installed or protected from the elements.

(j) *Storage of LPG containers.* Storage of LPG within buildings is prohibited.

(k) *Storage outside of buildings.* (1) Storage outside of buildings, for containers awaiting use, shall be located from the nearest building or group of buildings, in accordance with the following:

TABLE F–3

Quantity of LP-Gas stored:	Distance (feet)
500 lbs. or less	0
501 to 6,000 lbs	10
6,001 to 10,000 lbs	20
Over 10,000 lbs	25

(2) Containers shall be in a suitable ventilated enclosure or otherwise protected against tampering.

(l) *Fire protection.* Storage locations shall be provided with at least one approved portable fire extinguisher having a rating of not less than 20–B:C.

§ 1926.154 Temporary heating devices.

(a) *Ventilation.* (1) Fresh air shall be supplied in sufficient quantities to maintain the health and safety of workmen. Where natural means of fresh air supply is inadequate, mechanical ventilation shall be provided.

(2) When heaters are used in confined spaces, special care shall be taken to provide sufficient ventilation in order to ensure proper combustion, maintain the health and safety of workmen, and limit temperature rise in the area.

(b) *Clearance and mounting.* (1) Temporary heating devices shall be installed to provide clearance to combustible material not less than the amount shown in Table F–4.

(2) Temporary heating devices, which are listed for installation with lesser clearances than specified in Table F–4, may be installed in accordance with their approval.

TABLE F–4

Heating appliances	Minimum clearance, (inches)		
	Sides	Rear	Chimney connector
Room heater, circulating type	12	12	18
Room heater, radiant type	36	36	18

(3) Heaters not suitable for use on wood floors shall not be set directly upon them or other combustible materials. When such heaters are used, they shall rest on suitable heat insulating material or at least 1-inch concrete, or equivalent. The insulating material shall extend beyond the heater 2 feet or more in all directions.

(4) Heaters used in the vicinity of combustible tarpaulins, canvas, or similar coverings shall be located at least 10 feet from the coverings. The coverings shall be securely fastened to prevent ignition or upsetting of the heater

due to wind action on the covering or other material.

(c) *Stability.* Heaters, when in use, shall be set horizontally level, unless otherwise permitted by the manufacturer's markings.

(d) *Solid fuel salamanders.* Solid fuel salamanders are prohibited in buildings and on scaffolds.

(e) *Oil-fired heaters.* (1) Flammable liquid-fired heaters shall be equipped with a primary safety control to stop the flow of fuel in the event of flame failure. Barometric or gravity oil feed shall not be considered a primary safety control.

(2) Heaters designed for barometric or gravity oil feed shall be used only with the integral tanks.

(3) [Revoked]

(4) Heaters specifically designed and approved for use with separate supply tanks may be directly connected for gravity feed, or an automatic pump, from a supply tank.

§ 1926.155 Definitions applicable to this subpart.

(a) "Approved", for the purpose of this subpart, means equipment that has been listed or approved by a nationally recognized testing laboratory such as Factory Mutual Engineering Corp., or Underwriters' Laboratories, Inc., or Federal agencies such as Bureau of Mines, or U.S. Coast Guard, which issue approvals for such equipment.

(b) "Closed container" means a container so sealed by means of a lid or other device that neither liquid nor vapor will escape from it at ordinary temperatures.

(c) "Combustible liquids" mean any liquid having a flash point at or above 140° F. (60° C.), and below 200° F. (93.4° C.).

(d) "Combustion" means any chemical process that involves oxidation sufficient to produce light or heat.

(e) "Fire brigade" means an organized group of employees that are knowledgeable, trained, and skilled in the safe evacuation of employees during emergency situations and in assisting in fire fighting operations.

(f) "Fire resistance" means so resistant to fire that, for specified time and under conditions of a standard heat intensity, it will not fail structurally and will not permit the side away from the fire to become hotter than a specified temperature. For purposes of this part, fire resistance shall be determined by the Standard Methods of Fire Tests of Building Construction and Materials, NFPA 251–1969.

(g) "Flammable" means capable of being easily ignited, burning intensely, or having a rapid rate of flame spread.

(h) "Flammable liquids" means any liquid having a flash point below 140° F. and having a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100° F.

(i) "Flash point" of the liquid means the temperature at which it gives off vapor sufficient to form an ignitable mixture with the air near the surface of the liquid or within the vessel used as determined by appropriate test procedure and apparatus as specified below.

(1) The flash point of liquids having a viscosity less than 45 Saybolt Universal Second(s) at 100° F. (37.8° C.) and a flash point below 175° F. (79.4° C.) shall be determined in accordance with the Standard Method of Test for Flash Point by the Tag Closed Tester, ASTM D–56–69.

(2) The flash point of liquids having a viscosity of 45 Saybolt Universal Second(s) or more at 175° F. (79.4° C.) or higher shall be determined in accordance with the Standard Method of Test for Flash Point by the Pensky Martens Closed Tester, ASTM D–93–69.

(j) "Liquefied petroleum gases," "LPG" and "LP Gas" mean and include any material which is composed predominantly of any of the following hydrocarbons, or mixtures of them, such as propane, propylene, butane (normal butane or iso-butane), and butylenes.

(k) "Portable tank" means a closed container having a liquid capacity more than 60 U.S. gallons, and not intended for fixed installation.

(l) "Safety can" means an approved closed container, of not more than 5 gallons capacity, having a flash-arresting screen, spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.

(m) "Vapor pressure" means the pressure, measured in pounds per square inch (absolute), exerted by a volatile liquid as determined by the "Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method)." (ASTM D–323–58).

Subpart G—Signs, Signals, and Barricades

§ 1926.200 Accident prevention signs and tags.

(a) *General.* Signs and symbols required by this subpart shall be visible at all times when work is being performed, and shall be removed or covered promptly when the hazards no longer exist.

(b) *Danger signs.* (1) Danger signs (see Figure G–1) shall be used only where an immediate hazard exists.

(2) Danger signs shall have red as the predominating color for the upper panel; black outline on the borders; and a white lower panel for additional sign wording.

(c) *Caution signs.* (1) Caution signs (see Figure G–2) shall be used only to warn against potential hazards or to caution against unsafe practices.

(2) Caution signs shall have yellow as the predominating color; black upper panel and borders; yellow lettering of "caution" on the black panel; and the lower yellow panel for additional sign wording. Black lettering shall be used for additional wording.

Figure G-1



Figure G-2



(d) *Exit signs.* Exit signs, when required, shall be lettered in legible red letters, not less than 6 inches high, on a white field and the principal stroke of the letters shall be at least three-fourths inch in width.

(e) *Safety instruction signs.* Safety instruction signs, when used, shall be white with green upper panel with white letters to convey the principal message. Any additional wording on the sign shall be black letters on the white background.

(f) *Directional signs.* Directional signs, other than automotive traffic signs specified in paragraph (g) of this section, shall be white with a black panel and a white directional symbol. Any additional wording on the sign shall be black letters on the white background.

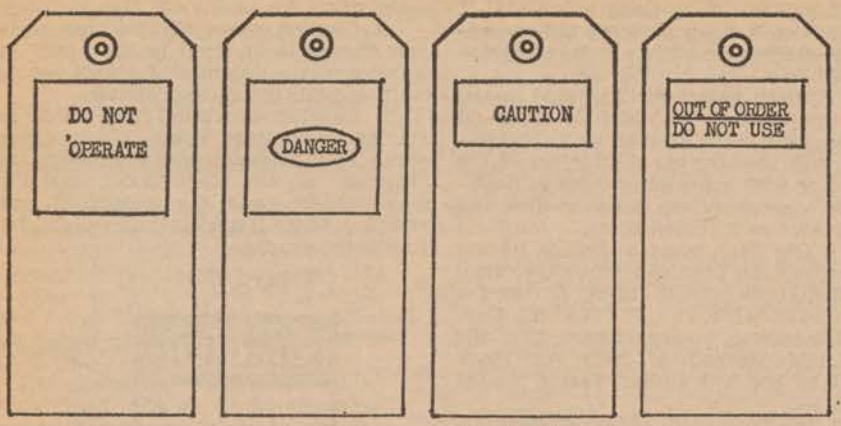
(g) *Traffic signs.* (1) Construction areas shall be posted with legible traffic signs at points of hazard.

(2) All traffic control signs or devices used for protection of construction workmen shall conform to American National Standards Institute D6.1–1971, Manual on Uniform Traffic Control Devices for Streets and Highways.

(h) *Accident prevention tags.* (1) Accident prevention tags shall be used as a temporary means of warning employees of an existing hazard, such as defective tools, equipment, etc. They shall not be used in place of, or as a substitute for, accident prevention signs.

(2) Specifications for accident prevention tags similar to those in Table G–1 shall apply.

Table G-1



White tag – White letters on red square	White tag – White letters on red oval with a black square	Yellow tag – Yellow letters on a black background	White tag – White letters on black background

Basic Stock (Background)	Safety Colors (Ink)	Copy Specification (Letters)
White	Red	Do Not Operate
White	Black and Red	Danger
Yellow	Black	Caution
White	Black	Out of Order Do Not Use

(i) *Additional rules.* American National Standards Institute (ANSI) Z35.1–1968, Specifications for Accident Prevention Signs, and Z35.2–1968, Specifications for Accident Prevention Tags, contain rules which are additional to the rules prescribed in this section. The employer shall comply with ANSI Z35.1–1968 and Z35.2–1968 with respect to rules not specifically prescribed in this subpart.

§ 1926.201 Signaling.

(a) *Flagmen.* (1) When operations are such that signs, signals, and barricades do not provide the necessary protection on or adjacent to a highway or street, flagmen or other appropriate traffic controls shall be provided.

(2) Signaling directions by flagmen shall conform to American National Standards Institute D6.1–1971, Manual on Uniform Traffic Control Devices for Streets and Highways.

(3) Hand signaling by flagmen shall be by use of red flags at least 18 inches square or sign paddles, and in periods of darkness, red lights.

(4) Flagmen shall be provided with and shall wear a red or orange warning garment while flagging. Warning garments worn at night shall be of reflectorized material.

(b) *Crane and hoist signals.* Regulations for crane and hoist signaling will be found in applicable American National Standards Institute standards.

§ 1926.202 Barricades.

Barricades for protection of employees shall conform to the portions of the American National Standards Institute D6.1–1971, Manual on Uniform Traffic Control Devices for Streets and Highways, relating to barricades.

§ 1926.203 Definitions applicable to this Subpart.

(a) "Barricade" means an obstruction to deter the passage of persons or vehicles.

(b) "Signs" are the warnings of hazard, temporarily or permanently affixed or placed, at locations where hazards exist.

(c) "Signals" are moving signs, provided by workers, such as flagmen, or by devices, such as flashing lights, to warn of possible or existing hazards.

(d) "Tags" are temporary signs, usually attached to a piece of equipment or part of a structure, to warn of existing or immediate hazards.

Subpart H—Materials Handling, Storage, Use, and Disposal

§ 1926.250 General requirements for storage.

(a) *General.* (1) All materials stored in tiers shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling or collapse.

(2) Maximum safe load limits of floors within buildings and structures, in pounds per square foot, shall be conspicuously posted in all storage areas, except for floor or slab on grade. Maximum safe loads shall not be exceeded.

(3) Aisles and passageways shall be kept clear to provide for the free and safe movement of material handling equipment or employees. Such areas shall be kept in good repair.

(4) When a difference in road or working levels exist, means such as ramps, blocking, or grading shall be used to ensure the safe movement of vehicles between the two levels.

(b) *Material storage.* (1) Material stored inside buildings under construction shall not be placed within 6 feet of any hoistway or inside floor openings, nor within 10 feet of an exterior wall which does not extend above the top of the material stored.

(2) Employees required to work on stored material in silos, hoppers, tanks, and similar storage areas shall be equipped with lifelines and safety belts meeting the requirements of Subpart E of this part.

(3) Noncompatible materials shall be segregated in storage.

(4) Bagged materials shall be stacked by stepping back the layers and cross-keying the bags at least every 10 bags high.

(5) Materials shall not be stored on scaffolds or runways in excess of supplies needed for immediate operations.

(6) Brick stacks shall not be more than 7 feet in height. When a loose brick stack reaches a height of 4 feet, it shall be tapered back 2 inches in every foot of height above the 4-foot level.

(7) When masonry blocks are stacked higher than 6 feet, the stack shall be tapered back one-half block per tier above the 6-foot level.

(8) Lumber:

(i) Used lumber shall have all nails withdrawn before stacking.

(ii) Lumber shall be stacked on level and solidly supported sills.

(iii) Lumber shall be so stacked as to be stable and self-supporting.

(iv) Lumber piles shall not exceed 20 feet in height provided that lumber to be handled manually shall not be stacked more than 16 feet high.

(9) Structural steel, poles, pipe, bar stock, and other cylindrical materials, unless racked, shall be stacked and blocked so as to prevent spreading or tilting.

§ 1926.251 Rigging equipment for material handling.

(a) *General.* (1) Rigging equipment for material handling shall be inspected

prior to use on each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service.

(2) Rigging equipment shall not be loaded in excess of its recommended safe working load, as prescribed in Tables H-1 through H-20 in this subpart, following § 1926.252(e) for the specific equipment.

(3) Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to employees.

(4) Special custom design grabs, hooks, clamps, or other lifting accessories, for such units as modular panels, prefabricated structures and similar materials, shall be marked to indicate the safe working loads and shall be proof-tested prior to use to 125 percent of their rated load.

(b) *Alloy steel chains.* (1) Welded alloy steel chain slings shall have permanently affixed durable identification stating size, grade, rated capacity, and sling manufacturer.

(2) Hooks, rings, oblong links, pear-shaped links, welded or mechanical coupling links, or other attachments, when used with alloy steel chains, shall have a rated capacity at least equal to that of the chain.

(3) Job or shop hooks and links, or makeshift fasteners, formed from bolts, rods, etc., or other such attachments, shall not be used.

(4) Rated capacity (working load limit) for alloy steel chain slings shall conform to the values shown in Table H-1.

(5) Whenever wear at any point of any chain link exceeds that shown in Table H-2, the assembly shall be removed from service.

(c) *Wire rope.* (1) Tables H-3 through H-14 shall be used to determine the safe working loads of various sizes and classifications of improved plow steel wire rope and wire rope slings with various types of terminals. For sizes, classifications, and grades not included in these tables, the safe working load recommended by the manufacturer for specific, identifiable products shall be followed, provided that a safety factor of not less than 5 is maintained.

(2) Protruding ends of strands in splices on slings and bridles shall be covered or blunted.

(3) Wire rope shall not be secured by knots, except on haul back lines on scrapers.

(4) The following limitations shall apply to the use of wire rope:

(i) An eye splice made in any wire rope shall have not less than three full tucks. However, this requirement shall not operate to preclude the use of another form of splice or connection which can be shown to be as efficient and which is not otherwise prohibited.

(ii) Except for eye splices in the ends of wires and for endless rope slings, each wire rope used in hoisting or lowering, or in pulling loads, shall consist of one continuous piece without knot or splice.

(iii) Eyes in wire rope bridles, slings, or bull wires shall not be formed by wire rope clips or knots.

(iv) Wire rope shall not be used if, in any length of eight diameters, the total number of visible broken wires exceeds 10 percent of the total number of wires, or if the rope shows other signs of excessive wear, corrosion, or defect.

(5) When U-bolt wire rope clips are used to form eyes, Table H-20 shall be used to determine the number and spacing of clips.

(i) When used for eye splices, the U-bolt shall be applied so that the "U" section is in contact with the dead end of the rope.

(d) *Natural rope, and synthetic fiber*—(1) *General.* When using natural or synthetic fiber rope slings, Tables H-15, 16, 17, and 18 shall apply.

(2) All splices in rope slings provided by the employer shall be made in accordance with fiber rope manufacturers' recommendations.

(i) In manila rope, eye splices shall contain at least three full tucks, and short splices shall contain at least six full tucks (three on each side of the centerline of the splice).

(ii) In layed synthetic fiber rope, eye splices shall contain at least four full tucks, and short splices shall contain at least eight full tucks (four on each side of the centerline of the splice).

(iii) Strand end tails shall not be trimmed short (flush with the surface of the rope) immediately adjacent to the full tucks. This precaution applies to both eye and short splices and all types of fiber rope. For fiber ropes under 1-inch diameter, the tails shall project at least six rope diameters beyond the last full tuck. For fiber ropes 1-inch diameter and larger, the tails shall project at least 6 inches beyond the last full tuck. In applications where the projecting tails may be objectionable, the tails shall be tapered and spliced into the body of the rope using at least two additional tucks (which will require a tail length of approximately six rope diameters beyond the last full tuck).

(iv) For all eye splices, the eye shall be sufficiently large to provide an included angle of not greater than 60° at the splice when the eye is placed over the load or support.

(v) Knots shall not be used in lieu of splices.

(e) *Synthetic webbing (nylon, polyester, and polypropylene).* (1) The employer shall have each synthetic web sling marked or coded to show:

(i) Name or trademark of manufacturer.

(ii) Rated capacities for the type of hitch.

(iii) Type of material.

(2) Rated capacity shall not be exceeded.

(f) *Shackles and hooks.* (1) Table H-19 shall be used to determine the safe working loads of various sizes of shackles, except that higher safe working loads are permissible when recommended by the manufacturer for specific, identifiable products, provided that a safety factor of not less than 5 is maintained.

(2) The manufacturer's recommendations shall be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks. All hooks for which no applicable manufacturer's recommendations are available shall be tested to twice the intended safe working load before they are initially put into use. The employer shall maintain a record of the dates and results of such tests.

§ 1926.252 Disposal of waste materials.

(a) Whenever materials are dropped more than 20 feet to any point lying outside the exterior walls of the building, an enclosed chute of wood, or equivalent material, shall be used. For the purpose of this paragraph, an enclosed chute is a slide, closed in on all sides, through which material is moved from a high place to a lower one.

(b) When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above. Signs warning of the hazard of falling materials shall be posted at each level. Removal shall not be permitted in this lower area until debris handling ceases above.

(c) All scrap lumber, waste material, and rubbish shall be removed from the immediate work area as the work progresses.

(d) Disposal of waste material or debris by burning shall comply with local fire regulations.

(e) All solvent waste, oily rags, and flammable liquids shall be kept in fire resistant covered containers until removed from worksite.

Table H-1
RATED CAPACITY (WORKING LOAD LIMIT), FOR ALLOY STEEL CHAIN SLINGS*
RATED CAPACITY (WORKING LOAD LIMIT), POUNDS

Chain Size, Inches	Single Branch Sling — 90 degree Loading	Double Sling Vertical Angle (1) 30 degree / 45 degree / 60 degree Horizontal Angle (2) 60 degree / 45 degree / 30 degree			Triple and Quadruple Sling Vertical Angle (1) 30 degree / 45 degree / 60 degree Horizontal Angle (2) 60 degree / 45 degree / 30 degree		
1/4	3,250	5,560	4,550	3,250	8,400	6,800	4,900
3/8	6,600	11,400	9,300	6,600	17,000	14,000	9,900
1/2	11,250	19,500	15,900	11,250	29,000	24,000	17,000
5/8	16,500	28,500	23,300	16,500	43,000	35,000	24,500
3/4	23,000	39,800	32,500	23,000	59,500	48,500	34,500
7/8	28,750	49,800	40,600	28,750	74,500	61,000	43,000
1	38,750	67,100	54,800	38,750	101,000	82,000	58,000
1-1/8	44,500	77,000	63,000	44,500	115,500	94,500	66,500
1-1/4	57,500	99,500	81,000	57,500	149,000	121,500	86,000
1-3/8	67,000	116,000	94,000	67,000	174,000	141,000	100,500
1-1/2	80,000	138,000	112,500	80,000	207,000	169,000	119,500
1-3/4	100,000	172,000	140,000	100,000	258,000	210,000	150,000

(1) Rating of multileg slings adjusted for angle of loading measured as the included angle between the inclined leg and the vertical.

(2) Rating of multileg slings adjusted for angle of loading between the inclined leg and the horizontal plane of the load.

*Other grades of proof tested steel chain include Proof Coil, BBB Coil and Hi-Test Chain. These grades are not recommended for overhead lifting and therefore are not covered by this code.

TABLE H-2—MAXIMUM ALLOWABLE WEAR AT ANY POINT OF LINK

Chain size (inches)	*Maximum allowable wear (inch)*	*Chain size (inches)*	*Maximum allowable wear (inch)*
1/4	3/64	7/8	11/64
3/8	5/64	1	3/16
1/2	7/64	1 1/8	7/32
5/8	9/64	1 1/4	1/4
3/4	5/32	1 3/8	9/32
		1 1/2	5/16
		1 3/4	11/32

Table H-3
RATED CAPACITIES FOR SINGLE LEG SLINGS
6 x 19 AND 6 x 37 CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE
WITH FIBER CORE (FC)

Rope Dia (Inches)	Rope Constr	Rated Capacities, Tons (2,000 lb) Vertical HT	Vertical MS	Vertical S	Choker HT	Choker MS	Choker S	Vertical Basket* HT	Vertical Basket* MS	Vertical Basket* S
1/4	6 x 19	0.49	0.51	0.55	0.37	0.38	0.41	0.99	1.0	1.1
5/16	6 x 19	0.76	0.79	0.85	0.57	0.59	0.64	1.5	1.6	1.7
3/8	6 x 19	1.1	1.1	1.2	0.80	0.85	0.91	2.1	2.2	2.4
7/16	6 x 19	1.4	1.5	1.6	1.1	1.1	1.2	2.9	3.0	3.3
1/2	6 x 19	1.8	2.0	2.1	1.4	1.5	1.6	3.7	3.9	4.3
9/16	6 x 19	2.3	2.5	2.7	1.7	1.9	2.0	4.6	5.0	5.4
5/8	6 x 19	2.8	3.1	3.3	2.1	2.3	2.5	5.6	6.2	6.7
3/4	6 x 19	3.9	4.4	4.8	2.9	3.3	3.6	7.8	8.8	9.5
7/8	6 x 19	5.1	5.9	6.4	3.9	4.5	4.8	10.0	12.0	13.0
1	6 x 19	6.7	7.7	8.4	5.0	5.8	6.3	13.0	15.0	17.0
1-1/8	6 x 19	8.4	9.5	10.0	6.3	7.1	7.9	17.0	19.0	21.0
1-1/4	6 x 37	9.8	11.0	12.0	7.4	8.3	9.2	20.0	22.0	25.0
1-3/8	6 x 37	12.0	13.0	15.0	8.9	10.0	11.0	24.0	27.0	30.0
1-1/2	6 x 37	14.0	16.0	17.0	10.0	12.0	13.0	28.0	32.0	35.0
1-5/8	6 x 37	16.0	18.0	21.0	12.0	14.0	15.0	33.0	37.0	41.0
1-3/4	6 x 37	19.0	21.0	24.0	14.0	16.0	18.0	38.0	43.0	48.0
2	6 x 37	25.0	28.0	31.0	18.0	21.0	23.0	49.0	55.0	62.0

HT = Hand Tucked Splice and Hidden Tuck Splice
For hidden tuck splice (IWRC) use values in HT columns.
MS = Mechanical Splice
S = Swaged or Zinc Poured Socket
*These values only apply when the D/d ratio for HT slings is 10 or greater, and for MS and S slings is 20 or greater where:
D = Diameter of curvature around which the body of the sling is bent.
d = Diameter of rope.

Table H-4
RATED CAPACITIES FOR SINGLE LEG SLINGS
6 x 19 AND 6 x 37 CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE
WITH INDEPENDENT WIRE ROPE CORE (IWRC)

Rope Dia (Inches)	Rope Constr	Rated Capacities, Tons (2,000 lb)								
		Vertical			Choker			Vertical Basket*		
		HT	MS	S	HT	MS	S	HT	MS	S
1/4	6 x 19	0.53	0.56	0.59	0.40	0.42	0.44	1.0	1.1	1.2
5/16	6 x 19	0.81	0.87	0.92	0.61	0.65	0.69	1.6	1.7	1.8
3/8	6 x 19	1.1	1.2	1.3	0.86	0.93	0.98	2.3	2.5	2.6
7/16	6 x 19	1.5	1.7	1.8	1.2	1.3	1.3	3.1	3.4	3.5
1/2	6 x 19	2.0	2.2	2.3	1.5	1.6	1.7	3.9	4.4	4.6
9/16	6 x 19	2.5	2.7	2.9	1.8	2.1	2.2	4.9	5.5	5.8
5/8	6 x 19	3.0	3.4	3.6	2.2	2.5	2.7	6.0	6.8	7.2
3/4	6 x 19	4.2	4.9	5.1	3.1	3.6	3.8	8.4	9.7	10.0
7/8	6 x 19	5.5	6.6	6.9	4.1	4.9	5.2	11.0	13.0	14.0
1	6 x 19	7.2	8.5	9.0	5.4	6.4	6.7	14.0	17.0	18.0
1-1/8	6 x 19	9.0	10.0	11.0	6.8	7.8	8.5	18.0	21.0	23.0
1-1/4	6 x 37	10.0	12.0	13.0	7.9	9.2	9.9	21.0	24.0	26.0
1-3/8	6 x 37	13.0	15.0	16.0	9.6	11.0	12.0	25.0	29.0	32.0
1-1/2	6 x 37	15.0	17.0	19.0	11.0	13.0	14.0	30.0	35.0	38.0
1-5/8	6 x 37	18.0	20.0	22.0	13.0	15.0	17.0	35.0	41.0	44.0
1-3/4	6 x 37	20.0	24.0	26.0	15.0	18.0	19.0	41.0	47.0	51.0
2	6 x 37	26.0	30.0	33.0	20.0	23.0	25.0	53.0	61.0	66.0

HT = Hand Tucked Splice
For hidden tuck splice (IWRC) use Table H-3 values in HT column.
MS = Mechanical Splice.
S = Swaged or Zinc Poured Socket.
*These values only apply when the D/d ratio for HT slings is 10 or greater, and for MS and S Slings is 20 or greater where:
D = Diameter of curvature around which the body of the sling is bent.
d = Diameter of rope.

Table H-5
RATED CAPACITIES FOR SINGLE LEG SLINGS
CABLE LAID ROPE – MECHANICAL SPLICE ONLY
7x7x7 & 7x7x19 CONSTRUCTIONS GALVANIZED AIRCRAFT GRADE ROPE
7x6x19 IWRC CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE

Rope		Rated Capacities, Tons (2,000 lb)		
Dia (Inches)	Constr	Vertical	Choker	Vertical Basket*
1/4	7x7x7	0.50	0.38	1.0
3/8	7x7x7	1.1	0.81	2.2
1/2	7x7x7	1.8	1.4	3.7
5/8	7x7x7	2.8	2.1	5.5
3/4	7x7x7	3.8	2.9	7.6
5/8	7x7x19	2.9	2.2	5.8
3/4	7x7x19	4.1	3.0	8.1
7/8	7x7x19	5.4	4.0	11.0
1	7x7x19	6.9	5.1	14.0
1-1/8	7x7x19	8.2	6.2	16.0
1-1/4	7x7x19	9.9	7.4	20.0
3/4	7x6x19 IWRC	3.8	2.8	7.6
7/8	7x6x19 IWRC	5.0	3.8	10.0
1	7x6x19 IWRC	6.4	4.8	13.0
1-1/8	7x6x19 IWRC	7.7	5.8	15.0
1-1/4	7x6x19 IWRC	9.2	6.9	18.0
1-5/16	7x6x19 IWRC	10.0	7.5	20.0
1-3/8	7x6x19 IWRC	11.0	8.2	22.0
1-1/2	7x6x19 IWRC	13.0	9.6	26.0

*These values only apply when the D/d ratio is 10 or greater where:
D = Diameter of curvature around which the body of the sling is bent.
d = Diameter of rope.

Table H-6
RATED CAPACITIES FOR SINGLE LEG SLINGS
8-PART AND 6-PART BRAIDED ROPE
6 x 7 AND 6 x 19 CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE
7 x 7 CONSTRUCTION GALVANIZED AIRCRAFT GRADE ROPE

Component Ropes		Rated Capacities, Tons (2,000 lb)					
Diameter (Inches)	Constr	Vertical		Choker		Basket Vertical to 30 degree*	
		8-Part	6-Part	8-Part	6-Part	8-Part	6-Part
3/32	6 x 7	0.42	0.32	0.32	0.24	0.74	0.55
1/8	6 x 7	0.76	0.57	0.57	0.42	1.3	0.98
3/16	6 x 7	1.7	1.3	1.3	0.94	2.9	2.2
3/32	7 x 7	0.51	0.39	0.38	0.29	0.89	0.67
1/8	7 x 7	0.95	0.71	0.71	0.53	1.6	1.2
3/16	7 x 7	2.1	1.5	1.5	1.2	3.6	2.7
3/16	6 x 19	1.7	1.3	1.3	0.98	3.0	2.2
1/4	6 x 19	3.1	2.3	2.3	1.7	5.3	4.0
5/16	6 x 19	4.8	3.6	3.6	2.7	8.3	6.2
3/8	6 x 19	6.8	5.1	5.1	3.8	12.0	8.9
7/16	6 x 19	9.3	6.9	6.9	5.2	16.0	12.0
1/2	6 x 19	12.0	9.0	9.0	6.7	21.0	15.0
9/16	6 x 19	15.0	11.0	11.0	8.5	26.0	20.0
5/8	6 x 19	19.0	14.0	14.0	10.0	32.0	24.0
3/4	6 x 19	27.0	20.0	20.0	15.0	46.0	35.0
7/8	6 x 19	36.0	27.0	27.0	20.0	62.0	47.0
1	6 x 19	47.0	35.0	35.0	26.0	81.0	61.0

*These values only apply when the D/d ratio is 20 or greater where:
D = Diameter of curvature around which the body of the sling is bent.
d = Diameter of component rope.

Table H-7
RATED CAPACITIES FOR 2-LEG & 3-LEG BRIDLE SLINGS
6 x 19 AND 6 x 37 CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE
WITH FIBER CORE (FC)

Rope		Rated Capacities, Tons (2,000 lb)											
		2-Leg Bridle Slings						3-Leg Bridle Slings					
Dia (Inches)	Constr	Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree	
		HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS
1/4	6 x 19	0.85	0.88	0.70	0.72	0.49	0.51	1.3	1.3	1.0	1.1	0.74	0.7
5/16	6 x 19	1.3	1.4	1.1	1.1	0.76	0.79	2.0	2.0	1.6	1.7	1.1	1.2
3/8	6 x 19	1.8	1.9	1.5	1.6	1.1	1.1	2.8	2.9	2.3	2.4	1.6	1.7
7/16	6 x 19	2.5	2.6	2.0	2.2	1.4	1.5	3.7	4.0	3.0	3.2	2.1	2.3
1/2	6 x 19	3.2	3.4	2.6	2.8	1.8	2.0	4.8	5.1	3.9	4.2	2.8	3.0
9/16	6 x 19	4.0	4.3	3.2	3.5	2.3	2.5	6.0	6.5	4.9	5.3	3.4	3.7
5/8	6 x 19	4.8	5.3	4.0	4.4	2.8	3.1	7.3	8.0	5.9	6.5	4.2	4.6
3/4	6 x 19	6.8	7.6	5.5	6.2	3.9	4.4	10.0	11.0	8.3	9.3	5.8	6.6
7/8	6 x 19	8.9	10.0	7.3	8.4	5.1	5.9	13.0	15.0	11.0	13.0	7.7	8.9
1	6 x 19	11.0	13.0	9.4	11.0	6.7	7.7	17.0	20.0	14.0	16.0	10.0	11.0
1-1/8	6 x 19	14.0	16.0	12.0	13.0	8.4	9.5	22.0	24.0	18.0	20.0	13.0	14.0
1-1/4	6 x 37	17.0	19.0	14.0	16.0	9.8	11.0	25.0	29.0	21.0	23.0	15.0	17.0
1-3/8	6 x 37	20.0	23.0	17.0	19.0	12.0	13.0	31.0	35.0	25.0	28.0	18.0	20.0
1-1/2	6 x 37	24.0	27.0	20.0	22.0	14.0	16.0	36.0	41.0	30.0	33.0	21.0	24.0
1-5/8	6 x 37	28.0	32.0	23.0	26.0	16.0	18.0	43.0	48.0	35.0	39.0	25.0	28.0
1-3/4	6 x 37	33.0	37.0	27.0	30.0	19.0	21.0	49.0	56.0	40.0	45.0	28.0	32.0
2	6 x 37	43.0	48.0	35.0	39.0	25.0	28.0	64.0	72.0	52.0	59.0	37.0	41.0

HT = Hand Tucked Splice.
MS = Mechanical Splice

Table H-8
RATED CAPACITIES FOR 2-LEG & 3-LEG BRIDLE SLINGS
6 x 19 and 6 x 37 CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE
WITH INDEPENDENT WIRE ROPE CORE (IWRC)

Rope		Rated Capacities, Tons (2,000 lb)											
		2-Leg Bridle Sling						3-Leg Bridle Sling					
		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree	
Dia (Inches)	Constr	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS
1/4	6 x 19	0.92	0.97	0.75	0.79	0.53	0.56	1.4	1.4	1.1	1.2	0.79	0.84
5/16	6 x 19	1.4	1.5	1.1	1.2	1.81	0.87	2.1	2.3	1.7	1.8	1.2	1.3
3/8	6 x 19	2.0	2.1	1.6	1.8	1.1	1.2	3.0	3.2	2.4	2.6	1.7	1.9
7/16	6 x 19	2.7	2.9	2.2	2.4	1.5	1.7	4.0	4.4	3.3	3.6	2.3	2.5
1/2	6 x 19	3.4	3.8	2.8	3.1	2.0	2.2	5.1	5.7	4.2	4.6	3.0	3.3
9/16	6 x 19	4.3	4.8	3.5	3.9	2.5	2.7	6.4	7.1	5.2	5.8	3.7	4.1
5/8	6 x 19	5.2	5.9	4.2	4.8	3.0	3.4	7.8	8.8	6.4	7.2	4.5	5.1
3/4	6 x 19	7.3	8.4	5.9	6.9	4.2	4.9	11.0	13.0	8.9	10.0	6.3	7.3
7/8	6 x 19	9.6	11.0	7.8	9.3	5.5	6.6	14.0	17.0	12.0	14.0	8.3	9.9
1	6 x 19	12.0	15.0	10.0	12.0	7.2	8.5	19.0	22.0	15.0	18.0	11.0	13.0
1-1/8	6 x 19	16.0	18.0	13.0	15.0	9.0	10.0	23.0	27.0	19.0	22.0	13.0	16.0
1-1/4	6 x 37	18.0	21.0	15.0	17.0	10.0	12.0	27.0	32.0	22.0	26.0	16.0	18.0
1-3/8	6 x 37	22.0	25.0	18.0	21.0	13.0	15.0	33.0	38.0	27.0	31.0	19.0	22.0
1-1/2	6 x 37	26.0	30.0	21.0	25.0	15.0	17.0	39.0	45.0	32.0	37.0	23.0	26.0
1-5/8	6 x 37	31.0	35.0	25.0	29.0	18.0	20.0	46.0	53.0	38.0	43.0	27.0	31.0
1-3/4	6 x 37	35.0	41.0	29.0	33.0	20.0	24.0	53.0	61.0	43.0	50.0	31.0	35.0
2	6 x 37	46.0	53.0	37.0	43.0	26.0	30.0	68.0	79.0	56.0	65.0	40.0	46.0

HT = Hand Tucked Splice
MS = Mechanical Splice

Table H-9
RATED CAPACITIES FOR 2-LEG & 3-LEG BRIDLE SLINGS
CABLE LAID ROPE – MECHANICAL SPLICE ONLY
7 x 7 x 7 AND 7 x 7 x 19 CONSTRUCTIONS GALVANIZED AIRCRAFT GRADE ROPE
7 x 6 x 19 IWRC CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE

Rope		Rated Capacities, Tons (2,000 lb)					
		2-Leg Bridle Sling			3-Leg Bridle Sling		
Dia (Inches)	Constr	Vert 30 deg Horz 60 deg	45 degree Angle	Vert 60 deg Horz 30 deg	Vert 30 deg Horz 60 deg	45 degree Angle	Vert 60 deg Horz 30 deg
1/4	7 x 7 x 7	0.87	0.71	0.50	1.3	1.1	0.75
3/8	7 x 7 x 7	1.9	1.5	1.1	2.8	2.3	1.6
1/2	7 x 7 x 7	3.2	2.6	1.8	4.8	3.9	2.8
5/8	7 x 7 x 7	4.8	3.9	2.8	7.2	5.9	4.2
3/4	7 x 7 x 7	6.6	5.4	3.8	9.9	8.1	5.7
5/8	7 x 7 x 19	5.0	4.1	2.9	7.5	6.1	4.3
3/4	7 x 7 x 19	7.0	5.7	4.1	10.0	8.6	6.1
7/8	7 x 7 x 19	9.3	7.6	5.4	14.0	11.0	8.1
1	7 x 7 x 19	12.0	9.7	6.9	18.0	14.0	10.0
1-1/8	7 x 7 x 19	14.0	12.0	8.2	21.0	17.0	12.0
1-1/4	7 x 7 x 19	17.0	14.0	9.9	26.0	21.0	15.0
3/4	7x6x19 IWRC	6.6	5.4	3.8	9.9	8.0	5.7
7/8	7x6x19 IWRC	8.7	7.1	5.0	13.0	11.0	7.5
1	7x6x19 IWRC	11.0	9.0	6.4	17.0	13.0	9.6
1-1/8	7x6x19 IWRC	13.0	11.0	7.7	20.0	16.0	11.0
1-1/4	7x6x19 IWRC	16.0	13.0	9.2	24.0	20.0	14.0
1-5/16	7x6x19 IWRC	17.0	14.0	10.0	26.0	21.0	15.0
1-3/8	7x6x19 IWRC	19.0	15.0	11.0	28.0	23.0	16.0
1-1/2	7x6x19 IWRC	22.0	18.0	13.0	33.0	27.0	19.0

Table H-10
RATED CAPACITIES FOR 2-LEG AND 3-LEG BRIDLE SLINGS
8-PART AND 6-PART BRAIDED ROPE
6 x 7 AND 6 x 19 CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE
7 x 7 CONSTRUCTION GALVANIZED AIRCRAFT GRADE ROPE

Component Rope		Rated Capacities, Tons (2,000 lb)											
		2-Leg Bridle Slings						3-Leg Bridle Slings					
		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree	
Dia (Inches)	Constr	8-Part	6-Part	8-Part	6-Part	8-Part	6-Part	8-Part	6-Part	8-Part	6-Part	8-Part	6-Part
3/32	6 x 7	0.74	0.55	0.60	0.45	0.42	0.32	1.1	0.83	0.90	0.68	0.64	0.48
1/8	6 x 7	1.3	0.98	1.1	0.80	0.76	0.57	2.0	1.5	1.6	1.2	1.1	0.85
3/16	6 x 7	2.9	2.2	2.4	1.8	1.7	1.3	4.4	3.3	3.6	2.7	2.5	1.9
3/32	7 x 7	0.89	0.67	0.72	0.55	0.51	0.39	1.3	1.0	1.1	0.82	0.77	0.58
1/8	7 x 7	1.6	1.2	1.3	1.0	0.95	0.71	2.5	1.8	2.0	1.5	1.4	1.1
3/16	7 x 7	3.6	2.7	2.9	2.2	2.1	1.5	5.4	4.0	4.4	3.3	3.1	2.3
3/16	6 x 19	3.0	2.2	2.4	1.8	1.7	1.3	4.5	3.4	3.7	2.8	2.6	1.9
1/4	6 x 19	5.3	4.0	4.3	3.2	3.1	2.3	8.0	6.0	6.5	4.9	4.6	3.4
5/16	6 x 19	8.3	6.2	6.7	5.0	4.8	3.6	12.0	9.3	10.0	7.6	7.1	5.4
3/8	6 x 19	12.0	8.9	9.7	7.2	6.8	5.1	18.0	13.0	14.0	11.0	10.0	7.7
7/16	6 x 19	16.0	12.0	13.0	9.8	9.3	6.9	24.0	18.0	20.0	15.0	14.0	10.0
1/2	6 x 19	21.0	15.0	17.0	13.0	12.0	9.0	31.0	23.0	25.0	19.0	18.0	13.0
9/16	6 x 19	26.0	20.0	21.0	16.0	15.0	11.0	39.0	29.0	32.0	24.0	23.0	17.0
5/8	6 x 19	32.0	24.0	26.0	20.0	19.0	14.0	48.0	36.0	40.0	30.0	28.0	21.0
3/4	6 x 19	46.0	35.0	38.0	28.0	27.0	20.0	69.0	52.0	56.0	42.0	40.0	30.0
7/8	6 x 19	62.0	47.0	51.0	38.0	36.0	27.0	94.0	70.0	76.0	57.0	54.0	40.0
1	6 x 19	81.0	61.0	66.0	50.0	47.0	35.0	22.0	91.0	99.0	74.0	70.0	53.0

Table H-11
RATED CAPACITIES FOR STRAND LAID GROMMET – HAND TUCKED
IMPROVED PLOW STEEL GRADE ROPE

ROPE BODY		RATED CAPACITIES, TONS (2,000 lb)		
Dia (Inches)	Constr	 Vertical	 Choker	 Vertical Basket*
1/4	7 x 19	0.85	0.64	1.7
5/16	7 x 19	1.3	1.0	2.6
3/8	7 x 19	1.9	1.4	3.8
7/16	7 x 19	2.6	1.9	5.2
1/2	7 x 19	3.3	2.5	6.7
9/16	7 x 19	4.2	3.1	8.4
5/8	7 x 19	5.2	3.9	10.00
3/4	7 x 19	7.4	5.6	15.0
7/8	7 x 19	10.0	7.5	20.0
1	7 x 19	13.0	9.7	26.0
1-1/8	7 x 19	16.0	12.0	32.0
1-1/4	7 x 37	18.0	14.0	37.0
1-3/8	7 x 37	22.0	16.0	44.0
1-1/2	7 x 37	26.0	19.0	52.0

* These values only apply when the D/d ratio is 5 or greater where:
D = Diameter of curvature around which rope is bent.
d = Diameter of rope body.

Table H-12

RATED CAPACITIES FOR CABLE LAID GROMMET – HAND TUCKED
7 × 6 × 7 AND 7 × 6 × 19 CONSTRUCTIONS IMPROVED PLOW STEEL GRADE ROPE
7 × 7 × 7 CONSTRUCTION GALVANIZED AIRCRAFT GRADE ROPE

CABLE BODY		RATED CAPACITIES, TONS (2,000 lb)		
Dia (Inches)	Constr	 Vertical	 Choker	 Vertical Basket*
3/8	7 × 6 × 7	1.3	0.95	2.5
9/16	7 × 6 × 7	2.8	2.1	5.6
5/8	7 × 6 × 7	3.8	2.8	7.6
3/8	7 × 7 × 7	1.6	1.2	3.2
9/16	7 × 7 × 7	3.5	2.6	6.9
5/8	7 × 7 × 7	4.5	3.4	9.0
5/8	7 × 6 × 19	3.9	3.0	7.9
3/4	7 × 6 × 19	5.1	3.8	10.0
15/16	7 × 6 × 19	7.9	5.9	16.0
1-1/8	7 × 6 × 19	11.0	8.4	22.0
1-5/16	7 × 6 × 19	15.0	11.0	30.0
1-1/2	7 × 6 × 19	19.0	14.0	39.0
1-11/16	7 × 6 × 19	24.0	18.0	49.0
1-7/8	7 × 6 × 19	30.0	22.0	60.0
2-1/4	7 × 6 × 19	42.0	31.0	84.0
2-5/8	7 × 6 × 19	56.0	42.0	112.0

* These values only apply when the D/d ratio is 5 or greater where:
D = Diameter of curvature around which cable body is bent.
d = Diameter of cable body.

Table H-13

RATED CAPACITIES FOR STRAND LAID ENDLESS SLINGS-MECHANICAL JOINT
IMPROVED PLOW STEEL GRADE ROPE

ROPE BODY		RATED CAPACITIES, TONS (2,000 lb)		
Dia (Inches)	Constr	 Vertical	 Choker	 Vertical Basket*
1/4	6 × 19 IWRC	0.92	0.69	1.8
3/8	6 × 19 IWRC	2.0	1.5	4.1
1/2	6 × 19 IWRC	3.6	2.7	7.2
5/8	6 × 19 IWRC	5.6	4.2	11.0
3/4	6 × 19 IWRC	8.0	6.0	16.0
7/8	6 × 19 IWRC	11.0	8.1	21.0
1	6 × 19 IWRC	14.0	10.0	28.0
1-1/8	6 × 19 IWRC	18.0	13.0	35.0
1-1/4	6 × 37 IWRC	21.0	15.0	41.0
1-3/8	6 × 37 IWRC	25.0	19.0	50.0
1-1/2	6 × 37 IWRC	29.0	22.0	59.0

* These values only apply when the D/d ratio is 5 or greater where:
D = Diameter of curvature around which rope is bent.
d = Diameter of rope body.

Table H-14

RATED CAPACITIES FOR CABLE LAID ENDLESS SLINGS-MECHANICAL JOINT
7 × 7 × 7 AND 7 × 7 × 19 CONSTRUCTIONS GALVANIZED AIRCRAFT GRADE ROPE
7 × 6 × 19 IWRC CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE

CABLE BODY		RATED CAPACITIES, TONS (2,000 lb)		
Dia (Inches)	Constr	 Vertical	 Choker	 Vertical Basket*
1/4	7 × 7 × 7	0.83	0.62	1.6
3/8	7 × 7 × 7	1.8	1.3	3.5
1/2	7 × 7 × 7	3.0	2.3	6.1
5/8	7 × 7 × 7	4.5	3.4	9.1
3/4	7 × 7 × 7	6.3	4.7	12.0
5/8	7 × 7 × 19	4.7	3.5	9.5
3/4	7 × 7 × 19	6.7	5.0	13.0
7/8	7 × 7 × 19	8.9	6.6	18.0
1	7 × 7 × 19	11.0	8.5	22.0
1-1/8	7 × 7 × 19	14.0	10.0	28.0
1-1/4	7 × 7 × 19	17.0	12.0	33.0
3/4	7 × 6 × 19 IWRC	6.2	4.7	12.0
7/8	7 × 6 × 19 IWRC	8.3	6.2	16.0
1	7 × 6 × 19 IWRC	10.0	7.9	21.0
1-1/8	7 × 6 × 19 IWRC	13.0	9.7	26.0
1-1/4	7 × 6 × 19 IWRC	16.0	12.0	31.0
1-3/8	7 × 6 × 19 IWRC	18.0	14.0	37.0
1-1/2	7 × 6 × 19 IWRC	22.0	16.0	43.0

* These values only apply when the D/d value is 5 or greater where:
D = Diameter of curvature around which cable body is bent.
d = Diameter of cable body.

Table H-15
MANILA ROPE SLINGS

ROPE DIAMETER Nominal In Inches	Nominal Weight Per 100 ft In Pounds	Minimum Breaking Strength In Pounds	RATED CAPACITY IN POUNDS (Safety Factor = 5)											
			EYE AND EYE SLING						ENDLESS SLING					
			VERTICAL HITCH	CHOKER HITCH	BASKET HITCH				VERTICAL HITCH	CHOKER HITCH	BASKET HITCH			
					Angle of Rope to Horizontal						Angle of Rope to Horizontal			
					90 deg	60 deg	45 deg	30 deg			90 deg	60 deg	45 deg	30 deg
					Angle of Rope to Vertical						Angle of Rope to Vertical			
					0 deg	30 deg	45 deg	60 deg			0 deg	30 deg	45 deg	60 deg
1/2	7.5	2,650	550	250	1,100	900	750	550	950	500	1,900	1,700	1,400	950
9/16	10.4	3,450	700	350	1,400	1,200	1,000	700	1,200	600	2,500	2,200	1,800	1,200
5/8	13.3	4,400	900	450	1,800	1,500	1,200	900	1,600	800	3,200	2,700	2,200	1,600
3/4	16.7	5,400	1,100	550	2,200	1,900	1,500	1,100	2,000	950	3,900	3,400	2,800	2,000
13/16	19.5	6,500	1,300	650	2,600	2,300	1,800	1,300	2,300	1,200	4,700	4,100	3,300	2,300
7/8	22.5	7,700	1,500	750	3,100	2,700	2,200	1,500	2,800	1,400	5,600	4,800	3,900	2,800
1	27.0	9,000	1,800	900	3,600	3,100	2,600	1,800	3,200	1,600	6,500	5,600	4,600	3,200
1 1/16	31.3	10,500	2,100	1,100	4,200	3,600	3,000	2,100	3,800	1,900	7,600	6,600	5,400	3,800
1 1/8	36.0	12,000	2,400	1,200	4,800	4,200	3,400	2,400	4,300	2,200	8,600	7,500	6,100	4,300
1 1/4	41.7	13,500	2,700	1,400	5,400	4,700	3,800	2,700	4,900	2,400	9,700	8,400	6,900	4,900
1 5/16	47.9	15,000	3,000	1,500	6,000	5,200	4,300	3,000	5,400	2,700	11,000	9,400	7,700	5,400
1 1/2	59.9	18,500	3,700	1,850	7,400	6,400	5,200	3,700	6,700	3,300	13,500	11,500	9,400	6,700
1 5/8	74.6	22,500	4,500	2,300	9,000	7,800	6,400	4,500	8,100	4,100	16,000	14,000	11,500	8,000
1 3/4	89.3	26,500	5,300	2,700	10,500	9,200	7,500	5,300	9,500	4,800	19,000	16,500	13,500	9,500
2	107.5	31,000	6,200	3,100	12,500	10,500	8,800	6,200	11,000	5,600	22,500	19,500	16,000	11,000
2 1/3	125.0	36,000	7,200	3,600	14,500	12,500	10,000	7,200	13,000	6,500	26,000	22,500	18,500	13,000
2 1/4	146.0	41,000	8,200	4,100	16,500	14,000	11,500	8,200	15,000	7,400	29,500	25,500	21,000	15,000
2 1/2	166.7	46,500	9,300	4,700	18,500	16,000	13,000	9,300	16,500	8,400	33,500	29,000	23,500	16,500
2 5/8	190.8	52,000	10,500	5,200	21,000	18,000	14,500	10,500	18,500	9,500	37,500	32,500	26,500	18,500

Table H-16
NYLON ROPE SLINGS

ROPE DIAMETER Nominal In Inches	Nominal Weight Per 100 ft In Pounds	Minimum Breaking Strength In Pounds	RATED CAPACITY IN POUNDS (Safety Factor = 9)											
			EYE AND EYE SLING						ENDLESS SLING					
			VERTICAL HITCH	CHOKER HITCH	BASKET HITCH				VERTICAL HITCH	CHOKER HITCH	BASKET HITCH			
					Angle of Rope to Horizontal						Angle of Rope to Horizontal			
					90 deg	60 deg	45 deg	30 deg			90 deg	60 deg	45 deg	30 deg
					Angle of Rope to Vertical						Angle of Rope to Vertical			
					0 deg	30 deg	45 deg	60 deg			0 deg	30 deg	45 deg	60 deg
1/2	6.5	6,080	700	350	1,400	1,200	950	700	1,200	600	2,400	2,100	1,700	1,200
9/16	8.3	7,600	850	400	1,700	1,500	1,200	850	1,500	750	3,000	2,600	2,200	1,500
5/8	10.5	9,880	1,100	550	2,200	1,900	1,600	1,100	2,000	1,000	4,000	3,400	2,800	2,000
3/4	14.5	13,490	1,500	750	3,000	2,600	2,100	1,500	2,700	1,400	5,400	4,700	3,800	2,700
13/16	17.0	16,150	1,800	900	3,600	3,100	2,600	1,800	3,200	1,600	6,400	5,600	4,600	3,200
7/8	20.0	19,000	2,100	1,100	4,200	3,700	3,000	2,100	3,800	1,900	7,600	6,600	5,400	3,800
1	26.0	23,750	2,600	1,300	5,300	4,600	3,700	2,600	4,800	2,400	9,500	8,200	6,700	4,800
1 1/16	29.0	27,360	3,000	1,500	6,100	5,300	4,300	3,000	5,500	2,700	11,000	9,500	7,700	5,500
1 1/8	34.0	31,350	3,500	1,700	7,000	6,000	5,000	3,500	6,300	3,100	12,500	11,000	8,900	6,300
1 1/4	40.0	35,625	4,000	2,000	7,900	6,900	5,600	4,000	7,100	3,600	14,500	12,500	10,000	7,100
1 5/16	45.0	40,850	4,500	2,300	9,100	7,900	6,400	4,500	8,200	4,100	16,500	14,000	12,000	8,200
1 1/2	55.0	50,350	5,600	2,800	11,000	9,700	7,900	5,600	10,000	5,000	20,000	17,500	14,000	10,000
1 5/8	68.0	61,750	6,900	3,400	13,500	12,000	9,700	6,900	12,500	6,200	24,500	21,500	17,500	12,500
1 3/4	83.0	74,100	8,200	4,100	16,500	14,500	11,500	8,200	15,000	7,400	29,500	27,500	21,000	15,000
2	95.0	87,400	9,700	4,900	19,500	17,000	13,500	9,700	17,500	8,700	35,000	30,500	24,500	17,500
2 1/8	109.0	100,700	11,000	5,600	22,500	19,500	16,000	11,000	20,000	10,000	40,500	35,000	28,500	20,000
2 1/4	129.0	118,750	13,000	6,600	26,500	23,000	18,500	13,000	24,000	12,000	47,500	41,000	33,500	24,000
2 1/2	149.0	133,000	15,000	7,400	29,500	25,500	21,000	15,000	26,500	13,500	53,000	46,000	37,500	26,500
2 5/8	169.0	153,900	17,100	8,600	34,000	29,500	24,000	17,000	31,000	15,500	61,500	53,500	43,500	31,000

Table H-17
POLYESTER ROPE SLINGS

ROPE DIAMETER Nominal In Inches	Nominal Weight Per 100 ft In Pounds	Minimum Breaking Strength In Pounds	RATED CAPACITY IN POUNDS (Safety Factor = 9)											
			EYE AND EYE SLING						ENDLESS SLING					
			VERTICAL HITCH	CHOKER HITCH	BASKET HITCH				VERTICAL HITCH	CHOKER HITCH	BASKET HITCH			
					Angle of Rope to Horizontal						Angle of Rope to Horizontal			
					90 deg	60 deg	45 deg	30 deg			90 deg	60 deg	45 deg	30 deg
					Angle of Rope to Vertical						Angle of Rope to Vertical			
					0 deg	30 deg	45 deg	60 deg			0 deg	30 deg	45 deg	60 deg
1/2	8.0	6,080	700	350	1,400	1,200	950	700	1,200	600	2,400	2,100	1,700	1,200
9/16	10.2	7,600	850	400	1,700	1,500	1,200	850	1,500	750	3,000	2,600	2,200	1,500
5/8	13.0	9,500	1,100	550	2,100	1,800	1,500	1,100	1,900	950	3,800	3,300	2,700	1,900
3/4	17.5	11,875	1,300	650	2,600	2,300	1,900	1,300	2,400	1,200	4,800	4,100	3,400	2,400
13/16	21.0	14,725	1,600	800	3,300	2,800	2,300	1,600	2,900	1,500	5,900	5,100	4,200	2,900
7/8	25.0	17,100	1,900	950	3,800	3,300	2,700	1,900	3,400	1,700	6,800	5,900	4,800	3,400
1	30.5	20,900	2,300	1,200	4,600	4,000	3,300	2,300	4,200	2,100	8,400	7,200	5,900	4,200
1 1/16	34.5	24,225	2,700	1,300	5,400	4,700	3,800	2,700	4,800	2,400	9,700	8,400	6,900	4,800
1 1/8	40.0	28,025	3,100	1,600	6,200	5,400	4,400	3,100	5,600	2,800	11,000	9,700	7,900	5,600
1 1/4	46.3	31,540	3,500	1,800	7,000	6,100	5,000	3,500	6,300	3,200	12,500	11,000	8,900	6,300
1 5/16	52.5	35,625	4,000	2,000	7,900	6,900	5,600	4,000	7,100	3,600	14,500	12,500	10,000	7,100
1 1/2	66.8	44,460	4,900	2,500	9,900	8,600	7,000	4,900	8,900	4,400	18,000	15,500	12,500	8,900
1 5/8	82.0	54,150	6,000	3,000	12,000	10,400	8,500	6,000	11,000	5,400	21,500	19,000	15,500	11,000
1 3/4	98.0	64,410	7,200	3,600	14,500	12,500	10,000	7,200	13,000	6,400	26,000	22,500	18,000	13,000
2	118.0	76,000	8,400	4,200	17,000	14,500	12,000	8,400	15,000	7,600	30,500	26,500	21,500	15,000
2 1/8	135.0	87,400	9,700	4,900	19,500	17,000	13,500	9,700	17,500	8,700	35,000	30,500	24,500	17,500
2 1/4	157.0	101,650	11,500	5,700	22,500	19,500	16,000	11,500	20,500	10,000	40,500	35,000	29,000	20,500
2 1/2	181.0	115,900	13,000	6,400	26,000	22,500	18,000	13,000	23,000	11,500	46,500	40,000	33,000	23,000
2 5/8	205.0	130,150	14,500	7,200	29,000	25,000	20,500	14,500	26,000	13,000	52,000	45,000	37,000	26,000

Table H-18
POLYPROPYLENE ROPE SLINGS

ROPE DIAMETER Nominal In Inches	Nominal Weight Per 100 ft In Pounds	Minimum Breaking Strength In Pounds	RATED CAPACITY IN POUNDS (Safety Factor = 6)											
			EYE AND EYE SLING						ENDLESS SLING					
			VERTICAL HITCH	CHOKER HITCH	BASKET HITCH				VERTICAL HITCH	CHOKER HITCH	BASKET HITCH			
					Angle of Rope to Horizontal						Angle of Rope to Horizontal			
					90 deg	60 deg	45 deg	30 deg			90 deg	60 deg	45 deg	30 deg
					Angle of Rope to Vertical						Angle of Rope to Vertical			
					0 deg	30 deg	45 deg	60 deg			0 deg	30 deg	45 deg	60 deg
1/2	4.7	3,990	650	350	1,300	1,200	950	650	1,200	600	2,400	2,100	1,700	1,200
9/16	6.1	4,845	800	400	1,600	1,400	1,100	800	1,500	750	2,900	2,500	2,100	1,500
5/8	7.5	5,890	1,000	500	2,000	1,700	1,400	1,000	1,800	900	3,500	3,100	2,500	1,800
3/4	10.7	8,075	1,300	700	2,700	2,300	1,900	1,300	2,400	1,200	4,900	4,200	3,400	2,400
13/16	12.7	9,405	1,600	800	3,100	2,700	2,200	1,600	2,800	1,400	5,600	4,900	4,000	2,800
7/8	15.0	10,925	1,800	900	3,600	3,200	2,600	1,800	3,300	1,600	6,600	5,700	4,600	3,300
1	18.0	13,300	2,200	1,100	4,400	3,800	3,100	2,200	4,000	2,000	8,000	6,900	5,600	4,000
1 1/16	20.4	15,200	2,500	1,300	5,100	4,400	3,600	2,500	4,600	2,300	9,100	7,900	6,500	4,600
1 1/8	23.7	17,385	2,900	1,500	5,800	5,000	4,100	2,900	5,200	2,600	10,500	9,000	7,400	5,200
1 1/4	27.0	19,950	3,300	1,700	6,700	5,800	4,700	3,300	6,000	3,000	12,000	10,500	8,500	6,000
1 5/16	30.5	22,325	3,700	1,900	7,400	6,400	5,300	3,700	6,700	3,400	13,500	11,500	9,500	6,700
1 1/2	38.5	28,215	4,700	2,400	9,400	8,100	6,700	4,700	8,500	4,200	17,000	14,500	12,000	8,500
1 5/8	47.5	34,200	5,700	2,900	11,500	9,900	8,100	5,700	10,500	5,100	20,500	18,000	14,500	10,500
1 3/4	57.0	40,850	6,800	3,400	13,500	12,000	9,600	6,800	12,500	6,100	24,500	21,000	17,500	12,500
2	69.0	49,400	8,200	4,100	16,500	14,500	11,500	8,200	15,000	7,400	29,500	25,500	21,000	15,000
2 1/8	80.0	57,950	9,700	4,800	19,500	16,500	13,500	9,700	17,500	8,700	35,000	30,100	24,500	17,500
2 1/4	92.0	65,550	11,000	5,500	22,000	19,000	15,500	11,000	19,500	9,900	39,500	34,000	28,000	19,500
2 1/2	107.0	76,000	12,500	6,300	25,500	22,000	18,000	12,500	23,000	11,500	45,500	39,500	32,500	23,000
2 5/8	120.0	85,500	14,500	7,100	28,500	24,500	20,000	14,500	25,500	13,000	51,500	44,500	36,500	25,500

TABLE H-19—SAFE WORKING LOADS FOR SHACKLES

[In tons of 2000 pounds]

Material size (inches)	Pin diameter (inches)	Safe working load
½	⅝	1.4
⅝	¾	2.2
¾	⅞	3.2
⅞	1	4.3
1	1⅛	5.6
1⅛	1¼	6.7
1¼	1⅜	8.2
1⅜	1½	10.0
1½	1⅝	11.9
1¾	2	16.2
2	2¼	21.2

TABLE H-20—NUMBER AND SPACING OF U-BOLT WIRE ROPE CLIPS

Improved plow steel, rope diameter inches	Number of clips		Minimum spacing (inches)
	Drop forged	Other material	
½	3	4	3
⅝	3	4	3¾
¾	4	5	4½
⅞	4	5	5¼
1	5	6	6
1⅛	6	6	6¾
1¼	6	7	7½
1⅜	7	7	8¼
1½	7	8	9

Subpart I—Tools—Hand and Power

§ 1926.300 General requirements.

