

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

[V-04-1]

Alberici Mid-Atlantic, LLC, Commonwealth Dynamics, Inc., and R and P Industrial Chimney Co., Inc., Application for Permanent Variance and Interim Order, Grant of Interim Order, and Request for Comments

AGENCY: Occupational Safety and Health Administration (OSHA), Department of Labor.

ACTION: Notice of an application for a permanent variance and interim order; grant of interim order; and request for comments.

SUMMARY: Alberici Mid-Atlantic, LLC, Commonwealth Dynamics, Inc., and R and P Industrial Chimney Co., Inc. ("the applicants") have applied for a permanent variance from the provisions of the OSHA standards that regulate the use of boatswains' chairs and hoist platforms, specifically paragraph (o)(3) of § 1926.452 and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of § 1926.552. In addition, the applicants have requested an interim order based on the alternative conditions specified by the variance application. Since these conditions are the same as the conditions specified in the most recent permanent variance granted by the Agency for these boatswains'-chair and hoist-platform provisions, OSHA is granting the applicants' request for an interim order.

DATES: Submit comments and requests for a hearing by September 9, 2004.

ADDRESSES: *Electronic.* OSHA also permits electronic submission of comments (but not attachments) and hearing requests through its Web site at <http://ecomments.osha.gov>. If a commenter would like to submit additional materials to be associated with a comment that was submitted electronically, these materials should be sent, in triplicate hard copy, to the OSHA Docket Office at the above address. These materials must clearly identify the sender's name, date, subject, and docket number to enable the Agency to attach them to the appropriate comments.

Facsimile. OSHA allows facsimile transmission of comments that are 10 pages or fewer in length (including attachments), as well as hearing requests. Send these comments, identified with the docket number (*i.e.*, V-04-1), to the OSHA Docket Office at (202) 693-1648; hard copies of these

comments are not required. Commenters may submit attachments to their comments, such as studies and journal articles, in triplicate hard copy, to the OSHA Docket Office at the above address instead of transmitting facsimile copies of these materials. These materials must clearly identify the sender's name, date, subject, and docket number so that the Agency can attach them to the appropriate comments.

Regular mail, express delivery, hand delivery, and messenger service. Submit three copies of comments (including attachments), as well as hearing requests, to the OSHA Docket Office, Docket No. V-04-1, Technical Data Center, Room N-2625, OSHA, U.S. Department of Labor, 200 Constitution Ave., NW., Washington, DC 20210; telephone (202) 693-2350. Please contact the OSHA Docket Office at (202) 693-2350 for information about security procedures concerning the delivery of materials by express delivery, hand delivery, and messenger service. The hours of operation for the OSHA Docket Office and Department of Labor are 8:15 a.m. to 4:45 p.m., e.t.

FOR FURTHER INFORMATION CONTACT: For information about this notice contact Ms. Maryann S. Garrahan, Director, Office of Technical Programs and Coordination Activities, Room N-3655, OSHA, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210; telephone (202) 693-2110; fax (202) 693-1644. For additional copies of this **Federal Register** notice, contact the Office of Publications, Room N-3103, OSHA, U.S. Department of Labor, 200 Constitution Ave., NW., Washington, DC 20210 (telephone (202) 693-1888). Electronic copies of this **Federal Register** notice, as well as news releases and other relevant documents, are available at OSHA's Web site on the Internet at <http://www.osha.gov/>.

Additional information about this variance application also is available from the following OSHA Regional Offices:

- U.S. Department of Labor, OSHA, JFK Federal Building, Room E340, Boston, MA 02203, telephone (617) 565-9860, and fax (617) 565-9827.
- U.S. Department of Labor, OSHA, 201 Varick St., Room 670, New York, NY 10014, telephone (212) 337-2378, and fax (212) 337-2371.
- U.S. Department of Labor, OSHA, Curtis Building, Suite 740 West, 170 South Independence Mall West, Philadelphia, PA 19106, telephone (215) 861-4900, and fax (215) 861-4904.
- U.S. Department of Labor, OSHA, Sam Nunn Atlanta Federal Center, 61 Forsyth St., SW., Room 6T50, Atlanta,

GA 30303, telephone (404) 562-2300, and fax (404) 562-2295.

- U.S. Department of Labor, OSHA, 230 South Dearborn St., Room 3244, Chicago, IL 60604, telephone (312) 353-2220, and fax (312) 353-7774.
- U.S. Department of Labor, OSHA, 525 Griffin St., Room 602, Dallas, TX 75202, telephone (214) 767-4736, and fax (214) 767-4693.
- U.S. Department of Labor, OSHA, City Center Square, 1100 Main St., Suite 800, Kansas City, MO 64105, telephone (816) 426-5861, and fax (816) 426-2750.
- U.S. Department of Labor, OSHA, 1999 Broadway, Suite 1690, Denver, CO 80202-5716 (overnight), P.O. Box 46550, Denver, CO 80201-6550 (mail), telephone (303) 844-1600, and fax (303) 844-1616.
- U.S. Department of Labor, OSHA, 71 Stevenson St., Room 420, San Francisco, CA 94105, telephone (415) 975-4310, and fax (415) 975-4319.
- U.S. Department of Labor, OSHA, 1111 Third Ave., Suite 715, Seattle, WA 98101-3212, telephone (206) 553-5930, and fax (206) 553-6499.