(a) *Condition of tools.* All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition.

(b) *Guarding.* (1) When power operated tools are designed to accommodate guards, they shall be equipped with such guards when in use.

(2) Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating or moving parts of equipment shall be guarded if such parts are exposed to contact by employees or otherwise create a hazard. Guarding shall meet the requirements as set forth in American National Standards Institute, B15.1–1953 (R1958), Safety Code for Mechanical Power-Transmission Apparatus.

(c) *Personal protective equipment.* Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases shall be provided with the particular personal protective equipment necessary to protect them from the hazard. All personal protective equipment shall meet the requirements and be maintained according to Subparts D and E of this part.

(d) *Switches.* (1) All hand-held powered platen sanders, grinders with wheels 2-inch diameter or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws, and jigsaws with blade shanks one-fourth of an inch wide or less may be equipped with only a positive "on-off" control.

(2) All hand-held powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches in diameter, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar operating powered tools shall be equipped with a momentary contact "on-off" control and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

(3) All other hand-held powered tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means, shall be equipped with a constant pressure switch that will shut off the power when the pressure is released.

(4) The requirements of this paragraph shall become effective on July 15, 1972.

(5) Exception: This paragraph does not apply to concrete vibrators, concrete breakers, powered tampers, jack hammers, rock drills, and similar hand operated power tools.

§ 1926.301 Hand tools.

(a) Employers shall not issue or permit the use of unsafe hand tools.

(b) Wrenches, including adjustable, pipe, end, and socket wrenches shall not be used when jaws are sprung to the point that slippage occurs.

(c) Impact tools, such as drift pins, wedges, and chisels, shall be kept free of mushroomed heads.

(d) The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.

§ 1926.302 Power-operated hand tools.

(a) *Electric power-operated tools.* (1) Electric power operated tools shall either be of the approved double-insulated type or grounded in accordance with Subpart K of this part.

(2) The use of electric cords for hoisting or lowering tools shall not be permitted.

(b) *Pneumatic power tools.* (1) Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

(2) Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

(3) All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 p.s.i. pressure at the tool shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.

(4) Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment which meets the requirements of Subpart E of this part. The 30 p.s.i. requirement does not apply for concrete form, mill scale and similar cleaning purposes.

(5) The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded.

(6) The use of hoses for hoisting or lowering tools shall not be permitted.

(7) All hoses exceeding ½-inch inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.

(8) Airless spray guns of the type which atomize paints and fluids at high pressures (1,000 pounds or more per square inch) shall be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger to prevent release of the paint or fluid until the safety device is manually released.

(9) In lieu of the above, a diffuser nut which will prevent high pressure, high velocity release, while the nozzle tip is removed, plus a nozzle tip guard which will prevent the tip from coming into contact with the operator, or other equivalent protection, shall be provided.

(c) *Fuel powered tools.* (1) All fuel powered tools shall be stopped while being refueled, serviced, or maintained, and fuel shall be transported, handled, and stored in accordance with Subpart F of this part.

(2) When fuel powered tools are used in enclosed spaces, the applicable requirements for concentrations of toxic gases and use of personal protective equipment, as outlined in Subparts D and E of this part, shall apply.

(d) *Hydraulic power tools.* (1) the fluid used in hydraulic powered tools shall be fire-resistant fluids approved under Schedule 30 of the U.S. Bureau of Mines, Department of the Interior, and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed.

(2) The manufacturer's safe operating pressures for hoses, valves, pipes, filters, and other fittings shall not be exceeded.

(e) *Powder-actuated tools.* (1) Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool.

(2) The tool shall be tested each day before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer's recommended procedure.

(3) Any tool found not in proper working order, or that develops a defect during use, shall be immediately removed from service and not used until properly repaired.

(4) Personal protective equipment shall be in accordance with Subpart E of this part.

(5) Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any employees. Hands shall be kept clear of the open barrel end.

(6) Loaded tools shall not be left unattended.

(7) Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.

(8) Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the other side.

(9) No fastener shall be driven into a spalled area caused by an unsatisfactory fastening.

(10) Tools shall not be used in an explosive or flammable atmosphere.

(11) All tools shall be used with the correct shield, guard, or attachment recommended by the manufacturer.

(12) Powder-actuated tools used by employees shall meet all other applicable requirements of American National Standards Institute, A10.3–1970, Safety Requirements for Explosive-Actuated Fastening Tools.

§ 1926.303 Abrasive wheels and tools.

(a) *Power.* All grinding machines shall be supplied with sufficient power to maintain the spindle speed at safe levels under all conditions of normal operation.

(b) *Guarding.* Grinding machines shall be equipped with safety guards in conformance with the requirements of American National Standards Institute, B7.1–1970, Safety Code for the Use, Care and Protection of Abrasive Wheels, and paragraph (d) of this section.

(c) *Use of abrasive wheels.* (1) Floor stand and bench mounted abrasive wheels, used for external grinding, shall be provided with safety guards (protection hoods). The maximum angular exposure of the grinding wheel periphery and sides shall be not more than 90°, except that when work requires contact with the wheel below the horizontal plane of the spindle, the angular exposure shall not exceed 125°. In either case, the exposure shall begin not more than 65° above the horizontal plane of the spindle. Safety guards shall be strong enough to withstand the effect of a bursting wheel.

(2) Floor and bench-mounted grinders shall be provided with work rests which are rigidly supported and readily adjustable. Such work rests shall be kept at a distance not to exceed one-eighth inch from the surface of the wheel.

(3) Cup type wheels used for external grinding shall be protected by either a revolving cup guard or a band type guard in accordance with the provisions of the American National Standards Institute, B7.1–1970 Safety Code for the Use, Care, and Protection of Abrasive Wheels. All other portable abrasive wheels used for external grinding, shall be provided with safety guards (protection hoods) meeting the requirements of subparagraph (5) of this paragraph, except as follows:

(i) When the work location makes it impossible, a wheel equipped with safety flanges, as described in subparagraph (6) of this paragraph, shall be used;

(ii) When wheels 2 inches or less in diameter which are securely mounted on the end of a steel mandrel are used.

(4) Portable abrasive wheels used for internal grinding shall be provided with safety flanges (protection flanges) meeting the requirements of subparagraph (6) of this paragraph, except as follows:

(i) When wheels 2 inches or less in diameter which are securely mounted on the end of a steel mandrel are used;

(ii) If the wheel is entirely within the work being ground while in use.

(5) When safety guards are required, they shall be so mounted as to maintain proper alignment with the wheel, and the guard and its fastenings shall be of sufficient strength to retain fragments of the wheel in case of accidental breakage. The maximum angular exposure of the grinding wheel periphery and sides shall not exceed 180°.

(6) When safety flanges are required, they shall be used only with wheels designed to fit the flanges. Only safety flanges, of a type and design and properly assembled so as to ensure that the pieces of the wheel will be retained in case of accidental breakage, shall be used.

(7) All abrasive wheels shall be closely inspected and ring-tested before mounting to ensure that they are free from cracks or defects.

(8) Grinding wheels shall fit freely on the spindle and shall not be forced on. The spindle nut shall be tightened only enough to hold the wheel in place.

(9) All employees using abrasive wheels shall be protected by eye protection equipment in accordance with the requirements of Subpart E of this part, except when adequate eye protection is afforded by eye shields which are permanently attached to the bench or floor stand.

(d) *Other requirements.* All abrasive wheels and tools used by employees shall meet other applicable requirements of American National Standards Institute, B7.1–1970, Safety Code for the Use, Care and Protection of Abrasive Wheels.

§ 1926.304 Woodworking tools.

(a) *Disconnect switches.* All fixed power driven woodworking tools shall be provided with a disconnect switch that can either be locked or tagged in the off position.

(b) *Speeds.* The operating speed shall be etched or otherwise permanently marked on all circular saws over 20 inches in diameter or operating at over 10,000 peripheral feet per minute. Any saw so marked shall not be operated at a speed other than that marked on the blade. When a marked saw is retensioned for a different speed, the marking shall be corrected to show the new speed.

(c) *Self-feed.* Automatic feeding devices shall be installed on machines whenever the nature of the work will permit. Feeder attachments shall have the feed rolls or other moving parts covered or guarded so as to protect the operator from hazardous points.

(d) *Guarding.* All portable, power-driven circular saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position.

(e) *Personal protective equipment.* All personal protective equipment provided for use shall conform to Subpart E of this part.

(f) *Other requirements.* All woodworking tools and machinery shall meet other applicable requirements of American National Standards Institute, 01.1–1961, Safety Code for Woodworking Machinery.

§ 1926.305 Jacks—lever and ratchet, screw, and hydraulic.

(a) *General requirements.* (1) The manufacturer's rated capacity shall be legibly marked on all jacks and shall not be exceeded.

(2) All jacks shall have a positive stop to prevent overtravel.

(b) *Lift slab construction.* (1) Hydraulic jacks used in lift slab construction shall have a safety device which will cause the jacks to support the load in any position in the event the jack malfunctions.

(2) If lift slabs are automatically controlled, a device shall be installed which will stop the operation when the ½-inch leveling tolerance is exceeded.

(c) *Blocking.* When it is necessary to provide a firm foundation, the base of the jack shall be blocked or cribbed. Where there is a possibility of slippage of the metal cap of the jack, a wood block shall be placed between the cap and the load.

Subpart J—Welding and Cutting

§ 1926.350 Gas welding and cutting.

(a) *Transporting, moving, and storing compressed gas cylinders.* (1) Valve protection caps shall be in place and secured.

(2) When cylinders are hoisted, they shall be secured on a cradle, slingboard, or pallet. They shall not be hoisted or transported by means of magnets or choker slings.

(3) Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dropped, struck, or permitted to strike each other violently.

(4) When cylinders are transported by powered vehicles, they shall be secured in a vertical position.

(5) Valve protection caps shall not be used for lifting cylinders from one vertical position to another. Bars shall not be used under valves or valve protection caps to pry cylinders loose when frozen. Warm, not boiling, water shall be used to thaw cylinders loose.

(6) Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators shall be removed and valve protection caps put in place before cylinders are moved.

(7) A suitable cylinder truck, chain, or other steadying device shall be used to keep cylinders from being knocked over while in use.

(8) When work is finished, when cylinders are empty, or when cylinders are moved at any time, the cylinder valve shall be closed.

(9) Compressed gas cylinders shall be secured in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried.

(b) *Placing cylinders.* (1) Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not

reach them. When this is impractical, fire resistant shields shall be provided.

(2) Cylinders shall be placed where they cannot become part of an electrical circuit. Electrodes shall not be struck against a cylinder to strike an arc.

(3) Fuel gas cylinders shall be placed with valve end up whenever they are in use. They shall not be placed in a location where they would be subject to open flame, hot metal, or other sources of artificial heat.

(4) Cylinders containing oxygen or acetylene or other fuel gas shall not be taken into confined spaces.

(c) *Treatment of cylinders.* (1) Cylinders, whether full or empty, shall not be used as rollers or supports.

(2) No person other than the gas supplier shall attempt to mix gases in a cylinder. No one except the owner of the cylinder or person authorized by him, shall refill a cylinder. No one shall use a cylinder's contents for purposes other than those intended by the supplier. All cylinders used shall meet the Department of Transportation requirements published in 49 CFR Part 178, Subpart C, Specification for Cylinders.

(3) No damaged or defective cylinder shall be used.

(d) *Use of fuel gas.* The employer shall thoroughly instruct employees in the safe use of fuel gas, as follows:

(1) Before a regulator to a cylinder valve is connected, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve shall stand to one side of the outlet, not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work, sparks, flame, or other possible sources of ignition.

(2) The cylinder valve shall always be opened slowly to prevent damage to the regulator. For quick closing, valves on fuel gas cylinders shall not be opened more than 1½ turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

(3) Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(4) Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.

(5) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, and it shall be properly tagged and removed from the work area. In the event that fuel gas should leak from the cylinder valve, rather than from the valve stem, and the gas cannct be shut off, the cylinder shall be properly tagged and removed from the work area. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat, the cylinder need not be removed from the work area.

(6) If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the work area.

(e) *Fuel gas and oxygen manifolds.* (1) Fuel gas and oxygen manifolds shall bear the name of the substance they contain in letters at least 1-inch high which shall be either painted on the manifold or on a sign permanently attached to it.

(2) Fuel gas and oxygen manifolds shall be placed in safe, well ventilated, and accessible locations. They shall not be located within enclosed spaces.

(3) Manifold hose connections, including both ends of the supply hose that lead to the manifold, shall be such that the hose cannot be interchanged between fuel gas and oxygen manifolds and supply header connections. Adapters shall not be used to permit the interchange of hose. Hose connections shall be kept free of grease and oil.

(4) When not in use, manifold and header hose connections shall be capped.

(5) Nothing shall be placed on top of a manifold, when in use, which will damage the manifold or interfere with the quick closing of the valves.

(f) *Hose.* (1) Fuel gas hose and oxygen hose shall be easily distinguishable from each other. The contrast may be made by different colors or by surface characteristics readily distinguishable by the sense of touch. Oxygen and fuel gas hoses shall not be interchangeable. A single hose having more than one gas passage shall not be used.

(2) When parallel sections of oxygen and fuel gas hose are taped together, not more than 4 inches out of 12 inches shall be covered by tape.

(3) All hose in use, carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter into combustion, or be in any way harmful to employees, shall be inspected at the beginning of each working shift. Defective hose shall be removed from service.

(4) Hose which has been subject to flashback, or which shows evidence of severe wear or damage, shall be tested to twice the normal pressure to which it is subject, but in no case less than 300 p.s.i. Defective hose, or hose in doubtful condition, shall not be used.

(5) Hose couplings shall be of the type that cannot be unlocked or disconnected by means of a straight pull without rotary motion.

(6) Boxes used for the storage of gas hose shall be ventilated.

(7) Hoses, cables, and other equipment shall be kept clear of passageways, ladders and stairs.

(g) *Torches.* (1) Clogged torch tip openings shall be cleaned with suitable cleaning wires, drills, or other devices designed for such purpose.

(2) Torches in use shall be inspected at the beginning of each working shift for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall not be used.

(3) Torches shall be lighted by friction lighters or other approved devices, and not by matches or from hot work.

(h) *Regulators and gauges.* Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use.

(i) *Oil and grease hazards.* Oxygen cylinders and fittings shall be kept away from oil or grease. Cylinders, cylinder caps and valves, couplings, regulators, hose, and apparatus shall be kept free from oil or greasy substances and shall not be handled with oily hands or gloves. Oxygen shall not be directed at oily surfaces, greasy clothes, or within a fuel oil or other storage tank or vessel.

(j) *Additional rules.* For additional details not covered in this subpart, applicable technical portions of American National Standards Institute, Z49.1–1967, Safety in Welding and Cutting, shall apply.

§ 1926.351 Arc welding and cutting.

(a) *Manual electrode holders.* (1) Only manual electrode holders which are specifically designed for arc welding and cutting, and are of a capacity capable of safely handling the maximum rated current required by the electrodes, shall be used.

(2) Any current-carrying parts passing through the portion of the holder which the arc welder or cutter grips in his hand, and the outer surfaces of the jaws of the holder, shall be fully insulated against the maximum voltage encountered to ground.

(b) *Welding cables and connectors.* (1) All arc welding and cutting cables shall be of the completely insulated, flexible type, capable of handling the maximum current requirements of the work in progress, taking into account the duty cycle under which the arc welder or cutter is working.

(2) Only cable free from repair or splices for a minimum distance of 10 feet from the cable end to which the electrode holder is connected shall be used, except that cables with standard insulated connectors or with splices whose insulating quality is equal to that of the cable are permitted.

(3) When it becomes necessary to connect or splice lengths of cable one to another, substantial insulated connectors of a capacity at least equivalent to that of the cable shall be used. If connections are effected by means of cable lugs, they shall be securely fastened together to give good electrical contact, and the exposed metal parts of the lugs shall be completely insulated.

(4) Cables in need of repair shall not be used. When a cable, other than the cable lead referred to in subparagraph (2) of this paragraph, becomes worn to the extent of exposing bare conductors,

the portion thus exposed shall be protected by means of rubber and friction tape or other equivalent insulation.

(c) *Ground returns and machine grounding.* (1) A ground return cable shall have a safe current carrying capacity equal to or exceeding the specified maximum output capacity of the arc welding or cutting unit which it services. When a single ground return cable services more than one unit, its safe current-carrying capacity shall equal or exceed the total specified maximum output capacities of all the units which it services.

(2) Pipelines containing gases or flammable liquids, or conduits containing electrical circuits, shall not be used as a ground return. For welding on natural gas pipelines, the technical portions of regulations issued by the Department of Transportation, Office of Pipeline Safety, 49 CFR Part 192, Minimum Federal Safety Standards for Gas Pipelines, shall apply.

(3) When a structure or pipeline is employed as a ground return circuit, it shall be determined that the required electrical contact exists at all joints. The generation of an arc, sparks, or heat at any point shall cause rejection of the structures as a ground circuit.

(4) When a structure or pipeline is continuously employed as a ground return circuit, all joints shall be bonded, and periodic inspections shall be conducted to ensure that no condition of electrolysis or fire hazard exists by virtue of such use.

(5) The frames of all arc welding and cutting machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current. Grounding circuits, other than by means of the structure, shall be checked to ensure that the circuit between the ground and the grounded power conductor has resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.

(6) All ground connections shall be inspected to ensure that they are mechanically strong and electrically adequate for the required current.

(d) *Operating instructions.* Employers shall instruct employees in the safe means of arc welding and cutting as follows:

(1) When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects.

(2) Hot electrode holders shall not be dipped in water; to do so may expose the arc welder or cutter to electric shock.

(3) When the arc welder or cutter has occasion to leave his work or to stop work for any appreciable length of time, or when the arc welding or cutting machine is to be moved, the power supply switch to the equipment shall be opened.

(4) Any faulty or defective equipment shall be reported to the supervisor.

(5) Other requirements, as outlined in Article 630, National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of 1968), Electric Welders, shall be used when applicable.

(e) *Shielding.* Whenever practicable, all arc welding and cutting operations shall be shielded by noncombustible or flameproof screens which will protect employees and other persons working in the vicinity from the direct rays of the arc.

§ 1926.352 Fire prevention.

(a) When practical, objects to be welded, cut, or heated shall be moved to a designated safe location or, if the objects to be welded, cut, or heated cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place, or otherwise protected.

(b) If the object to be welded, cut, or heated cannot be moved and if all the fire hazards cannot be removed, positive means shall be taken to confine the heat, sparks, and slag, and to protect the immovable fire hazards from them.

(c) No welding, cutting, or heating shall be done where the application of flammable paints, or the presence of other flammable compounds, or heavy dust concentrations creates a hazard.

(d) Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use.

(e) When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire while the actual welding, cutting, or heating operation is being performed, and for a sufficient period of time after completion of the work to ensure that no possibility of fire exists. Such personnel shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.

(f) When welding, cutting, or heating is performed on walls, floors, and ceilings, since direct penetration of sparks or heat transfer may introduce a fire hazard to an adjacent area, the same precautions shall be taken on the opposite side as are taken on the side on which the welding is being performed.

(g) For the elimination of possible fire in enclosed spaces as a result of gas escaping through leaking or improperly closed torch valves, the gas supply to the torch shall be positively shut off at some point outside the enclosed space whenever the torch is not to be used or whenever the torch is left unattended for a substantial period of time, such as during the lunch period. Overnight and at the change of shifts, the torch and hose shall be removed from the confined space. Open end fuel gas and oxygen hoses shall be immediately removed from enclosed spaces when they are disconnected from the torch or other gas-consuming device.

(h) Except when the contents are being removed or transferred, drums, pails, and other containers, which contain or have contained flammable liquids, shall be kept closed. Empty containers shall be removed to a safe area apart from hot work operations or open flames.

(i) Drums, containers, or hollow structures which have contained toxic or flammable substances shall, before welding, cutting, or heating is undertaken on them, either be filled with water or thoroughly cleaned of such substances and ventilated and tested. For welding, cutting and heating on steel pipelines containing natural gas, the pertinent portions of regulations issued by the Department of Transportation, Office of Pipeline Safety, 49 CFR Part 192, Minimum Federal Safety Standards for Gas Pipelines, shall apply.

(j) Before heat is applied to a drum, container, or hollow structure, a vent or opening shall be provided for the release of any built-up pressure during the application of heat.

§ 1926.353 Ventilation and protection in welding, cutting, and heating.

(a) *Mechanical ventilation.* For purposes of this section, mechanical ventilation shall meet the following requirements:

(1) Mechanical ventilation shall consist of either general mechanical ventilation systems or local exhaust systems.

(2) General mechanical ventilation shall be of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fumes and smoke within safe limits, as defined in Subpart D of this part.

(3) Local exhaust ventilation shall consist of freely movable hoods intended to be placed by the welder or burner as close as practicable to the work. This system shall be of sufficient capacity and so arranged as to remove fumes and smoke at the source and keep the concentration of them in the breathing zone within safe limits as defined in Subpart D of this part.

(4) Contaminated air exhausted from a working space shall be discharged into the open air or otherwise clear of the source of intake air.

(5) All air replacing that withdrawn shall be clean and respirable.

(6) Oxygen shall not be used for ventilation purposes, comfort cooling, blowing dust from clothing, or for cleaning the work area.

(b) *Welding, cutting, and heating in confined spaces.* (1) Except as provided in subparagraph (2) of this paragraph and paragraph (c)(2) of this section, either general mechanical or local exhaust ventilation meeting the requirements of paragraph (a) of this section shall be provided whenever welding, cutting, or heating is performed in a confined space.

(2) When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space shall be protected by air line respirators in accordance with the requirements of Subpart E of this part, and an employee on the outside of such a confined space shall be assigned to maintain communi-

cation with those working within it and to aid them in an emergency.

(c) *Welding, cutting, or heating of metals of toxic significance.* (1) Welding, cutting, or heating in any enclosed spaces involving the metals specified in this subparagraph shall be performed with either general mechanical or local exhaust ventilation meeting the requirements of paragraph (a) of this section:

(i) Zinc-bearing base or filler metals or metals coated with zinc-bearing materials;

(ii) Lead base metals;

(iii) Cadmium-bearing filler materials;

(iv) Chromium-bearing metals or metals coated with chromium-bearing materials.

(2) Welding, cutting, or heating in any enclosed spaces involving the metals specified in this subparagraph shall be performed with local exhaust ventilation in accordance with the requirements of paragraph (a) of this section, or employees shall be protected by air line respirators in accordance with the requirements of Subpart E of this part:

(i) Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials;

(ii) Cadmium-bearing or cadmium-coated base metals;

(iii) Metals coated with mercury-bearing metals;

(iv) Beryllium-containing base or filler metals. Because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air line respirators.

(3) Employees performing such operations in the open air shall be protected by filter-type respirators in accordance with the requirements of Subpart E of this part, except that employees performing such operations on beryllium-containing base or filler metals shall be protected by air line respirators in accordance with the requirements of Subpart E of this part.

(4) Other employees exposed to the same atmosphere as the welders or burners shall be protected in the same manner as the welder or burner.

(d) *Inert-gas metal-arc welding.* (1) Since the inert-gas metal-arc welding process involves the production of ultraviolet radiation of intensities of 5 to 30 times that produced during shielded metal-arc welding, the decomposition of chlorinated solvents by ultraviolet rays, and the liberation of toxic fumes and gases, employees shall not be permitted to engage in, or be exposed to the process until the following special precautions have been taken:

(i) The use of chlorinated solvents shall be kept at least 200 feet, unless shielded, from the exposed arc, and surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is permitted on such surfaces.

(ii) Employees in the area not protected from the arc by screening shall be protected by filter lenses meeting the requirements of Subpart E of this part. When two or more welders are exposed to each other's arc, filter lens goggles of a suitable type, meeting the requirements of Subpart E of this part, shall be worn under welding helmets. Hand shields to protect the welder against flashes and radiant energy shall be used when either the helmet is lifted or the shield is removed.

(iii) Welders and other employees who are exposed to radiation shall be suitably protected so that the skin is covered completely to prevent burns and other damage by ultraviolet rays. Welding helmets and hand shields shall be free of leaks and openings, and free of highly reflective surfaces.

(iv) When inert-gas metal-arc welding is being performed on stainless steel, the requirements of paragraph (c) (2) of this section shall be met to protect against dangerous concentrations of nitrogen dioxide.

(e) *General welding, cutting, and heating.* (1) Welding, cutting, and heating, not involving conditions or materials described in paragraph (b), (c), or (d) of this section, may normally be done without mechanical ventilation or respiratory protective equipment, but where, because of unusual physical or atmospheric conditions, an unsafe accumulation of contaminants exists, suitable mechanical ventilation or respiratory protective equipment shall be provided.

(2) Employees performing any type of welding, cutting, or heating shall be protected by suitable eye protective equipment in accordance with the requirements of Subpart E of this part.

§ 1926.354 Welding, cutting, and heating in way of preservative coatings.

(a) Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

(b) Precautions shall be taken to prevent ignition of highly flammable hardened preservative coatings. When coatings are determined to be highly flammable, they shall be stripped from the area to be heated to prevent ignition.

(c) Protection against toxic preservative coatings: (1) In enclosed spaces, all surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least 4 inches from the area of heat application, or the employees shall be protected by air line respirators, meeting the requirements of Subpart E of this part.

(2) In the open air, employees shall be protected by a respirator, in accordance with requirements of Subpart E of this part.

(d) The preservative coatings shall be removed a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heating area may be used to limit the size of the area required to be cleaned.

Subpart K—Electrical

§ 1926.400 General requirements.

(a) All electrical work, installation, and wire capacities shall be in accordance with the pertinent provisions of the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968), unless otherwise provided by regulations of this part.

(b) *Applicability.* These regulations apply only to electrical installations used on the jobsite, both temporary and permanent. For power distribution and transmission lines, see Subpart V of this part.

(c) *Protection of employees.* (1) No employer shall permit an employee to work in such proximity to any part of an electric power circuit that he may contact the same in the course of his work unless the employee is protected against electric shock by deenergizing the circuit and grounding it or by guarding it by effective insulation or other means. In work areas where the exact location of underground electric power lines is unknown, workmen using jack-hammers, bars, or other hand tools which may contact a line shall be provided with insulated protective gloves.

(2) Before work is begun the employer shall ascertain by inquiry or direct observation, or by instruments, whether any part of an electric power circuit, exposed or concealed, is so located that the performance of the work may bring any person, tool, or machine into physical or electrical contact therewith. The employer shall post and maintain proper warning signs where such a circuit exists. He shall advise his employees of the location of such lines, the hazards involved and the protective measures to be taken.

(d) *Passageways and open spaces.* Suitable barriers or other means shall be provided to ensure that workspace for electrical equipment will not be used as a passageway during periods when energized parts of electrical equipment are exposed.

(e) *Workspace around equipment.* Sufficient space shall be provided and maintained in the area of electrical equipment to permit ready and safe operation and maintenance of such equipment. When parts are exposed, the minimum clearance for the workspace shall be not less than 6¼ feet high, nor less than a radius of 3 feet wide, and there shall be clearance sufficient to permit at least a 90° opening of all doors or hinged panels. All working clearances shall be maintained in accordance with Article 110–16, National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968).

(f) *Load ratings.* In existing installations no changes in circuit protection shall be made to increase the load in excess of the load rating of the circuit wiring, as specified in National Electric Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968), Article 310.

(g) *Lockout and tagging of circuits.* (1) Equipment or circuits that are de-

energized shall be rendered inoperative and have tags attached at all points where such equipment or circuits can be energized.

(2) Controls that are to be deactivated during the course of work on energized or deenergized equipment or circuits shall be tagged.

(3) Tags shall be placed to identify plainly the equipment or circuits being worked on.

§ 1926.401 Grounding and bonding.

(a) *Portable and/or cord and plug-connected equipment.* (1) The noncurrent-carrying metal parts of portable and/or plug-connected equipment shall be grounded.

(2) Portable tools and appliances protected by an approved system of double insulation, or its equivalent, need not be grounded. Where such an approved system is employed, the equipment shall be distinctively marked.

(b) *Fixed equipment.* Exposed noncurrent-carrying metal parts of fixed electrical equipment, including motors, generators, frames and tracks of electrically operated cranes, electrically driven machinery, etc., shall be grounded.

(c) *Effective grounding.* The path from circuits, equipment, structures, and conduit or enclosures to ground shall be permanent and continuous; have ample carrying capacity to conduct safely the currents liable to be imposed on it; and have impedance sufficiently low to limit the potential above ground and to result in the operation of the overcurrent devices in the circuit.

(d) *Ground resistance.* Driven rod electrodes shall, where practicable, have a resistance to ground not to exceed 25 ohms. Where the resistance is not as low as 25 ohms, two or more electrodes connected in parallel shall be used.

(e) *Testing of grounds.* Grounding circuits shall be checked to ensure that the circuit between the ground and the grounded power conductor has a resistance which is low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.

(f) *Extension cords.* Extension cords used with portable electric tools and appliances shall be of three-wire type.

(g) *Bonding.* (1) Conductors used for bonding and grounding stationary and moveable equipment shall be of ample size to carry the anticipated current.

(2) When attaching bonding and grounding clamps or clips, a secure and positive metal-to-metal contact shall be made. Such attachments shall be made before closures are opened and material movements are started and shall not be broken until after material movements are stopped and closures are made.

(h) *Temporary wiring.* All temporary wiring shall be effectively grounded in accordance with the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968), Articles 305 and 310.

(i) *Construction site.* Precautions shall be taken to make any necessary open wiring inaccessible to unauthorized personnel.

(j) *Temporary lighting.* (1) Temporary lights shall be equipped with guards to prevent accidental contact with the bulb, except that guards are not required when the construction of the reflector is such that the bulb is deeply recessed.

(2) Temporary lights shall be equipped with heavy duty electric cords with connections and insulation maintained in safe condition. Temporary lights shall not be suspended by their electric cords unless cords and lights are designed for this means of suspension. Splices shall have insulation equal to that of the cable.

(3) Working spaces, walkways, and similar locations shall be kept clear of cords so as not to create a hazard to employees.

(4) Portable electric lighting used in moist and/or other hazardous locations, as for example, drums, tanks, and vessels shall be operated at a maximum of 12 volts.

§ 1926.402 Equipment installation and maintenance.

(a) *Flexible cable and cords.* (1) Receptacles for attachment plugs shall be of approved, concealed contact type with a contact for extending ground continuity and shall be so designed and constructed that the plug may be pulled out without leaving any live parts exposed to accidental contact.

(2) Where different voltages, frequencies, or types of current (a.c. or d.c.) are to be supplied by portable cords, receptacles shall be of such design that attachment plugs used on such circuits are not interchangeable.

(3) Attachment plugs or other connectors supplying equipment at more than 300 volts shall be of the skirted type or otherwise so designed that arcs will be confined.

(4) Attachment plugs for use in work areas shall be so constructed that they will endure rough use and be equipped with a suitable cord grip to prevent strain on the terminal screws.

(5) Flexible cord shall be used only in continuous lengths without splice, except suitable molded or vulcanized splices may be used where properly made, and the insulation shall be equal to the cable being spliced and wire connections soldered.

(6) Trailing cables shall be protected from damage.

(7) Splices in trailing cable shall be mechanically strong components and insulated to retain the mechanical and dielectric strength of the original cable.

(8) Cable passing through work areas shall be covered or elevated to protect it from damage which would create a hazard to employees.

(9) Handlamps of the portable type shall be of the molded composition or other type approved for the purpose. Brass-shell, paper-lined lampholders shall not be used. Handlamps shall be equipped with a handle and a substantial guard over the bulb and attached to the lampholder or the handle.

(10) Worn or frayed electric cables shall not be used.

(11) Extension cords shall be protected against accidental damage as may be caused by traffic, sharp corners, or projections and pinching in doors or elsewhere.

(12) Extension cords shall not be fastened with staples, hung from nails, or suspended by wire.

(b) *Overcurrent protection.* (1) Overcurrent protection shall be provided by fuses or circuit breakers for each feeder and branch circuit, and shall be based on the current-carrying capacity of the conductors supplied and the power load being used.

(2) No overcurrent device shall be placed in any permanently grounded conductor, except where the overcurrent device simultaneously opens all conductors of the circuit or for motor running protection.

(3) When fuses are installed or removed with one or both terminals energized, special tools insulated for the voltage shall be used.

(c) *Switches, circuit breakers, and disconnecting means.* (1) Each disconnecting means for motors and appliances, and each service feeder or branch circuit at the point where it originates, shall be legibly marked to indicate its purpose unless located and arranged so the purpose is evident.

(2) Disconnecting means shall be located or shielded so that employees will not be injured.

(3) Boxes for disconnecting means shall be securely and rigidly fastened to the surface upon which they are mounted and fitted with covers.

(4) Boxes and disconnecting means installed in damp or wet locations shall be waterproof to the extent that water does not enter or accumulate.

(d) *Transformers.* (1) Energized transformers and other related electrically energized equipment over 150 volts to ground shall be protected so as to prevent accidental contact with any person. Protection shall be provided by individual integrated housing or by an enclosure, such as an electrical substation fence, which accommodates a group of such equipment. Metallic enclosures shall be grounded.

(2) Access to energized equipment covered by subparagraph (1) of this paragraph shall be secured by lock or other fasteners requiring the use of tools to open them.

(3) Signs indicating danger and prohibiting unauthorized access shall be conspicuously displayed on the housing or other enclosure around the equipment.

(4) Transformers mounted on utility poles at a height of more than 12 feet from the ground are exempt from the requirements of this paragraph.

(e) *Welding and cutting equipment.* Welding and cutting equipment shall meet the requirements specified in Subparts F and J of this part.

§ 1926.403 Battery rooms and battery charging.

(a) *General requirements.* (1) Batteries of the nonseal type shall be located in enclosures with outside vents or in well ventilated rooms, so arranged as to prevent the escape of fumes, gases, or electrolyte spray into other areas.

(2) Ventilation shall be provided to ensure diffusion of the gases from the battery to prevent the accumulation of an explosive mixture.

(3) Racks and trays shall be substantial and treated to be resistant to the electrolyte.

(4) Floors shall be of acid resistant construction or be protected from acid accumulations.

(5) Face shields, aprons, and rubber gloves shall be provided for workmen handling acids or batteries.

(6) Facilities for quick drenching of the eyes and body shall be provided within 25 feet of the work area for emergency use.

(7) Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage by trucks, and for adequate ventilation for dispersal of fumes from gassing batteries.

(b) *Charging.* (1) Battery charging installations shall be located in areas designated for that purpose.

(2) When charging batteries, the vent caps shall be kept in place to avoid electrolyte spray. Care shall be taken to assure that vent caps are functioning.

§ 1926.404 Hazardous locations.

(a) General: For the purpose of this section, hazardous locations are defined as follows:

(1) Class I Locations—Class I Locations are those in which flammable gases or vapors are or may be present in quantities sufficient to produce explosive or ignitable mixtures.

(2) Class II Locations—Class II Locations are those which are hazardous because of the presence of combustible dust.

(3) Class III Locations—Class III Locations are those which are hazardous because of the presence of easily ignitable fibers or flyings, but in which such fibers or flyings are not likely to be in suspension in air in quantities sufficient to produce ignitable mixtures.

(4) See the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968) for further definition of divisions 1 and 2 for each class.

(b) All components and utilization equipment used in a hazardous location shall be chosen from among those listed by a nationally recognized testing laboratory, such as Underwriters' Laboratories, Inc., or Factory Mutual Engineering Corp., except custom-made components and utilization equipment.

(c) Equipment approved for a specific hazardous location shall not be installed or intermixed with equipment approved for another specific hazardous location.

(d) Employer shall ensure that all wiring components and utilization equipment are maintained as vapor, dust, or fiber tight as contemplated by their approvals. There shall be no loose or missing screws, gaskets, threaded connections, or other impairments to this tight condition.

§ 1926.405 Definitions applicable to this subpart.

(a) The definition of "approved" as set forth in § 1910.308(d) of this chapter shall apply.

(b) "Bonding jumper"—a conductor to assure the required electrical conductivity between metal parts required to be electrically connected.

(c) "Branch circuits"—that portion of a wiring system extending beyond the final overcurrent device protecting the circuit. (A device not approved for branch circuit protection, such as thermal cutout or motor overload protective device, is not considered as the overcurrent device protecting the circuit.)

(d) "Circuit breaker"—a device designed to open and close a circuit by manual means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating.

(e) "Exposed" (as applied to live parts)—means that a live part can be inadvertently touched or approached nearer than a safe distance by a person. This term applies to parts not suitably guarded, isolated, or insulated.

(f) "Ground"—a conducting connection, whether intentional or accidental, between an electrical circuit or equipment and earth, or to some conducting body which serves in place of the earth.

(g) "Grounded"—connected to earth or to some conducting body which serves in place of the earth.

(h) "Hazard" is considered to include casualty, fire, and shock when applicable.

(i) "Isolated" means not readily accessible to person unless special means of access are used.

(j) "Raceway"—any channel for loosely holding wires or cables in interior work which is designed expressly and used solely for this purpose. Raceways may be of metal, wood, or insulating material, and the term includes wood and metal moldings consisting of a backing and capping, and also metal ducts into which wires are to be pulled.

(k) "Shock hazard"—considered to exist at an accessible part in a circuit between the part and ground, or other accessible parts if the potential is more than 42.4 volts peak and the current through a 1,500-ohm load is more than 5 milliamperes.

(l) "Weatherproof"—so constructed or protected that exposure to the weather shall not interfere with successful operation.

Subpart L—Ladders and Scaffolding

§ 1926.450 Ladders.

(a) *General requirements.* (1) Except where either permanent or temporary stairways or suitable ramps or runways are provided, ladders described in this subpart shall be used to give safe access to all elevations.

(2) The use of ladders with broken or missing rungs or steps, broken or split side rails, or other faulty or defective construction is prohibited. When ladders with such defects are discovered, they shall be immediately withdrawn from service. Inspection of metal ladders shall include checking for corrosion of interiors of open end hollow rungs.

(3) Manufactured portable wood ladders provided by the employer shall be in accordance with the provisions of the American National Standards Institute, A 14.1–1968, Safety Code for Portable Wood Ladders.

(4) Portable metal ladders shall be of strength equivalent to that of wood ladders. Manufactured portable metal ladders provided by the employer shall be in accordance with the provisions of the American National Standards Institute, A 14.2–1956, Safety Code for Portable Metal Ladders.

(5) Fixed ladders shall be in accordance with the provisions of the American National Standards Institute, A 14.3–1956, Safety Code for Fixed Ladders.

(6) Portable ladder feet shall be placed on a substantial base, and the area around the top and bottom of the ladder shall be kept clear.

(7) Portable ladders shall be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is about one-quarter of the working length of the ladder (the length along the ladder between the foot and the top support). Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds.

(8) Ladders shall not be placed in passageways, doorways, driveways, or any location where they may be displaced by activities being conducted on any other work, unless protected by barricades or guards.

(9) The side rails shall extend not less than 36 inches above the landing. When this is not practical, grab rails, which provide a secure grip for an employee moving to or from the point of access, shall be installed.

(10) Portable ladders in use shall be tied, blocked, or otherwise secured to prevent their being displaced.

(11) Portable metal ladders shall not be used for electrical work or where they may contact electrical conductors.

(b) *Job-made ladders.* (1) Job-made ladders shall be constructed for intended use. If a ladder is to provide the only means of access or exit from a working area for 25 or more employees, or simultaneous two-way traffic is expected, a double cleat ladder shall be installed.

(2) Double cleat ladders shall not exceed 24 feet in length.

(3) Single cleat ladders shall not exceed 30 feet in length between supports (base and top landing). If ladders are to connect different landings, or if the length required exceeds this maximum length, two or more separate ladders shall be used, offset with a platform between each ladder. Guardrails and toeboards shall be erected on the exposed sides of the platforms. (See § 1926.451 (a)(5).)

(4) The width of single cleat ladders shall be at least 15 inches, but not more than 20 inches, between rails at the top.

(5) Side rails shall be parallel or flared top to bottom by not more than one-quarter of an inch for each 2 feet of length.

(6) Wood side rails of ladders having cleats shall be not less than 1½ inches thick and 3½ inches deep (2 inches by 4 inches nominal) when made of Group 2 or Group 3 woods (see Table L–1). Wood side rails of Group 4 woods (see Table L–1) may be used in the same cross-section of dimensions for cleat ladders up to 20 feet in length.

TABLE L–1

AVERAGE DENSITIES OF VARIOUS SPECIES OF WOOD FOR USE IN LADDERS

Species	Density (lbs./ft.³)	Species	Density (lbs./ft.³)
GROUP 1			
White ash	41	Hard maple	42
Beech	43	Red maple	36
Birch	44	Red oak	43
Rock elm	43	White oak	46
Hickory	50	Pecan	46
Locust	47	Persimmon	50
GROUP 2			
Douglas fir (coast region)	34	Southern yellow pine	37
Western larch	38		
GROUP 3			
Red alder	28	Gum	34
Oregon ash	38	West Coast hemlock	30
Pumpkin ash	37	Magnolia	35
Alaska cedar	31	Oregon maple	34
Port Orford cedar	30	Norway pine	31
Cucumber	34	Poplar	28
Cypress	32	Redwood	25
Soft elm	36	Eastern spruce	28
Douglas fir (Rocky Mountain type)	30	Sitka spruce	28
		Sycamore	35
Noble fir	27	Tamarack	37
		Tupelo	35
GROUP 4			
Aspen	27	Eastern hemlock	28
Basswood	25	Holly	39
Buckeye	25	Soft maple	33
Butternut	27	Lodgepole pine	29
Incense cedar	25	Idaho white pine	28
Western red cedar	23	Northern white pine	25
Black cottonwood	24	Ponderosa pine	28
White fir	26	Sugar pine	26
Hackberry	37		

(7) It is preferable that side rails be continuous. If splicing is necessary to attain the required length, however, the splice must develop the full strength of a continuous side rail of the same length.

(8) 2-inch by 4-inch lumber shall be used for side rails of single cleat ladders up to 16 feet long; 3-inch by 6-inch lumber shall be used for single cleat ladders from 16 to 30 feet in length.

(9) 2-inch by 4-inch lumber shall be used for side and middle rails of double cleat ladders up to 12 feet in length; 2-inch by 6-inch lumber for double cleat ladders from 12 to 24 feet in length.

(10) Wood cleats shall have the following minimum dimensions when made of Group 1 woods (see Table L–1):

TABLE L–2

Length of cleat (inches)	Thickness (inches)	Width (inches)
Up to and including 20	¾	3
Over 20 and up to and including 30	¾	3½

(11) Cleats may be made of species of any other group of wood (see Table L–1) provided equal or greater strength is maintained.

(12) Cleats shall be inset into the edges of the side rails one-half inch, or filler blocks shall be used on the rails between the cleats. The cleats shall be secured to each rail with three 10d common wire nails or other fasteners of equivalent strength. Cleats shall be uniformly spaced, 12 inches top-to-top.

§ 1926.451 Scaffolding.[2]

(a) *General requirements.* (1) Scaffolds shall be erected in accordance with requirements of this section.

(2) The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks, shall not be used to support scaffolds or planks.

(3) No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent persons.

(4) Guardrails and toeboards shall be installed on all open sides and ends of platforms more than 6 feet above the ground or floor, except needle beam scaffolds and floats. Scaffolds 4 feet to 6 feet in height, having a minimum horizontal dimension in either direction of less than 45 inches, shall have standard guardrails installed on all open sides and ends of the platform.

(5) Guardrails shall be 2- x 4-inches, or the equivalent, approximately 42 inches high, with a midrail, when required. Supports shall be at intervals not to exceed 8 feet. Toeboards shall be a minimum of 4 inches in height.

(6) Where persons are required to work or pass under the scaffold, scaffolds shall be provided with a screen between the toeboard and the guardrail, extending along the entire opening, consisting of No. 18 gauge U.S. Standard wire ½-inch mesh, or the equivalent.

(7) Scaffolds and their components shall be capable of supporting without failure at least 4 times the maximum intended load.

(8) Any scaffold including accessories such as braces, brackets, trusses, screw legs, ladders, etc. damaged or weakened from any cause shall be immediately repaired or replaced.

(9) All load-carrying timber members of scaffold framing shall be a minimum of 1,500 fiber (Stress Grade) construction-grade lumber. All dimensions are nominal sizes as provided in the American Lumber Standards, except that where rough sizes are noted, only rough or undressed lumber of the size specified will satisfy minimum requirements.

(10) All planking shall be Scaffold Grades, or equivalent, as recognized by approved grading rules for the species of wood used. The maximum permissible spans for 2- x 10-inch or wider planks shall be as shown in the following:

TABLE L–3

MATERIAL

	Full thickness undressed lumber			Nominal thickness lumber[1]		
Working load (p.s.f.)	25	50	75	25	50	
Permissible span (ft.)	10	8	6	8	6	

[1] Nominal thickness lumber not recommended for heavy duty use.

[2] See Appendix I for amendments to this section.

(11) The maximum permissible span for 1¼- x 9-inch or wider plank of full thickness shall be 4 feet with medium duty loading of 50 p.s.f.

(12) All planking or platforms shall be overlapped (minimum 12 inches), or secured from movement.

(13) An access ladder or equivalent safe access shall be provided.

(14) Scaffold planks shall extend over their end supports not less than 6 inches nor more than 12 inches.

(15) The poles, legs, or uprights of scaffolds shall be plumb, and securely and rigidly braced to prevent swaying and displacement.

(16) Overhead protection shall be provided for men on a scaffold exposed to overhead hazards.

(17) Slippery conditions on scaffolds shall be eliminated as soon as possible after they occur.

(18) No welding, burning, riveting, or open flame work shall be performed on any staging suspended by means of fiber or synthetic rope. Only treated or protected fiber or synthetic ropes shall be used for or near any work involving the use of corrosive substances or chemicals. Specific requirements for boatswain's chairs and float or ship scaffolds are contained in paragraphs (l) and (w) of this section.

(19) Wire, synthetic, or fiber rope used for scaffold suspension shall be capable of supporting at least 6 times the rated load.

(20) The use of shore or lean-to scaffolds is prohibited.

(21) Lumber sizes, when used in this subpart, refer to nominal sizes except where otherwise stated.

(b) *Wood pole scaffolds.* (1) Scaffold poles shall bear on a foundation of sufficient size and strength to spread the load from the pole over a sufficient area to prevent settlement. All poles shall be set plumb.

(2) Where wood poles are spliced, the ends shall be squared and the upper section shall rest squarely on the lower section. Wood splice plates shall be provided on at least two adjacent sides and shall be not less than 4 feet in length, overlapping the abutted ends equally, and have the same width and not less than the cross-sectional area of the pole. Splice plates or other materials of equivalent strength may be used.

(3) Independent pole scaffolds shall be set as near to the wall of the building as practicable.

(4) All pole scaffolds shall be securely guyed or tied to the building or structure. Where the height or length exceeds 25 feet, the scaffold shall be secured at intervals not greater than 25 feet vertically and horizontally.

(5) Putlogs or bearers shall be set with their greater dimension vertical, long enough to project over the ledgers of the inner and outer rows of poles at least 3 inches for proper support.

(6) Every wooden putlog on single pole scaffolds shall be reinforced with a 3/16- x 2-inch steel strip, or equivalent, secured to its lower edge throughout its entire length.

(7) Ledgers shall be long enough to extend over two pole spaces. Ledgers shall not be spliced between the poles. Ledgers shall be reinforced by bearing blocks securely nailed to the side of the pole to form a support for the ledger.

(8) Diagonal bracing shall be provided to prevent the poles from moving in a direction parallel with the wall of the building, or from buckling.

(9) Cross bracing shall be provided between the inner and outer sets of poles in independent pole scaffolds. The free ends of pole scaffolds shall be cross braced.

(10) Full diagonal face bracing shall be erected across the entire face of pole scaffolds in both directions. The braces shall be spliced at the poles. The inner row of poles on medium and heavy duty scaffolds shall be braced in a similar manner.

(11) Platform planks shall be laid with their edges close together so the platform will be tight with no spaces through which tools or fragments of material can fall.

(12) Where planking is lapped, each plank shall lap its end supports at least 12 inches. Where the ends of planks abut each other to form a flush floor, the butt joint shall be at the centerline of a pole. The abutted ends shall rest on separate bearers. Intermediate beams shall be provided where necessary to prevent dislodgment of planks due to deflection, and the ends shall be secured to prevent their dislodgment.

(13) When a scaffold materially changes its direction, the platform planks shall be laid to prevent tipping. The planks that meet the corner putlog at an angle shall be laid first, extending over the diagonally placed putlog far enough to have a good safe bearing, but not far enough to involve any danger from tipping. The planking running in the opposite direction at an angle shall be laid so as to extend over and rest on the first layer of planking.

(14) When moving platforms to the next level, the old platform shall be left undisturbed until the new putlogs or bearers have been set in place, ready to receive the platform planks.

(15) Guardrails, not less than 2 x 4 inches or the equivalent, approximately 42 inches high, with a midrail of 1- x 6-inch lumber or equivalent, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section, when required.

(16) All wood pole scaffolds 60 feet or less in height shall be constructed and erected in accordance with Tables L–4 to 10. If they are over 60 feet in height, they shall be designed by a qualified engineer competent in this field, and it shall be constructed and erected in accordance with such design.

TABLE L–4—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE SCAFFOLDS, LIGHT DUTY

	Maximum height of scaffold	
	20 ft.	60 ft.
Uniformly distributed load	Not to exceed 25 p.s.f.	
Poles or uprights	2 x 4 in.	4 x 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.	10 ft. 0 in.
Maximum width of scaffold	5 ft. 0 in.	5 ft. 0 in.
Bearers or putlogs to 3 ft. 0 in. width	2 x 4 in.	2 x 4 in.
Bearers or putlogs to 5 ft. 0 in. width	2 x 6 in. or 3 x 4 in.	2 x 6 in. or 3 x 4 in. (rough).
Ledgers	1 x 4 in.	1¼ x 9 in.
Planking	1¼ x 9 in. (rough)	2 x 10 in.
Vertical spacing of horizontal members	7 ft. 0 in.	9 ft. 0 in.
Bracing, horizontal and diagonal	1 x 4 in.	1 x 4 in.
Tie-ins	1 x 4 in.	1 x 4 in.
Toeboards	4 in. high (minimum)	4 in. high (minimum).
Guardrail	2 x 4 in.	2 x 4 in.

All members except planking are used on edge.

TABLE L–5—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE SCAFFOLDS—MEDIUM DUTY

Uniformly distributed load.	Not to exceed 50 p.s.f.
Maximum height of scaffold.	60 ft.
Poles or uprights	4 x 4 in.
Pole spacing (longitudinal).	8 ft. 0 in.
Maximum width of scaffold.	5 ft. 0 in.
Bearers or putlogs	2 x 10 in. or 3 x 4 in.
Spacing of bearers or putlogs.	8 ft. 0 in.
Ledgers	2 x 10 in.
Vertical spacing of horizontal members.	7 ft. 0 in.
Bracing, horizontal	1 x 6 in. or 1¼ x 4 in.
Bracing, diagonal	1 x 4 in.
Tie-ins	1 x 4 in.
Planking	2 x 10 in.
Toeboards	4-in. high (minimum).
Guardrail	2 x 4 in.

All members except planking are used on edge.

TABLE L–6—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE SCAFFOLDS—HEAVY DUTY

Uniformly distributed load.	Not to exceed 75 p.s.f.
Maximum height of scaffold.	60 ft.
Poles or uprights	4 x 6 in.
Pole spacing (longitudinal).	6 ft. 0 in.
Maximum width of scaffold.	5 ft. 0 in.
Bearers or putlogs	2 x 10 in. or 3 x 5 in.
Spacing of bearers or putlog.	6 ft. 0 in.
Ledgers	2 x 10 in.
Vertical spacing of horizontal members.	6 ft. 6 in.
Bracing, horizontal and diagonal.	2 x 4 in.
Tie-ins	1 x 4 in.
Planking	2 x 10 in.
Toeboards	4-in. high (minimum).
Guardrail	2 x 4 in.

All members except planking are used on edge.

TABLE L–7—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE SCAFFOLD LIGHT DUTY

	Maximum height of scaffold	
	20 ft.	60 ft.
Uniformly distributed load	Not to exceed 25 p.s.f.	
Poles or uprights	2 x 4 in.	4 x 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.	10 ft. 0 in.
Pole spacing (transverse)	6 ft. 0 in.	10 ft. 0 in.
Ledgers	1¼ x 4 in.	1¼ x 9 in.
Bearers to 3 ft. 0 in. span	2 x 4 in.	2 x 4 in.
Bearers to 10 ft. 0 in. span	2 x 6 in. or 3 x 4 in.	2 x 10 (rough) or 3 x 8 in.
Planking	1¼ x 9 in.	2 x 10 in.
Vertical spacing of horizontal members	7 ft. 0 in.	7 ft. 0 in.
Bracing, horizontal and diagonal	1 x 4 in.	1 x 4 in.
Tie-ins	1 x 4 in.	1 x 4 in.
Toeboards	4 in. high	4 in. high (minimum).
Guardrail	2 x 4 in.	2 x 4 in.

All members except planking are used on edge.

TABLE L–8—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE SCAFFOLDS—MEDIUM DUTY

Uniformly distributed load.	Not to exceed 50 p.s.f.
Maximum height of scaffold.	60 ft.
Poles or uprights	4 x 4 in.
Pole spacing (longitudinal).	8 ft. 0 in.
Pole spacing (transverse).	8 ft. 0 in.
Ledgers	2 x 10 in.
Vertical spacing of horizontal members.	6 ft. 0 in.
Spacing of bearers	8 ft. 0 in.
Bearers	2 x 10 in.
Bracing, horizontal	1 x 6 in. or 1¼ x 4 in.
Bracing, diagonal	1 x 4 in.
Tie-ins	1 x 4 in.

Planking	2 x 10 in.
Toeboards	4-in. high (minimum).
Guardrail	2 x 4 in.

All members except planking are used on edge.

TABLE L-9—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE SCAFFOLDS—HEAVY DUTY

Uniformly distributed load.	Not to exceed 75 p.s.f.
Maximum height of scaffold.	60 ft.
Poles or uprights	4 x 4 in.
Pole spacing (longitudinal).	6 ft. 0 in.
Pole spacing (transverse).	8 ft. 0 in.
Ledgers	2 x 10 in.
Vertical spacing of horizontal members.	6 ft. 0 in.
Bearers	2 x 10 in. (rough).
Bracing, horizontal and diagonal.	2 x 4 in.
Tie-ins	1 x 4 in.
Planking	2 x 10 in.
Toeboards	4-in. high (minimum).
Guardrail	2 x 4 in.

All members except planking are used on edge.

(c) *Tube and coupler scaffolds.* (1) A light duty tube and coupler scaffold shall have all posts, bearers, runners, and bracing of nominal 2-inch O.D. steel tubing. The posts shall be spaced no more than 6 feet apart by 10 feet along the length of the scaffold. Other structural metals when used must be designed to carry an equivalent load. No dissimilar metals shall be used together.

(2) A medium duty tube and coupler scaffold shall have all posts, runners, and bracing of nominal 2-inch O.D. steel tubing. Posts spaced not more than 6 feet apart by 8 feet along the length of the scaffold shall have bearers of nominal 2½-inch O.D. steel tubing. Posts spaced not more than 5 feet apart by 8 feet along the length of the scaffold shall have bearers of nominal 2-inch O.D. steel tubing. Other structural metals, when used, must be designed to carry an equivalent load. No dissimilar metals shall be used together.

(3) A heavy duty tube and coupler scaffold shall have all posts, runners, and bracing of nominal 2-inch O.D. steel tubing, with the posts spaced not more than 6 feet by 6 feet-6 inches. Other structural metals, when used, must be designed to carry an equivalent load. No dissimilar metals shall be used together.

(4) Tube and coupler scaffolds shall be limited in heights and working levels to those permitted in Tables L-10, 11, and 12. Drawings and specifications of all tube and coupler scaffolds above the limitations in Tables L-10, 11, and 12 shall be designed by a qualified engineer competent in this field.

(5) All tube and coupler scaffolds shall be constructed and erected to support four times the maximum intended loads, as set forth in Tables L-10, 11, and 12, or as set forth in the specifications by a licensed professional engineer competent in this field.

TABLE L-10—TUBE AND COUPLER SCAFFOLDS LIGHT DUTY

Uniformly distributed load	Not to exceed 25 p.s.f.
Post spacing (longitudinal)	10 ft. 0 in.
Post spacing (transverse)	6 ft. 0 in.

Working levels	Additional planked levels	Maximum height
1	8	125 ft.
2	4	125 ft.
3	0	91 ft. 0 in.

TABLE L-11—TUBE AND COUPLER SCAFFOLDS MEDIUM DUTY

Uniformly distributed load	Not to exceed 50 p.s.f.
Post spacing (longitudinal)	8 ft. 0 in.
Post spacing (transverse)	6 ft. 0 in.

Working levels	Additional planked levels	Maximum height
1	6	125 ft.
2	0	78 ft. 0 in.

TABLE L-12—TUBE AND COUPLER SCAFFOLDS HEAVY DUTY

Uniformly distributed load	Not to exceed 75 p.s.f.
Post spacing (longitudinal)	6 ft. 6 in.
Post spacing (traverse)	6 ft. 0 in.

Working levels	Additional planked levels	Maximum height
1	6	125 ft.

(6) Posts shall be accurately spaced, erected on suitable bases, and maintained plumb.

(7) Runners shall be erected along the length of the scaffold, located on both the inside and the outside posts at even height. Runners shall be interlocked to the inside and the outside posts at even heights. Runners shall be interlocked to form continuous lengths and coupled to each post. The bottom runners shall be located as close to the base as possible. Runners shall be placed not more than 6 feet-6 inches on centers.

(8) Bearers shall be installed transversely between posts and shall be securely coupled to the posts bearing on the runner coupler. When coupled directly to the runners, the coupler must be kept as close to the posts as possible.

(9) Bearers shall be at least 4 inches but not more than 12 inches longer than the post spacing or runner spacing.

(10) Cross bracing shall be installed across the width of the scaffold at least every third set of posts horizontally and every fourth runner vertically. Such bracing shall extend diagonally from the inner and outer runners upward to the next outer and inner runners.

(11) Longitudinal diagonal bracing on the inner and outer rows of poles shall be installed at approximately a 45° angle from near the base of the first outer post upward to the extreme top of the scaffold. Where the longitudinal length of the scaffold permits, such bracing shall be duplicated beginning at every fifth post. In a similar manner, longitudinal diagonal bracing shall also be installed from the last post extending back and upward toward the first post. Where conditions preclude the attachment of this bracing to the posts, it may be attached to the runners.

(12) The entire scaffold shall be tied to and securely braced against the building at intervals not to exceed 30 feet horizontally and 26 feet vertically.

(13) Guardrails, not less than 2 x 4 inches or the equivalent, approximately 42 inches high, with a midrail of 1- x 6-inch lumber or equivalent, and toeboard, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(d) *Tubular welded frame scaffolds.* (1) Metal tubular frame scaffolds, including accessories such as braces, brackets, trusses, screw legs, ladders, etc., shall be designed, constructed, and erected to safely support four times the maximum rated load.

(2) Spacing of panels or frames shall be consistent with the loads imposed.

(3) Scaffolds shall be properly braced by cross bracing or diagonal braces, or both, for securing vertical members together laterally, and the cross braces shall be of such length as will automatically square and aline vertical members so that the erected scaffold is always plumb, square, and rigid. All brace connections shall be made secure.

(4) Scaffold legs shall be set on adjustable bases or plain bases placed on mud sills or other foundations adequate to support the maximum rated load.

(5) The frames shall be placed one on top of the other with coupling or stacking pins to provide proper vertical alinement of the legs.

(6) Where uplift may occur, panels shall be locked together vertically by pins or other equivalent suitable means.

(7) To prevent movement, the scaffold shall be secured to the building or structure at intervals not to exceed 30 feet horizontally and 26 feet vertically.

(8) Maximum permissible spans or planking shall be in conformity with paragraph (a)(10), of this section.

(9) Drawings and specifications for all frame scaffolds over 125 feet in height above the base plates shall be designed by a registered professional engineer.

(10) Guardrails, not less than 2 x 4 inches or the equivalent, and approximately 42 inches high, with a midrail, of 1- x 6-inch lumber or equivalent, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(e) *Manually propelled mobile scaffolds.* (1) When free-standing mobile scaffold towers are used, the height shall not exceed four times the minimum base dimension.

(2) Casters shall be properly designed for strength and dimensions to support

four times the maximum intended load. All casters shall be provided with a positive locking device to hold the scaffold in position.

(3) Scaffolds shall be properly braced by cross bracing and horizontal bracing conforming with paragraph (d)(3) of this section.

(4) Platforms shall be tightly planked for the full width of the scaffold except for necessary entrance opening. Platforms shall be secured in place.

(5) A ladder or stairway shall be provided for proper access and exit and shall be affixed or built into the scaffold and so located that when in use it will not have a tendency to tip the scaffold. A landing platform must be provided at intervals not to exceed 35 feet.

(6) The force necessary to move the mobile scaffold shall be applied near or as close to the base as practicable and provision shall be made to stabilize the tower during movement from one location to another. Scaffolds shall only be moved on level floors, free of obstructions and openings.

(7) The employer shall not allow employees to ride on manually propelled scaffolds unless the following conditions exist:

(i) The floor or surface is within 3° of level, and free from pits, holes, or obstructions;

(ii) The minimum dimension of the scaffold base when ready for rolling, is at least one-half of the height. Outriggers, if used, shall be installed on both sides of staging;

(iii) The wheels are equipped with rubber or similar resilient tires;

(iv) All tools and materials are secured or removed from the platform before the mobile scaffold is moved.

(8) Scaffolds in use by any persons shall rest upon a suitable footing and shall stand plumb. The casters or wheels shall be locked to prevent any movement.

(9) Mobile scaffolds constructed of metal members shall also conform to applicable provisions of paragraphs (b), (c), or (d) of this section, depending on the material of which they are constructed.

(10) Guardrails not less than 2 x 4 inches or the equivalent, approximately 42 inches high, with a midrail, of 1- x 6-inch lumber or equivalent, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(f) *Elevating and rotating work platforms.* Applicable requirements of American National Standards Institute A92.2–1969, Vehicle Mounted Elevating and Rotating Work Platforms, shall be complied with for such equipment, as required by the provisions of § 1926.556.

(g) *Outrigger scaffolds.* (1) Outrigger beams shall extend not more than 6 feet beyond the face of the building. The inboard end of outrigger beams, measured from the fulcrum point to anchorage point, shall be not less than 1½ times the outboard end in length. The beams shall rest on edge, the sides shall be plumb, and the edges shall be horizontal. The fulcrum point of the beam shall rest on a secure bearing at least 6 inches in each horizontal dimension. The beam shall be secured in place against movement and shall be securely braced at the fulcrum point against tipping.

(2) The inboard ends of outrigger beams shall be securely anchored either by means of struts bearing against sills in contact with the overhead beams or ceiling, or by means of tension members secured to the floor joists underfoot, or by both if necessary. The inboard ends of outrigger beams shall be secured against tipping and the entire supporting structure shall be securely braced in both directions to prevent any horizontal movement.

(3) Unless outrigger scaffolds are designed by a registered professional engineer competent in this field, they shall be constructed and erected in accordance with Table L–13. Outrigger scaffolds, designed by a registered professional engineer, shall be constructed and erected in accordance with such design.

TABLE L–13—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF OUTRIGGER SCAFFOLDS

Maximum scaffold load.	Light duty	Medium duty
	25 p.s.f.	50 p.s.f.
Outrigger size	2 x 10 in	3 x 10 in.
Maximum outrigger spacing.	10 ft. 0 in	6 ft. 0 in.
Planking	2 x 10 in	2 x 10 in.
Guardrail	2 x 4 in	2 x 4 in.
Guardrail uprights	2 x 4 in	2 x 4 in.
Toeboards	4 in. (minimum).	4 in. (minimum).

(4) Planking shall be laid tight and shall extend to within 3 inches of the building wall. Planking shall be secured to the beams.

(5) Guardrails, not less than 2 x 4 inches or the equivalent, approximately 42 inches high, with a midrail of 1- x 6-inch lumber or equivalent, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(h) *Masons' adjustable multiple-point suspension scaffolds.* (1) The scaffold shall be capable of sustaining a working load of 50 pounds per square foot and shall not be loaded in excess of that figure.

(2) The scaffold shall be provided with hoisting machines that meet the requirements of Underwriters' Laboratories or Factory Mutual Engineering Corporation.

(3) The platform shall be supported by wire ropes, capable of supporting at least 6 times the intended load, suspended from overhead outrigger beams.

(4) The scaffold outrigger beams shall consist of structural metal securely fastened or anchored to the frame or floor system of the building or structure.

(5) Each outrigger beam shall be equivalent in strength to at least a standard 7-inch, 15.3-pound steel I-beam, at least 15 feet long, and shall not project more than 6 feet 6 inches beyond the bearing point.

(6) Where the overhang exceeds 6 feet 6 inches, outrigger beams shall be composed of stronger beams or multiple beams and be installed under the supervision of a competent person.

(7) All outrigger beams shall be set and maintained with their webs in a vertical position.

(8) A stop bolt shall be placed at each end of every outrigger beam.

(9) The outrigger beam shall rest on suitable wood bearing blocks.

(10) The free end of the suspension wire ropes shall be equipped with proper size thimbles and secured by splicing or other equivalent means. The running ends shall be securely attached to the hoisting drum and at least four turns of wire rope shall at all times remain on the drum. The use of fiber rope is prohibited.

(11) Where a single outrigger beam is used, the steel shackles or clevises with which the wire ropes are attached to the outrigger beams shall be placed directly over the hoisting drums.

(12) The scaffold platform shall be equivalent in strength to at least 2-inch planking. (For maximum planking spans, see paragraph (a)(11) of this section.)

(13) When employees are at work on the scaffold and an overhead hazard exists, overhead protection shall be provided on the scaffold, not more than 9 feet above the platform, consisting of 2-inch planking, or material of equivalent strength, laid tight, and extending not less than the width of the scaffold.

(14) Each scaffold shall be installed or relocated under the supervision of a competent person.

(15) Guardrails, not less than 2 x 4 inches or the equivalent, approximately 42 inches high, with a midrail, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(i) (*Swinging scaffolds*) *two-point suspension.* (1) Two-point suspension scaffold platforms shall be not less than 20 inches nor more than 36 inches wide overall. The platform shall be securely fastened to the hangers by U-bolts or by other equivalent means.

(2) The hangers of two-point suspension scaffolds shall be made of mild steel, or other equivalent materials, having a cross-sectional area capable of sustaining 4 times the maximum rated load, and shall be designed with a support for guardrail, intermediate rail, and toeboard.

(3) When hoisting machines are used on two-point suspension scaffolds, such machines shall be of a design tested and approved by Underwriters' Laboratories or Factory Mutual Engineering Corporation.

(4) The roof irons or hooks shall be of mild steel, or other equivalent material, of proper size and design, securely installed and anchored. Tiebacks of ¾-inch manila rope, or the equivalent, shall serve as a secondary means of anchorage, installed at right angles to the face of the building, whenever possible, and secured to a structurally sound portion of the building.

(5) Two-point suspension scaffolds shall be suspended by wire, synthetic, or fiber ropes capable of supporting at least 6 times the rated load. All other components shall be capable of supporting at least four times the rated load.

(6) The sheaves of all blocks, consisting of at least one double and one single block, shall fit the size and type of rope used.

(7) All wire ropes, fiber and synthetic ropes, slings, hangers, platforms, and other supporting parts shall be inspected before every installation. Periodic inspections shall be made while the scaffold is in use.

(8) On suspension scaffolds designed for a working load of 500 pounds, no more than two men shall be permitted to work at one time. On suspension scaffolds with a working load of 750 pounds, no more than three men shall be permitted to work at one time. Each employee shall be protected by an approved safety life belt attached to a lifeline. The lifeline shall be securely attached to substantial members of the structure (not scaffold), or to securely rigged lines, which will safely suspend the employee in case of a fall. In order to keep the lifeline continuously attached, with a minimum of slack, to a fixed structure, the attachment point of the lifeline shall be appropriately changed as the work progresses.

(9) Two-point suspension scaffolds shall be securely lashed to the building or structure to prevent them from swaying. Window cleaners' anchors shall not be used for this purpose.

(10) The platform of every two-point suspension scaffold shall be one of the following types:

(i) *Ladder-type platforms.* The side stringer shall be of clear straight-grained spruce or materials of equivalent strength and durability. The rungs shall be of straight-grained oak, ash, or hickory, at least 1⅛ inch in diameter, with ⅞-inch tenons mortised into the side stringers at least seven-eighths inch. The stringers shall be tied together with tie rods not less than one-quarter inch in diameter, passing through the stringers and riveted up tight against washers on both ends. The flooring strips shall be spaced not more than five-eighths inch apart except at the side rails where the space may be 1 inch. Ladder-type platforms shall be constructed in accordance with Table L–14.

TABLE L–14—SCHEDULE FOR LADDER-TYPE PLATFORMS

	Length of platform (feet)				
	12	14 and 16	18 and 20	22 and 24	28 and 30
Side Stringers, minimum cross section (finished sizes):					
At ends (inches)	1¾ x 2¾	1¾ x 2¾	1¾ x 3	1¾ x 3	1¾ x 3½.
At middle (inches)	1¾ x 3¾	1¾ x 3¾	1¾ x 4	1¾ x 4¼	1¾ x 5.
Reinforcing strip (minimum)	A ⅛x1⅛-inch steel reinforcing strip or its equivalent shall be attached to the side or underside, full length.				
Rungs	Rungs shall be 1⅛-inches minimum diameter with at least ⅞-inch diameter tenons, and the maximum spacing shall be 12 inches center to center.				
Tie rods:					
Number (minimum)	3	4	4	5	6.
Diameter (minimum)	¼ in.	¼ in.	¼ in.	¼ in.	¼ in.
Flooring, minimum finished size (inches)	⅛x2¾	⅛x2¾	⅛x2¾	⅛x2¾	⅛x2¾.

(ii) *Plank-type platforms.* Plank-type platforms shall be composed of not less than nominal 2- x 10-inch unspliced planks, properly cleated together on the underside, starting 6 inches from each end; intervals in between shall not exceed 4 feet. The plank-type platform shall not extend beyond the hangers more than 12 inches. A bar or other effective means shall be securely fastened to the platform at each end to prevent its slipping off the hanger. The span between hangers for plank-type platforms shall not exceed 8 feet.

(iii) *Beam-type platforms.* Beam platforms shall have side stringers of lumber not less than 2 x 6 inches set on edge. The span between hangers shall not exceed 12 feet when beam platforms are used. The flooring shall be supported on 2- x 6-inch cross beams, laid flat and set into the upper edge of the stringers with a snug fit, at intervals of not more than 4 feet, securely nailed in place. The flooring shall be of 1- x 6-inch material properly nailed. Floor boards shall not be spaced more than one-half inch apart.

(iv) *Light metal-type platforms,* when used, shall be tested and listed according to Underwriters' Laboratories or Factory Mutual Engineering Corporation.

(11) Guardrails, not less than 2 x 4 inches, or the equivalent, approximately 42 inches high, with a midrail, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(j) *Stone setters' adjustable multiple-point suspension scaffolds.* (1) The scaffold shall be capable of sustaining a working load of 25 pounds per square foot and shall not be overloaded. Scaffolds shall not be used for storage of stone or other heavy materials.

(2) When used, the hoisting machine and its supports shall be of a type tested and listed by Underwriters' Laboratories or Factory Mutual Engineering Corporation.

(3) The platform shall be securely fastened to the hangers by U-bolts or other equivalent means. (For materials and spans, see subdivision (ii) of paragraph (i)(10), Plank-Type Platforms, and Table L–14 of this section.)

(4) The scaffold unit shall be suspended from metal outriggers, iron brackets, wire rope slings, or iron hooks.

(5) Outriggers, when used, shall be set with their webs in a vertical position, securely anchored to the building or structure and provided with stop bolts at each end.

(6) The scaffold shall be supported by wire rope capable of supporting at least 6 times the rated load. All other components shall be capable of supporting at least 4 times the rated load.

(7) The free ends of the suspension wire ropes shall be equipped with proper size thimbles, secured by splicing or other equivalent means. The running ends shall be securely attached to the hoisting drum and at least four turns of wire rope shall remain at the drum at all times.

(8) When two or more scaffolds are used on a building or structure, they shall not be bridged one to the other, but shall be maintained at even height with platforms abutting closely.

(9) Guardrails, not less than 2 x 4 inches or the equivalent, approximately 42 inches high, with a midrail, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(k) *Single-point adjustable suspension scaffolds.* (1) The scaffolding, including power units or manually operated winches, shall be of a type tested and listed by Underwriters' Laboratories or Factory Mutual Engineering Corporation.

(2) The power units may be either electrically or air motor driven.

(3) All power-operated gears and brakes shall be enclosed.

(4) In addition to the normal operating brake, all power-driven units shall have an emergency brake which engages automatically when the normal speed of descent is exceeded.

(5) The hoisting machines, cables, and equipment shall be regularly serviced and inspected.

(6) The units may be combined to form a two-point suspension scaffold. Such scaffold shall then comply with paragraph (i) of this section.

(7) The supporting cable shall be vertical for its entire length, and the basket shall not be swayed nor the cable fixed to any intermediate points to change the original path of travel.

(8) Suspension methods shall conform to applicable provisions of paragraphs (h) and (i) of this section.

(9) Guards, midrails, and toeboards shall completely enclose the cage or basket. Guardrails shall be no less than 2 x 4 inches or the equivalent, approximately

42 inches above the platform. Midrails shall be 1 x 6 inches or the equivalent, installed equidistant between the guardrail and the platform. Toeboards shall be a minimum of 4 inches in height.

(10) For additional details not covered in this paragraph, applicable technical portions of American National Standards Institute, A120.1–1970, Power-Operated Devices for Exterior Building Maintenance Powered Platforms, shall be used.

(l) *Boatswain's chairs.* (1) The chair seat shall not be less than 12 x 24 inches, and 1-inch thickness. The seat shall be reinforced on the underside by cleats securely fastened to prevent the board from splitting.

(2) The two fiber rope seat slings shall be of ⅝-inch diameter, reeved through the four seat holes so as to cross each other on the underside of the seat.

(3) Seat slings shall be of at least ⅜-inch wire rope when an employee is conducting a heat-producing process, such as gas or arc welding.

(4) The employee shall be protected by a safety belt and lifeline in accordance with § 1926.104. The attachment point of the lifeline to the structure shall be appropriately changed as the work progresses.

(5) The tackle shall consist of correct size ball bearing or bushed blocks and properly spliced ⅝-inch diameter first-grade manila rope, or equivalent.

(6) The roof irons, hooks, or the object to which the tackle is anchored, shall be securely installed. Tiebacks, when used, shall be installed at right angles to the face of the building and securely fastened.

(m) *Carpenters' bracket scaffolds.* (1) the brackets shall consist of a triangular wood frame not less than 2 x 3 inches in cross section, or of metal of equivalent strength. Each member shall be properly fitted and securely joined.

(2) Each bracket shall be attached to the structure by means of one of the following:

(i) A bolt, no less than five-eighths inch in diameter, which shall extend through to the inside of the building wall;

(ii) A metal stud attachment device;

(iii) Welding to steel tanks;

(iv) Hooking over a well-secured and adequately strong supporting member.

(3) The brackets shall be spaced no more than 8 feet apart.

(4) No more than two employees shall occupy any given 8 feet of a bracket scaffold at any one time. Tools and materials shall not exceed 75 pounds in addition to the occupancy.

(5) The platform shall consist of not less than two 2- x 10-inch nominal size planks extending not more than 12 inches or less than 6 inches beyond each end support.

(6) Guardrails, not less than 2 x 4 inches or the equivalent, approximately 42 inches high, with a midrail, or 1- x 6-inch lumber or equivalent, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(n) *Bricklayers' square scaffolds.* (1) The squares shall not exceed 5 feet in width and 5 feet in height.

(2) Members shall be not less than those specified in Table L–15.

TABLE L–15—MINIMUM DIMENSIONS FOR BRICKLAYERS' SQUARE SCAFFOLD MEMBERS

Members	*Dimensions*
Bearers or horizontal members	2 x 6 in.
Legs	2 x 6 in.
Braces at corners	1 x 6 in.
Braces diagonally from center frame.	1 x 8 in.

(3) The squares shall be reinforced on both sides of each corner with 1- x 6-inch gusset pieces. They shall also have diagonal braces 1 x 8 inches on both sides running from center to center of each member, or other means to secure equivalent strength and rigidity.

(4) The squares shall be set not more than 5 feet apart for medium duty scaffolds, and not more than 8 feet apart for light duty scaffolds. Bracing, 1 x 8 inches, extending from the bottom of each square to the top of the next square, shall be provided on both front and rear sides of the scaffold.

(5) Platform planks shall be at least 2- x 10-inch nominal size. The ends of the planks shall overlap the bearers of the squares and each plank shall be supported by not less than three squares.

(6) Bricklayers' square scaffolds shall not exceed three tiers in height and shall be so constructed and arranged that one square shall rest directly above the other. The upper tiers shall stand on a continuous row of planks laid across the next lower tier and be nailed down or otherwise secured to prevent displacement.

(7) Scaffolds shall be level and set upon a firm foundation.

(o) *Horse scaffolds.* (1) Horse scaffolds shall not be constructed or arranged more than two tiers or 10 feet in height.

(2) The members of the horses shall be not less than those specified in Table L–16.

TABLE L–16—MINIMUM DIMENSIONS FOR HORSE SCAFFOLD MEMBERS

Members	*Dimensions*
Horizontal members or bearers.	3 x 4 in.
Legs	1¼ x 4½ in.
Longitudinal brace between legs.	1 x 6 in.
Gusset brace at top of legs	1 x 8 in.
Half diagonal braces	1¼ x 4½ in.

(3) Horses shall be spaced not more than 5 feet for medium duty and not more than 8 feet for light duty.

(4) When arranged in tiers, each horse shall be placed directly over the horse in the tier below.

(5) On all scaffolds arranged in tiers, the legs shall be nailed down or otherwise secured to the planks to prevent displacement or thrust and each tier shall be substantially cross braced.

(6) Horses or parts which have become weak or defective shall not be used.

(7) Guardrails, not less than 2 x 4 inches or the equivalent, approximately 42 inches high, with a midrail, of 1- x 6-inch lumber or equivalent, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(p) *Needle beam scaffold.* (1) Wood needle beams shall be not less than 4 x 6 inches in size, with the greater dimension placed in a vertical direction. Metal beams or the equivalent, conforming to paragraphs (a) (8) and (10) of this section, may be used and shall not be altered or moved horizontally while they are in use.

(2) Ropes or hangers shall be provided for supports. The span between supports on the needle beam shall not exceed 10 feet for 4- x 6-inch timbers. Rope supports shall be equivalent in strength to 1-inch diameter first-grade manila rope.

(3) The ropes shall be attached to the needle beams by a scaffold hitch or a properly made eye splice. The loose end of the rope shall be tied by a bowline knot or by a round turn and a half hitch.

(4) The scaffold hitch shall be arranged so as to prevent the needle beam from rolling or becoming otherwise displaced.

(5) The platform span between the needle beams shall not exceed 8 feet when using 2-inch scaffold plank. For spans greater than 8 feet, platforms shall be designed based on design requirements for the special span. The overhang of each end of the platform planks shall be not less than 6 inches and not more than 12 inches.

(6) When needle beam scaffolds are used, the planks shall be secured against slipping.

(7) All unattached tools, bolts, and nuts used on needle beam scaffolds shall be kept in suitable containers, properly secured.

(8) One end of a needle beam scaffold may be supported by a permanent structural member conforming to paragraphs (a) (8) and (10) of this section.

(9) Each employee working on a needle beam scaffold shall be protected by a safety belt and lifeline in accordance with § 1926.104.

(q) *Plasterers', decorators', and large area scaffolds.* (1) Plasterers', lathers', and ceiling workers' inside scaffolds shall be constructed in accordance with the general requirements set forth for independent wood pole scaffolds. (See paragraph (b) and Tables L–7, 8, and 9 of this section.)

(2) All platform planks shall be laid with the edges close together.

(3) When independent pole scaffold platforms are erected in sections, such sections shall be provided with connecting runways equipped with substantial guardrails.

(4) Guardrails, not less than 2 x 4 inches or the equivalent, approximately 42 inches high, with a midrail of 1- x 6-

inch lumber or equivalent, and toeboards, shall be installed on all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(r) *Interior hung scaffolds.* (1) An interior hung scaffold shall be hung or suspended from the roof structure or ceiling beams.

(2) The suspending wire or fiber rope shall be capable of supporting at least 6 times the rated load. The rope shall be wrapped at least twice around the supporting members and twice around the bearers of the scaffold, with each end of the wire rope secured by at least three standard wire-rope clips properly installed.

(3) For hanging wood scaffolds, the following minimum nominal size material shall be used:

(i) Supporting bearers 2 x 10 inches on edge;

(ii) Planking 2 x 10 inches, with maximum span 7 feet for heavy duty and 10 feet for light duty or medium duty.

(4) Steel tube and coupler members may be used for hanging scaffolds with both types of scaffold designed to sustain a uniform distributed working load up to heavy duty scaffold loads with a safety factor of four.

(5) Guardrails, not less than 2 x 4 inches or the equivalent, approximately 42 inches high, with a midrail of 1- x 6-inch lumber or equivalent, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 6 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(s) *Ladder jack scaffolds.* (1) All ladder jack scaffolds shall be limited to light duty and shall not exceed a height of 20 feet above the floor or ground.

(2) All ladders used in connection with ladder jack scaffolds shall be heavy-duty ladders and shall be designed and constructed in accordance with American National Standards Institute A 14.1–1968, Safety Code for Portable Wood Ladders, and A 14.2–1968, Safety Code for Portable Metal Ladders. Cleated ladders shall not be used for this purpose.

(3) The ladder jack shall be so designed and constructed that it will bear on the side rails in addition to the ladder rungs, or if bearing on rungs only, the bearing area shall be at least 10 inches on each rung.

(4) Ladders used in conjunction with ladder jacks shall be so placed, fastened, held, or equipped with devices so as to prevent slipping.

(5) The wood platform planks shall be not less than 2 inches nominal in thickness. Both metal and wood platform planks shall overlap the bearing surface not less than 12 inches. The span between supports for wood shall not exceed 8 feet. Platform width shall be not less than 18 inches.

(6) Not more than two employees shall occupy any given 8 feet of any ladder jack scaffold at any one time.

(t) *Window jack scaffolds.* (1) Window jack scaffolds shall be used only for the purpose of working at the window opening through which the jack is placed.

(2) Window jacks shall not be used to support planks placed between one window jack and another or for other elements of scaffolding.

(3) Window jack scaffolds shall be provided with guardrails unless safety belts with lifelines are attached and provided for employee.

(4) Not more than one employee shall occupy a window jack scaffold at any one time.

(u) *Roofing brackets.* (1) Roofing brackets shall be constructed to fit the pitch of the roof.

(2) Brackets shall be secured in place by nailing in addition to the pointed metal projections. When it is impractical to nail brackets, rope supports shall be used. When rope supports are used, they shall consist of first-grade manila of at least ¾-inch diameter, or equivalent.

(3) A catch platform shall be installed below the working area of roofs more than 10 feet from the ground to eaves with a slope greater than 3 inches in 12 inches without a parapet. In width, the platform shall extend 2 feet beyond the projection of the eaves and shall be provided with a guardrail, midrail, and toeboard. This provision shall not apply where employees engaged in work upon such roofs are protected by a safety belt attached to a lifeline.

(v) *Crawling boards or chicken ladders.* (1) Crawling boards shall be not less than 10 inches wide and 1 inch thick, having cleats 1 x 1½ inches. The cleats shall be equal in length to the width of the board and spaced at equal intervals not to exceed 24 inches. Nails shall be driven through and clinched on the underside. The crawling board shall extend from the ridge pole to the eaves when used in connection with roof construction, repair, or maintenance.

(2) A firmly fastened lifeline of at least ¾-inch diameter rope, or equivalent, shall be strung beside each crawling board for a handhold.

(3) Crawling boards shall be secured to the roof by means of adequate ridge hooks or other effective means.

(w) *Float or ship scaffolds.* (1) Float or ship scaffolds shall not be used to support more than three men and a few light tools, such as those needed for riveting, bolting, and welding. They shall be constructed as designed in subparagraphs (2) through (6) of this paragraph, unless substitute designs and materials provide equivalent strength, stability, and safety.

(2) The platform shall be not less than 3 feet wide and 6 feet long, made of ¾-inch plywood, equivalent to American Plywood Association Grade B–B, Group I, Exterior, or other similar material.

(3) Under the platform, there shall be two supporting bearers made from 2- x 4-inch, or 1- x 10-inch rough, "selected lumber," or better. They shall be free of knots or other flaws and project 6 inches beyond the platform on both sides. The ends of the platform shall extend 6 inches beyond the outer edges of the bearers. Each bearer shall be securely fastened to the platform.

(4) An edging of wood not less than ¾ x 1½ inches or equivalent shall be placed around all sides of the platform to prevent tools from rolling off.

(5) Supporting ropes shall be 1-inch diameter manila rope or equivalent, free from deterioration, chemical damage, flaws, or other imperfections. Rope connections shall be such that the platform cannot shift or slip. If two ropes are used with each float, they shall be arranged so as to provide four ends which are to be securely fastened to an overhead support. Each of the two supporting ropes shall be hitched around one end of bearer and pass under the platforms to the other end of the bearer where it is hitched again, leaving sufficient rope at each end for the supporting ties.

(6) Each employee shall be protected by an approved safety lifebelt and lifeline, in accordance with § 1926.104.

(x) *Form scaffolds.* (1) Form scaffolds shall be constructed of wood or other suitable materials, such as steel or aluminum members of known strength characteristics. All scaffolds shall be designed and erected with a minimum safety factor of 4, computed on the basis of the maximum rated load.

(2) All scaffold planking shall be a minimum of 2- x 10-inch nominal Scaffold Grade, as recognized by approved grading rules for the species of lumber used, or equivalent material. Maximum permissible spans shall not exceed 8 feet on centers for 2- x 10-inch nominal planking. Scaffold planks shall be either nailed or bolted to the ledgers or of such length that they overlap the ledgers at least 6 inches. Unsupported projecting ends of scaffolding planks shall be limited to a maximum overhang of 12 inches.

(3) Scaffolds shall not be loaded in excess of the working load for which they were designed.

(4) Figure-four form scaffolds: (i) Figure-four scaffolds are intended for light duty and shall not be used to support loads exceeding 25 pounds per square foot unless specifically designed for heavier loading. For minimum design criteria, see Table L–17.

TABLE L–17—MINIMUM DESIGN CRITERIA FOR FIGURE-FOUR FORM SCAFFOLDS

Members	*Dimensions*
Uprights	2 x 4 in. or 2 x 6 in.
Outriggers ledgers (two).	1 x 6 in.
Braces	1 x 6 in.
Guardrails	2 x 4 in.
Guardrail height	Approximately 42 in.
Intermediate guardrails.	1 x 6 in.
Toeboards	4 in. (minimum).
Maximum length of ledgers.	3 ft. 6 in. (unsupported).
Planking	2 x 10 in.
Upright spacing	8 ft. 0 in. (on centers).

(ii) Figure-four form scaffold frames shall be spaced not more than 8 feet on

centers and constructed from sound lumber, as follows: The outrigger ledger shall consist of two pieces of 1- x 6-inch or heavier material nailed on opposite sides of the vertical form support. Ledgers shall project not more than 3 feet 6 inches from the outside of the form support and shall be substantially braced and secured to prevent tipping or turning. The knee or angle brace shall intersect the ledger at least 3 feet from the form at an angle of approximately 45°, and the lower end shall be nailed to a vertical support. The platform shall consist of two or more 2- x 10-inch planks, which shall be of such length that they extend at least 6 inches beyond ledgers at each end unless secured to the ledgers. When planks are secured to the ledgers (nailed or bolted), a wood filler strip shall be used between the ledgers. Unsupported projecting ends of planks shall be limited to an overhang of 12 inches.

(5) Metal bracket form scaffolds: (i) Metal brackets or scaffold jacks which are an integral part of the form shall be securely bolted or welded to the form. Folding type brackets shall be either bolted or secured with a locking-type pin when extended for use.

(ii) "Clip-on" or "hook-over" brackets may be used, provided the form walers are bolted to the form or secured by snap ties or shea-bolt extending through the form and securely anchored.

(iii) Metal brackets shall be spaced not more than 8 feet on centers.

(iv) Scaffold planks shall be either bolted to the metal brackets or of such length that they overlap the brackets at each end by at least 6 inches. Unsupported projecting ends of scaffold planks shall be limited to a maximum overhang of 12 inches.

(v) Metal bracket form scaffolds shall be equipped with wood guardrails, intermediate rails, toeboards, and scaffold planks meeting the minimum dimensions shown in Table L–18. (Metal may be substituted for wood, providing it affords equivalent or greater design strength.)

TABLE L–18—MINIMUM DESIGN CRITERIA FOR METAL BRACKET FORM SCAFFOLDS

Members	*Dimensions*
Uprights	2 x 4 in.
Guardrails	2 x 4 in.
Guardrail height	Approximately 42 in.
Intermediate guardrails.	1 x 6 in.
Toeboards	4 in. (minimum).
Planking	2 x 9 in.

(6) Wooden bracket form scaffolds: (i) Wooden bracket form scaffolds shall be an integral part of the form panel. The minimum design criteria set forth herein and in Table L–19 cover scaffolding intended for light duty and shall not be used to support loads exceeding 25 pounds per square foot, unless specifically designed for heavier loading.

(ii) Scaffold planks shall be either nailed or bolted to the ledgers or of such length that they overlap the ledgers at each end by at least 6 inches. Unsupported projecting ends of scaffold planks shall be limited to a maximum overhang of 12 inches.

TABLE L–19—MINIMUM DESIGN CRITERIA FOR WOODEN BRACKET FORM SCAFFOLDS

Members	*Dimensions*
Uprights	2 x 4 in. or 2 x 6 in.
Support ledgers	2 x 6 in.
Maximum scaffold width.	3 ft. 6 in.
Braces	1 x 6 in.
Guardrails	2 x 4 in.
Guardrail height	Approximately 42 in.
Intermediate guardrails.	1 x 6 in.
Toeboards	4 in. (minimum).
Upright spacing	8 ft. 0 in. (on centers).

(iii) Guardrails and toeboard shall be installed on all open sides and ends of platforms and scaffolding over 6 feet above floor or ground. Guardrails shall be 2- x 4-inch nominal dimension or equivalent, approximately 42 inches high, supported at intervals not to exceed 8 feet. Guardrails shall be equipped with midrails constructed of 2- x 6-inch nominal lumber or equivalent. Toeboards shall be constructed of 1- x 6-inch nominal lumber or equivalent and shall extend not less than 4 inches above the scaffold plank.

§ 1926.452 Definitions applicable to this subpart.

(a) "Ladders"—(1) "Cleats"—Ladder crosspieces of rectangular cross section placed on edge on which a person may step in ascending or descending.

(2) "Single cleat ladder"—One which consists of a pair of side rails, usually parallel, but with flared side rails permissible, connected together with cleats that are joined to the side rails at regular intervals.

(3) "Double cleat ladder"—One that is similar to a single cleat ladder, but is wider, with an additional center rail which will allow for two-way traffic for workmen in ascending and descending.

(b) "Scaffolding"—(1) "Bearer"—A horizontal member of a scaffold upon which the platform rests and which may be supported by ledgers.

(2) "Boatswain's chair"—A seat supported by slings attached to a suspended rope, designed to accommodate one workman in a sitting position.

(3) "Brace"—A tie that holds one scaffold member in a fixed position with respect to another member.

(4) "Bricklayers' square scaffold"—A scaffold composed of framed wood squares which support a platform, limited to light and medium duty.

(5) "Carpenters' bracket scaffold"—A scaffold consisting of wood or metal brackets supporting a platform.

(6) "Coupler"—A device for locking together the component parts of a tubular metal scaffold. (The material used for the couplers shall be of a structural type, such as a drop-forged steel, malleable iron, or structural grade aluminum.)

(7) "Crawling board or chicken ladder"—A plank with cleats spaced and secured at equal intervals, for use by a worker on roofs, not designed to carry any material.

(8) "Double pole or independent pole scaffold"—A scaffold supported from the base by a double row of uprights, independent of support from the walls and constructed of uprights, ledgers, horizontal platform bearers, and diagonal bracing.

(9) "Float or ship scaffold"—A scaffold hung from overhead supports by means of ropes and consisting of a substantial platform having diagonal bracing underneath, resting upon and securely fastened to two parallel plank bearers at right angles to the span.

(10) "Guardrail"—A rail secured to uprights and erected along the exposed sides and ends of platforms.

(11) "Heavy duty scaffold"—A scaffold designed and constructed to carry a working load not to exceed 75 pounds per square foot.

(12) "Horse scaffold"—A scaffold for light or medium duty, composed of horses supporting a work platform.

(13) "Interior hung scaffold"—A scaffold suspended from the ceiling or roof structure.

(14) "Ladder jack scaffold"—A light duty scaffold supported by brackets attached to ladders.

(15) "Ledgers (stringer)"—A horizontal scaffold member which extends from post to post and which supports the putlogs or bearers forming a tie between the posts.

(16) "Light duty scaffold"—A scaffold designed and constructed to carry a working load not to exceed 25 pounds per square foot.

(17) "Manually propelled mobile scaffold"—A portable rolling scaffold supported by casters.

(18) "Masons' adjustable multiple-point suspension scaffold"—A scaffold having a continuous platform supported by bearers suspended by wire rope from overhead supports, so arranged and operated as to permit the raising or lowering of the platform to desired working positions.

(19) "Maximum rated load"—The total of all loads including the working load, the weight of the scaffold, and such other loads as may be reasonably anticipated.

(20) "Medium duty scaffold"—A scaffold designed and constructed to carry a working load not to exceed 50 pounds per square foot.

(21) "Midrail"—A rail approximately midway between the guardrail and platform, secured to the uprights erected along the exposed sides and ends of platforms.

(22) "Needle beam scaffold"—A light duty scaffold consisting of needle beams supporting a platform.

(23) "Outrigger scaffold"—A scaffold supported by outriggers or thrustouts projecting beyond the wall or face of the building or structure, the inboard ends of which are secured inside of such building or structure.

(24) "Putlog"—A scaffold member upon which the platform rests.

(25) "Roofing or bearer bracket"—A bracket used in slope roof construction, having provisions for fastening to the roof or supported by ropes fastened over

the ridge and secured to some suitable object.

(26) "Runner"—The lengthwise horizontal bracing or bearing members or both.

(27) "Scaffold"—Any temporary elevated platform and its supporting structure used for supporting workmen or materials, or both.

(28) "Single-point adjustable suspension scaffold"—A manually or power-operated unit designed for light duty use, supported by a single wire rope from an overhead support so arranged and operated as to permit the raising or lowering of platform to desired working positions.

(29) "Single-pole scaffold"—Platforms resting on putlogs or cross beams, the outside ends of which are supported on ledgers secured to a single row of posts or uprights, and the inner ends of which are supported on or in a wall.

(30) "Stone setters' adjustable multiple-point suspension scaffold"—A swinging type scaffold having a platform supported by hangers suspended at four points so as to permit the raising or lowering of the platform to the desired working position by the use of hoisting machines.

(31) "Toeboard"—A barrier secured along the sides and ends of a platform to guard against the falling of material.

(32) "Tube and coupler scaffold"—An assembly consisting of tubing which serves as posts, bearers, braces, ties, and runners, a base supporting the posts, and special couplers which serve to connect the uprights and to join the various members.

(33) "Tubular welded frame scaffold"—A sectional panel or frame metal scaffold substantially built up of prefabricated welded sections which consists of posts and horizontal bearer with intermediate members.

(34) "Two-point suspension scaffold (swinging scaffold)"—A scaffold, the platform of which is supported by hangers (stirrups) at two points, suspended from overhead supports so as to permit the raising or lowering of the platform to the desired working position by tackle or hoisting machines.

(35) "Window jack scaffold"—A scaffold, the platform of which is supported by a bracket or jack which projects through a window opening.

(36) "Working load"—Load imposed by men, materials, and equipment.

Subpart M—Floor and Wall Openings, and Stairways

§ 1926.500 Guardrails, handrails, and covers.

(a) *General provision.* This subpart shall apply to temporary or emergency conditions where there is danger of employees or materials falling through floor, roof, or wall openings, or from stairways or runways.

(b) *Guarding of floor openings and floor holes.* (1) Floor openings shall be guarded by a standard railing and toe boards or cover, as specified in paragraph (f) of this section. In general, the railing shall be provided on all exposed sides, except at entrances to stairways.

(2) Ladderway floor openings or platforms shall be guarded by standard railings with standard toe boards on all exposed sides, except at entrance to opening, with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

(3) Hatchways and chute floor openings shall be guarded by one of the following:

(i) Hinged covers of standard strength and construction and a standard railing with only one exposed side. When the opening is not in use, the cover shall be closed or the exposed side shall be guarded at both top and intermediate positions by removable standard railings;

(ii) A removable standard railing with toe board on not more than two sides of the opening and fixed standard railings with toe boards on all other exposed sides. The removable railing shall be kept in place when the opening is not in use and should preferably be hinged or otherwise mounted so as to be conveniently replaceable.

(4) Wherever there is danger of falling through a skylight opening, it shall be guarded by a fixed standard railing on all exposed sides or a cover capable of sustaining the weight of a 200-pound person.

(5) Pits and trap-door floor openings shall be guarded by floor opening covers of standard strength and construction. While the cover is not in place, the pit or trap openings shall be protected on all exposed sides by removable standard railings.

(6) Manhole floor openings shall be guarded by standard covers which need not be hinged in place. While the cover is not in place, the manhole opening shall be protected by standard railings.

(7) Temporary floor openings shall have standard railings.

(8) Floor holes, into which persons can accidentally walk, shall be guarded by either a standard railing with standard toeboard on all exposed sides, or a floor hole cover of standard strength and construction that is secured against accidental displacement. While the cover is not in place, the floor hole shall be protected by a standard railing.

(9) Where doors or gates open directly on a stairway, a platform shall be provided, and the swing of the door shall not reduce the effective width of the platform to less than 20 inches.

(c) *Guarding of wall openings.* (1) Wall openings, from which there is a drop of more than 4 feet, and the bottom of the opening is less than 3 feet above the working surface, shall be guarded as follows:

(i) When the height and placement of the opening in relation to the working surface is such that either a standard rail or intermediate rail will effectively reduce the danger of falling, one or both shall be provided;

(ii) The bottom of a wall opening, which is less than 4 inches above the working surface, regardless of width, shall be protected by a standard toeboard or an enclosing screen either of solid construction or as specified in paragraph (f) (7) (ii) of this section.

(2) An extension platform outside a wall opening onto which materials can be hoisted for handling shall have side rails or equivalent guards of standard specifications. One side of an extension platform may have removable railings in order to facilitate handling materials.

(3) When a chute is attached to an opening, the provisions of subparagraph (1) of this paragraph shall apply, except that a toeboard is not required.

(d) *Guarding of open-sided floors, platforms, and runways.* (1) Every open-sided floor or platform 6 feet or more above adjacent floor or ground level shall be guarded by a standard railing, or the equivalent, as specified in paragraph (f) (i) of this section, on all open sides, except where there is entrance to a ramp, stairway, or fixed ladder. The railing shall be provided with a standard toeboard wherever, beneath the open sides, persons can pass, or there is moving machinery, or there is equipment with which falling materials could create a hazard.

(2) Runways shall be guarded by a standard railing, or the equivalent, as specified in paragraph (f) of this section, on all open sides, 4 feet or more above floor or ground level. Wherever tools, machine parts, or materials are likely to be used on the runway, a toeboard shall also be provided on each exposed side.

(3) Runways used exclusively for special purposes may have the railing on one side omitted where operating conditions necessitate such omission, providing the falling hazard is minimized by using a runway not less than 18 inches wide.

(4) Where employees entering upon runways become thereby exposed to machinery, electrical equipment, or other danger not a falling hazard, additional guarding shall be provided.

(5) Regardless of height, open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment, pickling or galvanizing tanks, degreasing units, and similar hazards shall be guarded with a standard railing and toeboard.

(e) *Stairway railings and guards.* (1) Every flight of stairs having four or more risers shall be equipped with standard stair railings or standard handrails as specified below, the width of the stair to be measured clear of all obstructions except handrails:

(i) On stairways less than 44 inches wide having both sides enclosed, at least one handrail, preferably on the right side descending;

(ii) On stairways less than 44 inches wide having one side open, at least one stair railing on the open side;

(iii) On stairways less than 44 inches wide having both sides open, one stair railing on each side;

(iv) On stairways more than 44 inches wide but less than 88 inches wide, one handrail on each enclosed side and one stair railing on each open side;

(v) On stairways 88 or more inches wide, one handrail on each enclosed side,

one stair railing on each open side, and one intermediate stair railing located approximately midway of the width.

(2) Winding stairs shall be equipped with a handrail offset to prevent walking on all portions of the treads having width less than 6 inches.

(f) *Standard specifications.* (1) A standard railing shall consist of top rail, intermediate rail, toeboard, and posts, and shall have a vertical height of approximately 42 inches from upper surface of top rail to floor, platform, runway, or ramp level. The top rail shall be smooth-surfaced throughout the length of the railing. The intermediate rail shall be halfway between the top rail and the floor, platform, runway, or ramp. The ends of the rails shall not overhang the terminal posts except where such overhang does not constitute a projection hazard. Minimum requirements for standard railings under various types of construction are specified in the following paragraphs:

(i) For wood railings, the posts shall be of at least 2-inch by 4-inch stock spaced not to exceed 8 feet; the toprail shall be of at least 2-inch by 4-inch stock; the intermediate rail shall be of at least 1-inch by 6-inch stock.

(ii) For pipe railings, posts and top and intermediate railings shall be at least 1½ inches nominal diameter with posts spaced not more than 8 feet on centers.

(iii) For structural steel railings, posts and top and intermediate rails shall be of 2-inch by 2-inch by ⅜-inch angles or other metal shapes of equivalent bending strength, with posts spaced not more than 8 feet on centers.

(iv) The anchoring of posts and framing of members for railings of all types shall be of such construction that the completed structure shall be capable of withstanding a load of at least 200 pounds applied in any direction at any point on the top rail, with a minimum of deflection.

(v) Railings receiving heavy stresses from employees trucking or handling materials shall be provided additional strength by the use of heavier stock, closer spacing of posts, bracing, or by other means.

(vi) Other types, sizes, and arrangements of railing construction are acceptable, provided they meet the following conditions:

(*a*) A smooth-surfaced top rail at a height above floor, platform, runway, or ramp level of approximately 42 inches;

(*b*) A strength to withstand at least the minimum requirement of 200 pounds top rail pressure with a minimum of deflection;

(*c*) Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard intermediate rail;

(*d*) Elimination of overhang of rail ends unless such overhang does not constitute a hazard.

(2) A stair railing shall be of construction similar to a standard railing, but the vertical height shall be not more than 34 inches nor less than 30 inches from upper surface of top rail to surface of tread in line with face of riser at forward edge of tread.

(3) (i) A standard toeboard shall be 4 inches minimum in vertical height from its top edge to the level of the floor, platform, runway, or ramp. It shall be securely fastened in place and have not more than ¼-inch clearance above floor level. It may be made of any substantial material, either solid, or with openings not over 1 inch in greatest dimension.

(ii) Where material is piled to such height that a standard toeboard does not provide protection, paneling or screening from floor to intermediate rail or to top rail shall be provided.

(4) (i) A standard handrail shall be of construction similar to a standard railing except that it is mounted on a wall or partition, and does not include an intermediate rail. It shall have a smooth surface along the top and both sides of the handrail. The handrail shall have an adequate handhold for any one grasping it to avoid falling. Ends of the handrail shall be constructed so as not to constitute a projection hazard.

(ii) The height of handrails shall be not more than 34 inches nor less than 30 inches from upper surface of handrail to surface of tread, in line with face of riser or to surface of ramp.

(iii) All handrails and railings shall be provided with a clearance of approximately 3 inches between the handrail or railing and any other object.

(5) Floor opening covers shall be of any material that meets the following strength requirements:

(i) Conduits, trenches, and manhole covers and their supports, when located in roadways, and vehicular aisles, shall be designed to carry a truck rear-axle load of at least 2 times the maximum intended load;

(ii) The floor opening cover shall be capable of supporting the maximum intended load and so installed as to prevent accidental displacement.

(6) Skylight openings that create a falling hazard shall be guarded with a standard railing, or covered in accordance with subparagraph (5) (ii) of this paragraph.

(7) Wall opening protection shall meet the following requirements:

(i) Barriers shall be of such construction and mounting that, when in place at the opening, the barrier is capable of withstanding a load of at least 200 pounds applied in any direction (except upward), with a minimum of deflection at any point on the top rail or corresponding member.

(ii) Screens shall be of such construction and mounting that they are capable of withstanding a load of at least 200 pounds applied horizontally at any point on the near side of the screen. They may be of solid construction, of grill work with openings not more than 8 inches long, or of slat work with openings not more than 4 inches wide with length unrestricted.

§ 1926.501 Stairways.

(a) On all structures, two or more floors (20 feet or over) in height, stairways, ladders, or ramps shall be provided for employees during the construction period.

(b) Stairway railings and guardrails shall meet the requirements of § 1926.500 (e) and (f).

(c) All parts of stairways shall be free of hazardous projections, such as protruding nails.

(d) Debris, and other loose materials, shall not be allowed on or under stairways.

(e) Slippery conditions on stairways shall be eliminated as soon as possible after they occur.

(f) Permanent steel or other metal stairways, and landings with hollow pan-type treads that are to be filled with concrete or other materials, when used during construction, shall be filled to the level of the nosing with solid material. The requirement shall not apply during the period of actual construction of the stairways themselves.

(g) Wooden treads for temporary service shall be full width.

(h) Metal landings shall be secured in place before filling.

(i) Temporary stairs shall have a landing not less than 30 inches in the direction of travel at every 12 feet of vertical rise.

(j) Stairs shall be installed at angles to the horizontal of between 30° and 50°.

(k) Rise height and tread width shall be uniform throughout any flight of stairs including any foundation structure used as one or more treads of the stairs.

(l) All stairs shall be lighted in accordance with Subpart D of this part.

(m) Spiral stairways shall not be permitted except for special limited usage and secondary access situations where it is not practical to provide a conventional stairway.

§ 1926.502 Definitions applicable to this subpart.

(a) "Floor hole"—An opening measuring less than 12 inches but more than 1 inch in its least dimension in any floor, roof, or platform through which materials but not persons may fall, such as a belt hold, pipe opening, or slot opening.

(b) "Floor opening"—An opening measuring 12 inches or more in its least dimension in any floor, roof, or platform through which persons may fall.

(c) "Handrail"—A bar or pipe supported on brackets from a wall or partition, as on a stairway or ramp, to furnish persons with a handhold in case of tripping.

(d) "Nose, nosing"—That portion of a tread projecting beyond the face of the riser immediately below.

(e) "Platform"—A working space for persons, elevated above the surrounding floor or ground, such as a balcony or platform for the operation of machinery and equipment.