I. Notice of Application

The following companies ("the applicants") have submitted requests for a permanent variance under section 6(d) of the Occupational Safety and Health Act of 1970 (29 U.S.C. 655) and 29 CFR 1905.11: (1) Alberici Mid-Atlantic, LLC, 4300 First Avenue, P.O. Box 9, Nitro, West Virginia 25143 (Ex. 1); (2) Commonwealth Dynamics, Inc., 95 Court Street, Portsmouth, New Hampshire 03801 (Ex. 2); and (3) R and P Industrial Chimney Co., Inc., 244 Industry Parkway, Nicholasville, Kentucky 40356 (Ex. 3). The applicants seek a permanent variance from § 1926.452(o)(3), which provides the tackle requirements for boatswains' chairs. The applicants also request a variance from paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of § 1926.552. These latter paragraphs specify the following requirements:

- (c)(1)—Construction requirements for hoist towers outside a structure;
- (c)(2)—Construction requirements for hoist towers inside a structure;
- (c)(3)—Anchoring a hoist tower to a structure;
- (c)(4)—Hoistway doors or gates;
- (c)(8)—Electrically interlocking entrance doors or gates to the hoistway and cars;
- (c)(13)—Emergency stop switch located in the car;
- (c)(14)(i)—Using a minimum of two wire ropes for drum hoisting; and
- (c)(16)—Material and component requirements for construction of personnel hoists.

The applicants contend that the permanent variance would provide their employees with a place of employment that is at least as safe and healthful as they would obtain under the existing provisions.

The places of employment affected by this variance application are the present and future projects where the applicants construct chimneys, including states under federal jurisdiction, as well as states having safety and health plans approved by OSHA under section 18 of the OSH Act (29 U.S.C. 667) and 29 CFR part 1952 ("Approved State Plans for Enforcement of State Standards") ("State-plan states"). The applicants certify that they have provided each current employee that would be affected by the permanent variance, as well as employee representatives, with a copy of their variance requests, and also have posted a copy of these requests in a prominent location in their corporate offices and at each job site where they normally post notices. In addition, the applicants have informed employees and their representatives of their right to petition the Assistant Secretary of Labor for Occupational Safety and Health for a hearing on this variance application.

II. Multi-State Variance

The applicants perform chimney work in a number of geographic locations in the United States; these locations are likely to include one or more locations in State-plan states. Consequently, any permanent variance granted as a result of this variance application would be subject to the requirements specified by 29 CFR 1952.9 ("Variances affecting multi-state employers") and 29 CFR 1905.14(b)(3) ("Action on applications"). Under these regulations, a permanent variance granted by the Agency would become effective in State-plan states to the extent that the relevant state standards are the same as the federal OSHA standards from which the applicants are seeking the permanent variance, and the state has jurisdiction over both private- and public-sector employers and employees.¹ The permanent variance granted previously to American Boiler and Chimney Co. and Oak Park

Chimney Corp. became effective in nine State-plan states, including Alaska, Arizona, Kentucky, Maryland, New Mexico, North Carolina, Oregon, South Carolina (under specified conditions), and Tennessee (*see* 68 FR 52964).

III. Supplementary Information

A. Overview

The applicants construct, remodel, repair, maintain, inspect, and demolish tall chimneys made of reinforced concrete, brick, and steel. This work, which occurs throughout the United States, requires the applicants to transport employees and construction material to and from elevated work platforms and scaffolds located, respectively, inside and outside tapered chimneys. While tapering contributes to the stability of a chimney, it requires frequent relocation of, and adjustments to, the work platforms and scaffolds so that they will fit the decreasing circumference of the chimney as construction progresses upwards.

To transport employees to various heights inside and outside a chimney, the applicants propose to use a hoist system that would lift and lower personnel-transport devices that include personnel cages, personnel platforms, or boatswains' chairs. The applicants would also attach a hopper or concrete bucket to the hoist system to raise or lower material inside or outside a chimney. The applicants would use personnel cages, personnel platforms, or boatswains' chairs solely to transport employees with the tools and materials necessary to do their work, and not to transport only materials or tools in the absence of employees.

The applicants would use a hoist engine located and controlled outside the chimney, to power the hoist system. The system would also consist of a wire rope that: Spools off the hoist drum into the interior of the chimney; passes to a footblock that redirects the rope from the horizontal to the vertical planes; goes from the footblock through the overhead sheaves above the elevated platform; and finally drops to the bottom landing of the chimney where it connects to the personnel or material transport. The cathead, which is a superstructure at the top of a derrick, supports the overhead sheaves. The overhead sheaves (and the vertical span of the hoist system) move upward with the derrick as chimney construction progresses. Two guide cables, suspended from the cathead, eliminate swaying and rotation of the load. If the hoist rope breaks, safety clamps activate and grip the guide cables to prevent the load from falling. The applicants would

use a headache ball, located on the hoist rope directly above the load, to counterbalance the rope's weight between the cathead sheaves and the footblock.