(f) "Runway"—A passageway for persons, elevated above the surrounding floor or ground level, such as a footwalk

along shafting or a walkway between buildings.

(g) "Rise"—The vertical distance from the top of a tread to the top of the next higher tread.

(h) "Stair platform"—An extended step or landing breaking a continuous run of stairs.

(i) "Stair railing"—A vertical barrier erected along exposed sides of a stairway to prevent falls of persons.

(j) "Stairs, stairways"—A series of steps leading from one level or floor to another, or leading to platforms, pits, boiler rooms, crossovers, or around machinery, tanks, and other equipment that are used more or less continuously or routinely by employees or only occasionally by specific individuals. For the purpose of this subpart, a series of steps and landings having three or more rises constitutes stairs or stairway.

(k) "Standard railing"—A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent falls of persons.

(l) "Standard strength and construction"—Any construction of railings, covers, or other guards that meets the requirements of this subpart.

(m) "Toeboard"—A vertical barrier at floor level erected along exposed edges of a floor opening, wall opening, platform, runway, or ramp to prevent falls of materials.

(n) "Tread width"—The horizontal distance from front to back of tread, including nosing, when used.

(o) "Wall opening"—An opening at least 30 inches high and 18 inches wide, in any wall or partition, through which persons may fall, such as a yard-arm doorway or chute opening.

Subpart N—Cranes, Derricks, Hoists, Elevators, and Conveyors

§ 1926.550 Cranes and derricks.

(a) *General requirements.* (1) The employer shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a qualified engineer competent in this field and such determinations will be appropriately documented and recorded. Attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer.

(2) Rated load capacities, and recommended operating speeds, special hazard warnings, or instruction, shall be conspicuously posted on all equipment. Instructions or warnings shall be visible to the operator while he is at his control station.

(3) [Revoked]

(4) Hand signals to crane and derrick operators shall be those prescribed by the applicable ANSI standard for the type of crane in use. An illustration of the signals shall be posted at the job site.

(5) The employer shall designate a competent person who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired, or defective parts replaced, before continued use.

(6) A thorough, annual inspection of the hoisting machinery shall be made by a competent person, or by a government or private agency recognized by the U.S. Department of Labor. The employer shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment.

(7) Wire rope shall be taken out of service when any of the following conditions exist:

(i) In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay;

(ii) Wear of one-third the original diameter of outside individual wires. Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure;

(iii) Evidence of any heat damage from any cause;

(iv) Reductions from nominal diameter of more than one-sixty-fourth inch for diameters up to and including five-sixteenths inch, one-thirty-second inch for diameters three-eighths inch to and including one-half inch, three-sixty-fourths inch for diameters nine-sixteenths inch to and including three-fourths inch, one-sixteenth inch for diameters seven-eighths inch to 1⅛ inches inclusive, three-thirty-seconds inch for diameters 1¼ to 1½ inches inclusive;

(v) In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.

(vi) Wire rope safety factors shall be in accordance with American National Standards Institute B 30.5–1968 or SAE J959–1966.

(8) Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or other moving parts or equipment shall be guarded if such parts are exposed to contact by employees, or otherwise create a hazard. Guarding shall meet the requirements of the American National Standards Institute B 15.1–1958 Rev., Safety Code for Mechanical Power Transmission Apparatus.

(9) Accessible areas within the swing radius of the rear of the rotating superstructure of the crane, either permanently or temporarily mounted, shall be barricaded in such a manner as to prevent an employee from being struck or crushed by the crane.

(10) All exhaust pipes shall be guarded or insulated in areas where contact by employees is possible in the performance of normal duties.

(11) Whenever internal combustion engine powered equipment exhausts in enclosed spaces, tests shall be made and recorded to see that employees are not exposed to unsafe concentrations of toxic gases or oxygen deficient atmospheres.

(12) All windows in cabs shall be of safety glass, or equivalent, that introduces no visible distortion that will interfere with the safe operation of the machine.

(13) (i) Where necessary for rigging or service requirements, a ladder, or steps, shall be provided to give access to a cab roof.

(ii) Guardrails, handholds, and steps shall be provided on cranes for easy access to the car and cab, conforming to American National Standards Institute B30.5.

(iii) Platforms and walkways shall have anti-skid surfaces.

(14) Fuel tank filler pipe shall be located in such a position, or protected in such manner, as to not allow spill or overflow to run onto the engine, exhaust, or electrical equipment of any machine being fueled.

(i) An accessible fire extinguisher of 5BC rating, or higher, shall be available at all operator stations or cabs of equipment.

(ii) All fuels shall be transported, stored, and handled to meet the rules of Subpart F of this part. When fuel is transported by vehicles on public highways, Department of Transportation rules contained in 49 CFR Parts 177 and 393 concerning such vehicular transportation are considered applicable.

(15) Except where electrical distribution and transmission lines have been deenergized and visibly grounded at point of work or where insulating barriers, not a part of or an attachment to the equipment or machinery, have been erected to prevent physical contact with the lines, equipment or machines shall be operated proximate to power lines only in accordance with the following:

(i) For lines rated 50 kV. or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet;

(ii) For lines rated over 50 kV., minimum clearance between the lines and any part of the crane or load shall be 10 feet plus 0.4 inch for each 1 kV. over 50 kV., or twice the length of the line insulator, but never less than 10 feet;

(iii) In transit with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50 kV., and 10 feet for voltages over 50 kV. up to and including 345 kV., and 16 feet for voltages up to and including 750 kV.

(iv) A person shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means;

(v) Cage-type boom guards, insulating links, or proximity warning devices may be used on cranes, but the use of such devices shall not alter the requirements of any other regulation of this part even if such device is required by law or regulation;

(vi) Any overhead wire shall be considered to be an energized line unless

and until the person owning such line or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded;

(vii) Prior to work near transmitter towers where an electrical charge can be induced in the equipment or materials being handled, the transmitter shall be de-energized or tests shall be made to determine if electrical charge is induced on the crane. The following precautions shall be taken when necessary to dissipate induced voltages:

(*a*) The equipment shall be provided with an electrical ground directly to the upper rotating structure supporting the boom; and

(*b*) Ground jumper cables shall be attached to materials being handled by boom equipment when electrical charge is induced while working near energized transmitters. Crews shall be provided with nonconductive poles having large alligator clips or other similar protection to attach the ground cable to the load.

(*c*) Combustible and flammable materials shall be removed from the immediate area prior to operations.

(16) No modifications or additions which affect the capacity or safe operation of the equipment shall be made by the employer without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.

(17) The employer shall comply with Power Crane and Shovel Association Mobile Hydraulic Crane Standard No. 2.

(18) Sideboom cranes mounted on wheel or crawler tractors shall meet the requirements of SAE J743a–1964.

(b) *Crawler, locomotive, and truck cranes.* (1) All jibs shall have positive stops to prevent their movement of more than 5° above the straight line of the jib and boom on conventional type crane booms. The use of cable type belly slings does not constitute compliance with this rule.

(2) All crawler, truck, or locomotive cranes in use shall meet the applicable requirements for design, inspection, construction, testing, maintenance and operation as prescribed in the ANSI B30.5–1968, Safety Code for Crawler, Locomotive and Truck Cranes.

(c) *Hammerhead tower cranes.* (1) Adequate clearance shall be maintained between moving and rotating structures of the crane and fixed objects to allow the passage of employees without harm.

(2) Employees required to perform duties on the horizontal boom of hammerhead tower cranes shall be protected against falling by guardrails or by safety belts and lanyards attached to lifelines in conformance with Subpart E of this part.

(3) Buffers shall be provided at both ends of travel of the trolley.

(4) Cranes mounted on rail tracks shall be equipped with limit switches limiting the travel of the crane on the track and stops or buffers at each end of the tracks.

(5) All hammerhead tower cranes in use shall meet the applicable requirements for design, construction, installation, testing, maintenance, inspection, and operation as prescribed by the manufacturer.

(d) *Overhead and gantry cranes.* (1) The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block, and this marking shall be clearly legible from the ground or floor.

(2) Bridge trucks shall be equipped with sweeps which extend below the top of the rail and project in front of the truck wheels.

(3) Except for floor-operated cranes, a gong or other effective audible warning signal shall be provided for each crane equipped with a power traveling mechanism.

(4) All overhead and gantry cranes in use shall meet the applicable requirements for design, construction, installation, testing, maintenance, inspection, and operation as prescribed in the ANSI B30.2.0–1967, Safety Code for Overhead and Gantry Cranes.

(e) *Derricks.* All derricks in use shall meet the applicable requirements for design, construction, installation, inspection, testing, maintenance, and operation as prescribed in American National Standards Institute B30.6–1969, Safety Code for Derricks.

(f) *Floating cranes and derricks*—(1) *Mobile cranes mounted on barges.* (i) When a mobile crane is mounted on a barge, the rated load of the crane shall not exceed the original capacity specified by the manufacturer.

(ii) A load rating chart, with clearly legible letters and figures, shall be provided with each crane, and securely fixed at a location easily visible to the operator.

(iii) When load ratings are reduced to stay within the limits for list of the barge with a crane mounted on it, a new load rating chart shall be provided.

(iv) Mobile cranes on barges shall be positively secured.

(2) *Permanently mounted floating cranes and derricks.* (i) When cranes and derricks are permanently installed on a barge, the capacity and limitations of use shall be based on competent design criteria.

(ii) A load rating chart with clearly legible letters and figures shall be provided and securely fixed at a location easily visible to the operator.

(iii) Floating cranes and floating derricks in use shall meet the applicable requirements for design, construction, installation, testing, maintenance, and operation as prescribed by the manufacturer.

(3) *Protection of employees working on barges.* The employer shall comply with the applicable requirements for protection of employees working onboard marine vessels specified in § 1926.605.

§ 1926.551 Helicopters.

(a) *Helicopter regulations.* Helicopter cranes shall be expected to comply with any applicable regulations of the Federal Aviation Administration.

(b) *Briefing.* Prior to each day's operation a briefing shall be conducted. This briefing shall set forth the plan of operation for the pilot and ground personnel.

(c) *Slings and tag lines.* Load shall be properly slung. Tag lines shall be of a length that will not permit their being drawn up into rotors. Pressed sleeve, swedged eyes, or equivalent means shall be used for all freely suspended loads to prevent hand splices from spinning open or cable clamps from loosening.

(d) *Cargo hooks.* All electrically operated cargo hooks shall have the electrical activating device so designed and installed as to prevent inadvertent operation. In addition, these cargo hooks shall be equipped with an emergency mechanical control for releasing the load. The hooks shall be tested prior to each day's operation to determine that the release functions properly, both electrically and mechanically.

(e) *Personal protective equipment.* (1) Personal protective equipment for employees receiving the load shall consist of complete eye protection and hard hats secured by chinstraps.

(2) Loose-fitting clothing likely to flap in the downwash, and thus be snagged on hoist line, shall not be worn.

(f) *Loose gear and objects.* Every practical precaution shall be taken to provide for the protection of the employees from flying objects in the rotor downwash. All loose gear within 100 feet of the place of lifting the load, depositing the load, and all other areas susceptible to rotor downwash shall be secured or removed.

(g) *Housekeeping.* Good housekeeping shall be maintained in all helicopter loading and unloading areas.

(h) *Operator responsibility.* The helicopter operator shall be responsible for size, weight, and manner in which loads are connected to the helicopter. If, for any reason, the helicopter operator believes the lift cannot be made safely, the lift shall not be made.

(i) *Hooking and unhooking loads.* When employees are required to perform work under hovering craft, a safe means of access shall be provided for employees to reach the hoist line hook and engage or disengage cargo slings. Employees shall not perform work under hovering craft except when necessary to hook or unhook loads.

(j) *Static charge.* Static charge on the suspended load shall be dissipated with a grounding device before ground personnel touch the suspended load, or protective rubber gloves shall be worn by all ground personnel touching the suspended load.

(k) *Weight limitation.* The weight of an external load shall not exceed the manufacturer's rating.

(l) *Ground lines.* Hoist wires or other gear, except for pulling lines or conductors that are allowed to "pay out" from a container or roll off a reel, shall not be attached to any fixed ground structure, or allowed to foul on any fixed structure.

(m) *Visibility.* When visibility is reduced by dust or other conditions, ground

personnel shall exercise special caution to keep clear of main and stabilizing rotors. Precautions shall also be taken by the employer to eliminate as far as practical reduced visibility.

(n) *Signal systems.* Signal systems between aircrew and ground personnel shall be understood and checked in advance of hoisting the load. This applies to either radio or hand signal systems. Hand signals shall be as shown in Figure N–1.

(o) *Approach distance.* No unauthorized person shall be allowed to approach within 50 feet of the helicopter when the rotor blades are turning.

(p) *Approaching helicopter.* Whenever approaching or leaving a helicopter with blades rotating, all employees shall remain in full view of the pilot and keep in a crouched position. Employees shall avoid the area from the cockpit or cabin rearward unless authorized by the helicopter operator to work there.

(q) *Personnel.* Sufficient ground personnel shall be provided when required for safe helicopter loading and unloading operations.

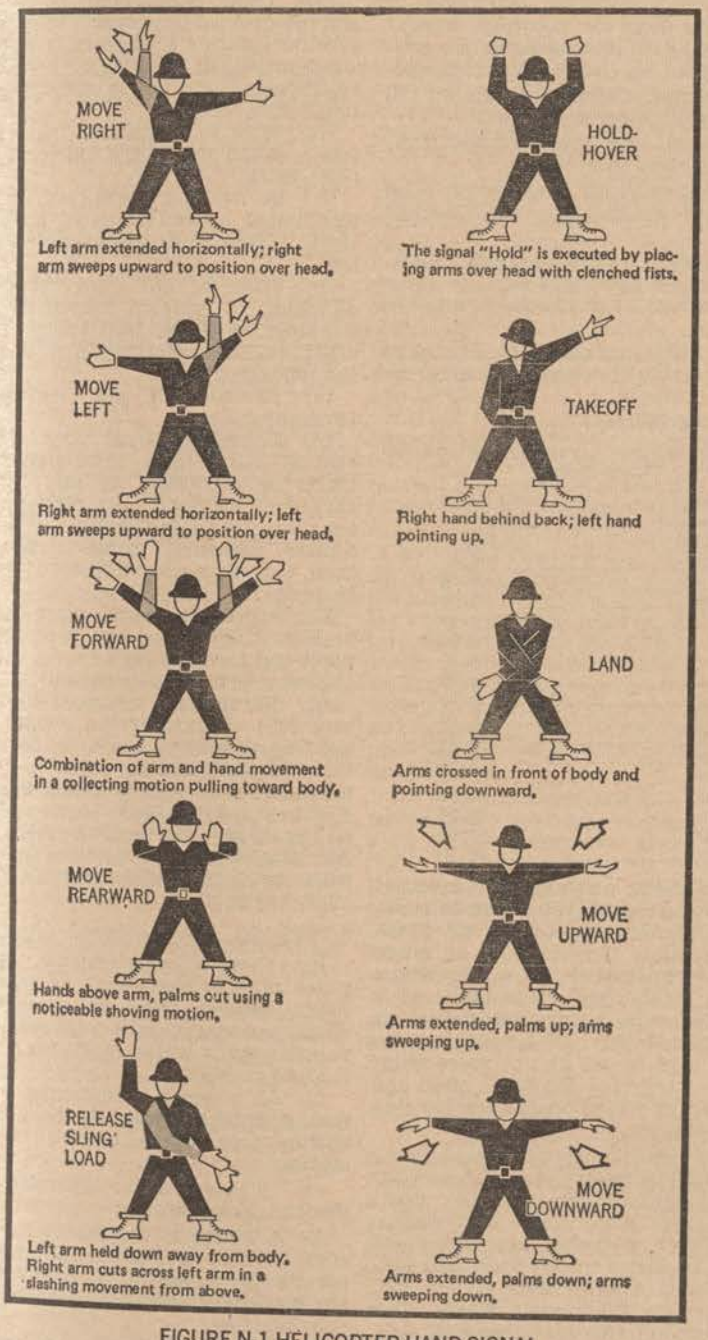


FIGURE N-1 HELICOPTER HAND SIGNAL

(r) *Communications.* There shall be constant reliable communication between the pilot, and a designated employee of the ground crew who acts as a signalman during the period of loading and unloading. This signalman shall be distinctly recognizable from other ground personnel.

(s) *Fires.* Open fires shall not be permitted in an area that could result in such fires being spread by the rotor downwash.

§ 1926.552 Material hoists, personnel hoists, and elevators.

(a) *General requirements.* (1) The employer shall comply with the manufacturer's specifications and limitations applicable to the operation of all hoists and elevators. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a professional engineer competent in the field.

(2) Rated load capacities, recommended operating speeds, and special hazard warnings or instructions shall be posted on cars and platforms.

(3) Wire rope shall be removed from service when any of the following conditions exists:

(i) In hoisting ropes, six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay;

(ii) Abrasion, scrubbing, flattening, or peening, causing loss of more than one-third of the original diameter of the outside wires;

(iii) Evidence of any heat damage resulting from a torch or any damage caused by contact with electrical wires;

(iv) Reduction from nominal diameter of more than three sixty-fourths inch for diameters up to and including three-fourths inch; one-sixteenth inch for diameters seven-eighths to 1⅛ inches; and three thirty-seconds inch for diameters 1¼ to 1½ inches.

(4) Hoisting ropes shall be installed in accordance with the wire rope manufacturer's recommendations.

(5) The installation of live booms on hoists is prohibited.

(6) The use of endless belt-type manlifts on construction shall be prohibited.

(b) *Material hoists.* (1) (i) Operating rules shall be established and posted at the operator's station of the hoist. Such rules shall include signal system and allowable line speed for various loads. Rules and notices shall be posted on the car frame or crosshead in a conspicuous location, including the statement "No Riders Allowed."

(ii) No person shall be allowed to ride on material hoists except for the purposes of inspection and maintenance.

(2) All entrances of the hoistways shall be protected by substantial gates or bars which shall guard the full width of the landing entrance. All hoistway entrance bars and gates shall be painted with diagonal contrasting colors, such as black and yellow stripes.

(i) Bars shall be not less than 2- by 4-inch wooden bars or the equivalent, located 2 feet from the hoistway line. Bars shall be located not less than 36 inches nor more than 42 inches above the floor.

(ii) Gates or bars protecting the entrances to hoistways shall be equipped with a latching device.

(3) Overhead protective covering of 2-inch planking, ¾-inch plywood, or other solid material of equivalent strength, shall be provided on the top of every material hoist cage or platform.

(4) The operator's station of a hoisting machine shall be provided with overhead protection equivalent to tight planking not less than 2 inches thick. The support for the overhead protection shall be of equal strength.

(5) Hoist towers may be used with or without an enclosure on all sides. However, whichever alternative is chosen, the following applicable conditions shall be met:

(i) When a hoist tower is enclosed, it shall be enclosed on all sides for its entire height with a screen enclosure of ½-inch mesh, No. 18 U.S. gauge wire or equivalent, except for landing access.

(ii) When a hoist tower is not enclosed, the hoist platform or car shall be totally enclosed (caged) on all sides for the full height between the floor and the overhead protective covering with ½-inch mesh of No. 14 U.S. gauge wire or equivalent. The hoist platform enclosure shall include the required gates for loading and unloading. A 6-foot high enclosure shall be provided on the unused sides of the hoist tower at ground level.

(6) Car arresting devices shall be installed to function in case of rope failure.

(7) All material hoist towers shall be designed by a licensed professional engineer.

(8) All material hoists shall conform to the requirements of ANSI A10.5–1969, Safety Requirements for Material Hoists.

(c) *Personnel hoists.* (1) Hoist towers outside the structure shall be enclosed for the full height on the side or sides used for entrance and exit to the structure. At the lowest landing, the enclosure on the sides not used for exit or entrance to the structure shall be enclosed to a height of at least 10 feet. Other sides of the tower adjacent to floors or scaffold platforms shall be enclosed to a height of 10 feet above the level of such floors or scaffolds.

(2) Towers inside of structures shall be enclosed on all four sides throughout the full height.

(3) Towers shall be anchored to the structure at intervals not exceeding 25 feet. In addition to tie-ins, a series of guys shall be installed. Where tie-ins are not practical the tower shall be anchored by means of guys made of wire rope at least one-half inch in diameter, securely fastened to anchorage to ensure stability.

(4) Hoistway doors or gates shall be not less than 6 feet 6 inches high and shall be provided with mechanical locks which cannot be operated from the landing side, and shall be accessible only to persons on the car.

(5) Cars shall be permanently enclosed on all sides and the top, except sides used for entrance and exit which have car gates or doors.

(6) A door or gate shall be provided at each entrance to the car which shall protect the full width and height of the car entrance opening.

(7) Overhead protective covering of 2-inch planking, ¾-inch plywood or other solid material of equivalent strength shall be provided on the top of every personnel hoist.

(8) Doors or gates shall be provided with electric contacts which do not allow movement of the hoist when door or gate is open.

(9) Safeties shall be capable of stopping and holding the car and rated load when traveling at governor tripping speed.

(10) Cars shall be provided with a capacity and data plate secured in a conspicuous place on the car or crosshead.

(11) Internal combustion engines shall not be permitted for direct drive.

(12) Normal and final terminal stopping devices shall be provided.

(13) An emergency stop switch shall be provided in the car and marked "Stop."

(14) Ropes: (i) The minimum number of hoisting ropes used shall be three for traction hoists and two for drum-type hoists.

(ii) The minimum diameter of hoisting and counterweight wire ropes shall be ½-inch.

(iii) Safety factors:

MINIMUM FACTORS OF SAFETY FOR SUSPENSION WIRE ROPES

Rope speed in feet per minute:	*Minimum factor of safety*
50	7.60
75	7.75
100	7.95
125	8.10
150	8.25
175	8.40
200	8.60
225	8.75
250	8.90
300	9.20
350	9.50
400	9.75
450	10.00
500	10.25
550	10.45
600	10.70

(15) Following assembly and erection of hoists, and before being put in service, an inspection and test of all functions and safety devices shall be made under the supervision of a competent person. A similar inspection and test is required following major alteration of an existing installation. All hoists shall be inspected and tested at not more than 3-month intervals. Records shall be maintained and kept on file for the duration of the job.

(16) All personnel hoists used by employees shall be constructed of materials and components which meet the specifications for materials, construction, safety devices, assembly, and structural integrity as stated in the American National Standard A10.4–1963, Safety Requirements for Workmen's Hoists. The requirements of this subparagraph (16) do not apply to cantilever type personnel hoists.

(17) (i) Personnel hoists used in bridge tower construction shall be approved by a registered professional engineer and erected under the supervision of a qualified engineer competent in this field.

(ii) When a hoist tower is not enclosed, the hoist platform or car shall be totally enclosed (caged) on all sides for the full height between the floor and the overhead protective covering with ¾-inch mesh of No. 14 U.S. gauge wire or equivalent. The hoist platform enclosure shall include the required gates for loading and unloading.

(iii) These hoists shall be inspected and maintained on a weekly basis. Whenever the hoisting equipment is exposed to winds exceeding 35 miles per hour it shall be inspected and put in operable condition before reuse.

(iv) Wire rope shall be taken out of service when any of the following conditions exist:

(*a*) In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay;

(*b*) Wear of one-third the original diameter of outside individual wires. Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure;

(*c*) Evidence of any heat damage from any cause;

(*d*) Reductions from nominal diameter of more than three-sixty-fourths inch for diameters to and including three-fourths inch, one sixteenth inch for diameters seven-eighths inch to 1⅛ inches inclusive, three-thirty-seconds inch for diameters 1¼ to 1½ inches inclusive;

(*e*) In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.

(d) Permanent elevators under the care and custody of the employer and used by employees for work covered by this Act shall comply with the requirements of American National Standards Institute A17.1–1965 with addenda A17.1a–1967, A17.1b–1968, A17.1c–1969, A17.1d–1970, and inspected in accordance with A17.2–1960 with addenda A17.2a–1965, A17.2b–1967.

§ 1926.553 Base-mounted drum hoists.

(a) *General requirements.* (1) Exposed moving parts such as gears, projecting screws, setscrews, chain, cables, chain sprockets, and reciprocating or rotating parts, which constitute a hazard, shall be guarded.

(2) All controls used during the normal operation cycle shall be located within easy reach of the operator's station.

(3) Electric motor operated hoists shall be provided with:

(i) A device to disconnect all motors from the line upon power failure and not permit any motor to be restarted until the controller handle is brought to the "off" position;

(ii) Where applicable, an overspeed preventive device;

(iii) A means whereby remotely operated hoists stop when any control is ineffective.

(4) All base-mounted drum hoists in use shall meet the applicable requirements for design, construction, installation, testing, inspection, maintenance, and operations, as prescribed by the manufacturer.

(b) *Specific requirements.* [Reserved]

§ 1926.554 Overhead hoists.

(a) *General requirements.* (1) The safe working load of the overhead hoist, as determined by the manufacturer, shall be indicated on the hoist, and this safe working load shall not be exceeded.

(2) The supporting structure to which the hoist is attached shall have a safe working load equal to that of the hoist.

(3) The support shall be arranged so as to provide for free movement of the hoist and shall not restrict the hoist from lining itself up with the load.

(4) The hoist shall be installed only in locations that will permit the operator to stand clear of the load at all times.

(5) Air hoists shall be connected to an air supply of sufficient capacity and pressure to safely operate the hoist. All air hoses supplying air shall be positively connected to prevent their becoming disconnected during use.

(6) All overhead hoists in use shall meet the applicable requirements for construction, design, installation, testing, inspection, maintenance, and operation, as prescribed by the manufacturer.

(b) *Specific requirements.* [Reserved]

§ 1926.555 Conveyors.

(a) *General requirements.* (1) Means for stopping the motor or engine shall be provided at the operator's station. Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor.

(2) If the operator's station is at a remote point, similar provisions for stopping the motor of engine shall be provided at the motor or engine location.

(3) Emergency stop switches shall be arranged so that the conveyor cannot be started again until the actuating stop switch has been reset to running or "On" position.

(4) Screw conveyors shall be guarded to prevent employee contact with turning flights.

(5) Where a conveyor passes over work areas, aisles, or thoroughfares, suitable guards shall be provided to protect employees required to work below the conveyors.

(6) All crossovers, aisles, and passageways shall be conspicuously marked by suitable signs, as required by Subpart G of this part.

(7) Conveyors shall be locked out or otherwise rendered inoperable, and tagged out with a "Do Not Operate" tag during repairs and when operation is hazardous to employees performing maintenance work.

(8) All conveyors in use shall meet the applicable requirements for design, construction, inspection, testing, maintenance, and operation, as prescribed in the ANSI B20.1–1957, Safety Code for Conveyors, Cableways, and Related Equipment.

§ 1926.556 Aerial lifts.

(a) *General requirements.* (1) Unless otherwise provided in this section, aerial lifts acquired for use on or after the effective date of this section shall be designed and constructed in conformance with the applicable requirements of the American National Standard for "Vehicle Mounted Elevating and Rotating Work Platforms," ANSI A92.2–1969, including appendix. Aerial lifts acquired before the effective date of this section, which do not meet the requirements of ANSI A92.2–1969, may not be used after January 1, 1976, unless they shall have been modified so as to conform with the applicable design and construction requirements of ANSI A92.2–1969. Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to jobsites above ground: (i) Extensible boom platforms, (ii) aerial ladders, (iii) articulating boom platforms, (iv) vertical towers, and (v) a combination of any of the above. Aerial equipment may be made of metal, wood, fiberglass reinforced plastic (FRP), or other material; may be powered or manually operated; and are deemed to be aerial lifts whether or not they are capable of rotating about a substantially vertical axis.

(2) Aerial lifts may be "field modified" for uses other than those intended by the manufacturer provided the modification has been certified in writing by the manufacturer or by any other equivalent entity, such as a nationally recognized testing laboratory, to be in conformity with all applicable provisions of ANSI A92.2–1969 and this section and to be at least as safe as the equipment was before modification.

(b) *Specific requirements*—(1) *Ladder trucks and tower trucks.* Aerial ladders shall be secured in the lower traveling position by the locking device on top of the truck cab, and the manually operated device at the base of the ladder before the truck is moved for highway travel.

(2) *Extensible and articulating boom platforms.* (i) Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

(ii) Only authorized persons shall operate an aerial lift.

(iii) Belting off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.

(iv) Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.

(v) A body belt shall be worn and a lanyard attached to the boom or basket when working from an aerial lift.

(vi) Boom and basket load limits specified by the manufacturer shall not be exceeded.

(vii) The brakes shall be set and when outriggers are used, they shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial lift on an incline, provided they can be safely installed.

(viii) An aerial lift truck shall not be moved when the boom is elevated in a working position with men in the basket, except for equipment which is specifically designed for this type of operation in accordance with the provisions of subparagraphs (1) and (2) of paragraph (a) of this section.

(ix) Articulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.

(x) Climbers shall not be worn while performing work from an aerial lift.

(xi) The insulated portion of an aerial lift shall not be altered in any manner that might reduce its insulating value.

(xii) Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position except as provided in subdivision (viii) of this subparagraph.

(3) *Electrical tests.* All electrical tests shall conform to the requirements of ANSI A92.2–1969 section 5. However equivalent d.c. voltage tests may be used in lieu of the a.c. voltage specified in A92.2–1969; d.c. voltage tests which are approved by the equipment manufacturer or equivalent entity shall be considered an equivalent test for the purpose of this subparagraph (3).

(4) *Bursting safety factor.* The provisions of the American National Standards Institute standard ANSI A92.2–1969, section 4.9 Bursting Safety Factor shall apply to all critical hydraulic and pneumatic components. Critical components are those in which a failure would result in a free fall or free rotation of the boom. All noncritical components shall have a bursting safety factor of at least 2 to 1.

(5) *Welding standards.* All welding shall conform to the following standards as applicable:

(i) Standard Qualification Procedure, AWS B3.0–41.

(ii) Recommended Practices for Automotive Welding Design, AWS D8.4–61.

(iii) Standard Qualification of Welding Procedures and Welders for Piping and Tubing, AWS D10.9–69.

(iv) Specifications for Welding Highway and Railway Bridges, AWS D2.0–69.

Subpart O—Motor Vehicles, Mechanized Equipment, and Marine Operations

§ 1926.600 Equipment.

(a) *General requirements.* (1) All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment.

(2) A safety tire rack, cage, or equivalent protection shall be provided and used when inflating, mounting, or dismounting tires installed on split rims, or rims equipped with locking rings or similar devices.

(3) (i) Heavy machinery, equipment, or parts thereof, which are suspended or held aloft by use of slings, hoists, or jacks shall be substantially blocked or cribbed to prevent falling or shifting before employees are permitted to work under or between them. Bulldozer and scraper blades, end-loader buckets, dump bodies, and similar equipment, shall be either fully lowered or blocked when being repaired or when not in use. All controls shall be in a neutral position, with the motors stopped and brakes set, unless work being performed requires otherwise.

(ii) Whenever the equipment is parked, the parking brake shall be set. Equipment parked on inclines shall have the wheels chocked and the parking brake set.

(4) The use, care and charging of all batteries shall conform to the requirements of Subpart K of this part.

(5) All cab glass shall be safety glass, or equivalent, that introduces no visible distortion affecting the safe operation of any machine covered by this subpart.

(6) All equipment covered by this subpart shall comply with the requirements of § 1518.550(a)(15) when working or being moved in the vicinity of power lines or energized transmitters.

(b) *Specific requirements.* [Reserved]

§ 1926.601 Motor vehicles.

(a) *Coverage.* Motor vehicles as covered by this part are those vehicles that operate within an off-highway jobsite, not open to public traffic. The requirements of this section do not apply to equipment for which rules are prescribed in § 1926.602.

(b) *General requirements.* (1) All vehicles shall have a service brake system, an emergency brake system, and a parking brake system. These systems may use common components, and shall be maintained in operable condition.

(2) (i) Whenever visibility conditions warrant additional light, all vehicles, or combinations of vehicles, in use shall be equipped with at least two headlights and two taillights in operable condition.

(ii) All vehicles, or combination of vehicles, shall have brake lights in operable condition regardless of light conditions.

(3) All vehicles shall be equipped with an adequate audible warning device at the operator's station and in an operable condition.

(4) No employer shall use any motor vehicle equipment having an obstructed view to the rear unless:

(i) The vehicle has a reverse signal alarm audible above the surrounding noise level or:

(ii) The vehicle is backed up only when an observer signals that it is safe to do so.

(5) All vehicles with cabs shall be equipped with windshields and powered wipers. Cracked and broken glass shall be replaced. Vehicles operating in areas or under conditions that cause fogging or frosting of the windshields shall be equipped with operable defogging or defrosting devices.

(6) All haulage vehicles, whose pay load is loaded by means of cranes, power shovels, loaders, or similar equipment, shall have a cab shield and/or canopy adequate to protect the operator from shifting or falling materials.

(7) Tools and material shall be secured to prevent movement when transported in the same compartment with employees.

(8) Vehicles used to transport employees shall have seats firmly secured and adequate for the number of employees to be carried.

(9) Seat belts and anchorages meeting the requirements of 49 CFR Part 571 (Department of Transportation, Federal Motor Vehicle Safety Standards) shall be installed in all motor vehicles.

(10) Trucks with dump bodies shall be equipped with positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering of the body while maintenance or inspection work is being done.

(11) Operating levers controlling hoisting or dumping devices on haulage bodies shall be equipped with a latch or other device which will prevent accidental starting or tripping of the mechanism.

(12) Trip handles for tailgates of dump trucks shall be so arranged that, in dumping, the operator will be in the clear.

(13) (i) All rubber-tired motor vehicle equipment manufactured on or after May 1, 1972, shall be equipped with fenders. All rubber-tired motor vehicle equipment manufactured before May 1, 1972, shall be equipped with fenders not later than May 1, 1973.

(ii) Mud flaps may be used in lieu of fenders whenever motor vehicle equipment is not designed for fenders.

(14) All vehicles in use shall be checked at the beginning of each shift to assure that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use: service brakes, including trailer brake connections; parking system (hand brake); emergency stopping system (brakes); tires; horn; steering mechanism; coupling devices; seat belts; operating controls; and safety devices. All defects shall be corrected before the vehicle is placed in service. These requirements also apply to equipment such as lights, reflectors, windshield wipers, defrosters, fire extinguishers, etc., where such equipment is necessary.

§ 1926.602 Material handling equipment.

(a) *Earthmoving equipment; General.* (1) These rules apply to the following types of earthmoving equipment: scrapers, loaders, crawler or wheel tractors, bulldozers, off-highway trucks, graders, agricultural and industrial tractors, and similar equipment. The promulgation of specific rules for compactors and rubber-tired "skid-steer" equipment is reserved pending consideration of standards currently being developed.

(2) *Seat belts.* (i) Seat belts shall be provided on all equipment covered by this section and shall meet the requirements of the Society of Automotive Engineers, J386–1969, Seat Belts for Construction Equipment. Seat belts for agricultural and light industrial tractors shall meet the seat belt requirements of Society of Automotive Engineers J333a–1970, Operator Protection for Agricultural and Light Industrial Tractors.

(ii) Seat belts need not be provided for equipment which is designed only for standup operation.

(iii) Seat belts need not be provided for equipment which does not have rollover protective structure (ROPS) or adequate canopy protection.

(3) *Access roadways and grades.* (i) No employer shall move or cause to be moved construction equipment or vehicles upon any access roadway or grade unless the access roadway or grade is constructed and maintained to accommodate safely the movement of the equipment and vehicles involved.

(ii) Every emergency access ramp and berm used by an employer shall be constructed to restrain and control runaway vehicles.

(4) *Brakes.* All earthmoving equipment mentioned in this § 1926.602(a) shall have a service braking system capable of stopping and holding the equipment fully loaded, as specified in Society of Automotive Engineers SAE–J237, Loader Dozer–1971, J236, Graders–1971, and J319b, Scrapers–1971. Brake systems for self-propelled rubber-tired off-highway equipment manufactured after January 1, 1972 shall meet the

applicable minimum performance criteria set forth in the following Society of Automotive Engineers Recommended Practices:

Self-Propelled Scrapers	SAE J319b–1971
Self-Propelled Graders	SAE J236–1971
Trucks and Wagons	SAE J166–1971
Front End Loaders and Dozers	SAE J237–1971

(5) *Fenders.* Pneumatic-tired earthmoving haulage equipment (trucks, scrapers, tractors, and trailing units) whose maximum speed exceeds 15 miles per hour, shall be equipped with fenders on all wheels to meet the requirements of Society of Automotive Engineers SAE J321a–1970, Fenders for Pneumatic-Tired Earthmoving Haulage Equipment. An employer may, of course, at any time seek to show under § 1926.2, that the uncovered wheels present no hazard to personnel from flying materials.

(6) *Rollover protective structures (ROPS).* See Subpart W of this part for requirements for rollover protective structures and overhead protection.

(7) *Rollover protective structures for off-highway trucks.* The promulgation of standards for rollover protective structures for off-highway trucks is reserved pending further study and development.

(8) *Specific effective dates—brakes and fenders.* Equipment mentioned in subparagraphs (4) and (5) of this paragraph, and manufactured after January 1, 1972, which is used by any employer after that date, shall comply with the applicable rules prescribed therein concerning brakes and fenders. Equipment mentioned in subparagraphs (4) and (5) of this paragraph, and manufactured before January 1, 1972, which is used by any employer after that date, shall meet the applicable rules prescribed herein not later than June 30, 1973. It should be noted that, as permitted under § 1926.2, employers may request variations from the applicable brakes and fender standards required by this subpart. Employers wishing to seek variations from the applicable brakes and fenders rules may submit any requests for variations after the publication of this document in the FEDERAL REGISTER. Any statements intending to meet the requirements of § 1926.2(b)(4), should specify how the variation would protect the safety of the employees by providing for any compensating restrictions on the operation of equipment.

(9) *Audible alarms.* (i) All bidirectional machines, such as rollers, compacters, front-end loaders, bulldozers, and similar equipment, shall be equipped with a horn, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction. The horn shall be maintained in an operative condition.

(ii) No employer shall permit earthmoving or compacting equipment which has an obstructed view to the rear to be used in reverse gear unless the equipment has in operation a reverse signal alarm distinguishable from the surrounding noise level or an employee signals that it is safe to do so.

(10) *Scissor points.* Scissor points on all front-end loaders, which constitute a hazard to the operator during normal operation, shall be guarded.

(b) *Excavating and other equipment.* (1) Tractors covered in paragraph (a) of this section shall have seat belts as required for the operators when seated in the normal seating arrangement for tractor operation, even though backhoes, breakers, or other similar attachments are used on these machines for excavating or other work.

(2) For the purposes of this subpart and of Subpart N of this part, the nomenclatures and descriptions for measurement of dimensions of machinery and attachments shall be as described in Society of Automotive Engineers 1970 Handbook, pages 1088 through 1103.

(3) The safety requirements, ratios, or limitations applicable to machines or attachment usage covered in Power Crane and Shovel Associations Standards No. 1 and No. 2 of 1968, and No. 3 of 1969, shall be complied with, and shall apply to cranes, machines, and attachments under this part.

(c) *Lifting and hauling equipment (other than equipment covered under Subpart N of this part).* (1) Industrial trucks shall meet the requirements of § 1926.600 and the following:

(i) Lift trucks, stackers, etc., shall have the rated capacity clearly posted on the vehicle so as to be clearly visible to the operator. When auxiliary removable counterweights are provided by the manufacturer, corresponding alternate rated capacities also shall be clearly shown on the vehicle. These ratings shall not be exceeded.

(ii) No modifications or additions which affect the capacity or safe operation of the equipment shall be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.

(iii) If a load is lifted by two or more trucks working in unison, the proportion of the total load carried by any one truck shall not exceed its capacity.

(iv) Steering or spinner knobs shall not be attached to the steering wheel unless the steering mechanism is of a type that prevents road reactions from causing the steering handwheel to spin. The steering knob shall be mounted within the periphery of the wheel.

(v) All high lift rider industrial trucks shall be equipped with overhead guards which meet the configuration and structural requirements as defined in paragraph 421 of American National Standards Institute B56.1–1969, Safety Standards for Powered Industrial Trucks.

(vi) All industrial trucks in use shall meet the applicable requirements of design, construction, stability, inspection, testing, maintenance, and operation, as defined in American National Standards Institute B56.1–1969, Safety Standards for Powered Industrial Trucks.

§ 1926.603 Pile driving equipment.

(a) *General requirements.* (1) Boilers and piping systems which are a part of, or used with, pile driving equipment shall meet the applicable requirements of the American Society of Mechanical Engineers, Power Boilers (section I).

(2) All pressure vessels which are a part of, or used with, pile driving equipment shall meet the applicable requirements of the American Society of Mechanical Engineers, Pressure Vessels (section VIII).

(3) Overhead protection, which will not obscure the vision of the operator and which meets the requirements of Subpart N of this part, shall be provided. Protection shall be the equivalent of 2-inch planking or other solid material of equivalent strength.

(4) Stop blocks shall be provided for the leads to prevent the hammer from being raised against the head block.

(5) A blocking device, capable of safely supporting the weight of the hammer, shall be provided for placement in the leads under the hammer at all times while employees are working under the hammer.

(6) Guards shall be provided across the top of the head block to prevent the cable from jumping out of the sheaves.

(7) When the leads must be inclined in the driving of batter piles, provisions shall be made to stabilize the leads.

(8) Fixed leads shall be provided with ladder, and adequate rings, or similar attachment points, so that the loft worker may engage his safety belt lanyard to the leads. If the leads are provided with loft platform(s), such platform(s) shall be protected by standard guardrails.

(9) Steam hose leading to a steam hammer or jet pipe shall be securely attached to the hammer with an adequate length of at least ¼-inch diameter chain or cable to prevent whipping in the event the joint at the hammer is broken. Air hammer hoses shall be provided with the same protection as required for steam lines.

(10) Safety chains, or equivalent means, shall be provided for each hose connection to prevent the line from thrashing around in case the coupling becomes disconnected.

(11) Steam line controls shall consist of two shutoff valves, one of which shall

be a quick-acting lever type within easy reach of the hammer operator.

(12) Guys, outriggers, thrustouts, or counterbalances shall be provided as necessary to maintain stability of pile driver rigs.

(b) *Pile driving from barges and floats.* Barges or floats supporting pile driving operations shall meet the applicable requirements of § 1926.605.

(c) *Pile driving equipment.* (1) Engineers and winchmen shall accept signals only from the designated signalmen.

(2) All employees shall be kept clear when piling is being hoisted into the leads.

(3) When piles are being driven in an excavated pit, the walls of the pit shall be sloped to the angle of repose or sheet-piled and braced.

(4) When steel tube piles are being "blown out", employees shall be kept well beyond the range of falling materials.

(5) When it is necessary to cut off the tops of driven piles, pile driving operations shall be suspended except where the cutting operations are located at least twice the length of the longest pile from the driver.

(6) When driving jacked piles, all access pits shall be provided with ladders and bulkheaded curbs to prevent material from falling into the pit.

§ 1926.604 Site clearing.

(a) *General requirements.* (1) Employees engaged in site clearing shall be protected from hazards of irritant and toxic plants and suitably instructed in the first aid treatment available.

(2) All equipment used in site clearing operations shall be equipped with rollover guards meeting the requirements of this subpart. In addition, rider-operated equipment shall be equipped with an overhead and rear canopy guard meeting the following requirements:

(i) The overhead covering on this canopy structure shall be of not less than ⅛-inch steel plate or ¼-inch woven wire mesh with openings no greater than 1 inch, or equivalent.

(ii) The opening in the rear of the canopy structure shall be covered with not less than ¼-inch woven wire mesh with openings no greater than 1 inch.

(b) *Specific requirements.* [Reserved]

§ 1926.605 Marine operations and equipment.

(a) *Material handling operations.* (1) Operations fitting the definition of "material handling" shall be performed in conformance with applicable requirements of Part 1918, "Safety and Health Regulations for Longshoring" of this chapter. The term "longshoring operations" means the loading, unloading, moving, or handling of construction materials, equipment and supplies, etc. into, in, on, or out of any vessel from a fixed structure or shore-to-vessel, vessel-to-shore or fixed structure or vessel-to-vessel.

(b) *Access to barges.* (1) Ramps for access of vehicles to or between barges shall be of adequate strength, provided with side boards, well maintained, and properly secured.

(2) Unless employees can step safely to or from the wharf, float, barge, or river towboat, either a ramp, meeting the requirements of subparagraph (1) of this paragraph, or a safe walkway, shall be provided.

(3) Jacob's ladders shall be of the double rung or flat tread type. They shall be well maintained and properly secured.

(4) A Jacob's ladder shall either hang without slack from its lashings or be pulled up entirely.

(5) When the upper end of the means of access rests on or is flush with the top of the bulwark, substantial steps, properly secured and equipped with at least one substantial hand rail approximately 33 inches in height, shall be provided between the top of the bulwark and the deck.

(6) Obstructions shall not be laid on or across the gangway.

(7) The means of access shall be adequately illuminated for its full length.

(8) Unless the structure makes it impossible, the means of access shall be so located that the load will not pass over employees.

(c) *Working surfaces of barges.* (1) Employees shall not be permitted to walk along the sides of covered lighters or barges with coamings more than 5 feet high, unless there is a 3-foot clear walkway, or a grab rail, or a taut handline is provided.

(2) Decks and other working surfaces shall be maintained in a safe condition.

(3) Employees shall not be permitted to pass fore and aft, over, or around deckloads, unless there is a safe passage.

(4) Employees shall not be permitted to walk over deckloads from rail to coaming unless there is a safe passage. If it is necessary to stand at the outboard or inboard edge of the deckload where less than 24 inches of bulwark, rail, coaming, or other protection exists, all employees shall be provided with a suitable means of protection against falling from the deckload.

(d) *First-aid and lifesaving equipment.* (1) Provisions for rendering first aid and medical assistance shall be in accordance with Subpart D of this part.

(2) The employer shall ensure that there is in the vicinity of each barge in use at least one U.S. Coast Guard-approved 30-inch lifering with not less than 90 feet of line attached, and at least one portable or permanent ladder which will reach the top of the apron to the surface of the water. If the above equipment is not available at the pier, the employer shall furnish it during the time that he is working the barge.

(3) Employees walking or working on the unguarded decks of barges shall be protected with U.S. Coast Guard-approved work vests or buoyant vests.

(e) *Diving operations.* [Reserved]

§ 1926.606 Definitions applicable to this subpart.

(a) "Apron"—The area along the waterfront edge of the pier or wharf.

(b) "Bulwark"—The side of a ship above the upper deck.

(c) "Coaming"—The raised frame, as around a hatchway in the deck, to keep out water.

(d) "Jacob's ladder"—A marine ladder of rope or chain with wooden or metal rungs.

(e) "Rail", for the purpose of § 1926.605, means a light structure serving as a guard at the outer edge of a ship's deck.

Subpart P—Excavations, Trenching, and Shoring

§ 1926.650 General protection requirements.

(a) Walkways, runways, and sidewalks shall be kept clear of excavated material or other obstructions and no sidewalks shall be undermined unless shored to carry a minimum live load of one hundred and twenty-five (125) pounds per square foot.

(b) If planks are used for raised walkways, runways, or sidewalks, they shall be laid parallel to the length of the walk and fastened together against displacement.

(c) Planks shall be uniform in thickness and all exposed ends shall be provided with beveled cleats to prevent tripping.

(d) Raised walkways, runways, and sidewalks shall be provided with plank steps on strong stringers. Ramps, used in lieu of steps, shall be provided with cleats to insure a safe walking surface.

(e) All employees shall be protected with personal protective equipment for the protection of the head, eyes, respiratory organs, hands, feet, and other parts of the body as set forth in Subpart E of this part.

(f) Employees exposed to vehicular traffic shall be provided with and shall be instructed to wear warning vests marked with or made of reflectorized or high visibility material.

(g) Employees subjected to hazardous dusts, gases, fumes, mists, or atmospheres deficient in oxygen, shall be protected with approved respiratory protection as set forth in Subpart D of this part.

(h) No person shall be permited under loads handled by power shovels, derricks, or hoists. To avoid any spillage employees shall be required to stand away from any vehicle being loaded.

(i) Daily inspections of excavations shall be made by a competent person. If evidence of possible cave-ins or slides is apparent, all work in the excavation shall cease until the necessary precautions have been taken to safeguard the employees.

§ 1926.651 Specific excavation requirements.

(a) Prior to opening an excavation, effort shall be made to determine whether underground installations; i.e., sewer, telephone, water, fuel, electric lines, etc., will be encountered, and if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation.

(b) Trees, boulders, and other surface encumbrances, located so as to create a hazard to employees involved in excavation work or in the vicinity thereof at any time during operations, shall be removed or made safe before excavating is begun.

(c) The walls and faces of all excavations in which employees are exposed to danger from moving ground shall be guarded by a shoring system, sloping of the ground, or some other equivalent means.

(d) Excavations shall be inspected by a competent person after every rainstorm or other hazard-increasing occurrence, and the protection against slides and cave-ins shall be increased if necessary.

(e) The determination of the angle of repose and design of the supporting system shall be based on careful evaluation of pertinent factors such as: Depth of cut; possible variation in water content of the material while the excavation is open; anticipated changes in materials from exposure to air, sun, water, or freezing; loading imposed by structures, equipment, overlying material, or stored material; and vibration from equipment, blasting, traffic, or other sources.

(f) Supporting systems; i.e., piling, cribbing, shoring, etc., shall be designed by a qualified person and meet accepted engineering requirements. When tie rods are used to restrain the top of sheeting or other retaining systems, the rods shall be securely anchored well back of the angle of repose. When tight sheeting or sheet piling is used, full loading due to ground water table shall be assumed, unless prevented by weep holes or drains or other means. Additional stringers, ties, and bracing shall be provided to allow for any necessary temporary removal of individual supports.

(g) All slopes shall be excavated to at least the angle of repose except for areas where solid rock allows for line drilling or presplitting.

(h) The angle of repose shall be flattened when an excavation has water conditions, silty materials, loose boulders, and areas where erosion, deep frost action, and slide planes appear.

(i) (1) In excavations which employees may be required to enter, excavated or other material shall be effectively stored and retained at least 2 feet or more from the edge of the excavation.

(2) As an alternative to the clearance prescribed in subparagraph (1) of this paragraph, the employer may use effective barriers or other effective retaining devices in lieu thereof in order to prevent excavated or other materials from falling into the excavation.

(j) Sides, slopes, and faces of all excavations shall meet accepted engineering requirements by scaling, benching, barricading, rock bolting, wire meshing, or other equally effective means. Special attention shall be given to slopes which may be adversely affected by weather or moisture content.

(k) Support systems shall be planned and designed by a qualified person when excavation is in excess of 20 feet in depth, adjacent to structures or improvements, or subject to vibration or ground water.

(l) Materials used for sheeting, sheet piling, cribbing, bracing, shoring, and underpinning shall be in good serviceable condition, and timbers shall be sound, free from large or loose knots, and of proper dimensions.

(m) Special precautions shall be taken in sloping or shoring the sides of excavations adjacent to a previously backfilled excavation or a fill, particularly when the separation is less than the depth of the excavation. Particular attention also shall be paid to joints and seams of material comprising a face and the slope of such seams and joints.

(n) Except in hard rock, excavations below the level of the base of footing of any foundation or retaining wall shall not be permitted, unless the wall is underpinned and all other precautions taken to insure the stability of the adjacent walls for the protection of employees involved in excavation work or in the vicinity thereof.

(o) If the stability of adjoining buildings or walls is endangered by excavations, shoring, bracing, or underpinning shall be provided as necessary to insure their safety. Such shoring, bracing, or underpinning shall be inspected daily or more often, as conditions warrant, by a competent person and the protection effectively maintained.

(p) Diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Water shall not be allowed to accumulate in an excavation.

(q) If it is necessary to place or operate power shovels, derricks, trucks, materials, or other heavy objects on a level above and near an excavation, the side of the excavation shall be sheet-piled, shored, and braced as necessary to resist the extra pressure due to such superimposed loads.

(r) Blasting and the use of explosives shall be performed in accordance with Subpart U of this part.

(s) When mobile equipment is utilized or allowed adjacent to excavations, substantial stop logs or barricades shall be installed. If possible, the grade should be away from the excavation.

(t) Adequate barrier physical protection shall be provided at all remotely located excavations. All wells, pits, shafts, etc., shall be barricaded or covered. Upon completion of exploration and similar operations, temporary wells, pits, shafts, etc., shall be backfilled.

(u) If possible, dust conditions shall be kept to a minimum by the use of water, salt, calcium chloride, oil, or other means.

(v) In locations where oxygen deficiency or gaseous conditions are possible, air in the excavation shall be tested. Controls, as set forth in Subparts D and E of this part, shall be established to assure acceptable atmospheric conditions. When flammable gases are present, adequate ventilation shall be provided or sources of ignition shall be eliminated. Attended emergency rescue equipment, such as breathing apparatus, a safety harness and line, basket stretcher, etc., shall be readily available where adverse atmospheric conditions may exist or develop in an excavation.

(w) Where employees or equipment are required or permitted to cross over excavations, walkways or bridges with standard guardrails shall be provided.

(x) Where ramps are used for employees or equipment, they shall be designed and constructed by qualified persons in accordance with accepted engineering requirements.

(y) All ladders used on excavation operations shall be in accordance with the requirements of Subpart L of this part.

§ 1926.652 Specific trenching requirements.

(a) Banks more than 5 feet high shall be shored, laid back to a stable slope, or some other equivalent means of protection shall be provided where employees may be exposed to moving ground or cave-ins. Refer to Table P–1 as a guide in sloping of banks. Trenches less than 5 feet in depth shall also be effectively protected when examination of the ground

indicates hazardous ground movement may be expected.

(b) Sides of trenches in unstable or soft material, 5 feet or more in depth, shall be shored, sheeted, braced, sloped, or otherwise supported by means of sufficient strength to protect the employees working within them. See Tables P–1, P–2 (following paragraph (g) of this section).

(c) Sides of trenches in hard or compact soil, including embankments, shall be shored or otherwise supported when the trench is more than 5 feet in depth and 8 feet or more in length. In lieu of shoring, the sides of the trench above the 5-foot level may be sloped to preclude collapse, but shall not be steeper than a 1-foot rise to each ½-foot horizontal. When the outside diameter of a pipe is greater than 6 feet, a bench of 4-foot minimum shall be provided at the toe of the sloped portion.

(d) Materials used for sheeting and sheet piling, bracing, shoring, and underpinning, shall be in good serviceable condition, and timbers used shall be sound and free from large or loose knots, and shall be designed and installed so as to be effective to the bottom of the excavation.

(e) Additional precautions by way of shoring and bracing shall be taken to prevent slides or cave-ins when excavations or trenches are made in locations adjacent to backfilled excavations, or where excavations are subjected to vibrations from railroad or highway traffic, the operation of machinery, or any other source.

(f) Employees entering bell-bottom pier holes shall be protected by the installation of a removeable-type casing of sufficient strength to resist shifting of the surrounding earth. Such temporary protection shall be provided for the full depth of that part of each pier hole which is above the bell. A lifeline, suitable for instant rescue and securely fastened to a shoulder harness, shall be worn by each employee entering the shafts. This lifeline shall be individually manned and separate from any line used to remove materials excavated from the bell footing.

(g) (1) Minimum requirements for trench timbering shall be in accordance with Table P–2.

(2) Braces and diagonal shores in a wood shoring system shall not be subjected to compressive stress in excess of values given by the following formula:

$$S = 1300 - \frac{20L}{D}$$

$$\text{Maximum ratio } \frac{L}{D} = 50$$

Where:

L = Length, unsupported, in inches.
D = Least side of the timber in inches.
S = Allowable stress in pounds per square inch of cross-section.

Table P - 1

APPROXIMATE ANGLE OF REPOSE
FOR SLOPING OF SIDES OF EXCAVATIONS

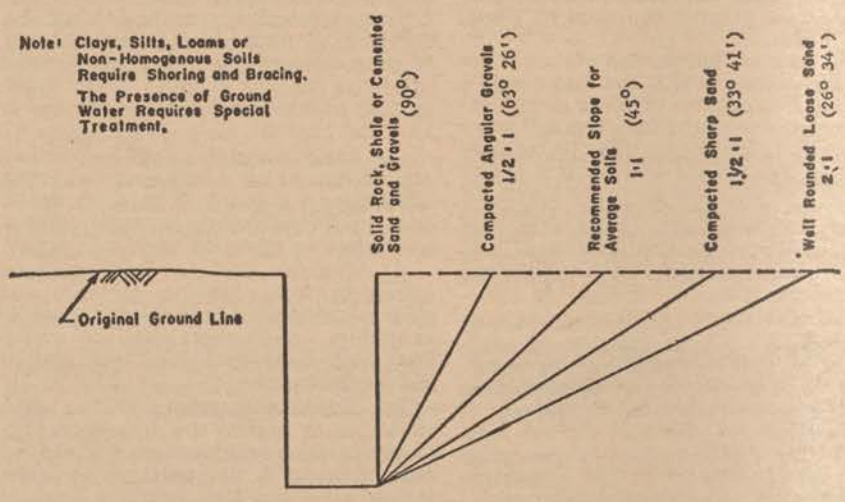


TABLE P–2

TRENCH SHORING—MINIMUM REQUIREMENTS

Depth of trench	Kind or condition of earth	Size and spacing of members										
		Uprights		Stringers		Cross braces [1]					Maximum spacing	
						Width of trench						
		Minimum dimension	Maximum spacing	Minimum dimension	Maximum spacing	Up to 3 feet	3 to 6 feet	6 to 9 feet	9 to 12 feet	12 to 15 feet	Vertical	Horizontal
Feet		Inches	Feet	Inches	Feet	Inches	Inches	Inches	Inches	Inches	Feet	Feet
5 to 10	Hard, compact	3 x 4 or 2 x 6	6			2 x 6	4 x 4	4 x 6	6 x 6	6 x 8	4	6
	Likely to crack	3 x 4 or 2 x 6	3	4 x 6	4	2 x 6	4 x 4	4 x 6	6 x 6	6 x 8	4	6
	Soft, sandy, or filled	3 x 4 or 2 x 6	Close sheeting	4 x 6	4	4 x 4	4 x 6	6 x 6	6 x 8	8 x 8	4	6
	Hydrostatic pressure	3 x 4 or 2 x 6	Close sheeting	6 x 8	4	4 x 4	4 x 6	6 x 6	6 x 8	8 x 8	4	6
10 to 15	Hard	3 x 4 or 2 x 6	4	4 x 6	4	4 x 4	4 x 6	6 x 6	6 x 8	8 x 8	4	6
	Likely to crack	3 x 4 or 2 x 6	2	4 x 6	4	4 x 4	4 x 6	6 x 6	6 x 8	8 x 8		6
	Soft, sandy, or filed	3 x 4 or 2 x 6	Close sheeting	4 x 6	4	4 x 6	6 x 6	6 x 8	8 x 8	8 x 10	4	6
	Hydrostatic pressure	3 x 6	Close sheeting	8 x 10	4	4 x 6	6 x 6	6 x 8	8 x 8	8 x 10	4	6
15 to 20	All kinds or conditions	3 x 6	Close sheeting	4 x 12	4	4 x 12	6 x 8	8 x 8	8 x 10	10 x 10	4	6
Over 20	All kinds or conditions	3 x 6	Close sheeting	6 x 8	4	4 x 12	8 x 8	8 x 10	10 x 10	10 x 12	4	

[1] Trench jacks may be used in lieu of, or in combination with, cross braces.
Shoring is not required in solid rock, hard shale, or hard slag.
Where desirable, steel sheet piling and bracing of equal strength may be substituted for wood.

(h) When employees are required to be in trenches 4 feet deep or more, an adequate means of exit, such as a ladder or steps, shall be provided and located so as to require no more than 25 feet of lateral travel.

(i) Bracing or shoring of trenches shall be carried along with the excavation.

(j) Cross braces or trench jacks shall be placed in true horizontal position, be spaced vertically, and be secured to prevent sliding, falling, or kickouts.

(k) Portable trench boxes or sliding trench shields may be used for the protection of personnel in lieu of a shoring system or sloping. Where such trench boxes or shields are used, they shall be designed, constructed, and maintained in a manner which will provide protection equal to or greater than the sheeting or shoring required for the trench.

(l) Backfilling and removal of trench supports shall progress together from the bottom of the trench. Jacks or braces shall be released slowly and, in unstable soil, ropes shall be used to pull out the jacks or braces from above after employees have cleared the trench.

§ 1926.653 Definitions applicable to this subpart.

(a) "Accepted engineering requirements (or practices)"—Those requirements or practices which are compatible with standards required by a registered architect, a registered professional engineer, or other duly licensed or recognized authority.

(b) "Angle of repose"—The greatest angle above the horizontal plane at which a material will lie without sliding.

(c) "Bank"—A mass of soil rising above a digging level.

(d) "Belled excavation"—A part of a shaft or footing excavation, usually near the bottom and bell-shaped; i.e., an enlargement of the cross section above.

(e) "Braces (trench)"—The horizontal members of the shoring system whose ends bear against the uprights or stringers.

(f) "Excavation"—Any manmade cavity or depression in the earth's surface, including its sides, walls, or faces, formed by earth removal and producing unsupported earth conditions by reasons of the excavation. If installed forms or similar structures reduce the depth-to-width relationship, an excavation may become a trench.

(g) "Faces"—See paragraph (k) of this section.

(h) "Hard compact soil"—All earth materials not classified as running or unstable.

(i) "Kickouts"—Accidental release or failure of a shore or brace.

(j) "Sheet pile"—A pile, or sheeting, that may form one of a continuous interlocking line, or a row of timber, concrete, or steel piles, driven in close contact to provide a tight wall to resist the lateral pressure of water, adjacent earth, or other materials.

(k) "Sides", "Walls", or "Faces"—The vertical or inclined earth surfaces formed as a result of excavation work.

(l) "Slope"—The angle with the horizontal at which a particular earth material will stand indefinitely without movement.

(m) "Stringers" (wales)—The horizontal members of a shoring system whose sides bear against the uprights or earth.

(n) "Trench"—A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15 feet.

(o) "Trench jack"—Screw or hydraulic type jacks used as cross bracing in a trench shoring system.

(p) "Trench shield"—A shoring system composed of steel plates and bracing, welded or bolted together, which support the walls of a trench from the ground level to the trench bottom and which can be moved along as work progresses.

(q) "Unstable soil"—Earth material, other than running, that because of its nature or the influence of related conditions, cannot be depended upon to remain in place without extra support, such as would be furnished by a system of shoring.

(r) "Uprights"—The vertical members of a shoring system.

(s) "Wales"—See paragraph (m) of this section.

(t) "Walls"—See paragraph (k) of this section.

Subpart Q—Concrete, Concrete Forms, and Shoring

§ 1926.700 General provisions.

(a) *General.* All equipment and materials used in concrete construction and masonry work shall meet the applicable requirements for design, construction, inspection, testing, maintenance and operations as prescribed in ANSI A10.9–1970, Safety Requirements for Concrete Construction and Masonry Work.

(b) *Reinforcing steel.* (1) Employees working more than 6 feet above any adjacent working surfaces, placing and tying reinforcing steel in walls, piers, columns, etc., shall be provided with a safety belt, or equivalent device, in accordance with Subpart E of this part.

(2) Employees shall not be permitted to work above vertically protruding reinforcing steel unless it has been protected to eliminate the hazard of impalement.

(3) Guying: Reinforcing steel for walls, piers, columns, and similar vertical structures shall be guyed and supported to prevent collapse.

(4) Wire mesh rolls: Wire mesh rolls shall be secured at each end to prevent dangerous recoiling action.

(c) *Bulk concrete handling.* Bulk storage bins, containers, or silos shall have conical or tapered bottoms with mechanical or pneumatic means of starting the flow of material.

(d) *Concrete placement*—(1) *Concrete mixers.* Concrete mixers equipped with 1-yard or larger loading skips shall be equipped with a mechanical device to clear the skip of material.

(2) *Guardrails.* Mixers of 1-yard capacity or greater shall be equipped with protective guardrails installed on each side of the skip.

(3) *Bull floats.* Handles on bull floats, used where they may contact energized electrical conductors, shall be constructed of nonconductive material, or insulated with a nonconductive sheath whose electrical and mechanical characteristics provide the equivalent protection of a handle constructed of nonconductive material.

(4) *Powered concrete trowels.* Powered and rotating-type concrete troweling machines that are manually guided shall be equipped with a control switch that will automatically shut off the power whenever the operator removes his hands from the equipment handles.

(5) *Concrete buggies.* Handles of buggies shall not extend beyond the wheels on either side of the buggy. Installation of knuckle guards on buggy handles is recommended.

(6) *Pumpcrete systems.* Pumpcrete or similar systems using discharge pipes shall be provided with pipe supports designed for 100 percent overload. Compressed air hose in such systems shall be provided with positive fail-safe joint connectors to prevent separation of sections when pressurized.

(7) *Concrete buckets.* (i) Concrete buckets equipped with hydraulic or pneumatically operated gates shall have positive safety latches or similar safety devices installed to prevent aggregate and loose material from accumulating on the top and sides of the bucket.

(ii) Riding of concrete buckets for any purpose shall be prohibited, and vibrator crews shall be kept out from under concrete buckets suspended from cranes or cableways.

(8) When discharging on a slope, the wheels of ready-mix trucks shall be blocked and the brakes set to prevent movement.

(9) Nozzlemen applying a cement, sand, and water mixture through a pneumatic hose shall be required to wear protective head and face equipment, as prescribed in Subpart E of this part.

(e) *Vertical shoring*—(1) *General requirements.* (i) When temporary storage of reinforcing rods, material, or equipment on top of formwork becomes necessary, these areas shall be strengthened to meet the intended loads.

(ii) The sills for shoring shall be sound, rigid, and capable of carrying the maximum intended load.

(iii) All shoring equipment shall be inspected prior to erection to determine that it is as specified in the shoring layout. Any equipment found to be damaged shall not be used for shoring.

(iv) Erected shoring equipment shall be inspected immediately prior to, during, and immediately after the placement of concrete. Any shoring equipment that is found to be damaged or weakened shall be immediately reinforced or reshored.

(v) Reshoring shall be provided when necessary to safely support slabs and beams after stripping, or where such members are subjected to superimposed loads due to construction work done.

(2) *Tubular welded frame shoring.* (i) Metal tubular frames used for shoring shall not be loaded beyond the safe working load recommended by the manufacturer.

(ii) All locking devices on frames and braces shall be in good working order; coupling pins shall align the frame or panel legs; pivoted cross braces shall have their center pivot in place; and all components shall be in a condition similar to that of original manufacture.

(iii) When checking the erected shoring frames with the shoring layout, the spacing between towers and cross brace spacing shall not exceed that shown on the layout, and all locking devices shall be in the closed position.

(iv) Devices for attaching the external lateral stability bracing shall be securely fastened to the legs of the shoring frames.

(v) All baseplates, shore heads, extension devices, or adjustment screws shall be in firm contact with the footing sill and the form.

§ 1926.701 Forms and shoring.

(a) *General provisions.* (1) Formwork and shoring shall be designed, erected, supported, braced, and maintained so that it will safely support all vertical and lateral loads that may be imposed upon it during placement of concrete.

(2) Drawings or plans showing the jack layout, formwork, shoring, working decks, and scaffolding, shall be available at the jobsite.

(3) Stripped forms and shoring shall be removed and stockpiled promptly after stripping, in all areas in which persons are required to work or pass. Protruding nails, wire ties, and other form accessories not necessary to subsequent work shall be pulled, cut, or other means taken to eliminate the hazard.

(4) Imposition of any construction loads on the partially completed structure shall not be permitted unless such loading has been considered in the design and approved by the engineer-architect.

(b) *Vertical slip forms.* (1) The steel rods or pipe on which the jacks climb or by which the forms are lifted shall be specifically designed for the purpose. Such rods shall be adequately braced where not encased in concrete.

(2) Jacks and vertical supports shall be positioned in such a manner that the vertical loads are distributed equally and do not exceed the capacity of the jacks.

(3) The jacks or other lifting devices shall be provided with mechanical dogs or other automatic holding devices to provide protection in case of failure of the power supply or the lifting mechanism.

(4) Lifting shall proceed steadily and uniformly and shall not exceed the predetermined safe rate of lift.

(5) Lateral and diagonal bracing of the forms shall be provided to prevent excessive distortion of the structure during the jacking operation.

(6) During jacking operations, the form structure shall be maintained in line and plumb.

(7) All vertical lift forms shall be provided with scaffolding or work platforms completely encircling the area of placement.

(c) *Tube and coupler shoring.* (1) Couplers (clamps) shall not be used if they are deformed, broken, or have defective or missing threads on bolts, or other defects.

(2) The material used for the couplers (clamps) shall be of a structural type such as drop-forged steel, malleable iron, or structural grade aluminum. Gray cast iron shall not be used.

(3) When checking the erected shoring towers with the shoring layout, the spacing between posts shall not exceed that shown on the layout, and all interlocking of tubular members and tightness of couples shall be checked.

(4) All baseplates, shore heads, extension devices, or adjustment screws shall be in firm contact with the footing sill and the form material and shall be snug against the posts.

(d) *Single post shores.* (1) For stability, single post shores shall be horizontally braced in both the longitudinal and transverse directions, and diagonal bracing shall also be installed. Such bracing shall be installed as the shores are being erected.

(2) All baseplates or shore heads of single post shores shall be in firm contact with the footing sill and the form materials.

(3) Whenever single post shores are used in more than one tier, the layout shall be designed and inspected by a structural engineer.

(4) When formwork is at an angle, or sloping, or when the surface shored is sloping, the shoring shall be designed for such loading.

(5) Adjustment of single post shores to raise formwork shall not be made after concrete is in place.

(6) Fabricated single post shores shall not be used if heavily rusted, bent, dented, rewelded, or having broken weldments or other defects. If they contain timber, they shall not be used if timber is split, cut, has sections removed, is rotted, or otherwise structurally damaged.

(7) All timber and adjusting devices to be used for adjustable timber single post shores shall be inspected before erection.

(8) Timber shall not be used if it is split, cut, has sections removed, is rotted, or is otherwise structurally damaged.

(9) Adjusting devices shall not be used if heavily rusted, bent, dented, rewelded, or having broken weldments or other defects.

(10) All nails used to secure bracing or adjustable timber single post shores shall be driven home and the point of the nail bent over if possible.

§ 1926.702 Definitions applicable to this subpart.

(a) "Bull float"—A tool used to spread out and smooth the concrete.

(b) "Formwork" or "falsework"—The total system of support for freshly placed concrete, including the mold or sheathing which contacts the concrete as well as all supporting members, hardware, and necessary bracing.

(c) "Guy"—A line that steadies a high piece or structure by pulling against an off-center load.

(d) "Shore"—A supporting member that resists a compressive force imposed by a load.

(e) "Vertical slip forms"—Forms which are jacked vertically and continuously during placing of the concrete.

Subpart R—Steel Erection

§ 1926.750 Flooring requirements.

(a) *Permanent flooring—skeleton steel construction in tiered buildings.* (1) The permanent floors shall be installed as the erection of structural members progresses, and there shall be not more than eight stories between the erection floor and the uppermost permanent floor, except where the structural integrity is maintained as a result of the design.

(2) At no time shall there be more than four floors or 48 feet of unfinished bolting or welding above the foundation or uppermost permanently secured floor.

(b) *Temporary flooring—skeleton steel construction in tiered buildings.* (1) (i) The derrick or erection floor shall be solidly planked or decked over its entire surface except for access openings. Planking or decking of equivalent strength, shall be of proper thickness to carry the working load. Planking shall be not less than 2 inches thick full size undressed, and shall be laid tight and secured to prevent movement.

(ii) On buildings or structures not adaptable to temporary floors, and where scaffolds are not used, safety nets shall be installed and maintained whenever the potential fall distance exceeds two stories or 25 feet. The nets shall be hung with sufficient clearance to prevent contacts with the surface of structures below.

(iii) Floor periphery—safety railing. A safety railing of ½-inch wire rope or equal shall be installed, approximately 42 inches high, around the periphery of all temporary-planked or temporary metal-decked floors of tier buildings and other multifloored structures during structural steel assembly.

(2) Where erection is being done by means of a crane operating on the ground, a tight and substantial floor shall be maintained within two stories or 25 feet, whichever is less, below and directly under that portion of each tier of beams on which bolting, riveting, welding, or painting is being done.

(c) *Flooring—other construction.* (1) In the erection of a building having double wood floor construction, the rough flooring shall be completed as the building progresses, including the tier below the one on which floor joists are being installed.

(2) For single wood floor or other flooring systems, the floor immediately below the story where the floor joists are being installed shall be kept planked or decked over.

§ 1926.751 Structural steel assembly.

(a) During the final placing of solid web structural members, the load shall not be released from the hoisting line until the members are secured with not

less than two bolts, or the equivalent at each connection and drawn up wrench tight.

(b) Open web steel joists shall not be placed on any structural steel framework unless such framework is safely bolted or welded.

(c) (1) In steel framing, where bar joists are utilized, and columns are not framed in at least two directions with structural steel members, a bar joist shall be field-bolted at columns to provide lateral stability during construction.

(2) Where longspan joists or trusses, 40 feet or longer, are used, a center row of bolted bridging shall be installed to provide lateral stability during construction prior to slacking of hoisting line.

(3) No load shall be placed on open web steel joists until these security requirements are met.

(d) Tag lines shall be used for controlling loads.

§ 1926.752 Bolting, riveting, fitting-up, and plumbing-up.

(a) *General requirements.* (1) Containers shall be provided for storing or carrying rivets, bolts, and drift pins, and secured against accidental displacement when aloft.

(2) Pneumatic hand tools shall be disconnected from the power source, and pressure in hose lines shall be released, before any adjustments or repairs are made.

(3) Air line hose sections shall be tied together except when quick disconnect couplers are used to join sections.

(4) Eye protection shall be provided in accordance with Subpart E of this part.

(b) *Bolting.* (1) When bolts or drift pins are being knocked out, means shall be provided to keep them from falling.

(2) Impact wrenches shall be provided with a locking device for retaining the socket.

(c) *Riveting.* (1) Riveting shall not be done in the vicinity of combustible material unless precautions are taken to prevent fire.

(2) When rivet heads are knocked off, or backed out, means shall be provided to keep them from falling.

(3) A safety wire shall be properly installed on the snap and on the handle of the pneumatic riveting hammer and shall be used at all times. The wire size shall be not less than No. 9 (B&S gauge), leaving the handle and annealed No. 14 on the snap, or equivalent.

(d) *Plumbing-up.* (1) Connections of the equipment used in plumbing-up shall be properly secured.

(2) The turnbuckles shall be secured to prevent unwinding while under stress.

(3) Plumbing-up guys related equipment shall be placed so that employees can get at the connection points.

(4) Plumbing-up guys shall be removed only under the supervision of a competent person.

(e) Wood planking shall be of proper thickness to carry the working load, but shall be not less than 2 inches thick full size undressed, exterior grade plywood, at least ¾-inch thick, or equivalent material.

(f) Metal decking of sufficient strength shall be laid tight and secured to prevent movement.

(g) Planks shall overlap the bearing on each end by a minimum of 12 inches.

(h) Wire mesh, exterior plywood, or equivalent, shall be used around columns where planks do not fit tightly.

(i) Provisions shall be made to secure temporary flooring against displacement.

(j) All unused openings in floors, temporary or permanent, shall be completely planked over or guarded in accordance with Subpart M of this part.

(k) Employees shall be provided with safety belts in accordance with § 1926.104 when they are working on float scaffolds.

Subpart S—Tunnels and Shafts, Caissons, Cofferdams, and Compressed Air

§ 1926.800 Tunnels and shafts.

(a) *General.* (1) The specific requirements of this Subpart S, Tunnels, Shafts, Caissons, Cofferdams, and Compressed Air, shall be complied with as well as the applicable provisions of all other subparts of this part.

(2) Safe means of access shall be provided and maintained to all working places.

(3) When ladders and stairways are provided in shafts and steep inclines, they shall meet the requirements of Subparts L and M of this part.

(4) Access to unattended underground openings shall be restricted by gates or doors. Unused chutes, manways, or other openings shall be tightly covered, bulkheaded, or fenced off, and posted. Conduits, trenches, and manholes shall meet the requirements of Subparts M and P of this part.

(5) Subsidence areas that present hazards shall be fenced and posted.

(6) Each operation shall have a check-in and check-out system that will provide positive identification of every employee underground. An accurate record and location of the employees shall be kept on the surface.

(b) *Emergency provisions.* (1) Evacuation plans and procedures shall be developed and made known to the employees.

(2) Emergency hoisting facilities shall be readily available at shafts more than 50 feet in depth, unless hoisting facilities are provided that are independent of electrical power failures. A boatswain's chair shall meet the requirements of Subpart L of this part.

(3) Bureau of Mines approved self-rescuers shall be available near the advancing face to equip each face employee. Such equipment shall be on the haulage equipment and in other areas where employees might be trapped by smoke or gas, and shall be maintained in good condition.

(4) Telephone or other signal communication shall be provided between the work face and the tunnel portal, and such systems shall be independent of the tunnel power supply.

(c) *Air Quality and Ventilation*—(1) *Air quality and quantity.* (i) Instruments shall be provided to test the atmosphere quantitatively for carbon monoxide, nitrogen dioxide, flammable or toxic gases, dusts, mists, and fumes that occur in the tunnel or shaft. Tests shall be conducted as frequently as necessary to assure that the required quality and quantity of air is maintained. A record of all tests shall be maintained and be kept available.

(ii) Field-type oxygen analyzers, or other suitable devices, shall be used to test for oxygen deficiency.

(iii) Respirators shall not be substituted for environmental control measures. However, where environmental controls have not yet been developed, or when necessary by the nature of the work involved (for example, welding, sand blasting, lead burning), an employee may work for short periods of time in concentrations of airborne contaminants which exceed the limit of permissible excursions referred to in subdivisions (iv) and (v) of this subparagraph, if such employee wears a respiratory protective device approved by the Bureau of Mines as protection against the particular hazards involved.

(iv) The exposure to airborne contaminants of an employee working in a tunnel or shaft shall not exceed the threshold limit values adopted by the American Conference of Governmental Industrial Hygienists, as set forth and explained in the 1970 edition of "Threshold Limit Values of Airborne Contaminants."

(v) Employees shall be withdrawn from areas in which there is a concentration of an airborne contaminant which exceeds the threshold limit value listed for that contaminant.

(vi) Atmospheres in all active areas shall contain at least 20 percent oxygen.

(2) *Ventilation.* (i) Tunnels shall be provided with mechanically induced primary ventilation in all work areas. The direction of airflow shall be reversible.

(ii) Ventilation doors, not operated mechanically, shall be designed and installed so that they are self-closing and will remain closed regardless of the direction of the air movement.

(iii) When there has been a failure of ventilation, and ventilation has been restored in a reasonable time, all places where flammable gas may have accumulated shall be examined by a competent person and determined to be free of flammable gas before power is restored and work resumed.

(iv) When the main fan or fans have been shut down with all employees out of the adit, tunnel or shaft, no employee, other than those qualified to examine the adit, tunnel, or shaft, or other authorized employee, shall go underground until the fans have been started, the work areas examined for gas and other hazards, and declared safe.

(v) The supply of fresh air shall not be less than 200 cubic feet per minute for each employee underground. The linear velocity of the air flow in the tunnel bore shall not be less than 30 feet per minute in those tunnels where blasting or rock drilling is conducted or where there are other conditions that are likely to pro-

duce dusts, fumes, vapors, or gases in harmful quantities.

(vi) If 1.5 percent or higher concentration of flammable gas is detected in air returning from an underground working place or places, the employees shall be withdrawn and the power cut off to the portion of the area endangered by such flammable gas until the concentration of such gas is reduced to 1 percent or less.

(vii) Internal combustion engines other than mobile diesel shall not be used underground. Mobile diesel-powered equipment used underground shall be certified by the Bureau of Mines, U.S. Department of the Interior according to the Bureau of Mines publication "Mechanical Equipment for Mines—tests for permissibility and suitability, Part 32, Mobile Diesel Power Equipment for Non-Coal Mines, Schedule 24" of March 23, 1965.

(d) *Illumination.* (1) Sufficient lighting shall be provided, in accordance with the requirements of Table D-3 of Subpart D of this part, to permit safe operations at the face as well as in the general tunnel or shaft area and at the employees' workplace.

(e) *Fire prevention and control*—(1) *General.* (i) The requirements for fire prevention and protection specified in Subpart F of this part shall be complied with in all tunnel and shaft operations.

(ii) Signs warning against smoking and open flames shall be posted so that they can be readily seen in areas or places where fire or explosion hazards exist.

(iii) The carrying of matches, lighters, or other flame-producing smoking materials shall be prohibited in all underground operations where fire or explosion hazards exist.

(iv) Not more than a 1 day's supply of diesel fuel shall be stored underground.

(v) Gasoline or liquefied petroleum gases shall not be taken, stored, or used underground.

(vi) Oil, grease, or fuel stored underground shall be kept in tightly sealed containers in fire-resistant areas, at safe distances from explosives magazines, electrical installations, and shaft stations.

(vii) Air that has passed through underground oil or fuel-storage areas shall not be used to ventilate working areas.

(viii) Approved fire-resistant hydraulic fluids shall be used in hydraulically actuated underground machinery and equipment.

(ix) Fires shall not be built underground.

(x) Noncombustible barriers shall be installed below welding or burning operations in or over a shaft or raise.

(xi) Fire extinguishers or equivalent protection shall be provided at the head and tail pulleys of underground belt conveyors and at 300-foot intervals along the belt line.

(xii) At tunnel operations, employing 25 or more employees at one time underground at least two rescue crews (10 employees divided between shifts) shall be trained annually in rescue procedures, in the use, care, and limitations of oxygen breathing apparatus, and the use and maintenance of firefighting equipment. Not less than one crew (5 employees) shall be trained at smaller operations.

(f) *Personal protective equipment.* Protective clothing or equipment shall be worn as specified in Subparts D and E of this part.

(g) *Noise.* (1) Permissible noise exposures shall conform to those specified in Subpart D of this part.

(h) *Ground support*—(1) *Tunnel portal area.* Portals shall be protected and supported where loose soil or rock or fractured material is encountered.

(2) *Tunnel area.* (i) The employer shall examine and test the roof, face, and walls of the work area at the start of each shift and frequently thereafter.

(ii) Loose ground shall be taken down or supported. Ground conditions along haulage ways and travelways shall be examined periodically and scaled or supported as necessary.

(iii) Torque meters and torque wrenches shall be available at tunnels where rock bolts are used for ground support. Frequent tests shall be made to determine if bolts meet the required torque. The test frequency shall be determined by rock conditions and distance from vibration sources.

(iv) Damaged or dislodged tunnel supports, whether steel sets or timber, shall be repaired or replaced. New supports shall be installed whenever possible before removing the damaged supports.

(v) All sets, including horseshoe-shaped or arched rib steel sets, shall be designed and installed so that the bottoms will have required anchorage to prevent pressures from pushing them inward into the excavation. Lateral bracing shall be provided between sets to further stabilize the support.

(3) *Shafts.* (i) Small diameter shafts, which employees are required to enter, shall be provided with a steel casing, concrete pipe, timber, or other material of required strength to support the surrounding earth.

(ii) The casing and bracing shall be provided the full depth of the shaft, or at least 5 feet into solid rock if possible, and shall extend at least 1 foot above ground level.

(iii) All wells or shafts over 5 feet in depth shall be retained with lagging, spiling, or casing.

(iv) In shafts, the employer shall inspect the walls, ladders, timbers, blocking, and wedges of the last set to determine if they have loosened following blasting operations. Where found unsafe, corrections shall be made before shift operations are started.

(v) Safety belts shall be worn on skips and platforms used in shafts by crews when the skip or cage does not occlude the opening to within 1 foot of the sides of the shaft, unless guardrails or cages are provided.

(i) *Drilling.* (1) Equipment that is to be used during a shift shall be inspected each shift by a competent person. Equipment defects affecting safety shall be corrected before the equipment is used.

(2) The drilling area shall be inspected for hazards before starting the drilling operation.

(3) Employees shall not be allowed on a drill mast while the drill bit is in operation.

(4) When a drill is being moved from one drilling area to another, drill steel, tools, and other equipment shall be secured, and the mast placed in a safe position.

(5) Receptacles or racks shall be provided for drill steel stored on jumbos.

(6) Before drilling cycle is started, warning shall be given to men working below jumbo decks.

(7) Drills on columns shall be anchored firmly before drilling is started and shall be retightened frequently thereafter.

(8) The employer shall provide mechanical means for lifting drills, roof bolts, mine straps, and other unwieldy heavy material to the top decks of jumbos over 10 feet in height.

(9) The employer shall provide stair access to jumbo decks wide enough to accomodate two persons if the deck is over 10 feet in height.

(10) On jumbo decks over 10 feet in height, guardrails which are removable (pipe in sockets with chain handrail), or equal, shall be provided on all sides and back platforms.

(11) Scaling bars shall be in good condition at all times, and blunted and severely worn bars shall not be used.

(12) When jumbos are being moved, riders will not be allowed on the jumbo unless they are assisting the driver.

(13) Before commencing the drill cycle, the face and lifters shall be examined for misfires (residual explosives) and, if found, they shall be removed before drilling commences at the face. Lifters shall not be drilled through blasted rock (muck) or water.

(14) Air lines that are buried in the invert shall be identified by signs posted nearby, warning all personnel.

(j) *Blasting.* All blasting and explosives-handling operations shall be conducted in compliance with Subpart U of this part.

(k) *Haulage.* (1) Equipment that is to be used during a shift shall be inspected by a competent person each shift. Equipment defects affecting safety shall be corrected before the equipment is used.

(2) Powered mobile equipment shall be provided with adequate brakes.

(3) Powered mobile haulage equipment shall be provided with audible warning devices. Lights shall be provided at both ends.

(4) Cab windows shall be of safety glass, or equivalent, in good condition, and shall be kept clean.

(5) Adequate backstops or brakes shall be installed on inclined conveyor drive units to prevent conveyors from running in reverse and creating a hazard to employees.

(6) No employee shall be permitted to ride a power-driven chain, belt, or bucket conveyor, unless the conveyor is specifically designed for the transportation of employees.

(7) The employer shall not permit employees to ride in dippers, shovel buckets, forks, clamshells, or in the beds of dump trucks, or on haulage equipment not specifically designed or adapted for the transportation of employees.

(8) Electrically powered mobile equipment shall not be left unattended unless the master switch is in the off position, all operating controls are in the neutral position, and the brakes are set, or other equivalent precautions are taken against rolling.

(9) When dumping cars by hand, the car dumps shall be provided with tie-down chains or bumper blocks to prevent cars from overturning.

(10) Rocker-bottom or bottom-dump cars shall be equipped with positive locking devices.

(11) Equipment which is to be hauled shall be so loaded and protected as to prevent sliding or spillage.

(12) Parked railcars shall be blocked securely.

(13) Berms, bumper blocks, safety hooks, or similar means shall be provided to prevent overtravel and overturning at dumping locations.

(14) Where necessary, bumper blocks, or the equivalent, shall be provided at all track dead ends.

(15) Supplies, materials, and tools, other than small handtools, shall not be transported with employees in mantrip cars.

(l) *Electrical equipment.* (1) Electrical equipment shall conform to the requirements of Subpart K of this part.

(2) Powerlines shall be well separated or insulated from waterlines, telephone lines, and airlines.

(3) Oil-filled transformers shall not be used underground unless they are located in a fire-resistant enclosure and surrounded by a dike to contain the contents of the transformers in event of a rupture.

(m) *Hoisting.* (1) Hoisting machines, either powered or hand operated, shall be worm-geared or powered both ways. The design must be such that when the power is stopped, the load cannot move.

(2) Controls for powered hoists shall be of the deadman type with a nonlocking switch or control.

(3) A device to shut off the power shall be installed ahead of the operating control.

(4) Hand-operated release mechanisms, which can permit the load to descend faster than the speed rating, shall not be used.

(5) Hoist machines with cast metal parts shall not be used.

(6) Every hoist shall be tested with twice the maximum load before being put into operation, and annually thereafter.

(7) All anchorages of hoists shall be inspected at the beginning of each shift.

(8) An enclosed covered metal cage shall be used to raise and lower persons in the shaft. The cage shall be designed with a safety factor of 4 and shall be load-tested prior to use. The exterior of the cage shall be free of projections or sharp corners. Only closed shackles shall be used in the cage rigging.

(9) If the cage is equipped with a door, a positive locking device shall be installed to prevent the door from opening accidentally while the cage is being lowered or raised while hoisting or lowering employees.

§ 1926.801 Caissons.

(a) Wherever, in caisson work in which compressed air is used, and the working chamber is less than 11 feet in length, and when such caissons are at any time suspended or hung while work is in progress so that the bottom of the excavation is more than 9 feet below the deck of the working chamber, a shield shall be erected therein for the protection of the employees.

(b) Shafts shall be subjected to a hydrostatic or air-pressure test, at which pressure they shall be tight. The shaft shall be stamped on the outside shell about 12 inches from each flange to show the pressure to which they have been subjected.

(c) Whenever a shaft is used, it shall be provided, where space permits, with a safe, proper, and suitable staircase for its entire length, including landing platforms, not more than 20 feet apart. Where this is impracticable, suitable ladders shall be installed with landing platforms located about 20 feet apart to break the climb.

(d) All caissons having a diameter or side greater than 10 feet shall be provided with a man lock and shaft for the exclusive use of employees.

(e) In addition to the gauge in the locks, an accurate gauge shall be maintained on the outer and inner side of each bulkhead. These gauges shall be accessible at all times and kept in accurate working order.

(f) In caisson operations where employees are exposed to compressed air working environments, the requirements contained in § 1926.803 shall be complied with.

§ 1926.802 Cofferdams.

(a) If overtopping of the cofferdam by high waters is possible, means shall be provided for controlled flooding of the work area.

(b) Warning signals for evacuation of employees in case of emergency shall be developed and posted.

(c) Cofferdam walkways, bridges, or ramps with at least two means of rapid exit shall be provided with guardrails as specified in Subpart M of this part.

(d) Cofferdams located close to navigable shipping channels shall be protected from vessels in transit, where possible.

§ 1926.803 Compressed air.

(a) *General provisions.* (1) There shall be present, at all times, at least one competent person designated by and representing the employer, who shall be familiar with this subpart in all respects, and responsible for full compliance with these and other applicable subparts.

(2) Every employee shall be instructed in the rules and regulations which concern his safety or the safety of others.

(b) *Medical attendance, examination, and regulations.* (1) There shall be retained one or more licensed physicians familiar with and experienced in the physical requirements and the medical aspects of compressed air work and the treatment of decompression illness. He shall be available at all times while work is in progress in order to provide medical supervision of employees employed in compressed air work. He shall himself be physically qualified and be willing to enter a pressurized environment.

(2) No employee shall be permitted to enter a compressed air environment until he has been examined by the physician and reported by him to be physically qualified to engage in such work.

(3) In the event an employee is absent from work for 10 days, or is absent due to sickness or injury, he shall not resume work until he is reexamined by the physician, and his physical condition reported, as provided in this paragraph, to be such as to permit him to work in compressed air.

(4) After an employee has been employed continuously in compressed air for a period designated by the physician, but not to exceed 1 year, he shall be reexamined by the physician to determine if he is still physically qualified to engage in compressed air work.

(5) Such physician shall at all times keep a complete and full record of examinations made by him. The physician shall also keep an accurate record of any decompression illness or other illness or injury incapacitating any employee for work, and of all loss of life that occurs in the operation of a tunnel, caisson, or other compartment in which compressed air is used.

(6) Records shall be available for the inspection of the Secretary or his representatives, and a copy thereof shall be forwarded to OSHA within 48 hours following the occurrence of the accident, death, injury, or decompression illness. It shall state as fully as possible the cause of said death or decompression illness, and the place where the injured or sick employee was taken, and such other relative information as may be required by the Secretary.

(7) A fully equipped first aid station shall be provided at each tunnel project regardless of the number of persons employed. An ambulance or transportation suitable for a litter case shall be at each project.

(8) Where tunnels are being excavated from portals more than 5 road miles apart, a first aid station and transportation facilities shall be provided at each portal.

(9) A medical lock shall be established and maintained in immediate working order whenever air pressure in the working chamber is increased above the normal atmosphere.

(10) The medical lock shall:

(i) Have at least 6 feet of clear headroom at the center, and be subdivided into not less than two compartments;

(ii) Be readily accessible to employees working under compressed air;

(iii) Be kept ready for immediate use for at least 5 hours subsequent to the emergence of any employee from the working chamber;

(iv) Be properly heated, lighted and ventilated;

(v) Be maintained in a sanitary condition;

(vi) Have a nonshatterable port through which the occupant(s) may be kept under constant observation;

(vii) Be designed for a working pressure of 75 p.s.i.g.

(viii) Be equipped with internal controls which may be overridden by external controls;

(ix) Be provided with air pressure gauges to show the air pressure within each compartment to observers inside and outside the medical lock.

(x) Be equipped with a manual type sprinkler system that can be activated inside the lock or by the outside lock tender.

(xi) Be provided with oxygen lines and fittings leading into external tanks. The lines shall be fitted with check valves to prevent reverse flow. The oxygen system inside the chamber shall be of a closed circuit design and be so designed as to automatically shut off the oxygen supply whenever the fire system is activated.

(xii) Be in constant charge of an attendant under the direct control of the retained physician. The attendant shall be trained in the use of the lock and suitably instructed regarding steps to be taken in the treatment of employee exhibiting symptoms compatible with a diagnosis of decompression illness;

(xiii) Be adjacent to an adequate emergency medical facility;

(xiv) The medical facility shall be equipped with demand-type oxygen inhalation equipment approved by the U.S. Bureau of Mines;

(xv) Be capable of being maintained at a temperature, in use, not to exceed 90° F. nor be less than 70° F.; and

(xvi) Be provided with sources of air, free of oil and carbon monoxide, for normal and emergency use, which are capable of raising the air pressure in the lock from 0 to 75 p.s.i.g. in 5 minutes.

(11) Identification badges shall be furnished to all employees, indicating that the wearer is a compressed air worker. A permanent record shall be kept of all identification badges issued. The badge shall give the employee's name, address of the medical lock, the telephone number of the licensed physician for the compressed air project, and contain instructions that in case of emergency of unknown or doubtful cause or illness, the wearer shall be rushed to the medical lock. The badge shall be worn at all times—off the job, as well as on the job.

(c) *Telephone and signal communication.* (1) Effective and reliable means of communication, such as bells, whistles, or telephones, shall be maintained at all times between all the following locations:

(i) The working chamber face;

(ii) The working chamber side of the man lock near the door;

(iii) The interior of the man lock;

(iv) Lock attendant's station;

(v) The compressor plant;

(vi) The first-aid station;

(vii) The emergency lock (if one is required); and

(viii) The special decompression chamber (if one is required).

(d) *Signs and records.* (1) The time of decompression shall be posted in each man lock as follows:

TIME OF DECOMPRESSION FOR THIS LOCK

------ pounds to ------ pounds in ------ minutes.
------ pounds to ------ pounds in ------ minutes.

(Signed by) ----------
(Superintendent)

This form shall be posted in the Man Lock at all times.

(2) Any code of signals used shall be conspicuously posted near workplace entrances and such other locations as may be necessary to bring them to the attention of all employees concerned.

(3) For each 8-hour shift, a record of employees employed under air pressure shall be kept by an employee who shall remain outside the lock near the entrance. This record shall show the period each employee spends in the air chamber and the time taken from decompression. A copy shall be submitted to the appointed physician after each shift.

(e) *Compression.* (1) Every employee going under air pressure for the first time shall be instructed on how to avoid excessive discomfort.

(2) During the compression of employees, the pressure shall not be increased to more than 3 p.s.i.g. within the first minute. The pressure shall be held at 3 p.s.i.g. and again at 7 p.s.i.g. sufficiently long to determine if any employees are experiencing discomfort.

(3) After the first minute the pressure shall be raised uniformly and at a rate not to exceed 10 p.s.i. per minute.

(4) If any employee complains of discomfort, the pressure shall be held to determine if the symptoms are relieved. If, after 5 minutes the discomfort does not disappear, the lock attendant shall gradually reduce the pressure until the employee signals that the discomfort has ceased. If he does not indicate that the discomfort has disappeared, the lock attendant shall reduce the pressure to atmospheric and the employee shall be released from the lock.

(5) No employee shall be subjected to pressure exceeding 50 pounds per square inch except in emergency.

(f) *Decompression.* (1) Decompression to normal condition shall be in accordance with the Decompression Tables in Appendix A of this subpart.

(2) In the event it is necessary for an employee to be in compressed air more than once in a 24-hour period, the appointed physician shall be responsible for the establishment of methods and procedures of decompression applicable to repetitive exposures.

(3) If decanting is necessary, the appointed physician shall establish procedures before any employee is permitted to be decompressed by decanting methods. The period of time that the employees spend at atmospheric pressure between the decompression following the shift and recompression shall not exceed 5 minutes.

(g) *Man locks and special decompression chambers*—(1) *Man locks.* (i) Except in emergency, no employees employed in compressed air shall be permitted to pass from the working chamber to atmospheric pressure until after decompression, in accordance with the procedures in this subpart.

(ii) The lock attendant in charge of a man lock shall be under the direct supervision of the appointed physician. He shall be stationed at the lock controls on the free air side during the period of compression and decompression and shall remain at the lock control station whenever there are men in the working chamber or in the man lock.

(iii) Except where air pressure in the working chamber is below 12 p.s.i.g., each man lock shall be equipped with automatic controls which, through taped programs, cams, or similar apparatus, shall automatically regulate decompressions. It shall also be equipped with manual controls to permit the lock attendant to override the automatic mechanism in the event of an emergency, as provided in subdivision (viii) of this subparagraph.

(iv) A manual control, which can be used in the event of an emergency, shall be placed inside the man lock.

(v) A clock, thermometer, and continuous recording pressure gauge with a 4-hour graph shall be installed outside of each man lock and shall be changed prior to each shift's decompression. The chart shall be of sufficient size to register a legible record of variations in pressure within the man lock and shall be visible to the lock attendant. A copy of each graph shall be submitted to the appointed physician after each shift. In addition, a pressure gauge, clock, and thermometer shall also be installed in each man lock. Additional fittings shall be provided so that test gauges may be attached whenever necessary.

(vi) Except where air pressure is below 12 p.s.i.g. and there is no danger of rapid flooding, all caissons having a working area greater than 150 square feet, and each bulkhead in tunnels of 14 feet or more in diameter, or equivalent area, shall have at least two locks in perfect working condition, one of which shall be used exclusively as a man lock, the other, as a materials lock.

(vii) Where only a combination man-and-materials lock is required, this single lock shall be of sufficient capacity to hold the employees constituting two successive shifts.

(viii) Emergency locks shall be large enough to hold an entire heading shift and a limit maintained of 12 p.s.i.g. There shall be a chamber available for oxygen decompression therapy to 28 p.s.i.g.

(ix) The man lock shall be large enough so that those using it are not compelled to be in a cramped position,

and shall not have less than 5 feet clear head room at the center and a minimum of 30 cubic feet of air space per occupant.

(x) Locks on caissons shall be so located that the bottom door shall be not less than 3 feet above the water level surrounding the caisson on the outside. (The water level, where it is affected by tides, is construed to mean high tide.)

(xi) In addition to the pressure gauge in the locks, an accurate pressure gauge shall be maintained on the outer and inner side of each bulkhead. These gauges shall be accessible at all times and shall be kept in accurate working order.

(xii) Man locks shall have an observation port at least 4 inches in diameter located in such a position that all occupants of the man lock may be observed from the working chamber and from the free air side of the lock.

(xiii) Adequate ventilation in the lock shall be provided.

(xiv) Man locks shall be maintained at a minimum temperature of 70° F.

(xv) When locks are not in use and employees are in the working chamber, lock doors shall be kept open to the working chamber, where practicable.

(xvi) Provision shall be made to allow for rescue parties to enter the tunnel if the working force is disabled.

(xvii) A special decompression chamber of sufficient size to accommodate the entire force of employees being decompressed at the end of a shift shall be provided whenever the regularly established working period requires a total time of decompression exceeding 75 minutes.

(2) *Special decompression chamber.* (i) The headroom in the special decompression chamber shall be not less than a minimum 7 feet and the cubical content shall provide at least 50 cubic feet of airspace for each employee. For each occupant, there shall be provided 4 square feet of free walking area and 3 square feet of seating space, exclusive of area required for lavatory and toilet facilities. The rated capacity shall be based on the stated minimum space per employee and shall be posted at the chamber entrance. The posted capacity shall not be exceeded, except in case of emergency.

(ii) Each special decompression chamber shall be equipped with the following:

(*a*) A clock or clocks suitably placed so that the attendant and the chamber occupants can readily ascertain the time;

(*b*) Pressure gauges which will indicate to the attendants and to the chamber occupants the pressure in the chamber;

(*c*) Valves to enable the attendant to control the supply and discharge of compressed air into and from the chamber;

(*d*) Valves and pipes, in connection with the air supply and exhaust, arranged so that the chamber pressure can be controlled from within and without;

(*e*) Effective means of oral intercommunication between the attendant, occupants of the chamber, and the air compressor plant; and

(*f*) An observation port at the entrance to permit observation of the chamber occupants.

(iii) Seating facilities in special decompression chambers shall be so arranged as to permit a normal sitting posture without cramping. Seating space, not less than 18 inches by 24 inches wide, shall be provided per occupant.

(iv) Adequate toilet and washing facilities, in a screened or enclosed recess, shall be provided. Toilet bowls shall have a built-in protector on the rim so that an air space is created when the seat lid is closed.

(v) Fresh and pure drinking water shall be available. This may be accomplished by either piping water into the special decompression chamber and providing drinking fountains, or by providing individual canteens, or by some other sanitary means. Community drinking vessels are prohibited.

(vi) No refuse or discarded material of any kind shall be permitted to accumulate, and the chamber shall be kept clean.

(vii) Unless the special decompression chamber is serving as the man lock to atmospheric pressure, the special decompression chamber shall be situated, where practicable, adjacent to the man lock on the atmospheric pressure side of the bulkhead. A passageway shall be provided, connecting the special chamber with the man lock, to permit employees in the process of decompression to move from the man lock to the special chamber without a reduction in the ambient pressure from that designated for the next stage of decompression. The passageway shall be so arranged as to not interfere with the normal operation of the man lock, nor with the release of the occupants of the special chamber to atmospheric pressure upon the completion of the decompression procedure.

(h) *Compressor plant and air supply.* (1) At all times there shall be a thoroughly experienced, competent, and reliable person on duty at the air control valves as a gauge tender who shall regulate the pressure in the working areas. During tunneling operations, one gauge tender may regulate the pressure in not more than two headings: *Provided*, That the gauge and controls are all in one location. In caisson work, there shall be a gauge tender for each caisson.

(2) The low air compressor plant shall be of sufficient capacity to not only permit the work to be done safely, but shall also provide a margin to meet emergencies and repairs.

(3) Low air compressor units shall have at least two independent and separate sources of power supply and each shall be capable of operating the entire low air plant and its accessory systems.

(4) The capacity, arrangement, and number of compressors shall be sufficient to maintain the necessary pressure without overloading the equipment and to assure maintenance of such pressure in the working chamber during periods of breakdown, repair, or emergency.

(5) Switching from one independent source of power supply to the other shall be done periodically to ensure the workability of the apparatus in an emergency.

(6) Duplicate low-pressure air feedlines and regulating valves shall be provided between the source of air supply and a point beyond the locks with one of the lines extending to within 100 feet of the working face.

(7) All high- and low-pressure air supply lines shall be equipped with check valves.

(8) Low-pressure air shall be regulated automatically. In addition, manually operated valves shall be provided for emergency conditions.

(9) The air intakes for all air compressors shall be located at a place where fumes, exhaust gases, and other air contaminants will be at a minimum.

(10) Gauges indicating the pressure in the working chamber shall be installed in the compressor building, the lock attendant's station, and at the employer's field office.

(i) *Ventilation and air quality.* (1) Exhaust valves and exhaust pipes shall be provided and operated so that the working chamber shall be well ventilated, and there shall be no pockets of dead air. Outlets may be required at intermediate points along the main low-pressure air supply line to the heading to eliminate such pockets of dead air. Ventilating air shall be not less than 30 cubic feet per minute.

(2) The air in the workplace shall be analyzed by the employer not less than once each shift, and records of such tests shall be kept on file at the place where the work is in progress. The test results shall be within the threshold limit values specified in Subpart D of this part, for hazardous gases, and within 10 percent of the lower explosive limit of flammable gases. If these limits are not met, immediate action to correct the situation shall be taken by the employer.

(3) The temperature of all working chambers which are subjected to air pressure shall, by means of after-coolers or other suitable devices, be maintained at a temperature not to exceed 85° F.

(4) Forced ventilation shall be provided during decompression. During the entire decompression period, forced ventilation through chemical or mechanical air purifying devices that will ensure a source of fresh air shall be provided.

(5) Whenever heat-producing machines (moles, shields) are used in compressed air tunnel operations, a positive means of removing the heat build-up at the heading shall be provided.

(j) *Electricity.* (1) All lighting in compressed-air chambers shall be by electricity exclusively, and two independent electric-lighting systems with independent sources of supply shall be used. The emergency source shall be arranged to become automatically operative in the event of failure of the regularly used source.

(2) The minimum intensity of light on any walkway, ladder, stairway, or working level shall be not less than 10 foot-candles, and in all workplaces the

lighting shall at all times be such as to enable employees to see clearly.

(3) All electrical equipment, and wiring for light and power circuits, shall comply with requirements of the National Electrical Code, ANSI C1–1971 (Rev. of 1968) for use in damp, hazardous, high temperature, and compressed air environments.

(4) External parts of lighting fixtures and all other electrical equipment, when within 8 feet of the floor, shall be constructed of noncombustible, nonabsorptive, insulating materials, except that metal may be used if it is effectively grounded.

(5) Portable lamps shall be equipped with noncombustible, nonabsorptive, insulating sockets, approved handles, basket guards, and approved cords.

(6) The use of worn or defective portable and pendant conductors is prohibited.

(k) *Sanitation.* (1) Sanitary, heated, lighted, and ventilated dressing rooms and drying rooms shall be provided for all employees engaged in compressed air work. Such rooms shall contain suitable benches and lockers. Bathing accommodations (showers at the ratio of one to 10 employees per shift), equipped with running hot and cold water, and suitable and adequate toilet accommodations, shall be provided. One toilet for each 15 employees, or fractional part thereof, shall be provided.

(2) When the toilet bowl is shut by a cover, there should be an air space so that the bowl or bucket does not implode when pressure is increased.

(3) All parts of caissons and other working compartments shall be kept in a sanitary condition.

(l) *Fire prevention and protection.* (1) Firefighting equipment shall be available at all times and shall be maintained in working condition.

(2) While welding or flame-cutting is being done in compressed air, a firewatch with a fire hose or approved extinguisher shall stand by until such operation is completed.

(3) Shafts and caissons containing flammable material of any kind, either above or below ground, shall be provided with a waterline and a fire hose connected thereto, so arranged that all points of the shaft or caisson are within reach of the hose stream.

(4) Fire hose shall be at least 1½ inches in nominal diameter; the water pressure shall at all times be adequate for efficient operation of the type of nozzle used; and the water supply shall be such as to ensure an uninterrupted flow. Fire hose, when not in use, shall be located or guarded to prevent injury thereto.

(5) The power house, compressor house, and all buildings housing ventilating equipment, shall be provided with at least one hose connection in the waterline, with a fire hose connected thereto. A fire hose shall be maintained within reach of structures of wood over or near shafts.

(6) Tunnels shall be provided with a 2-inch minimum diameter waterline extending into the working chamber and to within 100 feet of the working face. Such line shall have hose outlets with 100 feet of fire hose attached and maintained as follows: One at the working face; one immediately inside of the bulkhead of the working chamber; and one immediately outside such bulkhead. In addition, hose outlets shall be provided at 200-foot intervals throughout the length of the tunnel, and 100 feet of fire hose shall be attached to the outlet nearest to any location where flammable material is being kept or stored or where any flame is being used.

(7) In addition to fire hose protection required by this subpart, on every floor of every building not under compressed air, but used in connection with the compressed air work, there shall be provided at least one approved fire extinguisher of the proper type for the hazard involved. At least two approved fire extinguishers shall be provided in the working chamber as follows: One at the working face and one immediately inside the bulkhead (pressure side). Extinguishers in the working chamber shall use water as the primary extinguishing agent and shall not use any extinguishing agent which could be harmful to the employees in the working chamber. The fire extinguisher shall be protected from damage.

(8) Highly combustible materials shall not be used or stored in the working chamber. Wood, paper, and similar combustible material shall not be used in the working chamber in quantities which could cause a fire hazard. The compressor building shall be constructed of noncombustible material.

(9) Man locks shall be equipped with a manual type fire extinguisher system that can be activated inside the man lock and also by the outside lock attendant. In addition, a fire hose and portable fire extinguisher shall be provided inside and outside the man lock. The portable fire extinguisher shall be the dry chemical type.

(10) Equipment, fixtures, and furniture in man locks and special decompression chambers shall be constructed of noncombustible materials. Bedding, etc., shall be chemically treated so as to be fire resistant.

(11) Head frames shall be constructed of structural steel or open frame-work fireproofed timber. Head houses and other temporary surface buildings or structures within 100 feet of the shaft, caisson, or tunnel opening shall be built of fire-resistant materials.

(12) No oil, gasoline, or other combustible material shall be stored within 100 feet of any shaft, caisson, or tunnel opening, except that oils may be stored in suitable tanks in isolated fireproof buildings, provided such buildings are not less than 50 feet from any shaft, caisson, or tunnel opening, or any building directly connected thereto.

(13) Positive means shall be taken to prevent leaking flammable liquids from flowing into the areas specifically mentioned in the preceding paragraph.

(14) All explosives used in connection with compressed air work shall be selected, stored, transported, and used as specified in Subpart U of this part.

(m) *Bulkheads and safety screens.* (1) Intermediate bulkheads with locks, or intermediate safety screens or both, are required where there is the danger of rapid flooding.

(2) In tunnels 16 feet or more in diameter, hanging walkways shall be provided from the face to the man lock as high in the tunnel as practicable, with at least 6 feet of head room. Walkways shall be constructed of noncombustible material. Standard railings shall be securely installed throughout the length of all walkways on open sides in accordance with Subpart M of this part. Where walkways are ramped under safety screens, the walkway surface shall be skidproofed by cleats or by equivalent means.

(3) Bulkheads used to contain compressed air shall be tested, where practicable, to prove their ability to resist the highest air pressure which may be expected to be used.

§ 1926.804 Definitions applicable to this subpart.

(a) "Bulkhead"—An airtight structure separating the working chamber from free air or from another chamber under a lesser pressure than the working pressure.

(b) "Caisson"—A wood, steel, concrete or reinforced concrete, air- and watertight chamber in which it is possible for men to work under air pressure greater than atmospheric pressure to excavate material below water level.

(c) "Decanting"—A method used for decompressing under emergency circumstances. In this procedure, the employees are brought to atmospheric pressure with a very high gas tension in the tissues and then immediately recompressed in a second and separate chamber or lock.

(d) "Emergency locks"—A lock designed to hold and permit the quick passage of an entire shift of employees.

(e) "High air"—Air pressure used to supply power to pneumatic tools and devices.

(f) "Low air"—Air supplied to pressurize working chambers and locks.

(g) "Man lock"—A chamber through which men pass from one air pressure environment into another.

(h) "Materials lock"—A chamber through which materials and equipment pass from one air pressure environment into another.

(i) "Medical lock"—A special chamber in which employees are treated for decompression illness. It may also be used in preemployment physical examinations to determine the adaptability of the prospective employee to changes in pressure.

(j) "Normal condition"—One during which exposure to compressed air is limited to a single continuous working period followed by a single decompression in any given 24-hour period; the total time of exposure to compressed air during the single continuous working period is not interrupted by exposure to normal atmospheric pressure, and a second exposure to compressed air does not occur until at least 12 consecutive hours of exposure to normal atmospheric pressure has elapsed since the employee has been under pressure.

(k) "Pressure"—A force acting on a unit area. Usually shown as pounds per square inch. (p.s.i.)

(l) "Absolute pressure" (p.s.i.a.)—The sum of the atmospheric pressure and gauge pressure (p.s.i.g.).

(m) "Atmospheric pressure"—The pressure of air at sea level, usually 14.7 p.s.i.a. (1 atmosphere), or 0 p.s.i.g.

(n) "Gauge pressure" (p.s.i.g.)—Pressure measured by a gauge and indicating the pressure exceeding atmospheric.