The applicants would implement additional conditions to improve employee safety, including:

- Attaching the wire rope to the personnel cage using a keyed-screwpin shackle or positive-locking link;
- Adding limit switches to the hoist system to prevent overtravel by the personnel- or material-transport devices;
- Providing the safety factors and other precautions required for personnel hoists specified by the pertinent provisions of § 1926.552(c), including canopies and shields to protect employees located in a personnel cage from material that may fall during hoisting and other overhead activities;
- Providing falling-object protection for scaffold platforms as specified by § 1926.451(h)(1);
- Conducting tests and inspections of the hoist system as required by §§ 1926.20(b)(2) and 1926.552(c)(15);
- Establishing an accident-prevention program that conforms to § 1926.20(b)(3);
- Ensuring that employees who use a personnel platform or boatswain's chair wear full body harnesses and lanyard; and
- Securing the lifelines (used with a personnel platform or boatswain's chair) to the rigging at the top of the chimney and to a weight at the bottom of the chimney to maximum stability to the lifeline.

B. Previous Variances From § 1926.452(o)(3) and 1926.552(c)

Since 1973, ten chimney-construction companies have demonstrated to OSHA that several of the hoist-tower requirements of § 1926.552(c) present access problems that pose a serious danger to their employees. These companies have received permanent variances from these hoist-tower and boatswains'-chair requirements, and they have used essentially the same alternate apparatus and procedures that the applicants are now proposing to use in this variance application. The Agency published the permanent variances for these companies at 38 FR 8545 (April 3, 1973), 44 FR 51352 (August 31, 1979), 50 FR 40627 (October 4, 1985), 52 FR 22552 (June 12, 1987), and 68 FR 52961 (September 8, 2003) (*see* Exs. 4 to 8).²

² Zurn Industries, Inc. received two permanent variances from OSHA. The first variance, granted on May 14, 1985 (50 FR 20145), addressed the boatswains'-chair provision (then in paragraph (l)(5) of § 1926.451), as well as the hoist-platform

¹ Three State-plan states (*i.e.*, Connecticut, New Jersey, and New York) and one territory (*i.e.*, Virgin Islands) do not have jurisdiction over private-sector employees (*i.e.*, they limit their occupational safety and health jurisdiction to public-sector employees only). State-plan states and territories that have jurisdiction over both public- and private-sector employers and employees are: Alaska, Arizona, California, Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virginia, Washington, and Wyoming.

In 1980, the Agency evaluated the alternative conditions specified in the permanent variances that it had granted to chimney-construction companies as of that date. In doing so, OSHA observed hoisting operations conducted by these companies at various construction sites. These evaluations found that, while the alternative conditions generally were safe, compliance with the conditions among the companies was uneven (*see* Exs. 9 and 10). Additionally, the National Chimney Construction Safety and Health Advisory Committee, an industry-affiliated organization, conducted evaluations of the hoist systems that provided useful information regarding safety and efficacy of the alternative conditions (*see, e.g.,* Ex. 11).

The permanent variance granted most recently by OSHA to American Boiler and Chimney Co. and Oak Park Chimney Corp. (*see* 68 FR 52961; September 8, 2003) updated the permanent variances granted by the Agency in the 1970s and 1980s by clarifying the alternative conditions and citing the most recent consensus standards and other references. On the basis of this experience and knowledge, the Agency finds that the applicants' requests for a permanent variance are consistent with the permanent variances that OSHA has granted previously to other employers in the chimney-construction industry. Therefore, the Agency believes that the conditions specified in these variance applications will provide the employees of the applicants with at least the same level of safety that they would receive from § 1926.452(o)(3) and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of § 1926.552.

C. Requested Variance From § 1926.452(o)(3)

The applicants state that it is necessary, on occasion, to use a boatswains' chair to transport employees to and from a bracket scaffold on the outside of an existing chimney during flue installation or repair work, or to and from an elevated scaffold located inside a chimney that has a small or tapering diameter. Paragraph (o)(3) of § 1926.452, which regulates the tackle used to rig a boatswains' chair, states that this tackle must "consist of correct size ball bearings or bushed blocks containing safety hooks and properly 'eye-spliced'

minimum five-eighth (5/8") inch diameter first-grade manila rope [or equivalent rope]."

The primary purpose of this paragraph is to allow an employee to safely control the ascent, descent, and stopping locations of the boatswains' chair. However, the applicants note that the required tackle is difficult or impossible to operate on some chimneys that are over 200 feet tall because of space limitations. Therefore, as an alternative to complying with the tackle requirements specified by § 1926.452(o)(3), the applicants propose to use the hoisting system described in paragraph III.A ("Overview") of this notice, both inside and outside a chimney, to raise or lower employees in a personnel cage to work locations. The applicants would use a personnel cage for this purpose to the extent that adequate space is available; they would use a personnel platform whenever a personnel cage is infeasible because of limited space. However, when limited space also makes a personnel platform infeasible, the applicants would then use a boatswains' chair to lift employees to work locations. The applicants would limit use of the boatswains' chair to elevations above the highest work location that the personnel cage and personnel platform can reach; under these conditions, they would attach the boatswains' chair directly to the hoisting cable only when the structural arrangement precludes the safe use of the block and tackle required by § 1926.452(o)(3).

D. Requested Variance From § 1926.552(c)

Paragraph (c) of § 1926.552 specifies the requirements for enclosed hoisting systems used to transport personnel from one elevation to another. This paragraph ensures that employers transport employees safely to and from elevated work platforms by mechanical means during the construction, alteration, repair, maintenance, or demolition of structures such as chimneys. However, this standard does not provide specific safety requirements for hoisting personnel to and from elevated work platforms and scaffolds in tapered chimneys; the tapered design requires frequent relocation of, and adjustment to, the work platforms and scaffolds. The space in a small-diameter or tapered chimney is not large enough or configured so that it can accommodate an enclosed hoist tower. Moreover, using an enclosed hoist tower for outside operations exposes employees to additional fall hazards because they need to install extra bridging and bracing to support a

walkway between the hoist tower and the tapered chimney.

Paragraph (c)(1) of § 1926.552 requires employers to enclose hoist towers located outside a chimney on the side or sides used for entrance to, and exit from, the chimney; these enclosures must extend the full height of the hoist tower. The applicants assert that it is impractical and hazardous to locate a hoist tower outside tapered chimneys because it becomes increasingly difficult, as a chimney rises, to erect, guy, and brace a hoist tower; under these conditions, access from the hoist tower to the chimney or to the movable scaffolds used in constructing the chimney exposes employees to a serious fall hazard. Additionally, the applicants note that the requirement to extend the enclosures 10 feet above the outside scaffolds often exposes the employees involved in building these extensions to dangerous wind conditions.

Paragraph (c)(2) of § 1926.552 requires that employers enclose all four sides of a hoist tower even when the tower is located inside a chimney; the enclosure must extend the full height of the tower. The applicants contend that it is hazardous for employees to erect and brace a hoist tower inside a chimney, especially small-diameter or tapered chimneys, or chimneys with sublevels, because these structures have limited space and cannot accommodate hoist towers; space limitations result from chimney design (*e.g.,* tapering), as well as reinforced steel projecting into the chimney from formwork that is near the work location.

As an alternative to complying with the hoist-tower requirements of § 1926.552(c)(1) and (c)(2), the applicants propose to use the rope-guided hoist system proposed above in section III.A ("Overview") of this application to transport employees to and from work locations inside and outside chimneys. Use of the proposed hoist system would eliminate the need for the applicants to comply with other provisions of § 1926.552(c) that specify requirements for hoist towers.

Therefore, they are requesting a permanent variance from several other closely-related provisions, as follows:

- (c)(3)—Anchoring the hoist tower to a structure;
- (c)(4)—Hoistway doors or gates;
- (c)(8)—Electrically interlocking entrance doors or gates that prevent hoist movement when the doors or gates are open;
- (c)(13)—Emergency stop switch located in the car;
- (c)(14)(i)—Using a minimum of two wire ropes for drum-type hoisting; and

requirements of paragraphs (c)(1), (c)(2), (c)(3), and (c)(14)(i) of § 1926.552. The second variance, granted on June 12, 1987 (52 FR 22552), includes these same paragraphs, as well as paragraphs (c)(4), (c)(8), (c)(13), and (c)(16) of § 1926.552.

- (c)(16)—Construction specifications for personnel hoists, including materials, assembly, structural integrity, and safety devices.

The applicants assert that the proposed hoisting system would protect their employees at least as effectively as the hoist-tower requirements of § 1926.552(c).

IV. Grant of Interim Order

In addition to requesting a permanent variance, the applicants also requested an interim order that would remain in effect until the Agency makes a decision on their application for a permanent variance. In doing so, the applicants acknowledge that during this period they will comply fully with the conditions of the interim order as an alternative to complying with the tackle requirements provided for boatswains' chairs by § 1926.452(o)(3) and the requirements for personnel hoists specified by paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i) and (c)(16) of § 1926.552.

Based on its previous experience with permanent variances from these provisions granted to other companies, OSHA believes that an interim order is justified in this case. As noted above in section III.A ("Previous Variances * * *"), the Agency has granted four permanent variances from these provisions to eight companies since 1973. Over this period, the affected companies have used effectively the alternative conditions specified in the variances. Moreover, the conditions of the interim order requested by the applicants duplicate exactly the conditions approved in the permanent variance granted recently to American Boiler and Chimney Co. and Oak Park Chimney Corp. (*see* 68 FR 52961). In granting this permanent variance to American Boiler and Chimney Co. and Oak Park Chimney Corp., the Agency stated, "[W]hen the employers comply with the conditions of the following order, their employees will be exposed to working conditions that are at least as safe and healthful as they would be if the employers complied with paragraph (o)(3) of § 1926.452, and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of § 1926.552." (*See* 68 FR 52967.)