(o) "Safety screen"—An air- and water-tight diaphragm placed across the upper part of a compressed air tunnel between the face and bulkhead, in order to prevent flooding the crown of the tunnel between the safety screen and the bulkhead, thus providing a safe means of refuge and exit from a flooding or flooded tunnel.

(p) "Special decompression chamber"—A chamber to provide greater comfort for employees when the total decompression time exceeds 75 minutes.

(q) "Working chamber"—The space or compartment under air pressure in which the work is being done.

APPENDIX A

DECOMPRESSION TABLES

1. *Explanation.* The decompression tables are computed for working chamber pressures from 0 to 14 pounds, and from 14 to 50 pounds per square inch gauge inclusive by 2-pound increments and for exposure times for each pressure extending from one-half to over 8 hours inclusive. Decompressions will be conducted by two or more stages with a maximum of four stages, the latter for a working chamber pressure of 40 pounds per square inch gauge or over.

Stage 1 consists of a reduction in ambient pressure ranging from 10 to a maximum of 16 pounds per square inch, but in no instance will the pressure be reduced below 4 pounds at the end of stage 1. This reduction in pressure in stage 1 will always take place at a rate not greater than 5 pounds per minute.

Further reduction in pressure will take place during stage 2 and subsequent stages as required at a slower rate, but in no event at a rate greater than 1 pound per minute.

Decompression Table No. 1 indicates in the body of the table the total decompression time in minutes for various combinations of working chamber pressure and exposure time.

Decompression Table No. 2 indicates for the same various combinations of working chamber pressure and exposure time the following:

a. The number of stages required;

b. The reduction in pressure and the terminal pressure for each required stage;

c. The time in minutes through which the reduction in pressure is accomplished for each required stage;

d. The pressure reduction rate in minutes per pound for each required stage;

IMPORTANT NOTE: The Pressure Reduction in Each Stage is Accomplished at a Uniform Rate. Do Not Interpolate Between Values Shown on the Tables. Use the Next Higher Value of Working Chamber Pressure or Exposure Time Should the Actual Working Chamber Pressure or the Actual Exposure Time, Respectively, Fall Between Those for Which Calculated Values Are Shown in the Body of the Tables.

Examples:

Example No. 1:	
4 hours working period at 20 pounds gauge.	
Decompression Table No. 1:	
20 pounds for 4 hours, total decompression time.	43 minutes.
Decompression Table No. 2:	
Stage 1: Reduce pressure from 20 pounds to 4 pounds at the uniform rate of 5 pounds per minute.	
Elapsed time stage 1: $\frac{16}{5}$	3 minutes.
Stage 2 (final stage): Reduce pressure at a uniform rate from 4 pounds to 0-pound gage over a period of 40 minutes.	
Rate—0.10 pound per minute or 10 minutes per pound.	
Stage 2 (final) elapsed time.	40 minutes.
Total time	43 minutes.
Example No. 2:	
5-hour working period at 24 pounds gage.	
Decompression Table No. 1:	
24 pounds for 5 hours, total decompression time.	117 minutes.
Decompression Table No. 2:	
Stage 1: Reduce pressure from 24 pounds to 8 pounds at the uniform rate of 5 pounds per minute.	
Elapsed time stage 1: $\frac{16}{5}$	3 minutes.
Stage 2: Reduce pressure at a uniform rate from 8 pounds to 4 pounds over a period of 4 minutes. Rate, 1 pound per minute elapsed time, stage 2	4 minutes.
Transfer men to special decompression chamber maintaining the 4-pound pressure during the transfer operation.	
Stage 3 (final stage): In the special decompression chamber, reduce the pressure at a uniform rate from 4 pounds to 0-pound gage over a period of 110 minutes. Rate, 0.037 pound per minute or 27.5 minutes per pound. Stage 3 (final) elapsed time	110 minutes.
Total time	117 minutes.

DECOMPRESSION TABLE NO. 1—TOTAL DECOMPRESSION TIME

Work pressure p.s.i.g.	Working period hours										
	½	1	1½	2	3	4	5	6	7	8	Over 8
0–12	3	3	3	3	3	3	3	3	3	3	3
14	6	6	6	6	6	6	6	6	16	16	33
16	7	7	7	7	7	7	17	33	48	48	62
18	7	7	7	8	11	17	48	63	63	73	87
20	7	7	8	15	15	43	63	73	83	103	113
22	9	9	16	24	38	68	93	103	113	128	133
24	11	12	23	27	52	92	117	122	127	137	151
26	13	14	29	34	69	104	126	141	142	142	163
28	15	23	31	41	98	127	143	153	153	165	183
30	17	28	38	62	105	143	165	168	178	188	204
32	19	35	43	85	126	163	178	193	203	213	226
34	21	39	58	98	151	178	195	218	223	233	248
36	24	44	63	113	170	198	223	233	243	253	273
38	28	49	73	128	178	203	223	238	253	263	278
40	31	49	84	143	183	213	233	248	258	278	288
42	37	56	102	144	189	215	245	260	263	268	293
44	43	64	118	154	199	234	254	264	269	269	293
46	44	74	139	171	214	244	269	274	289	299	318
48	51	89	144	189	229	269	299	309	319	319	
50	58	94	164	209	249	279	309	329			

DECOMPRESSION TABLE NO. 2

(Do not interpolate, use next higher value for conditions not computed.)

Working chamber pressure P.s.i.g.	Working period Hours	Decompression data					
		Stage No.	Pressure reduction P.s.i.g.		Time in stage Minutes	Pressure reduction rate Min/Pound	Total time decompress Minutes
			From	To			
14	½	1	14	4	2	0.20	6
		2	4	0	4	1.00	6
	1	1	14	4	2	0.20	6
		2	4	0	4	1.00	6
	1½	1	14	4	2	0.20	6
		2	4	0	4	1.00	6
	2	1	14	4	2	0.20	6
		2	4	0	4	1.00	6
	3	1	14	4	2	0.20	6
		2	4	0	4	1.00	6
	4	1	14	0	2	0.20	6
		2	4	0	4	1.00	6
	5	1	14	4	2	0.20	6
		2	4	0	4	1.00	6
	6	1	14	4	2	0.20	
		2	4	0	4	1.00	6
	7	1	14	4	2	0.20	
		2	4	0	14	3.50	16
	8	1	14	4	2	0.20	
		2	4	0	14	3.50	16
	Over 8	1	14	4	2	0.20	
		2	4	0	30	7.50	32
16	½	1	16	4	3	0.20	
		2	4	0	4	1.00	7
	1	1	16	4	3	0.20	7
		2	4	0	4	1.00	7
	1½	1	16	4	3	0.20	
		2	4	0	4	1.00	7
	2	1	16	4	3	0.20	
		2	4	0	4	1.00	7
	3	1	16	4	3	0.20	
		2	4	0	4	1.00	7
	4	1	14	4	3	0.20	
		2	4	0	4	1.00	7
	5	1	14	4	3	0.20	7
		2	4	0	4	3.50	17
	6	1	14	4	3	0.20	
		2	4	0	30	7.50	33
	7	1	14	4	3	0.20	
		2	4	0	45	11.25	48
	8	1	14	4	3	0.20	
		2	4	0	45	11.25	48
	Over 8	1	14	4	3	0.20	
		2	4	0	60	15.00	63
18	½	1	18	4	3	0.20	
		2	4	0	4	1.00	7

Working chamber pressure P.s.i.g.	Working period Hours	Decompression data					
		Stage No.	Pressure reduction P.s.i.g.		Time in stage Minutes	Pressure reduction rate Min/Pound	Total time decompress Minutes
			From	To			
18	1	1	18	4	3	0.20	
		2	4	0	4	1.00	7
	1½	1	18	4	3	0.20	
		2	4	0	4	1.00	7
	2	1	18	4	3	0.20	
		2	4	0	5	1.25	8
	3	1	18	4	3	0.20	
		2	4	0	8	2.00	11
	4	1	18	4	3	0.20	
		2	4	0	14	3.50	17
	5	1	18	4	3	0.20	
		2	4	0	45	11.25	48
	6	1	18	4	3	0.20	
		2	4	0	60	15.00	63
	7	1	18	4	3	0.20	
		2	4	0	60	15.00	63
	8	1	18	4	3	0.20	
		2	4	0	70	17.50	73
	Over 8	1	18	4	3	0.20	
		2	4	0	84	21.00	87
20	½	1	20	4	3	0.20	
		2	4	0	4	1.00	7
	1	1	20	4	3	0.20	
		2	4	0	4	1.00	7
	1½	1	20	4	3	0.20	
		2	4	0	5	1.25	8
	2	1	20	4	3	0.20	
		2	4	0	12	3.00	15
	3	1	20	4	3	0.20	
		2	4	0	12	3.00	15
	4	1	20	4	3	0.20	
		2	4	0	40	10.00	43
	5	1	20	4	3	0.20	
		2	4	0	60	15.00	63
	6	1	20	4	3	0.20	
		2	4	0	70	17.50	73
	7	1	20	4	3	0.20	
		2	4	0	80	20.00	83
	8	1	20	4	3	0.20	
		2	4	0	100	25.00	103
20	Over 8	1	20	4	3	0.20	
		2	4	0	110	27.50	113
22	½	1	22	6	3	0.20	
		2	6	0	6	1.00	9
	1	1	22	6	3	0.20	
		2	6	0	6	1.00	9
	1½	1	22	6	3	0.20	
		2	6	0	13	2.20	16
	2	1	22	6	3	0.20	
		2	6	0	21	3.50	24
	3	1	22	6	3	0.20	
		2	6	0	35	5.85	38
	4	1	22	6	3	0.20	
		2	6	0	65	10.83	68
	5	1	22	6	3	0.20	
		2	6	0	90	15.00	93
	6	1	22	6	3	0.20	
		2	6	0	100	16.67	103
	7	1	22	6	3	0.20	
		2	6	0	110	18.35	113
	8	1	22	6	3	0.20	
		2	6	0	125	20.80	128
	Over 8	1	22	6	3	0.20	
		2	6	0	130	21.70	
24	½	1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	4	1.00	11
	1	1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	5	1.25	12
	1½	1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	16	4.00	23
	2	1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	20	5.00	27
	3	1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	45	11.25	52

Working chamber pressure P.s.i.g.	Working period Hours	Decompression data					
		Stage No.	Pressure reduction P.s.i.g.		Time in stage Minutes	Pressure reduction rate Min/Pound	Total time decompress Minutes
			From	To			
	4	1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	85	21.25	92
	5	1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	110	27.50	117
	6	1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	115	28.80	122
	7	1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	120	30.00	127
	8	1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	130	32.50	137
	Over 8	1	24	8	3	0.20	
		2	8	4	8	2.00	
		3	4	0	140	35.00	151
26	½	1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	4	1.00	13
	1	1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	5	1.25	14
	1½	1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	20	5.00	29
	2	1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	25	6.25	34
	3	1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	60	15.00	69
	4	1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	95	23.75	104
	5	1	26	10	3	0.20	
		2	10	4	8	1.33	
		3	4	0	115	28.80	126
	6	1	26	10	3	0.20	
		2	10	4	8	1.33	
		3	4	0	130	32.50	141
	7	1	26	10	3	2.20	
		2	10	4	9	1.50	
		3	4	0	130	32.50	142
	8	1	26	10	3	0.20	
		2	10	4	9	1.50	
		3	4	0	130	32.50	142
	Over 8	1	26	10	3	0.20	
		2	10	4	30	5.00	
		3	4	0	130	32.50	163
28	½	1	28	12	3	0.20	
		2	12	4	8	1.00	
		3	4	0	4	1.00	15
	1	1	28	12	3	0.20	
		2	12	4	8	1.00	
		3	4	0	12	3.00	23
	1½	1	28	12	3	0.20	
		2	12	4	8	1.00	
		3	4	0	20	5.00	31
	2	1	28	12	3	0.20	
		2	12	4	8	1.00	
		3	4	0	30	7.50	41
	3	1	28	12	3	0.20	
		2	12	4	10	1.25	
		3	4	0	85	21.20	98
	4	1	28	12	3	0.20	
		2	12	4	14	1.75	
		3	4	0	110	27.50	127
	5	1	28	12	3	0.20	
		2	12	4	20	2.50	
		3	4	0	120	30.00	143
	6	1	28	12	3	0.20	
		2	12	4	20	2.50	
		3	4	0	130	32.50	153
	7	1	28	12	3	0.20	
		2	12	4	20	2.50	
		3	4	0	120	32.50	153

Working chamber pressure P.s.i.g.	Working period Hours	Decompression data					
		Stage No.	Pressure reduction P.s.i.g.		Time in stage Minutes	Pressure reduction rate Min/Pound	Total time decompress Minutes
			From	To			
28	8	1	28	12	3	0.20	
		2	12	4	32	4.00	
		3	4	0	130	32.50	165
	Over 8	1	28	12	3	0.20	
		2	12	4	50	6.25	
		3	4	0	130	32.50	183
30	½	1	30	14	3	0.20	
		2	14	4	10	1.00	
		3	4	0	4	1.00	17
	1	1	30	14	3	0.20	
		2	14	4	10	1.00	
		3	4	0	15	3.75	28
	1½	1	30	14	3	0.20	
		2	14	4	10	1.00	
		3	4	0	25	6.25	38
	2	1	30	14	3	0.20	
		2	14	4	14	1.40	
		3	4	0	45	11.25	62
	3	1	30	14	3	0.20	
		2	14	4	17	1.70	
		3	4	0	85	21.20	105
	4	1	30	14	3	0.20	
		2	14	4	30	3.00	
		3	4	0	110	27.50	143
	5	1	30	14	3	0.20	
		2	14	4	35	3.50	
		3	4	0	130	32.50	165
	6	1	30	14	3	0.20	
		2	14	4	35	3.50	
		3	4	0	130	32.50	168
	7	1	30	14	3	0.20	
		2	14	4	45	4.50	
		3	4	0	130	32.50	178
	8	1	30	14	3	0.20	
		2	14	4	55	5.50	
		3	4	0	130	32.50	188
	Over 8	1	30	14	3	0.20	
		2	14	4	71	7.10	
		3	4	0	130	32.50	204
32	½	1	32	16	3	0.20	
		2	16	4	12	1.00	
		3	4	0	4	1.00	19
	1	1	32	16	3	0.20	
		2	16	4	12	1.00	
		3	4	0	20	5.00	35
	1½	1	32	16	3	0.20	
		2	16	4	15	1.25	
		3	4	0	25	6.25	43
	2	1	32	16	3	0.20	
		2	16	4	22	1.83	
		3	4	0	60	15.00	85
	3	1	32	16	3	0.20	
		2	16	4	28	2.33	
		3	4	0	95	23.75	126
	4	1	32	16	3	0.20	
		2	16	4	40	3.33	
		3	4	0	120	30.00	163
	5	1	32	16	3	0.20	
		2	16	4	45	3.75	
		3	4	0	130	32.50	178
	6	1	32	16	3	0.20	
		2	16	4	60	5.00	
		3	4	0	130	32.50	193
	7	1	32	16	3	0.20	
		2	16	4	70	5.83	
		3	4	0	130	32.50	203
	8	1	32	16	3	0.20	
		2	16	4	80	6.67	
		3	4	0	130	32.50	213
	Over 8	1	32	16	3	0.20	
		2	16	4	93	7.75	
		3	4	0	130	32.50	226
34	½	1	34	18	3	0.20	
		2	18	4	14	1.00	
		3	4	0	4	1.00	21
	1	1	34	18	3	0.20	
		2	18	4	14	1.00	
		3	4	0	22	5.50	39

Working chamber pressure P.s.i.g.	Working period Hours	Decompression data					
		Stage No.	Pressure reduction P.s.i.g.		Time in stage Minutes	Pressure reduction rate Min/Pound	Total time decompress Minutes
			From	To			
34	1¼	1	34	18	3	0.20	
		2	18	4	25	1.80	
		3	4	0	30	7.50	58
	2	1	34	18	3	0.20	
		2	18	4	35	2.50	
		3	4	0	60	15.00	98
	3	1	34	18	3	0.20	
		2	18	4	43	3.10	
		3	4	0	105	26.25	151
	4	1	34	18	3	0.20	
		2	18	4	55	3.93	
		3	4	0	120	30.00	178
	5	1	34	18	3	0.20	
		2	18	4	62	4.43	
		3	4	0	130	32.50	195
	6	1	34	18	3	0.20	
		2	18	4	85	6.07	
		3	4	0	130	32.50	218
	7	1	34	18	3	0.20	
		2	18	4	90	6.43	
		3	4	0	130	32.50	223
	8	1	34	18	3	0.20	
		2	18	4	100	7.15	
		3	4	0	130	32.50	233
	Over 8	1	34	18	3	0.20	
		2	18	4	115	8.23	
		3	4	0	130	32.50	248
36	½	1	36	20	3	0.20	
		2	20	4	16	1.00	
		3	4	0	5	1.25	24
	1	1	36	20	3	0.20	
		2	20	4	16	1.00	
		3	4	0	25	6.25	44
	1½	1	36	20	3	0.20	
		2	20	4	30	1.88	
		3	4	0	30	7.50	63
	2	1	36	20	3	0.20	
		2	20	4	40	2.50	
		3	4	0	70	17.50	113
	3	1	36	20	3	0.20	
		2	20	4	52	3.25	
		3	4	0	115	28.75	170
	4	1	36	20	3	0.20	
		2	20	4	65	4.06	
		3	4	0	130	32.50	198
	5	1	36	20	3	0.20	
		2	20	4	90	5.63	
		3	4	0	130	32.50	223
	6	1	36	20	3	0.20	
		2	20	4	100	6.25	
		3	4	0	130	32.50	233
	7	1	36	20	3	0.20	
		2	20	4	110	6.88	
		3	4	0	130	32.50	243
	8	1	36	20	3	0.20	
		2	20	4	120	7.50	
		3	4	0	130	32.50	253
	Over 8	1	36	20	3	0.20	
		2	20	4	140	8.75	
		3	4	0	130	32.50	273
38	½	1	38	22	3	0.20	
		2	22	6	16	1.00	
		3	6	0	9	1.50	28
	1	1	38	22	3	0.20	
		2	22	6	16	1.00	
		3	6	0	30	5.00	49
	1½	1	38	22	3	0.20	
		2	22	6	20	1.25	
		3	6	0	50	8.34	73
	2	1	38	22	3	0.20	
		2	22	6	30	1.88	
		3	6	0	95	15.83	128
	3	1	38	22	3	0.20	
		2	22	6	35	2.19	
		3	6	0	140	23.35	178
	4	1	38	22	3	0.20	
		2	22	6	50	3.12	
		3	6	0	150	25.00	203

Working chamber pressure P.s.i.g.	Working period Hours	Decompression data					
		Stage No.	Pressure reduction P.s.i.g.		Time in stage Minutes	Pressure reduction rate Min/Pound	Total time decompress Minutes
			From	To			
38	5	1	38	22	3	0.20	
		2	22	6	55	3.44	
		3	6	0	165	27.50	223
	6	1	38	22	3	0.20	
		2	22	6	70	4.38	
		3	6	0	165	27.50	238
	7	1	38	22	3	0.20	
		2	22	6	85	5.32	
		3	6	0	165	27.50	253
	8	1	38	22	3	0.20	
		2	22	6	95	5.93	
		3	6	0	165	27.50	263
	Over 8	1	38	22	3	0.20	
		2	22	6	110	6.88	
		3	6	0	165	27.50	278
40	½	1	40	24	3	0.20	
		2	24	8	16	1.00	
		3	8	4	4	1.00	
		4	4	0	8	2.00	31
	1	1	40	24	3	0.20	
		2	24	8	16	1.00	
		3	8	4	5	1.25	
		4	4	0	25	6.25	49
	1½	1	40	24	3	0.20	
		2	24	8	16	1.00	
		3	8	4	20	5.00	
		4	4	0	45	11.25	84
	2	2	40	24	3	0.20	
		1	24	8	25	1.56	
		3	8	4	20	5.00	
		4	4	0	95	23.75	143
	3	1	40	24	3	0.20	
		2	24	8	30	1.88	
		3	8	4	30	7.50	
		4	4	0	120	30.00	183
	4	1	40	24	3	0.20	
		2	24	8	45	2.81	
		3	8	4	35	8.75	
		4	4	0	130	32.50	213
	5	1	40	24	3	0.20	
		2	24	8	47	2.94	
		3	8	4	53	13.25	
		4	4	0	130	32.50	233
	6	1	40	24	3	0.20	
		2	24	8	55	3.44	
		3	8	4	60	15.00	
		4	4	0	130	32.50	248
	7	1	40	24	3	0.20	
		2	24	8	65	4.06	
		3	8	4	60	15.00	
		4	4	0	130	32.50	258
	8	1	40	24	3	0.20	
		2	24	8	75	4.70	
		3	8	4	60	15.00	
		4	4	0	130	32.50	268
	Over 8	1	40	24	3	0.20	
		2	24	8	95	5.93	
		3	8	4	60	15.00	
		4	4	0	130	32.50	288
42	½	1	42	26	3	0.20	
		2	26	10	16	1.00	
		3	10	4	6	1.00	
		4	4	0	12	3.00	37
	1	1	42	26	3	0.20	
		2	26	10	16	1.00	
		3	10	4	12	2.00	
		4	4	0	25	6.25	56
	1½	1	42	26	3	0.20	
		2	26	10	16	1.00	
		3	10	4	23	3.83	
		4	4	0	60	15.00	102
	2	1	42	26	3	0.20	
		2	26	10	16	1.00	
		3	10	4	30	5.00	
		4	4	0	95	23.75	144
	3	1	42	26	3	0.20	
		2	26	10	16	1.00	
		3	10	4	50	8.34	
		4	4	0	120	30.00	189

Working chamber pressure P.s.i.g.	Working period Hours	Decompression data					
		Stage No.	Pressure reduction P.s.i.g.		Time in stage Minutes	Pressure reduction rate Min/Pound	Total time decompress Minutes
			From	To			
42	4	1	42	26	3	0.20	
		2	26	10	17	1.06	
		3	10	4	65	10.83	
		4	4	0	130	32.50	215
	5	1	42	26	3	0.20	
		2	26	10	27	1.69	
		3	10	4	85	14.18	
		4	4	0	130	32.50	245
	6	1	42	26	3	0.20	
		2	26	10	27	1.69	
		3	10	4	100	16.67	
		4	4	0	130	32.50	260
	7	1	42	26	3	0.20	
		2	26	10	30	1.88	
		3	10	4	100	16.67	
		4	4	0	130	32.50	263
	8	1	42	26	3	0.20	
		2	26	10	35	2.19	
		3	10	4	100	16.67	
		4	4	0	130	32.50	268
	Over 8	1	42	26	3	0.20	
		2	26	10	60	3.75	
		3	10	4	100	16.67	
		4	4	0	130	32.50	293
44	½	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	8	1.00	
		4	4	0	16	4.00	43
	1	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	20	2.50	
		4	4	0	25	6.25	64
	1½	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	27	3.38	
		4	4	0	72	18.00	118
	2	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	40	5.00	
		4	4	0	95	23.75	154
	3	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	60	7.50	
		4	4	0	120	30.00	199
	4	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	85	10.62	
		4	4	0	130	32.50	234
	5	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	105	13.13	
		4	4	0	130	32.50	254
	6	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	115	14.38	
		4	4	0	130	32.50	264
	7	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	120	15.00	
		4	4	0	130	32.50	269
	8	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	120	15.00	
		4	4	0	130	32.50	269
	Over 8	1	44	28	3	0.20	
		2	28	12	40	2.50	
		3	12	4	120	15.00	
		4	4	0	130	32.50	293
46	½	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	10	1.00	
		4	4	0	15	3.75	44
	1	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	25	2.50	
		4	4	0	30	7.50	74
	1½	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	35	3.50	
		4	4	0	85	21.20	139

Working chamber pressure P.s.i.g.	Working period Hours	Decompression data					
		Stage No.	Pressure reduction P.s.i.g.		Time in stage Minutes	Pressure reduction rate Min/Pound	Total time decompress Minutes
			From	To			
46	2	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	47	4.70	
		4	4	0	105	26.25	171
	3	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	65	6.50	
		4	4	0	130	32.50	214
	4	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	95	9.50	
		4	4	0	130	32.50	244
	5	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	120	12.00	
		4	4	0	130	32.50	269
	6	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	125	12.50	
		4	4	0	130	32.50	274
	7	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	140	14.00	
		4	4	0	130	32.50	289
	8	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	150	15.00	
		4	4	0	130	32.50	299
	Over 8	1	46	30	3	0.20	
		2	30	14	25	1.56	
		3	14	4	160	16.00	
		4	4	0	130	32.50	318
48	½	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	12	1.00	
		4	4	0	20	5.00	51
	1	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	35	2.92	
		4	4	0	35	8.75	89
	1½	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	45	3.75	
		4	4	0	80	20.00	144
	2	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	60	5.00	
		4	4	0	110	27.50	189
	3	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	90	7.50	
		4	4	0	120	30.00	229
	4	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	120	10.00	
		4	4	0	130	32.50	269
	5	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	140	11.67	
		4	4	0	130	32.50	299
	6	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	160	13.33	
		4	4	0	130	32.50	309
	7	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	170	14.17	
		4	4	0	130	32.50	319
	8	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	170	14.17	
		4	4	0	130	32.50	319
50	½	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	14	1.00	
		4	4	0	25	6.25	58
	1	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	40	2.86	
		4	4	0	35	8.75	94

Working chamber pressure P.s.i.g.	Working period Hours	Decompression data					
		Stage No.	Pressure reduction P.s.i.g. From	To	Time in stage Minutes	Pressure reduction rate Min/Pound	Total time decompress Minutes
50	1½	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	55	3.93	
		4	4	0	90	22.50	164
	2	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	70	5.00	
		4	4	0	120	30.00	209
	3	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	100	7.15	
		4	4	0	130	32.50	249
	4	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	130	8.58	
		4	4	0	130	32.50	279
	5	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	160	11.42	
		4	4	0	130	32.50	309
	6	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	180	12.85	
		4	4	0	130	32.50	329

Subpart T—Demolition

§ 1926.850 Preparatory operations.

(a) Prior to permitting employees to start demolition operations, an engineering survey shall be made, by a competent person, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The employer shall have in writing evidence that such a survey has been performed.

(b) When employees are required to work within a structure to be demolished which has been damaged by fire, flood, explosion, or other cause, the walls or floor shall be shored or braced.

(c) All electric, gas, water, steam, sewer, and other service lines shall be shut off, capped, or otherwise controlled, outside the building line before demolition work is started. In each case, any utility company which is involved shall be notified in advance.

(d) If it is necessary to maintain any power, water or other utilities during demolition, such lines shall be temporarily relocated, as necessary, and protected.

(e) It shall also be determined if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. When the presence of any such substances is apparent or suspected, testing and purging shall be performed and the hazard eliminated before demolition is started.

(f) Where a hazard exists from fragmentation of glass, such hazards shall be removed.

(g) Where a hazard exists to employees falling through wall openings, the opening shall be protected to a height of approximately 42 inches.

(h) When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above. Signs, warning of the hazard of falling materials, shall be posted at each level. Removal shall not be permitted in this lower area until debris handling ceases above.

(i) All floor openings, not used as material drops, shall be covered over with material substantial enough to support the weight of any load which may be imposed. Such material shall be properly secured to prevent its accidental movement.

(j) Except for the cutting of holes in floors for chutes, holes through which to drop materials, preparation of storage space, and similar necessary preparatory work, the demolition of exterior walls and floor construction shall begin at the top of the structure and proceed downward. Each story of exterior wall and floor construction shall be removed and dropped into the storage space before commencing the removal of exterior walls and floors in the story next below.

(k) Employee entrances to multistory structures being demolished shall be completely protected by sidewalk sheds or canopies, or both, providing protection from the face of the building for a minimum of 8 feet. All such canopies shall be at least 2 feet wider than the building entrances or openings (1 foot wider on each side thereof), and shall be capable of sustaining a load of 150 pounds per square foot.

§ 1926.851 Stairs, passageways, and ladders.

(a) Only those stairways, passageways, and ladders, designated as means of access to the structure of a building, shall be used. Other access ways shall be entirely closed at all times.

(b) All stairs, passageways, ladders and incidental equipment thereto, which are covered by this section, shall be periodically inspected and maintained in a clean safe condition.

(c) In a multistory building, when a stairwell is being used, it shall be properly illuminated by either natural or artificial means, and completely and substantially covered over at a point not less than two floors below the floor on which work is being performed, and access to the floor where the work is in progress shall be through a properly lighted, protected, and separate passageway.

§ 1926.852 Chutes.

(a) No material shall be dropped to any point lying outside the exterior walls of the structure unless the area is effectively protected.

(b) All materials chutes, or sections thereof, at an angle of more than 45° from the horizontal, shall be entirely enclosed, except for openings equipped with closures at or about floor level for the insertion of materials. The openings shall not exceed 48 inches in height measured along the wall of the chute. At all stories below the top floor, such openings shall be kept closed when not in use.

(c) A substantial gate shall be installed in each chute at or near the discharge end. A competent employee shall be assigned to control the operation of the gate, and the backing and loading of trucks.

(d) When operations are not in progress, the area surrounding the discharge end of a chute shall be securely closed off.

(e) Any chute opening, into which workmen dump debris, shall be protected by a substantial guardrail approximately 42 inches above the floor or other surface on which the men stand to dump the material. Any space between the chute and the edge of openings in the floors through which it passes shall be solidly covered over.

(f) Where the material is dumped from mechanical equipment or wheelbarrows, a securely attached toeboard or bumper, not less than 4 inches thick and 6 inches high, shall be provided at each chute opening.

(g) Chutes shall be designed and constructed of such strength as to eliminate failure due to impact of materials or debris loaded therein.

§ 1926.853 Removal of materials through floor openings.

Any openings cut in a floor for the disposal of materials shall be no larger in size than 25 percent of the aggregate of the total floor area, unless the lateral supports of the removed flooring remain in place. Floors weakened or otherwise made unsafe by demolition operations shall be shored to carry safely the intended imposed load from demolition operations.

§ 1926.854 Removal of walls, masonry sections, and chimneys.

(a) Masonry walls, or other sections of masonry, shall not be permitted to fall upon the floors of the building in such masses as to exceed the safe carrying capacities of the floors.

(b) No wall section, which is more than one story in height, shall be permitted to stand alone without lateral bracing, unless such wall was originally designed and constructed to stand without such lateral support, and is in a con-

dition safe enough to be self-supporting. All walls shall be left in a stable condition at the end of each shift.

(c) Employees shall not be permitted to work on the top of a wall when weather conditions constitute a hazard.

(d) Structural or load-supporting members on any floor shall not be cut or removed until all stories above such a floor have been demolished and removed. This provision shall not prohibit the cutting of floor beams for the disposal of materials or for the installation of equipment, provided that the requirements of §§ 1926.853 and 1926.855 are met.

(e) Floor openings within 10 feet of any wall being demolished shall be planked solid, except when employees are kept out of the area below.

(f) In buildings of "skeleton-steel" construction, the steel framing may be left in place during the demolition of masonry. Where this is done, all steel beams, girders, and similar structural supports shall be cleared of all loose material as the masonry demolition progresses downward.

(g) Walkways or ladders shall be provided to enable employees to safely reach or leave any scaffold or wall.

(h) Walls, which serve as retaining walls to support earth or adjoining structures, shall not be demolished until such earth has been properly braced or adjoining structures have been properly underpinned.

(i) Walls, which are to serve as retaining walls against which debris will be piled, shall not be so used unless capable of safely supporting the imposed load.

§ 1926.855 Manual removal of floors.

(a) Openings cut in a floor shall extend the full span of the arch between supports.

(b) Before demolishing any floor arch, debris and other material shall be removed from such arch and other adjacent floor area. Planks not less than 2 inches by 10 inches in cross section, full size undressed, shall be provided for, and shall be used by employees to stand on while breaking down floor arches between beams. Such planks shall be so located as to provide a safe support for the workmen should the arch between the beams collapse. The open space between planks shall not exceed 16 inches.

(c) Safe walkways, not less than 18 inches wide, formed of planks not less than 2 inches thick if wood, or of equivalent strength if metal, shall be provided and used by workmen when necessary to enable them to reach any point without walking upon exposed beams.

(d) Stringers of ample strength shall be installed to support the flooring planks, and the ends of such stringers shall be supported by floor beams or girders, and not by floor arches alone.

(e) Planks shall be laid together over solid bearings with the ends overlapping at least 1 foot.

(f) When floor arches are being removed, employees shall not be allowed in the area directly underneath, and such an area shall be barricaded to prevent access to it.

(g) Demolition of floor arches shall not be started until they, and the surrounding floor area for a distance of 20 feet, have been cleared of debris and any other unnecessary materials.

§ 1926.856 Removal of walls, floors, and material with equipment.

(a) Mechanical equipment shall not be used on floors or working surfaces unless such floors or surfaces are of sufficient strength to support the imposed load.

(b) Floor openings shall have curbs or stop-logs to prevent equipment from running over the edge.

(c) Mechanical equipment used shall meet the requirements specified in Subparts N and O of this part.

§ 1926.857 Storage.

(a) The storage of waste material and debris on any floor shall not exceed the allowable floor loads.

(b) In buildings having wooden floor construction, the flooring boards may be removed from not more than one floor above grade to provide storage space for debris, provided falling material is not permitted to endanger the stability of the structure.

(c) When wood floor beams serve to brace interior walls or free-standing exterior walls, such beams shall be left in place until other equivalent support can be installed to replace them.

(d) Floor arches, to an elevation of not more than 25 feet above grade, may be removed to provide storage area for debris: *Provided,* That such removal does not endanger the stability of the structure.

(e) Storage space into which material is dumped shall be blocked off, except for openings necessary for the removal of material. Such openings shall be kept closed at all times when material is not being removed.

§ 1926.858 Removal of steel construction.

(a) When floor arches have been removed, planking in accordance with § 1926.855(b) shall be provided for the workers engaged in razing the steel framing.

(b) Cranes, derricks, and other hoisting equipment used shall meet the requirements specified in Subpart N of this part.

(c) Steel construction shall be dismantled column length by column length, and tier by tier (columns may be in two-story lengths).

(d) Any structural member being dismembered shall not be overstressed.

§ 1926.859 Mechanical demolition.

(a) No workers shall be permitted in any area, which can be adversely affected by demolition operations, when balling or clamming is being performed. Only those workers necessary for the performance of the operations shall be permitted in this area at any other time.

(b) The weight of the demolition ball shall not exceed 50 percent of the crane's rated load, based on the length of the boom and the maximum angle of operation at which the demolition ball will be used, or it shall not exceed 25 percent of the nominal breaking strength of the line by which it is suspended, whichever results in a lesser value.

(c) The crane boom and loadline shall be as short as possible.

(d) The ball shall be attached to the loadline with a swivel-type connection to prevent twisting of the loadline, and shall be attached by positive means in such manner that the weight cannot become accidentally disconnected.

(e) When pulling over walls or portions thereof, all steel members affected shall have been previously cut free.

(f) All roof cornices or other such ornamental stonework shall be removed prior to pulling walls over.

(g) During demolition, continuing inspections by a competent person shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

§ 1926.860 Selective demolition by explosives.

Selective demolition by explosives shall be conducted in accordance with the applicable sections of Subpart U of this part.

Subpart U—Blasting and the Use of Explosives

§ 1926.900 General provisions.

(a) The employer shall permit only authorized and qualified persons to handle and use explosives.

(b) Smoking, firearms, matches, open flame lamps, and other fires, flame or heat producing devices and sparks shall be prohibited in or near explosive magazines or while explosives are being handled, transported or used.

(c) No person shall be allowed to handle or use explosives while under the influence of intoxicating liquors, narcotics, or other dangerous drugs.

(d) All explosives shall be accounted for at all times. Explosives not being used shall be kept in a locked magazine, unavailable to persons not authorized to handle them. The employer shall maintain an inventory and use record of all explosives. Appropriate authorities shall be notified of any loss, theft, or unauthorized entry into a magazine.

(e) No explosives or blasting agents shall be abandoned.

(f) No fire shall be fought where the fire is in imminent danger of contact with explosives. All employees shall be removed to a safe area and the fire area guarded against intruders.

(g) Original containers, or Class II magazines, shall be used for taking detonators and other explosives from storage magazines to the blasting area.

(h) When blasting is done in congested areas or in proximity to a structure, railway, or highway, or any other installation that may be damaged, the

blaster shall take special precautions in the loading, delaying, initiation, and confinement of each blast with mats or other methods so as to control the throw of fragments, and thus prevent bodily injury to employees.

(i) Employees authorized to prepare explosive charges or conduct blasting operations shall use every reasonable precaution including, but not limited to, visual and audible warning signals, flags, or barricades, to ensure employee safety.

(j) Insofar as possible, blasting operations above ground shall be conducted between sunup and sundown.

(k) Due precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by radar, radio transmitters, lightning, adjacent powerlines, dust storms, or other sources of extraneous electricity. These precautions shall include:

(1) Detonators shall be short-circuited in holes which have been primed and shunted until wired into the blasting circuit.

(2) The suspension of all blasting operations and removal of persons from the blasting area during the approach and progress of an electric storm;

(3) (i) The prominent display of adequate signs warning against the use of mobile radio transmitters, on all roads within 1,000 feet of blasting operations. Whenever adherence to the 1,000-foot distance would create an operational handicap, a competent person shall be consulted to evaluate the particular situation, and alternative provisions may be made which are adequately designed to prevent any premature firing of electric blasting caps. A description of any such alternatives shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted. The description shall be maintained at the construction site during the duration of the work, and shall be available for inspection by representatives of the Secretary of Labor.

(ii) Specimens of signs which would meet the requirements of subdivision (i) of this subparagraph (3) are the following:



About 48" x 48"



About 42" x 36"

(4) Ensuring that mobile radio transmitters which are less than 100 feet away from electric blasting caps, in other than original containers, shall be de-energized and effectively locked;

(5) Compliance with the recommendations of The Institute of the Makers of Explosives with regard to blasting in the vicinity of radio transmitters as stipulated in Radio Frequency Energy—A Potential Hazard in the Use of Electric Blasting Caps, IME Publication No. 20, March 1971.

(l) Empty boxes and paper and fiber packing materials, which have previously contained high explosives, shall not be used again for any purpose, but shall be destroyed by burning at an approved location.

(m) Explosives, blasting agents, and blasting supplies that are obviously deteriorated or damaged shall not be used.

(n) Delivery and issue of explosives shall only be made by and to authorized persons and into authorized magazines or approved temporary storage or handling areas.

(o) Blasting operations in the proximity of overhead power lines, communication lines, utility services, or other services and structures shall not be carried on until the operators and/or owners have been notified and measures for safe control have been taken.

(p) The use of black powder shall be prohibited.

(q) All loading and firing shall be directed and supervised by competent persons thoroughly experienced in this field.

(r) All blasts shall be fired electrically with an electric blasting machine or properly designed electric power source, except as provided in § 1926.906 (a) and (r).

§ 1926.901 Blaster qualifications.

(a) A blaster shall be able to understand and give written and oral orders.

(b) A blaster shall be in good physical condition and not be addicted to narcotics, intoxicants, or similar types of drugs.

(c) A blaster shall be qualified, by reason of training, knowledge, or experience, in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of State and local laws and regulations which pertain to explosives.

(d) Blasters shall be required to furnish satisfactory evidence of competency in handling explosives and performing in a safe manner the type of blasting that will be required.

(e) The blaster shall be knowledgeable and competent in the use of each type of blasting method used.

§ 1926.902 Surface transportation of explosives.

(a) Transportation of explosives shall meet the provisions of Department of Transportation regulations contained in 14 CFR Part 103, Air Transportation; 46 CFR Parts 146–149, Water Carriers; 49 CFR Parts 171–179, Highways and Railways; 49 CFR Part 180, Pipelines; and 49 CFR Parts 390–397, Motor Carriers.

(b) Motor vehicles or conveyances transporting explosives shall only be driven by, and be in the charge of, a licensed driver who is physically fit. He shall be familiar with the local, State, and Federal regulation governing the transportation of explosives.

(c) No person shall smoke, or carry matches or any other flame-producing device, nor shall firearms or loaded cartridges be carried while in or near a motor vehicle or conveyance transporting explosives.

(d) Explosives, blasting agents, and blasting supplies shall not be transported with other materials or cargoes. Blasting caps (including electric) shall not be transported in the same vehicle with other explosives.

(e) Vehicles used for transporting explosives shall be strong enough to carry the load without difficulty, and shall be in good mechanical condition.

(f) When explosives are transported by a vehicle with an open body, a Class II magazine or original manufacturer's container shall be securely mounted on the bed to contain the cargo.

(g) All vehicles used for the transportation of explosives shall have tight floors and any exposed spark-producing metal on the inside of the body shall be covered with wood, or other nonsparking material, to prevent contact with containers of explosives.

(h) Every motor vehicle or conveyance used for transporting explosives shall be marked or placarded on both sides, the front, and the rear with the word "Explosives" in red letters, not less than 4 inches in height, on white background. In addition to such marking or placarding, the motor vehicle or conveyance may display, in such a manner that it will be readily visible from all directions, a red flag 18 inches by 30 inches, with the word "Explosives" painted, stamped, or sewed thereon, in white letters, at least 6 inches in height.

(i) Each vehicle used for transportation of explosives shall be equipped with a fully charged fire extinguisher, in good condition. An Underwriters Laboratory-approved extinguisher of not less than 10-ABC rating will meet the minimum requirement. The driver shall be trained in the use of the extinguisher on his vehicle.

(j) Motor vehicles or conveyances carrying explosives, blasting agents, or blasting supplies, shall not be taken inside a garage or shop for repairs or servicing.

(k) No motor vehicle transporting explosives shall be left unattended.

§ 1926.903 Underground transportation of explosives.

(a) All explosives or blasting agents in transit underground shall be taken to the place of use or storage without delay.

(b) The quantity of explosives or blasting agents taken to an underground loading area shall not exceed the amount estimated to be necessary for the blast.

(c) Explosives in transit shall not be left unattended.

(d) The hoist operator shall be notified before explosives or blasting agents are transported in a shaft conveyance.

(e) Trucks used for the transportation of explosives underground shall have the electrical system checked weekly to detect any failures which may constitute an electrical hazard. A written record of such inspections shall be kept on file.

(f) The installation of auxiliary lights on truck beds, which are powered by the truck's electrical system, shall be prohibited.

(g) Explosives and blasting agents shall be hoisted, lowered, or conveyed in a powder car. No other materials, supplies, or equipment shall be transported

in the same conveyance at the same time.

(h) No one, except the operator, his helper, and the powderman, shall be permitted to ride on a conveyance transporting explosives and blasting agents.

(i) No person shall ride in any shaft conveyance transporting explosives and blasting agents.

(j) No explosives or blasting agents shall be transported on any locomotive. At least two car lengths shall separate the locomotive from the powder car.

(k) No explosives or blasting agents shall be transported on a man haul trip.

(l) The car or conveyance containing explosives or blasting agents shall be pulled, not pushed, whenever possible.

(m) The powder car or conveyance especially built for the purpose of transporting explosives or blasting agents shall bear a reflectorized sign on each side with the word "Explosives" in letters, not less than 4 inches in height; upon a background of sharply contrasting color.

(n) Compartments for transporting detonators and explosives in the same car or conveyance shall be physically separated by a distance of 24 inches or by a solid partition at least 6 inches thick.

(o) Detonators and other explosives shall not be transported at the same time in any shaft conveyance.

(p) Explosives, blasting agents, or blasting supplies shall not be transported with other materials.

(q) Explosives or blasting agents, not in original containers, shall be placed in a suitable container when transported manually.

(r) Detonators, primers, and other explosives shall be carried in separate containers when transported manually.

§ 1926.904 Storage of explosives and blasting agents.

(a) Explosives and related materials shall be stored in approved facilities required under the applicable provisions of the Internal Revenue Service regulations contained in 26 CFR 181, Commerce in Explosives.

(b) Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents.

(c) Smoking and open flames shall not be permitted within 50 feet of explosives and detonator storage magazine.

(d) No explosives or blasting agents shall be permanently stored in any underground operation until the operation has been developed to the point where at least two modes of exit have been provided.

(e) Permanent underground storage magazines shall be at least 300 feet from any shaft, adit, or active underground working area.

(f) Permanent underground magazines containing detonators shall not be located closer than 50 feet to any magazine containing other explosives or blasting agents.

§ 1926.905 Loading of explosives or blasting agents.

(a) Procedures that permit safe and efficient loading shall be established before loading is started.

(b) All drill holes shall be sufficiently large to admit freely the insertion of the cartridges of explosives.

(c) Tamping shall be done only with wood rods or plastic tamping poles without exposed metal parts, but nonsparking metal connectors may be used for jointed poles. Violent tamping shall be avoided. The primer shall never be tamped.

(d) No holes shall be loaded except those to be fired in the next round of blasting. After loading, all remaining explosives and detonators shall be immediately returned to an authorized magazine.

(e) Drilling shall not be started until all remaining butts of old holes are examined for unexploded charges, and if any are found, they shall be refired before work proceeds.

(f) No person shall be allowed to deepen drill holes which have contained explosives or blasting agents.

(g) No explosives or blasting agents shall be left unattended at the blast site.

(h) Machines and all tools not used for loading explosives into bore holes shall be removed from the immediate location of holes before explosives are delivered. Equipment shall not be operated within 50 feet of loaded holes.

(i) No activity of any nature other than that which is required for loading holes with explosives shall be permitted in a blast area.

(j) Powerlines and portable electric cables for equipment being used shall be kept a safe distance from explosives or blasting agents being loaded into drill holes. Cables in the proximity of the blast area shall be deenergized and locked out by the blaster.

(k) Holes shall be checked prior to loading to determine depth and conditions. Where a hole has been loaded with explosives but the explosives have failed to detonate, there shall be no drilling within 50 feet of the hole.

(l) When loading a long line of holes with more than one loading crew, the crews shall be separated by practical distance consistent with efficient operation and supervision of crews.

(m) No explosive shall be loaded or used underground in the presence of combustible gases or combustible dusts.

(n) No explosives other than those in Fume Class 1, as set forth by the Institute of Makers of Explosives, shall be used; however, explosives complying with the requirements of Fume Class 2 and Fume Class 3 may be used if adequate ventilation has been provided.

(o) All blast holes in open work shall be stemmed to the collar or to a point which will confine the charge.

(p) Warning signs, indicating a blast area, shall be maintained at all approaches to the blast area. The warning sign lettering shall not be less than 4 inches in height on a contrasting background.

(q) A bore hole shall never be sprung when it is adjacent to or near a hole that is loaded. Flashlight batteries shall not be used for springing holes.

(r) Drill holes which have been sprung or chambered, and which are not water-filled, shall be allowed to cool before explosives are loaded.

(s) No loaded holes shall be left unattended or unprotected.

(t) The blaster shall keep an accurate, up-to-date record of explosives, blasting agents, and blasting supplies used in a blast and shall keep an accurate running inventory of all explosives and blasting agents stored on the operation.

§ 1926.906 Initiation of explosive charges—electric blasting.

(a) Electric blasting caps shall not be used where sources of extraneous electricity make the use of electric blasting caps dangerous. Blasting cap leg wires shall be kept short-circuited (shunted) until they are connected into the circuit for firing.

(b) Before adopting any system of electrical firing, the blaster shall conduct a thorough survey for extraneous currents, and all dangerous currents shall be eliminated before any holes are loaded.

(c) In any single blast using electric blasting caps, all caps shall be of the same style or function, and of the same manufacture.

(d) Electric blasting shall be carried out by using blasting circuits or power circuits in accordance with the electric blasting cap manufacturer's recommendations, or an approved contractor or his designated representative.

(e) When firing a circuit of electric blasting caps, care must be exercised to ensure that an adequate quantity of delivered current is available, in accordance with the manufacturer's recommendations.

(f) Connecting wires and lead wires shall be insulated single solid wires of sufficient current-carrying capacity.

(g) Bus wires shall be solid single wires of sufficient current-carrying capacity.

(h) When firing electrically, the insulation on all firing lines shall be adequate and in good condition.

(i) A power circuit used for firing electric blasting caps shall not be grounded.

(j) In underground operations when firing from a power circuit, a safety switch shall be placed in the permanent firing line at intervals. This switch shall be made so it can be locked only in the "Off" position and shall be provided with a short-circuiting arrangement of the firing lines to the cap circuit.

(k) In underground operations there shall be a "lightning" gap of at least 5 feet in the firing system ahead of the main firing switch; that is, between this switch and the source of power. This gap shall be bridged by a flexible jumper cord just before firing the blast.

(l) When firing from a power circuit, the firing switch shall be locked in the open or "Off" position at all times, except when firing. It shall be so designed that the firing lines to the cap circuit are automatically short-circuited when the switch is in the "Off" position. Keys

to this switch shall be entrusted only to the blaster.

(m) Blasting machines shall be in good condition and the efficiency of the machine shall be tested periodically to make certain that it can deliver power at its rated capacity.

(n) When firing with blasting machines, the connections shall be made as recommended by the manufacturer of the electric blasting caps used.

(o) The number of electric blasting caps connected to a blasting machine shall not be in excess of its rated capacity. Furthermore, in primary blasting, a series circuit shall contain no more caps than the limits recommended by the manufacturer of the electric blasting caps in use.

(p) The blaster shall be in charge of the blasting machines, and no other person shall connect the leading wires to the machine.

(q) Blasters, when testing circuits to charged holes, shall use only blasting galvanometers equipped with a silver chloride cell especially designed for this purpose.

(r) Whenever the possibility exists that a leading line or blasting wire might be thrown over a live powerline by the force of an explosion, care shall be taken to see that the total length of wires are kept too short to hit the lines, or that the wires are securely anchored to the ground. If neither of these requirements can be satisfied, a nonelectric system shall be used.

(s) In electrical firing, only the man making leading wire connections shall fire the shot. All connections shall be made from the bore hole back to the source of firing current, and the leading wires shall remain shorted and not be connected to the blasting machine or other source of current until the charge is to be fired.

(t) After firing an electric blast from a blasting machine, the leading wires shall be immediately disconnected from the machine and short-circuited.

§ 1926.907 Use of safety fuse.

(a) Safety fuse shall only be used where sources of extraneous electricity make the use of electric blasting caps dangerous. The use of a fuse that has been hammered or injured in any way shall be forbidden.

(b) The hanging of a fuse on nails or other projections which will cause a sharp bend to be formed in the fuse is prohibited.

(c) Before capping safety fuse, a short length shall be cut from the end of the supply reel so as to assure a fresh cut end in each blasting cap.

(d) Only a cap crimper of approved design shall be used for attaching blasting caps to safety fuse. Crimpers shall be kept in good repair and accessible for use.

(e) No unused cap or short capped fuse shall be placed in any hole to be blasted; such unused detonators shall be removed from the working place and destroyed.

(f) No fuse shall be capped, or primers made up, in any magazine or near any possible source of ignition.

(g) No one shall be permitted to carry detonators or primers of any kind on his person.

(h) The minimum length of safety fuse to be used in blasting shall be as required by State law, but shall not be less than 30 inches.

(i) At least two men shall be present when multiple cap and fuse blasting is done by hand lighting methods.

(j) Not more than 12 fuses shall be lighted by each blaster when hand lighting devices are used. However, when two or more safety fuses in a group are lighted as one by means of igniter cord, or other similar fuse-lighting devices, they may be considered as one fuse.

(k) The so-called "drop fuse" method of dropping or pushing a primer or any explosive with a lighted fuse attached is forbidden.

(l) Cap and fuse shall not be used for firing mudcap charges unless charges are separated sufficiently to prevent one charge from dislodging other shots in the blast.

(m) When blasting with safety fuses, consideration shall be given to the length and burning rate of the fuse. Sufficient time, with a margin of safety, shall always be provided for the blaster to reach a place of safety.

§ 1926.908 Use of detonating cord.

(a) Care shall be taken to select a detonating cord consistent with the type and physical condition of the bore hole and stemming and the type of explosives used.

(b) Detonating cord shall be handled and used with the same respect and care given other explosives.

(c) The line of detonating cord extending out of a bore hole or from a charge shall be cut from the supply spool before loading the remainder of the bore hole or placing additional charges.

(d) Detonating cord shall be handled and used with care to avoid damaging or severing the cord during and after loading and hooking-up.

(e) Detonating cord connections shall be competent and positive in accordance with approved and recommended methods. Knot-type or other cord-to-cord connections shall be made only with detonating cord in which the explosive core is dry.

(f) All detonating cord trunklines and branchlines shall be free of loops, sharp kinks, or angles that direct the cord back toward the oncoming line of detonation.

(g) All detonating cord connections shall be inspected before firing the blast.

(h) When detonating cord millisecond-delay connectors or short-interval-delay electric blasting caps are used with detonating cord, the practice shall conform strictly to the manufacturer's recommendations.

(i) When connecting a blasting cap or an electric blasting cap to detonating cord, the cap shall be taped or otherwise attached securely along the side or the end of the detonating cord, with the end of the cap containing the explosive charge pointed in the direction in which the detonation is to proceed.

(j) Detonators for firing the trunkline shall not be brought to the loading area nor attached to the detonating cord until everything else is in readiness for the blast.

§ 1926.909 Firing the blast.

(a) A code of blasting signals equivalent to Table U–1, shall be posted on one or more conspicuous places at the operation, and all employees shall be required to familiarize themselves with the code and conform to it. Danger signs shall be placed at suitable locations.

(b) Before a blast is fired, a loud warning signal shall be given by the blaster in charge, who has made certain that all surplus explosives are in a safe place and all employees, vehicles, and equipment are at a safe distance, or under sufficient cover.

(c) Flagmen shall be safely stationed on highways which pass through the danger zone so as to stop traffic during blasting operations.

(d) It shall be the duty of the blaster to fix the time of blasting.

(e) Before firing an underground blast, warning shall be given, and all possible entries into the blasting area, and any entrances to any working place where a drift, raise, or other opening is about to hole through, shall be carefully guarded. The blaster shall make sure that all employees are out of the blast area before firing a blast.

TABLE U–1

WARNING SIGNAL—A 1-minute series of long blasts 5 minutes prior to blast signal.
BLAST SIGNAL—A series of short blasts 1 minute prior to the shot.
ALL CLEAR SIGNAL—A prolonged blast following the inspection of blast area.

§ 1926.910 Inspection after blasting.

(a) Immediately after the blast has been fired, the firing line shall be disconnected from the blasting machine, or where power switches are used, they shall be locked open or in the off position.

(b) Sufficient time shall be allowed, not less than 15 minutes in tunnels, for the smoke and fumes to leave the blasted area before returning to the shot. An inspection of the area and the surrounding rubble shall be made by the blaster to determine if all charges have been exploded before employees are allowed to return to the operation, and in tunnels, after the muck pile has been wetted down.

§ 1926.911 Misfires.

(a) If a misfire is found, the blaster shall provide proper safeguards for excluding all employees from the danger zone.

(b) No other work shall be done except that necessary to remove the hazard of the misfire and only those employees necessary to do the work shall remain in the danger zone.

(c) No attempt shall be made to extract explosives from any charged or misfired hole; a new primer shall be put in and the hole reblasted. If refiring of the misfired hole presents a hazard, the explosives may be removed by washing out with water or, where the misfire is under water, blown out with air.

(d) If there are any misfires while using cap and fuse, all employees shall remain away from the charge for at least 1 hour. Misfires shall be handled under the direction of the person in charge of the blasting. All wires shall be carefully traced and a search made for unexploded charges.

(e) No drilling, digging, or picking shall be permitted until all missed holes have been detonated or the authorized representative has approved that work can proceed.

§ 1926.912 Underwater blasting.

(a) A blaster shall conduct all blasting operations, and no shot shall be fired without his approval.

(b) Loading tubes and casings of dissimilar metals shall not be used because of possible electric transient currents from galvanic action of the metals and water.

(c) Only water-resistant blasting caps and detonating cords shall be used for all marine blasting. Loading shall be done through a nonsparking metal loading tube when tube is necessary.

(d) No blast shall be fired while any vessel under way is closer than 1,500 feet to the blasting area. Those on board vessels or craft moored or anchored within 1,500 feet shall be notified before a blast is fired.

(e) No blast shall be fired while any swimming or diving operations are in progress in the vicinity of the blasting area. If such operations are in progress, signals and arrangements shall be agreed upon to assure that no blast shall be fired while any person is in the water.

(f) Blasting flags shall be displayed.