Having determined previously that the alternative conditions proposed by the applicants will protect employees at least as effectively as the requirements of paragraph (o)(3) of § 1926.452 and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of § 1926.552, OSHA has decided to grant an interim order to the applicants pursuant to the provisions of paragraph

(c) of § 1905.11. Accordingly, in lieu of complying with paragraph (o)(3) of § 1926.452 and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of § 1926.552, the applicants will: (1) Provide notice of this grant of interim order to the employees affected by the conditions of the interim order using the same means they used to inform these employees of their application for a permanent variance; and (2) comply with the specific conditions listed below in section V ("Conditions of the Interim Order * * *") of this application for the period between the date of this **Federal Register** notice and the date the Agency publishes its final decision on the application in the **Federal Register**; the interim order will remain in effect during this period unless OSHA modifies or revokes it in accordance with the requirements of § 1905.13.

With regard to chimney-construction operations conducted in State-plan states, the applicants are invited to submit a request to the appropriate occupational safety and health authorities in those states where such operations are planned or are ongoing to determine whether they will honor this interim order. (For a list of State-plan states, *see* footnote 1 above.)

V. Specific Conditions of the Interim Order and the Application for a Permanent Variance

The following conditions apply to the interim order being granted by OSHA to Alberici Mid-Atlantic, LLC, Commonwealth Dynamic, Inc., and R and P Industrial Chimney Co., Inc. as part of their application for a permanent variance described in this **Federal Register** notice. In addition, these conditions specify the alternatives to the requirements of paragraph (o)(3) of § 1926.452 and paragraphs (c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16) of § 1926.552 that the applicants are proposing in their application for a permanent variance. These conditions include:³

1. Scope

(a) The interim order/permanent variance applies/would apply only when the applicants use a rope-guided hoist system during inside or outside chimney construction to raise or lower their employees between the bottom landing of a chimney and an elevated work location on the inside or outside surface of the chimney.

³ In these conditions, the verb "must" applies to the interim order, while the verb "would" pertains to the application for a permanent variance.

(b) Except for the requirements specified by § 1926.452 (o)(3) and § 1926.552(c)(1) through (c)(4), (c)(8), (c)(13), (c)(14)(i), and (c)(16), the applicants must/would comply fully with all other applicable provisions of 29 CFR parts 1910 and 1926.

2. Replacing a Personnel Cage With a Personnel Platform or a Boatswains' Chair

(a) *Personnel platform.* When the applicants demonstrate that available space makes a personnel cage for transporting employees infeasible, they may replace the personnel cage with a personnel platform when they limit use of the personnel platform to elevations above the last work location that the personnel cage can reach.

(b) *Boatswains' chair.* When the applicants demonstrate that available space makes a personnel platform for transporting employees infeasible, they may:

(i) Replace the personnel platform with a boatswains' chair when they limit use of the boatswains' chair to elevations that are above the highest work location that the personnel platform can reach; and

(ii) When doing so, they must/would attach the boatswains' chair directly to the hoisting cable only when the structural arrangement precludes the safe use of the block and tackle required by § 1926.452(o)(3).

3. Qualified Competent Person

(a) The applicants must/would:

(i) Provide a qualified competent person, as specified in paragraphs (f) and (m) of § 1926.32, who is responsible for ensuring that the design, maintenance, and inspection of the hoist system comply with the conditions of this grant and with the appropriate requirements of 29 CFR part 1926 ("Safety and Health Regulations for Construction"); and

(ii) Ensure that the qualified competent person is present at ground level to assist in an emergency whenever the hoist system is raising or lowering employees.

(b) The applicants must/would use a qualified competent person to design and maintain the cathead described under Condition 8 ("Cathead and Sheave") below.

4. Hoist Machine

(a) *Type of hoist.* The applicants must/would designate the hoist machine as a portable personnel hoist.

(b) *Raising or lowering a transport.* The applicants must/would ensure that:

(i) The hoist machine includes a base-mounted drum hoist designed to control line speed; and

(ii) Whenever they raise or lower a personnel or material hoist (e.g., a personnel cage, personnel platform, boatswains' chair, hopper, concrete bucket) using the hoist system:

(A) The drive components are engaged continuously when an empty or occupied transport is being lowered (i.e., no "freewheeling");

(B) The drive system is interconnected, on a continuous basis, through a torque converter, mechanical coupling, or an equivalent coupling (e.g., electronic controller, fluid clutches, hydraulic drives).

(C) The braking mechanism is applied automatically when the transmission is in the neutral position and a forward-reverse coupling or shifting transmission is being used; and

(D) No belts are used between the power source and the winding drum.

(c) *Power source.* The applicants must/would power the hoist machine by an air, electric, hydraulic, or internal-combustion drive mechanism.