(g) The storage and handling of explosives aboard vessels used in underwater blasting operations shall be according to provisions outlined herein on handling and storing explosives.

(h) When more than one charge is placed under water, a float device shall be attached to an element of each charge in such manner that it will be released by the firing. Misfires shall be handled in accordance with the requirements of § 1926.911.

§ 1926.913 Blasting in excavation work under compressed air.

(a) Detonators and explosives shall not be stored or kept in tunnels, shafts, or caissons. Detonators and explosives for each round shall be taken directly from the magazines to the blasting zone and immediately loaded. Detonators and explosives left over after loading a round shall be removed from the working chamber before the connecting wires are connected up.

(b) When detonators or explosives are bought into an air lock, no employee except the powderman, blaster, lock tender and the employees necessary for carrying, shall be permitted to enter the air lock. No other material, supplies, or equipment shall be locked through with the explosives.

(c) Detonators and explosives shall be taken separately into pressure working chambers.

(d) The blaster or powderman shall be responsible for the receipt, unloading, storage, and on-site transportation of explosives and detonators.

(e) All metal pipes, rails, air locks, and steel tunnel lining shall be electrically bonded together and grounded at or near the portal or shaft, and such pipes and rails shall be cross-bonded together at not less than 1,000-foot intervals throughout the length of the tunnel. In addition, each low air supply pipe shall be grounded at its delivery end.

(f) The explosives suitable for use in wet holes shall be water-resistant and shall be Fume Class 1.

(g) When tunnel excavation in rock face is approaching mixed face, and when tunnel excavation is in mixed face, blasting shall be performed with light charges and with light burden on each hole. Advance drilling shall be performed as tunnel excavation in rock face approaches mixed face, to determine the general nature and extent of rock cover and the remaining distance ahead to soft ground as excavation advances.

§ 1926.914 Definitions applicable to this subpart.

(a) "American Table of Distances" (also known as Quantity Distance Tables) means American Table of Distances for Storage of Explosives as revised and approved by the Institute of the Makers of Explosives, June 5, 1964.

(b) "Approved storage facility"—A facility for the storage of explosive materials conforming to the requirements of this part and covered by a license or permit issued under authority of the Internal Revenue Service. (See 26 CFR Part 181).

(c) "Blast area"—The area in which explosives loading and blasting operations are being conducted.

(d) "Blaster"—The person or persons authorized to use explosives for blasting purposes and meeting the qualifications contained in § 1926.901.

(e) "Blasting agent"—A blasting agent is any material or mixture consisting of a fuel and oxidizer used for blasting, but not classified an explosive and in which none of the ingredients is classified as an explosive provided the furnished (mixed) product cannot be detonated with a No. 8 test blasting cap when confined. A common blasting agent presently in use is a mixture of ammonium nitrate (NH_4NO_3) and carbonaceous combustibles, such as fuel oil or coal, and may either be procured, premixed and packaged from explosives companies or mixed in the field.

(f) "Blasting cap"—A metallic tube closed at one end, containing a charge of one or more detonating compounds, and designed for and capable of detonation from the sparks or flame from a safety fuse inserted and crimped into the open end.

(g) "Block holing"—The breaking of boulders by firing a charge of explosives that has been loaded in a drill hole.

(h) "Conveyance"—Any unit for transporting explosives or blasting agents, including but not limited to trucks, trailers, rail cars, barges, and vessels.

(i) "Detonating cord"—A flexible cord containing a center core of high explosives which when detonated, will have sufficient strength to detonate other cap-sensitive explosives with which it is in contact.

(j) "Detonator"—Blasting caps, electric blasting caps, delay electric blasting caps, and nonelectric delay blasting caps.

(k) "Electric blasting cap"—A blasting cap designed for and capable of detonation by means of an electric current.

(l) "Electric blasting circuitry"—

(1) Bus wire. An expendable wire, used in parallel or series, in parallel circuits, to which are connected the leg wires of electric blasting caps.

(2) Connecting wire. An insulated expendable wire used between electric blasting caps and the leading wires or between the bus wire and the leading wires.

(3) Leading wire. An insulated wire used between the electric power source and the electric blasting cap circuit.

(4) Permanent blasting wire. A permanently mounted insulated wire used between the electric power source and the electric blasting cap circuit.

(m) "Electric delay blasting caps"—Caps designed to detonate at a predetermined period of time after energy is applied to the ignition system.

(n) "Explosives"—(1) Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion; that is, with substantially instantaneous release of gas and heat, unless such compound, mixture or device is otherwise specifically classified by the U.S. Department of Transportation.

(2) All material which is classified as Class A, Class B, and Class C explosives by the U.S. Department of Transportation.

(3) Classification of explosives by the U.S. Department of Transportation is as follows:

Class A Explosives. Possessing detonating hazard, such as dynamite, nitroglycerin, picric acid, lead azide, fulminate of mercury, black powder, blasting caps, and detonating primers.

Class B Explosives. Possessing flammable hazard, such as propellant explosives, including some smokeless propellants.

Class C Explosives. Include certain types of manufactured articles which contain Class A or Class B explosives, or both, as components, but in restricted quantities.

(o) "Fuse lighters"—Special devices for the purpose of igniting safety fuse.

(p) "Magazine"—Any building or structure, other than an explosives manufacturing building, used for the storage of explosives.

(q) "Misfire"—An explosive charge which failed to detonate.

(r) "Mud-capping" (sometimes known as bulldozing, adobe blasting, or dobying). The blasting of boulders by placing a quantity of explosives against a rock, boulder, or other object without confining the explosives in a drill hole.

(s) "Nonelectric delay blasting cap"—A blasting cap with an integral delay element in conjunction with and capable of being detonated by a detonation impulse or signal from miniaturized detonating cord.

(t) "Primary blasting"—The blasting operation by which the original rock

formation is dislodged from its natural location.

(u) "Primer"—A cartridge or container of explosives into which a detonator or detonating cord is inserted or attached.

(v) "Safety fuse"—A flexible cord containing an internal burning medium by which fire is conveyed at a continuous and uniform rate for the purpose of firing blasting caps.

(w) "Secondary blasting"—The reduction of oversize material by the use of explosives to the dimension required for handling, including mudcapping and blockholing.

(x) "Stemming"—A suitable inert incombustible material or device used to confine or separate explosives in a drill hole, or to cover explosives in mudcapping.

(y) "Springing"—The creation of a pocket in the bottom of a drill hole by the use of a moderate quantity of explosives in order that larger quantities or explosives may be inserted therein.

(z) "Water gels, or slurry explosives"—A wide variety of materials used for blasting. They all contain substantial proportions of water and high proportions of ammonium nitrate, some of which is in solution in the water. Two broad classes of water gels are: (1) Those which are sensitized by a material classed as an explosive, such as TNT or smokeless powder, and (2) those which contain no ingredient classified as an explosive; these are sensitized with metals such as aluminum or with other fuels. Water gels may be premixed at an explosives plant or mixed at the site immediately before delivery into the bore hole.

Subpart V—Power Transmission and Distribution

§ 1926.950 General requirements.

(a) *Application.* The occupational safety and health standards contained in this Subpart V shall apply to the construction of electric transmission and distribution lines and equipment.

(1) As used in this Subpart V the term "construction" includes the erection of new electric transmission and distribution lines and equipment, and the alteration, conversion, and improvement of existing electric transmission and distribution lines and equipment.

(2) Existing electric transmission and distribution lines and electrical equipment need not be modified to conform to the requirements of applicable standards in this Subpart V, until such work as described in subparagraph (1) of this paragraph is to be performed on such lines or equipment.

(3) The standards set forth in this Subpart V provide minimum requirements for safety and health. Employers may require adherence to additional standards which are not in conflict with the standards contained in this Subpart V.

(b) *Initial inspections, tests, or determinations.* (1) Existing conditions shall be determined before starting work, by an inspection or a test. Such conditions shall include, but not be limited to, energized lines and equipment, conditions of poles, and the location of circuits and equipment, including power and communication lines, CATV and fire alarm circuits.

(2) Electric equipment and lines shall be considered energized until determined to be deenergized by tests or other appropriate methods or means.

(3) Operating voltage of equipment and lines shall be determined before working on or near energized parts.

(c) *Clearances.* The provisions of subparagraph (1) or (2) of this paragraph shall be observed.

(1) No employee shall be permitted to approach or take any conductive object without an approved insulating handle closer to exposed energized parts than shown in Table V–1, unless:

(i) The employee is insulated or guarded from the energized part (gloves or gloves with sleeves rated for the voltage involved shall be considered insulation of the employee from the energized part), or

(ii) The energized part is insulated or guarded from him and any other conductive object at a different potential, or

(iii) The employee is isolated, insulated, or guarded from any other conductive object(s), as during live-line bare-hand work.

(2) (i) The minimum working distance and minimum clear hot stick distances stated in Table V–1 shall not be violated. The minimum clear hot stick distance is that for the use of live-line tools held by linemen when performing live-line work.

(ii) Conductor support tools, such as link sticks, strain carriers, and insulator cradles, may be used: *Provided,* That the clear insulation is at least as long as the insulator string or the minimum distance specified in Table V–1 for the operating voltage.

TABLE V–1

ALTERNATING CURRENT—MINIMUM DISTANCES

Voltage range (phase to phase) kilovolt	*Minimum working and clear hot stick distance*
2.1 to 15	2 ft. 0 in.
15.1 to 35	2 ft. 4 in.
35.1 to 46	2 ft. 6 in.
46.1 to 72.5	3 ft. 0 in.
72.6 to 121	3 ft. 4 in.
138 to 145	3 ft. 6 in.
161 to 169	3 ft. 8 in.
230 to 242	5 ft. 0 in.
345 to 362	[1] 7 ft. 0 in.
500 to 552	[1] 11 ft. 0 in.
700 to 765	[1] 15 ft. 0 in.

[1] NOTE: For 345–362 kv., 500–552 kv., and 700–765 kv., the minimum working distance and the minimum clear hot stick distance may be reduced provided that such distances are not less than the shortest distance between the energized part and a grounded surface.

(d) *Deenergizing lines and equipment.* (1) When deenergizing lines and equipment operated in excess of 600 volts, and the means of disconnecting from electric energy is not visibly open or visibly locked out, the provisions of subdivisions (i) through (vii) of this subparagraph shall be complied with:

(i) The particular section of line or equipment to be deenergized shall be clearly identified, and it shall be isolated from all sources of voltage.

(ii) Notification and assurance from the designated employee shall be obtained that:

(*a*) All switches and disconnectors through which electric energy may be supplied to the particular section of line or equipment to be worked have been deenergized;

(*b*) All switches and disconnectors are plainly tagged indicating that men are at work;

(*c*) And that where design of such switches and disconnectors permits, they have been rendered inoperable.

(iii) After all designated switches and disconnectors have been opened, rendered inoperable, and tagged, visual inspection or tests shall be conducted to insure that equipment or lines have been deenergized.

(iv) Protective grounds shall be applied on the disconnected lines or equipment to be worked on.

(v) Guards or barriers shall be erected as necessary to adjacent energized lines.

(vi) When more than one independent crew requires the same line or equipment to be deenergized, a prominent tag for each such independent crew shall be placed on the line or equipment by the designated employee in charge.

(vii) Upon completion of work on deenergized lines or equipment, each designated employee in charge shall determine that all employees in his crew are clear, that protective grounds installed by his crew have been removed, and he shall report to the designated authority that all tags protecting his crew may be removed.

(2) When a crew working on a line or equipment can clearly see that the means of disconnecting from electric energy are visibly open or visibly locked-out, the provisions of subdivisions (i), and (ii) of this subparagraph shall apply:

(i) Guards or barriers shall be erected as necessary to adjacent energized lines.

(ii) Upon completion of work on deenergized lines or equipment, each designated employee in charge shall determine that all employees in his crew are clear, that protective grounds installed by his crew have been removed, and he shall report to the designated authority that all tags protecting his crew may be removed.

(e) *Emergency procedures and first aid.* (1) The employer shall provide training or require that his employees are knowledgeable and proficient in:

(i) Procedures involving emergency situations, and

(ii) First-aid fundamentals including resuscitation.

(2) In lieu of subparagraph (1) of this paragraph the employer may comply with the provisions of § 1926.50(c) regarding first-aid requirements.

(f) *Night work.* When working at night, spotlights or portable lights for emergency lighting shall be provided as needed to perform the work safely.

(g) *Work near and over water.* When crews are engaged in work over or near water and when danger of drowning exists, suitable protection shall be provided as stated in § 1926.104, or § 1926.105, or § 1926.106.

(h) *Sanitation facilities.* The requirements of § 1926.51 of Subpart D of this part shall be complied with for sanitation facilities.

(i) *Hydraulic fluids.* All hydraulic fluids used for the insulated sections of derrick trucks, aerial lifts, and hydraulic tools which are used on or around energized lines and equipment shall be of the insulating type. The requirements for fire resistant fluids of § 1926.302(d)(1) do not apply to hydraulic tools covered by this paragraph.

§ 1926.951 Tools and protective equipment.

(a) *Protective equipment.* (1) (i) Rubber protective equipment shall be in accordance with the provisions of the American National Standards Institute (ANSI), ANSI J6 series, as follows:

Item	*Standard*
Rubber insulating gloves	J6.6–1971.
Rubber matting for use around electric apparatus	J6.7–1935 (R1971).
Rubber insulating blankets	J6.4–1971.
Rubber insulating hoods	J6.2–1950 (R1971).
Rubber insulating line hose	J6.1–1950 (R1971).
Rubber insulating sleeves	J6.5–1971.

(ii) Rubber protective equipment shall be visually inspected prior to use.

(iii) In addition, an "air" test shall be performed for rubber gloves prior to use.

(iv) Protective equipment of material other than rubber shall provide equal or better electrical and mechanical protection.

(2) Protective hats shall be in accordance with the provisions of ANSI Z89.2–1971 Industrial Protective Helmets for Electrical Workers, Class B, and shall be worn at the jobsite by employees who are exposed to the hazards of falling objects, electric shock, or burns.

(b) *Personal climbing equipment.* (1) Body belts with straps or lanyards shall be worn to protect employees working at elevated locations on poles, towers, or other structures except where such use creates a greater hazard to the safety of the employees, in which case other safeguards shall be employed.

(2) Body belts and safety straps shall meet the requirements of § 1926.959. In addition to being used as an employee safeguarding item, body belts with approved tool loops may be used for the purpose of holding tools. Body belts shall be free from additional metal hooks and tool loops other than those permitted in § 1926.959.

(3) Body belts and straps shall be inspected before use each day to determine that they are in safe working condition.

(4) (i) Life lines and lanyards shall comply with the provisions of § 1926.104.

(ii) Safety lines are not intended to be subjected to shock loading and are used for emergency rescue such as lowering a man to the ground. Such safety lines shall be a minimum of one-half-inch diameter and three or four strand first-grade manila or its equivalent in strength (2,650 lb.) and durability.

(5) Defective ropes shall be replaced.

(c) *Ladders.* (1) Portable metal or conductive ladders shall not be used near energized lines or equipment except as may be necessary in specialized work such as in high voltage substations where nonconductive ladders might present a greater hazard than conductive ladders. Conductive or metal ladders shall be prominently marked as conductive and all necessary precautions shall be taken when used in specialized work.

(2) Hook or other type ladders used in structures shall be positively secured to prevent the ladder from being accidentally displaced.

(d) *Live-line tools.* (1) Only live-line tool poles having a manufacturer's certification to withstand the following minimum tests shall be used:

(i) 100,000 volts per foot of length for 5 minutes when the tool is made of fiberglass; or

(ii) 75,000 volts per foot of length for 3 minutes when the tool is made of wood; or

(iii) Other tests equivalent to subdivision (i) or (ii) of this subparagraph as appropriate.

(2) All live-line tools shall be visually inspected before use each day. Tools to be used shall be wiped clean and if any hazardous defects are indicated such tools shall be removed from service.

(e) *Measuring tapes or measuring ropes.* Measuring tapes or measuring ropes which are metal or contain conductive strands shall not be used when working on or near energized parts.

(f) *Handtools.* (1) Switches for all powered hand tools shall comply with § 1926.300(d).

(2) All portable electric handtools shall:

(i) Be equipped with three-wire cord having the ground wire permanently connected to the tool frame and means for grounding the other end; or

(ii) Be of the double insulated type and permanently labeled as "Double Insulated"; or

(iii) Be connected to the power supply by means of an isolating transformer, or other isolated power supply.

(3) All hydraulic tools which are used on or around energized lines or equipment shall use nonconducting hoses having adequate strength for the normal operating pressures. It should be noted that the provisions of § 1926.302(d)(2) shall also apply.

(4) All pneumatic tools which are used on or around energized lines or equipment shall:

(i) Have nonconducting hoses having adequate strength for the normal operating pressures, and

(ii) Have an accumulator on the compressor to collect moisture.

§ 1926.952 Mechanical equipment.

(a) *General.* (1) Visual inspections shall be made of the equipment to determine that it is in good condition each day the equipment is to be used.

(2) Tests shall be made at the beginning of each shift during which the equipment is to be used to determine that the brakes and operating systems are in proper working condition.

(3) No employer shall use any motor vehicle equipment having an obstructed view to the rear unless:

(i) The vehicle has a reverse signal alarm audible above the surrounding noise level or:

(ii) The vehicle is backed up only when an observer signals that it is safe to do so.

(b) *Aerial lifts.* (1) The provisions of § 1926.556, Subpart N of this part, shall apply to the utilization of aerial lifts.

(2) When working near energized lines or equipment, aerial lift trucks shall be grounded or barricaded and considered as energized equipment, or the aerial lift truck shall be insulated for the work being performed.

(3) Equipment or material shall not be passed between a pole or structure and an aerial lift while an employee working from the basket is within reaching distance of energized conductors or equipment that are not covered with insulating protective equipment.

(c) *Derrick trucks, cranes and other lifting equipment.* (1) All derrick trucks, cranes and other lifting equipment shall comply with Subpart N and O of this part except:

(i) As stated in § 1926.550(a)(15) (i) and (ii) relating to clearance (for clearances in this subpart see Table V–1) and

(ii) Derrick truck (electric line trucks) shall not be required to comply with § 1926.550 (a)(7)(vi), (a)(17), (b)(2), and (e).

(2) With the exception of equipment certified for work on the proper voltage, mechanical equipment shall not be operated closer to any energized line or equipment than the clearances set forth in § 1926.950(c) unless:

(i) An insulated barrier is installed between the energized part and the mechanical equipment, or

(ii) The mechanical equipment is grounded, or

(iii) The mechanical equipment is insulated, or

(iv) The mechanical equipment is considered as energized.

§ 1926.953 Material handling.

(a) *Unloading.* Prior to unloading steel, poles, cross arms and similar material, the load shall be thoroughly examined to ascertain if the load has shifted, binders or stakes have broken or the load is otherwise hazardous to employees.

(b) *Pole hauling.* (1) During pole hauling operations, all loads shall be secured to prevent displacement and a red flag shall be displayed at the trailing end of the longest pole.

(2) Precautions shall be exercised to prevent blocking of roadways or endangering other traffic.

(3) When hauling poles during the hours of darkness, illuminated warning devices shall be attached to the trailing end of the longest pole.

(c) *Storage.* (1) No materials or equipment shall be stored under ener-

gized bus, energized lines, or near energized equipment, if it is practical to store them elsewhere.

(2) When materials or equipment are stored under energized lines or near energized equipment, applicable clearances shall be maintained as stated in Table V–1; and extraordinary caution shall be exercised when moving materials near such energized equipment.

(d) *Tag line.* Where hazards to employees exist tag lines or other suitable devices shall be used to control loads being handled by hoisting equipment.

(e) *Oil filled equipment.* During construction or repair of oil filled equipment the oil may be stored in temporary containers other than these required in § 1926.152, such as pillow tanks.

(f) *Framing.* During framing operations, employees shall not work under a pole or a structure suspended by a crane, A-frame or similar equipment unless the pole or structure is adequately supported.

(g) *Attaching the load.* The hoist rope shall not be wrapped around the load. This provision shall not apply to electric construction crews when setting or removing poles.

§ 1926.954 Grounding for protection of employees.

(a) *General.* All conductors and equipment shall be treated as energized until tested or otherwise determined to be deenergized or until grounded.

(b) *New construction.* New lines or equipment may be considered deenergized and worked as such where:

(1) The lines or equipment are grounded, or

(2) The hazard of induced voltages is not present, and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment.

(c) *Communication conductors.* Bare wire communication conductors on power poles or structures shall be treated as energized lines unless protected by insulating materials.

(d) *Voltage testing.* Deenergized conductors and equipment which are to be grounded shall be tested for voltage. Results of this voltage test shall determine the subsequent procedures as required in § 1926.950(d).

(e) *Attaching grounds.* (1) When attaching grounds, the ground end shall be attached first, and the other end shall be attached and removed by means of insulated tools or other suitable devices.

(2) When removing grounds, the grounding device shall first be removed from the line or equipment using insulating tools or other suitable devices.

(f) Grounds shall be placed between work location and all sources of energy and as close as practicable to the work location, or grounds shall be placed at the work location. If work is to be performed at more than one location in a line section, the line section must be grounded and short circuited at one location in the line section and the conductor to be worked on shall be grounded at each work location. The minimum distance shown in Table V–1 shall be maintained from ungrounded conductors at the work location. Where the making of a ground is impracticable, or the conditions resulting therefrom would be more hazardous than working on the lines or equipment without grounding, the grounds may be omitted and the line or equipment worked as energized.

(g) *Testing without grounds.* Grounds may be temporarily removed only when necessary for test purposes and extreme caution shall be exercised during the test procedures.

(h) *Grounding electrode.* When grounding electrodes are utilized, such electrodes shall have a resistance to ground low enough to remove the danger of harm to personnel or permit prompt operation of protective devices.

(i) *Grounding to tower.* Grounding to tower shall be made with a tower clamp capable of conducting the anticipated fault current.

(j) *Ground lead.* A ground lead, to be attached to either a tower ground or driven ground, shall be capable of conducting the anticipated fault current and shall have a minimum conductance of No. 2 AWG copper.

§ 1926.955 Overhead lines.

(a) *Overhead lines.* (1) When working on or with overhead lines the provisions of subparagraphs (2) through (8) of this paragraph shall be complied with in addition to other applicable provisions of this subpart.

(2) Prior to climbing poles, ladders, scaffolds, or other elevated structures, an inspection shall be made to determine that the structures are capable of sustaining the additional or unbalanced stresses to which they will be subjected.

(3) Where poles or structures may be unsafe for climbing, they shall not be climbed until made safe by guying, bracing, or other adequate means.

(4) Before installing or removing wire or cable, strains to which poles and structures will be subjected shall be considered and necessary action taken to prevent failure of supporting structures.

(5) (i) When setting, moving, or removing poles using cranes, derricks, gin poles, A-frames, or other mechanized equipment near energized lines or equipment, precautions shall be taken to avoid contact with energized lines or equipment, except in bare-hand live-line work, or where barriers or protective devices are used.

(ii) Equipment and machinery operating adjacent to energized lines or equipment shall comply with § 1926.952(c)(2).

(6) (i) Unless using suitable protective equipment for the voltage involved, employees standing on the ground shall avoid contacting equipment or machinery working adjacent to energized lines or equipment.

(ii) Lifting equipment shall be bonded to an effective ground or it shall be considered energized and barricaded when utilized near energized equipment or lines.

(7) Pole holes shall not be left unattended or unguarded in areas where employees are currently working.

(8) Tag lines shall be of a nonconductive type when used near energized lines.

(b) *Metal tower construction.* (1) When working in unstable material the excavation for pad- or pile-type footings in excess of 5 feet deep shall be either sloped to the angle of repose as required in § 1926.652 or shored if entry is required. Ladders shall be provided for access to pad- or pile-type footing excavations in excess of 4 feet.

(2) When working in unstable material provision shall be made for cleaning out auger-type footings without requiring an employee to enter the footing unless shoring is used to protect the employee

(3) (i) A designated employee shall be used in directing mobile equipment adjacent to footing excavations.

(ii) No one shall be permitted to remain in the footing while equipment is being spotted for placement.

(iii) Where necessary to assure the stability of mobile equipment the location of use for such equipment shall be graded and leveled.

(4) (i) Tower assembly shall be carried out with a minimum exposure of employees to falling objects when working at two or more levels on a tower.

(ii) Guy lines shall be used as necessary to maintain sections or parts of sections in position and to reduce the possibility of tipping.

(iii) Members and sections being assembled shall be adequately supported.

(5) When assembling and erecting towers the provisions of subdivisions (i), (ii), and (iii) of this subparagraph shall be complied with:

(i) The construction of transmission towers and the erecting of poles, hoisting machinery, site preparation machinery, and other types of construction machinery shall conform to the applicable requirements of this part.

(ii) No one shall be permitted under a tower which is in the process of erection or assembly, except as may be required to guide and secure the section being set.

(iii) When erecting towers using hoisting equipment adjacent to energized transmission lines, the lines shall be deenergized when practical. If the lines are not deenergized, extraordinary caution shall be exercised to maintain the minimum clearance distances required by § 1926.950(c), including Table V–1.

(6) (i) Erection cranes shall be set on firm level foundations and when the cranes are so equipped outriggers shall be used.

(ii) Tag lines shall be utilized to maintain control of tower sections being raised and positioned, except where the use of such lines would create a greater hazard.

(iii) The loadline shall not be detached from a tower section until the section is adequately secured.

(iv) Except during emergency restoration procedures erection shall be discontinued in the event of high wind or other adverse weather conditions which would make the work hazardous.

(v) Equipment and rigging shall be regularly inspected and maintained in safe operating condition.

(7) Adequate traffic control shall be maintained when crossing highways and railways with equipment as required by the provisions of § 1926.200(g) (1) and (2).

(8) A designated employee shall be utilized to determine that required clearance is maintained in moving equipment under or near energized lines.

(c) *Stringing or removing deenergized conductors.* (1) When stringing or removing deenergized conductors, the provisions of subparagraph (2) through (12) of this paragraph shall be complied with.

(2) Prior to stringing operations a briefing shall be held setting forth the plan of operation and specifying the type of equipment to be used, grounding devices and procedures to be followed, crossover methods to be employed, and the clearance authorization required.

(3) Where there is a possibility of the conductor accidentally contacting an energized circuit or receiving a dangerous induced voltage buildup, to further protect the employee from the hazards of the conductor, the conductor being installed or removed shall be grounded or provisions made to insulate or isolate the employee.

(4) (i) If the existing line is deenergized, proper clearance authorization shall be secured and the line grounded on both sides of the crossover or, the line being strung or removed shall be considered and worked as energized.

(ii) When crossing over energized conductors in excess of 600 volts, rope nets or guard structures shall be installed unless provision is made to isolate or insulate the workman or the energized conductor. Where practical the automatic reclosing feature of the circuit interrupting device shall be made inoperative. In addition, the line being strung shall be grounded on either side of the crossover or considered and worked as energized.

(5) Conductors being strung in or removed shall be kept under positive control by the use of adequate tension reels, guard structures, tielines, or other means to prevent accidental contact with energized circuits.

(6) Guard structure members shall be sound and of adequate dimension and strength, and adequately supported.

(7) (i) Catch-off anchors, rigging, and hoists shall be of ample capacity to prevent loss of the lines.

(ii) The manufacturer's load rating shall not be exceeded for stringing lines, pulling lines, sock connections, and all load-bearing hardware and accessories.

(iii) Pulling lines and accessories shall be inspected regularly and replaced or repaired when damaged or when dependability is doubtful. The provisions of § 1926.251(c) (4) (ii) (concerning splices) shall not apply.

(8) Conductor grips shall not be used on wire rope unless designed for this application.

(9) While the conductor or pulling line is being pulled (in motion) employees shall not be permitted directly under overhead operations, nor shall any employee be permitted on the crossarm.

(10) A transmission clipping crew shall have a minimum of two structures clipped in between the crew and the conductor being sagged. When working on bare conductors, clipping and tying crews shall work between grounds at all times. The grounds shall remain intact until the conductors are clipped in, except on dead end structures.

(11) (i) Except during emergency restoration procedures, work from structures shall be discontinued when adverse weather (such as high wind or ice on structures) makes the work hazardous.

(ii) Stringing and clipping operations shall be discontinued during the progress of an electrical storm in the immediate vicinity.

(12) (i) Reel handling equipment, including pulling and braking machines, shall have ample capacity, operate smoothly, and be leveled and aligned in accordance with the manufacturer's operating instructions.

(ii) Reliable communications between the reel tender and pulling rig operator shall be provided.

(iii) Each pull shall be snubbed or dead ended at both ends before subsequent pulls.

(d) *Stringing adjacent to energized lines.* (1) Prior to stringing parallel to an existing energized transmission line a competent determination shall be made to ascertain whether dangerous induced voltage buildups will occur, particularly during switching and ground fault conditions. When there is a possibility that such dangerous induced voltage may exist the employer shall comply with the provisions of subparagraphs (2) through (9) of this paragraph in addition to the provisions of paragraph (c) of this § 1926.955, unless the line is worked as energized.

(2) When stringing adjacent to energized lines the tension stringing method or other methods which preclude unintentional contact between the lines being pulled and any employee shall be used.

(3) All pulling and tensioning equipment shall be isolated, insulated, or effectively grounded.

(4) A ground shall be installed between the tensioning reel setup and the first structure in order to ground each bare conductor, subconductor, and overhead ground conductor during stringing operations.

(5) During stringing operations, each bare conductor, subconductor, and overhead ground conductor shall be grounded at the first tower adjacent to both the tensioning and pulling setup and in increments so that no point is more than 2 miles from a ground.

(i) The grounds shall be left in place until conductor installation is completed.

(ii) Such grounds shall be removed as the last phase of aerial cleanup.

(iii) Except for moving type grounds, the grounds shall be placed and removed with a hot stick.

(6) Conductors, subconductors, and overhead ground conductors shall be grounded at all dead-end or catch-off points.

(7) A ground shall be located at each side and within 10 feet of working areas where conductors, subconductors, or overhead ground conductors are being spliced at ground level. The two ends to be spliced shall be bonded to each other. It is recommended that splicing be carried out on either an insulated platform or on a conductive metallic grounding mat bonded to both grounds. When a grounding mat is used, it is recommended that the grounding mat be roped off and an insulated walkway provided for access to the mat.

(8) (i) All conductors, subconductors, and overhead ground conductors shall be bonded to the tower at any isolated tower where it may be necessary to complete work on the transmission line.

(ii) Work on dead-end towers shall require grounding on all deenergized lines.

(iii) Grounds may be removed as soon as the work is completed: *Provided,* That the line is not left open circuited at the isolated tower at which work is being completed.

(9) When performing work from the structures, clipping crews and all others working on conductors, subconductors, or overhead ground conductors shall be protected by individual grounds installed at every work location.

(e) *Live-line bare-hand work.* In addition to any other applicable standards contained elsewhere in this subpart all live-line bare-hand work shall be performed in accordance with the following requirements.

(1) Employees shall be instructed and trained in the live-line bare-hand technique and the safety requirements pertinent thereto before being permitted to use the technique on energized circuits.

(2) Before using the live-line bare-hand technique on energized high-voltage conductors or parts, a check shall be made of:

(i) The voltage rating of the circuit on which the work is to be performed;

(ii) The clearances to ground of lines and other energized parts on which work is to be performed; and

(iii) The voltage limitations of the aerial-lift equipment intended to be used.

(3) Only equipment designed, tested, and intended for live-line bare-hand work shall be used.

(4) All work shall be personally supervised by a person trained and qualified to perform live-line bare-hand work.

(5) The automatic reclosing feature of circuit interrupting devices shall be made inoperative where practical before working on any energized line or equipment.

(6) Work shall not be performed during the progress of an electrical storm in the immediate vicinity.

(7) A conductive bucket liner or other suitable conductive device shall be provided for bonding the insulated aerial device to the energized line or equipment.

(i) The employee shall be connected to the bucket liner by use of conductive

shoes, leg clips, or other suitable means.

(ii) Where necessary, adequate electrostatic shielding for the voltage being worked or conductive clothing shall be provided.

(8) Only tools and equipment intended for live-line bare-hand work shall be used, and such tools and equipment shall be kept clean and dry.

(9) Before the boom is elevated, the outriggers on the aerial truck shall be extended and adjusted to stabilize the truck and the body of the truck shall be bonded to an effective ground, or barricaded and considered as energized equipment.

(10) Before moving the aerial lift into the work position, all controls (ground level and bucket) shall be checked and tested to determine that they are in proper working condition.

(11) Arm current tests shall be made before starting work each day, each time during the day when higher voltage is going to be worked and when changed conditions indicate a need for additional tests. Aerial buckets used for bare-hand live-line work shall be subjected to an arm current test. This test shall consist of placing the bucket in contact with an energized source equal to the voltage to be worked upon for a minimum time of three (3) minutes. The leakage current shall not exceed 1 microampere per kilovolt of nominal line-to-line voltage. Work operations shall be suspended immediately upon any indication of a malfunction in the equipment.

(12) All aerial lifts to be used for live-line bare-hand work shall have dual controls (lower and upper) as required by subdivisions (i) and (ii) of this subparagraph.

(i) The upper controls shall be within easy reach of the employee in the basket. If a two basket type lift is used access to the controls shall be within easy reach from either basket.

(ii) The lower set of controls shall be located near base of the boom that will permit over-ride operation of equipment at any time.

(13) Ground level lift control shall not be operated unless permission has been obtained from the employee in lift, except in case of emergency.

(14) Before the employee contacts the energized part to be worked on, the conductive bucket liner shall be bonded to the energized conductor by means of a positive connection which shall remain attached to the energized conductor until the work on the energized circuit is completed.

(15) The minimum clearance distances for live-line bare-hand work shall be as specified in Table V–2. These minimum clearance distances shall be maintained from all grounded objects and from lines and equipment at a different potential than that to which the insulated aerial device is bonded unless such grounded objects or other lines and equipment are covered by insulated guards. These distances shall be maintained when approaching, leaving, and when bonded to the energized circuit.

TABLE V–2

MINIMUM CLEARANCE DISTANCES FOR LIVE-LINE BARE-HAND WORK (ALTERNATING CURRENT)

Voltage range (phase-to-phase) kilovolts	Distance in feet and inches for maximum voltage	
	Phase to ground	Phase to phase
2.1–15	2′0″	2′0″
15.1–35	2′4″	2′4″
35.1–46	2′6″	2′6″
46.1–72.5	3′0″	3′0″
72.6–121	3′4″	4′6″
138–145	3′6″	5′0″
161–169	3′8″	5′6″
230–242	5′0″	8′4″
345–362	[1] 7′0″	[1] 13′4″
500–552	[1] 11′0″	[1] 20′0″
700–765	[1] 15′0″	[1] 31′0″

[1] NOTE: For 345–362kv., 500–552kv., and 700–765kv., the minimum clearance distance may be reduced provided the distances are not made less than the shortest distance between the energized part and a grounded surface.

(16) When approaching, leaving, or bonding to an energized circuit the minimum distances in Table V–2 shall be maintained between all parts of the insulated boom assembly and any grounded parts (including the lower arm or portions of the truck).

(17) When positioning the bucket alongside an energized bushing or insulator string, the minimum line-to-ground clearances of Table V–2 must be maintained between all parts of the bucket and the grounded end of the bushing or insulator string.

(18) (i) The use of handlines between buckets, booms, and the ground is prohibited.

(ii) No conductive materials over 36 inches long shall be placed in the bucket, except for appropriate length jumpers, armor rods, and tools.

(iii) Nonconductive-type handlines may be used from line to ground when not supported from the bucket.

(19) The bucket and upper insulated boom shall not be overstressed by attempting to lift or support weights in excess of the manufacturer's rating.

(20) (i) A minimum clearance table (as shown in table V–2) shall be printed on a plate of durable nonconductive material, and mounted in the buckets or its vicinity so as to be visible to the operator of the boom.

(ii) It is recommended that insulated measuring sticks be used to verify clearance distances.

§ 1926.956 Underground lines.

(a) *Guarding and ventilating street opening used for access to underground lines or equipment.* (1) Appropriate warning signs shall be promptly placed when covers of manholes, handholes, or vaults are removed. What is an appropriate warning sign is dependent upon the nature and location of the hazards involved.

(2) Before an employee enters a street opening, such as a manhole or an unvented vault, it shall be promptly protected with a barrier, temporary cover, or other suitable guard.

(3) When work is to be performed in a manhole or unvented vault:

(i) No entry shall be permitted unless forced ventilation is provided or the atmosphere is found to be safe by testing for oxygen deficiency and the presence of explosive gases or fumes;

(ii) Where unsafe conditions are detected, by testing or other means, the work area shall be ventilated and otherwise made safe before entry;

(iii) Provisions shall be made for an adequate continuous supply of air.

(b) *Work in manholes.* (1) While work is being performed in manholes, an employee shall be available in the immediate vicinity to render emergency assistance as may be required. This shall not preclude the employee in the immediate vicinity from occasionally entering a manhole to provide assistance, other than emergency. This requirement does not preclude a qualified employee, working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.

(2) When open flames must be used or smoking is permitted in manholes, extra precautions shall be taken to provide adequate ventilation.

(3) Before using open flames in a manhole or excavation in an area where combustible gases or liquids may be present, such as near a gasoline service station, the atmosphere of the manhole or excavation shall be tested and found safe or cleared of the combustible gases or liquids.

(c) *Trenching and excavating.* (1) During excavation or trenching, in order to prevent the exposure of employees to the hazards created by damage to dangerous underground facilities, efforts shall be made to determine the location of such facilities and work conducted in a manner designed to avoid damage.

(2) Trenching and excavation operations shall comply with §§ 1926.651 and 1926.652.

(3) When underground facilities are exposed (electric, gas, water, telephone, etc.) they shall be protected as necessary to avoid damage.

(4) Where multiple cables exist in an excavation, cables other than the one being worked on shall be protected as necessary.

(5) When multiple cables exist in an excavation, the cable to be worked on shall be identified by electrical means unless its identity is obvious by reason of distinctive appearance.

(6) Before cutting into a cable or opening a splice, the cable shall be identified and verified to be the proper cable.

(7) When working on buried cable or on cable in manholes, metallic sheath continuity shall be maintained by bonding across the opening or by equivalent means.

§ 1926.957 Construction in energized substations.

(a) *Work near energized equipment facilities.* (1) When construction work is performed in an energized substation,

authorization shall be obtained from the designated, authorized person before work is started.

(2) When work is to be done in an energized substation, the following shall be determined:

(i) What facilities are energized, and

(ii) What protective equipment and precautions are necessary for the safety of personnel.

(3) Extraordinary caution shall be exercised in the handling of busbars, tower steel, materials, and equipment in the vicinity of energized facilities. The requirements set forth in § 1926.950(c), shall be complied with.

(b) *Deenergized equipment or lines.* When it is necessary to deenergize equipment or lines for protection of employees, the requirements of § 1926.950(d) shall be complied with.

(c) *Barricades and barriers.* (1) Barricades or barriers shall be installed to prevent accidental contact with energized lines or equipment.

(2) Where appropriate, signs indicating the hazard shall be posted near the barricade or barrier. These signs shall comply with § 1926.200.

(d) *Control panels.* (1) Work on or adjacent to energized control panels shall be performed by designated employees.

(2) Precaution shall be taken to prevent accidental operation of relays or other protective devices due to jarring, vibration, or improper wiring.

(e) *Mechanized equipment.* (1) Use of vehicles, gin poles, cranes, and other equipment in restricted or hazardous areas shall at all times be controlled by designated employees.

(2) All mobile cranes and derricks shall be effectively grounded when being moved or operated in close proximity to energized lines or equipment, or the equipment shall be considered energized.

(3) Fenders shall not be required for lowboys used for transporting large electrical equipment, transformers, or breakers.

(f) *Storage.* The storage requirements of § 1926.953(c) shall be complied with.

(g) *Substation fences.* (1) When a substation fence must be expanded or removed for construction purposes, a temporary fence affording similar protection, when the site is unattended, shall be provided. Adequate interconnection with ground shall be maintained between temporary fence and permanent fence.

(2) All gates to all unattended substations shall be locked, except when work is in progress.

(h) *Footing excavation.* (1) Excavation for auger, pad and piling type footings for structures and towers shall require the same precautions as for metal tower construction (see § 1926.955(b)(1)).

(2) No employee shall be permitted to enter an unsupported auger-type excavation in unstable material for any purpose. Necessary clean-out in such cases shall be accomplished without entry.

§ 1926.958 External load helicopters.

In all operations performed using a rotorcraft for moving or placing external loads, the provisions of § 1926.551 of Subpart N of this part shall be complied with.

§ 1926.959 Lineman's body belts, safety straps, and lanyards.

(a) *General requirements.* The requirements of paragraphs (a) and (b) of this section shall be complied with for all lineman's body belts, safety straps and lanyards acquired for use after the effective date of this subpart.

(1) Hardware for lineman's body belts, safety straps, and lanyards shall be drop forged or pressed steel and have a corrosive resistive finish tested to American Society for Testing and Materials B117–64 (50-hour test). Surfaces shall be smooth and free of sharp edges.

* * * * *

(2) All buckles shall withstand a 2,000-pound tensile test with a maximum permanent deformation no greater than one sixty-fourth inch.

(3) D rings shall withstand a 5,000-pound tensile test without failure. Failure of a D ring shall be considered cracking or breaking.

(4) Snaphooks shall withstand a 5,000-pound tensile test without failure. Failure of a snaphook shall be distortion sufficient to release the keeper.

(b) *Specific requirements.* (1) (i) All fabric used for safety straps shall withstand an A.C. dielectric test of not less than 25,000 volts per foot "dry" for 3 minutes, without visible deterioration.

(ii) All fabric and leather used shall be tested for leakage current and shall not exceed 1 milliampere when a potention of 3,000 volts is applied to the electrodes positioned 12 inches apart.

(iii) Direct current tests may be permitted in lieu of alternating current tests.

(2) The cushion part of the body belt shall:

(i) Contain no exposed rivets on the inside;

(ii) Be at least three (3) inches in width;

(iii) Be at least five thirty-seconds (5/32) inch thick, if made of leather; and

(iv) Have pocket tabs that extended at least 1½ inches down and three (3) inches back of the inside of circle of each D ring for riveting on plier or tool pockets. On shifting D belts, this measurement for pocket tabs shall be taken when the D ring section is centered.

(3) A maximum of four (4) tool loops shall be so situated on the body belt that four (4) inches of the body belt in the center of the back, measuring from D ring to D ring, shall be free of tool loops, and any other attachments.

(4) Suitable copper, steel, or equivalent liners shall be used around bar of D rings to prevent wear between these members and the leather or fabric enclosing them.

(5) All stitching shall be of a minimum 42-pound weight nylon or equivalent thread and shall be lock stitched. Stitching parallel to an edge shall not be less than three-sixteenths (3/16) inch from edge of narrowest member caught by the thread. The use of cross stitching on leather is prohibited.

(6) The keeper of snaphooks shall have a spring tension that will not allow the keeper to begin to open with a weight of 2½ pounds or less, but the keeper of snaphooks shall begin to open with a weight of four (4) pounds, when the weight is supported on the keeper against the end of the nose.

(7) Testing of lineman's safety straps, body belts and lanyards shall be in accordance with the following procedure:

(i) Attach one end of the safety strap or lanyard to a rigid support, the other end shall be attached to a 250-pound canvas bag of sand:

(ii) Allow the 250-pound canvas bag of sand to free fall 4 feet for (safety strap test) and 6 feet for (lanyard test); in each case stopping the fall of the 250-pound bag:

(iii) Failure of the strap or lanyard shall be indicated by any breakage, or slippage sufficient to permit the bag to fall free of the strap or lanyard. The entire "body belt assembly" shall be tested using one D ring. A safety strap or lanyard shall be used that is capable of passing the "impact loading test" and attached as required in subdivision (i) of this subparagraph. The body belt shall be secured to the 250-pound bag of sand at a point to simulate the waist of a man and allowed to drop as stated in subdivision (ii) of this subparagraph. Failure of the body belt shall be indicated by any breakage, or slippage sufficient to permit the bag to fall free of the body belt.

§ 1926.960 Definition applicable to this subpart.

(a) *Alive or live (energized).* The term means electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of the earth in the vicinity. The term "live" is sometimes used in place of the term "current-carrying," where the intent is clear, to avoid repetition of the longer term.

(b) *Automatic circuit recloser.* The term means a self-controlled device for automatically interrupting and reclosing an alternating current circuit with a predetermined sequence of opening and reclosing followed by resetting, hold closed, or lockout operation.

(c) *Barrier.* The term means a physical obstruction which is intended to prevent contact with energized lines or equipment.

(d) *Barricade.* The term means a physical obstruction such as tapes, screens, or cones intended to warn and limit access to a hazardous area.

(e) *Bond.* The term means an electrical connection from one conductive element to another for the purpose of minimizing potential differences or providing suitable conductivity for fault current or for mitigation of leakage current and electrolytic action.

(f) *Bushing.* The term means an insulating structure including a through conductor, or providing a passageway for such a conductor, with provision for mounting on a barrier, conducting or otherwise, for the purpose of insulating the conductor from the barrier and conducting current from one side of the barrier to the other.

(g) *Cable.* The term means a conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable) or a combination of conductors insulated from one another (multiple-conductor cable).

(h) *Cable sheath.* The term means a protective covering applied to cables.

NOTE: A cable sheath may consist of multiple layers of which one or more is conductive.

(i) *Circuit.* The term means a conductor or system of conductors through which an electric current is intended to flow.

(j) *Communication lines.* The term means the conductors and their supporting or containing structures which are used for public or private signal or communication service, and which operate at potentials not exceeding 400 volts to ground or 750 volts between any two points of the circuit, and the transmitted power of which does not exceed 150 watts. When operating at less than 150 volts no limit is placed on the capacity of the system.

NOTE: Telephone, telegraph, railroad signal, data, clock, fire, police-alarm, community television antenna, and other systems conforming with the above are included. Lines used for signaling purposes, but not included under the above definition, are considered as supply lines of the same voltage and are to be so run.

(k) *Conductor.* The term means a material, usually in the form of a wire, cable, or bus bar suitable for carrying an electric current.

(l) *Conductor shielding.* The term means an envelope which encloses the conductor of a cable and provides an equipotential surface in contact with the cable insulation.

(m) *Current-carrying part.* The term means a conducting part intended to be connected in an electric circuit to a source of voltage. Non-current-carrying parts are those not intended to be so connected.

(n) *Dead (deenergized).* The term means free from any electrical connection to a source of potential difference and from electrical charges: Not having a potential difference from that of earth.

NOTE: The term is used only with reference to current-carrying parts which are sometimes alive (energized).

(o) *Designated employee.* The term means a qualified person delegated to perform specific duties under the conditions existing.

(p) *Effectively grounded.* The term means intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltages which may result in undue hazard to connected equipment or to persons.

(q) *Electric line trucks.* The term means a truck used to transport men, tools, and material, and to serve as a traveling workshop for electric power line construction and maintenance work. It is sometimes equipped with a boom and auxiliary equipment for setting poles, digging holes, and elevating material or men.

(r) *Enclosed.* The term means surrounded by a case, cage, or fence, which will protect the contained equipment and prevent accidental contact of a person with live parts.

(s) *Equipment.* This is a general term which includes fittings, devices, appliances, fixtures, apparatus, and the like, used as part of, or in connection with, an electrical power transmission and distribution system, or communication systems.

(t) *Exposed.* The term means not isolated or guarded.

(u) *Electric supply lines.* The term means those conductors used to transmit electric energy and their necessary supporting or containing structures. Signal lines of more than 400 volts to ground are always supply lines within the meaning of the rules, and those of less than 400 volts to ground may be considered as supply lines, if so run and operated throughout.

(v) *Guarded.* The term means protected by personnel, covered, fenced, or enclosed by means of suitable casings, barrier rails, screens mats, platforms, or other suitable devices in accordance with standard barricading techniques designed to prevent dangerous approach or contact by persons or objects.

NOTE: Wires, which are insulated but not otherwise protected, are not considered as guarded.

(w) *Ground. (Reference).* The term means that conductive body, usually earth, to which an electric potential is referenced.

(x) *Ground (as a noun).* The term means a conductive connection whether intentional or accidental, by which an electric circuit or equipment is connected to reference ground.

(y) *Ground (as a verb).* The term means the connecting or establishment of a connection, whether by intention or accident of an electric circuit or equipment to reference ground.

(z) *Grounding electrode (ground electrode).* The term grounding electrode means a conductor embedded in the earth, used for maintaining ground potential on conductors connected to it, and for dissipating into the earth current conducted to it.

(aa) *Grounding electrode resistance.* The term means the resistance of the grounding electrode to earth.

(bb) *Grounding electrode conductor (grounding conductor).* The term means a conductor used to connect equipment or the grounded circuit of a wiring system to a grounding electrode.

(cc) *Grounded conductor.* The term means a system or circuit conductor which is intentionally grounded.

(dd) *Grounded system.* The term means a system of conductors in which at least one conductor or point (usually the middle wire, or neutral point of transformer or generator windings) is intentionally grounded, either solidly or through a current-limiting device (not a current-interrupting device).

(ee) *Hotline tools and ropes.* The term means those tools and ropes which are especially designed for work on energized high voltage lines and equipment. Insulated aerial equipment especially designed for work on energized high voltage lines and equipment shall be considered hot line.

(ff) *Insulated.* The term means separated from other conducting surfaces by a dielectric substance (including air space) offering a high resistance to the passage of current.

NOTE: When any object is said to be insulated, it is understood to be insulated in suitable manner for the conditions to which it is subjected. Otherwise, it is within the purpose of this subpart, uninsulated. Insulating covering of conductors is one means of making the conductor insulated.

(gg) *Insulation (as applied to cable).* The term means that which is relied upon to insulate the conductor from other conductors or conducting parts or from ground.

(hh) *Insulation shielding.* The term means an envelope which encloses the insulation of a cable and provides an equipotential surface in contact with cable insulation.

(ii) *Isolated.* The term means an object that is not readily accessible to persons unless special means of access are used.

(jj) *Manhole.* The term means a subsurface enclosure which personnel may enter and which is used for the purpose of installing, operating, and maintaining equipment and/or cable.

(kk) *Pulling tension.* The term means the longitudinal force exerted on a cable during installation.

(ll) *Qualified person.* The term means a person who by reason of experience or training is familiar with the operation to be performed and the hazards involved.

(mm) *Switch.* The term means a device for opening and closing or changing the connection of a circuit. In these rules, a switch is understood to be manually operable, unless otherwise stated.

(nn) *Tag.* The term means a system or method of identifying circuits, systems or equipment for the purpose of alerting persons that the circuit, system or equipment is being worked on.

(oo) *Unstable material.* The term means earth material, other than running, that because of its nature or the influence of related conditions, cannot be depended upon to remain in place without extra support, such as would be furnished by a system of shoring.

(pp) *Vault.* The term means an enclosure above or below ground which personnel may enter and is used for the purpose of installing, operating, and/or maintaining equipment and/or cable.

(qq) *Voltage.* The term means the effective (rms) potential difference between any two conductors or between a conductor and ground. Voltages are expressed in nominal values. The nominal voltage of a system or circuit is the value assigned to a system or circuit of a given voltage class for the purpose of convenient designation. The operating voltage of the system may vary above or below this value.

(rr) *Voltage of an effectively grounded circuit.* The term means the voltage between any conductor and ground unless otherwise indicated.

(ss) *Voltage of a circuit not effectively grounded.* The term means the voltage between any two conductors. If one circuit is directly connected to and supplied from another circuit of higher voltage (as in the case of an autotransformer), both are considered as of the higher voltage, unless the circuit of lower voltage is effectively grounded, in which case its voltage is not determined by the circuit of higher voltage. Direct connection implies electric connection as distinguished from connection merely through electromagnetic or electrostatic induction.

Subpart W—Rollover Protective Structures; Overhead Protection

§ 1926.1000 Rollover protective structures (ROPS) for material handling equipment.

(a) *Coverage.* (1) This section applies to the following types of material handling equipment: To all rubber-tired, self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler tractors, crawler-type loaders, and motor graders, with or without attachments, that are used in construction work. This requirement does not apply to sideboom pipelaying tractors.

(2) The promulgation of specific standards for rollover protective structures for compactors and rubber-tired skid-steer equipment is reserved pending consideration of standards currently being developed.

(b) *Equipment manufactured on or after September 1, 1972.* Material handling machinery described in paragraph (a) of this section and manufactured on or after September 1, 1972, shall be equipped with rollover protective structures which meet the minimum performance standards prescribed in §§ 1926.1001 and 1926.1002, as applicable.

(c) *Equipment manufactured before September 1, 1972.* (1) All material handling equipment described in paragraph (a) of this section and manufactured or placed in service (owned or operated by the employer) prior to September 1, 1972, shall be fitted with rollover protective structures no later than the dates listed below:

(i) Machines manufactured on or after January 1, 1972, shall be fitted no later than April 1, 1973.

(ii) Machines manufactured between July 1, 1971, and December 31, 1971, shall be fitted no later than July 1, 1973.

(iii) Machines manufactured between July 1, 1970, and June 30, 1971, shall be fitted no later than January 1, 1974.

(iv) Machines manufactured between July 1, 1969, and June 30, 1970, shall be fitted no later than July 1, 1974.

(v) Machines manufactured before July 1, 1969: Reserved pending further study, development, and review.

(2) Rollover protective structures and supporting attachment shall meet the minimum performance criteria detailed in §§ 1926.1001 and 1926.1002, as applicable or shall be designed, fabricated, and installed in a manner which will support, based on the ultimate strength of the metal, at least two times the weight of the prime mover applied at the point of impact.

(i) The design objective shall be to minimize the likelihood of a complete overturn and thereby minimize the possibility of the operator being crushed as a result of a rollover or upset.

(ii) The design shall provide a vertical clearance of at least 52 inches from the work deck to the ROPS at the point of ingress or egress.

(d) *Remounting.* ROPS removed for any reason, shall be remounted with equal quality, or better, bolts or welding as required for the original mounting.

(e) *Labeling.* Each ROPS shall have the following information permanently affixed to the structure:

(1) Manufacturer or fabricator's name and address;

(2) ROPS model number, if any;

(3) Machine make, model, or series number that the structure is designed to fit.

(f) *Machines meeting certain existing governmental requirements.* Any machine in use, equipped with rollover protective structures, shall be deemed in compliance with this section if it meets the rollover protective structure requirements of the State of California, the U.S. Army Corps of Engineers, or the Bureau of Reclamation of the U.S. Department of the Interior in effect on April 5, 1972. The requirements in effect are:

(1) State of California: Construction Safety Orders, issued by the Department of Industrial Relations pursuant to Division 5, Labor Code, § 6312, State of California.

(2) U.S. Army Corps of Engineers: General Safety Requirements, EM–385–1–1 (March 1967).

(3) Bureau of Reclamation, U.S. Department of the Interior: Safety and Health Regulations for Construction, Part II (September 1971).

§ 1926.1001 Minimum performance criteria for rollover protective structures for designated scrapers, loaders, dozers, graders, and crawler tractors.

(a) *General.* This section prescribes minimum performance criteria for rollover protective structures (ROPS) for rubber-tired self-propelled scrapers; rubber-tired front-end loaders and rubber-tired dozers; crawler tractors, and crawler-type loaders, and motor graders. The vehicle and ROPS as a system shall have the structural characteristics prescribed in paragraph (f) of this section for each type of machine described in this paragraph.

(b) The static laboratory test prescribed herein will determine the adequacy of the structures used to protect the operator under the following conditions:

(1) For rubber-tired self-propelled scrapers, rubber-tired front-end loaders, and rubber-tired dozers: Operating between 0 and 10 miles per hour over hard clay where rollover would be limited to a maximum roll angle of 360° down a slope of 30° maximum.

(2) For motor graders: Operating between 0 and 10 miles per hour over hard clay where rollover would be limited to 360° down a slope of 30° maximum.

(3) For crawler tractors and crawler-type loaders: Operating between 0 and 10 miles per hour over hard clay where rollover would be limited to a maximum roll angle of 360° down a slope of 45°.

(c) *Facilities and apparatus.* (1) The following material is necessary:

(i) Material, equipment, and tiedown means adequate to insure that the ROPS and its vehicle frame absorb the applied energy.

(ii) Equipment necessary to measure and apply loads to the ROPS. Adequate means to measure deflections and lengths should also be provided.