(d) *Constant pressure control switch.* The applicants must/would:

(i) Equip the hoist machine with a hand- or foot-operated constant-pressure control switch (i.e., a "deadman control switch") that stops the hoist immediately upon release; and

(ii) Protect the control switch to prevent it from activating if the hoist machine is struck by a falling or moving object.

(e) *Line-speed indicator.* The applicants must/would:

(i) Equip the hoist machine with an operating line-speed indicator maintained in good working order; and

(ii) Ensure that the line-speed indicator is in clear view of the hoist operator during hoisting operations.

(f) *Braking systems.* The applicants must/would equip the hoist machine with two (2) independent braking systems (i.e., one automatic and one manual) located on the winding side of the clutch or couplings, with each braking system being capable of stopping and holding 150 percent of the maximum rated load.

(g) *Slack-rope switch.* The applicants must/would equip the hoist machine with a slack-rope switch to prevent rotation of the winding drum under slack-rope conditions.

(h) *Frame.* The applicants must/would ensure that the frame of the hoist machine is a self-supporting, rigid, welded-steel structure, and that holding brackets for anchor lines and legs for anchor bolts are integral components of the frame.

(i) *Stability.* The applicants must/would secure hoist machines in position to prevent movement, shifting, or dislodgement.

(j) *Location.* The applicants must/would:

(i) Locate the hoist machine far enough from the footblock to obtain the correct fleet angle for proper spooling of the cable on the drum; and

(ii) Ensure that the fleet angle remains between one-half degree ($\frac{1}{2}^\circ$) and one and one-half degrees ($1\frac{1}{2}^\circ$) for smooth drums, and between one-half degree ($\frac{1}{2}^\circ$) and two degrees (2°) for grooved drums, with the lead sheave centered on the drum.⁴

(k) *Drum and flange diameter.* The applicants must/would:

(i) Provide a winding drum for the hoist that is at least 30 times the diameter of the rope used for hoisting; and

(ii) Ensure that the winding drum has a flange diameter that is at least one and one-half ($1\frac{1}{2}$) times the winding-drum diameter.

(l) *Spooling of the rope.* The applicants must/would never spool the rope closer than two (2) inches (5.1 cm) from the outer edge of the winding-drum flange.

(m) *Electrical system.* The applicants must/would ensure that all electrical equipment is weatherproof.

(n) *Limit switches.* The applicants must/would equip the hoist system with limit switches and related equipment that automatically prevent overtravel of a personnel cage, personnel platform, boatswains' chair, or material-transport device at the top of the supporting structure and at the bottom of the hoistway or lowest landing level.

5. Methods of Operation

(a) *Employee qualifications and training.* The applicants must/would:

(i) Ensure that only trained and experienced employees, who are knowledgeable of hoist-system operations, control the hoist machine; and

(ii) Provide instruction, periodically and as necessary, on how to operate the hoist system, to each employee who uses a personnel cage for transportation.

(b) *Speed limitations.* The applicants must/would not operate the hoist at a speed in excess of:

(i) Two hundred and fifty (250) feet (76.9 m) per minute when a personnel

cage is being used to transport employees;

(ii) One hundred (100) feet (30.5 m) per minute when a personnel platform or boatswains' chair is being used to transport employees; or

(iii) A line speed that is consistent with the design limitations of the system when only material is being hoisted.

(c) *Communication.* The applicants must/would:

(i) Use a voice-mediated intercommunication system to maintain communication between the hoist operator and the employees located in or on a moving personnel cage, personnel platform, or boatswains' chair;

(ii) Stop hoisting if, for any reason, the communication system fails to operate effectively; and

(iii) Resume hoisting only when the site superintendent determines that it is safe to do so.

6. Hoist Rope

(a) *Grade.* The applicants must/would use a wire rope for the hoist system (i.e., "hoist rope") that consists of extra-improved plow steel, an equivalent grade of non-rotating rope, or a regular lay rope with a suitable swivel mechanism.

(b) *Safety factor.* The applicants must/would maintain a safety factor of at least eight (8) times the safe workload throughout the entire length of hoist rope.

(c) *Size.* The applicants must/would use a hoist rope that is at least one-half ($\frac{1}{2}$) inch (1.3 cm) in diameter.

(d) *Inspection, removal, and replacement.* The applicants must/would:

(i) Thoroughly inspect the hoist rope before the start of each job and on completing a new setup;

(ii) Maintain the proper diameter-to-diameter ratios between the hoist rope and the footblock and the sheave by inspecting the wire rope regularly (see Conditions 7(c) and 8(d) below); and

(iii) Remove and replace the wire rope with new wire rope when any of the conditions specified by § 1926.552(a)(3) occurs.

(e) *Attachments.* The applicants must/would attach the rope to a personnel cage, personnel platform, or boatswains' chair with a keyed-screwpin shackle or positive-locking link.