(iii) Recommended, but not mandatory, types of test setups are illustrated in Figure W–1 for all types of equipment to which this section applies; and in Figure W–2 for rubber-tired self-propelled scrapers; Figure W–3 for rubber-tired front-end loaders, rubber-tired dozers, and motor graders; and Figure W–4 for crawler tractors and crawler-type loaders.

(2) Table W–1 contains a listing of the required apparatus for all types of equipment described in paragraph (a) of this section.

TABLE W–1

Means to measure	*Accuracy*
Deflection of ROPS, inches.	±5% of deflection measured.
Vehicle weight, pounds.	±5% of the weight measured.
Force applied to frame, pounds.	±5% of force measured.
Dimensions of critical zone, inches.	±0.5 in.

(d) *Vehicle condition.* The ROPS to be tested must be attached to the vehicle structure in the same manner as it will be attached during vehicle use. A totally assembled vehicle is not required. However, the vehicle structure and frame which support the ROPS must represent the actual vehicle installation. All normally detachable windows, panels, or nonstructural fittings shall be removed

so that they do not contribute to the strength of the ROPS.

(e) *Test procedure.* The test procedure shall include the following, in the sequence indicated:

(1) Energy absorbing capabilities of ROPS shall be verified when loaded laterally by incrementally applying a distributed load to the longitudinal outside top member of the ROPS, as shown in Figure W–1, W–2, or W–3, as applicable. The distributed load must be applied so as to result in approximately uniform deflection of the ROPS. The load increments should correspond with approximately 0.5 in. ROPS deflection increment in the direction of the load application, measured at the ROPS top edge. Should the operator's seat be offcenter, the load shall be applied on the offcenter side. For each applied load increment, the total load (lb.) versus corresponding deflection (in.) shall be plotted, and the area under the load-deflection curve shall be calculated. This area is equal to the energy (in.-lb.) absorbed by the ROPS. For a typical load-deflection curve and calculation method, see Figure W–5.

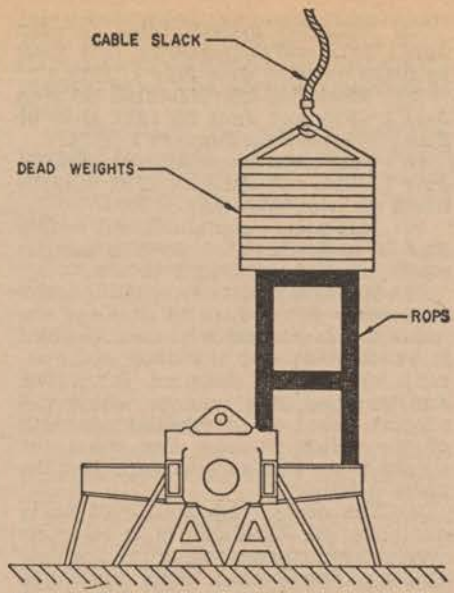


FIGURE W–1—Vertical loading setup for all types of equipment described in § 1518.1001(a).

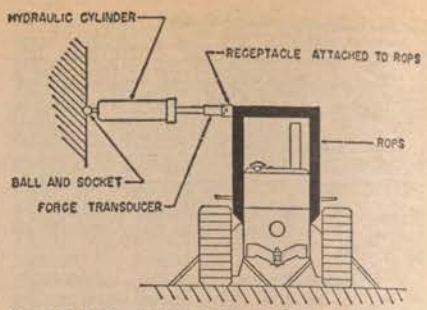
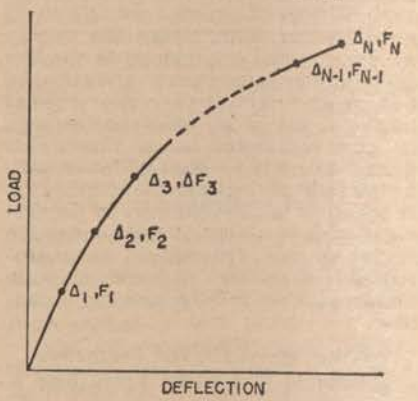


FIGURE W–4—Side-loading setup for crawler tractors and crawler loaders.



Δ- TOTAL DEFLECTION
F- FORCE APPLIED

$$\text{AREA} = \frac{\Delta_1 F_1}{2} + (\Delta_2 - \Delta_1)\frac{F_1 + F_2}{2} + (\Delta_3 - \Delta_2)\frac{F_2 + F_3}{2} + \cdots + (\Delta_N - \Delta_{N-1})\frac{F_{N-1} + F_N}{2}$$

FIGURE W–5—Determination of energy area under force deflection curve for all types of ROPS equipment defined in § 1926.1001.

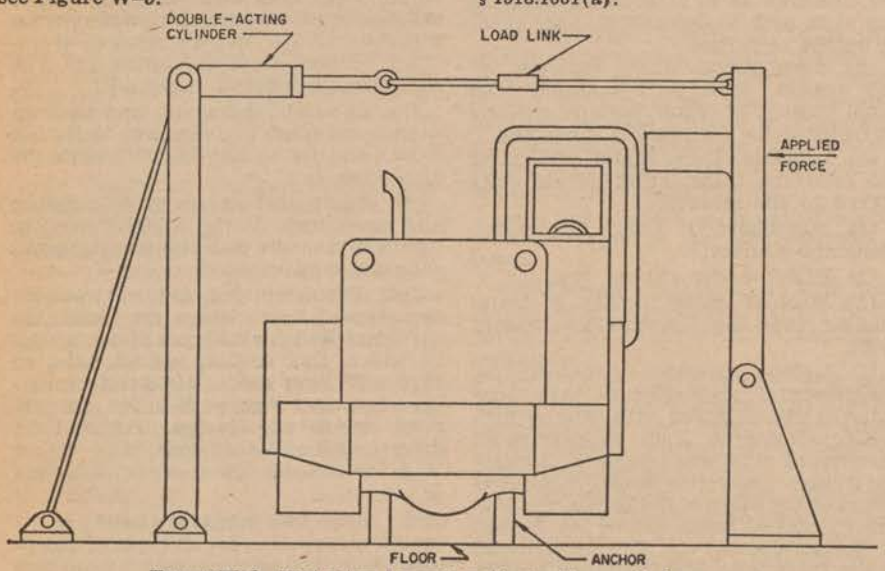


FIGURE W–2—Test setup for rubber-tired self-propelled scrapers.

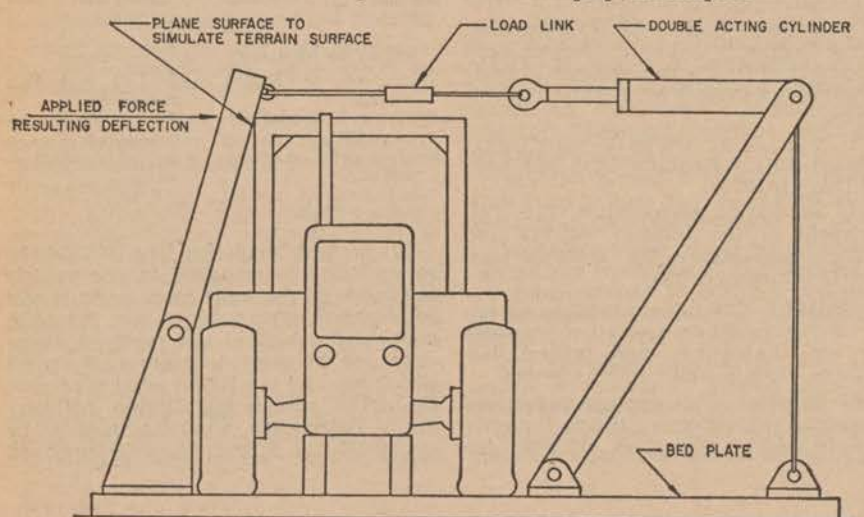


FIGURE W–3—Test setup for rubber-tired front-end loaders, rubber-tired dozers, and motor graders.

Incremental loading shall be continued until the ROPS has absorbed the amount of energy and the minimum applied load specified under paragraph (f) of this section has been reached or surpassed.

(2) To cover the possibility of the vehicle coming to rest on its top, the support capability shall be verified by applying a distributed vertical load to the top of the ROPS so as to result in approximately uniform deflection (see Figure W–1). The load magnitude is specified in paragraph (f)(2)(iii) of this section.

(3) The low temperature impact strength of the material used in the ROPS shall be verified by suitable material tests or material certification (see paragraph (f)(2)(iv) of this section).

(f) *Performance requirements*—(1) *General performance requirements.* (i) No repairs or straightening of any member shall be carried out between each prescribed test.

(ii) During each test, no part of the ROPS shall enter the critical zone as detailed in SAE J397 (1969). Deformation of the ROPS shall not allow the plane of the ground to enter this zone.

(2) *Specific performance requirements.* (i) The energy requirement for purposes of meeting the requirements of paragraph (e)(1) of this section is to be determined by referring to the plot of the energy versus weight of vehicle (see Figure W–6 for rubber-tired self-propelled scrapers; Figure W–7 for rubber-

tired front-end loaders and rubber-tired dozers; Figure W–8 for crawler tractors and crawler-type loaders; and Figure W–9 for motor graders). For purposes of this section, force and weight are measured as pounds (lb.); energy (U) is measured as inch-pounds.

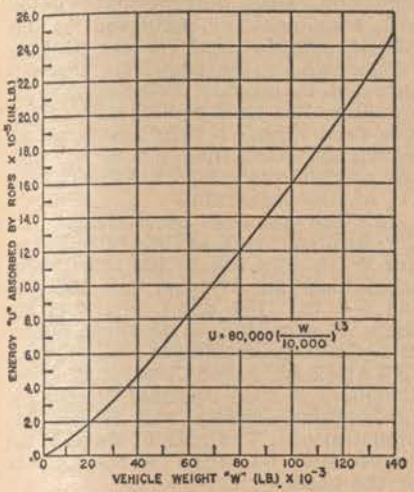


FIGURE W–6—Energy absorbed versus vehicle weight.

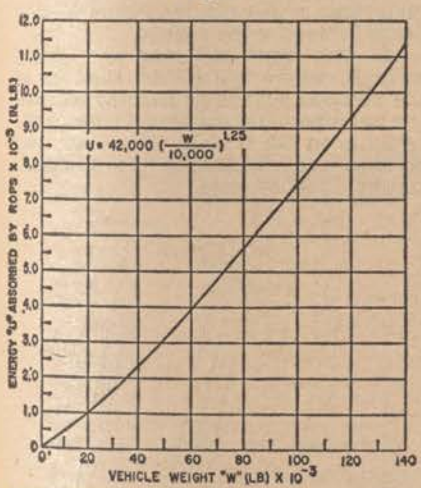


FIGURE W–7—Energy absorbed versus vehicle weight.

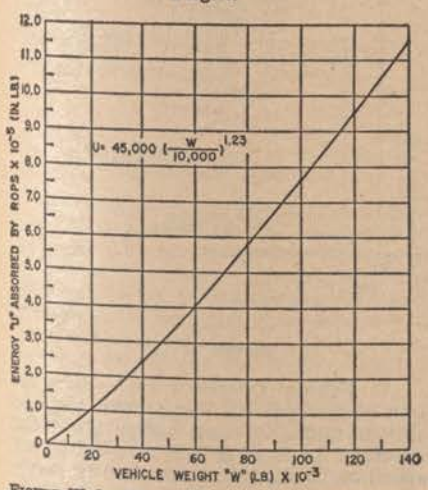


FIGURE W–8—Energy absorbed versus vehicle weight.

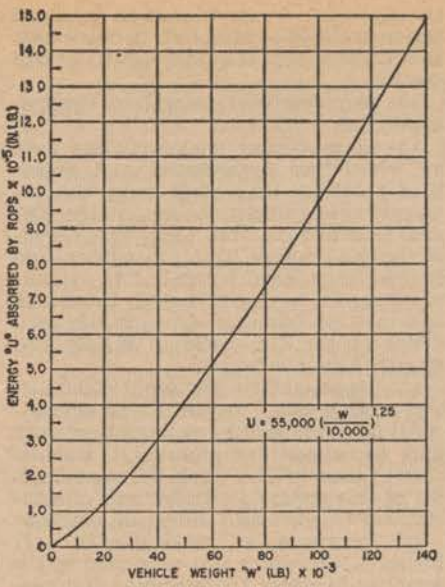


FIGURE W–9—Energy absorbed Versus Vehicle Weight.

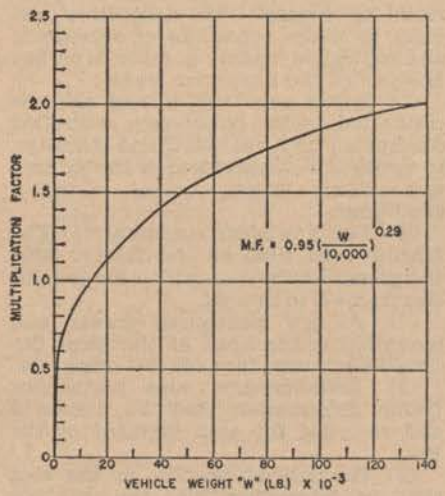


FIGURE W–10—Minimum horizontal load factor for self-propelled scrapers.

(ii) The applied load must attain at least a value which is determined by multiplying the vehicle weight by the corresponding factor shown in Figure W–10 for rubber-tired self-propelled scrapers; in Figure W–11 for rubber-tired front-end loaders and rubber-tired dozers; in Figure W–12 for crawler tractors and crawler-type loaders; and in Figure W–13 for motor graders.

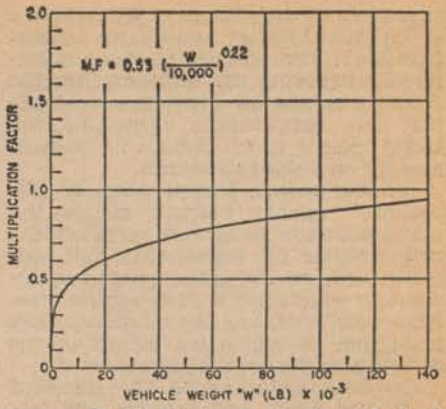


FIGURE W–11—Minimum horizontal load factor for rubber-tired loaders and dozers.

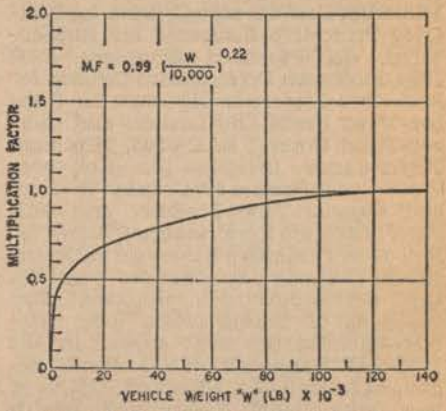


FIGURE W–12—Minimum horizontal load factor for crawler tractors and crawler-type loaders.

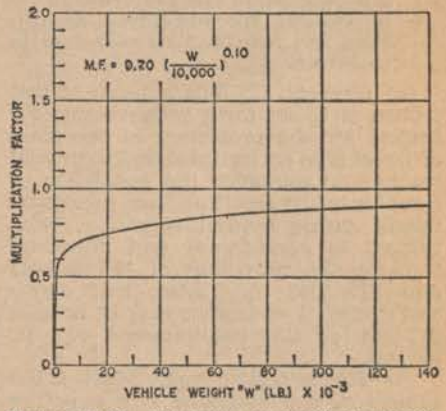


FIGURE W–13—Minimum horizontal load factor for motor graders.

(iii) The load magnitude for purposes of compliance with paragraph (e)(2) of this section is equal to the vehicle weight. The test of load magnitude shall only be made after the requirements of subparagraph (2)(i) of this paragraph are met.

(iv) Material used in the ROPS must have the capability of performing at zero degrees Fahrenheit, or exhibit Charpy V notch impact strength of 8 foot-pounds at minus 20° Fahrenheit. This is a standard Charpy specimen as described in American Society of Testing and Materials A 370, Methods and Definitions for Mechanical Testing of Steel Products

(available at each Regional Office of the Occupational Safety and Health Administration). The purpose of this requirement is to reduce the tendency of brittle fracture associated with dynamic loading, low temperature operation, and stress raisers which cannot be entirely avoided on welded structures.

(g) *Definitions.* For purposes of this section, "vehicle weight" means the manufacturer's maximum weight of the prime mover for rubber-tired self-propelled scrapers. For other types of equipment to which this section applies, "vehicle weight" means the manufacturer's maximum recommended weight of the vehicle plus the heaviest attachment.

(h) *Source of standard.* This standard is derived from, and restates, the following Society of Automotive Engineers Recommended Practices: SAE J320a, Minimum Performance Criteria for Roll-Over Protective Structure for Rubber-Tired, Self-Propelled Scrapers; SAE J394, Minimum Performance Criteria for Roll-Over Protective Structure for Rubber-Tired Front End Loaders and Rubber-Tired Dozers; SAE J395, Minimum Performance Criteria for Roll-Over Protective Structure for Crawler Tractors and Crawler-Type Loaders; and SAE J396, Minimum Performance Criteria for Roll-Over Protective Structure for Motor Graders. These recommended practices shall be resorted to in the event that questions of interpretation arise. The recommended practices appear in the 1971 SAE Handbook, which may be examined in each of the Regional Offices of the Occupational Safety and Health Administration.

§ 1926.1002 Protective frame (ROPS) test procedures and performance requirements for wheel-type agricultural and industrial tractors used in construction.

(a) *General.* (1) The purpose of this section is to set forth requirements for frames for the protection of operators of wheel type agricultural and industrial tractors to minimize the possibility of operator injury resulting from accidental upsets during normal operation. With respect to agricultural and industrial tractors, the provisions of §§ 1026.1001 and 1926.1003 for rubber-tired dozers and rubber-tired loaders may be utilized in lieu of the requirements of this section.

(2) The protective frame which is the subject of this standard is a structure mounted to the tractor that extends above the operator's seat and conforms generally to Figure W–14.

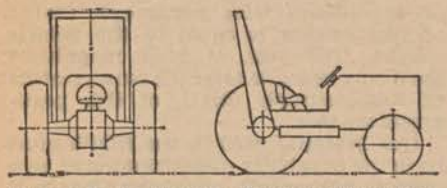


FIGURE W–14—Typical frame configuration.

(3) If an overhead weather shield is attached to the protective frame, it may be in place during tests: *Provided,* That it does not contribute to the strength of the protective frame. If such an overhead weather shield is attached, it must meet the requirements of paragraph (i) of this section.

(4) For overhead protection requirements, see § 1926.1003.

(5) If protective enclosures are used on wheel-type agricultural and industrial tractors, they shall meet the requirements of Society of Automotive Engineers Standard J168 (July 1970), Protective Enclosures, Test Procedures, and Performance Requirements. This standard appears in the 1971 SAE Handbook and may be examined in each Regional Office of the Occupational Safety and Health Administration.

(b) *Applicability.* The requirements of this section apply to wheel-type agricultural tractors used in construction work and to wheel-type industrial tractors used in construction work. See paragraph (j) of this section for definitions of agricultural tractors and industrial tractors.

(c) *Performance requirements.* (1) Either a laboratory test or a field test is required in order to determine the performance requirements set forth in subdivision (i) of this subparagraph.

(2) A laboratory test may be either static or dynamic. The laboratory test must be under conditions of repeatable and controlled loading in order to permit analysis of the protective frame.

(3) A field upset test, if used, shall be conducted under reasonably controlled conditions, both rearward and sideways, to verify the effectiveness of the protective frame under actual dynamic conditions.

(d) *Test procedures—general.* (1) The tractor used shall be the tractor with the greatest weight on which the protective frame is to be used.

(2) A new protective frame and mounting connections of the same design shall be used for each test procedure.

(3) Instantaneous and permanent frame deformation shall be measured and recorded for each segment of the test.

(4) Dimensions relative to the seat shall be determined with the seat unloaded and adjusted to its highest and most rearward latched position provided for a seated operator.

(5) If the seat is offset, the frame loading shall be on the side with the least space between the centerline of the seat and the upright.

(6) The low temperature impact strength of the material used in the protective structure shall be verified by suitable material tests or material certifications in accordance with § 1926.1001 (f) (2) (iv).

(e) *Test procedure for vehicle overturn—(1) Vehicle weight.* The weight of the tractor, for purposes of this section, includes the protective frame, all fuels, and other components required for normal use of the tractor. Ballast must be added if necessary to achieve a minimum total weight of 130 lb. (59 kg.) per maximum power takeoff horsepower at rated engine speed. The weight of the front end must be at least 33 lb. (15 kg.) per maximum power takeoff horsepower. In case power takeoff horsepower is unavailable, 95 percent of net engine flywheel horsepower shall be used.

(2) Agricultural tractors shall be tested at the weight set forth in subparagraph (1) of this paragraph.

(3) Industrial tractors shall be tested with items of integral or mounted equipment and ballast that are sold as standard equipment or approved by the vehicle manufacturer for use with the vehicle where the protective frame is expected to provide protection for the operator with such equipment installed. The total vehicle weight and front end weight as tested shall not be less than the weights established in subparagraph (1) of this paragraph.

(4) The test shall be conducted on a dry, firm soil bank as illustrated in Figure W–15. The soil in the impact area shall have an average cone index in the 0–6 in. (153 mm.) layer not less than 150 according to American Society of Agricultural Engineers Recommendation ASAE R313, Soil Cone Penetrometer (available in each Regional Office of the Occupational Safety and Health Administration). The path of travel of the vehicle shall be 12°±2° to the top edge of the bank.

(5) The upper edge of the bank shall be equipped with an 18 in. (457 mm.) high ramp as described in Figure W–15 to assist in tipping the vehicle.

(6) The front and rear wheel tread settings, where adjustable, shall be at the position nearest to halfway between the minimum and maximum settings obtainable on the vehicle. Where only two settings are obtainable, the minimum setting shall be used.

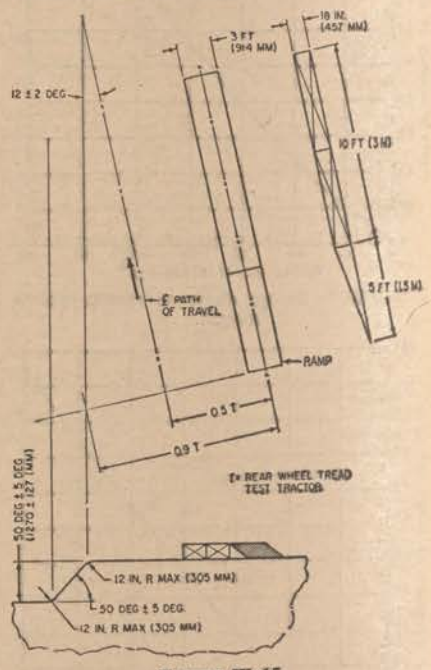


FIGURE W–15.

(7) *Vehicle Overturn Test—Sideways and Rearward.* (i) The tractor shall be driven under its own power along the specified path of travel at a minimum speed of 10 m.p.h. (16 km./hr.) or maximum vehicle speed if under 10 m.p.h.

(16 km./hr.) up the ramp as described in subparagraph (5) of this paragraph to induce sideways overturn.

(ii) Rear upset shall be induced by engine power with the tractor operating in gear to obtain 3–5 m.p.h. (4.8–8 km./hr.) at maximum governed engine r.p.m. preferably by driving forward directly up a minimum slope of two vertical to one horizontal. The engine clutch may be used to aid in inducing the upset.

(f) *Other test procedures.* When the field upset test is not used to determine ROPS performance, either the static test or the dynamic test, contained in paragraph (g) or (h) of this section, shall be made.

(g) *Static test*—(1) *Test conditions.* (i) The laboratory mounting base shall include that part of the tractor chassis to which the protective frame is attached including the mounting parts.

(ii) The protective frame shall be instrumented with the necessary equipment to obtain the required load deflection data at the locations and directions specified in Figures W–16, W–17, and W–18.

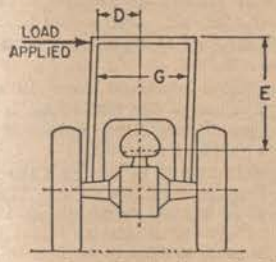


FIGURE W–16—Side load application.

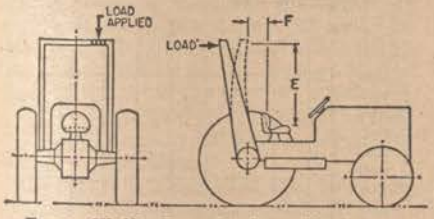


FIGURE W–17—Rear load application.

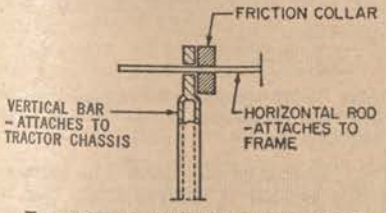


FIGURE W–18—Method of measuring instantaneous deflection.

(iii) The protective frame and mounting connections shall be instrumented with the necessary recording equipment to obtain the required load-deflection data to be used in calculating FSB (see paragraph (j)(3) of this section). The gauges shall be placed on mounting connections before the installation load is applied.

(2) *Test procedure.* (i) The side load application shall be at the upper extremity of the frame upright at a 90° angle to the centerline of the vehicle. The side load "L" shall be applied according to Figure W–16. "L" and "D" shall be recorded simultaneously. The test shall be stopped when:

(*a*) The strain energy absorbed by the frame is equal to the required input energy (E_{in}) or

(*b*) Deflection of the frame exceeds the allowable deflection, or

(*c*) The frame load limit occurs before the allowable deflection is reached in the side load.

(ii) The L–D diagram, as shown by means of a typical example in Figure W–19, shall be constructed, using the data obtained in accordance with subdivision (i) of this subparagraph.

(iii) The modified L_m–D_m diagram shall be constructed according to subdivision (ii) of this subparagraph and according to Figure W–20. The strain energy absorbed by the frame (E_u) shall then be determined.

(iv) E_{in}, FER, and FSB shall be calculated.

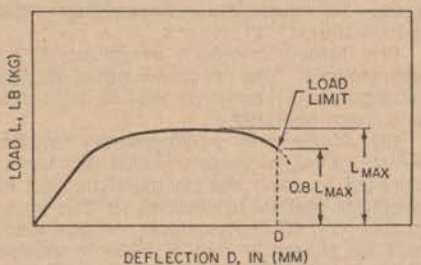


FIGURE W–19—Typical L–D diagram.

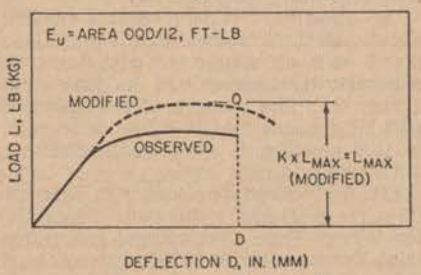


FIGURE W–20—Typical modified L_m–D_m diagram.

(v) The test procedure shall be repeated on the same frame utilizing L (rear input; see FIGURE W–18) and E_{ir}. Rear load application shall be uniformly distributed along a maximum projected dimension of 27 in. (686 mm.) and a maximum area of 160 sq. in. (1,032 sq. cm.) normal to the direction of load application. The load shall be applied to the upper extremity of the frame at the point which is midway between the centerline of the seat and the inside of the frame upright.

(h) *Dynamic test*—(1) *Test conditions.* (i) The protective frame and tractor shall meet the requirements of paragraphs (e) (2) or (3) of this section, as appropriate.

(ii) The dynamic loading shall be produced by use of a 4,410 lb. (2,000 kg.) weight acting as a pendulum. The impact face of the weight shall be 27 plus or minus 1 in. by 27 plus or minus 1 in. (686+ or −25 mm.) and shall be constructed so that its center of gravity is within 1 in. (25.4 mm.) of its geometric center. The weight shall be suspended from a pivot point 18–22 ft. (5.5–6.7 m.) above the point of impact on the frame and shall be conveniently and safely adjustable for height. (See Figure W–21.)

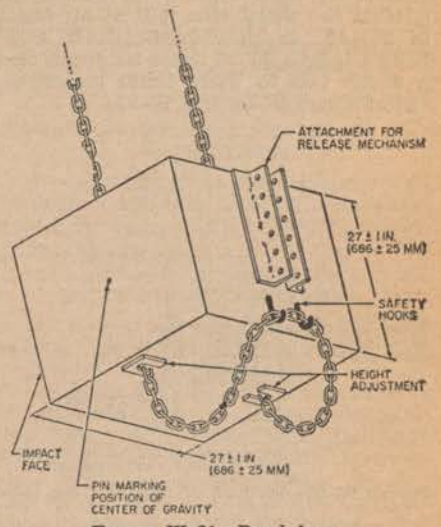


FIGURE W–21—Pendulum.

(iii) For each phase of testing, the tractor shall be restrained from moving when the dynamic load is applied. The restraining members shall be of 0.5–0.63 in. (12.5–16 mm.) steel cable and points of attaching restraining members shall be located an appropriate distance behind the rear axle and in front of the front axle to provide a 15°–30° angle between a restraining cable and the horizontal. The restraining member shall either be in the plane in which the center gravity of the pendulum will swing or more than one restraining cable shall give a resultant force in this plane. (See Figure W–22.)

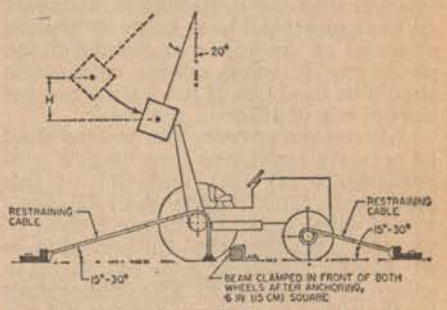


FIGURE W–22—Method of impact from rear.

(iv) The wheel tread setting shall comply with the requirements of paragraph (e)(6) of this section. The tires shall have no liquid ballast and shall be inflated to the maximum operating pressure recommended by the tire manufacturer. With specified tire inflation, the restraining cables shall be tightened to provide tire deflection of 6–8 percent of nominal tire section width. After the vehicle is properly restrained, a wooden beam 6 x 6 in. (15 x 15 cm.) shall be driven tightly against the appropriate wheels and clamped. For the test to the side, an additional wooden beam shall be placed as a prop against the wheel near-

est the operator's station and shall be secured to the floor so that it is held tightly against the wheel rim during impact. The length of this beam shall be chosen so that when it is positioned against the wheel rim, it is at an angle of 25°–40° to the horizontal. It shall have a length 20–25 times its depth and a width two to three times its depth. (See Figures W–22 and W–23.)

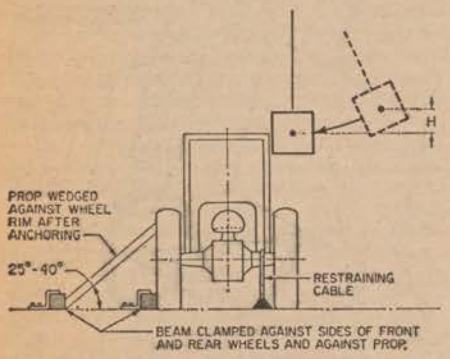


FIGURE W–23—Method of impact from side.

(v) Means shall be provided indicating the maximum instantaneous deflection along the line of impact. A simple friction device is illustrated in Figure W–23.

(vi) No repair or adjustments may be carried out during the test.

(vii) If any cables, props, or blocking shift or break during the test, the test shall be repeated.

(2) *Test procedure*—(i) *General.* The frame shall be evaluated by imposing dynamic loading to rear followed by a load to the side on the same frame. The pendulum dropped from the height (see definition "H" in paragraph (j) (3) of this section) imposes the dynamic load. The position of the pendulum shall be so selected that the initial point of impact on the frame shall be in line with the arc of travel of the center of gravity of the pendulum. A quick release mechanism should be used but, if used, shall not influence the attitude of the block.

(ii) *Impact at rear.* The tractor shall be properly restrained according to subparagraphs (1) (iii) and (iv) of this paragraph. The tractor shall be positioned with respect to the pivot point of the pendulum such that the pendulum is 20° from the vertical prior to impact, as shown in Figure W–22. The impact shall be applied to the upper extremity of the frame at the point which is midway between the centerline of the seat and the inside of the frame upright of a new frame.

(iii) *Impact at side.* The block and restraining shall conform to subparagraphs (1) (iii) and (iv) of this paragraph. The point of impact shall be that structural member of the protective frame likely to hit the ground first in a sideways accidental upset. The side impact shall be applied to the side opposite that used for rear impact.

(i) *Performance requirements*—(1) *General.* (i) The frame, overhead weather shield, fenders, or other parts in the operator area may be deformed but shall not shatter or leave sharp edges exposed to the operator, or violate dimensions as shown in Figures W–16 and W–17 as follows:

D=2 in. (51 mm.) inside of frame upright to vertical centerline of seat.
E=30 in. (762 mm.).
F=Not less than 0 in. and not more than 12 in. (305 mm.), measured at centerline front of seat backrest to crossbar along the line of load application as shown in Figure W–17.
G=24 in. (610 mm.).

(ii) The material and design combination used in the protective structure must be such that the structure can meet all prescribed performance tests at zero degrees Fahrenheit in accordance with § 1926.1001(f) (2) (iv).

(2) *Vehicle overturn performance requirements.* The requirements of this paragraph (i) must be met in both side and rear overturns.

(3) *Static test performance requirements.* Design factors shall be incorporated in each design to withstand an overturn test as prescribed in this paragraph (i). The structural requirements will be generally met if FER is greater than 1 and FSB is greater than K–1 in both side and rear loadings.

(4) *Dynamic test performance requirements.* Design factors shall be incorporated in each design to withstand the overturn test prescribed in this paragraph (i). The structural requirements will be generally met if the dimensions in this paragraph (i) are adhered to in both side and rear loads.

(j) *Definitions applicable to this section.* (1) SAE J333a, Operator Protection for Wheel-Type Agricultural and Industrial Tractors (July 1970) defines "agricultural tractor" as a "wheel-type vehicle of more than 20 engine horsepower designed to furnish the power to pull, carry, propel, or drive implements that are designed for agricultural usage." Since this Part 1926 applies only to construction work, the following definition of "agricultural tractor" is adopted for purposes of this subpart: "Agricultural tractor" means a wheel-type vehicle of more than 20 engine horsepower, used in construction work, which is designed to furnish the power to pull, propel, or drive implements.

(2) "Industrial tractor" means that class of wheeled type tractor of more than 20 engine horsepower (other than rubber-tired loaders and dozers described in § 1926.1001), used in operations such as landscaping, construction services, loading, digging, grounds keeping, and highway maintenance.

(3) The following symbols, terms, and explanations apply to this section:

E_{ls}=Energy input to be absorbed during side loading. $E_{ls}=723+0.4$ W ft.-lb. ($E'_{ls}=100+0.12$ W', m.-kg.).
E_{lr}=Energy input to be absorbed during rear loading. $E_{lr}=0.47$ W ft.-lb. ($E'_{lr}=0.14$ W', m.-kg.).
W=Tractor weight as prescribed in § 1926.1002 (e) (1) and (e) (3), in lb. (W', kg.).
L=Static load, lb. (kg.).
D=Deflection under L, in. (mm.).
L-D=Static load-deflection diagram.
L_m-D_m=Modified static load-deflection diagram (Figure W–20). To account for increase in strength due to increase in strain rate, raise L in plastic range to L x K.
K=Increase in yield strength induced by higher rate of loading (1.3 for hot rolled low carbon steel 1010–1030). Low carbon is preferable; however, if higher carbon or other material is used, K must be determined in the laboratory. Refer to Charles H. Norris, et al., Structural Design for Dynamic Loads (1959), p. 3.
L_{max}=Maximum observed static load.
Load Limit=Point on L-D curve where observed static load is 0.8 L_{max} (refer to Figure W–19).
E_u=Strain energy absorbed by the frame, ft.-lb. (m.-kg.) area under L_m-D_m curve.
FER=Factor of energy ratio, FER=E_u/E_{ls}; also=E_u/E_{tr}.
P_b=Maximum observed force in mounting connection under static load, L, lb. (kg.).
FSB=Design margin for mounting connection FSB=$(P_u/P_b)-1$.
H=Vertical height of lift of 4,410 lb. (2,000 kg.) weight, in. (H', mm.). The weight shall be pulled back so that the height of its center of gravity above the point of impact is defined as follows: H=4.92 +0.00190 W or (H'=125+0.107 W') (Figure W–24).

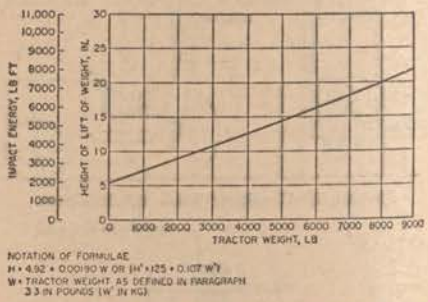


FIGURE W–24—Impact energy and corresponding lift height of 4,410 lb. (2,000 kg.) weight.

(k) *Source of standard.* The standard in this section is derived from, and restates, Society of Automotive Engineers Standard J334a (July 1970), Protective Frame Test Procedures and Performance Requirements. This standard shall be resorted to in the event that questions of interpretation arise. The standard appears in the 1971 SAE Handbook, which may be examined in each of the Regional Offices of the Occupational Safety and Health Administration.

§ 1926.1003 Overhead protection for operators of agricultural and industrial tractors.

(a) *General*—(1) *Purpose.* When overhead protection is provided on wheel-type agricultural and industrial tractors, the overhead protection shall be designed and installed according to the requirements contained in this section. The provisions of § 1926.1001 for rubber-tired dozers and rubber-tired loaders may be used in lieu of the standards contained in this section. The purpose of the standard is to minimize the possibility of operator injury resulting from overhead hazards such as flying and falling objects, and at the same time to minimize the possibility of operator injury from the cover itself in the event of accidental upset.

(2) *Applicability.* This standard applies to wheel-type agricultural tractors used in construction work and to wheel-type industrial tractors used in construction work. See § 1926.1002 (b) and (j). In the case of machines to which § 1926.604 (relating to site clearing) also applies, the overhead protection may be either the type of protection provided in § 1926.604 or the type of protection provided by this section.

(b) *Overhead protection.* When overhead protection is installed on wheel-type agricultural or industrial tractors used in construction work, it shall meet the requirements of this paragraph. The overhead protection may be constructed of a solid material. If grid or mesh is used, the largest permissible opening shall be such that the maximum circle which can be inscribed between the elements of the grid or mesh is 1.5 in. (38 mm.) in diameter. The overhead protection shall not be installed in such a way as to become a hazard in the case of upset.

(c) *Test procedures—general.* (1) The requirements of § 1926.1002 (d), (e), and (f) shall be met.

(2) Static and dynamic rear load application shall be uniformly distributed along a maximum projected dimension of 27 in. (686 mm.) and a maximum area of 160 in.^{2} (1,032 cm.^{2}) normal to the direction of load application. The load shall be applied to the upper extremity of the frame at the point which is midway between the centerline of the seat and the inside of the frame upright.

(3) The static and dynamic side load application shall be uniformly distributed along a maximum projected dimension of 27 in. (686 mm.) and a maximum area of 160 in.^{2} (1,032 cm.^{2}) normal to the direction of load application. The direction of load application is the same as in § 1926.1002 (g) and (h). To simulate the characteristics of the structure during an upset, the center of load application may be located from a point 24 in. (610 mm.) (K) forward to 12 in. (305 mm.) (L) rearward of the front of the seat backrest to best utilize the structural strength. See Figure W–25.

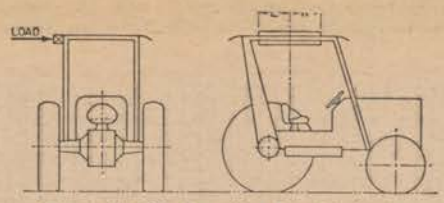


FIGURE W–25—Location for side load.

(d) *Drop test procedures.* (1) The same frame shall be subjected to the drop test following either the static or dynamic test.

(2) A solid steel sphere or material of equivalent spherical dimension weighing 100 lb. (45.4 kg.) shall be dropped once from a height 10 ft. (3,048 mm.) above the overhead cover.

(3) The point of impact shall be on the overhead cover at a point within the zone of protection as shown in Figure W–26, which is furthest removed from major structural members.

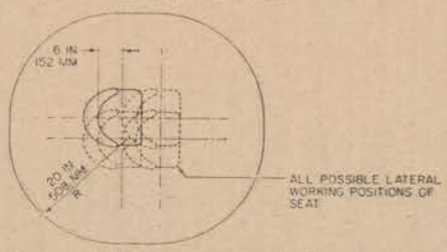


FIGURE W–26—Zone of protection for drop test.

(e) *Crush test procedure.* (1) The same frame shall be subjected to the crush test following the drop test and static or dynamic test.

(2) The test load shall be applied as shown in Figure W–27 with the seat positioned as specified in § 1926.1002(d)(4). Loading cylinders shall be pivotally mounted at both ends. Loads applied by each cylinder shall be equal within 2 percent, and the sum of the loads of the two cylinders shall be two times the tractor weight as set forth in § 1926.1002(e)(1). The maximum width of the beam illustrated in Figure W–27 shall be 6 in. (152 mm.).

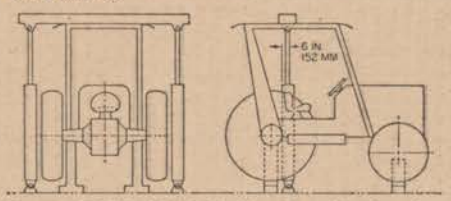


FIGURE W–27—Method of load application for crush test.

(f) *Performance requirements*—(1) *General.* The performance requirements set forth in § 1926.1002(i) (2), (3), and (4) shall be met.

(2) *Drop test performance requirements.* (i) Instantaneous deformation due to impact of the sphere shall not enter the protected zone as illustrated in Figures W–25, W–26, and W–28.

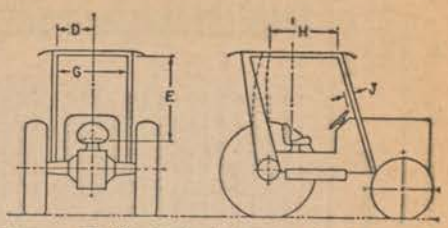


FIGURE W–28—Protected zone during crush and drop tests.

(ii) In addition to the dimensions set forth in § 1926.1002(i)(1)(i), the following dimensions apply to Figure W–28:

H=17.5 in. (444 mm.)
J=2 in. (50.8 mm.) measured from the outer periphery of the steering wheel.

(3) *Crush test performance requirements.* The protected zone as described in Figure W–28 must not be violated.

(g) *Source of standard.* This standard is derived from, and restates, the portions of Society of Automotive Engineers Standard J167 which pertain to overhead protection requirements. The full title of the SAE standard is: Protective Frame with Overhead Protection—Test Procedures and Performance Requirements. The SAE standard shall be resorted to in the event that questions of interpretation arise. The SAE standard appears in the 1971 SAE Handbook, which may be examined in each of the Regional Offices of the Occupational Safety and Health Administration.

Subpart X—Effective Dates

§ 1926.1050 Effective dates (general).

Except where different effective dates are specifically provided in § 1926.1051, the safety and health standards published in Subparts C through U of this part shall become effective on April 24, 1971, for all Federal and federally assisted advertised contracts subject thereto which are advertised after that date and on April 27, 1971, for all such negotiated contracts for which negotiations begin after that date.

§ 1926.1051 Effective dates (specific).

(a) With respect to standards concerning brakes and fenders prescribed in § 1926.602, the rules contained therein specify the applicable effective dates.

(b) (1) To the extent that the standards in this part apply to light residential construction, their application is delayed until September 27, 1971, whereupon the standards shall apply to contracts subject to the Contract Work Hours and Safety Standards Act which are advertised on or after that date and to such contracts which may be negotiated when the negotiations commence on or after that date.

(2) For the purpose of this paragraph, the term "light residential construction" is limited to the construction of homes and apartments which do not exceed three stories in height, and which do not have an elevator.

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[FR Doc.72-21503 Filed 12-15-72;8:45 am]

APPENDIX I

NOTE: The amendments to § 1926.451 published at 37 F.R. 25712, December 2, 1972, are not included in the republication of Part 1926. As a convenience to the user, the complete text of the amending document is set forth below.

PART 1926—SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

Scaffolding Generally and Pump Jack Scaffolding and Roof Catch Platforms

Proceedings with respect to the above subjects were commenced by notice published in the FEDERAL REGISTER on June 7, 1972 (37 F.R. 11340). The notice concerned: (1) A proposed increase in the height after which guardrails, midrails, and toeboards on scaffolding are required; (2) permitting the use of pump jack scaffolds subject to specific requirements; and (3) requirements for roof catch platforms. The proposals largely reflected the recommendations of the Advisory Committee on Construction Safety and Health.

The regulations to which the changes were proposed have application under the Construction Safety Act (40 U.S.C. 333) and the Williams-Steiger Occupational Safety and Health Act of 1970 (29 U.S.C. 651, et seq.).

The notice of proposed rule making invited interested persons to submit written data, views, and arguments concerning the proposed changes and a hearing was held on July 26, 1972.

The certified record of the hearing, the written comments received as well as staff suggestions were submitted to the Advisory Committee on Construction Safety and Health for its review and advice pursuant to 29 CFR 1911.18. The Advisory Committee has considered this material and has submitted its recommendation to the Assistant Secretary for Occupational Safety and Health for decision.

The major issues for decision are:

1. Whether the height after which guardrails, midrails, and toeboards for scaffolds are required should be raised from 6 feet to 10 feet;

2. Whether the height after which catch platforms must be used below sloped roofs should be raised from 10 feet to 16 feet or some greater height and whether this requirement should continue to apply to slopes greater than three in 12 or should be changed to apply only to some greater slope; and

3. Whether the use of pump jack scaffolds should be permitted and if so under what conditions.

Having considered carefully all written and oral comments contained in the record and having reviewed the views of the Advisory Committee, these issues are discussed and decided as follows:

1. *Ten foot requirement for scaffolding.* The notice of proposed rule making changes the height above which guardrails, midrails, and toeboards are required from 6 feet above the floor or ground to 10 feet. No comments were received objecting to this amendment which tends to bring about a greater uniformity between the Construction Safety Standards and the general industry standards contained in 29 CFR Part 1910. Accordingly this proposal is adopted. The provisions of the proposal relating to form scaffolds (29 CFR 1926.451(x)(6)(iii)) are, however, changed to conform to the requirements applying to other types of scaffolds.

2. *Catch platforms.* Under the notice of proposed rule making the height above which catch platforms are required was raised from 10 feet to 16 feet. Because the occupational safety and health standard for general industry employments is set at 20 feet, it has been contended that in the interest of uniformity this level should be applied to construction as well. The Advisory Committee pointed out, however, that the 16-foot level provides a more practical dividing line for the construction industry as it will generally apply the obligation to the building of structures that exceed one story while in most circumstances will relieve builders of single-story structures. Their recommendation is therefore adopted.

The requirements for catch platforms apply where the slope of a roof exceeds 3 inches in 12 inches without a parapet. The greatest number of comments indicated the belief that this slope did not present any significant danger of falling. Accordingly, the Committee has recommended and I have decided to adopt a standard of 4 inches in 12 inches without a parapet.

At the hearing a contention was made that in certain circumstances a temporary device constructed on a sloped roof could form an economical and equally safe alternative to a catch platform. To the extent that such devices can be said to constitute secure temporary parapets, they may qualify as an acceptable means of protection. Such a solution requires no amendment to the standards as they already permit parapets as an alternative to catch platforms.

3. *Pump jack scaffolds.* Under the present standards the use of pump jack scaffolds is prohibited. Because the Advisory Committee determined that subject to proper safeguards the use of pump jack scaffolding would be safe, the proposal authorized their use subject to itemized minimum safety requirements. Although no objections were received to the proposed authorization to use this type of scaffold, several suggestions were submitted by persons who have had experience with them for improving the safety requirements relating to their use. Accordingly, the proposed § 1926.451(y) has been revised on the basis of an analysis of these comments.

Accordingly, the amendments as proposed are hereby adopted subject to changes in § 1926.451 (u)(3), (x)(6)(iii), and (y) based upon the findings set forth above. As these amendments will result in relieving restrictions they shall become effective immediately.

Signed at Washington, D.C., this 29th day of November 1972.

G. C. GUENTHER,
Assistant Secretary of Labor.

§ 1926.451 Scaffolding.

(a) *General requirements.* * * *

(4) Guardrails and toeboards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor, except needle beam scaffolds and floats (see paragraphs (p) and (w) of this section). Scaffolds 4 feet to 10 feet in height, having a minimum horizontal dimension in either direction of less than 45 inches, shall have standard guardrails installed on all open sides and ends of the platform.

* * * * *

(20) The use of shore or lean-to scaffolds is prohibited.

* * * * *

(b) *Wood pole scaffolds.* * * *

(15) Guardrails, made of lumber not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail of 1 x 6 inch lumber (or other material providing equivalent protection), and toeboards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section, when required.

* * * * *

(c) *Tube and coupler scaffolds.* * * *

(13) Guardrails, made of lumber not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail of 1 x 6 inch lumber (or other material providing equivalent protection), and toeboard shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(d) *Tubular welded frame scaffolds.* * * *

(10) Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), and approximately 42 inches high, with a midrail of 1 x 6 inch lumber (or other material providing equivalent protection), and toeboards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(e) *Manually propelled mobile scaffolds.* * * *

(10) Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail, of 1 x 6 inch lumber (or other material providing equivalent protection), and toeboards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

* * * * *

(g) *Outrigger scaffolds.* * * *

(5) Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail of 1 x 6 inch lumber (or other material providing equivalent protection), and toeboards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(h) *Masons' adjustable multiple-point suspension scaffolds.* * * *

(15) Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(i) *(Swinging scaffolds) two-point suspension.* * * *

(11) Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(j) *Stone setters' adjustable multiple point suspension scaffolds.* * * *

(9) Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail, and toeboards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

* * * * *

(m) *Carpenters' bracket scaffolds.* * * *

(6) Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail, of 1 x 6 inch lumber (or other material providing equivalent protection), and toeboards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

* * * * *

(o) *Horse scaffolds.* * * *

(7) Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail, of 1 x 6 inch lumber (or other material providing equivalent protection), and toeboards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

* * * * *

(q) *Plasterers', decorators', and large area scaffolds.* * * *

(4) Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail of 1 x 6 inch lumber (or other material providing equivalent protection), and toeboards, shall be installed on all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

(r) *Interior hung scaffolds.* * * *

(5) Guardrails made of lumber, not less than 2 x 4 inches (or other material providing equivalent protection), approximately 42 inches high, with a midrail of 1 x 6 inch lumber (or other material providing equivalent protection), and toeboards, shall be installed at all open sides and ends on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(6) of this section.

* * * * *

(u) *Roofing brackets.* * * *

(3) A catch platform shall be installed below the working area of roofs more than 16 feet from the ground to eaves with a slope greater than 4 inches in 12 inches without a parapet. In width, the platform shall extend 2 feet beyond the protection of the eaves and shall be provided with a guardrail, midrail, and toeboard. This provision shall not apply where employees engaged in work upon such roofs are protected by a safety belt attached to a lifeline.

* * * * *

(x) *Form scaffolds.* * * *

(6) * * *

(iii) Guardrails and toeboards shall be installed on all open sides and ends of platforms and scaffolding over 10 feet above floor or ground. Guardrails shall be made of lumber 2 x 4 inch nominal dimension (or other material providing equivalent protection), approximately 42 inches high, supported at intervals not to exceed 8 feet. Guardrails shall be equipped with midrails constructed of 1 x 6 inch nominal lumber (or other material providing equivalent protection). Toeboards shall extend not less than 4 inches above the scaffold plank.

(y) *Pump jack scaffolds.* (1) Pump jack scaffolds shall:

(i) Not carry a working load exceeding 500 pounds; and

(ii) Be capable of supporting without failure at least four times the maximum intended load.

(iii) The manufactured components shall not be loaded in excess of the manufacturer's recommended limits.

(2) Pump jack brackets, braces, and accessories shall be fabricated from metal plates and angles. Each pump jack bracket shall have two positive gripping mechanisms to prevent any failure or slippage.

(3) The platform bracket shall be fully decked and the planking secured. Planking, or equivalent, shall conform with paragraph (a) of this section.

(4) (i) When wood scaffold planks are used as platforms, poles used for pump jacks shall not be spaced more than 10 feet center to center. When fabricated platforms are used that fully comply with all other provisions of this paragraph (y), pole spacing may exceed 10 feet center to center.

(ii) Poles shall not exceed 30 feet in height.

(iii) Poles shall be secured to the work wall by rigid triangular bracing, or equivalent, at the bottom, top, and other points as necessary, to provide a maximum vertical spacing of not more than 10 feet between braces. Each brace shall be capable of supporting a minimum of 225 pounds tension or compression.

(iv) For the pump jack bracket to pass bracing already installed, an extra brace shall be used approximately 4 feet above the one to be passed until the original brace is reinstalled.

(5) All poles shall bear on mud sills or other adequate firm foundations.

(6) Pole lumber shall be two 2 x 4's, of Douglas fir, or equivalent, straight-grained, clear, free of cross-grain, shakes, large loose or dead knots, and other defects which might impair strength.

(7) When poles are constructed of two continuous lengths, they shall be two by fours, spiked together with the seam parallel to the bracket, and with 10d common nails, no more than 12 inches center to center, staggered uniformly from opposite outside edges.

(8) If two by fours are spliced to make up the pole, the splices shall be so constructed as to develop the full strength of the member.

(9) A ladder, in accordance with § 1926.450, shall be provided for access to the platform during use.

(10) Not more than two persons shall be permitted at one time upon a pump jack scaffold between any two supports.

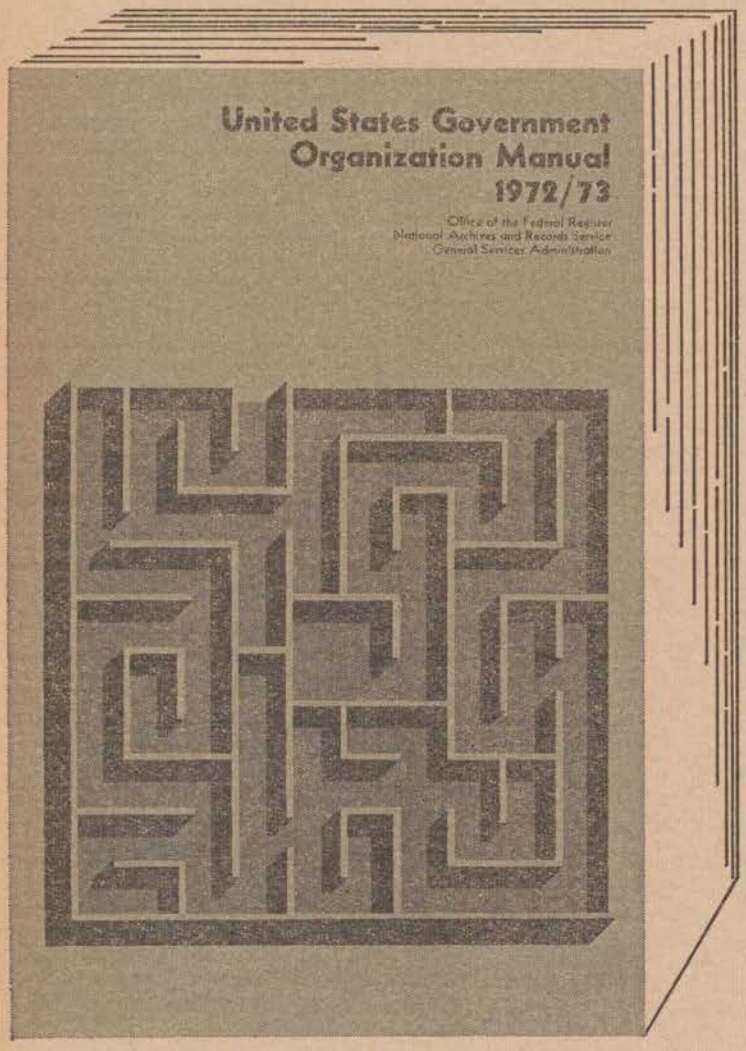
(11) Pump jacks scaffolds shall be provided with standard guardrails as defined in § 1926.451(a)(15), but no guardrail is required when safety belts with lifelines are provided for employees.

(12) When a work bench is used at an approximate height of 42 inches, the top guardrail may be eliminated, if the work bench is fully decked, the planking secured, and is capable of withstanding 200 pounds pressure in any direction.

(13) Employees shall not be permitted to use a work bench as a scaffold platform.

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