(f) *Wire-rope fastenings.* When the applicants use clip fastenings (e.g., U-bolt wire-rope clips) with wire ropes, they must/would:

(i) Use Table H-20 of § 1926.251 to determine the number and spacing of clips;

⁴ Taken from the definition of, and specifications for, the term "fleet angle" from *Cranes and Derricks*, H. I. Shapiro, et al. (eds.); New York: McGraw-Hill, 2000. Accordingly, the fleet angle is "[t]he angle the rope leading onto a [winding] drum makes with the line perpendicular to the drum rotating axis when the lead rope is making a wrap against the flange."

(ii) Use at least three (3) drop-forged clips at each fastening;

(iii) Install the clips with the "U" of the clips on the dead end of the rope; and

(iv) Space the clips so that the distance between them is six (6) times the diameter of the rope.

7. Footblock

(a) *Type of block.* The applicants must/would use a footblock:

(i) Consisting of construction-type blocks of solid single-piece bail with a safety factor that is at least four (4) times the safe workload, or an equivalent block with roller bearings;

(ii) Designed for the applied loading, size, and type of wire rope used for hoisting;

(iii) Designed with a guard that contains the wire rope within the sheave groove;

(iv) Bolted rigidly to the base; and

(v) Designed and installed so that it turns the moving wire rope to and from the horizontal or vertical as required by the direction of rope travel.

(b) *Directional change.* The applicants must/would ensure that the angle of change in the hoist rope from the horizontal to the vertical direction at the footblock is approximately 90°.

(c) *Diameter.* The applicants must/would ensure that the line diameter of the footblock is at least 24 times the diameter of the hoist rope.

8. Cathead and Sheave

(a) *Support.* The applicants must/would use a cathead (*i.e.*, "overhead support") that consists of a wide-flange beam or two (2) steel-channel sections securely bolted back-to-back to prevent spreading.

(b) *Installation.* The applicants must/would ensure that:

(i) All sheaves revolve on shafts that rotate on bearings; and

(ii) The bearings are mounted securely to maintain the proper bearing position at all times.

(c) *Rope guides.* The applicants must/would provide each sheave with appropriate rope guides to prevent the hoist rope from leaving the sheave grooves when the rope vibrates or swings abnormally.

(d) *Diameter.* The applicants must/would use a sheave with a diameter that is at least 24 times the diameter of the hoist rope.

9. Guide Ropes

(a) *Number and construction.* The applicants must/would affix two (2) guide ropes by swivels to the cathead. The guide ropes must/would:

(i) Consist of steel safety cables not less than one-half (1/2) inch (1.3 cm) in diameter; and

(ii) Be free of damage or defect at all times.

(b) *Guide rope fastening and alignment tension.* The applicants must/would fasten one end of each guide rope securely to the overhead support, with appropriate tension applied at the foundation.

(c) *Height.* The applicants must/would rig the guide ropes along the entire height of the hoist-machine structure.

10. Personnel Cage

(a) *Construction.* A personnel cage must/would be of steel-frame construction and capable of supporting a load that is four (4) times its maximum rated load capacity. The applicants also must/would ensure that the personnel cage has:

(i) A top and sides that are permanently enclosed (except for the entrance and exit);

(ii) A floor securely fastened in place;

(iii) Walls that consist of 14-gauge, one-half (1/2) inch (1.3 cm) expanded metal mesh, or an equivalent material;

(iv) Walls that cover the full height of the personnel cage between the floor and the overhead covering;

(v) A sloped roof constructed of one-eighth (1/8) inch (0.3 cm) aluminum, or an equivalent material; and

(vi) Safe handholds (*e.g.*, rope grips—but *not* rails or hard protrusions⁵) that accommodate each occupant.

(b) *Overhead weight.* A personnel cage must/would have an overhead weight (*e.g.*, a headache ball of appropriate weight) to compensate for the weight of the hoist rope between the cathead and footblock. In addition, the applicants must/would:

(i) Ensure that the overhead weight is capable of preventing line run; and

(ii) Use a means to restrain the movement of the overhead weight so that the weight does *not* interfere with safe personnel hoisting.

(c) *Gate.* The personnel cage must/would have a gate that:

(i) Guards the full height of the entrance opening; and

(ii) Has a functioning mechanical lock that prevents accidental opening.

(d) *Operating procedures.* The applicants must/would post the procedures for operating the personnel cage conspicuously at the hoist operator's station.

(e) *Capacity.* The applicants must/would:

(i) Hoist no more than four (4) occupants in the cage at any one time; and

(ii) Ensure that the rated load capacity of the cage is at least 250 pounds (113.4 kg) for each occupant so hoisted.

(f) *Employee notification.* The applicants must/would post a sign in each personnel cage notifying employees of the following conditions:

(i) The standard rated load, as determined by the initial static drop test specified by Condition 10(g) ("Static drop tests") below; and

(ii) The reduced rated load for the specific job.

(g) *Static drop tests.* The applicants must/would:

(i) Conduct static drop tests of each personnel cage, and these tests must/would comply with the definition of "static drop test" specified by section 3 ("Definitions") and the static drop-test procedures provided in section 13 ("Inspections and Tests") of American National Standards Institute (ANSI) standard A10.22-1990 (R1998) ("American National Standard for Rope-Guided and Nonguided Worker's Hoists—Safety Requirements");

(ii) Perform the initial static drop test at 125 percent of the maximum rated load of the personnel cage, and subsequent drop tests at no less than 100 percent of its maximum rated load; and

(iii) Use a personnel cage for raising or lowering employees only when no damage occurred to the components of the cage as a result of the static drop tests.

11. Safety Clamps

(a) *Fit to the guide ropes.* The applicants must/would:

(i) Fit appropriately designed and constructed safety clamps to the guide ropes; and

(ii) Ensure that the safety clamps do not damage the guide ropes when in use.

(b) *Attach to the personnel cage.* The applicants must/would attach safety clamps to each personnel cage for gripping the guide ropes.

(c) *Operation.* The safety clamps attached to the personnel cage must/would:

(i) Operate on the "broken rope principle" defined in section 3 ("Definitions") of ANSI standard A10.22-1990 (R1998);

(ii) Be capable of stopping and holding a personnel cage that is carrying 100 percent of its maximum rated load and traveling at its maximum allowable speed if the hoist rope breaks at the footblock; and

(iii) Use a pre-determined and pre-set clamping force (*i.e.*, the "spring

⁵ To reduce impact hazards should employees lose their balance because of cage movement.

compression force”) for each hoist system.

(d) *Maintenance.* The applicants must/would keep the safety-clamp assemblies clean and functional at all times.

12. Overhead Protection

(a) The applicants must/would install a canopy or shield over the top of the personnel cage that is made of steel plate at least three-sixteenth (3/16) of an inch (4.763 mm) thick, or material of equivalent strength and impact resistance, to protect employees (*i.e.*, both inside and outside the chimney) from material and debris that may fall from above.

(b) The applicants must/would ensure that the canopy or shield slopes to the outside of the personnel cage.⁶

13. Emergency-Escape Device

(a) *Location.* The applicants must/would provide an emergency-escape device in at least one of the following locations:

(i) In the personnel cage, provided that the device is long enough to reach the bottom landing from the highest possible escape point; or

(ii) At the bottom landing, provided that a means is available in the personnel cage for the occupants to raise the device to the highest possible escape point.

(b) *Operating instructions.* The applicants must/would ensure that written instructions for operating the emergency-escape device are attached to the device.

(c) *Training.* The applicants must/would instruct each employee who uses a personnel cage for transportation on how to operate the emergency-escape device:

- (i) Before the employee uses a personnel cage for transportation; and
- (ii) Periodically, and as necessary, thereafter.

14. Personnel Platforms and Boatswains' Chairs

(a) *Personnel platforms.* When the applicants elect to replace the personnel cage with a personnel platform in accordance with Condition 2(a) of this variance, they must/would:

(i) Ensure that an enclosure surrounds the platform, and that this enclosure is at least 42 inches (106.7 cm) above the platform's floor;

(ii) Provide overhead protection when an overhead hazard is, or could be, present; and

(iii) Comply with the applicable scaffolding strength requirements specified by § 1926.451(a)(1).

(b) *Boatswains' chairs.* When the applicants elect to replace the personnel platform with a boatswains' chair in accordance with Condition 2(b) (“Boatswains” chair”) of this variance, they may attach the boatswains' chair directly to the hoisting cable only when they demonstrate that the spatial arrangement makes it infeasible to safely use the block and tackle required by § 1926.452(o)(3).

(c) *Fall-protection equipment.* Before employees use work platforms or boatswains' chairs, the applicants must/would equip the employees with, and ensure that they use, body harnesses and lifelines as specified by § 1926.104 and the applicable requirements of § 1926.502(d).

15. Inspections, Tests, and Accident Prevention

(a) The applicants must/would:

(i) Conduct inspections of the hoist system as required by § 1926.20(b)(2);

(ii) Ensure that a competent person conducts daily visual inspections of the hoist system; and

(iii) Inspect and test the hoist system as specified by § 1926.552(c)(15).

(b) The applicants must/would comply with the accident-prevention requirements of § 1926.20(b)(3).

16. Welding

(a) The applicants must/would use only qualified welders to weld components of the hoisting system.

(b) The applicants must/would ensure that the qualified welders:

(i) Are familiar with the weld grades, types, and materials specified in the design of the system; and

(ii) Perform the welding tasks in accordance with 29 CFR part 1926, subpart J (“Welding and Cutting”).

VII. Authority and Signature

John L. Henshaw, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 200 Constitution Ave., NW., Washington, DC directed the preparation of this notice. This notice is issued under the authority specified by section 6(d) of the Occupational Safety and Health Act of 1970 (29 U.S.C. 655), Secretary of Labor's Order No. 5-2002 (67 FR 65008), and 29 CFR part 1905.

Signed in Washington, DC on July 28, 2004.

John L. Henshaw,

Assistant Secretary of Labor.

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⁶ Paragraphs (a) and (b) have been adapted from the personnel-cage provisions of OSHA's Underground Construction Standard (§ 1926.800(t)(4)(iv)).